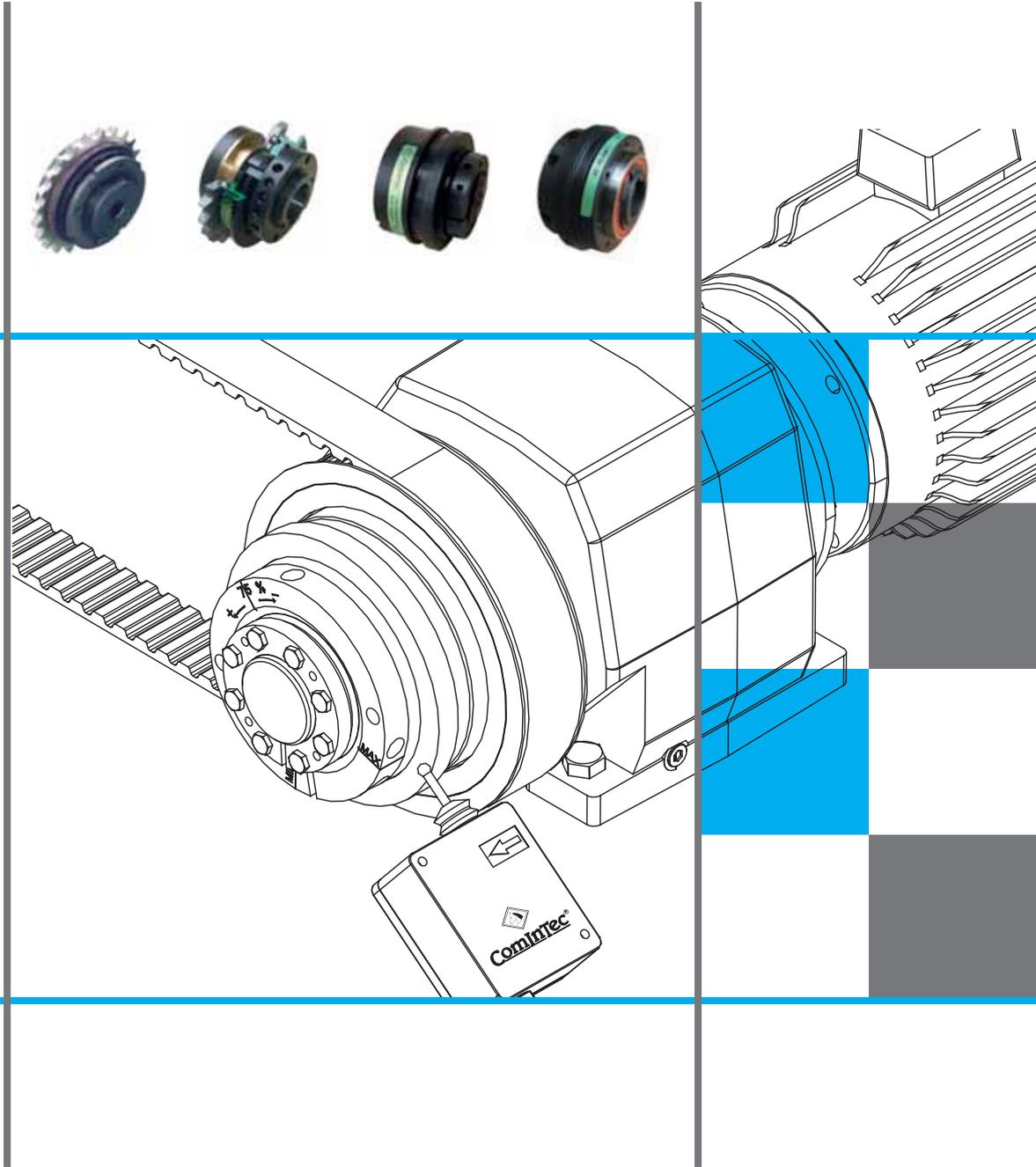


TORQUE LIMITERS - CLUTCHES

Up to 30.000 Nm of torque and 140 mm bores

(SAFETY COUPLINGS)



ComIntec[®]
Technology for Safety

Sold Exclusively in North America by:



30 Wilson Drive,
Suite B
Sparta, NJ 07871
info@hexelus.com
(973) 864-4548

TORQUE LIMITERS (SAFETY COUPLINGS) - CLUTCHES: introduction

ComInTec **torque limiters** (safety couplings) and **clutches** are mechanical components necessary to fit along the kinematic chain and are preferred to electronic safety devices because of a better response time, improved reliability, excellent configuration flexibility, easy fitting and adjustment, use at high speeds in hard environments in the presence of inertias and important masses. In fact the electronic systems, which normally act up to the transmission, present: delayed reaction time, many factors as a source of error, configuration and management complexity. The fitting of the mechanical torque limiters along the kinematic chain is therefore necessary for a reliable and complete protection, in order to improve the level of safety and the machine, according to the new EN ISO 13489-1 standards, reducing the average possible broken-down and unproductive downtime.

Benefit of our models:

- Long product life with continuous reliability.
- Optimum protection against environmental conditions.
- Simple mounting for in-line and parallel transmission.
- Easy setting and adjustment.
- Highly accurate and fast machine protection.
- Special designs to suit specific applications possible.
- Competitive pricing without sacrificing quality.
- "Made in Italy" with certified quality.

Our main product lines:

- Friction lines:** simple, economical, with sliding function suitable for use in dry and dusty environments .
- disengage lines:** high stability during transmission with instant disengagement and the possibility of free rotation.
- Axial lines:** Suitable for limiting compression and tension forces on crank mechanisms.
- Pneumatic clutch lines:** function of the clutch- disengagement with the possibility of variation of the torque during the motion.

FRICITION TORQUE LIMITER "DF"



Sliding Safety coupling where the transmission component is fitted between two friction rings and slides when the calibrated torque is reached. The minimum required to have a low cost protection.

Torque max 23000 Nm - Max bore ϕ 140 mm.

1

ECONOMIC BALLS TORQUE LIMITER "EDF"



Safety coupling with simple and compact balls inserted directly in the drive element of transmission. The disengagement occurs quickly and safely if the calibrated torque is exceeded.

Torque max 1450 Nm - Max bore ϕ 55 mm.

1

ROLLERS TORQUE LIMITER "DSR"



A Roller safety coupling that allows a complete disengagement when the calibrated torque is reached. Suitable for transmitting high torque with high reliability and small size.

Torque max 12000 Nm - Max bore ϕ 120 mm.

2

BACKLASH FREE TORQUE LIMITER "DSS/SG"



Ball safety coupling with high technology and backlash free transmission. Device with high sensitivity of intervention, instant and precise disconnection.

Torque max 1200 Nm - Max bore ϕ 65 mm.

3

FREE ROTATION TORQUE LIMITER "DSS/SG/RF"



Backlash free Safety coupling suitable for high speeds, with free rotation without residual torque after disengagement that occurs precisely and immediately. The re-engagement is manual.

Torque max 1200 Nm - Max bore ϕ 65 mm.

3

MODULAR TORQUE LIMITER "DSM"



Modular Safety coupling, robust, suitable for "heavy industries" even at high speeds. After disconnection there is free rotation without residual torque, re-engagement is simple and manual.

Torque max 9000 Nm - Max bore ϕ 140 mm.

4

TORQUE LIMITER FOR REDUCERS "PR"



Safety coupling to be mounted between the motor and gear unit thus reducing significantly the size of the device at the same power output.

Available in both slip release versions.

Torque max 2600 Nm - Max bore ϕ 55 mm.

5

AXIAL FORCE LIMITER "DSA"



Safety coupling with linear limitation of force. The axial disengagement can take place in both compression and tension once the calibrated force is reached, the re-engagement is automatic.

Force max 4700 N - Max shaft ϕ 20 mm.

6

PNEUMATIC CLUTCHES "AP"



Clutch or roller with torque control during motion and low residual torque after disengagement. Ability to disconnect the driven portion from the driving through pneumatic control.

Torque max 30000 Nm - Max bore ϕ 120 mm.

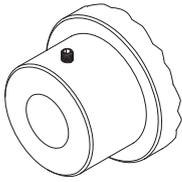
6

SELECTION GUIDE

									
	DF page 7	EDF page 17	DSR page 21	DSS/SG page 31	DSS/SG/RF page 43	DSM page 49	PR page 55	DSA page 61	AP page 65
TECHNICAL CHARACTERISTICS									
⊙ Manufactured in turned steel	■	■	■	■	■	■	■	■	■
⊙ Anticorrosive treatment std. phosphate	■	■	■	■	■	■	■	■	■
⊙ Compact size	■	■		■	■	■	■		
⊙ High torque possible			■			■			■
⊙ Maintenance-free		■	■	■	■	■	■	■	
⊙ High torsional stiffness				■	■				
⊙ Modular system						■			
⊙ Reduced inertia				■	■		■		
⊙ Noise during transmission	■								
⊙ Suitable for high speeds				■	■	■	■		■
⊙ Suitable for dusty environments	■								
⊙ Suitable for wet and oily		■	■	■	■	■	■	■	
⊙ Assembly with flexible couplings - rigid coupling possible	■	■	■	■	■	■	■		■
ADVANTAGES AND BENEFITS									
⊙ Protect the gear motor from jamming due to foreign bodies	■	■	■	■		■	■		■
⊙ Absorb starting torques without disconnecting the transmission	■								
⊙ Protect the film of the packaging in case of excessive traction	■								■
⊙ Protect slides or servomotors from impact or limit		■		■			■	■	
⊙ Keep the phases between the driving and driven after an overload			■	■					
⊙ Protect the final product from crushing or deformation	■	■	■	■		■	■	■	■
⊙ Protect indexers overload long transmission				■					
⊙ Where it is necessary to complete the transmission disconnect					■	■			■
⊙ Best simplicity and sensitivity compared to integrated solutions in gear box	■			■			■		
⊙ Protect the operating units of the machine tool from collisions				■					
⊙ Protecting mechanical devices during transmission at high speeds of rotation					■	■			
⊙ Engage / disengage different lines of transmission of the product									■
⊙ Greater durability of all the devices, thanks to the free rotation					■	■			
⊙ Protect axial movers within the transmission from overload								■	
APPLICATIONS									
⊙ Conveyors	■	■	■	■			■		
⊙ Extruders and laminators					■	■			
⊙ Heavy Industry	■		■			■			
⊙ Packaging machinery and equipment			■	■			■		
⊙ Labelling				■					
⊙ Conveyors		■	■						
⊙ Machine tools and CNC				■					
⊙ Servo motors and linear guides				■					
⊙ Machines with cycle variable torque									■
⊙ Agricultural machinery and earthmoving	■		■						
⊙ Winding and unwinding of coils									■
⊙ Test benches					■				■
⊙ Automotive	■			■					
⊙ Handling and eccentric cams								■	

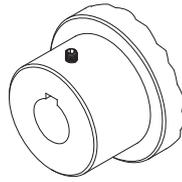
TORQUE LIMITERS (SAFETY COUPLINGS) - CLUTCHES: hub connection type on couplings application

Type **A** Plain bored H7 hub with set screw.



An economic and quick solution for low torque.

Type **A1** H7 bore with keyway and set screw.



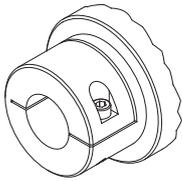
Standard solution on the hubs shown in the catalogue for horizontal assembling.

Type **A2** Splined bore with set screw.



Recommended solution in the case of hard transmission.

Type **B** Single split clamp hub with plain H7 bore.



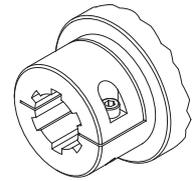
Reduction of angular backlash without change to the overall dimensions.

Type **B1** Single split clamp hub with H7 bore and keyway.



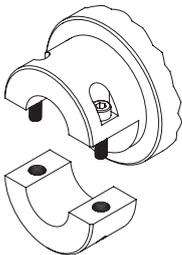
Reduction of angular backlash, during reversing drives, and high torques.

Type **B2** Single split clamp hub with splined bore.



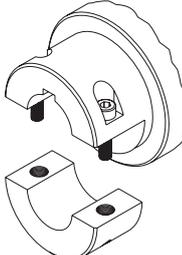
Reduction of angular backlash in the case of hard transmission.

Type **C** Two piece clamp hub with plain H7 bore.



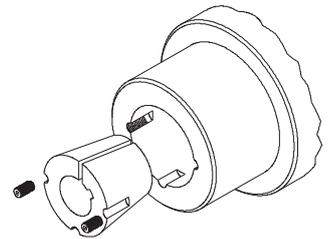
Reduction of angular backlash, and simple radial assembly/disassembly.

Type **C1** Two piece clamp hub with H7 bore and keyway.



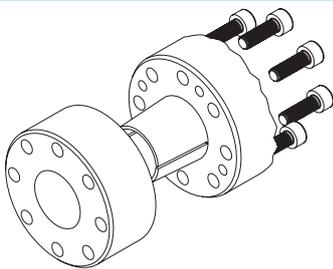
Simple assembly and reduction angular backlash, even with high torque.

Type **G** Clamp connection with internal Taper Bush.



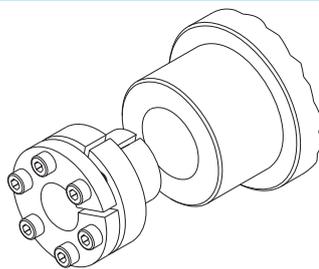
Flexibility of fitting for conical bushing without angular backlash.

Type **D** Clamp connection with integrated locking assembly.



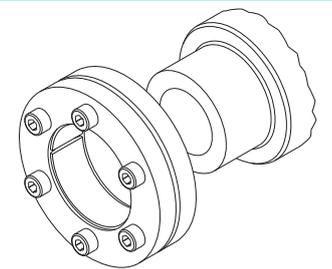
Suitable for high speeds without change to standard dimensions (.../CCE version).

Type **E** Clamp connection with internal locking assembly.

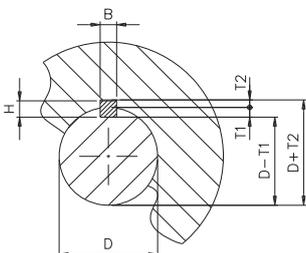


Reduction of angular backlash and reduced radial dimensions.

Type **F** Clamp connection with external locking assembly.



Fast and economic solution to transmit low torque.



Bore and Keyways according to UNI 6604 (DIN 6885-1)

D	>10 12	>12 17	<17 22	>22 30	>30 38	>38 44	>44 50	>50 58	>58 65	>65 75	>75 85	>85 95	>95 110	>110 130	>130 150	>150 170	>170 200
B H9	4	5	6	8	10	12	14	16	18	20	22	25	28	32	36	40	45
H	4	5	6	7	8	8	9	10	11	12	14	14	16	18	20	22	25
T1	2,5	3	3,5	4	5	5	5,5	6	7	7,5	9	9	10	11	12	13	15
T2	1,8	2,3	2,8	3,3	3,3	3,3	3,8	4,3	4,4	4,9	5,4	5,4	6,4	7,4	8,4	9,4	10,4
		+0,1 0							+0,2 0								+0,3 0

TORQUE LIMITERS (SAFETY COUPLINGS) - CLUTCHES: hub connection type on couplings application

HUB CONNECTIONS														
	.../TAC page 11	+GAS page 12	+GEC page 12	.../TAC page 20	+GTR page 27	+GAS page 27	+GEC page 28	+GAS/SG/ CCE page 38	+GAS/SG page 39	+GSF page 40	+GAS/SG page 47	+GAS page 52	+GTR page 52	+GEC page 68
● Pilot bore	●	●	●	●	●	●	●	●	×	○	●	●	●	●
▲ Type A	▲	▲	▲	▲	▲	▲	▲	▲	×	×	▲	▲	▲	▲
● Type A1	●	●	●	●	●	●	●	●	×	×	●	●	●	○
▲ Type A2	▲	▲	▲	▲	▲	▲	▲	▲	×	×	▲	▲	▲	▲
● Type B	▲	○	▲	▲	○	○	▲	○	×	●	○	×	×	▲
● Type B1	▲	▲	▲	▲	▲	▲	▲	▲	×	▲	▲	×	×	▲
● Type B2	▲	▲	▲	▲	▲	▲	▲	▲	×	×	▲	×	×	▲
● Type C	▲	▲	▲	▲	▲	▲	▲	▲	×	×	▲	×	×	▲
● Type C1	▲	▲	▲	▲	▲	▲	▲	▲	×	×	▲	×	×	▲
● Type G	▲	▲	▲	▲	▲	▲	▲	▲	×	×	▲	▲	▲	▲
● Type D	×	×	×	×	▲	×	×	●	●	×	×	×	●	●
● Type E	▲	▲	▲	▲	▲	▲	▲	▲	×	×	▲	▲	▲	▲
● Type F	▲	▲	▲	▲	▲	▲	▲	▲	×	×	▲	▲	▲	▲

Symbol	Description	Notes
●	Standard supply	<ul style="list-style-type: none"> All types of hub connections are carried out only on the finished bore. For the supply or feasibility of other types of hub locking and combinations please contact our technical department.
○	Optional standard supply	
▲	Supplied on request	
×	Not supplied	

TORQUE LIMITERS (SAFETY COUPLINGS) - CLUTCHES: selection and assembly

SUMMARY CHARACTERISTICS

Model	Function	Torque	Max bore	Speed	Main characteristics	Sensitivity
DF	friction	1 ÷ 23000	140	medium - low	economic solution	medium - low
EDF/F	mechanical	7,5 ÷ 1450	55	medium - low	compact solution with balls in phase	medium - high
DSR	mechanical	10 ÷ 12000	120	medium - low	with rollers in phase or equidistant	medium - high
DSS/SG	mechanical	0,8 ÷ 1200	50	medium - high	backlash free with balls in phase or equidistant	high
DSR/SG/RF	mechanical	10 ÷ 1200	65	medium - high	backlash free rotation	medium - high
DSM	mechanical	200 ÷ 9000	140	high	free rotation for high speed	medium - high
DSS/F/SG/PR-V	mechanical	3 ÷ 720	48	medium - high	compact solution for gearbox	medium - high
DF/TAC/PR-V	friction	1 ÷ 2600	55	medium - low	economic and compact solution for gearbox	medium - low
DSA	mechanical	30 ÷ 4700 N	-	medium	axial limitation	medium - high
DSR/F/AP	pneumatic	7 ÷ 30000	120	high	mechanical roller clutch	high
DSF/TF/AP	pneumatic	3 ÷ 875	65	medium - high	friction clutch	medium

ASSEMBLY EXAMPLES

FRICITION TORQUE LIMITERS



Transmission with parallel shafts



Transmission with in-line shafts

BALLS OR ROLLERS TORQUE LIMITERS



Transmission with parallel shafts



Transmission with in-line shafts

TORQUE LIMITER FREE ROTATION

(SAFETY COUPLINGS)

Up to 1.200 Nm of torque and 65 mm bore

DSS/SG/RF



ComInTec[®]
Technology for Safety

DSS/SG/RF - torque limiter free rotation: introduction



- ⦿ Absence of torsional play during the transmission of motion.
- ⦿ Fine-tuning the torque through a balanced radial ring.
- ⦿ Motion transmission through balls.
- ⦿ An innovative calibration system with "H dimension" for an immediate calibration of the equipment.
- ⦿ Manual re-engagement.
- ⦿ No residual torque after disengagement.
- ⦿ Possibility of combining a switch / proximity to stop the engine.

ON REQUEST

- ⦿ Complete transmission gear worked and fitted (crown, pulley, gear, ...).
- ⦿ Can be supplied with various types of rigid/elastic couplings for in-line shafts transmission.
- ⦿ Possibility of surface treatments for corrosion-specific needs.
- ⦿ Possibility of connection with 8 holes interchangeable with other products on the market.

A backlash free Safety coupling with free rotation and low residual torque suitable for high speed transmission. The disengagement is instantaneous once the torque is reached, the calibration is adjusted by changing the pressure of the springs. The re-engagement is manual, quick and reliable.

APPLICATIONS

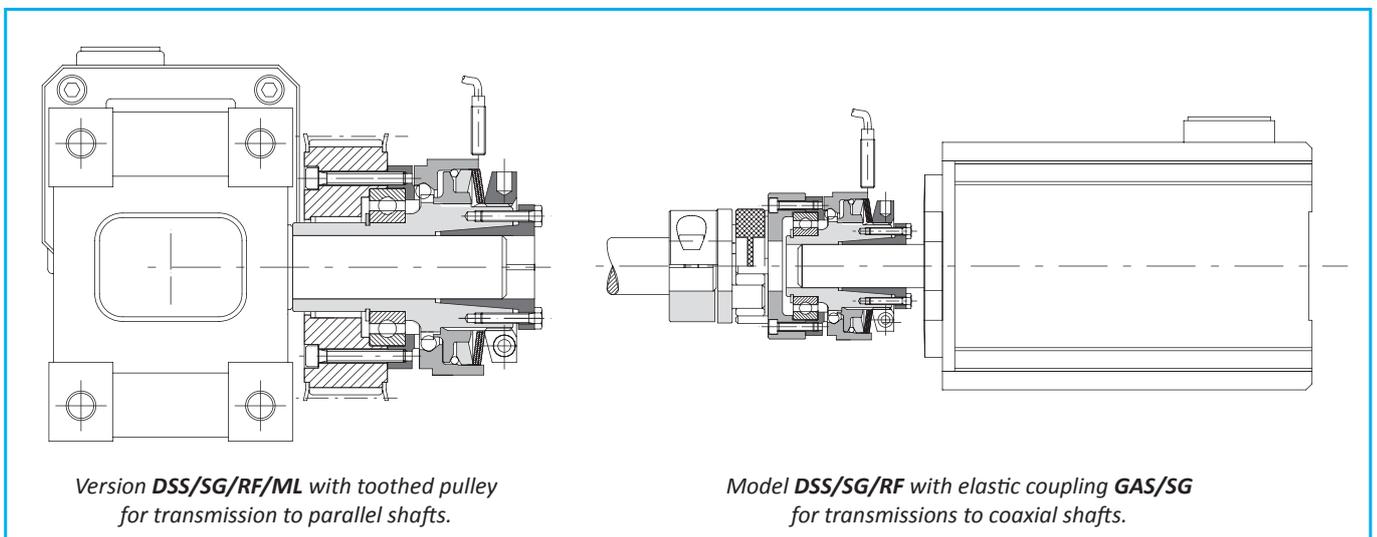
- ⦿ Extruders.
- ⦿ Packing machines.
- ⦿ Automation technology.
- ⦿ Test benches.

ADVANTAGES AND BENEFITS

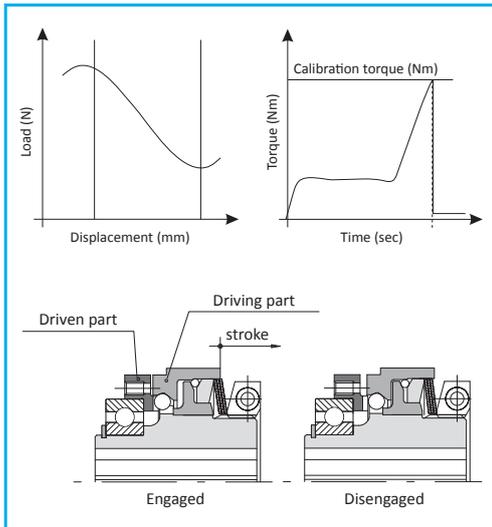
- ⦿ Protect the elements of a transmission even in case of high inertias.
- ⦿ Protect the product from shock or incorrect positioning.
- ⦿ Protect devices during transmission at high speeds of rotation.
- ⦿ Greater durability of all devices, thanks to the free rotation.

	.../DSS/SG/RF: version suitable for immediate release to overcome Torque calibration; low residual torque after disengagement.	from 10 to 1200 Nm 65 mm max bore	Pag. 46
	... + GAS/SG: connection with flexible coupling and locking clamp for quick installation.	from 10 to 1200 Nm 70 mm max bore	Pag. 48

ASSEMBLY EXAMPLES



OPERATION



This model of torque limiter negative version to incorporate the following features:

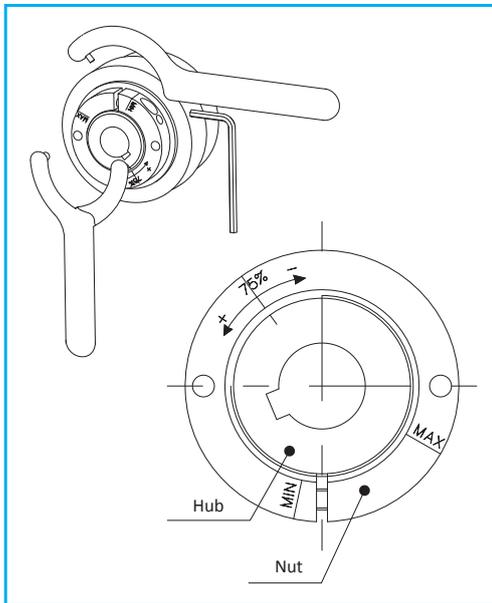
- ⦿ Backlash free with compact dimensions
- ⦿ Instantaneous reduction of the couple at the time of overloading
- ⦿ Absence of residual torque, after disengagement
- ⦿ Immediate response times and high sensitivity

Suitable for protecting against overloads within automatic machines with significant powers and inertias and high rotation speeds. When an overload occurs an immediate and complete separation of the drive and driven occurs and will remain disconnected in free rotation until it is re-engaged manually or using a suitable tool. A possible micro switch or sensor detects the movement of the movable base by generating an electrical signal necessary to stop the transmission. This electrical signal can also be used for further control functions. Electromechanical microswitches model EM1 or EM2 or inductive sensors model PRX, available from Comintec.

TORQUE ADJUSTMENT

Adjustment of the Negative version is opposite to all other units in our range. Unlike the traditional units, by rotating the adjuster nut clockwise the disengagement torque will reduce, and therefore to increase the torque the nut must be rotated anti-clockwise. To assist the operator in setting, there are clear markings on the nut showing 75% of the max torque and +/- Min/Max directions indicated.

Unless otherwise requested, these models are supplied pre-calibrated at 75% of the maximum torque value of the spring's chosen configuration.



HOW TO USE AND ASSEMBLE

The device is supplied ONLY with finished bore in the hub, unless otherwise specified, with tolerance H7 and keyway according to UNI 6604 (DIN 6885-1) with tolerance H9, H7 tolerance or without keyway with integrated locking assembly.

The device can be fixed axially by a screw and washer for the version with hole and keyway or by the locking device integrated in the version without key. They can be used, on request, also conical rings. The device is NOT self-supporting so it is necessary to provide that the shafts on which it will be fitted are with bearings and are supported in the case of the application are met with coupling misalignment shown in the catalog.

These devices, mechanical, are maintenance-free.

In the case of the torque is appropriate to take account of different variables that combined together can affect the length of the limiter:

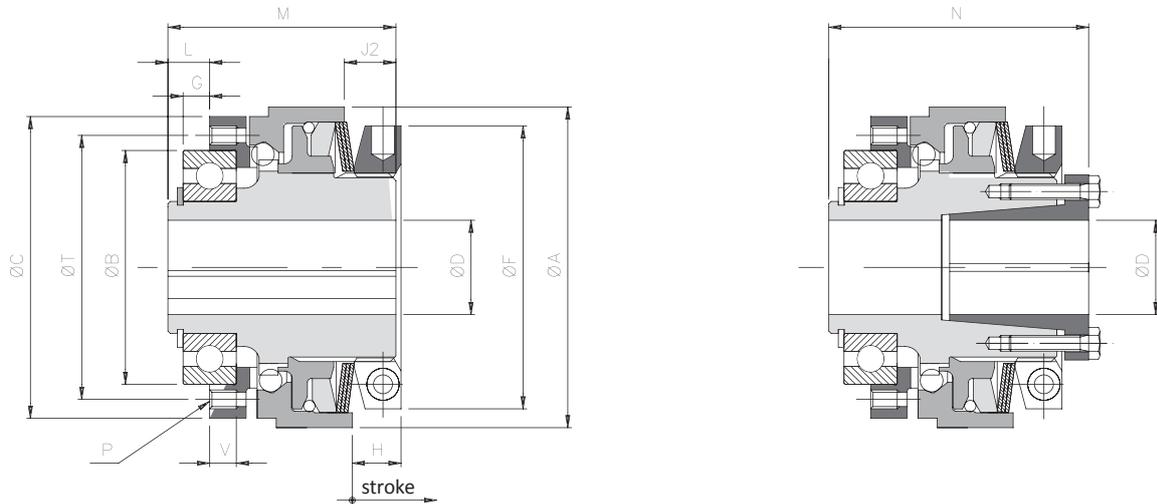
- Torque intervention in relation to the range provided by the limiter.
- Whether the frequency and duration of interventions.
- Ability to dissipate heat generated by the sliding.
- Speed of rotation.
- Environmental working conditions.

MAINTENANCE

DSS/SG/RF - torque limiter free rotation: technical data



- ⊙ Simple manual re-engagement without special equipment.
- ⊙ Suitable to be installed in the kinematic chains with high inertia.
- ⊙ Available with extended hub for assembly of wide organs: ... / ML.
- ⊙ Organ mounted and directly supported by a ball bearing.
- ⊙ Model available only with finished bore (with keyway or with locking assembly).
- ⊙ Torque range: 25-1200 Nm; ø65 mm maximum bore.



DIMENSIONS

Size	A	B h5	C	DH7	F	* G	L	J2	P	M	N	T	V	On request "8C"						
				Max.		B h5								C	G	L	P	T	V	
0.63	70	42	65	20	62	4	7	12	6xM5	50	57	48	7	47	-	5	8	8xM4	56	6
1.80	85	62	80	25	75	7	11	13,5	6xM5	60	68	70	7	-	-	-	-	8xM5	71	-
2.96	100	75	96	35*	82	9	14	16	6xM6	70	78	89	9	-	95	-	-	8xM6	85	-
3.116	115	90	115	42	97	8	14	17	6xM8	80	89	105	12	-	110	10	16	8xM6	100	10
4.138	135	100	138	50	117	6,5	14,5	20,5	6xM10	95	106	125	14	-	130	10	18	8xM8	116	11
5.172	165	130	172	65	145	11	20	33	6xM12	120	135	155	18	-	166	12	21	8xM10	150	15

TECHNICAL DETAILS

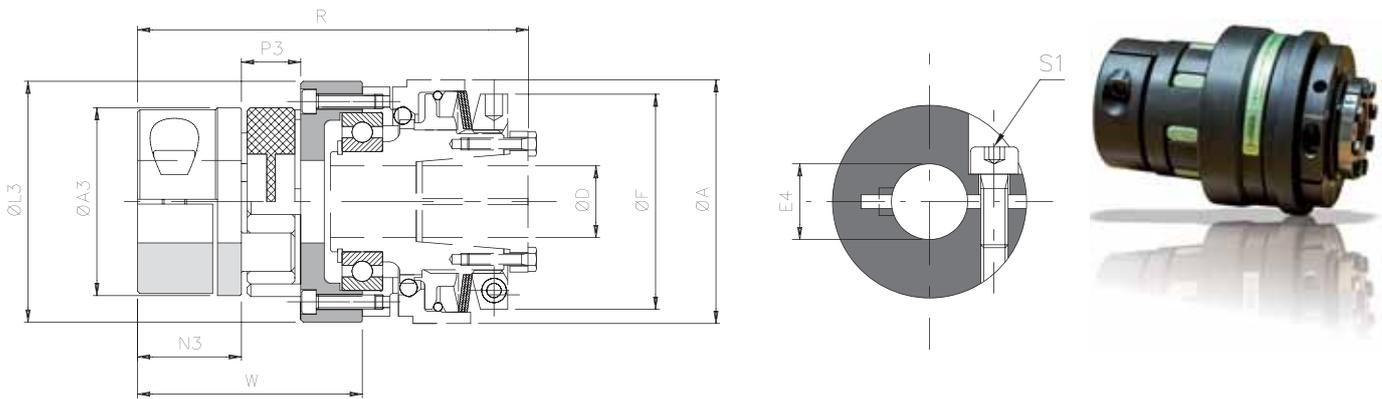
Size	Torque [Nm]				Stroke [mm]	Locking assembly		Inerzia [kgm²]			Max speed [Rpm]	Weight [Kg]	
	T1	T2	T3	T4		Screws	Tightening torque [Nm]	Flange side	Nut side			cava	Locking assembly
									keyway	Locking assembly			
0.63	10 - 22	20 - 30	30 - 50	-	1,8	6xM4	4,1	0,00008	0,00039	0,00040	8000	1,2	1,2
1.80	20 - 40	35 - 70	55 - 100	-	2	8xM4	4,1	0,00029	0,00115	0,00118	7000	2	2,1
2.96	40 - 70	70 - 105	100 - 150	120 - 200	2,5	10xM4	4,1	0,00068	0,00257	0,00264	6000	3,6	3,8
3.116	70 - 150	150 - 220	200 - 350	280 - 400	4	8xM5	8,5	0,00129	0,00473	0,00493	5000	5,0	5,4
4.138	150 - 280	280 - 380	350 - 550	350 - 700	4,5	8xM6	14	0,00315	0,01083	0,01132	4000	8,7	9,3
5.172	300 - 450	450 - 600	580 - 950	700 - 1200	5	8xM8	35	0,01012	0,03302	0,03380	3500	13,0	13,4

NOTES

▲ On request

- DH7*: maximum diameter for finished bore with reduced keyway according to UNI 7510.
- G*: assembly tolerance +0,1.
- Weights are relevant to the pilot bore; inertias refer to the maximum diameter for finished bore of the torque limiter.
- Microswitches EM1 or EM2 and inductive sensor PRX see page 73

... + GAS/SG - model with jaw coupling and single split clamp hub type "B": technical data



DIMENSIONS

Size		Torque [Nm]		A3	E3 H7 max	L3	N3	P3	A	D H7	F	W	R
/RF	GAS SG	Nom	Max							max			
0.63	0	60	120	55	30	65	30	18	70	20	62	63	112
1.80	1	160	320	65	35	84	35	20	85	25	75	74,5	131,5
2.96	2	325	650	80	45	102	45	24	100	35	82	93	157
3.116	3	450	900	95	50	122	50	26	115	42	97	100	175
4.138	4	525	1050	105	60	143	56	28	135	50	117	110,5	204
5.172	6	1040	2080	135	70	178	100	35	165	65	145	147	262

TECHNICAL DETAILS

Size		Clamp hub		Misalignments			Rigidity			Inertia coupling side [Kgm ²]	Max. speed [Rpm]	Weight [kg]
/RF	GAS SG	Screws	Tightening torque [Nm]	Angular α [°]	Axial X [mm]	Radial K [mm]	Torsional [Nm/rad]	Axial [mm]	Radial [mm]			
0.63	0	M6	15	0° 54'	1,4	0,10	3650	8100	2900	0,00040	8000	0,7
1.80	1	M8	36		1,5	0,11	4180	10700	3650	0,00107	7000	1,7
2.96	2	M8	36		1,8	0,12	8150	21850	5000	0,00296	6000	1,9
3.116	3	M10	70		2,0	0,15	15000	34000	5900	0,00559	5000	3,2
4.138	4	M12	121		2,1	0,16	16000	49000	6800	0,01213	4000	5,8
5.172	6	M12	121		2,6	0,18	38000	97000	6400	0,04301	3500	13

TRANSMITTABLE TORQUE WITH CLAMP HUB ASSEMBLY

Size	Transmission torque [Nm] according to the ø finished bore [mm]																							
	12	14	15	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60	65	70
0 (24)	76	78	80	81	84	85	87	89	92	93	97	100												
1 (28)					165	167	170	175	179	182	189	194	199	207										
2 (38)							199	204	209	212	219	224	229	237	244	249	254	262						
3 (42)										320	330	337	343	353	363	370	376	386	396	403				
4 (48)																	1640	1677	1714	1738	1800	1861	1922	
6 (55)																		1824	1861	1885	1947	2008	2069	2130

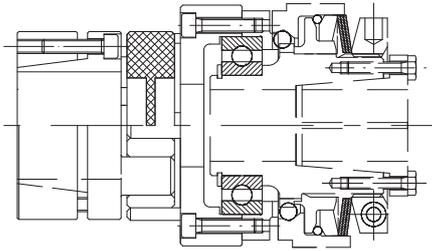
▲ On request

NOTES

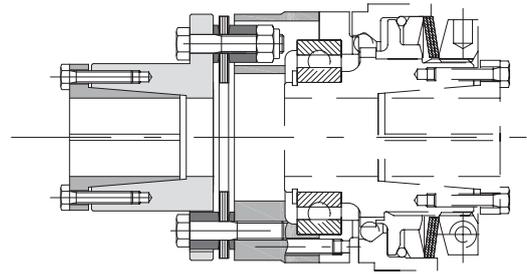
- These details refer only for the coupling (GAS/SG with backlash free red element 98 Shore-A), for torque limiters details see on page 46.
- Weights are relevant only to the pilot bore (GAS/SG); inertias refer only the coupling with maximum bore (GAS/SG).
- Microswitches EM1 or EM2 and inductive sensor PRX see page 73

DSS/SG/RF - torque limiter free rotation: additional information

OTHER COUPLING TYPES AVAILABLE ON REQUEST

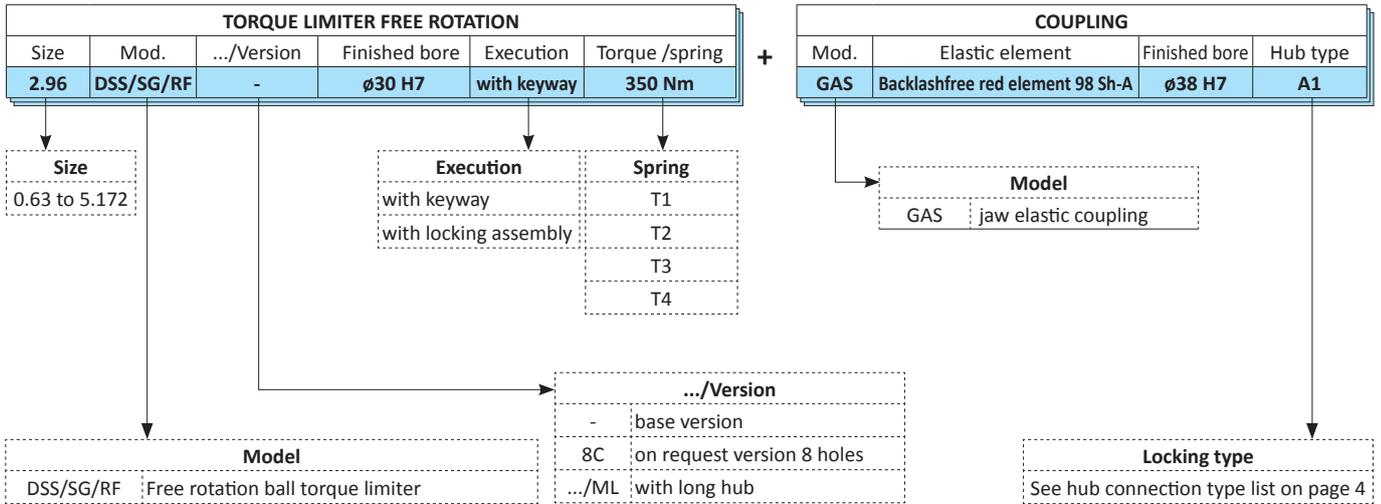


Model **DSS/SG/RF** with backlash free jaw elastic coupling
GAS/SG/CCE with integrated locking assembly when is required
 to accomodate misalignment with high torsional rigidity.



Model **DSS/SG/RF** with single flexing disc coupling **GTR/S**,
 for applications where torsional rigidity is required.

ORDER EXAMPLE



● Model available only with finished bore.