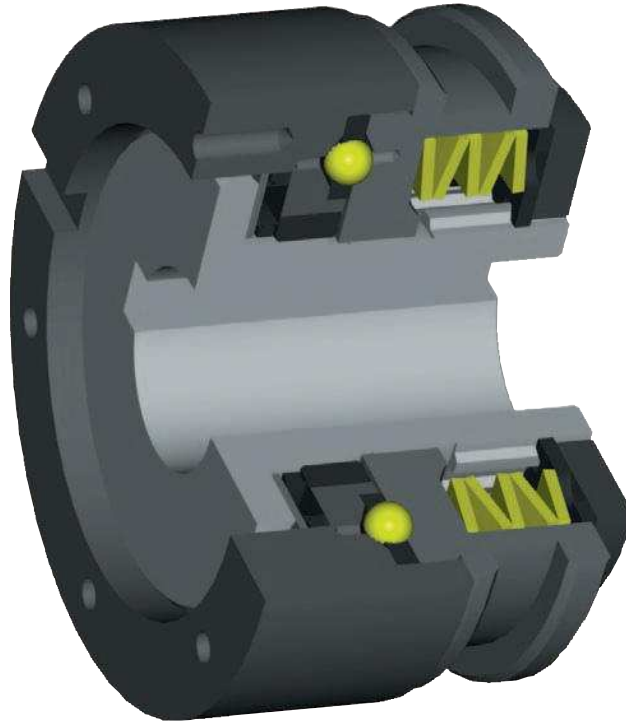


**We provide safety**

- Overload protection up to 8200 Nm
- Available with same dimensions as a ratchet, synchronous and fail-safe design
- Reduction of torque peaks
- High repeating accuracy, even after a long operating period
- Disconnection of the drive in case of overload
- Automatically operative

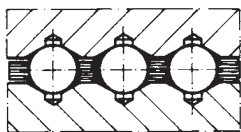


- Different designs also suitable for your application
- Easy assembly and torque setting
- Maintenance-free
- Insensitive to oil and grease
- High service life due to high-quality materials
- Backlash-free shaft-hub-connections

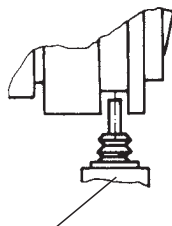
In case of overload the ratchet parts (balls or rollers) leave their indentations, and a relative motion between the driving and driven side is produced. In this way damages due to overload are avoided. The shift ring (3) makes an axial motion to the shifting way „S“ and activates the limit switch or proximity initiator. The signal can be used for control functions or for disconnection of the drive. For the restart we would recommend to electrically bypass the limit switch or proximity initiator for a short time.

No signal in case of normal operation

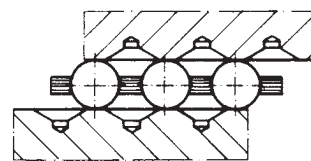
Signal in case of overload



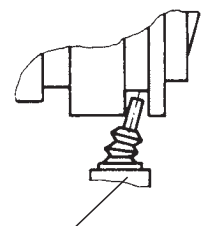
Engaged



Limit switch

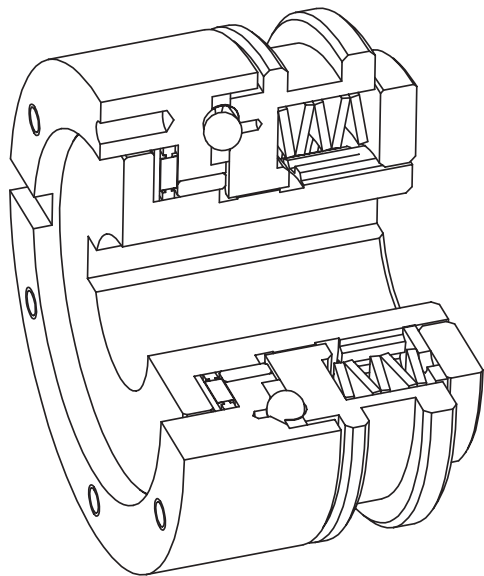


Disengaged



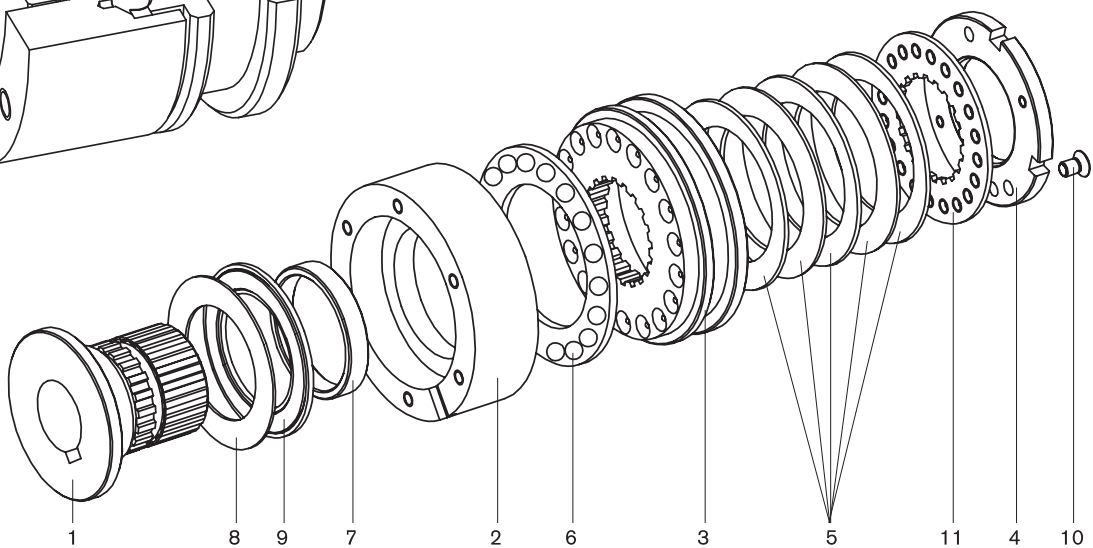
Limit switch

Variable applications by modular system



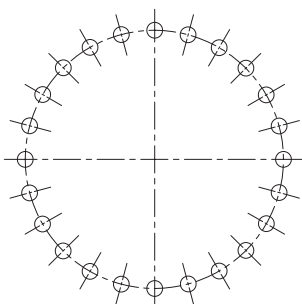
List of components:

1. Hub
2. Flange ring
3. Shift ring
4. Setting nut
5. Disk spring
6. Ball retainer
7. Slide bush
8. Axial disk
9. Axial needle bearing
10. Setscrew
11. Securing disk



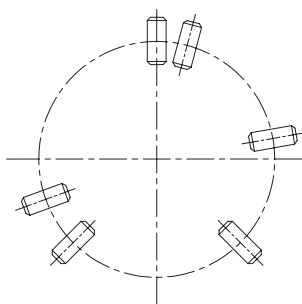
Three operating principles with the same mounting space

Ratchet design DK



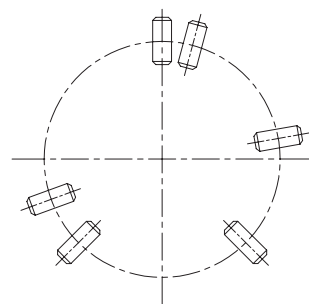
Any engagement after an overload. After eliminating the overload, the balls engage automatically with the next following ball indentation of the disk springs.

Synchronous design SR



Synchronous engagement after an overload. After eliminating the overload, the balls re-engage automatically with the disk springs after a rotation of 360°. Driving and driven side are always placed in the same position to each other. Other degrees of re-engagement, for example 180°, are also possible.

Fail-safe design SGR

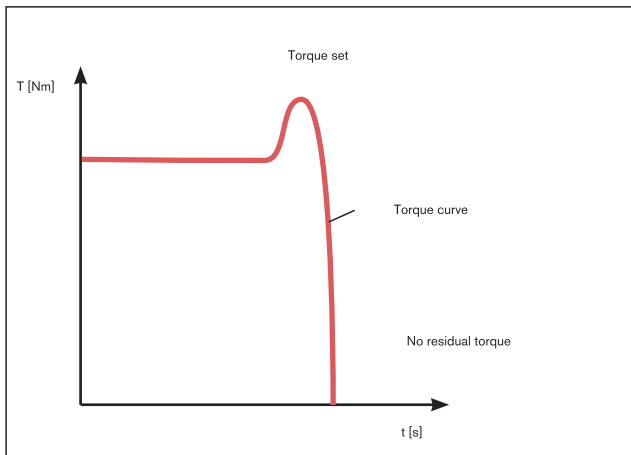


The fail-safe design is a pure torque measurement without any ratchet operation. In case of overload a signal is generated by the limit switch, producing a mechanical separation of driving and driven side = ratching is not possible.

**Idle rotation coupling (Type FR)**

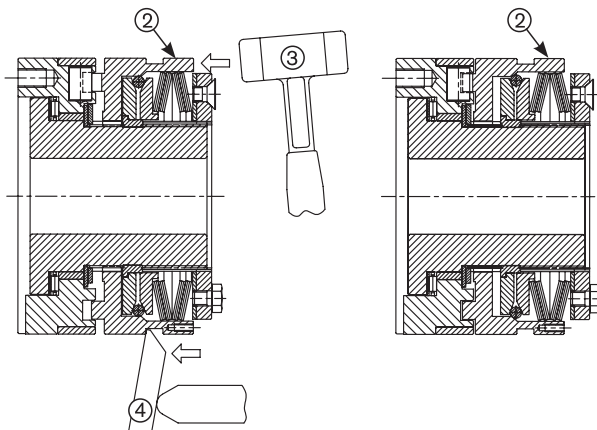


- Idle-rotation safety clutch for a torque up to 1800 Nm
- Max. speed up to 5000 rpm (see table)
- Driving and driven side are permanently separated
- Manual re-engagement
- Optional overload recognition by limit switch or sensor
- Combination with jaw coupling as shaft-to-shaft connection
- Easy assembly and torque setting



Operating principle of the TT idle-rotation couplings:

- When achieving the torque set, the coupling rotates.
- Subject to the idle rotation mechanism driving and driven side remain separated. The resulting flywheel mass may run out in idle state.
- After having removed the overload, the coupling reengages.
- The re-engagement is effected manually or via a device.



Re-engagement of the idle rotation coupling:

Re-engagement of the free-rotating coupling is effected by axial pressure on the shifting ring (2). Dependent on the existing media, accessibility etc., the re-engagement can be effected in different ways:

- by several beats with a plastic hammer (3) axially on the shifting ring (see on the left)
- by mounting levers (4)
- by a pneumatic or hydraulic engagement device (automated process of engagement)

Size	Torques [Nm]		
	Disk spring layer		
	T1	T2	T3
1	12-25	25-50	50-100
2	25-50	50-100	100-200
3	50-100	100-200	200-450
4	100-200	200-400	400-800
5	170-450	350-900	600-1800

Size	Max. speeds [rpm]
	n <sub>max.</sub>
1	5000
2	4000
3	3500
4	3000
5	2300

Dimensions like TT-SI design DK, SR and SGR (see following pages)

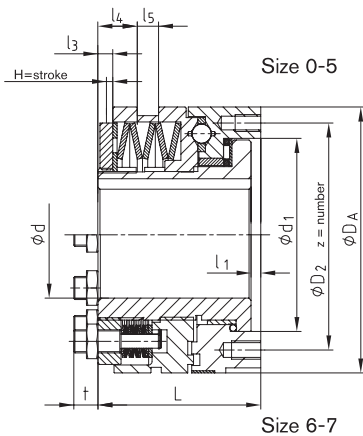
**Ordering example:**

TT-SI	2	FR	FT	T2	Ø20	40 Nm
Type	Size	Design	Design	Disk springs	Bore	Torque set

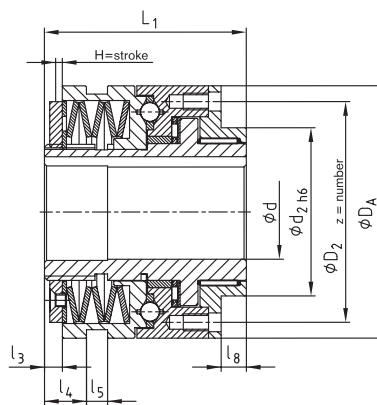
Type FT, KT and LT



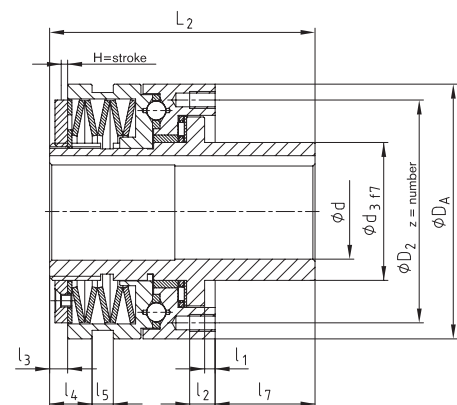
- Standard TT-SI safety clutch up to 8200 Nm
- Available ready for assembly with the torque set
- For direct mounting of customers' components
- Available as a ratchet, synchronous and fail-safe design
- Torque setting possible while in place
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9
- Surface protection by phosphating



Type FT



Type KT



Type LT

Technical data - Torques, weights

Size	Torques [Nm]								Weight with max. bore [kg]
	Disk spring layers type DK				Disk spring layers type SR and SGR				
	T1	T2	T3	T4	T1	T2	T3	T4	
0	2,5-5	5-20	-	20-40	5-10	10-40	-	-	0,41
1	6-12	12-25	25-55	55-100	12-25	25-50	50-100	-	1,30
2	12-25	25-50	50-120	120-200	25-50	50-100	100-200	-	2,27
3	25-50	50-100	100-250	200-450	50-100	100-200	200-450	-	3,88
4	50-100	100-200	200-500	500-1000	100-200	200-400	400-800	800-2000	8,34
5	85-250	230-600	300-1000	600-2000	170-450	350-900	600-1800	1200-3400	13,51
6	180-480	360-960	720-1950	1600-3300	300-750	600-1500	1200-3000	2900-5800	21
7	250-520	500-1050	1000-2100	2000-3600	550-1100	1100-2200	2200-4400	3000-8200	37

Dimensions [mm]

Size	Bore d		H=stroke																			
	Pilot bore	max.	d <sub>1</sub>	D <sub>2</sub>	D <sub>A</sub>	d <sub>2</sub>	d <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	l <sub>7</sub>	l <sub>8</sub>	L	L <sub>1</sub>	L <sub>2</sub>	z	DK	SR	SGR	FR
0	7	20	41,0	48	55	38	28	4,0	6,5	3,0	7,5	9	27,5	8	38,5	51,0	66,0	6xM5	1,4	1,2	0,6	1,6
1	10	25	60,0	70	82	50	38	4,0	8,0	6,0	11,5	9	33,0	10	52,0	70,0	85,0	6xM5	2,3	1,8	0,8	2,3
2	14	35	78,0	89	100	60	52	5,0	10,0	5,0	12,0	9	39,0	12	61,0	78,0	100,0	6xM6	2,4	2,0	1,1	3,0
3	18	45	90,5	105	120	80	65	5,0	12,0	8,5	21,0	10	47,0	12	78,0	96,0	125,0	6xM8	2,7	2,2	1,2	3,5
4	24	55	105,0	125	146	100	78	6,5	15,0	11,0	27,0	9	52,5	16	100,0	124,5	152,5	6xM10 <sup>1)</sup>	3,7	2,5	1,2	3,8
5	30	65	120,5	155	176	120	90	6,5	17,0	12,0	33,0	9	57,5	18	113,5	140,0	171,0	6xM12 <sup>2)</sup>	4,6	3,0	1,6	4,5
6 <sup>2)</sup>	40	80	136,0	160	200	130	108	7,0	20,0	14,0	39,0	9	64,0	20	119,0	150,0	183,0	6xM12 <sup>2)</sup>	5,0	3,5	2,5	-
7 <sup>2)</sup>	50	100	168,0	200	240	160	135	8,0	25,0	15,0	46,0	9	72,0	25	141,0	175,0	213,0	6xM16 <sup>1)</sup>	5,5	4,0	2,7	-

<sup>1)</sup> Type T4 SR and SRG: tightening torques according to 12.9

<sup>2)</sup> Size 6: dimension t= 15 mm, Size 7: dimension t= 21 mm

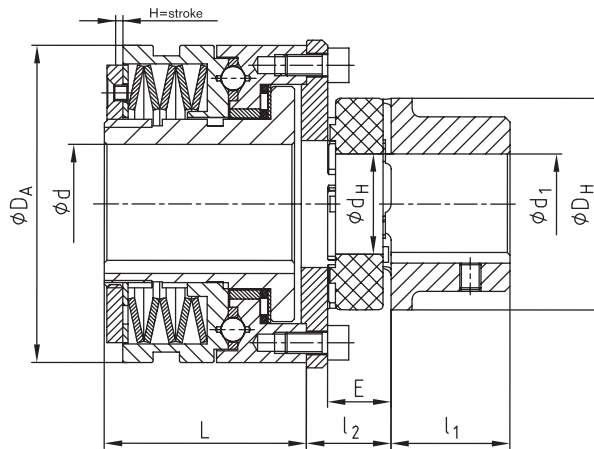
Ordering example:

TT-SI	2	DK	FT	T2	Ø20	40 Nm
Type	Size	Design	Design	Disk springs	Bore	Torque set

With torsionally flexible spacer coupling



- TT-SI safety clutch as a shaft-to-shaft connection
- Axial plug-in
- Able to compensate for misalignment
- Available as a ratchet, synchronous and fail-safe design
- Torque setting possible while in place
- Various kinds of elastomer hardness available
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9



Technical data

TT-SI size	Coupling size	Torque [Nm] <sup>1)</sup>		Coupling size	Torque [Nm] <sup>1)</sup>		TT-SI disk spring layer type DK Torque [Nm]				Torque [Nm] TT-SI disk spring layer type SR and SGR			
		T <sub>KN</sub>	T <sub>Kmax</sub>		T <sub>KN</sub>	T <sub>Kmax</sub>	T1	T2	T3	T4	T1	T2	T3	T4
0	19	17	34	28	160	320	2,5-5	5-20	-	20-40	5-10	10-40	-	-
1	24	60	120	38	325	650	6-12	12-25	25-55	55-100	12-25	25-50	50-100	-
2	28	160	320	48	525	1050	12-25	25-50	50-120	120-200	25-50	50-100	100-200	-
3	38	325	650	55	685	1370	25-50	50-100	100-250	200-450	50-100	100-200	200-450	-
4	48	525	1050	75	1920	3840	50-100	100-200	200-500	500-1000	100-200	200-400	400-800	800-2000
5	55	685	1370	90	3600	7200	85-250	230-600	300-1000	600-2000	170-450	350-900	600-1800	1200-3400
6	100	4950	9900	100	4950	9900	180-480	360-960	720-1950	1600-3300	300-750	600-1500	1200-3000	2900-5800
7	110	7200	14400	110	7200	14400	250-520	500-1050	1000-2100	2000-3600	550-1100	1100-2200	2200-4400	3000-8200

Dimensions

TT-SI size	Coupling size	Max. Bore		Dimensions [mm]							H=stroke [mm]	
		d	d <sub>1</sub>	D <sub>A</sub>	D <sub>H</sub>	d <sub>H</sub>	E	l <sub>1</sub>	l <sub>2</sub>	L	Design	
											DK	SR
0	19		24	55	40	18	16	25	22	38,5	1,4	1,2
	28	20	38		65	30	20	35	28,5			
1	24	25	28	82	55	27	18	30	24	52	2,3	1,8
	38		45		80	38	24	45	32,5			
2	28	35	38	100	65	30	20	35	28	61	2,4	2,0
	48		60		105	51	28	56	38			
3	38	45	45	120	80	38	24	45	32	78	2,7	2,2
	55		70		120	60	30	65	43			
4	48	55	60	146	105	51	28	56	38	100	3,7	2,5
	75		95		160	80	40	85	56,5			
5	55	65	70	176	120	60	30	65	44	113,5	4,6	3,0
	90		110		200	100	45	100	62			
6	100	80	115	200	225	113	50	110	72	119	5,0	3,5
	110		125		240	255	127	55	120			

<sup>1)</sup> The respective flexible jaw coupling can be selected based on the torque of the machine. Torques for 98 Sh-A spider

Ordering example

TT-SI 2	28	DK	T2	Ø25	Ø20	40 Nm
Type/size	Coupling size	Design	Disk springs	Coupling bore	TT-SI bore	Torque set