








"DF" FRICTION TORQUE LIMITER: introduction



- Simple and economic friction torque limiter.
- Suitable for dusty conditions without need of timing between gearbox and output.
- Silent overload without vibration.
- Protection in both rotation directions. ○ Asbestos-free friction discs.
- Simple and precise torque setting by adjusting the locking ring.
- The innovative setting of the nominal torque by measuring the "H" dimension allows for immediate coupling calibration.

ON REQUEST

- Complete with transmission gear, fully turned and mounted (plate wheel, pulley, gear pair)
- Different types of friction discs for specific applications.
- Possibility of connections with bore and keyway, locking assembly or other locking systems.
- Anti-corrosive surface treatments for special requirements.

	DF: Basic model for parallel shaft transmission, with plate wheels, gear pairs or pulleys.	from 1 to 23000 Nm max. bore \varnothing 140 mm	Page 5
	DF/SI: signaling on overload and automatic re-engaging possible.	from 3 to 23000 Nm max. bore \varnothing 140 mm	Page 6
	DF/PR: designed for the application on the slow speed shaft of a worm-gearbox.	from 1 to 2600 Nm max. bore \varnothing 55 mm	Page 7
	DF/TAC/PR-V: designed for application on the high speed shaft of a worm-gearbox.	from 1 to 1200 Nm max. shaft - bore \varnothing 55 mm	Page 7
	DF/TAC: in-line shaft connection, simple and economic.	from 1 to 23000 Nm max. bore \varnothing 140 mm	Page 8
	... + GAS: in-line shaft connection with elastic coupling with high misalignments.	from 1 to 7200 Nm max bore \varnothing 110 mm	Page 9
	... + GEC: in-line shaft connection with compact elastic coupling.	from 1 to 800 Nm max bore \varnothing 160 mm	Page 9

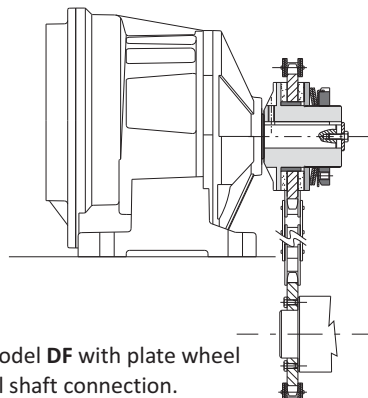
MAIN APPLICATIONS

- Forming machines.
- Conveyors.
- Automotive.
- Agricultural machines, woodworking machines.

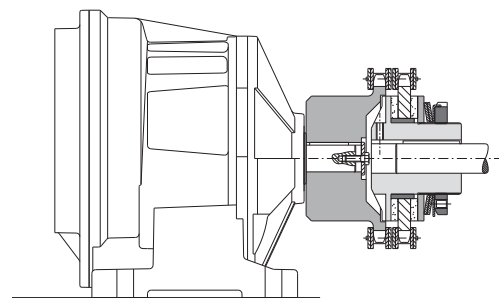
ADVANTAGES AND BENEFITS

- Protects the motor-gearbox in case of accidental collision.
- Protects the film of wrapping machines in case of higher tension.
- Absorbs static torques without disengaging.
- Protects the gear in case of short product jam.

APPLICATION EXAMPLES



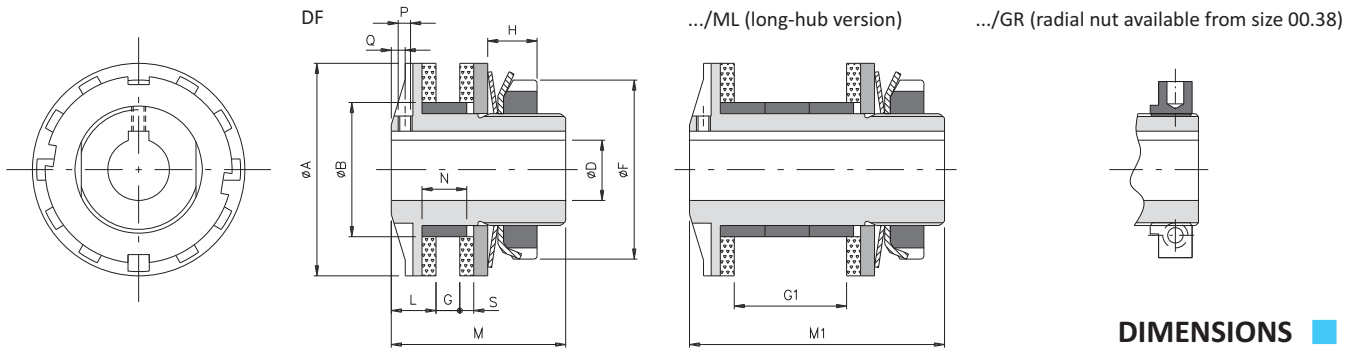
Friction Model **DF** with plate wheel for parallel shaft connection.



Friction Model with chain coupling **DF/TAC** for in-line shafts connection.

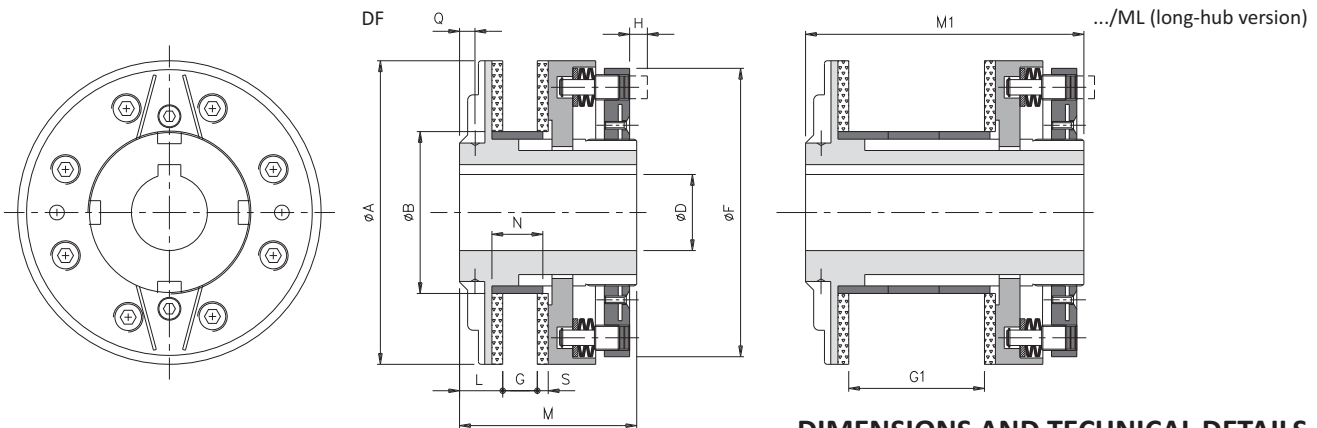
DF (friction torque limiter): technical data

- Compact solution.
- Assembly with helical springs possible: .../CM.
- Available with anti-corrosive surface treatments: DF/EA.
- Torque range: 2-23000 Nm; max. bore: $\varnothing 140$ mm.
- Available with customized alignments ("L" quote) interchangeable with other models present on the market.
- Available with radial nut (.../GR) statically balanced.



DIMENSIONS

Size	Torque [Nm]	A	B h7	D H7		F	G		G1	L	M	M1	N	P	Q	S	Max. speed [Rpm]	Weight [Kg]
				pilot bore	max.		min.	max.										
00.25	1 - 20	25	14	-	8	22	1	3	-	5	26	-	5,5	M3*	3*	2	10000	0,1
00.38	1 - 34	38	24	-	12	32	1	5	21	8	33	46	8	M3	2	2,5	10000	0,2
0.50	2 - 100	50	36	-	20	44	1	6	26	10	35	57,5	10	M4	3	3	7600	0,4
1.70	6 - 210	70	45	-	25	63	1	10	40	15	55	85	15	M6	4,5	4	5450	1,1
2.90	10 - 450	90	60	-	38	82	3	12	46	16	60	95	17	M6	5,5	4	4250	2,2
3.115	26 - 950	115	72	18	45	105	5	16	58	18	70	113	21	M6	5,5	4	3350	3,7
4.140	80 - 1200	140	85	24	55	130	8	19	69	20	80	136	25	M8	6,5	5	2750	6,6
5.170	150 - 2600	170	98	28	65	158	10	22	78	22,5	95	153,5	28	M8	6,5	5	2250	10,9



DIMENSIONS AND TECHNICAL DETAILS

Size	Torque [Nm]	A	B h7	D H7		F	G		G1	L	M	M1	N	S	On request Q	Max. speed [Rpm]	Weight [Kg]
				pilot bore	max.		min.	max.									
6.205	300 - 4800	205	120	38	80	193	18	26	90	27	110	174	32	5	8,5 - M8	1900	20,1
7.240	500 - 8000	240	145	50	100	230	21	29	99	27	116	186	35	5	8,5 - M10	1600	30,9
8.300	800 - 14000	300	175	60	120	287	21	33	113	29	123	203	40	6	8,5 - M10	1300	49,1
9.340	1000 - 18000	340	205	60	130	325	23	33	113	41	158	238	40	6	12 - M12	1200	85,5
10.400	1500 - 23000	400	230	60	140	388	23	35	119	46	167	251	42	6	13 - M12	1000	124,5

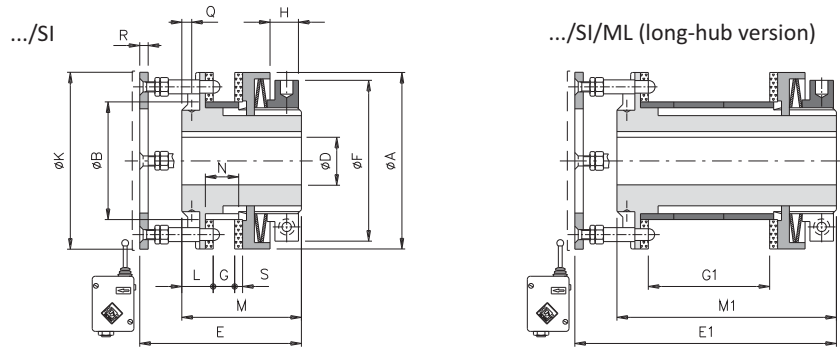
NOTES

- ⊗ P-Q*: On the size 00.25 the grub screw is located on the nut side, not on the flange side.
- ⊗ Technical details: Weights are relevant to the torque limiter with pilot bore (DF).

.../SI (intervention signaling version): technical data

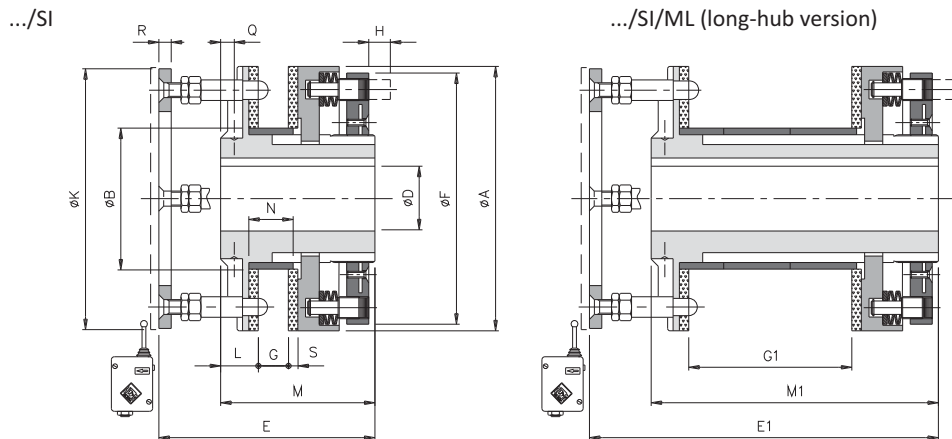


- Electromechanical overload signaling.
- Automatic re-engaging after transmission reset.
- Assembly with helical springs possible: .../SI/CM.
- Available with a longer shaft for assembly with transmission elements of large size: .../SI/ML.
- Available with friction rings at different performances for specific needs.
- Torque range: 3 – 23000 Nm; max. bore: $\varnothing 140$ mm.



DIMENSIONS AND TECHNICAL DETAILS

Size	Torque [Nm]	A	B h7	D H7		E	E1	F	G		G1	K	L	M	M1	N	R	S	On request Q	Max speed [Rpm]	Weight [Kg]
				pilot bore	max.				min.	max.											
1.70	6 - 210	70	45	-	25	75	105	63	5	10	40	70	15	55	85	15	3	4	4,5 - M4	5450	1,4
2.90	10 - 450	90	60	-	38	80	114	82	7	12	46	90	16	61	95	17	3	4	5 - M6	4250	2,7
3.115	26 - 950	115	72	18	45	89	131	104	9	16	58	115	18	71	113	21	4	4	5 - M6	3350	4,9
4.140	80 - 1200	140	85	24	55	103	152	128	13	19	69	140	20	86	136	25	4	5	6 - M6	2750	7,8
5.170	150 - 2600	170	98	28	65	116	172	157	15	22	78	170	22,5	97,5	153,5	28	4	5	6,5 - M8	2250	12,9



DIMENSIONS AND TECHNICAL DETAILS

Size	Torque [Nm]	A	B h7	D H7		E	E1	F	G		G1	K	L	M	M1	N	R	S	On request Q	Max. speed [Rpm]	Weight [Kg]
				pilot bore	max.				min.	max.											
6.205	300 - 4800	205	120	38	80	124	188	193	18	26	90	205	27	110	174	32	4	5	8,5 - M8	1900	20,9
7.240	500 - 8000	240	145	50	100	131	201	230	21	29	99	240	27	116	186	35	6	5	8,5 - M10	1600	32,2
8.300	800 - 14000	300	175	60	120	136	216	287	21	33	113	300	29	123	203	40	6	6	8,5 - M10	1300	50,6
9.340	1000 - 18000	340	205	60	130	170	250	325	23	33	113	340	41	158	238	40	6	6	12 - M12	1200	88
10.400	1500 - 23000	400	230	60	140	175	260	388	23	35	119	400	46	167	251	42	6	6	13 - M12	1000	128,8

NOTE

- Technical details: weights are relevant to the torque limiter with pilot bore (DF/SI).

.../PR - .../TAC/PR-V (versions for gearboxes): technical data

- Friction rings available in various materials and performance to suit specific needs.
- More simple and higher sensitivity than in gearbox integrated solutions.
- Specifically for assembly with hollow shafts with model (.../PR).
- Specifically for assembly between motor and gearbox complete with aluminium spacer (.../TAC/PR-V).
- ABS** Certification for application in the Naval sector (.../TAC/PR-V).
- Torque range: 1 – 2600 Nm (.../PR), 1 –1200 Nm (.../TAC/PR-V); maximum shaft: \varnothing 55 mm.

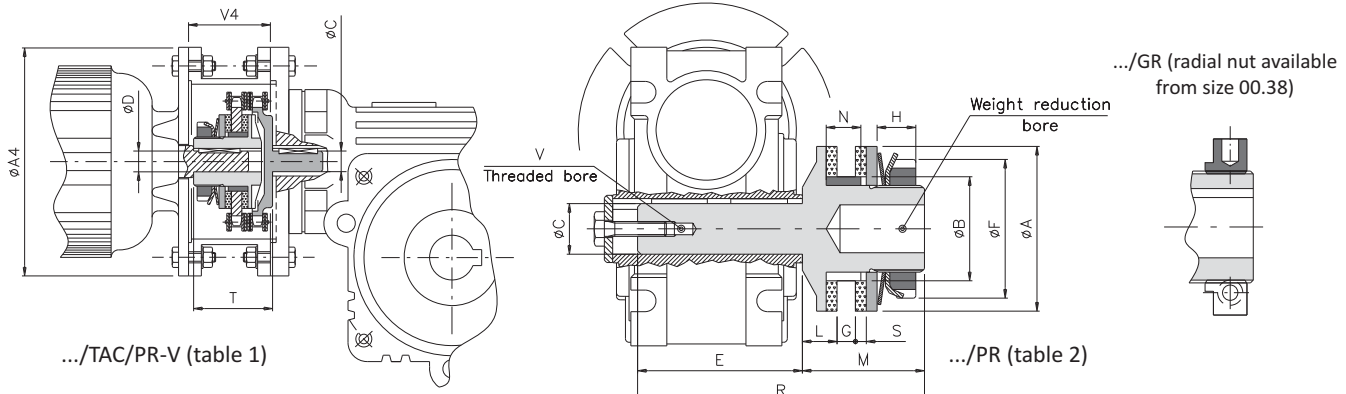


table 1

DIMENSIONS AND TECHNICAL DETAILS

Size	Torque [Nm]	Engine type	DF/TAC/PR-V		Spacer on request for flange B5		Max speed [Rpm]	Weight [Kg]
			D H7 - C h7	T	A4	V4		
00.38	1 - 34	63a	11	43	140	43	5000	0,6
		71a	14 *		160	43		0,6
0.50	2 - 100	80a	19	45	200	45,5	3800	1
		90S	24 *			55,5		0,9
1.70	6 - 210	100La - 112M	28	64	250	66	2800	2,6
2.90	10 - 450	132M	38	72	300	83,5	2200	5,4
3.115	26 - 950	160L	42	104	350	120	1800	10,2
		180L	48					10,4
4.140	80 - 1200	200L	55	104	400	122	1500	18

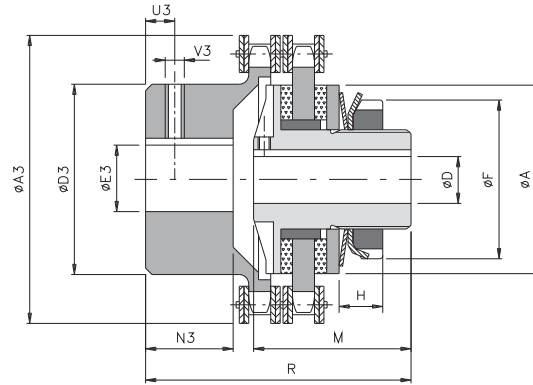
table 2

Size	Torque [Nm]	A	B h7	C h7	E	F	G		L	M	N	R	S	V	Max speed [Rpm]	Weight [Kg]
							min.	max.								
00.38	1 - 34	38	24	11	48	32	2,5	5	8	33	8	81	2,5	M4x10	10000	0,2
0.50	2 - 100	50	36	14	53	44	3,5	6	10	35	10	88	3	M5x13	7600	0,4
1.70	6 - 210	70	45	18	62	63	5	10	15	55	15	117	4	M6x16	5450	1,1
				19	78							133				1,1
				24	90							145				1,3
				25	80							135				1,2
2.90	10 - 450	90	60	25	90	82	7	12	16	60	17	150	4	M8x20	4250	2,1
				28	110							170				2,3
3.115	26 - 950	115	72	32	120	105	9	16	18	70	21	190	4	M10x25	3350	3,7
				35	118							188				3,9
				38	138							208				4,2
4.140	80 - 1200	140	85	42	152	130	13	19	20	80	25	232	5	M12x32	2750	6,9
				45	163							243				7,2
				48	178							258				7,7
				50	167							262				11,5
5.170	150 - 2600	170	98	55	208	158	15	22	22,5	95	28	303	5	M16x40	2250	12,7

NOTES

- ⊗ DH7*: reduced keyway on the torque limiter.
- ⊗ Technical details: weights are relevant to the torque limiter with pilot bore (DF/PR – DF/TAC/PR-V).

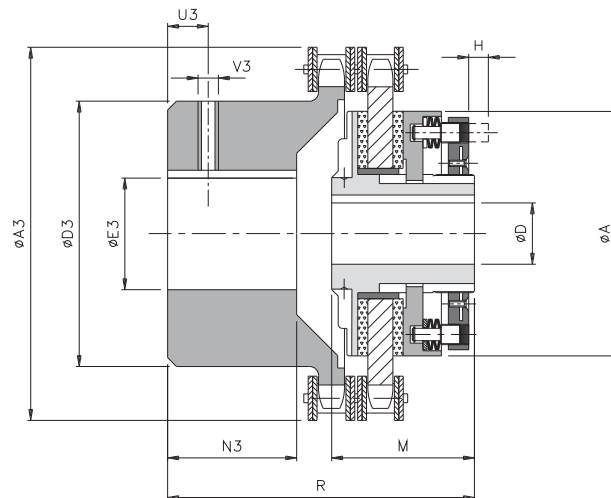
.../TAC (version with chain coupling): technical data



.../GR (radial nut available from size 00.38)

DIMENSIONS AND TECHNICAL DETAILS

Size	Torque [Nm]	A	D H7		M	P	Q	R	A3	D3	E3 H7		N3	U3	V3	Max speed [Rpm]	Weight [Kg]
			pilot bore	max.							pilot bore	max.					
00.25	1 - 20	25	-	8	26	M3	3	39	45	23	8	12	9	4	M3	5000	0,2
00.38	1 - 34	38	-	12	33	M3	3	58	58	37	10	20	20	5	M3	5000	0,6
0.50	2 - 100	50	-	20	35	M4	4	58	75	50	12	28	19	8	M4	3800	1,1
1.70	6 - 210	70	-	25	55	M6	6	87	101	70	16	38	29	8	M4	2800	2,8
2.90	10 - 450	90	-	38	60	M6	6	102	126	89	20	55	38	12	M6	2200	5,9
3.115	26 - 950	115	18	45	70	M6	6	131	159	112	20	70	56,5	12	M6	1800	11,1
4.140	80 - 1200	140	24	55	80	M8	8	146	184	130	28	80	59,5	15	M8	1500	20,3
5.170	150 - 2600	170	28	65	95	M8	8	189	216	130	30	80	88	15	M8	1300	31,0



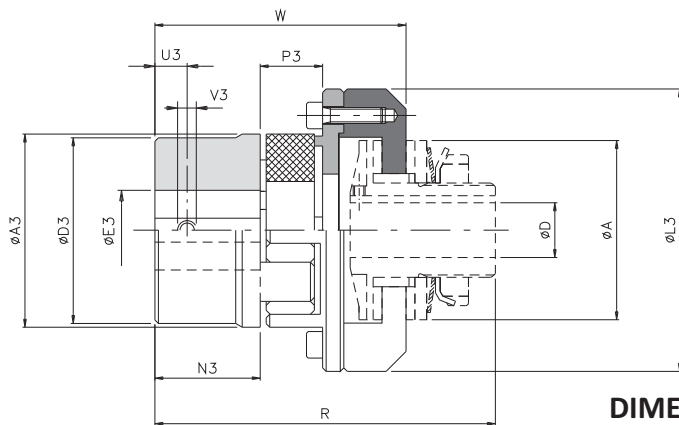
DIMENSIONS AND TECHNICAL DETAILS

Size	Torque [Nm]	A	D H7		M	R	A3	D3	E3 H7		N3	U3	V3	Max speed [Rpm]	Weight [Kg]
			pilot bore	max.					pilot bore	max.					
6.205	300 - 4800	205	40	80	110	218	291	150	38	90	103	25	M10	1000	54,6
7.240	500 - 8000	240	50	100	116	245	312	170	50	110	124	25	M10	900	76,7
8.300	800 - 14000	300	60	120	123	284	374	200	50	140	147	30	M12	750	125,5
9.340	1000 - 18000	340	60	130	158	329	423	210	60	150	165	30	M12		
10.400	1500 - 23000	400	60	140	167	364	471	240	60	160	191	30	M16		

NOTES

- ⊗ **Technical details:** data is relevant to the whole group (DF/TAC).
- ⊗ **Technical details:** weights are relevant to the whole group with pilot bore (DF/TAC).

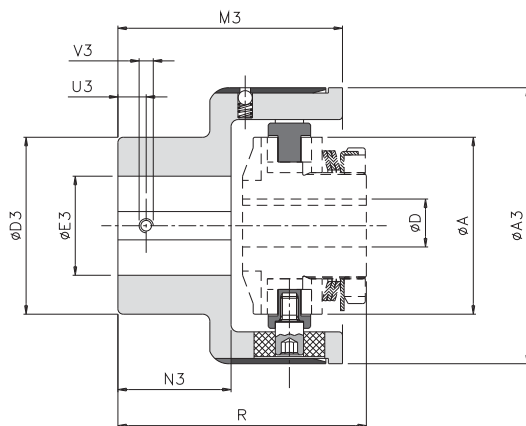
... + GAS (jaw coupling model): technical data



DIMENSIONS AND TECHNICAL DETAILS

Size		Torque [Nm]		A3	D3	E3 H7 max.	L3	N3	P3	U3	V3	D H7		R	W	Misalignments*			Max speed [Rpm]	Weight [Kg]
DF	GAS	Nom.	Max.									pilot bore	max.			Angular α [°]	Axial X [mm]	Radial K [mm]		
00.25	01 (14)	12,5	25	30	30	16	43	11	12	5	M4	-	8	56	37,5	0°54'	1	0,09	10000	0,2
00.38	00 (19)	17	34	40	40	25	58	25	16	10	M5	-	12	84,5	64	1° 18'	1	0,4	10000	0,4
0.50	0 (24)	60	120	55	53	35	74	30	18	10	M5	-	20	94	74,5	1° 18'	1	0,8	7600	0,8
1.70	2 (38)	325	650	80	78	48	107	45	24	15	M8	-	25	135	104	1° 18'	1,4	1	5450	3,3
2.90	3 (42)	450	900	95	93	55	132	50	26	20	M8	-	38	148,5	115,5	1° 18'	1,6	1	4250	5,4
3.115	5 (55)	685	1370	120	118	74	164	65	30	20	M10	18	45	181,5	143,5	1° 18'	1,8	1,4	3350	10,3
4.140	7 (75)	1465	2930	160	158	95	208	85	40	25	M10	24	55	224	181	1° 18'	2,5	1,8	2750	21,1
5.170	8 (90)	3600	7200	200	180	110	248	100	45	30	M12	28	65	260	207,5	1° 18'	2,8	1,8	2250	36,3

... + GEC (compact elastic coupling model): technical data



DIMENSIONS AND TECHNICAL DETAILS

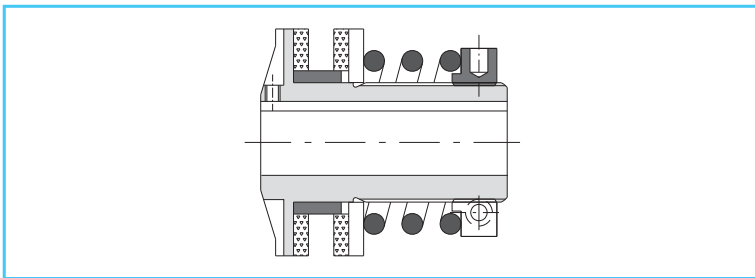
Size		Torque [Nm]		A3	D3	E3 H7		M3	N3	U3	V3	A	D H7		R	Misalignments			Max. speed [Rpm]	Weight [Kg]
DF	GEC	Nom	Max			pilot bore	max.						pilot bore	max.		Angular α [°]	Axial X [mm]	Radial K [mm]		
00.38	00	35	50	63	42	5	20	60,5	29	8	M4	25	-	12	68	1°	±0,7	0,5	6000	0,8
0.50	0	70	110	78	50	10	28	63,5	32	10	M5	50	-	20	71,5	1°	±0,7	0,5	5500	1,41
1.70	1	280	420	108	70	12	38	89	49	12	M6	70	-	25	106	0° 48'	±0,7	0,5	5000	4,18
2.90	2	570	860	130	80	15	45	111	65	15	M8	90	-	38	129	0° 36'	±0,7	0,6	4250	7,45
3.115	3	980	1500	161	100	15	60	140	85	15	M8	115	18	45	159	0° 30'	±0,8	0,6	3350	13,4
4.140	4	2340	3600	206	120	20	70	168	105	20	M10	140	24	55	195	0° 24'	±0,8	0,6	2750	24,1
5.170	5	3880	5800	239	135	30	80	201	130	20	M10	170	28	65	232	0° 24'	±0,8	0,6	2250	37,9
6.205	6	15000	20000	312	215	40	150	260	165	25	M12	205	38	80	291	0° 24'	±0,8	0,6	1900	86,8
7.240	7	30000	35000	360	240	40	160	310	205	25	M12	240	50	100	342	0° 24'	±0,8	0,6	1500	160,5

NOTES

- ⊗ ... + GAS (misalignments)*: data relates to red elastomeric element 98Sh-A.
- ⊗ Technical details: data is relevant only to application (.../GAS-.../GEC), for torque limiter data see on page 5.
- ⊗ Technical details: weights are relevant only to the coupling application with pilot bore version (.../GAS-.../GEC).

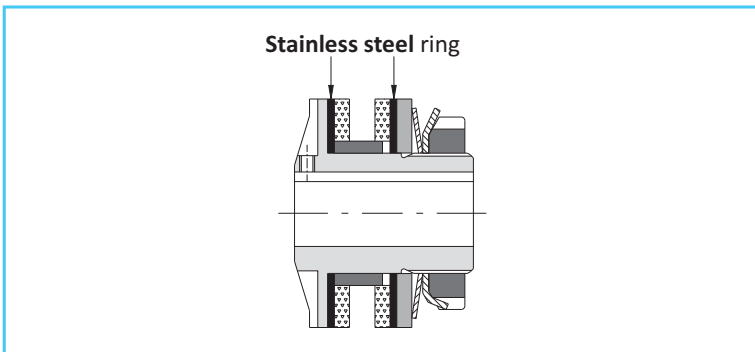
FRICITION TORQUE LIMITER “DF”: additional information

VERSIONS ON REQUEST



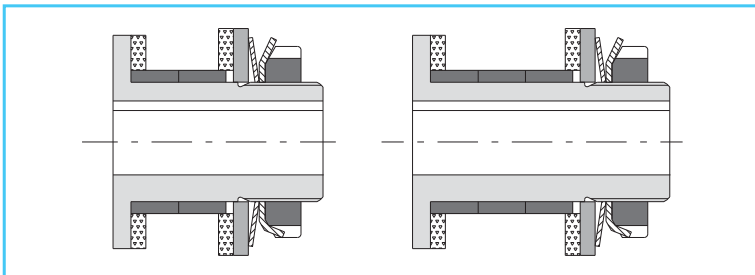
.../CM: minimum torque version

Helical springs execution, for a higher torque range and consequently, a finer adjustment on calibration is possible



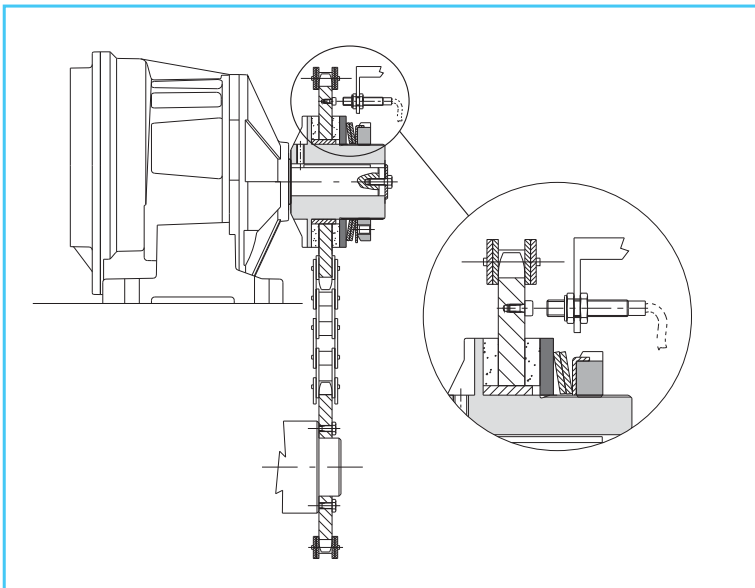
.../EA: rust resistant

Rust resistant execution, with stainless steel rings, galvanized for application in wet environments.



.../MFR: reduced flange hub version

Reduced flange hub execution, to assemble elements with reduced diameters. Available with two or three bushes version.



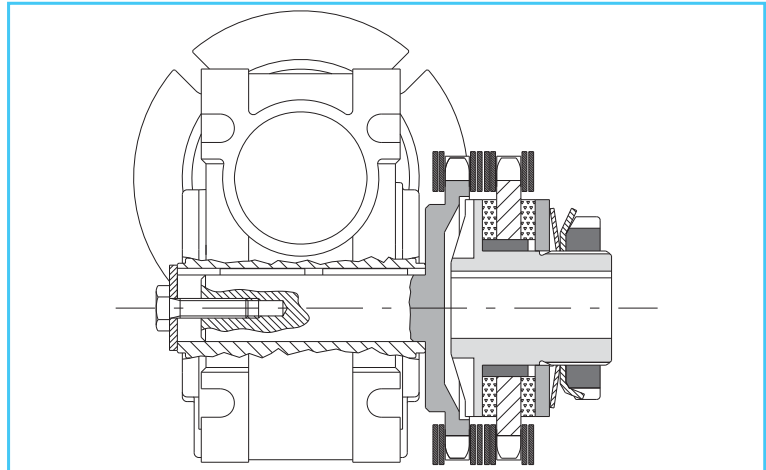
.../MS: overload detection version

Our suggestion to increase the life of the friction rings and to maintain the torque limiter efficiency is (it is possible and advised) to stop the machine immediately, on the first slip caused by an overload. This is possible by using one proximity inductive sensor, which registers any speed anomaly, as indicated in the picture.

VERSIONS ON REQUEST

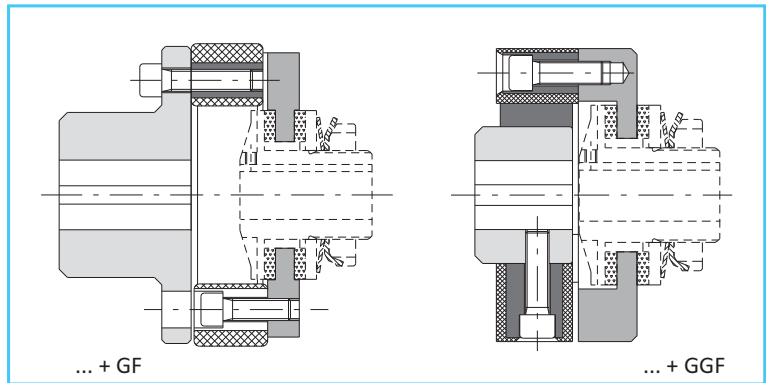
.../TAC/PR: version suitable for gearboxes and in-line shafts

Model for gearboxes with chain coupling, suitable for an in-line shafts connection out of the gearbox.



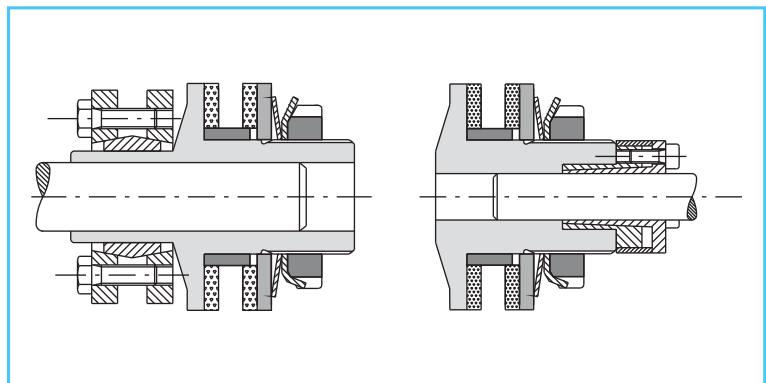
DF + GF: with flexible coupling DF + GGF: with highly flexible coupling

Models suitable for an in-line shafts connection and also able to accommodate high misalignments.



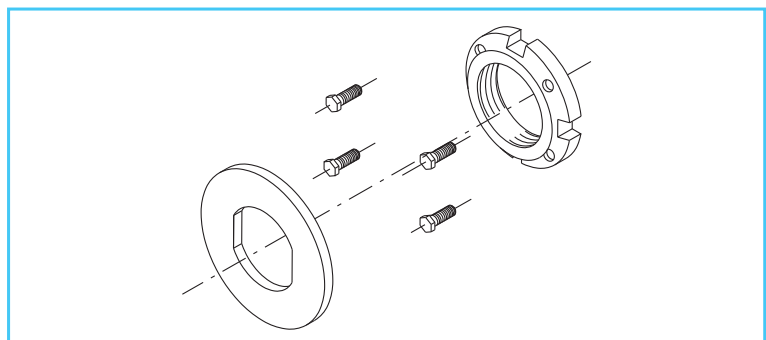
VERSION WITH LOCKING ASSEMBLY

Shaft connections possible with internal and external locking assemblies, eliminating backlash present in the keyway.



GT/DR KIT: kit for double registration matching to the nut with notches GT

Torque adjustment system by double registration (GT nut plus hexagonal head-screws) for high sensitivity and precision on calibration, also with belleville washers.



FRICION TORQUE LIMITER "DF": additional information

PLATE WHEELS

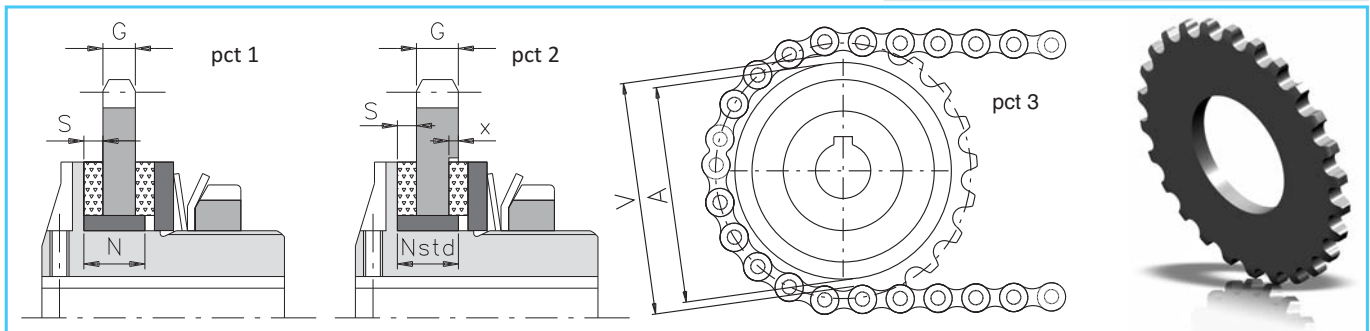
The driving part selected (plate wheels, pulleys, gears, and so on) to be incorporated into the friction torque limiter, must adhere to predetermined characteristics (ex. the surface in contact to the friction rings with roughness $Ra=0,8 : 1,6$) to ensure good performance. In the table below, there are standard plate wheels in ComInTec's production (supplied already grounded) which can be assembled on the torque limiter; and the minimum chain passage "V" (see picture 3), necessary for the correct sizing of the plate wheel to avoid contact between the chain and outside diameter of the limiter. It is possible to assemble various types of plate wheels, but the surfaces must be machined, and the chain passage cannot be smaller than this value. Another aspect to take into consideration to ensure the dimension of the assembly is correct, is the element thickness and its relevant bush "N" (see picture 1). We suggest to obtain a quote "N" equal to $[S + G + 1]$. Comparing "N" value obtained, to the N_{std} indicated on the table, which corresponds to the standard length of the bushes, you can have: "N" < " N_{std} " (picture 1 - ex.A) → reduce the bush width to quote "N".

"N" > " N_{std} " (picture 2 - exB) → machine the driving part at a diameter of "A+1" and a depth equal to "x" ($N - N_{std}$).

Example "A" (see picture 1)
 1.70 with plate wheel #7
 $G = 7 \text{ mm}$
 $S = 4 \text{ mm}$
 $N = S + G + 1 = 4 + 7 + 1 = 12$
 $N_{std} = 15$
 Reduce the bush width to 12 mm.

Example "B" (see picture 2)
 1.70 with plate wheel #13
 $G = 13 \text{ mm}$
 $S = 4 \text{ mm}$
 $N = S + G + 1 = 4 + 13 + 1 = 18$
 $N_{std} = 15$
 Machine $\varnothing 71$ with depth (value "x"= $18-15=3$)

where:
 p = pitch [in]
 G = thickness of the ground element
 Z = teeth number
 dp = pitch diameter
 S = thickness of the friction ring
 N_{std} = thickness of the standard bush
 N = thickness of the calculated bush ($S+G+1$)
 A = outside diameter of the torque limiter
 V = inside diameter of the chain
 x = depth of the machining ($N - N_{std}$)



Size	P [in]	G [mm]	Z	dp [mm]	S [mm]	N Std [mm]	A [mm]	V [mm]	Code for single plate wheel		
									DF DSF/TF/AP	DF/SI DSF/TF/AP/SI	EDF/F
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	-	580406951P05
0.50	3/8"	5,1	20	60,89	3	10	50	53	580406400P05	-	580406451P05
			22	66,93					580406500P05	-	580406551P05
			16	65,10					580406700P05	-	-
1.70	3/8"	5,1	28	85,07	4	15	70	73	580404000P05	-	-
			7,0	89,24					580403700P05	580407700P20	580403751P05
			8,9	96,45					580404200P05	-	-
2.90	1/2" x 5/16"	7,0	26	105,36	4	17	90	94	580404700P05	-	-
			8,9	111,55					580404600P05	-	-
			10,9	109,71					580440100P05	580442100P20	580440151P05
3.115	5/8"	8,9	38	192,24	4	21	115	119	580404800P05	-	-
			10,9	139,9					580404900P05	-	-
			16,0	138,22					580440200P05	580442200P20	580440200P05
4.140	1"	16,0	20	162,38	5	25	140	144	580440300P05	580442300P20	580440351P05
			24	194,59					580440400P05	580442400P20	-
5.170	1" 1/4	18,3	20	202,98	5	28	170	175	580417200P05	-	-
			26	263,40					580406200P05	580407600P20	-
7.240	1" 1/4	18,3	28	283,56	5	35	240	245	580406300P05	580407700P20	-
8.300	1" 1/2	23,8	28	340,27	6	40	300	306	580407000P05	580407300P20	-
9.340	1" 1/2	23,8	32	388,69	6	40	340	355	580407100P05	580407400P20	-
10.400	1" 1/2	23,8	36	437,16	6	42	400	403	580407200P05	580407500P20	-

TORQUE TRANSMISSION

Torque transmission [Nm] relevant to the springs configuration									
Size	A1S1)	A2S2)	A3S3)	A1M1)	A1G1)	A2G2)	A3G3)	ST ())	SQ ())
00.25	1 - 8	2 - 12	2 - 20						
00.38	1 - 14	8 - 22	15 - 34						
0.50	2 - 12				4 - 40	17 - 70	23 - 100	1,5 - 9	
1.70	6 - 18			9 - 35	19 - 60	34 - 120	60 - 210	2 - 34	2 - 60
2.90	10 - 36			13 - 105	74 - 140	90 - 280	185 - 450	5 - 56	3 - 70
3.115	26 - 100			65 - 280	120 - 360	207 - 700	210 - 950	10 - 130	25 - 160
4.140	80 - 140			100 - 240	180 - 550	260 - 950	390 - 1200		
5.170				120 - 280	160 - 700	300 - 1450	1000 - 2600		

Size	A4M1 ()	A4G1 ()	A4G2 ()						
6.205	300 - 1200	500 - 2400	1000 - 4800						
7.240	500 - 2000	1000 - 4000	2000 - 8000						
8.300	800 - 3500	1500 - 7000	3000 - 14000						
9.340	1000 - 4500	2000 - 9000	4000 - 18000						
10.400	1500 - 5000	3000 - 11000	5000 - 23000						

ORDER EXAMPLE

