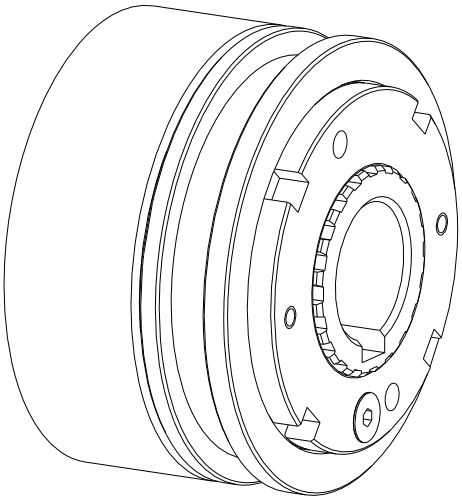
KTR-SI

Type DK
(ratchet design)

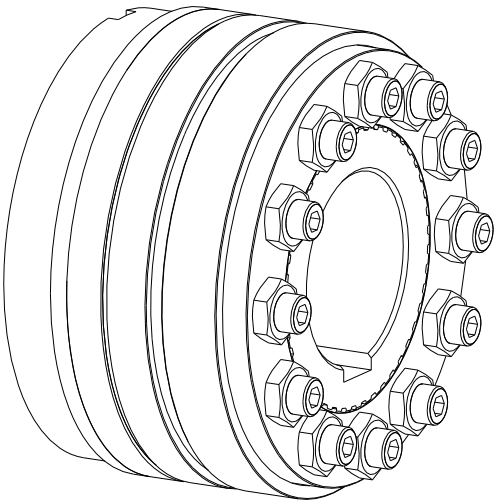
Type SR
(synchronous design)

Type FR
(Idle rotation design)

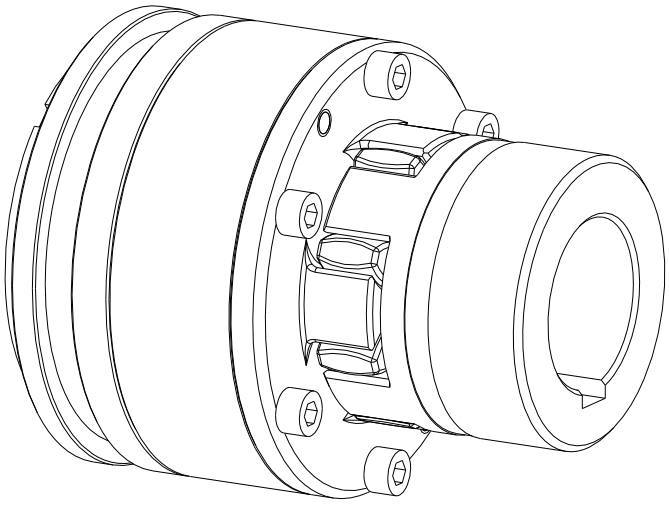
Type SGR
(fail-safe synchronous design)



KTR-SI size 0 to 5



KTR-SI size 6 to 7



KTR-SI with torsionally flexible ROTEX® coupling

KTR-SI is a torque limiting overload system with positive locking operation protecting adjacent components from damage.

- In case of overload **type DK** (ratchet design) re-engages every 15° with the next following ball indentation.
- In case of overload **type SR** (synchronous design) re-engages after a rotation of 360°.
- **Type FR** (idle rotation design) remains separated with overload. The overload system re-engages manually or via a mechanism with standstill of machine.
- **Type SGR** (fail-safe synchronous design) is purely intended for torque measurement without any ratchet operation. In case of overload a signal is generated by a limit switch along with mechanical separation of driving and driven side = ratching is not possible.

Table of contents

1 Technical data

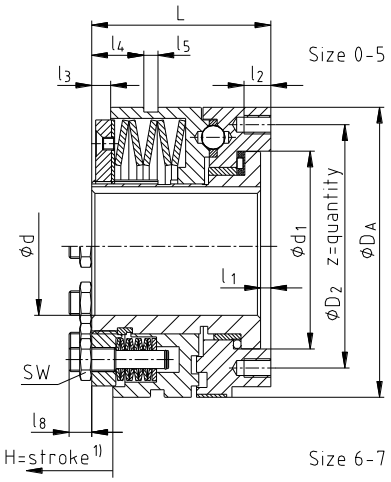


Illustration 1: KTR-SI type FT

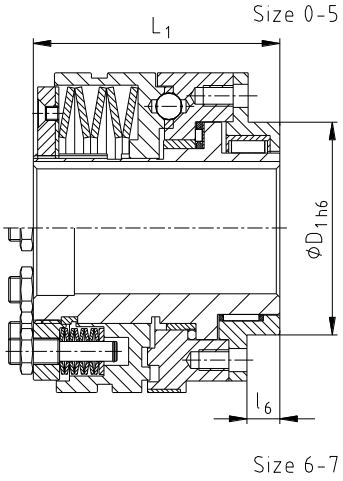


Illustration 2: KTR-SI type KT

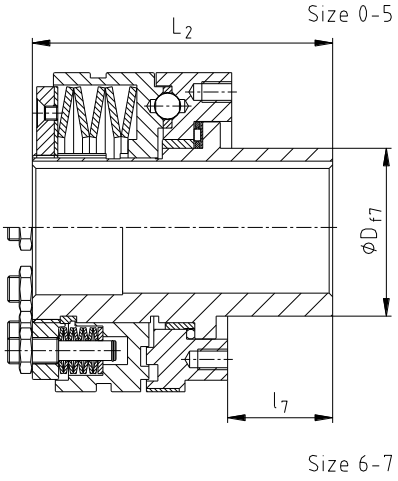


Illustration 3: KTR-SI type LT

Table 1: Dimensions and weights

Size	Dimensions [mm]										
	Bore d		d_1	D	D_1	D_2	D_A	l_1	l_2	l_3	l_4
	Pilot bore	Max.									
0	7	20	41.0	28	38	48	55	4.0	6.5	3.0	7.5
1	10	25	60.0	38	50	70	82	4.0	8.0	6.0	11.5
2	14	35	78.0	52	60	89	100	5.0	10.0	5.0	12.0
3	18	45	90.5	65	80	105	120	5.0	12.0	8.5	21.0
4	24	55	105.0	78	100	125	146	6.5	15.0	11.0	27.0
5	30	65	120.5	90	120	155	176	6.5	17.0	12.0	33.0
6	40	80	136.0	108	130	160	200	7.0	20.0	14.0	39.0
7	50	100	168.0	135	160	200	240	8.0	25.0	15.0	46.0

Size	Dimensions [mm]									Weight with max. bore [kg]
	l_5	l_6	l_7	l_8	L	L_1	L_2	z	SW	
0	9	8	27.5	-	38.5	51.0	66.0	6 x M5	-	0.41
1	9	10	33.0	-	52.0	70.0	85.0	6 x M5	-	1.30
2	9	12	39.0	-	61.0	78.0	100.0	6 x M6	-	2.27
3	10	12	47.0	-	78.0	96.0	125.0	6 x M8	-	3.88
4	9	16	52.5	-	100.0	124.5	152.5	6 x M10 2)	-	8.34
5	9	18	57.5	-	113.5	140.0	171.0	6 x M12 2)	-	13.51
6	9	20	64.0	15	119.0	150.0	183.0	6 x M12 2)	30	21
7	9	25	72.0	21	141.0	175.0	213.0	6 x M16 2)	24	37

1) Dimensions H=stroke see table 9
2) Type T4 SR and SGR: tightening torques according to 12.9

Table 2: Torques

Size	Torques [Nm]											
	Type DK				Type SR and SGR				Type FR			
	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	$n_{max.}$ 3) [rpm]
0	2.5-5	5-20	-	20-40	5-10	10-40	-	-	5-10	10-20	20-40	6000
1	6-12	12-25	25-55	55-100	12-25	25-50	50-100	-	12-25	25-50	50-100	5000
2	12-25	25-50	50-120	120-200	25-50	50-100	100-200	-	25-50	50-100	100-200	4000
3	25-50	50-100	100-250	200-450	50-100	100-200	200-450	-	50-100	100-200	200-450	3500
4	50-100	100-200	200-500	500-1000	100-200	200-400	400-800	800-2000	100-200	200-400	400-800	3000
5	85-250	230-600	300-1000	600-2000	170-450	350-900	600-1800	1200-3400	170-450	350-900	600-1800	2300
6	180-480	360-960	720-1950	1600-3300	300-750	600-1500	1200-3000	2900-5800	-	-	-	-
7	250-520	500-1050	1000-2100	2000-3600	550-1100	1100-2200	2200-4400	3000-8200	-	-	-	-

3) Only valid for type FR

1 Technical data

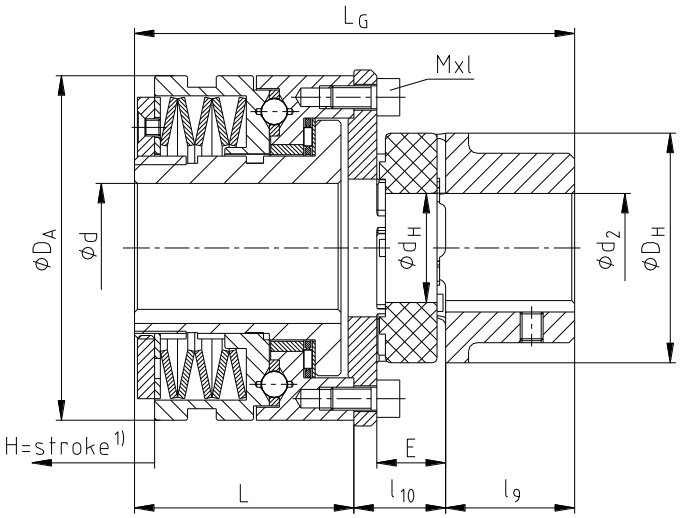


Illustration 4: KTR-SI with torsionally flexible ROTEX® coupling

Table 3: Dimensions

Size	ROTEX® size	Dimensions [mm]										Cap screws DIN EN ISO 4762 - 12.9	
		Max. bore		d_H	D_H	D_A	l_9	l_{10}	E	L	L_G	M x l	T_A [Nm]
		d	d_2										
0	19	20	25	18	40	55	25	22.0	16	38.5	85.5	M5 x 10 2)	5.5
	28		40	30	65		35	28.5	20		102.0		
1	24	25	35	27	55	82	30	24.0	18	52.0	106.0	M5 x 12	8.1
	38		48	38	80		45	32.5	24		129.5	M5 x 10	
2	28	35	40	30	65	100	35	28.0	20	61.0	124.0	M6 x 16	14
	48		62	51	105		56	38.0	28		155.0	M6 x 12	
3	38	45	48	38	80	120	45	32.0	24	78.0	155.0	M8 x 18	34
	55		74	60	120		65	43.0	30		186.0	M8 x 16	
4	48	55	62	51	105	146	56	38.0	28	100.0	194.0	M10 x 20	67
	75		95	80	160		85	56.5	40		241.5		
5	55	65	74	60	120	176	65	44.0	30	113.5	222.5	M12 x 30	115
	90		110	100	200		100	62.0	45		275.5	M12 x 20	
6	100	80	115	113	225	200	110	72.0	50	119.0	301.0	M12 x 30	115
7	110	100	125	127	255	240	120	78.0	55	141.0	339.0	M16 x 35	290

1) Dimensions H=stroke see table 9
2) DIN 6912 - 8.8

Table 4: Torques

ROTEX® torque [Nm] 98 ShA	ROTEX® size									
	19	24	28	38	48	55	75	90	100	110
T_{KN}	17	60	160	325	525	685	1920	3600	4950	7200
$T_{Kmax.}$	34	120	320	650	1050	1370	3840	7200	9900	14400

2 Advice

2.1 General advice

Please read through these operating/assembly instructions carefully before you start up the coupling.
Please pay special attention to the safety instructions!
The operating/assembly instructions are part of your product. Please store them carefully and close to the coupling. The copyright for these operating/assembly instructions remains with KTR.

2.2 Safety and advice symbols

	**Warning of personal injury**	This symbol indicates notes which may contribute to preventing bodily injuries or serious bodily injuries that may result in death.
	**Warning of product damages**	This symbol indicates notes which may contribute to preventing material or machine damage.
	**General advice**	This symbol indicates notes which may contribute to preventing adverse results or conditions.
	**Warning of hot surfaces**	This symbol indicates notes which may contribute to preventing burns with hot surfaces resulting in light to serious bodily injuries.

2.3 General hazard warnings

With assembly, operation and maintenance of the coupling it has to be made sure that the entire drive train is secured against accidental switch-on. You may be seriously hurt by rotating parts. Please make absolutely sure to read through and observe the following safety indications.

- All operations on and with the coupling have to be performed taking into account "safety first".
- Please make sure to switch off the power pack before you perform your work on the coupling.
- Secure the power pack against accidental switch-on, e. g. by providing warning signs at the place of switch-on or removing the fuse for current supply.
- Do not reach into the operating area of the coupling as long as it is in operation.
- Please secure the coupling against accidental contact. Please provide for the necessary protection devices and covers.

2 Advice

2.4 Intended use

You may only assemble, operate and maintain the coupling if you

- have carefully read through the operating/assembly instructions and understood them
- had technical training
- are authorized by your company

The coupling may only be used in accordance with the technical data (see chapter 1). Unauthorized modifications on the coupling design are not admissible. We will not assume liability for any damage that may arise. In the interest of further development we reserve the right for technical modifications.
The **KTR-SI** described in here corresponds to the state of the art at the time of printing of these operating/assembly instructions.

2.5 Coupling selection

For a long-lasting and failure-free operation of the coupling it must be selected according to the selection instructions for the particular application (see catalogue drive technology "KTR-SI").
If the operating conditions (performance, speed, modifications on engine and machine) change, the coupling selection must be reviewed.
The transmittable torque of the shaft-hub-connection must be reviewed by the customer and is subject to his responsibility.

2.6 Reference to EC Machinery Directive 2006/42/EC

The couplings supplied by KTR should be considered as components, not machines or partly completed machines according to EC Machinery Directive 2006/42/EC. Consequently KTR does not have to issue a declaration of incorporation. For details about safe assembly, start-up and safe operation please refer to the present operating/assembly instructions considering the warnings.

3 Storage, transport and packaging

3.1 Storage

The couplings are supplied in preserved condition and can be stored at a dry and covered place for 6 - 9 months.

Humid storage rooms are not suitable.
Please make sure that condensation is not generated. The best relative air humidity is less than 65 %.

3.2 Transport and packaging

In order to avoid any injuries and any kind of damage please always make use of proper transport and lifting equipment.

The couplings are packed differently each depending on size, number and kind of transport. Unless otherwise contractually agreed, packaging will follow the in-house packaging specifications of KTR.

4 Assembly

The coupling is supplied in assembled condition.

4.1 Components of the couplings

Components of KTR-SI size 0 to 5

Compo-nent	Quantity	Description
1	1	Hub
2	1	Flange ring (type DK)
3	1	Shifting ring (type DK)
4	1	Ball bearing cage
5	1	Lock washer
6	1	Slide bush
7	1	Setting nut
8	see table 5	Disk springs (set)
9	1	Axial needle bearing [1]
10	1	Axial disk
11	1	Locking screw

1) With size 0: bearing balls (1 set)

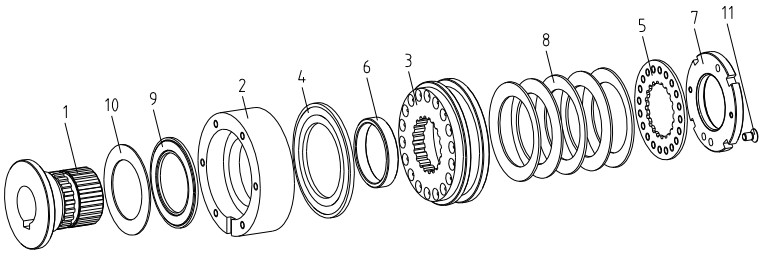


Illustration 5: KTR-SI size 0 to 5

Components of KTR-SI size 6 to 7

Compo-nent	Quantity	Description
1	1	Hub
2	1	Flange ring (type DK)
3	1	Shifting ring (type DK)
6	1	Slide bush
7	1	Setting nut
9	1	Bearing balls (set)
12	see table 6	Setting screws
13		Lock nut
14	6	Setscrew DIN EN ISO 4029
15	1	Additional ring

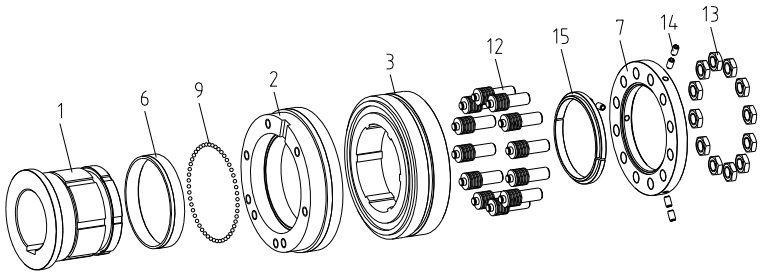


Illustration 6: KTR-SI size 6 to 7

Components of KTR-SI with torsionally flexible ROTEX® coupling

Compo-nent	Quantity	Description
1	1	KTR-SI (complete coupling)
2	1	ROTEX®-SI flange [1]
3	1	ROTEX® spider
4	1	ROTEX® hub
5	6	Cap screws DIN EN ISO 4762 - 12.9 [2]
6	1	Setscrew DIN EN ISO 4029

1) from ROTEX® size 75 with additional feather key on the front side
2) Size 0: Cap screws DIN 6912 - 8.8

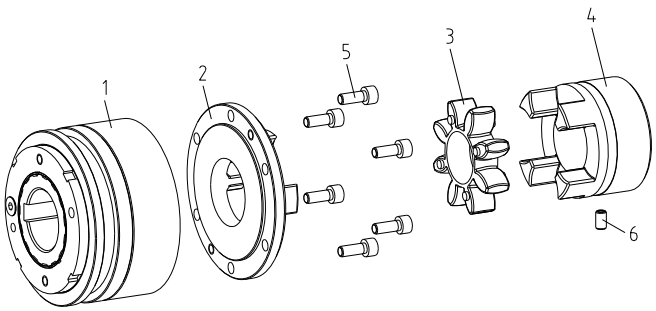


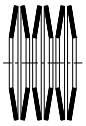
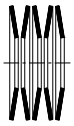
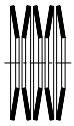
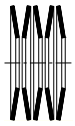
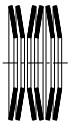
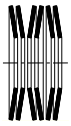
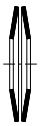
Illustration 7: KTR-SI with torsionally flexible ROTEX® coupling

4 Assembly

4.2 Layering of disk springs

Layering of disk springs with KTR-SI size 0 to 5

Table 5: Disk springs

Layering of disk springs	T1	T2	T3		T4		
Size	**0 to 5**	**0 to 5**	**0 and 5**	**1 to 4**	**0**	**1 to 4**	**5**
Type	**DK, SR and SGR**						
Illustration							
Designation	6x1S	5x1M	5x1M	5x1L	4x1L	3x2L	3x2M
Type	**FR**						
Illustration					-		
Designation	2x1S	2x1M	2x1M	2x1L			

Arrangement of setting screw with KTR-SI size 6 to 7

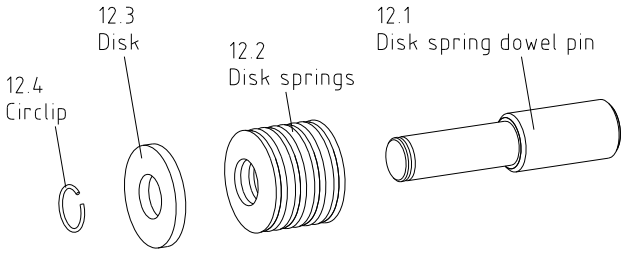
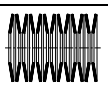
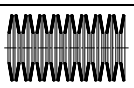
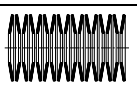
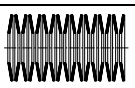
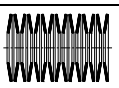
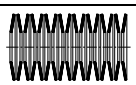
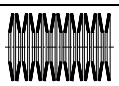
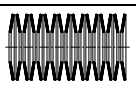
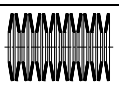
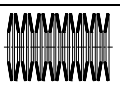
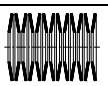


Illustration 8: Structure of setting screw

Table 6: Disk springs

Layering of disk springs	T1		T2		T3		T4	
Size	**6**	**7**	**6**	**7**	**6**	**7**	**6**	**7**
Quantity of components 12.1, 12.3, 12.4, 13	3		6		12		12	
Type	**DK**							
Illustration								
Designation	13x1S	17x1S	13x1S	17x1S	13x1S	17x1S	11x1M	15x1M
Type	**SR and SGR**							
Illustration								
Designation	17x1S	15x1M	17x1S	15x1M	17x1S	15x1M	15x1M	13x1L

4 Assembly

4.3 Advice for finish bore

STOP

The maximum permissible bore diameters d (see table 1 and 3 in chapter 1 - technical data) must not be exceeded. If these figures are disregarded, the coupling may tear. Rotating particles may cause danger to life.

- If the bore of the hub is machined by the customer, the coupling needs to be disassembled (see chapter 4.6).
- Axial run-out or concentricity (see illustration 9) need to be adhered to.
- Please make absolutely sure to observe the figures for Ø d_{max}.
- Carefully align the hubs when the finish bores are drilled.

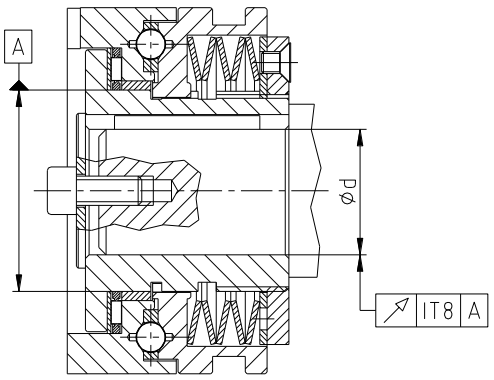


Illustration 9: Concentricity and axial runout

The customer bears the sole responsibility for all machining processes performed subsequently on unbored or pilot bored as well as finish machined coupling components and spare parts. KTR does not assume any warranty claims resulting from insufficient remachining.

Table 7: Recommended fit pairs acc. to DIN 748/1

Bore [mm]		Shaft tolerance	Bore tolerance
above	up to		
	50	k6	H7 (KTR standard)
50		m6	

If a feather keyway is intended to be used in the hub, it should correspond to the tolerance ISO JS9 (KTR standard) with normal operating conditions or ISO P9 with difficult operating conditions (frequently alternating torsional direction, shock loads, etc.). (Applies only in combination with a ROTEX® coupling): The keyway should preferably be located between the cams. With axial fastening by setscrews the tapping should be located on the keyway with the exception of Al-D which should be located opposite to the keyway.

The transmittable torque of the shaft-hub-connection must be reviewed by the customer and is subject to his responsibility.

4 Assembly

4.4 Assembly (general)

We recommend to inspect bores, shaft, keyway and feather key for dimensional accuracy before assembly.

Heating the KTR-SI coupling or ROTEX® hub lightly (approx. 80 °C) allows for an easier mounting on the shaft.

Touching the heated coupling or hub causes burns.
Please wear safety gloves.

When mounting the coupling, do not exert any force on the flange (component 2, see illustration 17) (e. g. by hammer blows or a mounting device).

- Please make sure the perfect technical condition of the **KTR-SI** overload system.
- Please only use original **KTR** components (no purchased parts).

4.5 Assembly of the KTR-SI coupling

- Mount the KTR-SI coupling (component 1) on the shaft of driving or driven side.
- Please provide for an end plate to fasten the KTR-SI coupling axially (see illustration 9 in chapter 4.3).

4.6 Assembly of KTR-SI with torsionally flexible ROTEX® coupling

Please consider our operating/assembly instructions KTR-N 40210 additionally when using the ROTEX® coupling.

- Mount the KTR-SI coupling (component 1) or ROTEX® hub (component 4) onto the shafts of the driving or driven side.
- Please provide for an end plate to fasten the KTR-SI coupling axially (see illustration 9 in chapter 4.3).
- Hand-tighten the ROTEX®-SI flange (component 2) with the KTR-SI coupling for the time being.
- For sizes 5 to 7 an extra feather key is provided between component 1 and 2 (see illustration 10).

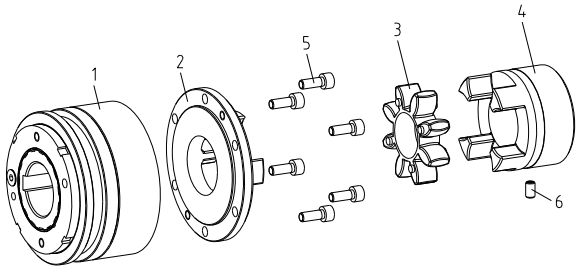


Illustration 10: KTR-SI with torsionally flexible ROTEX® coupling

4 Assembly

4.6 Assembly of KTR-SI with torsionally flexible ROTEX® coupling

- Tighten the screws crosswise by means of a suitable torque wrench to the tightening torques T_A specified in table 3.
- Insert the ROTEX® spider (component 3) into the cam section of the ROTEX® hub.
- Shift the power packs in axial direction until the distance dimension E has been achieved (see illustration 11).
- If the power packs are already firmly assembled, shifting the hubs axially on the shafts allows for adjusting the distance dimension E.
- Fasten the hubs by tightening the setscrews DIN EN ISO 4029 with a cup point (tightening torque T_A see KTR-N 40210).

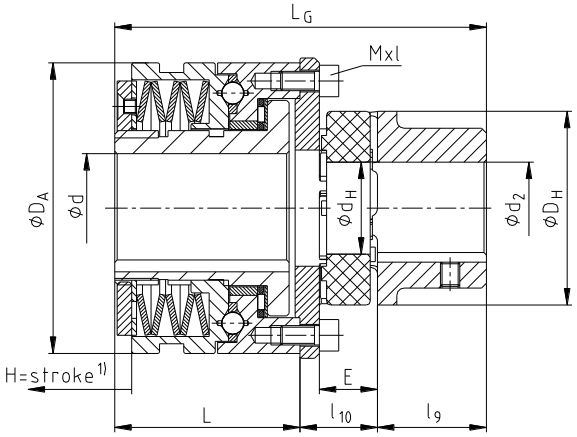


Illustration 11: Assembly of coupling

With the assembly please make sure that the distance dimension E (see table 3) is observed so that the coupling components are not in contact with each other during the operation. Disregarding this advice may cause damage to the coupling.

4.7 Disassembly of the coupling / replacement of single parts

Only valid for size 0 to 5:

- Disassemble the locking screw (component 11) and setting nut (component 7).
- Remove the locking washer (component 5) from the hub.
- Remove the disk springs (component 8) and the shifting ring (component 3).

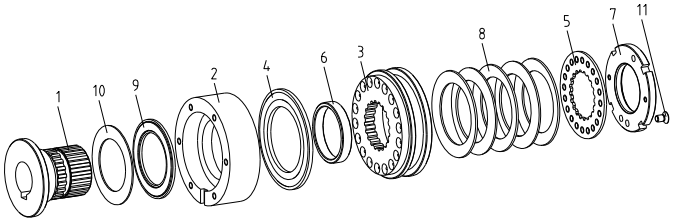


Illustration 12: KTR-SI size 0 to 5

Please note the disk spring layer for the assembly.

Only valid for size 6 to 7:

- Unscrew the locking nuts (component 13).
- Turn the setting screw (component 12) counterclockwise until the disk spring is in contact with the setting nut (component 7).
- Remove the setscrews (component 14) and afterwards disassemble the setting nut (component 7).

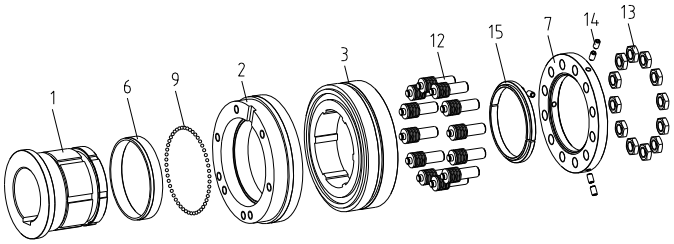


Illustration 13: KTR-SI size 6 to 7

Continuation of disassembly with all sizes:

- Remove the shifting ring (component 3) and flange ring (component 2) from the hub (component 1).
- Remove the slide bush (component 6) and the axial needle bearing or bearing balls, respectively (component 9).

For sizes 0, 6 and 7 bearing balls are mounted between hub (component 1) and flange ring (component 2) instead of the axial needle bearing (component 9) (see illustration 6 and 7).

4 Assembly

4.8 Assembly of the coupling

The assembly is done in reverse order with the disassembly (see chapter 4.7). For that purpose please observe the exploded-view drawings illustration 12 and 13. Components lubricated by the manufacturer may have to be re-lubricated.

☞ **Greasing by usual greases has to be done.**

⚠ **Please note the disk spring layer for the assembly as per chapter 4.2.**

4.9 Torque setting - KTR-SI size 0 to 5

Depending on the layering of the disk springs used the requested torque can be set by adjusting the torque of the setting nut:

- Fix the hub (component 1) to avoid twisting.
- Unscrew the locking screw (component 11).
- Screw the setting nut (component 7) manually to the disk springs (component 8) against a stop (zero point ➔ backlash-free prestress of disk spring).
- Choose any reference point of the setting nut (component 7) versus a scale mark of the shifting ring (component 3).
- Insert the face spanner (see table 8) into the respective bores of the adjusting nut (see illustration 14).
- The accurate torque is adjusted by turning the setting nut (component 7) clockwise.

☞ **With torque setting please note the adjusting diagrammes of the respective sizes (see diagramme 1 to 6 in chapter 4.10).**

- Having set the torque the setting nut (component 7) is secured against working loose by means of the locking screw (component 11).

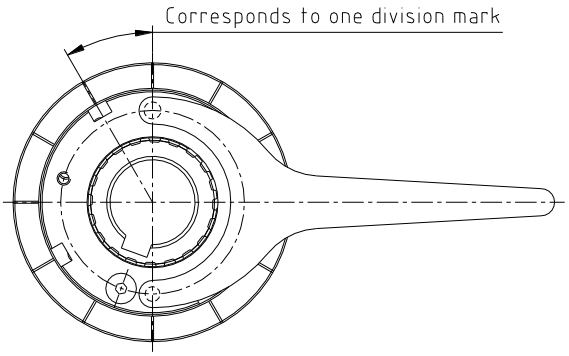


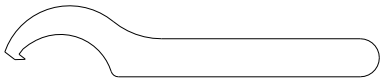
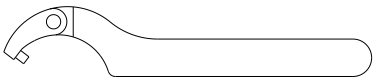
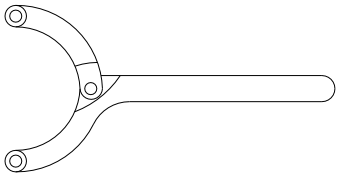
Illustration 14: Torque setting - KTR-SI size 0 to 5

Once the **KTR-SI** has been set to the required torque as per these operating/mounting instructions, the figure of the ratchet torque can be a reference value only. For a more accurate setting the ratchet torque should be inspected by means of a suitable measuring system. In order to achieve the optimum accuracy, the ratchet torque has to be reinspected after the initial ratchings and reset, if necessary.

4 Assembly

4.9 Torque setting - KTR-SI size 0 to 5

Table 8: Tools for torque setting

Size	Hook spanner DIN 1810-A	Jointed pin wrench	Jointed face wrench
			
0	Ø40-42	Ø35-60x4	Ø18-40x4
1	Ø52-55		Ø40-80x5
2	Ø68-75	Ø60-90x5	
3	Ø80-90		Ø80-125x6
4	Ø110-115	Ø90-155x8	
5	Ø120-130		Ø125-200x8

4.10 Torque setting - KTR-SI size 6 to 7

Depending on the layering of the disk springs used the requested torque can be set by adjusting the torque of the setting nut:

KTR supplies the coupling in pre-assembled condition as a standard. Continue with item 2 *torque setting*.
If a new assembly has been performed or the buyer has made modifications subsequently, please go on with item 1 *preparation of torque setting*.

1. Preparation of torque setting

- Fix the hub (component 1) to avoid twisting.
- Unscrew the locking nuts (component 13).
- Turn the adjusting screws (component 12) manually counter-clockwise against a stop (contact between internal disk springs and adjusting nut).
- Remove each the first one out of the three setscrews arranged twice (component 14) and afterwards unscrew the second setscrew.
- Turn the setting nut (component 7) manually against a stop.
- Afterwards turn back the setting nut counterclockwise until the balance of the three setscrews is flush with three out of the total of six keyways of the hub.
- Screw in the three setscrews (component 14) in order to lock the setting nut by positive fit on the hub. Afterwards counter the setscrews each by the second setscrew.

4 Assembly

4.10 Torque setting - KTR-SI size 6 to 7

2. Torque setting

- Screw the adjusting screws (component 12) manually with only little effort to the disk springs (component 8) against a stop (➔ backlash-free contact between disk springs and shifting ring).
- Tighten the adjusting screws (component 12) stepwise evenly in several revolutions (max. 360°) clockwise to the requested torque (6/6 corresponds to one complete revolution). The torque can be set by means of a hexagon socket wrench (component 16).

☞ **With torque setting please observe the adjusting diagrammes of the respective sizes (see diagramme 7 to 8 in chapter 4.10).**

- Having set the torque the adjusting screws (component 12) are protected from working loose by locking nuts (component 13) (see illustration 15).

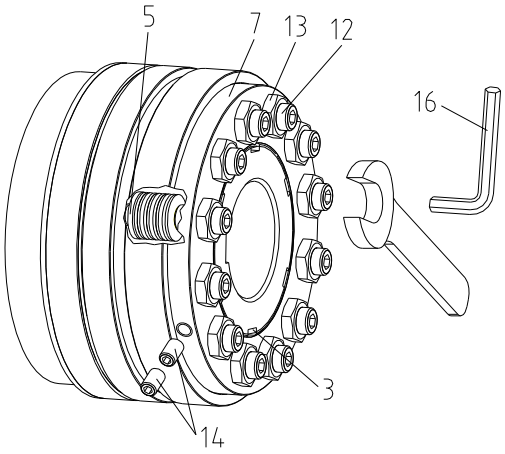


Illustration 15: Torque setting - KTR-SI size 6 to 7

Once the **KTR-SI** has been set to the required torque as per these operating/mounting instructions, the figure of the ratchet torque can be a reference value only. For a more accurate setting the ratchet torque should be inspected by means of a suitable measuring system. In order to achieve the optimum accuracy, the ratchet torque has to be reinspected after the initial ratchings and reset, if necessary.

4.11 Setting diagrammes - type DK

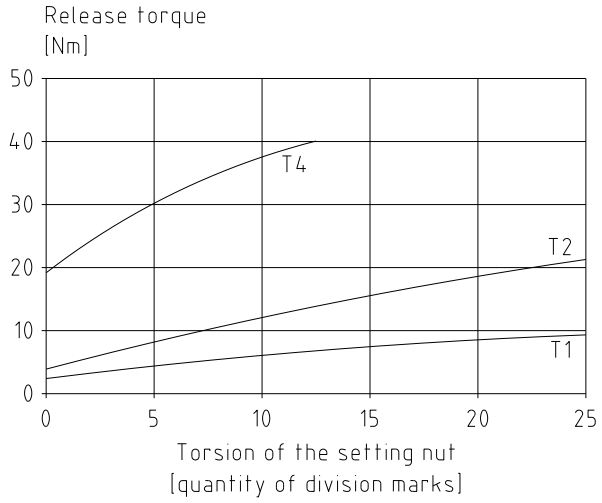


Diagramme 1: KTR-SI 0

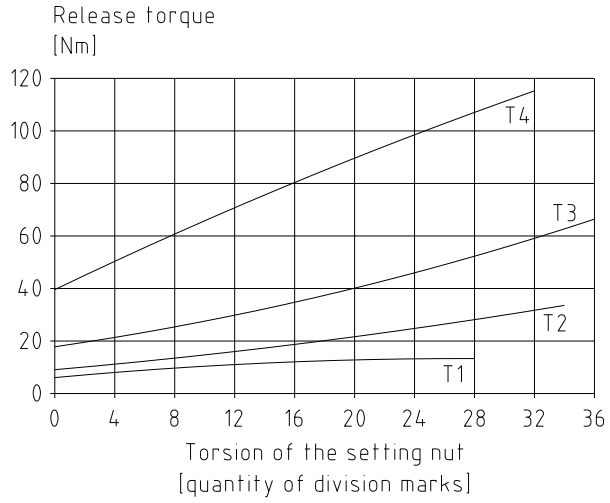


Diagramme 2: KTR-SI 1

4 Assembly

4.11 Setting diagrammes - type DK

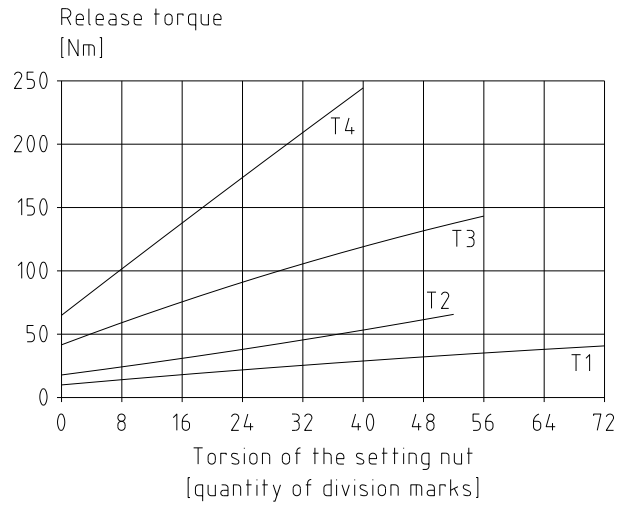


Diagramme 3: KTR-SI 2

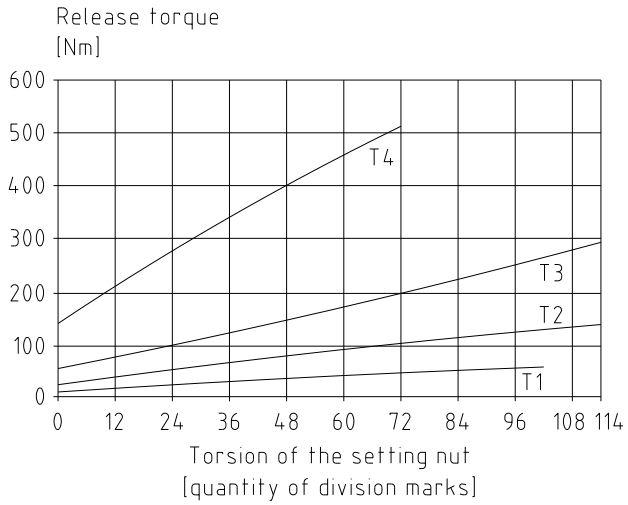


Diagramme 4: KTR-SI 3

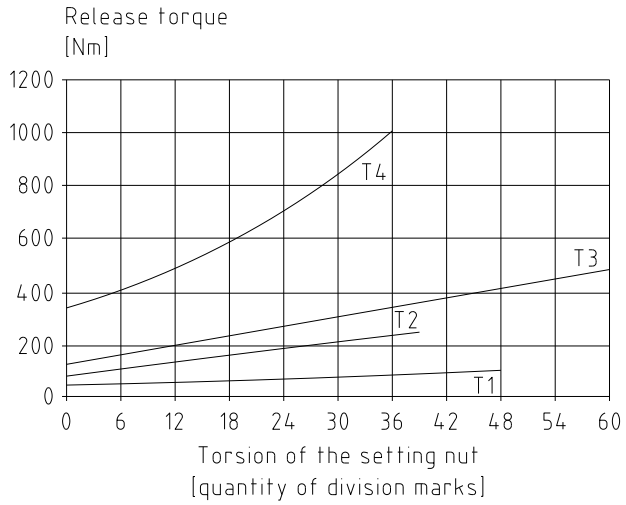


Diagramme 5: KTR-SI 4

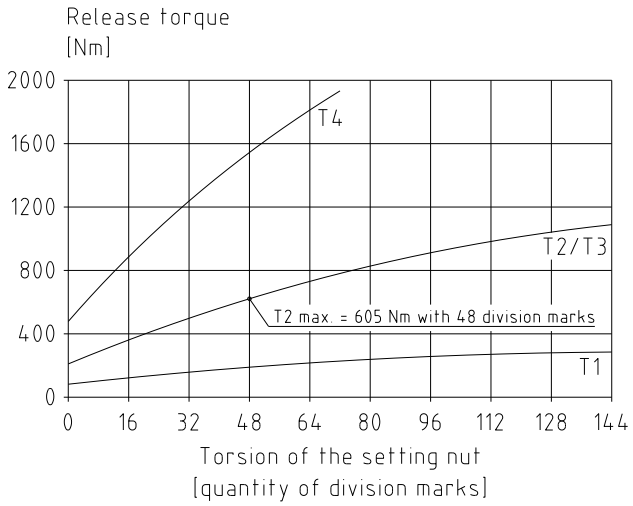


Diagramme 6: KTR-SI 5

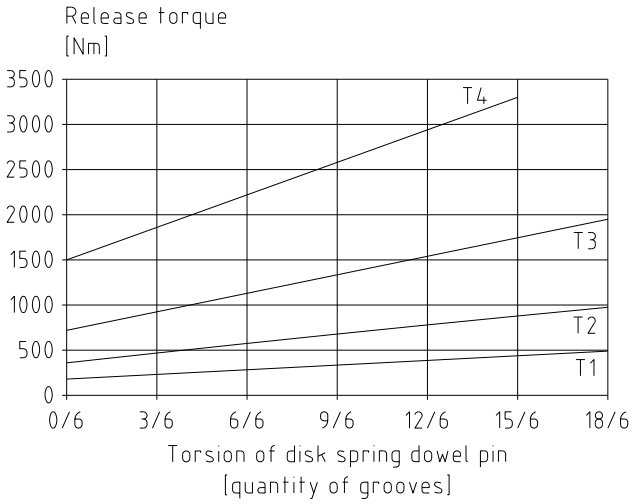


Diagramme 7: KTR-SI 6

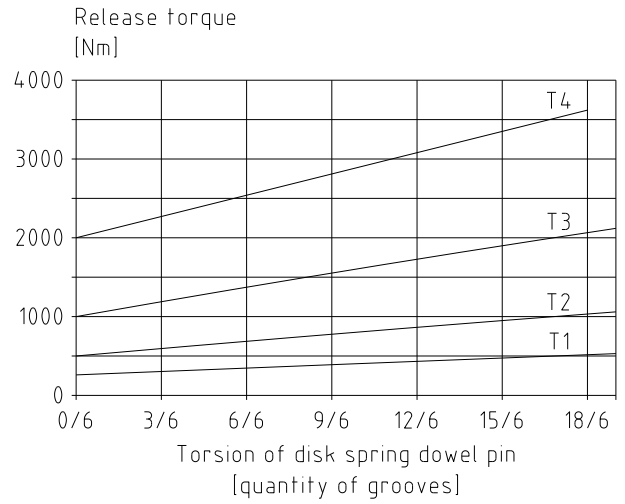


Diagramme 8: KTR-SI 7

4 Assembly

4.12 Setting diagrammes - type SR/SGR

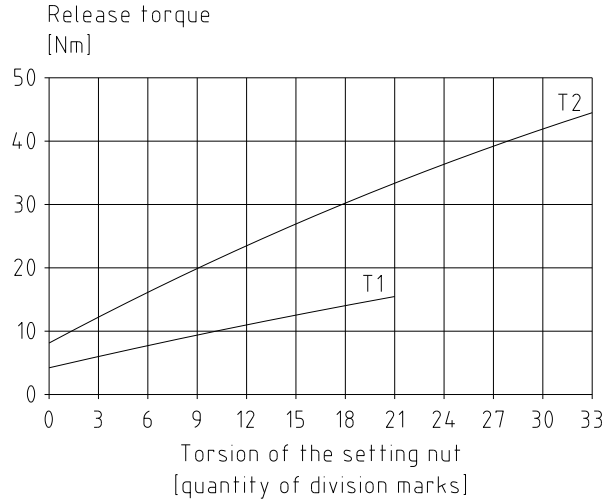


Diagramme 9: KTR-SI 0

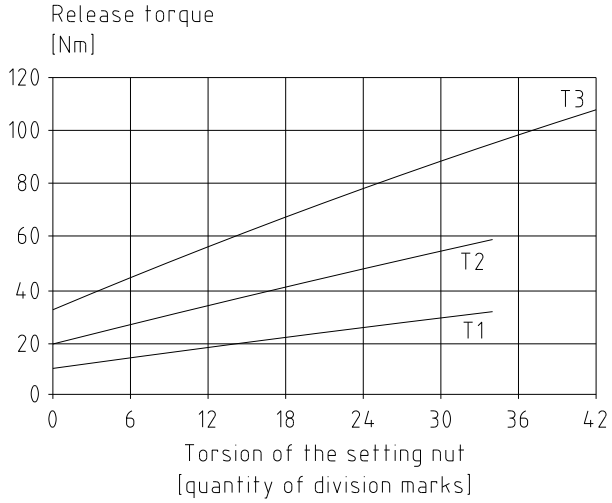


Diagramme 10: KTR-SI 1

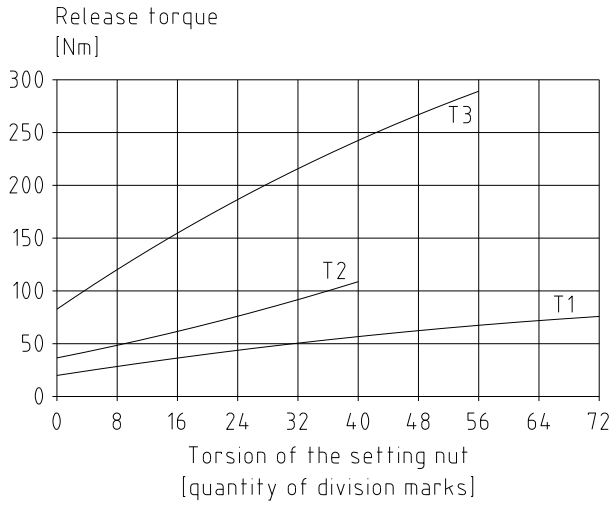


Diagramme 11: KTR-SI 2

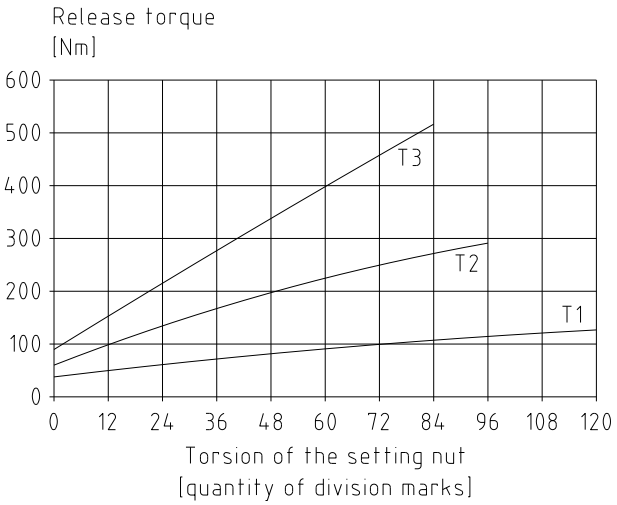


Diagramme 12: KTR-SI 3

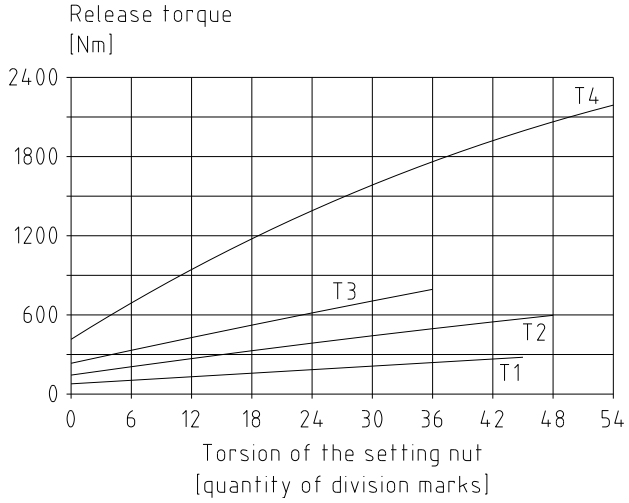


Diagramme 13: KTR-SI 4

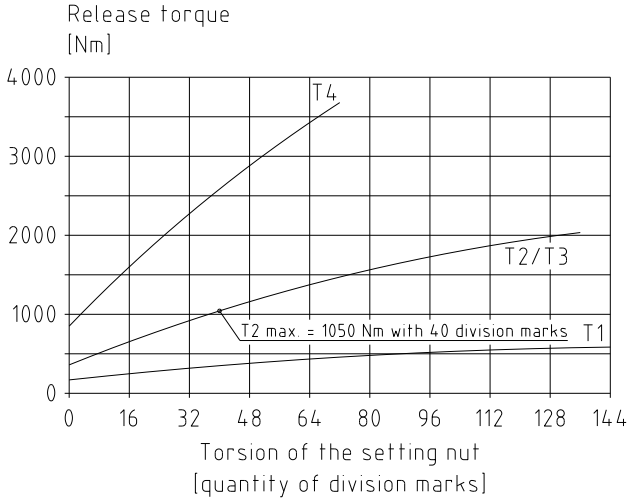


Diagramme 14: KTR-SI 5

4 Assembly

4.12 Setting diagrammes - type SR/SGR

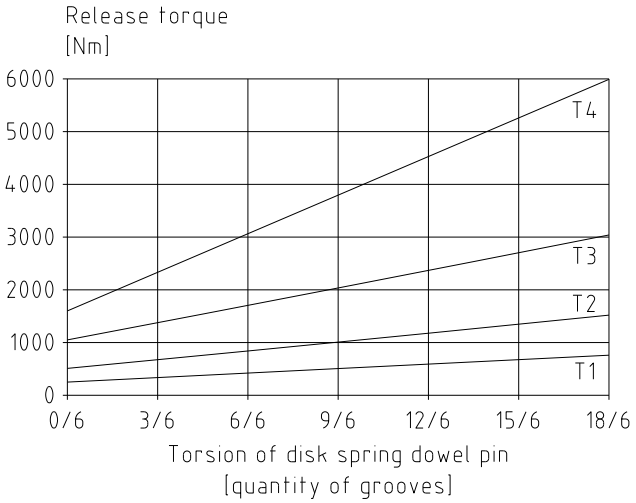


Diagramme 15: KTR-SI 6

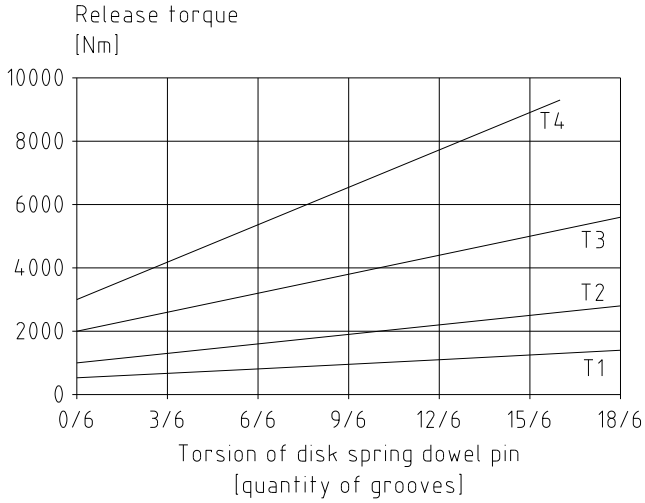


Diagramme 16: KTR-SI 7

4.13 Setting diagrammes - type FR

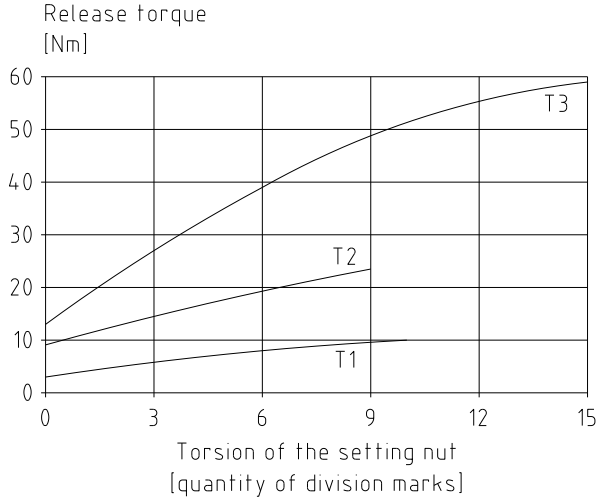


Diagramme 17: KTR-SI 0

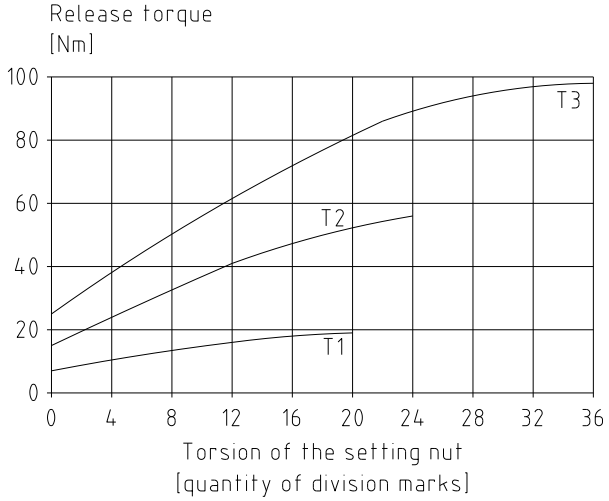


Diagramme 18: KTR-SI 1

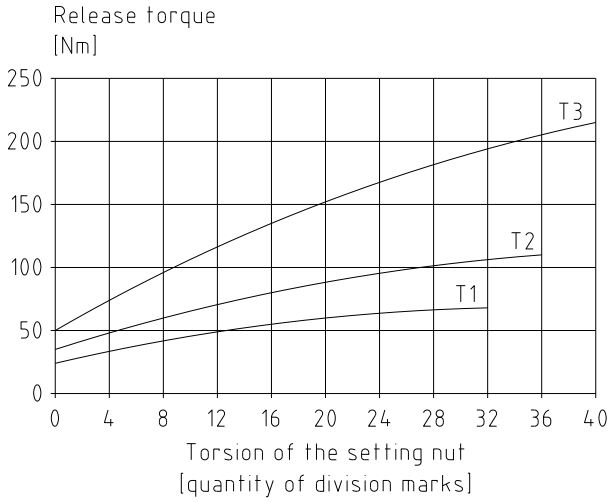


Diagramme 19: KTR-SI 2

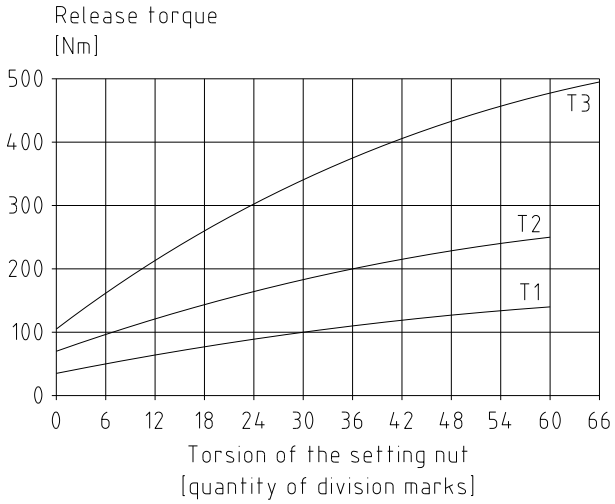


Diagramme 20: KTR-SI 3

4 Assembly

4.13 Setting diagrammes - type FR

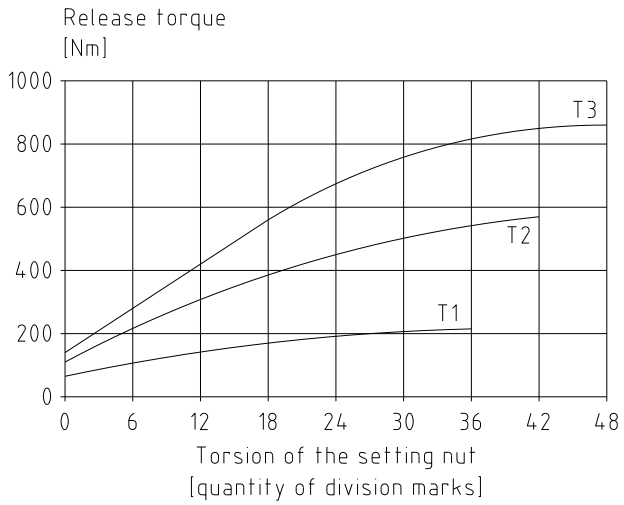


Diagramme 21: KTR-SI 4

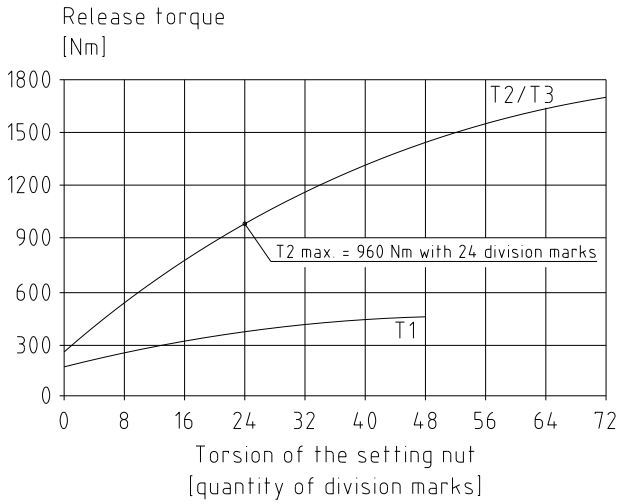


Diagramme 22: KTR-SI 5

4.14 Advice for the use of drive components

With the use of drive components such as sprockets, belt pulleys or gear wheels radial forces may be expected during operation. For the design FT the customer should provide for a separate bearing of the drive component. The non-positive connection of the drive components with the overload hub is done by screwing using usual standard screws of property class 10.9.

For the designs KT and LT the drive components are mounted to the coupling hub and screwed to the flange ring. The resulting radial force on the drive element should be within the level of the bearing in order to avoid twisting of the drive elements and consequently the flange ring.

- If torsional vibrations of the overall drive have to be expected, we would recommend to lock the screw by means of a suitable screw lock.
- Do not give any axial pressure on the coupling. The drive element needs a corresponding bearing.
- With higher torque shocks an extra feather key can be used for additional positive locking power transmission.

4 Assembly

4.15 Assembly of limit switch

The limit switch should be assembled in the keyway of the shifting ring (see illustration 16). The positions and dimensions of the keyway are shown in table 11.

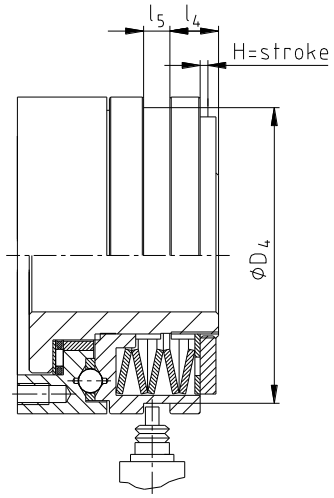


Illustration 16: Mechanical limit switch

Table 11: Position of limit switch

Size	Dimensions [mm]						
	l_4	l_5	$ØD_4$	H=stroke Type			
				DK	SR	SGR	FR
0	7.5	9	50.0	1.4	1.2	0.6	1.6
1	11.5	9	72.5	2.3	1.8	0.8	2.3
2	12.0	9	90.5	2.4	2.0	1.1	3.0
3	21.0	10	112	2.7	2.2	1.2	3.5
4	27.0	9	140	3.7	2.5	1.2	3.8
5	33.0	9	170	4.6	3.0	1.6	4.5
6	39.0	9	190	5.0	3.5	2.5	-
7	46.0	9	230	5.5	4.0	2.7	-

Function

The axial stroke of the shifting ring generated with overload may activate a mechanical limit switch or an inductive sensor. As a result a control signal is generated which can be evaluated for disengaging the drive.

Assembly

The sensor needs to be mounted in a solid device to ensure a smooth operation. The sensor should be protected from dirt and potential mechanical faults.

Adjustment

When the overload coupling slips, the shifting ring makes an axial thrust (see table 9). The sensor or limit switch, respectively, has to be mounted within this shifting range. In order to adapt the mechanical limit switch and the shifting travel to the machine, the limit switch has to be adjusted accordingly.

We recommend to use a limit switch!
Please absolutely observe the operation of the limit switch before the machine is supplied.
Please also observe the operating instructions for the sensor or limit switch, respectively.
The axial stroke of the shifting ring must not be blocked by other components.
As soon as the limit switch or sensor is activated (overload: release of overload coupling) the drive should immediately be stopped .
With higher speeds respective braking devices may be necessary.

5 Re-engagement of KTR-SI design FR

Re-engagement is generated by axial pressure on the shifting ring ①. Depending on the existing tools, accessibility, etc., re-engagement can be performed in different ways.
The coupling can be re-engaged by several axial blows with a plastic hammer ② on the shifting ring (see illustration 17, on top) or pneumatic respectively hydraulic ratching mechanisms (automatic ratching process).

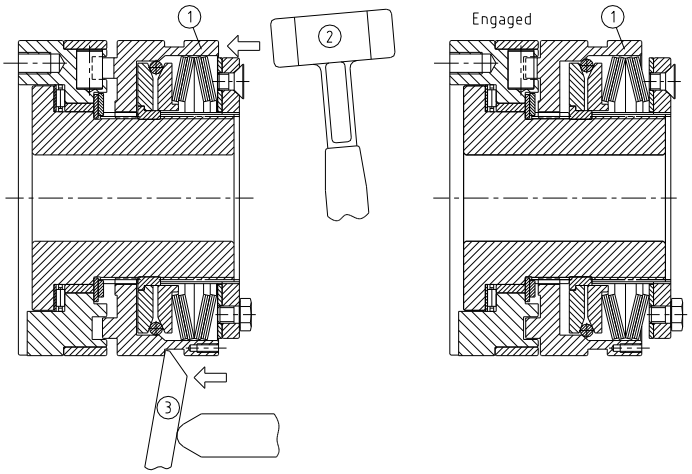


Illustration 17: Re-engagement

6 Breakdowns, causes and elimination

The below-mentioned failures can result in a use of the **KTR-SI** coupling other than intended. In addition to the specifications given in these operating and assembly instructions please make sure to avoid such failures.
The errors listed can only be clues to search for the failures. When searching for the failure the adjacent components must generally be considered.

<u>General failures with use other than intended:</u>

- Important data for the coupling selection were not forwarded.
- The calculation of the shaft-hub-connection was not considered.
- Coupling components with damage occurred during transport are assembled.
- If the heated hubs are assembled, the permissible temperature is exceeded.
- The clearance of the components to be assembled is not coordinated with one another.
- Tightening torques have been fallen below/exceeded.
- Components are mixed up by mistake/assembled incorrectly.
- No original **KTR** components (purchased parts) are used.
- Maintenance intervals are not observed.

6 Breakdowns, causes and elimination

Breakdowns	Causes	Elimination
Different operating noise and/or vibrations occuring	Misalignment	1) Set the unit out of operation 2) Eliminate the reason for the misalignment (e. g. loose foundation bolts, breaking of the engine mount, heat expansion of unit components, modification of the installation dimension E of the coupling)
	Screws working loose	1) Set the unit out of operation 2) Inspect coupling components and replace coupling components that are damaged 3) Tighten the fit bolts to the tightening torque specified. 4) Inspect alignment, adjust if necessary
	Screws/fastening screw for axial fastening of flange hubs working loose	1) Set the unit out of operation 2) Inspect alignment of coupling 3) Tighten the screws to fasten the flange hubs and secure against working loose
	Faulty storage	1) Set the unit out of operation 2) Send the coupling to KTR for inspection/repair.
The coupling releases in an undefined position. The coupling does not release in case of overload.	Torque is not set Torque set incorrectly Setting nut has worked loose	1) Set the unit out of operation 2) Adjust torque, see chapter 4.8 or 4.9
	Wear	1) Set the unit out of operation 2) Send the coupling to KTR for inspection/repair.
The torque of KTR SI with ROTEX® is no longer transmitted	ROTEX® driving flange has worked loose	1) Set the unit out of operation 2) Tighten the fastening screws
ROTEX®	Please consider our operating/assembly instructions KTR-N 40210 additionally when using the ROTEX® coupling. See chapter 6 *Breakdowns, causes and elimination*	

7 Disposal

In respect of environmental protection we would ask you to dispose of the packaging or products on termination of their service life in accordance with the legal regulations and standards that apply, respectively.

- **Metal**
  Any metal components have to be cleaned and disposed of by scrap metal.

8 Maintenance and service

KTR-SI is a low-maintenance coupling. It is finish bored and provided with grease filling. We recommend to perform a visual inspection on the coupling **at least once a year**. With normal drive conditions this grease filling is sufficient during the overall service life. In case of extreme drive conditions or heavy dirt, respectively, the KTR-SI has to be regularly inspected for its operation. If KTR-SI is ordered in a pilot bored design, the customer has to disassemble it in order to machine a finish bore.

With subsequent assembly please lubricate with standard bearing greases.

- Since the flexible machine bearings of the driving and driven side settle during the course of load, please inspect the alignment of the coupling and re-align the coupling, if necessary.
- The coupling components have to be inspected for damages.
- The screw connections have to be inspected visually.

Having started up the coupling the tightening torques of the screws have to be inspected during the usual inspection intervals.

9 Spares inventory, customer service addresses

A basic requirement to ensure the readiness for use of the coupling is a stock of the most important spare parts on site.

Contact addresses of the KTR partners for spare parts and orders can be obtained from the KTR homepage at www.ktr.com.

KTR does not assume any liability or warranty for the use of spare parts and accessories which are not provided by KTR and for the damages which may incur as a result.