

BALL AND ROLLER TORQUE LIMITERS “DSS or DSR”: introduction



- ⊙ Precise torque setting by adjusting the radially balanced locking nut.
- ⊙ The innovative regulation of the nominal torque by measuring the “H” dimension allows for immediate coupling calibration.
- ⊙ Equidistant re-engagement in phase or at 360°.
- ⊙ Available with electromechanical switch / proximity for the transmission disconnection.
- ⊙ Immediate intervention for an improved reaction compared to electronic systems.
- ⊙ Maintenance-free for long lasting high reliability.
- ⊙ Suitable for oily and wet environments.

ON REQUEST

- ⊙ Complete with transmission gear, fully turned and mounted (plate wheel, pulley, gear pair).
- ⊙ Possibility to use helical springs for low intervention torques.
- ⊙ Connections with bore and keyway, locking assembly possible.
- ⊙ Version with personalized re-engagement in phase 30°, 45°, 60°, 90°... possible.

	DSS or DSR: basic model for coupling connections.	from 2,5 to 12000 Nm max. bore \varnothing 120 mm	Page 19	Models and versions described on pages 17 and 18
	.../FS: for the assembly of simple transmission elements.	from 2,5 to 12000 Nm max. bore \varnothing 120 mm	Page 20	
	DSR/F/RF: mechanical model with free rotation and phase 360°.	from 25 to 1460 Nm max. bore \varnothing 68 mm	Page 21	
	... + GTR: connection with torsionally rigid coupling.	from 2,5 to 2800 Nm max. bore \varnothing 90 mm	Page 22	
	... + GAS: connection with elastic coupling with high misalignments.	from 2,5 to 2800 Nm max. bore \varnothing 110 mm	Page 22	
	... + GEC: connection with elastic coupling with low misalignments.	from 2,5 to 12000 Nm max. bore \varnothing 180 mm	Page 23	

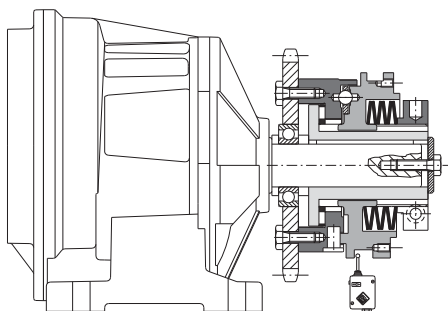
MAIN APPLICATIONS

- ⊙ Packaging and wrapping machines.
- ⊙ Labelling machines.
- ⊙ Bottling machines.
- ⊙ Conveyors.

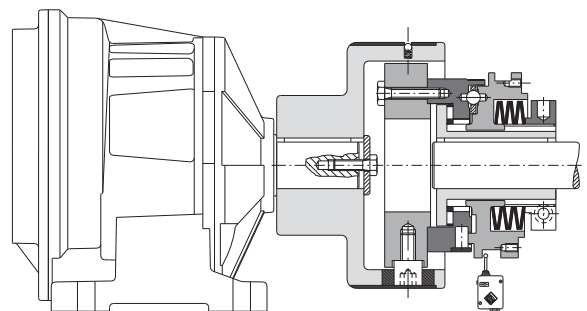
ADVANTAGES AND BENEFITS

- ⊙ Protects the gearbox from jamming due to foreign matters.
- ⊙ Protects packages from squashing and deforming.
- ⊙ Protects the product handling elements from accumulations.
- ⊙ Maintains the timing between driver and driven after an overload.

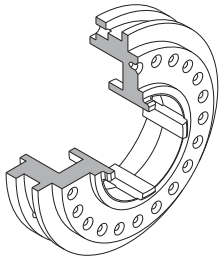
APPLICATION EXAMPLES



Model DSS or DSR drive element supported by bearing for parallel axes transmission.

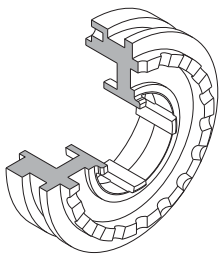


Model DSS or DSR with compact elastic coupling GEC for coaxial shaft transmission.



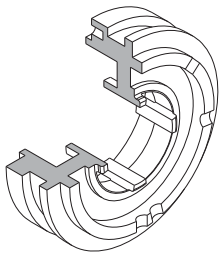
DSS: Ball torque limiter with optimum sensitivity in case of sudden torque variations

- Ball transmission.
- High sensitivity and immediate intervention in case of minimal torque variation.
- Equidistant automatic re-engagement.
- Torque range from 2,5 to 2050 Nm; max. bore \varnothing 68 mm.
- Same intervention torque in both directions.



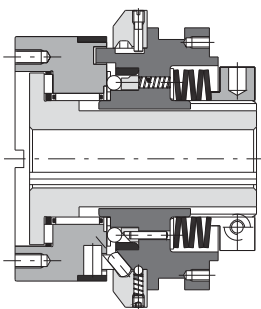
DSR: Roller torque limiter for steady transmission at high torques and vibrations

- Roller transmission.
- Equidistant automatic re-engagement.
- High torque settings at reduced dimensions.
- Torque range from 10 to 12000 Nm; max. bore \varnothing 120 mm.
- Same intervention torque in both directions.



DSR/F: Roller phase torque limiter, synchronised connection between input and output.

- Roller transmission.
- Optimized roller arrangement (patented) with perfect stability and 3 point contact during the whole rotation period.
- and after disengagement.
- Automatic re-engagement in phase 360° or personalized (30°, 45°, 60°, 90°, 120°, ...)
- High torque settings at reduced dimensions.
- Torque range from 10 to 12000 Nm; max. bore \varnothing 120 mm.



DSR/F/RF: roller phase torque limiter free rotation after disengagement, until inertial forces are stopped

- Roller transmission.
- Free rotation after disengagement.
- one engagement in 360°.
- Same intervention torque in both directions.
- Torque range from 2,5 to 2800 Nm; max. bore \varnothing 68 mm.

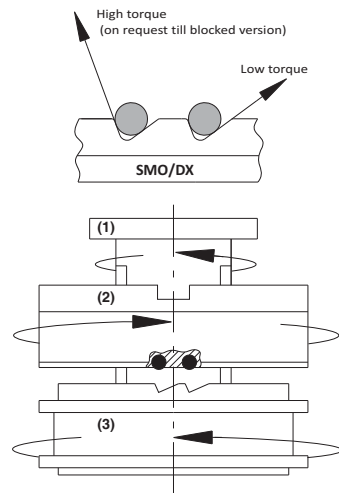
NUMBER OF RE-ENGAGEMENT IN 360°

Model	Size							
	0.56	1.90	2.110	3.130	4.160	5.194	6.240	7.280
DSS	24	22	20	20	22	15	-	-
DSR	18	18	16	16	16	24	24	24
DSR/F	1	1	1	1	1	1	1	1
DSR/F/RF	-	1	1	1	1	1	-	-

BALL AND ROLLER TORQUE LIMITER "DSS or DSR": introduction

VERSIONS

Example: DSR/F/SMO DX



DSR/SMO: Torque limiter with different disengagement torques from clockwise to anti-clockwise rotation.

- Different intervention torques in the two rotation directions.
- Locking of one direction possible.
- Roller transmission with automatic re-engagement.
- Available with equidistant re-engagement or personalized angular phases.
- Torque range from 10 to 12000 Nm; max. bore \varnothing 120 mm.

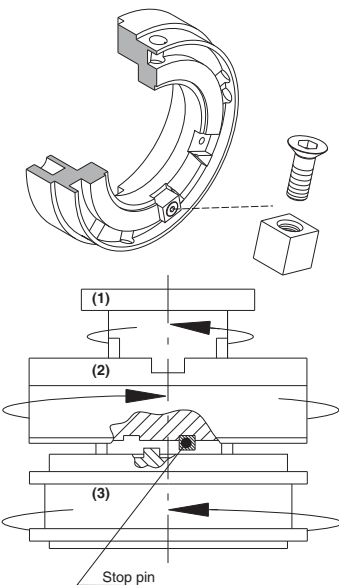
DSR/SMO and DSR/F/SMO: determination of the rotation direction

To allow our engineers to select the correct direction "SX" or "DX" for your application, we require a drawing showing:

- 1) How the unit will be mounted on to the shaft (orientation).
- 2) The direction of rotation.
- 3) In which direction the high/low torque is required.



Example: DSR/F/AM DX



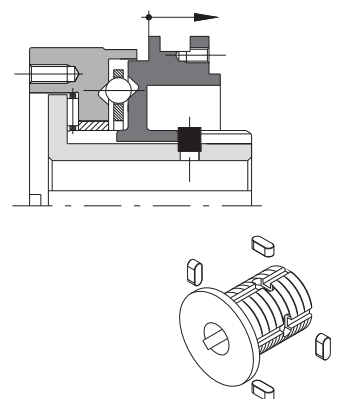
DSR/F/AM: DSR/F/AM: Torque limiter with mechanical disconnection to maintain the timing between driver and driven

- Stop pin resists 4 times the maximum torque.
- 345° rotation after disengagement allows the cancellation of the residual torque before the device stops.
- Maintains the timing and re-engages in the same position.
- High torque settings at reduced dimensions.
- Torque range from 10 to 2800 Nm; max. bore \varnothing 68 mm.

DSR/F/AM: determination of the rotation direction

To allow our engineers to select the correct direction "SX" or "DX" for your application, we require a drawing showing:

- 1) How the unit will be mounted on to the shaft (orientation).
- 2) The direction of rotation.
- 3) Confirm which drive will continue to rotate after the overload, the shaft or platewheel, pulley, etc.

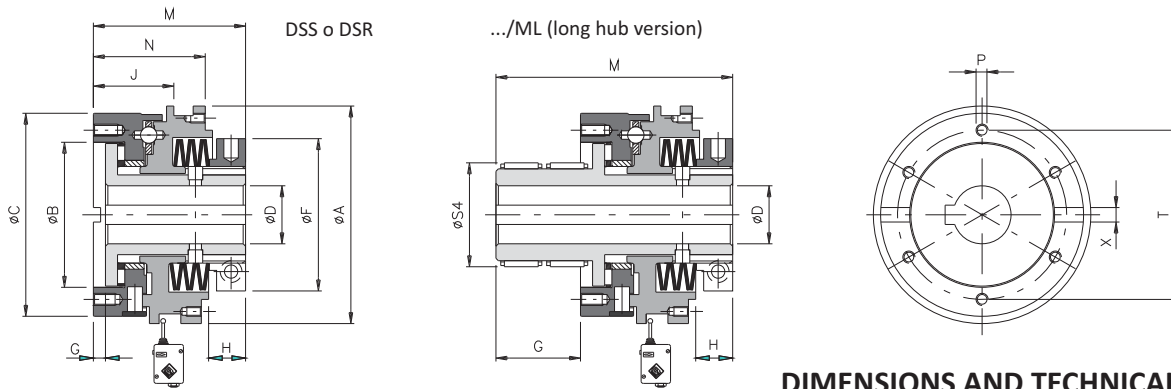


.../TAS: Torque limiter with stop pins

- Complete disconnection prevented.
- Minimum movement of the mobile base for an electrical signal to stop transmission.
- Roller or ball transmission.
- Torque range from 2,5 to 2800 Nm; max. bore \varnothing 68 mm.
- Suitable for applications where the drive must not be disconnected.

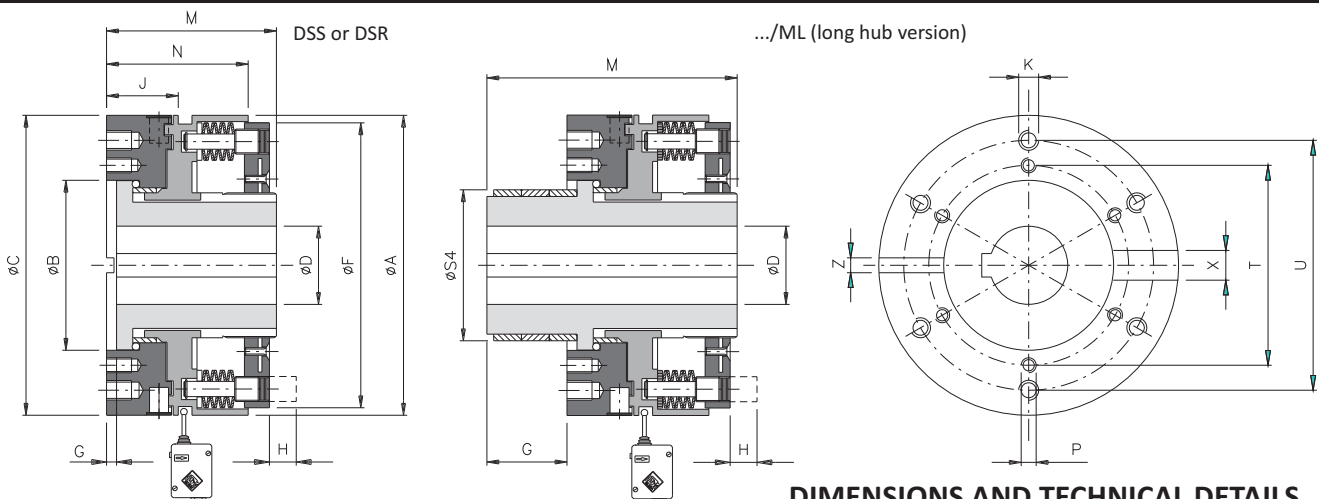
DSS or DSR (ball or roller torque limiter): technical data

- Basic model, connection with in-line shafts possible.
- The assembly with helical springs allows a higher sensitivity in torque setting: .../CM.
- Available with longer shaft for the assembly with transmission elements of large size : .../ML.
- Available with anti-corrosive surface treatments.
- Available with intervention signal ring.
- Torque range from 2,5 to 12000 Nm; max. bore \varnothing 120 mm.



DIMENSIONS AND TECHNICAL DETAILS

Size	Mod.	Torque [Nm]	A	B H7	C	D H7		F	G		J	M		N	P	S4 h7		T	X	Max speed [Rpm]	Weight [Kg]		
						Grz	Max. /ML		/ML	/ML		Bushing				Bearing							
0.56	DSS	2,5 - 32	56	41	56	-	20	20*	42	3,8	27,5	21,5	46	73,5	32	31	M5	32	33	48	6x3	4500	0,6
	DSR	10 - 75																					
1.90	DSS	18 - 155	90	60	84	-	28	28*	63	5	35	33,5	63	98	47	45	M5	45	43	70	6x3	3000	1,9
	DSR	30 - 350																					
2.110	DSS	30 - 290	110	78	104	-	40	38	82	6	38	39	76	114	54	52	M6	60	55	89	8x3,5	2500	3,6
	DSR	60 - 620																					
3.130	DSS	40 - 540	130	90,5	124	20	50	50*	104	6	47	47	88	135	65	64	M8	72	70	105	10x4	2000	6,0
	DSR	75 - 900																					
4.160	DSS	70 - 1200	160	105	148	25	58	58*	128	8	53	58,5	107	160	76,5	M10	85	83	125	12x4	1600	10,7	
	DSR	160 - 1800																					
5.194	DSS	125 - 2050	194	120,5	176	28	68	68*	157	6,5	57,5	65	124,5	182	88	88,5	M12	98	98	155	14x4,6	1300	18,2
	DSR	275 - 2800																					



DIMENSIONS AND TECHNICAL DETAILS

Size	Mod.	Torque [Nm]	A	B H7	C	D H7		F	G		J	K	M		N	P	S4 h7		T	U	Z	X	Max speed [Rpm]	Weight [Kg]
						Pilot bore	max.		/ML	/ML			Bushing											
6.240	DSR	1600 - 8000	240	136	240	50	90	227	8	64	57	M 16	141	205	116	M12	118	160	200	16x5,1	18x5,1	300	30,6	
7.280	DSR	2000 - 12000	280	198	280	50	120	262,5	8	82	82	-	200	282	159	M20	168	230	-	-	20x6,1	200	79,0	

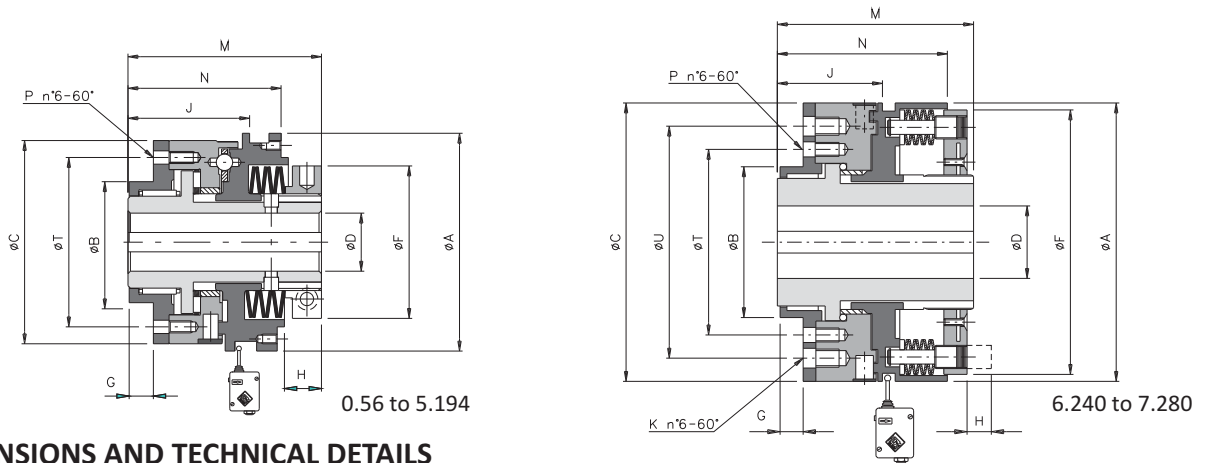
NOTE

⊗ Technical details: weights are relevant to the pilot bore torque limiter (DSS or DSR).

.../FS (version with supporting flange): technical data



- Basic model with flange for parallel shafts.
- The assembly with helical springs allows a higher sensitivity in torque setting: .../FS/CM.
- Available with anti-corrosive surface treatments.
- Available with /FIR flange for reduced axial dimensions.
- Available with /FAV flange for cardan coupling connection.
- Torque range from 2,5 to 12000 Nm; max. bore \varnothing 120 mm.

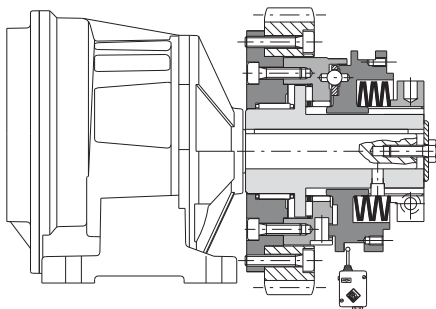


DIMENSIONS AND TECHNICAL DETAILS

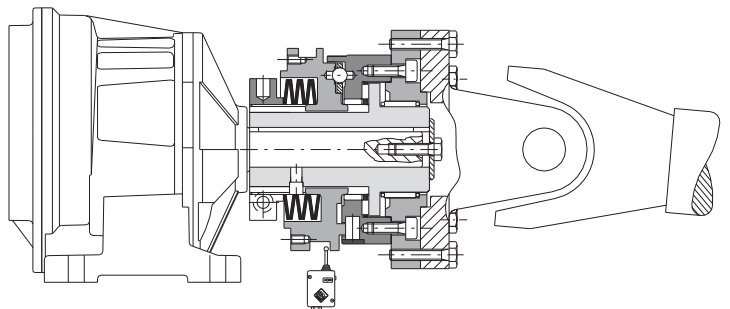
Size	Mod.	Torque [Nm]	A	B H7	C	D H7		F	G	J	K	M	N	P	T	U	Max. speed [Rpm]	Weight [Kg]
						Pilot bore	max.											
0.56	DSS DSR	2,5 - 32 10 - 75	56	38	56	-	20*	42	7,5	34,5 33	-	59	45 44	M5	48	-	4500 1500	0,7
1.90	DSS DSR	18 - 155 30 - 350	90	50	84	-	28*	63	9,5	50,5 44,5	-	80	64 62	M5	70	-	3000 1000	2,4
2.110	DSS DSR	30 - 290 60 - 620	110	60	104	-	38	82	11,5	56 53,5	-	93	71 69	M6	89	-	2500 800	4,4
3.130	DSS DSR	40 - 540 75 - 900	130	80	124	20	50*	104	11,5	65 63	-	106	83 82	M8	105	-	2000 700	7,1
4.160	DSS DSR	70 - 1200 160 - 1800	160	100	148	25	58*	128	15,5	83,5 79,5	-	132	101,5	M10	125	-	1600 550	13,0
5.194	DSS DSR	125 - 2050 275 - 2800	194	120	176	28	68*	157	17,5	92,5 92	-	152	115,5 116	M12	155	-	1300 400	21,6
6.240	DSR	1600 - 8000	240	130	240	50	90	227	18	83,5	M16	170	142,5	M12	160	200	300	37,5
7.280	DSR	2000 - 12000	280	190	280	50	120	262,5	30	130	-	248	207	M20	230	-	200	90,5

* with reduced keyway UNI7510.

OTHER FLANGE TYPES



Version .../FIR with reduced dimension flange, designed to reduce to the minimum the axial dimensions.



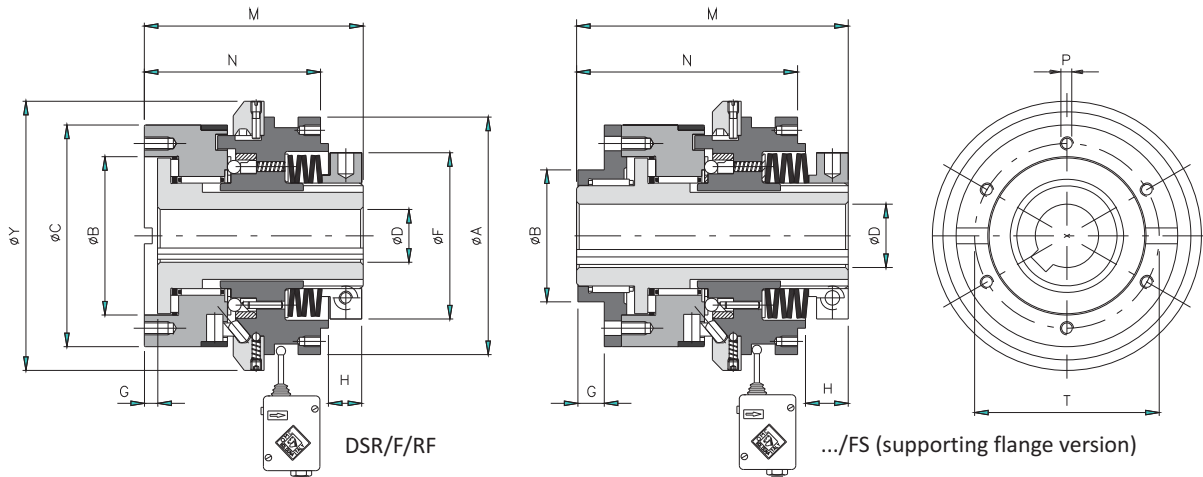
Version .../FAV with various flange dimensions to connect cardan shafts to the torque limiter.

NOTE

- ⊗ **Technical details:** weights are relevant to the pilot bore torque limiter (.../FS).

DSR/F/RF (roller phase torque limiter free rotation): technical data

- Simple manual engagement without any specific equipment.
- Suitable for assembly in drive trains with high inertia.
- Available with longer shaft for assembly with transmission elements of large size: .../ML.
- Available with supporting flange for assembly of the drive element directly on the hub: .../FS.
- Model available only with finished bore.
- Torque range from 25 to 1460 Nm; max. bore $\varnothing 68$ mm.

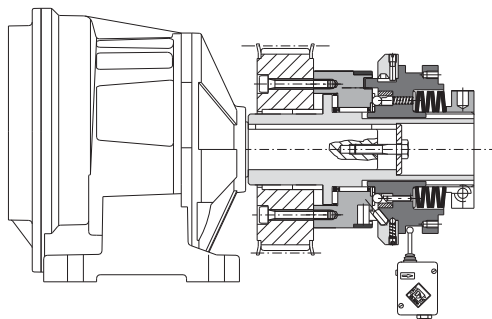


DIMENSIONS AND TECHNICAL DETAILS

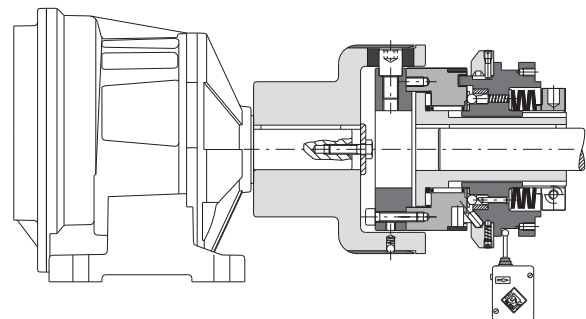
Size	Torque [Nm]	A	B (H7 - h7)		C	D H7			F	G		M		N		P	T	Y	Max. speed [Rpm]	Weight [Kg]	
			/FS			Pilot bore	max.	/FS		/FS	/FS	/FS	/FS	/FS	/FS					/FS	
1.90	25 - 155	90	60	50	84	-	28	28*	63	5	10	86	103	67	84	M5	70	102	1500	3	3,5
2.110	45 - 360	110	78	60	104	-	40	38	82	4	10,5	93	112	69	86	M6	89	128	1100	4,7	5,5
3.130	80 - 450	130	90,5	80	124	20	50	50*	104	4	11	108	126	83	101	M8	105	146	900	7,8	9,3
4.160	125 - 1060	160	105	100	148	25	58	58*	128	8	16	138	163	109	134	M10	125	176	700	14,5	17,2
5.194	160 - 1460	194	120,5	120	176	28	68	68*	157	5,5	18	154	181	110	154	M12	155	205	550	22,9	26,3

* with reduced keyway UNI7510.

APPLICATION EXAMPLES



Version .../ML with drive element supported by bronze bushing for parallel shafts transmissions with elements of large size.

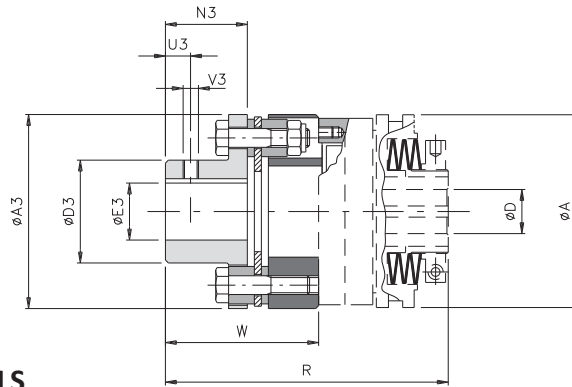


Model DSR/F/RF with compact elastic coupling GEC for coaxial shafts connections.

NOTE

- Technical details: weights are relevant to the pilot bore torque limiter (DSR/F/RF).

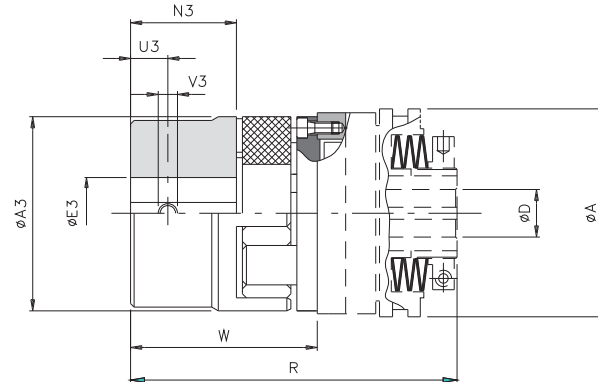
... + GTR (model with torsionally rigid disc coupling): technical data



DIMENSIONS AND TECHNICAL DETAILS

Size		Torque [Nm]		A3	D3	E3 H7 max.	N3	U3	V3	A	D H7		R	W	Misalignments		Stiffness	Max. speed [Rpm]		Weight [Kg]
DSS	DSR	GTR	Nom	Max							pilot bore	max.			Angular α [°]	Axial X [mm]	[Nm/rad·10 ³]	DSS	DSR	
0.56	0	40	80	78	45	32	29	10	M5	56	-	20	105	59	1°	1,40	80	4500	1500	1,4
1.90	2	150	300	92	53	38	42	10	M5	90	-	28	137	74	0° 45'	0,95	156	3000	1000	2,1
2.110	3	300	600	112	65	45	46	15	M8	110	-	40	161	85	0° 45'	1,25	415	2500	800	3,9
3.130	4	700	1400	136	75	52	56	15	M8	130	20	50	186	98	0° 45'	1,45	970	2000	700	5,8
4.160	5	1100	2200	162	92	65	66	20	M8	160	25	58	223	116,5	0° 45'	1,65	1846	1600	550	10,8
5.194	7	2600	5200	206	130	90	92	20	M10	194	28	68	270	145,5	0° 45'	2,25	3511	1300	400	21,9

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



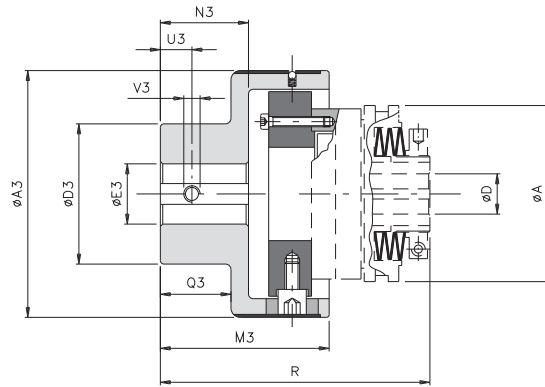
DIMENSIONS AND TECHNICAL DETAILS

Size		Torque [Nm]		A3	E3 H7 max	N3	P3	U3	V3	A	D H7		R	W	Misalignments			Max. speed [Rpm]		Weight [Kg]
DSS	DSR	GAS	Nom.	Max.							Pilot bore	max.			Angular α [°]	Axial X [mm]	Radial K [mm]	DSS	DSR	
0.56	0	60	120	55	35	30	18	10	M5	56	-	20	103	57	1° 18'	1	0,8	4500	1500	0,8
1.90	2	325	650	80	48	45	24	15	M8	90	-	28	141	78	1° 18'	1,4	1	3000	1000	3,7
2.110	4	525	1050	105	62	56	28	20	M8	110	-	40	171	95	1° 18'	1,7	1,4	2500	800	5,2
3.130	5	685	1370	120	74	65	30	20	M10	130	20	50	198	110	1° 18'	1,8	1,4	2000	700	9,1
4.160	7	1465	2930	160	95	85	40	25	M10	160	25	58	249	142	1° 18'	2,5	1,8	1600	550	17,9
5.194	8	3600	7200	200	110	100	45	30	M12	194	28	68	288,5	164	1° 18'	2,8	1,8	1300	400	29,5

NOTES

- ⊗ Technical details: details are relevant to only for the coupling (GTR-GAS), for torque limiter details see on page 19.
- ⊗ Technical details: weights are relevant to only for the coupling (GTR-GAS) pilot bore.

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



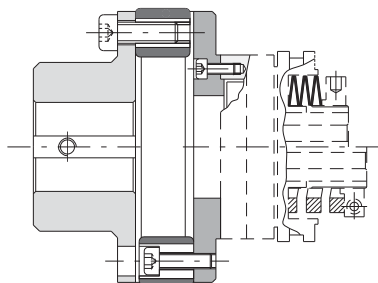
DIMENSIONS

Size		Torque [Nm]		A3	D3	E3 H7		M3	N3	Q3	U3	V3	A	D H7		R
DSS or DSR	GEC	Nom.	Max.			pilot bore	max.							pilot bore	max.	
0.56	0	70	110	78	50	10	28	63,5	32	28	8	M4	56	-	20	100,5
1.90	1	280	420	108	70	12	38	89	49	44	12	M6	90	-	28	142
2.110	2	570	860	130	80	15	45	111	65	59	15	M8	110	-	40	177
3.130	3	980	1500	161	100	15	60	140	85	77	15	M8	130	20	50	215
4.160	4	2340	3600	206	120	20	70	168	105	97	20	M10	160	25	58	261
5.194	5	3880	5800	239	135	30	80	201	130	120	20	M10	194	28	68	309,5
6.240	6	15000	20000	315	215	40	150	260	165	150	25	M12	240	50	90	381
7.280	7	30000	35000	364	240	40	180	310	205	185	25	M12	280	50	120	485

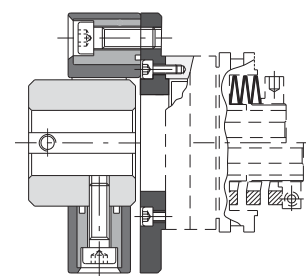
TECHNICAL DETAILS

Size		Misalignments							Max. speed [Rpm]		Weight [Kg]
DSS DSR	GEC	Angular α [°]		Axial X [mm]		Radial K [mm]		Torsional γ [°]	DSS	DSR	
		continuous	intermittent	continuous	intermittent	continuous	intermittent				
0.56	0	1°	1° 30'	± 0,7	± 1,5	0,5	0,7	2°	4500	1500	1,2
1.90	1	0° 48'	1°	± 0,7	± 1,5	0,5	0,7	2°	3000	1000	3,5
2.110	2	0° 36'	0° 48'	± 0,7	± 1,5	0,6	0,7	1° 45'	2500	800	6,2
3.130	3	0° 30'	0° 42'	± 0,8	± 1,6	0,6	0,8	1° 15'	2000	700	11,5
4.160	4	0° 24'	0° 30'	± 0,8	± 1,6	0,6	0,8	1°	1600	550	20,8
5.194	5	0° 24'	0° 30'	± 0,8	± 1,6	0,6	0,8	1°	1300	400	32,0
6.240	6	0° 24'	0° 30'	± 0,8	± 1,6	0,6	0,8	1°	-	300	91,3
7.280	7	0° 24'	0° 30'	± 0,8	± 1,6	0,6	0,8	1°	-	200	173,9

OTHER COUPLINGS



Model DSS or DSR with elastic coupling GF to absorb high torsional vibrations and for fast substitution of the elastic element.











Model DSS or DSR with elastic coupling GGF to accept high misalignments.





NOTES

- ⊗ **Technical details:** details are relevant to only for the coupling (GEC), for torque limiter details see on page 19.
- ⊗ **Technical details:** weights are relevant to only for the coupling (GEC) pilot bore.

BALL OR ROLLER TORQUE LIMITER "DSS/DSR": additional information

TORQUE TRANSMISSION

Torque transmitted [Nm] according to the spring configuration									
Size		A6S1 	A5M1 	A6M1 	A6M2 	A5G1 	A6G2 	ST 	SQ 
0.56	DSS	2,5 - 9,5		5,5 - 17,5	15 - 32			0,8 - 10,9	
	DSR	10 - 20		14 - 37	30 - 75			1,9 - 25,6	
1.90	DSS	18 - 48	24 - 55			35 - 90	55 - 155	2 - 40	5 - 90
	DSR	30 - 60	45 - 100			85 - 180	170 - 350	8 - 75	8 - 145
	DSR/F/RF	25 - 55	45 - 95			80 - 155			
2.110	DSS	30 - 60	35 - 100			55 - 160	80 - 290	9 - 50	12 - 100
	DSR	60 - 110	80 - 200			120 - 330	275 - 620	12 - 90	25 - 190
	DSR/F/RF	45 - 95	90 - 210			100 - 360			
3.130	DSS	40 - 100	50 - 225			70 - 300	130 - 540	12 - 135	24 - 190
	DSR	75 - 180	115 - 370			200 - 510	430 - 900	30 - 300	50 - 320
	DSR/F/RF	80 - 165	120 - 390			120 - 450			
4.160	DSS	70 - 200	90 - 325			150 - 690	300 - 1280		
	DSR	160 - 335	210 - 540			330 - 1040	750 - 1800		
	DSR/F/RF	125 - 310	190 - 550			310 - 1060			
5.194	DSS		125 - 420			360 - 1040	460 - 2050		
	DSR		275 - 660			540 - 1620	1050 - 2800		
	DSR/F/RF		160 - 630			430 - 1460			

Size		A12S1 	A14S1 	A15G1 	A16G1 				
6.240	DSR	1600 - 3800		2000 - 8000					
7.280	DSR		2000 - 5600		2500 - 12000				

ORDER EXAMPLE

