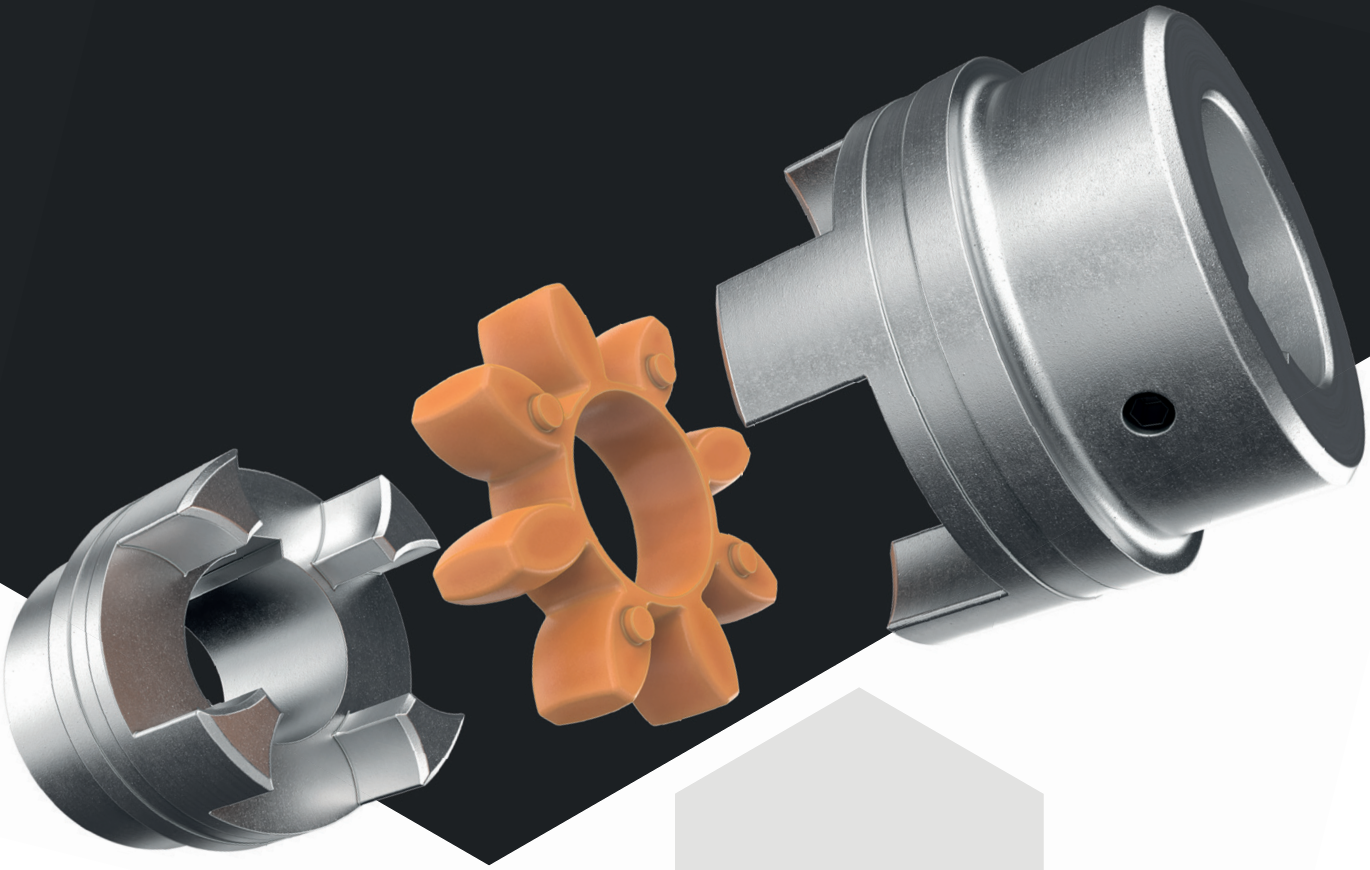
Made for Motion KTR



Drive Technology

Couplings
Torque limiters
Clamping elements
Torque measuring systems

2023/24
www.ktr.com

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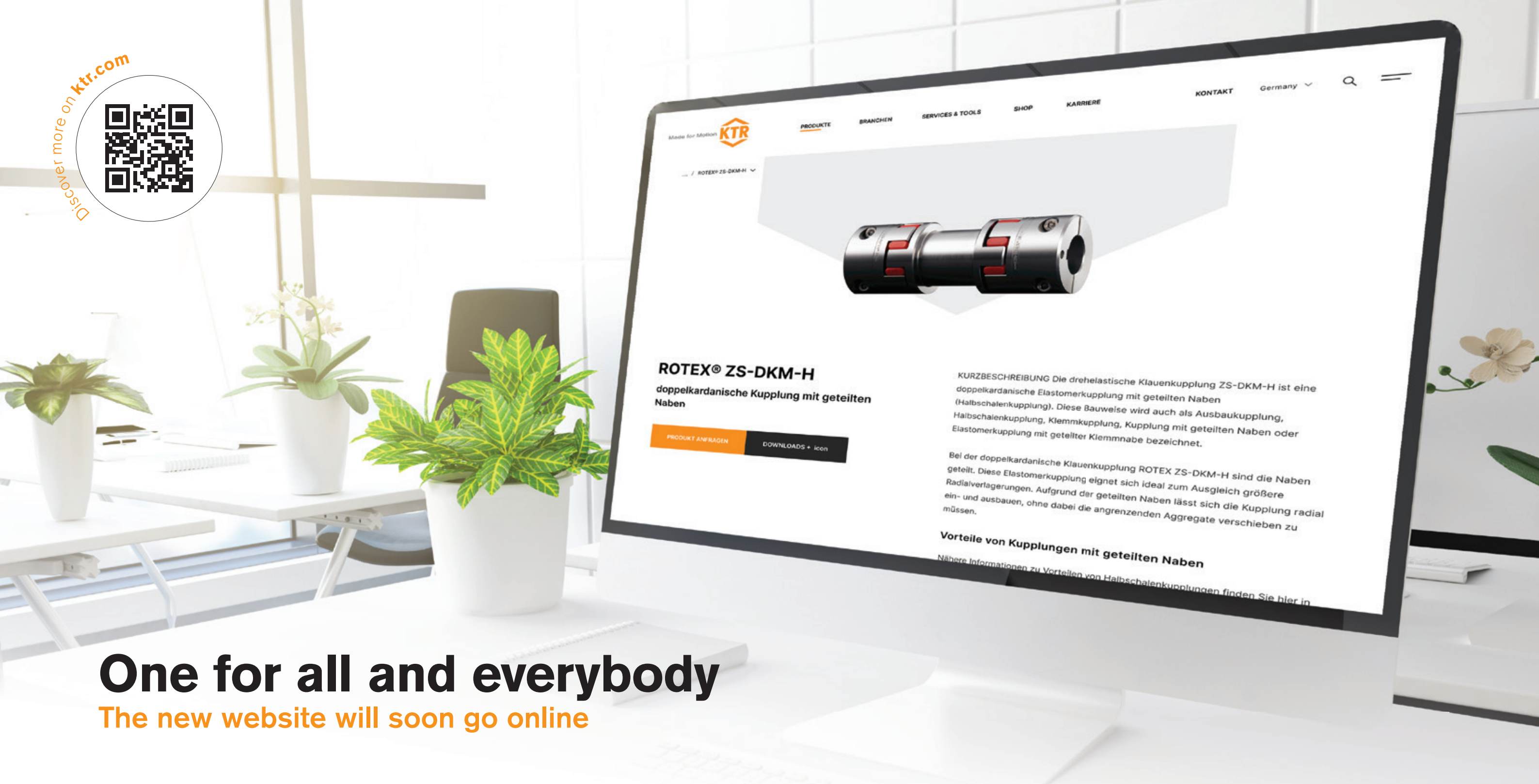


ROTEX® ZS-DKM-H

doppelkardanische Kupplung mit geteilten Naben

KURZBESCHREIBUNG Die drehelastische Klauenkupplung ZS-DKM-H ist eine doppelkardanische Elastomerkupplung mit geteilten Naben (Halbschalenkupplung). Diese Bauweise wird auch als Ausbaukupplung, Halbschalenkupplung, Klemmkupplung, Kupplung mit geteilten Naben oder Elastomerkupplung mit geteilter Klemmnabe bezeichnet.

Bei der doppelkardanische Klauenkupplung ROTEX ZS-DKM-H sind die Naben geteilt. Diese Elastomerkupplung eignet sich ideal zum Ausgleich größere Radialverlagerungen. Aufgrund der geteilten Naben lässt sich die Kupplung radial ein- und ausbauen, ohne dabei die angrenzenden Aggregate verschieben zu müssen.

Vorteile von Kupplungen mit geteilten Naben

Nähere Informationen zu Vorteilen von Halbschalenkupplungen finden Sie hier in

One for all and everybody

The new website will soon go online

There will be no alteration, no revision, nor merely a facelift: There will rather be a comprehensive relaunch of our website making our company, our products and our services digitally accessible in a more detailed and convenient way than ever before.

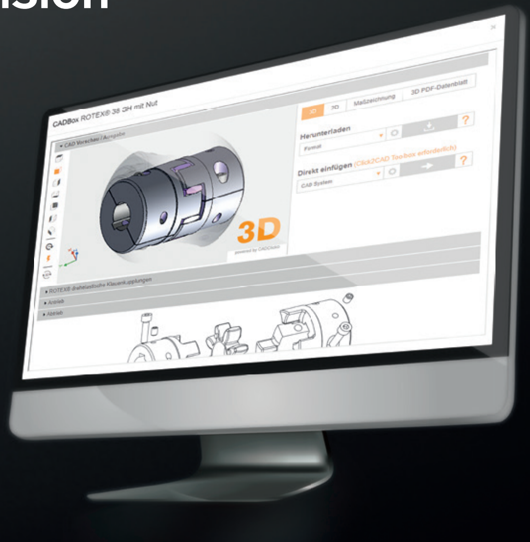
The conception stage of the relaunch project managed by Melanie Gunka and Julian Birich already started in September 2021. Initially numerous international specifications of requirements as well as in-house and external surveys were executed. The target was to provide only one digital platform for all in the future - accordingly for example integrate the platforms ktr360.com and ktr-events.com completely in the new website.

„The focus is definitely on improving the services and usability of the website for visitors", Melanie Gunka underlines. „All contents are concentrated in one place and the performance is significantly increased. The objective is to raise the user experience to a new level.“ For that purpose a new, comfortable and quick search function is integrated, as an example. The streamlined structure as well as links to products and services facilitate navigation and consequently locating the numerous offers of KTR. Besides, its responsive design makes the new website equally easy to access for all terminal devices. The login area is significantly facilitated as well: In the future customers only have to log in once to have access to all contents and applications, from miscellaneous downloads and services to 3D-CAD drawings.

After launching both the KTR configuration tools are to be natively embedded in the website and all national versions of the website are to be adapted in the course of 2023 - to make sure all customers are able to benefit from the advantages of our retreated website in the respective national language step by step worldwide.

Our 2D/3D publishers as an extension of our online tools

Having calculated the right product by means of the coupling configurator, you can be provided with the result as a 2D, 3D, dimensional drawing or as a 3D-PDF file as of now. What is special: Clicking the download the requested drawings and models are generated in real time in the background.



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Online tools

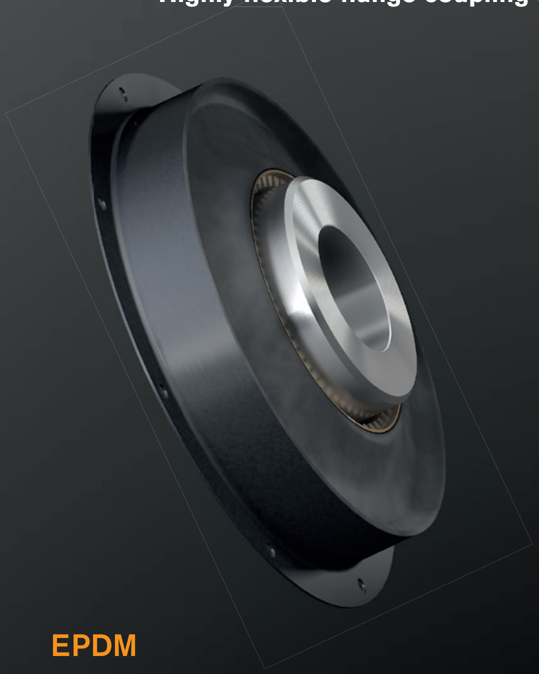
Tailor-made to your specifications - make use of our online tools

NEWS

Discover more on ktr.com

Materials synthetical rubber (EPDM) and silicone rubber (SI)

Highly flexible flange coupling SINULASTIC® A, B, T, V



EPDM

- Maximum ambient temperature +100 °C
- Long service life
- High weather and aging resistance
- Resuming high damping work

(see page 250)

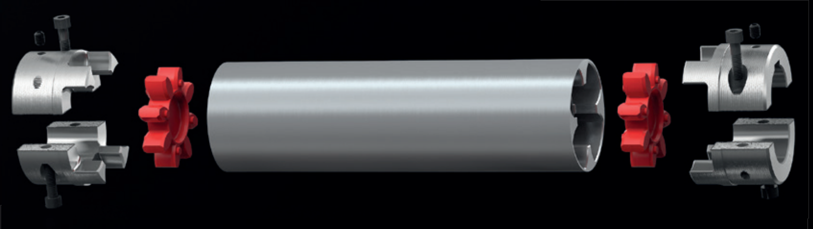
SI

- Maximum ambient temperature +130 °C
- Lighly progressive torsional stiffness with load
- Very good media resistance against oils and greases
- High weather and aging resistance

(see page 251)

Discover more on ktr.com

Torsionally flexible intermediate shaft coupling



ROTEX® ZRS

- Shaft distances up to 4,000 mm
- Spacer made of high-strength aluminium
- Torques up to 560 Nm
- Available in five sizes

(see page 50)

Those who value KTR as a manufacturer will love us as a partner.

KTR provides the mechanical and plant engineering with an extensive portfolio of high-quality drive and hydraulic components as well as braking and cooling systems. We are pleased to be at your service during the designing stage and develop tailor-made solutions for you. Perfectly organized logistics, global presence via 24 subsidiary companies and more than 90 distribution partners along with an international network consisting of 8 production sites are the prerequisite for quick delivery. When it comes to service we ensure short distances along with competent and personal support.

Made for Motion KTR

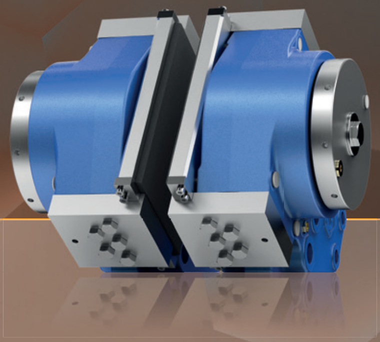
> „Innovation and tradition are the key components of our product portfolio and KTR's corporate culture.“

Nicola Warning, CEO of KTR

Wherever motion is essential, we have the right answer.

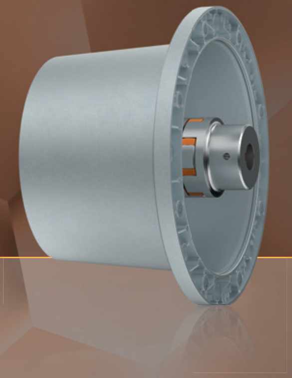
Drive Technology

Mechanical components are and will remain essential in drive technology. The industry's demands on components grow continuously: energy efficiency, power density, ease of servicing and electronification. Our portfolio includes couplings and torque limiters, clamping sets and universal joints as well as torque measuring shafts.



Brake systems

Our hydraulic and electromechanical brake systems are globally used in various industries. Customer preference and parameters of the application decide upon the selection of the right brake.



Hydraulic components

For almost 50 years we have provided the industry with a continuously growing range of hydraulic components from our in-house development and manufacturing: accurate selection, high-quality processing, quick availability.

Cooling systems

As a customised product or standard solution, multimedium or oil/air cooler, for mobile machines or stationary hydraulics, optionally available as a marine or ATEX version, powerful and efficient.

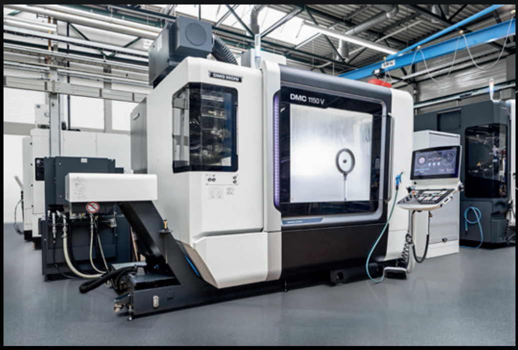
OUR INDUSTRIES


Wind power


Construction and agricultural machines

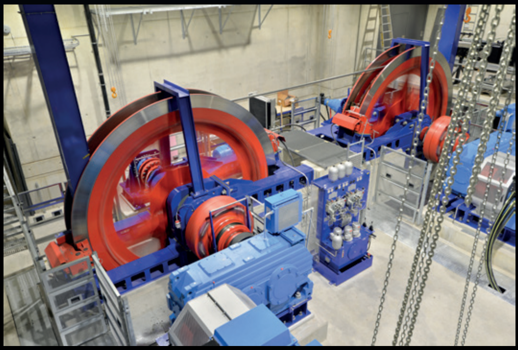

Pumps and compressors

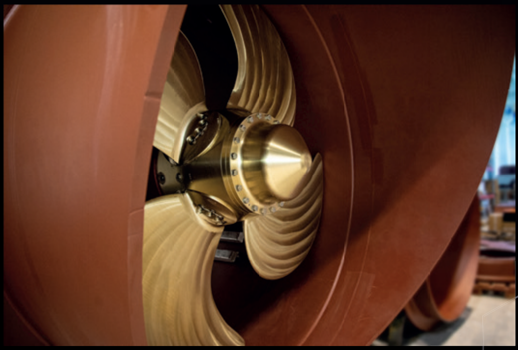

Indoor materials handling


Machine tools


©www.herrenknecht.com

Hydraulics


General drive technology


Marine / shipbuilding


Stationary power generation

SUMMARY OF PRODUCTS/INDUSTRIES

WIND POWER	Gearless wind turbines	Wind turbines	Local power grids	CONSTRUCTION AND AGRICULTURAL MACHINERY	Excavators	Road rollers	Crushers	Combine harvesters	Tank spreaders	PUMPS AND COMPRESSORS	Compressors	Pumps	Cooling towers	INDOOR MATERIALS HANDLING	Conveying and storage	Food processing machinery	Packaging machinery	
COUPLINGS																		
Flexible jaw and pin & bush couplings																		
ROTEX®		■			■	■	■	■	■		■	■	■		■	■	■	■
ROFLEX®											■	■	■					
POLY-NORM®											■	■	■					
POLY												■						
REVOLEX® KX-D							■					■						
Gear couplings																		
BoWex®						■						■				■	■	■
GEARex®												■			■	■	■	■
Backlash-free servo couplings																		
ROTEX® GS	■	■	■			■									■	■	■	■
ROTEX® GS P / HP																		
TOOLFLEX®		■													■	■	■	■
RADEX®-NC															■	■	■	■
COUNTEX®		■													■	■	■	■
Steel laminae couplings																		
RADEX®-N		■									■	■	■		■	■	■	■
RIGIFLEX®-N											■	■						
RIGIFLEX®-HP											■	■						
Highly flexible shaft couplings																		
EVOLASTIC®					■	■	■	■	■		■	■	■					
BoWex® HEW Compact											■	■						
Flange couplings for I. C.-engines																		
Pump mounting flange					■	■	■	■							■			
BoWex® FLE-PA / FLE-PAC					■	■	■	■							■			
MONOLASTIC®					■	■	■	■							■			
BoWex-ELASTIC®					■	■	■	■			■	■						
SINULASTIC®					■	■	■	■			■	■						
Magnetic couplings																		
MINEX®-S											■	■			■	■	■	■
TORQUE LIMITERS																		
RUFLEX®						■	■	■							■	■	■	■
KTR SI/KTR SI Compact							■				■	■			■	■	■	■
SYNTEX®/SYNTEX®-NC															■	■	■	■
CLAMPING SETS																		
CLAMPEX®		■			■	■	■	■	■		■	■	■		■	■	■	■
TORQUE MEASURING SHAFTS																		
DATAFLEX®		■	■		■						■	■					■	■

MACHINE TOOLS	Positioning axes	Main spindle drives	Robotic drives	HYDRAULICS	Power pack production	Plastics processing industry	GENERAL DRIVE TECHNOLOGY	Industrial gears	Planetary gears	Extruders	Metering machines	Steel mills	Linear technology	SHIPBUILDING / MARINE	Cargo ships	Cruises	Yachts	Workboats	GENSETS	Emergency power generators	Product pages from page
					■	■		■	■	■	■	■			■	■	■	■			38
					■			■	■	■	■	■									63
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	■		■						■		■										176
	■		■										■								182
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								■	■	■	■	■			■	■	■	■		■	292
	■		■					■	■		■		■			■	■				302
	■	■	■		■	■		■	■	■	■	■	■		■	■	■	■		■	324
			■							■											368

SUMMARY OF PRODUCTS / SPECIFICATIONS

	Max. torque [Nm]	Max. circumferential speed [m/s]	Max. bore diameter [mm]	Torsionally stiff	Flexible	Highly torsionally flexible	Backlash-free	Maintenance-free	Fail-safe	Shear type	Compact dimensions	Double-cardanic	Single-cardanic	Hig
COUPLINGS														
Flexible jaw and pin & bush couplings														
ROTEX®	35,000	60	200		■			■	■		■	■	■	■
ROFLEX®	5,000	35	120		■			■	■		■		■	
POLY-NORM®	67,000	35	280		■			■	■		■		■	
POLY	6,100	35	145		■			■		■			■	
REVOLEX® KX-D	1,350,000	60	650		■		■	■	■		■		■	■
Gear couplings														
BoWex®	2,500	30	125	■				■		■	■	■	■	
GEARex®	2,750,000	–	520	■					■		■	■		■
Backlash-free servo couplings														
ROTEX® GS	5,850	80	110		■		■	■	■		■	■	■	■
KTR-STOP® NC														
TOOLFLEX®	600	40	65	■			■	■		■	■	■		
RADEX®-NC	300	35	55	■			■	■			■	■	■	
COUNTEX®	1	40	14	■			■	■			■	■		
Steel laminae couplings														
RADEX®-N	280,000	65	330	■			■	■			■	■	■	
RIGIFLEX®-N	280,000	100	400	■			■	■			■	■		
RIGIFLEX®-HP	330,000	200	380	■			■	■			■	■		
Highly flexible shaft couplings														
EVOLASTIC®	5,600	60	140			■	■	■	■		■	■	■	■
BoWex® HEW Compact	8,400		125			■		■		■	■		■	
Flange couplings for I. C.-engines														
BoWex® FLE-PA / FLE-PAC	6,600	50	125	■				■		■	■		■	
MONOLASTIC®	1,850	50	60		■			■		■	■		■	
BoWex-ELASTIC®	70,000		275			■		■		■	■		■	
SINULASTIC®	25,000		240			■	■	■		■	■		■	
Magnetic couplings														
MINEX®-S	1,000		90		■			■						
TORQUE LIMITERS														
RUFLEX®	12,000		140								■			■
KTR-SI	8,200		100											
KTR-SI FRE	60,000		200											
KTR-SI FRA	2,600		80											
SYNTEX®	400		50				■				■			
SYNTEX®-NC	550		60				■				■			■
KTR-SI Compact	3,100		80				■							
CLAMPING SETS														
CLAMPEX®	7,394,000		1,000				■	■			■			■
TORQUE MEASURING SHAFTS														
DATAFLEX®	50,000	–	–	■			■	■						

For legend of certificate please refer to flapper on the cover

									MARINE						
Axial plug-in	All-steel	Contactless	Friction coupling	Ratchet coupling	Self-centering	Not self-centering	ATEX	GOST R/GOST TR	Bureau Veritas	American Bureau of Shipping	DNV/GL	ClassNK	Coupling selection acc. to DIN 740 part II (page 14 et seqq.)	Coupling selection based on operating factors (page 18 et seqq.)	Coupling selection acc. to DIN 740 part II with spec. factors (page 22 et seqq.)	Product pages from page
■							■	■	■	■	■	■	■			38
■							■	■					■			63
■							■	■					■			67
■							■	■					■			74
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■							■	■	■		■		■			94
	■						■		■	■	■	■		■		108
■							■								■	134
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							■								■	176
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	■			■												298
				■												302
				■												310
	■			■												313
					■	■		■			■					324
		■														368

INDEX OF SUBJECTS

Summary of Products

COUPLING SELECTION ACCORDING TO DIN 740 PART II

Coupling types

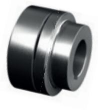
Flexible jaw couplings

ROTEX®

Flexible coupling **(see page 28)**

- Flexible
- Maintenance-free
- Fail-safe
- Compact dimensions
- Axial plug-in

ROFLEX®



Flexible coupling **(see page 62)**

- Flexible
- Maintenance-free
- Fail-safe
- Axial plug-in

POLY-NORM®

Flexible coupling **(see page 65)**

- Flexible
- Maintenance-free
- Fail-safe
- Compact dimensions
- Axial plug-in

POLY

Flexible, shear type coupling **(see page 73)**

- Flexible
- Maintenance-free
- Shear type
- Axial plug-in

Gear couplings

BoWex®

Torsionally stiff curved-tooth gear coupling® **(see page 88)**

- Torsionally stiff
- Maintenance-free
- Shear type
- Compact dimensions
- Single-cardanic or double-cardanic
- Axial plug-in

Highly flexible shaft couplings

EVOLASTIC®

Highly flexible coupling **(see page 206)**

- Highly flexible
- Maintenance-free
- Fail-safe
- Axial plug-in
- Backlash-free

BoWex® HEW Compact

Highly flexible shaft coupling **(see page 222)**

- Highly flexible
- Maintenance-free
- Shear type
- Compact dimensions
- Single-cardanic
- Axial plug-in

Flange couplings for I. C.-engines

BoWex-ELASTIC®

Highly flexible flange coupling **(see page 244)**

- Flexible to highly flexible
- Maintenance-free
- Shear type
- Compact dimensions
- Single-cardanic
- Axial plug-in

SINULASTIC®

Highly flexible flange coupling **(see page 252)**

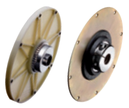
- Highly flexible
- Maintenance-free
- Shear type
- Damping vibrations
- Very compact dimensions
- Axial plug-in

MONOLASTIC®

One-piece, flexible flange coupling **(see page 240)**

- Flexible
- Maintenance-free
- Shear type
- Compact dimensions
- Single-cardanic
- Axial plug-in

BoWex® FLE-PA/-PAC



Torsionally stiff flange coupling **(see page 228)**

- Torsionally stiff
- Maintenance-free
- Shear type
- Compact dimensions
- Single-cardanic
- Axial plug-in

COUPLING SELECTION ACCORDING TO DIN 740 PART II

Terminology of coupling selection

Description	Symbol	Definition resp. explanation
Rated torque of coupling [Nm]	T_{KN}	Torque that can be continuously transmitted over the entire permissible speed range
Maximum torque of coupling [Nm]	$T_{K\ max}$	Torque that can be transmitted as dynamic load ≥ 10^5 times respectively $5 \cdot 10^4$ as vibratory load over the entire operating life of the coupling
Vibratory torque of coupling [Nm]	T_{KW}	Torque amplitude of the permissible periodical torque fluctuation with a frequency of 10 Hz and a basic load of T_{KN} respectively dynamic load up to T_{KN}.
Damping power of coupling [W]	P_{KW}	Permissible damping power with an ambient temperature of +30 °C
Rated torque of machine [Nm]	T_N	Stationary rated torque on the coupling
Rated torque of driving side [Nm]	T_{AN}	Rated torque of machine, calculated on the basis of rated power and rated speed
Rated torque of load side [Nm]	T_{LN}	Maximum figure of the load torque calculated on the basis of power and speed
Peak torque of machine [Nm]	T_S	Peak torque on the coupling
Peak torque of driving side [Nm]	T_{AS}	Peak torque with torque shock on driving side, e. g. tilting moment of the electric motor
Peak torque of load side [Nm]	T_{LS}	Peak torque with torque shock on load side, e. g. braking
Vibratory torque of machine [Nm]	T_W	Amplitude of the vibratory torque effective on the coupling

Description	Symbol	Definition resp. explanation
Damping power of machine [W]	P_W	Damping power which is effective on the coupling due to the load generated by the vibratory torque
Engine power [kW]	P	Rated power of drive
Speed [rpm]	n	Rated speed of engine
Rotational inertia coefficient of driving side	M_A	Factor considering the mass distribution with shocks and vibrations generated on the driving or load side
Rotational inertia coefficient of load side	M_L	
Mass moment of inertia of driving side [kgm²]	J_A	Total of moments of inertia existing on the driving or load side referring to the coupling speed
Mass moment of inertia of load side [kgm²]	J_L	
Mass moment of inertia of coupling [kgm²]	J_{KA}	Mass mom. of inertia of the coupl. half on drive side
	J_{KL}	Mass mom. of inertia of the coupl. half on load side
Starting factor	S_Z	Factor considering the additional load caused by the starting frequency per hour
Shock factor on driving side	S_A	Factor considering the shocks arising depending on the application (e. g. starting shocks)
Shock factor on load side	S_L	
Temperature factor	S_t	Factor considering the lower loading capacity resp. larger deformation of an elastomer part under load particularly in case of increased temperatures
Operating factor	S_B	Factor considering the different demands on the coupling dependent on the application
Screw tightening torque [Nm]	T_A	Tightening torque of screw

Temperature factor S_t

	-40 °C/+30 °C	≤ +40 °C	≤ +50 °C	≤ +60 °C	≤ +70 °C	≤ +80 °C	≤ +90 °C	≤ +100 °C	≤ +110 °C	≤ +120 °C
ROTEX®										
T-PUR®	1.00	1.00	1.20	1.30	1.45	1.60	1.80	2.10	2.50	3.00
PUR	1.00	1.00	1.30	1.40	1.55	1.80	2.20	–	–	–
PA	1.00	1.00	1.00	1.00	1.2	1.40	1.60	–	–	–
EVOLASTIC®										
NR	1.00	1.00	1.00	1.25	1.40	1.60	–	–	–	–
POLY-NORM®/ROFLEX®										
NBR 78 Shore A	1.00	1.20	1.30	1.40	1.60	1.80	–	–	–	–
POLY										
NBR (cuboid)	1.00	1.20	1.30	1.40	1.60	1.80	–	–	–	–
BoWex®										
PA 6.6	1.00	1.00	1.00	1.00	1.20	1.40	1.60	1.80	–	–
PA-CF	1.00	1.00	1.00	1.00	1.10	1.20	1.40	1.60	1.90	2.20
BoWex® HEW Compact	1.00	1.00	1.00	1.00	1.10	1.40	1.70	–	–	–
BoWex-ELASTIC®										
Standard	1.00	1.00	1.00	1.00	1.10	1.40	1.70	–	–	–
SINULASTIC®										
NR	1.00	1.00	1.00	1.25	1.40	1.60	–	–	–	–
EPDM	–	–	–	1.20	1.20	1.30	1.40	1.60	–	–
SI	–	–	–	1.30	1.30	1.30	1.30	1.30	1.40	1.60
MONOLASTIC®										
Standard	1.00	1.00	1.00	1.00	1.10	1.40	1.70	–	–	–
BoWex® FLE-PA/-PAC										
PA 6 GF	1.00	1.00	1.00	1.00	1.00	1.00	1.20	1.40	1.60	1.80
PA-CF	1.00	1.00	1.00	1.00	1.10	1.20	1.40	1.60	1.90	2.20

For the selection with PEEK spider a temperature factor is not necessary. For temperature factors for PA spiders see page 32.
With temperatures below -40 °C please consult with KTR.

Starting factor S_Z

ROTEX®, POLY-NORM®, POLY, BoWex®, BoWex® HEW Compact, EVOLASTIC®				
Starting frequency per hour	< 100	< 200	< 400	< 800
S_Z	1.0	1.2	1.4	1.6
BoWex-ELASTIC®, SINULASTIC®				
Starting frequency per hour	< 10	< 60	< 120	> 120
S_Z	1.0	1.5	2.0	On request

Shock factor S_A/S_L

ROTEX®, POLY-NORM®, POLY, BoWex®, BoWex® HEW Compact, BoWex-ELASTIC®, EVOLASTIC®, SINULASTIC®	S_A/S_L
Moderate shocks	1.5
Medium shocks	1.8
Heavy shocks	2.5

Operating factor S_B

Hydrostatic drives for BoWex® FLE-PA, MONOLASTIC®	
Applications	S_B
Wheel loaders	1.6
Compact loaders	1.6
Hydraulic excavators	1.4
Mobile cranes	1.6
Graders	1.5
Vibration rollers	1.4
Forklift trucks	1.6
Concrete mixer trucks	1.3
Concrete pumps	1.4
Asphalt finishers	1.4
Concrete cutters	1.4
Road milling machines	1.4

Permissible load on feather keyway of the coupling hubs

The shaft-hub-connection needs to be verified by the customer.

Permissible surface pressure according to DIN 6892 (method C)

Cast iron (GJL)	225 N/mm²	Sintered steel	180 N/mm²
Nodular iron (GJS)	225 N/mm²	Aluminium diecast (Al-D)	110 N/mm²
Steel	250 N/mm²	Aluminium wrought products (Al-H)	200 N/mm²
Polyamide	30 N/mm² (up to +40 °C)	For other steel materials $p_{perm.}$	$0.9 \bullet R_e$ ($R_{p0.2}$)

COUPLING SELECTION ACCORDING TO DIN 740 PART II

Coupling selection

The coupling selection is based on DIN 740 part 2. The coupling has to be dimensioned in that the permissible coupling load is not exceeded during any operating condition. For this purpose the actual loads have to be compared to the permissible parameters of the coupling. The torques specified $T_{KN}/T_{K\ max}$ refer to the couplings. The shaft-hub-connection needs to be verified by the customer.

1. Drives without periodical torsional vibrations

For example centrifugal pumps, fans, screw compressors, etc. The coupling selection is based on reviewing the rated torque T_{KN} and the maximum torque $T_{K\ max}$.

1.1 Loading generated by rated torque

Considering the ambient temperature the permissible rated torque T_{KN} of the coupling must at least equal the rated torque of the machine T_N.

$$T_N\ [Nm] = 9550 \bullet \frac{P\ [kW]}{n\ [rpm]}$$

$$T_{KN} \geq T_N \bullet S_t$$

1.2 Loading generated by torque shocks

The permissible maximum torque of the coupling $T_{K\ max}$ must at least equal the total of the peak torque T_S and rated torque of the machine T_N taking into account the shock frequency S_Z and the ambient temperature S_t. This applies in case if the rated torque of the machine T_N is superimposed by a shock process. Knowing the mass distribution, direction and kind of shock it is possible to calculate the peak torque T_S. For drives with A. C. motors and big masses on the load side we recommend to run a calculation of the peak starting torque by our simulation program.

$$T_{K\ max} \geq T_S \bullet S_Z \bullet S_t + T_N \bullet S_t$$

Shock on drive side

$$T_S = T_{AS} \bullet M_A \bullet S_A$$

Shock on load side

$$T_S = T_{LS} \bullet M_L \bullet S_L$$

$$M_A = \frac{J_L}{(J_A + J_L)}$$

$$M_L = \frac{J_A}{(J_A + J_L)}$$

2. Drives with periodical torsional vibrations

For drives subject to torsional vibrations, e. g. diesel engines, piston compressors, piston pumps, generators etc. it is necessary to perform a torsional vibration calculation for a selection ensuring a safe operation. If requested, we will perform the torsional vibration calculation and the coupling selection in our company. For the necessary details refer to KTR standard 20004.

2.1 Loading generated by rated torque

Considering the ambient temperature the permissible rated torque T_{KN} of the coupling must at least equal the rated torque of the machine T_N.

$$T_{KN} \geq T_N \bullet S_t$$

2.2 Passing through the resonance range

Considering the temperature the peak torque T_S arising when passing through the resonance range must not exceed the maximum torque $T_{K\ max}$ of the coupling.

$$T_{K\ max} \geq T_S \bullet S_t$$

2.3 Loading generated by vibratory torque shocks

Considering the ambient temperature the permissible vibratory torque T_{KW} of the coupling must not be exceeded by the biggest periodical vibratory torque T_W with operating speed. With higher operating frequencies f > 10 Hz the heat generated by damping in the elastomer is considered as damping power P_W. The permissible damping power P_{KW} of the coupling depends on the ambient temperature and must not be exceeded by the damping power generated.

$$T_{KW} \geq T_W \bullet S_t$$

$$P_{KW} \geq P_W$$

With torsionally stiff couplings the damping power can be ignored.

Coupling selection of BoWex® FLE-PA, MONOLASTIC® and EVOLASTIC®

1. Loading generated by rated torque

For drives with small mass moments of inertia on the load side (hydrostatic drives) the selection can be simplified using operating factors.

$$T_{KN} \geq T_N \bullet S_B \bullet S_t$$

Please note:

For drives subject to torsional vibrations, e. g. diesel engines, piston compressors, piston pumps, generators etc. it is necessary to perform a torsional vibration calculation for a selection ensuring a safe operation. This applies in particular with large mass moments of inertia on the load side. If requested, we will perform the torsional vibration calculation and the coupling selection in our company.

COUPLING SELECTION ACCORDING TO DIN 740 PART II

Example of calculation

Requested:	Axial plug-in coupling damping vibrations	→ ROTEX®
Applications:	Connection of IEC standard motor and screw compressor	

→ Coupling selection following page 16, item 1: Drives without periodical torsional vibrations

Given: Details of driving side

A. C. motor:	Size 315 L	→ S_A =1.8 (see page 15)
Motor power:	P = 160 kW	
Speed:	n = 1485 rpm	
Moment of inertia of driving side:	$J_{Motor} = 2.9\ kgm^2$	
Starting frequency:	6 times per hour	→ S_Z =1.0 (see page 15)
Ambient temperature:	+70 °C	→ S_t =1.45 using T-PUR® (see page 15)
Peak torque (starting torque) T_{AS}	$= 2 \bullet T_{AN}$	

Given: Details of load side

Screw compressor:	
Rated torque of load side:	$T_{LN} = 930\ Nm$
Moment of inertia of load side:	$J_{Compressor} = 6.8\ kgm^2$

Calculation

1.1 Loading generated by rated torque

- Rated torque of drive T_{AN}

$T_{AN} = 9550 \bullet \frac{P\,[kW]}{n\,[rpm]}$ → $9550 \bullet \frac{160\ kW}{1485\ rpm} = \underline{1029\ Nm}$

- Rated torque of load side T_{LN}

$T_{KN} \geq T_{LN} \bullet S_t$ → $930\ Nm \bullet 1.45 = 1348.5\ Nm$ → $T_{KN} \geq \underline{1348.5\ Nm}$

- Coupling selection

ROTEX® size 90 - spider 92 Shore A with:	Mass moments of inertia of page 59
$T_{KN} = 2400\ Nm$	$J_{KA} = 0.0673\ kgm^2$
$T_{K\,max} = 4800\ Nm$	$J_{KL} = 0.0673\ kgm^2$

1.2 Loading generated by torque shocks

- Shock on driving side without load torque being superimposed

$T_{K\,max} \geq T_S \bullet S_Z \bullet S_t + T_N \bullet S_t$ → $T_N = 0$

Shock on drive side $T_S = T_{AS} \bullet M_A \bullet S_A$

$M_A = \frac{J_L}{(J_A + J_L)}$ → $\frac{6.8673\ kgm^2}{2.9673\ kgm^2 + 6.8673\ kgm^2}$ → $M_A = \underline{0.7}$

$J_A = J_{Motor} + J_{KA}$ → 2.9 kgm² + 0.0673 kgm² → $J_A = \underline{2.9673\ kgm^2}$

$J_L = J_{Compressor} + J_{KL}$ → 6.8 kgm² + 0.0673 kgm² → $J_L = \underline{6.8673\ kgm^2}$

Starting torque $T_{AS} = 2 \bullet T_{AN}$ → 2 • 1029 Nm= $\underline{2058\ Nm}$

→ Shock on drive side T_S = 2058 • 0.7 • 1.8 = $\underline{2593.1\ Nm}$

→ $T_{K\,max} \geq 2593.1\ Nm \bullet 1 \bullet 1.45 = \underline{3760\ Nm}$

$T_{K\,max}$ with 4800 Nm ≥ 3760 Nm ✓

Result

The coupling is sufficiently dimensioned.

Please note:

The shaft-hub-connection has to be verified by the customer separately!

COUPLING SELECTION BASED ON OPERATING FACTORS

Coupling types

Laminae couplings

RADEX®-N

Steel laminae coupling **(see page 184)**

- Torsionally stiff
- Backlash-free
- Maintenance-free
- Compact dimensions
- Single-cardanic or double-cardanic
- All-steel

RIGIFLEX®-N

Steel laminae coupling **(see page 194)**

- Torsionally stiff
- Backlash-free
- Maintenance-free
- Double-cardanic
- All-steel
- Coupling in accordance with API 610, API 671 optionally

RIGIFLEX®-HP

High-performance steel laminae coupling **(see page 200)**

- Torsionally stiff
- Backlash-free
- Maintenance-free
- Double-cardanic
- All-steel
- Coupling design as per API 671

Pin & bush couplings

REVOLEX® KX-D

Flexible pin & bush coupling **(see page 77)**

- Flexible
- Maintenance-free
- Fail-safe
- Compact dimensions
- Axial plug-in

Gear couplings

GEARex®

All-steel gear coupling (see page 108)

- Torsionally stiff
- Fail-safe
- Compact dimensions
- Double-cardanic
- High power density
- All-steel

Terminology of coupling selection

Description	Symbol	Definition resp. explanation
Rated torque of coupling [Nm]	T_{KN}	Torque that can be continuously transmitted over the entire permissible speed range
Maximum torque of coupling [Nm]	$T_{K\ max}$	Torque that can be transmitted as dynamic load ≥ 10^5 times respectively $5 \cdot 10^4$ as vibratory load over the entire operating life of the coupling
Vibratory torque of coupling [Nm]	T_{KW}	Torque amplitude of the permissible periodical torque fluctuation with a frequency of 10 Hz and a basic load of T_{KN} respectively dynamic load up to T_{KN}.
Rated torque of machine [Nm]	T_N	Stationary rated torque on the coupling
Peak torque of machine [Nm]	T_S	Peak torque on the coupling

Description	Symbol	Definition resp. explanation
Engine power [kW]	P	Rated power of drive
Speed [rpm]	n	Rated speed of engine
Starting factor	S_Z	Factor considering the additional load caused by the starting frequency per hour
Direction factor	S_R	Considers the torsional direction
Temperature factor	S_t	Factor considering the lower loading capacity particularly in case of increased temperatures
Operating factor	S_B	Factor considering the different demands on the coupling dependent on the application

COUPLING SELECTION BASED ON OPERATING FACTORS

Factors

Temperature factor S_t

	-30 °C/ +30 °C	≤ +40 °C	≤ +60 °C	≤ +80 °C	≤ +150 °C	≤ +200 °C	≤ +230 °C	≤ +270 °C
REVOLEX® KX-D	1.0	1.2	1.4	1.8	–	–	–	–
GEARex®	1.0	1.0	1.0	1.0	–	–	–	–
RADEX®-N, RIGIFLEX®-N, RIGIFLEX®-HP	1.0	1.0	1.0	1.0	1.0	1.10	1.25	1.43

Starting factor S_Z

Starting frequency per hour	< 10	< 25	< 50
S_Z	1.0	1.2	1.4

Direction factor S_R

Same torsional direction	1.0
Alternating torsional direction	1.7

Operating factor S_B

Application	
Construction machines	
Manoeuvre hoists	1.50 - 2.00
Swing gears	1.50 - 2.00
Miscellaneous winches	1.50 - 2.00
Filters, cable winches	1.75 - 2.25
Multi-bucket excavators	1.75 - 2.25
Running gears (caterpillar)	1.75 - 2.25
Impellers	1.75 - 2.25
Cutter drives	2.00 - 2.50
Elevators	1.50 - 2.00
Conveyors	
Bucket elevators	1.50 - 2.00
Elevators	1.75 - 2.25
Hauling winches	1.50 - 2.00
Apron conveyors	1.25 - 1.75
Rubber belt conveyors (bulk)	1.25 - 1.75
Boom plate bucket conveyors	1.25 - 1.75
Rotary conveyors	1.50 - 1.75
Steel plate conveyors	1.50 - 1.75
Worm conveyors	1.25 - 1.50
Steel belt conveyors	1.75 - 2.00
Conveyors	1.75 - 2.00
Rubber belt conveyors (bulk)	1.75 - 2.00
Inclined lifts	1.75 - 2.00
Shaking slides	2.00 - 2.25
Generators	
Frequency converters	1.75 - 2.00
Generators	1.50 - 2.00
Rubber & nylon industry	
Rubber calanders and rolling mills	1.25 - 2.00
Mixers	1.25 - 2.00
Extruders	1.25 - 2.00
Lifters/cranes	
Bridge cranes for steel industry	2.00 - 2.25
Cranes (heavy load operation)	2.00 - 2.25
Running gears	1.75 - 2.25
Lifting gears	1.75 - 2.25
Woodworking machinery	
Planing machines	1.50 - 1.75
Barking machines	1.75 - 2.00
Saw frames	1.75 - 2.00
Compressors	
Centrifugal compressors	1.50 - 2.00
Rotary compressors	1.50 - 2.00
Turbo compressors	2.00 - 2.50
Piston compressors	2.50 - 3.00
Metal industry	
Wire pulls	1.25 - 1.50
Winders	1.25 - 1.50
Winding drums	1.50 - 2.00
Wire drawing machines	2.00 - 2.50
Plate shears	2.00 - 2.50
Block pushers	2.00 - 2.50
Blooming and slabbing	2.00 - 2.50
De-scalers	2.00 - 2.50
Hot-rolling mills	2.00 - 2.50
Cold-rolling mills	2.00 - 2.50
Billet shears	2.00 - 2.50
Plugging machines	2.00 - 2.50
Continuous casting machines	2.00 - 2.50
Shifting devices	2.00 - 2.50
Application	2.00 - 2.50
Roller tables (heavy-weight)	2.00 - 2.50

Application	
Mixers	
Constant density	1.75 - 2.25
Variable density	2.00 - 2.50
Grinders	
Centrifugal mills	1.75 - 2.00
Beater mills	1.75 - 2.00
Autogenous mills	1.75 - 2.00
Hammer and ball mills	2.00 - 2.50
Food industry	
Sugarcane harvesters	1.25 - 1.50
Sugar-beet harvesters	1.25 - 1.50
Sugar-beet washing	1.25 - 1.50
Kneading machines	1.75 - 2.00
Sugarcane breakers	1.75 - 2.00
Sugarcane mills	1.75 - 2.00
Oil industry	
Filter presses for paraffin	1.50 – 2.00
Rotary furnaces	1.75 – 2.00
Paper machines	
Couch rolls	1.75 - 2.25
Calanders	1.75 - 2.25
Wet presses	1.75 - 2.25
Pumps	
Radial pumps	1.25 - 1.75
Centrifugal pumps (light liquid)	1.50 - 2.00
Centrifugal pumps (viscous liquid)	2.25 - 2.50
Gear and vane pumps	1.50 - 1.75
Piston pumps, plunger pumps and press pumps	2.00 - 2.50
Agitators	
Light liquid	1.25 - 1.50
Viscous liquid	1.50 - 1.75
Liquid with constant density	1.25 - 1.50
Liquid with variable density	1.50 - 2.00
Textile industry	
Winders	1.25 - 1.75
Printing and dyeing machines	1.25 - 1.75
Shredders	1.50 - 2.00
Fans, ventilators and blowers	
Light-weight fans	1.25 - 1.75
Large fans	1.75 - 2.50
Centrifugal fans	1.25 - 1.50
Industrial fans	1.25 - 1.50
Rotary blowers	1.25 -1.75
Fans (axial/radial)	1.25 -1.75
Fans for cooling towers	1.50 - 2.00
Wastewater treatment plants	
Rakes	1.25 - 1.50
Worm pumps	1.25 - 1.50
Concentrators	1.25 - 1.50
Mixers	1.25 - 1.75
Aerators	1.75 - 2.00
Machine tools	
Scissors	1.50 - 2.00
Dressing rollers	1.50 - 2.00
Bending machines	1.50 - 2.00
Hole punching machines	1.75 - 2.50
Levelling machines	1.75 - 2.50
Hammers	1.75 - 2.50
Presses	1.75 - 2.50
Forging presses	1.75 - 2.50
Other	
Equipment for transport of persons	2.00 - 2.50
Rock crushers	2.50 - 3.00
Rolling mill drives	2.00 - 2.50

COUPLING SELECTION BASED ON OPERATING FACTORS

Coupling selection

The coupling selection is based on operating factors. The coupling has to be dimensioned in that the permissible coupling load is not exceeded during any operating condition. For this purpose the actual loads have to be compared to the permissible parameters of the coupling. The shaft-hub-connection needs to be verified by the customer.

1. Drives without periodical torsional vibrations

For example centrifugal pumps, fans, screw compressors, etc. The coupling selection is based on reviewing the rated torque T_{KN} and the maximum torque $T_{K\ max}$.

1.1 Loading generated by rated torque

$$T_N\ [Nm] = 9550 \bullet \frac{P\ [kW]}{n\ [rpm]}$$

$$T_{KN} \geq T_N \bullet S_B \bullet S_t \bullet S_R$$

Considering the operating factor, the ambient temperature and the torsional direction, the permissible rated torque T_{KN} of the coupling must at least equal the rated torque of the machine T_N.

1.2 Loading generated by torque shocks

$$T_{K\ max} \geq (T_N + T_S) \bullet S_Z \bullet S_t \bullet S_R$$

Taking into account all relevant factors, the permissible maximum torque of the coupling $T_{K\ max}$ must at least equal the total of the peak torque T_S and rated torque of the machine T_N. This applies if the rated torque of the machine T_N is superimposed by a shock process. For drives with A. C. motors and big masses on the load side we recommend to run a calculation of the peak starting torque by our simulation program.

2. Drives with periodical torsional vibrations

For drives subject to torsional vibrations, e. g. diesel engines, piston compressors, piston pumps, generators etc. it is necessary to perform a torsional vibration calculation for a selection ensuring a safe operation. If requested, we will perform the torsional vibration calculation and the coupling selection in our company. For the necessary details refer to KTR standard 20004.

COUPLING SELECTION BASED ON OPERATING FACTORS

Example of calculation

Requested: Double-cardanic steel laminae coupling for bridging a shaft distance dimension → RADEX®-N

Applications: Connection of IEC standard motor and radial pump

→ Coupling selection following page 20, item 1: Drives without periodical torsional vibrations

Given: Details of driving side

A. C. motor:	Size 315 L	
Motor power:	P = 200 kW	
Speed:	n = 1500 rpm	
Starting frequency:	6 times per hour	→ S_Z =1.0 (see page 19)
Ambient temperature:	+65 °C	→ S_t =1.0 (see page 19)
Peak torque (starting torque) T_{AS}	= 2 • T_{AN}	
Diameter of motor shaft:	80 mm	

Given: Details of load side

Radial pump		→ S_B =1.5 (see page 19)
Rated torque of load side:	T_{LN} = 930 Nm	
Diameter of pump shaft:	75 mm	
Distance dimension of motor shaft - pump shaft (DBSE)	= 250 mm	
Direction of torque:	same	→ S_R =1.0 (see page 19)

Calculation

1.1 Loading generated by rated torque

- Rated torque of drive T_{AN}

$T_{AN} = 9550 \bullet \frac{P\,[kW]}{n\,[rpm]}$ | → $9550 \bullet \frac{200\text{ kW}}{1500\text{ rpm}}$ = $\underline{1273\text{ Nm}}$

- Loading generated by rated torque

$T_{KN} \geq T_{AN} \bullet S_B \bullet S_t \bullet S_R$ | → 1273 Nm • 1.5 • 1 • 1= 1348.5 Nm → T_{KN} $\underline{\geq 1909.5\text{ Nm}}$

1.2 Loading generated by torque shocks

- Shock on driving side without load torque being superimposed

$T_{K\,max} \geq (T_N + T_S) \bullet S_Z \bullet S_t \bullet S_R$ | → $T_N = 0$

└→ Starting torque $T_{AS} = 2 \bullet T_{AN}$ | → 2 • 930 Nm = $\underline{1860\text{ Nm}}$

→ $T_{K\,max} \geq$ 1860 Nm • 1 • 1 • 1 = $\underline{1860\text{ Nm}}$

- Coupling selection

T_{KN} = 2400 Nm

$T_{K\,max}$ = 4800 Nm

Result

The coupling is sufficiently dimensioned.

Please note:

The shaft-hub-connection has to be verified by the customer separately!

COUPLING SELECTION ACCORDING TO DIN 740 PART II WITH SPECIFIC FACTORS

Coupling types

Backlash-free servo couplings

ROTEX® GS

Backlash-free, flexible jaw coupling **(see page 126)**

- Backlash-free and flexible
- Maintenance-free
- Fail-safe
- Compact dimensions, high power density
- Single-cardanic or double-cardanic
- Axial plug-in
- High speeds

TOOLFLEX®

Backlash-free, torsionally stiff metal bellow-type coupling **(see page 156)**

- Backlash-free and torsionally stiff
- Maintenance-free
- Shear type
- Compact dimensions
- Double-cardanic
- Axial plug-in (as an option)
- All-metal coupling

RADEX®-NC

Backlash-free, torsionally stiff servo laminae coupling **(see page 174)**

- Backlash-free and torsionally stiff
- Maintenance-free
- Compact dimensions
- Single-cardanic or double-cardanic
- All-metal coupling

COUNTEX®

Backlash-free, torsionally stiff shaft encoder coupling **(see page 182)**

- Backlash-free and torsionally stiff
- Maintenance-free
- Compact dimensions
- Double-cardanic
- Axial plug-in

ROTEX® GS HP

Backlash-free high-speed coupling **(see page 142)**

- Backlash-free and flexible
- Maintenance-free
- Compact dimensions
- Axial plug-in
- Severely high speeds

Terminology of coupling selection

Description	Symbol	Definition resp. explanation
Rated torque of coupling [Nm]	T_{KN}	Torque which can be continuously transmitted over the entire permissible speed range, taking into account the factors
Maximum torque of coupling [Nm]	$T_{K\ max}$	Torque which can be transmitted over the entire service life of the coupling as dynamic load ≥ 10^5 or vibratory load $5 \cdot 10^4$ taking into account the factors
Rated torque of machine [Nm]	T_N	Stationary rated torque on the coupling
Rated torque of driving side [Nm]	T_{AN}	Constantly occuring driving torque as per the data indicated by the motor manufacturer
Peak torque [Nm]	T_S	Peak torque on the coupling
Peak torque of driving side [Nm]	T_{AS}	Peak torque with torque shock on driving side, e. g. starting torque of the servo motor as per the data specified by the motor manufacturer
Peak torque of load side [Nm]	T_{LS}	Peak torque with torque shock on load side, e. g. braking
Screw tightening torque [Nm]	T_A	Tightening torque of screw
Friction torque [Nm]	T_R	Torque that can be transmitted through the frictionally engaged shaft-hub-connection

Description	Symbol	Definition resp. explanation
Rotational inertia coefficient of driving side	M_A	Factor considering the mass distribution with shocks and vibrations generated on the driving or load side
Rotational inertia coefficient of load side	M_L	
Mass moment of inertia of driving side [kgm²]	J_A	Total of moments of inertia existing on the driving or load side referring to the coupling speed
Mass moment of inertia of load side [kgm²]	J_L	
Mass moment of inertia of coupling [kgm²]	J_{KA}	Mass mom. of inertia of the coupl. half on drive side
	J_{KL}	Mass mom. of inertia of the coupl. half on load side
Mass moment of inertia [kgm²]	$J_{Mot}/J_{Sp}/J_{HS}$	Mass moment of inertia of the motor/mass moment of inertia of the spindle/mass moment of inertia of the main spindle
Temperature factor	S_t	Factor considering the lower loading capacity or larger deformation of an elastomer part under load particularly with increased temperatures
Operating factor	S_B	Factor considering the different demands on the coupling dependent on the application

COUPLING SELECTION ACCORDING TO DIN 740 PART II WITH SPECIFIC FACTORS

Factors

Temperature factor S_t

	-50 °C	-40 °C	-30 °C	-20 °C/ +30 °C	≤ +40 °C	≤ +50 °C	≤ +60 °C	≤ +70 °C	≤ +80 °C	≤ +90 °C	≤ +100 °C	≤ +110 °C	≤ +120 °C	≤ +200 °C
ROTEX® GS														
Polyurethane 80 ShA-GS	1.0	1.0	1.0	1.0	1.2	1.3	1.4	1.55	1.8	-	-	-	-	-
Polyurethane 92 ShA-GS	-	1.0	1.0	1.0	1.2	1.3	1.4	1.55	1.8	2.2	-	-	-	-
Polyurethane 98 ShA-GS	-	-	1.0	1.0	1.2	1.3	1.4	1.55	1.8	2.2	-	-	-	-
Polyurethane 57 ShD-GS	-	-	1.0	1.0	1.2	1.3	1.4	1.55	1.8	2.2	-	-	-	-
Polyurethane 64 ShD-GS	-	-	-	1.0	1.2	1.3	1.4	1.55	1.8	2.2	3.0	3.0	-	-
Polyurethane 72 ShD-GS	-	-	-	1.0	1.2	1.3	1.4	1.55	1.8	2.2	3.0	3.0	-	-
PUR 52 Sh-D-GS FiPUR	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.2	1.3	1.4	1.55	1.8	2.2	-
Hytrel 64 ShD-H-GS	1.0	1.0	1.0	1.0	1.2	1.3	1.4	1.5	1.6	1.8	2.0	2.3	2.8	-
Hytrel 72 ShD-H-GS	1.0	1.0	1.0	1.0	1.2	1.3	1.4	1.5	1.6	1.8	2.0	2.3	2.8	-
TOOLFLEX®														
Size 5 to 12	-	-	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	-	-	-
Size 16 to 65	-	-	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1
RADEX-NC®														
EK and DK	-	-	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1
ROTEX® GS HP														
Polyurethane 98 ShA-GS	-	-	1.0	1.0	1.2	1.3	1.4	1.55	1.8	2.2	-	-	-	-

Operating factor S_B

ROTEX® GS*		
Backlash-free drives		
Main spindle drive of machine tools		2.0 - 5.0
Moderate shocks	Grinders, small milling machines/drills	1.5 - 2.5
Medium shocks	Milling machines/drills with interrupted cut	2.0 - 3.0
Heavy shocks	Milling machines etc.	2.5 - 3.5
positioning drives		
Ball screw drive/toothed belt drive		2.5 - 4.0
Gearbox	i 3 - ≤ 5	8.0
	i > 5 - ≤ 7	5.0
	i > 7	3.0
Servo-hydraulic drives		
With pulsating load ¹⁾		1.2 - 1.3
With vibratory load ²⁾		1.3 - 1.5
TOOLFLEX®, RADEX®-NC		
Uniform motion		1.5
Irregular motion		2.0
Shock motion		2.5 - 4.0
For drives on machine tools (servo motors) values from 1.5 - 2.0 must be applied.		
ROTEX® GS HP		
Main spindle drive		2.0 - 3.0

Starting factor S_Z

Starting frequency per hour	
< 20	1.0
< 60	1.2
< 120	1.4
< 180	1.6
< 240	1.8
> 240	2.0

* When using the spider 64 ShD-GS or 72 ShD-GS a minimum factor of 4 or steel hubs have to be used.
[1] With pulsating load the use of aluminium is permissible.
[2] With vibratory load make use of steel hubs.

Shaft encoder drives: Subject to the low torques to be transmitted the coupling size for shaft encoder drives is selected according to the shaft diameters to be connected.

Coupling selection

The coupling selection of the backlash-free servo couplings is based on DIN 740 part 2, but with specific factors. The coupling has to be dimensioned in that the permissible coupling load is not exceeded during any operating condition. For this purpose the actual loads have to be compared to the permissible parameters of the coupling. The shaft-hub-connection needs to be verified by the customer.
The size of the coupling must be selected such that the following conditions are met.

1. Backlash-free drives

$T_{KN} \geq T_N \bullet S_t \bullet S_B$ *and* $T_{KN} \geq T_S \bullet S_t \bullet S_B$

In case of load torque: $T_{KN} \geq T_S \bullet S_t \bullet S_B + T_N \bullet S_t$

Considering the ambient temperature and the operating factor, the permissible rated torque T_{KN} of the coupling must at least equal the rated torque of the machine T_N.
Considering the ambient temperature and the operating factor, the permissible rated torque T_{KN} of the coupling must at least equal the peak torque arising.
The following applies for the peak torque T_S:

Shock on drive side
$T_S = T_{AS} \bullet M_A \bullet S_Z$ $\longrightarrow$ $M_A = \frac{J_L}{(J_A + J_L)}$

2. Servo-hydraulic drives

$T_{KN} \geq T_{AS} \bullet S_t \bullet S_B$

Considering the ambient temperature and the operating factor, the permissible rated torque T_{KN} of the coupling must at least equal the peak torque of the driving side T_{AS}.

$S_t \bullet S_B$ with use of aluminium at least 1.5.

Please note:
For general applications (not backlash-free applications) observe coupling selection according to DIN 740 part 2 (page 14 et seqq.).

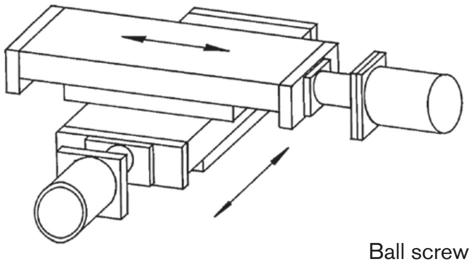
COUPLING SELECTION ACCORDING TO DIN 740 PART II WITH SPECIFIC FACTORS

Example of calculation for positioning drives

Requested:	Backlash-free coupling damping vibrations	→ ROTEX® GS
Applications:	Connecting servo motor and ball screw drive for backlash-free positioning	

→ Coupling selection following page 23, item 1: Backlash-free drives

Given: Details of driving side



Servo motor

Rated torque T_{AN}:	43 Nm	
Max. driving torque T_{AS}:	144 Nm	
Moment of inertia J_{Mot}:	0.0108 kgm²	
Diameter of motor shaft:	32 k6 without feather keyway	
Ambient temperature:	+40 °C	→ S_t = 1.2 (see page 23)
Starts per minute:	15	→ S_Z = 1.0 (see page 23)

Given: Details of machine on driven side

Ball spindle J_{SP}:	0.0038 kgm²
Spindle pitch s:	10 mm
Diameter of spindle shaft:	30 k6 without feather keyway
Mass of slide + workpiece m_{Sl}:	1030 kg

No load torque available

Required:	High torsional stiffness	→ S_B = 4 (see page 23)

Calculation

1. Backlash-free drives

- Loading by rated torque (pre-selection)

$T_{KN} \geq T_{AN} \bullet S_t \bullet S_B \rightarrow 43 \text{ Nm} \bullet 1.2 \bullet 4 \rightarrow T_{KN} \geq 206.4 \text{ Nm}$

- Coupling selection (pre-selection)

  ROTEX® GS 38

  Spider 98 Shore A with clamping ring hubs 6.0 light:

  T_{KN} = 325 Nm

  $T_{K\,max}$ = 650 Nm

Mass moments of inertia of page 138

J_{KA} = 0.000517 kgm²

J_{KL} = 0.000517 kgm²

- Load by maximum driving torque, not including load torque

$T_{KN} \geq T_S \bullet S_t \bullet S_B$

Shock on drive side

$T_S = T_{AS} \bullet M_A \bullet S_Z \rightarrow = 144 \text{ Nm} \bullet 0.379 \bullet 1.0 \rightarrow T_S = \underline{54.58 \text{ Nm}}$

$M_A = \frac{J_L}{(J_A + J_L)} \rightarrow = \frac{0.006917 \text{ kgm}^2}{(0.011317 \text{ kgm}^2 + 0.006917 \text{ kgm}^2)} \rightarrow M_A = \underline{0.379}$

$J_L = J_{Sp} + J_{Sl} + J_{KL} \rightarrow 0.0038 \text{ kgm}^2 + 0.0026 \text{ kgm}^2 + 0.000517 \text{ kgm}^2 \rightarrow J_L = \underline{0.006917 \text{ kgm}^2}$

$J_{Sl} = m_{Sl} \bullet \left(\frac{s}{2 \bullet \pi}^2\right) \rightarrow 1030 \text{ kg} \bullet \left(\frac{0.01}{2 \bullet \pi}\right)^2 \rightarrow J_{Sl} = \underline{0.0026 \text{ kgm}^2}$

$J_A = J_{Mot} + J_{KA} \rightarrow 0.0108 \text{ kgm}^2 + 0.000517 \text{ kgm}^2 \rightarrow J_A = \underline{0.011317 \text{ kgm}^2}$

$\rightarrow T_{KN} \geq 54.58 \text{ Nm} \bullet 1.2 \bullet 4 \rightarrow T_{KN} \geq \underline{261.9 \text{ Nm}}$

T_{KN} with 325 Nm ≥ 261.9 Nm

- Review of shaft-hub-connection: Friction torque for clamping ring hubs type 6.0 light

The coupling has to be dimensioned in that the permissible friction torque is not exceeded during any operating condition.

$T_R \geq T_{AS}$ values T_R see page 136

Friction torque of ROTEX® GS 38 clamping ring hub 6.0 light Ø30 H7/k6 T_R = 656 Nm > 144 Nm

Result

The coupling is sufficiently dimensioned.

COUPLING SELECTION ACCORDING TO DIN 740 PART II WITH SPECIFIC FACTORS

Example of calculation for main spindle drives

Requested:	Backlash-free, axial plug-in coupling for high speeds	→ ROTEX® GS
Applications:	Connecting servo motor and main spindle in grinding machine	

→ Coupling selection following page 23, item 1: Backlash-free drives

Given: Details of driving side

Servo motor		
Max. continuous torque with machining T_{AN}:	130 Nm	
Max. driving torque T_{AS}:	190 Nm	
Max. speed:	6000 rpm	
Moment of inertia J_{Mot}:	0.316 kgm^2	
Diameter of motor shaft:	38 k6 without feather keyway	
Ambient temperature:	+60 °C	→ S_t = 1.4 (see page 23)
Starting factor S_Z:	< 20 rpm	→ S_Z = 1.0 (see page 23)

Given: Details of machine on driven side

Moment of inertia of load side J_{HS}:	0.1094 kgm^2	
Diameter of main spindle shaft:	30 k6 without feather keyway	
No load torque available		
Required:	Medium shocks	→ S_B = 2.4 (see page 23)

Calculation

1. Backlash-free drives

- Loading by rated torque (machining torque)

$T_{KN} \geq T_{AN} \bullet S_t \bullet S_B$ → 130 Nm • 1.4 • 2.4 → $T_{KN} \geq$ 436.8 Nm

- Coupling selection

ROTEX® GS 42
Spider 98 Shore A with clamping ring hubs 6.0 light:
T_{KN} = 450 Nm
$T_{K\,max}$ = 900 Nm

Mass moments of inertia of page 138
J_{KA} = 0.001117 kgm^2
J_{KL} = 0.001117 kgm^2

- Loading by maximum driving torque, without load torque (acceleration of spindle)

$T_{KN} \geq T_S \bullet S_t \bullet S_B$

Shock on drive side
$T_S = T_{AS} \bullet M_A \bullet S_Z$ → = 190 Nm • 0.258 • 1.0 → $T_S = \underline{49.02\text{ Nm}}$

$M_A = \frac{J_L}{(J_A + J_L)}$ → = $\frac{0.110517\ kgm^2}{(0.317117\ kgm^2 + 0.110517\ kgm^2)}$ → $M_A = \underline{0.258}$

$J_L = J_{HSt} + J_{KL}$ → 0.1094 kgm^2 + 0.001117 kgm^2 → $J_L = \underline{0.110517\ kgm^2}$

$J_A = J_{Mot} + J_{KL}$ → 0.316 kgm^2 + 0.001117 kgm^2 → $J_A = \underline{0.317117\ kgm^2}$

$T_{KN} \geq$ 49.02 Nm • 1.4 • 2.4 → $T_{KN} \geq \underline{164.7\text{ Nm}}$

T_{KN} with 450 Nm ≥ 164.7 Nm

- Review of shaft-hub-connection: Friction torque for clamping ring hubs type 6.0 light

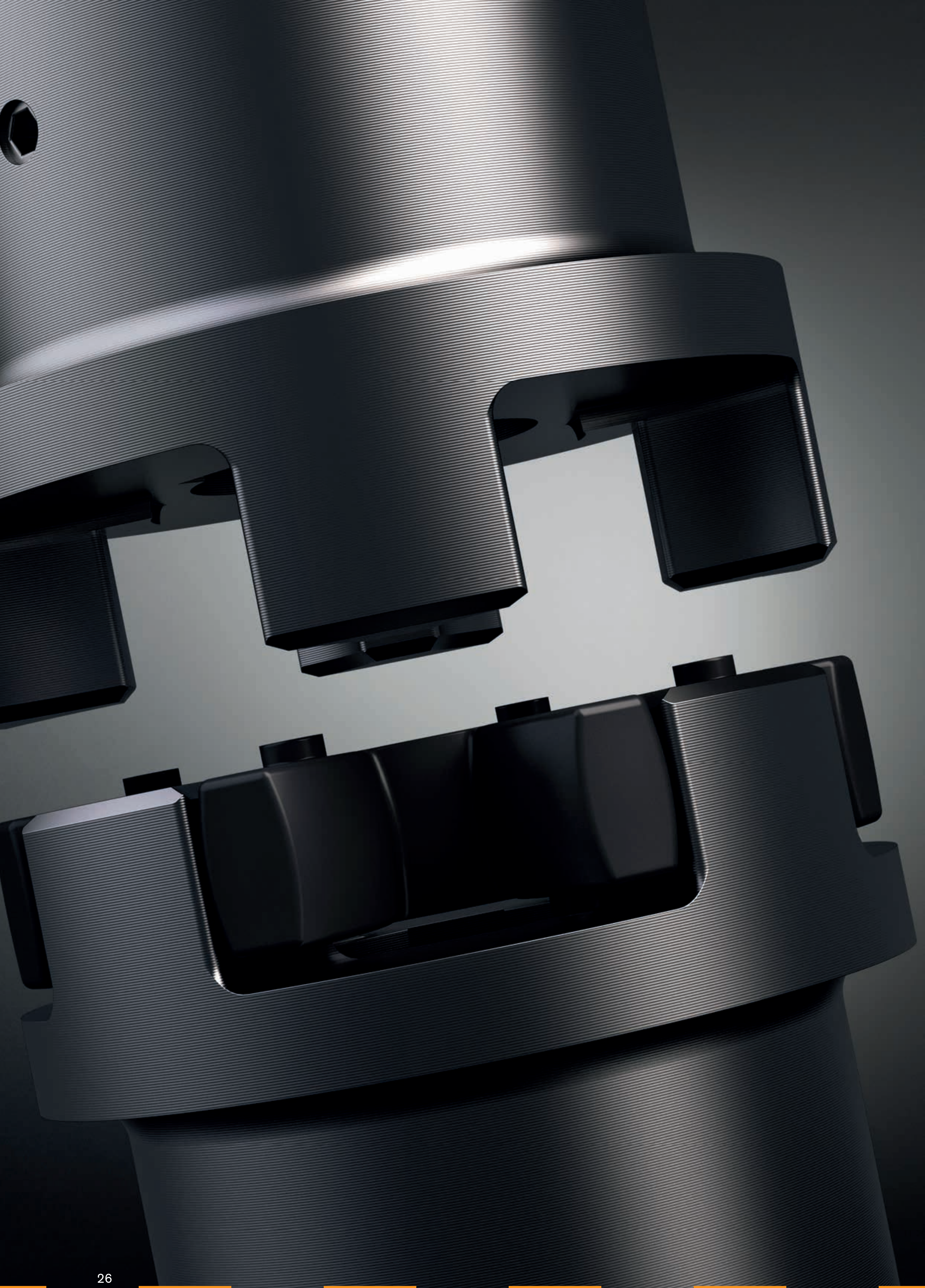
The coupling has to be dimensioned in that the permissible friction torque is not exceeded during any operating condition.

$T_R \geq T_{AS}$ values T_R see page 136

Friction torque of ROTEX® GS 42 clamping ring hub 6.0 light Ø30 H7/k6 T_R = 752 Nm > 190 Nm

Result

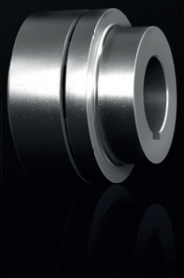
The coupling is sufficiently dimensioned.



Flexible jaw and pin & bush couplings

ROTEX®

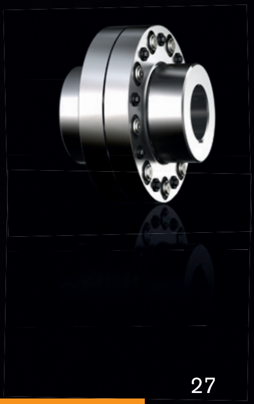
ROFLEX® NEW



POLY-NORM®

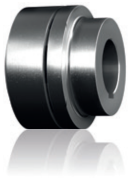
POLY

REVOLEX®



FLEXIBLE JAW AND PIN & BUSH COUPLINGS TYPES AND OPERATING DESCRIPTION

Properties of flexible jaw and pin & bush couplings

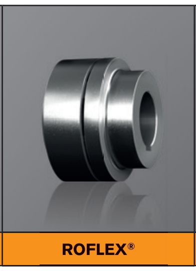
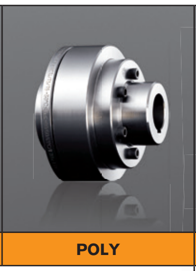
					
Product	**ROTEX®**	**ROFLEX®**	**POLY-NORM®**	**POLY**	**REVOLEX®**
Type	Torsionally flexible jaw coupling				Torsionally flexible pin & bush coupling
Properties					
Torsionally flexible	●	●	●	●	●
Damping vibrations	●	●	●	●	●
Maintenance-free	●	●	●	●	●
Axial plug-in	●	●	●	●	●
Shear type				●	
Fail-safe	●	●	●		●
Compensating for misalignment	●	●	●	●	●
Types					
Variant diversity	very high	average	average	average	high
Special features	extensive basic programme available from stock while customised solutions can be realized	basic programme available from stock	basic programme available from stock	basic programme available from stock	extensive programme, ideal for customised solutions, for applications with high performance ranges
Applications / core industries	manifold applications, applicable in all industries	pump industry, industrial gearboxes	pump industry, industrial gearboxes	chemical pumps, high-pressure pumps, ...	industrial gearboxes, conveyor systems, industrial fans, cableways, agitators, generators, ...
surface	allover machining, very good dynamic properties	shell surface machined	shell surface machined	shell surface machined	allover machining, good dynamic properties
Torque range T_{KN} [Nm]					
Min.	1	65	40	42	4300
Max.	35,000	5,000	67,000	6,100	1,350,000
Max. circumferential speed v [m/s]					
Cast EN-GJL (dynamic balancing)	35	35	35	35	35
Steel + cast EN-GJS (dynamic balancing)	60				60
Hub materials available					
Steel (semi-finished product) » customised solutions available	●				●
Cast iron (GJL) » subject to mould	●	●[1]	●	●	●
Nodular iron (GJS) » subject to mould	●		○		○
Aluminium wrought products (Al-H) » customised solutions available	●				
Aluminium diecast (Al-D)	●				
Stainless steel	●				
Corrosion-protected types	●		○	○	●
Spiders / elastomers					
Material	T-PUR®, PA, PEEK, Hytrel, ...	T-PUR® (size 68) NBR (from size 80)	NBR (up to size 180) T-PUR® (from size 200)	NBR	NR, NBR NBR electrically insulating
Degree of hardness	flexible to torsionally stiff	flexible	flexible	flexible	flexible
Temperature range in °C, min. / max. (standard)	-40 / +120	-30 / +80	-30 / +80	-30 / +80	-30 / +80
Temperature range in °C, min. / max. (special)	-40 / +250	-30 / +80	-30 / +80	-30 / +80	-50 / +80

● ≈ Standard
○ ≈ On request

[1] Size 68 made of sintered steed

FLEXIBLE JAW AND PIN & BUSH COUPLINGS TYPES AND OPERATING DESCRIPTION

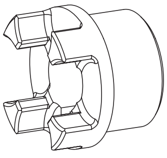
Product finder of jaw and pin & bush couplings

					
Product	**ROTEX®**	**ROFLEX®**	**POLY-NORM®**	**POLY**	**REVOLEX®**
Type	Torsionally flexible jaw coupling				Torsionally flexible pin & bush coupling
Geometries					
Design	compact	short	short	short	short
Mass moment of inertia	low	average	average	high	average
Shaft distance dimension	low / average	low	low	low	low
Types (extract)					
Elastomers can be radially disassembled » without displacing driving/driven side	AFN, AH, SH, ZR, DF, DFN, CF-H	SH	ADR, ADR-SB	PKD	Standard
Intermediate shaft types » bridging larger shaft distances	ZR, ZWN	–	–	–	customised
Standard spacers 100 mm to 250 mm	ZS-DKM-SH	–	AZR	PKA	customised
shaft-to-shaft connection	Standard	N	Standard	Standard	Standard
flange-to-shaft connection	CF, CFN	–	–	–	customised
Flange-to-flange connection » particularly short mounting length	DF, DNF	–	–	–	customised
Double-cardanic » compensating for big displacements, lower restoring forces	ZS-DKM-H, ZR, ZWN	–	–	–	–
Certifications / type examinations					
ATEX	●	●	●	●	●
UL-listed	●				
GOST R / GOST TR	●	●	●	●	●
DNV/GL	●				●
ABS	●				○
Bureau Veritas	●				○
LR	○				○
RS CLASS	○				○
CCS	○				○
ClassNK	○				

● ≈ Standard
○ ≈ On request

Types of hubs

Since ROTEX® is used on many different applications and mounting conditions, this coupling system is available with various hub types. These types mainly differ in that they provide either positive or frictionally engaged (backlash-free) connections, but mounting situations like, for example, gear shafts with integrated transmission cams or similar applications are covered, too.



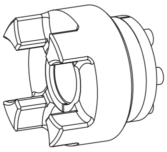
Type 1.0 hub with feather keyway and setscrew

Positive-locking power transmission, permissible torque depending on the permissible surface pressure. Not suitable for backlash-free power transmission with heavily reversing operation.

Type 1.1 hub
without feather keyway, with setscrew

Non-positive torque transmission for crimping connections and adhesive bonds. (No ATEX approval)

Type 1.3 hub
with spline bore (see page 37)

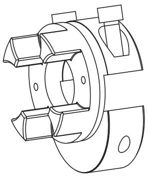


Type 4.2 hub for CLAMPEX® clamping set KTR 250

Frictionally engaged, backlash-free shaft-hub-connection for transmitting average torques.

Type 4.1 for CLAMPEX® clamping set KTR 200
Type 4.3 for CLAMPEX® clamping set KTR 400

Frictionally engaged, backlash-free shaft-hub-connection for the transmission of high torques.

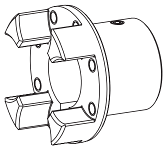


Type 7.6 clamping hub type DH with feather keyway for double-cardanic connection

Positive-locking power transmission with additional friction fit for radial assembly of coupling. The friction fit avoids resp. reduces reverse backlash. Surface pressure of the keyway connection is reduced.

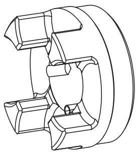
Type 7.5 clamping hub type DH
without feather keyway for double-cardanic connection

Frictionally engaged, backlash-free shaft-hub-connection for radial assembly of coupling. Transmittable torques depending on bore diameter. (For ATEX category 3 only)



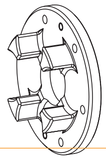
FNN hub

Coupling hub to be connected to an attachment such as brake drum, brake disk and fan.



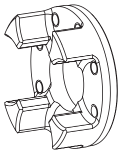
TB1 hub/TB2 hub

Coupling hub for taper clamping sleeves TB1 screwed on cam side. TB2 screwed externally.



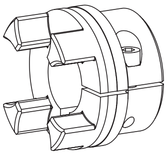
Driving flange type 3b

Driving flange to connect to customer’s component.
For dimensions see page 48.



Driving flange type 3Na

Driving flange to connect to customer’s component.
For dimensions see page 48.



Type 2.3 clamping hub with spline bore

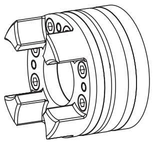
For splines see page 37. Positive-locking power transmission. The friction fit avoids resp. reduces reverse backlash.

Type 2.0 clamping hub
single slot without feather keyway

Frictionally engaged, backlash-free shaft-hub-connection. Transmittable torques depending on bore diameter (see page 44). (For ATEX category 3 only)

Type 2.1 clamping hub
single slot with feather keyway

Positive-locking power transmission with additional friction fit. The friction fit avoids resp. reduces reverse backlash. Surface pressure of the keyway connection is reduced.

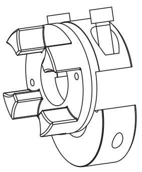


Type 6.0 clamping ring hub (see ROTEX® GS series)

Integrated frictionally engaged shaft-hub-connection for the transmission of higher torques. Screwing on elastomer side. For details about torque and dimensions see page 43. Suitable for high speeds.

Type 6.5 clamping ring hub
(see ROTEX® GS series)

Design like 6.0, except for clamping screws externally.
For instance for radial disassembly of intermediate pipe (special design).

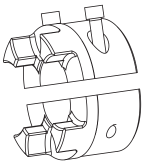


Type 7.9 clamping hub type H with feather keyway

Positive-locking power transmission with additional friction fit for radial assembly of coupling. The friction fit avoids resp. reduces reverse backlash. Surface pressure of the keyway connection is reduced.

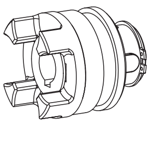
Type 7.8 clamping hub type H
without feather keyway

Frictionally engaged, backlash-free shaft-hub-connection for radial assembly of coupling. Transmittable torques depending on bore diameter. (For ATEX category 3 only)



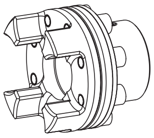
Type 7.1 SPLIT hub with feather keyway

Split hub made of cast iron. Positive-locking power transmission with additional friction fit. The friction fit avoids resp. reduces reverse backlash. Surface pressure of the keyway connection is reduced.



SD hub shifting hub

Coupling hub for separating resp. switching on the driving/driven machine with downtime of the machine. Can be combined with slip ring and shiftable linkage.



Type 3Na and 4N Driving flange with flange type K

For type AFN and BFN.
With type AFN the spider can be replaced when installed without having to disassemble the driving and driven side.

ROTEX®
Flexible jaw couplings

Speeds

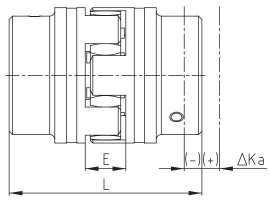
Maximum speeds of hub versions/types

ROTEX® size	Maximum speed [rpm]														Maximum speed [rpm] depending on outside Ø of brake drum/disk			
	1.0 / 1.1 / 1.3			2.0 / 2.1 / 2.3 / 7.5 / 7.6 / 7.8 / 7.9	6.0	7.1	TB1 / TB2	FNN	FNN with fan	SD (with shiftable linkage)	3b / 3Na / 4N	DKM / ZS-DKM	ZR	ZRS	Brake drum (steel)		Brake disk (steel)	
	Steel, GJS, Al-H	GJL, sinter metal	Al-D												Outside Ø [mm]	[rpm]	Outside Ø [mm]	[rpm]
14	10000	10000	3600	-	see ROTEX® GS	-	-	-	The permissible speed depends on the fan. Please consult with KTR for any other applications.	-	-	-	Depending on the application (observe critical bending speed on page 51).	Depending on the application (observe critical bending speed on page 50).	160	6000	200	8600
19	10000	10000	3600	10000		-	-	-		-	-	3600			200	4800	250	6850
24	10000	10000	3600	8600		10000	10000	-		-	10000	3600			250	3800	315	5500
28	10000	10000	3600	7300		8800	10000	10000		-	10000	3600			315	3000	355	4850
38	9500	8300	3600	6000		7200	8300	8800		3280	9500	3600			400	2400	400	4300
42	8000	7000	3600	5000		6000	7000	7200		3280	8000	3600			500	1900	450	3800
48	7200	6300	3600	4500		5500	6300	6000		2550	7200	3600			630	1500	500	3500
55	6300	5500	-	4000		4800	5500	5500		2120	6300	3600			630	1500	560	3050
65	5600	4900	-	3600		4200	4900	4800		2120	5600	3600			710	1350	630	2700
75	4700	4200	-	3000		3600	4200	4200		1710	4700	3600			710	1350	710	2400
90	3800	3600	-	2400		3000	3600	3600		1360	3800	3000			800	1200	800	2150
100	3600	-	-	2100		-	2900	2900		1360	3600	-					900	1900
110	3000	-	-	1900		-	2600	-		1360	3000	-					1000	1700
125	2600	-	-	1800		-	2300	-		855	2600	-						
140	2400	-	-	1500		-	2000	-		-	2400	-						
160	2000	-	-	1300		-	-	-		-	2000	-						
180	1800	-	-	1150		-	-	-		-	1800	-						
We recommend balancing from a circumferential speed of	v = 30 m/s	v = 30 m/s	On request	v = 20 m/s		v = 30 m/s	v = 30 m/s	v = 30 m/s	v = 30 m/s	v = 30 m/s	v = 30 m/s	On request	On request	On request	v = 30 m/s		v = 30 m/s	

Depending on the application, balancing may also be required with lower circumferential speeds.
Higher speeds possible on request.

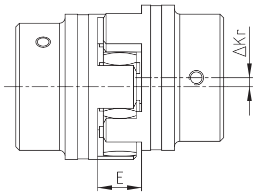
Displacements

Axial displacement ΔK_a

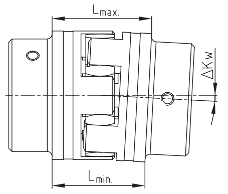


$L_{max.} = L + \Delta K_a$

Radial displacement ΔK_r



Angular displacement ΔK_w [degree]



ΔK_w [mm] = $L_{max} - L_{min}$

Displacements for spider 92 and 98 Shore A

ROTEX® size	14	19	24	28	38	42	48	55	65	75	90	100	110	125	140	160	180
Max. axial displacement ΔK_a [mm]	-0.5 +1.0	-0.5 +1.2	-0.5 +1.4	-0.7 +1.5	-0.7 +1.8	-1.0 +2.0	-1.0 +2.1	-1.0 +2.2	-1.0 +2.6	-1.5 +3.0	-1.5 3.4	-1.5 +3.8	-2.0 +4.2	-2.0 +4.6	-2.0 +5.0	-2.5 +5.7	-3.0 +6.4
Max. radial displacement with n=1500 rpm ΔK_r [mm]	0.17	0.20	0.22	0.25	0.28	0.32	0.36	0.38	0.42	0.48	0.50	0.52	0.55	0.60	0.62	0.64	0.68
Max. angular displacement with n=1500 rpm ΔK_w [degree]	1.2	1.2	0.9	0.9	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.2	1.2	1.2
ΔK_w [mm]	0.67	0.82	0.85	1.05	1.35	1.70	2.00	2.30	2.70	3.30	4.30	4.80	5.60	6.50	6.60	7.60	9.00

Displacements for spider 64 Shore D

ROTEX® size	14	19	24	28	38	42	48	55	65	75	90	100	110	125	140	160	180
Max. axial displacement ΔK_a [mm]	-0.5 +1.0	-0.5 +1.2	-0.5 +1.4	-0.7 +1.5	-0.7 +1.8	-1.0 +2.0	-1.0 +2.1	-1.0 +2.2	-1.0 +2.6	-1.5 +3.0	-1.5 +3.4	-1.5 +3.8	-2.0 +4.2	-2.0 +4.6	-2.0 +5.0	-2.5 +5.7	-3.0 +6.4
Max. radial displacement with n=1500 rpm ΔK_r [mm]	0.11	0.13	0.15	0.18	0.21	0.23	0.25	0.27	0.30	0.34	0.36	0.37	0.40	0.43	0.45	0.46	0.49
Max. angular displacement with n=1500 rpm ΔK_w [degree]	1.1	1.1	0.8	0.8	0.9	0.9	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.1	1.1	1.1
ΔK_w [mm]	0.57	0.76	0.76	0.90	1.25	1.40	1.80	2.00	2.50	3.00	3.80	4.30	5.30	6.00	6.10	7.10	8.00

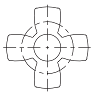
Displacements for spider PA, PEEK

ROTEX® size	14	19	24	28	38	42	48	55	65	75	90	100	110	125	140
Max. axial displacement ΔK_a [mm]	-0.5 +1.0	-0.5 +1.2	-0.5 +1.4	-0.7 +1.5	-0.7 +1.8	-1.0 +2.0	-1.0 +2.1	-1.0 +2.2	-1.0 +2.6	-1.5 +3.0	-1.5 +3.4	-1.5 +3.8	-2.0 +4.2	-2.0 +4.6	-2.0 +5.0
Max. radial displacement with n=1500 rpm ΔK_r [mm]	0.08	0.10	0.11	0.12	0.14	0.16	0.18	0.19	0.21	0.24	0.25	0.26	0.27	0.30	0.31
Max. angular displacement with n=1500 rpm ΔK_w [degree]	0.60	0.45	0.45	0.50	0.50	0.55	0.55	0.55	0.60	0.60	0.60	0.60	0.65	0.65	0.60
ΔK_w [mm]	0.33	0.41	0.42	0.52	0.67	0.85	1.00	1.15	1.35	1.65	2.15	2.40	2.80	3.25	3.30

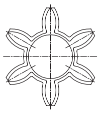
The specified permissible displacement figures of the flexible ROTEX® couplings are standard values taking into account the load of the coupling up to the rated torque T_{KN} and an operating speed n = 1500 rpm along with an ambient temperature of +30 °C.
The displacement figures may only be used one by one, if they appear simultaneously, they must be limited in proportion. Care should be taken to maintain the distance dimension E accurately in order to allow for axial clearance of the coupling while in operation. Detailed mounting instructions are shown on our homepage www.ktr.com.

Properties of standard spiders

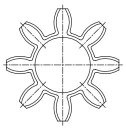
ROTEX® 14



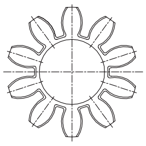
ROTEX® 19



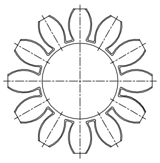
ROTEX® 24 - 65



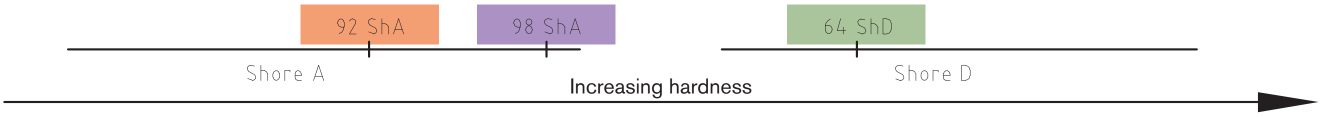
ROTEX® 75 - 160



ROTEX® 180



Degree of hardness



Spider type (Shore hardness)	**92 Shore A (T-PUR®)**	**92 Shore A**
	 **T-PUR®**	
Size	14 to 180	14 to 90
Material	T-PUR®	Polyurethane (PUR)
Permissible temperature range Permanent temperature Short-term temperature	 -40 °C to +120 °C -40 °C to +150 °C	 -40 °C to +90 °C -40 °C to +120 °C
Properties	– significantly higher service life expectancy – very good temperature resistance – improved damping of vibrations – good damping, medium flexibility – suitable for all hub materials	– good damping, medium flexibility – suitable for all hub materials

Spider type (Shore hardness)	**98 Shore A (T-PUR®)**	**98 Shore A**
	 **T-PUR®**	
Size	14 to 180	14 to 90
Material	T-PUR®	Polyurethane (PUR)
Permissible temperature range Permanent temperature Short-term temperature	 -40 °C to +120 °C -40 °C to +150 °C	 -30 °C to +90 °C -40 °C to +120 °C
Properties	– significantly higher service life expectancy – very good temperature resistance – improved damping of vibrations – transmission of high torques with average damping – recommended hub material: steel, GJL and GJS	– transmission of high torques with average damping – recommended hub material: steel, GJL and GJS

Spider type (Shore hardness)	**64 Shore D (T-PUR®)**
	 **T-PUR®**
Size	14 to 180
Material	T-PUR®
Permissible temperature range Permanent temperature Short-term temperature	 -40 °C to +120 °C -40 °C to +150 °C
Properties	– significantly higher service life expectancy – very good temperature resistance – improved damping of vibrations – transmission of very high torques with low damping – recommended hub material: steel and GJS

ROTEX®
Flexible jaw couplings

Technical data of standard spiders

92 Shore A spider made of T-PUR® and PUR

ROTEX® size	Torsion angle ϕ with		Torque [Nm]				Damping power P_{KW} [W] [3]	Relative damping ψ	Resonance factor V_R	Torsion spring stiffness C dyn. [Nm/rad]			
	T_{KN}	$T_{K\,max}$	DIN 740 [1]			$T_{K\,max}$ [2]				1.0 T_{KN}	0.75 T_{KN}	0.5 T_{KN}	0.25 T_{KN}
			Rated T_{KN}	Max. $T_{K\,max}$	Vibratory T_{KW}								
14	6.4°	10°	7.5	15	2.0	22.5	–			0.38x10^3	0.31x10^3	0.24x10^3	0.14x10^3
19	3.2°	5°	10	20	2.6	30	4.8	0.80	7.90	1.28x10^3	1.05x10^3	0.8x10^3	0.47x10^3
24			35	70	9.1	105	6.6			4.86x10^3	3.98x10^3	3.01x10^3	1.79x10^3
28			95	190	25	285	8.4			10.9x10^3	8.94x10^3	6.76x10^3	4.01x10^3
38			190	380	49	570	10.2			21.05x10^3	17.26x10^3	13.05x10^3	7.74x10^3
42			265	530	69	795	12.0			23.74x10^3	19.47x10^3	14.72x10^3	8.73x10^3
48			310	620	81	930	13.8			36.7x10^3	30.09x10^3	22.75x10^3	13.49x10^3
55			410	820	107	1230	15.6			50.7x10^3	41.59x10^3	31.45x10^3	18.64x10^3
65			625	1250	163	1875	18.0			97.1x10^3	79.65x10^3	60.2x10^3	35.7x10^3
75			1280	2560	333	3840	21.6			113.3x10^3	92.9x10^3	70.3x10^3	41.65x10^3
90			2400	4800	624	7200	30.0			190.1x10^3	155.9x10^3	117.9x10^3	69.9x10^3
100			3300	6600	858	9900	36.0			253.1x10^3	207.5x10^3	156.9x10^3	93x10^3
110			4800	9600	1248	14400	42.0			415.5x10^3	336.9x10^3	257.6x10^3	177.4x10^3
125			6650	13300	1729	19950	48.0			647.7x10^3	537.3x10^3	412.2x10^3	277.5x10^3
140			8550	17100	2223	25650	54.6			813.4x10^3	670.2x10^3	519.7x10^3	351.7x10^3
160			12800	25600	3328	38400	75.0			1298x10^3	1104x10^3	901.9x10^3	655.7x10^3
180			18650	37300	4849	55950	78.0			2327x10^3	1981x10^3	1618x10^3	1176x10^3

98 Shore A spider made of T-PUR® and PUR

ROTEX® size	Torsion angle ϕ with		Torque [Nm]				Damping power P_{KW} [W] [3]	Relative damping ψ	Resonance factor V_R	Torsion spring stiffness C dyn. [Nm/rad]			
	T_{KN}	$T_{K\,max}$	DIN 740 [1]			$T_{K\,max}$ [2]				1.0 T_{KN}	0.75 T_{KN}	0.5 T_{KN}	0.25 T_{KN}
			Rated T_{KN}	Max. $T_{K\,max}$	Vibratory T_{KW}								
14	6.4°	10°	12.5	25	3.3	37.5	–			0.56x10^3	0.46x10^3	0.35x10^3	0.21x10^3
19	3.2°	5°	17	34	4.4	51	4.8	0.80	7.90	2.92x10^3	2.39x10^3	1.81x10^3	1.07x10^3
24			60	120	16	180	6.6			9.93x10^3	8.14x10^3	6.16x10^3	3.65x10^3
28			160	320	42	480	8.4			26.77x10^3	21.95x10^3	16.6x10^3	9.84x10^3
38			325	650	85	975	10.2			48.57x10^3	39.83x10^3	30.11x10^3	17.85x10^3
42			450	900	117	1350	12.0			54.5x10^3	44.69x10^3	33.79x10^3	20.03x10^3
48			525	1050	137	1575	13.8			65.3x10^3	53.54x10^3	40.48x10^3	24x10^3
55			685	1370	178	2055	15.6			95x10^3	77.9x10^3	58.88x10^3	34.9x10^3
65			940	1880	244	2820	18.0			129.5x10^3	106.2x10^3	80.3x10^3	47.6x10^3
75			1920	3840	499	5760	21.6			197.5x10^3	162x10^3	122.5x10^3	72.6x10^3
90			3600	7200	936	10800	30.0			312.2x10^3	256x10^3	193.6x10^3	114.7x10^3
100			4950	9900	1287	14850	36.0			383.3x10^3	314.3x10^3	237.6x10^3	140.9x10^3
110			7200	14400	1872	21600	42.0			805.9x10^3	663.1x10^3	515.3x10^3	360.5x10^3
125			10000	20000	2600	30000	48.0			1207x10^3	1003x10^3	787.6x10^3	552.5x10^3
140			12800	25600	3328	38400	54.6			1549x10^3	1283x10^3	979.8x10^3	674.1x10^3
160			19200	38400	4992	57600	75.0			2481x10^3	2137x10^3	1781x10^3	1275x10^3
180			28000	56000	7280	84000	78.0			4220x10^3	3635x10^3	3031x10^3	2170x10^3

64 Shore D spider made of T-PUR®

ROTEX® size	Torsion angle ϕ with		Torque [Nm]				Damping power P_{KW} [W] [3]	Relative damping ψ	Resonance factor V_R	Torsion spring stiffness C dyn. [Nm/rad]			
	T_{KN}	$T_{K\,max}$	DIN 740 [1]			$T_{K\,max}$ [2]				1.0 T_{KN}	0.75 T_{KN}	0.5 T_{KN}	0.25 T_{KN}
			Rated T_{KN}	Max. $T_{K\,max}$	Vibratory T_{KW}								
14	4.5°	7.0°	16	32	4.2	48	9.0	0.75	8.50	0.76x10^3	0.62x10^3	0.47x10^3	0.28x10^3
19	2.5°	3.6°	21	42	5.5	63	7.2			5.35x10^3	4.39x10^3	3.32x10^3	1.97x10^3
24			75	150	19.5	225	9.9			15.11x10^3	12.39x10^3	9.37x10^3	5.55x10^3
28			200	400	52	600	12.6			27.52x10^3	22.57x10^3	17.06x10^3	10.12x10^3
38			405	810	105	1215	15.3			70.15x10^3	57.52x10^3	43.49x10^3	25.78x10^3
42			560	1120	146	1680	18.0			79.9x10^3	65.5x10^3	49.52x10^3	29.35x10^3
48			655	1310	170	1965	20.7			95.5x10^3	78.3x10^3	59.22x10^3	35.1x10^3
55			825	1650	215	2475	23.4			107.9x10^3	88.5x10^3	66.9x10^3	39.66x10^3
65			1175	2350	306	3525	27.0			151.1x10^3	123.9x10^3	93.7x10^3	55.53x10^3
75			2400	4800	624	7200	32.4			248.2x10^3	203.5x10^3	153.9x10^3	91.2x10^3
90			4500	9000	1170	13500	45.0			674.5x10^3	553.1x10^3	418.2x10^3	247.9x10^3
100			6185	12370	1608	18555	54.0			861.2x10^3	706.2x10^3	533.9x10^3	316.5x10^3
110			9000	18000	2340	27000	63.0			1230x10^3	1001x10^3	773.1x10^3	531.4x10^3
125			12500	25000	3250	37500	72.0			1749x10^3	1436x10^3	1149x10^3	832.1x10^3
140			16000	32000	4160	48000	81.9			2312x10^3	1929x10^3	1521x10^3	1082x10^3
160			24000	48000	6240	72000	112.5			3415x10^3	2961x10^3	2471x10^3	1830x10^3
180			35000	70000	9100	105000	117.0			5670x10^3	4917x10^3	4103x10^3	3038x10^3

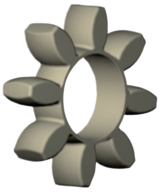
[1] see catalogue page 15
[2] ≤ 1000 load cycles
[3] with +30 °C

Temperature factor S_t

	-40 °C +30 °C	+40 °C	+50 °C	+60 °C	+70 °C	+80 °C	+90 °C	+100 °C	+110 °C	+120 °C
T-PUR®	1.0	1.0	1.2	1.3	1.45	1.6	1.8	2.1	2.5	3.0
PUR	1.0	1.0	1.3	1.4	1.55	1.8	2.2	–	–	–

With temperatures below -40 °C please consult with KTR.
Unless the Shore hardness of spider is explicitly specified in your order, we will supply spiders with Shore hardness 92 Shore A T-PUR®.
For circumferential speeds exceeding v = 30 m/s dynamic balancing is required. For circumferential speeds exceeding v = 35 m/s only steel or nodular iron.

Technical data and properties of special spiders

		
Description	PA	PEEK
Material	Polyamide	Polyetheretherketone
Permissible temperature range Permanent temperature Short-term temperature	 -40 °C to +100 °C [1] -40 °C to +120 °C [1]	 up to +180 °C up to +250 °C
Properties	– small twisting angle and high torsion spring stiffness – transmission of very high torques with very low damping – good resistance to chemicals [1] – recommended hub material: steel – high restoring forces with displacements	– small twisting angle and high torsion spring stiffness – transmission of very high torques with very low damping – highly temperature-resistant, resistant to hydrolysis – good resistance to chemicals – recommended hub material: steel – high restoring forces with displacements

[1] different properties depending on compound

Torques

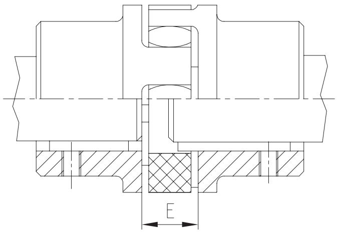
ROTEX® size	PA, PEEK		
	T_{KN} [Nm]	$T_{K\,max}$ [Nm]	T_{KW} [Nm]
14	22	44	5.5
19	30	60	8.0
24	105	210	27.5
28	280	560	73
38	565	1130	147
42	785	1570	204
48	915	1830	238
55	1200	2400	312
65	1645	3290	427
75	2560	5130	667
90	6300	12600	1640
100	8650	17300	2250
110	10500	21000	2730
125	13000	26000	3380

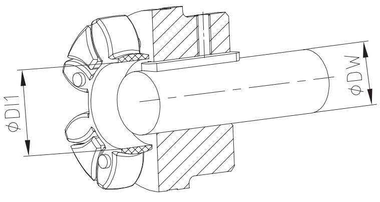
Temperature factor S_t

	-40 °C +30 °C	+40 °C	+50 °C	+60 °C	+70 °C	+80 °C	+90 °C	+100 °C	+110 °C	+120 °C
PA	1.0	1.0	1.0	1.0	1.2	1.4	1.6	–	–	–
PEEK	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

With temperatures below -40 °C please consult with KTR.

Installation of spider





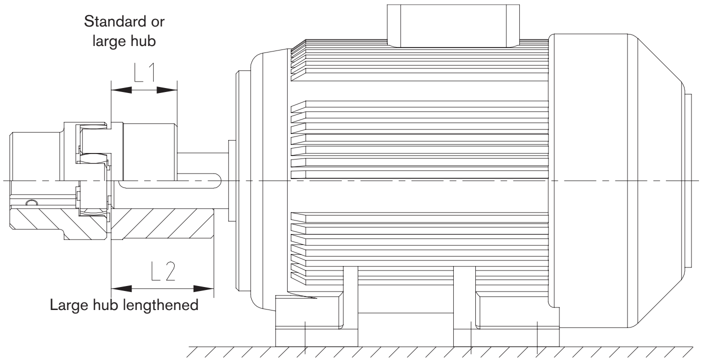
Shaft ØDW with feather key (acc. to DIN 6885 sheet 1) protruding into the spider ØDI1

Mounting dimensions

ROTEX® size	14	19	24	28	38	42	48	55	65	75	90	100	110	125	140	160	180
Distance dimension E	13	16	18	20	24	26	28	30	35	40	45	50	55	60	65	75	85
Dimension DI1	10	18	27	30	38	46	51	60	68	80	100	113	127	147	165	190	220
Dimension DW [2]	7	12	20	22	28	36	40	48	55	65	80	95	100	120	135	160	185

[2] If the shaft diameter is smaller than or equal to dimension DI1, one shaft end or both shaft ends may protrude with the feather keyway into the spider.

Selection of standard IEC motors



ROTEX® couplings for standard IEC motors, protection class IP 54/IP 55 (spider 92 Shore A)

A. C. motor 50 Hz			Motor power n= 3000 rpm 2 poles		ROTEX® coupling size	Motor power n= 1500 rpm 4 poles		ROTEX® coupling size	Motor power n= 1000 rpm 6 poles		ROTEX® coupling size	Motor power n= 750 rpm 8 poles		ROTEX® coupling size
Size	Shaft end DWxLW [mm]													
	2 poles	4, 6, 8 poles	Power P [kW]	Torque T [Nm]		Power P [kW]	Torque T [Nm]		Power P [kW]	Torque T [Nm]		Power P [kW]	Torque T [Nm]	
56	9 x 20		0.09	0.32	9 1)	0.06	0.43	9 1)	0.037	0.43	9 1)			
			0.12	0.41		0.09	0.64		0.045	0.52				
63	11 x 23		0.18	0.62		0.12	0.88		0.06	0.7				
			0.25	0.86	14	0.18	1.3	14	0.09	1.1	14			
71	14 x 30		0.37	1.3		0.25	1.8		0.18	2		0.09	1.4	14
			0.55	1.9		0.37	2.5		0.25	2.8		0.12	1.8	
80	19 x 40		0.75	2.5		0.55	3.7		0.37	3.9		0.18	2.5	
			1.1	3.7	19	0.75	5.1	19	0.55	5.8	19	0.25	3.5	19
90S	24 x 50		1.5	5		1.1	7.5		0.75	8		0.37	5.3	
90L			2.2	7.4		1.5	10		1.1	12		0.55	7.9	
100L			3	9.8		2.2	15	24	1.5	15	24	0.75	11	24
	28 x 60				24	3	20					1.1	16	
112M			4	13		4	27		2.2	22		1.5	21	
132S			5.5	18		5.5	36		3	30		2.2	30	
	38 x 80		7.5	25	28			28			28			28
132M						7.5	49		4	40		3	40	
									5.5	55				
160M			11	36		11	72		7.5	75		4	54	
	42 x 110		15	49	38			38			38	5.5	74	38
160L			18.5	60		15	98		11	109		7.5	100	
180M	48 x 110		22	71		18.5	121							
180L						22	144	42	15	148	42	11	145	42
200L	55 x 110		30	97	42	30	196		18.5	181		15	198	
			37	120					22	215				
225S	55 x 110	60 x 140				37	240	48				18.5	244	48
225M			45	145		45	292	55	30	293	55	22	290	55
250M	60 x 140	65 x 140	55	177	48	55	356		37	361	65 2)	30	392	65
280S		75 x 140	75	241	55	75	484	65 2)	45	438		37	483	65 2)
280M			90	289		90	581		55	535		45	587	75
315S		80 x 170	110	353		110	707	75	75	727	75	55	712	
315M			132	423	65	132	849		90	873		75	971	
	65 x 140		160	513		160	1030		110	1070		90	1170	90
315L			200	641		200	1290	90	132	1280	90	110	1420	
					75				160	1550		132	1710	
315		85 x 170	250	802		250	1600		200	1930		160	2070	
			315	1010		315	2020		250	2410	100	200	2580	100
			355	1140		355	2280	100						
355	75 x 140	95 x 170	400	1280	90	400	2570		315	3040	110	250	3220	110
			500	1600		500	3210	110	400	3850	125	315	4060	125
			560	1790		560	3580	125	450	4330		355	4570	
400	80 x 170	110 x 210	630	2020		630	4030		500	4810		400	5150	140
			710	2270	100	710	4540		560	5390	140	450	5790	
			800	2560		800	5120	140	630	6060		500	6420	
450	90 x 170	120 x 210	900	2880	110	900	5760		710	6830	160	560	7190	160
			1000	3200		1000	6400	160	800	7690		630	8090	

The coupling selection is based on an ambient temperature of up to +30 °C. The selection is based on a minimum safety factor of 2 to the max. coupling torque ($T_{K\ max}$). A detailed selection is possible according to catalogue page 14 et seqq. Drives with periodical torque curves must be selected according to DIN 740 part 2. If requested, KTR will perform the selection.

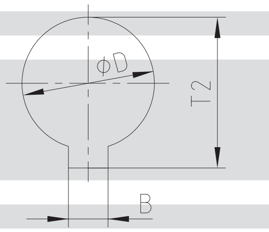
Torque T = rated torque according to Siemens catalogue M 11 · 1994/95.

1) For dimensions see ROTEX® GS series

2) For motor hub made of steel see page 40

Cylindrical bores and inch bores

Bore ØD		Width of keyway B		Keyway depth T2	KTR code Inch bore	ROTEX® basic bores, available from stock Hub material aluminium🟢; hub material steel🔵; hub material EN-GJL🔴										
						ROTEX® sizes										
ØD [mm]	ØD [inch]	B [mm]	B [inch]	T2 [mm]		14	19	24	28	38	42	48	55	65	75	90
Ø6 H7 $^{+0.012}$		2 JS9 $^{\pm0.0125}$		7 $^{+0.1}$		🟢										
Ø8 H7 $^{+0.015}$		2 JS9 $^{\pm0.0125}$		9 $^{+0.1}$		🔵🟢	🔵🟢									
Ø9 H7 $^{+0.015}$		3 JS9 $^{\pm0.0125}$		10.4 $^{+0.1}$		🔵🟢	🔵									
Ø9.525 $^{+0.0254}$	$^{3}/_{8}$	3.175 $^{+0.051}$	$^{1}/_{8}$	10.972 $^{+0.381}$	Tb											
Ø10 H7 $^{+0.015}$		3 JS9 $^{\pm0.0125}$		11.4 $^{+0.1}$		🔵🟢	🔵🟢	🔵🟢								
Ø11 H7 $^{+0.018}$		4 JS9 $^{\pm0.015}$		12.8 $^{+0.1}$		🔵🟢	🔵🟢	🔵								
Ø11.112 $^{+0.0254}$	$^{7}/_{16}$	2.382 $^{+0.051}$	$^{3}/_{32}$	12.293 $^{+0.381}$	DNB											
Ø12 H7 $^{+0.018}$		4 JS9 $^{\pm0.015}$		13.8 $^{+0.1}$		🔵🟢	🔵🟢	🔵🟢								
Ø12.7 $^{+0.0254}$	$^{1}/_{2}$	3.175 $^{+0.051}$	$^{1}/_{8}$	14.224 $^{+0.381}$	Ta		🔵	🔵								
Ø12.7 $^{+0.0254}$	$^{1}/_{2}$	4.762 $^{+0.051}$	$^{3}/_{16}$	14.757 $^{+0.381}$	T											
Ø13.495 $^{+0.0254}$	$^{17}/_{32}$	3.175 $^{+0.051}$	$^{1}/_{8}$	15.011 $^{+0.381}$	DNC											
Ø14 H7 $^{+0.018}$		5 JS9 $^{\pm0.015}$		16.3 $^{+0.1}$		🔵🟢	🔵🟢	🔵🟢	🔵🟢							
Ø14.287 $^{+0.0254}$	$^{9}/_{16}$	3.175 $^{+0.051}$	$^{1}/_{8}$	15.824 $^{+0.381}$	Do											
Ø15 H7 $^{+0.018}$		5 JS9 $^{\pm0.015}$		17.3 $^{+0.1}$		🔵🟢	🔵🟢	🔵🟢	🔵							
Ø15.875 $^{+0.0254}$	$^{5}/_{8}$	3.175 $^{+0.051}$	$^{1}/_{8}$	17.424 $^{+0.381}$	E											
Ø15.875 $^{+0.0254}$	$^{5}/_{8}$	3.968 $^{+0.051}$	$^{5}/_{32}$	17.729 $^{+0.381}$	Es		🔵	🔵	🔵							
Ø15.875 $^{+0.0254}$	$^{5}/_{8}$	4.762 $^{+0.051}$	$^{3}/_{16}$	18.008 $^{+0.381}$	Ed		🔵	🔵								
Ø16 H7 $^{+0.018}$		5 JS9 $^{\pm0.015}$		18.3 $^{+0.1}$		🔵🟢	🔵🟢	🔵🟢	🔵🟢							
Ø17 H7 $^{+0.018}$		5 JS9 $^{\pm0.015}$		19.3 $^{+0.1}$			🔵🟢	🔵🟢	🔵							
Ø17.462 $^{+0.0254}$	$^{11}/_{16}$	4.762 $^{+0.051}$	$^{3}/_{16}$	19.634 $^{+0.381}$	DNH											
Ø18 H7 $^{+0.018}$		6 JS9 $^{\pm0.015}$		20.8 $^{+0.1}$			🔵🟢	🔵🟢	🔵🟢	🔴						
Ø19 H7 $^{+0.021}$		6 JS9 $^{\pm0.015}$		21.8 $^{+0.1}$			🔵🟢	🔵🟢	🔵🟢	🔴						
Ø19.05 $^{+0.0254}$	$^{3}/_{4}$	3.175 $^{+0.051}$	$^{1}/_{8}$	20.624 $^{+0.381}$	Ad											
Ø19.05 $^{+0.0254}$	$^{3}/_{4}$	4.762 $^{+0.051}$	$^{3}/_{16}$	21.259 $^{+0.381}$	A		🔵	🔵	🔵	🔴						
Ø20 H7 $^{+0.021}$		6 JS9 $^{\pm0.015}$		22.8 $^{+0.1}$			🔵🟢	🔵🟢	🔵🟢	🟢🔴	🔴					
Ø22 H7 $^{+0.021}$		6 JS9 $^{\pm0.015}$		24.8 $^{+0.1}$			🔵	🔵🟢	🔵🟢	🔴	🔴					
Ø22.225 $^{+0.0254}$	$^{7}/_{8}$	4.762 $^{+0.051}$	$^{3}/_{16}$	24.485 $^{+0.381}$	G		🔵	🔵	🔵	🔴	🔴					
Ø22.225 $^{+0.0254}$	$^{7}/_{8}$	6.35 $^{+0.051}$	$^{1}/_{4}$	25.069 $^{+0.381}$	F			🔵	🔵	🔴	🔴					
Ø23.812 $^{+0.0254}$	$^{15}/_{16}$	6.35 $^{+0.051}$	$^{1}/_{4}$	26.695 $^{+0.381}$	Gf											
Ø24 H7 $^{+0.021}$		8 JS9 $^{\pm0.018}$		27.3 $^{+0.2}$			🔵🟢	🔵🟢	🔵🟢	🟢🔴	🔴					
Ø25 H7 $^{+0.021}$		8 JS9 $^{\pm0.018}$		28.3 $^{+0.2}$			🔵	🔵🟢	🔵🟢	🔵🔴	🔵🔴	🔴	🔴			
Ø25.4 $^{+0.0254}$	1	4.762 $^{+0.051}$	$^{3}/_{16}$	27.686 $^{+0.381}$	H											
Ø25.4 $^{+0.0254}$	1	6.35 $^{+0.051}$	$^{1}/_{4}$	28.295 $^{+0.381}$	Hs			🔵	🔵	🔴	🔴					
Ø26.987 $^{+0.0254}$	1 $^{1}/_{16}$	4.762 $^{+0.051}$	$^{3}/_{16}$	29.286 $^{+0.381}$	R											
Ø28 H7 $^{+0.021}$		8 JS9 $^{\pm0.018}$		31.3 $^{+0.2}$				🔵🟢	🔵🟢	🔵🔴	🔵🔴	🔴				
Ø28.575 $^{+0.0254}$	1 $^{1}/_{8}$	6.35 $^{+0.051}$	$^{1}/_{4}$	31.521 $^{+0.381}$	Sb			🔵	🔵	🔴						
Ø28.575 $^{+0.0254}$	1 $^{1}/_{8}$	7.937 $^{+0.051}$	$^{5}/_{16}$	32.105 $^{+0.381}$	Sd											
Ø30 H7 $^{+0.021}$		8 JS9 $^{\pm0.018}$		33.3 $^{+0.2}$				🔵	🔵🟢	🔵🔴	🔵🔴	🔵🔴	🔴			
Ø31.75 $^{+0.0254}$	1 $^{1}/_{4}$	6.35 $^{+0.051}$	$^{1}/_{4}$	34.721 $^{+0.381}$	Js					🔴						
Ø31.75 $^{+0.0254}$	1 $^{1}/_{4}$	7.937 $^{+0.051}$	$^{5}/_{16}$	35.331 $^{+0.381}$	K				🔴	🔴	🔴	🔴	🔴	🔴		
Ø32 H7 $^{+0.025}$		10 JS9 $^{\pm0.018}$		35.3 $^{+0.2}$				🔵🟢	🔵🟢	🔵🔴	🔵🔴	🔵🔴	🔵🔴	🔴		
Ø34.925 $^{+0.0254}$	1 $^{3}/_{8}$	7.937 $^{+0.051}$	$^{5}/_{16}$	38.557 $^{+0.381}$	Ma				🔵	🔴						
Ø34.925 $^{+0.0254}$	1 $^{3}/_{8}$	9.525 $^{+0.0635}$	$^{3}/_{8}$	39.141 $^{+0.381}$	RH1											
Ø35 H7 $^{+0.025}$		10 JS9 $^{\pm0.018}$		38.3 $^{+0.2}$					🔵🟢	🔵🔴	🔵🔴	🔵🔴	🔵🔴	🔴		
Ø36.512 $^{+0.0254}$	1 $^{7}/_{16}$	9.525 $^{+0.0635}$	$^{3}/_{8}$	40.767 $^{+0.381}$	Cb											
Ø38 H7 $^{+0.025}$		10 JS9 $^{\pm0.018}$		41.3 $^{+0.2}$					🔵🟢	🔵🔴	🔵🔴	🔵🔴	🔵🔴	🔴	🔴	
Ø38.1 $^{+0.0254}$	1 $^{1}/_{2}$	7.937 $^{+0.051}$	$^{5}/_{16}$	41.783 $^{+0.381}$	Ca											
Ø38.1 $^{+0.0254}$	1 $^{1}/_{2}$	9.525 $^{+0.0635}$	$^{3}/_{8}$	42.392 $^{+0.381}$	C					🔴	🔴	🔴	🔴	🔴	🔴	
Ø40 H7 $^{+0.025}$		12 JS9 $^{\pm0.0215}$		43.3 $^{+0.2}$					🔵	🔵🔴	🔵🔴	🔵🔴	🔵🔴	🔵🔴	🔵🔴	
Ø41.275 $^{+0.0254}$	1 $^{5}/_{8}$	9.525 $^{+0.0635}$	$^{3}/_{8}$	45.618 $^{+0.381}$	Nb					🔴	🔴					
Ø42 H7 $^{+0.025}$		12 JS9 $^{\pm0.0215}$		45.3 $^{+0.2}$						🔵🔴	🔵🔴	🔵🔴	🔴	🔵🔴	🔴	
Ø44.45 $^{+0.0254}$	1 $^{3}/_{4}$	9.525 $^{+0.0635}$	$^{3}/_{8}$	48.818 $^{+0.381}$	Ls											
Ø44.45 $^{+0.0254}$	1 $^{3}/_{4}$	11.112 $^{+0.0635}$	$^{7}/_{16}$	49.428 $^{+0.381}$	L											
Ø45 H7 $^{+0.025}$		14 JS9 $^{\pm0.0215}$		48.8 $^{+0.2}$						🔵🔴	🔵🔴	🔵🔴	🔵🔴	🔵🔴	🔵🔴	
Ø47.625 $^{+0.0254}$	1 $^{7}/_{8}$	12.7 $^{+0.0635}$	$^{1}/_{2}$	53.238 $^{+0.381}$	Lu						🔴					
Ø48 H7 $^{+0.025}$		14 JS9 $^{\pm0.0215}$		51.8 $^{+0.2}$						🔵🔴	🔵🔴	🔵🔴	🔵🔴	🔵🔴	🔵🔴	
Ø49.212 $^{+0.0254}$	1 $^{15}/_{16}$	12.7 $^{+0.0635}$	$^{1}/_{2}$	54.864 $^{+0.381}$	Da											
Ø50 H7 $^{+0.025}$		14 JS9 $^{\pm0.0215}$		53.8 $^{+0.2}$							🔵🔴	🔵🔴	🔵🔴	🔵🔴	🔵🔴	🔴
Ø50.8 $^{+0.0254}$	2	12.7 $^{+0.0635}$	$^{1}/_{2}$	56.464 $^{+0.381}$	Ds											
Ø53.975 $^{+0.0381}$	2 $^{1}/_{8}$	12.7 $^{+0.0635}$	$^{1}/_{2}$	59.69 $^{+0.381}$	Pa						🔴					
Ø55 H7 $^{+0.03}$		16 JS9 $^{\pm0.0215}$		59.3 $^{+0.2}$							🔵🔴	🔵🔴	🔵🔴	🔵🔴	🔵🔴	🔴
Ø57.15 $^{+0.0381}$	2 $^{1}/_{4}$	12.7 $^{+0.0635}$	$^{1}/_{2}$	62.915 $^{+0.381}$	U											
Ø60 H7 $^{+0.03}$		18 JS9 $^{\pm0.0215}$		64.4 $^{+0.2}$								🔵🔴	🔵🔴	🔵🔴	🔵🔴	🔵🔴
Ø60.325 $^{+0.0381}$	2 $^{3}/_{8}$	15.875 $^{+0.076}$	$^{5}/_{8}$	67.335 $^{+0.381}$	Ub											
Ø65 H7 $^{+0.03}$		18 JS9 $^{\pm0.0215}$		69.4 $^{+0.2}$									🔵🔴	🔵🔴	🔵🔴	🔴
Ø70 H7 $^{+0.03}$		20 JS9 $^{\pm0.026}$		74.9 $^{+0.2}$									🔴	🔵🔴	🔵🔴	🔵🔴
Ø75 H7 $^{+0.03}$		20 JS9 $^{\pm0.026}$		79.9 $^{+0.2}$									🔵	🔵🔴	🔵🔴	🔵🔴
Ø80 H7 $^{+0.03}$		22 JS9 $^{\pm0.026}$		85.4 $^{+0.2}$										🔵	🔵🔴	🔵🔴
Ø85 H7 $^{+0.035}$		22 JS9 $^{\pm0.026}$		90.4 $^{+0.2}$											🔵	🔴
Ø85.725 $^{+0.0381}$	3 $^{3}/_{8}$	22.225 $^{+0.076}$	$^{7}/_{8}$	95.504 $^{+0.381}$	Wd											
Ø90 H7 $^{+0.035}$		25 JS9 $^{\pm0.026}$		95.4 $^{+0.2}$											🔵	🔵🔴
Ø92.075 $^{+0.0381}$	3 $^{5}/_{8}$	22.225 $^{+0.076}$	$^{7}/_{8}$	101.955 $^{+0.381}$	Wf											
Ø100 H7 $^{+0.035}$		28 JS9 $^{\pm0.026}$		106.4 $^{+0.2}$												🔵



Spline bores

Basic programme of SAE involute splines

Spline code	Size	Pitch circle	pitch	No. of teeth	Angle	Spline code	Size	Pitch circle	pitch	No. of teeth	Angle
PH-S	$^{5}/_{8}$"	14.28	16/32	9	30°	**PS-S**	1 $^{1}/_{2}$"	35.98	12/24	17	30°
PI-S	$^{3}/_{4}$"	17.46	16/32	11	30°	**PD-S**	1 $^{1}/_{2}$"	36.51	16/32	23	30°
PB-S	$^{7}/_{8}$"	20.63	16/32	13	30°	**PE-S**	1 $^{3}/_{4}$"	42.86	16/32	27	30°
PB-BS	1"	23.81	16/32	15	30°	**PK-S**	1 $^{3}/_{4}$"	41.275	8/16	13	30°
PJ	1 $^{1}/_{8}$"	26.98	16/32	17	30°	**PT-C** [1]	2"	47.625	8/16	15	30°
PC-S	1 $^{1}/_{4}$"	29.63	12/24	14	30°	**PQ-C** [1]	2 $^{1}/_{4}$"	53.975	8/16	17	30°
PA-S	1 $^{3}/_{8}$"	33.33	16/32	21	30°						

Basic programme of spline bores acc. to DIN 5482

Size	Pitch circle	Module	No. of teeth	Profile correction	Size	Pitch circle	Module	No. of teeth	Profile correction
A 17 x 14	14.40	1.6	9	+0.600 [2]	**A 35 x 31**	31.50	1.75	18	+0.676
A 20 x 17	19.20	1.6	12	-0.200	**A 40 x 36**	38.00	1.9	20	+0.049
A 25 x 22	22.40	1.6	14	+0.550	**A 45 x 41**	44.00	2	22	+0.181
A 28 x 25	26.25	1.75	15	+0.302	**A 50 x 45**	48.00	2	24	+0.181
A 30 x 27	28.00	1.75	16	+0.327					

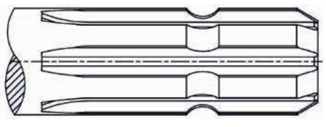
Basic programme of spline bores acc. to DIN 5480

Spline code	Pitch circle	Module	No. of teeth	Spline code	Pitch circle	Module	No. of teeth
20 x 1 x 18 x 8H	18.0	1	18	**40 x 2 x 18 x 8H**	36.0	2	18
20 x 1.25 x 14 x 8H	17.5	1.25	14	**45 x 2 x 21 x 8H**	41.0	2	21
25 x 1.25 x 18 x 8H	22.5	1.25	18	**48 x 2 x 22 x 9H**	44.0	2	22
28 x 1.25 x 21 x 8H	26.25	1.25	21	**50 x 2 x 24 x 8H**	48.0	2	24
30 x 2 x 14 x 8H	26.0	2	14	**60 x 2 x 28 x 8H**	56.0	2	28
32 x 2 x 14 x 8H	28.0	2	14	**75 x 3 x 24 x 8H**	72.0	3	24
35 x 2 x 16 x 8H	32.0	2	16	**80 x 3 x 25 x 8H**	75.0	3	25

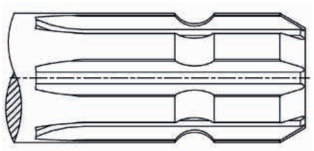
Basic programme of spline bores acc. to DIN 9611 - ISO 500 (p.t.o. shaft connection)

Size	Width of keyway	No. of teeth	Tip circle	Root circle
1 $^{3}/_{8}$"	8.69	6	34.93	29.65
1 $^{3}/_{8}$"	–	21	34.95	34.80 [3]
1 $^{3}/_{4}$"	11.07	6	44.45	37.74
1 $^{3}/_{4}$"	–	20	45.20	40.20

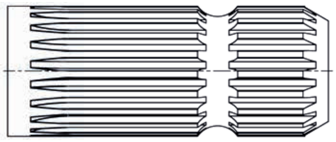
1 ⅜“, 6 teeth



1 ¾“, 6 teeth



1 ¾ “, 20 teeth



Spline clamping hubs are often adapted to the shafts of hydraulic pump/hydraulic motor shafts. Please contact us for the respective hub length of the spline code!

[1] For clamping hubs only, with plug-in hubs use code PT or PQ.

[2] Profile correction different from DIN

[3] Similar to code PA-S

Taper bores

Basic programme taper 1:8

Code	$D^{+0.05}$	(D2)	B^{JS9}	$T2^{+0.1}$	LK
N/1	9.7	7.575	2.4$^{+0.05}$	10.85	17.0
N/1c	11.6	9.5375	3^{JS9}	12.90	16.5
N/1e	13.0	10.375	2.4$^{+0.05}$	13.80	21.0
N/1d	14.0	11.813	3^{JS9}	15.50	17.5
N/1b	14.3	11.8625	3.2$^{+0.05}$	15.65	19.5
N/2	17.287	14.287	3.2$^{+0.05}$	18.24	24.0
N/2a	17.287	14.287	4^{JS9}	18.94	24.0
N/2b	17.287	14.287	3^{JS9}	18.34	24.0
N/3	22.002	18.502	4^{JS9}	23.40	28.0
N/4	25.463	20.963	4.78$^{+0.05}$	27.83	36.0
N/4b	25.463	20.963	5^{JS9}	28.23	36.0
N/4a	27.0	22.9375	4.78$^{+0.05}$	28.80	32.5
N/4g	28.45	23.6375	6^{JS9}	29.32	38.5
N/5	33.176	27.676	6.38$^{+0.05}$	35.39	44.0
N/5a	33.176	27.676	7^{JS9}	35.39	44.0

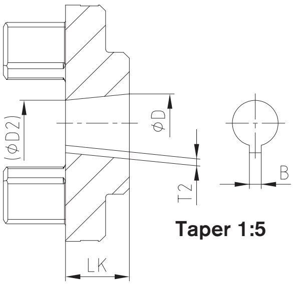
With code N/6 and N/6a keyway in parallel with taper.

Basic programme of taper 1:10

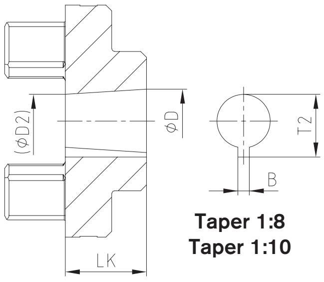
Code	$D^{+0.05}$	(D2)	B^{JS9}	$T2^{+0.1}$	LK
CX	19.95	16.75	5^{JS9}	22.08	32
DX	24.95	20.45	6^{JS9}	26.68	45
EX	29.75	24.75	8^{JS9}	31.88	50

Basic programme taper 1:5

Code	$D^{+0.05}$	(D2)	B^{JS9}	$T2^{+0.1}$	LK
A-10	9.85	7.55	2^{JS9}	1.0	11.5
B-17	16.85	13.15	3^{JS9}	1.8	18.5
C-20	19.85	15.55	4^{JS9}	2.2	21.5
Cs-22	21.95	17.65	3^{JS9}	1.8	21.5
D-25	24.85	19.55	5^{JS9}	2.9	26.5
E-30	29.85	23.55	6^{JS9}	2.6	31.5
F-35	34.85	27.55	6^{JS9}	2.6	36.5
G-40	39.85	32.85	6^{JS9}	2.6	35.0



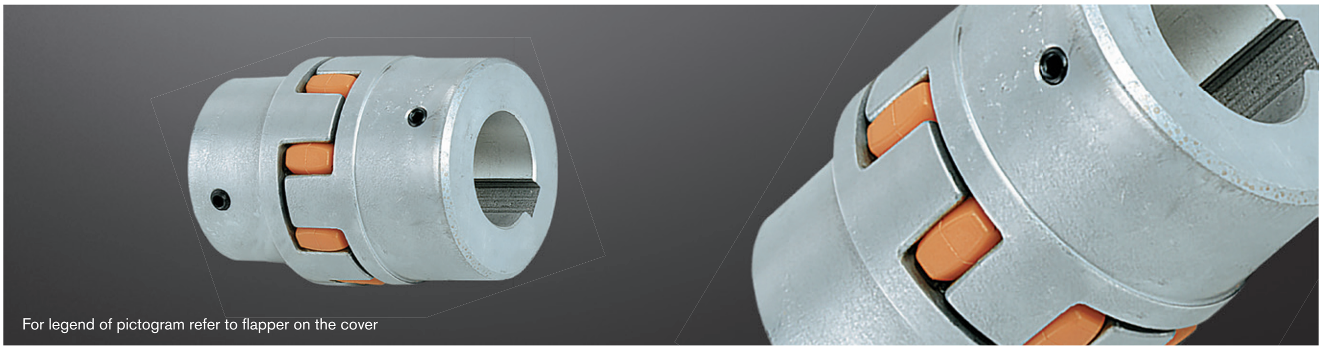
Taper 1:5



Taper 1:8
Taper 1:10

ROTEX® Standard
Flexible jaw couplings

Materials: aluminium + cast + sinter material



For legend of pictogram refer to flapper on the cover

Size	Compo-nent	Spider 1) (component 2) Rated torque [Nm]			Dimensions [mm]												
					Finish bore D (min. - max.)	General									Setscrew		
		92 ShA	98 ShA	64 ShD		L	L1, L2	E	B1	S	DH	DI1	DN	N	G	T	T_A [Nm]
ROTEX® Sintered steel (Sint)																	
14	1a	7.5	12.5	—	0-16	35	11	13	10	1.5	30	10	30	–	M4	5	1.5
19	1a	10	17	—	0-25	66	25	16	12	2.0	40	18	40	–	M5	10	2
24	1a	35	60	—	0-35	78	30	18	14	2.0	56	27	56	–	M5	10	2
ROTEX® Aluminium diecast (Al-D)																	
19	1	10	17	—	0-19	66	25	16	12	2	41	18	32	20	M5	10	2
	1a				19-24								41				
24	1	35	60	—	0-24	78	30	18	14	2	56	27	40	24	M5	10	2
	1a				22-28								56				
28	1	95	160	—	0-28	90	35	20	15	2.5	66	30	48	28	M8	15	10
	1a				28-38								66				
ROTEX® Aluminium (Al-H)																	
14	1a	7.5	12.5	16	0-16	35	11	13	10	1.5	30	10.5	-	-	M4	5	1.5
19	1a	10	17	26	0-24	66	25	16	12	2.0	40	18	-	-	M5	10	2
24	1a	35	60	75	0-28	78	30	18	14	2.0	55	27	-	-	M5	10	2
28	1a	95	160	200	0-38	90	35	20	15	2.5	65	30	-	-	M8	15	10
38	1a	190	325	405	0-45	114	45	24	18	3.0	80	38	-	-	M8	15	10
42	1a	265	450	560	0-55	126	50	26	20	3.0	95	46	-	-	M8	20	10
48	1a	310	525	655	0-62	140	56	28	21	3.5	105	51	-	-	M8	20	10

The coupling is provided with a ROTEX® GS spider as a standard (ROTEX® standard spider available, if requested).

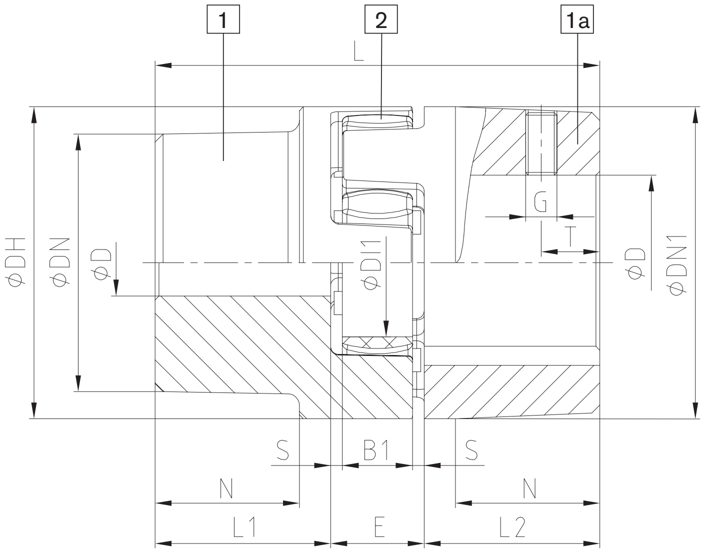
ROTEX® Cast iron (GJL)																	
38	1	190	325	405	12-40	114	45	24	18	3	80	38	66	37	M8	15	10
	1a				38-48								78				
	1b				12-48	164	70							62			
42	1	265	450	560	14-45	126	50	26	20	3	95	46	75	40	M8	20	10
	1a				42-55								94				
	1b				14-55	176	75							65			
48	1	310	525	655	15-52	140	56	28	21	3.5	105	51	85	45	M8	20	10
	1a				48-62								104				
	1b				15-62	188	80							69			
55	1	410	685	825	20-60	160	65	30	22	4	120	60	98	52	M10	20	17
	1a				55-74								118				
65	1	625	940	1175	22-70	185	75	35	26	4.5	135	68	115	61	M10	20	17
75	1	1280	1920	2400	30-80	210	85	40	30	5	160	80	135	69	M10	25	17
90	1	2400	3600	4500	40-100	245	100	45	34	5.5	200	100	160	81	M12	30	40
ROTEX® Nodular iron (GJS)																	
100	1	3300	4950	6185	50-115	270	110	50	38	6	225	113	180	89	M12	30	40
110	1	4800	7200	9000	60-125	295	120	55	42	6.5	255	127	200	96	M16	35	80
125	1	6650	10000	12500	60-145	340	140	60	46	7	290	147	230	112	M16	40	80
140	1	8550	12800	16000	60-160	375	155	65	50	7.5	320	165	255	124	M20	45	140
160	1	12800	19200	24000	80-185	425	175	75	57	9	370	190	290	140	M20	50	140
180	1	18650	28000	35000	85-200	475	195	85	64	10.5	420	220	325	156	M20	50	140

🟧 =Unless any material is specified in the order, it is defined with the calculation/order.

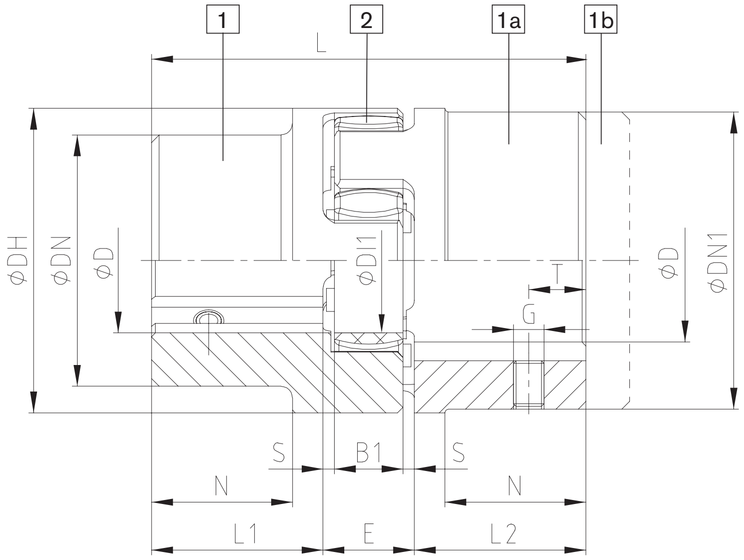
1) Maximum torque of the coupling $T_{K\ max}$ = rated torque of the coupling T_{KN} x 2. For selection see page 14 et seqq.

Ordering example:	ROTEX® 38	GJL	92 ShA	1a	Ø45	1	Ø25
	Coupling size	Material	Spider hardness	Component	Finish bore	Component	Finish bore

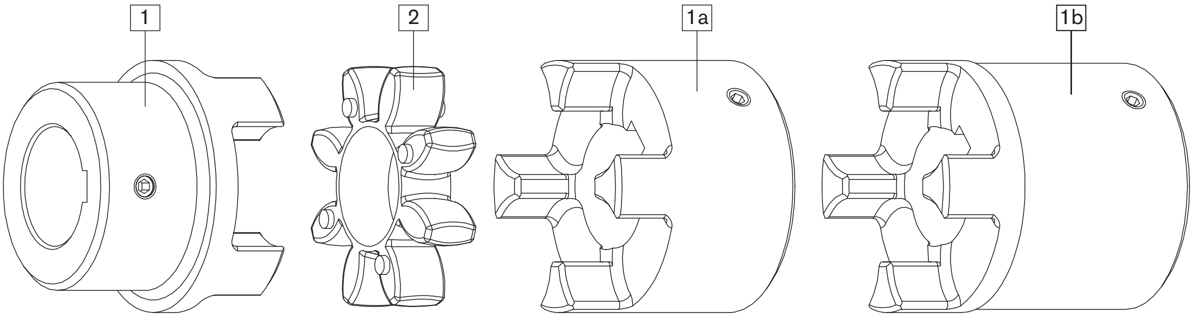
Components



AI-D (thread opposite the keyway)



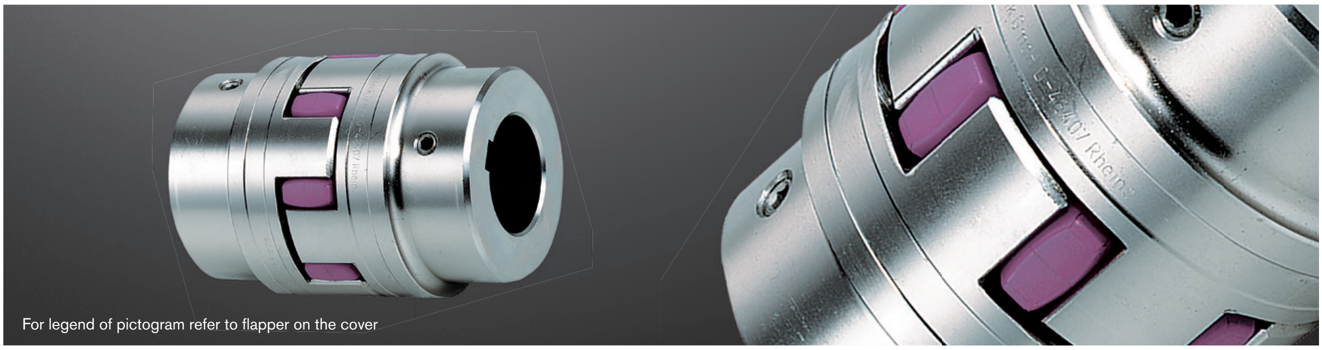
GJL / GJS (thread on the keyway)



Standard hub Spider Large hub Large hub lengthened

ROTEX® Standard
Flexible jaw couplings

Material steel/stainless steel



For legend of pictogram refer to flapper on the cover

ROTEX® Steel (St)

Size	Compo-nent	Spider [1] (component 2) Rated torque [Nm]			Finish bore D (min. - max.)	Dimensions [mm]											
						General									Setscrew		
		92 ShA	98 ShA	64 ShD		L	L1, L2	E	B1	S	DH	DI1	DN	N	G	T	T_A [Nm]
14	1a	7.5	12.5	16	0-16	35	11	13	10	1.5	30	10	30	—	M4	5	1.5
	1b					50	18.5										
■ 19	1a	10	17	21	0-25	66	25	16	12	2	40	18	40	—	M5	10	2
	1b					90	37										
■ 24	1a	35	60	75	0-35	78	30	18	14	2	55	27	55	—	M5	10	2
	1b					118	50										
■ 28	1a	95	160	200	0-40	90	35	20	15	2.5	65	30	65	—	M8	15	10
	1b					140	60										
38	1	190	325	405	0-48	114	45	24	18	3	80	38	70	27	M8	15	10
	1b					164	70						80	—			
42	1	265	450	560	0-55	126	50	26	20	3	95	46	85	28	M8	20	10
	1b					176	75						95	—			
48	1	310	525	655	0-62	140	56	28	21	3.5	105	51	95	32	M8	20	10
	1b					188	80						105	—			
55	1	410	685	825	0-75	160	65	30	22	4	120	60	110	37	M10	20	17
	1b					210	90						120	—			
65	1	625	940	1175	0-80	185	75	35	26	4.5	135	68	115	47	M10	20	17
	1b					235	100						135	—			
75	1	1280	1920	2400	0-95	210	85	40	30	5	160	80	135	53	M10	25	17
	1b					260	110						160	—			
90	1	2400	3600	4500	0-110	245	100	45	34	5.5	200	100	160	62	M12	30	40
	1b					295	125						200	—			
100	1	3300	4950	6185	0-115	270	110	50	38	6	225	113	180	89	M12	30	40
110	1	4800	7200	9000	0-125	295	120	55	42	6.5	255	127	200	96	M16	35	80
125	1	6650	10000	12500	60-145	340	140	60	46	7	290	147	230	112	M16	40	80
140	1	8550	12800	16000	60-160	375	155	65	50	7.5	320	165	255	124	M20	45	140
160	1	12800	19200	24000	80-185	425	175	75	57	9	370	190	290	140	M20	50	140
180	1	18650	28000	35000	85-200	475	195	85	64	10.5	420	220	325	156	M20	50	140

■ =Unless any material is specified in the order, it is defined with the calculation/order.

[1] Maximum torque of the coupling $T_{K\ max}$ = rated torque of the coupling T_{KN} x 2. For selection see page 14 et seqq.

ROTEX® Stainless steel

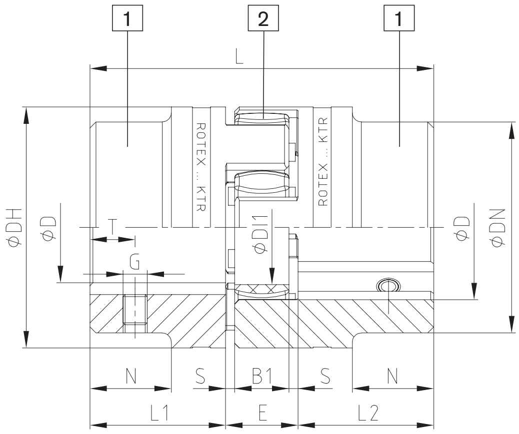
Size	Material	Spider (component 2) Rated torque [Nm]			Finish bore D (min. - max.)	Dimensions [mm]											
						General									Setscrew		
		92 ShA	98 ShA	64 ShD		L	L1, L2	E	B1	S	DH	DI1	DN	N	G	T	T_A [Nm]
19	1.4305	10	17	21	0-25	66	25	16	12	2	40	18	40	-	M5	10	2
24	1.4305	35	60	75	0-35	78	30	18	14	2	55	27	55	-	M5	10	2
28	1.4305	95	160	200	0-40	90	35	20	15	2.5	65	30	65	-	M8	15	10
38	1.4305	190	325	405	0-48	114	45	24	18	3	80	38	70	27	M8	15	10
42	1.4305	265	450	560	0-55	126	50	26	20	3	95	46	85	28	M8	20	10
48	1.4305	310	525	655	0-62	140	56	28	21	3.5	105	51	95	32	M8	20	10

Material 1.4571 on request.

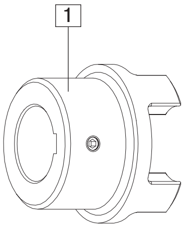
Ordering example:	ROTEX® 38	1.4305	92 ShA	1 - Ø45		1 - Ø25	
	Coupling size	Material	Spider hardness	Component	Finish bore	Component	Finish bore

DIN EN 10204 - 3.1 and 3.2 material test certificate

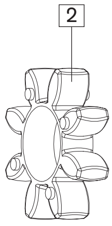
Components



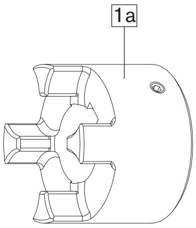
Steel (thread on the keyway)



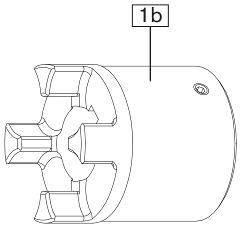
Standard hub



Spider



Large hub



Large hub lengthened

ROTEX® Coupling hubs with test certificate 1)

Size	Component	Material 2)	Inspection certificate acc. to DIN EN 10204	Notch impact strength
19	1a	S355 2)	3.1	>=27 J
24	1a	S355 2)	3.1	>=27 J
28	1a	S355 2)	3.1	>=27 J
38	1a	S355 2)	3.1	>=27 J
42	1	S355 2)	3.1	>=27 J
48	1	S355 2)	3.1	>=27 J
55	1	S355 2)	3.1	>=27 J
65	1	S355 2)	3.1	>=27 J
75	1	S355 2)	3.1/3.2	>=27 J
		42CrMoS4+QT 3)		
90	1	S355 2)	3.1/3.2	>=27 J
		42CrMoS4+QT 3)		
100	1	S355 2)	3.1/3.2	>=27 J
		42CrMoS4+QT 3)		
110	1	S355 2)	3.1/3.2	>=27 J
		42CrMoS4+QT 3)		
120	1	S355 2)	3.1/3.2	>=27 J
		42CrMoS4+QT 3)		
140	1	S355 2)	3.1/3.2	>=27 J
		42CrMoS4+QT 3)		
160	1	S355 2)	3.1/3.2	>=27 J
		42CrMoS4+QT 3)		
180	1	S355 2)	3.1/3.2	>=27 J
		42CrMoS4+QT 3)		

1) S355 suitable for feather key connections, 42CrMoS4+QT for oil press-fits
2) Notch impact strength with -40 °C
3) Notch impact strength with -20 °C

Marine programme:

Hub materials S355J2+N and 42CrMo4+QT acc. to DIN EN 10204 - 3.1+3.2, size 75 - 180 available from stock.

UL

Use in fire pumps
ROTEX® couplings comply with the specifications of NFPA 20 standard for the installation of stationary pumps for fire protection and due to completion of the endurance tests required they also comply with the specifications of UL 448A, flexible couplings and connection shafts for stationary fire pumps.

UL® CERTIFIED
SAFETY US
EX15517

Sizes available:

ROTEX® UL Listed

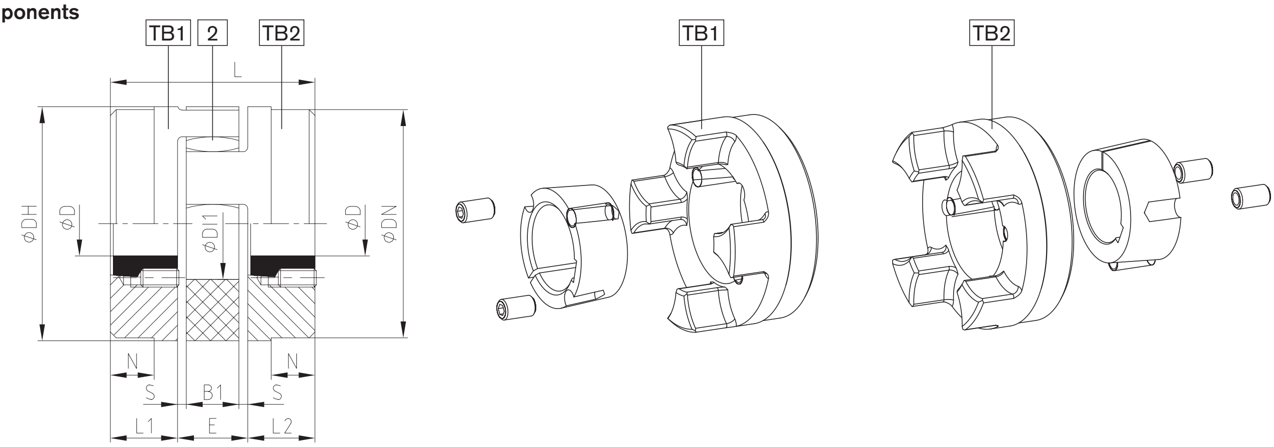
Size	Compo-nent	Material	Spider (component 2) Rated torque [Nm]	Dimensions [mm]				
			92 ShA	Finish bore D (min. - max.)	L	L1, L2	E	DH
42	1	St	265	18-55	126	50	26	95
55	1	St	410	24-74	160	65	30	120
65	1	St	625	24-80	185	75	35	135
75	1	St	1280	24-95	210	85	40	160
90	1	St	2400	30-110	245	100	45	200

* for complete dimensions see table on page 40

Taper clamping sleeve

For legend of pictogram refer to flapper on the cover

Components



ROTEX® Shaft coupling for taper clamping sleeve														
Size	Taper clamping sleeve	Dimensions [mm]									Fastening screws for taper clamping sleeves			
		L1, L2	E	B1	S	L	N	DH	DN	DI1	Size [Inch] 1)	Length [mm]	Number	T_A [Nm]
24	1008	22	18	14	2.0	62	–	55	55	27	$^{1}/_{4}$"	13	2	5.7
28	1108	23	20	15	2.5	66	–	65	65	30	$^{1}/_{4}$"	13	2	5.7
38	1108	23	24	18	3.0	70	15	80	78	38	$^{1}/_{4}$"	13	2	5.7
42	1610	26	26	20	3.0	78	16	95	94	46	$^{3}/_{8}$"	16	2	20
48	1615	39	28	21	3.5	106	28	105	104	51	$^{3}/_{8}$"	16	2	20
55	2012	33	30	22	4.0	96	20	120	118	60	$^{7}/_{16}$"	22	2	31
65	2012	33	35	26	4.5	101	19	135	115	68	$^{7}/_{16}$"	22	2	31
75	2517	52	40	30	5.0	144	36	160	158	80	$^{1}/_{2}$"	25	2	49
	• 3020										$^{5}/_{8}$"	32		92
90	3020	52	45	34	5.5	149	33	200	160	100	$^{5}/_{8}$"	32	2	92
100	3535	90	50	38	6.0	230	69	225	180	113	$^{1}/_{2}$"	49	3	113
125	4545	114	60	46	7.0	288	86	290	230	147	$^{3}/_{4}$"	49	3	192

Taper clamping sleeve																			
Size	Summary of bore dimensions D [mm], H7 fit - feather keyway acc. to DIN 6885 sheet 1																		
1008	Ø10	Ø11	Ø12	Ø14	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25								
1108	Ø10	Ø11	Ø12	Ø14	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28 2)							
1610	Ø14	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42 2)				
1615	Ø14	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42 2)				
2012	Ø14	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	
2517	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55	Ø60
3020	Ø25	Ø28	Ø30	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55	Ø60	Ø65	Ø70	Ø75				
3535	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55	Ø60	Ø65	Ø70	Ø75	Ø80	Ø85	Ø90				
4545	Ø55	Ø60	Ø65	Ø70	Ø75	Ø80	Ø85	Ø90	Ø95	Ø100	Ø105	Ø110							

• Available for type TB2 only

1) 1. BSW thread

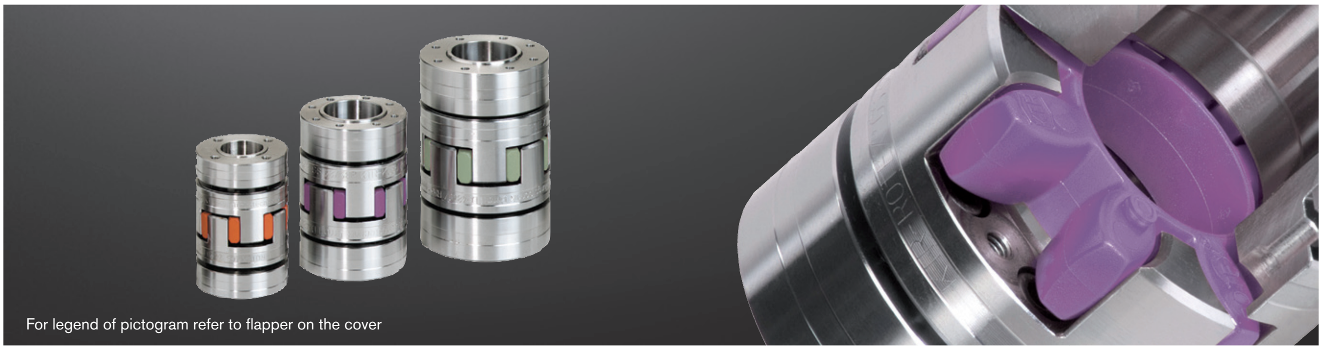
Coupling type TB1/TB2, TB1/TB1 and TB2/TB2 possible.
Please order our separate dimension sheet (M373054).

2) Bores with feather keyway (flat design) acc. to DIN 6885 sheet 3

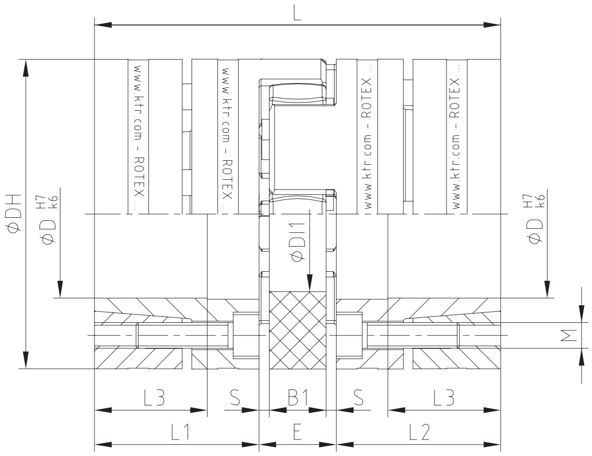
Ordering example:

ROTEX® 38	92 ShA	1108	TB1 - Ø24		TB2 - Ø22	
Coupling size	Spider hardness	Taper clamping sleeve	Hub type	Finish bore	Hub type	Finish bore

Clamping ring hubs



For legend of pictogram refer to flapper on the cover



Extraction thread M1 between clamping screws.

Clamping ring hubs steel

Size	Torques [Nm] ¹⁾				Dimensions [mm]								Clamping screws				Weight per hub with max. bore [kg]	Mass moment of inertia per hub with max. bore [kgm²]
	92 ShA		98 ShA															
	T_{KN}	$T_{K\ max}$	T_{KN}	$T_{K\ max}$	DH ²⁾	DI1	L	L1, L2	L3	E	B1	S	M	Z = number	T_A [Nm]	M1		
19	10.0	20	17	34	40	18	66	25	18	16	12	2.0	M4	6	4.1	M4	0.179	0.44×10^{-4}
24	35.0	70	60	120	55	27	78	30	22	18	14	2.0	M5	4	8.5	M5	0.399	1.91×10^{-4}
28	95.0	190	160	320	65	30	90	35	27	20	15	2.5	M5	8	8.5	M5	0.592	4.18×10^{-4}
38	190.0	380	325	650	80	38	114	45	35	24	18	3.0	M6	8	14	M6	1.225	12.9×10^{-4}
42	265	530	450	900	95	46	126	50	35	26	20	3.0	M8	4	35	M8	2.30	31.7×10^{-4}
48	310	620	525	1050	105	51	140	56	41	28	21	3.5	M10	4	69	M10	3.08	52.0×10^{-4}
55	375	750	685	1370	120	60	160	65	45	30	22	4.0	M10	4	69	M10	4.67	103.0×10^{-4}
65	—	—	940	1880	135	68	185	75	55	35	26	4.5	M12	4	120	M12	6.70	191.0×10^{-4}
75	—	—	1920	3840	160	80	210	85	63	40	30	5.0	M12	5	120	M12	9.90	396.8×10^{-4}
90	—	—	3600	4500	200	104	245	100	75	45	34	5.5	M16	5	295	M16	17.70	1136×10^{-4}

Bore D and the respective transmittable friction torques T_R of clamping ring hub in [Nm] ¹⁾

Size	Ø10	Ø11	Ø14	Ø15	Ø16	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55*	Ø60*	Ø65*	Ø70*	Ø80*	Ø90*	Ø95*	Ø100*	Ø105*
19	27	32	69	84	57	94	110																					
24			70	87	56	97	114	116	133	192																		
28				108	131	207	148	253	285	315	382	330	433	503														
38							208	353	395	439	531	463	603	593	689	793	776											
42									445	495	595	526	678	671	775	718	872	1043	1061									
48											616	704	899	896	1030	962	1160	1379	1222	1543								
55													863	856	991	918	1119	1110	1247	1277	1665	1605	2008					
65															1446	1355	1637	1635	1827	1887	2429	2368	2930					
75																1710	2053	2059	2294	2384	3040	2983	3664	4293				
90																			3845	4249	4794	5858	5900	7036	8047	9247	9575	10845

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¹⁾ For selection see page 14 et seqq.

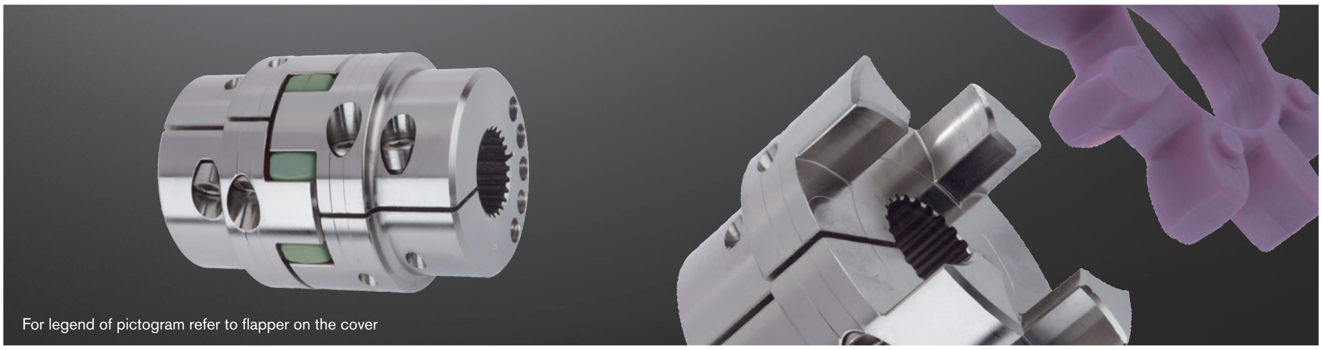
²⁾ ØDH + 2 mm with high speeds for expansion of spider

The transmittable torques of the clamping connection consider the max. clearance with shaft clearance k6/bore H7, from Ø55 G7/m6. The torque is reduced with bigger clearance. For the strength calculation of shaft/hollow shaft see KTR standard 45510 on our homepage www.ktr.com.

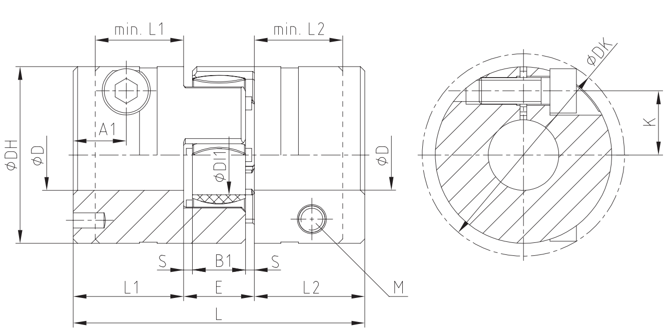
Ordering example:

ROTEX® GS 24	98 ShA	6.0 steel	Ø24	6.0 steel	Ø20
Coupling size	Spider hardness	Hub type	Finish bore	Hub type	Finish bore

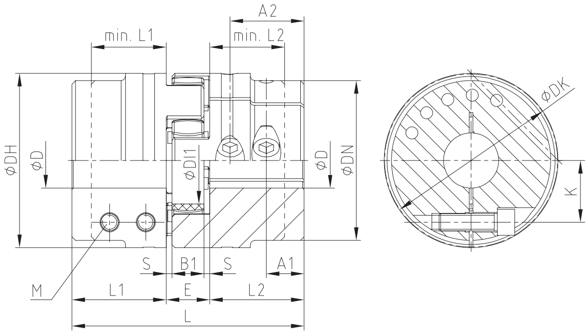
Clamping hubs



For legend of pictogram refer to flapper on the cover



ROTEX® 19 - 28



ROTEX® 38 - 90

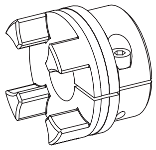
ROTEX® as clamping hubs															
Size	Dimensions [mm]													Screw DIN EN ISO 4762	
	Max. finish bore D	L	L1, L2	min. L1, min. L2	E	B1	S	DH	DN	DI1	DK	A1	A2	K	M	T_A [Nm]
19	20 [1]	66	25	20	16	12	2.0	40	-	18	46.0	12	—	14.5	M6	14
24	28	78	30	25	18	14	2.0	55	-	27	57.5	12	—	20.0	M6	14
28	38	90	35	30	20	15	2.5	65	-	30	73.0	14 [2]	—	25.0	M8	35
38	42	114	45	35	24	18	3.0	80	70	38	77.5	19	—	26.5	M8	35
42	50	126	50	42	26	20	3.0	95	85	46	93.5	18 [2]	—	32.0	M10	69
48	55	140	56	46	28	21	3.5	105	95	51	105.0	21 [2]	—	36.0	M12	120
55	68	160	65	50	30	22	4.0	120	110	60	119.5	26	51 [2]	42.5 [3]	M12	120
65	70	185	75	55	35	26	4.5	135	115	68	132.5	33	61 [2]	50.0 [3]	M12	120
75	80	210	85	65	40	30	5.0	160	135	80	158.0	36	68 [2]	57.0 [3]	M16	295
90	90	245	100	80	45	34	5.5	200	160	100	197.0	40	80 [2]	72.0 [3]	M20	580

Bore D and the respective transmittable friction torques T_R [Nm] of ROTEX® clamping hubs type 2.0																														
Size	Ø8	Ø10	Ø11	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55	Ø60	Ø65	Ø70	Ø75	Ø80	Ø85	Ø90
19	44	46	47	51	52	53	55	57	58																					
24		59	60	64	65	66	68	70	71	73	76	77	80																	
28				139	141	144	148	150	152	157	161	163	170	174	178	185	191													
38					163	165	170	172	174	178	183	185	192	196	200	207	213	217	222											
42									291	297	304	308	318	325	332	342	353	360	367	377	387	394								
48									466	476	486	491	506	516	526	542	557	567	577	592	607	618	643							
55															1185	1215	1245	1266	1286	1316	1347	1367	1417	1468	1519					
65																1316	1347	1367	1387	1417	1448	1468	1519	1569	1620	1671				
75																			2869	2926	2983	3022	3117	3213	3309	3404	3500	3595		
90																			5220	5310	5400	5460	5610	5760	5910	6060	6210	6360	6510	6660

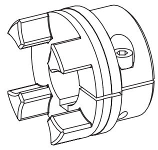
[1] With type 2.1 $D_{max.}$ Ø17 mm

[2] With reduced hubs dimension A1 varies resp. the number of screws changes from 2-off to 1-off

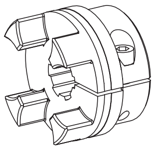
[3] A1 and A2 have a different dimension K



Type 2.0
Clamping hub single slot without feather keyway



Type 2.1
Clamping hub single slot with feather keyway

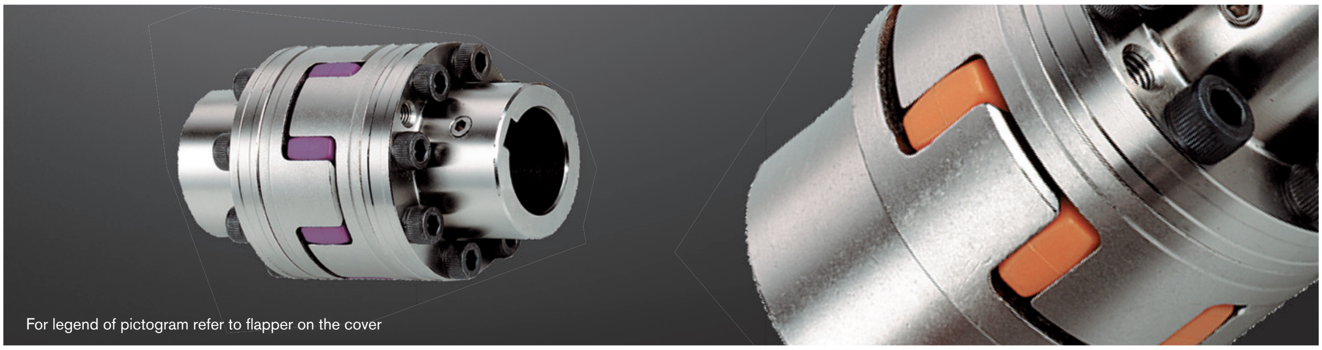


Type 2.3
Clamping hub with spline bore (For a selection of our programme of spline bores see page 37)

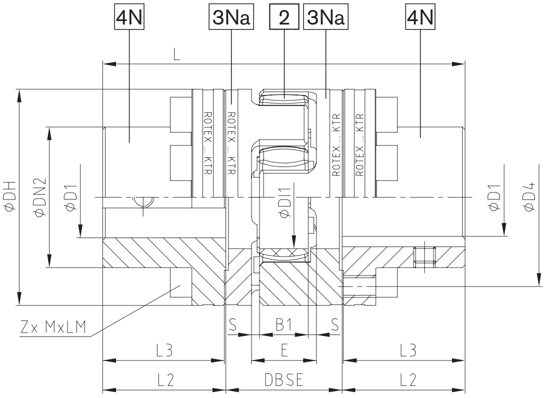
Ordering example:	ROTEX® 24	98 ShA	2.1	Ø24	2.0	Ø20
	Coupling size	Spider hardness	Hub type	Finish bore	Hub type	Finish bore

ROTEX® AFN and BFN Flexible jaw couplings

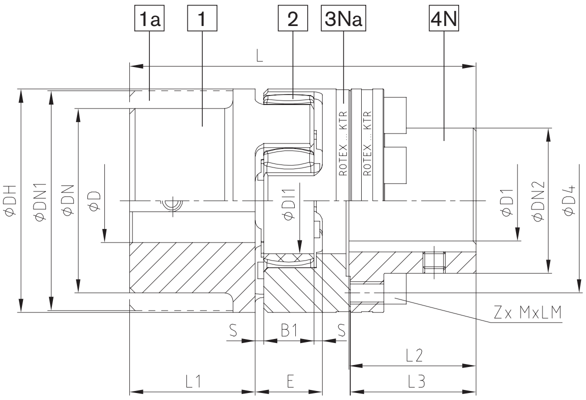
Flange programme


For legend of pictogram refer to flapper on the cover

Components



Type AFN



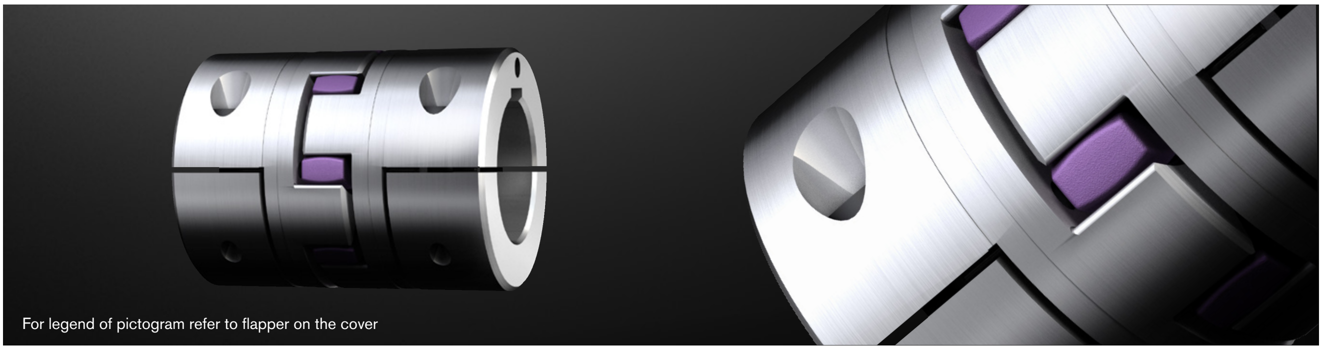
Type BFN

ROTEX® Type AFN and BFN																	
Size	Pilot bore D	Dimensions [mm]												Cap screws [3] DIN EN ISO 4762 - 12.9			
		Component 4N max. finish bore D1	DH	DN2	D4	DI1	DBSE	L1, L2	E	B1	S	L3	L				
													AFN	BFN	MxLM	Z	pitch [2]	T_A [1] [Nm]
24	Jaw coupling: page 38 to 40 Stock programme: page 36 and 37	27	55	36	45	27	33	30	18	15	2.0	30.5	94	86	M5x16	8	8x45°	10
28		30	65	42	54	30	39	35	20	15	2.5	35.5	110	100	M6x20	8		17
38		38	80	52	66	38	43	45	24	18	3.0	45.5	134	124	M8x22	8		41
42		45	95	62	80	46	48	50	26	20	3.0	51.0	150	138	M8x25	12	16x22.5°	41
48		52	105	70	90	51	50	56	28	21	3.5	57.0	164	152	M8x25	12		41
55		60	120	80	102	60	60	65	30	22	4.0	66.0	192	176	M10x30	8	8x45°	83
65		70	135	94	116	68	65	75	35	26	4.5	76.0	217	201	M10x30	12	16x22.5°	83
75		80	160	108	136	80	75	85	40	30	5.0	86.5	248	229	M12x40	15	20x18°	120
90		105	200	142	172	100	82	100	45	34	5.5	101.5	285	265	M16x40	15		295
100		115	225	158	195	113	97	110	50	38	6.0	111.5	320	295	M16x50	15		295
110		130	255	178	218	127	103	120	55	42	6.5	122.0	347	321	M20x50	15		580
125		150	290	206	252	147	116	140	60	46	7.0	142.0	400	370	M20x60	15		580
140		170	320	235	282	165	128	155	65	50	7.5	157.5	443	409	M20x60	15		580
160		200	370	270	325	190	146	175	75	57	9.0	177.5	501	463	M24x70	15		1000
180		230	420	315	375	220	159	195	85	64	10.5	198.0	555	515	M24x80	18	24x15°	1000

[1] Screw tightening torque T_A [Nm].
[2] Thread in the driving flange between the cams.
[3] Coupling is delivered not assembled.

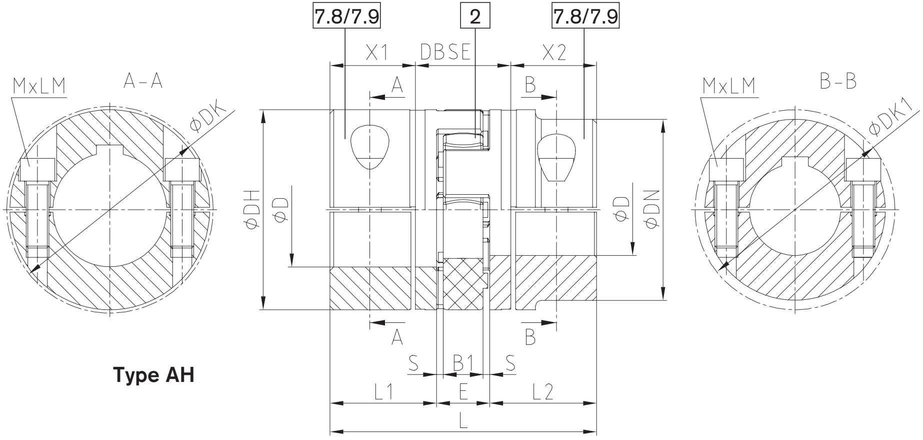
Ordering example:	ROTEX® 24	AFN	92 ShA	4N	Ø38	4N	Ø35
	Coupling size	Type	Spider hardness	Component	Finish bore	Component	Finish bore

Drop-out center design coupling

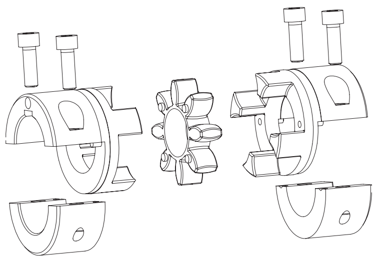


For legend of pictogram refer to flapper on the cover

Components



Type AH



ROTEX® Type AH

Size	Dimensions [mm]												Cap screws DIN EN ISO 4762	
	Max. finish bore D	L	L1, L2	E	B1	S	DH	DN	DK	DK1	X1, X2	DBSE	MxLM	Tightening torque T_A [Nm]
19	20	66	25	16	12	2.0	40	—	46.0	—	17.5	31	M6x16	14
24	28	78	30	18	14	2.0	55	—	57.5	—	22.5	33	M6x20	14
28	38	90	35	20	15	2.5	65	—	73.0	—	25.5	39	M8x25	35
38	45	114	45	24	18	3.0	80	—	83.5	—	35.5	43	M8x30	35
42	50	126	50	26	20	3.0	95	85	—	93.5	39.0	48	M10x30	69
	55							—	97.0	—			M10x35	
48	55	140	56	28	21	3.5	105	95	—	105.0	45.0	50	M12x35	120
	60							—	108.5	—			M12x40	
55	65	160	65	30	22	4.0	120	110	—	119.5	50.0	60	M12x40	120
	70							—	122.0	—			M12x45	
65	70	185	75	35	26	4.5	135	115	—	123.5	60.0	65	M12x40	120
	80							—	132.5	—			M12x45	
75	80	210	85	40	30	5.0	160	135	—	147.5	67.5	75	M16x50	295
	90							—	158.0	—				
90	90	245	100	45	34	5.5	200	160	—	176.0	81.5	82	M20x60	580
	110							—	197.0	—				
100 1)	110	270	110	50	38	6.0	225	180	—	185.5	84.0	102	M16x50	295
110 1)	120	295	120	55	42	6.5	255	200	—	208.0	90.0	115	M20x60	580
125 1)	140	340	140	60	46	7.0	290	230	—	242.5	105.0	130	M24x70	1000

CAUTION:
With maximum bore the feather keyways are offset to each other by approx. 5°!
Hub material up to size 90: steel, from size 100: GJS

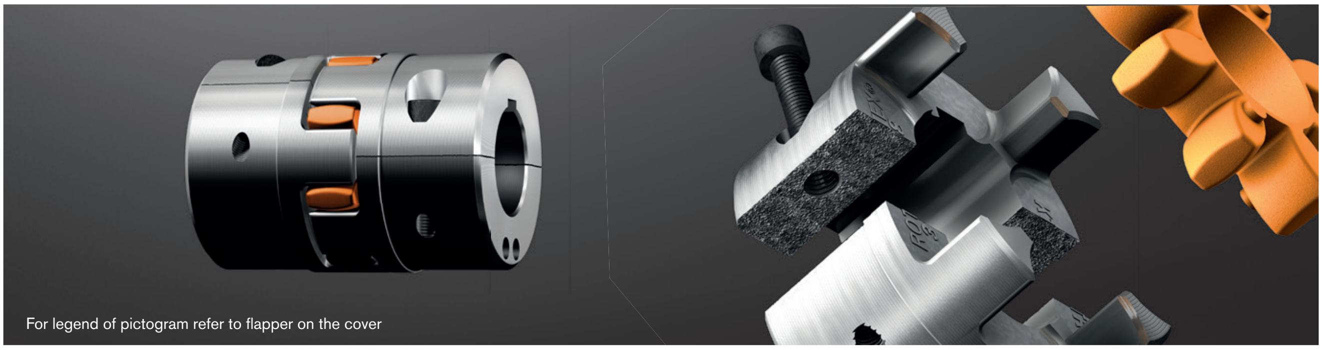
7.8 = Half shell clamping hub without feather keyway max. circumferential speed of v = 35 m/s.
From a circumferential speed of v = 25 m/s the frictional torque of shaft/hub has to be reviewed. Please consult with KTR.
7.9 = Half shell clamping hub with feather keyway max. circumferential speed of v = 35 m/s. From a circumferential speed of v = 25 m/s dynamic balancing is required.

Speed: max. circumferential speed of 25 m/s on the outside diameter DH of the coupling
1) From size 100: 4 clamping screws for each clamping hub

Ordering example:	ROTEX® 38	AH	98 ShA	7.8	Ø38	7.8	Ø30
	Coupling size	Type	Spider hardness	Hub type	Finish bore	Hub type	Finish bore

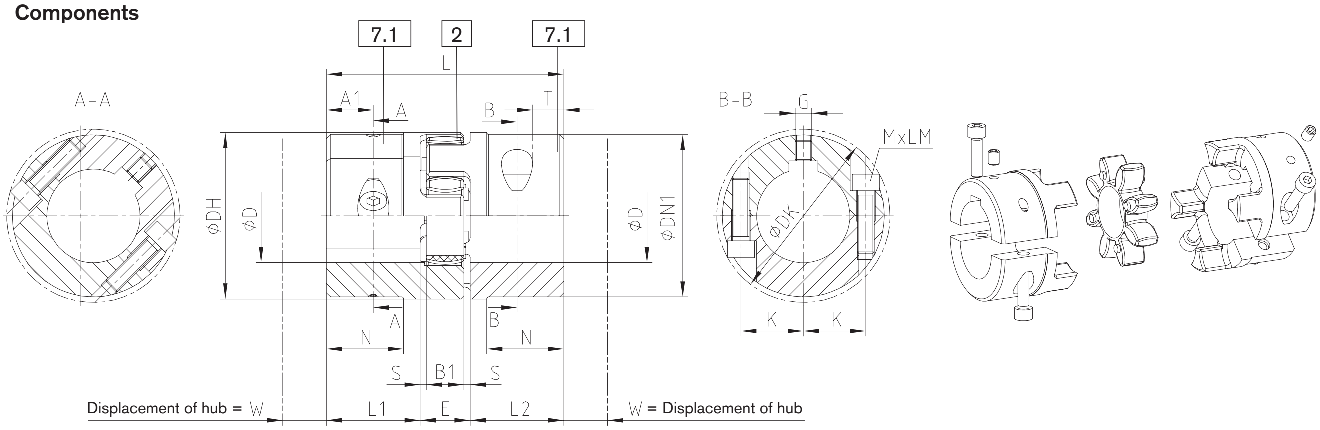
ROTEX® SH
Flexible jaw couplings

Drop-out center design coupling with SPLIT hubs



For legend of pictogram refer to flapper on the cover

Components



Type SH

ROTEX® Type SH Sintered steel (Sinter)																	
Size	Finish bore D		Dimensions [mm]													Cap screws DIN EN ISO 4762	
	min.	Max.	L	L1, L2	E	B1	S	DH	DN1	DK	N	K	A1	T	G	W	MxLM	Tightening torque T_A [Nm]
24	0	28	78	30	18	14	2.0	55	-	57.5	-	20	15	10	M5	12	M6x20	14
28	0	38	90	35	20	15	2.5	65	-	73	-	25	17.5	15	M8	12	M8x25	34

ROTEX® Type SH Cast iron (GJL)																		
Size	Finish bore D		Dimensions [mm]														Cap screws DIN EN ISO 4762	
	min.	Max.	L	L1, L2	E	B1	S	DH	DN1	DK	N	K	A1	T	G	W	MxLM	Tightening torque T_A [Nm]
38	24	48	114	45	24	18	3.0	80	78	83.5	37	30	22.5	15	M8	15	M8x30	34
42	24	55	126	50	26	20	3.0	95	94	97	40	30	25			15	M10x35	67
48	24	60	140	56	28	21	3.5	105	104	108.5	45	35	28	20		15	M12x40	115
55	24	70	160	65	30	22	4.0	120	118	122	52	40	32.5			15	M12x45	115
65	28	70	185	75	35	26	4.5	135	115	123.5	61	45	37.5		M10	15	M12x40	115
	70	80							135	132.5		50					M12x45	
75	40	80	210	85	40	30	5.0	160	135	147	69	51	42.5	25		20	M16x50	290
	80	90							160	158		57						
90	40	90	245	100	45	34	5.5	200	160	176	81	60	50	30	M12	30	M20x60	560
	90	110							200	197		72						

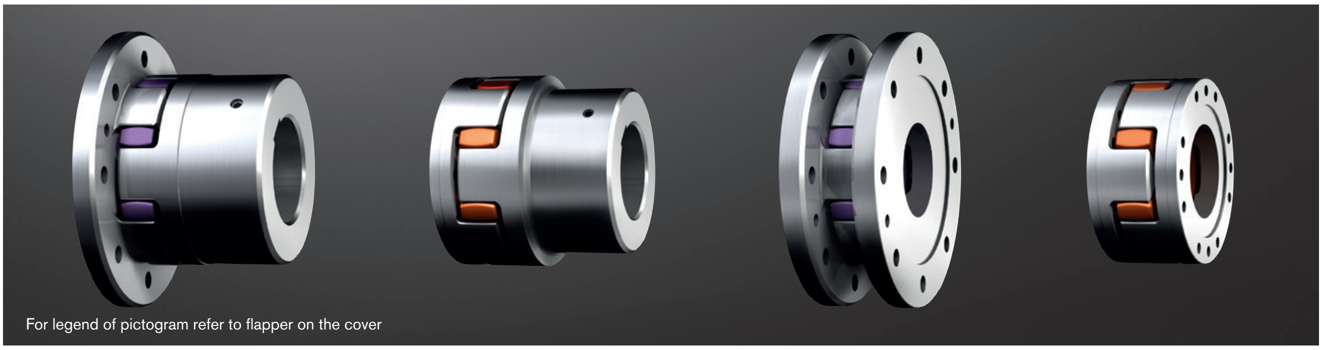
7.1 = SPLIT hub with feather keyway

Ordering example:

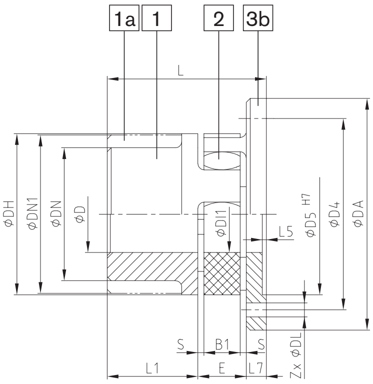
ROTEX® 38	SH	98 ShA	7.1	Ø38	7.1	Ø30
Coupling size	Type	Spider hardness	Hub type	Finish bore	Hub type	Finish bore

ROTEX® CF, CFN, DF and DFN
Flexible jaw couplings

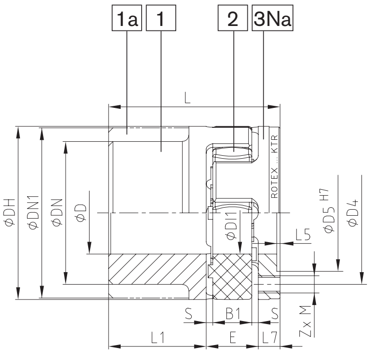
Flange programme


For legend of pictogram refer to flapper on the cover

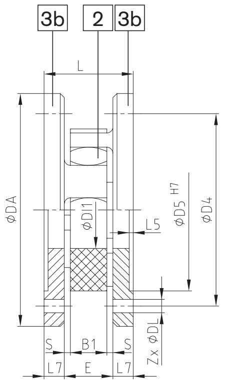
Components



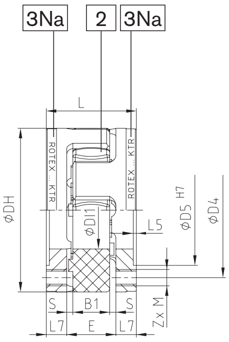
Type CF



Type CFN



Type DF

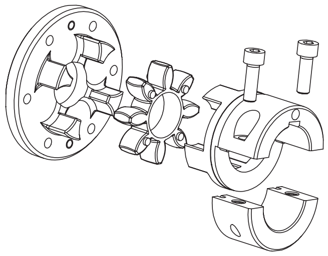


Type DFN

ROTEX® Type CF, CFN and DF, DFN																							
Size	D, DN, DN1	Dimensions general [mm]								Dimensions CF and DF [mm]							Dimensions CFN and DFN [mm]						
		DH	DI1	L1	E	B1	S	L5	L7	DA	D4	D5	Z	DL	L		D4	D5	M	Z	pitch	L	
															CF	DF						CFN	DFN
24	Jaw coupling: page 38 to 40 Stock programme: page 36 and 37	55	27	30	18	14	2.0	1.5	8	80	65	55	5	4.5	56	34	45	36	M5	8	8x45°	56	34
28		65	30	35	20	15	2.5	1.5	10	100	80	65	6	6.6	65	40	54	44	M6	8		65	40
38		80	38	45	24	18	3.0	1.5	10	115	95	80	6	6.6	79	44	66	54	M8	8		79	44
42		95	46	50	26	20	3.0	2.0	12	140	115	95	6	9.0	88	50	80	65	M8	12	16x22.5°	88	50
48		105	51	56	28	21	3.5	2.0	12	150	125	105	8	9.0	96	52	90	75	M8	12		96	52
55		120	60	65	30	22	4.0	2.0	16	175	145	120	8	11.0	111	62	102	84	M10	8	8x45°	111	62
65		135	68	75	35	26	4.5	2.0	16	190	160	135	10	11.0	126	67	116	96	M10	12	16x22.5°	126	67
75		160	80	85	40	30	5.0	2.5	19	215	185	160	10	13.5	144	78	136	112	M12	15	20x18°	144	78
90		200	100	100	45	34	5.5	3.0	20	260	225	200	12	13.5	165	85	172	145	M16	15		165	85
100		225	113	110	50	38	6.0	4.0	25	285	250	225	12	13.5	185	100	195	165	M16	15		185	100
110		255	127	120	55	42	6.5	4.0	26	330	290	255	12	17.5	201	107	218	180	M20	15		201	107
125		290	147	140	60	46	7.0	5.0	30	370	325	290	16	17.5	230	120	252	215	M20	15		230	120
140		320	165	155	65	50	7.5	5.0	34	410	360	320	16	22.0	254	133	282	245	M20	15		254	133
160		370	190	175	75	57	9.0	5.0	38	460	410	370	16	22.0	288	151	325	280	M24	15		288	151
180		420	220	195	85	64	10.5	5.5	40	520	465	420	16	26.0	320	165	375	330	M24	18	24x15°	320	165

For other flange programmes see page 45.

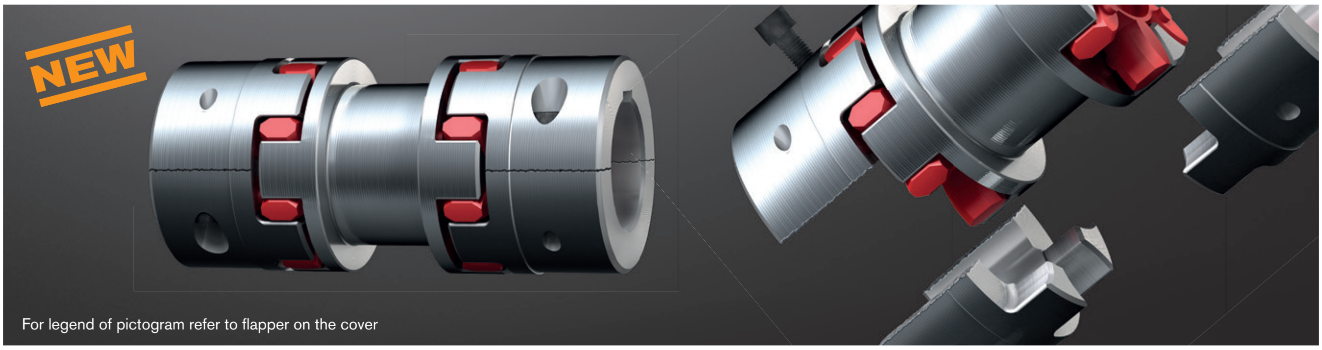
Other types: ROTEX® CF-H
Flange drop-out center design coupling
Please order our separate dimension sheet (M412069).



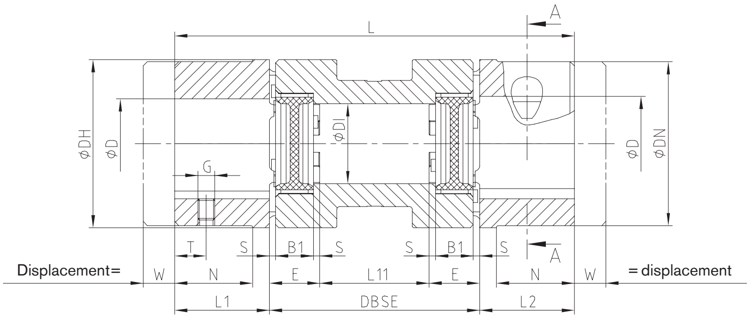
Ordering example:	ROTEX® 38	CF	92 ShA	1	GJL	Ø20
	Coupling size	Type	Spider hardness	Hub side, component	Material	Finish bore

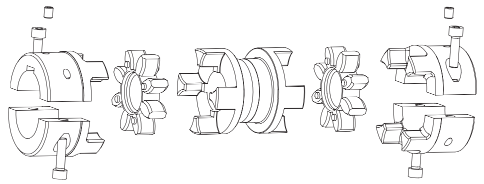
ROTEX® ZS-DKM-SH
Flexible jaw couplings

Double-cardanic shaft coupling with SPLIT hubs



For legend of pictogram refer to flapper on the cover





ROTEX® type ZS-DKM-SH

Size [3]	Spider 98 ShA-GS T_{KN} [Nm] [1] [2]	Dimensions [mm]																Screws DIN EN ISO 4762		Max. displacements				
		Drop-out center length DBSE	Finish bore D		DH	DN	DK	DI	L1, L2	L11	E	B1	S	L	G	W			Axial [mm]	with n = 1500 rpm		with n = 3000 rpm	
			min.	Max.													MxLM	T_A [Nm]		Radial [mm]	Angular [°]	Radial [mm]	Angular [°]
19	10	42 [5]	0	24	40	-	-	18	25	10	16	12	2.0	92	-	-	-	-	1.2	0.45	1	-	0.75
24	35	52 [5]	0	28	55	-	57.5	27	30	16	18	14	2.0	112	M5	12	M6x20	14	1.4	0.59		-	
		100								64				160						1.43		1.07	
		140								104				200						2.13		1.60	
28	95	58 [5]	0	38	65	-	73	30	35	18	20	15	2.5	128	M8	12	M8x25	34	1.5	0.66		-	
		100								60				170						1.40		1.05	
		140								100				210						2.10		1.57	
38	190	68 [5]	24	45	80	78	83.5	38	45	20	24	18	3.0	158	M8	15	M8x30	34	1.8	0.77		-	
		100								52				190						1.33		0.99	
		140								92				230						2.02		1.52	
42	265	74 [5]	24	55	95	94	97	46	50	22	26	20	3.0	174	M8	15	M10x35	67	2.0	0.84		-	
		100								48				200						1.29		0.97	
		140								88				240						2.00		1.49	
48	310	80 [5]	24	60	105	104	108.5	51	56	24	28	21	3.5	192	M8	15	M12x40	115	2.1	0.91		-	
		100								44				212						1.26		0.94	
		140								84				252						1.95		1.47	
55	410	88 [5]	24	70	120	118	122	60	65	28	30	22	4.0	218	M10	15	M12x45	115	2.2	1.01		-	
		100								40				230						1.22		0.92	
		140								80				270						1.92		1.44	
		180								120				310						2.62		1.96	
		200								140				330						2.97		2.22	
65	625	102 [5]	24	80	135	135 [6]	132.5 [6]	68	75	32	35	26	4.5	252	M10	15	M12x40	115	2.6	1.17		-	
		140								70				290						1.83		1.37	
		180								110				330						2.53		1.90	
75	1280	116 [5]	40	90	160	160 [6]	158 [6]	80	85	36	40	30	5.0	286	M10	20	M16x50	290	3.0	1.33		-	
		140								60				310						1.75		1.31	
		180								100				350						2.44		1.83	
		200								120				370						2.79		2.09	
		250								170				420						3.67		2.75	
90	2400	130 [5]	40	110	200	200 [6]	197 [6]	100	100	40	45	34	5.5	330	M12	30	M20x60	560	3.4	1.48		-	
		180								90				380						2.36		1.76	
		250								160				450						3.58		2.68	

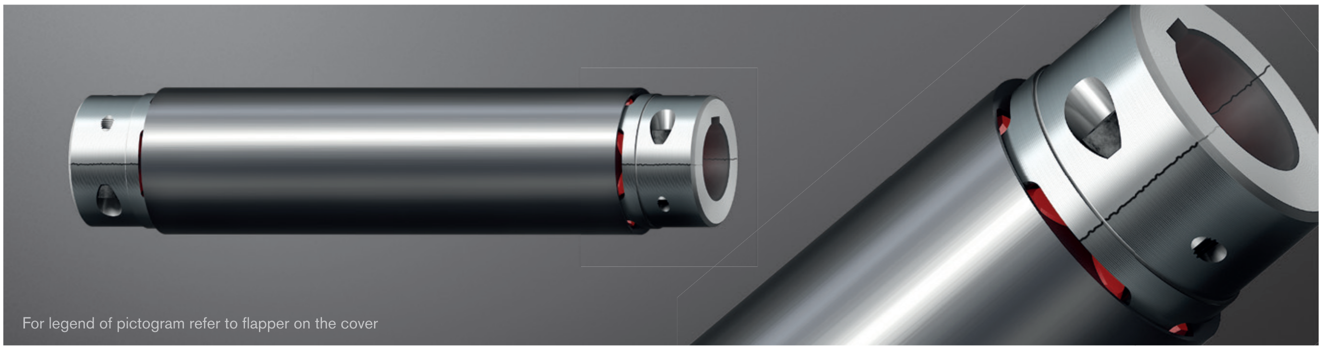
[1] Maximum torque of coupling $T_{K\,max}$ = rated torque of coupling T_{KN} x 2
[2] Mathematically transmittable torque with double-cardanic types acc. to 92 ShA-GS using the higher quality spiders 98 ShA-GS
[3] ROTEX®-SPLIT hub material sizes 24 and 28 = sintered steel; hub material sizes 38 to 90 = EN-GJL
[4] Hub type 7.1 = SPLIT hub with feather keyway and thread for setscrews
[5] Material spacer Al-H
[6] ØDN and ØDK depending on finish bore ØD, see page 47

The max. permissible circumferential speed for double-cardanic ROTEX® DKM and ZS-DKM-SH coupling is 20m/s, with higher speeds please consult with KTR.
Spiders ROTEX® 98 ShA-GS and 64 ShD-GS applicable, while the transmittable torque [T_{KN}; T_{Kmax}] of the 92 ShA-GS spider must not be exceeded.

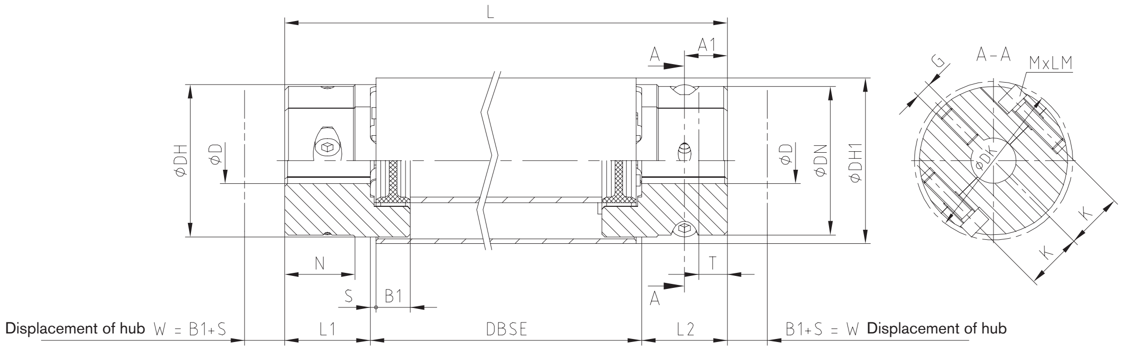
Ordering example:	ROTEX® 38	ZS-DKM-SH	140	98 ShA-GS	7.1 [4]	Ø 38	7.1 [4]	Ø30
	Coupling size	Type	Shaft distance dimension DBSE	Spider hardness	Hub type	Finish bore	Hub type	Finish bore

ROTEX® ZRS
Flexible / backlash-free intermediate shaft coupling

Intermediate shaft programme



For legend of pictogram refer to flapper on the cover



ROTEX® type ZRS																		
Size	Dimensions [5] [mm]															Clamping screw DIN EN ISO 4762		Intermediate pipe Torsion spring stiffness C [2] [Nm/rad]
	Finish bore D		DH	DN	L1, L2	N	B1	S	G	T	A1	K	DK	DH1	Min. DBSE	L [1]	MxLM	Tightening torque T_A [Nm]	
	min.	Max.																	
19 [3]	0	20	40	-	25	-	12	2.0	-	-	8.0	14.5	46.0	45	33	[4]	M6x16	14	3800
24	0	24	55	-	30	-	14	2.0	M5	10	15.0	20.0	57.5	60	37	L = DBSE + L1 + L2	M6x20	14	11100
28	0	38	65	-	35	-	15	2.5	M8	15	17.5	25.0	73.0	72	40		M8x25	34	23600
38	24	45	80	78	45	37.0	18	3.0	M8	15	22.5	30.0	83.5	87	49		M8x30	34	43800
42	24	55	95	94	50	40.0	20	3.0	M8	20	25.0	30.0	97.0	103	53		M10x35	67	82600

[1] With inquiries and orders please specify the shaft distance dimension DBSE along with the maximum speed to review the critical bending speed.
Maximum DBSE = 4000 mm (different lengths on request).

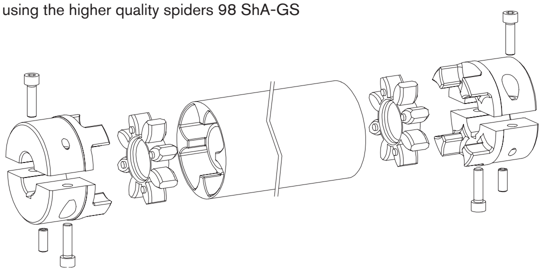
[2] Torsion spring stiffness with an intermediate pipe length of 1 m

[3] Available as a clamping hub type DH (7.5/7.6)

[4] L = DBSE + L1 + L2 - 15

[5] Finish bore according to ISO fit H7, feather keyway according to DIN 6885, sheet 1 [JS9]

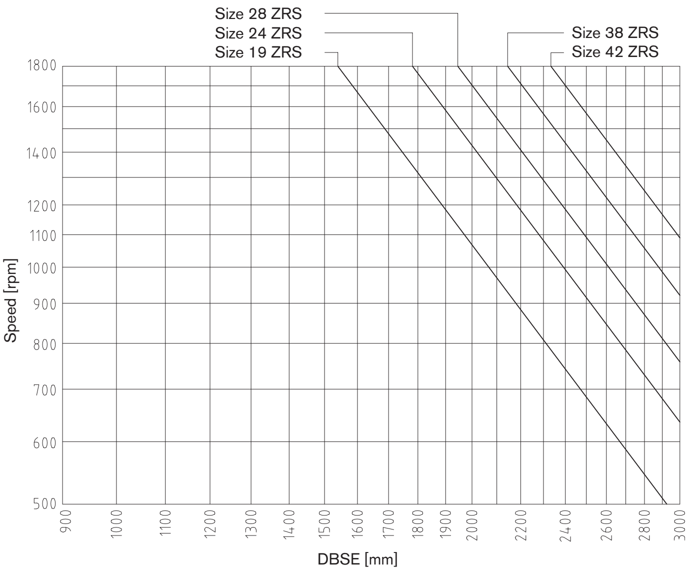
Mathematically transmittable torque with double-cardanic types acc. to 92 ShA-GS using the higher quality spiders 98 ShA-GS



7.1 = SPLIT hub with feather keyway

Displacements			
Size	Axial displacement [mm]	Radial displacement [mm] per 1m of pipe length	Angular displacement [degree]
19	1.2	15.7	0.9
24	1.4	15.7	0.9
28	1.5	15.7	0.9
38	1.8	17.5	1.0
42	2.0	17.5	1.0

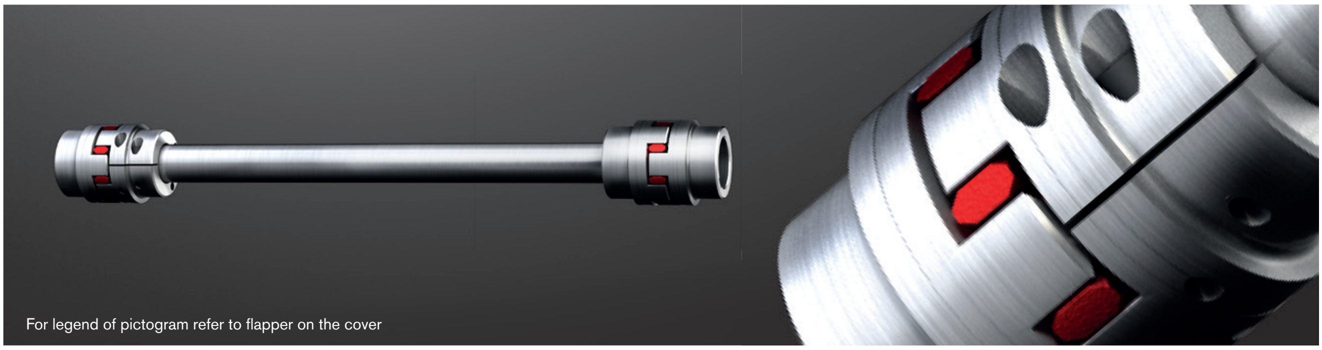
Diagramme for coupling selection:



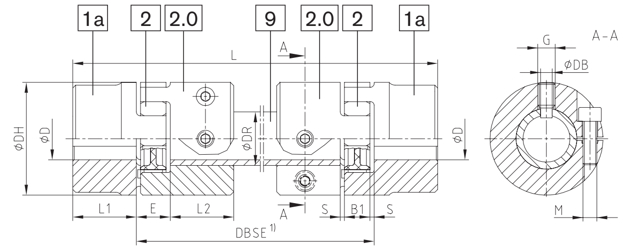
Ordering example:	ROTEX® 38	ZRS	1200	98 ShA-GS	7.1	Ø30	7.1	Ø30
	Coupling size	Type	Shaft distance dimension DBSE	Spider hardness	Hub type	Finish bore	Hub type	Finish bore

ROTEX® ZR
Flexible jaw couplings

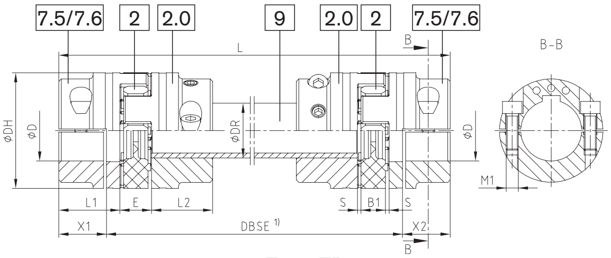
Intermediate shaft programme


For legend of pictogram refer to flapper on the cover

Components



Type ZR
(with GS spider) 3)



Type ZR
(with GS spider and clamping hubs type DH for a double-cardanic connection 7.5 or 7.6) 3)

ROTEX® Type ZR

Size	Dimensions [mm]															Intermediate pipe Torsional stiffness/m		Locking screw G	Pin hole DB [mm]	Axial displacement [mm]	Angular displacement [degree]
	Max. finish bore D		DH	L1, L2	X1, X2	E	B1	S	L		min. DBSE		Clamping screw component 2.0		Clamping screw component 7.5/7.6						
	Component 1a	Component 7.5/7.6							Component 1a	Component 7.5/7.6	Component 1a	Component 7.5/7.6	M	T_A [Nm]	M1	T_A [Nm]	DR	C 2) [Nm²/rad]				
19	25	20	40	25	17.5	16	12	2.0	L = DBSE + 2 • L1	L = DBSE + 2 • X1/X2	110	97	M6	14	M6	10	Ø20x3	954.9	M6	4.0	1.2	0.9
24	35	28	55	30	22.5	18	14	2.0			128	111	M6	14	M6	14	Ø30x4	4522	M8	5.5	1.4	0.9
28	40	38	65	35	25.5	20	15	2.5			145	129	M8	35	M8	35	Ø35x4	7611	M10	7.0	1.5	0.9
38	48	45	80	45	35.5	24	18	3.0			180	157	M8	25	M8	35	Ø40x4	11870	M12	8.5	1.8	1.0
42	55	55	95	50	39.0	26	20	3.0			198	174	M10	49	M10	69	Ø45x4	17487	M12	8.5	2.0	1.0
48	62	60	105	56	45.0	28	21	3.5			217	190	M12	86	M12	120	Ø50x4	24648	M16	12	2.1	1.1
55	74	70	120	65	50.0	30	22	4.0			242	220	M12	120	M12	120	Ø55x4	33544	M16	12	2.2	1.1
65	80	80	135	75	60.0	35	26	4.5			281	250	M12	120	M12	120	Ø65x5	68329	M16	12	2.6	1.2
75	95	90	160	85	67.5	40	30	4.0			318	285	M16	295	M16	295	Ø75x5	108000	M16	12	3.0	1.2

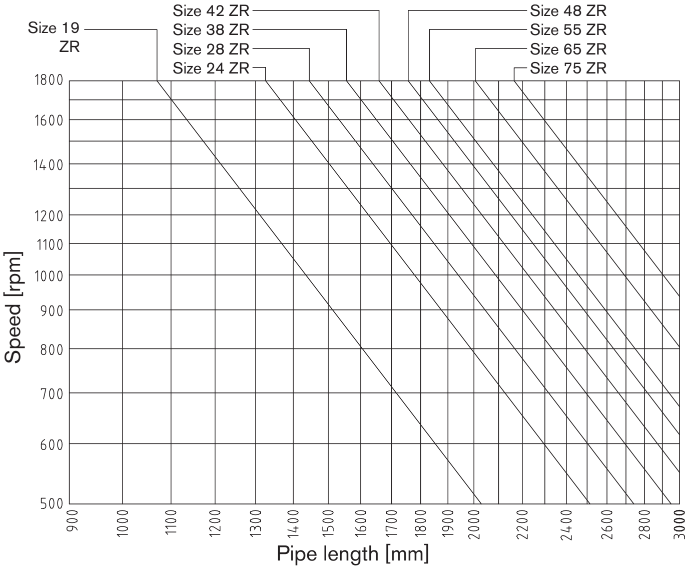
[1] With inquiries and orders please specify the shaft distance dimension DBSE along with the maximum speed to review the critical bending speed.

[2] Torsion spring stiffness with 1 m length of intermediate pipe
finish bore acc. to ISO fit H7, feather keyway acc. to DIN 6885 sheet 1 [JS9].
Friction torques of clamping hubs have to be considered.
Please order dimension sheet M583613.

[3] Mathematically transmittable torque with double-cardanic types acc. to 92 ShA-GS using the higher quality spiders 98 ShA-GS

Not permissible for crane and hoist drives

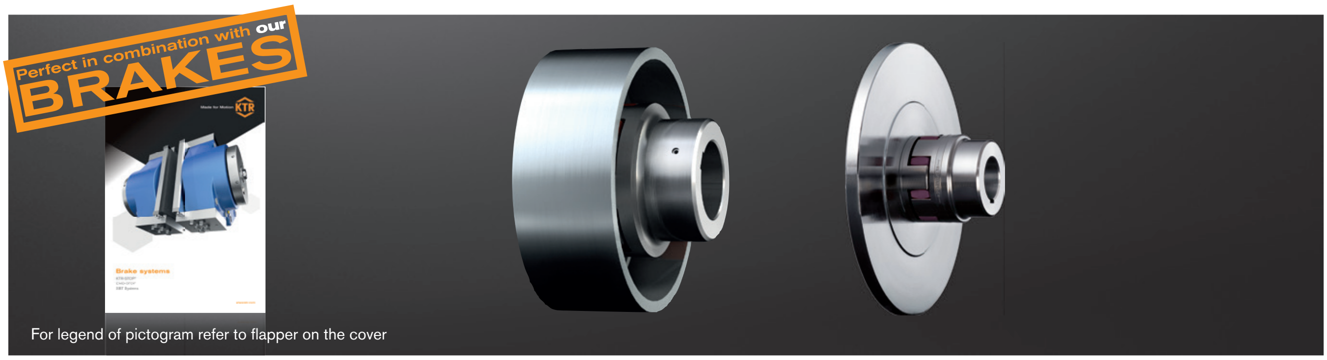
Diagramme for coupling selection:



Ordering example:	ROTEX® 38	ZR	1200	98 ShA-GS	7.5	Ø38	7.5	Ø30
	Coupling size	Type	Shaft distance dimension DBSE	Spider hardness	Hub type	Finish bore	Hub type	Finish bore

ROTEX® BTAN and SBAN
Flexible jaw couplings

With brake drum/with brake disk



For legend of pictogram refer to flapper on the cover

ROTEX® Type BTAN and SBAN													
Size	Pilot bore, D, DN, DN1	Max. finish bore D1		Dimensions [mm]									
		GJS	steel	L	DH	DI1	D4	D5	Z	pitch [1]	M	T_A [Nm]	L1, L2	E
38	Jaw coupling: page 38 to 40 Stock programme: page 36 and 37	–	37	114	80	38	66	50	8	8 x 45°	M8	35	45	24
42		–	44	126	95	46	80	60	12	16 x 22.5°	M8	41	50	26
48		–	50	140	105	51	90	68	12		M8	41	56	28
55		–	57	160	120	60	102	78	8	8 x 45°	M10	83	65	30
65		–	68	185	135	68	116	92	12	16 x 22.5°	M10	83	75	35
75		–	78	210	160	80	136	106	15	20 x 18°	M12	120	85	40
90		–	104	245	200	100	172	140	15		M16	295	100	45
100		100	–	270	225	113	195	156	15		M16	295	110	50
110		110	–	295	255	127	218	176	15		M20	580	120	55
125		130	–	340	290	147	252	204	15		M20	580	140	60

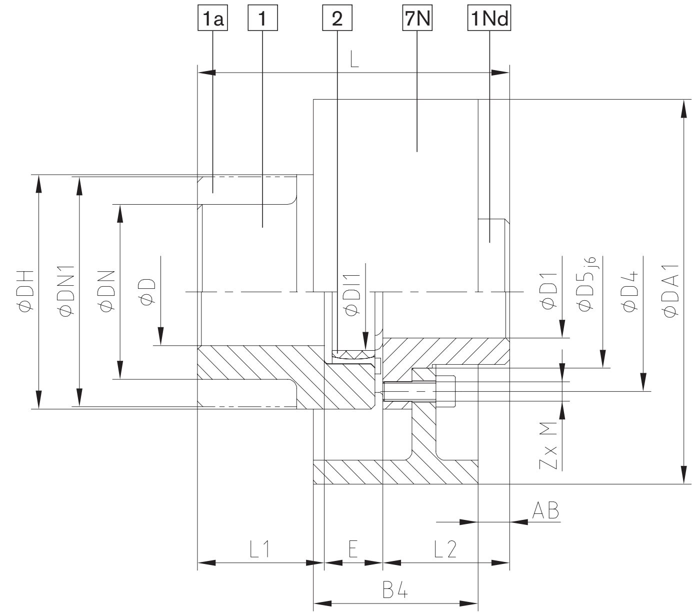
Type BTAN												Type SBAN											
Brake drum	ROTEX® BTAN dimension “AB”										Speed rpm [V] (30 m/s)	Brake disk	ROTEX® SBAN dimension “AS”										Speed rpm [V] (30 m/s)
	38	42	48	55	65	75	90	100	110	125			38	42	48	55	65	75	90	100	110	125	
160x60	14										3550	200x12.5	31.25										2800
200x75	9	12	17	24							2800	250x12.5	31.25	34.25	39.25								2240
250x95	1	4	9	16	25	33					2240	315x16		32.5	37.5	44.5	53.5	61.5					1800
315x118		-5	0	7	16	24	36				1800	400x16			37.5	44.5	53.5	61.5	73.5	81.5	88.5		1400
400x150		-18	-13	-6	3	11	23	31	38		1400	500x16				44.5	53.5	61.5	73.5	81.5	88.5	104.5	1120
500x190					-12	-4	8	16	23	39	1120	630x20					51.5	59.5	71.5	79.5	86.5	102.5	900
630x236						-22	-10	-2	5	21	900	710x20					51.5	59.5	71.5	79.5	86.5	102.5	800
710x265								-13	-6	10	800	800x25							69	77	84	100	710
800x300										-4	710	900x25									84	100	630

[1] Thread in the hub between the cams.

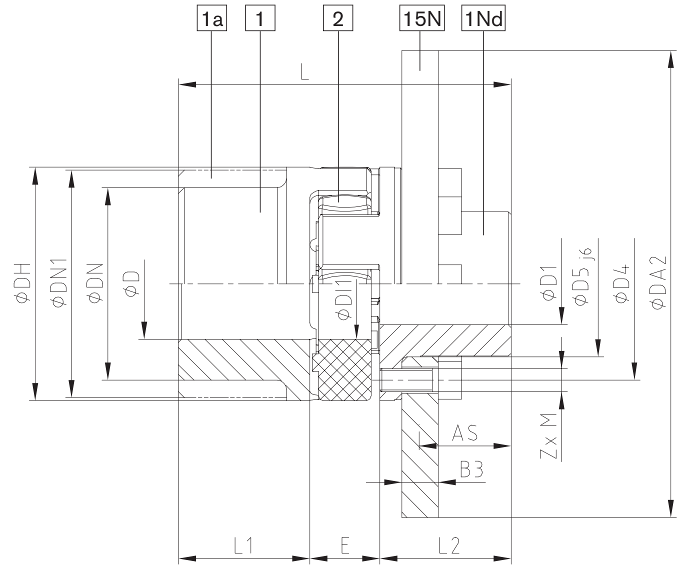
Other sizes on request according to dimension sheet:
BTAN: M380821
SBAN straight: M380822; cranked: M 370065
FNN hub: M 380823
Finish bore according to ISO fit H7, feather keyway according to DIN 6885, sheet 1 [JS9].

Ordering example:	ROTEX® 38	BTAN	Ø200x75	98 ShA	1Nd	Ø34	1	Ø30
	Coupling size	Type	Brake drum Ø x width	Spider hardness	Component	Finish bore	Component	Finish bore

Components



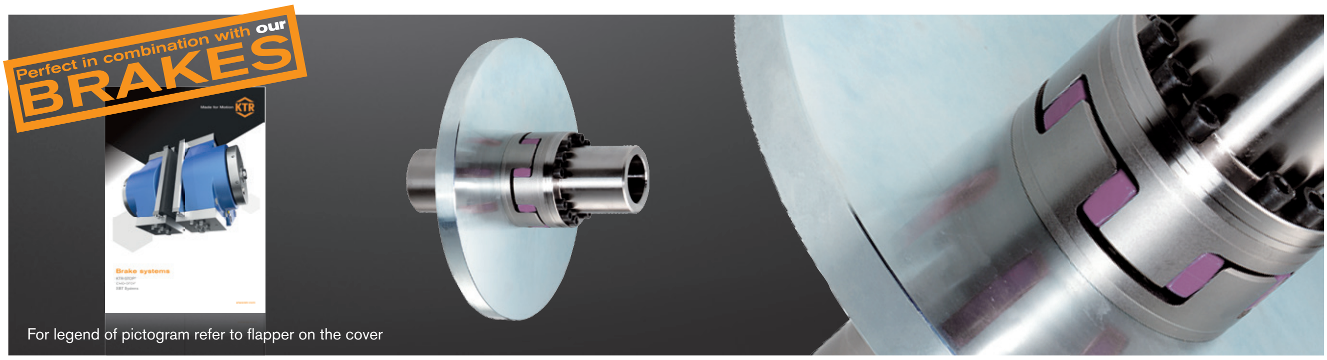
Brake drum
Type BTAN



Brake disk
Type SBAN

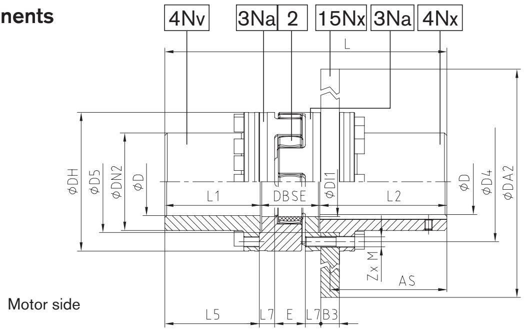
ROTEX® AFN-SB special
Flexible jaw couplings

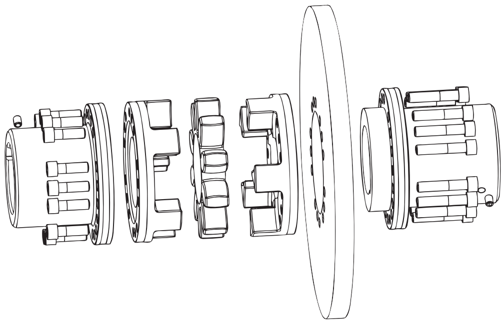
Drop-out center design coupling with brake disk



For legend of pictogram refer to flapper on the cover

Components





ROTEX® Type AFN-SB special												
Size	Finish bore D		Dimensions [mm]									
	min.	Max.	DH	DN2	D4	D5 H7/h7	DI1	DBSE	E	M	Z	pitch	T_A [Nm]
65	22	70	135	94	116	96	68	65	35	M10	12	16x22.5°	83
75	30	80	160	108	136	112	80	75	40	M12	15		120
90	40	105	200	142	172	145	100	82	45	M16	15		295
100	46	115	225	158	195	165	113	97	50	M16	15		295
110	60	130	255	178	218	180	127	103	55	M20	15	20x18°	580
125	60	150	290	206	252	215	147	116	60	M20	15		580
140	60	170	320	235	282	245	165	128	65	M20	15		580
160	80	200	370	270	325	280	190	146	75	M24	15		1000
180	85	230	420	315	375	330	220	159	85	M24	18	24x15°	1000

ROTEX® Type AFN-SB special										
Size	Torque with 98 ShA [1]		Max. speed [rpm]	Max. braking torque [2] [Nm]	Dimensions [mm]					
	T_{KN}	$T_{K\,max}$			L1	L2	L5	L7	AS	L
65	940	1880	3450	1880	113.5	166.0	112.5	16	150	344.5
75	1920	3840	3250	3840	133.0	166.5	131.5	19	150	374.5
90	3600	7200	3000	7200	165.5	206.5	164.0	20	190	454.0
100	4950	9900	2800	9900	155.0	206.5	153.5	25	190	458.5
110	7200	14400	2600	14400	203.5	212.0	201.5	26	195	518.5
125	10000	20000	2250	20000	200.5	212.0	198.5	30	195	528.5
140	12800	25600	1800	25600	247.0	252.5	244.5	34	235 230 [3]	627.5
160	19200	38400	1500	38400	229.0	252.5	226.5	38	235 230 [3]	627.5
180	28000	56000	1350	56000	198.0	252.5	195.0	40	235	609.5

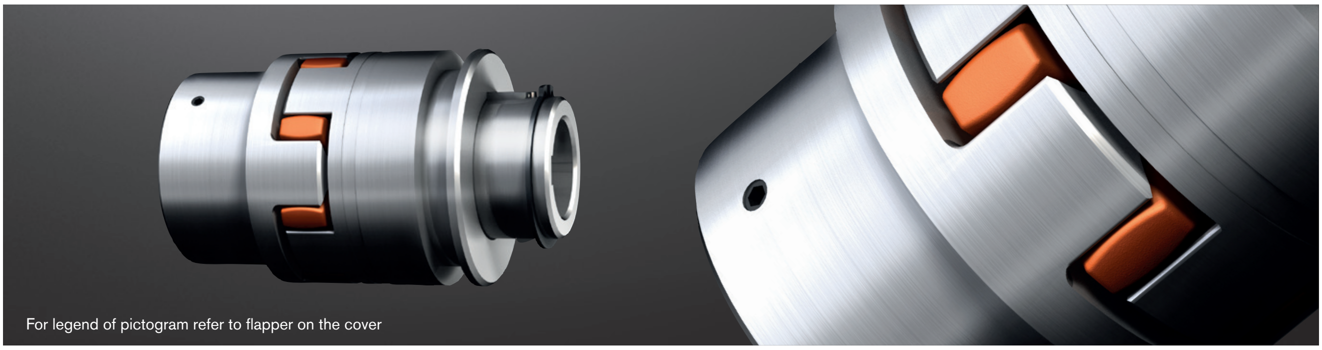
ROTEX® Selection of coupling/brake disk											
Size	Brake disk ØDA2 x B3										
	355x30	400x30	450x30	500x30	560x30	630x30	710x30	800x30	900x30	900x40	1000x40
65	x	x	x								
75		x	x	x							
90			x	x	x	x					
100				x	x	x					
110				x	x	x	x				
125						x	x	x			
140							x	x	x	x	x
160							x	x	x	x	x
180							x	x	x	x	x

[1] For selection see page 14 et seqq. [2] The maximum braking torque must not exceed the maximum torque of the coupling. [3] Dimensions with a width of brake disk B3 of 40 mm.

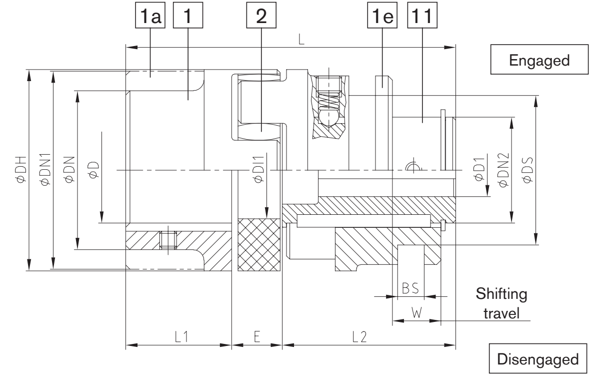
Ordering example:	ROTEX® 90	AFN-SB special	Ø450x30	98 ShA	4Nv	Ø90	4Nx	Ø90
	Coupling size	Type	Brake disk Ø x width	Spider hardness	Component	Finish bore	Component	Finish bore

ROTEX® SD
Flexible jaw couplings

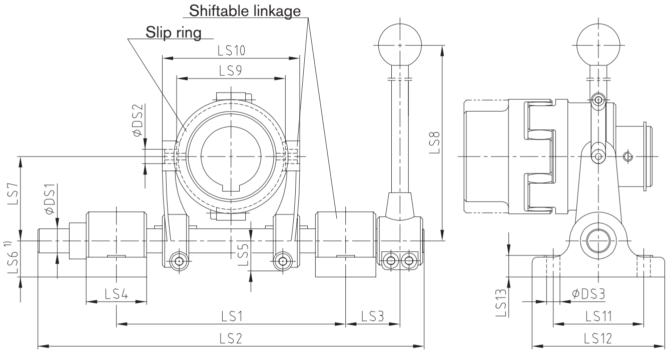
Shiftable coupling shiftable at standstill


For legend of pictogram refer to flapper on the cover

Components



Type SD



Type SD with slip ring and shiftable linkage

Upon request: Shiftable linkage available with locking pin, locking device and retrieval of shift position.

ROTEX® Type SD

Size	D, DN, DN1	Dimensions [mm]												Shifting force set in [N]	Slip ring size	Shiftable linkage size
		Finish bore D1		DH	DI1	DN2	DS±0.1	L	L1	L2	L6±0.1	E	W			
		min.	Max.													
24	Jaw coupling: page 38 to 40 Stock programme: page 36 and 37	8	20	55	27	30	41	98	30	51.5	6.0	16.5	16.0	110	-	-
28		10	24	65	30	36	58	113	35	60.0	8.0	18.0	17.5	130	-	-
38		12	30	80	38	45	70.5	140	45	73.0	12.5	22.0	21.0	150	1.1	1
42		14	35	95	46	50	70.5	156	50	82.0	12.5	24.0	23.0	180	1.1	1
48		15	42	105	51	60	89.5	172	56	90.5	17.5	25.5	24.5	200	2.2	2
55		18	50	120	60	70	112.5	195	65	103.0	18.0	27.0	26.0	250	3.3	3
65		20	55	135	68	80	112.5	227	75	120.0	18.0	32.0	30.5	280	3.3	3
75		25	65	160	80	95	130.5	257	85	135.0	20.5	37.0	35.0	350	4.4	3
90		28	75	200	100	110	164.5	293	100	152.0	25.5	41.0	39.5	350	5.5	4
100		30	80	225	113	115	164.5	325	110	169.0	25.5	46.0	44.0	380	5.5	4
110		35	85	255	127	125	164.5	355	120	184.0	25.5	51.5	48.5	450	5.5	4
125		40	100	290	147	145	210.5	404	140	208.5	30.5	55.5	53.0	500	6.6	5

Slip ring and shiftable linkage

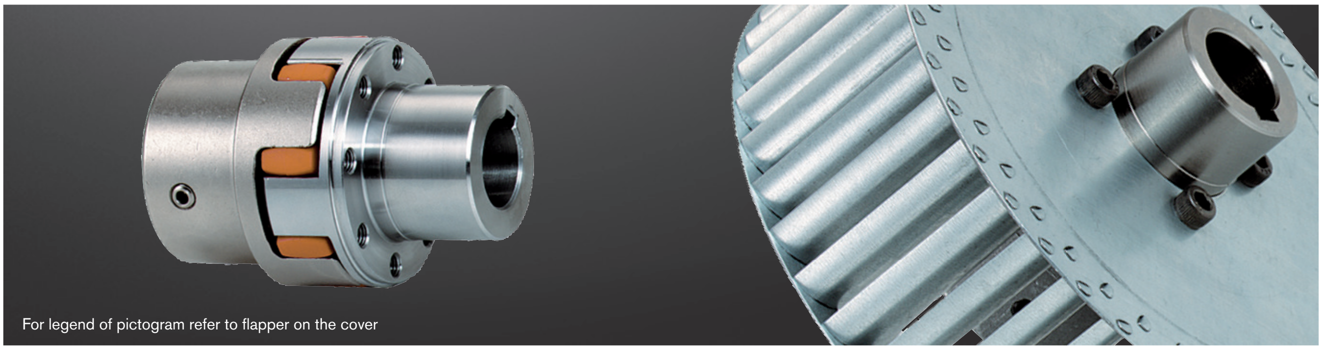
Size	Size of shiftable linkage	Dimensions [mm]																	Max. speed [rpm] of slip ring
		DS1	DS2	DS3	LS1		LS2	LS3	LS4	LS5	LS6	LS7	LS8	LS9	LS10	LS11	LS12	LS13	
					min.	Max.													
38	1	20	12	11	180	190	320	55	50	25	30	70	400	90	114	75	110	18	3280
42	1																		
48	2	25	17	13.5	240	270	430	60	60	27	40	97.5	450	111	151	100	140	25	2550
55	3	30			280	310	490	70		32.5		120	600	140	180				2120
65	3																		
75	3													170	210				1710
90	4	35	21		321	365	565			37.5	50	147.5	750	200	244	120	160		1360
100	4																		
110	4																		
125	5	40	25		365	410	630	80		46		190	1085	250	300				855

[1] With a through base plate dimension „LS6" of the shiftable linkage size 5 to be increased by at least 10 mm.
Finish bore according to ISO fit H7, feather keyway according to DIN 6885, sheet 1 [JS9].

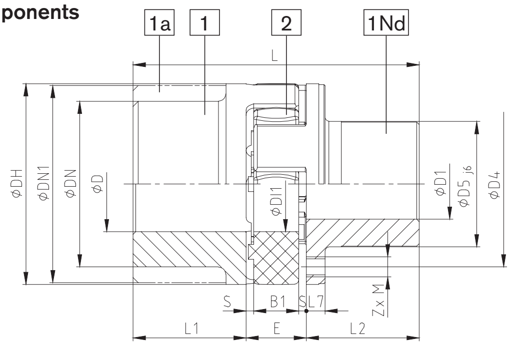
Ordering example:	ROTEX® 38	SD	With 1.1 and 1	98 ShA	1	Ø38	11	Ø28
	Coupling size	Type	With slip ring 1.1 and shiftable linkage 1	Spider hardness	Component	Finish bore	Component	Finish bore

ROTEX® FNN
Flexible jaw couplings

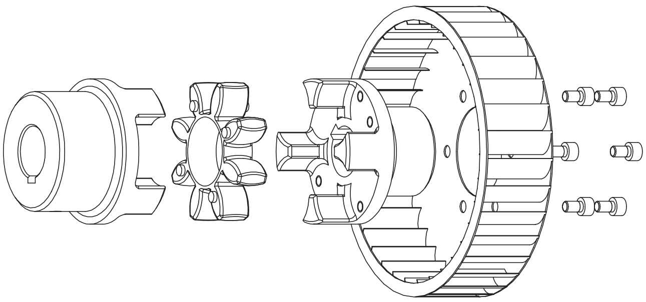
For mounting of fan


For legend of pictogram refer to flapper on the cover

Components



Type FNN



Type FNN with fan (type 1)

ROTEX® Type FNN															
Size	D, DN, DN1	Max. finish bore D1	Dimensions [mm]												
			L	DH	DI1	D4	D5	E	B1	S	L1, L2	L7	M	Z	pitch
28	Jaw coupling: page 38 to 40 Stock programme: page 36 and 37	29	90	65	30	54	40	20	15	2.5	35	6.5	M6	8	8x45°
38		37	114	80	38	66	50	24	18	3.0	45	7.5	M8	8	
42		44	126	95	46	80	60	26	20	3.0	50	9.5	M8	12	16x22.5°
48		50	140	105	51	90	68	28	21	3.5	56	10.5	M8	12	
55		57	160	120	60	102	78	30	22	4.0	65	12.5	M10	8	8x45°
65		68	185	135	68	116	92	35	26	4.5	75	13.5	M10	12	16x22.5°
75		78	210	160	80	136	106	40	30	5.0	85	15.5	M12	15	20x18°
90		104	245	200	100	172	140	45	34	5.5	100	18.5	M16	15	

Other sizes on request.

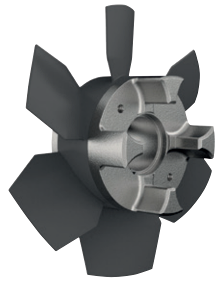
Dimensioning of fans is customer-specific and depends on the coupling selection. Please advise all necessary details for dimensioning of your fan. For that purpose you may use the KTR questionnaire acc. to KTR-N 20008 sheet 1.

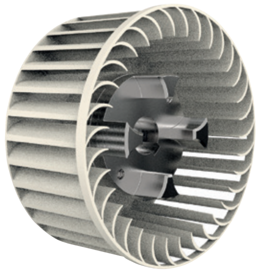
Type 1: Fan screwed on

The ROTEX® hub can be supplied with the fan screwed on. Customised connection dimensions such as pitch circle of threads, size of threads and number or centering of fans must be specified in your inquiry.

Type 2: Fan injection-moulded

Low prices due to optimisation of production with bigger volumes.



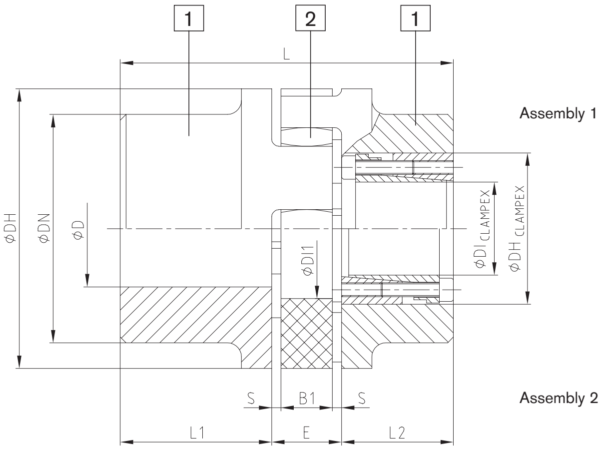


Ordering example:	ROTEX® 38	FNN	92 ShA	1	Ø38	1Nd	Ø30
	Coupling size	Type	Spider hardness	Component	Finish bore	Component	Finish bore

ROTEX®
Flexible jaw couplings

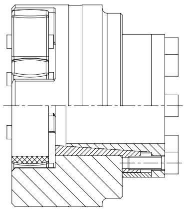
Other types with clamping sets

Components



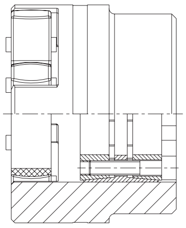
ROTEX® with clamping set CLAMPEX® KTR 200														
Size	D, DN	Hub material	CLAMPEX® KTR 200			Dimensions [mm]								
			Max. size of KTR clamping set DIxDH	Transmittable torque and axial force										
				T [Nm]	F_{AX} [kN]	L1	L2	E	B1	S	DH	DN	DI1	L
42	Jaw coupling: page 38 to 40 Stock programme: page 36	steel Component 1	30x55	790	53	50	48	26	20	3.0	95	—	46	Length = L1 + E + L2 (clamping set)
48			35x60	1300	74	56	48	28	21	3.5	105	—	51	
55			45x75	2200	98	65	59	30	22	4.0	120	—	60	
65			45x75	2200	98	75	59	35	26	4.5	135	115	68	
75			50x80	3330	132	85	59	40	30	5.0	160	135	80	
90			65x95	4300	132	100	59	45	34	5.5	200	160	100	
100		GJS Component 1	65x95	4300	132	110	59	50	38	6.0	225	180	113	
110			70x110	7500	214	120	70	55	42	6.5	255	200	127	
125			80x120	8500	213	140	70	60	46	7.0	290	230	147	
140			95x135	12600	265	155	70	65	50	7.5	320	255	165	
160			110x155	16500	300	175	80	75	57	9.0	370	290	190	
180			120x165	22500	375	195	80	85	64	10.5	420	325	220	

ROTEX® hub combined with CLAMPEX® KTR 250



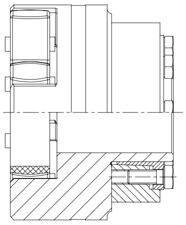
Frictionally engaged and backlash-free transmission of medium torques. CLAMPEX® KTR 250 is particularly suitable for thin-walled hubs and/or those made of aluminium or cast material. Please contact the KTR engineering department for further details.

ROTEX® hub combined with CLAMPEX® KTR 400



Frictionally engaged and backlash-free transmission of high torques. Compared to all other CLAMPEX® internal clamping sets, CLAMPEX® KTR 400 transmits the highest torques. Please contact the KTR engineering department for further details.

ROTEX® hub combined with CLAMPEX® KTR 620



Frictionally engaged and backlash-free transmission of torques immediately between shaft and hub. Since CLAMPEX® KTR 620 is positioned outside on the hub, the hub is in direct contact with the shaft. This results in significantly higher concentricity compared to the combinations with CLAMPEX® KTR 250 or CLAMPEX® KTR 400. Please contact the KTR engineering department for further details.

For CLAMPEX® programme see pages 280 to 315.

Other types with torque limiter

ROTEX® BKN - Overload coupling, type BKN

- Torsionally flexible coupling ROTEX® with shear pins
- Load-separating with blockage/overload
- Easy replacement of shear pin
- Fracture torque to be defined individually depending on the application

Customer variant from the stock programme.
Please specify the fracture torques with your order!
For further details see dimension sheet No. 5020/000/009-760313

ROTEX® - RUFLEX® - Overload coupling

- High power density
- Large wear volume with long service life
- Easy assembly and torque setting

For further details see catalogue page 288

ROTEX® - KTR-SI - Overload coupling

- Available in a ratchet, synchronous, idle rotation and fail-safe design
- High response accuracy, even after a long operating period
- Maintenance-free

For further details see catalogue page 295

ROTEX® - KTR-SI FRE - idle rotation overload coupling

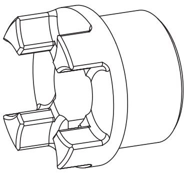
- Idle rotation overload system for high torques
- High repeatability
- Intelligent further development towards the shear pin coupling and hydraulic clamping sets

For further details see catalogue page 297

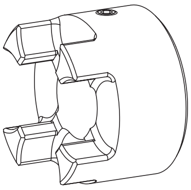
ROTEX®
Flexible jaw couplings

Weights and mass moments of inertia

1



1a



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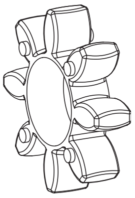

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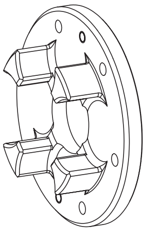
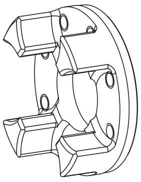
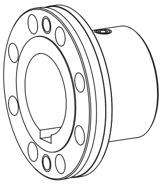


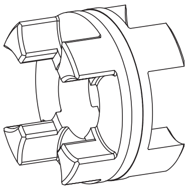
3Na



4N



6

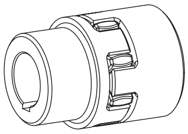


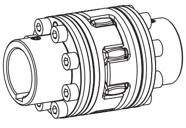
ROTEX® individual components

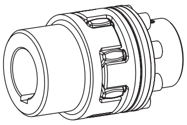
Size	Standard hub				Large hub			Spider	Driving flange			Coupling flange	DKM spacer
	Component 1				Component 1a			Component 2	Component 3b	Component 3Na		Component 4N	Component 6
	Aluminium [kg] [kgm²]	GJL [kg] [kgm²]	GJS [kg] [kgm²]	St [kg] [kgm²]	Aluminium [kg] [kgm²]	GJL [kg] [kgm²]	St [kg] [kgm²]	Polyurethane (Vulkollan) [kg] [kgm²]	GJS [kg] [kgm²]	St [kg] [kgm²]	GJS [kg] [kgm²]	St [kg] [kgm²]	Aluminium [kg] [kgm²]
14	—	—	—	—	0.020	—	—	0.0044	—	—	—	—	—
	—	—	—	—	0.000003	—	—	0.0000005	—	—	—	—	—
19	0.064	—	—	—	0.074	—	0.25	0.0057	—	—	—	—	—
	0.00001	—	—	—	0.00002	—	0.00006	0.000001	—	—	—	—	—
24	0.123	—	—	—	0.174	—	0.55	0.014	0.028	0.145	—	0.30	0.14
	0.00004	—	—	—	0.00008	—	0.00023	0.000006	0.00023	0.00007	—	0.00009	0.00006
28	0.200	—	—	—	0.264	—	0.89	0.024	0.54	0.232	—	0.49	0.22
	0.00010	—	—	—	0.00019	—	0.00053	0.00001	0.0007	0.00017	—	0.0002	0.00013
38	0.44	1.16	—	1.6	0.470	1.32	1.74	0.042	0.73	—	0.313	0.87	0.35
	0.00033	0.00086	—	0.00151	0.00046	0.00135	0.00155	0.00004	0.001	—	0.00038	0.0005	0.00035
42	0.69	1.75	—	2.44	0.772	2.05	2.74	0.065	1.26	—	0.608	1.4	0.47
	0.00067	0.00178	—	0.00281	0.00111	0.00291	0.00343	0.00008	0.0032	—	0.00089	0.0011	0.00068
48	0.80	2.44	—	3.34	1.01	2.78	3.72	0.086	1.45	—	0.755	1.92	0.62
	0.0012	0.00308	—	0.00473	0.00174	0.00484	0.00570	0.00013	0.0043	—	0.001358	0.0018	0.0011
55	—	3.68	—	5.05	—	4.08	5.57	0.11	2.58	—	1.243	2.93	0.90
	—	0.00615	—	0.00948	—	0.00926	0.01193	0.00023	0.0105	—	0.002920	0.0037	0.0021
65	—	5.67	—	6.79	—	6.04	8.22	0.17	3.10	—	1.635	4.36	1.31
	—	0.01240	—	0.01516	—	0.01789	0.02079	0.00043	0.0149	—	0.004891	0.0069	0.0039
75	—	8.72	—	10.5	—	9.53	14.3	0.32	4.46	—	2.511	6.80	1.97
	—	0.02644	—	0.03269	—	0.03946	0.05069	0.001166	0.0281	—	0.01050	0.0151	0.0082
90	—	14.8	—	18.7	—	18.2	24.0	0.57	6.94	—	4.151	12.84	3.45
	—	0.06730	—	0.08742	—	0.15086	0.13151	0.00326	0.0651	—	0.02723	0.0448	0.0224
100	—	—	19.7	—	—	—	—	0.82	10.2	—	6.350	16.16	—
	—	—	0.11694	—	—	—	—	0.00592	0.1165	—	0.05273	0.0798	—
110	—	—	27.4	—	—	—	—	1.14	—	—	8.578	21.35	—
	—	—	0.20465	—	—	—	—	0.01048	—	—	0.09121	0.2824	—
125	—	—	42.3	—	—	—	—	1.56	—	—	12.598	34.33	—
	—	—	0.40727	—	—	—	—	0.01878	—	—	0.17469	0.3229	—
140	—	—	58.1	—	—	—	—	2.02	—	—	17.271	48.69	—
	—	—	0.67739	—	—	—	—	0.02989	—	—	0.29247	0.4917	—
160	—	—	84.2	—	—	—	—	3.08	—	—	26.305	71.08	—
	—	—	1.31729	—	—	—	—	0.06049	—	—	0.59436	0.9693	—
180	—	—	118.5	—	—	—	—	5.04	—	—	33.076	109.43	—
	—	—	2.30835	—	—	—	—	0.13295	—	—	0.97394	1.9650	—

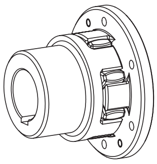
Weight and mass moment of inertia each refer to the average finish bore without feather keyway.

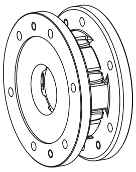
Weights and mass moments of inertia

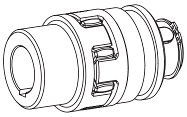






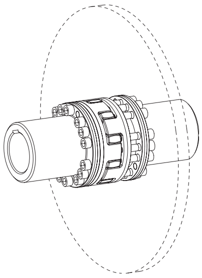






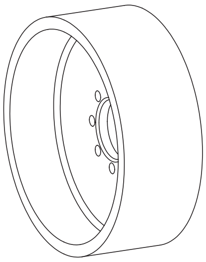
ROTEX® Complete coupling types

Size	Standard		AFN		BFN		CF		DF		SD	
	Weight [kg]	Mass moment of inertia J [kgm^2]	Weight [kg]	Mass moment of inertia J [kgm^2]	Weight [kg]	Mass moment of inertia J [kgm^2]	Weight [kg]	Mass moment of inertia J [kgm^2]	Weight [kg]	Mass moment of inertia J [kgm^2]	Weight [kg]	Mass moment of inertia J [kgm^2]
19	0.51	0.000121	—	—	—	—	0.44	0.00016	0.38	0.00020	0.42	0.00008
24	1.1	0.000466	0.98	0.00036	1.1	0.00041	0.84	0.00047	0.57	0.00047	1.1	0.00046
28	1.8	0.00107	1.6	0.00083	1.7	0.00095	1.5	0.00124	1.1	0.00141	1.9	0.00106
38	2.5	0.00171	2.8	0.00209	2.6	0.00193	1.9	0.00217	1.5	0.00259	3.0	0.00435
42	3.9	0.00476	4.5	0.00472	4.1	0.00419	3.1	0.00513	2.6	0.00662	4.4	0.00804
48	5.3	0.00805	5.9	0.00736	5.5	0.00684	3.9	0.00755	3.0	0.00881	6.2	0.00223
55	7.9	0.01564	8.9	0.01480	8.3	0.01369	6.4	0.01692	5.3	0.02131	9.8	0.0166
65	11.9	0.03071	12.9	0.0266	12.3	0.0259	8.9	0.02780	6.4	0.003037	14.9	0.0326
75	18.6	0.06706	20.6	0.0601	19.3	0.0572	13.5	0.0557	9.2	0.05741	23.2	0.0706
90	33.6	0.22139	37.8	0.1718	34.2	0.1551	22.3	0.1356	14.5	0.1333	40.5	0.1891
100	40.2	0.23976	49.6	0.3068	45.2	0.2737	30.9	0.2401	21.2	0.2394	46.7	0.2467
110	56.0	0.42027	67.5	0.5385	61.7	0.4793	42.9	0.4324	29.8	0.4446	61.5	0.4186
125	86.2	0.83426	102.6	1.0485	94.4	0.9413	64.4	0.8187	42.2	0.8031	96.8	0.8497
140	118.3	1.38607	141.2	1.743	129.7	1.564	90.4	1.4221	62.5	1.4580	127.8	1.368
160	171.6	2.69781	210.3	3.517	190.9	3.107	127.6	2.589	83.6	2.4805	190.3	2.723
180	242.25	4.75449	306.6	6.582	274.4	5.668	175.1	4.448	107.9	4.141	262.2	4.810



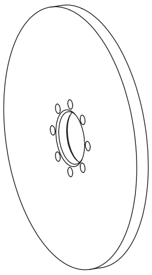
AFN-SB spec. without brake disk

Size	Weight [kg]	Mass moment of inertia J [kgm^2]
65	13.7	0.03126
75	21	0.06828
90	39	0.20132
100	53	0.34637
110	74	0.61684
125	101	1.12844
140	145	1.95075
160	200	3.67846
180	262	6.41621



Brake drum for BTAN

Brake drum ØD_B x B	Weight [kg]	Mass moment of inertia J [kgm^2]
160 x 60	2.1	0.01
200 x 75	3.5	0.03
250 x 95	6.9	0.08
315 x 118	15.0	0.28
400 x 150	31	0.89
500 x 190	60,	2.70
630 x 236	112	8.01
710 x 265	161	14.9
800 x 300	202	27.2

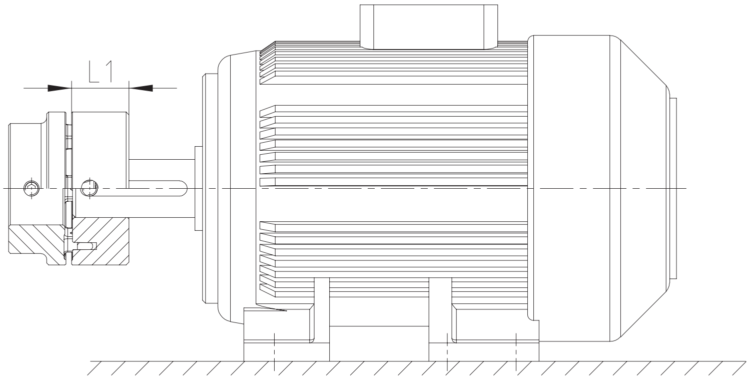


Brake disk for SBAN / AFN-SB spec.

Brake disk ØA x G_S	Weight [kg]	Mass moment of inertia J [kgm^2]
200 x 12.5	2.9	0.01537
250 x 20	7.7	0.05913
250 x 30	11.5	0.08869
250 x 12.5	4.7	0.03758
315 x 16	8.6	0.11183
315 x 20	12.3	0.15117
315 x 30	18.5	0.22601
355 x 20	15.5	0.23376
355 x 30	23.5	0.36432
400 x 16	15.2	0.31521
400 x 20	20	0.39058
400 x 30	30	0.57652
450 x 20	25	0.62101
450 x 30	38	0.93169
500 x 16	24	0.76996
500 x 20	31	0.93714
500 x 30	47	1.40607
560 x 20	39	1.50479
560 x 30	59	2.25145
630 x 20	48	2.38081
630 x 30	74	3.45018
710 x 20	61	3.90652
710 x 30	93	5.52149
800 x 25	95	7.87899
800 x 30	114	9.40746
900 x 25	119	12.60909
900 x 30	150	14.84302
900 x 40	200	20.15384
1000 x 25	148	19.23494
1000 x 30	185	22.79405
1000 x 40	246	30.35531
1250 x 30	290	56.25377
1250 x 40	385	75.00507

Notes

Selection of standard IEC motors



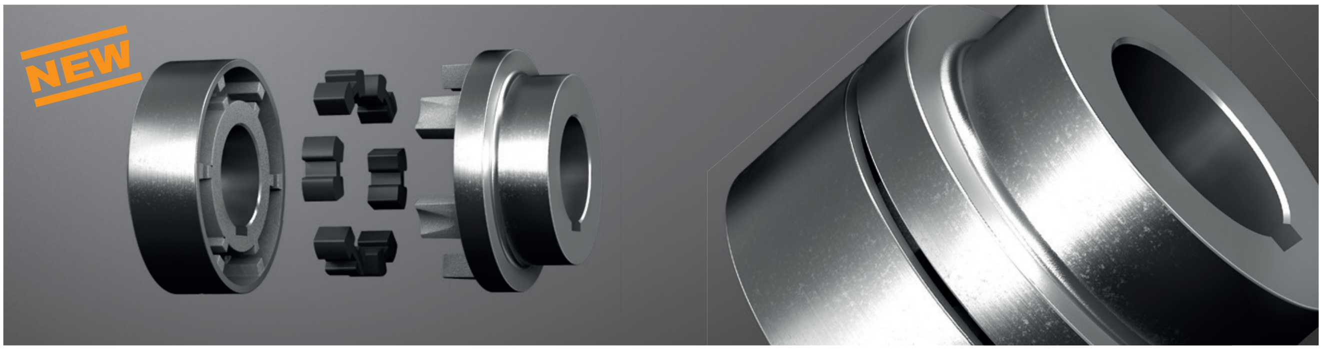
ROFLEX® couplings for standard IEC motors, protection class IP 54/IP 55 (elastomer ring 78 Shore A)

A. C. motor 50 Hz			Motor power n= 3000 rpm 2 poles		ROFLEX® coupling size	Motor power n= 1500 rpm 4 poles		ROFLEX® coupling size	Motor power n= 1000 rpm 6 poles		ROFLEX® coupling size	Motor power n= 750 rpm 8 poles		ROFLEX® coupling size
Size	Shaft end DWxLW [mm]													
	2 poles	4, 6, 8 poles	Power P [kW]	Torque T [Nm]		Power P [kW]	Torque T [Nm]		Power P [kW]	Torque T [Nm]		Power P [kW]	Torque T [Nm]	
56	9 x 20		0.09	0.32		0.06	0.43		0.037	0.43				
			0.12	0.41		0.09	0.64		0.045	0.52				
63	11 x 23		0.18	0.62		0.12	0.88		0.06	0.7				
			0.25	0.86		0.18	1.3		0.09	1.1				
71	14 x 30		0.37	1.3		0.25	1.8		0.18	2		0.09	1.4	
			0.55	1.9		0.37	2.5		0.25	2.8		0.12	1.8	
80	19 x 40		0.75	2.5		0.55	3.7		0.37	3.9		0.18	2.5	
			1.1	3.7		0.75	5.1		0.55	5.8		0.25	3.5	
90S	24 x 50		1.5	5	68	1.1	7.5	68	0.75	8	68	0.37	5.3	
90L			2.2	7.4		1.5	10		1.1	12		0.55	7.9	
100L	28 x 60		3	9.8		2.2	15		1.5	15		0.75	11	68
						3	20					1.1	16	
112M			4	13		4	27		2.2	22		1.5	21	
132S	38 x 80		5.5	18		5.5	36		3	30		2.2	30	
			7.5	25										
132M						7.5	49		4	40		3	40	
									5.5	55	80			
160M	42 x 110		11	36		11	72		7.5	75	95	4	54	80
			15	49	80			95				5.5	74	95
160L			18.5	60		15	98		11	109		7.5	100	
180M	48 x 110		22	71	95	18.5	121	110			110			110
180L						22	144		15	148		11	145	
200L	55 x 110		30	97		30	196		18.5	181	125	15	198	
			37	120	110			125	22	215				125
225S	55 x 110	60 x 140				37	240				140	18.5	244	
225M			45	145		45	292	140	30	293		22	290	140
250M	60 x 140	65 x 140	55	177	125	55	356	160	37	361	160	30	392	160
280S		75 x 140	75	241	140	75	484		45	438		37	483	
280M			90	289		90	581	180	55	535	160	45	587	180
315S			110	353		110	707		75	727		55	712	
315M		80 x 170	132	423	160	132	849		90	873		75	971	200
	65 x 140		160	513		160	1030		110	1070	200	90	1170	
315L			200	641		200	1290	200	132	1280		110	1420	225
					180				160	1550	225	132	1710	250
315		85 x 170	250	802		250	1600	225	200	1930	250	160	2070	
			315	1010		315	2020		250	2410		200	2580	
			355	1140	200	355	2280					250	3220	
355	75 x 140	95 x 170	400	1280		400	2570		315	3040		315	4060	
			500	1600	225	500	3210		400	3850				
			560	1790		560	3580		450	4330		355	4570	
400	80 x 170	110 x 210	630	2020		630	4030		500	4810		400	5150	
			710	2270		710	4540		560	5390		450	5790	
			800	2560		800	5120		630	6060		500	6420	
450	90 x 170	120 x 200	900	2880		900	5760		710	6830		560	7190	
			1000	3200		1000	6400		800	7690		630	8090	

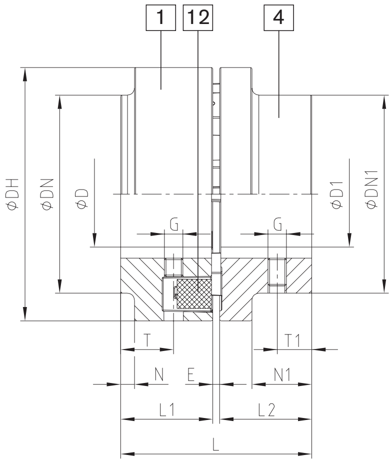
The coupling selection is based on an ambient temperature of up to +30 °C. The selection is based on a minimum safety factor of 2 to the max. coupling torque (TK max).
A detailed selection is possible according to catalogue page 15 et seqq. Drives with periodical torque curves must be selected according to DIN 740 part 2.
If requested, KTR will perform the selection.
Torque T = rated torque according to Siemens catalogue M 11 · 1994/95.

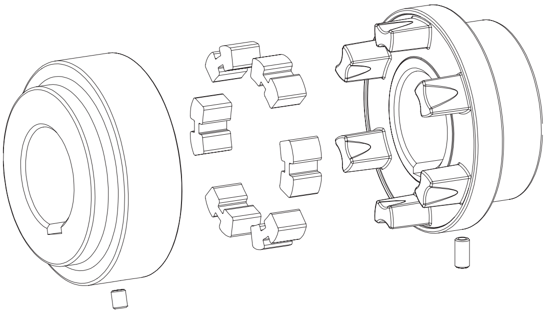
ROFLEX® N
Flexible jaw couplings

Two-part



Components





ROFLEX® type N

Size	Torque		Max. speed [rpm]	Dimensions														Mass moment of inertia J1 [kgm²] [1]	Mass moment of inertia J4 [kgm²] [1]	Weight [kg] [1]
				Max. finish bore		General								Thread for setscrews						
	T_{KN} [Nm]	$T_{K\ max}$ [Nm]		D	D1	L	L1, L2	E	DH	DN	DN1	N	N1	G	T	T1	TA [Nm]			
68	65	180	8500	28	38	43	20	3	68	-	-	-	-	M5	8.5	8	2	0.00016	0.00029	0.6
80	80	220	7500	35	45	63	30	3	80	-	68	-	20	M8	20.5	12	10	0.00059	0.00055	1.2
95	125	345	6800	45	48	73	35	3	95	76	76	5	23	M8	22	15	10	0.00116	0.00120	1.9
110	205	565	6500	50	55	83	40	3	110	86	86	6	26	M8	24	18	10	0.0024	0.0024	2.9
125	315	865	5800	60	65	103	50	3	125	100	100	14	32	M8	32	20	10	0.0046	0.0052	4.5
140	450	1240	5400	70	65	113	55	3	140	100	100	21	35	M10	13	22	17	0.0062	0.0077	5.3
160	790	2170	4800	75	70	124	60	4	160	108	108	21	40	M10	13	25	17	0.014	0.013	8.1
180	1150	3160	4350	85	80	144	70	4	180	125	125	28	50	M10	16	32	17	0.021	0.023	11.0
200	1800	4950	3950	90	90	164	80	4	200	140	140	33	56	M12	20	40	40	0.038	0.044	16.3
225	2100	5775	3600	100	100	184	90	4	225	150	150	38	72	M12	22	40	40	0.06	0.06	20.4
250	3550	9765	3000	110	110	205.5	100	5.5	250	165	165	40	82	M16	24	45	80	0.11	0.10	28.2
280	5000	13750	3000	120	120	225.5	110	5.5	280	180	180	45	90	M16	28	45	80	0.19	0.16	38.1

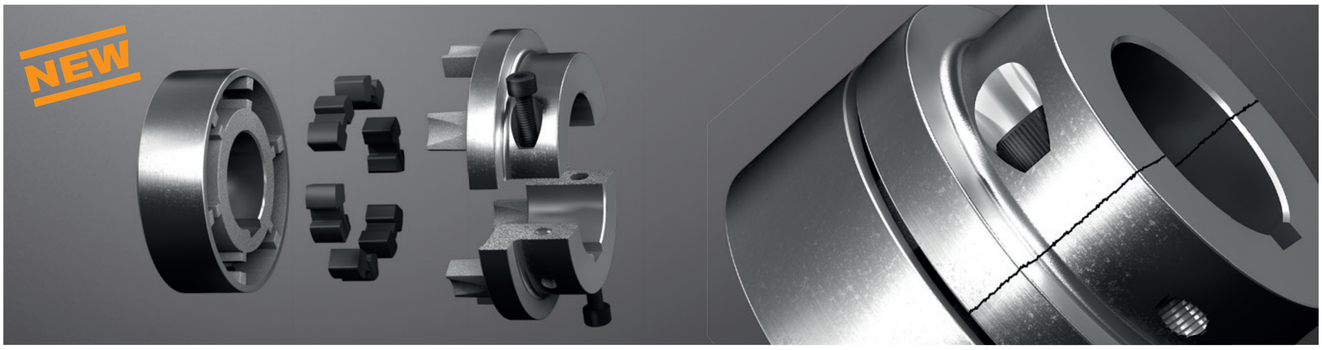
[1] Mass moments of inertia J1 and J4 as well as the total weight refer to the maximum bore diameters

Ordering example:

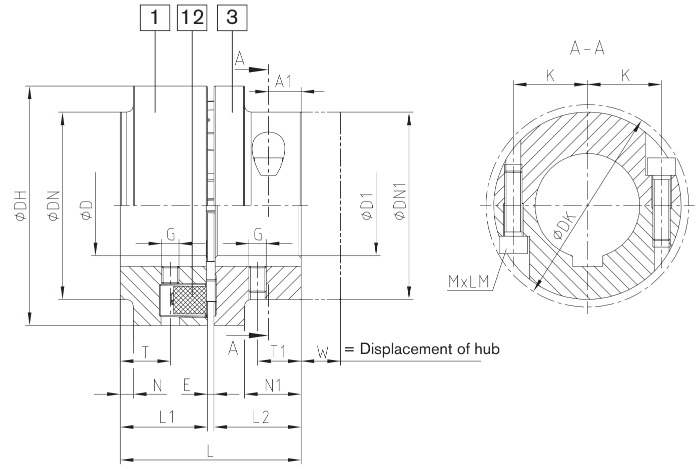
ROFLEX® 110	N	ØD = 50	ØD1 = 55
Coupling size	Type	Finish bore	Finish bore

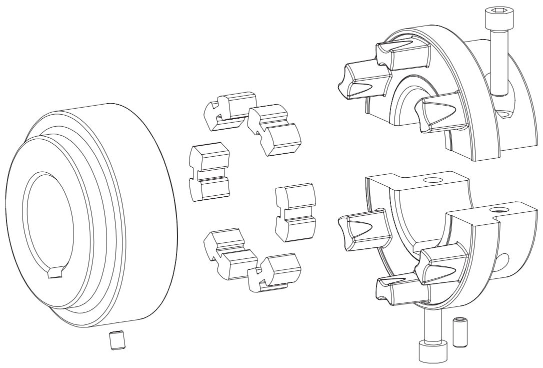
ROFLEX® SH
Flexible jaw couplings

Coupling with SPLIT hub



Components





ROFLEX® type SH

Size	Torque		Max. speed [rpm]	Dimensions																						Mass moment of inertia J1 [kgm^2] 1)	Mass moment of inertia J3 [kgm^2] 1)	Weight [kg] 1)
				Max. finish bore		General										Thread for setscrews				Cap screws								
	T_{KN} [Nm]	$T_{K\,max}$ [Nm]		D	D1	L	L1	L2	E	DH	DN	DN1	N	N1	W	G	T	T1	T_A [Nm]	MxLM	DK	K	A1	A2	T_A [Nm]			
80	80	220	7500	35	38	63	30	30	3	80	80	68	-	20	15.5	M8	20.5	12	10	M8x25	75	25	11	-	34	0.00059	0.00058	1.3
95	125	345	6800	45	42	73	35	35	3	95	76	76	5	23	18	M8	22	15	10	M8x30	82	28.5	13	-	34	0.00116	0.00123	2.0
110	205	565	6500	50	48	83	40	40	3	110	86	86	6	26	21	M8	24	18	10	M8x35	94	31.5	15	-	34	0.0024	0.0025	3.1
125	315	865	5800	60	55	103	50	50	3	125	100	100	14	32	23.5	M8	32	20	10	M10x40	108	38.5	20	-	67	0.0046	0.0052	4.5
140	450	1240	5400	70	60	113	55	55	3	140	100	100	21	35	25	M10	13	22	17	M10x35	108	39.0	10.5	25.5	67	0.0062	0.0080	5.7
160	790	2170	4800	75	65	124	60	60	4	160	108	108	21	40	30	M10	13	25	17	M12x35	118	42.5	12	29	115	0.014	0.014	8.5
180	1150	3160	4350	85	75	144	70	70	4	180	125	125	28	50	32	M10	16	32	17	M12x40	135	50	15	35	115	0.021	0.024	11.6
200	1800	4950	3950	90	85	164	80	80	4	200	140	140	33	56	34	M12	20	40	40	M16x50	153	54	17	40	290	0.038	0.044	17.8
225	2100	5775	3600	100	90	184.0	90	90	4.0	225	150	150	38	73	39.0	M12	22	40	40	M20x50	170	58	22	30	560	0.06	0.06	20.4
250	3550	9765	3000	110	100	205.5	100	100	5.5	250	165	165	40	82	44.5	M16	24	40	80	M20x55	182	63	25	35	560	0.11	0.1	28.2
280	5000	13750	3000	120	120	225.5	110	110	5.5	280	180	180	45	90	50.0	M16	28	45	80	M16x60	194	72	17	29	290	0.19	0.16	38.1

1) Mass moments of inertia J1 and J3 as well as the total weight refer to the maximum bore diameters

Ordering example:	ROFLEX® 110	SH	ØD = 42	ØD1 = 48
	Coupling size	Type	Finish bore	Finish bore

POLY-NORM®
Flexible couplings

Technical data

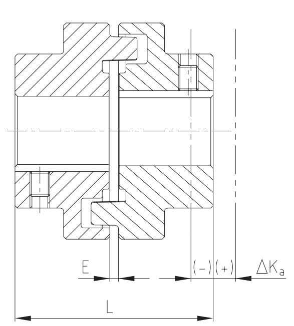
POLY-NORM® Technical data

Size	Torque [Nm]			Max. speed [rpm] with v = 35 m/s	Torsion angle with		Torsion spring stiffness C dyn. [Nm/rad]				Max. perm. displacement [mm] [1]		
	Rated torque T_{KN}	Maximum torque $T_{K\ max}$	Vibratory torque T_{KW}		T_{KN}	$T_{K\ max}$	1.0 T_{KN}	0.75 T_{KN}	0.5 T_{KN}	0.25 T_{KN}	Axial ΔK_a	Radial ΔK_r	Angular ΔK_w
28	40	80	16	9650	4.5	6.0	$0.52x10^4$	$0.332x10^4$	$0.187x10^4$	$0.09x10^4$	± 1.0	0.20	1.2
32	60	120	24	8550			$0.782x10^4$	$0.499x10^4$	$0.282x10^4$	$0.135x10^4$	± 1.0	0.25	1.4
38	90	180	36	7650			$1.35x10^4$	$0.864x10^4$	$0.489x10^4$	$0.234x10^4$	± 1.0	0.25	1.5
42	150	300	60	6950			$2.63x10^4$	$1.68x10^4$	$0.947x10^4$	$0.453x10^4$	± 1.0	0.25	1.7
48	220	440	88	6300	4.0	5.5	$2.99x10^4$	$1.91x10^4$	$1.08x10^4$	$0.516x10^4$	± 1.5	0.30	1.8
55	300	600	120	5650			$3.85x10^4$	$2.46x10^4$	$1.39x10^4$	$0.664x10^4$	± 1.5	0.30	2.0
60	410	820	164	5150			$6.76x10^4$	$4.31x10^4$	$2.32x10^4$	$1.17x10^4$	± 1.5	0.30	2.2
65	550	1100	220	4750			$8.18x10^4$	$5.22x10^4$	$2.7x10^4$	$1.41x10^4$	± 1.5	0.35	2.4
75	850	1700	340	4200			$12.29x10^4$	$7.84x10^4$	$4.06x10^4$	$2.12x10^4$	± 1.5	0.40	2.7
85	1350	2700	540	3650			$24.31x10^4$	$15.51x10^4$	$7.49x10^4$	$4.19x10^4$	± 1.5	0.40	3.0
90	2000	4000	800	3300	2.5	3.5	$36.16x10^4$	$23.07x10^4$	$11.14x10^4$	$6.24x10^4$	± 1.5	0.45	3.4
100	2900	5800	1160	2950			$54.82x10^4$	$34.98x10^4$	$16.89x10^4$	$9.46x10^4$	± 3.0	0.50	3.9
110	3900	7800	1560	2650			$79.23x10^4$	$50.55x10^4$	$24.4x10^4$	$13.67x10^4$	± 3.0	0.60	4.3
125	5500	11000	2200	2350			$102.3x10^4$	$65.28x10^4$	$31.52x10^4$	$17.65x10^4$	± 3.0	0.60	4.8
140	7200	14400	2880	2100			$164x10^4$	$104.7x10^4$	$50.85x10^4$	$28.3x10^4$	± 3.0	0.60	5.5
160	10000	20000	4000	1900			$209.1x10^4$	$133.4x10^4$	$64.82x10^4$	$36.07x10^4$	± 3.0	0.65	6.1
180	13400	26800	5360	1650			$267.1x10^4$	$170.4x10^4$	$82.79x10^4$	$46.07x10^4$	± 3.0	0.65	6.0
200	19000	38000	7600	1450	1.5	2.1	$159.5x10^4$	$126.2x10^4$	$96.24x10^4$	$60.2x10^4$	± 4.0	0.65	7.8
220	30000	60000	12000	1300			$218.8x10^4$	$174x10^4$	$128.7x10^4$	$77.84x10^4$	± 4.0	0.70	8.7
240	43000	86000	17200	1200			$567.9x10^4$	$438.3x10^4$	$301.6x10^4$	$161.9x10^4$	± 4.0	0.70	9.6
260	55000	110000	22000	1000			$663.8x10^4$	$539.4x10^4$	$382.2x10^4$	$195.5x10^4$	± 4.0	0.85	11.3
280	67000	134000	26800	950			$773.1x10^4$	$628.1x10^4$	$467.9x10^4$	$266.2x10^4$	± 4.0	0.95	12.2

[1] Displacement with n = 1500 rpm

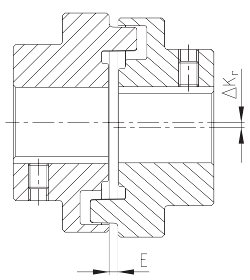
Radial and angular displacements may occur simultaneously. The combined sum of displacements must not exceed the values listed in the table. If requested, coupling is dynamically balanced (semi-key balancing G 6.3 with 1500 rpm). For circumferential speeds exceeding v = 20 m/s dyn. balancing is recommended.

Axial displacement ΔK_a

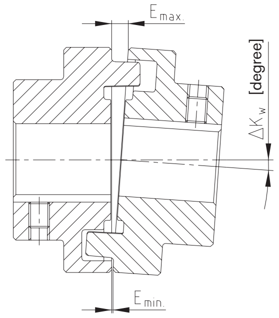


$L_{max./min.} = L + \Delta K_a$ [mm]

Radial displacement ΔK_r



Angular displacement ΔK_w



$\Delta K_w = E_{max.} - E_{min.}$ [mm]

Advice for assembly

With assembly the coupling halves must be mounted in that coupling and shaft are flush. Alignment must be made in that radial and angular displacement is as small as possible. The service life of coupling and bearings is extended by accurate alignment. Steps must be taken to ensure that the alignment condition does not change during any operating condition. Inevitable shaft displacements should not exceed the figures specified in the table. Angular and radial displacement may occur simultaneously. The combined sum of displacements must not exceed the values listed in the table above. See KTR assembly instructions, KTR standard 49510 on our homepage www.ktr.com.

General information about the elastomer

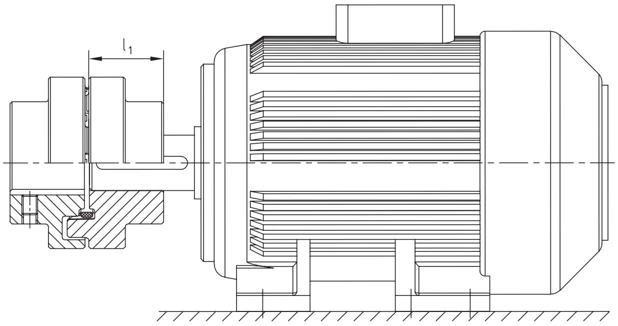
Material/hardness	Perbunan [NBR]/78 Shore A
Permanent temperature range [°C]	-30 to +80
Max. temperature (short time) [°C]	-50 to +120
Operating range	General engineering Pump industry ATEX applications Chemical industry Standard applications with medium elasticity
Resistant to	Gasoline, diesel Acids, bases Use in the tropics (Salt) water (hot/cold) Oils, greases Propane, butane Natural gas, city gas

Elastomer ring NBR 78 Shore A

Elastomer ring Viton [FKM] 60 Shore A for the high-temperature range on request.

POLY-NORM®
Flexible coupling

Selection of standard IEC motors



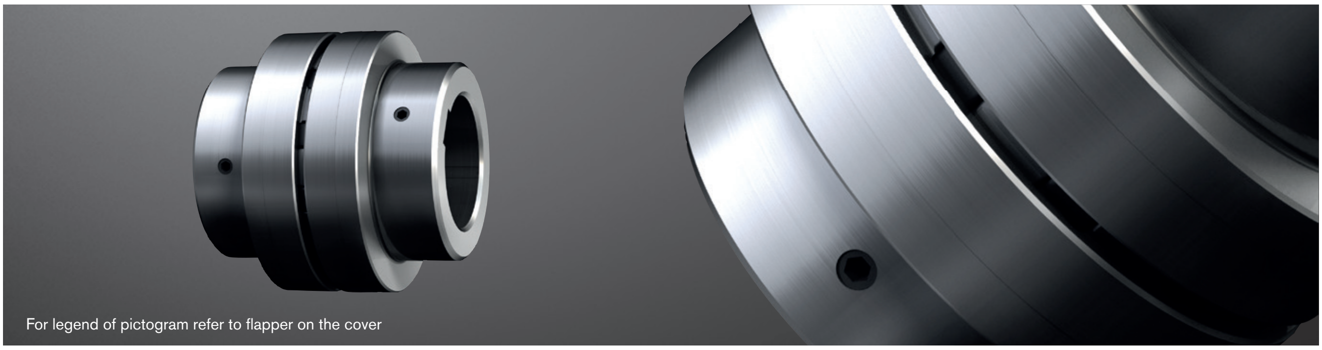
POLY-NORM® couplings for standard IEC motors, protection class IP 54/IP 55 (elastomer ring 78 Shore A)

A. C. motor 50 Hz			Motor power n= 3000 rpm 2 poles		POLY-NORM® coupling size	Motor power n= 1500 rpm 4 poles		POLY-NORM® coupling size	Motor power n= 1000 rpm 6 poles		POLY-NORM® coupling size	Motor power n= 750 rpm 8 poles		POLY-NORM® coupling size
Size	Shaft end dxl [mm]		Power P [kW]	Torque T [Nm]		Power P [kW]	Torque T [Nm]		Power P [kW]	Torque T [Nm]		Power P [kW]	Torque T [Nm]	
	2 poles	4, 6, 8 poles												
56	9 x 20		0.09	0.32	28/32	0.06	0.43	28/32	0.037	0.43	28/32			28/32
			0.12	0.41		0.09	0.64		0.045	0.52				
63	11 x 23		0.18	0.62		0.12	0.88		0.06	0.7				
			0.25	0.86		0.18	1.3		0.09	1.1				
71	14 x 30		0.37	1.3		0.25	1.8		0.18	2		0.09	1.4	
			0.55	1.9		0.37	2.5		0.25	2.8		0.12	1.8	
80	19 x 40		0.75	2.5		0.55	3.7		0.37	3.9		0.18	2.5	
			1.1	3.7		0.75	5.1		0.55	5.8		0.25	3.5	
90S	24 x 50		1.5	5		1.1	7.5		0.75	8		0.37	5.3	
90L			2.2	7.4		1.5	10		1.1	12		0.55	7.9	
100L	28 x 60		3	9.8		2.2	15		1.5	15		0.75	11	
						3	20					1.1	16	
112M			4	13		4	27		2.2	22		1.5	21	
132S	38 x 80		5.5	18	38	5.5	36	38	3	30	38	2.2	30	38
			7.5	25										
132M						7.5	49		4	40		3	40	
									5.5	55				
160M	42 x 110		11	36	42	11	72	42	7.5	75	42	4	54	42
			15	49								5.5	74	
160L			18.5	60		15	98		11	109		7.5	100	
180M	48 x 110		22	71	48	18.5	121	48			48			48
180L						22	144		15	148		11	145	
200L	55 x 110		30	97	55	30	196	55	18.5	181	55	15	198	55
			37	120					22	215				
225S	55 x 110	60 x 140				37	240	60			60	18.5	244	60
225M			45	145		45	292		30	293		22	290	
250M	60 x 140	65 x 140	55	177	60	55	356	65	37	361	65	30	392	65
280S	65 x 140	75 x 140	75	241	65	75	484	75	45	438	75	37	483	75
280M			90	289		90	581		55	535		45	587	
315S		80 x 170	110	353		110	707	85	75	727	85	55	712	85
315M			132	423	75	132	849		90	873		75	971	
			160	513		160	1030		110	1070	90	90	1170	90
315L			200	641	85	200	1290	90	132	1280		110	1420	
		85 x 170							160	1550	100	132	1710	100
315			250	802		250	1600	100	200	1930		160	2070	
			315	1010	90	315	2020		250	2410	110	200	2580	110
355	75 x 140	95 x 170	355	1140		355	2280	110	315	3040	125	250	3220	125
			400	1280		400	2570		400	3850	140	315	4060	
			500	1600	100	500	3210	125						140
400	80 x 170	110 x 210	560	1790		560	3580		450	4330		355	4570	
			630	2020		630	4030		500	4810		400	5150	
			710	2270	110	710	4540	140	560	5390	160	450	5790	160
450	90 x 170	120 x 200	800	2560	125	800	5120	160	630	6060		500	6420	
			900	2880		900	5760		710	6830	180	560	7190	180
			1000	3200		1000	6400		800	7690		630	8090	

The coupling selection is based on an ambient temperature of up to +30 °C. The selection is based on a minimum safety factor of 2 to the max. coupling torque ($T_{K\ max}$). A detailed selection is possible according to catalogue page 15 et seqq. Drives with periodical torque curves must be selected according to DIN 740 part 2. If requested, KTR will perform the selection.
Torque T = rated torque according to Siemens catalogue M 11 · 1994/95.

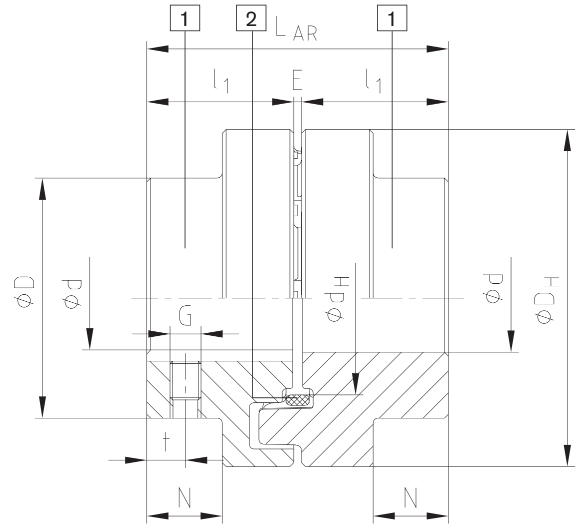
POLY-NORM® AR
Flexible couplings

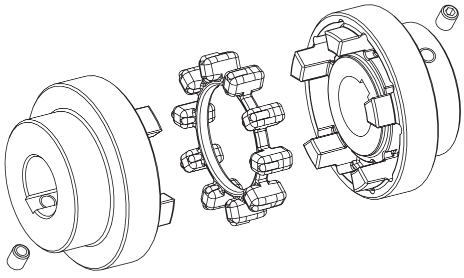
Two-part



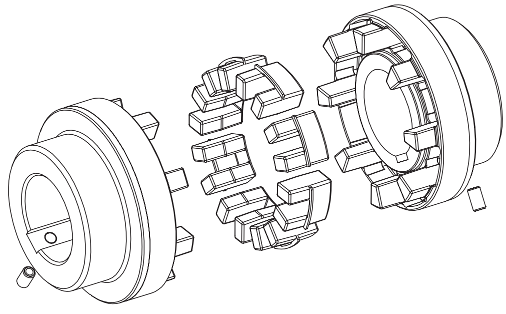
For legend of pictogram refer to flapper on the cover

Components





Size 28 - 125



Size 140 - 280

Components of type AR:
1 = Standard hub (GJL)
2 = Elastomer ring (up to size 180: NBR 78 ShA; from size 200: T-PUR® 84 ShA)

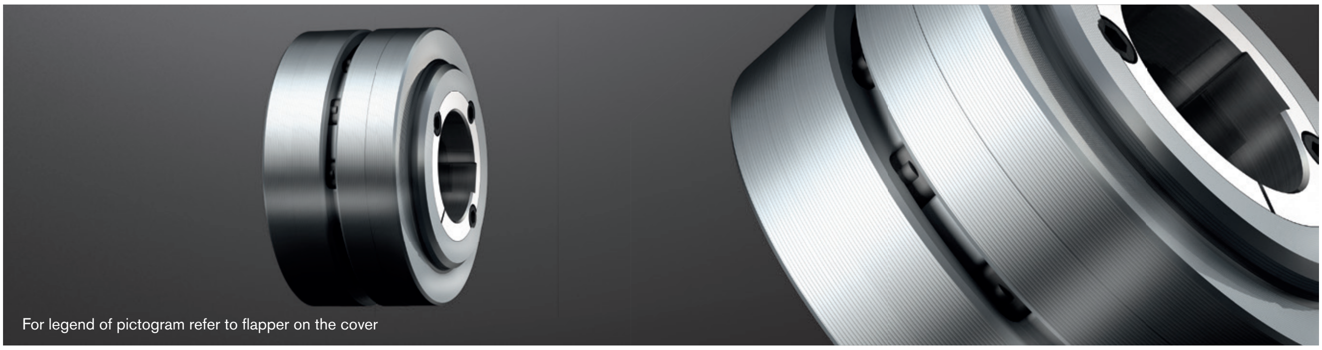
POLY-NORM® Type AR

Size	Elastomer ring [1] (component [2]) Torque [Nm]		Max. finish bore d [2]	Dimensions [mm]									Mass moment of inertia [3] [kgm²]	Weight [3] [kg]
				General							Setscrew [2]			
	T_{KN}	$T_{K\,max}$		L_{AR}	l_1	E	D_H	D	d_H	N	G	t		
28	40	80	12-30	59	28	3	69	46	36.5	12	M5	7	0.0004	0.9
32	60	120	12-35	68	32	4	78	53	41.5	14	M8	7	0.0008	1.4
38	90	180	19-40	80	38	4	87	62	50	19.5	M8	10	0.0016	2.0
42	150	300	19-45	88	42	4	96	69	55.5	20	M8	10	0.0026	2.7
48	220	440	19-50	101	48	5	106	78	64	24	M8	15	0.0042	3.7
55	300	600	19-60	115	55	5	118	90	73	29	M8	14	0.0070	5.5
60	410	820	19-65	125	60	5	129	97	81	33	M8	15	0.0112	6.9
65	550	1100	19-70	135	65	5	140	105	86	36	M10	20	0.0174	8.8
75	850	1700	32-80	155	75	5	158	123	100	42.5	M10	20	0.028	13.5
85	1350	2700	32-90	175	85	5	182	139	116	48.5	M10	25	0.052	19.5
90	2000	4000	32-95	185	90	5	200	148	128	49	M12	25	0.090	23.2
100	2900	5800	42-110	206	100	6	224	165	143	55	M12	25	0.160	31.9
110	3900	7800	50-120	226	110	6	250	185	158	60	M16	30	0.317	38.0
125	5500	11000	55-140	256	125	6	280	210	178	70	M16	35	0.570	55.2
140	7200	14400	65-155	286	140	6	315	235	216	76.5	M20	35	1.030	92.6
160	10000	20000	75-175	326	160	6	350	265	246	94.5	M20	45	1.746	126.9
180	13400	26800	75-200	366	180	6	400	300	290	111.5	M20	50	3.239	181.8
200	19000	38000	85-200	408	200	8	450	335	-	126	M24	50	5.728	263.7
220	30000	60000	95-220	448	220	8	500	370	-	140	M24	50	9.489	355.9
240	43000	86000	105-240	488	240	8	550	405	-	154	M24	50	14.963	466.3
260	55000	110000	115-260	530	260	10	650	440	-	158	M24	60	29.504	672.2
280	67000	134000	125-280	570	280	10	700	475	-	172	M24	60	42.451	836.6

[1] Standard material Perbunan [NBR] 78 Shore A, size 140 - 280 double tooth elastomers, for selection see page 14 et seqq.
[2] Bores H7 with keyway to DIN 6885 sheet 1 [JS9] and setscrew on the keyway
[3] Referring to average bore

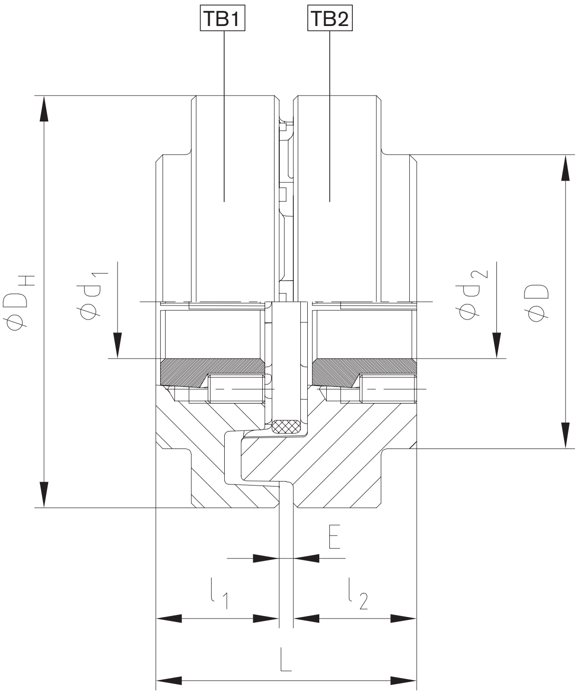
POLY-NORM® AR
Flexible couplings

For taper clamping sleeve



For legend of pictogram refer to flapper on the cover

Components



POLY-NORM® for taper clamping sleeve																	
Size	Taper clamping sleeve	Dimensions [mm]		Fastening screws [1] for taper clamping sleeve				Size	Taper clamping sleeve	Dimensions [mm]		Fastening screws [1] for taper clamping sleeve			
		Max. d_1, d_2	l_1, l_2	Size [Inch]	Length [mm]	SW [mm]	T_A [Nm]			Max. d_1, d_2	l_1, l_2	Size [Inch]	Length [mm]	SW [mm]	T_A [Nm]
32	1108	25	25.5	$^{1}/_{4}$"	13	3	5.7	75	2517	60	52.5	$^{1}/_{2}$"	25	6	49
42	1210	32	31.0	$^{3}/_{8}$"	16	5	20	85	2517	60	46.5	$^{1}/_{2}$"	25	6	49
48	1610	40	30.0	$^{3}/_{16}$"	16	5	20		3030	75	82	$^{5}/_{8}$"	32	8	90
	1615	40	42.5	$^{3}/_{8}$"	16	5	20	90	3020	75	52.0	$^{5}/_{8}$"	32	8	92
60	2012	50	38.5	$^{7}/_{16}$"	22	6	31	100	3535	90	98.0	$^{1}/_{2}$"	38	10	115
65	2517	60	62.5	$^{1}/_{2}$"	25	6	49	125	4040	100	111.5	$^{5}/_{8}$"	45	12	172

[1] Each 2 fastening screws, with 3535/4040 3-off

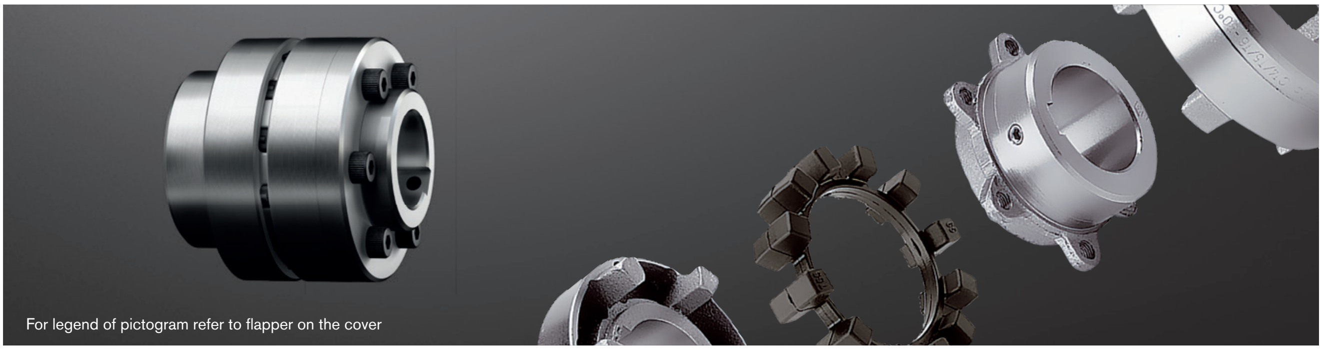
For coupling type TB1 screw connection on cam side - TB2 screw connection on collar side

Combination possible! Please order our separate dimension sheet (M407045).

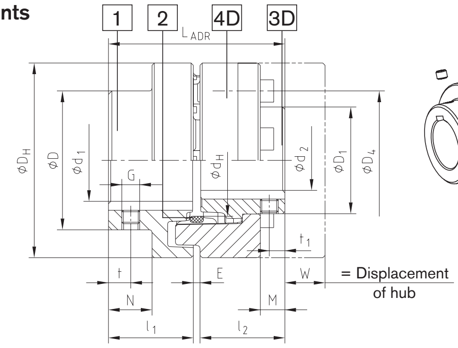
Ordering example:	POLY-NORM® 38	AR	Ø38	Ø30
	Coupling size	Type	Finish bore	Finish bore

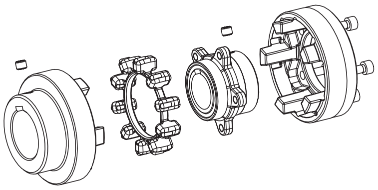
POLY-NORM® ADR
Flexible couplings

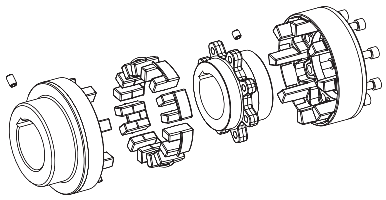
Three-part


For legend of pictogram refer to flapper on the cover

Components




Size 38 - 125


Size 140 - 280

Components of type ADR (three-part):
1 = Standard hub* (GJL)
2 = Elastomer ring (up to size 180: NBR 78 ShA; from size 200: T-PUR® 84 ShA)
3D = Flange hub (GJS); 4D = Cam ring (GJL)
* To be preferably used on driving side

POLY-NORM® Type ADR

Size	Elastomer ring 1) (component 2) Torque [Nm]		Dimensions [mm]															
			Max. finish bore 2)		General										Setscrew			
	T_{KN}	$T_{K\,max}$	d_1	d_2	L_{ADR}	l_1, l_2	E	D_H	D	D_1	d_H	N	M	W	G	t	t_1	T_A [Nm]
38	90	180	40	34	80	38	4	87	62	48	50	19.5	11.0	12	M8	10	7	10
42	150	300	45	38	88	42	4	96	69	54	55.5	20	12.0	16	M8	10	7	10
48	220	440	50	44	101	48	5	106	78	62	64	24	13.7	16	M8	15	7	10
55	300	600	60	50	115	55	5	118	90	72	73	29	18.7	15	M8	14	14	10
60	410	820	65	56	125	60	5	129	97	80	81	33	22.2	14	M8	15	15	10
65	550	1100	70	60	135	65	5	140	105	86	86	36	26.7	11	M10	20	20	17
75	850	1700	80	68	155	75	5	158	123	98	100	42.5	27.8	16	M10	20	20	17
85	1350	2700	90	78	175	85	5	182	139	112	116	48.5	33.7	18	M10	25	25	17
90	2000	4000	95	85	185	90	5	200	148	122	128	49	31.5	26	M12	25	25	40
100	2900	5800	110	95	206	100	6	224	165	136	143	55	37.5	28	M12	25	25	40
110	3900	7800	50-120	105	226	110	6	250	185	150	158	60	39.5	30	M16	30	30	80
125	5500	11000	55-140	115	256	125	6	280	210	168	178	70	48.0	35	M16	35	35	80
140	7200	14400	65-155	55-135	286	140	6	315	235	195	216	76.5	47.0	59	M20	35	35	140
160	10000	20000	75-175	65-155	326	160	6	350	265	225	246	94.5	65.0	43	M20	45	45	140
180	13400	26800	75-200	65-175	366	180	6	400	300	255	290	111.5	79.0	33	M20	50	50	140
200	19000	38000	85-200	73-200	408	200	8	450	335	290	320	126	95	7	M24	50	50	240
220	30000	60000	95-220	83-220	448	220	8	500	370	320	354	140	103	8	M24	50	50	240
240	43000	86000	105-240	93-240	488	240	8	550	405	350	388	154	119	1	M24	50	50	240
260	55000	110000	115-260	103-260	530	260	10	650	440	380	445	158	109	34	M24	60	60	240
280	67000	134000	125-280	113-280	570	280	10	700	475	410	478	172	109	29	M24	60	60	240

Selection of cap screws DIN EN ISO 4762 - 12.9

Size	M x l [mm]	z = number	Pitch z x angle	D_4 [mm]	T_A [Nm] 3)	Size	M x l [mm]	z = number	Pitch z x angle	D_4 [mm]	T_A [Nm] 3)
38	M6x16	5	5x72	62	10	110	M16x40	8	8x45	183	210
42	M8x16	5	5x72	69	25	125	M20x40	8	8x45	202	410
48	M8x20	6	6x60	78	25	140	M20x50	8	8x45	237	410
55	M8x20	6	6x60	88	25	160	M20x55	9	9x40	267	410
60	M8x20	6	6x60	98	25	180	M20x60	10	10x36	304	410
65	M10x20	6	6x60	104	49	200	M20x60	10	10x36	342	580
75	M10x25	6	6x60	120	49	220	M24x70	10	10x36	378	1000
85	M12x25	6	6x60	138	86	240	M27x70	10	10x36	416	1500
90	M16x30	6	6x60	149	210	260	M30x90	10	10x36	480	2000
100	M16x30	6	6x60	163	210	280	M30x90	10	10x36	520	2000

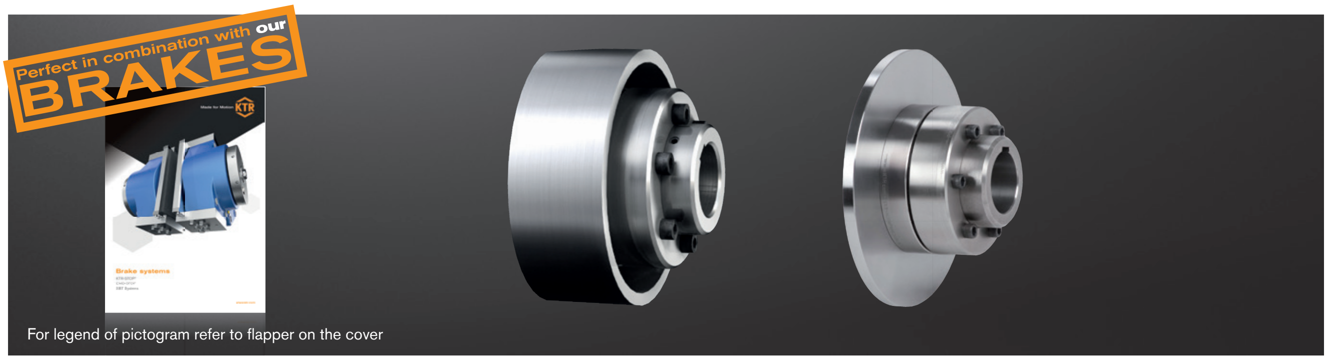
[1] Standard material Perbunan [NBR] 78 Shore A, size 140 - 280 double tooth elastomers, for selection see page 14 et seqq.

[2] Bores H7 with keyway to DIN 6885 sheet 1 [JS9] and setscrew [3] Screw tightening torques acc. to 8.8

Ordering example:	POLY-NORM® 65	ADR	d_1 = Ø55	d_2 = Ø60
	Coupling size	Type	Finish bore	Finish bore

POLY-NORM® BTA and SBA
Flexible couplings

With brake drum/brake disk for brake stop



For legend of pictogram refer to flapper on the cover

POLY-NORM® Type AR-BTA, AR-SBA, ADR-BTA and ADR-SBA

Size	Elastomer ring [1] (component 2) Torque [Nm]		Dimensions [mm]											
			D, D_1	Max. finish bore			D_H	D_2	D_3	z	M_1	l_1, l_2	E	L
	T_{KN}	$T_{K\ max}$		d_1	d_2	d_3								
38	90	180	For dimensions D, D_1 please refer to our company catalogue on page 67 and 69	40	34	38	87	61	75	5 x 72°	M6	38	4	80
42	150	300		45	38	42	96	68	82	5 x 72°	M8	42	4	90
48	220	440		50	44	48	106	77	92	6 x 60°	M8	48	5	101
55	300	600		60	50	55	118	88	104	6 x 60°	M8	55	5	115
60	410	820		65	56	60	129	96	114	6 x 60°	M8	60	5	125
65	550	1100		70	60	65	140	104	122	6 x 60°	M10	65	5	135
75	850	1700		80	68	75	158	121	140	6 x 60°	M10	75	5	155
85	1350	2700		90	78	85	182	137	160	6 x 60°	M12	85	5	175
90	2000	4000		95	85	90	200	146	174	6 x 60°	M16	90	5	185
100	2900	5800		110	95	100	224	164	195	6 x 60°	M16	100	6	206
110	3900	7800		50-120	105	50-110	250	184	218	8 x 45°	M16	110	6	226
125	5500	11000		55-140	115	55-125	280	208	245	8 x 45°	M20	125	6	256
140	7200	14400		65-155	55-135	65-140	315	233	276	8 x 45°	M20	140	6	286
160	10000	20000		75-175	65-155	75-160	350	263	308	9 x 40°	M20	160	6	326
180	13400	26800		75-200	65-175	75-180	400	298	349	10 x 36°	M20	180	6	366

POLY-NORM® Type BTA

POLY-NORM® size	38	42	48	55	60	65	75	85	90	100	110	125	140	160	180	Max. speed [rpm] with v = 60 m/s [3]
ØD_BxB Brake drum [2]	Dimensions C [mm]															
160x60	4															7150
200x75	9	8	4													5725
250x95	17	16	20	7	3	0										4575
315x118		25	21	16	12	9	2.5	-3.5								3625
400x150			34	28	25	22	15.5	9.5	9	3						2850
500x190										18	12	-2				2275
630x236												20	13	-4		1800
710x265													24	7	-11	1600

POLY-NORM® Type SBA

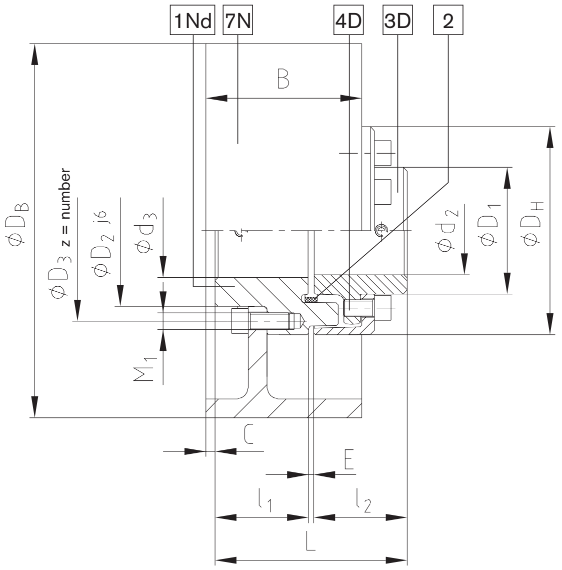
POLY-NORM® size	38	42	48	55	60	65	75	85	90	100	110	125	140	160	180	Max. speed [rpm] with v = 60 m/s [3]
ØAxG Brake disk [2]	Dimensions N [mm]															
200x12.5	13.75															5725
250x12.5	13.75	14.75	18.75													4575
315x16		13	17	22	26	29	35.5									3625
400x16			17	22	26	29	35.5	41.5	42	48						2850
500x16				22	26	29	35.5	41.5	42	48	54	64				2275
630x20										46	52	62	69	86		1800
710x20										46	52	62	69	86	104	1600
800x25										43.5	49.5	59.5	66.5	83.5	101.5	1425
900x25											49.5	59.5	66.5	83.5	101.5	1250

[1] Standard material Perbunan [NBR], for selection see page 14 et seqq.
[2] Steel
[3] Dynamic balancing required

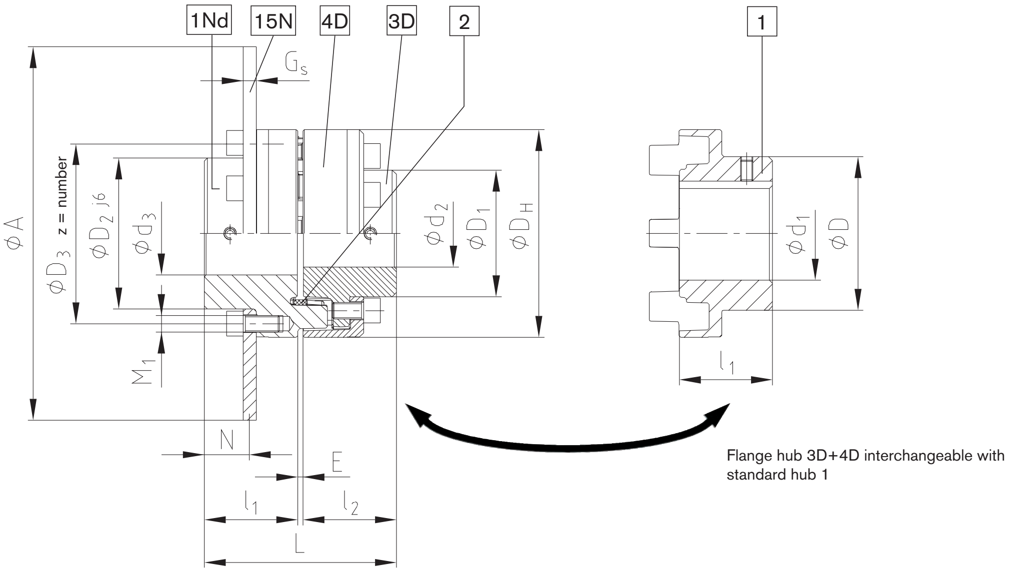
Other sizes on request

Ordering example:	POLY-NORM® 38	ADR-BTA	Ø200 x 75	d_2 = Ø32 NnD	d_3 = Ø25 NnD
	Coupling size	Type	Brake drum Ø	Component with finish bore	Component with finish bore

Components



Brake drum type ADR-BTA



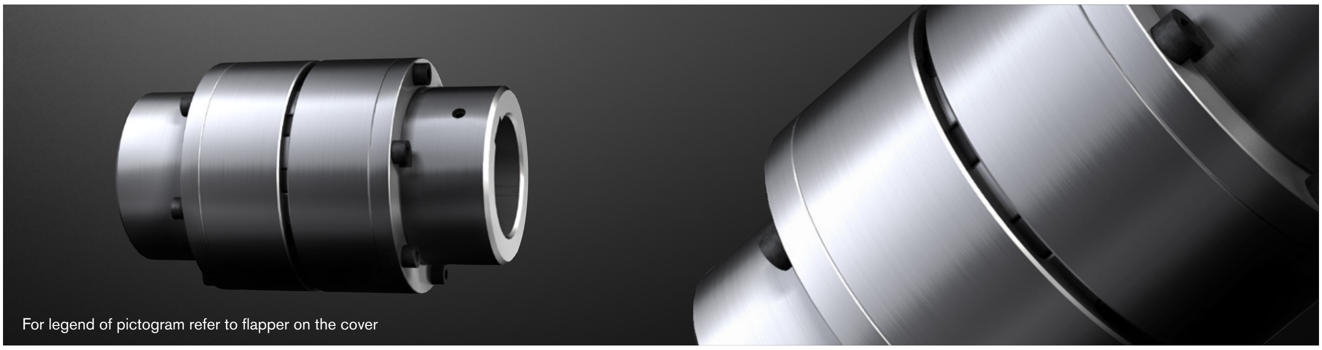
Flange hub 3D+4D interchangeable with standard hub 1

Brake disk type ADR-SBA

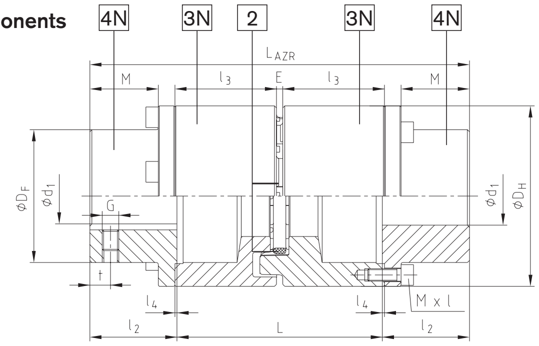
With standard hub
type AR-BTA or AR-SBA

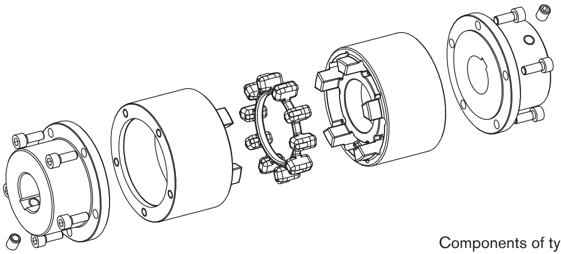
POLY-NORM® AZR
Flexible couplings

Standard drop-out center design coupling


For legend of pictogram refer to flapper on the cover

Components





Components of type AZR:
2 = Elastomer ring (NBR 78 ShA)
3N = Driving flange (GJL)
4N= Coupling flange (steel)

POLY-NORM® Type AZR

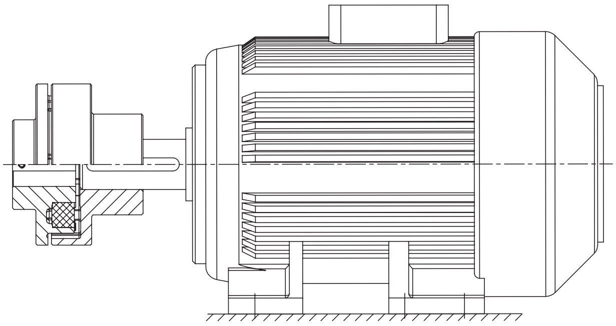
Size	Drop-out center length* L [mm]	Elastomer ring [1] (component 2) Torque [Nm]		Dimensions [mm]													Mass moment of inertia [3] [kgm^2]	Weight [3] [kg]
				Max. finish bore d_1 [2]	General										Setscrew			
		T_{KN}	$T_{K\ max}$		L_{AZR}	l_2	l_3	E	l_4	D_H	D_F	M	Mxl	T_A [Nm]	G	t		
28	100	40	80	34	170	35	49.5	3	1	69	46	26	M6x18	14	M5	7	0.0020	2.4
32	100	60	120	38	170	35	49	4	1	78	53	26	M6x18	14	M8	7	0.0042	3.2
	140				210		69										0.0062	3.9
38	100	90	180	45	184	42	49	4	1	87	62	33	M6x20	14	M8	10	0.0048	4.3
	140				224		69										0.0068	5.1
42	100	150	300	50	190	45	49	4	1	96	69	35	M6x20	14	M8	10	0.0094	5.1
	140				230		69										0.0128	6.0
48	100	220	440	55	204	52	49	5	1.5	106	78	41.5	M6x20	14	M8	15	0.0170	6.6
	140				244		69										0.0216	7.5
55	100	300	600	65	210	55	49	5	1.5	118	88	43.5	M8x25	35	M8	14	0.0188	9.4
	140				250		69										0.0240	10.8
	180				290		89										0.0232	12.2
60	100	410	820	70	220	60	49	5	1.5	129	97	47.5	M8x25	35	M8	15	0.0326	11.2
	140				260		69										0.0414	13.0
	180				300		89										0.0504	14.6
65	100	550	1100	75	230	65	49	5	1.5	140	105	51.5	M8x25	35	M10	20	0.0564	14.0
	140				270		69										0.0730	15.8
	180				310		89										0.0894	17.5
75	140	850	1700	90	290	75	69	5	1.5	158	123	60.5	M10x30	69	M10	20	0.0824	23.2
	180				330		89										0.1008	25.6
	250				400		124										0.1332	29.8
85	140	1350	2700	100	310	85	69	5	1.5	182	139	69.5	M10x30	69	M10	25	0.1570	32.1
	180				350		89										0.1658	35.2
	250				420		124										0.1812	40.7
90	140	2000	4000	110	320	90	69	5	1.5	200	148	73.5	M12x35	120	M12	25	0.2466	38.2
	180				360		89										0.2880	42.2
	250				430		124										0.3566	49.3
100	140	2900	5800	120	340	100	69	6	2	224	165	83	M12x35	120	M12	25	0.3988	50.0
	180				380		89										0.4450	54.8
	250				450		124										0.5465	63.2

[1] Standard material Perbunan [NBR] 78 Shore A, for selection see page 14 et seqq.
[2] Bores H7 with keyway to DIN 6885 sheet 1 [JS9] and setscrew on the keyway
[3] Referring to average bore
*For other extendable lengths (L = 120/160/195/215) it is possible to combine two driving flanges 3N with various lengths. As an example: driving flanges of POLY-NORM® 85 for extendable length 140 and 250 give an extendable length of 195 mm (140 mm + 250 mm = 390 mm; 390 mm/2 = 195 mm)

Ordering example:	POLY-NORM® 42	AZR	140	Ø38	Ø42
	Coupling size	Type	Drop-out center length L	Finish bore	Finish bore

POLY
Flexible couplings

Selection of standard IEC motors



POLY couplings for standard IEC standard motors, protection class IP 54/IP 55

A. C. motor 50 Hz			Motor power n= 3000 rpm 2 poles		POLY coupling size	Motor power n= 1500 rpm 4 poles		POLY coupling size	Motor power n= 1000 rpm 6 poles		POLY coupling size	Motor power n= 750 rpm 8 poles		POLY coupling size
Size	Shaft end dxl [mm]													
	2 poles	4, 6, 8 poles	Power P [kW]	Torque T [Nm]		Power P [kW]	Torque T [Nm]		Power P [kW]	Torque T [Nm]		Power P [kW]	Torque T [Nm]	
56	9 x 20		0.09	0.32	8	0.06	0.43	8	0.037	0.43	8			8
			0.12	0.41		0.09	0.64		0.045	0.52				
63	11 x 23		0.18	0.62		0.12	0.88		0.06	0.7				
			0.25	0.86		0.18	1.3		0.09	1.1				
71	14 x 30		0.37	1.3		0.25	1.8		0.18	2		0.09	1.4	
			0.55	1.9		0.37	2.5		0.25	2.8		0.12	1.8	
80	19 x 40		0.75	2.5		0.55	3.7		0.37	3.9		0.18	2.5	
			1.1	3.7		0.75	5.1		0.55	5.8		0.25	3.5	
90S	24 x 50		1.5	5	9	1.1	7.5	9	0.75	8	9	0.37	5.3	9
90L			2.2	7.4		1.5	10		1.1	12		0.55	7.9	
100L	28 x 60		3	9.8		2.2	15		1.5	15		0.75	11	
						3	20					1.1	16	
112M			4	13		4	27		2.2	22		1.5	21	
132S	38 x 80		5.5	18	10	5.5	36	10	3	30	10	2.2	30	10
			7.5	25										
132M						7.5	49		4	40		3	40	
									5.5	55				
160M	42 x 110		11	36	12	11	72	12	7.5	75		4	54	
			15	49								5.5	74	
160L			18.5	60		15	98		11	109	14	7.5	100	14
180M	48 x 110		22	71		18.5	121	14						
180L						22	144		15	148		11	145	
200L	55 x 110		30	97	15	30	196	15	18.5	181	15	15	198	15
			37	120					22	215				
225S	55 x 110	60 x 140				37	240	17				18.5	244	17
225M			45	145		45	292	20	30	293	20	22	290	20
250M	60 x 140	65 x 140	55	177	17	55	356		37	361		30	392	
280S	65 x 140	75 x 140	75	241	20*	75	484	20	45	438	20	37	483	20
280M			90	289		90	581		55	535		45	587	
315S		80 x 170	110	353		110	707	22	75	727	22	55	712	22
315M			132	423	20*	132	849	25	90	873	25	75	971	25
			160	513		160	1030		110	1070		90	1170	
315L			200	641	22*	200	1290	28	132	1280	28	110	1420	28
		85 x 170							160	1550		132	1710	
315			250	802		250	1600		200	1930		160	2070	30
			315	1010		315	2020		250	2410	30	200	2580	
355	75 x 140	95 x 170	355	1140		355	2280	30						35
			400	1280		400	2570		315	3040		250	3220	
			500	1600		500	3210		400	3850	35	315	4060	
400	80 x 170	110 x 210	560	1790		560	3580	35	450	4330		355	4570	40
			630	2020		630	4030		500	4810		400	5150	
			710	2270		710	4540		560	5390	40	450	5790	
450	90 x 170	120 x 210	800	2560		800	5120	40	630	6060		500	6420	
			900	2880		900	5760							
			1000	3200		1000	6400							

The coupling selection is based on an ambient temperature of up to +30 °C. The coupling was selected for normal operation. The couplings selected have a minimum operating factor $f_{min.}$ = 1.35. Drives with periodical torque curves must be selected according to DIN 740 part 2. If requested, KTR will perform the selection.

Torque T = rated torque according to Siemens catalogue M 11 · 1994/95.

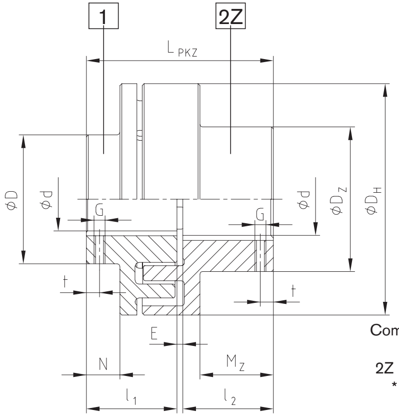
* Dynamic balancing required

POLY PKZ and PKD
Flexible couplings

PKZ (two-part) and PKD (three-part)

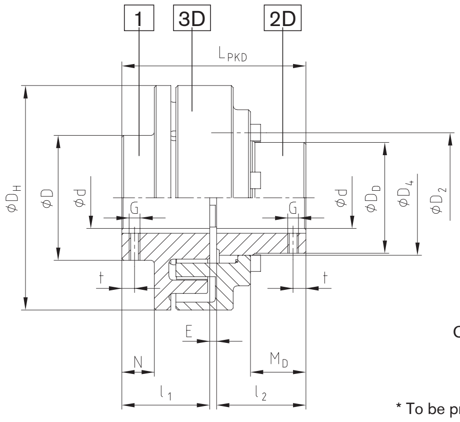
For legend of pictogram refer to flapper on the cover

Components



Components of type PKZ (Z):
1 = Cam section (GJL)
2Z = Pocket element * (GJL)
* To be used preferably on driving side

Type PKZ (Z) – (Size 8 to 30)



Components of type PKD (D):
1 = Cam section * (GJL)
2D = Flange hub (steel)
3D = Cam ring (GJL)
* To be preferably used on driving side

Type PKD (D) – (Size 15 to 35)

POLY Type PKZ and PKD

Size	Rated torque [1] T_{KN} [Nm]	Max. speed [2] n [rpm]	Max. finish bore d			Dimensions [mm]												Setscrew			Weight [3] [kg]
			Component 1	Component 2Z	Component 2D	D_H	D	D_Z	D_D	l_1, l_2	M_Z	M_D	N	E	D_2	D_4 (H7/h7)	L_{PKZ}/L_{PKD}	G	t	T_A [Nm]	
8 (Z)	42	5000	20	28	—	86	43	50	—	35	25	—	3	3	—	—	73	M5	18	2	1.7
9 (Z)	72	5000	28	38	—	97	55	65	—	41	30	—	7	3	—	—	85	M8	23	10	2.7
10 (Z)	100	5000	32	42	—	107	60	70	—	45	35	—	10	4	—	—	94	M8	27	10	3.5
12 (Z)	170	5000	38	48	—	131	70	80	—	55	43	—	12	4	—	—	114	M8	30	10	5.4
14 (Z)	210	4800	45	55	—	142	80	93	—	60	46	—	17	4	—	—	124	M8	10	10	7.6
15 (Z;D)	320	4300	50	60	50	157	90	100	74.5	65	52	33	21	4	90	75	134	M8	15	10	8.6
17 (Z;D)	400	3800	60	65	60	176	100	110	87	70	56	43.5	26	4	106	90	144	M8	15	10	12
20 (Z;D)	820	3300	65	75	70	205	115	127	104	80	65	45	23	4	123	105	164	M8	15	10	20
22 (Z)	1100	3000	85	85	—	224	140	140	—	90	75	—	38	4	—	—	184	M10	20	17	25
25 (Z;D)	1600	2700	90	90	95	257	150	150	138	100	84	67	43	5	162	140	205	M12	20	40	35
30 (Z;D)	3950	2200	110	110	110	308	180	180	165	130	108	89	58	5	202	170	265	M16	20	80	66
35 (D)	6100	1850	130	—	145	373	210	—	209	160	—	102	70	5	240	210	325	M16	25	80	125

[1] Maximum torque $T_{K\ max} = T_{KN} \times 2$; elastomer: standard material Perbunan [NBR] 92 Shore A; hub: standard material GJL

[2] Speeds for v = 30 m/s. For circumferential speeds exceeding v = 30 m/s, we recommend dynamic balancing

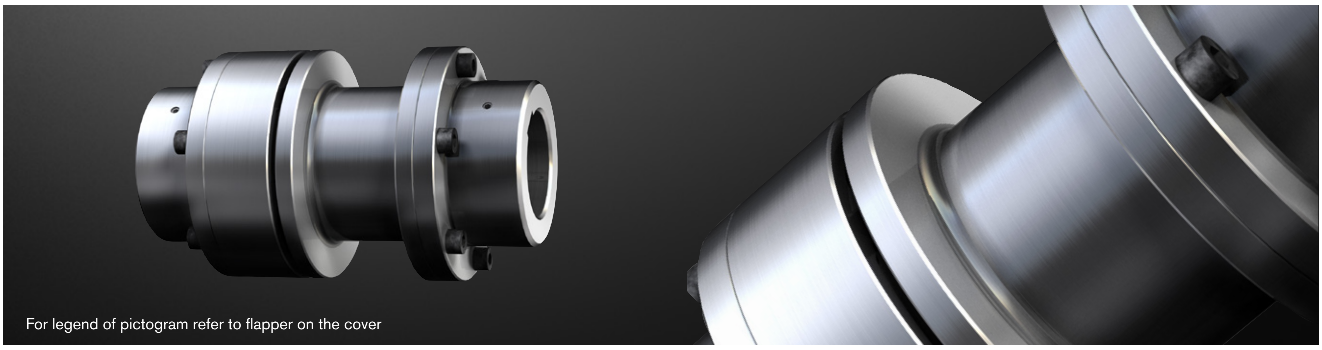
[3] Referring to average bore

Ordering example:

POLY	PKD	28	d_1 = Ø90	d_2 = Ø80
Coupling type	Type	Size	Finish bore component 1	Finish bore component 2

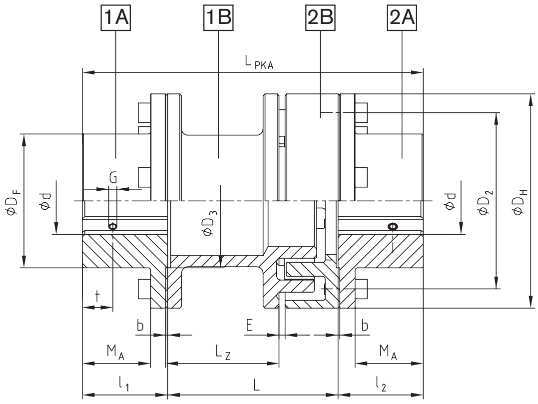
POLY PKA
Flexible couplings

Drop-out center design coupling



For legend of pictogram refer to flapper on the cover

Components



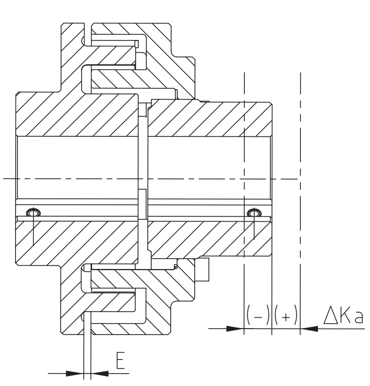
Components of type PKA:
1A/2A = Coupling flange (steel)
1B = Spacer (GJL)
2B = Driving flange (GJL)
1A and 1B to be preferably used on driving side

POLY Type PKA

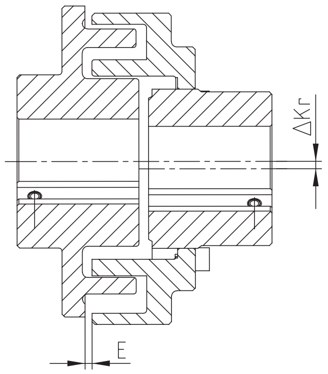
Size	Rated torque T_{KN} [Nm]	Max. speed n [rpm]	Max. finish bore d component 1A/2A	Dimensions [mm]											Setscrew			Weight [kg]
				D_H	D_F	D_2	D_3	l_1, l_2	b	M_A	E	L	L_{PKA}	L_Z	G	t	T_A [Nm]	
8	42	5000	40	86	55	70	60	35	1.5	25.5	3	100	170	66	M5	15	2	3.04
9	72	5000	50	97	70	85	70	41	1.5	30.5	3	100	182	63	M8	15	10	4.26
												140	222	103				4.66
10	100	5000	55	107	78	93	80	46	1.5	35.5	4	100	192	61	M8	20	10	5.42
												140	232	101				5.88
12	170	5000	70	131	95	113	90	55	1.5	43.0	4	100	210	55	M8	20	10	9.49
												140	250	95				10.15
14	210	4800	75	142	105	125	100	60	1.5	48.0	4	100	220	54	M8	25	10	11.46
												140	260	94				12.23
15	320	4300	80	157	110	135	110	65	1.5	49.5	4	140	270	93	M8	25	10	15.63
												180	310	133				16.50
20	820	3300	110	205	150	175	130	80	2.0	61.0	4	140	300	81	M8	30	10	30.96
												180	340	121				32.18

Ordering example:	POLY	PKA	15	140	Ø38	Ø40
	Coupling type	Type	Size	Drop-out center design length	Finish bore component 1A	Finish bore component 2A

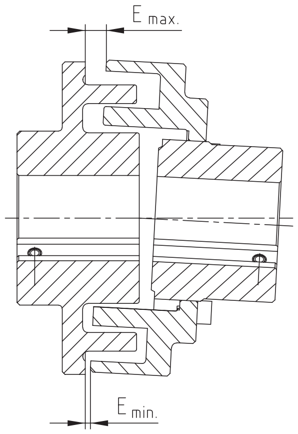
Displacements / elastomer sets / screws



Axial displacement



Radial displacement

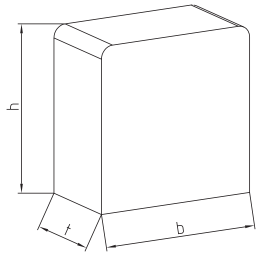


Angular displacement

$\Delta K_W = E_{max.} - E_{min.}$ [mm]

Radial and angular displacements may occur simultaneously.
The combined sum V = ΔK_r [mm] + ($E_{max.}$ [mm] - $E_{min.}$ [mm]) should not exceed the values listed in the table.

Displacements [mm]															
Coupling size		8	9	10	12	14	15	17	19	20	22	25	28	30	35
Max. axial displacement ΔK_a [mm]		±1	±1	±1	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±3
Max. radial displacement ΔK_r or max. angular displacement ΔK_W or sum V	n=750 rpm	0.8	0.8	0.8	0.8	0.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.2	1.2
	n=1000 rpm	0.7	0.7	0.7	0.7	0.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.1	1.1
	n=1500 rpm	0.5	0.5	0.5	0.5	0.5	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.9



Elastomer sets NBR (cuboid)															
Coupling size		8	9	10	12	14	15	17	19	20	22	25	28	30	35
Size of set		1			2		3		3a	4	3b	4Ü	5	6Ü	7Ü
Number of sets		8	10	10	10	10	12	12	12	12	16	16	16	16	20
Dimensions of elastomer sets w x d x h [mm]	b	18.4			24.9		27.2		27.7	34.9	29.6	34.8	40	43.3	45.7
	t	10			15.3		16.1		18.4	19.6	18.4	20.1	22.2	28.6	25.0
	h	18.9			23.9		24.6		26.8	34.6	29.6	35	40.6	41.1	60.0

Type PKD - Dimensions of cap screws acc. to DIN EN ISO 4762															
Coupling size		8	9	10	12	14	15	17	19	20	22	25	28	30	35
Screw size	M	—	—	—	—	—	M8	M8	M8	M10	M8	M10	M10	M12	M12
	l	—	—	—	—	—	30	25	25	30	30	30	40	40	55
Number		—	—	—	—	—	6	6	6	6	8	8	8	8	10
Tightening torque T_A [Nm]		—	—	—	—	—	25	25	25	49	25	49	49	86	86
Type PKA - Dimensions of cap screws acc. to DIN EN ISO 4762															
Screw size	M	M6	M6	M6	M8	M8	M10	M10	—	M10	—	M10	—	—	—
	l	16	18	18	20	20	25	25	—	30	—	30	—	—	—
Number		4	5	5	5	5	6	6	—	6	—	8	—	—	—
Tightening torque T_A [Nm]		10	10	10	25	25	49	49	—	49	—	49	—	—	—

REVOLEX®
Flexible pin & bush coupling

Technical data

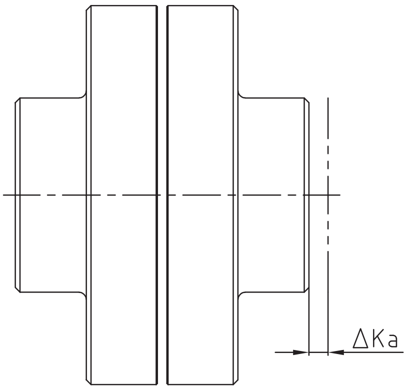
REVOLEX® KX-D Technical data

Size	Torque [Nm] NBR 80 ShA				Cast iron		steel		Torsion spring stiffness C dyn. [Nm/rad]			
	Rated T_{KN}	Max. $T_{K\ max}$	Vibratory T_{KW}	$T_{K\ max}$ [1]	Max. speed [rpm] with v = 35 m/s	Max. bore [mm]	Max. speed [rpm] with v = 60 m/s	Max. bore [mm]	0.25 T_{KN}	0.50 T_{KN}	0.75 T_{KN}	1.00 T_{KN}
KX-D 75	4300	8600	1720	12900	–	–	4500	100	3.60x10^{5}	5.70x10^{5}	1.06x10^{6}	1.58x10^{6}
KX-D 85	5500	11000	2200	16500	–	–	4175	110	4.68x10^{5}	7.42x10^{5}	1.38x10^{6}	2.06x10^{6}
KX-D 95	7200	14400	2880	21600	–	–	3845	125	6.05x10^{5}	9.58x10^{5}	1.78x10^{6}	2.65x10^{6}
KX-D 105	9400	18800	3760	28200	2000	110	3475	130	7.88x10^{5}	1.25x10^{6}	2.32x10^{6}	3.46x10^{6}
KX-D 120	15200	30400	6080	45600	1800	125	3100	150	2.14x10^{6}	2.97x10^{6}	4.18x10^{6}	5.62x10^{6}
KX-D 135	20000	40000	8000	60000	1600	140	2725	170	2.87x10^{6}	3.99x10^{6}	5.61x10^{6}	7.55x10^{6}
KX-D 150	25000	50000	10000	75000	1450	160	2500	190	3.57x10^{6}	4.96x10^{6}	6.97x10^{6}	9.38x10^{6}
KX-D 170	41000	82000	16400	123000	1250	180	2150	220	4.63x10^{6}	6.66x10^{6}	9.92x10^{6}	1.64x10^{7}
KX-D 190	54000	108000	21600	162000	1100	205	1900	245	6.10x10^{6}	8.78x10^{6}	1.31x10^{7}	2.16x10^{7}
KX-D 215	67500	135000	27000	202500	1000	230	1725	275	7.70x10^{6}	1.11x10^{7}	1.65x10^{7}	2.73x10^{7}
KX-D 240	98000	196000	39200	294000	900	250	1550	310	8.10x10^{6}	1.15x10^{7}	1.57x10^{7}	2.68x10^{7}
KX-D 265	134000	268000	53600	402000	800	285	1375	350	1.12x10^{7}	1.59x10^{7}	2.17x10^{7}	3.70x10^{7}
KX-D 280	170000	340000	68000	510000	720	315	1225	385	1.45x10^{7}	2.06x10^{7}	2.82x10^{7}	4.81x10^{7}
KX-D 305	205000	410000	82000	615000	675	330	1150	405	1.74x10^{7}	2.47x10^{7}	3.37x10^{7}	5.76x10^{7}
KX-D 330	265000	530000	106000	795000	625	355	1075	435	2.29x10^{7}	3.25x10^{7}	4.43x10^{7}	7.56x10^{7}
KX-D 355	350000	700000	140000	1050000	575	380	975	450	4.26x10^{7}	8.99x10^{7}	1.37x10^{8}	1.85x10^{8}
KX-D 370	430000	860000	172000	1290000	535	450	900	530	4.92x10^{7}	1.04x10^{8}	1.59x10^{8}	2.14x10^{8}
KX-D 470	520000	1040000	208000	1560000	–	–	855	520	6.25x10^{7}	1.33x10^{8}	2.03x10^{8}	2.74x10^{8}
KX-D 520	810000	1620000	324000	2430000	–	–	740	According to customer specification	9.83x10^{7}	2.08x10^{8}	3.18x10^{8}	4.28x10^{8}
KX-D 590	1000000	2000000	400000	3000000	–	–	660		1.21x10^{8}	2.56x10^{8}	3.91x10^{8}	5.26x10^{8}
KX-D 650	1350000	2700000	540000	4050000	–	–	590		1.63x10^{8}	3.47x10^{8}	5.30x10^{8}	7.14x10^{8}

[1] ≤ 1000 load cycles

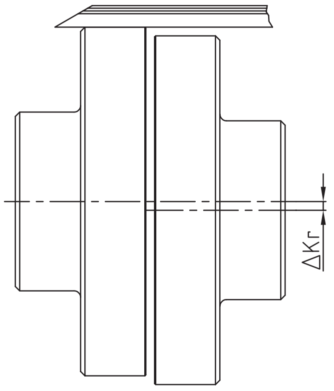
If requested, coupling is dynamically balanced (semi-key balancing G 6.3 with speed as specified by the customer). For circumferential speeds exceeding v = 30 m/s dyn. balancing is recommended.

Axial displacement ΔK_a

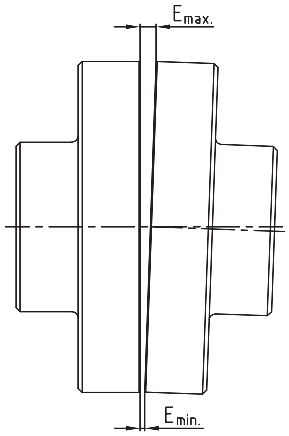


$L_{max./min.} = L + \Delta K_a$ [mm]

Radial displacement ΔK_r



Angular displacement ΔK_w



$\Delta K_w = E_{max.} - E_{min.}$ [mm]

Displacements

Size (KX and KX-D)		75	85	95	105	120	135	150	170	190	215	240	265	280	305	330	355	370	470	520	590	650
Max. axial displacement ΔK_a [mm]		±1.5	±1.5	±1.5	±2	±2	±2	±2	±2.5	±2.5	±2.5	±2.5	±2.5	±2.5	±2.5	±4	±4	±4	±4	±4	±4	±4
Max. radial displacement ΔK_r [mm] or max. angular displacement ΔK_w [mm] with speed n	250 rpm	0.95	1.1	1.1	1.2	1.3	1.4	1.5	1.7	1.9	2.0	2.2	2.5	2.7	2.9	3.1	3.3	3.5	3.8	4.4	4.9	5.4
	500 rpm	0.70	0.80	0.80	0.9	0.9	1.0	1.1	1.2	1.3	1.4	1.6	1.7	1.9	2.0	2.2	2.3	2.5	2.8	3.1	3.5	3.8
	750 rpm	0.60	0.65	0.65	0.7	0.8	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.6	1.7	1.8	1.9	2.0	2.2	2.4	–	–
	1000 rpm	0.50	0.55	0.55	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.1	1.2	1.4	1.4	1.5	1.7	1.8	–	–	–	–
	1500 rpm	0.40	0.45	0.45	0.5	0.5	0.6	0.6	0.7	0.8	0.8	0.9	1.0	–	–	–	–	–	–	–	–	–
	2000 rpm	0.35	0.40	0.40	0.4	0.5	0.5	0.5	0.6	0.7	–	–	–	–	–	–	–	–	–	–	–	–
	3000 rpm	0.30	0.35	0.35	0.4	0.4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

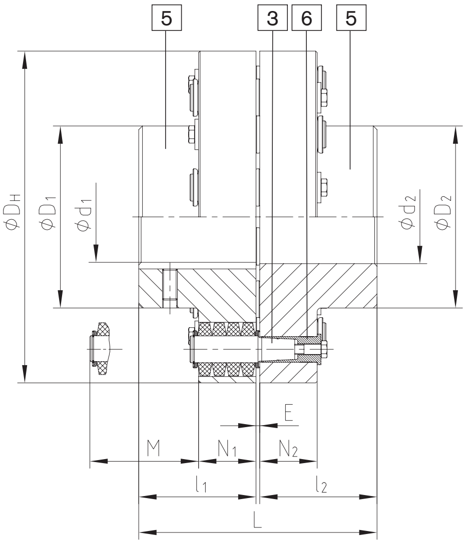
Advice for assembly
The permissible displacement figures of the flexible REVOLEX® KX couplings specified are general standard values taking into account the load of the coupling up to the rated torque T_{KN} of the coupling and an ambient temperature of +30 °C. The displacement figures may only be used one by one, if they appear simultaneously, they must be limited in proportion. Care should be taken to maintain the distance dimension E accurately in order to allow for axial clearance of the coupling while in operation. See KTR assembly instructions, KTR standard 49410 on our homepage www.ktr.com.

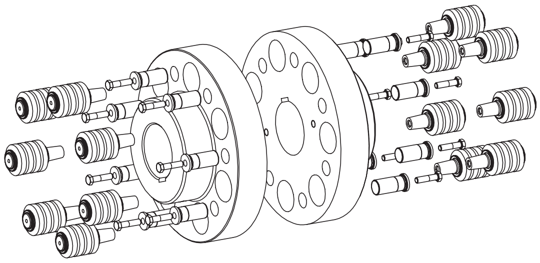
REVOLEX® KX-D
Flexible pin & bush coupling

Material cast


For legend of pictogram refer to flapper on the cover

Components





Components of type KX-D:
5 = Hub part 5
3 = Pins complete
6 = KX-D sleeve (hardened and corrosion-protected)

REVOLEX® Type KX-D

Size	Torque [1] [Nm]		Max. speed [2] [rpm]	Finish bore (min. - max.)	Dimensions [mm]							Mass moment of inertia [3] [kgm²]	Weight [3] [kg]
	T_{KN}	$T_{K\,max}$		d_1, d_2	L	l_1, l_2	E	D_H	D_1, D_2	N_1, N_2	M*		
🟧 KX-D 105	9400	18800	2000	38-110	237	117	3	330	180	56	76	0.907	68
🟧 KX-D 120	15200	30400	1800	45-125	270	132	6	370	206	76	100	1.867	108
🟧 KX-D 135	20000	40000	1600	75-140	300	147	6	419	230	76	100	3.144	145
🟧 KX-D 150	25000	50000	1450	85-160	336	165	6	457	256	76	100	4.573	180
🟧 KX-D 170	41000	82000	1250	95-180	382	188	6	533	292	92	130	10.259	291
🟧 KX-D 190	54000	108000	1100	110-205	428	211	6	597	330	92	130	16.601	385
🟧 KX-D 215	67500	135000	1000	125-230	480	237	6	660	368	92	130	25.495	498
🟧 KX-D 240	98000	196000	900	140-250	534	264	6	737	407	122	170	50.147	760
🟧 KX-D 265	134000	268000	800	160-285	590	292	6	826	457	122	170	80.796	997
🟧 KX-D 280	170000	340000	720	180-315	628	311	6	927	508	122	170	129.979	1301
🟧 KX-D 305	205000	410000	675	180-330	654	324	6	991	533	122	170	170.016	1509
🟧 KX-D 330	265000	530000	625	200-355	666	330	6	1067	572	122	170	227.451	1755
KX-D 355	350000	700000	575	225-380	721	356	9	1156	610	164	220	415.259	2263
KX-D 370	430000	860000	535	225-450	773	382	9	1250	720	164	220	586.686	2701

* Drop-out center design dimension required

[1] Standard material Perbunan [NBR] 80 Shore A, for selection see page 18 et seqq.

[2] Higher speeds on request.

[3] Referring to max. bore

Finish bore according to ISO fit H7, feather keyway according to DIN 6885, sheet 1 [JS9].

If requested, coupling is dynamically balanced (semi-key balancing G 6.3 with speed as specified by the customer). For circumferential speeds exceeding v = 30 m/s dyn. balancing is recommended.

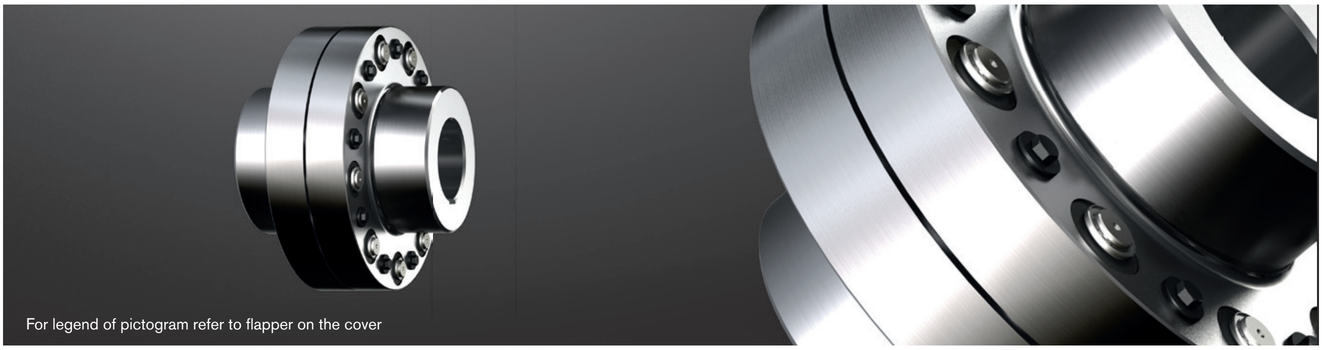
🟧 = Pilot bored available from stock

Ordering example:

REVOLEX® KX-D 170	GJL	Ø120	Ø150
Type and size of coupling	Material	Finish bore	Finish bore

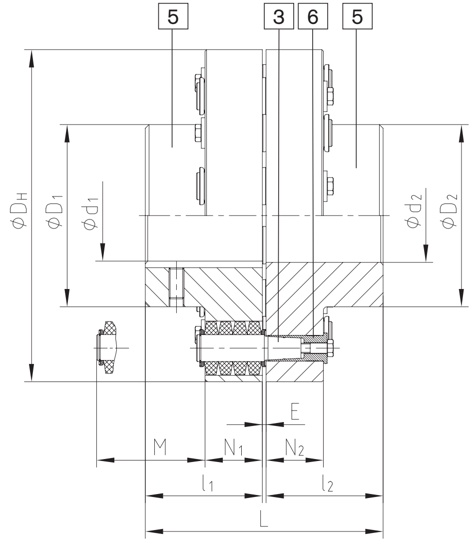
REVOLEX® KX-D
Flexible pin & bush coupling

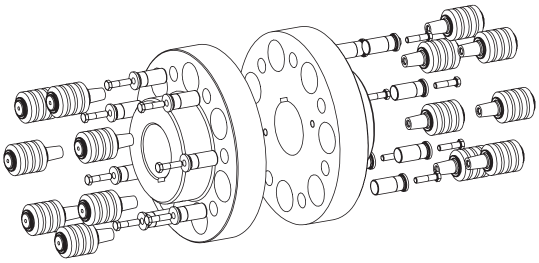
Material steel



For legend of pictogram refer to flapper on the cover

Components





Components of type KX-D:
5 = Hub part 5
3 = Pins complete
6 = KX-D sleeve (hardened and corrosion-protected)

REVOLEX® Type KX-D

Size	Torque $^{1)}$ [Nm]		Max. speed $^{2)}$ [rpm]	Finish bore (min. - max.)	Dimensions [mm]							Mass moment of inertia $^{3)}$ [kgm²]	Weight $^{3)}$ [kg]
	T_{KN}	$T_{K\,max}$		d_1, d_2	L	l_1, l_2	E	D_H	D_1, D_2	N_1, N_2	M*		
KX-D 75	4300	8600	4500	0-100	193	95	3	255	136	56	76	0.325	39
KX-D 85	5500	11000	4175	0-110	213	105	3	274	152	56	76	0.440	46
KX-D 95	7200	14400	3825	0-125	227	112	3	298	168	56	76	0.624	56
🟧 KX-D 105	9400	18800	3475	0-130	237	117	3	330	180	56	76	0.907	80
🟧 KX-D 120	15200	30400	3100	0-150	270	132	6	370	206	76	100	1.867	124
🟧 KX-D 135	20000	40000	2725	75-170	300	147	6	419	230	76	100	3.144	165
🟧 KX-D 150	25000	50000	2500	85-190	336	165	6	457	256	76	100	4.573	205
🟧 KX-D 170	41000	82000	2150	95-220	382	188	6	533	292	92	130	10.259	322
🟧 KX-D 190	54000	108000	1900	110-245	428	211	6	597	330	92	130	16.601	431
🟧 KX-D 215	67500	135000	1725	125-275	480	237	6	660	368	92	130	25.495	559
🟧 KX-D 240	98000	196000	1550	140-310	534	264	6	737	407	122	170	50.147	833
🟧 KX-D 265	134000	268000	1375	160-350	590	292	6	826	457	122	170	80.796	1099
🟧 KX-D 280	170000	340000	1225	180-385	628	311	6	927	508	122	170	129.979	1436
🟧 KX-D 305	205000	410000	1150	180-405	654	324	6	991	533	122	170	170.016	1669
🟧 KX-D 330	265000	530000	1075	200-435	666	330	6	1067	572	122	170	227.451	1954
KX-D 355	350000	700000	975	225-450	721	356	9	1156	610	164	220	415.259	2451
KX-D 370	430000	860000	900	225-530	773	382	9	1250	720	164	220	584.686	2925
KX-D 470	520000	1040000	855	240-520 $^{4)}$	969 $^{4)}$	480 $^{4)}$	9	1340	705 $^{4)}$	164	220	785.489	3631
KX-D 520	810000	1620000	760	240-520 $^{4)}$	1089 $^{4)}$	540 $^{4)}$	9	1540	780 $^{4)}$	164	220	1264.725	5155
KX-D 590	1000000	2000000	680	260-590 $^{4)}$	1212 $^{4)}$	600 $^{4)}$	12	1735	885 $^{4)}$	164	220	2081.885	6895
KX-D 650	1350000	2700000	610	280-650 $^{4)}$	1332 $^{4)}$	660 $^{4)}$	12	1935	975 $^{4)}$	164	220	3228.297	8893

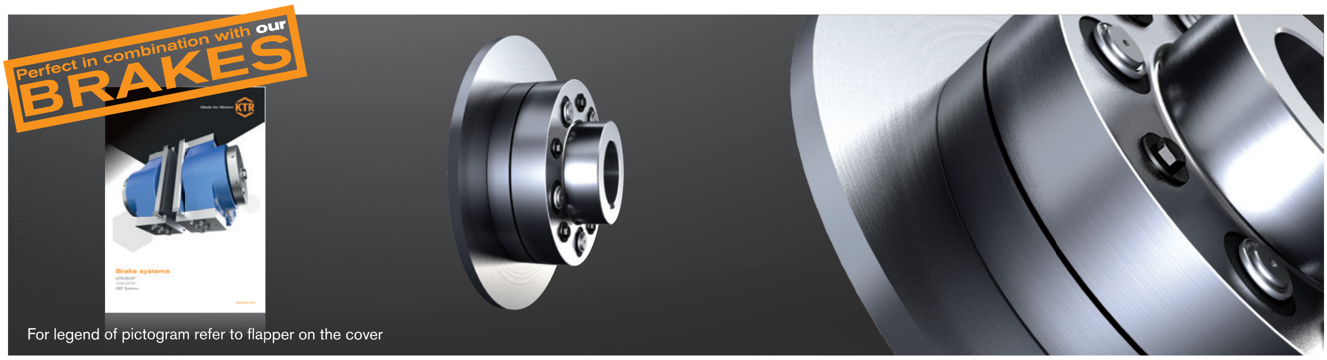
* Drop-out center design dimension required $^{1)}$ Standard material Perbunan [NBR] 80 Shore A, for selection see page 18 et seqq.
$^{2)}$ Higher speeds on request. $^{3)}$ Referring to max. bore $^{4)}$ Variable according to customer's requests
Finish bore according to ISO fit H7, feather keyway according to DIN 6885, sheet 1 [JS9]. If requested, coupling is dynamically balanced (semi-key balancing G 6.3 with speed as specified by the customer). For circumferential speeds exceeding v = 30 m/s dyn. balancing is recommended.
🟧 = Pilot bored available from stock

Ordering example:

REVOLEX® KX-D 170	steel	Ø120	Ø150
Type and size of coupling	Material	Finish bore	Finish bore

REVOLEX® KX-D SB
Flexible pin & bush coupling

With brake disk



For legend of pictogram refer to flapper on the cover

REVOLEX® KX-D Type SB													
Size	Torque [1] [Nm] KX-D		Finish bore KX-D (min. - max.)		Dimensions [mm]								
	T_{KN}	$T_{K\ max}$	GJL d_1, d_2	Steel d_1, d_2	L	l_1, l_2	E	D_H	D_1	N_1	N_2	N_3	M*
105	9400	18800	34-110	0-130	237	117	3	330	180	56	29	55	76
120	15200	30400	50-125	0-150	270	132	6	370	206	76	45	75	100
135	20000	40000	70-140	70-170	300	147	6	419	230	76	45	75	100
150	25000	50000	82-160	82-190	336	165	6	457	256	76	45	75	100
170	41000	82000	95-180	95-220	382	188	6	533	292	92	62	91	130
190	54000	108000	110-205	110-245	428	211	6	597	330	92	62	91	130
215	67500	135000	125-230	125-275	480	237	6	660	368	92	62	91	145
240	98000	196000	140-250	140-310	534	264	6	737	407	122	75	121	167

Selection of coupling/brake disk dimension N						
Size	Brake disk ØA x b [2]					
	Ø560x30	Ø630x30	Ø710x30	Ø800x30	Ø900x30	Ø1000x30
	KX-D	KX-D	KX-D	KX-D	KX-D	KX-D
105	47	47				
120	42	42				
135		57	57			
150			75	75		
170			82	82		
190				105	105	
215				131	131	131
240				128	128	128

* Drop-out center design dimension required

[1] Standard material Perbunan [NBR] 80 Shore A, for selection see page 18 et seqq.

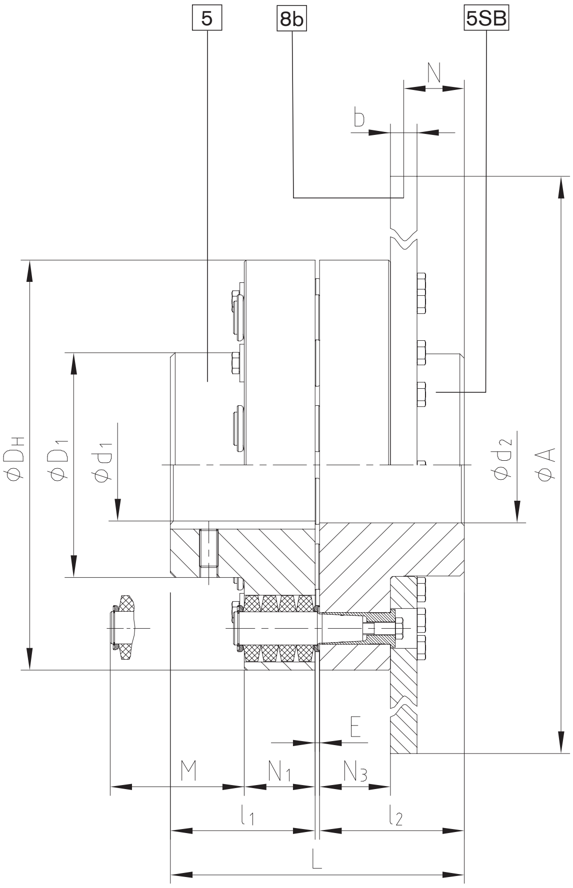
[2] Maximum circumferential speed v = 60 m/s referring to the maximum outside diameter.

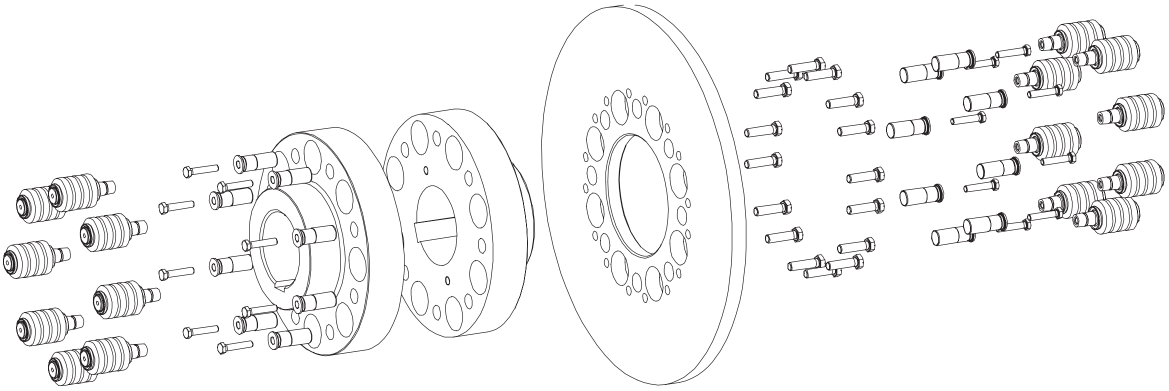
Finish bore according to ISO fit H7, feather keyway according to DIN 6885, sheet 1 [JS9].

If requested, coupling is dynamically balanced (semi-key balancing G 6.3 with speed as specified by the customer). For circumferential speeds exceeding v = 30 m/s dynamic balancing is necessary (referring to outside diameter ØA).

Ordering example:	REVOLEX® KX 170	SB	Ø710 x 30	1 - Ø120	2SB - Ø150
	Type and size of coupling	Type	Brake disk	Finish bore	Finish bore

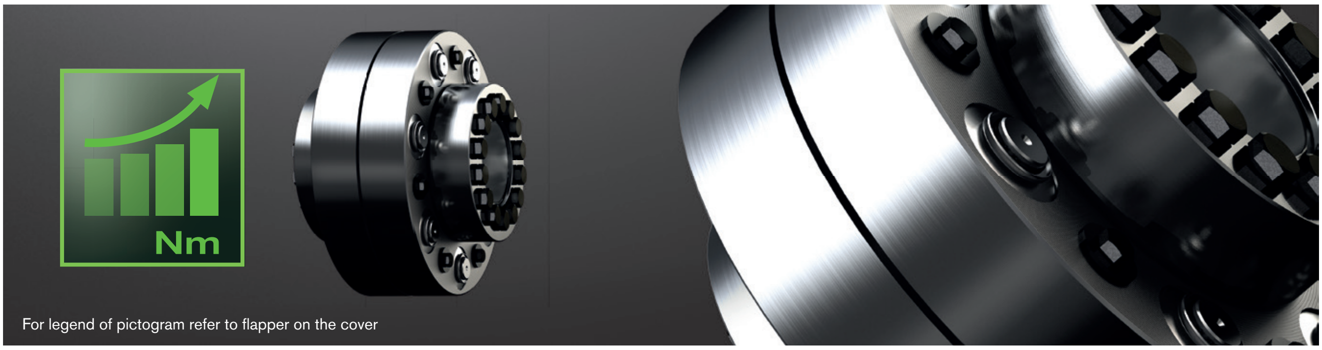
Components





REVOLEX® KX-D with KTR 650 clamping set
Flexible pin & bush coupling

Material steel



For legend of pictogram refer to flapper on the cover

REVOLEX® KX-D						CLAMPEX® KTR 650							
						Dimensions [mm]		Screws					
Size	D_H	L1, L2	N	E	T_{KN} [1] [Nm]	Max. perm. size d x D	T_K	Size	Length	Number	T_A [Nm]	Transmittable torque T [Nm]
105	330	123	56	3	9400	100 x 197	156	M16	75	14	250	18800
120	370	149	76	6	15200	110 x 215	166	M20	90	10	490	22400
135	419	157	76	6	20000	120 x 230	186	M20	90	14	490	35200
150	457	168	76	6	25000	140 x 290	216	M20	100	16	490	46700
170	533	205	92	6	41000	180 x 340	276	M24	130	16	840	85800
190	597	214	92	6	54000	220 x 405	320	M27	140	18	1250	148600
215	660	232	92	6	67500	260 x 460	356	M27	160	21	1250	192900
240	737	254	122	6	98000	240 x 430	340	M27	150	20	1250	175400
265	826	280	122	6	134000	320 x 550	402	M27	180	24	1250	248900
280	927	313	122	6	170000	390 x 630	486	M30	200	24	1700	368300
305	991	321	122	6	205000	440 x 700	534	M30	220	28	1700	472100
330	1067	321	122	6	265000	440 x 700	534	M30	220	28	1700	472100

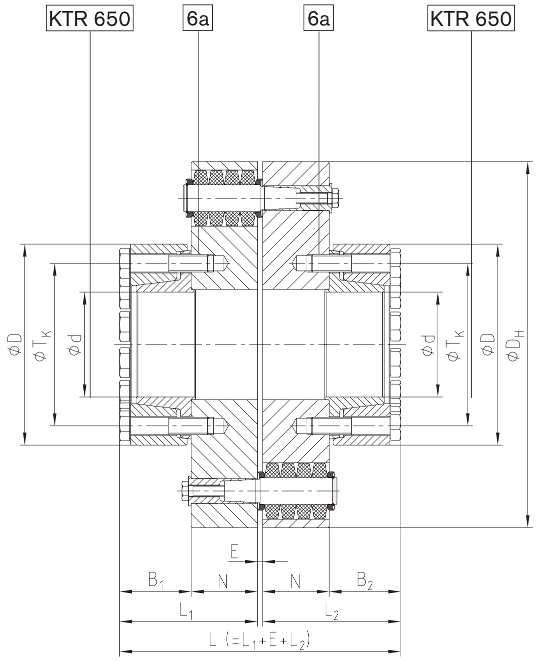
🟩 = Years of experience with applications at customer sites and additional test series in the KTR test field in Rheine enabled us to determine potentials allowing for an increase of the rated and maximum torques with some sizes of this series.

[1] Standard material Perbunan [NBR] 80 Shore A, for selection see page 18 et seqq.
If requested, coupling is dynamically balanced (semi-key balancing G 6.3 with speed as specified by the customer). For circumferential speeds exceeding v = 30 m/s dynamic balancing is necessary (referring to outside diameter ØA).

CLAMPEX® KTR 650							
d x D	Dimensions [mm]		Screws				Transmittable torque T [Nm]
	B1/B2	T_K	Size	Length	Number	T_A [Nm]	
100 x 215	73	166	M20	90	10	490	22400
110 x 230	81	186	M20	90	14	490	33600
120 x 290	92	216	M20	100	16	490	42100
130 x 290	92	216	M20	100	16	490	46700
140 x 320	102	234	M24	110	14	840	63600
150 x 320	102	234	M24	110	14	840	63600
160 x 340	113	276	M24	130	16	840	85800
170 x 340	113	276	M24	130	16	840	85800
180 x 370	117	290	M27	140	16	1,250	119700
190 x 370	117	290	M27	140	16	1,250	119700
200 x 405	122	320	M27	140	18	1,250	148600
210 x 405	122	320	M27	140	18	1,250	148600
220 x 430	132	340	M27	150	20	1,250	175400
230 x 430	132	340	M27	150	20	1,250	175400
240 x 460	140	356	M27	160	21	1,250	192900
250 x 460	140	356	M27	160	21	1,250	192900
260 x 485	147	360	M27	180	21	1,250	195000
270 x 485	147	360	M27	180	21	1,250	195000
280 x 520	150	380	M27	180	21	1,250	205900
290 x 520	150	380	M27	180	21	1,250	205900
300 x 550	158	402	M27	180	24	1,250	248900
310 x 550	158	402	M27	180	24	1,250	248900
320 x 570	164	424	M27	180	24	1,250	262500
330 x 570	164	424	M27	180	24	1,250	262500
340 x 610	171	454	M30	190	24	1,700	344000
350 x 610	171	454	M30	190	24	1,700	344000

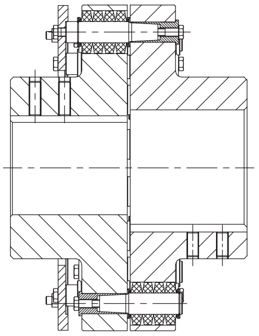
Ordering example:	REVOLEX® KX-D 170	steel	KTR 650 Ø120	KTR 650 Ø150
	Type and size of coupling	Material	KTR 650 for shaft diameter	KTR 650 for shaft diameter

Components

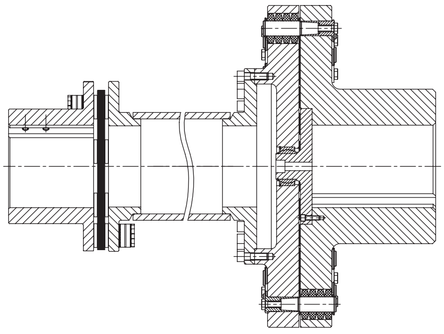


Other types

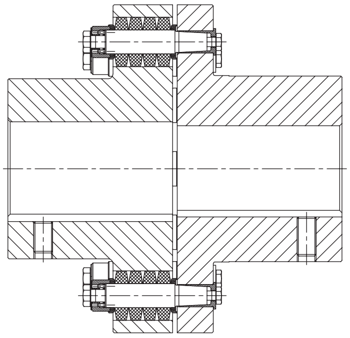
Type AB with limitation of axial backlash



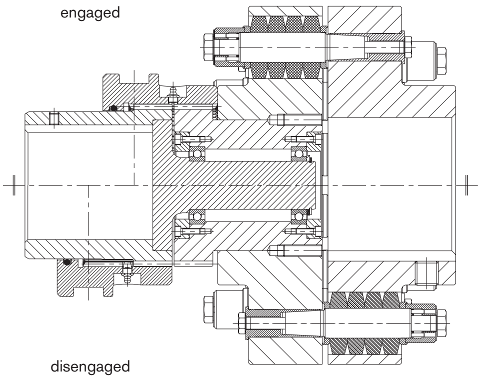
Intermediate shaft type with RADEX®-N



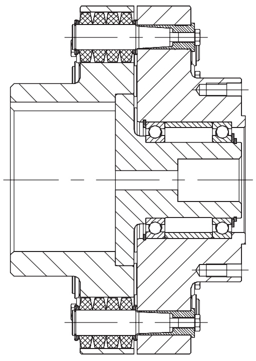
Backlash-free type



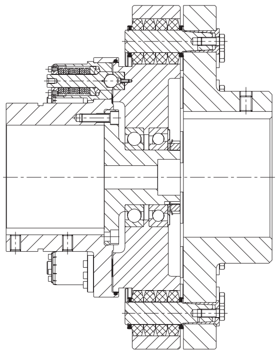
Type KX-D SD
shiftable with shiftable linkage



Type KX-D
with cardan shaft connection

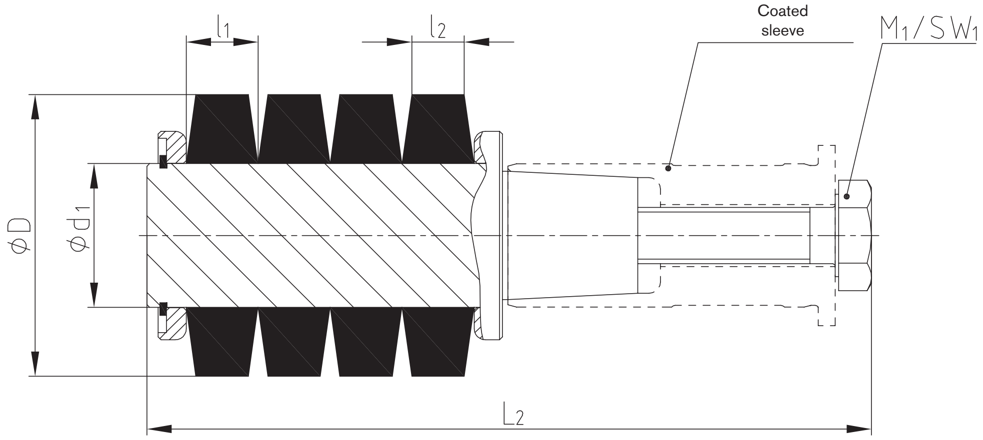


Type KX-D
with KTR-SI FRE



REVOLEX® KX-D
Flexible pin & bush coupling

Technical data of pins



Taper pin design B

KX-D

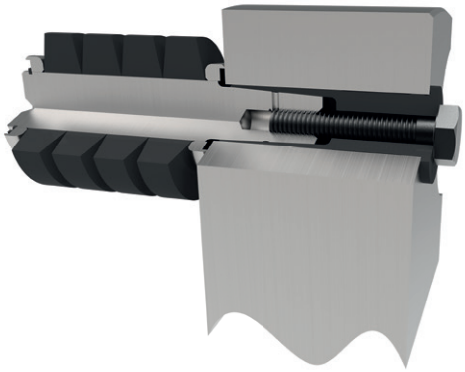
Technical data

Size	Pin		Elastomer ring NBR 80 Shore A			Pin		Screw DIN EN ISO 4014/4017		Tightening torque T_A [Nm]
	Size	Number								
		KX-D	D	l_1	l_2	d_1	L_2	M_1	SW_1	
75	3	10	50	12.7	9.3	25.5	129	M10	16	67
85		12								
95		14								
105		16								
120	4	14	63	17.8	12.5	30.7	178	M12	18	115
135		16								
150		18								
170	5	14	85.5	23.1	15.3	43.2	220	M16	24	290
190		16								
215		18								
240	6	14	113.7	30.5	20.3	58.4	290	M24	36	970
265		16								
280		18								
305		20								
330		24								
355	7	16	150	41.5	29	75	393	M30	46	1350
370		20								
470		22								
520	8	18	209.5	55.5	35	95	523	M36	55	2250
590		20								
650		24								

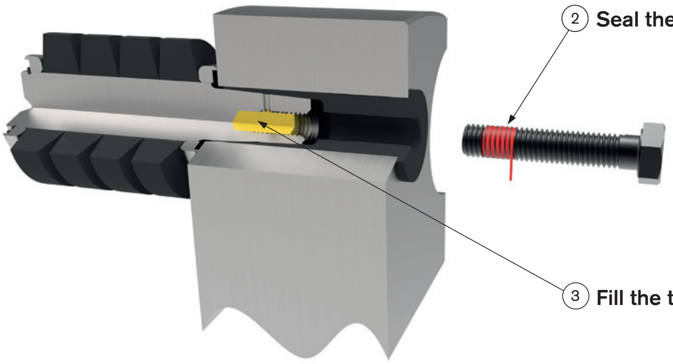
General information on the elastomer rings

Material	Perbunan [NBR]	Natural rubber [NR]	Perbunan [NBR]
Hardness	80 Shore A	80 Shore A	80 Shore A
Permanent temperature range [°C]	-30 to +80	-50 to +70	-30 to +80
Max. temperature (short time) [°C]	-50 to +120	–	–
Colour	black	black	blue
Operating range	STANDARD	sub-zero temperatures	electrically insulating and backlash-free, e. g. cableway drives
			

Assembly/disassembly

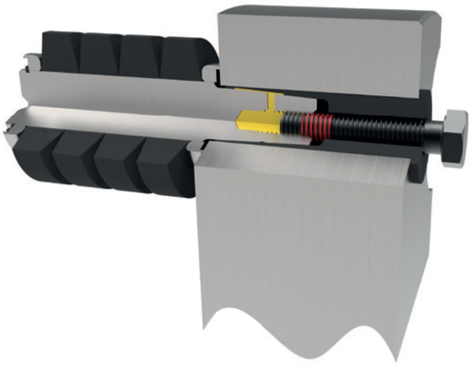


① Unscrew screw

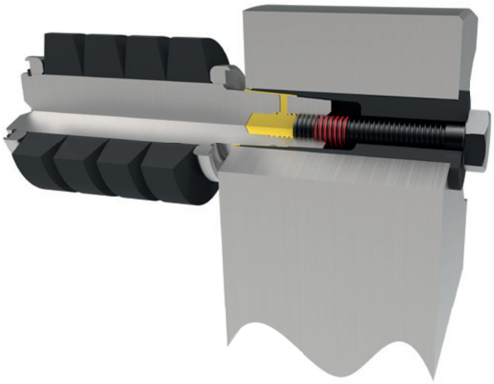


② Seal the screw in this area with sealing tape (e. g. Loctite® 55)

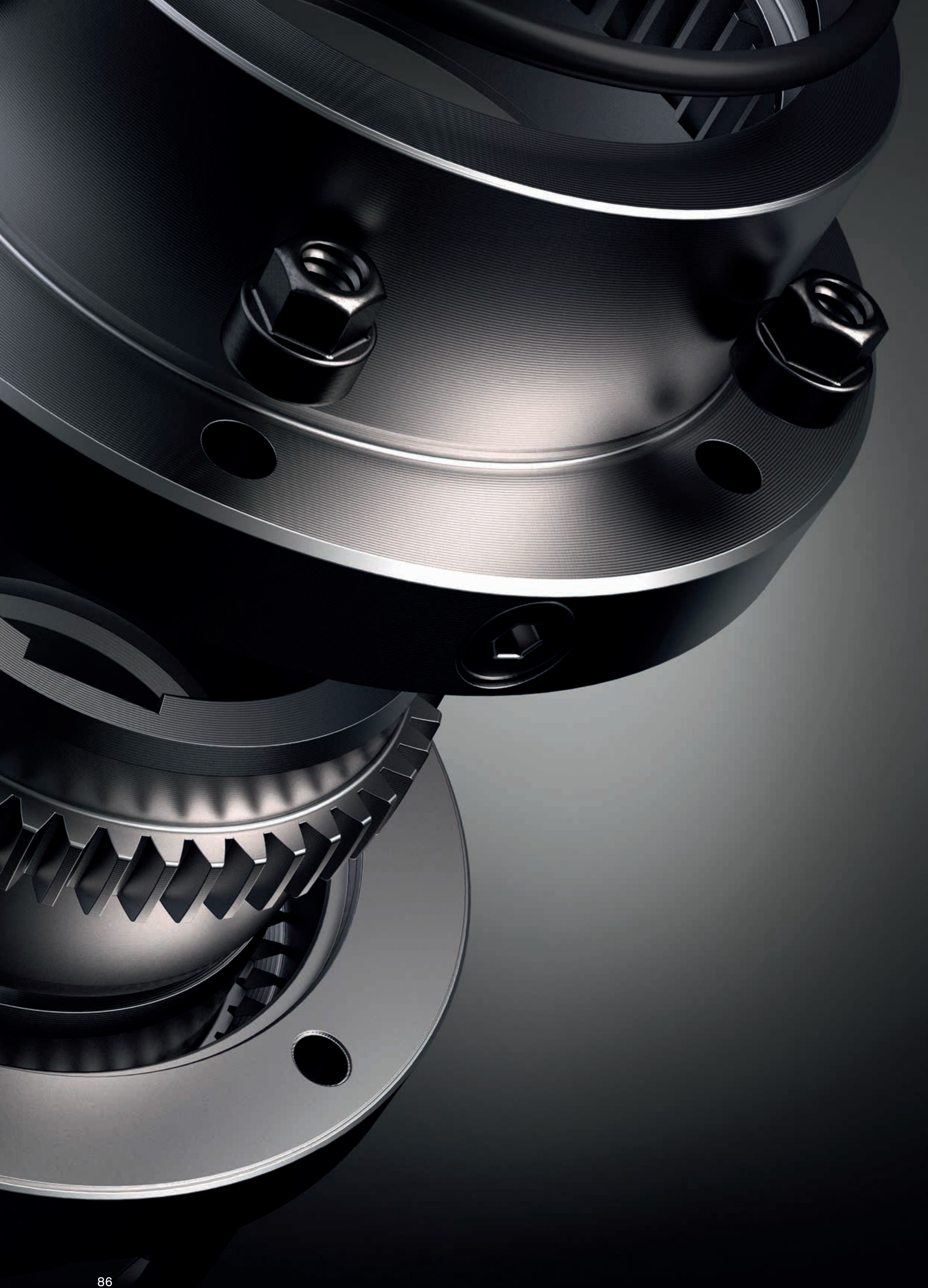
③ Fill the tapped hole with standard grease for 3/4



④ Screw in the screw (no special tools required)



⑤ The hydraulic pressure is transmitted to the pin pressing it out of the taper fit.



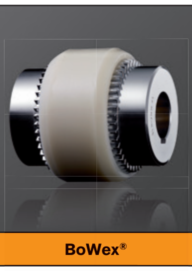
Gear couplings

BoWex®

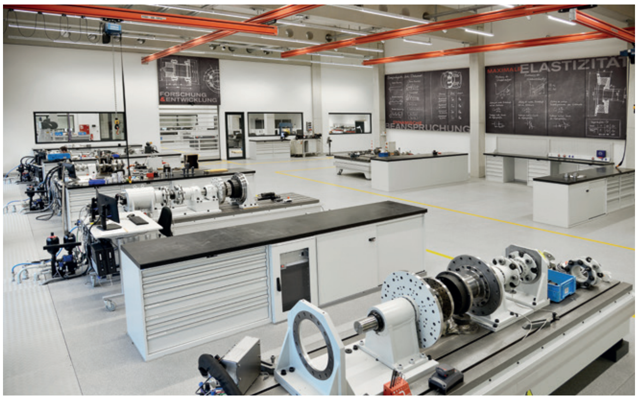
GEARex®

GEAR COUPLINGS
TYPES AND OPERATING DESCRIPTION

Properties of gear couplings

		
Product	**BoWex®**	**GEARex®**
Type	Curved-tooth gear coupling®	All-steel gear coupling
Properties		
AGMA		●
Torsionally stiff	●	●
Damping vibrations	HEW Compact	
Maintenance-free	●	
Axial plug-in	●	
Compensating for misalignment	●	●
Fail-safe		●
Shear type	●	
Electrical insulation	●	○
Special features		
Variation	very high extensive basic programme available from stock while customised solutions can be realized	average extensive basic programme available from stock while customised solutions can be realized
Applications / core industries	pump drives, general mechanical engineering & hydraulics, food industry, …	heavy engineering transport, logistics, cement industry, …
Torque range T_{KN} [Nm]		
Max.	2,500	2,750,000
Speed range n [rpm] *		
Max.	14,000	8,500
Hub materials available		
Nylon	●	
Quality steel (C45)	Size 65 - 125	up to size 85
Alloyed Q & T steel (42CrMo4V)		from size 90
Sintered steel » subject to mould	Size 14 - 65	
Stainless steel	●	
Other special materials possible	●	●
Corrosion-protected types	○	○
Sleeve (standard and special)		
Material	polyamide, polyamide with carbon fibre share	–
Temperature range [°C] min./max.		
Standard	-40/+100	-20/+80
Special	-50/+120	-40/+120

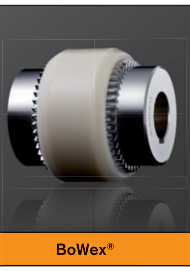
● ≈ Standard
○ ≈ On request
* ≈ Depending on size



In KTR's Power Transmission Center the performance of our products is subjected to testing. Great emphasis is put on quality assurance.

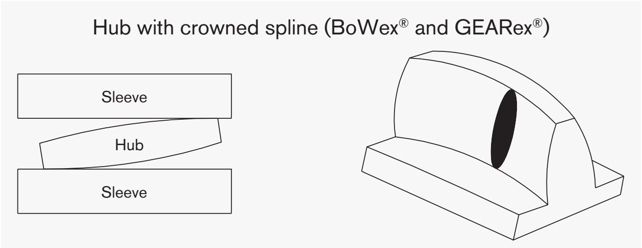
GEAR COUPLINGS
TYPES AND OPERATING DESCRIPTION

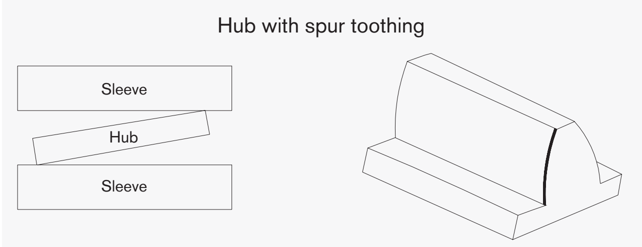
Product finder of gear couplings

		
Product	**BoWex®**	**GEARex®**
Type	Curved-tooth gear coupling®	All-steel gear coupling
Geometries		
Design	compact	short/compact
Mass moment of inertia	low	average
Shaft distance dimension	very low	very low
Types (extract)		
Shiftable coupling type	SD, SD-1, SD-D, SD-D3	SD
Flange type	-	FA, FB, FAB, FH, FR, FBR
Cover type	-	DA, DB, DAB, DH, DR, DBR
Suitable for horizontal assembly	Standard	Standard
Suitable for vertical assembly	Standard	VD
Sleeve can be disassembled radially » without displacing driving/driven side	GT	–
Intermediate shaft types » bridging larger shaft distances	ZR	FH, DH
Single-cardanic	–	FR, DR
Double-cardanic » compensating for big displacements » lower restoring forces	Standard	Standard
Certifications/type examinations		
ATEX	●	●
DNV/GL	●	●
Bureau Veritas	●	
ABS		●
GOST R/GOST TR	●	
Curved-tooth gear principle	●	●

● ≈ Standard

Details on spline


Hub with crowned spline (BoWex® and GEARex®)


Hub with spur toothing

Based on the operating principle of the renowned crowned gear technology, edge pressure in the spline is avoided with angular and radial displacements.

BoWex®:
The smooth and hard surface of the BoWex® sleeve (crystalline structure) and the high thermal stability and resistance to lubricants, fuels, hydraulic liquids, solvents, etc. make polyamide an ideal material for components stressed by sliding, particularly for coupling manufacture.

GEARex®:
In order to ensure regular and controlled lubrication in assembled condition, two connections for hydraulics are arranged opposite to each other radially on each coupling sleeve. Accordingly a complete GEARex® coupling has four connections offset to each other by 90°.

BoWex®
Curved-tooth gear coupling®

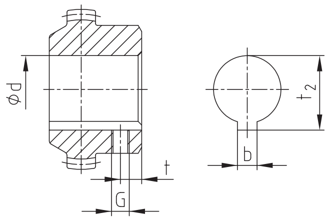
Technical data

Power, torque and speed

Type and size		Power P [kW] / n [rpm]		Torque [Nm]			Max. speed [rpm]
		Rated	Max.	T_{KN}	$T_{K\ max.}$	T_{KW}	
Type plug-in coupling/ junior M	junior 14 / M-14	0.0005	0.010	5	10	2.5	6000
	junior 19 / M-19	0.0008	0.0017	8	16	4	
	junior 24 / M-24	0.0013	0.0025	12	24	6	
Type M I AS Spec.-I SG SSR	14	0.0010	0.003	10	30	5	14000
	19	0.0017	0.005	16	48	8	11800
	24	0.0021	0.006	20	60	10	10600
	28	0.0047	0.014	45	135	23	8500
	32	0.0063	0.019	60	180	30	7500
	38	0.0084	0.025	80	240	40	6700
	42	0.010	0.031	100	300	50	6000
	45 / 48	0.015	0.044	140	420	70	5600
	65	0.040	0.119	380	1140	190	4000
	80	0.073	0.22	700	2100	350	3150
	100	0.13	0.38	1200	3600	600	3000
	125	0.26	0.78	2500	7500	1250	2120
Type M...C GT	14	0.0015	0.0047	15	45	7.5	14000
	19	0.0025	0.0075	24	72	12	11800
	24	0.003	0.009	30	90	15	10600
	28	0.007	0.022	70	210	35	8500
	32	0.009	0.028	90	270	45	7500
	38	0.013	0.038	120	360	60	6700
	48	0.021	0.063	200	600	100	5600
	65	0.058	0.18	560	1680	280	4000
	80	0.105	0.311	1000	3000	500	3150

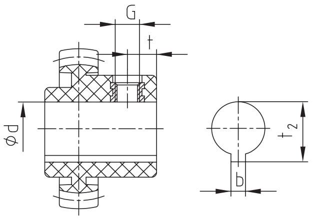
Setscrews

Thread dimensions for setscrews, BoWex® coupling hubs with cylindrical bore.



Position of the thread for setscrew BoWex® M-14 to M-24 opposite the keyway

BoWex® M-28 to I-125 on the keyway



Position of thread with BoWex® junior plug-in coupling and junior M coupling

BoWex® coupling hubs

Size Dimensions	14 19 24	28 32 38	42 45 48	65	80	100	125
Thread G	M5	M8		M10	M10	M12	M16
Distance t	6	10		15 [1] 20	20	30	40
Tightening torque T_A [Nm]	2	10		17	17	40	80

BoWex® junior coupling hubs

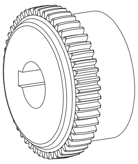
Size Dimensions	14	19	24
Thread G	M5	M5	M5
Hub 1b - Distance t	6	6	6
Plug-in sleeve 2b - Distance t	8	10	10
Tightening torque T_A [Nm]	1.4	1.4	1.4

---

[1] Length of hub 55 mm t = 15 mm, 70 mm t = 20 mm

BoWex®
Curved-tooth gear coupling®

Types of hubs



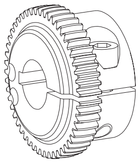
Type 1.0 hub
with feather keyway and setscrew

Positive-locking power transmission, permissible torque depending on the permissible surface pressure. Not suitable for backlash-free power transmission with heavily reversing operation.

Type 1.1 hub
without feather keyway, with setscrew

Non-positive torque transmission for crimp connections and adhesive bonds. (No ATEX approval)

Type 1.3 hub
with spline bore (see page 107)



Type 2.0 clamping hub
single slot without feather keyway

Frictionally engaged, backlash-free shaft-hub-connection. Transmittable torques depending on bore diameter.

Type 2.1 clamping hub
single slot with feather keyway
Positive-locking power transmission with additional friction fit. The friction fit avoids resp. reduces reverse backlash. Surface pressure of the keyway connection is reduced.

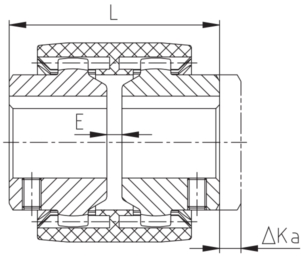
Type 2.3 clamping hub
with spline bore (see page 107)

Other hub types on request.

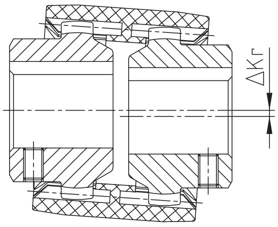
Displacements

BoWex® couplings are double-cardanic compensating for axial, radial and angular shaft displacements in addition to transmitting the power so that damage on the driving or driven machine is prevented.

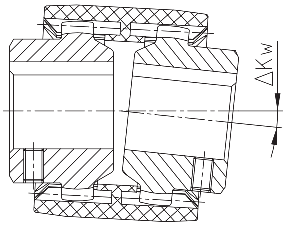
Axial displacement



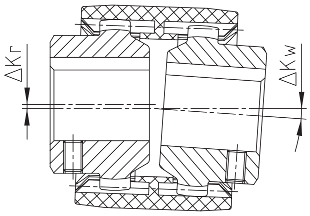
Radial displacement



Angular displacement



Radial and angular displacement



Displacements – type junior couplings						
BoWex® size	Type junior plug-in coupling			Type junior M		
	14	19	24	14	19	24
Max. axial displacement ΔK_a [mm]	± 1	± 1	± 1	± 1	± 1	± 1
Max. radial displacement with n=1500 rpm ΔK_r [mm]	± 0.1	± 0.1	± 0.1	± 0.3	± 0.3	± 0.4
Max. radial displacement with n=3000 rpm ΔK_r [mm]	± 0.1	± 0.1	± 0.1	± 0.3	± 0.3	± 0.4
Max. angular displacement with n=1500 rpm ΔK_W [degree]	± 1.0	± 1.0	± 0.9	± 1.0	± 1.0	± 0.9
Max. angular displacement with n=3000 rpm ΔK_W [degree]	± 0.7	± 0.7	± 0.6	± 0.7	± 0.7	± 0.6

Displacements – type M, M..C, I, AS, Spec.-I, SG and SSR												
BoWex® size	14	19	24	28	32	38	42	48	65	80	100	125
Max. axial displacement ΔK_a [mm]	± 1	± 1	± 1	± 1	± 1	± 1	± 1	± 1	± 1	± 1	± 1	± 1
Max. radial displacement with n=1500 rpm ΔK_r [mm]	± 0.30	± 0.30	± 0.35	± 0.35	± 0.35	± 0.40	± 0.40	± 0.40	± 0.45	± 0.45	± 0.45	± 0.45
Max. radial displacement with n=3000 rpm ΔK_r [mm]	± 0.20	± 0.20	± 0.23	± 0.23	± 0.23	± 0.25	± 0.25	± 0.25	± 0.28	± 0.28	± 0.28	± 0.28
Max. angular displacement with n=1500 rpm ΔK_W [degree]	± 1.0	± 1.0	± 0.9	± 0.9	± 0.9	± 0.9	± 0.9	± 0.9	± 0.7	± 0.6	± 0.6	± 0.4
Max. angular displacement with n=3000 rpm ΔK_W [degree]	± 0.7	± 0.7	± 0.6	± 0.6	± 0.6	± 0.6	± 0.6	± 0.6	± 0.5	± 0.4	± 0.4	± 0.3

	Displacements – type GT				Displacements – type HEW Compact														
BoWex® size	28	38	48	65	42-130			65-180			80-225			100-305			125-365		
Elastomer hardness [Shore A]					T50	T65	T70	T50	T65	T70	T50	T65	T70	T50	T65	T70	T40	T52	T65
Max. axial displacement ΔK_a [mm]	± 1	± 1	± 1	± 1	± 2			± 2			± 2			± 2			± 2		
Max. radial displacement with n=1500 rpm ΔK_r [mm]	± 1	± 1	± 1.4	± 1.4	± 1.1	± 1	± 0.5	± 1.6	± 1.5	± 0.7	± 1.8	± 1.7	± 2.2	± 2.2	± 2	± 1	± 2.5	± 2.3	± 1.1
Max. radial displacement with n=3000 rpm ΔK_r [mm]	± 0.6	± 0.6	± 1	± 1	± 0.55	± 0.5	± 0.25	± 0.8	± 0.75	± 0.35	± 0.9	± 0.85	± 0.9	± 1.1	± 1	± 0.5	± 1.25	± 1.15	± 0.55
Max. angular displacement with n=1500 rpm ΔK_W [degree]	± 1	± 1	± 0.9	± 0.9	± 1	± 0.75	± 0.5	± 1	± 0.75	± 0.5	± 1	± 0.75	± 0.4	± 1	± 0.75	± 0.5	± 1	± 0.75	± 0.5
Max. angular displacement with n=3000 rpm ΔK_W [degree]	± 0.7	± 0.7	± 0.6	± 0.6	± 0.5	± 0.4	± 0.25	± 0.5	± 0.4	± 0.25	± 0.5	± 0.4	± 0.5	± 0.5	± 0.25	± 0.25	± 0.5	± 0.4	± 0.25

The permissible displacement figures of the BoWex® couplings specified are general standard values taking into account the load of the coupling up to the rated torque T_{KN} of the coupling. With different operating conditions please order our data sheet for displacements of BoWex® KTR-N 20140.
The displacement figures may only be used one by one, if they appear simultaneously, they must be limited in proportion. Care should be taken to maintain the distance dimension E accurately in order to allow for axial clearance of the coupling while in operation. Detailed mounting instructions are shown on our homepage www.ktr.com.

For cylindrical bores, taper/inch bores see selection of standard IEC motors

Stock programme of cylindrical finish bores [mm] H7 feather keyway acc. to DIN 6885 sheet 1 [JS9] and setscrew

BoWex® Size	un/pilot bored	Ø8	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	Ø17	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55	Ø60	Ø65	Ø70	Ø75
14	●■	●	●	●	●	●	●																							
19	●■		●	●	●	●	●	●	●	●	●■	●																		
24	●■		●	●	●	●■	●	●	●	●	●■	●■	●	●■	●															
28	●■				●	●	●	●	●	●	●	●	●	●	●	●■														
32	●■							●		●	●	●	●	●	●	●	●	●												
38	●■							●		●	●	●	●	●	●	●	●	●	●	●■										
42	●■									●	●	●	●	●	●	●	●	●	●	●	●	●								
48	●■											●			●	●	●	●	●	●	●	●■	●	●■						
65	●■																●■	●	●■	●	●■	●■	●■	●■	●■	●■	●■	●■		
80	●																						●		●	●	●	●	●	●

● Standard length ■ Standard lenghthened

Taper and inch bores

	Taper 1:5					Taper 1:8					Inch bores								
Code d +0.05 b JS9 t +0.2	**A-10** 9.85 2	**B-17** 16.85 3	**C-20** 19.85 4	**D-25** 24.85 5	**E-30** 29.85 6	**N/1** 9.7 2.4	**N1d** 14 3	**N/2** 17.28 3.2	**N/2a** 17.28 4	**N/3** 22 3.99	**Ta** 12.7 3.17 14.3	**DNC** 13.45 3.17 14.9	**Ed** 15.87 4.75 18.1	**A** 19.05 4.78 21.3	**G** 22.22 4.75 24.7	**F** 22.22 6.38 25.2	**Bs** 25.38 6.37 28.3	**Hs** 25.4 6.35 28.7	**K** 31.75 7.93 35.4
14	●					●							●						
19		●				●							●						
24	●	●				●		●	●		●			●	●				
28	●	●				●	●	●	●	●				●					
32		●																●	
38		●						●	●					●					
42		●		●				●	●	●				●		●	●		
48																			
65																			●

Other dimensions on request.
● Standard length

BoWex® couplings for standard IEC motors, protection class IP 54/IP 55

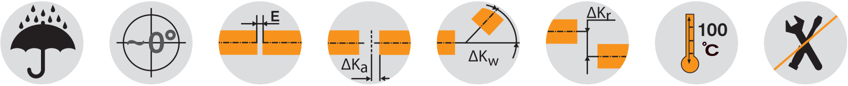
A. C. motor Size	Engine power with 50 Hz n = 3000 [rpm]			Engine power with 50 Hz n = 1500 [rpm]			Engine power with 50 Hz n = 1000 [rpm]			Cylindrical shaft ends d x l [mm]	
	kW	T [Nm]	BoWex® coupling	kW	T [Nm]	BoWex® coupling	kW	T [Nm]	BoWex® coupling	3000 ≤ 1500	
56	0.09	0.32	14	0.06	0.43	14	0.037	0.43	14	9 x 20	
	0.12	0.41		0.09	0.64		0.045	0.52			
63	0.18	0.62		0.12	0.88		0.06	0.72		11 x 23	
	0.25	0.86		0.18	1.3		0.09	1.1			
71	0.37	1.3		0.25	1.8		0.18	2.0		14 x 30	
	0.55	1.9		0.37	2.5		0.25	2.7			
80	0.75	2.5	19	0.55	3.7	19	0.37	3.9	19	19 x 40	
	1.1	3.7		0.75	5.1		0.55	5.8			
90 S	1.5	5.0	24	1.1	7.5	24	0.75	8.0	24	24 x 50	
90 L	2.2	7.4		1.5	10		1.1	12			
100 L	3	9.8	28	2.2	15	28	1.5	15	28	28 x 60	
				3	20						
112 M	4	13		4	27		2.2	22			
132 S	5.5	18	38	5.5	36	38	3	30	38	38 x 80	
	7.5	25									
132 M				7.5	49		4	40			
							5.5	55			
160 M	11	36	42	11	72	42	7.5	75	42	42 x 110	
	15	49									
160 L	18.5	60		15	98		11	108			
180 M	22	71	48	18.5	121	48			48	48 x 110	
180 L				22	144		15	148			
200 L	30	97	65	30	196	65	18.5	181	65	55 x 110	
	37	120					22	215			
225 S				37	240					55 x 110	60 x 140
225 M	45	145		45	292		30	293			
250 M	55	177		55	356		37	361		60 x 140	65 x 140
280 S	75	241		75	484	80	45	438	80	65 x 140	75 x 140
280 M	90	289		90	581		55	535			
315 S	110	353		110	707		75	727			
315 M	132	423	80	132	849	100	90	873	100		80 x 170
315 L	160	513		160	1030		110	1070			
	200	641		200	1290		132	1280			
							160	1550	125		85 x 170
315	250	801	100	250	1610	125	200	1930			
	315	1010		315	2020		250	2420			
355	355	1140		355	2280		315	3040	-	75 x 140	95 x 170
	400	1280	125	400	2560						

Torque T $\hat{=}$ rated torque according to Siemens catalogue.

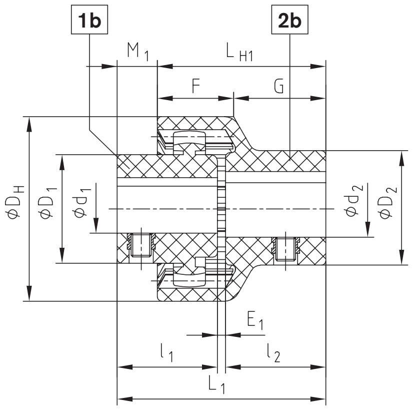
BoWex® junior and junior M Curved-tooth gear coupling®

Plug-in coupling made of nylon (two-part and three-part)

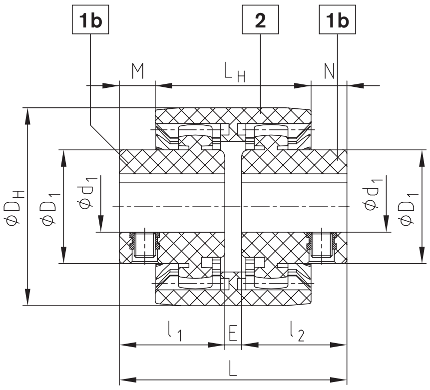

For legend of pictogram please refer to flapper on the cover



Components



Type junior plug-in coupling (two-part)



Type junior M coupling (three-part)

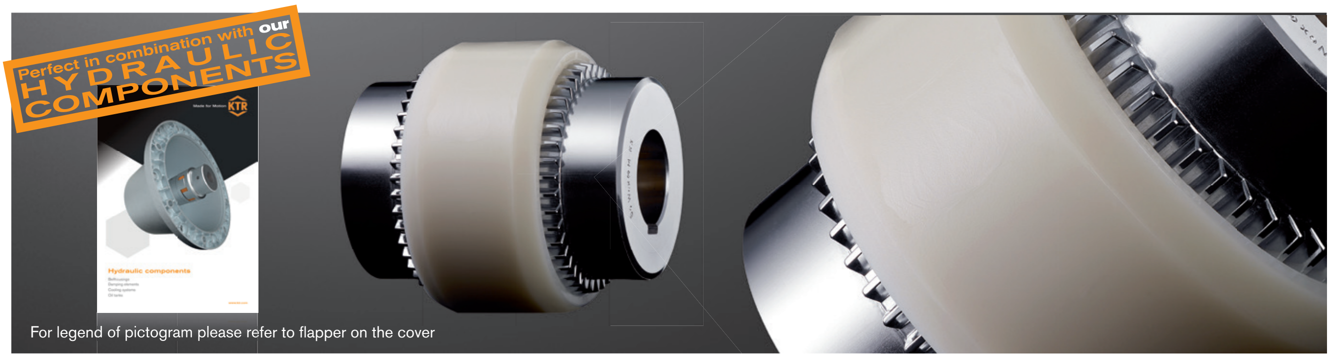
BoWex® junior plug-in coupling (two-part) and BoWex® junior M (three-part)																			
Size	Torque [Nm]		Finish bore				Dimensions [mm]												Max. speed [rpm]
			Hub Component 1b [1]		Plug-in sleeve Component 2b [1]		D_H	l_1, l_2	E_1	L_1	L_{H1}	M_1	F	G	E	L	L_H	M, N	
	T_{KN}	$T_{K\,max.}$	d_1 [1]	D_1	d_2 [1]	D_2													
14 M-14	5	10	Ø6, Ø7, Ø8, Ø9	22	Ø6, Ø7, Ø8	22	40	23	2	48	40	8	18.5	21.5	4	50	37	6.5	6000
			Ø10, Ø11	25	Ø10, Ø11	25													
			Ø12, Ø14	26	Ø12, Ø14	26													
19 M-19	8	16	Ø10, Ø11, Ø12, Ø14	27	Ø12, Ø14, Ø15, Ø16	29	47	25	2	52	42	10	19.0	23.0	4	54	37	8.5	6000
			Ø15, Ø16	30															
			Ø19	32	Ø19	35													
24 M-24	12	24	Ø10, Ø11, Ø12	26	Ø14, Ø16	32	53	26	2	54	45	9	21.5	23.5	4	56	41	7.5	6000
			Ø14, Ø15, Ø16	32															
			Ø18, Ø19, Ø20	36	Ø19, Ø20	36													
			Ø24	38	Ø24	40													

[1] Finish bore with tolerance +0.05/-0.1; feather keyway ±0.08

Ordering example:	BoWex® junior 19	d_1 Ø19	d_2 Ø14
	Coupling size of two-part type or BoWex® junior M-19 three-part type	Finish bore	Finish bore

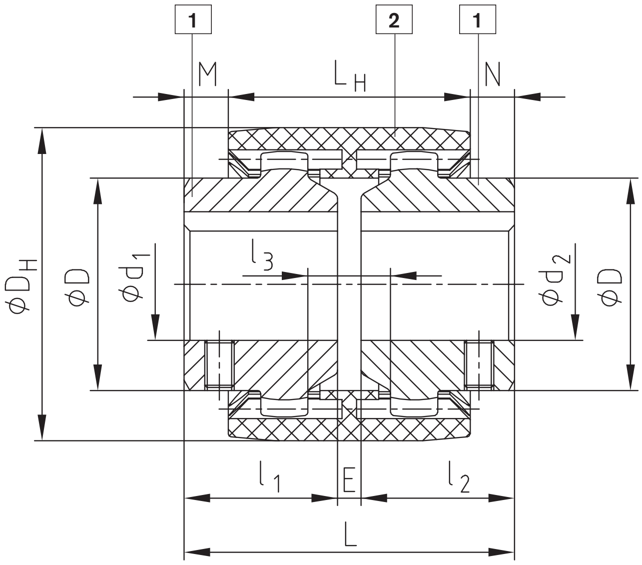
BoWex® M, I
Curved-tooth gear coupling®

Compact and maintenance-free

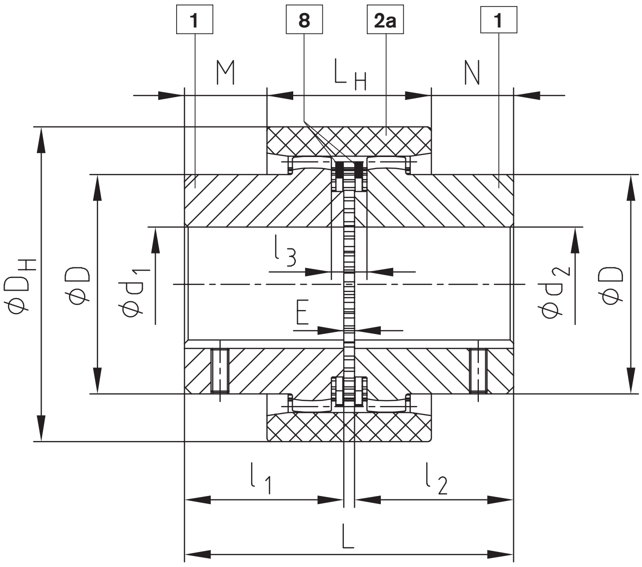


For legend of pictogram please refer to flapper on the cover

Components



Type M



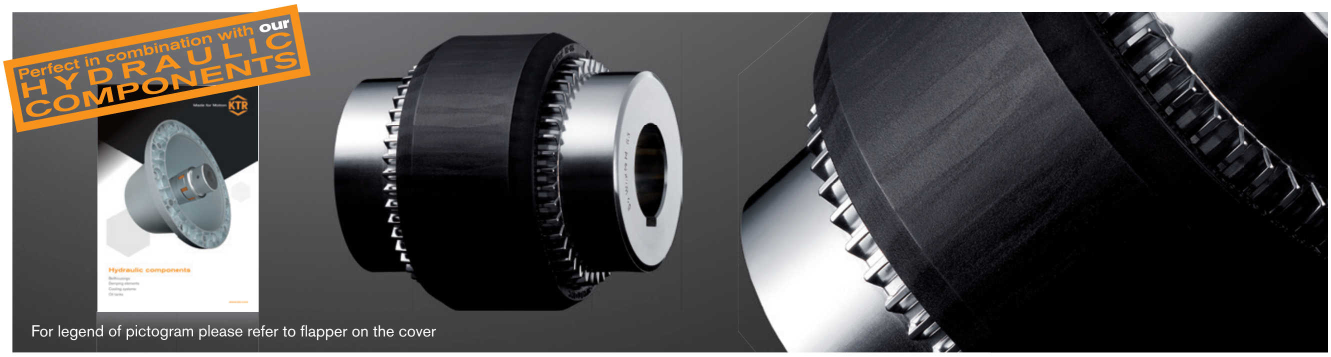
Type I

BoWex® type M, type I																					
Size	Torque [Nm]			Finish bore d1, d2		Dimensions [mm]												Weight with max. bore [kg]			Mass moment of inertia J with max. bore [kgcm²]		
	T_{KN}	$T_{K\,max.}$	T_{KW}	Pilot bored	Max.	l_1, l_2	E	L	L_H	M, N	l_3	D	D_H	Tip circle ØD_Z hub	Number of teeth	Hub lengthened max. l_1, l_2	Sleeve	Hub	Total	Sleeve	Hub	Total
M-14	10	30	5	-	15	23	4	50	37	6.5	10	25	40	33	20	40	0.03	0.07	0.1	0.08	0.09	0.26
M-19	16	48	8	-	20	25	4	54	37	8.5	10	32	47	39	24	40	0.03	0.1	0.23	0.15	0.16	0.47
M-24	20	60	10	-	24	26	4	56	41	7.5	14	36	53	45	28	50	0.04	0.14	0.32	0.21	0.36	0.93
M-28	45	135	23	-	28	40	4	84	46	19	13	44	65	54	34	55	0.08	0.33	0.74	0.65	1.22	3.09
M-32	60	180	30	-	32	40	4	84	48	18	13	50	75	63	40	55	0.09	0.43	0.95	1.14	2.17	5.48
M-38	80	240	40	-	38	40	4	84	48	18	13	58	83	69	44	60	0.13	0.55	1.23	1.58	3.55	8.68
M-42	100	300	50	-	42	42	4	88	50	19	13	65	92	78	50	60	0.14	0.68	1.5	2.32	5.98	14.28
M-48	140	420	70	-	48	50	4	104	50	27	13	68	95	78	50	60	0.23	0.79	1.81	3.9	7.22	18.34
M-65	380	1140	190	21	65	55	4	114	68	23	16	96	132	110	42	70	0.55	1.9	4.35	21.2	31.8	84.8
I-80	700	2100	350	31	90	90	6	186	93	46.5	20	124	178	145	46	-	1.13	5.2	11.53	68.9	150.8	370.5
I-100	1200	3600	600	38	100	110	8	228	102	63	22	152	210	176	48	-	1.78	9.37	20.52	158.6	401.3	961.2
I-125	2500	7500	1250	45	125	140	10	290	134	78	30	192	270	225	54	-	3.88	19.44	42.76	562.9	1362.3	3287.5

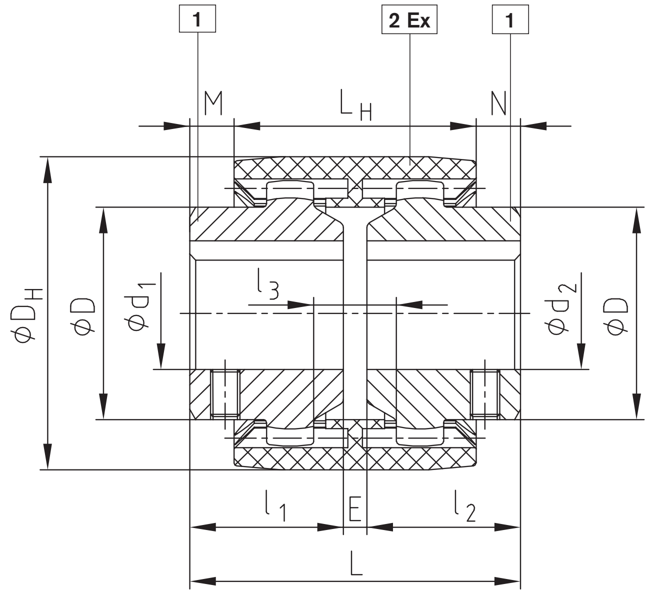
Ordering example:	BoWex® M-28	d_1 Ø20	d_2 Ø28
	Size and type of coupling	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)

BoWex® M...C
Curved-tooth gear coupling®

Compact and maintenance-free



For legend of pictogram please refer to flapper on the cover



Type M...C Ex

BoWex® Type M...C Ex

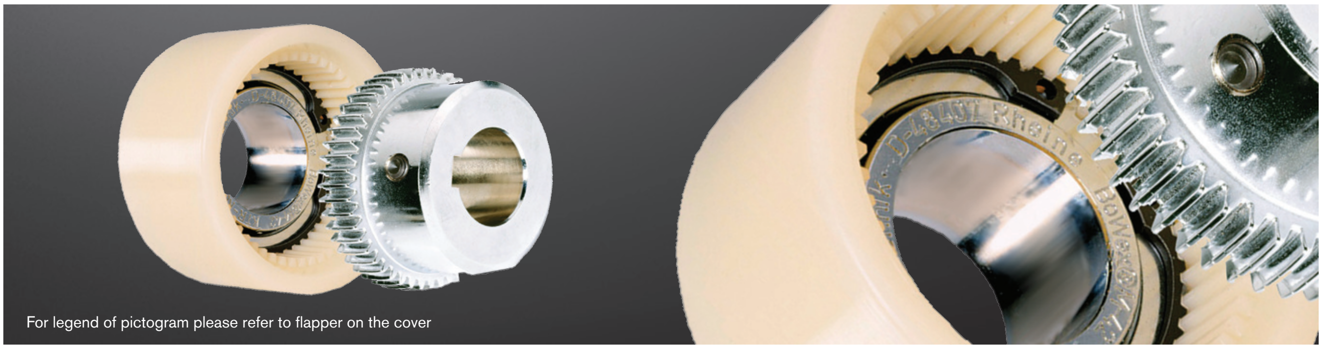
Size	Torque [Nm]			Finish bore d1, d2		Dimensions [mm]											Weight with max. bore [kg]			Mass moment of inertia J with max. bore [kgcm²]		
	T_{KN}	$T_{K\,max.}$	T_{KW}	Pilot bored	Max.	l_1, l_2	E	L	L_H	M, N	l_3	D	D_H	Tip circle $ØD_Z$ hub	Number of teeth	Hub lengthened max. l_1, l_2	Sleeve	Hub	Total	Sleeve	Hub	Total
M-14C	15	45	7.5	-	15	23	4	50	37	6.5	10	25	40	33	20	40	0.03	0.07	0.1	0.08	0.09	0.26
M-19C	24	72	12	-	20	25	4	54	37	8.5	10	32	47	39	24	40	0.03	0.1	0.23	0.15	0.16	0.47
M-24C	30	90	15	-	24	26	4	56	41	7.5	14	36	53	45	28	50	0.04	0.14	0.32	0.21	0.36	0.93
M-28C	70	210	35	-	28	40	4	84	46	19	13	44	65	54	34	55	0.08	0.33	0.74	0.65	1.22	3.09
M-32C	90	270	45	-	32	40	4	84	48	18	13	50	75	63	40	55	0.09	0.43	0.95	1.14	2.17	5.48
M-38C	120	360	60	-	38	40	4	84	48	18	13	58	83	69	44	60	0.13	0.55	1.23	1.58	3.55	8.68
M-48C	200	600	100	-	48	50	4	104	50	27	13	68	95	78	50	60	0.23	0.79	1.81	3.9	7.22	18.34
M-65C	560	1680	280	21	65	55	4	114	68	23	16	96	132	110	42	70	0.55	1.9	4.35	21.2	31.8	84.8
M-80C	1000	3000	500	31	90	90	6	186	93	46.5	20	124	178	145	46	-	1.13	5.2	11.53	68.9	150.8	370.5

Ordering example:

BoWex® M-28C	d_1 Ø20	d_2 Ø28
Size and type of coupling	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)

BoWex® AS and Spec.-I Curved-tooth gear coupling®

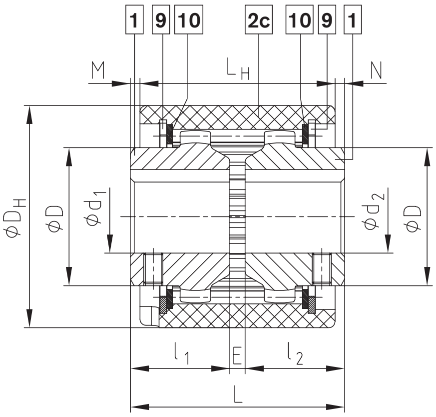
Compact and maintenance-free



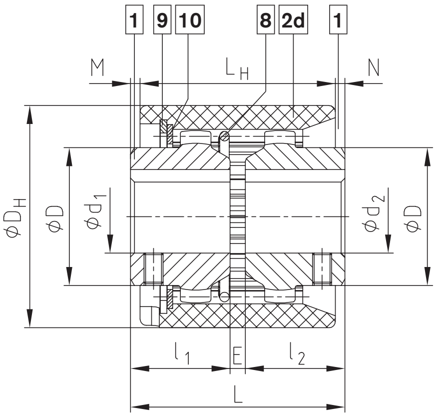
For legend of pictogram please refer to flapper on the cover

~0° E ΔKa ΔKw ΔKr 100 °C

Components



Type AS



Type Spec.-I

BoWex® Type AS and type Spec.-I

Size	Pilot bore		Finish bore d_1, d_2		Dimensions [mm]								Weight with max. bore [kg]			Mass moment of inertia J with max. bore [kgcm²]		
	Unbored	Pilot bored		Max.	l_1, l_2	E	L	L_H	M, N	D	D_H	Hub length. max. l_1, l_2	Sleeve	Hub	Total	Sleeve	Hub	Total
24	x	-	For finish bores see stock programme	24	26	4	56	51	2.5	36	58	50	0.11	0.14	0.39	0.38	0.36	1.10
28	x	-		28	40	4	84	56	14	44	70	55	0.16	0.33	0.82	1.54	1.22	3.98
32	x	-		32	40	4	84	58	13	50	84	55	0.21	0.43	1.07	2.75	2.17	7.09
45	x	-		45	42	4	88	60	14	65	100	60	0.27	0.63	1.53	5.49	5.66	16.81
65	-	21		65	55	4	114	84	15	96	140	70	0.84	2.10	5.00	29.83	43.96	117.8
80	-	31		90	90	6	186	93	46.5	124	178	-	1.30	5.20	11.70	83.20	150.8	384.8
100	-	38		100	110	8	228	102	63	152	210	-	2.05	9.40	20.80	184.4	401.3	987.0
125	-	45		125	140	10	290	134	78	192	270	-	4.32	19.44	43.10	620.0	1362.3	3344.6

For performance data see page 90.

Ordering example:

BoWex® 32 AS	d_1 Ø32	d_2 Ø32
Size and type of coupling AS or Spec.-I	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)

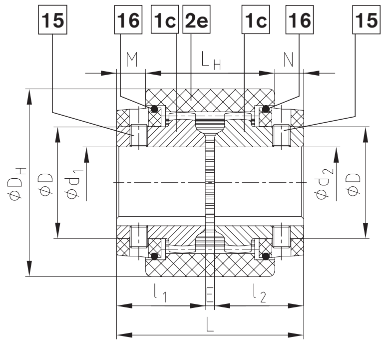
BoWex® SG, SSR and Spec.-I/CD
Curved-tooth gear coupling®

Type with dust protection

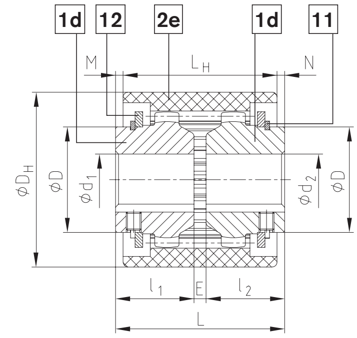
For legend of pictogram please refer to flapper on the cover

BoWex® Type SG with dust protection circlips												
Size	Pilot bore		Finish bore		Dimensions [mm]							
	Unbored	Pilot bored	Min.	Max.	l_1, l_2	E	L	L_H	M, N	D	D_H	Hub length. max. l_1, l_2
24 SG	x	-	10	24	36	4	76	51	12.5	36	58	50
28 SG	x	-	10	28	40	4	84	56	14	44	70	55
32 SG	x	-	12	32	40	4	84	58	13	50	84	55
45 SG	x	-	20	45	42	4	88	60	14	65	100	60
65 SG	-	21	30	65	70	4	144	84	30	96	140	-
80 SG	-	31	35	90	90	6	186	93	46.5	122	175	-
100 SG	-	38	40	100	110	8	228	102	63	150	210	-
125 SG	-	45	50	125	140	10	290	134	78	190	270	-

Setscrews with finish bored hubs only.

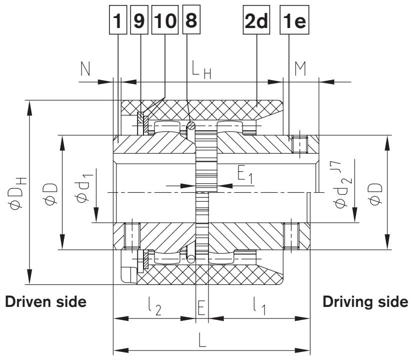


BoWex® Type SSR with Seeger circlips												
Size	Pilot bore		Finish bore		Dimensions [mm]							
	Unbored	Pilot bored	Min.	Max.	l_1, l_2	E	L	L_H	M, N	D	D_H	Hub length. max. l_1, l_2
24 SSR	x	-	10	22	26	4	56	51	2.5	35	58	50
28 SSR	x	-	10	26	40	4	84	56	14	42	70	55
32 SSR	x	-	12	30	40	4	84	58	13	48	84	55
45 SSR	x	-	20	42	42	4	88	60	14	63	100	60
65 SSR	-	21	30	65	55	4	114	84	15	95	140	70
80 SSR	-	31	35	90	90	6	186	93	46.5	120	175	-
100 SSR	-	38	40	100	110	8	228	102	63	150	210	-
125 SSR	-	45	50	125	140	10	290	134	78	190	270	-



BoWex® Type Spec.-I/CD															
Size	Pilot bore		Finish bore		Dimensions [mm]										
	Un-bored	Pilot bored	Min.	Max.	L	L_1	L_H	E	E_1	l_2	l_1	D_H	D	M	N
24 CD	x	-	10	24	70	73.5	51	4	9.0	26	40	58	36	20	2.5
28 CD	x	-	10	28	94.5	98	56	4	8.5	40	50.5	70	44	28	14
32 CD	x	-	12	32	94.5	-	58	4	8.5	40	50.5	84	50	27	13
45 CD	x	-	20	45	101.5	-	60	4	8.5	42	55.5	100	65	32	14
65 CD	-	21	30	65	123	-	84	4	10	55	64	140	96	28.5	15
80 CD	-	31	35	90	179	-	93	6	13	90	83	178	124	44	46.5

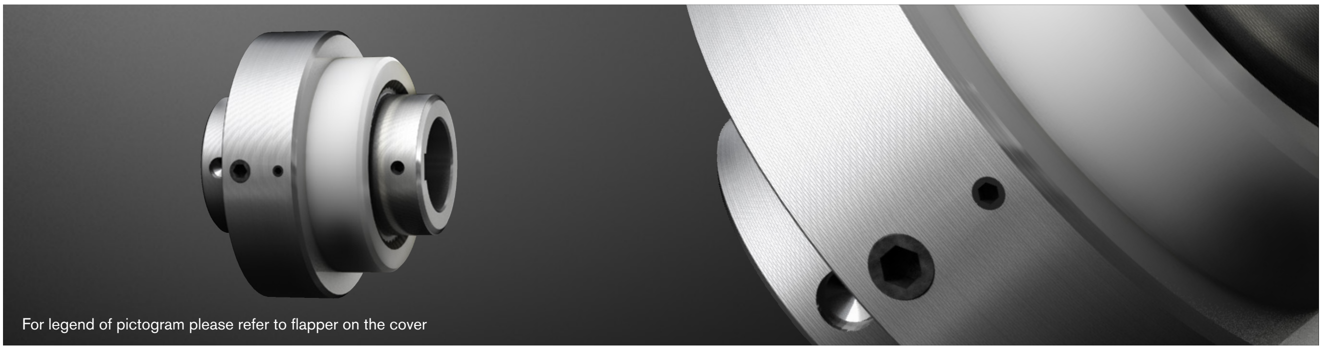
Please order dimension sheet for type Spec.-I/CDB with safety pins.
For performance data see page 90.



Ordering example:	BoWex® 45 SG	d_1 Ø22	d_2 Ø40
	Size and type of coupling SG, SSR or Spec.-I/CD	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)

BoWex® SD/SD-D
Curved-tooth gear coupling®

Shiftable coupling (at standstill)


For legend of pictogram please refer to flapper on the cover

BoWex® Type SD

Size	Pilot bore		Finish bore d_1, d_2			Dimensions [mm]												Weight with max. bore [kg]		Mass moment of inertia J with max. bore [kgcm²]		Shifting force [N]
	Un-bored	Pilot bored	d_1	d_1 max.	d_2 max.	E	l_1	l_2	L	L_H	l_3	M	W	N	D	D_H	D_A	Shifting hub with sleeve	Driving hub	Shifting hub with sleeve	Driving hub	
24 SD	x	-	For finish bores see stock programme on page 86	24	24	4	26	50	80	52	31	10	19	18	36	58	78	1.08	0.14	8.23	0.36	140
28 SD	x	-		28	28	4	40	55	99	57	33	21.5	21.5	20.5	44	70	88	1.50	0.33	15.62	1.22	180
32 SD	x	-		32	32	4	40	55	99	58	33	20.5	21.5	20.5	50	84	100	1.85	0.43	22.87	2.17	180
45 SD	x	-		45	45	4	42	60	106	63	37	21.5	22.5	21.5	65	100	125	2.56	0.68	46.07	5.66	250
				48			50		114			29.5							0.79			
65 SD	-	26		65	65	4	55	70	129	77	37	28	25	24	95	140	156	5.07	2.30	158.99	43.96	350
80 SD	-	31		90	90	6	90	90	186	96	47	56	35	34	124	175	195	10.60	5.20	523.7	150.8	350
100 SD	-	38		100	100	8	110	110	228	113	55	72	43	43	152	210	235	18.87	9.37	1350	401.3	400
125 SD	-	45		125	125	10	140	140	290	149	70	89	52	52	192	270	298	40.40	9.44	4919	1362.3	450

Connection dimensions of BoWex® SD shifting ring (comp. 17) for mounting of: slip ring SD1 (s. catalogue on p. 89), shifting disk etc.

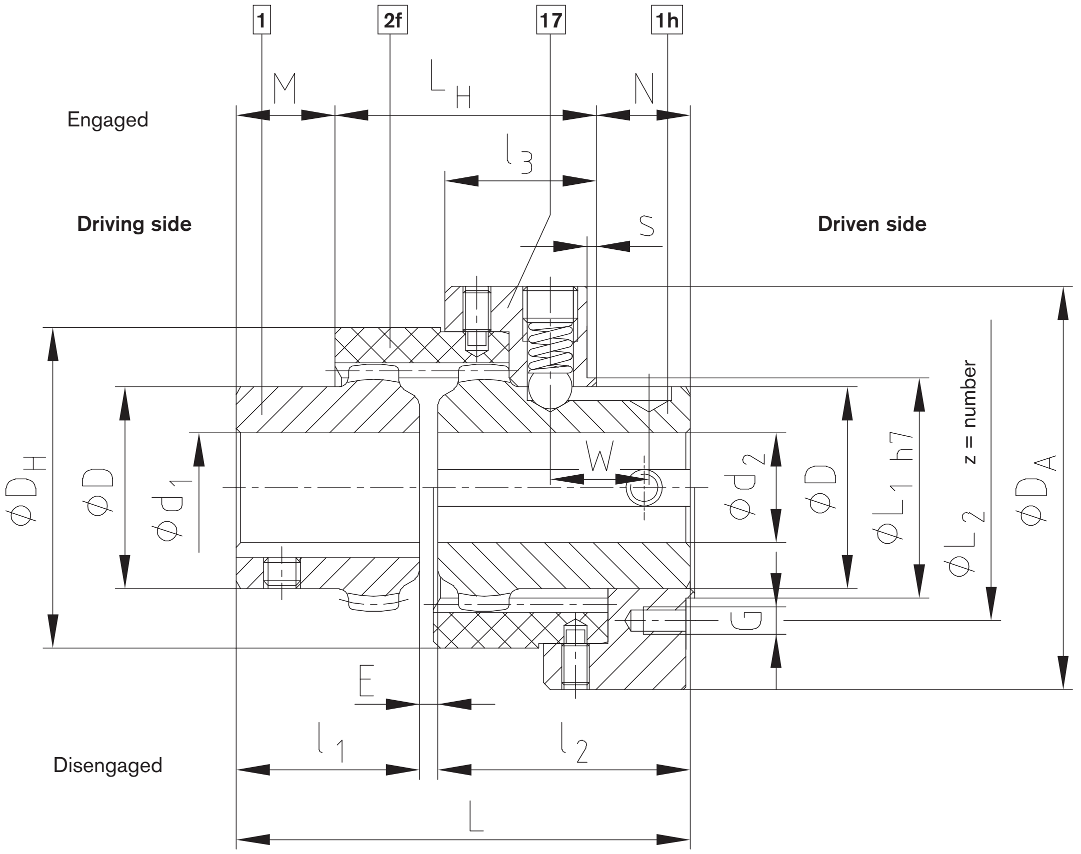
Size	Dimensions [mm]			
	L_1	L_2	z x G	s
24 SD	48	58	4 x M6	2
28 SD	48	58	4 x M6	2
32 SD	64	75	4 x M6	2
45 SD	75	90	4 x M8	2
65 SD	100	114	4 x M8	2
80 SD	130	145	4 x M8	3
100 SD	180	196	6 x M10	4
125 SD	220	236	6 x M10	4

Performance data/torques see type M (on page 90), max. circumferential speed v = 20 m/s, referring to $ØD_A$
Other sizes on request

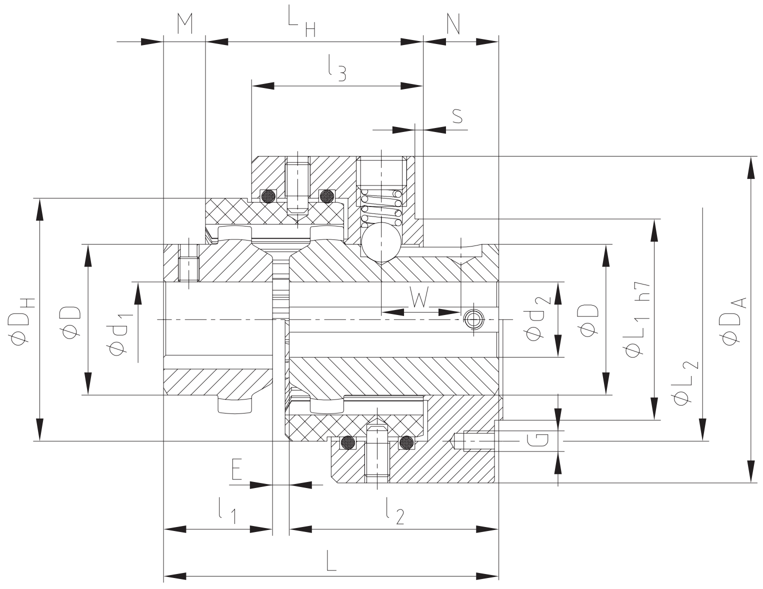
Ordering example:

BoWex® 32 SD	d_1 Ø32	d_2 Ø32
Size and type of coupling	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)

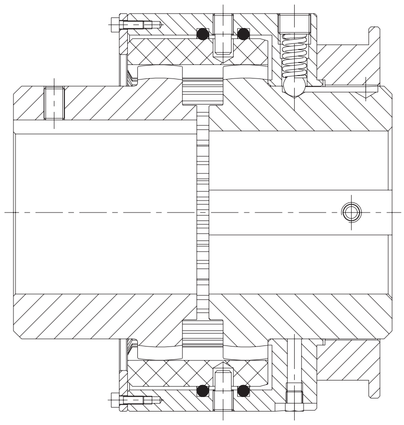
Components



BoWex® SD



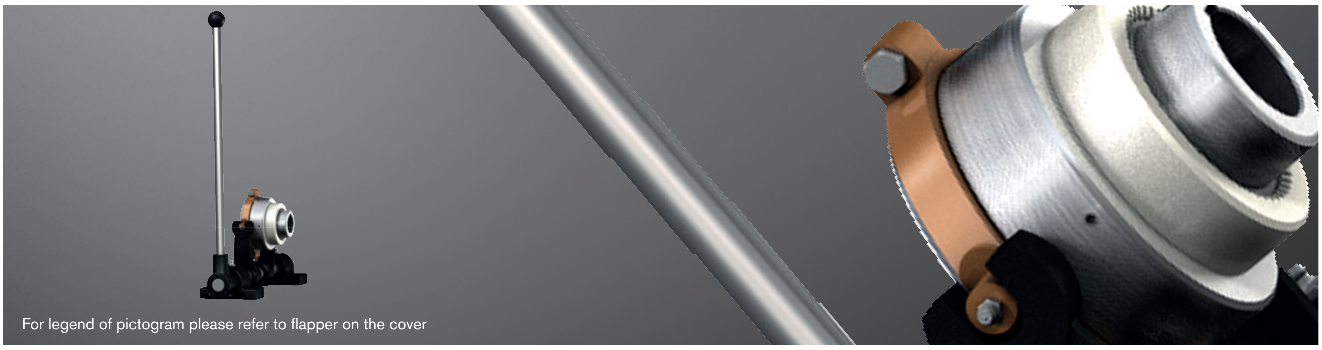
BoWex® SD-D



BoWex® SD-D3

BoWex® SD1
Curved-tooth gear coupling®

Shiftable coupling with shiftable linkage (at standstill)


For legend of pictogram please refer to flapper on the cover

BoWex® Type SD1 and slip ring

Size	Finish bore			Dimensions [mm]																	Shifting force [N]
	d_1	d_1 max.	d_2 max.	E	l_1	l_2	L	L_G	l_4	l_5	M	W	t	D	D_H	D_A	D_1	D_2 ±0.1 (keyway)	D_5	n ±0.1 (keyway)	
24 SD1	For finish bores see stock programme on page 86	24	24	4	26	50	80	67	11	46	10	19	16	36	58	78	45	70.5	78	12.5	140
28 SD1		28	28	4	40	55	99	72	11	48	21.5	21.5	16	44	70	88	45	70.5	78	12.5	180
32 SD1		32	32	4	40	55	99	78	13.5	53	20.5	21.5	21	50	84	100	60	89.5	100	17.5	180
45 SD1		45	45	4	42	60	106	84	14	58	21.5	22.5	22	65	100	125	70	112.5	125	18	250
		48			50		114				29.5										
65 SD1		65	65	4	55	70	129	103	16	61	26	25	25	96	140	156	96	130.5	145	20.5	350
80 SD1		90	90	6	90	90	186	124	18.5	75	56	35	29	124	175	195	125	164.5	182	25.5	350
100 SD1		100	100	8	110	110	228	152	28	94	72	43	39	152	210	235	174	210.5	230	30.5	400
125 SD1		125	125	10	140	140	290	193	30.5	114	89	52	44	192	270	298	214	250.5	275	35.5	450

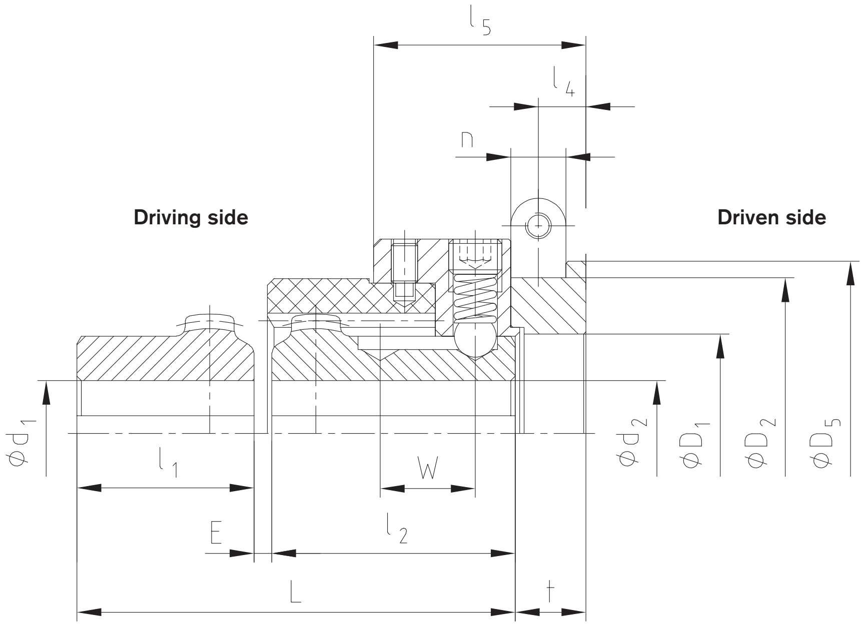
BoWex® Type SD1 - Shiftable linkage

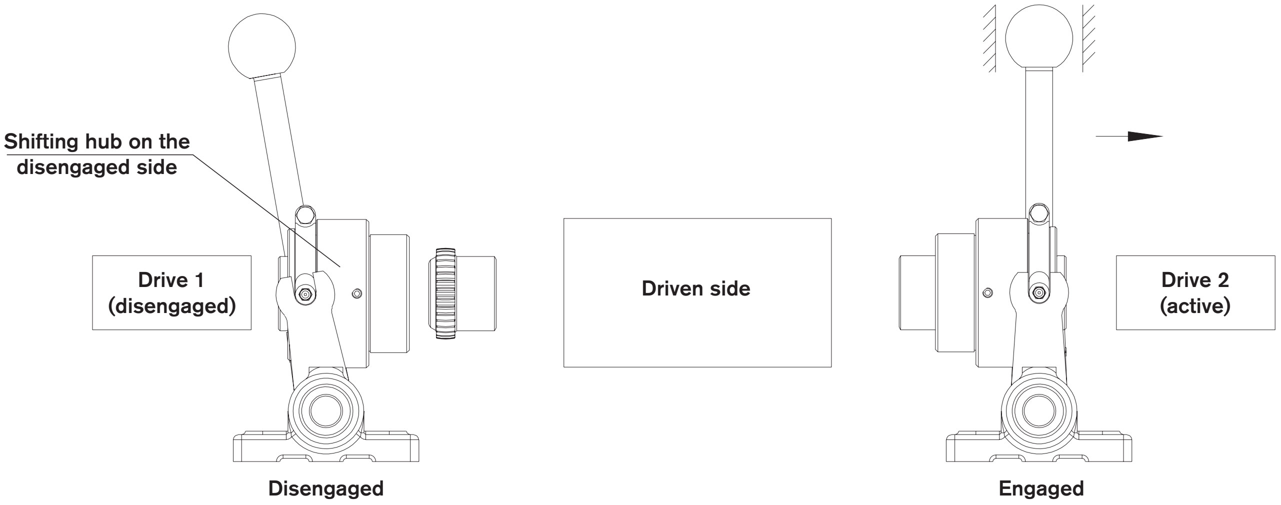
Size	Shiftable linkage size	Slip ring size	Dimensions [mm]																Dimensions with m_1 max.		
			a	b	c	d	d_3	d_4	e	F	g_1	L_2	L_3	m	m_1 min.	m_1 max.	A	B	m_3	m_4	m_5
24 SD1	1	1.1	110	50	18	20	11	16	30	70	55	320	400	75	180	190	90	114	20	55	16
28 SD1	1	1.1																			
32 SD1	2	2.2	140	60	25	25	13.5	20	40	97.5	60	430	450	100	240	270	111	151		80	34
45 SD1	3	3.3				30				120	70	490	600		280	310	140	180		90	44
65 SD1	3	4.4															170	210			
80 SD1	4	5.5	160			35		30	50	147.5		565	750	120	321	365	200	244	30	100	54
100 SD1	5	6.6				40			50 [1]	190	80	630	1085		365	410	250	300		110	62
125 SD1	5	7.7													-		300	350			

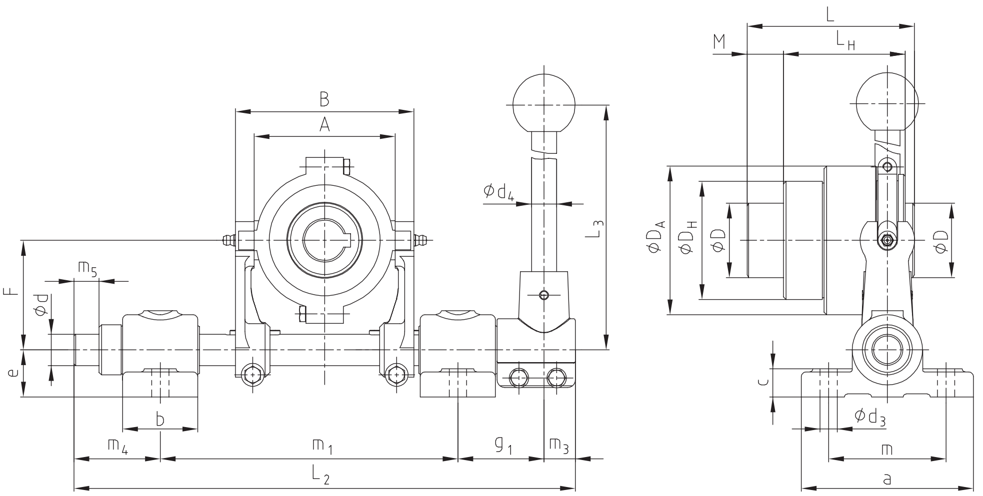
[1] = With a continuous base plate dimension „e" has to be increased by at least 10 mm. The brackets of the driving and driven side have to be adjusted accordingly.
Also available as type SD-D. Other sizes on request.

Performance data/torques see type M (on page 88), max. circumferential speed v = 20 m/s, referring to ØD_A

Ordering example:	BoWex® 65 SD1	d_1 Ø32	d_2 Ø32	4.4	3
	Size and type of coupling	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)		Slip ring Size	Shiftable linkage Size


Driving side
Driven side
l5
l4
n
ød1
ød2
øD1
øD2
øD5
l1
W
E
l2
L
t

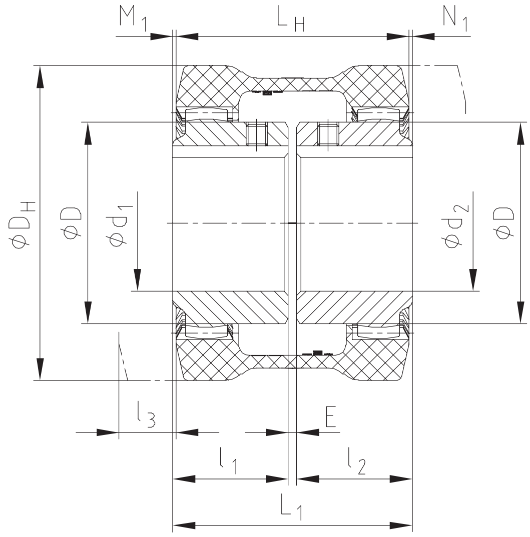

Shifting hub on the disengaged side
Drive 1 (disengaged)
Driven side
Drive 2 (active)
Disengaged
Engaged

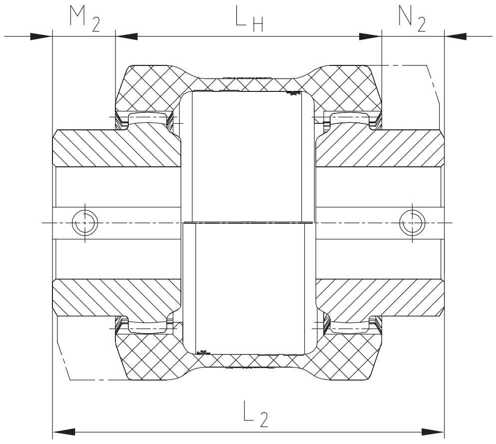

B
A
ød4
L3
F
m5
ød
e
b
m4
m1
g1
m3
L2
L
M
LH
øDA
øDH
øD
øD
c
ød3
m
a

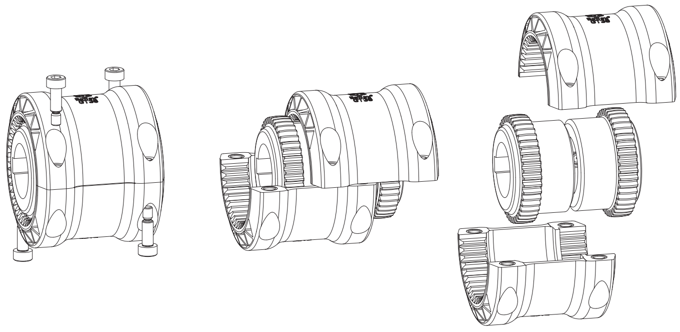
BoWex® GT
Curved-tooth gear coupling®

Split CFK sleeve for high power density


For legend of pictogram please refer to flapper on the cover







BoWex® Type GT with split sleeve

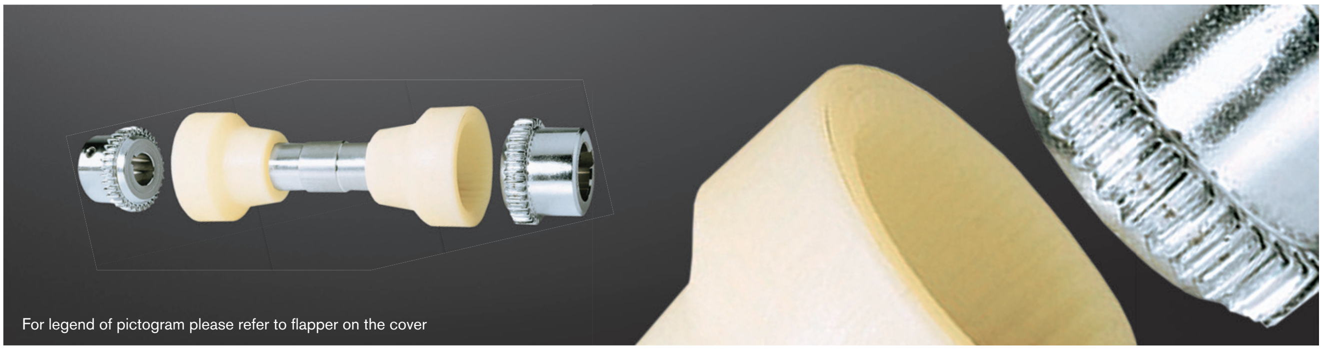
Size	Torque [Nm]			Finish bore $d_{max.}$		Dimensions [mm]											Weight with max. bore [kg]			Mass moment of inertia J with max. bore [kgcm²]		
	T_{KN}	$T_{K\ max.}$	T_{KW}	d_1	d_2	D	D_H	L_H	l_1	l_2	l_3	E	L_1	L_2	M_1, N_1	M_2, N_2	Sleeve	Hub	Total	Sleeve	Hub	Total
28	70	210	35	28	28	44	80	80	40	40	15	4	84	124	2	22	0.158	0.22	0.702	1.77	1.22	4.21
38	120	360	60	38	38	58	98	83	40	40	18	4	84	122	0.5	19.5	0.25	0.45	1.15	4.43	3.36	11.15
48	200	600	100	48	48	68	110	104	50	50	21	4	104	160	0	28	0.33	0.67	1.68	7.39	6.11	19.61
65	560	1680	280	65	65	96	150	111	55	55	27	4	114	160	1.5	24.5	0.69	1.54	3.77	28.9	31.80	92.5

l_3 = Drop-out center dimension required

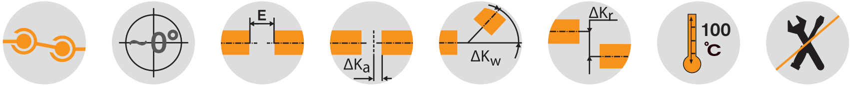
Ordering example:	BoWex® GT-28	d_1 Ø20	d_2 Ø28
	Size and type of coupling	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)

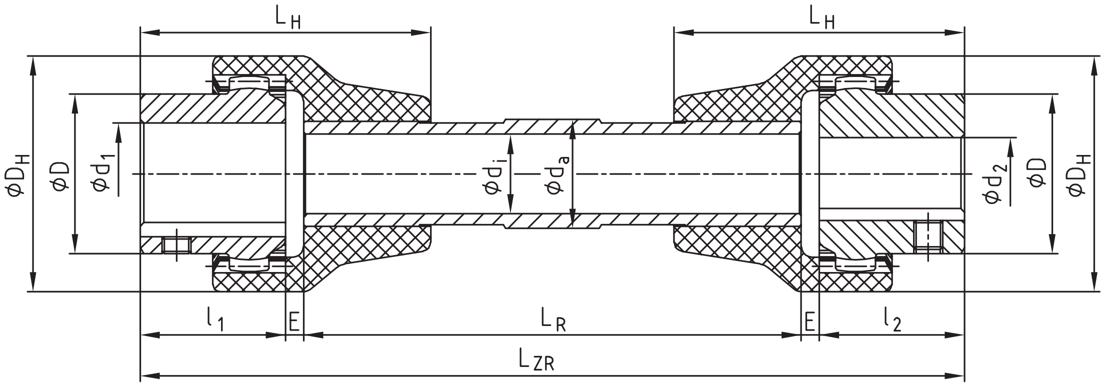
BoWex® ZR
Curved-tooth gear coupling®

Bridging larger shaft distances



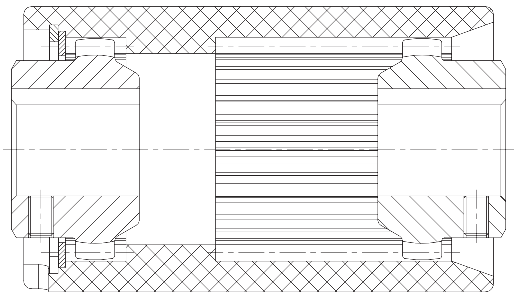
For legend of pictogram please refer to flapper on the cover





BoWex® Type ZR															
Size	Pilot bore	Finish bore	Dimensions [mm]										Torque [Nm]		
		d_1 max. d_2 max.	l_1, l_2	Hub length. max. l_1, l_2	L_H	E	L_{ZR} tot.	L_R	D	D_H	d_i	d_a	T_{KN}	$T_{K\ max.}$	T_{KW}
14	-	14	23	40	40	3	According to customer specification		25	40	21	25	10	20	5
28	-	28	40	55	60	3			44	66	30	26	45	90	23
42	-	42	42	60	85	3			65	95	40	50	100	200	50
48	-	48	50	60	85	3			68	95	40	50	140	280	70

BoWex® ZR couplings are available up to a length of 2000 mm for serial applications only ($n_{max.}$ = 1000 rpm)

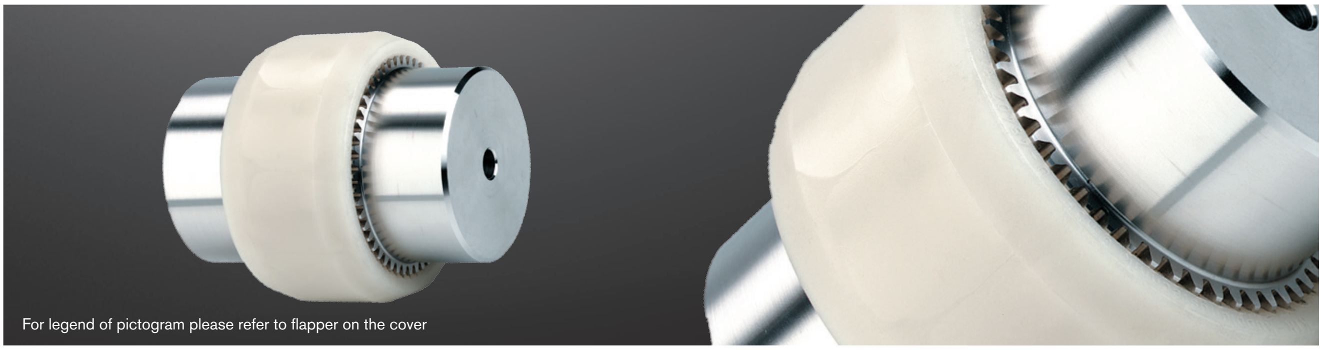


Type Spec.-I with a long PA-sleeve

- BoWex® Spec.-I with lengthened sleeve on request
- Bridging larger shaft distances
- Axial shifting of driving and driven shaft at standstill
- Maintenance-free
- Compensating for larger displacements
- Axial plug-in
- Application range from -25 °C to +100 °C

BoWex® M
Curved-tooth gear coupling®

Made of corrosion-resistant materials


For legend of pictogram please refer to flapper on the cover

BoWex® junior plug-in coupling (two-part) and BoWex® junior M (three-part)														
Size	Finish bore				Dimensions [mm]									
	Hub Component 1b		Plug-in sleeve Component 2b		D_H	l_1, l_2	E_1	E	L_{H1}	L_H	L_1	L	M_1	M, N
	d_1	D_1	d_2	D_2										
14 M-14	Ø6, Ø7, Ø8, Ø9	22	Ø8	22	40	23	2	4	40	37	48	50	8	6.5
	Ø10, Ø11	25	Ø10, Ø11	25										
	Ø12, Ø14	26	Ø12, Ø14	26										
19 M-19	Ø12, Ø14	27	Ø14, Ø15	29	48	25	2	4	42	37	52	54	10	8.5
	Ø16	30												
	Ø19	32	Ø19	35										
24 M-24	Ø10, Ø11, Ø12	26	Ø14, Ø16	32	53	26	2	4	45	41	54	56	9	7.5
	Ø14, Ø15, Ø16	32												
	Ø18, Ø19, Ø20	36	Ø19, Ø20	36										
	Ø24	38	Ø24	40										

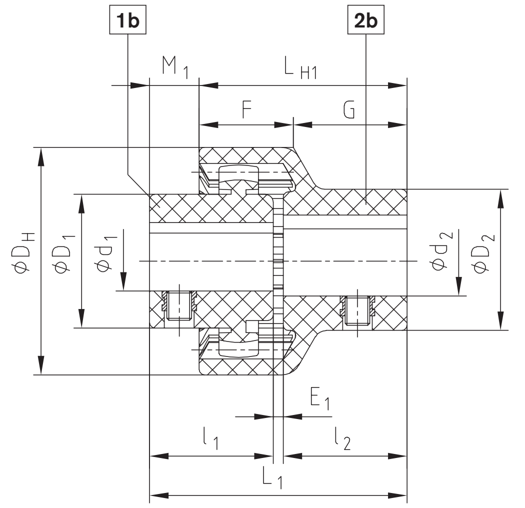
BoWex® Type M								
Size	Finish bore d_1 max., d_2 max.	Dimensions [mm]						
		D_H	D	l_1, l_2	E	L_H	L	M, N
M-24	24	53	36	26	4	41	56	7.5
M-38	38	83	58	40	4	48	84	18
M-48	48	95	68	50	4	50	104	27

Other coupling sizes on request. Setscrews with BoWex® junior coupling are made of V4A as a standard.
For performance data see page 88.

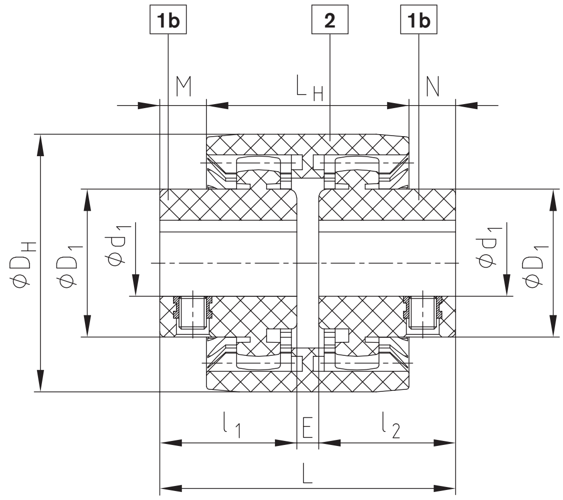
Applications:
Food industry, print and paper industry, textile industry, sewage technology, wash-mobiles, chemical and pharmaceutical industry, offshore units, etc. For use in aggressive environment (air, water, chemicals, etc.).

Ordering example:	BoWex® M-24 V4A	d_1 Ø20	d_2 Ø24
	Size and type of coupling	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)

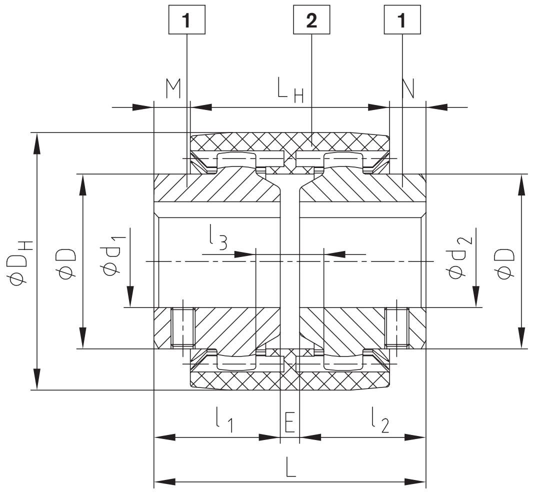
Type junior plug-in coupling (two-part)



Type junior M coupling (three-part)

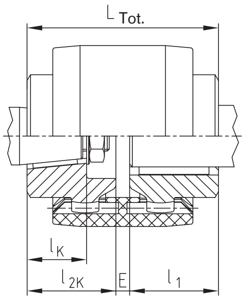


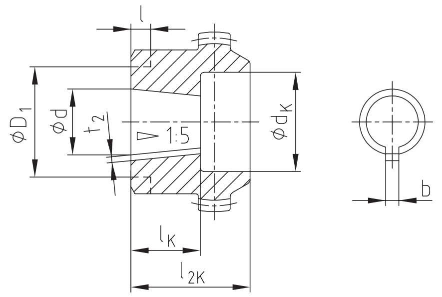
Type M (V4A)

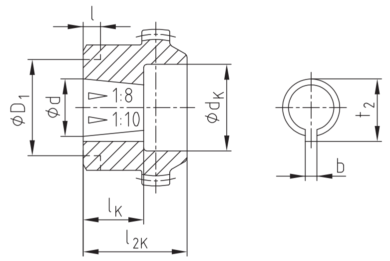


Taper bores

BoWex® with taper bore







$L_{Tot.} = l_1 + E + l_{2K}$

see stock programme on page 90

Taper bores 1:5																						
Dimensions [mm]					Counterbore d_K and hub length l_{2K} [mm] Recess on hub collar D_1 x l [mm]																	
Code	Details of bores				14		19		24		28		32		38		42		48		65	
	$d^{+0.05}$	b^{JS9}	$t_2^{+0.1}$	l_K	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}
A-10	9.85	2	1.0	11.5	18	23	18	25	25	26	25	26	25	26	25	26						
					-		30 x 7		30 x 7		30 x 5		-		30 x 5							
B-17	16.85	3	1.8	18.5			25	30	28	30	36	40	36	40	36	40	45	42	45	42	45	50
C-20	19.85	4	2.2	21.5					28	36	36	40	36	40	36	40	45	42	45	42	45	50
Cs-22	21.95	3	1.8	21.5					28	36	36	40	36	40	36	40	45	42	45	42		
D-25	24.85	5	2.9	26.5							36	40	36	40	36	40	45	42	45	42	45	50
E-30	29.85	6	2.6	31.5											45	55	45	55	45	55	45	55
F-35	34.85	6	2.6	36.5															52	60	55	60
G-40	39.85	6	2.6	41.5															52	60	65	70

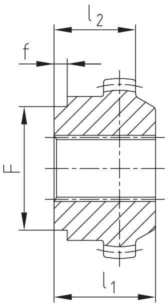
Taper bores 1:8																						
Dimensions [mm]					Counterbore d_K and hub length l_{2K} [mm] Recess on hub collar D_1 x l [mm]																	
Code	Details of bores				14		19		24		28		32		38		42		48		65	
	$d^{+0.05}$	b^{JS9}	$t_2^{+0.1}$	l_K	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}
N/1	9.7 ± 0.015	$2.4^{+0.05}$	10.85	17	18	26	18	25	25	26	25	30	25	30	25	30						
					23 x 8		23 x 8		23 x 8		23 x 8		-		23 x 8							
N/1c	11.6	3^{JS9}	12.90	16.5	18	23			25	26	25	30										
N/1e	13	$2.4^{+0.05}$	13.80	21					25	30	25	30			25	30						
N/1d	14	3^{JS9}	15.50	17.5	20	23	25	30	28	30	28	30	28	40								
					-		-		-		28 x 10		-									
N/2	17.287	$3.2^{+0.05}$	18.24	24					28	35	36	40	36	40	36	40	45	42	45	42	45	50
									-		35 x 12		-		-		-		-		-	
N/2a	17.287	4^{JS9}	18.94	24					28	35	36	40	36	40	36	40	45	42	45	42	45	50
									-		35 x 12		-		-		-		-		-	
N/2b	17.287	3^{JS9}	18.34	24					28	35					36	40	45	42	45	42		
									-						-		-		-			
N/3	22.002	4^{JS9}	23.40	28							36	40	36	40	36	40	45	42	45	42	45	50
											-		-		-		-		-		48 x 14	
N/4	25.463	$4.78^{+0.05}$	27.83	36							36	50	36	50	36	50	45	50	45	50	45	62
											-		-		-		58 x 10		58 x 10		-	
N/4b	25.463	5^{JS9}	28.23	36							36	50					45	50	45	50	45	62
N/4a	27	$4.78^{+0.05}$	28.80	32.5											36	50						
N/4g	28.45	6^{JS9}	29.32	38.5											36	60	45	60	45	60		
N/5	33.176	$6.38^{+0.05}$	35.39	44											45	60	45	60	45	60	45	62
N/5a	33.176	7^{JS9}	35.39	44													45	60	45	60	45	62

Taper bores 1:10																						
Dimensions [mm]					Counterbore d_K and hub length l_{2K} [mm]																	
Code	Details of bores				14		19		24		28		32		38		42		48		65	
	$d^{+0.05}$	b^{JS9}	$t_2^{+0.1}$	l_K	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}
CX-20	19.85	5	22.08	32							36	50			36	50	45	50	45	50		
DX-25	24.95	6	26.68	45									36	50			45	60	45	60	45	60
EX-30	29.75	8	31.88	50													45	60	45	60	45	70

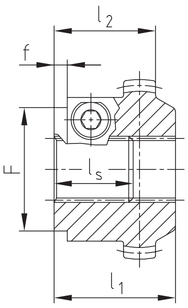
Spline hubs and inch bores

BoWex® spline hubs – basic programme

Spline hub (N)



Clamping hub (K)



If it is not possible to fasten the hubs of pump shafts with involute spline by means of an end plate and a screw, we recommend to use our spline clamping hub.
Radial clamping ensures a backlash-free tight fit on the pump shaft.

Spline and clamping hubs acc. to DIN 5480

Size	Dimensions [mm]							Order designation specify coupling size
	Type	Spline size	l_1	l_2	l_S	F	f	
42	N	25x1.25x18	42	-	-	-	-	P000205
	K	25x1.25x18	42	-	-	-	-	P500202
	K	30x2x14	42	-	-	60	6	P500203
48	N	30x2x14	50	-	-	60	6	P000206
	K	30x2x14	50	-	-	60	6	P500203
65	N	35x2x16	55	-	-	60	6	P000303
	K	35x2x16	60	-	-	60	6	P500301
	N	40x2x18	55	-	-	78	6	P000304
	K	40x2x18	60	-	-	78	6	P500302
	K	45x2x21	55	-	-	78	6	P500401

Spline and clamping hubs to ANSI B92.1

Size	Dimensions [mm]							Order designation specify coupling size
	Type	Spline size	l_1	l_2	l_S	F	f	
42	K	PH-S ⅝" 16/32DP, z=9	42	-	-	-	-	P558101
	K	PI-S ¾" 16/32DP, z=11	-	35	-	-	-	P559101
	K	PB-S ⅞" 16/32DP, z=13	42	-	-	60	3	P567101
	K	PB-BS 1" 16/32DP, z=15	42	-	27	50	6	P660201
48	K	PA-S ⅜" 16/32DP, z=21	50	-	45	52	7	P663301
65	K	PA-S ⅜" 16/32DP, z=21	55	-	48	52	5	P663301
	K	PC-S 1¼" 12/24DP, z=14	55	-	44	52	5	P656201

Inch bores – see stock programme on page 86

Bore and keyway acc. to ANSI/AGMA 9002-C14
Bore (clearance fit) Keyway (commercial class fit)

KTR Code	Bore Ø [Inch]	Width of keyway [Inch]	Bore Ø [mm]	Width of keyway [mm]	Keyway depth/ Tolerance +0.381 [mm]
Tb	3/8	1/8	9.525 $^{+0.0254}$	3.175 $^{+0.05}$	10.972
DNB	7/16	3/32	11.112 $^{+0.0254}$	2.382 $^{+0.051}$	12.293
T	1/2	3/16	12.7 $^{+0.0254}$	4.762 $^{+0.051}$	14.757
Ta	1/2	1/8	12.7$^{+0.0254}$	3.175 $^{+0.051}$	14.224
DNC	17/32	1/8	13.495 $^{+0.0254}$	3.175 $^{+0.051}$	15.011
Do	9/16	1/8	14.287 $^{+0.0254}$	3.175 $^{+0.051}$	15.824
E	5/8	1/8	15.875 $^{+0.0254}$	3.175 $^{+0.051}$	17.424
Es	5/8	5/32	15.875 $^{+0.0254}$	3.968 $^{+0.051}$	17.729
Ed	5/8	3/16	15.875 $^{+0.0254}$	4.762 $^{+0.051}$	18.008
DNH	11/16	3/16	17.462 $^{+0.0254}$	4.762 $^{+0.051}$	19.634
Ad	3/4	1/8	19.05 $^{+0.0254}$	3.175 $^{+0.051}$	20.624
A	3/4	3/16	19.05 $^{+0.0254}$	4.762 $^{+0.051}$	21.259
G	7/8	3/16	22.225 $^{+0.0254}$	4.762 $^{+0.051}$	24.485
F	7/8	1/4	22.225 $^{+0.0254}$	6.35 $^{+0.051}$	25.069
Gf	15/16	1/4	23.812 $^{+0.0254}$	6.35 $^{+0.051}$	26.695
H	1	3/16	25.4 $^{+0.0254}$	4.762 $^{+0.051}$	27.686
Hs	1	1/4	25.4 $^{+0.0254}$	6.35 $^{+0.051}$	28.295
R	1 1/16	3/16	26.987 $^{+0.0254}$	4.762 $^{+0.051}$	29.286
Sb	1 1/8	1/4	28.575 $^{+0.0254}$	6.35 $^{+0.051}$	31.521
Sd	1 1/8	5/16	28.575$^{+0.0254}$	7.937 $^{+0.051}$	32.105
Js	1 1/4	1/4	31.75$^{+0.0254}$	6.35 $^{+0.051}$	34.721
K	1 1/4	5/16	31.75$^{+0.0254}$	7.937 $^{+0.051}$	35.331
Ma	1 3/8	5/16	34.925$^{+0.0254}$	7.937 $^{+0.051}$	38.557
RH1	1 3/8	3/8	34.925$^{+0.0254}$	9.525 $^{+0.063}$	39.141
Cb	1 7/16	3/8	36.512$^{+0.0254}$	9.525 $^{+0.063}$	40.767
Ca	1 1/2	5/16	38.1$^{+0.0254}$	7.937 $^{+0.051}$	41.783
C	1 1/2	3/8	38.1 $^{+0.0254}$	9.525 $^{+0.0635}$	42.392
Nb	1 5/8	3/8	41.275 $^{+0.0254}$	9.525 $^{+0.0635}$	45.618
Ls	1 3/4	3/8	44.45 $^{+0.0254}$	9.525 $^{+0.0635}$	48.818
L	1 3/4	7/16	44.45 $^{+0.0254}$	11.112 $^{+0.0635}$	49.428
Lu	1 7/8	1/2	47.625 $^{+0.0254}$	12.7 $^{+0.0635}$	53.238
Da	1 15/16	1/2	49.212 $^{+0.0254}$	12.7 $^{+0.0635}$	54.864
Ds	2	1/2	50.8 $^{+0.0254}$	12.7 $^{+0.0635}$	56.464
Pa	2 1/8	1/2	53.975 $^{+0.0381}$	12.7 $^{+0.063}$	59.69
U	2 1/4	1/2	57.15 $^{+0.0381}$	12.7 $^{+0.063}$	62.915
Ub	2 3/8	5/8	60.325 $^{+0.0381}$	15.875 $^{+0.076}$	67.335
Wd	3 3/8	7/8	85.725 $^{+0.0381}$	22.225 $^{+0.076}$	95.504
Wf	3 5/8	7/8	92.075 $^{+0.0381}$	22.225 $^{+0.076}$	101.955

The splines and inch bores specified are only a part of KTR's options. Many other variants are available, too.

GEARex® FA, FB and FAB
All-steel gear couplings

Coupling in accordance with AGMA 9008-B00, high power density

For legend of pictogram please refer to flapper on the cover

Dimensions

Size	Pilot bore	Max. finish bore	Dimensions [mm]														
		d_1, d_2	l_1, l_2	Hub lengthened max. l_1, l_2 2)	E_{FA}	E_{FB}	E_{FAB}	L_{FA}	L_{FB}	L_{FAB}	L_3	D	D_{A1}	D_{A2}	F 1)	d_3 1)
10	26	50	43	105	3	21	12	89	107	98	55	67	111	83	74	52
15	26	64	50	115	3	15	9	103	115	109	59	87	142	106	84	68
20	31	80	62	130	3	31	17	127	155	141	79	108	174	129	104	85
25	38	98	76	150	5	29	17	157	181	169	93	130	213	157	123	110
30	44.5	112	90	170	5	33	19	185	213	199	109	153	240	181	148	130
35	46	133	105	185	6	40	23	216	250	233	128	180	280	213	172	150
40	52	158	120	215	6	42	24	246	282	264	144	214	318	249	192	175
45	80	172	135	245	8	50	29	278	320	299	164	233	347	273	216	190
50	80	192	150	295	8	56	32	308	356	332	182	260	390	308	241	220
55	90	210	175	300	8	70	39	358	420	389	214	283	425.5	333	275	250
60	100	232	190	305	8	84	46	388	464	426	236	312	457	364.5	316	265
70	100	276	220	310	10	76	43	450	516	483	263	371	527	424	360	300

Technical data

Size	Torque [Nm] 3)		Max. speed [rpm]	Weight with max. bore [kg]			Mass moment of inertia with max. bore [kgm²]	Dowel screw (10.9)		
	T_{KN}	T_{KN} (42CrMo4)		Sleeve	Hub	Total		z	M	T_A [Nm]
10	930	1580	8500	0.75	0.55	2.75	0.004	6	M6	15
15	2000	3300	6400	1.50	1.10	5.60	0.015	8	M8	36
20	3500	6300	5400	2.40	2.10	9.50	0.037	6	M10	72
25	6500	11000	4500	4.30	3.60	16.60	0.096	6	M12	125
30	10000	17400	4000	5.70	6.20	25.00	0.178	8	M12	125
35	17000	28800	3500	9.50	9.90	40.90	0.410	8	M14	200
40	28500	48500	3100	11.60	16.00	57.50	0.746	8	M14	200
45	37000	62000	3000	15.40	21.40	76.40	1.163	10	M14	200
50	51000	86000	2500	25.30	29.50	113.50	2.229	8	M18	430
55	65000	110000	2300	31.00	40.20	149.00	3.415	14	M18	430
60	85000	145000	2100	32.10	52.80	175.70	4.514	14	M18	430
70	135000	240000	1850	42.50	85.50	265.50	9.212	16	M20	610

🟧 = Standard

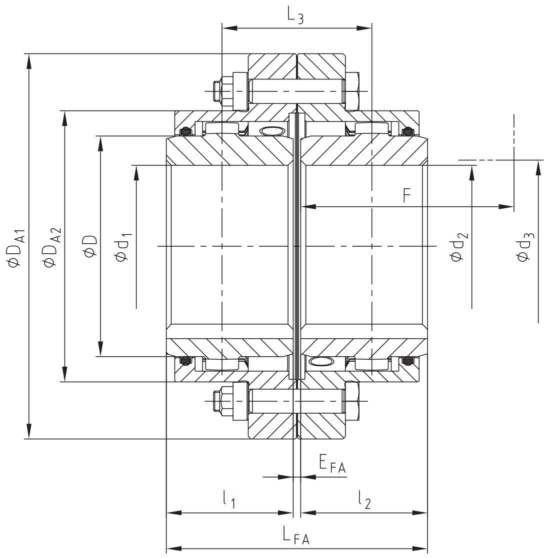
1) Space required to align the coupling and replace the gasket

2) Lengthened hubs available as a standard for type FA only. For type FB and FAB lengthened hubs are available on request only.

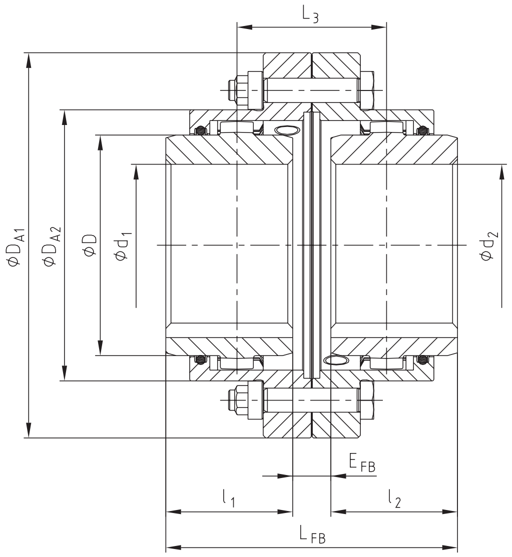
3) Maximum torque of the coupling $T_{K\ max}$ = rated torque of the coupling T_{KN} x 2. For selection see page 14 et seqq.

Ordering example:	GEARex® FA 10	d_1 Ø50	d_2 Ø50
	Type and size of coupling	Finish bore with keyway to DIN 6885 sheet 1	Finish bore with keyway to DIN 6885 sheet 1

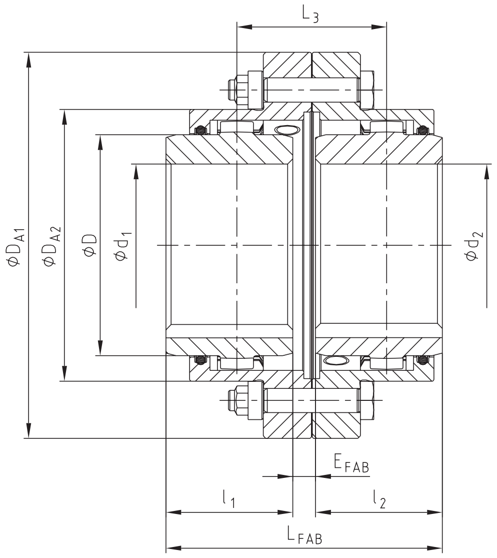
Type FA



Type FB

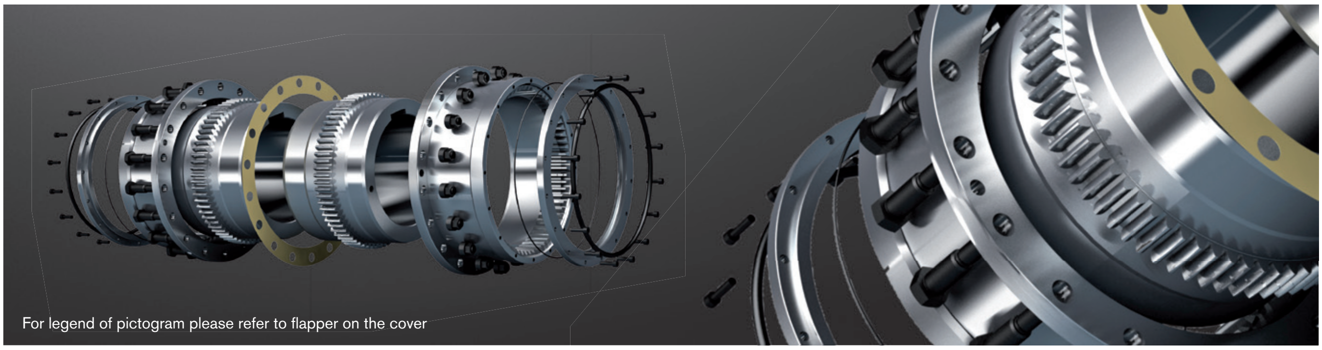


Type FAB



GEARex® DA, DB and DAB
All-steel gear couplings

Easy to assemble, high power density



For legend of pictogram please refer to flapper on the cover

Dimensions

Size	Pilot bore	Max. finish bore	Dimensions [mm]													
		d_1, d_2	l_1, l_2	Hub lengthened max. l_1, l_2 [2]	E_{DA}	E_{DB}	E_{DAB}	L_{DA}	L_{DB}	L_{DAB}	L_3	D	D_{A1}	D_{A2}	F [1]	d_3 [1]
20	31	80	62	130	3	31	17	133	155	144	79	108	187	146	105	85
25	38	98	76	150	5	29	17	157	181	169	93	130	220	172	115	105
30	44.5	112	90	170	5	33	19	185	213	199	109	153	248	194	140	120
35	46	133	105	185	6	40	23	216	250	233	128	180	285	228	165	145
40	52	158	120	215	6	42	24	246	282	264	144	214	335	270	180	160
45	80	172	135	245	8	50	29	278	320	299	164	233	358	294	195	185
50	80	192	150	295	8	56	32	388	356	332	182	260	390	332	215	205
55	90	210	175	300	8	70	39	358	420	389	214	283	425.5	354	240	220
60	100	232	190	305	8	84	46	388	464	426	236	312	457	380	260	245
70	100	276	220	310	10	76	43	450	516	483	263	371	527	445	300	290
80	140	300	280	-	10	50	30	570	610	590	310	394	545	475	340	310
85	160	325	292	-	13	53	33	597	637	617	325	430	585	515	352	330
90	180	350	305	-	13	83	48	623	693	658	353	464	640	560	365	360
100	220	390	330	-	13	93	53	673	753	713	383	512	690	612	390	400
110	220	420	350	-	20	296	158	720	996	858	508	560	765	665	410	420
120	260	450	420	-	25	421	223	864	1261	1063	643	608	825	720	480	470
130	300	500	440	-	25	415	220	905	1295	1100	660	684	980	805	520	520
140	380	550	460	-	20	430	225	940	1350	1145	685	750	1055	875	570	590
150	460	630	520	-	30	460	245	1070	1500	1285	765	850	1180	975	630	670

Technical data

Size	Torque [Nm] [3]		Max. speed [rpm]	Weight with max. bore [kg]			Mass moment of inertia with max. bore [kgm²]	Dowel screw (10.9)		
	T_{KN}	T_{KN} (42CrMo4)		Sleeve	Hub	Total		z	M	T_A [Nm]
20	🟧 3500	6300	5400	3.6	2.1	12.8	0.056	6	M10	72
25	🟧 6500	11000	4500	5.5	3.6	20.3	0.125	6	M12	125
30	🟧 10000	17400	4000	6.9	6.2	28.9	0.219	8	M12	125
35	🟧 17000	28800	3500	11.2	9.8	46.6	0.488	8	M14	200
40	🟧 28500	48500	3100	16.3	15.9	70.9	1.011	8	M14	200
45	🟧 37000	62000	3000	20.2	21.4	90.7	1.482	10	M14	200
50	🟧 51000	86000	2500	27.0	29.5	123.5	2.474	8	M18	430
55	🟧 65000	110000	2300	32.6	40.2	159.1	3.714	14	M18	430
60	🟧 85000	145000	2100	32.0	52.8	184.4	4.810	14	M18	430
70	🟧 135000	240000	1850	43.8	85.5	280	9.907	16	M20	610
80	🟧 175000	300000	1750	64	117	362	14.214	18	M20	610
85	🟧 225000	380000	1650	75	148	446	20.320	20	M20	610
90	-	🟧 500000	1550	101	183	568	31.036	20	M24	1000
100	-	🟧 650000	1500	117	232	698	45.358	24	M24	1000
110	-	🟧 820000	1250	140	295	940	73.880	20	M30	1700
120	-	🟧 1050000	1150	188	430	1312	118.40	24	M30	1700
130	-	🟧 1450000	1000	330	595	1965	235.431	20	M36	2800
140	-	🟧 1950000	950	391	751	2411	343.432	24	M36	2800
150	-	🟧 2750000	850	488	1057	3242	575.453	30	M36	2800

🟧 = Standard

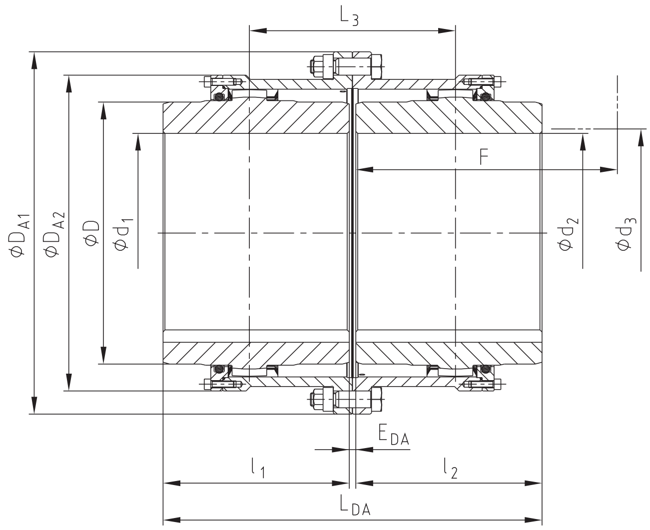
[1] Space required to align the coupling and replace the gasket

[2] Lengthened hubs as a standard available for type DA only. For type DB and DAB lengthened hubs available on request only.

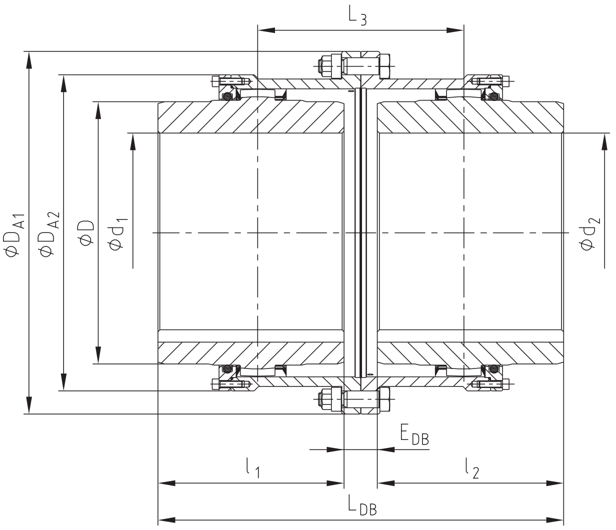
[3] Maximum torque of the coupling $T_{K\ max}$ = rated torque of the coupling T_{KN} x 2. For selection see page 14 et seqq.

Ordering example:	GEARex® DA 80	d_1 Ø300	d_2 Ø300
	Type and size of coupling	Finish bore with keyway to DIN 6885 sheet 1	Finish bore with keyway to DIN 6885 sheet 1

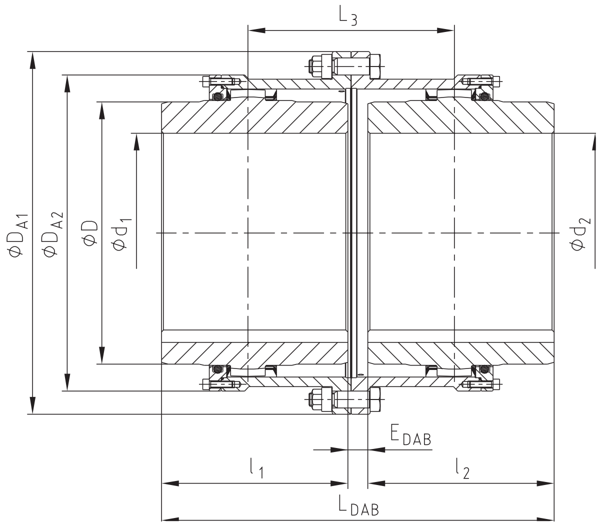
Type DA



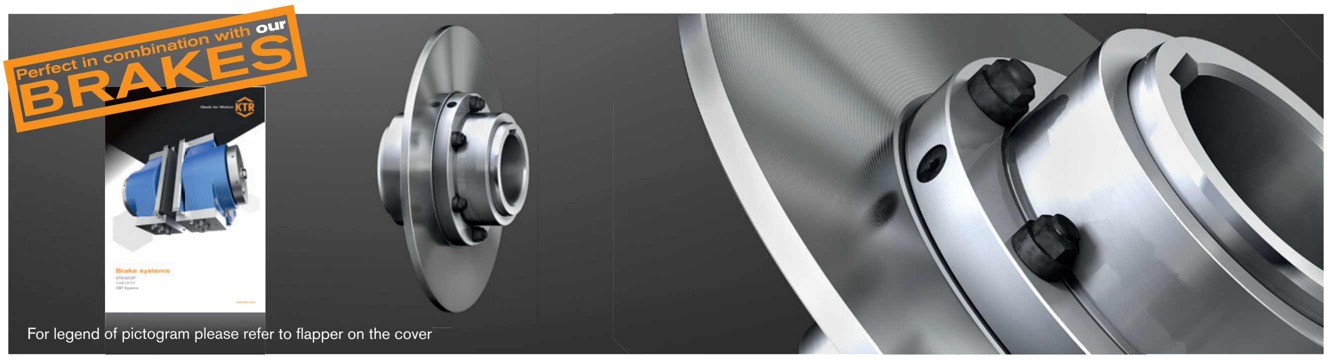
Type DB



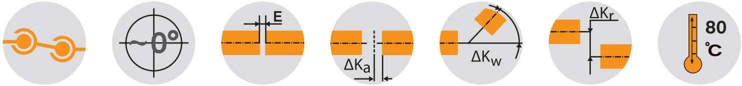
Type DAB



All-steel gear coupling with brake disk



For legend of pictogram please refer to flapper on the cover



Dimensions

Size	Pilot bore	Max. finish bore	Dimensions [mm]													
		d_1, d_2	l_1, l_2	Hub lengthened max. l_1, l_2 [3]	E_A	E_B	L_A	L_B	L_3	N	D	D_{A1} [4]	D_{A2} [4]	F [2]	d_3 [2]	a
10 [1]	26	50	43	105	16	34	102	120	68	N = L_A • 0.5 or L_B • 0.5	67	111	83	74	52	1.8
15 [1]	26	64	50	115	23	35	123	135	79		87	142	106	84	68	2.3
20	31	80	62	130	20	48	144	172	96		108	174	129	104	85	2.3
25	38	98	76	150	26	50	178	202	114		130	213	157	123	110	2.3
30	44.5	112	90	170	25	53	205	233	129		153	240	181	148	130	2.3
35	46	133	105	185	33	67	243	277	155		180	280	213	172	150	3.3
40	52	158	120	215	21	57	261	297	159		214	318	249	192	175	3.3
45	80	172	135	245	26	68	296	338	182		233	347	273	216	190	3.3
50	80	192	150	295	27	75	327	375	201		260	390	308	241	220	3.3

Technical data

Size	Torque [Nm] [5]		Dowel screw (10.9)			Weight with max. bore excluding brake disk [kg]		Max. speed [6]	
	T_{KN}	T_{KN} (42CrMo4)	z	M	TA [Nm]	FBR	DBR	ØA x b [mm]	n [rpm]
10 [1]	930	1580	6	M6	15	2.75	–	250 x 12.7	3900
15 [1]	2000	3300	8	M8	36	5.60	–	300 x 12.7	3300
20	3500	6300	6	M10	72	9.50	12.8	315 x 12.7	3100
25	6500	11000	6	M12	125	16.60	20.3	350 x 12.7	2800
30	10000	17400	8	M12	125	25.00	28.9	400 x 12.7	2400
35	17000	28800	8	M14	200	40.90	46.6	460 x 12.7	2100
40	28500	48500	8	M14	200	57.50	70.9	515 x 12.7	1900
45	37000	62000	10	M14	200	76.40	90.7	610 x 12.7	1600
50	51000	86000	8	M18	430	113.50	123.5	710 x 12.7	1400

Recommended selection of coupling/brake disk

Size	Brake disk ØA x b [7]									
	250 x 12.7	300 x 12.7	315 x 12.7	350 x 12.7	400 x 12.7	460 x 12.7	515 x 12.7	610 x 12.7	710 x 12.7	810 x 12.7
10 [1]	x	x	x							
15 [1]		x	x	x						
20			x	x	x	x				
25					x	x	x	x		
30						x	x	x	x	
35							x	x	x	
40								x	x	x
45								x	x	x
50								x	x	x

🟧 = Standard

[1] Size 10 and 15 available as type F only.

[2] Space required to align the coupling and replace the gasket

[3] Hubs lengthened as a standard available in connection with hub configuration A only.

[4] Dimensions of type F For dimensions of type D see page 110.

[5] Maximum torque of the coupling $T_{K\ max.}$ = rated torque of the coupling T_{KN} x 2. For selection see page 14 et seqq.

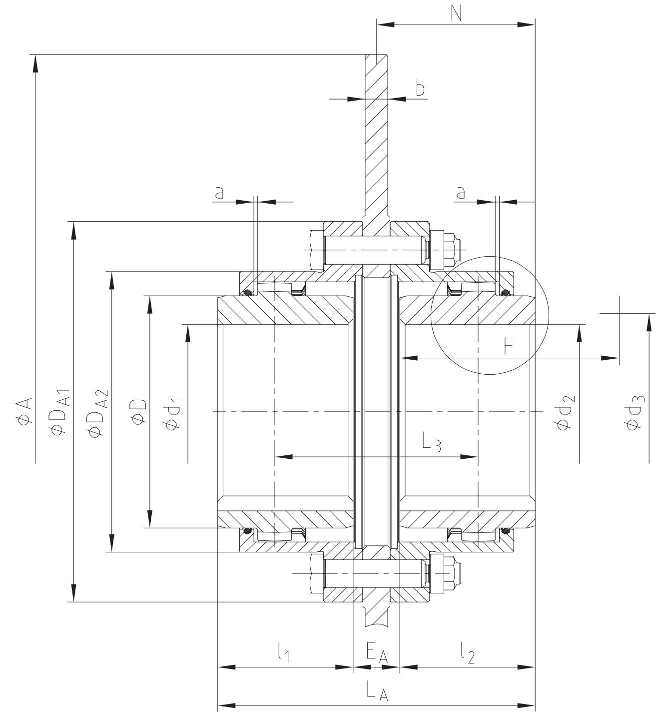
[6] The maximum speed depends on the size of brake disk and the maximum perm. circumferential speed. Please observe specifications of the brake manufacturer.

[7] Other sizes of brake disks on request. Cranked brake disks are available on request of the customer, too.

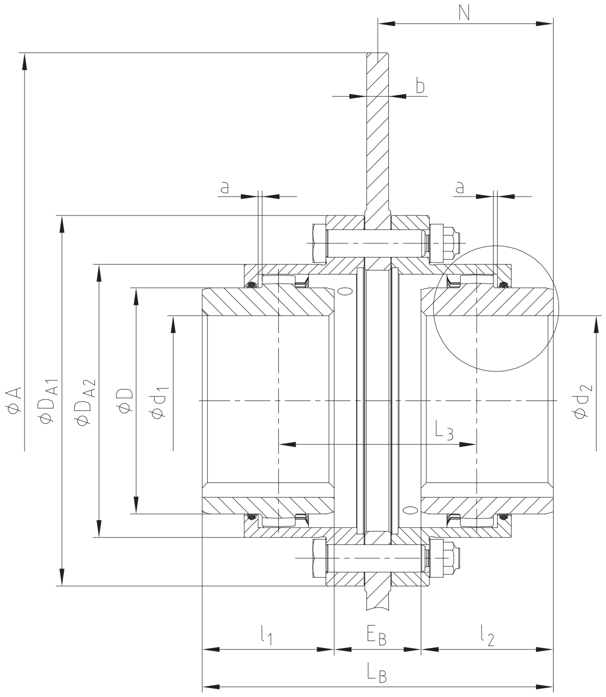
Ordering example:

GEARex® FBR 10	d_1 Ø50	d_2 Ø50	E_A = 16	Ø300 x 12.7
Type and size of coupling	Finish bore with keyway to DIN 6885 sheet 1	Finish bore with keyway to DIN 6885 sheet 1	Configuration of hubs with shaft distance dimension E	Brake disk ØA x width b

Type FBR with hub configuration A

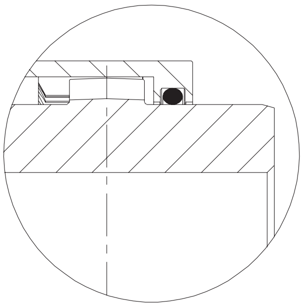


Type FBR with hub arrangement B

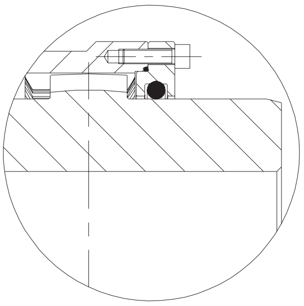


Types:

Type FBR

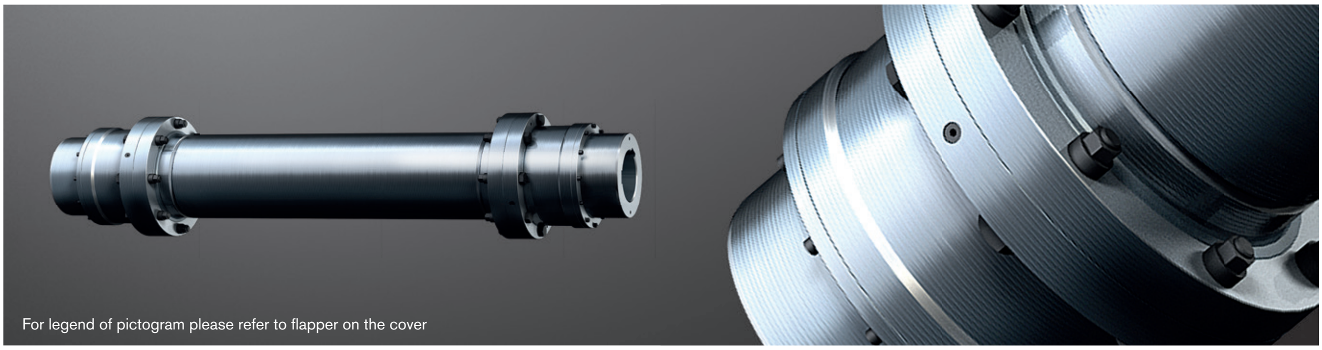


Type DBR



GEARex® FH and DH
All-steel gear couplings

Large shaft distance dimension, high power density



For legend of pictogram please refer to flapper on the cover

Dimensions															
Size [3]	Torque [Nm] [4]		Pilot bore	Max. finish bore	Dimensions [mm]								Dowel screw (10.9)		
	T_{KN}	T_{KN} (42CrMo4)		d_1, d_2	l_1, l_2	Hub lengthened max. l_1, l_2	D	D_{A1} [2]	D_{A2} [2]	L_H	E_H	F [1]	d_3 [1]	z	M	T_A [Nm]
10	🟧 930	1580	26	50	43	105	67	111	83	$L_H = E_H + l_1 + l_2$	According to customer specification	74	52	6	M6	15
15	🟧 2000	3300	26	64	50	115	87	142	106			84	68	8	M8	36
20	🟧 3500	6300	31	80	62	130	108	174	129			104	85	6	M10	72
25	🟧 6500	11000	38	98	76	150	130	213	157			123	110	6	M12	125
30	🟧 10000	17400	44.5	112	90	170	153	240	181			148	130	8	M12	125
35	🟧 17000	28800	46	133	105	185	180	280	213			172	150	8	M14	200
40	🟧 28500	48500	52	158	120	215	214	318	249			192	175	8	M14	200
45	🟧 37000	62000	80	172	135	245	233	347	273			216	190	10	M14	200
50	🟧 51000	86000	80	192	150	295	260	390	308			241	220	8	M18	430
55	🟧 65000	110000	90	210	175	300	283	425.5	333			275	250	14	M18	430
60	🟧 85000	145000	100	232	190	305	312	457	364.5			316	265	14	M18	430
70	🟧 135000	240000	100	276	220	310	371	527	424			360	300	16	M20	610
80	🟧 175000	300000	140	300	280	-	394	545	475			340	310	18	M20	610
85	🟧 225000	380000	160	325	292	-	430	585	515			352	330	20	M20	610
90	-	🟧 500000	180	350	305	-	464	640	560			365	360	20	M24	1000
100	-	🟧 650000	220	390	330	-	512	690	612			390	400	24	M24	1000
110	-	🟧 820000	220	420	350	-	560	765	665			410	420	20	M30	1700
120	-	🟧 1050000	260	450	420	-	608	825	720			480	470	24	M30	1700
130	-	🟧 1450000	300	500	440	-	684	980	805			520	520	20	M36	2800
140	-	🟧 1950000	380	550	460	-	750	1055	875			570	590	24	M36	2800
150	-	🟧 2750000	460	630	520	-	850	1180	975			630	670	30	M36	2800

🟧 = Standard

[1] Space required to align the coupling and replace the gasket

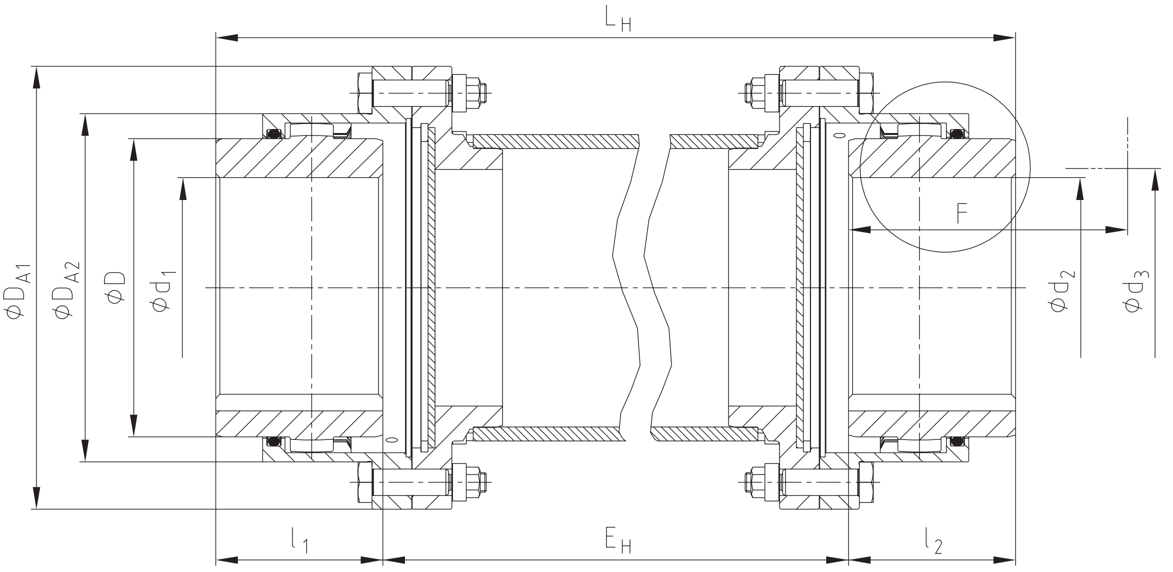
[2] For dimensions of type F see page 108. For type D see page 110.

[3] Size 10 and 15 available as type F only. From size 80 available as type D only.

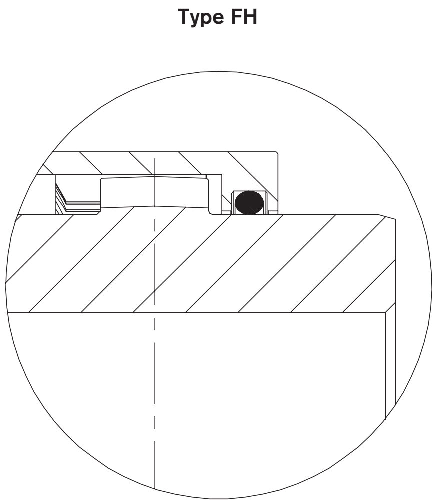
[4] Maximum torque of the coupling $T_{K\,max}$ = rated torque of the coupling T_{KN} x 2. For selection see page 14 et seqq.

Ordering example:	GEARex® FH 10	d_1 Ø50	d_2 Ø50	250
	Type and size of coupling	Finish bore with keyway to DIN 6885 sheet 1	Finish bore with keyway to DIN 6885 sheet 1	Shaft distance dimension E_H

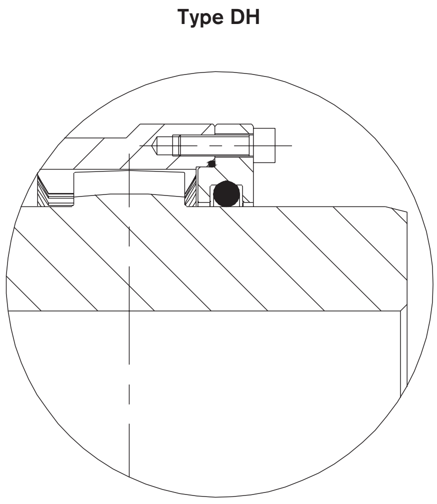
Components



Types



Type FH



Type DH

Shiftable coupling with shiftable linkage (at standstill)

For legend of pictogram please refer to flapper on the cover

Dimensions

Size	Torque T_{KN} [Nm] 1)	Max. finish bore	Dimensions [mm]									
		d_1, d_2	E	l_1	l_2	l_3	L	n	D	D_n	D_{A1}	D_{A2}
10	1580	50	3	50	50	14	103	18	67	112.5	110	125
15	3300	64	3	60	60	20	123	20	87	131	132	145
20	6300	80	3	70	70	18	143	25	108	165	152	185
25	11000	98	5	80	80	20.5	165	30	130	210.5	183	230
30	17400	112	6	100	100	20	206	30	153	210.5	208	230
35	28800	133	6	110	110	22.5	226	35	180	250.5	238	270
40	48500	160	6	140	140	27.5	286	38	214	300.5	282	320
45	62000	175	8	150	150	27.5	308	38	233	300.5	302	320
50	86000	195	8	170	170	30	348	40	260	362	330	386
55	110000	210	10	190	190	40	390	40	283	362	354	386

Dimensions

Size	Shiftable linkage Size	Slip ring Size	Dimensions [mm]																	
			a	b	c	d_3	d_4	d_5	e	F	g_1	L_2	L_3	m	m_1	m_2	m_3	m_4	A	B
10	3	3.3	140	60	25	30	13.5	20	40	120	70	490	600	100	310	20	90	44	140	180
15	3	4.4	140	60	25	30	13.5	20	40	120	70	490	600	100	310	20	90	44	170	210
20	4	5.5	160	60	25	35	13.5	30	50	147.5	70	565	750	120	365	30	100	54	200	244
25	5	6.6	160	60	25	40	13.5	30	50	190	80	630	1025	120	410	30	110	62	250	300
30	5	6.6	160	60	25	40	13.5	30	50	190	80	630	1025	120	410	30	110	62	300	350
35	5	7.7	160	60	25	40	13.5	30	50	190	80	630	1085	120	410	30	110	62	300	350
40	6	8.8	160	60	25	40	13.5	30	50	265	80	760	1068	120	540	30	110	62	360	420
45	6	8.8	160	60	25	40	13.5	30	50	265	80	760	1068	120	540	30	110	62	360	420
50	6	9.9	160	60	25	40	13.5	30	50	265	80	760	1068	120	540	30	110	62	420	480
55	6	9.9	160	60	25	40	13.5	30	50	265	80	760	1068	120	540	30	110	62	420	480

1) Maximum torque of the coupling $T_{K\ max}$ = rated torque of the coupling T_{KN} x 2. For selection see page 14 et seqq.

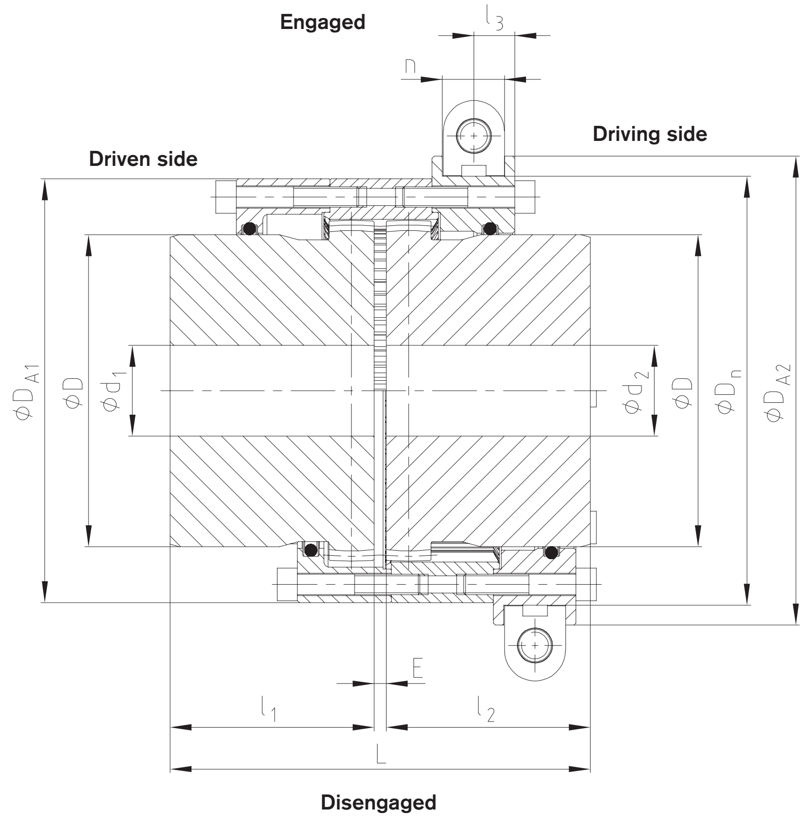
Max. circumferential speed v = 20 m/s, referring to D_n.
Standard GEARex® SD couplings are not designed for continuous operation.
For displacement figures of the couling refer to KTR standard 40311.

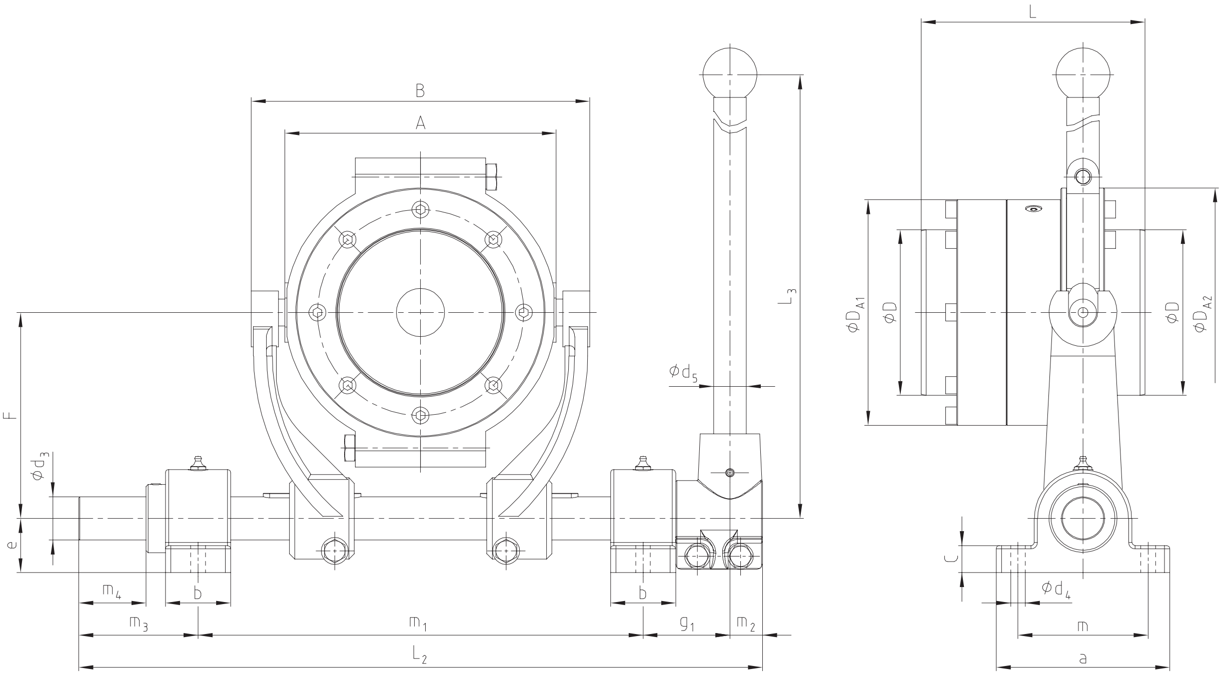
On request:
Other sizes or types for continuous operation available.
Shiftable linkage available with locking pins, locking devices and retrieval of shift position.

Ordering example:

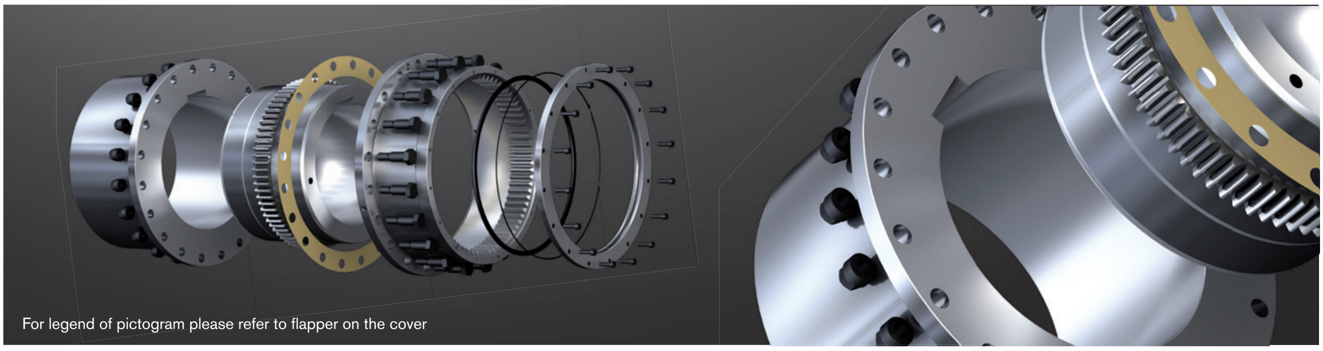
GEARex® 30 SD	d_1 Ø50	d_2 Ø55	6.6	5
Size and type of coupling	Finish bore with keyway to DIN 6885 sheet 1		Slip ring Size	Shiftable linkage Size

Components


Engaged
l3
n
Driving side
Driven side
ØDA1
ØD
Ød1
Ød2
ØD
ØDn
ØDA2
E
l1
l2
L
Disengaged


B
A
F
Ød3
e
m4
b
b
m3
m1
g1
m2
L2
L3
Ød5
L
ØDA1
ØD
ØD
ØDA2
c
Ød4
m
a

Single-cardanic, high power density



For legend of pictogram please refer to flapper on the cover

Dimensions

Size [3]	Torque [Nm] [4]		Max. finish bore		Dimensions [mm]									Dowel screw (10.9)		
	T_{KN}	T_{KN} (42CrMo4)	d_1	d_4	l_1, l_2	Hub lengthened max. l_1, l_2	D	D_{A1} [2]	D_{A2} [2]	D_F	L_R	F [1]	d_3 [1]	z	M	T_A [Nm]
10	🟧 930	1580	50	60	43	105	67	111	83	83	88	74	52	6	M6	15
15	🟧 2000	3300	64	78	50	115	87	142	106	106	103	84	68	8	M8	36
20	🟧 3500	6300	80	95	62	130	108	174	129	129	127	104	85	6	M10	72
25	🟧 6500	11000	98	115	76	150	130	213	157	157	157	123	110	6	M12	125
30	🟧 10000	17400	112	135	90	170	153	240	181	181	185	148	130	8	M12	125
35	🟧 17000	28800	133	155	105	185	180	280	213	213	216	172	150	8	M14	200
40	🟧 28500	48500	158	185	120	215	214	318	249	249	244	192	175	8	M14	200
45	🟧 37000	62000	172	200	135	245	233	347	273	273	276	216	190	10	M14	200
50	🟧 51000	86000	192	225	150	295	260	390	308	308	305	241	220	8	M18	430
55	🟧 65000	110000	210	245	175	300	283	425.5	333	333	356	275	250	14	M18	430
60	🟧 85000	145000	232	265	190	305	312	457	364.5	364.5	386	316	265	14	M18	430
70	🟧 135000	240000	276	310	220	310	371	527	424	424	450	360	300	16	M20	610
80	🟧 175000	300000	300	340	280	-	394	545	475	462	570	340	310	18	M20	610
85	🟧 225000	380000	325	370	292	-	430	585	515	500	597	352	330	20	M20	610
90	-	🟧 500000	350	400	305	-	464	640	560	546	623	365	360	20	M24	1000
100	-	🟧 650000	390	440	330	-	512	690	612	594	673	390	400	24	M24	1000
110	-	🟧 820000	420	480	350	-	560	765	665	647	710	410	420	20	M30	1700
120	-	🟧 1050000	450	520	420	-	608	825	720	700	852	480	470	24	M30	1700
130	-	🟧 1450000	500	560	440	-	684	980	805	760	890	520	520	20	M36	2800
140	-	🟧 1950000	550	610	460	-	750	1055	875	835	930	570	590	24	M36	2800
150	-	🟧 2750000	630	690	520	-	850	1180	975	935	1055	630	670	30	M36	2800

🟧 = Standard

[1] Space required to align the coupling and replace the gasket

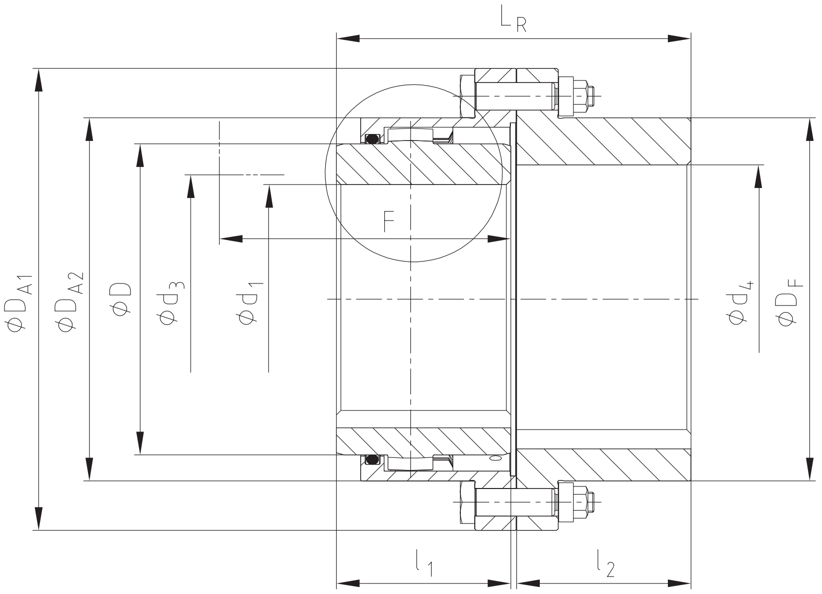
[2] For dimensions of type F see page 108. For type D see page 110.

[3] Size 10 and 15 available as type F only. From size 80 available as type D only.

[4] Maximum torque of the coupling $T_{K\,max}$ = rated torque of the coupling T_{KN} x 2. For selection see page 14 et seqq.

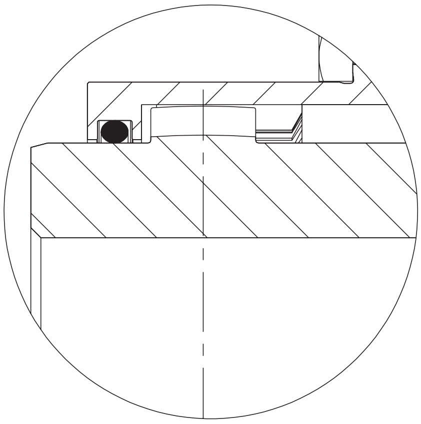
Ordering example:	GEARex® FR 10	d_1 Ø50	d_4 Ø60
	Type and size of coupling	Finish bore with keyway to DIN 6885 sheet 1	Finish bore with keyway to DIN 6885 sheet 1

Components

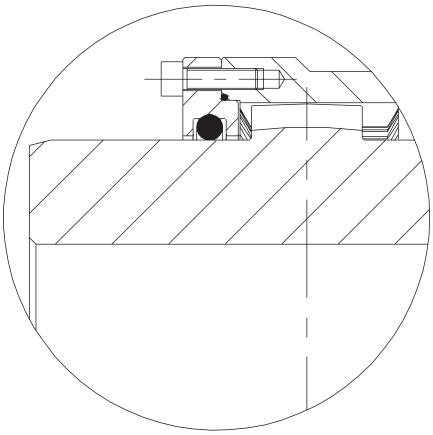


Types

Type FR

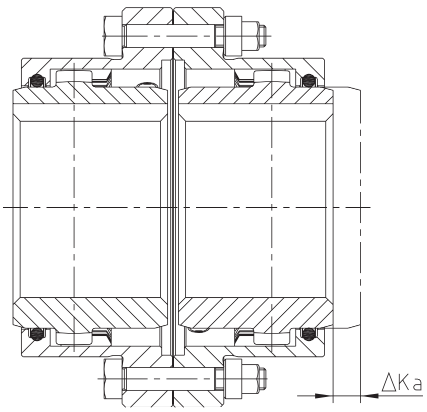


Type DR

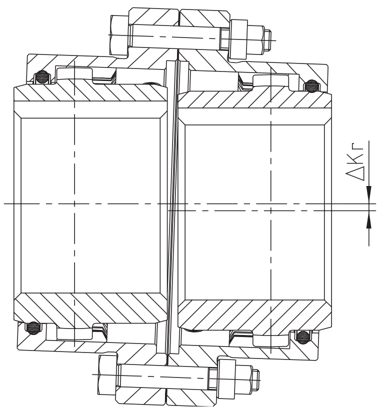


Displacements

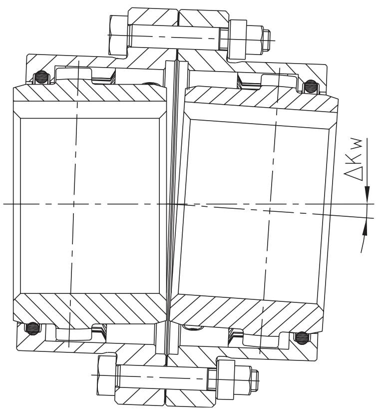
Axial displacement



Radial displacement



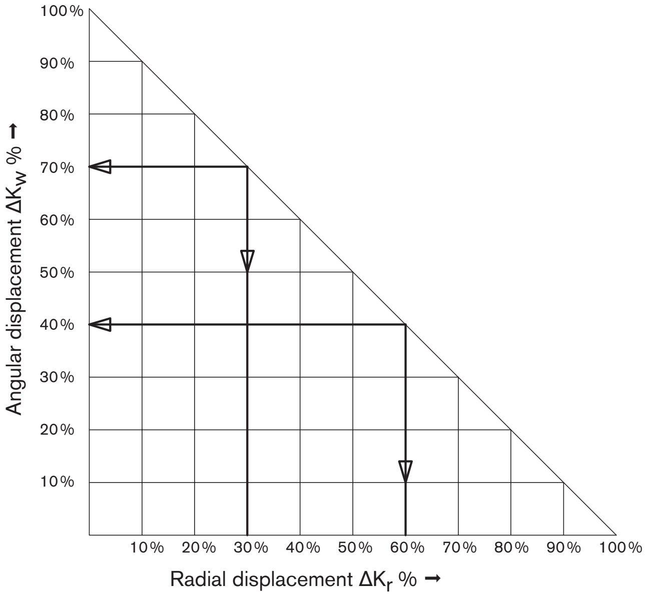
Angular displacement



Displacements			
Size	Max. axial displacement ΔK_a [mm]	Max. permissible displacements [1]	
		ΔK_r [mm]	ΔK_w [°]
10		± 0.4	
15		± 0.5	
20		± 0.6	
25	± 1.0	± 0.8	
30		± 1.0	
35		± 1.0	
40		± 1.2	
45		± 1.4	
50		± 1.6	
55	± 1.5	± 1.8	
60		± 2.0	0.5° each hub
70		± 2.2	
80		± 2.5	
85		± 2.8	
90	± 2.0	± 3.0	
100		± 3.2	
110		± 4.4	
120		± 5.5	
130		± 5.7	
140	± 2.5	± 6.0	
150		± 6.6	

---

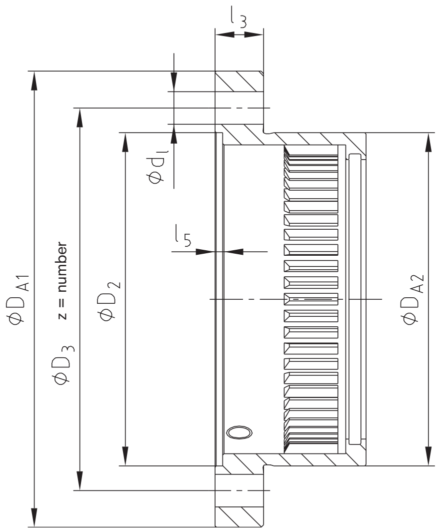
[1] The displacement figures are maximum figures which must not arise in parallel. If radial and angular displacements arise in parallel, the figures need to be reduced (see examples of calculation and diagramme).



Example 1:
$\Delta K_r = 30\,\%$
$\Delta K_w = 70\,\%$

Example 2:
$\Delta K_r = 60\,\%$
$\Delta K_w = 40\,\%$

Flange dimensions in accordance with AGMA 9008-B00

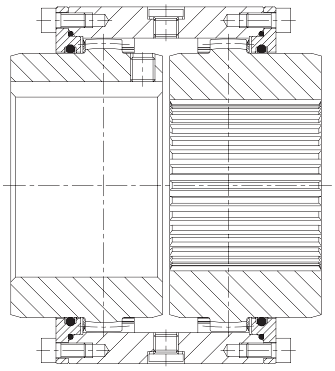


Flange dimensions

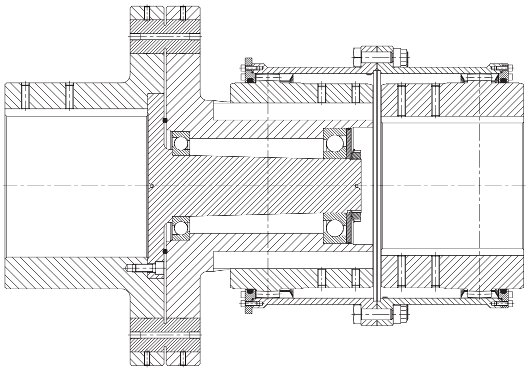
Size	Dimensions [mm]							
	D_{A1}	D_{A2}	D_2	D_3	d_l	z = number	l_3	l_5
10	111	83	82	95.25	6.35	6	14	3
15	142	106	105	122.24	9.52	8	19	3
20	174	129	130	149.23	12.70	6	19	3
25	213	157	153	180.97	15.87	6	22	4
30	240	181	178	206.38	15.87	8	22	4
35	280	213	205	241.30	19.05	8	28.5	5
40	318	249	243	279.40	19.05	8	28.5	4
45	347	273	265	304.80	19.05	10	28.5	5.5
50	390	308	302	342.90	22.22	8	38	6
55	425.5	333	320	368.30	22.22	14	38	6
60	457	364.5	353	400.05	22.22	14	26	6
70	527	424	412	463.55	25.40	16	28.5	8

Other types

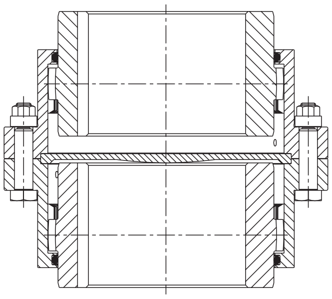
Type I (with one-piece sleeve)



Type BK (with shear pins)



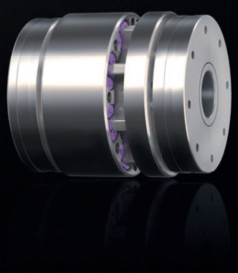
Type VD (for vertical assembly)



Backlash-free servo couplings

ROTEX® GS

ROTEX® GS HP



TOOLFLEX®

RADEX®-NC

COUNTEX®

BACKLASH-FREE SERVO COUPLINGS
TYPES AND OPERATING DESCRIPTION

Properties of backlash-free couplings

				
Product	**ROTEX® GS**	**TOOLFLEX®**	**RADEX®-NC**	**COUNTEX®**
Type	Jaw coupling	Metal bellow-type coupling	Servo laminae coupling	Shaft encoder coupling
Properties				
Backlash-free	●	●	●	●
Torsionally stiff		●	●	●
Damping vibrations	●			
Maintenance-free	●	●	●	●
Axial plug-in	●	Optionally		●
Compensating for misalignment	●	●	●	●
Electrical insulation	●			●
Fail-safe	●			
Shear type		●		
Special features				
Applications	Backlash-free drives			
Core industries	Machine tools, automation technology, drive technology, medical technology, packaging technology	Drive technology, automation technology, medical technology, packaging technology, machine tools	Automation technology, drive technology, packaging technology, machine tools, medical technology	Automation technology, drive technology, medical technology
Applications	Main spindles Control & positioning technology (screw drives with incline s < 40, otherwise review by KTR) Gearboxes (for medium to high transmission i ≥ 7) Measuring and testing technology Miniature drives	Gearboxes (transmissions i < 7) Miniature drives Control & positioning technology (screw drives with incline s ≥ 40)	Gearboxes (transmissions i < 7) Measuring & testing technology Miniature drives Control & positioning technology (screw drives with incline s ≥ 40)	Measuring & control technology Miniature drives
Variation of components	very high	medium	medium	low
Torque range T_{KN} [Nm]				
Min.	0.2	0.1	2.5	0.3
Max.	5,850	600	3200	1.0
Max. circumferential speed v [m/s]				
Steel	depending on hub type up to 40 80 (type P) 175 (type HP)	depending on hub type up to 40	35	–
Aluminium	depending on hub type up to 50		depending on hub type up to 75	40
Torsion spring stiffness C_T [Nm/rad]				
Up to	1,308,850	322,740	1,050,000	235
Radial spring stiffness C_r [N/mm]				
Up to	20,290	1,365		70
Spiders / bellow / laminas / spacer				
Material	Polyurethane, Hytrel	Stainless steel	Stainless steel	PEEK
Elastomer hardness	flexible to torsionally stiff	-	-	Torsionally stiff
Temperature range [°C] min./max.	-50/+120	-30/+100 (bonded) -30/+200 (flanged/welded)	-30/+200	-40/+160
Geometries				
Design	compact	compact, short	compact, short	Short
Mass moment of inertia	low	low	low	low
Shaft distance dimension	medium	medium	medium	low
Shaft-hub-connection				
Positive-locking	●	Optionally	Optionally	Optionally
Non-positive (frictionally engaged)	●	●	●	●

● ≈ Standard

BACKLASH-FREE SERVO COUPLINGS TYPES AND OPERATING DESCRIPTION

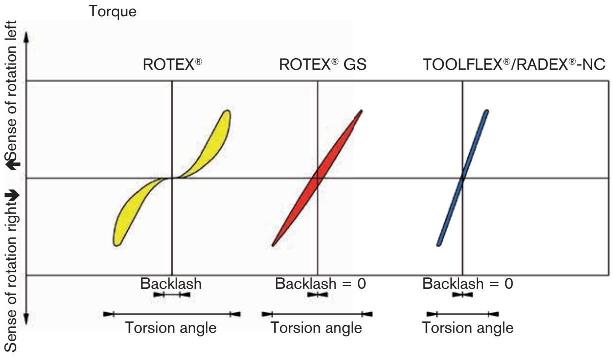
Product finder of backlash-free couplings

				
Product	**ROTEX® GS**	**TOOLFLEX®**	**RADEX®-NC**	**COUNTEX®**
Type	Jaw coupling	Metal bellow-type coupling	Servo laminae coupling	Shaft encoder coupling
Types (extract)				
Elastomers can be radially disassembled » without displacing driving/driven side	A-H	-	-	-
Intermediate shaft types » bridging larger shaft distances	ZR1, ZR2, ZR3	ZR	ZR	-
Shaft-to-shaft connection	Standard	Standard	Standard	Standard
Flange-to-shaft connection	CFN, DFN, CF-DKM	CF	-	-
Flange-to-flange connection » particularly short mounting length	Optionally	Optionally	-	-
Single-cardanic	Standard	-	EK	-
Double-cardanic » compensating for big displacements » lower restoring forces	DKM	Standard	DK	Standard
Certifications				
ATEX Ex	●		●	●

● ≈ Standard

Torsion angle

The diagramme alongside this text explains the impact of ROTEX®, ROTEX® GS, RADEX®-NC and TOOLFLEX® couplings on backlash and torsion angle. Due to the high torsion spring stiffness of RADEX®-NC and TOOLFLEX® the torsion angle is very low under torque. However, contrary to the flexible ROTEX® and the backlash-free ROTEX® GS damping of torsional vibrations etc. is not possible.



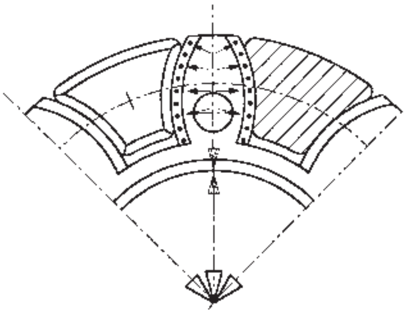
ROTEX® GS
Backlash-free jaw couplings

Technical description

ROTEX® GS is a three-part, axial plug-in coupling backlash-free under prestress. It impresses even with critical applications by its backlash-free power transmission, its stiffness which is each adapted to the application and its optimum damping of vibrations. Using this principle provides for particularly assembly-friendly options optimizing the assembly times in production.

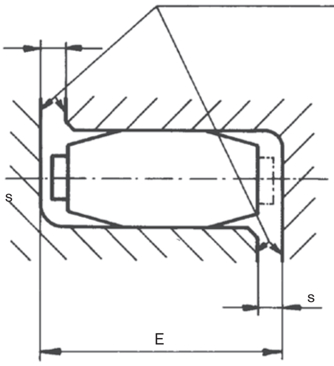
The straight spline of the spider mounted under prestress results in a lower surface pressure and consequently higher stiffness of the coupling system. The flexible teeth compensating for misalignment are radially supported in the internal diameter by a web. This avoids too high internal or external deformation with high acceleration or high speeds. This is vital for a smooth operation and long service life of the coupling.
The pegs on the spider arranged reciprocally prevent contact of the spider on the hubs over the full surface. Observing the distance dimension E ensures the coupling's ability to compensate for displacements.
Observing the gap dimension „s"ensures electrical insulation as well as a long service life of the coupling. This is gaining more and more importance, due to the increasing precision of shaft encoders and the existing demand for electromagnetic compatibility (EMC).

Limitation by concave cams with high speeds/
centrifugal forces and prestress of elastomer parts



Support to the axis of rotation

Electrical insulation due to gap dimension „s"



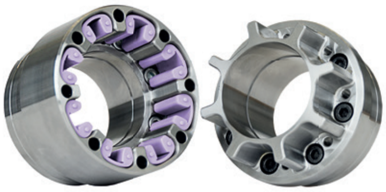
Advice

- Feather keyways available from a bore ≥Ø6. Feather keyways according to DIN 6885 sheet 1, tolerance JS9.
- Finish bore tolerance H7 (except for clamping hubs), from Ø55 G7 with clamping ring hubs
- Finish bore tolerance H6 for ROTEX® GS P and ROTEX® GS HP
- Recommended insertion dimension of shafts in the coupling hubs: l_1/l_2; for clamping ring hubs the minimum insertion dimension l_3 applies
- Spider with bore available on request. Please specify in the order as shown in the example on page 134.

Use in potentially explosive atmospheres

ROTEX® GS couplings are suitable for power transmission in drives in potentially explosive atmospheres. The couplings are assessed and approved as units of category 2G/2D according to EU directive 2014/34/EU and thus suitable for the use in potentially explosive atmospheres of zone 1, 2, 21 and 22. Please read through our information included in the respective type examination certificate and the operating and assembly instructions at www.ktr.com.
Selection: If used in potentially explosive atmospheres the clamping ring hubs (clamping hubs without feather keyway only for use in category 3) must be selected in that there is a minimum safety factor of s = 2 between the peak torque of the machine including all operating parameters and the nominal torque and frictional locking torque of the coupling.

Technical description



ROTEX® GS HP is a backlash-free, axial plug-in, flexible jaw coupling developed for high-speed drives.

In contrast to the ROTEX® GS coupling this type has individual elastomers instead of a connected spider.
This allows to design the hubs as a completely enclosed shape so that both the cam section and the pocket part feature higher stiffness against loads in the direction of rotation (torque shocks), but also in tangential direction (centrifugal force). The elastomers are embedded in the pocket part in a way that the high loads resulting from centrifugal forces do not have any negative influence on them and consequently on the overall drive system.

Instead of torques with circumferential speeds of a maximum of 100 m/s for ROTEX® GS P couplings, circumferential speeds up to 175 m/s can be reached with the new ROTEX® GS HP system.

Spiders

The flexible spiders for the GS series are available in five different kinds of Shore hardness, injected in different colours, either as a torsionally soft or hard material. These five spiders with different kinds of Shore hardness allow to easily adjust the ROTEX® GS to the individual conditions of an application considering the torsional spring stiffness and the vibration characteristics. The flexible prestress varies depending on the coupling size, the spiders/materials and the production tolerances. Resulting from it is the axial plug-in force starting from low as a close sliding fit resp. with torsionally soft spider to heavy with big prestress resp. torsionally rigid spider (see operating/assembly instruction KTR-N 45510 at www.ktr.com).

Along with an increasing hardness of the spider the torques to be transmitted and the stiffness of the spider increase, too. Along with reduced hardness of the spider the ability of compensating for displacements and damping the spider is increased.

Properties of ROTEX® GS spiders

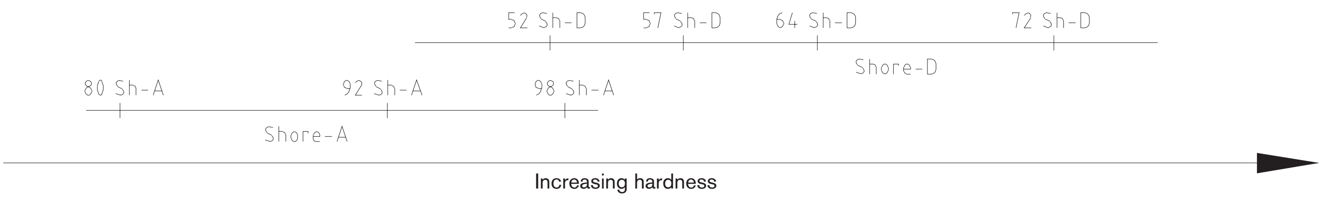
Description of spider hardness [Shore]	Marking of colour	Material	Perm. temperature range [°C]		Available for coupling size	Typical applications
			Permanent temperature [1]	Max. temperature (short-time) [1]		
80 ShA-GS		Polyurethane	-50 to +80	-60 to +120	Size 5 to 19	– drives of electric measuring systems
92 ShA-GS		Polyurethane	-40 to +90	-50 to +120	Size 5 to 38	– drives of electric measuring and control systems – main spindle drives
98 ShA-GS		Polyurethane	-30 to +90	-40 to +120	Size 5 to 90	– positioning drives – main spindle drives – high load
52 ShD-S-GS [2]	 NEW	Polyurethane	-40 to +120	-50 to +150	Size 24 to 42	– positioning drives – backlash-free gears – main spindle drives – high load with increased temperature
57 ShD-GS	 NEW	Polyurethane	-30 to +90	-40 to +120	Size 19 to 48	– positioning drives – main spindle drives – high load
64 ShD-H-GS 64 ShD-GS		Hytrel	-50 to +120	-60 to +150	Size 7 to 38	– planetary gears/backlash-free gears – higher torsion spring stiffness
		Polyurethane	-20 to +110	-30 to +120	Size 42 to 90	– higher load – higher torsion spring stiffness
72 ShD-H-GS 72 ShD-GS		Hytrel	-50 to +120	-60 to +150	Size 24 to 38	– very high torsion spring stiffness – very high load
		Polyurethane	-20 to +110	-30 to +120	Size 42 to 90	– very high torsion spring stiffness – very high load

Properties of ROTEX® GS HP tooth elements

Description of spider hardness [Shore]	Marking of colour	Material	Perm. temperature range [°C]		Available for coupling size	Typical applications
			Permanent temperature	Max. temperature (short-time)		
98 ShA-GS 52 ShD-GS		Polyurethane	-30 to +90	-40 to +120	Size 24 to 65 (for ROTEX® GS HP only)	– HSC main spindle drives – test benches with severely high speeds
64 ShD-GS	 NEW	Polyurethane	-30 to +90	-40 to +120	Size 24 to 65 (for ROTEX® GS HP only)	– HSC main spindle drives – test benches with severely high speeds – higher load – higher torsion spring stiffness

[1] The temperature factors specified on page 23 must be considered.
[2] Torques and displacements same as with 98 ShA-GS spider

Degree of hardness



Increasing hardness

Spider material	Polyurethane					Hytrel
Degree of hardness	**92 Shore A**	**98 Shore A**	**52 Shore D**	**57 Shore D**	**64 Shore D**	**64 Shore D**
Relative damping ψ [-] [1]	0.80	0.80	0.75	0.75	0.75	0.60
Resonance factor V_R [-] [1]	7.90	7.90	8.50	8.50	8.50	10.5

[1] Special figures apply for ROTEX® GS HP, please contact us.

ROTEX® GS
Backlash-free jaw couplings

Technical data

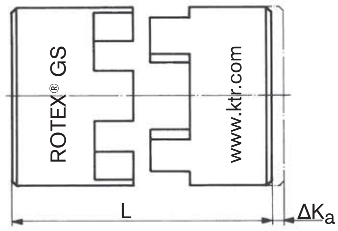
Size	Spider GS Shore hardness	Shore scale	Max. speed [rpm] for type						Torque [Nm]		Static torsion spring stiffness [1] [Nm/rad]	Dynamic torsion spring stiffness [1] [Nm/rad]	Radial spring stiffness C_r [N/mm]	Weight [kg]		Mass moment of inertia J [kgm²]	
			2.0/2.1 2.5/2.6	2.8 2.9	1.0 1.1	6.0 light [2]	6.0 P [2]	DKM	T_{KN}	$T_{K\ max}$				Per hub [5]	Spider	Per hub [5]	Spider
5	80	A	38000	38000	47700			57300	0.3	0.6	3.15	10	82	0.001	0.2 x 10^{-3}	0.015 x 10^{-6}	0.002 x 10^{-6}
	92	A							0.5	1.0	5.16	16	154				
	98	A							0.9	1.7	8.3	25	296				
7	80	A	27000	27000	34100			40900	0.7	1.4	8.6	26	114	0.003	0.7 x 10^{-3}	0.085 x 10^{-6}	0.01 x 10^{-6}
	92	A							1.2	2.4	14.3	43	219				
	98	A							2.0	4.0	22.9	69	421				
	64	D							2.4	4.8	34.3	103	630				
8	80	A		23800					0.7	1.4	8.8	27	117	0.003	0.5 x 10^{-3}	0.117 x 10^{-6}	0.0124 x 10^{-6}
	98	A							2.0	4.0	23.5	71	433				
	64	D							2.4	4.8	35.3	106	648				
9	80	A	19000	19000	23800			28600	1.8	3.6	17.2	52	125	0.01	1.7 x 10^{-3}	0.48 x 10^{-6}	0.085 x 10^{-6}
	92	A							3.0	6.0	31.5	95	262				
	98	A							5.0	10.0	51.6	155	518				
	64	D							6.0	12.0	74.6	224	739				
12	80	A	15200	15200	19100			22900	3.0	6.0	84.3	252	274	0.02	2.3 x 10^{-3}	1.5 x 10^{-6}	0.139 x 10^{-6}
	92	A							5.0	10.0	160.4	482	470				
	98	A							9.0	18.0	240.7	718	846				
	64	D							12.0	24.0	327.9	982	1198				
13	80	A		12700		38200			3.6	7.2	111	330	359	0.01	2.0 x 10^{-3}	1.1 x 10^{-6}	0.155 x 10^{-6}
	98	A							11.0	22.0	316	941	1109				
	64	D							14.5	29.0	430	1287	1570				
14	80	A	12700	12700	15900	32000	47700	19100	4.0	8.0	60.2	180	153	0.02	4.7 x 10^{-3}	2.8 x 10^{-6}	0.509 x 10^{-6}
	92	A							7.5	15.0	114.6	344	336				
	98	A							12.5	25.0	171.9	513	654				
	64	D							16.0	32.0	234.2	702	856				
16	80	A		12000					5.0	10.0	157	471	400	0.02	3.6 x 10^{-3}	2.8 x 10^{-6}	0.435 x 10^{-6}
	98	A							15.0	30.0	450	1341	1710				
	64	D							19.0	38.0	612	1835	2238				
19	80	A	9550	9550	11900	24000 19000[4]	35800	14300	6.0	12.0	618	1065	582	0.09	7.6 x 10^{-3}	19.5 x 10^{-6}	1.35 x 10^{-6}
	92	A							12.0	24.0	1090	1815	1120				
	98	A							21.0	42.0	1512	2540	2010				
	57	D							23.0	46.0	2036	3175	2470				
	64	D							26.0	52.0	2560	3810	2930				
24	92	A	6950	10400	8650	17000 14000[4]	26000	10400	35	70	2280	4010	1480	0.2	0.02	81.9 x 10^{-6}	6.7 x 10^{-6}
	98	A							60	120	3640	5980	2560				
	52	D							60	120	3640	5980	2560				
	57	D							68	136	4335	8438	3128				
	64	D							75	150	5030	10896	3696				
	72[3]	D							97	194	9944	17095	5799				
28	92	A	5850	8800	7350	15000 12000[4]	22000	8800	95	190	4080	6745	1780	0.3	0.03	184.2 x 10^{-6}	14.85 x 10^{-6}
	98	A							160	320	6410	9920	3200				
	52	D							160	320	6410	9920	3200				
	57	D							180	360	8335	15050	3775				
	64	D							200	400	10260	20177	4348				
	72[3]	D							260	520	21526	36547	7876				
38	92	A	4750	7150	5950	12000 9600[4]	17900	7150	190	380	6525	11050	2350	0.6	0.05	542.7 x 10^{-6}	39.4 x 10^{-6}
	98	A							325	650	11800	17160	4400				
	52	D							325	650	11800	17160	4400				
	57	D							365	730	19050	28745	5437				
	64	D							405	810	26300	40335	6474				
	72[3]	D							525	1050	44584	71180	11425				
42	98	A	4000		5000	10000 8050[4]	15000	6000	450	900	21594	37692	5570	2.4	0.08	2802 x 10^{-6}	85 x 10^{-6}
	52	D							450	900	21594	37692	5570				
	57	D							495	990	29225	53760	6420				
	64	D							560	1120	36860	69825	7270				
	72[3]	D							728	1456	58600	93800	9766				
48	98	A	3600		4550	9100 7200[4]	13600	5450	525	1050	25759	45620	5930	3.3	0.09	4709 x 10^{-6}	135 x 10^{-6}
	57	D							590	1180	41695	72685	7102				
	64	D							655	1310	57630	99750	8274				
	72[3]	D							852	1704	80000	136948	11359				
55	98	A	3150		3950	6350[4]	11900	4750	685	1370	42117	61550	6686	5.1	0.12	9460 x 10^{-6}	229 x 10^{-6}
	64	D							825	1650	105730	130200	9248				
	72[3]	D							1072	2144	150000	209530	12762				
65	98	A	2800		3500	5650[4]	11000		940	1880	48520	71660	6418	6.7	0.2	15143 x 10^{-6}	437 x 10^{-6}
	64	D							1175	2350	118510	189189	8870				
	72[3]	D							1527	3054	160000	310000	11826				
75	98	A	2350		2950	4750[4]	8950		1920	3840	79150	150450	8650	10.5	0.3	32750 x 10^{-6}	1179 x 10^{-6}
	64	D							2400	4800	182320	316377	11923				
	72[3]	D							3120	6240	360540	586429	16454				
90	98	A	1900		2380	3800[4]	7150		3600	7200	204500	302900	10700	18.2	0.6	87099 x 10^{-6}	3362 x 10^{-6}
	64	D							4500	9000	429450	908700	14700				
	72[3]	D							5850	11700	847440	1308852	20290				

[1] Static and dynamic torsion spring stiffness with 0.5 x T_{KN}
[2] For higher speeds see ROTEX® GS HP
[3] When using the spider 72 ShD, we recommend to use hubs made of steel
[4] Clamping ring hubs 6.0 made of steel
[5] Hubs with an average bore type 1.0

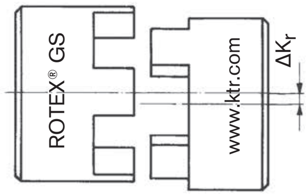
The coupling has to be dimensioned in that the permissible coupling load is not exceeded during any operating condition (see coupling selection on page 22 et seqq.).
The specified torques $T_{KN}/T_{K\ max}$ refer to the spider. The shaft-hub-connection needs to be verified by the customer.

Notes for displacements

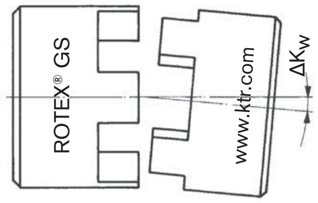
Axial displacement



Radial displacement



Angular displacement



Due to its design the ROTEX® GS is able to absorb axial, angular and radial displacement, without causing any wear or premature failure of the coupling. As the spider is only stressed under pressure it is ensured that the coupling remains backlash-free even after a longer operation period.

For instance, axial displacement may be generated by different tolerances of the connecting elements with assembly or by alteration of the shaft lengths if temperature fluctuations occur. As the shaft bearings usually cannot be axially stressed to a big extent, it is the task of the coupling to compensate for this axial displacement and keep the reaction forces low.

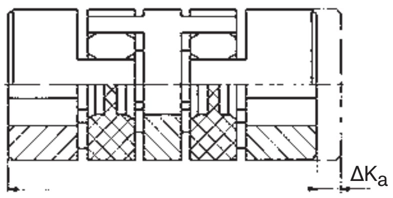
In case of pure angular displacement the imaginary bisecting lines of the shafts intersect in the centre of the coupling. Within a permissible range this displacement can be absorbed by the coupling without extensive restoring forces being generated.

Radial displacement results from parallel displacement of the shafts to one another, caused by different tolerances on the centerings or by mounting the power packs on different levels. Due to the kind of displacement the largest restoring forces are generated here, consequently causing the highest stresses on adjacent components.

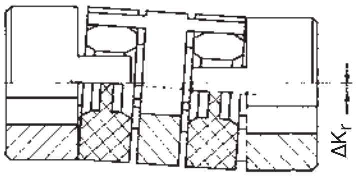
In case of larger displacements (especially radial displacements) the ROTEX® GS type DKM double-cardanic system should be used in order to avoid excessive restoring forces.

The permissible displacement figures of the flexible ROTEX® GS couplings specified are general standard values taking into account the load of the coupling up to the rated torque TKN of the coupling and an ambient temperature of +30 °C. The displacement figures may only be used one by one, if they appear simultaneously, they must be limited in proportion. The ROTEX® GS couplings are able to absorb axial, radial and angular displacements. Careful and accurate alignment of the shafts increases the service life of the coupling.

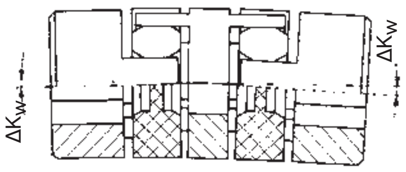
Axial displacement



Radial displacement



Angular displacement



Shaft misalignment of ROTEX® GS type DKM

This design reduces the restoring forces arising with radial displacement to a minimum, due to the double-jointed operation, additionally the coupling is able to compensate for higher axial and angular misalignment.

Displacements

Displacements							
Size	Spider GS	Standard displacements			DKM displacements		
		Axial ΔK_a 1) [mm]	Radial ΔK_r [mm]	Angular ΔK_w [degree]	Axial ΔK_a 1) [mm]	Radial ΔK_r [mm]	Angular ΔK_w [degree]
5	80 ShA	-0.2	0.12	1.1°	-0.4	0.15	1.1°
	92 ShA		0.06	1.0°		0.14	1.0°
	98 ShA		0.04	0.9°		0.13	0.9°
7	80 ShA	+0.6 -0.3	0.15	1.1°	+0.6 -0.6	0.23	1.1°
	92 ShA		0.10	1.0°		0.21	1.0°
	98 ShA		0.06	0.9°		0.19	0.9°
	64 ShD		0.04	0.8°		0.17	0.8°
8	80 ShA	+0.6 -0.5	0.15	1.1°	—	—	—
	98 ShA		0.08	0.9°			
	64 ShD		0.06	0.8°			
9	80 ShA	+0.8 -0.4	0.19	1.1°	+0.8 -0.8	0.29	1.1°
	92 ShA		0.13	1.0°		0.26	1.0°
	98 ShA		0.08	0.9°		0.24	0.9°
	64 ShD		0.05	0.8°		0.21	0.8°
12	80 ShA	+0.9 -0.4	0.20	1.1°	+0.9 -0.9	0.35	1.1°
	92 ShA		0.14	1.0°		0.32	1.0°
	98 ShA		0.08	0.9°		0.29	0.9°
	64 ShD		0.05	0.8°		0.25	0.8°
13	80 ShA	+0.9 -0.8	0.20	1.1°	—	—	—
	98 ShA		0.08	0.9°			
	64 ShD		0.05	0.8°			
14	80 ShA	+1.0 -0.5	0.21	1.1°	+1.0 -1.0	0.40	1.1°
	92 ShA		0.15	1.0°		0.37	1.0°
	98 ShA		0.09	0.9°		0.33	0.9°
	64 ShD		0.06	0.8°		0.29	0.8°
16	80 ShA	+1.0 -0.8	0.21	1.1°	—	—	—
	98 ShA		0.10	0.9°			
	64 ShD		0.08	0.8°			
19	80 ShA	+1.2 -0.5	0.15	1.1°	+1.2 -1.0	0.49	1.1°
	92 ShA		0.10	1.0°		0.45	1.0°
	98 ShA		0.06	0.9°		0.41	0.9°
	57 ShD		0.05	0.85°		0.38	0.85°
	64 ShD		0.04	0.8°		0.36	0.8°
24	92 ShA	+1.4 -0.5	0.14	1.0°	+1.4 -1.0	0.59	1.0°
	98 ShA		0.10	0.9°		0.53	0.9°
	57 ShD		0.08	0.85		0.50	0.85
	64 ShD		0.07	0.8°		0.47	0.8°
	72 ShD		0.04	0.7°		0.42	0.7°
28	92 ShA	+1.5 -0.7	0.15	1.0°	+1.5 -1.4	0.66	1.0°
	98 ShA		0.11	0.9°		0.60	0.9°
	57 ShD		0.09	0.85		0.56	0.85
	64 ShD		0.08	0.8°		0.53	0.8°
	72 ShD		0.05	0.7°		0.46	0.7°
38	92 ShA	+1.8 -0.7	0.17	1.0°	+1.8 -1.4	0.77	1.0°
	98 ShA		0.12	0.9°		0.69	0.9°
	57 ShD		0.10	0.85		0.65	0.85
	64 ShD		0.09	0.8°		0.61	0.8°
	72 ShD		0.06	0.7°		0.54	0.7°
42	98 ShA	+2,0 -1,0	0,14	0,9°	+2,0 -2,0	0,75	0,9°
	57 ShD		0,12	0,85		0,71	0,85
	64 ShD		0,10	0,8°		0,67	0,8°
	72 ShD		0,07	0,7°		0,59	0,7°
48	98 ShA	+2,1 -1,0	0,16	0,9°	+2,1 -2,0	0,82	0,9°
	57 ShD		0,13	0,85		0,77	0,85
	64 ShD		0,11	0,8°		0,73	0,8°
	72 ShD		0,08	0,7°		0,64	0,7°
55	98 ShA	+2,2 -1,0	0,17	0,9°	+2,2 -2,0	0,91	0,9°
	64 ShD		0,12	0,8°		0,81	0,8°
	72 ShD		0,09	0,7°		0,71	0,7°
65	98 ShA	+2.6 -1.0	0.18	0.9°	—	—	—
	64 ShD		0.13	0.8°			
	72 ShD		0.10	0.7°			
75	98 ShA	+3.0 -1.5	0.21	0.9°	—	—	—
	64 ShD		0.15	0.8°			
	72 ShD		0.11	0.7°			
90	98 ShA	+3.4 -1.5	0.23	0.9°	—	—	—
	64 ShD		0.17	0.8°			
	72 ShD		0.13	0.7°			

1) The Ka figures specified have to be added to the length of the respective coupling type.

The displacement figures may only be used one by one, if they appear simultaneously, they must be limited in proportion. Care should be taken to maintain the distance dimension E accurately in order to allow for axial clearance of the coupling while in operation. Detailed mounting instructions are shown on our homepage www.ktr.com.

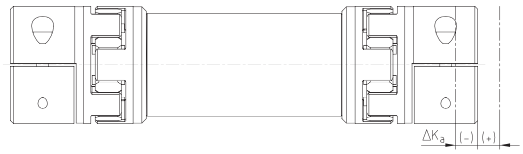
For technical data of type HP see page 142.

Displacements of intermediate shaft coupling

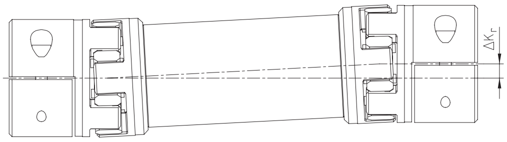
Displacements of intermediate shaft couplings			
ROTEX® GS size (with 98 ShA-GS)	Axial ΔK_a [mm]	Radial ΔKr [1] [mm]	Angular ΔK_W [degree]
14	+1.0	15	0.9°
	-1.0		
19	+1.2	14	0.9°
	-1.0		
24	+1.4	14	0.9°
	-1.0		
28	+1.5	14	0.9°
	-1.4		
38	+1.8	14	0.9°
	-1.4		
42	+2.0	14	0.9°
	-2.0		
48	+2.1	13	0.9°
	-2.0		
55	+2.2	13	0.9°
	-2.0		
65	+2.6	13	0.9°
	-2.0		

[1] Radial displacements based on a coupling length L_{ZR} = 1000 mm

Axial displacement

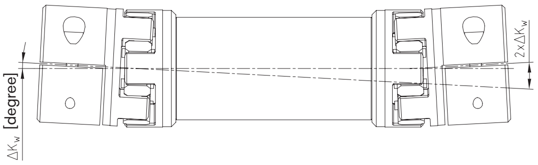


Radial displacement



$$\Delta Kr = (L_{ZR} - 2 \bullet l_1 - E) \cdot \tan \Delta Kw$$

Angular displacement



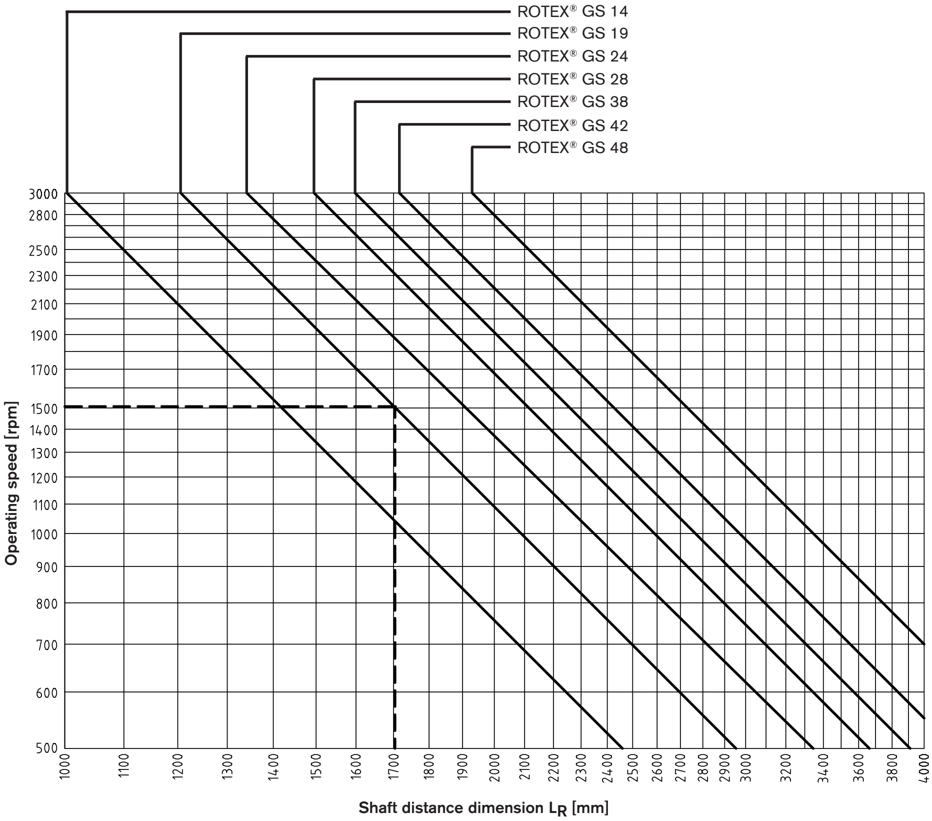
Calculation of overall torsion spring stiffness:

$$C_{tot.} = \frac{1}{2 \bullet \frac{1}{C_1} + \frac{L_{pipe}}{C_2}} \quad \text{[Nm/rad]}$$

$$\text{with } L_{pipe} = \frac{L_{ZR} - 2 \bullet L}{1000 \text{ [m]}}$$

C_1 = torsion spring stiffness for spider see page 128
C_2 = from table on page 150 - 152

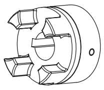
Chart of critical bending speeds for type ZR3



Example:
ROTEX® GS 19
Operating speed: 1500 rpm
Max. perm. shaft distance dimension: 1700 mm
Operating speed = $n_{crit}/1.4$

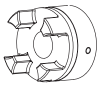
Types of hubs

Due to the numerous applications of ROTEX® GS for many different mounting situations, this coupling system is available with various hub types. The different hub types can be randomly combined within one size.



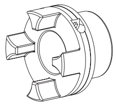
Type 1.0
with feather keyway and setscrew

Positive-locking power transmission, permissible torque depending on the permissible surface pressure. Not suitable for backlash-free power transmission with heavily reversing operation.



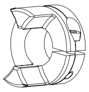
Type 1.1
without feather keyway, with setscrew

Non-positive torque transmission. Suitable for backlash-free transmission of very low torques.
(For ATEX category 3 only)



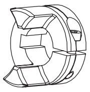
Type 1.5
with hydraulic clamping system

Integrated frictionally engaged shaft-hub-connection for transmitting high torques with easy assembly by means of a screw.



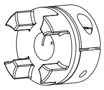
Type 2.0 clamping hub
single slot without feather keyway

Frictionally engaged, backlash-free shaft-hub-connection. Transmittable torques depending on bore diameter. Type 2.0 up to size 14 as standard.
(For ATEX category 3 only)



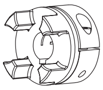
Type 2.1 clamping hub
single slot with feather keyway

Positive-locking power transmission with additional friction fit. The friction fit avoids resp. reduces reverse backlash. Surface pressure of the keyway connection is reduced. Type 2.1 up to size 14 as standard.



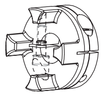
Type 2.5 clamping hub
double slotted, without feather keyway

Frictionally engaged, backlash-free shaft-hub-connection. Transmittable torques depending on bore diameter. Type 2.5 from size 19 as standard.
(For ATEX category 3 only)



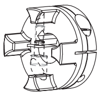
Type 2.6 clamping hub
double slotted, with feather keyway

Positive-locking power transmission with additional friction fit. The friction fit avoids resp. reduces reverse backlash. Surface pressure of the keyway connection is reduced. Type 2.6 from size 19 as standard.



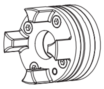
Type 2.8 compact type clamping hub C
with axial slot, without feather keyway

Frictionally engaged, backlash-free shaft-hub-connection, good properties of concentric running. Transmittable torques depending on bore diameter. Type 2.8 from size 24 as standard; size 7 - 19 type 2.8 single slotted.
(For ATEX category 3 only)



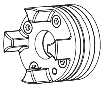
Type 2.9 compact type clamping hub C
with axial slot, with feather keyway

Positive-locking power transmission with additional friction fit. Surface pressure of the keyway connection is reduced. Type 2.9 from size 24 as standard;
size 7 - 19 type 2.9 single slotted.



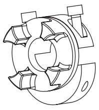
Type 6.0 clamping ring hub

Integrated frictionally engaged shaft-hub-connection for the transmission of higher torques. Screwing on elastomer side. For details about torque and dimensions see page 138/139 and HP page 142. Suitable for high speeds.



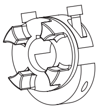
Type 6.0 precision clamping ring hub

Operating principle equal to type 6.0, but highly accurate machining with slight modifications of design. See page 140/141.



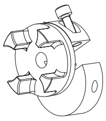
Type 7.5 clamping hub type DH
without feather keyway for double-cardanic connections

Frictionally engaged, backlash-free shaft-hub-connection for radial assembly of coupling. Transmittable torques depending on bore diameter. For torques see page 150.

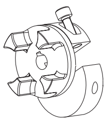


Type 7.6 clamping hub type DH
with feather keyway for double-cardanic connections

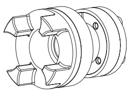
Positive shaft-hub-connection with additional friction fit for radial assembly of coupling. The friction fit avoids resp. reduces reverse backlash. Surface pressure of the keyway connection is reduced.



Type 7.8 clamping hub type H
without feather keyway for single-cardanic connection

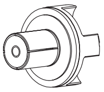


Type 7.9 clamping hub type H
with feather keyway for single-cardanic connection



Type 4.2 with CLAMPEX KTR 250

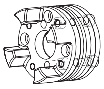
Frictionally engaged shaft-hub-connection to transmit high torques with clamping screws externally.



Type 9.0 expansion hub

Frictionally engaged connection for hollow shaft. Transmittable torques depend on bore diameter and hollow shaft.

Special designs on request of customers



Type 6.5 clamping ring hub

Design equal to 6.0, but only clamping screws externally. For instance for radial disassembly of intermediate pipe (special design).

ROTEX® GS
Backlash-free jaw couplings

Stock programme

Size	Hub type	un/pilot bored	Finish bore [mm] according to ISO fit H7 / feather keyway with thread according to DIN 6885 sheet 1 - JS9																													
			Ø2	Ø3	Ø4	Ø5	Ø6	Ø6.35	Ø7	Ø8	Ø9	Ø9.5	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45
7	1.1	●			●	●	●																									
	2.0	●		●	●	●	●	●	●																							
	2.8	●																														
8	2.8	●		●	●	●	●		●	●																						
9	1.0	●					●			●	●		●																			
	1.1	●			●	●	●		●	●			●																			
	2.0	●		●	●	●	●	●	●	●	●	●	●	●																		
	2.1	●					●			●	●		●	●																		
	2.8	●				●	●			●	●																					
12	1.0	●													●																	
	1.1	●																														
	2.0	●			●	●	●	●		●	●		●	●	●																	
	2.1	●											●		●																	
	2.8	●																														
13	2.8	●					●			●			●	●	●																	
14	1.0	●					●			●	●		●	●	●	●	●	●														
	1.1	●					●			●			●	●	●	●																
	2.0	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●														
	2.1	●								●	●		●	●	●	●	●	●														
	2.8	●								●	●		●	●	●	●		●														
	6.0 light						●			●	●		●	●	●	●																
	6.0 P															●																
16	2.8	●								●	●		●		●	●		●														
19	1.0	●											●	●	●	●	●	●	●	●	●	●	●									
	2.5	●				■				●		●	●	●	●	●	●	●	●	●	●	●1)	●1)									
	2.6	●								●			●	●	●	●	●	●	●	●	●		●1)									
	2.8	●								●	●		●	●	●	●	●	●	●	●	●		●									
	6.0 light												●	●	●	●	●	●	●	●	●											
	6.0 steel															●		●		●	●											
	6.0 P37.5																	●														
	6.0 P																			●												
24	1.0	●													●	●	●	●	●	●	●	●	●	●	●							
	2.5	●								■					●	●	●	●	●	●	●	●	●	●	●							
	2.6	●													●	●		●	●	●	●	●	●	●	●							
	2.8															●	●	●		●	●		●	●	●	●						
	6.0 light													●		●	●	●	●	●	●	●	●	●	●							
	6.0 steel																					●	●	●	●							
	6.0 P 50																						●									
	6.0 P																							●								
28	1.0	●																		●	●	●	●	●	●	●	●	●				
	2.5	●											■						●	●	●	●	●	●	●	●	●	●	●			
	2.6	●																●			●	●	●	●	●	●	●	●	●			
	2.8																			●		●	●	●	●	●		●				
	6.0 light																		●	●	●	●	●	●	●	●	●	●	●			
	6.0 steel																					●	●	●	●	●	●	●	●			
	6.0 P																					●					●	●	●			
38	1.0	●																			●			●	●	●	●	●	●	●	●	
	2.5	●												■										●			●	●	●	●		
	2.6	●																			●			●	●	●	●	●	●	●		
	2.8																				●			●	●		●	●		●		
	6.0 light																				●	●	●	●	●	●	●	●	●	●	●	●
	6.0 steel																							●	●	●	●	●	●	●		●
	6.0 P																										●	●	●	●		

Taper bores for Fanuc motors:
GS 19 1:10 Ø11
GS 24 1:10 Ø16
1) Type 2.0/2.1

Size	Hub type	Finish bores [mm]														
		Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55	Ø60	Ø65	Ø70	Ø80
42	6.0 light	●		●	●	●		●	●		●					
	6.0 steel	●	●	●	●	●	●	●	●	●	●					
48	6.0 light			●			●		●	●		●				
	6.0 steel			●	●	●	●	●	●	●	●	●				
55	6.0 steel					●	●	●	●	●	●	●	●			
65	6.0 steel						●	●	●	●	●	●	●	●	●	
75	6.0 steel										●	●	●	●	●	●
90	6.0 steel	Bores on request														

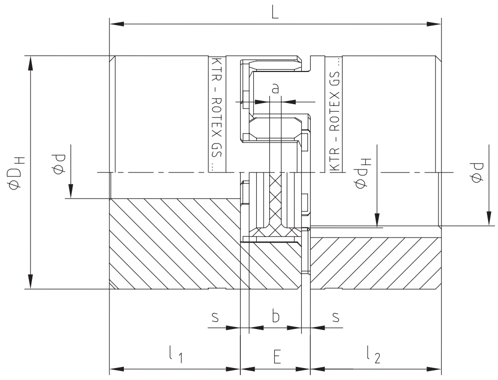
■ = Pilot bored clamping hubs
● = Standard bore from stock
Unbored hubs up to size 65 available from stock
Other dimensions on request

ROTEX® GS
Backlash-free jaw couplings

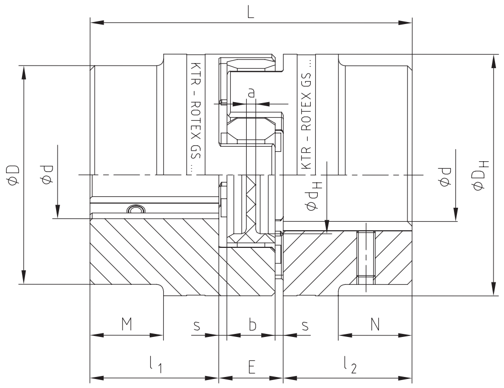
Standard types

For legend of pictogram refer to flapper on the cover

ROTEX® GS 5 - 38

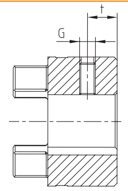


ROTEX® GS 42 - 90



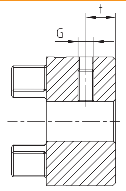
Types of hubs:

Type 1.0



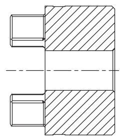
with feather keyway
and setscrew

Type 1.1



without feather keyway,
with setscrew

Type 1.2



without feather keyway
and without setscrew

ROTEX® GS standard types - For size 5 to 38 hub material aluminium/for size 42 to 90 hub material steel

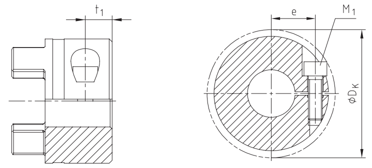
Size	Spider GS [1] torque T_{KN} [Nm] for 98 ShA	$d_{max.}$ for hub type			Dimensions [mm]										Setscrew DIN EN ISO 4029		
		1.0	1.1	1.2	D	D_H	d_H	L	l_1, l_2	M, N	E	b	s	a	G	t	T_A [Nm]
5	0.9	-	6	5	–	10	—	15	5	–	5	4	0.5	4.0	M2	2.5	0.35
7	2.0	7	7	7	–	14	—	22	7	–	8	6	1.0	6.0	M3	3.5	0.6
9	5.0	10	11	11	–	20	7.2	30	10	–	10	8	1.0	1.5	M4	5.0	1.5
12	9.0	12	12	12	–	25	8.5	34	11	–	12	10	1.0	3.5	M4	5.0	1.5
14	12.5	16	16	16	–	30	10.5	35	11	–	13	10	1.5	2.0	M4	5.0	1.5
19	21	24	-	–	–	40	18	66	25	–	16	12	2.0	3.0	M5	10	2.0
24	60	32	–	–	–	55	27	78	30	–	18	14	2.0	3.0	M5	10	2.0
28	160	38	–	–	–	65	30	90	35	–	20	15	2.5	4.0	M8	15	10
38	325	45	–	–	–	80	38	114	45	–	24	18	3.0	4.0	M8	15	10
42	450	55	–	–	85	95	46	126	50	28	26	20	3.0	4.0	M8	20	10
48	525	62	–	-	95	105	51	140	56	32	28	21	3.5	4.0	M8	20	10
55	685	74	–	–	110	120	60	160	65	37	30	22	4.0	4.5	M10	20	17
65	940	80	–	–	115	135	68	185	75	47	35	26	4.5	4.5	M10	20	17
75	1920	95	–	–	135	160	80	210	85	53	40	30	5.0	5.0	M10	25	17
90	3600	110	–	–	160	200	104	245	100	62	45	34	5.5	6.5	M12	30	40

[1] For selections see page 22 et seqq./other spiders see page 127.

Ordering example:	ROTEX® GS 24	98 ShA-GS	d 20	2.5 - Ø24		1.0 - Ø20	
	Coupling size	Spider hardness	**Optional:** Bore in spider	Hub type	Finish bore	Hub type	Finish bore

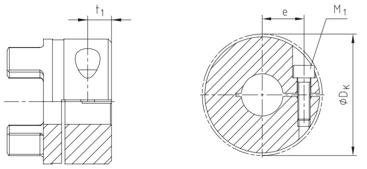
Types of hubs:

Type 2.0
Type 2.1



Size 5 to 14
Type 2.0: single slotted clamping hub **without** feather keyway (only for ATEX cat. 3), torque depending on bore Ø
Type 2.1: single slotted clamping hub **with** feather keyway

Type 2.5
Type 2.6



from size 19
Type 2.5: double slotted clamping hub **without** feather keyway (only for ATEX cat. 3), torque depending on bore Ø
Type 2.6: double slotted clamping hub **with** feather keyway

ROTEX® GS standard types - For size 5 to 38 hub material aluminium/for size 42 to 90 hub material steel

Size	Spider GS [1] torque T_{KN} [Nm] for 98 ShA	$d_{max.}$ for hub type				Dimensions [mm]										Clamping screws DIN EN ISO 4762 (ROTEX® GS 5 - DIN EN ISO 1207)				
		2.0	2.1	2.5	2.6	D	D_H	d_H	L	l_1, l_2	M, N	E	b	s	a	M_1	t_1	e	DK	T_A [Nm]
5	0.9	5	–	–	–	–	10	—	15	5	–	5	4	0.5	4.0	M1.2	2.5	3.5	11.4	– [2]
7	2.0	7	7	–	–	–	14	—	22	7	–	8	6	1.0	6.0	M2	3.5	5.0	16.5	0.37
9	5.0	11	11	–	–	–	20	7.2	30	10	–	10	8	1.0	1.5	M2.5	5.0	7.5	23.4	0.76
12	9.0	12	12	–	–	–	25	8.5	34	11	–	12	10	1.0	3.5	M3	5.0	9.0	27.5	1.34
14	12.5	16	16	–	–	–	30	10.5	35	11	–	13	10	1.5	2.0	M3	5.0	11.5	32.2	1.34
19	21	–	–	24	24	–	40	18	66	25	–	16	12	2.0	3.0	M6	11.0	14.5	46	10.5
24	60	–	–	28	28	–	55	27	78	30	–	18	14	2.0	3.0	M6	10.5	20.0	57.5	10.5
28	160	–	–	38	38	–	65	30	90	35	–	20	15	2.5	4.0	M8	11.5	25.0	73	25
38	325	–	–	45	45	–	80	38	114	45	–	24	18	3.0	4.0	M8	15.5	30.0	83.5	25
42	450	–	–	50	45	85	95	46	126	50	28	26	20	3.0	4.0	M10	18	32.0	93.5	69
48	525	–	–	55	55	95	105	51	140	56	32	28	21	3.5	4.0	M12	21	36.0	105	120
55	685	–	–	68	68 [3]	110	120	60	160	65	37	30	22	4.0	4.5	M12	26	42.5	119.5	120
65	940	–	–	70	70 [3]	115	135	68	185	75	47	35	26	4.5	4.5	M12	33	45.0	124	120
75	1920	–	–	80	80	135	160	80	210	85	53	40	30	5.0	5.0	M16	36	51.0	147.5	295
90	3600	–	–	90	90	160	200	104	245	100	62	45	34	5.5	6.5	M20	40	60.0	176	580

[1] For selections see page 22 et seqq./other spiders see page 127.
[2] No T_A defined (slotted screw)
[3] From Ø60 keyway opposite the clamping screw

Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type 2.0

Size	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	Ø10	Ø11	Ø12	Ø13	Ø14	Ø15	Ø16
7	0.7	0.9	1.1	1.2	1.4									
9		1.6	1.9	2.2	2.6	2.9	3.2	3.5	3.8					
12		2.4	2.9	3.4	3.9	4.4	4.9	5.4	5.8	6.3				
14			3.1	3.6	4.2	4.7	5.2	5.7	6.2	6.7	7.1	7.6	8.0	8.5

Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type 2.5

Size	Ø8	Ø10	Ø11	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55	Ø60	Ø65	Ø70	Ø75	Ø80	Ø85	Ø90
19	19	23	25	31	33	35	39	41	42	46 [4]	49 [4]																			
24		24	26	33	35	37	41	43	45	48	52	54	59																	
28				63	67	71	79	82	86	94	101	105	115	122	129	139	148													
38					67	71	79	83	87	95	102	106	117	124	131	142	152	158	165	175										
42								188	197	214	231	240	264	281	297	320	343	358	373	395	417	431								
48												356	394	418	442	478	513	536	558	592	624	646	699							
55															456	493	529	553	577	611	646	668	724	778	830	882				
65																499	536	560	584	620	655	677	734	789	842	895	946			
75																			1107	1175	1242	1287	1396	1503	1607	1709	1810	1908	2005	
90																			1764	1876	1985	2057	2235	2409	2579	2746	2911	3072	3231	3387

[4] Clamping hub single slotted with 2-off clamping screws M4 and dimension e = 15, T_A = 2.9 Nm

ROTEX® GS Compact
Backlash-free jaw couplings

Compact design


For legend of pictogram refer to flapper on the cover

ROTEX® GS Compact - Hub material aluminium																
Size	Spider GS [1] torque T_{KN} [Nm]				Dimensions [mm]									Clamping screws DIN EN ISO 4762			
	80 ShA	92 ShA	98 ShA	64 ShD	$d_{max.}$	D_H	DK	L	l_1, l_2	E	b	s	d_H	t	e	M	T_A [Nm]
Single slotted hub type 2.8/2.9																	
7	0.7	1.2	2.0	2.4	7	14	16.6	18	5	8	6	1	–	2.5	5	M2	0.37
8	0.5	–	2.0	2.4	8	15	17.3	20	7	6	5	0.5	6.2	4	5.4	M2	0.52
9	1.8	3.0	5.0	6	9	20	21.3	24	7	10	8	1	–	3.5	6.7	M2.5	0.76
12	3.0	5.0	9.0	12	12	25	26.2	26	7	12	10	1	–	3.5	8.3	M3	1.34
13	3.6	–	11	14.5	12.7	25	25.7	26	8	10	8	1	10	4	8	M3	1.9
14	4.0	7.5	12.5	16	16 [2]	30	31.6	32	9.5	13	10	1.5	–	4.5	10	M4	2.9
16	5.0	–	15	19	16	30	32.5	32	10.3	11.4	9.4	1	14	5.3	10.5	M4	4.1
19	6.0	12.0	21.0	26.0	24 [2]	40	45.5	50	17	16	12	2	–	9	14.0	M6	10
Axially slotted hub type 2.8/2.9																	
24	–	35	60	75	32	55	57.5	54	18	18	14	2	–	11	20.0	M6	10
28	–	95	160	200	35	65	69.0	62	21	20	15	2.5	–	12	23.8	M8	25
38	–	190	325	405	45	80	86.0	76	26	24	18	3	–	15	29.5	M10	49

Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type 2.8																									
Size	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45
Single slotted hub type 2.8																										
7	0.7	0.9	1.1	1.2	1.4																					
8	1.0	1.2	1.5	1.8	2.0	2.3																				
9		1.5	1.8	2.1	2.4	2.7	3.0																			
12		2.3	2.8	3.3	3.8	4.3	4.7	5.2	5.6	6.0																
13		3.1	3.9	4.6	5.2	5.9	6.5	7.1	7.8	8.4																
14			5.0	5.9	6.8	7.7	8.5	9.4	10.2	11.0	7.2 [2]	7.7 [2]	8.1 [2]													
16			7.2	8.5	9.8	11.0	12.2	13.4	14.6	15.7	17.9	19.0	20.0													
19						18.7	20.8	22.9	24.9	26.9	30.8	32.7	34.6	38.2	40.0	41.8	36.0 [2]									
Axially slotted hub type 2.8																										
24								34	37	41	48	51	54	61	64	68	81	85	95	102	109					
28											87	93	100	112	118	124	149	156	174	187	199	218				
38												148	158	178	188	198	237	247	277	296	316	346	375	395	415	444

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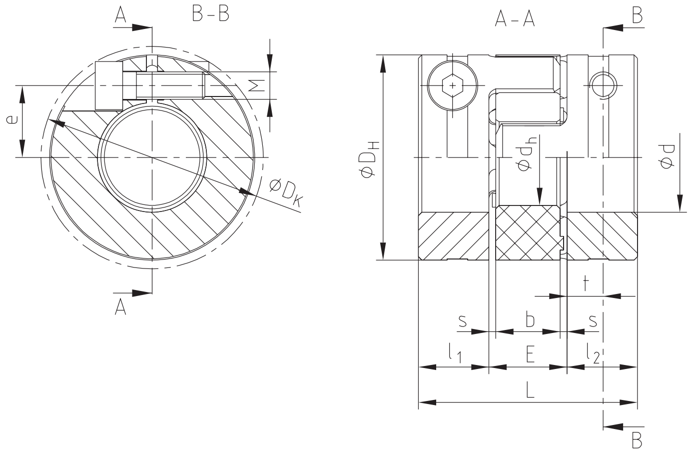
[1] For selections see page 22 et seqq./other spiders see page 127.

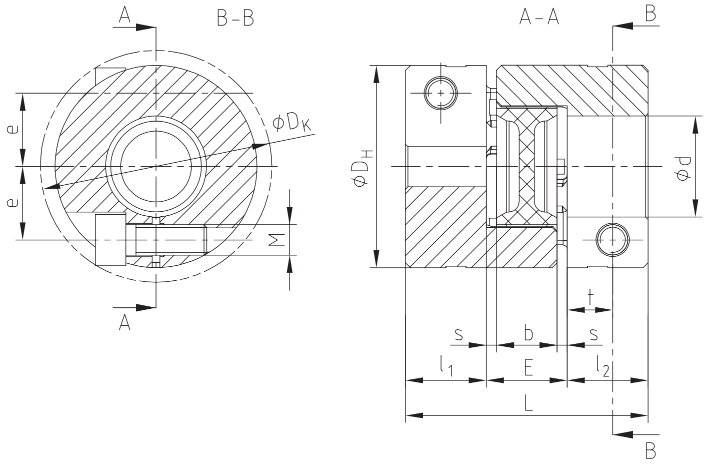
[2] Size 14 with screw M3 and dimension e = 10.4/D_K = 30.5/T_A = 1.34 Nm; size 19 with screw M5 and dimension e = 15.5/D_K = 47mm/T_A = 6 Nm

Ordering example:	ROTEX® GS 38	Compact	98 ShA-GS	d 28	2.8 - Ø28		2.8 - Ø45	
	Coupling size	Type	Spider hardness	**Optional:** Bore in spider	Hub type	Finish bore	Hub type	Finish bore

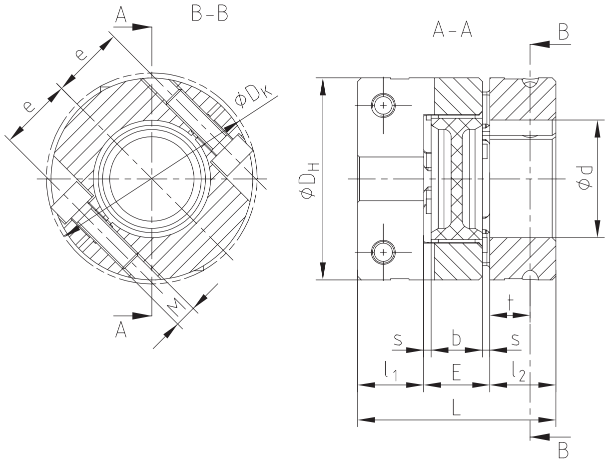
**ROTEX® GS 8, 13, 16
Compact
single slotted type 2.8**



**ROTEX® GS 7, 9, 12, 14, 19
Compact
single slotted type 2.8**

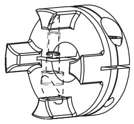


**ROTEX® GS 24 - 38
Compact
axially slotted type 2.8**



Types of hubs

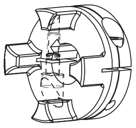
Type 2.8



Compact type clamping hub C with axial slot, without feather keyway

Type 2.8 from size 24 as standard, size 7 - 19 type 2.8 single slotted

Type 2.9

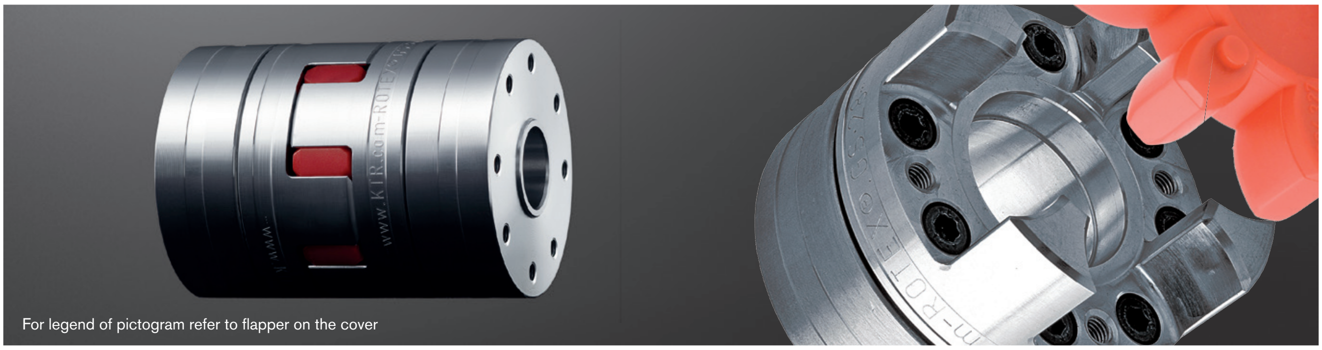


Compact type clamping hub C with axial slot, with feather keyway

Type 2.9 from size 24 as standard, size 7 - 19 type 2.9 single slotted

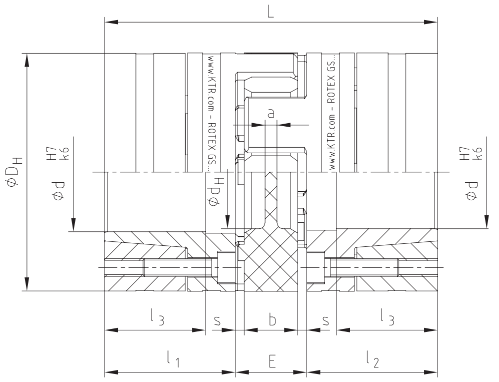
ROTEX® GS Clamping ring hubs light
Backlash-free jaw couplings

Integrated clamping system made of aluminium


For legend of pictogram refer to flapper on the cover

Extraction thread M_1 between clamping screws

Clamping ring hub light with block mounting (hub and clamping ring mounted as a block)



ROTEX® GS clamping ring hubs light

Size	Spider GS [1] torque T_{KN} [Nm]			Dimensions [mm]										Clamping screws DIN EN ISO 4762				Weight per hub with max. bore [kg]	Mass moment of inertia per hub with max. bore [kgm²]
	92 ShA	98 ShA	64 ShD	$d_{max.}$	D_H [2]	d_H	L	l_1, l_2	l_3	E	b	s	a	M	z = number	T_A [Nm]	M_1		
13	-	11	14.5	13	25	10	34	12	9	10	8	1	-	M2	6	0.37	M2	0.014	1.39×10^{-6}
14	7.5	12.5	16.0	14	30	10.5	50	18.5	13.5	13	10	1.5	2.0	M3	4	1.34	M3	0.032	0.04×10^{-4}
19	12	21	26	20	40	18	66	25	18	16	12	2.0	3.0	M4	6	3	M4	0.077	0.19×10^{-4}
24	35	60	75	32	55	27	78	30	22	18	14	2.0	3.0	M5	4	6	M5	0.162	0.78×10^{-4}
28	95	160	200	38	65	30	90	35	27	20	15	2.5	4.0	M5	8	6	M5	0.240	1.70×10^{-4}
38	190	325	405	48	80	38	114	45	35	24	18	3.0	4.0	M6	8	10	M6	0.490	5.17×10^{-4}
42	265	450	560	51	95	46	126	50	35	26	20	3.0	4.0	M8	4	25	M8	0.772	11.17×10^{-4}
48	310	525	655	55	105	51	140	56	41	28	21	3.5	4.0	M10	4	49	M10	1.066	18.81×10^{-4}

[1] For selections see page 22 et seqq./other spiders see page 127.

[2] $ØD_H$ + 2 mm with high speeds for expansion of spider

Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type 6.0 light

Size		Ø3	Ø4	Ø5	Ø6	Ø8	Ø9	Ø10	Ø11	Ø14	Ø15	Ø16	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55*
13	H7/k6	1.3 [3]	2.3 [3]	4.3 [3]	5.4 [3]	10 [3]	6.3	8.9	10.6																		
	H7/h6						2.4	4.8	5.4																		
14	H7/k6				8.2	13.1	18.7	20.5	25.9	36.2																	
	H7/h6				5.8	9.5	15.7	16.6	21.6	24.7																	
19	H7/k6							33	41	59	71	51	80	92													
	H7/h6							27	35	52	65	39	68	81													
24	H7/k6									84	99	93	139	157	160	177	232	177 [4]									
	H7/h6									75	92	79	125	145	119	136	190	147 [4]									
28	H7/k6											140	207	188	289	316	355	414	324	404	422						
	H7/h6											121	187	157	263	293	318	381	245	324	343						
38	H7/k6													290	439	480	567	656	617	759	733	825	922	808	937		
	H7/h6													247	403	447	530	626	499	636	606	696	792	678	809		
42	H7/k6																651	752	747	916	1001	1115	1044	1218	1404	1432	
	H7/h6																574	681	613	774	881	1001	888	1058	1241	1295	
48	H7/k6																765	822	927	1121	1220	1357	1318	1536	1768	1535	1823
	H7/h6																678	760	837	1047	1085	1231	1128	1339	1566	1331	1475

* Standard bore tolerance H7, special tolerances on request * From Ø55 tolerance G7/m6

The friction torque is reduced with bigger clearance.. Steel or nodular iron with a yield strength of approx. 250 N/mm² or more can be used as shaft material. For strength calculation of shaft/hollow shaft see KTR standard 45510 on our homepage www.ktr.com.

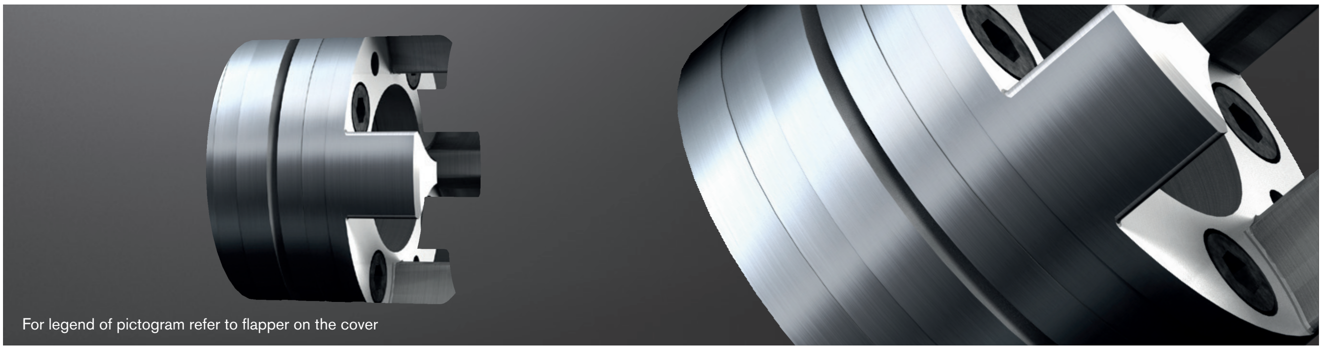
[3] Taper of hub with slot

[4] Clamping ring hub with screws M3, z = 8 and T_A = 2.9 Nm

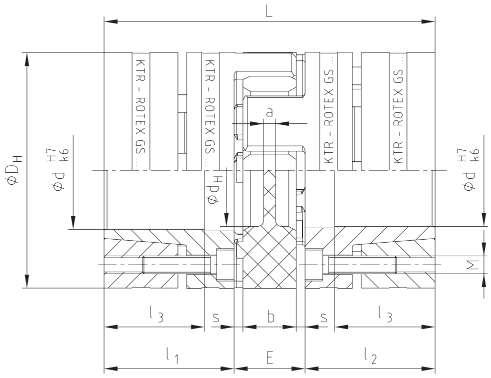
Ordering example:	ROTEX® GS 24	98 ShA-GS	d 20	6.0 light - Ø24		6.0 light - Ø20	
	Coupling size	Spider hardness	**Optional:** Bore in spider	Hub type	Finish bore	Hub type	Finish bore

ROTEX® GS Clamping ring hubs made of steel
Backlash-free jaw couplings

Integrated clamping system made of steel


For legend of pictogram refer to flapper on the cover

Extraction thread M_1 between clamping screws



Size	Spider GS 1) torque T_{KN} [Nm]			Dimensions [mm]										Clamping screws DIN EN ISO 4762				Weight per hub with max. bore [kg]	Mass moment of inertia per hub with max. bore [kgm²]
	98 ShA	64 ShD	72 ShD	$d_{max.}$	D_H 2)	d_H	L	l_1, l_2	l_3	E	b	s	a	M	z = number	T_A [Nm]	M_1		
19	21	26	–	20	40	18	66	25	18	16	12	2.0	3.0	M4	6	4.1	M4	0.179	0.44×10^{-4}
24	60	75	97	28	55	27	78	30	22	18	14	2.0	3.0	M5	4	8.5	M5	0.399	1.91×10^{-4}
28	160	200	260	38	65	30	90	35	27	20	15	2.5	4.0	M5	8	8.5	M5	0.592	4.18×10^{-4}
38	325	405	525	48	80	38	114	45	35	24	18	3.0	4.0	M6	8	14	M6	1.225	12.9×10^{-4}
42	450	560	728	51	95	46	126	50	35	26	20	3.0	4.0	M8	4	41	M8	2.30	31.7×10^{-4}
48	525	655	852	55	105	51	140	56	41	28	21	3.5	4.0	M10	4	69	M10	3.08	52.0×10^{-4}
55	685	825	1072	70	120	60	160	65	45	30	22	4.0	4.5	M10	4	69	M10	4.67	103.0×10^{-4}
65	940	1175	1527	70	135	68	185	75	55	35	26	4.5	4.5	M12	4	120	M12	6.70	191.0×10^{-4}
75	1920	2400	3120	80	160	80	210	85	63	40	30	5.0	5.0	M12	5	120	M12	9.90	396.8×10^{-4}
90	3600	4500	5850	105	200	104	245	100	75	45	34	5.5	6.5	M16	5	295	M16	17.7	1136×10^{-4}

Table title: **ROTEX® GS clamping ring hubs steel**

[1] For selections see page 22 et seqq./other spiders see page 127.

[2] ØD_H + 2 mm with high speeds for expansion of spider

Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type 6.0 steel

Size		Ø10	Ø11	Ø14	Ø15	Ø16	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55*	Ø60*	Ø65*	Ø70*	Ø80*	Ø90*	Ø95*	Ø100*	Ø105*
19	H7/k6	27	32	69	84	57	94	110																					
	H7/h6	15	18	57	74	38	76	94																					
24	H7/k6			70	87	56	97	114	116	133	192																		
	H7/h6			55	74	32	72	93	84	103	173																		
28	H7/k6				108	131	207	148	253	285	315	382	330	433	503														
	H7/h6				74	97	172	94	207	242	267	343	260	377	453														
38	H7/k6							208	353	395	439	531	463	603	593	689	793	776											
	H7/h6							136	290	337	373	476	367	525	491	601	721	677											
42	H7/k6									445	495	595	526	677	671	775	718	872	1043	1061									
	H7/h6									387	429	540	429	600	569	687	599	773	970	978									
48	H7/k6											616	704	899	896	1030	962	1160	1379	1222	1543								
	H7/h6											513	590	806	775	924	822	1042	1290	1073	—								
55	H7/k6													863	856	991	918	1119	1110	1247	1277	1665	1605	2008					
	H7/h6													750	710	863	750	976	934	1089	—	—	—	—					
65	H7/k6															1446	1355	1637	1635	1827	1887	2429	2368	2930					
	H7/h6															1275	1135	1447	1404	1619	—	—	—	—					
75	H7/k6																1710	2053	2059	2294	2384	3040	2983	3664	4293				
	H7/h6																1460	1836	1797	2056	—	—	—	—	—				
90	H7/k6																			3845	4249	4795	5859	5906	7036	8047	9247	9575	10845
	H7/h6																			3445	—	—	—	—	—	—	—	—	—

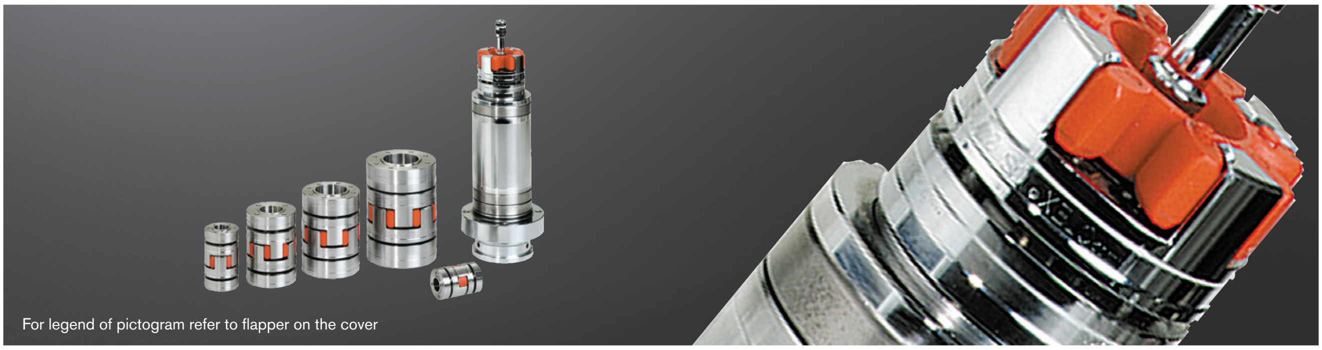
* From Ø55 tolerance G7/m6

The friction torque is reduced with bigger clearance.. For the strength calculation of shaft/hollow shaft see KTR standard 45510 on our homepage www.ktr.com.

Ordering example:	ROTEX® GS 24	98 ShA-GS	d 20	6.0 steel - Ø24		6.0 steel - Ø20	
	Coupling size	Spider hardness	**Optional:** Bore in spider	Hub type	Finish bore	Hub type	Finish bore

ROTEX® GS P
Backlash-free jaw couplings

Highly accurate type P according to DIN 69002



For legend of pictogram refer to flapper on the cover

ROTEX® GS P - hubs/clamping ring material steel																		
Size	Spider GS 1) torque T_{KN} [Nm]		Dimensions [mm]										Clamping screws DIN EN ISO 4762				Weight per hub $d_{standard}$ 3) [kg]	Mass moment of inertia per hub with bore $d_{standard}$ 3) [kgm²]
	98 ShA	64 ShD	$d_{max.}$	D_H 2)	d_H	L	l_1, l_2	l_3	E	b	s	a	d_3	M	z = number	T_A [Nm]	M1		
14 P	12.5	16	15	32	10.5	50	18.5	15.5	13	10	1.5	2	—	M3	4	1.89	M3	0.08	0.011×10^{-3}
19 P	21	26	20	40	18	66	25	21	16	12	2	3	—	M4	6	3.05	M4	0.19	0.046×10^{-3}
24 P	60	75	28	55	27	78	30	25	18	14	2	3	—	M5	4	8.5	M5	0.44	0.201×10^{-3}
28 P	160	200	38	65	30	90	35	30	20	15	2.5	4	—	M5	8	8.5	M5	0.64	0.438×10^{-3}
38 P	325	405	48	80	38	114	45	40	24	18	3	4	—	M6	8	14	M6	1.32	1.325×10^{-3}
42 P	450	560	51	95	46	126	50	45	26	20	3	4	18.5	M8	4	35	M8	2.23	3.003×10^{-3}
48 P	525	655	55	105	51	140	56	50	28	21	3.5	4	20.5	M10	4	69	M10	3.09	5.043×10^{-3}
55 P	685	825	70	120	60	160	65	58	30	22	4	4.5	22.5	M10	4	69	M10	4.74	10.02×10^{-3}
65 P	940	1175	70	135	68	185	75	55	35	26	4.5	4.5	30	M12	4	120	M12	6.70	191.0×10^{-4}
75 P	1920	2400	80	160	80	210	85	63	40	30	5.0	5.0	40	M12	5	120	M12	9.90	396.8×10^{-4}
90 P	3600	4500	105	200	104	245	100	75	45	34	5.5	6.5	50	M16	5	295	M16	17.7	1136×10^{-4}

1) For selections see page 22 et seqq./other spiders see page 127.

2) Ø D_H + 2 mm with high speeds for expansion of spider

For the strength calculation of shaft/hollow shaft see KTR standard 45610 on our homepage www.ktr.com.

Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type 6.0 steel																													
Size		Ø10	Ø11	Ø14	Ø15	Ø16	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55*	Ø60*	Ø65*	Ø70*	Ø80*	Ø90*	Ø95*	Ø100*	Ø105*
14	H6/k6	11	13	29																									
	H6/h6	3	4	23																									
19	H6/k6	34	41	75	90	68	104	119																					
	H6/h6	22	26	64	80	49	85	103																					
24	H6/k6			79	95	70	110	126	134	149	201																		
	H6/h6			64	82	46	85	104	101	119	183																		
28	H6/k6				128	150	225	177	278	307	341	403	366	461	528														
	H6/h6				94	117	191	123	232	265	293	364	295	405	478														
38	H6/k6							247	386	426	475	560	511	641	644	733	828	825	970										
	H6/h6							174	323	368	408	505	415	564	542	645	757	726	897										
42	H6/k6									389	433	512	464	585	586	669	631	753	888	906									
	H6/h6									330	367	457	368	508	485	581	512	654	815	823									
48	H6/k6											672	762	945	957	1082	1033	1219	1423	1296	1606								
	H6/h6											568	647	852	836	977	892	1101	1334	1148	-								
55	H6/k6													920	929	1055	1002	1190	1198	1325	1388	1743	1722	2088					
	H6/h6													807	783	927	834	1047	1022	1168	-	-	-	-					
65	H6/k6															1532	1465	1731	1750	1931	2034	2534	2521	3038					
	H6/h6															1361	1245	1542	1520	1723	-	-	-	-					
75	H6/k6																1835	2161	2190	2413	2551	3161	3158	3789	4421				
	H6/h6																1585	1944	1928	2175	-	-	-	-	-				
90	H6/k6																			4046	4503	5057	6079	6181	7324	8398	9530	9892	11084
	H6/h6																			3645	-	-	-	-	-	-	-	-	-

* From Ø55 tolerance G6/m6.

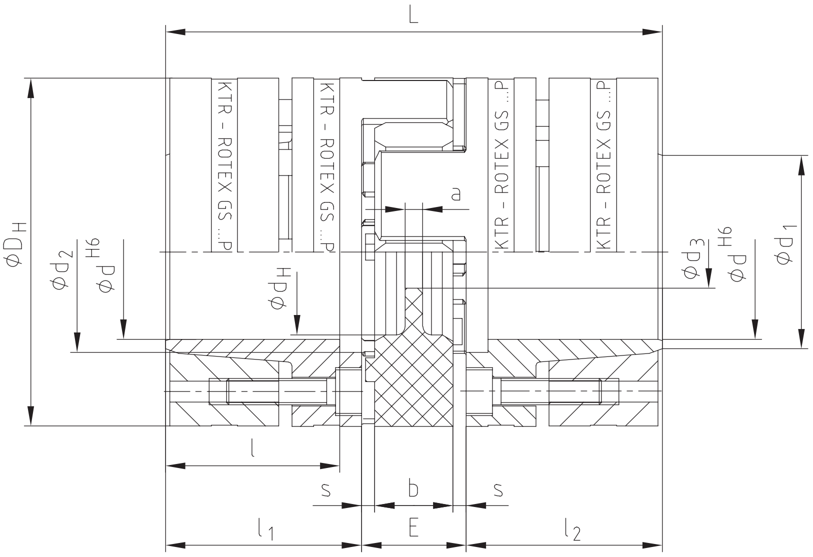
The friction torque is reduced with bigger clearance.. For the strength calculation of shaft/hollow shaft see KTR standard 45610 on our homepage www.ktr.com.

Assignment for stub spindles according to DIN 69002											
Spindle drive	ROTEX® GS P size	Dimensions according to DIN 69002									
		Standard spindle shaft diameter d	d_1	d_2	d_3	D_H	l_1, l_2	L	E	Transmittable torque T_R with d [Nm] 3)	Weight per hub with bore $d_{standard}$ 3) [kg]	Mass moment of inertia with bore $d_{standard}$ 3) [kgm²]
25 x 20	14 P	14	17	17	8.5	32	18.5	50	13	25	0.08	0.011×10^{-3}
32k x 25	19 P37.5	16	20	19	9.5	37.5	25	66	16	60	0.16	0.037×10^{-3}
32g x 30	19 P	19	23	22	9.5	40	25	66	16	71	0.19	0.046×10^{-3}
40 x 35	24 P50	24	28	29	12.5	50	30	78	18	108	0.331	0.136×10^{-3}
50 x 45	24 P	25	30	30	12.5	55	30	78	18	170	0.44	0.201×10^{-3}
63 x 55	28 P	35	40	40	14.5	65	35	90	20	506	0.64	0.438×10^{-3}
80 x 75	38 P	40	46	46	16.5	80	45	114	24	821	1.32	1.325×10^{-3}

3) Standard spindle shaft diameter

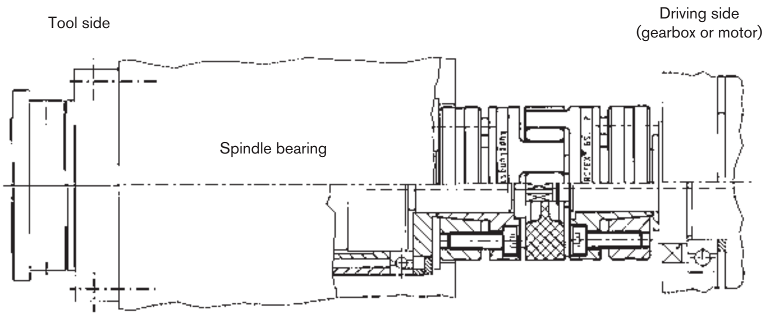
Ordering example:	ROTEX® GS P 24	98 ShA-GS	6.0 - Ø25		6.0 - Ø25	
	Coupling size	Spider hardness	Hub type	Finish bore	Hub type	Finish bore

Components



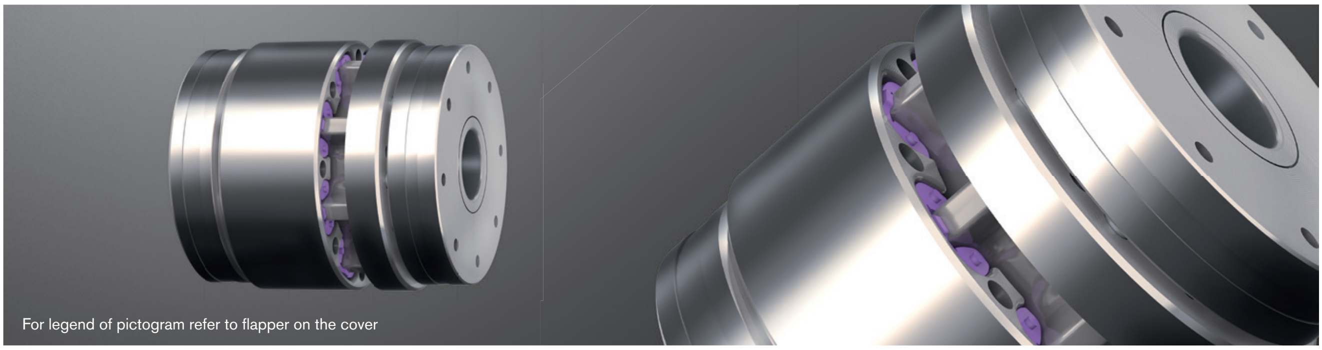
Extraction thread M_1 between clamping screws

ROTEX® GS P with central coolant supply for stub spindles and multiple spindle heads



ROTEX® GS HP
Backlash-free shaft coupling

Highly accurate closed coupling system


For legend of pictogram refer to flapper on the cover

ROTEX® GS HP - clamping ring hubs/clamping ring material steel

Size	Tooth element ROTEX® GS HP [1] torque T_{KN} [Nm]		Max. speed [rpm]	Dimensions [mm]										Clamping screws DIN EN ISO 4762			Weight of coupling with max. bore [kg]	Mass moment of inertia of coupling with max. bore [kgm²]
	52 ShD	64 ShD		Max. d_1, d_2	D_H	D	L	l_1, l_2	l_3, l_4	N	E	b	s	M	z = number	T_A [Nm]		
24	100	125	59,000	25	55	48	73	24.5	18	15	24	20	2	5	5	7.7	0.74	0.000317
28	160	200	47,000	35	66	58	78	27	17	17	24	20	2	5	6	7.7	1.02	0.000653
38	400	500	39,000	45	80	76	82	29	18	18	24	20	2	5	8	7.7	1.54	0.001534
42	475	590	35,000	51	95	82	99	36	24	24	27	22	2.5	6	8	13	2.59	0.003441
48	550	685	30,000	55	105	92	101	37	25	25	27	22	2.5	6	9	13	3.39	0.005481
55	725	905	26,000	60	120	105	103	38	26	26	27	22	2.5	6	10	13	6.84	0.009172
65	1075	1340	22,500	70	139	125	107	40	27	25.3	27	22	2.5	6	12	14	7.00	0.019633

[1] For selections see page 22 et seqq./other spiders see page 127.

Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type 6.0 steel

Size		Ø12	Ø15	Ø18	Ø19	Ø20	Ø22	Ø25	Ø28	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55 *	Ø60 *	Ø65 *
24	H6/k6	55	102	165	115	133	172	241												
	H6/h6	34	82	150	81	100	143	222												
28	H6/k6		125	199	226	158	202	280	246	340	432									
	H6/h6		99	177	201	111	157	240	195	292	398									
38	H6/k6					216	274	376	374	508	635	586	666	752	649					
	H6/h6					170	231	339	318	452	592	509	589	674	524					
42	H6/k6									665	830	1015	770	871	1035	1215	1153			
	H6/h6									570	749	953	656	766	948	1150	1076			
48	H6/k6													1128	1321	1530	1211	1477		
	H6/h6													914	1102	1306	985	–		
55	H6/k6													1314	1543	1562	1711	1562	1915	
	H6/h6													1217	1463	1329	1474	–	–	
65	H6/k6														1606	1852	2026	1891	2306	2134
	H6/h6														1349	1584	1751	–	–	–

* From Ø55 G6/m6.
The friction torque depends on the speed.
The friction torque is reduced with bigger clearance.. For the strength calculation of shaft/hollow shaft see KTR standard 45710 on our homepage www.ktr.com.

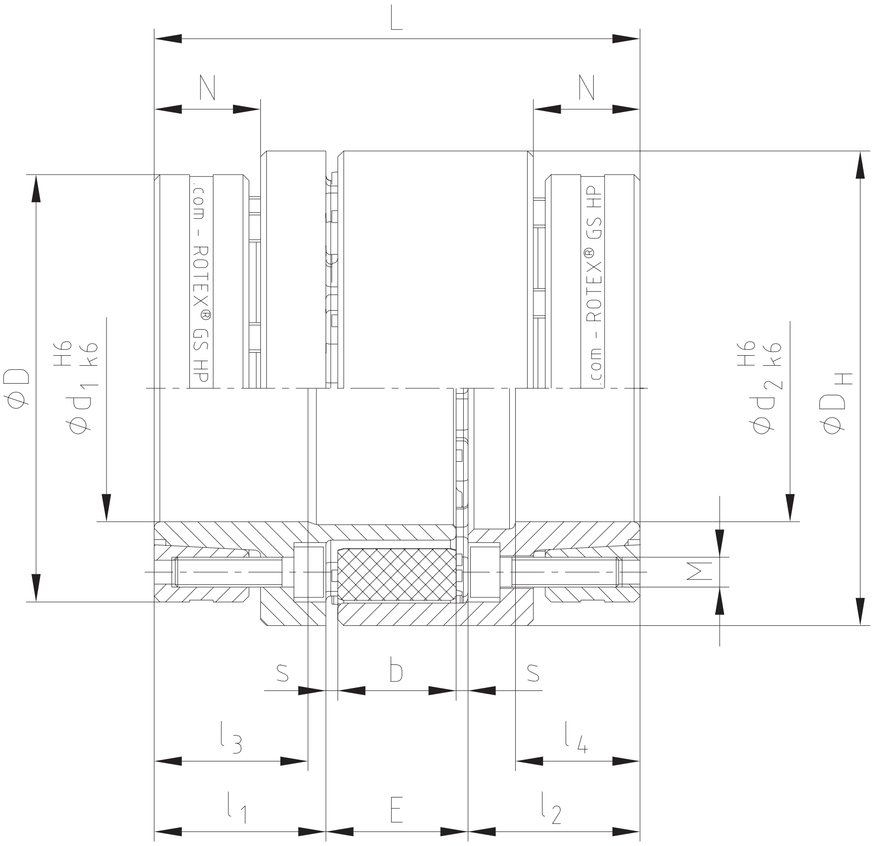
Technical data

Size	Tooth element ROTEX® GS HP	Displacements			Torsional stiffness [Nm/rad]		Radial spring stiffness [N/mm]	Axial stiffness [N/mm]
		Axial ΔKa [mm]	Radial ΔKr [mm]	Angular ΔKw [degree]	$C_{T\ stat.}$	$C_{T\ dyn.}$	Cr	C_a
24	52 ShD	+1.0/-0.8	0.10	0.9	3,780	10,950	7,210	3,440
	64 ShD		0.07	0.8	6,050	17,520	10,100	4,820
28	52 ShD		0.10	0.9	7,760	23,980	8,380	4,360
	64 ShD		0.07	0.8	12,420	38,370	11,740	6,110
38	52 ShD		0.10	0.9	27,800	69,000	11,190	6,280
	64 ShD		0.07	0.8	44,480	110,400	15,670	8,790
42	52 ShD	+1.4/-1.0	0.14	0.9	52,950	101,750	12,490	7,410
	64 ShD		0.10	0.8	84,720	162,800	17,490	10,380
48	52 ShD		0.14	0.9	64,140	128,530	11,480	8,230
	64 ShD		0.10	0.8	102,620	205,640	16,070	11,520
55	52 ShD		0.14	0.9	87,500	198,940	12,240	9,830
	64 ShD		0.10	0.8	140,000	318,300	17,140	13,770
65	52 ShD		0.14	0.9	110,350	295,200	14,000	14,820
	64 ShD		0.10	0.8	174,930	472,300	19,600	20,750

The displacement figures may only be used one by one, if they appear simultaneously, they must be limited in proportion. Care should be taken to maintain the distance dimension E accurately in order to allow for axial clearance of the coupling while in operation. Detailed mounting instructions are shown on our homepage www.ktr.com.

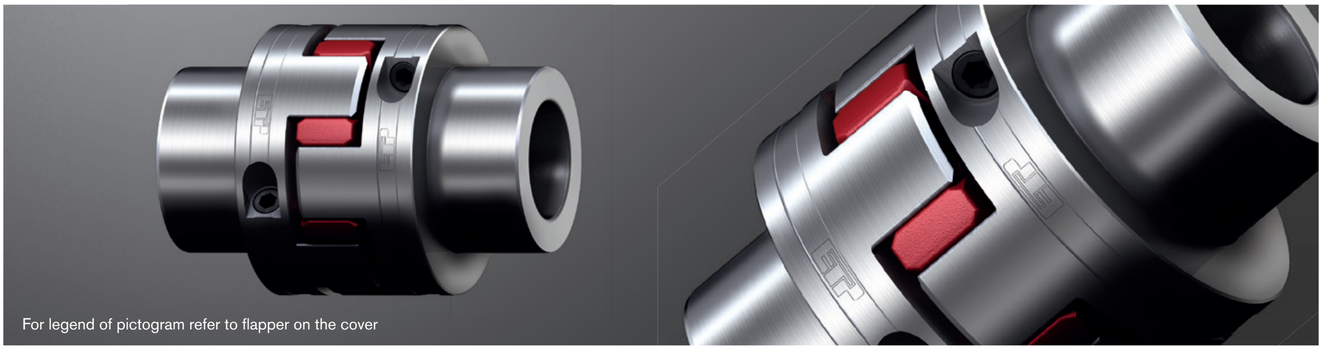
Ordering example:	ROTEX® GS 24 HP	98 ShA-GS	d1 6.0 - Ø25		d2 6.0 - Ø25	
	Coupling size	Hardness of tooth element	Hub type	Finish bore	Hub type	Finish bore

Components

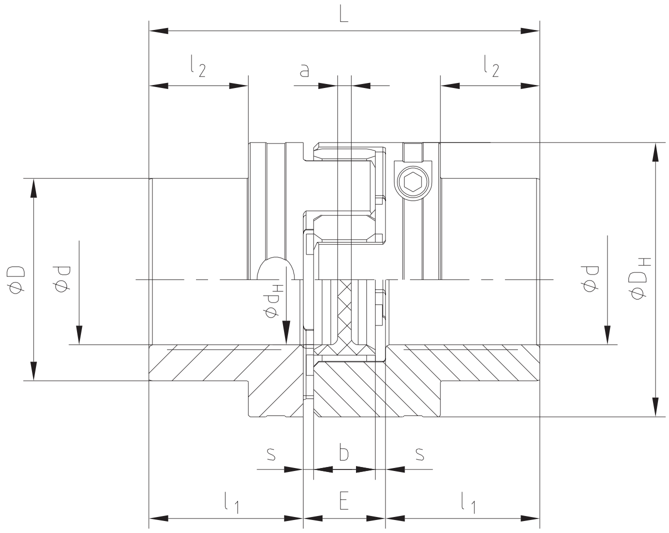

L
N
N
.com - ROTEX® GS HP
com - ROTEX® GS HP
ϕD
ϕd1 H6 k6
ϕd2 H6 k6
ϕDH
M
s
b
s
l3
l4
l1
E
l2

ROTEX® GS P ETP®
Backlash-free jaw couplings

Integrated hydraulic clamping system



For legend of pictogram refer to flapper on the cover



ROTEX® GS P ETP®

Size	Spider GS [1] torque T_{KN} [Nm]			Dimensions [mm]										Screw		Weight per hub with max. bore [kg]
	92 ShA	98 ShA	64 ShD	$d_{max.}$	D_H [2]	d_H	L	l_1	l_2	E	b	s	a	M	T_A [Nm]	
24	35	60	75	24	55	27	78	30	16	18	14	2	3	M6	5	0.33
28	95	160	200	32	65	30	90	35	20	20	15	2.5	4	M6	5	0.53
38	190	325	405	40	80	38	114	45	29	24	18	3	4	M6	5	0.98
42	265	450	560	48	95	46	126	50	34	26	20	3.5	4	M6	5	1.51

[1] For selections see page 22 et seqq./other spiders see page 127.
[2] ØD_H + 2 mm with high speeds for expansion of spider

Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type ROTEX® GS P ETP®

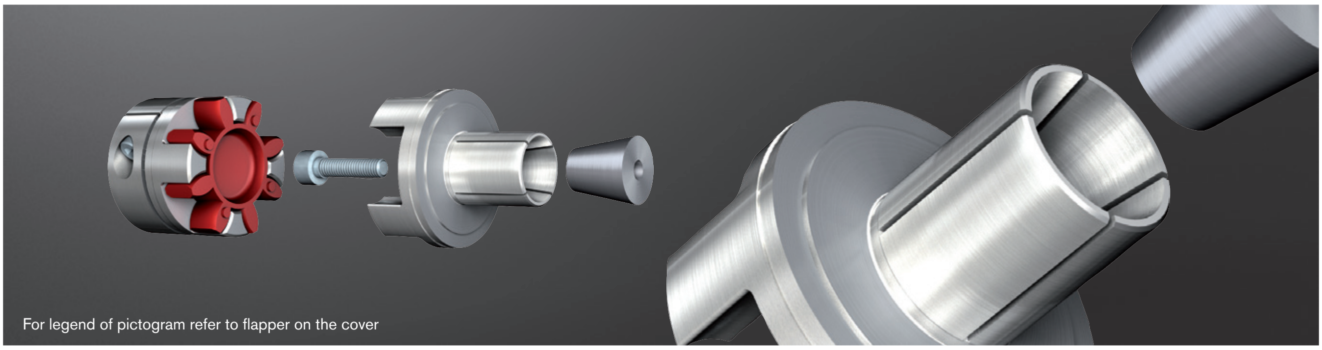
Size	Tolerance fit	Bore diameter d/collar diameter D														
		Ø15/ Ø24	Ø16/ Ø26	Ø19/ Ø30	Ø20/ Ø32	Ø24/ Ø39	Ø25/ Ø40	Ø28/ Ø44	Ø30/ Ø47	Ø32/ Ø50	Ø35/ Ø55	Ø38/ Ø59	Ø40/ Ø62	Ø42/ Ø65	Ø45/ Ø70	Ø48/ Ø74
24	F6/h6	42	50	70	80	125										
28		50	60	80	95	150	160	210	230	250						
38						220	230	310	350	380	450	570	610			
42							270	360	410	440	540	660	730	820	940	1100

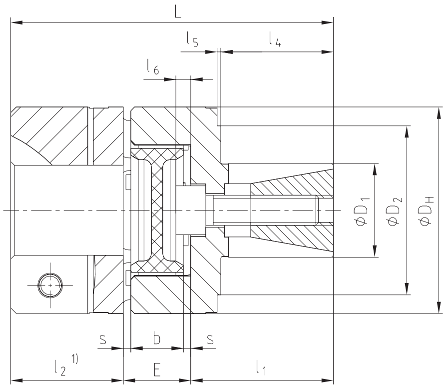
ETP® is a registered trademark by ETP® Transmission AB.

Ordering example:	ROTEX® GS P ETP® 24	98 ShA-GS	d 20	Ø24	Ø20
	Coupling size	Spider hardness	**Optional:** Bore in spider	Finish bore	Finish bore

ROTEX® GS expansion hubs
Backlash-free jaw couplings

Clamping system for hollow shaft connection


For legend of pictogram refer to flapper on the cover

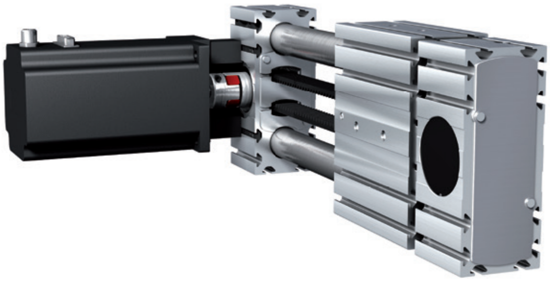


ROTEX® GS expansion hub - Expansion hub material aluminium/clamp pin material stainless steel

Size	Spider GS [2] torque T_{KN} [Nm]					Dimensions [mm]												Friction torque [3] [Nm]
	80 ShA	92 ShA	98 ShA	64 ShD	72 ShD	D_1 [2]	D_2	D_H	l_1 [2]	l_2	l_4 [2]	l_5 [2]	l_6	L	E	b	s	
9	1.8	3.0	5.0	6.0	–	10	–	20	20	10	11	–	0	40	10	8	1.0	6.4
12	3.0	5.0	9.0	12.0	–	10	20	25	19	11	14	1.5	2	42	12	10	1.0	7.7
14	4.0	7.5	12.5	16.0	–	12	24	30	18.5	11	12.5	3	2	42.5	13	10	1.5	7.7
19	6.0	12.0	21.0	26.0	–	20	35	40	28	25	20	1	0	69	16	12	2.0	35.7
24	–	35	60	75	97	25	45	55	38	30	30	1	4	86	18	14	2.0	82.0
28	–	95	160	200	260	35	55	65	44	35	36	1	5	99	20	15	2.5	182.0

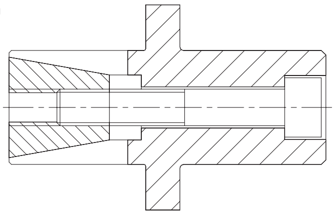
[1] For selections see page 22 et seqq./other spiders see page 127.
[2] Example: Other dimensions on customers' request.
[3] The friction torque applies for the figures D_1, l_1, l_4 and l_5 specified and a hollow shaft material steel.

ROTEX® GS expansion hub for axis of belt

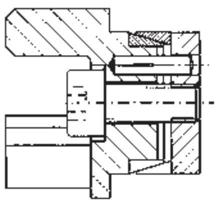


Special types for hollow shaft connections

Shaft extension



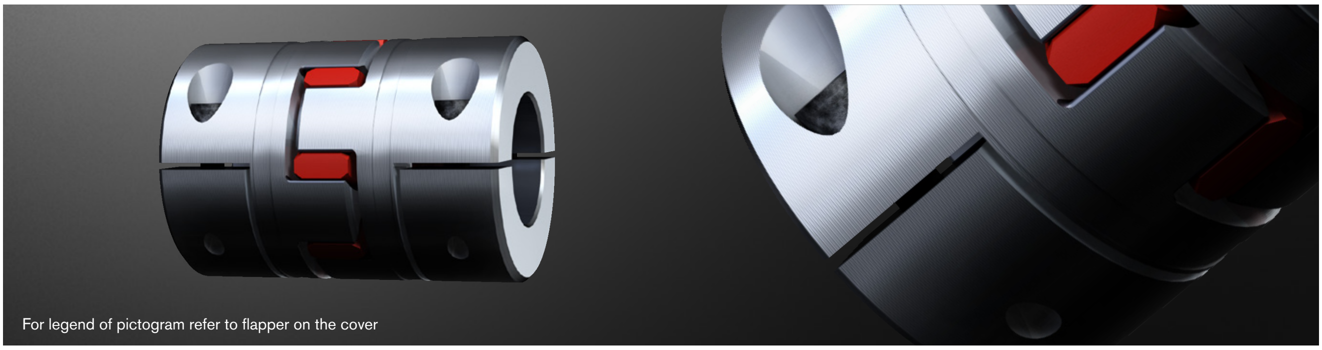
ROTEX® GS hub with CLAMPEX® KTR 150



Ordering example:	ROTEX® GS 24	98 ShA-GS	d 20	9.0 – Ø24		2.5 – Ø20	
	Coupling size	Spider hardness	**Optional:** Bore in spider	Hub type	Finish bore	Hub type	Finish bore

ROTEX® GS A-H
Backlash-free jaw couplings

Drop-out center design coupling



For legend of pictogram refer to flapper on the cover

ROTEX® GS type A-H - Hub material aluminium

Size	Dimensions [mm]										Cap screws DIN EN ISO 4762	
	$d_{max.}$	L	l_1, l_2	E	b	s	D_H	DK	x_1, x_2	E_1	M	T_A [Nm]
19	20	66	25	16	12	2.0	40	46	17.5	31	M6	10
24	30	78	30	18	14	2.0	55	57.5	22.0	34	M6	10
28	38	90	35	20	15	2.5	65	73	25.0	40	M8	25
38	45	114	45	24	18	3.0	80	83.5	33.0	48	M8	25
42	50	126	50	26	20	3.0	95	93.5	36.5	48	M10	49

Technical data

Size	Spider Shore-GS [1]	Shore scale	Max. speed [rpm]	Torque [Nm]		Static torsion spring stiffness [Nm/rad]	Weight per hub with max. bore [kg]	Mass moment of inertia J per hub with max. bore [kgm²]
				T_{KN}	$T_{K\ max}$			
19	80	A	9550	6.0	12.0	618	77 x 10^{-3}	19.6 x 10^{-6}
	92	A		12.0	24.0	1090		
	98	A		21.0	42.0	1512		
	64	D		26.0	52.0	2560		
24	92	A	6950	35	70	2280	161 x 10^{-3}	77.3 x 10^{-6}
	98	A		60	120	3640		
	64	D		75	150	5030		
28	92	A	5850	95	190	4080	240 x 10^{-3}	173 x 10^{-6}
	98	A		160	320	6410		
	64	D		200	400	10260		
38	92	A	4750	190	380	6525	470 x 10^{-3}	496 x 10^{-6}
	98	A		325	650	11800		
	64	D		405	810	26300		
42	92	A	4000	265	530	10870	1770 x 10^{-3}	2409 x 10^{-6}
	98	A		450	900	21594		
	64	D		560	1120	36860		

[1] For selections see page 22 et seqq./other spiders see page 127.

[2] Static torsion spring stiffness with 0.5 x T_{KN}

To make sure that the coupling can be assembled/disassembled radially, observe the insertion dimension x1/x2 of the shafts.

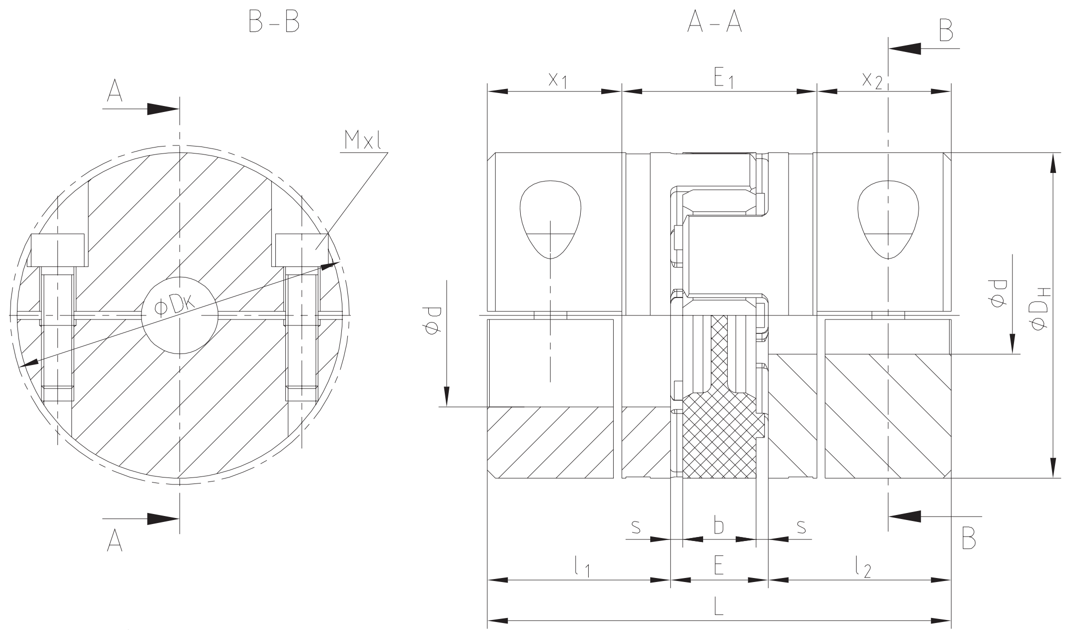
Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type 7.8

Size	Ø8	Ø10	Ø11	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø46	Ø48	Ø50
19	17	21	23	30	32	34	38	40	42														
24		21	23	30	32	34	38	40	42	47	51	53	59	63									
28				54	58	62	70	74	78	86	93	97	109	117	124	136	148						
38							70	74	78	86	93	97	109	117	124	136	148	156	163	175			
42										136	149	155	174	186	198	217	235	248	260	279	285	297	310

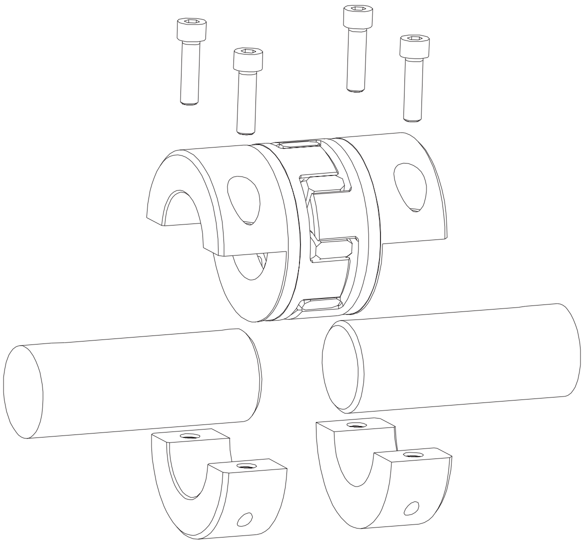
Ordering example:

ROTEX® GS 38	A-H	98 ShA-GS	7.8 – Ø38		7.9 – Ø30	
Coupling size	Type	Spider hardness	Hub type	Finish bore	Hub type	Finish bore

Type A-H

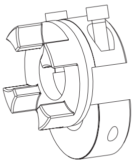


Caution:
Feather keyways are offset to one another by approx. 5°!
Hub material: Al-H



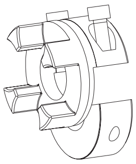
Types of hubs

Type 7.8



clamping hub type H without feather keyway for single-cardanic connection

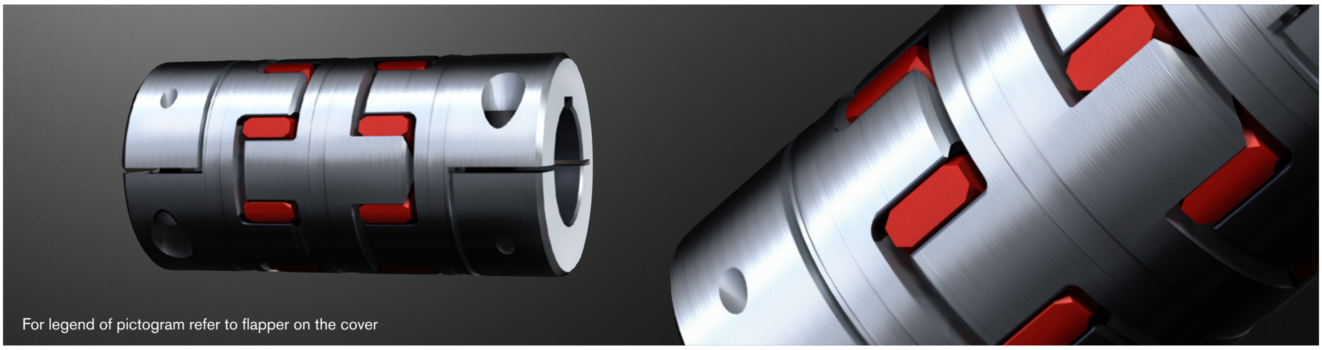
Type 7.9



clamping hub type H with feather keyway for single-cardanic connection

ROTEX® GS DKM
Backlash-free jaw couplings

Double-cardanic jaw coupling



For legend of pictogram refer to flapper on the cover

≤5° E ΔKa ΔKw ΔKr 90 °C Ex

ROTEX® GS DKM - Spacer material aluminium/hub material depends on hub type

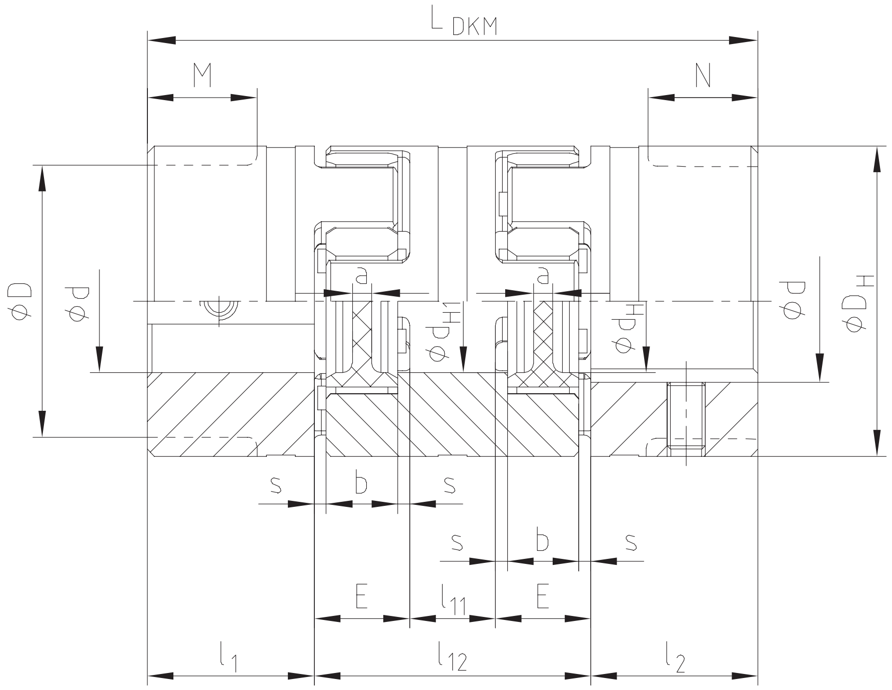
Size	Spider GS [1] torque T_{KN} [Nm]		Dimensions [mm]													
	98 ShA	64 ShD	$d_{max.}$ [2]	D	D_H	d_H	d_{H1}	l_1, l_2	M, N	l_{11}	l_{12}	L_{DKM}	E	b	s	a
5	0.9	—	5	—	10	—	—	5	—	3	13	23	5	4	0.5	4.0
7	2.0	2.4	7	—	14	—	—	7	—	4	20	34	8	6	1.0	6.0
9	5.0	6.0	11	—	20	7.2	—	10	—	5	25	45	10	8	1.0	1.5
12	9.0	12.0	12	—	25	8.5	—	11	—	6	30	52	12	10	1.0	3.5
14	12.5	16.0	16	—	30	10.5	—	11	—	8	34	56	13	10	1.5	2.0
19	21.0	26.0	24	—	40	18.0	18	25	—	10	42	92	16	12	2.0	3.0
24	60	75	30	—	55	27.0	27	30	—	16	52	112	18	14	2.0	3.0
28	160	200	38	—	65	30.0	30	35	—	18	58	128	20	15	2.5	4.0
38	325	405	45	—	80	38.0	38	45	—	20	68	158	24	18	3.0	4.0
42	450	560	55	85	95	46	46	50	28	22	74	174	26	20	3.0	4.0
48	525	655	62	95	105	51	51	56	32	24	80	192	28	21	3.5	4.0
55	685	825	74	110	120	60	60	65	37	28	88	218	30	22	4.0	4.5

[1] For selections see page 22 et seqq./other spiders see page 127.

[2] Dependent on hub type. Hub types can be freely selected, for summary see page 132.

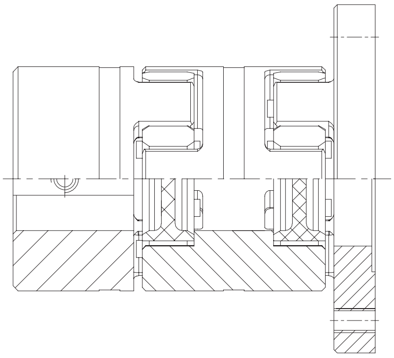
Ordering example:

ROTEX® GS 24	DKM	98 ShA-GS	d 25	1.0 - Ø25		2.5 - Ø25	
Coupling size	Type	Spider hardness	**Optional:** Bore in spider	Hub type	Finish bore	Hub type	Finish bore

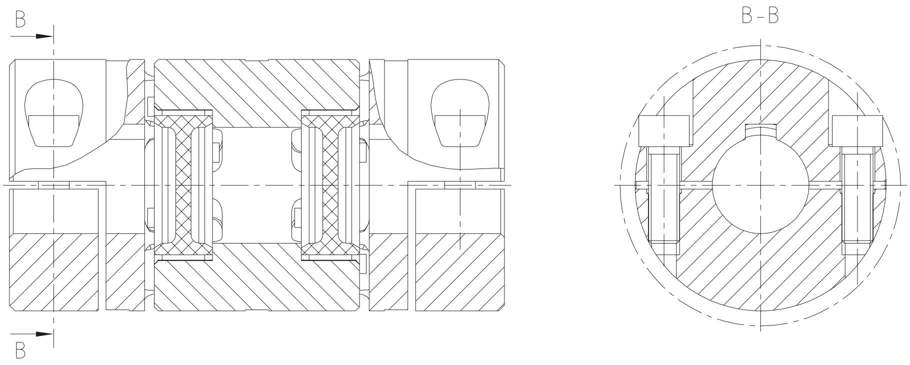


Other types:

ROTEX® GS - CF - DKM

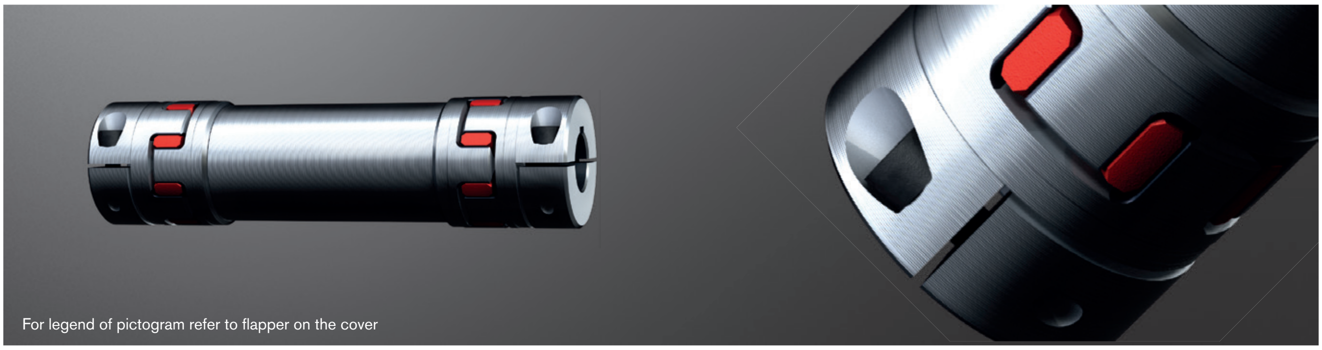


ROTEX® GS DKM-H



ROTEX® GS ZR3
Backlash-free intermediate shaft couplings

Intermediate shaft coupling with aluminium pipe bonded



For legend of pictogram refer to flapper on the cover

ROTEX® GS Type ZR3 - Hub material aluminium/intermediate pipe material aluminium

Size	Dimensions [mm]															
	$d_{max.}$	D_H	l_1	L	l_3	E	L_R		$L_{ZR} = L_R + 2 \bullet l_3$		d_R	DK	t_1	e	Cap screws DIN EN ISO 4762	
							Min.	Max.	Min.	Max.					M	T_A [Nm]
14	15	30	18.5	36.0	14.5	13	72	2971	101	3000	28	33.3	7.5	10.5	M4	2.9
19	20	40	25	49.0	17.5	16	98	2965	133	3000	40	46	8.0	14.5	M6	10
24	30	55	30	59.0	22.0	18	121	3456	165	3500	50	57.5	10.5	20	M6	10
28	38	65	35	67.0	25.0	20	137	3950	187	4000	60	73	11.5	25	M8	25
38	45	80	45	83.5	33.0	24	169	3934	235	4000	70	83.5	15.5	30	M8	25
42	50	95	50	93.0	36.5	26	180	3927	253	4000	80	93.5	18.0	32	M10	49
48	55	105	56	100.0	39.5	28	202	3921	281	4000	100	105	18.5	36	M12	86

Technical data of type ZR3

Size	Spider GS [1] torque T_{KN} [Nm]		Moment of inertia [10^{-3} kgm²]			Static torsion spring stiffness [Nm/rad]
	98 ShA	64 ShD	Hub [2]	ZR hub	Pipe/meter	ZW C_2
14	12.5	16.0	0.00362	0.00238	0.088	858
19	21.0	26.0	0.02002	0.01304	0.329	3243.6
24	60.0	75.0	0.07625	0.04481	0.673	6631.8
28	160	200	0.17629	0.10950	1.199	11814.1
38	325	405	0.50385	0.2572	2.972	29290.4
42	450	560	1.12166	0.5523	4.560	44929.7
48	525	655	1.87044	1.1834	9.251	91158.2

[1] For selections see page 22 et seqq./other spiders see page 127.

[2] With d_{max}.

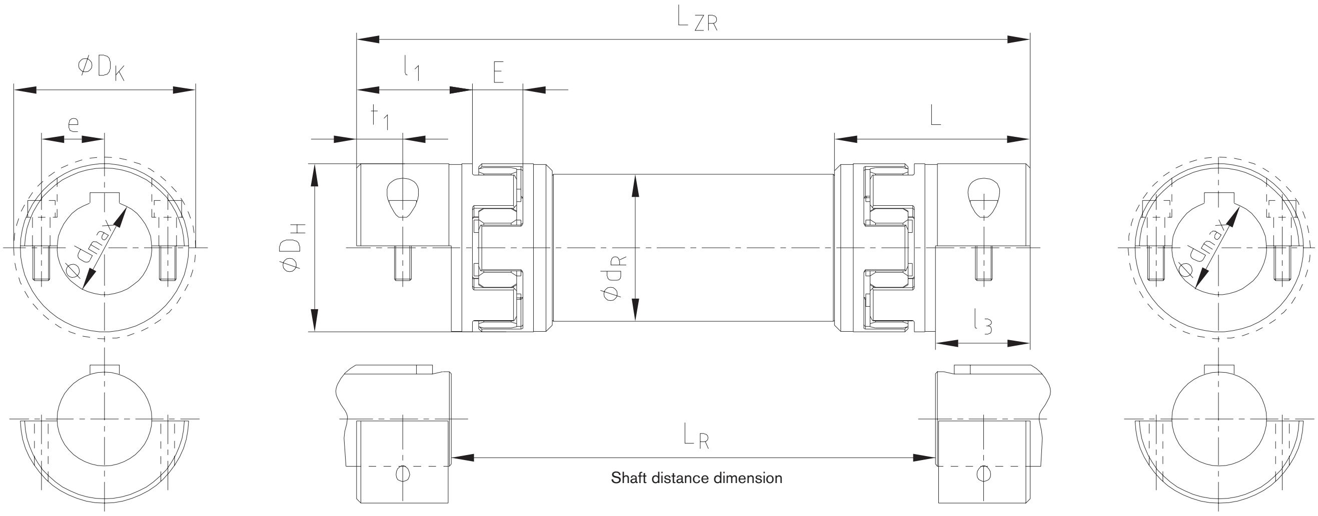
[3] Torsion spring stiffness with a length of 1 m of intermediate pipe with $L_{pipe} = L_{ZR} - 2 \cdot L$

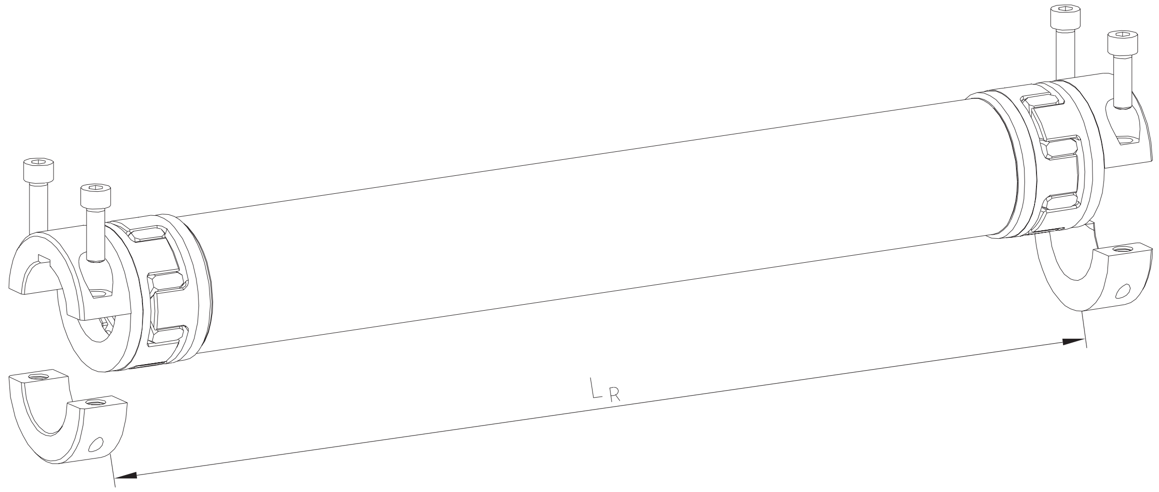
For inquiries and orders please specify the shaft distance dimension L_R along with the maximum speed to review the critical bending speed. See diagramme on page 131.
The intermediate pipe can be combined with other hub types, but in that case it can no longer be disassembled radially. Please specify the required shaft distance dimension in your order.
With vertical application a support washer has to be used (please specify in your order).
Insertion dimension of shaft l_3, to make sure the coupling can be radially assembled/disassembled.
Straightness/concentricity of pipes according to DIN EN 755-1.

Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type 7.5

Size	Ø6	Ø8	Ø10	Ø11	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø46	Ø48	Ø50	Ø55
14	5.5	7.4	9.2	10.1	12.9	13.8																			
19		17	21	23	30	32	34	38	40	42															
24			21	23	30	32	34	38	40	42	47	51	53	59	63										
28					54	58	62	70	74	78	86	93	97	109	117	124	136	148							
38								70	74	78	86	93	97	109	117	124	136	148	156	163	175				
42											136	149	155	174	186	198	217	235	248	260	279	285	297	310	
48											199	217	226	253	271	290	317	344	362	380	407	416	434	452	498

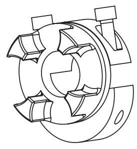
Ordering example:	ROTEX® GS 24	ZR3	1200 mm	98 ShA-GS	7.5 - Ø24		7.5 - Ø24	
	Coupling size	Type	Shaft distance dimension (L_R)	Spider hardness	Hub type	Finish bore	Hub type	Finish bore





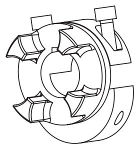
Types of hubs

Type 7.5



Clamping hub type DH without feather keyway for double-cardanic connections

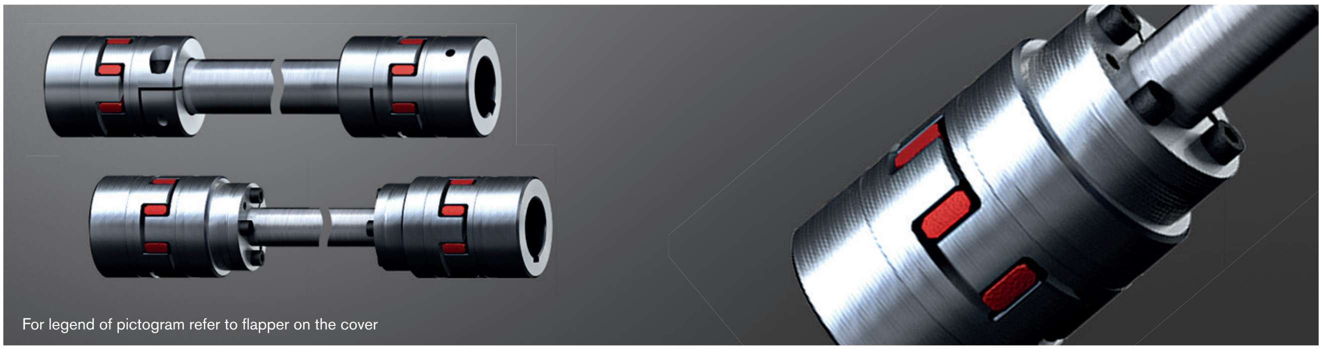
Type 7.6



Clamping hub type DH with feather keyway for double-cardanic connections

ROTEX® GS ZR1 and ZR2
Backlash-free intermediate shaft couplings

Intermediate shaft couplings with steel pipe/steel shaft



For legend of pictogram refer to flapper on the cover

ROTEX® GS Type ZR1																	
Size	Spider GS [1] torque T_{KN} [Nm]		Dimensions [mm]												Cap screws DIN EN ISO 4762		Friction torque T_R [Nm]
	98 ShA	64 ShD	$d_{max.}$ [2]	D_H	l_1, l_2	L	E	b	s	B	L_{R1}	Minimum dimen-sion for L_{R1}	L_{ZR1}	d_R [3]	M	T_A [Nm]	
14 ZR1	12.5	16.0	16	30	11	35	13	10	1.5	11.5	Please specify with inquiries and orders.	71	L_{R1}+22	14x2.5	M3	1.34	6.1
19 ZR1	21.0	26.0	24	40	25	66	16	12	2.0	14.0		110	L_{R1}+50	20x3.0	M6	10.5	34
24 ZR1	60	75	28	55	30	78	18	14	2.0	16.0		128	L_{R1}+60	25x2.5	M6	10.5	45
28 ZR1	160	200	38	65	35	90	20	15	2.5	17.5		145	L_{R1}+70	35x4.0	M8	25	105
38 ZR1	325	405	45	80	45	114	24	18	3.0	21.0		180	L_{R1}+90	40x4.0	M8	25	123

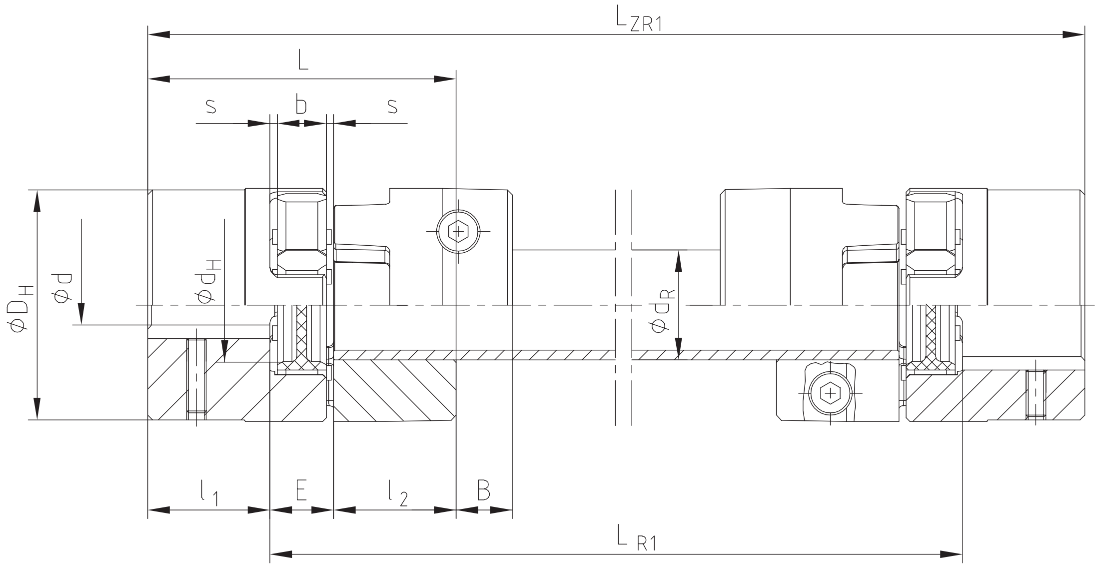
ROTEX® GS Type ZR2																		
Size	Spider GS [1] torque T_{KN} [Nm]		Dimensions [mm]											Precision tube		Clamping set size KTR 250	Clamping screws DIN EN ISO 4762	Tightening torque T_A [Nm]
	98 ShA	64 ShD	dmax. [2]	D_H	l_1, l_2	l_3	L	E	b	s	B	L_{R2}	Minimum dimension for L_{R2}	L_{ZR2}	d_R [3] [mm]	C_2 [4] [Nm/rad]	dxD	M	
14 ZR2	12.5	16.0	16	30	11	26	50	13	10	1.5	11.5	Please specify with inquiries and orders.	109	L_{R2}+22	10x2.0	68.36	10x16	M4	5.6
19 ZR2	21.0	26.0	24	40	25	26	67	16	12	2.0	14.0		120	L_{R2}+50	12x2.0	130	12x18	M4	5.6
24 ZR2	60	75	28	55	30	38	86	18	14	2.0	16.0		156	L_{R2}+60	20x3.0	954.9	20x28	M6	17.0
28 ZR2	160	200	38	65	35	45	100	20	15	2.5	17.5		177	L_{R2}+70	25x2.5	1811	25x34	M6	17.0
38 ZR2	325	405	45	80	45	45	114	24	18	3.0	21.0		192	L_{R2}+90	32x3.5	5167	32x43	M6	17.0
42 ZR2	450	560	55	95	50	52	128	26	20	3.0	23.0		214	L_{R2}+100	40x4.0	11870	40x53	M6	17.0
48 ZR2	525	655	62	105	56	70	154	28	21	3.5	24.5		261	L_{R2}+112	45x4.0	17486	45x59	M8	41.0
55 ZR2	685	825	74	120	65	80	175	30	22	4.0	26.0		288	L_{R2}+130	55x4.0	33543	55x71	M8	41.0
65 ZR2	940	1175	80	135	75	80	185	35	26	4.5	30.5		387	L_{R2}+150	60x4.0	44362	60x77	M8	41.0

[1] For selections see page 22 et seqq./other spiders see page 127.
[2] Dependent on hub type. Hub types can be freely selected, for summary see page 132.
[3] Has to be remachined, if necessary.
[4] Torsion spring stiffness with a length of 1 m of intermediate pipe.

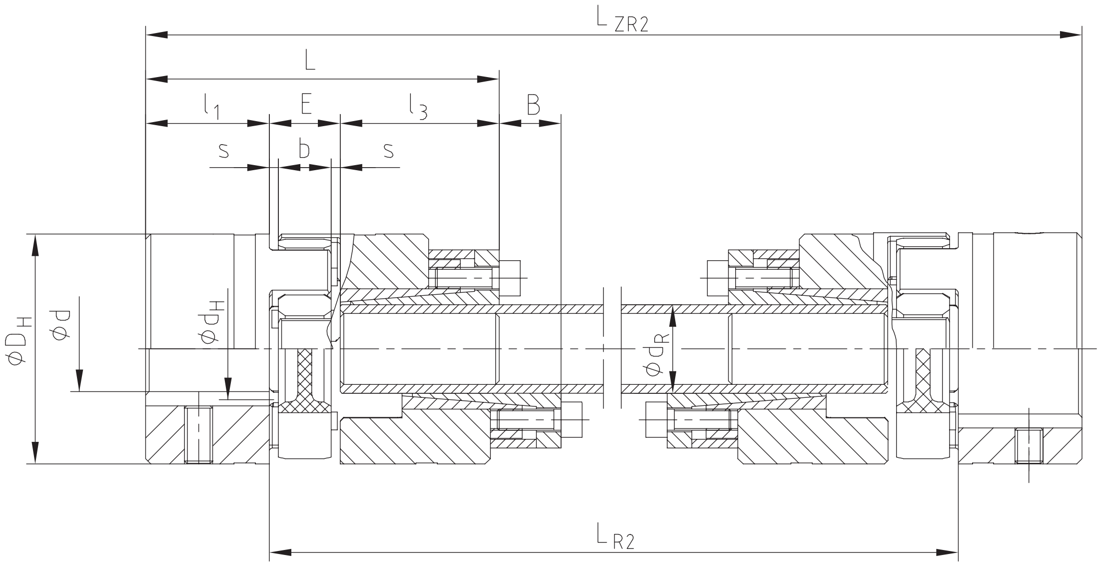
For inquiries and orders please specify the shaft distance dimension L_{R1}/L_{R2} along with the maximum speed to review the critical bending speed.
With vertical application a support washer has to be used (please specify in your order).
Straightness/concentricity of pipes according to DIN EN 10305-1.

Ordering example:	ROTEX® GS 24	ZR1	1000 mm	98 ShA-GS	1.0 - Ø24		2.5 - Ø24	
	Coupling size	Type	Shaft distance dimension (L_{R1}/L_{R2})	Spider hardness	Hub type	Finish bore	Hub type	Finish bore

Type ZR1

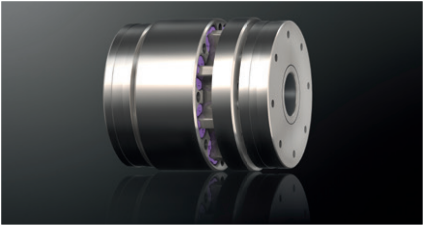


Type ZR2



Wide range for your application

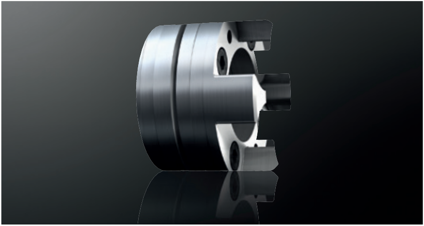

ROTEX® GS


ROTEX® GS HP


ROTEX® GS miniature coupling

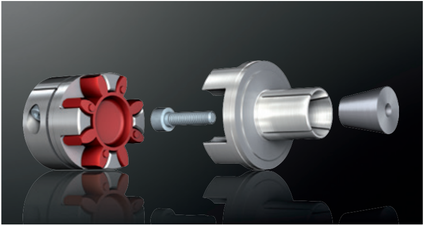

ROTEX® GS Compact


ROTEX® GS clamping ring hubs light


ROTEX® GS clamping ring hubs steel

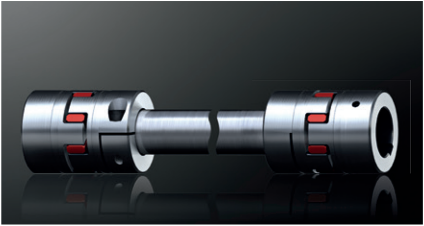

ROTEX® GS P acc. to DIN 69002


ROTEX® GS P ETP


ROTEX® GS expansion hub


ROTEX® GS A-H


ROTEX® GS DKM


ROTEX® GS ZR1


ROTEX® GS ZR2


ROTEX® GS ZR3

Low-cost, backlash-free servo couplings – easy and quick assembly

ROTEX® GS is a three-part servo coupling backlash-free under prestress (elastomer coupling). The various hub versions and different Shore hardnesses determine the optimum coupling for each application in automation technology.

This servo coupling is applied wherever drives need to position precisely. In spite of its vibration-damping properties the coupling is torsionally stiff so that you do not have to cut back on precision even with highly dynamic servo drives. The ROTEX® GS backlash-free elastomer couplings allow for simultaneous compensation of radial, axial and angular displacements. The backlash-free servo coupling ROTEX® GS operates with the construction kit system; it is available in a large number of various hub types that can be combined with each other within one coupling size.

The selection of the hub material depends on the size and it is composed of either aluminium or steel. Both frictionally engaged connections without feather keyway and positive-locking connections with feather keyway are available.

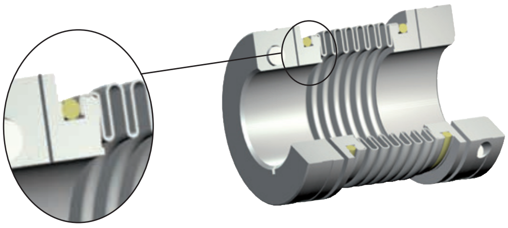
Applications of the servo coupling ROTEX® GS

Couplings for machine tools, automation technology, drive technology, medical technology, packaging technology.

TOOLFLEX®
Metal bellow-type couplings

Technical description

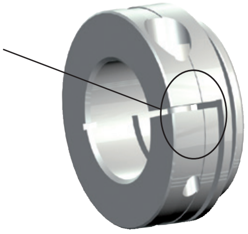
TOOLFLEX® is a metal bellow-type coupling, a coupling system which has proven in the field with numerous applications. The metal bellow compensates optimally for axial, radial and angular displacements. At the same time its geometric shape allows for high torsional stiffness and a low mass moment of inertia. TOOLFLEX® is manufactured in twelve sizes for maximum torques up to 600 Nm.
Its main application ranges are both positioning drives, e. g. ball spindles with a high incline, and indexing tables or planetary and worm gears with small gear ratios.



Subject to its proven bonding technique a non-positive, backlash-free connection of the aluminium hubs with the multilayer bellows made of stainless steel is generated. The flanged insert connection for sizes 16 to 55 ensures torque transmission of every single bellow layer. Since TOOLFLEX® is a metal coupling, it remains fatigue-endurable in the high-temperature range up to a maximum of 200 °C. Apart from that it is resistant to the effect of media respectively critical operating conditions.

The renowned shaft-hub-connection made by clamping hubs ensures an easy assembly by a radial clamping screw.
Subject to two slots in the hub there is no deformation of the bellow when tightening the clamping screw.
For higher friction torques type KN with taper hubs can be used.

Double slotted clamping hub



Types

Type with setscrew

Type with clamping hubs

Type S-H / M-H

Type ZR

Type PI

Type KN

Type CF

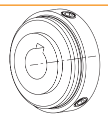
Summary

Size	Type	Bellow-hub-connection	Torque of bellow [Nm]		Standard types					Special types	
					Max. speed [rpm]						
			T_{KN} [Nm]	$T_{K\,max}$ [Nm]	Setscrew 1.0 / 1.1	Clamping hubs 2.5 / 2.6	S-H / M-H 7.8 / 7.9	ZR 7.5 / 7.6	PI	KN 6.5	CF
5	S	**Bonded** Maximum ambient temperature 100 °C	0.1	0.15	47,700						
	M										
7	S		1	1.5	31,800	31,800					
	M										
9	S		1.5	2.25	23,800	23,800					
	M										
12	S		2	3	19,000	19,100					
	M										
16	S	**Flanged** Maximum ambient temperature 200 °C	5	7.5	14,900	14,900					
	M										
20	S		15	22.5	11,900	11,900	9,550	3,000	11,900		
	M										
30	S		35	52.5		8,700	6,950	3,000	8,700	15,280	8,700
	M										
38	S		65	97.5		7,350	5,850	3,000	7,350	12,600	7,350
	M										
42	S		95	142.5		6,820			6,820	11,580	6,820
	M										
45	S		170	255		5,750	4,750	3,000	5,750	9,300	5,750
	M										
55 Al	S		340	510		4,800					
	M										
55	S	**Welded** Maximum ambient temperature 200 °C	340	510		4,800			4,800	7,870	
	M										
65	S		600	900		3,850					
	M										

TOOLFLEX®
Metal bellow-type couplings

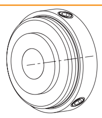
Types of hubs

Due to the use of TOOLFLEX® for many different applications and mounting situations, this coupling system is available with various hub types and two different lengths of bellows. A combination of the components forms a type.
TOOLFLEX® is supplied as a complete unit; a supply of individual components is not possible.



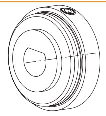
Type 1.0
with feather keyway and setscrew

Positive-locking power transmission. Permissible torque depending on the permissible surface pressure. Not suitable for backlash-free power transmission with heavily reversing operation.



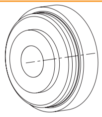
Type 1.1
without feather keyway, with setscrew

Non-positive torque transmission. Suitable for backlash-free transmission of very low torques.



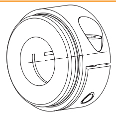
Type 1.3
with spline bore

Positive-locking power transmission. Spline on request of customers (e. g. for shaft with flattening).



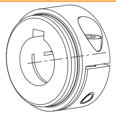
Type 1.2
without feather keyway, without setscrew

For low torques. Suitable for bonding or pressing of the shaft.



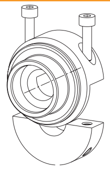
Type 2.5 clamping hub
double slotted, without feather keyway

Frictionally engaged, backlash-free shaft-hub-connection. Transmittable torques depending on bore diameter.



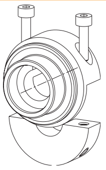
Type 2.6 clamping hub
double slotted, with feather keyway

Positive-locking power transmission with additional friction fit. The friction fit avoids resp. reduces reverse backlash. Surface pressure of the keyway connection is reduced.



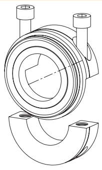
Type 7.5 clamping hub type DH
without feather keyway for double-cardanic connection

Frictionally engaged, backlash-free shaft-hub-connection for radial assembly of coupling. Transmittable torques depending on bore diameter.



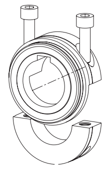
Type 7.6 clamping hub type DH
with feather keyway for double-cardanic connection

Positive-locking power transmission with additional friction fit for radial assembly of coupling. The friction fit avoids resp. reduces reverse backlash. Surface pressure of the keyway connection is reduced.



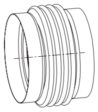
Type 7.8 clamping hub type H
without feather keyway for single-cardanic connection

Frictionally engaged, backlash-free shaft-hub-connection for radial assembly of coupling. Transmittable torques depending on bore diameter.



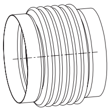
Type 7.9 clamping hub type H
with feather keyway for single-cardanic connection

Positive-locking power transmission with additional friction fit for radial assembly of coupling. The friction fit avoids resp. reduces reverse backlash. Surface pressure of the keyway connection is reduced.



Bellow type S

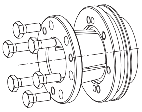
Bellow with 4 layers made of stainless steel; compact design with high torsion spring stiffness.



Bellow type M

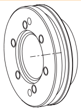
Bellow with 6 layers made of stainless steel; realizing large shaft distance dimensions and displacements.

Special designs on request of customers



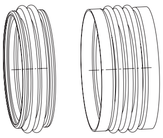
Type 6.5 taper hub KN

Integrated frictionally engaged shaft-hub-connection for the transmission of higher torques in the area of the shaft-hub-connection.



Flange

Flange to connect to customer's component.0
Special dimensions on request.

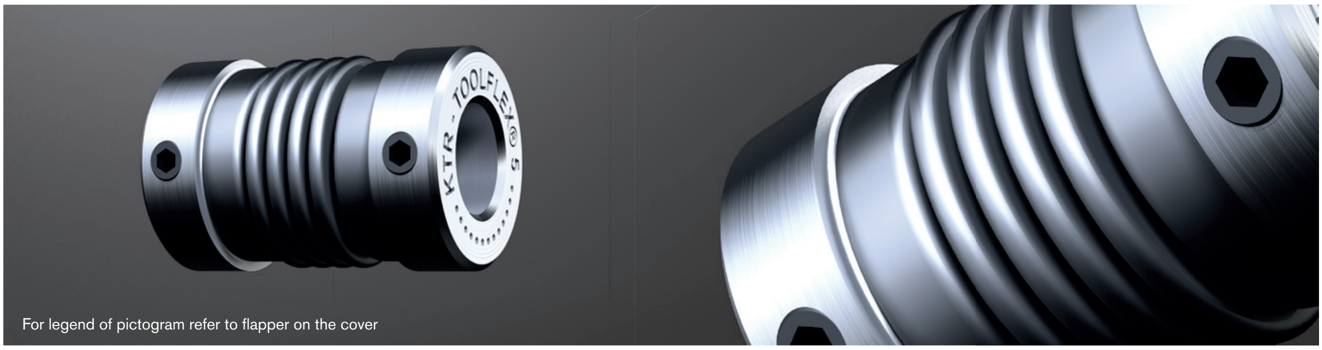


Special bellows

Bellows with 1, 2 or 3 layers available on request.

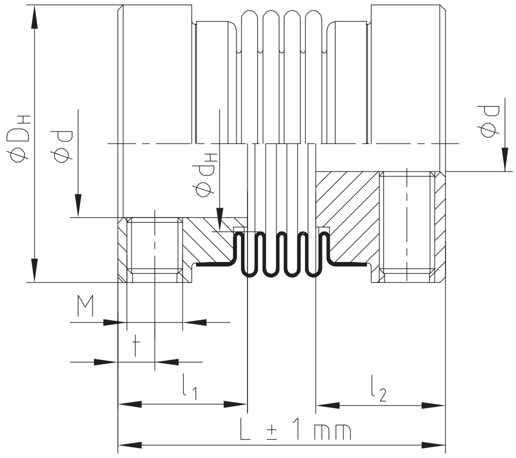
TOOLFLEX® S
Metal bellow-type couplings

Type S: Hubs with setscrews



For legend of pictogram refer to flapper on the cover

TOOLFLEX® S type 1.1

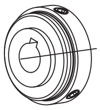


TOOLFLEX® S with setscrew (type 1.1) - Hub material aluminium/bellow material stainless steel																	
Size	Bellow-hub-connection	Torque of bellow TKN 1) [Nm]	Max. speed [rpm]	Dimensions [mm]									Perm. displacements			Torsion spring stiff-ness CT [Nm/rad]	Weight 3) [kg]
				Finish bore d		General				Setscrew							
				Min.	Max.	DH	dH	L	l1, l2	M	t	z = number 2)	Axial [mm]	Radial [mm]	Angular [degree]		
5	4)	0.1	47700	2	5	10	6	15	6	M2	1.8	1	±0.30	0.10	0.7	97	0.0027
7		1.0	31800	3	8	15	9	18	7	M3	2.0	1	±0.30	0.10	0.7	390	0.005
9		1.5	23800	3	10	20	12	21	8	M3	2.2	2	±0.35	0.15	1.0	750	0.010
12		2.0	19000	4	14	25	16	27.5	11	M4	2.8	2	±0.40	0.15	1.0	1270	0.017
16	5)	5.0	14900	5	18	32	20	37	13	M5	4	2	±0.30	0.15	1.0	4500	0.046
20		15	11900	6	25	40	27	42	15	M5	5	2	±0.40	0.15	1.0	9600	0.076

[1] For selection see page 22 et seqq.
[2] Number per hub; from size 9: 2 x 120° offset.
[3] Figures refer to the complete coupling with max. bore.
[4] Bonded
[5] Flanged

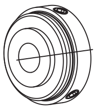
Types of hubs

Type 1.0



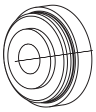
Hub with feather keyway and setscrew

Type 1.1



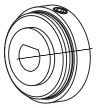
Hub without feather keyway, with setscrew

Type 1.2



Hub without feather keyway, without setscrew

Type 1.3

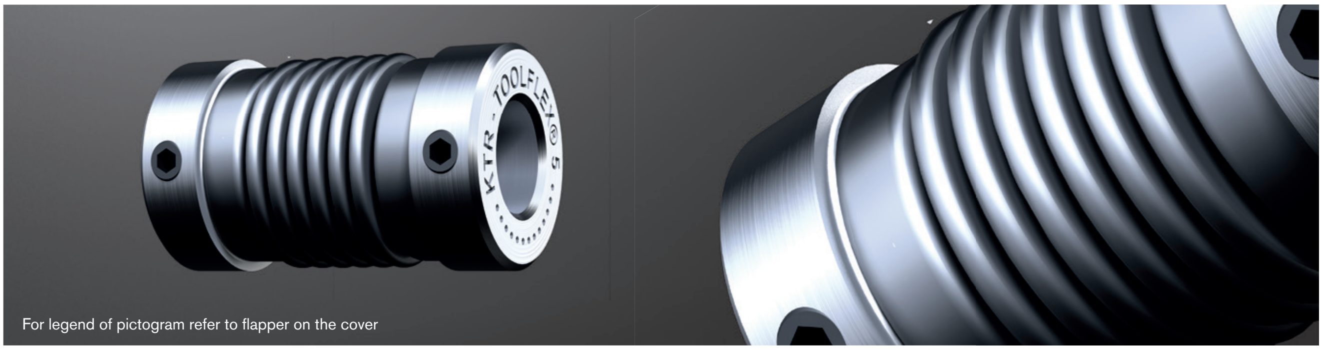


Hub with spline bore

Ordering example:	TOOLFLEX® 7 S	1.1 - Ø4		1.1 - Ø6	
	Size and type of coupling	Hub type	Finish bore	Hub type	Finish bore

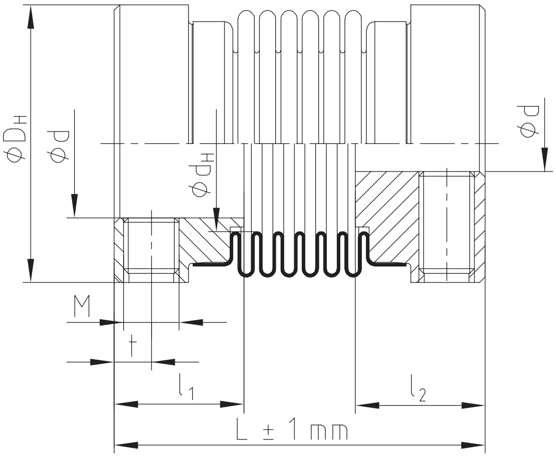
TOOLFLEX® M
Metal bellow-type couplings

Type M: Hubs with setscrews



For legend of pictogram refer to flapper on the cover

TOOLFLEX® M type 1.1

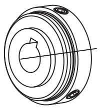


TOOLFLEX® M with setscrew (type 1.1) - Hub material aluminium/bellow material stainless steel																	
Size	Bellow-hub-connection	Torque of bellow T_{KN} [1] [Nm]	Max. speed [rpm]	Dimensions [mm]									Perm. displacements			Torsion spring stiffness C_T [Nm/rad]	Weight [3] [kg]
				Finish bore d		General				Setscrew							
				Min.	Max.	D_H	d_H	L	l_1, l_2	M	t	z = number [2]	Axial [mm]	Radial [mm]	Angular [degree]		
5	[4]	0.1	47700	2	5	10	6	17	6	M2	1.8	1	±0.40	0.15	1.0	75	0.003
7		1.0	31800	3	8	15	9	20	7	M3	2.0	1	±0.40	0.15	1.0	300	0.006
9		1.5	23800	3	10	20	12	24	8	M3	2.2	2	±0.50	0.20	1.5	580	0.011
12	[5]	2.0	19000	4	14	25	16	31	11	M4	2.8	2	±0.60	0.20	1.5	980	0.019
16		5.0	14900	5	18	32	20	41	13	M5	4	2	±0.50	0.20	1.5	3050	0.049
20		15	11900	6	25	40	27	49	15	M5	5	2	±0.60	0.20	1.5	6600	0.082

[1] For selection see page 22 et seqq.
[2] Number per hub; from size 9: 2 x 120° offset.
[3] Figures refer to the complete coupling with max. bore.
[4] Bonded
[5] Flanged

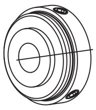
Types of hubs

Type 1.0



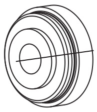
Hub with feather keyway and setscrew

Type 1.1



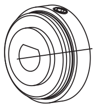
Hub without feather keyway, with setscrew

Type 1.2



Hub without feather keyway, without setscrew

Type 1.3

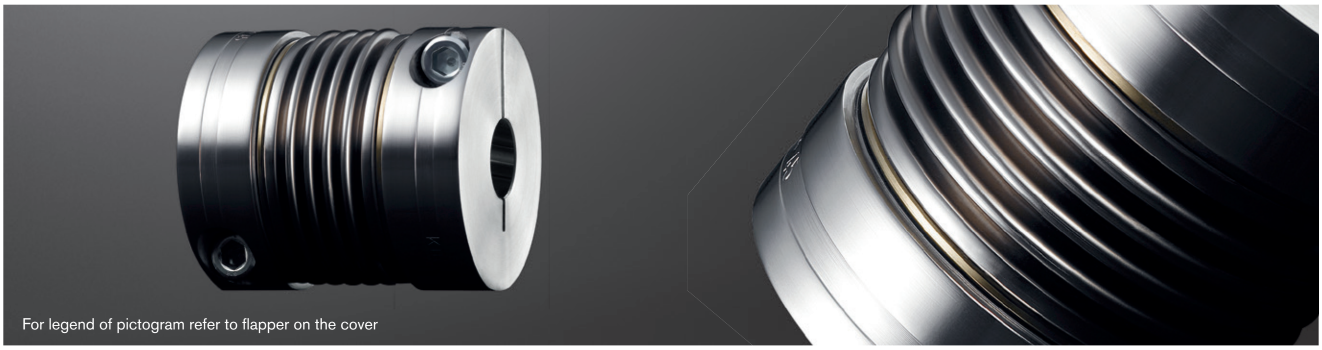


Hub with spline bore

Ordering example:	TOOLFLEX® 7 M	1.1 - Ø4		1.1 - Ø6	
	Size and type of coupling	Hub type	Finish bore	Hub type	Finish bore

TOOLFLEX® S
Metal bellow-type couplings

Type S: with clamping hubs


For legend of pictogram refer to flapper on the cover

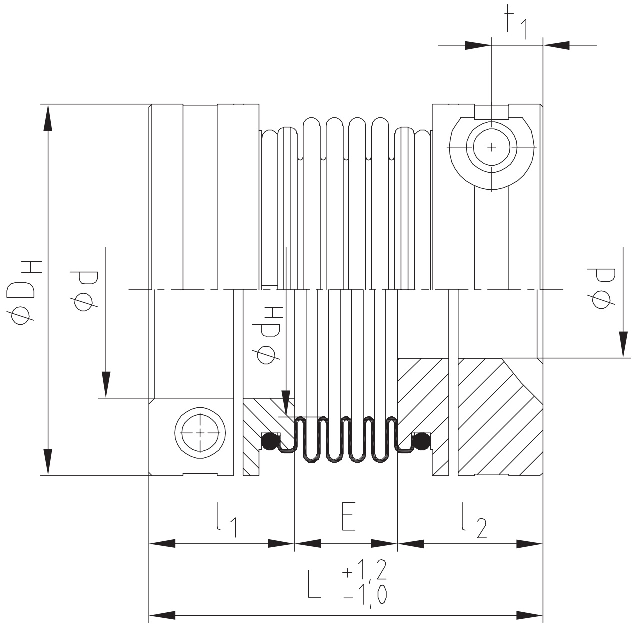
TOOLFLEX® Type S with clamping hubs - Hub material aluminium (size 55/65 steel)/bellow material stainless steel												
Size	Dimensions [mm]											
	Finish bore d		General					Clamping screws DIN EN ISO 4762				
	Min.	Max.	L	l_1, l_2	E	D_H	d_H	M_1	DK	t_1	e_1	T_A [Nm]
7	3	7	24	9	6	15	9	M2	16.5	3.2	5	0.37
9	3	9	29	11	7	20	12	M2.5	21.5	3.5	7.1	0.76
12	4	12	34.5	13	8.5	25	16	M3	26.5	4	8.5	1.34
16	5	16	45	17.0	11	32	20	M4	35.0	5	12.0	2.9
20	8	20	55	21.5	12	40	27	M5	43.5	6	14.5	6
30	10	30	63	23.0	17	55	33	M6	58.0	7	19	10
38	12	38	69	25.5	18	65	42	M8	72.6	9	25	25
42	14	42	84	30.0	24	70	46	M8	76.1	9	27	25
45	14	45	86.5	32.0	22.5	83	58	M10	89.0	11	30	49
55 Al	20	55	111	40.0	31	100	73	M12	106.0	14	37	86
55 3)	20	55	111	40.0	31	100	73	M12	106.0	14	37	120
65 3)	30	65	126	45.0	36	125	95	M14	127.2	15	45	185

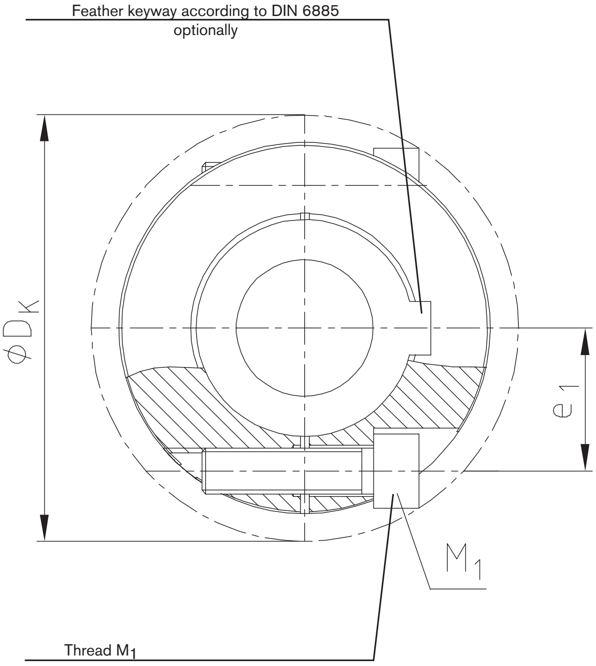
Technical data												
Size	Bellow-hub-connection	Torque of bellow T_{KN} 1) [Nm]	Max. speed [rpm]	Hub material	Moment of inertia 2) $[x10^{-6}kgm^2]$	Torsion spring stiffness C_T [Nm/rad]	Axial stiffness C_a [N/mm]	Radial stiffness C_r [N/mm]	Perm. displacements			Weight 2) [kg]
									Axial [mm]	Radial [mm]	Angular [degree]	
7	Bonded	1	31800	Aluminium	0.26	390	—	—	±0.3	0.10	0.7	0.007
9		1.5	23800	Aluminium	0.97	750	—	—	±0.35	0.15	1.0	0.014
12		2	19100	Aluminium	2.6	1270	—	—	±0.4	0.15	1.0	0.025
16	Flanged	5	14900	Aluminium	9	4500	43	138	±0.3	0.15	1.0	0.06
20		15	11950	Aluminium	30	9600	63	189	±0.4	0.15	1.0	0.12
30		35	8700	Aluminium	114	17800	97	233	±0.5	0.20	1.5	0.24
38		65	7350	Aluminium	245	37400	108	318	±0.6	0.20	1.5	0.35
42		95	6820	Aluminium	396	54700	120	499	±0.6	0.20	1.5	0.49
45		170	5750	Aluminium	931	95800	132	738	±0.9	0.20	1.5	0.82
55 Al		340	4800	Aluminium	1665	144100	160	894	±1.1	0.25	1.5	1.50
55 3)	3)	340	4800	Steel	4996	144100	160	894	±1.0	0.25	1.5	3.20
65 3)		600	3850	Steel	13318	322740	212	1365	±1.0	0.30	1.5	5.50

1) For selection see page 22 et seqq.
2) Figures refer to the complete coupling with max. bore.
3) Hub made of steel welded with bellow.

Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type 2.5																														
Size	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø50	Ø55	Ø60	Ø65
7	0.84	0.91	0.97	1.04	1.10																									
9	1.87	1.98	2.09	2.20	2.31	2.41	2.52																							
12		3.48	3.65	3.81	3.98	4.14	4.31	4.48	4.64	4.81																				
16			8.5	8.8	9.1	9.4	9.7	9.9	10.2	10.5	11.1	11.4	11.7																	
20						17.6	18.1	18.6	19.1	19.5	20.5	21.0	21.4	22.4	22.9	23.3														
30									33.1	33.8	35.1	35.8	36.5	37.8	38.5	39.2	41.9	42.5	44.6	45.9										
38											79.2	80.4	81.7	84.2	85.4	86.6	91.6	92.8	96.5	99.0	102	105	109							
42											84.2	85.4	86.6	89.1	90.3	91.6	96.5	97.8	102	104	106	110	114	116	119					
45																157	165	167	173	177	181	187	193	197	200	206				
55 Al																270	281	284	293	298	304	313	321	327	333	341	356	371		
55 3)																	397	401	413	421	429	442	454	462	470	482	502	523		
65 3)																				720	732	750	768	780	792	810	840	870	900	930

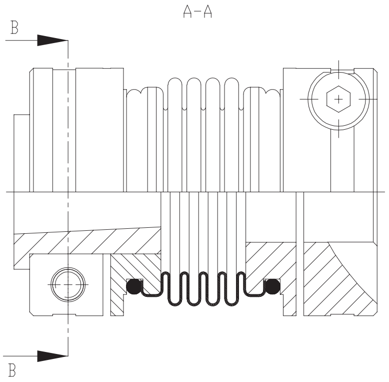
Ordering example:	TOOLFLEX® 30 S	2.5	Ø25	2.5	Ø30
	Size and type of coupling	Hub type	Finish bore	Hub type	Finish bore

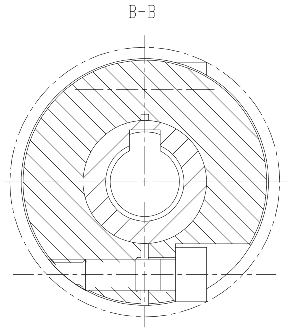




Other types:

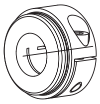
Type for FANUC motors





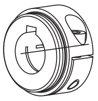
Types of hubs

Type 2.5



Clamping hub double slot without feather keyway

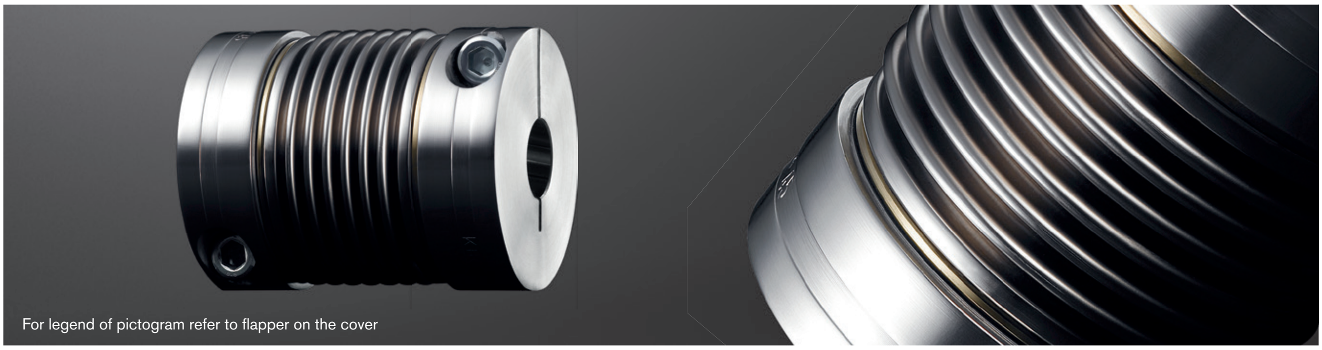
Type 2.6



Clamping hub double slot with feather keyway

TOOLFLEX® M
Metal bellow-type couplings

Type M: with clamping hubs



For legend of pictogram refer to flapper on the cover

E ΔKa ΔKw ΔKr 100 °C 200 °C

TOOLFLEX® Type M with clamping hubs - Hub material aluminium (size 55/65 steel)/bellow material stainless steel

Size	Dimensions [mm]										
	Finish bore d		General					Clamping screws DIN EN ISO 4762			
	Min.	Max.	L	l_1, l_2	E	D_H	d_H	M_1	DK	t_1	e_1	T_A [Nm]
7	3	7	26	9	8	15	9	M2	16.5	3.2	5	0.37
9	3	9	32	11	10	20	12	M2.5	21.5	3.5	7.1	0.76
12	4	12	38	13	12	25	16	M3	26.5	4	8.5	1.34
16	5	16	49	17.0	15	32	20	M4	35.0	5	12	2.9
20	8	20	62	21.5	19	40	27	M5	43.5	6	14.5	6
30	10	30	72	23.0	26	55	33	M6	58.0	7	19	10
38	12	38	81	25.5	30	65	42	M8	72.6	9	25	25
42	14	42	95	30.0	35	70	46	M8	76.1	9	27	25
45	14	45	103	32.0	39	83	58	M10	89.0	11	30	49
55 Al	20	55	125	40.0	45	100	73	M11	106.0	14	37	86
55 [3]	20	55	125	40.0	45	100	73	M12	106.0	14	37	120
65 [3]	30	65	142	45.0	52	125	95	M14	127.2	15	45	185

Technical data

Size	Bellow-hub-connection	Torque of bellow T_{KN} [1] [Nm]	Max. speed [rpm]	Hub material	Moment of inertia [2] [x10⁻⁶kgm²]	Torsion spring stiffness C_T [Nm/rad]	Axial stiffness C_a [N/mm]	Radial stiffness C_r [N/mm]	Perm. displacements			Weight [2] [kg]
									Axial [mm]	Radial [mm]	Angular [degree]	
7	Bonded	1	31800	Aluminium	0.3	300	—	—	±0.4	0.15	1.0	0.008
9		1.5	23800	Aluminium	1.0	580	—	—	±0.5	0.20	1.5	0.015
12		2	19100	Aluminium	2.7	980	—	—	±0.6	0.20	1.5	0.03
16	Flanged	5	14900	Aluminium	10	3050	29	92	±0.5	0.20	1.5	0.06
20		15	11950	Aluminium	32	6600	42	126	±0.6	0.20	1.5	0.14
30		35	8700	Aluminium	123	14800	65	155	±0.8	0.25	2.0	0.31
38		65	7350	Aluminium	262	24900	72	212	±0.8	0.25	2.0	0.45
42		95	6820	Aluminium	427	36500	80	333	±0.8	0.25	2.0	0.52
45		170	5750	Aluminium	1020	64000	88	492	±1.0	0.25	2.0	1.13
55 Al		340	4800	Aluminium	1706	96100	107	598	±1.1	0.30	20	2.0
55 [3]	[3]	340	4800	Steel	5118	96100	107	598	±1.0	0.30	2.0	3.3
65 [3]		600	3850	Steel	13727	226550	135	910	±2.0	0.35	2.0	5.6

[1] For selection see page 22 et seqq.

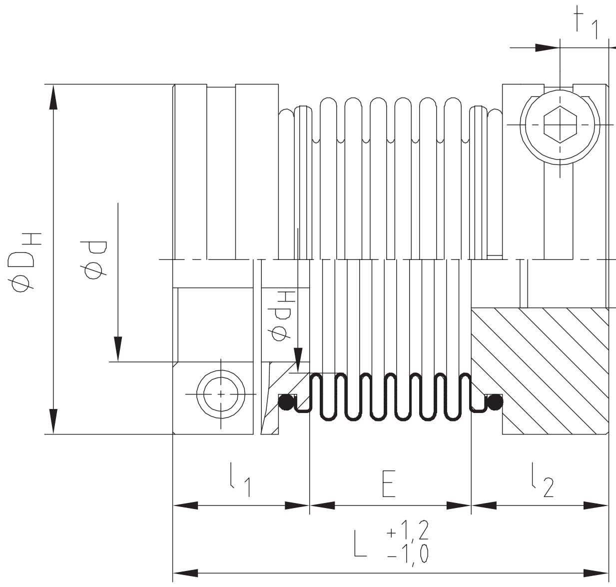
[2] Figures refer to the complete coupling with max. bore.

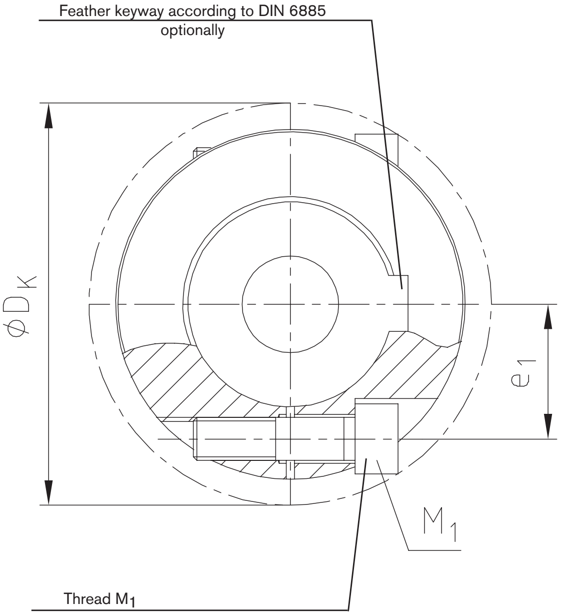
[3] Hub made of steel welded with bellow.

Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type 2.5

Size	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø50	Ø55	Ø60	Ø65
7	0.84	0.91	0.97	1.04	1.10																									
9	1.87	1.98	2.09	2.20	2.31	2.41	2.52																							
12		3.48	3.65	3.81	3.98	4.14	4.31	4.48	4.64	4.81																				
16			8.5	8.8	9.1	9.4	9.7	9.9	10.2	10.5	11.1	11.4	11.7																	
20						17.6	18.1	18.6	19.1	19.5	20.5	21.0	21.4	22.4	22.9	23.3														
30									33.1	33.8	35.1	35.8	36.5	37.8	38.5	39.2	41.9	42.5	44.6	45.9										
38											79.2	80.4	81.7	84.2	85.4	86.6	91.6	92.8	96.5	99.0	102	105	109							
42											84.2	85.4	86.6	89.1	90.3	91.6	96.5	97.8	102	104	106	110	114	116	119					
45																157	165	167	173	177	181	187	193	197	200	206				
55 Al																270	281	284	293	298	304	313	321	327	333	341	356	371		
55 [3]																	397	401	413	421	429	442	454	462	470	482	502	523		
65 [3]																				720	732	750	768	780	792	810	840	870	900	930

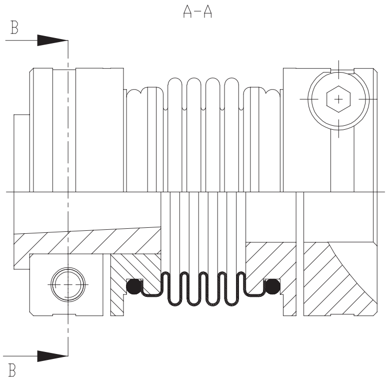
Ordering example:	TOOLFLEX® 30 M	2.5 - Ø25		2.5 - Ø30	
	Size and type of coupling	Hub type	Finish bore	Hub type	Finish bore

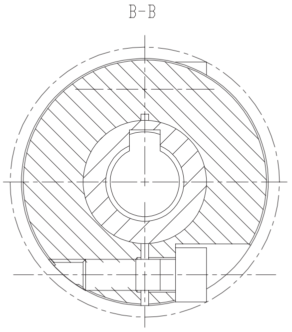




Other types:

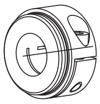
Type for FANUC motors





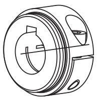
Types of hubs

Type 2.5



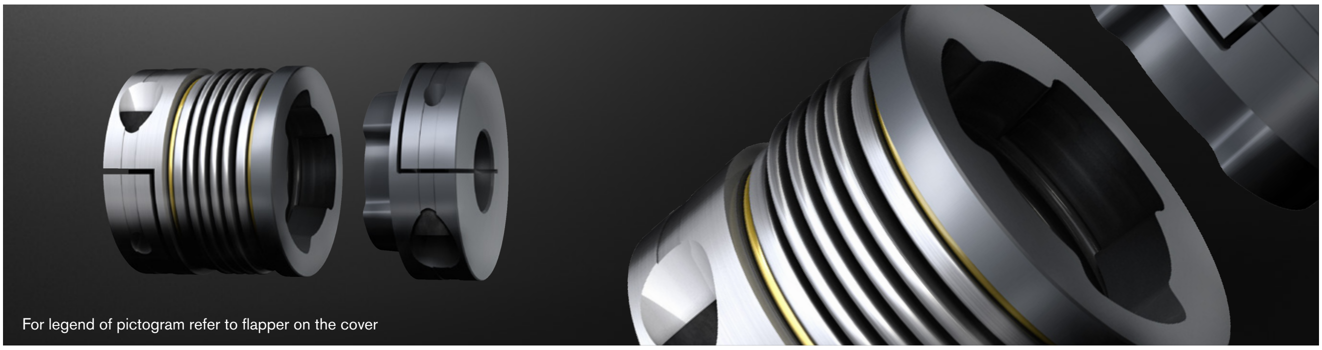
Clamping hub double slot without feather keyway

Type 2.6



Clamping hub double slot with feather keyway

Axial plug-in



For legend of pictogram refer to flapper on the cover

TOOLFLEX® Type S-PI - Hub material aluminium/bellow material stainless steel															
Size	Type	Dimensions [mm]													
		General								Clamping screws DIN EN ISO 4762					
		Min. d_1, d_2	Max. d_1	Max. d_2	L [1]	l_1	l_2	E	D_H	H	M_1, M_2	DK	e	t_1, t_2	T_A [Nm]
20	S	8	20	20	67.0	21.5	33.5	12.0	40	0.5 - 1	M5	43.5	14.5	6	6
30	S	10	30	28	73.5	23.0	33.5	17.0	55	0.5 - 1	M6	58.0	19.0	7	10
38	S	12	38	32	87.5	25.5	44.0	18.0	65	0.5 - 1.5	M8	72.6	25.0	9	25
42	S	14	42	35	93.0	30	39.0	21.0	70	0.5 - 1.5	M8	76.1	25.0	9	25
45	S	14	45	42	96.0	32.0	41.5	22.5	83	0.5 - 1.5	M10	89.0	30.0	11	49
55 [4]	S	20	55	55	130.1	40	58.5	31.5	100	0.5 - 1.5	M12	106.0	37	14	120

Technical data of TOOLFLEX® S-PI										
Size	Type	Torque of bellow T_{KN} [2] [Nm]	Max. speed [rpm]	Moment of inertia [3] [x10⁻⁶kgm²]	Torsion spring stiffness C_T [Nm/rad]	Axial stiffness C_a [N/mm]	Radial stiffness C_r [N/mm]	Perm. displacements		Weight [3] [kg]
								Radial [mm]	Angular [degree]	
20	S	15	11950	37	6600	63	189	0.15	1.0	0.15
30	S	35	8700	140	11500	97	233	0.20	1.5	0.29
38	S	65	7350	329	21500	108	318	0.20	1.5	0.50
42	S	95	6820	396	31500	120	499	0.20	1.5	0.49
45	S	170	5750	1031	55000	132	738	0.25	1.5	0.93
55 [4]	S	340	4800	6150	144100	160	894	0.25	1.5	3.80

TOOLFLEX® Type M-PI - Hub material aluminium/bellow material stainless steel															
Size	Type	Dimensions [mm]													
		General								Clamping screws DIN EN ISO 4762					
		Min. d_1, d_2	Max. d_1	Max. d_2	L [1]	l_1	l_2	E	D_H	H	M_1, M_2	DK	e	t_1, t_2	T_A [Nm]
20	M	8	20	20	74.0	21.5	33.5	19.0	40	0.5 - 1	M5	43.5	14.5	6	6
30	M	10	30	28	82.5	23.0	33.5	26.0	55	0.5 - 1	M6	58.0	19.0	7	10
38	M	12	38	32	99.5	25.5	44.0	30.0	65	0.5 - 1.5	M8	72.6	25.0	9	25
42	M	14	42	35	104.0	30	39.0	32.0	70	0.5 - 1.5	M8	76.1	25.0	9	25
45	M	14	45	42	112.5	32.0	41.5	39.0	83	0.5 - 1.5	M10	89.0	30.0	11	49
55	M	20	55	55	143.6	40	58.5	45	100	0.5 - 1.5	M12	106.0	37	14	120

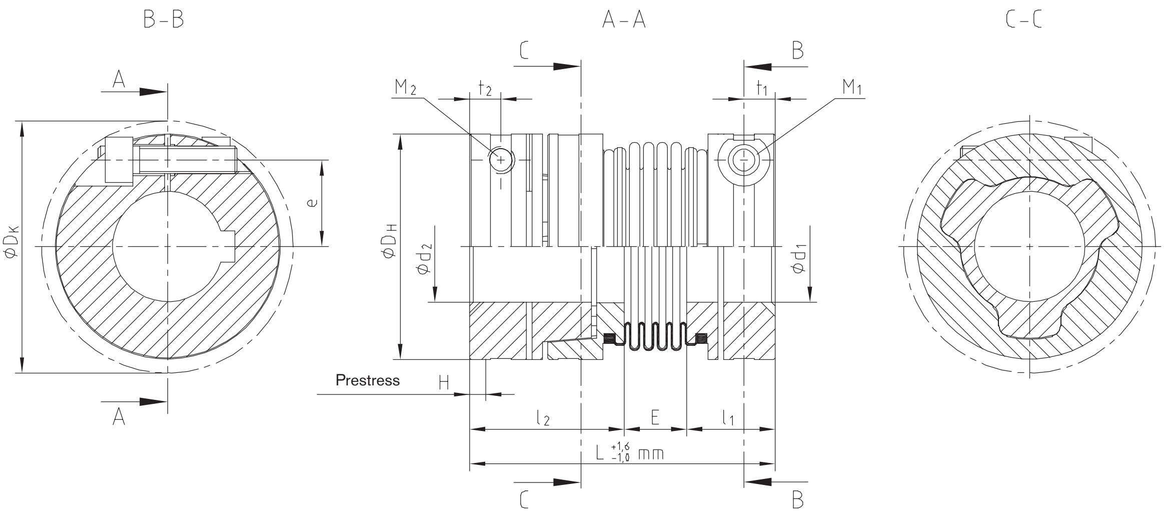
Technical data of TOOLFLEX® M-PI										
Size	Type	Torque of bellow T_{KN} [2] [Nm]	Max. speed [rpm]	Moment of inertia [3] [x10⁻⁶kgm²]	Torsion spring stiffness C_T [Nm/rad]	Axial stiffness C_a [N/mm]	Radial stiffness C_r [N/mm]	Perm. displacements		Weight [3] [kg]
								Radial [mm]	Angular [degree]	
20	M	15	11950	38	4900	42	126	0.20	1.5	0.16
30	M	35	8700	145	10200	65	155	0.25	2.0	0.31
38	M	65	7350	346	15100	72	212	0.25	2.0	0.52
42	M	95	6820	427	22000	80	333	0.25	2.0	0.52
45	M	170	5750	1127	41000	88	492	0.30	2.0	1.00
55 [4]	M	340	4800	6270	96100	107	598	0.30	2.0	3.90

[1] When plugged in
[2] For selection see page 22 et seqq.
[3] Figures refer to the complete coupling with max. bore.
[4] Hub made of steel welded with bellow.

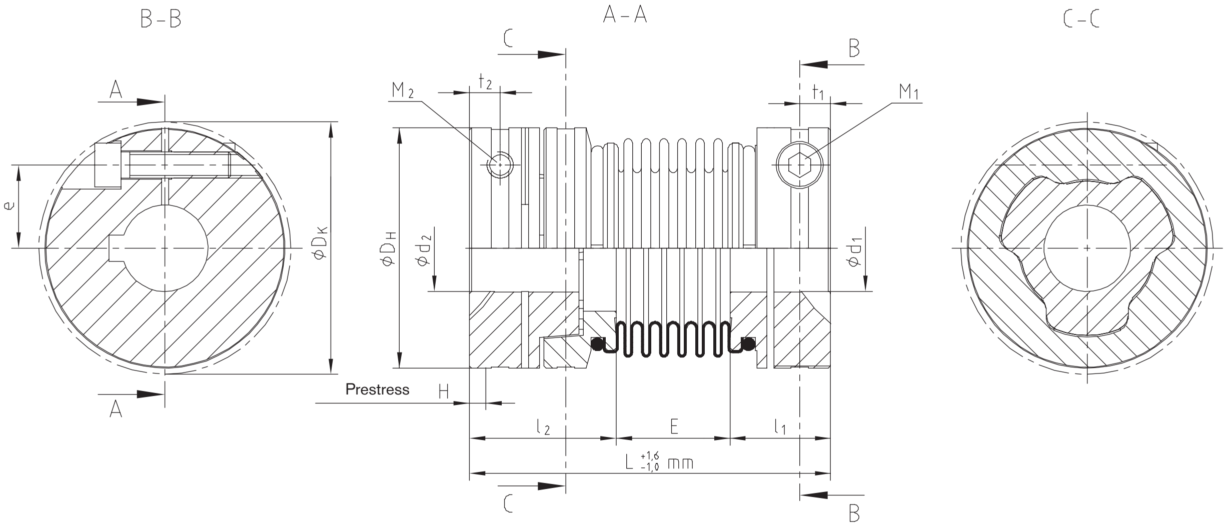
Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type 2.5 for $Ød_1/Ød_2$																				
Size	Ø8	Ø9	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42
20	17.6	18.1	18.6	19.1	19.5	20.5	21.0	21.4	22.4	22.9	23.3									
30				33.1	33.8	35.1	35.8	36.5	37.8	38.5	39.2	41.9	42.5	44.6	45.9					
38						79.2	80.4	81.7	84.2	85.4	86.6	91.6	92.8	96.5	99.0	102				
42						79.2	80.4	81.7	84.2	85.4	86.6	91.6	92.8	96.5	99.0	102	105			
45											157	165	167	173	177	181	187	193	197	200
55												397	401	413	421	429	442	454	462	470

Ordering example:	TOOLFLEX® 30 S-PI	d_1 - Ø22	d_2 - Ø18
	Size and type of coupling	Finish bore	Finish bore

TOOLFLEX® S-PI

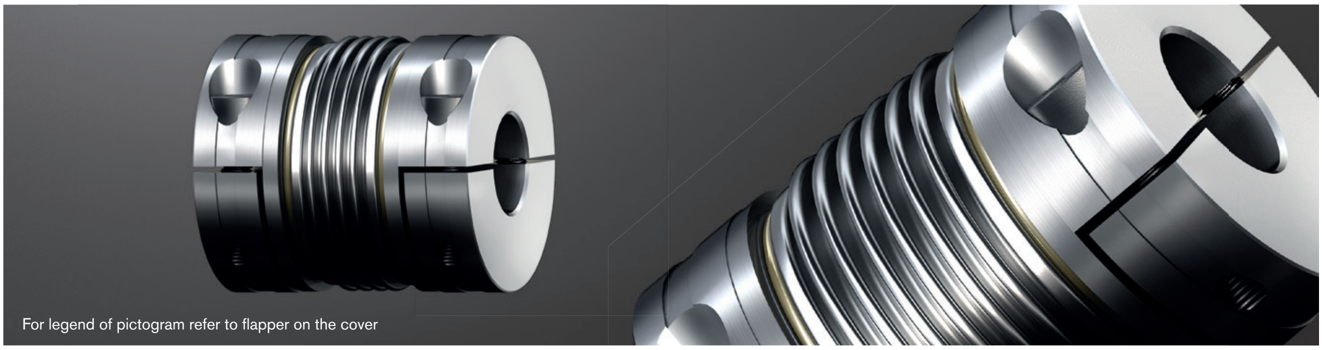


TOOLFLEX® M-PI



TOOLFLEX® S-H / M-H
Metal bellow-type couplings

Half shell clamping hubs


For legend of pictogram refer to flapper on the cover

TOOLFLEX® type S-H / shell clamping hubs - Hub material aluminium/bellow material stainless steel													
Size	Finish bore d		Dimensions [mm]										
			General								Clamping screws DIN EN ISO 4762		
	Min.	Max.	L	l_1, l_2	E	D_H	DK	E_1	t_1	x_1, x_2	e	M	T_A [Nm]
20	8	20	51	19.5	12.0	40	41.2	26.0	5.5	12.5	14.5	M4	5.0
30	10	30	68	25.5	17.0	55	57.7	34.0	7.5	17.0	19.0	M6	15.0
38	12	38	78	30.0	18.0	65	72.6	36.0	9.5	21.0	25.0	M8	40.0
45	14	45	94.5	36.0	22.5	83	88.8	46.5	11.0	24.0	30.0	M10	70.0

Technical data of TOOLFLEX® S-H											
Size	Bellow-hub-connection	Torque of bellow T_{KN} [1] [Nm]	Max. speed [rpm]	Moment of inertia [2] [x10⁻⁶kgm²]	Torsion spring stiffness C_T [Nm/rad]	Axial stiffness C_a [N/mm]	Radial stiffness C_r [N/mm]	Perm. displacements			Weight [2] [kg]
								Axial [mm]	Radial [mm]	Angular [degree]	
20	Flanged	15	9550	28	9600	63	189	±0.4	0.15	1.0	0.110
30		35	6950	132	17800	97	233	±0.5	0.20	1.5	0.285
38		65	5850	292	37400	108	318	±0.6	0.20	1.5	0.422
45		170	4750	1003	95800	132	738	±0.9	0.20	1.5	0.897

TOOLFLEX® type M-H / half shell clamping hubs - Hub material aluminium/bellow material stainless steel													
Size	Finish bore d		Dimensions [mm]										
			General								Clamping screws DIN EN ISO 4762		
	Min.	Max.	L	l_1, l_2	E	D_H	DK	E_1	t_1	x_1, x_2	e	M	T_A [Nm]
20	8	20	58	19.5	19.0	40	41.2	33.0	5.5	12.5	14.5	M4	5.0
30	10	30	77	25.5	26.0	55	57.7	43.0	7.5	17.0	19.0	M6	15.0
38	12	38	90	30.0	30.0	65	72.6	48.0	9.5	21.0	25.0	M8	40.0
45	14	45	111	36.0	39.0	83	88.8	63.0	11.0	24.0	30.0	M10	70.0

Technical data of TOOLFLEX® M-H											
Size	Bellow-hub-connection	Torque of bellow T_{KN} [1] [Nm]	Max. speed [rpm]	Moment of inertia [2] [x10⁻⁶kgm²]	Torsion spring stiffness C_T [Nm/rad]	Axial stiffness C_a [N/mm]	Radial stiffness C_r [N/mm]	Perm. displacements			Weight [2] [kg]
								Axial [mm]	Radial [mm]	Angular [degree]	
20	Flanged	15	9550	29	6600	42	126	±0.6	0.20	1.5	0.115
30		35	6950	138	14800	65	155	±0.8	0.25	2.0	0.304
38		65	5850	310	24900	72	212	±0.8	0.25	2.0	0.445
45		170	4750	1069	64000	88	492	±1.0	0.25	2.0	0.947

[1] For selection see page 22 et seqq.

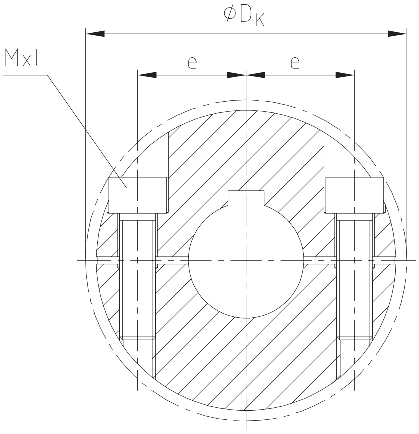
[2] Figures refer to the complete coupling with max. bore.

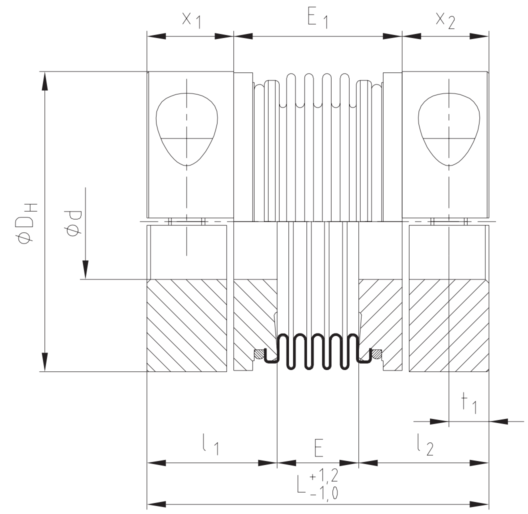
To make sure that the coupling can be assembled/disassembled radially, observe the insertion dimension x1/x2 of the shafts.

Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type 7.8 for $Ød_1/Ød_2$																					
Size	Ø8	Ø9	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45
20	20	23	25	28	30	35	38	40	45	48	50										
30			51	56	61	71	76	81	92	97	102	122	127	143							
38					120	140	150	160	180	190	200	240	250	280	300	320	350	380			
45						197	211	226	254	268	282	338	352	395	423	451	493	536	564	592	634

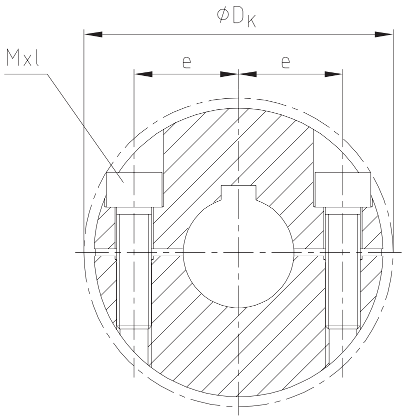
Ordering example:	TOOLFLEX® 30 S-H	7.8 - Ø25		7.9 - Ø30	
	Size and type of coupling	Hub type	Finish bore	Hub type	Finish bore

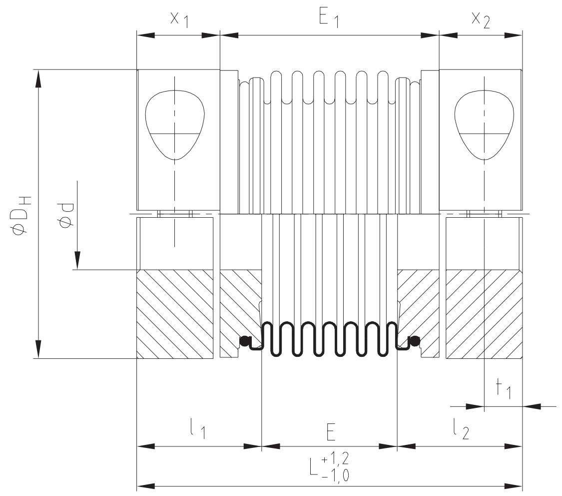
TOOLFLEX® S-H





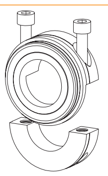
TOOLFLEX® M-H





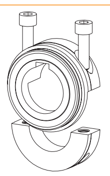
Types of hubs

Type 7.8



clamping hub type H without feather keyway for single-cardanic connection

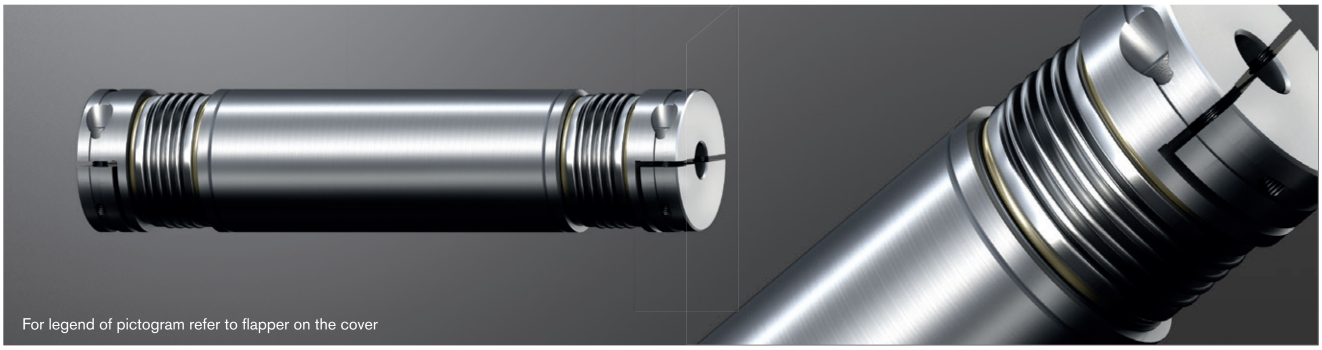
Type 7.9



clamping hub type H with feather keyway for single-cardanic connection (on request)

TOOLFLEX® ZR
Metal bellow-type couplings

Intermediate shaft coupling with aluminium pipe bonded


For legend of pictogram refer to flapper on the cover

TOOLFLEX® type ZR / half shell clamping hubs - Hub material aluminium/bellow material stainless steel

Size	Finish bore d		Dimensions [mm]												
			General											Clamping screws DIN EN ISO 4762	
	Min.	Max.	D_H	L	l_3	L_R		$L_{ZR} = L_R + 2 \bullet l_3$		d_R	DK	t_1	e	M	T_A [Nm]
						Min.	Max.	Min.	Max.						
20	8	20	40	40	12.5	80	2975	105	3000	40	41.2	5.5	14.5	M4	5
30	10	28	55	58.5	17.0	114	3466	148	3500	50	58.0	7.5	19	M6	15
38	12	38	65	61	21.0	129	3958	171	4000	60	72.6	9.5	25	M8	40
45	14	45	83	78.5	25.0	149	3950	199	4000	80	89.0	11.0	30	M10	70

Technical data of TOOLFLEX® ZR

Size	Torque of bellow T_{KN} [1] [Nm]	Moment of inertia [10^{-3} kgm²]		Static torsion spring stiffness [Nm/rad]
		Z_R hub [2]	Pipe/meter	Z_W C_2 [3]
20	15	0.024378	0.329	1935
30	35	0.121256	0.673	3800
38	65	0.253162	1.199	7240
45	170	0.961451	4.560	23183

[1] For selection see page 22 et seqq.
[2] Figures refer to the complete coupling with max. bore.
[3] Torsion spring stiffness with a length of 1 m of intermediate pipe with $L_{pipe} = L_{ZR} - 2 \cdot L$

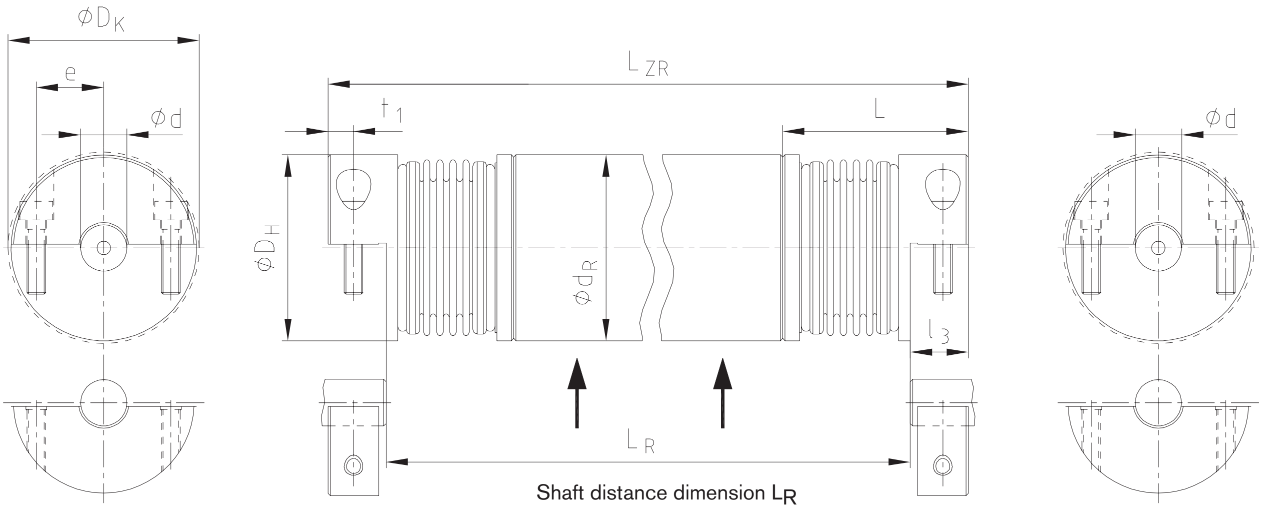
For inquiries and orders please specify the shaft distance dimension L_R along with the maximum speed to review the critical bending speed.
Straightness/concentricity of pipes according to DIN EN 755-1.

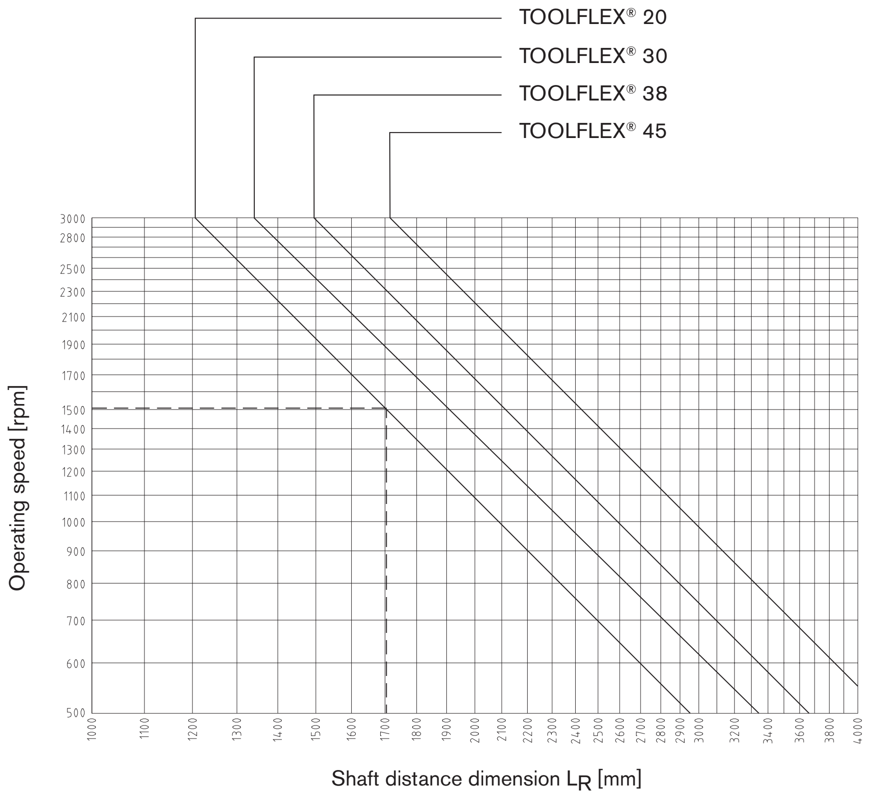
Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type 7.5 for Ød$_1$/Ød$_2$

Size	Ø8	Ø9	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45
20	20	23	25	28	30	35	38	40	45	48	50										
30			51	56	61	71	76	81	92	97	102	122	127	143							
38					120	140	150	160	180	190	200	240	250	280	300	320	350	380			
45						197	211	226	254	268	282	338	352	395	423	451	493	536	564	592	634

Ordering example:	TOOLFLEX® 30	ZR	1200 mm	7.5 - Ø24		7.6 - Ø24	
	Size and type of coupling	Type	Shaft distance dimension (L_R)	Hub type	Finish bore	Hub type	Finish bore

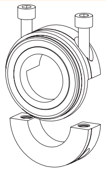
TOOLFLEX® ZR





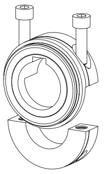
Types of hubs

Type 7.5



Clamping hub type DH without feather keyway for double-cardanic connection

Type 7.6

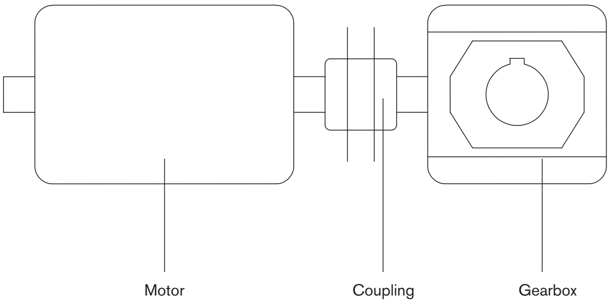


Clamping hub type DH with feather keyway for double-cardanic connection (on request)

Technical description

RADEX®-NC is a line specifically developed for servo technology. With this coupling a set of torsionally rigid steel laminas that are soft in bending ensure reliable compensation for axial, angular and radial shaft displacements. As an all-metal coupling - the laminas are made of stainless steel - RADEX®-NC can even be used with high temperatures (up to 200 °C) and under aggressive ambient conditions. RADEX®-NC is manufactured in 10 sizes from size 5 to 75 for max. torques up to 4800 Nm. In addition to the two different types (EK = single-cardanic and DK = double-cardanic) it is available in five different hub types.

A typical application of RADEX®-NC are backlash-free worm gear pairs with low gear ratios. For reason of the gear ratio of the gearbox the rigidity of the coupling must be converted from the drive side into the driven side. Here the gear ratio itself has a decisive effect because it is included in the calculation by square. This converted rigidity is added in line with the gearbox stiffness in order to obtain the total rigidity. In case of gear ratios that are smaller than i = 8 we recommend to use RADEX®-NC due to the loss of rigidity of the total system arising with the use of flexible couplings.

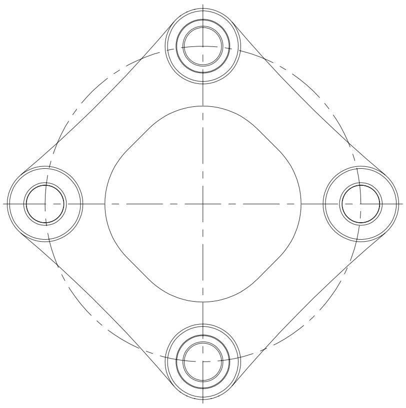


Use in potentially explosive atmospheres

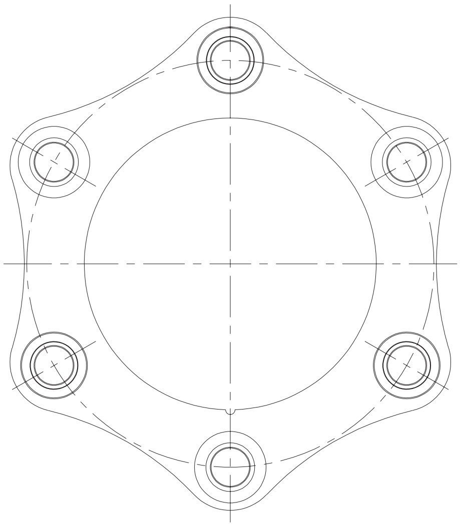
RADEX®-NC couplings are suitable for power transmission in drives in potentially explosive atmospheres. The couplings are assessed and approved as units of category 2G/2D according to EU directive 2014/34/EU and thus suitable for the use in potentially explosive atmospheres of zone 1, 2, 21 and 22. Please read through our information included in the respective type examination certificate and the operating and assembly instructions at www.ktr.com.
Selection:
If used in potentially explosive atmospheres, the clamping hubs without feather keyway only for use in category 3 (with feather keyway for cat. 2) must be selected in that there is a minimum safety factor of s = 2 between the peak torque (including all operating parameters) and the nominal torque and frictional torque of engagement of the coupling.

RADEX®-NC DK and EK
Servo laminae couplings

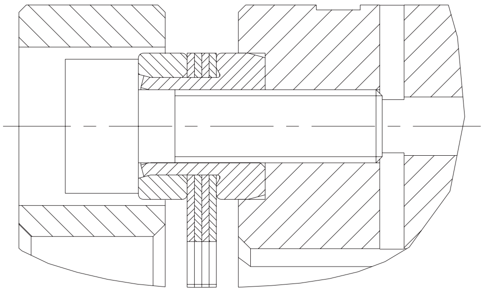
Laminae sets



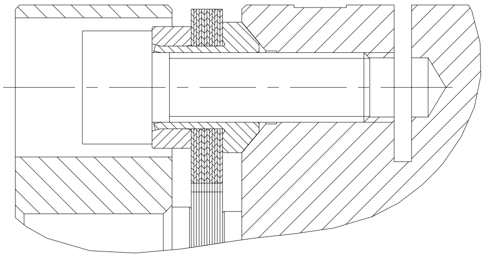
Size 5 to 26
(lamina with 4 holes)



Size 36 to 75
(lamina with 6 holes)

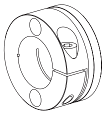


Size 5 to 10
(cylindrical sleeve)



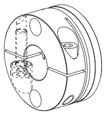
Size 16 to 75
(taper sleeve)

Types of hubs



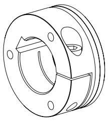
Type 2.5 clamping hub
double slotted, without feather keyway

Frictionally engaged, backlash-free shaft-hub-connection. Transmittable torques depending on bore diameter.



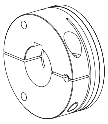
Type 3.5 clamping hub
triple slotted, without feather keyway

Frictionally engaged, backlash-free shaft-hub-connection, good properties of concentric running and reduced imbalance. Transmittable torques depending on bore diameter. Type 3.5 standard from size 43



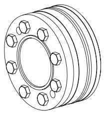
Type 2.6 clamping hub
double slotted, with feather keyway

Positive-locking power transmission with additional friction fit. The friction fit avoids resp. reduces reverse backlash. Surface pressure of the keyway connection is reduced.



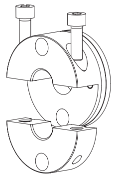
Type 3.6 clamping hub
triple slotted, with feather keyway

Positive-locking power transmission with additional friction fit. The friction fit avoids resp. reduces reverse backlash. Surface pressure of the keyway connection is reduced. Type 3.6 standard from size 43



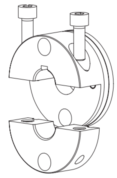
Type 6.5 clamping ring hub

Integrated frictionally engaged shaft-hub-connection for the transmission of higher torques. Suitable for high speeds.



Type 7.5 clamping hub type DH
without feather keyway for double-cardanic connection

Frictionally engaged, backlash-free shaft-hub-connection for radial assembly of coupling. Transmittable torques depending on bore diameter.



Type 7.6 clamping hub type DH
with feather keyway for double-cardanic connection

Positive-locking, backlash-free power transmission with additional friction fit for radial assembly of coupling. The friction fit avoids resp. reduces reverse backlash. Surface pressure of the keyway connection is reduced.

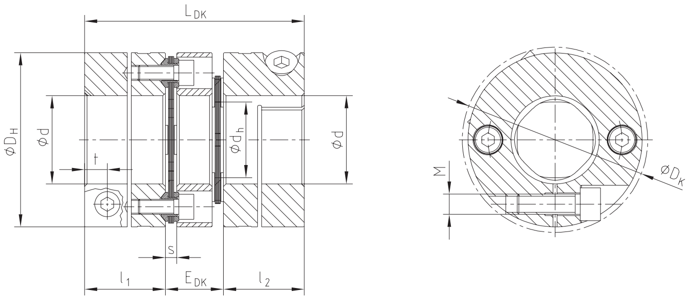
RADEX®-NC DK and EK
Servo laminae couplings

Double- and single-cardanic types

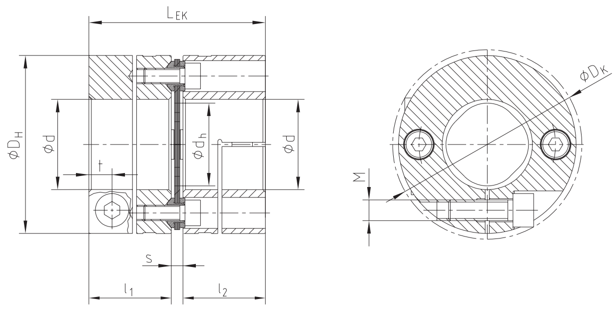

For legend of pictogram refer to flapper on the cover

Hub type 2.5/2.6

Type DK



Type EK



RADEX®-NC Types DK and EK - Hub and spacer material aluminium/laminas made of stainless steel

Size	Dimensions [mm]										Clamping screws DIN EN ISO 4762		Mass moment of inertia [kgm²]	
	$d_{max.}$	D_H	DK	l_1, l_2	L_{DK}	E_{DK}	L_{EK}	d_h	s	t	M	T_A [Nm]	DK	EK
5	12	26	26	12	34	10	26.5	12	2.5	3.5	M2.5	0.8	0.000004	0.000003
10	15	35	35	16	44	12	35	14.5	3	5	M4	3	0.000016	0.000012
16	20	46	49	22	58	14	47	19.5	3	6.8	M6	10	0.000063	0.00005
21	30	58	59	25	69	19	53.5	24	3.5	6.8	M6	10	0.00018	0.00014
26	38	69	73	32	88	24	69	30	5	9	M8	25	0.00046	0.00036
36	45	84	87	35	93.6	23.6	74.8	48	4.8	10.5	M10	49	0.0011	0.00091

Technical data

Size	T_{KN} [1] [Nm]	$T_{K\ max}$ [1] [Nm]	Max. speed [rpm]	Torsion spring stiffness [Nm/rad]		Laminae type	Displacements of type DK			Displacements of type EK		
				EK	DK		Radial [mm]	Axial [mm]	Angular per lamina [degree]	Radial [mm]	Axial [mm]	Angular per lamina [degree]
5	2.5	5	18,300	2,400	1,200	4 holes	0.13	± 0.4	1	-	± 0.2	1
10	7.5	15	13,600	5,600	2,800	4 holes	0.16	± 0.8	1	-	± 0.4	1
16	35	53	10,500	20,000	10,000	4 holes	0.19	± 1.0	1	-	± 0.5	1
21	70	105	8,500	40,000	20,000	4 holes	0.27	± 1.2	1	-	± 0.6	1
26	120	180	7,000	84,000	42,000	4 holes	0.33	± 1.6	1	-	± 0.8	1
36	340	510	5,700	280,000	140,000	6 holes	0.32	± 2.0	1	-	± 1.0	1

[1] For selection see page 22 et seqq.

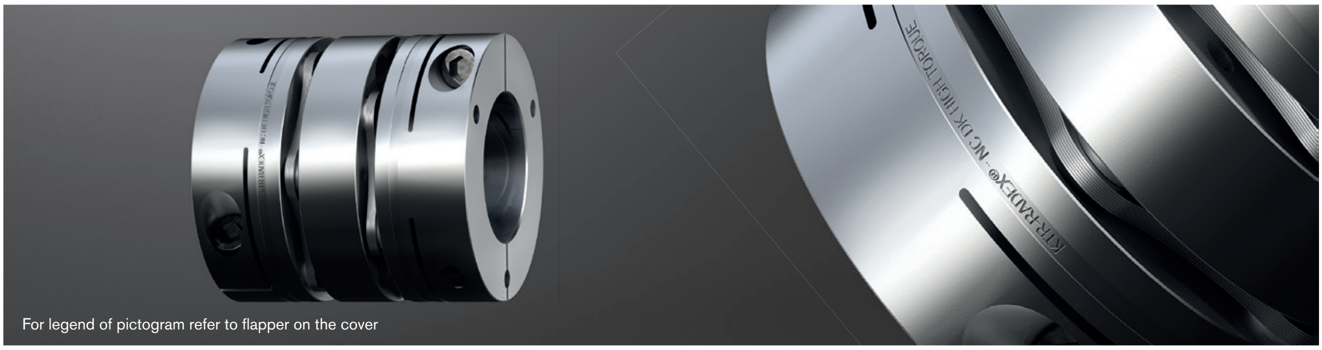
Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type 2.5

Size	Pilot bored	Ø3	Ø5	Ø8	Ø10	Ø12	Ø14	Ø15	Ø16	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45
5	2.5	1.1	1.8	2.8	3.4	4																
10	4.5		5	7.7	9.5	11.1	12.7	13.5														
16	5.5				23	27	31	33	35	41	43											
21	7.5					28	32	34	36	42	44	48	52	54	59	63						
26	9.5							66	70	81	85	92	100	103	114	121	127	137	147			
36	11.5									129	135	147	159	165	182	194	199	221	237	247	258	273

Ordering example:	RADEX®-NC 21	DK	2.5 - Ø20		2.5 - Ø25	
	Coupling size	Type	Hub type	Finish bore	Hub type	Finish bore

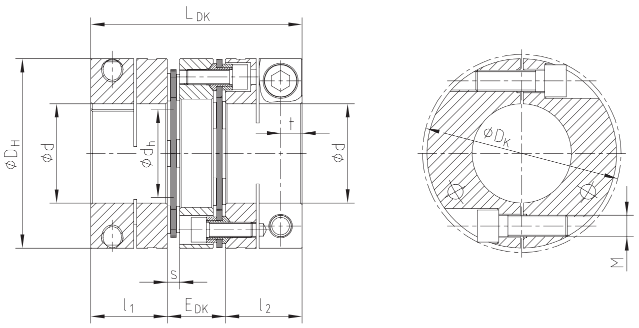
RADEX®-NC DK and EK
Servo laminae couplings

Double- and single-cardanic types

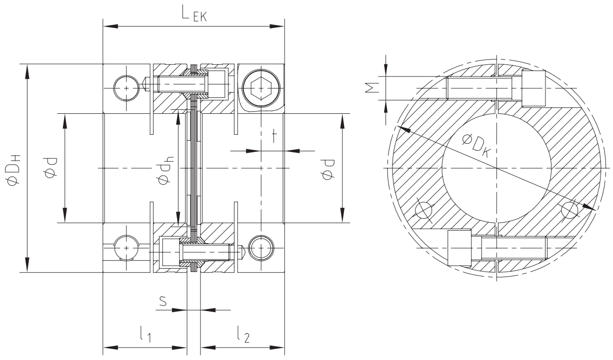

For legend of pictogram refer to flapper on the cover

Hub type 3.5/3.6

Type DK



Type EK



RADEX®-NC Types DK and EK - Hub and spacer material aluminium up to size 61, steel with size 75 / laminas made of stainless steel

Size	Dimensions [mm]										Clamping screws DIN EN ISO 4762		Mass moment of inertia [kgm²]	
	$d_{max.}$	D_H	DK	l_1, l_2	L_{DK}	E_{DK}	L_{EK}	d_h	s	t	M	T_A [Nm]	DK	EK
43	55	104	104	40.5	115	34	89	61	8	10.5	M10	49	0.0033	0.0025
51	70	124	130	50	138	38	108	73	8	14	M14	135	0.0082	0.006
61	80	144	148.5	54	150	42	118	88	10	16	M16	210	0.016	0.012
75	90	170	181.1	70	189	49	152	104	12	21.5	M20	610	0.099	0.077

Technical data

Size	T_{KN} [1] [Nm]	$T_{K max}$ [1] [Nm]	Max. speed [rpm]	Torsion spring stiffness [Nm/rad]		Laminae type	Displacements of type DK			Displacements of type EK		
				Type EK	Type DK		Radial [mm]	Axial [mm]	Angular per lamina [degree]	Radial [mm]	Axial [mm]	Angular per lamina [degree]
43	600	900	8,100	510,000	255,000	6 holes	0.45	± 2.20	1	—	± 1.10	1
51	1,300	1,950	6,700	920,000	460,000	6 holes	0.52	± 2.50	1	—	± 1.25	1
61	2,000	3,000	6,100	1,500,000	750,000	6 holes	0.56	± 2.60	1	—	± 1.30	1
75	3,200	4,800	5,100	2,100,000	1,050,000	6 holes	0.64	± 2.90	1		± 1.45	1

[1] For selection see page 22 et seqq.

Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type 3.5

Size	Pilot bored	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55	Ø58	Ø60	Ø65	Ø70	Ø75	Ø80	Ø85	Ø90
43	15.0	238	248	258	297	317	347	377	397	416	446	476	496	545								
51	28.0				594	633	693	752	792	831	891	950	990	1089	1148	1188	1286	1385				
61	30.0							1039	1093	1148	1230	1312	1367	1503	1585	1640	1777	1913	2050	2187		
75	35												3129	3192	3630	3755	4068	4381	4694	5006	5319	5632

Ordering example:	RADEX®-NC 43	DK	3.5 - Ø25		3.5 - Ø35	
	Coupling size	Type	Hub type	Finish bore	Hub type	Finish bore

RADEX®-NC DK and EK with clamping ring hubs
Servo laminae couplings

Double- and single-cardanic types

For legend of pictogram refer to flapper on the cover

ΔKa ΔKw ΔKr 200 °C

RADEX®-NC Types DK and EK - Hub and spacer material aluminium/laminas made of stainless steel															
Size	Dimensions [mm]										Clamping screws DIN EN ISO 4017			Mass moment of inertia [kgm²]	
	$d_{max.}$	D_H	l_1, l_2	l_3	L_{DK}	L_{DK1}	E_{DK}	L_{EK}	L_{EK1}	d_h	s	M x l	z = number	T_A [Nm]	DK	EK
16	20	46	24	18	62	68	14	51	57	19.5	3	M5 x 20	4	6	0.000075	0.000063
21	28	58	28	22	75	81.2	19	59.5	65.7	24	3.5	M6 x 25	4	10	0.000218	0.000177
26	35	69	36	28	96	100.8	24	77	81.8	30	5	M5 x 30	8	6	0.000565	0.000467
36	42	84	43	35	109.6	118.3	23.6	90.8	99.5	48	4.8	M8 x 40	6	25	0.001581	0.001294
43	60	104	46	35	126	135.9	34	100	109.9	61	8	M8 x 40	6	25	0.004051	0.003250
51	70	124	50	38	138	150.5	38	108	120.5	73	8	M10 x 45	6	49	0.008981	0.007096
61	80	144	55	43	152	165.5	42	120	133.5	88	10	M12 x 50	6	85	0.024188	0.020678

Technical data													
Size	T_{KN} [1] [Nm]	$T_{K\ max}$ [1] [Nm]	Max. speed [rpm]	Torsion spring stiffness [Nm/rad]		Laminae type	Displacements of type DK			Displacements of type EK		
				Type EK	Type DK		Radial [mm]	Axial [mm]	Angular per lamina [degree]	Radial [mm]	Axial [mm]	Angular per lamina [degree]
16	35	53	31,150	20,000	10,000	4 holes	0.19	± 1.00	1.00	—	± 0.50	1
21	70	105	24,700	40,000	20,000	4 holes	0.27	± 1.20	1.00	—	± 0.60	1
26	120	180	20,800	84,000	42,000	4 holes	0.33	± 1.60	1.00	—	± 0.80	1
36	340	510	17,100	280,000	140,000	6 holes	0.32	± 2.00	1.00	—	± 1.00	1
43	600	900	13,800	510,000	255,000	6 holes	0.45	± 2.20	1.00	—	± 1.10	1
51	1300	1950	11,600	920,000	460,000	6 holes	0.52	± 2.50	1.00	—	± 1.25	1
61	2000	3000	10,000	1,500,000	750,000	6 holes	0.56	± 2.60	1.00	—	± 1.30	1

[1] For selection see page 22 et seqq.

Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type 6.5																										
Size	Tolerance fit	Ø10	Ø12	Ø14	Ø15	Ø16	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55*	Ø60*	Ø65*	Ø70*	Ø75*	Ø80*
16	H7/h6	29	33	57	70	50	83	97																		
	H7/k6	34	42	64	76	62	96	109																		
21	H7/h6	27	45	75	91	79	125	145	127	144	201															
	H7/k6	36	56	83	99	93	139	157	169	187	245															
26	H7/h6				104	126	194	169	279	311	338	404	273	357												
	H7/k6				124	145	214	200	305	334	382	444	355	441												
36	H7/h6							241	395	438	521	616	523	664	647	741	841									
	H7/k6							284	430	471	558	646	640	779	778	875	974									
43	H7/h6										595	705	647	814	946	1073	980	1163	1360	1200	1072	1372				
	H7/k6										684	789	784	916	1096	1219	1144	1332	1534	1376	1370	1669				
51	H7/h6											750	818	1020	1085	1228	1166	1377	1605	1450	1607	2283	2255	2704		
	H7/k6											822	927	1117	1254	1392	1348	1568	1803	1652	1960	2387	2447	2842		
61	H7/h6													880	1074	1211	1264	1480	1597	1750	1911	2097	2542	2669	2718	3168
	H7/k6													951	1131	1258	1333	1534	1668	1810	2032	2239	2635	2785	2855	3252

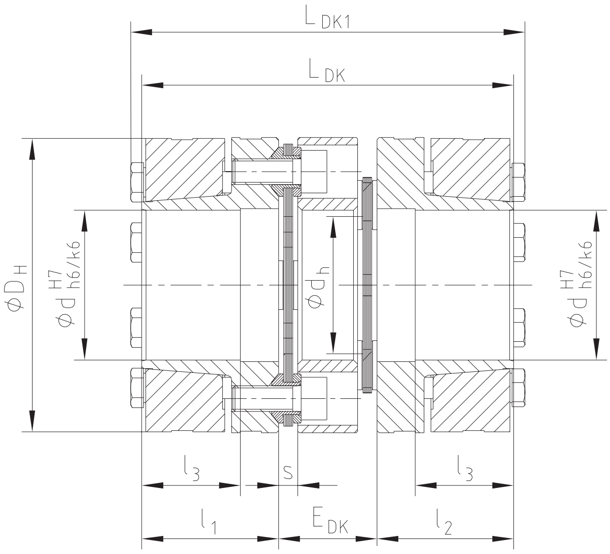
* From Ø55 tolerance G7/m6

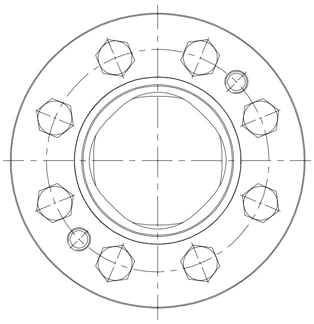
Ordering example:

RADEX®-NC 26	DK	6.5 - Ø24		6.5 - Ø35	
Coupling size	Type	Hub type	Finish bore	Hub type	Finish bore

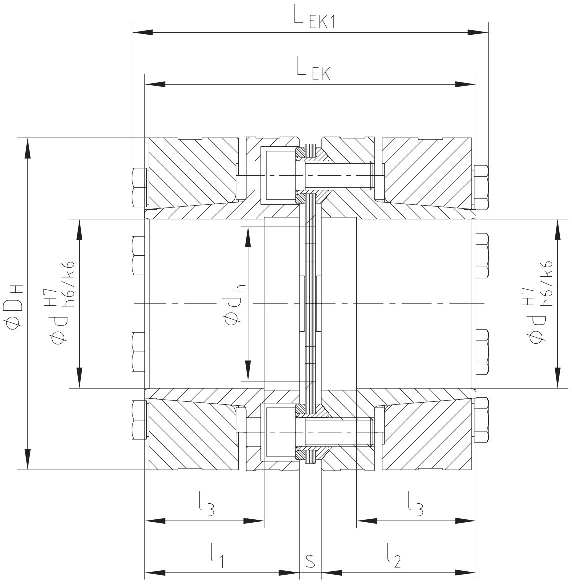
Hub type 6.5

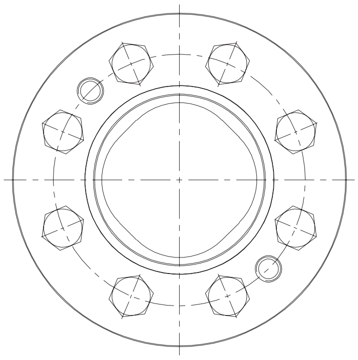
Type DK



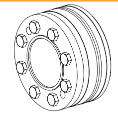


Type EK





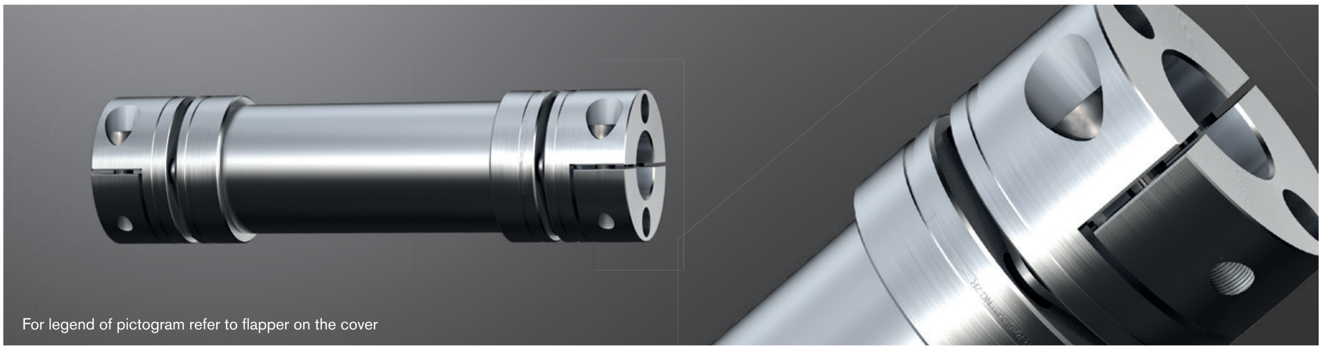
Types of hubs



Type 6.5
Clamping ring hub

RADEX®-NC ZR
Servo laminae couplings

Double-cardanic type



For legend of pictogram refer to flapper on the cover

RADEX®-NC Type ZR - Hub and spacer material aluminium/laminas made of stainless steel															
Size	Finish bore d		Dimensions [mm]												
			General											Clamping screws DIN EN ISO 4762	
	Min.	Max.	D_H	L	l_3	L_R		$L_{ZR} = L_R + 2 \bullet l_3$		d_R	DK	t_1	e	M	T_A [Nm]
						Min.	Max.	Min.	Max.						
16	6	20	46	42	17.0	75	2966	109	3000	40	48.9	8	16	M6	15.0
21	8	30	58	47.5	17.0	92	3466	126	3500	50	59.2	8	20.5	M6	15.0
26	10	35	69	59	21.5	124	3957	167	4000	60	72.6	9.5	25	M8	40.0
36	12	45	84	62.3	26.5	114	3947	167	4000	80	86.8	12	30	M10	70.0

Technical data of RADEX®-NC ZR				
Size	T_{KN} [1] [Nm]	Moment of inertia [10^{-3} kgm²]		Static torsion spring stiffness [Nm/rad]
		Z_R hub [2]	Pipe/meter	Z_W C_2 [3]
16	35	0.049596	0.329	2449
21	70	0.138744	0.673	4980
26	120	0.348421	1.199	9220
36	340	0.869569	4.560	34014

[1] For selection see page 22 et seqq.

[2] Figures refer to the complete coupling with max. bore.

[3] Torsion spring stiffness with a length of 1 m of intermediate pipe with $L_{pipe} = L_{ZR} - 2 \cdot L$

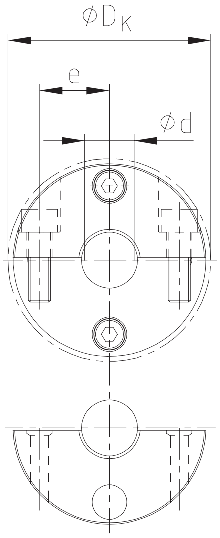
For inquiries and orders please specify the shaft distance dimension L_R along with the maximum speed to review the critical bending speed.

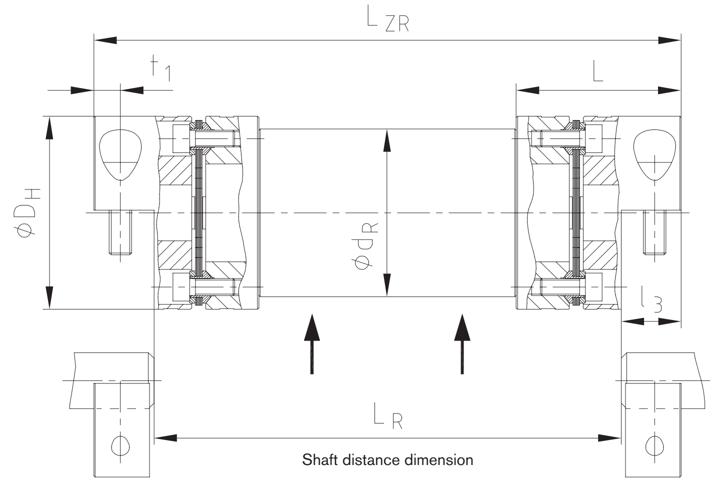
Straightness/concentricity of pipes according to DIN EN 755-1.

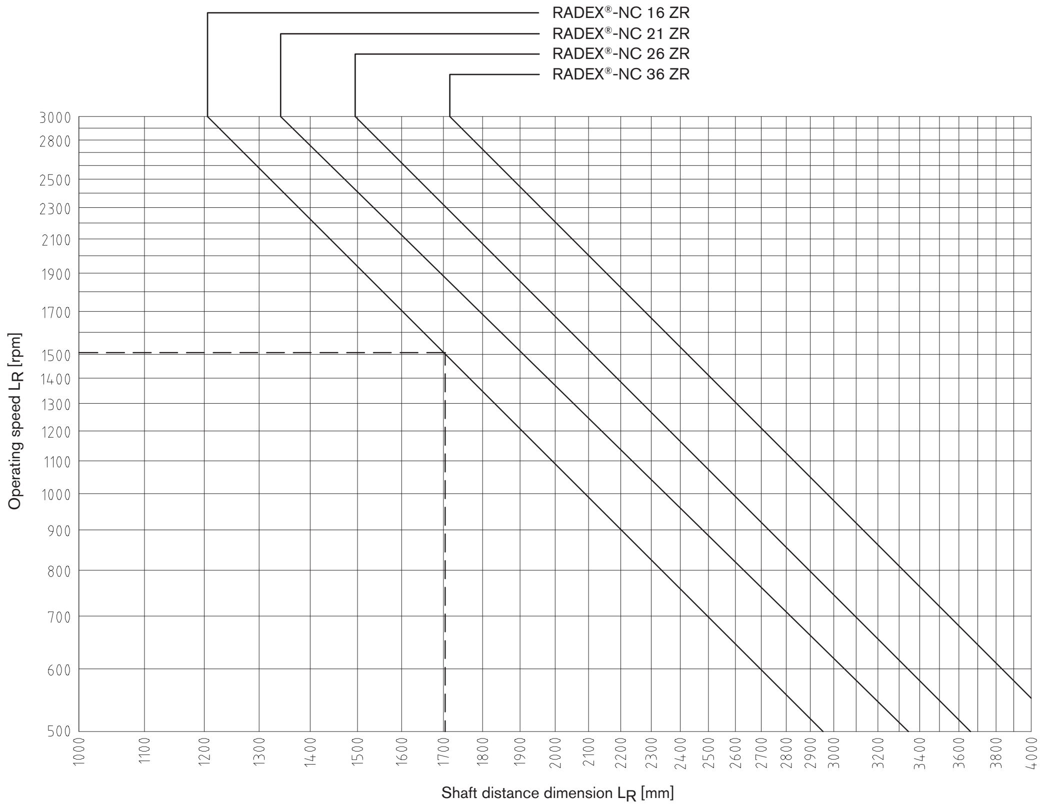
Review of shaft-hub-connection: Friction torques T_R [Nm] for hub type 7.5 for Ød$_1$/Ød$_2$																					
Size	Ø8	Ø9	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45
16			51	56	61	71	76	81	92	97	102										
21					61	71	76	81	92	97	102	122	127	143	153						
26							150	160	180	190	200	240	250	280	300						
36										268	282	338	352	395	423	451	493	536	564	592	634

Ordering example:	RADEX®-NC 26	ZR	1200 mm	7.5 - Ø24		7.6 - Ø24	
	Coupling size	Type	Shaft distance dimension (L_R)	Hub type	Finish bore	Hub type	Finish bore

Components

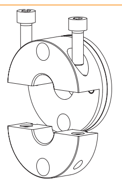






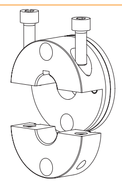
Types of hubs

Type 7.5



Clamping hub type DH without feather keyway for double-cardanic connection

Type 7.6



Clamping hub type DH with feather keyway for double-cardanic connection (on request)

Double-cardanic for measuring drives

For legend of pictogram refer to flapper on the cover

COUNTEX® - Hub material aluminium/spacer PEEK													
Size	Torque [Nm]		Finish bore d		Dimensions [mm]				Displacements			Torsion spring stiffness C_T [Nm/rad]	Radial stiffness C_r [N/mm]	Axial restoring force F_A [N]
	T_{KN}	$T_{K\ max}$	Min.	Max.	D	l_1, l_2	E	L	Radial ΔK_r [mm]	Axial ΔK_a [mm]	Angular ΔK_w [degree]			
6	0.3	0.6	2	6	15	4	4	12	0.05	-0.3/+0.6	0.36	48	26	10
12	0.5	1.0	2	12	22	6	3.5	15.5	0.10	-0.5/+1.0	0.45	120	65	25
14	1.0	2.0	5	14	31	8	4	20	0.12	-0.5/+1.0	0.57	235	70	27

General description

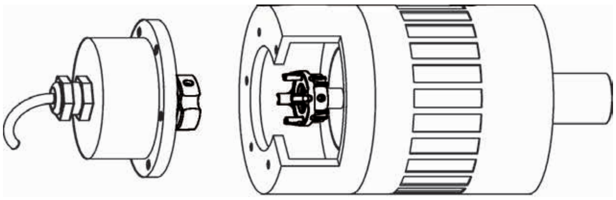
COUNTEX® is a three-part, backlash-free and torsionally stiff coupling specifically developed for the demands in measuring and control technology.

Its axial plug-in ability combined with the geometry of hubs results in a coupling system with compact dimensions, easy to assemble. The material of the spacer is resistant to high temperatures ensuring almost continuous properties of the coupling system even with temperatures up to 160 °C.

Applications

The measuring and control technology demands for high torsion spring stiffness of the coupling in order to implement reproducible positioning. At the same time the coupling has to compensate for displacements without any big forces causing stresses on the adjacent filigree components.

With its spacer made of high-temperature resistant nylon our COUNTEX® ensures almost constant torsion spring stiffness even with high temperatures. The double-cardanic principle of COUNTEX® reduces the restoring forces to a minimum. Nevertheless it has very compact dimensions which make it excellently suitable for tight mounting spaces.

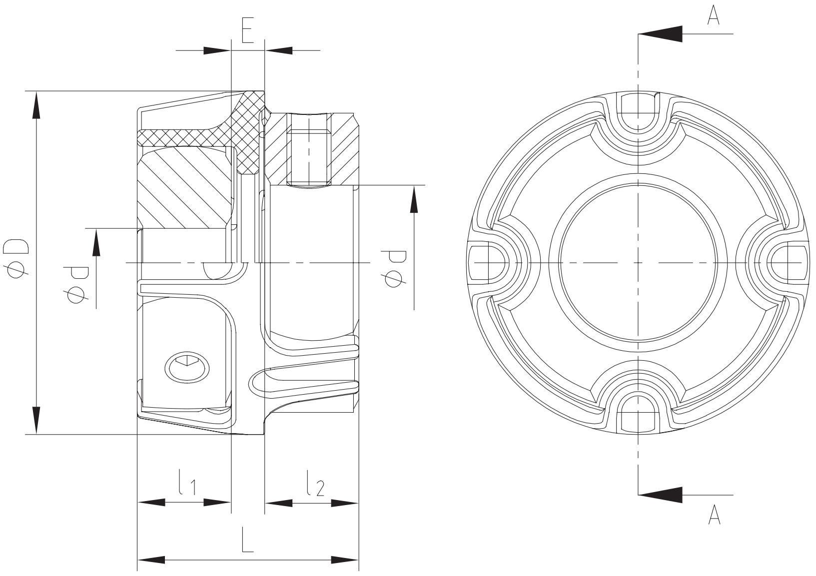


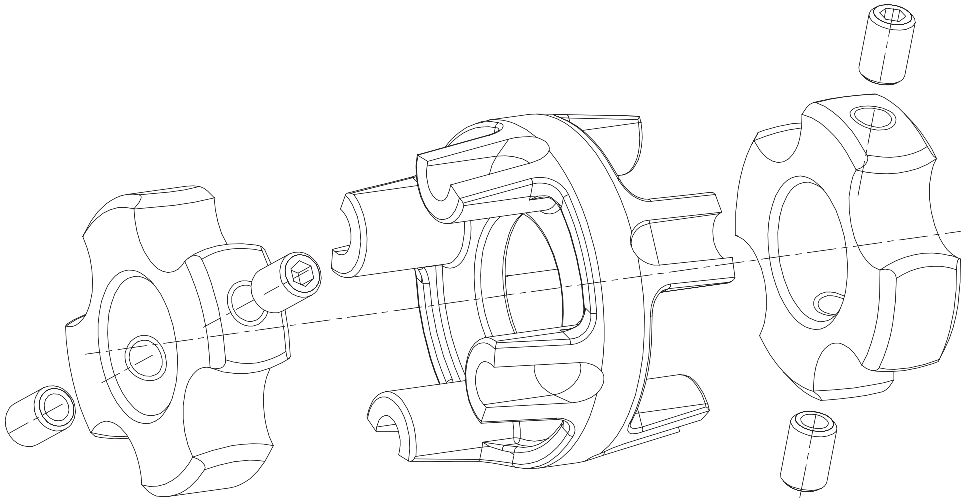
Use in potentially explosive atmospheres

COUNTEX® couplings are suitable for positioning transmission in drives used in potentially explosive atmospheres. The couplings are assessed and approved as units of category 2G/2D according to EU directive 2014/34/EU and thus suitable for the use in potentially explosive atmospheres of zone 1, 2, 21 and 22. Please read through our information included in the respective type examination certificate and the operating and assembly instructions at www.ktr.com.

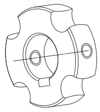
Ordering example:

COUNTEX® 14	1.1 - Ø6.35		1.1 - Ø10	
Coupling size	Hub type	Finish bore d_1	Hub type	Finish bore d_2



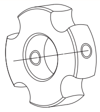


Types of hubs



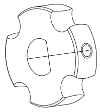
Type 1.0
with feather keyway and setscrew

Positive-locking power transmission. Permissible torque depending on the permissible surface pressure. Not suitable for backlash-free power transmission with heavily reversing operation.



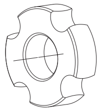
Type 1.1
without feather keyway, with setscrew

Non-positive torque transmission. Suitable for backlash-free transmission of very low torques.
Standard



Type 1.3
with spline bore

Positive-locking power transmission. Spline on request of customers (e. g. for shaft with flattening).



Type 1.2
without feather keyway, without setscrew

For low torques. Suitable for bonding or pressing of the shaft.

Steel laminae couplings

Please note: torque increase

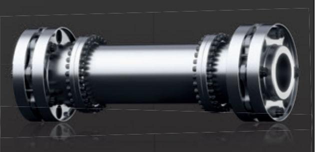
Years of experience with applications at customer sites and additional test series in the KTR test field in Rheine enabled us to determine potentials allowing for an increase of rated and maximum torques with some sizes of this series:

RADEX®-N

RIGIFLEX®-N

RIGIFLEX®-HP

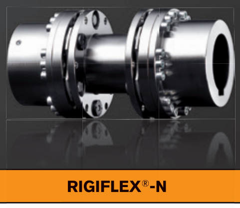
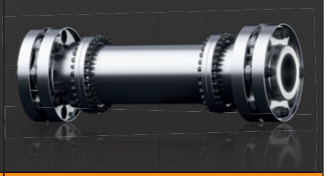
Properties of laminae couplings

			
Product	**RADEX®-N**	**RIGIFLEX®-N**	**RIGIFLEX®-HP**
Type	Steel laminae coupling		High-performance steel laminae coupling
Properties			
Torsionally stiff	●	●	●
Backlash-free	●	●	●
Maintenance-free	●	●	●
Compensating for misalignment	●	●	●
Special features			
Stock programme	Basic programme available from stock, customised solutions available	Basic programme available from stock, customised solutions available	For customised solutions, applications in high performance ranges and on high-speed drives
Applications / core industries	Pumps, compressors, fans	Pumps, compressors, fans	Pumps, turbo compressors, turbines
API	610	610 & 671	610 & 671
Performance data			
Max. rated torque T_{KN} [Nm]	280,000	280,000	330,000
Max. speed n [rpm]	20,000	23,000	17,300
Max. operating temperature T [°C]	280	280	280
Standard materials			
Hubs			
Steel (S355J2)	●	●	
Q & T steel (C45N)	●	●	
Q & T steel (42CrMo4V)			●
Q & T steel (30CrNiMo8)			●
Spacers			
Steel (S355J2)	●	●	
Q & T steel (C45N)	●	●	
Q & T steel (42CrMo4V)	with torsion shafts		●
Q & T steel (30CrNiMo8)	with torsion shafts		●
Special materials (corrosion-resistant)			
Hubs			
Steel (1.4305)	●	○	○
Steel (1.4404)	●		
Spacers			
Steel (1.4305)	●	○	○
Steel (1.4404)	●		
Spacer made of Composite GRP (fibre glass)	●		
Spacer made of Composite CFRP (carbon fibre)	●		
Surface coating	Painting, phosphating, zinc-coating and passivating, Geomet, Tenifer Q	Painting, phosphating, zinc-coating and passivating, Geomet, Tenifer Q	Painting, phosphating, zinc-coating and passivating, Geomet, Tenifer Q

● ≈ Standard
○ ≈ On request

STEEL LAMINAE COUPLINGS
TYPES AND OPERATING DESCRIPTION

Product finder of laminae couplings

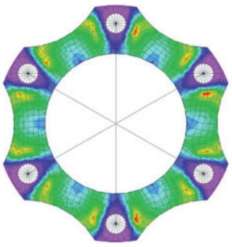
			
Product	**RADEX®-N**	**RIGIFLEX®-N**	**RIGIFLEX®-HP**
Type	Steel laminae coupling		High-performance steel laminae coupling
Geometries			
Design	Single- and double-cardanic	Double-cardanic	Double-cardanic
Max. shaft diameter [mm]	330	400	380
Radial assembly	●	●	●
Certifications/type examinations			
ATEX	●	●	–
GOST R/ GOST TR	●	●	●
DNV GL	●	●	●
ABS	●	●	–

● ≈ Standard

Details on laminae couplings

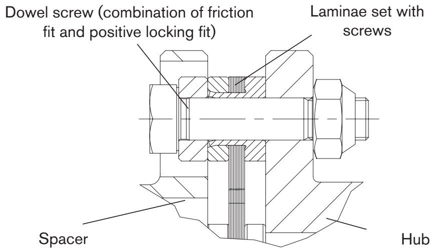
Laminas - laminae shape optimized by FEM

The steel laminae sets made of high-strength, stainless spring steel were developed based on FEM calculations. Considering the necessary options of displacement of the coupling, the optimum shape with regard to torque transmission and torsional stiffness was aimed at. The waisted shape of the steel laminas on the outside diameter resulted from this optimization calculation.



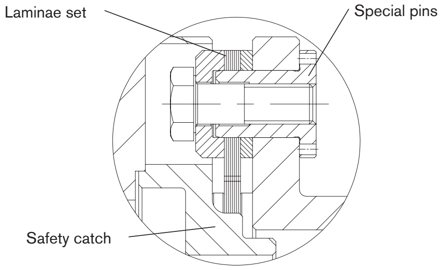
RADEX®-N - laminae sets with dowel screws

The heart of the steel laminae coupling are the laminae sets and their connection to hubs and spacers. High-strength special dowel screws that are alternately screwed to hubs and spacer allow for a combination of friction fit and positive locking fit. Thus a high power density with simultaneous ease of displacement and low restoring forces is ensured.



RIGIFLEX®-N - protecting the spacer

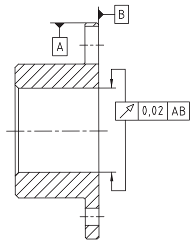
Since our main idea with the development of RIGIFLEX®-N was to comply with the standards of API 610 and API 671, the spacer is secured by a safety catch, too. In case if the laminas break the spacer remains inside the coupling.
In general the spacer is supplied along with laminae sets pre-assembled by the manufacturer. These are connected with the spacers resp. flanges fully free from backlash via positive-locking special pins.



General advice

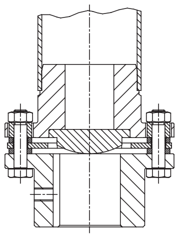
Advice on assembly and operation

See our mounting instructions KTR standard 47110 at www.ktr.com. With the assembly it is important to make sure that the laminae sets are assembled free from distortion in axial direction. If the finish bore is machined by the customer, the concentricity and axial running tolerances have to be adhered to (see sketch).



Installation

RADEX®-N couplings are designed for horizontal installation. With vertical installation the spacer might have to be supported (see sketch). Please consult with us.



Delivery condition

RADEX®-N couplings are delivered as individual components (can be delivered assembled on request). The hubs can be supplied unbored or with finish bore and feather keyway or with a frictionally engaged shaft-hub-connection. The shaft-hub-connection needs to be inspected by the customer (consult with KTR, if necessary).

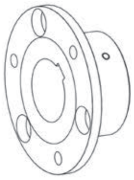
Balancing

On request of the customer the RADEX®-N couplings can be balanced. For standard applications this is not necessary due to accurate machining of the coupling. Please consult with us, if necessary.

Safety regulations

The coupling has to be dimensioned in that the permissible coupling load is not exceeded during any operating condition. For this purpose the actual loads have to be compared to the permissible parameters of the coupling. The customer has to protect rotating parts from accidental contact (Safety of Machinery DIN EN 292 chapter 2). Take precautions to make sure there is sufficient coupling protection in case of fracture of the coupling caused by overload.

Types of hubs



Type 1.0 hub
with feather keyway and setscrew

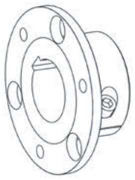
Positive locking torque transmission, permissible torque depending on the permissible surface pressure. Not suitable for backlash-free torque transmission with heavily reversing operation.

Type 1.1 hub
without feather keyway, with setscrew

Non-positive torque transmission for crimp connections and adhesive bonds. (No ATEX approval)

Type 1.2 hub
without feather keyway, without setscrew

Non-positive torque transmission for crimp connections and adhesive bonds. (No ATEX approval)

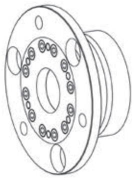


Type 2.5 clamping hub
double slotted, without feather keyway

Frictionally engaged, backlash-free shaft-hub-connection. Transmittable torques depending on bore diameter. For ATEX category 3 only.

Type 2.6 clamping hub
double slotted, with feather keyway

Positive shaft-hub connection with additional friction fit. The friction fit prevents respectively reduces reverse backlash.



Type 6.0 clamping ring hub

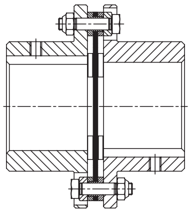
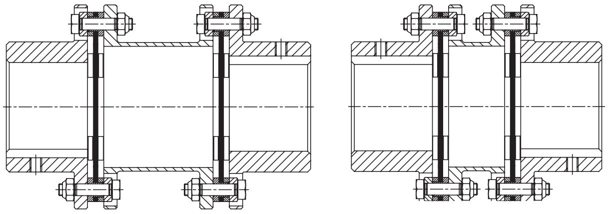
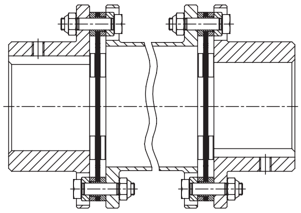
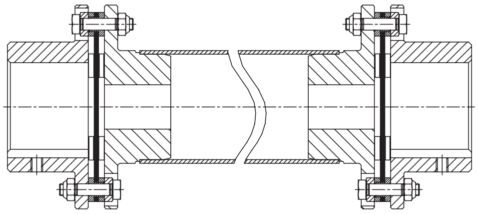
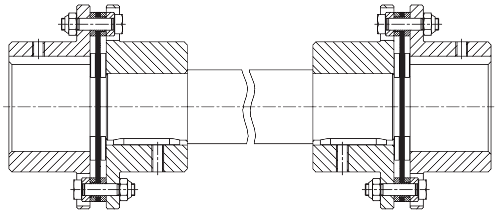
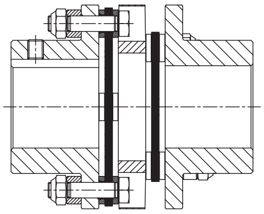
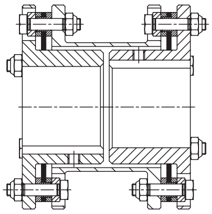
Integrated frictionally engaged shaft-hub-connection for the transmission of higher torques. Clamping screws on laminae side. Transmittable torques depending on bore diameter. Suitable for high speeds.

Type 6.5 clamping ring hub

Integrated frictionally engaged shaft-hub-connection for the transmission of higher torques. Clamping screws from outside. Transmittable torques depending on bore diameter. Suitable for high speeds.

RADEX®-N
Steel laminae couplings

Types and applications

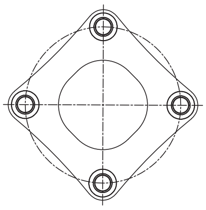
	Properties	Applications
Type NN (see page 188) 	Single-cardanic type Only angular and axial displacement permissible High torsional rigidity Compact dimensions	Mixers Agitators Immersion pumps Fans Applications with high radial load
Type NANA 1/NANA 2 (see page 188) 	Double-cardanic type Compensating for high misalignment with low restoring forces Standard spacers available from stock	Paper machines Printing and processing machines Materials handling Steel mills Generators Mill drives
Type NANA 3 (see page 192) 	Double-cardanic type Spacers adapted to standard dimensions of pumps Radial assembly, no shifting of the machine required Available according to API 610	Process pumps Water pumps Pumps according to API standard Turbines Compressors
Type NANA 4 (see page 190) 	Customised spacers Max. shaft distance dimension up to approx. 6 m Welded intermediate pipes for high torsional rigidity	Foil and paper machines Pallet and conveyor systems Robotic palletizers Test benches Cooling towers/blowers
Type NNW (see page 190) 	Customised spacers Coupling consisting of 2-off type NN with intermediate shaft For drives with relatively low speeds	Low-speed drives with large shaft distance dimensions Agitators Crushers Presses Packaging machinery
Type NNZ (see page 189) 	Compact double-cardanic coupling Cannot be radially assembled With intermediate disk Ideal for replacing curved-tooth gear couplings made of steel Standard type up to size 70	Robotics Paper machines and inserters Machine tools Packaging machinery Test benches
Type NENE (see page 189) 	With reduced hubs Compact double-cardanic design Spacer cannot be radially assembled Variable spacer length	Applications with short shaft distance dimensions Replacement of curved-tooth gear couplings made of steel

RADEX®-N
Steel laminae couplings

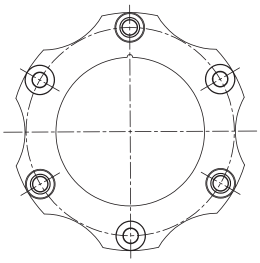
Technical data

The following laminae types are to be distinguished with RADEX®-N:

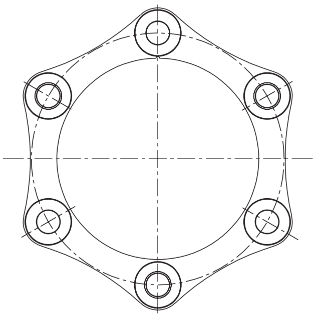
Size 20 – 50
(laminae with 4 holes)



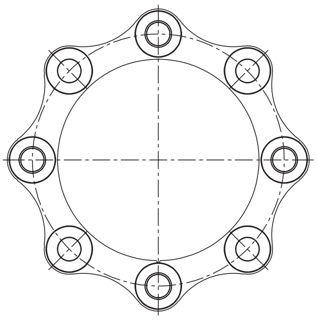
Size 60 – 135
(laminae with 6 holes)



Size 136 – 336
(laminae with 6 holes)



Size 138 – 338
(laminae with 8 holes)



Torques and displacements

Size	Laminae type	Torques [Nm] [1]			Perm. displacements [2]				
		T_{KN}	$T_{K\ max}$	T_{KW}	Angular [°] each laminae	Axial [mm]		Radial [mm]	
						NN	NANA 1/ NANA2/ NNZ	NANA 1	NANA 2
20	laminae with 4 holes	30	60	15	1.0	0.60	1.2	1.0	0.2
25		60	120	30	1.0	0.80	1.6	1.0	0.2
35		120	240	60	1.0	1.00	2.0	1.1	0.3
38		240	480	120	1.0	1.20	2.4	1.2	0.3
42		320	640	160	1.0	1.40	2.8	1.2	0.4
50		470	940	235	1.0	1.60	3.2	1.5	0.4
60	laminae with 6 holes	900	1800	450	1.0	1.00	2.0	1.5	0.8
70		1300	2600	650	1.0	1.10	2.2	1.8	1.0
80		1800	3600	900	1.0	1.30	2.6	2.1	1.2
85		2600	5200	1300	1.0	1.30	2.6	2.2	1.2
90		4600	9200	2300	1.0	1.00	2.0	2.2	1.1
105		5600	11200	2800	1.0	1.20	2.4	2.4	1.4
115		9900	19800	4950	1.0	1.40	2.8	2.5	1.5
135		13500	27000	6750	1.0	1.75	3.5	3.8	–
136		17500	35000	8750	0.7	1.85	3.7	Depending on drop-out center dimension E	
156		25000	50000	12500	0.7	2.10	4.2		
166		35000	70000	17500	0.7	2.25	4.5		
186		42000	84000	21000	0.7	2.40	4.8		
206		52500	105000	26250	0.7	2.60	5.2		
246		90000	180000	45000	0.7	3.00	6.0		
286		150000	300000	75000	0.7	3.35	6.7		
336		210000	420000	105000	0.7	3.75	7.5		
138	laminae with 8 holes	23000	46000	11500	0.5	1.30	2.6		
158		33000	66000	16500	0.5	1.40	2.8		
168		45000	90000	22500	0.5	1.50	3.0		
188		56000	112000	28000	0.5	1.60	3.2		
208		70000	140000	35000	0.5	1.75	3.5		
248		120000	240000	60000	0.5	2.00	4.0		
288		200000	400000	100000	0.5	2.40	4.5		
338		280000	560000	140000	0.5	2.50	5.0		

🟩 = Years of experience with applications at customer sites and additional test series in the KTR test field in Rheine enabled us to determine potentials allowing for an increase of the rated and maximum torques with some sizes of this series.

Permissible speeds and torsional stiffness figures

Size	Max. speed [rpm] (higher speeds on request)	Torsion spring stiffness x 10^6 [Nm/rad] per laminae set	Size	Max. speed [rpm] (higher speeds on request)	Torsion spring stiffness x 10^6 [Nm/rad] per laminae set
20	20400	0.02	156	3500	17.00
25	16800	0.03	166	3300	19.00
35	13900	0.11	186	3000	25.00
38	12000	0.20	206	2800	31.00
42	11000	0.28	246	2300	55.00
50	9000	0.50	286	2000	79.00
60	8200	0.56	336	1800	125.00
70	7300	0.90	138	3800	20.00
80	6300	1.10	158	3500	26.00
85	5900	1.50	168	3300	30.00
90	5400	2.00	188	3000	39.00
105	5000	2.50	208	2800	49.00
115	4300	3.50	248	2300	83.00
135	3700	6.90	288	2000	125.00
136	3800	13.00	338	1800	200.00

[1] For selection of coupling see page 18 et seqq.

[2] The permissible displacement figures specified are maximum figures which must not arise simultaneously. If axial, radial and angular displacement arises at the same time, these values must be reduced.

RADEX®-N
Steel laminae couplings

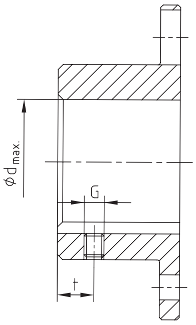
Technical data

Weights and mass moments of inertia

Size	Hub 1) [kg] / [kgm^2]	Laminae set [kg] / [kgm^2]	NN 1) complete [kg] / [kgm^2]	NANA 1 1) complete [kg] / [kgm^2]	NANA 2 1) complete [kg] / [kgm^2]	NNZ 1) complete [kg] / [kgm^2]
20	0.13 / 0.000043	0.04 / 0.00002	0.3 / 0.00011	0.6 / 0.000204	–	0.4 / 0.000166
25	0.2 / 0.000116	0.08 / 0.00005	0.56 / 0.00028	0.9 / 0.000522	–	0.8 / 0.000414
35	0.6 / 0.00042	0.10 / 0.00010	1.2 / 0.00094	1.9 / 0.00158	–	1.6 / 0.00129
38	0.8 / 0.00073	0.20 / 0.00026	1.8 / 0.0017	2.8 / 0.00303	–	2.4 / 0.00247
42	1.1 / 0.00123	0.25 / 0.00040	2.4 / 0.0029	3.6 / 0.00482	–	3.1 / 0.00409
50	1.7 / 0.00291	0.46 / 0.0010	4.0 / 0.0068	6.2 / 0.0118	–	5.1 / 0.00932
60	1.9 / 0.00378	0.40 / 0.0012	4.2 / 0.0087	6.0 / 0.0141	5.8 / 0.0138	5.3 / 0.0120
70	2.8 / 0.00714	0.42 / 0.0016	6.0 / 0.016	8.6 / 0.0253	8.2 / 0.0242	7.5 / 0.0214
80	4.1 / 0.0134	0.72 / 0.0037	9.0 / 0.031	12.6 / 0.0476	12.0 / 0.0458	11.1 / 0.0410
85	5.1 / 0.0195	1.0 / 0.0065	11.2 / 0.046	16.2 / 0.0734	15.5 / 0.0711	14.8 / 0.0650
90	6.2 / 0.0282	2.3 / 0.0162	14.7 / 0.073	22.0 / 0.121	21.3 / 0.119	20.1 / 0.108
105	7.6 / 0.0414	2.2 / 0.0180	17.4 / 0.101	25.8 / 0.165	24.6 / 0.159	23.1 / 0.145
115	12.0 / 0.0899	4.0 / 0.0433	27.9 / 0.223	42.8 / 0.381	41.2 / 0.372	38.3 / 0.333
135	19.0 / 0.187	7.3 / 0.105	45.1 / 0.478	71.3 / 0.835	–	–
136	16.8 / 0.153	7.9 / 0.113	41.4 / 0.419	Depending on drop-out center dimension E	Depending on drop-out center dimension E	–
156	20.2 / 0.217	11.9 / 0.200	52.2 / 0.634			–
166	30.0 / 0.373	12.3 / 0.255	72.3 / 1.001			–
186	42.0 / 0.629	12.7 / 0.318	96.7/ 1.576			–
206	55.1 / 1.004	18.2 / 0.548	128.3 / 2.556			–
246	85.9 / 2.229	31.2 / 1.304	203.1 / 5.762			–
286	145.1 / 4.977	44.4 / 2.495	334.4 / 12.449			–
336	223.9 / 10.486	64.2 / 4.74	512.0 / 25.712			–
138	16.2 / 0.145	9.9 / 0.143	42.3 / 0.433			–
158	19.5 / 0.205	14.9 / 0.252	54.0 / 0.662			–
168	29.4 / 0.360	15.2 / 0.318	74.0 / 1.038			–
188	41.7/ 0.611	15.6 / 0.396	99.0 / 1.618			–
208	54.1 / 0.971	22.4 / 0.680	130.5 / 2.622			–
248	84.0 / 2.144	38.2 / 1.605	206.2 / 5.893			–
288	142.5 / 4.823	53.8 / 3.056	338.8 / 12.702			–
338	220.1 / 10.18	78.0 / 5.817	518.2 / 26.177			–

1) Hubs with max. bore

Cylindrical bores



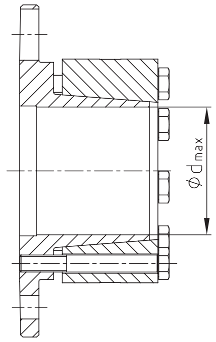
Standard hub 1.0 with feather keyway according to DIN 6885 sheet 1

Size	$d_{max.}$	G	t	T_A [Nm]	Size	$d_{max.}$	G	t	T_A [Nm]
20	20	M5	6	2.0	105	110	M12	30	40.0
25	25	M5	8	2.0	115	120	M12	30	40.0
35	38	M6	15	4.8	135	135	According to customer specification		
38	42	M6	15	4.8	136 / 138	135			
42	50	M8	20	10.0	156 / 158	150			
50	55	M8	20	10.0	166 / 168	170			
60	65	M8	20	10.0	186 / 188	190			
70	75	M10	20	17.0	206 / 208	210			
80	85	M10	20	17.0	246 / 248	245			
85	90	M10	25	17.0	286 / 288	290			
90	100	M12	25	40.0	336 / 338	340			

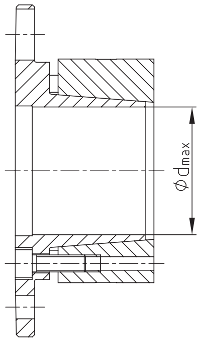
Backlash-free shaft-hub connections without feather key

Selection: If used in potentially explosive atmospheres the clamping ring hubs must be selected in that there is a minimum safety factor of s = 2 between the peak torque of the machine including all operating parameters and the nominal torque and frictional locking torque of the coupling.

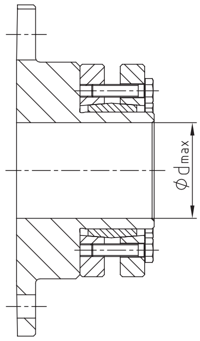
Clamping ring hub type 6.5
(clamping screws from outside)



Clamping ring hub type 6.0
(clamping screws from inside)

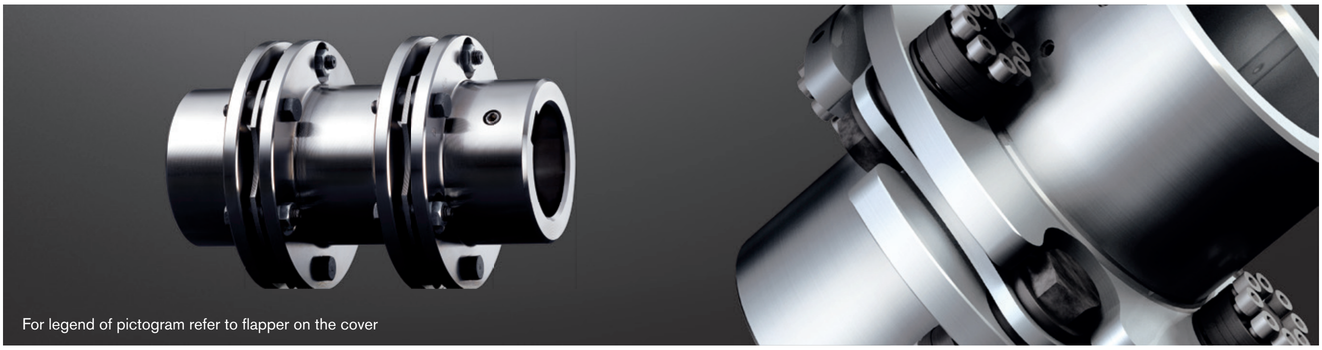


Type with CLAMPEX® element type 603

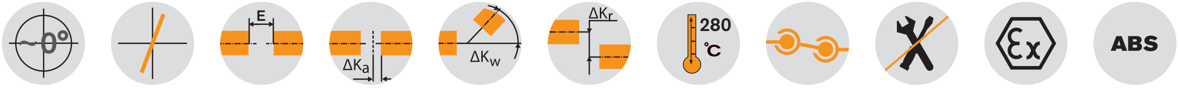


RADEX®-N NN, NANA 1 and NANA 2
Steel laminae couplings

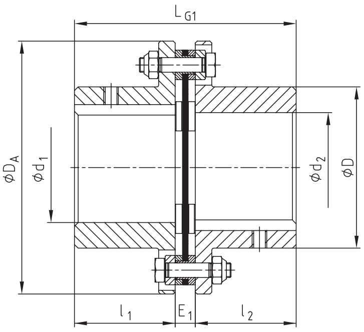
Standard types



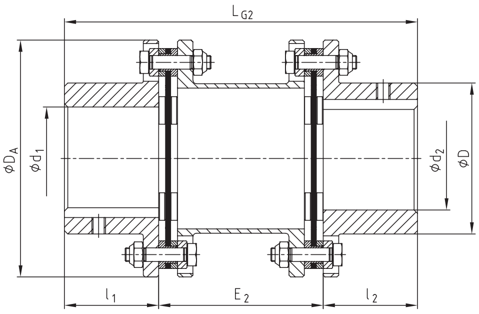
For legend of pictogram refer to flapper on the cover



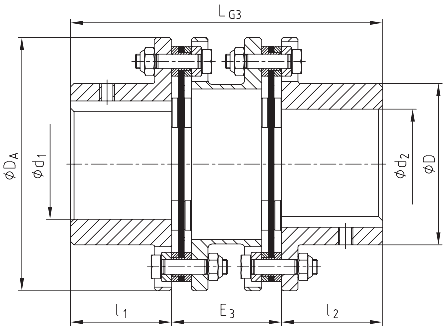
Components



Type NN



Type NANA 1



Type NANA 2

RADEX®-N Types NN, NANA 1, NANA 2

Size	Max. finish bore	Dimensions [mm]								
	d_1, d_2	D	D_A	l_1, l_2	L_{G1}	E_1	L_{G2}	E_2	L_{G3}	E_3
20	20	32	56	20	45	5	100	60	–	–
25	25	40	68	25	56	6	110	60	–	–
35	38	54	82	40	86	6	150	70	–	–
38	42	58	94	45	98	8	170	80	–	–
42	50	68	104	45	100	10	170	80	–	–
50	55	78	126	55	121	11	206	96	–	–
60	65	88	138	55	121	11	206	96	170	60
70	75	102	156	65	141	11	246	116	200	70
80	85	117	179	75	164	14	286	136	233	83
85	90	123	191	80	175	15	300	140	246	86
90	100	132	210	80	175	15	300	140	251	91
105	110	147	225	90	200	20	340	160	281	101
115	120	163	265	100	223	23	370	170	309	109
135	135	184	305	135	297	27	520	250	–	–
136	135	180	300	135	293	23	According to customer specification			
156	150	195	325	150	327	27				
166	170	225	350	165	361	31				
186	190	250	380	185	401	31				
206	210	275	420	200	437	37				
246	245	320	500	240	524	44				
286	290	383	567	280	612	52				
336	340	445	660	330	718	58				
138	135	180	300	135	293	23				
158	150	195	325	150	327	27				
168	170	225	350	165	361	31				
188	190	250	380	185	401	31				
208	210	275	420	200	437	37				
248	245	320	500	240	524	44				
288	290	383	567	280	612	52				
338	340	445	660	330	718	58				

Ordering example:

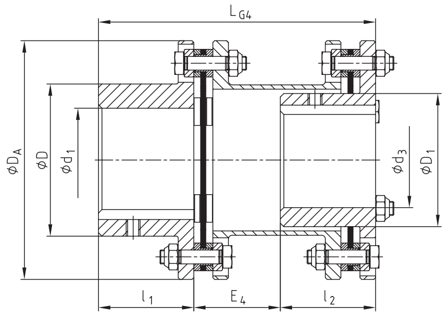
RADEX®-N 60	NANA 1	Ø50	Ø60
Coupling size	Type	Finish bore d_1	Finish bore d_2

RADEX®-N NENA 1, NENA 2, NENE and NNZ
Steel laminae couplings

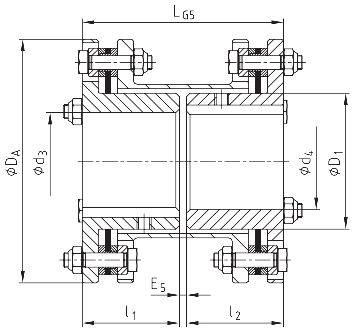
Standard types

For legend of pictogram refer to flapper on the cover

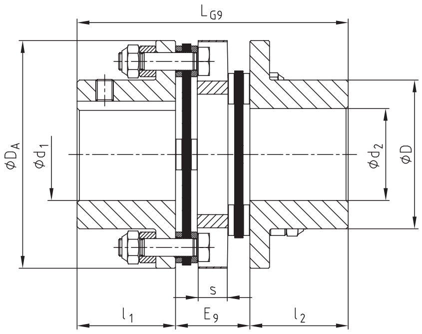
Components



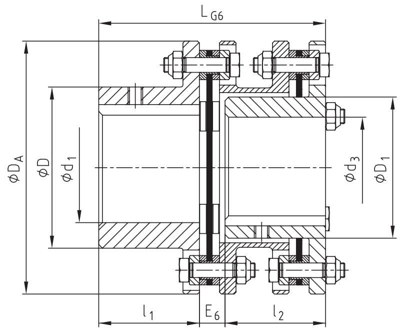
Type NENA 1



Type NENE



Type NNZ



Type NENA 2

RADEX®-N Types NENA 1, NENE, NENA 2, NNZ

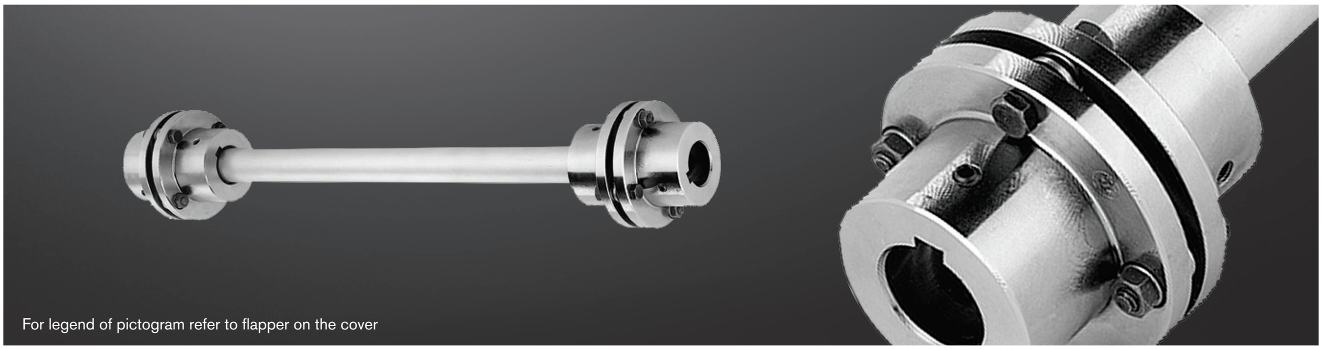
Size	Max. finish bore		Dimensions [mm]											
	d_1, d_2	d_3, d_4	D	D_1	D_A	l_1, l_2	L_{G4}	E_4	L_{G5}	E_5	L_{G6}	E_6	L_{G9}	E_9
20	20	–	32	–	56	20	–	–	–	–	–	–	58	18
25	25	–	40	–	68	25	–	–	–	–	–	–	70	20
35	38	–	54	–	82	40	–	–	–	–	–	–	102	22
38	42	–	58	–	94	45	–	–	–	–	–	–	118	28
42	50	–	68	–	104	45	–	–	–	–	–	–	124	34
50	55	–	78	–	126	55	–	–	–	–	–	–	144	34
60	65	55	88	77	138	55	160	50	114	4	124	14	144	34
70	75	65	102	90	156	65	190	60	134	4	144	14	166	36
80	85	75	117	104	179	75	220	70	154	4	167	17	–	–
85	90	80	123	112	191	80	232	72	164	4	178	18	–	–
90	100	85	132	119	210	80	233	73	166	6	184	24	–	–
105	110	90	147	128	225	90	263	83	186	6	204	24	–	–
115	120	100	163	145	265	100	288	88	206	6	227	27	–	–

Ordering example:

RADEX®-N 60	NENA 1	Ø50	Ø60
Coupling size	Type	Finish bore d_1	Finish bore d_2

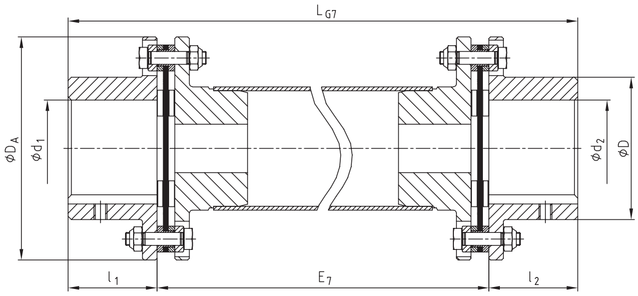
RADEX®-N NANA 4 and NNW
Steel laminae couplings

Customised types

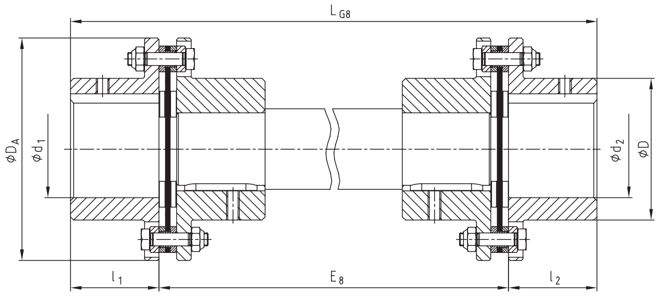


For legend of pictogram refer to flapper on the cover

Components



Type NANA 4



Type NNW

RADEX®-N Types NANA 4, NNZ and NNW								
Size	Max. finish bore	Dimensions [mm]						
	d_1, d_2	D	D_A	l_1, l_2	L_{G7}	E_7	L_{G8}	E_8
20	20	32	56	20	$L_{G7} = E_7 + l_1 + l_2$	Intermediate shaft dimension according to customer specification	$L_{G8} = E_8 + l_1 + l_2$	Intermediate shaft dimension according to customer specification
25	25	40	68	25				
35	38	54	82	40				
38	42	58	94	45				
42	50	68	104	45				
50	55	78	126	55				
60	65	88	138	55				
70	75	102	156	65				
80	85	117	179	75				
85	90	123	191	80				
90	100	132	210	80				
105	110	147	225	90				
115	120	163	265	100				
135	135	184	305	135				
136	135	180	300	135				
156	150	195	325	150				
166	170	225	350	165				
186	190	250	380	185				
206	210	275	420	200				
246	245	320	500	240				
286	290	383	567	280				
336	340	445	660	300				
138	135	180	300	135				
158	150	195	325	150				
168	170	225	350	165				
188	190	250	380	185				
208	210	275	420	200				
248	245	320	500	240				
288	290	383	567	280				
338	340	445	660	300				

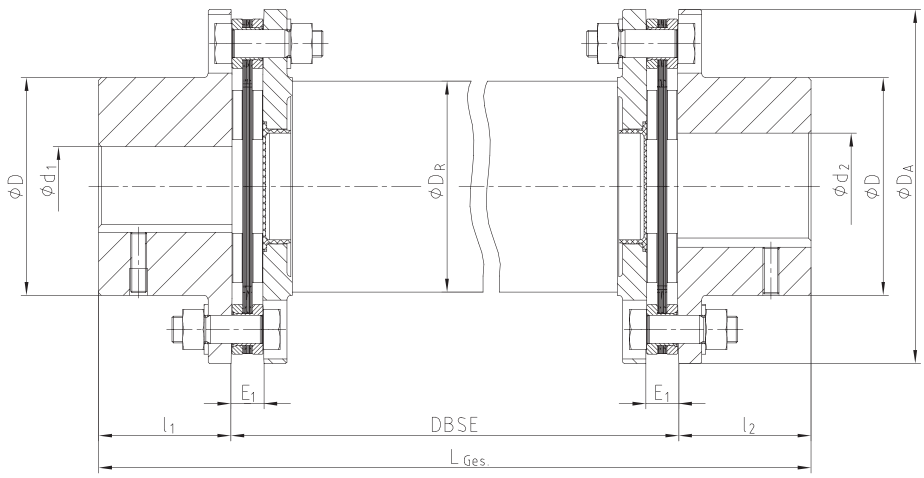
Ordering example:	RADEX®-N 60	NANA 4	Ø50	Ø60	2500
	Coupling size	Type	Finish bore d_1	Finish bore d_2	Shaft distance dimension

RADEX®-N Composite
Steel laminae couplings

Corrosion-resistant type for large shaft distances

For legend of pictogram refer to flapper on the cover

Components



RADEX®-N Type NANA 4 CFK

Size	Torque [Nm] $^{1)}$		Dimensions [mm]								
	T_{KN}	$T_{K\ max}$	D_A	d_1, d_2 max.	D	l_1, l_2	E_1	DBSE	L_{total}	Composite tube D_R	Max. DBSE $^{2)}$ with 1500 rpm
70	800	1600	149	75	102	65	11	As specified by the customer	$l_1 + l_2 +$ DBSE	95	3500
85	1800	3600	184	90	123	80	15			117	3900
90	2500	5000	200	100	135	80	15			128	4100
115	4500	9000	253	120	163	100	23			160	4600

1) For selection of coupling see page 18 et seqq.

2) For higher speeds or bigger shaft distance dimensions please consult with KTR (+49 5971 798-484). The above-mentioned characteristic figures (e. g. max. DBSE) can be varied by composite tubes optimized for the application, if necessary.

Particularly the steel laminae couplings are well suited for applications with especially large distance dimensions between the drive and the driven side (e. g. cooling towers, fans etc.) due to their design. In order to generate high speeds with large distance dimensions, RADEX®-N couplings with intermediate shafts made of glass fibre or carbon fibre reinforced nylon (GRP or CFRP) are used, if necessary.

Ordering example:	RADEX®-N 85	NANA 4 CFK	Ø60	Ø70	3000
	Coupling size	Type	Finish bore d_1	Finish bore d_2	Shaft distance dimension

RADEX®-N NANA 3
Steel laminae couplings

Pump drives in accordance with API 610

For legend of pictogram refer to flapper on the cover

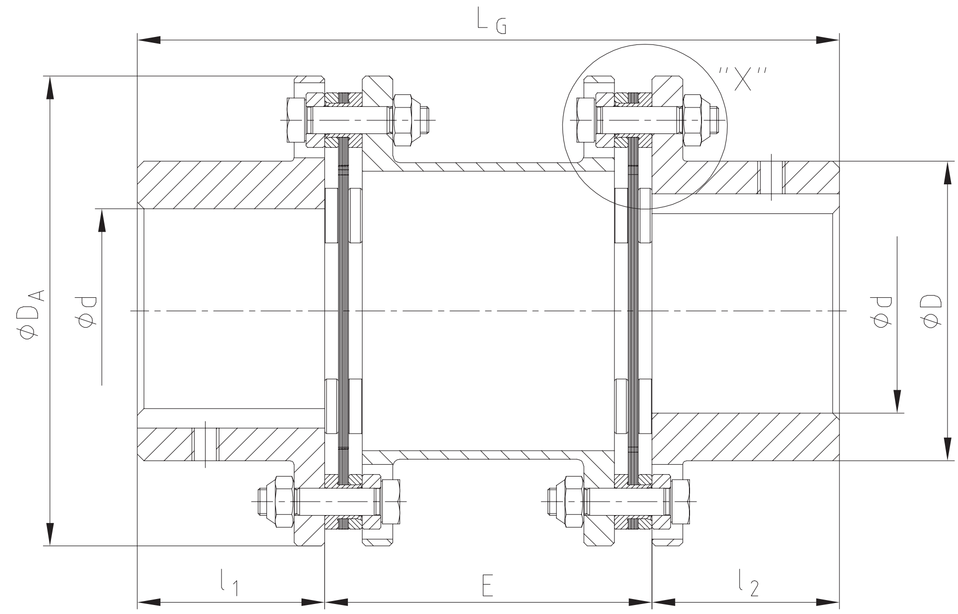
~0° ΔKa ΔKw ΔKr 280 °C API 610 ABS

RADEX®-N type NANA 3							
Size	Max. finish bore	Dimensions [mm]				Perm. displacements	
	d	D	D_A	$E_{standard}$ [1]	l_1, l_2	Angular [°] each laminae	Axial [mm]
42	50	68	104	100	45	1.0	2.8
50	55	78	126	140/180	55	1.0	3.2
60	65	88	138	100/140/180/250	55	1.0	2.0
70	75	102	156	100/140/180	65	1.0	2.2
80	85	117	179	100/140/180/250	75	1.0	2.6
85	90	123	191	100/140/180/250	80	1.0	2.3
90	100	132	210	140/180/250	80	1.0	2.0
105	110	147	225	250	90	1.0	2.4
115	120	163	265	250	100	1.0	2.8
135	135	184	305	250	135	1.0	3.5
136	135	180	300	As specified by the customer	135	0.7	3.7
156	150	195	325		150	0.7	4.2
166	170	225	350		165	0.7	4.5
186	190	250	380		185	0.7	4.8
206	210	275	420		200	0.7	5.2
246	245	320	500		240	0.7	6.0
286	290	383	567		280	0.7	6.7
336	340	445	660		330	0.7	7.5
138	135	180	300		135	0.5	2.6
158	150	195	325		150	0.5	2.8
168	170	225	350		165	0.5	3.0
188	190	250	380		185	0.5	3.2
208	210	275	420		200	0.5	3.5
248	245	320	500		240	0.5	4.0
288	290	383	567		280	0.5	4.5
338	340	445	660		330	0.5	5.0

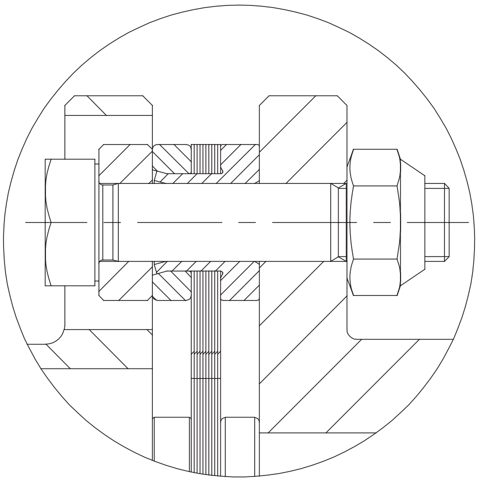
[1] Other distance dimensions E available on request.

Ordering example:	RADEX®-N 60	NANA 3	Ø50	Ø60	140
	Coupling size	Type	Finish bore d_1	Finish bore d_2	Shaft distance dimension

Components



Detail "X"



Safety catch of the spacer:
The laminae sets are provided with a sleeve in order to secure the spacer if the laminas break.

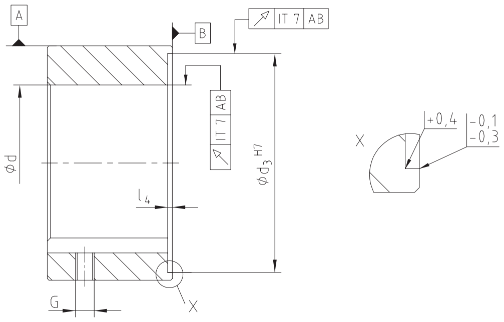
RIGIFLEX®-N
Steel laminae couplings

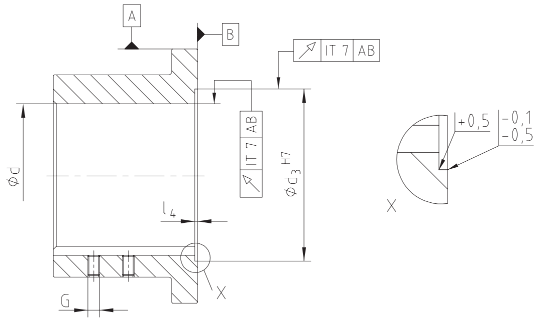
General advice

Advice on assembly and operation

See our mounting instructions KTR standard 47410 at www.ktr.com. With the assembly it is important to make sure that the laminae sets are assembled free from distortion in axial direction.

If the finish bore is machined by the customer, the tolerances for concentricity and axial run-out have to be observed (see illustrations below).





Installation

RIGIFLEX®-N couplings are designed for horizontal installation. With vertical installation the spacer has to be supported, if necessary. Please consult with us.

Delivery condition

RIGIFLEX®-N-couplings are supplied as individual components (assembled on request), with the subassembly of spacers (flanges, laminae sets and spacer) being fully assembled. The hubs can be supplied unbored or with finish bore and feather keyway or with a frictionally engaged shaft-hub-connection. The shaft-hub-connection needs to be inspected by the customer (consult with KTR, if necessary).

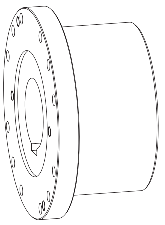
Balancing

On request of the customer the RIGIFLEX®-N couplings can be balanced. Please consult with us, if necessary.

Safety regulations

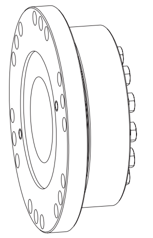
The coupling has to be dimensioned in that the permissible coupling load is not exceeded during any operating condition. For this purpose the actual loads have to be compared to the permissible parameters of the coupling. The customer has to protect rotating parts from accidental contact (Safety of Machinery DIN EN 292 chapter 2). Take precautions to make sure there is sufficient coupling protection in case of fracture of the coupling caused by overload.

Types of hubs



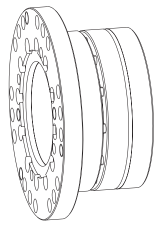
Type 1.0 hub with feather keyway and setscrew

Positive locking torque transmission, permissible torque depending on the permissible surface pressure.



Type with KTR 620 or 603 clamping set

Frictionally engaged torque transmission with external clamping set KTR 620 or KTR 603. Transmittable torques depending on bore diameter.



Type 6.0 and 6.5 hub

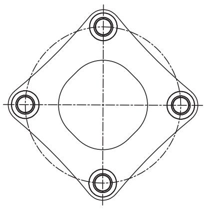
Integrated frictionally engaged shaft-hub-connection. Transmittable torques depending on bore diameter. Suitable for high speeds.

RIGIFLEX®-N
Steel laminae coupling

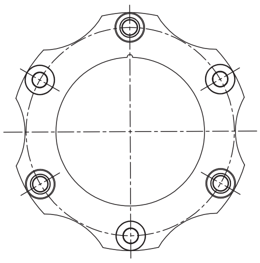
Technical data

The following laminae types are to be distinguished with RIGIFLEX®-N:

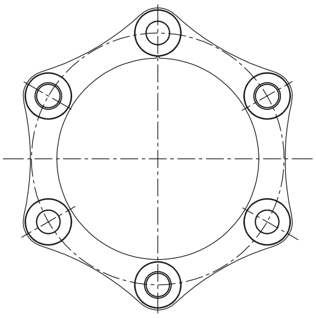
Size 35 – 65
(laminae with 4 holes)



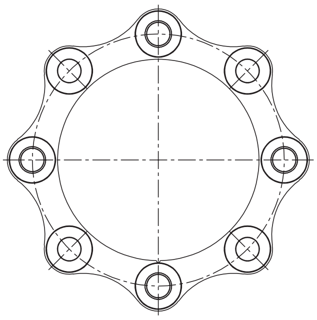
Size 75 – 160
(laminae with 6 holes)



Size 166 – 406
(laminae with 6 holes)



Size 168 – 408
(laminae with 8 holes)



Torques and displacements

Size	Laminae type	Torques [Nm]			Perm. displacements						
		T_{KN}	$T_{K\,max}$	T_{KW}	Angular displacement ± K_W 1) [°]	Axial displacement ± K_a [mm]	Radial ± K_r [mm]				
							E=100	E=140	E=180	E=200	E=250
35		130	260	65	0.7	1.2	0.90	1.40	–	–	–
50	laminae with 4 holes	270	540	135	0.7	1.4	0.77	1.26	–	–	–
65		550	1100	275	0.7	1.5	0.75	1.23	1.72	–	–
75		1100	2200	550	0.7	1.8	0.73	1.22	1.71	–	–
85		1900	3800	950	0.7	2.1	–	1.14	1.62	1.87	2.48
110		3500	7000	1750	0.7	2.4	–	1.05	1.54	1.78	2.39
120		5750	11500	2875	0.7	2.6	–	1.00	1.49	1.73	2.35
140		10500	21000	5250	0.7	3.3	–	–	–	1.55	2.16
160		16000	32000	8000	0.7	3.8	–	–	–	–	1.99
166	laminae with 6 holes	19000	38000	9500	0.7	3.7					
196		22500	45000	11250	0.7	4.2					
216		32000	64000	16000	0.7	4.5					
256		52500	105000	26250	0.7	5.2					
306		86000	172000	43000	0.7	6.0					
346		135000	270000	67500	0.7	6.7					
406		210000	420000	105000	0.7	7.5	Depending on shaft distance dimension E				
168		25000	50000	12500	0.5	2.6					
198		30000	60000	15000	0.5	2.8					
218		42500	85000	21500	0.5	3.0					
258	laminae with 8 holes	70000	140000	35000	0.5	3.5					
308		115000	230000	57500	0.5	4.0					
348		180000	360000	90000	0.5	4.5					
408		280000	560000	140000	0.5	5.0					

1) Angular displacement each laminae set

If axial, angular and radial shaft displacement arises in parallel please note the following table:

Size	Permissible angular displacement							
	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7
	Permissible axial displacement							
35	1.20	1.00	0.85	0.74	0.60	0.40	0.20	0.00
50	1.40	1.20	1.00	0.80	0.60	0.40	0.20	0.00
65	1.50	1.29	1.07	0.86	0.64	0.43	0.22	0.00
75	1.80	1.54	1.29	1.03	0.77	0.52	0.26	0.00
85	2.10	1.80	1.50	1.20	0.90	0.60	0.30	0.00
110	2.40	2.06	1.71	1.37	1.03	0.69	0.34	0.00
120	2.60	2.23	1.86	1.48	1.11	0.74	0.37	0.00
140	3.30	2.83	2.36	1.88	1.41	0.94	0.47	0.00
160	3.80	3.26	2.71	2.17	1.63	1.09	0.54	0.00
166	3.70	3.17	2.64	2.12	1.59	1.06	0.53	0.00
196	4.20	3.60	3.00	2.40	1.80	1.20	0.60	0.00
216	4.50	3.86	3.21	2.57	1.93	1.29	0.64	0.00
256	5.20	4.46	3.71	2.97	2.23	1.49	0.74	0.00
306	6.00	5.14	4.29	3.43	2.57	1.72	0.86	0.00
346	6.75	5.79	4.82	3.86	2.89	1.93	0.96	0.00
406	7.50	6.43	5.36	4.28	3.21	2.14	1.07	0.00
168	2.60	2.08	1.56	1.04	0.52	0.00	–	–
198	2.80	2.24	1.68	1.12	0.56	0.00	–	–
218	3.00	2.40	1.80	1.20	0.60	0.00	–	–
258	3.50	2.80	2.10	1.40	0.70	0.00	–	–
308	4.00	3.20	2.40	1.60	0.80	0.00	–	–
348	4.50	3.60	2.70	1.80	0.90	0.00	–	–
408	5.00	4.00	3.00	2.00	1.00	0.00	–	–

Technical data

Permissible speeds and stiffness figures

Size	Max. speed [rpm]	each laminae set		ct [Nm/rad] for complete coupling with mounting length E				
		cw [Nm/rad]	ct x 10^6 [Nm/rad]	E=100	E=140	E=180	E=200	E=250
35	23000	170	0.056	65020	56700	–	–	–
50	18000	490	0.27	73953	63990	–	–	–
65	13600	260	0.5	146022	129938	117046	–	–
75	12400	1000	0.67	306145	278381	255234	–	–
85	11000	1500	0.9	–	406641	369429	353265	318433
110	9000	1500	1.5	–	664284	637587	625028	595693
120	8000	3000	2.0	–	1798018	1637553	1567602	1416348
140	6400	10000	3.5	–	–	–	2363340	2226630
160	5600	10350	6.9	–	–	–	–	2654894
166	5600	26800	13.0	Mounting dimension E as indicated by the customer				
196	5200	35800	17.0					
216	4600	41500	19.0					
256	3900	65000	31.0					
306	3300	112000	55.0					
346	2900	205000	79.0					
406	2500	276000	125.0					
168	5600	44300	20.0					
198	5200	82200	26.0					
218	4600	90000	30.0					
258	3900	138000	49.0					
308	3300	234000	83.0					
348	2900	416000	125.0					
408	2500	562000	200.0					

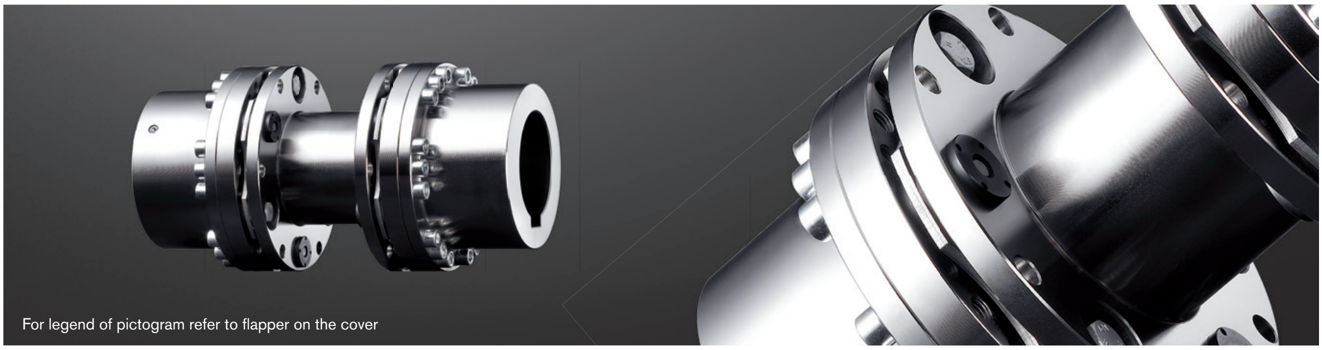
cw = angular stiffness
ct = torsion spring stiffness

Weights and mass moments of inertia

Size	Hub (max. bore)		Spacer complete [kg]					Spacer complete [kgm^2]				
	[kg]	[kgm^2]	E=100	E=140	E=180	E=200	E=250	E=100	E=140	E=180	E=200	E=250
35	0.60	0.0007	1.030	1.120	–	–	–	0.00040	0.00050	–	–	–
50	0.92	0.001019	2.262	2.442	–	–	–	0.00256	0.00263	–	–	–
65	2.7	0.00541	3.922	4.183	4.445	–	–	0.00810	0.00830	0.00828	–	–
75	2.4	0.00566	4.482	4.842	5.202	–	–	0.01143	0.01191	0.01239	–	–
85	3.7	0.01135	–	7.154	7.548	7.746	8.239	–	0.02364	0.02427	0.02459	0.02538
110	6.7	0.03222	–	12.492	13.478	13.972	15.205	–	0.06291	0.06540	0.06665	0.06976
120	9.2	0.05238	–	–	17.324	17.842	19.137	–	–	0.10314	0.10458	0.10818
140	18.2	0.15175	–	–	–	32.530	34.325	–	–	–	0.31901	0.32845
160	29.9	0.33890	–	–	–	–	52.458	–	–	–	–	0.68640
166	28.0	0.32	Mounting dimension E as indicated by the customer									
196	37.0	0.554										
216	50.0	0.85										
256	95.0	2.35										
306	138.0	4.55										
346	215.0	9.75										
406	310.0	18.95										
168	30.0	0.33										
198	40.0	0.56										
218	52.0	0.88										
258	99.0	2.43										
308	142.0	4.78										
348	222.0	9.83										
408	325.0	19.22										

RIGIFLEX®-N
Steel laminae couplings

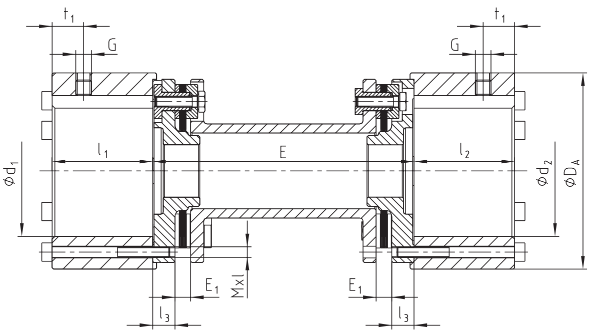
Standard type A


For legend of pictogram refer to flapper on the cover

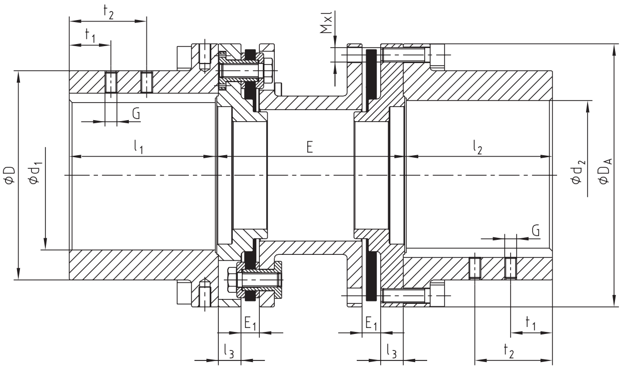
~0° | E | ΔKa | ΔKw | ΔKr | 280 °C | API 610 671 | ABS

Components

Size 35



Size 50 - 408



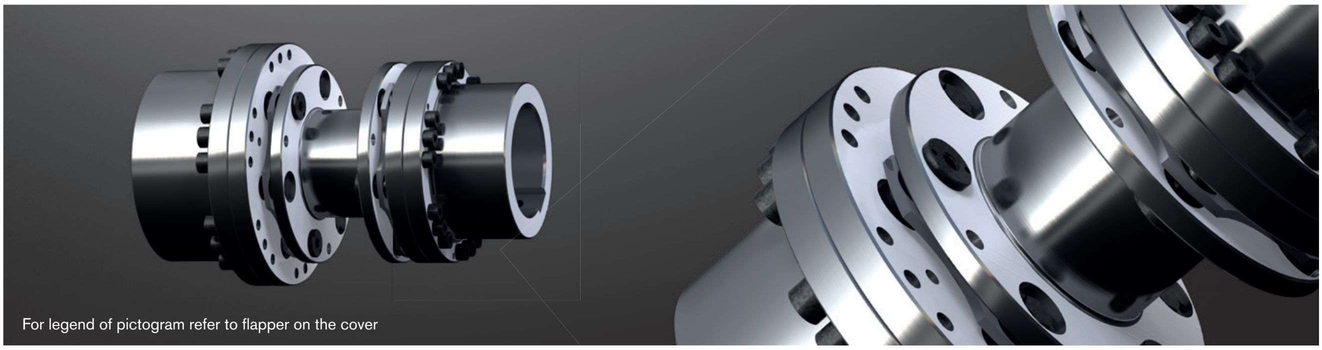
RIGIFLEX®-N type A																		
Size	Torques [Nm]			Max. finish bore	Dimensions [mm]												Screws DIN EN ISO 4762	
	T_{KN}	$T_{K\ max}$	T_{KW}	d_1, d_2	D	D_A	l_1, l_2	l_3	G	t_1	t_2	E_1	E [1]					Mxl	T_A [Nm]
35	130	260	65	50	–	75	38.5	8.5	M6	15	–	6	100	140	–	–	–	M4x45	4.1
50	270	540	135	50	70	95	50	12	M6	10	–	9	100	140	–	–	–	M6x22	14
65	550	1100	275	70	100	126	63	12	M8	20	–	11	100	140	180	–	–	M6x25	14
75	1100	2200	550	75	105	138	62.5	12	M8	20	–	11	100	140	180	–	–	M8x30	35
85	1900	3800	950	90	120	156	72.5	15	M10	20	–	12	–	140	180	200	250	M8x30	35
110	3500	7000	1750	110	152	191	87	18	M10	25	–	12	–	140	180	200	250	M10x35	69
120	5750	11500	2875	120	165	213	102	20	M12	25	–	12	–	–	180	200	250	M12x40	120
140	10500	21000	5250	150	200	265	126	25	M12	30	–	15	–	–	–	200	250	M16x50	295
160	16000	32000	8000	165	230	305	145	31	M12	30	–	15	–	–	–	–	250	M16x55	295
166	19000	38000	9500	165	230	305	155	31	M16	30	70	17	According to customer specification					M20x50	560
196	22500	45000	11250	195	260	330	185	32	M16	40	90	24						M20x50	560
216	32000	64000	16000	210	285	370	205	32	M20	50	110	26						M20x65	560
256	52500	105000	26250	260	350	440	245	38	M20	70	130	31						M24x80	970
306	86000	172000	43000	305	400	515	295	43	M24	70	130	36						M27x100	1450
346	135000	270000	67500	350	460	590	335	55	M24	95	175	45						M30x110	1950
406	210000	420000	105000	405	530	675	395	58.5	M24	95	175	50						M36x130	3300
168	25000	50000	12500	165	230	305	155	31	M16	30	70	17						M20x50	560
198	30000	60000	15000	195	260	330	185	32	M16	40	90	24						M20x50	560
218	42500	85000	21500	210	285	370	205	32	M20	50	110	26						M20x65	560
258	70000	140000	35000	260	350	440	245	38	M20	70	130	31						M24x80	970
308	115000	230000	57500	305	400	515	295	43	M24	70	130	36						M27x100	1450
348	180000	360000	90000	350	460	590	335	55	M24	95	175	45						M30x110	1950
408	280000	560000	140000	405	530	675	395	58.5	M24	95	175	50						M36x130	3300

[1] Other shaft distance dimensions available on request.

For selection of coupling see page 18 et seqq. Assembly instructions of KTR standard 47410 available at www.ktr.com.

Ordering example:	RIGIFLEX®-N 120	A	Ø 100	Ø 120	200
	Coupling size	Type	Bore d_1	Bore d_2	Shaft distance dimension E

Standard type A-J

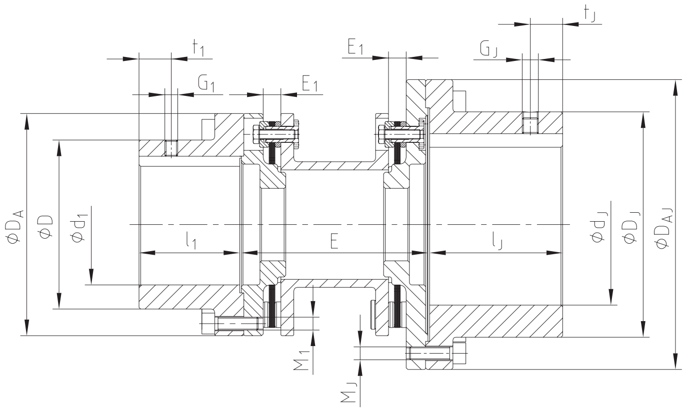


For legend of pictogram refer to flapper on the cover

~0° · ΔKr · 280 °C · E · ΔKa · ΔKw · API 610 671 · ABS

Components

Size 50 - 140

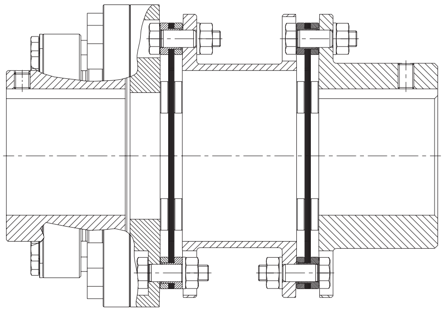


RIGIFLEX®-N type A-J																									
Size	Torques [Nm]			Max. finish bore		Dimensions [mm]																Screws DIN EN ISO 4762			
	T_{KN}	$T_{K\,max}$	T_{KW}	d_1	d_J	D	D_A	l_1	D_J	D_{AJ}	l_J	G_1	t_1	G_J	t_J	E_1	E[1]					M_1	T_A [Nm]	M_J	T_{AJ} [Nm]
50	270	540	135	50	70	70	95	50	100	126	63	M6	10	M8	20	9	100	140	–	–	–	M6	14	M6	14
65	550	1100	275	70	90	100	126	63	120	156	72.5	M8	20	M10	20	11	100	140	180	–	–	M6	14	M8	35
75	1100	2200	550	75	100	105	138	62.5	140	180	83	M8	20	M10	20	11	100	140	180	–	–	M8	35	M8	35
85	1900	3800	950	90	110	120	156	72.5	152	191	87.5	M10	20	M10	25	12	–	140	180	200	250	M8	35	M10	69
110	3500	7000	1750	110	150	152	191	87	200	265	127	M10	25	M12	30	12	–	140	180	200	250	M10	69	M16	295
120	5750	11500	2875	120	165	165	213	102	230	305	147	M12	25	M12	30	12	–	–	180	200	250	M12	120	M16	295
140	10500	21000	5250	150	195	200	265	126	260	330	186	M12	30	M16	40/90	15	–	–	–	200	250	M16	295	M20	560
160	16000	32000	8000	165	210	230	305	145	285	370	205	M12	30	M20	50/60	15	–	–	–	200	250	M16	295	M20	560

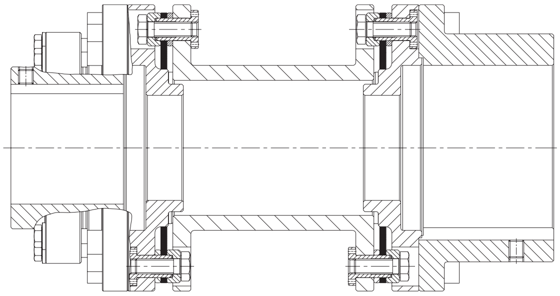
[1] Other shaft distance dimensions available on request.

For selection of coupling see page 18 et seqq. Assembly instructions of KTR standard 47410 available at www.ktr.com.

Other types:



For RADEX®-N with integrated slipping unit
see dimension sheet 699206

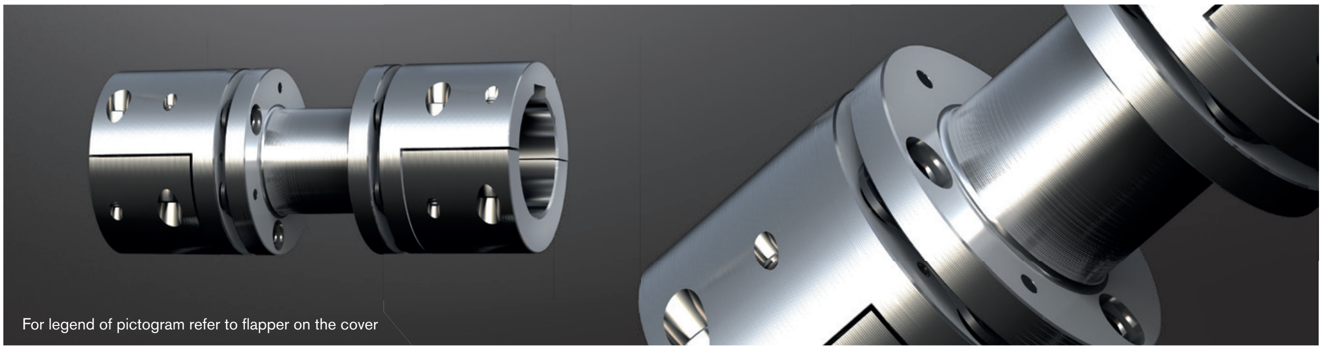


For RIGIFLEX®-N with integrated slipping unit
see dimension sheet 698869

Ordering example:	RIGIFLEX®-N 85	A-J	Ø 80	Ø 120	200
	Coupling size	Type	Bore d_1	Bore d_J	Shaft distance dimension E

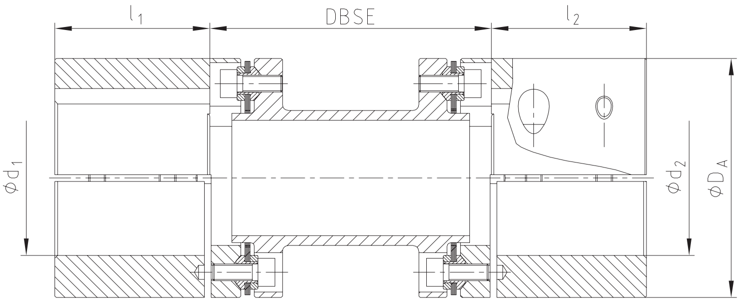
RIGIFLEX®-N
Steel laminae coupling

Standard type A-H


For legend of pictogram refer to flapper on the cover

280 °C | ΔKr | ΔKa | ΔKw | API 610 671 | ABS

Components

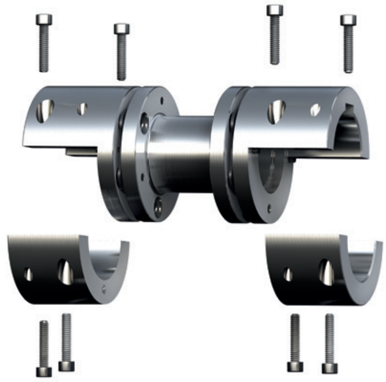


RIGIFLEX®-N type A-H											
Size	Torques [Nm]		Max. finish bore [mm]	Dimensions [mm]							
	T_{KN}	$T_{K\ max}$	d_1, d_2	D_A	l_1, l_2	Standard shaft distance dimension DBSE [1]				Perm. axial displacement	Perm. angular displacement (per laminae set [°])
46	90	180	42	69	45	100	140	180	250	+/- 1.4	1.0
56	255	510	55	85	55					+/- 1.2	0.7
66	450	900	65	105	65					+/- 1.6	0.7
76	975	1950	75	124	75					+/- 1.8	0.7
86	1500	3000	85	145	85	-				+/- 2.2	0.7
106	2400	4800	105	168	105		-			+/- 2.4	0.7

[1] Other shaft distance dimensions (DBSE) available on request

Benefits of type A-H:

- Hub type 7.6 - half shell hub
- Easy and quick radial assembly and disassembly
- Type according to API 610 and 671 (see exceptions)
- Drop-out protection of spacer with fracture of laminas following API 671

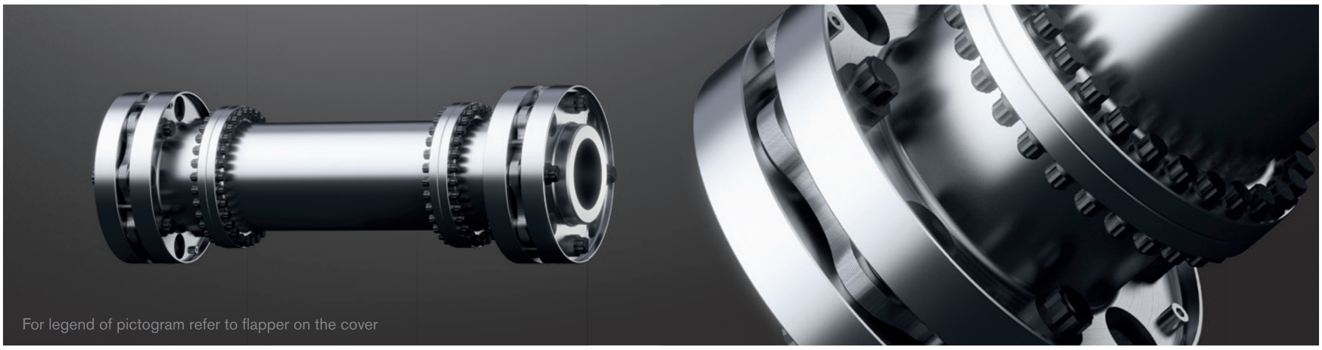


Ordering example:

RIGIFLEX®-N 66	A-H	Ø 42	Ø 48	140
Coupling size	Type	Bore d_1	Bore d_2	Shaft distance dimension DBSE

RIGIFLEX®-HP C
High-performance steel laminae couplings

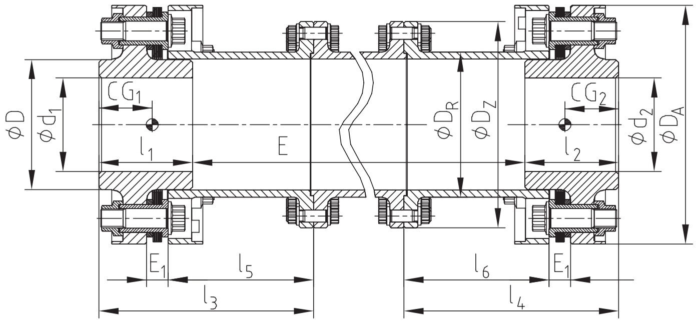
Flange connection



For legend of pictogram refer to flapper on the cover

E ΔKa ΔKw ΔKr 280 °C API 671

Components



RIGIFLEX®-HP type C

Size	Torques [Nm]		Max. finish bore	Dimensions [mm]										
	T_{KN}	$T_{K\ max}$	d_1, d_2	D	D_A	D_Z	D_R	E_1	E	$E_{min.}$	CG_1, CG_2 2)	l_1, l_2	l_3, l_4	l_5, l_6
158	20000	26000	85	119	220	195	135	17	According to customer specification	335	46	85	189	130
168	30000	39000	100	139	255	220	155	23		395	55	100	229	155
188	38000	49400	105	147	265	235	165	23		375	55	105	229	155
208	50000	65000	120	168	298	245	186	23		350	57	120	229	155
228	59000	76700	125	178	315	270	199	33		425	65	125	265	175
248	72000	93600	140	196	335	300	217	33		395	67	140	265	175
278	115000	149500	160	225	380	335	248	33		355	70	160	265	175
318	180000	234000	180	252	445	370	280	48		495	88	180	348	225
358	253000	328900	210	295	500	415	326	48		435	93	210	348	225
388	330000	429000	235	330	545	464	362	48		400	97	235	348	225

Technical data

Size	Max. speed [rpm]	Perm. displacements			Stiffness figures		
		Angular 1)	Axial	Radial 2)	each laminae set	Spacer	Coupling complete 2)
		± K_W [°]	± K_a [mm]	± K_r [mm]	c_t [Nm/rad]	c_{tR} [Nm · mm/rad]	c_{tE} = 457.2 [Nm/rad]
158	17300	0.25	3.0	2.30	$13.0 \cdot 10^6$	$839 \cdot 10^6$	$1.04 \cdot 10^6$
168	14900	0.25	3.0	2.32	$18.0 \cdot 10^6$	$1535 \cdot 10^6$	$1.79 \cdot 10^6$
188	14400	0.25	3.3	2.37	$28.0 \cdot 10^6$	$1974 \cdot 10^6$	$2.23 \cdot 10^6$
208	12800	0.25	3.8	2.50	$35.0 \cdot 10^6$	$2876 \cdot 10^6$	$3.15 \cdot 10^6$
228	12100	0.25	4.0	2.44	$39.5 \cdot 10^6$	$4123 \cdot 10^6$	$5.06 \cdot 10^6$
248	11400	0.25	4.2	2.58	$60.0 \cdot 10^6$	$5410 \cdot 10^6$	$5.51 \cdot 10^6$
278	10000	0.25	4.5	2.75	$80.0 \cdot 10^6$	$8592 \cdot 10^6$	$7.94 \cdot 10^6$
318	8500	0.25	5.2	2.70	$105.0 \cdot 10^6$	$14724 \cdot 10^6$	$13.00 \cdot 10^6$
358	7600	0.25	6.0	2.96	$155.0 \cdot 10^6$	$26258 \cdot 10^6$	$20.30 \cdot 10^6$
388	7000	0.25	6.5	3.18	$225.0 \cdot 10^6$	$37596 \cdot 10^6$	$27.70 \cdot 10^6$

1) Per laminae set 2) with E=457.2 mm and cylindrical maximum finish bore

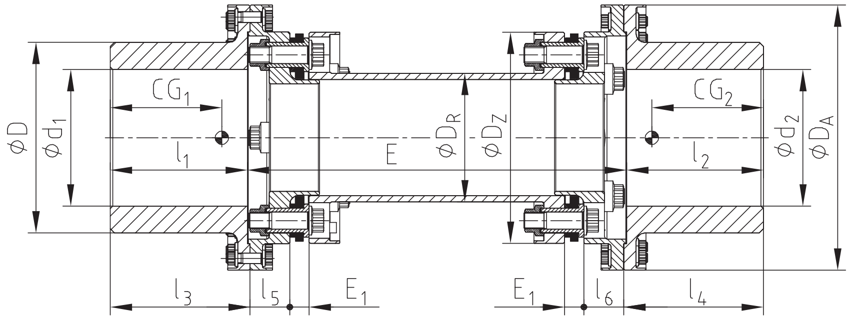
Size	Coupling 2)		Spacer	
	m [kg]	J [kgm²]	m_R [kg/mm]	J_R [kgm²/mm]
158	45	0.274	$20.28 \cdot 10^{-3}$	$81 \cdot 10^{-6}$
168	69	0.577	$27.282 \cdot 10^{-3}$	$149 \cdot 10^{-6}$
188	78	0.711	$30.975 \cdot 10^{-3}$	$191 \cdot 10^{-6}$
208	97	1.081	$35.118 \cdot 10^{-3}$	$279 \cdot 10^{-6}$
228	123	1.561	$44.397 \cdot 10^{-3}$	$400 \cdot 10^{-6}$
248	144	2.109	$48.614 \cdot 10^{-3}$	$524 \cdot 10^{-6}$
278	190	3.542	$58.694 \cdot 10^{-3}$	$833 \cdot 10^{-6}$
318	306	7.792	$79.311 \cdot 10^{-3}$	$1427 \cdot 10^{-6}$
358	405	12.869	$104.041 \cdot 10^{-3}$	$2545 \cdot 10^{-6}$
388	525	19.257	$120.151 \cdot 10^{-3}$	$3644 \cdot 10^{-6}$

$c_{t\ total} = 1 / ((1/c_{tE} = 457.2) + ((E - 457.2\ mm) / c_{tR}))$
$m_{total} = m + m_R \cdot (E - 457.2\ mm)$
$J_{total} = J + J_R \cdot (E - 457.2\ mm)$

RIGIFLEX®-HP L
High-performance steel laminae couplings

Type with flange hubs

Components



RIGIFLEX®-HP type L														
Size	Torques [Nm]		Max. finish bore	Dimensions [mm]										
	T_{KN}	$T_{K\,max}$	d_1, d_2	D	D_A	D_Z	D_R	E_1	E	$E_{min.}$	CG_1, CG_2 [2]	l_1, l_2	l_3, l_4	l_5, l_6
158	20000	26000	150	210	310	220	135	17	According to customer specification	265	140	150	163.5	37.5
168	30000	39000	165	230	320	255	155	23		340	148	165	168.5	48.0
188	38000	49400	180	250	335	265	165	23		340	156	180	183.5	48.0
208	50000	65000	200	280	362	298	186	23		340	165	200	203.5	48.0
228	59000	76700	220	310	390	315	199	33		390	179	220	223.5	54.5
248	72000	93600	240	340	420	334	217	33		390	185	235	238.5	54.5
278	115000	149500	270	380	455	380	248	33		390	202	270	273.5	54.5
318	180000	234000	315	445	550	445	280	48		510	246	315	318.5	71.5
358	253000	328900	350	490	600	500	326	48		510	263	350	353.5	71.5
388	330000	429000	380	535	650	545	362	48		510	277	380	383.5	71.5

Technical data							
Size	Max. speed [rpm]	Perm. displacements			Stiffness figures		
		Angular [1]	Axial	Radial [2]	each laminae set	Spacer	Coupling complete [2]
		± K_W [°]	± K_a [mm]	± K_r [mm]	c_t [Nm/rad]	c_{tR} [Nm · mm/rad]	c_{tE} = 457.2 [Nm/rad]
158	13800	0.25	3.0	1.56	$13.0 \cdot 10^6$	$839 \cdot 10^6$	$1.70 \cdot 10^6$
168	12300	0.25	3.0	1.45	$18.0 \cdot 10^6$	$1535 \cdot 10^6$	$3.00 \cdot 10^6$
188	11400	0.25	3.3	1.45	$28.0 \cdot 10^6$	$1974 \cdot 10^6$	$4.08 \cdot 10^6$
208	10500	0.25	3.8	1.45	$35.0 \cdot 10^6$	$2876 \cdot 10^6$	$5.61 \cdot 10^6$
228	9700	0.25	4.0	1.34	$39.5 \cdot 10^6$	$4123 \cdot 10^6$	$7.77 \cdot 10^6$
248	9000	0.25	4.2	1.34	$60.0 \cdot 10^6$	$5410 \cdot 10^6$	$10.70 \cdot 10^6$
278	8300	0.25	4.5	1.34	$80.0 \cdot 10^6$	$8592 \cdot 10^6$	$15.60 \cdot 10^6$
318	6900	0.25	5.2	1.13	$105.0 \cdot 10^6$	$14724 \cdot 10^6$	$26.90 \cdot 10^6$
358	6300	0.25	6.0	1.13	$155.0 \cdot 10^6$	$26258 \cdot 10^6$	$41.20 \cdot 10^6$
388	5800	0.25	6.5	1.13	$225.0 \cdot 10^6$	$37596 \cdot 10^6$	$61.30 \cdot 10^6$

[1] Per laminae set [2] with E=457.2 mm and cylindrical maximum finish bore

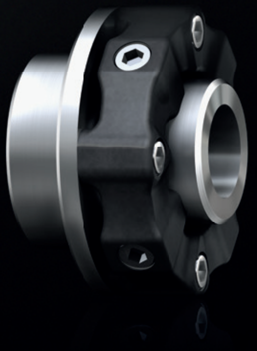
Size	Coupling [2]		Spacer	
	m [kg]	J [kgm²]	m_R [kg/mm]	J_R [kgm²/mm]
158	80	0.717	$20.28 \cdot 10^{-3}$	$81 \cdot 10^{-6}$
168	115	1.327	$27.282 \cdot 10^{-3}$	$149 \cdot 10^{-6}$
188	135	1.759	$30.975 \cdot 10^{-3}$	$191 \cdot 10^{-6}$
208	175	2.771	$35.118 \cdot 10^{-3}$	$279 \cdot 10^{-6}$
228	235	4.525	$44.397 \cdot 10^{-3}$	$400 \cdot 10^{-6}$
248	285	6.417	$48.614 \cdot 10^{-3}$	$524 \cdot 10^{-6}$
278	375	10.381	$58.694 \cdot 10^{-3}$	$833 \cdot 10^{-6}$
318	642	24.810	$79.311 \cdot 10^{-3}$	$1427 \cdot 10^{-6}$
358	812	38.404	$104.041 \cdot 10^{-3}$	$2545 \cdot 10^{-6}$
388	1016	57.062	$120.151 \cdot 10^{-3}$	$3644 \cdot 10^{-6}$

Ordering example:

RIGIFLEX®-HP 188	L	Ø 160	Ø 180	457.2
Coupling size	Type	Bore d_1	Bore d_2	Shaft distance dimension E

Highly flexible shaft couplings

EVOLASTIC® NEW



BoWex-ELASTIC® HEW Compact

HIGHLY FLEXIBLE SHAFT COUPLINGS
TYPES AND OPERATING DESCRIPTION

Properties of highly flexible shaft couplings

		
Product	**EVOLASTIC®**	**BoWex® HEW Compact**
Type	Highly flexible jaw coupling	Highly flexible gear coupling
Properties		
Highly flexible	●	●
Damping vibrations	●	
Maintenance-free	●	●
Axial plug-in	●	●
Shear type		●
Fail-safe	●	
Compensating for misalignment	●	●
Types		
Variant diversity	very high	average
Special features	reducing torsional vibrations and compensating for misalignment above average with compact dimensions, extremely flexible for individual drives	this type combines a compact design, ability for axial plug-in and low restoring forces
Applications / core industries	flexible all-rounder coupling for wide applications in mechanical and plant engineering	applications critical to rotation such as screw compressors, piston compressors or transfer pumps
Torque range T_{KN} [Nm]		
Min.	100	200
Max.	5,600	8,400
Max. circumferential speed v [m/s]		
Steel + cast EN-GJS (dynamic balancing)	60	50
Hub materials available		
Steel (semi-finished product) » customised solutions available	●	●
Stainless steel	○	○
Corrosion-protected types	○	○
Spiders / elastomers		
Material	NR + EPDM	NR + EPDM
Degree of hardness	highly flexible compounds W, S, M	40 - 70 Shore A
Temperature range in °C, min. / max. (standard)	-40 / +80	-40 / +100
Temperature range in °C, min. / max. (special)	-30 / +100	-30 / +120

● ≈ Standard
○ ≈ On request

HIGHLY FLEXIBLE SHAFT COUPLINGS TYPES AND OPERATING DESCRIPTION

Product finder for highly flexible shaft couplings

		
Product	**EVOLASTIC®**	**BoWex® HEW Compact**
Type	Highly flexible jaw coupling	Highly flexible gear coupling
Geometries		
Design	Short	Short
Mass moment of inertia	low	low
Shaft distance dimension	low	low
Types (extract)		
Elastomers can be radially disassembled » without displacing driving/driven side	D2H, DFH	–
Intermediate shaft types » bridging larger shaft distances	D2H, DFH	–
Shaft-to-shaft connection	EH, E2H, EHP, E2HP	Standard
Flange-to-shaft connection	EFH, EFHP	–
Flange-to-flange connection » particularly short mounting length	customised	–
Double-cardanic » compensating for big displacements, lower restoring forces	D2H, DFH	–
Certifications / type examinations		
ATEX	○	●
GOST R / GOST TR	○	●
DNV/GL	○	●
Bureau Veritas	○	●

● ≈ Standard
○ ≈ On request

EVOLASTIC®
Highly flexible couplings

Description of product and application

The EVOLASTIC® is a highly flexible, non-slip and backlash-free shaft and flange coupling for versatile use in a large number of main and auxiliary drives in mechanical and plant engineering.

Subject to the elastomer element pre-stressed to pressure, the coupling is able to reduce torsional vibrations in the drive train and absorb overload shocks smoothly. Structure-borne noise is efficiently damped. At the same time it offsets misalignment above average in three dimensions (axially, radially and angularly).

The key component of this series is a vulcanised, circularly closed elastomer element made of natural rubber (WN, SN, MN, up to 80 °C) or for higher temperatures made of synthetical EPDM material (WE, SE, ME, up to 100 °C). The various kinds of rubber hardness cover one application and torque range per size.

The basic variants distinguish between directly screwed types and pluggable types. They cover all convenient mounting conditions ranging from a finished individual component through hub/hub and flange/hub applications to the driving shaft. Apart from that the product portfolio allows for highly individual and flexible mounting options, tailor-made for the special application.

Technical data

Size	Elastomer type [2]	Torque [Nm] [1]				Dynamic torsion spring stiffness $C_{dyn.}$ [Nm/rad]		Relative damping ψ [-]		Perm. damping power P_{KW} [W]		Operating speed [rpm]	
		T_{KN}	T_{Kmax}	T_{Kmax1}	T_{KW}	30 °C	60 °C	30 °C	60 °C	30 °C	60 °C	n	$n_{max.}$
12	SN	100	200	300	40	900	720	0.80	0.64	25	15	4,500	5,000
	MN	120	240	360	48	1,500	1,200	1.10	0.88			5,400	6,000
24	SN	200	400	600	80	2,000	1,600	0.80	0.64	40	24	3,780	4,200
	MN	240	480	720	96	3,600	2,880	1.10	0.88			4,500	5,000
NEW 32	SN	280	560	840	112	6,500	5,200	0.80	0.64	50	30	3,800	4,200
	MN	320	640	960	128	9,500	7,600	1.10	0.88			4,500	5,000
48	SN	420	840	1,260	168	6,800	5,440	0.80	0.64	75	45	3,780	4,200
	MN	480	960	1,440	192	13,500	10,800	1.10	0.88			4,500	5,000
60	SN	500	1,000	1,500	200	4,600	3,680	0.80	0.64	80	48	3,240	3,600
	MN	600	1,200	1,800	240	7,750	6,200	1.10	0.88			3,600	4,000
86	SN	760	1,520	2,280	304	12,500	10,000	0.90	0.72	90	54	3,600	4,000
	MN	860	1,720	2,580	344	21,000	16,800	1.10	0.88			4,050	4,500
125	SN	1,100	2,200	3,300	440	8,800	7,040	0.80	0.64	120	72	2,880	3,200
	MN	1,250	2,500	3,750	500	16,000	13,600	1.10	0.88			3,240	3,600
200	SN	1,700	3,400	5,100	680	29,000	23,200	0.90	0.72	150	90	3,060	3,400
	MN	2,000	4,000	5,250	800	44,000	35,200	1.10	0.88			3,240	3,600
280	WN	2,400	4,800	6,100	960	38,000	30,400	0.70	0.56	170	102	2,700	3,000
	MN	2,800	5,600	6,100	1,120	78,000	62,400	1.10	0.88			3,060	3,400
360	WN	3,200	6,400	9,600	1,280	48,500	38,800	0.70	0.56	200	120	2,700	3,000
	SN	3,400	6,800	10,200	1,360	67,000	53,600	0.90	0.72			3,060	3,400
	MN	3,600	7,200	10,800	1,440	115,000	92,000	1.10	0.88			3,060	3,400
560	WN	5,000	10,000	14,000	2,000	73,500	58,800	0.80	0.64	240	144	2,250	2,500
	SN	5,200	10,400	14,000	2,080	105,000	84,000	1.00	0.80			2,520	2,800
	MN	5,600	11,200	14,000	2,240	138,000	110,400	1.10	0.88			2,700	3,000

[1] T_{KN} Torque that can be constantly transmitted over the entire speed range.
T_{Kmax} Transient torque peaks (e. g. resonance passage), max. 100,000 load alternation pulsating / 50,000 load alternation vibratory
T_{Kmax1} Impact loads rarely, max. 1,000 load alternation
For selection consider DIN 740 part II (operating factor, temperature factor), parameters for an ambient temperature of 30 °C.

[2] Higher strength on request.

Types

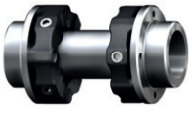
Types axially screwed+	
E	Elastomer + set of screws
EH	Elastomer + hub (drive)
E2H	Elastomer + two hubs (driving and driven side)
EFH	Elastomer + flange (drive) + hub (driven side)
D2H	Two elastomers + intermediate shaft + two hubs
DFH	Two elastomers + intermediate shaft + flange and hub


E


EH


E2H


EFH


D2H


DFH

Types plugged in axially	
EP	Elastomer + locking pin
EHP	Elastomer + hub (drive), pluggable
E2HP	Elastomer + two hubs (driving and driven side), pluggable
EFHP	Elastomer + flange (drive) + hub (driven side), pluggable

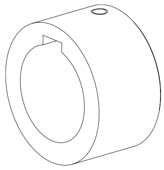

EP


EHP

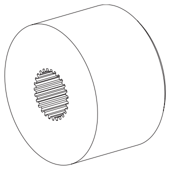

E2HP


EFHP

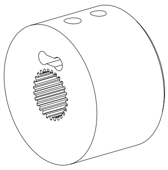
Types of hubs



Type 1.0
with feather keyway
and setscrew



Type 1.3
spline toothing



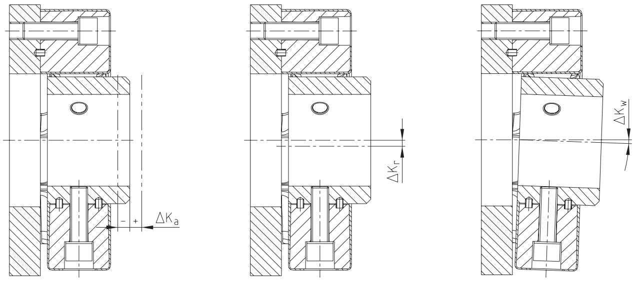
Type 3.1
spline/clamping hub N

Other hub types on request.

Examples:

- slotted clamping hub
- clamping ring hub
- taper or cylindrical press fit

Displacements / Displacement stiffness



NEW

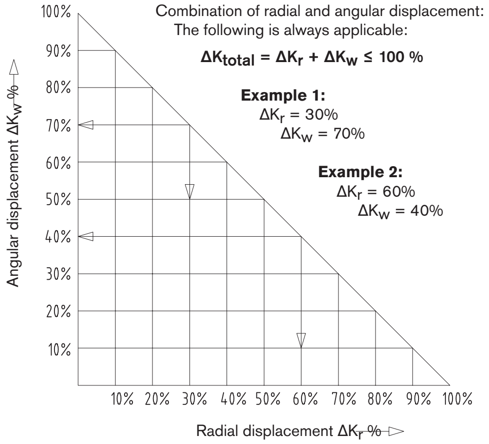
EVOLASTIC® size		12	24	32	48	60	86	125	200	280	360	560
Perm. axial displacement ΔK_a [mm]		±2.5	±3.0	±3.0	±2.5	±3.0	±3.0	±3.5	±3.0	±3.5	±4.0	±4.0
Perm. radial displacement ΔK_r [mm]	1,500 rpm	2.0	2.0	2.0	2.0	2.5	2.0	2.5	2.5	2.5	3.0	3.0
	Max. [1]	2.5	2.5	3.6	3.5	3.5	3.5	3.5	3.5	3.5	5.0	5.0
Perm. angular displacement ΔK_w [°]	1,500 rpm	3.0	3.0	2.0	2.0	3.0	2.0	3.0	2.0	2.0	2.0	2.0
	Max. [1] [2]	6.0	6.0	4.0	4.0	6.0	4.0	6.0	4.0	4.0	4.0	4.0

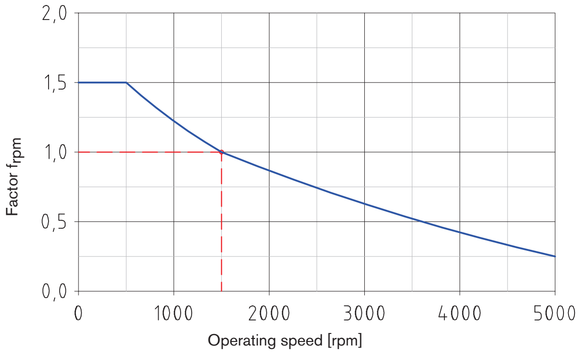
[1] With assembly for a short time resp. rarely with downtime or start-up operation as well as exceptional load conditions.

[2] Check for cardanic free movement

The radial and angular displacement of a coupling element refers to an operating speed of 1,500 RPM. Following the graph the permissible operating displacement increases with lower speed or reduces with rising speed by the factor f_{rpm}. The combination of radial and angular displacement in an application is divided up as a percentage. The permissible displacement refers to the total of alignment and operating displacement.

Size	Elastomer hardness	Axial stiffness C_a [N/mm]		Radial stiffness C_r [N/mm]		Angular stiffness C_w [Nm/°]	
		30 °C	60 °C	30 °C	60 °C	30 °C	60 °C
12	S	50	40	280	224	2.0	1.6
	M	70	56	400	320	3.0	2.4
24	S	70	56	400	320	4.0	3.2
	M	100	80	550	440	5.0	4.0
NEW 32	S	200	160	1,100	880	12	9.6
	M	450	360	1,700	1,360	25	20
48	S	270	216	1,000	800	10	8.0
	M	420	336	1,500	1,200	15	12
60	S	100	80	440	352	10	8.0
	M	120	96	650	520	14	11
86	S	390	312	1,300	1,040	24	19
	M	490	392	1,625	1,300	30	24
125	S	150	120	650	520	15	12
	M	200	160	920	736	22	18
200	S	420	336	1,700	1,360	45	36
	M	525	420	2,125	1,700	56	45
280	W	460	368	1,150	920	58	46
	M	800	640	2,800	2,240	95	76
360	W	450	360	1,800	1,440	66	53
	S	550	440	2,200	1,760	80	64
	M	710	568	2,500	2,000	100	80
560	W	380	304	1,950	1,560	95	76
	S	480	384	2,500	2,000	120	96
	M	620	496	3,000	2,400	150	120



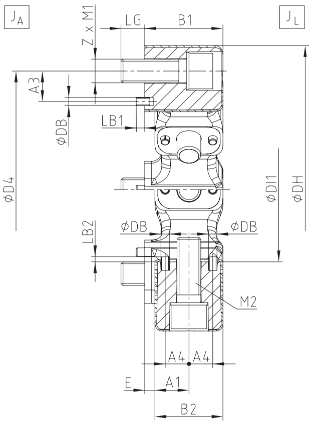


EVOLASTIC® E
Highly flexible couplings

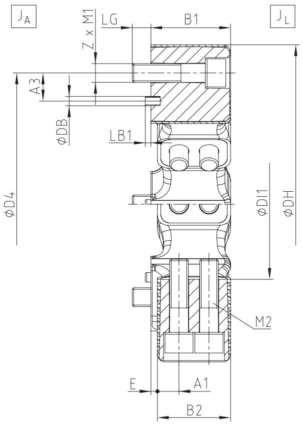
Individual element - available in various kinds of Shore hardness

For legend of pictogram refer to flapper on the cover

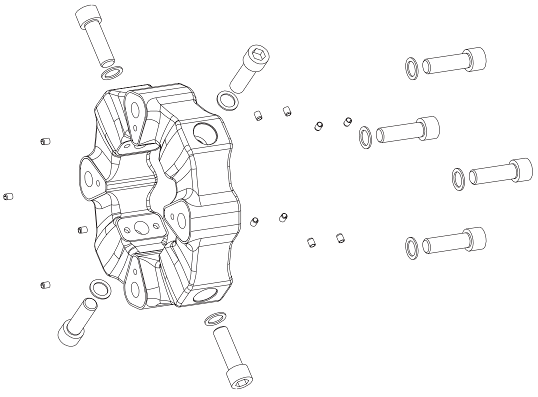
≤45° E 110 °C ΔKa ΔKw ΔKr



Size 12 - 280



Size 360 - 560



EVOLASTIC® type E

Size	Dimensions [mm]														Mass moment of inertia [kgm²]		Weight [kg]
	DH	DI1	B1	B2	E	D4	Z x Pitch	A3	LG	LB1	DB	A1	A4	LB2	J_A	J_L	
12	122	60	32	28	4	100	3 x 120°	12	10	4	4	14.0	10.0	-	0.0005	0.0005	0.50
24	150	70	42	36	6	125	3 x 120°	18	12	4	5	18.0	13.5	5	0.0010	0.0010	0.93
NEW 32	150	70	42	36	6	125	4 x 90°	18	12	4	5	18.0	13.5	5	0.0020	0.0020	1.13
48	170	85	46	40	6	140	4 x 90°	18	14	5	5	20.0	14.0	5	0.0040	0.0030	1.55
60	200	100	58	50	8	165	3 x 120°	20	16	5	5	25.0	18.0	5	0.0070	0.0070	2.28
86	200	100	58	50	8	165	4 x 90°	20	16	5	5	25.0	18.0	5	0.0090	0.0080	2.76
125	260	125	70	63	7	215	3 x 120°	25	20	5	8	31.5	22.5	5	0.0240	0.0220	4.74
200	260	125	70	63	7	215	4 x 90°	25	20	5	8	31.5	22.5	5	0.0300	0.0280	5.79
280	300	145	80	72	8	250	4 x 90°	25	20	5	8	36.0	22.5	5	0.0550	0.0500	7.89
360	340	160	85	78	7	280	4 x 90°	30	20	6	10	2 x 23.0	-	-	0.0960	0.0950	11.50
560	363	170	105	95	10	300	4 x 90°	40	24	6	10	2 x 28.5	-	-	0.1510	0.1450	15.38

Delivery condition:
EVOLASTIC® couplings type E are supplied with a mounting kit consisting of cap screws, screw locking washers and positioning sleeves. With the connection design make sure sufficient screw-in depth.

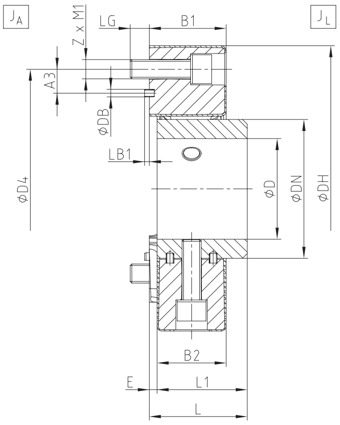
Size	Cap screw DIN EN ISO 4762 - 12.9		Tightening torque T_A
	M1 / axial	M2 / radial	[Nm]
12	M10 x 30	M10 x 30	71
24	M12 x 35	M12 x 35	123
32	M12 x 35	M12 x 35	123
48	M14 x 40	M14 x 40	195
60	M16 x 50	M16 x 50	302
86	M16 x 50	M16 x 50	302
125	M20 x 65	M20 x 65	592
200	M20 x 65	M20 x 65	592
280	M20 x 65	M20 x 65	592
360	M20 x 80	M20 x 80	592
560	M24 x 90	M20 x 90	1,017 / 592

Ordering example:	EVOLASTIC® 48	E	S
	Coupling size	Type	Elastomer hardness

EVOLASTIC® EH
Highly flexible couplings

Individual element + shaft connection

For legend of pictogram refer to flapper on the cover



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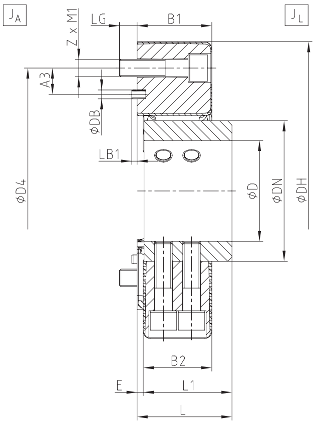

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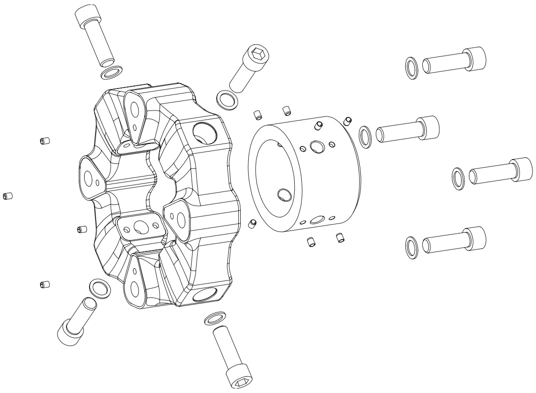


EVOLASTIC® type EH

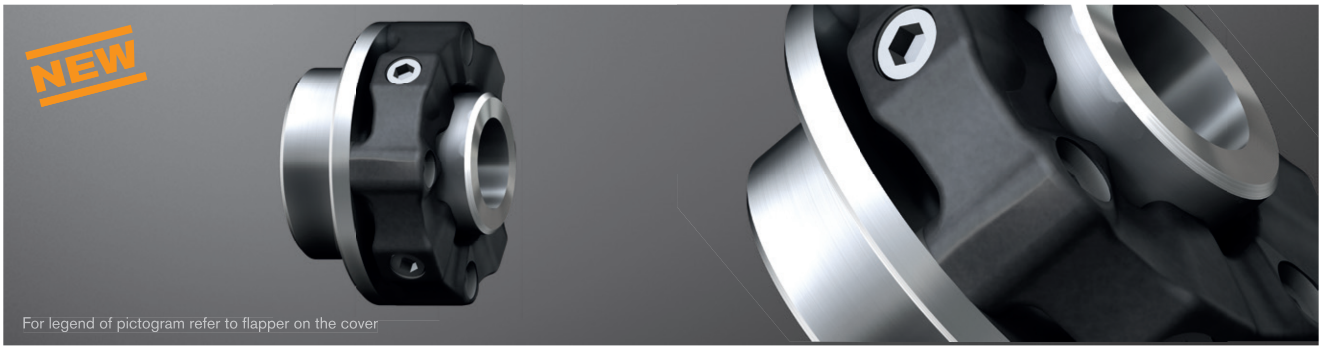
Size	Dimensions [mm]															Mass moment of inertia [kgm²] [1]		Weight [kg] [1]
	Max. finish bore D	DH	DN	B1	B2	E	L	L1	D4	Z x Pitch	M1	A3	LG	LB1	DB	J_A	J_L	
12	38	122	60	32	28	4	46	42	100	3 x 120°	M10	12	10	4	4	0.0006	0.0009	1.04
24	46	150	70	42	36	6	56	50	125	3 x 120°	M12	18	12	4	5	0.0016	0.0021	1.76
NEW 32	46	150	70	42	36	6	56	50	125	4 x 90°	M12	18	12	4	5	0.0020	0.0030	1.95
48	55	170	85	46	40	6	61	55	140	4 x 90°	M14	18	14	5	5	0.0040	0.0050	2.90
60	65	200	100	58	50	8	74	66	165	3 x 120°	M16	20	16	5	5	0.0070	0.0110	4.55
86	65	200	100	58	50	8	74	66	165	4 x 90°	M16	20	16	5	5	0.0090	0.0120	5.03
125	85	257	125	70	63	7	88	80	215	3 x 120°	M20	25	20	5	8	0.0240	0.0340	8.77
200	85	257	125	70	63	7	88	80	215	4 x 90°	M20	25	20	5	8	0.0300	0.0400	9.80
280	105	299	145	80	72	8	102	94	250	4 x 90°	M20	25	20	5	8	0.0560	0.0730	13.54
360	115	340	160	85	78	7	108	100	280	4 x 90°	M20	30	20	6	10	0.0960	0.1320	18.85
560	120	363	170	105	95	10	135	125	300	4 x 90°	M24	40	24	6	10	0.1530	0.2080	26.34

[1] With max. bore

Ordering example:	EVOLASTIC® 48	EH	S	1.0	Ø52
	Coupling size	Type	Elastomer hardness	Hub type	Finish bore

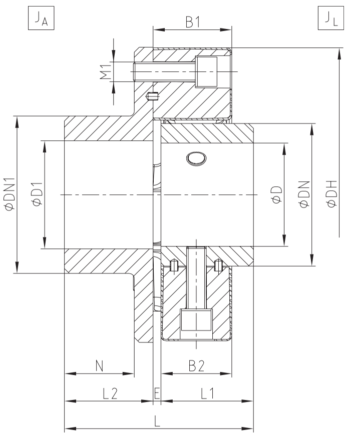
EVOLASTIC® E2H
Highly flexible couplings

Shaft-to-shaft connection

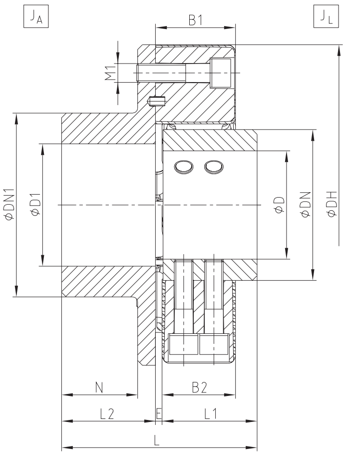


For legend of pictogram refer to flapper on the cover

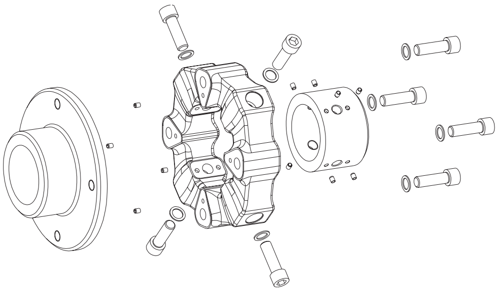
≤45° E 110 °C ΔKa ΔKw ΔKr



Size 12 - 280



Size 360 - 560



EVOLASTIC® type E2H																
Size	Dimensions [mm]													Mass moment of inertia [kgm²] 1)		Weight [kg] 1)
	Max. finish bore		DH	DN	DN1	B1	B2	E	N	L	L1	L2	M1			
	D	D1												JA	JL	
12	38	55	122	60	80	32	28	4	32	88	42	42	M10	0.0030	0.0010	2.38
24	46	70	150	70	100	42	36	6	38	106	50	50	M12	0.0081	0.0021	4.22
NEW 32	46	70	150	70	100	42	36	6	38	106	50	50	M12	0.0090	0.0030	4.40
48	55	85	170	85	115	46	40	6	41	116	55	55	M14	0.0160	0.0050	6.21
60	65	100	200	100	140	58	50	8	50	140	66	66	M16	0.0360	0.0110	10.39
86	65	100	200	100	140	58	50	8	50	140	66	66	M16	0.0370	0.0120	10.83
125	85	110	260	125	160	70	63	7	60	168	80	80	M20	0.1110	0.0340	20.17
200	85	110	260	125	160	70	63	7	60	168	80	80	M20	0.1160	0.0400	21.15
280	105	110	300	145	160	80	72	8	70	192	94	90	M20	0.1960	0.0730	28.30
360	115	130	340	160	195	85	78	7	80	208	100	100	M20	0.3540	0.1320	40.66
560	120	140	370	170	200	105	95	10	100	260	125	125	M24	0.5890	0.2080	56.56

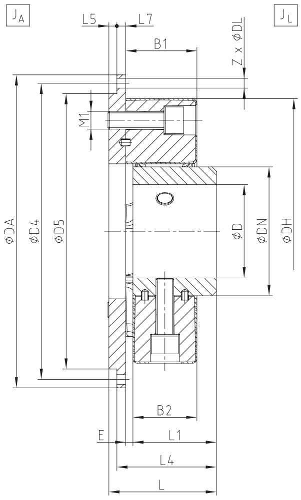
[1] With max. bore

Ordering example:	EVOLASTIC® 48	E2H	S	1.0	Ø52	1.0	Ø52
	Coupling size	Type	Elastomer hardness	Hub type	Finish bore	Hub type	Finish bore

EVOLASTIC® EFH
Highly flexible couplings

Flange-to-shaft connection

For legend of pictogram refer to flapper on the cover



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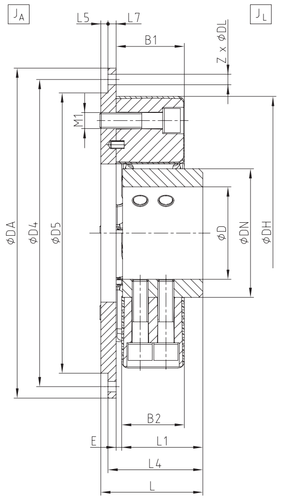
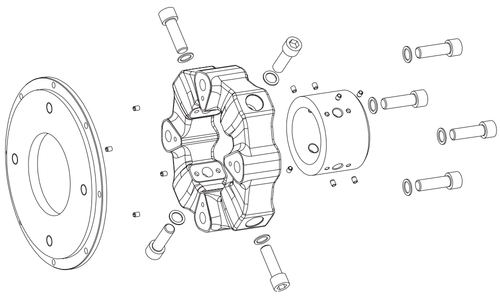


Size 360 - 560



Flange dimensions according to SAE J620 [mm]				
Size	DA	D4	Z	DL
6 $^1/_2$"	215.90	200.02	6	9
7 $^1/_2$"	241.30	222.25	8	9
8"	263.52	244.47	6	11
10"	314.32	295.27	8	11
11 $^1/_2$"	352.42	333.37	8	11
14"	466.72	438.15	8	13

EVOLASTIC® type EFH

Size	Flange connection acc. to SAE - J620						Dimensions [mm]													Mass moment of inertia [kgm²] [1]		Weight [kg] [1]
	6.5"	7.5"	8"	10"	11.5"	14"	Max. finish bore D	DH	DN	B1	B2	E	L	L1	L4	L5	L7	M1	D5	JA	JL	
12	●						38	122	60	32	28	4	56	42	52	4	6	M10	180	0.013	0.001	3.26
		●																	190	0.020	0.001	3.78
24	●						46	150	70	42	36	6	68	50	62	6	6	M12	180	0.016	0.002	4.26
		●																	190	0.023	0.002	4.82
NEW 32	●						46	150	70	42	36	6	68	50	62	6	6	M12	180	0.016	0.003	4.44
		●																	190	0.023	0.003	5.00
48		●					55	170	85	46	40	6	75	55	67	8	6	M14	190	0.026	0.005	6.03
			●																200	0.034	0.005	6.62
				●											71	4	10		260	0.091	0.005	9.91
60				●			65	200	100	58	50	8	90	66	84	6	10	M16	270	0.103	0.011	12.07
					●														310	0.165	0.011	14.49
86				●			65	200	100	58	50	8	90	66	84	6	10	M16	270	0.105	0.012	12.52
					●														360	0.166	0.012	14.94
125				●			85	260	125	70	63	7	107	80	98	9	10	M16	270	0.129	0.034	16.72
					●														310	0.199	0.034	19.57
200				●			85	260	125	70	63	7	107	80	98	9	10	M20	270	0.135	0.039	17.64
					●														310	0.205	0.039	20.50
						●													405	0.572	0.039	30.01
280					●		105	300	145	80	72	8	121	94	112	9	10	M20	310	0.226	0.072	23.54
						●													405	0.593	0.072	33.05
360						●	115	340	160	85	78	7	127	100	118	9	10	M20	405	0.628	0.130	37.55
560						●	120	363	170	105	95	10	160	125	145	15	25	M24	405	0.794	0.203	49.06

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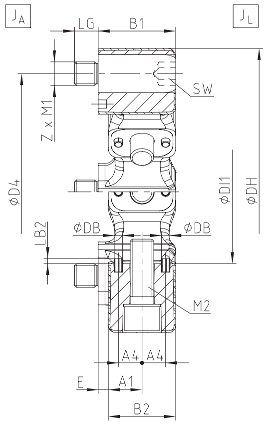
[1] With max. bore

Ordering example:	EVOLASTIC® 48	EFH	S	8	1.0	Ø52
	Coupling size	Type	Elastomer hardness	Flange ØDA acc. to SAE or special	Hub type	Finish bore

EVOLASTIC® EP
Highly flexible couplings

Pluggable elastomer - available in various kinds of Shore hardness

For legend of pictogram refer to flapper on the cover



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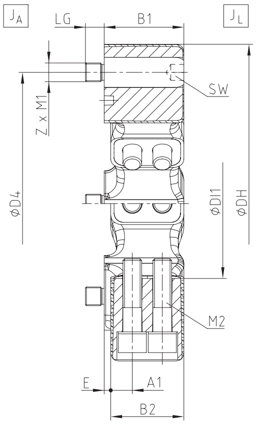

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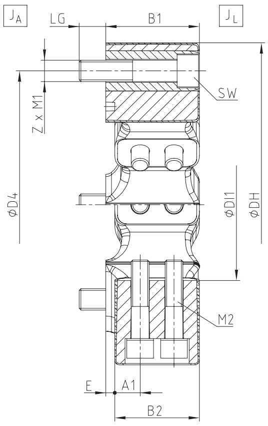

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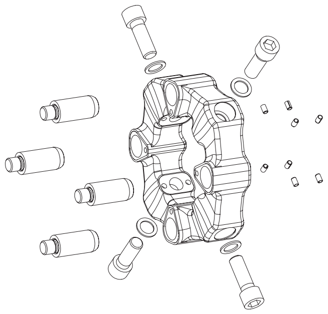


	EVOLASTIC® type EP														
	Size	Dimensions [mm]											Mass moment of inertia [kgm²]		Weight [kg]
		DH	DI1	B1	B2	E	D4	Z x Pitch	LG	DB	A1	A4	LB2	J_A	J_L	
	12	122	60	32	28	4	100	3 x 120°	10	4	14.0	10.0	-	0.001	0.001	0.55
	24	150	70	42	36	6	125	3 x 120°	12	5	18.0	13.5	5	0.002	0.001	1.03
NEW	32	150	70	42	36	6	125	4 x 90°	12	5	18.0	13.5	5	0.003	0.002	1.26
	48	170	85	46	40	6	140	4 x 90°	14	5	20.0	14.0	5	0.005	0.003	1.74
	60	200	100	58	50	8	165	3 x 120°	16	5	25.0	18.0	5	0.009	0.007	1.52
	86	200	100	58	50	8	165	4 x 90°	16	5	25.0	18.0	5	0.010	0.008	3.08
	125	260	125	70	63	7	215	3 x 120°	20	8	31.5	22.5	5	0.028	0.022	5.16
	200	260	125	70	63	7	215	4 x 90°	20	8	31.5	22.5	5	0.036	0.028	6.35
NEW	280	300	145	80	72	8	250	4 x 90°	20	8	36.0	22.5	5	0.068	0.050	8.71
NEW	360	340	160	85	78	7	280	4 x 90°	20	-	2 x 23.0	-	-	0.110	0.096	12.21
NEW	560	363	170	105	95	10	300	4 x 90°	30	-	2 x 28.5	-	-	0.203	0.145	17.67

Delivery condition:
EVOLASTIC® couplings type EP are supplied with a mounting kit consisting of cap screws, screw locking washers, locking pins and positioning sleeves. With the connection design make sure sufficient screw-in depth. For the locking pin provide for an adhesive (e. g. Loctite® 243).

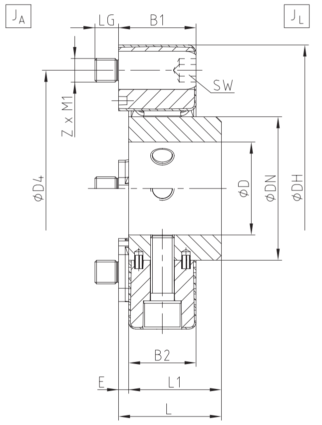
Size	Pin			Cap screw radial DIN EN ISO 4762 - 12.9	
	M1 / axial	SW	Tightening torque [Nm]	M2 / radial	Tightening torque [Nm]
12	M10	8	71	M10 x 30	71
24	M12	10	123	M12 x 35	123
32	M12	10	123	M12 x 35	123
48	M14	12	195	M14 x 40	195
60	M16	14	302	M16 x 50	302
86	M16	14	302	M16 x 50	302
125	M20	17	592	M20 x 65	592
200	M20	17	592	M20 x 65	592
280	M20	17	592	M20 x 65	592
360	M20	17	592	M20 x 80	592
560	M24	19	1017	M20 x 90	592

Ordering example:	EVOLASTIC® 48	EP	S
	Coupling size	Type	Elastomer hardness

EVOLASTIC® EHP
Highly flexible couplings

Pluggable elastomer + shaft connection

For legend of pictogram refer to flapper on the cover



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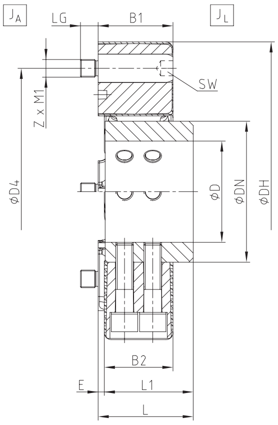
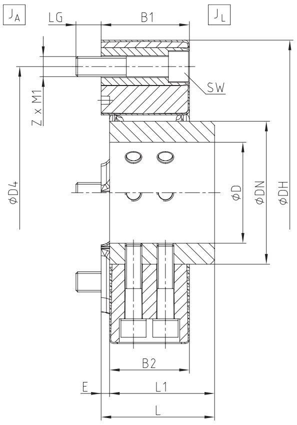


Size 360

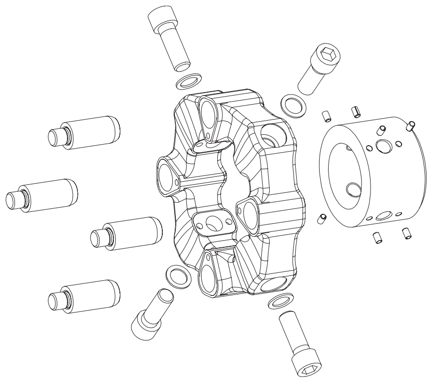


Size 560

EVOLASTIC® type EHP

	Size	Dimensions [mm]													Mass moment of inertia [kgm²] 1)		Weight [kg] 1)
		Max. finish bore D	DH	DN	B1	B2	E	L	L1	D4	Z x Pitch	LG	M1	SW	J_A	J_L	
	12	38	122	60	32	28	4	46	42	100	3 x 120°	10	M10	8	0.001	0.001	1.09
	24	46	150	70	42	36	6	56	50	125	3 x 120°	12	M12	10	0.002	0.002	1.85
NEW	32	46	150	70	42	36	6	56	50	125	4 x 90°	12	M12	10	0.003	0.003	2.08
	48	55	170	85	46	40	6	61	55	140	4 x 90°	14	M14	12	0.004	0.005	3.07
	60	65	200	100	58	50	8	74	66	165	3 x 120°	16	M16	14	0.009	0.010	4.79
	86	65	200	100	58	50	8	74	66	165	4 x 90°	16	M16	14	0.010	0.012	5.32
	125	85	260	125	70	63	7	88	80	215	3 x 120°	20	M20	17	0.028	0.024	9.15
	200	85	260	125	70	63	7	88	80	215	4 x 90°	20	M20	17	0.036	0.039	10.30
NEW	280	105	300	145	80	72	8	102	94	250	4 x 90°	20	M20	17	0.068	0.076	14.29
NEW	360	115	340	160	85	78	7	108	100	280	4 x 90°	20	M20	17	0.110	0.131	19.44
NEW	560	120	363	170	105	95	10	135	125	300	4 x 90°	30	M24	19	0.203	0.203	28.41

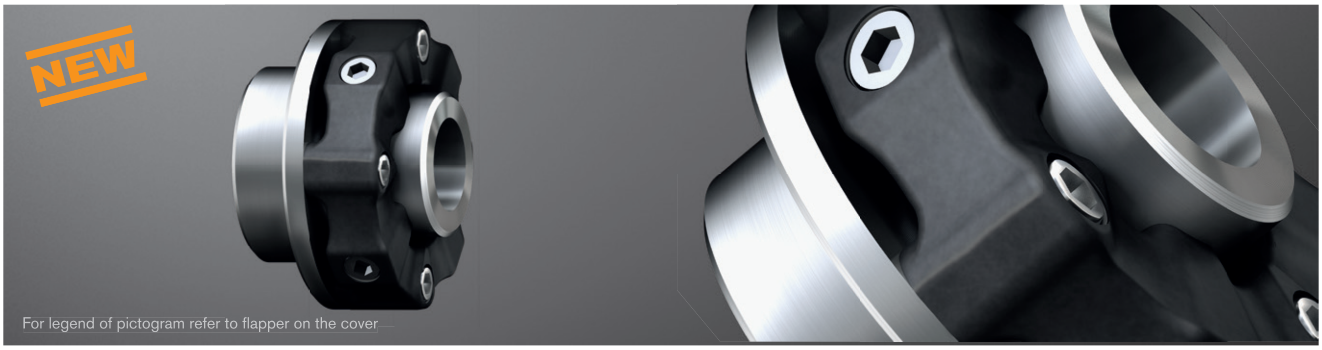
[1] With max. bore



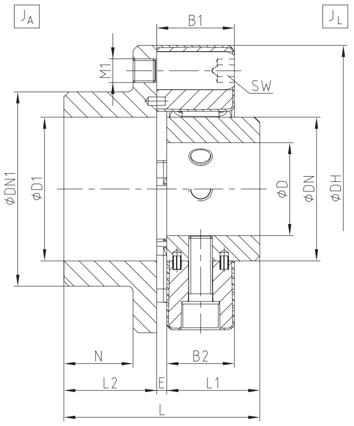
Ordering example:	EVOLASTIC® 48	EHP	S	1.0	Ø52
	Coupling size	Type	Elastomer hardness	Hub type	Finish bore

EVOLASTIC® E2HP
Highly flexible couplings

Shaft-to-shaft connection, plug-in



For legend of pictogram refer to flapper on the cover



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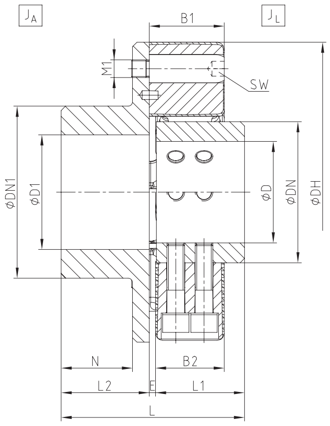
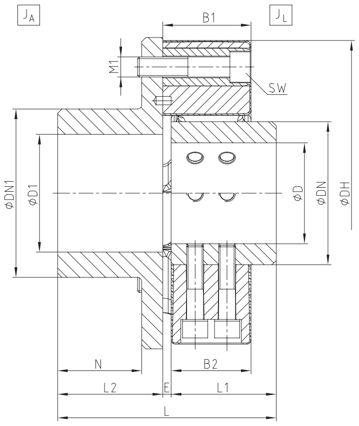


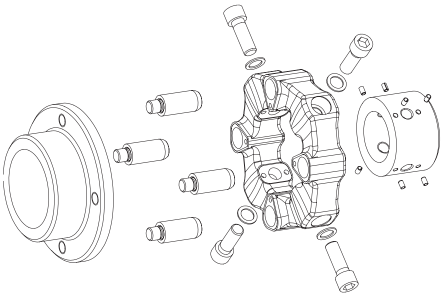
Size 360



Size 560

	EVOLASTIC® type E2HP																
	Size	Dimensions [mm]														Mass moment of inertia [kgm²] [1]		Weight [kg] [1]
		Max. finish bore		DH	DN	DN1	B1	B2	E	N	L	L1	L2	M1	SW			
		D	D1													J_A	J_L	
	12	38	55	122	60	80	32	28	4	32	88	42	42	M10	8	0.003	0.001	2.44
	24	46	70	150	70	100	42	36	6	38	106	50	50	M12	10	0.009	0.002	4.26
NEW	32	46	70	150	70	100	42	36	6	38	105	50	50	M12	10	0.009	0.003	4.53
	48	55	85	170	85	115	46	40	6	41	116	55	55	M14	12	0.016	0.005	6.41
	60	65	100	200	100	140	58	50	8	50	140	66	66	M16	14	0.038	0.010	10.62
	86	65	100	200	100	140	58	50	8	50	140	66	66	M16	14	0.039	0.012	11.13
	125	85	110	260	125	160	70	63	7	60	168	80	80	M20	17	0.115	0.034	20.55
	200	85	110	260	125	160	70	63	7	60	168	80	80	M20	17	0.123	0.039	21.65
NEW	280	105	110	300	145	160	80	72	8	70	192	94	90	M20	17	0.208	0.073	29.05
NEW	360	115	130	340	160	195	85	78	7	80	208	100	100	M20	17	0.368	0.104	41.25
NEW	560	120	140	363	170	200	105	95	10	100	260	125	125	M24	19	0.640	0.203	58.62

[1] With max. bore



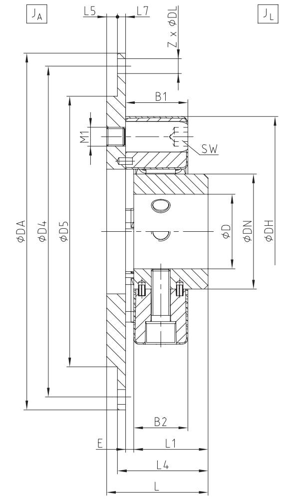
Ordering example:	EVOLASTIC® 48	E2HP	S	1.0	Ø52	1.0	Ø52
	Coupling size	Type	Elastomer hardness	Hub type	Finish bore	Hub type	Finish bore

EVOLASTIC® EFHP
Highly flexible couplings

Flange-to-shaft connection, pluggable

For legend of pictogram refer to flapper on the cover

≤45° 110 °C E ΔKa ΔKw ΔKr



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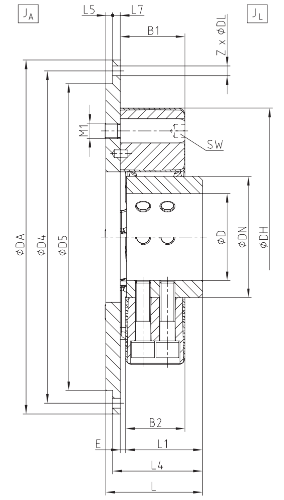

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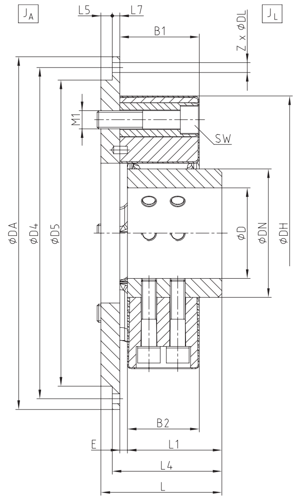

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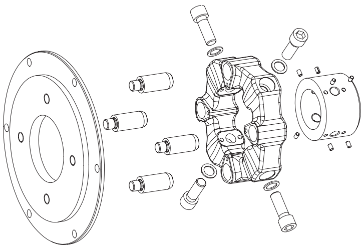


Flange dimensions according to SAE J620 [mm]				
Size	DA	D4	Z	DL
6 $^1/_2$"	215.90	200.02	6	9
7 $^1/_2$"	241.30	222.25	8	9
8"	263.52	244.47	6	11
10"	314.32	295.27	8	11
11 $^1/_2$"	352.42	333.37	8	11
14"	466.72	438.15	8	13

EVOLASTIC® type EFHP

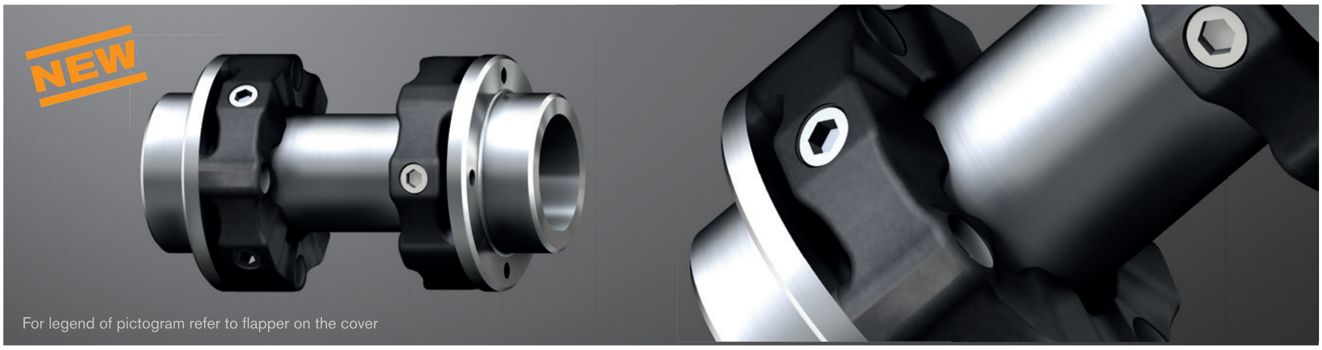
	Size	Flange connection acc. to SAE - J620						Dimensions [mm]															Mass moment of inertia [kgm²] 1)		Weight [kg] 1)
		6.5"	7.5"	8"	10"	11.5"	14"	Max. finish bore D	DH	DN	B1	B2	E	L	L1	L4	L5	L7	M1	SW	D5	JA	JL	
	12	●						38	122	60	32	28	4	56	42	52	4	6	M10	8	180	0.014	0.001	3.33
			●																		190	0.020	0.001	3.84
	24	●						46	150	70	42	36	6	68	50	62	6	6	M12	10	180	0.016	0.002	4.30
			●																		190	0.249	0.002	4.86
NEW	32	●						46	150	70	42	36	6	68	50	62	6	6	M12	10	180	0.017	0.003	4.57
			●																		190	0.024	0.003	5.13
	48		●					55	170	85	46	40	6	75	55	67	8	6	M14	12	190	0.027	0.005	6.20
				●																	200	0.035	0.005	6.80
					●											71	4	10			260	0.091	0.005	10.09
	60				●			65	200	100	58	50	8	90	66	84	6	10	M16	14	270	0.105	0.011	12.30
						●															310	0.166	0.011	14.73
	86				●			65	200	100	58	50	8	90	66	84	6	10	M16	14	270	0.107	0.012	12.82
						●															310	0.168	0.012	15.24
	125				●			85	260	125	70	63	7	107	80	98	9	10	M20	17	270	0.134	0.034	17.10
						●															310	0.204	0.034	19.95
	200				●			85	260	125	70	63	7	107	80	98	9	10	M20	17	270	0.141	0.039	18.20
						●															310	0.212	0.039	21.06
							●														405	0.578	0.039	30.57
NEW	280					●		105	300	145	80	72	8	121	94	112	9	10	M20	17	310	0.239	0.072	24.35
							●														405	0.606	0.072	33.87
NEW	360						●	115	340	160	85	78	7	127	100	118	9	10	M20	17	405	0.642	0.130	38.25
NEW	560						●	120	363	170	105	95	10	160	125	145	15	10	M24	19	405	0.847	0.203	51.35

1) With max. bore

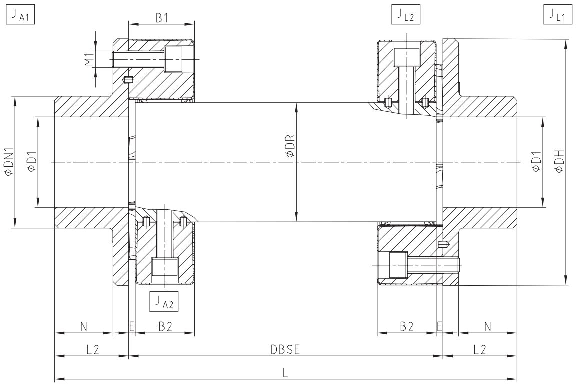
Ordering example:	EVOLASTIC® 48	EFHP	S	8	1.0	Ø55
	Coupling size	Type	Elastomer hardness	Flange ØDA acc. to SAE or special	Hub type	Finish bore

EVOLASTIC® D2H
Highly flexible couplings

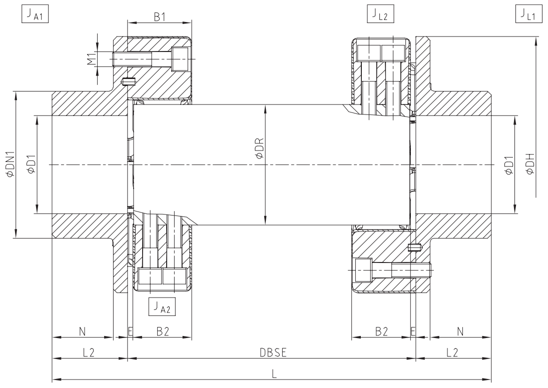
Double-cardanic shaft-to-shaft connection



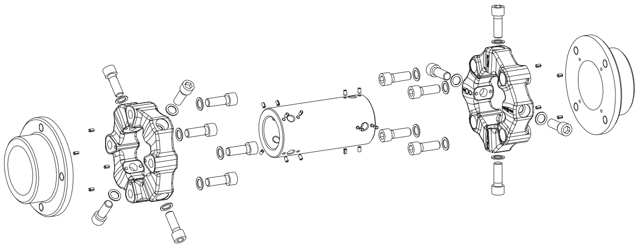
For legend of pictogram refer to flapper on the cover



Size 12 - 280



Size 360 - 560



EVOLASTIC® type D2H

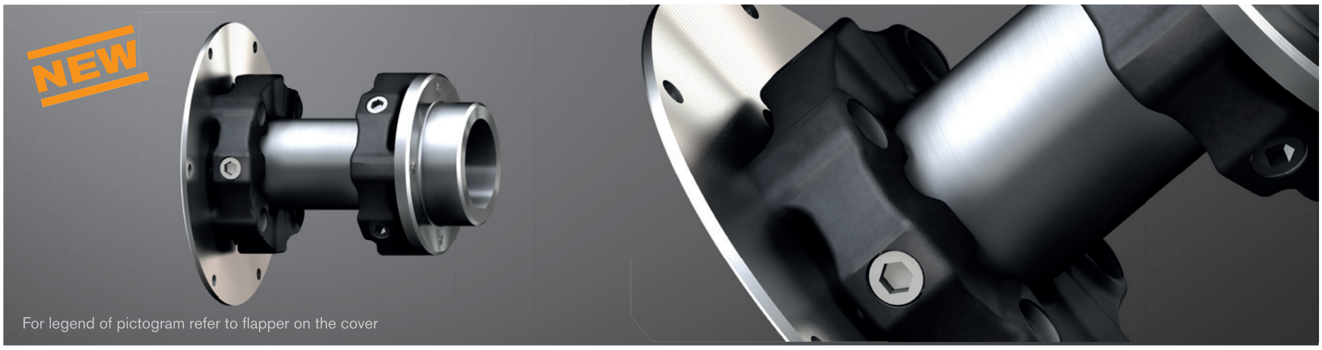
Size	Dimensions [mm]										Mass moment of inertia [kgm²] 1)	
	Max. finish bore D1	DH	DN1	DR	B1	B2	E	L2	N	M1	J_{A1}	J_{L1}
12	55	122	80	60	32	28	4	42	32	M10	0.003	0.003
24	70	150	100	70	42	36	6	50	38	M12	0.008	0.008
NEW 32	70	150	100	70	42	36	6	50	38	M12	0.009	0.009
48	85	170	115	85	46	40	6	55	41	M14	0.016	0.016
60	100	200	140	100	58	50	8	66	50	M16	0.036	0.036
86	100	200	140	100	58	50	8	66	50	M16	0.037	0.037
125	110	260	160	125	70	63	7	80	60	M20	0.111	0.111
200	110	260	160	125	70	63	7	80	60	M20	0.116	0.116
280	110	300	160	145	80	72	8	94	70	M20	0.196	0.196
360	130	340	195	160	85	78	7	100	80	M20	0.354	0.354
560	140	370	200	170	105	95	10	125	100	M24	0.589	0.589

1) With max. bore
Dimension L and DBSE as well as total weight depend on the mounting length
Mass moments JA2 and JL2 depend on the mounting length and are available on request

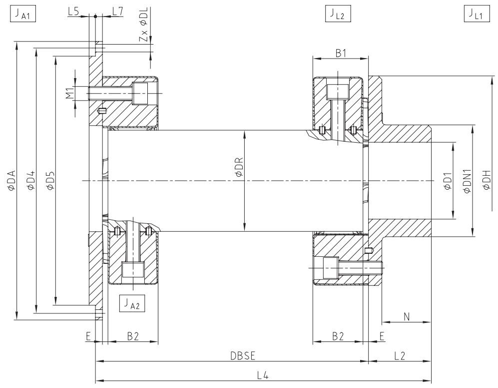
Ordering example:	EVOLASTIC® 48	D2H	140	S	1.0	Ø52	1.0	Ø52
	Coupling size	Type	Shaft distance DBSE	Elastomer hardness	Hub type	Finish bore	Hub type	Finish bore

EVOLASTIC® DFH
Highly flexible couplings

Double-cardanic flange-to-shaft connection



For legend of pictogram refer to flapper on the cover



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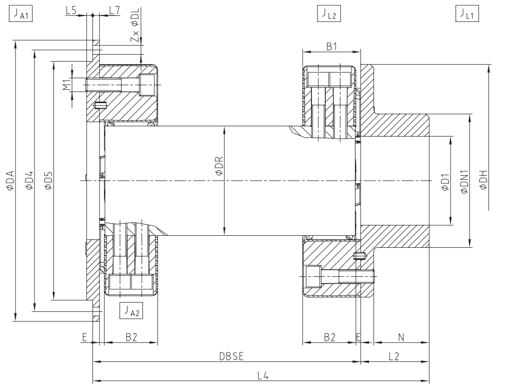
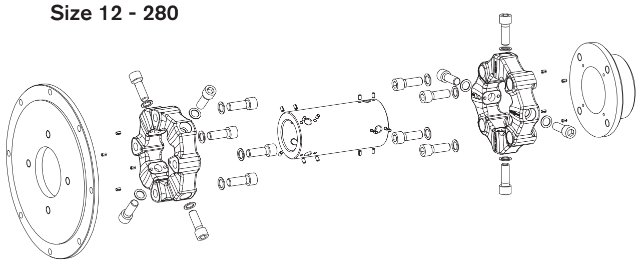


Size 360 - 560



Flange dimensions according to SAE J620 [mm]				
Size	DA	D4	Z	DL
6 $^1/_2$"	215.90	200.02	6	9
7 $^1/_2$"	241.30	222.25	8	9
8"	263.52	244.47	6	11
10"	314.32	295.27	8	11
11 $^1/_2$"	352.42	333.37	8	11
14"	466.72	438.15	8	13

EVOLASTIC® type DFH

Size	Flange connection acc. to SAE - J620						Dimensions [mm]													Mass moment of inertia [kgm²] 1)	
	6.5"	7.5"	8"	10"	11.5"	14"	Max. finish bore D1	DH	DN1	DR	B1	B2	E	L5	L7	L2	N	M1	D5	J_{A1}	J_{L1}
12	●						55	122	80	60	32	28	4	4	6	42	32	M10	180	0.013	0.003
		●																	190	0.020	
24	●						70	150	100	70	42	36	6	6	6	50	38	M12	180	0.016	0.008
		●																	190	0.023	
NEW 32	●						70	150	100	70	42	36	6	6	6	50	38	M12	180	0.016	0.009
		●																	190	0.023	
48		●					85	170	115	85	46	40	6	8	6	55	41	M14	190	0.026	0.016
			●																200	0.034	
				●										4	10				260	0.091	
60				●			100	200	140	100	58	50	8	6	10	66	50	M16	270	0.103	0.036
					●														310	0.165	
86				●			100	200	140	100	58	50	8	6	10	66	50	M16	270	0.105	0.037
					●														310	0.166	
125				●			110	260	160	125	70	63	7	9	10	80	60	M20	270	0.129	0.111
					●														310	0.199	
200				●			110	260	160	125	70	63	7	9	10	80	60	M20	270	0.135	0.116
					●														310	0.205	
						●													405	0.572	
280					●		110	300	160	145	80	72	8	9	10	94	70	M20	310	0.226	0.196
						●													405	0.593	
360						●	130	340	195	160	85	78	7	9	10	100	80	M20	405	0.628	0.354
560						●	140	370	200	170	105	95	10	15	25	125	100	M24	405	0.794	0.589

[1] With max. bore

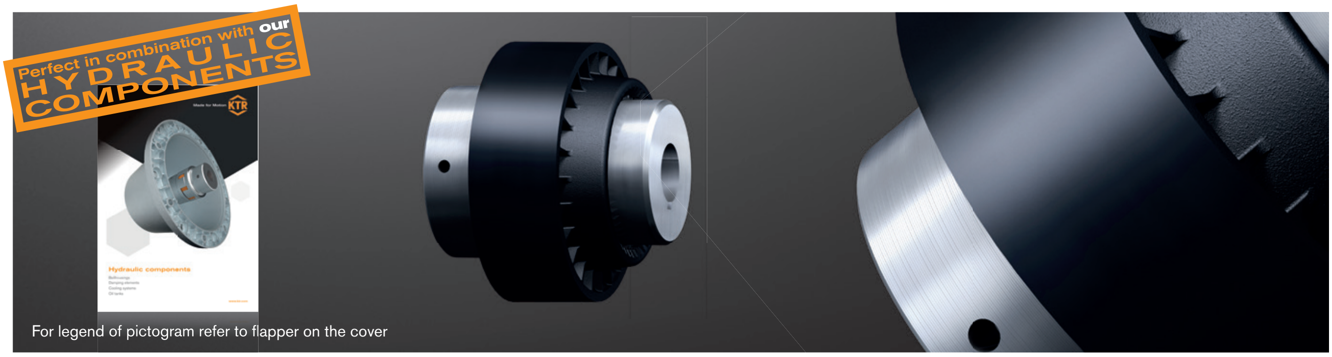
Dimension L4 and DBSE as well as total weight depend on the mounting length

Mass moments JA2 and JL2 depend on the mounting length and are available on request

Ordering example:	EVOLASTIC® 48	DFH	140	S	8	1.0	Ø52
	Coupling size	Type	Shaft distance DBSE	Elastomer hardness	Flange ØDA acc. to SAE or special	Hub type	Finish bore

BoWex-ELASTIC® HEW Compact
Curved-tooth gear coupling®

Compensating for large displacements, very compact design



For legend of pictogram refer to flapper on the cover

BoWex-ELASTIC® type HEW Compact

Size	Dimensions [mm]																		Weight with pilot bored coupling [kg]	Mass moment of inertia with pilot bored coupling [kgm²]		
	Max. finish bore		L		L1		L2	E		DA	DN	DN1	D4	D7	B1	NH	Z	M				
	D	D1	HEW1	HEW2	HEW1	HEW2		HEW1	HEW2											J_A	J_{L1}	J_{L2}
42-130	42	42	118	98	42	42	42	34	14	131	65	65	78	90	45	37	6	M6	3.4	0.003	0.001	0.001
65-180	65	65	145	122	55	55	60	30	7	180	98	85	110	130	44	47	8	M10	9.0	0.014	0.006	0.006
80-225	90	75	210	158	90	70	70	50	18	225	124	100	120	145	77	51	10	M12	18.9	0.035	0.029	0.021
100-305	100	100	258	187	110	70	90	58	17	305	152	170	175	200	90	73	16	M12	40.2	0.152	0.087	0.068
125-365	125	125	328	240	140	100	120	68	20	365	192	170	205	230	105	90	12	M16	75.0	0.360	0.260	0.192

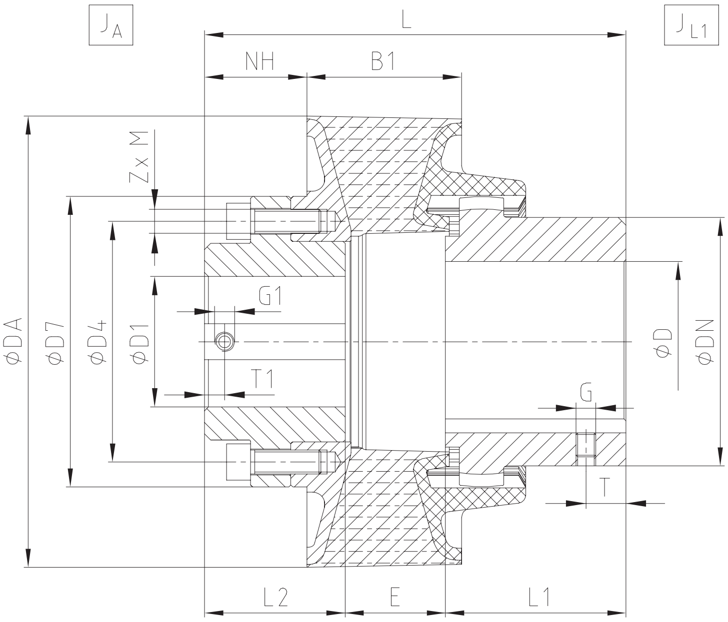
Technical data

Coupling size	Elastomer hardness [Shore A]	Torque [Nm]			Perm. speed $n_{max.}$ [rpm]	Perm. damping power P_{KW}			Dynamic torsion spring stiffness $C_{dyn.}$ [Nm/rad]	Relative damping ψ	Resonance factor $V_R≈2·\Pi/ψ$	Radial spring stiffness C_r [N/mm]
		T_K	$T_{K\ max.}$	with 10 Hz T_{KW}		60 °C	80 °C	90 °C				
42 HEW Compact	T50	200	400	50	7300	30	18	12	780	0.8	7.9	178
	T65	270	540	68					2400	1.2	5.2	600
	T70	320	640	80					2900	1.2	5.2	710
65 HEW Compact	T50	550	1100	138	5500	55	33	22	2850	0.8	7.9	379
	T65	740	1500	185					7800	1.2	5.2	955
	T70	860	1700	215					9500	1.2	5.2	1240
80 HEW Compact	T50	1250	2500	313	4400	90	54	36	5000	0.8	7.9	420
	T65	1600	3200	400					13000	1.2	5.2	1090
	T70	1900	3800	475					16500	1.2	5.2	1450
100 HEW Compact	T50	2750	5500	688	3200	150	90	60	17000	0.8	7.9	760
	T65	3900	7800	975					44000	1.2	5.2	1850
	T70	4500	9000	1125					50000	1.2	5.2	2250
125 HEW Compact	T50	5500	11000	1375	2900	220	132	88	25000	0.8	7.9	750
	T65	7500	15000	1875					62000	1.2	5.2	1930
	T70	8400	16800	2100					70000	1.2	5.2	2300

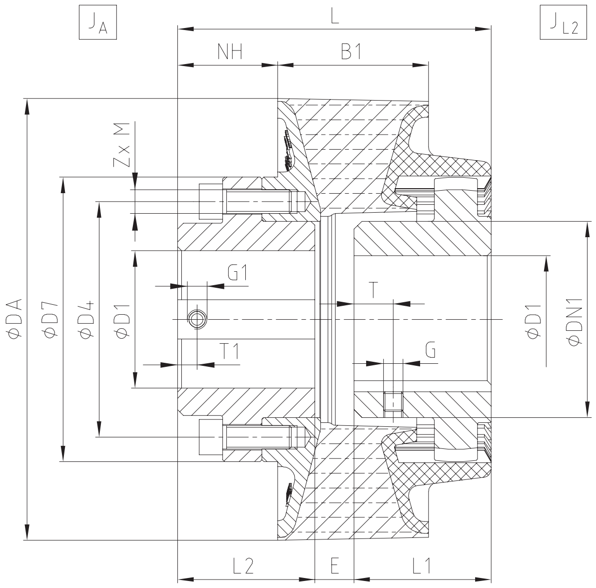
Ordering example:

BoWex® 65 HEW Compact	T50	d_1 Ø40	d_2 Ø65
Size and type of coupling	Elastomer hardness	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)

BoWex-ELASTIC® HEW1 Compact



BoWex-ELASTIC® HEW2 Compact (with reduced hub)



Displacements – type HEW Compact

BoWex-ELASTIC® size	42-130			65-180			80-225			100-305			125-365		
Elastomer hardness [Shore A]	T50	T65	T70	T50	T65	T70	T50	T65	T70	T50	T65	T70	T40	T52	T65
Max. axial displacement ΔK_a [mm]	± 2			± 2			± 2			± 2			± 2		
Max. radial displacement with n=1500 rpm ΔK_r [mm]	± 1.1	± 1	± 0.5	± 1.6	± 1.5	± 0.7	± 1.8	± 1.7	± 2.2	± 2.2	± 2	± 1	± 2.5	± 2.3	± 1.1
Max. radial displacement with n=3000 rpm ΔK_r [mm]	± 0.55	± 0.5	± 0.25	± 0.8	± 0.75	± 0.35	± 0.9	± 0.85	± 0.9	± 1.1	± 1	± 0.5	± 1.25	± 1.15	± 0.55
Max. angular displacement with n=1500 rpm ΔK_W [degree]	± 1	± 0.75	± 0.5	± 1	± 0.75	± 0.5	± 1	± 0.75	± 0.4	± 1	± 0.75	± 0.5	± 1	± 0.75	± 0.5
Max. angular displacement with n=3000 rpm ΔK_W [degree]	± 0.5	± 0.4	± 0.25	± 0.5	± 0.4	± 0.25	± 0.5	± 0.4	± 0.5	± 0.5	± 0.25	± 0.25	± 0.5	± 0.4	± 0.25

Flange couplings

BoWex® FLE-PA

BoWex® FLE-PAC

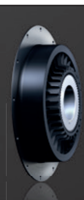
MONOLASTIC®

BoWex-ELASTIC®

SINULASTIC® NEW

FLANGE COUPLINGS
TYPES AND OPERATING DESCRIPTION

Properties of flange couplings

				
Product	**BoWex® FLE-PA/-PAC**	**MONOLASTIC®**	**BoWex-ELASTIC®**	**SINULASTIC®**
Type	Torsionally stiff flange coupling	Flexible flange coupling	Highly flexible flange coupling	Highly flexible flange coupling
Properties				
Torsionally stiff	●			
Torsionally flexible		●		
Highly flexible			●	●
Damping vibrations		●	●	●
Maintenance-free	●	●	●	●
Axial plug-in	●	●	●	●
Special features/applications				
Variant diversity	very high	high	very high	very high (type A, B, T, V)
Flange dimension	SAE standard and special dimensions	type 3/4 hole, SAE standard and special dimensions	SAE standard and special dimensions	SAE standard and special dimensions
internal spline	see standard programme of BoWex® hubs	for SAE or DIN pump shafts	see standard programme of BoWex® hubs	Type B
Applications	hydrostatic drives of construction machines, agricultural machines, …	hydrostatic drives of construction machines, agricultural machines, …	generators, splitterboxes, water pumps, piston compressors, agricultural machines, gensets, mill drives, separator drives, …	generators, gensets, splitterboxes, traction drives, hydraulic pumps, piston compressors, ...
Performance data				
Max. rated torque T_{KN} [Nm]	6,600	1,850	70,000	25,000
Max. speed n [rpm]	6,000	6,000	6,200	3,800
Flange (standard and special)				
Material	fibre-glass reinforced polyamide (PA) combination of polyamide with carbon fibre share and steel flange (PAC)	natural rubber	natural rubber	natural rubber, EPDM, silicone
Elastomer hardness	torsionally stiff	65, 70 Shore A	various kinds of hardness for vibration adaptation of drives	miscellaneous: S, M, H, U
Flange (standard)				
Temperature range [°C] min./max.	-25 / +130 (PA) -25 / +130 (PAC)	-40 / +100	-40 / +100	-40 / +120
Engine power [kW]				
Max.	800	250	5,000	3,500

● ≈ Standard
○ ≈ On request
* ≈ Depending on size

FLANGE COUPLINGS
TYPES AND OPERATING DESCRIPTION

Product finder of flange couplings

				
Product	**BoWex® FLE-PA/-PAC**	**MONOLASTIC®**	**BoWex-ELASTIC®**	**SINULASTIC®**
Type	Torsionally stiff flange coupling	Flexible flange coupling	Highly flexible flange coupling	Highly flexible flange coupling
Geometries				
Design	extremely short	short	short	short
max. radial displacement	0.5 mm	1 mm	9.5 mm	3 mm
shaft diameter min./max. [mm]	20 / 125	20 / 60	21 / 275	20 / 240
Types (extract)				
Intermediate shaft types » bridging larger shaft distances	–	–	HE-ZS	Type B and V
shaft-to-shaft connection		–	HEW1 and HEW2, HEW-ZS	○
flange-to-shaft connection	Standard	Standard	HE1, HE2, HE3 and HE4, HE-ZS	●
For cardan shafts » connecting couplings for I. C.-engines	–	–	HEG1 and HEG2	○
Combination with pump mounting flange	●	●	●	●
Certifications / type examinations				
ATEX			●	○
Bureau Veritas	●		●	○
DNV/GL			●	○
GOST R / GOST TR	●	●	●	○

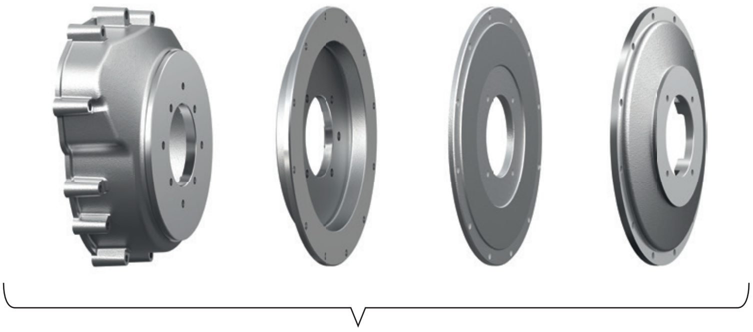
● ≈ Standard

Please note: Pump mounting flanges

For connecting hydraulic pumps to the diesel engine KTR supplies mounting flanges according to SAE connection dimensions sizes SAE 6 to SAE 1. These flanges are made of steel and EN-GJL-250 for hydraulic pumps with flange connections according to SAE-A, -B, -C, -D and -E as types with 2 and 4 holes.

Pump connection housings made of EN-GJL-250 to be mounted directly to the back plate of the engine.

Miscellaneous pump mounting flange designs



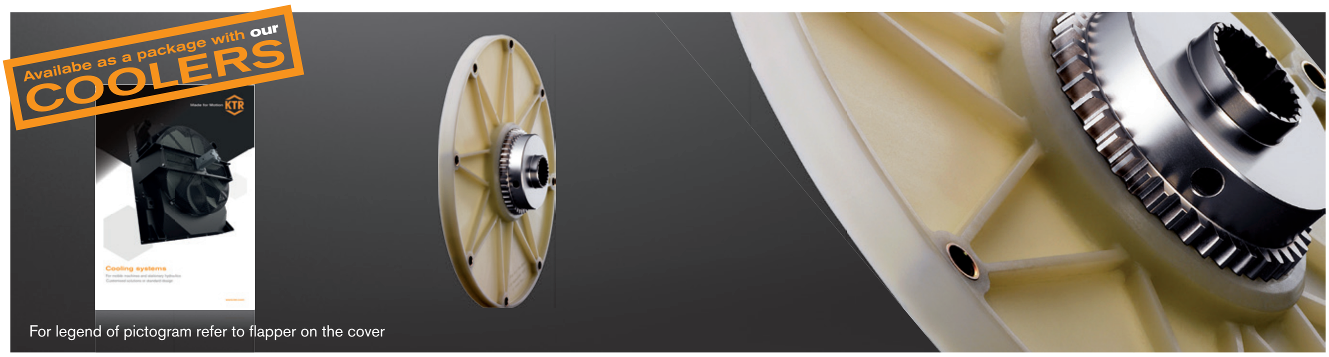
Electrogalvanized and (white) passivated

Primed
(machined surfaces bright)

CDP

BoWex® FLE-PA
Torsionally stiff flange couplings

Axial plug-in, maintenance-free, torsionally stiff



For legend of pictogram refer to flapper on the cover

ΔK_a ΔK_w ΔK_r 130 °C

BoWex® FLE-PA – Dimensions/nominal dimension acc. to SAE

Size	Pilot bore	Finish bore d		Dimensions [mm]								Special length	Nominal size acc. to SAE (D_3)						Max. axial displacement [mm]
		min.	Max.	D	D_1	l_1	l_3	l_7	l_8	l_{10}	l_{11}	l_1 max.	6 ½"	7 ½"	8"	10"	11 ½"	14"	
48	-	20	48	68	100	50	41	50	20	13	48	up to 60	●	●	●	●			± 2
T 48	13	15	48	68	100	50	38	45	20	13	46	-	●	●	●	●			± 1
T 55	17	20	55	85	115	50	37	48	24	13	48	-	●	●	●	●			± 2
65 / T 65	21	30	65	96	132	55	45	54	27	21	51	up to 70			●	●	●		± 2
T 70	26	30	70	100	153	60	48	56	30	21	57	-				●			± 2
80 / T 80	31	35	90	124	170	90	78	87	30	21	87	-				●	●		± 2
100 / T 100	38	40	100	152	265	110	78	108	35	21	110	-					●	●	± 2
125 / T 125	45	50	125	192	250	140	113	140	50	28	97	-					●	●	± 2

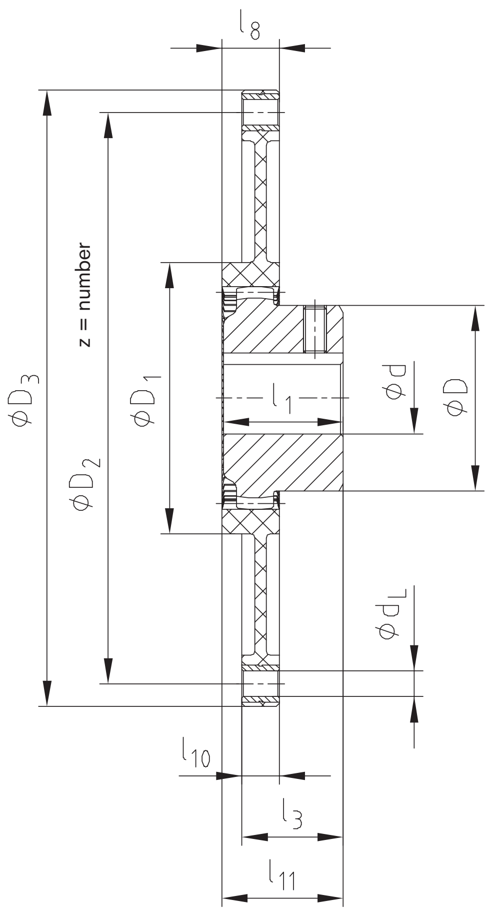
Special flange dimensions see page 230 et seqq. and on request

Technical data of BoWex® FLE-PA – Torques/weights/mass moments of inertia/torsion spring stiffness

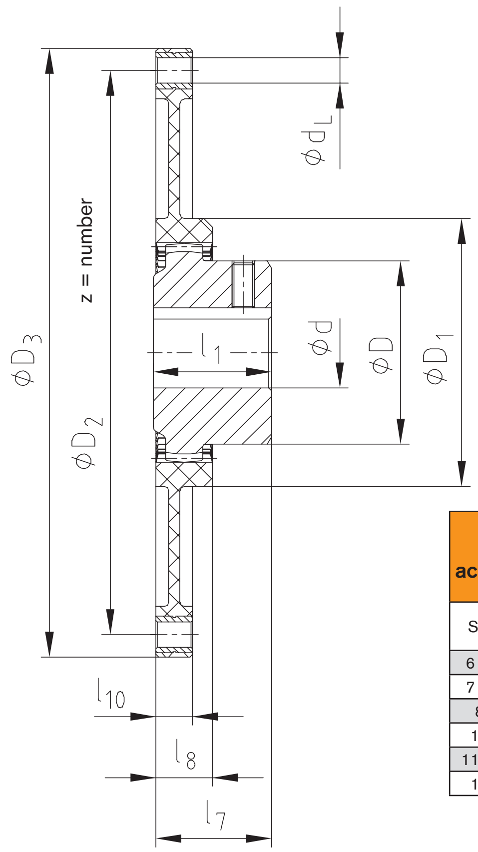
Size	Torque T_K [Nm]			Weight/mass moment of inertia J	Hub with max. bore	FLE-PA flanges according to SAE						Dynamic torsion spring stiffness with +60 °C/ψ = 0.4 [Nm/rad]			
	T_{KN}	$T_{K\ max.}$	T_{KW}			6 ½"	7 ½"	8"	10"	11 ½"	14"	0.30 T_{KN}	0.50 T_{KN}	0.75 T_{KN}	1.00 T_{KN}
48	240	600	120	[kg]	0.79	0.32	0.43	0.51	0.64	–	–	35 x 10^3	75 x 10^3	105 x 10^3	125 x 10^3
				[kgm^2]	0.0007	0.0021	0.0035	0.0049	0.0085						
T 48	300	750	150	[kg]	0.79	0.32	0.43	0.51	0.64	–	–	40 x 10^3	86 x 10^3	120 x 10^3	143 x 10^3
				[kgm^2]	0.0007	0.0021	0.0035	0.0049	0.0085						
T 55	450	1125	225	[kg]	1.20	0.34	0.62	0.45	0.646	–	–	90 x 10^3	140 x 10^3	170 x 10^3	195 x 10^3
				[kgm^2]	0.0016	0.0022	0.0053	0.0044	0.0086						
65	650	1600	325	[kg]	1.50	–	–	0.63	0.64	0.89	–	110 x 10^3	160 x 10^3	200 x 10^3	230 x 10^3
				[kgm^2]	0.0027			0.0064	0.0065	0.012					
T 65	800	2000	400	[kg]	1.60	–	–	0.63	0.64	0.89	–	130 x 10^3	190 x 10^3	240 x 10^3	280 x 10^3
				[kgm^2]	0.0035			0.0064	0.0065	0.012					
T 70	1000	2500	500	[kg]	2.60	–	–	–	0.941	–	–	165 x 10^3	315 x 10^3	345 x 10^3	368 x 10^3
				[kgm^2]	0.0059				0.0132						
80	1200	3000	600	[kg]	5.20	–	–	–	1.05	1.12	–	200 x 10^3	410 x 10^3	580 x 10^3	700 x 10^3
				[kgm^2]	0.0151				0.015	0.022					
T 80	1500	3750	750	[kg]	5.20	–	–	–	1.05	1.12	–	240 x 10^3	450 x 10^3	638 x 10^3	770 x 10^3
				[kgm^2]	0.0151				0.015	0.022					
100	2050	5150	1025	[kg]	9.37	–	–	–	–	1.16	8.45	500 x 10^3	700 x 10^3	856 x 10^3	950 x 10^3
				[kgm^2]	0.0401					0.021	0.234				
T 100	2500	6250	1250	[kg]	9.37	–	–	–	–	1.16	8.45	600 x 10^3	830 x 10^3	960 x 10^3	1070 x 10^3
				[kgm^2]	0.0401					0.021	0.234				
125	4250	10700	2125	[kg]	19.73	–	–	–	–	2.09	9.85	1280 x 10^3	1885 x 10^3	2280 x 10^3	2665 x 10^3
				[kgm^2]	0.1359					0.043	0.306				
T 125	5300	13250	2650	[kg]	19.73	–	–	–	–	2.09	9.85	1600 x 10^3	2250 x 10^3	2700 x 10^3	3200 x 10^3
				[kgm^2]	0.1359					0.043	0.306				

Mounting procedure, screw type with property class, tightening torques as per KTR assembly instructions (see www.ktr.com).

Short mounting version



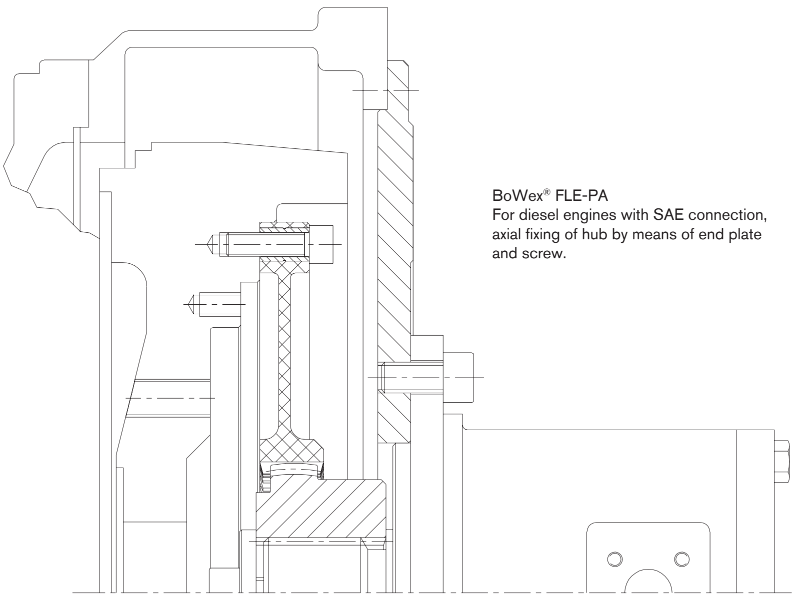
Long mounting version



Flange dimensions according to SAE J620 [mm]

Size	D_3	D_2	z	d_L
6 ½"	215.9	200.02	6	9
7 ½"	241.3	222.25	8	9
8"	263.52	244.47	6	11
10"	314.32	295.27	8	11
11 ½"	352.42	333.37	8	11
14"	466.72	438.15	8	13

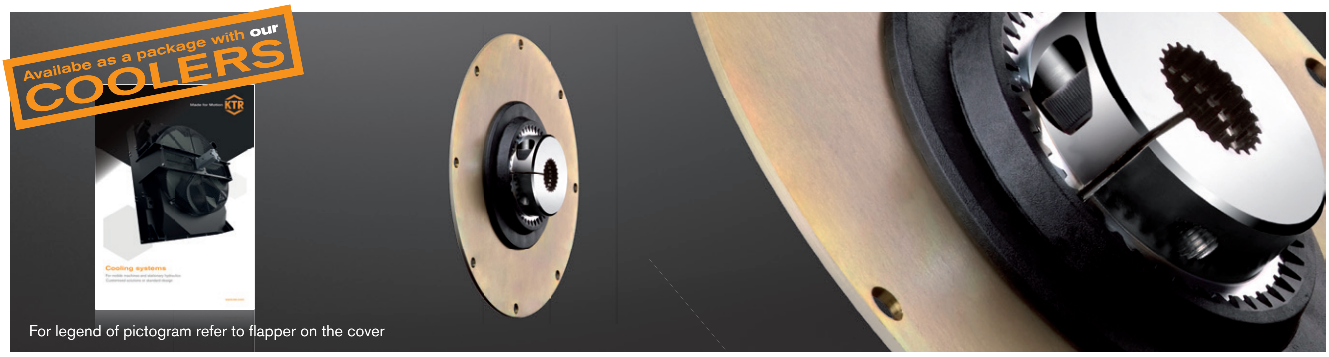
Example of installation



BoWex® FLE-PA
For diesel engines with SAE connection, axial fixing of hub by means of end plate and screw.

BoWex® FLE-PAC
Torsionally stiff flange couplings

Axial plug-in, extremely short design, carbon-fibre reinforced material



For legend of pictogram refer to flapper on the cover

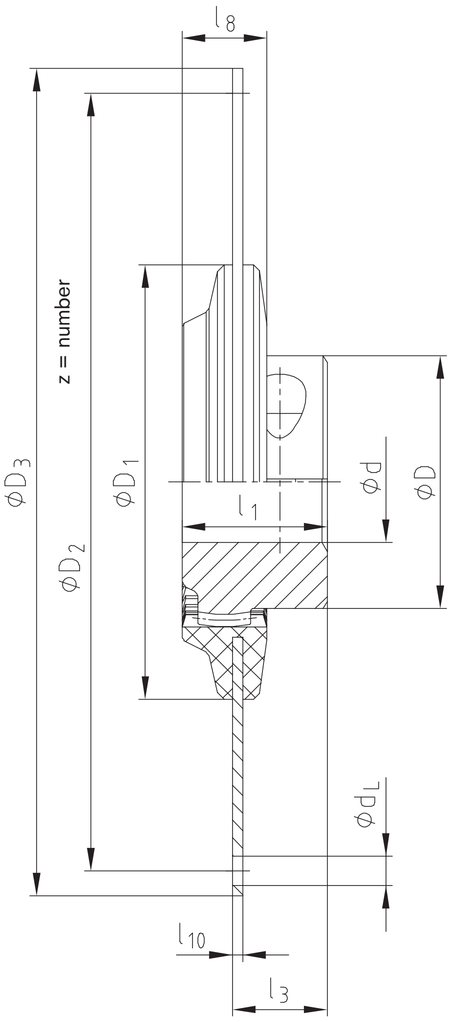
BoWex® FLE-PAC – Dimensions/nominal dimension to SAE																		
Size	Pilot bore	Finish bore d		Dimensions [mm]							Special length l_1 max.	Nominal size acc. to SAE (D_3)						Max. axial displacement [mm]
		min.	Max.	D	D_1	l_1	l_3	l_7	l_8	l_{10}		6 ½"	7 ½"	8"	10"	11 ½"	14"	
48 / T 48	13	15	48	68	110	50	35	46	25	3	up to 60	●	●	●	●			± 3
T 55	17	20	55	85	148	50	32	42	28	3	-	●	●	●	●			± 3
65 / T 65	21	30	65	96	165	55	36	46	32	4	up to 70	●	●	●	●	●		± 3
80 / T 80	31	35	90	124	220	90	72	76	35	4	-				●	●	●	± 3
100 / T 100	38	40	100	152	280	110	85	102	47	5	-					●	●	± 3
125 / T 125	45	50	125	192	250	140	113	140	50	28	-					●	●	± 3

Special flange dimensions deviating from SAE standard are also available.

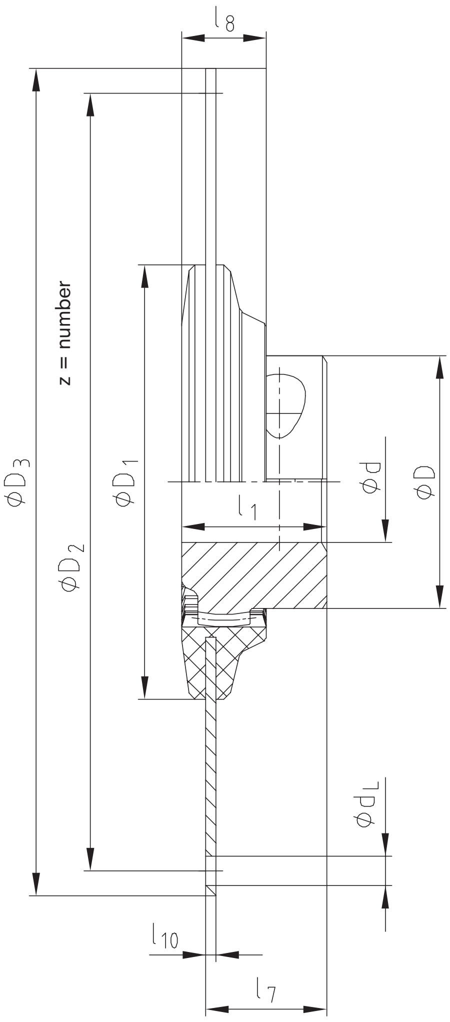
Technical data of BoWex® FLE-PAC – Torques/weights/mass moments of inertia/torsion spring stiffness															
Size	Torque T_K [Nm]			Weight/mass moment of inertia J	Hub with max. bore	FLE-PAC flanges according to SAE						Dynamic torsion spring stiffness with +60 °C/ψ = 0.45 [Nm/rad]			
	T_{KN}	$T_{K\,max.}$	T_{KW}			6 $^1/_2$"	7 $^1/_2$"	8"	10"	11 $^1/_2$"	14"	0.30 T_{KN}	0.50 T_{KN}	0.75 T_{KN}	1.00 T_{KN}
48	300	600	150	[kg]	0.79	0.77	0.98	1.19	1.73			64 x 10^3	95 x 10^3	114 x 10^3	132 x 10^3
				[kgm²]	0.0007	0.0049	0.0077	0.0109	0.0221						
T 48	370	740	185	[kg]	0.79	0.77	0.98	1.19	1.73			91 x 10^3	129 x 10^3	155 x 10^3	182 x 10^3
				[kgm²]	0.0007	0.0049	0.0077	0.0109	0.0221						
T 55	550	1100	275	[kg]	1.20	0.74	0.95	1.16	1.7			181 x 10^3	258 x 10^3	312 x 10^3	358 x 10^3
				[kgm²]	0.0016	0.0049	0.0077	0.0109	0.0222						
65	800	1600	400	[kg]	1.50	0.93	1.2	1.48	2.20	2.83		214 x 10^3	329 x 10^3	397 x 10^3	451 x 10^3
				[kgm²]	0.0027	0.0065	0.0101	0.0145	0.0294	0.0467					
T 65	1000	2000	500	[kg]	1.60	0.93	1.2	1.48	2.20	2.83		256 x 10^3	381 x 10^3	461 x 10^3	516 x 10^3
				[kgm²]	0.0035	0.0065	0.0101	0.0145	0.0294	0.0467					
80	1500	3000	750	[kg]	5.20				2.27	2.90	5.20	486 x 10^3	713 x 10^3	923 x 10^3	1156 x 10^3
				[kgm²]	0.0151				0.0312	0.0485	0.1462				
T 80	1850	3700	925	[kg]	5.20				2.27	2.90	5.20	556 x 10^3	815 x 10^3	1065 x 10^3	1329 x 10^3
				[kgm²]	0.0151				0.0312	0.0485	0.1462				
100	2550	5100	1275	[kg]	9.37					3.35	6.22	679 x 10^3	929 x 10^3	1218 x 10^3	1457 x 10^3
				[kgm²]	0.0401					0.0606	0.1828				
T 100	3100	6200	1550	[kg]	9.37					3.35	6.22	767 x 10^3	1030 x 10^3	1343 x 10^3	1594 x 10^3
				[kgm²]	0.0401					0.0606	0.1828				
125	5350	10700	2675	[kg]	19.73					2.09	9.85	1538 x 10^3	2098 x 10^3	2528 x 10^3	2980 x 10^3
				[kgm²]	0.1359					0.043	0.306				
T 125	6600	13200	3300	[kg]	19.73					2.09	9.85	1887 x 10^3	2495 x 10^3	3035 x 10^3	3629 x 10^3
				[kgm²]	0.1359					0.043	0.306				

Mounting procedure, screw type with property class, tightening torques as per KTR assembly instructions (see www.ktr.com).

Short mounting version

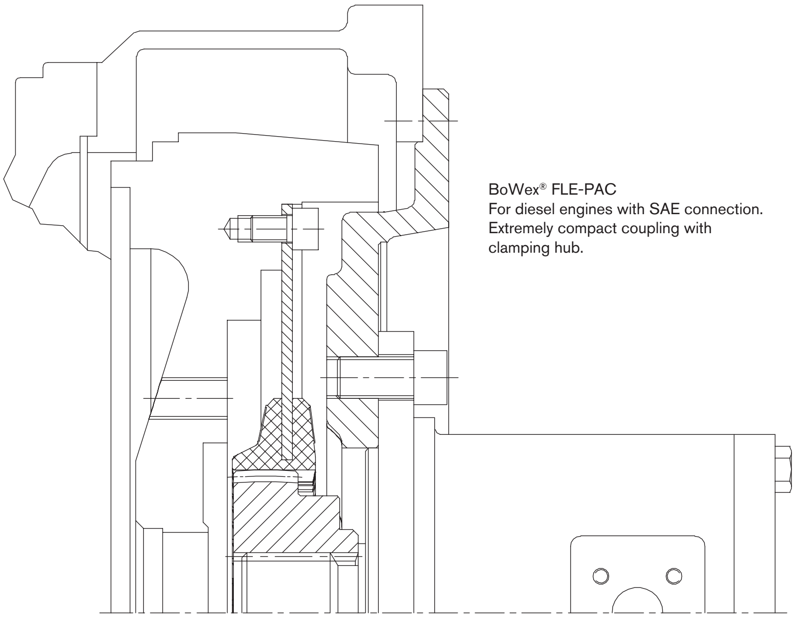


Long mounting version



Flange dimensions according to SAE J620 [mm]

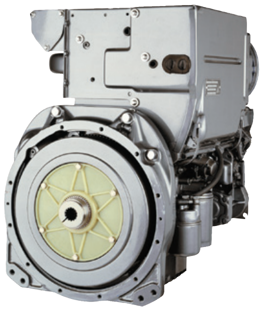
Size	D_3	D_2	z	d_L
6 ½"	215.9	200.02	6	9
7 ½"	241.3	222.25	8	9
8"	263.52	244.47	6	11
10"	314.32	295.27	8	11
11 ½"	352.42	333.37	8	11
14"	466.72	438.15	8	14



BoWex® FLE-PAC
For diesel engines with SAE connection.
Extremely compact coupling with clamping hub.

BoWex® FLE-PA / FLE-PAC
Torsionally stiff flange couplings

Selection according to SAE standard



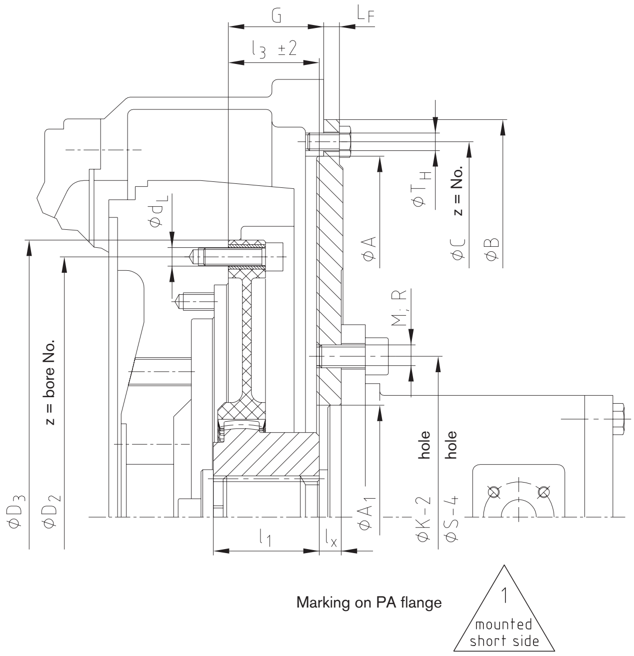
Determination of coupling

Determination of coupling size	**Table 1**
Connection dimension of coupling	**Table 2**
Hub type/mounting length	**Table 3**

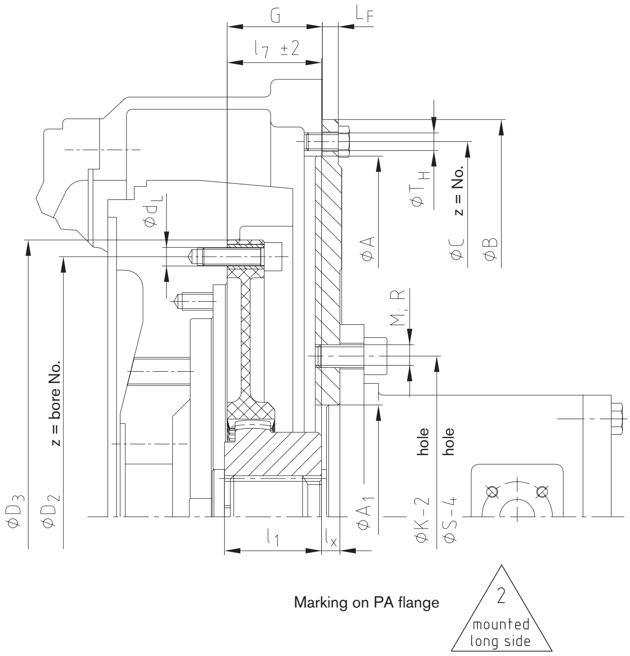
SAE pump mounting flange

Flange size according to SAE 617	**Table 4**
Connection flange of hydraulic pump	**Table 5**

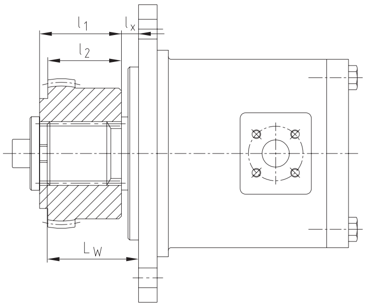
Short mounting version of coupling (l_3)



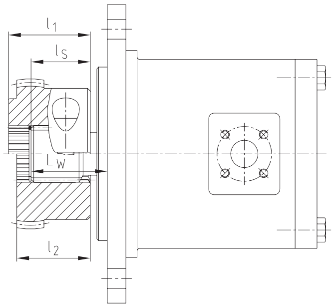
Long mounting version of coupling (l_7)



Spline hub



Clamping hub



Determination of mounting length l_3 or l_7	
SAE shaft	$l_3 / l_7 = G + L_F - L_W + l_S$
DIN shaft	$l_3 / l_7 = G + L_F - l_X$

If axial fixing of the hub by means of an end plate and a screw is not possible for a pump shaft with involute spline, we recommend to use a clamping hub.

Mounting instructions:
The flange can be fastened to the engine flywheel by means of socket head cap screws according to DIN EN ISO 4762 quality 8.8 or by hexagon head screws quality 8.8. We recommend screws are loctited in position.

Screw tightening torque of FLE-PA flange on the flywheel	
M8	25 Nm
M10	49 Nm
M12	86 Nm

Screw tightening torque of spline clamping hubs DIN EN ISO 4762		
42/48	M10	49 Nm
T55/65/T70	M12	86 Nm
80/100/125	M16	210 Nm

BoWex® FLE-PA / FLE-PAC
Torsionally stiff flange couplings

Mounting dimensions according to SAE standard

1. Selection of coupling for diesel engine

Diesel engine power		Coupling size	Flywheel acc. to SAE				Pump mounting flange		Driving shaft of pump
kW	PS			G			LF		
up to 40	up to 55	48 FLE-PA	6 1/2"	30.15	1.19"	For dimensions to SAE see tables 3 and 4	9.5	0.375“	See Table 3 hub type SAE J 498 /DIN 5480
			7 1/2"	30.15	1.19"				
			8	62	2.44"				
			10	54	2.12"				
up to 75	up to 100	T55 FLE-PA	6 1/2"	30.15	1.19"				
			7 1/2"	30.15	1.19"				
			8	62	2.44"				
			10	54	2.12"				
up to 90	up to 120	65 FLE-PA	8	62	2.44"		9.5	0.375"	
			10	54	2.12"				
			11 1/2"	39.6	1.56"		12.7	0.5"	
up to 150	up to 200	T70 FLE-PA	10	54	2.12"		9.5	0.375"	
up to 180	up to 240	80 FLE-PA	10	54	2.12"		9.5	0.375"	
			11 1/2"	39.6	1.56"		12.7	0.5"	
up to 285	380	100 FLE-PA	11 1/2"	39.6	1.56"				
			14	25.4	1"				
up to 540	720	125 FLE-PA	11 1/2"	39.6	1.56"				
			14	25.4	1"				

2. Dimensions of coupling flange according to SAE J620 [mm]

Nominal size	D_3	D_2	z = number	d_L
6 1/2"	215.90	200.02	6	9
7 1/2"	241.30	222.25	8	9
8"	263.52	244.47	6	11
10"	314.32	295.27	8	11
11 1/2"	352.42	333.37	8	11
14 "	466.72	438.15	8	14

3. Selection of coupling hubs - Determination of mounting length l_3 or l_7

BoWex® coupling size	Pump shaft to SAE J 498 and DIN 5480	Spline hub	Spline clamping hub	Dimensions of coupling hub [mm]			Mounting length of coupling l_3 or l_7								Code to order coupling hub Specify coupling size
							Flange size 6 1/2" and 7 1/2"		Flange size 8"		Flange size 10"		Flange size 11 1/2"		
							K	L	K	L	K	L	K	L	
				l_1	l_2	l_S	l_3	l_7	l_3	l_7	l_3	l_7	l_3	l_7	
42	SAE-16/32 DP PI-S 3/4" z = 11		x	42	-	33	33	42							P559101
42	SAE-16/32 DP PB-S 7/8" z = 13		x	42	-	-	33	42							P567101
42	SAE-16/32 DP PB-BS 1" z = 15		x	42	-	27	33	42							P660201
48	SAE-16/32 DP PA-S 1 3/8" z = 21		x	50	-	45	41	50		50	41	50			P663301
65			x	50	-	48				54	45	54	41		P663301
65	SAE-12/24 DP PC-S 1 1/4" z = 14		x	55	-	44				54	45	54	41		P656201
65	SAE-16/32 DP PD-S 1 1/2" z = 23		x	-	49	45						53	41		P664301
80	SAE-16/32 DP PE-S 1 3/4" z = 27		x	55	-	-							33	44	P565402
42	25 x 1.25 x 18 DIN 5480	x		42	-	-	33	42							P000205
42			x	42	-	-	33	42							P500202
42	30 x 2 x 14 DIN 5480		x	42	-	-	33	42							P500203
48		x		50	-	-	41	50							P000206
48			x	50	-	-	41	50		50		50			P500203
48	35 x 2 x 16 DIN 5480	x		46	-	-	37	46							P000303
65		x		55	-	-						54	39		P000303
65			x	60	-	-			50	59	50	59	39		P500301
65	40 x 2 x 18 DIN 5480	x		55	-	-						54	39		P000304
65			x	55	-	-				54	45	54	39		P500302
65	45 x 2 x 21 DIN 5480	x		-	64	-			60	69	60	69	39		P000403
65			x	55	-	-				54	45	54	39		P500401
80	50 x 2 x 24 DIN 5480		x	55	-	-							37	42	P500405

Shown above is a small overview of splines available, other SAE or DIN splines are also available.

4. Housing dimensions according to SAE 617 [mm]

SAE size	A	B	C	Z	TH	
SAE-1	511.18	552	530.2	12	M10	3/8"
SAE-2	447.68	489	466.7	12	M10	3/8"
SAE-3	409.58	451	428.6	12	M10	3/8"
SAE-4	361.95	403	381.0	12	M10	3/8"
SAE-5	314.33	356	333.4	8	M10	3/8"
SAE-6	266.7	308	285.7	8	M10	3/8"

5. Mounting flange for hydraulic pump acc. to SAE [mm]

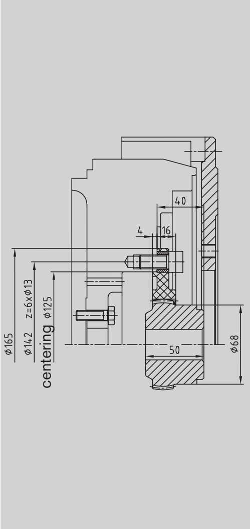
SAE size	SAE flange with 2 holes					SAE flange with 4 holes				
	A_1	K-2	M		Z	A_1	S-4	R		Z
A	82.55	106.4	M10	3/8“	2	82.55	104.6	M10	3/8"	4
B	101.6	146.0	M12	1/2"	2	101.6	127.0	M12	1/2"	4
C	127.0	181.0	M16	5/8“	2	127.0	162.0	M12	1/2"	4
D	152.4	228.6	M16	5/8"	2	152.4	228.6	M16	5/8"	4
E	-	-	-	-	-	165.1	317.5	M20	3/4"	4

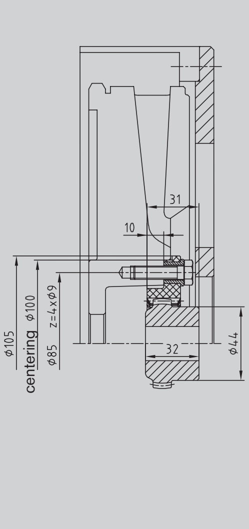
Ordering example: Coupling FLE-PA/FLE-PAC			SAE pump mounting flange	
BoWex® 48 FLE-PA	7 1/2"	P663301	SAE-4	B-2L
Coupling size	SAE connection of coupling	Code of coupling hub	Pump mounting flange for engine housing	Pump flange acc. to SAE 2 holes/4 holes standard metric fastening thread
Table 1	Table 2	Table 3	Table 4	Table 5

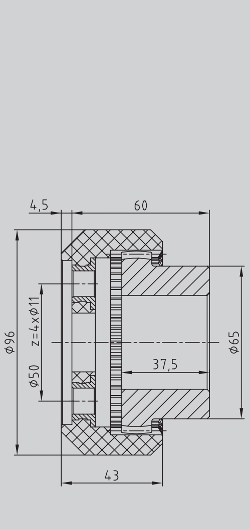
BoWex® FLE-PA
Torsionally stiff flange couplings

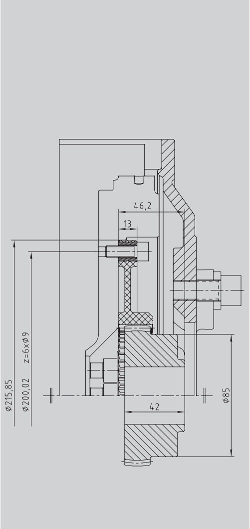
Special flange programme, deviations from SAE standard

Fitting to diesel engines: Hatz



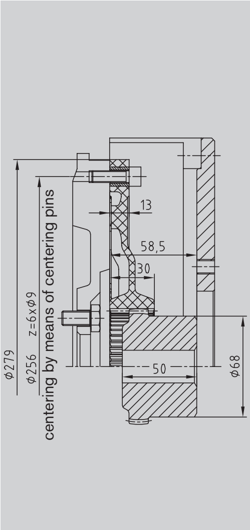


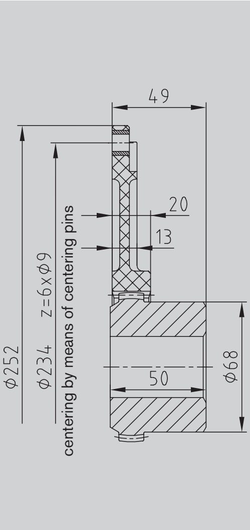


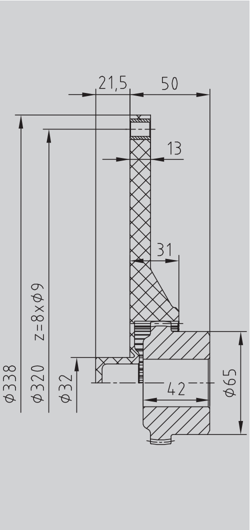


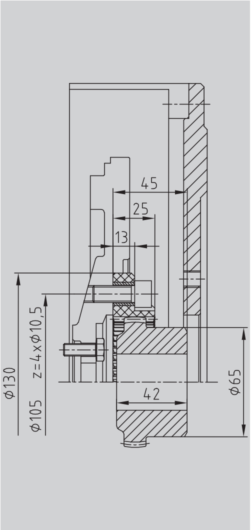
Coupling size	BoWex® 48 FLE-PA, Ø165	BoWex® 28 FLE-PA, Ø105	BoWex® 48 FLE-PA, Ø96	BoWex® T55 FLE-PA
Engine type	Hatz 2L/3L/4L41C 2M/3M/4M41 4M42, 4L42C	Hatz 1D81/1D90	Hatz Z788/Z789/Z790	Hatz 2-4 H50

Fitting to diesel engines: VW Mitsubishi



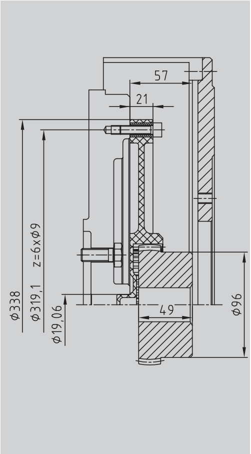


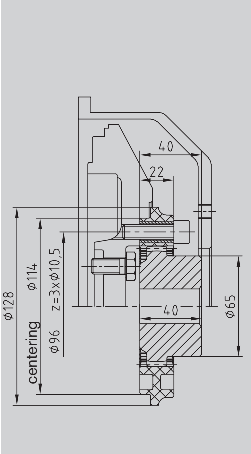


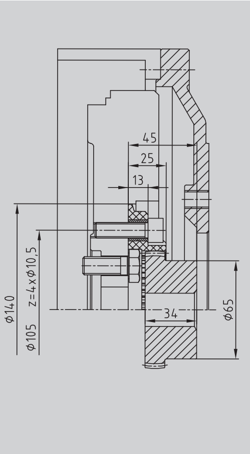


Coupling size	BoWex® 48 FLE-PA, Ø279	BoWex® 48 FLE-PA, Ø252	BoWex® 48 FLE-PA	BoWex® 48 FLE-PA, Ø130
Engine type	VW 028.B / M344	VW 062.2 / 068.5 / 6 / A / D	Mitsubishi Ø338-32	Mitsubishi Series L / Series K

Fitting to diesel engines: Perkins Lombardini





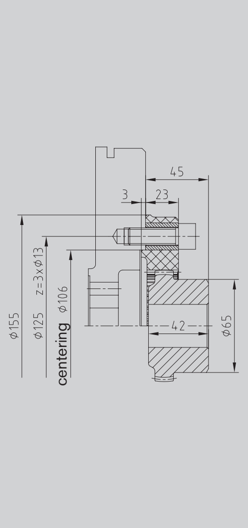


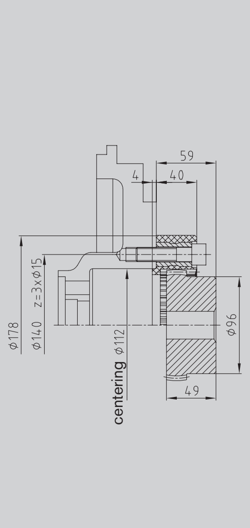
Coupling size	BoWex® 65 FLE-PA, Ø338	BoWex® 48 FLE-PA, Ø128	BoWex® 48 FLE-PA, Ø140
Engine type	Perkins 1104C-44T Flywheel No. D0014	Lombardini FOCS series	Lombardini LDW

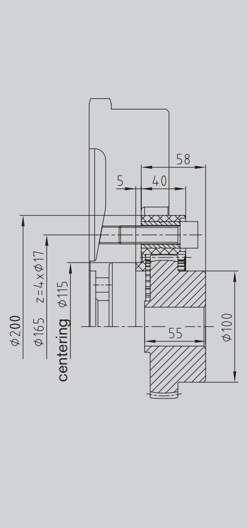
BoWex® FLE-PA
Torsionally stiff flange couplings

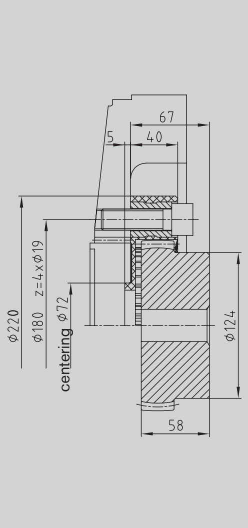
Special flange programme, deviations from SAE standard

Fitting to
diesel engines:
Perkins
Isuzu
Cummins



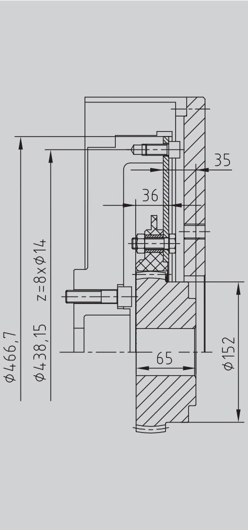


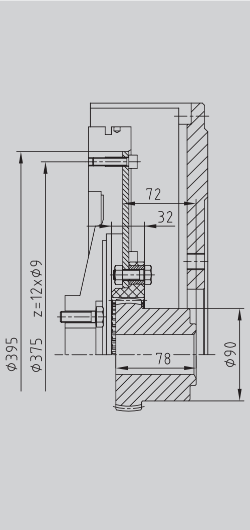


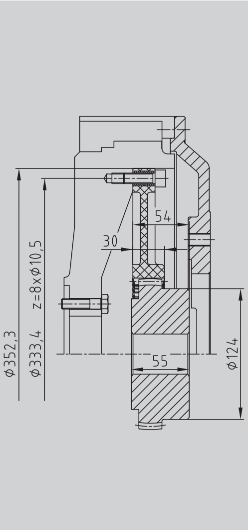


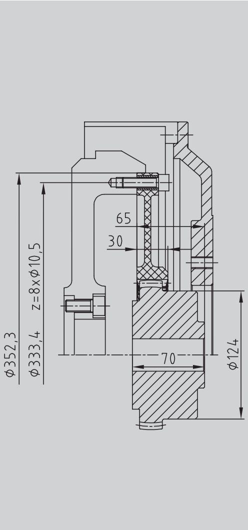
Coupling size	BoWex® 48 FLE-PA, Ø155	BoWex® 65 FLE-PA, Ø178	BoWex® 70 FLE-PA, Ø200	BoWex® 80 FLE-PA, Ø220
Engine type	3 holes, Ø125	3 holes, Ø140	4 holes, Ø165	4 holes, Ø180

Fitting to
diesel engines:
Caterpillar
Daimler
Cummins
John Deere



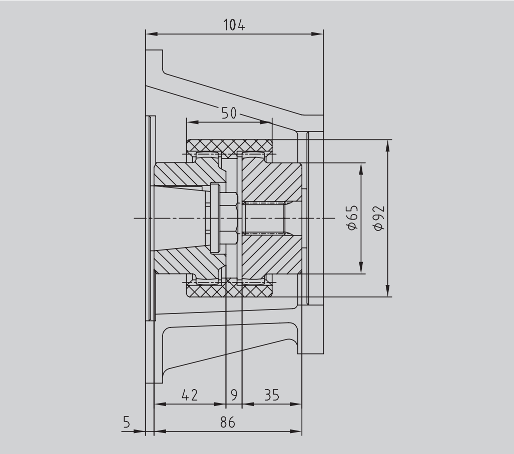


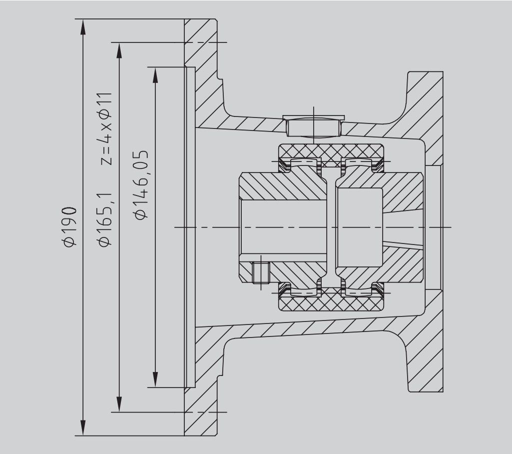




Coupling size	BoWex® T100 FLE-PA, 14” Caterpillar	BoWex® T65 FLE-PA, Ø395 Daimler	BoWex® 80 FLE-PA, 11 1/2” Cummins	BoWex® 80 FLE-PA 11 1/2” John Deere
Engine type	C 10 / C 12	OM904	QSX/QSB	

Fitting to
shaft engines:
Hatz
Honda
Briggs & Stratton
Yanmar
Kohler
Robin



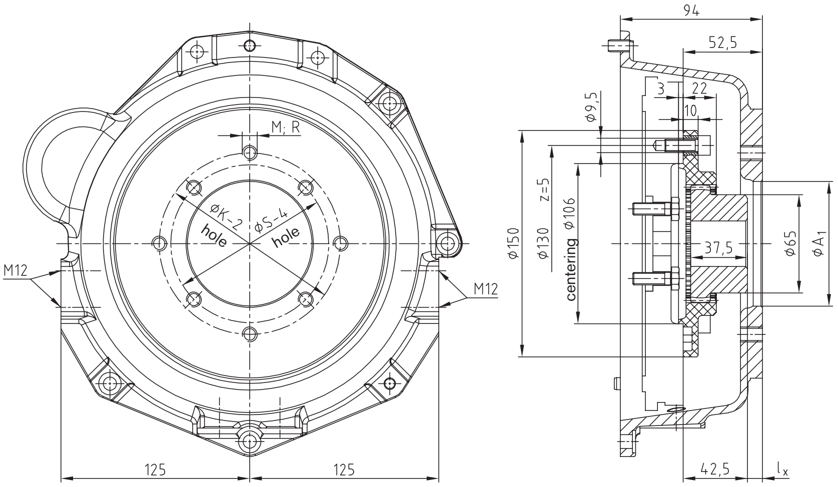


Coupling size	BoWex® M42	BoWex® shaft coupling type M28 and M32
Engine type	Hatz 2G30	Housing connection according to SAE J609A

Flange couplings and pump connection housings for KUBOTA engines

KUBOTA
Super MINI series

Z-400
Z-442-B
Z-482-B
D-600
D-662-B
D-902-B
V-800



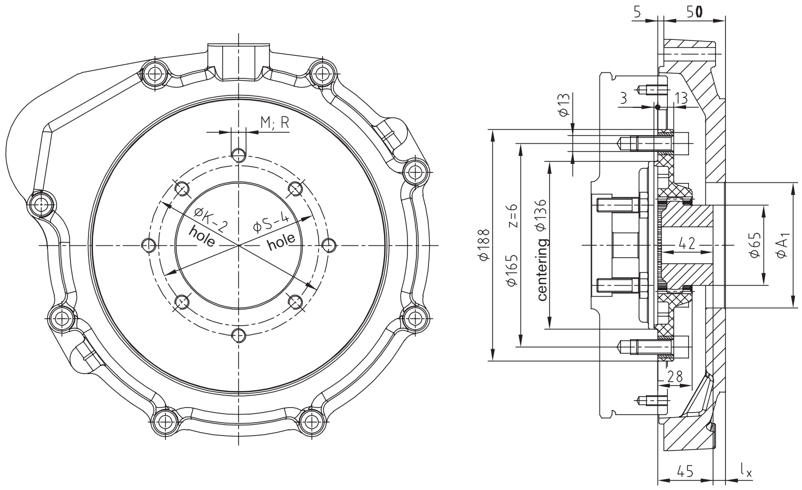
BoWex® 48 FLE-PA Ø 150 / pump connection housings

KUBOTA
Super 3 series

D 1403/1703
Flywheel
No. 190027991

V 1903/2203
Flywheel
No. 190002369

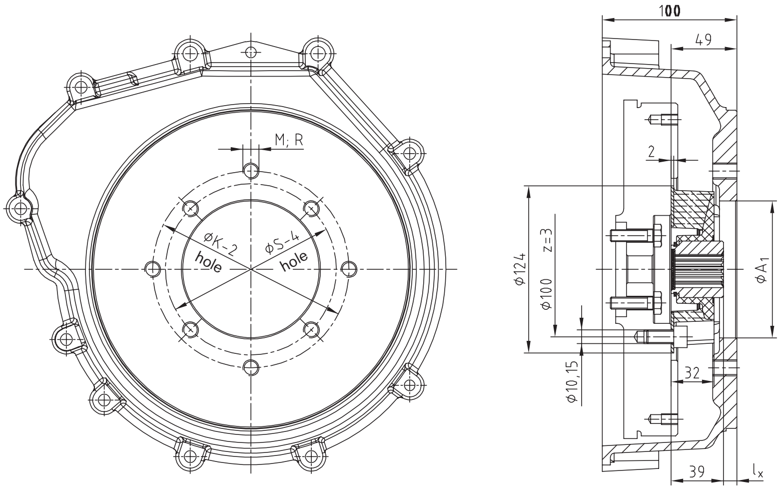
V 2003-T



BoWex® 48 FLE-PA Ø 188 / pump connection housings

KUBOTA
Super 5 series

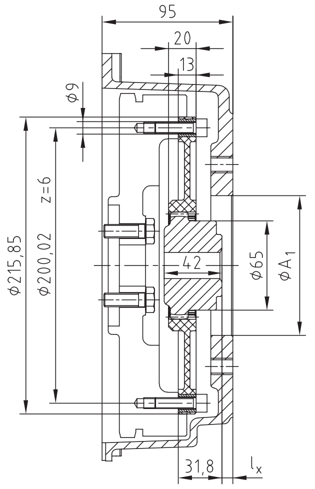
D 905
D 1005
D 1105
D 1105-T
V 1205
V 1305
V 1505

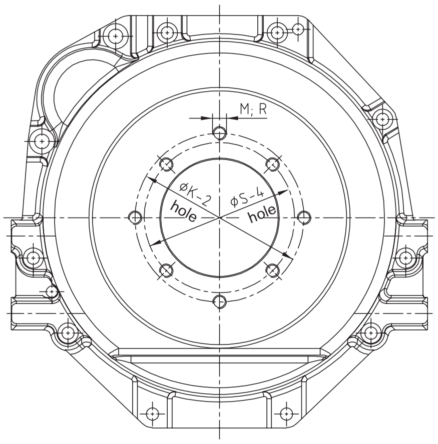


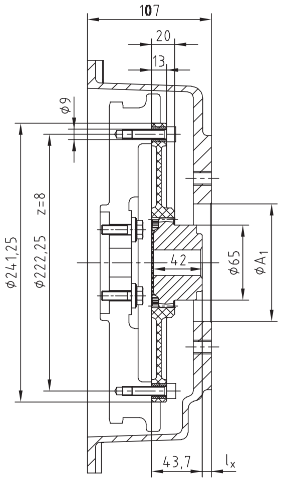
MONOLASTIC® 28 Ø 124 / pump connection housings

BoWex® FLE-PA
Torsionally stiff flange couplings

Flange couplings and pump connection housings for Perkins engines

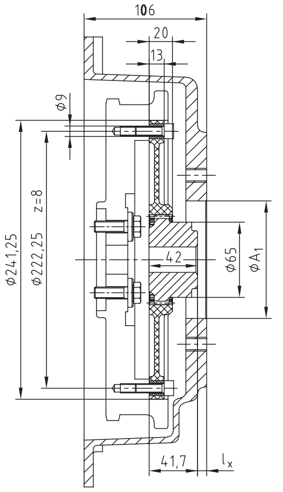


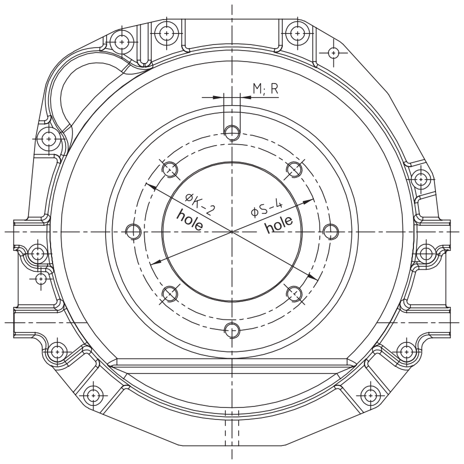


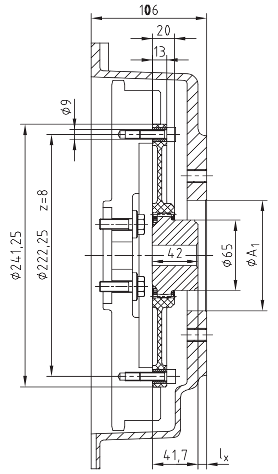


Perkins 403D - 10/11

Perkins 403D - 13/15



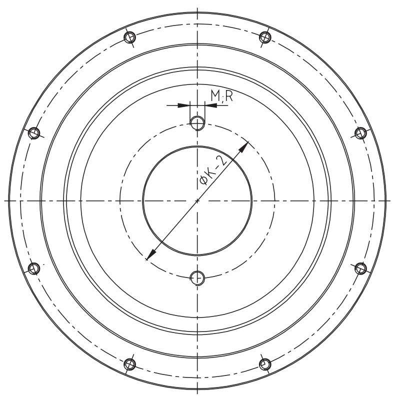




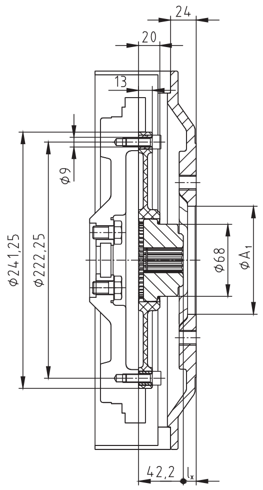
Perkins 404D - 20

Perkins 404D - 22

Other selections on request for Yanmar Mitsubishi etc.



Mitsubishi SL series

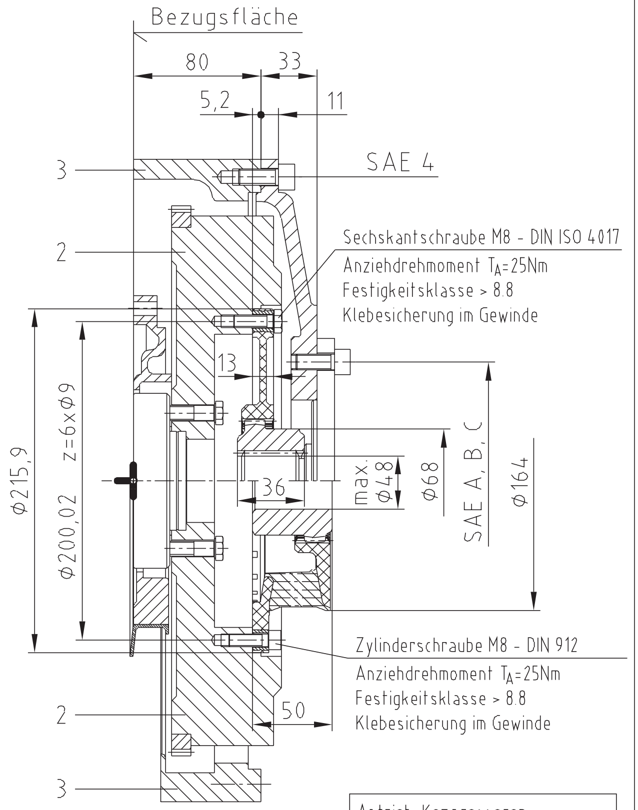


Yanmar TNV series

Selection of DEUTZ engines FL/M 1011 and FL/M 2011, TCD/TD/D 2.9 L4, TDC/T 3.6 L

Anbaukombination A

Antrieb: Hydraulikpumpen
BoWex® 48 FLE-PA 6 1/2"
SAE-4.0/33 Pumpenanbauflansch

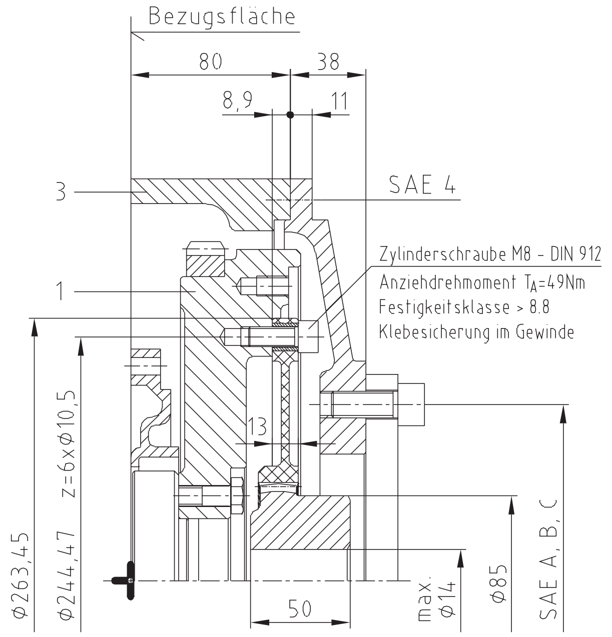


Anbaukombination B

Antrieb: Kompressoren,
Wasserpumpen usw.
BoWex-Elastic® HE 6 1/2"

Anbaukombination D

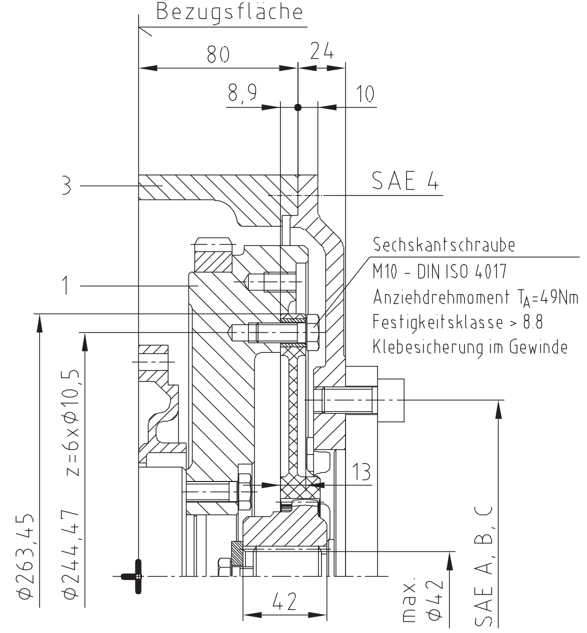
Antrieb: Hydraulikpumpen
BoWex® T55 FLE-PA 8"
SAE-4.0/38 Pumpenanbauflansch



ACHTUNG: Entsprechend der Motorleistung ist die Kupplungsanordnung durch den Anwender zu prüfen. Nach erfolgtem Kupplungsanbau Kurbelwellenlängsspiel prüfen. Sollmaß für Lagerluft 0,1 ... 0,3 mm. DEUTZ übernimmt keine Haftung für außerhalb des DEUTZ Lieferumfanges liegende Maßgaben und/oder Teile.

Anbaukombination C

Antrieb: Hydraulikpumpen
BoWex® 48 FLE-PA 8"
SAE-4.3/24 Pumpenanbauflansch



Bei techn. Rückfragen hinsichtlich der Kupplungsausführung wenden Sie sich bitte an:
KTR-Kupplungstechnik GmbH
Postfach 1763 D-48407 Rheine
Telefon +49 - 05971 / 798-0

1	1	1	1	3	Zwischengehäuse (SAE-4)	0427 0980 KZ 0138-52 0417 1040 UA 0138-52	15	0553
-	-	1	1	2	Schwungrad (SAE 6 1/2") J= 0,499 kgm²	0428 0586 KZ 0138-05 0417 1301 UA 0138-05	30,3	3174
1	1	-	-	1	Schwungrad (SAE 8 u.10") J= 0,405 kgm²	0427 2426 KZ 0138-05 0417 1301 UA 0138-05	25,3	2461
D	C	B	A	Pos.	Benennung	Nummer	G(kg)	Baus.-Nr.
Anbau-kombination								

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN MILLIMETERS
CORNERS PER DIN 6784
GEOMETRIC TOLERANCES PER ISO 1101 GENERAL TOLERANCES -
SURFACE TEXTURE PER ISO 1302 IN MICROMETERS
MATERIAL
PROJECTION METHOD
Bauart TYPE FL/M1011 FL/M2011
Werkstückkanten nach DIN 6784 -0,3 +0,6
Form- und Lagetoleranzen nach DIN 7184 Allgemeintoleranzen -
Oberflächen Angaben nach ISO 1302 Rz nach DIN 4768
Maßstab SCALE 1:1
Gewicht WEIGHT -
ISO 128 Darstellungs-Methode
Werkstoff Rohteil-Nr. BLANK NO. -

	Datum	Name
Bearb.	17.12.03	Sha
Gepr.	12.02.13	Sh
Norm		
OE DEPT.		Ges.

Benennung TITLE Kupplungsanbau BoWex® FLE-PA / ELASTIC HE
DEUTZ AG
Teilenummer (Sach-, Identnummer) EPN 0428 0967
Cha. For. UB
Techn. Ordnungsnummer 0138-97
Blatt SHEET 1 von 1 Bl.
Mkr. Zust. Änderung REVISION Dat./Na. Gepr. Urspr. ORIGIN.
Ers. f.: REPLACES:

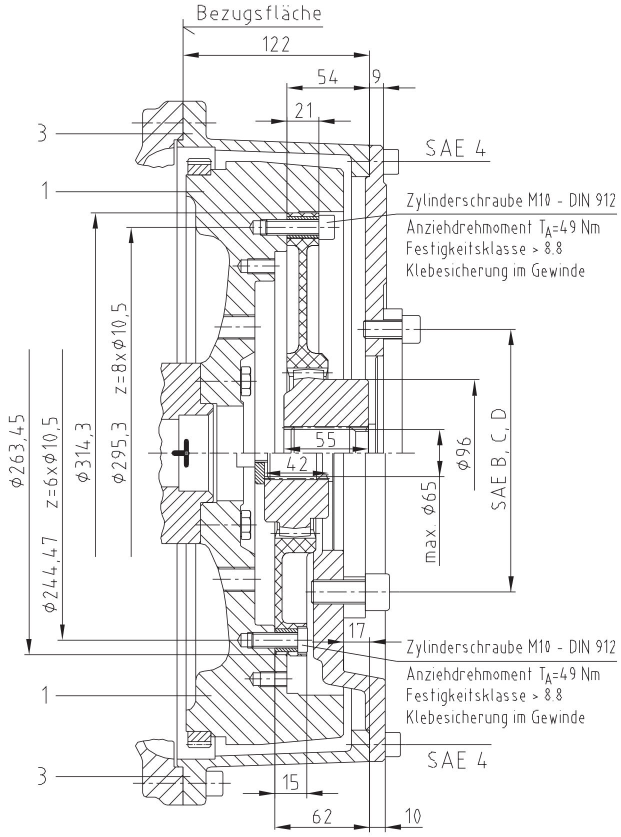
BoWex® FLE-PA
Torsionally stiff flange couplings

Selection of DEUTZ engines BFM 1012/1013/2012/2013/1015

Anbaukombination A

BoWex® 65 FLE-PA 10"
SAE-4/9 Pumpenanbauflansch

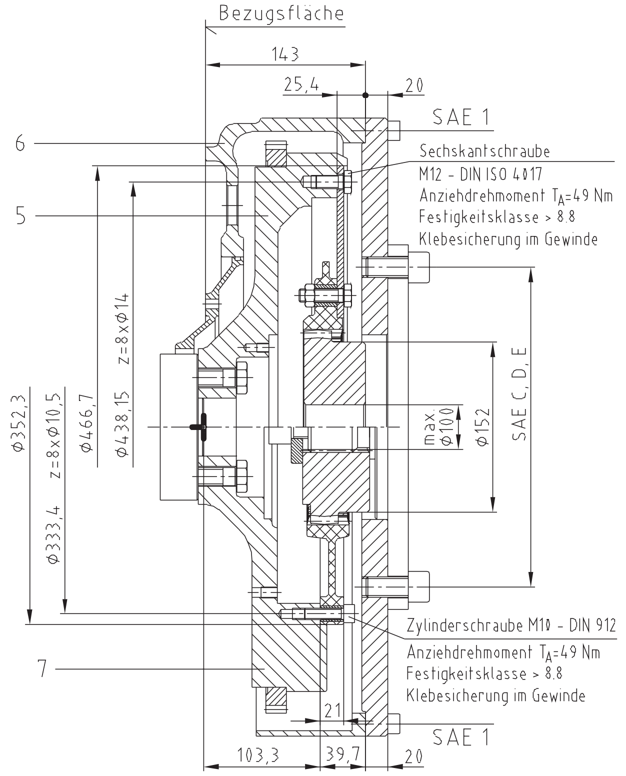
Deutz-Motor
BF4/6M 1012/2012, BF4/6 1013/2013,
TCD/TD 2012 L04/06 2V/4V, TCD/TD 2013 L04 2V, TCD 4.1 L4



Anbaukombination D

BoWex® 100 FLE-PA 14"
SAE-1/20 Pumpenanbauflansch

Deutz-Motor
BF6/8M 1015/2015,
TCD 2015 V06, TCD 12.0 V6



Anbaukombination B

BoWex® 65 FLE-PA 8"
SAE-4.2/-17 Pumpenanbauflansch

Deutz-Motor
BF4/6M 1012/2012, BF4/6 1013/2013,
TCD/TD 2012 L04/06 2V/4V, TCD/TD 2013 L04 2V, TCD 4.1 L4

Anbaukombination E

BoWex® 100 FLE-PA 11 1/2"
SAE-1/20 Pumpenanbauflansch

Deutz-Motor
BF6/8M 1015/2015,
TCD 2015 V06, TCD 12.0 V6

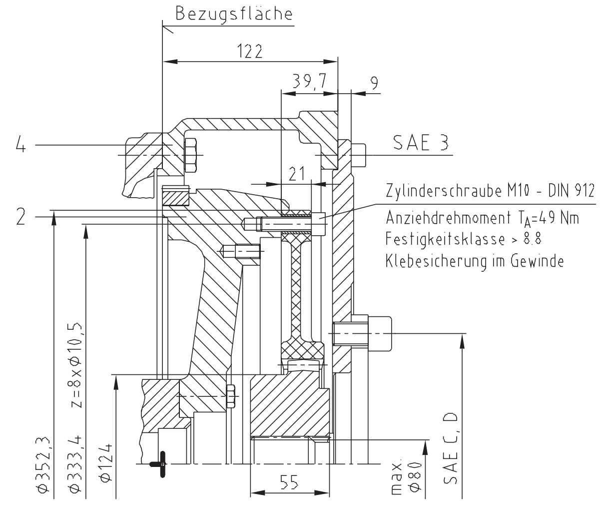
Anbaukombination C

BoWex® 80 FLE-PA 11 1/2"
SAE-3/9 Pumpenanbauflansch

Deutz-Motor
BF4/6M 1012/2012, BF4/6 1013/2013,
TCD/TD 2012 L04/06 2V/4V, TCD/TD 2013 L04/06 2V, TCD 4.1 L4, TCD 6.1 L6

ACHTUNG: Entsprechend der Motorleistung ist die Kupplungsanordnung durch den Anwender zu prüfen. Nach erfogtem Kupplungsanbau Kurbelwellenlängsspiel prüfen. Sollmaß für Lagerluft: Motor 1012/1013/2012/2013 = 0,1 - 0,28 mm; Motor 1015 = 0,2 - 0,4 mm

DEUTZ übernimmt keine Haftung für außerhalb des DEUTZ Lieferumfanges liegende Maßgaben und/oder Teile.



Bei techn. Rückfragen hinsichtlich der Kupplungsausführung wenden Sie sich bitte an:
KTR-Kupplungstechnik GmbH; Postfach 1763; D-48407 Rheine; Tel.: 05971/798-0

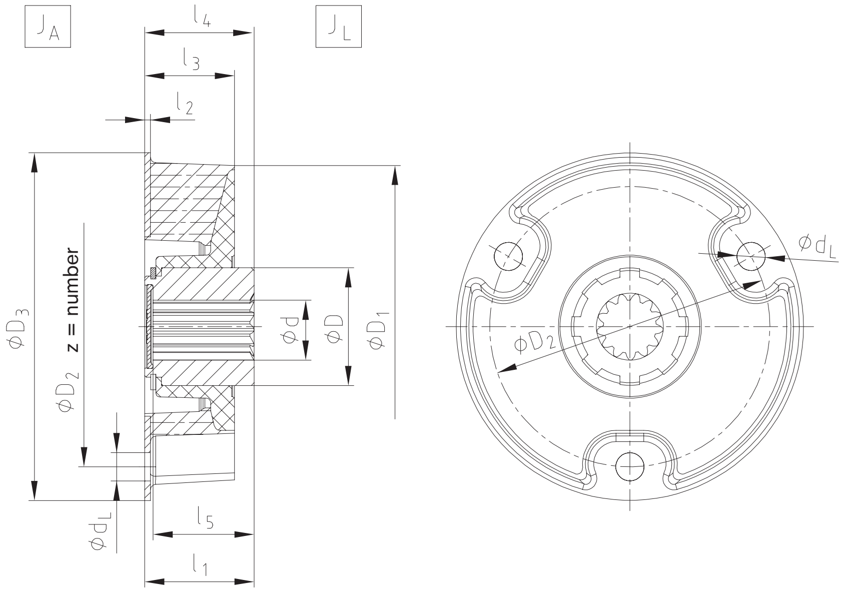
1	-	-	-	-	7	Schwungrad (SAE-11 1/2") J= 2,255 kgm²		66,7	
1	1	-	-	-	6	Anschlußgehäuse (SAE-1)		45,6	
-	1	-	-	-	5	Schwungrad (SAE-14") J= 2,264 kgm²		61,6	
-	-	1	-	-	4	Anschlußgehäuse (SAE-3)			
-	-	-	1	1	3	Anschlußgehäuse (SAE-4)			
-	-	1	-	-	2	Schwungrad (SAE-10 u. 11 1/2") J= 0,872 kgm²			
-	-	-	1	1	1	Schwungrad (SAE-8 u. 10") J= 1,03 kgm²			
E	D	C	B	A	Pos.	Benennung	Nummer	G(kg)	Baus.-Nr.
Anbau-kombination									

DEUTZ 1012 / 1013
siehe 0420 8900 UB 0130-97

MONOLASTIC®
One-piece, flexible flange couplings

Type with 3 holes (EP 0853203/U.S. Patent 6,117,017)

For legend of pictogram refer to flapper on the cover



MONOLASTIC®																
Size	Elastomer hardness [Shore A]	Torque [Nm]			Dimensions [mm]											
		T_{KN}	$T_{K\ max.}$	T_{KW}	d	D	D_1	D_2	z	d_L	D_3	l_1	l_2	l_3	l_4	l_5
22	T65	40	100	20	20	34	93	80	3	8.10	100	33	1.5	32	34	30
28	T65	70	175	35	25	42	115	100	3	10.10	124	40	2	32	40	38
	T70	100	250	50												
32	T65	160	400	80	32	50	140	125	3	12.10	150	42	2	42	43	38
	T70	225	562	112												
50-140	T70	260	650	130	32	50	167	140	3	14.10	175	46	3	35	46	43
50-165	T70	300	750	150	32	50	175	165	3	16.15	200	46	3	35	46	43
50-170	T70	300	750	150	32	50	175	170	3	16.15	200	46	3	35	46	43
60-165	T70	400	1000	200	48	68	191	165	3	16.15	205	50	3	40	55	46

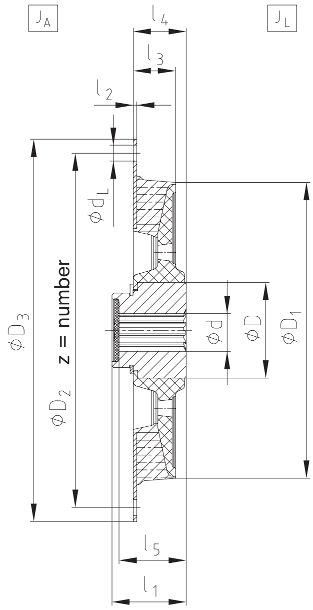
Technical data									
Size	Elastomer hardness [Shore A]	$C_{dyn.}$ with 60 °C [Nm/rad]	Perm. damping power with 60 °C P_{KW} [W]	Max. displacement with 2200 rpm ΔK_r [mm]	Perm. angular displacement with 2200 rpm ΔK_w [°]	Radial spring stiffness C_r [N/mm]	Mass moment of inertia [kgm²]		Perm. operating speed $n_{max.}$ [rpm]
							J_A	J_L	
22	T65	600	10	0.6	1	200	0.00017	0.00010	6000
28	T65	900	15	0.6		300	0.00054	0.00033	6000
	T70	1300		0.5		400			
32	T65	1800	25	0.6		400	0.00120	0.00081	6000
	T70	2400		0.5		500			
50-140	T70	4200	35	0.5		1365	0.00210	0.00130	6000
50-165		5600	40			1550	0.00250	0.00130	6000
50-170									
60-165	T70	7800	40	0.5		1500	0.00599	0.00358	6000

T = Temperature-stable rubber compound. The technical data specified apply for an ambient temperature of T = 60 °C.

MONOLASTIC®
One-piece, flexible flange couplings

Type SAE (EP 0853203/U.S. Patent 6,117,017)

For legend of pictogram refer to flapper on the cover



Flange dimensions according to SAE J620 [mm]

Size	D_3	D_2	z	d_L
6 ½"	215.9	200.02	6	9
7 ½"	241.3	222.25	8	9
8"	263.52	244.47	6	11
10"	314.32	295.27	8	11
11 ½"	352.42	333.37	8	11

MONOLASTIC®

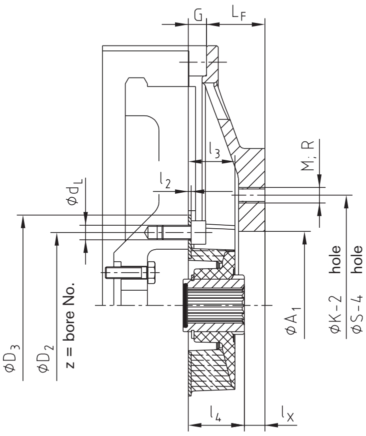
Size	Elastomer hardness [Shore A]	Torque [Nm]			Dimensions [mm]								MONOLASTIC® flanges according to SAE				
		T_{KN}	$T_{K\,max.}$	T_{KW}	$d_{max.}$	D	D_1	l_1	l_2	l_3	l_4	l_5	6 ½"	7 ½"	8"	10"	11 ½"
30	T65	200	400	100	25	42	120	39	2	21	30	36	X	X			
	T70	250	500	125													
50	T65	350	700	175	32	50	167	42	2	24	30	38	X	X	X	X	
	T70	450	900	225													
G50	T70	600	1200	300	32	50	178	42	2	24	36	38		X	X	X	
65	T65	750	1500	375	48	68	200	45	3	32	45	42				X	X
	T70	1000	2000	500													
75	T65	1500	3000	750	60	90	265	58	3	35	50	54				X	X
	T70	1850	3700	925													

Technical data

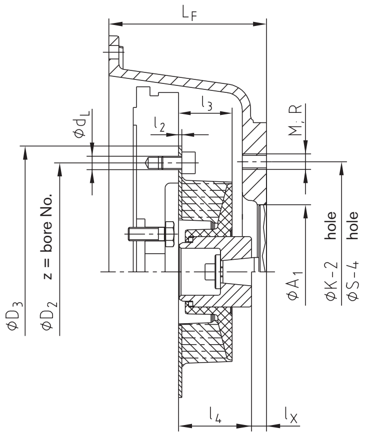
Size	Elastomer hardness [Shore A]	$C_{dyn.}$ with 60 °C [Nm/rad]	Perm. damping power with 60 °C P_{KW} [W]	Max. displacement with 2200 rpm ΔK_r [mm]	Perm. angular displacement with 2200 rpm ΔK_w [°]	Radial spring stiffness C_r [N/mm]	Mass moment of inertia [kgm²]			Perm. operating speed $n_{max.}$ [rpm]
							J_A		J_L	
30	T65	3750	25	0.5	1	1150	6 ½"	0.0038	0.00030	6000
	T70	4875				1500	7 ½"	0.0057		
50	T65	9000	35	0.5	1	1300	8"	0.0078	0.00120	6000
	T70	12000				1700	10"	0.0153		
G50	T70	17500	40	0.5	1	1910	7 ½"	0.0060	0.00120	6000
							8"	0.0080		
							10"	0.0162		
65	T65	14000	45	0.5	1	1900	10"	0.0238	0.00380	6000
	T70	18000				2450	11 ½"	0.0368		
75	T65	34000	80	0.5	1	1850	10"	0.0272	0.01450	6000
	T70	42000				2400	11 ½"	0.0402		

T = Temperature-stable rubber compound. The technical data specified apply for an ambient temperature of T = 60 °C.

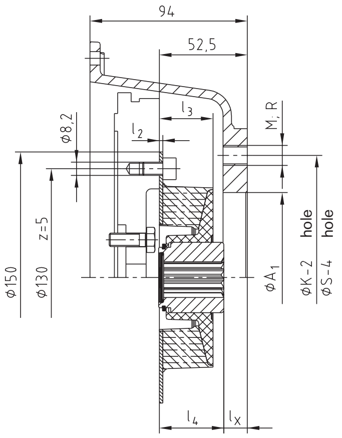
Examples of installation for type with 3 holes (EP 0853203/U.S. Patent 6,117,017)



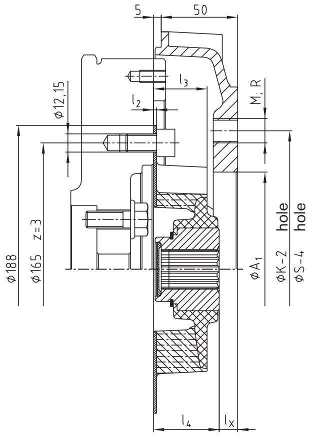
MONOLASTIC® 28
with spline shaft



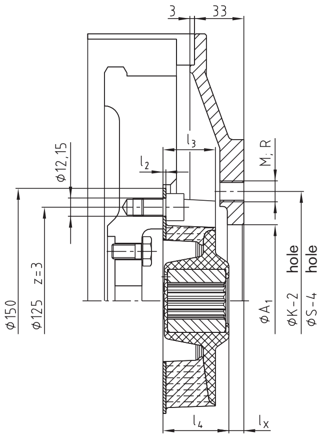
MONOLASTIC® 28
with taper shaft



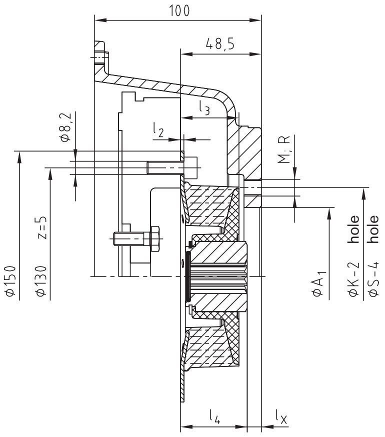
MONOLASTIC® 28
KUBOTA-Mini



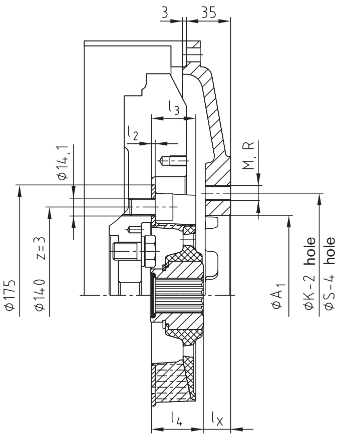
MONOLASTIC® 32 - 188
KUBOTA Super Three Series



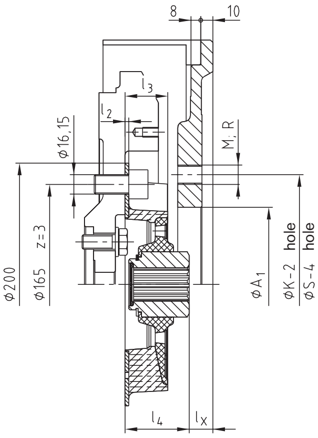
MONOLASTIC® 32 S



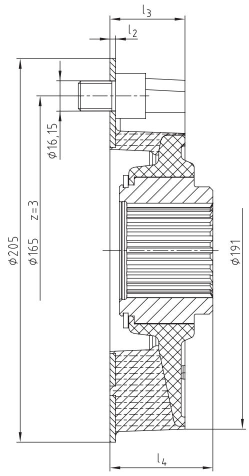
MONOLASTIC® 28
KUBOTA Super Mini



MONOLASTIC® 50 - 140

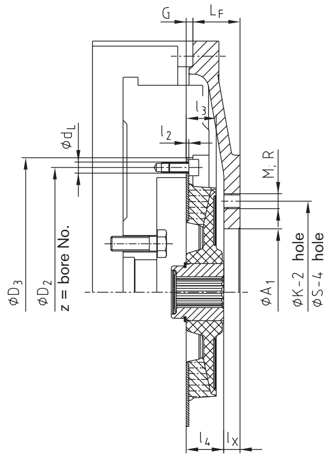


MONOLASTIC® 50 - 165

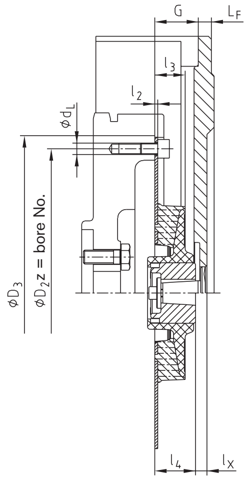


MONOLASTIC® 60 - 165

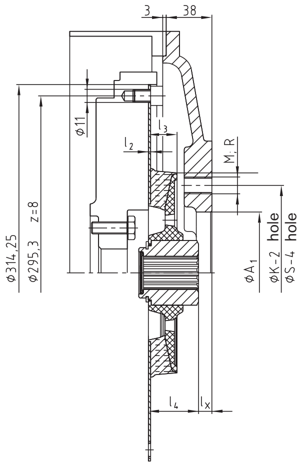
Examples of installation for SAE type (EP 0853203/U.S. Patent 6,117,017)



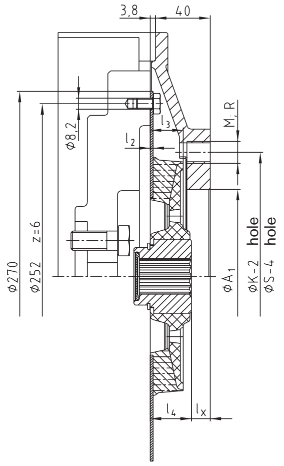
MONOLASTIC® 30
with spline shaft



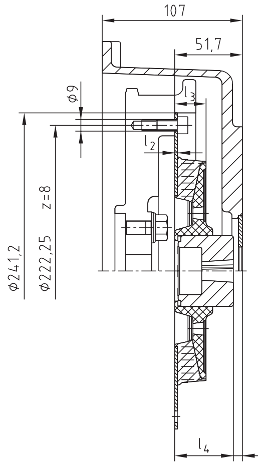
MONOLASTIC® 30
with taper shaft



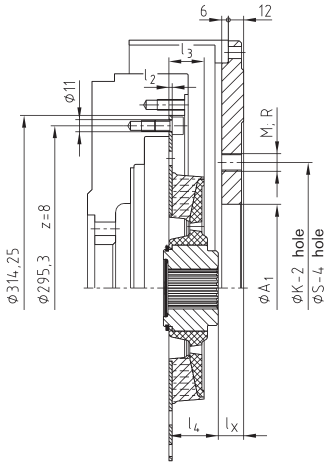
MONOLASTIC® 50 - 10“



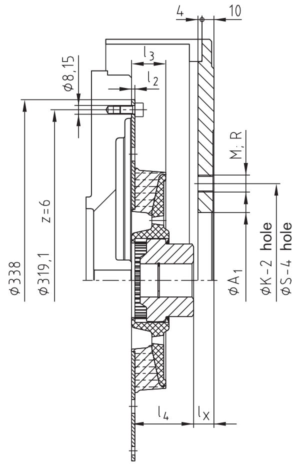
MONOLASTIC® 50 - 270
KUBOTA engine
D1803, V2403, V2403T



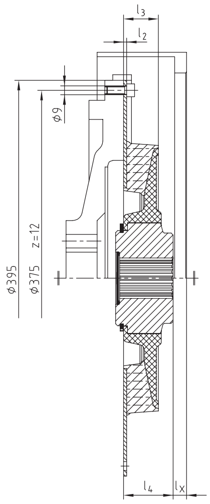
MONOLASTIC® 50
Perkins engine
403-13/403-15



MONOLASTIC® 65 - 10“



MONOLASTIC® 65 / T48



MONOLASTIC® 75 - 395

BoWex-ELASTIC® HE1 - HE4
Highly flexible flange couplings

Axial plug-in, available in different kinds of hardness

For legend of pictogram refer to flapper on the cover

BoWex-ELASTIC® Type HE1 - HE4

Size	Bore d [mm]		Flange connection acc. to SAE - J620						Dimensions [mm]												Type HE1 / HE2			Type HE3 / HE4		
	Pilot bored	Max.	6 ½"	7 ½"	8"	10"	11 ½"	14"	l_3 HE1/ HE2	l_3 HE3/ HE4	D_5	l_2 HE1/ HE2	l_2 HE3/ HE4	D_4	D	l_1	L_{HE1}	L_{HE2}	L_{HE3}	L_{HE4}	Weight with max. bore [kg]	Mass moment of inertia with max. bore [kgm²]		Weight with max. bore [kg]	Mass moment of inertia with max. bore [kgm²]	
																						J_A	J_L		J_A	J_L
42 HE	-	42	●	●					4	2	180	44.5	37	145	65	42	70	50	55	40	1.8	0.0074	0.0016	1.8	0.0071	0.0021
					●																2.8	0.0172	0.0016	-	-	-
48 HE	-	48	●	●					4	2	198	45	37	163	68	50	78	50	68	42	2.3	0.0119	0.0021	1.9	0.0070	0.0022
					●																2.6	0.0170	0.0021	2.1	0.0103	0.0022
						●															3.4	0.0342	0.0021	2.5	0.0201	0.0022
65 HE	21	65				●			5	-	244	55.5	-	205	96	55	85	62	-	-	4.9	0.0424	0.0069	-	-	-
							●														5.7	0.0647	0.0069			
G 65 HE	21	65			●				-	3	-	-	45	205	96	55	-	-	73	50	-	-	-	3.9	0.0147	0.0075
						●																		4.1	0.0281	0.0075
							●																	4.6	0.0423	0.0075
GG 65 HE	21	65			●				-	3	-	-	45	220	96	55	-	-	73	50	-	-	-	3.8	0.0163	0.0093
						●																		4.4	0.0294	0.0093
							●																	4.9	0.0439	0.0093
80 HE	31	90				●			-	4	316	70	56	265	124	90	126	74	112	60	8.1	0.0239	0.0307	9.1	0.0414	0.0305
							●		6								132	80			10.2	0.0765	0.0307	-	-	-
G 80 HE	31	90					●		-	4	356	80	66	300	124	90	136	80	122	70	9.7	0.0426	0.0471	11.1	0.0713	0.0472
								●	6								142	84			14.7	0.2851	0.0471	-	-	-
GG 80 HE	31	90					●		-	4	-	-	71	302	124	90	-	-	130	80	-	-	-	11.9	0.0768	0.0498
100 HE	38	100						●	-	4	-	-	76	350	152	110	142	90	150	82	-	-	-	18.3	0.2028	0.1104
G 100 HE	38	100						●	-	4	-	-	76	350	152	65	-	-	102	85	-	-	-	16	0.2172	0.1013

Other flange connections on request

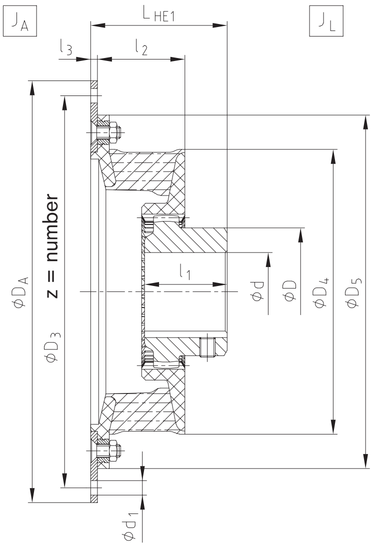
Technical data

Size	Elastomer hardness [Shore A]	Torque [Nm]				Perm. damping power P_{KW} [W]			Perm. operating speed $n_{max.}$ [rpm]	Dynamic torsion spring stiffness $C_{dyn.}$ [Nm/rad]	Relative damping ψ	Resonance factor $V_R \approx 2 \bullet \pi / \psi$	Radial spring stiffness C_r [N/mm]
		T_{KN}	T_K max. 10,000 LA [Nm]	T_K max. 50,000 LA [Nm]	with 10 Hz T_{KW}	60 °C	80 °C	90 °C					
42 HE	T40	165	395	330	41	26.0	15.6	10.4	6200	550	0.6	10.5	142
	T50	205	490	410	51					850	0.8	7.9	219
	T65	260	625	520	65					2700	1.2	5.2	697
48 HE	T40	250	600	500	63	36.0	21.6	14.4	5600	850	0.6	10.5	176
	T50	315	755	630	79					1300	0.8	7.9	269
	T65	400	960	800	100					3500	1.2	5.2	724
65 HE	T40	440	1050	880	110	60.0	36.0	24.0	4500	1600	0.6	10.5	209
	T50	550	1320	1100	138					2200	0.8	7.9	288
	T65	720	1730	1440	180					6000	1.2	5.2	784
G65 HE	T40	540	1300	1080	135	68.0	40.8	27.2	4300	2350	0.6	10.5	294
	T50	700	1700	1400	175					3000	0.8	7.9	375
	T65	890	2140	1780	223					8500	1.2	5.2	1063
GG 65 HE	T40	750	1800	1500	188	76.0	45.6	30.4	4000	3650	0.6	10.5	420
	T50	960	2300	1920	240					4800	0.8	7.9	550
	T65	1250	3000	2500	313					13500	1.2	5.2	1550
80 HE	T40	950	2280	1900	238	120.0	72.0	48.0	3600	4500	0.6	10.5	351
	T50	1300	3120	2600	325					6500	0.8	7.9	507
	T65	1750	4200	3500	438					18000	1.2	5.2	1404
G 80 HE	T40	1600	3850	3200	400	180.0	108.0	72.0	3000	7500	0.6	10.5	476
	T50	2200	5280	4400	550					12000	0.8	7.9	762
	T65	2900	6960	5800	725					32000	1.2	5.2	2031
GG 80 HE	T40	2000	4800	4000	500	196.0	117.6	78.4	3000	9200	0.6	10.5	660
	T50	2750	6600	5500	688					14200	0.8	7.9	1020
	T65	3600	8650	7200	900					39600	1.2	5.2	2800
100 HE	T40	2500	6000	5000	625	210.0	126.0	84.0	2700	12000	0.6	10.5	460
	T50	3250	7800	6500	813					19000	0.8	7.9	730
	T65	4250	10200	8500	1063					48000	1.2	5.2	1840
G 100 HE	T40	3000	7200	6000	750	215.0	129.0	86.0	2700	14200	0.6	10.5	584
	T50	3800	9120	7600	950					22600	0.8	7.9	935
	T65	5000	12000	10000	1250					57000	1.2	5.2	2350

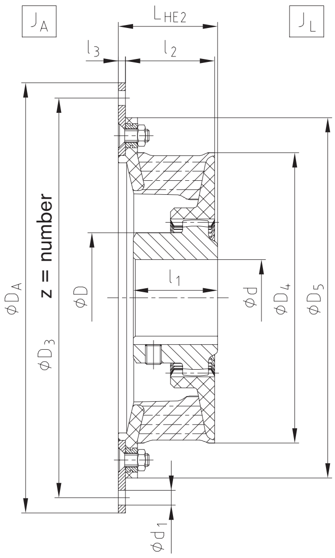
T = Temperature-stable rubber compound. The technical data specified apply for an ambient temperature of T = 60 °C.

Ordering example:

BoWex-ELASTIC® 42	HE1	T40	8	70	U
Coupling size	Type	Elastomer hardness	Flange Ø D_A according to SAE or special	Mounting length L_{HE}	Unbored or with finish bore



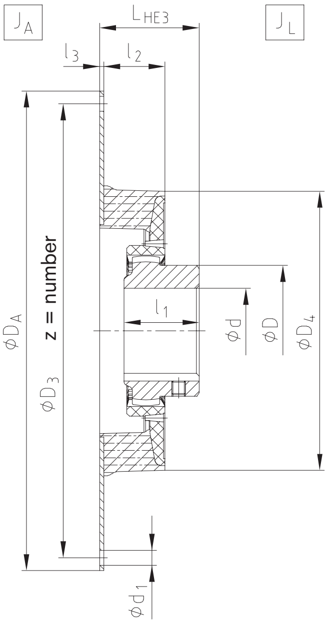
Type HE1



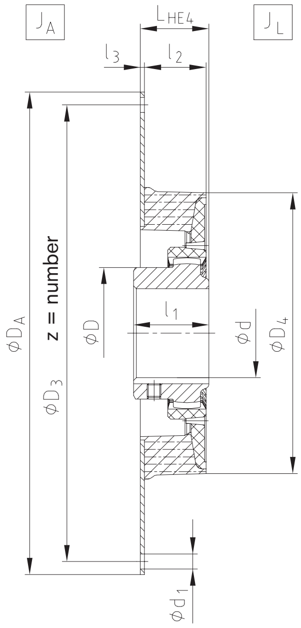
Type HE2

Flange dimensions according to SAE J620 [mm]

Nominal size	D_A	D_3	z	d_1
6 ½"	215.90	200.02	6	9
7 ½"	241.30	222.25	8	9
8"	263.52	244.47	6	11
10"	314.32	295.27	8	11
11 ½"	352.42	333.37	8	11
14"	466.72	438.15	8	13



Type HE3



Type HE4

Displacements

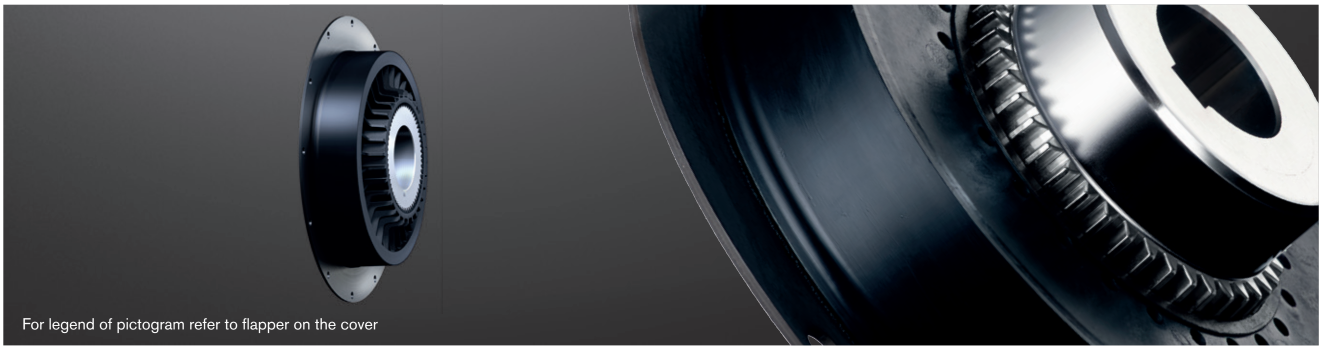
Size		42 HE			48 HE			65 HE G65 HE GG65 HE			80 HE G80 HE GG80 HE			100 HE G100 HE		
Elastomer hardness [Shore A]		T40	T50	T65	T40	T50	T65	T40	T50	T65	T40	T50	T65	T40	T50	T65
Perm. radial displacement ΔK_r [mm]	n=1500 rpm	1.1	1.0	0.5	1.2	1.1	0.5	1.6	1.5	0.7	1.8	1.7	0.8	2.2	2.0	1.0
	max. [1]	3.6	3.3	1.5	3.8	3.5	1.7	5.1	4.7	2.2	5.7	5.3	2.4	6.5	6.0	3.0
Perm. angular displacement ΔK_W [°]	n=1500 rpm	1.0	0.75	0.5	1.0	0.75	0.5	1.0	0.75	0.5	1.0	0.75	0.5	1.0	0.75	0.5
	n=3000 rpm	0.5	0.4	0.25	0.5	0.4	0.25	0.5	0.4	0.25	0.5	0.4	0.25	0.5	0.4	0.25
Perm. angular displacement ΔK_W [°]	max. [1]	1.5			1.5			1.5			1.5			1.5		
Perm. axial displacement ΔK_a [mm]		± 2			± 2			± 2			± 2			± 3		

[1] For short-term start-up operation

Mounting procedure, screw type with property class, tightening torques as per KTR assembly instructions (see www.ktr.com).

BoWex-ELASTIC® HE3 / HE4 / HE-D
Highly flexible flange couplings

Axial plug-in, available in different kinds of hardness



For legend of pictogram refer to flapper on the cover

BoWex-ELASTIC® Type HE3, HE4 and HE-D

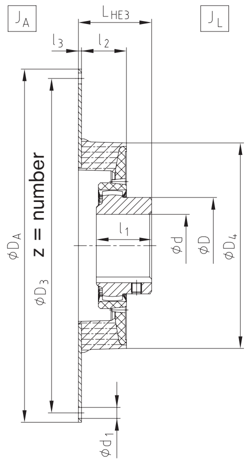
Size	Bore d [mm]		Flange connection acc. to SAE - J620							Dimensions [mm]							Weight with max. bore [kg]	Mass moment of inertia with max. bore [kgm^2]	
	Pilot bored	Max.	14"	16"	18"	21"	24"	Ø800	Ø885	l_3	l_2	D_4	D	l_1	L_{HE3}	L_{HE4}		J_A	J_L
125 HE	45	125	●							6	92	416	192	140	186	103	33.1	0.3142	0.2750
				●											192	109	34.8	0.4231	0.2750
G125 HE	45	125		●						6	89	440	192	140	179	91	36.6	0.4634	0.3264
					●												39.5	0.6812	0.3264
150 HE	44	160			●					6	140	470	225	150	205	160	46.8	0.7277	0.5414
						●											51.5	1.2120	0.5414
150 HE-D	44	160			●					-	286	470	225	275	291	-	113	3.0045	1.0738
						●											155	6.4399	1.0738
G150 HE	44	160			●					6	140	504	225	150	205	160	51.9	0.8164	0.6500
						●											56.6	1.3007	0.6500
G150 HE-D	44	160			●					-	286	504	225	275	291	-	123	3.1820	1.291
						●											165	6.6173	1.291
200 HE	46	180				●				6	149	568	250	175	240	160	76.8	1.4880	1.2952
							●										81.2	2.0390	1.2952
200 HE-D	46	180				●				-	325	568	250	298	310	-	228	11.80	2.4672
							●										216	10.66	2.4672
G200 HE	46	180				●				6	149	600	250	175	240	160	81.6	1.6272	1.5409
							●										86.0	2.1782	1.5409
G200 HE-D	46	180				●				-	325	600	250	298	310	-	238	12.00	3.0387
							●										230	10.92	3.0387
240 HE	80	240						●		8	172	772	326	200	270	205	138	4.2414	4.0410
275 HE	80	275							●	10	185	810	372	240	312	215	206	7.3696	7.6845

Technical data

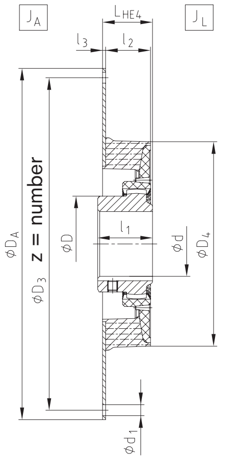
Size	Elastomer hardness [Shore A]	Torque [Nm]				Perm. damping power P_{KW} [W]			Perm. operating speed $n_{max.}$ [rpm]	Dynamic torsion spring stiffness $C_{dyn.}$ [Nm/rad] 60 °C	Relative damping ψ	Resonance factor $V_R \approx 2 \cdot \pi / \psi$	Radial spring stiffness C_r [N/mm]
		T_{KN} [Nm]	$T_{K\,max.}$ 10,000 LA [Nm]	$T_{K\,max.}$ 50,000 LA [Nm]	T_{KW} [Nm]	60 °C	80 °C	90 °C					
125 HE	T40	3500	10500	7000	875	221	133	88	2300	20000	0.6	10.5	625
	T50	4800	11400	9600	1200					30000	0.8	7.9	988
	T70	6800	20400	13600	1700					54000	1.2	5.2	2434
G125 HE	T40	4800	14400	7200	1200	240	144	96	2250	34000	0.6	10.5	890
	T50	6600	19800	9900	1650					51000	0.8	7.9	1305
	T70	10000	30000	15000	2500					98000	1.2	5.2	1915
150 HE	T50	8000	24000	12000	2000	262	157	105	2200	67500	0.8	7.9	714
	T70	14000	42000	21000	3500					140000	1.2	5.2	2500
150 HE-D	T50	16000	48000	24000	4000	524	314	210	2200	134000	0.8	7.9	1428
	T70	28000	84000	42000	7000					279000	1.2	5.2	5000
G150 HE	T50	10000	30000	15000	2500	278	167	111	2100	85000	0.8	7.9	1485
	T70	18000	54000	27000	4500					160000	1.2	5.2	5874
G150 HE-D	T50	20000	60000	30000	5000	556	334	222	2100	170000	0.8	7.9	2970
	T70	36000	108000	54000	9000					320000	1.2	5.2	11748
200 HE	T50	14500	43500	21750	3625	308	185	123	1900	119000	0.8	7.9	1720
	T70	25000	75000	37500	6250					241000	1.2	5.2	6769
200 HE-D	T50	29000	87000	43500	7250	616	370	246	1900	238000	0.8	7.9	3440
	T70	50000	150000	75000	12500					482000	1.2	5.2	13538
G200 HE	T50	17500	52500	26250	4375	324	194	130	1800	139000	0.8	7.9	1952
	T70	30000	90000	45000	7500					281500	1.2	5.2	7708
G200 HE-D	T50	35000	105000	52500	8750	648	388	260	1800	278000	0.8	7.9	3904
	T70	60000	180000	90000	15000					563000	1.2	5.2	15416
240 HE	T50	29000	87000	43500	7250	372	223	149	1500	259000	0.8	7.9	2326
	T70	49000	147000	73500	12250					521000	1.2	5.2	9160
275 HE	T50	42000	126000	63000	10500	410	246	164	1500	375000	0.8	7.9	2950
	T70	70000	210000	105000	17500					758000	1.2	5.2	11785

Ordering example:	BoWex-ELASTIC® 125	HE3	T40	14“	186	U
	Coupling size	Type	Elastomer hardness	Flange Ø D_A according to SAE or special	Mounting length L_{HE}	Unbored or with finish bore

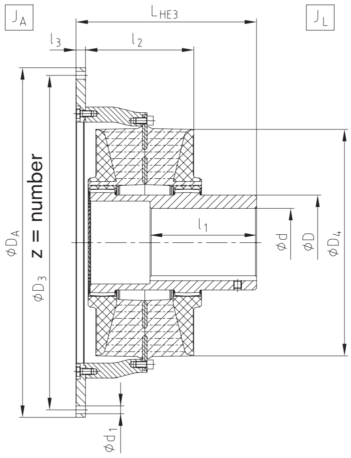
Type HE3



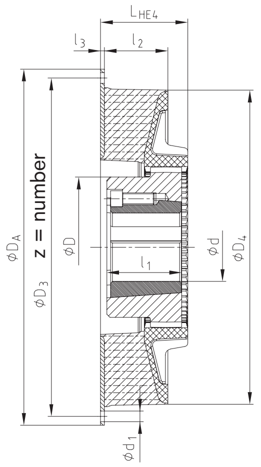
Type HE4



Type HE-D



Type HE4 with taper clamping sleeve



Flange dimensions according to SAE J620 [mm]

Nominal size	D_A	D_3	z	d_1
14"	466.72	438.15	8	13
16"	517.50	489.00	8	13
18"	571.50	542.90	6	17
21“	673.10	641.35	12	17
24“	733.42	692.15	12	21
Ø800 [1]	800	770	32	17
Ø885 [1]	885	855	36	17

[1] Flange connection differing from SAE standard, dimensions in mm.

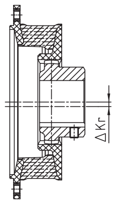
Displacements

For different operating speeds or higher operating temperatures the permissible radial displacement is calculated as follows:

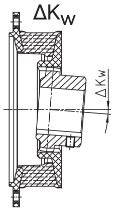
$$\Delta K_{r\,perm.} = \Delta K_r \bullet St \bullet \sqrt{1500 / nx}$$

nx = speed / **St** = temperature factor

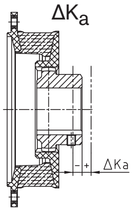
Radial displacement ΔK_r



Angular displacement ΔK_w



Axial displacement ΔK_a



Displacements

Size		125 HE G125 HE			150 HE G150 HE			200 HE G200 HE			240 HE			275 HE		
Elastomer hardness [Shore A]		T40	T50	T70	T40	T50	T70	T40	T50	T70	T40 Sh	T50	T70	T40	T50	T70
Perm. radial displacement ΔK_r [mm]	n=1500 rpm	2.5	2.3	1.1	2.8	2.5	1.3	3.0	2.7	1.5	3.2	2.9	1.6	3.4	3.1	1.8
	max. [2]	7.5	6.9	3.3	8.0	7.5	4.0	8.5	8.0	4.5	9.0	8.5	5.0	9.5	9.0	5.5
Perm. angular displacement ΔK_w [°]	n=1500 rpm	1.0	0.75	0.5	1.0	0.75	0.5	1.0	0.75	0.5	1.0	0.75	0.5	1.0	0.75	0.5
	n=3000 rpm	0.5	0.4	0.25	–	–	–	–	–	–	–	–	–	–	–	–
Perm. angular displacement ΔK_w [°]	max. [2]	1.5			1.5			1.5			1.5			1.5		
Perm. axial displacement ΔK_a [mm]		± 3			± 4			± 4			± 4			± 4		

[2] For short-term start-up operation

Mounting procedure, screw type with property class, tightening torques as per KTR assembly instructions (see www.ktr.com).

BoWex-ELASTIC® HE-ZS and HEW
Highly flexible flange couplings

With drop-out center design piece for pump drives, highly flexible shaft-to-shaft coupling

For legend of pictogram refer to flapper on the cover

BoWex-ELASTIC® Type HE-ZS

Size	Max. finish bore d_4	Flange connection acc. to SAE - J620 D_A for HE-ZS										Dimensions [mm]									Drop-out center design piece HE-ZS L_Z [mm]					Weight with max. bore [kg]	Mass moment of inertia [kgm²]	
		6 ½"	7 ½"	8"	10"	11 ½"	14"	16"	18“	21“	24“	D_1	D_4	D_5	D_7	D_8	l_1	l_2	l_3	l_6	100	120	140	180	250		J_A	J_L
48[3]	28	●										160	164	200	78	45	40	48	10	37	●	●				2.9[1]	0.0026	0.0033
			●															37	4		●	●				3.6[1]	0.0106	0.0033
				●																	●	●				3.9[1]	0.0148	0.0033
					●																●	●				4.6[1]	0.0298	0.0033
G65[3]	45				●								205		110	72	60	48	3	56		●	●			7.3[1]	0.0242	0.0129
						●																	●	●		8.9[2]	0.0372	0.0150
80[3]	65				●							265	266	318	145	100	80	70	11	76			●	●		13.7[2]	0.0211	0.0497
						●													6				●	●		15.9[2]	0.0726	0.0497
G80[3]	65					●						300	302	358	145	100	80	80	11	76			●	●		14.6[2]	0.0402	0.0634
							●												6					●	●	19.5[2]	0.2251	0.0634
100[3]	95						●						350		202	148	110	80	4	106				●	●	29.8[2]	0.1951	0.1779
125[4]	100						●						416		225	165	120	99	6	116				●	●	41.7[2]	0.3013	0.3363
								●																●	●	43.6[2]	0.4123	0.3363
G125[4]	120							●					440		225	165	120	95	6	116				●	●	45.6[2]	0.4781	0.3700
									●															●	●	47.7[2]	0.6380	0.3700
150[4]	135								●				470		245	185	140	140	6	136					●	63.2	0.6918	0.6647
										●															●	67.9	1.1410	0.6647
G150[4]	135								●				504		245	185	140	140	6	136					●	68.3	0.7540	0.7677
										●															●	73.0	1.2460	0.7677
200[4]	150									●			568		270	205	160	149	6	156					●	98.7	1.5348	1.4109
											●														●	101.7	1.9138	1.4109
G200[4]	150									●			600		270	205	160	149	6	156					●	103.5	1.7270	1.6401
											●														●	106.6	2.1060	1.6401

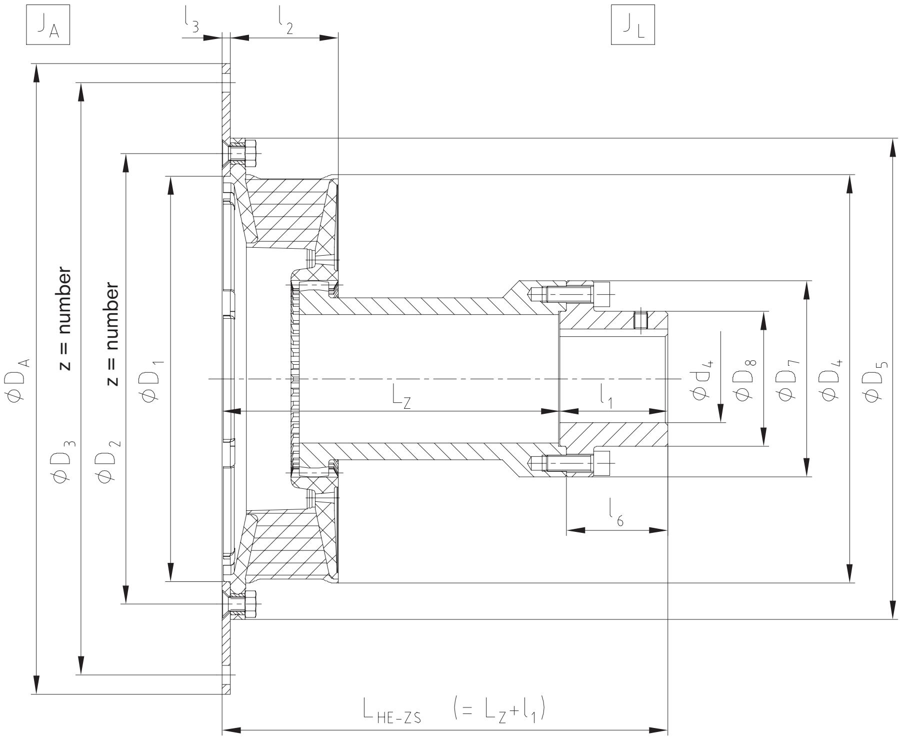
[1] with L_Z 120
[2] with L_Z 100
[3] For technical data see page 240
[4] For technical data see page 241

BoWex-ELASTIC® Type HEW

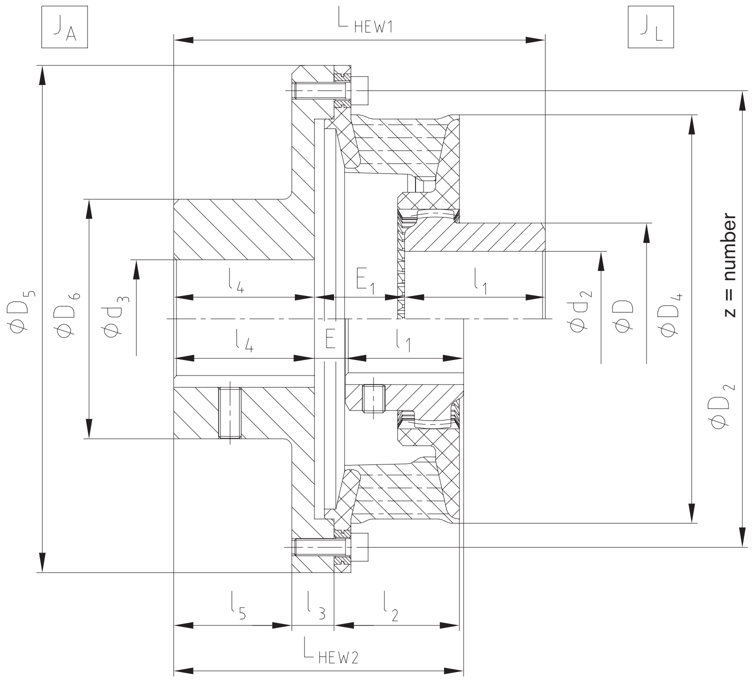
Size	Max. finish bore		Dimensions [mm]																Weight with max. bore [kg]	Mass moment of inertia [kgm²]	
	d_2	d_3	D	D_2	z x M		D_4	D_5	D_6	l_1	l_2	l_3	l_4	l_5	E	E_1	L_{HEW1}	L_{HEW2}		J_A	J_L
42	48	50	68	162	6	M6	146	180	85	50	45	15	50	42	4	32	132	104	4.3	0.0121	0.0015
48[3]	48	55	68	180	8	M6	164	200	92	50	45	17	55	45	4	32	137	109	5.5	0.0204	0.0019
65[3]	65	75	96	224	8	M8	205	245	125	70	55	28	75	63	5	42	187	150	13.2	0.0752	0.0071
80[3]	90	80	124	295.27	8	M10	266	318	130	90	70	17	80	70	5	45	215	160	19.7	0.1449	0.0285
G80[3]	90	95	124	333.4	8	M10	302	358	145	90	80	22	90	78	5	55	235	185	25.9	0.2748	0.0422
100[3]	100	110	152	438.15	8	M12	350	478	158	110	80	14	111.5	113	26	57	278	207	48.5	0.8356	0.1050
125[4]	125	125	192	438.15	8	M12	416	478	175	140	99	14	170	158	-	45	355	-	67.2	0.9498	0.2617
G125[4]	125	125	192	489	8	M12	440	530	175	140	95	14	170	158	-	45	355	-	76.6	1.4492	0.3034
150[4]	160	160	225	542.9	6	M16	470	585	225	150	100	18	160	145	-	70	380	-	110	2.7206	0.5303
G150[4]	160	160	225	542.9	6	M16	504	585	225	150	108	18	160	145	-	70	380	-	113.4	2.7809	0.5861
200[4]	180	200	250	641.35	12	M16	568	683	280	175	149	26	220	214	-	85	480	-	195	6.6418	1.1406
G200[4]	180	200	250	641.35	12	M16	600	683	280	175	149	26	220	214	-	85	480	-	200	6.6099	1.3419

[3] For technical data see page 240
[4] For technical data see page 241
Other sizes available. Please consult with us.

Type HE-ZS



Type HEW1



Type HEW2

Cardan shaft connecting coupling

For legend of pictogram refer to flapper on the cover

BoWex-ELASTIC® Type HEG1 and type HEG2

Size	Flywheel connection acc. to SAE-J620					Metric flange connection HEG1 dimensions [mm]										MECHANICS cardan shaft connection HEG2 dimensions [mm]								Dimensions [mm]			Weight [kg]	Mass moment of inertia	
	8"	10"	11 ½"	14"	16"	58	65	75	90	100	120	150	180	l_4	L	2 C	4 C	5 C	6 C	7 C	8,5 C	8 C	L_1	D_4	l_2	l_3		J_A [kgm²]	J_L [kgm²]
48 [1]	●					●	●	●						8	58.5									163	43.5	8	7	0.03	0.006
		●				●	●	●																			8	0.06	0.006
G65 [1]		●						●	●	●				8	66	●	●	●					71	205	48.0	10	12	0.07	0.02
			●					●	●	●						●	●	●									14	0.10	0.02
80 [1]		●						●	●	●	●			10	88.5		●	●	●				104	265	68.5	23	21	0.11	0.06
			●					●	●	●	●						●	●	●							12	23	0.17	0.06
G80 [1]			●						●	●	●	●		10	96			●	●	●			110	302	74.0	23	26	0.18	0.09
				●					●	●	●	●						●	●	●						12	33	0.48	0.09
100 [1]				●						●	●	●	●	12	98					●	●		128	350	78.0	16	41	0.63	0.19
125 [2]				●						●	●	●	●	12	111						●	●	135	416	96.0	18	56	0.74	0.42
					●					●	●	●	●								●	●				12	59	0.97	0.42

[1] For technical data see page 240
[2] For technical data see page 241

Flywheel connection acc. to SAE-J620

Size	D_A	D_1	z_1	d_1
8"	263.52	244.47	6	11
10"	314.32	295.27	8	11
11 ½"	352.42	333.37	8	11
14"	466.72	438.15	8	14
16"	517.50	489.00	8	14

Metric flange connection HEG1 [mm]

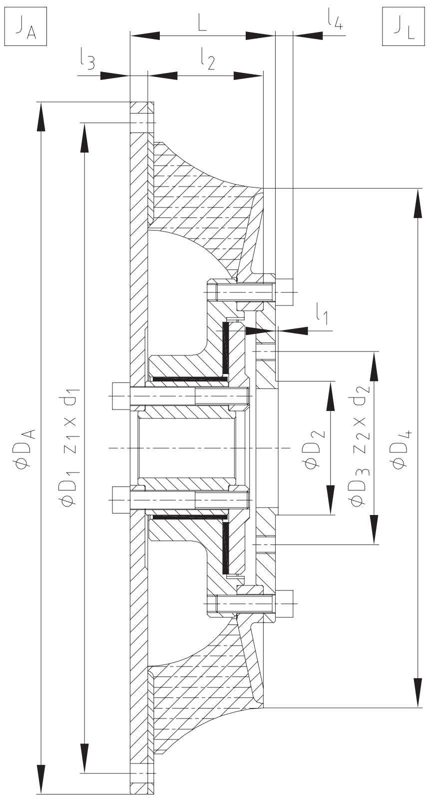
Size	D_2	l_1	D_3	z_2	d_2
58	30	1.0	47.0	4	M5
65	35	1.0	52.0	4	M6
75	42	1.5	62.0	6	M6
90	47	2.0	74.5	4	M8
100	57	2.0	84.0	6	M8
120	75	2.0	101.5	8	M10
150	90	2.5	130.0	8	M12
180	110	3.0	155.5	8	M14

MECHANICS cardan shaft connection HEG2 [mm]

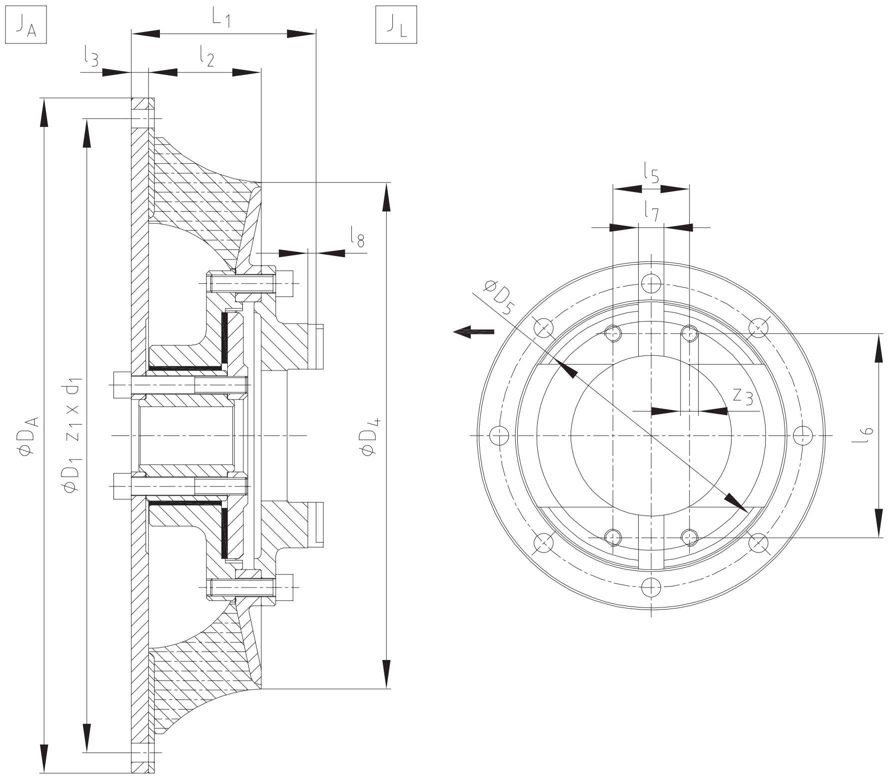
Size	D_5	l_5	l_6	l_7	l_8	z_3
2 C	79.35	33.3	59.5	9.50	3.8	M8
4 C	107.92	36.5	87.3	9.50	3.8	M8
5 C	115.06	42.9	88.9	14.26	5.1	M10
6 C	140.46	42.9	114.3	14.26	5.1	M10
7 C	148.39	49.2	117.5	15.85	6.0	M12
8,5 C	165.08	71.4	123.8	15.85	6.0	M12
8 C	206.32	49.2	174.6	15.85	6.0	M12

BoWex-ELASTIC® type HEG has a maintenance-free plain bearing compensating for the radial loads generated by the cardan shaft. Moreover, the coupling has a friction disk which is axially prestressed by the elastomer part. The elastomer part is made of natural rubber via vulcanizing.
The permanent friction provides the coupling with excellent damping properties reducing the high vibratory torques generated in the coupling during the starting process and passing through resonance considerably.

Type HEG1



Type HEG2



SINULASTIC®
Highly flexible flange coupling

Description of product and application

SINULASTIC® is a modularly structured series of highly flexible flange couplings based on a disk-shaped coupling body. Four practical basic versions with individual properties cover a wide range of applications primarily for diesel engine drives, but also general drive tasks.

The main task of the coupling is reducing torsional vibrations resulting from excitations of the I. C.-engine during standard operation and misfire operation as well as protecting the drive from overload. It is a good option both for variable speed and constant speed drives, while a supercritical selection of the drive train above resonance level is always made. Particularly for the series the coupling disk requires the smallest possible axial mounting space.

Depending on the type the coupling is pluggable and compensates for displacements resp. tolerances moderately to very well. It is a non-slip or shear type and radially mountable.

The elastomer element is available in various qualities for all types. It is composed of natural rubber compounds optimised over many years (SN, MN, HN, UN up to 80 °C) or upon request of synthetical EPDM material for higher temperatures (SE, ME, HE, UE up to 100 °C) as well as silicone rubber (SC, MC up to 120 °C). The various kinds of rubber hardness cover one application and torque range per size. The vibratory properties of the four types are compatible within one size.

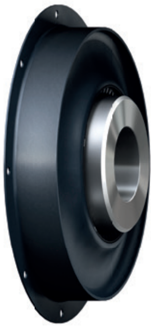
A wide standard portfolio of hub connections covers a large variety of shaft configurations on the driven side while special connections can be realised.

NEW

SINULASTIC® - The types

A

T



B

V

SINULASTIC® A is the evolution design of the renowned disk coupling with plug-in spline between elastomer and flange ring as well as hub vulcanized on. The tooth shape that is subject to high loads particularly with alternating loads in the contact area between engine flange and rubber was extensively optimized, the new sinusoidal tooth shape being eponymous for the series. For the first time the engine flange was executed by a deep-drawn sheet metal section creating a beneficial and smooth surface to the elastomer. Another benefit is the tight contact gap for easy mountability with simultaneously highly sound and defined form fit.

In contrast to type A a Taperlock shaft connection as a standard version with feather key is used with SINULASTIC® T. The modular concept makes use of the plug-in ability of type A on the flange side.

Type B and V make use of a deep-drawn and inherently stable flange ring that the elastomer part is externally vulcanized on. This results in a low-cost solution for high speeds and overloads.

In combination with the renowned BoWex® inner hub the SINULASTIC® B as an all-rounder of the overall series is formed. The so-called BoWex® hub defines a pluggable connection resistant to high loads as well as beneficial adaptations on the driven side up to long driving shaft systems owing to the potentials for particularly high displacements. The hub and connection variants of BoWex®-ELASTIC are fully compatible with the elastomer elements of this series.

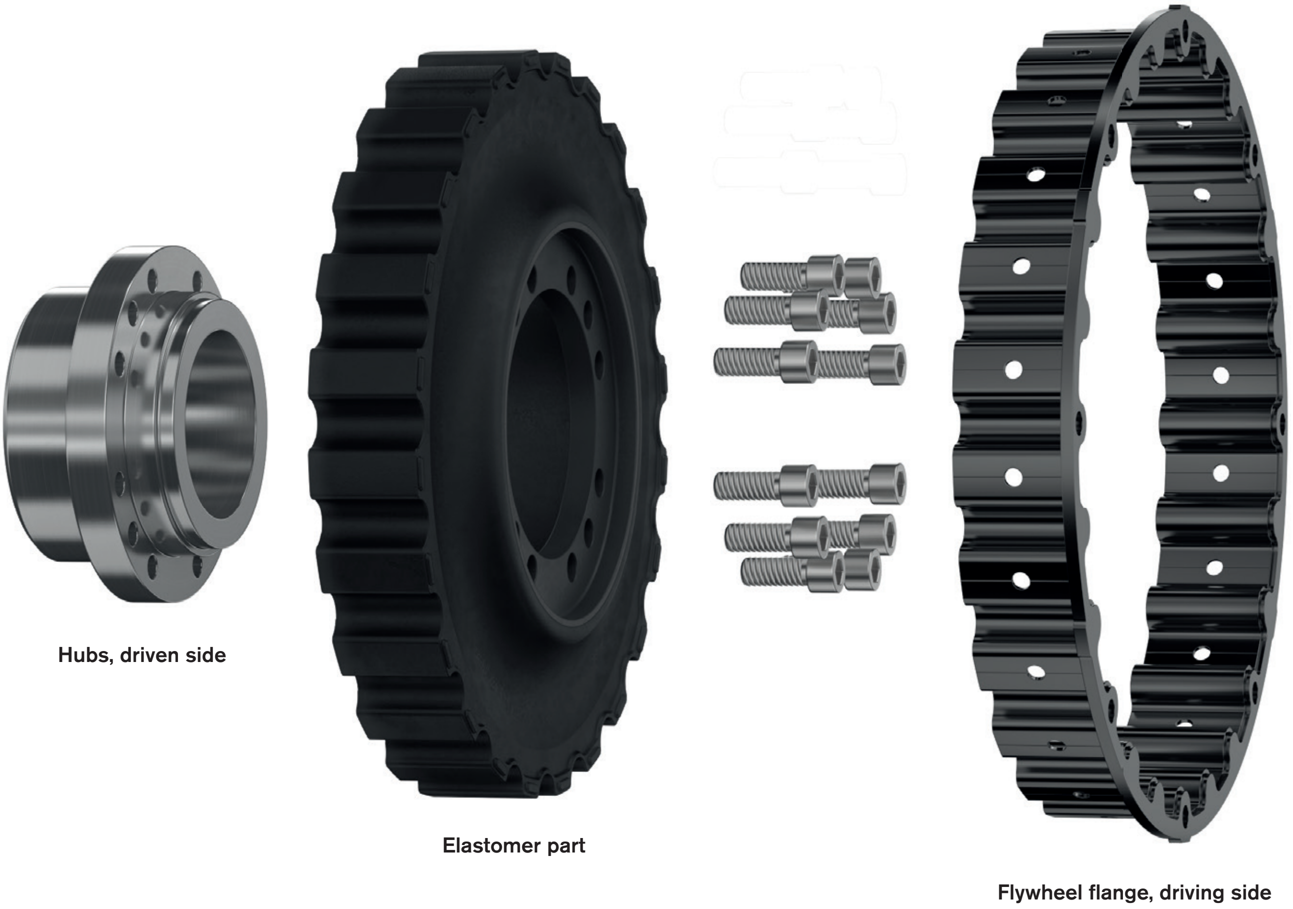
SINULASTIC® V is beneficially used where the ability for axial plug-in is not required. A resulting radial assembly is realised by a split ring on the hub side.

The slim wasteline shape of the elastomer elements of this type allows for significant displacements in axial, radial and angular direction without any wear, while the coupling element is suitable both for not flange-mounted assembly, i. e. for system configurations set up freely and as a shaft coupling with cardanic misalignment.

Properties of types compared

Properties of types compared			
Properties	SINULASTIC® A SINULASTIC® T	SINULASTIC® V	SINULASTIC® B
Rated torque T_{KN}	Compatible within the series		
Maximum torque T_{Kmax}	≥ 2x T_{KN}	3x T_{KN}	3x T_{KN}
Vibratory properties, e. g. torsional stiffness	Compatible within the series		
Materials [1]	Natural rubber compounds up to 80 °C for hardness ranges WN, SN, MN and HN, synthetical EPDM up to 100 °C for hardness ranges WE, SE, ME and HE, silicone rubber up to 120°C in the hardness ranges SC and MC.		
Plug-in	Yes	No	Yes
Radial assembly	Partially possible	Yes	No
Mounting length	++	Ø	++
Axial displacement	++	+	++
Radial displacement	Ø	+	+
Angular displacement	Ø	++	++
Standard	For flywheel flange and shaft connection (SAE J620, DIN 5480 et seqq., DIN 6281, etc.)		
Special solutions	Bearing-mounted intermediate coupling, with failure protection, combination with shifting unit	Cardanic offset joint, failure protection, shaft systems	
	Application-specific shaft connections of elastomer elements		

[1] The standard materials and availabilities depend on the size and type, special compounds available on request



Technical data of natural rubber (NR)

Size	Elastomer type	Torque [Nm] [1]				Dynamic torsion spring stiffness $C_{dyn.}$ [Nm/rad] [2]		Relative damping ψ [-]		Perm. damping power [W] [3]			Operating speed [rpm]	
		T_{KN}	T_{Kmax}	T_{Kmax1}	T_{KW}	30 °C	60 °C	30 °C	60 °C to 80 °C	30 °C	60 °C	80 °C	n	$n_{max.}$
20	SN	1800	2700	3600	720	7500	6150	1.00	0.70	210	130	80	2700	3000
	MN	2000	3000	4000	800	11500	9430	1.10	0.77	240	149	91	2700	3000
	HN	2500	3750	7500	1000	18500	15170	1.30	0.91	270	167	103	3240	3600
	UN	2850	4275	8550	1140	22000	18040	1.40	0.98	290	180	110	3240	3600
28	WN	2000	3000	4000	800	9800	8036	0.90	0.63	240	149	91	2340	2600
	SN	2200	3300	4400	880	12500	10250	1.00	0.70	260	161	99	2340	2600
	MN	2800	4200	5600	1120	17000	13940	1.10	0.77	270	167	103	2340	2600
	HN	3400	5100	10200	1360	24000	19680	1.30	0.91	290	180	110	2520	2800
	UN	3750	5625	11250	1500	30000	24600	1.40	0.98	310	192	118	2520	2800
38	SN	3100	4650	6200	1240	15000	12300	1.00	0.70	275	171	105	2520	2800
	MN	3800	5700	7600	1520	22000	18040	1.10	0.77	300	186	114	2520	2800
	HN	4600	6900	13800	1840	35000	28700	1.30	0.91	330	205	125	2880	3200
	UN	5100	7650	15300	2040	41000	33620	1.40	0.98	350	217	133	2880	3200
53	SN	4200	6300	8400	1680	17000	13940	1.00	0.70	285	177	108	2340	2600
	MN	5300	7950	10600	2120	28000	22960	1.10	0.77	325	202	124	2340	2600
	HN	6200	9300	18600	2480	45500	37310	1.30	0.91	370	229	141	2700	3000
	UN	7000	10500	21000	2800	52000	42640	1.40	0.98	400	248	152	2700	3000
96	SN	8100	12150	16200	3240	75000	61500	1.00	0.70	480	298	182	2070	2300
	MN	10000	15000	20000	4000	100000	82000	1.10	0.77	500	310	190	2070	2300
	HN	11200	16800	33600	4480	135000	110700	1.30	0.91	510	316	194	2250	2500
	UN	13200	19800	39600	5280	175000	143500	1.40	0.98	520	322	198	2250	2500
114	SN	10000	15000	20000	4000	90000	73800	1.00	0.70	500	310	190	2070	2300
	MN	11400	17100	22800	4560	125000	102500	1.10	0.77	530	329	201	2070	2300
	HN	13400	20100	40200	5360	160000	131200	1.30	0.91	550	341	209	2250	2500
	UN	15600	23400	46800	6240	190000	155800	1.40	0.98	560	347	213	2250	2500
140	SN	13000	19500	26000	5200	106000	86920	1.00	0.70	540	335	205	1890	2100
	MN	14000	21000	28000	5600	149000	122180	1.10	0.77	550	341	209	1890	2100
	HN	16200	24300	48600	6480	235000	192700	1.30	0.91	570	353	217	2070	2300
	UN	19000	28500	57000	7600	330000	270600	1.40	0.98	590	366	224	2070	2300
180	SN	16000	24000	32000	6400	132000	108240	1.00	0.70	620	384	236	1890	2100
	MN	18000	27000	36000	7200	185000	151700	1.10	0.77	630	391	239	1890	2100
	HN	22000	33000	66000	8800	295000	241900	1.30	0.91	650	403	247	2070	2300
	UN	25000	37500	75000	1000	380000	311600	1.40	0.98	670	415	255	2070	2300

[1] T_{KN} Torque that can be continuously transmitted over the full speed range
Tkmax Transient torque peaks (e. g. resonance passage), max. 100,000 load alternations pulsating / 50,000 load alternations vibratory
TKmax1 Impact loads rarely, max. 1,000 load alternations
For selection consider DIN 740 part II (operating factor, temperature factor), parameters for an ambient temperature of 20 °C.

[2] Referring to 0.5 TKW

[3] Here permanent damping power. Twice the damping power figure is permissible for one hour.

Technical data of synthetical rubber (EPDM)

Size	Elastomer type	Torque [Nm] [1]				Dynamic torsion spring stiffness $C_{dyn.}$ [Nm/rad] [2]	Relative damping ψ [-]			Perm. damping power [W] [3]			Operating speed [rpm]	
		T_{KN}	T_{Kmax}	T_{Kmax1}	T_{KW}	60 °C - 100 °C	30 °C	80 °C	100 °C	30 °C	80 °C	100 °C	n	$n_{max.}$
20	SE	1800	2700	3600	720	Data available on request.							2700	3000
	ME	2000	3000	4000	800								2700	3000
	HE	2500	3750	7500	1000								3240	3600
	UE	2850	4275	8550	1140								3240	3600
28	SE	2200	3300	4400	880								2340	2600
	ME	2800	4200	5600	1120								2340	2600
	HE	3400	5100	10200	1360								2520	2800
	UE	3750	5625	11250	1500								2520	2800
38	SE	3100	4650	6200	1240								2520	2800
	ME	3800	5700	7600	1520								2520	2800
	HE	4600	6900	13800	1840								2880	3200
	UE	5100	7650	15300	2040								2880	3200
53	SE	4200	6300	8400	1680								2340	2600
	ME	5300	7950	10600	2120								2340	2600
	HE	6200	9300	18600	2480								2700	3000
	UE	7000	10500	21000	2800								2700	3000
96	SE	8100	12150	16200	3240								2070	2300
	ME	10000	15000	20000	4000								2070	2300
	HE	11200	16800	33600	4480								2250	2500
	UE	13200	19800	39600	5280								2250	2500
114	SE	10000	15000	20000	4000								2070	2300
	ME	11400	17100	22800	4560								2070	2300
	HE	13400	20100	40200	5360								2250	2500
	UE	15600	23400	46800	6240								2250	2500
140	SE	13000	19500	26000	5200								1890	2100
	ME	14000	21000	28000	5600								1890	2100
	HE	16200	24300	48600	6480								2070	2300
	UE	19000	28500	57000	7600								2070	2300
180	SE	16000	24000	32000	6400								1890	2100
	ME	18000	27000	36000	7200								1890	2100
	HE	22000	33000	66000	8800								2070	2300
	UE	25000	37500	75000	1000								2070	2300

[1] T_{KN} Torque that can be continuously transmitted over the full speed range
Tkmax Transient torque peaks (e. g. resonance passage), max. 100,000 load alternations pulsating / 50,000 load alternations vibratory
TKmax1 Impact loads rarely, max. 1,000 load alternations
For selection consider DIN 740 part II (operating factor, temperature factor), parameters for an ambient temperature of 20 °C.

[2] Referring to 0.5 T_{KW}

[3] Here permanent damping power. Twice the damping power figure is permissible for one hour.

SINULASTIC®
Highly flexible couplings

Technical data of silicone rubber (SI)

Technical data

Size	Elastomer type	T_{KN} RT [3]	Torque [Nm] with an ambient temperature of +80 °C[1]				Dynamic torsion spring stiffness $C_{dyn.}$ [Nm/rad] [2]					Relative damping ψ [-]			Perm. damping power [W] [3]				Operating speed [rpm]	
			T_{KN}	T_{Kmax}	T_{Kmax1}	T_{KW}	10%	25%	50%	75%	100%	30 °C	100 °C	120 °C	30 °C	80 °C	100 °C	120 °C	n	$n_{max.}$
20	SC	1800	1385	2077	2769	554													2700	3000
	MC	2000	1538	2308	3077	615													2700	3000
28	SC	2200	1692	2538	3385	677													2340	2600
	MC	2800	2154	3231	4308	862													2340	2600
38	SC	3100	2385	3577	4769	954													2520	2800
	MC	3800	2923	4385	5846	1169													2520	2800
53	SC	4200	3231	4846	6462	1292													2340	2600
	MC	5300	4077	6115	8154	1631	Data available on request.												2250	2500
96	SC	8100	6231	9346	12462	2492													2070	2300
	MC	9600	7385	11077	14769	2954													2070	2300
114	SC	9200	7077	10615	14154	2831													2070	2300
	MC	11400	8769	13154	17538	3508													2070	2300
140	SC	12500	9615	14423	19231	3846													1890	2100
	MC	14000	10769	16154	21538	4308													1890	2100
180	SC	16000	12308	18462	24615	4923													1890	2100
	MC	18000	13846	20769	27692	4800													1890	2100

[1] T_{KN} Torque that can be continuously transmitted over the full speed range
Tkmax Transient torque peaks (e. g. resonance passage), max. 100,000 load alternations pulsating / 50,000 load alternations vibratory
TKmax1 Impact loads rarely, max. 1,000 load alternations
For selection consider DIN 740 part II (operating factor, temperature factor)

[2] Referring to 0.5 T_{KW}

[3] Reference value with an ambient temperature of +20 °C

Natural rubber (NR)

Synthetical rubber (EPDM)

Silicone rubber (SI)

New materials

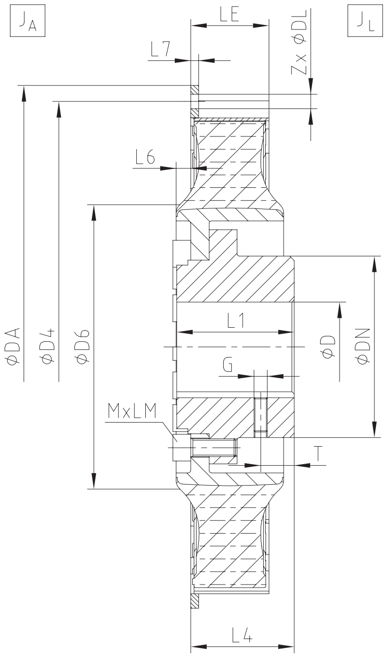
Synthetical rubber (EPDM)	Silicone rubber (SI)
• Max. ambient temperature: +100 °C	• Max. ambient temperature: +120 °C
• Long service life	• Very good resistance to media with oils and greases
• Low decline of torsion spring stiffness	• Lightly progressive torsion spring stiffness
• High weather and aging resistance	• High weather and aging resistance
• Resuming high damping work	• Resuming very high damping work

SINULASTIC® A
Highly flexible flange coupling

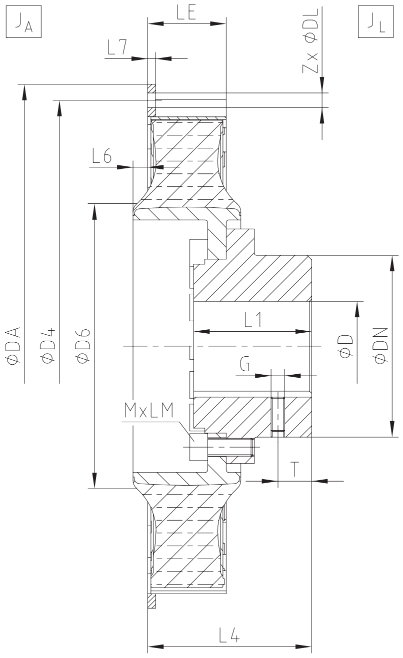
Pluggable disk coupling with optimal tooth contact

For legend of pictogram refer to flapper on the cover

Type AK



Type AL



Types AK and AL specify the standard with variable hub connections as a short or long version

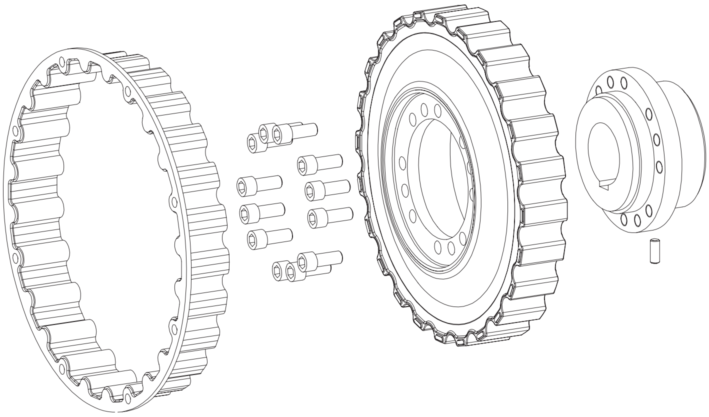
Flange dimensions according to SAE J620 [mm]				
Nominal size	DA	D4	Z	DL
11 ½"	352.42	333.37	8	11
14"	466.72	438.15	8	13
18"	571.50	542.90	6	17
21"	673.10	641.35	12	17
24"	733.42	692.15	12	21
Ø475	475	450	12	11

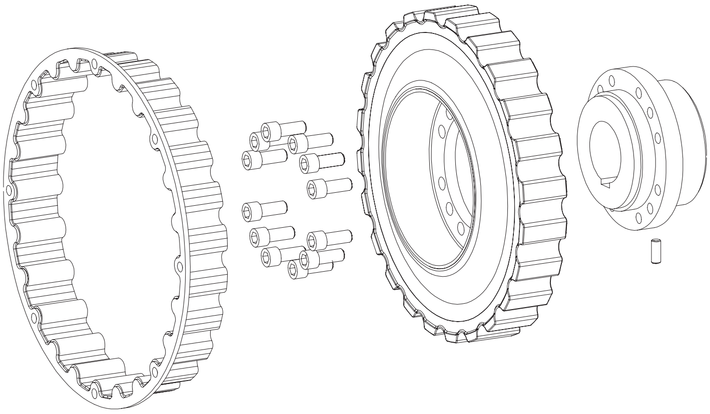
SINULASTIC® type AK / AL

Size	Flange connection acc. to SAE - J620						Dimensions [mm]												Mass moment of inertia [kgm²] 1)		Weight [kg] 1)
	11 ½"	14"	18"	21"	24"	Ø475	Max. finish bore D	DN	D6	LE	L1	L4		L6	L7	MxLM	G	T			
												AK	AL						JA	JL	
20	●						80	112	164	65	75	90.5 +3.5/-4.5	127.5 +3.5/-4.5	5.5	41.0	M12x30	M10	30	0.0947	0.0533	13.70
		●													13.6				0.1353	0.0533	14.79
28		●					115	162	244	44	90	93.5 ±3	109 ±3	7.0	7.0	M16x40	M12	35	0.1873	0.1667	21.89
			●																0.4968	0.1667	26.54
						●													0.2013	0.1667	22.15
38		●					115	162	244	58	100	93.5 ±3	123 ±3	7.0	7.0	M16x40	M12	35	0.2444	0.1994	25.53
			●																0.5539	0.1994	30.18
						●													0.2584	0.1994	25.79
53		●					115	162	247	70	105	92.5 ±3	146 ±3	13.0	7.0	M16x40	M12	40	0.2906	0.2378	29.44
			●																0.6000	0.2378	34.09
						●													0.3046	0.2378	29.70
96			●				175	248	352	84	150	129 ±4	192 ±4	1.0	11.0	M20x50	-	-	0.7310	1.0321	63.86
				●															1.5407	1.0321	72.34
					●														2.2186	1.0321	77.90
114			●				175	248	352	98	150	129 ±4	206 ±4	1.0	11.0	M20x50	-	-	0.8367	1.1212	68.00
				●															1.6464	1.1212	76.48
					●														2.3243	1.1212	82.05
140				●			175	248	431	94	200	200 ±3.5	280 ±3.5	3.0	14.0	M20x60	-	-	1.6664	2.1577	101.52
					●														2.5280	2.1577	108.59
180				●			175	248	431	114	200	200 ±3.5	300 ±3.5	3.0	14.0	M20x60	-	-	1.9539	2.4188	109.82
					●														2.8167	2.4188	116.90

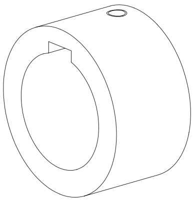
---

[1] With max. bore

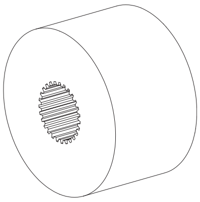




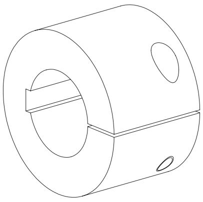
Types of hubs type AK / AL [1)]



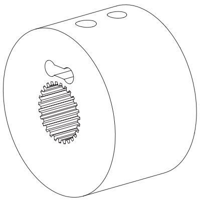
Type 1.0
with feather keyway
and setscrew
(acc. to standard AK, AL)



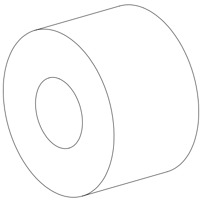
Type 1.3
spline toothing



Type 2.1
clamping hub
single slot with
feather keyway



Type 3.1
spline/clamping hub N



Type 8.0
taper interference fit

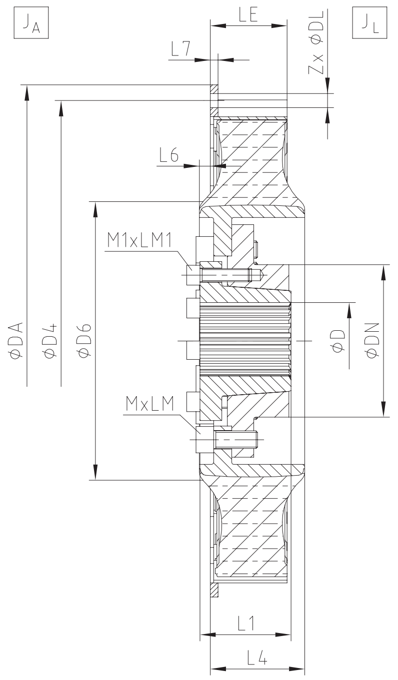
Type 8.1
cylindrical
interference fit

[1)] Dimensions and type may differ depending on size, other types of hubs on request

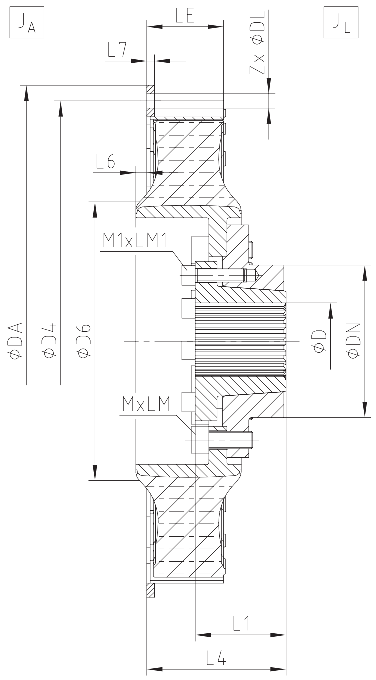
SINULASTIC® A
Highly flexible flange coupling

Type ALC / AKC

Type AKC

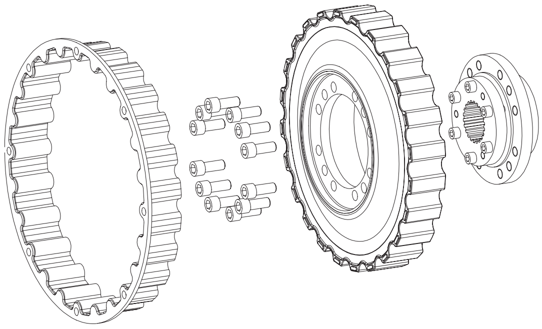


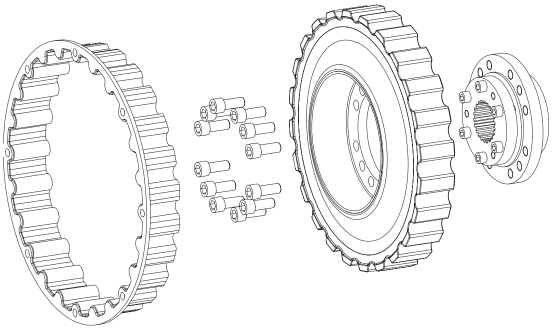
Type ALC



Types AKC and ALC specify the hub type as a spline clamping ring hub

Flange dimensions according to SAE J620 [mm]				
Nominal size	DA	D4	Z	DL
11 ½"	352.42	333.37	8	11
14"	466.72	438.15	8	13
18"	571.50	542.90	6	17
21"	673.10	641.35	12	17
24"	733.42	692.15	12	21
Ø475	475	450	12	11





SINULASTIC® type AKC / ALC

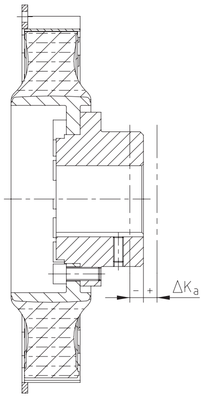
Size	Flange connection acc. to SAE - J620						Dimensions [mm]												Mass moment of inertia [kgm²] 1)		Weight [kg] 1)
							Finish bore D		DN	D6	LE	L1	L4		L6	L7	MxLM	M1xLM1			
	11½"	14"	18"	21"	24"	Ø475	Pilot bored	Max.					AK	AL					JA	JL	
20	●						30	50	109	164	65	57	70.5 +3.5/-4.5	95.5 +3.5/-4.5	5.5	41.0	M12x30	M10x30	0.0947	0.0520	13.93
		●														13.6			0.1353	0.0520	15.02
28		●					46	65	139	244	44	63	56.5 ±3	72 ±3	7.0	7.0	M16x40	M10x40	0.1873	0.1525	21.15
			●																0.4968	0.1525	25.79
						●													0.2013	0.1525	21.40
38		●					46	80	139	244	58	69	65 ±3	92 ±3	7.0	7.0	M16x40	M10x40	0.2444	0.1837	24.05
			●																0.5539	0.1837	28.70
						●													0.2584	0.1837	24.31
53		●					46	80	139	247	70	83	83 ±3	124 ±3	13.0	7.0	M16x40	M12x45	0.2906	0.2240	28.72
			●																0.6000	0.2240	33.37
						●													0.3046	0.2240	28.98
96	On request																				
114																					
140																					
180																					

---

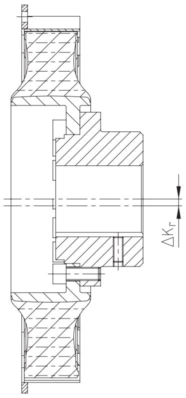
[1] With max. bore

SINULASTIC® A
Highly flexible flange coupling

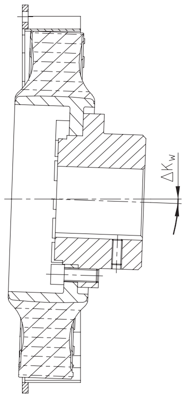
Displacements



Axial displacement



Radial displacement



Angular displacement

SINULASTIC® A size		20	28	38	53	96	114	140	180
Perm. axial displacement ΔK_a [mm] [2]		±2.0	±3.0	±3.0	±3.0	±3.0	±3.0	±3.0	±3.0
Perm. radial displacement ΔK_r [mm]	1500 rpm	0.8	1.1	1.1	1.1	1.25	1.25	1.5	1.5
	$n_{max.}$	0.6	0.8	0.8	0.8	0.9	0.9	1.1	1.1
	max. [1]	1.6	2.2	2.2	2.2	2.5	2.5	3.0	3.0
Perm. angular displacement ΔK_w [degree]	1500 rpm	0.7	0.6	0.6	0.6	0.5	0.5	0.4	0.4
	$n_{max.}$	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.3
	max. [1]	1.1	0.9	0.9	0.9	0.8	0.8	0.6	0.6

[1] With assembly, for a short time resp. rarely with downtime or start-up operation as well as exceptional load conditions.

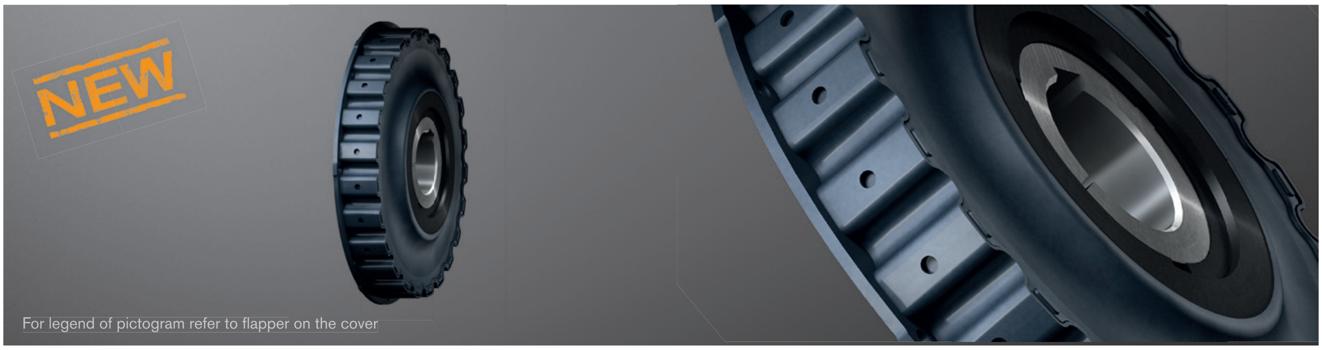
[2] Plug-in fit in the tooth contact allows for alternative mounting lengths

Ordering example:

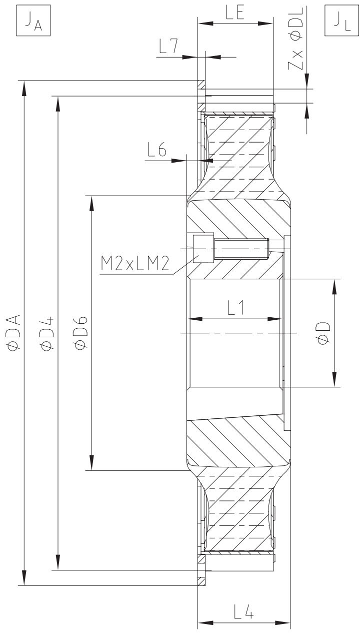
SINULASTIC® 53	ALC	M	14	1.3	DIN 5480 - 60x2x28
Coupling size	Type	Elastomer hardness	Flange ØDA acc. to SAE or special	Hub type	Finish bore

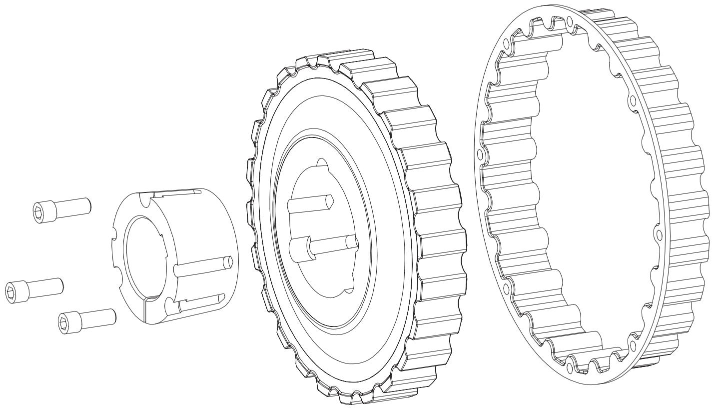
SINULASTIC® T
Highly flexible flange coupling

Pluggable disk coupling with optimal tooth contact



Type T specifies the hub type as Taperlock shaft connection





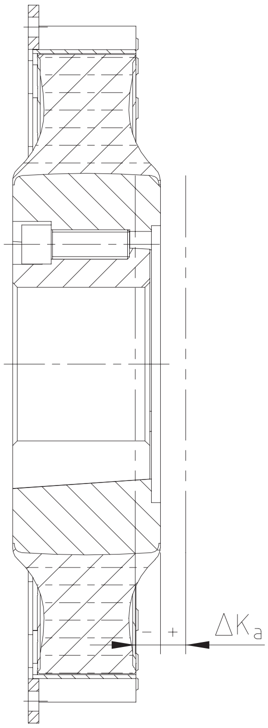
Flange dimensions according to SAE J620 [mm]				
Nominal size	DA	D4	Z	DL
11 ½"	352.42	333.37	8	11
14"	466.72	438.15	8	13
18"	571.50	542.90	6	17
21"	673.10	641.35	12	17
24"	733.42	692.15	12	21
Ø475	475	450	12	11

SINULASTIC® type T

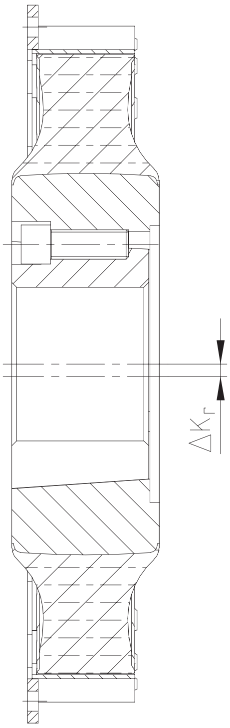
Size	Flange connection acc. to SAE - J620						Dimensions [mm]									Taper clamping sleeve		Mass moment of inertia [kgm²] [1]		Weight [kg] [1]
							Finish bore D		D6	LE	L1	L4	L6	L7		M2xLM2	Type			
	11½"	14"	18"	21"	24"	Ø475	Pilot bored	Max.										JA	JL	
20	●						35	90	164	60	63.5	70.5 +3.5/-4.5	5.5	41.0		1/2"x38	3525	0.0947	0.0568	13.75
		●												13.6				0.1353	0.0568	14.83
28		●					35	90	244	44	63.5	57.0 ± 3	7.0	7.0		1/2"x38	3525	0.1873	0.1919	24.37
			●															0.4968	0.1919	29.02
						●												0.2013	0.1919	24.63
38		●					40	110	244	58	76.2	70.0 ± 3	7.0	7.0		5/8"x44	4030	0.2444	0.2404	28.68
			●															0.5539	0.2404	33.33
						●												0.2584	0.2404	28.93
53		●					55	125	247	70	89.0	83.0 ± 3	13.0	7.0		3/4"x50	4535	0.2906	0.2993	33.72
			●															0.6000	0.2993	38.36
						●												0.3046	0.2993	33.97

[1] With max. bore

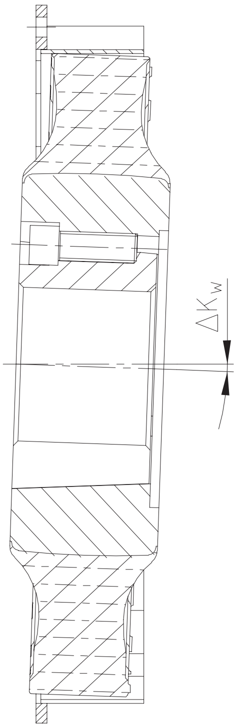
Displacements



Axial displacement



Radial displacement



Angular displacement

SINULASTIC® T size		20	28	38	53
Perm. axial displacement ΔK_a [mm] [2]		±2.0	±3.0	±3.0	±3.0
Perm. radial displacement ΔK_r [mm]	1500 rpm	0.8	1.1	1.1	1.1
	$n_{max.}$	0.6	0.8	0.8	0.8
	max. [1]	1.6	2.2	2.2	2.2
Perm. angular displacement ΔK_w [degree]	1500 rpm	0.7	0.6	0.6	0.6
	$n_{max.}$	0.5	0.4	0.4	0.4
	max. [1]	1.1	0.9	0.9	0.9

[1] With assembly, for a short time resp. rarely with downtime or start-up operation as well as exceptional load conditions.

[2] Plug-in fit in the tooth contact allows for alternative mounting lengths

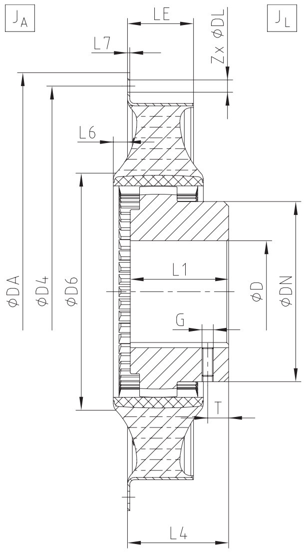
Ordering example:	SINULASTIC® 53	T	M	14	1.0	Ø75
	Coupling size	Type	Elastomer hardness	Flange ØDA acc. to SAE or special	Hub type	Finish bore

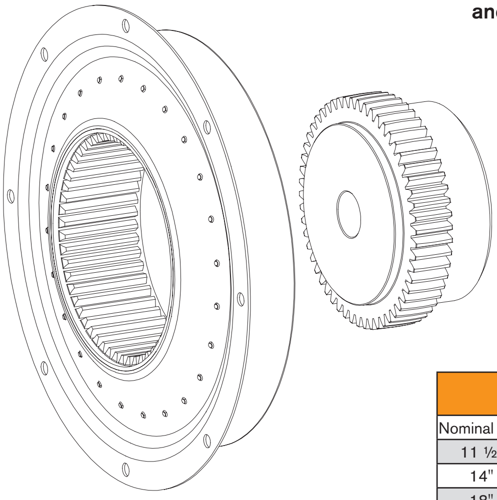
SINULASTIC® B
Highly flexible flange coupling

Disk coupling pluggable inside

For legend of pictogram refer to flapper on the cover

Type B specifies a type pluggable in the hub for variable use and high potential for offset





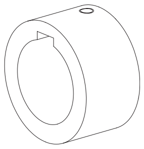
Flange dimensions according to SAE J620 [mm]				
Nominal size	DA	D4	Z	DL
11 ½"	352.42	333.37	8	11
14"	466.72	438.15	8	13
18"	571.50	542.90	6	17
21"	673.10	641.35	12	17
24"	733.42	692.15	12	21
Ø475	475	450	12	11

SINULASTIC® type B

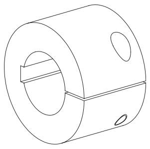
Size	Flange connection acc. to SAE - J620						Dimensions [mm]										Mass moment of inertia [kgm²] 1)		Weight [kg] 1)
	11 ½"	14"	18"	21"	24"	Ø475	Max. finish bore D	DN	D6	LE	L1	L4	L6	L7	G	T	J_A	J_L	
20	●						80	124	169	60.0	75	80.5 ±21	8.5	2.0	M10	20	0.0625	0.0336	9.67
		●															0.1114	0.0336	10.82
28		●					125	200	244	38.0	140	129 ±7	10.0	2.5	M10	20	0.1159	0.1978	27.15
			●														0.2291	0.1978	28.82
						●											0.1213	0.1978	27.24
38		●					125	200	245	52.0	140	136 ±14	10.0	2.5	M16	40	0.1524	0.2121	28.95
			●														0.2655	0.2121	30.62
						●											0.1578	0.2121	29.05
53		●					125	200	247	70.5	140	143 ±20	15.0	2.5	M16	40	0.1944	0.2298	31.10
			●														0.3075	0.2298	32.77
						●											0.1998	0.2298	31.20
96			●				160	225	352	69.0	150	131.5 ±12	7.0	2.5	-	-	0.3857	0.5413	41.23
				●													0.5741	0.5413	43.18
					●												0.7318	0.5413	44.46
114			●				160	225	352	83.0	150	138.5 ±19	7.0	2.5	-	-	0.4591	0.5979	44.33
				●													0.6475	0.5979	46.28
					●												0.8052	0.5979	47.56
140				●			240	326	431	81.0	200	175 ±11	10.0	3.0	-	-	0.8816	1.8772	83.39
					●												1.0708	1.8772	84.93
180				●			240	326	431	101.0	200	185 ±21	10.0	3.0	-	-	1.0905	2.0154	88.66
					●												1.2796	2.0154	90.19

[1] With max. bore

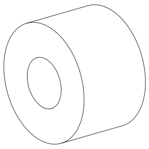
Types of hubs type B [1)]



Type 1.0
with feather keyway
and setscrew



Type 2.1
clamping hub
single slot with
feather keyway

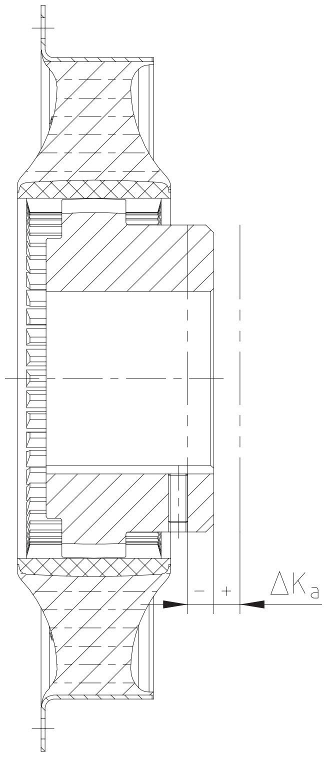


Type 8.0
taper interference fit

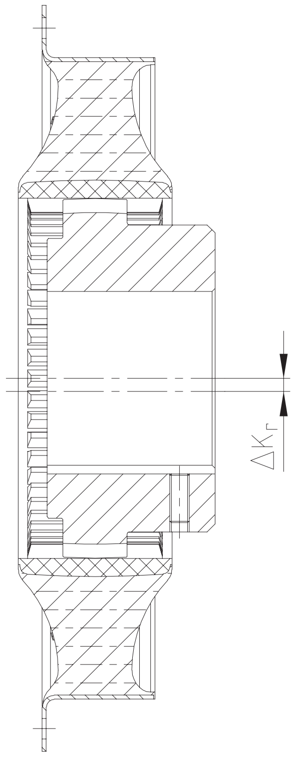
Type 8.1
cylindrical
interference fit

[1)] Dimensions and type may differ depending on size, other types of hubs on request

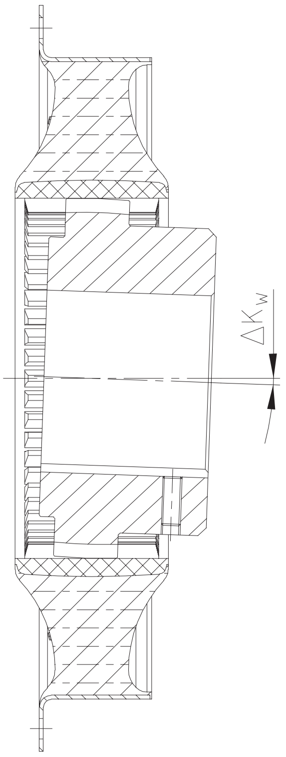
Displacements



Axial displacement



Radial displacement



Angular displacement

SINULASTIC® B size		20	28	38	53	96	114	140	180
Perm. axial displacement ΔK_a [mm]		±2	±3	±3.0	±3.0	±4.0	±4.0	±4.0	±4.0
Perm. radial displacement ΔK_r [mm]	1500 rpm	0.8	1.1	1.1	1.1	1.25	1.25	1.5	1.5
	$n_{max.}$	0.6	0.8	0.8	0.8	0.9	0.9	1.1	1.1
	max. [1)]	1.6	2.2	2.2	2.2	2.5	2.5	3.0	3.0
Perm. angular displacement ΔK_w [degree]	1500 rpm	1.0	0.8	0.8	0.8	0.7	0.7	0.6	0.6
	$n_{max.}$	0.7	0.6	0.6	0.6	0.5	0.5	0.4	0.4
	max. [1)]	2.0	1.6	1.6	1.6	1.4	1.4	1.2	1.2

[1)] With assembly, for a short time resp. rarely with downtime or start-up operation as well as exceptional load conditions.

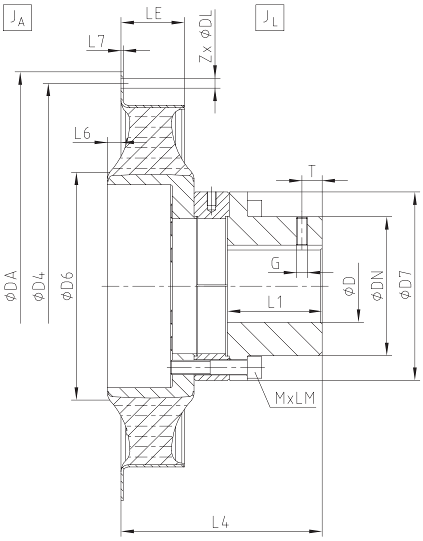
Ordering example:	SINULASTIC® 53	B	M	14	1.3	DIN 5480 - 60x2x28
	Coupling size	Type	Elastomer hardness	Flange ØDA acc. to SAE or special	Hub type	Finish bore

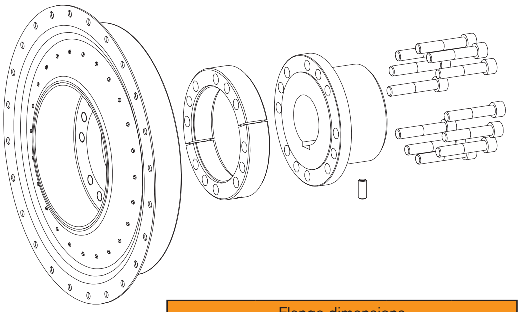
SINULASTIC® V
Highly flexible flange coupling

Radially mountable disk coupling

For legend of pictogram refer to flapper on the cover

Type V specifies a radially replaceable type for not flange-mounted drives set up freely





Flange dimensions according to SAE J620 [mm]				
Nominal size	DA	D4	Z	DL
11 ½"	352.42	333.37	8	11
14"	466.72	438.15	8	13
18"	571.50	542.90	6	17
21"	673.10	641.35	12	17
24"	733.42	692.15	12	21
Ø475	475	450	12	11

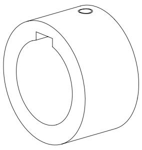
SINULASTIC® type V

Size	Flange connection acc. to SAE - J620						Dimensions [mm]												Mass moment of inertia [kgm²] 1)		Weight [kg] 1)
	11 ½"	14"	18"	21"	24"	Ø475	Max. finish bore D	DN	D6	D7	LE	L1	L4	L6	L7	MxLM	G	T	J_A	J_L	
20	●						70	100	145	145	60.0	75	196	8.5	2.0	M12x90	M10	20	0.0625	0.0650	16.22
		●											181						0.1114	0.0612	16.40
28		●					110	154	244	209	38.0	100	191	10.0	2.5	M16x90	M10	20	0.1159	0.2148	27.33
			●										181						0.2291	0.2053	27.85
						●							181						0.1213	0.2053	26.28
38		●					110	154	245	209	52.0	100	205	10.0	2.5	M16x90	M16	40	0.1524	0.2379	29.77
			●										195						0.2655	0.2274	30.16
						●							195						0.1578	0.2274	28.59
53		●					110	154	247	209	70.5	105	229	15.0	2.5	M16x90	M16	40	0.1944	0.2751	33.62
			●										223						0.3075	0.2690	34.55
						●							223						0.1998	0.2690	32.97
96			●				160	235	352	300	69.0	150	249	7.0	2.5	M20x80	-	-	0.3857	1.1404	68.98
				●															0.5741	0.1404	70.93
					●														0.7318	1.1404	72.21
114			●				160	235	352	300	83.0	150	263	7.0	2.5	M20x80	-	-	0.4591	1.2304	72.97
				●															0.6475	1.2304	74.92
					●														0.8052	1.2304	76.20
140				●			165	235	431	300	81.0	200	314	10.0	3.0	M20x80	-	-	0.8816	2.1530	97.56
					●														1.0708	2.1530	99.10
180				●			165	235	431	300	101.0	200	334	10.0	3.0	M20x80	-	-	1.0905	2.3954	104.94
					●														1.2796	2.3954	106.47

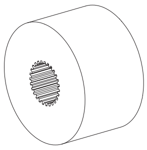
---

1) With max. bore

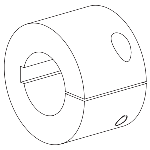
Types of hubs type V [1)]



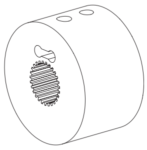
Type 1.0
with feather keyway
and setscrew



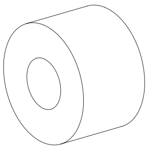
Type 1.3
spline toothing



Type 2.1
clamping hub
single slot with
feather keyway



Type 3.1
spline/clamping hub N

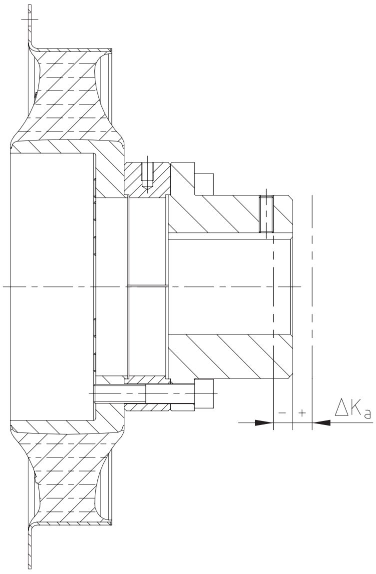


Type 8.0
taper interference fit

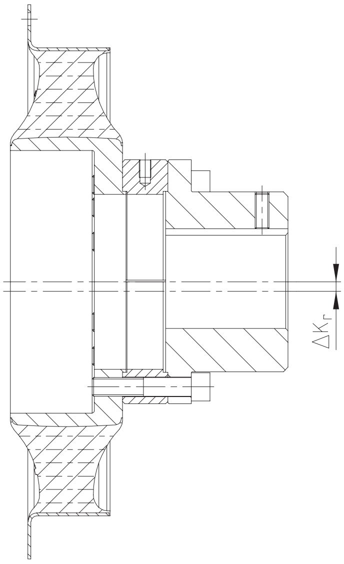
Type 8.1
cylindrical
interference fit

[1)] Dimensions and type may differ depending on size, other types of hubs on request

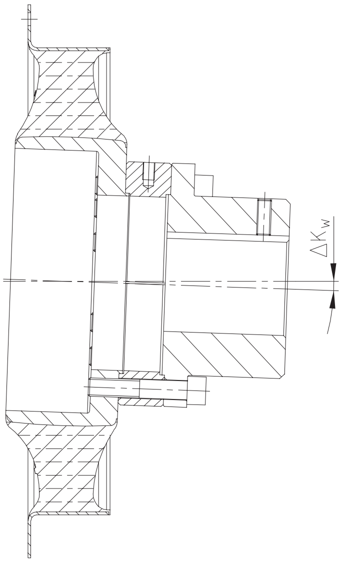
Displacements



Axial displacement



Radial displacement



Angular displacement

SINULASTIC® V size		20	28	38	53	96	114	140	180
Perm. axial displacement ΔK_a [mm]		±2	±3	±3.0	±3.0	±4.0	±4.0	±4.0	±4.0
Perm. radial displacement ΔK_r [mm]	1500 rpm	0.8	1.1	1.1	1.1	1.25	1.25	1.5	1.5
	$n_{max.}$	0.6	0.8	0.8	0.8	0.9	0.9	1.1	1.1
	max. [1)]	1.6	2.2	2.2	2.2	2.5	2.5	3.0	3.0
Perm. angular displacement ΔK_w [degree]	1500 rpm	1.0	0.8	0.8	0.8	0.7	0.7	0.6	0.6
	$n_{max.}$	0.7	0.6	0.6	0.6	0.5	0.5	0.4	0.4
	max. [1)]	2.0	1.6	1.6	1.6	1.4	1.4	1.2	1.2

[1)] With assembly, for a short time resp. rarely with downtime or start-up operation as well as exceptional load conditions.

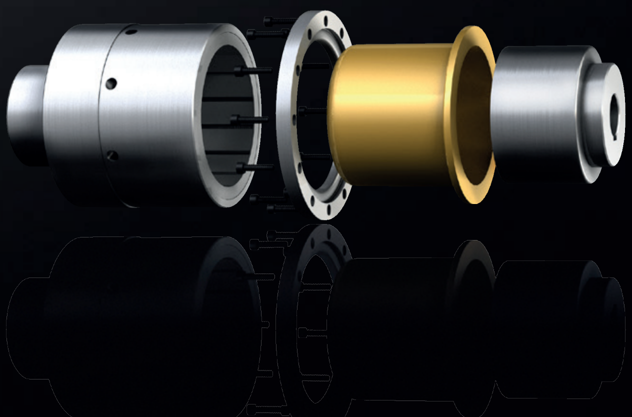
Ordering example:

SINULASTIC® 53	V	M	14	1.0	Ø60
Coupling size	Type	Elastomer hardness	Flange ØDA acc. to SAE or special	Hub type	Finish bore

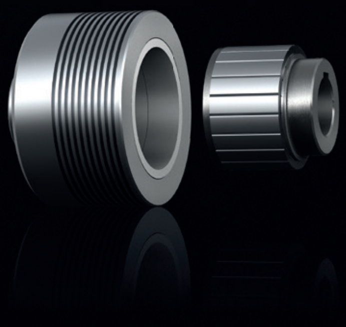
Magnetic couplings

Please note: Higher pressure resistance

Years of experience with applications at customer sites and additional test series in the KTR test field in Rheine enabled us to determine potentials allowing for an increase of pressure resistance with some sizes of this series.



MINEX®-S



MINEX®-H

MAGNETIC COUPLINGS
TYPES AND OPERATING DESCRIPTION

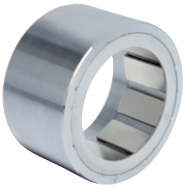
General information

General description

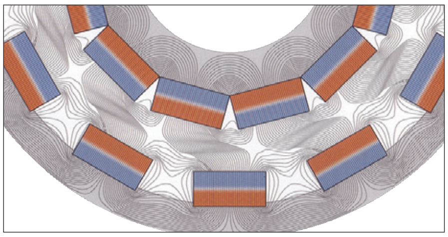
MINEX®-S magnetic couplings transmit the torque without contact through magnetic forces between the internal and external rotor. They ensure hermetic separation between driving and driven side in pumps and agitators sealing hazardous liquids and gases reliably. As a result they prevent serious leakages operating as a reliable alternative to usual dynamic shaft seals.

Internal rotor

External rotor



Run of flux lines



Operation/design

The coupling consists of an external and an internal rotor. The external rotor has high-quality, permanent magnets of changing polarity on the inner side while the internal rotor has got them on the outside.

The external rotor is usually fixed on the drive side and the magnets are bonded in the keyways. The magnets of the internal rotor on the driven side are fully encapsulated.

Torque transmission

In their non-operative states the north and south poles of the rotors face each other and the magnetic field is completely symmetric. It is only when the rotors are twisted that the magnetic field lines are deflected, hence the torque is transmitted through the air gap. Then there is a synchronous operation under a constant torsion angle.

If the maximum coupling torque and the maximum torsion angle are exceeded, the power transmission is interrupted.

Containment shroud

Sealing function

The containment shroud that is fixed to the housing separates internal and external rotor from each other.

It ensures a completely leak-proof separation of product and atmosphere.

The sealing is made statically, e. g. with a flat gasket or an O-ring, thus eliminating the need to use dynamically loaded sealing elements.

As a standard KTR supplies both metallic and non-metallic containment shrouds.

The metallic types cover the widest application range, yet causing eddy current losses which might require cooling measures. If eddy current losses have to be entirely excluded, the energy-efficient alternative materials PEEK and ceramics are available.

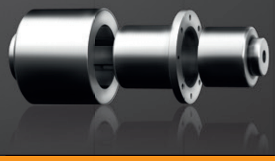
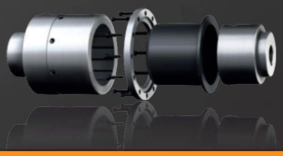
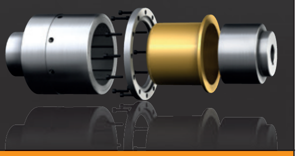
Use in potentially explosive atmospheres

MINEX® couplings are suitable for power transmission in drives in potentially explosive atmospheres. The types with metallic, ceramic and PEEK containment shrouds are assessed and approved as components of category II according to EU directive 2014/34/EU and thus suitable for the use in potentially explosive atmospheres of zone 2G.

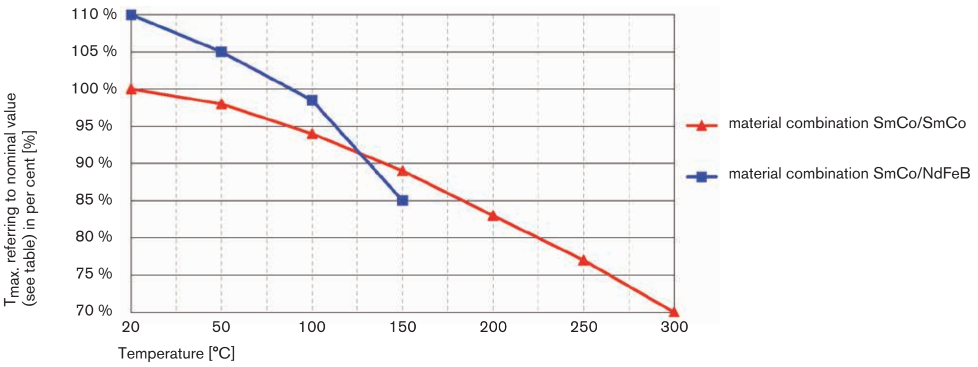
Please read through our information included in the respective type examination certificate and the operating and assembly instructions at **www.ktr.com**.

MAGNETIC COUPLINGS TYPES AND OPERATING DESCRIPTION

Properties of magnetic couplings

			
Product	**Type with metallic containment shroud**	**Type with containment shroud made of PEEK CFRP**	**Type with containment shroud made of oxide ceramics**
Type	Permanent-magnetic synchronous coupling		
Properties			
Permanent-magnetic	●	●	●
Contactless	●	●	●
Maintenance-free	●	●	●
Torsionally flexible	●	●	●
Low vibrations	●	●	●
Special features/applications			
	most common type covering the widest performance range particularly suitable for pump drives/ applications with liquids high t_{max} [°C] and p_{max} [bar]	no eddy current losses energy-efficient and economic particularly suitable for dry running for average requirements on t_{max} [°C] and p_{max} [bar]	high t_{max} [°C] and p_{max} [bar]
Torque range T_{KN} [Nm]			
Max.	1,000	600	600
Max. pressure resistance [bar]			
$p_{max.}$	up to 90 bars depending on size	up to 16 bars with 130 °C	up to 25 bars depending on size
Geometries			
shaft diameter min./max. [mm]	Ø5 pilot bored	Ø5 pilot bored	Ø5 pilot bored
Max. temperature resistance [°C]			
$t_{max.}$	150/300 depending on magnet material	130	300
Certifications/type examinations			
ATEX Ex	●	CFRP reinforcement ● GRP reinforcement	●
	for further details see catalogue pages 268 - 271	for further details see catalogue pages 272 - 273	for further details see catalogue pages 274 - 275

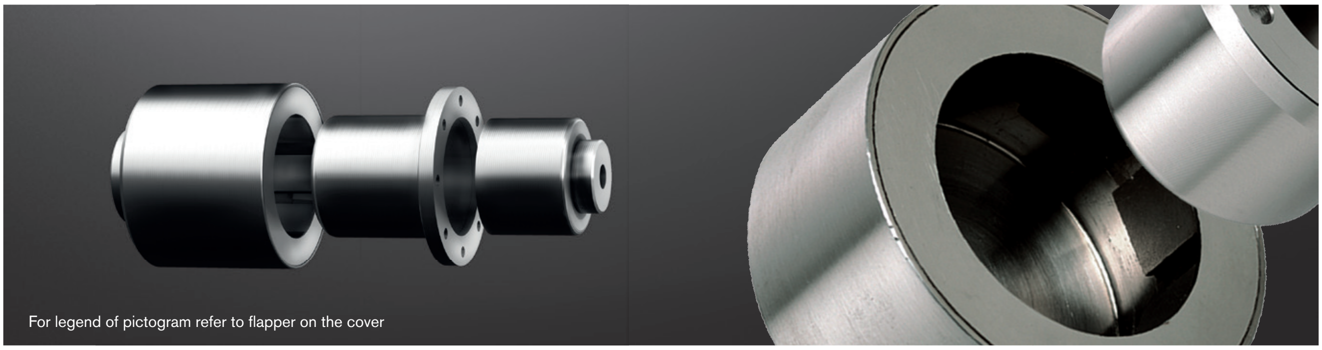
Torque reduction with temperature increase

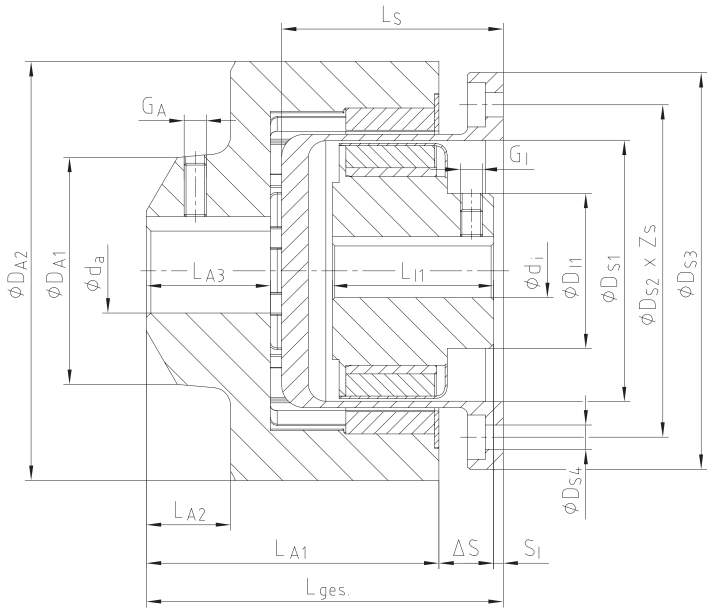


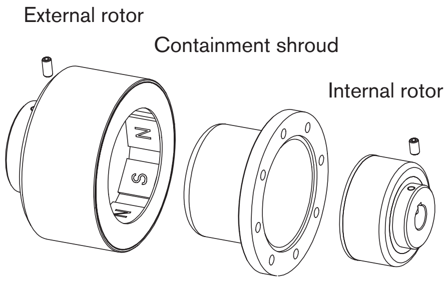
Temporary torque reduction with increased temperature for alternative material combinations [%].

Please note:
KTR recommends to use NdFeB magnets for the external rotor, provided that the operating temperature falls below 150 °C.

Containment shroud – material stainless steel


For legend of pictogram refer to flapper on the cover





Technical data – Internal rotor and containment shroud

Size	$T_{K\ max}$ [Nm] with 20 °C	Dimensions [mm]												
		Internal rotor							Containment shroud					
		Finish bore [1] d_i		D_{I1}	L_{I1}	GI	S_I		D_{S1}	D_{S2}	D_{S3}	D_{S4}	Z_S	L_S
		min.	max.				min.	max.						
SA 22/4	0.15	5	9	20	20	M3	2.0	2.0	21.5	38	46	4.5	8	29
SA 34/10	1	5	12	20	22	M3	2.0	5.5	34	46	55	4.5	4	30.5
SA 46/6	3	8	16	28	33	M4	6.5	7.0	46	64	78	4.5	8	45
SA 60/8	7	12	22	35	36.3	M5	1.7	5.5	59	75	89	5.5	8	50
SB 60/8	14			36	56	M5	0.0	4.0						70.3

Technical data – External rotor and general

Size	Dimensions [mm]										
	External rotor								General		
	Finish bore [1] d_a		D_{A1}	D_{A2}	G_A	L_{A1}	L_{A2}	L_{A3}	ΔS	L_{total}	
	min.	max.								min.	max.
SA 22/4	5	11	18	38	M4	35	8.5	11	5	42	42
SA 34/10	5	14	22	53	M4	38.8	10.5	13	5.3	46	49.5
SA 46/6	5	24	40	69.5	M5	53	16	22	9	69	69.5
SA 60/8	9	32	50	94.5	M6	66	19	28	12	80	83.3
SB 60/8	9	38			M8	93.3	15	30		105.2	109.2

[1] Bores H7 with keyway to DIN 6885 sheet 1 [JS9]

Ordering example:	MINEX® SA 60/8	NdFeB	d_i Ø20 mm	d_a Ø24 mm
	Coupling size	NdFeB – $t_{max.}$ = 150 °C Sm2Co17 – $t_{max.}$ = 300 °C	Finish bore (H7), feather keyway acc. to DIN 6885 sheet 1 (JS9)	

Examples of application

MINEX® couplings with containment shroud made of stainless steel are the most common type for pump drives and other applications with liquids in the lower performance range. Subject to their high resistance to pressure and temperature they cover a wide application range. The magnetic rotors are available from stock in an unbored or pilot bored design. If requested, the parts can be finish bored according to ISO fit H7 and provided with feather keyway to DIN 6885 sheet 1 [JS9].
Inside the rotating magnetic field metallic containment shrouds generally cause losses of eddy current which are converted into heat and which may require cooling measures. On applications with pumps the heat generated can usually be dissipated by the medium to be pumped. If higher pressure resistance than covered by the KTR standard is required, KTR provides for customised special solutions.

Typical applications: gear pumps, centrifugal pumps, screw spindle pumps, agitators, PU foaming lines

Use in potentially explosive atmospheres

MINEX® couplings with containment shroud made of stainless steel are suitable for power transmission in drives used in potentially explosive atmospheres. They are assessed and approved as components of category II according to EU directive 2014/34/EU and thus suitable for the use in potentially explosive atmospheres of zone 2G.

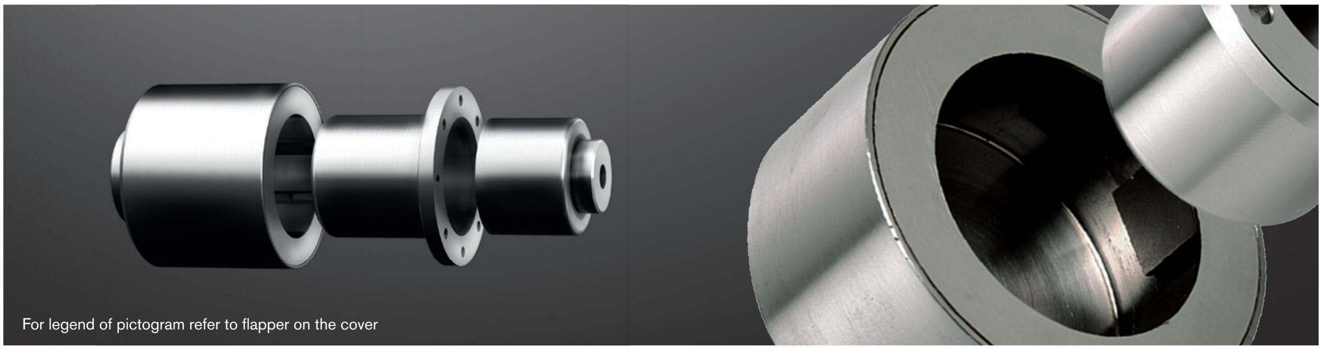
If the couplings operate in potentially explosive atmospheres, the user has to provide for special measures. Please read through our information included in the respective type examination certificate and the operating and assembly instructions at **www.ktr.com**.

Technical data – Materials, temperature and pressure resistance

Size	$T_{K\ max}$ [Nm] with 20 °C	Internal rotor			Containment shroud			External rotor (+ flange hub optionally)		
		Standard material		Max. temperature	Standard material		Max. pressure	Standard material		Max. temperature
		Hub	Magnets	$t_{max.}$ [°C]	Hub	Cont. shroud	$P_N/P_{max.}$ [bar]	Hub	Magnets	$t_{max.}$ [°C]
SA 22/4	0.15	1.4462	NdFeB	150	1.4571	1.4571	60/90	S355J2	NdFeB	150
SA 34/10	1	1.4462	NdFeB	150	1.4571	1.4571	16/24	S355J2	NdFeB	150
SA 46/6	3	1.4571	Sm2Co17	300	1.4571	1.4571	16/24	S355J2	Sm2Co17	300
SA 60/8	7	1.4571	Sm2Co17	300	1.4571	1.4571	40/60	S355J2	Sm2Co17*	300
SB 60/8	14	1.4571	Sm2Co17	300	1.4571	1.4571	40/60	S355J2	Sm2Co17*	300

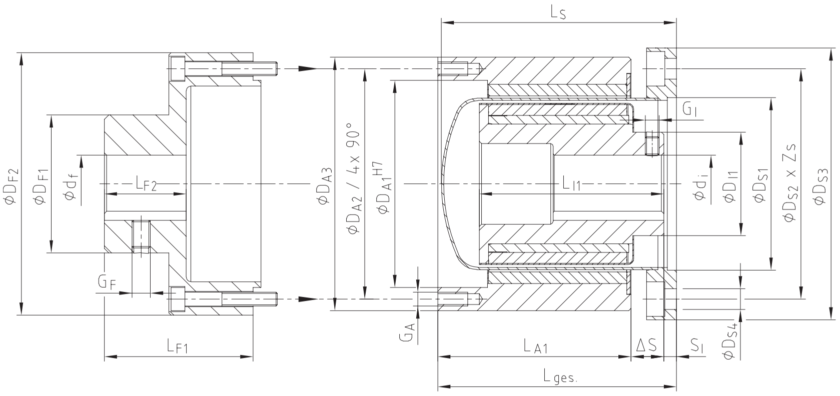
*) External rotor alternatively available with magnets made of NdFeB ($t_{max.}$ = 150 °C)

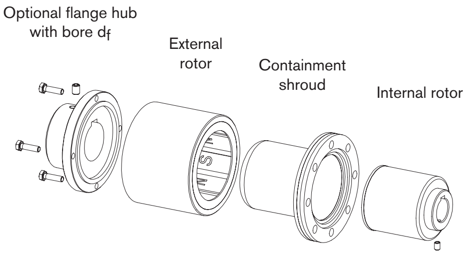
Containment shroud – material Hastelloy



For legend of pictogram refer to flapper on the cover

300 °C





Technical data – Materials, temperature and pressure resistance									
Size	$T_{K\ max}$ [Nm] with 20 °C	Internal rotor			Containment shroud			External rotor (+ flange hub optionally)		
		Standard material		Max. temperature	Standard material		Max. pressure	Standard material		Max. temperature
		Hub	Magnets	$t_{max.}$ [°C]	Hub	Cont. shroud	$P_N/P_{max.}$ [bar]	Hub	Magnets	$t_{max.}$ [°C]
SA 75/10	10	1.4571	Sm2Co17	300	1.4571	2.4602**	25/37.5	S355J2	Sm2Co17*	300
SB 75/10	24	1.4571	Sm2Co17	300	1.4571	2.4602**	25/37.5	S355J2	Sm2Co17*	300
SC 75/10	40	1.4571	Sm2Co17	300	1.4571	2.4602**	25/37.5	S355J2	Sm2Co17*	300
SB 110/16	60	1.4571	Sm2Co17	300	1.4571	2.4856	25/37.5	S355J2	Sm2Co17*	300
SC 110/16	95	1.4571	Sm2Co17	300	1.4571	2.4856	25/37.5	S355J2	Sm2Co17*	300
SB 135/20	100	1.4571	Sm2Co17	300	1.4571	2.4856	25/37.5	S355J2	Sm2Co17*	300
SC 135/20	145	1.4571	Sm2Co17	300	1.4571	2.4856	25/37.5	S355J2	Sm2Co17*	300
SD 135/20	200	1.4571	Sm2Co17	300	1.4571	2.4856	25/37.5	S355J2	Sm2Co17*	300
SC 165/24	210	1.4571	Sm2Co17	300	1.4571	2.4856	25/37.5	S355J2	Sm2Co17	300
SD 165/24	280	1.4571	Sm2Co17	300	1.4571	2.4856	25/37.5	S355J2	Sm2Co17	300
SE 165/24	370	1.4571	Sm2Co17	300	1.4571	2.4856	25/37.5	S355J2	Sm2Co17	300
SD 200/30	460	1.4571	Sm2Co17	300	1.4571	2.4856	16/24	S355J2	Sm2Co17	300
SE 200/30	600	1.4571	Sm2Co17	300	1.4571	2.4856	16/24	S355J2	Sm2Co17	300
SD 250/38	670	1.4571	Sm2Co17	300	1.4571	2.4856	16/24	S355J2	Sm2Co17	300
SE 250/38	820	1.4571	Sm2Co17	300	1.4571	2.4856	16/24	S355J2	Sm2Co17	300
SF 250/38	1000	1.4571	Sm2Co17	300	1.4571	2.4856	16/24	S355J2	Sm2Co17	300

*) External rotor alternatively available with magnets made of NdFeB ($t_{max.}$ = 150 °C)
**) Containment shroud size 75 alternatively available made of stainless steel 1.4571 (P_N/P_{max} = 16/24 bars)

Ordering example:	MINEX® SB 75/10	NdFeB	d_i Ø20 mm	d_a Ø24 mm	Hastelloy
	Coupling size	NdFeB – $t_{max.}$ = 150 °C Sm2Co17 – $t_{max.}$ = 300 °C	Finish bore (H7), feather keyway acc. to DIN 6885 sheet 1 (JS9)		Containment shroud type Stainless steel 1.4571 or Hastelloy

Examples of application

MINEX® couplings with containment shroud made of Hastelloy are the most common type for pump drives and other applications with liquids in the average and higher performance range. Subject to their high resistance to pressure and temperature they cover a wide application range.
Inside the rotating magnetic field metallic containment shrouds generally cause losses of eddy current which are converted into heat and which may require cooling measures. On applications with pumps the heat generated can usually be dissipated by the medium to be pumped. If higher pressure resistance than covered by the KTR standard is required, KTR provides for customised special solutions.

Typical applications: gear pumps, centrifugal pumps, screw spindle pumps, agitators, PU foaming lines

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Use in potentially explosive atmospheres

MINEX® couplings with containment shroud made of Hastelloy are suitable for power transmission in drives used in potentially explosive atmospheres. They are assessed and approved as components of category II according to EU directive 2014/34/EU and thus suitable for the use in potentially explosive atmospheres of zone 2G.

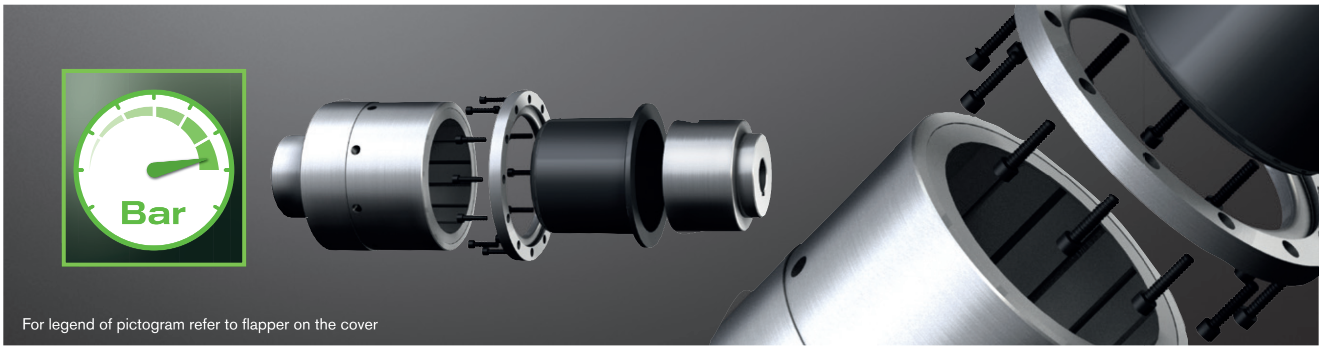
If the couplings operate in potentially explosive atmospheres, the user has to provide for special measures. Please read through our information included in the respective type examination certificate and the operating and assembly instructions at **www.ktr.com**.

Technical data – External rotor and general

Size	Dimensions [mm]																										
	Internal rotor							Containment shroud						External rotor					Flange hub						General		
	Finish bore [1)]		D_{I1}	L_{I1}	G_I	S_I		D_{S1}	D_{S2}	D_{S3}	D_{S4}	Z_S	L_S	D_{A1}	D_{A2}	D_{A3}	L_{A1}	G_A	$d_{f\ max.}$	D_{F1}	D_{F2}	L_{F1}	L_{F2}	G_F	ΔS	Total length [2)] (with flange hub)	
	$d_{i\ min.}$	$d_{i\ max.}$				min.	max.																			min.	max.
SA 75/10	12	32	45	39.5	M6	4	46.5	75	100	118	9	8	102	90	100	110	41.3	M6	42	60	114	64.5	35.5	M8	12.2	140	164.5
SB 75/10				58			26.5										61.3									142	
SC 75/10				80			4.0										83.8								14.2	166.5	166.5
SB 110/16	14	55	80	65	M8	4	35.0	110	133	153	9	12	115	126	135	145	61.3	M6	55	85	150	99.5	59.5	M10	18.7	183.5	214.5
SC 110/16				85			15.0										81.3									203.5	
SB 135/20	20	70	90	65	M10	4	50.5	135	158	178	9	16	139	150	160	170	70.3	M6	70	100	170	65.5	48.5	M12	18.2	190.5	204.5
SC 135/20				85			30.5										90.3										
SD 135/20				110			8.0										110.3								20.7	200.5	
SC 165/24	24	80	110	85	M12	6	61.5	163.5	192	218	11	12	170	180	188	198	90.3	M6	75	110	198	77	60	M16	18.2	233	247
SD 165/24				110			39.0										110.3								20.7		
SE 165/24				130			19.0										130.3									234	
SD 200/30	38	90	130	135	M16	6	24.0	200	252	278	11	12	180	212	222	232	130.3	M6	80	120	232	120	98	M12	25.7	282	300
SE 200/30																											
SD 250/38	38	100	165	115	M16	6	46.0	255	285	315	13.5	12	182	272	282	292	110.3	M6	100	150	300	140	93	M16	25.7	282	322
SE 250/38				135			26.0										130.3									302	
SF 250/38				155			6.0										150.3									322	

[1)] Bores H7 with keyway to DIN 6885 sheet 1 [JS9]
[2)] Total length without flange hub = L_S

Containment shroud – material PEEK



For legend of pictogram refer to flapper on the cover

130 °C

Technical data – Internal rotor and containment shroud

Size	$T_{K\,max}$ [Nm] with 20 °C	Dimensions [mm]												
		Internal rotor							Containment shroud					
		Finish bore 1) d_i		D_{I1}	L_{I1}	G_I	S_I		D_{S1}	D_{S2}	D_{S3}	D_{S4}	Z_S	L_S = L_{total}
		min.	max.				min.	max.						
SA 75/10	10	12	32	45	39.5	M6	30.5	54.5	-	100	118	9	8	108
SB 75/10	24				58		8.5	35.5						
SC 75/10	40				80		5.5	13.5						
SB 110/16	70	14	55	80	65	M8	4	25	140	151	168	9	12	115
SC 110/16	100				85		2	5						
SB 135/20	110	20	70	90	65	M10	38.5	48	157	167	180	6.6	12	144
SC 135/20	155				85		18.5	28						
SD 135/20	210				110		4	4						
SC 165/24	220	24	80	110	85	M12	4	32	196	210	228	9	12	156
SD 165/24	300				110			8						
SE 165/24	390				130		-6	-6						165
SD 200/30	460	38	100	130	135	M16	2	4	229	246	265	9	12	183
SE 200/30	600													

Technical data – External rotor, flange hub and general

Size	Dimensions [mm]													
	External rotor					Flange hub						General		
	D_{A1}	D_{A2}	D_{A3}	L_{A1}	G_A	Max. finish bore 1) d_f	D_{F1}	D_{F2}	L_{F1}	L_{F2}	G_F	ΔS	Total length 2) (with flange hub)	
													min.	max.
SA 75/10	90	100	110	41.3	M6	42	60	114	64.5	35.5	M8	12.2	148.5	172.5
SB 75/10				61.3									148.5	172.5
SC 75/10				83.8								14.2	168	172.5
SB 110/16	130	138	150	61.3	M6	55	85	153	87.5	45.5	M10	18.7	172.5	193.5
SC 110/16				81.3									191.5	193.5
SB 135/20	158	167	176	70.3	M6	70	100	176	89	67	M12	18.2	216	225.5
SC 135/20				90.3									216	225.5
SD 135/20				110.3								20.7	224	224
SC 165/24	186	195	204	90.3	M6	75	110	204	94	70	M16	18.5	231	234.8
SD 165/24				110.3								21	231	233.3
SE 165/24				130.3									254.3	254.3
SD 200/30	212	222	232	130	M6	90	120	232	133	98	M16	25.7	288	290
SE 200/30														

1) Bores H7 with keyway to DIN 6885 sheet 1 [JS9] 2) Total length without flange hub = L_S

Technical data

Size	$T_{K\,max}$ [Nm] with 20 °C	Internal rotor		Containment shroud				External rotor (+ flange hub optionally)	
		Standard material		Standard material		Max. pressure	Max. temperature	Standard material	
		Hub	Magnets	Clamping ring	Cont. shroud	P_N [bar]	$t_{max.}$ [°C]	Hub	Magnets
SA 75/10	10	1.4571	Sm2Co17	-	PEEK	16	130	S355J2	NdFeB
SB 75/10	24	1.4571	Sm2Co17	-	PEEK	16	130	S355J2	NdFeB
SC 75/10	40	1.4571	Sm2Co17	-	PEEK	16	130	S355J2	NdFeB
SB 110/16	70	1.4571	Sm2Co17	Aluminium	PEEK	16	130	S355J2	NdFeB
SC 110/16	100	1.4571	Sm2Co17	Aluminium	PEEK	16	130	S355J2	NdFeB
SB 135/20	110	1.4571	Sm2Co17	Aluminium	PEEK	16	130	S355J2	NdFeB
SC 135/20	155	1.4571	Sm2Co17	Aluminium	PEEK	16	130	S355J2	NdFeB
SD 135/20	210	1.4571	Sm2Co17	Aluminium	PEEK	16	130	S355J2	NdFeB
SC 165/24	220	1.4571	Sm2Co17	Aluminium	PEEK	16	130	S355J2	NdFeB
SD 165/24	300	1.4571	Sm2Co17	Aluminium	PEEK	16	130	S355J2	NdFeB
SE 165/24	390	1.4571	Sm2Co17	Aluminium	PEEK	16	130	S355J2	NdFeB
SD 200/30	460	1.4571	Sm2Co17	Aluminium	PEEK	16	130	S355J2	NdFeB
SE 200/30	600	1.4571	Sm2Co17	Aluminium	PEEK	16	130	S355J2	NdFeB

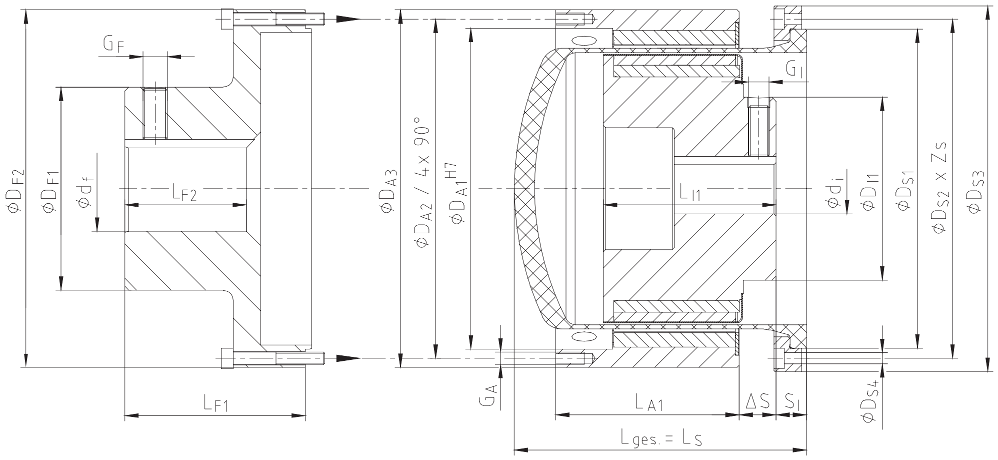
🟩 = Years of experience with applications at customer sites and additional test series in the KTR test field in Rheine enabled us to determine potentials allowing for an increase of the pressure resistance with some sizes of this series.

Ordering example:	MINEX® SB 75/10	NdFeB	d_i Ø20 mm	d_a Ø24 mm	PEEK
	Coupling size	NdFeB – $t_{max.}$ = 150 °C	Finish bore (H7), feather keyway acc. to DIN 6885 sheet 1 (JS9)		Containment shroud type

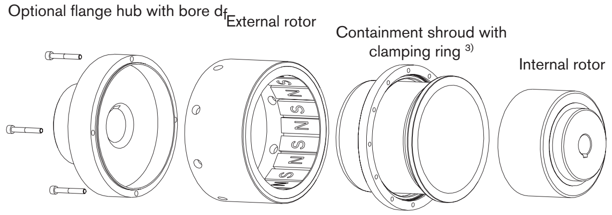
Examples of application

MINEX® couplings with countainment shroud made of PEEK are an economic, energy-efficient alternative to the metallic types. They do not generate any eddy current losses and as a result do not generate any heat so that usually expensive cooling measures can be done without. Moreover, they are characterized by low susceptibility to fracture, low weight and easy handling.
They are ideally suitable for applications with low demands on temperature and pressure resistance.

Typical applications: vacuum pumps, fan drives, compressors, agitators, PU foaming lines



$S_A = S_I + \Delta S$



[3] Containment shroud size 75 also available as a one-piece design!

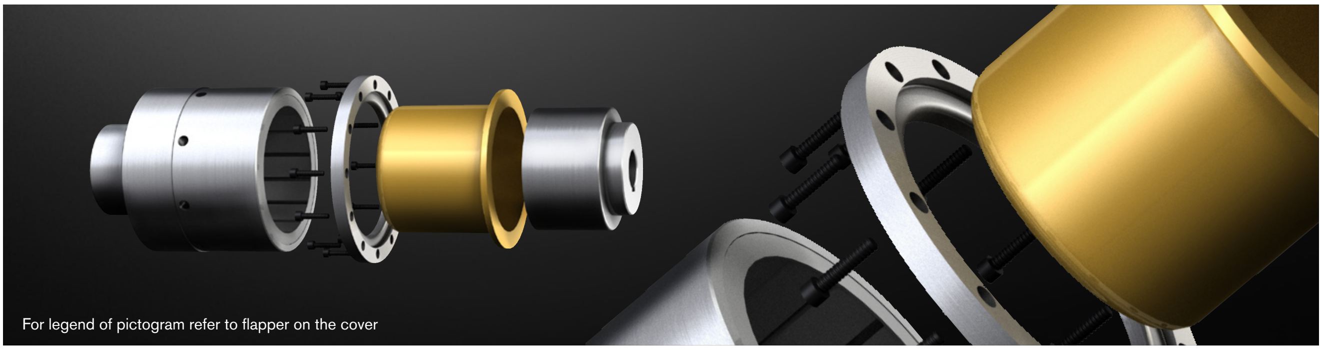
Use in potentially explosive atmospheres

MINEX® couplings with containment shrouds made of carbon fibre reinforced PEEK are suitable for power transmission in drives in potentially explosive atmospheres. They are assessed and approved as components of category II according to EU directive 2014/34/EU and thus suitable for the use in potentially explosive atmospheres of zone 2G.

If the couplings operate in potentially explosive atmospheres, the user has to provide for special measures. Please read through our information included in the respective type examination certificate and the operating and assembly instructions at **www.ktr.com**.

MINEX®-S
Magnetic couplings

Containment shroud – material oxide ceramics



For legend of pictogram refer to flapper on the cover

Technical data – Internal rotor and containment shroud

Size	$T_{K\ max}$ [Nm] with 20 °C	Dimensions [mm]												
		Internal rotor							Containment shroud					
		Finish bore [1] d_i		D_{I1}	L_{I1}	G_I	S_I		D_{S1}	D_{S2}	D_{S3}	D_{S4}	Z_S	$L_S = L_{total}$
		min.	max.				min.	max.						
SB 60/8	14	12	22	36	56	M5	1	21	75	82	99	5.5	6	92
SC 60/8	22				76			2						
SB 75/10	24	12	32	45	58	M6	6.5	30.5	89	100	118	9	8	108
SC 75/10	40				80			8.5						
SB 110/16	70	14	55	72	65	M8	4	28.0	132	151	168	9	12	115
SC 110/16	100				85			9.0						
SB 135/20	110	20	70	90	65	M10	4	46.5	157	167	180	6.6	12	143
SC 135/20	155				85			26.5						
SD 135/20	210				110			4.0						
SC 165/24	220	24	90	110	85	M12	4	28.0	196	210	228	9	12	150
SD 165/24	300				110			4.0						
SE 165/24	390				130			17.0						185
SD 200/30	460	38	90	130	135	M16	4	4.0	229	246	265	9	12	185
SE 200/30	600													

Technical data – External rotor, flange hub and general

Size	Dimensions [mm]													
	External rotor					Flange hub						General		
	D_{A1}	D_{A2}	D_{A3}	L_{A1}	G_A	Max. finish bore [1] d_f	D_{F1}	D_{F2}	L_{F1}	L_{F2}	G_F	ΔS	Total length [2] (with flange hub)	
													min.	max.
SB 60/8	76	84	94	79.5	M6	38	60	94	42	38	M6	12.5	135	156
SC 60/8														
SB 75/10	90	100	110	61.3	M6	42	80	114	84.5	35.5	M6	11.9	148.5	170.4
SC 75/10				83.8								13.9	170.5	
SB 110/16	130	138	150	61.3	M6	55	85	153	87.5	45.5	M10	18.7	171.5	195.5
SC 110/16				81.3									191.5	196.5
SB 135/20	158	167	176	70.3	M6	70	100	176	89	67	M12	18.2	215	224
SC 135/20				90.3									215	224
SD 135/20				110.3								20.7	220	220
SC 165/24	186	195	204	90.3	M6	75	110	204	94	70	M16	18.5	225	230.5
SD 165/24				110.3								20.7	229	229
SE 165/24				130.3									260	260
SD 200/30	212	222	232	130.3	M6	80	120	240	120	88	M16	25.7	280	280
SE 200/30														

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[1] Bores H7 with keyway to DIN 6885 sheet 1 [JS9]

[2] Total length without flange hub = L_S

Technical data

Size	$T_{K\ max}$ [Nm] with 20 °C	Internal rotor			Containment shroud			External rotor (+ flange hub optionally)		
		Standard material		Max. temperature	Standard material		Max. pressure	Standard material		Max. temperature
		Hub	Magnets	$t_{max.}$ [°C]	Hub	Cont. shroud	$P_N/P_{max.}$ [bar]	Hub	Magnets	$t_{max.}$ [°C]
SB 60/8	14	1.4571	Sm2Co17	300	Aluminium	ZrO2MgO	40/60	S355J2	Sm2Co17	300
SC 60/8	22	1.4571	Sm2Co17	300	Aluminium	ZrO2MgO	40/60	S355J2	Sm2Co17	300
SB 75/10	24	1.4571	Sm2Co17	300	Aluminium	ZrO2MgO	40/60	S355J2	Sm2Co17	300
SC 75/10	40	1.4571	Sm2Co17	300	Aluminium	ZrO2MgO	40/60	S355J2	Sm2Co17	300
SB 110/16	60	1.4571	Sm2Co17	300	Aluminium	ZrO2MgO	25/37.5	S355J2	Sm2Co17	300
SC 110/16	95	1.4571	Sm2Co17	300	Aluminium	ZrO2MgO	25/37.5	S355J2	Sm2Co17	300
SB 135/20	100	1.4571	Sm2Co17	300	Aluminium	ZrO2MgO	25/37.5	S355J2	Sm2Co17	300
SC 135/20	145	1.4571	Sm2Co17	300	Aluminium	ZrO2MgO	25/37.5	S355J2	Sm2Co17	300
SD 135/20	200	1.4571	Sm2Co17	300	Aluminium	ZrO2MgO	25/37.5	S355J2	Sm2Co17	300
SC 165/24	210	1.4571	Sm2Co17	300	Aluminium	ZrO2MgO	25/37.5	S355J2	Sm2Co17	300
SD 165/24	280	1.4571	Sm2Co17	300	Aluminium	ZrO2MgO	25/37.5	S355J2	Sm2Co17	300
SE 165/24	370	1.4571	Sm2Co17	300	Aluminium	ZrO2MgO	25/37.5	S355J2	Sm2Co17	300
SD 200/30	460	1.4571	Sm2Co17	300	Aluminium	ZrO2MgO	25/37.5	S355J2	Sm2Co17	300
SE 200/30	600	1.4571	Sm2Co17	300	Aluminium	ZrO2MgO	25/37.5	S355J2	Sm2Co17	300

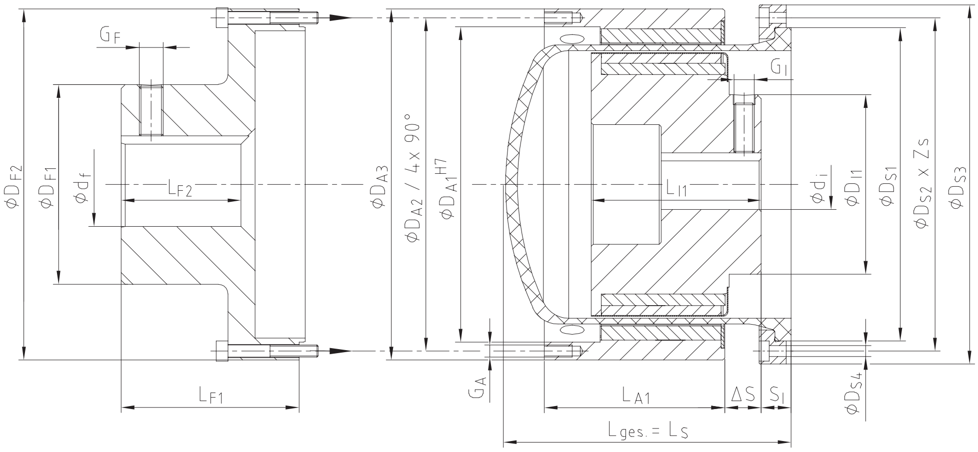
Ordering example:

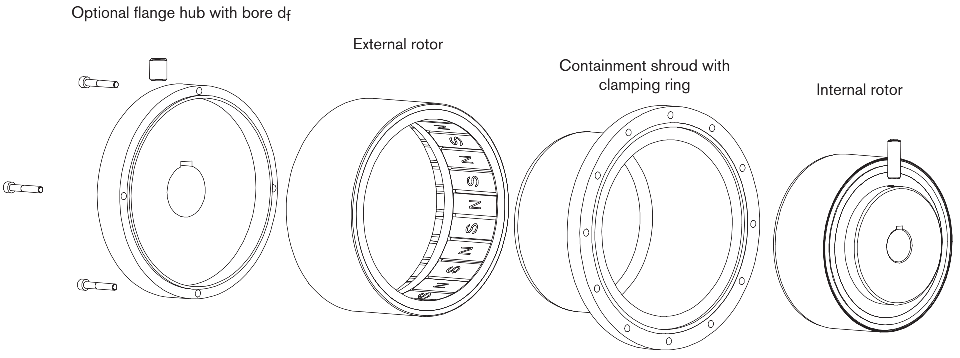
MINEX® SB 135/20	NdFeB	d_i Ø20 mm	d_a Ø24 mm	Oxide ceramics ZrO_2MgO
Coupling size	NdFeB – $t_{max.}$ = 150 °C Sm2Co17 – $t_{max.}$ = 300 °C	Finish bore (H7), feather keyway acc. to DIN 6885 sheet 1 (JS9)		Containment shroud type

Examples of application

Like with the types with containment shroud made of PEEK, MINEX® couplings with containment shroud made of ceramics are an economic, energy-efficient alternative to the metallic types. Again they do not generate any eddy current losses and as a result do not generate any heat so that usually expensive cooling measures can be done without. Compared to PEEK, the containment shrouds made of ceramics are characterized by higher resistance to pressure and an excellent temperature resistance.

Typical applications: vacuum pumps, fan drives, compressors, agitators, PU foaming lines



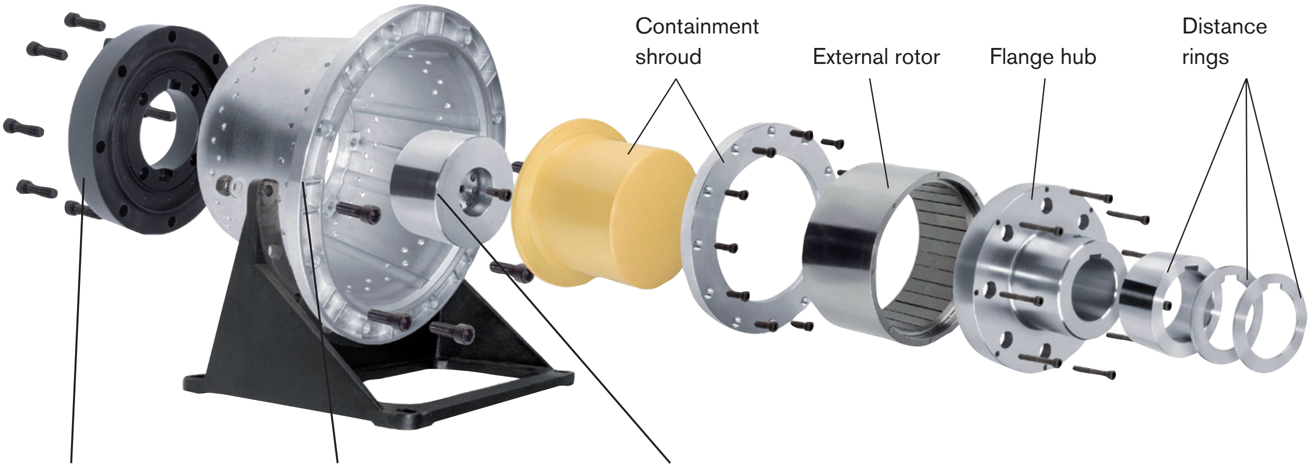


Use in potentially explosive atmospheres

MINEX® couplings with containment shrouds made of oxide ceramics are suitable for power transmission in drives used in potentially explosive atmospheres. They are assessed and approved as components of category II according to EU directive 2014/34/EU and thus suitable for the use in potentially explosive atmospheres of zone 2G.

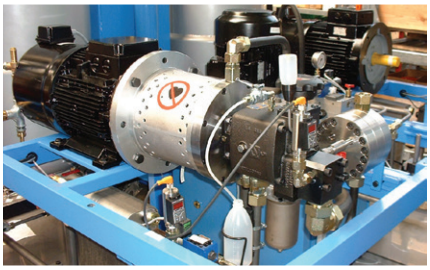
Please read through our information included in the respective type examination certificate and the operating and assembly instructions at **www.ktr.com**.

Conversion kits and customised subassemblies



On request KTR provides customised special solutions in combination with KTR hydraulic components, allowing to easily retrofit existing systems with MINEX®-S.

Conversion kits for PUR foaming processes



Maintenance-free sealing of proportioning pumps for polyol and isocyanate in high-pressure reaction moulding machines

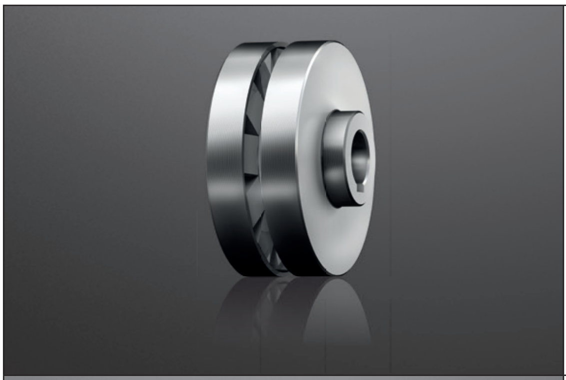
When conveying and proportioning the media polyol and isocyanate in the processing plants for PUR, ambient air has to be prevented from penetrating into the process, since otherwise adverse reactions may be generated.
For a reliable sealing of such drives KTR provides standard conversion kits, among others for axial piston pumps type REXROTH A2VK/A7VK and ROTARY POWER C series offering the following benefits:

- maintenance-free operation
- downtimes are considerably reduced
- no more problems with sealing
- better efficiency and process reliability

The subassemblies are available for all motor-pump-combinations and in various materials.

Pump data		Motor data (4 poles, n=1500 rpm)			Coupling data		
Pump	Type	Engine	Power [kW]	Torque T_N	Size	Max. torque $T_{K\,max}$	Bellhousings
REXROTH A2VK/A7VK	A2/A7VK-12	132 S	5.5	35 Nm	SB 110/16	60 Nm	PL 300/13/…
		132 M	7.5	48 Nm	SC 110/16	95 Nm	
		160 M	11	70 Nm	SC 135/20	145 Nm	
	A2/A7VK-28	160 M	11	70 Nm	SC 135/20	145 Nm	PL 350/7…
		160 L	15	96 Nm	SD 135/20	200 Nm	
		180 M	18.5	118 Nm	SD 135/20	200 Nm	
	A2/A7VK-55	160 L	15	96 Nm	SC 165/24	210 Nm	PL 350/7/…
		180 M	18.5	118 Nm	SC 165/24	210 Nm	
		180 L	22	144 Nm	SD 165/24	280 Nm	PL350/7/…
		200 L	30	196 Nm	SE 165/24	280 Nm	PL400/5/…
		225 S/M	37/45	240/292 Nm	SE 165/24	370 Nm	PL450/3/…
	A2/A7VK-107	225 S/M	37/45	240/292 Nm	SE 165/24	370 Nm	PL400/5/…
ROTARY POWER C-Range	C 01	100L	2.2	14 Nm	SB 75/10	24 Nm	PK 250/13/…
	C 04	132 M	7.5	48 Nm	SC 110/16	95 Nm	PL300/13/…
	C 07	132 S	5.5	35 Nm	SB 110/16	60 Nm	PL300/13/…
		132 M	7.5	48 Nm	SC 110/16	95 Nm	PL300/13/…
	C20	160 L	15	96 Nm	SD 135/20	200 Nm	PL 350/7/…
		180 M	18.5	118 Nm	SD 135/20	200 Nm	PL 350/7/…

Other types

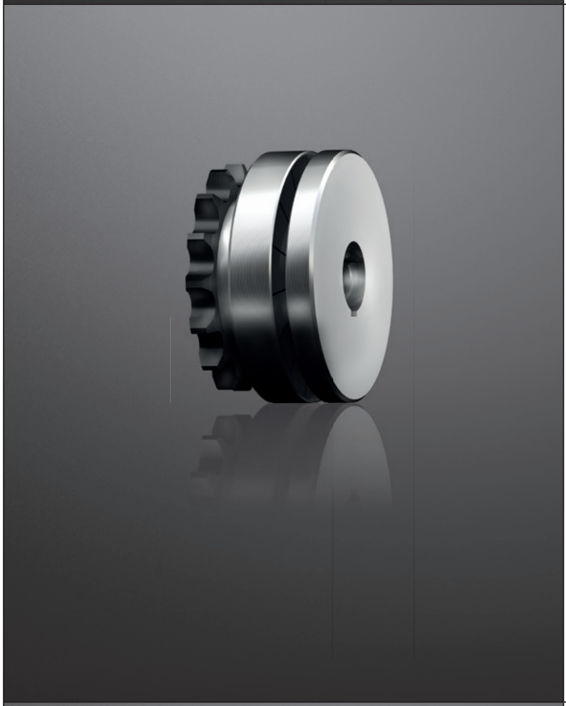


Disk coupling

With this type the magnets are arranged opposite each other in axial direction. Thus this type is able to transmit the torque through plane walls. Furthermore it provides the following benefits:

- compact
- drive of applications in closed liquid containers
- torque setting via air gap

Applications: Pumps, agitators, compressors, fans, swivel drives

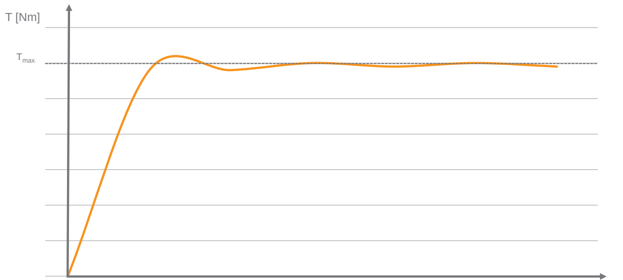


Hysteresis coupling MINEX®-H

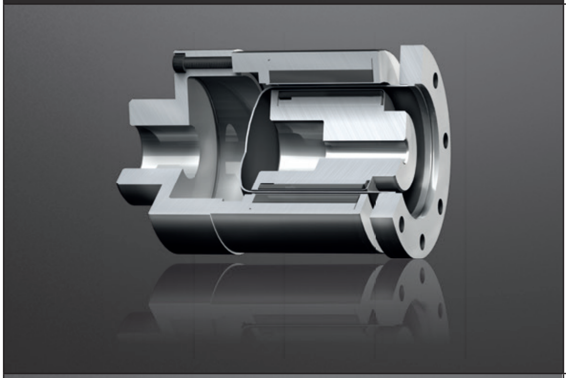
Different from the MINEX®-S magnetic coupling this type switches to slipping operation once the maximum transmittable torque has been achieved, while it continues to transmit T_{max} as a holding torque.

- wear-free torque limitation
- maintenance-free & load-holding
- very good repeatability of torque
- applicable as a coupling or brake

Applications: roller conveyors, winder drives, capping machines, etc.



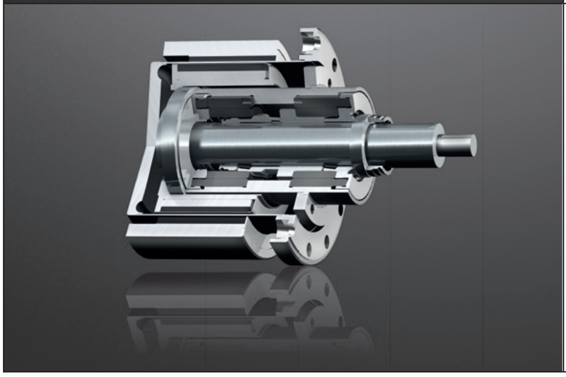
Hysterese-Prinzip



MINEX®-S fully made of stainless steel

If requested, KTR supplies MINEX®-S fully made of stainless steel. The magnets of the external rotor are encapsulated just like with the internal rotor.

Applications: offshore, marine, etc.

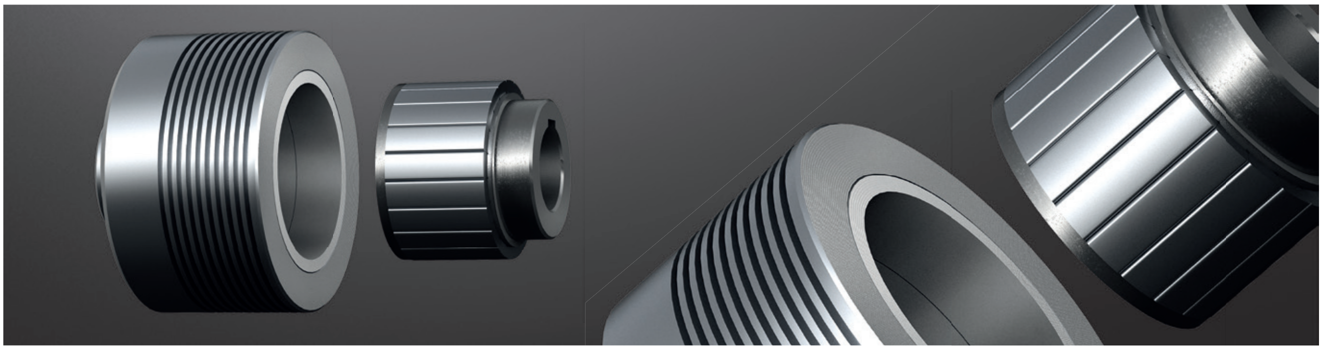


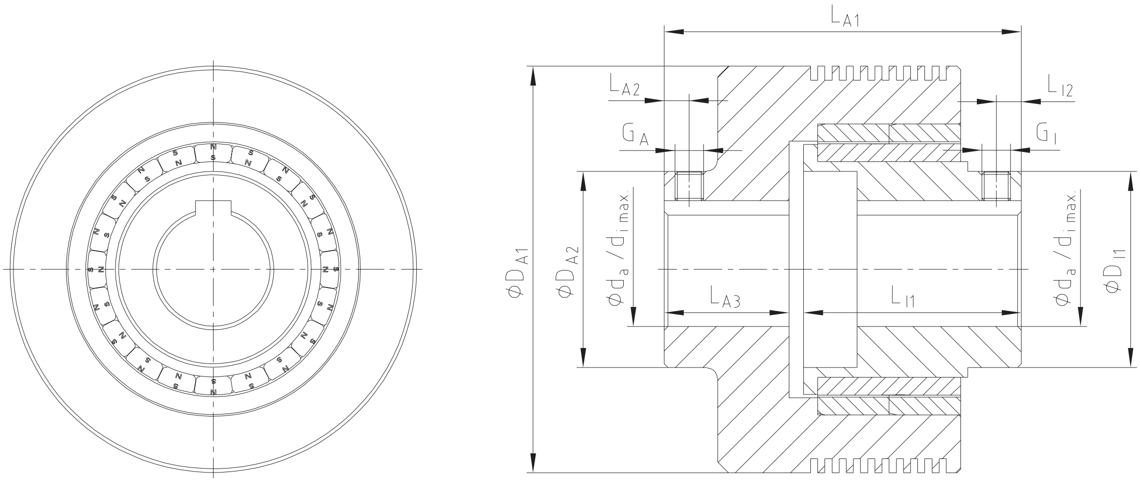
Customised special solutions

If requested, KTR supplies MINEX®-S in combination with the plain bearing required for the driven shaft.

MINEX®-H
Magnetic couplings

Hysteresis coupling





Technical data

Size	Overload torque $T_{max. 20 °C}$ [Nm]	Finish bore $d_a/d_{i\ max.}$ [mm]	Dimensions [mm]										permissible power loss $P_{V\ perm. 20 °C}$ [W]	Max. speed $n_{max.}$ [rpm]	Max. temperature $t_{max.}$ [°C]
			D_{A1}	D_{A2}	L_{A1}	L_{A2}	L_{A3}	D_{I1}	L_{I1}	L_{I2}	G_A	G_I			
HA 48/12	1.2	16	82	35	80	7	35	35	41	7	M4	M4	80	1800	120
HB 48/12	2.4	16	82	35	100	7	35	35	61	7	M4	M4	88	1800	120
HA 60/16	2	22	94	45	80	7	35	45	41	7	M5	M5	87	1800	120
HB 60/16	4	22	94	45	100	7	35	45	61	7	M5	M5	96	1800	120
HA 71/20	3	32	114	55	80	7	35	55	41	7	M8	M8	98	1800	120
HB 71/20	6	32	114	55	100	7	35	55	61	7	M8	M8	110	1800	120

Technical selection:

$$P_V = \frac{T_{max.\ 20\ °C} * n_{Slip}}{9.55} * Z \le P_{V\ perm.\ 20\ °C}$$

$$Z = \frac{t_{Slip}}{t_{Cycle}}$$

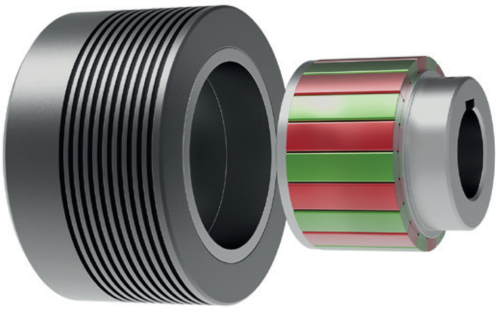
P_V = Power loss
$T_{max.\ 20\ °C}$ = Transmittable torque [Nm]
$P_{V\ all.\ 20\ °C}$ = Permissible power loss [Nm]
n_{Slip} = Slip speed [1/min]
Z = Cycle factor (continuous slip operation Z=1)
t_{Slip} = Slip time [s]
t_{Cycle} = Cycle time [s]

Ordering example:

MINEX® HB 60/16	d_i Ø18 mm	d_a Ø20 mm
Coupling size	Finish bore (H7), feather keyway acc. to DIN 6885 sheet 1 (JS9)	

Torque curve with overload

The MINEX®-H transfers the torque contactlessly by means of magnetic forces and serves as a wear-free torque limiter in case of overload.



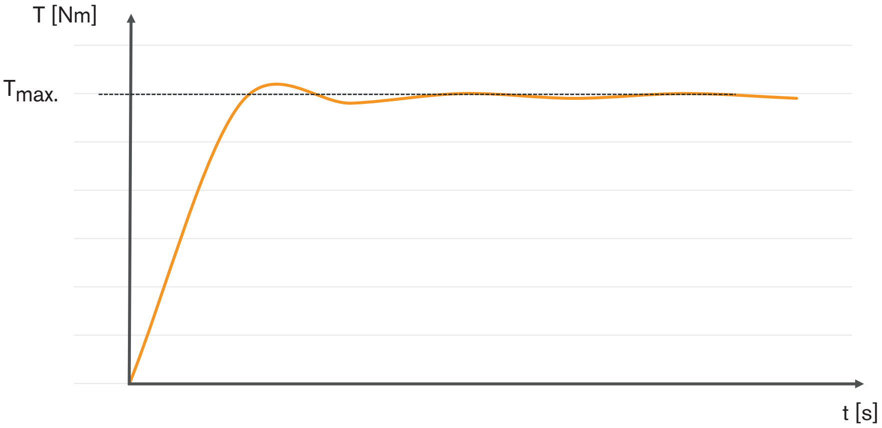
Function standard mode:

The torque is transmitted from the drive to the output element contactlessly by means of magnetic forces. The speed is synchronously transmitted as long as the operating torque is below the selection torque (slip torque).

Function of overload mode:

As soon as the operating torque exceeds the selection torque, the coupling slips and a relative speed sets in between the drive and output side. During this, the hysteresis material is continuously reversed and heats up. The selection torque is almost constant in case of an overload. As the relative speed increases, the slip torque increases due to the eddy current effect.

Torque curve with overload



Characteristics:

- Contactless torque transmission by means of magnetic forces
- Wear-free torque limitation
- Maintenance-free
- Load-holding
- Very good repeatability of torque
- Applicable as a coupling or brake

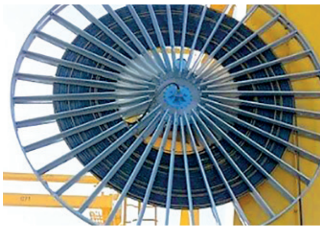
Examples of application:

Filling systems

Film winder

Materials handling

Medical technology



Unwinding and winding equipment

Torque limiters

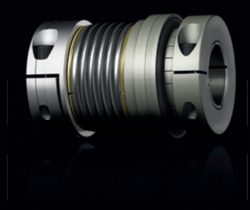
RUFLEX®

KTR-SI

KTR-SI FRA

SYNTEX®

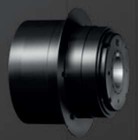
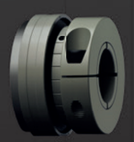
SYNTEX®-NC



KTR-SI Compact

TORQUE LIMITERS
TYPES AND OPERATING DESCRIPTION

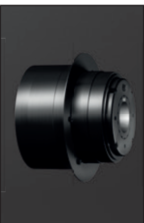
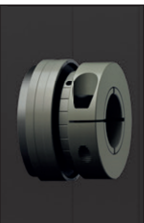
Properties of torque limiters

							
Product	**RUFLEX®**	**KTR-SI**	**KTR-SI FRE**	**KTR-SI FRA**	**SYNTEX®**	**SYNTEX®-NC**	**KTR-SI Compact**
Type	Torque limiter	Overload system	Overload system	Overload system	Backlash-free overload system		
Torque limitation							
Friction (load-retaining)	●						
Ratchet coupling		●	●	●	●	●	●
Synchronous ratcheting SK/SR (load-separating)		●			●	●	●
Ratcheting DK (load-separating)		●			●	●	●
Idle rotation FR/FRE/FRA (load-separating)		●	●	●			
Fail-safe SGR (no mechanical separation)		●					
Properties							
Backlash-free					●	●	●
High repeatability		●	●	●	●	●	●
Quick separation with overload						●	●
Signal by limit switch/sensor		●	●	●	●	●	●
Torque setting possible when in place	●	●	●	●	●	●	●
Torque range T_{KN} [Nm]							
min. - max.	0.5 - 12,000	2.5 - 8,200	1,000 - 60,000 (and above)	5 - 3,000	6 - 400	2 - 550	3 - 3,100
Max. bore [mm]							
	140	100	200 (and above)	80	50	60	80
Shaft-hub-connection							
Positive locking	●	●	●	●	●	●	●
Frictionally engaged			●		●	●	●
Speed $n_{max.}$ [rpm]							
	10,000	6,000	3,300	3,600	1,500	3,500	4,000
Special features							
	high power density, low price	hardened surfaces, solid design	modular design, for high torques	re-engagement by reversing the direction of rotation	for tailor-made solutions, low cost, ideally suitable for bigger quantities	high power density, light-weight design	hardened surfaces, solid design
Applications							
	slowly rotating drives such as sprocket or toothed belt drives, conveyors, rotary feeders, …	rugged drive situations, e. g. crushers, …	shredders, extruders, steel mills, test benches	shredders, extruders, materials handling, ...	customised design, packaging machines, linear drives, …	dynamic drives, packaging machines, machine tools, linear drives, …	packaging machines, special purpose machines, conveyor technology, …

● ≈ Standard

TORQUE LIMITERS
TYPES AND OPERATING DESCRIPTION

Product finder of torque limiters

							
Product	**RUFLEX®**	**KTR-SI**	**KTR-SI FRE**	**KTR-SI FRA**	**SYNTEX®**	**SYNTEX®-NC**	**KTR-SI Compact**
Type	Torque limiter	Overload system	Overload system	Overload system	Backlash-free overload system		
Types (extract)							
Combined with:							
» Sprocket/toothed belt pulley/flange	●	●	●	●	●	●	●
» ROTEX® torsionally flexible jaw coupling	●	●	●				
» BoWex® torsionally stiff curved-tooth gear coupling®	●						
» TOOLFLEX® torsionally stiff metal bellow-type coupling						●	
» ROTEX® GS backlash-free jaw coupling					●	●	●
» POLY-NORM® torsionally flexible jaw coupling				●			
» RADEX®-N torsionally stiff steel laminae coupling	○	○	○				
» RADEX®-NC torsionally stiff servo laminae coupling						○	
» GEARex® all-steel gear coupling			○				
Integrated ball bearing			●			●	●

●≈ Standard
○≈ On request

Information on selection of torque limiters

To make sure that the torque limiter is not released with process-related torque peaks, the switching torque of the coupling should at least be 30 % above the maximum operating torque (see diagramme).

Torque limiters and overload systems that re-engage automatically should be used with reduced speed only after having applied higher release torques.
Frequent or continuous slipping or ratcheting increases the wear on the torque limiter.

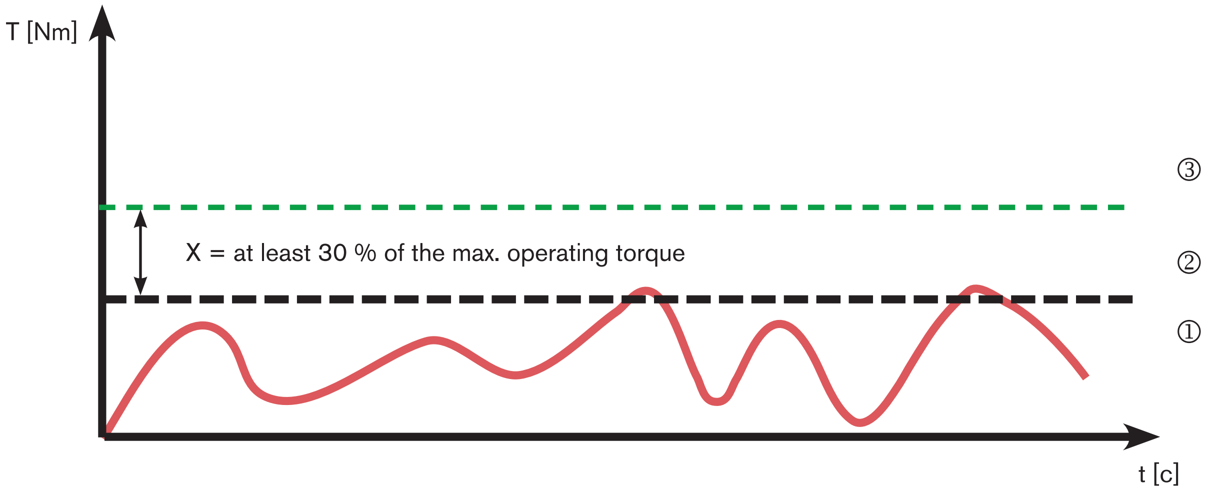
After the torque limiter separated driving from driven side in case of overload, it may take some time before the drive stops due to large inertias in the drive train. This may generate higher wear on the torque limiter and the overload system re-engaging automatically. That is why we recommend to use the overload system KTR-SI as an idle rotation type (page 288 et seqq.) for drives with larger inertias or higher speeds.

We basically recommend electronic monitoring of the torque limiters to disconnect the drive immediately in case of overload.

We will be pleased to assist you with any technical questions about the selection of torque limiters.
For that purpose we dispose of state-of-the-art simulation and calculation programs. Here the principle applies: The more detailed the data provided, the more accurate the calculation results.

Unless otherwise specified, our feather keyways are designed acc. to DIN 6885 Bl.1 [JS9]. The shaft-hub-connection needs to be verified by the customer.

A smooth operation is only ensured if the overload torque set exceeds the maximum operating torque of the machine (see diagramme).



① Torque curve of the machine
② Max. operating torque arising on the machine
③ Torque set on the coupling

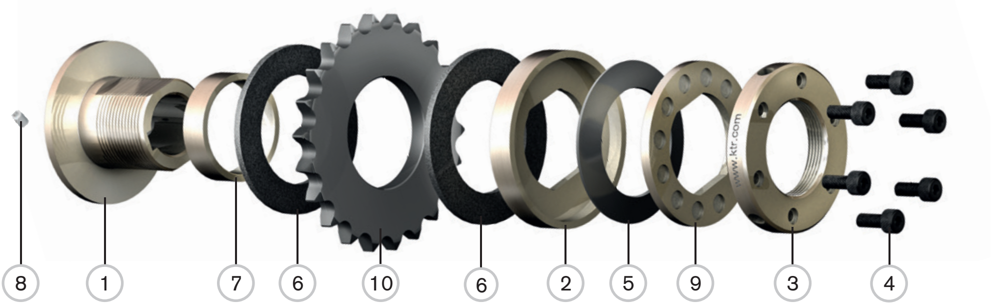
Design and operation

- Load-retaining overload protection up to 12.000 Nm (standard)
- Available with various drive components (e. g. sprocket) and combinations (e. g. ROTEX®)
- Asbestos-free and rust-proof friction lining for dry running (ATEX available on request ⟨Ex⟩)
- High wear capacity, long service life
- High-quality plain bush with dry lubricant
- Torque setting possible when in place

- Protection of the nut by locking in 12 different positions
- Easy assembly and torque setting
- Coupling components made of steel, large safety reserves
- Corrosion protection by zinc-coated and passivated surfaces
- Rust-proof and acid-proof type on request
- High power density due to high-quality disk springs and friction linings

The RUFLEX® modular system provides solutions for your drive, too.
The combination with the proven KTR couplings and the integration of customised drive components (e. g. sprockets) allows for an overload protection optimally adapted to the respective application.
Various disk spring layerings and high-quality friction linings ensure high power density even with only small mounting space.

RUFLEX® consists of the following components:



List of components:

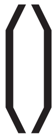
① Hub
② Pressure ring
③ Setting nut
④ Torque setting screws
⑤ Disk spring
⑥ Friction lining
⑦ Plain bush
⑧ Setscrew
⑨ Lock washer
⑩ Drive component (e. g. sprocket)

Disk spring layerings:

1TF
- Small specific load on friction linings
- For small to medium torques
- Long service life of friction linings

2TF
- Standard specific load on friction linings
- Medium wear and decrease of torque with longer slipping periods
- Double torque due to double disk spring layering

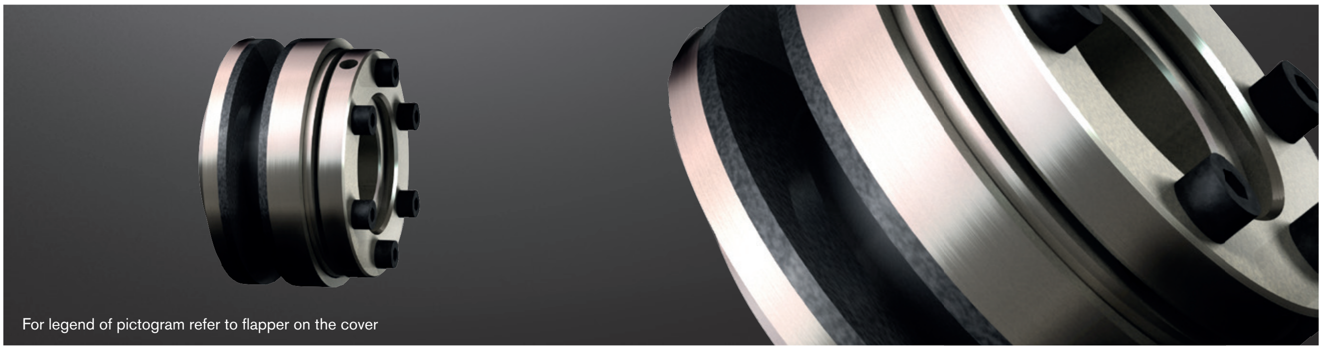
3TF
- High specific load on friction linings
- High wear and decrease of torque with longer slipping periods
- Applicable only in special cases for designs with only limited dimensions

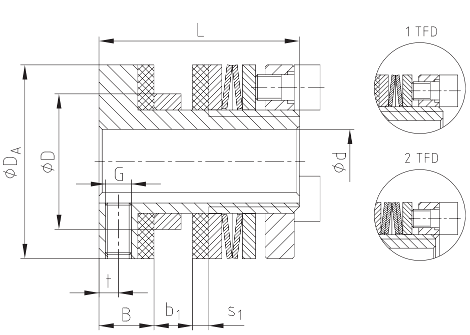


1TFD
- Small specific load on friction linings
- Torques like with type 1TF
- Only small decrease of torque even with a longer period of friction
- Precision torque adjustment due to double spring excursion

2TFD
- Standard specific load on friction linings
- Torques like with type 2TF
- Only small decrease of torque even with a longer period of friction
- Precision torque adjustment due to double spring excursion

Standard width of drive component


For legend of pictogram refer to flapper on the cover



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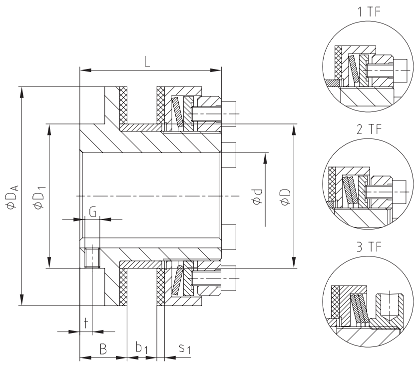
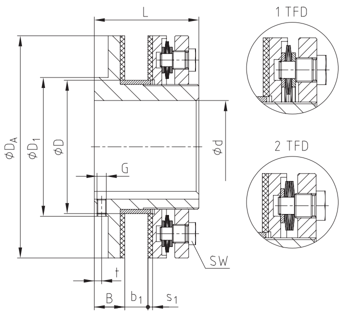


Size 0 - 5



Size 6 - 9

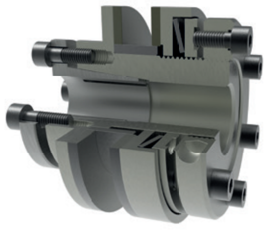
Technical data – dimensions

Size	Max. speed [4] [rpm]	Torques [Nm]			Dimensions [mm]											
					Bore d		D [2]	D$_1$	D$_A$	B	Drive component b$_1$		s$_1$	L	Setscrew	
		1TF	2TF	3TF [3]	Pilot bore	Max.					Min.	Max.			t	G
00	10000	(0.5) [5] 1-3	2-5	–	–	10	21	-	30	8.5	2	6	2.5	31	3	M4
0	8500	2-10	4-20	–	–	19 (20) [1]	35	45	45	8.5	2	6	2.5	33	3	M4
01	6600	5-35	10-70	–	–	22	40	40	58	16	3	8	3	45	4	M5
1	5600	20-75	40-150	130-200	–	25	44	45	68	17	3	10	3	52	5	M5
2	4300	25-140	50-280	250-400	–	35	58	58	88	19	4	12	3	57	5	M6
3	3300	50-300	100-600	550-800	–	45	72	75	115	21	5	15	4	68	5	M6
4	2700	90-600	180-1200	1100-1600	–	55	85	90	140	23	6	18	4	78	5	M8
5	2200	400-800	800-1600	1400-2100	–	65	98	102	170	29	8	20	5	92	8	M8
6	1900	300-1200	600-2400	–	38	80	116	120	200	31	8	23	5	102	8	M8
7	1600	600-2200	1200-4400	–	45	100	144	150	240	33	8	25	5	113	8	M10
8	1300	900-3400	1800-6800	–	58	120	170	180	285	35	8	25	5	115	8	M10
9	1000	2500-6000	6000-12000	–	65	140	237	225	350	53	16	28	6	162	11	M12

[1] The figure in brackets specifies the max. bore with keyway to DIN 6885 sheet 3 (low-rise design)
[2] Bore tolerance (drive component): F8 with size 00 - 4, H8 with size 5 - 9
[3] With clamping setting nut to be used on types limited in dimensions only
[4] See comments on page 281
[5] With special disk spring

On request:

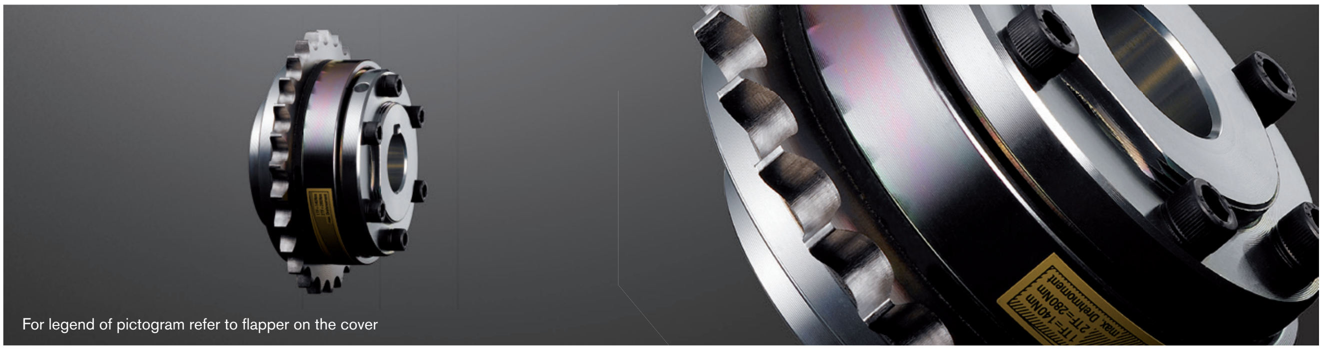
- With clamping setting nut for size 0 - 5 (standard with 3TF)
- For radial torque setting



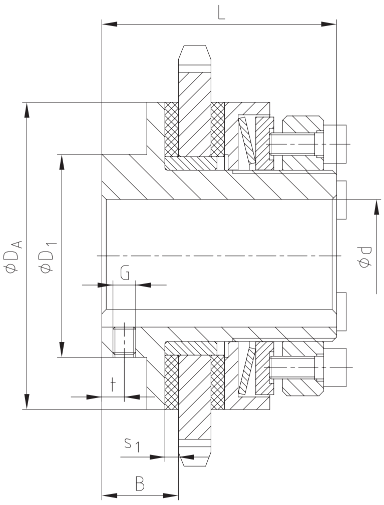
- With taper sleeve (hub type 4.5)
- Frictionally engaged shaft-hub-connection

Ordering example:	RUFLEX® 1	2TF	b$_1$ 10	d Ø20
	Type/size	Disk spring layering	Width of drive component b$_1$	Finish bore

With sprocket

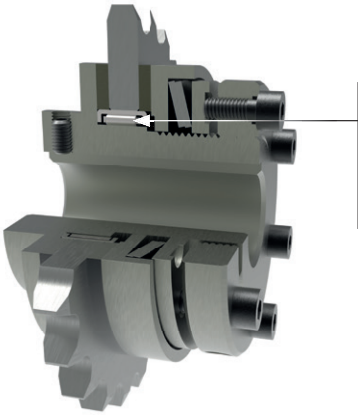


For legend of pictogram refer to flapper on the cover



Technical data – dimensions												
Size [4]	Max. speed [3] [rpm]	Torques [Nm]			Dimensions [mm]							
					Max. bore	D_1	D_A	B	s_1	L	Setscrew		Standard sprocket [2]
		1TF	2TF	3TF [1]	d						t	G	
01	6600	5-35	10-70	–	22	40	58	16	3	45	4	M5	06 B-1 ($^{3}/_{8}$ x $^{7}/_{32}$) z = 23
1	5600	20-75	40-150	130-200	25	45	68	17	3	52	5	M5	08 B-1 ($^{1}/_{2}$ x $^{5}/_{16}$) z = 22
2	4300	25-140	50-280	250-400	35	58	88	19	3	57	5	M6	08 B-1 ($^{1}/_{2}$ x $^{5}/_{16}$) z = 27
3	3300	50-300	100-600	550-800	45	75	115	21	4	68	5	M6	12 B-1 ($^{3}/_{4}$ x $^{7}/_{16}$) z = 22
4	2700	90-600	180-1200	1100-1600	55	90	140	23	4	78	5	M8	16 B-1 (1 x 17,02) z = 21

[1] With clamping setting nut to be used on types limited in dimensions only
[2] Review minimum number of teeth required / Other sprockets available on request.
[3] See comments on page 281
[4] Other sizes on request



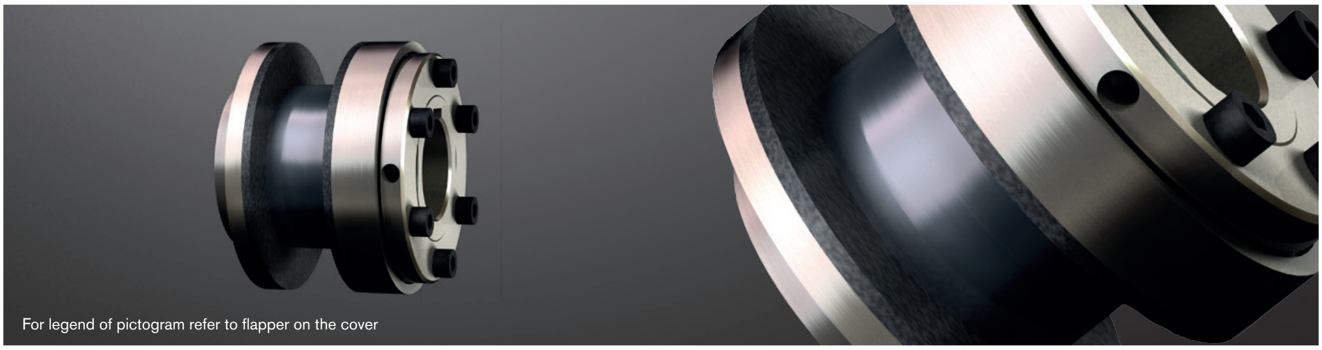
Special type:

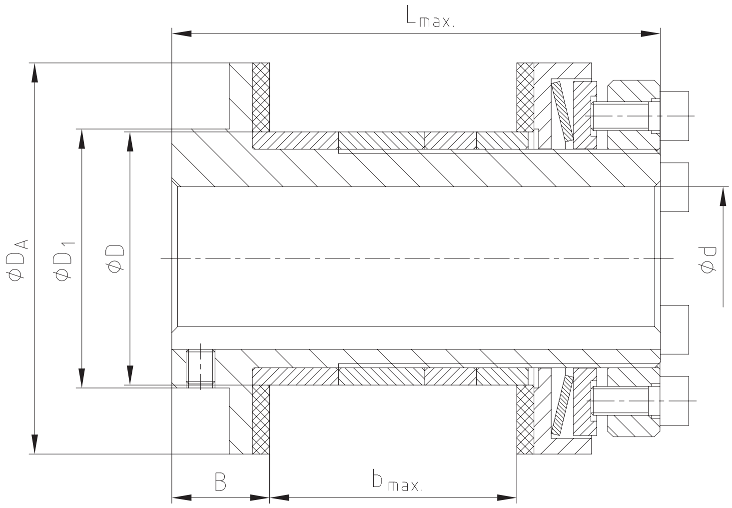
- If requested, available with needle bearing instead of slide bush
- For high radial loads on the sprocket
- With high speeds or long slipping periods

Ordering example:	RUFLEX® 1	2TF	d Ø20	08 B -1 ($^{1}/_{2}$ x $^{5}/_{16}$), z = 29	100 Nm
	Type/size	Disk spring layering	Finish bore	Sprocket	Torque set

RUFLEX®
Torque limiters

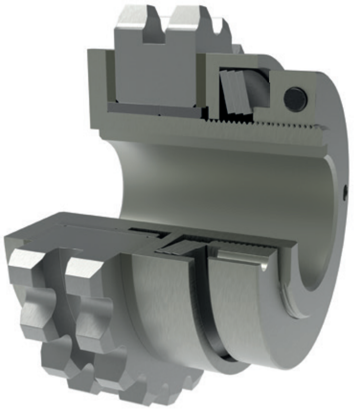
Max. type


For legend of pictogram refer to flapper on the cover



Technical data – dimensions											
Size	Max. speed [3] [rpm]	Torques [Nm]			Dimensions [mm]						
					Max. bore	D_1	D_A	B	Max. b	D [1]	Max. L
		1TF	2TF	3TF [2]	d						
01	6600	5-35	10-70	–	22	40	58	16	33	40	70
1	5600	20-75	40-150	130-200	25	45	68	17	43	44	85
2	4300	25-140	50-280	250-400	35	58	88	19	54	58	100
3	3300	50-300	100-600	550-800	45	75	115	21	62	72	115
4	2700	90-600	180-1200	1100-1600	55	90	140	23	91.5	85	154

[1] Bore tolerance (drive component): F8
[2] With clamping setting nut to be used on types limited in dimensions only
[3] See comments on page 281



Example:

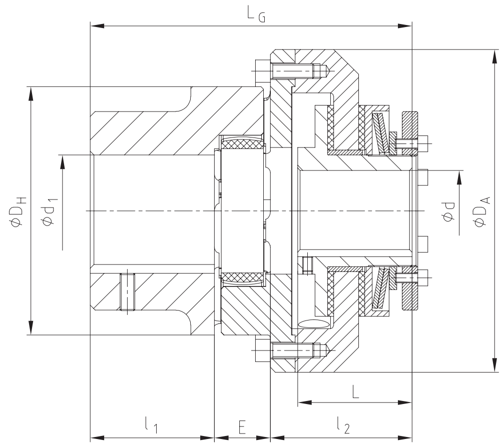
- RUFLEX® max. with sprocket assembled
- Available as a complete subassembly with torque preset

Ordering example:

RUFLEX® max. 1	2TF	b 35	d Ø20
Type/size	Disk spring layering	Width of drive component b	Finish bore

With torsionally flexible ROTEX®


For legend of pictogram refer to flapper on the cover



Technical data – dimensions

RUFLEX® size	ROTEX® size	RUFLEX® Torques [Nm]			ROTEX® 3) Torques [Nm]		Dimensions [mm]										
					98 Shore A		Bore d		Max. bore	D_H	D_A	l_1	l_2	E	L	L_G
		1TF	2TF	3TF 2)	T_{KN}	$T_{K\,max}$	Pilot bore	Max.	d_1							
00	14	(0.5)4) 1-3	2-5	–	12.5	25	–	10	16	30	44	11	35	13	31	59.5
0	19	2-10	4-20	–	17	34	–	19 (20) 1)	25	40	63	25	37	16	33	78
01	24	5-35	10-70	–	60	120	–	22	35	55	80	30	50	18	45	98
1	28	20-75	40-150	130-200	160	320	–	25	40	65	98	35	58	20	52	113
2	38	25-140	50-280	250-400	325	650	–	35	48	80	120	45	64	24	57	133
3	48	50-300	100-600	550-800	525	1050	–	45	62	105	162	56	82	28	68	166
4	75	90-600	180-1200	1100-1600	1920	3840	–	55	95	160	185	85	80	40	78	205
5	90	400-800	800-1600	1400-2100	3600	7200	–	65	110	200	260	100	114	45	92	259
6	100	300-1200	600-2400	–	4950	9900	38	80	115	225	285	110	130	50	102	290
7	110	600-2200	1200-4400	–	7200	14400	45	100	125	255	330	120	142	55	113	317
8	140	900-3400	1800-6800	–	12800	25600	58	120	160	320	410	155	152	65	115	372
9	160	2500-6000	6000-12000	–	19200	38400	65	140	185	370	460	175	199	75	161	449

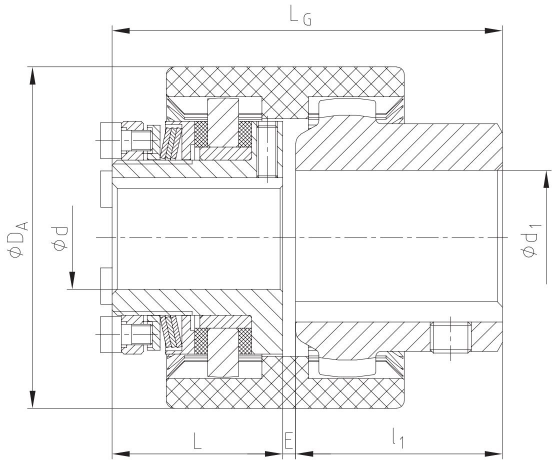
[1] The figure in brackets specifies the max. bore with keyway to DIN 6885 sheet 3 (low-rise design)
[2] With clamping setting nut to be used on types limited in dimensions only
[3] See selection of ROTEX® couplings on page 14 et seqq.
[4] With special disk spring

Ordering example:	RUFLEX® 1	2TF	d Ø20	ROTEX® 28	98 ShA	d_1 Ø25	100 Nm
	Type/size	Disk spring layering	RUFLEX® bore	Type/size	Spider	ROTEX® bore	Torque set

RUFLEX®
Torque limiters

With torsionally stiff BoWex®

For legend of pictogram refer to flapper on the cover



Technical data – dimensions

RUFLEX® size	BoWex® size	RUFLEX® Torques [Nm]			BoWex® 3) Torques [Nm]		Dimensions [mm]						
							Max. bore		D_A	l_1	L	E	L_G
		1TF	2TF	3TF 2)	T_{KN}	$T_{K\ max}$	d	d_1					
00	19	(0.5)4) 1-3	2-5	–	16	32	10	19	48	25.0	31	2.5	58.5
0	28	2-10	4-20	–	45	90	19 (20) 1)	28	66	40.0	33	2.5	75.5
01	38	5-35	10-70	–	80	160	22	38	83	35.5	45	1.0	81.5
1	48	20-75	40-150	130-200	140	280	25	48	95	45.5	52	1.0	98.5
2	65	25-140	50-280	250-400	380	760	35	65	132	64.0	57	1.0	122

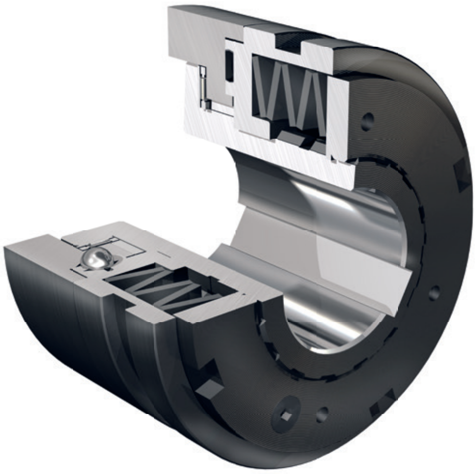
1) The figure in brackets specifies the max. bore with keyway to DIN 6885 sheet 3 (low-rise design)
2) With clamping setting nut to be used on types limited in dimensions only
3) See selection of BoWex® couplings on page 14 et seqq.
4) With special disk spring

Ordering example:

RUFLEX® 1	1TF	d Ø20	BoWex® 48	d_1 Ø25	50 Nm
Type/size	Disk spring layering	RUFLEX® bore	Type/size	BoWex® bore	Torque set

Design and operation

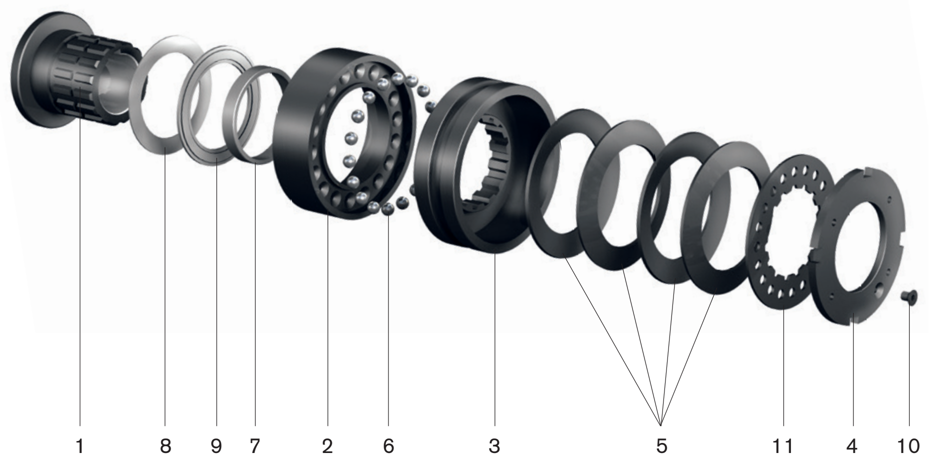
- Overload protection up to 8,200 Nm
- Available as a ratchet, synchronous, idle rotation and fail-safe design with the same dimensions
- Reduction of torque peaks
- High response accuracy, even after a long operating period
- Disconnection of the drive with overload by retrieving limit switch
- Automatically operative (DK, SR, SGR)



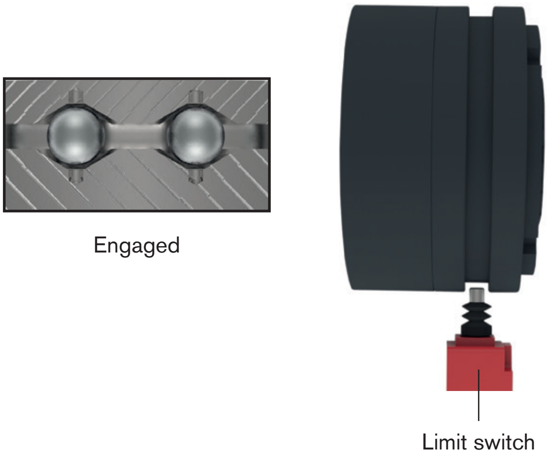
- Available in various types (e. g. with needle bearing) and combinations (e. g. with torsionally flexible ROTEX®)
- Easy assembly and torque setting
- Maintenance-free
- Insensitive to oil and grease
- Long service life due to high-quality materials

In case of overload the ratchet components (balls or rollers) leave their indentations, and a relative motion between the driving and driven side is generated. Damages caused by overload are reliably prevented in this way. The shift ring (3) makes an axial motion to the engagement travel „H“ activating the limit switch or proximity initiator. The signal can be used for controlling or disconnecting the drive. For restarting we would recommend to bypass the limit switch or proximity switch electrically for a short time.

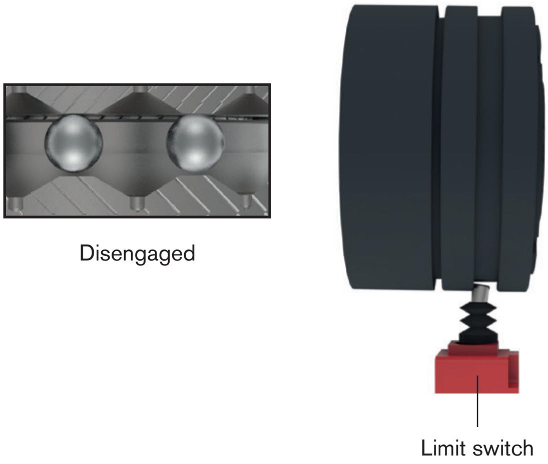
Component	Description
1	Hub
2	Flange ring
3	Shifting ring
4	Setting nut
5	Disk spring
6	Ball bearing cage
7	Plain bush
8	Axial disk
9	Axial needle bearing
10	Setscrew
11	Lock washer



No signal with normal operation



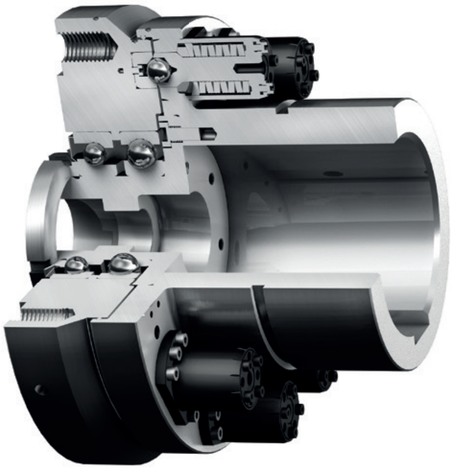
Signal with overload



KTR-SI FRE
Idle rotation overload system

Design and operation

- Setting range up to 60,000 Nm (higher torques available on request)
- Idle rotation overload system (load-separating)
- High repeatability



- Flange type to connect toothed belt pulleys or sprockets
- Combination with ROTEX®, GEARex® or RADEX®-N as a shaft-to-shaft connection
- The intelligent further development of shear pin couplings and hydraulic clamping sets

The core of the overload system is formed by the idle rotation elements. They uncouple the driving and driven side in case of overload while protecting the drive train from damages. After eliminating the overload, the idle rotation segments are manually re-engaged so that the drive is released again. In order to set the coupling to the requested release torque, a defined pre-stress is generated on the disk springs in each idle rotation element via the setting nut. The number of idle rotation elements varies depending on the release torque demanded. If requested, the coupling can be preset by the manufacturer. It is also possible to adapt the coupling when in place.

Component	Description
1	Hub
2	Bearing flange
3	Cap screw
4	Angular ball bearing
5	O-ring
6	KTR-SI FRE connection flange
7	Groove ball bearing
8	NILOS ring
9	Supporting disk
10	Safety plate
11	Groove nut
12	Shim ring
13	Idle rotation element
14	Setscrew

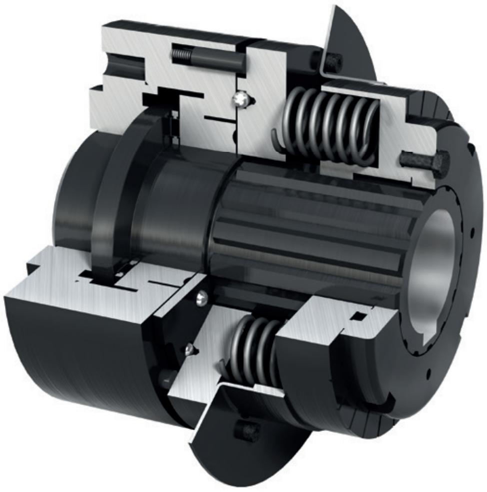
KTR-SI FRA

Idle rotation overload system with automatic re-engagement when reversing the direction of rotation

NEW

Design and operation

- Overload protection up to 3,000 Nm
- Idle rotation overload system (load-separating)
- Re-engagement by reversing the direction of rotation, thus optimally suitable for positions difficult to accesss



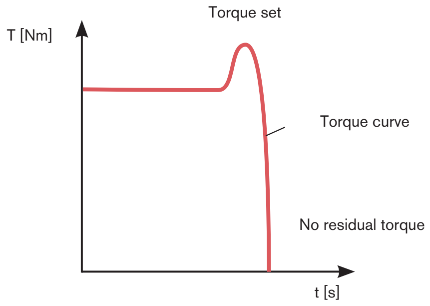
- Flange type to connect toothed belt pulleys or sprockets
- Combination with torsionally flexible POLY-NORM® as a shaft-to-shaft connection

Component	Description
1	Connection flange
2	Plain bearing
3	Axial disk
4	Hub
5	Axial bearing
6	Bearing flange
7	Flange ring
8	Balls
9	Shifting ring
10	Disk springs
11	Pressure ring
12	Lock washer
13	Setting nut

KTR-SI / KTR-SI FRE / KTR-SI FRA
Overload systems

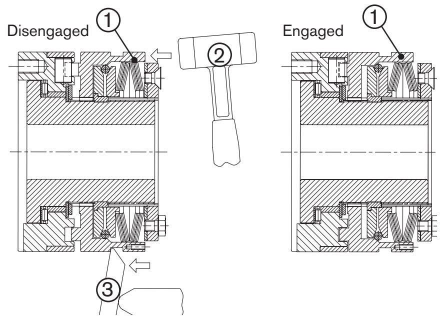
Operating principles

1. Idle rotation design FR/FRE/FRA



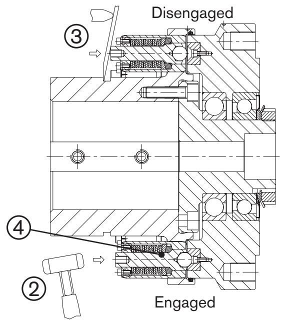
Operating principle of KTR-SI idle rotation couplings:
When achieving the torque set, the coupling rotates. Subject to the idle rotation mechanism driving and driven side remain separated. The resulting flywheel mass can slow down in idle state. After eliminating the overload, the coupling can be re-engaged. The re-engagement is effected manually or via a device respectively automatically.

Re-engagement of FR



Re-engagement of the idle rotation coupling:
Re-engagement is generated by axial pressure on the shifting ring (1). Dependent on the existing resources, accessibility etc., re-engagement can be made in different ways: By several blows of a plastic hammer (2) axially on the shifting ring (see above), via assembly levers (3) or a pneumatic or hydraulic engagement device (automated engagement procedure).

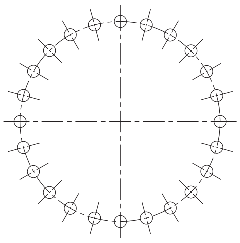
Re-engagement of FRE



Re-engagement of idle rotation elements:
After eliminating the overload, driving and driven side are aligned to each other. By means of a plastic hammer (2) or a tyre lever (3) the idle rotation elements (4) are manually re-engaged. Re-engagement can be heard loudly. The overload coupling is ready for use again.

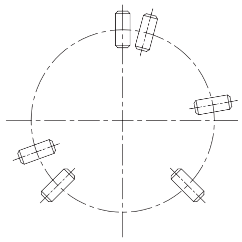
Re-engagement of FRA
After eliminating the overload the KTR-SI FRA can be re-engaged by reversing the direction of rotation with slow speed (>50 rpm).

2. Ratchet design DK



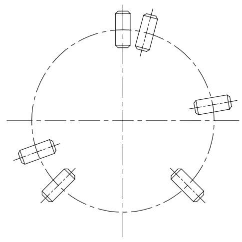
Any engagement after an overload. After eliminating the overload, the balls re-engage automatically with the next following ball indentation.

3. 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.

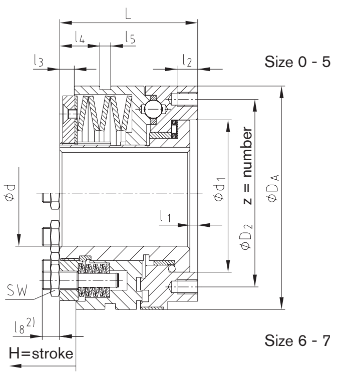
4. Fail-safe design SGR



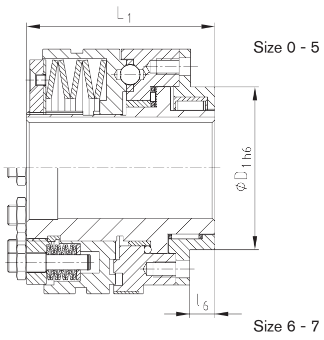
The fail-safe design is purely intended for torque measurement without any ratcheting operation. In case of overload a signal is generated by a limit switch along with mechanical separation of driving and driven side = ratcheting is not possible.

Flange type

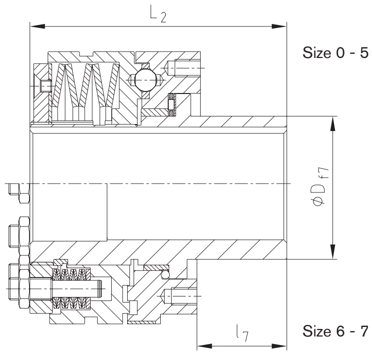
Type FT



Type KT



Type LT



Technical data

Size	Torques [Nm]												Weight with max. bore [kg]
	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	0.41
1	6-12	12-25	25-55	55-100	12-25	25-50	50-100	–	12-25	25-50	50-100	5000	1.30
2	12-25	25-50	50-120	120-200	25-50	50-100	100-200	–	25-50	50-100	100-200	4000	2.27
3	25-50	50-100	100-250	200-450	50-100	100-200	200-450	–	50-100	100-200	200-450	3500	3.88
4	50-100	100-200	200-500	500-1000	100-200	200-400	400-800	800-2000	100-200	200-400	400-800	3000	8.34
5	85-250	230-600	300-1000	600-2000	170-450	350-900	600-1800	1200-3400	170-450	350-900	600-1800	2300	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		d_1	D	D_1	D_2	D_A	l_1	l_2	l_3	l_4	l_5	l_6	l_7	L	L_1	L_2	z	H=stroke			
	Pilot bore	Max.																	DK	SR	SGR	FR
0	7	20	41.0	28	38	48	55	4.0	6.5	3.0	7.5	9	8	27.5	38.5	51.0	66.0	6xM5	1.4	1.2	0.6	1.6
1	10	25	60.0	38	50	70	82	4.0	8.0	6.0	11.5	9	10	33.0	52.0	70.0	85.0	6xM5	2.3	1.8	0.8	2.3
2	14	35	78.0	52	60	89	100	5.0	10.0	5.0	12.0	9	12	39.0	61.0	78.0	100.0	6xM6	2.4	2.0	1.1	3.0
3	18	45	90.5	65	80	105	120	5.0	12.0	8.5	21.0	10	12	47.0	78.0	96.0	125.0	6xM8	2.7	2.2	1.2	3.5
4	24	55	105.0	78	100	125	146	6.5	15.0	11.0	27.0	9	16	52.5	100.0	124.5	152.5	6xM10 1)	3.7	2.5	1.2	3.8
5	30	65 (70) 4)	120.5	90	120	155	176	6.5	17.0	12.0	33.0	9	18	57.5	113.5	140.0	171.0	6xM12 1)	4.6	3.0	1.6	4.5
6 2)	40	80	136.0	108	130	160	200	7.0	20.0	14.0	39.0	9	20	64.0	119.0	150.0	183.0	6xM12 1)	5.0	3.5	2.5	–
7 2)	50	100 (110) 4)	168.0	135	160	200	240	8.0	25.0	15.0	46.0	9	25	72.0	141.0	175.0	213.0	6xM16 1)	5.5	4.0	2.7	–

1) Type T4 SR and SGR: tightening torques according to 12.9

2) Size 6: dimension l_8 = 15 mm, size 7: dimension l_8 = 21 mm

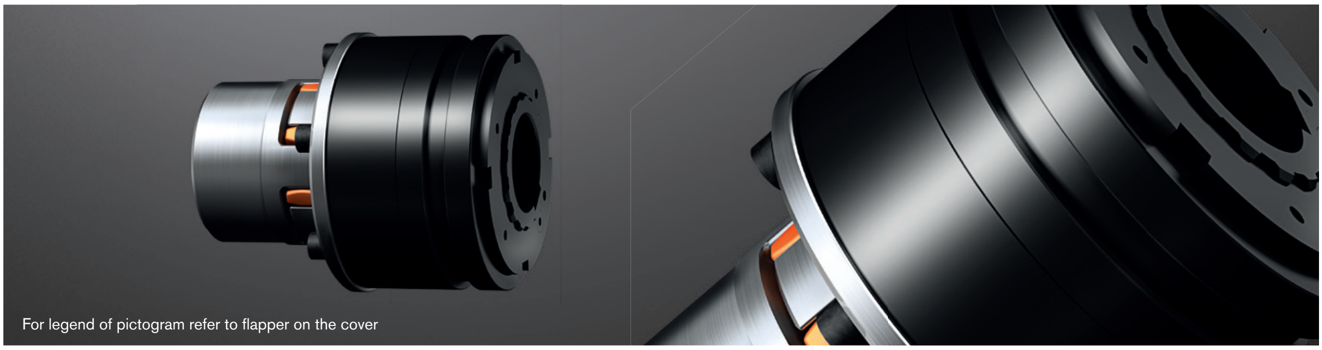
3) See comments on page 281

4) The figure in brackets specifies the max. bore with keyway to DIN 6885 sheet 3 (low-rise design)

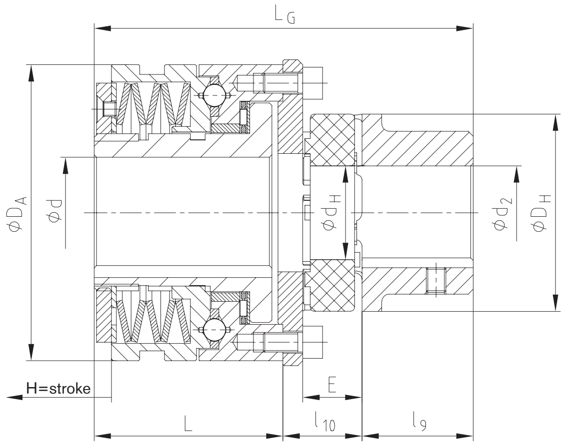
Ordering example:	KTR-SI 2	FR	FT	T2	d Ø20	40 Nm
	Type/size	Type (DK/SR/SGR/FR)	Type	Disk spring layering	Bore	Torque set

KTR-SI
Overload systems

With torsionally flexible ROTEX®


For legend of pictogram refer to flapper on the cover

120 °C ΔK_a ΔK_w ΔK_r ≤5°



Technical data

KTR-SI size	Torques [Nm]										
	Type DK				Type SR and SGR				Type FR		
	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3
0	2.5-5	5-20	–	20-40	5-10	10-40	–	–	5-10	10-20	20-40
1	6-12	12-25	25-55	55-100	12-25	25-50	50-100	–	12-25	25-50	50-100
2	12-25	25-50	50-120	120-200	25-50	50-100	100-200	–	25-50	50-100	100-200
3	25-50	50-100	100-250	200-450	50-100	100-200	200-450	–	50-100	100-200	200-450
4	50-100	100-200	200-500	500-1000	100-200	200-400	400-800	800-2000	100-200	200-400	400-800
5	85-250	230-600	300-1000	600-2000	170-450	350-900	600-1800	1200-3400	170-450	350-900	600-1800
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	–	–	–

Technical data – dimensions

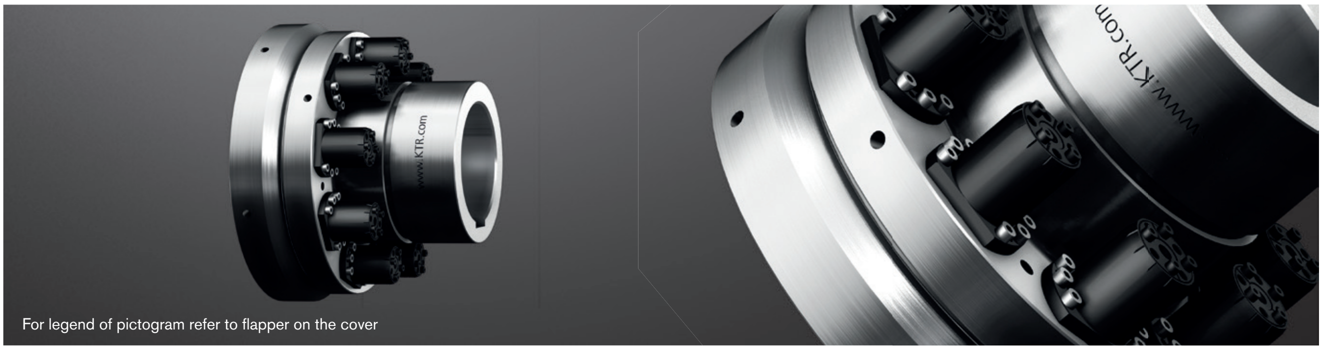
KTR-SI size	ROTEX® size	ROTEX® [1] Torque [Nm] 98 ShA		Max. bore		Dimensions [mm]								H=stroke Type		
		T_{KN}	$T_{K\,max}$	d	d_2	d_H	D_H	D_A	l_9	l_{10}	E	L	L_G	DK	SR	FR
0	19	17	34	20	25	18	40	55	25	22	16	38.5	85.5	1.4	1.2	1.6
	28	160	320		40	30	65		35	28.5	20		102			
1	24	60	120	25	35	27	55	82	30	24	18	52	106	2.3	1.8	2.3
	38	325	650		48	38	80		45	32.5	24		129.5			
2	28	160	320	35	40	30	65	100	35	28	20	61	124	2.4	2.0	3.0
	48	525	1050		62	51	105		56	38	28		155			
3	38	325	650	45	48	38	80	120	45	32	24	78	155	2.7	2.2	3.5
	55	685	1370		74	60	120		65	43	30		186			
4	48	525	1050	55	62	51	105	146	56	38	28	100	194	3.7	2.5	3.8
	75	1920	3840		95	80	160		85	56.5	40		241.5			
5	55	685	1370	65 (70) [2]	70	60	120	176	65	44	30	113.5	222.5	4.6	3.0	4.5
	90	3600	7200		110	100	200		100	62	45		275.5			
6	100	4950	9900	80	115	113	225	200	110	72	50	119	301	5.0	3.5	–
7	110	7200	14400	100 (110) [2]	125	127	255	240	120	78	55	141	339	5.5	4.0	–

[1] See selection of ROTEX® couplings on page 14 et seqq.
[2] The figure in brackets specifies the max. bore with keyway to DIN 6885 sheet 3 (low-rise design)

Ordering example:	KTR-SI 2	DK	T2	d Ø20	ROTEX® 28	98 ShA	d_2 Ø25	40 Nm
	Type/size	Type (DK/SR/SGR/FR)	Disk spring layering	KTR-SI bore	Type/size	Spider	ROTEX® bore	Torque set

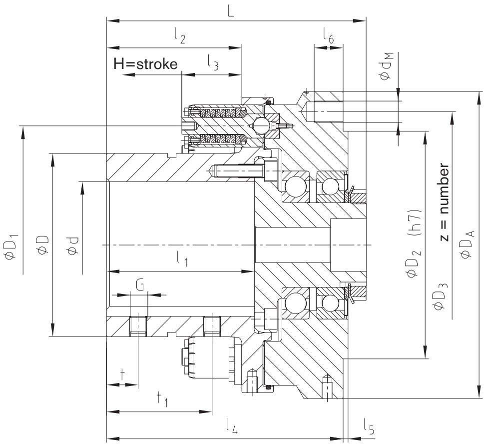
KTR-SI FRE
Idle rotation overload system

Flange type



For legend of pictogram refer to flapper on the cover

+/- 15%



Torques [Nm]							
Size	Type of element	3 idle rotation elements		6 idle rotation elements		9 idle rotation elements	
		Min.	Max.	Min.	Max.	Min.	Max.
9	1T1	800	2600	–	–	–	–
	1T2	1000	4000	2000	8000	–	–
	1T3	2400	5500	4800	11000	–	–
12	1T2	1300	5000	2600	10000	3900	15000
	1T3	2900	6700	5800	13400	8700	20100
15	1T2	1700	6000	3400	12000	5100	18000
	1T3	3500	8200	7000	16400	10500	24600
20	2T2	5000	15000	10000	30000	15000	45000
	2T3	13100	20000	26300	40000	39400	60000

Technical data – dimensions																							
Size 1)	Max. bore	Dimensions [mm]																		Max. permissible forces on the flange connection 2) [kN]		Speed 3) [rpm]	Weight with max. bore [kg]
	d	D	D_1	D_2	D_3	D_A	l_1	l_2	l_3	l_4	l_5	l_6	G	t	t_1	L	d_M	z	pitch	H=stroke	Radial	Axial		
9	90	135	185	200	225	260	120	110	56.7	197	2.5	17.5	M12	25	75	213.5	12	12	12x30°	5.2	18	13	3300	38
12	120	173	225	215	252	290	140	128	56.7	224	4.5	27.5	M16	30	100	246	20	15	20x18°	5.2	26	18	2300	57
15	150	215	270	245	282	324	170	160	56.7	258	4.5	27.5	M20	40	120	281	20	15	20x18°	5.2	30	20	2050	81
20	200	285	370	330	375	460	220	200	89.4	341	5	33.0	M20	50	150	366	24	18	24x15°	8.9	50	40	1550	211

1) Other sizes on request
2) Larger forces on request
3) Higher speeds on request, see comments on page 281

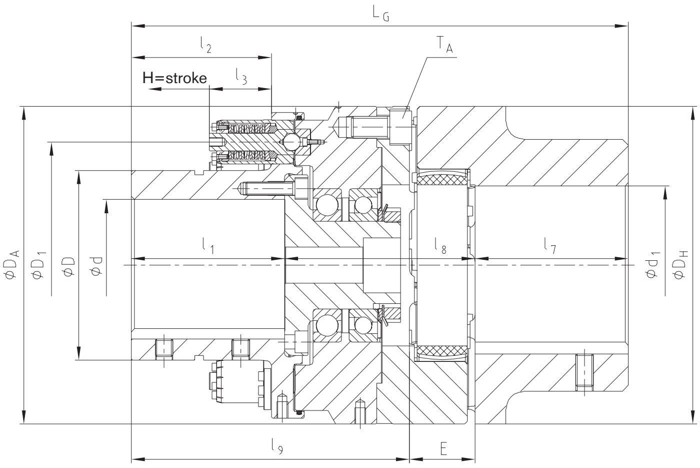
Special type:

- KTR-SI FRE with sprocket
- Available as a complete subassembly with torque preset

Ordering example:	KTR-SI FRE 12	1T2	9	d Ø85	7500 Nm
	Type/size	Type of element	Number of idle rotation elements	KTR-SI FRE bore	Torque set

KTR-SI FRE
Idle rotation overload system

With torsionally flexible ROTEX®



Torques [Nm]							
Size	Type of element	3 idle rotation elements		6 idle rotation elements		9 idle rotation elements	
		Min.	Max.	Min.	Max.	Min.	Max.
9	1T1	800	2600	–	–	–	–
	1T2	1000	4000	2000	8000	–	–
	1T3	2400	5500	4800	11000	–	–
12	1T2	1300	5000	2600	10000	3900	15000
	1T3	2900	6700	5800	13400	8700	20100
15	1T2	1700	6000	3400	12000	5100	18000
	1T3	3500	8200	7000	16400	10500	24600
20	2T2	5000	15000	10000	30000	15000	45000
	2T3	13100	20000	26300	40000	39400	60000

Technical data – dimensions																					
Size 1)	ROTEX®			Max. bore		Dimensions [mm]													T_A [Nm]	Speed 2) [rpm]	Weight with max. bore [kg]
	Size	Torque 3) [Nm] 64 ShD		d	d_1																
		T_{KN}	$T_{K\,max}$			D	D_1	D_H	D_A	l_1	l_2	l_3	l_7	l_8	l_9	E	L_G	H=stroke			
9	90	4500	9000	90	110	135	185	200	260	120	110	56.7	100	133	217	45	362	5.2	117	3300	59
12	125	12500	25000	120	145	173	225	290	290	146	130	56.7	140	165	254	60	454	5.2	560	2300	106
15	140	16000	32000	150	160	215	270	320	324	170	160	56.7	155	176	292	65	512	5.2	560	2050	147
20	180	35000	70000	200	200	285	370	420	460	220	200	88.4	195	227	381	85	661	8.9	970	1550	349

1) Other sizes on request
2) Higher speeds on request, see comments on page 281
3) See selection of ROTEX® couplings on page 14 et seqq.

Special type:

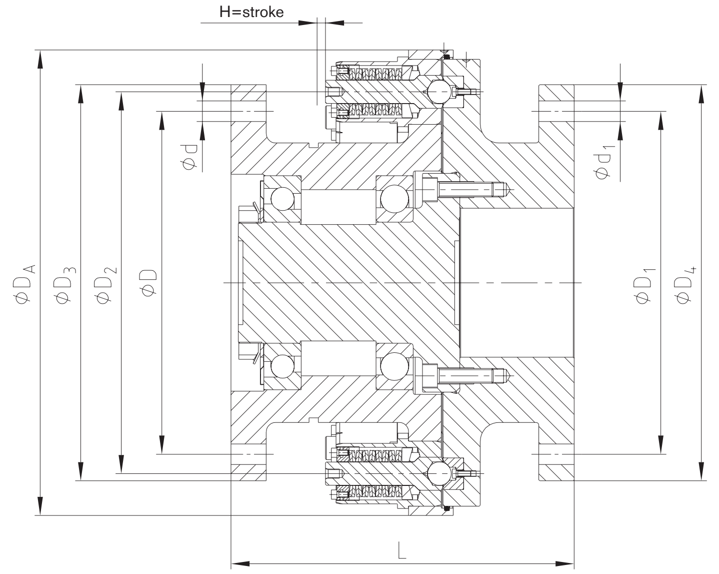
- KTR-SI FRE with torsionally flexible pin & bush coupling REVOLEX® KX-D and limitation of axial backlash
- KTR-SI FRE with torsionally stiff all-steel gear coupling GEARex® and integrated brake disk
- KTR-SI FRE with torsionally stiff laminae coupling RADEX®-N and integrated brake disk

Ordering example:	KTR-SI FRE 12	1T3	9	d Ø85	ROTEX® 125	98 ShA	d_1 Ø85	12000 Nm
	Type/size	Type of element	Number of idle rotation elements	KTR-SI FRE bore	Type/size	Spider	ROTEX® bore	Torque set

KTR-SI FRE
Idle rotation overload system

Customised type (on request)

For legend of pictogram refer to flapper on the cover



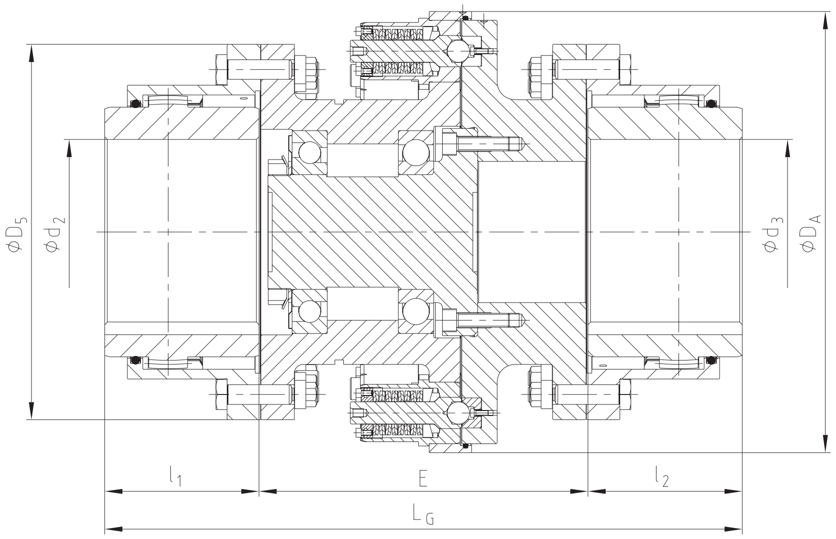
Torques [Nm]									
Size	Type of element	3 idle rotation elements		6 idle rotation elements		9 idle rotation elements		12 idle rotation elements	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
00-1	1T1	1200	3800	2400	7600	3600	11400	–	–
	1T2	1700	6000	3400	1200	5100	18000	–	–
	1T3	3500	8200	7000	16400	10500	24600	–	–
00-2	2T1	–	–	6800	17200	10200	25800	13600	34400
	2T2	–	–	11700	31900	17550	47850	23400	63800
	2T3	–	–	21200	43000	32400	64500	42400	86000
00-3	3T1	–	–	23000	78000	34500	117000	46000	156000
	3T2	–	–	47000	108000	70500	162000	94000	216000

Technical data – dimensions																									
Size	GEARex®			RADEX®-N			Max. bore			Dimensions [mm]															
	Size	Torque [Nm]		Size	Torque [Nm]		d_2, d_3	d_4	d_5																
		T_{KN}	$T_{Kmax.}$		T_{KN}	$T_{Kmax.}$				d, d_1	D, D_1	D_2	D_3, D_4	D_5	D_6	D_A	l_1, l_2	l_3	l_4	E	E_1	L	L_G	L_{G1}	H=stroke
00-1	35	17000	34000	136	17500	35000	133	135	140	custom-ised	custom-ised	270	custom-ised	280	300	324	105	135	126	256	custom-ised	custom-ised	466	$E+l_7+l_8$	5.2
00-2	55	65000	130000	208	70000	140000	210	200	250			410		425.5	425.5	500	175	200	245	373			723		8.9
00-3	85	225000	450000	288	200000	400000	325	290	350			540		585	567	655	292	280	335	416			1000		13.6

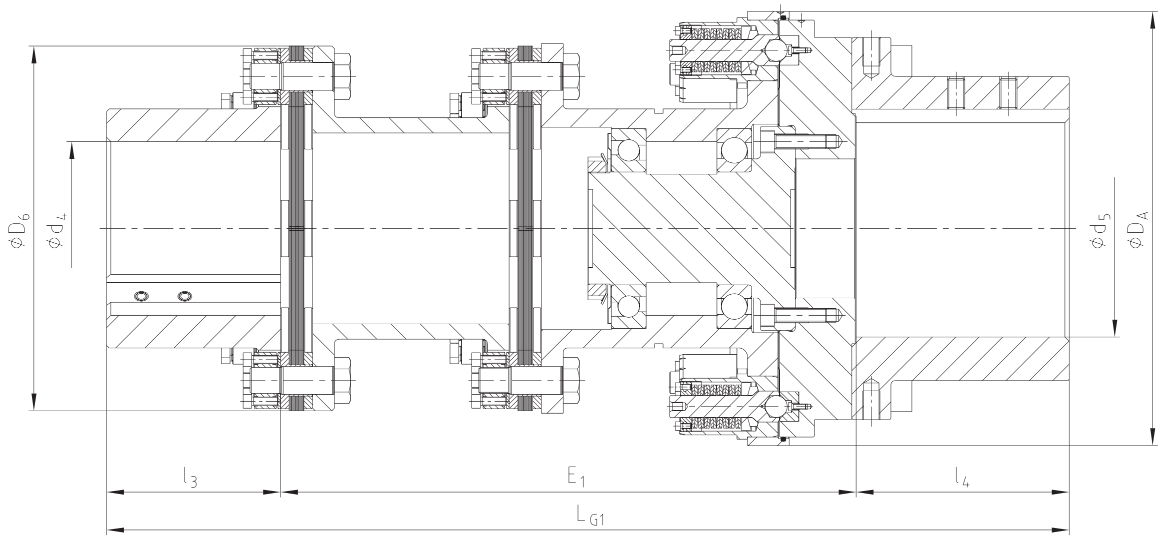
Ordering example:	KTR-SI FRE 00-2	T2	6	Ø350	Ø400	349	25000 Nm
	Type/size	Type of element	Number of idle rotation elements	Flange diameter ØD3	Flange diameter ØD4	Total length L	Torque set

Other types and combinations available on request.

Type 00 with GEARex®

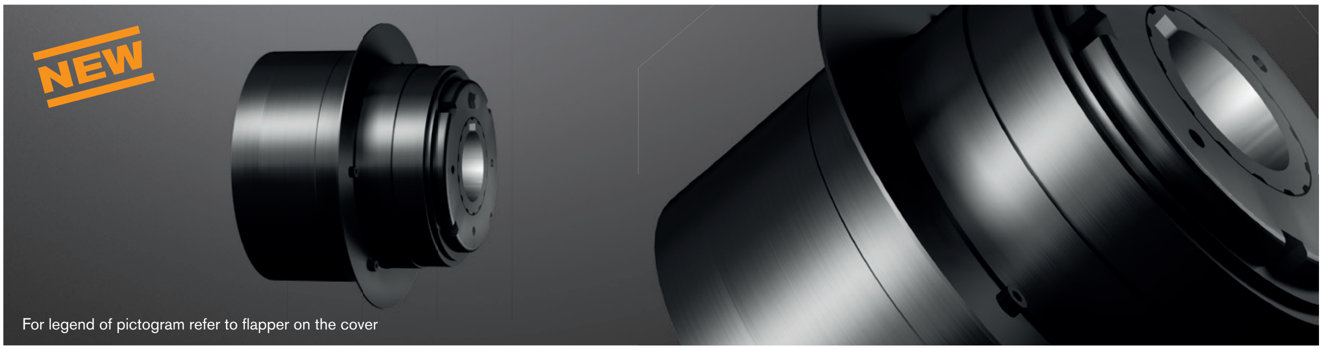


Type 00 with RADEX®-N

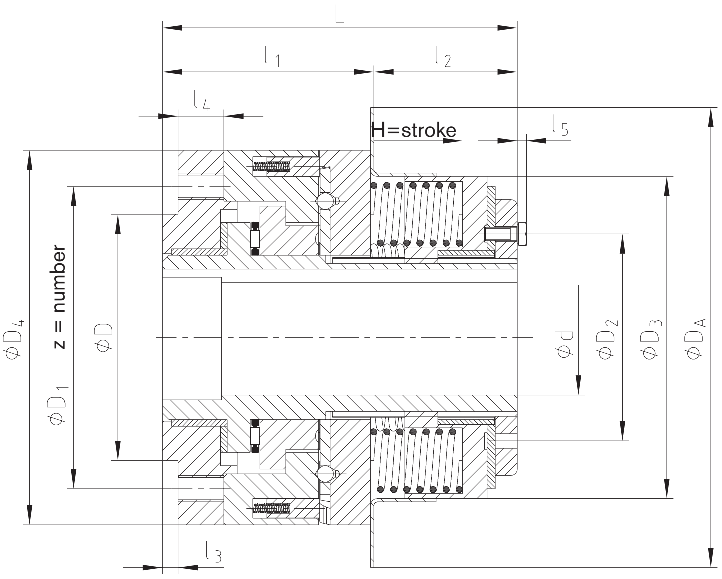


KTR-SI FRA
Idle rotation overload system with automatic re-engagement when reversing the direction of rotation

Flange type FT



For legend of pictogram refer to flapper on the cover



Torques [Nm]				
Size	T1	T2	T3	T4
2	5-20	15-70	40-135	80-260
3	24-104	57-360	110-540	245-730
4	45-210	145-435	340-960	465-1320
5	90-415	240-640	490-1880	1060-3000

Technical data – dimensions

Size	Bore d		Dimensions [mm]														Speed [1] [rpm]	Weight with max. bore [kg]
	Pilot bore	Max.	D j7	D_1	D_2	D_3	D_4	D_A	l_1	l_2	l_3	l_4	l_5	L	z	H=stroke		
2	22	35	75	92	70	98	114	140	63	45	4.7	14	-	108	6xM8	2.8	3600	5
3	22	45	95	114	77	131	149	184	69	42	4.7	15	3.5	111	7xM10	3.5	3600	10
4	25	55	122	144	88	147	166	203	75	46	4.7	15	4.0	121	8xM12	3.5	2000	13
5	30	80	155	184	152	196	223	279	94	70	6.3	23	2.3	164	8xM16	4.4	2000	32

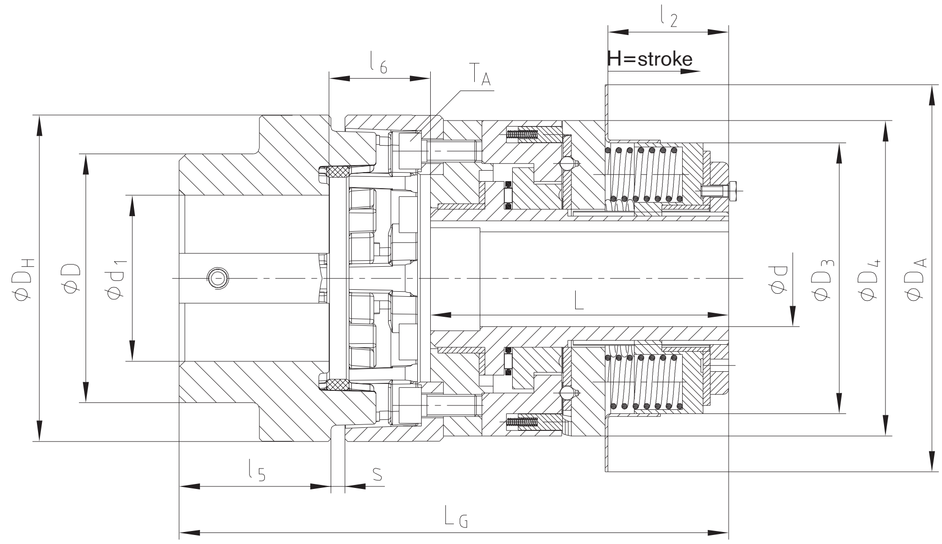
[1] See comments on page 281

Ordering example:	KTR-SI FRA 3	FT	T3	d Ø35	300 Nm
	Type/size	Type	Torque setting range	KTR-SI FRE bore	Torque set

KTR-SI FRA
Idle rotation overload system with automatic re-engagement when reversing the direction of rotation

With torsionally flexible POLY-NORM®

For legend of pictogram refer to flapper on the cover



Torques [Nm]				
KTR-SI FRA size	T1	T2	T3	T4
2	5-20	15-70	40-135	80-260
3	24-104	57-360	110-540	245-730
4	45-210	145-435	340-960	465-1320
5	90-415	240-640	490-1880	1060-3000

Technical data – dimensions

KTR-SI FRA size	POLY-NORM®			Max. bore		Dimensions [mm]													T_A [Nm]	Speed [1] [rpm]	Weight with max. bore [kg]
	Size	Torque [Nm]																			
		T_{KN}	$T_{K\ max}$	d	d_1	D	D_3	D_4	D_H	D_A	l_1	l_2	l_5	l_6	s	L_G	L	H=stroke			
2	55	300	600	35	60	90	98	114	118	140	108	45	55	27	5	189.3	108	2.8	23	3600	9
3	75	850	1700	45	70	123	131	149	158	184	111	42	75	33.8	5	218.8	111	3.5	46	3600	18
4	85	1350	2700	55	80	139	147	166	182	203	121	46	85	52.6	5	257.6	121	3.5	79	2000	25
5	100	3900	7800	80	90	165	196	223	224	279	164	70	100	63.2	6	326.2	164	4.4	195	2000	51

[1] See comments on page 281

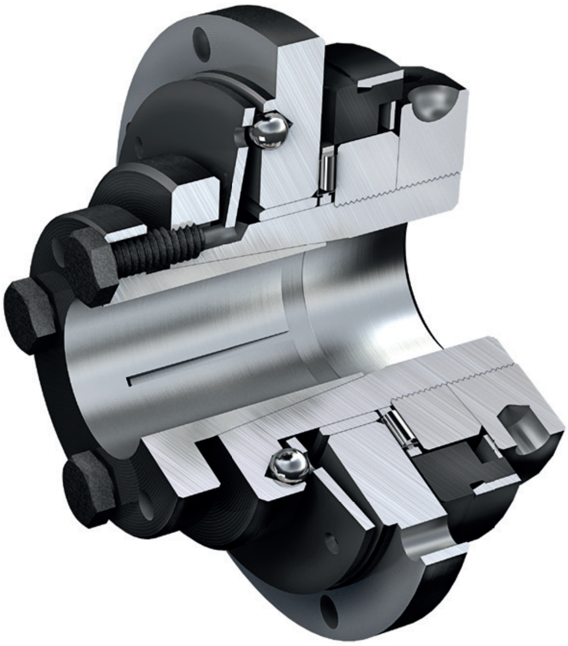
Ordering example:

KTR-SI FRA 3	T3	d Ø35	POLY-NORM® 75	AR	d_1 Ø45	300 Nm
Type/size	Torque setting range	KTR-SI FRA bore	Type/size	Type	POLY-NORM® bore	Torque set

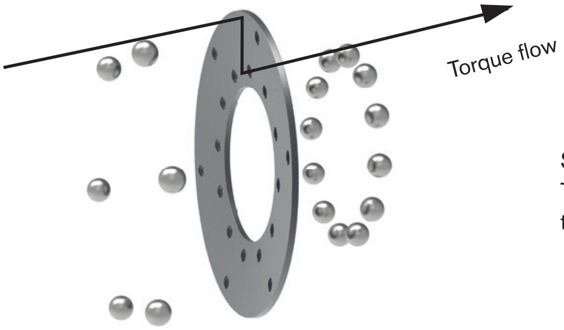
SYNTEX®
Backlash-free overload systems

Design 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 ready for operation again

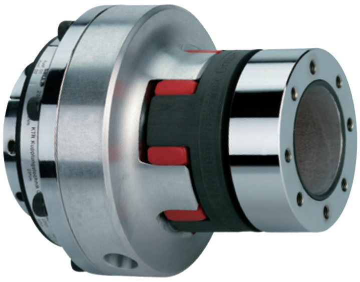


SYNTEX® is an overload system with positive locking operation. The punched disk spring is a component serving for transmitting the torque.

SYNTEX®
Overload system with mounting flange

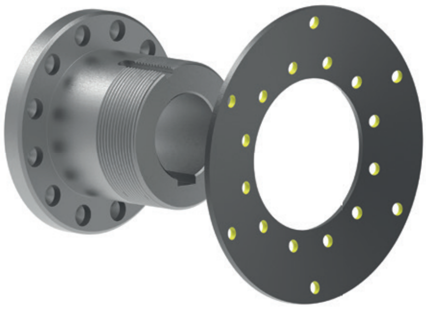
SYNTEX®
Overload system with sprocket

SYNTEX®
Overload system with ROTEX® GS

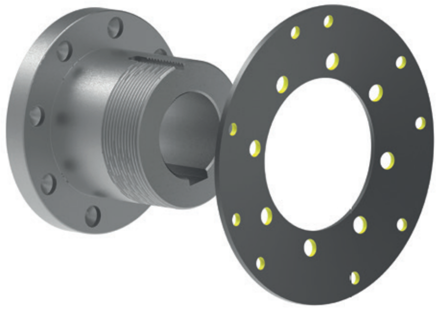


Operating principles

Ratchet design DK



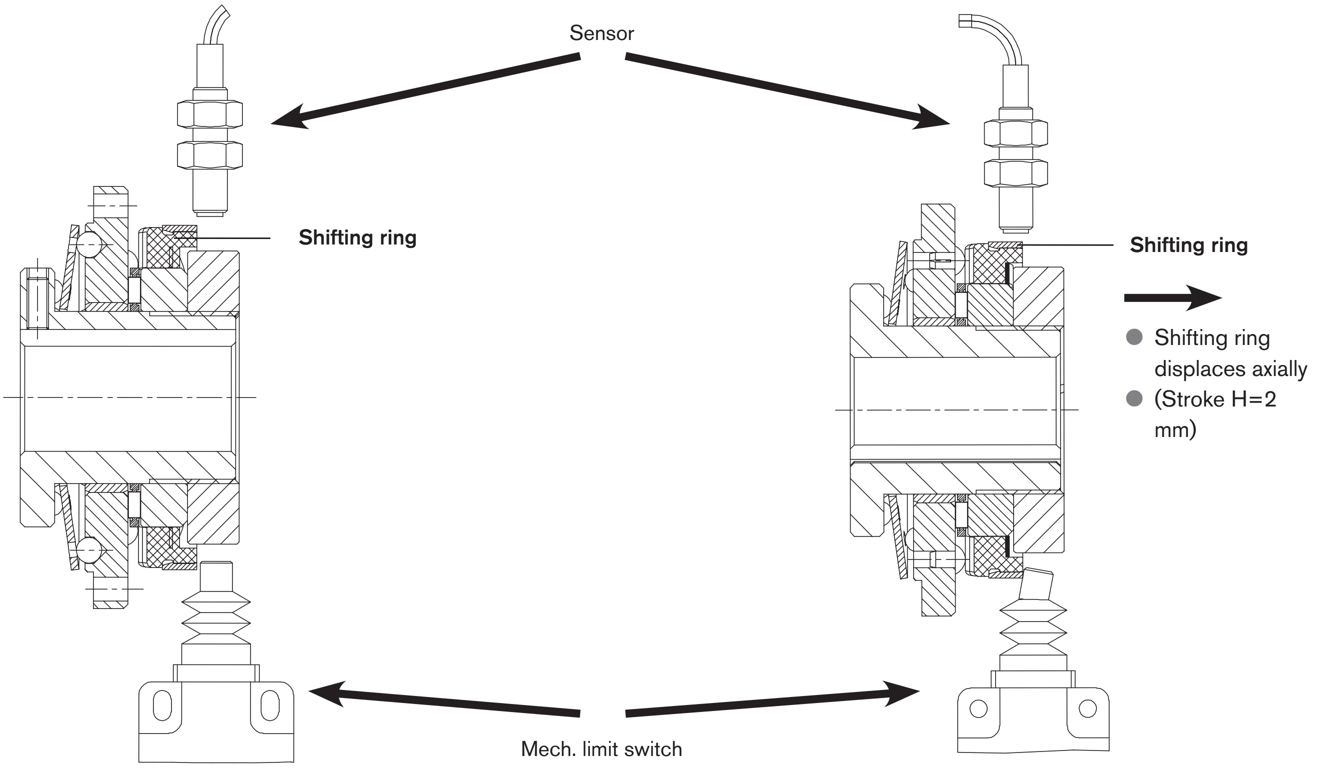
Synchronous design SK



If the torque set is exceeded, a relative movement is generated between the driving and driven side. The transmittable torque is reduced to a low residual figure.
The balls leave the indentations of the disk spring. After eliminating the overload, the balls engage automatically with the next following ball indentation of the disk spring.

If the torque set is exceeded, a relative movement is generated between the driving and driven side. The transmittable torque is reduced to a low residual figure.
The balls leave the indentations of the disk spring. 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 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 resp. mechanical limit switch. The resulting signal can be used for control operation (e. g. motor stop).

Flange type

For legend of pictogram refer to flapper on the cover

Technical data – dimensions

Size	Torques [Nm]				Max. speed [1] [rpm]	Dimensions [mm]															
	Ratchet design DK		Synchronous design SK			Max. bore	D	D_1	D_2	D_3	D_4	D_A	l_1	l_2	l_3	l_4	l_5	d_L	L	z	H=stroke
	DK1	DK2	SK1	SK2		d															
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

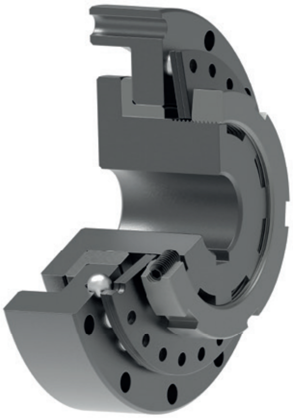
Dimensions – Hub type 4.5

Size	Dimensions [mm]							Tightening torque T_A [Nm]
	d_1 max.	l_6	l_7	l_8	L_1	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_R [Nm] (clearance H7/h6) of hub type 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

[1] See comments on page 281



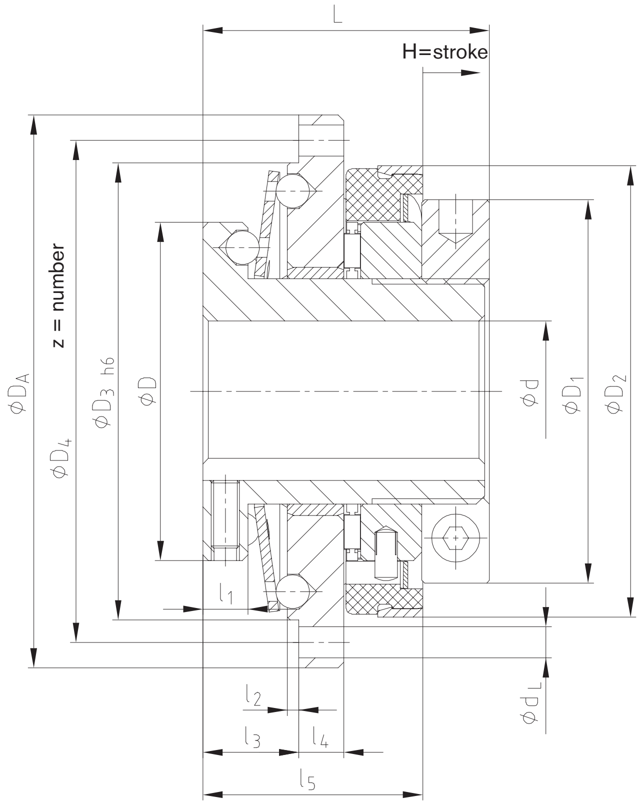
Special type:

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

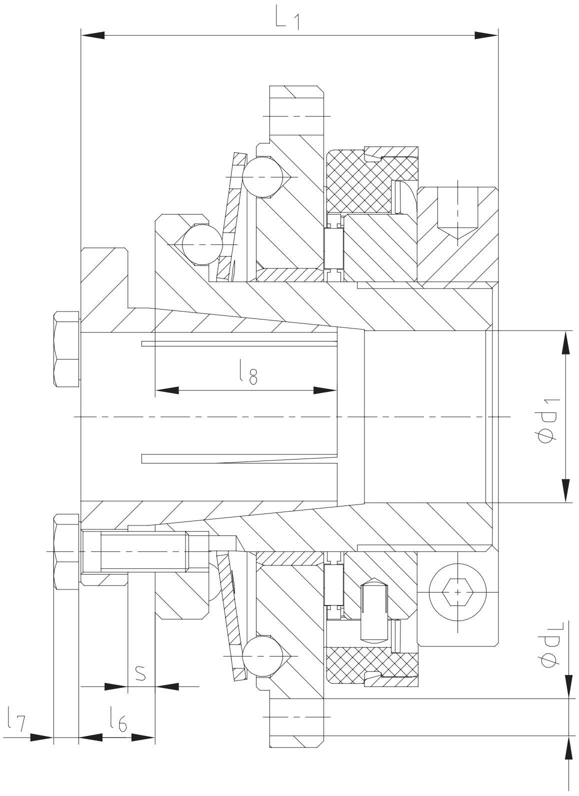
Ordering example:

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

Hub type 1.0



Hub type 4.5



With sprocket


For legend of pictogram refer to flapper on the cover

Technical data – dimensions

Size	Torque [Nm]				Max. speed [2] [rpm]	Dimensions [mm]									
	Ratchet design DK		Synchronous design SK			Max. bore	Standard sprocket [1]	D	D_1	D_2	l_1	l_3	l_5	L	H=stroke
	DK1	DK2	SK1	SK2		d									
20	6-20	15-30	10-20	20-65	1500	20	06 B-1 ($^3/_8$ x $^7/_{32}$) 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 ($^1/_2$ x $^5/_{16}$) z = 24	60	68	80	8	15	37	50	2
35	25-80	75-150	30-100	70-180	1000	35	08 B-1 ($^1/_2$ x $^5/_{16}$) z = 29	75	78	91	10	19	41	60	2
50	60-180	175-300	80-280	160-400	1000	50	12 B-1 ($^3/_4$ x $^7/_{16}$) z = 27	105	108	121	12	23	52	70	2

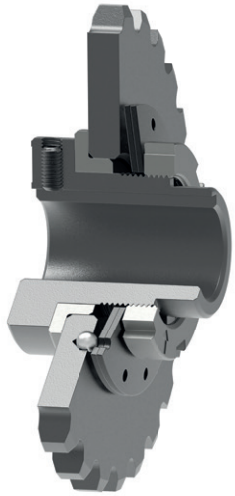
Dimensions – Hub type 4.5

Size	Dimensions [mm]							Tightening torque T_A [Nm]
	$d_{1\ max.}$	l_6	l_7	l_8	L_1	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_R [Nm] (clearance H7/h6) of hub type 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

[1] z = min. number of teeth required / Other sprockets available on request
[2] See comments on page 281

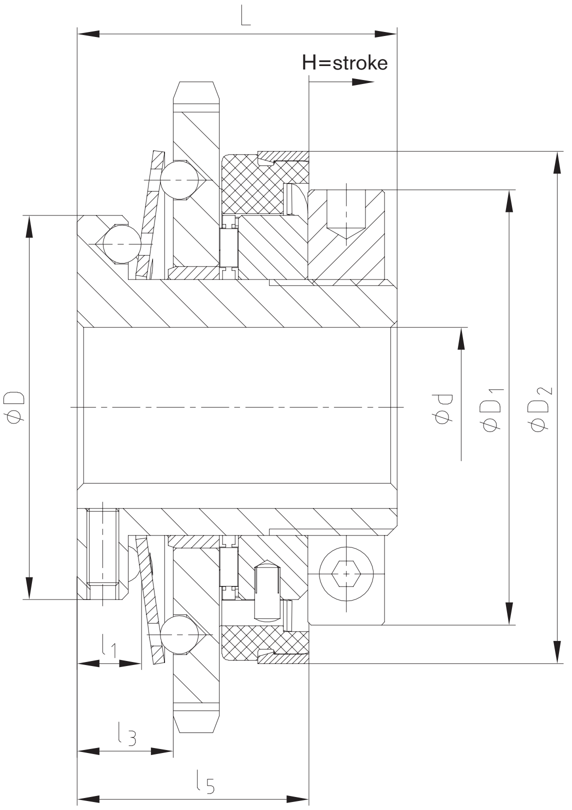


Special type:

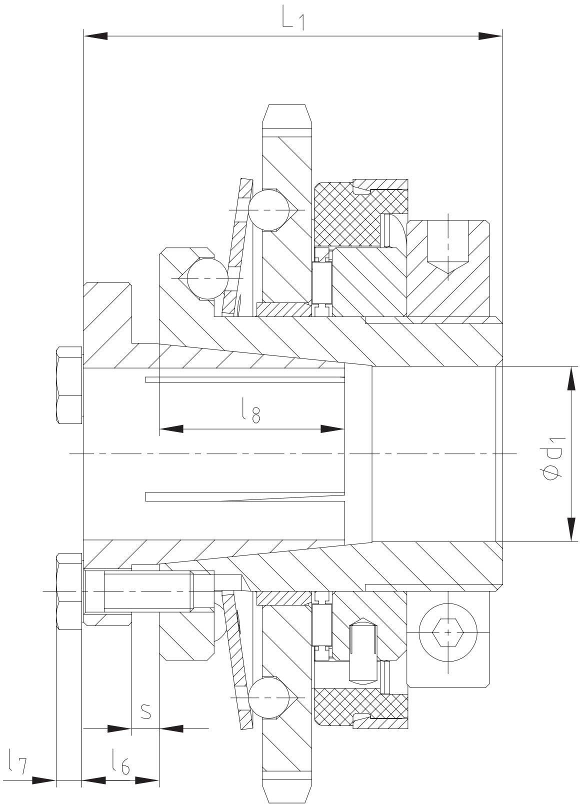
- Standard SYNTEX® with integrated toothed belt pulley or sprocket
- Available ready for assembly with the torque set
- Reduction of components by integration of components
- Available both as a ratchet and synchronous design
- Torque setting possible while in place
- Finish bore according to ISO fit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

Ordering example:	SYNTEX® 25	DK1	1.0	d Ø20	08 B-1 ($^1/_2$ x $^5/_{16}$), z = 29	45 Nm
	Type/size	Type (DK/SK)	Hub type	Bore	Sprocket	Torque set

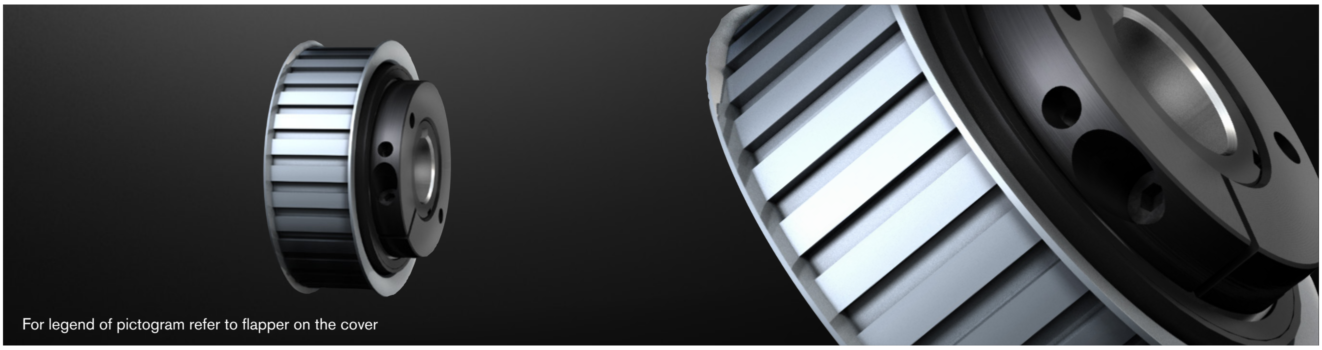
Hub type 1.0



Hub type 4.5

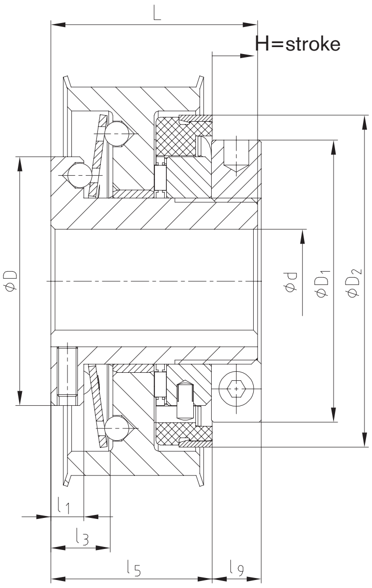


With toothed belt pulley

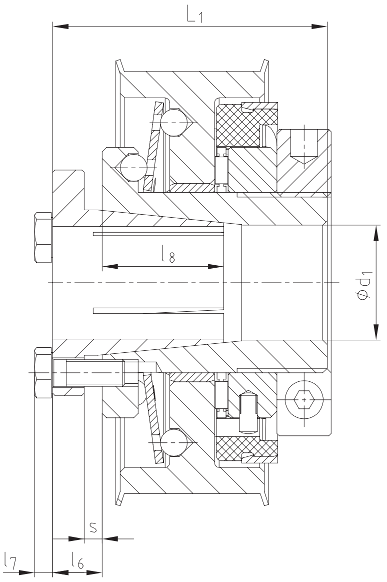


For legend of pictogram refer to flapper on the cover

Hub type 1.0



Hub type 4.5



Technical data – dimensions

Size	Torques [Nm]				Max. speed [2] [rpm]	Dimensions [mm]										
	Ratchet design DK		Synchronous design SK			Max. bore	Toothed belt pulley		D	D1	D2	l1	l3	l5	L	H=stroke
	DK1	DK2	SK1	SK2		d	T10 [1]	AT10 [1]								
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 [3]	AT10, z = 48 [3]	105	108	121	12	23	56	70	2

Dimensions – Hub type 4.5

Size	Max. bore	Dimensions [mm]							Tightening torque T_A [Nm]
	d_1	l_6	l_7	l_8	l_9	L_1	s	Clamping screws	
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_R [Nm] (clearance H7/h6) of hub type 4.5

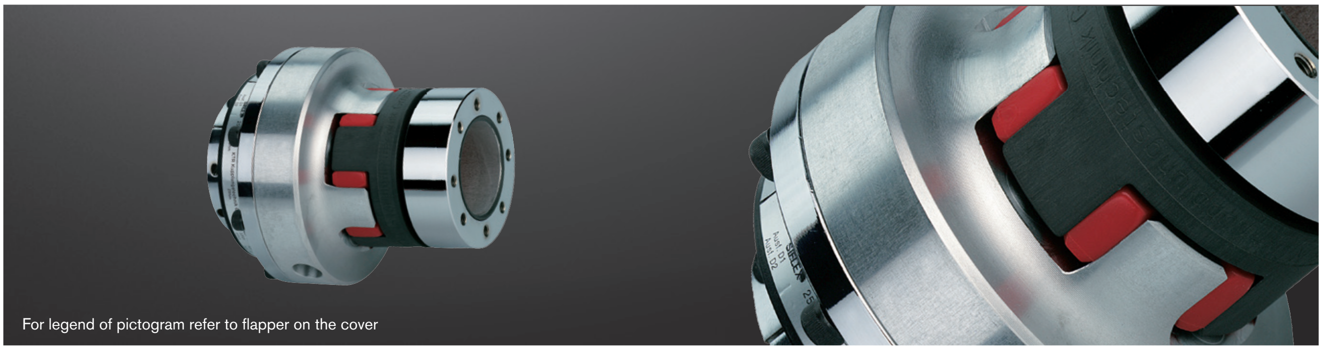
Size	Ø12	Ø14	Ø15	Ø16	Ø17	Ø18	Ø19	Ø20	Ø22	Ø23	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50
20	45	62	71	81	92	103	115	127														
25		72	83	95	107	120	133	148	179	196	213	231										
35									127	139	152	165	207	237	270	323						
50																238	281	311	343	394	448	486

[1] z = min. number of teeth required / Other sizes available on request
[2] See comments on page 281
[3] Without flanged wheel

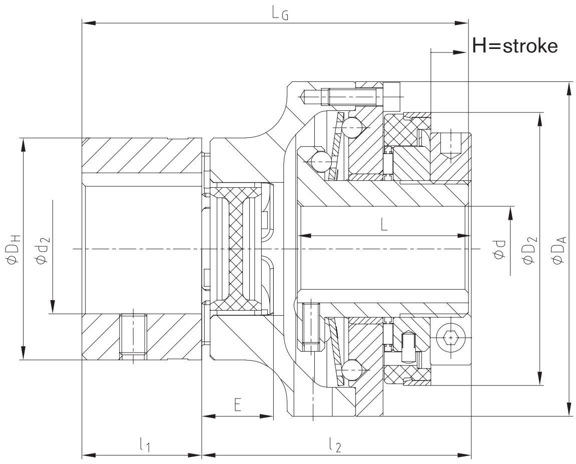
Ordering example:	SYNTEX® 25	DK1	1.0	d Ø20	AT10, z = 24	32	45 Nm
	Type/size	Type (DK/SK)	Hub type	Bore	Toothed belt pulley	Width of toothed belt pulley	Torque set

SYNTEX®
Backlash-free overload systems

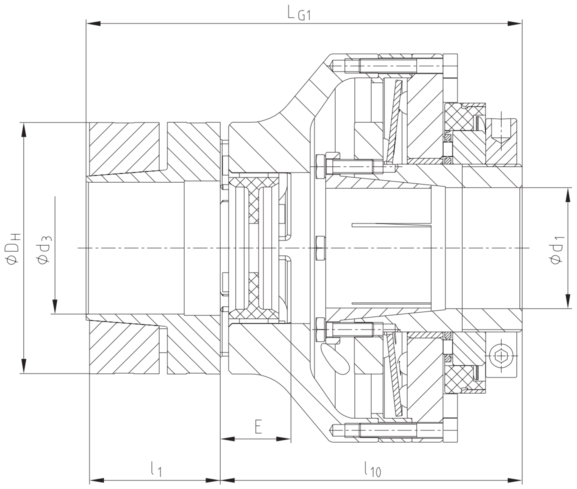
With backlash-free ROTEX® GS


For legend of pictogram refer to flapper on the cover

Hub type 1.0 Hub type 1.0



Hub type 6.0 Hub type 4.5



Technical data – dimensions

SYNTEX® size	ROTEX® GS size	Torques [Nm]						Max. speed [2] [rpm]	Dimensions [mm]														
		Ratchet design DK		Synchronous design SK		ROTEX® GS [1] 98 ShA-GS			Max. bore				D_2	D_H	D_A	l_1	l_2	l_{10}	E	L	L_G	L_{G1}	H=stroke
		DK1	DK2	SK1	SK2	T_{KN}	$T_{K\,max}$		d	d_1	d_2	d_3											
20	24	6-20	15-30	10-20	20-65	60	120	1500	20	20	28	28 [3]	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 [3]	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 [3]	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 [3]	121	105	162	56	111	126	28	70	167	182	2

Transmittable friction torques T_R [Nm] (clearance H7/h6) of hub type 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

[1] See selection of ROTEX® GS couplings on page 22 et seqq.
[2] See comments on page 281
[3] For transmittable friction torques T_R [Nm] of ROTEX® GS hub type 2.8 or 6.0 refer to mounting instructions of ROTEX® GS

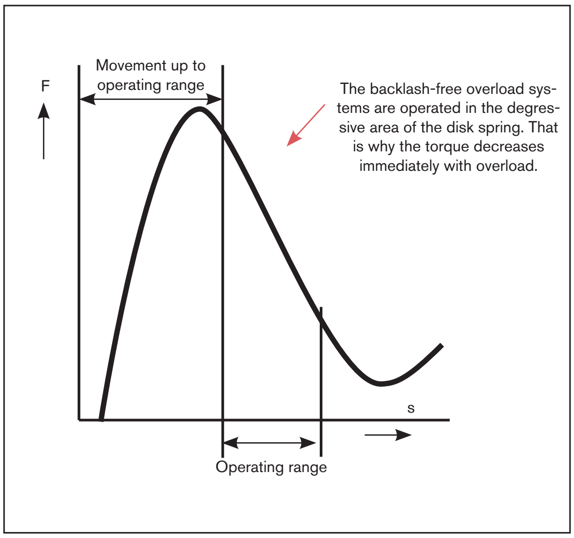
Ordering example:	SYNTEX® 25	DK1	1.0	d Ø20	ROTEX® GS 28	98 ShA-GS	1.0	d_2 Ø25	50 Nm
	Type/size	Type	Hub type	Bore	Type/size	Spider	Hub type	ROTEX® GS bore	Torque set

SYNTEX®-NC / KTR-SI Compact Backlash-free overload systems

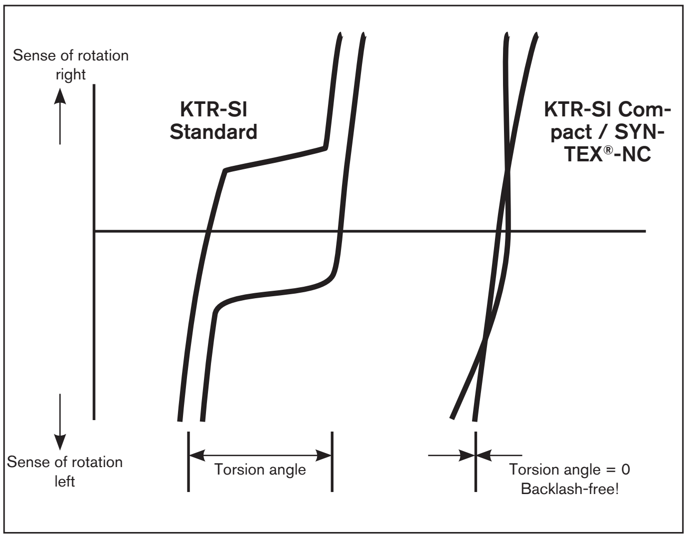
Design and operation

The design of the backlash-free overload systems SYNTEX®-NC and KTR-SI Compact is based on a spring-preloaded and positive-locking ball engagement principle allowing for high repeatability and short response times. Moreover, an integrated groove ball bearing provides for the option of direct assembly of toothed belt pulleys, special flanges or other components. Main applications are latest machine tools, control and positioning technology as well as packaging machines and special purpose machinery.
Both systems make use of disk springs with a degressive spring characteristic curve the preset prestress of which drops during the disengaging process. As a result driving and driven end are reliably separated from each other within some milliseconds with the wear on the components being simultaneouslyr educed to a minimum.

Spring characteristic curve



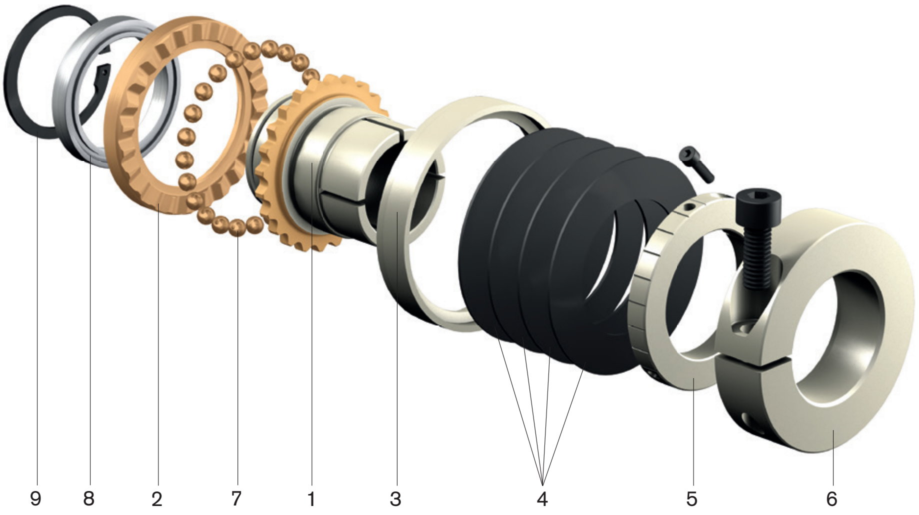
What does backlash-free mean?



Ratchet design DK
Any engagement after an overload. After eliminating the overload, the balls re-engage automatically with the next following ball indentation.

Synchronous design SK
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.

● = The core of the backlash-free overload systems



List of components:

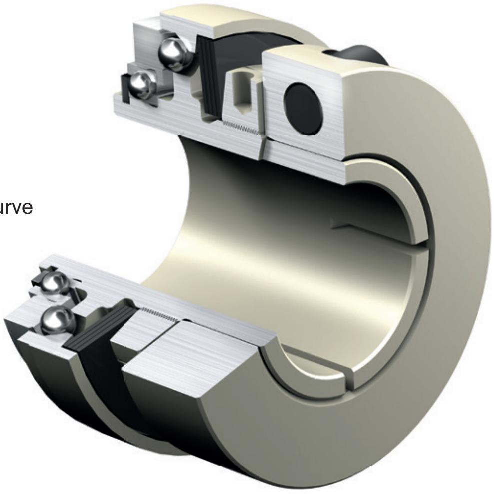
1. Hub with keyway to DIN (type 1.0) or with clamping ring (type 6.1)
2. Flange ring
3. Shifting ring
4. Disk spring
5. Setting nut
6. Clamping ring
7. Balls
8. Groove ball bearing
9. Circlip

SYNTEX®-NC / KTR-SI Compact
Backlash-free overload systems

Operating principle

SYNTEX®-NC

- Overload protection up to 550 Nm
- Backlash-free torque transmission
- Light-weight design
- Degressive spring characteristic curve
- Low mass moment of inertia
- Large bore diameters
- Short response times
- High power density



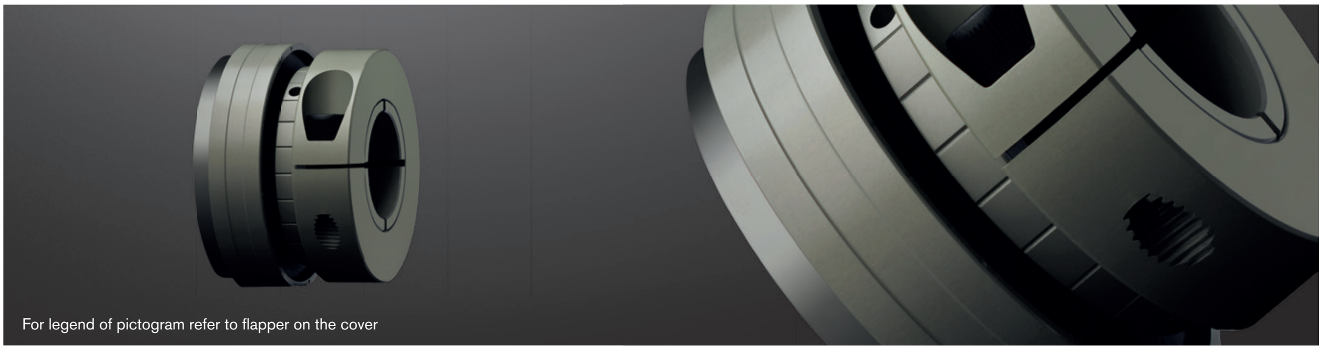
- Clamping ring design easy to assemble
- Available both as a ratchet (DK) and synchronous design (SK)
- Backlash-free shaft-hub-connection
- In combination with the backlash-free, torsionally flexible ROTEX® GS or backlash-free, torsionally stiff TOOLFLEX®
- Direct assembly of toothed belt pulleys, as an example, possible (integrated groove ball bearing)

KTR-SI Compact

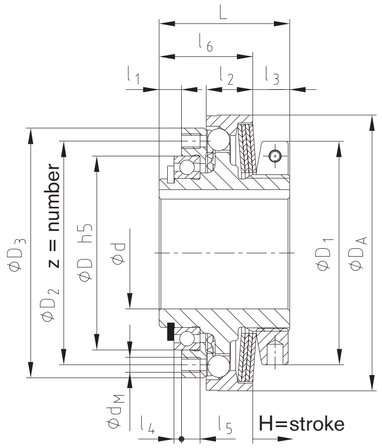
- Overload protection up to 3,100 Nm
- Backlash-free overload system with a degressive spring characteristic curve
- Solid design
- Accurate disengagement with high repeatability
- Accurate backlash-free torque transmission even in case of wear
- Shifting ring with setting scale for accurate torque setting

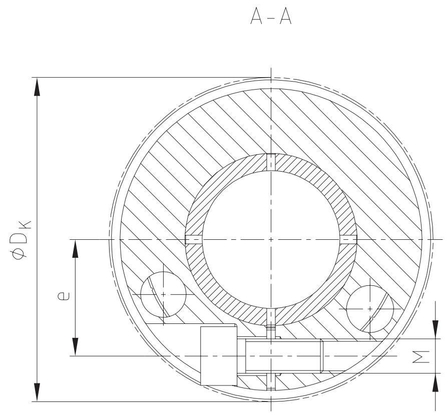
- Easy torque setting by torque scale on the coupling
- Connection flange with ball bearing
- Hardened ratchet surfaces for a long service life
- Backlash-free shaft-hub-connection via taper bush
- Can be used with the proven ROTEX® GS as a shaft-to-shaft connection

Hub type

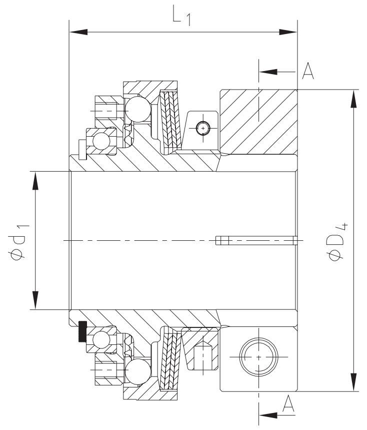

For legend of pictogram refer to flapper on the cover

Hub type 1.0 (keyway acc. to DIN 6885)





Hub type 6.1 (clamping ring)



Technical data – dimensions

Size	Max. speed [3] [rpm]	Torques [Nm]			Max. bore	Dimensions [mm]													
		T1	T2	T3	d	D h5	D_1	D_2	D_3	D_A	l_1	l_2	l_3	l_4	l_5	l_6	L	z x d_M	H=stroke
15	3500	2-3.5	3.5-7	7-14	12	32	33	37	42	42	5.0	7.0	9.2	2	4	18.8	28	12xM3	0.8
25	3000	9-15	20-35	40-65	20 (22) [1]	42	50	48	56	61	5.5	11.5	9.1	2	5	23.9	33	8xM4	1.2
32	3000	25-38	50-75	100-150	27 (30) [1]	52	60	60	67	74	6	12.5	9.9	2	5	25.1	35	8xM4	1.5
42	2500	30-65	60-135	120-265	36 (38) [1]	65	72	75	83	90	7	16	11.2	2	6	31.8	43	8xM5	1.5
60 [4]	2000	70-140	120-180	220-550	50	90	96	100	113	116	8	21	11.8	2	7	38.2	52	12xM6	1.8

Dimensions – Hub type 6.1

Size	Bore d_1		Dimensions [mm]						Weight with max. bore [kg]	Mass moment of inertia [2] J_{total} [kgm²]
	Pilot bore	Max.	D_4	DK	L_1	e	M	T_A [Nm]		
15	7.5	15	40	43	38	15	M4	1.7	0.124	0.029×10^{-3}
25	9.5	25	55	-	45	21	M6	14	0.282	0.14×10^{-3}
32	13.5	32	70	-	53	27	M8	34	0.471	0.35×10^{-3}
42	18.5	42	86	91.2	63	33	M10	67	0.815	0.95×10^{-3}
60 [4]	24	60	112	119.4	75	45	M12	115	3.04	5.9×10^{-3}

Transmittable friction torques T_R [Nm] (clearance H7/h6) of hub type 6.1

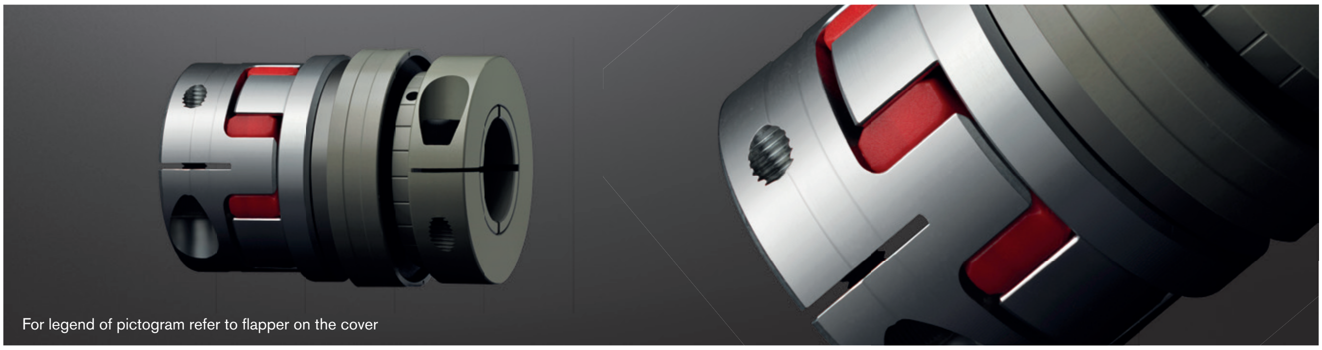
Size	Ø8	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø36	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55	Ø60
15	8	12	14	16	22	24																				
25		30	35	42	55	62	69	48	53	58	69	80	86													
32						74	83	104	114	125	148	116	125	153	172	192										
42										149	178	209	225	275	310	264	309	324	356	389	422					
60 [4]													247	310	356	405	485	513	571	633	394	452	514	558	675	803

[1] The figure in brackets specifies the max. bore with keyway to DIN 6885 sheet 3 (low-rise design)
[2] With max. bore
[3] See comments on page 281
[4] Material steel

Ordering example:	SYNTEX®-NC 32	SK	6.1	T3	d_1 Ø25	120
	Type/size	Type (DK/SK)	Hub type	Disk springs	Bore	Torque set

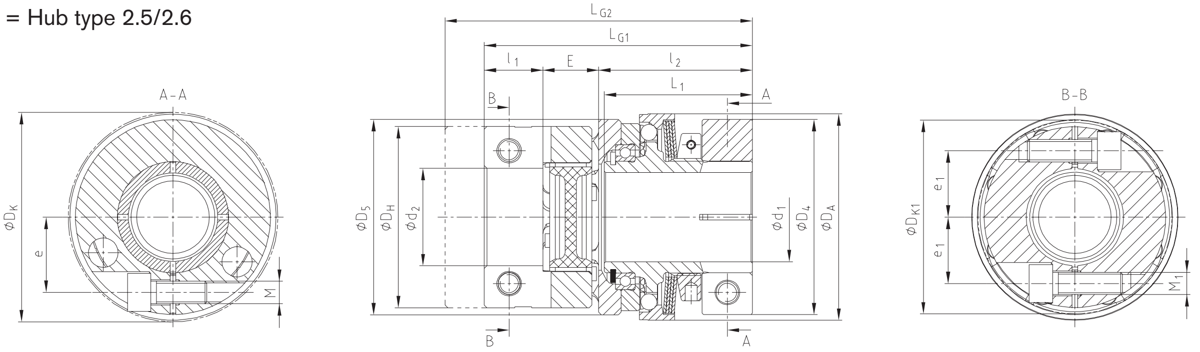
SYNTEX®-NC
Backlash-free overload systems

With backlash-free ROTEX® GS


For legend of pictogram refer to flapper on the cover

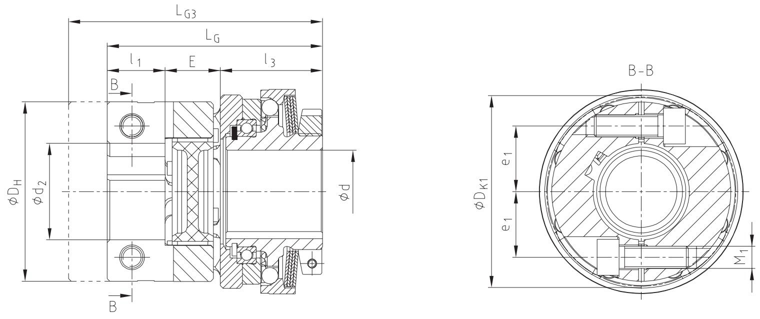
LG1 = Hub type 2.8 from size 60 6.0 light
LG2 = Hub type 2.5/2.6

Hub type 6.1



LG = Hub type 2.9 from size 60 1.0
LG3 = Hub type 2.5/2.6

Hub type 1.0



Technical data – dimensions

Size	ROTEX® GS size [1]	Torques [Nm]			Max. speed [2] [rpm]	Max. bore			Dimensions [mm]																			
		T1	T2	T3		d	d_1	d_2	D_5	D_H	DK	D_{K1}	D_A	l_1	l_2	l_3	E	e	e_1	L_G	L_1	L_{G1}	L_{G2}	L_{G3}	M	T_A [Nm]	M_1	T_{A1} [Nm]
15	19	2-3.5	3.5-7	7-14	3500	12	15	24 [3]	45	40	-	46.7	42	17	40	30	16	15	15.5	63	38	73	81	71	M4	1.7	M5	6
25	24	9-15	20-35	40-65	3000	20 (22)[4]	25	32 [3]	58	55	-	57.5	61	18	47.5	35.5	18	21	20	71.5	45	83.5	95.5	83.5	M6	14	M6	10
32	28	25-38	50-75	100-150	3000	27 (30)[4]	32	35 [3]	70	65	-	69	74	21	55	37	20	27	23.8	78	53	96	110	92	M8	34	M8	25
42	38	30-65	60-135	120-265	2500	36 (38)[4]	42	45 [3]	88	80	91.2	86	90	26	66	46	24	33	30.5	96	63	116	135	115	M10	67	M10	49
60 [5]	48	70-140	120-280	220-550	2000	50	60	55 [3]	113	105	119.4	-	116	56	83	60	28	45	-	144	75	167	167	144	M12	115	M10	49

Transmittable friction torques T_R [Nm] (clearance H7/h6) of hub type 6.1

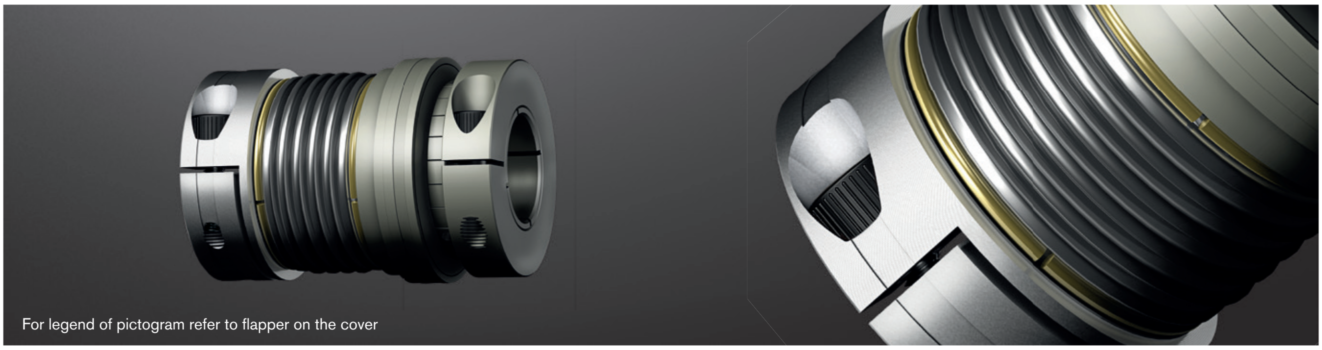
Size	Ø8	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø36	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55	Ø60
15	8	12	14	16	22	24																				
25		30	35	42	55	62	69	48	53	58	69	80	86													
32						74	83	104	114	125	148	116	125	153	172	192										
42										149	178	209	225	275	310	264	309	324	356	389	422					
60 [5]													247	310	356	405	485	513	571	633	394	452	514	558	675	803

[1] See selection of ROTEX® GS couplings on page 22 et seqq.
[2] See comments on page 281
[3] For transmittable friction torques T_R [Nm] of ROTEX® GS hub type 2.8 or 6.0 refer to mounting instructions of ROTEX® GS
[4] The figure in brackets specifies the max. bore with keyway to DIN 6885 sheet 3 (low-rise design)
[5] Material steel

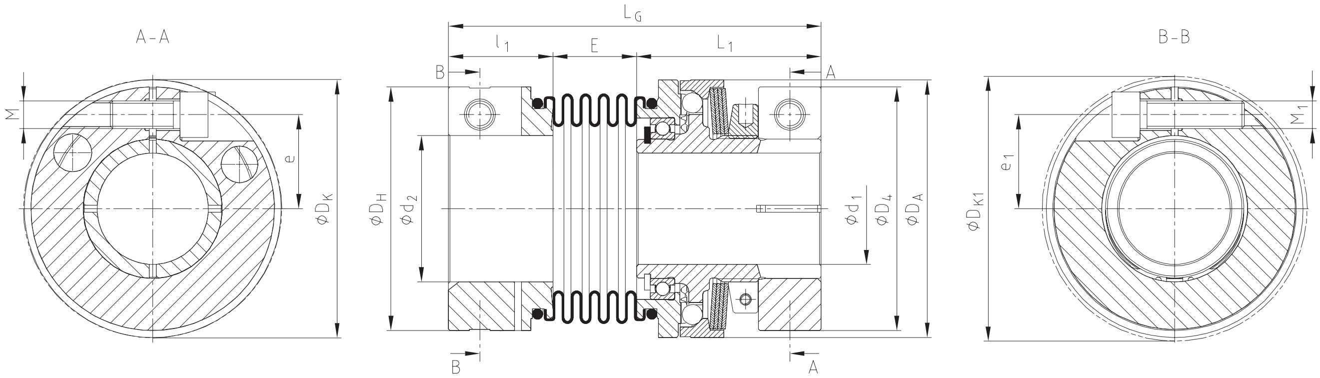
Ordering example:	SYNTEX®-NC 32	SK	6.1	T3	d_1 Ø25	28	2.8	d_2 Ø20	120
	Type/size	Type	Hub type	Disk springs	SYNTEX®-NC bore	ROTEX® GS size	Hub type	ROTEX® GS bore	Torque set

SYNTEX®-NC
Backlash-free overload systems

With torsionally stiff TOOLFLEX® S



For legend of pictogram refer to flapper on the cover



Technical data – dimensions

Size	TOOLFLEX® size 1)	Torques [Nm]			Speed 2) [rpm]	Max. bore		Dimensions [mm]														
		T1	T2	T3		d_1	d_2	D_4	D_H	D_A	DK	D_{K1}	l_1	L_1	E	e	e_1	L_G	M	T_A [Nm]	M_1	T_{A1} [Nm]
15	20	2-3.5	3.5-7	7-14	3500	15	20 3)	40	40	52	43	43.5	21.5	38	16.5	15	14.5	76	M4	1.7	M5	6
25	38	9-15	20-35	40-65	3000	25	38 3)	55	65	61	-	72.6	25.5	45	18	21	25	88	M6	14	M8	25
32	42	25-38	50-75	100-150	3000	32	42 3)	70	70	74	-	76.1	30	53	24	27	27	107	M8	34	M8	25
42	45	30-65	60-135	120-265	2500	42	45 3)	86	83	90	91.2	89	32	63	22.5	33	30	114	M10	67	M10	49
60 4)	65	70-140	120-280	220-550	2000	60	65 3)	112	125	140	119.4	127.1	45	84	36	45	45	165	M12	115	M14	185

Transmittable friction torques T_R [Nm] (clearance H7/h6) of hub type 6.1

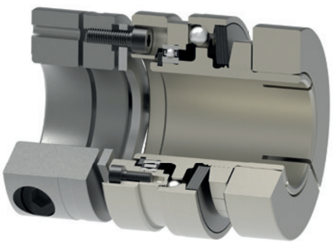
Size	Ø8	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø36	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55	Ø60
15	8	12	14	16	22	24																				
25		30	35	42	55	62	69	48	53	58	69	80	86													
32						74	83	104	114	125	148	116	125	153	172	192										
42										149	178	209	225	275	310	264	309	324	356	389	422					
60 4)													247	310	356	405	485	513	571	633	394	452	514	558	675	803

1) See selection of TOOLFLEX® couplings on page 22 et seqq.

2) See comments on page 281

3) For transmittable friction torques T_R [Nm] of TOOLFLEX® hub type 2.5 refer to mounting instructions of TOOLFLEX®

4) Material steel



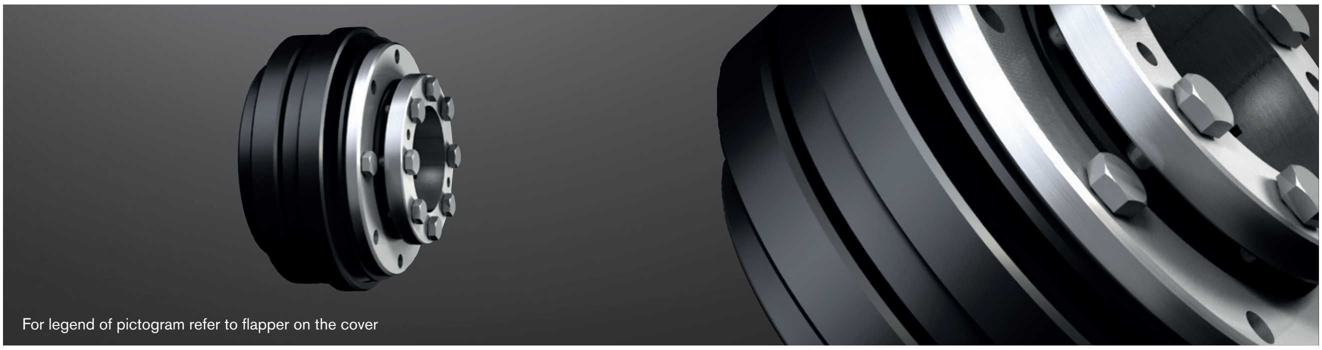
Special type:

- SYNTEX®-NC with RADEX®-NC

Ordering example:	SYNTEX®-NC 32	SK	6.1	T3	d_1 Ø25	42-S	2.5	d_2 Ø20	120
	Type/size	Type	Hub type	Disk springs	SYNTEX®-NC bore	TOOLFLEX® size	Hub type	TOOLFLEX® bore	Torque set

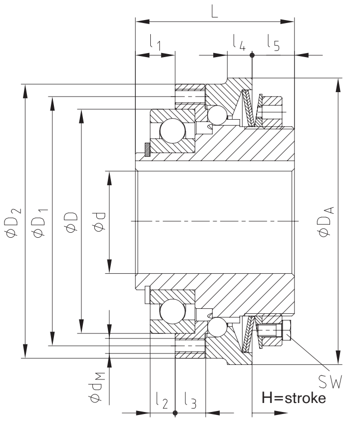
KTR-SI Compact
Backlash-free overload systems

Flange type

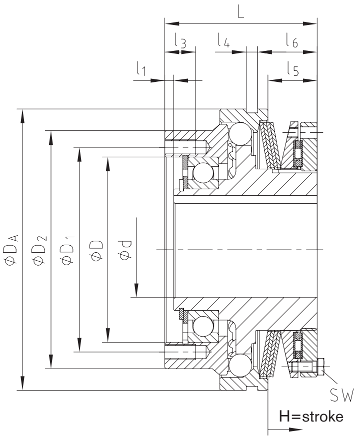

For legend of pictogram refer to flapper on the cover

Hub type 1.0

Size 01 - 3

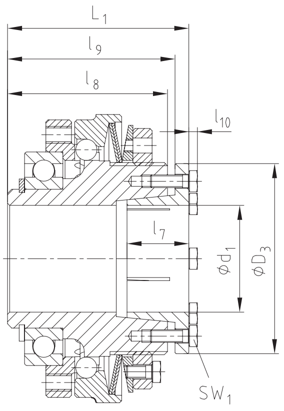


Size 4

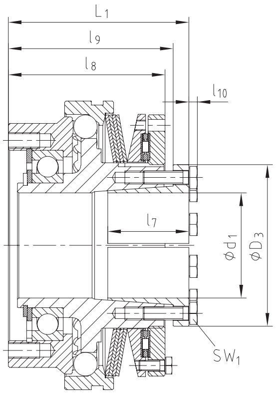


Hub type 4.5 with taper bush

Size 01 - 3



Size 4



Technical data – dimensions

Size	Speed [1] [rpm]	Torque [Nm]			Dimensions [mm]														
		T1	T2	T3	Bore d	D_{h5}	D_1	D_2	D_A	l_1	l_2	l_3	l_4	l_5	l_6	L	d_M	SW	H= stroke
01	4000	3-14	6-28	13-56	8-20	47	56	65	70	8	5	7.5	7	12	-	40	8xM4	7	1.2
0	3000	9-35	18-70	40-140	10-25 (30) [3]	62	71	80	85	11	7	8.0	8	14	-	48	8xM5	7	1.5
1	2500	19-65	38-130	78-260	14-30 (35) [3]	75	85	95	100	14	9	10.5	9	16	-	59	8xM6	8	1.8
2	2000	35-110	80-220	160-440	18-40 (45) [3]	90	100	110	115	16	10	12	10	17	-	64	8xM6	10	2.0
3	1200	80-200	160-400	320-800	24-50	100	116	130	135	18	10	12	12	21	-	75	8xM8	10	2.2
4	400	230-730	460-1590	960-3100	40-75	145^{H7}	160	186	220	7	-	24	9	38.5	46.5	119	6xM12	13	3.5

Dimensions – Hub type 4.5

Size	Bore [2]	Dimensions [mm]							
	d_1	D_3	l_7	l_8	l_9	l_{10}	L_1	SW_1	T_A [Nm]
01	10-20	40.5	26	40	42	2.8	47	7	3
	19-25	42							
0	15-20	40.5	26	46	48	2.8	53	7	4.6
	19-30	57	31		49	4	56	10	10
1	19-30	57	40	57	60	4	67	10	10
	32-40	64	31			3.5		8	5.9
2	32-50	73.5	29	63	66.5	4	73	10	10
3	32-50	73.5	29	75	78.5	4	85	10	10
	55-60	89	44		78		86		
4	50-60	96.5	54	119	125.5	5.5	133.5	13	28
	65-80	123	62		126	7	138	16	49

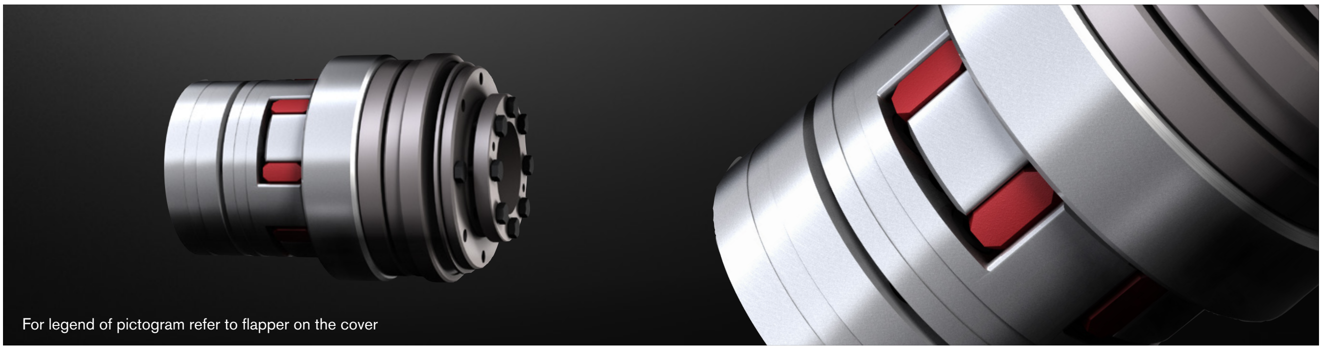
[1] See comments on page 281

[2] For transmittable friction torques T_R [Nm] of hub type 4.5 refer to assembly instructions

[3] The figure in brackets specifies the max. bore with keyway to DIN 6885 sheet 3 (low-rise design)

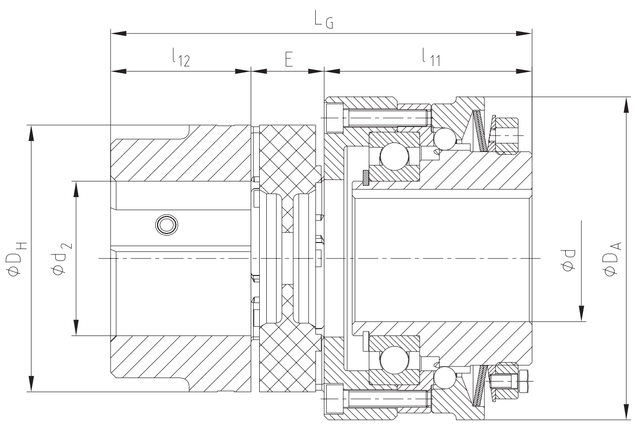
Ordering example:	KTR-SI Compact 2	DK	4.5	T2	d_1 Ø40	150 Nm
	Type/size	Type (DK/SK)	Hub type	Disk springs	Bore	Torque set

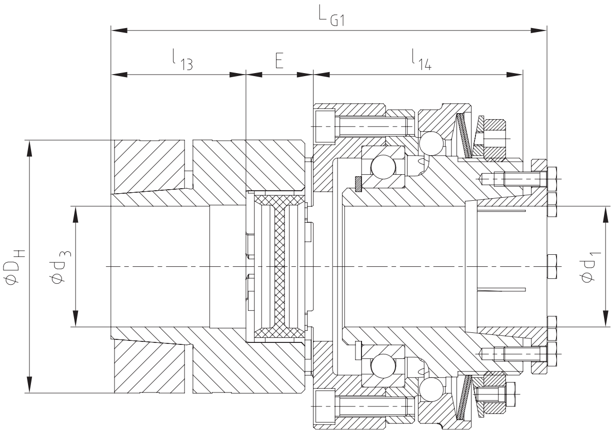
With backlash-free ROTEX® GS



For legend of pictogram refer to flapper on the cover

Hub type 1.0 Hub type 1.0 Hub type 6.0 Hub type 4.5





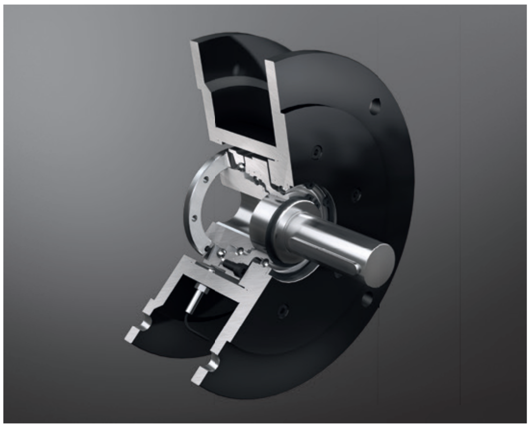
Technical data – dimensions																		
Size	Max. speed [1] [rpm]	Torques [Nm]			ROTEX® GS size [2]	Max. bore				Dimensions [mm]								
		T1	T2	T3		d	d_1	d_2	d_3	D_H	D_A	l_{11}	l_{12}	l_{13}	l_{14}	E	L_G	L_{G1}
01	4000	3-14	6-28	13-56	24	20	25	28	20	55	70	47	30	30	47	18	95	102
0	3000	9-35	18-70	40-140	28	25	30	38	38	65	85	56.5	35	35	54.5	20	111.5	119.5
1	2500	19-65	38-130	78-260	38	30	40	45	48	80	100	69	45	45	67	24	138	146
2	2000	35-110	80-220	160-440	42	40 (45) [3]	50	55	51	95	115	74	50	50	73	26	150	159
3	1200	80-210	160-400	320-800	48	50	60	62	55	105	135	87	56	56	87	28	171	182
4	400	230-730	460-1590	960-3100	75	75	80	80	80	160	220	158.5	85	85	139.5	40	283.5	302.5

[1] See comments on page 281
[2] See selection of ROTEX® GS couplings on page 22 et seqq.
[3] The figure in brackets specifies the max. bore with keyway to DIN 6885 sheet 3 (low-rise design)

Ordering example:	KTR-SI Compact 1	DK	T2	4.5	d_1 Ø25	6.0 / d_3 Ø25	150 Nm
	Type/size	Type (DK/SK)	Disk spring	KTR-SI hub type	KTR-SI bore	ROTEX® GS hub type/bore	Torque set

Special types

Other types and combinations available on request.

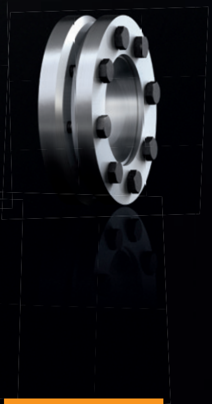


- KTR-SI Compact with IEC flange

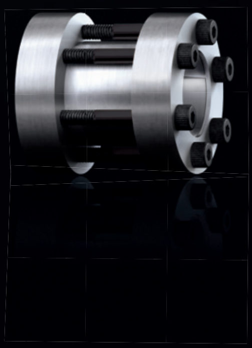
Clamping elements and precision joints

Internal clamping elements

External clamping elements

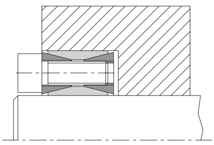
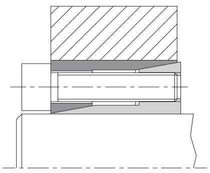
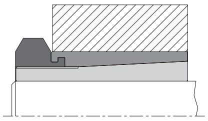
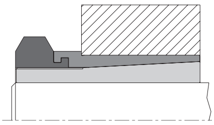
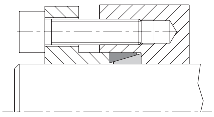
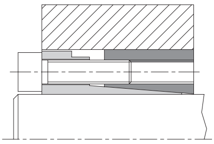
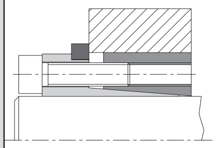


Shaft couplings



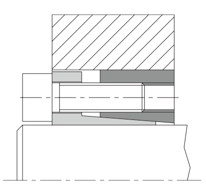
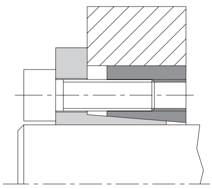
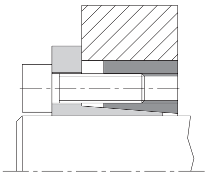
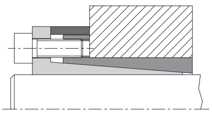
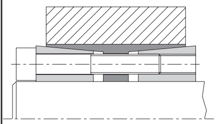
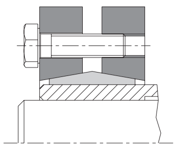
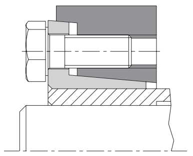
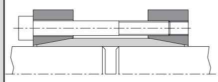
Precision joints

Properties of clamping elements

Type	Series		Shaft diameter [mm]	Transmittable torque T [Nm]	Centering of hub to shaft via the clamping element	Centering between hub and shaft required	Axial displacement of hub during assembly of clamping element	Details on page
Internal clamping elements		KTR 100	17 — 1,000	260 — 3,017,100		●		324 325
		KTR 105	5 — 50	5 — 1,900	●		●	326 327
		KTR 130	5 — 50	10 — 2,320	●		●	328 329
		KTR 131	5 — 35	10 — 836	●		●	328 329
		KTR 150	6 — 440	2 — 215,000		●	●*	330 331
		KTR 200	20 — 200	530 — 68,000	●		●	332 333
		KTR 201	20 — 200	320 — 48,800	●			332 333

* Depending on mounting position

CLAMPEX® CLAMPING ELEMENTS
TYPES AND OPERATING DESCRIPTION

Type	Series		Shaft diameter [mm]	Transmittable torque T [Nm]	Centering of hub to shaft via the clamping element	Centering between hub and shaft required	Axial displacement of hub during assembly of clamping element	Details on page
Internal clamping elements		KTR 203	18 — 400	370 — 487,000	●		●	334 335
		KTR 206	18 — 400	290 — 342,000	●			334 335
		KTR 225	14 — 50	287 — 1,796	●			336 337
		KTR 250	6 — 130	11 — 25,000	●			338 339
		KTR 400	24 — 600	700 — 1,640,000	●		●	340 341
External clamping elements		KTR 603	10 — 420	28 — 1,460,000	●			342 - 345
		KTR 620	13 — 700	70 — 7,394,000	●			346 - 349
Shaft couplings		KTR 700	10 — 100	62 — 8,350	●			350 351

Guide for selection

1. Which properties of a clamping set are required?
- a. Shall shaft and hub be centered to each other by the clamping set?
- b. Is axial displacement of the hub permissible during assembly of the clamping set?

For an explanation of the properties specified above see CLAMPEX® selection guide on page 322.

2. Which dimensions of clamping sets are required?
- a. Internal diameter of clamping set = shaft diameter
- b. External diameter of clamping set = diameter of hub bore
- c. Length of clamping set

For dimensions of clamping sets see catalogue on page 324 et seqq.

3. How much torque and/or axial force needs to be transmitted?

The following safety factors are recommended by KTR:
- **≥ 1.5** between the maximum torque of machine/axial force and the transmittable torque/axial force of clamping set.
- **≥ 2.0** between the rated torque of machine/axial force and the transmittable torque/axial force of clamping set.

4. Is the wall thickness of the hubs sufficient?

Calculation of wall thickness of the hubs is possible via the following methods:
- a. For formula for calculating the necessary outside diameter of hubs see page 321.
- b. For calculating the necessary outside diameter of hub via correction factor see page 323.

5. Other selection criteria

Please consult with KTR.
- The clamping set is to be mounted on a shaft with a feather keyway.
- Simultaneous transmission of torque and axial force.
- The clamping set is radially loaded.
- The clamping set is stressed on bending.
- High circumferential speeds (from 30 m/s).
- High operating temperatures.
- Shaft with bore (hollow shaft).
- Clamping set in a corrosion-protected design.

Selection

Use in potentially explosive atmospheres

The power transmission of CLAMPEX® clamping elements is based on the principle of two taper rings twisted into each other. Axial force generated on the rings (by means of several screws) produces surface pressure inside the shaft and outside the hub which allows for frictionally engaged transmission of the torque. Considering all operating data (intended use), there is no potential source of ignition. That is why clamping elements do not come within the scope of directive 2014/34/EU.

Due to the aforementioned design of CLAMPEX® clamping elements a failure of components does not have to be anticipated. A risk only arises if friction heat is generated with slipping of a clamping connection (improper assembly/tightening torques).

Concentricity

The concentricity of the self-centering CLAMPEX® clamping elements is between 0.05 mm and 0.08 mm. This concentricity is not reproducible due to the slotted individual components of the clamping elements. As a result this figure merely serves for supporting with designing.

Table of screws

Dimension M	Preload force F_V and tightening torque T_A with μ_{total} = 0.14					
	Preload force F_V [N]			Tightening torque T_A [Nm]		
	8.8	10.9	12.9	8.8	10.9	12.9
M3	2210	3110	3730	1.34	1.89	2.25
M4	3900	5450	6550	2.9	4.1	4.9
M5	6350	8950	10700	6	8.5	10
M6	9000	12600	15100	10	14	17
M8	16500	23200	27900	25	35	41
M10	26200	36900	44300	49	69	83
M12	38300	54000	64500	86	120	145
M14	52500	74000	88500	135	190	230
M16	73000	102000	123000	210	295	355
M18	88000	124000	148000	290	405	485
M20	114000	160000	192000	410	580	690
M22	141000	199000	239000	550	780	930
M24	164000	230000	276000	710	1000	1200
M27	215000	302000	363000	1050	1500	1800
M30	262000	368000	442000	1450	2000	2400

Selection

Symbol	Definition resp. explanation
$\sigma_{N0.2}$	Yield point of hub material [N/mm²]
$\sigma_{W0.2}$	Yield point of shaft material [N/mm²]
C	Specific heat capacity C of hub type (see illustration on page 323)
d	Internal diameter of clamping element [mm]
d_{iw}	Internal diameter of hollow shaft [mm]
D	External diameter of clamping element [mm]
D_N	Required external diameter of hub [mm]
T	Transmittable torque [Nm]
T_S	Peak torque to be transmitted [Nm]
T_A	Screw tightening torque [Nm]
B2/B3	Length of clamping element [mm]

Symbol	Definition resp. explanation
L/L_1	Hub length [mm]
P_N	Surface pressure generated on the clamping element/hub [N/mm²]
P_W	Surface pressure generated on the clamping element/shaft [N/mm²]
C_W	d_{iW}/d -> Ratio of internal diameter of hollow shaft/clamping element
C_N	D/D_N -> Ratio of external diameter of clamping element/hub
F_a	Axial force generated during operation [kN]
F_{ax}	Transmittable axial force [kN]
F_V	Preload force [N]
P_O	Setting force for clamping element [N]
P_S	Clamping force for clamping element [N]
P_A	$P_O + P_S$ = Total force for clamping element [N]

The transmission data are parameters found out by calculations. Subject to the friction coefficient variation which is subjected to physical properties, small deviations with the transmission figures may arise.

1. Fatigue strength and shape stability of components subjected to torsion and bending load

The stress concentration figures β_k for the clamping elements press fits are worked out similarly to those of pressure oil fits. Stress concentration factors on request.

2. Transmittable torque T

The transmittable torque T always has to be above the biggest torque peak T_S, which may arise on the joints. The torque peaks occurring with acceleration of electric motors as well as additional axial forces F_a have to be considered.

$$T \geq \sqrt{T_S\,[\text{Nm}]^2 + \left(F_a\,[\text{kN}] \bullet \frac{d\,[\text{mm}]}{2}\right)^2}$$

3. Transmittable axial force F_{ax}

The maximum transmittable axial force F_{ax} specified in the tables has to be reduced accordingly with additional torque transmission.

$$F_{ax}\,[\text{kN}] = 2 \bullet \frac{T\,[\text{Nm}]}{d\,[\text{mm}]}$$

4. Calculation of external diameter of hub D_N

The required external diameter of hub D_N depends on the hub geometry, the yield point of the hub material and the surface pressure between clamping element and hub. In order to simplify the calculation, the table on page 323 specifies correction values which allow to calculate D_N.

$$D_N\,[\text{mm}] \geq D \bullet \text{ correction value x}$$

Those external diameters of hubs which cannot be calculated based on the table are calculated via the following formula:

$$D_N \geq D \bullet \sqrt{\frac{\sigma_{N0.2} + P_N \bullet C}{\sigma_{N0.2} - P_N \bullet C}}$$

Tangential stress on the internal diameter of hub

$$\sigma_{tiN} \approx P_N \bullet \frac{(1 + C_N^2)}{(1 - C_N^2)} \bullet C$$

For clamping connections with hollow shafts the required internal diameter of the hollow shaft d_{iW} is calculated based on the following formula:

$$d_{iw} \leq d \bullet \sqrt{\frac{\sigma_{W0.2} - 2 \bullet P_W \bullet 0.8}{\sigma_{W0.2}}}$$

Tangential stress on the internal diameter of shaft

$$\sigma_{tiW} \approx \frac{2 \bullet P_W}{(C_W^2 - 1)}$$

Selection of hub material with external clamping sets KTR 603 and KTR 620

The hub material should have a yield strength Re of ≥ 350 N/mm². For applications with additional bending load, Q + T steel such as 42CrMo4 should be used.

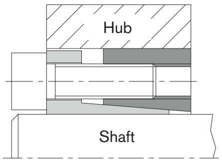
Selection guide

Selection guide for CLAMPEX® clamping elements

1

Internal clamping sets

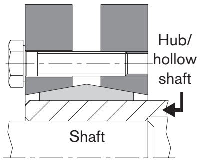
Positioned between shaft and hub.
Frictional fit is generated between internal clamping set and shaft and between internal clamping set and hub.



2

External clamping sets

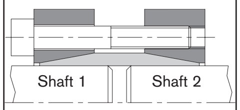
Positioned on the hub/hollow shaft. Frictional fit is generated between shaft and hub/hollow shaft.



3

Shaft couplings

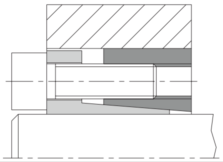
Positioned on two opposing shaft ends. Frictional fit is generated between shaft coupling and shaft ends.



1

Self-centering

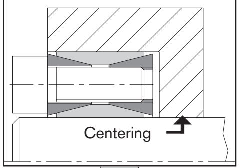
Shaft and hub are centered to each other via an internal clamping set.
Additional centering of hub is not required.



2

Not self-centering

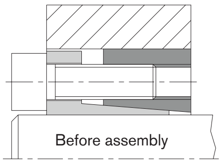
Centering between shaft and hub required.

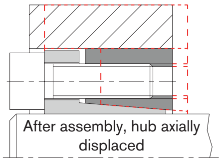


1

With axial shifting of hub

Axial shifting of hub during assembly of the internal clamping set. Hub axially shiftable to meet the catalogue data is required. [1]

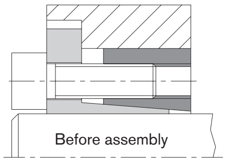


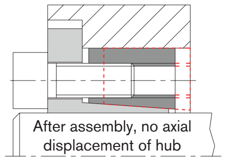


2

Without axial shifting of hub

No axial shifting of hub during assembly of the internal clamping set. Hub is axially fixed during assembly via the internal clamping set.





Selection of the series of clamping elements based on its geometry and performance data

KTR 105
KTR 130
KTR 131
KTR 200
KTR 203
KTR 400

Selection of the series of clamping elements based on its geometry and performance data

KTR 201
KTR 206
KTR 225
KTR 250

Selection of the series of clamping elements based on its geometry and performance data

KTR 100
KTR 150

Selection of the series of clamping elements based on its geometry and performance data

KTR 603
KTR 620

Selection of the series of clamping elements based on its geometry and performance data

KTR 700

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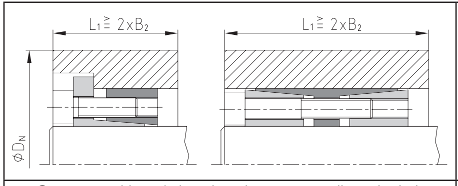
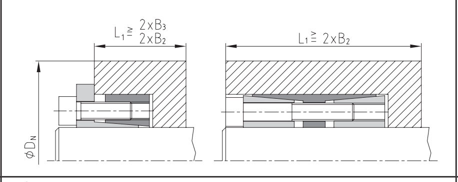
[1] Does not apply for KTR 400

Calculation of hubs

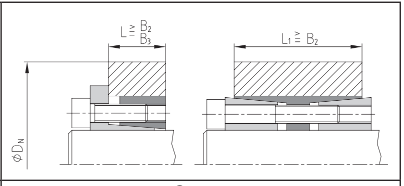
Mounting conditions of clamping elements with specific heat capacity C of hub type



C = 0.6 position of clamping element centrally to the hub



C = 0.8 position of clamping element eccentrically to the hub



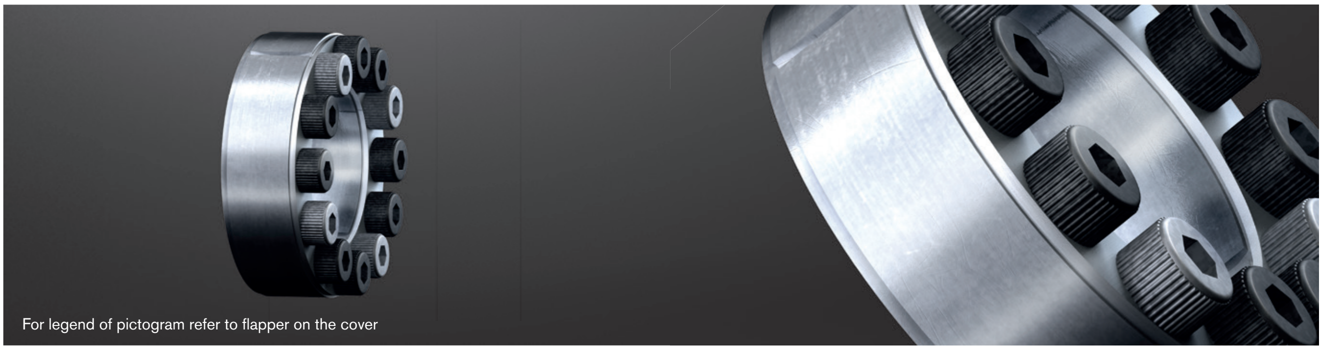
C = 1.0

Selection table for the calculation of the external diameter of hub D_N required (correction value x)

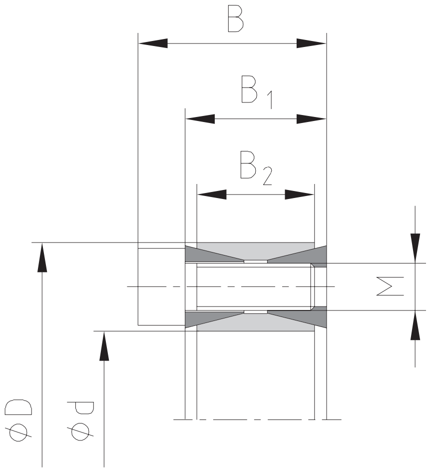
Surface pressure between clamping element and hub		Average yield point of material σ 0.2 in N/mm² (more accurate stiffness figures depending on diameter as specified by the manufacturer)										
		150	180	200	220	250	270	300	350	400	450	600
		Hub materials										
P_N [N/mm²]	Specific heat capacity C of hub type	GJL 200	GJL 250 GE 200	GJL 300 GJMB-350	GE 240	GJS 400-15 GE 260 AW-2007	E295 C 35	GJS 500-7 GE 300 S355J2	GJS 600-3 C 45	GJS 700-2 C 60	Q & T steel	Q & T steel
65	C = 0.6	1.30	1.25	1.22	1.20	1.18	1.15	1.13	1.11	1.10	1.09	1.07
	C = 0.8	1.44	1.35	1.30	1.28	1.24	1.22	1.20	1.16	1.14	1.12	1.09
	C = 1.0	1.60	1.45	1.40	1.35	1.30	1.28	1.24	1.20	1.18	1.16	1.12
70	C = 0.6	1.34	1.26	1.24	1.22	1.18	1.16	1.15	1.12	1.11	1.10	1.07
	C = 0.8	1.48	1.38	1.34	1.30	1.25	1.23	1.20	1.18	1.15	1.13	1.10
	C = 1.0	1.65	1.50	1.45	1.40	1.34	1.30	1.26	1.22	1.20	1.17	1.13
75	C = 0.6	1.30	1.28	1.25	1.23	1.20	1.18	1.16	1.14	1.12	1.11	1.08
	C = 0.8	1.52	1.42	1.36	1.32	1.28	1.25	1.22	1.18	1.16	1.14	1.11
	C = 1.0	1.74	1.55	1.48	1.42	1.36	1.33	1.30	1.25	1.20	1.18	1.13
80	C = 0.6	1.39	1.31	1.28	1.25	1.21	1.20	1.18	1.15	1.13	1.11	1.08
	C = 0.8	1.58	1.45	1.39	1.35	1.30	1.27	1.24	1.20	1.18	1.15	1.11
	C = 1.0	1.81	1.61	1.53	1.46	1.39	1.36	1.31	1.26	1.22	1.20	1.14
85	C = 0.6	1.42	1.34	1.30	1.27	1.23	1.21	1.19	1.16	1.14	1.12	1.09
	C = 0.8	1.63	1.49	1.42	1.38	1.32	1.29	1.26	1.22	1.19	1.16	1.12
	C = 1.0	1.90	1.67	1.57	1.50	1.42	1.39	1.34	1.28	1.24	1.21	1.15
90	C = 0.6	1.46	1.36	1.32	1.28	1.25	1.22	1.20	1.17	1.15	1.13	1.09
	C = 0.8	1.69	1.53	1.46	1.40	1.34	1.31	1.28	1.23	1.20	1.18	1.13
	C = 1.0	2.00	1.73	1.62	1.54	1.46	1.41	1.36	1.30	1.26	1.22	1.16
95	C = 0.6	1.49	1.39	1.34	1.30	1.26	1.24	1.21	1.18	1.15	1.14	1.10
	C = 0.8	1.75	1.57	1.49	1.43	1.37	1.34	1.30	1.25	1.21	1.19	1.14
	C = 1.0	2.11	1.80	1.68	1.59	1.49	1.44	1.39	1.32	1.27	1.24	1.17
100	C = 0.6	1.53	1.41	1.36	1.32	1.28	1.25	1.22	1.19	1.16	1.14	1.11
	C = 0.8	1.81	1.61	1.53	1.46	1.39	1.36	1.31	1.26	1.22	1.20	1.14
	C = 1.0	2.24	1.87	1.73	1.63	1.53	1.48	1.41	1.34	1.29	1.25	1.18
105	C = 0.6	1.56	1.44	1.39	1.34	1.29	1.27	1.24	1.20	1.17	1.15	1.11
	C = 0.8	1.88	1.66	1.56	1.50	1.42	1.38	1.33	1.28	1.24	1.21	1.15
	C = 1.0	2.38	1.95	1.79	1.68	1.56	1.51	1.44	1.36	1.31	1.27	1.19
110	C = 0.6	1.60	1.47	1.41	1.36	1.31	1.28	1.25	1.21	1.18	1.16	1.12
	C = 0.8	1.96	1.71	1.60	1.53	1.44	1.40	1.35	1.29	1.25	1.22	1.16
	C = 1.0	2.55	2.04	1.86	1.73	1.60	1.54	1.47	1.38	1.33	1.28	1.20
115	C = 0.6	1.64	1.50	1.43	1.36	1.33	1.30	1.26	1.22	1.19	1.17	1.12
	C = 0.8	2.04	1.76	1.64	1.56	1.47	1.43	1.37	1.31	1.26	1.23	1.17
	C = 1.0	2.75	2.13	1.93	1.79	1.64	1.58	1.50	1.41	1.34	1.30	1.21
120	C = 0.6	1.69	1.53	1.46	1.40	1.34	1.31	1.28	1.23	1.20	1.18	1.13
	C = 0.8	2.13	1.81	1.69	1.60	1.50	1.45	1.39	1.33	1.28	1.24	1.18
	C = 1.0	3.00	2.24	2.00	1.84	1.69	1.61	1.53	1.43	1.36	1.31	1.22
125	C = 0.6	1.73	1.56	1.48	1.43	1.36	1.33	1.29	1.24	1.21	1.18	1.13
	C = 0.8	2.24	1.87	1.73	1.63	1.53	1.48	1.41	1.34	1.29	1.25	1.18
	C = 1.0	3.32	2.35	2.08	1.91	1.73	1.65	1.56	1.45	1.38	1.33	1.24
130	C = 0.6	1.78	1.59	1.51	1.45	1.38	1.35	1.30	1.25	1.22	1.19	1.14
	C = 0.8	2.35	1.93	1.78	1.67	1.56	1.50	1.44	1.36	1.30	1.27	1.19
	C = 1.0	3.74	2.49	2.17	1.97	1.78	1.69	1.59	1.48	1.40	1.35	1.25
135	C = 0.6	1.83	1.62	1.54	1.47	1.40	1.36	1.32	1.27	1.23	1.20	1.15
	C = 0.8	2.48	2.00	1.83	1.71	1.59	1.53	1.46	1.38	1.32	1.28	1.20
	C = 1.0	4.36	2.65	2.27	2.04	1.83	1.73	1.62	1.50	1.42	1.36	1.26
140	C = 0.6	1.88	1.66	1.56	1.50	1.42	1.38	1.33	1.28	1.24	1.21	1.15
	C = 0.8	2.63	2.07	1.88	1.75	1.62	1.55	1.48	1.39	1.33	1.29	1.21
	C = 1.0	5.39	2.83	2.38	2.12	1.88	1.78	1.66	1.53	1.44	1.38	1.27
145	C = 0.6	1.94	1.69	1.59	1.52	1.44	1.40	1.35	1.29	1.25	1.22	1.16
	C = 0.8	2.80	2.15	1.94	1.80	1.65	1.58	1.50	1.41	1.35	1.30	1.22
	C = 1.0	7.68	3.05	2.50	2.21	1.94	1.82	1.69	1.55	1.46	1.40	1.28
150	C = 0.6	2.00	1.73	1.62	1.54	1.46	1.41	1.36	1.30	1.26	1.23	1.16
	C = 0.8	3.00	2.24	2.0	1.84	1.69	1.61	1.53	1.43	1.36	1.31	1.23
	C = 1.0	–	3.32	2.65	2.30	2.00	1.87	1.73	1.58	1.48	1.41	1.29
155	C = 0.6	2.06	1.77	1.65	1.57	1.48	1.43	1.38	1.31	1.27	1.24	1.17
	C = 0.8	3.25	2.33	2.06	1.89	1.72	1.65	1.55	1.45	1.38	1.33	1.23
	C = 1.0	–	3.66	2.80	2.40	2.06	1.92	1.77	1.61	1.51	1.43	1.30
160	C = 0.6	2.13	1.81	1.69	1.60	1.50	1.45	1.39	1.33	1.28	1.24	1.18
	C = 0.8	3.55	2.43	2.13	1.94	1.76	1.67	1.58	1.47	1.39	1.34	1.24
	C = 1.0	–	4.12	3.00	2.52	2.13	1.98	1.81	1.64	1.53	1.45	1.31
165	C = 0.6	2.21	1.86	1.72	1.62	1.52	1.47	1.41	1.34	1.29	1.25	1.18
	C = 0.8	3.96	2.55	2.21	2.00	1.80	1.71	1.60	1.49	1.41	1.35	1.25
	C = 1.0	–	4.80	3.23	2.65	2.21	2.04	1.86	1.67	1.55	1.47	1.33

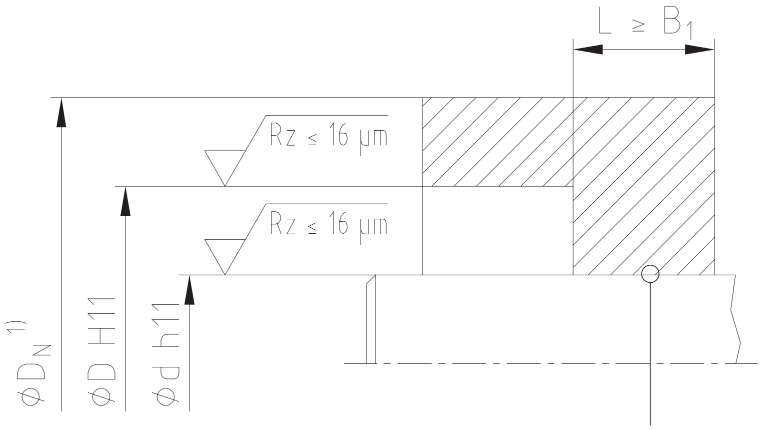
CLAMPEX® KTR 100
Clamping elements

Not self-centering, suitable for large shaft and hub tolerances


For legend of pictogram refer to flapper on the cover

-20 +160 °C

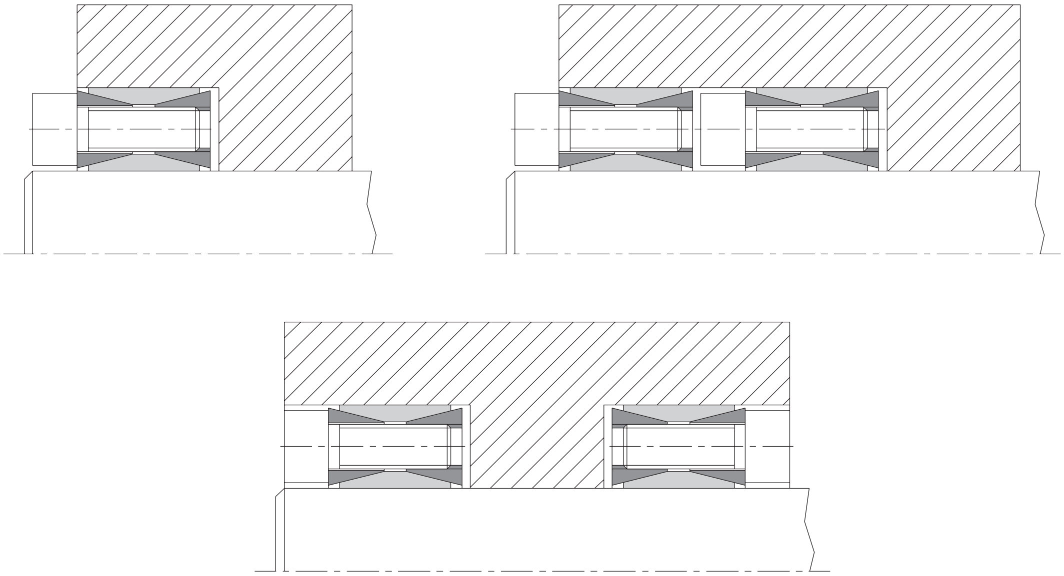




[1] Dimension D_N: for calculation see page 321.

Centering required

Example of application of hub type



● Sizes of clamping elements available from stock.

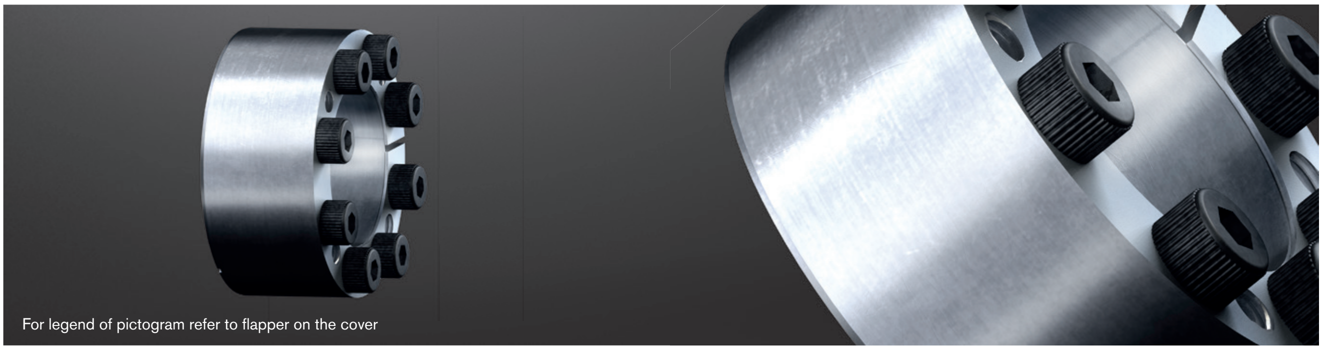
[1] These are the maximum screw tightening torques. They can be reduced by a maximum of 40 % of the above-mentioned figures with T, F_{ax}, P_W and P_N decreasing proportionately.

Ordering example:	KTR 100	50	x	80
	Series	Size of internal diameter d		Size of external diameter D

CLAMPEX® – KTR 100

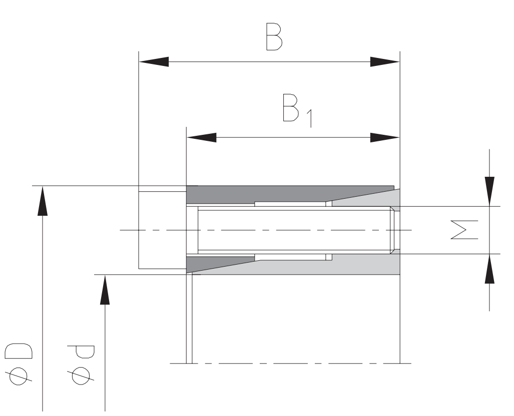
d x D [mm]	Dimensions [mm]			Clamping screws DIN EN ISO 4762 - 12.9 μ_{total}=0.14				Transmittable torque or axial force		Surface pressure between clamping element		Weight [~kg]	Stock programme
	B	B_1	B_2	M	Length	z = number	T_A [Nm] [1]	T [Nm]	F_{ax} [kN]	Shaft P_W [N/mm²]	Hub P_N [N/mm²]		
17 x 47	26	20	17	M6	18	8	16	260	31	281	102	0.2	
18 x 47	26	20	17	M6	18	8	16	280	31	270	103	0.2	
19 x 47	26	20	17	M6	18	8	16	290	31	251	101	0.2	●
20 x 47	26	20	17	M6	18	8	16	310	31	242	103	0.2	●
22 x 47	26	20	17	M6	18	8	16	340	31	219	103	0.2	●
24 x 50	26	20	17	M6	18	8	16	370	31	200	96	0.3	●
25 x 50	26	20	17	M6	18	8	16	390	31	195	97	0.3	●
28 x 55	26	20	17	M6	18	12	16	650	46	259	132	0.3	●
30 x 55	26	20	17	M6	18	12	16	700	47	243	132	0.3	●
32 x 60	26	20	17	M6	18	12	16	750	47	229	122	0.3	●
35 x 60	26	20	17	M6	18	12	16	820	47	209	122	0.3	●
38 x 65	26	20	17	M6	18	15	16	1100	58	238	139	0.4	●
40 x 65	26	20	17	M6	18	15	16	1170	59	228	140	0.3	●
42 x 75	32	24	20	M8	22	12	40	1670	80	251	141	0.6	●
45 x 75	32	24	20	M8	22	12	40	1790	80	234	141	0.5	●
48 x 80	32	24	20	M8	22	12	40	1900	79	219	131	0.6	●
50 x 80	32	24	20	M8	22	12	40	1990	80	211	132	0.6	●
55 x 85	32	24	20	M8	22	15	40	2740	100	240	155	0.6	●
60 x 90	32	24	20	M8	22	15	40	2990	100	220	147	0.7	●
65 x 95	32	24	20	M8	22	15	40	3240	100	203	139	0.8	●
70 x 110	38	28	24	M10	25	15	78	5550	159	250	159	1.3	●
75 x 115	38	28	24	M10	25	15	78	5950	159	234	152	1.2	●
80 x 120	38	28	24	M10	25	15	78	6350	159	219	146	1.4	●
85 x 125	38	28	24	M10	25	15	78	6740	159	206	140	1.4	●
90 x 130	38	28	24	M10	25	15	78	7140	159	195	135	1.5	●
95 x 135	38	28	24	M10	25	18	78	9000	189	220	155	1.6	●
100 x 145	44	32	26	M12	30	15	135	11600	232	237	163	2.2	●
110 x 155	44	32	26	M12	30	15	135	12750	232	215	153	2.3	●
120 x 165	44	32	26	M12	30	16	135	14800	247	210	153	2.4	●
130 x 180	50	38	34	M12	30	20	135	20150	310	186	134	3.5	●
140 x 190	50	38	34	M12	30	22	135	23850	341	190	140	3.8	●
150 x 200	50	38	34	M12	30	24	135	27850	371	193	145	4.0	●
160 x 210	50	38	34	M12	30	26	135	32200	403	196	150	4.4	●
170 x 225	58	44	38	M14	45	22	215	40300	474	195	147	5.7	●
180 x 235	58	44	38	M14	45	24	215	46600	518	201	154	6.0	●
190 x 250	66	52	46	M14	45	28	215	57300	603	183	139	8.0	●
200 x 260	66	52	46	M14	45	30	215	71000	710	205	157	8.2	●
220 x 285	72	56	50	M16	50	26	335	93200	847	204	158	11.0	●
240 x 305	72	56	50	M16	50	30	335	117300	978	216	170	12.2	
260 x 325	72	56	50	M16	50	34	335	144000	1108	226	181	13.2	
280 x 355	84	66	60	M18	60	32	465	177700	1269	200	158	19.2	
300 x 375	84	66	60	M18	60	36	465	214100	1427	210	168	20.5	
320 x 405	98	78	72	M20	70	36	660	295800	1849	213	168	29.6	
340 x 425	98	78	72	M20	70	36	660	314300	1849	200	160	31.1	
360 x 455	112	90	84	M22	80	36	900	413300	2296	201	159	42.2	
380 x 475	112	90	84	M22	80	36	900	436300	2296	191	153	44.0	
400 x 495	112	90	84	M22	80	36	900	459300	2297	181	147	46.0	
420 x 515	112	90	84	M22	80	40	900	535800	2551	192	156	50.0	
440 x 545	130	102	96	M24	90	40	1130	647600	2944	185	149	64.6	
460 x 565	130	102	96	M24	90	40	1130	677000	2943	177	144	67.4	
480 x 585	130	102	96	M24	90	42	1130	741800	3091	178	146	71.0	
500 x 605	130	102	96	M24	90	44	1130	809500	3238	179	148	72.6	
520 x 630	130	102	96	M24	90	45	1130	861000	3312	176	145	80	
540 x 650	130	102	96	M24	90	45	1130	894000	3311	169	141	82	
560 x 670	130	102	96	M24	90	48	1130	989000	3532	174	146	85	
580 x 690	130	102	96	M24	90	50	1130	1067000	3679	175	147	88	
600 x 710	130	102	96	M24	90	50	1130	1103800	3679	169	143	91	
620 x 730	130	102	96	M24	90	52	1130	1186200	3826	171	145	93	
640 x 750	130	102	96	M24	90	54	1130	1271600	3974	172	146	96	
660 x 770	130	102	96	M24	90	56	1130	1359900	4121	173	148	99	
680 x 790	130	102	96	M24	90	56	1130	1401100	4121	167	144	102	
700 x 810	130	102	96	M24	90	60	1130	1545400	4415	174	151	104	
720 x 830	130	102	96	M24	90	60	1130	1589500	4415	169	147	107	
740 x 850	130	102	96	M24	90	62	1130	1688100	4562	170	148	110	
760 x 870	130	102	96	M24	90	64	1130	1789700	4710	171	150	113	
780 x 890	130	102	96	M24	90	65	1130	1865500	4783	169	149	116	
800 x 910	130	102	96	M24	90	66	1130	1942700	4857	168	147	118	
820 x 930	130	102	96	M24	90	68	1130	2051600	5004	169	149	121	
840 x 950	130	102	96	M24	90	70	1130	2163500	5151	169	150	124	
860 x 970	130	102	96	M24	90	72	1130	2278300	5298	170	151	127	
880 x 990	130	102	96	M24	90	74	1130	2396000	5445	171	152	129	
900 x 1010	130	102	96	M24	90	75	1130	2483600	5519	169	151	132	
920 x 1030	130	102	96	M24	90	76	1130	2572600	5593	168	150	135	
940 x 1050	130	102	96	M24	90	78	1130	2697700	5740	169	151	138	
960 x 1070	130	102	96	M24	90	80	1130	2825800	5887	169	152	140	
980 x 1090	130	102	96	M24	90	81	1130	2920700	5961	168	151	143	
1000 x 1110	130	102	96	M24	90	82	1130	3017100	6034	167	150	146	

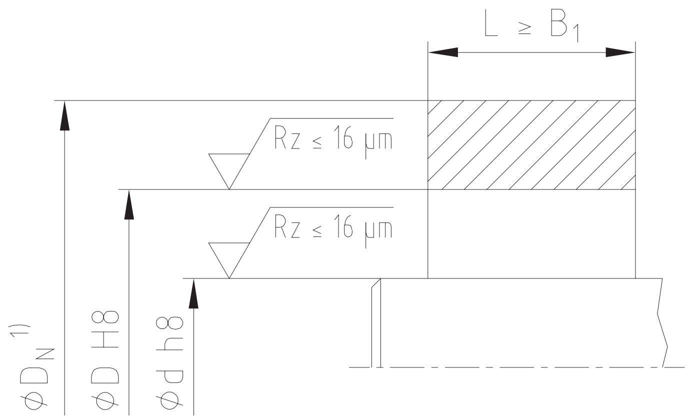
Self-centering clamping element in a compact design



For legend of pictogram refer to flapper on the cover

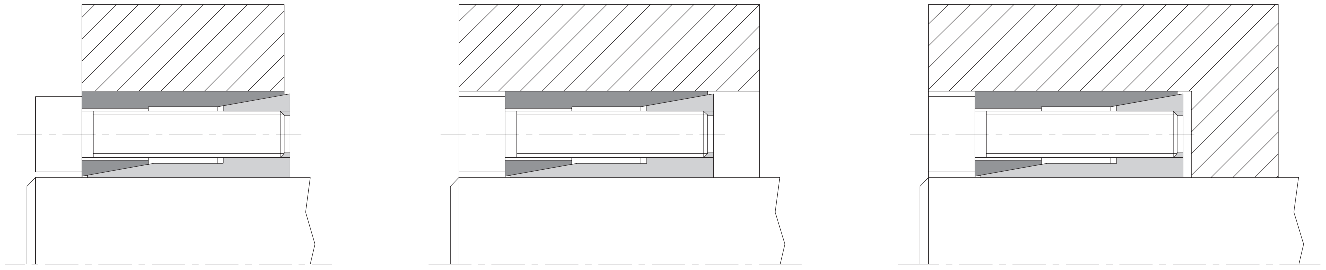
-20 +160 °C





[1] Dimension D_N: for calculation see page 321.

Example of application of hub type



Ordering example:	KTR 105	8	x	18
	Series	Size of internal diameter d		Size of external diameter D

CLAMPEX® – KTR 105

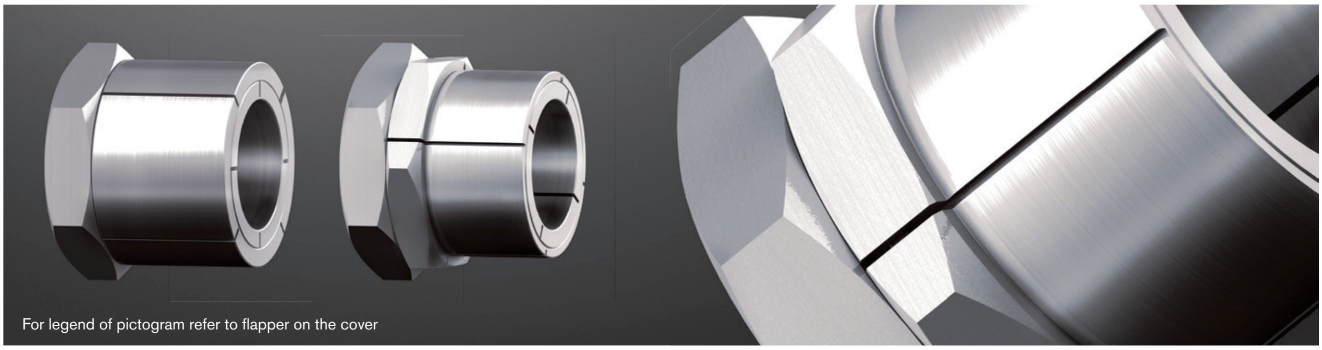
d x D [mm]	Dimensions [mm]		Clamping screws DIN EN ISO 4762 - 12.9 μ_{total}=0.14				Transmittable torque or axial force		Surface pressure between clamping element		Weight [~kg]	Stock programme
	B	B1	M	Length	z = number	T_A [Nm] [1]	T [Nm]	F_{ax} [kN]	Shaft P_W [N/mm²]	Hub P_N [N/mm²]		
5 x 16	13.5	11	M2.5	10	3	1.2	5	2	177	55	0.01	
6 x 16	13.5	11	M2.5	10	3	1.2	6	2	147	55	0.01	●
6.35 x 16	13.5	11	M2.5	10	3	1.2	6	2	132	52	0.01	●
7 x 17	13.5	11	M2.5	10	3	1.2	8	2	144	59	0.01	●
8 x 18	13.5	11	M2.5	10	3	1.2	10	3	138	61	0.02	●
9 x 20	15.5	13	M2.5	12	4	1.2	15	3	140	63	0.02	●
9.53 x 20	15.5	13	M2.5	12	4	1.2	15	3	125	60	0.02	
10 x 20	15.5	13	M2.5	12	4	1.2	15	3	114	57	0.02	●
11 x 22	15.5	13	M2.5	12	4	1.2	18	3	113	56	0.02	●
12 x 22	15.5	13	M2.5	12	4	1.2	20	3	105	57	0.02	●
14 x 26	20	17	M3	16	4	2.1	35	5	105	57	0.04	●
15 x 28	20	17	M3	16	4	2.1	40	5	94	51	0.04	●
16 x 32	21	17	M4	16	4	4.9	70	9	132	66	0.07	●
17 x 35	25	21	M4	20	4	4.9	75	9	125	61	0.09	●
18 x 35	25	21	M4	20	4	4.9	80	9	119	61	0.09	●
19 x 35	25	21	M4	20	4	4.9	85	9	114	62	0.08	●
20 x 38	26	21	M5	20	4	9.7	150	15	153	81	0.1	●
22 x 40	26	21	M5	20	4	9.7	160	15	135	74	0.1	●
24 x 47	32	26	M6	25	4	16.5	250	21	154	78	0.2	●
25 x 47	32	26	M6	25	4	16.5	260	21	147	78	0.2	●
28 x 50	32	26	M6	25	6	16.5	440	31	198	111	0.2	●
30 x 55	32	26	M6	25	6	16.5	470	31	185	101	0.3	●
32 x 55	32	26	M6	25	6	16.5	500	31	173	100	0.25	●
35 x 60	37	31	M6	30	8	16.5	730	42	166	97	0.35	●
38 x 65	37	31	M6	30	8	16.5	800	42	155	90	0.4	●
40 x 65	37	31	M6	30	8	16.5	840	42	147	90	0.4	●
42 x 75	44	36	M8	35	6	40	911	43	125	70	0.7	●
45 x 75	44	36	M8	35	8	40	1300	58	155	93	0.6	●
48 x 80	44	36	M8	35	8	40	1824	76	191	115	0.7	
50 x 80	44	36	M8	35	8	40	1900	76	183	115	0.7	●

● Sizes of clamping elements available from stock.

[1] These are the maximum screw tightening torques. They can be reduced by a maximum of 40 % of the above-mentioned figures with T, F_{ax}, P_W and P_N decreasing proportionately.

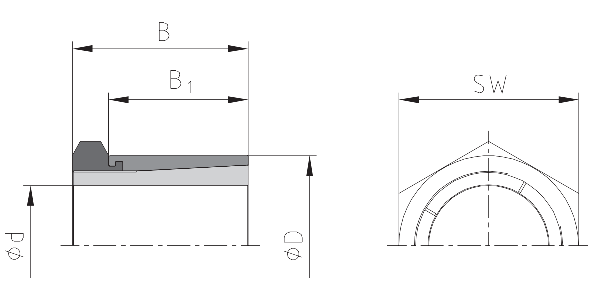
CLAMPEX® KTR 130 and KTR 131
Clamping elements

Self-centering clamping elements with a central clamping nut for easy assembly/disassembly

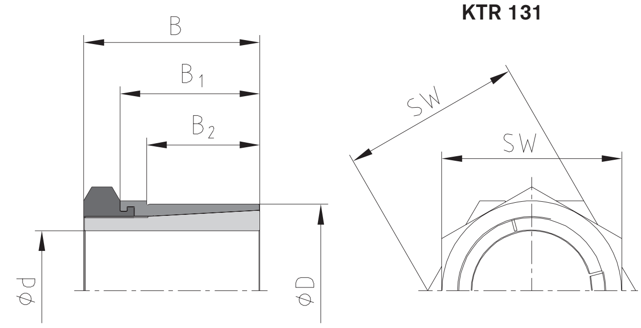

For legend of pictogram refer to flapper on the cover

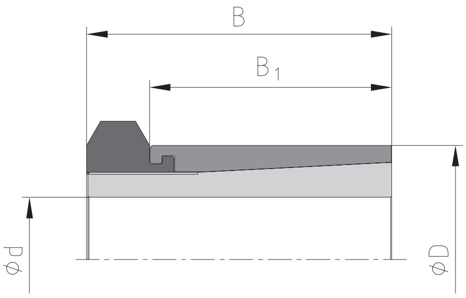
-20 +160 °C

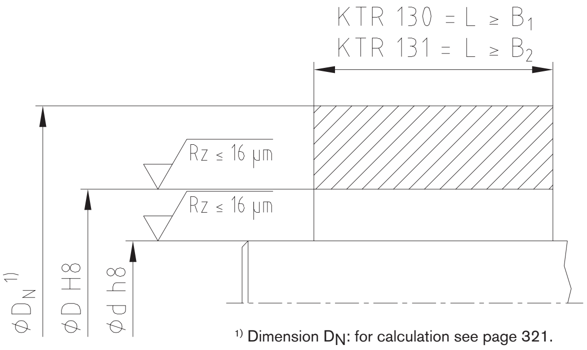
KTR 130



KTR 131

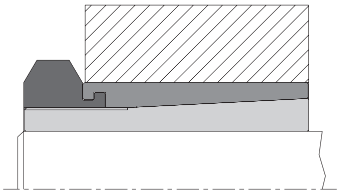


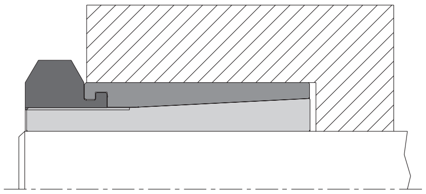


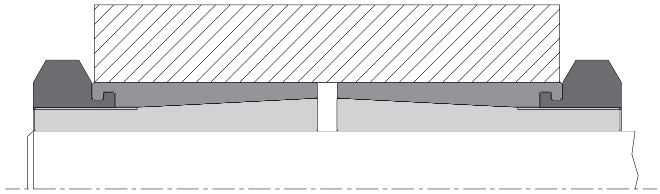


[1] Dimension D_N: for calculation see page 321.

Example of application of hub type







Ordering example:

KTR 130	18	x	35
Series	Size of internal diameter d		Size of external diameter D

CLAMPEX® – KTR 130

d x D [mm]	Dimensions [mm]		Hexagon nut		Transmittable torque or axial force		Surface pressure between clamping element		Weight [~kg]	Stock programme
	B	B_1	Width across flats SW	T_A [Nm] [1]	T [Nm]	F_{ax} [kN]	Shaft P_W [N/mm²]	Hub P_N [N/mm²]		
5 x 14	19	15	14	10	10.1	4.0	264	96	0.02	●
6 x 14	19	15	14	10	12.1	4.0	220	96	0.02	●
8 x 16	22	17	17	17	23.4	5.8	179	91	0.02	●
9 x 20	24	19	22	35	43.2	9.7	248	112	0.04	●
10 x 20	24	19	22	35	48.6	9.7	223	112	0.05	●
12 x 22	24	19	22	44	65.3	10.9	206	117	0.05	●
14 x 26	28	22	27	65	93.0	13.3	178	99	0.08	●
15 x 26	28	22	27	65	99.0	13.3	166	99	0.08	●
16 x 26	28	22	27	65	106	13.3	156	99	0.07	●
18 x 35	36	27	36	161	223	24.8	224	125	0.2	●
19 x 35	36	27	36	161	235	24.8	212	125	0.2	●
20 x 35	36	27	36	161	248	24.8	201	125	0.2	●
22 x 42	41	30	46	250	349	31.8	197	110	0.3	●
24 x 42	41	30	46	250	381	31.8	180	110	0.3	●
25 x 42	41	30	46	250	397	31.8	173	110	0.3	●
30 x 47	44	33	50	355	605	40.4	162	110	0.4	●
32 x 55	51	38	55	490	764	47.8	166	102	0.6	
35 x 55	51	38	55	490	836	47.8	151	102	0.6	●
40 x 62	58	43	65	800	1329	66.5	152	98	0.8	●
45 x 65	63	48	65	900	1605	71.0	142	98	0.9	●
48 x 75	73	58	75	1290	2227	92.0	121	77	1.5	
50 x 75	73	58	75	1290	2320	92.0	116	77	1.4	●

● Sizes of clamping elements available from stock.

[1] These are the maximum screw tightening torques. They can be reduced by a maximum of 40 % of the above-mentioned figures with T, F_{ax}, P_W and P_N decreasing proportionately.

CLAMPEX® – KTR 131

d x D [mm]	Dimensions [mm]			Hexagon nut/ counter hexagon nut		Transmittable torque or axial force		Surface pressure between clamping element		Weight [~kg]	Stock programme
	B	B_1	B_2	Width across flats SW	T_A [Nm] [1]	T [Nm]	F_{ax} [kN]	Shaft P_W [N/mm²]	Hub P_N [N/mm²]		
5 x 12	19	15	9	14	10	10.1	4.0	264	119	0.02	●
6 x 12	19	15	9	14	10	12.1	4.0	220	119	0.02	●
8 x 14	22	17	11	17	17	23.4	5.8	179	121	0.02	●
10 x 18	24	19	12	22	35	48.6	9.7	221	127	0.04	●
12 x 20	24	19	12	22	44	65.3	10.9	206	128	0.04	●
14 x 24	28	22	15	27	65	93.0	13.3	178	107	0.08	●
15 x 24	28	22	15	27	65	99.0	13.3	166	107	0.07	●
16 x 24	28	22	15	27	65	106	13.3	156	107	0.07	●
18 x 30	36	27	17	36	161	223	24.8	224	145	0.2	●
19 x 30	36	27	17	36	161	235	24.8	212	145	0.2	●
20 x 30	36	27	17	36	161	248	24.8	201	145	0.15	●
22 x 38	41	30	20	46	250	349	31.8	197	122	0.35	●
24 x 38	41	30	20	46	250	381	31.8	180	122	0.3	●
25 x 38	41	30	20	46	250	397	31.8	173	122	0.3	●
30 x 42	44	33	23	50	355	605	40.4	162	123	0.35	●
32 x 50	51	38	28	55	490	764	47.8	166	112	0.55	●
35 x 50	51	38	28	55	490	836	47.8	151	112	0.5	●

● Sizes of clamping elements available from stock.

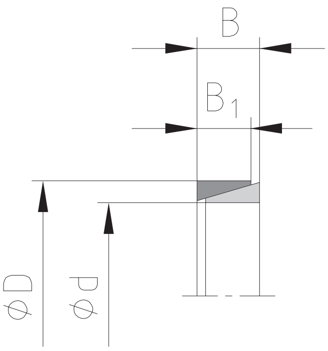
[1] These are the maximum screw tightening torques. They can be reduced by a maximum of 40 % of the above-mentioned figures with T, F_{ax}, P_W and P_N decreasing proportionately.

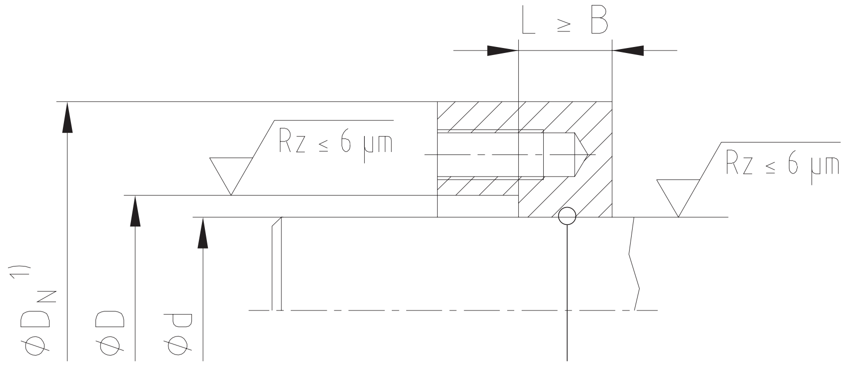
CLAMPEX® KTR 150
Clamping elements

Not self-centering clamping element with minimum dimensions

For legend of pictogram refer to flapper on the cover

-20 +160 °C





[1] Dimension D_N: for calculation see page 321.

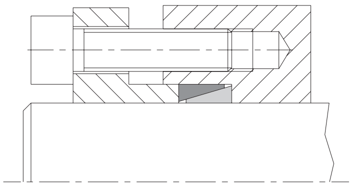
Centering required

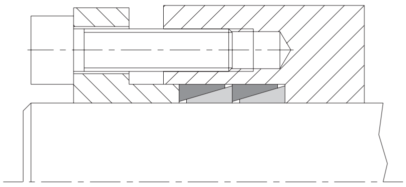
Tolerances for d and D

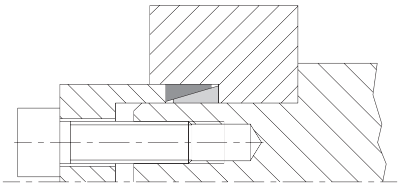
d ≤ 38 mm = d **h6**/D **H7**

d > 38 mm = d **h8**/D **H8**

Example of application of hub type





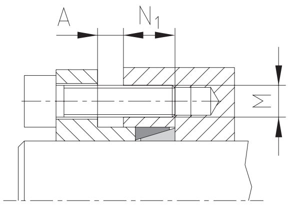


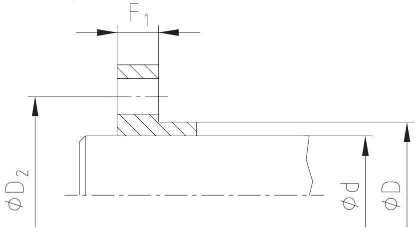
Up to four clamping elements can be installed one after another.

The torques rise as follows:

1 clamping element	$T = T_{catalogue} \times 1.00$
2 clamping elements	$T = T_{catalogue} \times 1.55$
3 clamping elements	$T = T_{catalogue} \times 1.85$
4 clamping elements	$T = T_{catalogue} \times 2.02$

Pressure flanges





Recommended dimensions of pressure flanges:

N_1 [mm] ≥ 1.5 • B

D_2 [mm] = D + 12 +M

F_1 [mm] = M • 1.3 (with screws 8.8)

F_1 [mm] = M • 1.8 (with screws 10.9/12.9)

Ordering example:	KTR 150	60	x	68
	Series	Size of internal diameter d		Size of external diameter D

CLAMPEX® – KTR 150

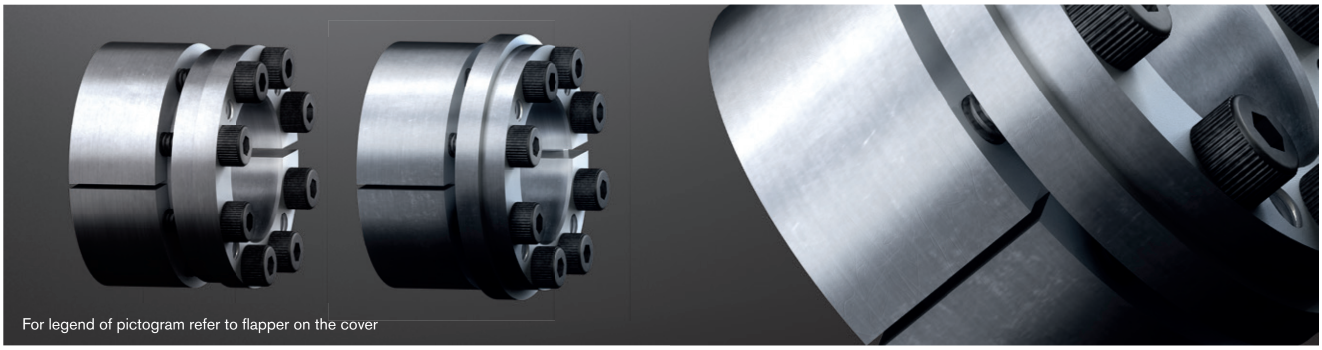
d x D [mm]	Dimensions [mm]		Distance dimension A [mm]				Clamping force required for clamping screws μ_{total}=0.14			Transmittable torque or axial force		Surface pressure between clamping element		Weight [~kg]	Stock programme
	B	B_1	Clamping elements				P_O [kN]	P_S [kN]	P_A = P_O+P_S [kN]	T [Nm]	F_{ax} [kN]	Shaft P_W [N/mm²]	Hub P_N [N/mm²]		
			1	2	3	4									
6 x 9	4.5	3.7	3	3	3	4	0	3	3	2	0.6	80	53	0.0015	●
7 x 10	4.5	3.7	3	3	3	4	0	5	5	4	1	117	82	0.0014	●
8 x 11	4.5	3.7	3	3	3	4	0	6	6	5	1	112	81	0.0015	●
9 x 12	4.5	3.7	3	3	3	4	8	8	16	8	1	142	106	0.0017	●
10 x 13	4.5	3.7	3	3	3	4	7	9	16	10	2	143	110	0.0018	●
12 x 15	4.5	3.7	3	3	3	4	7	8	15	11	1	110	88	0.0022	●
13 x 16	4.5	3.7	3	3	3	4	6	10	16	13	2	110	90	0.0023	●
14 x 18	6.3	5.3	3	4	4	5	11	15	26	22	3	112	87	0.0049	●
15 x 19	6.3	5.3	3	4	4	5	11	15	26	25	3	111	88	0.0053	●
16 x 20	6.3	5.3	3	4	4	5	10	15	25	26	3	102	81	0.0055	●
17 x 21	6.3	5.3	3	4	4	5	10	16	26	30	3	104	84	0.0058	●
18 x 22	6.3	5.3	3	4	4	5	9	17	26	33	3	102	83	0.0061	●
19 x 24	6.3	5.3	3	4	4	5	13	19	32	40	4	111	88	0.0078	●
20 x 25	6.3	5.3	3	4	4	5	12	20	32	44	4	110	88	0.0082	●
22 x 26	6.3	5.3	3	4	4	5	9	21	30	50	4	103	87	0.0072	●
24 x 28	6.3	5.3	3	4	4	5	8	26	34	68	5	118	101	0.0079	●
25 x 30	6.3	5.3	3	4	4	5	10	27	37	75	6	120	100	0.01	●
28 x 32	6.3	5.3	3	4	4	5	7	30	37	90	6	115	101	0.009	●
30 x 35	6.3	5.3	3	4	4	5	8	31	39	100	6	111	95	0.012	●
32 x 36	6.3	5.3	3	4	4	5	8	34	42	120	7	117	104	0.01	●
35 x 40	7	6.0	3	4	4	5	13	42	55	160	9	115	101	0.02	●
36 x 42	7	6.0	4	5	5	6	15	43	58	170	9	116	99	0.02	●
38 x 44	7	6.0	4	5	5	6	14	46	60	190	10	116	100	0.02	●
40 x 45	8	6.6	4	5	5	6	14	53	67	230	11	116	103	0.02	●
42 x 48	8	6.6	4	5	5	6	16	57	73	260	12	118	104	0.03	●
45 x 52	10	8.6	4	5	5	6	26	80	106	390	17	119	103	0.05	●
48 x 55	10	8.6	4	5	5	6	25	82	107	430	17	115	100	0.05	●
50 x 57	10	8.6	4	5	5	6	24	86	110	470	18	116	102	0.05	●
55 x 62	10	8.6	4	5	5	6	22	97	119	580	21	118	105	0.05	●
56 x 64	12	10.4	4	5	5	6	29	122	151	740	26	120	105	0.07	
60 x 68	12	10.4	4	5	6	7	27	129	156	840	28	119	105	0.07	●
63 x 71	12	10.4	4	5	6	7	26	134	160	920	29	118	105	0.08	●
65 x 73	12	10.4	4	5	6	7	25	142	167	1000	30	121	108	0.08	●
70 x 79	14	12.2	4	5	6	7	31	171	202	1300	37	115	102	0.11	●
71 x 80	14	12.2	4	5	6	7	31	181	212	1400	39	121	107	0.11	
75 x 84	14	12.2	4	5	6	7	34	184	218	1500	40	116	104	0.12	●
80 x 91	17	15.0	5	6	7	8	48	241	289	2100	52	116	102	0.12	●
85 x 96	17	15.0	5	6	7	8	45	260	305	2400	56	117	104	0.2	●
90 x 101	17	15.0	5	6	7	8	43	276	319	2700	60	118	105	0.2	●
95 x 106	17	15.0	5	6	8	9	41	290	331	3000	63	118	105	0.22	●
100 x 114	21	18.7	5	6	8	9	61	386	447	4200	84	119	105	0.4	●
110 x 124	21	18.7	5	6	8	9	65	393	458	4700	85	110	98	0.4	●
120 x 134	21	18.7	5	6	8	9	60	391	451	5100	85	100	90	0.5	●
130 x 148	28	25.3	6	7	9	11	96	573	669	8100	124	101	88	0.85	●
140 x 158	28	25.3	6	7	9	11	89	618	707	9400	134	101	89	0.91	●
150 x 168	28	25.3	6	7	9	11	84	674	758	11000	146	103	92	0.97	
160 x 178	28	25.3	6	7	9	11	79	833	912	14500	181	119	107	1.02	
170 x 191	33	30.0	7	8	10	12	118	1054	1172	19500	229	119	106	1.5	
180 x 201	33	30.0	7	8	10	12	112	1082	1194	21200	235	116	104	1.6	
190 x 211	33	30.0	7	9	10	12	106	1166	1272	24100	253	118	106	1.7	
200 x 224	38	34.5	7	9	11	13	133	1425	1558	31000	310	119	106	2.3	
210 x 234	38	34.5	7	9	11	13	127	1532	1659	35000	333	122	110	2.5	
220 x 244	38	34.5	7	9	11	13	122	1587	1709	38000	345	121	109	2.5	
230 x 257	43	39.5	7	9	12	14	165	1579	1744	39500	343	100	90	3.4	
240 x 267	43	39.5	7	9	12	14	158	1801	1959	47000	391	110	99	3.5	
250 x 280	48	44.0	8	10	13	16	188	1912	2100	52000	416	100	90	4.7	
260 x 290	48	44.0	8	10	13	16	181	1997	2178	56500	434	101	90	4.8	
270 x 300	48	44.0	8	10	13	16	174	2077	2251	61000	451	101	91	4.9	
280 x 313	53	49.0	9	11	14	17	205	2381	2586	72500	517	100	90	6.3	
290 x 323	53	49.0	9	11	14	17	221	2457	2678	77500	534	100	90	6.5	
300 x 333	53	49.0	9	11	14	17	214	2544	2758	83000	553	100	90	6.7	
320 x 360	65	59.0	10	15	20	25	291	3275	3566	114000	712	100	89	10.9	
340 x 380	65	59.0	10	15	20	25	275	3474	3749	128500	755	100	89	11.5	
360 x 400	65	59.0	10	15	20	25	261	3677	3938	144000	800	100	90	12.2	
380 x 420	65	59.0	10	15	20	25	269	3870	4139	160000	842	100	90	12.8	
400 x 440	65	59.0	10	15	20	25	256	4091	4347	178000	890	100	91	13.5	
420 x 460	65	59.0	10	15	20	25	244	4290	4534	196000	933	100	91	14.1	
440 x 480	65	59.0	10	15	20	25	234	4492	4726	215000	977	100	92	14.7	

● Sizes of clamping elements available from stock.
Other sizes on request.

P_A = Total force
P_O = Setting force
P_S = Clamping force

CLAMPEX® KTR 200 and KTR 201
Clamping elements

Self-centering clamping elements with a wide range of applications

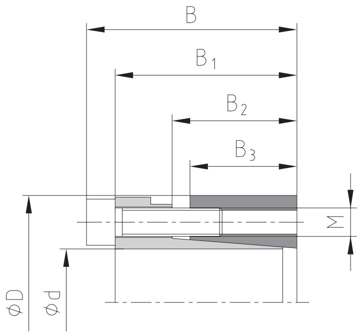


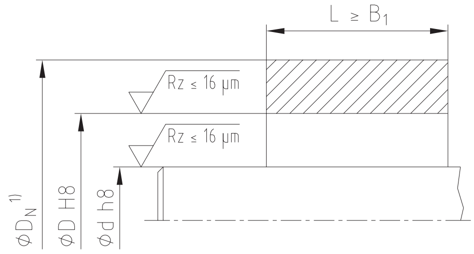
For legend of pictogram refer to flapper on the cover

-20 +160 °C

KTR 200

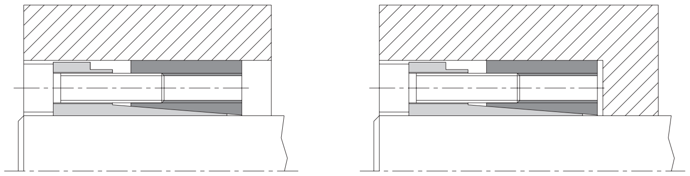
KTR 200



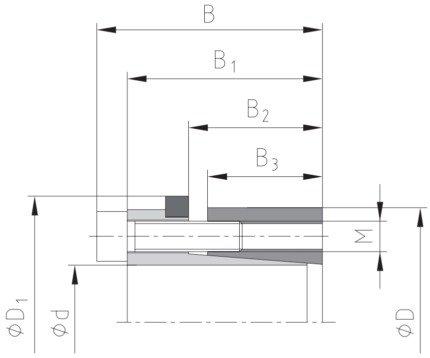


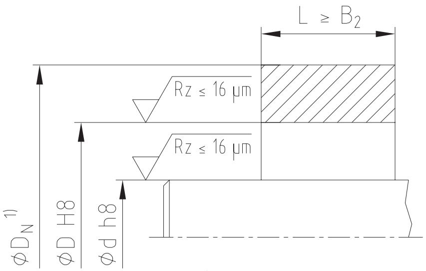
[1] Dimension D_N: for calculation see page 321.

Example of application of hub type



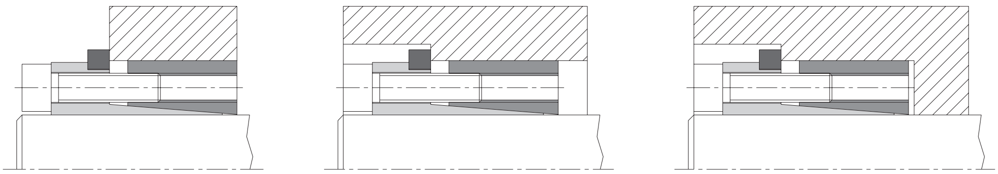
KTR 201





[1] Dimension D_N: for calculation see page 321.

Example of application of hub type



Ordering example:

KTR 200	40	x	65
Series	Size of internal diameter d		Size of external diameter D

CLAMPEX® – KTR 200 and KTR 201

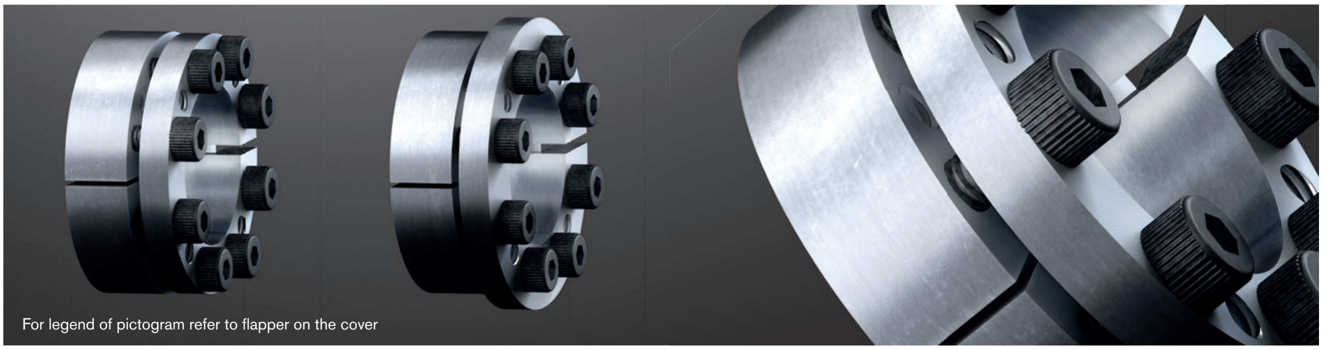
											KTR 200						KTR 201					
d x D [mm]	Dimensions [mm]					Clamping screws DIN EN ISO 4762 - 12.9 μ_{total}=0.14					Transmittable torque or axial force		Surface pressure between clamping element		Weight [~kg]	Stock programme	Transmittable torque or axial force		Surface pressure between clamping element		Weight [~kg]	Stock programme
	B	B_1	B_2	B_3	D_1	M	Length	z = number	T_A [Nm] [1] KTR 200	T_A [Nm] [1] KTR 201	T [Nm]	F_{ax} [kN]	Shaft P_W [N/mm²]	Hub P_N [N/mm²]			T [Nm]	F_{ax} [kN]	Shaft P_W [N/mm²]	Hub P_N [N/mm²]		
20 x 47	48	42	31	26	53	M6	25	6	17	17	530	53	270	115	0.4	●	320	32	163	69	0.4	●
22 x 47	48	42	31	26	53	M6	25	6	17	17	580	53	245	114	0.4	●	360	33	152	71	0.4	●
24 x 50	48	42	31	26	56	M6	25	6	17	17	630	53	223	107	0.4	●	390	33	138	66	0.4	●
25 x 50	48	42	31	26	56	M6	25	6	17	17	660	53	215	108	0.4	●	400	32	131	65	0.4	●
28 x 55	48	42	31	26	61	M6	25	6	17	17	740	53	193	98	0.5	●	450	32	117	60	0.5	●
30 x 55	48	42	31	26	61	M6	25	6	17	17	790	53	179	98	0.5	●	490	33	111	61	0.5	●
32 x 60	48	42	31	26	66	M6	25	8	17	17	1150	72	229	122	0.6	●	690	43	137	73	0.6	●
35 x 60	48	42	31	26	66	M6	25	8	17	17	1300	74	217	126	0.5	●	750	43	125	73	0.5	●
38 x 65	48	42	31	26	71	M6	25	8	17	17	1300	68	184	107	0.6	●	820	43	116	68	0.6	●
40 x 65	48	42	31	26	71	M6	25	8	17	17	1400	70	179	110	0.6	●	860	43	110	67	0.6	●
42 x 75	59	51	35	30	81	M8	30	6	41	41	2000	95	200	112	1.0	●	1300	62	130	73	1.0	●
45 x 75	59	51	35	30	81	M8	30	6	41	41	2200	98	192	115	1.0	●	1400	62	122	73	1.0	●
48 x 80	59	51	35	30	86	M8	30	8	41	41	3200	133	246	147	1.1	●	1900	79	146	87	1.1	●
50 x 80	59	51	35	30	86	M8	30	8	41	41	3300	132	233	146	1.1	●	2000	80	141	88	1.1	●
55 x 85	59	51	35	30	91	M8	30	8	41	41	3600	131	210	136	1.2	●	2200	80	129	83	1.2	●
60 x 90	59	51	35	30	96	M8	30	8	41	41	3900	130	192	128	1.2	●	2400	80	118	79	1.2	●
65 x 95	59	51	35	30	101	M8	30	8	41	41	4300	132	180	123	1.3	●	2600	80	109	74	1.3	●
70 x 110	71	61	46	40	119	M10	30	8	83	83	7500	214	203	129	2.2	●	4600	131	125	79	2.3	●
75 x 115	71	61	46	40	124	M10	30	8	83	83	8000	213	189	123	2.3	●	5000	133	118	77	2.4	●
80 x 120	71	61	46	40	129	M10	30	8	83	83	8500	213	176	117	2.4	●	5200	130	108	72	2.6	●
85 x 125	71	61	46	40	134	M10	30	10	83	83	11400	268	209	142	2.6	●	7000	165	128	87	2.7	●
90 x 130	71	61	46	40	139	M10	30	10	83	83	12000	267	196	136	2.7	●	7400	164	121	84	2.8	●
95 x 135	71	61	46	40	144	M10	30	10	83	83	12600	265	185	130	2.8	●	7800	164	115	81	2.9	●
100 x 145	80	68	52	45	155	M12	35	8	145	145	15000	300	177	122	3.9	●	9800	196	116	80	4.1	●
110 x 155	80	68	52	45	165	M12	35	8	145	145	16500	300	161	114	4.2	●	10700	195	104	74	4.4	●
120 x 165	80	68	52	45	175	M12	35	10	145	145	22500	375	184	134	4.5	●	14600	243	120	87	4.7	●
130 x 180	80	68	52	45	188	M12	35	12	145	145	29000	446	202	146	5.5		19000	292	133	96	5.7	
140 x 190	90	76	58	50	199	M14	40	10	210	230	32000	457	173	128	6.6		23000	329	125	92	6.9	
150 x 200	90	76	58	50	209	M14	40	12	210	230	41000	547	193	145	6.9	●	30000	400	141	106	7.2	
160 x 210	90	76	58	50	219	M14	40	12	210	230	44000	550	182	139	7.4		32000	400	133	101	7.8	
170 x 225	90	76	58	50	234	M14	40	14	210	230	54500	641	200	151	8.6		39000	459	143	108	9.0	
180 x 235	90	76	58	50	244	M14	40	14	210	230	57500	639	188	144	9.1		41000	456	134	103	9.5	
190 x 250	90	76	58	50	259	M14	40	15	210	230	65000	684	191	145	10.6		46400	488	136	104	11.1	
200 x 260	90	76	58	50	269	M14	40	15	210	230	68000	680	180	139	11.2		48800	488	129	100	11.7	

● Sizes of clamping elements available from stock.

[1] These are the maximum screw tightening torques. They can be reduced by a maximum of 40 % of the above-mentioned figures with T, F_{ax}, P_W and P_N decreasing proportionately.

CLAMPEX® KTR 203 and KTR 206
Clamping elements

Self-centering clamping elements as a compact alternative to KTR 200/201

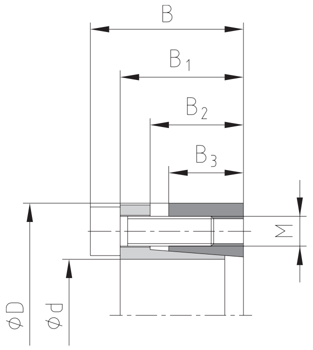


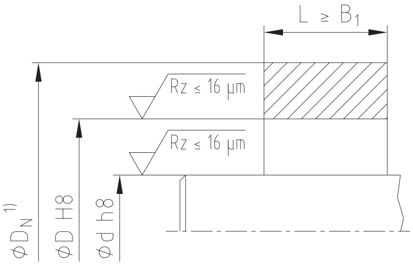
For legend of pictogram refer to flapper on the cover

-20 +160 °C

KTR 203

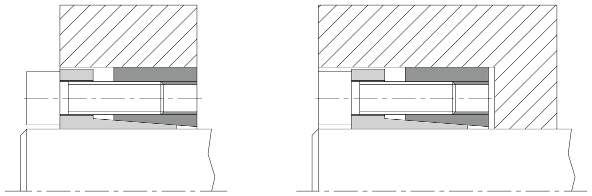
KTR 203



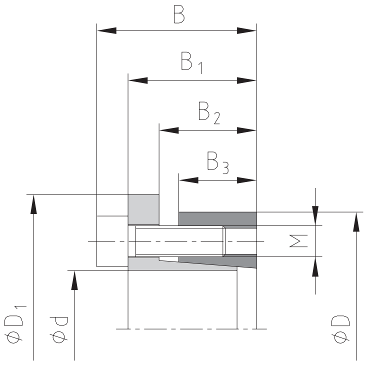


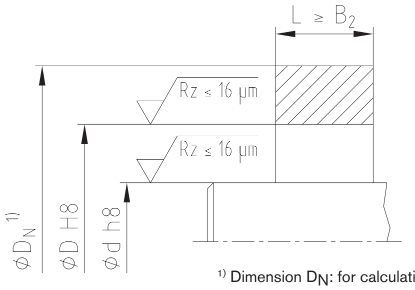
[1] Dimension D_N: for calculation see page 321.

Example of application of hub type



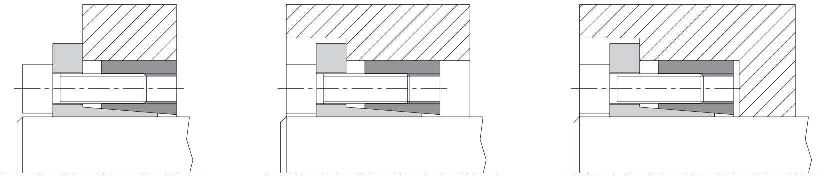
KTR 206





[1] Dimension D_N: for calculation see page 321.

Example of application of hub type



Ordering example:	KTR 203	40	x	65
	Series	Size of internal diameter d		Size of external diameter D

CLAMPEX® – KTR 203 and KTR 206

d x D [mm]	Dimensions [mm]					Clamping screws DIN EN ISO 4762 - 12.9 μ_{total}=0.14					KTR 203						KTR 206					
									T_A [Nm] 1)		Transmittable torque or axial force		Surface pressure between clamping element		Weight [~kg]	Stock programme	Transmittable torque or axial force		Surface pressure between clamping element		Weight [~kg]	Stock programme
	B	B_1	B_2	B_3	D_1	M	Length	z = number	KTR 203	KTR 206	T [Nm]	F_{ax} [kN]	Shaft P_W [N/mm²]	Hub P_N [N/mm²]			T [Nm]	F_{ax} [kN]	Shaft P_W [N/mm²]	Hub P_N [N/mm²]		
18 x 47	34	28	22	17	53	M6	20	6	14	17	370	41	356	136	0.3		290	32	279	107	0.3	
19 x 47	34	28	22	17	53	M6	20	6	14	17	390	41	337	136	0.3		300	32	259	105	0.3	
20 x 47	34	28	22	17	53	M6	20	6	14	17	410	41	320	136	0.3	●	320	32	250	106	0.3	●
22 x 47	34	28	22	17	53	M6	20	6	14	17	450	41	290	136	0.3	●	350	32	226	106	0.3	●
24 x 50	34	28	22	17	56	M6	20	6	14	17	490	41	265	127	0.3	●	390	33	211	101	0.3	●
25 x 50	34	28	22	17	56	M6	20	6	14	17	510	41	255	127	0.3	●	400	32	200	100	0.3	●
28 x 55	34	28	22	17	61.4	M6	20	6	14	17	570	41	227	116	0.3	●	450	32	179	91	0.4	●
30 x 55	34	28	22	17	61.4	M6	20	6	14	17	610	41	212	115	0.3	●	490	33	170	93	0.3	●
32 x 60	34	28	22	17.5	67	M6	20	8	14	17	880	55	261	139	0.4	●	700	44	207	111	0.3	●
35 x 60	34	28	22	17.5	67	M6	20	8	14	17	960	55	238	139	0.3	●	760	43	188	110	0.4	●
38 x 65	34	28	22	17.5	72	M6	20	8	14	17	1000	53	210	123	0.4	●	820	43	172	101	0.5	●
40 x 65	34	28	22	17.5	72	M6	20	8	14	17	1100	55	208	128	0.4	●	870	44	165	101	0.4	●
42 x 75	41	33	25	20	84	M8	25	8	35	41	2200	105	331	185	0.6	●	1700	81	256	143	0.7	●
45 x 75	41	33	25	20	84	M8	25	8	35	41	2400	107	314	189	0.6	●	1800	80	236	141	0.7	●
48 x 80	41	33.5	24	20	89	M8	25	8	35	41	2500	104	288	173	0.7		1900	79	219	131	0.8	●
50 x 80	41	33.5	24	20	89	M8	25	8	35	41	2600	104	276	172	0.7	●	2000	80	212	133	0.8	●
55 x 85	41	33.5	24	20	94	M8	25	8	35	41	2900	105	254	165	0.7	●	2200	80	193	125	0.9	●
60 x 90	41	33.5	24	20	99	M8	25	8	35	41	3100	103	228	152	0.8	●	2400	80	177	118	0.9	●
65 x 95	41	33.5	24	20	104	M8	25	8	35	41	3400	105	213	146	0.8	●	2600	80	163	112	0.9	●
70 x 110	50	40	29	24	119	M10	30	8	70	83	6000	171	271	172	1.5	●	4600	131	208	132	1.6	●
75 x 115	50	40	29	24	124	M10	30	8	70	83	6400	171	252	164	1.6	●	5000	133	196	128	1.7	●
80 x 120	50	40	29	24	129	M10	30	8	70	83	6800	170	235	157	1.7	●	5300	133	183	122	1.9	●
85 x 125	50	40	29	24	134	M10	30	10	70	83	9000	212	275	187	1.8	●	7000	165	214	146	2.0	●
90 x 130	50	40	29	24	139	M10	30	10	70	83	9600	213	262	181	1.9	●	7400	164	202	140	2.0	●
95 x 135	50	40	29	24	144	M10	30	10	70	83	10200	215	250	176	2.0		7800	164	191	134	2.3	
100 x 145	56	44	31	25.5	154	M12	30	8	115	145	12000	240	250	172	2.6	●	9700	194	202	139	2.8	●
110 x 155	56	44	31	25.5	164	M12	30	8	115	145	13000	236	224	159	2.8		10700	195	184	131	3.1	●
120 x 165	56	44	31	26	174	M12	30	9	115	145	16000	267	227	165	3.6		13100	218	186	135	3.2	●
130 x 180	64	52	39	34	189	M12	30	12	115	145	23000	354	212	153	4.4		19000	292	175	127	4.6	●
140 x 190	68	54	39	34	199	M14	40	9	185	230	25000	357	199	147	4.9		20500	293	163	120	5.0	
150 x 200	68	54	39	34	209	M14	40	10	185	230	30000	400	208	156	5.2		24500	327	170	127	5.2	
160 x 210	68	54	39	34	219	M14	40	12	185	230	38800	485	236	180	5.6		31300	391	191	145	5.6	
170 x 225	78	64	49	44	234	M14	40	12	185	230	41300	486	172	130	6.9		33200	391	139	105	6.5	
180 x 235	78	64	49	44	244	M14	40	12	185	230	43700	486	163	125	8.5		35000	389	130	100	8.5	
190 x 250	78	64	49	43.5	259	M14	40	15	185	230	57700	607	195	148	9.0		46500	489	157	119	9.0	
200 x 260	78	64	49	43.5	269	M14	40	15	185	230	60700	607	185	142	9.6		49000	490	149	115	9.6	
220 x 285	88	72	57	50	294	M16	40	12	290	360	77300	703	169	131	13.4		57100	519	125	97	14.0	
240 x 305	88	72	57	50	314	M16	40	15	290	360	105400	878	194	153	14.5		77800	648	143	113	15.1	
260 x 325	88	72	57	50	334	M16	40	18	290	360	137000	1054	215	172	16.1		101200	778	159	127	16.2	
280 x 355	102	84	66	60	364	M18	50	16	400	480	160300	1145	181	143	23.4		113300	809	128	101	25.6	
300 x 375	102	84	66	60	384	M18	50	18	400	480	193200	1288	190	152	25.3		136500	910	134	107	25.5	
320 x 405	121	101	81	74	414	M20	50	18	580	690	269300	1683	189	149	36.9		191000	1194	134	106	37.9	
340 x 425	121	101	81	74	434	M20	50	21	580	690	333800	1964	207	166	39.0		237000	1394	147	118	38.3	
360 x 455	138	116	93	86	464	M22	60	18	780	930	375700	2087	179	141	54.0		264000	1467	126	99	53.3	
380 x 475	138	116	93	86	484	M22	60	21	780	930	462700	2435	198	158	56.2		325000	1711	139	111	57.6	
400 x 495	138	116	93	86	504	M22	60	21	780	930	487000	2435	188	152	58.9		342000	1710	132	107	60.3	

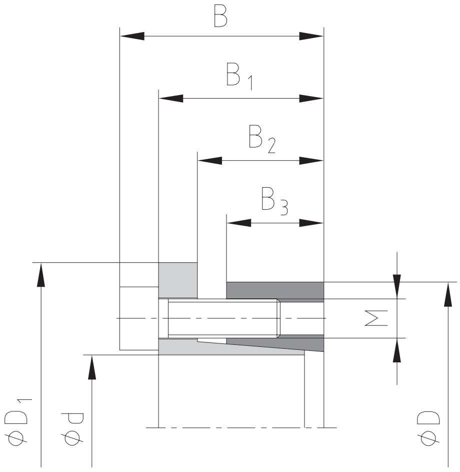
● Sizes of clamping elements available from stock.

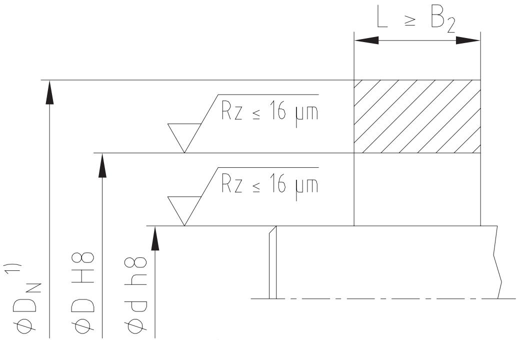
[1] These are the maximum screw tightening torques. They can be reduced by a maximum of 40 % of the above-mentioned figures with T, F_{ax}, P_W and P_N decreasing proportionately.

Self-centering, combination of a hub Ø with various shaft Ø

For legend of pictogram refer to flapper on the cover

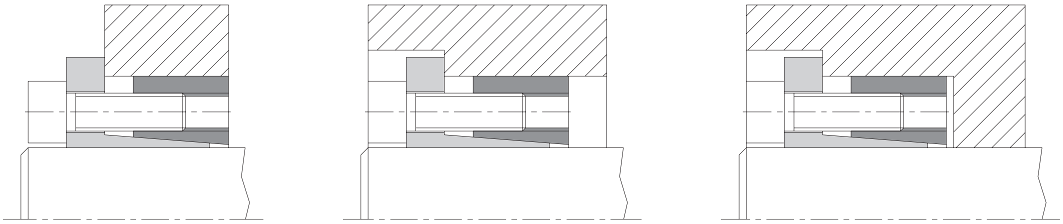
-20 +160 °C



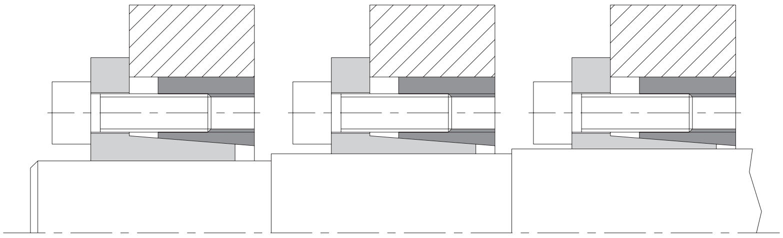


[1] Dimension D_N: for calculation see page 321.

Example of application of hub type



To fasten one size of hubs on different shaft diameters



Ordering example:	KTR 225	28	x	65
	Series	Size of internal diameter d		Size of external diameter D

CLAMPEX® – KTR 225

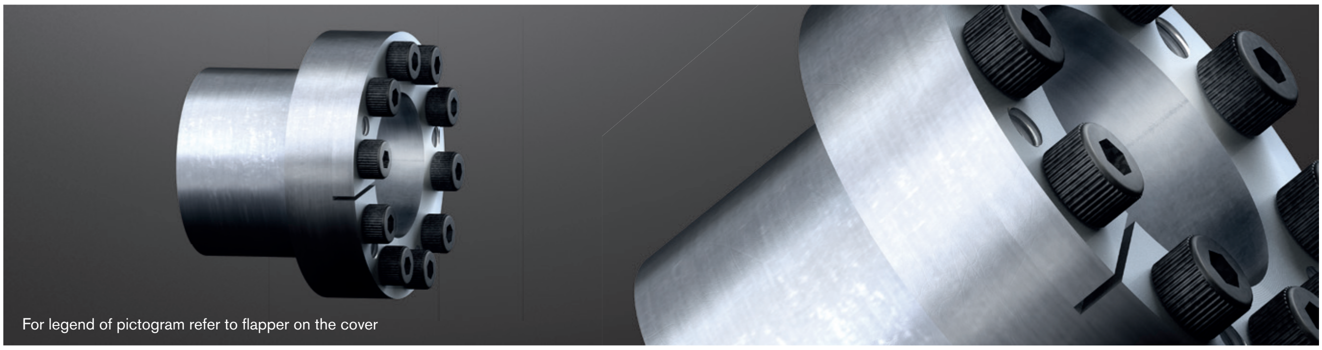
d x D [mm]	Dimensions [mm]					Clamping screws DIN EN ISO 4762 - 12.9 $\mu_{total}=0.14$				Transmittable torque or axial force		Surface pressure between clamping element		Weight [~kg]	Stock programme
	B	B_1	B_2	B_3	D_1	M	Length	z = number	T_A [1] [Nm]	T [Nm]	F_{ax} [kN]	Shaft P_W [N/mm²]	Hub P_N [N/mm²]		
14 x 55	38	30	22	17	62	M8	25	4	41	287	41	457	116	0.5	
16 x 55	38	30	22	17	62	M8	25	4	41	329	41	401	117	0.5	●
18 x 55	38	30	22	17	62	M8	25	4	41	370	41	356	117	0.5	●
19 x 55	38	30	22	17	62	M8	25	4	41	390	41	337	116	0.5	●
20 x 55	38	30	22	17	62	M8	25	4	41	410	41	320	116	0.5	●
22 x 55	38	30	22	17	62	M8	25	4	41	451	41	291	116	0.5	●
24 x 55	38	30	22	17	62	M8	25	4	41	492	41	267	116	0.4	●
25 x 55	38	30	22	17	62	M8	25	4	41	513	41	256	116	0.4	●
28 x 55	38	30	22	17	62	M8	25	4	41	575	41	229	117	0.4	●
30 x 55	38	30	22	17	62	M8	25	4	41	616	41	214	117	0.4	●
24 x 65	38	30	22	17	72	M8	25	5	41	616	51	334	123	0.7	●
25 x 65	38	30	22	17	72	M8	25	5	41	641	51	320	123	0.7	●
28 x 65	38	30	22	17	72	M8	25	5	41	718	51	286	123	0.6	●
30 x 65	38	30	22	17	72	M8	25	5	41	770	51	267	123	0.6	●
32 x 65	38	30	22	17	72	M8	25	5	41	821	51	250	123	0.6	●
35 x 65	38	30	22	17	72	M8	25	5	41	898	51	229	123	0.5	●
38 x 65	38	30	22	17	72	M8	25	5	41	975	51	211	123	0.5	●
40 x 65	38	30	22	17	72	M8	25	5	41	1026	51	200	123	0.5	●
30 x 80	41	33	25	20	88	M8	25	7	41	1077	72	317	119	1.1	
32 x 80	41	33	25	20	88	M8	25	7	41	1150	72	298	119	1.1	
35 x 80	41	33	25	20	88	M8	25	7	41	1257	72	272	119	1.0	
38 x 80	41	33	25	20	88	M8	25	7	41	1364	72	251	119	1.0	
40 x 80	41	33	25	20	88	M8	25	7	41	1436	72	238	119	0.9	●
42 x 80	41	33	25	20	88	M8	25	7	41	1509	72	227	119	0.9	
45 x 80	41	33	25	20	88	M8	25	7	41	1616	72	212	119	0.9	
48 x 80	41	33	25	20	88	M8	25	7	41	1723	72	198	119	0.8	
50 x 80	41	33	25	20	88	M8	25	7	41	1796	72	191	119	0.8	●

● Sizes of clamping elements available from stock.

[1] These are the maximum screw tightening torques. They can be reduced by a maximum of 40 % of the above-mentioned figures with T, F_{ax}, P_W and P_N decreasing proportionately.

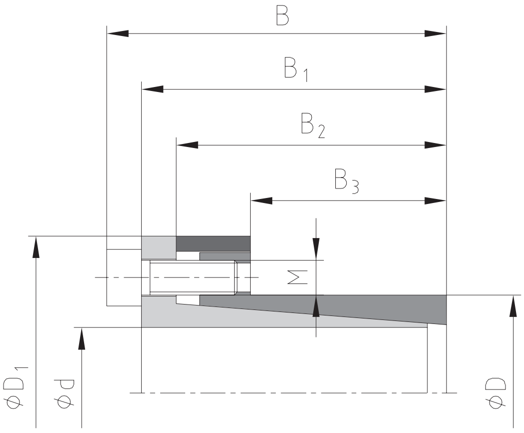
CLAMPEX® KTR 250
Clamping elements

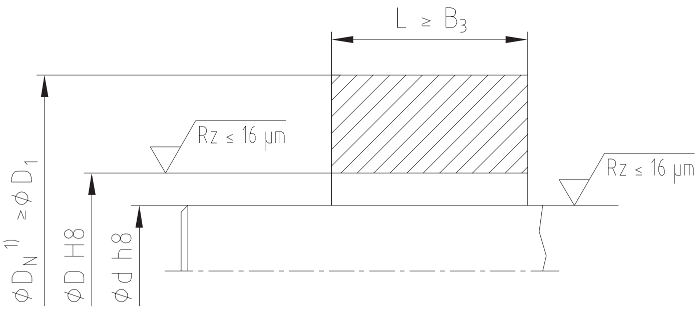
Self-centering clamping element, particularly suitable for thin-walled hubs



For legend of pictogram refer to flapper on the cover

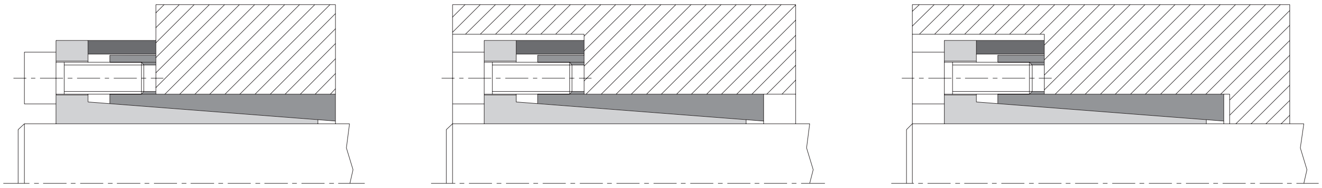
-20 +160 °C





[1] Dimension D_N: for calculation see page 321.

Example of application of hub type



Ordering example:	KTR 250	28	x	39
	Series	Size of internal diameter d		Size of external diameter D

CLAMPEX® – KTR 250

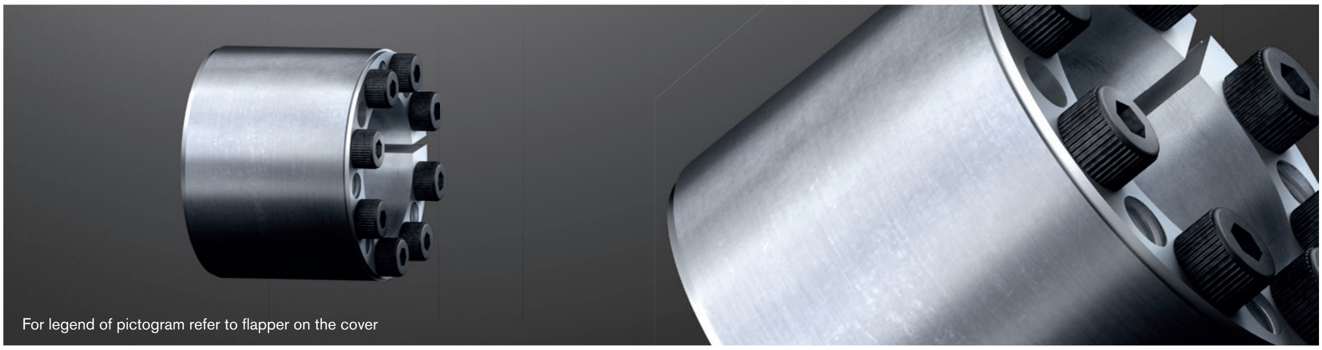
d x D [mm]	Dimensions [mm]					Clamping screws DIN EN ISO 4762 - 12.9 μ_{total}=0.14				Transmittable torque or axial force		Surface pressure between clamping element		Weight [~kg]	Stock programme
	B	B_1	B_2	B_3	D_1	M	Length	z = number	T_A [Nm] [1]	T [Nm]	F_{ax} [kN]	Shaft P_W [N/mm²]	Hub P_N [N/mm²]		
6 x 14	24.5	21.5	18.5	10	25	M3	10	4	2.6	11	4	162	69	0.05	●
8 x 15	29	25	21.5	11.5	27	M4	10	3	5.6	26	7	187	100	0.05	●
9 x 16	30	26	22.5	14	28	M4	10	4	5.6	37	8	173	97	0.06	●
10 x 16	30	26	22.5	14	29	M4	10	4	5.6	42	8	159	99	0.16	●
11 x 18	30	26	22.5	13.5	32	M4	10	4	5.6	50	9	162	99	0.18	●
12 x 18	30	26	22.5	13.5	32	M4	10	4	5.6	55	9	150	100	0.18	●
14 x 23	30	26	22.5	14	38	M4	10	6	5.6	100	14	193	118	0.20	●
15 x 24	42	36	28.5	16	44	M6	18	4	15	145	19	214	134	0.2	●
16 x 24	42	36	28.5	16	44	M6	18	4	15	155	19	201	134	0.3	●
17 x 25	42	36	28.5	16	45	M6	18	4	15	162	19	186	126	0.2	
17 x 26	44	38	31	18	47	M6	18	4	17	180	21	184	120	0.2	
18 x 26	44	38	31	18	47	M6	18	4	17	200	22	182	126	0.2	●
19 x 27	44	38	31	18	48	M6	18	4	17	210	22	171	121	0.3	●
20 x 28	44	38	31	18	49	M6	18	4	17	220	22	162	116	0.2	●
22 x 32	51	45	38	25	54	M6	18	4	17	250	23	110	75	0.3	●
24 x 34	51	45	38	25	56	M6	18	4	17	270	23	99	70	0.3	●
25 x 34	51	45	38	25	56	M6	18	4	17	280	22	95	70	0.3	●
28 x 39	51	45	38	25	61	M6	18	6	17	480	34	130	93	0.4	●
30 x 41	51	45	38	25	62	M6	18	6	17	510	34	120	88	0.4	●
32 x 43	51	45	38	25	65	M6	18	8	17	730	46	151	113	0.5	●
35 x 47	56	50	43	30	69	M6	18	8	17	800	46	115	86	0.5	●
38 x 50	56	50	43	30	72	M6	18	8	17	860	45	105	80	0.6	●
40 x 53	56	50	43	30	75	M6	18	8	17	900	45	99	75	0.6	●
42 x 55	65	57	49	32	78	M8	22	8	41	1800	86	169	129	0.9	●
45 x 59	73	65	57	40	85	M8	22	8	41	1900	84	124	95	1.0	●
48 x 62	78	70	62	45	87	M8	22	8	41	2000	83	102	79	1.0	●
50 x 65	78	70	62	45	92	M8	22	10	41	2600	104	123	94	1.3	●
55 x 71	83	75	67	50	98	M8	22	10	41	2900	105	102	79	1.5	●
60 x 77	83	75	67	50	104	M8	22	10	41	3100	103	91	71	1.7	●
65 x 84	83	75	67	50	111	M8	22	10	41	3400	105	85	66	1.9	●
70 x 90	101	91	80	60	119	M10	25	10	83	5800	166	105	81	2.9	●
75 x 95	101	91	80	60	126	M10	25	10	83	6200	165	97	77	2.3	●
80 x 100	106	96	85	65	131	M10	25	12	83	8000	200	102	82	3.3	●
85 x 106	106	96	85	65	137	M10	25	12	83	8500	200	96	77	3.6	●
90 x 112	106	96	85	65	143	M10	25	15	83	11200	249	113	91	3.9	●
95 x 120	106	96	85	65	153	M10	25	15	83	11800	248	107	84	4.5	
100 x 125	114	102	89	65	162	M12	30	12	145	14600	292	119	95	5.5	●
110 x 140	140	128	114	90	180	M12	30	12	145	16000	291	78	61	8.0	●
120 x 155	140	128	114	90	198	M12	30	12	145	17400	290	71	55	10.5	
130 x 165	140	128	114	90	208	M12	30	16	145	25000	385	87	69	11.9	

● Sizes of clamping elements available from stock.

[1] These are the maximum screw tightening torques. They can be reduced by a maximum of 40 % of the above-mentioned figures with T, F_{ax}, P_W and P_N decreasing proportionately.

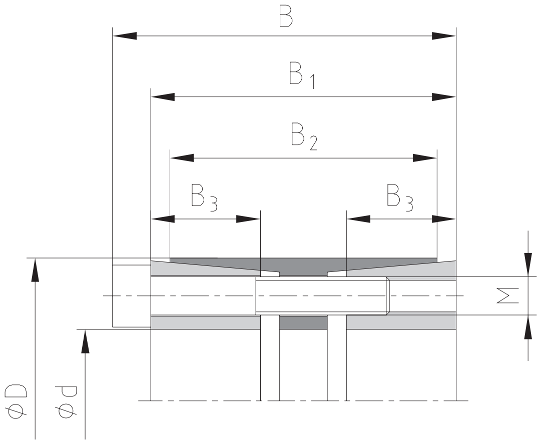
CLAMPEX® KTR 400
Clamping elements

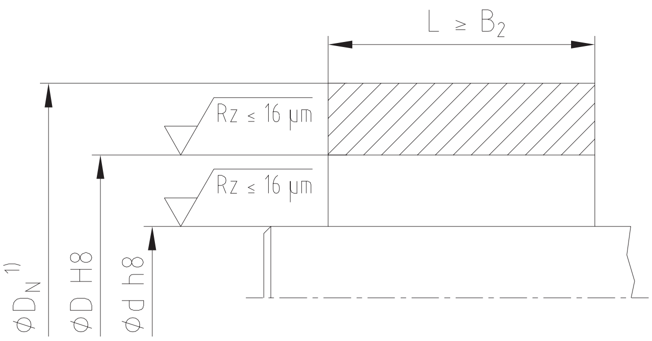
Self-centering clamping element with highest transmission performance



For legend of pictogram refer to flapper on the cover

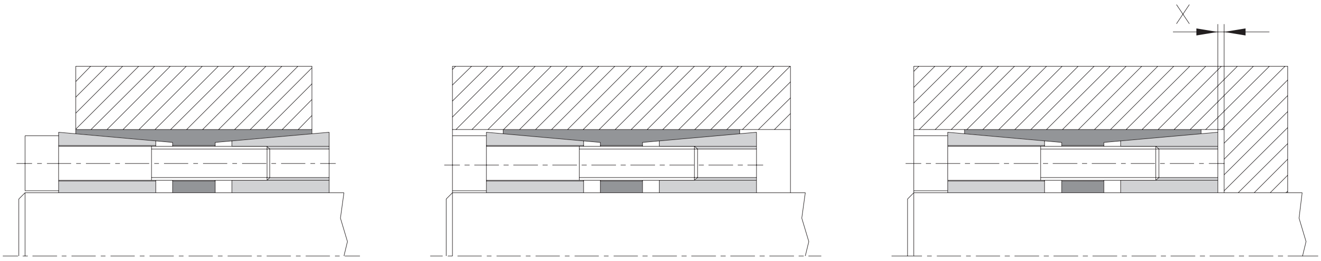
-20
+160
°C





[1] Dimension D_N: for calculation see page 321.

Example of application of hub type



Formula to calculate space x for disassembly:

$$x = \frac{B_1 - B_2}{2}$$

Ordering example:	KTR 400	100	x	145
	Series	Size of internal diameter d		Size of external diameter D

CLAMPEX® – KTR 400																							
					Standard applications in industry								Applications with components subjected to bending and torsion stress									Weight [~kg]	Stock programme
d x D [1] [mm]	Dimensions [mm]				Clamping screws DIN EN ISO 4762 - 12.9 μ_{total}=0.14				Transmittable torque or axial force		Surface pressure between clamping element		Clamping screws DIN EN ISO 4762 - 12.9 μ_{total}=0.14				Transmittable torque or axial force		Transmittable bending moment M_b perm. [Nm]	Surface pressure between clamping element			
	B	B_1	B_2	B_3	M	z = number	Length	T_A [2] [Nm]	T [Nm]	F_{ax} [kN]	Shaft P_W [N/mm²]	Hub P_N [N/mm²]	M	z = number	Length	T_A [Nm]	T [Nm]	F_{ax} [kN]		Shaft P_W [N/mm²]	Hub P_N [N/mm²]		
24 x 50	51	45	41	16	M6	6	35	17	700	58	202	92	M6	6	35	14	460	38	420	230	93	0.5	●
25 x 50	51	45	41	16	M6	6	35	17	730	58	194	92	M6	6	35	14	470	38	430	222	94	0.5	●
28 x 55	51	45	41	16	M6	8	35	17	1100	79	233	112	M6	8	35	14	740	53	490	257	110	0.5	●
30 x 55	51	45	41	16	M6	8	35	17	1180	79	217	112	M6	8	35	14	790	53	520	243	112	0.5	●
32 x 60	51	45	41	16	M6	8	35	17	1270	79	206	103	M6	8	35	14	830	52	560	230	104	0.8	●
35 x 60	51	45	41	16	M6	8	35	17	1390	79	188	104	M6	8	35	14	890	51	610	214	106	0.7	●
38 x 65	51	45	41	16	M6	10	35	17	1880	99	216	119	M6	10	35	14	1250	66	660	240	119	1.1	●
40 x 65	51	45	41	16	M6	10	35	17	1980	99	205	119	M6	10	35	14	1300	65	700	230	120	1.1	●
40 x 75	51	45	41	16	M8	8	35	41	2850	143	296	149	M8	8	35	35	2030	102	700	320	142	1.1	●
42 x 75	51	45	41	16	M8	8	35	41	3000	143	282	149	M8	8	35	35	2120	101	730	307	142	1.2	●
45 x 75	51	45	41	16	M8	8	35	41	3250	144	266	151	M8	8	35	35	2260	100	780	289	145	1.1	●
48 x 80	70	62	58	23	M8	8	55	41	3450	144	173	98	M8	8	55	35	2160	90	1700	202	101	1.5	●
50 x 80	70	62	58	23	M8	8	55	41	3600	144	166	98	M8	8	55	35	2220	89	1770	196	102	1.4	●
55 x 85	70	62	58	23	M8	8	55	41	3950	144	151	92	M8	8	55	35	2350	85	1950	182	98	1.5	●
60 x 90	70	62	58	23	M8	10	55	41	5400	180	173	109	M8	10	55	35	3380	113	2130	202	113	1.6	●
65 x 95	70	62	58	23	M8	10	55	41	5850	180	160	103	M8	10	55	35	3560	110	2310	190	109	1.7	●
70 x 110	86	76	70	28	M10	10	60	83	10200	291	197	118	M10	10	60	69	6620	189	3650	222	120	3.1	●
75 x 115	86	76	70	28	M10	10	60	83	10950	292	184	113	M10	10	60	69	6970	186	3920	210	117	3.3	●
80 x 120	86	76	70	28	M10	12	60	83	14000	350	207	130	M10	12	60	69	9210	230	4180	231	131	3.5	●
85 x 125	86	76	70	28	M10	12	60	83	15000	353	197	126	M10	12	60	69	9710	228	4440	220	129	3.6	●
90 x 130	86	76	70	28	M10	12	60	83	15800	351	185	121	M10	12	60	69	10000	222	4700	210	124	3.8	●
95 x 135	86	76	70	28	M10	12	60	83	16800	354	176	117	M10	12	60	69	10500	221	4960	201	122	4.0	●
100 x 145	110	98	92	35	M12	12	80	145	26000	520	197	121	M12	12	80	120	16850	337	8580	219	124	6.1	●
110 x 155	110	98	92	35	M12	12	80	145	28600	520	179	114	M12	12	80	120	18000	327	9440	203	118	6.6	●
120 x 165	110	98	92	35	M12	14	80	145	36300	605	191	124	M12	14	80	120	23350	389	10300	214	128	7.1	●
130 x 180	128	114	108	41	M14	12	90	230	46000	708	176	114	M14	12	90	190	29950	461	15300	201	119	10.0	●
140 x 190	128	114	108	41	M14	14	90	230	57800	826	191	126	M14	14	90	190	37200	531	16500	214	129	10.6	●
150 x 200	128	114	108	41	M14	16	90	230	70800	944	204	136	M14	16	90	190	46400	619	17700	226	139	11.2	●
160 x 210	128	114	108	41	M14	16	90	230	75500	944	191	130	M14	16	90	190	48600	608	18800	214	133	11.9	●
170 x 225	162	146	136	52	M16	14	110	355	95900	1128	169	114	M16	14	110	295	59100	695	32000	196	119	17.6	●
180 x 235	162	146	136	52	M16	15	110	355	108800	1209	171	117	M16	15	110	295	67500	750	33900	198	122	18.5	●
190 x 250	162	146	136	52	M16	16	110	355	122500	1289	173	117	M16	16	110	295	76100	801	35800	199	122	21.4	●
200 x 260	162	146	136	52	M16	16	110	355	128900	1289	164	113	M16	16	110	295	78600	786	37700	192	118	22.4	●
220 x 285	162	146	136	52	M16	18	110	355	171800	1562	181	120	M16	18	110	295	105000	955	41400	195	126	26.6	●
240 x 305	162	146	136	52	M16	20	110	355	208000	1733	184	125	M16	20	110	295	128000	1067	45200	198	130	28.7	●
260 x 325	166	150	134	55	M16	21	110	355	237000	1823	169	117	M16	21	110	295	142000	1092	51000	187	123	31.2	
280 x 355	197	177	165	66	M20	18	130	690	340000	2429	174	119	M20	18	130	580	208000	1486	81300	192	125	46.8	
300 x 375	197	177	165	66	M20	20	130	690	405000	2700	181	125	M20	20	130	580	252000	1680	87100	198	130	69.7	
320 x 405	197	177	165	66	M20	21	130	690	453000	2831	178	121	M20	21	130	580	280000	1750	92900	196	127	60.5	
340 x 425	197	177	165	66	M20	22	130	690	504900	2970	176	121	M20	22	130	580	311000	1829	98700	193	127	63.9	
360 x 455	224	203	190	76	M22	21	150	930	626000	3478	169	115	M22	21	150	780	381000	2117	138500	189	121	86.8	
380 x 475	224	203	190	76	M22	22	150	930	692000	3642	167	115	M22	22	150	780	420000	2211	146000	188	122	91.0	
400 x 495	224	203	190	76	M22	24	150	930	795000	3975	173	121	M22	24	150	780	489000	2445	154000	194	127	95.3	
420 x 515	224	203	190	76	M22	24	150	930	835000	3976	165	116	M22	24	150	780	505000	2405	161500	186	123	100	
440 x 535	224	203	190	76	M22	24	150	930	875000	3977	158	112	M22	24	150	780	517000	2350	169000	178	120	105	
460 x 555	224	203	190	76	M22	24	150	930	914000	3974	151	108	M22	24	150	780	530000	2304	177000	172	117	109	
480 x 575	224	203	190	76	M22	28	150	930	1113000	4638	169	121	M22	28	150	780	678000	2825	184500	189	128	114	
500 x 595	224	203	190	76	M22	28	150	930	1160000	4640	162	117	M22	28	150	780	692000	2768	192000	182	125	119	
520 x 615	224	203	190	76	M22	30	150	930	1292000	4969	167	122	M22	30	150	780	780000	3000	200000	186	129	122.5	
540 x 635	224	203	190	76	M22	30	150	930	1342000	4970	161	118	M22	30	150	780	799000	2959	207500	180	126	128	
560 x 655	224	203	190	76	M22	32	150	930	1484000	5300	165	122	M22	32	150	780	893000	3189	215500	184	129	131	
580 x 675	224	203	190	76	M22	32	150	930	1537000	5300	159	118	M22	32	150	780	912000	3145	223000	179	127	136	
600 x 695	224	203	190	76	M22	33	150	930	1640000	5467	159	118	M22	33	150	780	972000	3240	231000	179	127	139	

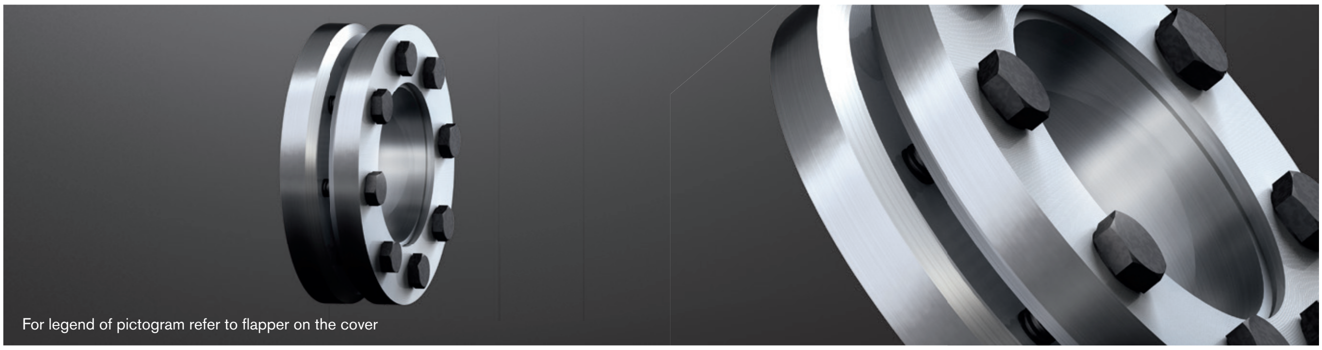
● Sizes of clamping elements available from stock.

[1] External ring from size 400 x 495 without slot.

[2] These are the maximum screw tightening torques. They can be reduced by a maximum of 40 % of the above-mentioned figures with T, F_{ax}, P_W and P_N decreasing proportionately.

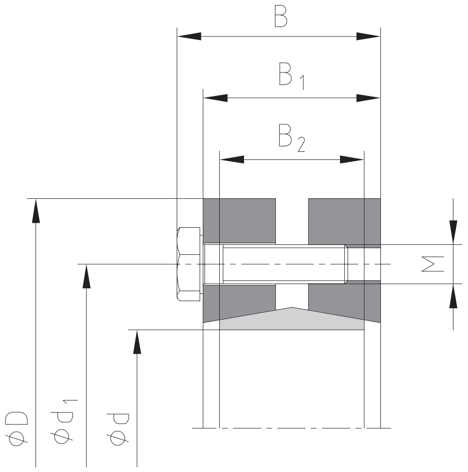
CLAMPEX® KTR 603
Clamping elements

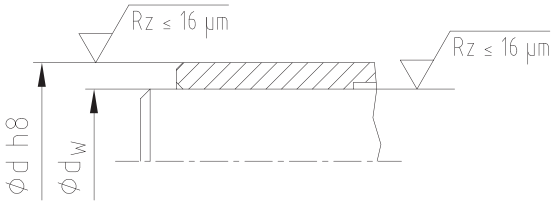
Three-part external clamping set for applications on hollow shafts



For legend of pictogram refer to flapper on the cover

-20 +160 °C

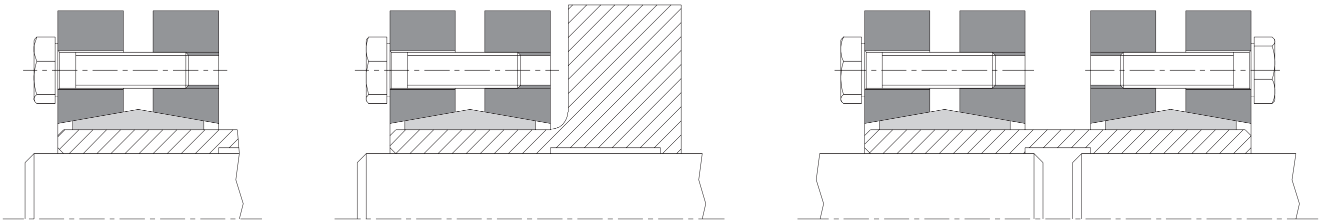




Tolerances for d_W

For $\mathbf{d}_W$ from 10 to 30 mm	**H6 / j6**
For $\mathbf{d}_W$ from 31 to 50 mm	**H6 / h6**
For $\mathbf{d}_W$ from 51 to 80 mm	**H6 / g6**
For $\mathbf{d}_W$ from 81 to 500 mm	**H7 / g6**

Example of application of hub type



Ordering example:	KTR 603	44	x	80
	Series	Size of internal diameter d		Size of external diameter D

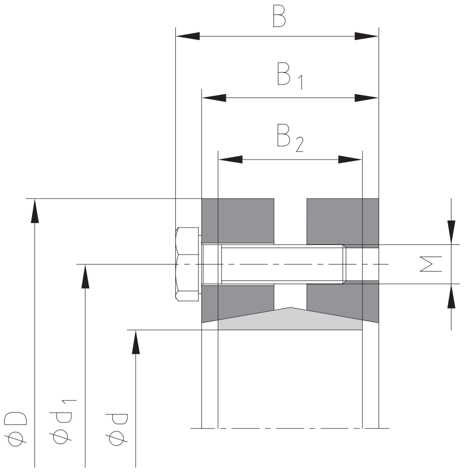
CLAMPEX® – KTR 603

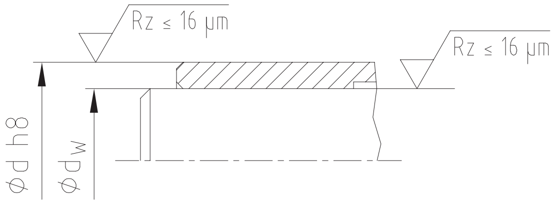
d x D [mm]	Shaft diameter d_W [mm]	Transmittable torque or axial force		Dimensions [mm]				Clamping screws DIN EN ISO 4014 - 10.9 $\mu_{total}=0.10$				Surface pressure of clamping element/hollow shaft	Weight [~kg]	Stock programme
		T [Nm]	F_{ax} [kN]	B	B_1	B_2	d_1	M	Length	z = number	T_A [Nm]	P_H [N/mm²]		
14 x 38	10	28	6	14.5	11	9	24	M5	10	4	3.5	388	0.1	●
	11	38	7											
	12	50	8											
16 x 41	12	50	8	18.5	15	11	26	M5	14	5	4	310	0.2	●
	13	70	11											
	14	90	13											
24 x 50	19	180	19	22.5	19	14	36	M5	18	6	5	286	0.2	●
	20	210	21											
	21	250	24											
30 x 60	24	310	26	24.5	21	16	44	M5	18	6	6	233	0.3	●
	25	340	27											
	26	380	29											
36 x 72	28	460	33	27	23	18	52	M6	20	5	12	307	0.4	●
	30	590	39											
	31	630	41											
44 x 80	32	630	39	29	25	20	61	M6	22	7	12	317	0.6	●
	35	780	45											
	36	860	48											
50 x 90	38	940	49	31	27	22	70	M6	22	8	12	289	0.8	●
	40	1100	55											
	42	1300	62											
55 x 100	42	1200	57	34	30	23	75	M6	25	8	12	252	1.1	●
	45	1500	67											
	48	1900	79											
62 x 110	48	1800	75	34	30	23	86	M6	25	10	12	279	1.3	●
	50	2200	88											
	52	2400	92											
68 x 115	50	2000	80	34	30	23	86	M6	25	10	12	255	1.4	●
	55	2500	91											
	60	3100	103											
75 x 138	55	2500	91	37.5	32	25	100	M8	30	7	30	273	1.8	●
	60	3200	107											
	65	3900	120											
80 x 145	60	3200	107	37.5	32	25	100	M8	30	7	30	256	2.6	●
	65	3900	120											
	70	4600	131											
85 x 155	65	4800	148	44.5	39	30	114	M8	35	10	30	285	3.9	
	70	6100	174											
	75	7400	197											
90 x 155	65	4700	145	44.5	39	30	114	M8	35	10	30	217	3.8	●
	70	6000	171											
	75	7200	192											
100 x 170	70	6900	197	49.5	44	34	124	M8	35	12	30	227	4.7	●
	75	7500	200											
	80	9000	225											
110 x 185	75	7200	192	56.5	50	39	136	M10	40	9	59	215	6.0	●
	80	9000	225											
	85	11000	259											
115 x 188	80	8500	213	56.5	50	39	141	M10	40	9	59	209	5.0	
	85	10000	235											
	90	12000	267											
120 x 215	80	10500	263	58.5	52	42	160	M10	40	12	59	271	5.9	
	85	13200	311											
	90	14400	320											
125 x 215	85	11000	259	58.5	52	42	160	M10	40	12	59	222	8.5	●
	90	13000	289											
	95	15000	316											
130 x 215	90	13700	304	58.5	52	42	160	M10	40	12	59	227	9.0	
	95	15800	333											
	100	18200	364											
140 x 230	95	15000	316	67.5	60	46	175	M12	45	10	100	209	11	
	100	17000	340											
	105	20000	381											

● Sizes of clamping elements available from stock.
Other sizes on request.

CLAMPEX® KTR 603
Clamping elements

Three-part external clamping set for applications on hollow shafts





CLAMPEX® – KTR 603

d x D [mm]	Shaft diameter d_w [mm]	Transmittable torque or axial force		Dimensions [mm]				Clamping screws DIN EN ISO 4014 - 10.9 μ_{total}=0.10				Surface pressure of clamping element/hollow shaft	Weight [~kg]	Stock programme
		T [Nm]	F_{ax} [kN]	B	B_1	B_2	d_1	M	Length	z = number	T_A [Nm]	P_H [N/mm²]		
155 x 265	105	20000	381	71.5	64	50	192	M12	50	12	100	212	15	
	110	23000	418											
	115	26000	452											
160x 265	110	22500	409	71.5	64	50	192	M12	50	12	100	204	14	
	115	25500	443											
	120	28600	477											
165 x 290	115	36000	626	81	71	56	210	M16	60	8	250	269	24	
	120	39000	650											
	125	44000	704											
170 x 290	120	31700	528	81	71	56	210	M16	60	8	250	216	24	
	125	35800	573											
	130	40000	615											
175 x 300	125	40000	640	81	71	56	220	M16	60	8	250	253	16	
	130	44000	677											
	135	49000	726											
180 x 300	130	36800	566	81	71	56	220	M16	60	8	250	211	16	
	135	42000	622											
	140	46000	657											
185 x 330	135	55000	815	96	86	71	236	M16	65	10	250	231	35	
	140	60000	857											
	145	65000	897											
190 x 330	140	53300	761	96	86	71	236	M16	65	10	250	201	35	
	145	58500	807											
	150	63500	847											
195 x 350	140	66000	943	96	86	71	246	M16	65	12	250	259	38	
	150	76000	1013											
	155	82000	1058											
200 x 350	150	73700	983	96	86	71	246	M16	65	12	250	240	41	
	155	79800	1030											
	160	85800	1073											
220 x 370	160	95000	1188	114	104	88	270	M16	80	15	250	216	54	
	165	102000	1236											
	170	110000	1294											
240 x 405	170	120000	1412	121.5	109	92	295	M20	80	12	490	239	67	
	180	140000	1556											
	190	160000	1684											
250 x 405	180	160000	1778	120.5	108	92	295	M20	85	14	490	263	64	
	190	180000	1895											
	200	200000	2000											
260 x 430	190	165000	1737	132.5	120	103	321	M20	90	14	490	225	82	
	200	185000	1850											
	210	204000	1943											

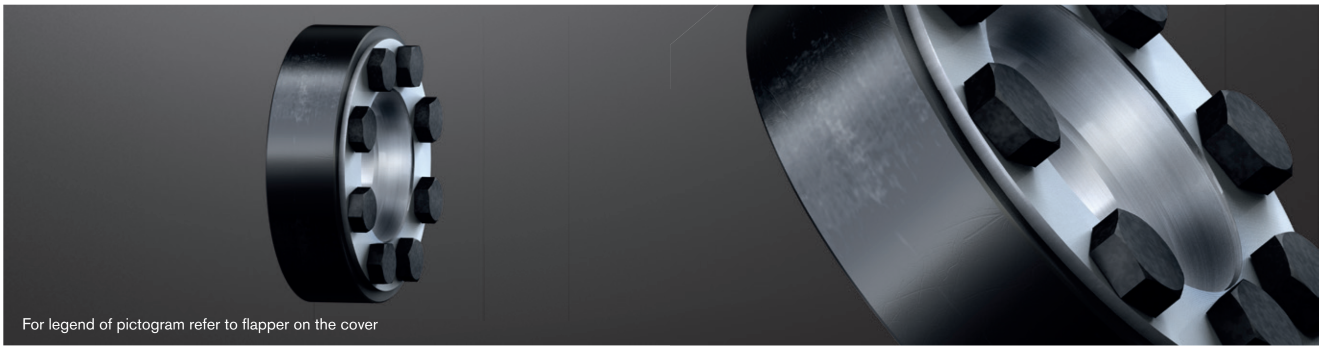
● Sizes of clamping elements available from stock.
Other sizes on request.

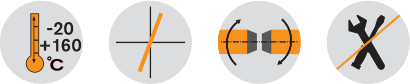
CLAMPEX® – KTR 603

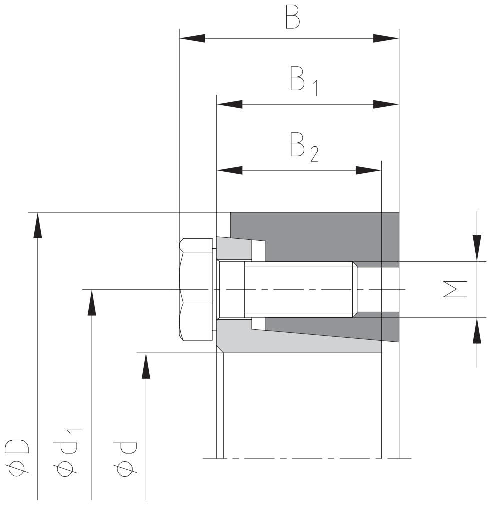
d x D [mm]	Shaft diameter d_W [mm]	Transmittable torque or axial force		Dimensions [mm]				Clamping screws DIN EN ISO 4014 - 10.9 μ_{total}=0.10				Surface pressure of clamping element/hollow shaft	Weight [~kg]	Stock programme
		T [Nm]	F_{ax} [kN]	B	B_1	B_2	d_1	M	Length	z = number	T_A [Nm]	P_H [N/mm²]		
280 x 460	210	216000	2057	146.5	134	114	346	M20	100	16	490	217	102	
	220	245000	2227											
	230	270000	2348											
300 x 485	230	274000	2383	154.5	142	122	364	M20	100	18	490	209	118	
	240	296000	2467											
	245	316000	2580											
320 x 520	240	311000	2592	154.5	142	122	386	M20	100	20	490	219	131	
	250	340000	2720											
	260	375000	2885											
330 x 520	250	352000	2816	154.5	142	122	386	M20	100	22	490	224	126.1	
	260	385000	2962											
	270	420000	3111											
340 x 570	250	389000	3112	168.5	156	134	408	M20	110	24	490	227	186	
	260	422000	3246											
	270	459000	3400											
350 x 580	270	443000	3281	174.5	162	140	432	M20	110	24	490	212	195	
	280	480000	3429											
	285	500000	3509											
360 x 590	280	462000	3300	174.5	162	140	432	M20	110	24	490	204	204	
	290	500000	3448											
	300	530000	3533											
380 x 645	290	570000	3931	183	168	144	458	M24	120	20	840	224	239	
	300	610000	4067											
	310	660000	4258											
390 x 660	300	625000	4167	183	168	144	468	M24	120	21	840	229	260	
	310	670000	4323											
	320	720000	4500											
400 x 680	315	671000	4260	183	168	144	480	M24	120	21	840	222	280	
	320	695000	4344											
	330	745000	4515											
420 x 690	330	782000	4739	203	188	164	504	M24	130	24	840	211	316	
	340	841000	4947											
	350	902000	5154											
440 x 750	340	805000	4735	217	202	177	527	M24	140	24	840	190	408	
	350	861000	4920											
	360	920000	5111											
460 x 770	360	1000000	5556	217	202	177	547	M24	140	28	840	210	420	
	370	1073000	5800											
	380	1141000	6005											
480 x 800	380	1175000	6184	228	213	188	570	M24	140	30	840	206	505	
	390	1250000	6410											
	400	1312000	6560											
500 x 850	400	1314000	6570	230	213	188	590	M27	150	24	1250	205	575	
	410	1382000	6741											
	420	1460000	6952											

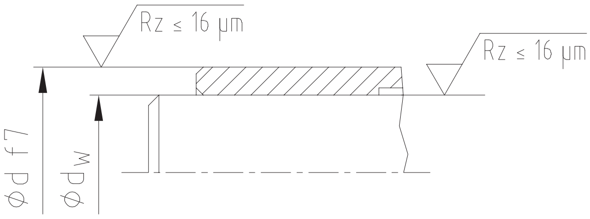
● Sizes of clamping elements available from stock.
Other sizes on request.

Two-part external clamping set for applications on hollow shafts


For legend of pictogram refer to flapper on the cover





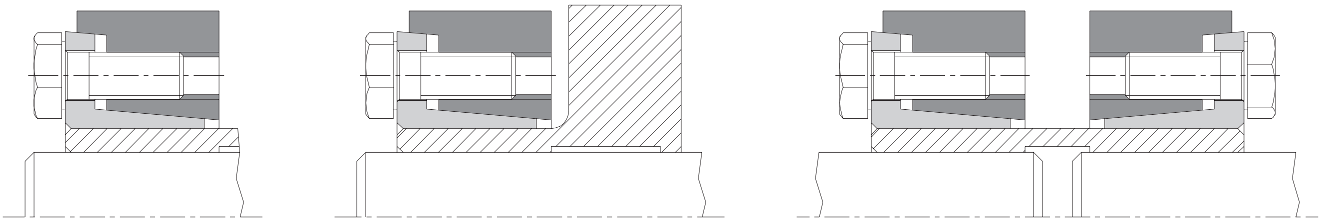


Tolerances for d_W

$d_W \le Ø\ 160 = h6/H7$

$d_W > Ø\ 160 = g6/H7$

Example of application of hub type



Ordering example:	KTR 620	55	x	100
	Series	Size of internal diameter d		Size of external diameter D

CLAMPEX® – KTR 620

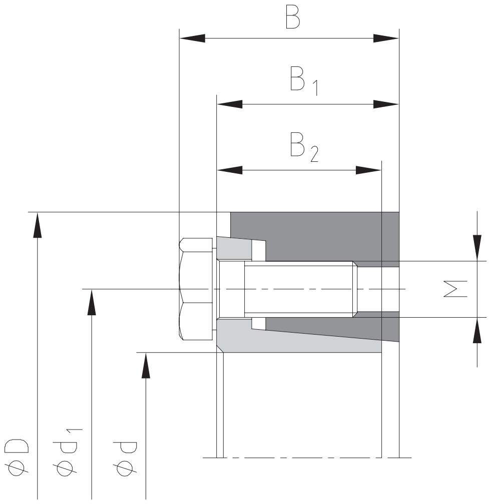
d x D [mm]	Shaft diameter d_W [mm]	Transmittable torque or axial force		Dimensions [mm]				Clamping screws DIN EN ISO 4017 - 12.9 [1)] $\mu_{total}=0.10$				Surface pressure of clamping element/hollow shaft	Weight [~kg]	Stock programme
		T [Nm]	F_{ax} [kN]	B	B_1	B_2	d_1	M	Length	z = number	T_A [Nm]	P_H [N/mm²]		
16 x 41	13	70	11	19.5	15.3	13.5	28	M6	12	3	13	254	0.1	
	14	90	13											
18 x 44	15	80	11	19.5	15.3	13.5	30	M6	12	4	13	222	0.1	
	16	110	14											
20 x 47	17	150	18	19.5	15.3	13.5	32	M6	12	4	13	274	0.1	●
	18	175	19											
24 x 50	19	165	17	22	18.22	16	36	M6	16	5	13	243	0.2	●
	20	215	22											
	22	280	25											
26 x 51.5	20	200	20	22	18.05	16	38	M6	16	5	13	238	0.2	
	22	260	24											
	24	330	28											
30 x 60	24	370	31	24	20.26	18	44	M6	16	6	13	255	0.3	●
	25	420	34											
	26	465	36											
36 x 72	27	480	36	27.5	22.1	20	52	M8	20	5	30	250	0.5	●
	30	650	43											
	33	835	51											
38 x 72	27	480	36	27.5	22.1	20	54	M8	20	5	30	240	0.5	●
	30	645	43											
	33	765	46											
40 x 80	34	830	49	29.5	24.22	22	61	M8	20	6	30	209	0.6	●
44 x 80	35	770	44	29.5	24.22	22	61	M8	20	6	30	192	0.6	●
	37	880	48											
50 x 90	38	1130	59	31.5	26.1	23.5	68	M8	20	8	30	212	0.8	●
	40	1260	63											
	42	1400	67											
55 x 100	42	1300	62	34.5	29	26	72	M8	20	8	30	195	1.1	●
	45	1600	71											
	48	1900	79											
60 x 110	48	1700	71	34.5	29.25	26	80	M8	20	9	30	191	1.3	●
	50	1950	78											
	52	2160	83											
62 x 110	48	1700	71	34.5	29.25	26	80	M8	20	9	30	189	1.3	●
	50	1950	78											
	52	2160	83											
68 x 115	50	1900	76	35	29.4	26	86	M8	20	9	30	206	1.3	●
	55	2500	91											
	60	3150	105											
75 x 138	55	2700	98	37.5	30.7	27	100	M10	25	10	60	211	2.3	●
	60	3400	113											
	65	4100	126											
80 x 141	60	3300	110	37.5	31.1	27	104	M10	25	10	60	215	2.3	●
	65	4100	126											
	70	4950	141											
85 x 155	65	5500	169	44.5	38.2	34	114	M10	25	11	60	216	3.2	
	70	6400	183											
	75	7300	195											
90 x 155	65	5500	169	44.5	38.2	34	114	M10	25	11	60	223	3.2	●
	70	6600	189											
	75	7900	211											
95 x 170	70	6200	177	50	43.45	39	124	M10	30	14	60	182	4.3	
	75	7400	197											
	80	8600	215											
100 x 170	70	6200	177	50	43.45	39	124	M10	30	14	60	176	4.3	●
	75	7400	197											
	80	8600	215											
105 x 185	80	10500	263	56.5	49.1	43.5	136	M12	35	12	100	208	5.8	
	85	11800	278											
	90	13700	304											
110 x 185	80	10500	263	56.5	49.1	43.5	136	M12	35	12	100	202	5.8	●
	85	11800	278											
	90	13700	304											
115 x 197	85	12500	294	60.5	53	48	147	M12	35	14	100	193	6.9	
	90	14100	313											
	95	16000	337											
120 x 197	85	12500	294	60.5	53	48	147	M12	35	14	100	189	6.9	
	90	14100	313											
	95	16000	337											

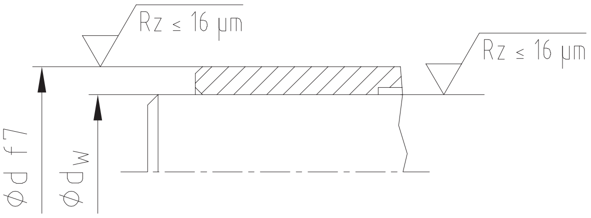
● Sizes of clamping elements available from stock.

[1)] DIN EN ISO 4017-10.9 for size 16 x 41 to 20 x 47

CLAMPEX® KTR 620
Clamping elements

Two-part external clamping set for applications on hollow shafts





CLAMPEX® – KTR 620

d x D [mm]	Shaft diameter d_w [mm]	Transmittable torque or axial force		Dimensions [mm]				Clamping screws DIN EN ISO 4017 - 12.9 µtotal=0.10				Surface pressure of clamping element/hollow shaft	Weight [~kg]	Stock programme
		T [Nm]	F_{ax} [kN]	B	B_1	B_2	d_1	M	Length	z = number	T_A [Nm]	P_H [N/mm²]		
125 x 215	90	14500	322	61	53.4	48	158	M12	35	14	100	196	8.7	●
	95	16600	349											
	100	18800	376											
130 x 215	95	17000	358	61	53.4	48	158	M12	35	14	100	187	9.4	
	100	18400	368											
	110	22000	400											
130 x 230	95	18400	387	66.5	57.5	51	165	M14	40	12	160	213	10.8	●
	100	20800	416											
	110	26200	476											
135x 230	95	18400	387	66.5	57.5	51	165	M14	40	12	160	209	10.8	
	100	20800	416											
	110	26200	476											
140 x 230	100	19900	398	67	57.8	51	172	M14	40	12	160	207	10.3	
	105	22200	423											
	115	27800	483											
150 x 263	110	27000	491	71	62.2	55	186	M14	40	14	160	202	15.2	
	120	32000	533											
	125	36200	579											
155 x 263	110	27000	491	71	62.2	55	186	M14	40	14	160	199	15.2	
	120	32000	533											
	125	36200	579											
160 x 290	120	39000	650	78.5	68.5	61	198	M16	45	12	250	215	21.5	
	130	48000	738											
	135	51000	756											
165 x 290	120	39000	650	78.5	68.5	61	198	M16	45	12	250	212	21.5	
	130	48000	738											
	135	51000	756											
170 x 300	130	46500	715	79	68.9	61	208	M16	50	14	250	212	22.5	
	140	53000	757											
	145	59000	814											
175 x 300	130	46500	715	79	68.9	61	208	M16	50	14	250	209	22.5	●
	140	53000	757											
	145	59000	814											
180 x 320	140	66000	943	95	85	77.5	222	M16	50	16	250	210	32.7	
	150	76000	1013											
	155	83000	1071											
185 x 320	140	66000	943	95	85	77.5	222	M16	50	16	250	207	32.7	
	150	76000	1013											
	155	83000	1071											
190 x 340	150	82000	1093	98	87.7	77.5	238	M16	50	16	250	225	36.3	
	160	91000	1138											
	165	102000	1236											
195 x 340	150	82000	1093	98	87.7	77.5	238	M16	50	16	250	222	36.3	
	160	91000	1138											
	165	102000	1236											
200 x 340	150	82000	1093	98	87.7	77.5	238	M16	50	16	250	219	36.3	
	160	91000	1138											
	165	102000	1236											

● Sizes of clamping elements available from stock.

CLAMPEX® – KTR 620

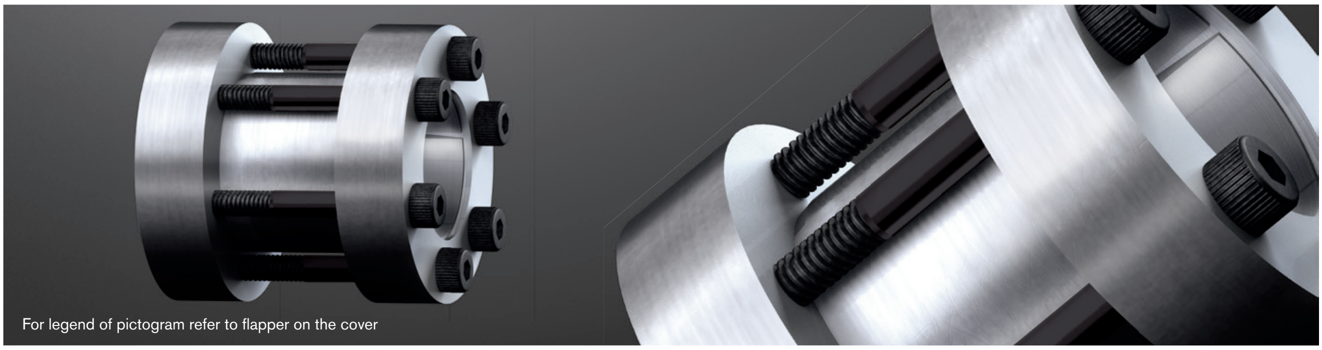
d x D [mm]	Shaft diameter d_w [mm]	Transmittable torque or axial force		Dimensions [mm]				Clamping screws DIN EN ISO 4017 - 12.9 [2] μ_{total}=0.10				Surface pressure of clamping element/hollow shaft	Weight [~kg]	Stock programme
		T [Nm]	F_{ax} [kN]	B	B_1	B_2	d_1	M	Length	z = number	T_A [Nm]	P_H [N/mm²]		
220 x 370	160	105000	1313	120	107.55	96.5	268	M20	60	15	480	205	53	
	170	122000	1435											
	180	138000	1533											
240 x 405	170	125000	1471	123.5	111.1	98	288	M20	60	16	480	214	66	
	180	145000	1611											
	200	182000	1820											
260 x 430	190	165000	1737	138	125.3	110.5	312	M20	60	16	480	202	82	
	200	190000	1900											
	220	238000	2164											
280 x 460	210	220000	2095	152.5	140	121	334	M20	60	18	480	193	103	
	220	245000	2227											
	240	300000	2500											
300 x 485	220	297000	2700	159	139.8	124	360	M24	70	16	840	205	120	
	230	330000	2870											
	250	399000	3192											
320 x 520	240	331000	2758	160.5	141.6	124	380	M24	70	18	840	190	138	
	250	365000	2920											
	270	437000	3237											
340 x 570	250	429000	3432	177.5	158.4	139	402	M24	70	18	840	195	189	
	260	469000	3608											
	280	556000	3971											
360 x 590	270	545000	4037	182	163	143	424	M24	70	20	840	216	207	
	280	592000	4229											
	290	694000	4786											
390 x 650	290	704000	4855	191	169.2	148	454	M27	70	18	1250	216	249	
	300	760000	5067											
	320	879000	5494											
420 x 670	320	827000	5169	208.4	186.4	166	486	M27	70	20	1250	184	285	
	330	876000	5309											
	350	1000000	5714											
440 x 710	340	1117000	6571	220	198	179	506	M27	70	21	1250	222	343	
	350	1190000	6800											
	370	1345000	7270											
460 x 750	360	1306000	7256	223	201	179	534	M27	70	21	1250	230	387	
	370	1386000	7492											
	390	1554000	7969											
470 x 705	370	950000	5135	241.6	219.6	200	538	M27	70	21	1250	151	340	
	380	1000000	5263											
	400	1150000	5750											
480 x 770	380	1557000	8195	247	223	201	552	M30	100	21	1650	223	449	
	390	1648000	8451											
	410	1818000	8868											
500 x 820	400	1653000	8265	241	217	198	572	M30	100	24	1650	214	515	
	410	1725000	8415											
	430	1915000	8907											
530 x 850	430	2048000	9526	262.3	238.3	216	606.5	M30	100	24	1650	208	585	
	440	2154000	9791											
	460	2374000	10322											
560 x 885	450	2306000	10249	266	242	220	632	M30	100	24	1650	212	636	
	460	2419000	10517											
	480	2654000	11058											
590 x 950	470	2735000	11638	281.5	257.5	236	664	M30	100	28	1650	211	805	
	480	2863000	11929											
	500	3128000	12512											
620 x 960	500	3150000	12600	307	283	258	706	M30	100	28	1650	201	853	
	520	3396000	13062											
	540	3689000	13663											
660 x 1020	530	3636000	13721	319	293	267	748	M33	130	28	2250	199	993	
	550	3942000	14335											
	570	4261000	14951											
700 x 1085	560	4189000	14961	318.5	292.5	263	788	M33	130	28	2250	187	1112	
	580	4520000	15586											
	600	4863000	16210											
750 x 1100	600	5281000	17603	346	320	280	850	M33	130	32	2250	202	1111	
	620	5672000	18297											
	650	6287000	19345											
800 x 1230	640	6091000	19034	359	333	296	900	M33	130	32	2250	202	1589	
	660	6511000	19730											
	700	7394000	21126											

● Sizes of clamping elements available from stock.

[2] DIN EN ISO 4014-12.9 for size 660 x 1020 to 800 x 1230

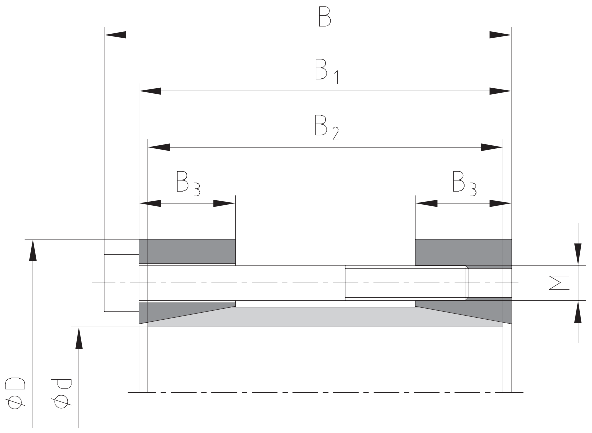
CLAMPEX® KTR 700
Clamping elements

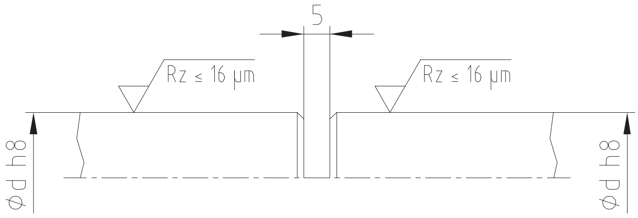
Rigid shaft coupling to connect two shaft ends



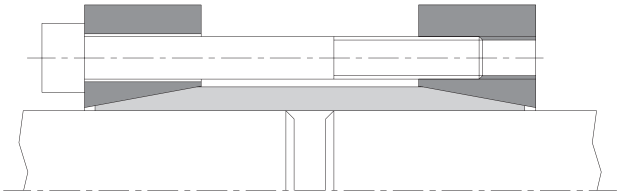
For legend of pictogram refer to flapper on the cover

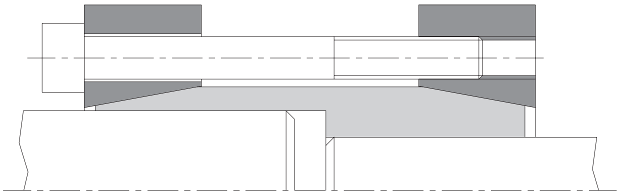
-20 +160 °C





Example of application





Type on request

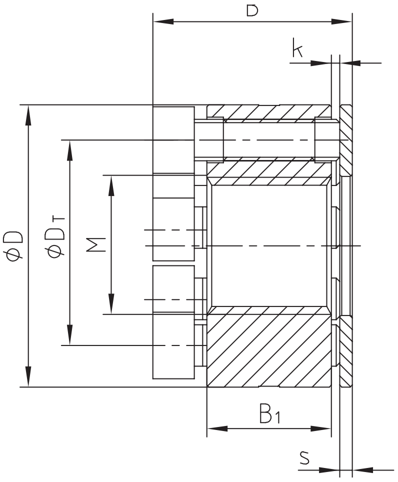
Ordering example:	KTR 700	35	x	75
	Series	Size of internal diameter d		Size of external diameter D

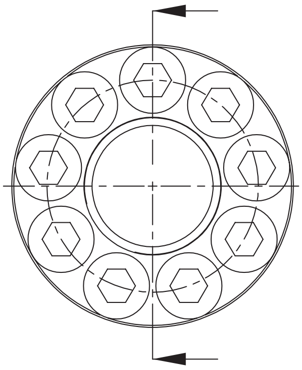
CLAMPEX® – KTR 700

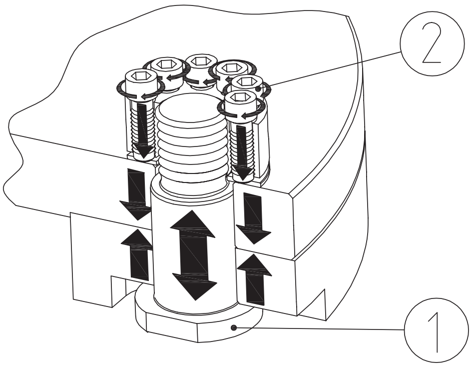
d x D [mm]	Dimensions [mm]				Clamping screws DIN EN ISO 4762 - 12.9 μ_{total}=0.14				Transmittable torque or axial force		Surface pressure of clamping element/shaft	Weight [~kg]	Stock programme
	B	B_1	B_2	B_3	M	Length	z = number	T_A [Nm]	T [Nm]	F_{ax} [kN]	P_W [N/mm²]		
10 x 35	42	38	36	15	M4	30	6	5.5	62	12	219	0.2	
11 x 35	42	38	36	15	M4	30	6	5.5	66	12	193	0.2	
12 x 35	42	38	36	15	M4	30	6	5.5	72	12	177	0.2	
14 x 35	42	38	36	15	M4	30	6	5	76	11	137	0.2	
15 x 45	56	50	47	15	M6	45	4	17	160	21	252	0.4	
16 x 45	56	50	47	15	M6	45	4	17	170	21	235	0.4	
17 x 45	56	50	47	15	M6	45	4	17	180	21	220	0.4	●
18 x 50	56	50	47	15	M6	45	4	17	190	21	207	0.5	
19 x 50	56	50	47	15	M6	45	4	17	200	21	196	0.4	
20 x 50	56	50	47	15	M6	45	4	17	220	22	195	0.4	●
22 x 55	66	60	57	18	M6	55	6	17	360	33	219	0.5	
24 x 55	66	60	57	18	M6	55	6	17	390	33	200	0.6	
25 x 55	66	60	57	18	M6	55	6	17	400	32	189	0.6	●
28 x 60	66	60	57	18	M6	55	6	17	390	28	147	0.8	
30 x 60	66	60	57	18	M6	55	6	17	420	28	138	0.7	●
32 x 75	83	75	72	20	M8	70	4	41	610	38	158	0.1	
35 x 75	83	75	72	20	M8	70	4	41	670	38	145	1.3	●
38 x 75	83	75	72	20	M8	70	4	41	730	38	134	1.2	
40 x 75	83	75	72	20	M8	70	4	41	760	38	126	1.2	●
42 x 85	93	85	81	22	M8	80	6	41	1170	56	160	1.8	
45 x 85	93	85	81	22	M8	80	6	41	1260	56	150	1.7	
48 x 90	93	85	81	22	M8	80	6	41	1360	57	142	1.9	
50 x 90	93	85	81	22	M8	80	6	41	1400	56	135	1.8	●
55 x 95	93	85	81	22	M8	80	8	41	2000	73	159	2.0	
60 x 100	93	85	81	22	M8	80	8	41	2260	75	151	2.2	●
65 x 105	93	85	81	22	M8	80	8	41	2500	77	143	2.6	
70 x 115	110	100	96	35	M10	80	8	83	3300	94	102	4.1	
75 x 120	110	100	96	35	M10	80	8	83	3500	93	94	4.3	
80 x 125	110	100	96	35	M10	80	7	75	3900	98	92	4.5	
90 x 136	110	100	96	35	M10	80	8	75	5100	113	95	5.2	
100 x 158	132	120	116	40	M12	100	8	130	8350	167	111	6.0	

● Sizes of clamping elements available from stock.

Large screw connections for easy and quick assembly







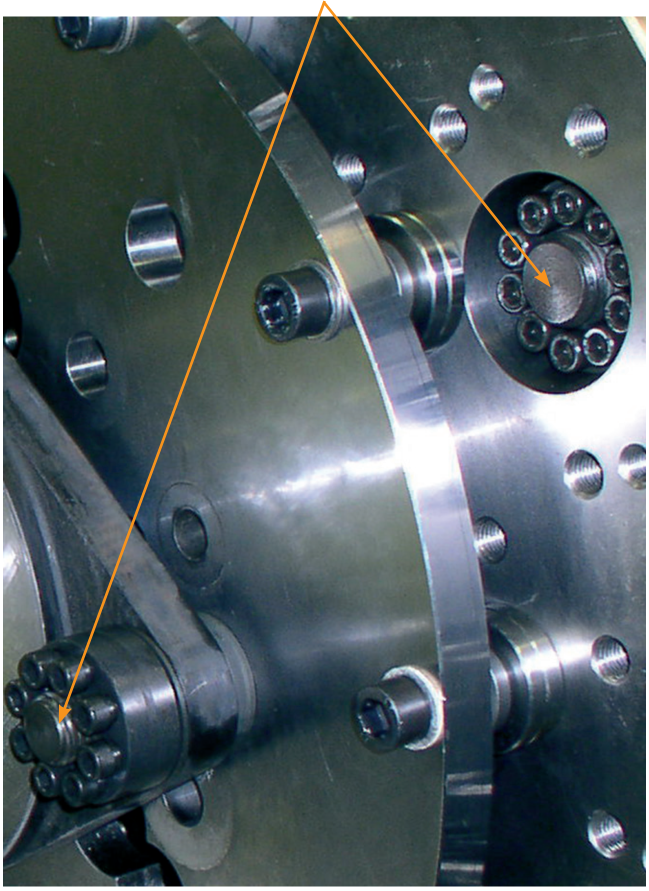
KTR Clamping nuts											
Size	Dimensions [mm]						Pressure screw pos. 2		Property class 8.8, screw pos. 1		Property class 10.9, screw pos. 1	
	D	D_T	B	B_1	s	k	DIN EN ISO 4762	z = number	Tightening torque * [Nm]	Preload force [N]	Tightening torque * [Nm]	Preload force [N]
M24 x 3.0	52	39	36.0	20	3.0	1 - 2	M8	8	21	174000	30	249000
M27 x 3.0	57	42	41.0	25	3.0	1 - 2	M8	9	24	224000	30	280000
M30 x 3.5	65	48	43.0	25	3.0	1 - 2	M10	8	41	274000	60	401000
M33 x 3.5	68	51	48.0	30	3.0	1 - 2	M10	9	45	338000	60	451000
M36 x 4.0	80	58	50.0	30	3.0	1 - 2	M12	8	71	396000	105	586000
M42 x 4.5	86	64	55.0	35	3.0	1 - 2	M12	10	78	544000	105	732000
M48 x 5.0	90	72	60.0	40	3.0	1 - 2	M12	11	94	721000	105	806000
M52 x 5.0	100	79	66.5	42	4.5	1 - 2	M12	13	95	862000	105	952000
M56 x 5.5	108	83	75.5	45	4.5	1 - 2	M16	9	210	1001000	250	1192000
M60 x 5.5	112	86	80.5	48	4.5	1 - 2	M16	10	215	1139000	250	1325000
M64 x 6.0	120	92	84.0	52	8.0	1 - 2	M16	11	225	1311000	250	1457000
M72 x 6.0	142	107	98.0	58	8.0	1 - 2	M20	10	400	1696000	490	2077000
M80 x 6.0	164	122	103.0	64	8.0	1 - 2	M20	12	420	2137000	490	2493000

* each screw pos. 2

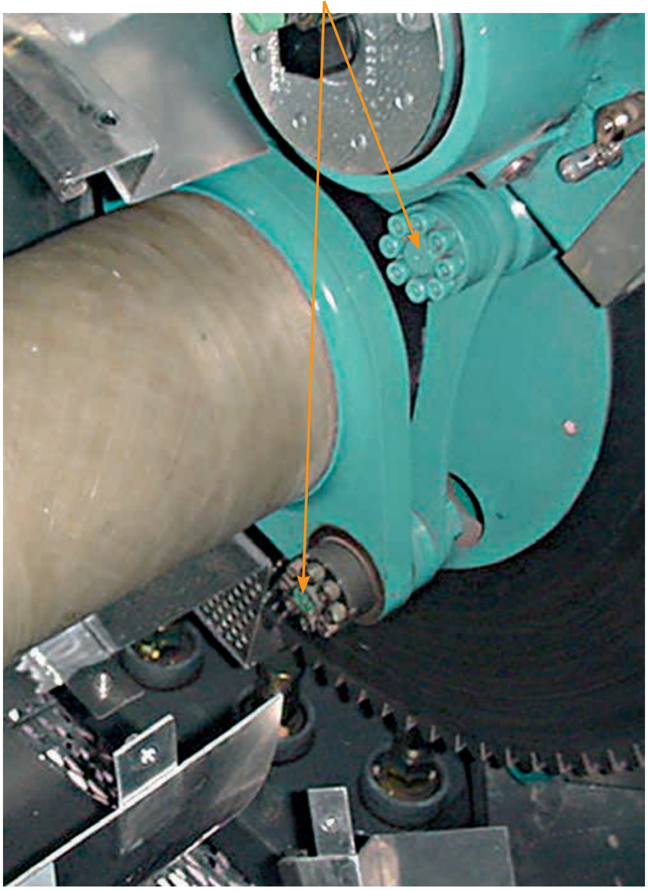
Ordering example:

KTR clamping nut	M33 x 3.5
Description	Size

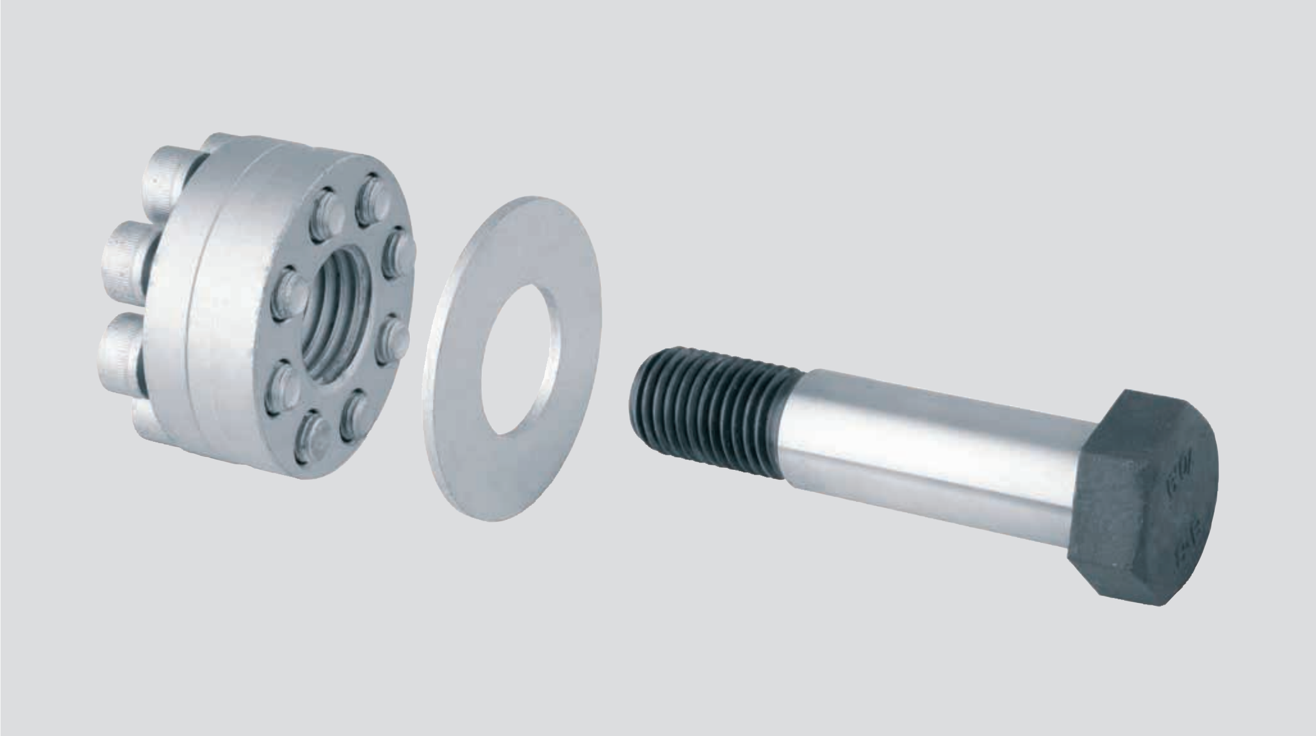
Used on 100 kNm test bench flanges



Used on couplings for wind turbines



Available as a complete unit including dowel screw



Precision joints with plain and needle bearing series G and H according to DIN 808

Series G is provided with plain bearings, series H with needle bearings. Series H requires neither lubrication nor maintenance, since its bearings are permanently lubricated.

For low-speed applications (max. 1,000 rpm) precision joints with plain bearings (series G) are recommended. They are able to absorb shock loads, irregular rotation and relatively high torques. With high speeds, relatively low torques, reversing operation or big diffraction angles precision joints with needle bearings (series H) should be preferred. Considering the diffraction angle they can be used up to a speed of 4,000 rpm.

The maximum diffraction angle is 45° for single joints and 90° for double joints.

Joints made of stainless steel series X according to DIN 808

Joints series X are fully made of stainless steel 1.4301. The maximum diffraction angle is 45° for single joints and 90° for double joints. The maximum permissible speed for series X is 300 rpm.

Selection criteria

The permissible torque transmission of a joint over a more or less long period considering constant and shock-free load mainly depends on the number of revolutions per minute and the diffraction angle.
The diagrammes on pages 356 - 357 were created based on such criteria.

The figures in the diagramme shall be considered as reference values referring to single joints only. With the selection of a double joint it must be considered that it is able to transmit a torque falling below that of a single joint of the same size by about 10 %. Every application has special properties, e. g. shock loads, change of direction of rotation, mass moment of inertia, start/stop operation, start-up characteristics etc. that have to be considered with the selection of the joint.

Instructions for correct assembly

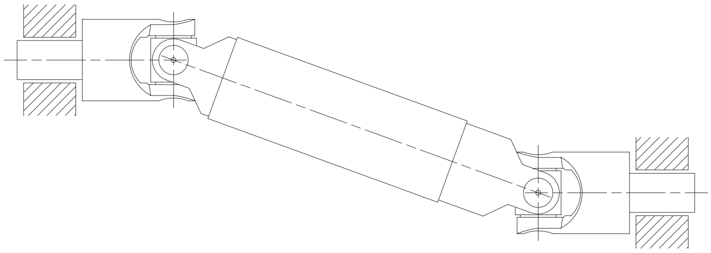


Illustration 1

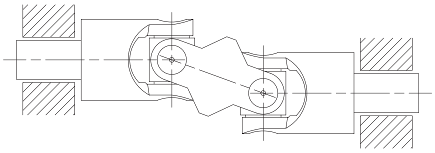


Illustration 2

In order to obtain consistent rotation between driving and driven shaft two single joints or one double joint have to be used. The bearing of the two shafts to be combined should be positioned as close as possible to the joints (see illustration 1 and 2).

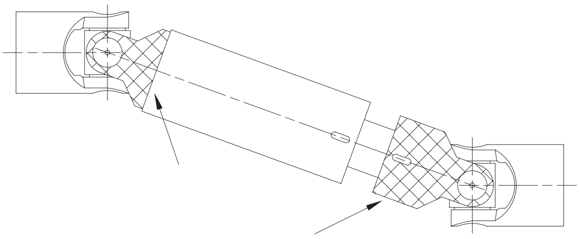


Illustration 3 (correct)

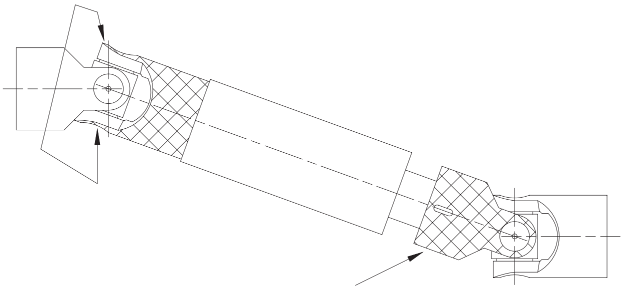


Illustration 4 (not correct)

When using two opposing single joints the identical fork position has to be observed. When using extendable joints it must be made sure that the markings applied are flush (see illustration 3 and 4).

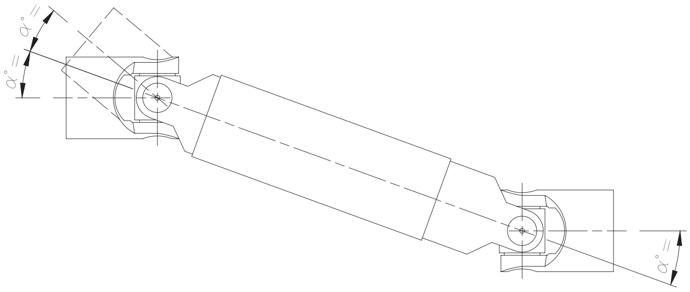
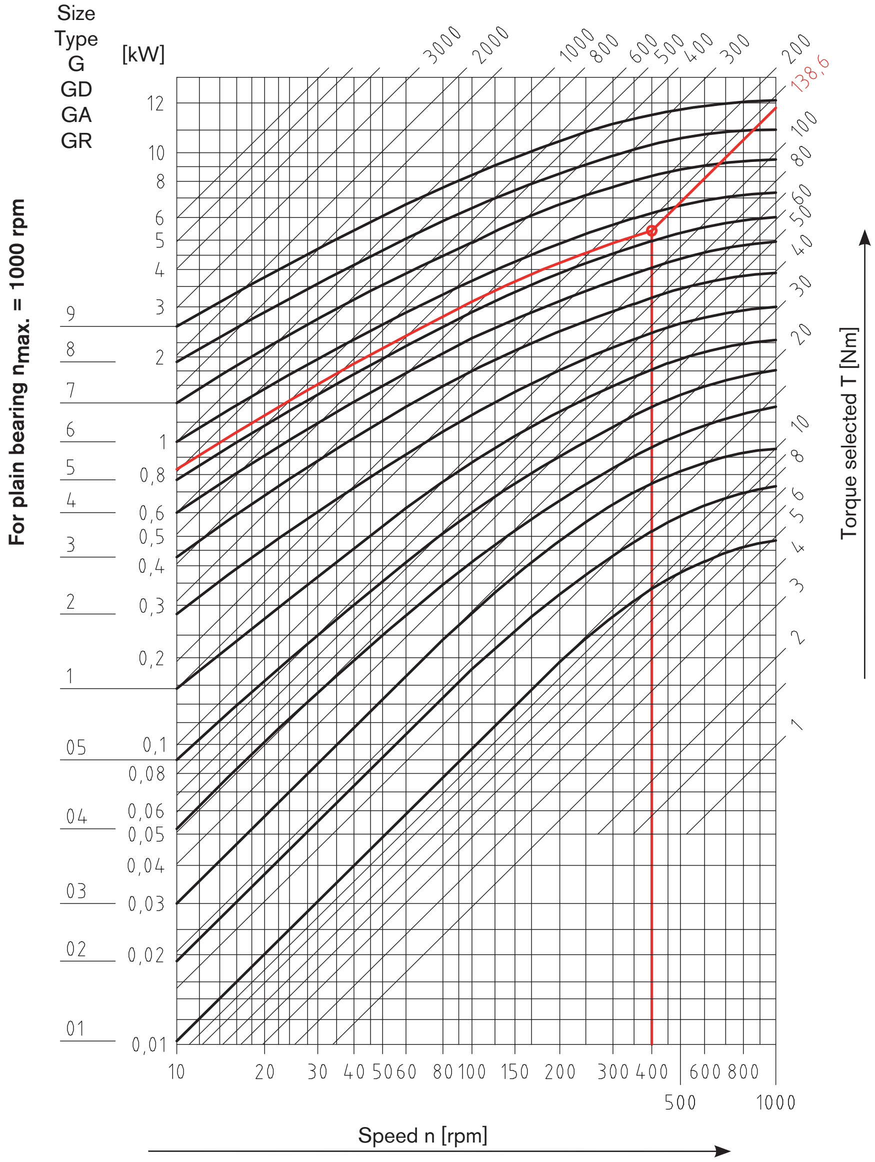


Illustration 5 (correct)

The diffraction angles α° must be identical (see illustration 5). The shafts may only be arranged in parallel or symmetrically to one another.

Selection and sizing according to DIN 808 with plain/needle bearing



Selection of type G, GD, GA, GR (max. 1000 rpm) [1)]

The selection of precision joints with plain bearing is based on the driving torque considering a correction factor which depends on the diffraction angle α and the operating speed.

For extendable joints the overall length and the speed need to be additionally considered for sizing (please consult with KTR).

$$\text{Driving torque } M_t \text{ [Nm]} = 9550 \bullet \frac{\text{Power [kW]}}{\text{Speed [rpm]}}$$

Torque selected T [Nm] = driving torque • correction factor

Additional review:

[1)] Diffraction angle [°] • speed [rpm] ≤ 40,000

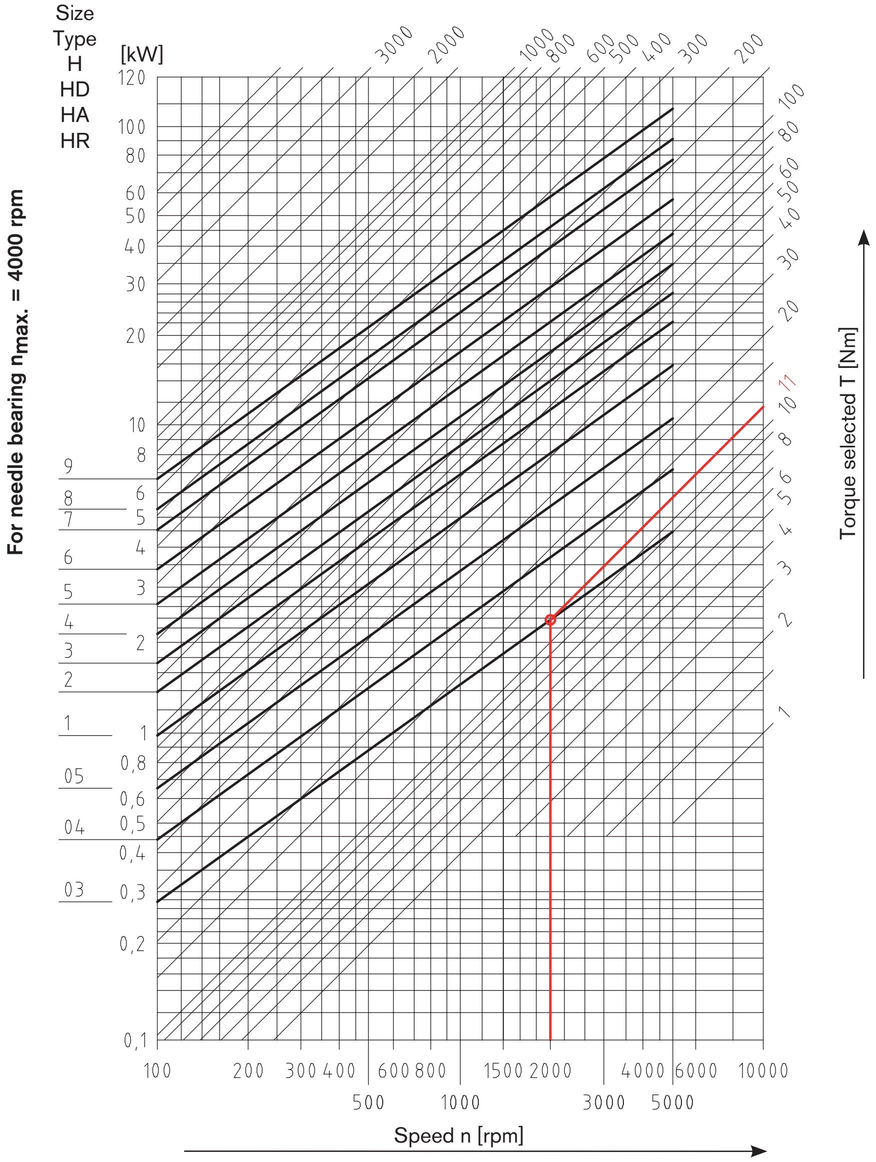
Diffraction angle [α]	5°	10°	15°	20°	25°	30°	35°	40°	45°
Correction factor	0.8	1.00	1.25	1.5	1.8	2.2	2.6	3.3	4.0

Details given:

Driving torque M_t	63 Nm	
Diffraction angle	30°	→ Correction factor for diffraction angle 2.2
Operating speed	400 rpm	

Torque selected T [Nm] = 63 Nm • 2.2 → 138.6 Nm

Selection based on table: joint size 6



Selection of type H, HD, HA, HR (max. 4000 rpm) [1]

The selection of precision joints with needle bearing is based on the driving torque considering a correction factor which depends on the diffraction angle α and the operating speed.
For extendable joints the overall length and the speed need to be additionally considered for sizing (please consult with KTR).

$$\text{Driving torque } M_t \text{ [Nm]} = 9550 \bullet \frac{\text{Power [kW]}}{\text{Speed [rpm]}}$$

$$\text{Torque selected T [Nm]} = \text{driving torque} \bullet \text{correction factor}$$

Additional review:

[1] Diffraction angle [°] • speed [rpm] ≤ 40,000

Diffraction angle [α]	5°	10°	15°	20°	25°	30°	35°	40°	45°
Correction factor	0.8	1.00	1.1	1.25	1.4	2.0	2.5	3.3	4.0

Details given:

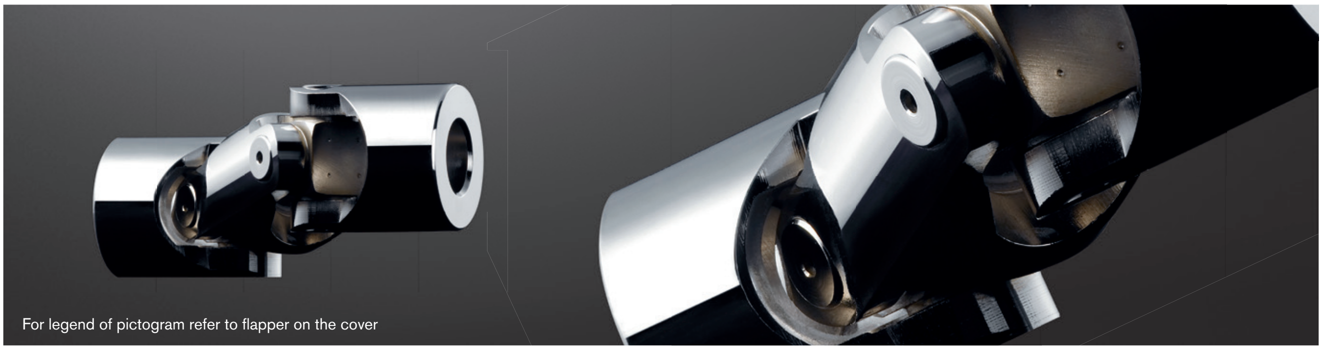
Driving torque M_t	8.8 Nm	
Diffraction angle	20°	→ Correction factor for diffraction angle 1.25
Operating speed	2000 rpm	

Torque selected T [Nm] = 8.8 Nm • 1.25 → 11 Nm

Selection based on table: joint size 03

KTR Precision joints type G and GD

According to DIN 808 with plain bearing



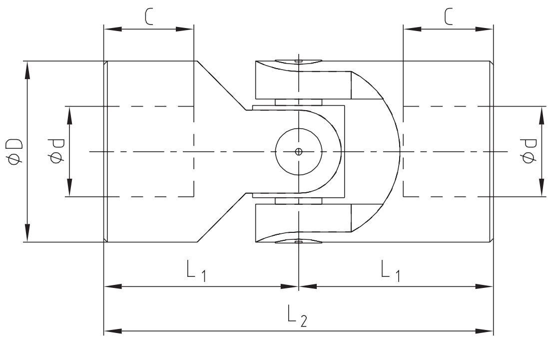
For legend of pictogram refer to flapper on the cover

ΔKw max. 45°

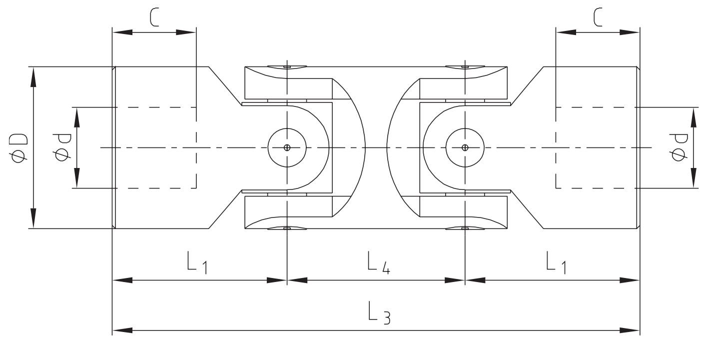
-25 +120 °C

$n_{max.}$ 1000 rpm

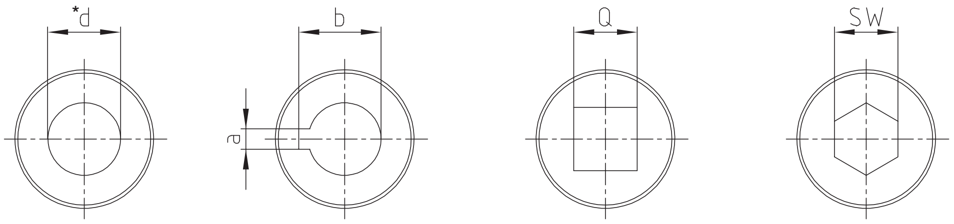
Precision single joint G



Precision double joint GD



Bore options:



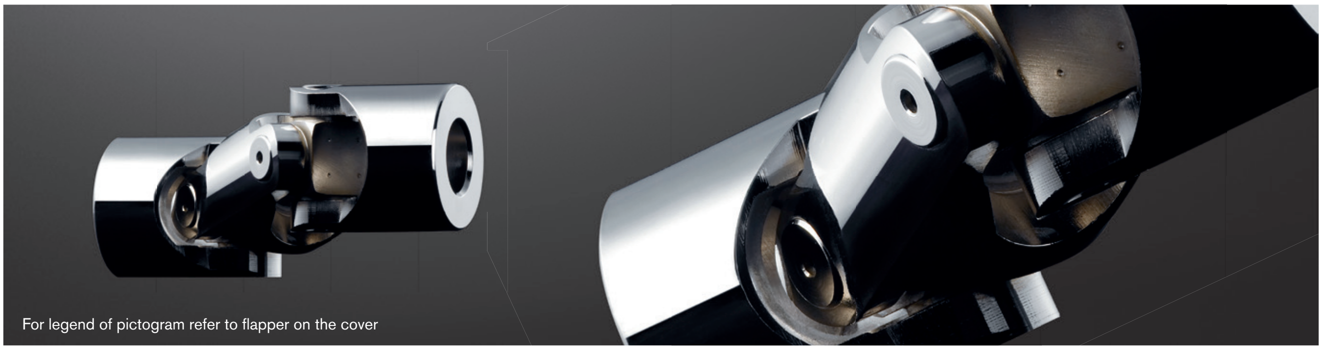
* Standard type of bore, unless differently inquired/ordered

Type G and GD																
Types and size															Weight [kg]	
Size G	DIN designation G	Size GD	DIN designation GD	d (H7)	D	L_2	L_1	C	L_4	L_3	a (JS9)	b	Q (H10)	SW (H10)	G	GD
01 G	E6 x 16-G	01 GD	D6 x 16-G	6	16	34	17	8	22	56	2	7.0	6	6	0.05	0.08
02 G	E8 x 16-G	02 GD	D8 x 16-G	8	16	40	20	11	22	62	2	9.0	8	8	0.05	0.08
03 G	E10 x 22-G	03 GD	D10 x 22-G	10	22	48	24	12	26	74	3	11.4	10	10	0.10	0.15
04 G	E12 x 25-G	04 GD	D12 x 25-G	12	25	56	28	13	30	86	4	13.8	12	12	0.16	0.25
05 G	E14 x 28-G	05 GD	D14 x 28-G	14	28	60	30	14	36	96	5	16.3	14	14	0.20	0.40
1 G	E16 x 32-G	1 GD	D16 x 32-G	16	32	68	34	16	37	105	5	18.3	16	16	0.30	0.45
2 G	E18 x 36-G	2 GD	D18 x 36-G	18	36	74	37	17	40	114	6	20.8	18	18	0.45	0.70
3 G	E20 x 42-G	3 GD	D20 x 42-G	20	42	82	41	18	47	129	6	22.8	20	20	0.60	1.00
4 G	E22 x 45-G	4 GD	D22 x 45-G	22	45	95	47.5	22	50	145	6	24.8	22	22	0.95	1.55
5 G	E25 x 50-G	5 GD	D25 x 50-G	25	50	108	54	26	55	163	8	28.3	25	25	1.20	2.00
6 G	E30 x 58-G	6 GD	D30 x 58-G	30	58	122	61	29	68	190	8	33.3	30	30	1.85	2.90
6 G1	E32 x 58-G	6 GD1	D32 x 58-G	32	58	130	65	33	68	198	10	35.3	30	30	2.00	3.00
7 G	E35 x 70-G	7 GD	D35 x 70-G	35	70	140	70	33	72	212	10	38.3	-	-	3.15	4.75
8 G	E40 x 80-G	8 GD	D40 x 80-G	40	80	160	80	38	85	245	12	43.3	-	-	4.60	7.20
9 G	E50 x 95-G	9 GD	D50 x 95-G	50	95	190	95	46	100	290	14	53.8	-	-	7.60	12.0

Ordering example:	04 G	Ø12	Ø12 keyway to DIN
	Size and type of joint	Finish bore (H7)	Finish bore (H7), feather keyway acc. to DIN 6885 sheet 1 (JS9)

KTR Precision joints type H and HD

According to DIN 808 with needle bearing



For legend of pictogram refer to flapper on the cover

ΔKw max. 45°

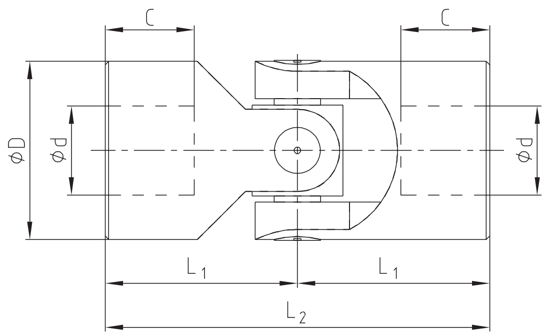
-25 +120 °C

~0°

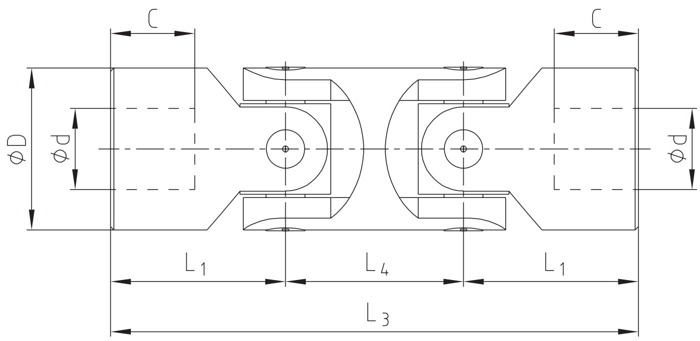
ΔKr

$n_{max.}$ 4000 rpm

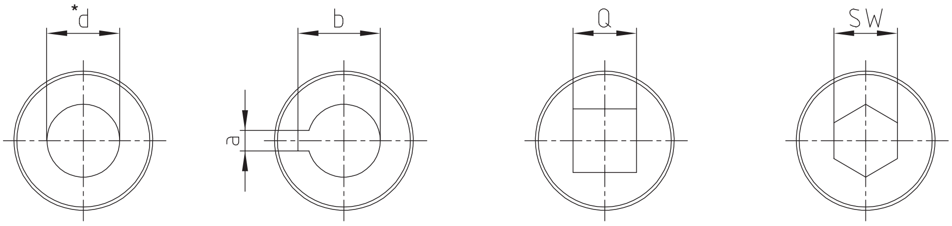
Precision single joint type H



Precision double joint type HD



Bore options:



* Standard type of bore, unless differently inquired/ordered

Type H and HD

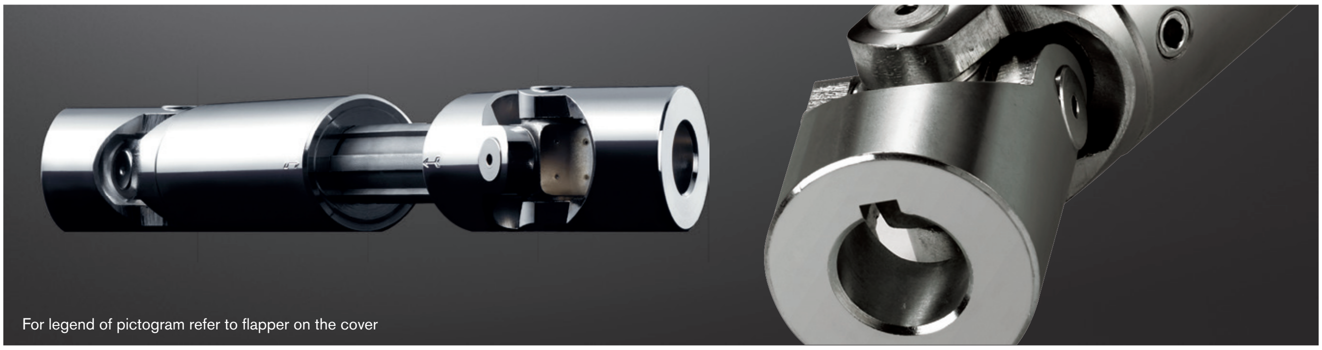
Types and size				Dimensions [mm]											Weight [kg]	
Size H	DIN designation H	Size HD	DIN designation HD	d (H7)	D	L_2	L_1	C	L_4	L_3	a (JS9)	b	Q (H10)	SW (H10)	H	HD
03 H	E10 x 22-W	03 HD	D10 x 22-W	10	22	48	24	12	26	74	3	11.4	10	10	0.10	0.15
04 H	E12 x 25-W	04 HD	D12 x 25-W	12	25	56	28	13	30	86	4	13.8	12	12	0.16	0.25
05 H	E14 x 28-W	05 HD	D14 x 28-W	14	28	60	30	14	36	96	5	16.3	14	14	0.20	0.40
1 H	E16 x 32-W	1 HD	D16 x 32-W	16	32	68	34	16	37	105	5	18.3	16	16	0.30	0.45
2 H	E18 x 36-W	2 HD	D18 x 36-W	18	36	74	37	17	40	114	6	20.8	18	18	0.45	0.70
3 H	E20 x 42-W	3 HD	D20 x 42-W	20	42	82	41	18	47	129	6	22.8	20	20	0.60	1.00
4 H	E22 x 45-W	4 HD	D22 x 45-W	22	45	95	47.5	22	50	145	6	24.8	22	22	0.95	1.55
5 H	E25 x 50-W	5 HD	D25 x 50-W	25	50	108	54	26	55	163	8	28.3	25	25	1.20	2.00
6 H	E30 x 58-W	6 HD	D30 x 58-W	30	58	122	61	29	68	190	8	33.3	30	30	1.85	2.90
6 H1	E32 x 58-W	6 HD1	D32 x 58-W	32	58	130	65	33	68	198	10	35.3	30	30	2.00	3.00
7 H	E35 x 70-W	7 HD	D35 x 70-W	35	70	140	70	33	72	212	10	38.3	-	-	3.15	4.75
8 H	E40 x 80-W	8 HD	D40 x 80-W	40	80	160	80	38	85	245	12	43.3	-	-	4.60	7.20
9 H	E50 x 95-W	9 HD	D50 x 95-W	50	95	190	95	46	100	290	14	53.8	-	-	7.60	12.0

Ordering example:

1 H	Ø16	Ø16 keyway to DIN
Size and type of joint	Finish bore (H7)	Finish bore (H7), feather keyway acc. to DIN 6885 sheet 1 (JS9)

KTR Precision joints type GA and HA

According to DIN 808 with plain and needle bearing (extendable)


For legend of pictogram refer to flapper on the cover

ΔKw max. 45°

-25 +120 °C

0°

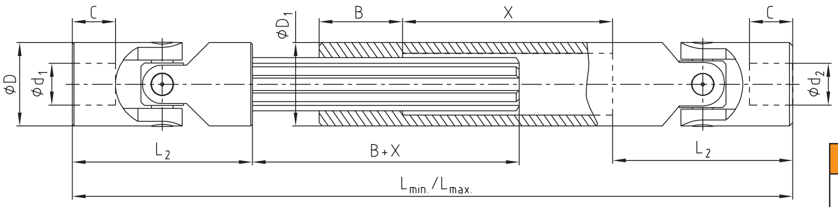
ΔKa

ΔKr

HA

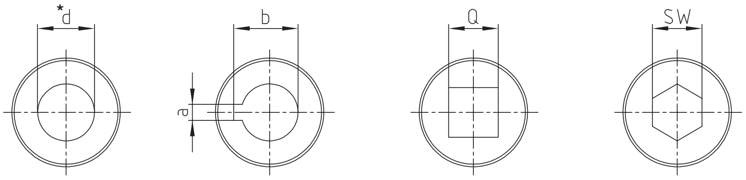
GA $n_{max.}$ 1000 rpm

HA $n_{max.}$ 4000 rpm



Preferred lengths									
Size	Dimensions [mm]								
	$L_{min.}$ / $L_{max.}$								
03	140 170	160 200	180 240	230 330					
04	160 190	180 225	200 270	220 300	250 355	280 420	300 450		
05	170 200	180 220	200 260	220 300	250 350	280 420	300 450	350 550	400 650
1	190 220	210 250	240 320	250 350	275 390	300 430	380 590	400 630	
2	230 280	250 320	270 370	290 400	300 415	400 620	500 820		
3	250 300	270 340	290 380	320 440	380 560	420 640	500 800		
4	250 280	270 320	290 350	330 430	350 470	470 710			
5	295 345	310 375	350 450	380 500	420 590	460 660	500 745		
6	330 380	350 420	370 455	400 510	450 620	500 720	540 795		

Bore options:



* Standard type of bore, unless differently inquired/ordered

Type GA with plain bearing $n_{max.}$ = 1000 rpm and type HA with needle bearing $n_{max.}$ = 4000 rpm														
Size		Dimensions [mm]											Spline shaft	D_1
GA	HA	d_1, d_2 (H7)	D	L_2	C	$L_{min.}$ / $L_{max.}$ / X		B	a (JS9)	b	Q (H10)	SW (H10)		
01 GA	-	6	16	34	8	←	→	25	2	7.0	6	6	SW8	16
02 GA	-	8	16	40	11	←	→	25	2	9.0	8	8	SW8	16
03 GA	03 HA	10	22	48	12	←	→	30	3	11.4	10	10	11 x 14 Z6	22
04 GA	04 HA	12	25	56	13	←	→	40	4	13.8	12	12	13 x 16 Z6	26
05 GA	05 HA	14	28	60	14	←	→	40	5	16.3	14	14	13 x 16 Z6	29
1 GA	1 HA	16	32	68	16	← As specified by the customer $L_{min.}$ / $L_{max.}$	→	40	5	18.3	16	16	16 x 20 Z6	32
2 GA	2 HA	18	36	74	17	←	→	40	6	20.8	18	18	18 x 22 Z6	37
3 GA	3 HA	20	42	82	18	←	→	45	6	22.8	20	20	21 x 25 Z6	42
4 GA	4 HA	22	45	95	22	←	→	45	6	24.8	22	22	23 x 28 Z6	47
5 GA	5 HA	25	50	108	26	←	→	45	8	28.3	25	25	26 x 32 Z6	52
6 GA	6 HA	30	58	122	29	←	→	50	8	33.3	30	30	32 x 38 Z8	58
7 GA	7 HA	35	70	140	33	←	→	70	10	38.3	-	-	36 x 42 Z8	70
8 GA	8 HA	40	80	160	38	←	→	80	12	43.3	-	-	42 x 48 Z8	80
9 GA	9 HA	50	95	190	46	←	→	90	14	53.8	-	-	46 x 54 Z8	95

Calculation of mounting lengths L and X (stroke)

Stroke $X \geq \frac{L_{max.} - 2 \bullet L_2 - B}{2}$

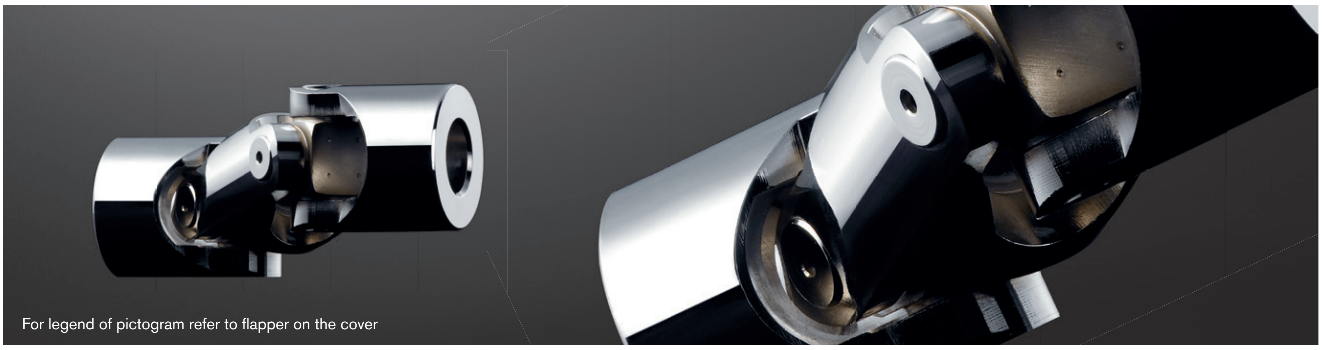
$L_{min.} \geq \frac{L_{max.} + 2 \bullet L_2 + B}{2}$

Minimum size $L_{min.} = L_2 + B + X + L_2$

Ordering example:	3 GA	d_1 = Ø20	d_2 = Ø20 keyway to DIN	550/650
	Size and type of joint	Finish bore (H7)	Finish bore (H7), feather keyway acc. to DIN 6885 sheet 1 (JS9)	Mounting length $L_{min.}$/$L_{max.}$

KTR Precision joints type X and XD

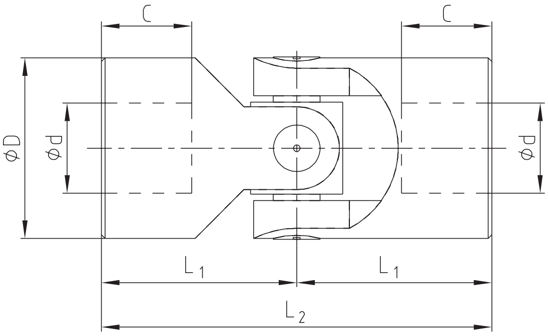
According to DIN 808 with plain bearing made of stainless steel 1.4301



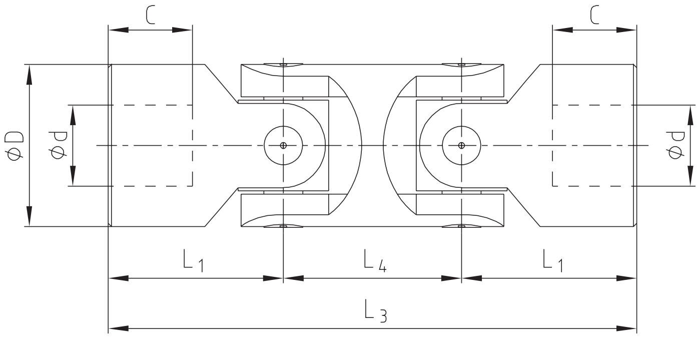
For legend of pictogram refer to flapper on the cover

ΔKw max. 45°
-25 +120 °C
~0°
ΔKr
$n_{max.}$ 300 rpm

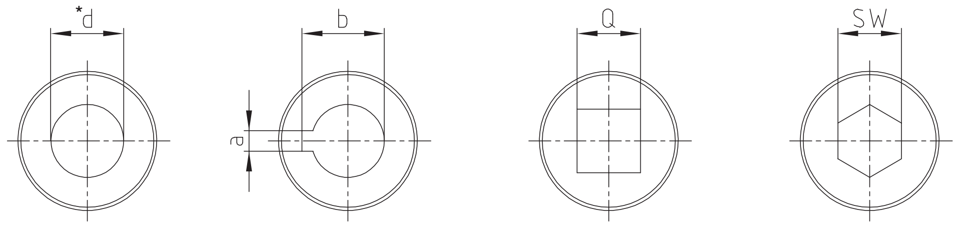
Precision single joint X



Precision double joint XD



Bore options:



* Standard type of bore, unless differently inquired/ordered

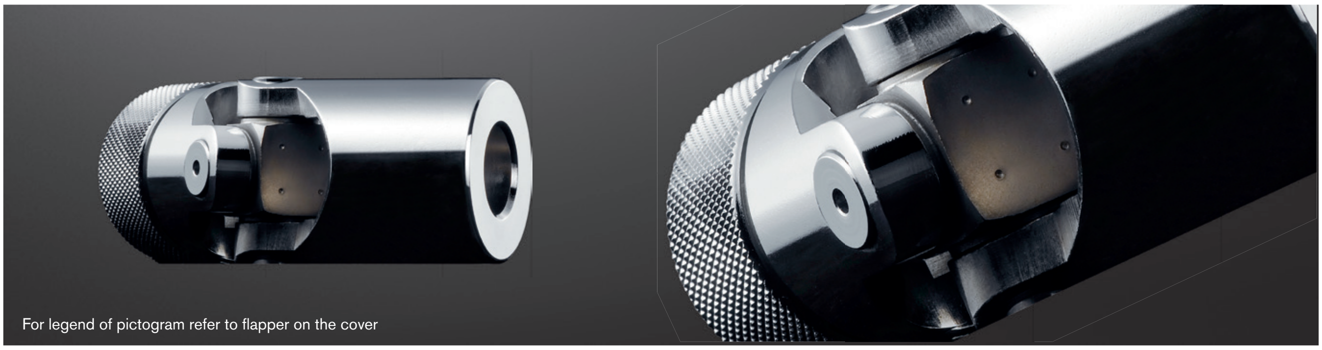
Type X and XD

Types and size				Dimensions [mm]											Weight [kg]	
Size X	DIN designation X	Size XD	DIN designation XD	d (H7)	D	L_2	L_1	C	L_4	L_3	a (JS9)	b	Q (H10)	SW (H10)	X	XD
01 X	E6 x 16-G	01 XD	D6 x 16-G	6	16	34	17	8	22	56	2	7.0	6	6	0.05	0.08
02 X	E8 x 16-G	02 XD	D8 x 16-G	8	16	40	20	11	22	62	2	9.0	8	8	0.05	0.08
03 X	E10 x 22-G	03 XD	D10 x 22-G	10	22	48	24	12	26	74	3	11.4	10	10	0.10	0.15
04 X	E12 x 25-G	04 XD	D12 x 25-G	12	25	56	28	13	30	86	4	13.8	12	12	0.16	0.25
05 X	E14 x 28-G	05 XD	D14 x 28-G	14	28	60	30	14	36	96	5	16.3	14	14	0.20	0.40
1 X	E16 x 32-G	1 XD	D16 x 32-G	16	32	68	34	16	37	105	5	18.3	16	16	0.30	0.45
3 X	E20 x 42-G	3 XD	D20 x 42-G	20	42	82	41	18	47	129	6	22.8	20	20	0.60	1.00
5 X	E25 x 50-G	5 XD	D25 x 50-G	25	50	108	54	26	55	163	8	28.3	25	25	1.20	2.00
6 X	E30 x 58-G	6 XD	D30 x 58-G	30	58	122	61	29	68	190	8	33.3	30	30	1.85	2.90

Ordering example:	04 X	Ø12	Ø12 keyway to DIN
	Size and type of joint	Finish bore (H7)	Finish bore (H7), feather keyway acc. to DIN 6885 sheet 1 (JS9)

KTR Precision joints type GR and HR

Plain and needle bearing with quick locking



For legend of pictogram refer to flapper on the cover

ΔK_w max. 45° | -25 +120 °C | ~0° | HR | GR $n_{max.}$ 1000 rpm | HR $n_{max.}$ 4000 rpm

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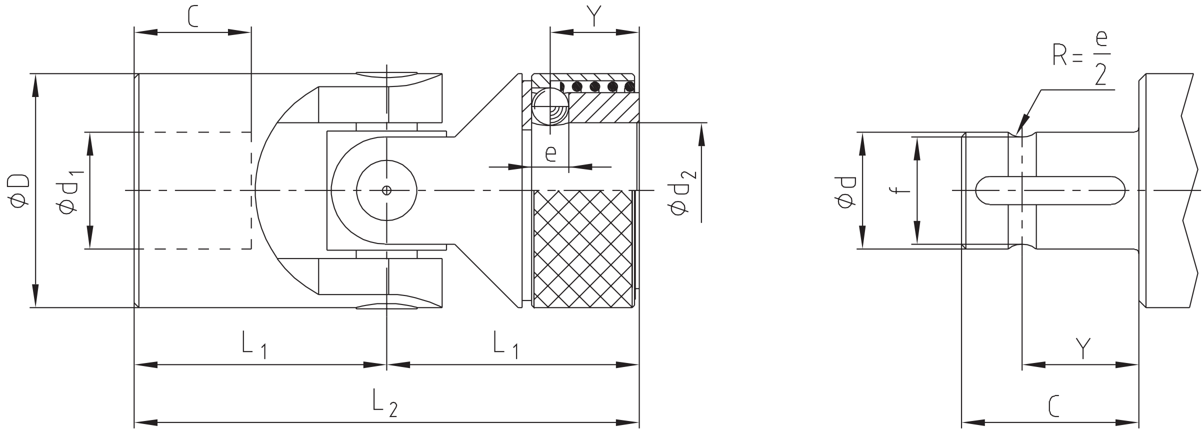
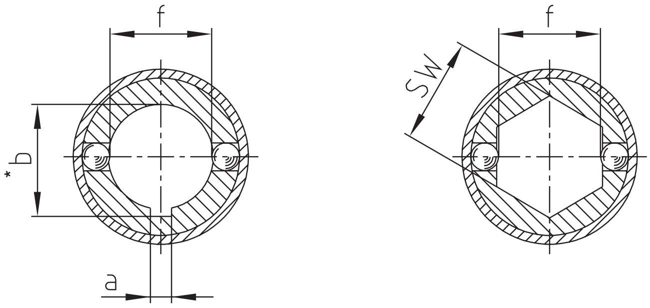


Bore options:



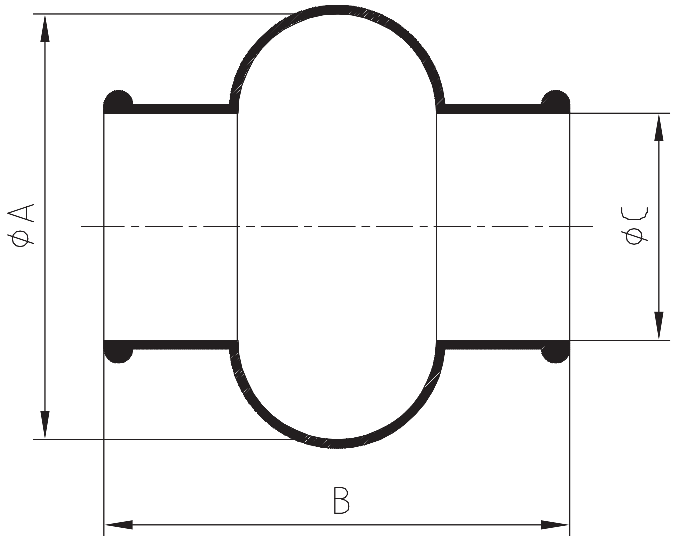
* Standard type of bore, unless differently inquired/ordered

Type GR with plain bearing $n_{max.}$ = 1000 rpm and type HR with needle bearing $n_{max.}$ = 4000 rpm

Size		Dimensions [mm]											Weight [kg]
GR	HR	d_1, d_2 (H7)	D	L_2	L_1	C	Y	e	f	a (JS9)	b	SW (H10)	
02 GR	-	8	16	52	26	14	9.5	3.5	6.3	2	9.0	8	0.05
03 GR	03 HR	10	22	62	31	17	11.5	4.0	8.7	3	11.0	10	0.12
04 GR	04 HR	12	25	74	37	21	13.5	4.0	11.0	4	13.3	12	0.19
05 GR	05 HR	14	25	74	37	21	13.5	4.0	13.0	5	15.3	14	0.17
1 GR	1 HR	16	32	86	43	24	14.0	6.35	14.8	5	18.3	16	0.34
2 GR	2 HR	18	36	96	48	28	19.0	8.0	16.0	6	20.8	18	0.48
3 GR	3 HR	20	42	108	54	31	19.0	8.0	18.0	6	22.8	20	0.76
4 GR	4 HR	22	45	120	60	34	20.5	10.0	20.0	6	24.8	22	0.97
5 GR	5 HR	25	50	132	66	38	20.5	10.0	23.0	8	28.3	25	1.3
6 GR	6 HR	30	58	166	83	49	25.0	10.0	28.0	8	33.3	30	2.13

Ordering example:	03 HR	d_1 = Ø10	d_2 = Ø10 keyway to DIN
	Size and type of joint	Finish bore (H7)	Finish bore (H7), feather keyway acc. to DIN 6885 sheet 1 (JS9)

Protection bushings



Protection bushings				
Size	Precision joints	A	B	C
M 01	01 G, 01 X	28	34	15
M 02	02 G, 02 X, 02 GR	32	40	16.5
M 03	03 G, 03 H, 03 GA, 03 HA, 03 X, 03 GR, 03 HR	40	45	20.5
M 04	04 G, 04 H, 04 GA, 04 HA, 04 X, 04 GR, 04 HR	48	50	24.5
M 05	05 G, 05 H, 05 GA, 05 HA, 05 GR, 05 HR	52	56	27.5
M 1	1 G, 1 H, 1 GA, 1 HA, 1 X, 1 GR, 1 HR	56	65	30.5
M 2	2 G, 2 H, 2 GA, 2 HA, 2 GR, 2 HR	66	72	35.5
M 3	3 G, 3 H, 3 GA, 3 HA, 3 X, 3 GR, 3 HR	75	82	40.0
M 4	4 G, 4 H, 4 GA, 4 HA, 4 GR, 4 HR	84	95	45.0
M 5	5 G, 5 H, 5 GA, 5 HA, 5 X, 5 GR, 5 HR	92	108	50.0
M 6	6 G, 6 G1, 6 H, 6 H1, 6 GA, 6 HA, 6 X, 6GR, 6 HR	100	122	56.0

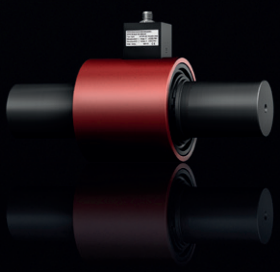
Torque measuring technology

DATAFLEX® 16

DATAFLEX® 32

DATAFLEX® 42

DATAFLEX® 70



DATAFLEX® 110

TORQUE MEASURING TECHNOLOGY TYPES AND OPERATING DESCRIPTION

Properties of torque measuring shafts

DATAFLEX® 16, 32, 42, 70, 110 – Dual-range measuring shaft providing for high precision with each revolution

The KTR torque sensors type DATAFLEX® 16 to DATAFLEX® 110 cover a torque range from 10 Nm to 20,000 Nm.
The torque is measured using the approved technology of wire strain gauges DMS while processing contactlessly with a revolution of 24 bits. Thus, the inaccuracy of torque measuring is reduced to less than 0.1 % of the measuring range. By integrating a high-resolution speed sensor the new series combines four measurements in one: Measuring the torque, speed, rotation angle and rotation direction is part of the standard equipment. A new feature is the option to switch the measuring range of each measuring shaft to one fifth of the rated torque. This option allows to measure smaller torques precisely without changing the design.

Customised solutions and special designs

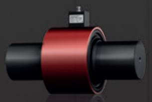
Besides KTR precision measuring shafts KTR manufactures and calibrates customised measuring shafts for measuring ranges up to 500 kNm. In this context key parameters such as measuring range, size, length and coupling type can be adjusted to the specifications. The torque is measured contactlessly so that bearings are not required.

Apart from customised torque sensors KTR provides special solutions with couplings equipped with torque measuring technology so that the design does not have to be modified.

Couplings adjusted to any application

Matching with all series of DATAFLEX® we recommend to use the servo laminae coupling RADEX®-NC and the steel laminae coupling RADEX®-N. Together they form a compact solution which is easy to integrate while having a high stiffness. Basically it is also possible to use backlash-free, plug-in types of couplings such as ROTEX® GS or to fit an overload coupling.

Product finder of torque measuring shafts

						
Product	**DATAFLEX® 16**	**DATAFLEX® 32**	**DATAFLEX® 42**	**DATAFLEX® 70**	**DATAFLEX® 110**	**customised**
Maintenance-free	●	●	●	●	●	●
For rotating applications	●	●	●	●	●	●
Dual-range measuring shaft	●	●	●	●	●	–
Measuring range 1 T_{KN} [Nm]	10, 30, 50	100, 300, 500	1000	3000, 5000	10000, 20000	20000 - 500000
Measuring range 2 T_{KN2} [Nm]	2, 6, 10	20, 60, 100	200	600, 1000	2000, 4000	–
Inaccuracy (% of T_{KN}/T_{KN2})	< 0.1 / 0.2	< 0.1 / 0.2	< 0.1 / 0.2	< 0.1 / 0.2	< 0.1 / 0.2	< 0.2
Torque output	-10 … 10 V	-10 … 10 V	-10 … 10 V	-10 … 10 V	-10 … 10 V	-10 ... 10 V, 4 … 20 mA
Speed output						
Square-wave signal [pulses/rev.]	2 x 360	2 x 720	2 x 720	2 x 450	2 x 720	–
DC - direct voltage signal [0 ... 10V]	●	●	●	●	●	–
Direction signal	●	●	●	●	●	–
Maximum speed [rpm]	10,000	7,500	6,500	4,000	3,000	miscellaneous
Recommended coupling	RADEX®-NC 21, 26	RADEX®-NC 36 RADEX®-N 60	RADEX®-N 80	RADEX®-N 90, 115	as specified	as specified
Connection housing DF2	●	●	●	●	●	–

Connection housing DF2 - All inclusive

The connection housing DF2 can easily be combined with all DATAFLEX® torque measuring shafts disposing of a retainer for top hat rail assembly as well as terminal screws for an easy connection of external devices.
The following features save the purchase of expensive measuring amplifiers and converters:

- The torque output can be filtered over 5 steps so that short torque peaks in the display can be reduced.
- The pulsed outputs of the speed signals can be configured both for 5 V (TTL) and 24 V (HTL) controls. This makes the outputs compatible with data logging boards and SPS controls.
- In parallel with the pulse signal an integrated frequency voltage converter supplies a DC voltage from 0 – 10 V proportionally to the speed, the scaling of which can be individually adapted. This makes an expensive counter superfluous so that the signal can either be processed as a voltage or displayed.
- A direction signal indicates the rotational direction of the drive (with DATAFLEX® 16, 32, 42, 70 and 110).

DATAFLEX® 16/10, 16/30, 16/50
DUAL-RANGE TORQUE SENSOR

For torques up to 50 Nm

For legend of pictogram refer to flapper on the cover

General properties					
DATAFLEX® type	Measuring range 1 T_{KN} [Nm]	Measuring range 2 T_{KN2} [Nm]	Supply voltage [V]	Current consumption [mA]	Operating temperature range [°C]
16/10	-10 ... +10	-2 ... +2	24 ±4	<100	0 ... 55
16/30	-30 ... +30	-6 ... +6			
16/50	-50 ... +50	-10 ... +10			

	Technical data of torque signal				Technical data of speed signal				
DATAFLEX® type	Inaccuracy (% of T_{KN}/ T_{KN2}) 1), 2), 3)	Output voltage [V]	Band width [kHz]	Influence of temperature 1) [%/10 °C]	Resolution [pulses/rev.]	Number of channels	Square-wave signal 4) [Vss]	Direct voltage signal 4) [V]	Direction signal 4) [V]
16/10	<0.1 / 0.2	-10 ... 10	2	0.05	360	2, 90° offset	5 / 24	0 ... 10, scalable	5 / 24
16/30									
16/50									

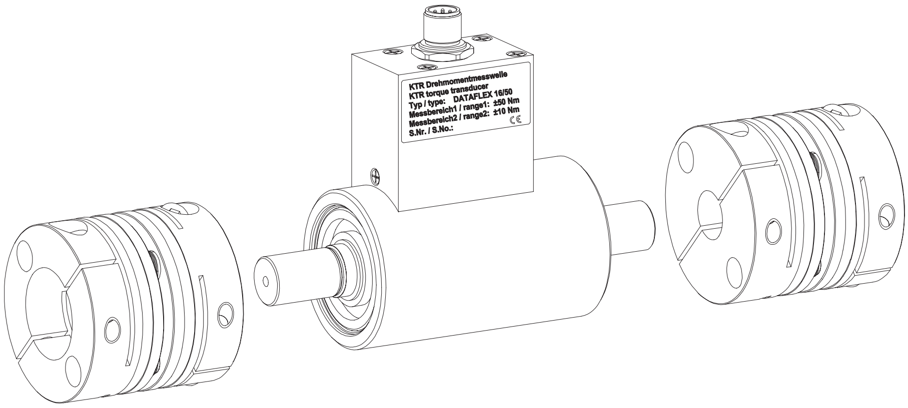
Mechanical data of torque measuring shaft										
DATAFLEX® type	Static load limit 1) $T_{K\ max}$ [%]	Breaking load $T_{K\ break}$ 1) [%]	Max. bending torque [Nm]	Max. radial force [N]	Max. axial force [kN]	Weight [kg]	Torsion spring stiffness C_T [Nm/rad]	Torsion angle with T_{KN} [°]	Mass moment of inertia [kgmm²]	Max. speed 5) [rpm]
16/10	150	300	1.07	12	1.1	0.7	910	0.63	22.6	10000
16/30			3.2	37	2.3		2840	0.61		
16/50			5.3	61	3.1		4100	0.7		

Mechanical data of combination of DATAFLEX® 16 and RADEX®-NC							
DATAFLEX® type	Coupling			Mechanical data of combination			
	RADEX®-NC size	Clamping screw M		Mass moment of inertia [kgmm²]	Torsion spring stiffness C_T [Nm/rad]	Weight [kg]	Max. speed 5) [rpm]
		M	T_A [Nm]				
16/10	21	M6	10	323	870	1.30	10000
16/30					2500		
16/50	26	M8	25	800	3600	1.80	

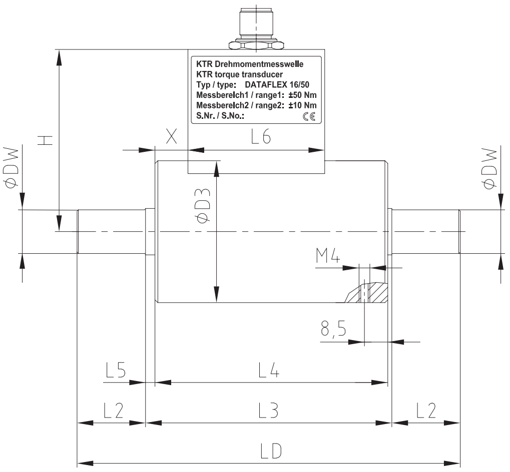
1) Referring to T_{KN}
2) Referring to T_{KN2}
3) Error in linearity incl. hysteresis
4) See page 367: with connection housing DF2
5) Using RADEX®-NC 3.5 hubs, with other couplings 7500 RPM.

Ordering example:	DATAFLEX® 16/30	DF2	2 m, 5 m and 10 m	RADEX®-NC 21 EK Ø16/20-Ø16/30
	Type of measuring shaft with measuring range	Connection housing (is required)	Connection cable	If any accessories are requested: coupling type, finish bores D/DW

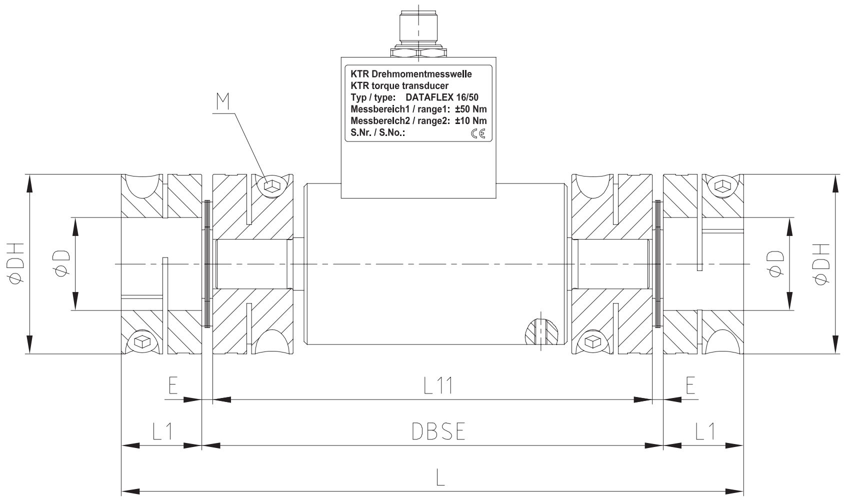
Components



DATAFLEX® 16



Combination of DATAFLEX® 16 with RADEX®-NC



Dimensions [mm] of torque measuring shaft and coupling combination with RADEX®-NC HT

DATAFLEX® type	DW	D3	LD	L2	L3	L4	L5	L6	H	X	RADEX®-NC size	DH	D_{max}	DBSE	L	L1	L11	E
16/10	16	52	140	25	90	85	3.5	50	67	12	21	58	30	149	201	26	142	3.5
16/30																		
16/50											26	69	38	166	232	33	156	5.0

DATAFLEX® 32/100, 32/300, 32/500
DUAL-RANGE TORQUE SENSOR

For torques up to 500 Nm

For legend of pictogram refer to flapper on the cover

General properties					
DATAFLEX® type	Measuring range 1 T_{KN} [Nm]	Measuring range 2 T_{KN2} [Nm]	Supply voltage [V]	Current consumption [mA]	Operating temperature range [°C]
32/100	-100 ... +100	-20 ... +20	24 ±4	<100	0 ... 55
32/300	-300 ... +300	-60 ... +60			
32/500	-500 ... +500	-100 ... +100			

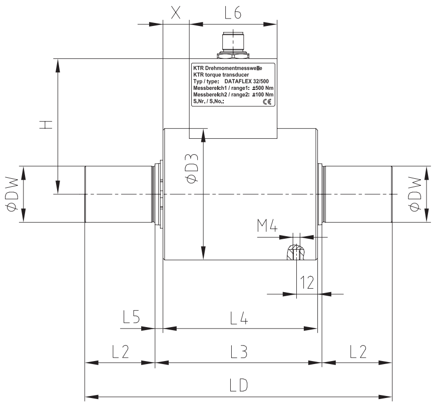
	Technical data of torque signal				Technical data of speed signal				
DATAFLEX® type	Inaccuracy (% of T_{KN}/ T_{KN2}) [1), 2), 3)]	Output voltage [V]	Band width [kHz]	Influence of temperature [1)] [%/10 °C]	Resolution [pulses/rev.]	Number of channels	Square-wave signal [4)] [Vss]	Direct voltage signal [4)] [V]	Direction signal [4)] [V]
32/100	<0.1 / 0.2	-10 ... 10	2	0.05	720	2, 90° offset	5 / 24	0 ... 10, scalable	5 / 24
32/300									
32/500									

Mechanical data of torque measuring shaft										
DATAFLEX® type	Static load limit [1)] $T_{K\,max}$ [%]	Breaking load $T_{K\,break}$ [1)] [%]	Max. bending torque [Nm]	Max. radial force [N]	Max. axial force [kN]	Weight [kg]	Torsion spring stiffness C_T [Nm/rad]	Torsion angle with T_{KN} [°]	Mass moment of inertia [kgmm²]	Max. speed [5)] [rpm]
32/100	150	300	11	110	5.0	1.9	18000	0.32	219	7500
32/300			32	320	10.4		46000	0.37	221	
32/500			53	530	14.6		60000	0.48	224	

Mechanical data of combination of DATAFLEX® 32 and RADEX®-NC								
DATAFLEX® type	Coupling				Mechanical data of combination			
	RADEX®-NC/ RADEX®-N size	Setscrew/clamping screw			Mass moment of inertia [kgmm²]	Torsion spring stiffness C_T [Nm/rad]	Weight [kg]	Max. speed [5)] [rpm]
		G	T	T_A [Nm]				
32/100	RADEX®-NC 36	M10	–	49	1097	15800	3.80	7500
32/300	RADEX®-N 60	M8	20	10	17900	40000	11.65	6700
32/500						49000	11.70	

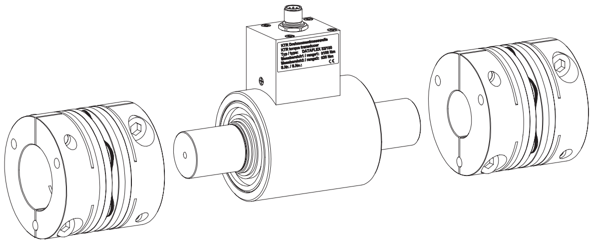
[1] Referring to T_{KN}
[2] Referring to T_{KN2}
[3] Error in linearity incl. hysteresis
[4] See page 367: with connection housing DF2
[5] With high speeds use coupling hubs that are balanced

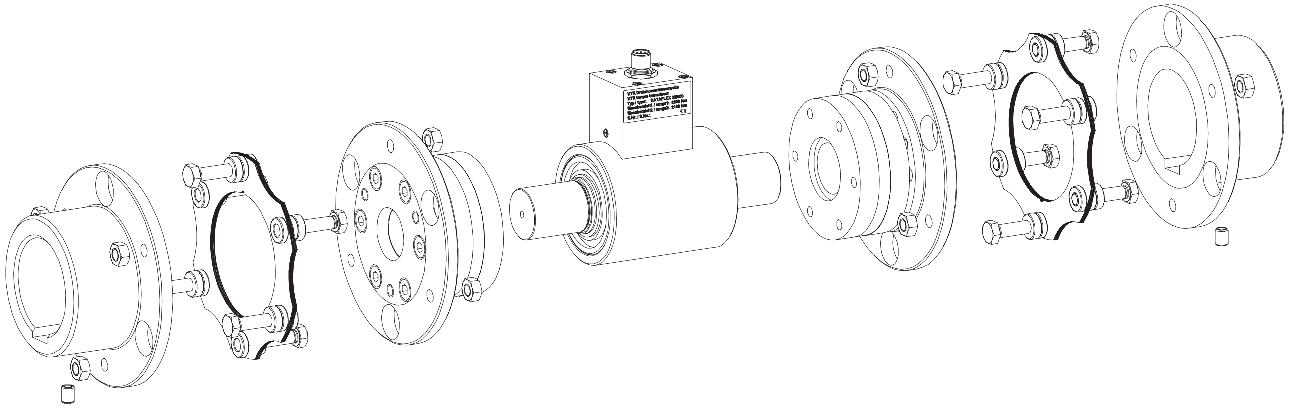
DATAFLEX® 32



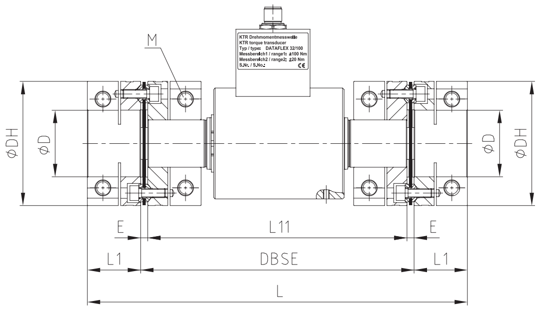
Ordering example:	DATAFLEX® 32/300	DF2	2 m, 5 m and 10 m	RADEX®-N 60 NN Ø32/50 keyway to DIN Ø32/60 keyway to DIN
	Type of measuring shaft with measuring range	Connection housing (is required)	Connection cable	If any accessories are requested: coupling type, finish bores D/DW

Components

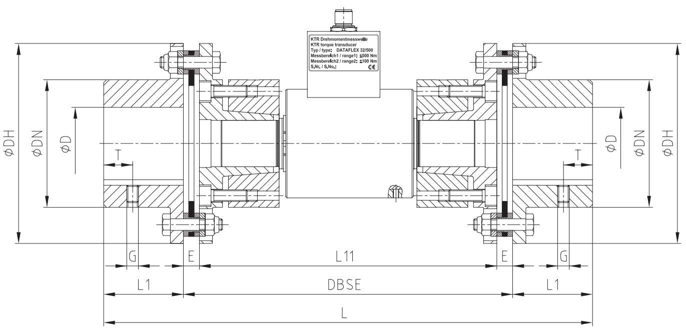




Combination of DATAFLEX® 32 with RADEX®-NC



Combination of DATAFLEX® 32 with RADEX®-N



Dimensions [mm] of torque measuring shaft and coupling combination with RADEX®-NC size																	
DATAFLEX® type	DW	D3	LD	L2	L3	L4	L5	L6	H	X	RADEX®-NC size	DH	D_{max}	DBSE	L	L1	L11	E
32/100	32	75	175	40	95	88	4.5	50	77.3	15	36	84	45	184.6	256.6	36	175	4.8

Dimensions [mm] of torque measuring shaft and coupling combination with RADEX®-N size																		
DATAFLEX® type	DW	D3	LD	L2	L3	L4	L5	L6	H	X	RADEX®-N size	DH	DN	D_{max}	DBSE	L	L1	L11	E
32/300	32	75	175	40	95	88	4.5	50	77.3	15	60	138	88	60	227	337	55	205	11
32/500																			

DATAFLEX® 42/1000
DUAL-RANGE TORQUE SENSOR

For torques up to 1000 Nm

For legend of pictogram refer to flapper on the cover

0.1 %

General properties

DATAFLEX® type	Measuring range 1 T_{KN} [Nm]	Measuring range 2 T_{KN2} [Nm]	Supply voltage [V]	Current consumption [mA]	Operating temperature range [°C]
42/1000	-1000 ... +1000	-200 ... +200	24 ±4	<100	0 ... 55

	Technical data of torque signal				Technical data of speed signal				
DATAFLEX® type	Inaccuracy (% of T_{KN}/ T_{KN2}) 1), 2), 3)	Output voltage [V]	Band width [kHz]	Influence of temperature 1) [%/10 °C]	Resolution [pulses/rev.]	Number of channels	Square-wave signal 4) [Vss]	Direct voltage signal 4) [V]	Direction signal 4) [V]
42/1000	<0.1 / 0.2	-10 ... 10	2	0.05	720	2, 90° offset	5 / 24	0 ... 10, scalable	5 / 24

Mechanical data of torque measuring shaft

DATAFLEX® type	Static load limit 1) $T_{K\,max}$ [%]	Breaking load $T_{K\,break}$ 1) [%]	Max. bending torque [Nm]	Max. radial force [N]	Max. axial force [kN]	Weight [kg]	Torsion spring stiffness C_T [Nm/rad]	Torsion angle with T_{KN} [°]	Mass moment of inertia [kgmm^2]	Max. speed 5) [rpm]
42/1000	150	300	107	780	24	3.43	132000	0.43	710	6500

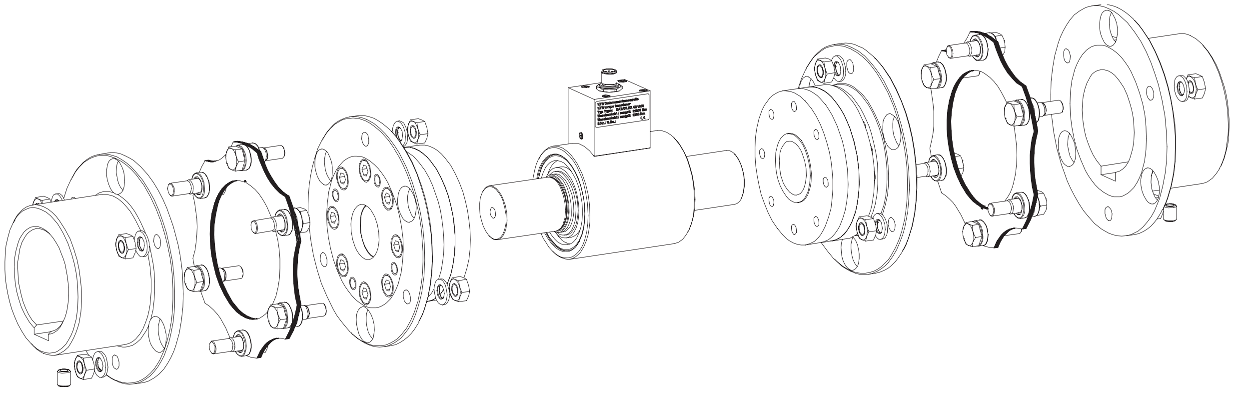
Mechanical data of combination of DATAFLEX® 42 and RADEX®-N

DATAFLEX® type	Coupling				Mechanical data of combination			
	RADEX®-N size	Setscrew			Mass moment of inertia [kgmm^2]	Torsion spring stiffness C_T [Nm/rad]	Weight [kg]	Max. speed 5) [rpm]
		G	T	T_A [Nm]				
42/1000	80	M10	20	17	61000	107000	23.1	5100

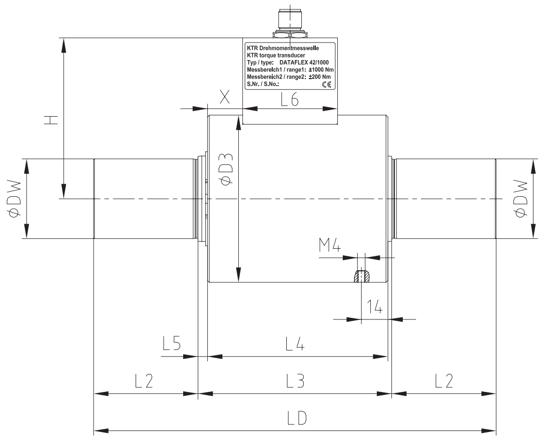
1) Referring to T_{KN}
2) Referring to T_{KN2}
3) Error in linearity incl. hysteresis
4) See page 367: with connection housing DF2
5) With high speeds use coupling hubs that are balanced

Ordering example:	DATAFLEX® 42/1000	DF2	2 m, 5 m and 10 m	RADEX®-N 80 NN Ø42/50 keyway to DIN Ø42/60 keyway to DIN
	Type of measuring shaft with measuring range	Connection housing (is required)	Connection cable	If any accessories are requested: coupling type, finish bores D/DW

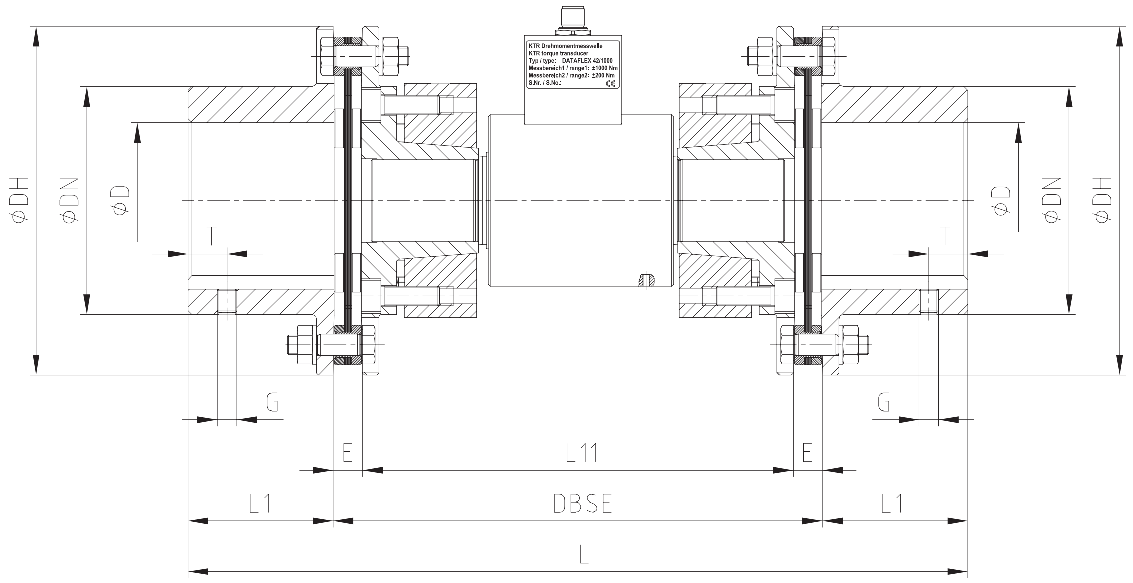
Components



DATAFLEX® 42



Combination of DATAFLEX® 42 with RADEX®-N



Dimensions [mm] of torque measuring shaft and coupling combination																		
DATAFLEX® type	DW	D3	LD	L2	L3	L4	L5	L6	H	X	RADEX®-N size	DH	DN	D_{max}	DBSE	L	L1	L11	E
42/1000	42	88	212	55	102	95	5	50	84.7	18.5	80	179	117	80	250	400	75	222	14

DATAFLEX® 70/3000, 70/5000
DUAL-RANGE TORQUE SENSOR

For torques up to 5000 Nm

For legend of pictogram refer to flapper on the cover

General properties

DATAFLEX® type	Measuring range 1 T_{KN} [Nm]	Measuring range 2 T_{KN2} [Nm]	Supply voltage [V]	Current consumption [mA]	Operating temperature range [°C]
70/3000	-3000 … +3000	-600 … +600	24 ±4	<100	0 ... 55
70/5000	-5000 … +5000	-1000 … +1000			

	Technical data of torque signal				Technical data of speed signal				
DATAFLEX® type	Inaccuracy (% of T_{KN}/T_{KN2}) 1), 2), 3)	Output voltage [V]	Band width [kHz]	Influence of temperature 1) [%/10 °C]	Resolution [pulses/rev.]	Number of channels	Square-wave signal 4) [Vss]	Direct voltage signal 4) [V]	Direction signal 4) [V]
70/3000	< 0.1 / 0.2	-10 ... 10	2	0.05	450	2, 90° offset	5 / 24	0 ... 10, scalable	5 / 24
70/5000									

Mechanical data of torque measuring shaft

DATAFLEX® type	Static load limit 1) $T_{K\,max}$ [%]	Breaking load $T_{K\,break}$ 1) [%]	Max. bending torque [Nm]	Max. radial force [N]	Max. axial force [kN]	Weight [kg]	Torsion spring stiffness C_T [Nm/rad]	Torsion angle with T_{KN} [°]	Mass moment of inertia [kgmm²]	Max. speed 5) [rpm]
70/3000	150	300	320	1700	48	12.30	395000	0.44	7200	4000
70/5000			520	2800	66	12.45	500000	0.57	7300	

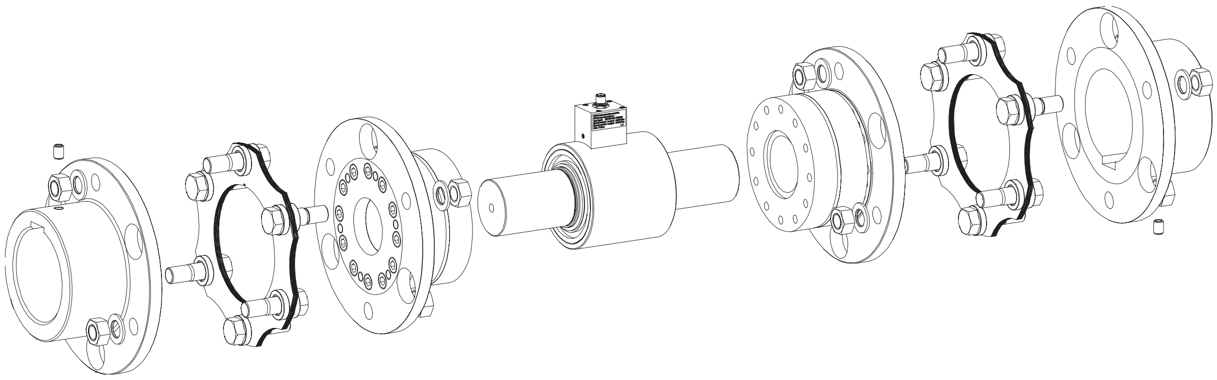
Mechanical data of combination of DATAFLEX® 70 and RADEX®-N

DATAFLEX® type	Coupling				Mechanical data of combination			
	RADEX®-N size	Setscrew			Mass moment of inertia [kgmm²]	Torsion spring stiffness C_T [Nm/rad]	Weight [kg]	Max. speed 5) [rpm]
		G	T	T_A [Nm]				
70/3000	90	M12	25	40	155200	283000	44.7	4000
70/5000	115		30		470000	389000	77.6	3400

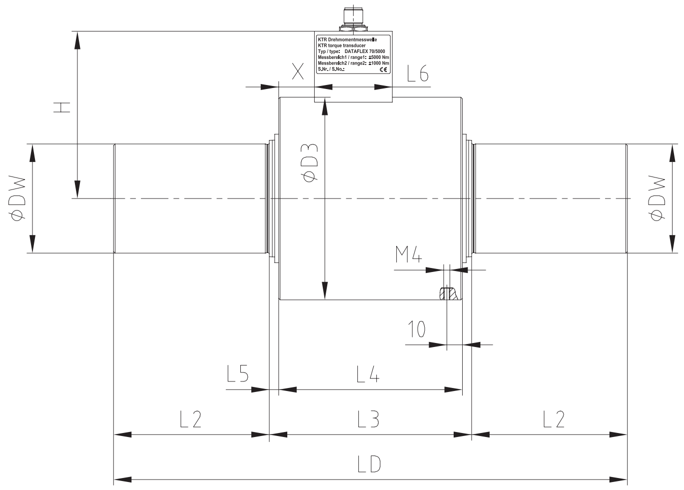
1) Referring to T_{KN}
2) Referring to T_{KN2}
3) Error in linearity incl. hysteresis
4) See page 367: with connection housing DF2
5) With high speeds use coupling hubs that are balanced

Ordering example:	DATAFLEX® 70/5000	DF2	2 m, 5 m and 10 m	RADEX®-N 115 NN Ø65/60 keyway to DIN Ø65/70 keyway to DIN
	Type of measuring shaft with measuring range	Connection housing (is required)	Connection cable	If any accessories are requested: coupling type, finish bores D/DW

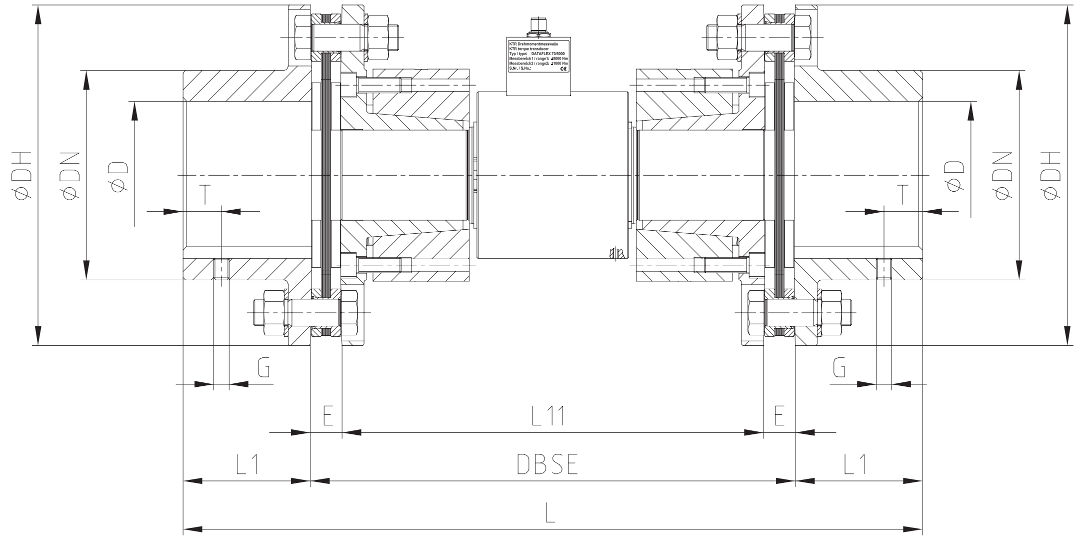
Components



DATAFLEX® 70



Combination of DATAFLEX® 70 with RADEX®-N



Dimensions [mm] of torque measuring shaft and coupling combination

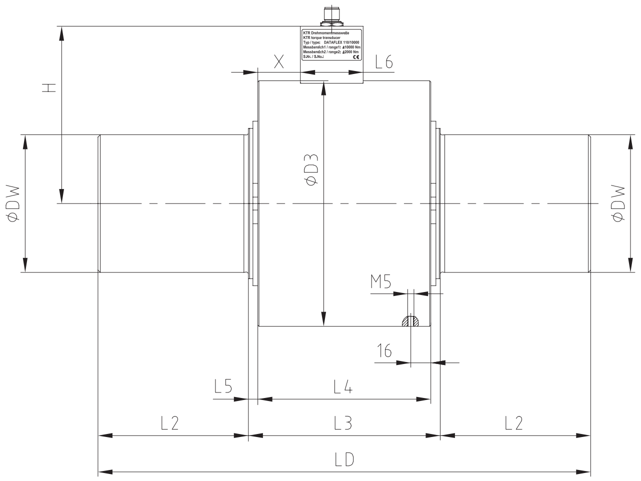
DATAFLEX® type	DW	D3	LD	L2	L3	L4	L5	L6	H	X	RADEX®-N size	DH	DN	D_{max}	DBSE	L	L1	L11	E
70/3000	70	130	330	100	130	118	6	50	107.35	23	90	210	132	90	360	520	80	330	15
70/5000											115	265	163	115	376	576	100		23

DATAFLEX® 110/10000, 110/20000
DUAL-RANGE TORQUE SENSOR

For torques up to 20000 Nm

For legend of pictogram refer to flapper on the cover

DATAFLEX® 110



General properties					
DATAFLEX® type	Measuring range 1 T_{KN} [Nm]	Measuring range 2 T_{KN2} [Nm]	Supply voltage [V]	Current consumption [mA]	Operating temperature range [°C]
110/10000	- 10000 ... + 10000	- 2000 ... + 2000	24 ±4	<100	0 ... 55
110/20000	- 20000 ... + 20000	- 4000 ... + 4000			

Technical data of torque signal					Technical data of speed signal				
DATAFLEX® type	Inaccuracy (% of T_{KN}/ T_{KN2}) $^{1), 2), 3)}$	Output voltage [V]	Band width [kHz]	Influence of temperature $^{1)}$ [%/10 °C]	Resolution [pulses/rev.]	Number of channels	Square-wave signal $^{4)}$ [Vss]	Direct voltage signal $^{4)}$ [V]	Direction signal $^{4)}$ [V]
110/10000	< 0.1 / 0.2	-10 ... +10	2	0.05	720	2, 90° offset	5 / 24	0 ... 10, scalable	5 / 24
110/20000									

Mechanical data of torque measuring shaft										
DATAFLEX® type	Static load limit $^{1)}$ $T_{K\ max}$ [%]	Breaking load $T_{K\ break}$ $^{1)}$ [%]	Max. bending torque [Nm]	Max. radial force [N]	Max. axial force [kN]	Weight [kg]	Torsion spring stiffness C_T [Nm/rad]	Torsion angle with T_{KN} [°]	Mass moment of inertia [kgm²]	Max. speed $^{5)}$ [rpm]
110/10000	150	300	1033	4700	106	35.72	2270000	0.25	0.0562	3000
110/20000			2037	9300	166	36.20	3550000	0.32	0.0569	

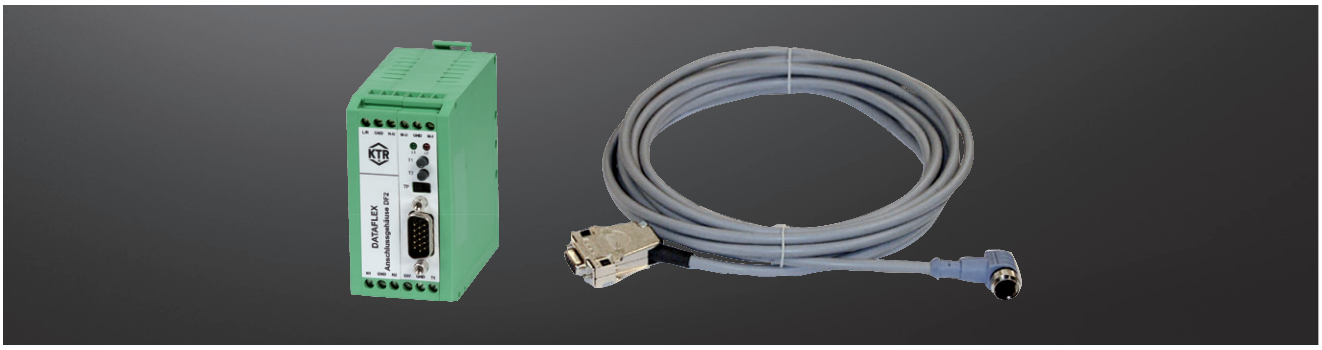
Dimensions [mm] of torque measuring shaft										
DATAFLEX® type	DW	D3	LD	L2	L3	L4	L5	L6	H	X
110/10000	110	196	393	120	153	138	7.5	50	141.4	34
110/20000										

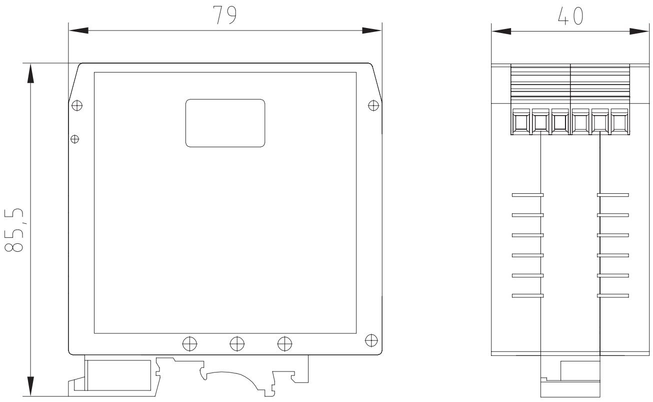
1) Referring to T_{KN}
2) Referring to T_{KN2}
3) Error in linearity incl. hysteresis
4) See page 367: with connection housing DF2
5) With high speeds use coupling hubs that are balanced

Ordering example:	DATAFLEX® 110/10000	DF2	2 m, 5 m and 10 m
	Type of measuring shaft with measuring range	Connection housing (is required)	Connection cable

DATAFLEX® CONNECTION ACCESSORIES OF TORQUE MEASURING SHAFTS

Connection housing DF2 and connection cable





Connection cable and connection housing DF2

Description	Function	DATAFLEX® 16	DATAFLEX® 32	DATAFLEX® 42	DATAFLEX® 70	DATAFLEX® 110
Connections DF2						
Input of operating voltage						
24 V	Supply voltage +	24 V DC ± 4V / 100mA max.				
GND	Supply voltage -					
Torque output						
M-U	Voltage output +	-10 V … 10V				
GND	Ground of torque output					
M-I	Current output	-	-	-	-	-
Speed output pulse signal						
N1	Pulsed output speed track 1	HTL, TTL (24 V, 5 V, 360 pulses/rev.)	HTL, TTL (24 V, 5 V, 720 pulses/rev.)	HTL, TTL (24 V, 5 V, 720 pulses/rev.)	HTL, TTL (24 V, 5 V, 450 pulses/rev.)	HTL, TTL (24 V, 5 V, 720 pulses/rev.)
GND	Ground of pulsed output					
N2	Pulsed output speed track 2	HTL, TTL (24 V, 5 V, 360 pulses/rev.)	HTL, TTL (24 V, 5 V, 720 pulses/rev.)	HTL, TTL (24 V, 5 V, 720 pulses/rev.)	HTL, TTL (24 V, 5 V, 450 pulses/rev.)	HTL, TTL (24 V, 5 V, 720 pulses/rev.)
Speed of direct voltage output						
R/L	Direction signal speed	HTL, TTL (24 V, 5 V, CW = 1)				
GND	Mass of direct voltage output speed					
N-U	Voltage output speed	0 V ... 10 V (scalable)				
Other connections / operating devices						
T1	Sensor T1 - connection	External push button connection T1				
L1, L2	Signal LEDs	Condition monitoring				
T1, T2	Sensor T1, T2	Sensor for programming				
TP	Switch low pass	Filter for torque signal to be set in four levels				
Connection cable						
Lengths of connection cable		2, 5, 10 m, other lengths on request				

Summary of literature

No matter if a perfect drive, a brake that takes effect, space-saving cooling or accurate hydraulics is required, if on land, by sea or at an airy height - KTR's product portfolio is just as manifold as its applications. The following catalogues and leaflets provide an overview. Available at **www.ktr.com**

Product catalogues


Made for Motion KTR

Drive Technology

Couplings
Torque limiters
Clamping elements
Torque measuring systems

www.ktr.com

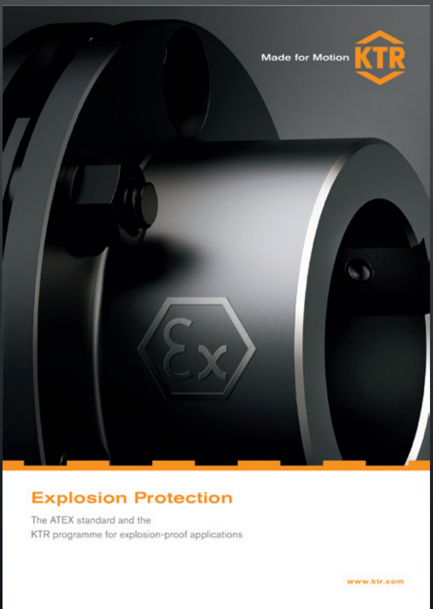

Made for Motion KTR

Brake systems

KTR-STOP®
EMB-STOP
SBT Systems

www.ktr.com

ATEX leaflet


Made for Motion KTR

Explosion Protection

The ATEX standard and the
KTR programme for explosion-proof applications

www.ktr.com

Company leaflet


Made for Motion KTR

Achieving Great Things Together

A Company Introduces Itself

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Made for Motion KTR

Certificates and Approvals

Being one of the first companies in the field of drive technology, KTR was certified in accordance with DIN EN ISO 9001 already in 1993, including the plants in Poland, China, India and USA.

Currently KTR products have been approved by numerous internationally renowned societies for standardization and classification. Individual approvals by other societies can be implemented on request without fail.

Legend of pictograms

~0°	Torsionally stiff
≤5°	Torsionally flexible
≤45°	Highly flexible
	Damping vibrations
	Axial plug-in
E	Consider shaft distance
E	Relatively short shaft distance
°C	Maximum operating temperature
	High speeds
	Backlash-free
	Shear type, separating, slipping
	Light-weight
ΔK_a	Axial compensation
ΔK_w	Angular compensation
ΔK_r	Radial compensation
	Shiftable at standstill
	Double-cardanic
	Radial disassembly, ease of service
	Standard drop-out centre lengths available
API	Available in accordance with API
Ex	Complying with ATEX For details refer to our ATEX leaflet
ABS	Certified in accordance with ABS
	Maintenance-free
	Protected against corrosion
	Electrically insulating
nmax X.000 rpm	Maximum speed
	No eddy current losses
~X°	Torque limiter slipping
360°	Torque limiter with synchronous ratcheting
T_{REST}	Torque limiter with idle rotation type
	Hardened surface
X%	Accuracy X %
	Consider axial displacement
	Additional features compared to standard version