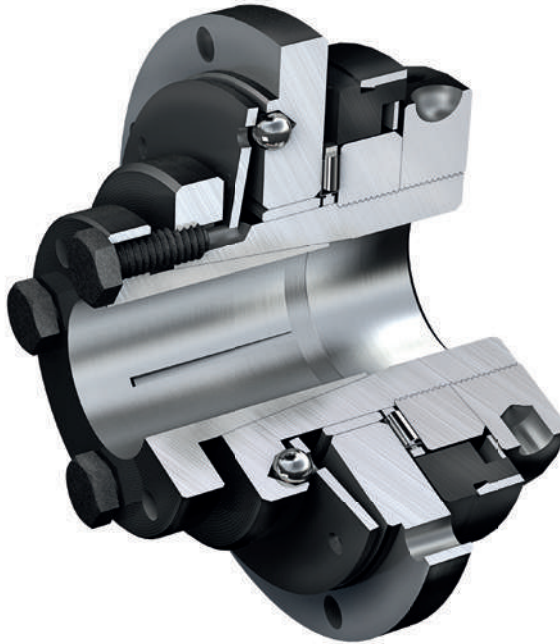
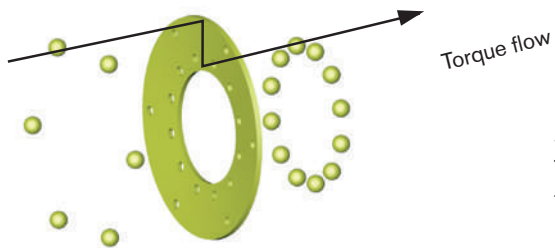


**Structure and operation**

- Backlash-free, torsionally rigid overload protection up to 400 Nm, suitable for reversing operation
- Disconnection of the drive in case of overload
- Reduction of torque peaks
- High response accuracy, even after a long operating period
- Easy integration of customer components
- Compact design, low mass moment of inertia
- Variable due to modular system
- Special disk springs available for special applications



- Low-cost protection even for simple drives
- Easy assembly and torque setting
- Maintenance-free
- Insensitive to oil and grease
- Long service life due to small internal loads
- Backlash-free shaft-hub-connections
- Any or synchronous re-engagement
- Automatically operative



SYNTEX® is an overload system with positive locking operation. The punched disk spring is a component serving for transmitting the torque.

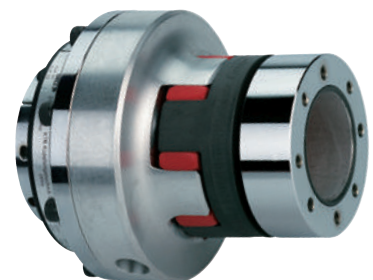
**SYNTEX®**  
Overload system with mounting flange



**SYNTEX®**  
Overload system with sprocket

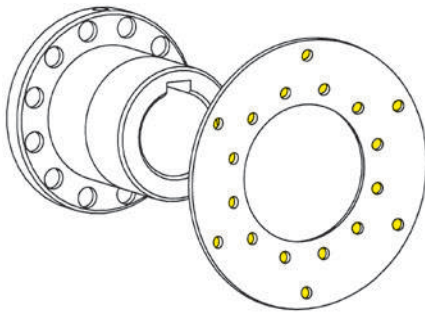


**SYNTEX®**  
Overload system with ROTEX® GS

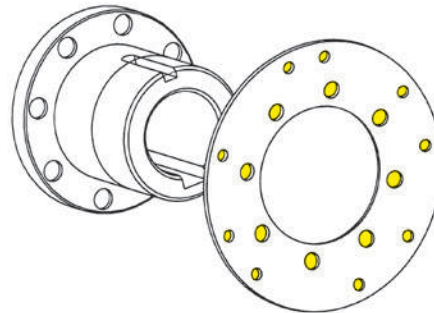


**Operating principles**

Ratchet design DK



Synchronous design SK



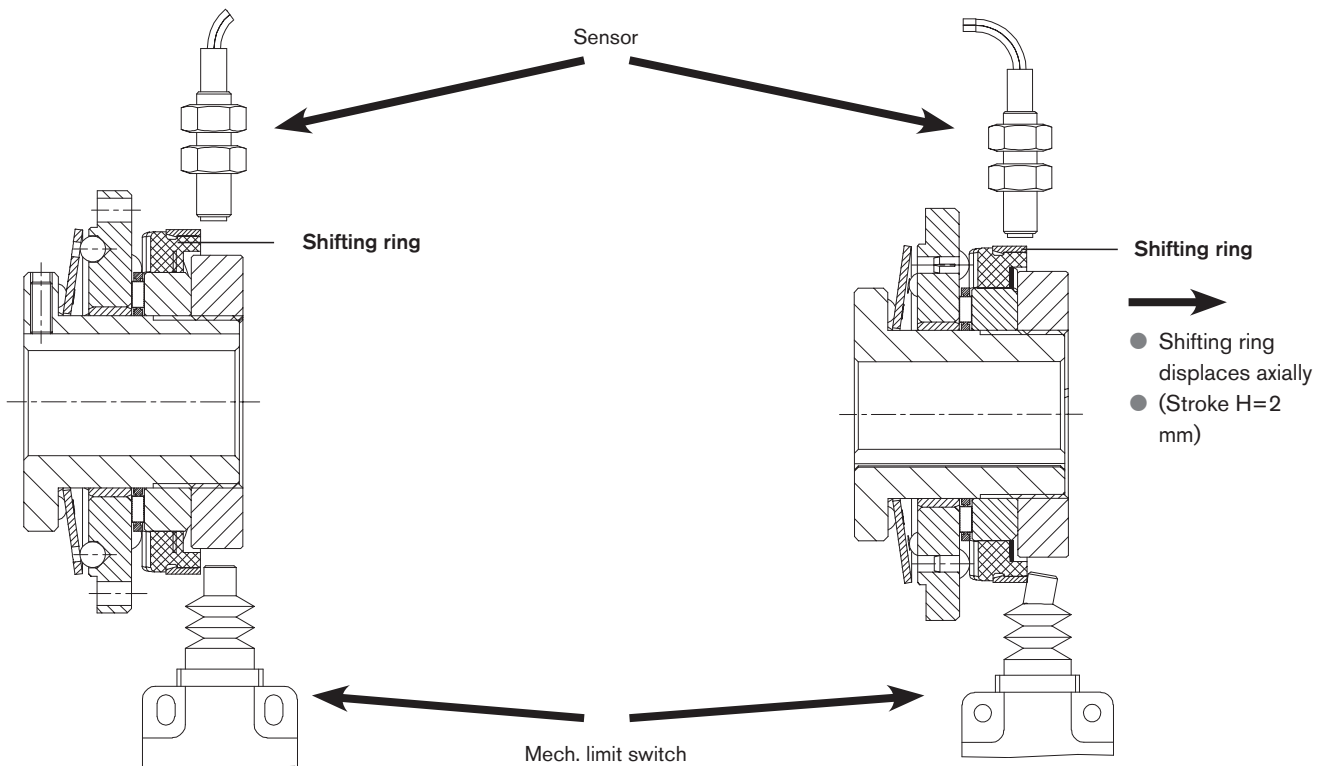
If the torque set is exceeded, a relative movement is generated between the driving and driven side. The transmittable torque is reduced to a minimum.

The balls leave the indentations of the disk springs. After eliminating the overload, the balls engage automatically with the next following ball indentation of the disk springs.

If the torque set is exceeded, a relative movement is generated between the driving and driven side. The transmittable torque is reduced to a minimum.

The balls leave the indentations of the disk springs. After eliminating the overload, the balls re-engage automatically with the disk springs after a rotation of 360° subject to their special pitch. 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).

Signal by limit switch or sensor in case of overload



**Normal operation:**

No signal by sensor or mechanical limit switch.

**In case of overload:**

The axial motion of the shifting ring activates the sensor or mechanical limit switch, respectively. The resulting signal can be used for control operation (e. g. motor stop).

**Flange type**



For legend of pictogram please refer to flapper on the cover



**Technical data – dimensions**

Size	Torques [Nm]				Max. speed <sup>1)</sup> [rpm]	Dimensions [mm]															
	Ratchet design DK		Synchronous design SK			Max. bore	D	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>A</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	l <sub>5</sub>	d <sub>1</sub>	L	z	H=stroke
	DK <sub>1</sub>	DK <sub>2</sub>	SK <sub>1</sub>	SK <sub>2</sub>																	
20	6-20	15-30	10-20	20-65	1500	20	48	54	61.5	65	71	80	8	2	16	6	35	4.5	45	8	2
25	20-60	45-90	25-65	40-100	1500	25	60	68	80	81	89	98	8	2	17	8	39	5.5	50	8	2
35	25-80	75-150	30-100	70-180	1000	35	75	78	91	102	110	120	10	2	21	10	42	5.5	60	12	2
50	60-180	175-300	80-280	160-400	1000	50	105	108	121	142	152	162	12	2	25	13	56	6.6	70	12	2

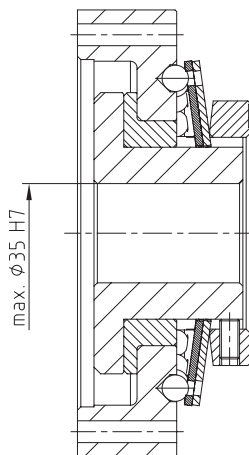
**Dimensions – Hub design 4.5**

Size	Dimensions [mm]							Clamping screws	Tightening torque T <sub>A</sub> [Nm]
	d <sub>1</sub> max.	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	L <sub>1</sub>	s			
20	20	9	3.5	23	54	3	4 x M5	8.5	
25	25	11	4.0	28	61	4	4 x M6	14	
35	35	10	4.0	31	70	4	4 x M6	14	
50	50	12	4.0	37	82	6	4 x M6	14	

**Transmittable friction torques T<sub>R</sub> [Nm] (fitting tolerance H7/h6) of hub design 4.5**

Size	Ø12	Ø14	Ø15	Ø16	Ø17	Ø18	Ø19	Ø20	Ø22	Ø23	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50
20	45	62	71	81	92	103	115	127														
25		72	83	95	107	120	133	148	179	196	213	231										
35									127	139	152	165	207	237	270	323						
50																238	281	311	343	394	448	486

<sup>1)</sup> See comments on page 245



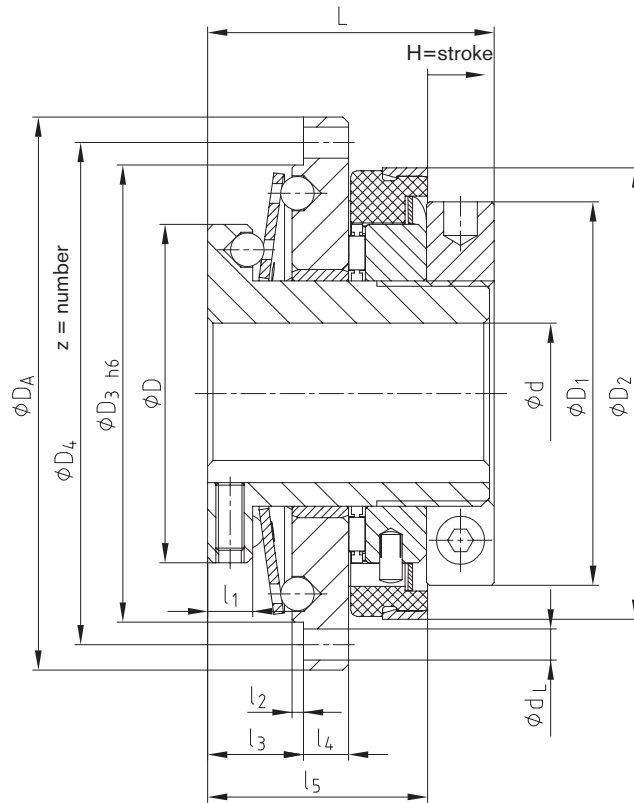
**Special type:**

- SYNTEX 35 spec. with integrated flange
- Performance range up to 360 Nm
- Adjustment of flange to ambient components possible

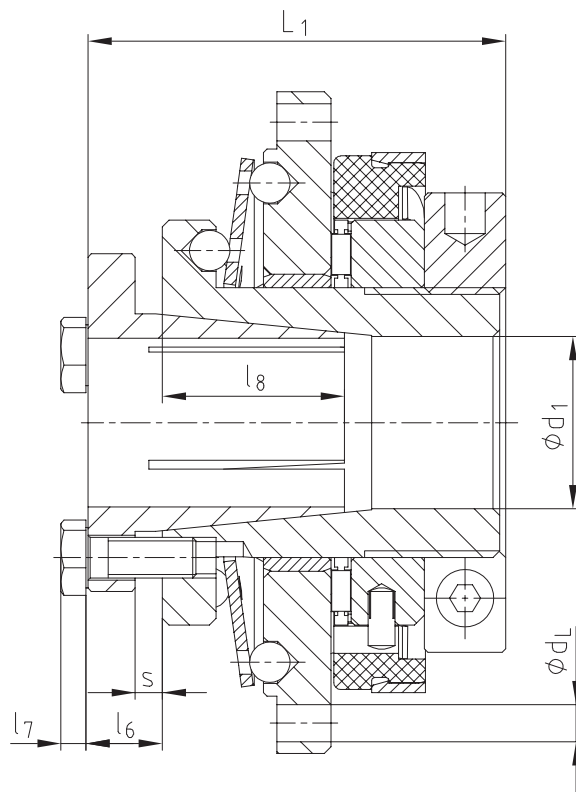
**Ordering example:**

SYNTEX® 25	d Ø20	DK1	1.0	45 Nm
Type/size	Bore	Type (DK/SK)	Hub design	Torque set

Hub design 1.0



Hub design 4.5



KTR-SI

SYNTEX®

SYNTEX®-NC

KTR-SI Compact

Torque limiters

**With sprocket**



For legend of pictogram please refer to flapper on the cover



**Technical data – dimensions**

Size	Torque [Nm]				Max. speed <sup>2)</sup> [rpm]	Dimensions [mm]														
	Ratchet design DK		Synchronous design SK			Max. bore d	Standard sprocket <sup>1)</sup>						D	D <sub>1</sub>	D <sub>2</sub>	l <sub>1</sub>	l <sub>3</sub>	l <sub>5</sub>	L	H=stroke
	DK1	DK2	SK1	SK2																
20	6-20	15-30	10-20	20-65	1500	20	06 B-1 ( <sup>9</sup> / <sub>8</sub> x <sup>7</sup> / <sub>32</sub> ) z = 25						48	54	61.5	8	14	33	45	2
25	20-60	45-90	25-65	40-100	1500	25	08 B-1 ( <sup>1</sup> / <sub>2</sub> x <sup>5</sup> / <sub>16</sub> ) z = 24						60	68	80	8	15	37	50	2
35	25-80	75-150	30-100	70-180	1000	35	08 B-1 ( <sup>1</sup> / <sub>2</sub> x <sup>5</sup> / <sub>16</sub> ) z = 29						75	78	91	10	19	41	60	2
50	60-180	175-300	80-280	160-400	1000	50	12 B-1 ( <sup>3</sup> / <sub>4</sub> x <sup>7</sup> / <sub>16</sub> ) z = 27						105	108	121	12	23	52	70	2

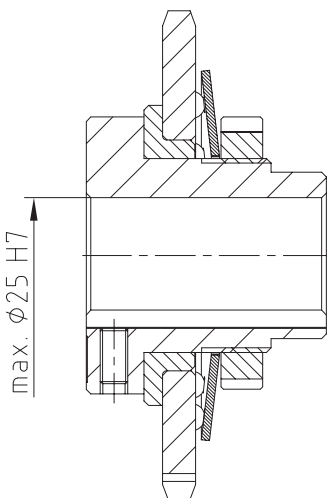
**Dimensions – Hub design 4.5**

Size	Dimensions [mm]							Tightening torque T <sub>A</sub> [Nm]
	d <sub>1</sub> max.	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	L <sub>1</sub>	s	Clamping screws	
20	20	9	3.5	23	54	3	4 x M5	8.5
25	25	11	4.0	28	61	4	4 x M6	14
35	35	10	4.0	31	70	4	4 x M6	14
50	50	12	4.0	37	82	6	4 x M6	14

**Transmittable friction torques T<sub>R</sub> [Nm] (fitting tolerance H7/h6) of hub design 4.5**

Size	Ø12	Ø14	Ø15	Ø16	Ø17	Ø18	Ø19	Ø20	Ø22	Ø23	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50
20	45	62	71	81	92	103	115	127														
25		72	83	95	107	120	133	148	179	196	213	231										
35									127	139	152	165	207	237	270	323						
50																238	281	311	343	394	448	486

<sup>1)</sup> z = min. number of teeth required / Other sprockets available on request  
<sup>2)</sup> See comments on page 245

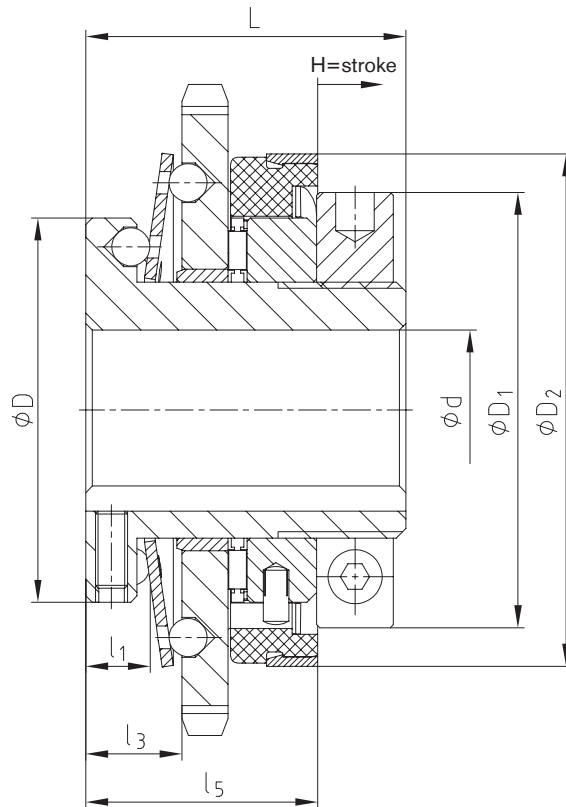


**Special type:**

- Standard SYNTEX® with integrated belt drive or sprocket
- Available ready for assembly with the torque set
- Reduction of components by integration of components
- Available both as a ratchet and synchronous design
- Torque setting possible while in place
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885, sheet 1 [JS9]
- Also available with a frictionally engaged shaft-hub-connection (hub design 4.5)

<b>Ordering example:</b>	SYNTEX® 25	DK1	1.0	d Ø20	08 B-1 ( <sup>1</sup> / <sub>2</sub> x <sup>5</sup> / <sub>16</sub> ), z = 29	45 Nm
	Type/size	Type (DK/SK)	Hub design	Bore	Sprocket	Torque set

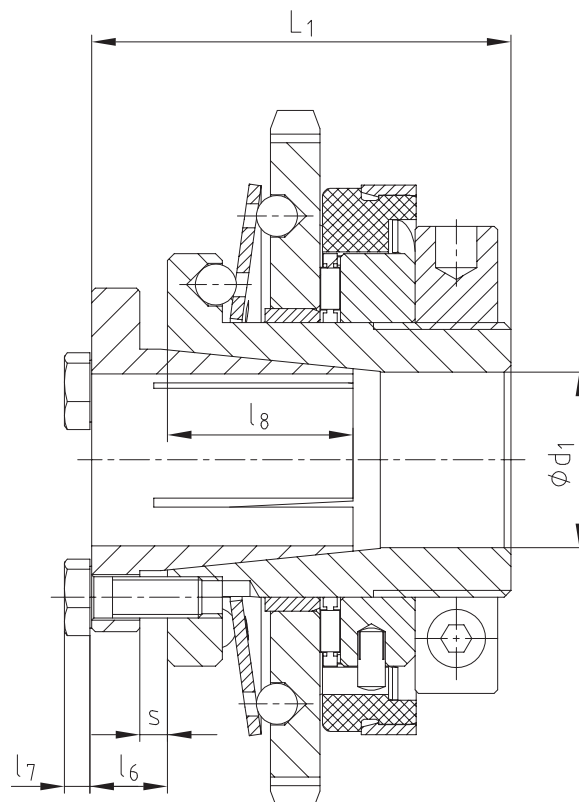
Hub design 1.0



KTR-SI

SYNTEX®

Hub design 4.5



SYNTEX®-NC

Torque limiters

KTR-SI Compact

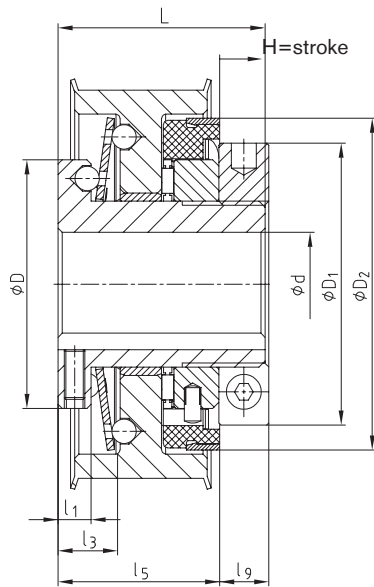
**With toothed belt pulley**



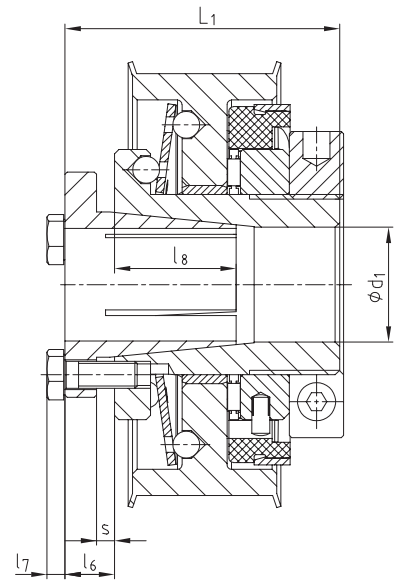
For legend of pictogram please refer to flapper on the cover



Hub design 1.0



Hub design 4.5



**Technical data – dimensions**

Size	Torques [Nm]				Max. speed <sup>2)</sup> [rpm]	Dimensions [mm]										
	Ratchet design DK		Synchronous design SK			Max. bore	Toothed belt pulley		D	D <sub>1</sub>	D <sub>2</sub>	l <sub>1</sub>	l <sub>3</sub>	l <sub>5</sub>	L	H=stroke
	DK1	DK2	SK1	SK2			d	T10 <sup>1)</sup>								
20	6-20	15-30	10-20	20-65	1500	20	T10, z = 24	AT10, z = 24	48	54	61.5	8	14	35	45	2
25	20-60	45-90	25-65	40-100	1500	25	T10, z = 30	AT10, z = 30	60	68	80	8	15	39	50	2
35	25-80	75-150	30-100	70-180	1000	35	T10, z = 36	AT10, z = 36	75	78	91	10	19	42	60	2
50	60-180	175-300	80-280	160-400	1000	50	T10, z = 48 <sup>3)</sup>	AT10, z = 48 <sup>3)</sup>	105	108	121	12	23	56	70	2

**Dimensions – Hub design 4.5**

Size	Max. bore	Dimensions [mm]						s	Clamping screws	Tightening torque T <sub>A</sub> [Nm]
		d <sub>1</sub>	l <sub>6</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>9</sub>	L <sub>1</sub>			
20	20	9	3.5	23	10	54	3	4 x M5	8.5	
25	25	11	4.0	28	11	61	4	4 x M6	14	
35	35	10	4.0	31	13	70	4	4 x M6	14	
50	50	12	4.0	37	14	82	6	4 x M6	14	

**Transmittable friction torques T<sub>R</sub> [Nm] (fitting tolerance H7/h6) of hub design 4.5**

Size	Ø12	Ø14	Ø15	Ø16	Ø17	Ø18	Ø19	Ø20	Ø22	Ø23	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50
20	45	62	71	81	92	103	115	127														
25		72	83	95	107	120	133	148	179	196	213	231										
35									127	139	152	165	207	237	270	323						
50																238	281	311	343	394	448	486

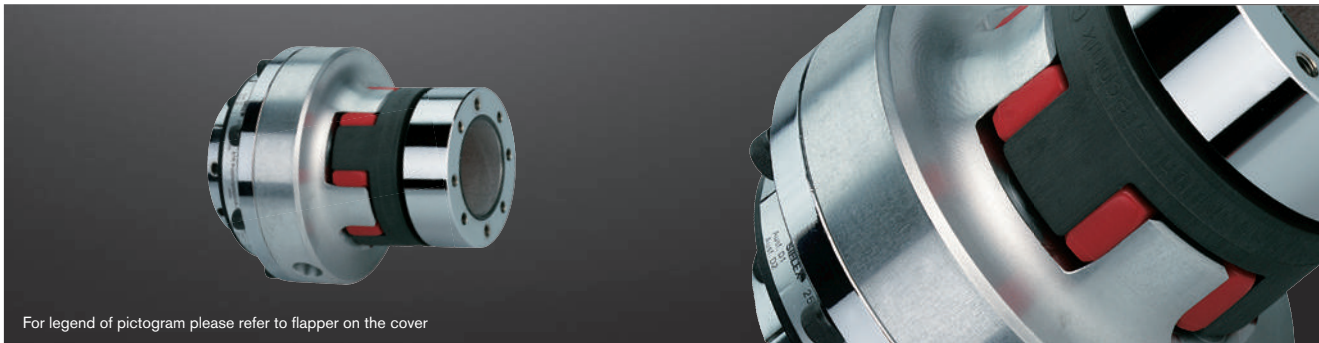
<sup>1)</sup> z = min. number of teeth required / Other sizes available on request

<sup>2)</sup> See comments on page 245

<sup>3)</sup> Without flanged wheel

<b>Ordering example:</b>	SYNTEX® 25	DK1	1.0	d Ø20	AT10, z = 24	32	45 Nm
	Type/size	Type (DK/SK)	Hub design	Bore	Toothed belt pulley	Width of toothed belt pulley	Torque set

**With backlash-free ROTEX® GS**



For legend of pictogram please refer to flapper on the cover

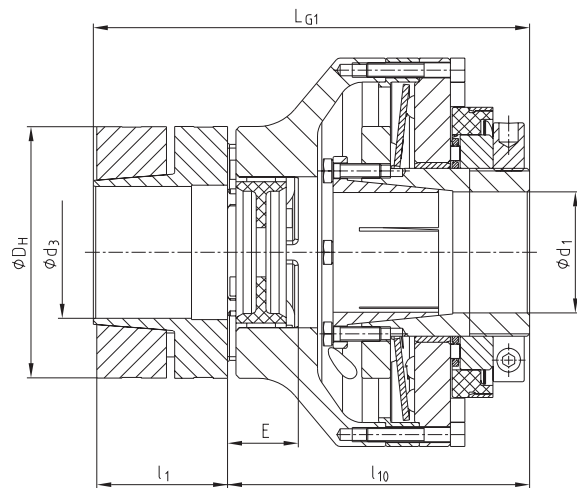
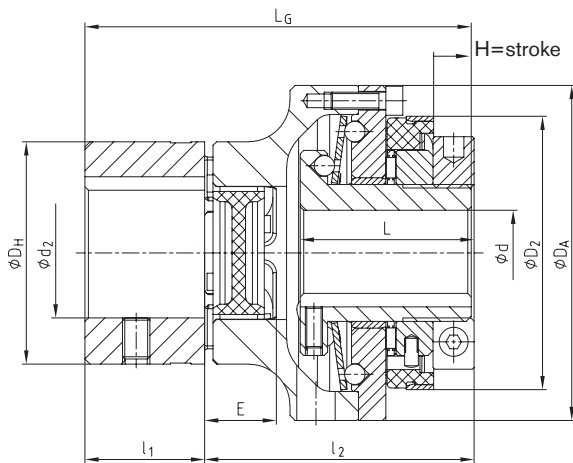


Hub design 1.0

Hub design 1.0

Hub design 6.0

Hub design 4.5



**Technical data – dimensions**

SYNTEX® size	ROTEX® GS size	Torques [Nm]							Max. speed <sup>2)</sup> [rpm]	Dimensions [mm]													
		Ratchet design DK		Synchronous design SK		ROTEX® GS <sup>1)</sup> 98 ShA-GS		Max. bore															
		DK1	DK2	SK1	SK2	T <sub>KN</sub>	T <sub>K max</sub>	d		d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	D <sub>2</sub>	D <sub>H</sub>	D <sub>A</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>10</sub>	E	L	L <sub>G</sub>	L <sub>G1</sub>	H=stroke
20	24	6-20	15-30	10-20	20-65	60	120	1500	20	20	28	28 <sup>3)</sup>	61.5	55	80	30	70	83	18	45	100	113	2
25	28	20-60	45-90	25-65	40-100	160	320	1500	25	25	38	38 <sup>3)</sup>	80	65	98	35	78	91	20	50	113	126	2
35	38	25-80	75-150	30-100	70-180	325	650	1000	35	35	45	48 <sup>3)</sup>	91	80	120	45	91	105.5	24	60	136	150.5	2
50	48	60-180	175-300	80-280	160-400	525	1050	1000	50	50	62	55 <sup>3)</sup>	121	105	162	56	111	126	28	70	167	182	2

**Transmittable friction torques T<sub>R</sub> [Nm] (fitting tolerance H7/h6) of hub design 4.5**

Size	Ø12	Ø14	Ø15	Ø16	Ø17	Ø18	Ø19	Ø20	Ø22	Ø23	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50
20	45	62	71	81	92	103	115	127														
25		72	83	95	107	120	133	148	179	196	213	231										
35									127	139	152	165	207	237	270	323						
50																238	281	311	343	394	448	486

<sup>1)</sup> See selection of ROTEX® GS couplings on page 22 et seqq.

<sup>2)</sup> See comments on page 245

<sup>3)</sup> For transmittable friction torques T<sub>R</sub> [Nm] of ROTEX® GS hub type 2.8 or 6.0 refer to mounting instructions of ROTEX® GS

<b>Ordering example:</b>	SYNTEX® 25	DK1	1.0	d Ø20	ROTEX® GS 28	98 ShA-GS	1.0	d <sub>2</sub> Ø25	50 Nm
	Type/size	Type	Hub design	Bore	Type/size	Spider	Hub design	ROTEX® GS bore	Torque set

RUFLEX®

KTR-SI

SYNTEX®

SYNTEX®-NC

Torque limiters

KTR-SI Compact



**Morskate®**



Any questions? Please contact us.

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