



Company catalogue 2011

Couplings
Hydraulic Components
Torque Limiters
Torque Measurement
Clamping Elements

Made for Motion



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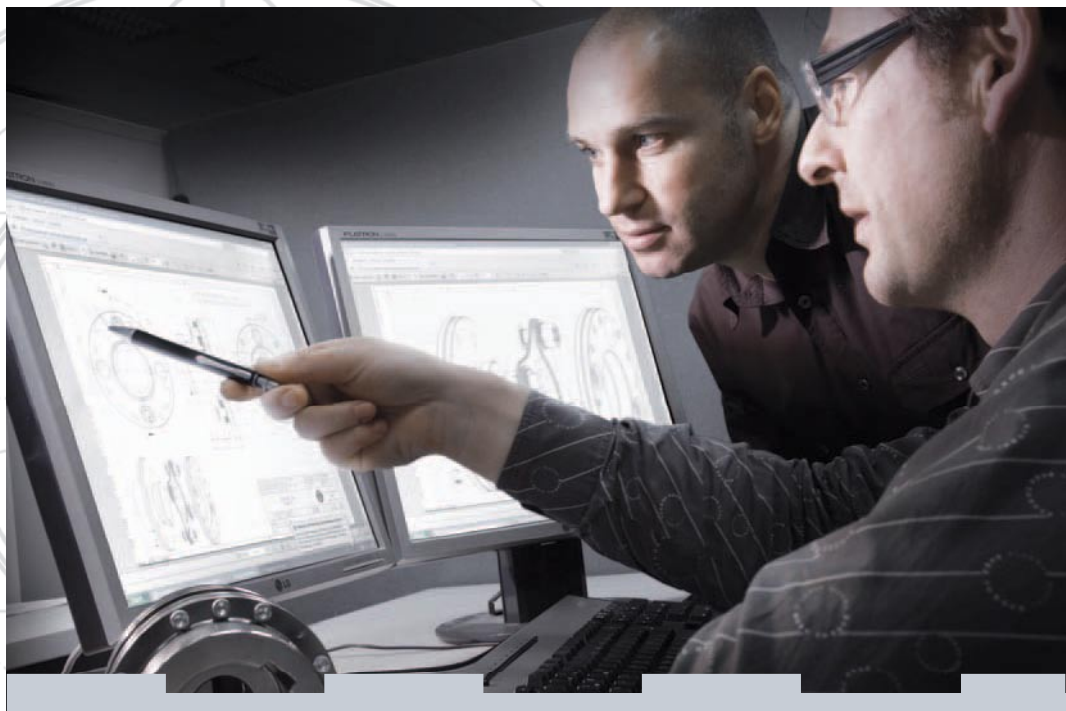
If you want to set things in motion: KTR

Competence meets creativity

As a leading manufacturer of high-quality drive and brake components, KTR supplies mechanical couplings, clamping sets, torque limiters, measuring systems, hydraulic components and high-power brakes all over the world. With more than 50 years experience in power transmission we are trendsetters in the development of coupling technology and offer customised solutions to all industries. The KTR trademark characterises quality and innovation, speed, reliability, flexibility and a close working relationship with customers.

Having started with the curved-tooth gear coupling BoWex® and the torsionally flexible jaw coupling ROTEX®, KTR has built up an extensive product portfolio covering torques from 0,1 to over 750.000 Nm. The production by KTR's in-house, up-to-date machinery ensures that the couplings are made to the utmost accuracy. The couplings having a unit weight of up to 2 tons. Flexible automation ensures a quick and low-cost production even if the product has to be customised to meet customers individual specifications. KTR produce several million couplings a year.

Even though KTR's standard product portfolio is quite extensive, it only represents a fraction of the different options available. KTR is not only a subcontractor but also a solution provider. The knowledge gained from thousands of applications in the field allows us to find optimum, low-cost solutions for customised applications. We will consult you during the planning stage providing drawings and prototypes or arranging for local discussions if required. Every year KTR produces more than 10.000 new products ordered by customers. This trend increases year on year. This leads to many special products becoming standard items: We permanently give vital ideas to the Power Transmission technology – in cooperation with our customers.



Accuracy meets speed

KTR products are evidence of well-designed, quality components resulting in improved characteristics of the drive or brake system and as a consequence, a longer service life. It is our aim to continually improve the quality of our products and services. We can analyse the stiffness of components by utilising FEM (Finite Element Method) system and we can also perform torsional vibration calculations for entire drive systems. In our in-house Research and Development Centre we test our products on accurate test benches in realistic operating conditions. Our main objective is to provide you with the uppermost satisfaction.

Our technical sales engineers and our well-trained sales staff will be pleased to give you advice. KTR provides you with extensive services online, too: At www.ktr.com you can request information, including our product catalogue, 3D-CAD-models and assembly instructions. For standard applications you can select your drive component from of more than 3.500 standard products. Having selected which one is the right component for your application by using our online calculation program, you are now in a position to order the products by contacting your nearest KTR company. Alternatively our KTR Shop is open 24 hours a day.

Our latest scheduling system SAP ERP ensures an optimum networking with our customers and allows for a quick and reliable delivery service. A selection of 3.500 couplings and hydraulic components are permanently available from stock. For orders placed by 2:00pm we guarantee the despatch of orders the same day! In the KTR Logistics Centre the overall flow of goods is supervised by radio-controlled barcode scanning. Leading distribution partners ensure delivery on time. Our tracking and tracing system allows you to follow the progress of your order at all times. KTR supplies to every location in the world.

For further details about us and our products:
www.ktr.com



Good is not good enough.

Inspected, optimized, certified

Our customers should not be satisfied with products being second best. That is why every member of the KTR staff takes a share in the responsibility for our products and services, while improving them continuously, starting with the right selection of the products to the reliable handling of orders. Moreover, we want to further improve the efficient utilization of energy and organize business processes while taking care of resources and the environment. It goes without saying that we are certified in accordance with DIN EN ISO 9001 and DIN EN ISO 14001.

Being one of the first companies in the range of drive technology, KTR was certified in accordance with DIN EN ISO 9001 already in 1993. Based on such international standards our business processes are optimized permanently.

KTR products correspond to industry-specific demands. Thus, all our products are type-approved and certified according to the strict standards set by Germanischer Lloyd (GL), American Bureau of Shipping (ABS), Det Norske Veritas (DNV) and Bureau Veritas (BVC). As a result they can be used in shipbuilding worldwide. It goes without saying that KTR couplings correspond to the strict standards of the pump industry, here in particular API 610, 671 and 685.

In this context please read through our brochures or consult with our sales engineers.



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Torsionally flexible pin & bush coupling

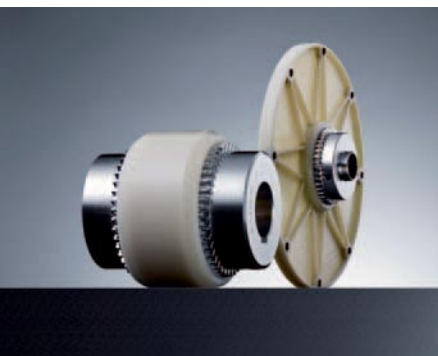
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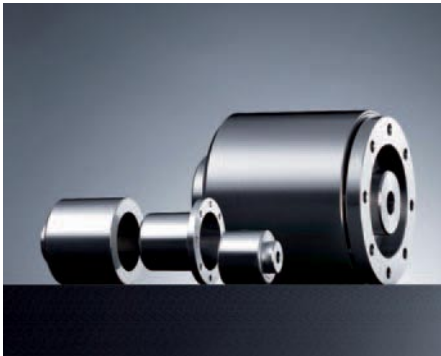
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What drives us now? Brakes. KTR-STOP®

No matter if your business is driven by raw wind, tremendous lifting forces or unrestrained torque, there is one thing which is essential: strong brakes! With our new KTR-STOP® brake system you will stop even heavy machines with rough ambient conditions safely.

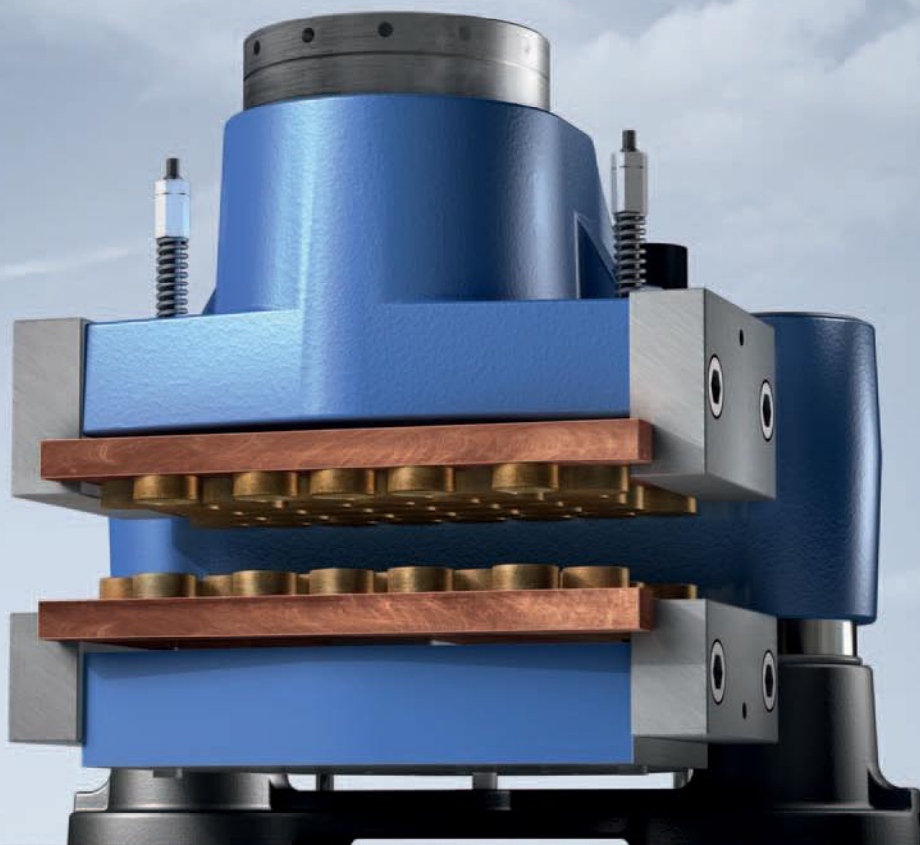
We have re-invented the brake

For many years we have been in the brake business. We have now put to good use this accumulated know-how and have performed tests on our test benches. Even the slightest weaknesses were eliminated via a detailed stop-and-go analysis, while all product benefits were consistently extended. The result is one of the most powerful and resistant brake systems you will find in the market at the moment.

The following are the benefits for you:

- Higher protection against atmospheric influences through full encapsulation and integrated dirt scrapers
- Less maintenance intervals and less operating expenses
- Longer service life
- Lower wear due to additional guiding systems „Wear Rings“
- Higher power density due to lower weight and more compact design
- Maximum utilisation of material of brake linings through a special design





All these benefits make KTR-STOP® the ideal brake system for the use in aggressive, rugged conditions – no matter whether Offshore applications, surface mining, mining or crane building are concerned. The offer is completed by suitable hydraulic power packs as well as an intelligent control system „IntelliRamp“ which allows controlled and well-coordinated braking processes. Our drive components will keep you going.

For further details and product data please have a look at our latest leaflet „KTR-STOP® brake systems“ which you can either order from us or download on our homepage.



KTR-STOP® Brake Systems

The efficient high-power brake

Made for Motion 

www.ktr.com



NEW T-PUR

ROTEX®

Torsionally flexible coupling

Made for Motion



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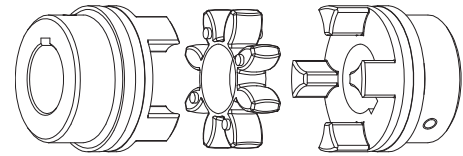


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Description of coupling

ROTEX® - couplings are characterized by small dimensions, low weight and low mass moments of inertia yet transmit high torques. Running quality and service life of the coupling are improved by accurate all-over machining.

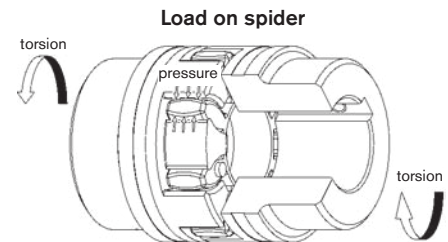
Their application is ideal for transmitting torque while damping torsional vibrations and absorbing shocks produced by the uneven operation of certain prime movers.



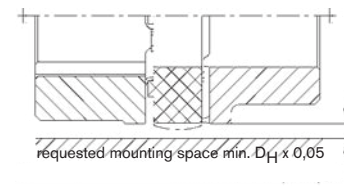
General description

ROTEX® - couplings are torsionally flexible and designed for positive torque transmission. They are fail-safe. Operational vibrations and shocks are efficiently dampened and reduced. The two congruent coupling halves with concave claws on the inside are periphally offset in relation to one another by half a pitch. In addition, they are designed in such a way as to enable an involute spider to be located between them.

The teeth of the spider are crowned to avoid edge pressure if the shafts are misaligned. ROTEX® couplings are capable of compensating for axial, radial and angular displacements of the shafts to be connected.



Deformation with load



Performance

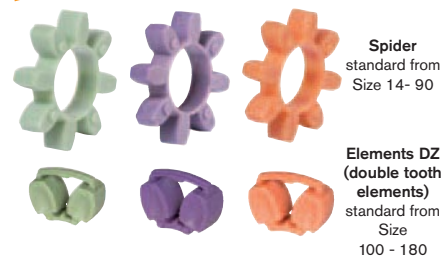
In contrast to other flexible couplings, the intermediate members of which are subject to bending stress and are therefore prone to earlier wear, the flexible teeth of ROTEX® couplings are subject to pressure only. This gives the additional advantage of the individual teeth being able to accept considerably higher loads. The elastomer parts show deformation with load and excessive speeds. Sufficient space for expansion should be ensured (see drawing – deformation with load).

The maximum torsion angle with ROTEX® couplings of any size amounts to 5°. They can be fitted both horizontally and vertically.

Spiders – New spider material T-PUR

KTR has developed a new standard material for its spiders. The improved polyurethane material **T-PUR** is resistant to significantly higher temperatures and has a considerably longer service life than the previous polyurethane material. From the visual point of view we have characterized the material **T-PUR** by the colours orange (92 Shore A), purple (98 Shore A) and pale green (64 Shore D). The previous spiders made from polyurethane in yellow, red and natural white with green ends will still be available. Up to size ROTEX® 90 inclusive single spiders are used. For ROTEX® couplings from size 100 to 180 the spider consists of DZ tooth segments as a standard. The single spider will still be available in these sizes as an option.

NEW

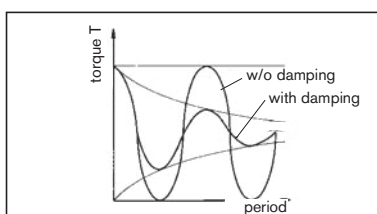


Explosion-proof use

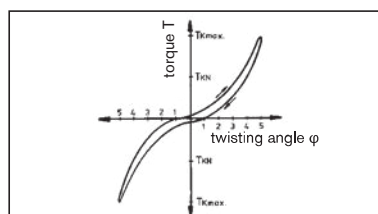
ROTEX® couplings are suitable for power transmission in drives in hazardous areas. The couplings are certified and confirmed according to EC standard 94/9/EC (ATEX 95) as units of category 2G/2D and thus suitable for the use in hazardous areas of zone 1, 2, 21 and 22. Please read through our information included in the respective Type Examination Certificate and the operating and mounting instructions at www.ktr.com.



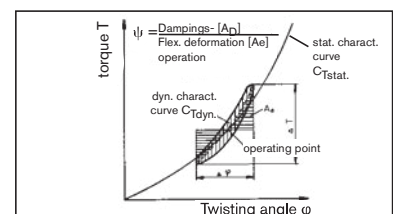
Comparison of loads



Twisting angle



Damping



Coupling selection

The ROTEX® coupling is selected in accordance with DIN 740 part 2. The coupling has to be dimensioned in a way that the permissible coupling load is not exceeded in any operating condition. For this purpose the actual loads have to be compared to the permissible parameters of the coupling. The torques T_{KN}/T_{Kmax} mentioned refer to the spider. The shaft-hub-connection has to be investigated by the customer.

1 Drives without periodical torsional vibrations

e. g. centrifugal pumps, fans, screw compressors, etc.

The coupling is selected taking into account the rated torques T_{KN} and maximum torque T_{Kmax} .

1.1 Load produced by rated torque

Taking into consideration the ambient temperature, the permissible rated torque T_{KN} of the coupling has to correspond at least to the rated torque T_N of the machine.

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

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

1.2 Load produced by torque shocks

The permissible maximum torque of the coupling has to correspond at least to the total of peak torque T_S and the rated torque T_N of the machine, taking into account the shock frequency Z and the ambient temperature.

This applies in case if the rated torque T_N of the machine is at the same time subject to shocks.

Knowing the mass distribution, shock direction and shock mode, the peak torque T_S can be calculated.

For drives with A. C.-motors with high masses on the load side we would recommend to calculate the peak driving torque with the help of our simulation programme.

$$T_{Kmax} \geq T_S \cdot S_z \cdot S_t + T_N \cdot S_t$$

$$\text{Drive-sided shock } T_S = T_{AS} \cdot M_A \cdot S_A$$

$$\text{Load-sided shock } T_S = T_{LS} \cdot M_L \cdot S_L$$

$$M_A = \frac{J_L}{J_A + J_L} \quad M_L = \frac{J_A}{J_A + J_L}$$

2. **Drives with periodical torsional vibrations.** For drives subject to high torsional vibrations, e. g. diesel engines, piston compressors, piston pumps, generators, etc., it is necessary to perform a torsional vibration calculation to ensure a safe operation. If requested, we perform the torsional vibration calculation and the coupling selection in our company. For necessary details please see KTR standard 20004.

2.1 Load produced by rated torque

Taking into account the ambient temperature, the permissible rated torque T_{KN} of the coupling has to correspond at least to the rated torque T_N of the machine.

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

2.2 Passing through the resonance range

Taking into account the temperature, the peak torque T_S arising when the resonance range is run through must not exceed the maximum torque T_{Kmax} of the coupling.

$$T_{Kmax} \geq T_S \cdot S_t$$

2.3 Load produced by vibratory torque shocks

Taking into account the ambient temperature, the permissible vibratory torque T_{KW} of the coupling must not be exceeded by the highest periodical vibratory torque T_W with operating speed.

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

$$P_{KW} \geq P_W$$

For higher operating frequencies $f > 10$, the heat produced by damping in the elastomer part 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 produced.

Description	Symbol	Definition or explanation
Rated torque of coupling	T_{KN}	Torque that can continuously be transmitted over the entire permissible speed range
Maximum torque of coupling	T_{Kmax}	Torque that can be transmitted as dynamic load $\geq 10^5$ times or 5×10^4 as vibratory load, respectively, during the entire operating life of the coupling
Vibratory torque of coupling	T_{KW}	Torque amplitude of the permissible periodical torque fluctuation with a frequency of 10 Hz and a basic load of T_{KN} or dynamic load up to T_{KN} , respectively
Damping power of coupling	P_{KW}	Permissible damping power with an ambient temperature of + 30 °C.
Rated torque of machine	T_N	Stationary rated torque on the coupling
Rated torque of driving side	T_{AN}	Rated torque of machine, calculated from rated power and rated speed
Rated torque of load side	T_{LN}	Maximum figure of the load torque calculated from power and speed
Peak torque of machine	T_S	Peak torque on the coupling
Peak torque on the driving side	T_{AS}	Peak torque with torque shock on the driving side, e. g. breakdown torque of the electric motor

Description	Symbol	Definition or explanation
Peak torque of load side	T_{LS}	Peak torque with torque shock on load side, e. g. braking
Vibratory torque of machine	T_W	Amplitude of the vibratory torque effective on the coupling
Damping power of the machine	P_W	Damping power which is effective on the coupling due to the load produced by the vibratory torque
Moment of inertia of driving side	J_A	Total of moments of inertia existing on the driving or load side referring to the coupling speed
Moment of inertia of load side	J_L	
Rotational inertia coefficient of driving side	M_A	Factor taking into account the mass distribution with shocks and vibrations produced on the driving or load side
Rotational inertia coefficient of load side	M_L	
		$M_A = \frac{J_L}{(J_A + J_L)} \quad M_L = \frac{J_A}{(J_A + J_L)}$

Permissible load on feather key of the coupling hub

The shaft-hub-connection has to be verified by the customer. Permissible surface pressure according to DIN 6892 (method C).

Cast iron GJL 225 N/mm²
Stell 250 N/mm²

nodular iron GJS 225 N/mm²

Coupling selection

Service factor temperature S_t											
	-50 °C	-30 °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	1,1	1,2	1,3	1,45	1,6	1,8	2,1	2,5	3,0
PUR	–	1,0	1,2	1,3	1,4	1,55	1,8	2,2	–	–	–

For the selection with PEEK and spiders from wire a temperature factor is not necessary.
For temperature factors for PA spiders see page 27.

Service factor S_Z for starting frequency				
starting frequency/h	100	200	400	800
S_Z	1,0	1,2	1,4	1,6

Service factor S_A/S_L for shocks	
	S_A/S_L
gentle shocks	1,5
average shocks	1,8
heavy shocks	2,5

Example of calculation of standard IEC motors shown on page 22:

Given: Details of driving side

A. C. motor type 315 L $\Rightarrow S_A = 1,8$
 Motor output $P = 160 \text{ kW}$
 Speed $n = 1485 \text{ rpm}$
 Moment of inertia driven side $J_A = 2,9 \text{ kgm}^2$
 Start-up frequency $z = 6^{1/h} \Rightarrow S_Z = 1,0$
 Ambient temperature $= +70 \text{ °C} \Rightarrow S_t = 1,45$ using T-PUR

Given: Details of load side

Screw compressor
 Rated torque of load side $T_{LN} = 930 \text{ Nm}$
 Moment of inertia of load side $J_L = 6,8 \text{ kgm}^2$

Calculation

● Rated driving torque

$$T_{AN} [\text{Nm}] = 9550 \frac{P_{AN} [\text{kW}]}{n_{AN} [\text{rpm}]}$$

$$T_{AN} = 9550 \cdot \frac{160 \text{ kW}}{1485 \text{ rpm}} = 1029 \text{ Nm}$$

Coupling selection:

● Load produced by rated torque

$$T_{KN} \geq T_{LN} \cdot S_t$$

$$T_{KN} \geq 930 \text{ Nm} \cdot 1,45 = 1348,5 \text{ Nm}$$

Selected: ROTEX® Size 90 - spider 92 Shore A with:

$T_{KN} = 2400 \text{ Nm}$
 $T_{K \max} = 4800 \text{ Nm}$

● Load produced by torque shocks

$$T_{K \max} \geq T_S \cdot S_Z \cdot S_t$$

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

$$M_A = \frac{J_L}{(J_A + J_L)} = \frac{(6,8 \text{ kgm}^2 + 0,0673 \text{ kgm}^2)}{(2,9 \text{ kgm}^2 + 0,0673 \text{ kgm}^2 + 6,8 \text{ kgm}^2 + 0,0673 \text{ kgm}^2)} = 0,7$$

● Driving torque

$$T_{AS} = 2,0 \cdot T_{AN}$$

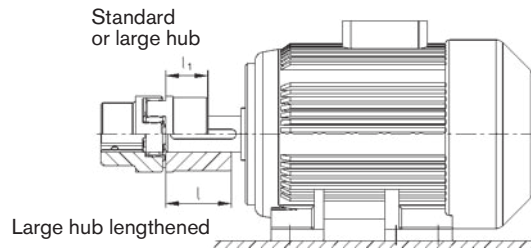
$$= 2,0 \cdot 1029 \text{ Nm} = 2058 \text{ Nm}$$

$$T_S = 2058 \text{ Nm} \cdot 0,7 \cdot 1,8 = 2593,1 \text{ Nm}$$

$$T_{K \max} \geq 2593,1 \text{ Nm} \cdot 1 \cdot 1,45 = 3760 \text{ Nm}$$

$$T_{K \max} \text{ with } 4800 \text{ Nm} \geq 3760 \text{ Nm} \quad \checkmark$$

Selection of standard IEC motors



ROTEX® couplings for standard IEC motors, protection IP 54/IP 55 (spider 92 Shore A)														
A. C. motor 50 Hz			Motor output n = 3000 1/min 2-pole		ROTEX® coupling size	Motor output n = 1500 1/min 4-pole		ROTEX® coupling size	Motor output n = 1000 1/min 6-pole		ROTEX® coupling size	Motor output n = 750 1/min 8-pole		ROTEX® coupling size
Size	Shaft end dxl [mm]		Output P [kW]	Torque T [Nm]		Output P [kW]	Torque T [Nm]		Output P [kW]	Torque T [Nm]		Output P [kW]	Torque T [Nm]	
	2-pole	4,6,8 pole												
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	14	0,12	0,88	14	0,06	0,7	14			
			0,25	0,86		0,18	1,3		0,09	1,1				
71	14 x 30		0,37	1,3	19	0,25	1,8	19	0,18	2	19	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	24	0,55	3,7	24	0,37	3,9	24	0,18	2,5	19
			1,1	3,7		0,75	5,1		0,55	5,8		0,25	3,5	
90S	24 x 50		1,5	5	28	1,1	7,5	28	0,75	8	28	0,37	5,3	24
90L			2,2	7,4		1,5	10		1,1	12		0,55	7,9	
100L	28 x 60		3	9,8	38	2,2	15	38	1,5	15	38	0,75	11	38
				3		20			1,5	15		1,1	16	
112M	38 x 80		4	13	42	4	27	42	2,2	22	42	1,5	21	42
			5,5	18			3		30	2,2		30		
132S	38 x 80		7,5	25	48	5,5	36	48	3	30	48	2,2	30	48
							4		40	5,5		55	3	
132M	42 x 110				55	7,5	49	55			55			55
			11	36			11		72	7,5		75	4	
160M	48 x 110		15	49	65	15	98	65	7,5	75	65	5,5	74	65
160L			18,5	60		18,5	121		11	109		7,5	100	
180M	55 x 110		22	71	75	22	144	75	15	148	75	11	145	75
180L									18,5	181		15	198	
200L	65 x 140		30	97	90	30	196	90	22	215	90	15	198	90
			37	120					22	215				
225S	55 x 110	60 x 140			100	37	240	100			100	18,5	244	100
225M			45	145		45	292		30	293		55	22	
250M	60 x 140	65 x 140	55	177	110	55	356	110	37	361	110	30	392	110
280S			75	241		75	484		45	438		37	483	
280M		75 x 140	90	289	125	90	581	125	55	535	125	45	587	125
315S			110	353		110	707		75	727		55	712	
315M	65 x 140	80 x 170	132	423	140	132	849	140	90	873	140	75	971	140
			160	513		160	1030		110	1070		90	1170	
315L		85 x 170	200	641	160	200	1290	160	132	1280	160	110	1420	160
									160	1550		132	1710	
315		85 x 170	250	802	180	250	1600	180	200	1930	180	160	2070	180
			315	1010		315	2020		250	2410		200	2580	
355	75 x 140	95 x 170	355	1140	200	355	2280	200			200			200
			400	1280		400	2570		315	3040		110	250	
			500	1600	220	500	3210	220	400	3850	220	315	4060	220
			560	1790		560	3580		450	4330		355	4570	
400	80 x 170	110 x 210	630	2020	250	630	4030	250	500	4810	250	400	5150	250
			710	2270		710	4540		560	5390		450	5790	
			800	2560	280	800	5120	280	630	6060	280	500	6420	280
			900	2880		900	5760		710	6830		560	7190	
450	90 x 170	120 x 210	1000	3200	315	1000	6400	315	800	7690	315	630	8090	315

The arrangement of couplings is valid for an ambient temperature of up to + 30 °C. For the selection there is a minimum safety factor of 2 of the max. coupling torque (T_{Kmax}).

A detailed arrangement is possible according to catalogue, page 20 and 21. Drives with periodical torque curves must be selected according to DIN 740 part 2. If requested, KTR will make the selection.

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

¹⁾ For dimensions see ROTEX® GS line

²⁾ Motor hub from steel see page 31

Overview spiders

Overview spiders						
Colour		Spider type hardness shore	Material	Perm. temperature range (°C)		Properties
				Continuous temp.	Max. temp. short time	
		92Sh-A (T-PUR)	T-PUR	-50 °C to 120 °C	-50 °C to 150 °C	– significantly longer service life – very good temperature resistance – improved damping of vibrations – good damping, average elasticity
		92 Sh-A	Polyurethane (PUR)	-40 °C to 90 °C	-50 °C to 120 °C	– good damping, average elasticity
		98Sh-A (T-PUR)	T-PUR	-50 °C to 120 °C	-50 °C to 150 °C	– significantly longer service life – very good temperature resistance – improved damping of vibrations – transmission of high torques with average damping
		98Sh-A	Polyurethane (PUR)	-30 °C to 90 °C	-40 °C to 120 °C	– transmission of high torques with average damping
		64Sh-D (T-PUR)	T-PUR	-50 °C to 120 °C	-50 °C to 150 °C	– significantly longer service life – very good temperature resistance – improved damping of vibrations – transmission of very high torques with low damping
		64Sh-D-F	Polyurethane (PUR)	-30 °C to 110 °C	-30 °C to 130 °C	– transmission of very high torques with low damping – suitable for displacing critical speeds
		PA ¹⁾	Polyamide	-20 °C to 130 °C ¹⁾	-30 °C to 150 °C ¹⁾	– low twisting angles and high torsion spring stiffness – transmission of very high torques with very low damping – very good to good resistance to chemicals ¹⁾
		PEEK	Polyetheretherketone	to + 180 °C (ATEX to 160 °C)	to + 250 °C	– low twisting angles and high torsion spring stiffness – transmission of very high torques with very low damping – highly temperature resistant – good resistance to chemicals – resistant to hydrolysis
		Spider from wire	Stainless steel	to + 250 °C	–	– transmission of high torques with average damping – highly temperature resistant – very good resistance to chemicals – resistant to hydrolysis – technical data according to 98 Sh A

¹⁾ different properties depending on compound

Torque of spiders

ROTEX® Size	increasing hardness →									
	92 Shore A		98 Shore A		64 Shore D		PA, PEEK		Spider from wire	
	T _{KN}	T _{K max}	T _{KN}	T _{K max}	T _{KN}	T _{K max}	T _{KN}	T _{K max}	T _{KN}	T _{K max}
14	7,5	15	12,5	25	16	32	–	–	12,5	25
19	10	20	17	34	21	42	30	60	17	34
24	35	70	60	120	75	150	105	210	60	120
28	95	190	160	320	200	400	280	560	160	320
38	190	380	325	650	405	810	565	1130	325	650
42	265	530	450	900	560	1120	785	1570	450	900
48	310	620	525	1050	655	1310	915	1830	525	1050
55	410	820	685	1370	825	1650	1200	2400	685	1370
65	625	1250	940	1880	1175	2350	1645	3290	940	1880
75	1280	2560	1920	3840	2400	4800	2560	5130	1920	3840
90	2400	4800	3600	7200	4500	9000	6300	12600	3600	7200
100	3300	6600	4950	9900	6185	12370	8650	17300	–	–
110	4800	9600	7200	14400	9000	18000	10500	21000	–	–
125	6650	13300	10000	20000	12500	25000	13000	26000	–	–
140	8550	17100	12800	25600	16000	32000	–	–	–	–
160	12800	25600	19200	38400	24000	48000	–	–	–	–
180	18650	37300	28000	56000	35000	70000	–	–	–	–

For details see page 24, 25, 26 and 27.

Technical data and properties of spider 92 Shore A

			
Spider type (hardness shore)	92 Shore A (T-PUR)	DZ 92 Shore A (T-PUR)	92 Shore A
Size	14 to 90	100 to 180	14 to 90
Material	T-PUR		Polyurethane (PUR)
Perm. temperature range	-50 °C to +120 °C -50 °C to +150 °C		-40 °C to +90 °C -50 °C to +120 °C
Continuous temperature			
Max. temperature short time			
Properties	– significantly longer service life – very good temperature resistance – improved damping of vibrations – good damping, average elasticity – suitable for all hub materials		– good damping, average elasticity – suitable for all hub materials

ROTEX® Size	Twist angle φ with		Torque [Nm]			Damping power- with P_{KW} [W] ¹⁾	Torsion spring stiffness C dyn. [Nm/rad]				
	T_{KN}	$T_{K\ max}$	Rated(T_{KN})	Max ($T_{K\ max}$)	Vibratory (T_{KW})		1,0 T_{KN}	0,75 T_{KN}	0,5 T_{KN}	0,25 T_{KN}	
Spider from polyurethane 92 Shore A											
14	6,4°	10°	7,5	15	2,0	–	0,38x10³	0,31x10³	0,24x10³	0,14x10³	
19			10	20	2,6	4,8	1,28x10³	1,05x10³	0,80x10³	0,47x10³	
24			35	70	9,1	6,6	4,86x10³	3,98x10³	3,01x10³	1,79x10³	
28			95	190	25	8,4	10,90x10³	8,94x10³	6,76x10³	4,01x10³	
38			190	380	49	10,2	21,05x10³	17,26x10³	13,05x10³	7,74x10³	
42			265	530	69	12,0	23,74x10³	19,47x10³	14,72x10³	8,73x10³	
48			310	620	81	13,8	36,70x10³	30,09x10³	22,75x10³	13,49x10³	
55			410	820	107	15,6	50,72x10³	41,59x10³	31,45x10³	18,64x10³	
65	3,2°	5°	625	1250	163	18,0	97,13x10³	79,65x10³	60,22x10³	35,70x10³	
75			1280	2560	333	21,6	113,32x10³	92,92x10³	70,26x10³	41,65x10³	
90			2400	4800	624	30,0	190,09x10³	155,87x10³	117,86x10³	69,86x10³	
100			3300	6600	858	36,0	253,08x10³	207,53x10³	156,91x10³	93,01x10³	
110			4800	9600	1248	42,0	311,61x10³	255,52x10³	193,20x10³	114,52x10³	
125			6650	13300	1729	48,0	474,86x10³	389,39x10³	294,41x10³	174,51x10³	
140			8550	17100	2223	54,6	660,49x10³	541,60x10³	409,50x10³	242,73x10³	
160			12800	25600	3328	75,0	890,36x10³	730,10x10³	552,03x10³	327,21x10³	
180			18650	37300	4849	78,0	2568,56x10³	2106,22x10³	1592,51x10³	943,95x10³	

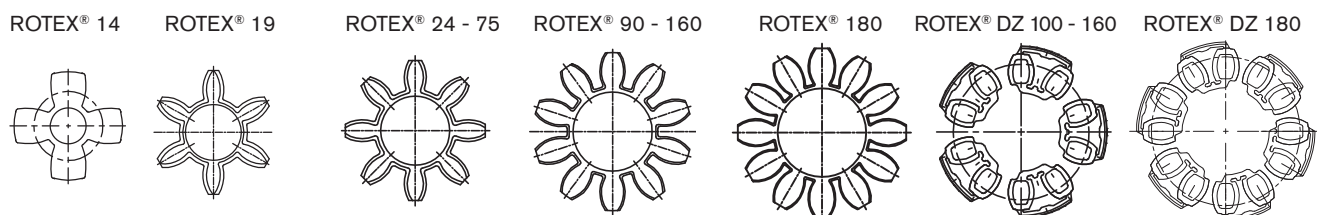
Service factor temperature S_t											
	-50 °C	-30 °C +30 °C	+40 °C	+50 °C	+60 °C	+70 °C	+80 °C	+90 °C	+100 °C	+110 °C	+120 °C
T-PUR	1,0	1,0	1,1	1,2	1,3	1,45	1,6	1,8	2,1	2,5	3,0
PUR	–	1,0	1,2	1,3	1,4	1,55	1,8	2,2	–	–	–

Spider from polyurethane	92 Shore A
Relative Damping ψ_R [-]	0,80
Resonance factor V_R [-]	7,90

Unless explicitly specified in your order, we will supply spiders with Shore hardness 92 A.

For peripheral speeds exceeding $V = 35$ m/sec., we would recommend only steel or nodular iron, respectively. Dynamic balancing required.

¹⁾ with +30 °C



Technical data and properties of spider 95/98 Shore A

			
Spider type (hardness shore)	98 Shore A (T-PUR)	DZ 95 Shore A (T-PUR)	98 Shore A
Size	14 to 90	100 to 180	14 to 90
Material	T-PUR		Polyurethane (PUR)
Perm. temperature range	-50 °C to +120 °C		-30 °C to +90 °C
Continuous temperature	-50 °C to +150 °C		-40 °C to +120 °C
Max. temperature short time			
Properties	– significantly longer service life – 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

ROTEX® Size	Twist angle φ with		Torque [Nm]			Damping power- with P_{KW} [W] ¹⁾	Torsion spring stiffness C dyn. [Nm/rad]			
	T _{KN}	T _{K max}	Rated(T _{KN})	Max (T _{K max})	Vibratory (T _{KW})		1,0 T _{KN}	0,75 T _{KN}	0,5 T _{KN}	0,25 T _{KN}
Spider from polyurethane 98 Shore A (from size 65: 95 Shore A)										
14	6,4°	10°	12,5	25	3,3	–	0,56x10³	0,46x10³	0,35x10³	0,21x10³
19			17	34	4,4	4,8	2,92x10³	2,39x10³	1,81x10³	1,07x10³
24			60	120	16	6,6	9,93x10³	8,14x10³	6,16x10³	3,65x10³
28			160	320	42	8,4	26,77x10³	21,95x10³	16,60x10³	9,84x10³
38			325	650	85	10,2	48,57x10³	39,83x10³	30,11x10³	17,85x10³
42			450	900	117	12,0	54,50x10³	44,69x10³	33,79x10³	20,03x10³
48			525	1050	137	13,8	65,29x10³	53,54x10³	40,48x10³	24,00x10³
55			685	1370	178	15,6	94,97x10³	77,88x10³	58,88x10³	34,90x10³
65	3,2°	5°	940	1880	244	18,0	129,51x10³	106,20x10³	80,30x10³	47,60x10³
75			1920	3840	499	21,6	197,50x10³	161,95x10³	122,45x10³	72,58x10³
90			3600	7200	936	30,0	312,20x10³	256,00x10³	193,56x10³	114,73x10³
100			4950	9900	1287	36,0	383,26x10³	314,27x10³	237,62x10³	140,85x10³
110			7200	14400	1872	42,0	690,06x10³	565,85x10³	427,84x10³	253,60x10³
125			10000	20000	2600	48,0	1343,64x10³	1101,79x10³	833,06x10³	493,79x10³
140			12800	25600	3328	54,6	1424,58x10³	1168,16x10³	883,24x10³	523,54x10³
160			19200	38400	4992	75,0	2482,23x10³	2035,43x10³	1538,98x10³	912,22x10³
180			28000	56000	7280	78,0	3561,45x10³	2920,40x10³	2208,10x10³	1308,84x10³

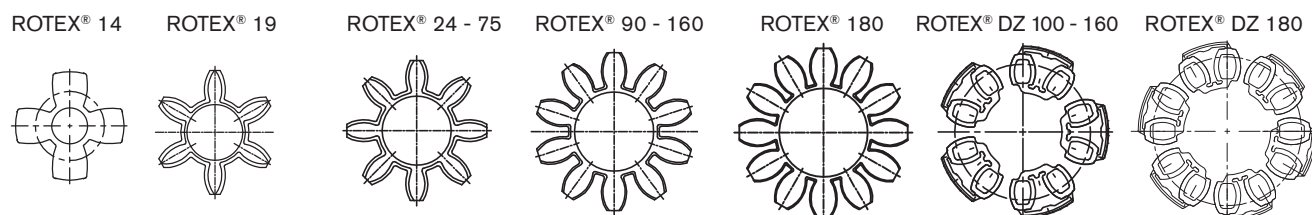
Service factor temperature S_t											
	-50 °C	-30 °C +30 °C	+40 °C	+50 °C	+60 °C	+70 °C	+80 °C	+90 °C	+100 °C	+110 °C	+120 °C
T-PUR	1,0	1,0	1,1	1,2	1,3	1,45	1,6	1,8	2,1	2,5	3,0
PUR	–	1,0	1,2	1,3	1,4	1,55	1,8	2,2	–	–	–

Spider from polyurethane	95/98 Shore A
Relative Damping ψ_r [-]	0,80
Resonance factor V_R [-]	7,90

Unless explicitly specified in your order, we will supply spiders with Shore hardness 92 A.

For peripheral speeds exceeding $V = 35$ m/sec., we would recommend only steel or nodular iron, respectively. Dynamic balancing required.

¹⁾ with +30 °C



Technical data and properties of spider 64 Shore D

			
Spider type (hardness shore)	64 Shore D (T-PUR)	DZ 64 Shore D (T-PUR)	64 Shore D
Size	14 to 90	100 to 180	14 to 90
Material	T-PUR		Polyurethane (PUR)
Perm. temperature range	-50 °C to +120 °C		-30 °C to +110 °C
Continuous temperature	-50 °C to +150 °C		-30 °C to +130 °C
Max. temperature short time			
Properties	– significantly longer service life – very good temperature resistance – improved damping of vibrations – transmission of very high torques with low damping – recommended hub material: Steel and GJS		– transmission of very high torques with low damping – suitable for displacing critical speeds – resistant to hydrolysis – recommended hub material: Steel and GJS

ROTEX® Size	Twist angle φ with		Torque [Nm]			Damping power- with P _{KW} [W] ²⁾	Torsion spring stiffness C dyn. [Nm/rad]			
	T _{KN}	T _{K max}	Rated(T _{KN})	Max (T _{K max})	Vibratory (T _{KW})		1,0 T _{KN}	0,75 T _{KN}	0,5 T _{KN}	0,25 T _{KN}
Spider from polyurethane 64 Shore D										
14	4,5°	7,0°	16	32	4,2	9,0	0,76x10 ³	0,62x10 ³	0,47x10 ³	0,28x10 ³
19 ¹⁾			21	42	5,5	7,2	5,35x10 ³	4,39x10 ³	3,32x10 ³	1,97x10 ³
24			75	150	19,5	9,9	15,11x10 ³	12,39x10 ³	9,37x10 ³	5,55x10 ³
28			200	400	52	12,6	27,52x10 ³	22,57x10 ³	17,06x10 ³	10,12x10 ³
38			405	810	105	15,3	70,15x10 ³	57,52x10 ³	43,49x10 ³	25,78x10 ³
42			560	1120	146	18,0	79,86x10 ³	65,49x10 ³	49,52x10 ³	29,35x10 ³
48			655	1310	170	20,7	95,51x10 ³	78,32x10 ³	59,22x10 ³	35,10x10 ³
55			825	1650	215	23,4	107,92x10 ³	88,50x10 ³	66,91x10 ³	39,66x10 ³
65	2,5°	3,6°	1175	2350	306	27,0	151,09x10 ³	123,90x10 ³	93,68x10 ³	55,53x10 ³
75			2400	4800	624	32,4	248,22x10 ³	203,54x10 ³	153,90x10 ³	91,22x10 ³
90			4500	9000	1170	45,0	674,52x10 ³	553,11x10 ³	418,20x10 ³	247,89x10 ³
100			6185	12370	1608	54,0	861,17x10 ³	706,16x10 ³	533,93x10 ³	316,48x10 ³
110			9000	18000	2340	63,0	1138,59x10 ³	933,64x10 ³	705,92x10 ³	418,43x10 ³
125			12500	25000	3250	72,0	1435,38x10 ³	1177,01x10 ³	889,93x10 ³	527,50x10 ³
140			16000	32000	4160	81,9	1780,73x10 ³	1460,20x10 ³	1104,05x10 ³	654,42x10 ³
160			24000	48000	6240	112,5	3075,80x10 ³	2522,16x10 ³	1907,00x10 ³	1130,36x10 ³
180			35000	70000	9100	117,0	6011,30x10 ³	4929,27x10 ³	3727,01x10 ³	2209,15x10 ³

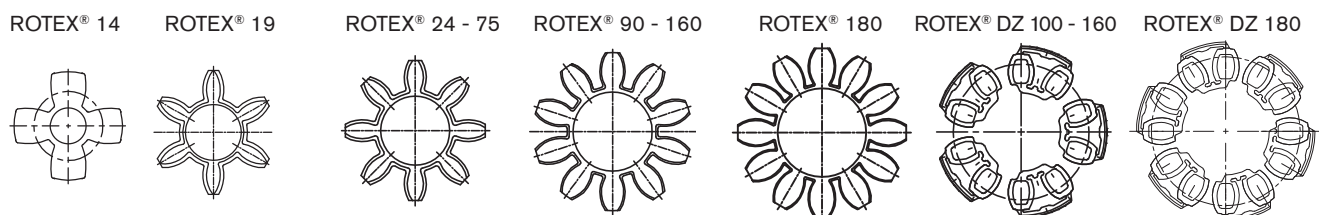
Service factor temperature S_t											
	-50 °C	-30 °C +30 °C	+40 °C	+50 °C	+60 °C	+70 °C	+80 °C	+90 °C	+100 °C	+110 °C	+120 °C
T-PUR	1,0	1,0	1,1	1,2	1,3	1,45	1,6	1,8	2,1	2,5	3,0
PUR	–	1,0	1,2	1,3	1,4	1,5	1,6	1,8	2,0	2,5	–

Spider from polyurethane	64 Shore D
Relative Damping ψ_R [-]	0,75
Resonance factor V_R [-]	8,50

Unless explicitly specified in your order, we will supply spiders with Shore hardness 92 A.

For peripheral speeds exceeding $V = 35$ m/sec., we would recommend only steel or nodular iron, respectively. Dynamic balancing required.

¹⁾ only at 64 Sh D-H ²⁾ with +30 °C



Technical data and properties of special spider

			 NEW
Spider type	PA	PEEK	Spider from wire
Material	Polyamide	Polyetheretherketone	stainless steel
Perm. temperature range			
Continuous temperature	-20°C to +130 °C ¹⁾	to +180 °C (ATEX to +160 °C)	to +250 °C
Max. temperature short time	-30 °C to +150 °C ¹⁾	to +250 °C	–
Properties	– low twisting angles and high torsion spring stiffness – transmission of very high torques with very low damping – very good to good resistance to chemicals ¹⁾ – recommended hub material: Steel	– low twisting angles and high torsion spring stiffness – transmission of very high torques with very low damping – highly temperature resistant, resistant to hydrolysis – good to good resistance to chemicals – recommended hub material: Steel	– transmission of high torques with average damping – highly temperature resistant, resistant to hydrolysis – very good to good resistance to chemicals – recommended hub material: Steel, GJL and hard coated ALU – technical data according to 98 Sh A

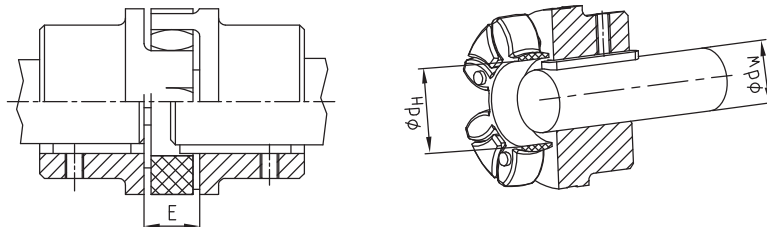
¹⁾ Different properties depending on compound

Torques						
ROTEX® Size	PA, PEEK			Spider from wire		
	T _{KN}	T _{K max}	T _{KW}	T _{KN}	T _{K max}	T _{KW}
14	22	44	5,5	12,5	25	3,3
19	30	60	8,0	17	34	4,4
24	105	210	27,5	60	120	16
28	280	560	73	160	320	42
38	565	1130	147	325	650	85
42	785	1570	204	450	900	117
48	915	1830	238	525	1050	137
55	1200	2400	312	685	1370	178
65	1645	3290	427	940	1880	244
75	2560	5130	667	1920	3840	499
90	6300	12600	1640	3600	7200	936
100	8650	17300	2250	–	–	–
110	10500	21000	2730	–	–	–
125	13000	26000	3380	–	–	–

Service factor temperature S _t												
	-50 °C	-30 °C +30 °C	+40 °C	+50 °C	+60 °C	+70 °C	+80 °C	+90 °C	+100 °C	+110 °C	+120 °C	+180 °C
PA	–	1,0	1,15	1,25	1,4	1,6	1,9	2,3	3,0	–	–	–
PEEK	–	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
Spider from wire	–	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0

Installation spider

Shaft with keyway (acc. DIN 6885 sh.1) protruding into the spider $\varnothing d_W$



Mounting dimension																	
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 d _H	10	18	27	30	38	46	51	60	68	80	100	113	127	147	165	190	220
Dimension d _W	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 corresponds to the dimension d_H, one shaft end or both shaft ends may protrude with the feather key in the spider.

Cylindrical bores and spline bores

[illegible]

GG = EN-GJL-250

Basic programme SAE involute spline											
Spline code	Size	Pitch circle	Pitch	No. of teeth	Angle	Spline code	Size	Pitch circle	Pitch	No. of teeth	Angle
PH-S	$\frac{5}{8}$ "	14,28	16/32	9	30°	PS-S	1 $\frac{1}{2}$ "	35,98	12/24	17	30°
PI-S	$\frac{3}{4}$ "	17,46	16/32	11	30°	PD-S	1 $\frac{1}{2}$ "	36,51	16/32	23	30°
PB-S	$\frac{7}{8}$ "	20,63	16/32	13	30°	PE-S	1 $\frac{3}{4}$ "	42,86	16/32	27	30°
PB-BS	1"	23,81	16/32	15	30°	PK	1 $\frac{3}{4}$ "	41,275	8/16	13	30°
PJ	1 $\frac{1}{8}$ "	26,98	16/32	17	30°	PT-C ¹⁾	2"	47,625	8/16	15	30°
PC-S	1 $\frac{1}{4}$ "	29,63	12/24	14	30°	PQ-C ¹⁾	2 $\frac{1}{4}$ "	53,975	8/16	17	30°
PA-S	1 $\frac{3}{8}$ "	33,33	16/32	21	30°						

Basic programme spline bores to DIN 5482									
Size	Pitch circle	Pitch	No. of teeth	Profile correctio	Size	Pitch circle	Pitch	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	-0,2	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 spline bores 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 7H	18,0	1	18	40 x 2	x 18 x 7H	36,0	2	18
20 x 1,25	x 14 x 7H	17,5	1,25	14	45 x 2	x 21 x 7H	41,0	2	21
25 x 1,25	x 18 x 7H	22,5	1,25	18	48 x 2	x 22 x 9H	44,0	2	22
28 x 1,25	x 21 x 7H	26,25	1,25	21	50 x 2	x 24 x 7H	48,0	2	24
30 x 2	x 14 x 7H	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 7H	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 spline bores to DIN 9611				
Size	Width of keyway	No. of teeth	Tip circle	Root circle
1 $\frac{3}{8}$ " $\frac{1}{8}$ "	8,69	6	34,93	29,65

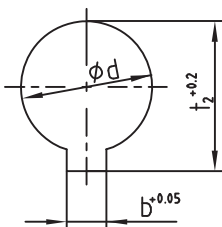
Spline clamping hubs are often adapted to the shafts of hydraulic pumps/hydraulic motors. Please ask us about the corresponding hub length of the spline code!

¹⁾ For clamping hubs only, for plug-in hubs use code PT or PQ.

2) spline correction different with DIN

Inch bores and taper bores

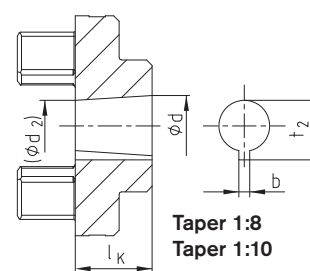
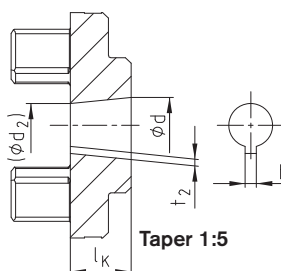
ROTEX® Size					19	24	28	38	42	48	55	65	75	90
Material					St	St	St	GJL	GJL	GJL	GJL	GJL	GJL	GJL
Code	Ød	Ød Inch	b ^{+0,05}	t ₂ ^{+0,2}										
Tb	9,5 ^{+0,03}	³ / ₈	3,17	11,1										
DNB	11,11 ^{M7}	⁷ / ₁₆	2,4	12,5										
T	12,69 ^{H7}	¹ / ₂	4,75	14,6										
Ta	12,7 ^{+0,03}	¹ / ₂	3,17	14,3	●	●								
DNC	13,45 ^{H7}	¹⁷ / ₃₂	3,17	14,9										
Do	14,29 ^{+0,03}	⁹ / ₁₆	3,17	15,6										
E	15,87 ^{+0,03}	⁵ / ₈	3,17	17,5										
Es	15,88 ^{+0,03}	⁵ / ₈	4,00	17,7	●	●	●							
Ed	15,87 ^{+0,03}	⁵ / ₈	4,75	18,1	●	●								
DNH	17,465 ^{H7}	¹¹ / ₁₆	4,75	19,6										
Ad	19,02 ^{+0,03}	³ / ₄	3,17	20,7										
A	19,05 ^{+0,03}	³ / ₄	4,78	21,3	●	●	●	●						
Gs	22,22 ^{+0,03}	⁷ / ₈	4,78	24,4	●									
G	22,22 ^{+0,03}	⁷ / ₈	4,75	24,7	●	●	●	●	●					
F	22,22 ^{+0,03}	⁷ / ₈	6,38	25,2		●	●	●	●	●				
Gd	22,225 ^{M7}	⁷ / ₈	4,76	24,7		●								
Gf	23,80 ^{+0,03}	¹⁵ / ₁₆	6,35	26,8										
Bs	25,38 ^{+0,03}	1	6,37	28,3		●	●	●	●					
H	25,40 ^{+0,03}	1	4,78	27,8										
Hs	25,40 ^{+0,03}	1	6,35	28,7			●							
R	26,95 ^{+0,03}	1 ¹ / ₁₆	4,78	29,3										
Sa	28,575 ^{M7}	1 ¹ / ₈	6,35	31,7		●	●							
Sb	28,58 ^{+0,03}	1 ¹ / ₈	6,35	31,5			●	●						
Sd	28,58 ^{+0,03}	1 ¹ / ₈	7,93	32,1										
Js	31,75 ^{+0,03}	1 ¹ / ₄	6,35	34,6										
K	31,75 ^{K7}	1 ¹ / ₄	7,93	35,5			●	●	●	●	●	●		
Ma	34,925 ^{M7}	1 ³ / ₈	7,93	38,7			●							
RH1	34,93 ^{M7}	1 ³ / ₈	9,55	37,8										
Cb	36,50 ^{+0,03}	1 ⁷ / ₁₆	9,55	40,9										
Ca	38,07 ^{+0,03}	1 ¹ / ₂	7,93	42,0										
C	38,07 ^{+0,03}	1 ¹ / ₂	9,55	42,5		●	●	●	●	●	●	●	●	
Nb	41,275 ^{M7}	1 ⁵ / ₈	9,55	45,8				●	●	●	●	●	●	
Ls	44,42 ^{+0,03}	1 ³ / ₄	9,55	48,8										
L	44,45 ^{K7}	1 ³ / ₄	11,11	49,4										
Lu	47,625 ^{M7}	1 ⁷ / ₈	12,7	53,5					●		●			
Da	49,20 ^{+0,03}	1 ¹⁵ / ₁₆	12,7	55,0						●	●			
Ds	50,77 ^{+0,03}	2	12,7	56,4										
D	50,80 ^{+0,03}	2	12,7	55,1										
Pa	53,975 ^{M7}	2 ¹ / ₈	12,7	60,0								●		
U	57,10 ^{+0,03}	2 ¹ / ₄	12,7	62,9										
Ub	60,325 ^{M7}	2 ³ / ₈	15,875	67,6										
Wd	85,725 ^{M7}	3 ³ / ₈	22,225	95,8										
Wf	92,075 ^{M7}	3 ⁵ / ₈	22,225	101,9										



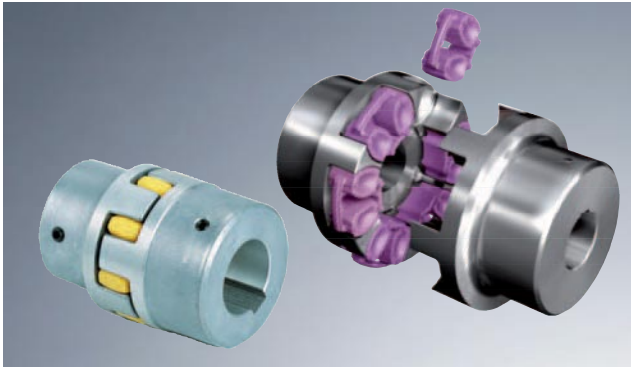
Basic programme taper 1:8					
Code	d ^{+0.05}	(d ₂)	b ^{/S9}	t ₂ ^{+0.1}	l _K
...N.../ 1	9,7	7,575	2,4	10,85	17,0
...N.../ 1c	11,6	9,5375	3	12,90	16,5
...N.../ 1e	13,0	10,375	2,4	13,80	21,0
...N.../ 1d	14,0	11,813	3	15,50	17,5
...N.../ 1b	14,3	11,8625	3,2	15,65	19,5
...N.../ 2	17,287	14,287	3,2	18,24	24,0
...N.../ 2a	17,287	14,287	4	18,94	24,0
...N.../ 2b	17,287	14,287	3	18,34	24,0
...N.../ 3	22,002	18,502	4	23,40	28,0
...N.../ 4	25,463	20,963	4,78	27,83	36,0
...N.../ 4b	25,463	20,963	5	28,23	36,0
...N.../ 4a	27,0	22,9375	4,78	28,80	32,5
...N.../ 4g	28,45	23,6375	6	29,32	38,5
...N.../ 5	33,176	27,676	6,38	35,39	44,0
...N.../ 5a	33,176	27,676	7	35,39	44,0
Basic programme taper 1:10					
CX	19,95	16,75	5	22,08	32
DX	24,95	20,45	6	26,68	45
EX	29,75	24,75	8	31,88	50

Basic programme taper 1:5					
Code	d ^{+0.05}	(d ₂)	b ^{/S9}	t ₂ ^{+0.1}	l _K
A-10	9,85	7,55	2	1,0	11,5
B-17	16,85	13,15	3	1,8	18,5
C-20	19,85	15,55	4	2,2	21,5
Cs-22	21,95	17,65	3	1,8	21,5
D-25	24,85	19,55	5	2,9	26,5
E-30	29,85	23,55	6	2,6	31,5
F-35	34,85	27,55	6	2,6	36,5
G-40	39,85	32,85	6	2,6	35,0

With codes N.../6 and N.../6a parallel to taper the respective pump code should be started before ...N and the respective size of coupling before and behind ...N.../.

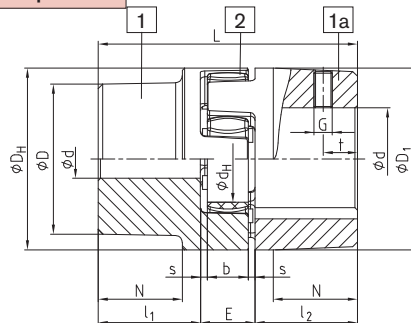


Shaft coupling design No. 001 - casted materials

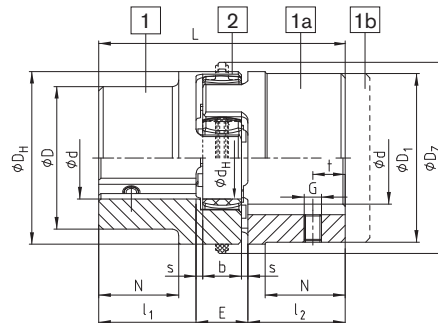


- Torsionally flexible, maintenance-free
- Damping vibrations
- Axial plug-in, fail-safe
- Allover machining – good dynamic properties
- Compact design/small flywheel effect
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9
- Stock programme/basic programme see pages 28 and 29
- Approved according to EC Standard 94/9/EC (without aluminium AL-D)
- Mounting instructions under www.ktr.com

Components

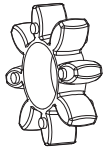


AL-D (thread opposite the keyway)

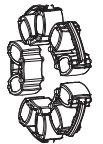


GJL / GJS (thread on the keyway)

Spider
as hardness 92 Sh-A
and 95/98 Sh-A
standard from size
14 - 90 and 64 Sh-D
size 14 - 180



elements DZ (double tooth elements)
as hardness 92 Sh-A
and 95 Sh-A
standard from size 100 -
180



ROTEX® Aluminium diecast (Al-D)																		
Size	Compo- nent	Spider (part 2) ¹⁾			Dimensions [mm]													
		Rated torque [Nm]			Finish bore d (min-max)	General											Thread for setscrews	
		92 Sh A	98 Sh A	64 Sh D		L	l ₁ :l ₂	E	b	s	D _H	D _Z	d _H	D; D ₁	N	G	t	T _A [Nm]
14 ²⁾	1a	7,5	12,5	-	6-16	35	11	13	10	1,5	30	-	10	30	-	M4	5	1,5
19	1	10	17	-	6-19	66	25	16	12	2	41	-	18	32	20	M5	10	2
	1a				19-24									41				
24	1	35	60	-	9-24	78	30	18	14	2	56	-	27	40	24	M5	10	2
	1a				22-28									56				
28	1	95	160	-	10-28	90	35	20	15	2,5	66	-	30	48	28	M8	15	10
	1a				28-38									66				

ROTEX® Cast iron (GJL)																			
Size	Component	Rated torque [Nm]	92 Sh A	98 Sh A	64 Sh D	Finish bore d (min-max)	L	l ₁ ; l ₂	E	b	s	D _H	D _Z	d _H	D ₁	N	G	t	T _A [Nm]
38	1	190	325	405	-	12-40	114	45	24	18	3	80	-	38	66	37	M8	15	10
	1a					38-48									78				
42	1	265	450	560	-	12-48	164	70	26	20	3	95	-	46	75	40	M8	20	10
	1a					42-55									94				
48	1	310	525	655	-	14-55	176	75	28	21	3,5	105	-	51	85	45	M8	20	10
	1a					15-52									104				
55	1	410	685	825	-	48-62	140	56	30	22	4	120	-	60	98	52	M10	20	17
	1a					15-62									118				
65	1	625	940	1175	-	20-60	160	65	30	22	4	120	-	60	98	52	M10	20	17
75	1	1280	1920	2400	-	55-74	185	75	35	26	4,5	135	-	68	115	61	M10	20	17
90	1	2400	3600	4500	-	22-70	210	85	40	30	5	160	-	80	135	69	M10	25	17
						40-97	245	100	45	34	5,5	200	218	100	160	81	M12	30	40

ROTEX® Nodular iron (GJS)																			
Size	Component	Rated torque [Nm]	92 Sh A	98 Sh A	64 Sh D	Finish bore d (min-max)	L	l ₁ ; l ₂	E	b	s	D _H	D _Z	d _H	D ₁	N	G	t	T _A [Nm]
100	1	3300	4950	6185	-	60-125	270	110	50	38	6	225	246	113	180	89	M12	30	40
110	1	4800	7200	9000	-	60-145	295	120	55	42	6,5	255	276	127	200	96	M16	35	80
125	1	6650	10000	12500	-	60-160	340	140	60	46	7	290	315	147	230	112	M16	40	80
140	1	8550	12800	16000	-	80-185	375	155	65	50	7,5	320	345	165	255	124	M20	45	140
160	1	12800	19200	24000	-	85-200	425	175	75	57	9	370	400	190	290	140	M20	50	140
180	1	18650	28000	35000	-		475	195	85	64	10,5	420	450	220	325	156	M20	50	140

¹⁾ = If no material is mentioned in the order, the calculation/order is based on the material marked with
¹⁾ Maximum torque of the coupling T_{Kmax} = rated torque of the coupling T_K Nenn. x 2 ²⁾ Material AL-H.

Order form:

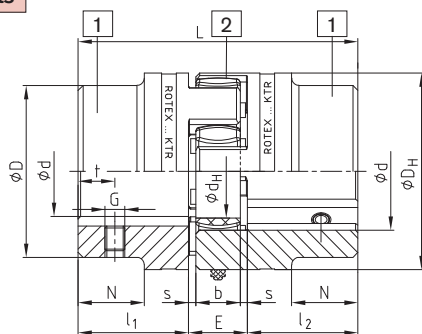
ROTEX® 38	GJL	92 Sh A	1a	- Ø 45	1	- Ø 25
Coupling size	Material	Spider hardness	Component	Finish bore	Component	Finish bore

Shaft coupling design No. 001 - material steel

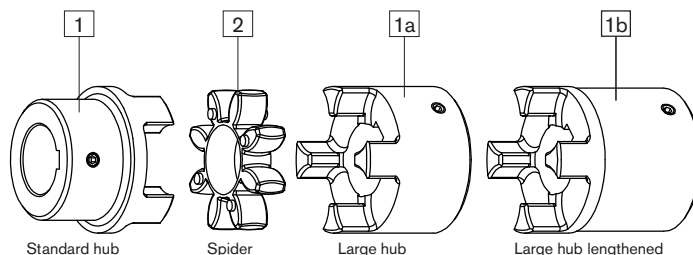


- Hubs from steel, specifically suitable for drive elements subject to high loads, e. g. steel mills, elevator drives, spline hubs, etc.)
- Torsionally flexible, maintenance-free, vibration-damping
- Axial plug-in, fail-safe
- All-over machining - good dynamic properties
- Compact design/small flywheel effect
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9
- Stock programme/basic programme see pages 28 and 29
- Approved according to EC Standard 94/9/EC
- Mounting instructions under www.ktr.com

Components



Steel (thread on the keyway)



ROTEX® steel (St)																			
Size	Component	Spider (part 2) ¹⁾			Finish bore d (min-max)	Dimensions [mm]													
		Rated torque [Nm]				General											Thread for setscrews		
		92 Sh A	98Sh A	64 Sh D		L	l ₁ ; l ₂	E	b	s	D _H	d _H	D	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	0-74	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	-					

ROTEX® sintered steel																	
Size	Component	Spider (part 2) ¹⁾		Dimensions [mm]													
		Rated torque [Nm]		Finish bore d	General										Thread for setscrews		
		92 Sh-A	98 Sh-A		L	l ₁ , l ₂	E	b	s	D _H	d _H	D	N	G	t	T _A [Nm]	
14	1a	7,5	12,5	unbored, 8, 10, 11, 12, 14, 15, 16	35	11	13	10	1,5	30	10	30	-	M4	5	1,5	
19	1a	10	17	unbored, 14, 16, 19, 20, 22, 24	66	25	16	12	2	40	18	40	-	M5	10	2	

¹⁾ = If no material is mentioned in the order, the calculation/order is based on the material marked with

¹⁾ Maximum torque of the coupling T_{Kmax} = rated torque of the coupling T_{K Nenn} x 2

ROTEX® 19 – 48 from stainless steel available from stock

- ROTEX® 19, 28 and 42 – hub material X10CrNiS 18-9 material number 1.4305 (V2A) DIN 17440

- ROTEX® 24, 38 and 48 – hub material X6CrNiMoTi17-12-2 material number 1.4571 (V4A) DIN 17440

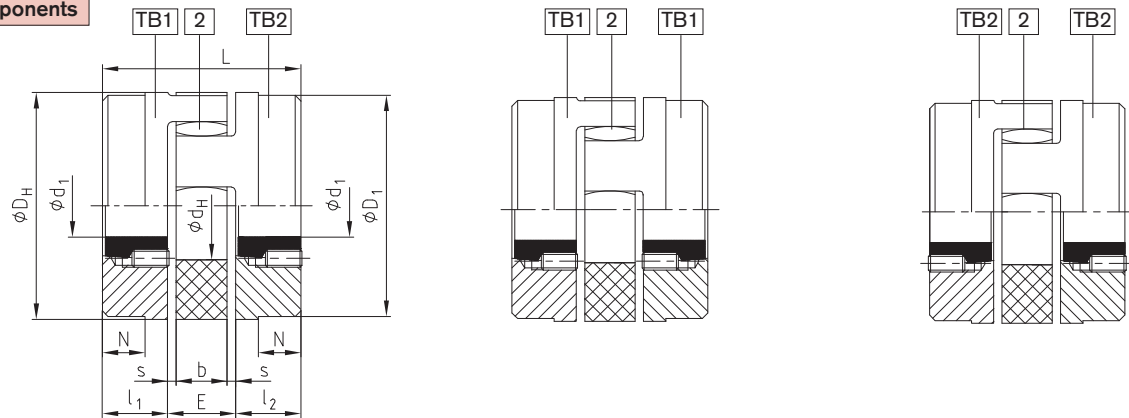
Order form:	ROTEX® 38		St		92 Sh A		1 – Ø 45		1 – Ø 25	
	Coupling size		Material		Spider hardness		Component		Finish bore	

Shaft coupling design No. 001 with Taper clamping bush



- Shaft coupling with taper clamping bush
- Sliding fit facilitates the axial alignment of the coupling
- Short mounting length
- Easy assembly/disassembly of the coupling hubs
- Extra securing by positive locking, the clamping screws are each mounted by half in the coupling hub and in the taper clamping bush

Components



ROTEX® type No. 001 with taper clamping bush

Size	Taper clamping bush	Dimensions [mm]									Fixing screw for taper bush			
		l_1, l_2	E	s	b	L	N	D_H	D_1	d_H	Size [Inch]	Length [mm]	Number	T_A [Nm]
24	1008	23	18	2,0	14	64	–	55	55	27	1/4"	13	2	5,7
28	1108	23	20	2,5	15	66	–	65	65	30	1/4"	13	2	5,7
38	1108	23	24	3,0	18	70	15	80	78	38	1/4"	13	2	5,7
42	1610	26	26	3,0	20	78	16	95	94	46	3/8"	16	2	20
48	1615	39	28	3,5	21	106	28	105	104	51	3/8"	16	2	20
55	2012	33	30	4,0	22	96	20	120	118	60	7/16"	22	2	31
65	2012	33	35	4,5	26	101	19	135	115	68	7/16"	22	2	31
75	2517	52	40	5,0	30	144	36	160	158	80	1/2"	25	2	49
	* 3020										5/8"	32		92
90	3020	52	45	5,5	34	149	33	200	160	100	5/8"	32	2	92
125	3535	90	60	7,0	46	288	86	230	290	147	1/2"	49	3	113
	4545										3/4"			192

* Only available for design TB 2

* 1. BSW thread

Coupling type TB 1/1; TB 2/2; TB 1/2 possible

* Please order our separate dimension sheet (M 373054).

Taper clamping bush

Size	Bore dimensions d_1 available; H7 fit – keyways to DIN 6885 sheet 1																		
1008	10	11	12	14	16	18	19	20	22	24	25								
1108	10	11	12	14	16	18	19	20	22	24	25	28*							
1610	14	16	18	19	20	22	24	25	28	30	32	35	38	40	42*				
1615	14	16	18	19	20	22	24	25	28	30	32	35	38	40	42*				
2012	14	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	
2517	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60
3020	25	28	30	35	38	40	42	45	48	50	55	60	65	70	75				
3535	35	38	40	42	45	48	50	55	60	65	70	75	80	85	90				
4545	55	60	65	70	75	80	85	90	95	100	105	110							

* Bores with keyway (flat design) to DIN 6885 sheet 3

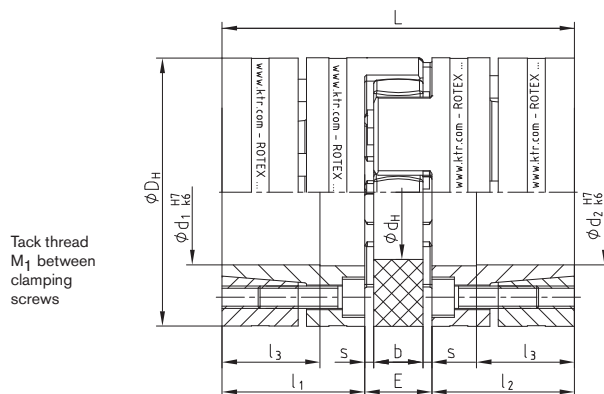
Order form:

ROTEX® 38	92 Sh A	1108	TB1 – Ø 24	TB2 – Ø 22
Coupling size	Spider hardness	Taper clamping bush	Hub design	Finish bore

Clamping ring hubs



- Torsionally flexible shaft coupling with integrated clamping system
- High smoothness of running, application up to a peripheral speed of 40 m/s
- For high friction torques (consider the selection in case of explosion protection use)
- Easy to assemble due to internal clamping screws
- Finish bore up to Ø 50 mm according to ISO fit H7, from Ø 55 mm according to ISO fit G7
- Approved according to EC Standard 94/9/EC



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] ²⁾
	92 Sh A		98 Sh A		D _H ³⁾	d _H	L	l ₁ ; l ₂	l ₃	E	b	s	M	number z	T _A [Nm]	M ₁				
	T _{KN}	T _{Kmax}	T _{KN}	T _{Kmax}																
Hub and clamping ring material – Steel (St-H)																				
19	10,0	20	17	34	40	18	66	25	18	16	12	2,0	M4	6	4,1	M4	0,179	0,44 x 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 x 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 x 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 x 10 ⁻⁴		
42	265	530	450	900	95	46	126	50	35	26	20	3,0	M8	4	35	M8	2,30	31,7 x 10 ⁻⁴		
48	310	620	525	1050	105	51	140	56	41	28	21	3,5	M10	4	69	M10	3,08	52,0 x 10 ⁻⁴		
55	375	750	685	1370	120	60	160	65	45	30	22	4,0	M10	4	69	M10	4,67	103,0 x 10 ⁻⁴		
65	-	-	940 ²⁾	1880 ²⁾	135	68	185	75	55	35	26	4,5	M12	4	120	M12	6,70	191,0 x 10 ⁻⁴		
75	-	-	1920 ²⁾	3840 ²⁾	160	80	210	85	63	40	30	5,0	M12	5	120	M12	9,90	396,8 x 10 ⁻⁴		

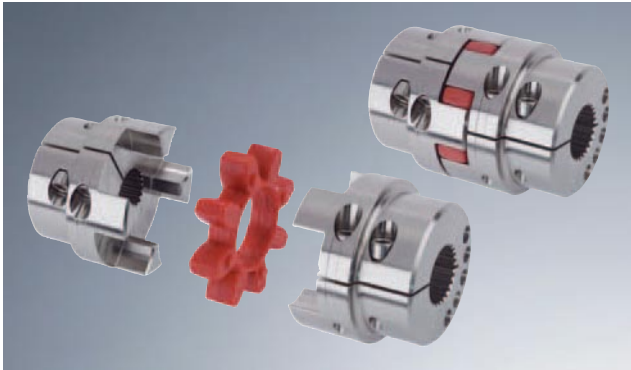
¹⁾ Please note coupling selection on pages 140/141 ²⁾ Figures for 95 Sh A - GS ³⁾ ØDH + 2 mm with high speeds for expansion of spider

Bores d ₁ /d ₂ and the corresponding 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
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									358	398	483	416	547	536	625	571	704	851	865					
48											616	704	899	896	1030	962	1160	1379	1222	1543				
55													863	856	991	918	1119	1110	1247	1277	1672	1605	2008	
65															1446	1355	1637	1635	1827	1887	2429	2368	2930	
75																1710	2053	2059	2294	2384	3040	2983	3664	4293

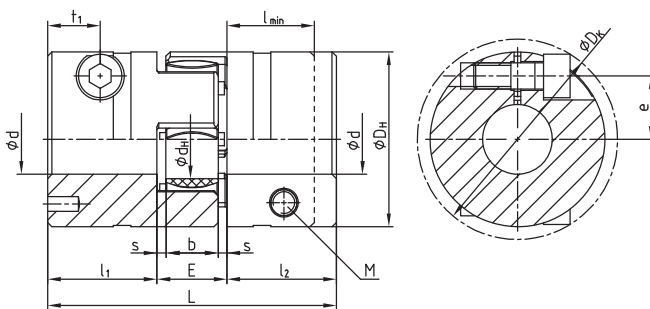
The transmittable torques of the clamping connection consider the max. clearance with shaft fit k6 / bore H7, from Ø55 G7/m6. With bigger clearance the torque is reduced.
For the stiffness calculation of the shaft/hollow shaft see KTR standard 45510 at our homepage www.ktr.com

Order form:	ROTEX® GS 24	98 Sh A	6.0 - Steel – Ø 24	6.0 - Steel – Ø 20
	Coupling size	Spider hardness	Hub design	Finish bore

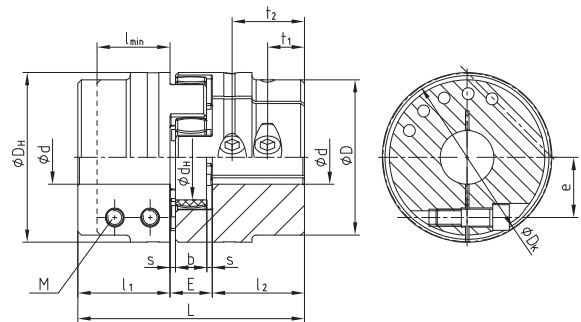
Clamping hubs



- Standard hub material steel
- Suitable in combination with spline hubs according to DIN 5480, DIN 5482, SAE J498 (see page 28) and in addition DIN 9611, DIN 5463 (ISO 14), DIN 5481 and DIN 5472
- Balanced on the basis of 3D-CAD data
- Axial plug-in, fail-safe
- Particularly suitable for applications with reversing operation
- Protection assessed and confirmed in accordance with EU standard 94/9/EC (only for hub designs 2.1 and 2.3, hub design 2.0 only according to category 3)
- Mounting instructions under www.ktr.com



ROTEX® 19 - 28



ROTEX® 38 - 90

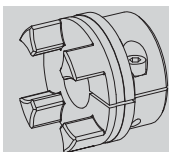
ROTEX® with clamping hubs																
Size	Dimensions [mm]														Screw DIN EN ISO 4762	
	d _{max}	L	l ₁ ^{1/2}	l _{min}	E	b	s	D _H	D	d _H	D _K	t ₁	t ₂	e	M	T _A [Nm]
19	20 ¹⁾	66	25	20	16	12	2	40	-	18	46,0	12	-	14,5	M6	14
24	28	78	30	25	18	14	2	55	-	27	57,5	12	-	20,0	M6	14
28	38	90	35	30	20	15	2,5	65	-	30	73,0	14 ²⁾	-	25,0	M8	35
38	42	114	45	35	24	18	3	80	70	38	77,5	19	-	26,5	M8	35
42	50	126	50	42	26	20	3	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	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	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 area and the corresponding transmittable friction torques [Nm] of ROTEX® clamping design 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

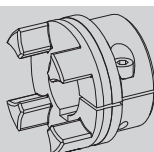
¹⁾ With design 2.1 d_{max} Ø17 mm

²⁾ With reduced hubs the dimension t₁ varies or the number of screws changes from 2-off to 1-off

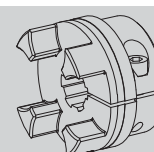
³⁾ t₁ and t₂ have a different e dimension



Design 2.0
clamping hub,
single slotted,
without keyway



Design 2.1
clamping hub,
single slotted,
with keyway



Design 2.3
clamping hub with
spline bore
(Please find a selection from
our spline bore programme on
page 28)

Order form:

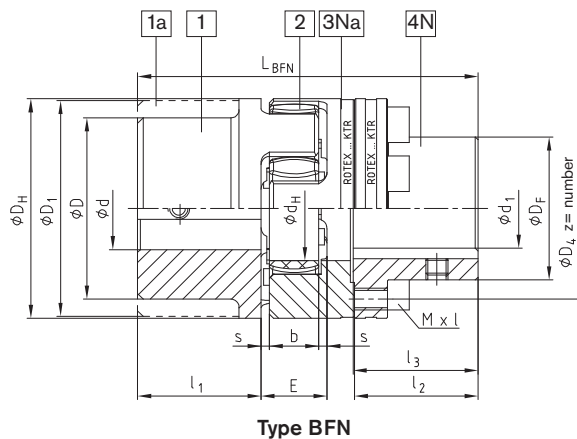
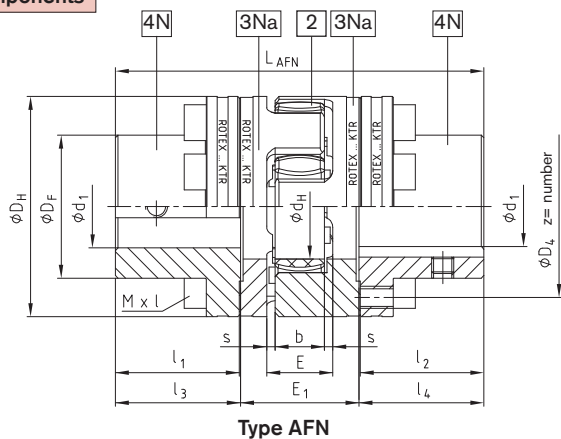
ROTEX® 24	98 Sh A	2.1	-	Ø 24	2.0	-	Ø 20
Coupling size	Spider hardness	Hub design	Finish bore	Hub design	Finish bore		

Flange programme types AFN and BFN



- Double flange design AFN and flange design BFN applicable to heavy machinery
- Radial assembly of driving or driven machine after disassembly of driving flanges
- For design AFN - spider interchangeable while coupling installed, without removal of driving or driven machine
- Power flow can be disconnected while coupling is installed
- Flange materials: comp. 4 N steel
comp. 3 Na GJS
- Finish bore according to ISO fit H7,
feather keyway according to DIN 6885 sheet 1 - JS9
- Approved according to EC Standard 94/9/EC

Components



ROTEX® AFN (No. 002) and BFN (No. 004)

Size	Pilot bored $\varnothing d_1$; $\varnothing D_1$	Component 4N max. finish bore $\varnothing d_1$	Dimensions [mm]											Cyl. screws ³⁾ DIN EN ISO 4762 - 12.9				
			D_H	D_F	D_4	d_H	$l_1; l_2$	E	E_1	s	b	$l_3; l_4$	L_{AFN}	L_{BFN}	Mxl	z	Pitch ²⁾	¹⁾ T_A [Nm]
24		24	55	36	45	27	30	18	33	2,0	14	30,5	94	86	M5x16	8		10
28		28	65	42	54	30	35	20	39	2,5	15	35,5	110	100	M6x20	8	8x45°	17
38		38	80	52	66	38	45	24	43	3,0	18	45,5	134	124	M8x22	8		41
42		42	95	62	80	46	50	26	48	3,0	20	51,0	150	138	M8x25	12		41
48		48	105	70	90	51	56	28	50	3,5	21	57,0	164	152	M8x25	12	16x22,5°	41
55		55	120	80	102	60	65	30	60	4,0	22	66,0	192	176	M10x30	8	8x45°	83
65		65	135	94	116	68	75	35	65	4,5	26	76,0	217	201	M10x30	12	16x22,5°	83
75		75	160	108	136	80	85	40	75	5,0	30	86,5	248	229	M12x40	15		120
90		100	200	142	172	100	100	45	82	5,5	34	101,5	285	265	M16x40	15		295
100		110	225	158	195	113	110	50	97	6,0	38	111,5	320	295	M16x50	15		295
110		125	255	178	218	127	120	55	103	6,5	42	122,0	347	321	M20x50	15	20x18°	580
125		145	290	206	252	147	140	60	116	7,0	46	142,0	400	370	M20x60	15		580
140		165	320	235	282	165	155	65	128	7,5	50	157,5	443	409	M20x60	15		580
160		190	370	270	325	190	175	75	146	9,0	57	177,5	501	463	M24x70	15		1000
180		220	420	315	375	220	195	85	159	10,5	64	198,0	555	515	M24x80	18	24x15°	1000

¹⁾ Screw tightening torque T_A [Nm].

²⁾ Thread in driving flange between cams.

³⁾ Coupling is delivered not assembled.

Order form

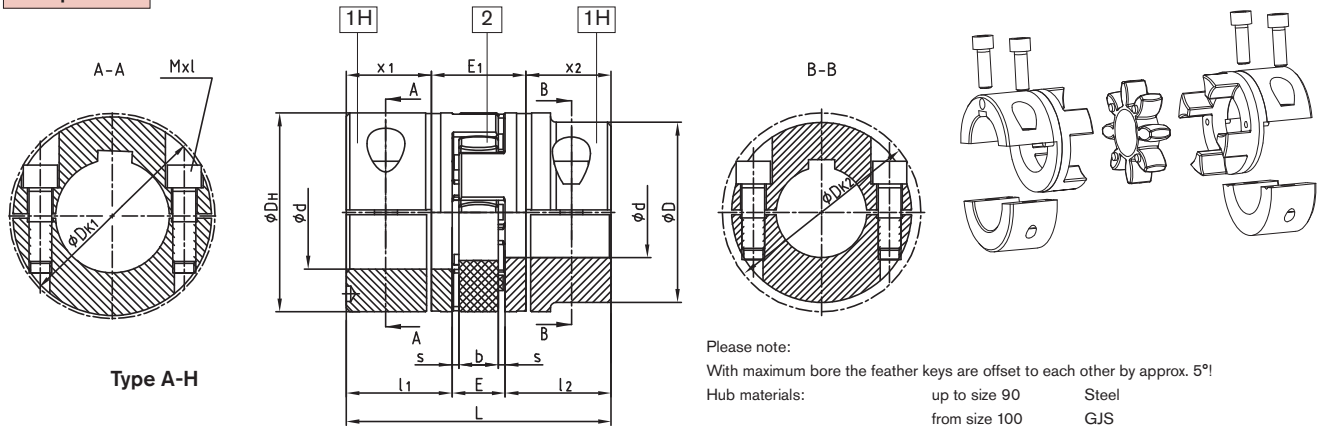
ROTEX® 38	AFN	92 Sh A	4N	-	Ø 38	4N	-	Ø 35
Coupling size	Type	Spider hardness	Component		Finish bore	Component		Finish bore

Drop-out center design coupling type A-H



- Assembly/disassembly by means of 4 screws only
- Exchange of spider with no need to shift the driving and driven side (motor and pump)
- Positive-locking and frictionally engaged hub combinations to be assembled radially (dimension E_1 of design AFN = dimension E_1 of A-H)
- Finish bore according to ISO tolerance H7, feather key according to DIN 6885 sheet 1 - JS9
- Please order our separate dimension sheet (M425460)
- Approved according to EC Standard 94/9/EC (type 7.8 shell clamping hub without feather key according to category 3)

Components



ROTEX® Type A-H															
Size	Component	Finish bore $\varnothing d_{max}$ [mm]	Dimension [mm]										Cyl. screw DIN EN ISO 4762		
			L	$l_1; l_2$	E	b	s	D_H	D	D_{K1}	D_{K2}	x_1/x_2	E_1	MxL	T_A [Nm]
19	1H	20	66	25	16	12	2,0	40	-	46	-	17,5	31	M6x16	14
24	1H	28	78	30	18	14	2,0	55	-	57,5	-	22,5	33	M6x20	14
28	1H	38	90	35	20	15	2,5	65	-	73	-	25,5	39	M8x25	35
38	1H	45	114	45	24	18	3,0	80	-	83,5	-	35,5	43	M8x30	35
42	1H	50	126	50	26	20	3,0	95	85	-	93,5	39	48	M10x30	69
		55							-	97	-			M10x35	
48	1H	55	140	56	28	21	3,5	105	95	-	105	45	50	M12x35	120
		60							-	108,5	-			M12x40	
55	1H	65	160	65	30	22	4,0	120	110	-	119,5	50	60	M12x40	120
		70							-	122	-			M12x45	
65	1H	70	185	75	35	26	4,5	135	115	-	123,5	60	65	M12x40	120
		80							-	132,5	-			M12x45	
75	1H	80	210	85	40	30	5,0	160	135	-	147,5	67,5	75	M16x50	295
		90							-	158	-				
90	1H	90	245	100	45	34	5,5	200	160	-	176	81,5	82	M20x60	580
		110							-	197	-				
100 ¹⁾	1H	110	270	110	50	38	6,0	225	180	-	185,5	84	102	M16x50	295
110 ¹⁾	1H	120	295	120	55	42	6,5	255	200	-	208	90	119	M20x60	580
125 ¹⁾	1H	140	340	140	60	46	7,0	290	230	-	242,5	105	130	M24x70	1000

Order form

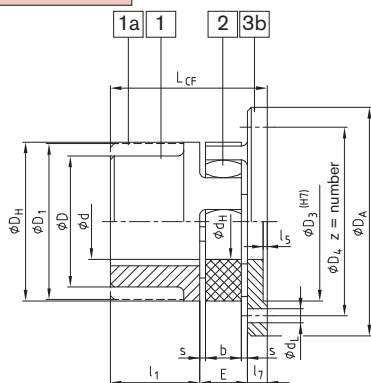
ROTEX® 38	A-H	98 Sh A	7.8	-	Ø 38	7.8	-	Ø 30
Coupling size	Type	Spider hardness	Component	Finish bore	Component	Finish bore		

Flange programme types CF, CFN, DF and DFN

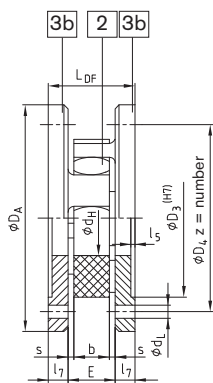


- Flange designs applicable to heavy machinery
- CF and CFN - connection flange to shaft
- DF and DFN - double flange design for the connection of driving and driven machine, radial assembly possible without removal of other components ⇒ quick replacement of spider
- CFN and DFN - particularly small outside diameters
- DF and DFN – compact design
- DFN - for customer-specific mounting flanges
- Flange material part 3b: GJS
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9
- Approved according to EC Standard 94/9/EC

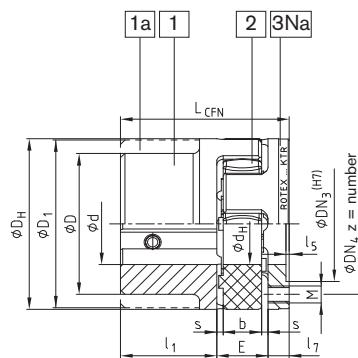
Components



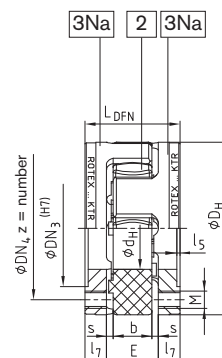
Type CF



Type DF



Type CFN



Type DFN

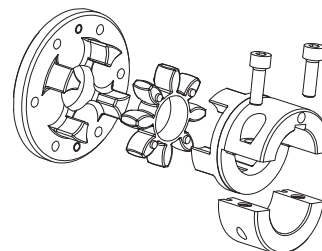
ROTEX® CF, CFN (No. 005) and DF, DFN (No. 006)

Size	$\frac{\varnothing D}{\varnothing D_1}$	General dimension								Dimensions CF and DF								Dimensions CFN and DFN							
		D _H	d _H	l ₁	E	s	b	l ₅	l ₇	D _A	D ₃	D ₄	z	d _L	L _{CF}	L _{DF}	DN ₃	DN ₄	M	z	Pitch ²⁾	L _{CFN}	L _{DFN}		
24	see shaft coupling on pages 30 and 31 stock programme/basic programme see pages 28 and 29	55	27	30	18	2,0	14	1,5	8	80	55	65	5	4,5	56	34	36	45	M5	8	8x45°	56	34		
28		65	30	35	20	2,5	15	1,5	10	100	65	80	6	6,6	65	40	44	54	M6	8		65	40		
38		80	38	45	24	3,0	18	1,5	10	115	80	95	6	6,6	79	44	54	66	M8	8		79	44		
42		95	46	50	26	3,0	20	2,0	12	140	95	115	6	9,0	88	50	65	80	M8	12	16x22,5°	88	50		
48		105	51	56	28	3,5	21	2,0	12	150	105	125	8	9,0	96	52	75	90	M8	12		96	52		
55		120	60	65	30	4,0	22	2,0	16	175	120	145	8	11,0	111	62	84	102	M10	8	8x45°	111	62		
65		135	68	75	35	4,5	26	2,0	16	190	135	160	10	11,0	126	67	96	116	M10	12	16x22,5°	126	67		
75		160	80	85	40	5,0	30	2,5	19	215	160	185	10	13,5	144	78	112	136	M12	15		144	78		
90		200	100	100	45	5,5	34	3,0	20	260	200	225	12	13,5	165	85	145	172	M16	15		165	85		
100		225	113	110	50	6,0	38	4,0	25	285	225	250	12	13,5	185	100	165	195	M16	15		185	100		
110		255	127	120	55	6,5	42	4,0	26	330	255	290	12	18,0	201	107	180	218	M20	15	20x18°	201	107		
125		290	147	140	60	7,0	46	5,0	30	370	290	325	16	18,0	230	120	215	252	M20	15		230	120		
140	320	165	155	65	7,5	50	5,0	34	410	320	360	16	22,0	254	133	245	282	M20	15		254	133			
160	370	190	175	75	9,0	57	5,0	38	460	370	410	16	22,0	288	151	280	325	M24	15		288	151			
180	420	220	195	85	10,5	64	5,5	40	520	420	465	16	26,0	320	165	330	375	M24	18	24x15°	320	165			

Other flange dimensions see page 35

Further types: ROTEX® CF-H
Flange drop-put center design coupling

Please order our separate dimension sheet (M412069)



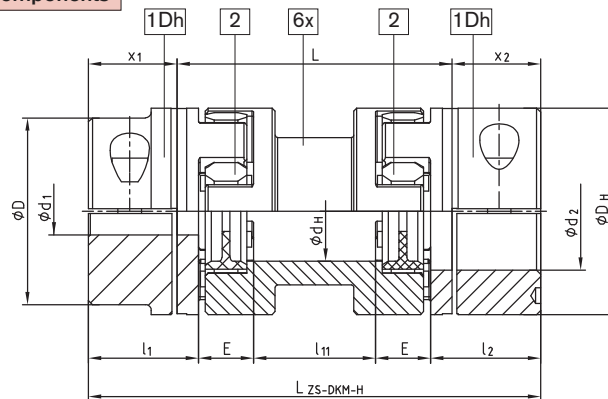
Order form:	ROTEX® 38	CF	92 Sh A	1	–	GJL	–	Ø 20
	Coupling size	Type	Spider hardness	Hub part Component		Material		Finish bore

Double cardanic type ZS-DKM-H

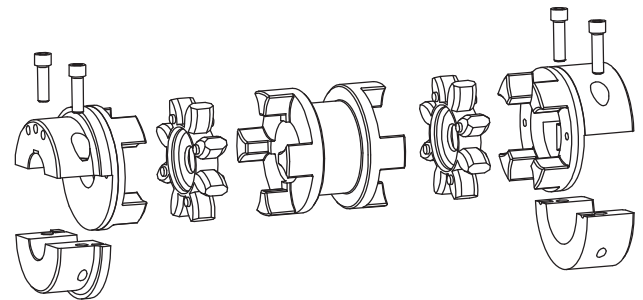


- Standard spacers up to 250 mm shaft distance dimension – ex stock
- Assembly/disassembly through 4 screws only
- Compensates for high shaft displacements due to double-cardanic design
- Remains torsionally symmetric in case of shaft displacements
- Reduced vibration and noise
- Low restoring forces ⇒ Increase of the total lifetime of all adjacent components (bearings, seals etc.)
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95) (type 7.6 marked at stock, type 7.5 shell clamping hub without feather key according to category 3)

Components



Type ZS-DKM-H



ROTEX® ZS-DKM-H																			
Size	Dismountable length L [mm]	Finish bore max. Ød ₁ /d ₂ [mm]	Spider (part 2) ¹⁾ T _{KN} [Nm]	Dimensions [mm]							Cap screw DIN EN ISO 4762 – 12.9		Max. displacements					Weight ²⁾ [kg]	
				D _H	d _H	l ₁ ; l ₂	x ₁ ; x ₂	l ₁₁	E	LZS-DKM-H	M	T _A [Nm]	Axial [mm]	at n = 1500 rpm		at n = 3000 rpm			
														Radial [mm]	Angular [°]	Radial [mm]	Angular [°]		
24	100	28	35	55	27	30	22,5	49	18	145	M6	14	1,4	1,17		0,87		1,40	
	140							185		1,87						1,40		1,60	
28	100	38	95	65	30	35	25,5	41	20	151	M8	35	1,5	1,06		0,80		1,90	
	140							191		1,76						1,32		2,20	
38	100	45	190	80	38	45	35,5	33	24	171	M8	35	1,8	0,99		0,74		3,90	
	140							211		1,69						1,27		4,10	
42	100	55	265	95	46	50	39,0	26	26	178	M10	69	2,0	0,91		0,68		5,10	
	140							218		1,60						1,20		5,70	
48	100	60	310	105	51	56	45,0	22	28	190	M12	120	2,1	0,87		0,65		7,10	
	140							230		1,57						1,18		7,90	
55	100	70	410	120	60	65	50,0	10	30	200	M12	120	2,2	0,70	1,0	0,52	0,75	9,50	
	140							50		240				1,40		1,05		11,20	
	180							90		280				2,09		1,57		12,30	
	200							110		300				2,44		1,83		12,80	
65	140	80	625	135	68	75	60,0	40	35	260	M12	120	2,6	1,31		0,98		16,10	
	180							80		300				2,00				1,50	16,80
75	140	90	1280	160	80	85	67,5	25	40	275	M16	295	3,0	1,13		0,85		23,60	
	180							65		315				1,83				1,37	26,00
	200							85		335				2,19				1,64	27,00
	250							135		385				3,05				2,29	29,50
90	180	110	2400	200	100	100	81,5	53	45	343	M20	580	3,4	1,71		1,28		48,90	
	250							123		413				2,93				2,19	52,60

- 1) Maximum torque of coupling T_{Kmax.} = nominal torque of coupling T_{KN} x 2
Size 24 to 75 spider type 95/98 Sh A-GS; at size 90 spider type 95 Sh A with inner ring
ZS-DKM-H: transmittable torque according to 92 Sh A-GS
- 2) Refer to max. bore

Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9

ATTENTION: The standard line is only for the horizontal assembly. Vertical assembly on request.

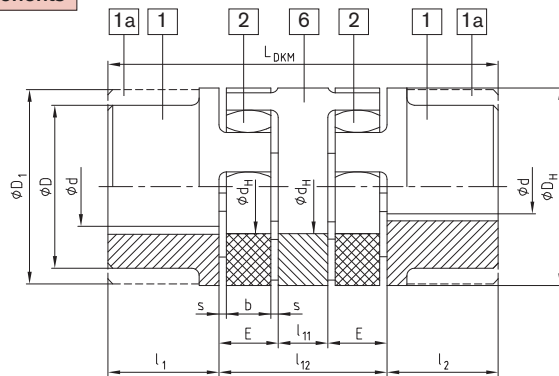
Order form	ROTEX® 38	ZS-DKM-H	140	98 Sh A-GS	Ø38	Ø30
	Coupling size	Type	Shaft distance dimension L	Spider hardness	Finish bore	Finish bore

Double cardanic type DKM

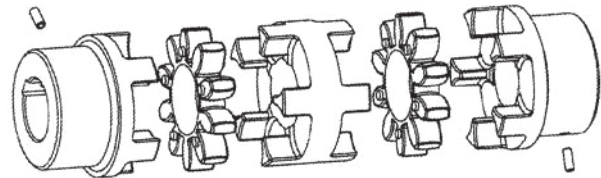


- For high shaft displacements, 3-part double-cardanic
- Reduced vibration and noise
- The restoring forces resulting from displacements are very low
- Increase of the total lifetime of all adjacent components (bearings, seals etc.)
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)
- Mounting instructions under www.ktr.com
- Double-cardanic design without the need for bearing support or external guarding

Components



Type DKM



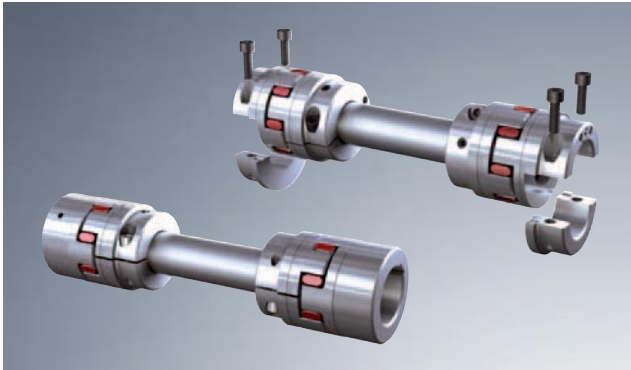
ROTEX® DKM (No. 018)															
Size	Ød ØD ØD ₁	Spider (part 2) Nominal torque [Nm]		Dimensions [mm]									Max. displacements at n = 1500 rpm		
		92 Sh-A	98 Sh-A	D _H	d _H	l ₁ ; l ₂	l ₁₁	l ₁₂	E	s	b	L _{DKM}	Radial [mm]	Angular [°]	Axial [mm]
19	see shaft coupling page 30 and 31; stock programme/basic programme page 28 and 29	10	17	40	18	25	10	42	16	2,0	12	92	0,45	1,0	+1,2/-1,0
24		35	60	55	27	30	16	52	18	2,0	14	112	0,59	1,0	+1,4/-1,0
28		95	160	65	30	35	18	58	20	2,5	15	128	0,66	1,0	+1,5/-1,4
38		190	325	80	38	45	20	68	24	3,0	18	158	0,77	1,0	+1,8/-1,4
42		265	450	95	46	50	22	74	26	3,0	20	174	0,84	1,0	+2,0/-2,0
48		310	525	105	51	56	24	80	28	3,5	21	192	0,91	1,0	+2,1/-2,0
55		410	685	120	60	65	28	88	30	4,0	22	218	1,01	1,0	+2,2/-2,0
65		625	940	135	68	75	32	102	35	4,5	26	252	1,17	1,0	+2,6/-2,0
75		1280	1920	160	80	85	36	116	40	5,0	30	286	1,33	1,0	+3,0/-3,0
90		2400	3600	200	100	100	40	130	45	5,5	34	330	1,48	1,0	+3,4/-3,0

Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9

Order form:

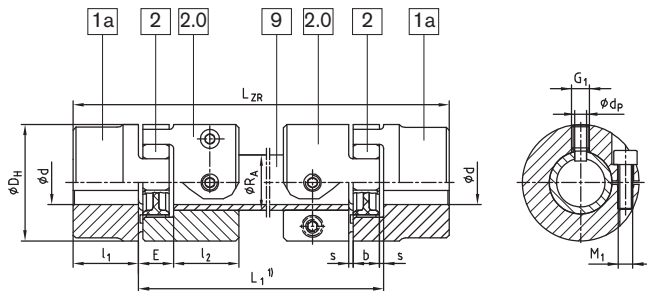
ROTEX® 38	DKM	GJL	98 Sh A	1	–	Ø 38	1	–	Ø 30
Coupling size	Type	Material	Spider hardness	Component	Finish bore	Component	Finish bore		

Intermediate shaft programme type ZR

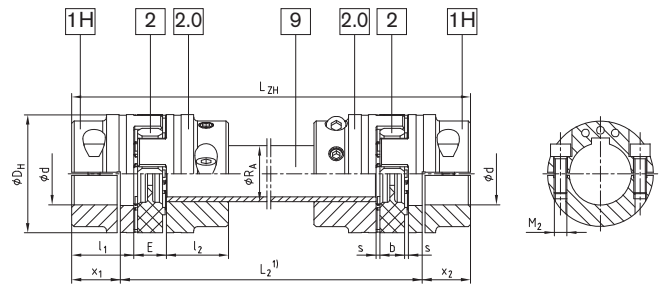


- To connect shaft ends with extended shaft separations
- Compensating for high shaft displacements due to the double-cardanic design
- Radial assembly possible without displacement of the driving or driven machine
- Particularly easy maintenance when using the semi-shell clamping hubs (type 7.5 and 7.6)
- Flexible bearing in backlash-free ROTEX® GS spiders

Components



Type ZR
(with GS spider)



Type ZR
(with GS spider and clamping hub DH component 1H)

ROTEX® type ZR (No. 037)																						
Size	Finish bore Ød _{max}		Dimensions [mm]						Intermediate pipe Torsional stiffness/m		Clamping screw Component 2.0		Clamping screw Component 1H		L _{ZR} ; L _{ZH}	min. LR ₁	min. LR ₂	Locking screw G ₁	Locking pin d _p [mm]	Axial displacement [mm]	Angular displacement [degrees]	
	Component 1a	Component 1H	D _H	l ₁ ; l ₂	x ₁ ; x ₂	E	s	b	R _A	C ² [Nm ² /rad]	M ₁	T _A [Nm]	M ₂	T _A [Nm]								
19	25	20	40	25	17,5	16	2,0	12	Ø20x3	954,9	M6	14	M6	10	L _{ZR} = L ₁ + 2 · l ₁ L _{ZH} = L ₁ + 2 · x ₁	110	97	M6	4,0	1,2	0,9	
24	35	28	55	30	22,5	18	2,0	14	Ø30x4	4522	M6	14	M6	14		128	111	M8	5,5	1,4	0,9	
28	40	38	65	35	25,5	20	2,5	15	Ø35x4	7611	M8	35	M8	35		145	129	M10	7,0	1,5	0,9	
38	48	45	80	45	35,5	24	3,0	18	Ø40x4	11870	M8	35	M8	25		180	157	M12	8,5	1,8	1,0	
42	55	55	95	50	39,0	26	3,0	20	Ø45x4	17487	M10	69	M10	49		198	174	M12	8,5	2,0	1,0	
48	62	60	105	56	45,0	28	3,5	21	Ø50x4	24648	M12	120	M12	86		217	190	M16	12	2,1	1,1	
55	74	70	120	65	50,0	30	4,0	22	Ø55x4	39662	M12	120	M12	120		242	220	M16	12	2,2	1,1	
65	80	80	135	75	60,0	35	4,5	26	Ø65x5	68329	M12	120	M12	120		281	250	M16	12	2,6	1,2	
75	95	90	160	85	67,5	40	4,0	30	Ø75x5	108000	M16	295	M16	295	318	285	M16	12	3,0	1,2		

¹⁾ Please indicate the shaft distance dimension L_1 in all inquiries and orders along with the maximum speed to review the critical whirling speed.

²⁾ Torsion spring stiffness when the intermediate pipe is 1m
Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9

Friction torques of clamping hubs have to be observed.

Please order dimension sheet no. 5020/000/017-757537.

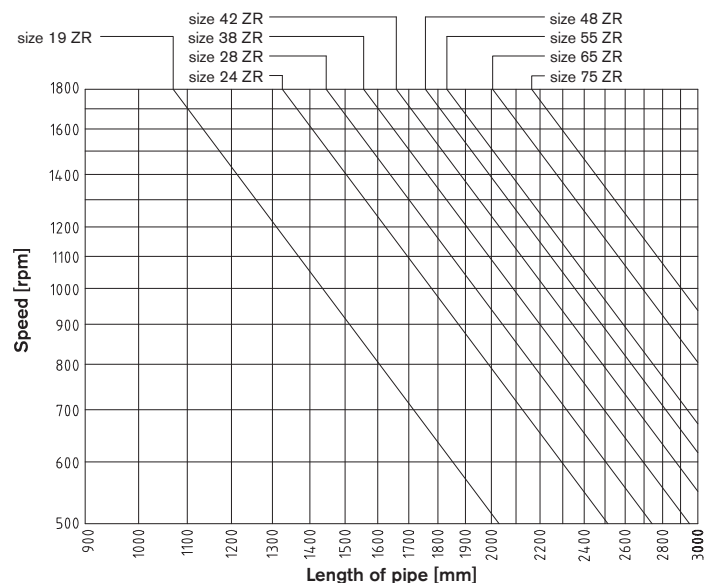


**Diagramme for
coupling selection:**

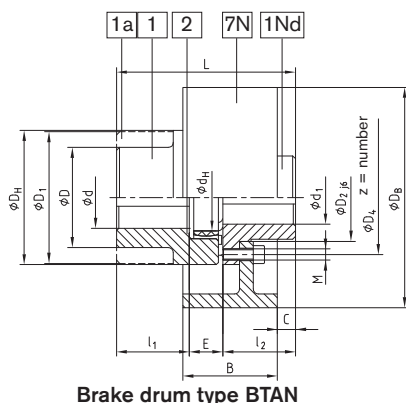
Order form:		ROTEX® 38	ZR	1200	St / GJL	98 Sh A-GS	1H - Ø 38	1H - Ø 30
Coupling size	Type	Shaft distance dim. L_1/L_2		Material		Spider hardness	Compo- nent	Finish bore

Type BTAN with brake drum/type SBAN with disk brake

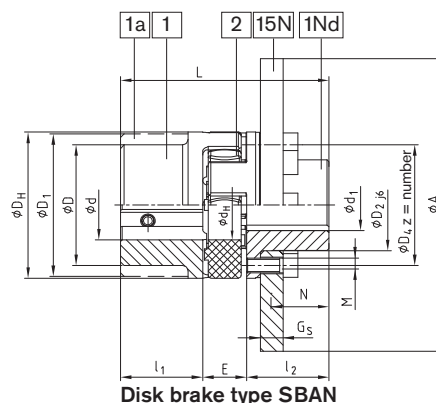


- Shaft coupling BTAN with brake drum to be mounted to external drum brakes with double shoes according to DIN 5431/15435
- Shaft coupling BTAN with disk for braking calipers
- Each coupling type to be combined with various sizes of brake drum disks (see dimension "N/C")
- The brake drum or disk brake has to be placed onto the shaft end with the biggest mass moment of inertia
- The maximum brake torque must not exceed the maximum torque of the coupling
- Designs BTAN and SBAN - modification for customer from the stock programme
- Mounting instructions under www.ktr.com

Components



Brake drum type BTAN



Disk brake type SBAN

ROTEX® type BTAN (No. 011) and SBAN (No. 013)

Size	Pilot bore ϕd ; ϕD_1	Finish bore max. d_1		Dimensions [mm]										
		GJS	Steel	D_H	D_2	D_4	d_H	z	pitch ¹⁾	M	T_A [Nm]	l_1 ; l_2	E	L
38	see shaft coupling on pages 30 and 31; stock programme/basic programme see pages 28 and 29	—	34	80	50	66	38	8	8 x 45°	M8	41	45	24	114
42		—	42	95	60	80	46	12	16 x 22,5°	M8	41	50	26	126
48		—	48	105	68	90	51	12	16 x 22,5°	M8	41	56	28	140
55		—	55	120	78	102	60	8	8 x 45°	M10	83	65	30	160
65		—	65	135	92	116	68	12	16 x 22,5°	M10	83	75	35	185
75		—	75	160	106	136	80	15	16 x 22,5°	M12	120	85	40	210
90		—	100	200	140	172	100	15	20 x 18°	M16	295	100	45	245
100		100	—	225	156	195	113	15	20 x 18°	M16	295	110	50	270
110		110	—	255	176	218	127	15	20 x 18°	M20	580	120	55	295
125		130	—	290	204	252	147	15	20 x 18°	M20	580	140	60	340

¹⁾ Thread in the hub between the cams

Type BTAN										Type SBAN									
Brake drum	ROTEX® BTAN dimension „C“									Disk brake	ROTEX® SBAN dimension „N“								
	38	42	48	55	65	75	90	100	110		38	42	48	55	65	75	90	100	110
160x60	14									3550	200x12,5	31,25							
200x75	9	12	17	24						2800	250x12,5	31,25	34,25	39,25					
250x95	1	4	9	16	25	33				2240	315x16		32,5	37,5	44,5	53,5	61,5		
315x118		-5	0	7	16	24	36			1800	400x16			37,5	44,5	53,5	61,5	73,5	81,5
400x150		-18	-13	-6	3	11	23	31	38	1400	500x16				44,5	53,5	61,5	73,5	81,5
500x190					-12	-4	8	16	23	39	630x20				51,5	59,5	71,5	79,5	86,5
630x236						-22	-10	-2	5	21	710x20				51,5	59,5	71,5	79,5	86,5
710x265								-13	-6	10	800x25						69	77	84
800x300									-4	710	900x25								84

Other sizes on request according to dimension sheet no.:

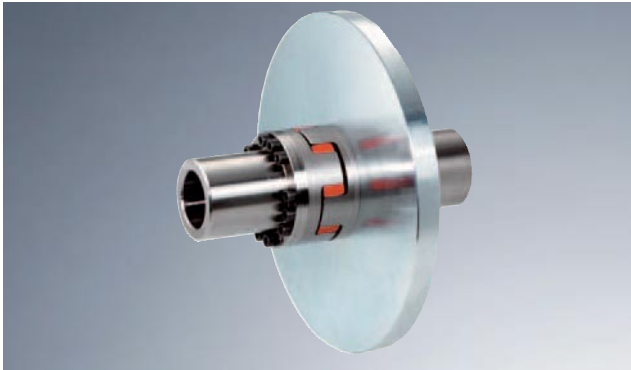
BTAN: M 380821
SBAN straight: M380822; cranked: M 370065
FNN hub: M 380823

Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9

Order form:

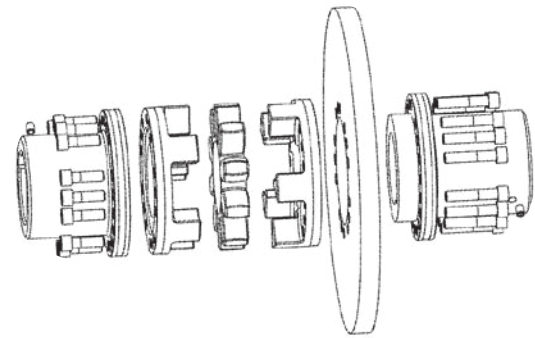
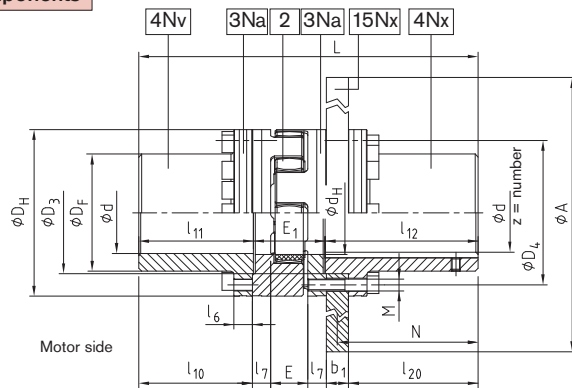
ROTEX® 38	BTAN	Ø200x75	92 Sh A	1Nd	— Ø 38	1	— Ø 30
Coupling size	Type	Ø Brake drum x width of brake drum	Spider hardness	Component	Finish bore	Component	Finish bore

Type AFN-SB special with disk brake



- Shaft coupling AFN-SB special with disk brake for braking calipers
- Brake disk and spider can be replaced while being assembled
- The disk brake has to be placed onto the shaft end with the biggest mass moment of inertia
- The maximum braking torque must not exceed the maximum torque of the coupling
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9
- Mounting instructions under www.ktr.com

Components



ROTEX® Type AFN-SB special

Size	Finish bore d		Dimensions [mm]										
	min.	max.	D _H	D _F	D ₃ ^{H7/h7}	D ₄	d _H	E	E ₁	M	z	Pitch	T _A [Nm]
65	22	65	135	94	96	116	68	35	65	M10	12	16x22,5°	83
75	30	75	160	108	112	136	80	40	75	M12	15		120
90	40	100	200	142	145	172	100	45	82	M16	15		295
100	46	110	225	158	165	195	113	50	97	M16	15		295
110	60	125	255	178	180	218	127	55	103	M20	15	20x18°	580
125	60	145	290	206	215	252	147	60	116	M20	15		580
140	60	165	320	235	245	282	165	65	128	M20	15		580
160	80	190	370	270	280	325	190	75	146	M24	15		1000

ROTEX® Type AFN-SB special

Size	Torque ¹⁾ mit 95Sh-A		Max. speed [rpm]	Max. ¹⁾ brake torque [Nm]	Dimensions [mm]						
	T _{KN}	T _{Kmax.}			l ₇	l ₁₀	l ₁₁	l ₁₂	l ₂₀	N	L
65	940	1880	3450	1880	16	112,5	113,5	166,0	135	150	344,5
75	1920	3840	3250	3840	19	131,5	133,0	166,5	135	150	374,5
90	3600	7200	3000	7200	20	164,0	165,5	206,5	175	190	454,0
100	4950	9900	2800	9900	25	153,5	155,0	206,5	175	190	458,5
110	7200	14400	2600	14400	26	201,5	203,5	212,0	180	195	518,5
125	10000	20000	2250	20000	30	198,5	200,5	212,0	180	195	528,5
140	12800	25600	1800	25600	34	244,5	247,0	252,5	220	235	627,5
									210 ²⁾	230 ²⁾	
160	19200	38400	1500	38400	38	226,5	229,0	252,5	220	235	627,5
									210 ²⁾	230 ²⁾	

Selection of ROTEX® coupling/disk brake

Size	Brake disk ØA x b ₁										
	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

¹⁾ The max. braking torque must not exceed the maximum torque of the coupling.

²⁾ Dimensions for a brake disk width b₁ of 40 mm.

Order form:

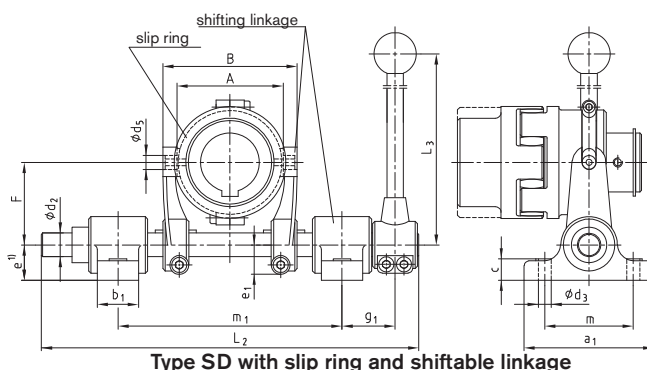
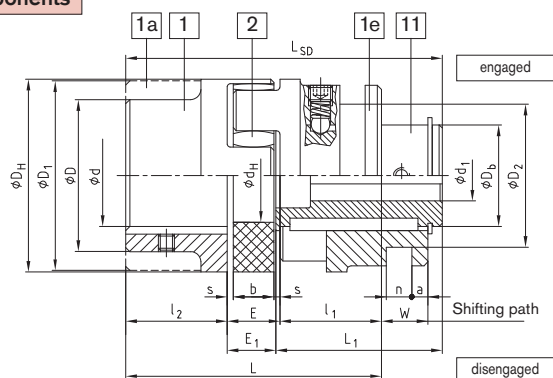
ROTEX® 90	AFN-SB special	Ø450x30	95 Sh A	4Nv – Ø 90	4Nx – Ø 90
Coupling size	Type	ØDisk brake width of disk	Spider hardness	Component	Finish bore

Type SD (shiftable at standstill)



- Shiftable shaft coupling for all applications in general engineering
- Easy to engage and disengage driving or driven machines with standstill of machine
- Existing shifting hub to be combined with slip ring and shiftable linkage
- With pilot bored shifting hubs the requested shifting force must be set after final machining
- Other sizes on request according to M 370266
- Complete shifting device consisting of:
separated slip ring from red bronze, shift fork, shifting shaft, shifting lever, eye type bearing

Components



ROTEX® type SD (No. 015)

Size	$\frac{\varnothing d}{\varnothing D}$ $\frac{\varnothing D_1}{\varnothing D_2}$	Finish bore d ₁		Dimensions [mm]																Shifting force set in [N]	Slip ring size	Shiftable linkage size
		min.	max.	D _H	D ₂ ±0,1	D _b	d _H	l ₁ :l ₂	E	s	b	E ₁	L	L ₁	W	a	n±0,1	L _{SD}				
24	see shaft coupling on pages 28 and 29; stock programme/basic programme see pages 26 and 27	8	18	55	41	30	27	30	18	2,0	14	16,5	78	51,5	16,0	6	6,0	98	110	—	—	
28		10	22	65	58	36	30	35	20	2,5	15	18,0	90	60,0	17,5	8	8,0	113	130	—	—	
38		12	28	80	70,5	45	38	45	24	3,0	18	22,0	114	73,0	21,0	8	12,5	140	150	1,1	1	
42		14	32	95	70,5	50	46	50	26	3,0	20	24,0	126	82,0	23,0	8	12,5	156	180	1,1	1	
48		15	40	105	89,5	60	51	56	28	3,5	21	25,5	140	90,5	24,5	6	17,5	172	200	2,2	2	
55		18	48	120	112,5	70	60	65	30	4,0	22	27,0	160	103,0	26,0	6	18,0	195	250	3,3	3	
65		20	55	135	112,5	80	68	75	35	4,5	26	32,0	185	120,0	30,5	7	18,0	227	280	3,3	3	
75		25	65	160	130,5	95	80	85	40	5,0	30	37,0	210	135,0	35,0	6	20,5	257	350	4,4	3	
90		28	75	200	164,5	110	100	100	45	5,5	34	41,0	245	152,0	39,5	8	25,5	293	350	5,5	4	
100		30	80	225	164,5	115	113	110	50	6,0	38	46,0	270	169,0	44,0	14	25,5	325	380	5,5	4	
110	35	85	255	164,5	125	127	120	55	6,5	42	51,5	295	184,0	48,5	18,5	25,5	355	450	5,5	4		
125	40	100	290	210,5	145	147	140	60	7,0	46	55,5	340	208,5	53,0	18,5	30,5	404	500	6,6	5		

Slip ring and shiftable linkage

Size	Shiftable linkage size	Dimensions [mm]																	Max. speed n for slip ring [rpm]
		a_1	b_1	c	d_2	d_3	d_5	$e^{1)}$	e_1	F	g_1	L_2	L_3	m	m_1 min.	m_1 max.	A	B	
38	1	110	35	18	20	11	12	30	25	70	55	320	400	75	180	190	90	114	3280
42	1				25				27	97,5	60	430	450		240	270	111	151	2550
48	2																		
55	3	140	40		30		17	40	32,5	120	70	490	600	100	280	310	140	180	2120
65	3																		
75	3			25		13,5											170	210	1710
90	4																		
100	4	160	45		35		21	50	37,5	147,5	70	565	750	120	321	365	200	244	1360
110	4																		
125	5				40		25		46	190	80	630	1068		365	410	250	300	855

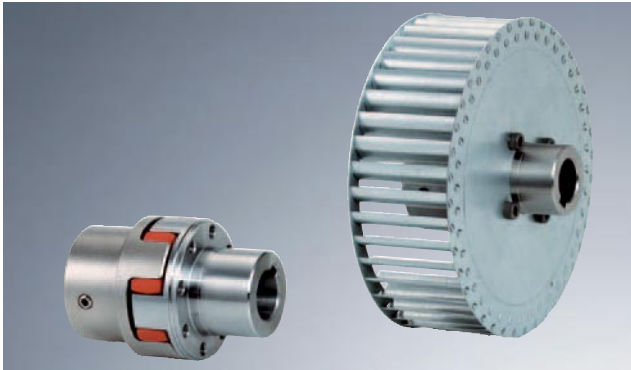
¹⁾ In case of a through base plate the dimension "e" of the shiftable linkage size 5 has to be increased by at least 10 mm.

Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9

Order form:

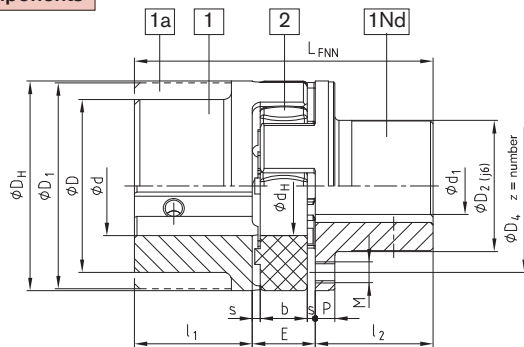
ROTEX® 38	SD	with 1,1 and 1	92 Sh A	1 - Ø 38	11 - Ø 28
Coupling size	Type	with slip ring 1,1 and shiftable linkage 1	Spider hardness	Component	Finish bore

Type FNN and FNN with fan

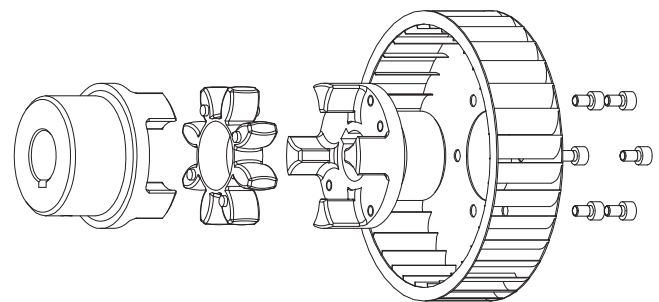


- Damping vibrations and reducing noise
- Ideal compensation for misalignment due to crowned teeth
- Coupling as plug-in design
- Easy checking of wear by sight control
- Coupling to be equipped with any fan
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9

Components



Type FNN



Type FNN with fan (typ 1)

ROTEX® type FNN (No. 021)

Size	$\varnothing d$ $\varnothing D$ $\varnothing D_1$	max. finish bore $\varnothing d_1$	Dimensions [mm]												
			D_H	D_2	D_4	d_H	E	s	b	l_1, l_2	P	M	z	Pitch	L_{FNN}
28	see shaft coupling on pages 30 and 31; stock programme/basic programme see pages 28 and 29	24	65	40	54	30	20	2,5	15	35	6,5	M6	8	8x45°	90
38		34	80	50	66	38	24	3,0	18	45	7,5	M8	8		114
42		42	95	60	80	46	26	3,0	20	50	9,5	M8	12	16x22,5°	126
48		48	105	68	90	51	28	3,5	21	56	10,5	M8	12		140
55		55	120	78	102	60	30	4,0	22	65	12,5	M10	8	8x45°	160
65		65	135	92	116	68	35	4,5	26	75	13,5	M10	12	16x22,5°	185
75		75	160	106	136	80	40	5,0	30	85	15,5	M12	15	20x18°	210
90		100	200	140	172	100	45	5,5	34	100	18,5	M16	15		245

Other sizes on request

Type 1: Fan screwed on

The ROTEX® coupling can be supplied with the fan screwed on. Specific connection dimensions of customers such as pitch circle of threads, size of threads and number of centering of fans should be mentioned in your inquiry.

Type 2: Fans injection-moulded

Low prices due to production volumes depending on quantity.

Type 3: Fans pressed or glued on

Special surface forming (knurling according to DIN 82) allows the fan to be pressed or glued onto the hub collar.

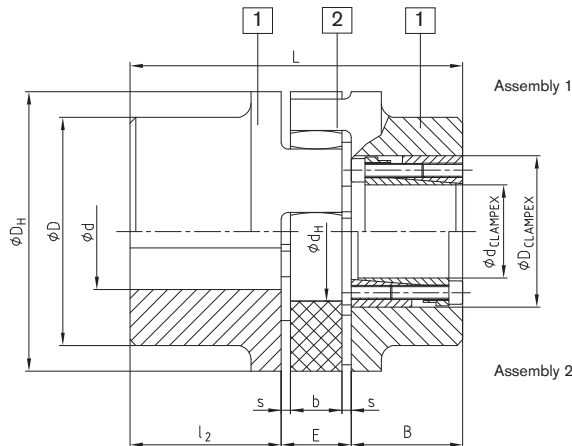


Order form:

ROTEX® 38	FNN	92 Sh A	1	–	Ø 38	1Nd	–	Ø 30
Coupling size	Type	Spider hardness	Component		Finish bore	Component		Finish bore

Further types with clamping sets

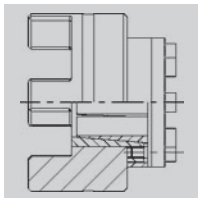
Components



ROTEX® type No. 001 with clamping set CLAMPEX® KTR 200														
Size	$\frac{\varnothing d}{\varnothing D_1}$	Hub material	CLAMPEX® KTR 200			B	Dimensions [mm]							
			Largest poss KTR clamping set dxD	Transmittable torques and force			l ₂	E	s	b	D _H	D	d _H	L
				T [Nm]	F _{AX} [kN]									
42	see shaft couplings on pages 30 and 31 basic programme see pages 28 and 29	Steel part 1	30x55	769	51	48	50	26	3,0	20	95	—	46	length L = l ₂ + E + B (clamping set)
48			35x60	1197	68	48	56	28	3,5	21	105	—	51	
55			45x75	2132	95	59	65	30	4,0	22	120	—	60	
65			45x75	2132	95	59	75	35	4,5	26	135	115	68	
75			50x80	3159	126	59	85	40	5,0	30	160	135	80	
90			65x95	4107	126	59	100	45	5,5	34	200	160	100	
100		GJS part 1	65x95	4107	126	59	110	50	6,0	38	225	180	113	
110			70x110	7023	201	70	120	55	6,5	42	255	200	127	
125			80x120	8026	201	70	140	60	7,0	46	290	230	147	
140			95x135	11373	239	70	155	65	7,5	50	320	255	165	
160			110x155	16068	292	80	175	75	9,0	57	370	290	190	length L = l ₂ + E + B (clamping set)
180			120x165	21910	365	80	195	85	10,5	64	420	325	220	

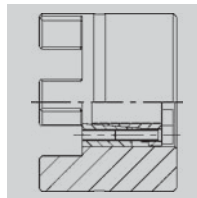
ROTEX® type No. 001 with clamping set CLAMPEX® KTR 200																	
KTR 200 Size	Length	Transmittable torque and axial force		Clamping screw DIN EN ISO 4762 – 12.9		KTR 200 Size	Length	Transmittable torque and axial force		Clamping screw DIN EN ISO 4762 – 12.9		KTR 200 Size	Length	Transmittable torque and axial force		Clamping screw DIN EN ISO 4762 – 12.9	
dxD	B	T [Nm]	F _{ax} [kN]	zxM	T _A [Nm]	dxD	B	T [Nm]	F _{ax} [kN]	zxM	T _A [Nm]	dxD	B	T [Nm]	F _{ax} [kN]	zxM	T _A [Nm]
20x47	48	513	51	6xM6	17	38x65	48	1299	68	8xM6	17	65x95	59	4107	126	8xM8	41
22x47	48	564	51	6xM6	17	40x65	48	1368	68	8xM6	17	70x110	70	7023	201	8xM10	83
24x50	48	616	51	6xM6	17	42x75	59	1990	95	6xM8	41	75x115	70	7524	201	8xM10	83
25x50	48	641	51	6xM6	17	45x75	59	2132	95	6xM8	41	80x120	70	8026	201	8xM10	83
28x50	48	718	51	6xM6	17	48x80	59	3033	126	8xM8	41	85x125	70	10659	251	10xM10	83
30x55	48	769	51	6xM6	17	50x80	59	3159	126	8xM8	41	90x130	70	11286	251	10xM10	83
32x60	48	1094	68	8xM6	17	55x85	59	3475	126	8xM8	41	95x135	66	11373	239	10xM10	83
35x60	48	1197	68	8xM6	17	60x90	59	3791	126	8xM8	41	for further details please see CLAMPEX® catalogue					

Design 4.2 with CLAMPEX® clamping set KTR 250



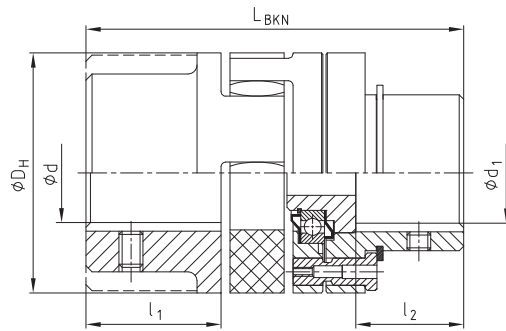
Frictionally engaged, backlash-free shaft-hub-connection for transmission of average torques.

Design 4.3 with CLAMPEX® clamping set KTR 400



Frictionally engaged, backlash-free shaft-hub-connection for transmission of larger torques. Largest clamping set possible depends on the hub collar diameter. Clamping set screw fitting possible both internally and externally. For details of calculation please see CLAMPEX® catalogue.

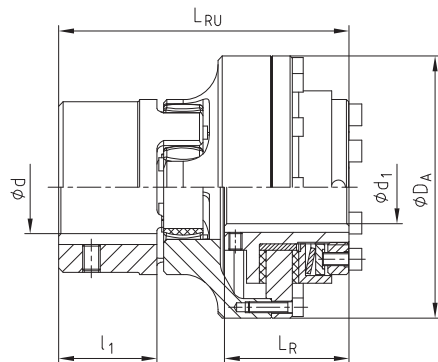
Further types with torque limiter



ROTEX® BKN - shear pin coupling, type BKN No. 009

Size	d	Max. d ₁	l ₁	l ₂	L _{BKN}	D _H	Min. fracture torque [Nm]
28	see shaft coupling on pages 30 and 31 basic programme see pages 28 and 29	28	35	25	101	65	100
38		38	45	35	125	80	190
42		42	50	40	139	95	250
48		48	56	46	153	105	300
55		55	65	55	177	120	400
65		65	75	65	202	135	500
75		75	85	70	230	160	600
90		100	100	85	266	200	700

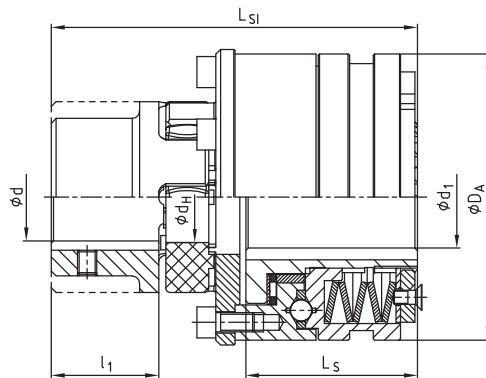
Modification for customer from the stock programme.
Please mention the fracture torques with your order!
For further details please see dim. sheet no. 5020/000/009-7603



ROTEX® - RUFLEX® - coupling with torque limiter, type No. 070

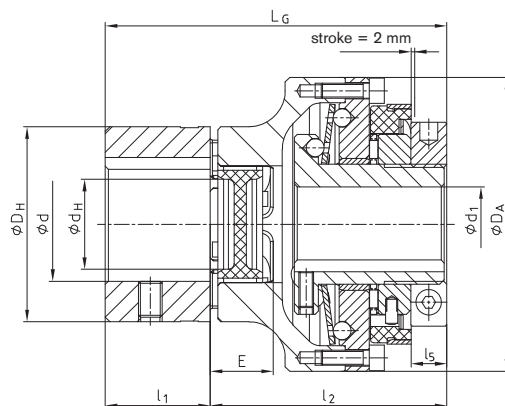
ROTEX® Size	RUFLEX® Size	Slipping torques [Nm]	d	d ₁ max.	D _A	l ₁	L _R	L _{RU}
14	00	0,5 — 5	see shaft coupling on pages 30 and 31 basic programme see pages 28 and 29	10	44	11	31	59
19	0	2 — 20		20 ¹⁾	63	25	33	78
24	01	5 — 70		22	80	30	45	98
28	1	20 — 200		25	98	35	52	113
38	2	25 — 400		35	120	45	57	133
48	3	50 — 800		45	162	56	68	166
75	4	90 — 1600		55	185	85	78	205

¹⁾ Finish bore exceeding ø 19, keyway according to 6885 sheet 3



ROTEX® - KTR-SI - coupling with torque limiter, type No. 070

ROTEX® Size	KTR-SI design	KTR-SI Size	Ratchet torque [Nm]	d	max. d ₁	D _A	l ₁	L _S	L _{SI}
28	DK	2	12-200	see shaft coupling on pages 30 and 31 basic programme see pages 28 and 29	35	100	35	56	124
	SR/SGR	0	5-40		20	55		34,5	102
38	DK	3	25-450		45	120	45	73	155
	SR/SGR	1	12-100		25	82		48	129,5
48	DK	4	50-1000		55	146	56	93,5	194
	SR/SGR	2	25-200		35	100		56	155
55	DK	5	85-2000		65	176	65	107	222,5
	SR/SGR	3	50-450		45	120		73	186
75	DK	—	—		—	—	85	—	—
	SR/SGR	4	100-2000		55	146		93,5	241,5
90	DK	—	—		—	—	100	—	—
	SR/SGR	5	170-3400		65	176		107	275,5



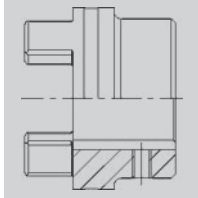
SYNTAX® - backlash-free, torsionally rigid overload coupling with ROTEX® GS

ROTEX® Size	SYNTAX® Size	SYNTAX® torque range disk spring [Nm]				Max. bore		D _A	D _H	d _H	E	L	L _G	l ₁	l ₂	l ₅
24	20	6-20	15-30	10-20	20-65	35	20	80	55	27	18	45	100	30	70	10
28	25	20-60	45-90	25-65	40-100	40	25	98	65	30	20	50	113	35	78	11
38	35	25-80	75-150	30-100	70-180	48	35	120	80	38	24	60	136	45	91	13
48	50	60-180	175-300	80-280	160-400	55	50	162	105	51	28	70	167	56	111	14

Hub designs

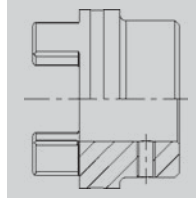
Due to the numerous applications of ROTEX® for many different mounting situations, this coupling system is available with various hub designs. These designs mainly differ in that they offer either positive or frictionally engaged connections, but mounting situations like, for example, gear shafts with integrated transmission cams or similar applications are covered, too.

Design 1.0 hub with keyway and fixing screw



Positive power transmission; permissible torque depends on the permissible surface pressure. Not suitable for backlash-free power transmission for heavily reversing operation.

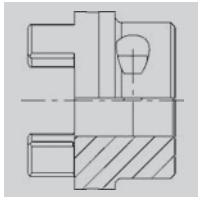
Design 1.1 hub without feather key, with setscrew



Positive torque transmission for connections pressed or glued in. (No ATEX release)

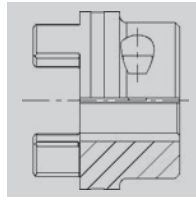
Design 1.3 hub with spline bore (page 28)

Design 2.0 clamping hub, single slotted, without keyway



Frictionally engaged, backlash-free shaft-hub-connection. Transmittable torques depend on the bore diameter (page 34). (Only for ATEX category 3)

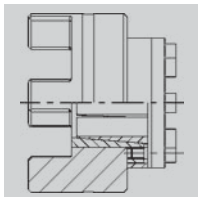
Design 2.1 clamping hub, single slotted, with keyway



Positive power transmission with additional frictional tightness. The frictional tightness avoids or reduces reversal backlash. Surface pressure of the keyway connection is reduced.

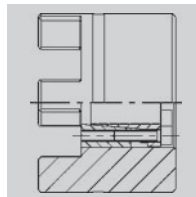
Design 2.3 clamping hub with spline bore (page 28/34)

Design 4.2 with CLAMPEX® clamping set KTR 250



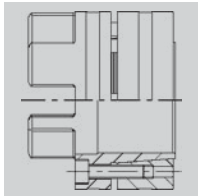
Frictionally engaged, backlash-free shaft-hub-connection for transmission of average torques.

Design 4.1 w. CLAMPEX® clamping set KTR 200/f. KTR 400 design 4.3



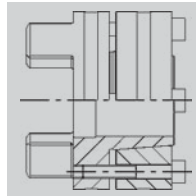
Frictionally engaged, backlash-free shaft-hub-connection for transmission of larger torques. Largest clamping set possible depends on the hub collar diameter. Clamping set screw fitting possible both internally and externally. For details of calculation please see CLAMPEX® catalogue.

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



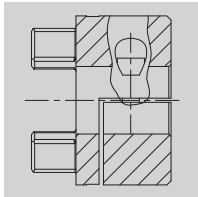
Integrated frictionally engaged shaft-hub-connection for transmission of higher torques. Screw fitting on elastomer side. For details about torques and dimensions see on page 33. Suitable for high speeds.

Design 6.5 clamping ring hub



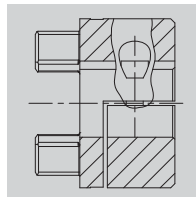
Design equal to 6.0, but clamping screws to be fitted externally. Suitable, for example, for disassembly of radial spacer tubes (special design).

Design 7.5 shell clamping hub without feather key for a double-cardanic connection



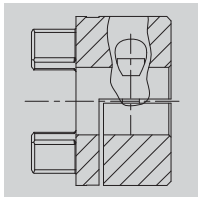
Frictionally engaged, backlash-free shaft-hub-connection for radial assembly of couplings. Transmittable torques depending on the bore diameter. (Only for ATEX category 3)

Design 7.6 shell clamping hub with feather key for a double-cardanic connection



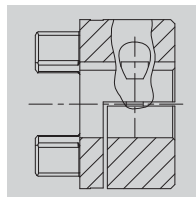
Positive power transmission with additional frictionally engaged operation for radial assembly of couplings. The frictionally engaged operation prevents or reduces reversing backlash, respectively. Surface pressure of the feather key connection is reduced.

Design 7.8 shell clamping hub without feather key



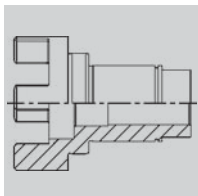
Frictionally engaged, backlash-free shaft-hub-connection for radial assembly of couplings. Transmittable torques depending on the bore diameter. (Only for ATEX category 3)

Design 7.9 shell clamping hub with feather key

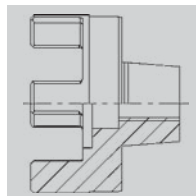


Positive power transmission with additional positive locking for radial assembly of couplings. Positive locking prevents or reduces reversing backlash, respectively. Surface pressure of the feather key connection is reduced.

Special hubs on request



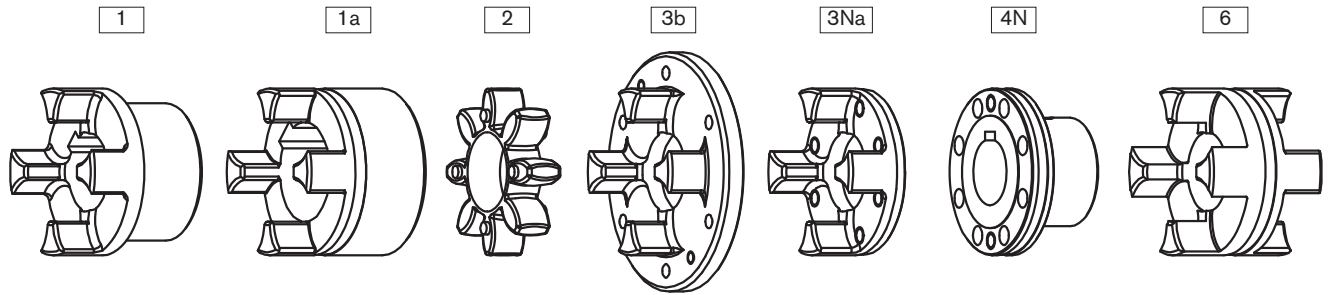
Special lengthened hub/shaft with integrated cams.



Special hub with external taper as a frictionally engaged connection.

Weights and mass moment of inertia

Components



ROTEX® components													
Size	Standard hub				Large hub			Spider	Driving flange			Coupling flange	DKM spacer
	Part 1				Part 1a			Part 2	Part 3b	Part 3Na		Part 4N	Part 6
	Alu [kg] [kgm²]	GJL [kg] [kgm²]	GJS [kg] [kgm²]	St [kg] [kgm²]	Alu [kg] [kgm²]	GJL [kg] [kgm²]	St [kg] [kgm²]	Polyurethan (Vulkollan) [kg] [kgm²]	GJS [kg] [kgm²]	St [kg] [kgm²]	GJS [kg] [kgm²]	St [kg] [kgm²]	Alu [kg] [kgm²]
14	—	—	—	—	0,020	—	—	0,0044	—	—	—	—	—
	—	—	—	—	0,000003	—	—	0,0000005	—	—	—	—	—
19	0,064	—	—	—	0,074	—	0,25	0,0056	—	—	—	—	—
	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	0,000010	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	0,00003	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	0,00007	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
	0,011	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	0,00042	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	0,00116	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	0,00323	0,0651	—	0,02723	0,0448	0,0224
100	—	—	19,7	—	—	—	—	0,81	10,2	—	6,350	16,16	—
	—	—	0,11694	—	—	—	—	0,00588	0,1165	—	0,05273	0,0798	—
110	—	—	27,4	—	—	—	—	1,19	—	—	8,578	21,35	—
	—	—	0,20465	—	—	—	—	0,01097	—	—	0,09121	0,2824	—
125	—	—	42,3	—	—	—	—	1,63	—	—	12,598	34,33	—
	—	—	0,40727	—	—	—	—	0,01972	—	—	0,17469	0,3229	—
140	—	—	58,1	—	—	—	—	2,11	—	—	17,271	48,69	—
	—	—	0,67739	—	—	—	—	0,03129	—	—	0,29247	0,4917	—
160	—	—	84,2	—	—	—	—	3,21	—	—	26,305	71,08	—
	—	—	1,31729	—	—	—	—	0,63228	—	—	0,59436	0,9693	—
180	—	—	118,5	—	—	—	—	5,25	—	—	33,076	109,43	—
	—	—	2,30835	—	—	—	—	0,13789	—	—	0,97394	1,9650	—

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

Weights and mass moment of inertia

ROTEX® complete couplings												
Size	AFN		BFN		CF		DF		ZWN ¹⁾		SD	
	Weight [kg]	Mass moment of inertia J [kgm²]	Weight [kg]	Mass moment of inertia J [kgm²]	Weight [kg]	Mass moment of inertia J [kgm²]	Weight [kg]	Mass moment of inertia J [kgm²]	Weight [kg]	Mass moment of inertia J [kgm²]	Weight [kg]	Mass moment of inertia J [kgm²]
19	—	—	—	—	0,44	0,00016	0,38	0,00020	—	—	0,42	0,00008
24	0,98	0,00036	1,1	0,00041	0,84	0,00047	0,57	0,00047	2,2	0,00084	1,1	0,00046
28	1,6	0,00083	1,7	0,00095	1,5	0,00124	1,1	0,00141	3,6	0,00193	1,9	0,00106
38	2,8	0,00209	2,6	0,00193	1,9	0,00217	1,5	0,00259	5,5	0,00393	3,0	0,00435
42	4,5	0,00472	4,1	0,00419	3,1	0,00513	2,6	0,00662	8,6	0,00853	4,4	0,00804
48	5,9	0,00736	5,5	0,00684	3,9	0,00755	3,0	0,00881	11,3	0,0138	6,2	0,00223
55	8,9	0,01480	8,3	0,01369	6,4	0,01692	5,3	0,02131	17,7	0,0279	9,8	0,0166
65	12,9	0,0266	12,3	0,0259	8,9	0,02780	6,4	0,003037	26,3	0,0531	14,9	0,0326
75	20,6	0,0601	19,3	0,0572	13,5	0,0557	9,2	0,05741	41,6	0,1172	23,2	0,0706
90	37,8	0,1718	34,2	0,1551	22,3	0,1356	14,5	0,1333	73,2	0,3173	40,5	0,1891
100	49,6	0,3068	45,2	0,2737	30,9	0,2401	21,2	0,2394	98,7	0,5629	46,7	0,2467
110	67,5	0,5385	61,7	0,4793	42,9	0,4324	29,8	0,4446	135,1	0,986	61,5	0,4186
125	102,6	1,0485	94,4	0,9413	64,4	0,8187	42,2	0,8031	206,2	1,937	96,8	0,8497
140	141,2	1,743	129,7	1,564	90,4	1,4221	62,5	1,4580	283,3	3,222	127,8	1,368
160	210,3	3,517	190,9	3,107	127,6	2,589	83,6	2,4805	418,2	6,393	190,3	2,723
180	306,6	6,582	274,4	5,668	175,1	4,448	107,9	4,141	601,9	11,682	262,2	4,810

BTAN/SBAN without drum/disk		
Size	Weight [kg]	Mass moment of inertia J [kgm²]
28	0,90	0,0004
38	2,10	0,0014
42	3,24	0,0031
48	4,41	0,0053
55	6,60	0,0105
65	10,1	0,0209
75	15,4	0,0442
90	27,6	0,1224
100	36,9	0,2074
110	50,9	0,3665
125	79,1	0,7349
140	109,0	1,2292
160	161,9	2,4569
180	232,9	4,4967

Drum for BTAN ²⁾		
Brake disk $\varnothing D_B \times B$	Weight [kg]	Mass moment of inertia J [kgm²]
160 x 60	2,12	0,01
200 x 75	3,45	0,03
250 x 95	6,87	0,08
315 x 118	14,95	0,28
400 x 150	31,20	0,89
500 x 190	60,00	2,70
630 x 236	112,00	8,01
710 x 265	161,00	14,9
800 x 300	202,00	27,2

Disk for SBAN ²⁾		
Disk brake $\varnothing A \times G_S$	Weight [kg]	Mass moment of inertia J [kgm²]
200 x 12,5	2,928	0,015367
250 x 12,5	4,662	0,037584
315 x 16	8,618	0,111829
400 x 16	15,230	0,315206
500 x 16	23,964	0,769963
630 x 20	47,716	2,426359
710 x 20	60,934	3,915100
800 x 25	94,913	7,878998
900 x 25	118,954	12,609089
1000 x 25	148,240	19,234941

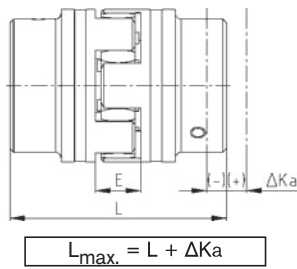
Weights and mass moments of inertia refer to standard hub with medial bore without keyway.

¹⁾ Weights and mass moments of inertia without intermediate shaft.

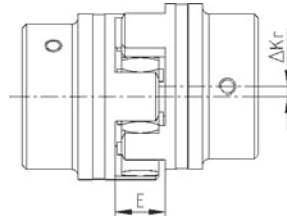
²⁾ Selection of ROTEX® brake drum - disk brake please see page 41.

Displacements

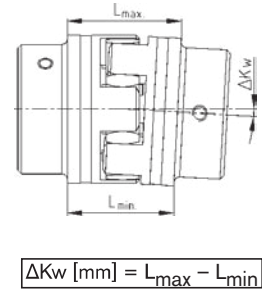
Axial displacement ΔK_a



Radial displacement ΔK_r



Angular displacement ΔK_w [degrees]

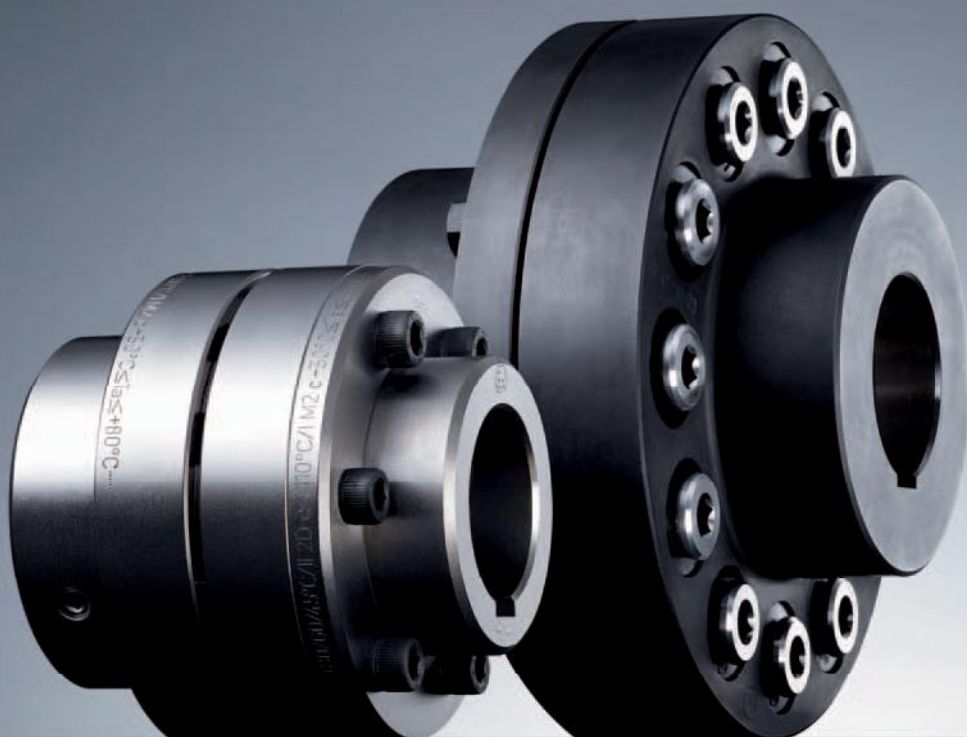


Displacements spider 92, 95/98 Shore A																	
ROTEX® Size	14	19	24	28	38	42	48	55	65	75	90	100	110	125	140	160	180
Max. axial displacement ΔKa [mm]	-0,5 +1,0	-0,5 +1,2	-0,5 +1,4	-0,7 +1,5	-0,7 +1,8	-1,0 +2,0	-1,0 +2,1	-1,0 +2,2	-1,0 +2,6	-1,5 +3,0	-1,5 3,4	-1,5 +3,8	-2,0 +4,2	-2,0 +4,6	-2,0 +5,0	-2,5 +5,7	-3,0 +6,4
Max. radial displacement with n=1500 rpm ΔKr [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 ΔKw [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
ΔKw [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 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 ΔKa [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 ΔKr [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 ΔKw [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
ΔKw [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 spider PA and PEEK																
ROTEX® Size	14	19	24	28	38	42	48	55	65	75	90	100	110	125	140	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	-2,0 +6,4
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	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	0,65	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	3,30

The above-mentioned figures of displacement of 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 $+ 30^\circ \text{C}$. For different operating conditions please order our data sheet KTR-N 20240 regarding displacements for ROTEX®. 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. In case of an axial shifting the dimension "L" has to be considered as a minimum dimension in order to keep the spider free from pressure on its faces. Detailed mounting instructions are shown on our homepage (www.ktr.com).



POLY-NORM®

Short torsionally flexible shaft coupling

REVOLEX® KX

Torsionally flexible pin & bush coupling

POLY

Torsionally flexible coupling, not failsafe

Made for Motion



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POLY-NORM®

Torsionally flexible coupling

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REVOLEX® KX

Torsionally flexible pin & bush coupling

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POLY

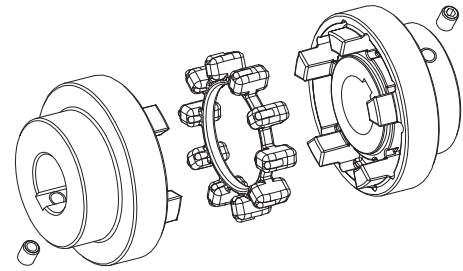
Torsionally flexible, shear type coupling

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Coupling description

General description

The POLY-NORM® coupling is a torsionally flexible, shear type shaft coupling. It has an axial plug-in design with a unique short over all length. The POLY-NORM® can be used in nearly all types of machinery and is ideal for the pump industry. The POLY-NORM® coupling compensates for shaft misalignment of all kinds and safely transmits the torque.



Function/Design

The coupling consists of two hubs, with fingers separated by elastomeric elements. The hubs are assembled blindly plugging the hub fingers into each other axially and the elastomer ring is trapped in a groove between both coupling hubs. The compact POLY-NORM® coupling transmits torque with the elastomer in compression.

Shaft misalignments, vibrations and shock loads are effectively absorbed by the POLY-NORM®.

The coupling is maintenance-free and used in general machinery, the pump industry and in compressors. Torques of up to 26,800 Nm are stocked in 17 different sizes and 7 designs. In addition to the standard coupling models, flange drop out center and spacer options are available in many variations.



Explosion-proof use

POLY-NORM® couplings are suitable for the use in drives in hazardous areas. The couplings are certified according to EC Standard 94/9/EC (ATEX 95) and belong to category 2G/2D, are confirmed and thus suitable for the use in hazardous areas of zone 1, 2, 21 and 22. Please read our information in the respective Type Examination Certificate and the operating and mounting instructions under www.ktr.com.



Variety of Options

The coupling can be adapted to many applications due to the many options that are possible with the building block arrangement. The POLY-NORM® components of a given model can be mixed and matched with each other to obtain different shaft distances using the same basic component.

On request, we can provide customized variations of the POLY-NORM® to fit your needs – for example, our POLY-NORM® overload coupling with RUFLEX® torque limiter. Just ask us!



Coupling selection

Selection of the POLY-NORM® coupling meets the DIN 740 part 2 specification. The coupling must be sized such that the coupling rated nominal torque is not exceeded in any operating condition. A comparison must be made between the application torque vs. the rating of the coupling. The selection process for torsionally flexible shaft couplings is described in detail in the ROTEX® catalogue which can be used for POLY-NORM® couplings as well. The torques T_{KN}/T_{Kmax} mentioned refer to the elastomer ring. The shaft-hub-connection has to be investigated by the customer.

Service factor S_t for temperature				
	-30 °C +30 °C	+40 °C	+60 °C	+80 °C
S_t	1,0	1,2	1,4	1,8

Service factor S_z for starting frequency				
starting frequency/h	100	200	400	800
S_z	1,0	1,2	1,4	1,6

Service factor S_A/S_L for shocks	
	S_A/S_L
gentle shocks	1,5
average shocks	1,8
heavy shocks	2,5

Example of calculation – Pump drive with three-phase motor

Given: Details of driving side

Power	$P = 75 \text{ kW}$	
Speed	$n = 1485 \text{ rpm}$	
Mass moment of inertia	$J_A = 1,06 \text{ kgm}^2$	$\Rightarrow S_A = 1,5$
Starting frequency	$z = 6^{1/h}$	$\Rightarrow S_z = 1,0$
Ambient temperature	$= +60 \text{ °C}$	$\Rightarrow S_t = 1,4$

Given: Details of driven side

Pump		
Nominal torque	$T_{LN} = 400 \text{ Nm}$	
Peak torque ¹⁾	$T_{LS} = 300 \text{ Nm}$	¹⁾ Peak value with shock load
Mass moment of inertia	$J_L = 2,3 \text{ kgm}^2$	$\Rightarrow S_L = 1,5$

Calculation

● Rated driving torque

$$T_{AN} [\text{Nm}] = 9550 \cdot \frac{P_{AN} [\text{kW}]}{n_{AN} [\text{rpm}]}$$

$$T_{AN} = 9550 \cdot \frac{75 \text{ kW}}{1485 \text{ rpm}} = 484 \text{ Nm}$$

Coupling selection

● Load produced by rated torque:

$$T_{KN} \geq T_{AN} \cdot S_t$$

$$T_{KN} \geq 484 \text{ Nm} \cdot 1,4 = 678 \text{ Nm}$$

Selected: POLY-NORM® AR Size 75:

$$T_{KN} = 850 \text{ Nm}$$

$$T_{Kmax} = 1700 \text{ Nm}$$

● Load produced by torque shocks:

$T_{Kmax} \geq T_S \cdot S_z \cdot S_t$

Drive-sided shock
 $T_S = T_{AS} \cdot M_A \cdot S_A$

● Driving torque:
 $T_{AS} = 2 \cdot T_{AN}$
 $= 2 \cdot 484 \text{ Nm} = 968 \text{ Nm}$

$M_A = \frac{J_L}{(J_A + J_L)} = \frac{2,3 \text{ kgm}^2}{(1,06 \text{ kgm}^2 + 2,3 \text{ kgm}^2)} = 0,68$

$T_S = 968 \text{ Nm} \cdot 0,68 \cdot 1,5 = 987 \text{ Nm}$

$T_{Kmax} \geq 987 \text{ Nm} \cdot 1 \cdot 1,4 = 1381 \text{ Nm}$

$T_{Kmax} \text{ with } 1700 \text{ Nm} \geq 1381 \text{ Nm} \quad \checkmark$

$T_{Kmax} \geq T_S \cdot S_z \cdot S_t$

Shock on driven side
 $T_S = T_{LS} \cdot M_L \cdot S_L$

$M_A = \frac{J_A}{(J_L + J_A)} = \frac{1,06 \text{ kgm}^2}{(2,3 \text{ kgm}^2 + 1,06 \text{ kgm}^2)} = 0,32$

$T_S = 300 \text{ Nm} \cdot 0,32 \cdot 1,5 = 144 \text{ Nm}$

$T_{Kmax} \geq 144 \text{ Nm} \cdot 1,0 \cdot 1,4 + 400 \text{ Nm} \cdot 1,4 = 762 \text{ Nm}$

$T_{Kmax} \text{ with } 1700 \text{ Nm} \geq 762 \text{ Nm} \quad \checkmark$

Technical data

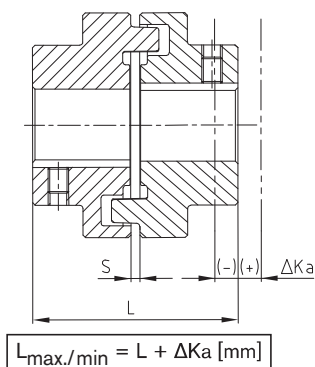
POLY-NORM® Technical data													
Size	Torque [Nm]			Max. speed [rpm] at V = 35 m/s	Twisting angle with		Torsion spring stiffness C _{dyn} [Nm/rad]				Max. permissible displacement [mm] ¹⁾		
	Nominal T _{KN}	Max. T _{Kmax.}	Alternating T _{KW}		T _{KN}	T _{Kmax}	1,0 T _{KN}	0,75 T _{KN}	0,5 T _{KN}	0,25 T _{KN}	Axial ΔKa	Radial ΔKr	Angular ΔKw
28	40	80	16	9650	4,5	6,0	5200	3318	1867	897	± 1,0	0,20	1,2
32	60	120	24	8550			7820	4989	2821	1349	± 1,0	0,25	1,4
38	90	180	36	7650			13540	8639	4885	2336	± 1,0	0,25	1,5
42	150	300	60	6950			26250	16748	9471	4528	± 1,0	0,25	1,7
48	220	440	88	6300			29896	19074	10786	5157	± 1,5	0,30	1,8
55	300	600	120	5650	4,0	5,5	38500	24563	13891	6641	± 1,5	0,30	2,0
60	410	820	164	5150			67600	43129	23200	11661	± 1,5	0,30	2,2
65	550	1100	220	4750			81800	52188	26994	14111	± 1,5	0,35	2,4
75	850	1700	340	4200			122900	78410	40557	21200	± 1,5	0,40	2,7
85	1350	2700	540	3650			243045	155063	74858	41925	± 1,5	0,40	3,0
90	2000	4000	800	3300			361571	230682	111364	62371	± 1,5	0,45	3,4
100	2900	5800	1160	2950			548200	349752	168846	94565	± 3,0	0,50	3,9
110	3900	7800	1560	2650			792300	505487	244028	136672	± 3,0	0,60	4,3
125	5500	11000	2200	2350	2,5	3,5	1023240	652827	315158	176509	± 3,0	0,60	4,8
140	7200	14400	2880	2100			1640430	1046594	508533	282974	± 3,0	0,60	5,5
160	10000	20000	4000	1900			2090930	1334013	648188	360685	± 3,0	0,65	6,1
180	13400	26800	5360	1650			2670700	1703907	827917	460696	± 3,0	0,65	6,0

¹⁾ Displacement at n = 1500 rpm.

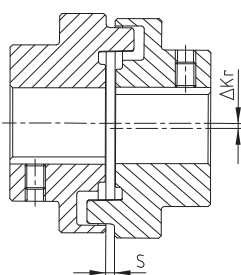
Angular and radial displacement can occur at the same time. The sum of all displacements must not exceed the figures set forth in the table. Couplings may be dynamically balanced on request. (Semi-wedge balancing G 6,3 with 1500 rpm). For circumferential speeds exceeding V = 20 m/s we would recommend dynamic balancing.

Displacements

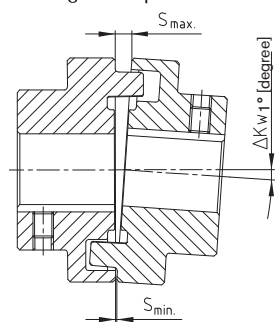
Axial displacement ΔKa



Radial displacement ΔKr



Angular displacement ΔKw



Assembly Guidelines

During assembly, the coupling halves must be mounted in a way that the coupling hub faces are flush to the end of the shafts. The alignment of the shafts must be adjusted that radial and the angular displacements are minimal. The life of the coupling and bearings is extended by precise alignment. Steps must be taken to ensure that the alignment will not change during all operating conditions. Shaft displacements which cannot be avoided must not exceed the figures indicated in the table. Angular and radial displacements can occur at the same time but the sum of these displacements must not exceed the figures set forth in the table above. See the KTR mounting instructions, KTR standard 49510 at 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
Applications	General machine construction Pump industry ATEX applications Chemical industry Applications of average elasticity
Resistant to	Gasoline, diesel Acids, bases Tropics (Salt-) Water (hot/cold) Oils, greases Propane, butane Natural gas, city gas

Elastomeres Viton [FKM] 60 Shore A for the high-temperature range

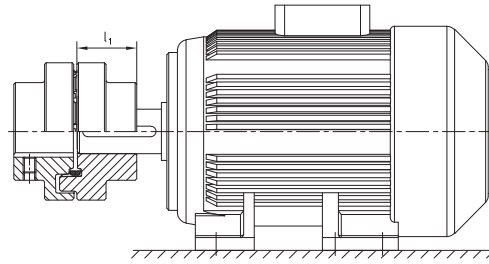


Elastomer ring



Elastomer ring Viton

Selection of standard IEC motors



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

A. C. motor 50 Hz			Motor output n = 3000 rpm 2-pole		POLY- NORM® coupling size	Motor output n = 1500 rpm 4-pole		POLY- NORM® coupling size	Motor output n = 1000 rpm 6-pole		POLY- NORM® coupling size	Motor output n = 750 rpm 8-pole		POLY- NORM® coupling size
Size	Shaft end dxl [mm]		Output P [kW]	Torque T [Nm]		Output P [kW]	Torque T [Nm]		Output P [kW]	Torque T [Nm]		Output 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	28/32	0,55	3,7	28/32	0,37	3,9	28/32	0,18	2,5	28/32
			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	
112M				3	20		2,2	22		1,1	16			
132S	38 x 80		4	13		4	27		2,2	22		1,5	21	
132M			5,5	18		5,5	36		3	30		2,2	30	
			7,5	25	38			38	4	40	38	3	40	38
						7,5	49			5,5		55		
160M	42 x 110		11	36		11	72		7,5	75	42	4	54	42
160L			15	49	42				5,5	74				
180M	48 x 110		18,5	60			15	98		11	109		7,5	100
180L			22	71	48	22	144		15	148		11	145	48
200L	55 x 110		30	97			30	196	55	18,5	181	55	15	
225S			37	120	55					22	215			15
225M	55 x 110	60 x 140					37	240	60			60	18,5	244
250M	60 x 140	65 x 140	45	145		45	292			30	293			22
280S	60 x 140	65 x 140	55	177	60	55	356	65	37	361	65	30	392	65
280M			75 x 140	75	241		75	484	75	45	438	75	37	483
315S	65 x 140	80 x 170	90	289	65	90	581			55	535			45
315M					110	353		110	707	85	75	727	85	55
			132	423	75	132	849		90		873			75
315L	65 x 140	80 x 170	160	513			160	1030	90	110	1070	90	90	1170
			200	641		200	1290			132	1280			110
315	85 x 170	85 x 170			85				160	1550	100	132	1710	100
			250	802			250	1600		200		1930		
355	75 x 140	95 x 170	315	1010	90	315	2020	110	250	2410	110	200	2580	110
			355	1140			355		2280			315	3040	
400	80 x 170	110 x 210	400	1280		400	2570	125	400	3850	140	315	4060	125
			500	1600		500	3210							
450	90 x 170	120 x 200	560	1790	100	560	3580	125	450	4330	160	355	4570	140
			630	2020		630	4030		500	4810			400	
450	90 x 170	120 x 200	710	2270	110	710	4540	140	560	5390	180	450	5790	160
			800	2560		800	5120		630	6060			500	
450	90 x 170	120 x 200	900	2880	125	900	5760	160	710	6830	180	560	7190	180
			1000	3200		1000	6400		800	7690			630	

The arrangement of couplings is valid for an ambient temperature of up to + 30 °C. For the selection there is a minimum safety factor of 2 of the max. coupling torque (T_{Kmax}). A detailed arrangement is possible according to catalogue, page 55. Drives with periodical torque curves must be selected according to DIN 740 part 2. If requested, KTR will make the selection.

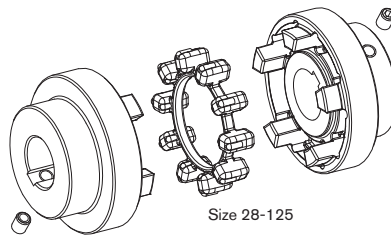
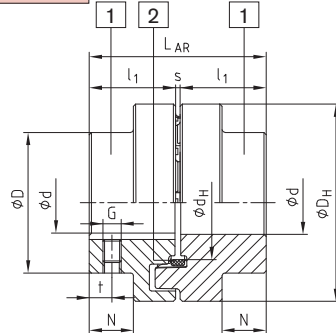
The coupling selection assumes normal operating conditions. Torque T = nominal torque according to Siemens catalogue M 11 · 1994/95.

Type AR

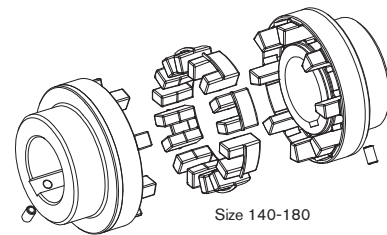


- Torsionally flexible, reduces vibrations
- Failsafe
- Maintenance-free
- Very short design
- Axial plug-in
- According to DIN 740
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)
- Detailed mounting instructions and further information available at www.ktr.com

Components



Size 28-125



Size 140-180

- 1 = Standard hub
2 = Elastomer ring

Components:
Type AR
(GJL)
(NBR 78 ShA)

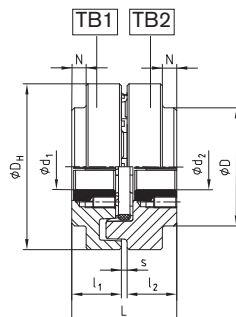
POLY-NORM® Type AR														
Size	Elastomer ring (part 2) ¹⁾ Torque [Nm]		Finish-bore Ø d _{max} ²⁾	Dimensions [mm]									Mass moment of inertia [kgm²] ³⁾	AR ³⁾ Weight [kg]
				General								Feststellgewinde ²⁾		
	T _{KN}	T _{K max.}		L _{AR}	l ₁	s	D _H	D	d _H	N	G	t		
28	40	80	28	59	28	3	69	46	36,5	12	M5	7	0,0004	0,9
32	60	120	32	68	32	4	78	53	41,5	14	M8	7	0,0008	1,4
38	90	180	38	80	38	4	87	62	50	19,5	M8	10	0,0016	2,0
42	150	300	42	88	42	4	96	69	55,5	20	M8	10	0,0026	2,7
48	220	440	48	101	48	5	106	78	64	24	M8	15	0,0042	3,7
55	300	600	55	115	55	5	118	90	73	29	M8	14	0,0070	5,5
60	410	820	60	125	60	5	129	97	81	33	M8	15	0,0112	6,9
65	550	1100	65	135	65	5	140	105	86	36	M10	20	0,0174	8,8
75	850	1700	75	155	75	5	158	123	100	42,5	M10	20	0,028	13,5
85	1350	2700	85	175	85	5	182	139	116	48,5	M10	25	0,052	19,5
90	2000	4000	90	185	90	5	200	148	128	49	M12	25	0,090	23,2
100	2900	5800	100	206	100	6	224	165	143	55	M12	25	0,160	31,9
110	3900	7800	50-110	226	110	6	250	185	158	60	M16	30	0,317	38,0
125	5500	11000	55-125	256	125	6	280	210	178	70	M16	35	0,570	55,2
140	7200	14400	65-140	286	140	6	315	235	216	76,5	M20	35	1,030	92,6
160	10000	20000	75-160	326	160	6	350	265	246	94,5	M20	45	1,746	126,9
180	13400	26800	75-180	366	180	6	400	300	290	111,5	M20	50	3,239	181,8

¹⁾ Standard material perbunan (NBR) 78 Shore A, size 140 - 180 double tooth elastomers

²⁾ Bore H7 with keyway DIN 6885 sheet 1 [JS9] and threads for setscrews on the feather keyway.

³⁾ Refer to medium bore

Components



POLY-NORM® with taper clamping sleeve																
Size	Taper clamping sleeve	Dimensions [mm]		Fixing screws ¹⁾ for taper sleeve				Size	Taper clamping sleeve	Dimensions [mm]		Fixing screws ¹⁾ for taper 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	85	2517	60	46,5	1/2"	25	6	49	
48	1610	40	30,0	3/8"	16	5	20	90	3020	75	52,0	5/8"	32	8	92	
	1615	40	42,5	3/8"	16	5	20	100	3535	90	98,0	1/2"	38	10	115	
60	2012	50	38,5	7/16"	22	6	31	125	4040	100	111,5	5/8"	45	12	172	
75	2517	60	52,5	1/2"	25	6	49	1) 2 fixing screws except for 3535/4040 3 fixing screws.								

Coupling design
Combination possible

TB 1 Cam-sided screwing
Please ask for our separate data sheet M407045

TB 2 Collar-sided screwing

¹⁾ 2 fixing screws except for 3535/4040 3 fixing screws.

Order form:

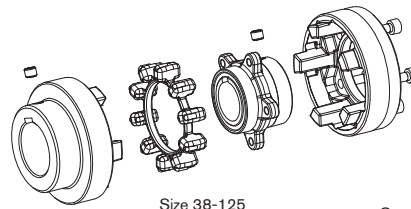
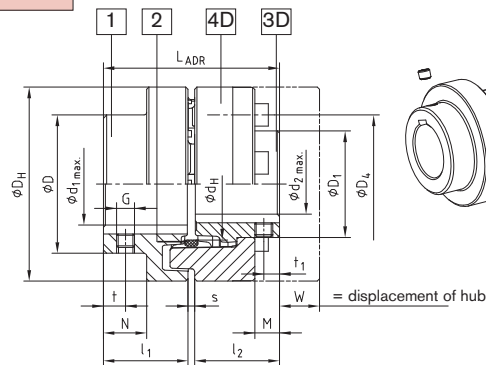
POLY-NORM® 38	AR	Ø38	Ø30
Coupling size	Type	Finish bore	Finish bore

Type ADR (3-part design)

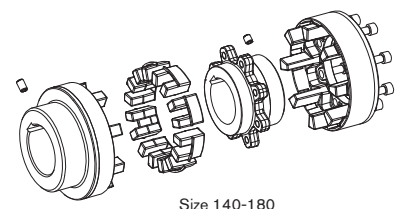


- Torsionally flexible, reduces vibrations
- Elastomer ring can be exchanged in assembled condition
- Failsafe
- Maintenance-free
- Short design
- Axial plug-in
- According to DIN 740
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)
- Detailed mounting instructions and further information available at www.ktr.com

Components



Size 38-125



Size 140-180

Components:

Type ADR (3-part)

1 = Standard hub*	(GJL)
2 = Elastomer ring	(NBR 78 ShA)
3D = Flange hub	(GJS)
4D = Cam ring	(GJL)

* To be preferably used drive-sided

POLY-NORM® Type ADR

Size	Elastomer ring torque [Nm] ¹⁾		Dimensions [mm]															
			Finish bore ²⁾		General										Thread for setscrew			
	T _{KN}	T _{Kmax.}	d ₁ max.	d ₂ max.	L _{ADR}	l ₁ /l ₂	s	D _H	D	D ₁	d _H	N	M	W	G	t	t ₁	T _A [Nm]
38	90	180	38	34	80	38	4	87	62	48	50	19,5	11,0	12	M8	10	7	10
42	150	300	42	38	88	42	4	96	69	54	55,5	20	12,0	16	M8	10	7	10
48	220	440	48	44	101	48	5	106	78	62	64	24	13,7	16	M8	15	7	10
55	300	600	55	50	115	55	5	118	90	72	73	29	18,7	15	M8	14	14	10
60	410	820	60	56	125	60	5	129	97	80	81	33	22,2	14	M8	15	15	10
65	550	1100	65	60	135	65	5	140	105	86	86	36	26,7	11	M10	20	20	17
75	850	1700	75	68	155	75	5	158	123	98	100	42,5	27,8	16	M10	20	20	17
85	1350	2700	85	78	175	85	5	182	139	112	116	48,5	33,7	18	M10	25	25	17
90	2000	4000	90	85	185	90	5	200	148	122	128	49	31,5	26	M12	25	25	40
100	2900	5800	100	95	206	100	6	224	165	136	143	55	37,5	28	M12	25	25	40
110	3900	7800	110	105	226	110	6	250	185	150	158	60	39,5	30	M16	30	30	80
125	5500	11000	125	115	256	125	6	280	210	168	178	70	48,0	35	M16	35	35	80
140	7200	14400	65-140	55-135	286	140	6	315	235	195	216	76,5	47,0	59	M20	35	35	140
160	10000	20000	75-160	65-155	326	160	6	350	265	225	246	94,5	65,0	43	M20	45	45	140
180	13400	26800	75-180	65-175	366	180	6	400	300	255	290	111,5	79,0	33	M20	50	50	140

¹⁾ Standard material perbunan (NBR) 78 Shore A, size 140 - 180 double tooth elastomers

²⁾ Bore H7 with keyway to DIN 6885 sheet 1 (JS9) with thread for set screws

Classification of cap crews DIN EN ISO 4762-12.9

Size	M x l [mm]	Number z	Separation z x angle	D ₄ [mm]	T _A [Nm] ³⁾	Size	M x l [mm]	Number z	Separation z x angle	D ₄ [mm]	T _A [Nm] ³⁾
38	M6x16	5	5x72	62	10	90	M16x30	6	6x60	149	210
42	M8x16	5	5x72	69	25	100	M16x30	6	6x60	163	210
48	M8x20	6	6x60	78	25	110	M16x40	8	8x45	183	210
55	M8x20	6	6x60	88	25	125	M20x40	8	8x45	202	410
60	M8x20	6	6x60	98	25	140	M20x50	8	8x45	237	410
65	M10x20	6	6x60	104	49	160	M20x55	9	9x40	267	410
75	M10x25	6	6x60	120	49	180	M20x60	10	10x36	304	410
85	M12x25	6	6x60	138	86						

Order form:

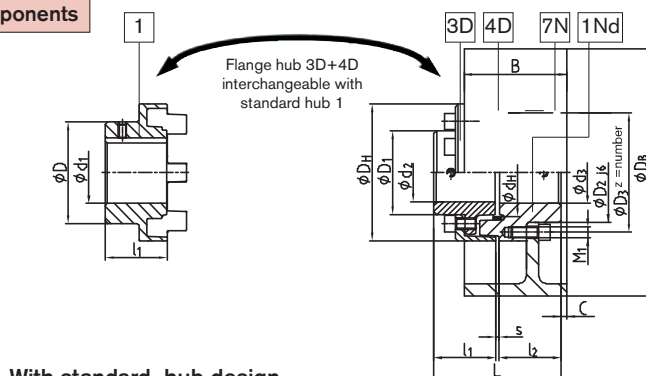
POLY-NORM® 65	ADR	d ₁ = Ø55	d ₂ = Ø60
Coupling size	Type	Finish bore part 1	Finish bore part 3D

Type BTA and SBA with Brake drum/Brake disk for brake stop

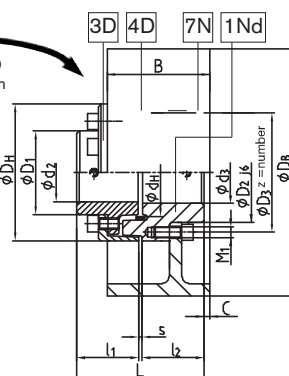


- Shaft coupling POLY-NORM® ADR-BTA with brake drum to be mounted to external drum brakes with double shoes according to DIN 15431/15435
- Shaft coupling POLY-NORM® ADR-SBA with disk for braking calipers
- Each coupling type to be combined with various sizes of brake drum disks (see selection)
- The brake drum or brake disk has to be placed onto the shaft end with the biggest mass moment of inertia
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9

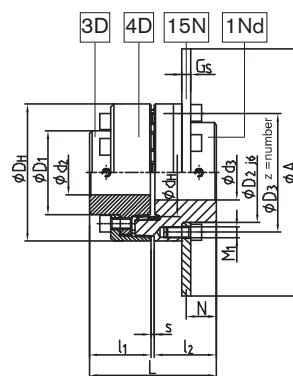
Components



With standard hub design
AR-BTA or AR-SBA



Brake drum design ADR-BTA



Brake disk design ADR-SBA

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

Size	Elastomer ring torque [Nm] ¹⁾		Dimensions [mm]											
	T _{KN}	T _{Kmax.}	Finish bore max.											
			D; D ₁	d ₁	d ₂	d ₃	D _H	D ₂	D ₃	z x α	M ₁	l ₁ ; l ₂	s	L
38	90	180	For dimension diameter $\varnothing D_1$, $\varnothing D_2$, please see our company catalogue on page 55 and 56.	38	34	38	87	61	75	5 x 72°	M6	38	4	80
42	150	300		42	38	42	96	68	82	5 x 72°	M8	42	4	90
48	220	440		48	44	48	106	77	92	6 x 60°	M8	48	5	101
55	300	600		55	50	55	118	88	104	6 x 60°	M8	55	5	115
60	410	820		60	56	60	129	96	114	6 x 60°	M8	60	5	125
65	550	1100		65	60	65	140	104	122	6 x 60°	M10	65	5	135
75	850	1700		75	68	75	158	121	140	6 x 60°	M10	75	5	155
85	1350	2700		85	78	85	182	137	160	6 x 60°	M12	85	5	175
90	2000	4000		90	85	90	200	146	174	6 x 60°	M16	90	5	185
100	2900	5800		100	95	100	224	164	195	6 x 60°	M16	100	6	206
110	3900	7800		50-110	105	50-110	250	184	218	8 x 45°	M16	110	6	226
125	5500	11000		55-125	115	55-125	280	208	245	8 x 45°	M20	125	6	256
140	7200	14400		65-140	55-135	65-140	315	233	276	8 x 45°	M20	140	6	286
160	10000	20000		75-160	65-155	75-160	350	263	308	9 x 40°	M20	160	6	326
180	13400	26800		75-180	65-175	75-180	400	298	349	10 x 36°	M20	180	6	366

POLY-NORM® BTA																POLY-NORM® SBA																	
POLY-NORM® Size 2) D _B x B Brake drum	Dimensions [mm]															Speed rpm with v = 60 m/s 3)	POLY-NORM® Size 2) Brake disk	Dimensions [mm]															Speed rpm with v = 60 m/s 3)
	C																	N															
	38	42	48	55	60	65	75	85	90	100	110	125	140	160	180		38	42	48	55	60	65	75	85	90	100	110	125	140	160	180		
160x60	4															7150	200x12,5	13,75														5725	
200x75	9	8	4													5725	250x12,5	13,75	14,75	18,75												4575	
250x95	17	16	20	7	3	0										4575	315x16		13	17	22	26	29	35,5								3625	
315x118		25	21	16	12	9	2,5	-3,5								3625	400x16			17	22	26	29	35,5	41,5	42	48					2850	
400x150			34	28	25	22	15,5	9,5	9	3						2850	500x16				22	26	29	35,5	41,5	42	48	54	64			2275	
500x190										18	12	-2				2275	630x20										46	52	62	69	86		1800
630x236												20	13	-4		1800	710x20										46	52	62	69	86	104	1600
710x265													24	7	-11	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]

¹⁾ Standard material Perbunan [NBR]

²⁾ Steel

³⁾ Dynamical balancing necessary

Further sizes on request

Order form:

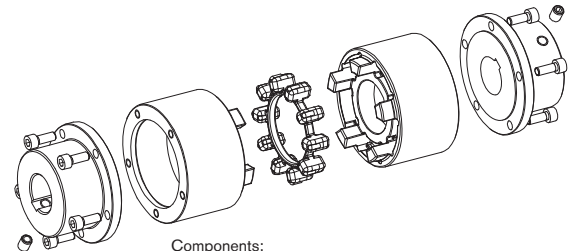
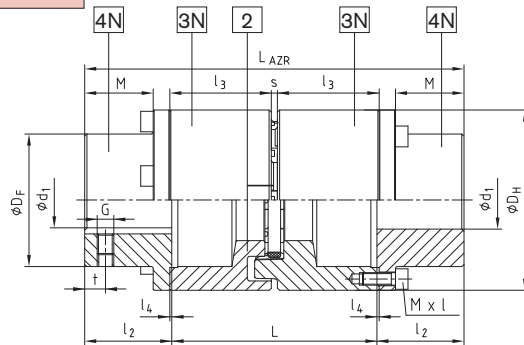
POLY-NORM® 38	ADR-BTA	Ø200 x 75	d ₂ - Ø32 NnD	d ₃ - Ø25 NnD
Coupling size	Type	Ø brake drum	Component with finish bore	Component with finish bore

Type AZR



- Connection of long shaft gaps with spacers
- Enables a change of the elastomer without disassembly of the drive and the driven components.
- No movement of driver and driven components is necessary for disassembly of pump thrust bearing.
- Custom designs are available (AZVR)
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)
- Detailed mounting instructions and further information available at www.ktr.com

Components



Components:

Type AZR

- 2 = Elastomer ring (NBR 78 ShA)
- 3N = Driving flange (GJS)
- 4N = Coupling flange (Steel)

POLY-NORM® Type AZR																		
Size	Drop out center length L [mm] *	Elastomer ring (p. 2) ¹⁾ torque [Nm]		Finish bore ²⁾ Ø d ₁ max	Dimensions [mm]												Mass moment of inertia ³⁾ [kgm ²]	AZR Weight ³⁾ [kg]
					General													
		T _{KN}	T _{Kmax}		L _{AZR}	l ₂	l ₃	s	l ₄	D _H	D _F	M	Mxl	T _A [Nm]	G	t		
28	100	40	80	30	170	35	49,5	3	1	69	46	26	M6x18	14	M5	7	0,0020	2,4
	210				69,5		0,0030										2,9	
32	100	60	120	35	170	35	49	4	1	78	53	26	M6x18	14	M8	7	0,0042	3,2
	210				69		0,0062										3,9	
38	100	90	180	40	184	42	49	4	1	87	62	33	M6x20	14	M8	10	0,0048	4,3
	224				69		0,0068										5,1	
42	100	150	300	45	190	45	49	4	1	96	69	35	M6x20	14	M8	10	0,0094	5,1
	230				69		0,0128										6,0	
48	100	220	440	50	204	52	49	5	1,5	106	78	41,5	M6x20	14	M8	15	0,0170	6,6
	244				69		0,0216										7,5	
	100				210		49										0,0188	9,4
	140				300		600										60	250
	180				290		89										0,0232	12,2
	100																	220
60	140	410	820	65	260	60	69	5	1,5	129	97	47,5	M8x25	35	M8	15	0,0414	13,0
	300				89		0,0504										14,6	
	100				230		49										0,0564	14,0
	140				550		1100										70	270
	180				310		89										0,0894	17,5
	140																	290
75	180	850	1700	80	330	75	89	5	1,5	158	123	60,5	M10x30	69	M10	20	0,1008	25,6
	250				400		124											
	140				310		69										0,1570	32,1
	180				1350		2700										90	350
	250				420		124										0,1812	40,7
	140																	320
90	180	2000	4000	100	360	90	89	5	1,5	200	148	73,5	M12x35	120	M12	25	0,2880	42,2
	250				430		124											
	140				340		69										0,3988	50,0
	100				180		2900										5800	110
	250				450		124										0,5465	63,2

¹⁾ Standard material Perbunan (NBR) 78 Shore-A

²⁾ Bore H7 with keyway DIN 6885 sheet 1 [JS9] and threads for setscrews on the feather keyway.

³⁾ Refer to medium 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 POLY-NORM® 85 for extendable length 140 and 250 result in an extendable length of 195 mm (140 mm + 250 mm = 390 mm 390 mm/2 = 195 mm).

Order form:

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

REVOLEX® KX

Torsionally flexible pin & bush coupling



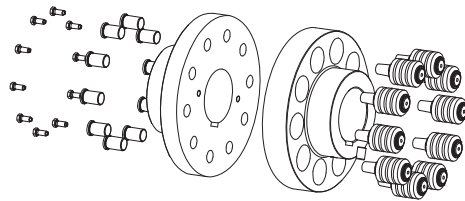
POLY-NORM®
REVOLEX® KX
POLY

Coupling description

General description

REVOLEX® KX is a torsionally flexible, failsafe pin & bush coupling. It can be plugged in axially and is characterized by its short design. In addition, REVOLEX® KX allows for an easy disassembly of the elastomer rings including the pins while being assembly. Taking into account the transmittable torque, REVOLEX® KX is based on the POLY-NORM® coupling.

The REVOLEX® KX coupling compensates for every kind of shaft misalignment while transmitting the torque safely.



Operation/Arrangement

The coupling consists of two hubs. The torque is transmitted via the steel pins with their taper elastomer rings.

As a result all kinds of shaft misalignment, for example caused by inaccurate alignment of the driving or driven elements, is compensated for reliably and vibrations and shocks are compensated for excellently.

The coupling is maintenance-free and is used in general engineering and the pump industry, conveyor technology, etc. For an optimum adjustment to the different applications, 18-off sizes are available covering torques up to 1.220.000 Nm. Apart from the standard programme customized solutions are available.



General information about the elastomer ring

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-term) [°C]	- 50 to +120	–	–
Colour	black	black	blue
Application	STANDARD	Temperatures below zero	Electrically insulating, e. g. ropeway drives
			

Explosion-proof use

REVOLEX® KX couplings are suitable for the use in drives in hazardous areas. The couplings are certified according to EC Standard 94/9/EC (ATEX 95) and belong to category 2G/2D, are confirmed and thus suitable for the use in hazardous areas of zone 1, 2, 21 and 22. Please read our information in the respective Type Examination Certificate and the operating and mounting instructions under www.ktr.com.



Coupling selection

The selection of the REVOLEX® KX coupling has to be dimensioned in a way that the permissible coupling load is not exceeded with any operating condition. For this purpose a comparison between the loads that arise and the permissible coupling parameters has to be performed. The torques T_{KN}/T_{Kmax} mentioned refer to the connection of pins. The shaft-hub-connection needs to be investigated from the part of the customer.

1 Drives without periodical torsional vibrations

e. g. centrifugal pumps, fans, screw compressors, etc.

The coupling is selected taking into account the rated torques T_{KN} and maximum torque T_{Kmax}

1.1 Load by rated torque

Determination of the actual rated torque T_N of the machine.

$$T_N \text{ [Nm]} = 9550 \cdot \frac{P_{AN/LN} \text{ [kW]}}{n \text{ [rpm]}}$$

Taking into account the operating factor S_B and the temperature factor S_t , the permissible rated torque T_{KN} of the coupling has to be at least as high as the rated torque T_N of the machine.

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

1.2 Taking into account short-term shocks

As an example: for the start-up or braking of drives two times the rated torque of the coupling is admitted for up to 10 times an hour.

$$T_{Kmax} \geq 2 \cdot T_{KN}$$

1.3 Determination of the necessary operating factor S_B

see table

It is necessary to consult with the engineering department of KTR if:

- the operating speed is close to the critical speed (page 64)
- the ambient temperature exceeds 80 °C
- more than 10 starts per hour are performed

2. Drives with periodical torsional vibrations.

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

Description	Symbol	Definition or explanation
Rated torque of coupling	T_{KN}	Torque that can continuously be transmitted over the entire permissible speed range
Maximum torque of coupling	T_{Kmax}	Torque that can be transmitted as dynamic load $\geq 10^5$ times or 5×10^4 as vibratory load, respectively, during the entire operating life of the coupling
Vibratory torque of coupling	T_{KW}	Torque amplitude of the permissible periodical torque fluctuation with a frequency of 10 Hz and a basic load of T_{KN} or dynamic load up to T_{KN} , respectively
Rated torque of machine	T_N	Stationary rated torque on the coupling

Service factor S_t for temperature				
	-30 °C +30 °C	+40 °C	+60 °C	+80 °C
S_t	1,0	1,2	1,4	1,8

Permissible load on feather key of the coupling hub

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

Permissible surface pressure according to DIN 6892 (method C).

Cast iron GJL	225 N/mm ²
material nodular iron GJS	225 N/mm ²
material steel	250 N/mm ²
for other steel materials $p_{zul} =$	$0,9 \cdot R_e (R_{p0,2})$

Example of calculation:

Kneading machine drive with rotary current motor

Details of machine on driving side:

Rotary current	motor size 560
Motor power	$P = 1000 \text{ kW}$
Speed	$n = 991 \text{ rpm}$

General details:

Ambient temperature	$= +40 \text{ °C}$

Coupling selection:

Load by rated torque:

$$T_N = 9550 \cdot \frac{1000 \text{ kW}}{991 \text{ rpm}} = 9636,7 \text{ Nm}$$

Operating factor $S_B = 1,75$ (see page 63)
Temperature factor $S_t = 1,2$ (see table)

Calculation of coupling torque:

$$T_{KN} \geq T_N \cdot 1,75 \cdot 1,2 = 20237 \text{ Nm}$$

→ Selected: **REVOLEX® KX-170**

Coupling selection

The operating factors listed are based on experiences estimating the operating behaviour of driving and driven combinations. For a periodic impulse of the machine or driving or braking of big masses it is necessary to perform a selection in accordance with DIN 740.

Operating factor S_B	
Agitator	
Light liquid	1,00
Viscous liquid	1,25
Liquid with constant density	1,25
Liquid with variable density	1,50
Liquid mixed with solids	1,75
Compressors	
Rotary compressors	1,00
Rotary compressors	1,25
Construction machines	
Manoeuvre winches	1,25
Swing gears	1,25
Miscellaneous winches	1,50
Filters, cable winches	1,75
Multi-bucket excavators	1,75
Running gears (caterpillars)	1,75
Impellers	1,75
Cutter heads	1,75
Cutter drives	2,00
Construction lifts	1,25
Concrete mixers	1,25
Road machines	1,25
Conveyors	
Bucket elevators	1,50
Freight lifts	1,75
Hauling winches	1,25
Apron conveyors	1,25
Rubber belt conveyors (bulk)	1,25
Boom plate bucket conveyors	1,25
Rotary conveyors	1,25
Steel plate conveyors	1,25
Worm conveyors	1,25
Steel belt conveyors	1,25
Conveyors	1,75
Rubber belt conveyor (piece goods)	1,75
Inclined lifts	1,75
Shaking slides	2,00
Fans, ventilators and blowers	
Centrifugal fans	1,75
Industrial fans	1,75
Rotary blowers	1,75
Fans (axial / radial)	1,75
Fans for cooling towers	1,75
Induced draught ventilators	1,75
Filters	
Screening drums	1,50
Food-processing industry	
Sugarcane harvesters	1,25
Sugar-beet harvesters	1,25
Sugar-beet washing	1,25
Kneading machines	1,75
Sugarcane breakers	1,75
Sugarcane mills	1,75
Generators	
Frequency converters	1,75
Generators	1,75
Lifters/cranes	
Luffing gears	1,00
Swing and sliding gears	1,25
Running gears	1,75
Lifting gears	1,75
Machine tools	
Scissors	1,25
Dressing rollers	1,50
Bending machines	1,50
Hole punching machines	1,75

Operating factor S_B	
Machine tools	
Levelling machines	1,75
Hammers	1,75
Presses	1,75
Forging presses	1,75
Metal industry	
Plate tilters	1,25
Wire pulls	1,25
Winders	1,25
Crawlers	1,25
Roller levellers	1,25
Winding drums	1,50
Wire drawing machines	1,75
Roller tables (light)	1,75
Plate shears	1,75
Block pushers	1,75
Blooming and slabbing	1,75
De-scalers	1,75
Cold rolling mills	1,75
Billet shears	1,75
Plugging machines	1,75
Continuous casting machines	1,75
Shifting devices	1,75
Roller tables (heavy)	2,00
Mills	
Centrifugal mills	1,75
Beater mills	1,75
Autogenous mills	1,75
Hammer and ball mills	2,00
Mixers	
Constant density	1,50
Variable density	1,75
Oil industry	
Filter presses for paraffin	1,50
Rotary furnaces	1,75
Paper machines	
Couch rolls	1,75
Calenders	1,75
Wet presses	1,75
Pumps	
Rotary pumps (light liquid)	1,00
Rotary pumps (viscous liquid)	1,25
Gear and vane pumps	1,25
Screw type pumps	1,50
Piston pumps, plunger pumps and press pumps	2,00
Rubber & nylon	
Rubber calenders and rolling mills	1,75
Mixers	1,75
Extruders	1,75
Kneading machines	1,75
Sewage plants	
Rakes	1,00
Spiral pumps	1,25
Concentrators	1,25
Mixers	1,25
Aerators	1,75
Textile industry	
Winders	1,25
Printing and dyeing machines	1,25
Tanning barrels	1,25
Shredders	1,50
Woodworking machinery	
Planing machines	1,25
Barking machines	1,75
Saw frames	1,75

Technical data

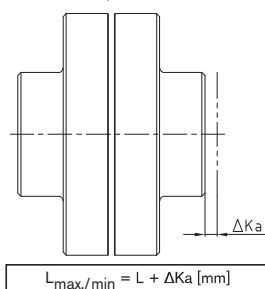
REVOLEX® KX Technical data											
Size	Torque [Nm] NBR 80Sh-A			Casted material		Steel		Dyn. Torsion spring stiffness			
				Max. speed [rpm] at V = 35 m/s	Max. bore [mm]	Max. speed [rpm] at V = 60 m/s	Max. bore [mm]				
	Nominal T _{KN}	Max. T _{Kmax.}	Alternating T _{KW}					0,25xT _{KN} [Nm/rad]	0,50xT _{KN} [Nm/rad]	0,75xT _{KN} [Nm/rad]	1,00xT _{KN} [Nm/rad]
KX 105	6485	12970	2594	2000	110/125	3475	120/135	1,053x10 ⁶	1,545x10 ⁶	2,225x10 ⁶	3,060x10 ⁶
KX 120	10080	20160	4032	1800	125/145	3100	140/155	1,242x10 ⁶	1,675x10 ⁶	2,350x10 ⁶	3,167x10 ⁶
KX 135	14030	28060	5612	1600	140/150	2725	160/165	1,728x10 ⁶	2,331x10 ⁶	3,270x10 ⁶	4,407x10 ⁶
KX 150	17960	35920	7184	1450	160	2500	185	2,213x10 ⁶	2,985x10 ⁶	4,187x10 ⁶	5,643x10 ⁶
KX 170	26360	52720	10544	1250	180	2150	220	3,250x10 ⁶	4,480x10 ⁶	7,500x10 ⁶	9,970x10 ⁶
KX 190	36160	72320	14464	1100	205	1900	245	4,458x10 ⁶	6,145x10 ⁶	1,029x10 ⁷	1,367x10 ⁷
KX 215	48160	96320	19264	1000	230	1725	275	5,938x10 ⁶	8,185x10 ⁶	1,370x10 ⁷	1,822x10 ⁷
KX 240	65740	131480	26296	900	250	1550	310	7,850x10 ⁶	1,075x10 ⁷	2,575x10 ⁷	3,465x10 ⁷
KX 265	91480	182960	36592	800	285	1375	350	1,092x10 ⁷	2,331x10 ⁷	3,583x10 ⁷	4,822x10 ⁷
KX 280	123530	247060	49412	720	315	1225	385	1,475x10 ⁷	3,147x10 ⁷	4,838x10 ⁷	6,511x10 ⁷
KX 305	152840	305680	61136	675	330	1150	405	1,830x10 ⁷	3,904x10 ⁷	6,002x10 ⁷	8,076x10 ⁷
KX 330	188470	376940	75388	625	355	1075	435	2,250x10 ⁷	4,802x10 ⁷	7,382x10 ⁷	9,934x10 ⁷
KX 355	230110	460220	92044	575	380	975	465	2,748x10 ⁷	5,863x10 ⁷	9,013x10 ⁷	1,213x10 ⁸
KX 370	302500	605000	121000	535	450	900	550	3,614x10 ⁷	7,712x10 ⁷	1,186x10 ⁸	1,595x10 ⁸

REVOLEX® KX-D Technical data											
Size	Torque [Nm] NBR 80Sh-A			Casted material		Steel		Dyn. Torsion spring stiffness			
				Max. speed [rpm] at V = 35 m/s	Max. bore [mm]	Max. speed [rpm] at V = 60 m/s	Max. bore [mm]				
	Nominal T _{KN}	Max. T _{Kmax.}	Alternating T _{KW}					0,25xT _{KN} [Nm/rad]	0,50xT _{KN} [Nm/rad]	0,75xT _{KN} [Nm/rad]	1,00xT _{KN} [Nm/rad]
KX-D 105	8650	17300	3460	2000	110	3475	120	1,404x10 ⁶	2,060x10 ⁶	2,967x10 ⁶	4,081x10 ⁶
KX-D 120	14110	28220	5640	1800	125	3100	140	1,742x10 ⁶	2,350x10 ⁶	3,297x10 ⁶	4,443x10 ⁶
KX-D 135	18690	37380	7476	1600	140	2725	160	2,304x10 ⁶	3,108x10 ⁶	4,360x10 ⁶	5,876x10 ⁶
KX-D 150	23100	46200	9240	1450	160	2500	185	2,880x10 ⁶	3,885x10 ⁶	5,450x10 ⁶	7,345x10 ⁶
KX-D 170	36900	73800	14760	1250	180	2150	220	4,550x10 ⁶	6,272x10 ⁶	1,050x10 ⁷	1,396x10 ⁷
KX-D 190	48210	96420	19284	1100	205	1900	245	5,980x10 ⁶	8,243x10 ⁶	1,380x10 ⁷	1,834x10 ⁷
KX-D 215	61900	123800	24760	1000	230	1725	275	7,634x10 ⁶	1,052x10 ⁷	1,762x10 ⁷	2,342x10 ⁷
KX-D 240	92030	184060	36812	900	250	1550	310	1,101x10 ⁷	2,350x10 ⁷	3,613x10 ⁷	4,861x10 ⁷
KX-D 265	121900	243800	48760	800	285	1375	350	1,456x10 ⁷	3,108x10 ⁷	4,778x10 ⁷	6,429x10 ⁷
KX-D 280	158800	317600	63520	720	315	1225	385	1,896x10 ⁷	4,047x10 ⁷	6,221x10 ⁷	8,371x10 ⁷
KX-D 305	191060	382120	76424	675	330	1150	405	2,287x10 ⁷	4,880x10 ⁷	7,502x10 ⁷	1,009x10 ⁸
KX-D 330	251200	502400	100480	625	355	1075	435	3,001x10 ⁷	6,403x10 ⁷	9,843x10 ⁷	1,324x10 ⁸
KX-D 355	299100	598200	119640	575	380	975	465	3,572x10 ⁷	7,622x10 ⁷	1,172x10 ⁸	1,577x10 ⁸
KX-D 370	377800	755600	151120	535	450	900	550	4,518x10 ⁷	9,640x10 ⁷	1,482x10 ⁸	1,994x10 ⁸

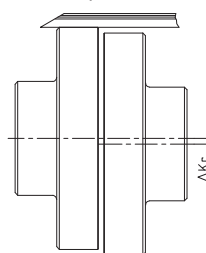
Couplings may be dynamically balanced on request (semi-spline balancing G 6,3 with speed acc. customer's specifications). For peripheral speeds exceeding $V = 30 \text{ m/sec.}$, we would recommend dynamically balancing.

Displacements

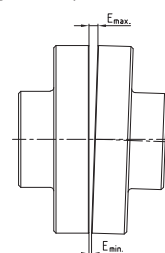
Axial displacement ΔK_a



Radial displacement ΔK_r



Angular displacement ΔK_w



Displacements															
Size (KX and KX-D)		105	120	135	150	170	190	215	240	265	280	305	330	355	370
Max. axial displacement ΔK_a [mm]		± 2	± 2	± 2	± 2	$\pm 2,5$	$\pm 2,5$	$\pm 2,5$	$\pm 2,5$	$\pm 2,5$	$\pm 2,5$	$\pm 2,5$	± 4	± 4	± 4
Max. radial displacement ΔK_r [mm] or max. angular displacement ΔK_w [mm] at speed n	250 rpm	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
	500 rpm	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
	750 rpm	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
	1000 rpm	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	0,5	0,5	0,6	0,6	0,7	0,8	0,8	0,9	1,0	—	—	—	—	—
	2000 rpm	0,4	0,5	0,5	0,5	0,6	0,7	—	—	—	—	—	—	—	—
	3000 rpm	0,4	0,4	—	—	—	—	—	—	—	—	—	—	—	—

Assembly instructions

The permissible misalignment figures of the flexible REVOLEX® KX couplings mentioned are general standard values, taking into account the coupling load up to the rated torque T_{KN} of the coupling and as well as an ambient temperature of $+30^\circ \text{C}$. The displacement figures may only be used separately - if various kinds of displacement arise in parallel, the displacement figures may only be used proportionately. For the assembly of the coupling please make sure that the distance dimension E is adhered to accurately to make sure that the coupling remains flexible during operation. See KTR assembly instructions, KTR standard 49410 at our homepage www.ktr.com.

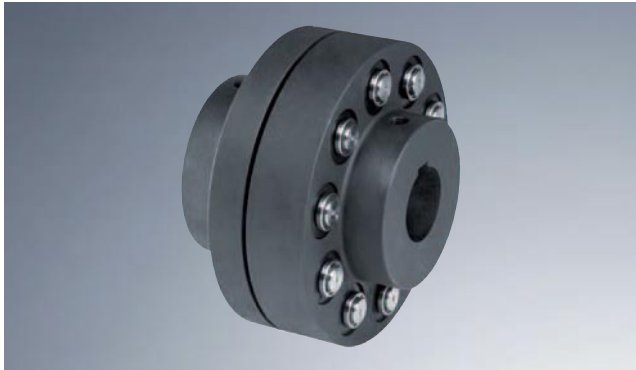
REVOLEX® KX

Torsionally flexible pin & bush coupling



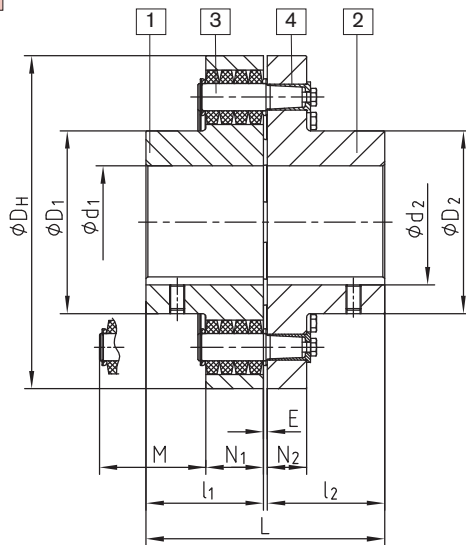
POLY-NORM®
REVOLEX® KX
POLY

Type KX – casted materials –



- Vibration-reducing, short design
- Radial assembly/disassembly
- Axial plug-in, failsafe
- All-side machining → good dynamical features
- Protected surfaces
- Standard hub material GJL (GJS or steel on request)
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)

Components



Components

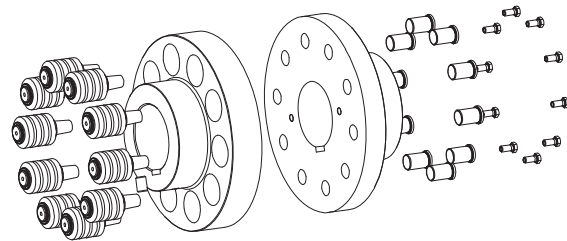
Type KX

1 = Hub part 1

2 = Hub part 2

3 = Complete pin

4 = KX sleeve (hardened and corrosion-resistant)



REVOLEX® KX

Size	Torques ¹⁾ [Nm]		max. speed ²⁾ [rpm]	Finish bore [min. - max.]		Dimensions [mm]										Moment of inertia ³⁾ [kgm²]	Approx. weight ³⁾ [kg]
	T _{KN}	T _{Kmax.}		d ₁	d ₂	L	l ₁ ; l ₂	E	D _H	D ₁	D ₂	N ₁	N ₂	M*			
KX 105	6485	12970	2000	34-110	34-125	237	117	3	330	180	202	56	30	76	0,771	62	
KX 120	10080	20160	1800	50-125	50-145	270	132	6	370	206	232	76	46	100	1,611	96	
KX 135	14030	28060	1600	70-140	70-150	300	147	6	419	230	240	76	46	100	2,685	123	
KX 150	17960	35920	1450	82-160		336	165	6	457	256	260	76	46	100	3,887	162	
KX 170	26360	52720	1250	95-180		382	188	6	533	292	292	92	63	130	9,165	273	
KX 190	36160	72320	1100	110-205		428	211	6	597	330	330	92	63	130	14,765	360	
KX 215	48160	96320	1000	125-230		480	237	6	660	368	368	92	63	145	22,771	465	
KX 240	65740	131480	900	140-250		534	264	6	737	407	407	122	76	167	43,484	695	
KX 265	91480	182960	800	160-285		590	292	6	826	457	457	122	76	170	70,143	910	
KX 280	123530	247060	720	180-315		628	311	6	927	508	508	122	76	189	112,637	1183	
KX 305	152840	305680	675	180-330		654	324	6	991	533	533	122	76	202	146,974	1369	
KX 330	188470	376940	625	200-355		666	330	6	1067	572	572	122	76	208	198,005	1598	
KX 355	230110	460220	575	225-380		718	356	6	1156	610	610	122	76	214	293,894	2069	
KX 370	302500	605000	535	225-450		770	382	6	1250	720	720	122	76	214	433,554	2629	

* Drop-out center dimension

¹⁾ Standard material NBR 80 Shore A

²⁾ Higher speeds on request

³⁾ Relating 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-wedge balancing G 6,3; speed as per customer's details). For circumferential speeds exceeding 30 m/s we would recommend dynamic balancing.

▲ = with pilot bore available from stock

Order form:

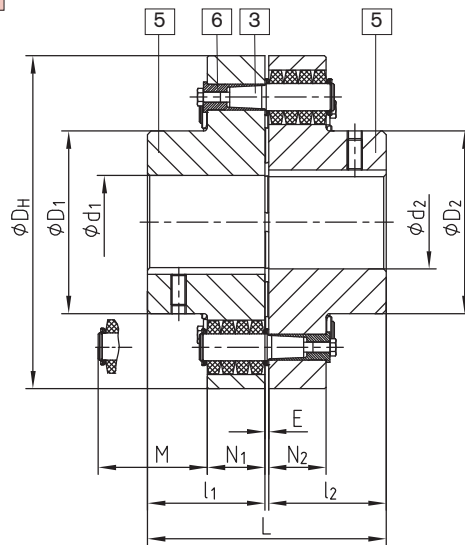
REVOLEX® KX 170	GJL	part 1 Ø120	part 2 Ø150
Coupling type/size	Material	Finish bore	Finish bore

Type KX-D – casted materials –



- Vibration-reducing, short design, protected surface
- Radial assembly/disassembly
- Axial plug-in, failsafe
- All-side machining → good dynamical features
- Standard hub material GJL (GJS on request)
- Pins are arranged alternately
- Increase of transmittable torque by up to 40 % compared to REVOLEX® KX
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)

Components



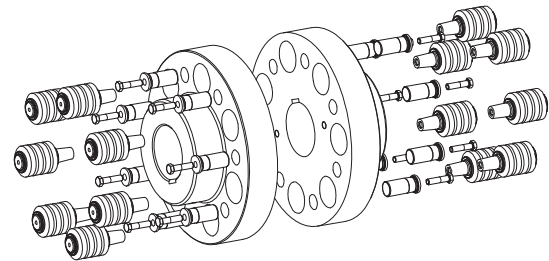
Components

Type KX-D

5 = Hub part 5

3 = Complete pin

6 = KX-D sleeve (hardened and corrosion-resistant)



REVOLEX® KX-D													
Size	Torque ¹⁾ [Nm]		Max. speed ²⁾ [rpm]	Finish bore [min. - max.]	Dimensions [mm]							Moment of inertia ³⁾ [kgm²]	Approx. weight ³⁾ [kg]
	T _{KN}	T _{Kmax.}		d ₁ ; d ₂	L	l ₁ ; l ₂	E	D _H	D ₁ ; D ₂	N ₁ ; N ₂	M*		
KX-D 105	8650	17300	2000	34-110	237	117	3	330	180	56	76	0,907	68
KX-D 120	14110	28220	1800	50-125	270	132	6	370	206	76	100	1,867	108
KX-D 135	18690	37380	1600	70-140	300	147	6	419	230	76	100	3,144	145
KX-D 150	23100	46200	1450	82-160	336	165	6	457	256	76	100	4,573	180
KX-D 170	36900	73800	1250	95-180	382	188	6	533	292	92	130	10,259	291
KX-D 190	48210	96420	1100	110-205	428	211	6	597	330	92	130	16,601	385
KX-D 215	61900	123800	1000	125-230	480	237	6	660	368	92	130	25,495	498
KX-D 240	92030	184060	900	140-250	534	264	6	737	407	122	170	50,147	760
KX-D 265	121900	243800	800	160-285	590	292	6	826	457	122	170	80,796	997
KX-D 280	158800	317600	720	180-315	628	311	6	927	508	122	170	129,979	1301
KX-D 305	191060	382120	675	180-330	654	324	6	991	533	122	170	170,016	1509
KX-D 330	251200	502400	625	200-355	666	330	6	1067	572	122	170	227,451	1755
KX-D 355	299100	598200	575	225-380	718	356	6	1156	610	122	170	338,145	2275
KX-D 370	377800	755600	535	225-450	770	382	6	1250	720	122	170	492,353	2853

* Drop-out center dimension

¹⁾ Standard material NBR 80 Shore A

²⁾ Higher speeds on request

³⁾ Relating 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-wedge balancing G 6,3; speed as per customer's details). For circumferential speeds exceeding 30 m/s we would recommend dynamic balancing.

▲ = with pilot bore available from stock

Order form:

REVOLEX® KX-D 170	GJL	Ø120	Ø150
Coupling type/size	Material	Finish bore	Finish bore

REVOLEX® KX

Torsionally flexible pin & bush coupling

Made for Motion



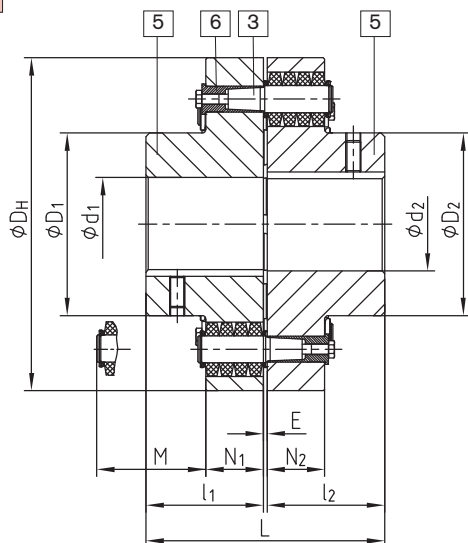
POLY-NORM®
REVOLEX® KX
POLY

Type KX-D – material steel –



- Vibration-reducing, short design, protected surfaces
- Radial assembly/disassembly, axial plug-in, failsafe
- All-side machining → good dynamical features
- Hubs from steel, specifically suitable for drive elements subject to high loads or high circumferential speeds
- Particularly suitable for drive components with high loads and high speeds due to hub material steel
- Pins are arranged alternately
- Increase of transmittable torque by up to 40 % compared to REVOLEX® KX
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)

Components



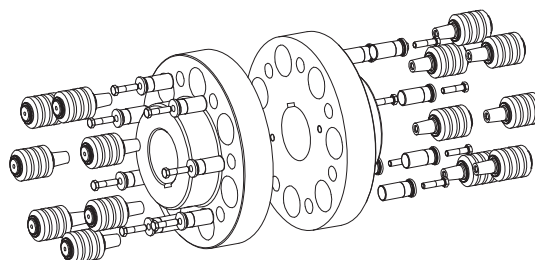
Components

Type KX-D

5 = Hub part 5

3 = Complete pin

6 = KX-D sleeve (hardened and corrosion-resistant)



REVOLEX® KX-D

Size	Torque ¹⁾ [Nm]		Max. speed ²⁾ [rpm]	Finish bore [min. - max.]	Dimensions [mm]							Moment of inertia ³⁾ [kgm²]	Approx. weight ³⁾ [kg]
	T _{KN}	T _{Kmax.}			d ₁ ; d ₂	L	l ₁ ; l ₂	E	D _H	D ₁ ; D ₂	N ₁ ; N ₂		
KX-D 105	8650	17300	3475	0-120	237	117	3	330	180	56	76	0,907	80
KX-D 120	14110	28220	3100	0-140	270	132	6	370	206	76	100	1,867	124
KX-D 135	18690	37380	2725	70-160	300	147	6	419	230	76	100	3,144	165
KX-D 150	23100	46200	2500	82-185	336	165	6	457	256	76	100	4,573	205
KX-D 170	36900	73800	2150	95-220	382	188	6	533	292	92	130	10,259	322
KX-D 190	48210	96420	1900	110-245	428	211	6	597	330	92	130	16,601	431
KX-D 215	61900	123800	1725	125-275	480	237	6	660	368	92	130	25,495	559
KX-D 240	92030	184060	1550	140-310	534	264	6	737	407	122	170	50,147	833
KX-D 265	121900	243800	1375	160-350	590	292	6	826	457	122	170	80,796	1099
KX-D 280	158800	317600	1225	180-385	628	311	6	927	508	122	170	129,979	1436
KX-D 305	191060	382120	1150	180-405	654	324	6	991	533	122	170	170,016	1669
KX-D 330	251200	502400	1075	200-435	666	330	6	1067	572	122	170	227,451	1954
KX-D 355	299100	598200	975	225-465	718	356	6	1156	610	122	170	338,145	1967
KX-D 370	377800	755600	900	225-550	770	382	6	1250	720	122	170	492,353	2367
KX-D 470	545000	1090000	870	240-470	969	480	9	1316	705	164	220	734,260	3775
KX-D 520	740000	1480000	760	240-520	1089	540	9	1501	780	164	220	1264,725	5155
KX-D 590	970000	1940000	680	260-590	1212	600	12	1685	885	164	220	2081,885	6895
KX-D 650	1220000	2440000	610	280-650	1332	660	12	1869	975	164	220	3228,297	8893

* Drop-out center dimension

¹⁾ Standard material NBR 80 Shore A

²⁾ Higher speeds on request

³⁾ Relating to max. bore

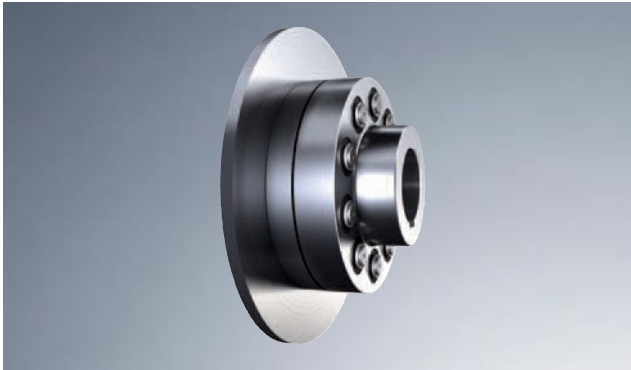
Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9. If requested, coupling is dynamically balanced (semi-wedge balancing G 6,3; speed as per customer's details). For circumferential speeds exceeding 30 m/s we would recommend dynamic balancing.

▲ = with pilot bore available from stock

Order form:

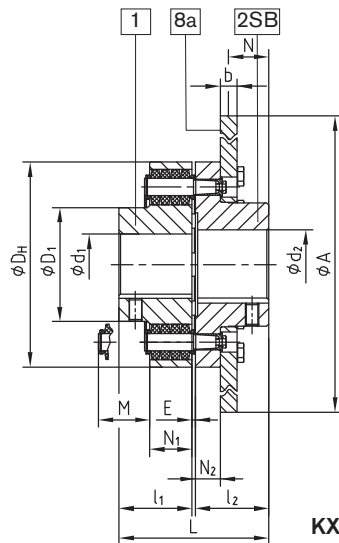
REVOLEX® KX-D 170	Steel	Ø120	Ø150
Coupling type/size	Material	Finish bore	Finish bore

Type KX and KX-D with disk brake

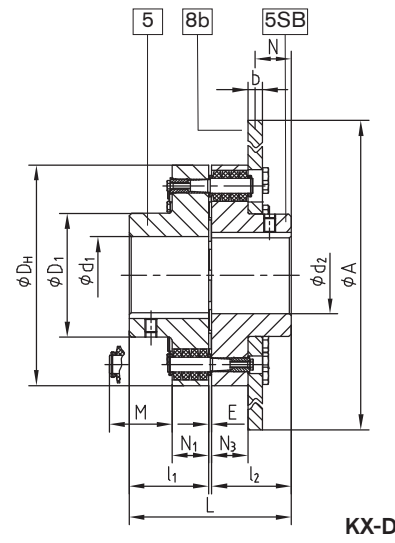


- Shaft coupling with disk brake
- The maximum brake torque must not exceed the maximum torque of the coupling
- The disk brake has to be placed onto the shaft end with the biggest mass moment of inertia
- Radial assembly/disassembly
- Axial plug-in, failsafe
- Pins can be replaced while being assembled
- All-side machining → good dynamical features
- Examples of applications are large fans, turbine drives, belt conveyor drives, etc.

Components



KX



KX-D

REVOLEX® KX and KX-D Type SB

Size	Torque ¹⁾ [Nm]		Torque ¹⁾ [Nm]		Finish bore KX GJL		Finish bore KX-D [min. - max.]		Dimensions [mm]										
	KX		KX-D		[min. - max.]		GJL		Steel										
	T _{KN}	T _{Kmax.}	T _{KN}	T _{Kmax.}	d ₁	d ₂	d ₁ ; d ₂	d ₁ ; d ₂	L	l ₁ ; l ₂	E	D _H	D ₁	N ₁	N ₂	N ₃	M*		
105	6485	12970	8650	17300	34-110	34-125	34-110	0-120	237	117	3	330	180	56	29	55	76		
120	10080	20160	14110	28220	50-125	50-145	50-125	0-140	270	132	6	370	206	76	45	75	100		
135	14030	28060	18690	37380	70-140	70-150	70-140	70-160	300	147	6	419	230	76	45	75	100		
150	17960	35920	23100	46200	82-160		82-160	82-185	336	165	6	457	256	76	45	75	100		
170	26360	52720	36900	73800	95-180		95-180	95-220	382	188	6	533	292	92	62	91	130		
190	36160	72320	48210	96420	110-205		110-205	110-245	428	211	6	597	330	92	62	91	130		
215	48160	96320	61900	123800	125-230		125-230	125-275	480	237	6	660	368	92	62	91	145		
240	65740	131480	92030	184060	140-250		140-250	140-310	534	264	6	737	407	122	75	121	167		

* Drop-out center dimension

¹⁾ Standard material NBR 80 Shore A

²⁾ Higher speeds on request

³⁾ Relating 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-wedge balancing G 6,3; speed as per customer's details). For circumferential speeds exceeding 30 m/s (referring to outside diameter ØA) we would recommend dynamic balancing.

Selection of coupling/disk brake dimension "N"

Size	Brake disk ØA x b ³⁾											
	Ø560x30		Ø630x30		Ø710x30		Ø800x30		Ø900x30		Ø1000x30	
	KX	KX-D	KX	KX-D	KX	KX-D	KX	KX-D	KX	KX-D	KX	KX-D
105	73	47	73	47								
120	72	42	72	42								
135			87	57	87	57						
150					105	75	105	75				
170					111	82	111	82				
190							134	105	134	105		
215							160	131	160	131	160	131
240							174	128	174	128	174	128

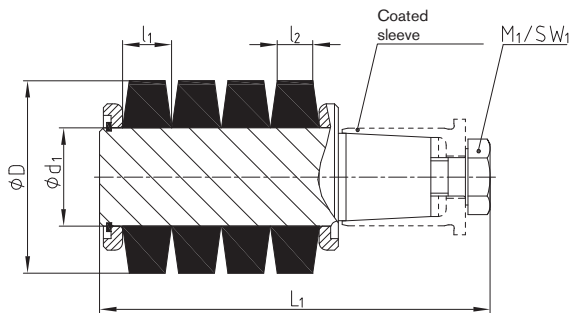
³⁾ Maximum circumferential speed = 60 m/s referring to maximum outside diameter

Order form:

REVOLEX® KX 170	SB	Ø710x30	1 - Ø120	2SB - Ø150
Coupling type/size	Type	Disk brake	Finish bore	Finish bore

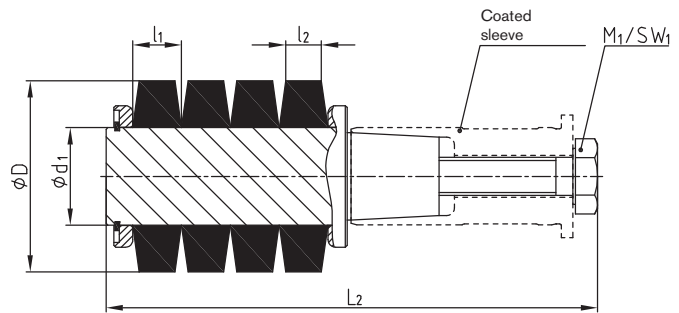
Technical data pin

KX



Taper pin design B

KX-D

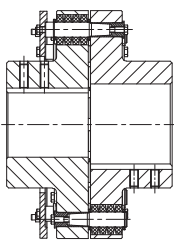


Taper pin design B

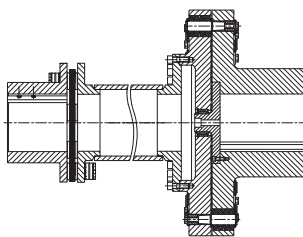
Technical data												
Size	Pin			Component 3.2			Component 3.1b			Component 3.4b		Tightening torque T _A [Nm]
	Size	Number		Elastomer ring NBR 80 Shore A			Pin			Screw DIN EN ISO 4017		
		KX	KX-D	D	l ₁	l ₂	d ₁	L ₁	L ₂	M ₁	SW ₁	
KX 105	3	12	16	50,0	12,7	9,0	25,40	101	116	M10	16	67
KX 120	4	10	14	63,0	17,8	12,5	30,60	147,5	158,5	M12	18	115
KX 135	4	12	16									
KX 150	4	14	18									
KX 170	5	10	14	85,5	22,9	15,2	43,20	190	205	M16	24	290
KX 190	5	12	16									
KX 215	5	14	18									
KX 240	6	10	14	113,7	30,5	20,3	58,40	242	255	M24	36	970
KX 265	6	12	16									
KX 280	6	14	18									
KX 305	6	16	20	113,7	30,5	20,3	58,40	242	255	M24	36	970
KX 330	6	18	24									
KX 355	6	20	26									
KX 370	6	24	30									

Futher types

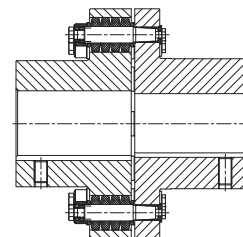
Type AB
with limited axial backlash



Intermediate shaft type
with RADEX®-N



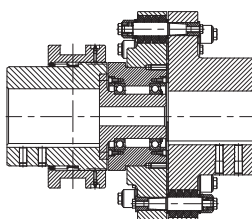
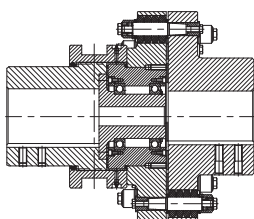
Backlash-free type



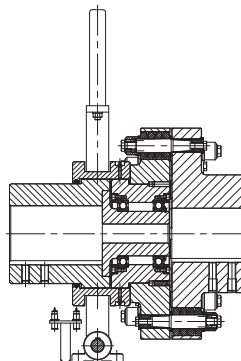
Type KX-D SD
shiftable

connected

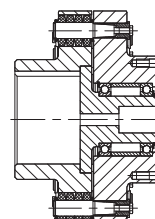
separated



Type KX-D SD
shiftable with shiftable linkage



Type KX-D
with cardan shaft connection

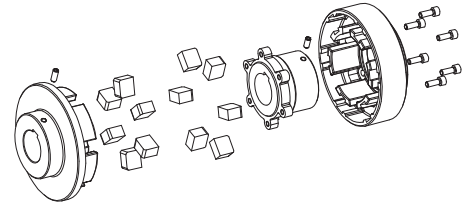


Coupling description

General description:

The POLY coupling is a torsionally flexible, not failsafe coupling for general machinery. It is assembled by axially plugging the hubs into each other and has excellent dampening characteristics. Its unique features are the flexible elastomeric elements that are located in both coupling halves.

The POLY advantage – A much greater number of flexible elements and thus a larger effective mass of the elastomer to accept vibration and to dissipate the heat caused by torsional vibrations when compared to similar competitive couplings with elements only in one half.



Coupling selection

The coupling selection must be done on the base POLY-NORM® or ROTEX®.

Function/Design

The coupling consists of 2 hubs with fingers that are separated by elastomeric elements which are assembled by axial blind plug-in to each other. Elastomer elements are placed into the slots of both coupling hubs. Torque is transmitted in a compact design. Shaft misalignments, vibrations and shock loads are effectively absorbed by the POLY coupling.

The coupling is maintenance-free and used in general machinery, the pump industry and in compressors. The Poly coupling handles torque ranges of up to 14300 Nm and is stocked in 16 different sizes and 3 designs for immediate availability. In addition to our standard coupling models, a variety of flange, drop out center and spacer options are available.



Explosion-proof use

POLY couplings are suitable for the use in drives in hazardous areas. The couplings are certified according to EC Standard 94/9/EC (ATEX 95) and belong to category 2G/2D, are confirmed and thus suitable for the use in hazardous areas of zone 1, 2, 21 and 22. Please read our information in the respective Type Examination Certificate and the operating and mounting instructions under www.ktr.com.



Variation of components

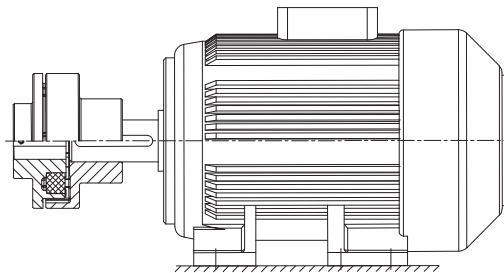
The coupling can be adapted to many applications due to the many options that are possible with the building block arrangement. The POLY components of a given model can be mixed and matched with each other to obtain different shaft distances using the same basic component.



General information about the elastomer packing

Standard Material/Hardness	Perbunan [NBR] / 92 Shore A
Permanent temperature range [°C]	- 30 to + 80
Max. temperature (short time) [°C]	- 50 to + 120
Applications	ATEX applications Chemical industry Mining General machine construction Applications of average elasticity
Resistant to	Gasoline, diesel Acids, bases Tropics (Salt-) Water (hot/cold) Oils, greases Propane, butane Natural gas, city gas

Selection of standard IEC motors



POLY couplings for standard IEC motors, protection IP 54/IP 55																		
A. C. motor 50 Hz			Motor output n = 3000 rpm 2-pole		POLY coupling size	Motor output n = 1500 rpm 4-pole		POLY coupling size	Motor output n = 1000 rpm 6-pole		POLY coupling size	Motor output n = 750 rpm 8-pole		POLY coupling size				
Size	Shaft end dxl [mm]		Output P [kW]	Torque T [Nm]		Output P [kW]	Torque T [Nm]		Output P [kW]	Torque T [Nm]		Output P [kW]	Torque T [Nm]					
	2-pole	4,6,8 pole																
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		9			
			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		10			
			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	11							
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	12							
112M			4	13	3	20			1,1	16								
132S	38 x 80		5,5	18	4	27	2,2	22	1,5	21	13							
			7,5	25	5,5	36	3	30	2,2	30								
132M					7,5	49	4	40	3	40	14							
							5,5	55										
160M	42 x 110		11	36	12	11	72	12	7,5	75	14	4	54	14				
160L			15	49					5,5	74								
160L	18,5	60	15	98		11	109		7,5	100								
180M	48 x 110		22	71		18,5	121											
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		30	293	19	22	290					
250M	60 x 140	65 x 140	55	177	17	55	356	19	37	361		30	392	19				
280S				75	241		75	484		45	438		37	483				
280M		75 x 140	90	289	19*	90	581	20	55	535	20	45	587	20				
315S			110	353		110	707	22	75	727	22	55	712	22				
315M	65 x 140	80 x 170	132	423	20*	132	849	25	90	873	25	75	971	25				
			160	513			160		1030			110	1070			90	1170	
315L			200	641			200		1290			132	1280			110	1420	
												160	1550			132	1710	
315		85 x 170	250	802		250	1600		200	1930		160	2070	30				
			315	1010		315	2020		250	2410		200	2580					
			355	1140		355	2280	30										
355	75 x 140	95 x 170	400	1280		400	2570		315	3040		250	3220	35				
			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			
			800	2560		800	5120		630	6060		500	6420					
450	90 x 170	120 x 210	900	2880		900	5760	40	710	6830	45	560	7190	45				
			1000	3200		1000	6400		800	7690		630	8090					

The coupling is selected for an ambient temperature of up to + 30 °C. The coupling was selected for the normal operation. The respective couplings have a minimum operating factor of f min. = 1,35. Drives with periodical torque courses must be selected according to DIN 740 part 2. On request the selection is made by KTR.

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

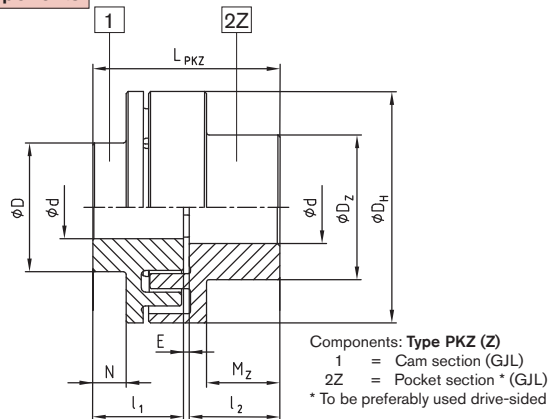
* dynamical balancing is necessary

Type PKZ (2-part design) and PKD (3-part design)

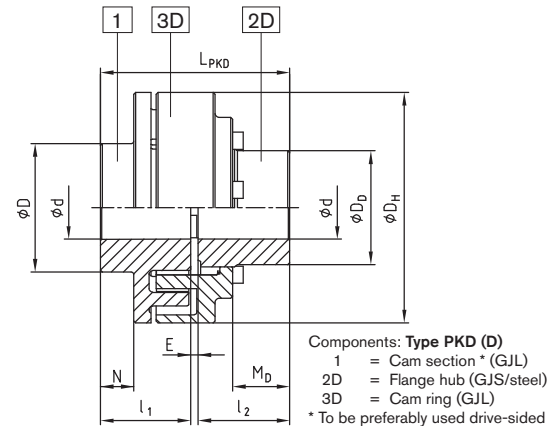


- Torsionally flexible / maintenance-free
- Reduced vibrations
- Shear type
- Axial plug-in assembly
- Short overall length / minimum distance between shafts
- In PKD the elastomer elements can be changed without moving driver or driven
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)
- Detailed mounting instructions and further information available at www.ktr.com

Components



Type PKZ (Z) – (Size 8 to 30)



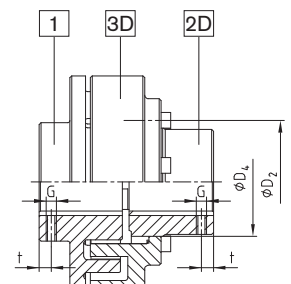
Type PKD (D) – (Size 15 to 45)

POLY PKZ and PKD																					
Size	Nominal torque ¹⁾ T _{KN} [Nm]	Max. speed ²⁾ n [rpm]	Max. Finish bore Ød _{max} [mm]			Dimensions [mm]												Thread of setscrew			Weight ³⁾ [kg]
			part 1	part 2Z	part 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/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	35	22	4	92	75	134	M8	15	10	8,6
17 (Z;D)	400	3800	60	65	60	176	100	110	87	70	56	40	25	4	106	90	144	M8	15	10	12
19 (Z;D)	660	3500	75	75	70	195	125	125	106	75	64	45	30	4	126	107	154	M8	15	10	18
20 (Z;D)	820	3300	65	75	70	205	115	127	98	80	65	45	23	4	123	105	164	M8	15	10	20
22 (Z)	1100	3000	85	85	90	224	140	140	129	90	75	59	39	4	150	130	184	M10	20	17	25
25 (Z;D)	1600	2700	90	90	95	257	150	150	138	100	84	60	44	5	162	140	205	M12	20	40	35
28 (Z;D)	2500	2350	100	100	100	288	165	165	154	110	90	65	45	5	178	160	225	M12	20	40	53
30 (Z;D)	3950	2200	110	110	110	308	180	180	165	130	108	75	58,5	5	202	170	265	M16	20	80	66
35 (D)	6100	1850	130	—	140	373	210	—	209	160	—	95	69	5	240	210	325	M16	25	80	125
40 (D)	9000	1600	145	—	160	423	240	—	238	180	—	115	85	5	275	240	365	M16	25	80	180
45 (D)	14300	1400	160	—	180	473	270	—	268	180	—	110	74	6	308	270	366	M16	30	80	220

¹⁾ Maximal torque T_{Kmax} = T_{KN} x 2; Standard material Perbunan (NBR) 92 Shore-A; Standard hub material: GJL

²⁾ For v = 30 m/sec. For peripheral speeds exceeding v = 30 m/sec. we recommend a dynamical balancing;

³⁾ Refer to medium bore



Order form:

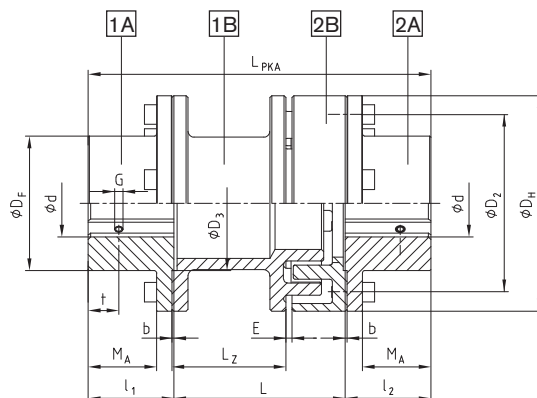
POLY	PKD	28	d ₁ Ø90	d ₂ Ø80
Coupling	Type	Size	Finish bore part 1	Finish bore part 2

Type PKA (dismountable coupling)



- Torsionally flexible, maintenance-free
- Vibration-reducing
- Not failsafe
- Axial plug-in
- Short design / low shaft distance dimension
- In the PKD the elastomer packages can be exchanged in exembled state
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)
- Detailed mounting instructions and further information available at www.ktr.com

Components



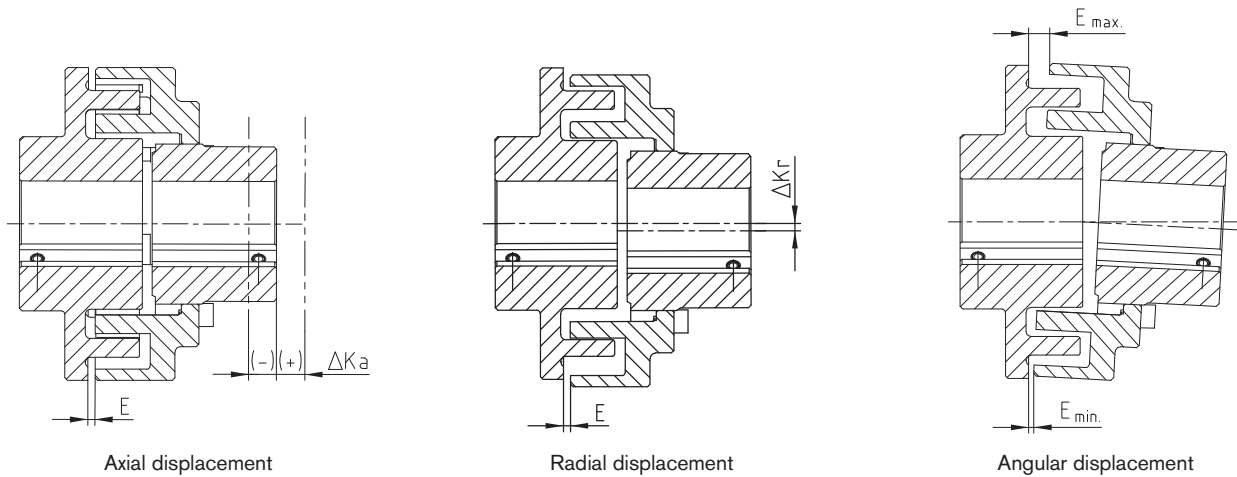
Components: **Type PKA**
 1A/2A = Coupling flange (steel)
 1B = Spacer (GJL)
 2B = Driving flange (GJL)
 1A and 1B to be preferably used drive-sided

POLY Type PKA																		
Size	Nominal-torque T_{KN} [Nm]	Max. speed n [rpm]	Finish bore d_{max} [mm] part 1A/2A	Dimensions [mm]											Thread of 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	38	86	55	70	60	35	1,5	25,5	3	100	170	66	M5	15	2	3,04
9	72	5000	45	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	50	107	78	93	80	46	1,5	35,5	4	100	192	61	M8	20	10	5,42
												140	232	101				5,88
												100	210	55				9,49
12	170	5000	60	131	95	113	90	55	1,5	43,0	4	140	250	95	M8	20	10	10,15
												180	290	135				10,86
												100	220	54				11,46
14	210	4800	70	142	105	125	100	60	1,5	48,0	4	140	260	94	M8	25	10	12,23
												180	300	134				13,01
												140	270	93				15,63
15	320	4300	70	157	110	135	110	65	1,5	49,5	4	180	310	133	M8	25	10	16,50
												250	380	203				18,01
												100	240	53				18,79
17	400	3800	80	176	125	150	110	70	1,5	54,5	4	140	280	93	M8	25	10	19,60
												180	320	133				20,41
												250	390	203				21,83
19	660	3500	90	195	135	160	120	75	1,5	59,5	4	140	290	91	M8	30	10	24,62
												180	330	131				25,91
												250	400	201				28,15
20	820	3300	100	205	150	175	130	80	2,0	61,0	4	140	300	81	M8	30	10	30,96
												180	340	121				32,18
												250	410	191				34,79
22	1100	3000	105	224	160	190	140	90	2,0	71,0	4	180	360	127	M10	35	17	37,79
												250	430	197				39,94
												140	340	81				54,73
25	1600	2700	125	257	195	225	150	100	2,0	81,0	5	180	380	121	M12	40	40	56,50
												250	450	191				59,60
												180	400	114				77,84
28	2500	2350	140	288	215	250	170	110	2,0	91,0	5	250	470	184	M12	45	40	82,41

Order form:

POLY	PKA	28	140	Ø38	Ø40
Coupling	Type	Size	Dismountable L	Finish bore part 1A	Finish bore part 2A

Displacements — Elastomer elements — Screws



Radial and angular displacements can occur simultaneously.

The combined sum $V = \Delta K_r + (E_{max} - E_{min})$ must not exceed the values listed in table .

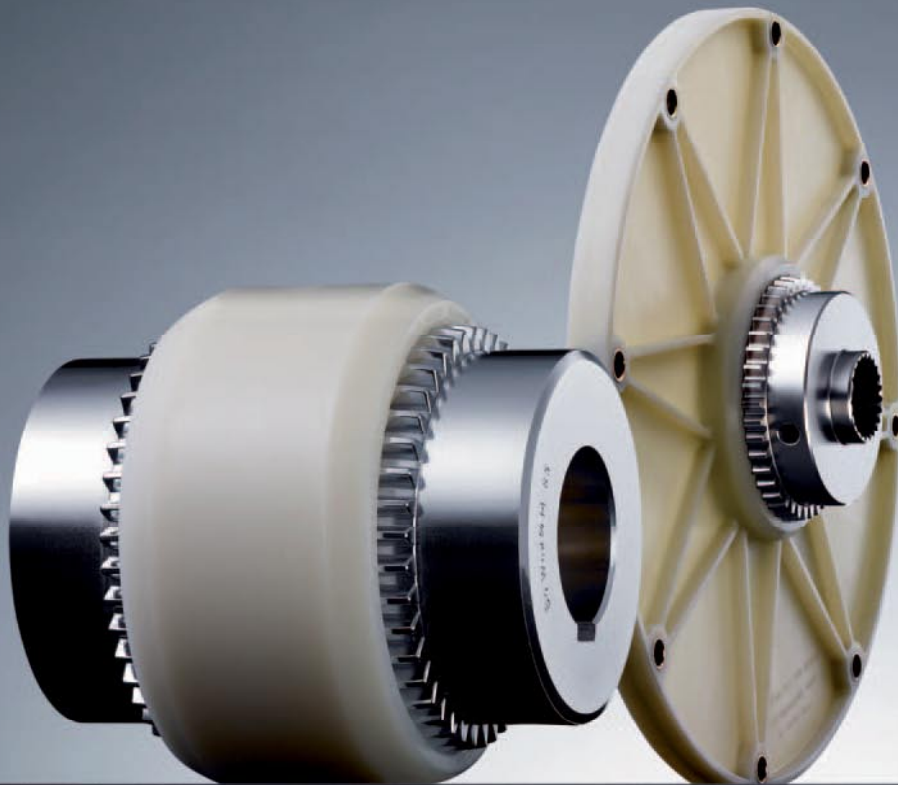
$$\Delta K_w = E_{max} - E_{min} \text{ [mm]}$$

Displacements [mm]																
Couplingsize	8	9	10	12	14	15	17	19	20	22	25	28	30	35	40	45
Max. axial displacement ΔK_a [mm]	±1	±1	±1	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±3	±3	±3
Max. radial displacement ΔK_r or max. angular displacement ΔK_w or sum V	n = 750 rpm n = 1000 rpm	0,8 0,7	0,8 0,7	0,8 0,7	0,8 0,7	1,0 0,9	1,0 0,9	1,0 0,9	1,0 0,9	1,0 0,9	1,0 0,9	1,0 0,9	1,2 1,1	1,2 1,1	1,2 1,1	1,2 1,1

Elastomer elements NBR (cuboid)																
Couplingsize	8	9	10	12	14	15	17	19	20	22	25	28	30	35	40	45
Element size	1			2			3			3a	4	3b	4	5	6Ü	7Ü
Number of elements	8	10	10	10	10	12	12	12	12	12	16	16	16	16	20	20
Dimensions of elastomer	b	18,4			24,9			27,2			27,7	34,9	26,9	34,9	40	43,3
elements	t	10			15,3			16,1			18,4	19,6	18,4	19,6	22,2	28,6
b x t x h [mm]	h	18,9			23,9			24,6			26,8	34,6	29,6	34,6	40,6	41,1

Type PKD — Dimension cyl. screw DIN EN ISO 4762																
Couplingsize	8	9	10	12	14	15	17	19	20	22	25	28	30	35	40	45
Screw size	M	—	—	—	—	M8	M8	M8	M10	M8	M10	M10	M12	M12	M16	M16
	l	—	—	—	—	30	25	25	30	30	30	40	40	55	55	60
Number	—	—	—	—	—	6	6	6	6	8	8	8	8	10	10	10
Tightening torque T_A [Nm]	—	—	—	—	—	25	25	25	25	25	49	49	86	86	295	210
Type PKA — Dimension cyl. screw DIN EN ISO 4762																
Screw size	M	M6	M6	M6	M8	M8	M10	M10	M10	M10	M10	M12	—	—	—	—
	l	16	18	18	20	20	25	25	30	30	30	30	—	—	—	—
Number	—	4	5	5	5	5	6	6	6	6	8	8	—	—	—	—
Tightening torque T_A [Nm]	—	10	10	10	25	25	49	49	49	49	49	86	—	—	—	—

Standard bore H7 with keyway DIN 6885 sheet 1 [JS9] and threads for setscrews on the feather keyway.
Please see our detailed mounting instructions at our website www.ktr.com.



BoWex®

Curved-tooth gear couplings, shaft couplings

BoWex® FLE-PA

U.S. Patent 5,586,938

Torsionally rigid flange couplings

BoWex - ELASTIC®

Highly flexible flange couplings

MONOLASTIC®

EP 0853203 U.S. Patent 6,117,017

Single parted, flexible flange couplings

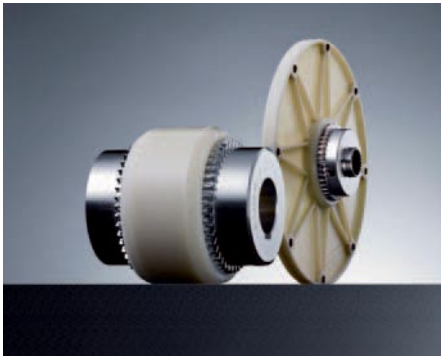
Pump mounting flanges

according to SAE and special dimensions

Made for Motion

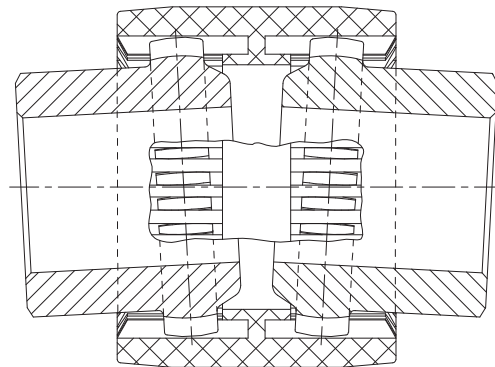


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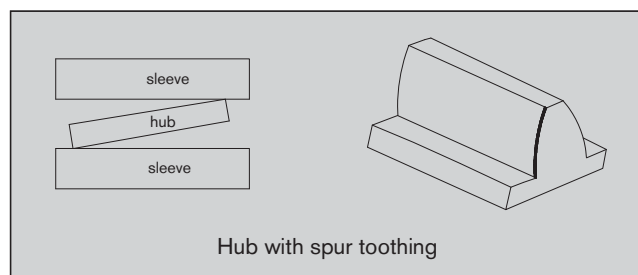
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Operating description

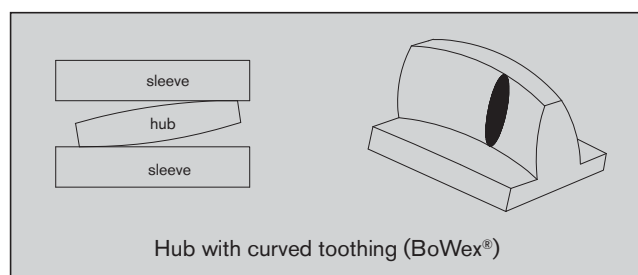


BoWex® Curved-tooth gear couplings are flexible shaft connections for a positive torque transmission and specifically suitable to compensate for axial, radial and angular shaft misalignment.

According to the well-known effect of curved-tooth gear couplings any edge pressure in the spline in case of angular and radial displacements is avoided so that BoWex couplings are almost free from wear.



On couplings with spur toothting high edge pressure along with considerable wear arises at the contact surfaces in case of misalignment.



The curved teeth avoid any edge pressure on the coupling in case of angular and radial misalignment.

The material combination of steel hubs and polyamide sleeves allows for maintenance-free continuous operation with very low friction on the teeth.

Due to the double cardanic operation of BoWex® couplings restoring forces may be neglected in case of angular and radial displacements and periodic fluctuations in angular velocity do not arise.

BoWex® couplings can be assembled both vertically or horizontally with no need for any special assembly tools.

The standard polyamide material is characterized by the following positive features:

- high mechanical consistency
- high stiffness
- high thermal stability (+ 100 °C)
- good viscosity even in case of low temperatures
- favourable slide-friction behaviour
- very good electrical insulating property
- good resistance to chemicals
- good dimensional accuracy

Behaviour of friction and wear of the BoWex® sleeve

The smooth and hard surface (crystalline structure) and the high thermal stability and resistance to lubricants, fuels, hydraulic fluids, dissolvents, etc. make polyamide an ideal material for components stressed by sliding, particularly for the coupling production. While any metallic materials tend to "corrode" in case of dry running, slide combinations with polyamide and steel are operative without any lubrication and maintenance.

Explosion protection use

BoWex® couplings type M until size 65 including an electrically conductive nylon sleeve (PA-CF) are suitable for power transmission in drives in hazardous areas. The couplings are certified and confirmed according to EC standard 94/9/EC (ATEX 95) as units of category 2G/2D and thus suitable for the use in hazardous areas of zone 1, 2, 21 and 22. Please read through our information included in the respective Type Examination Certificate and the operating and mounting instructions at www.ktr.com.



Technical data

Power, Torque and Speed							
Design and size		Power $\frac{P \text{ [kW]}}{n \text{ [rpm]}}$		Torque T_K [Nm]			Max. speed [rpm]
		Rated	Maximum	T_{KN}	$T_{K \text{ max.}}$	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	6000
	junior 24 / M-24	0,0013	0,0025	12	24	6	6000
Type M I AS Spez.-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	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
Type FLE-PA	28	0,0078	0,014	75	185	37,5	6000
	32	0,014	0,028	135	335	67,5	6000
	48	0,025	0,050	240	600	120	5000
	T 48	0,030	0,078	300	750	150	5000
	T 55	0,047	0,12	450	1125	225	4500
	65	0,068	0,140	650	1600	325	3600
	T 65	0,084	0,210	800	2000	400	3600
	T 70	0,105	0,262	1000	2500	500	3400
	80	0,13	0,250	1200	3000	600	3000
	T 80	0,16	0,039	1500	3750	750	3000
	100	0,21	0,43	2050	5150	1025	2500
	T 100	0,26	0,65	2500	6250	1250	2500
	125	0,44	0,89	4250	10700	2125	2500
Type ELASTIC HE HEW HEW-ZS HE-ZS HEG	40Sh	0,014	0,041	130	390	36	6200
	42 HE 50Sh	0,016	0,047	150	450	45	
	65Sh	0,019	0,057	180	540	54	
	40Sh	0,021	0,063	200	600	60	5600
	48 HE 50Sh	0,024	0,072	230	690	69	
	65Sh	0,029	0,088	280	840	84	
	40Sh	0,037	0,110	350	1050	105	4500
	65 HE 50Sh	0,042	0,126	400	1200	120	
	65Sh	0,052	0,157	500	1500	150	
	40Sh	0,045	0,135	430	1290	129	4300
	G 65 HE 50Sh	0,052	0,157	500	1500	150	
	65Sh	0,065	0,195	620	1860	186	
	40Sh	0,089	0,267	750	2250	225	3600
	80 HE 50Sh	0,096	0,298	950	2850	285	
	65Sh	0,126	0,372	1200	3600	360	
	40Sh	0,130	0,39	1250	3750	375	3000
	G 80 HE 50Sh	0,16	0,50	1600	4800	480	
	65Sh	0,21	0,62	2000	6000	600	
	40Sh	0,21	0,62	2000	6000	600	2700
	100 HE 50Sh	0,26	0,78	2500	7500	750	
	65Sh	0,36	1,00	3200	9600	960	
	40Sh	0,31	0,942	3000	9000	900	2300
	125 HE 50Sh	0,41	1,256	4000	12000	1200	
	70Sh	0,52	1,570	5000	15000	1500	
	40Sh	0,42	1,26	4000	12000	1200	2100
	G 125 HE 50Sh	0,54	1,63	5200	16000	1600	
	70Sh	0,68	2,04	6500	20000	2000	
	40Sh	0,58	1,73	5500	16500	1650	1800
	150 HE 50Sh	0,73	2,20	7000	21000	2100	
	70Sh	0,94	2,83	9000	27000	2700	

Coupling selection

The BoWex® coupling is selected in accordance with DIN 740 part 2. The coupling has to be dimensioned in a way that the permissible coupling load is not exceeded in any operating condition. For this purpose the actual loads have to be compared to the permissible parameters of the coupling.

1 Drives without periodical load

The coupling has been selected by checking the rated torques T_{KN} and maximum torque $T_{K \max}$:

2 Load produced by rated torque

Taking into consideration the ambient temperature, the permissible rated torque T_{KN} of the coupling has to correspond at least to the rated torque T_N of the machine.

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

$$T_N [\text{Nm}] = 9550 \cdot \frac{P_{AN/LN} [\text{kW}]}{n [\text{rpm}]}$$

3 Load produced by torque shocks

The permissible maximum torque of the coupling has to correspond at least to the total of peak torque T_S and the rated torque T_N of the machine, taking into account the shock frequency Z and the ambient temperature.

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

$$\text{Drive-sided shock} \\ T_S = T_{AS} \cdot M_A \cdot S_A$$

$$\text{Load-sided shock} \\ T_S = T_{LS} \cdot M_L \cdot S_L$$

$$M_A = \frac{J_L}{J_A + J_L} \quad M_L = \frac{J_A}{J_A + J_L}$$

This applies in case if the rated torque T_N of the machine is at the same time subject to shocks.

Knowing the mass distribution, shock direction and shock mode, the peak torque T_S can be calculated.

For drives with A. C.-motors with high masses on the load side we would recommend to calculate the peak driving torque with the help of our simulation programme.

Service factor S_t for temperature

Material of sleeve	-40 °C +60 °C	+70 °C	+80 °C	+90 °C	+100 °C	+110 °C	+120 °C
PA 6.6	1,0	1,2	1,4	1,6	1,8	-	-
PA-CF	1,0	1,1	1,2	1,4	1,6	1,9	2,2

Service factor S_Z for starting frequency

starting frequency/h	100	200	400	800
S_Z	1,0	1,2	1,4	1,6

Service factor S_A/S_L for shocks

	S_A/S_L
gentle shocks	1,5
average shocks	1,8
heavy shocks	2,5

Permissible load on feather key of the coupling hub

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

Permissible surface pressure according to DIN 6892 (method C).

Description	Symbol	Definition or explanation
Rated torque of coupling	T_{KN}	Torque that can continuously be transmitted over the entire permissible speed range.
Maximum torque of coupling	$T_{K \max}$	Torque that can be transmitted as dynamic load $\geq 10^6$ times or 5×10^4 as vibratory load, respectively, during the entire operating life of the coupling.
Vibratory torque of coupling	T_{KW}	Torque amplitude of the permissible periodical torque fluctuation with a frequency of 10 Hz and a basic load of T_{KN} or dynamic load up to T_{KN} , respectively.
Damping power of coupling	P_{KW}	Permissible damping power with an ambient temperature of + 30 °C.
Rated torque of machine	T_N	Stationary rated torque on the coupling
Peak torque of machine	T_S	Peak torque on the coupling
Peak torque on the driving side	T_{AS}	Peak torque with torque shock on the driving side, e. g. breakdown torque of the electric motor.

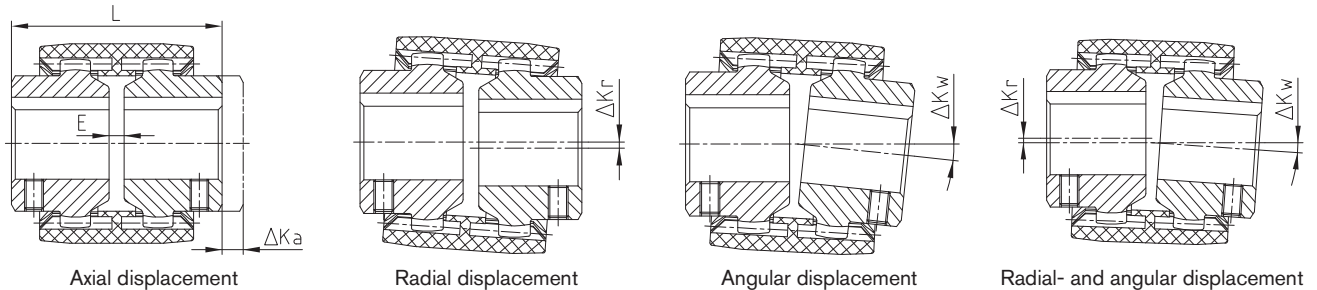
Polyamide 30 N/mm² (up to + 40 °C)
 Powder metal steel 180 N/mm²
 Material steel S355J2G3 (St 52.3) 250 N/mm²
 for other steel materials $p_{\text{perm.}} = 0,9 \cdot R_e (R_{p0.2})$

Description	Symbol	Definition or explanation
Peak torque of load side	T_{LS}	Peak torque with torque shock on load side, e. g. braking.
Vibratory torque of machine	T_W	Amplitude of the vibratory torque effective on the coupling.
Damping power of the machine	P_W	Damping power which is effective on the coupling due to the load produced by the vibratory torque.
Moment of inertia of driving side	J_A	Total of moments of inertia existing on the driving or load side referring to the coupling speed.
Moment of inertia of load side	J_L	
Rotational inertia coefficient of driving side	M_A	Factor taking into account the mass distribution with shocks and vibrations produced on the driving or load side. $M_A = \frac{J_L}{J_A + J_L} \quad M_L = \frac{J_A}{J_A + J_L}$
Rotational inertia coefficient of load side	M_L	

Displacements and threads for setscrews

Displacements

BoWex® couplings are double cardanic and in addition to transmitting the power compensate for axial, radial and angular shaft displacements in a way to prevent damages from the driving or driven machine, respectively.



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 $n=1500$ 1/min. ΔK_w [degree]	± 1,0	± 1,0	± 0,9	± 1,0	± 1,0	± 0,9
Max. angular displacement with $n=3000$ 1/min. ΔK_w [degree]	± 0,7	± 0,7	± 0,6	± 0,7	± 0,7	± 0,6

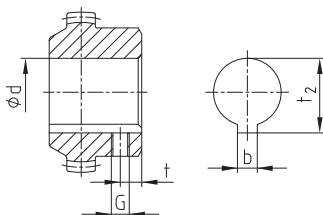
Displacements – type M, I, AS, Spec.-I, SG and SSR												
BoWex® size	14	19	24	28	32	38	42	48	65	80	100	125
Max. axial displacement ΔK_a [mm]	± 1	± 1	± 1	± 1	± 1	± 1	± 1	± 1	± 1	± 1	± 1	± 1
Max. radial displacement with $n=1500$ rpm ΔK_r [mm]	± 0,30	± 0,30	± 0,35	± 0,35	± 0,35	± 0,40	± 0,40	± 0,40	± 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 $n=1500$ 1/min. 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 $n=3000$ 1/min. 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

The above-mentioned figures of displacement of BoWex® couplings are standard values taking into account the load of the coupling up to the rated torque T_{KN} . For different operating conditions please order our data sheet KTR-N 20140 regarding displacements for BoWex®.

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).

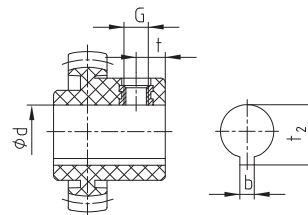
Threads for setscrews

(Thread dimensions for setscrews. BoWex® coupling hubs with cylindrical bores.)



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

BoWex® M-28 to I-125
on the keyway



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

BoWex® – coupling hubs						
Size Dimensions	14	28	42	65	80	100
	19	32	45			
	24	38	48			
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) Hub length 55 mm t = 15 mm, 70 mm t = 20 mm

Cylindrical bores, taper/inch bores and selection of standard IEC motors

Stock programme cylindrical finish bores [mm] H7 keyway to DIN 6885 sheet 1 [JS9] with thread for 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 lengthened

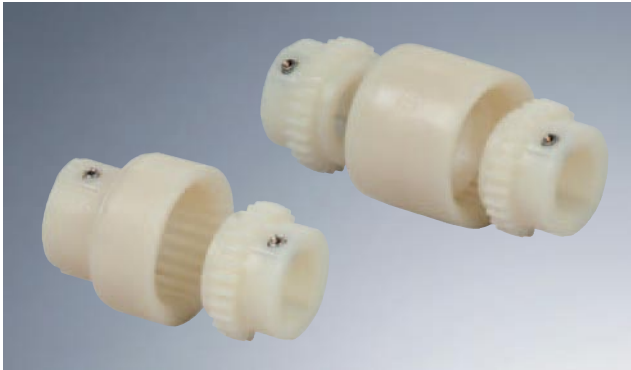
Stock programme taper and inch bores																			
	Taper 1:5					Taper 1:8					Inch bores								
Code d ^{+0,05} b ^{JS9} t ^{+0,2}	A-10 9,85 2	B-17 16,85 3	C-20 19,85 4	D-25 24,85 5	E-30 29,85 6	N/1 9,7 2,4	N1d 14 3	N/2 17,28 3,2	N/2a 17,28 4	N/3 22 3,99	Ta 12,7 3,17 14,3	DNC 13,45 3,17 14,9	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										●									

Further dimensions on request.

BoWex®-couplings for standard IEC-motors, protection type IP 54/IP 55											
A. C. motor size	Motor output with 50 Hz n = 3000 [rpm]			Motor output with 50 Hz n = 1500 [rpm]			Motor output with 50 Hz n = 1000 [rpm]			Cylindric shaft end d x l [mm] 3000 ≤ 1500	
	kW	T [Nm]	BoWex®- coupling	kW	T [Nm]	BoWex®- coupling	kW	T [Nm]	BoWex®- coupling		
56	0,09	0,32		0,06	0,43		0,037	0,43		9 x 20	
	0,12	0,41		0,09	0,64		0,045	0,52			
63	0,18	0,62	14	0,12	0,88	14	0,06	0,72	14	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	
112 M	4	13		3	20		2,2	22			
132 S	5,5	18	38	5,5	36	38	3	30	38	38 x 80	
	7,5	25		7,5	49		4	40			
132 M							5,5	55			
160 M	11	36	42	11	72	42	7,5	75	42	42 x 110	
	15	49		15	98		11	108			
160 L	18,5	60	48	18,5	121	48	11	108	48	48 x 110	
180 M	22	71		22	144		15	148			
180 L							18,5	181		55 x 110	
200 L	30	97	30	196	22	215					
225 S			65	37	240	65			65	55 x 110 60 x 140	
225 M	45	145		45	292		30	293			
250 M	55	177	65	55	356	65	37	361	65	60 x 140 65 x 140	
280 S	75	241		75	484		45	438			
280 M	90	289	80	90	581	80	55	535	80	75 x 140	
315 S	110	353		110	707		75	727			
315 M	132	423	80	132	849	80	90	873	80	80 x 170	
315 L	160	513		160	1030		110	1070			
	200	641	200	1290	132	1280	100	65 x 140			
315	250	801	100	250	1610	100	160	1550	100	85 x 170	
	315	1010		315	2020		200	1930			
355	355	1140	125	355	2280	125	250	2420	125	75 x 140 95 x 170	
	400	1280		400	2560		315	3040			

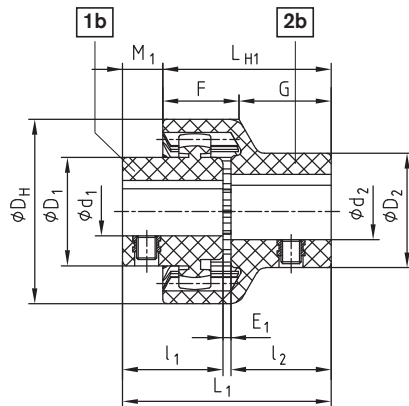
Torque T $\hat{=}$ rated torque according to Siemens catalogue.

Type junior plug-in coupling and type junior M from nylon

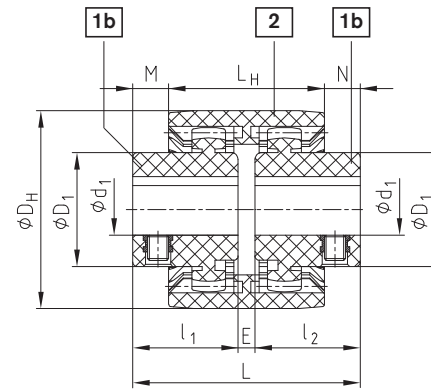


- Curved-tooth gear coupling plug-in type (2 parts) from nylon
- Double cardanic curved-tooth gear coupling type M (3 parts) from nylon
- Maintenance-free due to material combination nylon
- Compensating for axial, radial and angular shaft misalignment
- Low weight and small flywheel effect
- Axial plug-in – easy assembly
- Operating range - 25 °C to + 100 °C
- Available from stock with finish bore for standard shafts including keyway to DIN 6885 sheet 1 and thread for set-screws, bore tolerance + 0,05 - 0,1 keyway tolerance ± 0,08, H7 fit for steel hubs only

Components



Type junior plug-in coupling (2 parts)



Type junior M coupling (3 parts)

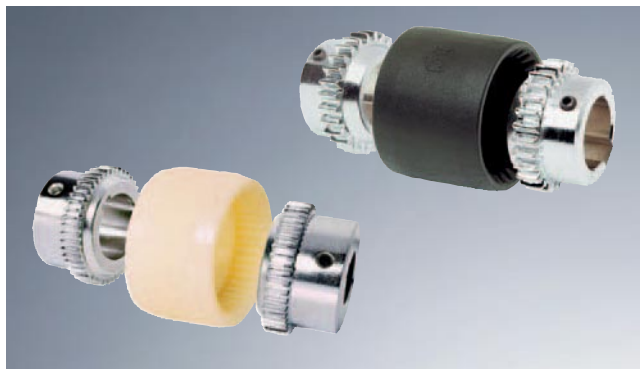
BoWex® junior plug-in coupling (2 parts) and BoWex® junior M (3 parts)

Size	Torque T _K [Nm]		Finish bore				Dimensions [mm]												Max. speed [rpm]														
	T _{KN}	T _{Kmax.}	Hub part 1b		Plug-in-sleeve part 2b		D _H	l ₁ , l ₂	E ₁	L ₁	L _{H1}	M ₁	F	G	E	L	L _H	M, N															
			d ₁	D ₁	d ₂	D ₂																											
14	5	10	Ø6, Ø7, Ø8, Ø9	22	Ø8	22	40	23	2	48	40	8	18,5	21,5	4	50	37	6,5	6000														
M-14			Ø10, Ø11	25	Ø10, Ø11	25																											
			Ø12, Ø14	26	Ø12, Ø14	26																											
19	8	16	Ø12, Ø14	27	Ø14, Ø15	29	47	25	2	52	42	10	19,0	23,0	4	54	37	8,5	6000														
M-19			Ø16	30		Ø19														35													
			Ø19	32		Ø19														35													
	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																													
24			Ø18, Ø19, Ø20	36		Ø19, Ø20														36													
M-24			Ø24	38		Ø24														40													

Order form:

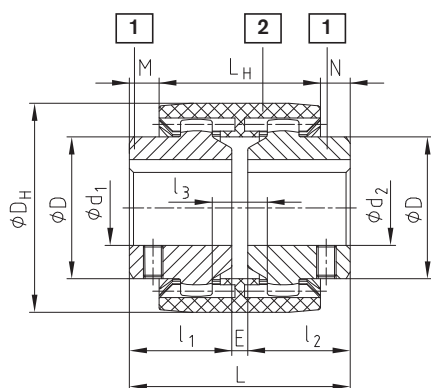
BoWex® junior 19	d_1 Ø 19	d_2 Ø 14
Coupling size 2-parted type or BoWex® junior M-19 3-parted type	Finish bore	Finish bore

Type M, type I and type M...C

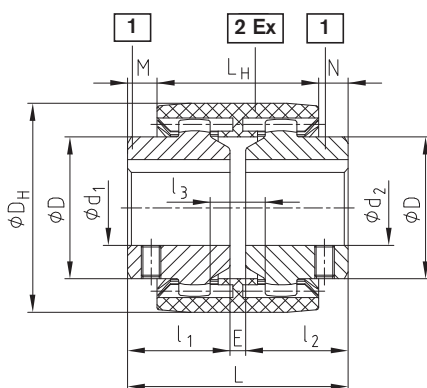


- For all applications in the range of general engineering and hydraulics
- Maintenance-free due to the material combination nylon/steel
- Compensating for axial, radial and angular shaft misalignment
- Axial plug-in - easy assembly
- Available with finish bore to ISO fit H7, keyway to DIN 6885 sheet 1 - JS9 as well as taper and inch bores
- Type M...C with carbon fiber reinforced PA, low backlash, higher torques and approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)
- Finish bores see stock programme on page 81
- For performance data see page 78

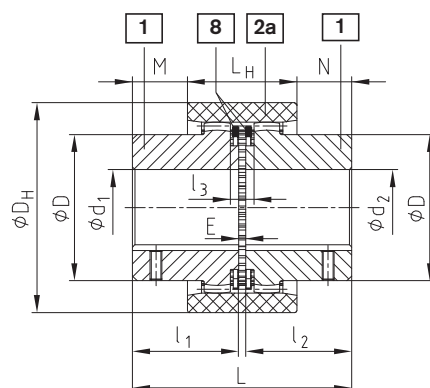
Components



Type M



Type M...C



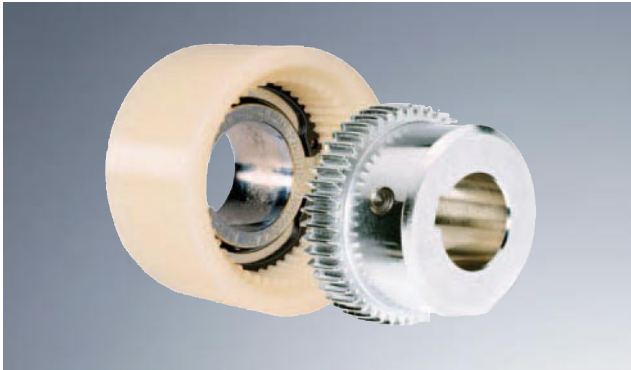
Type I

BoWex® type M, type I and type M...C 																				
Size		Finish bore d ₁ , d ₂		Dimensions [mm]										Weight with max. bore-Ø			Massmoment of inertia J with max. bore-Ø			
			Pilot bored		max.	l ₁ , l ₂	E	L	L _H	M, N	l ₃	D	D _H	Tip circle ØD _Z of hub	Leng- thened l ₁ , l ₂ max.	Sleeve [kg]	Hub [kg]	Total [kg]	Sleeve [kgcm ²]	Hub [kgcm ²]
M-14	M-14C	-	Finish bores see stock programme	15	23	4	50	37	6,5	10	25	40	33	40	0,03	0,07	0,10	0,08	0,09	0,26
M-19	M-19C	-		20	25	4	54	37	8,5	10	32	47	39	40	0,03	0,10	0,23	0,15	0,16	0,47
M-24	M-24C	-		24	26	4	56	41	7,5	14	36	53	45	50	0,04	0,14	0,32	0,21	0,36	0,93
M-28	M-28C	-		28	40	4	84	46	19	13	44	65	54	55	0,08	0,33	0,74	0,65	1,22	3,09
M-32	M-32C	-		32	40	4	84	48	18	13	50	75	63	55	0,09	0,43	0,95	1,14	2,17	5,48
M-38	M-38C	-		38	40	4	84	48	18	13	58	83	69	60	0,13	0,55	1,23	1,58	3,55	8,68
M-42		-		42	42	4	88	50	19	13	65	92	78	60	0,14	0,68	1,50	2,32	5,98	14,28
M-48	M-48C	-		48	50	4	104	50	27	13	68	95	78	60	0,23	0,79	1,81	3,90	7,22	18,34
M-65	M-65C	21		65	55	4	114	68	23	16	96	132	110	70	0,55	1,90	4,35	21,2	31,8	84,8
I-80		31		80	90	6	186	93	46,5	20	124	178	145	-	1,13	5,20	11,53	68,9	150,8	370,5
I-100		38	100	110	8	228	102	63	22	152	210	176	-	1,78	9,37	20,52	158,6	401,3	961,2	
I-125		45	125	140	10	290	134	78	30	192	270	225	-	3,88	19,44	42,76	562,9	1362,3	3287,5	

Order form:

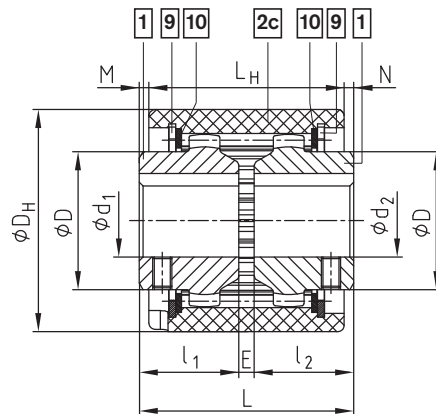
BoWex® M-28	d ₁ Ø 20	d ₂ Ø 28
Size and type of coupling	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)

Type AS and type Spec.-I

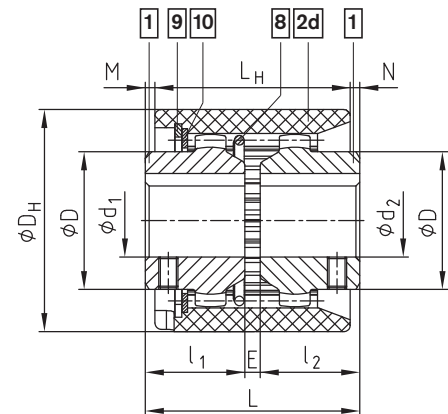


- Double cardanic curved-tooth gear coupling
- Maintenance-free due to the material combination nylon/steel
- Compensating for axial, radial and angular shaft misalignment
- Type AS – separable coupling design - axially movable sleeve when assembled
- Type Spec.-I – axial plug-in for blind assembly
- Application range from - 25 °C to + 100 °C
- Available with finish bore acc. to ISO fit H7, keyway to DIN 6885, sheet 1 - JS9 and thread for setscrews (page 80)
- Finish bores see stock programme on page 81
- For performance data see page 78

Components



Type AS



Type Spec. - I

BoWex® type AS and type Spec.-I

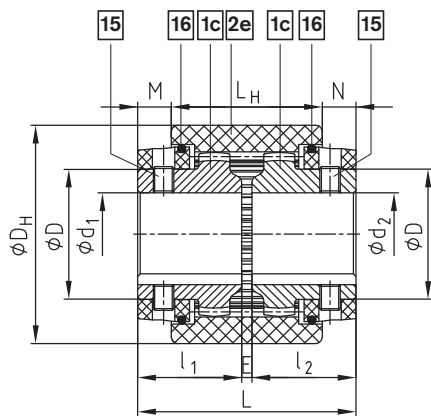
Size	Pilot bore		Finish bore d_1, d_2	Dimensions [mm]									Weight with max. bore-Ø			Massmoment of inertia J with max. bore-Ø		
	Un-bored	Pilot bored		max.	l_1, l_2	E	L	L_H	M, N	D	D_H	Lengthened l_1, l_2 max.	Sleeve [kg]	Hub [kg]	Total [kg]	Sleeve [kgcm ²]	Hub [kgcm ²]	Total [kgcm ²]
24	x	-	Finish 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		80	90	6	186	93	46,5	124	175	-	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

Order form:

BoWex® 32 AS	d_1 Ø 32	d_2 Ø 32
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)

Type SG, type SSR and type Spec.-I/CD

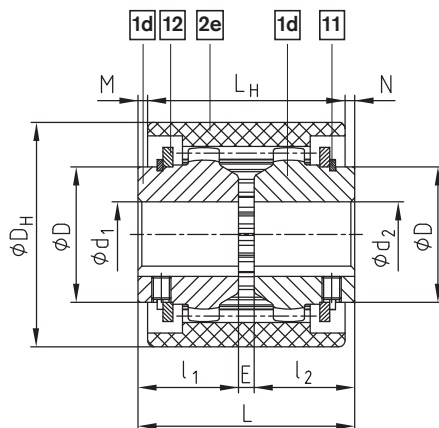
Type SG with dust protection circlips



BoWex® type SG												
Size	Pilot bore		Finish bore		Dimensions [mm]							
	Un-bored	Pilot bored	min.	max.	l_1, l_2	E	L	L_H	M, N	D	D_H	Lengthened l_1, l_2 max.
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	80	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	-

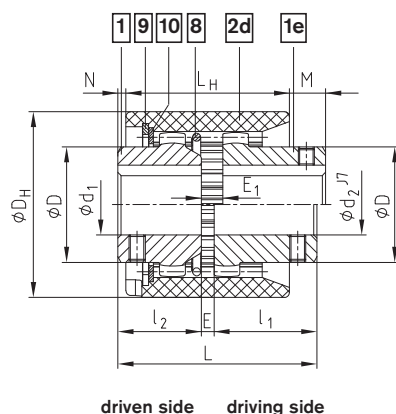
Thread for setscrews only for finish bored hubs.

Type SSR with supporting circlips



BoWex® type SSR												
Size	Pilot bore		Finish bore		Dimensions [mm]							
	Un-bored	Pilot bored	min.	max.	l_1, l_2	E	L	L_H	M, N	D	D_H	Lengthened l_1, l_2 max.
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	80	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	-

Type Spec.-I/CD



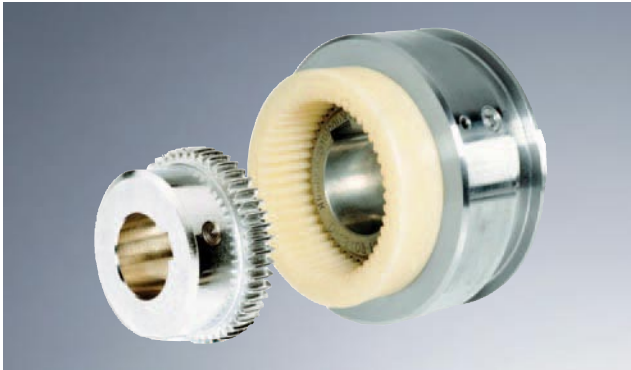
driven side driving side

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	7,5	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	80	179	-	93	6	13	90	83	175	124	44	46,5

Please order dimension sheet of type Spec.-I/CDB with shear pins.

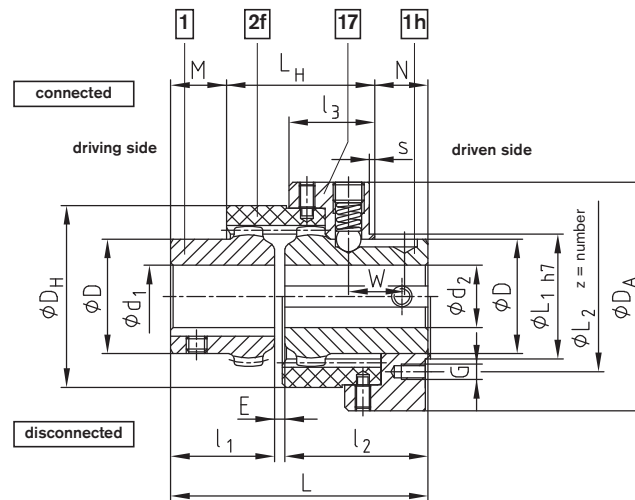
Order form:	BoWex® 45 SG		
	Size and type of coupling SG, SSR or Spec.-I/CD	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)

Type SD



- For all applications in the range of general engineering to quickly connect or disconnect power packs at standstill
- Maintenance-free due to the material combination nylon/steel
- Application range from - 25 °C to + 100 °C
- Available with finish bore according to ISO fit H7, keyway to DIN 6885 sheet 1 - JS9, thread for setscrews see on page 80
- For performance data please see page 78, compare to design M/I
- max. circumferential speed $v = 20 \text{ m/s}$, referring to $\varnothing D_A$

Components



BoWex® type SD																						
Size	Pilot bore		Finish bore d ₁ , d ₂			Dimensions [mm]												Weight with max. bore-Ø		Massmoment of inertia J with max. bore-Ø		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 [kg]	Driving hub [kg]	Shifting hub with sleeve [kgcm ²]	Driving hub [kgcm ²]	
24 SD	x	-	Finish bores see stock programme on page 81	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	-	21		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		80	80	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 (part 17) for mounting of: slip ring SD1 (s. catalogue page 87), shifting disk etc.				
Size	Dimensions [mm]			
	L_1	L_2	$z \times G$	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

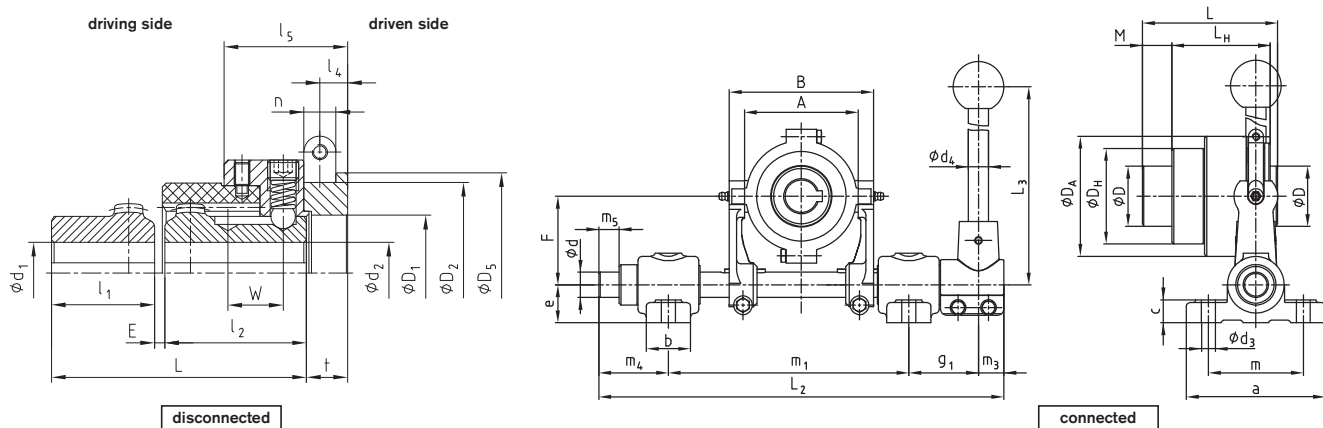
Order form:

BoWex® 32 SD	$d_1 \varnothing 32$	$d_2 \varnothing 32$
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 SD



- For all applications in the range of general engineering to quickly connect or disconnect power packs at standstill
- Maintenance-free due to the material combination nylon/steel
- Application range from - 25 °C to + 100 °C
- Available with finish bore according to ISO fit H7, keyway to DIN 6885 sheet 1 - JS9, thread for setscrews see on page 80
- Available with slip ring and shiftable linkage for manual operation
- For performance data please see page 78, compare to design M/I
- max. circumferential speed $v = 20 \text{ m/s}$, referring to $\varnothing D_A$



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	Finish bores see stock programme on page 81	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			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		80	80	6	90	90	1186	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® Bauart 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	35	18	20	11	16	30	70	55	320	400	75	180	190	90	114		55	16
28 SD1	1	1,1																			
32 SD1	2	2,2				25				97,5	60	430	450		240	270	111	151	20	80	34
45 SD1	3	3,3	140	40		30		20	40	120		490	600	100			140	180		90	44
65 SD1	3	4,4			25					70		490	600		280	310	170	210			
80 SD1	4	5,5				35	13,5		50	147,5		565	750		321	365	200	244		100	54
100 SD1	5	6,6	160	45				30						120	365		250	300	30		
125 SD1	5	7,7				40			50 ¹⁾	190	80	630	1068		-	410	300	350		110	62

1) = For a continuous base plate the dimension "e" has to be increased by at least 10 mm.
The brackets have to be adapted to the driving and driven sides accordingly.

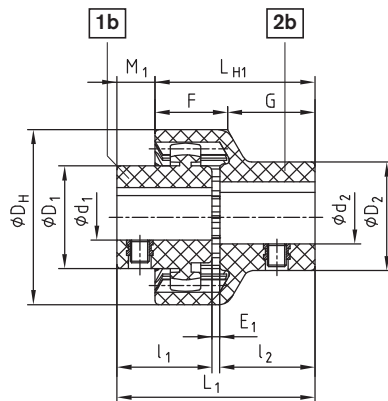
Order form:	BoWex® 65 SD1	$d_1 \varnothing 32$	$d_2 \varnothing 32$	4,4	3
	Size and type of coupling	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)		Slip ring size	Shiftable linkage size

made from corrosion-proof material

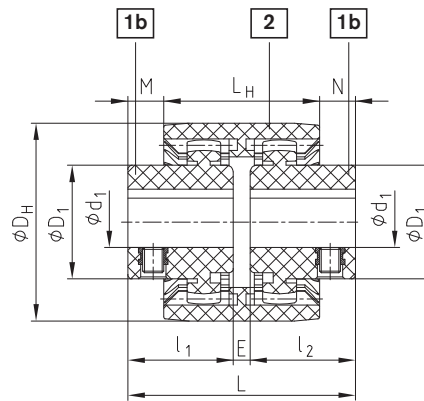


- BoWex® shaft couplings made from polyamid or stainless steel (material-no. 1.4571 and V4A respectively)
- BoWex® junior plug-in coupling (2 parts)
- BoWex® junior M (3 parts) from polyamide
- BoWex® M with sleeve made from polyamide and hubs from stainless steel (1.4571), available with finish bore acc. to ISO fit H7, keyway to DIN 6885, sheet 1 - JS9 and thread for setscrews (page 80)
- For performance data please see page 78

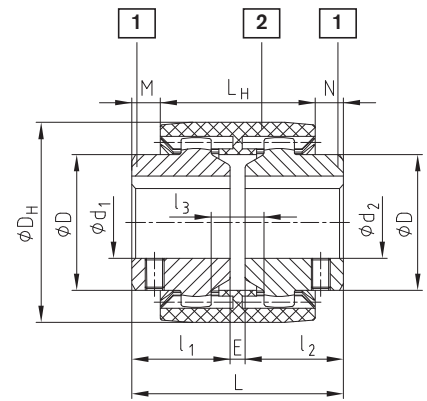
Components



Type junior plug-in coupling (2 parts)



Type junior M coupling (3 parts)



Type M

BoWex® junior plug-in coupling (2 parts) and BoWex® junior M (3 parts)

Size	Finish bore				Dimensions [mm]									
	Hub part 1b		Plug-in-sleeve part 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												
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												
	Ø24	38	Ø24	40										

BoWex® type M

Size	Finish bore d _{1max.} , d _{2max.}	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

Further sizes on request.

Application areas:

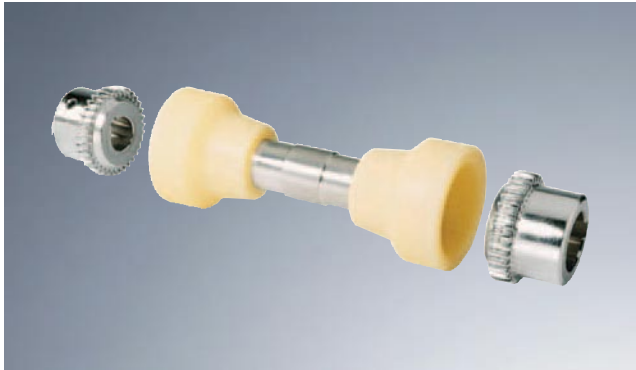
Food processing industry, print and paper, textile industry, sewage technology, wash-mobiles, chemical and pharmaceutical industry, offshore units ...

For applications in aggressive atmospheres (air, water, chemicals etc.).

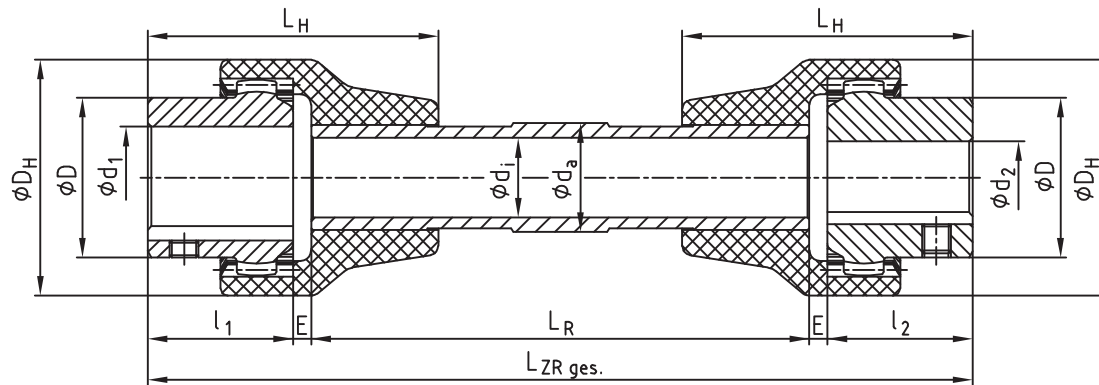
Order form:

BoWex® M-24 V4A	d ₁ Ø 20	d ₂ Ø 24
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 ZR and type Spec.-I for connection of larger shaft distances

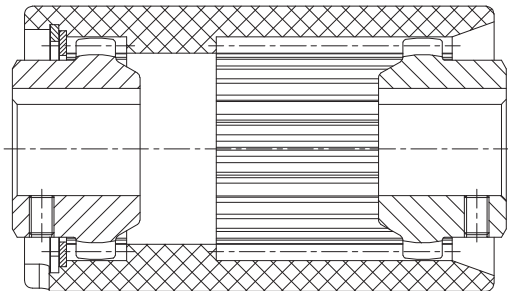


- Double cardanic curved-tooth gear coupling
- For all applications to connect larger shaft distances
- Low-cost for serial production
- Compensating for larger shaft displacements
- Axial plug-in
- Intermediate tubes variable in length (max. 2000 mm; on consultation with KTR)
- Hubs available with finish bores acc. to ISO fit H7 as well as taper and inch bores
- Application range from - 25 °C to + 100 °C



Type ZR

BoWex® type ZR															
Size	Pilot bore	Finish bore	Dimensions [mm]										Torque T _K [Nm]		
		d _{1max.} d _{2max.}	l ₁ , l ₂	Lengthened l ₁ , l ₂ max.	L _H	E	L _{ZR ges.}	L _R	D	D _H	d _i	d _a	T _{KN}	T _{K max.}	T _{KW}
14	-	14	23	40	40	3	as indicated by the customer		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



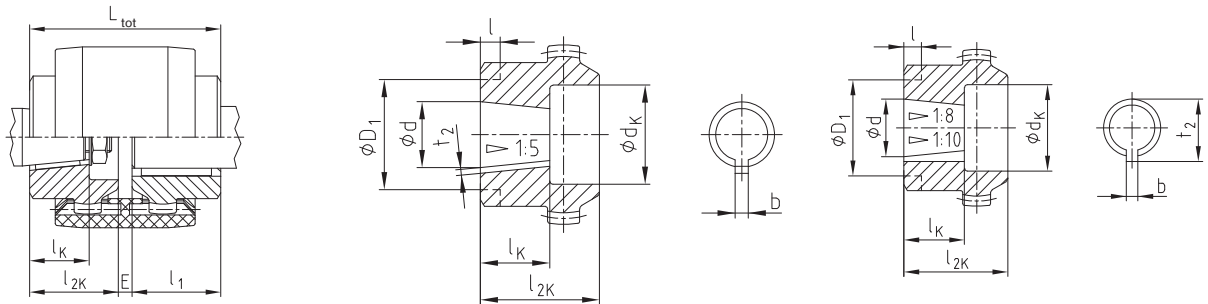
Type Spec.-I with a long PA-sleeve

- Lengthened special sleeves available on request
- Connecting 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® ZR couplings are available up to a length of 2000 mm only for serial applications (n_{max} = 1000 rpm)
- BoWex® Spec.-I with lengthened sleeve on request

Taper bores

BoWex® with taper bores



$$L_{tot} = L_1 + E + L_{2K}$$

For stock parts please see page 81

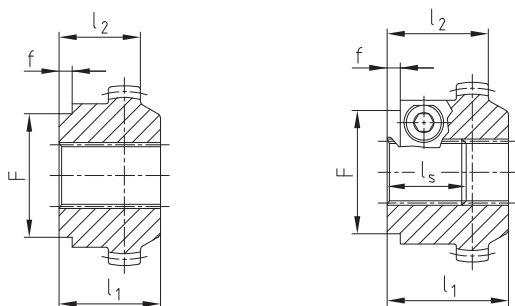
Taper bores 1:5																						
Dimensions [mm]					Counterbore d _K and hub length l _{2K} [mm]																	
					Recess on hub collar D ₁ x l [mm]																	
Code	Details of bores				14		19		24		28		32		38		42		48		65	
	d ^{+0,05}	b ^{IS9}	t ₂ ^{+0,1}	l _K	d _K	l _{2K}	d _K	l _{2K}	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 ^{IS9}	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	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 ^{IS9}	12,90	16,5	18	23			25	26	25	30										
N/1e	13	2,4	13,80	21					25	30	25	30			25	30						
N/1d	14	3 ^{IS9}	15,50	17,5	20	23	25	30	28	30	28	30	28	40								
					-		-		-		28 x 10		-									
N/2	17,287	3,2	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 ^{IS9}	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 ^{IS9}	18,34	24					28	35					36	40	45	42	45	42		
									-						-		-		-			
N/3	22,002	4 ^{IS9}	23,40	28							36	40	36	40	36	40	45	42	45	42	45	50
											-		-		-		-		-		48 x 14	
N/4	25,463	4,78	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 ^{IS9}	28,23	36							36	50					45	50	45	50	45	62
N/4a	27	4,78	28,80	32,5											36	50						
N/4g	28,45	6 ^{IS9}	29,32	38,5											36	60	45	60	45	60		
N/5	33,176	6,38	35,39	44											45	60	45	60	45	60	45	62
N/5a	33,176	7 ^{IS9}	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^{S9}	$t_2^{+0,1}$	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

Basic programme of BoWex® spline hubs



Spline hub (N)

Clamping hub (K)

If it is not possible to secure the hubs of pump shafts with involute spline by means of an end plate and a screw, we recommend our spline clamping hub.

The radial clamping ensures a backlash-free tight fit on the pump shaft.

Spline and clamping hubs to DIN 5480								
Size	Dimensions [mm]							Order designation Indicate coupling size
	Type	Spline size	l ₁	l ₂	l _s	F	f	
42	N	25x1,25x18	42	-	-	-	-	P000205
	K	25x1,25x18	42	-	-	-	-	P500202
48	K	30x2x14	42	-	-	60	6	P500203
	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 SAE J498								
Size	Dimensions [mm]							Order designation Indicate coupling size
	Type	Spline size	l ₁	l ₂	l _s	F	f	
42	K	PH-S 5/8" 16/32DP, z=9	42	-	-	-	-	P558101
	K	PI-S 3/4" 16/32DP, z=11	-	35	-	-	-	P559101
	K	PB-S 7/8" 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 3/8" 16/32DP, z=21	50	-	45	52	7	P663301
	K	PA-S 3/8" 16/32DP, z=21	55	-	48	52	5	P663301
65	K	PC-S 1 1/4" 12/24DP, z=14	55	-	44	52	5	P656201

Inch bores – For the stock parts please see the stock programme on page 81																
Code	Dimensions [mm]					Code	Dimensions [mm]					Code	Dimensions [mm]			
	Ød	Ød [inch]	b ^{+0,05}	t ₂ ^{+0,2}			Ød	Ød [inch]	b ^{+0,05}	t ₂ ^{+0,2}			Ød	Ød [inch]	b ^{+0,05}	t ₂ ^{+0,2}
Tb	9,5 ^{+0,03}	3/8	3,17	11,1		F	22,22 ^{+0,03}	7/8	6,38	25,2		M	34,92 ^{+0,03}	1 3/8	7,93	38,6
DNB	11,11 ^{M7}	7/16	2,4	12,5		Gd	22,225 ^{M7}	7/8	4,76	24,7		RH1	34,93 ^{M7}	1 3/8	9,55	37,8
T	12,69 ^{H7}	1/2	4,75	14,6		Gf	23,80 ^{+0,03}	15/16	6,35	26,8		Cb	36,50 ^{+0,03}	1 7/16	9,55	40,9
Ta	12,7 ^{+0,03}	1/2	3,17	14,3		B	25,37 ^{+0,03}	1	4,78	27,8		Ca	38,07 ^{+0,03}	1 1/2	7,93	42,0
DNC	13,45 ^{M7}	17/32	3,17	14,9		Ba	25,37 ^{+0,03}	1	6,35	27,6		C	38,07 ^{+0,03}	1 1/2	9,55	42,5
E	15,87 ^{+0,03}	5/8	3,17	17,5		Bs	25,38 ^{+0,03}	1	6,37	28,3		N	41,25 ^{+0,03}	1 5/8	9,55	45,6
S	15,87 ^{+0,03}	5/8	3,97	17,9		H	25,40 ^{+0,03}	1	4,78	27,8		Nb	41,275 ^{M7}	1 5/8	9,55	45,8
Es	15,88 ^{+0,03}	5/8	4,0	17,7		DNF	25,38 ^{H7}	1	6,35	28,4		Ls	44,42 ^{+0,03}	1 3/4	9,55	48,8
DND	15,852 ^{H7}	5/8	4,75	18,1		Hs	25,40 ^{+0,03}	1	6,35	28,7		L	44,45 ^{K7}	1 3/4	11,11	49,4
Ed	15,87 ^{+0,03}	5/8	4,75	18,1		Sa	28,575 ^{M7}	1 1/8	6,35	31,7		Lu	47,625 ^{M7}	1 7/8	12,7	53,5
DNH	17,465 ^{H7}	11/16	4,75	19,6		Sb	28,58 ^{+0,03}	1 1/8	6,35	31,5		Da	49,20 ^{+0,03}	1 15/16	12,7	55,0
Ad	19,02 ^{+0,03}	3/4	3,17	20,7		Sd	28,58 ^{+0,03}	1 1/8	7,93	32,1		Ds	50,77 ^{+0,03}	2	12,7	56,4
As	19,02 ^{+0,03}	3/4	4,78	21,3		Ja	31,70 ^{H7}	1 1/4	7,93	34,4		D	50,80 ^{+0,03}	2	12,7	55,1
A	19,05 ^{+0,03}	3/4	4,78	21,3		Jc	31,71 ^{+0,03}	1 1/4	7,93	35,3		P	53,95 ^{+0,03}	2 1/8	12,7	59,6
Fa	22,20 ^{+0,03}	7/8	6,35	25,2		Js	31,75 ^{+0,03}	1 1/4	6,35	34,6		Pa	53,975 ^{M7}	2 1/8	12,7	60,0
Ga	22,21 ^{H7}	7/8	4,75	24,8		J	31,75 ^{+0,03}	1 1/4	7,93	34,4		Ub	60,325 ^{M7}	2 3/8	15,875	67,6
DNI	22,228 ^{H7}	7/8	6,35	25,0		K	31,75 ^{K7}	1 1/4	7,93	35,5		Wa	73,025 ^{M7}	2 7/8	19,05	81,7
Gs	22,22 ^{+0,03}	7/8	4,78	24,4		DNK	31,755 ^{H7}	1 1/4	7,93	35,3		Wd	85,725 ^{M7}	3 3/8	22,225	95,8
G	22,22 ^{+0,03}	7/8	4,75	24,7		Ma	34,925 ^{M7}	1 3/8	7,93	38,7		Wf	92,075 ^{M7}	3 5/8	22,225	101,9

Operating description

MONOLASTIC®



MONOLASTIC® is a single-piece, flexible coupling with torque-to-bore volume ratio from natural rubber. The hub from steel with a hardened internal spline already assembled by the manufacturer allows an axial plug-in connection of the hydraulic pump. These couplings are available with all usual involute splines to SAE or DIN.

BoWex® FLE-PA



BoWex® FLE-PA couplings are torsionally rigid curved-tooth flange couplings, made from a combination of nylon and steel, for diesel engine drives in combination with hydraulic pumps.

The FLE-PA mounting flange is made from glass fiber reinforced polyamide with high mechanical stability and thermal strength.

The coupling hub with external curved teeth is made from steel.

The BoWex® FLE-PA allows an extremely short installation space. Apart from that it is easy to assemble without any additional tools for alignment.

BoWex® FLE-PAC



The coupling type BoWex® FLE-PAC is a further development of BoWex® FLE-PA for the use on I. C.-engines and hydraulic pumps.

The FLE-PAC consists of a high-quality carbon fibre material resulting in excellent resistance to wear and a long service life of the coupling.

In addition, the coupling's components have a high mechanical stiffness and dimensional stability under heat.

The coupling dimensions may vary, i. e. connection dimensions as per the SAE standard or special dimensions.

BoWex-ELASTIC®



BoWex-ELASTIC® is highly flexible, combining the benefits of the well-approved BoWex® system with the suppleness of a highly flexible coupling in compact design. Torsional vibrations and shock loads that may occur are dampened and reduced.

The BoWex-ELASTIC® consists of a highly flexible, annular rubber element from temperature-resistant natural caoutchouc, stressed for torque-to-bore ratio, and a BoWex® coupling hub to be plugged-in axially.

Pump mounting flanges



For connecting hydraulic pumps to the diesel engine KTR supplies mounting flanges sizes SAE 6 to SAE 1 in accordance with the SAE mounting dimensions. The flanges are made from steel for hydraulic pumps with flange connections to SAE-A, B, C, D and E both in a 2-hole or 4-hole design.

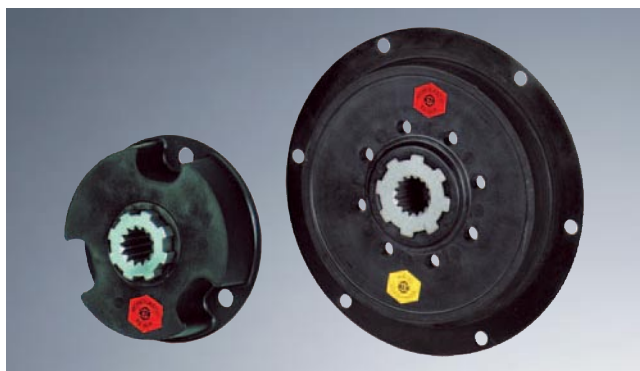
Pump connection housings from EN-GJL-250 (GG 25) to be mounted directly to the back plate of the engine.

MONOLASTIC®

Single-part, flexible flange couplings

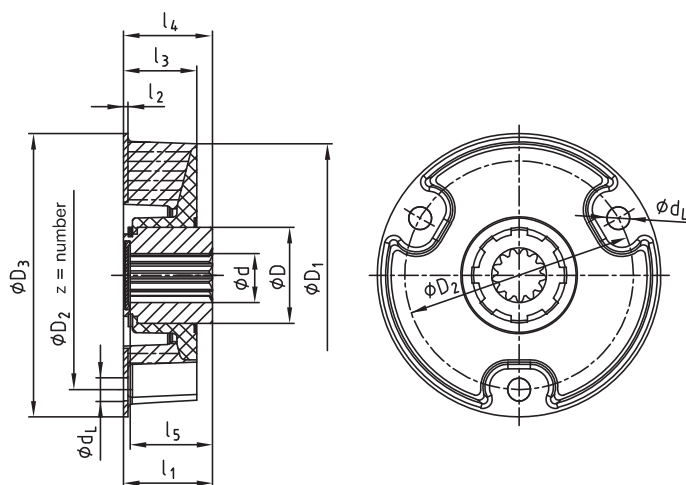


for I. C.-engines (EP 0853203/U.S. Patent 6,117,017)

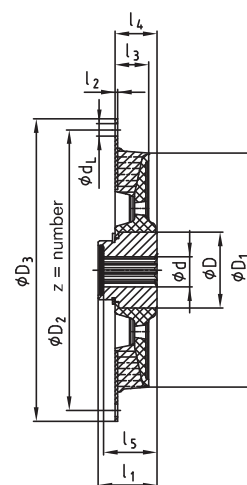


- MONOLASTIC® – for the drive of diesel engine/hydraulic pump up to 100 kW
- Single-part design with flange fastening by three bolts (sizes 22, 28, 32, 50-140, 50-165, 50-170)
- Flange connection according to SAE 6 1/2" to 11 1/2" (size 30, 50, 65)
- Easy assembly of coupling
- Axial plug-in in combination with the pump shaft
- Compensation for high radial and angular displacements
- Available for pump shafts according to SAE and DIN

BoWex®
BoWex® - FLE-PA
BoWex® - ELASTIC®
MONOLASTIC®



Size 22, 28, 32, 50-140, 50-165, 50-170

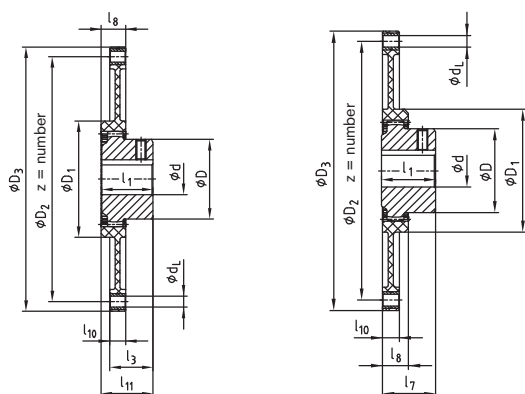


Size 30, 50, 65

MONOLASTIC®																
Size	Elastomer hardness [Shore A]	Torque [Nm]			Dimension [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	65	40	100	20	20	34	93	80	3	8,10	100	33	1,5	32	34	30
28	65	70	175	35	25	42	115	100	3	10,10	124	40	2	32	40	38
	70	100	300	50												
32	65	160	400	80	32	50	140	125	3	12,10	150	42	2	42	43	38
	70	225	675	112												
50-140	70	260	650	130	32	50	167	140	3	14,10	175	46	3	35	46	43
50-165	70	300	750	150	32	50	175	165	3	16,15	200	46	3	35	46	43
50-170	70	300	750	150	32	50	175	170	3	16,15	200	46	3	35	46	43
30	65	160	400	80	25	42	120	SAE-connection 6 1/2", 7 1/2"				39	2	21	30	36
50	65	300	750	150	32	50	167	SAE-connection 6 1/2", 7 1/2", 8", 10"				42	2	24	30	38
65	65	600	1600	180	48	68	200	SAE-connection 10", 11 1/2"				45	3	32	45	42

Technical data										
Size	Elastomer hardness [Shore A]	C _{dyn.} 60 °C [Nm/rad]	Perm. damping power with 60 °C P _{KW} [W]	Permissible radial displacement with 2200 rpm ΔK _r [mm]	Permissible angular displacement with 2200 rpm ΔK _w [°]	Radial spring stiffness C _r [N/mm]	Mass moment of inertia [kgm²]		Max. permissible operating speed n _{max} [rpm]	
							J _A	J _L		
22	65	600	10	0,6	1	200	0,00017	0,00010	6000	
28	65	900	15	0,6		300	0,00054	0,00033	6000	
	70	1300		400						
32	65	1800	25	0,6		400	0,00120	0,00081	6000	
	70	2400		500						
50-140	70	4200	35	0,5		1365	0,00210	0,00130	6000	
50-165	70	5600	40	0,5		1550	0,00250	0,00130	6000	
50-170	70	5600	40	0,5		1550		0,00130	6000	
30	65	3750	25	0,6		1150	6,5"	0,0038	0,00030	6000
							7,5"	0,0057		
50	65	9000	35	0,6		1300	8"	0,0078	0,00120	6000
							10"	0,0153		
65	65	14000	45	0,6		1900	10"	0,0238	0,00380	6000
							11,5"	0,0368		

- Flange coupling for connection to I. C.-engines and hydraulic pumps
- Applicable to all hydrostatic drives of construction machines, harvesting machines, etc.
- High torsional stiffness – operation free from resonance
- Maintenance-free due to the material combination nylon/steel
- Nylon flange with high mechanical resistance and thermal strength (+ 130 °C)
- Extremely short assembly
- Easy assembly by axial mounting
- Special mounting flanges available



Mounting long

BoWex® FLE-PA
for diesel engines with SAE connection; fixing of hub
by means of end plate and screw.

Flange dimensions according to SAE J 620 [mm]				
Size	D ₃	D ₂	z	d _L
6 1/2"	215,9	200,02	6	9
7 1/2"	241,3	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

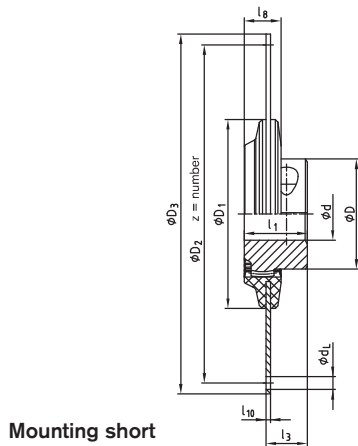
BoWex®-FLE-PA – Dimensions/Dimension to SAE																			
Size	Pilot bore	Finish bore d		Dimensions [mm]								Special length l ₁ max.	Dimension to SAE (D ₃)						Max. axial displacement [mm]
		min.	max.	D	D ₁	l ₁	l ₃	l ₇	l ₈	l ₁₀	l ₁₁		6 ½"	7 ½"	8"	10"	11 ½"	14"	
48	-	20	48	68	100	50	41	50	20	13	48	up to 60	●	●	●	●		± 2	
T 48	13	20	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	80	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	45	50	125	192	250	140	37	133	50	28	97	-					●	± 2	

Technical data of BoWex® FLE-PA – Torques/Weight/Mass moments of inertia/Torsion spring stiffness															
Size	Torque T _K [Nm]			Weight / Mass moment of inertia J	Hub with max. bore Ø	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 10³	75 x 10³	105 x 10³	125 x 10³
				[kgm²]	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 10³	86 x 10³	120 x 10³	143 x 10³
				[kgm²]	0,0007	0,0021	0,0035	0,0049	0,0085	–	–	–	–	–	–
T 55	450	1125	225	[kg]	1,12	0,34	0,62	0,45	0,646	–	–	90 x 10³	140 x 10³	170 x 10³	195 x 10³
				[kgm²]	0,0016	0,0022	0,0053	0,0044	0,0086	–	–	–	–	–	–
65	650	1600	325	[kg]	2,30	–	–	0,63	0,64	0,89	–	110 x 10³	160 x 10³	200 x 10³	230 x 10³
				[kgm²]	0,0044	–	–	0,0064	0,0065	0,012	–	–	–	–	–
T 65	800	2000	400	[kg]	2,40	–	–	0,63	0,64	0,89	–	130 x 10³	190 x 10³	240 x 10³	280 x 10³
				[kgm²]	0,0044	–	–	0,0064	0,0065	0,012	–	–	–	–	–
T 70	1000	2500	500	[kg]	2,60	–	–	–	0,941	–	–	230 x 10³	345 x 10³	440 x 10³	517 x 10³
				[kgm²]	0,0059	–	–	–	0,0132	–	–	–	–	–	–
80	1200	3000	600	[kg]	5,20	–	–	–	1,05	1,12	–	200 x 10³	410 x 10³	580 x 10³	700 x 10³
				[kgm²]	0,0151	–	–	–	0,015	0,022	–	–	–	–	–
T 80	1500	3750	750	[kg]	5,20	–	–	–	1,05	1,12	–	240 x 10³	450 x 10³	638 x 10³	770 x 10³
				[kgm²]	0,0151	–	–	–	0,015	0,022	–	–	–	–	–
100	2050	5150	1025	[kg]	9,37	–	–	–	–	1,16	8,45	500 x 10³	700 x 10³	856 x 10³	950 x 10³
				[kgm²]	0,0401	–	–	–	–	0,021	0,234	–	–	–	–
T 100	2500	6250	1250	[kg]	9,37	–	–	–	–	1,16	8,45	600 x 10³	830 x 10³	960 x 10³	1070 x 10³
				[kgm²]	0,0401	–	–	–	–	0,021	0,234	–	–	–	–
125	4250	10700	2125	[kg]	19,73	–	–	–	–	2,09	9,85	4200 x 10³	5000 x 10³	5600 x 10³	6200 x 10³
				[kgm²]	0,1359	–	–	–	–	0,043	0,306	–	–	–	–

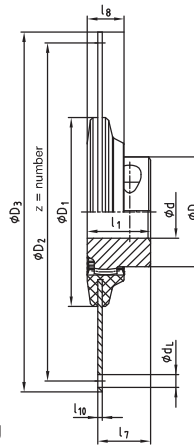
Type FLE-PAC



- High-quality flange coupling to connect flywheels to I. C.-engines and hydraulic pumps
- Composite design of steel flange/polyamide with carbon-fibre reinforcement
- High mechanical stiffness and thermal stability
- Maintenance-free with high resistance to wear due to the use of carbon-fibre reinforcement
- Extremely short dimensions subject to composite design
- Easy assembly by axial joining
- Special flange dimensions as a single-parted design



Mounting short



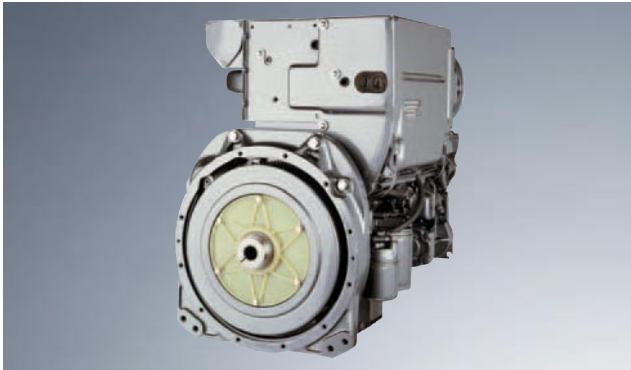
Mounting long

Flange dimensions according to SAE J 620 [mm]				
Size	D ₃	D ₂	z	d _L
6 1/2"	215,9	200,02	6	9
7 1/2"	241,3	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

BoWex®-FLE-PAC – dimensions/dimension to SAE																		
Size	Pilot bore	Finish bore d		Dimensions [mm]							Special length l ₁ max.	Dimension 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	20	48	68	110	50	35	46	25	3	up to 60	●	●	●	●		± 3	
65 / T 65	21	30	65	96	165	55	36	46	32	4	up to 70			●	●	●	± 3	
80 / T 80	31	35	80	124	220	90	72	76	35	4	-				●	●	●	± 3

Technical data of BoWex® FLE-PAC – torques/weight/mass moments of inertia/torsion spring stiffness															
Size	Torque T _K [Nm]			Weight / Mass moment of inertia J	Hub with max. bore Ø	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	240	600	120	[kg]	0,79	0,77	0,98	1,19	1,73			57 x 10 ³	89 x 10 ³	109 x 10 ³	126 x 10 ³
				[kgm ²]	0,0007	0,0049	0,0077	0,0109	0,0221						
T 48	300	750	150	[kg]	0,79	0,77	0,98	1,19	1,73			74 x 10 ³	115 x 10 ³	141 x 10 ³	164 x 10 ³
				[kgm ²]	0,0007	0,0049	0,0077	0,0109	0,0221						
65	650	1600	325	[kg]	2,3			1,48	2,20	2,83		164 x 10 ³	286 x 10 ³	365 x 10 ³	411 x 10 ³
				[kgm ²]	0,0044			0,0145	0,0294	0,0467					
T 65	800	2000	400	[kg]	2,4			1,48	2,20	2,83		202 x 10 ³	328 x 10 ³	420 x 10 ³	473 x 10 ³
				[kgm ²]	0,004			0,0145	0,0294	0,0467					
80	1200	3000	600	[kg]	5,2				2,27	2,90	5,20	433 x 10 ³	765 x 10 ³	990 x 10 ³	1200 x 10 ³
				[kgm ²]	0,0151				0,0312	0,0485	0,1462				
T 80	1500	3750	750	[kg]	5,2				2,27	2,90	5,20	520 x 10 ³	920 x 10 ³	1200 x 10 ³	1400 x 10 ³
				[kgm ²]	0,0151				0,0312	0,0485	0,1462				

Selection according to SAE standard



Selection of the coupling

Determination of coupling size

Table 1

Connection dimension of coupling

Table 2

Hub design/Mounting length

Table 3

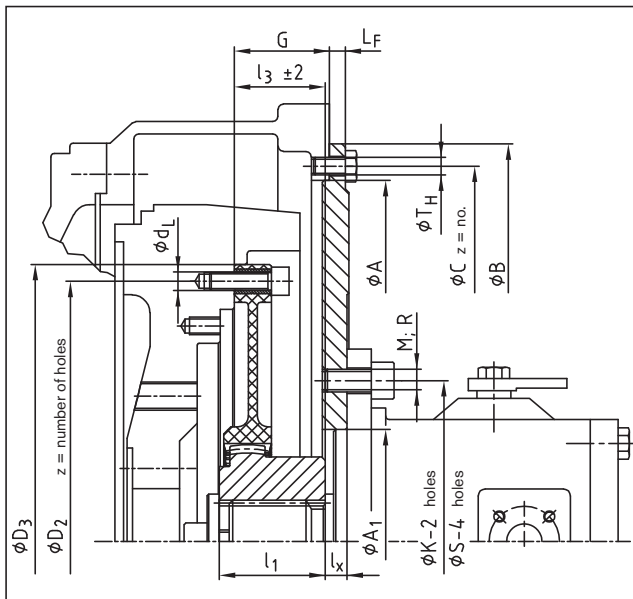
SAE - pump mounting flange

Flange size according to SAE 617

Table 4

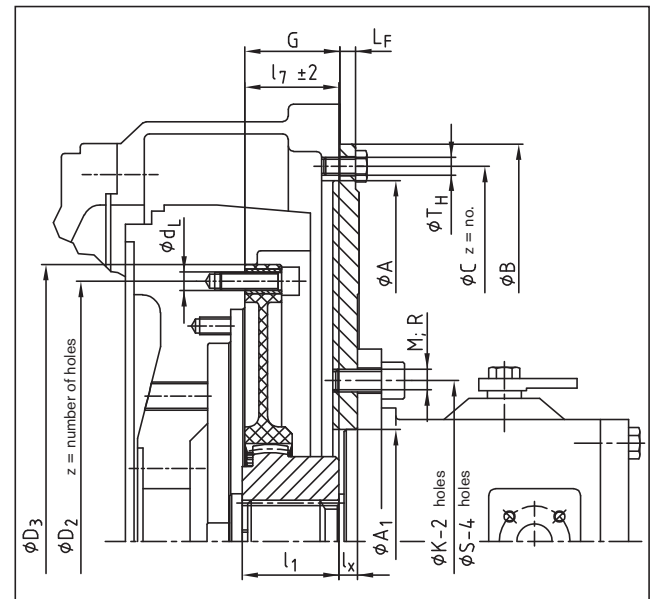
Mounting flange of hydraulic pump

Table 5



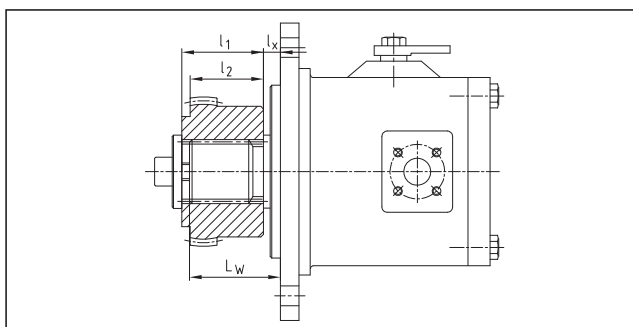
Coupling-mounting short (l_3)

Marking on PA flange

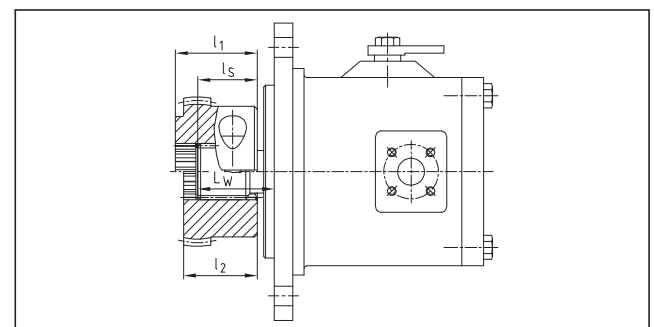


Coupling-mounting long (l_7)

Marking on PA flange



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 would recommend to use our 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 screw quality 8.8. We recommend screws are loctited in position.

Screw tightening torque of FLE-PA flange to 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
65	M12	86 Nm
80/100	M16	210 Nm

Mounting dimensions according to SAE standard

1. Selection of coupling for diesel engine										
⊗	Diesel engine power		Coupling size	Flywheel to SAE			Pump mounting flange		Driving shaft of pump	
	kW	HP		G			LF			
				6 1/2"	30,15	1,19"	Dimensions to SAE see tables 3 and 4			See table 3 Hub design SAE J 498 / DIN 5480
	up to 30 kW	up to 40 PS	48 FLE-PA	7 1/2"	30,15	1,19"				
				8"	62	2,44"		9,5	0,375"	
				10"	54	2,12"				
	up to 90 kW	up to 120 PS	65 FLE-PA	8"	62	2,44"	Dimensions to SAE see tables 3 and 4	9,5	0,375"	See table 3 Hub design SAE J 498 / DIN 5480
				10"	54	2,12"		12,7	0,5"	
	up to 180 kW	up to 240 PS	80 FLE-PA	11 1/2"	39,6	1,56"	12,7	0,5"		

2. Dimensions of coupling flange acc. to SAE J 620 [mm]					
(X)	Size	D ₃	D ₂	z=number	d _L
	6 1/2"	215,90	200,02	6	9
	7 1/2"	241,30	225,25	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

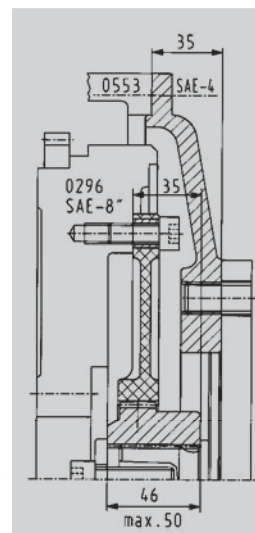
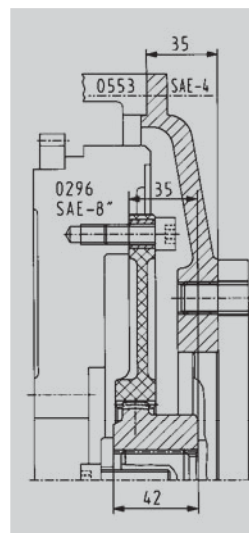
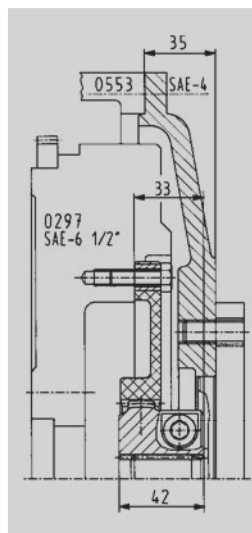
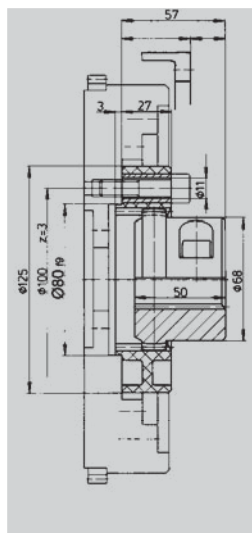
3. Selection of coupling hub - Determination of mounting lenght l_3 or l_7																
Please mention type (X)	BoWex® coupling size	Pump shaft to SAE J 498 and DIN 5480	Spline hub	Clamping hub	Dimensions of coupling size [mm]			Mounting length of coupling l_3 or l_7								Code to order coupling hub
								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		x	42	-	33	33	42							P559101
		PI-S 3/4"														
		z=11														
	42	SAE-16/32 DP		x	42	-	-	33	42							P567101
		PB-S 7/8"														
		z=13														
	42	SAE-16/32 DP		x	42	-	27	33	42							P660201
		PB-BS 1"														
		z=15														
	48	SAE-16/32 DP		x	50	-	45	41	50		50	41	50			P663301
	65	PA-S 1 3/8"		x	50	-	48				54	45	54	41		P663301
		z=21														
	65	SAE-12/24 DP		x	55	-	44				54	45	54	41		P656201
		PC-S 1 1/4"														
		z=14														
	65	SAE-16/32 DP		x	-	49	45						53	41		P664301
		PD-S 1 1/2"														
		z=23														
	80	SAE-16/32 DP		x	55	-	-							44	33	P565402
		PE-S 1 3/4"														
		z=27														
	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	-	-							42	37	P500405

Please photocopy dimension sheet and highlight all details required for design.

Order form: FLE-PA coupling			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 mounting to SAE 2 holes/4 holes standard - metric fastening thread
Table 1	Table 2	Table 3	Table 4	Table 5

Special flange programme, deviations from the SAE standard

Fitting to
Deutz
2011
diesel
engines



Coupling size
Engine type

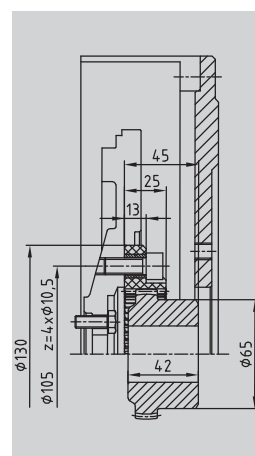
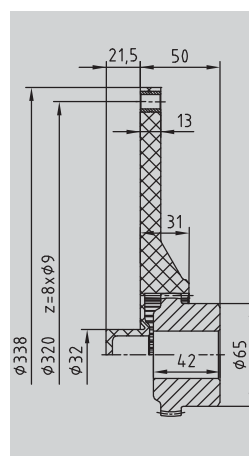
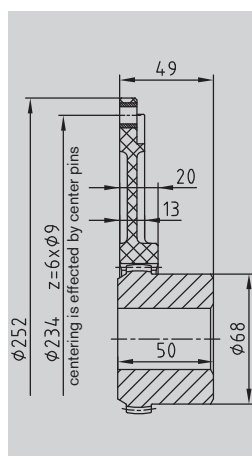
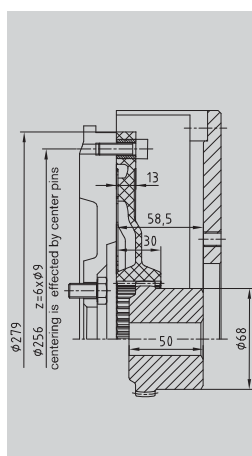
BoWex® 48 FLE-PA,
Ø 125
F2L511 – kit 1338

BoWex® 48 FLE-PA,
Ø 215,9
F2-4L 2011

BoWex® 48 FLE-PA,
Ø 263,52
F2-4L 2011

BoWex® T 48 FLE-PA,
Ø 263,52
BF 4L 2011

Fitting to
VW
Mitsubishi
diesel
engines



Coupling size
Engine type

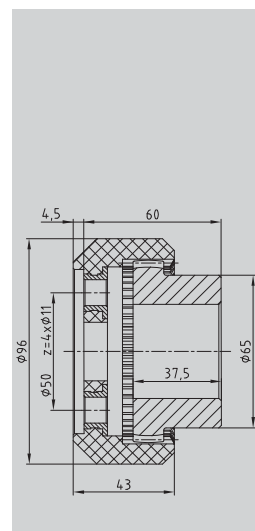
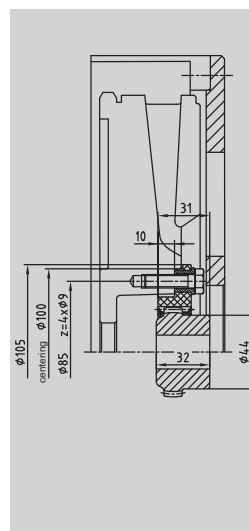
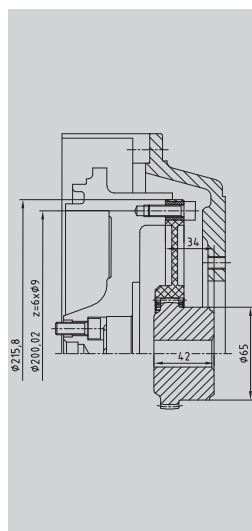
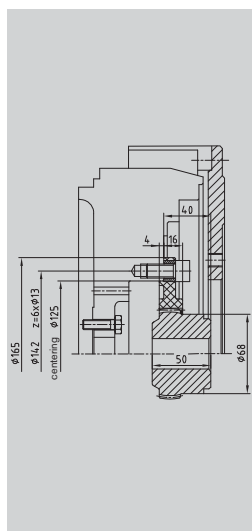
BoWex® 48 FLE-PA, Ø 279
VW
028.B / M344

BoWex® 48 FLE-PA, Ø 252
VW
062.2 / 068.5 / 6 / A / D

BoWex® 48 FLE-PA
Mitsubishi
Ø 338-32

BoWex® 48 FLE-PA, Ø 130
Mitsubishi
L-series / K-series

Fitting to
Hatz
diesel
engines



Coupling size
Engine type

BoWex® 48 FLE-PA, Ø 165
Hatz
2L/3L/4L41C 2M/3M/4M41

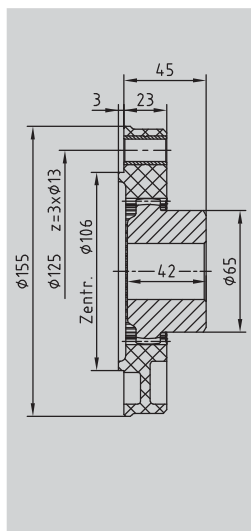
BoWex® 48 FLE-PA, 6,5
Hatz
W35

BoWex® 28 FLE-PA, Ø 105
Hatz
1D81 / 1D90

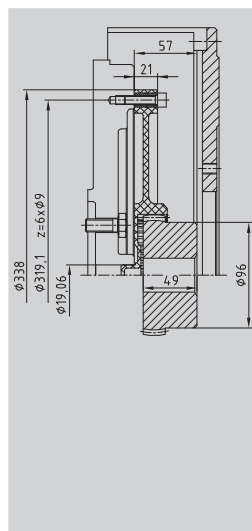
BoWex® 48 FLE-PA, Ø 96
Hatz
Z788 / Z789 / Z790

Special flange programme, deviations from the SAE standard

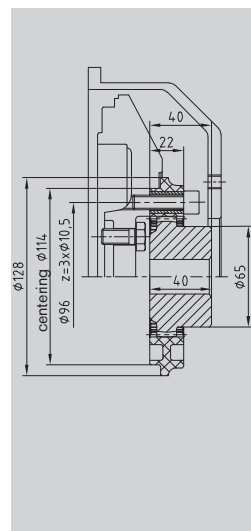
Fitting to
Perkins
Lombardini
diesel
engines



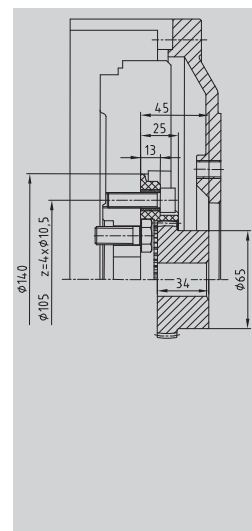
BoWex® 48 FLE-PA, Ø 152/1
Perkins
4.108



BoWex® 65 FLE-PA, Ø 338
Perkins 1104C-44T
Flywheel-No. D0014

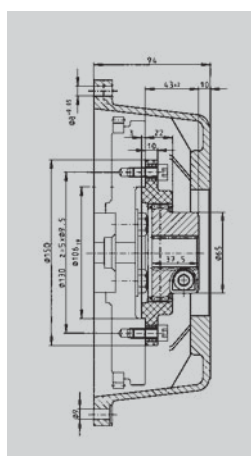


BoWex® 48 FLE-PA, Ø 128
Lombardini
FOCS-Series

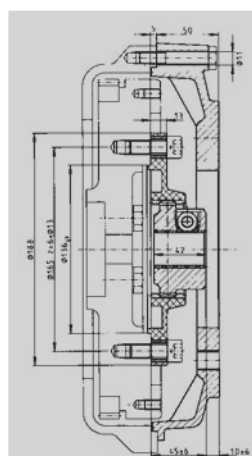


BoWex® 48 FLE-PA, Ø 140
Lombardini
LDW 1303/1503/2004

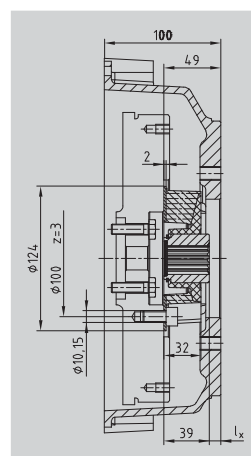
Fitting to
Kubota
diesel
engines



BoWex® 48 FLE-PA, Ø 150
Serie Super mini

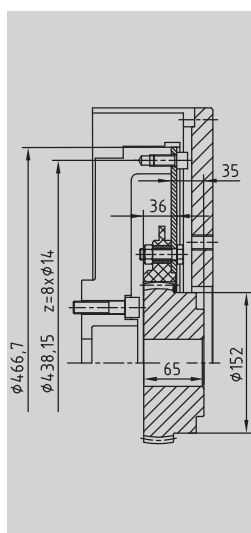


BoWex® 48 FLE-PA, Ø 188
Serie Super 3

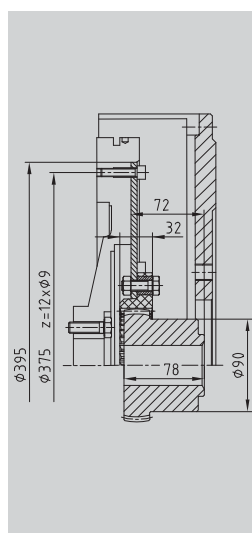


MONOLASTIC® 28, Ø 124
Serie Super 5

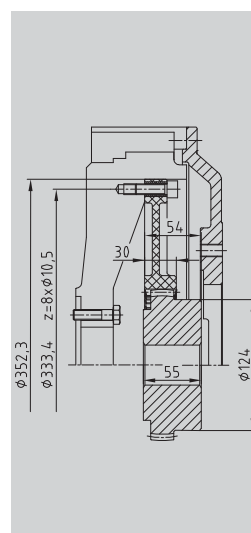
Fitting to
Caterpillar
Daimler-
Chrysler
Cummins
John-Deere
diesel
engine



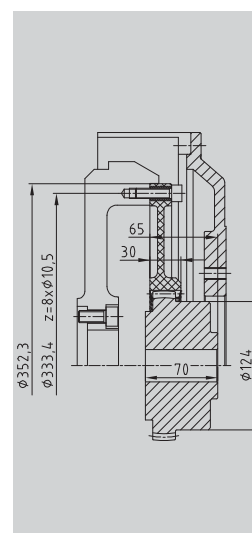
BoWex® T100 FLE-PA, 14"
Caterpillar
C 10 / C 12



BoWex® T65 FLE-PA, Ø 395
Daimler-Chrysler
OM904



BoWex® 80 FLE-PA, 11 1/2"
Cummins
6BTA5.9

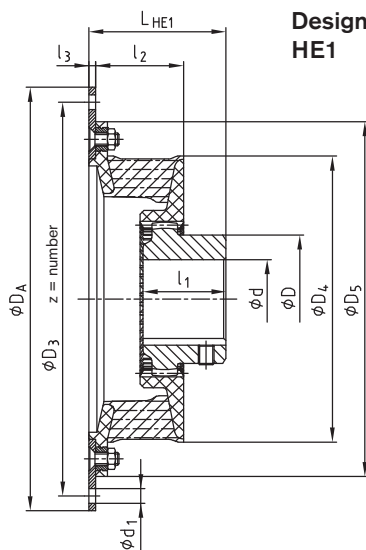


BoWex® 80 FLE-PA 11 1/2"
John Deere
1010D / 1110D / 1400D

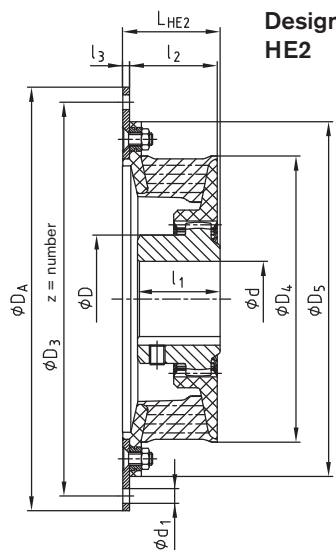
Type HE1 and HE2



- Flange coupling with flanges according to SAE and special dimensions for mounting to I. C.-engines
- Easy assembly by axial plug-in
- Compensation of misalignment on driving and driven side
- Use of coupling hubs from the BoWex standard programme
- Finish bore according to ISO fit H7, keyway to DIN 6885, sheet 1 (JS9) - inch bores, taper bores, spline clamping hub
- Available in the hardness 40, 50 and 65 Shore A
-  Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)



Design HE1



Design HE2

Flange dimensions according to SAE J 620 [mm]				
Size	D _A	D ₃	z	d ₁
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

BoWex-ELASTIC® Type HE1 and HE2																			
Size	Bore d [mm]		Flange connection according to SAE - J 620						Dimensions [mm]								Weight with pilot bored coupling [kg]	Mass moment of inertia with pilot bored coupling	
	Pilot bored	max.	6 ½"	7 ½"	8"	10"	11 ½"	14"	l ₃	l ₂	D ₄	D ₅	D	l ₁	L _{HE1}	L _{HE2}		J _A [kgm²]	J _L [kgm²]
42 HE	-	42	●	●					4	45	146	180	65	42	70	50	2,7	0,0061	0,0014
					●												2,9	0,0083	0,0014
48 HE	-	48	●	●					4	45	164	198	68	50	78	50	2,9	0,0106	0,0019
					●												3,1	0,0148	0,0019
						●											3,9	0,0298	0,0019
65 HE	21	65				●			5	55	205	244	96	55	85	62	6,4	0,0377	0,0064
						●	●										7,2	0,0594	0,0064
80 HE	31	80				●			-	70	266	-	124	90	126	74	10,9	0,0211	0,0283
							●			6		316			132	80	13,0	0,0726	0,0283
G 80 HE	31	80					●		-			-			136	84	12,5	0,0402	0,0428
									●	6	80	302	356	124	90	142	90	17,3	0,2251

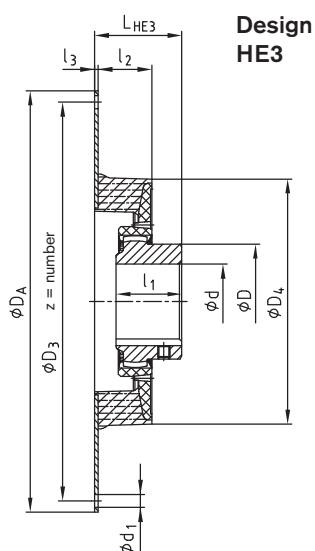
Order form:

BoWex-ELASTIC® 42	HE1	40	8	70	U
Coupling size	Design	Elastomer hardness	Flange diameter D _A acc. to SAE or special	Mounting length L _{HE}	Unbored or with finish bore

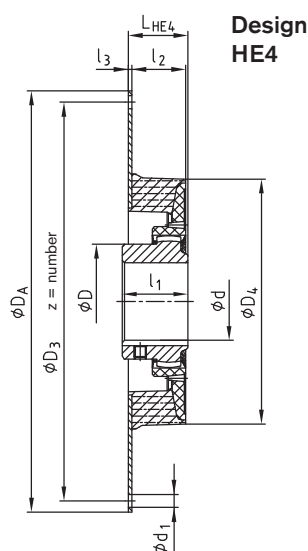
Type HE3 and HE4



- Flange coupling with flanges according to SAE and special dimensions for mounting to I. C.-engines
- Easy assembly by axial plug-in
- Compensation of misalignment on driving and driven side
- Use of coupling hubs from the BoWex standard programme
- Finish bore according to ISO fit H7, keyway to DIN 6885, sheet 1 (JS9) - inch bores, taper bores, spline clamping hub
- Available in the hardness 40, 50 and 65 Shore A
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)



**Design
HE3**



**Design
HE4**

Flange dimensions according to SAE J 620 [mm]				
Size	D _A	D ₃	z	d ₁
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
16"	517,50	489,00	8	13
18"	571,50	542,90	6	18

BoWex-ELASTIC® Type HE3 and HE4																				
Size	Bore d [mm]		Flange connection according to SAE - J 620								Dimensions [mm]						Weight with pilot bored coupling [kg]	Mass moment of inertia with pilot bored coupling J_A [kgm²] J_L [kgm²]		
	Pilot bored	max.	6 ½"	7 ½"	8"	10"	11 ½"	14"	16"	18"	l ₃	l ₂	D ₄	D	l ₁	L _{HE3}		L _{HE4}		
42 HE	-	42	●	●							2	33	145	65	42	55	40	1,7	0,0057	0,0014
				●														1,8	0,0060	0,0020
48 HE	-	48			●						2	37	163	68	50	68	42	2,0	0,0062	0,0020
						●												2,2	0,0065	0,0020
G 65 HE	21	65				●					3	45	205	96	55	73	50	5,3	0,0242	0,0076
							●											5,7	0,0372	0,0076
80 HE	31	80				●					4	56	265	124	90	112	60	11,4	0,0388	0,0305
G 80 HE	31	80					●				4	66	300	124	90	122	70	11,6	0,0702	0,0465
100 HE	38	100						●			4	80	350	152	110	150	82	24,1	0,1951	0,1019
									●		-					186	103	45,8	0,3013	0,2861
125 HE	45	125							●		6	98	416	192	140	192	109	47,7	0,4123	0,2861
										●								48,4	0,4781	0,2916
G 125 HE	45	125								●	6	89	440	192	140	179	91	50,5	0,6380	0,2916
150 HE	50	150								●	6	134	470	225	150	205	157	66,7	0,6918	0,5192

Order form:

BoWex-ELASTIC® 100	HE3	40	14	150	U
Coupling size	Design	Elastomer hardness	Flange diameter D _A acc. to SAE or special	Mounting length L _{HE}	Unbored or with finish bore

Technical data and displacements

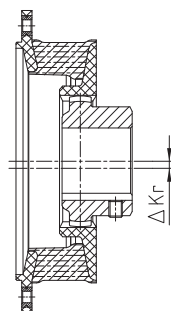
Technical data												
Size	Shore	Torque [Nm]			Perm. damping power P _{KW} [W]		Perm. operating speed n _{max.} [rpm]	Twisting angle with T _{KN} φT _{KN} [°]	Dynamic torsion spring stiffness C _{dyn} [Nm/rad]	Relative damping ψ	Resonance- factor V _R ≈ $\frac{2 \cdot \pi}{\psi}$	Radial spring stiffness C _r [N/mm]
		T _{KN}	T _K max.	with 10 Hz T _{KW}	60 °C	80 °C						
	40 Sh	130	390	36				16	550	0,6	10,5	142
42 HE	50 Sh	150	450	45	20	6,5	6200	13	850	0,8	7,9	219
	65 Sh	180	540	54				8	2700	1,2	5,2	697
	40 Sh	200	600	60				16	850	0,6	10,5	176
48 HE	50 Sh	230	690	69	27	9,0	5600	13	1300	0,8	7,9	269
	65 Sh	280	840	84				8	3500	1,2	5,2	724
	40 Sh	350	1050	105				16	1600	0,6	10,5	209
65 HE	50 Sh	400	1200	120	45	15	4500	13	2200	0,8	7,9	288
	65 Sh	500	1500	150				8	6000	1,2	5,2	784
	40 Sh	430	1290	129				12	2350	0,6	10,5	259
G 65 HE	50 Sh	500	1500	150	51	17	4300	10	3000	0,8	7,9	346
	65 Sh	620	1860	186				6	8500	1,2	5,2	975
	40 Sh	750	2250	225				14	4500	0,6	10,5	351
80 HE	50 Sh	950	2850	285	90	30	3600	13	6500	0,8	7,9	507
	65 Sh	1200	3600	360				6	18000	1,2	5,2	1404
	40 Sh	1250	3750	375				12	7500	0,6	10,5	476
G 80 HE	50 Sh	1600	4800	480	135	45	3000	10	12000	0,8	7,9	762
	65 Sh	2000	6000	600				6	32000	1,2	5,2	2031
	40 Sh	2000	6000	600				12	12000	0,6	10,5	366
100 HE	50 Sh	2500	7500	750	160	53	2700	10	19000	0,8	7,9	570
	65 Sh	3200	9600	960				6	48000	1,2	5,2	1200
	40 Sh	3000	9000	900				12	19000	0,6	10,5	617
125 HE	50 Sh	4000	12000	1200	180	60	2300	10	30000	0,8	7,9	974
	70 Sh	5000	15000	1500				6	75000	1,2	5,2	2434
	40 Sh	4000	12000	1200				11	30000	0,6	10,5	560
G 125 HE	50 Sh	5200	16000	1600	200	67	2100	9	44000	0,8	7,9	920
	70 Sh	6500	20000	2000				5	110000	1,2	5,2	1915
	40 Sh	5500	16500	1650				10	42000	0,6	10,5	714
150 HE	50 Sh	7000	21000	2100	225	75	1800	8	67000	0,8	7,9	1200
	70 Sh	9000	27000	2700				5	166000	1,2	5,2	2500

The technical data mentioned apply for an ambient temperature of T = 60 °C.

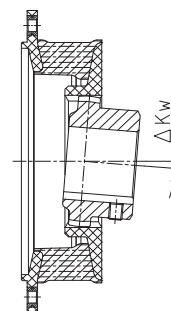
Displacements

For other operating speeds or higher operating temperatures the permissible radial displacement is calculated as follows:

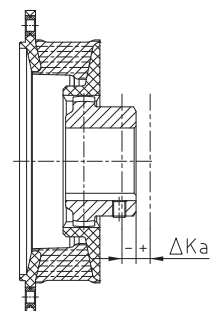
$$\Delta K_{r \text{ perm.}} = \Delta K_r \cdot S_t \cdot \sqrt{\frac{1500}{n_x}}$$



Radial displacement ΔKr



Angular displacement ΔKw



Axial displacement ΔKa

Displacements																						
Size		42 HE			48 HE			65 HE/G 65 HE			80 HE/G 80 HE			100 HE			125 HE/G 125 HE			150 HE		
Elastomer hardness [Shore A]		40 Sh	50 Sh	65 Sh	40 Sh	50 Sh	65 Sh	40 Sh	50 Sh	65 Sh	40 Sh	50 Sh	65 Sh	40 Sh	50 Sh	65 Sh	40 Sh	50 Sh	70 Sh	40 Sh	50 Sh	70 Sh
Perm. radial dis-	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	2,5	2,3	1,1	2,8	2,5	1,3
placement ΔKr [mm]	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	7,5	6,9	3,3	8,0	7,5	4,0
Perm. angular dis-	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	1,0	0,75	0,5	1,0	0,75	0,5
placement ΔKw [°]	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	0,5	0,4	0,25	0,5	0,4	0,25
Perm. angular dis-	max. 1)	1,5			1,5			1,5			1,5			1,5			1,5			1,5		
placement ΔKw [mm]																						
Perm. axial displacement ΔKa [mm]		± 2			± 2			± 2			± 2			± 3			± 3			± 5		

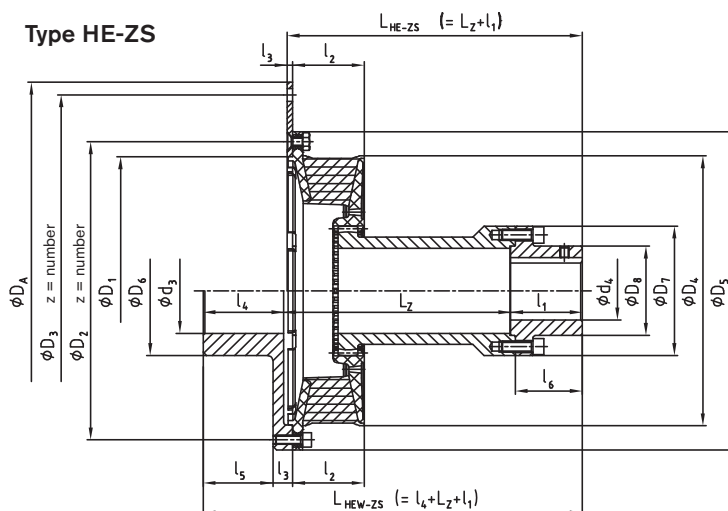
1) for short-term start

Process of assembly, screw type with quality, tightening torques according to KTR assembly instructions (see www.ktr.com).

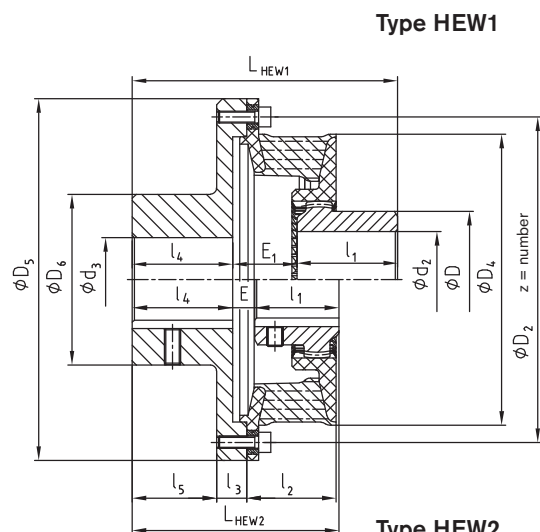
Type HE-ZS, Type HEW-ZS and Type HEW



- Highly flexible coupling to be mounted to combustion engines and electric motors
- Elastomer parts available as hardness 40, 50 and 65 Shore A
- High degree of compensation of errors in alignment
- Type HE-ZS with flange connection according to SAE-J 620 and removable part for pump drives
- Type HEW-ZS for shaft connections with removable part
- Type HEW1/HEW2 highly flexible shaft coupling
- Finish bore according to ISO fit H7, feather key according to DIN 6885 sheet 1 - JS9
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)



Type HEW-ZS



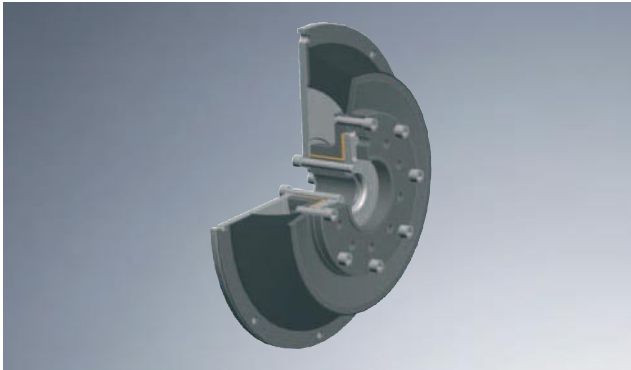
Type HEW2

BoWex-ELASTIC® Type HE-ZS																									
Size	max. finish bore d ₄	Flange connection to SAE-J 620 D _A for HE-ZS						Dimensions [mm]								Removable part HE-ZS L _Z [mm]					Weight with max. bore [kg]	Mass moment of inertia [kgm²]			
		6 ½"	7 ½"	8"	10"	11 ½"	14"	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	28	●												48	10		●	●					2,9	0,0028	0,0050
			●					160	164	200	78	45	40			45	●	●					3,6	0,0106	0,0050
				●										37	4		●	●					3,9	0,0148	0,0050
					●												●	●					4,6	0,0298	0,0050
G 65	45				●			198	205	245	110	72	60	45	3	56		●	●				7,7	0,0242	0,0223
						●												●		●			8,2	0,0372	0,0223
80	65				●			265	266	318	145	100	80	70	11	75			●	●			13,7	0,0211	0,0701
						●									6				●	●			15,9	0,0726	0,0701
G 80	65					●		300	302	358	145	100	80	80	11	75				●	●		17,4	0,0402	0,1412
							●								6				●	●			22,3	0,2251	0,1412

BoWex-ELASTIC® Type HEW-ZS																					
Size	max. finish bore		Dimensions [mm]										Removable part HEW-ZS L _Z [mm]					Weight with max. bore [kg]	Mass moment of inertia [kgm²]		
	d ₃	d ₄	D ₂	z ₁ x M		D ₄	D ₅	D ₆	l ₁	l ₂	l ₃	l ₄	l ₅	100	120	140	180		250	J _A	J _L
48	55	28	180	8	M6	164	200	92	50	45	17	55	45	●	●				6,9	0,0203	0,0050
65	75	45	224	8	M8	205	245	125	55	55	28	75	63		●	●			16,0	0,0747	0,0160
80	80	65	295,3	8	M10	266	318	130	90	70	17	80	70			●	●		25,5	0,1447	0,0699
G 80	95	65	333,4	8	M10	302	358	145	90	80	22	90	78				●	●	34,2	0,2752	0,1412

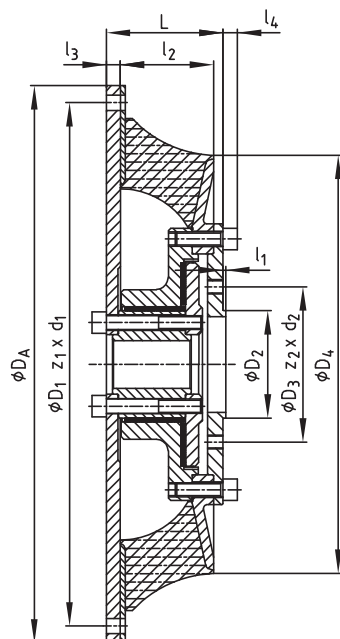
BoWex-ELASTIC® Type HEW																					
Size	max. finish bore		Dimensions [mm]															Weight with max. bore [kg]	Mass moment of inertia [kgm²]		
	d ₂	d ₃	D	D ₂	z x M		D ₄	D ₅	D ₆	l ₁	l ₂	l ₃	l ₄	l ₅	E	E ₁	L _{HEW1}		L _{HEW2}	J _A	J _L
42	48	50	68	162	6	M6	146	180	85	50	45	15	50	42	4	32	132	104	4,3	0,0121	0,0015
48	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	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	80	80	124	295,27	8	M10	266	318	130	90	70	17	80	70	5	45	215	160	19,7	0,1449	0,0285
G 80	85	95	124	333,4	8	M10	302	358	145	90	80	22	90	78	5	55	235	185	25,9	0,2748	0,0422

Type HEG for cardan shaft connections

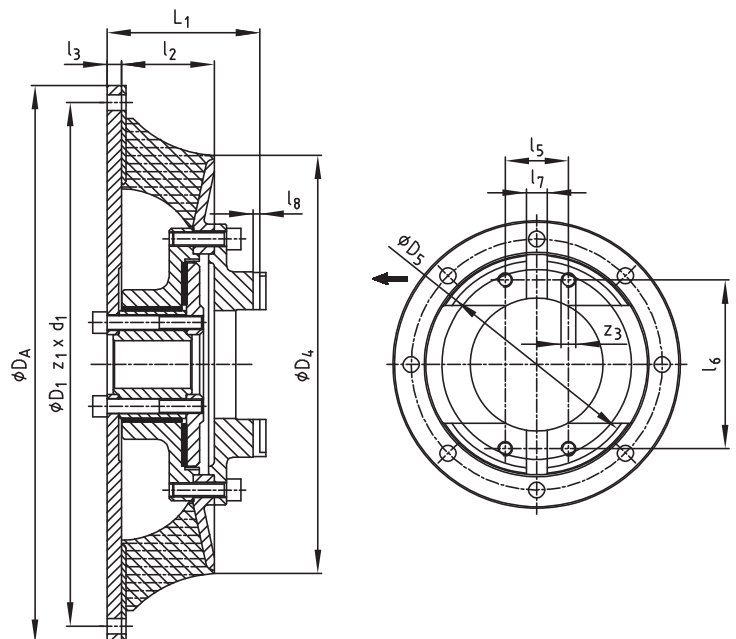


- Highly-flexible cardan shaft auxiliary coupling for I. C. engines
- Available in different elastomer hardness's
- High torsional flexibility
- Excellent damping properties due to additional friction damping
- Reduction of torque peaks in the elastomer part
- Radial plain bearing in maintenance-free design
- Cardan shaft connection for usual designs

Type HEG1



Type HEG2



BoWex-ELASTIC® Type HEG1 and Type HEG2

BoWex-ELASTIC® Type HEG1 and Type HEG2																															
Size	Flywheel connection to SAE-J 620					Metric cardan shaft 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	●					●	●	●						8	58,5										163	43,5	8	7 0,03	0,006		
		●				●	●	●																			8	0,06	0,006		
G 65		●						●	●	●				8	66	●	●	●						71	205	48,0	10	12 0,07	0,02		
			●					●	●	●						●	●	●									14	0,10	0,02		
80		●						●	●	●	●			10	88,5		●	●	●	●				104	265	68,5	23 12	21 23	0,11 0,17	0,06 0,06	
			●					●	●	●	●						●	●	●												
G 80			●						●	●	●	●		10	96			●	●	●				110	302	74,0	23 12	26 33	0,18 0,48	0,09 0,09	
				●					●	●	●	●						●	●	●											
100				●						●	●	●	●	12	98						●	●		128	350	78,0	16	41	0,63	0,19	
125				●						●	●	●	●	12	111							●	●	135	416	96,0	18 12	56 59	0,74 0,97	0,42 0,42	
					●					●	●	●	●									●	●								

Flywheel connection to SAE-J 620 [mm]				
Size	D _A	D ₁	z ₁	d ₁
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
16"	517,50	489,00	8	14

Metric cardan shaft 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	2,5	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

Coupling selection

1. BoWex-ELASTIC® couplings should be selected in accordance with DIN 740 part 2. The coupling must be sufficiently sized to ensure that the maximum permissible coupling load is not exceeded in any operating condition. It is therefore necessary to compare the actual loads with the permissible rated parameters of the coupling according to tables 1.1 - 1.4 listed below.

For drives subject to dangerous torsional vibrations it is necessary for a safe operation to review the drive by means of a torsional vibration calculation.

1.1 Load by rated torque

The permissible rated torque T_{KN} of the coupling must, at all operating temperatures, be at least as high as the rated torque T_N of the machine.

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

$$T_N [\text{Nm}] = 9550 \cdot \frac{P_{AN/LN} [\text{kW}]}{n [\text{rpm}]}$$

1.2 Load by torque shocks

The maximum permissible torque of the coupling must, at all operating temperatures, be as high as the operational peak torque T_S , taking into account the shock factor S_Z .

With knowledge of mass distribution, direction and type of shock it is possible to calculate the peak torque T_S . If the moments of inertia are unknown, M_A or $M_L = 1$.

$$T_{K \max} \geq T_S \cdot S_Z \cdot S_t$$

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

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

$$M_A = \frac{J_L}{J_A + J_L} \quad M_L = \frac{J_A}{J_A + J_L}$$

1.3 Passing through resonance range

The peak torque T_S arising when the resonance range is passed through must not exceed the maximum torque $T_{K \max}$ of the coupling, taking into account the temperature.

$$T_{K \max} \geq T_S \cdot S_Z \cdot S_t$$

1.4 Load by vibratory torque shocks

The permissible vibratory torque T_{KW} of the coupling, at the operating speed and ambient temperature, must not be exceeded by the biggest periodical vibratory torque T_W .

With operating frequencies $f > 10$ Hz the heat produced 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 actual damping power produced.

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

$$P_{KW} \geq P_W$$

Temperature factor S_t

	- 40 °C + 60 °C	+ 70 °C	+ 80 °C
S_t	1,0	1,2	1,6

Table No. 1

Starting factor S_Z

Starting frequency/h	< 10	> 10 < 60	> 60 < 120	> 120
S_Z	1,0	1,5	2,0	on request

Table No. 2

Shock factor S_A/S_L

Moderate shocks		1,5
Average shocks	S_A/S_L	1,8
Heavy shocks		2,5

Table No. 3

Technical data for coupling selection / Torsional vibration calculation

Driving side

diesel ☐ gas ☐ engine-type
 straight-type engine ☐ V-engine/angle stroke mm
 2-cycles ☐ 4-cycles ☐ piston Ø mm no. of cylinders
 nominal torque T_{AN} Nm speed range n: idle speed 1/min.
 peak torque T_{AS} Nm $n_{\min.}$ operational $n_{\max.}$ operational 1/min.
 mass moment of inertia J_A or flywheel effect GD^2_A for
 flywheel J_A kgm² or GD^2_A kgm²
 driving gear J_A kgm² or GD^2_A kgm²

Driven side

hydraulic pump ☐ splitterbox ☐ generator ☐ screw compressor ☐
 piston compressor ☐ no. of cylinders order of cylinder tangential force diagram
 manufacturer/type
 nominal torque T_{LN} Nm peak torque Nm
 mass moment of inertia J_L kgm² or flywheel effect GD^2_L kpm²

Applications - BoWex® FLE-PA, BoWex-ELASTIC® and MONOLASTIC®

**Applications for
BoWex® FLE-PA couplings and MONOLASTIC®**

wheel loaders	K 1,6
compact loaders	K 1,6
hydraulic excavators	K 1,4
mobile cranes	K 1,6
graders	K 1,5
vibration rollers	K 1,4
fork lift trucks	K 1,6
concrete mixer trucks	K 1,3
concrete pumps	K 1,4
asphalt finishers	K 1,4
concrete cutters	K 1,4
road mortisers	K 1,4

For a selection according to the engine driving torque T_{AN} a service factor $K = 1,3 - 1,6$ should be considered, depending on the load.

$$T_{KN} \geq T_{AN} \cdot K$$

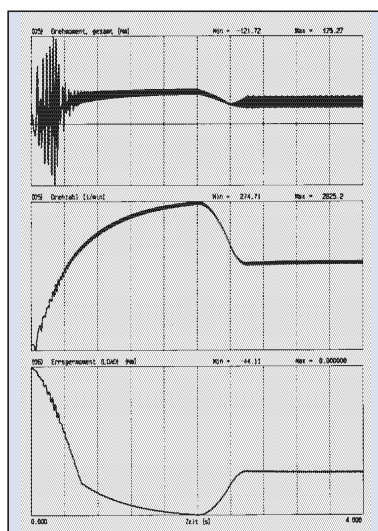
**Applications for
BoWex-ELASTIC® couplings**

screw compressors
generators
piston compressors
splitterboxes
suction pumps
high-pressure pumps
reversing gears
sifting gears
hydrodynamic converters

Coupling selection by means of torsional vibration calculation.

Additional Information

Use of
PC
with special
software
for coupling
selection



Application:
3-cylinder diesel engine - screw compressor

Use:
BoWex-ELASTIC®
42 HE - 50 Shore A

Calculation:
Acceleration
from 300 rpm
to 2700 rpm

KTR makes use of special simulation calculation programs for the coupling selection and the torsional vibration determination of the drive system.

This ensures a resonancefree operation of the machine, along with a safe, long-lasting operation of the drive components.

This is part of the usual KTR standard service.



GEARex®

All-steel gear couplings

Made for Motion

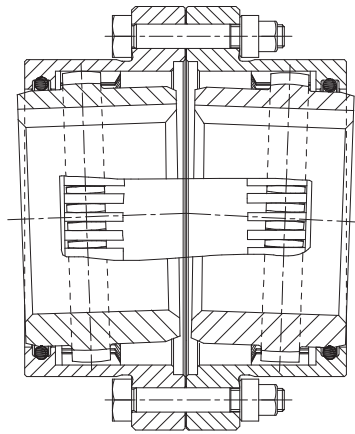


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Operating description

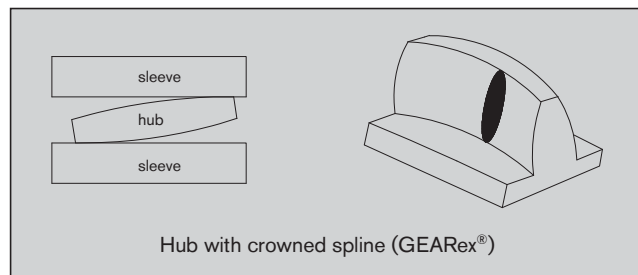


GEARex® couplings made from steel with grease lubrication and toroidal sealing ring correspond to the international standard. Being flexible shaft connections they are suitable for a positive torque transmission. In addition, they ensure to compensate for axial, radial and angular shaft displacements.

GEARex® couplings are used in every range of general engineering requesting for high operating safety and a long service life resulting from the reliable grease lubrication of the crowned spline. The couplings are suitable for horizontal assembly. As special solutions they are suitable for vertical assembly, too.

Numerous coupling sizes for a torque transmission from 930 Nm to 135.000 Nm with shaft dimensions up to a maximum of Ø 276 mm are available. The coupling torques may be increased by using special materials.

GEARex® couplings are in correspondence with the AGMA standard (American Gear Manufacturer Association). Small dimensions and a low weight along with a small mass moment of inertia result in a wide range of applications of GEARex® couplings.



According to the operating principle of the well-known crowned gear edge pressure in the spline is avoided in case of angular and radial displacements. Moreover, permanent grease lubrication produces a better friction ratio of the spline with an operation almost free from wear along with a long service life of the coupling.

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

The interior of the coupling is sealed by means of toroidal sealing rings (NBR 70 ShA).

The feather keys have to be sealed against escape of lubricants during the assembly.

Explosion-proof use

GEARex® couplings are suitable for power transmission in drives in hazardous areas. The couplings are certified and confirmed according to EC standard 94/9/EC (ATEX 95) as units of category 2G/2D and thus suitable for the use in hazardous areas of zone 1, 2, 21 and 22. Please read through our information included in the respective Type Examination Certificate and the operating and mounting instructions at www.ktr.com.



Coupling selection

The coupling has to be dimensioned in a way that the permissible coupling load is not exceeded during any operating condition. For that purpose the loads that are produced have to be compared to the permissible characteristic figures of the coupling.

1 Coupling selection

The coupling is selected according to the rated torque (T_{KN}). For that purpose the corresponding operating factors of the driving machine have to be taken into account, see starting factor S_Z and operating factor S_B .

2 Load of the coupling

$$T_{KN} \geq T_{NS}$$

$$T_{NS} = T_N \cdot S_Z \cdot S_B$$

$$T_N [\text{Nm}] = 9550 \cdot \frac{P_{AN/LN} [\text{kW}]}{n [\text{rpm}]}$$

T_{KN} = rated torque of the coupling

T_N = driving torque

T_{NS} = driving torque including operating factors

S_Z = starting factor

S_B = operating factor

3 Starting torque

The permissible starting torque of the machine should not exceed two times the rated torque of the coupling.

4 Permissible load on the feather key of the coupling

The shaft-hub-connection should be verified by the customer. Permissible surface pressure according to DIN 6892 (method C).

5 Permissible temperature range

The coupling can be used in a temperature range from -20 °C to +80 °C.

6 Example of selection

Electric motor: 30 kW
Application: textile machine
Shaft-Ø: 70/65 mm
Speed: 250 rpm
Starts: < 10/h
Starting torque: $2,5 \cdot T_{KN}$

Result:

$$T_N = 9550 \cdot \frac{30 \text{ kW}}{250 \text{ rpm}}$$

$$T_N = 1146 \text{ Nm}$$

$$T_{NS} = 1146 \text{ Nm} \cdot 1 \cdot 1,25$$

$$T_{NS} = 1432,5 \text{ Nm}$$

Coupling selected:

GEARex® 15 ($T_{KN} = 2000 \text{ Nm}$)

The starting torque of the machine is 2,5 times the starting torque (3581 Nm).

(permissible $2 \cdot T_{KN} = 4000 \text{ Nm}$)

Service factor S_Z for starting frequency

starting frequency/h	10	25	50
S_Z	1,0	1,2	1,4

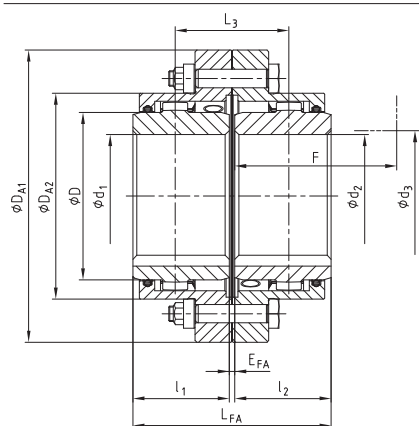
Operating factor S_B

Kind of load	Operating features	Machines	Operating factor
Smooth/smoothly	Permanent operation without overload or shock load. Low connecting frequency.	- Electric generators - Radial pumps - Light-weight fans	1,00
Light-weight	Permanent operation with small overload and short-term and rare shock load.	- Multistage radial compressors - Piston pumps - Large fans (heavy load operation) - Mixers for liquids - Mixers for solid matters - Textile machines - Machine tools - Belt conveyor - Elevators	1,25
Average	Interrupted operation with low shock load and short-term average overload.	- Piston compressor, cranes (running or drawing operation) - Winding engine, calenders for rubber and nylon - Calenders - Rolling mill drives - Non-reversing cold rolling mills	1,50
Heavy	Operation with heavy and frequent shock load. Frequent load reversion. High degree of safety.	- Bridge cranes for steel industry - Mixers for rubber and nylon - Cranes (heavy load operation) - Wood grinders, marine drives - Equipment for transport of persons - Mine fans - Roller tables - Non-reversing cold rolling mills - Reversing cold rolling mills - Hot-rolling mill	2,00
Very heavy	Extreme and overload with frequent and sudden load revolution.	- Reversing rolling mill drives - Heavy load operation in steel industry - Slitting machines - Grinding machines - Scissors and cutters - Crushers	2,50

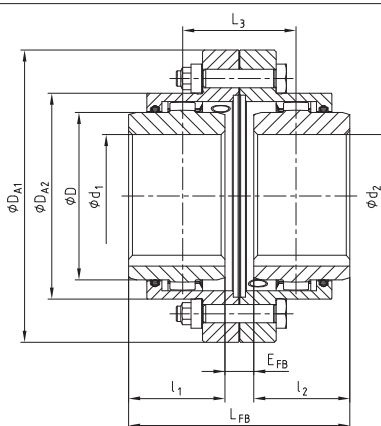
Type FA, type FB and type FAB



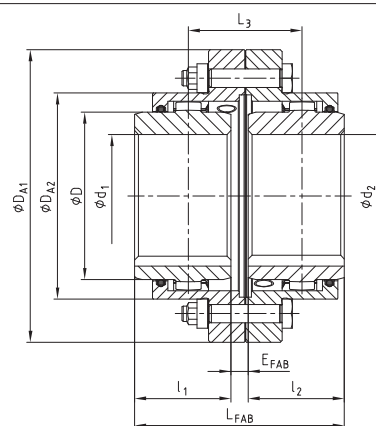
- Double-cardanic crowned gear coupling
- To be used on all applications in general engineering
- Compensating for shaft misalignment axial – radial – angular
- Available with finish bore to ISO fit H7, feather key according to DIN 6885 sheet 1, taper and inch bores
- For horizontal assembly
- Higher torques to be realized by special materials
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)



Type FA



Type FB



Type FAB

Dimensions

Size	Pilot bored	Max. finish bore	Dimensions [mm]														Grease ²⁾ feeding [dm³]
		d ₁ ; d ₂	l ₁ , l 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	3	21	12	89	107	98	55	67	111	84	74	52	0,02	
15	26	64	50	3	15	9	103	115	109	59	87	152	107	84	68	0,04	
20	31	80	62	3	31	17	127	155	141	79	108	178	130	104	85	0,08	
25	38	98	76	5	29	17	157	181	169	93	130	213	158	123	110	0,12	
30	44,5	112	90	5	33	19	185	213	199	109	153	240	182	148	130	0,18	
35	46	133	105	6	40	23	216	250	233	128	180	280	214	172	150	0,22	
40	52	158	120	6	42	24	246	282	264	144	214	318	250	192	175	0,35	
45	80	172	135	8	50	29	278	320	299	164	233	347	274	216	190	0,45	
50	80	192	150	8	56	32	308	356	332	182	260	390	309	241	220	0,70	
55	90	210	175	8	70	39	358	420	389	214	283	425,5	334	275	250	0,90	
60	100	232	190	8	84	46	388	464	426	236	312	457	365,5	316	265	1,15	
70	100	276	220	10	76	43	450	516	483	263	371	527	425	360	300	1,50	

¹⁾ Required space to align the coupling or replace the sealing ring, respectively.

²⁾ Grease feeding for each coupling half

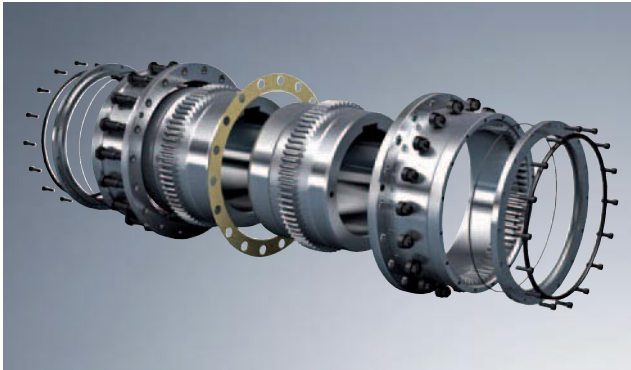
Technical data

Size	Torque [Nm]		Max. speed [rpm]	Weight with max. bore-Ø [kg]			Massmoment of inertia J with max. bore-Ø [kgm ²]	Dowel screws (10.9)		
	T _{KN}	T _{Kmax.}		Sleeve	Hub	Total		z	M	T _A [Nm]
10	930	1860	8500	0,748	0,553	2,73	0,00436	6	M6	15
15	2000	4000	7700	1,878	1,119	6,38	0,01894	8	M8	36
20	3500	7000	6900	2,602	2,089	9,94	0,04000	6	M10	72
25	6500	13000	6200	4,432	3,564	16,83	0,09749	6	M12	125
30	10000	20000	5800	5,829	6,184	25,21	0,18080	8	M12	125
35	17000	34000	5100	9,705	9,868	41,25	0,41419	8	M14	200
40	28500	57000	4500	11,883	16,065	58,14	0,75535	8	M14	200
45	37000	74000	4000	15,724	21,419	77,08	1,17590	10	M14	200
50	51000	102000	3750	25,661	29,594	114,40	2,24991	8	M18	430
55	65000	130000	3550	31,522	40,304	150,41	3,45102	14	M18	430
60	85000	170000	3400	32,822	52,960	177,44	4,16734	14	M18	430
70	135000	270000	3200	43,521	85,768	268,20	9,32429	16	M20	610

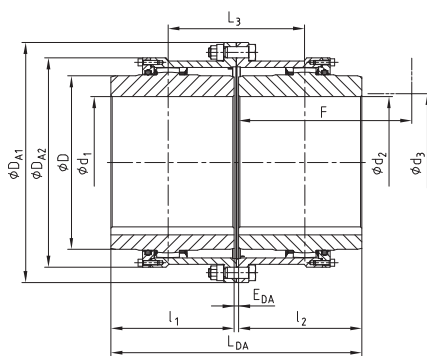
Order form:

GEARex® FA 10	d ₁ Ø 50	d ₂ Ø 50
Size and type of coupling	Finish bore keyway DIN 6885 sheet 1	Finish bore keyway DIN 6885 sheet 1

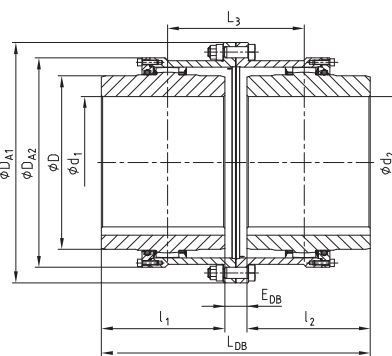
Type DA, type DB and type DAB



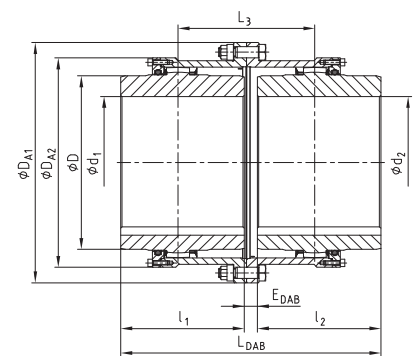
- Double-cardanic crowned gear coupling
- To be used on all applications in general engineering
- Compensating for shaft misalignment axial – radial – angular
- Available with finish bore to ISO fit H7, feather key according to DIN 6885 sheet 1, taper and inch bores
- For horizontal assembly
- Higher torques to be realized by special materials



Type DA



Type DB



Type DAB

Dimensions																
Size	Pilot bored	Max. finish bore	Dimensions [mm]													Grease ²⁾ feeding [dm ³]
		d ₁ ; d ₂	l ₁ ; l ₂	E _{DA}	E _{DB}	E _{DAB}	L _{DA}	L _{DB}	L _{DAB}	L ₃	D	DA1	DA2	F ¹⁾	d ₃ ¹⁾	
80	140	300	280	10	50	30	570	610	590	310	394	545	475	340	310	6,5
85	160	325	292	13	53	33	597	637	617	325	430	585	515	352	330	7,5
90	180	350	305	13	83	48	623	693	658	353	464	640	560	365	360	11
100	220	390	330	13	93	53	673	753	713	383	512	690	612	390	400	12

¹⁾ Required space to align the coupling or replace the sealing ring, respectively.

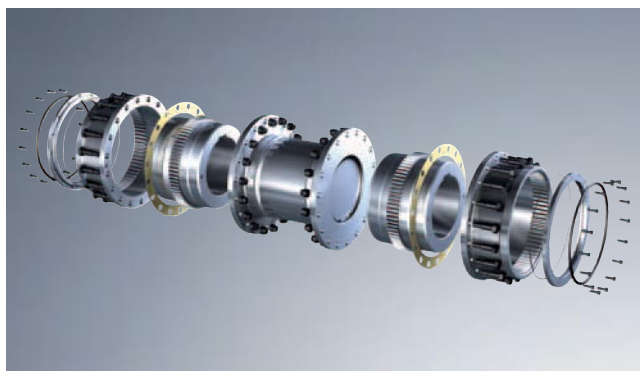
²⁾ Grease feeding for each coupling half

Technical data										
Size	Torque [Nm]		Max. speed [rpm]	Weight with max. bore-Ø [kg]			Massmoment of inertia J with max. bore-Ø [kgm²]	Dowel screws (10.9)		
	T _{KN}	T _{Kmax.}		Sleeve	Hub	Total		z	M	T _A [Nm]
80	175000	350000	1900	64	117	362	14,214	18	M20	610
85	225000	450000	1800	75	148	446	20,320	20	M20	610
90	380000	760000	1500	101	183	568	31,036	20	M24	1000
100	500000	1000000	1400	117	232	698	45,358	24	M24	1000

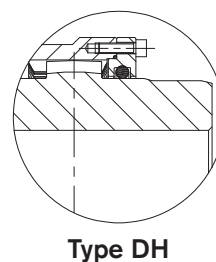
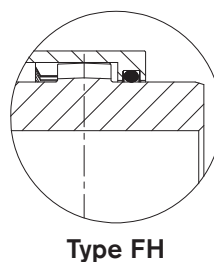
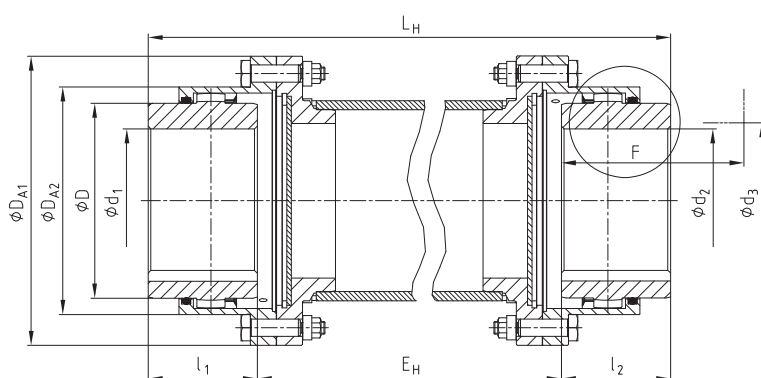
Order form:

GEARex® DA 80	d ₁ Ø 300	d ₂ Ø 300
Size and type of coupling	Finish bore keyway DIN 6885 sheet 1	Finish bore keyway DIN 6885 sheet 1

Type FH and type DH



- Coupling type for bigger shaft distance dimensions
- Type FH with single-parted sleeve GEARex® size 10 to 70
- Type DH with slit sleeve GEARex® size 80 to 100
- Higher torques to be realized by special materials
- Available with finish bore to ISO fit H7, feather key according to DIN 6885 sheet 1, taper and inch bores



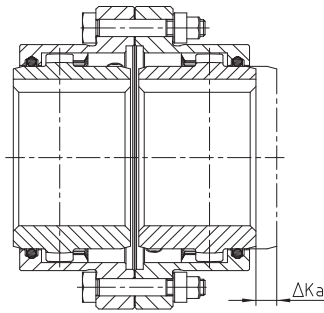
Dimensions																
Size	Torque [Nm]		Pilot bored	Max. finish bore	Dimensions [mm]								Dowel screws (10.9)			Grease ²⁾ feeding [dm³]
	T _{KN}	T _{Kmax.}		d ₁ ; d ₂	l ₁ , l ₂	D	D _{A1}	D _{A2}	L _H	E _H	F ¹⁾	d ₃ ¹⁾	z	M	T _A [Nm]	
10	930	1860	26	50	43	67	111	84	L _H = E _H + l ₁ + Δ	Indicated by the customer	74	52	6	M6	15	0,02
15	2000	4000	26	64	50	87	152	107			84	68	8	M8	36	0,04
20	3500	7000	31	80	62	108	178	130			104	85	6	M10	72	0,08
25	6500	13000	38	98	76	130	213	158			123	110	6	M12	125	0,12
30	10000	20000	44,5	112	90	153	240	182			148	130	8	M12	125	0,18
35	17000	34000	46	133	105	180	280	214			172	150	8	M14	200	0,22
40	28500	57000	52	158	120	214	318	250			192	175	8	M14	200	0,35
45	37000	74000	80	172	135	233	347	274			216	190	10	M14	200	0,45
50	51000	102000	80	192	150	260	390	309			241	220	8	M18	430	0,70
55	65000	130000	90	210	175	283	425,5	334			275	250	14	M18	430	0,90
60	85000	170000	100	232	190	312	457	365,5	316	265	14	M18	430	1,15		
70	135000	270000	100	276	220	371	527	425	360	300	16	M20	610	1,50		
80	175000	350000	140	300	280	394	545	475	340	310	18	M20	610	6,5		
85	225000	450000	160	325	292	430	585	515	352	330	20	M20	610	7,5		
90	380000	760000	180	350	305	464	640	560	365	360	20	M24	1000	11		
100	500000	1000000	220	390	330	512	690	612	390	400	24	M24	1000	12		

¹⁾ Required space to align the coupling or replace the sealing ring, respectively.

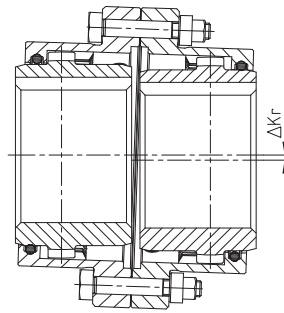
²⁾ Grease feeding for each coupling half

Order form:	GEARex® FH 10	d ₁ Ø 50	d ₂ Ø 50	250
	Size and type of coupling	Finish bore keyway DIN 6885 sheet 1	Finish bore keyway DIN 6885 sheet 1	Shaft distance dimension E _H

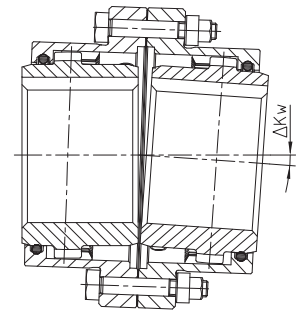
Displacements



Axial displacement



Radial displacement



Angular displacement

Displacements			
Size	Max. axial displacement ΔK_a [mm]	Max. permissible displacements ¹⁾	
		ΔK_r [mm]	ΔK_w [°]
10	$\pm 1,0$	$\pm 0,4$	0,5° each hub
15		$\pm 0,5$	
20		$\pm 0,6$	
25		$\pm 0,8$	
30		$\pm 1,0$	
35	$\pm 1,5$	$\pm 1,0$	
40		$\pm 1,2$	
45		$\pm 1,4$	
50		$\pm 1,6$	
55		$\pm 1,8$	
60	$\pm 2,0$	$\pm 2,0$	
70		$\pm 2,2$	
80		$\pm 2,5$	
85		$\pm 2,8$	
90		$\pm 3,0$	
100		$\pm 3,2$	

1) The displacement figures are maximum figures which must not arise at the same time. If both radial and angular displacement arise at the same time, these figures have to be reduced (see examples of calculation and diagramme).

Example 1:

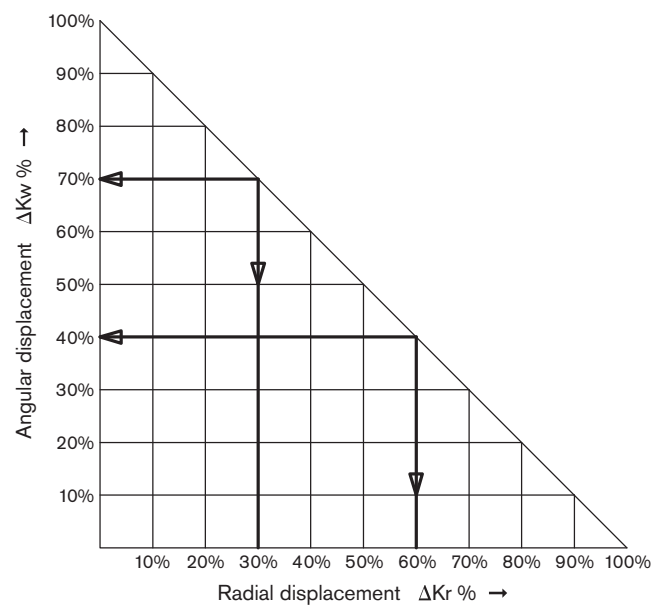
$$\Delta K_r = 30\%$$

$$\Delta K_w = 70\%$$

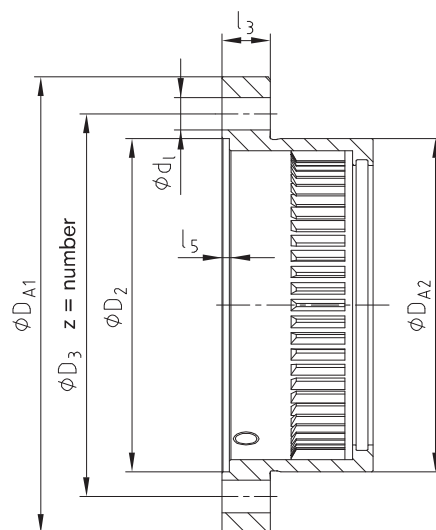
Example 2:

$$\Delta K_r = 60\%$$

$$\Delta K_w = 40\%$$

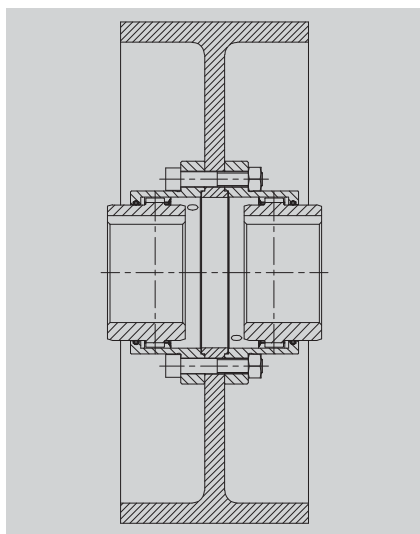


Flange dimensions

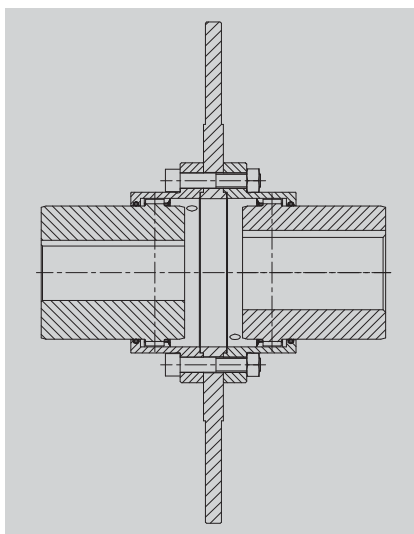


Flange dimensions								
Size	Dimensions [mm]							
	D_{A1}	D_{A2}	D_2	D_3	d_1	number z	l_3	l_5
10	111	84	82	95,25	6,35	6	14	3
15	152	107	105	122,24	9,52	8	19	3
20	178	130	130	149,23	12,70	6	19	3
25	213	158	153	180,97	15,87	6	22	4
30	240	182	178	206,38	15,87	8	22	4
35	280	214	205	241,30	19,05	8	28,5	5
40	318	250	243	279,40	19,05	8	28,5	4
45	347	274	265	304,80	19,05	10	28,5	5,5
50	390	309	302	342,90	22,22	8	38	6
55	425,5	334	320	368,30	22,22	14	38	6
60	457	365,5	353	400,05	22,22	14	26	6
70	527	425	412	463,55	25,40	16	28,5	8

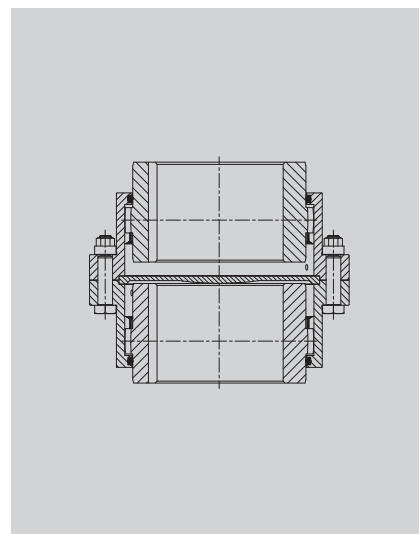
Other types



**Type with
brake drum**



**Type with
brake disc**



**Type VD
(vertical mounting)**



RADEX®-N

Steel laminae coupling

RIGIFLEX®-N

Steel laminae coupling

Made for Motion



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RIGIFLEX®-N	
Steel laminae coupling	
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Coupling selection steel laminae coupling

Description	Code	Definition or explanation
Rated torque of coupling	T_{KN}	Torque which can be transmitted continuously over the entire speed range of the coupling.
Vibratory torque of coupling	T_{KW}	Torque amplitude of the permissible periodic torque fluctuation with a frequency of 10 Hz and a basic load of T_{KN} or dynamic load up to T_{KN} .
Maximum torque of coupling	T_{Kmax}	Torque which can be trans-mitted during the entire life of the coupling $\geq 10^6$ times as spike load or 5×10^4 times as alternating load.

Guidelines for operating factor S_B	
Application	S_B
Construction machinery	2,0
Agitators	1,0 - 2,0
Centrifuges	1,5
Conveyors	2,0
Elevators	2,0
Fans/Blowers	1,5
Generators	1,0
Calanders	2,0
Crushers	2,5
Textile machinery	2,0
Rolling mills	2,5
Woodworking machinery	1,5
Mixers and extruders	2,0
Stamps, presses	2,5
Machine tools	2,0
Grinders	2,5
Packaging machines	1,0
Roller drives	2,5
Piston pumps	2,5
Centrifugal pumps	1,5
Piston compressors	2,5
Turbo compressors	2,0

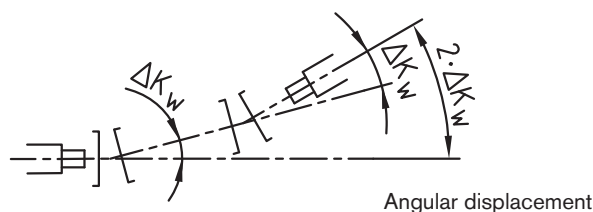
1. Permissible displacements:

ΔK_a : Permissible axial displacement

ΔK_w : Permissible angular displacement

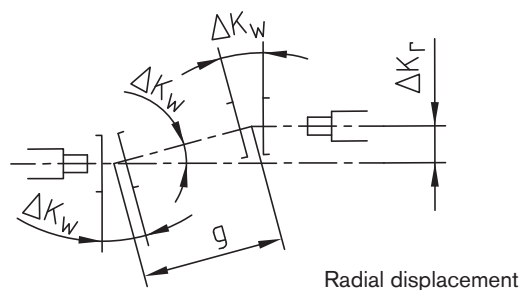
ΔK_r : Permissible radial displacement

The steel laminae couplings are selected in a way that the maximum permissible angular excursion ΔK_w may be compensated by every laminae set. Consequently the maximum permissible angular excursion of two shafts combined with each other is $2 \cdot \Delta K_w$. The maximum angular excursion for each laminae set is shown in the table "Technical capacity utilization".



The permissible radial displacement ΔK_r with distance g of the coupling elements is

$$\Delta K_r = g \cdot \tan(\Delta K_w)$$



In the table "Technical data" (RADEX®-N page 124/125 and RIGIFLEX®-N page 132/133) you can see the max. permissible radial displacements ΔK_r for every size and type based on the given standard lengths of the flange hollow shaft as well as the permissible angular displacement ΔK_w of the coupling elements. The max. permissible axial displacements ΔK_a for every size and type are also mentioned in the table "Technical data".

The figures of the permissible displacements indicated are dependent on each other!

With an increasing axial displacement ΔK_a the permissible angular displacement ΔK_w decreases and thus the radial displacement ΔK_r .

(See our mounting instructions www.ktr.com).

Coupling selection steel laminae coupling

Selection of the coupling size

2. Drives without periodic torsional vibrations

For example centrifugal pumps, fans, screw compressors, etc.
The coupling selection requires that the rated torque T_{KN} and the maximum torque T_{Kmax} are reviewed.

2.1 Loading by rated torque

Taking into account the operating factor S_B , directional factor S_R and temperature factor S_t , the permissible rated speed must be at least as large as the rated torque T_N of the machine.

The nominal torque T_{KN} of the coupling is:

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

T_N = Torque of the machine

S_B = Operating factor (see table page 119)

S_R = Factor of direction
= 1,00 same torque direction
= 1,70 changing torque direction

S_t = Operating temperature
Temperature factor

°C	- 30	0	+ 150	+ 200	+ 230	+ 270
Factor	1,00	1,00	1,00	1,10	1,25	1,43

2.2 Loading by torque shocks

The permissible maximum torque T_{Kmax} of the coupling must be at least as high as the sum of the peak torque T_S and rated torque T_N of the machine taking into account the operating factor S_B , temperature factor S_t and directional factor S_R . This is valid in case that the rated torque of the machine is superimposed by a shock (e. g. starting of the engine). For drives with A. C. motors and large masses on the load side we would recommend calculations by our simulation programme (please consult with our Engineering Department).

$$T_{Kmax} \geq (T_N + T_S) \cdot S_t \cdot S_R$$

T_S = Peak torque

Selection of the coupling size

3. Drives with periodic torsional vibrations

For drives subject to dangerous torsional vibrations (e. g. diesel engines, piston compressors, piston pumps, generators, etc.) it is necessary to perform a torsional vibration calculation (please consult with our Engineering Department).

3.1 Loading by rated torque

Taking into account the operating factor S_B , directional factor S_R and temperature factor S_t , the permissible rated speed must be at least as large as the rated torque T_N of the machine.

The nominal torque T_{KN} of the coupling is:

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

T_N = Torque of the machine

S_B = Operating factor (see table page 119)

S_R = Factor of direction
= 1,00 same torque direction
= 1,70 changing torque direction

S_t = Operating temperature
Temperature factor

°C	- 30	0	+ 150	+ 200	+ 230	+ 270
Factor	1,00	1,00	1,00	1,10	1,25	1,43

3.2 Passing through resonance

The peak torque T_{SR} arising while passing through resonance must not exceed the permissible maximum torque of the coupling T_{Kmax} :

$$T_{Kmax} \geq T_{SR}$$

3.3 Loading by vibratory torque

The permissible vibratory torque of the coupling T_{KW} must not be exceeded by the maximum periodic vibratory torque of the machine T_W .

$$T_{KW} \geq T_W$$

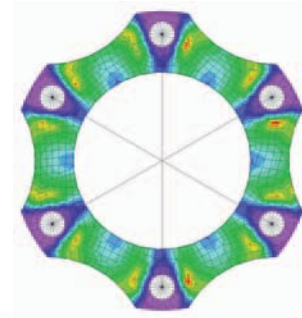
Description of coupling

The RADEX®-N is a backlash-free, torsionally rigid and maintenance-free all-steel coupling. The laminae that are extremely rigid in sense of rotation are made from high-strength, stainless spring steel and enable a compensation for high displacements with low restoring forces. By reason of the all-steel design the RADEX®-N can be used in drives with temperatures of up to 280 °C.



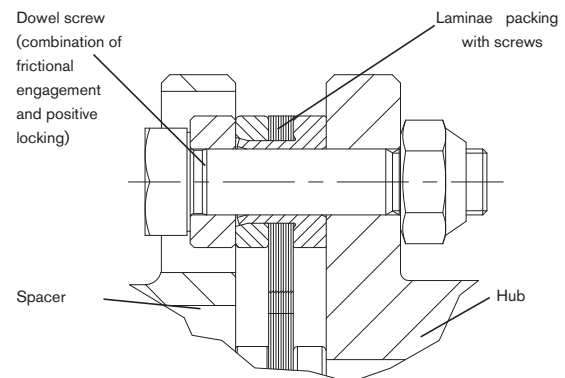
FEM-optimized laminae form

The steel laminae packings from stainless spring steel were developed on the basis of FEM calculations. Under consideration of the necessary possibilities of displacements of the coupling the optimal form regarding torque transmission and torsional rigidity was aimed for. The fitted form of the steel laminae at the outside diameter is the result of this optimization calculation.



Laminae packings with dowel screws

The „heart“ of the steel laminae coupling are the laminae packings and their connection to the hubs or spacers. High-strength, special dowel screw that are alternately screwed with hubs and spacer enable a combination of frictional engagement and positive locking. Thus a high power density with simultaneous easy displacement and low restoring forces is guaranteed. Due to the special constructive design of the RADEX®-N components the laminae packings are „artificially“ prestressed. Hereby the torsional rigidity of approx. 30 % is enabled and at the same time the known problem regarding the axial vibrations of the spacer is avoided.



Explosion protection use

RADEX®-N couplings are suitable for power transmission in drives in hazardous areas. The couplings are certified and confirmed according to EC standard 94/9/EC (ATEX 95) as units of category 2G/2D and thus suitable for the use in hazardous areas of zone 1, 2, 21 and 22. Please read through our information included in the respective Type Clamping ring hubs (clamping hub without dowel screw only for category 3) used in hazardous areas must be selected in a way that there is a safety of $s = 2$ from the peak torque of the unit including all operating parameters to the torque of frictional engagement and to the nominal torque of the coupling. Examination Certificate and the operating and mounting instructions at www.ktr.com.



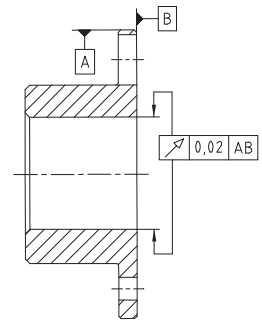
General information

Assembly and operating advice

(Please see our mounting instructions KTR standard 47110 see www.ktr.com.)

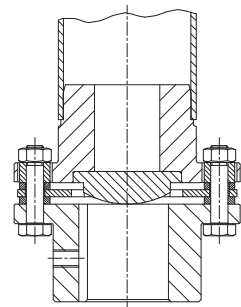
For the assembly it is important to make sure that the laminae sets are assembled free from distortion in axial direction.

If the finish bore is machined by the customer, the concentric and axial running tolerances have to be observed (see sketch below).



Installation:

RADEX®-N couplings are designed for horizontal installation. For vertical installation the spacer has to be supported (see sketch below). Please contact.



Delivery condition

RADEX®-N are delivered as individual parts (can be delivered assembled on request). The hubs can be supplied unbored or with finish bore and 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 most applications this is not necessary due to the accurate machining of the coupling. Please consult with KTR for any further questions.

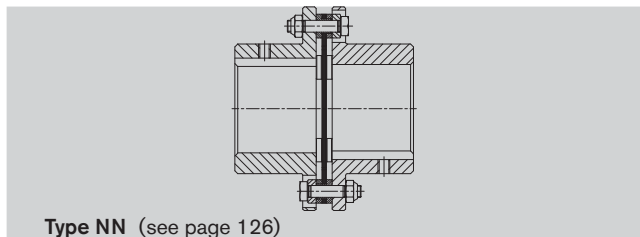
Safety regulations:

The coupling must be selected in a way that the permissible coupling load is not exceeded in any operating condition. For that purpose a comparison between the actual loads with the permissible coupling characteristics has to be performed.

The customer must protect rotating parts against unintended touch (Safety of Machines DIN EN 292 part 2). Please take precautions that there is a sufficient coupling protection in case of a fracture of the coupling caused by overload.

Types and applications

Types



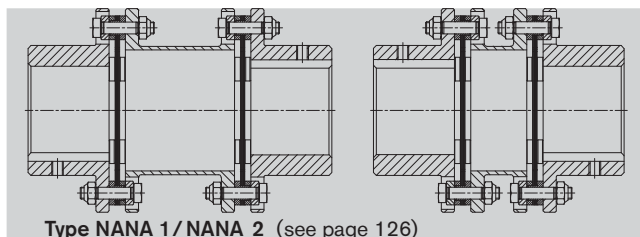
Type NN (see page 126)

Characteristics

- Single cardanic design
- Only angular and axial displacement permissible
- High torsional rigidity
- Compact dimensions

Applications

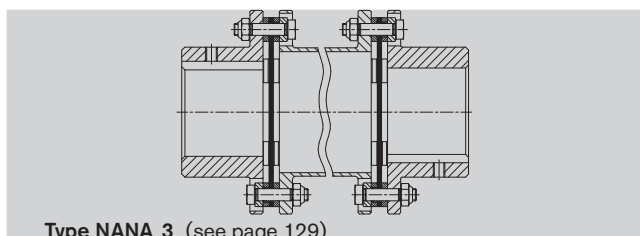
- Mixers
- Agitating machines
- Immersion pumps
- Fans
- Applications with high radial load



Type NANA 1 / NANA 2 (see page 126)

- Double cardanic design
- Compensation of high misalignment with low restoring forces
- Standard spacers available from stock

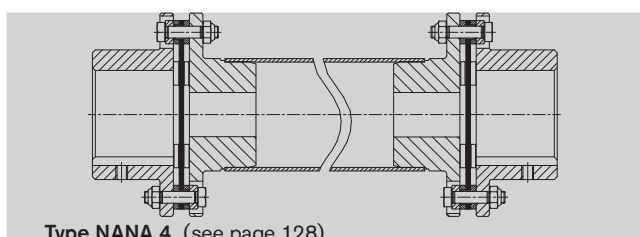
- Paper machines
- Printing and processing machines
- Conveyors
- Steel mills
- Generators
- Grinding machines



Type NANA 3 (see page 129)

- Double cardanic design
- Spacers adapted to standard dimensions of pumps
- Radial assembly, no movement of the machine required
- **Available according to API 610**

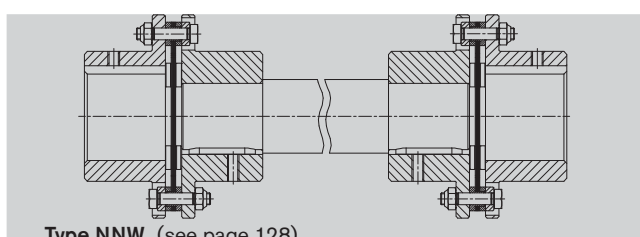
- Process pumps
- Water pumps
- Pumps according to API standard
- Turbines
- Compressors



Type NANA 4 (see page 128)

- Spacers can be determined by the customer
- Maximum shaft distance dimension up to approx. 6 m
- Welded intermediate pipes for high torsional rigidity

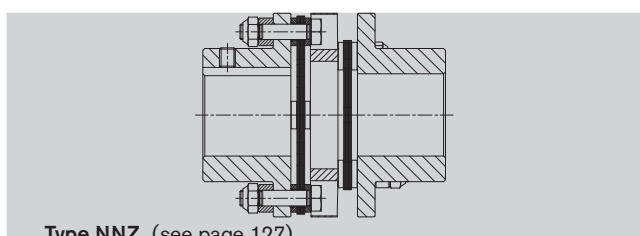
- Foil and paper machines
- Pallet and conveyor systems
- Portal robots
- Test benches
- Cooling towers/blowers



Type NNW (see page 128)

- Spacers can be determined by the customer
- Coupling consisting of 2 x type NN with intermediate shaft
- For drives with relatively low speeds

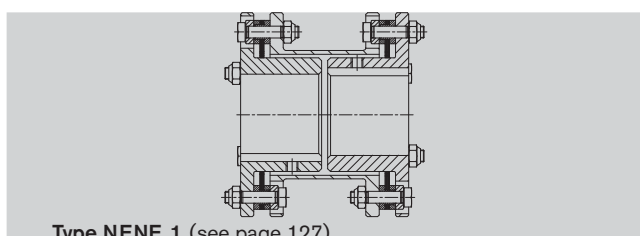
- Low speed drives with big shaft distance dimensions
- Agitating machines
- Crushers
- Presses
- Packaging machines



Type NNZ (see page 127)

- Compact double cardanic design
- Cannot be radially assembled
- With intermediate disk
- Ideal for replacement of curved-tooth gear couplings from steel
- Standard type up to size 70

- Robotics
- Paper machines and inserters
- Machine tools
- Packaging machines
- Test benches



Type NENE 1 (see page 127)

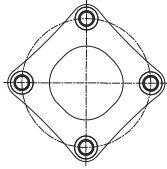
- With reduced hubs
- Compact double cardanic design
- Spacers cannot be assembled radially
- Variable spacer length

- Applications with short shaft distance dimensions
- Replacement for curved-tooth gear couplings from steel

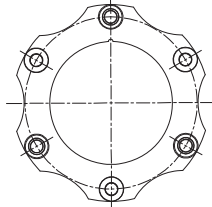
Technical data

The following laminae types are distinguished for RADEX®-N

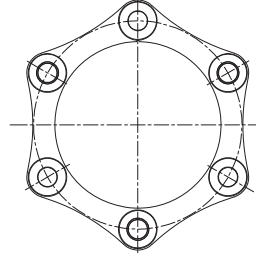
Size 20 – 50
(4 hole laminae)



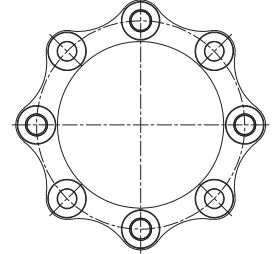
Size 60 – 135
(6 hole laminae)



Size 136 – 336
(6 hole laminae)



Size 138 – 338
(8 hole laminae)



Torques and displacements									
Size	Laminae types	Torques [Nm]				Permissible displacements ¹⁾			
		T _{KN}	T _{K max}	T _{KW}	Angular [°] each laminae	Axial [mm]		Radial [mm]	
						NN	NANA 1/ NANA2/NNZ	NANA 1	NANA 2/NNZ
20	4 hole laminae	15	30	5	1,0	0,60	1,2	0,5	0,1
25		30	60	10	1,0	0,80	1,6	0,5	0,2
35		60	120	20	1,0	1,00	2,0	0,5	0,2
38		120	240	40	1,0	1,20	2,4	0,6	0,3
42		180	360	60	1,0	1,40	2,8	0,6	0,3
50		330	660	110	1,0	1,60	3,2	0,8	0,4
60		690	1380	230	1,0	1,00	2,0	1,5	0,8
70		1100	2200	370	1,0	1,10	2,2	1,8	1,0
80	6 hole laminae	1500	3000	500	1,0	1,30	2,6	2,1	1,2
85		2400	4800	800	1,0	1,30	2,6	2,2	1,2
90		4500	9000	1500	1,0	1,00	2,0	2,2	1,1
105		5100	10200	1700	1,0	1,20	2,4	2,4	1,4
115		9000	18000	3000	1,0	1,40	2,8	2,5	1,5
135		12000	24000	4000	1,0	1,75	3,5	3,8	–
136		17500	35000	8750	0,7	1,85	3,7		
156		25000	50000	12500	0,7	2,10	4,2		
166	8 hole laminae	35000	70000	17500	0,7	2,25	4,5		
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		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		
208	8 hole laminae	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		

Permissible speeds and torsional stiffness					
Size	Max. speed [rpm] (higher speeds on request)	Torsion spring rigidity x 10 ⁶ [Nm/rad] per laminae set	Size	Max. speed [rpm] (higher speeds on request)	Torsion spring rigidity x 10 ⁶ [Nm/rad] per laminae set
20	20000	0,017	136	3800	7,64
25	16000	0,028	156	3500	9,20
35	13000	0,092	166	3300	13,8
38	12000	0,198	206	2800	23,8
42	10000	0,282	246	2300	28,4
50	8000	0,501	286	2000	41,4
60	6700	0,560	336	1800	48,5
70	5900	0,900	138	3800	13,2
80	5100	1,140	158	3500	18,3
85	4750	1,520	168	3300	26,2
90	4300	1,940	208	2800	52,0
105	4000	2,540	248	2300	71,0
115	3400	3,480	288	2000	108,0
135	3000	6,850	338	1800	156,0

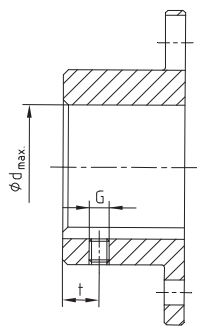
¹⁾ The permissible displacement figures mentioned are maximum figures which must not arise at the same time. If radial, axial and angular displacements arise at the same time the figures need to be reduced.

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	0,129 / 0,000043	0,044 / 0,00002	0,302 / 0,00011	0,596 / 0,000204	–	0,434 / 0,000166
25	0,240 / 0,000116	0,077 / 0,00005	0,557 / 0,00028	0,937 / 0,000522	–	0,757 / 0,000414
35	0,571 / 0,00042	0,098 / 0,00010	1,240 / 0,00094	1,889 / 0,00158	–	1,595 / 0,00129
38	0,781 / 0,00073	0,200 / 0,00026	1,762 / 0,0017	2,828 / 0,00303	–	2,356 / 0,00247
42	1,076 / 0,00123	0,250 / 0,00040	2,402 / 0,0029	3,635 / 0,00482	–	3,144 / 0,00409
50	1,752 / 0,00291	0,460 / 0,0010	3,964 / 0,0068	6,170 / 0,0118	–	5,097 / 0,00932
60	1,878 / 0,00378	0,396 / 0,0012	4,152 / 0,0087	5,997 / 0,0141	5,809 / 0,0138	5,267 / 0,0120
70	2,780 / 0,00714	0,425 / 0,0016	5,985 / 0,016	8,599 / 0,0253	8,154 / 0,0242	7,460 / 0,0214
80	4,120 / 0,0134	0,720 / 0,0037	8,960 / 0,031	12,580 / 0,0476	11,995 / 0,0458	11,118 / 0,0410
85	5,115 / 0,0195	1,018 / 0,0065	11,25 / 0,046	16,158 / 0,0734	15,519 / 0,0711	14,760 / 0,0650
90	6,195 / 0,0282	2,320 / 0,0162	14,71 / 0,073	21,977 / 0,121	21,278 / 0,119	20,112 / 0,108
105	7,601 / 0,0414	2,200 / 0,0180	17,40 / 0,101	25,753 / 0,165	24,637 / 0,159	23,028 / 0,145
115	11,95 / 0,0899	3,950 / 0,0433	27,85 / 0,223	42,770 / 0,381	41,230 / 0,372	38,251 / 0,333
135	18,90 / 0,187	7,260 / 0,105	45,06 / 0,478	71,308 / 0,835	–	–
136	16,73 / 0,153	7,899 / 0,113	41,36 / 0,419			–
156	20,18 / 0,217	11,88 / 0,200	52,24 / 0,634			–
166	29,99 / 0,373	12,28 / 0,255	72,26 / 1,001			–
206	55,09 / 1,004	18,22 / 0,548	128,3 / 2,556			–
246	85,91 / 2,229	31,24 / 1,304	203,1 / 5,762			–
286	145,1 / 4,977	44,36 / 2,495	334,4 / 12,449			–
336	223,9 / 10,486	64,24 / 4,74	512,0 / 25,712	Mounting dimension E as indicated by the customer	Mounting dimension E as indicated by the customer	–
138	16,19 / 0,145	9,896 / 0,143	42,29 / 0,433			–
158	19,54 / 0,205	14,84 / 0,252	53,93 / 0,662			–
168	29,38 / 0,360	15,20 / 0,318	73,96 / 1,038			–
208	54,06 / 0,971	22,38 / 0,680	130,5 / 2,622			–
248	84,03 / 2,144	38,16 / 1,605	206,2 / 5,893			–
288	142,5 / 4,823	53,82 / 3,056	338,8 / 12,702			–
338	220,1 / 10,18	78,01 / 5,817	518,2 / 26,177			–

¹⁾ Hubs with max. bore

Cylindrical bores

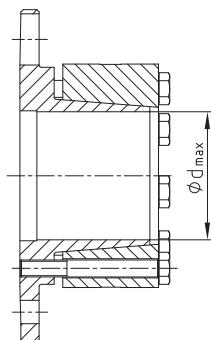


Standard hub 1.0 according to DIN 6885 sheet 1 (with keyway)									
Size	d _{max}	G	t	T _A [Nm]	Size	d _{max}	G	t	T _A [Nm]
20	20	M5	6	2,0	105	105	M12	30	40,0
25	25	M5	8	2,0	115	115	M12	30	40,0
35	35	M6	15	4,8	135	135			
38	38	M6	15	4,8	136 / 138	135			
42	42	M8	20	10,0	156 / 158	150			
50	50	M8	20	10,0	166 / 168	165			
60	60	M8	20	10,0	206 / 208	200			
70	70	M10	20	17,0	246 / 248	240			
80	80	M10	20	17,0	286 / 288	280			
85	85	M10	25	17,0	336 / 338	330			
90	90	M12	25	40,0					

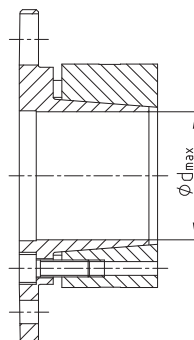
Backlash-free shaft-hub connections without feather key

Selection: In case of use in hazardous areas the clamping ring hubs must be selected in a way 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.

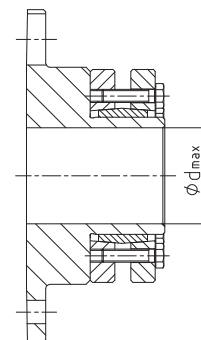
Clamping ring hub type 6.5
(clamping screws from the outside)



Clamping ring hub type 6.0
(clamping screws from the inside)



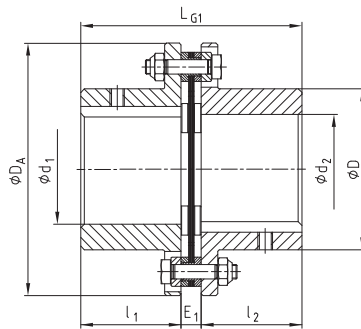
Design with CLAMPEX®
element type 603



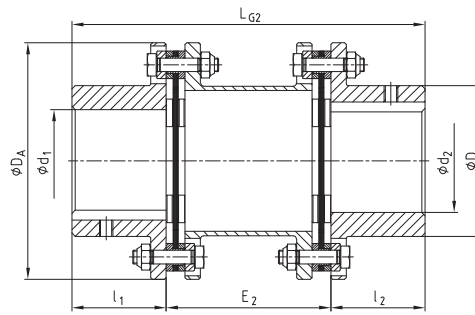
Standard types



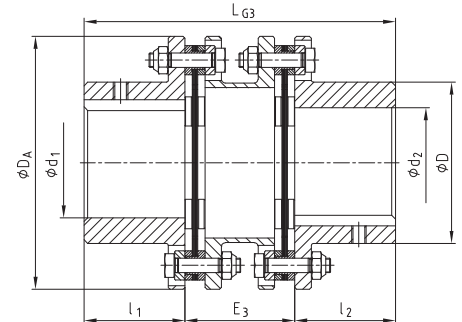
- Standard types available from stock
- Single and double cardanic designs
- Furthermore available with frictionally engaged shaft-hub-connection
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9
-  Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)
- From size 136 screwing of laminae by means of clamping nut (see assembly instructions KTR-N 47112)



Type NN



Type NANA 1



Type NANA 2

RADEX®-N types NN, NANA 1, NANA 2										
Size	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	35	54	82	40	86	6	150	70	—	—
38	38	58	94	45	98	8	170	80	—	—
42	42	68	104	45	100	10	170	80	—	—
50	50	78	126	55	121	11	206	96	—	—
60	60	88	138	55	121	11	206	96	170	60
70	70	102	156	65	141	11	246	116	200	70
80	80	117	179	75	164	14	286	136	233	83
85	85	123	191	80	175	15	300	140	246	86
90	90	132	210	80	175	15	300	140	251	91
105	105	147	225	90	200	20	340	160	281	101
115	115	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	Indicated by the customer			
156	150	195	325	150	327	27				
166	165	225	350	165	361	31				
206	200	275	420	200	437	37				
246	240	320	500	240	524	44				
286	280	383	567	280	612	52				
336	330	445	660	330	718	58				
138	135	180	300	135	293	23				
158	150	195	325	150	327	27				
168	165	225	350	165	361	31				
208	200	275	420	200	437	37	Indicated by the customer			
248	240	320	500	240	524	44				
288	280	383	567	280	612	52				
338	330	445	660	330	718	58				

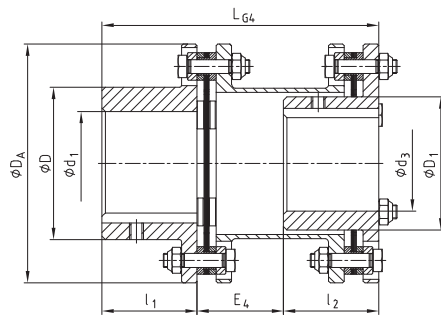
Order form

RADEX®-N 60	NANA 1	Ø 50	Ø 60
Coupling size	Type	Bore d ₁	Bore d ₂

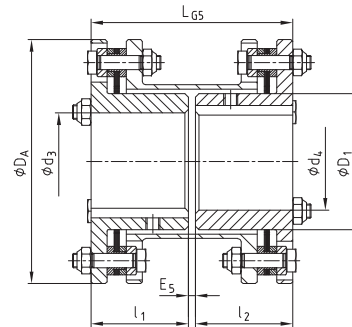
Standard types



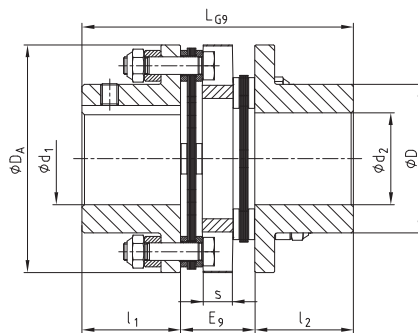
- Standard types available from stock
- Single and double cardanic designs
- Furthermore available with frictionally engaged shaft-hub-connection
- Type NNZ (double-cardanic) for very short shaft distance dimensions
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)



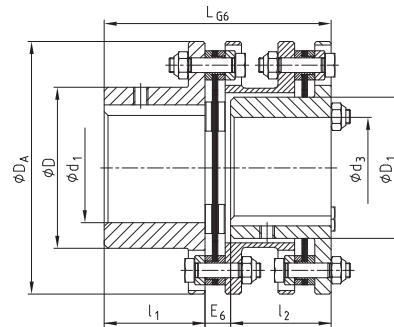
Type NENA 1



Type NENE 1



Type NNZ



Type NENA 2

RADEX®-N types NENA 1, NENE 1, NENA 2, NNZ

RADEX®-N types NENA 1, NENE 1, NENA 2, NNZ														
Size	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	35	–	54	–	82	40	–	–	–	–	–	–	102	22
38	38	–	58	–	94	45	–	–	–	–	–	–	118	28
42	42	–	68	–	104	45	–	–	–	–	–	–	124	34
50	50	–	78	–	126	55	–	–	–	–	–	–	144	34
60	60	55	88	77	138	55	160	50	114	4	124	14	144	34
70	70	65	102	90	156	65	190	60	134	4	144	14	166	36
80	80	75	117	104	179	75	220	70	154	4	167	17	–	–
85	85	80	123	112	191	80	232	72	164	4	178	18	–	–
90	90	85	132	119	210	80	233	73	166	6	184	24	–	–
105	105	90	147	128	225	90	263	83	186	6	204	24	–	–
115	115	100	163	145	265	100	288	88	206	6	227	27	–	–

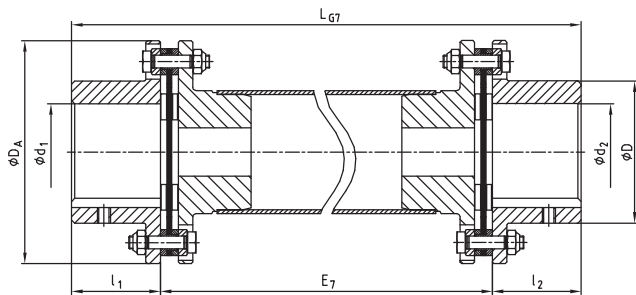
Order form

RADEX®-N 60	NENA 1	Ø 50	Ø 60
Coupling size	Type	Bore d ₁	Bore d ₂

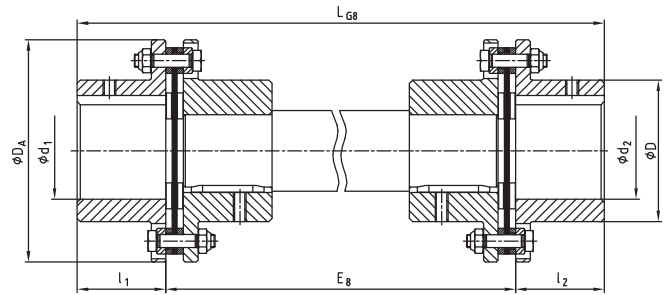
Special types on request of customers



- Types as per customer requirements
- Type NANA 4 for shaft distance dimensions up to 6 m (please note the critical whirling speed)
- Type NNW with full shaft (please note the critical whirling speed)
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)
- From size 136 screwing of laminae by means of clamping nut (see assembly instructions KTR-N 47112)



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				
25	25	40	68	25				
35	35	54	82	40				
38	38	58	94	45				
42	42	68	104	45				
50	50	78	126	55				
60	60	88	138	55				
70	70	102	156	65				
80	80	117	179	75				
85	85	123	191	80				
90	90	132	210	80				
105	105	147	225	90				
115	115	163	265	100				
135	135	184	305	135				
136	135	180	300	135				
156	150	195	325	150				
166	165	225	350	165				
206	200	275	420	200				
246	240	320	500	240				
286	280	383	567	280				
336	330	445	660	300				
138	135	180	300	135				
158	150	195	325	150				
168	165	225	350	165				
208	200	275	420	200				
248	240	320	500	240				
288	280	383	567	280				
338	330	445	660	300				

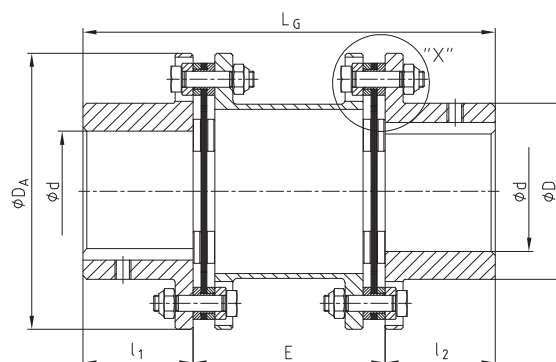
Order form:

RADEX®-N 60	NANA 4	Ø 50	Ø 60	2500
Coupling size	Type	Bore d ₁	Bore d ₂	Shaft distance dimension

Standard line NANA 3 for pump drives according to API 610



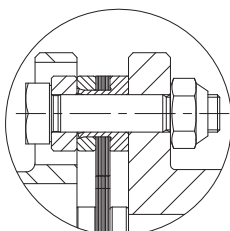
- Line NANA 3 for pump drives
- Coupling according to API 610
- High balancing quality due to precise manufacture (AGMA class 9)
- Device to secure the spacer if the laminae breaks (see detail "X")
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)
- From size 136 screwing of laminae by means of clamping nut (see assembly instructions KTR-N 47112)



RADEX®-N type NANA 3							
Size	Dimensions [mm]					Perm. displacements	
		D	D _A	E ^{Standard} ¹⁾	l ₁ /l ₂	Angle each laminae [°]	Axial [mm]
42	42	68	104	100	45	1,0	2,8
50	50	78	126	140/180	55	1,0	3,2
60	60	88	138	100/140/180/250	55	1,0	2,0
70	70	102	156	100/140/180	65	1,0	2,2
80	80	117	179	100/140/180/250	75	1,0	2,6
85	85	123	191	100/140/180/250	80	1,0	2,3
90	90	132	210	140/180/250	80	1,0	2,0
105	105	147	225	250	90	1,0	2,4
115	115	163	265	250	100	1,0	2,8
135	135	184	305	250	135	1,0	3,5
136	135	180	300		135	0,7	3,7
156	150	195	325		150	0,7	4,2
166	165	225	350		165	0,7	4,5
206	200	275	420		200	0,7	5,2
246	240	320	500		240	0,7	6,0
286	280	383	567		280	0,7	6,7
336	330	445	660	Indicated by the customer	330	0,7	7,5
138	135	180	300		135	0,5	2,6
158	150	195	325		150	0,5	2,8
168	165	225	350		165	0,5	3,0
208	200	275	420		200	0,5	3,5
248	240	320	500		240	0,5	4,0
288	280	383	567		280	0,5	4,5
338	330	445	660		330	0,5	5,0

¹⁾ Other E-dimensions available on request.

Detail "X"

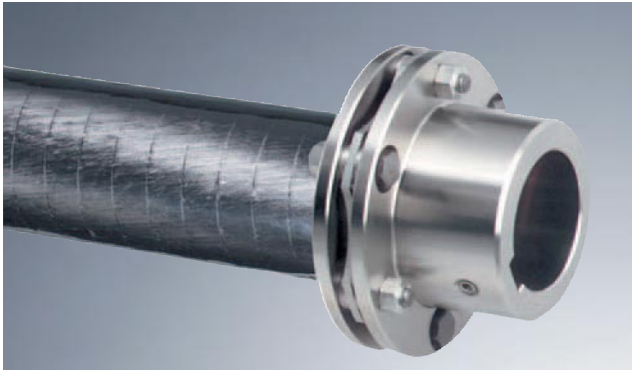


Securing device of the spacer:

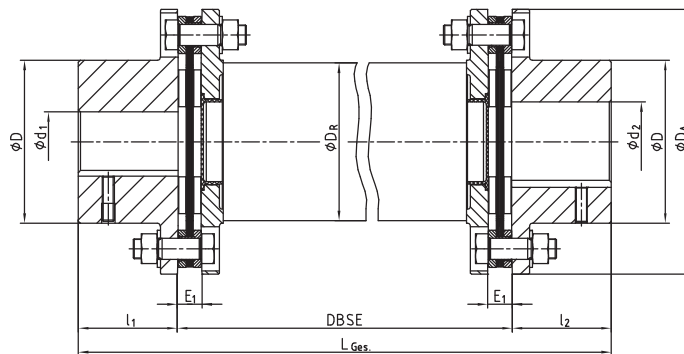
The laminae packings have a sleeve in order to secure the spacer if the laminae breaks.

Order form:	RADEX®-N 60	NANA 3	Ø 50	Ø 60	140
	Coupling size	Type	Bore d ₁	Bore d ₂	Shaft distance dimension

Corrosion-resistant type for large shaft distance dimension



- All steel parts made of stainless material
- Composite tubes are conglutinated with the flanges and radially bolted in addition
- Spacer sealed against environmental influences (e. g. penetration of moisture into the glued joint)
- On request also available with brake disc made of stainless material
- ATEX release possible



RADEX®-N type NANA 4 CFK											
Size	Torque [Nm]		Dimensions [mm]								max. DBSE ¹⁾ at 1500 rpm
	T _{KN}	T _{K max.}	D _A	max. d ₁ /d ₂	D	l ₁ /l ₂	E ₁	DBSE	L _{Ges.}	Composite Pipe D _R	
70	800	1600	149	70	102	65	11	customer's specifications	l ₁ + l ₂ + DBSE	95	3500
85	1800	3600	184	85	123	80	15			117	3900
90	2500	5000	200	90	135	80	15			128	4100
115	4500	9000	253	115	163	100	23			160	4600

¹⁾ In case of higher speeds or longer DBSE dimensions please contact the KTR engineering department (+49 5971 798-484).
Due to composite tubes optimized by applications the aforementioned technical details (e. g. max. DBSE) may be varied, if required.

Particularly the steel laminae couplings are wellsuited for applications with especially large distance dimensions between the drive and the driven side (e. g. cooling towers, ventilators etc.) due to their design.

In order to be able to realize high speeds with large distance dimensions, RADEX®-N couplings with intermediate shafts made from glass fiber or carbon fiber reinforced nylon (GRP or CFRP) are used, if necessary.

Order form:	RADEX®-N 85	NANA 4 CFK	Ø 60	Ø 70	3000
	Coupling size	Type	Bore d ₁	Bore d ₂	Shaft distance dimension

Description of coupling

RIGIFLEX®-N couplings are used on such applications which require a reliable and maintenance-free torque transmission with shaft displacement at the same time.

RIGIFLEX®-N was developed for pump drives in particular. This coupling system corresponds to the regulations of API 610 and may be supplied in accordance with API 671 optionally. (API = American Petroleum Institute)

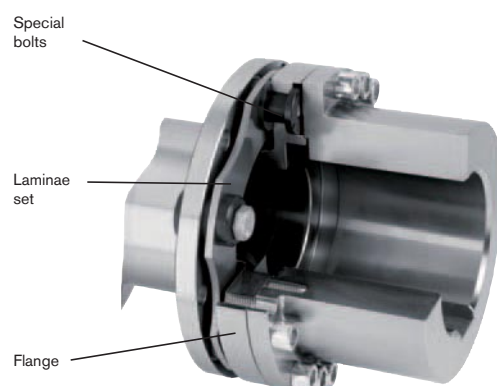
Torques from 60 Nm to 280.000 Nm are available in 23 sizes for an optimum adjustment to the different applications.



RIGIFLEX®-N laminae

RIGIFLEX®-N laminae are waisted laminae sets arranged in layers. They are connected to the hubs or flanges, respectively, in an absolutely backlash-free fit by means of positive-locking set screws.

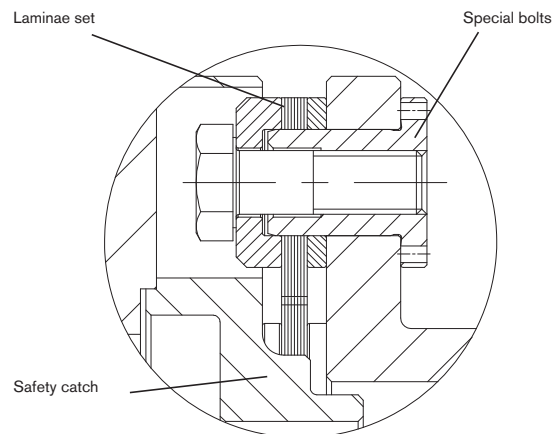
The number of the layers of individual laminae allows to vary torques, displacement figures and stiffness for special designs.



Securing 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 that the laminae break the spacer remains within the coupling.

In general the removable part is supplied along with a laminae set pre-assembled by the manufacturer.



Explosion protection use

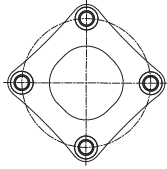
RIGIFLEX®-N couplings are suitable for the use in drives in hazardous areas. The couplings are certified and confirmed according to EC standard 94/9/EC (ATEX 95) as units of category 2G/2D and thus suitable for the use in hazardous areas of zone 1, 2, 21 and 22. Please read through our information included in the respective Type Examination Certificate and the operating and mounting instructions at www.ktr.com.



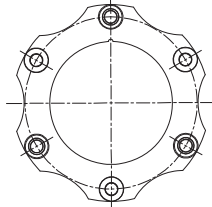
Technical data

The following laminae types are distinguished for RIGIFLEX®-N:

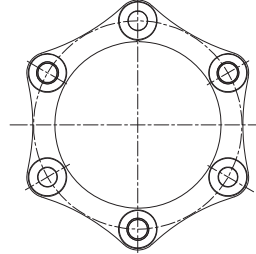
Size 35 – 65
(4 hole laminae)



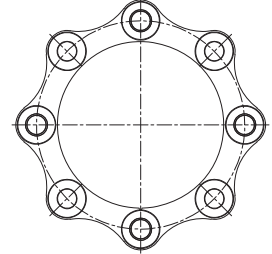
Size 75 – 160
(6 hole laminae)



Size 166 – 406
(6 hole laminae)



Size 168 – 408
(8 hole laminae)



Torques and displacements											
Size	Laminae type	Torque [Nm]			Permissible displacements						
		T _{KN}	T _{K max}	T _{KW}	Angular ± K _w ¹⁾ [°]	Axial ± K _a [mm]	Radial ± K _r [mm]				
							E=100	E=140	E=180	E=200	E=250
35	4 hole laminae	60	120	30	0,7	1,2	0,90	1,40	–	–	–
50		240	480	120	0,7	1,4	0,77	1,26	–	–	–
65		450	900	225	0,7	1,5	0,75	1,23	1,72	–	–
75		940	1880	470	0,7	1,8	0,73	1,22	1,71	–	–
85	6 hole laminae	1700	3400	850	0,7	2,1	–	1,14	1,62	1,87	2,48
110		2700	5400	1350	0,7	2,4	–	1,05	1,54	1,78	2,39
120		4500	9000	2250	0,7	2,6	–	1,00	1,49	1,73	2,35
140		9000	18000	4500	0,7	3,3	–	–	–	1,55	2,16
160		13000	26000	6500	0,7	3,8	–	–	–	–	1,99
166		17500	35000	8750	0,7	3,7	Mounting dimension E as indicated by the customer				
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					
168		23000	46000	11500	0,5	2,6					
198		30000	60000	15000	0,5	2,8					
218		42500	85000	21500	0,5	3,0					
258	8 hole laminae	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

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									
Size	Max. speed [rpm]	Complete coupling	Each laminae set		ct [Nm/rad] for complete coupling with mounting length E				
		ca [N/mm]	cw [Nm/rad]	ct [Nm/rad]	E=100	E=140	E=180	E=200	E=250
35	23000	30	107	170000	65020	56700	–	–	–
50	18000	75	470	198000	73953	63990	–	–	–
65	13600	136	860	360000	146022	129938	117046	–	–
75	12400	340	1500	720000	306145	278381	255234	–	–
85	11000	385	2300	1062000	–	406641	369429	353265	318433
110	9000	390	2800	1460000	–	664284	637587	625028	595693
120	8000	600	4100	4500000	–	1798018	1637553	1567602	1416348
140	6400	580	6400	5600000	–	–	–	2363340	2226630
160	5600	620	9800	6850000	–	–	–	–	2654894
166	5600	670	10200	7640000	Mounting dimension E as indicated by the customer				
196	5200	1020	17130	9200000					
216	4600	1280	32300	13800000					
256	3900	1640	47060	23800000					
306	3300	1910	64700	28400000					
346	2900	2050	85300	41400000					
406	2500	2140	161000	48500000					
168	5600	1230	34000	13200000					
198	5200	1800	58000	18300000					
218	4600	2300	110000	26200000					
258	3900	2950	160000	52000000					
308	3300	3400	220000	71000000					
348	2900	3700	290000	108000000					
408	2500	3800	550000	156000000					

ca = axial stiffness

cw = angular stiffness

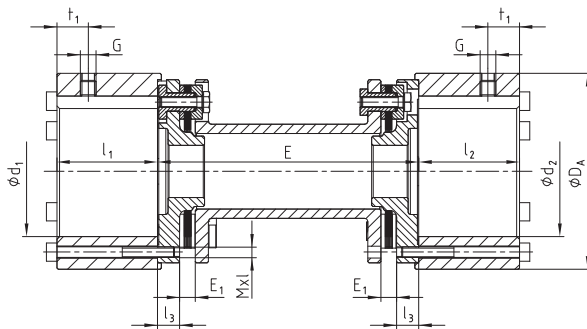
ct = torsion spring stiffness

Weights [kg] / Mass moments of inertia x 10 ⁻³ [kgm ²]												
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										

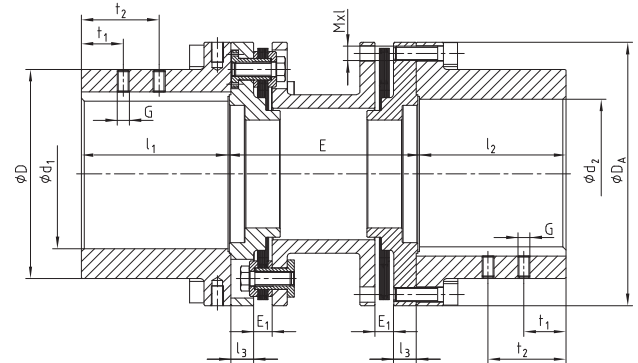
Type A



- Series for pump drives
- Coupling in accordance with API 610, API 671 optionally.
- Available with large hub for bigger bore diameters
- Spacers are supplied assembled by the manufacturer
- Finish bore according to ISO fit H7, feather key according to DIN 6885 sheet 1 - JS9
- High balancing quality due to accurate machining (AGMA Class 9)
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)



Size 35



Size 50 - 408

RIGIFLEX®-N type A																			
Size	Torque [Nm]			Max. finish bore	Dimensions [mm]												Screws DIN EN ISO 4762		
	T _{KN}	T _{Kmax}	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
35	60	120	30	50	–	75	38,5	8,5	M6	15	–	6	100	140	–	–	–	M4x45	4,1
50	240	480	120	50	70	95	50	12	M6	10	–	9	100	140	–	–	–	M6x22	14
65	450	900	225	65	100	126	63	12	M8	20	–	10	100	140	180	–	–	M6x25	14
75	940	1880	470	75	105	138	62,5	12	M8	20	–	10	100	140	180	–	–	M8x30	35
85	1700	3400	850	85	120	156	72,5	15	M10	20	–	12	–	140	180	200	250	M8x30	35
110	2700	5400	1350	110	152	191	87	18	M10	25	–	12	–	140	180	200	250	M10x35	69
120	4500	9000	2250	120	165	213	102	20	M12	25	–	12	–	–	180	200	250	M12x40	120
140	9000	18000	4500	140	200	265	126	25	M12	30	–	15	–	–	–	200	250	M16x50	295
160	13000	26000	6500	160	230	305	145	31	M12	30	–	15	–	–	–	–	250	M16x55	295
166	17500	35000	8750	160	230	305	155	31	M16	30	70	17						M20x50	560
196	22500	45000	11250	190	260	330	185	32	M16	40	90	24							
216	32000	64000	16000	210	285	370	205	32	M20	50	110	26							
256	52500	105000	26250	250	350	440	245	38	M20	70	130	31							
306	86000	172000	43000	300	400	515	295	43	M24	70	130	36							
346	135000	270000	67500	340	460	590	335	55	M24	95	175	45							
406	210000	420000	105000	400	530	675	395	58,5	M24	95	175	50	acc. to customer's request						
168	23000	46000	11500	160	230	305	155	31	M16	30	70	17							
198	30000	60000	15000	190	260	330	185	32	M16	40	90	24							
218	42500	85000	21500	210	285	370	205	32	M20	50	110	26							
258	70000	140000	35000	250	350	440	245	38	M20	70	130	31							
308	115000	230000	57500	300	400	515	295	43	M24	70	130	36							
348	180000	360000	90000	340	460	590	335	55	M24	95	175	45							
408	280000	560000	140000	400	530	675	395	58,5	M24	95	175	50							

¹⁾ Other shaft distances available on request

For selection of coupling see pages 119/120. Mounting instructions no. 47410 under www.ktr.com.

Order form:	RIGIFLEX®-N 120	A	Ø 100	Ø 120	200
	Coupling size	Type	Bore d ₁	Bore d ₂	Shaft distance dimension E



ROTEX® GS

Backlash-free flexible shaft coupling

COUNTEX®

Backlash-free shaft encoder coupling

TOOLFLEX®

Backlash-free torsionally stiff bellow-type coupling

RADEX®-NC

Backlash-free torsionally stiff servo laminae coupling

ROTEX® GS
COUNTEX®
TOOLFLEX®
RADEX®-NC

Made for Motion



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Application recommendation

If a shaft coupling is needed for a servo drive, three different backlash-free coupling types are available: ROTEX® GS, TOOLFLEX® and RADEX®-NC. Dependent on the required torsional stiffness of the complete system you choose the best coupling for your individual application.



ROTEX® GS Backlash-free, flexible jaw-type coupling

- axially plug-in ability
- high power density
- adjustment of damping through different elastomer hardness of the spiders

Shaft encoders, miniature drives	
Ball screws, synchronous belt drives	
Low backlash/backlash-free gears	
Main spindle drives	

- compact design, easy assembly/disassembly, electric insulation
- high power density, adapted torsional stiffness, damping vibrations, for thread drives with pitch < 40 (otherwise an inspection by KTR is necessary)
- high power density, easy blind assembly/disassembly, fail-safe, suitable for average to high gear ratios $i \geq 7$, temperature range 80 °C at the maximum
- high power density, good concentric running properties of the clamping ring hubs, damping vibrations with interrupted cutting, higher accuracy of the ROTEX® GS-P design for HSC machining



TOOLFLEX® Backlash-free, torsionally stiff metal bellow-type coupling

- non-positive bellow-hub connection
- frictionally engaged clamping hubs

Shaft encoders, miniature drives	
Ball screws, synchronous belt drives	
Low backlash/backlash-free gears	
Main spindle drives	

- compact flexible coupling with low radial restoring forces
- suitable if higher torsional stiffness is required, e. g. high pitch with threaded spindle drives $s \geq 40$, constant torsional stiffness with high temperatures
- suitable if higher torsional stiffness is required, e. g. gear ratios $i < 7$, constant torsional stiffness with high temperatures
- high torsional stiffness, for main spindle drives subject to critical resonances



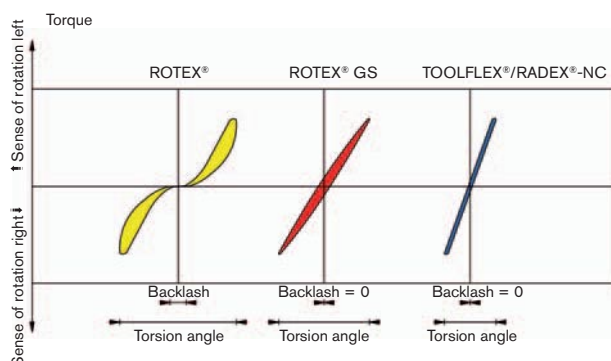
RADEX®-NC Backlash-free, torsionally rigid servo laminae coupling

- compact design
- higher torsional stiffness
- frictionally engaged clamping hubs

Shaft encoders, miniature drives	
Ball screws, synchronous belt drives	
Low backlash/backlash-free gears	
Main spindle drives	

- double-cardanic design to compensate for bigger displacements
- suitable if higher torsional stiffness is required, e. g. high pitch with threaded spindle drives $s \geq 40$, constant torsional stiffness with high temperatures
- suitable if higher torsional stiffness is required, e. g. gear ratios $i < 7$, constant torsional stiffness with high temperatures
- high torsional stiffness, for main spindle drives subject to critical resonances, for high torques type RADEX®-N is available: T_{KN} up to 280.000 Nm

The diagram alongside this text clarifies the influence of the ROTEX®, ROTEX® GS, RADEX®-NC and the TOOLFLEX® couplings regarding backlash and torsion angle. Due to the high stiffness of the RADEX®-NC and the TOOLFLEX® the torsion angle is very low under torque. However, contrary to the flexible ROTEX® and the backlash-free ROTEX® GS a damping of torsional vibrations is not possible.



Technical description



ROTEX® GS is a 3-part, axial plug-in coupling backlash-free under prestress. It is convincing 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. This principle of installation offers significant assembly possibilities which optimize the assembly times in production.

ROTEX® GS (straight tooth, backlash-free)

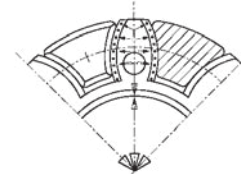
The straight toothting of the spider mounted under prestress results in a smaller surface pressure and consequently higher stiffness of the coupling system. The flexible teeth compensate for misalignment but are supported radially in the inside diameter by a central web. This avoids too high internal or external deformation by high acceleration or high speeds. This is vital for a smooth operation and long service life of the coupling.

The hub claws and the nylon teeth are chamfered to allow for a "blind assembly". The pegs arranged reciprocally on the spider prevent the spider from touching the hub over the entire surface. Observing the distance dimension E ensures the ability of the coupling to compensate for displacements. The plug-in force varies depending on the Shore hardness and prestress of the spider (see comments in the mounting instructions KTR-N 45510).

By observing the gap dimension "s" the electrical isolation is ensured, as well as a high service life of the coupling. This fact is gaining more and more importance, due to the increasing precision of shaft encoders and the existing demand for electro-magnetic compatibility.

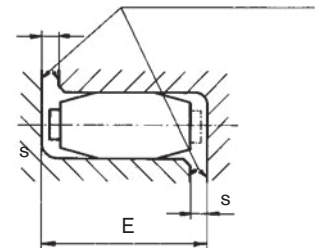
The elastic spiders of the GS line are available in five different kinds of Shore hardness, identified by colour, the material being soft to hard. Due to these four spiders with different kinds of Shore hardness it is easily possible to adjust the **ROTEX® GS** regarding the torsional stiffness and the vibration behaviour to the individual conditions of an application.

Limitation by concave cams in case of too high speeds/centrifugal forces and prestress of elastomer parts



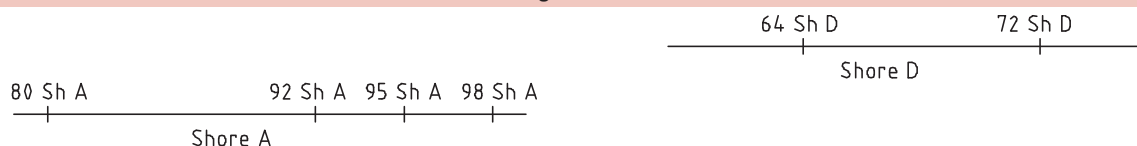
Support to the axis of rotation

Electric isolation due to gap dimension "s"



Spider						
Description of spider hardness [Shore]	Identification Colour	Material	Permissible temperature range [° C]		Available for coupling size	Typical applications
			Permanent temperature	Max. temperature short-term		
80 Sh A-GS	blue	Polyurethane	- 50 to + 80	- 60 to + 120	size 5 to 24	- drives of electric measuring systems
92 Sh A-GS	yellow	Polyurethane	- 40 to + 90	- 50 to + 120	size 5 to 55	- drives of electric measuring and control systems - main spindle drives
95/98 Sh A-GS	red	Polyurethane	- 30 to + 90	- 40 to + 120	size 5 to 75	- positioning drives - main spindle drives - high load
64 Sh D-H-GS	green	Hytrel	- 50 to + 120	- 60 to + 150	size 7 to 38	- planetary gears / backlash-free gears - heighten torsional stiffness / high ambient temperature
64 Sh D-GS	green	Polyurethane	- 20 to + 110	- 30 to + 120	size 42 to 75	- heighten load - heighten torsional stiffness
72 Sh D-H-GS	grey	Hytrel	- 50 to + 120	- 60 to + 150	size 24 to 38	- very high torsional stiffness - very high load
72 Sh D-GS	grey	Polyurethane	- 20 to + 110	- 30 to + 120	size 42 to 65	- very high torsional stiffness - very high load

Degree of hardness

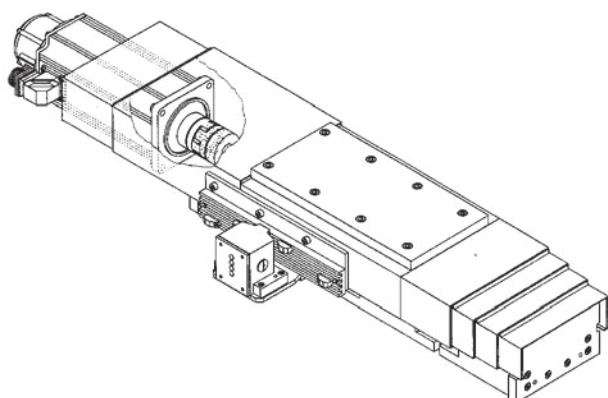
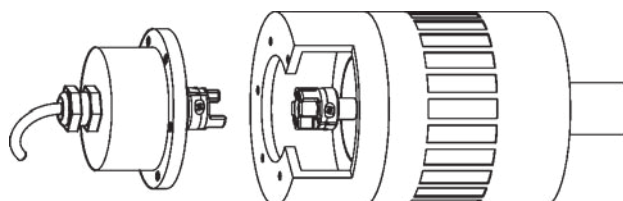


Application recommendation

Measurement and control systems

For measurement and control systems a high torsional stiffness of the coupling is required in order to obtain positioning repeatability. The torques that arise are relatively small so that backlash-free, torsionally stiff power transmission is achieved by the elastomer prestress.

In order to minimize the restoring forces we would recommend the spider 80 Sh A GS for such applications.



Servo and positioning drives

ROTEX® GS as an alternative to torsionally rigid couplings

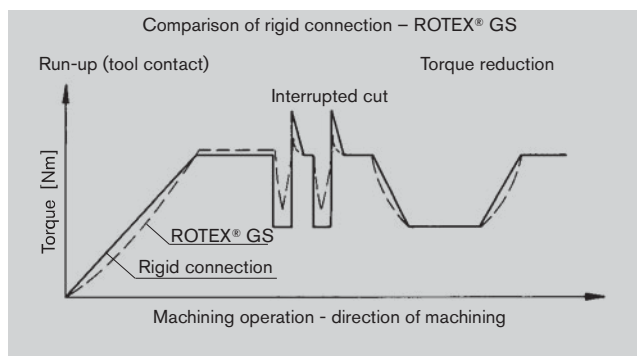
Torsionally rigid shaft-to-shaft connections do not only transmit the torque backlash-free and non-rigid, but also torque peaks and vibrations. For driving systems with critical vibrations, the benefit of high stiffness for torque transmission soon becomes a serious disadvantage. For applications on which torsionally rigid shaft-to-shaft connections may cause a problematic torque transmission, the optimum alternative is ROTEX® GS.

Backlash-free, damping vibrations, yet sufficiently torsionally rigid so that even highly dynamic servo drives must not suffer from lower precision with the right sizing of the coupling.

Main spindle drives

With the high torques in the field of machine tools, e. g. direct spindle drives, initial small twisting (under prestress) and damping dependent on the elastomer hardness is achieved. Peak tensions and shock loads are reduced or the resonance range is shifted to non-critical speed ranges, respectively.

For peripheral speeds up to 50 m/s (referred to the outside diameter of the coupling) we would recommend to use our ROTEX® GS clamping ring hub. For peripheral speeds exceeding 50 m/s, ROTEX® GS...P should be used. We have on hand experiences from industrial applications for peripheral speeds up to 80 m/s.



Explosion protection use

ROTEX® GS couplings are suitable for power transmission in drives in hazardous areas. The couplings are certified and confirmed according to EC standard 94/9/EC (ATEX 95) as units of category 2G/2D and thus suitable for the use in hazardous areas of zone 1, 2, 21 and 22. Please read through our information included in the respective Type Examination Certificate and the operating and mounting instructions at www.ktr.com.

Selection: In case of use in hazardous areas the clamping ring hubs (clamping hubs without feather keyway only for use in category 3) must be selected so that there is a minimum safetyfactor of $s = 2$ between the peak torque (including all operating parameters) and the nominal torque and frictional torque of engagement of the coupling.



Spider from polyurethane	92 Shore A	95/98 Shore A	64 Shore D
Relative Damping ψ [-]	0,80	0,80	0,75
Resonance factor V_R [-]	7,90	7,90	8,50

Technical data

Size	Spider Shore-GS	Shore range	Max. speed [rpm] for hub design				Torque [Nm]		Static torsion spring stiffness ¹⁾ [Nm/rad]	Dynamic torsion spring stiffness ¹⁾ [Nm/rad]	Radial stiffness C _r [N/mm]	Weight [kg]		Mass moment of inertia J [kgm²]	
			2.0 / 2.1 2.5 / 2.6	1.0 1.1	6.0 light ²⁾	6.0 P ²⁾	T _{KN}	T _{K max}				Each hub ⁵⁾	Spider	Each hub ⁵⁾	Spider
5	70	A	38000	47700			0,2	0,3	1,78	5	43	1 x 10 ⁻³	0,2 x 10 ⁻³	0,015 x 10 ⁻⁶	0,002 x 10 ⁻⁶
	80	A					0,3	0,6	3,15	10	82				
	92	A					0,5	1,0	5,16	16	154				
	98	A					0,9	1,7	8,3	25	296				
7	80	A	27000	34100			0,7	1,4	8,6	26	114	3 x 10 ⁻³	0,5 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				
9	80	A	19000	23800			1,8	3,6	17,2	52	125	8 x 10 ⁻³	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	19100			3,0	6,0	84,3	252	274	17 x 10 ⁻³	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				
14	80	A	12700	15900	32000	47700	4,0	8,0	60,2	180	153	23 x 10 ⁻³	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				
19	80	A	9550	11900	24000	35800	4,9	9,8	618	1065	582	86 x 10 ⁻³	7 x 10 ⁻³	19,5 x 10 ⁻⁶	1,35 x 10 ⁻⁶
	92	A					10,0	20,0	1090	1815	1120				
	98	A					17,0	34,0	1512	2540	2010				
	64	D					21,0	42,0	2560	3810	2930				
24	92	A	6950	8650	17000	26000	35	70	2280	4010	1480	197 x 10 ⁻³	18 x 10 ⁻³	81,9 x 10 ⁻⁶	6,7 x 10 ⁻⁶
	98	A					60	120	3640	5980	2560				
	64	D					75	150	5030	10896	3696				
	72 ³⁾	D					97	194	9944	17095	5799				
28	92	A	5850	7350	15000	22000	95	190	4080	6745	1780	312 x 10 ⁻³	29 x 10 ⁻³	184,2 x 10 ⁻⁶	14,85 x 10 ⁻⁶
	98	A					160	320	6410	9920	3200				
	64	D					200	400	10260	20177	4348				
	72 ³⁾	D					260	520	21526	36547	7876				
38	92	A	4750	5950	12000	17900	190	380	6525	11050	2350	611 x 10 ⁻³	49 x 10 ⁻³	542,7 x 10 ⁻⁶	39,4 x 10 ⁻⁶
	98	A					325	650	11800	17160	4400				
	64	D					405	810	26300	40335	6474				
	72 ³⁾	D					525	1050	44584	71180	11425				
42	92	A	4000	5000	10000 8050 ⁴⁾	15000	265	530	10870	15680	2430	2422 x 10 ⁻³	74,5 x 10 ⁻³	2802 x 10 ⁻⁶	85 x 10 ⁻⁶
	98	A					450	900	21594	37692	5570				
	64	D					560	1120	36860	69825	7270				
	72 ³⁾	D					728	1456	58600	93800	9766				
48	92	A	3600	4550	9100 7200 ⁴⁾	13600	310	620	12968	18400	2580	3314 x 10 ⁻³	96 x 10 ⁻³	4709 x 10 ⁻⁶	135 x 10 ⁻⁶
	98	A					525	1050	25759	45620	5930				
	64	D					655	1310	57630	99750	8274				
	72 ³⁾	D					852	1704	80000	136948	11359				
55	92	A	3150	3950	6350 ⁴⁾	11900	410	820	15482	21375	2980	5026 x 10 ⁻³	125 x 10 ⁻³	9460 x 10 ⁻⁶	229 x 10 ⁻⁶
	98	A					685	1370	42117	61550	6686				
	64	D					825	1650	105730	130200	9248				
	72 ³⁾	D					1072	2144	150000	209530	14883				
65	95	A	2800	3500	5650 ⁴⁾	11000	940	1880	48520	71660	6418	6754 x 10 ⁻³	185 x 10 ⁻³	15143 x 10 ⁻⁶	437 x 10 ⁻⁶
	64	D					1175	2350	118510	189189	8870				
	72 ³⁾	D					1527	3054	160000	310000	11826				
75	95	A	2350	2950	4750 ⁴⁾	8950	1920	3840	79150	150450	8650	10498 x 10 ⁻³	342 x 10 ⁻³	32750 x 10 ⁻⁶	1179 x 10 ⁻⁶
	64	D					2400	4800	182320	316377	11923				

¹⁾ Static and dynamic torsional stiffness with 0,5 x T_{KN}

²⁾ Higher speeds on request

³⁾ With the use of the 72 Sh D spider we would recommend to use hubs from steel

⁴⁾ Clamping ring hubs 6.0 from steel

<

Coupling selection

2. Factors

Temperature factor S_t				
	-30 °C +30 °C	+40 °C	+60 °C	+80 °C
S_t	1,0	1,2	1,4	1,8

See note on page 136.

Torsional stiffness factor S_d		
Main spindle drive of machine tool	Positioning drive (x - y axis)	Shaft encoders Angle encoders
2 - 5*	3 - 8*	10 →

See note on page 140.

*When using the 64 Sh D-GS spider at least factor 4
With the use of the spider 72 Sh D-GS with a minimum
factor 4 and steel hubs.

Operating factor S_A		
main spindle drive	positioning drive*	S_A
light shock loads	≤ 60	1,0
average shock loads	≥ 60 ≤ 300	1,4
heavy shock loads	≥ 300	1,8

*Starts/minute

3. Calculation formula

The size of the coupling must be selected so that the following conditions are met.

$$T_{KN} \geq T_N \cdot S_t \cdot S_d$$

and

$$T_{KN} \geq T_S \cdot S_t \cdot S_d$$

For the factors please see the tables at the top.

Peak torque

$$T_S = T_{AS} \times m_A \times S_A$$

$$T_S = T_{LS} \times m_L \times S_L$$

$$m_A = \frac{J_L}{J_A + J_L}$$

$$m_L = \frac{J_A}{J_A + J_L}$$

J_A = Moment of inertia of driving side
 J_L = Moment of inertia of load side

4. Example of calculation (positioning drive)

Given: Details of driving side

Servo motor

Rated torque T_{AN} = 43 Nm

Max. drive torque T_{AS} = 144 Nm

Moment of inertia J_{Mot} = $108 \cdot 10^{-4} \text{ kgm}^2$

Driving shaft d = 32 k6 without keyway

Details of driven side

Ball spindle J_{Sp} = $38 \cdot 10^{-4} \text{ kgm}^2$

Screw pitch s = 10 mm

Driven shaft d = 30 k6 ohne Nut

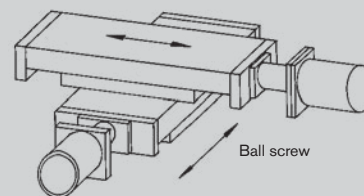
Mass of slide and work piece m_{Schl} = 1030 kg

Ambient temperature t = 40 °C

⇒ S_t = 1,4

60 starts/minute required

⇒ S_A = 1,0



required:

high torsional stiffness

⇒ S_d = 4

Preliminary consideration:

ROTEX® GS clamping ring hub - axial plug-in jaw coupling backlash-free under prestress with frictionally engaged shaft-hub-connection.

- Moment of inertia of slide and work piece reduced to driving axis.

$$J_{Schl} = m_{Schl} \left(\frac{s}{2 \cdot \pi} \right)^2 [\text{kgm}^2]$$

$$J_{Schl} = 1030 \text{ kg} \left(\frac{0,01 \text{ m}}{2 \cdot \pi} \right)^2 = 26 \cdot 10^{-4} \text{ kgm}^2$$

Coupling selection

- Selection according to rated torque (pre-selection)

$$T_{KN} \geq T_{AN} \cdot S_t \cdot S_d$$

$$T_{KN} \geq 43 \text{ Nm} \cdot 1,2 \cdot 4$$

$$T_{KN} \geq 206,4 \text{ Nm}$$

- Coupling selection: ROTEX® GS 38 - 98 Sh A-GS - clamping hub design T_{KN} 325 Nm

- Review of max. deiving torque

$$T_{KN} \geq T_S \cdot S_t \cdot S_d$$

$$T_S = T_{AS} \cdot m_A \cdot S_A$$

$$m_A = \frac{J_L}{J_A + J_L} = \frac{73,8 \cdot 10^{-4}}{(117,6 + 73,8) \cdot 10^{-4}} = 0,385$$

$$J_L = (J_{Sp} + J_{Schl} + \frac{1}{2} J_K) = (38 + 26 + 9,6) \cdot 10^{-4} \text{ kgm}^2 = 73,8 \cdot 10^{-4} \text{ kgm}^2$$

$$J_A = J_{Mot} + \frac{1}{2} J_K = (108 + 9,6) \cdot 10^{-4} \text{ kgm}^2 = 117,6 \cdot 10^{-4} \text{ kgm}^2$$

$$T_S = 144 \text{ Nm} \cdot 0,385 \cdot 1,0 = 55,44 \text{ Nm}$$

$$T_{KN} \geq 55,44 \text{ Nm} \cdot 1,2 \cdot 4$$

$$\text{ROTEX® GS 38 - 98 Sh A-GS } T_{KN} = 325 \text{ Nm}$$

$$T_{KN} \geq 266,11 \text{ Nm}$$

- Check of torque transmission of clamping ring hub for shaft diameter Ø 30

$$T_R > T_{AS}$$

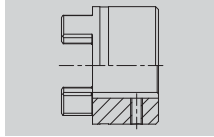
Figures for T_R see table on catalogue page 146.

Transmittable torque T_R Ø 30 H7/k6 = 452 Nm > 144 Nm ✓

Hub designs

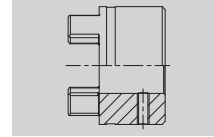
Due to the numerous applications of ROTEX® GS for many different mounting situations, this coupling system is available with various hub designs. These designs mainly differ in that they offer either positive or frictionally engaged (backlash-free) connections, but mounting situations like, for example, hollow shaft tacho, shaft encoder installation or similar applications are covered, too.

Design 1.0 with keyway and fixing screw



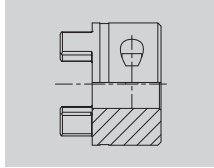
Positive power transmission; permissible torque depends on the permissible surface pressure. Not suitable for backlash-free power transmission for heavily reversing operation.

Design 1.1 without keyway, with setscrew



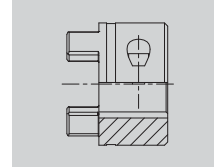
Non-positive torque transmission, suitable for backlash-free transmission of very small torques. (Only for ATEX category 3)

Design 2.0 clamping hub, single slotted, without keyway



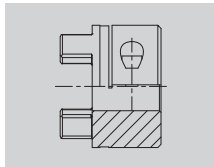
Frictionally engaged, backlash-free shaft-hub-connection. Transmittable torques depend on the bore diameter. Design 2.0 up to size 14 as standard. (Only for ATEX category 3)

Design 2.1 clamping hub, single slotted, with keyway



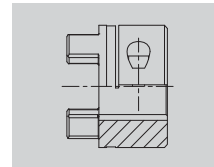
Positive power transmission with additional frictional tightness. The frictional tightness avoids or reduces reversal backlash. Surface pressure of the keyway connection is reduced. Design 2.1 up to size 14 as standard.

Design 2.5 clamping hub, double slotted, without keyway



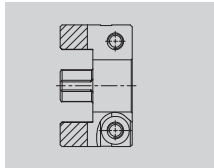
Frictionally engaged, backlash-free shaft-hub-connection. Transmittable torques depend on the bore diameter. Design 2.5 from size 19 as standard. (Only for ATEX category 3)

Design 2.6 clamping hub, double slotted, with keyway



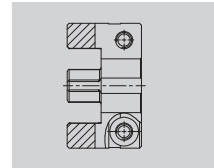
Positive power transmission with additional frictional tightness. The frictional tightness prevents or reduces reversal backlash. Surface pressure of the keyway connection is reduced. Design 2.6 from size 19 as standard.

Type 2.8 short clamping hub with axial slots without feather key



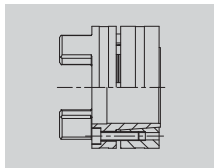
Frictionally engaged, backlash-free shaft-hub-connection, good properties of concentric running due to symmetrical arrangement and cams without slots. Design 2.8 up to size 24 as standard. (Only for ATEX category 3)

Type 2.9 short clamping hub with axial slots with feather key



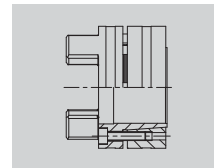
Positive-locking power transmission in addition frictionally engaged. Smooth power transmission due to cams without slots. The surface pressure of the feather key combination is reduced. Type 2.9 from size 24 as standard.

Design 6.0 clamping ring hub



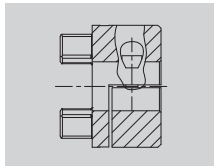
Integrated frictionally engaged shaft-hub-connection for transmission of higher torques. Screw fitting on elastomer side. For details about torques and dimensions see page 146/147. Suitable for high speeds.

Design 6.0 P precision clamping ring hub



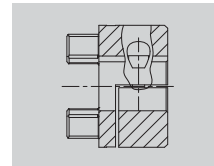
Design equal to 6.0, but highly accurate machining with slight modifications of design, see page 148.

Design 7.5 shell clamping hub without feather keyway for double-cardanic connections



Frictionally engaged, backlash-free shaft-hub connection for the radial assembly of the coupling. Transmittable torques dependent on bore diameter. Torque indicated on page 152.

Design 7.6 shell clamping hub with feather keyway for double-cardanic connections



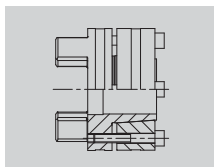
Positive shaft-hub connection with additional frictional engagement for the radial assembly of the coupling. The frictional engagement avoids or reduces the reverse backlash. The surface pressure of the feather key connection is reduced.

Design 7.8 shell clamping hub without feather keyway for single-cardanic connection

Design 7.9 shell clamping hub with feather keyway for single-cardanic connection

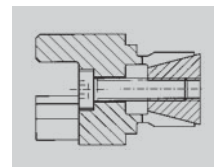
Special designs on request of customers

Design 6.5 clamping ring hub

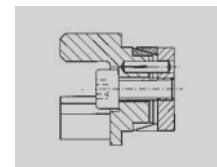


Design equal to 6.0, but clamping screws on the outside. For example for radial disassembly of the intermediate tube (special design).

Special hub designs for hollow shaft drives



Expansion hub



ROTEX® GS hub with CLAMPEX® KTR 150

Stock programme

Finish bore [mm] according to ISO fit H7 / feather keyway with thread according to DIN 6885 sheet 1 - JS9																																			
Size	Hub design	un-/pilot bored	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				
7	1.1	●			●	●	●		●																										
	2.0	●		●	●	●	●	●	●																										
	2.0C	●																																	
9	1.0	●					●		●	●	●		●																						
	1.1	●			●	●	●		●	●			●																						
	2.0	●		●	●	●	●	●	●	●	●	●	●	●																					
	2.1	●					●			●	●		●																						
	2.0C	●																																	
12	1.0	●													●																				
	1.1	●																																	
	2.0	●			●	●	●	●		●	●		●	●	●																				
	2.1	●											●		●																				
	2.0C	●																																	
14	1.0	●					●			●	●		●	●	●	●	●	●																	
	1.1	●					●			●	●		●	●	●	●	●																		
	2.0	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	2.1	●								●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	2.0C	●								●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	6.0 light									●			●	●	●	●																			
	6.0 P															●																			
19	1.0	●											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
	2.5	●				■				●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	2.6	●								●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	2.0C	●									●		●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	6.0 light												●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	6.0 Steel													●				●		●															
	6.0 P37.5																	●																	
24	6.0 P																			●															
	1.0	●													●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	2.5	●									■				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	2.6	●													●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	2.8															●	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●	
	6.0 light															●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	6.0 Steel																			●			●	●	●	●	●	●	●	●	●	●	●	●	
28	6.0 P 50																							●											
	6.0 P																								●										
	1.0	●																		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	2.5	●																		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	2.6	●																	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	2.8																				●		●	●	●	●	●	●	●	●	●	●	●	●	
	6.0 light																			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
38	6.0 Steel																				●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	6.0 P																							●	●	●	●	●	●	●	●	●	●	●	
	1.0	●																			●			●	●	●	●	●	●	●	●	●	●	●	●
	2.5	●																						●		●	●	●	●	●	●	●	●	●	●
	2.6	●																			●			●	●	●	●	●	●	●	●	●	●	●	●
	2.8																					●		●	●	●	●	●	●	●	●	●	●	●	●
42	6.0 light																				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	6.0 Steel																					●	●	●	●	●	●	●	●	●	●	●	●	●	●
	6.0 P																							●	●	●	●	●	●	●	●	●	●	●	●

Taper bores for Fanuc motors: GS 19 1:10 Ø 11; GS 24 1:10 Ø 16

Finish bores [mm]																
Size	Hub design	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										●	●	●	●	●	●

■ = Pilot bored clamping hubs ● = Standard bore

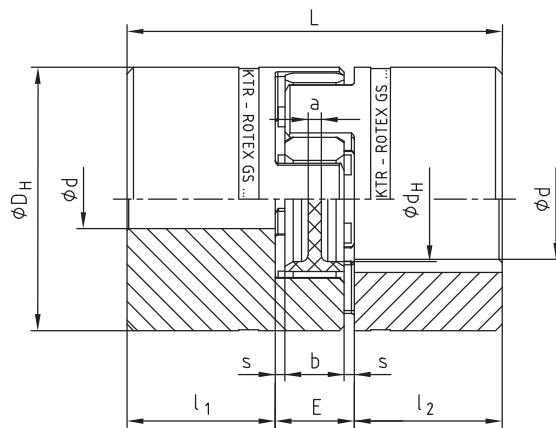
Unbored hubs up to size 65 available from stock.

Further dimensions on request

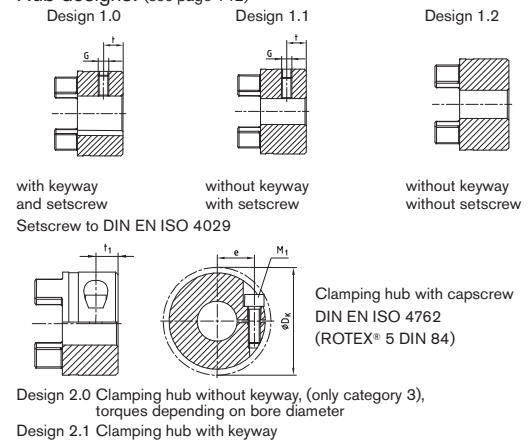
Miniature couplings



- Backlash-free shaft connections for measurement drive with small torques
- Small dimensions - low flywheel mass
- Maintenance-free, easy to check visually
- Different elastomer hardness of spiders
- Finish bore acc. to ISO fit H7 (apart from clamping hub), keyway, from Ø 6 mm acc. to DIN 6885 sheet 1 - JS9
-  Approved according to EC Standard 94/9/EC (without feather key according to category 3)



Hub designs: (see page 142)

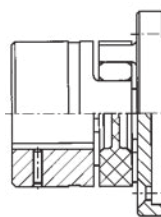


Size	Finish bore				Dimensions [mm]								Setscrew		Clamping screw					
	d _{min}	d _{max}	1.0	1.1, 1.2	2.0, 2.1	D _H	d _H	L	l ₁ : l ₂	E	b	s	a	G	t	M ₁	t ₁	e	ØD _K	T _A [Nm]
ROTEX® GS Aluminium (Al-H)																				
5	2	—	6	5	10	—	15	5	5	4	0,5	4,0	M2	2,5	M1,2	2,5	3,5	11,4	—	
7	3	7	7	7	14	—	22	7	8	6	1,0	6,0	M3	3,5	M2	3,5	5,0	16,5	0,37	
9	4	10	11	11	20	7,2	30	10	10	8	1,0	1,5	M4	5,0	M2,5	5,0	7,5	23,4	0,76	
12	4	12	12	12	25	8,5	34	11	12	10	1,0	3,5	M4	5,0	M3	5,0	9,0	27,5	1,34	
14	5	16	16	16	30	10,5	35	11	13	10	1,5	2,0	M4	5,0	M3	5,0	11,5	32,2	1,34	

Bore and the corresponding transmittable torques of the clamping hub design 2.0 [Nm]															
Size	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	
5	*	*	*	*											
7		0,8	0,9	0,95	1,0	1,1									
9			2,1	2,2	2,3	2,4	2,5	2,6	2,7	2,8					
12			3,6	3,8	4,0	4,1	4,3	4,5	4,7	4,8	5,0				
14				4,7	4,8	5,0	5,1	5,3	5,5	5,6	5,8	6,1	6,3	6,5	

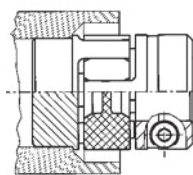
* Use of DIN 84 screw, tightening torque T_A not defined (slotted screw)

Other designs

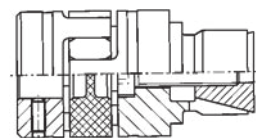


ROTEX® GS-CF

ROTEX® GS for hollow shaft connections



ROTEX® GS with interference fit hub



ROTEX® GS with expansion hub

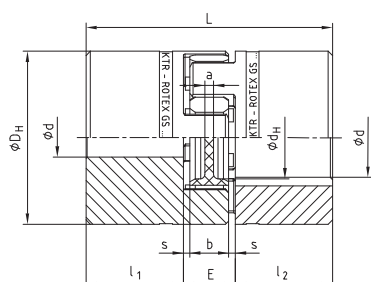
Order form:

ROTEX® GS 14	80 Sh A-GS	-d10	1.0	—	Ø 12	2.0	—	Ø 10
Coupling size	Spider hardness	Optional: Bore diameter in spider	Hub design	Finish bore	Hub design	Finish bore		

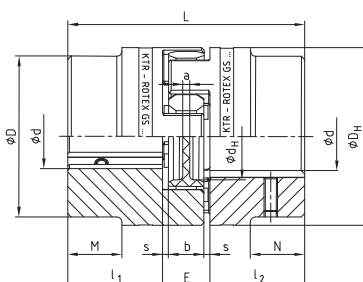
Standard types



- Backlash-free shaft connection under prestress for spindle drives, elevating platforms, machine tool drives, etc.
- Small dimensions - low flywheel mass
- Maintenance-free, easy to check visually
- Finish bore acc. to ISO fit H7 (apart from clamping hub), keyway, from Ø 6 mm acc. to DIN 6885 sheet 1 - JS9
- Approved according to EC Standard 94/9/EC (without feather key according to category 3)

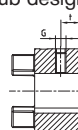


ROTEX® GS 5 - 38

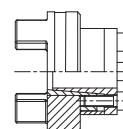


ROTEX® GS 42 - 75

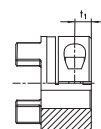
Hub designs: (see page 142)



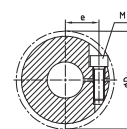
Design 1.0 with keyway and thread
1.1 without keyway, with thread



Design 4.2 with CLAMPEX® KTR 250



Design from size 19 as standard
2.5 double slot, without keyway (only for category 3)
2.6 double slot with keyway



Design 2.5 Torque depending on bore diameter

Size	un-bored	Finish bores				Dimensions [mm]										Setscrew		Clamping screw				
		d _{min.}	1.0, 1.1 d _{max.}	2.5 d _{max.}	2.6 ¹⁾ d _{max.}	D	D _H	d _H	L	l ₁ , l ₂	M, N	E	b	s	a	G	t	M ₁	t ₁	e	ØD _K	T _A [Nm]
ROTEX® GS Aluminium (Al-H)																						
19	●	6	24	24	24	–	40	18	66	25	–	16	12	2,0	3,0	M5	10	M6	11,0	14,5	46	10,5
24	●	8	28	28	28	–	55	27	78	30	–	18	14	2,0	3,0	M5	10	M6	10,5	20,0	57,5	10,5
28	●	10	38	38	38	–	65	30	90	35	–	20	15	2,5	4,0	M8	15	M8	11,5	25,0	73	25
38	●	12	45	45	45	–	80	38	114	45	–	24	18	3,0	4,0	M8	15	M8	15,5	30,0	83,5	25
ROTEX® GS Steel																						
42	●	14	55	50	45	85	95	46	126	50	28	26	20	3,0	4,0	M8	20	M10	18	32,0	93,5	69
48	●	15	62	55	55	95	105	51	140	56	32	28	21	3,5	4,0	M8	20	M12	21	36,0	105	120
55	●	20	74	68	68	110	120	60	160	65	37	30	22	4,0	4,5	M10	20	M12	26	42,5	119,5	120
65	●	22	80	70	70	115	135	68	185	75	47	35	26	4,5	4,5	M10	20	M12	33	45,0	124	120
75	●	30	95	80	80	135	160	80	210	85	53	40	30	5,0	5,0	M10	25	M16	36	51,0	147,5	295

Bores and the corresponding transmittable torques of the clamping hub design 2.5 [Nm]																						
Size	Ø8	Ø10	Ø11	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50
19	25	27	27	29	30	31	32	32	34	30 ²⁾	32 ²⁾											
24		34	35	36	38	38	39	40	41	42	43	45	46									
28				80	81	81	84	85	87	89	91	92	97	99	102	105	109					
38					92	94	97	98	99	102	104	105	109	112	113	118	122	123	126	130		
42									232	238	244	246	255	260	266	274	283	288	294	301	309	315
48												393	405	413	421	434	445	454	462	473	486	494
55															473	486	498	507	514	526	539	547
65																507	518	526	535	547	559	567
75																			1102	1124	1148	1163

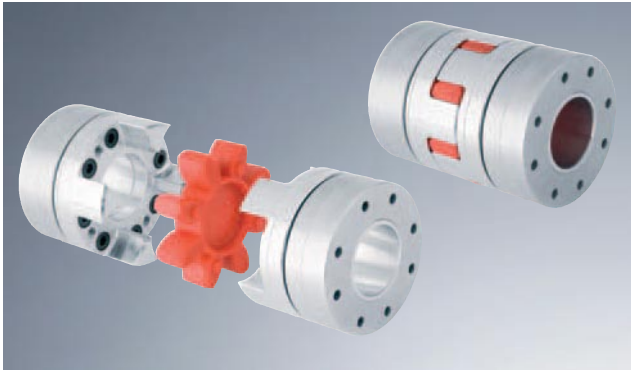
¹⁾ from Ø65 keyway opposite to the clamping screw

²⁾ clamping hub single slotted 2 x clamping screw M4 and dimension e=15

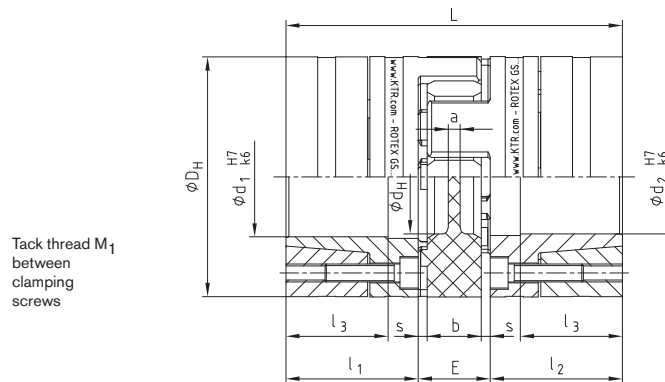
Order form:

ROTEX® GS 24	98 Sh A-GS	d20	2.5	—	Ø 24	1.0	—	Ø 20
Coupling size	Spider hardness	Optional: Bore diameter in spider	Hub design	Finish bore	Hub design	Finish bore		

Clamping ring hubs light



- Backlash-free shaft coupling with integrated clamping system
- As an example, use on feed/main spindles, drives on machine tools, handling units, etc.
- Low weight and low mass moment of inertia due to a design fully made from aluminium
- Easy assembly due to internal clamping screws and block assembly
- High friction torques
- High smoothness of running, application up to a peripheral speed of 50 m/s
- Approved according to EC Standard 94/9/EC



Size	Torque [Nm] ¹⁾				Dimensions [mm]										Clamping screws				Weight per hub with max. bore [kg]	Mass moment of inertia per hub with max. bore [kgm²]
	92 Sh A		98 Sh A		D _H ²⁾	d _H	L	l ₁ ; l ₂	l ₃	E	b	s	a	M	numberz	T _A [Nm]	M ₁			
	T _{KN}	T _{Kmax}	T _{KN}	T _{Kmax}																
Hub material – Aluminium (Al-H) Clamping ring material – Aluminium (Al-H)																				
14	7,5	15	12,5	25	30	10,5	50	18,5	13,5	13	10	1,5	2,0	M3	4	1,34	M3	0,032	0,04 x 10 ⁻⁴	
19	10	20	17	34	40	18	66	25	18	16	12	2,0	3,0	M4	6	3	M4	0,077	0,19 x 10 ⁻⁴	
24	35	70	60	120	55	27	78	30	22	18	14	2,0	3,0	M5	4	6	M5	0,162	0,78 x 10 ⁻⁴	
28	95	190	160	320	65	30	90	35	27	20	15	2,5	4,0	M5	8	6	M5	0,240	1,70 x 10 ⁻⁴	
38	190	380	325	650	80	38	114	45	35	24	18	3,0	4,0	M6	8	10	M6	0,490	5,17 x 10 ⁻⁴	
42	265	530	450	900	95	46	126	50	35	26	20	3,0	4,0	M8	4	25	M8	0,772	11,17 x 10 ⁻⁴	
48	310	620	525	1050	105	51	140	56	41	28	21	3,5	4,0	M10	4	49	M10	1,066	18,81 x 10 ⁻⁴	

¹⁾ Please note coupling selection on pages 141/142. ²⁾ ØD_H + 2 mm with high speeds for expansion of spider

Bore d ₁ /d ₂ and the corresponding transmittable friction torques T _R of clamping ring hub in [Nm] ¹⁾																					
Size	Ø6	Ø10	Ø11	Ø14	Ø15	Ø16	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55
14	5,4	7,5	11,3	24,7																	
19		17	20	41	49	36	56	64													
24				47	57	67	98	110	127	139	175										
28							121	133	201	219	248	285	253	307	329						
38								203	304	331	394	452	453	543	550	609	669	629	706		
42											444	508	535	638	692	763	754	858	964	976	
48												572	638	762	842	929	943	1074	1208	1136	1336

The transmittable torques of the clamping connection consider the max. clearance with shaft fit k6 / bore H7. With bigger clearance the torque is reduced.

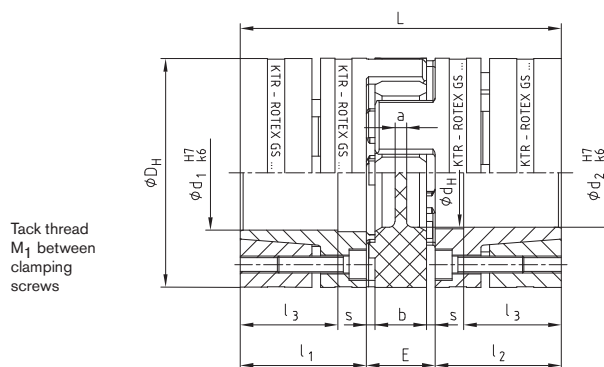
As shaft material – steel or spheroidal iron with a yield point of approx. 250 N/mm² or more can be used. For the stiffness calculation of the shaft/hollow shaft see KTR standard 45510 at our homepage www.ktr.com.

Order form:	ROTEX® GS 24		98 Sh A-GS		d20		6.0 light		– Ø 24		6.0 light		– Ø 20	
	Coupling size		Spider hardness		Optional: Bore diameter in spider		Hub design		Finish bore		Hub design		Finish bore	

Clamping ring hubs steel



- Backlash-free shaft coupling with integrated clamping system
- As an example, use on gearboxes and other drives with high torque shocks
- High smoothness of running, application up to a peripheral speed of 40 m/s
- For high friction torques (consider the selection in case of explosion protection use)
- Easy to assemble due to internal clamping screws
- Finish bore up to Ø 50 mm according to ISO fit H7, from Ø 55 mm according to ISO fit G7
- Approved according to EC Standard 94/9/EC



Size	Torques [Nm] ¹⁾				Dimensions [mm]										Clamping screws				Weight per hub with max. bore [kg]	Mass moment of inertia per hub with max. bore [kgm ²]
	98 Sh A		64 Sh D																	
	T _{KN}	T _{Kmax}	T _{KN}	T _{Kmax}	D _H ³⁾	d _H	L	l ₁ ; l ₂	l ₃	E	b	s	a	M	numberz	T _A [Nm]	M ₁			
Hub and clamping ring material – Steel (St-H)																				
19	17	34	21	42	40	18	66	25	18	16	12	2,0	3,0	M4	6	4,1	M4	0,179	0,44 x 10 ⁻⁴	
24	60	120	75	150	55	27	78	30	22	18	14	2,0	3,0	M5	4	8,5	M5	0,399	1,91 x 10 ⁻⁴	
28	160	320	200	400	65	30	90	35	27	20	15	2,5	4,0	M5	8	8,5	M5	0,592	4,18 x 10 ⁻⁴	
38	325	650	405	810	80	38	114	45	35	24	18	3,0	4,0	M6	8	14	M6	1,225	12,9 x 10 ⁻⁴	
42	450	900	560	1120	95	46	126	50	35	26	20	3,0	4,0	M8	4	35	M8	2,30	31,7 x 10 ⁻⁴	
48	525	1050	655	1310	105	51	140	56	41	28	21	3,5	4,0	M10	4	69	M10	3,08	52,0 x 10 ⁻⁴	
55	685	1370	825	1650	120	60	160	65	45	30	22	4,0	4,5	M10	4	69	M10	4,67	103,0 x 10 ⁻⁴	
65	940 ²⁾	1880 ²⁾	1175	2350	135	68	185	75	55	35	26	4,5	4,5	M12	4	120	M12	6,70	191,0 x 10 ⁻⁴	
75	1920 ²⁾	3840 ²⁾	2400	4800	160	80	210	85	63	40	30	5,0	5,0	M12	5	120	M12	9,90	396,8 x 10 ⁻⁴	

¹⁾ Please note coupling selection on pages 141/142 ²⁾ Figures for 95 Sh A - GS ³⁾ ØD_H + 2 mm with high speeds for expansion of spider

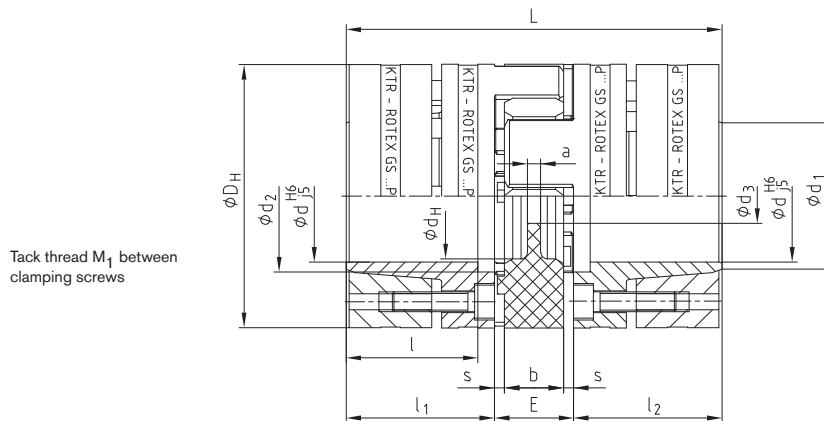
Bores d ₁ /d ₂ and the corresponding transmittable friction torques T _R of clamping ring hub in [Nm] ¹⁾																								
Size	Ø10	Ø11	Ø14	Ø15	Ø16	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55	Ø60	Ø65	Ø70	Ø80
19	27	32	69	84	57	94	110																	
24			70	87	56	97	114	116	133	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									358	398	483	416	547	536	625	571	704	851	865					
48											616	704	899	896	1030	962	1160	1379	1222	1543				
55													863	856	991	918	1119	1110	1247	1277	1672	1605	2008	
65															1446	1355	1637	1635	1827	1887	2429	2368	2930	
75																1710	2053	2059	2294	2384	3040	2983	3664	4293

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

Order form:

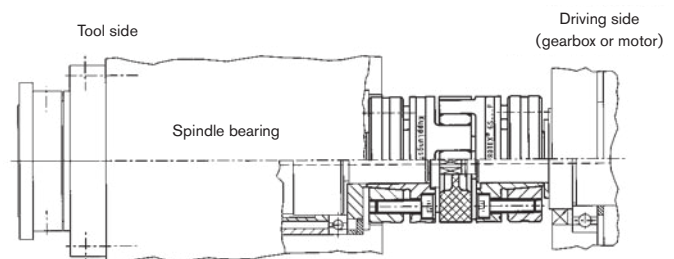
ROTEX® GS 24	98 Sh A-GS	d20	6.0 Steel	Ø24	6.0 Steel	Ø20
Coupling size	Spider hardness	Optional: Bore diameter in spider	Hub design	Finish bore	Hub design	Finish bore

- Backlash-free, highly accurate shaft coupling with integrated clamping system
- Developed specifically for stub spindles on multiple spindle heads according to DIN 69002
- Application on main spindle drives with high speeds, peripheral speeds of 75 m/s and more (please consult with KTR Engineering Department)
- For high friction torques (consider the selection in case of explosion protection use)
- Easy to assemble to due internal clamping screws
-  Approved according to EC Standard 94/9/EC



¹⁾ * Standard spindle shaft diameter. ²⁾ Please note coupling selection on pages 141/142. ³⁾ Ø D_H + 2 mm with higher speed for expansion of spider.
For the stiffness calculation of the shaft/hollow shaft see KTR standard 45510 at our homepage www.ktr.com.

Selection for stub spindles						
Spindle drive	ROTEX® GS P Size	Dimensions				
		d	D _H	l ₁ , l ₂	L	E
25 x 20	14 P	14	32	18,5	50	13
32k x 25	19 P37,5	16	37,5	25	66	16
32g x 30	19 P	19	40	25	66	16
40 x 35	24 P50	24	50	30	78	18
50 x 45	24 P	25	55	30	78	18
63 x 55	28 P	35	65	35	90	20



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

Order form:	ROTEX® GS 24	P	98 Sh A-GS	6.0 - Ø25		6.0 - Ø25	
	Coupling size	Type	Spider hardness	Hub design	Finish bore	Hub design	Finish bore

Compact



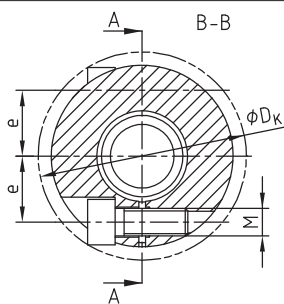
- Up to 1/3 shorter
- High performance

Design with axial slot, patent pending

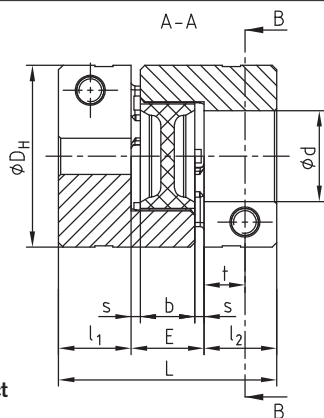
- Good concentric running properties
- Uniform power transmission due to cams without slots
- Improved balancing quality

- Finish bore from Ø 6 mm also available with feather key acc. To DIN 6885 sheet 1 – JS9

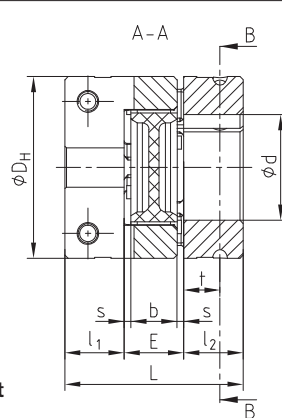
- Approved according to EC Standard 94/9/EC (without feather key according to category 3)



ROTEX® GS 7 - 19 Compact
single slotted design 2.0



ROTEX® GS 24 - 38 Compact
axially slotted design 2.8



ROTEX® GS Compact Hub material - Aluminium (Al-H)															
Size	Torque [Nm]			Dimensions [mm]											
	92Sh A	98Sh A	64Sh D	d _{max}	D _H	D _K	L	l ₁ , l ₂	E	b	s	t	e	M	T _A [Nm]
7	1,2	2,0	2,4	7	14	16,6	18	5	8	6	1	2,5	5,0	M2	0,37
9	3,0	5,0	6	9	20	21,3	24	7	10	8	1	3,5	6,7	M2,5	0,76
12	5,0	9,0	12	12	25	26,2	26	7	12	10	1	3,5	8,3	M3	1,34
14	7,5	12,5	16	16 ¹⁾	30	30,5	32	9,5	13	10	1,5	4,5	9,6	M4	2,9
19	10	17	21	24 ¹⁾	40	45,0	50	17	16	12	2	9	14,0	M6	10
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	16	30,5	M10	49

Bores and the corresponding transmittable torques of clamping hub design 2.0/2.8																										
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
7	0,8	0,9	1,0	1,0	1,1																					
9		1,9	2,0	2,1	2,2	2,3	2,4																			
12		3,4	3,6	3,7	3,9	4,1	4,2	4,4	4,6	4,7																
14			7,1	7,4	7,7	8,0	8,2	8,5	8,8	9,1	5,8 ¹⁾	5,9 ¹⁾	6,1 ¹⁾													
19						24,3	25,0	25,7	26,3	27,0	28,4	29,0	29,7	31,1	31,7	32,4	25,0 ¹⁾									
24								21	23	25	30	32	34	38	40	42	51	53	59	63	68					
28											54	58	62	70	74	78	93	97	109	116	124	136				
38												92	99	111	117	123	148	154	173	185	197	216	234	247	259	278

¹⁾ Size 14 with screw M3 (T_A=1,34 Nm) and dimension e=10.4, size 19 with screw M5 (T_A= 6 Nm) and dimension e=15.5

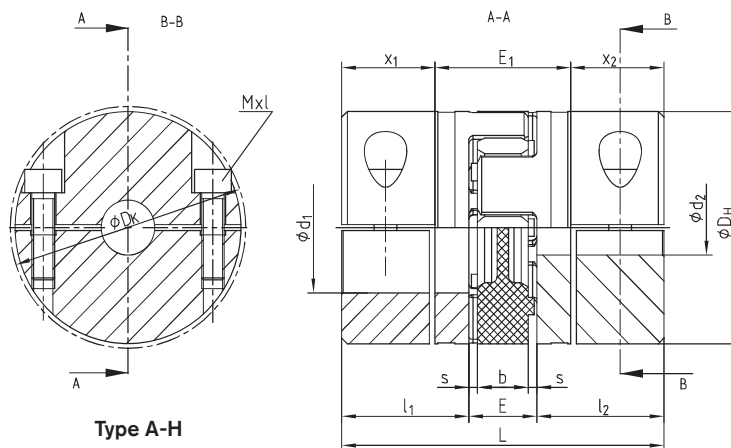
Order form:

ROTEX® GS 38	Compact	98 Sh A-GS	d28	2.8	-	Ø28	2.8	-	Ø45
Coupling size	Type	Spider hardness	Optional: Bore diameter in spider	Hub design	Finish bore	Hub design	Finish bore		

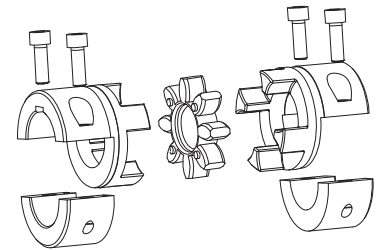
Drop-out center design coupling type A-H



- Backlash-free shaft connection under prestress
- Maintenance-free, easy to check visually
- Different elastomer hardness of spiders
- Assembly/disassembly by means of 4 screws only
- Exchange of spider with no need to shift the driving and driven side
- Finish bore according to ISO fit H7, keyway, from Ø 6 mm according to DIN 6885 sheet 1 - JS9
- Approved according to EC Standard 94/9/EC (type 7.8 shell clamping hub without feather key according to category 3)



Please note:
The feather keys are offset to each other by approx. 5°!
Hub material: Al-H
Hub design 7.8 shell clamping hub without keyway
Hub design 7.9 shell clamping hubs with keyway



ROTEX® GS Type A-H												
Size	Finish bore Ød _{max} [mm]	Dimensions [mm]									Cyl. screw DIN EN ISO 4762	
		L	l ₁ ; l ₂	E	b	s	D _H	D _K	x ₁ /x ₂	E ₁	MxL	T _A [Nm]
19	20	66	25	16	12	2,0	40	46	17,5	31	M6x16	10
24	28	78	30	18	14	2,0	55	57,5	22,0	34	M6x20	10
28	38	90	35	20	15	2,5	65	73	25,0	40	M8x25	25
38	45	114	45	24	18	3,0	80	83,5	33,0	48	M8x30	25
42	50	126	50	26	20	3,0	95	93,5	39	48	M10x30	49

Technical data																			
Size	Spider Shore -GS	Shore-range	Max. speed [rpm]	Torque [Nm]		Static torsion spring stiffness ¹⁾ [Nm/rad]	Weight of each hub with max. bore diame- tet [kg]	Mass moment of inertia of each hub with max. bore diameter [kgm ²]	Size	Spide r Shore -GS	Shore-range	Max. speed [rpm]	Torque [Nm]		Static torsion spring stiffness ¹⁾ [Nm/rad]	Weight of each hub with max. bore diame- tet [kg]	Mass moment of inertia of each hub with max. bore diameter [kgm ²]		
				T _{KN}	T _K max								T _{KN}	T _K max					
19	80	A	9550	4,9	9,8	618	77 x 10 ⁻³	19,6 x 10 ⁻⁶	38	92	A	4750				470 x 10 ⁻³	496 x 10 ⁻⁶		
	92	A		10,0	20,0	1090									190			380	6525
	98	A		17,0	34,0	1512									325			650	11800
	64	D		21,0	42,0	2560									405			810	26300
24	92	A	6950	35	70	2280	161 x 10 ⁻³	77,3 x 10 ⁻⁶	42	92	A	4000	265	530	10870	1770 x 10 ⁻³	2409 x 10 ⁻⁶		
	98	A		60	120	3640									450			900	21594
	64	D		75	150	5030									560			1120	36860
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													

¹⁾ static stiffness with 0,5 x T_{KN}

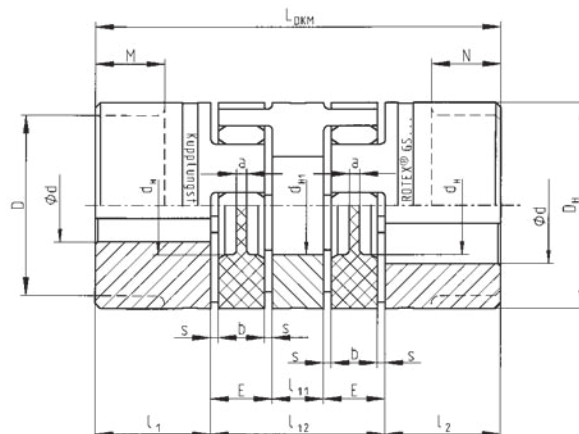
Bore and the corresponding transmittable torques of the Shell clamping hubwithout feather keyway [mm] design 7.8																							
Size	Ø8	Ø10	Ø11	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø46	Ø48	Ø50
19	17	21	23	30	32	34	38	40	42														
24			21	23	30	32	34	38	40	42	47	51	53	59									
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

Order form:	ROTEX® GS 38		A-H		98 Sh A-GS		7.8 - Ø 38		7.9 - Ø 30	
	Coupling size		Type		Spider hardness		Components		Finish bore	

Typ DKM (double cardanic)



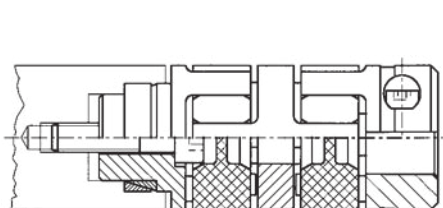
- Backlash-free, double cardanic shaft connection
- Double cardanic design allowing for absorption of larger radial displacements
- Axial plug-in ability - easy blind assembly
- Maintenance-free
- Simple to check visually
- Finish bore according to ISO fit H7 (apart from clamping hub), keyway, from Ø 6 mm according to DIN 6885 sheet 1 - JS9
- Approved according to EC Standard 94/9/EC



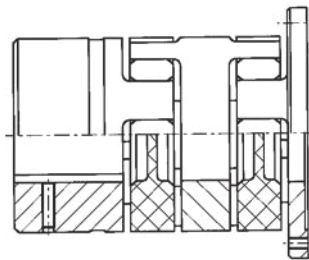
Size	Hub material - Aluminium (Al-H)						Spacer material - Aluminium (Al-H)								
	d _{max} ¹⁾	D	D _H	d _H	d _{H1}	l ₁ ; l ₂	M; N	l ₁₁	l ₁₂	L _{DKM}	E	b	s	a	
5	5	—	10	—	—	5	—	3	13	23	5	4	0,5	4,0	
7	7	—	14	—	—	7	—	4	20	34	8	6	1,0	6,0	
9	11	—	20	7,2	—	10	—	5	25	45	10	8	1,0	1,5	
12	12	—	25	8,5	—	11	—	6	30	52	12	10	1,0	3,5	
14	16	—	30	10,5	—	11	—	8	34	56	13	10	1,5	2,0	
19	24	—	40	18,0	18	25	—	10	42	92	16	12	2,0	3,0	
24	28	—	55	27,0	27	30	—	16	52	112	18	14	2,0	3,0	
28	38	—	65	30,0	30	35	—	18	58	128	20	15	2,5	4,0	
38	45	—	80	38,0	38	45	—	20	68	158	24	18	3,0	4,0	
Hub material - Steel						Spacer material - Aluminium (Al-H)									
42	55	85	95	46	46	50	28	22	74	174	26	20	3,0	4,0	
48	62	95	105	51	51	56	32	24	80	192	28	21	3,5	4,0	
55	74	110	120	60	60	65	37	28	88	218	30	22	4,0	4,5	

¹⁾ depend on hub design

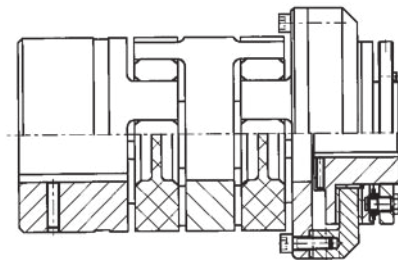
Other designs:



ROTEX® GS - DKM as hollow shaft design



ROTEX® GS - CF - DKM



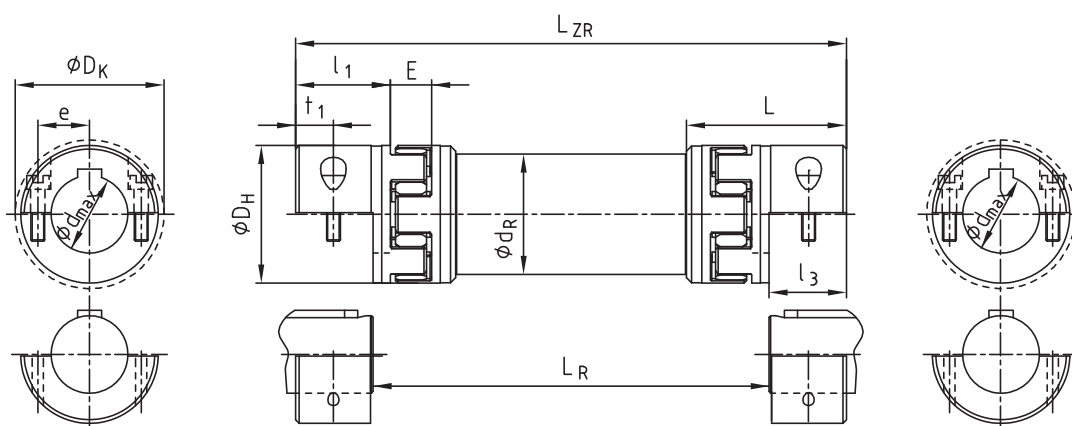
ROTEX® GS - DKM in combination with torque limiter KTR-RU

Order form:	ROTEX® GS 24	DKM	92 Sh A-GS	d25	1.0	- Ø38	2.5	- Ø25
	Coupling size	Type	Spider hard-ness	Optional: Bore diameter in spider	Hub design	Finish bore	Hub design	Finish bore

Intermediate shaft coupling



- Use with lifting machines, in handling units, robotic palletisers etc.
- Easy, radial coupling assembly because of split coupling hub
- Exchange of spiders without displacing the drive and driven side
- Lengths are possible up to 4 m without intermediate bearing dependent on speed and size
- Positive and frictionally engaged torque transmission
- Low mass moment of inertia due to use of aluminium
- Can be combined with other hub forms (clamping or clamping ring hubs, page 142)
- Finish bore according to ISO fit H7, keyway according to DIN 6885 sheet 1 - JS9



ROTEX® GS type ZR3																	
Size	Dimensions [mm]																
	Finish bore		General												Capscrew DIN EN ISO 4762		
	d _{min.}	d _{max.}	D _H	l ₁	L	l ₃	E	L _R		L _{ZR}		d _R	D _K	t ₁	e	8.8	T _A [Nm]
19	8	20	40	25	49,0	17,5	16	98	2965	133	3000	40	46	8,0	14,5	M6	10
24	10	28	55	30	59,0	22,0	18	113	3456	157	3500	50	57,5	10,5	20	M6	10
28	14	38	65	35	67,0	25,0	20	131	3950	181	4000	60	73	11,5	25	M8	25
38	18	45	80	45	83,5	33,0	24	163	3934	229	4000	70	83,5	15,5	30	M8	25
42	22	50	95	50	93,0	36,5	26	180	3927	253	4000	80	93,5	17,0	32	M10	49
48	22	55	105	56	100,0	39,5	28	202	3921	281	4000	100	105	18,5	36	M12	86

Technical data of type ZR3 with a spider 98 Sh-A-GS													
Size	Coupling torques [Nm]		Mass moment of inertia [10 ⁻³ kgm ²]			stat. torsion spring stiffness [Nm ² /rad]	Size	Coupling torques [Nm]		Mass moment of inertia [10 ⁻³ kgm ²]			stat. torsion spring stiffness [Nm ² /rad]
	T _{KN}	T _{K max.}	Hub ¹⁾	ZR-hub	Pipe/meter			T _{KN}	T _{K max.}	Nabe ¹⁾	ZR-Nabe	Rohr/Meter	
19	17	34	0,02002	0,01304	0,329	3243,6	38	325	650	0,50385	0,2572	2,972	29290,4
24	60	120	0,07625	0,04481	0,673	6631,8	42	450	900	1,12166	0,5523	4,560	44929,7
28	160	320	0,17629	0,10950	1,199	11814,1	48	525	1050	1,87044	1,1834	9,251	91158,2

Bores and the corresponding transmittable friction torques of split hub without keyway [mm] type 7.5																								
Size	Ø8	Ø10	Ø11	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø46	Ø48	Ø50	Ø55
19	17	21	23	30	32	34	38	40	42															
24		21	23	30	32	34	38	40	42	47	51	53	59											
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

¹⁾ At d_{max.}

²⁾ Torsional spring stiffness with an intermediate pipe of a length of 1 m, L_{pipe} being = L_{ZR} - 2 · L

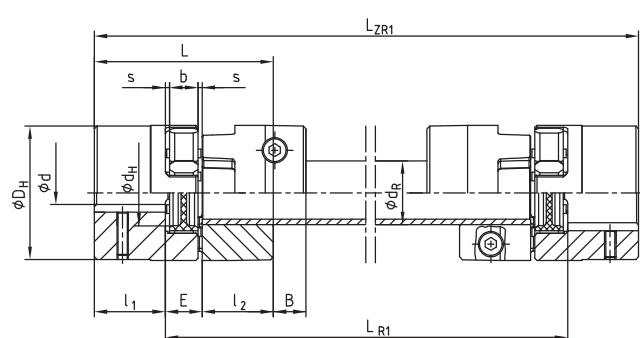
For enquiries and orders please mention the shaft distance dimension L_R along with the maximum speed to review the critical speed.

Order form:	ROTEX® GS 24		ZR3		1200 mm		98 Sh A-GS		7.5 - Ø24		7.5 - Ø24	
	Coupling size	Type	Shaft distance dimension (L _R)	Spider hardness	Hub design	Finish bore	Hub design	Finish bore				

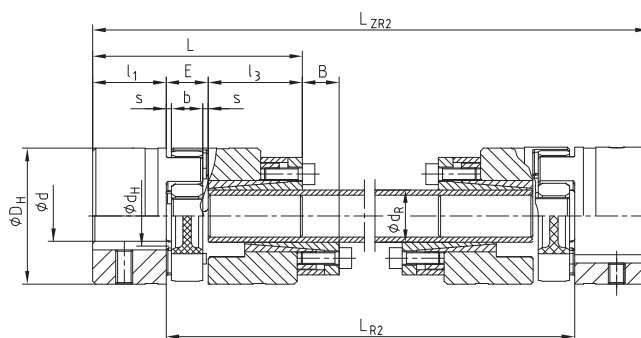
Intermediate shaft coupling



- Backlash-free intermediate shaft coupling
- Application, for example, on lifting spindle elements, parallel linear systems, overhead gantry robots, handling machines
- For connection of larger shaft distances and a maximum speed of 1500 rpm
- Spacer part to be disassembled radially
- Design ZR1 for torques up to the maximum friction torque of clamping hub, design ZR2 for higher torques
- Finish bore according to ISO fit H7 (apart from clamping hub), keyway, from Ø 6 mm according to DIN 6885 sheet 1 - JS9



Type ZR1



Type ZR2

ROTEX® GS Type ZR1													
Size	Finish bore	Dimensions [mm]								Cap screw DIN EN ISO 4762 – 8.8	Tightening torque	Friction torque	
	d _{max.} ¹⁾	D _H	l ₁ ; l ₂	L	E	b	s	B	L _{R1}				
14 ZR1	16	30	11	35	13	10	1,5	11,5	please mention for inquiries and orders	M3x12	1,34	6,1	
19 ZR1	24	40	25	66	16	12	2,0	14,0		M6x16	10,5	34	
24 ZR1	28	55	30	78	18	14	2,0	16,0		M6x20	10,5	45	
28 ZR1	38	65	35	90	20	15	2,5	17,5		M8x25	25	105	
38 ZR1	45	80	45	114	24	18	3,0	21,0		M8x30	25	123	

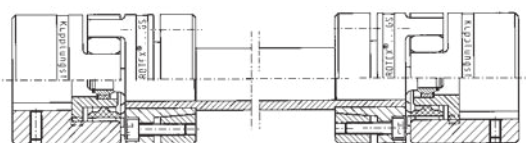
ROTEX® GS Type ZR2													
Size	Finish bore	Dimensions [mm]								Precision tube [mm]	Clamping set size	Clamping screws DIN EN ISO 4762- 12.9 μtot. = 0,14	Tightening torque T _A [Nm]
	max. d	D _H	l ₁ ; l ₂	l ₃	L	E	b	s	B				
14 ZR2	16	30	11	26	50	13	10	1,5	11,5	please mention for inquiries and orders	10x16	M4x10	5,2
19 ZR2	24	40	25	26	67	16	12	2,0	14,0		12x18	M4x10	5,2
24 ZR2	28	55	30	38	86	18	14	2,0	16,0		20x28	M6x18	17,0
28 ZR2	38	65	35	45	100	20	15	2,5	17,5		25x34	M6x18	17,0
38 ZR2	45	80	45	45	114	24	18	3,0	21,0		32x43	M6x18	17,0
42 ZR2	55	95	50	52	128	26	20	3,0	23,0		40x53	M6x18	17,0
48 ZR2	62	105	56	70	154	28	21	3,5	24,5		45x59	M8x22	41,0
55 ZR2	74	120	65	80	175	30	22	4,0	26,0		55x71	M8x22	41,0
65 ZR2	80	135	75	80	185	35	26	4,5	30,5		60x77	M8x22	41,0

¹⁾ For inquiries and orders please mention the shaft distance dimension L_{R1}/L_{R2} along with the maximum speed to review the critical whirling speed.

²⁾ Has to be remachined, if necessary

³⁾ Torsional spring stiffness with an intermediate pipe of a length of 1 m

Other designs:



ROTEX® ZRG with bearing for higher speeds

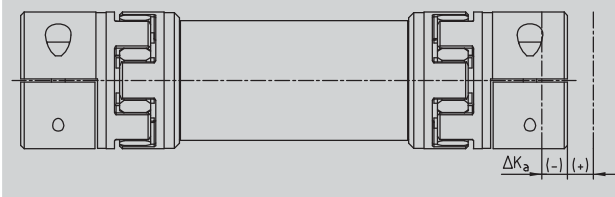


ROTEX® GS ZR for vertical assembly

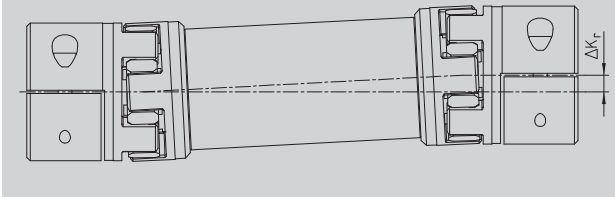
Order form:		ROTEX® GS 24	ZR1	1000 mm	98 Sh A-GS	1.0 - Ø24	2.5 - Ø24
Coupling size	Type	Shaft distance dimension (L _R)	Spider hardnes	Hub design	Finish bore	Hub design	Finish bore

Displacements and technical data

Axial displacements

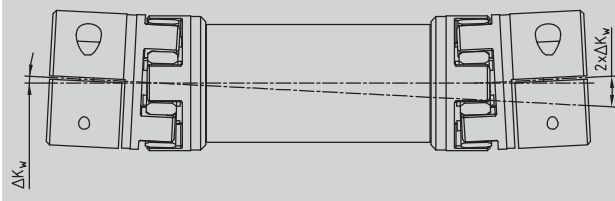


Radial displacements



$$\Delta K_r = (L_{ZR} - 2 \cdot l_1 - E) \cdot \tan \alpha$$

Angular displacements



Displacements intermediate shaft coupling

ROTEX® GS Size with 98Sh A-GS	Axial ΔK_a [mm]	Radial ΔK_r ¹⁾ [mm]	Angular α [degree]
14	+1,0 -1,0	15,16	0,9°
19	+1,2 -1,0	14,67	0,9°
24	+1,4 -1,0	14,48	0,9°
28	+1,5 -1,4	14,30	0,9°
38	+1,8 -1,4	13,92	0,9°
42	+2,0 -2,0	13,73	0,9°
48	+2,1 -2,0	13,51	0,9°
55	+2,2 -2,0	13,19	0,9°
65	+2,6 -2,0	12,80	0,9°

¹⁾ Radial displacements based on coupling length $L_{ZR} = 1000$ mm

Calculation of total torsion spring stiffness:

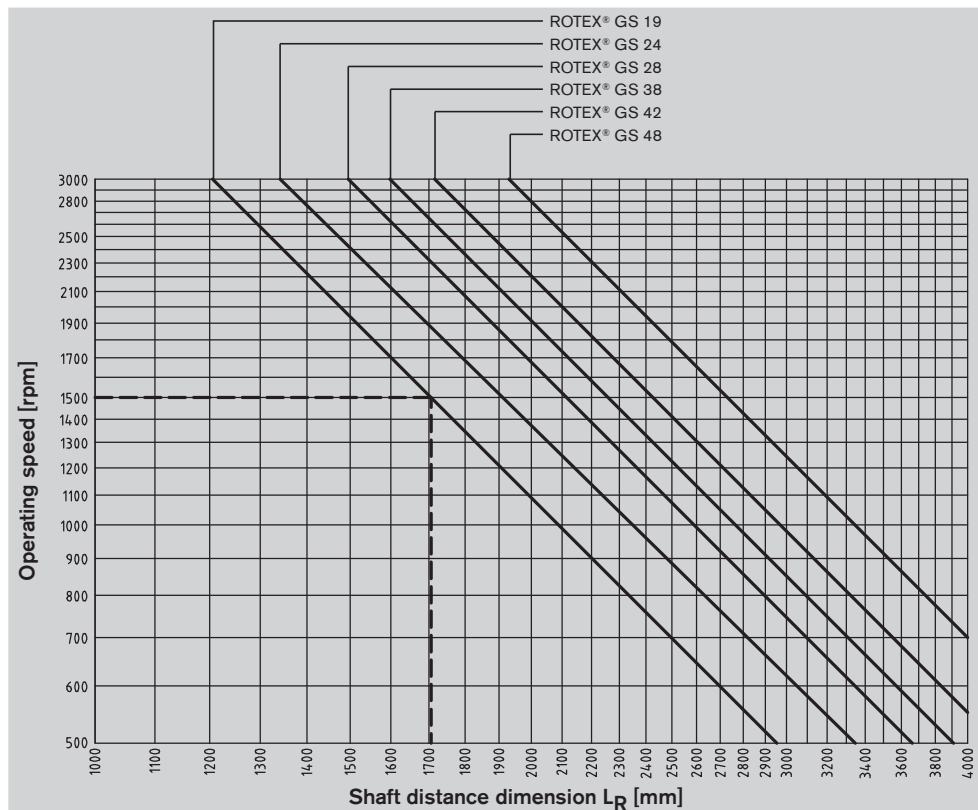
$$C_{\text{total}} = \frac{1}{2 \cdot \frac{1}{C_1} + \frac{L_{\text{pipe}}}{C_2}} \quad [\text{Nm/rad}]$$

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

C_1 = torsion spring stiffness for spider page 140

C_2 = from table page 152/153

Chart of critical speeds for design ZR3

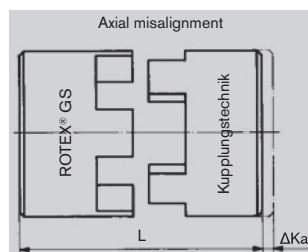


Example:

ROTEX® GS 19
Operating speed: 1500 rpm
Max. permissible shaft
distance dimension: 1700 mm
Operating speed = $n_{\text{krit}}/1,4$

Displacements

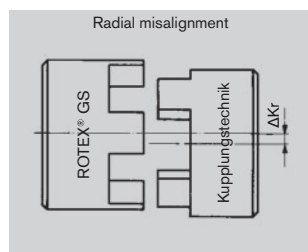
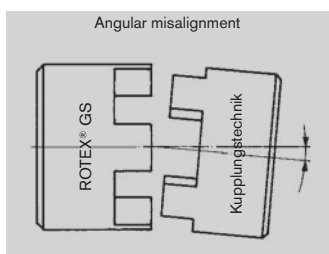
Due to its design the ROTEX® GS is able to absorb axial, angular and radial misalignment, without causing any wear or premature failure of the coupling. As the spider is only stressed under pressure it is ensured that the coupling will remain backlash-free even after a longer operation period.



As an example, axial misalignment may be produced by different tolerances of the connecting elements during the assembly or by alteration of the shaft length if fluctuation of temperature occurs. 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 misalignment and to keep the reaction forces low.

In case of pure angular misalignment the imagined bisecting lines of the shafts intersect in the middle of the coupling. Up to a certain permissible extent this displacement can be absorbed by the coupling without any danger of extensive restoring forces.



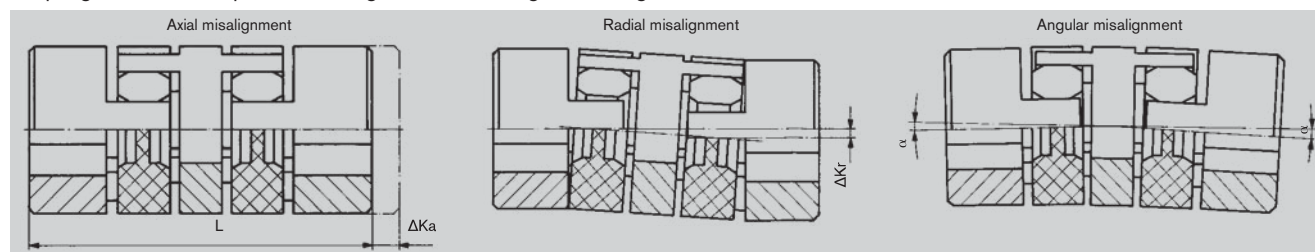
Radial misalignment results from parallel displacement of the shafts towards each other, caused by different tolerances at the centerings or by mounting of the power packs on different levels. Due to the kind of misalignment the largest restoring forces are produced here, consequently causing the highest

stresses for the adjacent components. In case of larger displacements (especially radial displacements) the ROTEX® GS DKM double cardanic design should be applied in order to avoid excessive restoring forces.

The above-mentioned permissible displacement figures of the flexible ROTEX® GS couplings are standard values, taking into account the coupling load up to the rated torque T_{KN} of the coupling and with an ambient temperature of + 30 °C. The displacement figures may, in each case, merely be used individually - if they occur simultaneously they may only be used proportionately. The ROTEX® GS-couplings are in a position to compensate for radial and angular displacements. Careful and accurate alignment of the shafts increases the service life of the coupling.

Shaft misalignment ROTEX® GS type DKM

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



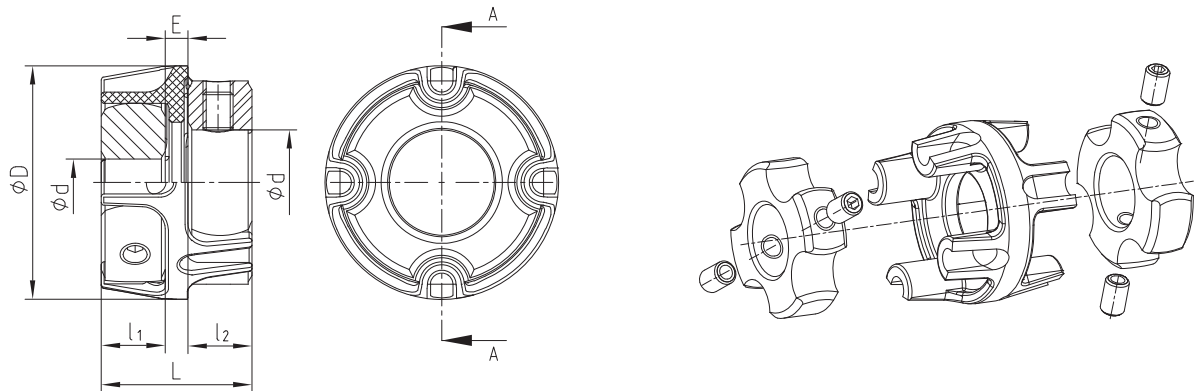
Displacements							
Size	Spider GS	Displacements standard			Displacements DKM		
		[mm] Axial ΔKa ¹⁾	[mm] Radial ΔKr	[degree] Angular α	[mm] Axial ΔKa ¹⁾	[mm] Radial ΔKr	[degree] Angular α
5	70 ShA		0,14	1,2°		0,17	1,2°
	80 ShA	+0,4	0,12	1,1°	+0,4	0,15	1,1°
	92 ShA	-0,2	0,06	1,0°	-0,4	0,14	1,0°
	98 ShA		0,04	0,9°		0,13	0,9°
7	80 ShA		0,15	1,1°		0,23	1,1°
	92 ShA	+0,6	0,10	1,0°	+0,6	0,21	1,0°
	98 ShA	-0,3	0,06	0,9°	-0,6	0,19	0,9°
	64 ShD		0,04	0,8°		0,17	0,8°
9	80 ShA		0,19	1,1°		0,29	1,1°
	92 ShA	+0,8	0,13	1,0°	+0,8	0,26	1,0°
	98 ShA	-0,4	0,08	0,9°	-0,8	0,24	0,9°
	64 ShD		0,05	0,8°		0,21	0,8°
12	80 ShA		0,20	1,1°		0,35	1,1°
	92 ShA	+0,9	0,14	1,0°	+0,9	0,32	1,0°
	98 ShA	-0,4	0,08	0,9°	-0,9	0,29	0,9°
	64 ShD		0,05	0,8°		0,25	0,8°
14	80 ShA		0,21	1,1°		0,40	1,1°
	92 ShA	+1,0	0,15	1,0°	+1,0	0,37	1,0°
	98 ShA	-0,5	0,09	0,9°	-1,0	0,33	0,9°
	64 ShD		0,06	0,8°		0,29	0,8°
19	80 ShA		0,15	1,1°		0,49	1,1°
	92 ShA	+1,2	0,10	1,0°	+1,2	0,45	1,0°
	98 ShA	-0,5	0,06	0,9°	-1,0	0,41	0,9°
	64 ShD		0,04	0,8°		0,36	0,8°
24	92 ShA		0,14	1,0°		0,59	1,0°
	98 ShA	+1,4	0,10	0,9°	+1,4	0,53	0,9°
	64 ShD	-0,5	0,07	0,8°	-1,0	0,47	0,8°
	72 ShD		0,04	0,7°		0,42	0,7°
28	92 ShA		0,15	1,0°		0,66	1,0°
	98 ShA	+1,5	0,11	0,9°	+1,5	0,60	0,9°
	64 ShD	-0,7	0,08	0,8°	-1,4	0,53	0,8°
	72 ShD		0,05	0,7°		0,46	0,7°
38	92 ShA		0,17	1,0°		0,77	1,0°
	98 ShA	+1,8	0,12	0,9°	+1,8	0,69	0,9°
	64 ShD	-0,7	0,09	0,8°	-1,4	0,61	0,8°
	72 ShD		0,06	0,7°		0,54	0,7°
42	92 ShA		0,19	1,0°		0,84	1,0°
	98 ShA	+2,0	0,14	0,9°	+2,0	0,75	0,9°
	64 ShD	-1,0	0,10	0,8°	-2,0	0,67	0,8°
	72 ShD		0,07	0,7°		0,59	0,7°
48	92 ShA		0,23	1,0°		0,91	1,0°
	98 ShA	+2,1	0,16	0,9°	+2,1	0,82	0,9°
	64 ShD	-1,0	0,11	0,8°	-2,0	0,73	0,8°
	72 ShD		0,08	0,7°		0,64	0,7°
55	92 ShA		0,24	1,0°		1,01	1,0°
	98 ShA	+2,2	0,17	0,9°	+2,2	0,91	0,9°
	64 ShD	-1,0	0,12	0,8°	-2,0	0,81	0,8°
	72 ShD		0,09	0,7°		0,71	0,7°
65	95ShA		0,18	0,9°			
	64 ShD	+2,6	0,13	0,8°			
	72 ShD	-1,0	0,10	0,7°			
75	95 ShA	+3,0	0,21	0,9°			
	64 ShD	-1,5	0,15	0,8°			

¹⁾ The Ka figures mentioned above have to be added to the length of the corresponding coupling type.

Double-cardanic for measuring drives



- Backlash-free shaft connections for measurement drive with small torques
- 3-parted double-cardanic coupling
- Small dimensions - low flywheel mass
- Axial plug-in – easy blind assembly
- Available from stock with usual shaft dimensions
- Temperatur range -40 °C to +160 °C
- Finish bore acc. to ISO fit H7, keyway from Ø 6 mm acc. to DIN 6885 sheet 1 - JS9



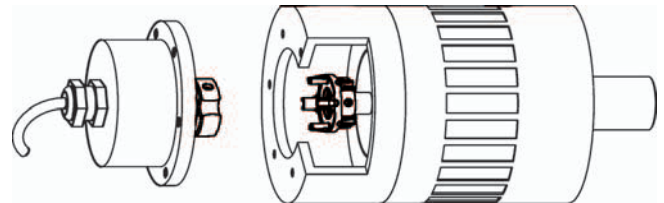
COUNTEX®												
Size	Torque [Nm]		Dimensions [mm]						Displacements			Torsional stiffness C_T [Nm/rad]
	T_{KN}	$T_{Kmax.}$	$d_{min.}$	$d_{max.}$	D	l_1/l_2	E	L	radial ΔK_r [mm]	axial ΔK_a [mm]	angular ΔK_w [°]	
6	0,3	0,6	2	6	15	4	4	12	0,05	-0,3/+0,6	0,36	48
14	1,0	2,0	5	14	30	8	4	20	0,12	-0,5/+1,0	0,57	235

General description

COUNTEX® is a three-parted, backlash-free and torsionally stiff coupling mainly used in measuring and control technology. Its axial plug-in ability combined with the geometry of hubs results in a coupling system with a specifically easy assembly offering options of mounting fitting with processing. 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.

Measuring and control technology

The measuring and control technology demands for a high torsion spring stiffness of the coupling in order to realize reproduceable positioning. The torques that arise are relatively low so that a backlash-free, torsional stiff power transmission is achieved subject to the prestress. The double-cardanic principle of COUNTEX® reduces the restoring forces to a minimum.

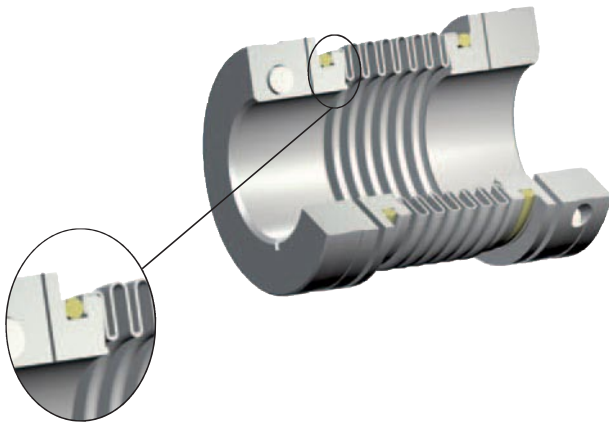


Order form:	COUNTEX® 14	Ø6,35	Ø10
	Coupling size	Finish bore Ød ₁	Finish bore Ød ₂

Coupling description

TOOLFLEX® is a metal bellow-type coupling, a coupling system which has proven its worth in the field in many cases. The metal bellow compensates perfectly 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 produced in eleven sizes for maximum torques up to 340 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 well-approved joint procedure a non-positive connection of the aluminium hubs with the multilayer bellows made from stainless steel is produced.

The flanged insert connection sizes 20 to 45 ensures a 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.

Moreover, it is resistant to influences of media or critical operating conditions, respectively

The well-known shaft-hub-connection by means of 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.



clamping hub with two slots

Types



Type M and S



Type KN



Type PI



Type CF

Coupling selection

Normally the TOOLFLEX® is selected according to the nominal torque (T_{KN}) shown in the list of technical data, like all other coupling systems. In all cases the torque (T_{KN}) must exceed the maximum torque to be transmitted (accelerating or peak torque). This should mainly be considered in connection with servo motors because their accelerating torques both positive and negative can exceed the nominal torque of the coupling by a significant amount. In case of values exceeding T_{KN} (collision, trouble) only limited alternating load figures are possible. In this torque range there can be permanent deformation of the bellow and fatigue fractures can occur. The torques T_{KN}/T_{Kmax} mentioned refer to the bellow. The shaft-hub-connection has to be investigated by the customer.

Description	Symbol	Definition or explanation
Rated torque of coupling	T_{KN}	Torque that can continuously be transmitted over the entire permissible speed range
Peak torque of machine	T_S	Peak torque on the coupling
Peak torque on the driving side	T_{AS}	Peak torque with torque shock on the driving side, e. g. breakdown torque of the electric motor
Peak torque of load side	T_{LS}	Peak torque with torque shock on load side, e. g. braking
Moment of inertia	$J_{A/L}$	Total of moments of inertia existing on the driving or load side referring to the coupling speed
Rotational inertia coefficient of driving side	m_A	Factor taking into account the mass distribution with shocks and vibrations produced on the driving side
Rotational inertia coefficient of load side	m_L	Factor taking into account the mass distribution with shocks and vibrations produced on the load side

Description	Symbol	Definition or explanation
max. engine performance	P_{max}	max. power in kW which the engine may produce
engine speed	n	Rated speed in rpm of the engine
Torsional angle	φ	Transmission error of the metal bellow due to torsional strain
Torsional stiffness	C_T	Torsional stiffness of the coupling in Nm/rad. For data see tables shown on the following pages.
Frequency of the 2-mass-system	f_e	in s^{-1}
Exciting frequency of the drive	f_r	in s^{-1}
Operating factor	k	$k = 1.5$ with uniform movement $k = 2.0$ with ununiform movement $k = 2.5 - 4$ with shocking movement For drives in machine tools (servo motors) k values of $1.5 - 2$ must be used.

Judgement calculation

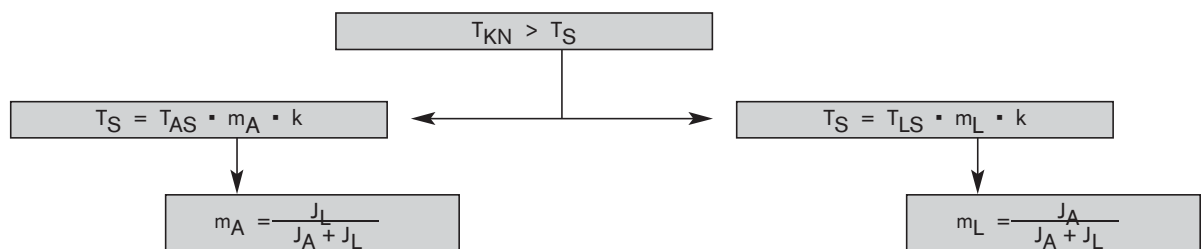
The size of the coupling must be selected so that the following conditions are met.

$$T_{KN} \geq T_{AS/LS} \cdot k$$

$$T_{AS} \text{ [Nm]} = 9550 \cdot \frac{P_{max} \text{ [kW]}}{n \text{ [rpm]}}$$

When selecting servo motors the calculations are made with the torque values of the engine suppliers and not with P_{max} . When dimensioning the coupling please use the respective data of the manufacturer considering the servo controller to be used.

Accelerating torque (drive side / load side)



Inspection of torsional stiffness

$$\varphi = \frac{180 \cdot T_{AS}}{\pi \cdot C_T}$$

Inspection of resonance frequency

The natural frequency of the coupling must be above or below the frequency of the unit. Valid for the mechanical spare model of the 2-mass-system:

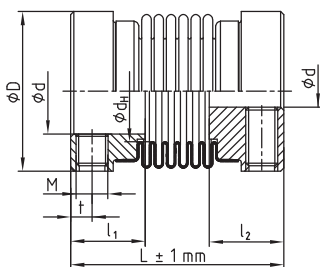
$$f_e = \frac{1}{2 \cdot \pi} \sqrt{C_T \cdot \left(\frac{J_L + J_A}{J_L \cdot J_A} \right)} \text{ [Hz]}$$

Valid in practice: $f_e \geq 2 \cdot f_r$

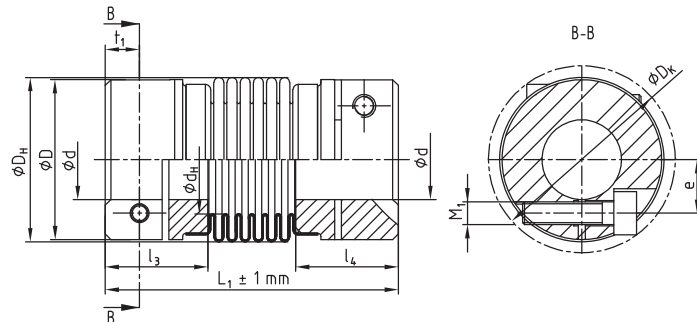
Miniature couplings



- Backlash-free, torsionally stiff
- Maintenance-free
- Low mass moment of inertia
- Easy assembly due to tolerance F7
- Temperature range - 30 °C to + 100 °C
- Finish bore from Ø 6 mm also available with feather key acc. To DIN 6885 sheet 1 – JS9



TOOLFLEX® Type 1.1



TOOLFLEX® Type 2.5

Technical data of type with fixing screw (type 1.1)

Size	Design ^{1/2)}	Torque T _{KN} [Nm]	Dimensions [mm]									Perm. displacements			Torsional stiffness C _T	Weight ⁴⁾
			Finish bore		General				Fixing screw							
			d _{min.}	d _{max.}	D _H	d _H	L	l ₁ ; l ₂	M	t	number ³⁾	Axial [mm]	Radial [mm]	Angular [degrees]	[Nm/rad]	[kg]
5	S	0,1	2	5	10	6	15 ¹⁾	6	M2	1,8	1	±0,30	0,10	0,7	97	0,0027
	M						17 ²⁾					±0,40	0,15	1,0	75	0,003
7	S	1,0	3	8	15	9	18 ¹⁾	7	M3	2,0	1	±0,30	0,10	0,7	390	0,005
	M						20 ²⁾					±0,40	0,15	1,0	300	0,006
9	S	1,5	4	10	20	12	21 ¹⁾	8	M3	2,2	2	±0,35	0,15	1,0	750	0,010
	M						24 ²⁾					±0,50	0,20	1,5	580	0,011
12	S	2,0	5	14	25	16	27,5 ¹⁾	11	M4	2,8	2	±0,40	0,15	1,0	1270	0,017
	M						31 ²⁾					±0,60	0,20	1,5	980	0,019
16	S	5,0	6	18	32	20	37 ¹⁾	13	M5	4	2	±0,30	0,15	1,0	4500	0,046
	M						41 ²⁾					±0,50	0,20	1,5	3050	0,049
20	S	15	6	25	40	27	42 ¹⁾	15	M5	5	2	±0,40	0,15	1,0	9600	0,076
	M						49 ²⁾					±0,60	0,20	1,5	6600	0,082

Circumferential speed $v_{max} = 25 \text{ m/s}$

Technical data of type with clamping screw (type 2.5)

Size	Design ^{1/2)}	Torque T _{KN} [Nm]	Dimensions [mm]											Perm. displacements			Torsional stiffness C _T [Nm/rad]	Weight ⁴⁾ [kg]
			Finish bore		General					Clamping screw				Axial [mm]	Radial [mm]	Angular [degrees]		
			d _{min.}	d _{max.}	D _H	d _H	L ₁	l ₃ ; l ₄	M ₁	t ₁	e	D _K	T _A [Nm]					
7	S	1,0	3	7	15	9	24 ¹⁾	9	M2	3,2	5,0	16,5	0,37	±0,30	0,10	0,7	390	0,007
	M						26 ²⁾							±0,40	0,15	1,0	300	0,008
9	S	1,5	3	9	20	12	29 ¹⁾	11	M2,5	3,5	7,1	21,5	0,76	±0,35	0,15	1,0	750	0,014
	M						32 ²⁾							±0,50	0,20	1,5	580	0,015
12	S	2,0	4	12	25	16	34,5 ¹⁾	13	M3	4,0	8,5	26,5	1,34	±0,40	0,15	1,0	1270	0,025
	M						38 ²⁾							±0,60	0,20	1,5	980	0,027

Bore range and respective torques of frictional engagement of the clamping hub type 2.5 [Nm]

Size	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	Ø9	Ø10	Ø11	Ø12
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

¹⁾ Design S = 4 shafts ²⁾ Design M = 6 shafts ³⁾ Quantity each hub, from size 9: 2x120° offset

⁴⁾ Figures refer to the complete coupling with max. bores

Circumferential speed $v_{max} = 20 \text{ m/s}$

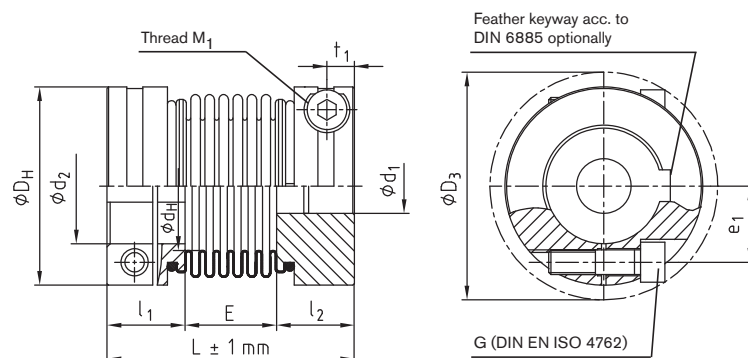
Order form:

TOOLFLEX® 7 M	2.5	-	Ø4	2.5	-	Ø6
Coupling size	Hub design	Finish bore	Hub design	Finish bore		

Type M



- Backlash-free, torsionally stiff
- Non-positive bellow-hub connection
- Frictionally engaged clamping hubs
- Maintenance-free
- Suitable for high temperatures due to flanged insert connection (max. 200 °C)
- Well-resistant to corrosion due to bellow made from stainless steel and aluminium clamping hubs
- Finish bore from Ø 6 mm also available with feather key acc. To DIN 6885 sheet 1 – JS9



TOOLFLEX Type M												
Size	Dimensions [mm]											
	Finish bore		General					Clamping screws				
	d _{min.}	d _{max.}	L	l ₁ : l ₂	E	D _H	d _H	M ₁	D ₃	t ₁	e ₁	T _A [Nm]
16	5	16	49	17,0	15	32	20	M4	35,0	5	12,0	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 ³⁾	20	55	125	40,0	45	100	73	M12	106,0	14	37	120

Technical data										
Size	Torque T _{KN} [Nm]	Speed n ¹⁾ [rpm]	Moment of inertia ²⁾ [x10 ⁻⁴ kgm ²]	Torsional stiffness C _T [Nm/rad]	Axial spring stiffness [N/mm]	Radial spring stiffness [N/mm]	Perm. displacements			Mass ²⁾ [x10 ⁻³ kg]
							Axial [mm]	Radial [mm]	Angular [degrees]	
16	5	14900	10	3050	29	92	±0,5	0,20	1,5	61
20	15	11950	32	6600	42	126	±0,6	0,20	1,5	144
30	35	8700	123	14800	65	155	±0,8	0,25	2,0	306
38	65	7350	262	24900	72	212	±0,8	0,25	2,0	448
42	95	6820	427	36500	80	333	±0,8	0,25	2,0	520
45	150	5750	1020	64000	88	492	±1,0	0,30	2,0	1125
55 ³⁾	340	4800	5118	96100	107	598	±1,0	0,30	2,0	3300

Bore range and respective torques of frictional engagement of the clamping hub type 2.5 [Nm]																										
Size	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
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												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 ³⁾															397	401	413	421	429	442	454	462	470	482	502	523

¹⁾ With v = 25 m/s

²⁾ Figures refer to the complete coupling with max. bores

³⁾ Hubs from steel welded with bellow

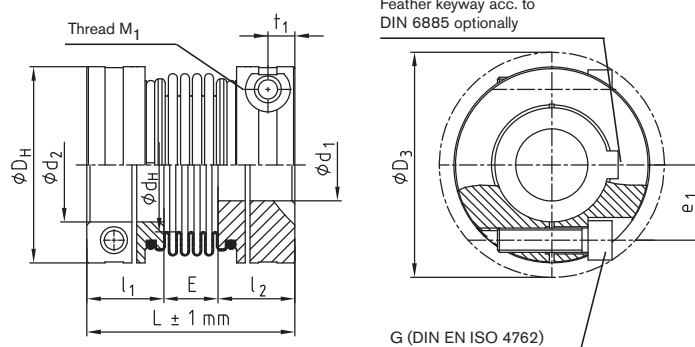
Order form:

TOOLFLEX® 30 M	Ø25	Ø30
Coupling size	Finish bore	Finish bore

Type S



- Short design
- Higher stiffness of torsion spring
- Lower mass moment of inertia
- Finish bore from Ø 6 mm also available with feather key acc. To DIN 6885 sheet 1 – JS9



TOOLFLEX Type S												
Size	Dimensions [mm]											
	Finish bore		General					Clamping screws				
	d _{min.}	d _{max.}	L	l ₁ : l ₂	E	D _H	d _H	M ₁	D ₃	t ₁	e ₁	T _A [Nm]
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 ³⁾	20	55	111	40,0	31	100	73	M12	106,0	14	37	120
Technical data												
Size	Torque T _{KN} [Nm]	Speed n ¹⁾ [rpm]	Moment of inertia ²⁾ [x10 ⁻⁶ kgm ²]	Torsional stiffness C _T [Nm/rad]	Axial spring stiffness [N/mm]	Radial spring stiffness [N/mm]	Perm. displacements			Mass ²⁾ [x10 ⁻³ kg]		
							Axial [mm]	Radial [mm]	Angular [degrees]			
16	5	14900	9	4500	43	138	±0,3	0,15	1,0	61		
20	15	11950	30	9600	63	189	±0,4	0,15	1,0	121		
30	35	8700	114	17800	97	233	±0,5	0,20	1,5	243		
38	65	7350	245	37400	108	318	±0,6	0,20	1,5	351		
42	95	6820	396	54700	120	499	±0,6	0,20	1,5	485		
45	150	5750	931	95800	132	738	±0,9	0,25	1,5	824		
55 ³⁾	340	4800	4996	144100	160	894	±1,0	0,25	1,5	3213		

¹⁾ With v = 25 m/s

²⁾ Figures refer to the complete coupling with max. bores

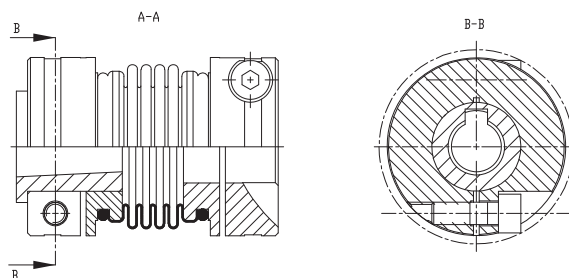
³⁾ Hubs from steel welded with bellow

Info:

Torques of frictional engagement of the clamping hub shown under Type M (page 160)

Other designs:

Type for FANUC-Motors

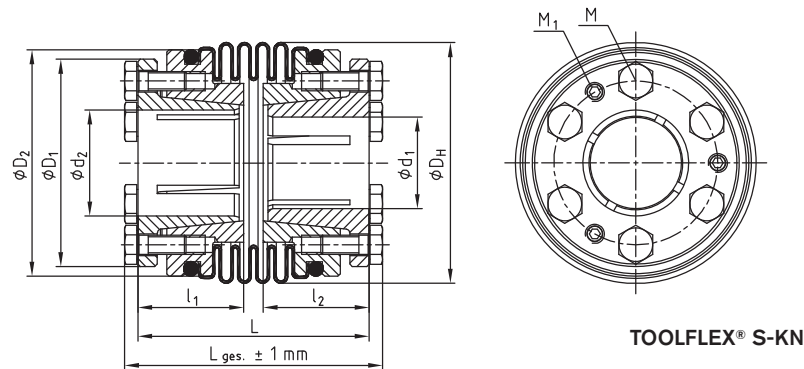


Order form:	TOOLFLEX® 30 S	Ø25	Ø30
	Coupling size	Finish bore	Finish bore

Type KN



- Backlash-free, torsionally stiff
- Non-positive bellow-hub connection
- High friction torques
- Maintenance-free
- Good properties of concentric running with high speeds
- Maximum speed up to 40 m/s circumferential speed



TOOLFLEX® S-KN

TOOLFLEX® Type KN																	
Size	Torque T_{KN} [Nm]	Dimensions [mm]															
		Finish bore		L		L _{ges.}		$l_1; l_2$	D_H	D_1	D_2	Clamping screw			Pull-off threads		
		d _{min.}	d _{max.}	4 shafts ¹⁾	6 shafts ²⁾	4 shafts ¹⁾	6 shafts ²⁾					M	T_A [Nm]	Number z	M_1	Number z	T_{A1} ⁴⁾ [Nm]
30	35	12	22	48	57	54	63	22	50	43	47	M4	2,9	12	M4	6	1,2
38	65	12	28	56	68	63	75	26	60,5	52	56	M5	6	12	M5	6	1,4
42	95	14	35	64	75	71	82	29	66	60	63	M5	6	12	M5	6	1,4
45	150	15	40	74,5	91	82,5	99	34	82	68	77	M6	14	12	M6	6	3
55 ³⁾	340	15	56	95,5	109	106	120	40	97	95	95	M8	35	12	M8	6	6

Bore range d and the corresponding transmittable torques T_R of frictional engagement of the clamping hub [Nm]																		
Size	Ø14	Ø15	Ø16	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55
30	50	58	66	71	79													
38		81	92	130	103	149	161	202										
42				105	117	168	131	164	189	215	257							
45					230	332	230	288	331	376	451	531	589					
55 ³⁾						483	606	696	792	792	585	690	764	843	967	1101	1194	1445

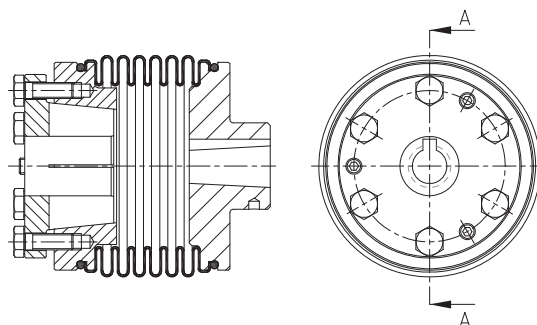
¹⁾ Design S = 4 shafts

²⁾ Design M = 6 shafts

³⁾ Hubs from steel welded with bellow

⁴⁾ After assembly of the clamping screws (M) tighten the pull-off thread (M_1) to the torque T_{A1} indicated.

Other designs: TOOLFLEX® KN for FANUC engines

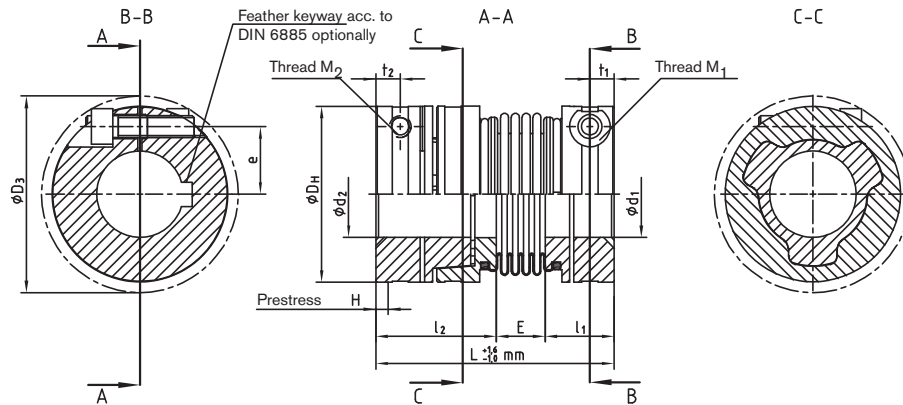


Order form:	TOOLFLEX® 38 S-KN		
	Coupling size	Finish bore	Finish bore
		Ø15	Ø22

Type PI



- Axial plug-in
- Backlash-free, torsionally stiff
- Maintenance-free
- Suitable for high temperatures due to flanged insert connection
- Well-resistant to corrosion due to bellow made from stainless steel and aluminium clamping hubs
- Optionally type M (6 shafts)
 - higher perm. displacements
- or Type S (4 shafts, short design)
 - higher stiffness of torsion spring
 - lower mass moment of inertia



Plug in metal bellow-type coupling type PI

Size	Design	Dimensions [mm]													
		General								Clamping screws					
		d ₁ ;d ₂ min.	d ₁ max.	d ₂ max.	L ¹⁾	l ₁	l ₂	E	D _H	H	M ₁ ;M ₂	D ₃	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
	M				74,0			19,0							
30	S	10	30	28	73,5	23,0	33,5	17,0	55	0,5 - 1	M6	58,0	19,0	7	10
	M				82,5			26,0							
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
	M				99,5			30,0							
42	S	14	42	42	93,0	30	39,0	24,0	70	0,5 - 1,5	M8	76,1	25,0	9	25
	M				104,0			35,0							
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
	M				112,5			39,0							

Technical data

Size	Design	Torque T _{KN} [Nm]	Speed n ³⁾ [min ⁻¹]	Moment of inertia ²⁾ [x10 ⁻⁶ kgm ²]	Torsional stiffness C _T [Nm/rad]	Axial spring stiffness [N/mm]	Radial spring stiffness [N/mm]	Perm. displacements		Mass ²⁾ [x10 ⁻³ kg]
								Radial [mm]	Angular [degrees]	
20	S	15	11950	37	9600	63	189	0,15	1,0	149
	M			38	6600	42	126	0,20	1,5	155
30	S	35	8700	140	17800	97	233	0,20	1,5	294
	M			145	14800	65	155	0,25	2,0	313
38	S	65	7350	329	37400	108	318	0,20	1,5	496
	M			346	24900	72	212	0,25	2,0	520
42	S	95	6820	396	54700	120	499	0,20	1,5	485
	M			427	36500	80	333	0,25	2,0	520
45	S	150	5750	1031	95800	132	738	0,25	1,5	930
	M			1127	64000	88	492	0,30	2,0	1000

Transmittable friction torque of clamping hubs $\varnothing d_1 / \varnothing d_2$

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									84,2	85,4	86,6	91,6	92,8	96,5	99,0	102				
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

¹⁾ When being plugged in

²⁾ Figures refer to the complete coupling with max. bores

³⁾ With v = 25 m/s

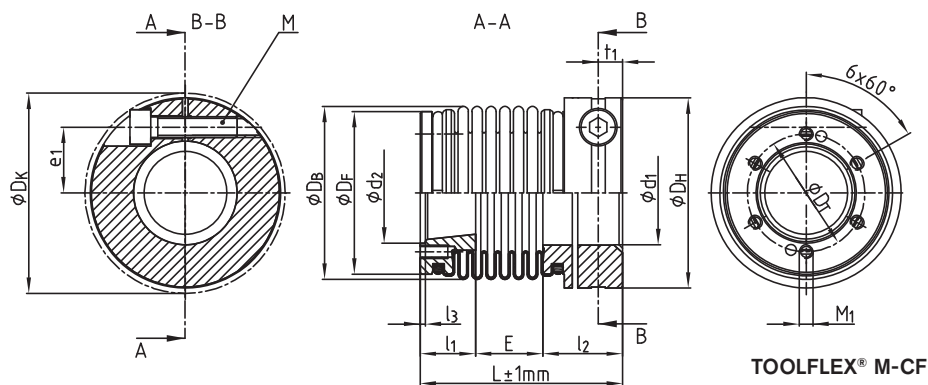
Order form:

TOOLFLEX® 30 PI-S	d ₁ - Ø22	d ₂ - Ø18
Coupling size	Finish bore	Finish bore

Type CF



- Backlash-free, torsionally stiff
- Maintenance-free
- Non-positive bellow-hub connection
- Suitable for high temperatures due to flanged insert connection (max. 200 °C)
- Available as type M (6 shafts) and S (4 shafts)



TOOLFLEX® Type M-CF and S-CF																		
Size	Finish bore		Dimensions [mm]									Clamping screw					Flange	
	min. d1	max. d1	D _H	D _B	D _F	d ₂ H7	l ₃	l ₁	l ₂	E	L	D _K	e ₁	t ₁	M	T _A	D _T	M ₁
30	10	20	55	50	47	25 29	1,5	16	23,0	17,0 ¹⁾ 26,0 ²⁾	56,0 ¹⁾ 65,0 ²⁾	58,0	19	7	M6	10	30 34	M4
38	14	38	65	60,5	55,75	29 36	1,5	18	25,5	18,0 ¹⁾ 30,0 ²⁾	61,5 ¹⁾ 73,5 ²⁾	72,6	25	9	M8	25	35 42	
42	14	42	70	66	62,95	36 43	1,5	21	30,0	24,0 ¹⁾ 35,0 ²⁾	75,0 ¹⁾ 86,0 ²⁾	76,1	27	9	M8	25	42 49	M5
45	14	45	83	82	77	38 49	1,5	23	32,0	22,5 ¹⁾ 39,0 ²⁾	77,5 ¹⁾ 94,0 ²⁾	89,0	30	11	M10	49	45 56	
55 ³⁾	20	55	100	97	95	51 68	1,5	28	40,0	31,0 ¹⁾ 45,0 ²⁾	99,0 ¹⁾ 113,0 ²⁾	106,0	37	14	M12	120	60 78	M8

Technical data

Size	Design	Torque T _{KN} [Nm]	Speed ⁴⁾ [rpm]	Torsional stiffness C _T [Nm/rad]	Axial spring stiffness [N/mm]	Radial spring stiffness [N/mm]	Perm. displacements		
							Axial [mm]	Radial [mm]	Angular [degrees]
30	S	35	8700	14800	97	233	±0,5	0,20	1,5
	M				65	155	±0,8	0,25	2,0
38	S	65	7350	24900	108	318	±0,6	0,20	1,5
	M				72	212	±0,8	0,25	2,0
42	S	95	6820	36500	120	499	±0,6	0,20	1,5
	M				80	333	±0,8	0,25	2,0
45	S	150	5750	64000	132	738	±0,9	0,25	1,5
	M				88	492	±1,0	0,30	2,0
55 ³⁾	S	340	4800	96100	160	894	±1,0	0,25	1,5
	M				107	598	±1,0	0,30	2,0

Bore range and respective torques of frictional engagement of the clamping hub [Nm]

Size	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø50	Ø55
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							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 ³⁾										397	401	413	421	429	442	454	462	470	482	502	523

¹⁾ Design S = 4 shafts

²⁾ Design M = 6 shafts

³⁾ Hubs from steel welded with bellow

⁴⁾ With v= 25m/s

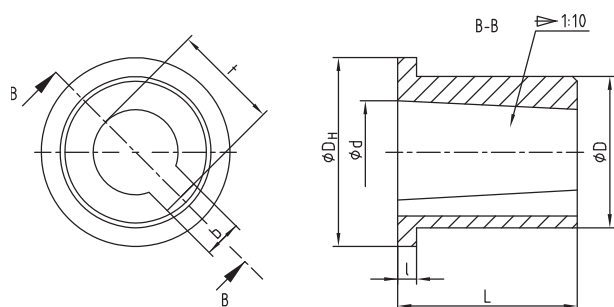
Order form:

TOOLFLEX® 38 M-CF	Ø15	Ø29 - Ø35 - 6xM5
Coupling size	Finish bore	Dimensions flange (d ₂ - D _T - M ₁)

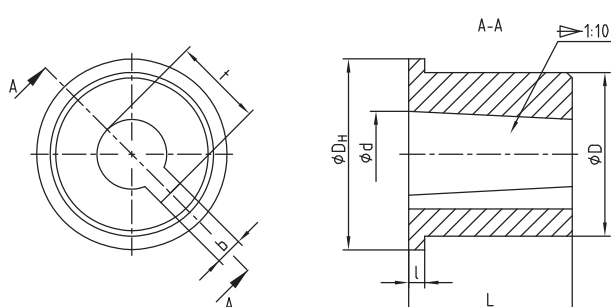
Basic programme

Basic programme TOOLFLEX® miniature (Finish bore [mm] according to ISO fit F7)																
Size	Hub design	Ø2	Ø3	Ø4	Ø5	Ø6	Ø6,35	Ø7	Ø8	Ø9	Ø9,52	Ø10	Ø11	Ø12	Ø14	Ø16
5	1.1	●	●	●	●	●										
7	1.1		●	●	●	●		●	●							
	2.5		●	●	●	●	●	●								
9	1.1			●	●	●		●	●	●		●				
	2.5		●	●	●	●	●	●	●	●	●					
12	1.1				●	●		●	●	●		●		●	●	
	2.5			●	●	●	●		●	●		●	●	●	●	
16	1.1					●			●			●	●	●	●	
20	1.1					●			●			●	●	●	●	●

Basic programme TOOLFLEX® type M and S (Finish bore [mm] according to ISO fit F7)																														
Size		Ø5	Ø6	Ø6,35	Ø7	Ø8	Ø9	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55
16	■	●	●	●	●	●	●	●	●	●	●	●	●																	
20	■							●	●	●	●	●	●	●	●	●														
30	■										●	●	●	●	●	●	●	●	●	●	●									
38	■														●	●	●	●	●	●	●	●	●	●						
42	■														●	●	●	●	●	●	●	●	●	●	●	●	●			
45	■																●	●	●	●	●	●	●	●	●	●	●	●		
55	■																					●	●	●	●	●	●	●	●	



Size 1



Size 2

Type M and S sleeve dimensions [mm] for FANUC engines									
Sleeve size	L	l	D _H	D	d ^{+0,05}	b _{J59}	t ^{+0,1}	Taper	Notice
1	16	2	20	16	10,9	4	12,2	1:10	For TOOLFLEX® size 16-20
2	30	3	35	30	15,8	5	17,9	1:10	For TOOLFLEX® size 30-45

Basic programme TOOLFLEX® type KN (Finish bore [mm] according to ISO fit F7)																			
Size		Ø14	Ø15	Ø16	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48
30	■	●	●	●	●	●	●	●											
38	■	●	●	●	●	●	●	●	●	●	●								
42	■				●	●	●	●	●	●	●	●	●	●					
45	■				●	●	●	●	●	●	●	●	●	●	●				
55	■										●	●	●	●	●	●	●	●	●

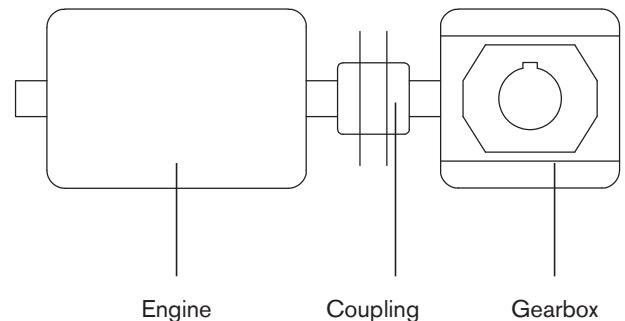
■ Pilot bore
Further dimensions on request

Coupling description

The RADEX®-NC is a line particularly developed for the servo technology. In this coupling a package of torsionally rigid steel laminae that are soft in bending ensures a reliable compensation for axial, angular and radial shaft displacements. As an all-metal coupling - the laminae are made from stainless steel - the RADEX®-NC can even be used with high temperatures (up to 200 °C) and under aggressive ambient conditions. The RADEX®-NC is manufactured in 7 sizes from size 5 to 42 for max. torques of up to 3690 Nm. The hubs are frictionally engaged clamping hubs made from aluminium (size 42 made from steel) and are thus backlash-free even in a reversing drive.



A typical application of the RADEX®-NC are backlash-free worm gear pairs with low transmissions. The rigidity of the coupling must be converted by reason of the transmission of the gearbox from the drive side to the driven side. Here the transmission itself has a decisive influence because it is squarely included in the calculation. This converted rigidity is added in line to the gearbox stiffness in order to get the total rigidity. In case of transmissions that are lower than $i = 8$ we recommend to use the RADEX®-NC due to the loss of rigidity of the total system if flexible couplings are used.



Explosion protection use

RADEX®-NC couplings are suitable for power transmission in drives in hazardous areas. The couplings are certified and confirmed according to EC standard 94/9/EC (ATEX 95) as units of category 2G/2D and thus suitable for the use in hazardous areas of zone 1, 2, 21 and 22. Please read through our information included in the respective Type Examination Certificate and the operating and mounting instructions at www.ktr.com.



Selection: In case of use in hazardous areas the clamping hubs without feather key, only for use in category 3 (with feather key for category 2), must be selected in a way 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.

Coupling selection

Normally the RADEX®-NC is selected according to the nominal torque (T_{KN}) shown in the list of technical data, like all other coupling systems. In all cases the torque (T_{KN}) must exceed the maximum torque to be transmitted (accelerating or peak torque). This should mainly be considered in connection with servo motors because their accelerating torques both positive and negative can exceed the nominal torque of the coupling by a significant amount. In case of values exceeding T_{KN} (collision, trouble) only limited alternating load figures are possible. The torques T_{KN}/T_{Kmax} mentioned refer to the laminae. The shaft-hub-connection has to be investigated by the customer.

Description	Symbol	Definition or explanation
Rated torque of coupling	T_{KN}	Torque that can continuously be transmitted over the entire permissible speed range
Peak torque of machine	T_S	Peak torque on the coupling
Peak torque on the driving side	T_{AS}	Peak torque with torque shock on the driving side, e. g. breakdown torque of the electric motor
Peak torque of load side	T_{LS}	Peak torque with torque shock on load side, e. g. braking
Moment of inertia	$J_{A/L}$	Total of moments of inertia existing on the driving or load side referring to the coupling speed
Rotational inertia coefficient of driving side	m_A	Factor taking into account the mass distribution with shocks and vibrations produced on the driving side
Rotational inertia coefficient of load side	m_L	Factor taking into account the mass distribution with shocks and vibrations produced on the load side

Description	Symbol	Definition or explanation
max. engine performance	$P_{max.}$	max. power in kW which the engine may produce
engine speed	n	Rated speed in rpm of the engine
Torsional angle	φ	Transmission error of the metal bellow due to torsional strain
Torsional stiffness	C_T	Torsional stiffness of the coupling in Nm/rad. For data see tables shown on the following pages
Frequency of the 2-mass-system	f_e	in s^{-1}
Exciting frequency of the drive	f_r	in s^{-1}
Operating factor	k	$k = 1.5$ with uniform movement $k = 2.0$ with ununiform movement $k = 2.5 - 4$ with shocking movement For drives in machine tools (servo motors) k values of $1.5 - 2$ must be used.

Judgement calculation

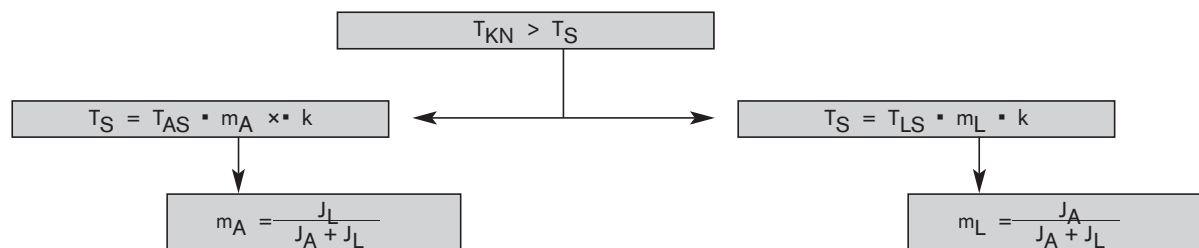
The size of the coupling must be selected so that the following conditions are met.

$$T_{KN} \geq T_{AS/LS} \cdot k$$

$$T_{AS} \text{ [Nm]} = 9550 \times \frac{P_{max} \text{ [kW]}}{n \text{ [rpm]}}$$

When selecting servo motors the calculations are made with the torque values of the engine suppliers and not with P_{max} . When dimensioning the coupling please use the respective data of the manufacturer considering the servo controller to be used.

Accelerating torque (drive side / load side)



Inspection of torsional stiffness

$$\varphi = \frac{180 \times T_{AS}}{\pi \times C_T}$$

Inspection of resonance frequency

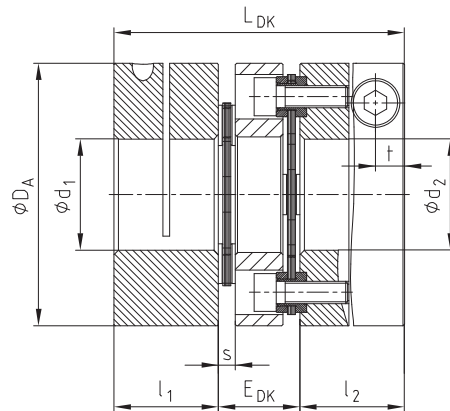
The natural frequency of the coupling must be above or below the frequency of the unit. Valid for the mechanical spare model of the 2-mass-system:

$$f_e = \frac{1}{2 \times \pi} \sqrt{C_T \cdot \frac{J_L + J_A}{J_L \times J_A}} \text{ [Hz]} \quad \text{Valid in practice: } f_e \geq 2 \cdot f_r$$

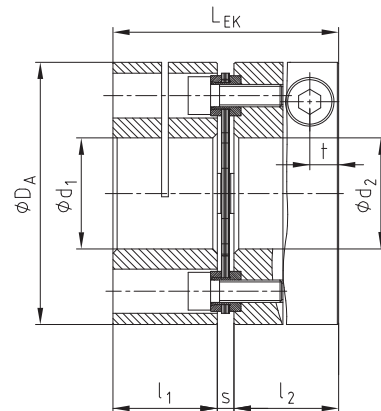
Standard types



- Backlash-free torque transmission
- Higher torsional rigidity
- Backlash-free shaft-hub-connection
- Low mass moment of inertia
- High speeds
- Operating temperature up to 200 °C
- Compact type
- Finish bore from Ø 6 mm also available with feather key acc. To DIN 6885 sheet 1 – JS9
-  Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95) (without feather key only for category 3)



Type DK



Type EK

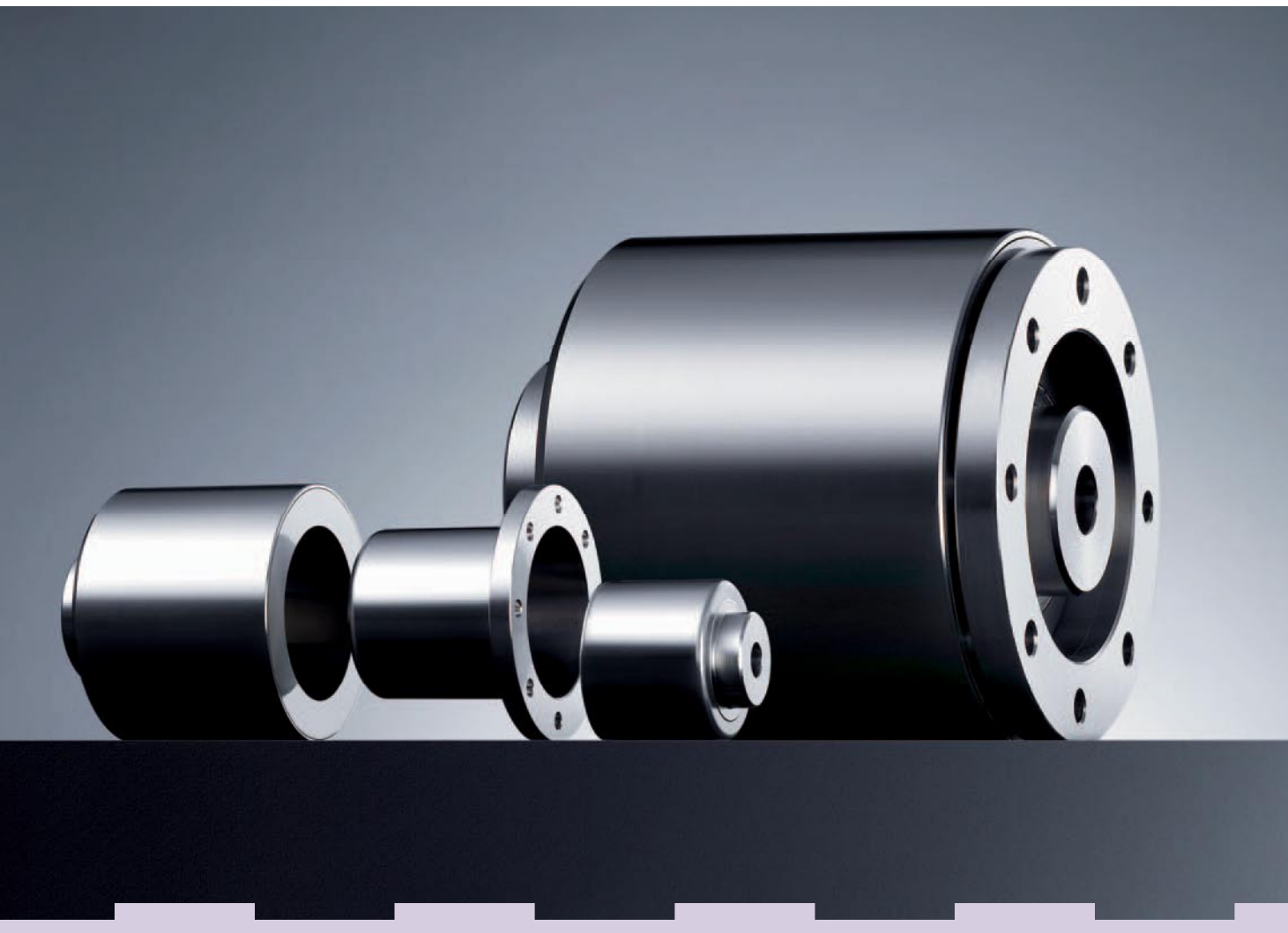
RADEX®-NC types DK and EK												
Size	Dimensions [mm]								Clamping screw		Mass moment of inertia	
	max. d ₁ /d ₂	D _A	l ₁ /l ₂	L _{DK}	E _{DK}	L _{EK}	s	t	M	T _A [Nm]	DK [kgm ²]	EK [kgm ²]
5	10	26	12	34	10	26,5	2,5	3,5	M2,5	0,8	0,000004	0,000003
10	15	35	16	44	12	35	3	5,0	M4	3	0,000016	0,000012
15	20	47	21	55	13	45	3	6,8	M6	10	0,000065	0,000053
20	25	59	24	67	19	52	4	6,5	M6	10	0,000199	0,000154
25	35	70	32	88	24	69	5	9,0	M8	25	0,000508	0,000393
35	40	84	35	98	28	77	7	10,5	M10	49	0,001153	0,000911
42	55	104	40	116	36	91	11	10,5	M10	69	0,007458	0,006153

Technical data											
Size	T _{KN} [Nm]	T _K max. [Nm]	max. speed [rpm]	Torsional rigidity [Nm/rad]		Displacement type DK			Displacement type EK		
				Type EK	Type DK	Radial [mm]	Axial [mm]	Angular [°] ¹⁾	Radial [mm]	Axial [mm]	Angular [°] ¹⁾
5	2,5	5	25000	2400	1200	0,10	0,4	1	—	0,2	1
10	7,5	15	20000	5600	2800	0,14	0,8	1	—	0,4	1
15	20	40	16000	12000	6000	0,16	1,0	1	—	0,5	1
20	30	60	12000	30000	15000	0,25	1,2	1	—	0,6	1
25	60	120	10000	60000	30000	0,30	1,6	1	—	0,8	1
35	100	200	9000	72000	36000	0,40	2,0	1	—	1,0	1
42	180	360	7000	120000	60000	0,50	2,8	1	—	1,4	1

Transmittable torque of the RADEX®-NC clamping hub [Nm] for standard bores																						
Size	Pilot bore	Ø3	Ø5	Ø8	Ø10	Ø12	Ø14	Ø15	Ø16	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø45	Ø50	Ø55
5	2,5	2,2	2,3	2,4	2,5																	
10	4,5		8	9	10	10	11	11														
15	5,5				28	30	31	32	32	34	35											
20	7,5					36	37	38	39	40	41	44	45									
25	9,5							82	83	87	88	93	94	98	100	103	106					
35	11,5									155	157	165	167	173	177	181	187	193	197			
42	15,0											285	287	296	301	307	315	323	329	343	357	370

¹⁾ for each laminae

Order form:	RADEX®-NC 20				DK				Ø20				Ø25			
	Coupling size				Type				Finish bore				Finish bore			



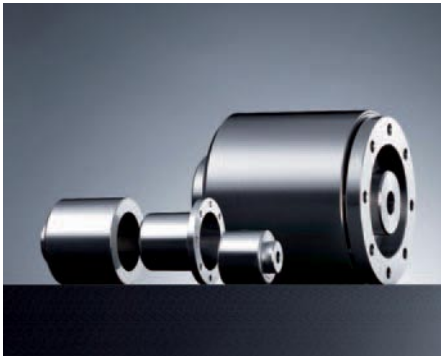
MINEX®-S

Magnetic couplings

Made for Motion



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Coupling description

General description

The MINEX®-S is a permanent-magnetic synchronous coupling that transmits torque through magnetic forces between the internal and the external rotor.

It ensures a hermetic separation of the drive and the driven side in its main function as sealing element in pumps and agitators. For critical media like aggressive acids etc. it serves as a reliable seal and prevents serious leakages occurring.

On request KTR can manufacture special customer-specific types of the MINEX®-S in connection with KTR hydraulic components. Thus existing pumps with a conventional shaft seal can be easily retrofitted with the MINEX®-S.



Function/Design

Torque transmission

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 and the internal rotor has them on the outside. The external rotor is normally fixed on the drive side and the magnets are glued in the keyways. The magnets of the driven-sided internal rotor are cylindrically ground to ensure a minimal air gap and encapsulated through a magnetic cover that is impervious to fluids.

In their non-operative states the north and south poles of the rotors are opposite to each other and the magnetic field is completely symmetric. It is only when the rotors are twisted that the magnetic field lines are moved, hence the torque is transmitted through the air gap. Then there is a synchronous operation under a constant torsion angle.

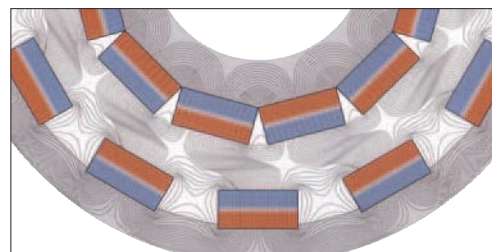
If the maximum coupling torque and the maximum torsion angle are exceeded, the power transmission is interrupted. Thus the MINEX®-S offers an overload protection function of the drive train. After removing the cause of the overload (e. g. damage to the bearing, blocking of the internal rotor) both rotors can be synchronised again and operation is resumed.



Internal rotor



External rotor



Run of flux lines

Sealing function

The main component of the MINEX®-S is the containment shroud that is fixed to the driven-sided power unit and separates internal and external rotor from each other. It ensures a low-vibration torque transmission working without mechanical connection and guarantees a completely leak-proof separation of product and atmosphere. The sealing is achieved with a flat seal or an o-ring, thus eliminating the need to dynamically load the sealing elements.

The containment shroud and internal rotor are generally made from stainless steel 1.4571 or Hastelloy. The magnets of the internal rotor are encapsulated to make them impervious to fluids and thus protected against external influences.

Since the containment shroud is a stationary component with a rotating magnetic field, it causes losses of eddy current. In order to keep these low, the containment shroud is also available in Hastelloy from size 75 upwards ensuring a higher electrical resistance than stainless steel. If eddy current losses can definitely be excluded, alternative materials like PEEK or ceramics may be chose.



Containment shroud

Technical description

Explosion-protection use

MINEX®-S couplings are suitable for the power transmission in drives that are used in hazardous areas. As a component of the device class II the couplings are assessed and confirmed for the use in explosive areas of category 2G according to the EU standards 94/9/EC (ATEX 95).



Please see our website www.ktr.com for advice, copies of certification and operating/mounting instructions.

Technical data															
Size	Stat. tear torque T _{Kmax.} with 20 °C [Nm]	External rotor					Internal rotor					Containment shroud			
		Standard material		Max. operating-temperature t _{max.} [°C]	Weight unbores [kg]	Mass moment of inertia with min. bore Ø [kgm²]	Standard material		Max. operating-temperature t _{max.} [°C]	Weight pilot bored [kg]	Mass moment of inertia with min. bore Ø [kgm²]	Standard material ²⁾		Max. pressure resistance p _N /p _{max.} ¹⁾ [bar]	Max. operational speed [rpm]
SA 22/4	0,15		NdFeB	150	0,129	30,01 x 10 ⁻⁶	1.4462	NdFeB	150	0,039	1,912 x 10 ⁻⁶			60/90	
SA 34/10	1				0,256	117,4 x 10 ⁻⁶				0,093	12,1 x 10 ⁻⁶			16/24	
SA 46/6	3				0,619	458,6 x 10 ⁻⁶				0,317	125 x 10 ⁻⁶			40/60	
SA 60/8	7				1,751	2279 x 10 ⁻⁶				0,563	221 x 10 ⁻⁶				
SB 60/8	14				2,682	3759 x 10 ⁻⁶				0,932	380 x 10 ⁻⁶				
SA 75/10	10				1,362	3159 x 10 ⁻⁶				0,940	539 x 10 ⁻⁶				
SB 75/10	24				2,095	4829 x 10 ⁻⁶				1,494	889 x 10 ⁻⁶				
SC 75/10	40				2,889	6654 x 10 ⁻⁶				1,893	1232 x 10 ⁻⁶				
SA 110/16	25				1,841	7356 x 10 ⁻⁶				2,550	3264 x 10 ⁻⁶				
SB 110/16	60				2,822	12111 x 10 ⁻⁶				3,732	5229 x 10 ⁻⁶				
SC 110/16	95				3,788	16238 x 10 ⁻⁶				4,845	7137 x 10 ⁻⁶				
SB 135/20	100				3,747	22878 x 10 ⁻⁶				5,668	12333 x 10 ⁻⁶				
SC 135/20	145				4,904	29874 x 10 ⁻⁶				7,362	16768 x 10 ⁻⁶				
SD 135/20	200				6,061	36870 x 10 ⁻⁶				9,497	22387 x 10 ⁻⁶				
SC 165/24	210				5,305	45480 x 10 ⁻⁶				11,400	37917 x 10 ⁻⁶				
SD 165/24	280				6,559	56170 x 10 ⁻⁶				14,674	50633 x 10 ⁻⁶				
SE 165/24	370				7,813	66860 x 10 ⁻⁶				17,303	60855 x 10 ⁻⁶				
SD 200/30	430				9,887	117296 x 10 ⁻⁶				26,057	125915 x 10 ⁻⁶				
SE 200/30	550				10,364	122342 x 10 ⁻⁶				26,114	126405 x 10 ⁻⁶				
SD 250/38	670				10,930	202540 x 10 ⁻⁶				37,920	282795 x 10 ⁻⁶			16/24	
SE 250/38	820				13,030	241273 x 10 ⁻⁶				45,220	340420 x 10 ⁻⁶				
SF 250/38	1000				15,130	280000 x 10 ⁻⁶				52,500	397915 x 10 ⁻⁶				

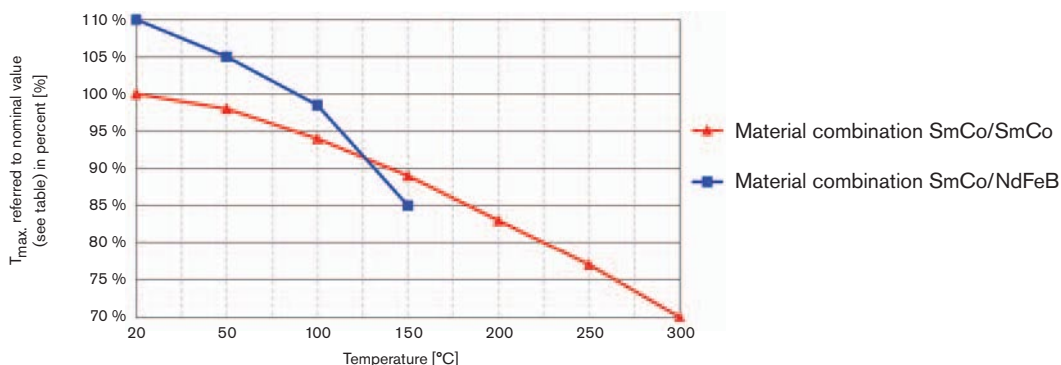
1) Resistances to higher pressures can be realized on request of the customer.

2) Alternative materials of stationary cans like oxide ceramics (see page 176) or PEEK are available on request.

Description	Reference	Definition or explanation
Static tear torque of coupling	$T_{Kmax.}$	Max. transmittable torque, from which onwards the magnetic forces tear during the static test.

Description	Reference	Definition or explanation
Maximum operating temperature	$t_{max.}$	Max. permissible temperature causing a temporary attenuation of the magnetic field. Exceeding irretrievable losses of magnetization.

Torque reduction with temperature increase



Temporary torque reduction with increased temperature
for alternative material combinations [%]

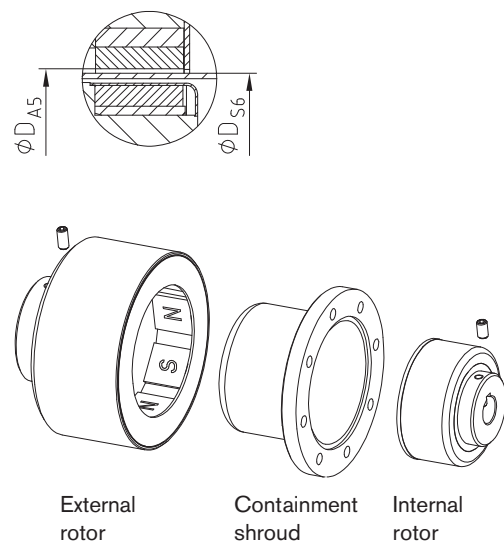
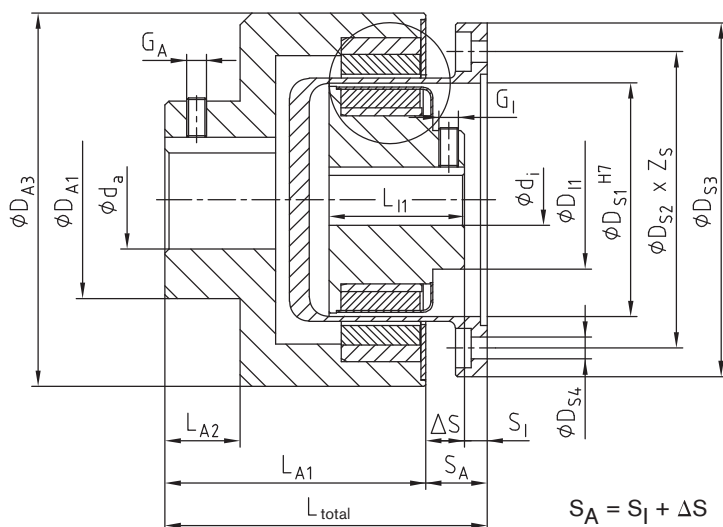
Please note:

To reduce expenses KTR would recommend to use NdFeB magnets for the external rotor if the operating temperature falls below 150 °C.

Sizes SA 22/4 to SB 60/8



- Contactless torque transmission
- Hermetic separation of drive and driven side
- Available from stock with pilot bored internal rotor and unbored external rotor
- Finish bore possible to ISO H7, feather keyway to DIN 6885 sheet 1 - JS9
- Standard containment shroud made from stainless steel 1.4571
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)
- Mounting instructions available at www.ktr.com



Technical data – Internal rotor and containment shroud													
Size	$T_{Kmax.}$ [Nm] in case of ~ 20 °C	Dimensions [mm]											
		Internal rotor						Containment shroud					
		Finish bore ¹⁾ d_i		D_{I1}	L_{I1}	S_I		G_I	D_{S1}	D_{S2}	D_{S3}	D_{S4}	Z_S
		min.	max.			min.	max.						
SA 22/4	0,15	5	9	20	20	2,0	2,0	M3	21,5	38	46	4,5	8
SA 34/10	1	5	12	20	22	2,0	5,5	M3	34	46	55	4,5	4
SA 46/6	3	8	16	28	33	6,5	7,0	M4	46	–	78	–	–
SA 60/8	7	12	22	36	36	2,2	3,5	M5	59	75	89,5	5,5	8
SB 60/8	14				56	0,0	3,5						

Technical data – External rotor and general													
Size	Dimensions [mm]												
	External rotor								General				
	Finish bore ¹⁾ d_a		D_{A1}	D_{A3}	L_{A1}	L_{A2}	ΔS	G_A	D_{S6}	D_{A5}	L_{total}		
	min.	max.									min.	max.	
SA 22/4	5	11	18	38	35	8,5	5,0	M4	23,5	24,8	42	42	
SA 34/10	5	14	22	53	38,5	10,5	5,5	M4	36,0	37,3	46	49,5	
SA 46/6	5	19	30	69,5	53	16	9,0	M5	48,5	49,4	68,5	69,5	
SA 60/8	9	28	50	94,5	66	19	12,0	M6	61,0	63,2	80	81,3	
SB 60/8	9	38			93	15		M8	61,5	63,2	105	108	

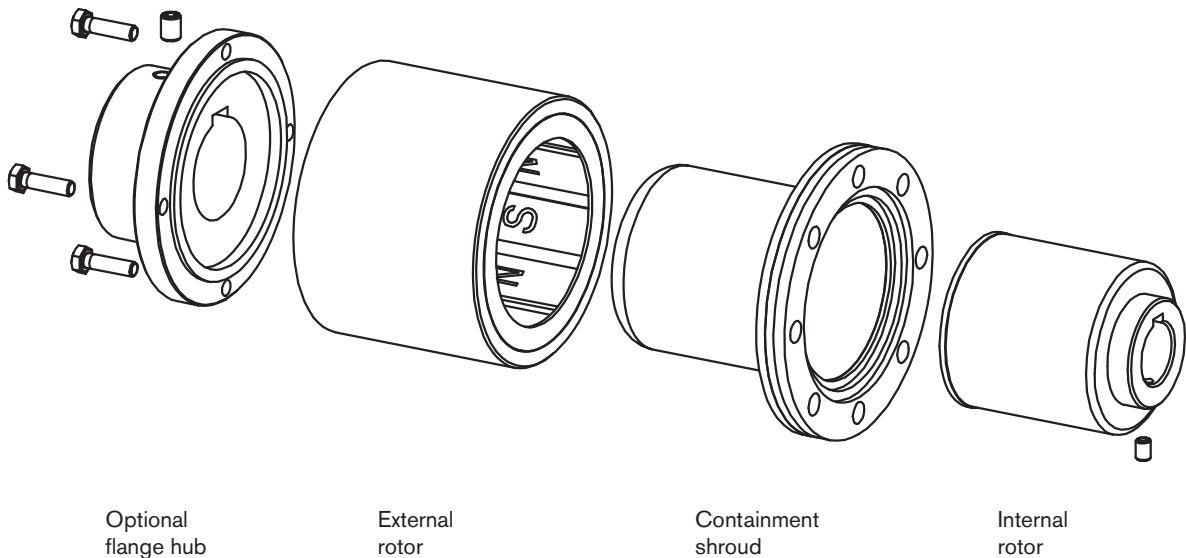
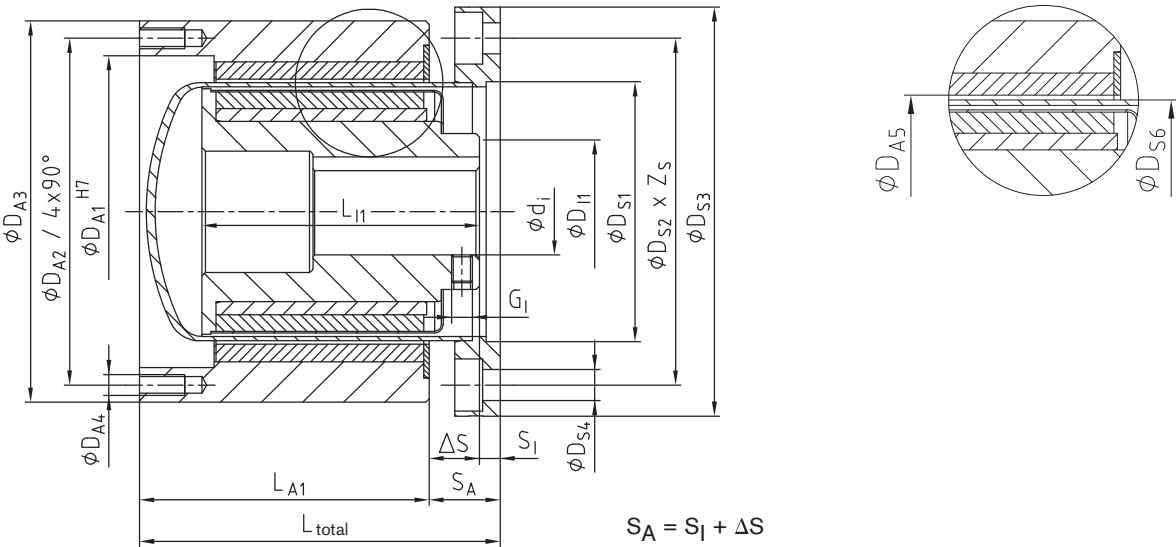
1) Bore H7 with feather keyway DIN 6885 sheet 1 [JS9]

Order form:	MINEX® SA 60/8	Design	d_i Ø 20 mm	d_a Ø 24 mm
	Coupling size	NdFeB – $t_{max.} = 150$ °C Sm ₂ Co ₁₇ – $t_{max.} = 300$ °C	Finish bore (H7) feather keyway DIN 6885 sheet 1 (JS9)	

Sizes SA 75/10 to SF 250/38



- Contactless torque transmission
- Hermetic separation of drive and driven side
- Two-part external rotor with flange hub that must be separately screwed, customer-specific variations are possible
- Available from stock with pilot bored internal rotor
- Finish bore possible to ISO H7, feather keyway to DIN 6885 sheet 1 - JS9
- Containment shroud also available from stainless steel or Hastelloy
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)



Order form:	MINEX® SB 75/10	Design	$d_i \text{ } \varnothing 20 \text{ mm}$	$d_a \text{ } \varnothing 24 \text{ mm}$	Containment shroud type
	Coupling size	NdFeB - $t_{max.} = 150 \text{ }^\circ\text{C}$ Sm ₂ Co ₁₇ - $t_{max.} = 300 \text{ }^\circ\text{C}$	Finish bore (H7), feather keyway DIN 6885 sheet 1 (JS9)		Stainless steel 1.4571 or Hastelloy

Technical data – Sizes SA 75/10 to SF 250/38

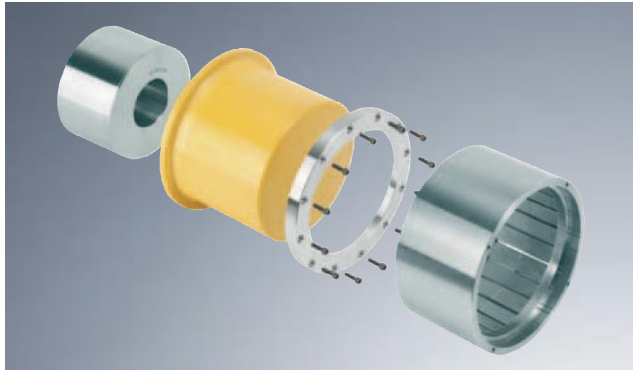
Technical data – Internal rotor and containment shroud													
Size	T _{Kmax.} [Nm] in case of ~ 20 °C	Dimensions [mm]											
		Internal rotor							Containment shroud				
		Finish bore ¹⁾ d _i		D _{I1}	L _{I1}	S _I		G _I	D _{S1}	D _{S2}	D _{S3}	D _{S4}	Z _S
		min.	max.			min.	max.						
SA 75/10	10				39,5		46,5						
SB 75/10	24	12	28	45	58	4	26,5	M6	75	100	118	9	8
SC 75/10	40				80		6,0						
SA 110/16	25				45		51,0						
SB 110/16	60	14	55	72	65	4	31,0	M8	110	133	153	9	12
SC 110/16	95				85		11,0						
SB 135/20	100				65		46,5						
SC 135/20	145	20	70	90	85	4	26,5	M10	135	158	178	9	16
SD 135/20	200				110		7,0						
SC 165/24	210				85		66,5						
SD 165/24	280	24	90	110	110	6	41,0	M12	163,5	192	218	11	12
SE 165/24	370				130		22,0						
SD 200/30	430												
SE 200/30	550	38	90	130	135	6	18,0	M16	200	252	278	11	12
SD 250/38	670				115		7,0						
SE 250/38	820	38	90	165	135	–	26,0	M16	255	285	315	13,5	12
SF 250/38	1000				155		46,0						

Technical data – External rotor and general									
Size	Dimensions [mm]								
	External rotor						General		
	D _{A1}	D _{A2}	D _{A3}	D _{A4}	L _{A1}	ΔS	D _{S6}	D _{A5}	L _{total}
SA 75/10					41				
SB 75/10	90	100	110	M6	61	12,5	74,6	76,4	102
SC 75/10					83,5	14,5			
SA 110/16					41				
SB 110/16	126	135	145	M6	61	19,0	111,5	113,1	115
SC 110/16					81				
SB 135/20					70				
SC 135/20	150	160	170	M6	90	18,5	136,5	138,5	139
SD 135/20					110	22,0			
SC 165/24					90	18,5			
SD 165/24	180	188	198	M6	110	21,0	167,0	169,2	170
SE 165/24					130				
SD 200/30									
SE 200/30	212	222	232	M6	130	26,0	198,0	199,5	180
SD 250/38					110				
SE 250/38	267	277	287	M6	130	26,0	253,0	255,0	183
SF 250/38					150				

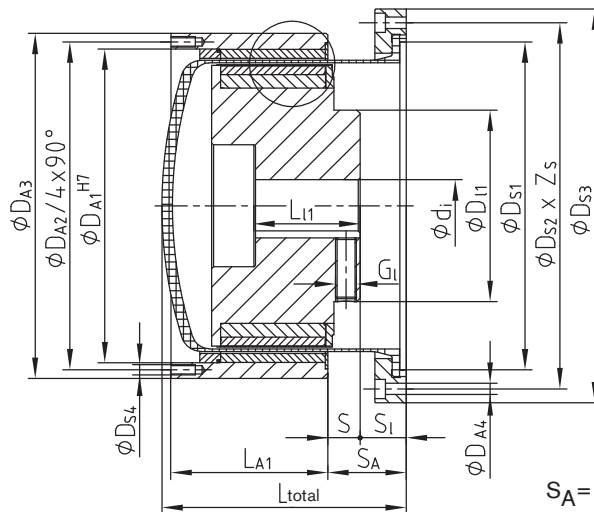
1) Bore H7 with feather keyway DIN 6885 sheet 1 [JS9]

Futher sizes on request.

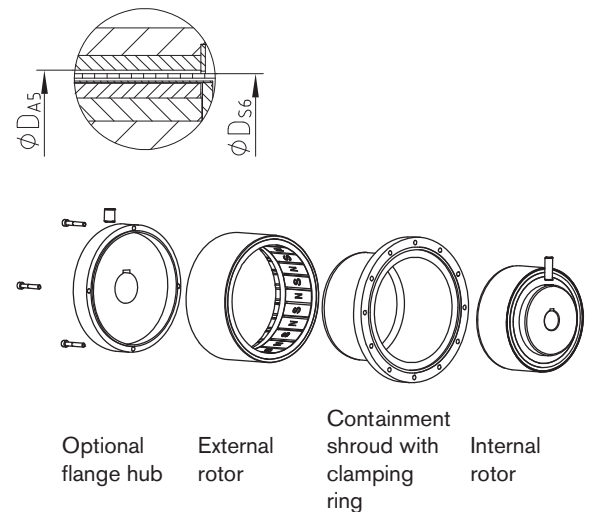
Sizes SA 110/16 to SE 200/30 with stationary can from ceramics



- No eddy current losses due to stationary can from ceramics
- No heat accumulation in the coupling caused by the stationary can
- Usually internal cooling measures are not necessary
- Suitable for dry running drives like compressors, vacuum pumps, etc.
- The selection torque may be reduced by 10 - 15 %
- Internal and external rotor in accordance with KTR standard
- Sizes SA 110/16 to SE 200/30 available from stock, other sizes on request
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)



$$S_A = S_I + \Delta S$$



Technical data – Internal rotor and containment shroud

Size	T _{Kmax.} [Nm] in case of ~ 20 °C	Dimensions [mm]											
		Internal rotor							Containment shroud				
		Finish bore ¹⁾ d _i		D _{I1}	L _{I1}	S _I		G _I	D _{S1}	D _{S2}	D _{S3}	D _{S4}	Z _S
		min.	max.			min.	max.						
SA 110/16	25				45		49,0						
SB 110/16	60	14	55	72	65	4,0	29,0	M8	119,5	148	162	5,5	12
SC 110/16	95				85		9,0						
SB 135/20	100				65		46,5						
SC 135/20	145	20	70	90	85	4,0	26,5	M10	145	173	187	5,5	12
SD 135/20	200				110		7,0						
SC 165/24	210				85	3,5	28,0						
SD 165/24	280	24	90	110	110	–	4,0	M12	188	210	226	6,6	12
SE 165/24	370				130	6,0	14,0						
SD 200/30	430												
SE 200/30	550	38	90	130	135	6,0	14,0	M16	242	272	294	9,0	12

Technical data – External rotor and general

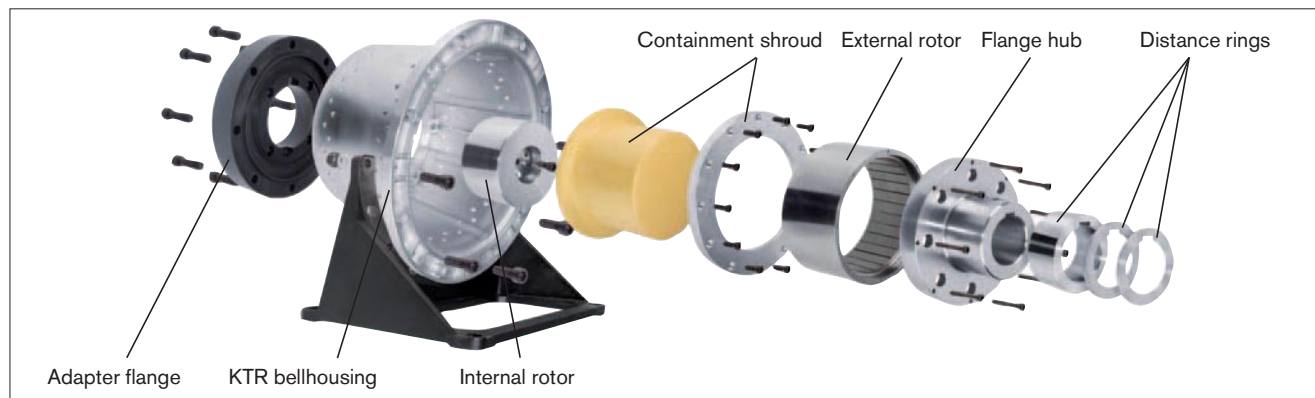
Size	Dimensions [mm]								
	External rotor						General		
	D _{A1}	D _{A2}	D _{A3}	D _{A4}	L _{A1}	ΔS	D _{S6}	D _{A5}	L _{total}
SA 110/16					41				
SB 110/16	126	135	145	M6	61	19,0	111,5	113,1	115
SC 110/16					81				
SB 135/20					70				
SC 135/20	150	160	170	M6	90	18,5	136,5	138,5	139
SD 135/20					110	22,0			
SC 165/24					90	18,5			
SD 165/24	180	188	198	M6	110		167,0	169,2	170
SE 165/24					130	21,0			
SD 200/30									
SE 200/30	212	222	232	M6	130	26,0	198,0	199,5	180

1) Bore H7 with feather keyway DIN 6885 sheet 1 [JS9]

Order form:

MINEX® SB 135/20	Design	d _i Ø 20 mm	Containment shroud type
Coupling size	NdFeB – t _{max.} = 150 °C Sm ₂ Co ₁₇ – t _{max.} = 300 °C	Finish bore (H7), feather keyway DIN 6885 sheet 1 (JS9)	Oxide ceramics ZrO ₂ MgO

Mounting sets and customized assemblies



On request KTR can offer special customer-specific solutions in combination with hydraulic components from KTR, whereby existing systems can be easily retrofitted with the MINEX®-S.

Redesigning sets for PUR foaming processes

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 unwanted reactions may be produced.

For a reliable sealing of such drives KTR offers standard sets for retrofitting, among others for axial piston pumps types **REXROTH A2VK** and **ROTARY POWER C series** offering the following benefits:

- Maintenance-free operation
- Standstill periods are considerably reduced
- No more problems with sealing
- Better efficiency and process safety

The assemblies are available for all motor-pump-combinations and in various materials.

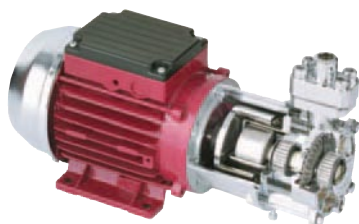


Axial piston pump REXROTH type A2VK

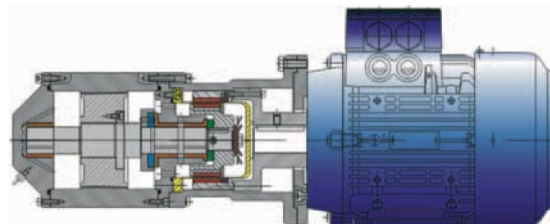


Maintenance-free sealing of dosing pump for polyde and isocyanate in high-pressure reaction casting machines

Examples of application



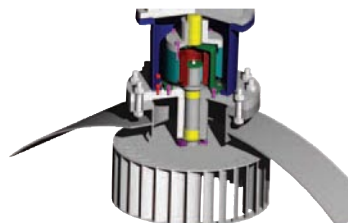
Use of the MINEX®-S in a small centrifugal pumps



MINEX®-S for sealing homogenizers for heavy oil processing in marine operation



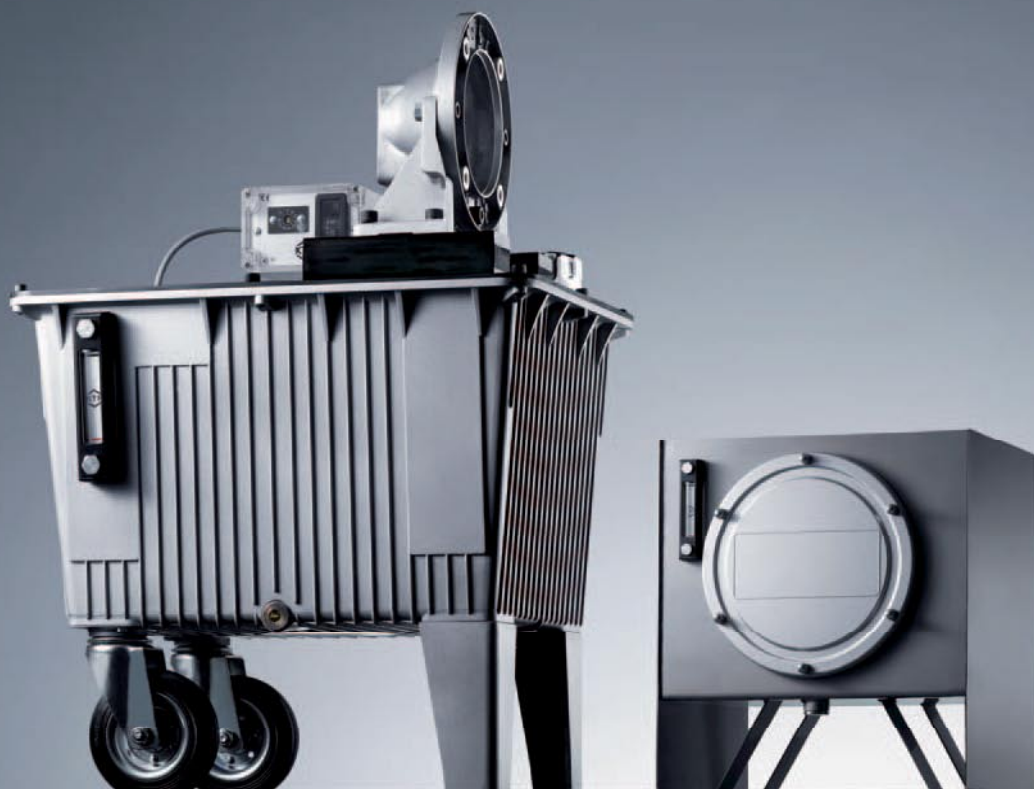
Re-equipment of a gear pump with MINEX® SA 75/10, bellhousing PK 200/30, base flange and damping rod



MINEX®-S for the separation of autoclaves (T.B.M./STERICHEM) in laboratories and clinics

Technical data for coupling selection/selection of components

Motor type	_____	Pump type	_____
Power	_____ kW	Speed	_____ rpm
Pressure	_____ bar	Temperature	_____ °C
Viscosity of medium	_____ mm ² /s	Max. perm. dimensions	_____ ØDxL _{total}



Hydraulic components:

- Bellhousings and accessories
- Damping elements
- Tanks
- Thermomanagement

Made for Motion

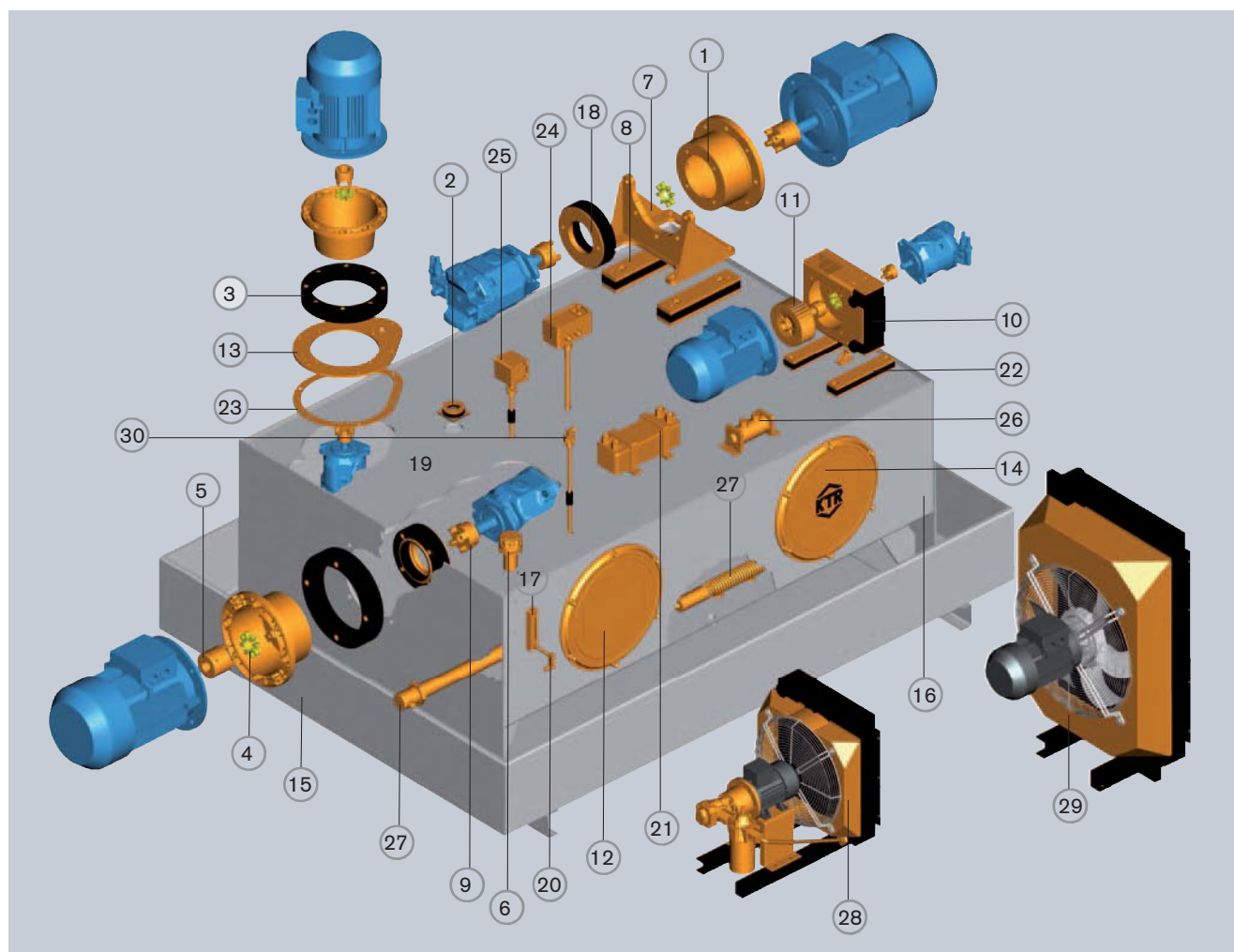


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Overview



① Bellhousing type PK/PL	①⑥ Steel tanks type BSK/BNK/BEK
② Elastic flange	①⑦ Oil-level indicator type KO
③ Damping ring design DT	①⑧ Damping ring type D
④ ROTEX® spider	①⑨ Machining of tank according to customer specification
⑤ ROTEX® coupling hub, motor side	②⑦ Temperature switch type TS
⑥ Filler breather (with ventilation filter)	②① PHE-Plate heat exchanger
⑦ Foot flange type PTFS (VDMA 24 561 part 1)	②② Damping rod design DSK for PIK
⑧ Damping rod design DSFS for foot flange type PTFS	②③ Gasket type DZ for additional flange type ZO
⑨ ROTEX® coupling hub, pump side	②④ Industrial controller IR
⑩ Bellhousing PIK with integrated oil cooler	②⑤ IRDN Digital industrial control with level switch
⑪ Fan for PIK	②⑥ Horizontally mounted cooler TAK
⑫ Standard cleaning cover	②⑦ Tank heaters
⑬ Additional flange type ZO	②⑧ OPC Cooling-pump-unit with hydraulic pump filter
⑭ Cleaning cover with logo according to customer specification	②⑨ OAC-Oil/air coller
⑮ Oil sump pan	③⑦ Level-temperatur-switch NVT

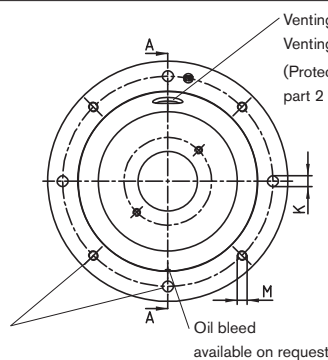
The customer has to protect rotating parts from unintended touch (Safety of Machines DIN EN 292 part 2).
The fastening screws should be secured against release by the customer (e. g. by anaerobic bonding agents like Loctite®).

Bellhousings



- Links between IEC motor and hydraulic pump
- For almost every hydraulic pump either available from stock or in short term
- Both flange sides are finish machined
- Motor and pump shaft centered
- KTR bellhousings are made from aluminium (steel on request)
- In many cases KTR bellhousings can be piled up
- Designed for high loads
- For the bellhousing selection you require please either see our selection programme at www.ktr.com
- Operating temperature: -40 °C to +100 °C
- Notice our mounting instructions

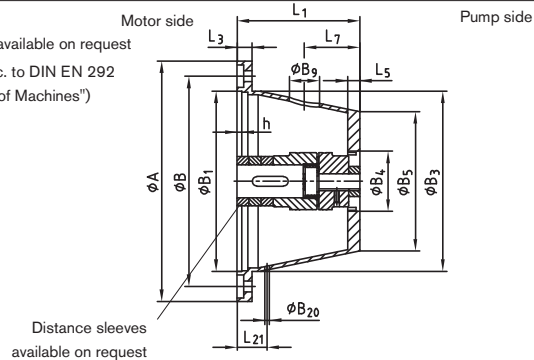
For IEC motor from size 225S
8 fixing holes are offset
22,5° on the verticle



Screw tightening torque with
screw quality 5.6

Venting hole
Venting plugs available on request
(Protection acc. to DIN EN 292
part 2 "Safety of Machines")

Oil bleed
available on request



Distance sleeves
available on request

Bellhousings according to VDMA 24561 design A

IEC- motor size (shaft end) d ₁ x l ₃	kW with n = 1500 rpm	Bell- housing Size	Gasket DP Size	Foot flange PTFL/ PTFS (*)	Dimensions [mm]															
					A	B	B ₁	B ₃	h	K	M	L ₁	L ₃	L ₅ ¹⁾	B ₅	Min.	Venting hole		Oil bleed	
																	B ₉	L ₇	B ₂₀	L ₂₁
71 (14 x 30)	0,25	PK 160/5/..	160	160	160	130	110	110	4	9	M8	80	13	8	105	27	25	33	7,5	28
	0,37	PL 160/5/..										90			102	29		38		
80 (19 x 40)	0,55	PK 200/3/..										100				40		43		
	0,75	PL 200/3/..										110			124	37		47		
90S/90L (24 x 60)	1,1	PL 200/8/..	200	200	200	165	130	145	4	11	M10	124	16	12	133	57	36	60	7,5	36
	1,5	PFL 200/6/..										140			180	47		62		
100L/112M (28 x 60)		PK 250/6/..										120	19		177	49		54		
	2,2	PL 250/3/..										124	20		126	42		52		
	3	PL 250/6/..	250	250	250	215	180	190	5	14	M12	135		12	180		40	57	7,5	43
	4	PL 250/4/..										148	18		166	56		64		
132S/132M (38 x 80)		PFL 250/18/..										175			250			77		
		PK 300/5/..										144			205	57		63		
	5,5	PL 300/15/..										150			231	77		66		
	7,5	PK 300/4/..	300	300	300	265	230	234	5	14	M12	155	20	15	205	56	50	68	7,5	45
160M/160L (42 x 110)		PL 300/4/..										168			220	57		74		
		PL 300/7/..										196						84		
	11	PK 350/4/..										188			225	59		82		
	15	PK 350/6/..										204				56		87		
180M/180L (48 x 110)	18,5	PK 350/10/..	350	350	350	300	250	260	6	17	M16	228	26	15	248	97	50	102	7,5	51
		PL 350/7/..										256			255	88		115		
	22											204			230	75		92		
		PK 400/4/..										204	26		230	75		92		
200L (55 x 110)	30	PK 400/5/..	400	400	400	350	300	300	6	17	M16	228		20	279	95	50	104	7,5	51
		PL 400/5/..										256	25		290	97		118		
												234	25		260			107		
225S/225M (60 x 140)	37	PK 450/3/..	450	450	450	400	350	350	6	17	M16	262	26	20	315	97	50	121	7,5	51
	45	PL 450/3/..										285	25		325			133		
		PL 550/8/..										248			340	97		116		
250M (65 x 140)	55	PL 550/1/..										265			360	120		125		
	75	PK 550/3/..	550	550	550	500	450	450 ²⁾	6	17	M16	275	26	25	340	97	50	130	7,5	51
	90	PL 550/3/..										295			360	123		140		
		PL 550/2/..										315			400	150		135		
315S/315M (80 x 170)	110	PK 660/2/..										310			410			147		
	132	PL 660/5/..										330			400	120		157		
	160	PL 660/2/..	660	660	660	600	550	550 ²⁾	8	22	M20	343	32	30	490	174	50	163	7,5	60
	200	PL 660/4/..										395			500	197		190		
355L/400M (100 x 210)	355	PL 880/1/..	800	800	800	740	680	680 ²⁾	8	22	M20	370	40	36	500		50	135	7,5	70
	710	PK 800/3/..										395			487	148		160		

Bellhousings

Other bellhousings																				
IEC- motor size (shaft end) d ₁ x l ₃	kW with n = 1500 rpm	Bell- housing Size	Gasket DP Size	Foot flange PTFL/ PTFS)	Dimensions [mm]															
					A	B	B ₁	B ₃	h	K	M	L ₁	L ₃	L ₅ ¹⁾	B ₅	Min. B ₄	Venting hole		Oil bleed	
																	B ₉	L ₇	B ₂₀	L ₂₁
71 (14 x 30)	0,25 0,37	PFK 160/6/.. PFL 160/6/..	160	160	160	130	110	110	4	9	M8	79 101	13	13	140	30 60	25	35 46	7,5	28
80 (19 x 40)	0,55 0,75	PK 200/4/.. PK 200/11/.. PL 200/11/..										109 45 55		12 10		57 97	36 10	46 15 18		36 30
															144					
90S/90L (24 x 50)	1,1 1,5	PK 200/13/.. PK 200/30/.. PL 200/30/..	200	200	200	165	130	145	4	11	M10	152 79 90	16			30 37	36 25	71 30 37	7,5	
																				36
															127					
100L/112M (28 x 60)	2,2 3 4	PK 250/13/.. PK 250/15/.. PL 250/15/..										159 61 79				186 97	77 10 20	40 20 29		
																			7,5	43
132S/132M (38 x 80)		PK 250/17/.. PK 300/8/.. PK 300/9/.. PL 300/9/.. PL 300/13/.. PK 300/15/..										100 110 85 99 210 138			186 225	74 95	40 40 30 40	39 45 32 37		
	5,5		300	300	300	265	230	234	5	14	M12	99	20	15	231	97			7,5	45
	7,5															57	95			
160M/160L (42 x 110) 180M/180L (48 x 110)	11 15 18,5 22	PK 350/8/.. PK 350/11/.. PL 350/11/.. PK 350/18/.. PL 350/18/.. PL 400/3/.. PK 400/12/.. PL 400/12/..										204 130 146 159 184 165	25	15	259 252	53 97 92		90 52 60		
			350	350	350	300	250	260	6	17	M16	146	26	18		92	50	60	7,5	51
200L (55 x 110)	30	PK 400/12/.. PL 400/12/..	400	400	400	350	300	300	6	17	M16	170 184	25	20	260	95	50	75 82	7,5	51
225S/225M (60 x 140)	37 45	PK 450/5/.. PL 450/5/.. PK 450/6/.. PFL 450/9/.. PK 450/12/.. PL 450/12/..										165 185 176 253 204 222	25 26		260 325 259 370 260	120 98 137 97		73 83 80 116 90 101		
			450	450	450	400	350	350	6	17	M16	176	26	20	259	98	50	80	7,5	51
250M (65 x 140) 280S/280M (75 x 140)	55 75 90	PK 550/4/.. PL 550/4/.. PK 550/8/..	550	550	550	500	450	450 ²⁾	6	17	M16	190/192 207 217		26 25	355 330 340	129 124 97		88 96 100	7,5	51
315S/315M (80 x 170)	110- 160	PK 660/3/.. PL 660/3/..	660	660	660	600	550	550 ²⁾	8	22	M20	247 260	32	30	465 340	80 156	50	115 122	7,5	60
355L/400M (100 x 210)	355 710	PK 800/1/.. P 800/3/..	800	900	800	740	680	680 ²⁾	8	22	M20	335 443	40 37	36 38	520 500	149 305	50	140 206	7,5	70

Please indicate in the order if the bellhousing is needed in oilproof design! (Extra charge)

¹⁾ Bottom of pot does not consist of sold material → ribbed

²⁾ Passing from dimension B₃ to flange radius R = 5.

*) For vertical assembly or lateral assembly on the tank gaskets are available (type DP, see page 189).

For the detailed order designation please see our PC/Internet selection programme or mention the IEC motor size and detailed pump type for selection.
If venting holes or oil bleeds are required, please mention in your order.

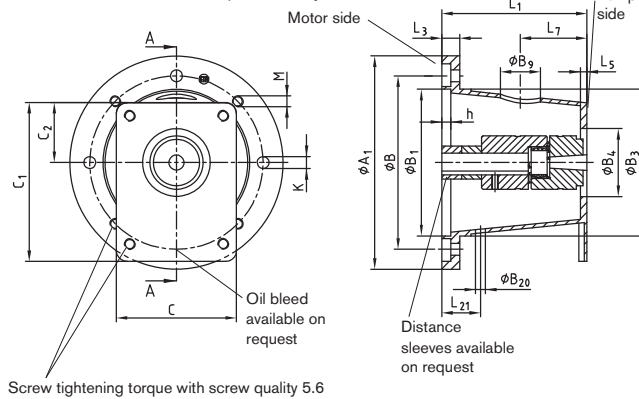
Order form	PL	PK	P	450	3	8
	Bellhousing type, Long	Bellhousing type, short, "K"	Former bellhousing type	Flange diameter of IEC Motor	Model code	Internal code

Bellhousings

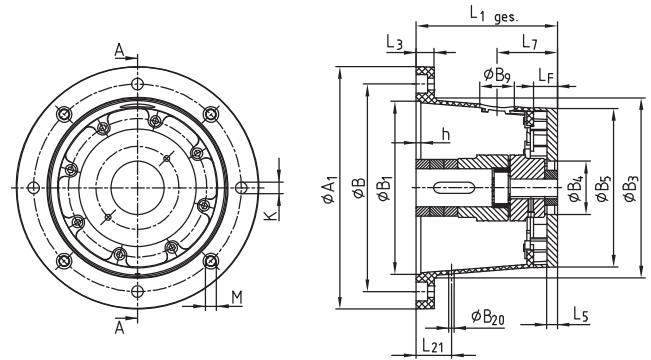


- Motor and pump shaft centered; designed for high loads
- Both flange sides are finish machined
- Type KPT: Bellhousing from special nylon material
 - Accurate to size with higher temperatures and moisture
 - Stiffness similar to aluminium bellhousings
 - Very good damping properties
 - Flange side for pump mounting from aluminium
- Low-cost alternative to bellhousings with damping ring
- Operating temperature: -10 °C to +60 °C
- For almost every hydraulic pump available from stock or in short term
- For the bellhousing selection you require please either see our selection programme at www.ktr.com

Venting hole and venting plugs available on request
(Protection acc. to DIN EN 292 part 2 "Safety of Machines")



Bellhousings with rectangular flange



Bellhousings from nylon

Bellhousings from aluminium with rectangular flange

IEC- motor size	kW with n = 1500 rpm	Bell- housing Size	Gasket DP Size	Foot flange PTFL/ PTFS (*)	Dimensions [mm]																						
					A ₁	B	B ₁	B ₃	h	K	M	L ₁	L ₃	L ₅	C	C ₁	C ₂	Min. B ₄	Venting hole		Oil bleed						
																			B ₉	L ₇	B ₂₀	L ₂₁					
71	0,25 0,37	PL 160/1/..	160	160	160	130	110	110	4	9	M8	70	13	8	70	91	35	20	16	27	7,5	28					
		PL 160/4/..										110		12					90	120			45	22	25	50	
		PK 160/4/..										95														43	
80 90S/90L	0,55 1,5 2,2	PL 200/1/..	200	200	200	165	130	145	4	11	M10	90	16	12	70	91	35	22	25	37	7,5	36					
		PL 200/2/..										100								90			90	120	22	42	
		PL 250/1/..										110											90	120	45	22	45
100L/112M	3 4	PL 250/2/..	250	250	250	215	180	190	5	14	M12	115	18	12	120	150	53	47	36	47	7,5	43					
		PL 250/7/..										125											145	180	64	46	52
132S/132M	5,5 7,5	PL 300/1/..	300	300	300	265	230	234	5	14	M12	132	20	15	120	150	53	33	50	56	7,5	45					
		PK 300/2/..										137											145	180	64	33	59
												171								26			120	156	59	33	73
160M/160L	11	PL 350/1/..	350	350	350	300	250	260	6	18	M16	171	25	15	145	180	64	31	50	78	7,5	51					
180M/180L	22	PL 350/2/..										181															

Bellhousings from nylon

IEC- motor size	kW with n = 1500 rpm	Bell- housing Size	Gasket DP Size	Foot flange PTFL/ PTFS)	Dimensions [mm]																
					A ₁	B	B ₁	B ₃	h	K	M	L ₁	L _F	L ₃	L ₅	B ₅	Min. B ₄	Venting hole		Oil bleed	
																		B ₉	L ₇	B ₂₀	L ₂₁
100L/112M	2,2	KPT 250/2/..										120	12				35		54		
	3	KPT 250/3/..	250	250	250	215	180	190	7	14	M12	124	16	19	12	166	42	40	52	7,5	43
	4	KPT 250/4/..										135	27				58		57		
132S/132M		KPT 300/2/..										144	15				57		63		
	5,5	KPT 300/3/..	300	300	300	265	230	234	7	14	M12	155	26	20	15	208	56	50	68	7,5	45
	7,5	KPT 300/4/..										168	39				74				
		KPT 300/5/..										196	67				84				
160M/160L 180M/180L	11	KPT 350/2/..										188	18				56		82		
	22	KPT 350/3/..	350	350	350	300	250	260	7	17	M16	204	34	26	15	230	77	50	87	7,5	51
		KPT 350/4/..										228	58				97		102		

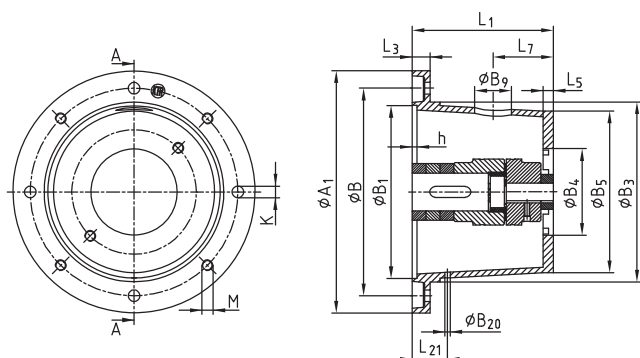
If venting holes or oil bleeds are required, please mention in your order.

Order form	PL	PK	KPT	250	2	8
	Bellhousing type, Long	Bellhousing type, short, "K"	Bellhousing design from nylon	Flange diameter of IEC Motor	Model code	Internal code

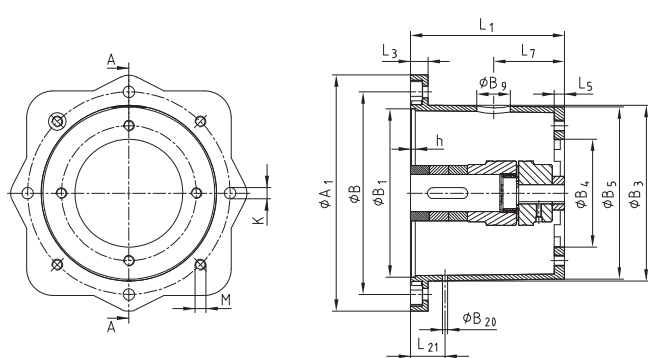
Bellhousings



- Bellhousing from cast iron
- PSG types particularly for servo motor drives with square flange
- Bellhousing suitable for high loads
- Suitable for mining, offshore applications and servo drives
- Resistant to almost every hydraulic oil and salt water
- Both mounting sides are finish machined
- The bellhousings are primed, machined surfaces are preserved
- Good damping properties due to the relatively big mass
- For almost every hydraulic pump available from stock or in short term
- Notice our mounting instructions



Bellhousings from cast iron (Type PG)



Bellhousings from cast iron for servo motors (Type PSG)

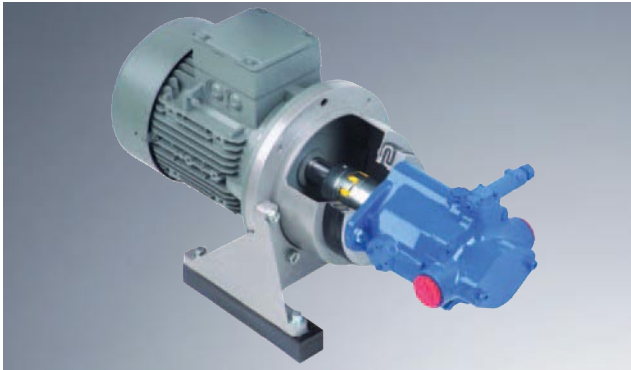
Bell housings from cast iron																				
IEC- motor size	kW with n = 1500 rpm	Bell- housing Size	Gasket DP Size	Foot flange PTFL/ PTFS)	Dimensions [mm]															
					A ₁	B	B ₁	B ₃	h	K	M	L ₁	L ₃	L ₅	B ₅	Min. B ₄	Venting hole		Oil bleed	
																	B ₉	L ₇	B ₂₀	L ₂₁
132S/132M	5,5 7,5	PG 300/5/..	300	300	300	265	230	234	5	14	M12	144	20	15	215	30	50	63	7,5	45
160M/160L 180M/180L	11 22	PG 350/4/.. PG 350/6/..	350	350	350	300	250	260	7	17	M16	188 204	26	15	242 235	76	50	82 87	7,5	51
200L	30	PG 400/2/..	400	400	400	350	300	300	7	17	M16	256	26	20	280	97	50	118	7,5	51
		204										260			92					
		228										280			104					
225S/225M	37 45	PG 450/2/.. PG 450/3/..	450	450	450	400	350	350	7	17	M16	234 262	26	24 20	289 315	97 91	50	107 121	7,5	51
250M 280S/280M	55 75 90	PG 550/1/.. PG 550/8/..	550	550	550	500	450	450	7	17	M16	265 248	26	25	360 349	97	50	125 116	7,5	51
315S/315M	110 - 160	PG 660/5/..	660	660	660	600	550	550	8	22	M20	330	32	30	425	119	50	157	7,5	60

Bellhousings from cast iron for servo motors																			
	Bell-housing	Gasket DP	Foot flange PTFL/PTFS *)	Dimensions [mm]															
				A ₁	B	B ₁	B ₃	h	K	M	L ₁	L ₃	L ₅	B ₅	Min. B ₄	Venting hole		Oil bleed	
	Size	Size		A ₁	B	B ₁	B ₃	h	K	M	L ₁	L ₃	L ₅	B ₅	B ₄	B ₉	L ₇	B ₂₀	L ₂₁
For Servo- and IEC-motors	PSG 200/1/..	200	200	200	165	130	145	7	11	M10	124	16	12	170	55	36	60	7,5	36
	PSG 250/1/..	250	250	250	215	180	190	7	13,5	M12	175	19	12	225	70	40	77	7,5	43
	PSG 350/10/..	350	350	350	300	250	260	7	17,5	M16	228	26	15	255	95	50	102	7,5	51

If venting holes or oil bleeds are required, please mention in your order.

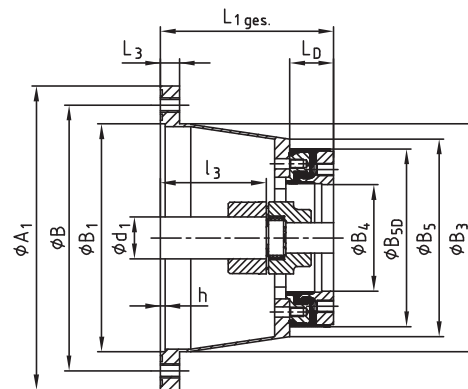
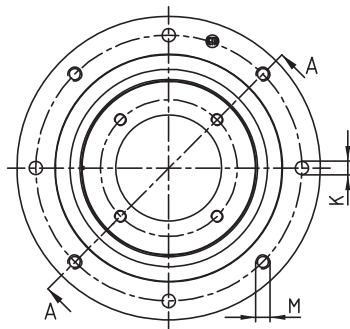
Order form	PG	PSG	250	1	4
	Bellhousing design from cast iron	Bellhousing design for servo drives	Flange diameter of IEC Motor	Model code	Internal code

Damping rings D in combination with bellhousings



- The damping ring forms a centering unit with the bellhousing
- Combination also available for multiple pumps
- For the mounting of the damping ring special bellhousings are available to build a short design
- For the bellhousing selection you require please either see our selection programme at www.ktr.com
- Notice our mounting instructions

Please mention in your order if venting holes or oil bleeds, respectively, are requested.
For dimensions see page 182/183.



For IEC-motor from size 225 S / 225 M 8 fixing holes and through holes are offset 22,5° to the verticle.

Damping rings type D in combination with bellhousings ¹⁾

IEC- motor size (shaft end) d ₁ x l ₃	kW with n = 1500 rpm	Bell- housing Size	Damping ring Size	Foot flange Size	Dimensions [mm]														Min.	Max.	B ₅	B _{5D}
					A ₁	B	B ₁	L _{1 ges.}	L ₃	K	M	h	L _D	B ₃	B ₄							
90S/90L (24x50)	1,1 1,5	PK 200/11/..	D 150/..	PTFL 200	200	165	130	90	16	11	M10	4	45	145	18	83	145	148				
		PL 200/11/..						100														
		PK 200/30/..						124														
		PK 250/15/..	D 150/..				106								18	83		148				
		PL 250/15/..					124															
		PK 250/17/..					145															
100L/112M (28x60)	2,2 3	PK 250/15/..		PTFL 250	250	215	180	106	18	14	M12	5	45	190			187					
		PL 250/15/..						124														
		PK 250/17/..						145														
		PK 300/8/..	D 150/..				155								18	83	231	148				
		PK 300/9/..					130															
		PL 300/9/..					144															
		PK 300/15/..					179															
		PL 300/15/..					195															
		PK 300/8/..					155															
		PK 300/9/..	D 190/..	PTFL 300	300	265	230	130	20	14	M12	5	45	234	30	121	231	190				
		PL 300/9/..						144														
		PK 300/15/..						183														
		PL 300/15/..					195															
		PK 300/8/..					168															
		PK 300/9/..					143															
		PL 300/9/..	D 230/..				157					58			97	143	231	234				
		PK 300/15/..					196															
		PL 300/15/..					208															
		PK 350/11/..	D 150/..				175	25							18	83	252	148				
		PL 350/11/..					190															
		PK 350/18/..					204															
160M/160L (42x110)	11 15	PL 350/18/..					229	25				45					252					
		PK 350/18/..					175															
		PL 350/11/..					188															
180M/180L (48x110)	18,5 22	PK 350/18/..	D 190/..	PTFL 350	350	300	250	204	26	17	M16	6		260	30	121	244	190				
		PL 350/18/..						229														
		PK 350/11/..						188														
		PL 350/11/..	D 230/..				204	26				58			97	143	244	234				
		PK 350/18/..					217															
		PL 350/18/..					242															

Continued on page 187

Damping rings D in combination with bellhousings

Damping rings type D in combination with bell housings ¹⁾																		
IEC- motor size (shaft end) d ₁ x l ₃	kW with n = 1500 rpm	Bell- housing Size	Damping ring Size	Foot flange Size	Dimensions [mm]													
					A ₁	B	B ₁	L _{1 ges}	L ₃	K	M	h	L _D	B ₃	Min.	Max.	B ₅	B _{5D}
															B ₄			
160M/160L (42x110)	11	PK350/11/..						188	25									
	15	PL 350/11/..						204	26									
		PK350/18/..	D 260/..	PTFL 350	350	300	250	217		17	M16	6	58	260	97	143	252	264
180M/180L (48x110)	18,5	PL 350/18/..						242	25									
	22	PL 350/48/98						247										
		PL 400/3/..						210									290	
		PK400/12/..	D 190/..					215					45		30	121		190
		PL 400/12/..						229										
200L (55x110)	30	PK400/12/..	D 230/..	PTFL 400	400	350	300	228	20	17	M16	6		300		143		
		PL 400/12/..						242									260	
		PK400/12/..						228					58		97			264
		PL 400/12/..	D 260/..					242								164		
		PL 400/12/98						247										
		PL 450/5/94						230									325	
		PK450/12/94	D 190/..					249					45		30	121	260	190
		PL 450/12/94						267										
		PL 450/5/96						243									325	
		PK450/6/96	D 230/..					234								143		234
225S/225M (60x140)	37	PK450/12/96		PTFL 450	450	400	350	262	25	17	M16	6					260	
	45	PL 450/12/96						280					58		97			
		PK450/5/98						243									325	
		PK450/6/98	D 260/..					234								164	260	265
		PK450/12/98						262										
		PL 450/12/98						280										
		PL 450/5/..	D 330/..					268					83		120	208	325	330
		PK550/4/94						237									355	
		PL 550/4/94	D 190/..					252					45		30	121	330	190
		PK550/8/94						262									340	
250M (65x140)	55	PK550/4/96						248									355	
		PL 550/4/96	D 230/..					265								143	330	234
		PK550/8/96		PTFL 550	550	500	450	275	26	17	M16	6	58	450			340	
280S/280M (75x140)	75	PK550/4/98						248							97		355	
	90	PL 550/4/98	D 260/..					265								164	330	264
		PK550/8/98						275									340	
		PK550/4/..						275									355	
		PL 550/4/..	D 330/..					290					83		120	208	330	330
		PK550/8/..						300									340	
315S/315M (80x170)	110	PK660/3/98	D 260/..					310					58		97	164	500	264
	132	PL 660/3/98						318									340	
315L (80x170)	160	PK660/3/..	D 330/..	PTFL 660	660	600	550	330	32	22	M20	8	83	550	120	208	500	330
	200	PL 660/3/..						343									340	
(85x170)		PK660/3/..	D 125/..					372					125		260	320	500	484

1) Preferred combinations with short bellhousings, other combinations on request (see pages 182 and 183), phone +49 5971 798-0.

* Passing from dimension B3 to the flange with radius R = 5

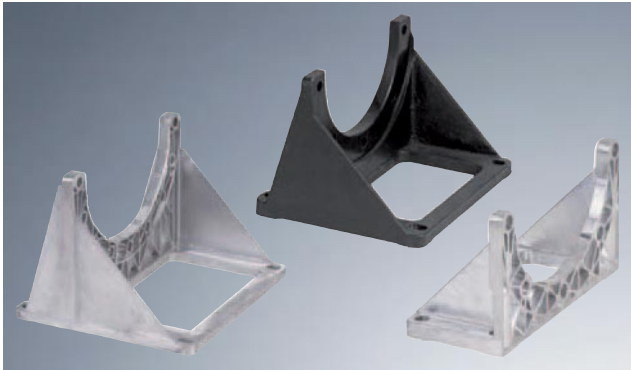
● For your power pack please pay attention to a separation of the piping, e. g. by tubes or elastic flanges (see page 191).

● For further measures of noise damping we recommend to use damping rods (see page 194/195) or DT/DTV rings (see page 193).

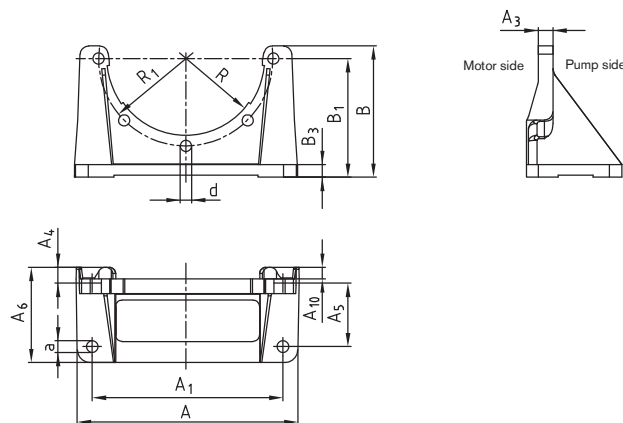
For the detailed order designation please see our PC/Internet selection programme or mention the IEC motor size and detailed pump type for selection.

Order form	PL	PK	250	15	92	D	150	23
	Bellhousing type, Long	Bellhousing type, short, "K"	Flange diameter of IEC Motor	Model code	Internal code	Damping ring	Size	Internal code

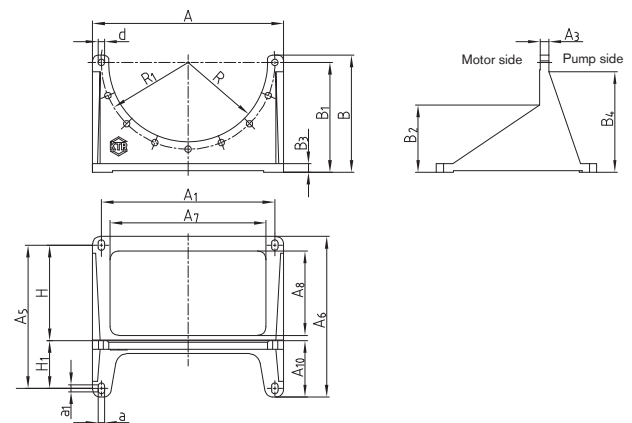
Foot flange



- The designing of PTFL by means of the finite element method permits very high loading capacity with minimum weight
- PTFL as a compact, space-saving design in combination with KTR bellhousing and damping ring
- Storage of only one electric motor type both for horizontal and vertical construction
- PTFS preferably for mobile applications
- All types available from stock - other sizes on request
- Notice our mounting instructions



Foot flange PTFL*



Foot flange PTFS*

*according to VDMA guideline 24561 part 1

Foot flange design PTFL from aluminium (Al)

Foot flange size	For bellhousing size	Dimensions [mm]													
		A	A ₁	A ₃	A ₆	A ₄	A ₅	A ₁₀	B	B ₁	B ₃	R	R ₁	d	a
PTFL 160	160	160	140	12	80	15	50	8	110	100	10	55	65	9	9
PTFL 200	200	210	180	14	90	15	60	11	124	112	12	72,5	82,5	11	11
PTFL 250	250	250	220	16	97	21	60	—	145	132	15	95	107,5	13	13
PTFL 300	300	290	260	18	116	20	80	—	175	160	18	117	132,5	13	13
PTFL 350	350	340	300	20	150	20	110	—	195	180	22	130	150	18	16

Foot flange design PTFS from aluminium (Al)

Foot flange size	For bellhousing size	Dimensions [mm]																			
		A	A ₁	A ₃	A ₅	A ₆	A ₇	A ₈	A ₁₀	B	B ₁	B ₂	B ₃	B ₄	R	R ₁	a	a ₁	d	H	H ₁
PTFS 250	250	250	215	18	185	230	190	—	82	165	155	120	15	150	95	107,5	14	10	14	125	60
PTFS 300	300	300	265	20	225	270	240	—	92	200	185	148	18	183	117	132,5	14	10	14	150	75
PTFS 350	350	350	300	25	265	305	260	160	110	252	235	188	18	228	130	150	18	12	18	175	90
PTFS 400	400	400	350	20	300	350	300	185	125	277	260	193	20	241	150	175	18	12	18	200	100
PTFS 450	450	450	400	25	335	385	350	207	138	312	295	232	20	290	175	200	18	12	18	225	110

Foot flange design PTFS from nodular iron (GJS)

Foot flange size	For bellhousing size	Dimensions [mm]																			
		A	A ₁	A ₃	A ₅	A ₆	A ₇	A ₈	A ₁₀	B	B ₁	B ₂	B ₃	B ₄	R	R ₁	a	a ₁	d	H	H ₁
PTFS 250	250	250	215	17	185	230	190	—	82	165	155	120	15	150	95	107,5	14	10	14	125	60
PTFS 350	350	350	300	20	265	305	260	160	110	252	235	193	22	232	130	150	18	12	18	175	90
PTFS 550	550	550	500	25	415	465	440	240	165	370	350	233	25	318	225	250	18	12	18	275	140
PTFS 660	660	660	600	30	495	555	540	292	195	405	380	233	30	348	275	300	22	15	22	330	165

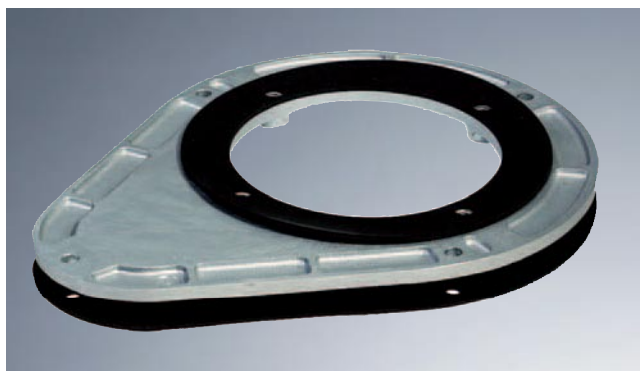
PTFS 800 from steel on request

In order to obtain the full loading capacity of the foot flanges all existing fastening bores have to be screwed up with the bellhousing!

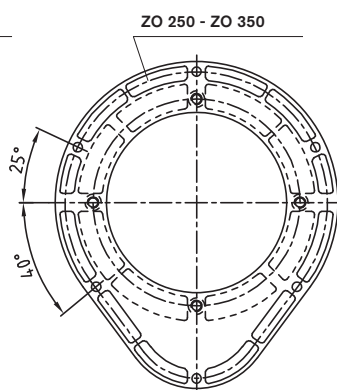
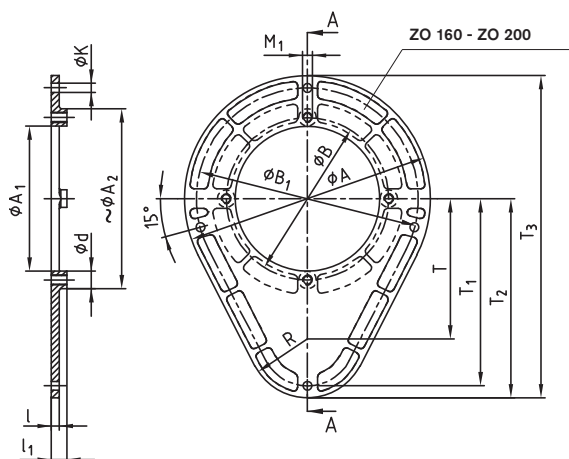
Order form

PTFL	350	GJS
Foot flange design	Size	Material

Accessories for bell housings

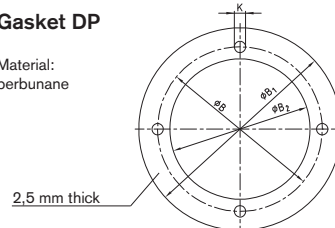


- Assembly and disassembly of the fully mounted drive unit outside the tank is possible
- Facilitates cleaning and maintenance
- Penstock connections via mounting flange
- Material aluminium
- Suitable for bell housings up to size P 350
- DP and DZ gaskets from Perbunane (NBR) available from stock
- Gaskets type DP are used between bellhousing and tank cover and furthermore between bellhousing and ZO mounting flange
- Gaskets type DZ are used between ZO mounting flange and tank cover

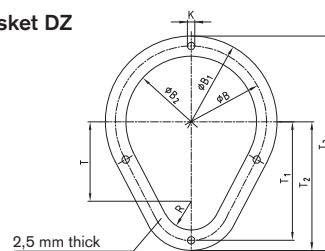


Gasket DP

Material:
perbunane



Gasket DZ



Mounting flange ZO

Size	Dimensions [mm]															Gasket DZ size	Gasket DP size
	A	A ₁	~A ₂	B	B ₁	K	M ₁	R	T	T ₁	T ₂	T ₃	d	l	l ₁		
ZO 160	210	112	150	130	185	9	M8	60	97,5	145	157,5	262,5	18	7	15	DZ 160	DP 160
ZO 200	250	147	187	165	225	9	M10	60	142,5	190	202,5	327,5	18	8	16	DZ 200	DP 200
ZO 250	300	192	239	215	275	9	M12	60	142,5	190	202,5	352,5	20	8	16	DZ 250	DP 250
ZO 300	360	236	289	265	330	14	M12	60	150	225	240	420	20	10	18	DZ 300	DP 300
ZO 350	410	262	332	300	380	14	M16	110	160	225	270	475	24	12	20	DZ 350	DP 350

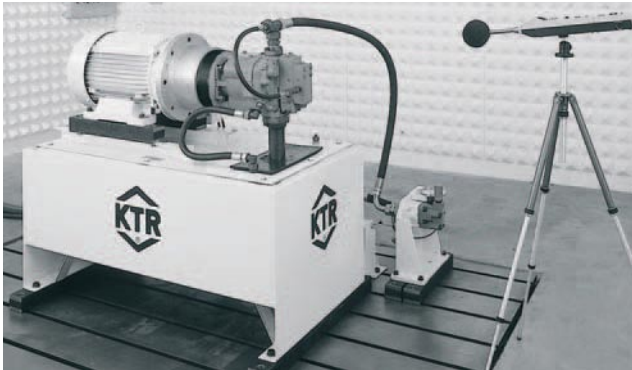
Gaskets for bell housings and mounting flanges

Size	Dimensions [mm]								
	B	B ₁	B ₂	T	T ₁	T ₂	T ₃	K	R
DP 160	130	160	111	—	—	—	—	4 x 9	—
DP 200	165	200	146	—	—	—	—	4 x 11	—
DP 250	215	250	191	—	—	—	—	4 x 13	—
DP 300	265	300	235	—	—	—	—	4 x 13	—
DP 350	300	350	261	—	—	—	—	4 x 17	—
DP 400	350	400	301	—	—	—	—	4 x 17	—
DP 450	400	450	351	—	—	—	—	4 x 17	—
DP 550	500	550	451	—	—	—	—	4 x 17	—
DZ 160	185	210	160	97,5	145	157,5	262,5	4 x 9	35
DZ 200	225	250	200	142,5	190	202,5	327,5	4 x 9	35
DZ 250	275	300	250	142,5	190	202,5	352,5	6 x 9	35
DZ 300	330	360	300	150	225	240	420	6 x 14	60
DZ 350	380	410	350	160	255	270	475	6 x 14	80

Order form

ZO 300	DP 300
Mounting flange size	Gasket design and size

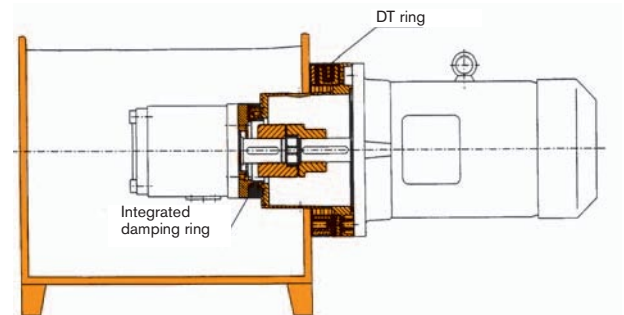
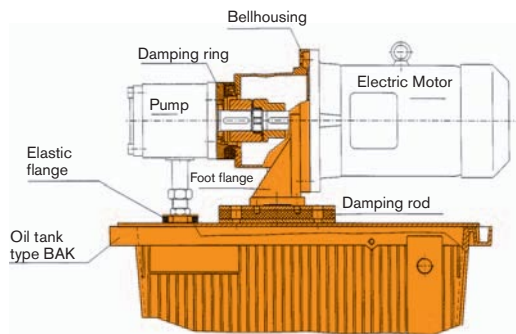
Damping elements



- Noise measurement in the R & D test center
- Noise measurement locally at the customer
- Airborne noise measurement on individual hydraulic components and complete units
- Structure-borne noise measurement to prove the efficiency of KTR damping elements
- Optimization of noise levels of systems or hydraulic units

In its research and development test center, KTR has provided for a sound measurement room allowing for low reflective test conditions. Comparative measurements are performed on an actual hydraulic power pack in order to test and optimize the efficiency of KTR damping elements. Apart from the stationary measurement in the laboratory, the efficiency of the KTR damping measurements taken can be proven locally.

Examples of application



Possible noise reductions compared to the rigid arrangement:

a) Damping ring only	3 – 6 dBA
b) Damping rod only	3 – 4 dBA
c) Damping ring and damping rod	6 – 8 dBA
d) Damping ring, damping rod and elastic flange	7 – 10 dBA
e) DT/DTV damping ring	3 – 6 dBA
f) DT/DTV damping ring and damping ring	6 – 8 dBA

Effect:

The effect of the KTR damping elements reflects the structure-borne noise vibration by means of the vulcanized, non-prestressed rubber layer in the acoustic frequency range from about 200 Hz. The reduction of structure-borne noise vibrations causes a reduced radiation of the airborne noise produced by the power pack.

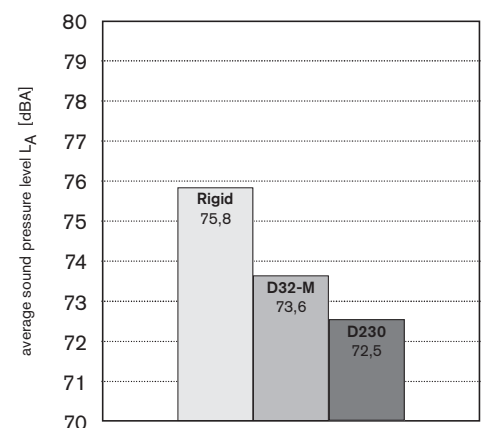
Result of a noise measurement

Test data:

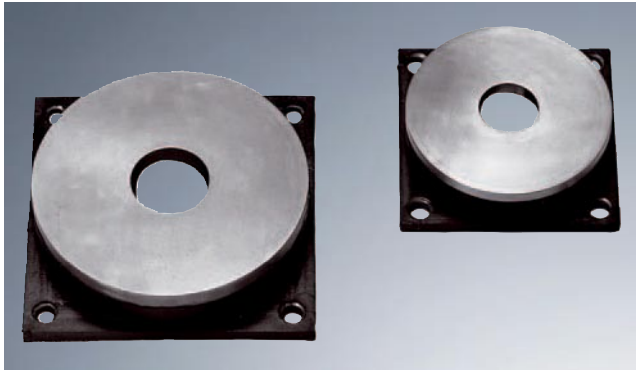
Electric motor: rotary current asynchronous 180M
18,5 kW, n = 1450 rpm
type B 3 / B 5

Pump: axial piston pump

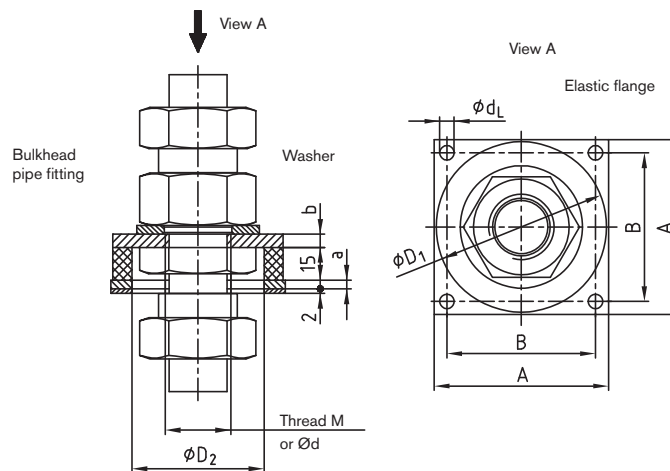
Coupling: ROTEX® 42 - 92 Shore A



Damping elements



- For structure-borne noise separation on the pressure and suction lines to the tank
- Suitable for bulkhead pipe fitting SV6 - SV42
- Sealing surface is moulded on
- Made from oil-resistant perbunane
- Larger types on request



Elastic flange												
Elastic flange								Bulkhead pipe fitting *)				Comment
Size	A	B	a	b	D ₁	D ₂	d _L	Type L light	Type S heavy	Thread M	Pilot bore for Ød	
80-2.11								SV 28-L	SV 25-S	M36 x 2	Ø34	
80-2.10								SV 22-L	SV 20-S	M30 x 2	Ø28	
80-2.9								SV 18-L	—	M26 x 1,5	Ø24,5	
80-2.8								—	SV 16-S	M24 x 1,5	Ø22,5	
80-2.7								SV 15-L	—	M22 x 1,5	Ø20,5	
80-2.6	80	68	4	6	78	60	6,6	—	SV 12-S	M20 x 1,5	Ø18,5	
80-2.5								SV 12-L	SV 10-S	M18 x 1,5	Ø16,5	
80-2.4								SV 10-L	SV 8-S	M16 x 1,5	Ø14,5	
80-2.3								SV 8-L	SV 6-S	M14 x 1,5	Ø12,5	
80-2.2								SV 6-L	—	M12 x 1,5	Ø10,5	
80-2.1								—	—	—	Ø10	Standard design
100-2.5								SV 42-L **)	SV 38-S **)	M52 x 2	Ø50	
100-2.4								—	SV 30-S	M42 x 2	Ø40	
100-2.3	100	82	5	8	95	65	9	SV 28-L	SV 25-S	M36 x 2	Ø34	
100-2.2								SV 22-L	SV 20-S	M30 x 2	Ø28	
100-2.1								—	—	—	Ø25	Standard design
130-2.4								SV 42-L	SV 38-S	M52 x 2	Ø50	
130-2.3	130	110	6	10	125	95	9	SV 35-L	—	M45 x 2	Ø43	
130-2.2								—	SV 30-S	M42 x 2	Ø40	
130-2.1								—	—	—	Ø35	Standard design

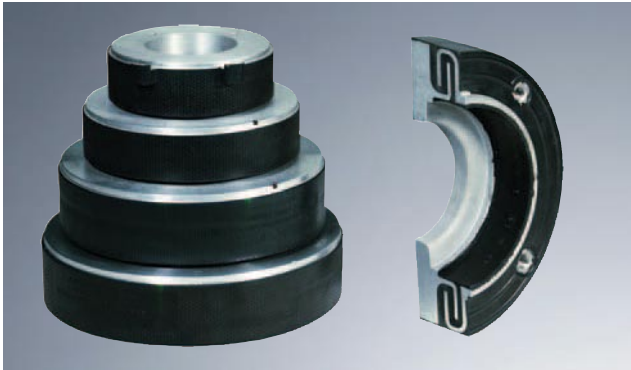
▲ Available from stock

*) Bulkhead pipe fitting and washer do not form part of our supply.

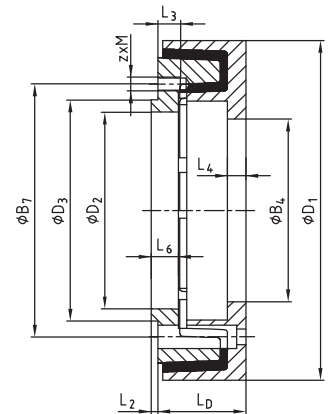
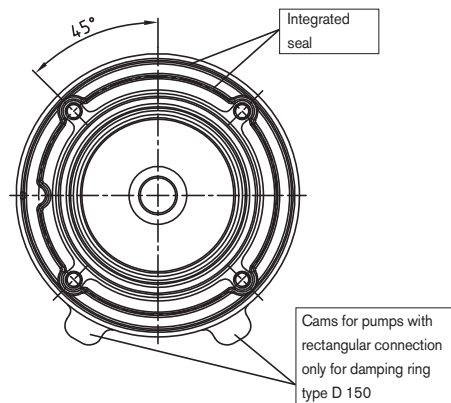
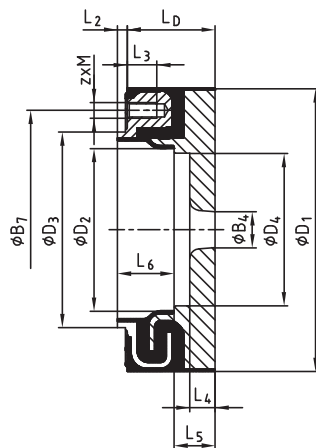
**) Counter nut cannot be assembled.

Order form	ERD	100	—	2.3
	Elastic flange	Size	Finish bore with thread M36 x 2	

Damping elements



- Vulcanized and failsafe (up to D 330, DBGM)
- High weight load permissible (e. g. multiple pumps)
- Excellent damping properties
- Excellent resistance to hydraulic oil
- Sealing lips are moulded on (up to size 330) – no additional sealing required
- For the bellhousing selection you require please either see our selection programme at www.ktr.com



D 84 / D 125 / D 145

Damping ring D														
Size	Dimensions [mm]													
	B ₄		B ₇	D ₁	D ₂	D ₃	D ₄	L _D	L ₂	L ₃	L ₄	L ₅	L ₆	z x M ²⁾
	min.	max.												
D 150/...	18	83	122	148	83	100	78	45	5	15	13	16	30	4 x M8
D 190/...	30	121	150	190	116	130	100	45	5	15	14	18	33	4 x M10
D 230/...	97	143	195	234	143	160	136	58	5	18	17	23	47	4 x M12
D 260/...	97	164	210	264	164	180	156	58	4	20	18	23	46	4 x M16
D 330/...	120	208	264	330	208	220	201	83	6	35	23	28	64	4 x M20
D 84/.../A	147	224	280	360	210	224	–	83	5	35	25	25	18	4 x M20
D 84/.../C														
D 125/.../A	260	320	360	484	285	315	–	125	10	33	25	25	40	M20 ³⁾
D 145/.../A	390	400	¹⁾	590	370	400	–	145	12	45	35	35	47	M24 ³⁾

¹⁾ Pitch circle diameter on request.

²⁾ Tightening torque of screw quality 5.6.

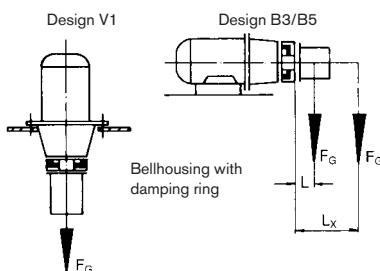
³⁾ Number of fixing holes on request.

Permissible radial and axial weight load of damping rings based on an ambient temperature of + 60 °C								
	D 150	D 190	D 230	D 260	D 330	D 84	D 125	D 145
Distance of center of gravity for radial load L [mm]	100	100	100	200	200	200	250	250
Perm. weight load F _{max} [N]	650	1800	3000	2300	4100	4000	6000	10000

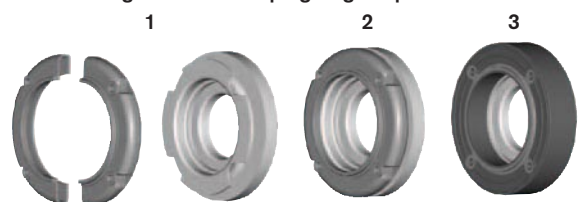
With a different distance of center of gravity L_x the permissible weight load is converted. If L_x < L, F_{max} = F_{perm}.

$$F_{zul.} = \frac{F_{max.} \cdot L}{L_x} \quad [N]$$

The permissible weight load F_{perm} must not be exceeded by the existing weight load F_G (radial or axial).



Arrangement of damping ring D up to D 330

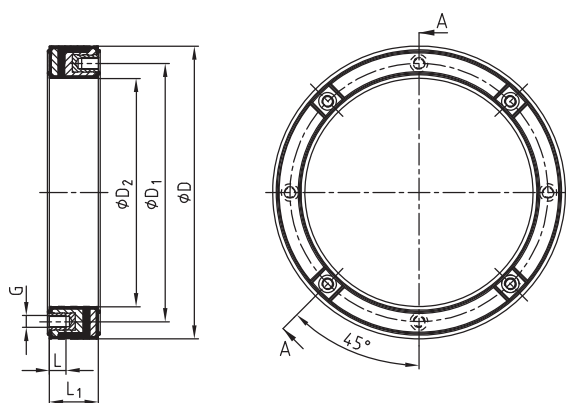


Order form	D	230	14
Damping ring	Size	Internal code	

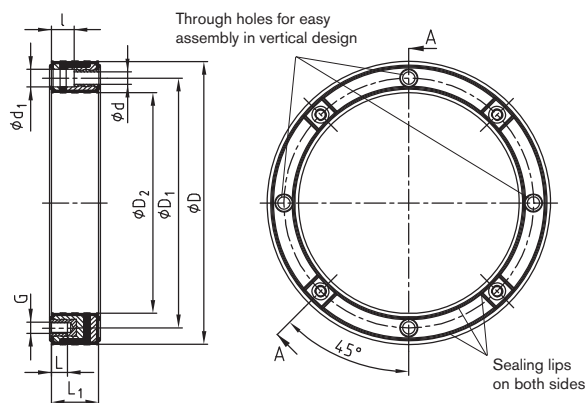
Damping elements



- DTV for vertical assembly only!
- To reduce noise between drive unit and tank by means of rubber flexible separation
- Type DT for horizontal and vertical assembly
- Type DT is protected against separation (failsafe) by means of a special design (registered design of the interconnected parts)
- Pressure-loaded elastomer due to the interconnected parts
- High permissible radial, angular and axial load
- Sealing lips are moulded on - no additional sealings required



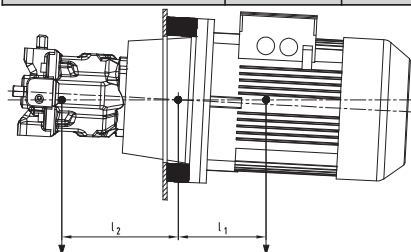
Damping ring type DT



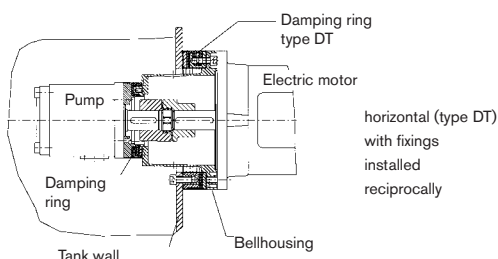
Damping ring type DT.../2

Damping ring DT (DBGM) and DTV

IEC-motor Size	Damping ring Size	Dimensions [mm]									Screw tightening torque [Nm]
		D	D ₁	D ₂	z x G	L	L ₁	z x d	z x d ₁	l	
71	DTV 160	160	130	111	4 x M8	16,5	35	4 x 9	4 x 14,5	18	12
80, 90S / 90L	DT 200	200	165	145,2	4 x M10	20	40	4 x 11	4 x 17,5	20	23
100L / 112M	DT 250	250	215	191	4 x M12	17,5	45	4 x 13	4 x 19,5	22	40
132S / 132M	DT 300	300	265	235	4 x M12	17,5	50	4 x 13	4 x 19	24	40
160M / 160L, 180M / 180L	DT 350	350	300	261	4 x M16	31	60	4 x 17	4 x 25	26	100
200L	DT 400	400	350	301	4 x M16	31	70	4 x 17	4 x 25	31	100
225S / 225M	DT 450	450	400	351	8 x M16	31	80	8 x 17	8 x 25	41	100
250M, 280S / 280M	DT / DTV 550	550	500	451	8 x M16	30	68	8 x 17	8 x 25	23	210
315S / 315M	DT / DTV 660	660	600	551	8 x M20	30	68	8 x 22	8 x 33	23	410



Example of assembly



Permissible radial weight and bending load of DT damping rings
with an operating temperature of + 60 °C

DT size	200	250	300	350	400	450	550	660
F _{perm.} [N]	370	720	1450	3600	4800	6600	13000	24000
M _{b perm.} [Nm]	30	65	175	740	1100	1600	4400	9000

$$F_{perm.} \geq F_P + F_M$$

$$M_{b perm.} \geq F_M \cdot l_1 - F_P \cdot l_2$$

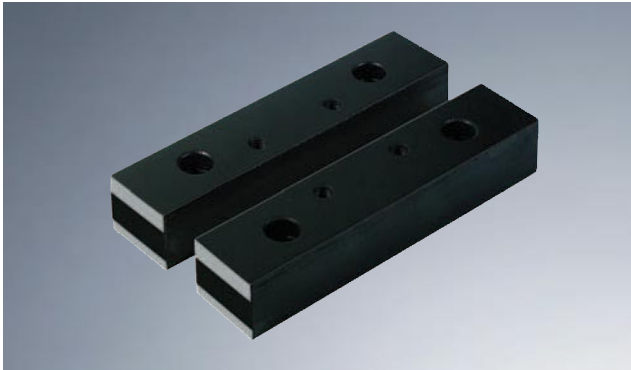
Arrangement of DT ring



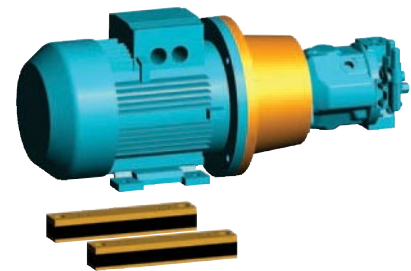
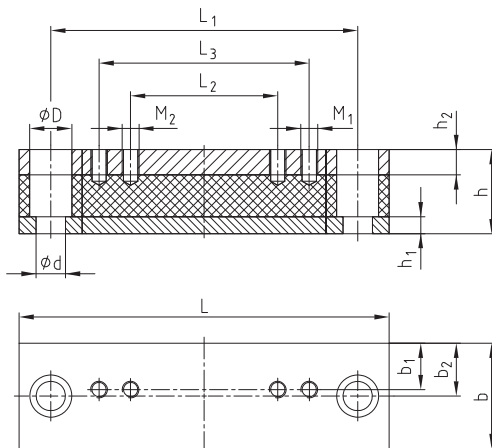
Order form

DT	250
Damping ring	Size

Damping elements



- Damping rods reduce the noise level and dampen vibrations
- Finish machined for motors IMB 35 (DSM), PTFL foot flanges (DSFL) or PTFS foot flanges (DSFS) and PIK oil coolers (DSK)
- Available from stock
- Special lengths or special designs on request
- Also suitable for Nema motors
- Damping rods are made from natural rubber (NR)
- All damping rods are adapted to the weight load that is produced
- Thrust loading (V1) not permissible



Type DSM

Damping rods design DSM for electric motors type IMB 35, protection IP 54

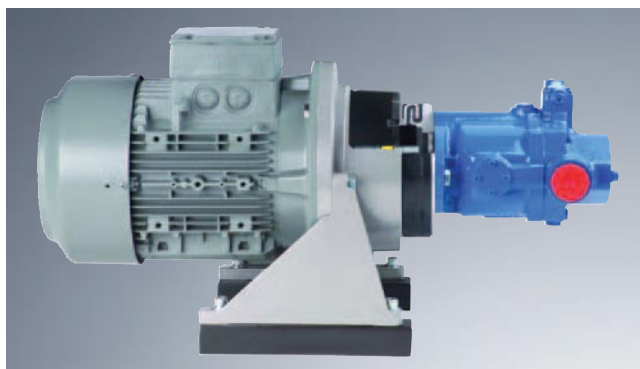
Damping rod Size	For motor Size	Dimensions [mm]													
		L	L ₁	L ₂	L ₃	h	h ₁	h ₂	b	b ₁	b ₂	d	D	M1	M2
DSM 71	71	196	156	90		40	8	12	50	21	25	14	20	M6	
DSM 80	80	176	146	100		40	8	12	50	22	25	14	20	M8	
DSM 90 S	90 S	196	156	100		40	8	12	50	24,5	25	14	20	M8	
DSM 90 L	90 L	240	205	125		40	8	12	50	24	25	14	20	M8	
DSM 100 L/112 M	100 L/112 M	240	205	140		40	8	12	50	22	25	14	20	M10	
DSM 132 S/132 M	132 S/132 M	280	245	140	178	45	8	12	50	20	25	14	20	M10	M10
DSM 160 M	160 M	340	300	210		60	15	15	70	28	35	18	26	M12	
DSM 160 L	160 L	416	370	254		60	15	15	70	28	35	18	26	M12	
DSM 180 M	180 M	416	370	241		60	15	15	70	35	35	18	26	M12	
DSM 180 L	180 L	446	400	279		60	15	15	70	35	35	18	26	M12	
DSM 200 L	200 L	492	430	305		60	15	15	70	35	35	22	33	M16	
DSM 225 S	225 S	492	430	286		60	15	15	70	35	35	22	33	M16	
DSM 225 M	225 M	492	445	311		60	15	15	70	35	35	22	33	M16	
DSM 250 M	250 M	492	445	349		60	15	15	100	50	50	22	33	M20	
DSM 280 S/280 M	280 S/280 M	614	570	368	419	60	15	15	100	50	50	22	33	M20	M20
DSM 315 S/315 M	315 S/315 M	614	570	406	457	60	15	15	120	60	60	22	33	M24	M20
DSM 315 L	315 L	704	660	508		60	15	15	120	60	60	22	33	M24	

Other sizes on request.

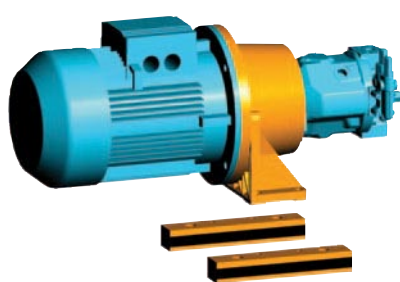
Order form

DSM	100 L/112 M
Damping rod	Size

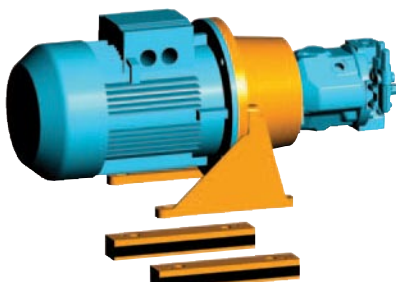
Damping elements



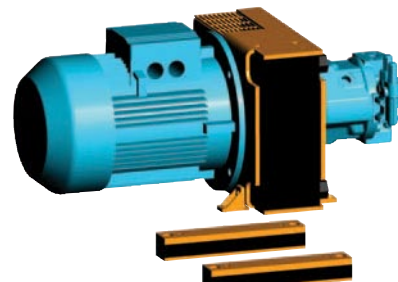
- Damping rods reduce the noise level and dampen vibrations
- Finish machined for motors IMB 35 (DSM), PTFL foot flanges (DSFL) or PTFS foot flanges (DSFS) and PIK oil coolers (DSK)
- Available from stock
- Special lengths or special designs on request
- Also suitable for Nema motors
- Damping rods are made from natural rubber (NR)
- All damping rods are adapted to the weight load that is produced
- Thrust loading (V1) not permissible



Type DSFL



Type DSFS



Type DSK

Damping rods design DSFL for foot flange PTFL

Damping rod Size	For motor Size	Dimensions [mm]											
		L	L ₁	L ₂	h	h ₁	h ₂	b	b ₁	b ₂	d	D	M
DSFL 160	PTFL 160	176	130	50	40	8	12	50	10	25	14	20	M8
DSFL 200	PTFL 200	176	130	60	40	8	12	50	15	25	14	20	M10
DSFL 250	PTFL 250	230	140	60	40	8	12	50	15	25	14	20	M12
DSFL 300	PTFL 300	270	170	80	40	8	12	50	15	25	14	20	M12
DSFL 350	PTFL 350	305	200	110	60	15	15	70	25	35	18	26	M16

Damping rods design DSFS for foot flange PTFS

Damping rod Size	For motor Size	Dimensions [mm]											
		L	L ₁	L ₂	h	h ₁	h ₂	b	b ₁	b ₂	d	D	M
DSFS 250	PTFS 250	240	140	185	40	8	12	50	17,5	25	13	20	M12
DSFS 300	PTFS 300	280	180	225	40	8	12	50	17,5	25	13	20	M12
DSFS 350	PTFS 350	325	200	265	60	15	15	70	25	35	17	26	M16
DSFS 400	PTFS 400	350	234	300	60	15	15	70	25	35	17	26	M16
DSFS 450	PTFS 450	385	270	335	60	15	15	70	25	35	17	26	M16
DSFS 550	PTFS 550	490	350	415	60	15	15	100	25	50	18	26	M16
DSFS 660	PTFS 660	635	415	495	60	15	15	100	30	50	22	33	M20

Damping rods design DSK for PIK bellhousings with integrated oil cooler with feet

Damping rod Size	For cooler Size	Dimensions [mm]											
		L	L ₁	L ₂	h	h ₁	h ₂	b	b ₁	b ₂	d	D	M
DSK 200	PIK 200	240	210	154,5	40	8	12	50	25	25	14	20	M12
DSK 250	PIK 250	270	240	175,5	40	8	12	50	25	25	14	20	M12
DSK 300	PIK 300	280	250	199,5	45	8	12	50	25	25	14	20	M12
DSK 350	PIK 350	325	295	243,5	60	15	15	70	35	35	14	20	M12

Order form

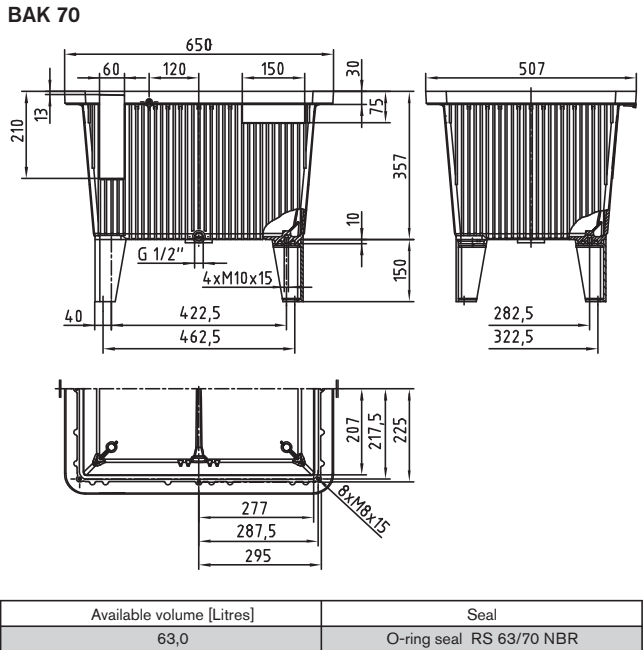
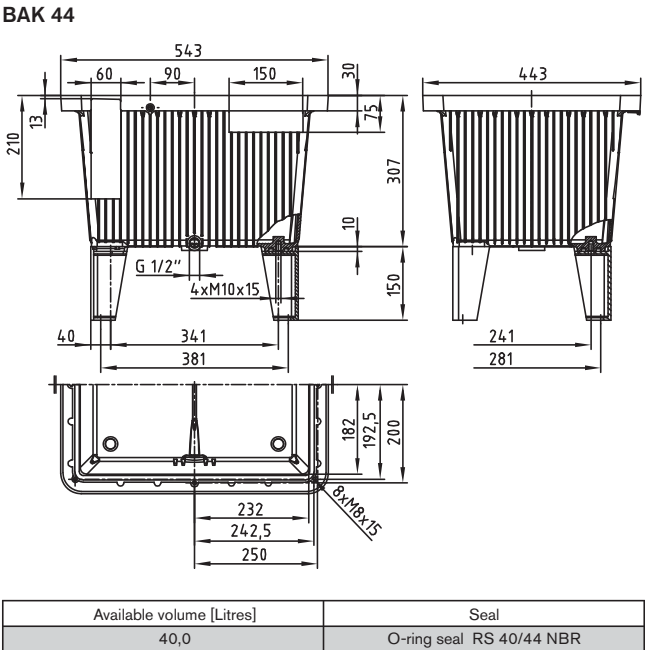
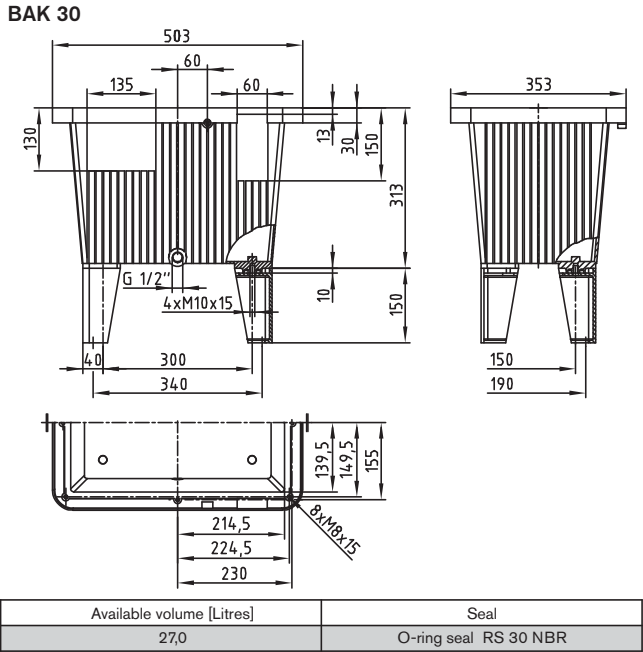
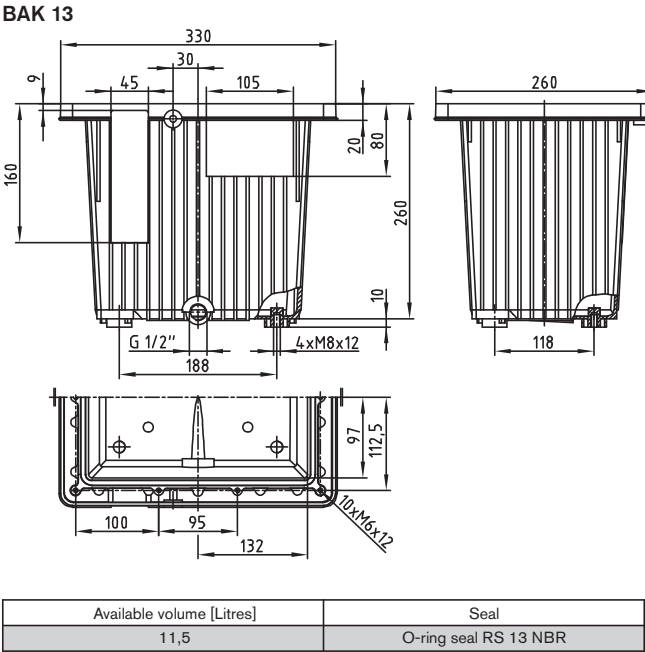
DSFS	300
Damping rod	Size

Aluminium tanks



- Made from aluminium for depressurized operation (0,5 bar at maximum)
- With oil collecting groove moulded on periphery for collection of leakage oil (Water Resources Act)
- O-ring seal for all tank sizes, ready to use
- No painting or priming of the tank required
- Good heat loss capacity due to high caloric conductivity and large heat dissipating surfaces
- All tanks are 100 % tight and may be stacked without jamming
- All sizes available from stock
- All tanks **including drain plug similar to DIN 908**
- Temperature resistant up to + 100 °C

Tanks with oil collecting groove BAK 13, BAK 30, BAK 44 and BAK 70



Order form	BAK	30
	Aluminium tank	Size

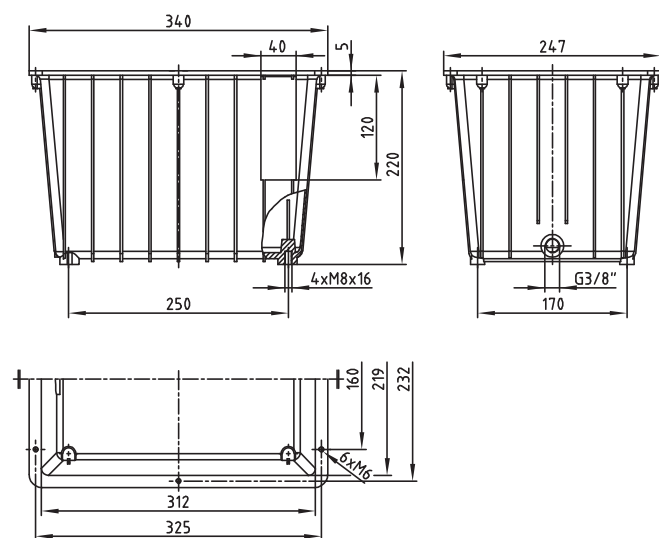
Aluminium tanks



- Made from aluminium for depressurized operation (0,5 bar at maximum)
- Without oil connecting groove
- O-ring seal or flat seal for all tank sizes, ready to use
- No painting or priming of the tank required
- Good heat loss capacity due to high calorific conductivity and large heat dissipating surfaces
- All tanks are 100 % tight and may be stacked without jamming
- All sizes available from stock
- All tanks **including drain plug similar to DIN 908**
- Temperature resistant up to + 100 °C

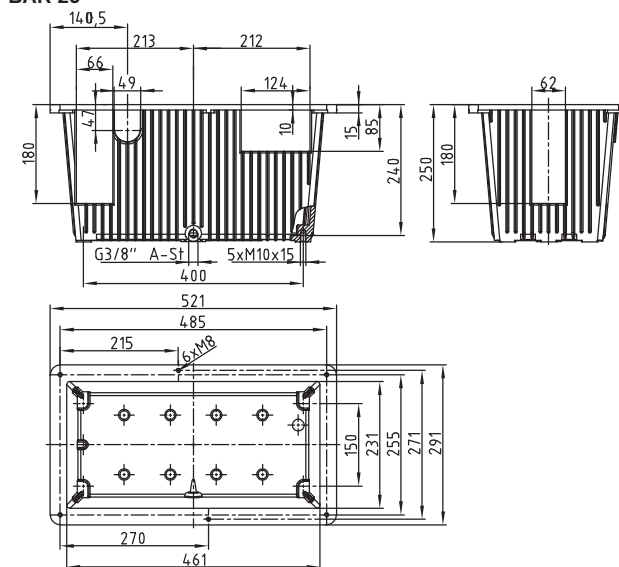
Tanks without oil collecting groove BAK 10, BAK 20, BAK 40, BAK 63 and BAK 100

BAK 10



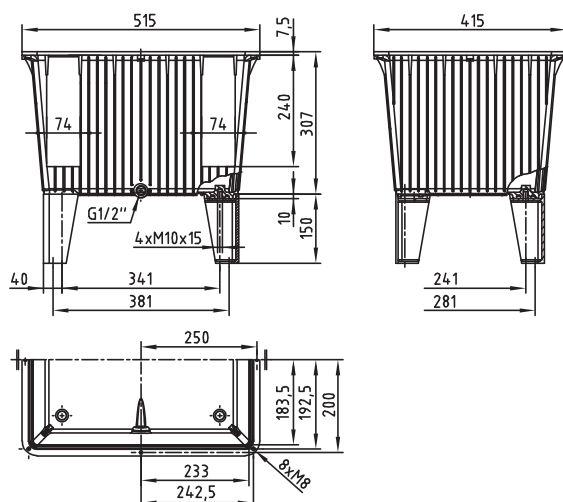
Available volume [Litres]	Seal
9,5	Flat seal FD 10

BAK 20



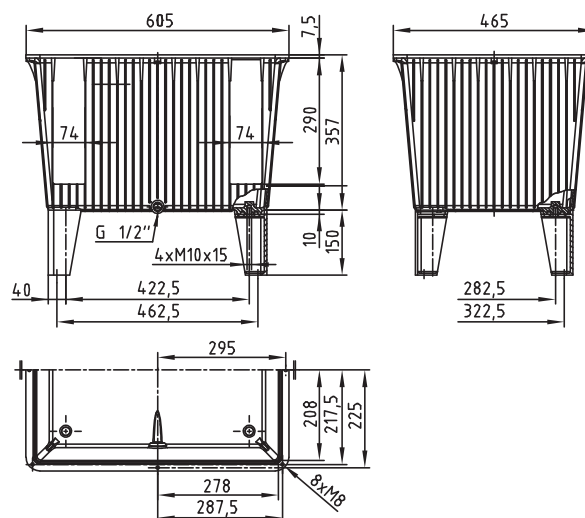
Available volume [Litres]	Seal
18,0	Flat seal FD 20

BAK 40



Available volume [Litres]	Seal
40,0	O-ring seal RS 40/44 NBR

BAK 63



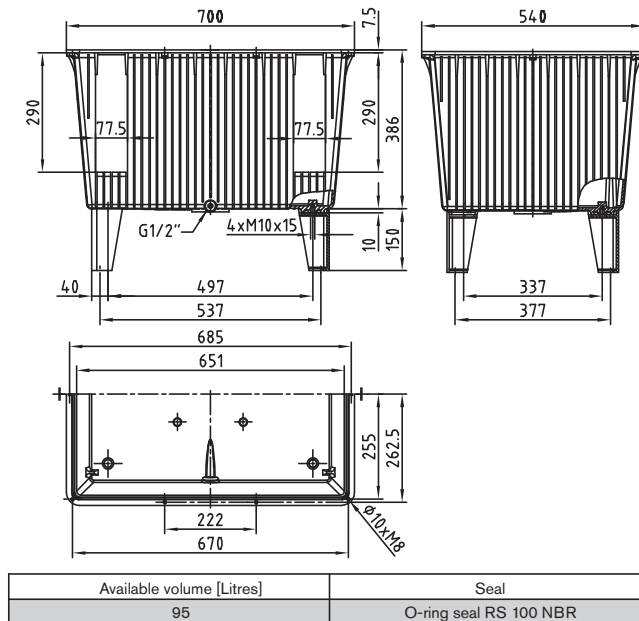
Available volume [Litres]	Seal
63,0	O-ring seal RS 63/70 NBR

Order form

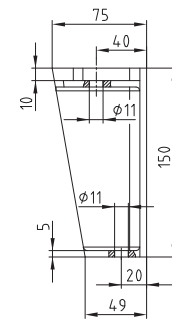
BAK	63
Aluminium tank	Size

Aluminium tanks and accessories

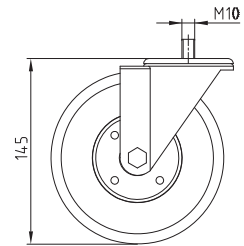
BAK 100



Tank feet BF 150 made from cast aluminium

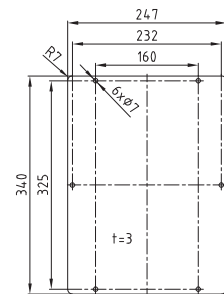


Wheels LR 150 with or without lock

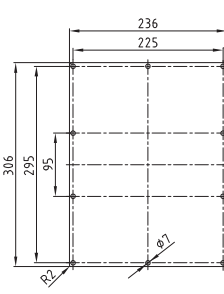


Tank cover made of steel and aluminium, accessories for aluminium tank

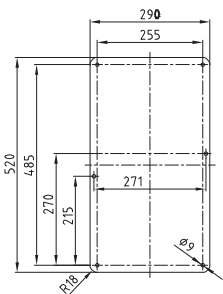
Cover		For tank	Dimensions [mm]							Cover thickness		Weight [kg]	
Steel	Al		A	A ₁	A ₂	B	B ₁	B ₂	R	St	Al	St	Al
ST 30	AL 30	BAK 30	475	460	449	325	310	299	25	5	5	6	2,1
ST 44	AL 44	BAK 40/BAK 44	515	500	485	415	400	385	32	5	8	8,5	4,6
ST 70	AL 70	BAK 63/BAK 70	605	590	575	465	450	435	32	5	8	10,5	6,1



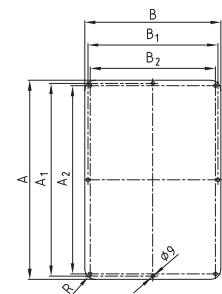
BAK 10 - ST 10
St: 3 mm thick; 1,9 kg



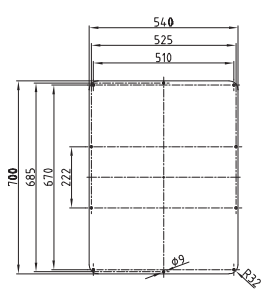
BAK 13 - ST 13 / AL 13
St: 4 mm thick; 2,2 kg
Al: 5 mm thick; 1,0 kg



BAK 20 - ST 20 / AL 20
St: 5 mm thick; 5,8 kg
Al: 5 mm thick; 2,0 kg



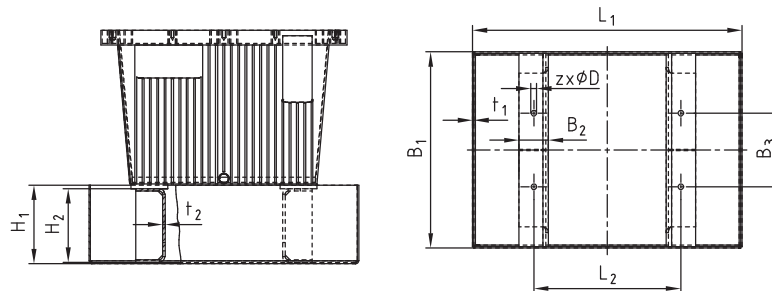
BAK 30-70
ST 30-70
AL 30-70



BAK 100 - ST 100 / AL 100
St: 6 mm thick; 17,8 kg
Al: 8 mm thick; 8,2 kg

Order form:

ST 44	BF 150	Plug DIN 908 with seal G 1/2 A
Tank cover for BAK 44 from steel	Feet for tank	Plug for BAK 44



Oil sumps BAKW for KTR aluminium tanks BAK

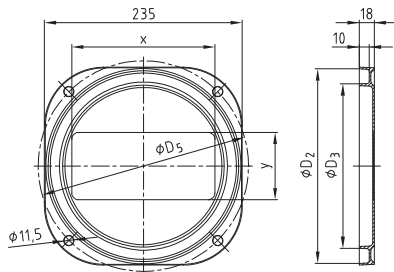
Oil sump	For tank	Volume of oil sump	Dimensions [mm]										
			L ₁	L ₂	B ₁	B ₂	B ₃	H ₁	H ₂	t ₁	t ₂	z	D
BAKW 13	BAK 13	11,8 l	380	188	310	60	118	110	100	3	3	4	9
BAKW 20	BAK 20	20 l	570	400	350	60	150	110	100	3	3	4	12
BAKW 30	BAK 30	33 l	550	300	400	60	150	160	150	3	5	4	12
BAKW 44	BAK40/BAK 44	45 l	600	341	500	60	241	160	150	3	5	4	12
BAKW 70	BAK 63/BAK 70	63,5 l	730	422,5	580	60	282,5	160	150	3	5	4	12
BAKW 100	BAK 100	104 l	920	497	770	60	337	160	150	3	5	4	12

Accessories for oil tanks

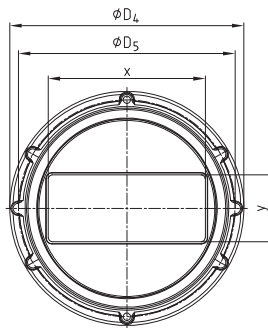


- Cleaning covers V324 and V449 according to DIN 24339
- Made from aluminium
- Screw tightening torque for all cleaning cover sizes 10 Nm at the maximum
- Cleaning cover V324-6/HFC, V449-6/HFC and V580-8/HFC are resistant to HFC fluids
- Gaskets type PRD made from perbunane (NBR), made from Viton on request
- On request available with logo
- Max. permissible pressure = 0,5 bar

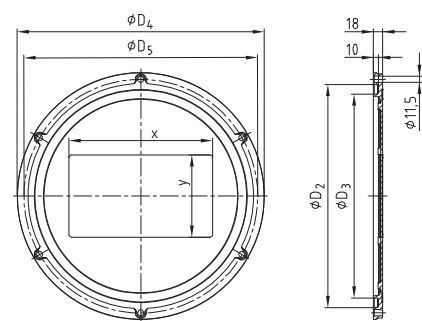
**Cleaning cover design
V250-4 PRD**



**Cleaning cover
DIN 24339**

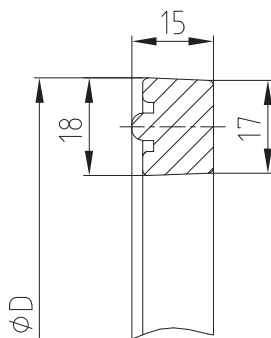


Cleaning cover



Cleaning covers								
Size	Dimensions [mm]					Number of bores	x	y
	D ₁	D ₂	D ₃	D ₄	D ₅			
V250-4 PRD	11,5	229	193	-	250	4	170	80
V324-6 / V324-6/HFC *	11,5	304	268	350	324	6	235	100
V324-6 Mould *	11,5	304	268	350	324	6	276	158
V449-6 / V449-6/HFC	11,5	429	393	475	449	6	276	158
V530-12	11,5	505	471	560	530	12	276	158
V580-8	11,5	560	523	620	580	8	370	210

* Cover with 4-hole fixing on request.

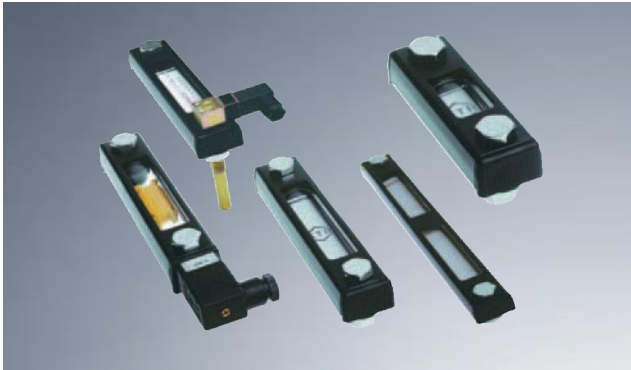


Gasket for cleaning covers			
Size		for cleaning cover	D [mm]
PRD 193 NBR	PRD 193 Viton	V250- PRD	229
PRD 268 NBR	PRD 268 Viton	V324	304
PRD 393 NBR	PRD 393 Viton	V449	429
PRD 471 NBR	-	V530	507
PRD 525 NBR	-	V580	561

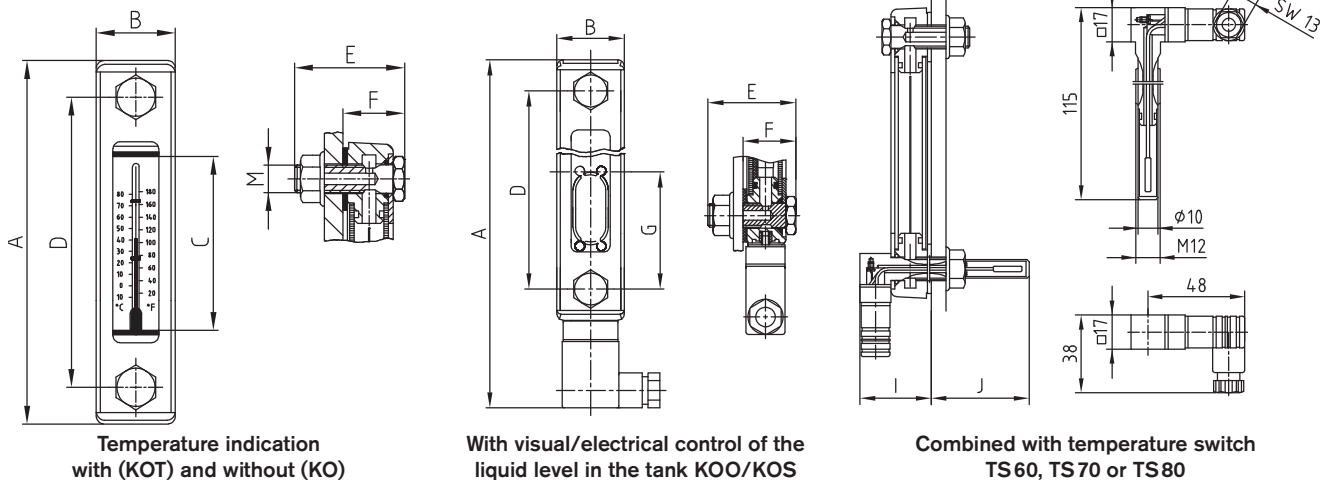
Order form

V449-6	PRD 393 NBR
Cleaning cover	Gasket

Accessories for oil tanks



- Oil level indicator with and without temperature indication
- Oil level indicator with liquid level control indication
- Oil level indicator to be combined either with temperature switch TS60, TS70 or TS 80
- Suitable for hydraulic oil HL, HLP, gas to max. 80 °C and diesel gas up to max. 60 °C
- Good UV resistance



Oil level indicator										
Designation	Dimensions [mm]								with TS	
	A	B	C	D	E	F	M	G	I	J
KO 01 / KOT 01	108		37	76				—	39	76
KO 02 / KOT 02	159	34	76	127	45	26	M12	—		
KOO 02 / KOS 02	205			127				50	47	68
KO 03	286		203	254				—	39	76

KOT 01: Indication range + 20 °C to + 80 °C

KOT 02: Indication range - 10 °C to + 80 °C

KOO: Electr. switch as opener

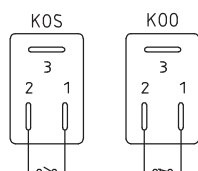
KOS: Electr. switch as closer

Operating range: - 10 °C to + 80 °C

Recommended screw tightening torque: 8 Nm

Prestress pressure of tank max. 1 bar

Electrical connections and functions:



Contact load:

KOS max. 10 W

KOO max. 3 W

Voltage:

50 V AC/DC

Switching current:

KOS max. 0,50 A

KOO max. 0,25 A

Line box with PG9

Protection IP 65

Connection 3 not used

Technical data (opener) of the temperature switch:

Shifting temperature:

TS 60: Shifting temperature 60 °C / 140 °F

TS 70: Shifting temperature 70 °C / 158 °F

TS 80: Shifting temperature 80 °C / 176 °F

Hysteresis:

20 °C

Tolerance of the shifting temp.: ± 5 °C.

Alternating current

- max. voltage 250 V

- max. current with 10.000 circuits

2,5 A with $\cos \varphi = 1,0$

1,6 A with $\cos \varphi = 0,6$

- max. current with 10.000 circuits

0,5 A with $\cos \varphi = 1,0$

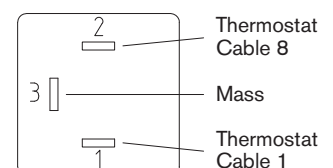
~0,25 A with $\cos \varphi = 0,6$

- min. switching current 50 mA

Direct current

- max. voltage 42 V

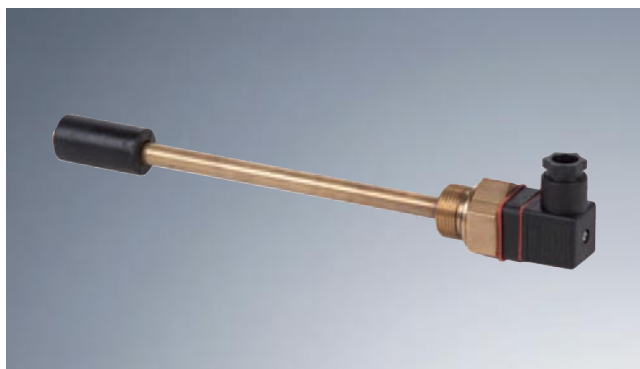
- max. current with 10.000 circuits 1 A



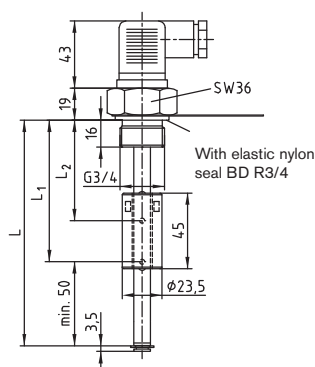
Order form

KO	02	+ TS 80
Type [KO, KOT KOO or KOS]	Size [01, 02 or 03]	with Temperature switch [TS 60, TS 70 or TS 80]

Accessories for oil tanks



- Electrical level and temperature control
- Suitable for mineral oils
- Available with 1 or 2 level contacts and with 1 temperature probe
- Electrical switch: decreasing level „opener“
increasing temperature „opener“
- Further lengths on request

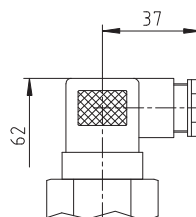


Switching tube
 Operating pressure max. 1 bar
 Operating temperature max. 80 °C
 Density of fluid min. 0,8 kg/dm³
 Swimmer SK 161 NBR
 Switching tube MS
 Flange MS

Level contacts
 Function NC (opener)
 Max. voltage operating 230 V
 Max. current 0,5 A
 Contact load 10 VA

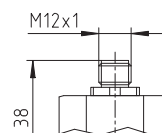
Temperature contacts
 Max. voltage operating 250 V
 Max. current switching 2 A
 Max. contact load 100 VA
 Switch-back difference 15 K ± 5 K

Plug-in connection D03
 Three-pole + PE DIN 43650



IP65 protection
 Cable screwing PG11
 Max. voltage 230 V
 AC/DC

Plug-in connection DM12
 3pol.

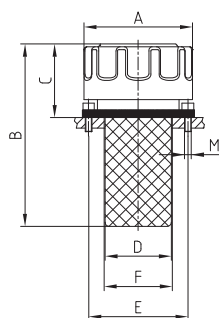


IP67** protection
 Cable screwing PG7**
 Max. voltage 24 V DC
 ** with respective upper part of plug

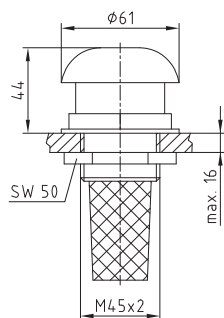
Level temperature switch			
Size	Dimensions [mm]		
	L	L ₁	L ₂
NVT22	220	170	40
NVT37	370	320	40
NVT45	450	400	40

Order form	NVT	22	2	60	D3
Type	Size	Type *	Shifting temperature	Voltage	
	22 = 220 mm contact tube	1 = 2 switch contact area H a. L	O = without temperature switch	D3 = max. 230 Volt (standard)	
	37 = 370 mm contact tube	2 = 1 switch contact area L and 1 temperature switch	60 = 60 °C	DM12 = max. 24 Volt	
	45 = 450 mm contact tube		70 = 70 °C		
			80 = 80 °C		

* Type with level switch on request



KE 01 and KE 02
 filter grade 10 µm



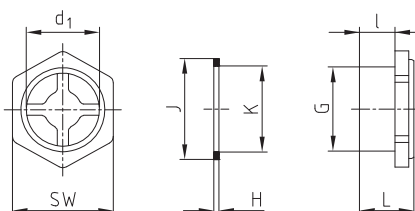
KE 03
 filter grade 45 µm

Filler breather with aeration filter							
Size	Dimensions [mm]						
	A	B	C	D	E	F	M
KE 01	44,5	110	48,5	28	41,3	30	3xM5
KE 02	79,9	134	54	48,7	73	53	6xM5

Air flow: KE 01 = 0,40 m³/min

KE 02 = 0,45 m³/min

Order form	Filler breather	KE 01
Type	Size	



Oil level sight glass								
Size	Dimensions [mm]							
	L	I	d ₁	G	H	J	K	SW
G ¹ / ₂ A	17,7	9,2	27,5	G ¹ / ₂	2	27	21	27
G ³ / ₄ A	18	9,2	23,8	G ³ / ₄	2	32	27	32
G1A	23,5	14	29	G1	2	40	34	40

Order form	Oil level sight glass	G ³ / ₄ A
Type	Size	

Temperature control and monitoring



- Up to 4 programmable switching terminals to be selected either as level or temperature signal
- Combined continuous control of level and temperature
- Perfectly visible LED display, swinging by 270°
- Easy to program
- 2 x M12 plug bases 4 poles
- Programmable analogous terminal as 4-20 mA, 0-5V, 0-10V or 2-10V
- PNP switching terminal to be programed as frequency terminal
- Min./max. memory, log-book operation
- Available from stock

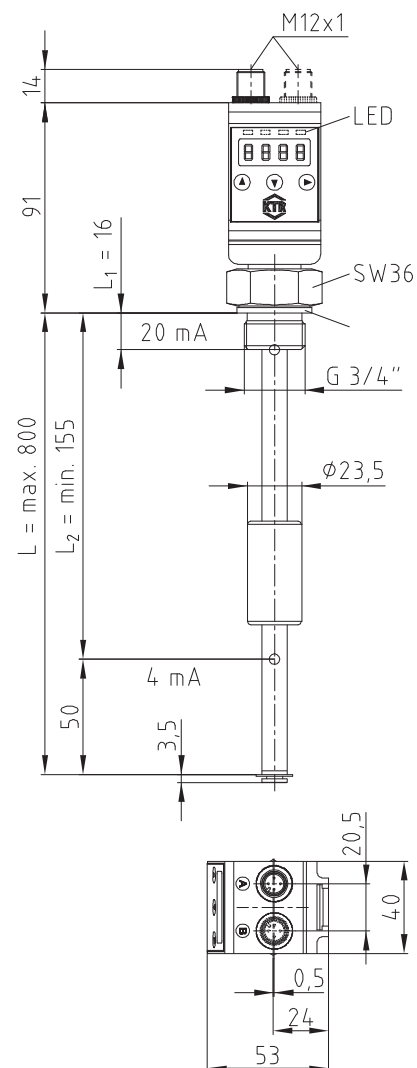
Electronic level and temperature control

Technical data

Operating pressure:	Max. 1 bar
Operating temperature:	-20 °C to +80 °C
Ambient temperature:	-20 °C to +70 °C
Weight:	ca. 400g
Sealing fluid:	Min. 0,8 kg/dm³
Swimmer:	PU
Immersion pipe:	MS
G 3/4 flange:	MS
Multiplier:	Reed chain
Resolution:	10 mm
Temperature sensor:	PT100 class B DIN 60751

Display and control unit

Display:	4-digit 7-segment LED display
Operation:	over 3 keys
Memory:	Min. and max. value memory
Current consumption with starting:	approx. 100 mA for 100 ms
Current consumption during operation:	approx. 50 mA
Supply voltage (U _B):	10-32 V DC (nominal voltage 24V DC)
Protection:	IP 65
Display units:	Level: %, cm, L, i, Gal Temperature: -20 °C to +120 °C or -4 °F to 248 °F
Setting range:	Level: e. g. 0-100 %l Temperature: 0 °C to +100 °C or 32 °F to 212 °F
Accuracy:	1% of final value



Order form	NVT-E	20	4	M12
	Type	20 = 200 mm contact tube 28 = 280 mm contact tube 37 = 370 mm contact tube 50 = 500 mm contact tube	4 = Switching points to be allocated freely 2NT = 2 switching terminals to be programed freely and 2 analogous terminals (level and temperature)	M12 = M12 plug base 4 poles

Temperature control and monitoring



- Control of the operating temperature of the medium
- Value of resistance proportionally changeable to the temperature
- Continuous signal change
- Flexible seal at the screwed thread head
- Optionally available with transmitter

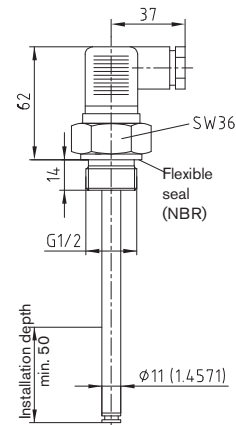
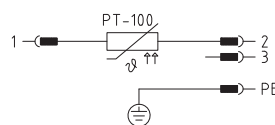
Temperature probe TE-PT-100

Basic values of precision resistance PT-100

°C	0	10	20	30	40	50	60	70	80	90	100
Ohm	100,00	103,90	107,79	111,67	115,54	119,40	123,24	127,07	130,89	134,70	138,50

Screwing and dipping sleeve: 1.4571 (stainless steel) – brass on request
 Available lengths: 100, 200 and 300 mm from stock (special lengths up to 1000 mm)
 Operating pressure: 10 bar (dipping sleeve of stainless steel)
 Operating temperature/measuring range: - 40 °C to + 100 °C
 Resistance feeler element: PT-100 Class B DIN/IEC 751
 Max. S-wire current PT-100: 1 mA
 Plug: according to DIN 43650 – 3 pl. + PE, Protection class IP65, cable screwing PG11

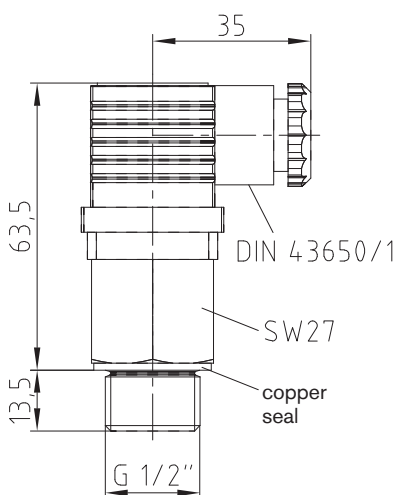
Connection diagram:



Order form

TE	PT-100	300
Temperature probe - electronic	Resistance feeler element	Lenght of dipping sleeve

Temperature switch TSC



- Simple, solid design
- Electric insert easy to disassemble
- For plug acc. to DIN 43650 straight cable outlet direction rotatable by 360°
- Copper seal
- Protective system IP 65

Technical data

Control element	DI metal
Switching function	NO = make contact
Switching temperature	+25 °C up to +80 °C
Material of probe	brass
Operating pressure max.	15 bar
Operating temperature	-20 °C up to +100 °C

Temperature contacts	Operating voltage max	230 V AC - 10 A	Shift point:	40 °C	TSC 40
	Switching current max.	2 A		50 °C	TSC 50
	Tolerance	± 5 K		60 °C	TSC 60
	Difference of shift back	15 K ± 3 K		70 °C	TSC 70
				80 °C	TSC 80

Order form

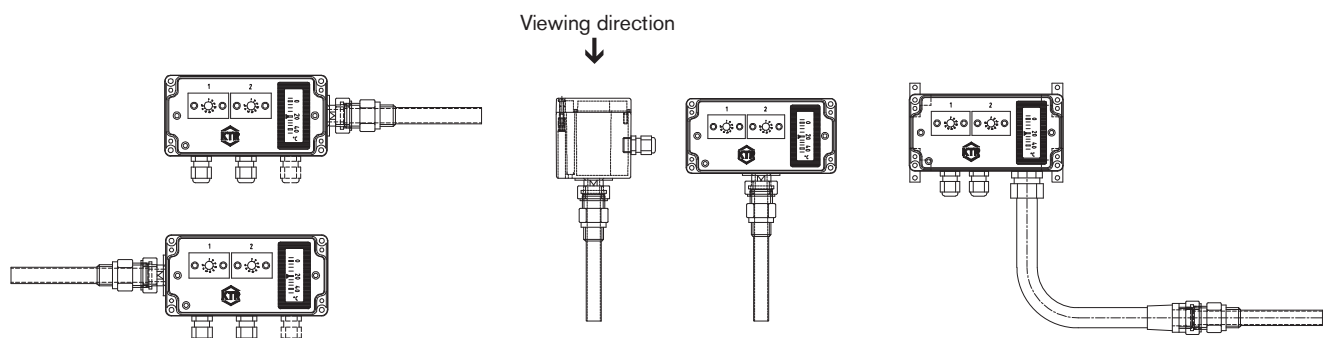
TSC	50
Temperature switch	Shift point 50 °C

Temperature control and monitoring



- Temperature control, indication and control of cooling and heating circles
- Excess temperature safety device of units
- Level control (IRDN)
- Used in hydraulic, lubrication and tempering units
- Up to 7 functions in one housing
- Dipping sleeve made from stainless steel
- Stable housing made from hardly inflammable and self-extinguishing Makrolon
- Operating range from - 30 °C to + 160 °C (IR)
- **IRDN:** Large LED display
- Level monitoring by means of 2-off firmly set Reed contacts

Industrial control system: Type/position of the dipping sleeve



Type R and L

- R:** Dipping sleeve on the right
L: Dipping sleeve on the left

Type H and U

- H:** Dipping sleeve in the back on the right
U: Dipping sleeve at the bottom

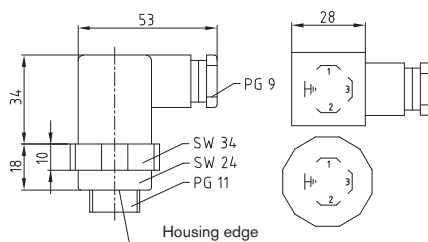
Type S₁

- S₁:** with 1 hose
S₃: with 2 hoses

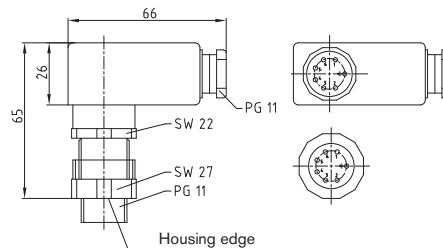
Hose lengths: S₁ = 1500 mm and S₃ = 2* 1500 mm

Electrical connections (IR)

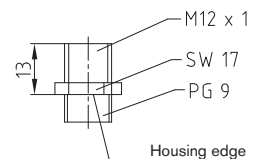
- A01 standard:** Flat plug 6,3 x 0,8; enclosed flat plug-in sleeves DIN 46247/3
A04 special design: Europe terminal strip completely cabled
 Connectors A02, A03 and A05 see pictures.



Plug A02
DIN 43650



Plug A03
DIN 43651



Contacts



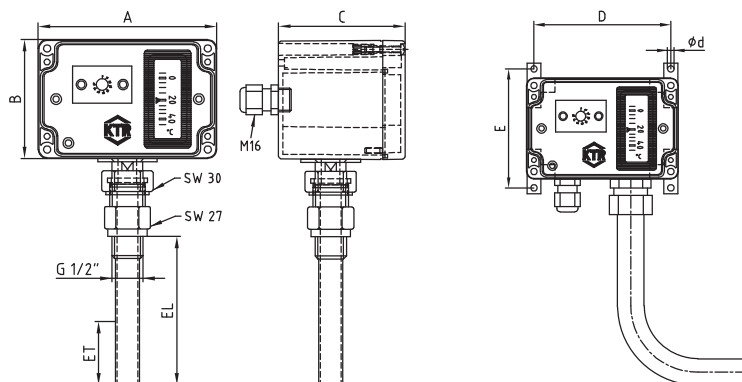
Plug A05
M12 - 4pol.

Controllers and temperature indication (IR)

Type	Function	Range	Max. probe temperature limiting temperature	Shifting difference Kelvin
00	Adjustable controller	-30 °C to +40 °C	80	~5
02	Adjustable controller	0 °C to +80 °C	120	~5
03	Adjustable controller	+10 °C to +120 °C	160	~5
04	Adjustable controller	+10 °C to +120 °C	160	~10
05	Adjustable controller	+60 °C to +160 °C	200	~5
07	Adjustable limiter *	0 °C to +150 °C	200	~5
T1	Thermometer	0 °C to +120 °C	140	
T2	Thermometer	-40 °C to +80 °C	100	

* Manual adjustment

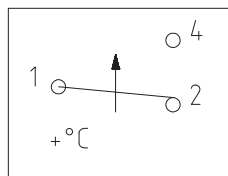
Temperature control and monitoring



Pin connection each controller IR

PE - connection (customer)

PE



Controller 1 ... X
Connection 6,3 AMP
Insulated plug

Type IR

Dimensions of the housing [mm]						
Number of functions				Type S ₁ - S ₃		
	A	B	C	D	E	d
1	82	80	85	70	94	5,2
2	120	80	85	108	94	5,2
3	160	80	85	148	94	5,2
4 / 5 / 6 / 7	240	120	100	228	134	5,2

Technical data

16 A (2,5)/250 VAC	0,5 K/min.
10 A (1,5)/400 VAC	
	T max. dependent on the type

Dimensions of the dipping sleeve IR

Typ/EL - installation length	100	200	300	400	500	900
ET - mm min. minimum depth of immersion referring to the number of installed functions						
1 - 3 functions	90					
4 - 6 functions	180					
7 functions	270					

Type IR

Technical data

Contact selection	Unipolar changer	Accuracy of indication	Class 3 according to DIN 16203
Contact material	Hard silver Ag	Housing material	Polycarbonate (makrolon)
Setting range	~ 30 °C to 160 °C	Dipping sleeve	1.4301
Shifting accuracy	~ 4 °C	Cable screwing	Polyamide
Ambient temperature	~ 35 °C to 80 °C	Probe + capillary tube	Cu
Test Certificates	VDE 0631, NF, SEMKO, Demko, ÖVE, KEMA	Shifting power	16 A (2,5)/250 VAC 10 A (1,5)/400 VAC 0,5 A/24 VDC further data on request
Isulation	According to VDE	Failsafety	2000 VAC between unified contacts and mass 1150 VAC between open contacts
Protection class	IP 65		
Cable screwing	M16 with strain relief		
Max. operating pressure of the dipping sleeve	16 bar		
Indication of thermometer	~ 30 °C to 160 °C		

LED 12 - 24 V	Index	LED 240 V	Index
green	2	green	5
red	3	red	6
red + green	4		

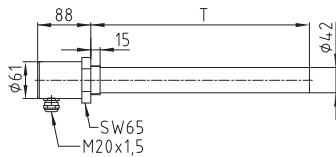
Order form

IR	200	H	A01	03 - 02 - 02 - T1
Type	Length of the dipping	Position of dipping sleeve	Connection	Requested controller or thermometer (max. 7). Arrangement according to requested assembly. If LED is requested, the figure 0 in the controller name is replaced by the respective index number (e. g. controller 02 and LED red = 32).

Tank heaters - Type EHP

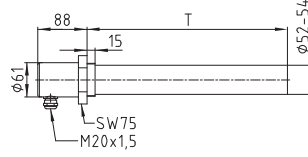


- Inserted heating cartridges to preheat hydraulic oil
- Temperature control by internal or external setting single-pole control 0 - 85 °C, 16 A
- Replaceable ceramic heating cartridges (assembly without oil drain)
- Steel cap from bright zinc coating/cover from stainless steel
- Suitable for horizontal assembly below oil level
- Material: steel (other material on request)
- Surface load 1.5 W/cm² for hydraulic oils
- Protection class IP 65 (excluding design EHP (TA) IP 54)
- Further designs available on request
- The connector pin assignment is enclosed to the unit



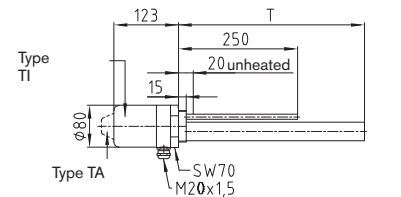
Without temperature control

Type EHP – G 1 1/2"



Without temperature control

Type EHP – G 2"



With temperature control
switching accuracy $\pm 3^\circ\text{C}$

Type EHP (TA/TI) – G 2"

Inserted heating cartridges								
Type EHP – G 1 1/2" without temperature control			Type EHP – G 2" without temperature control			Type EHP (TA/TI) – G 2" with temperature control		
Heating capacity [Watt]	Immersion depth T [mm]	Voltage [V]	Heating capacity [Watt]	Immersion depth T [mm]	Voltage [V]	Heating capacity [Watt]	Immersion depth T [mm]	Voltage [V]
400	200	230	500	200	230	450	300	230
600	300	230	750	300	230	600	400	230
800	400	230	1000	400	230	750	500	230
1000	500	230	1250	500	230	900	600	230
1200	600	230	1450	600	230	1050	700	230
1400	700	230	1700	700	230	1200	800	230
1600	800	230	1950	800	230	1350	900	230
1800	900	230	2200	900	230	1500	1000	230
2000	1000	230	2450	1000	230	1650	1100	230
2200	1100	230	2700	1100	230	1800	1200	230
2400	1200	230	2950	1200	230	1950	1300	230
2800	1400	230	3450	1400	3 x 400	2100	1400	230
3200	1600	230	3900	1600	3 x 400	2250	1500	230
3600	1800	3 x 400	4400	1800	3 x 400	2400	1600	230
4000	2000	3 x 400	4900	2000	3 x 400			

As an alternative: Control of tank heater possible in combination with KTR industrial controls with more than one temperature switch point (see page 204 and 205). In this case the temperature control on the tank heater can be done without. Please notice our mounting instructions under www.ktr.com.

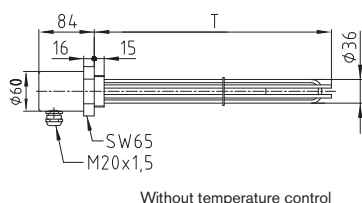
Order form	EHP	1950	1300	G 2"	TI	1 x 230 V
Type	Capacity [W]	Immersion depth T [mm]	Size of screwing thread	TA = temperature control with external setting TI = temperature control with internal setting O = without temperature control	Please make sure to mention the voltage [V] in your order, e. g. 1 x 230 V; 2 x 400 V; 3 x 400 V (from 1000 W)	

Tank heaters - Type EH and Type TEHM

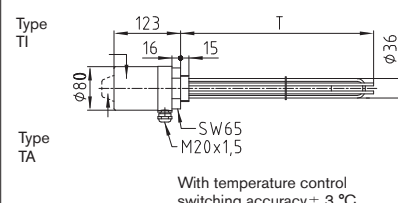


- Inserted tubular heating element to preheat hydraulic oil
- Suitable for horizontal assembly below oil level
- With or without temperature control for internal or external setting with single-pole control 0 - 85 °C, 16 Ampere
- Surface load 1.5 W/cm² for hydraulic oil
- Steel cap from bright zinc coating/cover from stainless steel
- Material: stainless steel (1.4541)/brassy nipple (other material on request)
- Protection class IP 65 (excluding design EH (TA) IP 54)
- Further designs available on request
- The connector pin assignment is enclosed to the unit
- Notice our mounting instructions (www.ktr.com)

Inserted tubular heating		
Type EH – G 1 1/2"		
without or with temperature control		
Heating capacity [Watt]	Immersion depth T [mm]	Voltage [V]
380	200	230
500	250	230
750	350	230
990	450	230
1460	650	230
1825	800	230
2300	1000	230



Type EH – G 1 1/2"



Type EH (TA/TI) – G 1 1/2"

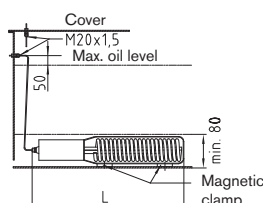
Order form					
EH	990	450	G 1 1/2"	TI	1 x 230 V
Type	Capacity [W]	Immersion depth T [mm]	Size of screwing thread	TA = temperature control with external setting TI = temperature control with internal setting O = without temperature control	Please make sure to mention the voltage [V] in your order, e. g. 1 x 230 V; 2 x 400 V; 3 x 400 V (from 1000 W)

Inserted tank heater with magnetic clamp type TEHM



- To preheat hydraulic oil
- Inserted tank heater either horizontally to the tank ground or vertically to the tank wall by means of magnetic clamps
- Ideal solution to retrofit existing machines and plants
- Assembly without oil drain
- Internal control with preset cut-in or cut-off temperature (standard 20 °C, switching precision 3 °C)
- If requested, it is possible for the manufacturer to set shifting temperatures to the details specified by the customer
- Other media/operating fluids available on request
- The connector pin assignment is enclosed to the unit
- Notice our mounting instructions (www.ktr.com)

Inserted tank heater		
Type TEHM		
Heating capacity [Watt]	Overall length L [mm]	Voltage [V]
250	265	230
500	290	230
1000	400	230



Technical data:

Shifting accuracy:	± 3°
Voltage:	230 V (other on request)
Operation temperature:	- 30 °C to + 80 °C
Surface load:	1,2 W/cm ² (0,6 W/cm ² on request)
Connection cable:	Three-pole, 2,5 m long including screwed cable gland M20x1,5

As an alternative: Control of tank heater possible in combination with KTR industrial controls with more than one temperature switch point (see page 204 and 205). In this case the temperature control on the tank heater can be done without.

Order form		
TEHM	1000	00
Type	Capacity [W]	Cut-off temp. set by the company to 20 °C = 00. Without temperature control = 01. Requested cut-off temperature e. g. 35 °C = 35.

Oil/air cooler — Type OAC



- High-performance cooler net for a maximum static operating pressure of 26 bar in aluminium (Al)
- Suitable for hydraulic oil, gear lubricant oil, lubricating oil, motor oil and water-glycine
- Fan drive in 12 V, 24 V, 230 V/400 V and hydraulic drive
- Easy maintenance and good options for cleaning
- Low sound pressure level
- CE certification
- Marine design for use in a corrosive atmosphere
- Alternative design available with OAC 200 to 900:
 Approved according to EC Standard 94/9/EC

A compact and high-performance cooler series comprising eight sizes was developed for high-power cooling of hydraulic and lubricating oils.

Accessories

- Thermal switch
- Thermal bypass valves

Applications

- Construction machines
- Agricultural machines
- Rail technology
- Machine tools
- Hydraulic power packs
- Wind power
- Hydraulic presses
- Iron and steel industry etc.

Arrangement

- Cooler net (plate and bar) made of aluminium with industrial lamina in black (RAL 9005)
- Fan cover made of steel in black (RAL 9005)
- Fan made of nylon PAG
- Protective grid made of steel in black (RAL 9005)
- Fan 12 V/24 V IP68, 230 V/400 V IP55
- Fan with hydraulic drive

Marine design:

- Refrigerating grid coated via KTL diving process
- Frame, fan cover, protection grid coated by KTL
- Electric motor as a design with double component coating

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Order form	OAC	400	-01	M
	Type	Size	Variant	Marine

Oil/air cooler — Type OAC

Selection system

To select the suitable cooler you need to know the following details:

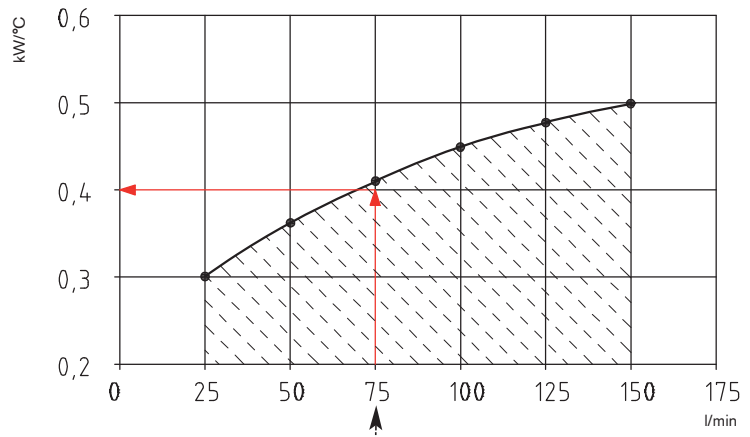
Q [kW]	Heat to be dissipated
V [l/min]	Oil flow
T _{Oil} [°C]	Inlet temperature of oil into cooler
T _L [°C]	Inlet temperature of ambient air into cooler

Example of calculation

Details given:

Q	=	14 kW
V	=	75 l/min
T _{Oil}	=	65 °C
T _L	=	30 °C

Power diagramme OAC 400



Calculation of the specific cooling effect

Inlet temperature difference ETD [°C]

$$= T_{Oil} - T_L$$

Required specific cooling effect P_{erf}.

$$= Q/ETD$$

The required specific cooling effect must be lower than the power curve!

$$\rightarrow 14 \text{ kW} / (65^\circ\text{C} - 30^\circ\text{C}) = \underline{0,4 \text{ kW/}^\circ\text{C}}$$

The following was selected: OAC 400

The actual cooling effect of the cooler is 0,41 kW/°C x 35°C = 14,35 kW

Calculation of the pressure lost

The pressure loss in the curves of the different data sheets is based on a viscosity of 30 cSt

The effective pressure loss is calculated as follows:

Pressure loss (from curve) x factor = effective pressure loss

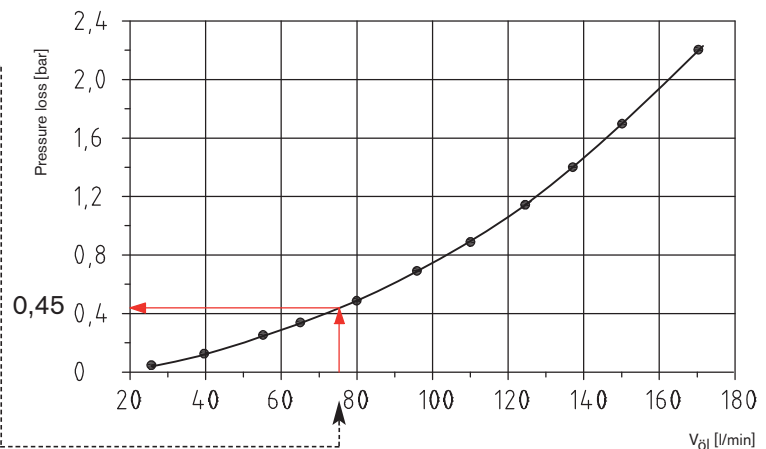
Example

V_{öl}: 75 l/min

Viscosity: 20 cSt

$$\rightarrow 0,45 \text{ bar} \times 0,75 = \underline{0,3375 \text{ bar}}$$

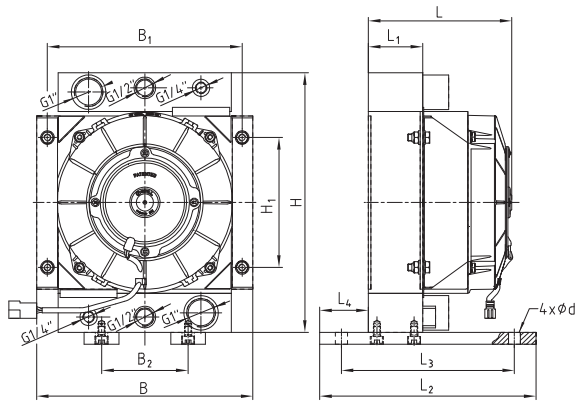
Pressure loss 30 cSt



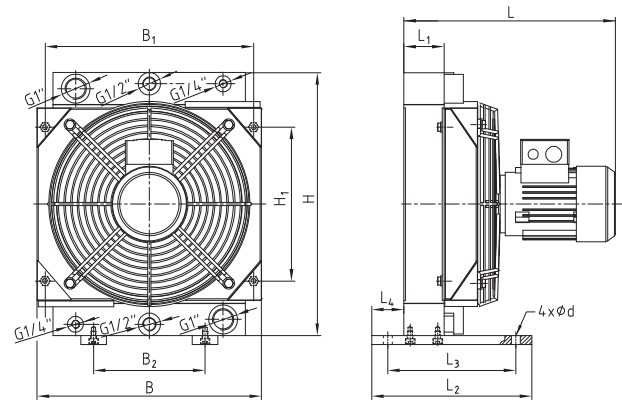
Conversion factor pressure loss

cSt	10	15	20	30	40	50	60	80	100
Factor	0,5	0,65	0,75	1	1,2	1,4	1,6	2,1	2,8

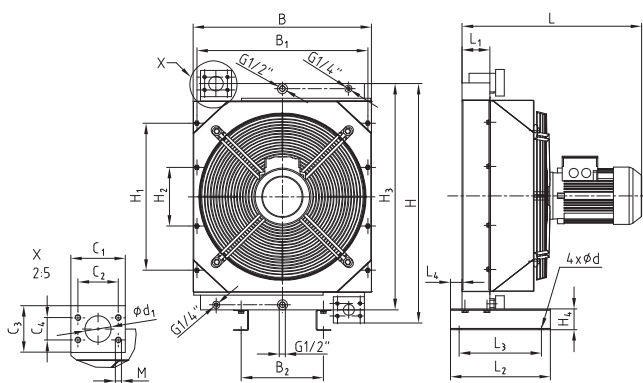
Oil/air cooler — Type OAC



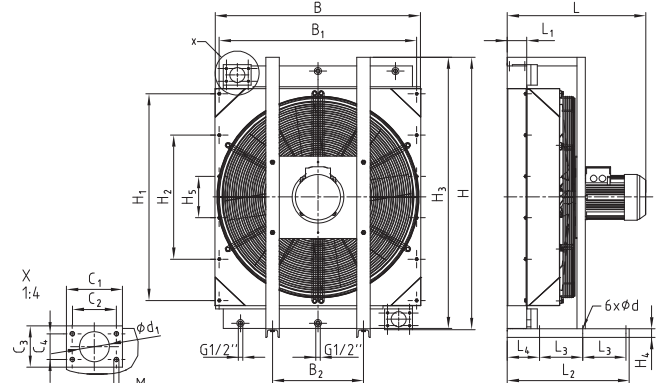
OAC 100



OAC 200 - OAC 400



OAC 500 - OAC 800



OAC 900 - OAC 1000

Oil/air cooler type OAC																						
Cooler type	Dimensions [mm]																					
	L	L ₁	L ₂	L ₃	L ₄	B	B ₁	B ₂	H	H ₁	H ₂	H ₃	H ₄	H ₅	d	d ₁	C ₁	C ₂	C ₃	C ₄	M	
OAC 100-01	167	63	250	200	50	250	225	100	314	150	-	-	-	-	14	-	-	-	-	-	-	
OAC 100-02	167																					
OAC 200-01	167																					
OAC 200-02		63	250	200	50	350	325	174	410	250	-	-	-	-	14	-	-	-	-	-	-	
OAC 200-03		330																				
OAC 200-04	253																					
OAC 300-01	230																					
OAC 300-02		65	250	200	49	446	421	200	500	320	-	-	-	-	14	-	-	-	-	-	-	
OAC 300-03		404																				
OAC 300-04	297																					
OAC 400-01	260																					
OAC 400-02		95	280	230	55,5	446	421	200	500	320	-	-	-	-	14	-	-	-	-	-	-	
OAC 400-03		434																				
OAC 400-04	326																					
OAC 500-01	259																					
OAC 500-02		94	340	280	40	460	435	130	740	400	200	670	70	-	13,5	38	95	69,9	77	35,7	M12	
OAC 500-03		433																				
OAC 500-04	325																					
OAC 600-01	222																					
OAC 600-02		94	340	280	40	607	582	280	815	500	200	770	70	-	13,5	51	105	77,8	90	42,9	M12	
OAC 600-03		533																				
OAC 600-04	400																					
OAC 700-03	542	94	340	280	40	608	582	280	965	700	300	920	70	-	13,5	51	105	77,8	90	42,9	M12	
OAC 700-04		410																				
OAC 800-03		692	140	450	390	40	701	676	280	965	700	300	920	70	-	13,5	51	105	77,8	90	42,9	M12
OAC 800-04	542																					
OAC 900-03	670	94	590	210	155	995	955	440	1318	1000	600	1312	42	200	14	73	135	106,5	100	62	M16	
OAC 900-04	650																					
OAC 1000-03	690	113	615	212	173	995	955	440	1318	1000	600	1312	42	200	14x Ø20	73	135	106,5	100	62	M16	
OAC 1000-04	670																					

NEW
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Oil/air cooler — Type OAC

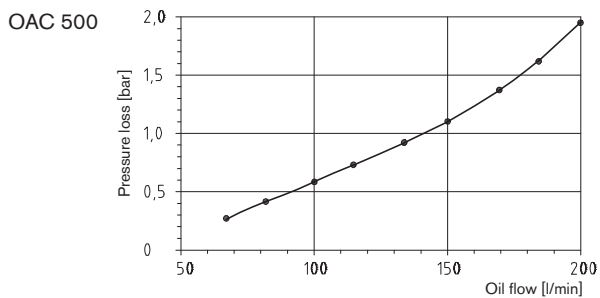
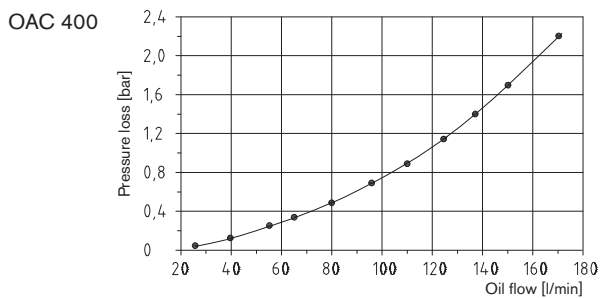
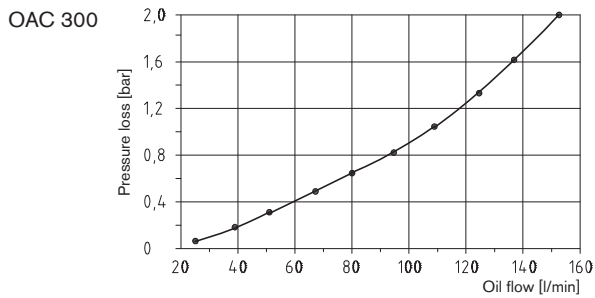
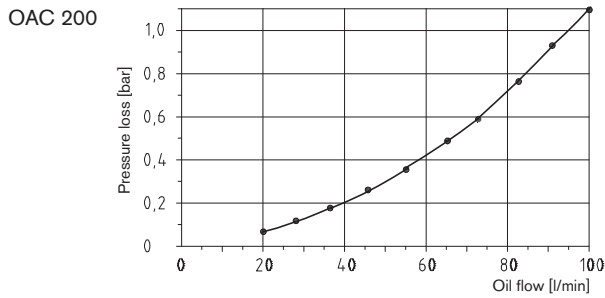
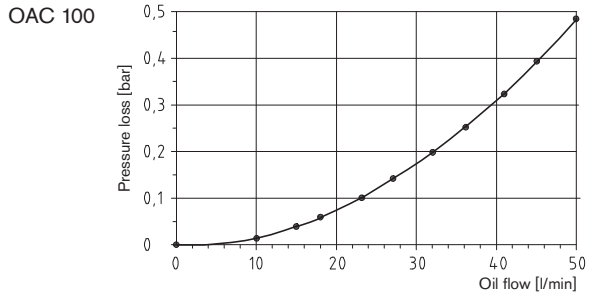
Technical data								
Cooler type	Drive	kW	Displacement [ccm]	A	IP	Fan-Ø [mm]	db [A]	Weight [kg]
OAC 100								
OAC 100-01	12 V DC	0,060		8,5	68	190	70	6,9
OAC 100-02	24 V DC	0,068		2,8	68	190	70	6,9
OAC 200								
OAC 200-01	12 V DC	0,084		4,7	68	280	73	14
OAC 200-02	24 V DC	0,192		9,8	68	280	73	14
OAC 200-03	230 V/400V	0,18		0,56	55	280	66	16
OAC 200-04-06	Hydraulic		6,3			280	66	16
OAC 300								
OAC 300-01	12 V DC	0,252		21	68	350	76	22
OAC 300-02	24 V DC	0,192		9,8	68	350	75	22
OAC 300-03	230 V/400V	0,37			55	380	75	22
OAC 300-04-06	Hydraulic		6,3			380	75	22
OAC 300-04-08	Hydraulic		8,0			380	75	22
OAC 300-04-11	Hydraulic		11,0			380	75	22
OAC 400								
OAC 400-01	12 V DC	0,252		21	68	350	76	27
OAC 400-02	24 V DC	0,192		9,8	68	350	75	27
OAC 400-03	230 V/400V	0,37			55	380	74	27
OAC 400-04-06	Hydraulic		6,3			380	74	27
OAC 400-04-08	Hydraulic		8,0			380	74	27
OAC 400-04-11	Hydraulic		11,0			380	74	27
OAC 500								
OAC 500-01	12 V DC	0,096		20,8	68	385	78	36
OAC 500-02	24 V DC	0,072		10,3	68	385	78	36
OAC 500-03	230 V/400V	0,370		1,03	55	380	74	38
OAC 500-04-06	Hydraulic		6,3			380	74	37
OAC 500-04-08	Hydraulic		8,0			380	74	37
OAC 500-04-11	Hydraulic		11,0			380	74	37
OAC 600								
OAC 600-01	2x12 V DC	2x0,11		4,7	68	2x280	79	46
OAC 600-02	2x24 V DC	2x0,09		9,8	68	2x280	79	46
OAC 600-03	230 V/400V	0,75		0,56	55	520	78	49
OAC 600-04-06	Hydraulic		6,3			520	78	48
OAC 600-04-08	Hydraulic		8,0			520	78	48
OAC 600-04-11	Hydraulic		11,0			520	78	48
OAC 700								
OAC 700-03	230 V/240 V	0,75		1,86	55	520	78	56
OAC 700-04-06	Hydraulic		6,3			520	78	56
OAC 700-04-08	Hydraulic		8,0			520	78	56
OAC 700-04-11	Hydraulic		11,0			520	78	56
OAC 800								
OAC 800-03	230 V/400 V	1,5		3,4	55	630	78	88
OAC 800-04-11	Hydraulic		11,0			630	78	87
OAC 800-04-14	Hydraulic		14,0			630	78	87
OAC 900 *								
OAC 900-03	230 V/400 V	2,2		5,8	55	900	79	190
OAC 900-04-14	Hydraulic		14,0			900	79	190
OAC 1000 *								
OAC 1000-03	230 V/400 V	2,2		5,8	55	900	79	210
OAC 1000-04	Hydraulic		19,0			900	79	210

* Maximum static operating pressure: 10bar

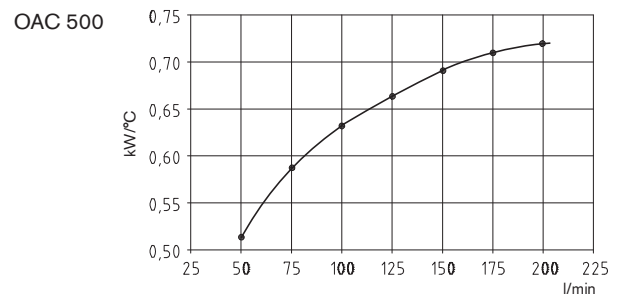
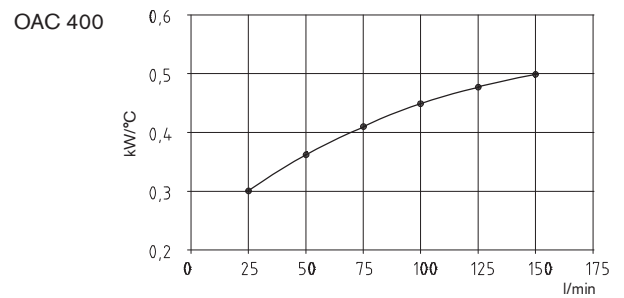
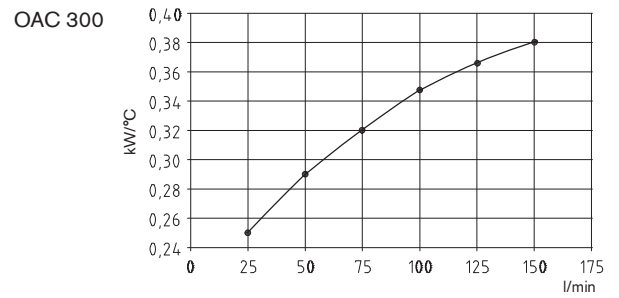
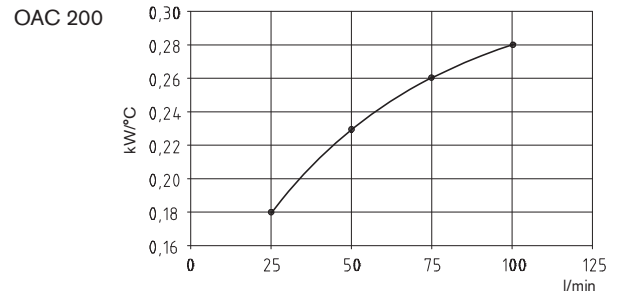
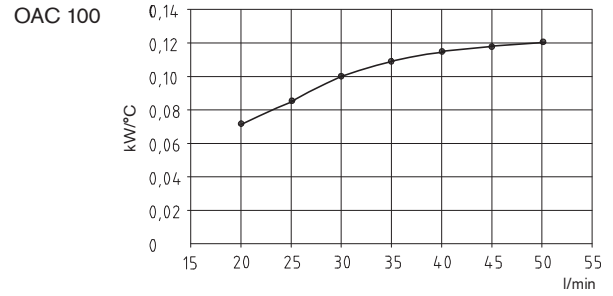
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Oil/air cooler — Type OAC

Pressure loss 30 cSt



Power diagramme

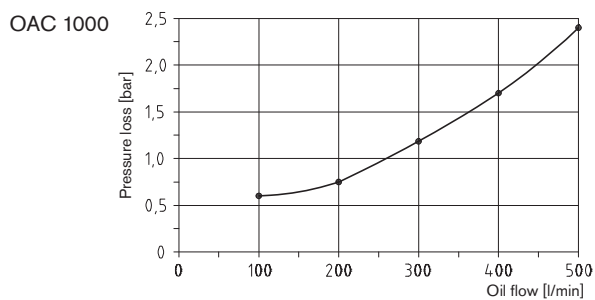
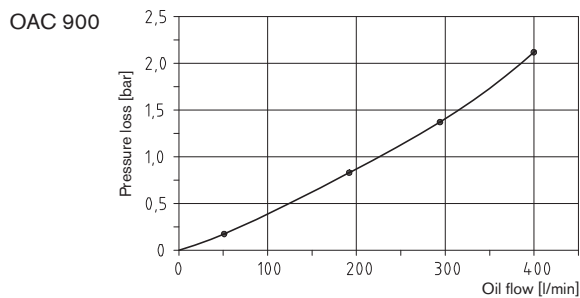
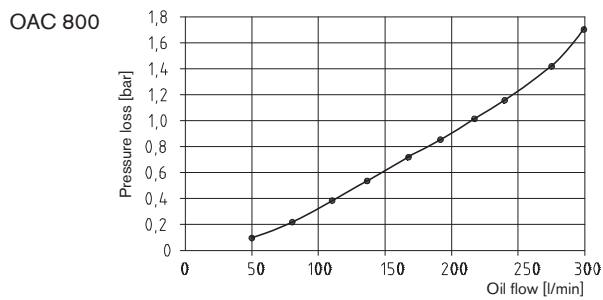
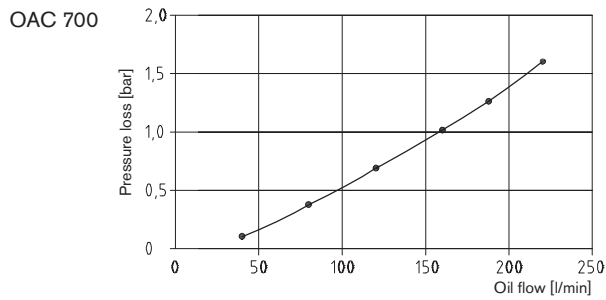
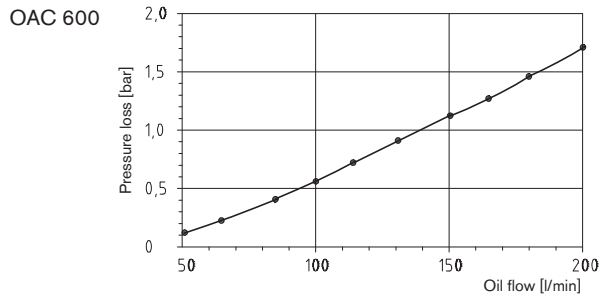


Conversion factor pressure loss

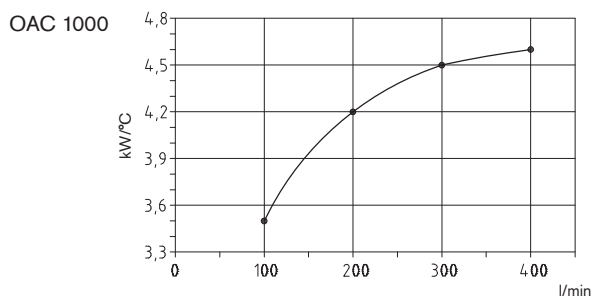
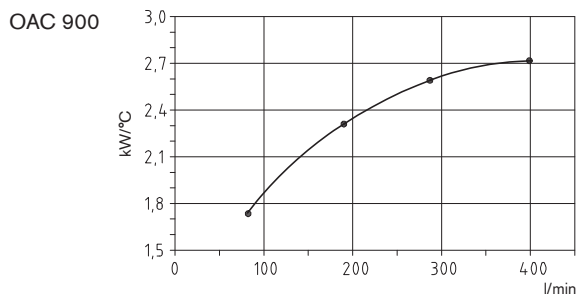
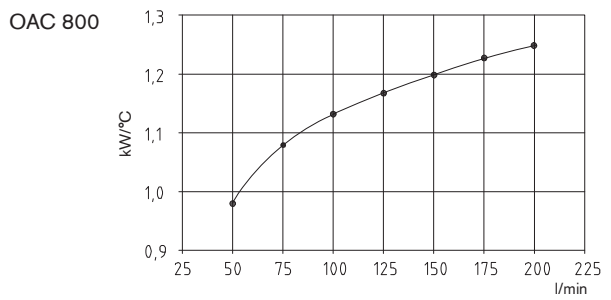
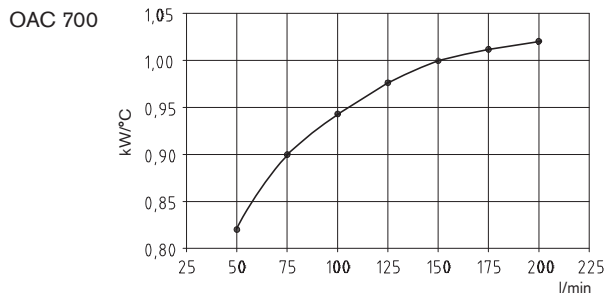
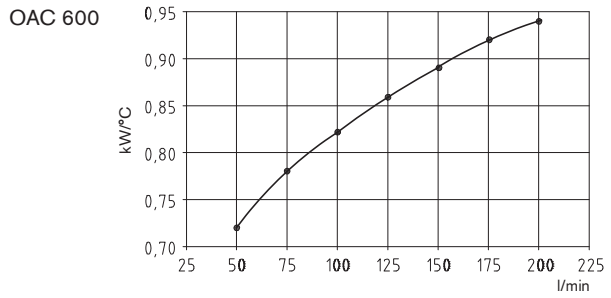
cSt	10	15	20	30	40	50	60	80	100
Factor	0,5	0,65	0,75	1	1,2	1,4	1,6	2,1	2,8

Oil/air cooler — Type OAC

Pressure loss 30 cSt



Power diagramme



Conversion factor pressure loss

cSt	10	15	20	30	40	50	60	80	100
Factor	0,5	0,65	0,75	1	1,2	1,4	1,6	2,1	2,8

OPC Cooling-pump-unit with hydraulic pump and filter



- High-performance cooler for a maximum static operating pressure of 26 bar
- Driving motor 230 V/400 V IP55
- Suitable for hydraulic oil, gear lubricant oil and lubricating oil
- Easy maintenance and good options for cleaning
- Available with filter
- Low sound pressure level
- CE certification
- Short delivery period

The OPC oil cooler unit is a system specifically developed for cooling in the bypass flow as an independent unit. The unit consists of a cooler, fan, electric motor, pump and may be supplemented by a filter on request of the customer.

Accessories

- Thermal switch
- Thermostat

Applications

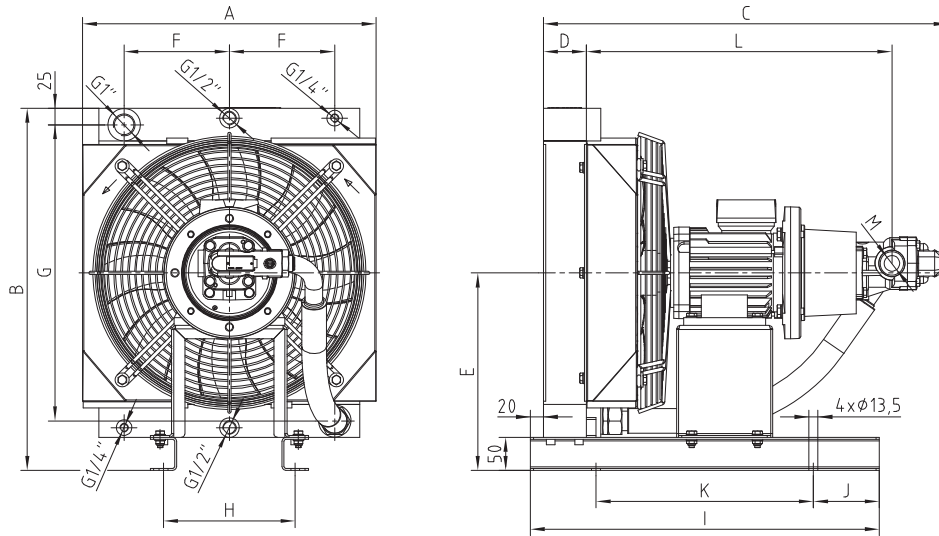
- Machine tools
- Elevators
- Test benches
- Add-on coolers
- Bypass flow cooling

Arrangement

- Cooler net (plate and bar) made of aluminium with industrial lamina in black (RAL 9005)
- Fan cover made of steel in black (RAL 9005)
- Fan made of nylon PAG
- Protective grid made of steel in black (RAL 9005)
- Electric motor 230 V/400 V
- Bellhousing and coupling
- Gearwheel feed pump
- Filter with visual maintenance indication on request of the customer

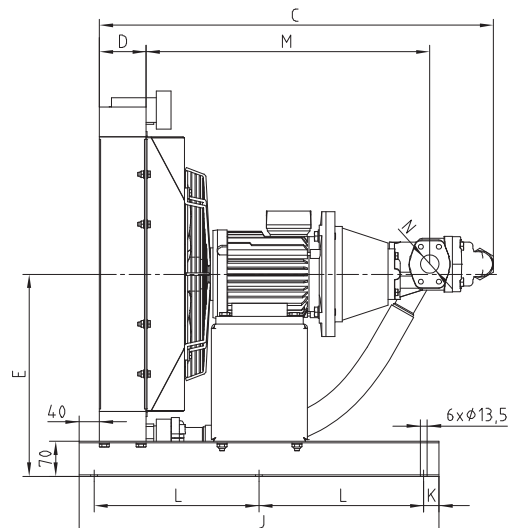
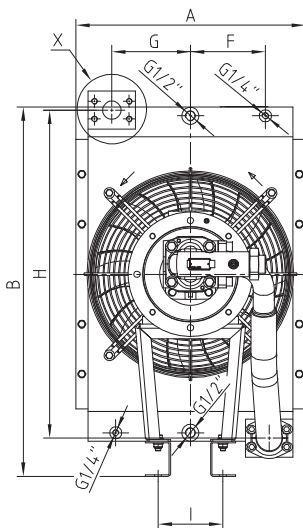
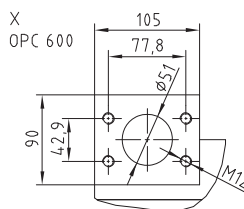
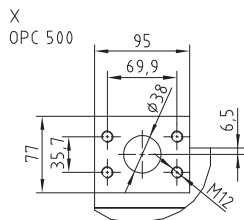
Order form	OPC	400	16	00
	Type	Size	Pump flow rate	Filter (00 = without; with filter please advise quality, e. g. 10 = 10)

OPC Cooling-pump-unit with hydraulic pump and filter



Type OPC 200 to 400

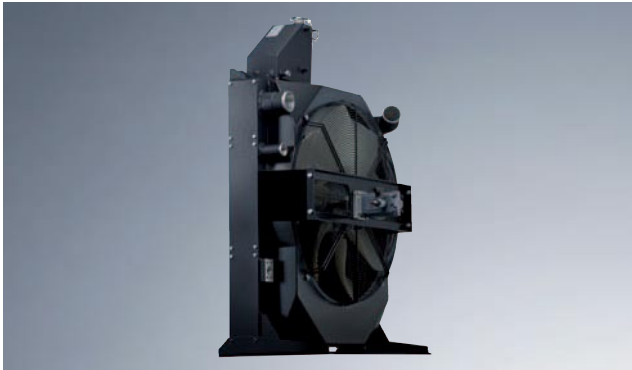
Cooler type	Voltage	Current [A]	Speed [1/min]	l/min	kW/°C	A	B	C	D	E	F	G	H	I	J	K	L	M	Weight [kg]
OPC 200-4D-0,75kW	230/400V 50 Hz	1,8	1400	5,5	0,12														
OPC 200-12D-0,75kW				16,7	0,14	350	460		63	255	115	360	174	530	100	330	426	G 3/4"	35
OPC 200-16D-0,75kW				21,4	0,15												435	G 1"	
OPC 300-4D-0,75kW				5,5	0,20														
OPC 300-12D-0,75kW				16,7	0,22	446	550		65	300	160	450	200	530	100	330	464	G 3/4"	42
OPC 300-16D-0,75kW				21,4	0,24												473	G 1"	
OPC 400-4D-0,75kW				5,5	0,24														
OPC 400-12D-0,75kW				16,7	0,26	446	550		95	300	160	450	200	550	75	400	465	G 3/4"	46
OPC 400-16D-0,75kW				21,4	0,28												474	G 1"	



Type OPC 500 and 600

Cooler type	Voltage	Current [A]	Speed [1/min]	l/min	kW/°C	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Weight [kg]
OPC 500-16D-2,2kW	230/400V 50 Hz	4,9	1410	21,5	0,40													547	G 1"	75
OPC 500-25D-2,2kW				33,4	0,48	460	740		94	405	150	157,5	657	130	720	30	330,0			
OPC 500-32D-2,2kW				42,7	0,50													568	SAE 1 1/2"	77
OPC 500-40D-2,2kW				53,5	0,52															
OPC 600-16D-2,2kW				21,5	0,65													626	G 1"	96
OPC 600-25D-2,2kW				33,4	0,68	607	840		94	455	225	226,0	770	280	795	30	367,5			
OPC 600-32D-2,2kW				42,7	0,70													647	SAE 1 1/2"	98
OPC 600-40D-2,2kW				53,5	0,73															

MMC combined cooler



- Multi-circle cooler for combustion engines (water, oil, charge air, fuel)
- Various lamina systems, applications in different ambient conditions
- Solid design from aluminium in plate and bar
- Systems with fan
- Different drives (hydraulic motor or 12/24 V fan)

The MMC cooler series is used on construction machines, agricultural machines and stationary I. C.-engines. Being used as a water cooler, series MMC tempers the cooling water. Being used as an oil cooler it ensures the cooling of hydraulic or gear oil, as a charge air cooler it operates the cooling of the combustion air. As a result such kind of high-power cooling system meets with all demands on the temperature regulation of media, including applications as fuel coolers.

It goes without saying that such cooling systems are developed individually, taking into account the necessary cooling power and in a close cooperation with the customers. If several power packs for cooling are requested, they can be arranged either „side by side“ or one after another. Depending on the application the MMC coolers are equipped with fans which are driven either by hydraulic fan drives, 12/24V or 230/400V electric motors, the hydraulic systems having the benefit of a higher efficiency, lower sound emission and a better adaptability to the different operating conditions on bigger machines. Regardless of the mode of drive the latest types of fans are used which are not only operating very efficiently, but also very quietly.

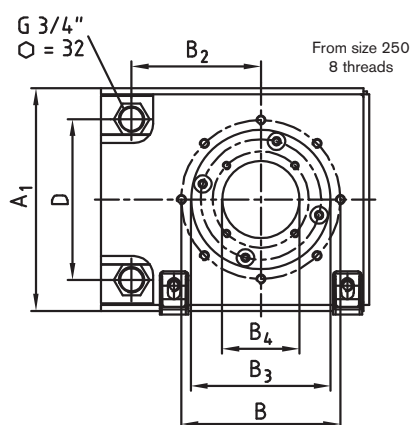
Potential applications



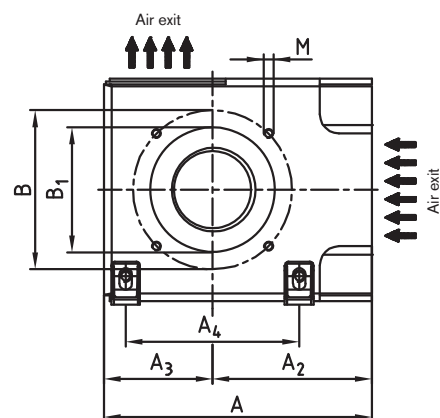
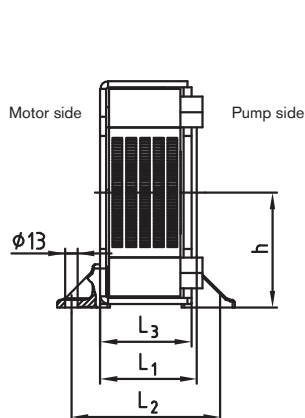
Oil/air cooler



- Suitable to cool the entire oil volume (return pass)
- Constant air flow rate of the heat exchanger due to a low pressure principle (DBGM)
- Optimum utilization of the high-performance heat exchanger
- Optimum accommodation of housing and fan wheel
- Direct suction of cold ambient air by the heat exchanger
- Heat exchanger can easily be cleaned externally (without any disassembly)
- For the bellhousing selection you require please either see our selection programme at www.ktr.com



View pump side



View motor side

Bell housings with integrated oil cooler PIK (DBGM)

Bel housings with integrated oil cooler PIK (DBGM)																		
IEC-motor Size (Shaft) kW with 1500 rpm		PIK oil cooler type	Dimensions [mm] *															
			L ₁	L ₂	L ₃	A	A ₁	A ₂	A ₃	A ₄	B	B ₁	B ₂	B ₃	min. B ₄	D	M	h
80 (19 x 40)	0,55	PIK 200/1/...	100	154,5	94,5	275	225	163	112,5	180	165	130	130	145	20	167	M10	116,5
90S / 90L (24 x 50)	0,75	PIK 200/2/...	110	154,5	94,5	275	225	163	112,5	180	165	130	130	145	20	167	M10	116,5
	1,1	PIK 200/4/...	124	154,5	94,5	275	225	163	112,5	180	165	130	130	145	20	167	M10	116,5
100L / 100M (28 x 60)	1,5	PIK 250/2/...*	124	175,5	115,5	308	250	180	125	220	215	180	150	190	20	192	M12	129
	2,2	PIK 250/4/...*	135	175,5	115,5	305	250	180	125	220	215	180	150	190	20	192	M12	129
132S / 132M (38x80)	3, 4	PIK 300/1/...	144	199,5	139,5	359	300	205	154	260	265	230	175	234	30	242	M12	154
	5,5 7,5	PIK 300/3/...	155	199,5	139,5	359	300	205	154	260	265	230	175	234	30	242	M12	154
		PIK 300/4/...	168	199,5	139,5	359	300	205	154	260	265	230	175	234	30	242	M12	154
160M / 160L (42 x 110)	11	PIK 350/1/...	188	243,5	183,5	405	360	230	175	310	300	250	200	260	50	292	M16	184
180M / 180L (48 x 110)	15	PIK 350/2/...	204	243,5	183,5	405	360	230	175	310	300	250	200	260	50	292	M16	184
	18,5																	
	22																	

* Dimensions following the VDMA guideline 24561.

** In case of an engine speed of ≥ 1900 rpm a steel fan must be used.

Assembly

For assembly and disassembly of the oil connection pipes please hold up with a hexagon key (max. tightening torque 40 Nm).

No reduction of the cross section behind the cooler. Return filter to be installed in front of the cooler (dynamic pressure, danger of bursting)

Tensions inside the connection pipes have to be avoided!

Vibration of the piping is to be avoided (should possibly be intercepted in front of the connection).

Supply and discharge to be chosen alternatively.

Please note that several hydraulic systems produce pressure peaks of more than 16 bar in the reverse motion (danger of bursting)!

Please consider our mounting instructions under www.ktr.com.

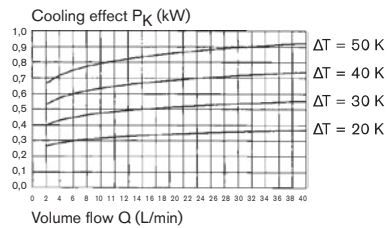
For PIK sizes 200 and 350 please mention the IEC-motor sizes in your order.

Order form	PIK	300	3	5	15
	Bellhousing with integrated oil cooler	Flange diameter of IEC-motor	Model code (code referring to length)	Internal code	Standard design 15 – V1 design

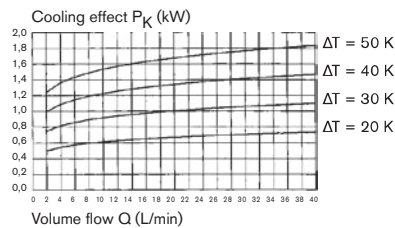
Oil/air cooler

1. Cooling effect for a speed of 1500 rpm depend-ing on the temperature difference between oil intake and air intake and oil volume

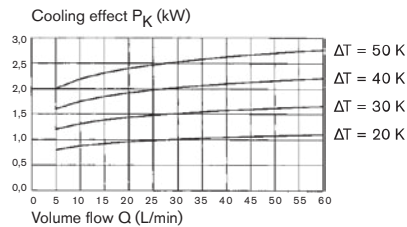
PIK 200



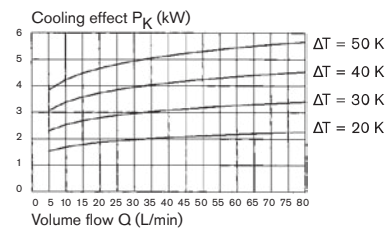
PIK 250



PIK 300



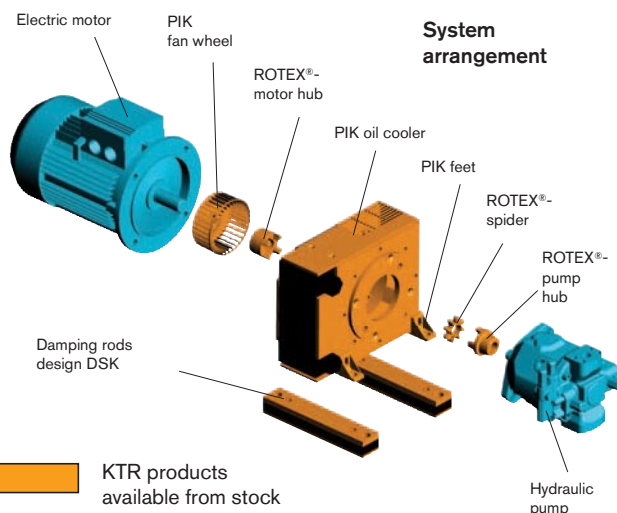
PIK 350



The diagrams shown are based on actual measurements of the PIK oil cooler performed in the KTR R & D test center. With 3000 rpm the cooling effect is increased by 50%.

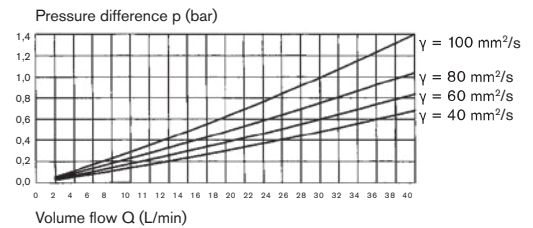
2. Working pressure

The maximum permissible working pressure for the oil cooler is 16 bar. Max. operating pressure in case of static load 30 bar. (All values apply for the medium pressure cooler.)

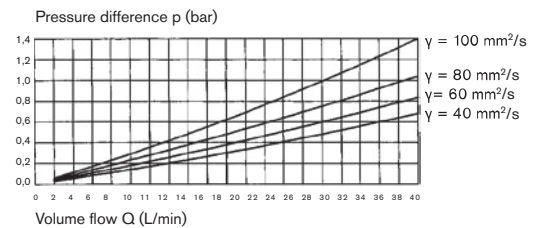


3. Pressure difference depending on oil flow and oil viscosity

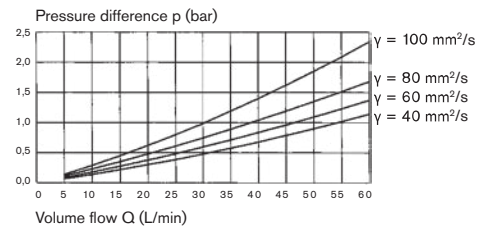
PIK 200



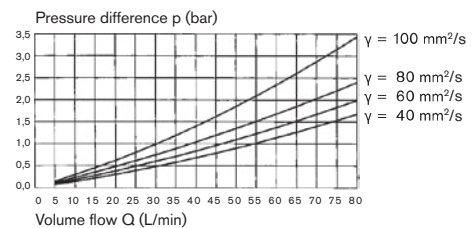
PIK 250



PIK 300



PIK 350



Viscosity measured up to 100 mm²/s.
 Higher viscosity on request.

4. Fan wheel

Torsional direction looking onto the pump – right – standard design.

Performance of the fan with 1500 rpm

PIK 200 = 25 W
 PIK 250 = 40 W
 PIK 300 = 125 W
 PIK 350 = 230 W

Air pressure rate in m³/h at 1500 rpm

PIK 200 = abt. 90 m³/h
 PIK 250 = abt. 200 m³/h
 PIK 300 = abt. 400 m³/h
 PIK 350 = abt. 860 m³/h

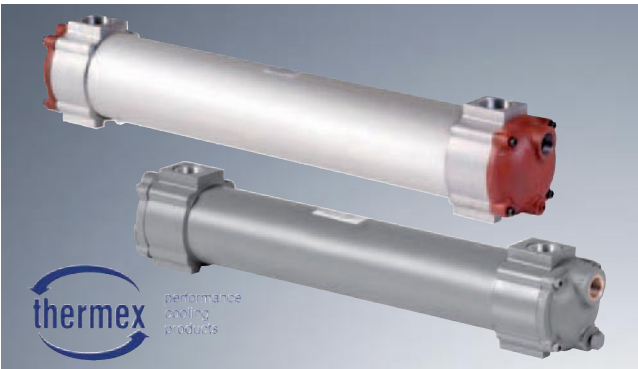
5. Cooler connection

R 3/4" internal thread

6. Oil flow

For a higher oil flow than indicated in the above diagramme, please consult with our Engineering Department, phone +49 59 71 798-0.

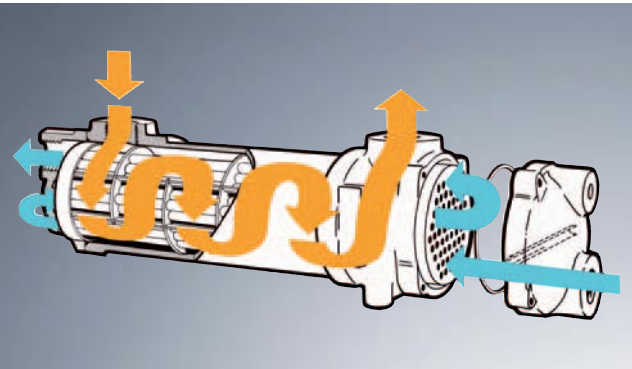
Oil/water cooler — Type TAK/T



- Shell and tube oil cooler
- Type TAK/T
- The cooler series TAK/T-2000 have been designed specifically for hydraulic systems
- Highly efficient up to 340 kW
- In marine version (seawater) available
- Easy cleaning by dismountable tube stacks
- Notice our mounting instructions (www.ktr.com)

The cooler series TAK/T-2000 have been designed specifically for hydraulic systems, but they are equally suitable for cooling lubricating oils, heat transfers fluids, etc.

The high efficiency tubestack is fully floating to minimise thermal stresses and incorporates the unique tube-to-tubeplate joint ensuring reliability under extreme operating conditions. The 2700 and 2800 ranges have twin seals and witness rings fitted as standard to provide maximum protection against fluid cross-contamination.



Materials:

These coolers are available in both industrial and marine versions.

Industrial version specifications (standard)		
Tubes	90/10 Copper/Nickel	ISO: CuNi10Fe1Mn
Tubeplates	Naval Brass	ISO: CuZn38Sn1
Body	Aluminium (2300 & 2500)	ISO: AlSi1MgMn
	(2700 & 2800)	ISO: AlSi12
Headers	Cast Iron	ISO: R185Gr20
Leak detection rings	Carbon Steel	ISO: Fe430A
Seals	Nitrile	

Marine version specifications (standard)		
Headers	Gunmetal	ISO: GCuSn5Pb5Zn5

Marine version specifications (Special differences for severely polluted or poor quality water.)		
Tubes	70/30 Copper/Nickel	ISO: CuNi30Mn1Fe
Tubeplates	90/10 Copper/Nickel	ISO: CuNi10Fe1Mn
Headers	Gunmetal	ISO: GCuSn5Pb5Zn5

Oil/water cooler — Type TAK/T

KTR tube and shell cooler performance of the 2000 series									
Type	Cooling effect [kW]	Oil flow [l/min]	Oil pressure loss		Water flow [l/min]	Water pressure loss		Sea water flow [l/min]	
			[kPa]	[bar]		[kPa]	[bar]	Min.	Max.
TAK/T-2312	3,6	40	40	0,4	8	1	0,01		
TAK/T-2322	6	50	60	0,6	8	1	0,01		
TAK/T-2332	10	65	50	0,5	13	3	0,03		
TAK/T-2342	15	80	80	0,8	16	5	0,05	20	45
TAK/T-2352	19	90	60	0,6	19	8	0,08		
TAK/T-2362	24	100	90	0,9	21	13	0,13		
TAK/T-2372	31	120	120	1,2	24	15	0,15		
TAK/T-2512	17	120	60	0,6	30	1	0,01		
TAK/T-2522	25	140	70	0,7	40	2	0,02		
TAK/T-2532	32	160	60	0,6	45	4	0,04		
TAK/T-2542	42	180	90	0,9	50	6	0,06		
TAK/T-2552	51	200	80	0,8	60	10	0,10	50	120
TAK/T-2562	68	220	100	1,0	70	17	0,17		
TAK/T-2572	85	250	80	0,8	87	30	0,30		
TAK/T-2582	110	280	110	1,1	120	65	0,65		
TAK/T-2592	135	300	170	1,7	120	75	0,75		
TAK/T-2712	92	340	50	0,5	170	18	0,18		
TAK/T-2722	124	360	100	1,0	180	23	0,23		
TAK/T-2732	140	380	80	0,8	190	29	0,29	100	210
TAK/T-2742	175	400	120	1,2	200	37	0,37		
TAK/T-2752	208	420	160	1,6	210	46	0,46		
TAK/T-2762	241	440	180	1,8	220	59	0,59		
TAK/T-2812	124	460	40	0,4	230	16	0,16		
TAK/T-2822	168	490	70	0,7	245	20	0,20		
TAK/T-2832	193	520	60	0,6	260	26	0,26	140	300
TAK/T-2842	240	550	80	0,8	275	33	0,33		
TAK/T-2852	288	580	100	1,0	290	42	0,42		
TAK/T-2862	339	610	110	1,1	305	54	0,54		

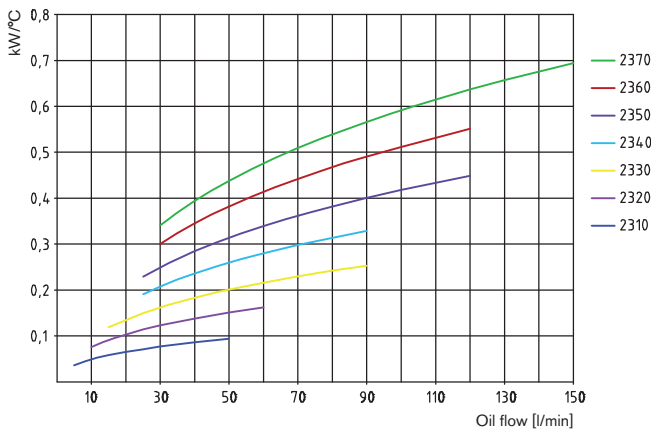
Operating conditions for the above predictions:

Shell circuit: VG37 oil at an inlet temperature of 60 °C

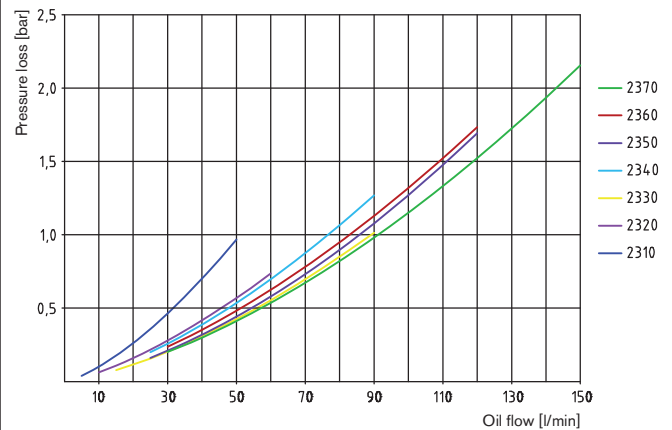
Tube circuit: Plain water at an inlet temperature of 20 °C

Note: Different fluids possess different thermal and mechanical properties. Fluids other than those indicated above will generate different performance characteristics to those shown in the table. For an accurate performance prediction contact the KTR engineering team. Tel. 05971- 798-0 oder www.ktr.com.

Power diagramme of the 2300 series

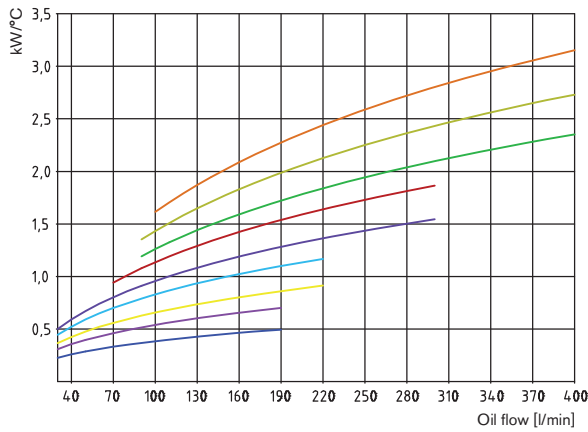


Pressure loss of the 2300 series

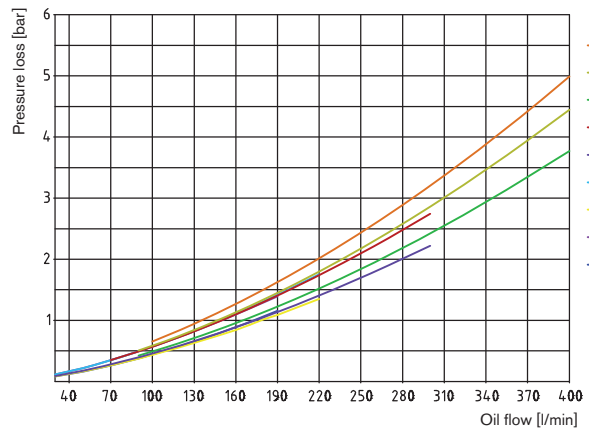


Oil/water cooler — Type TAK/T

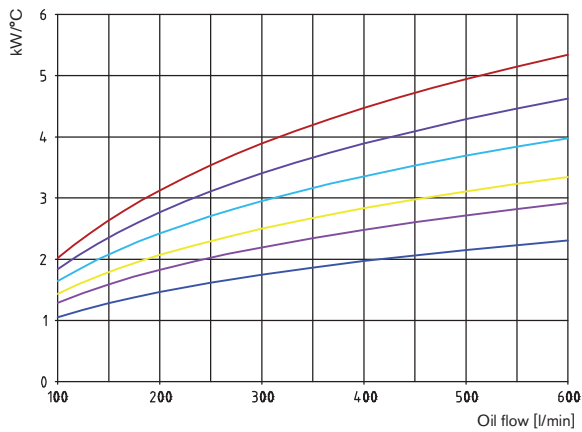
Power diagramme of the 2500 series



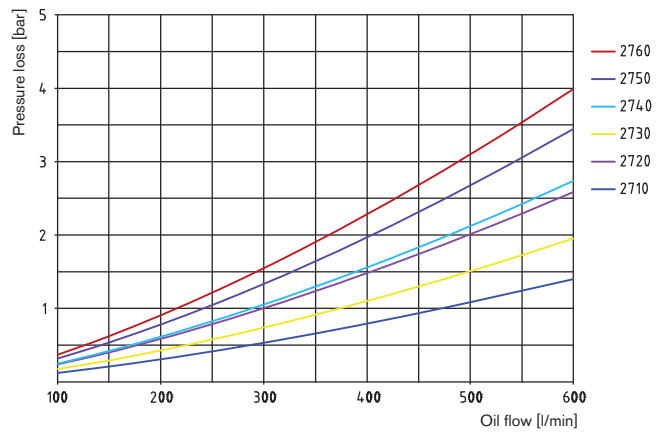
Pressure loss of the 2500 series



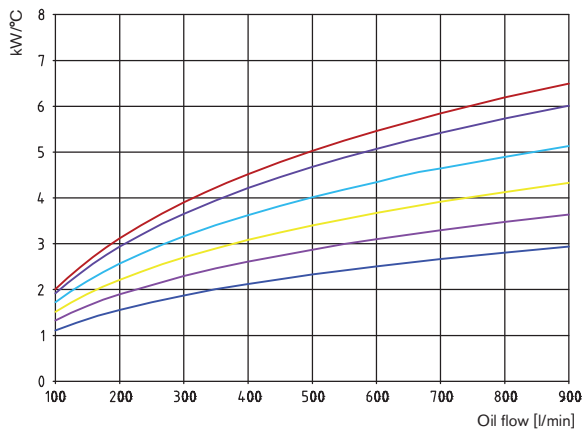
Power diagramme of the 2700 series



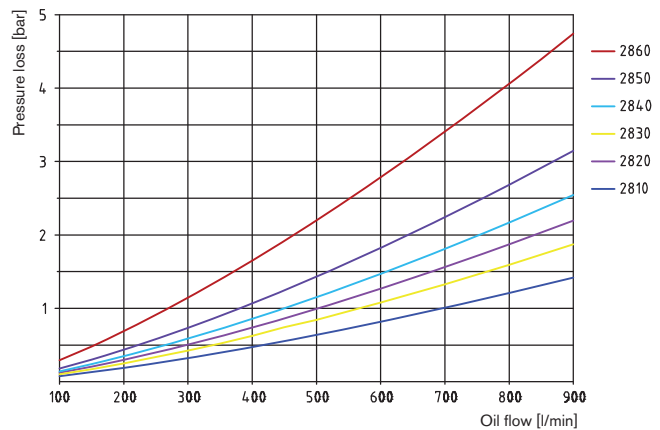
Pressure loss of the 2700 series



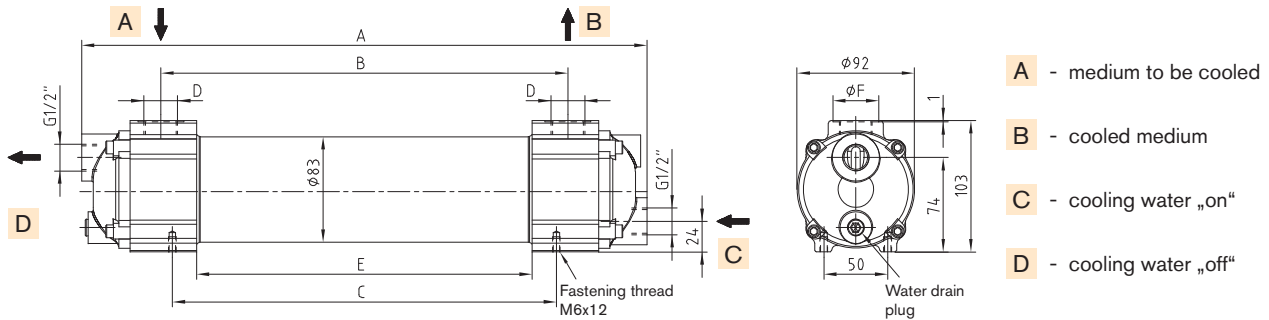
Power diagramme of the 2800 series



Pressure loss of the 2800 series



Oil/water cooler — Type TAK/T

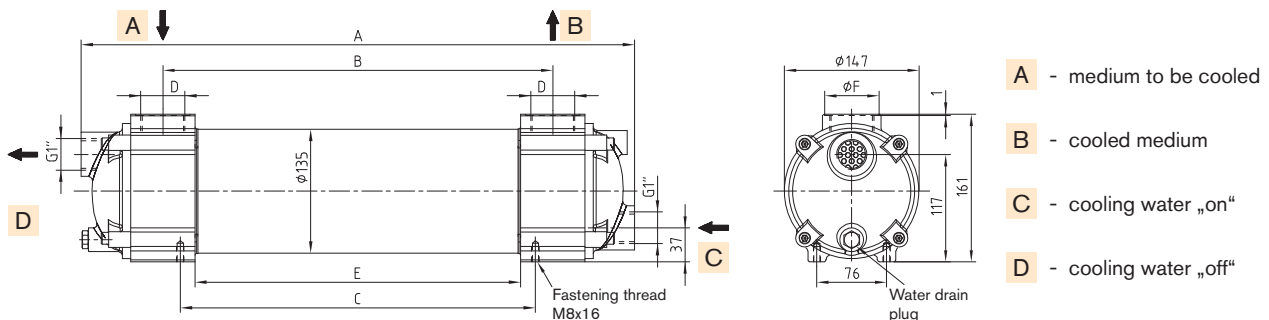


TAK/T Serie 23									
Type	A [mm]	B [mm]	C [mm]	D [BSP]	E [mm]	ØF [mm]	Weight [kg]	Oil vol. [l]	Water vol. [l]
TAK/T 2312	175	59	¹⁾	G 1/2	-	29,1	3	0,3	0,4
TAK/T 2322	259	135	117	G 3/4	-	36	4	0,5	0,5
TAK/T 2332	345	221	203	G 3/4	-	36	5	0,7	0,6
TAK/T 2342	443	319	301	G 3/4	263	36	5	1,0	0,7
TAK/T 2352	571	447	429	G 3/4	391	36	6	1,3	0,9
TAK/T 2362	717	587	575	G1	537	-	7	1,7	1,1
TAK/T 2372	895	765	753	G1	715	-	8	2,2	1,4

¹⁾ On Model No 2312 two M6 x 12 mounting holes are provided on the base midway between the oil port centres.

Add suffix H to part number for 3/4" BSP water connections.

Max. permissible oil temperature 100 °C. Max. oil pressure 30 bar. Max. water pressure 10 bar.



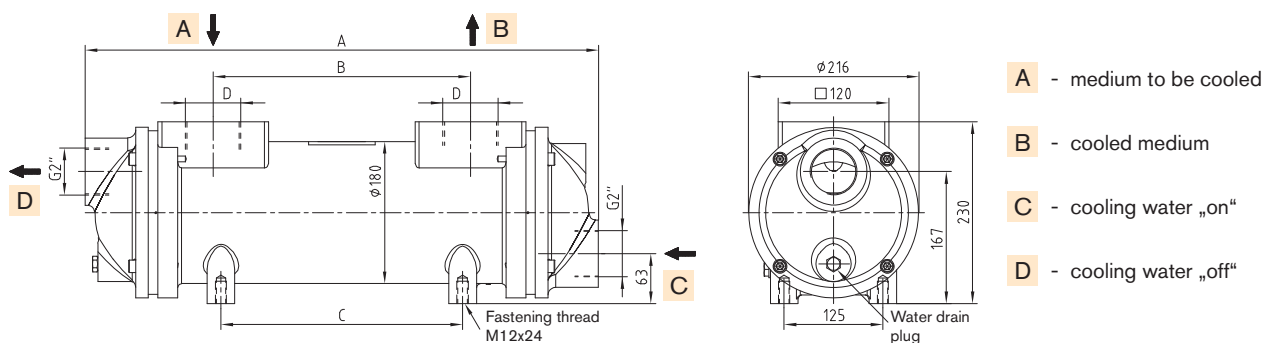
TAK/T Serie 25									
Type	A [mm]	B [mm]	C [mm]	D [BSP]	E [mm]	ØF [mm]	Weight [kg]	Oil vol. [l]	Water vol. [l]
TAK/T 2512	291	129	75	G1	-	45	10	1,4	1,4
TAK/T 2522	377	199	161	G1 1/4	-	53	12	1,9	1,7
TAK/T 2532	475	297	259	G1 1/4	-	53	13	2,5	2,1
TAK/T 2542	603	425	387	G1 1/4	333	53	14	3,5	2,6
TAK/T 2552	749	571	533	G1 1/2	479	59	17	4,5	3,2
TAK/T 2562	927	749	711	G1 1/2	657	59	20	5,8	3,9
TAK/T 2572	1129	951	913	G1 1/2	859	59	23	7,3	4,8
TAK/T 2582	1381	1203	1165	G1 1/2	1111	59	27	9,0	5,8
TAK/T 2592	1727	1549	1511	G1 1/2	1457	59	32	11,5	7,2

Add suffix H to part number for 1 1/2" BSP water connections (A = +14mm).

Max. permissible oil temperature 100 °C. Max. oil pressure 30 bar. Max. water pressure 10 bar.

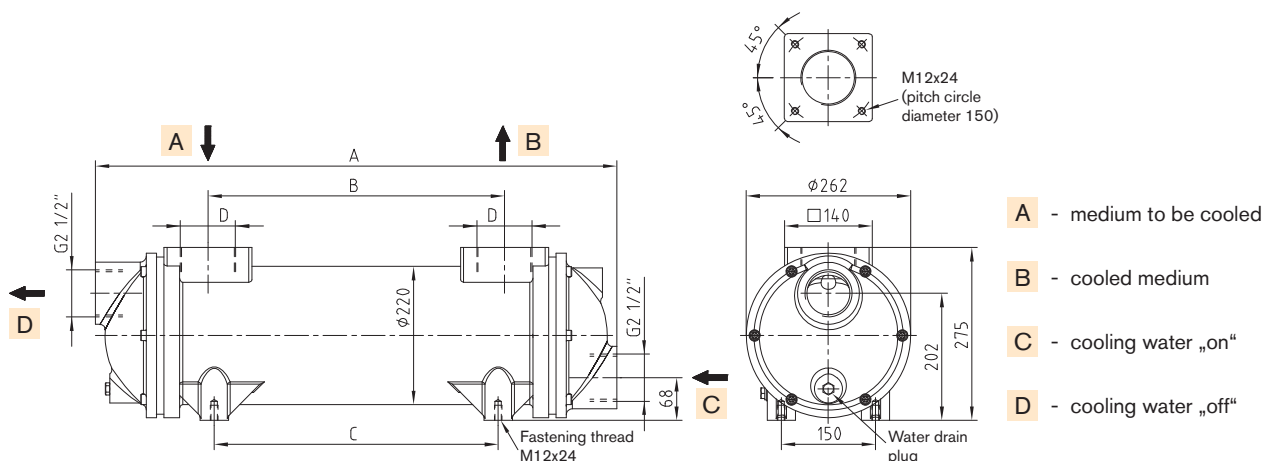
Order form	TAK/T	231	2	SW
Type	Series/Size	2 = Industrial version (standard) 3 = Industrial version with viton seals, Temp. >100 °C 4 = Marine version 5 = Marine version with viton seals, Temp. >100 °C 6 = Special Marine version for severely polluted or poor quality water 7 = Special Marine version for severely polluted or poor quality water with viton seals, Temp. >100 °C		Additional details SW = Sea water version

Oil/water cooler — Type TAK/T



TAK/T Serie 27							
Type	A [mm]	B [mm]	C [mm]	D [BSP]	Weight [kg]	Oil vol. [l]	Water vol. [l]
TAK/T 2712	650	326	306	G2	38	5,5	5,0
TAK/T 2722	796	472	452	G2	43	7,0	6,0
TAK/T 2732	974	650	630	G2	48	9,0	7,5
TAK/T 2742	1176	852	832	G2	55	11,0	9,0
TAK/T 2752	1428	1104	1084	G2	63	14,0	10,5
TAK/T 2762	1777	1453	1433	G2	74	17,5	13,0

Max. permissible oil temperature 100 °C. Max. oil pressure 20 bar. Max. water pressure 10 bar.



TAK/T Serie 28							
Type	A [mm]	B [mm]	C [mm]	D [BSP]	Weight [kg]	Oil vol. [l]	Water vol. [l]
TAK/T 2812	684	326	306	G3	48	9,0	7,5
TAK/T 2822	830	472	452	G3	54	11,5	9,0
TAK/T 2832	1008	650	630	G3	62	15,0	10,5
TAK/T 2842	1210	852	832	G3	71	18,5	13,0
TAK/T 2852	1462	1104	1084	G3	82	23,0	15,5
TAK/T 2862	1811	1453	1433	G3	97	29,5	19,0

Max. permissible oil temperature 100 °C. Max. oil pressure 20 bar. Max. water pressure 10 bar.

Order form	TAK/T	271	2	SW
Type	Series/Size	2 = Industrial version (standard) 3 = Industrial version with viton seals, Temp. > 100 °C 4 = Marine version 5 = Marine version with viton seals, Temp. > 100 °C 6 = Special Marine version for severely polluted or poor quality water 7 = Special Marine version for severely polluted or poor quality water with viton seals, Temp. > 100 °C		Additional details SW = Sea water version

Oil/water cooler — Type TAK



- Oil-water coolers as tube-bank heat exchanger
- Designs: **TAK** (built-on cooler)
- Wide fields of applications in industry
- Large cooling surface with low dimension
- High effectivity - heat exchange performance up to 230 kW due to aluminium laminas pushed over bank of tubes (cooling surface = 0,43 m² up to 18,41 m²)
- Minimum flow resistance due to large oil connections
- Maximum pressure: oil = 35 bar; water = 16 bar
- Optionally available in saltwater-proof design
- Easy to clean due to removable end caps

TAK

Materials		
Components	Standard coolers	Seawater coolers
mounting bracket shell baffle	steel	steel
end plates	TAK = steel	copper nickel alloy
cooling fins type designation plate	aluminium	aluminium
tubes	TAK = copper/nickel	TAK = copper/nickel
end caps	grey cast iron	grey cast iron (with copper/nickel layer)
gaskets	nitrile rubber cellulose fibres	nitrile rubber cellulose fibres
additional installation		zinc anode

Technical data

ATTENTION: Incorrect assembly can lead to a damage to the cooler!

1) Maximum flows

Series TAK	Oil Shell	TAK	
		Water	
		1-pass	2-pass
5..	75	45	22
7..	225	90	46
10..	330	210	106

All flows l/min.

2) Operating temperature

The max. operating temperature is:
TAK = 120 °C

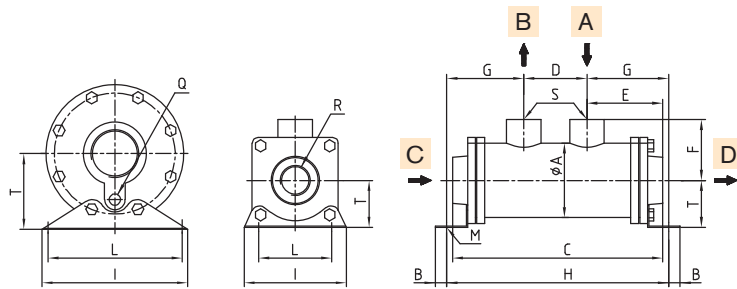
3) Operating pressure

The max. operating pressure of TAK is:
Shell = 35 bar; Tubes = 16 bar

To define the cooling performance or the cooler please contact **KTR** (phone: +49 5971 798-424).

Order form	TAK	1014	M	2W	O	FW	2	1
	Typ built-on cooler	Size	Oil connection type M=BSPF FM=SAE flange (optional)	Cooling water connection system 1W=1 pass 2W=2 pass	Bypass valve O=without	FW= fresh water SW= sea-water	Tubes 2=copper/nickel (standard)	Tube sheet 1=Stahl (standard) 3=saltwater-proof

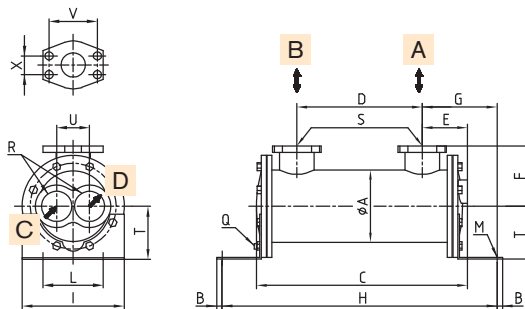
Oil/water cooler — Type TAK



- A** - medium to be cooled
- B** - cooled medium
- C** - cooling water „on“
- D** - cooling water „off“

TAK - Type „1-pass“										
Type	Dimensions [mm]									
	A	B	E	G	I	L	M	Q	R	T
TAK-5..	65	12	82*	83	89	63,5	Ø9x16	—	G 3/4"	41
TAK-7..	90	15	103	103	127	76	Ø11x19	G 1/4"	G 1 1/4"	66
TAK-10..	128	20	116	116	165	102	Ø11x25	G 1/4"	G 1 1/2"	102

* outsider TAK - 505 = 66 mm



- A** - medium to be cooled
- B** - cooled medium
- C** - cooling water „on“
- D** - cooling water „off“

TAK - Typ „2-pass“											
Type	Dimensions [mm]										
	A	B	E	G	I	L	M	Q	R	T	U
TAK-5..	65	12	83	85	89	63,5	Ø9x16	—	G 3/8"	41	28
TAK-7..	90	15	91	95	127	76	Ø11x19	—	G 1"	66	41
TAK-10..	128	20	113	110	165	102	Ø11x25	G 1/4"	G 1 1/4"	102	60

Unit dimensions											
Type	C		D	F	H	W _T ¹⁾ [m ²]	Weight [kg]	Oil connection			
	1-pass	2-pass						Standard S	Optional		
									SAE-flange	X	V
TAK-505	187	187	55	53	189	0,43	3,15	G 3/4"	—	—	—
TAK-508	263	265	97	57	265	0,73	3,60	G 3/4"	—	—	—
TAK-510	314	314	148	57	316	0,94	3,45	G 3/4"	—	—	—
TAK-512	365	365	199	57	367	1,13	4,05	G 3/4"	—	—	—
TAK-514	416	416	250	57	418	1,43	4,5	G 3/4"	—	—	—
TAK-518	517	517	351	57	519	1,74	5,1	G 3/4"	—	—	—
TAK-524	670	672	504	57	672	2,35	6,0	G 3/4"	—	—	—
TAK-536	975	976	809	57	976	3,57	7,8	G 3/4"	—	—	—
TAK-708	283	258	76	73	272	1,38	7,3	G 1 1/2"	SAE 1 1/2"	35,8	69,9
TAK-712	385	360	177	73	373	2,18	8,4	G 1 1/2"	SAE 1 1/2"	35,8	69,9
TAK-714	435	411	228	73	424	2,53	8,8	G 1 1/2"	SAE 1 1/2"	35,8	69,9
TAK-718	537	513	330	73	526	3,29	10,2	G 1 1/2"	SAE 1 1/2"	35,8	69,9
TAK-724	689	665	482	73	678	4,44	11,6	G 1 1/2"	SAE 1 1/2"	35,8	69,9
TAK-736	994	995	787	73	983	6,73	15,5	G 1 1/2"	SAE 1 1/2"	35,8	69,9
TAK-1012	389	369	157	92	392	4,38	15,4	G 1 1/2"	SAE 2"	42,9	77,7
TAK-1014	440	420	207	92	443	5,17	16,9	G 1 1/2"	SAE 2"	42,9	77,7
TAK-1018	541	522	309	92	544	6,73	19,8	G 1 1/2"	SAE 2"	42,9	77,7
TAK-1024	694	674	461	92	697	9,06	21,8	G 1 1/2"	SAE 2"	42,9	77,7
TAK-1036	999	979	766	92	1002	13,74	30,5	G 1 1/2"	SAE 2"	42,9	77,7
TAK-1048	1303	1284	1071	92	1306	18,41	39,8	G 1 1/2"	SAE 2"	42,9	77,7

Flange TAK 700 = 1 1/2"; flange TAK 1000 = 2"

¹⁾ W_T = Heat exchange surface [m²]

Oil/water cooler — Plate heat exchanger PHE



- Plate heat exchanger to cool hydraulic oil and other media
- Applied in industry and mobile technology
- Compact design with high cooling performance
- High corrosion resistance subject to plates from stainless steel 1.4301 (AISI 304) and the use of copper filler metal
- Maximum operating pressure: 30 bar /
Maximum operating temperature: 200 °C
- Available from stock

Technical data

Plate heat exchanger from stainless steel 1.4401 soldered to copper (solder metal based on nickel on request).

The stamped plates produce a high power density in a tight space. Compared to a bundle of pipes heat exchanger the plate heat exchanger only requires approx. 25 % - 30 % of space with less weight.

Applications are, as an example, machine tools, test benches, moulding machines, pump power packs, waste heat utilization, etc.

It is possible to use other media like, for example, oil, water glycole, water, refrigerating agents, air, etc.

Operating temperature: -10 °C to +200 °C.

Please observe boiling point and freezing point!

Maximum permissible operating pressure: 30 bar.

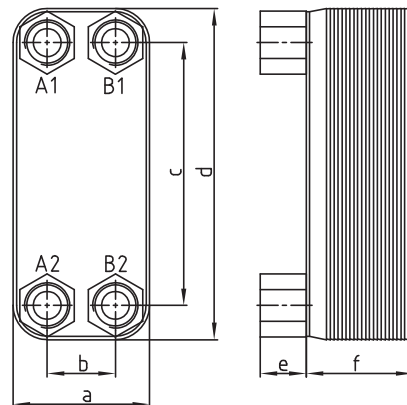
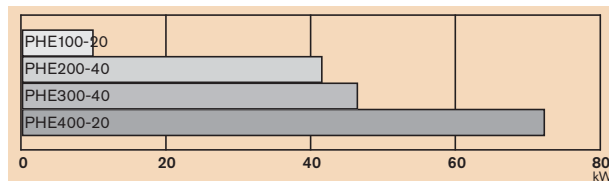


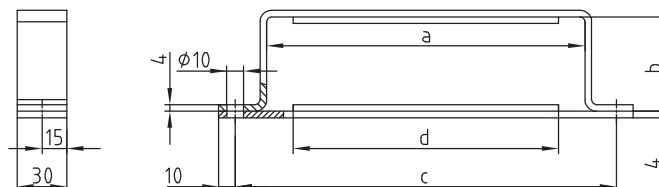
Plate heat exchanger

Series	Type	Thread	Plates	a	b	c	d	e	f
PHE	100	4 x 3/4"	20	73	40	154	191	24	52
PHE	200	4 x 1"	40	116	72	243	286	24	103
PHE	300	4 x 1"	40	112	50	466	526	24	103
PHE	400	4 x 1 1/2"	20	246	174	456	528	27	59,5

Cooling power



Typ	Oil temperatur switched on [°C]	Water temperature switched on [°C]	Oil V [l/min]	Water V [l/min]
PHE100-20	60	20	60	30
PHE200-40	60	20	160	80
PHE300-40	60	20	120	60
PHE400-20	60	20	180	90



Fasting device

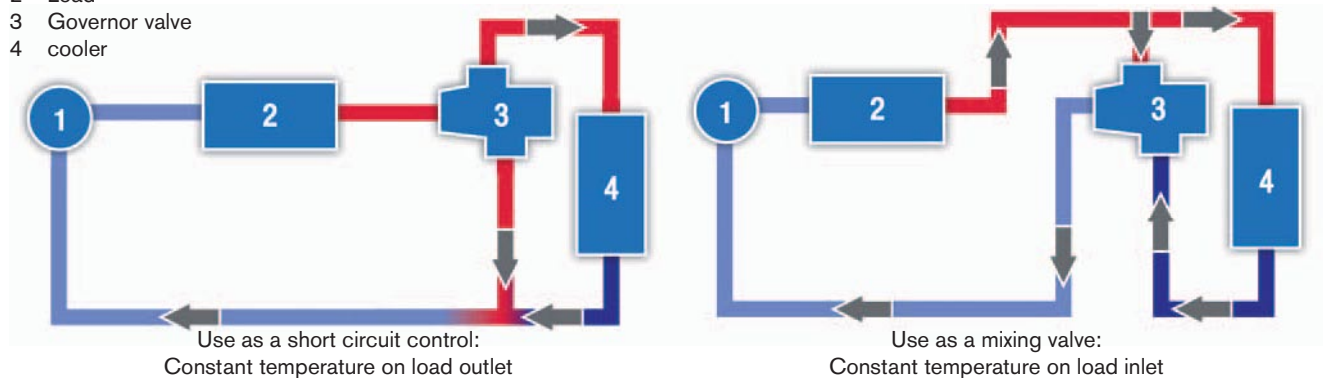
	a	b	c	d
BH100-20	80	51	114	75
BH200-40 / BH300-40	120	102	150	115
BH400-20	250	57	280	240

From size PHE 200 we recommend 2 supports per cooler.

Order form	PHE	100	20
	PHE=Plate heat exchanger	Size	Number of plates

Oil thermostat valve

- 1 Pump
- 2 Load
- 3 Governor valve
- 4 cooler

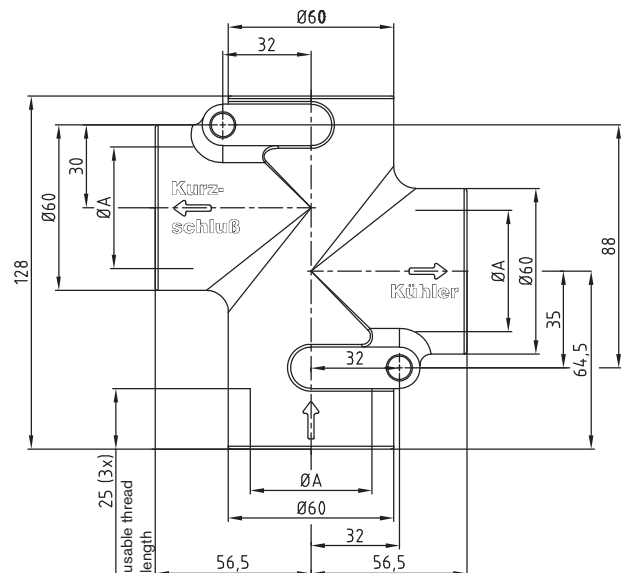
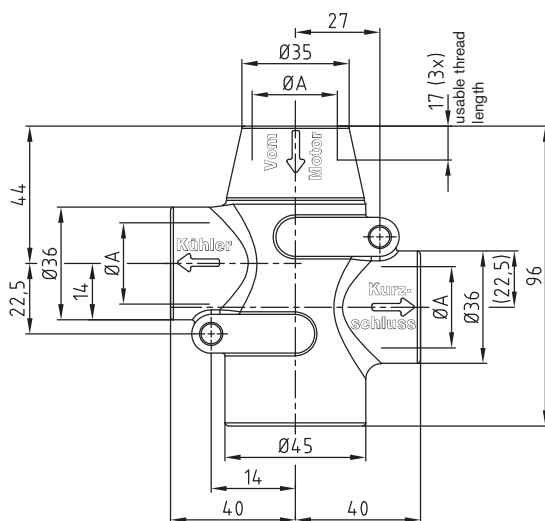


Main applications of oil thermostat valves

- Agricultural machines
- Construction machines
- Compressors
- Coolers
- Special applications,
e. g. wind power stations, gearboxes, hydraulics,
general engineering

Particular characteristics

- Temperature figures set
- High control accuracy
- Control operation independent of static and dynamic oil pressure
- Low pressure loss
- Solid design
- Insensitive to vibrations
- Insensitive to shocks
- Operation independent of the mounting situation
- Maintenance-free
- Long service life



OTV Oil thermostat valve				
Description	max. volume flow [m³/h]	Connection thread	Inlet temperature [°C]	Max. inflow to the cooler obtained with °C
OTV1-45	4	G 3/4"	45	60
OTV1-55	4	G 3/4"	55	70
OTV1-70	4	G 3/4"	70	85
OTV2-45	10	G 1 1/2"	45	60
OTV2-55	10	G 1 1/2"	55	70
OTV2-70	10	G 1 1/2"	70	85

max. operating pressure 16 bar

Order form	OTV	1	55
	Oil temperature valve	Size	Inlet temperature

Resistance

KTR-product		Medium							
Component	Material	HFA	HFB	HFC	HFD, HFD-R HFD-S, HFD-T	Hydraulic fluid with mineral oil base	Biological hydraulic oils		
							HETG	HEES	HEPG
Bellhousing P, PK, PL	ALU	●	●	6	●	●	●	●	●
Bellhousing PG	GG	●	●	6	6	●	6	6	6
Bellhousing PS	steel	●	●	6	6	●	6	6	6
Bellhousing KPT	synthetic/ALU	●	●	6	●	●	●	●	●
Damping ring D, DT, DTV	ALU/NBR	●	●	6	1	●	●	●	●
Bellhousing with integrated oil cooler PIK	steel/ALU	●	●	6	1	●	●	●	●
Oil-water coolers TAK	-	●	●	6	6	●	6	6	6
Foot flange PTFE, PTFE	ALU	●	●	6	●	●	●	●	●
Foot flange PTFE, PTFE	steel/GGG	●	●	6	6	●	6	6	6
ZO flange	ALU	●	●	6	●	●	●	●	●
Pump bracket K	ALU	●	●	6	●	●	●	●	●
	steel	●	●	6	6	●	6	6	6
Alu tank BAK with feet	ALU	●	●	6	●	●	●	●	●
Oil sump pan BAKW	steel	●	●	6	6	●	6	6	6
Steel tanks	steel	●	●	6	6	●	6	6	6
Tank covers from steel	steel	3	●	6	6	3	●	●	●
Tank covers from aluminium	ALU	●	●	6	●	●	●	●	●
Oil level indicators	-	●	●	●	5	●	6	6	6
Oil level sight glass	-	●	●	●	5	●	6	6	6
Filler breather	-	●	●	●	5	●	6	6	6
Cleaning cover	ALU	●	●	6	●	●	●	●	●
O-sealing ring	NBR	●	●	●	1/2	●	●	●	●
Spline seal	NBR	●	●	●	1/2	●	●	●	●
Gaskets type DP, DZ	NBR	●	●	●	1/2	●	●	●	●
Damping rod	steel/NR	1	1	1	5	1	6	6	6
Elastic flanges	steel/NBR	●	●	●	1	●	●	●	●
Elastic cover support EDL	steel/NBR/ALU	●	●	7	1	●	●	●	●
Industrial control system IR, IRD	stainless steel	●	●	●	●	●	●	●	●
Level temperature switch NVT	brass/NBR	5	5	5	5	●	5	5	5
Temperature probe TE-PT-100	stainless steel/NBR	●	●	●	●	●	●	●	●
Temperature switch TS	steel (anodized)	●	●	●	●	●	●	●	●
Tank heaters EH	brass/stainless steel	●	●	●	●	●	●	●	●
Tank heaters EHP	steel/Fiber NBR	●	●	6	●	●	●	●	●
Tank heaters TEHM	stainless steel/copper	5	5	5	5	●	5	5	5
Plate heat exchanger	-	●	●	6	6	●	6	6	6
BoWex® sleeve	PA	●	●	●	●	●	●	●	●
BoWex® hub	steel	3	●	4	4	3	●	●	●
ROTEX® spider → standard from polyurethane	PUR	1	1	1	5	●	6	6	6
ROTEX® hub	steel	●	●	4	4	3	●	●	●
ROTEX® hub	ALU	●	●	6	●	●	●	●	●

Composition of hydraulic fluids

HFA = Oil in water emulsion → water content > 80%
 HFB = Water in oil emulsion → water content > 40%
 HFC = Aqueous polymer solution (water glycols)
 water content > 45%
 HFD = Synthetical liquids (anhydrous)
 HFD-R = Phosphoric ester
 HFD-S = Chlorinated hydrocarbons
 HFD-T = Compound of HFD-R + HFD-S

Explanation of column notes

● = Resistant
 1 = Oil splash resistant
 Not resistant when continuously flushed with oil!
 2 = With continuous oil flushing use EPDM gasket!
 3 = Priming coat required
 4 = An additional layer with epoxy resin / DD lacquers is necessary.
 5 = Not resistant
 6 = Consultation is necessary, phone +49 5971 798-0

Please note:

The figures indicated may only be considered as a general standard. In case of doubt we would absolutely recommend to perform a test. The aforementioned details do not entitle for any legal claim, we definitely do neither take over any warranty nor liability. Purely the chemical and mechanical resistance is not sufficient to assess whether a certain product is suitable or not. The standards have to be considered in particular, as an example, with flammable liquids (explosion protection).

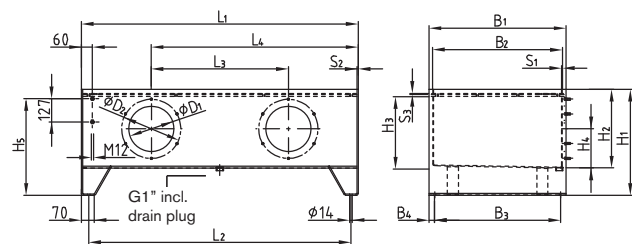
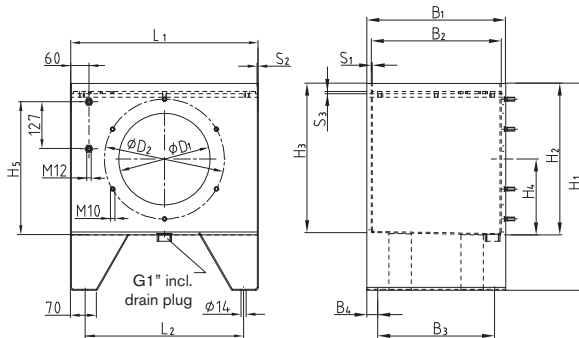
Series BSK



- Tanks made of high-grade steel
- Tank sand-blasted, with high-quality internal and external coating resistant to hydraulic oils on a mineral oil basis
- Priming is compatible with other varnish paints
- All tanks are subject to 100 % tightness test
- Subsequent assembly of KTR standard separation sheet metals possible for all tank sizes (assembly of separation sheet metals across cleaning hole)
- Cover machining as per customer's request
- Transport eyes on request of customer

up to NG 200

as from NG 250



Series BSK, NG 40-400

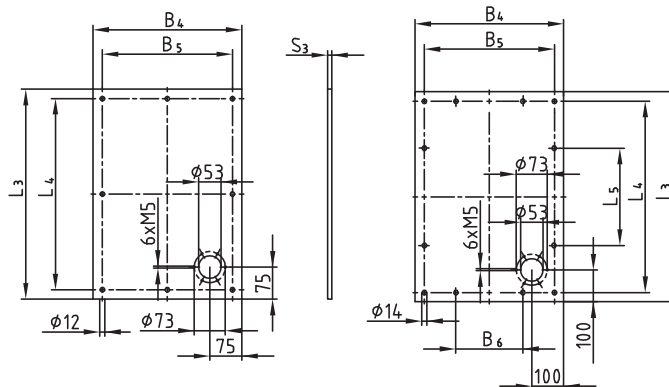
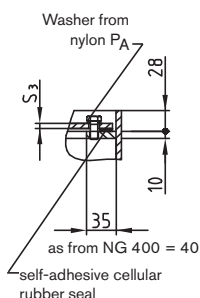
Order description	Avail. vol.	Weight	Tank dimensions [mm]																			Cleaning cover		Tank completely available from stock Tank cover E	
NG	Litres	kg	L ₁	L ₂	L ₃	L ₄	B ₁	B ₂	B ₃	B ₄	H ₁	H ₂	H ₃	H ₄	H ₅	D ₁	D ₂	S ₁	S ₂	S ₃	No.	Type	Standard t = S ₃	Reinforced t = 10	
BSK 40	38	34	508	428	—	—	375	365	315	30	430	280	273	140	230	195	250	3	3	6	1	V 250-4	●	on request	
BSK 63	59	38	508	428	—	—	375	365	315	30	560	410	403	205	360	248	324	3	3	6	1	V 324-6	●		
BSK 100	92	70	633	553	—	—	474	460	414	30	560	407	399	205	357	248	324	4	4	6	1	V 324-6	●		
BSK 160	152	86	810	730	—	—	604	590	544	30	560	410	400	205	360	248	324	4	4	6	1	V 324-6	●		
BSK 200	184	101	900	820	—	—	654	640	594	30	560	410	399	205	360	248	324	4	4	6	1	V 324-6	●		
BSK 250	235	138	1010	930	410	710	704	690	644	30	580	430	418	215	380	248	324	4	4	7	2	V 324-6	●		
BSK 300	272	144	1208	1128	410	809	714	700	654	30	580	412	400	206	362	248	324	4	4	7	2	V 324-6	●		
BSK 400	375	201	1514	1434	750	1132	749	735	689	30	580	430	417	215	380	248	324	4	7	7	2	V 324-6	●		

Tank cover

Cover type E

for NG 40-300

for NG 400



Cover type „E“

NG	Dimensions [mm]							Number of holes
	L ₃	L ₄	L ₅	B ₄	B ₅	B ₆	S ₃	
40	492	448	—	349	305	—	6	8x
63	492	448	—	349	305	—	6	8x
100	615	571	—	442	398	—	6	8x
160	792	748	—	572	528	—	6	8x
200	882	838	—	622	578	—	6	8x
250	992	948	—	672	628	—	7	8x
300	1190	1146	—	682	638	—	7	8x
400	1490	1440	480	717	667	222	7	12x

● = Standard programme available from stock and in short term

Order form

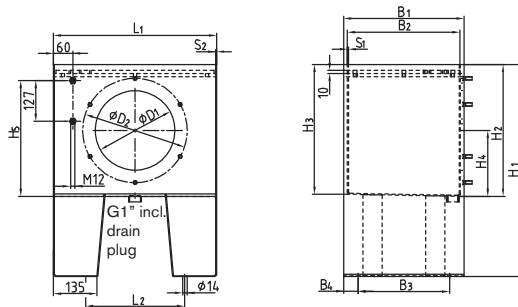
BSK	250	E
KTR standard tank	Tank size	Cover type "E"

Series BNK design A

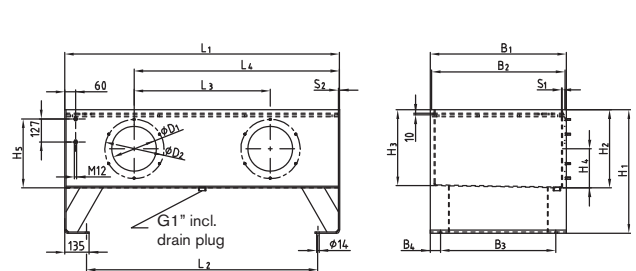


- DIN tanks made of high-grade steel
- Tank sand-blasted, with high-quality internal and external coating resistant to hydraulic oils on a mineral oil basis.
- Priming is compatible with other varnish paints
- All tanks are subject to 100 % tightness test
- Subsequent assembly of KTR standard separation sheet metals possible for all tank sizes (assembly of separation sheet metals across cleaning hole)
- Cover machining as per customer's request
- Transport eyes on request of customer

up to NG 160



as from NG 250



Series BNK Form A, NG 63-1250

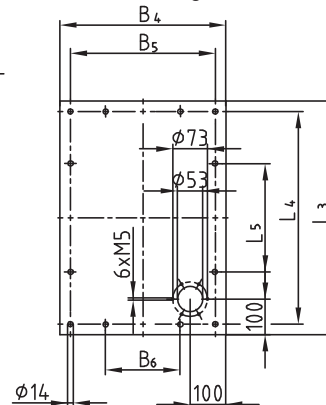
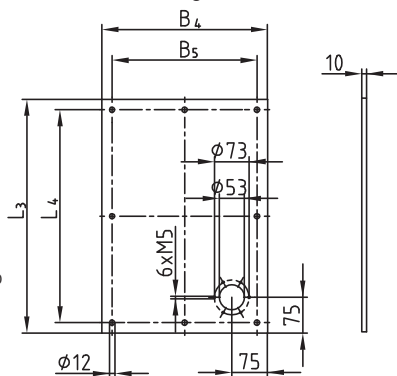
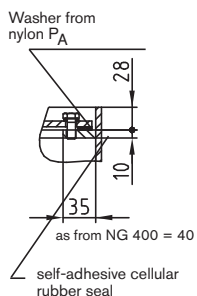
Order description	Avail. vol.	Weight	Tank dimensions [mm]																			Cleaning cover		Tank completely available from stock	
NG	Litres	kg	L ₁	L ₂	L ₃	L ₄	B ₁	B ₂	B ₃	B ₄	H ₁	H ₂	H ₃	H ₄	H ₅	D ₁	D ₂	S ₁	S ₂	No..	Type	Cover design E	Cover design C		
BNK 63	59	47	508	308	—	—	375	365	285	45	660	410	403	205	360	248	324	3	3	1	V 324-6	●	on request		
BNK 100	92	77	633	393	—	—	474	460	360	57	660	407	399	205	357	248	324	4	4	1	V 324-6	●			
BNK 160	152	112	810	570	—	—	604	590	490	57	660	410	400	205	360	248	324	4	4	1	V 324-6	●			
BNK 250	235	148	1010	770	410	710	704	690	590	57	680	430	418	215	380	248	324	4	4	2	V 324-6	●			
BNK 400	375	245	1514	1274	750	1132	749	735	635	57	680	430	417	215	380	248	324	4	7	2	V 324-6	●			
BNK 630	595	366	1514	1274	750	1132	959	945	845	57	770	520	504	265	470	383	449	4	7	2	V 449-6	●			
BNK 800	752	400	2014	1774	1000	1507	914	900	800	57	770	520	504	265	470	383	449	5	7	2	V 449-6	●			
BNK 1000	945	452	2014	1774	1000	1507	1079	1065	965	57	800	550	531	285	500	383	449	5	7	2	V 449-6				
BNK 1250	1180	600	2014	1774	1000	1507	1349	1335	1235	57	800	550	527	285	500	383	449	5	7	2	V 449-6				

Tank cover

Cover design E
Design E

for NG 63-250
Design E

for NG 400-1250
Design E



Cover design „E“

NG	Dimensions [mm]						Number of holes
	L ₃	L ₄	L ₅	B ₄	B ₅	B ₆	
63	492	448	—	349	305	—	8x
100	615	571	—	442	398	—	8x
160	792	748	—	572	528	—	8x
250	992	948	—	672	628	—	8x
400	1490	1440	480	717	667	222	12x
630	1490	1440	480	927	877	292	12x
800	1990	1940	647	880	830	277	12x
1000	1990	1940	647	1045	995	332	12x
1250	1990	1940	647	1315	1265	422	12x

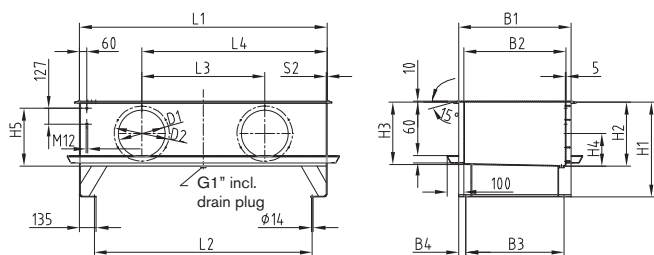
● = Standard programme available from stock and in short term.

Order form

BNK	250	A	E
KTR tank standard	Tank size	Tank design "A"	Cover design "E"

A large, heavy-duty metal safe, likely made of steel, with a dark grey or black finish. It has a rectangular body with a circular door on the front. The door is silver-colored and features the KTR logo in the center. The safe is mounted on a sturdy metal base with four legs. The background is a plain, light-colored wall.

-
- to NG 63= 55mm
- 60
- L1
- S2
- 127
- M12
- 2070D2
- H5
- G1* incl. drain plug
- 135
- L2
- $\phi 14$
- B1
- B2
- S1
- 15°
- H3
- 10
- 60
- 100
- H2
- H4
- H1
- B4
- B3



Series BNK design B, NG 63-1250																						
Order description	Avail. vol.	Weight	Tank dimensions [mm]																		Tank completely available from stock	
NG	Litres	kg	L ₁	L ₂	L ₃	L ₄	B ₁	B ₂	B ₃	B ₄	H ₁	H ₂	H ₃	H ₄	H ₅	D ₁	D ₂	S ₁	S ₂	No..	Type	
BNK 63	59	56	508	308	—	—	375	365	285	45	660	410	403	205	360	248	324	3	3	1	V 324-6	
BNK 100	95	88	633	393	—	—	474	460	360	57	660	407	399	205	360	248	324	4	4	1	V 324-6	
BNK 160	152	130	810	570	—	—	604	590	490	57	660	410	400	205	360	248	324	4	4	1	V 324-6	
BNK 250	235	170	1010	770	410	710	704	690	590	57	680	430	418	215	380	248	324	4	4	1	V 324-6	
BNK 400	375	270	1514	1274	750	1132	749	735	635	57	680	430	417	215	380	248	324	4	7	1	V 324-6	
BNK 630	595	375	1514	1274	750	1132	959	945	845	57	770	520	504	265	470	383	449	4	7	2	V 449-6	
BNK 800	752	420	2014	1774	1000	1507	914	900	800	57	770	520	504	265	470	383	449	5	7	2	V 449-6	
BNK 1000	945	490	2014	1774	1000	1507	1079	1065	965	57	800	550	531	285	500	383	449	5	7	2	V 449-6	
BNK 1250	1180	636	2014	1774	1000	1507	1349	1335	1235	57	800	550	527	285	500	383	449	5	7	2	V 449-6	

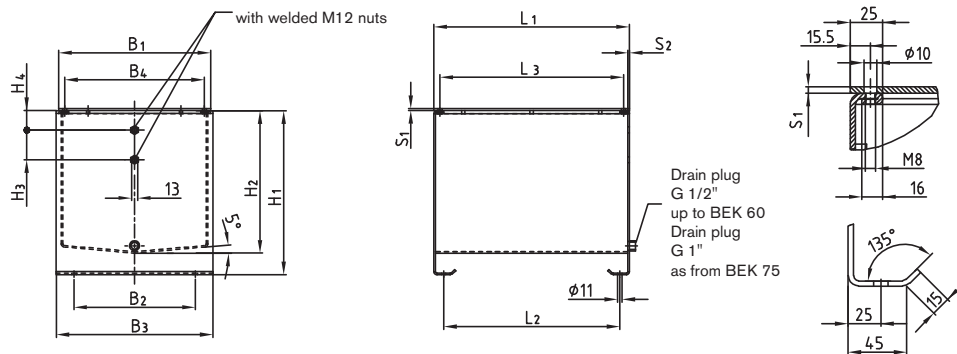
Cover design „A“			
NG	Dimensions [mm]		
	L	B	t
63	588	445	10
100	713	540	10
160	890	670	10
250	1090	770	10
400	1594	815	10
630	1594	1025	10
800	2094	980	10
1000	2094	1145	10
1250	2094	1415	10

Order form	BNK	250	B	A
	KTR tank standard	Tank size	Tank design "B"	Cover design "A"

Series BEK



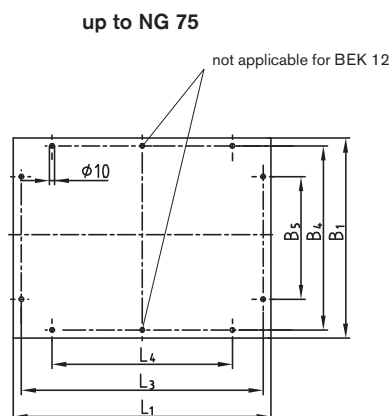
- Tanks made of high-grade steel
- Tank sand-blasted, with high-quality internal and external coating resistant to hydraulic oils on a mineral oil basis.
- Priming is compatible with other varnish paints
- All tanks are subject to 100 % tightness test
- Cover machining as per customer's request



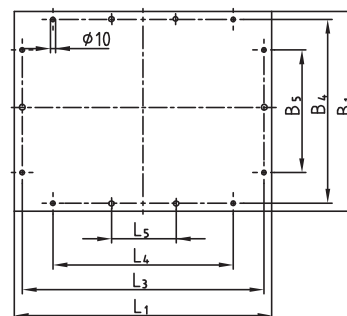
Series BEK, NG 12-300													
Order description	Available volume	Weight	Tank dimensions [mm]										Tank completely available from stock
NG	Litres	kg	L ₁	L ₂	B ₁	B ₂	B ₃	H ₁	H ₂	H ₃	H ₄	S ₂	Cover type E
BEK 12	16	17	310	260	298	220	310	275	220	76	50	4	●
BEK 20	26	23	400	350	298	220	310	325	270	76	50	4	●
BEK 35	40	30	470	420	298	220	310	400	345	76	50	4	●
BEK 50	58	40	500	450	388	310	400	420	365	76	50	4	●
BEK 60	69	43	550	500	388	310	400	445	390	76	50	4	●
BEK 75	85	46	550	500	388	310	400	530	475	127	50	4	●
BEK 100	109	54	700	650	388	310	400	530	475	127	50	4	●
BEK 150	175	79	750	700	488	410	500	620	565	127	80	4	●
BEK 225	267	115	900	850	588	510	600	650	595	127	80	4	●
BEK 300	339	127	900	850	688	610	700	700	645	127	80	4	●

Tank cover

Cover design E



as from NG 100



Cover design „E“

NG	dimensions [mm]							
	S ₁	L ₁	B ₁	L ₃	B ₄	L ₄	B ₅	L ₅
12	4	310	298	279	267	160	148	—
20	4	400	298	369	267	250	148	—
35	5	470	298	439	267	320	148	—
50	5	500	388	469	357	350	238	—
60	5	550	388	519	357	400	238	—
75	5	550	388	519	357	400	238	—
100	6	700	388	669	357	550	238	184
150	6	750	488	719	457	600	338	200
225	8	900	588	869	557	750	438	250
300	8	900	688	869	657	750	538	250

● = Standard programme available from stock and in short term.

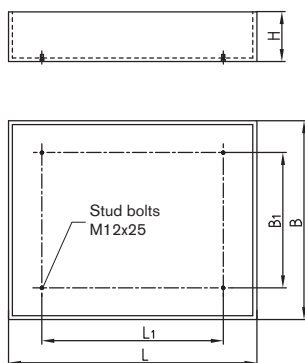
Order form	BEK	100	E
	KTR Euro tank	Tank size	Cover design "E"

Oil Sumps

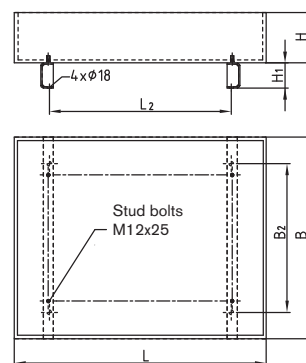


- Oil sumps made of high-grade steel
- Collection volume corresponds to the full load volume of the tank
- Tank sand-blasted, with high-quality internal and external coating resistant to hydraulic oils on a mineral oil basis.
- Priming is compatible with other varnish paints
- All oil sumps are subject to 100 % tightness test
- Oil sumps meet with the standards of WHG

Oil sump
without feet



Oil sump
with feet



Distance
dimensions for stud
bolts see
table L₁ and B₁

Oil Sumps for BSK and BNK

Order description	Volume	Weight in kg		Tank dimensions [mm]										Available from stock without feet
		without feet	with feet	L	L ₁		L ₂	B	B ₁		B ₂	H	H ₁	
NG	litres				BSK	BNK			BSK	BNK				
63	74	22	30	700	428	308	420	600	315	285	365	200	100	●
100	105	29	38	850	553	393	545	700	414	360	460	200	100	●
160	160	36	47	1000	730	570	722	800	544	490	590	200	100	●
200	200	42	54	1100	820	—	812	850	594	—	640	220	100	●
250	250	50	64	1250	930	770	922	1000	644	590	690	200	100	●
300	300	57	69	1400	1128	—	1120	900	654	—	700	250	100	●
400	400	72	87	1720	1434	1274	1426	980	689	635	735	250	100	●
630	630	93	112	1810	—	1274	1426	1190	—	845	945	300	100	●
800	800	110	138	2410	—	1774	1926	1190	—	800	900	300	100	●
1000	1000	123	155	2420	—	1774	1926	1380	—	965	1065	300	100	●
1250	1250	156	184	2380	—	1774	1926	1770	—	1235	1335	300	100	●

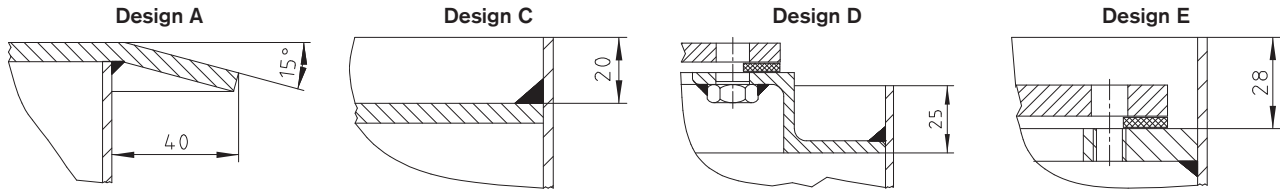
● =Standard programme available from stock and in short term.

Type plate and certificates according to regulations §19 WHG available against extra charge.
Please indicate in the order.

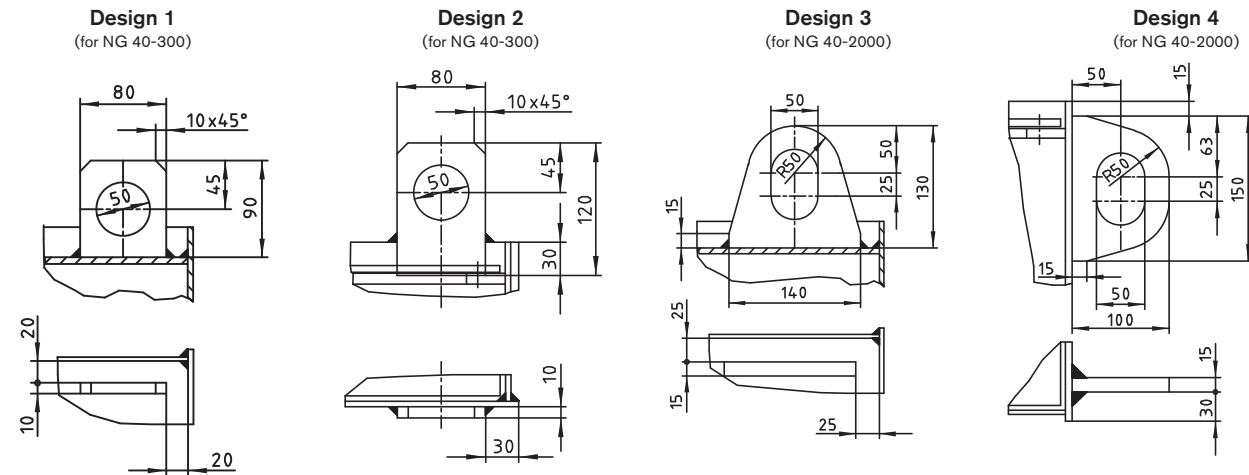
Order form	Ö	63	BSK	F
	Oil sump	Tank size	Tank design	F = with feet O = without feet

Cover design, separation sheet metals, transport eyes and creasings

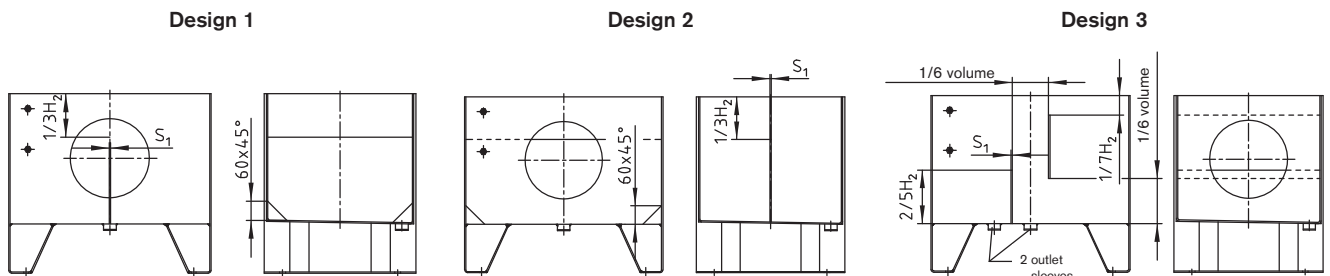
Cover designs for DIN tanks of the BKN series:



Transport eyes:

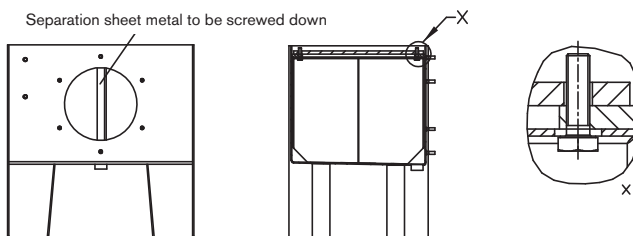


Separation sheet metals:

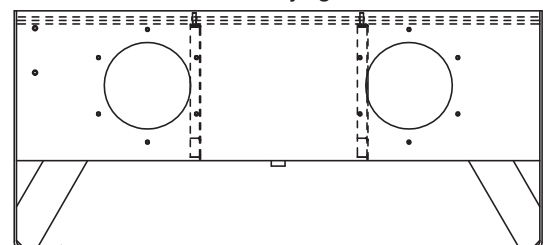


Separation sheet metals to be screwed down:

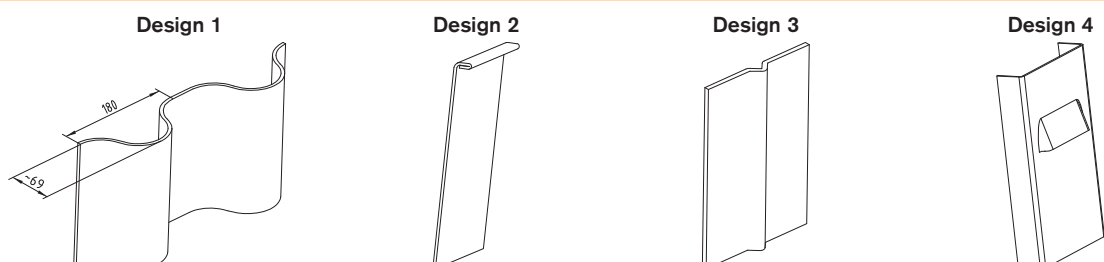
Separation sheet metal up to BSK/BNK 300



From BSK/BNK 400 separation sheet metals alternatively right or left



Creasings:



Special tanks on request

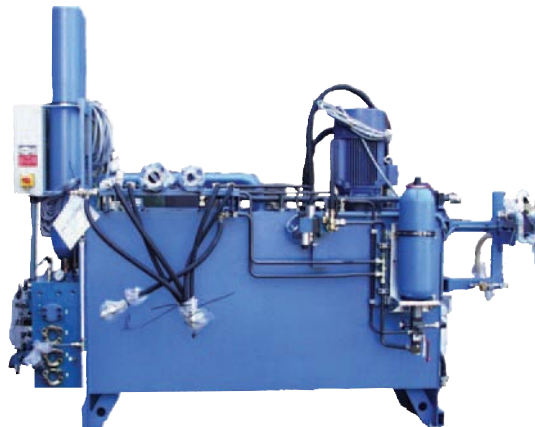
Combi-tank Hydraulic diesel with battery box



Mobile hydraulics



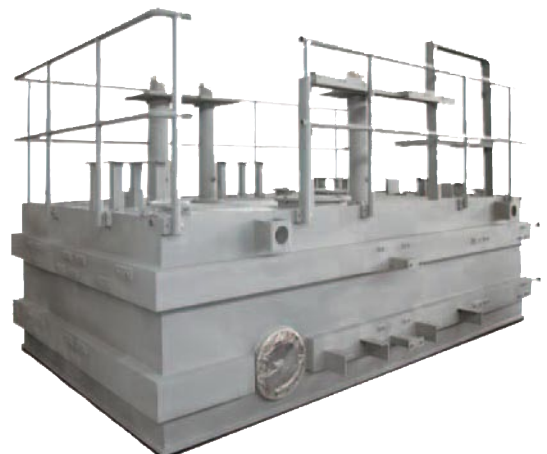
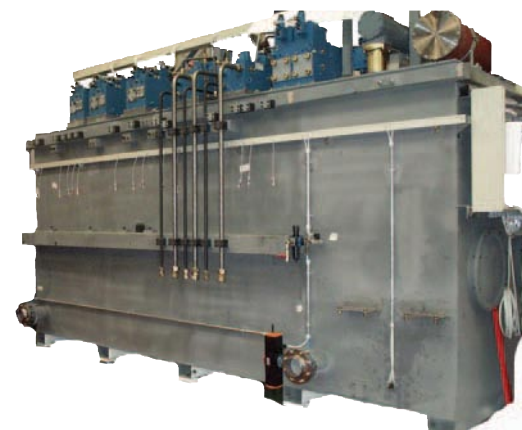
Hydraulic tank



Tank with housing



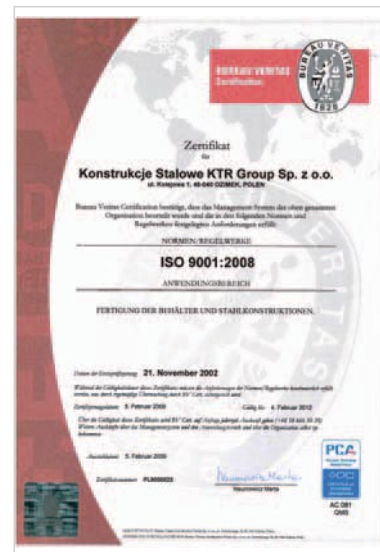
Large tanks for presses and units



Certificates

Welding approval for rail vehicles and vehicle parts acc. to
EN 15085-2

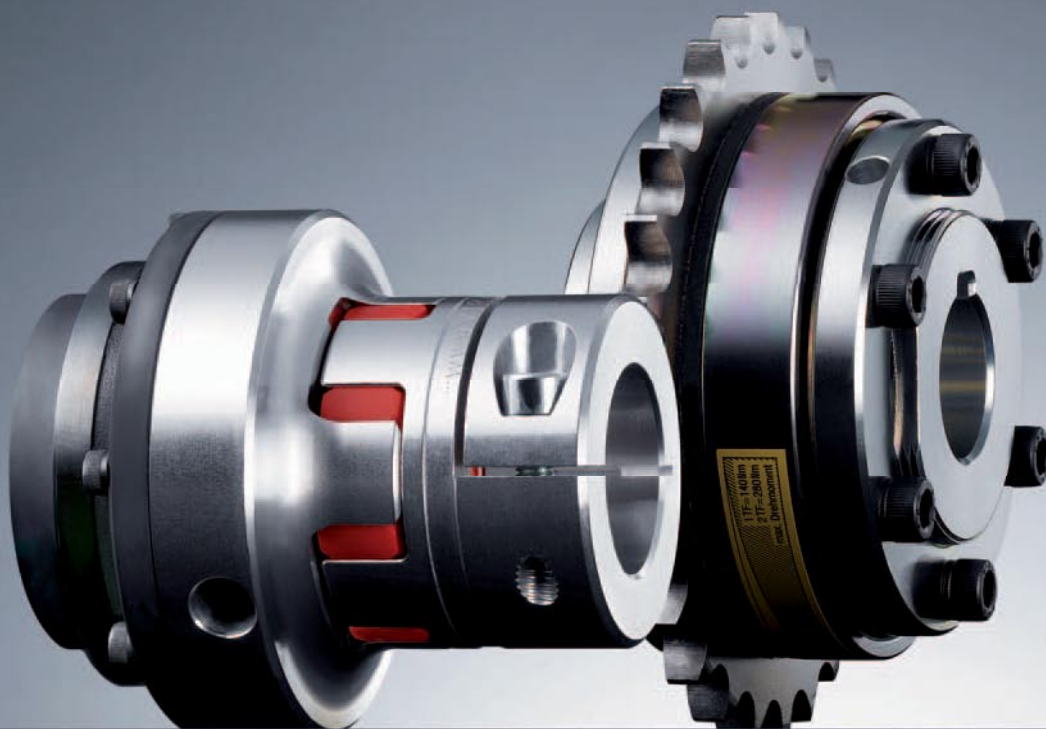
The manufacturing plant of KTR is certified according to
ISO 9001:2008



Complete qualification proof for steel
components and tanks according to DIN18800-7

Recognized expert plant acc. to the
water resources law §19 I WHG





RUFLEX®

Torque limiter

SYNTEX®

Backlash-free Overload System

KTR-SI

Safety system

Made for Motion



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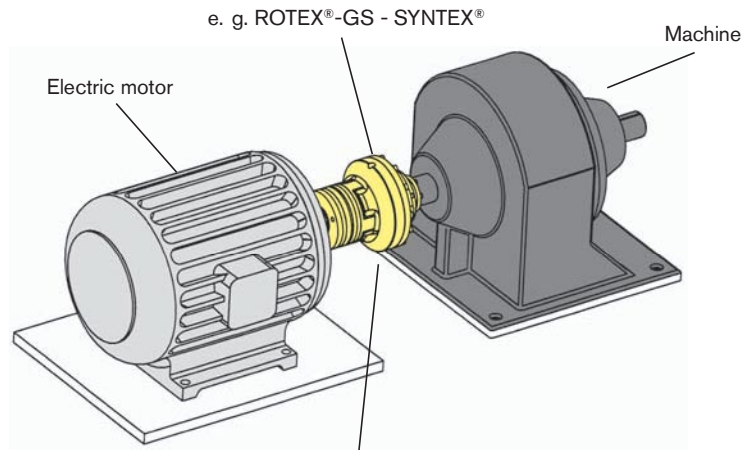
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Overload protection for direct and indirect drives

Direct drives



Torque limiter as shaft-to-shaft connection, for example:

- ball spindles
- axle drives
- between motor and gearbox

RUFLEX® - Torque limiter with ROTEX®



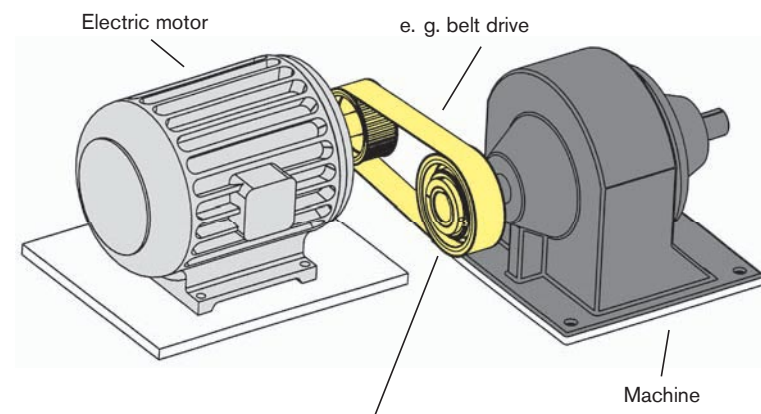
SYNTEX® - Safety coupling with ROTEX® GS



KTR-SI - Safety coupling with ROTEX®



Indirect drives



Shaft-to-flange connection, for example:

- sprockets
- belt drives
- crank gears

RUFLEX® - Torque limiter with sprocket



SYNTEX® - Safety coupling with sprocket



KTR-SI - Safety coupling with mounting flange



Types and applications

Type

Characteristics

Applications



RUFLEX® standard

- Torque limiter with high capacity due to high-quality materials
- Overload protection up to 6800 Nm
- High capacity of wear for a long service life
- Surfaces zinc-coated and passivated
- See page 245

- Conveyors
- Packaging machines
- Textile machines
- Gear motors



RUFLEX® with sprocket

- Torque limiter with sprocket
- Design ready for assembly
- Customer's torque is set
- Available from stock with standard sprockets
- Other sprockets available according to customer's requests
- See page 246

- Conveyors
- Automatisations systems
- Actuators



RUFLEX® max.

- Torque limiter in a lengthened design for assemblies with wide driving elements (e.g. double or triple sprockets)
- Detailed adjustment to customer's mounting dimensions possible
- Also available as a sprocket
- See page 247

- Multiple sprocket drives
- Multiple groove V-belt pulleys
- Conveyors
- Packaging machines



RUFLEX® with ROTEX®

- Torque limiter for shaft-to-shaft connection
- Torsionally flexible torque limiter able to compensate for misalignment
- Axial plug-in
- Various elastomers available each adjusted to the application
- See page 248

- Gear motors
- Axle drives
- High-quality pumps
- Printing machines



RUFLEX® with BoWex®

- Torque limiter as a torsionally rigid, double-cardanic shaft-to-shaft connection
- Low-cost shaft-to-shaft connection
- Axial plug-in
- Compensation for high misalignment due to double-cardanic design
- See page 249

- Simple applications
- Low speeds
- High misalignment

Types and applications

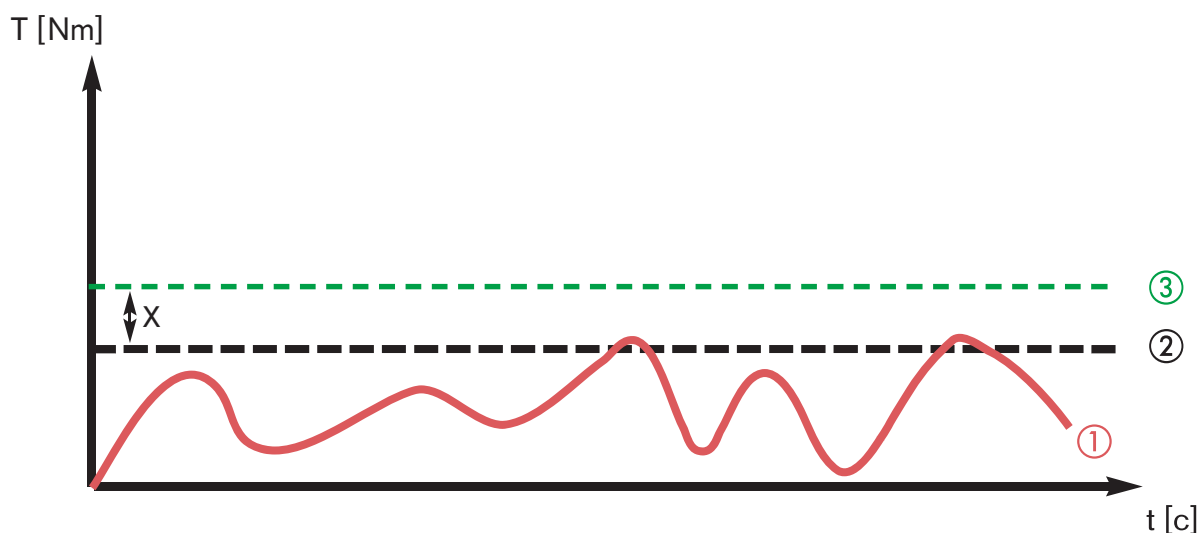
Type	Characteristics	Applications
 SYNTEX® standard	● Safety clutch up to 400 Nm ● Backlash-free, torsionally rigid ● Available as a synchronous or ratchet design ● For mounting of customer's components ● See page 252	● Packaging machines ● Machine tools ● X-Y-Z – axle drives ● Linear drives
 SYNTEX® with sprocket	● Safety clutch with integrated sprocket ● Customer's torque is set ● Reduction of components and costs ● Standard sprockets available from stock ● Alternatively available with belt pulley instead of sprocket ● See pages 253 and 254	● Conveyors for packaging machines ● Textile machines ● With belt pulley for linear drives
 SYNTEX® with ROTEX® GS	● Safety clutch as a shaft-to-shaft connection ● Combination with the backlash-free ROTEX® GS ● Torsionally flexible, able to compensate for misalignment ● Axial plug-in ● Various elastomers available ● See page 255	● Axle drives on machine tools ● Gear motors ● Woodworking machinery ● Linear drives
 KTR-SI standard	● Safety clutch up to 8200 Nm ● Available as a ratchet, synchronous and failsafe design ● New: Furthermore available as a free switching design (no residual torque) ● See page 260 and 261	● For rugged drives e.g. crushers ● In combination with coupling or belt pulleys, sprockets, etc.
 KTR-SI with ROTEX®	● Safety clutch as a shaft-to-shaft connection ● Torsionally flexible, able to compensate for misalignment ● Axial plug-in ● Various elastomers available ● See page 262	● Axle drives as a shaft-to-shaft connection ● Combinations for motor and gearbox ● Bottle filling machines ● Extruders (as a free switching coupling)

Information for selection torque limiters

- For exact dimensioning torque limiters latest simulation and calculation programmes are available. Therefore let us know many data of your drive. The more precise these data are, the more precise are the results of calculation. Make use of this possibility and discuss with us the application in advance.
- Please notice: High masses at the drive or driven end can mean long slow-down times also in case of torque limiters entered in function. This can cause increased wear at the coupling. Therefore in case of high speeds we recommend to use a free-rotating (load-separating) safety clutch (KTR-SI idle rotation coupling). If required, please contact KTR's engineering department.
- Besides it is important for the failure-free operation to define the engaging torque definitely above the max. operating torque of the unit. Therefore we recommend to set the coupling at least 30% above the max. operating torque (also refer to diagram below)
- For all torque limiters an electrical disconnection of the drive should be provided. Long slipping or locking times can destroy the coupling. We kindly assist you when selecting sensors, end switches or speed controls.

Important factors for the selection of torque limiters:

A smooth operation is only guaranteed if the overload torque set exceeds the maximum operating torque of the machine (see diagram below).



- ① Torque curve of the machine
- ② Maximum operating torque of the machine
- ③ Torque of the coupling set
- X Safety margin between ② and ③ (should be at least 30% of the maximum operating torque of the machine).

Assembly and operation

RUFLEX® standard



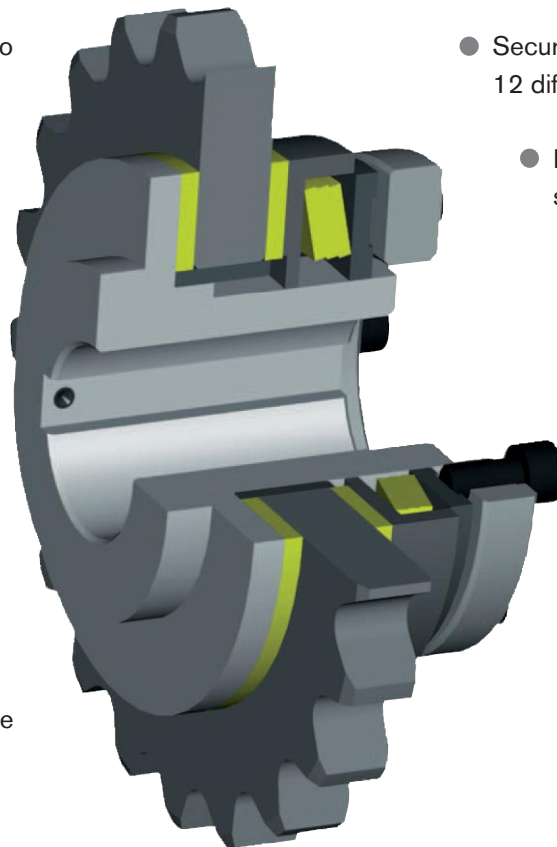
RUFLEX® with sprocket



RUFLEX® with ROTEX®



- Overload protection up to 6800 Nm (standard)
- Available with sprocket assembled
- Asbestos-free and rust-resistant friction lining for dry running
⚠ (ATEX possible on request)
- High wear capacity, long service life
- High-quality slide bush with dry-film lubricant
- Torque setting while in place



- Securing of the nut by locking in 12 different positions
- Easy assembly and torque setting
- Coupling components from steel, high safety reserves
- Corrosion protection by zinc-coated and passivated surfaces
- Rust-resistant and acid-proof design on request
- High capacity due to high-quality disk springs and friction linings

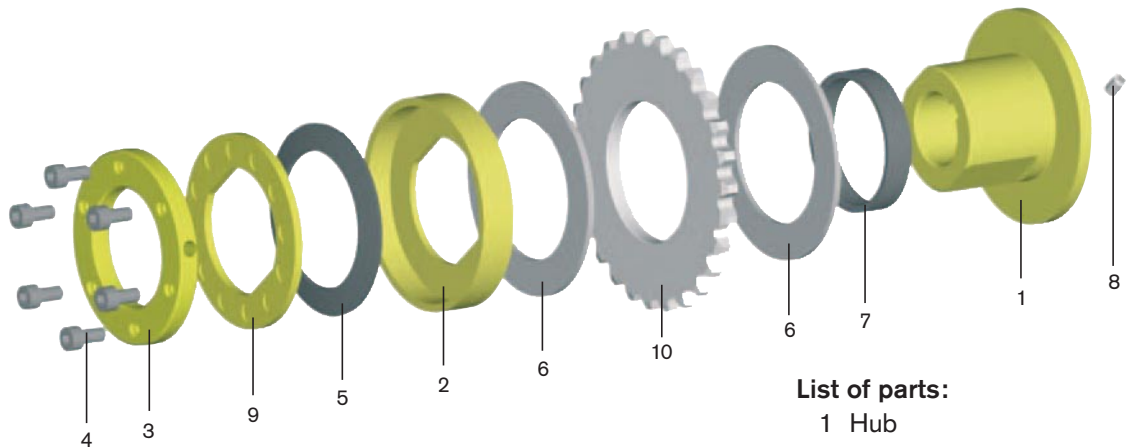
The RUFLEX® modular system is able to offer a solution for your drive, too.

The combination with the well-approved KTR couplings and the integration of customer-specific drive elements (e. g. sprockets) provides for an overload protection adapted to every application in an optimum way.

Various layers of disk springs and high-quality friction linings ensure a high capacity even for only a small mounting space.

Assembly and operation

RUFLEX® consists of the following components:



List of parts:

- 1 Hub
- 2 Pressure ring
- 3 Setting nut
- 4 Torque setting screws
- 5 Disk spring
- 6 Friction lining
- 7 Slide bush
- 8 Setscrew
- 9 Locking washer
- 10 Drive component (e. g. sprocket)

Layers of disk springs:



1 TF

- Small specific load on the friction linings
- For small to average torques
- High service life of the friction linings



1 TFD

- Small specific load on the friction linings
- Torques as with design 1TF
- Only small decrease of the torque even during a longer period of friction
- Precision torque adjustment due to a double spring excursion



2 TF

- Average specific load on the friction linings
- Average wear and decrease of torque with longer slipping periods
- Double torque due to double layer of the disk springs



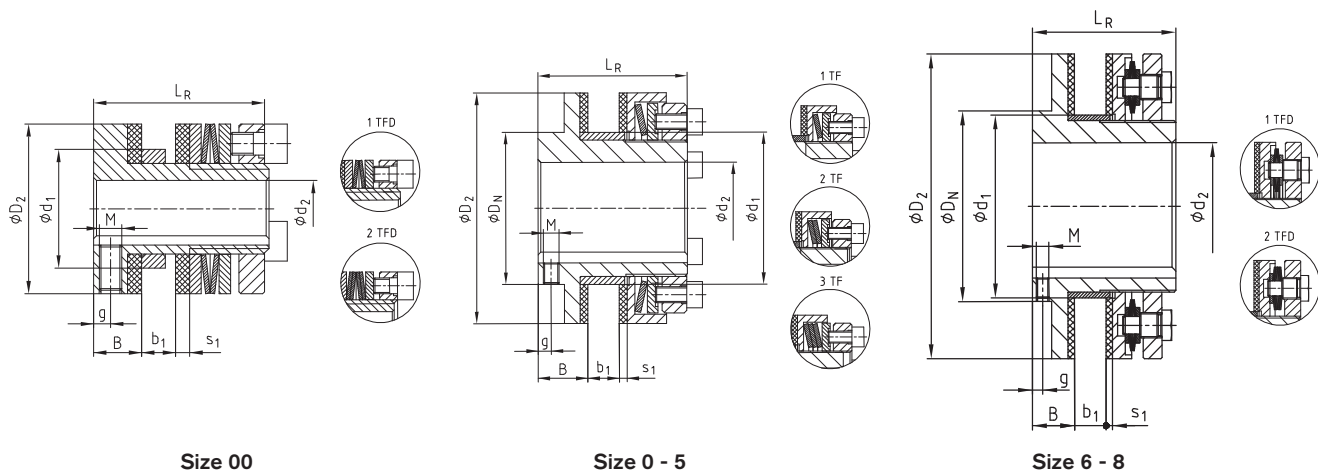
3 TF

- High specific load on the friction linings
- High wear and decrease of torque with longer slipping periods
- Suitable only in special cases for designs with only limited dimensions

Standard RUFLEX®



- Torque limiter for a torque range up to 6800 Nm
- Standard RUFLEX® zinc-coated and passivated
- Torque setting possible while in place
- Asbestos-free and rust-resistant friction linings
- Finish bore according to ISO fit H7,
feather keyway according to DIN 6885 sheet 1 - JS9
- Securing of the setting nut by locking in 12 different positions
- All components are made from high-quality steel

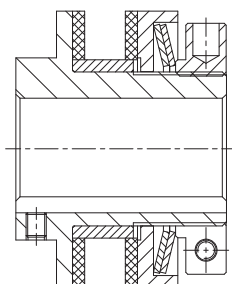


Technical data																
Size	Max. speed [rpm]	Torques [Nm]			Dimension [mm]											
		1TF	2TF	3TF ³⁾	Bore		D ₂	D _N	d ₁ ²⁾	B	Driving component b ₁		S ₁	L _R	Setscrew	
					Pilot bore	max.					min.	max.			g	M
00	10000	0,5-3	1-5	—	—	10	30	30	21	8,5	2	6	2,5	31	3	M4
0	8500	2-10	4-20	—	—	20 ¹⁾	45	45	35	8,5	2	6	2,5	33	3	M4
01	6600	5-35	10-70	—	—	22	58	40	40	16	3	8	3	45	4	M5
1	5600	20-75	40-150	130-200	—	25	68	45	44	17	3	10	3	52	5	M5
2	4300	25-140	50-280	250-400	—	35	88	58	58	19	4	12	3	57	5	M6
3	3300	50-300	100-600	550-800	—	45	115	75	72	21	5	15	4	68	5	M6
4	2700	90-600	180-1200	1100-1600	—	55	140	90	85	23	6	18	4	78	5	M8
5	2200	400-800	800-1600	1400-2100	—	65	170	102	98	29	8	20	5	92	8	M8
6	1900	300-1200	600-2400	—	38	80	200	120	116	31	8	23	5	102	8	M8
7	1600	600-2200	1200-4400	—	45	100	240	150	144	33	8	25	5	113	8	M10
8	1300	900-3400	1800-6800	—	58	120	285	180	170	35	8	25	5	115	8	M10

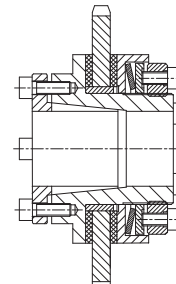
¹⁾ Finish bore larger than Ø 19, keyway to DIN 6885 sheet 3

²⁾ Bore tolerance (drive component): F8 at size 00-4
H8 at size 5-8

³⁾ To use only for designs with limited dimensions



- with clamping setting nut
- for radial torque setting



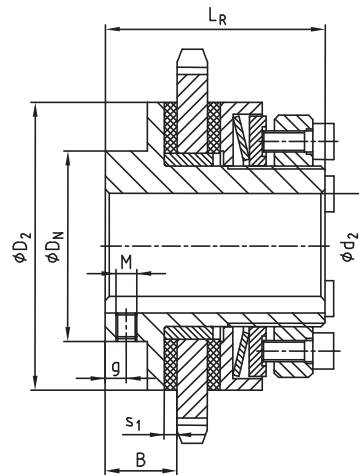
- with taper bush (hub design 4.5)
- frictionally engaged shaft-hub-connection

Order form:	RUFLEX®	1	2TF	10	Ø 20
	Coupling type	Size	Disk spring layer	Width of driving components	Bore

RUFLEX® with sprocket



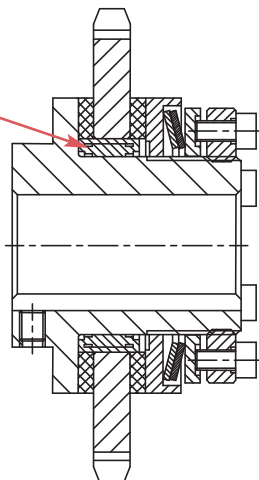
- RUFLEX® torque limiter with sprocket mounted
- Available from stock with standard sprocket (see table below)
- Other sprockets on request
- Complete unit with torque pre-set
- On request also available from stainless material
- Finish bore according to ISO fit H7,
feather keyway according to DIN 6885 sheet 1 - JS9



Technical data														
Size	Max. speed [rpm]	Torques [Nm]			Dimensions [mm]									
		1TF	2TF	3TF ¹⁾	Bore d ₂		D ₂	D _N	B	s ₁	L _R	Setscrew		Standard sprocket
					Pilot bore	max.						g	M	
01	6600	5-35	10-70	–	–	22	58	40	16	3	45	4	M5	³ / ₈ x ⁷ / ₃₂ , z = 23
1	5600	20-75	40-150	130-200	–	25	68	45	17	3	52	6	M5	¹ / ₂ x ⁵ / ₁₆ , z = 22
2	4300	25-140	50-280	250-400	–	35	88	58	19	3	57	6	M6	¹ / ₂ x ⁵ / ₁₆ , z = 27
3	3300	50-300	100-600	550-800	–	45	115	75	21	4	68	6	M6	³ / ₄ x ⁷ / ₁₆ , z = 22

¹⁾ To use only for designs with limited dimensions

On request available
with needle bearing
instead of slide bush.



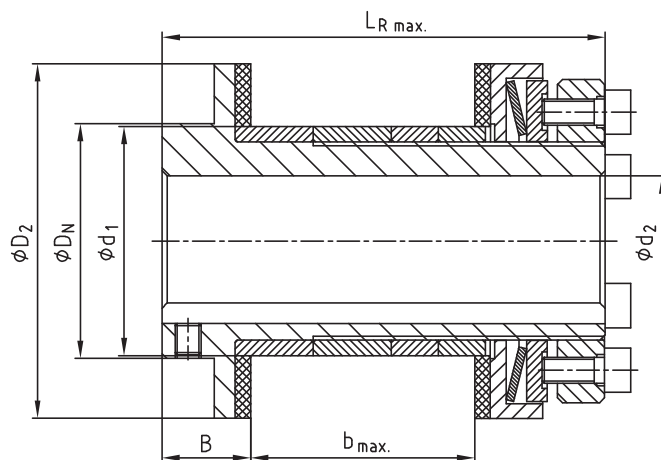
- available with needle bearing
- for high radial load on the sprocket
- for high torques or long slipping periods

Order form:	RUFLEX®	1	2TF	08 B1, z=24	Ø 20	100 Nm
	Coupling type	Size	Disk spring layer	Sprocket	Bore	Torque set

RUFLEX® max.



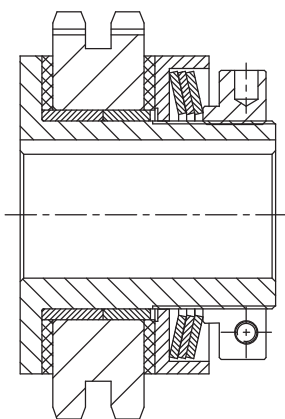
- RUFLEX® for assemblies with wide driving components
- E. g. double and triple sprockets
- Detailed adjustment to the customer's dimensions possible
- Also available as a complete unit with sprocket
- Other sizes of RUFLEX® max. on request
- Please mention the width of driving component "b" in your order
- Finish bore according to ISO fit H7,
feather keyway according to DIN 6885 sheet 1 - JS9



Technical data												
Size	Max. speed [rpm]	Torques [Nm]			Dimensions [mm]							
		1TF	2TF	3TF ²⁾	Bore d ₂		D ₂	D _N	B	b _{max.}	d ₁ ¹⁾	L _R max.
01	6600	5-35	10-70	–	–	22	58	40	16	33	40	70
1	5600	20-75	40-150	130-200	–	25	68	45	17	43	44	85
2	4300	25-140	50-280	250-400	–	35	88	58	19	54	58	100
3	3300	50-300	100-600	550-800	–	45	115	75	21	62	72	115
4	2700	90-600	180-1200	1100-1600	–	55	140	90	23	91,5	85	154

¹⁾ Bore tolerance (drive component): F8

²⁾ To use only for designs with limited dimensions



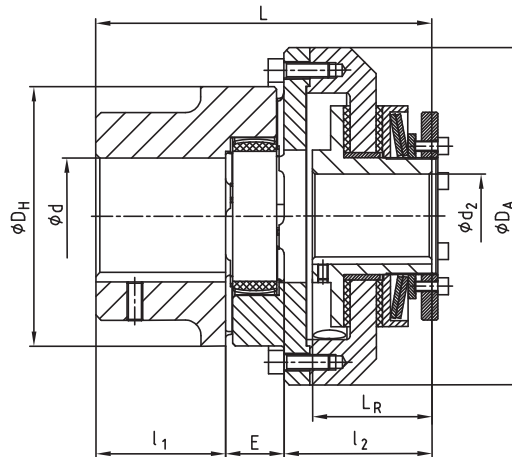
- RUFLEX® max. with sprocket mounted
- available as a complete unit with torque pre-set

Order form:	RUFLEX® max.	1	2TF	35	Ø 20
	Coupling type	Size	Disk spring layer	Width of driving components "b"	Bore

RUFLEX® with torsionally flexible ROTEX®



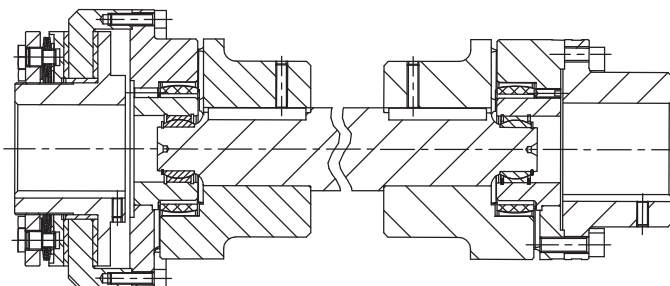
- RUFLEX® with ROTEX® as shaft-to-shaft-connection
- Torsionally flexible safety clutch
- Axial plug-in
- Able to compensate for misalignment
- Various kinds of elastomer hardness available
- Torque can be set while in place
- Easy assembly
- Finish bore according to ISO fit H7,
feather keyway according to DIN 6885 sheet 1 - JS9



Technical data																
RUFLEX® size	ROTEX® size	RUFLEX® torques [Nm]			ROTEX® torques [Nm]		Dimension [mm]									
		1TF	2TF	3TF ¹⁾	95/98 Shore A		Bore d ₂		Bore d _{max.}	L	D _A	L _R	E	l ₁	l ₂	D _H
					T _{KN}	T _{K max.}	Pilot bore	max.								
00	14	0,5-3	1-5	—	12,5	25	—	10	16	59	44	31	13	11	35	30
0	19	2-10	4-20	—	17	34	—	20 ¹⁾	25	78	63	33	16	25	37	40
01	24	5-35	10-70	—	60	120	—	22	35	98	80	45	18	30	50	55
1	28	20-75	40-150	130-200	160	320	—	25	40	113	98	52	20	35	58	65
2	38	25-140	50-280	250-400	325	650	—	35	48	133	120	57	24	45	64	80
3	48	50-300	100-600	550-800	525	1050	—	45	62	166	162	68	28	56	82	105
4	75	90-600	180-1200	1100-1600	1465	2930	—	55	95	205	185	78	40	85	80	160
5	90	400-800	800-1600	1400-2100	3600	7200	—	65	110	259	260	92	45	100	114	200
6	100	300-1200	600-2400	—	4950	9900	38	80	115	290	285	102	50	110	130	225
7	110	600-2200	1200-4400	—	6000	12000	45	100	125	317	330	113	55	120	142	255
8	140	900-3400	1800-6800	—	11000	22000	58	120	160	372	410	115	65	155	152	320

¹⁾ Finish bore larger than Ø 19, keyway to DIN 6885 sheet 3

²⁾ To use only for designs with limited dimensions



- RUFLEX® as intermediate shaft coupling
- for large shaft distance dimensions
- available in combination with ROTEX® or
RADEX-N® steel laminae couplings

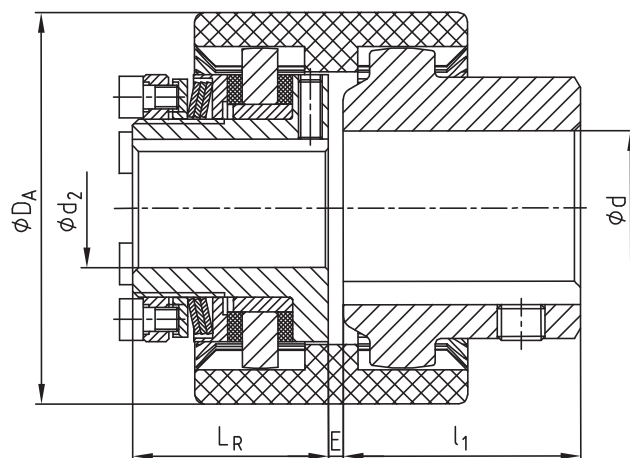
Order form:

RUFLEX®	1	2TF	Ø 20	ROTEX®	28	98 Sh A	Ø 25	100 Nm
Coupling type	Size	Disk spring layer	RUFLEX® bore	Coupling type	Size	Spider	ROTEX® bore	Torque set

RUFLEX® with torsionally rigid BoWex®



- RUFLEX® with BoWex® as shaft-to-shaft-connection
- Torsionally rigid safety clutch
- Axial plug-in
- Double-cardanic, able to compensate for misalignment
- For simple drives (low speeds, etc.)
- Easy assembly
- Finish bore according to ISO fit H7,
feather keyway according to DIN 6885 sheet 1 - JS9

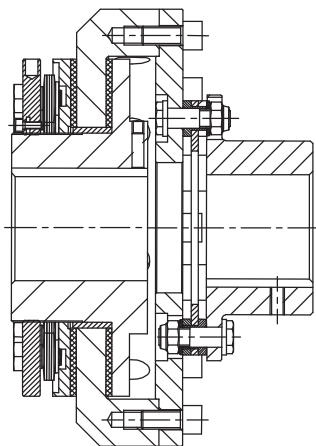


Technical data

RUFLEX® size	BoWex® size	RUFLEX® torques [Nm]			BoWex® torques [Nm]		Dimensions [mm]						
		1TF	2TF	3TF ²⁾	T _{KN}	T _{K max.}	Bore d ₂		Bore d _{max.}	D _A	L _R	E	l ₁
							Pilot bore	max.					
00	19	0,5-3	1-5	–	16	32	–	10	19	48	31	2,5	25,0
0	28	2-10	4-20	–	45	90	–	20 ¹⁾	28	66	33	2,5	40,0
01	38	5-35	10-70	–	80	160	–	22	38	83	45	1,0	35,5
1	48	20-75	40-150	130-200	140	280	–	25	48	95	52	1,0	45,5
2	65	25-140	50-280	250-400	380	760	–	35	65	132	57	1,0	64,0

¹⁾ Finish bores larger than Ø 19 mm, keyway to DIN 6885 sheet 3

²⁾ To use only for designs with limited dimensions



- RUFLEX® with torsionally rigid, backlash-free RADEX®-N steel laminae coupling
- suitable for high operating temperatures (up to 280 °C)
- with variable spacers for different shaft distance dimensions

Order form:

RUFLEX®	1	1TF	BoWex®	38	Ø 20	Ø 25	50 Nm
Coupling type	Size	Disk spring layer	Coupling type	Size	RUFLEX® bore	BoWex® bore	Torque set

A good idea - The punched disk spring

SYNTEX® - Safety clutch with mounting flange



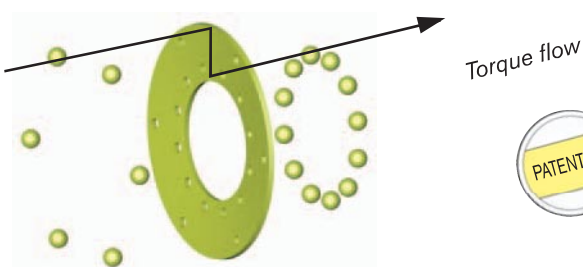
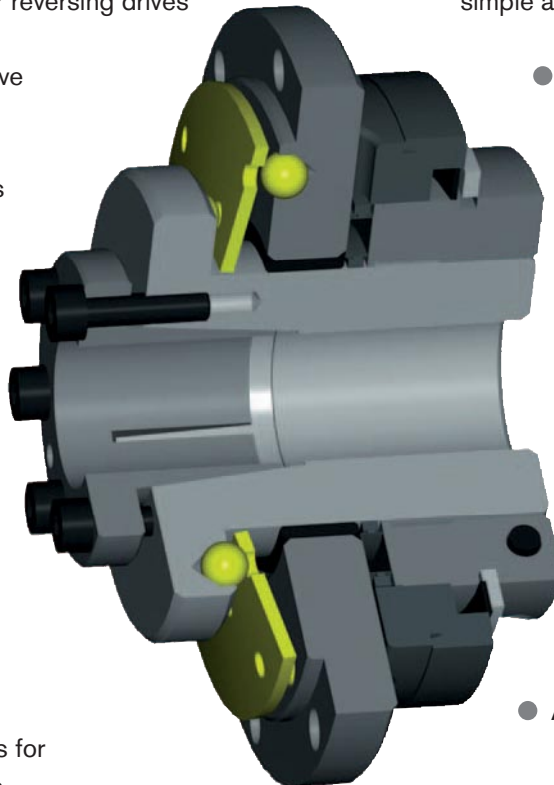
SYNTEX® - Safety clutch with sprocket



SYNTEX® - Safety clutch with ROTEX® GS



- Backlash-free, torsionally stiff overload protection, suitable for reversing drives
- Disconnection of the drive in case of overload
- Reduction of torque peaks
- High repeating accuracy even after a long operation period
- Easy integration of customer components
- Compact design, low mass moment of inertia
- Variable due to modular system
- Special disk springs for special applications
- Low-cost protection even for simple applications
- Easy assembly and torque setting
- Maintenance-free
- Insensitive to oil and grease
- Long service life due to low internal loads
- Backlash-free shaft-hub-connections
- Any or synchronous re-engagement
- Automatically operative

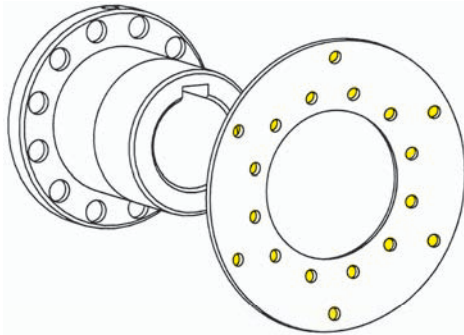


SYNTEX® is an overload system with positive operation.

The punched disk spring serves as the component for torque transmission (registered patent).

Operating principle

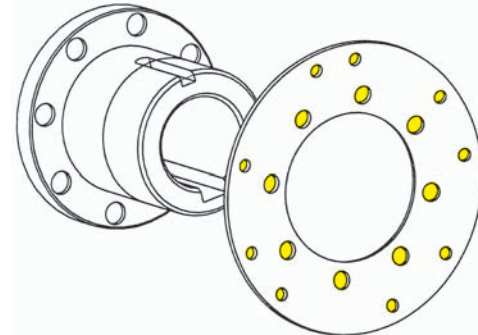
Ratchet design DK



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

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

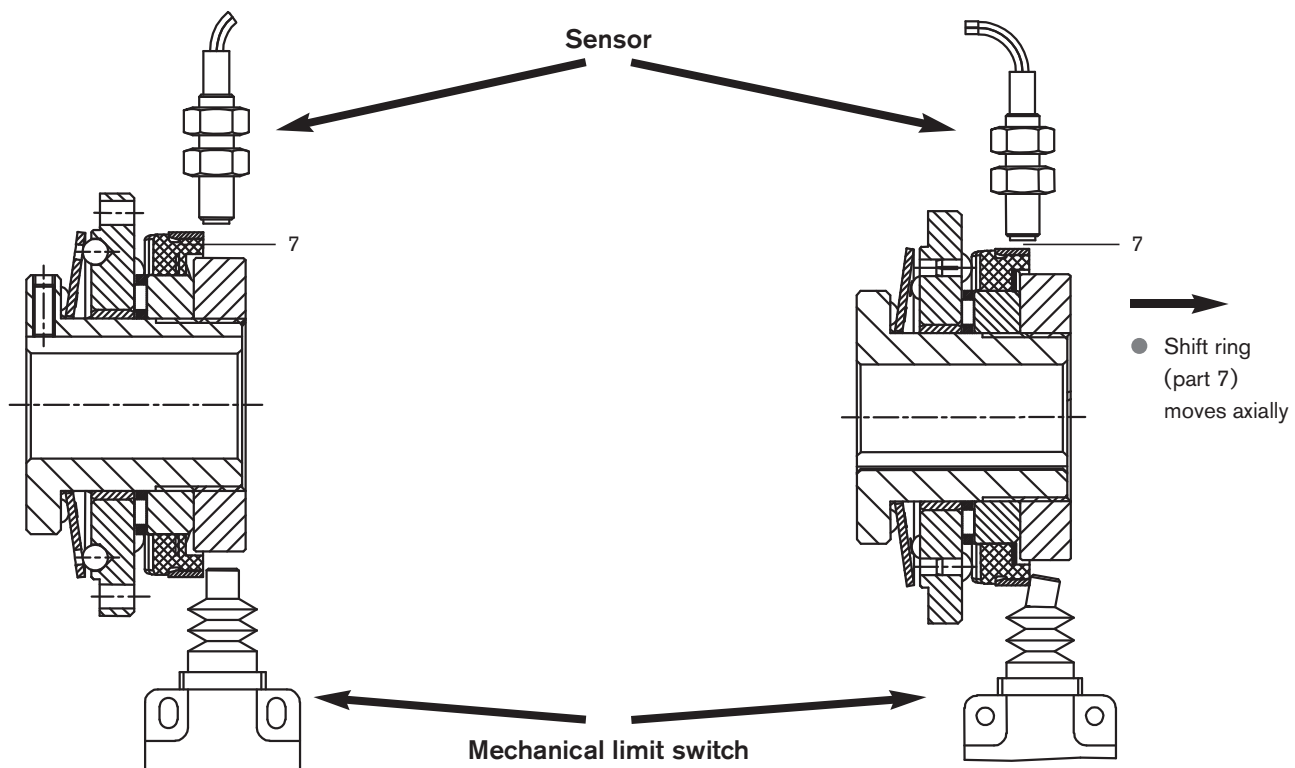
Synchronous design SK



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

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

Signal by limit switch or sensor in case of overload



Normal operation:

No signal by sensor or mechanical limit switch

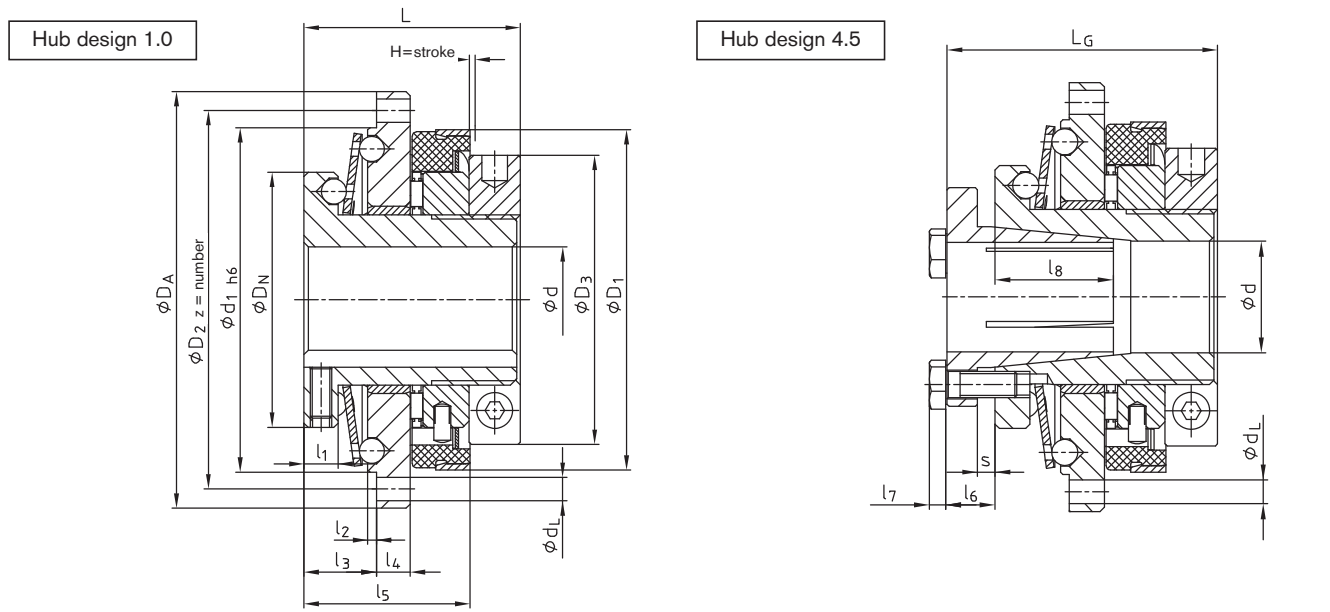
In case of overload:

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

SYNTEX® standard flange coupling



- SYNTEX® standard safety clutch applicable up to 400 Nm
- Flange design
- Easy mounting of customers' components
- Available both as a ratchet and synchronous design
- Torque setting possible while in place
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9
- Also available with a frictionally engaged shaft-hub-connection (hub design 4.5)



Technical data																						
Size	Torques [Nm]				Max. speed [rpm]	Dimensions [mm]																
	Ratchet design DK		Synchronous design SK			Bore d		D _A	D ₂	d ₁	D _N	D ₃	D ₁	d _L	L	l ₁	l ₂	l ₃	l ₄	l ₅	z	H=stroke
	DK1	DK2	SK1	SK2		Pilot bore	max.															
20	6-20	15-30	10-20	20-65	1500	–	20	80	71	65	48	54	61,5	4,5	45	8	2	16	6	35	8	2
25	20-60	45-90	25-65	40-100	1500	–	25	98	89	81	60	68	80	5,5	50	8	2	17	8	39	8	2
35	25-80	75-150	30-100	70-180	1000	–	35	120	110	102	75	78	91	5,5	60	10	2	21	10	42	12	2
50	60-180	175-300	80-280	160-400	1000	–	50	162	152	142	105	108	121	6,6	70	12	2	25	13	56	12	2

Technical data – Hub design 4.5								
Size	Dimensions [mm]						Tightening torque TA [Nm]	
	dmax.	l6	l7	l8	LG	s	Clamping screw	
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

Bores (fitting tolerance H7/h6) and the corresponding transmittable torques TR [Nm]																				
Size	Ø12	Ø14	Ø15	Ø16	Ø17	Ø18	Ø19	Ø20	Ø22	Ø23	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45
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

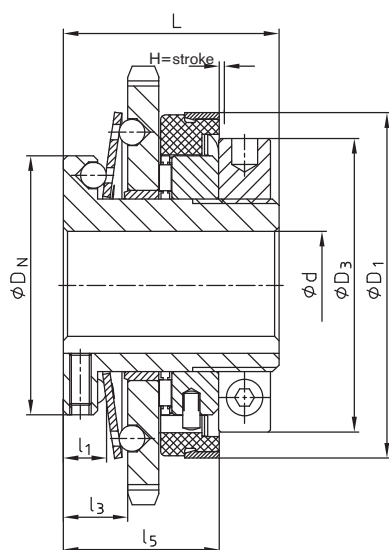
Order form:	SYNTEX®	25	DK1	Ø 20	1.0	45 Nm
	Coupling type	Size	Design	Bore	Hub design	Torque set

Standard SYNTEX® with integrated sprocket

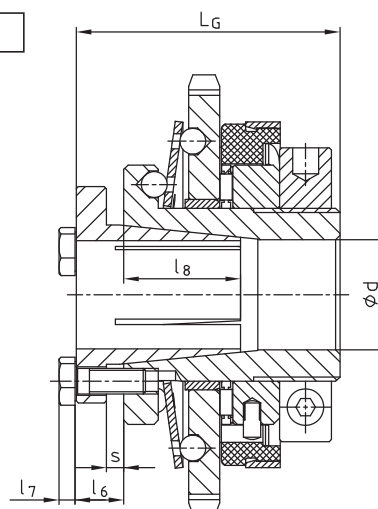


- Standard SYNTEX® with integrated sprocket
- Available ready to be installed with the torque set
- Reduction of components by integration of parts
- Available both as a ratchet and synchronous design
- Torque setting possible while in place
- Finish bore according to ISO fit H7, feather keyway according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

Hub design 1.0



Hub design 4.5



Technical data																
Size	Torques [Nm]				Max. speed [rpm]	Dimensions [mm]										
	Ratchet design DK		Synchronous design SK			Bore d		Standard sprocket	D _N	D ₃	D ₁	L	l ₁	l ₃	l ₅	H=stroke
	DK1	DK2	SK1	SK2		Pilot bore	max.									
20	6-20	15-30	10-20	20-65	1500	–	20	³ / ₈ x ⁷ / ₃₂ , z = 25	48	54	61,5	45	8	14	35	2
25	20-60	45-90	25-65	40-100	1500	–	25	¹ / ₂ x ⁵ / ₁₆ , z = 24	60	68	80	50	8	15	39	2
35	25-80	75-150	30-100	70-180	1000	–	35	¹ / ₂ x ⁵ / ₁₆ , z = 29	75	78	91	60	10	19	42	2
50	60-180	175-300	80-280	160-400	1000	–	50	³ / ₄ x ⁷ / ₁₆ , z = 27	105	108	121	70	12	23	56	2

Technical data – Hub design 4.5								
Size	Dimensions [mm]							Tightening torque T _A [Nm]
	d _{max.}	l ₆	l ₇	l ₈	L _G	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

Bores (fitting tolerance H7/h6) and the corresponding transmittable torques T _R [Nm]																						
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

Order form:

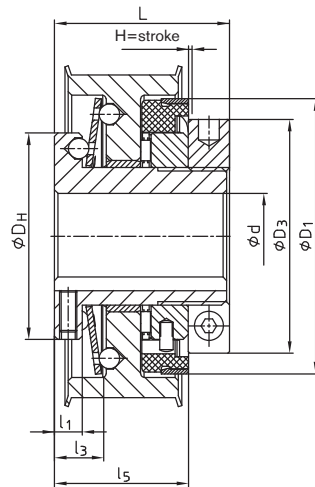
SYNTEX®	25	DK1	Ø 20	1.0	$\frac{1}{2} \times \frac{5}{16}, z = 29$	45 Nm
Coupling type	Size	Design	Bore	Hub design	Sprocket	Torque set

Standard SYNTEX® with belt drive

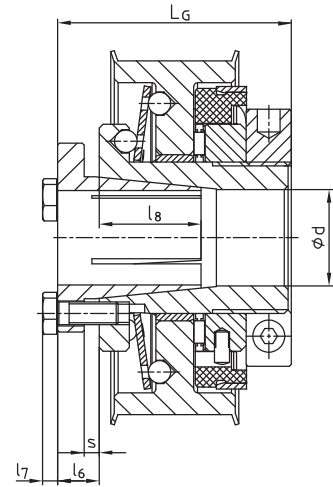


- Standard SYNTEX® with integrated belt drive
- Available ready to be installed with the torque set
- Reduction of components by integration of parts
- Available both as a ratchet and synchronous design
- Torque setting possible while in place
- Finish bore according to ISO fit H7, feather keyway according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

Hub design 1.0



Hub design 4.5



Technical data

Size	Torques [Nm]				Max. speed [rpm]	Dimensions [mm]											
	Ratchet design DK		Synchronous design SK			Bore d		Belt drive		D _N	D ₃	D ₁	L	l ₁	l ₃	l ₅	H=stroke
	DK1	DK2	SK1	SK2		Pilot bore	max.	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	45	8	14	35	2
25	20-60	45-90	25-65	40-100	1500	—	25	T10, z=30	AT10, z=30	60	68	80	50	8	15	39	2
35	25-80	75-150	30-100	70-180	1000	—	35	T10, z=36	AT10, z=36	75	78	91	60	10	19	42	2
50	60-180	175-300	80-280	160-400	1000	—	50	T10, z=48	AT10, z=48	105	108	121	70	12	23	56	2

¹⁾ z = min. number of teeth necessary

Technical data – Hub design 4.5

Size	Dimensions [mm]							Tightening torque T _A [Nm]
	d _{max.}	l ₆	l ₇	l ₈	L _G	s	Clamping screw	
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

Bores (fitting tolerance H7/h6) and the corresponding transmittable torques T_R [Nm]

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

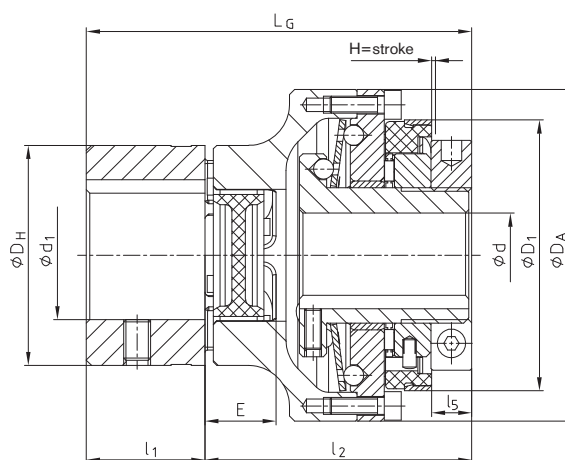
Order form:

SYNTEX®	25	DK1	Ø 20	1.0	AT10, z=24	30	45 Nm
Coupling type	Size	Design	Bore	Hub design	Belt drive	Width of synchronous belt	Torque set

SYNTEX® with shaft coupling ROTEX® GS



- Backlash-free, axially rigid safety clutch
- Axial plug-in
- Low mass moments of inertia by using aluminium components
- Available both as a ratchet or synchronous design
- Torque setting possible while in place
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9
- Also available with a frictionally engaged shaft-hub-connection (hub design 4.5)



Technical data																					
SYNTEX® size	ROTEX® GS size	Torques [Nm]						Max. speed [rpm]	Dimensions [mm]												
		Ratchet design DK		Synchronous design SK		ROTEX® GS 98 Sh A-GS			Max. bore		D _A	D _H	l ₁	E	l ₂	l ₅	L	L _G	D ₁	H=stroke	
		DK1	DK2	SK1	SK2	T _{KN}	T _{Kmax.}		d	d ₁											
20	24	6-20	15-30	10-20	20-65	60	120	1500	20	28	80	55	30	18	70	10	45	100	61,5	2	
25	28	20-60	45-90	25-65	40-100	160	320	1500	25	38	98	65	35	20	78	11	50	113	80	2	
35	38	25-80	75-150	30-100	70-180	325	650	1000	35	45	120	80	45	24	91	13	60	136	91	2	
50	48	60-180	175-300	80-280	160-400	525	1050	1000	50	62	162	105	56	28	111	14	70	167	121	2	

Order form:	SYNTEX®	25	DK1	1.0	Ø 20	ROTEX® GS	28	98 Sh A-GS	1.0	Ø 25	50 Nm
	Coupling type	Size	Design	Hub design	SYNTEX® bore	Coupling type	Size	Spider	Hub design	ROTEX® GS bore	Torque set

Assembly / Limit switch / Proximity initiator

Please order our separate mounting instructions KTR-N 46210!

The operating principle of the **SYNTEX®** overload system enables backlash-free torque transmission by positive locking. The torque is transmitted by **balls** and **disk springs**. By the prestressed force of the disk spring, the balls engage in the respective ball position of the disk spring.

By using a clamping **setting nut**, the ratchet torque can be set according to the partition of the plastic shift ring.

- Fix the hub against twisting.
- Unscrew the setscrew in the setting nut.
- Turn the setting nut clockwise with a sickle spanner in order to increase the ratchet torque; turn the setting nut anticlockwise in order to reduce the ratchet torque.
- If the requested ratchet torque is set, fix the setting nut again by screwing down the setscrew on the thread of the hub.

Limit switch

Operation

A mechanical limit switch or an inductive sensor is actuated by the axial stroke of the shift ring arising in case of overload. In this way a control signal is produced disconnecting the drive.

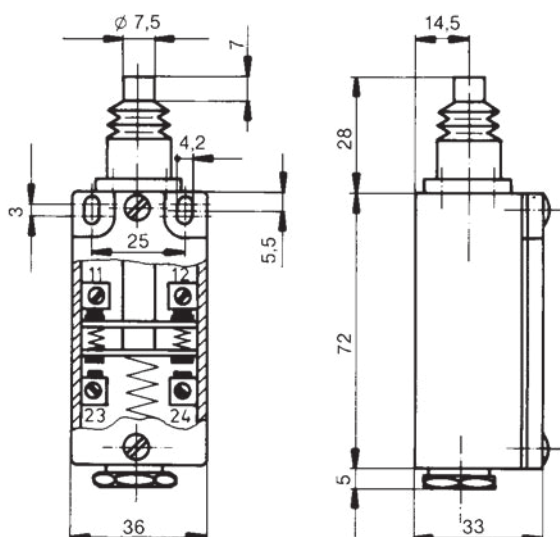
Assembly

The sensor has to be mounted in a solid device in order to ensure a smooth operation. The sensor should be protected against dirt and potential mechanical troubles.

Adjustment

On engagement of the overload coupling, the shift ring realizes an axial stroke movement of about 2 mm. The sensor or the limit switch must be assembled in this shifting range. In order to adapt the mechanical limit switch and the shifting way to the unit, the limit switch has to be adjusted accordingly. For that purpose the shifting way can be changed at the tappet after opening the cover plate.

Please make absolutely sure to check the operativeness of the limit switch before delivery of the unit.



Shifting

■ On □ Off

Degrees	0	3	8	12	16	20
11-12 Break contact	■	□	□	□	□	□
23-24 Make contact	□	■	□	□	□	□

Technical data:

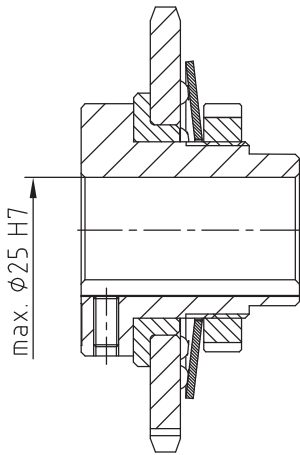
Maximum voltage	: 500 V AC
Maximum constant current	: 10 A
Kind of protection	: IP 65 acc. to DIN 40050
Switching frequency	: 6.000/h
Operating temperature	: - 30 °C to + 80 °C
Kind of contact	: 1 break contact, 1 make contact
Mechanical service life	: 10 ⁷ switches
Housing	: Aluminium diecast
Cover	: Aluminium sheet steel
Switching direction	: Possible from all directions

After opening the cover plate a change of the shifting way is possible!

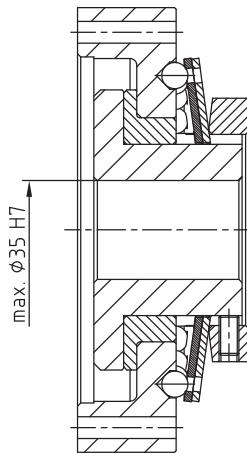
Cost-optimised version



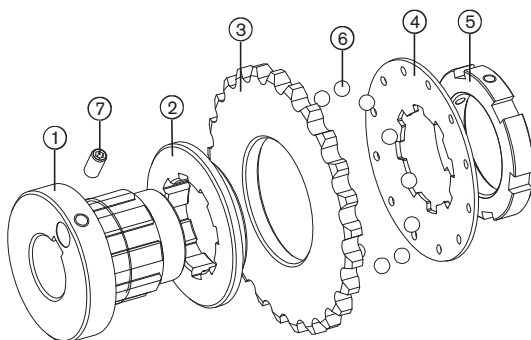
- Low-cost version with high power density
- Ideal for higher quantities e. g. for conveyor belt drives
- Use of optimised manufacturing processes, e. g. sintering
- Please ask for our detailed documentations



- Spec. SYNTEX® 25 with integrated sprocket
- Performance range with 1 disk spring up to 80 Nm, in case of 2 disk springs up to 160 Nm
- Use of different sprockets possible
- Ideal for „simple“ drives like e. g. in the conveyor technology



- Spec. SYNTEX® 35 with integrated flange
- Performance range with 1 disk spring up to 200 Nm, in case of 2 disk springs up to 400 Nm
- Adjustment of the flange to ambient construction possible

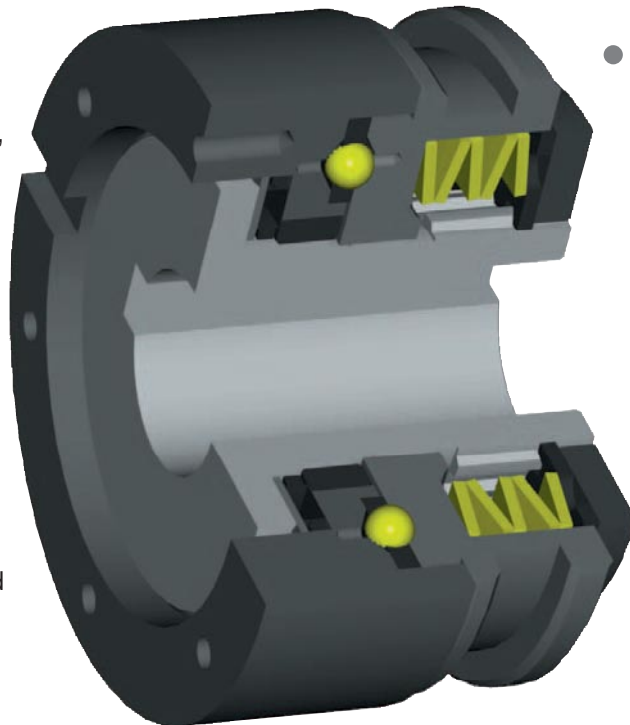


Components:

- ① Hub with external spline to support the disk spring (torque transmission)
- ② Plain bearing sleeve to support the axial and radial forces
- ③ Sprocket with cylinder bores to support the balls
- ④ Disk spring with internal spline and bores for balls (torque transmission and axial prestress, **KTR Patent**)
- ⑤ Keyway nut for torque setting
- ⑥ Ratchet balls for torque transmission
- ⑦ Set screw for axial fixing onto the shaft

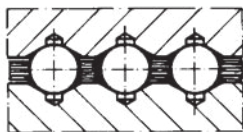
We provide safety

- Overload protection up to 8200 Nm
- Available with same dimensions as a ratchet, synchronous and fail-safe design
- Reduction of torque peaks
- High repeating accuracy, even after a long operating period
- Disconnection of the drive in case of overload
- Automatically operative
- Different designs also suitable for your application
- Easy assembly and torque setting
- Maintenance-free
- Insensitive to oil and grease
- High service life due to high-quality materials
- Backlash-free shaft-hub-connections

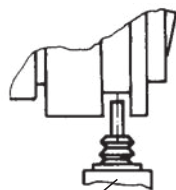


In case of overload the ratchet parts (balls or rollers) leave their indentations, and a relative motion between the driving and driven side is produced. In this way damages due to overload are avoided. The shift ring (3) makes an axial motion to the shifting way "S" and activates the limit switch or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

No signal in case of normal operation

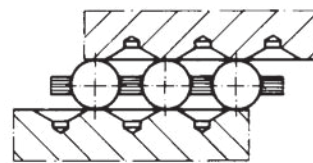


Engaged

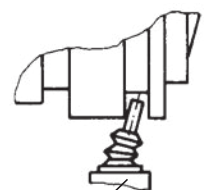


Limit switch

Signal in case of overload

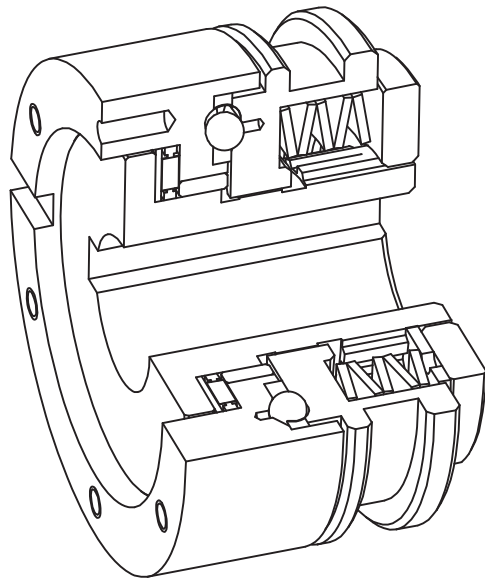


Disengaged



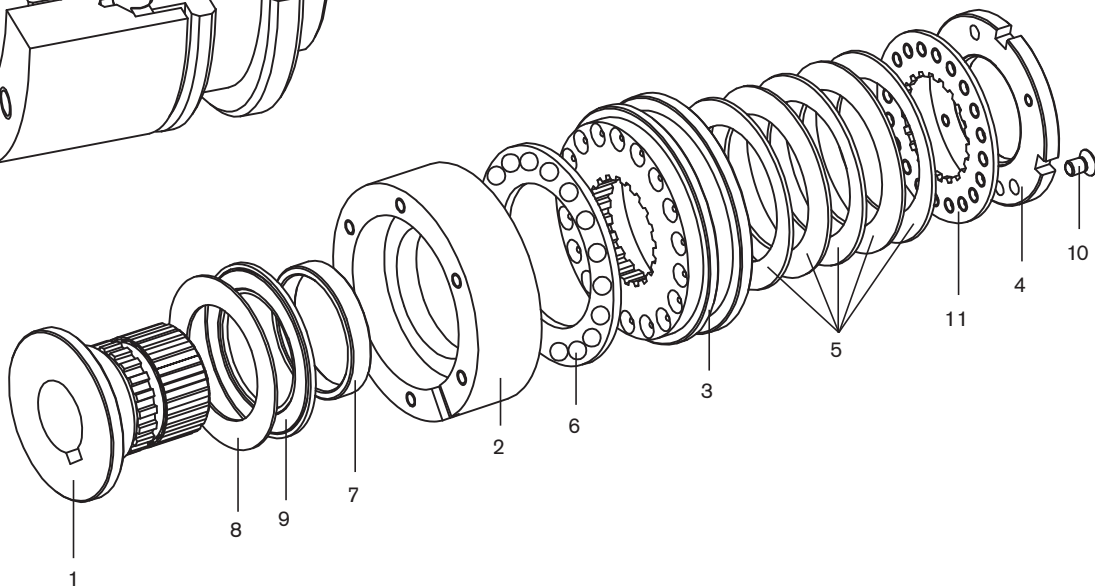
Limit switch

Variable applications by modular system



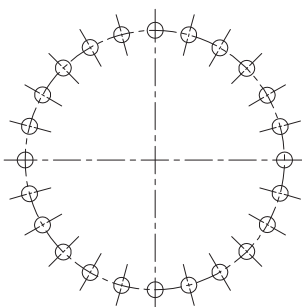
List of parts:

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



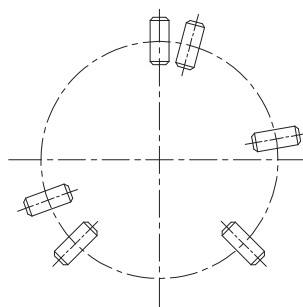
Three operating principles with the same mounting space

Ratchet design DK



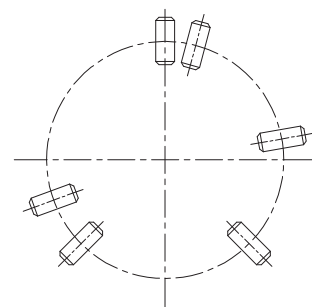
Any engagement after an overload.
After eliminating the overload, the balls automatically engage in the next indentation.

Synchronous design SR



Synchronous engagement after an overload.
After eliminating the overload the rollers automatically engage after a rotation of 360°. Driving and driven side are always placed in the same position to each other. Other degrees of engagement, e.g. 180°, are also possible.

Fail-safe design SGR



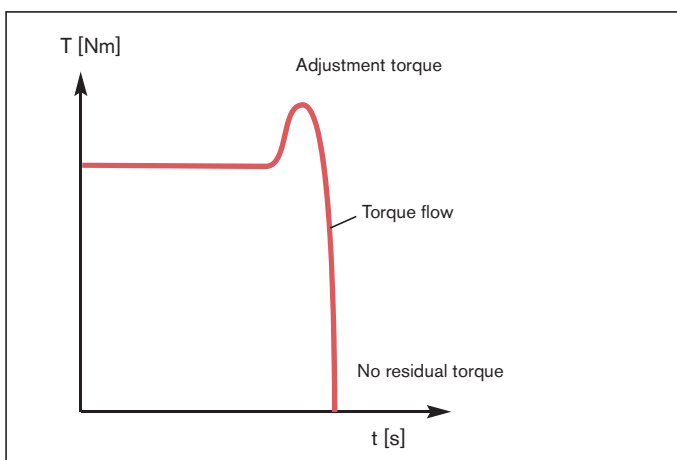
The fail-safe design is a pure torque measurement without any ratchet operation.

In case of overload a signal is given by the limit switch, producing a mechanical separation of driving and driven side = disengagement is not possible.

Idle rotation coupling (load-separating)

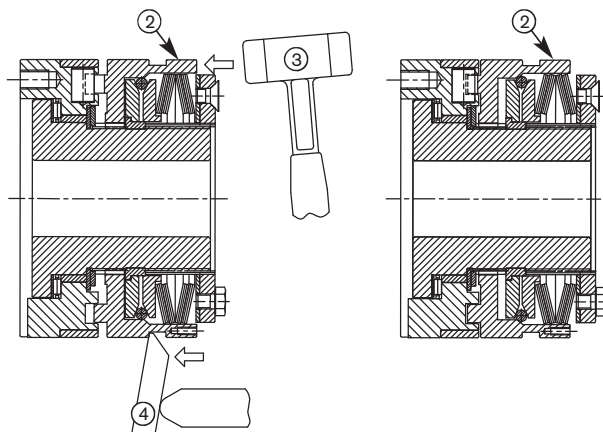


- Free-rotating safety clutch up to 1800 Nm torque
- Max. speed up to 5000 rpm (see table)
- Drive end and driven end are permanently separated
- Manual re-engagement
- Optional overload recognition by limit switch or sensor
- Combination with ROTEX® coupling as shaft-to-shaft connection
- Easy assembly and torque adjustment



Operating principle of the KTR-SI idle-rotation couplings:

- When achieving the torque setting, the coupling rotates.
- Subject to the idle rotation mechanism driving and driven side remain separated. The resulting flywheel mass may run out in idle state.
- After having removed the overload, the coupling re-engages.
- The re-engagement happens automatically.



Re-engagement Instructions:

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

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

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

Max. speeds	
Max. speed [rpm]	
Size	n _{max.}
1	5000
2	4000
3	3500
4	3000
5	2300

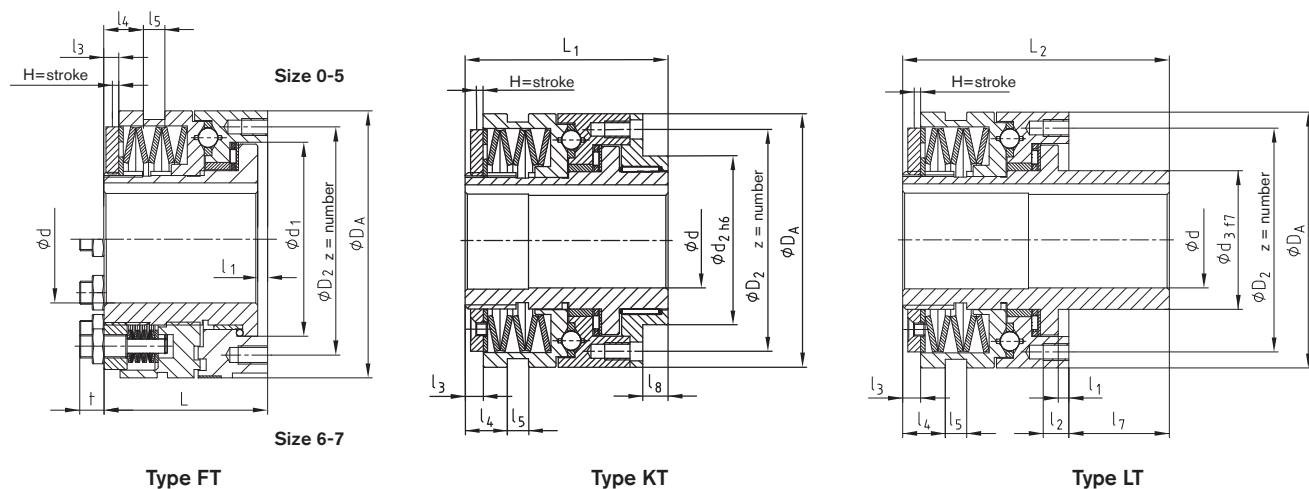
Dimensions like KTR-SI design
DK, SR and SGR
(see following pages)

Order form:	KTR-SI	2	FR	FT	T2	Ø 20	40 Nm
	Coupling type	Size	Design	Design	Disk springs	Bore	Torque set

Type FT, KT and LT



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



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

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

¹⁾ Type T4 SR and SRG: tightening torques according to 12.9

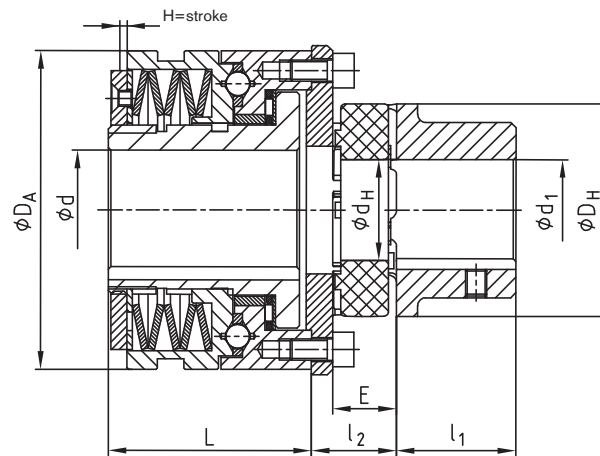
²⁾ Size 6: dimension t = 15 mm, Size 7: dimension t = 21 mm

Order form:	KTR-SI	2	DK	FT	T2	Ø 20	40 Nm
	Coupling type	Size	Design	Design	Disk springs	Bore	Torque set

With torsionally flexible ROTEX®



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



Technical data – Torques

Technical data – Torques											
Design DK						Design SR and SGR					
KTR-SI Size	ROTEX® Size	Torques [Nm]				KTR-SI Size	ROTEX® Size	Torques [Nm]			
		KTR-SI disk spring layer						KTR-SI disk spring layer			
		T1	T2	T3	T4			T1	T2	T3	T4
0	19	2,5-5	5-20	–	20-40	0	28	5-10	10-40	–	–
1	24	6-12	12-25	25-55	55-100	1	38	12-25	25-50	50-100	–
2	28	12-25	25-50	50-120	120-200	2	48	25-50	50-100	100-200	–
3	38	25-50	50-100	100-250	200-450	3	55	50-100	100-200	200-450	–
4	48	50-100	100-200	200-500	500-1000	4	75	100-200	200-400	400-800	800-2000
5	55	85-250	230-600	300-1000	600-2000	5	90	170-450	350-900	600-1800	1200-3400
6	100	180-480	360-960	720-1950	1600-3300	6	100	300-750	600-1500	1200-3000	2900-5800
7	110	250-520	500-1050	1000-2100	2000-3600	7	110	550-1100	1100-2200	2200-4400	3000-8200

Technical data – Dimensions

KTR-SI Size	ROTEX® Size	Dimensions [mm]									H=stroke [mm]	
		Max. Bore		D_A	D_H	d_H	E	l_1	l_2	L	Design	
		d	d_1								DK	SR
0	19	20	24	55	40	18	16	25	22	38,5	1,4	1,2
	28		38		65	30	20	35	28,5			
1	24	25	28	82	55	27	18	30	24	52	2,3	1,8
	38		45		80	38	24	45	32,5			
2	28	35	38	100	65	30	20	35	28	61	2,4	2,0
	48		60		105	51	28	56	38			
3	38	45	45	120	80	38	24	45	32	78	2,7	2,2
	55		70		120	60	30	65	43			
4	48	55	60	146	105	51	28	56	38	100	3,7	2,5
	75		95		160	80	40	85	56,5			
5	55	65	70	176	120	60	30	65	44	113,5	4,6	3,0
	90		110		200	100	45	100	62			
6	100	80	115	200	225	113	50	110	72	119	5,0	3,5
7	110	100	125	240	255	127	55	120	78	141	5,5	4,0

Order form:

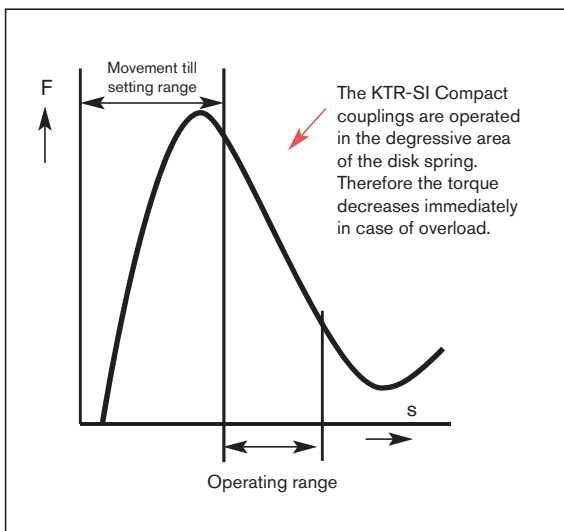
KTR-SI 2	28	DK	T2	Ø 25	Ø 20	40 Nm
Coupling type	ROTEX® Size	Design	Disk springs	ROTEX® Bore	KTR-SI Bore	Torque set

Backlash-free, torsionally stiff safety clutch

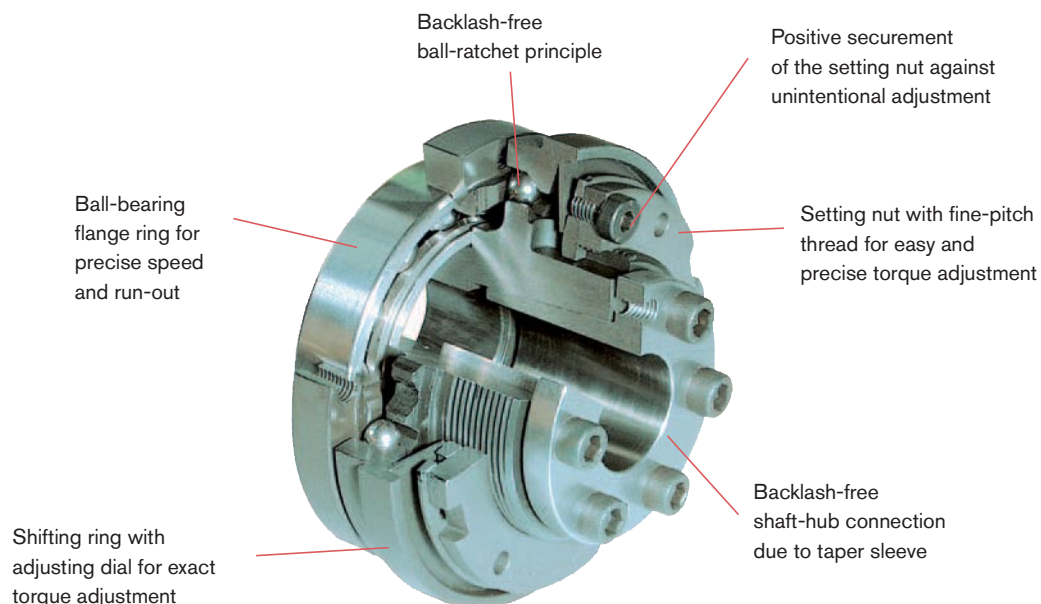
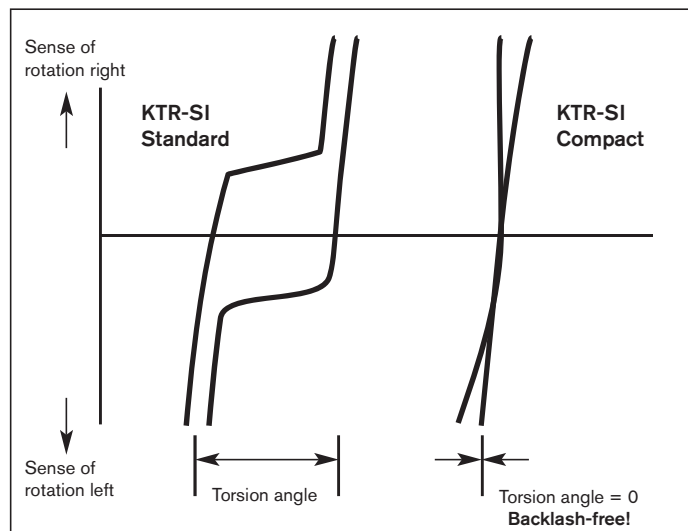


- Backlash-free safety clutch with patented curve spring design
- Precise switch-off with high repeating accuracy
- Exact, backlash-free torque transmission, even in case of wear
- Easy torque setting
- Ball-bearing connection flange
- Hardened ratchet surfaces for long lifespan
- Backlash-free shaft-hub connection due to taper sleeve
- Can be used with proven ROTEX® GS as shaft-to-shaft connection

Characteristic special curve



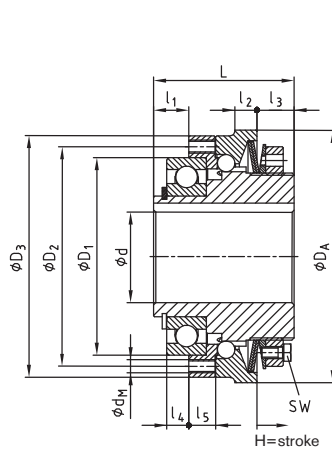
What is backlash-free?



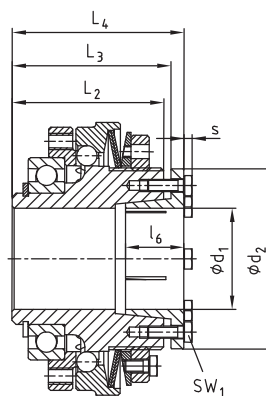
Type FT, FT-4.5 and FT with ROTEX® GS



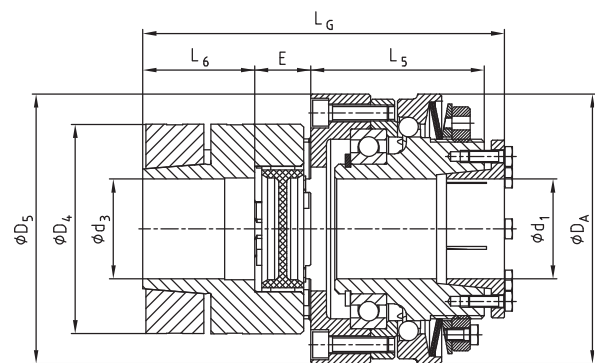
- Torque up to 740 Nm
- Maximum shaft diameter up to 60 mm
- Backlash-free and vibration-reducing in combination with ROTEX® GS
- Drive and driven-sided with backlash-free, frictionally engaged shaft-hub connection
- Synchronous and ratchet design
- Also available in combination with torsionally stiff RADEX®-N or RADEX®-NC
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9



Type FT



Type FT-4.5
with clamping connection



**Type FT with ROTEX® GS
as shaft-to-shaft connection**

Technical data																		
Size	Speed [rpm]	Torques [Nm]			Dimensions [mm]													
		T1	T2	T3	d _{max.}	D ₁ ^{h5}	D ₂	D ₃	D _A	d _M	L	l ₁	l ₂	l ₃	l ₄	l ₅	SW	H- stroke
01	4000	3-14	6-28	13-56	20	47	56	65	70	8xM4	40	8	7	12	5	7,5	7	1,2
0	3000	9-35	18-70	40-140	30 ¹⁾	62	71	80	85	8xM5	48	11	8	14	7	8,0	7	1,5
1	2500	19-65	38-130	78-260	35 ¹⁾	75	85	95	100	8xM6	59	14	9	16	9	10,5	8	1,8
2	2000	35-110	80-220	160-440	45 ¹⁾	90	100	110	115	8xM6	64	16	10	17	10	12	10	2,0
3	1200	80-185	160-370	320-740	50	100	116	130	135	8xM8	75	18	12	21	10	12	10	2,2

¹⁾ max. finish bore, keyway to DIN 6885 sheet 3

Dimensions with taper sleeve type 4.5 [mm]									
Size	Dimensions [mm]								
	d _{1max}	L ₂	L ₃	L ₄	l ₆	d ₂	s	SW ₁	T _A [Nm]
01	10-20	40	42	47	26	40,5	2,8	7	3
	19-25					42,0			
0	30	46	49	56	31	57	4,0	10	10
1	19-30	57	60	67	40	57	4,0	10	10
	32-40				31	64	3,5	8	5,9
2	50	63	68,5	73	29	73,5	4,0	10	10
3	32-50	75	78,5	85	29	73,5	4,0	10	10
	55-60		78,0	86	44	89			

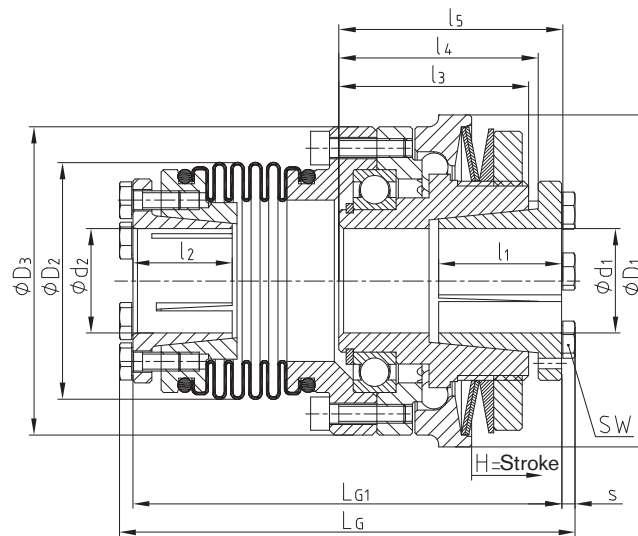
Dimensions type FT with ROTEX® GS [mm]										
Size	ROTEX® GS Size	Dimensions [mm]								
		d _{1max.}	d _{3max.}	D ₄	D ₅	L _G	L ₅	L ₆	D _A	E
01	24	25	28	55	70	102	47	30	70	18
0	28	30	38	65	85	119,5	54,5	35	85	20
1	38	40	45	80	100	146	67	45	100	24
2	42	50	55	95	115	159	73	50	115	26
3	48	60	62	105	135	182	87	56	135	28

Order form:	KTR-SI Compact	2	DK	T2	Ø 40	4.5	150 Nm
	Coupling type	Size	Design	Disk springs	Bore	Hub design	Torque set

with a torsionally stiff TOOLFLEX® S-KN



- Max. shaft diameter up to 56 mm
- Non-positive bellow-hub connection
- Maintenance-free
- Good properties of concentric running with high speeds
- Optionally available as design M (6 shafts) or design S (4 shafts, short version)



KTR-SI Compact with TOOLFLEX® S-KN

Technical data – Speeds, torques, dimensions

KTR-SI Compact Size	TOOLFLEX® S-KN ¹⁾ Size	Max. speed [rpm]	TOOLFLEX® S-KN Torques [Nm]	KTR-SI Compact Torques [Nm]		Dimensions [mm]				
				T1	T2	d ₁ max.	d ₂ max.	D ₁	L _G ²⁾	L _{G1} ²⁾
01	30	4000	35	3-14	6-28	25	22	70	96	90,5
0	38	3000	65	9-35	18-70	30	28	85	109	102,0
1	45	2500	150	19-65	38-130	40	40	100	145	137,5
2	55	2000	340	35-110	80-220	50	56	115	170	159,5

Technical data – Dimensions

KTR-SI Compact Size	TOOLFLEX® S-KN ¹⁾ Size	Dimensions [mm]									
		D ₂	D ₃	l ₁	l ₂	l ₃	l ₄	l ₅	s	SW ₁	H
01	30	50,0	65	26	22	40	42,0	47	2,8	7	1,2
0	38	60,5	80	31	26	46	49,0	56	4,0	7	1,5
1	45	82,0	95	40	34	57	60,0	67	4,0	8	1,8
2	55	97,0	110	29	40	63	68,5	73	3,5	10	2,0

¹⁾ Optionally available with clamping hub

²⁾ Depending on the type of TOOLFLEX®, M (6 shafts) or S (4 shafts)

Order form:

KTR-SI Compact	1	45	DK	T2	d ₁ Ø 40	d ₂ Ø 40	100 Nm
Coupling type	KTR-SI Compact Size	TOOLFLEX® S-KN Size	Design	Disk springs	Bore KTR-SI Compact	Bore TOOLFLEX® S-KN	Torque set



CLAMPEX®

Shaft-hub-connection

KTR Precision joints

according to DIN 808

Made for Motion



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Factors, hints

Reduction of costs!

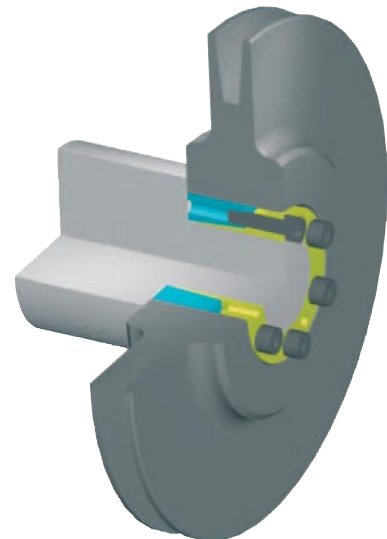
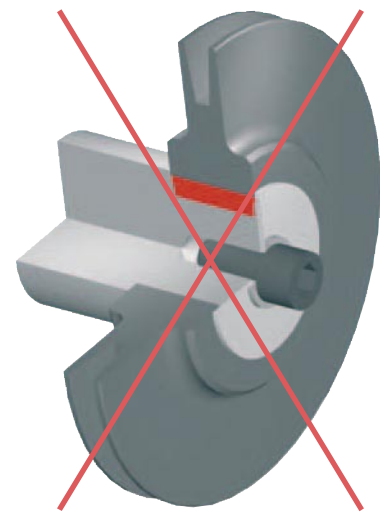
Reduction of components!

Reduction of dimensions!

Factors like cost reduction, material saving, simplified production processes, shorter delivery times of material are already determined by designing and development. Anyway, the growing demands can no longer be satisfied by keyway connections.

In this case the use of **CLAMPEX® clamping elements** offers new possibilities as a shaft-hub-connection:

- Material saving by smaller shaft and hub dimensions
- Simplified production processes
- Suitable for modern drive systems
- Easy assembly and disassembly with standard tools
- Ideal for drives with high vibratory loads, e. g. acceleration and braking
- Produce connections that are permanently free from destruction, i. e. no shearing off of keyways, dowel pins, pins, etc.
- Specifically suitable for high-speed drives
- Insensitive to dirt
- Reusable repeatedly
- Overload protection of the machine components by slipping (repeated slipping should be avoided)
- Low stress concentration on the shaft (stress concentration factor on request)
- Corrosion- and acid-resistant surface coating for food-processing industry, marine industry and chemical industry on request
- Simple calculation of the clamping connection



Advice for selection:

The transmission data mentioned in the catalogue are parameters found out by calculations. Subject to tests and the physical coefficient of friction slight deviations from the transmission values may arise.

Copyright according to ISO 16016.

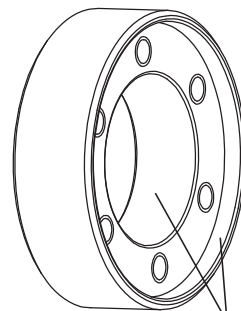
We reserve the right for modifications of dimensions and designs.

KTR 620

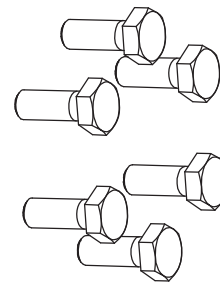
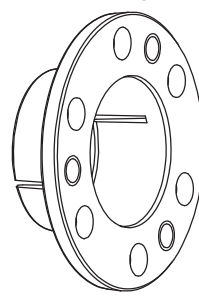


- Applications on hollow shafts, slip-on gears, couplings, mechanical shrink connections
- Suitable for high torque loads
- Easy assembly by optical mounting groove
- Corrosion-resistant outer ring (phosphatized)
- Good centering and concentricity characteristics
- KTR 620 FK flange coupling
(Please order dimension sheet M494133.)
- KTR 625 for higher torques
(Please order dimension sheet M462972.)
- Mounting instructions under www.ktr.com

Outer ring
phosphatized and
conus contact
surfaces greased



Inner ring



greased

Assembly

Clean and degrease the contact surfaces of shaft and hub (internal hollow shaft). Slightly unscrew the clamping screws and put the clamping set externally onto the hub/hollow shaft. Before tightening the clamping screws please assemble the shaft. Evenly tighten the diametrically opposite clamping screws until the front surfaces of the outer and inner rings are flush. The max. screw tightening torque indicated must not be exceeded. The values for T and F_{ax} indicated in the table relate to an assembly with greased external clamping set. The external clamping sets are delivered in greased condition. When assembling grease-free external clamping sets the values shown in the table and the values calculated are different. In case of questions, please feel free to contact us.

Note: Contact surfaces of shaft and hub bore (internal hollow shaft) must not be greased or oiled.

Disassembly

All clamping screws must be unscrewed evenly and successively. Do not completely unscrew the clamping screws off the thread. Loosen the external taper ring in the inner ring with the forcing thread.

Tolerances, surfaces

One accurate turning process is sufficient:

$$R_z \leq 16\mu\text{m}$$

Maximum permissible tolerances:

d = f7 for the hub (external hollow shaft)

$$d_w = h6/H7$$

$$d_w > \varnothing 160 - g6/H7$$

Axial movement

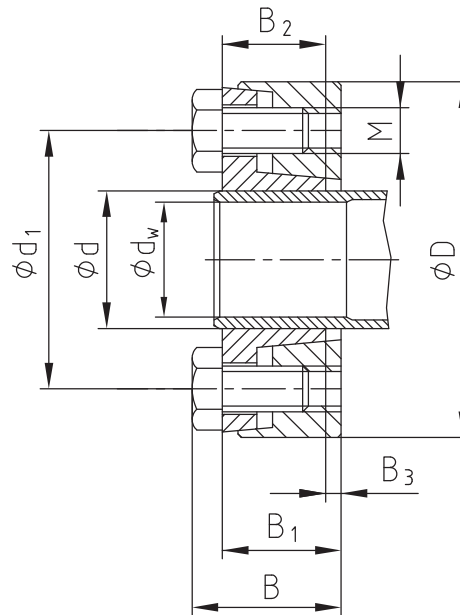
KTR 620: During the tightening of the screws there is no axial movement of the hub towards the shaft.

Order form:	KTR 620	20	x	47
	Type	Size of inside diameter		Size of outside diameter

KTR 620 – Technical data



Frictionally engaged connection of a
DATAFLEX® torque measuring shaft with KTR 620



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 - 10.9 μ _{ges.} = 0,10			Forcing thread		Surface pressure clamping set/ hollow shaft	Weight [~kg]
		T [Nm]	F _{ax} [kN]	B	B ₁	B ₂	B ₃	d ₁	M	z Number	T _A [Nm]	M ₁	z ₁	P _H [N/mm²]	
16 x 41	13	85	13	19,0	15	13	2	28	M6	3	12	M6	2	281	0,15
	14	105	15												
20 x 47	17	155	18	19,0	15	13	2	32	M6	4	12	M6	2	288	0,17
	18	175	19												
24 x 50	20	235	24	22,0	18	16	2	36	M6	5	12	M6	2	266	0,25
	22	305	28												
30 x 60	24	390	33	24,0	20	18	2	44	M6	6	12	M6	3	256	0,30
	25	430	34												
36 x 72	26	480	37	27,5	22	20	2	54	M8	5	30	M8	2	256	0,49
	28	510	38											253	
38 x 72	30	690	46	29,5	24	22	2	61	M8	6	30	M8	2	254	0,61
	33	820	50											231	
40 x 80	34	910	54	31,5	26	23,5	2,5	68	M8	8	30	M8	2	249	0,84
	35	850	49												
44 x 80	37	980	53	34,5	29	26	3	72	M8	8	30	M8	2	223	1,20
	38	1180	62												
50 x 90	40	1320	66	34,5	29	26	3	80	M8	9	30	M8	3	216	1,50
	42	1470	70												
55 x 100	42	1400	67	34,5	29	26	3	80	M8	8	30	M8	2	223	1,20
	45	1650	73												
60 x 110	48	1900	79	34,5	29	26	3	80	M8	9	30	M8	3	216	1,50
	48	1700	71												
62 x 110	50	2050	82	34,5	29	26	3	86	M8	9	30	M8	3	222	1,60
	52	2200	85												
68 x 115	50	1900	76	38,0	31	27	4	100	M10	10	59	M10	2	227	2,60
	55	2450	89												
75 x 138	60	3250	108	38,0	31	27	4	104	M10	10	59	M10	2	224	2,80
	65	3850	118												
80 x 141	60	3350	112	38,0	31	27	4	104	M10	10	59	M10	2	224	2,80
	65	3980	122												
80 x 141	70	4620	132	38,0	31	27	4	104	M10	10	59	M10	2	224	2,80
	70	4620	132												

All clamping sets available from stock.

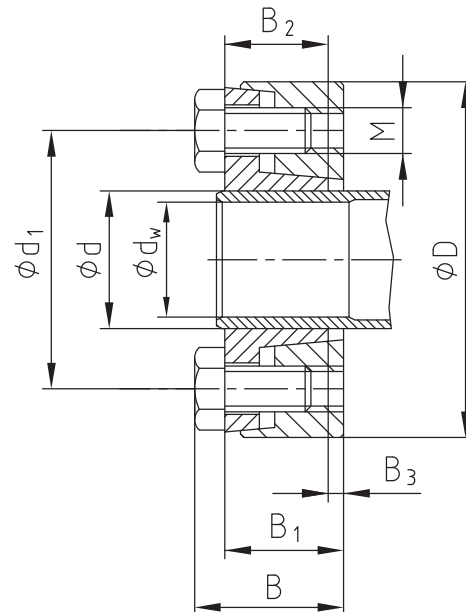
Other sizes on request.

Inner ring slotted up to size 40 x 80, all sizes of outer ring phosphated.

KTR 620 – Technical data



Frictionally engaged connection of a
DATAFLEX® torque measuring shaft with KTR 620



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 - 10.9 $\mu_{ges.}=0,10$			Forcing thread		Surface pressure clamping set/ hollow shaft	Weight [~kg]
		T [Nm]	F _{ax} [kN]	B	B ₁	B ₂	B ₃	d ₁	M	z Number	T _A [Nm]	M ₁	z ₁	P _H [N/mm²]	
90 x 155	65	5200	160												
	70	6000	171	45	38	34	4	114	M10	11	59	M10	2	219	3,40
	75	6900	184												
100 x 170	70	6600	189												
	75	7600	203	50	43	39	4	124	M10	14	59	M10	3	206	4,60
	80	8600	215												
110 x 185	80	10600	265												
	85	11900	280	57	49	44	5	136	M12	12	100	M12	4	212	6,20
	90	13300	296												
120 x 197	85	12700	299												
	90	14200	316	61	53	48	5	147	M12	14	100	M12	4	205	7,40
	95	15700	331												
125 x 215	90	14600	324												
	95	16000	337	61	53	48	5	158	M12	14	100	M12	4	215	9,30
	100	17500	350												
130 x 230	95	18600	392												
	100	20300	406	67	58	52	6	165	M14	9	160	M14	4	225	11,90
	110	23600	429												
140 x 230	100	20100	402												
	105	21700	413	67	58	52	6	172	M14	9	160	M14	4	205	11,00
	115	25150	437												
155 x 263	110	27400	498												
	115	29600	515	71	62	56	6	195	M14	10	160	M14	4	212	16,00
	125	32000	533												
165 x 290	120	41500	692												
	125	44300	709	78	68	61	7	204	M16	12	250	M16	4	223	22,30
	135	47200	726												
175 x 300	130	47600	732												
	135	50500	748	78	68	61	7	214	M16	12	250	M16	4	216	23,30
	140	53500	764												
185 x 320	140	66000	943												
	145	69900	964	95	85	77	8	224	M16	14	250	M16	4	201	33,40
	150	73500	980												

All clamping sets available from stock.

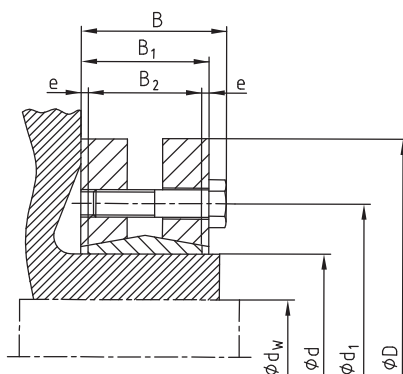
Other sizes on request.

Inner ring slotted up to size 40 x 80, all sizes of outer ring phosphated.

KTR 603



- „Typical external clamping set“
- For middle and high loads
- Typical applications: hollow shafts, slip-on gears
- For internal diameters $d=320$ to 500 mm please order dimension sheet M482352.
- KTR 603 GT external clamping set separated (Please order dimension sheet M483039.)
- KTR 603 FK flange coupling (Please order dimension sheet M494196.)
- Mounting instructions under www.ktr.com



Assembly

Clean and degrease the contact surfaces of shaft and hub (hollow shaft inside). Assemble the external clamping set onto the hub (hollow shaft outside). In the area of the external clamping set the external surface of the hub (hollow shaft outside) may be lubricated. Before tightening the clamping screws, assemble the shaft or push on the hub (hollow shaft). Tighten the clamping screws by degrees and evenly one after the other until the screw tightening torque T_A mentioned in the table is achieved. Several tightening processes are necessary to achieve the requested T_A figure. The figures T and F_{ax} mentioned in the table were calculated for an assembly with oiled/greased external clamping set. The external clamping sets are delivered with oil/grease. For the assembly of external clamping sets without oil/grease the figures mentioned in the table will deviate. Please contact us for any questions you may have.

Note: Do not use any oil with molybdenum sulphide between the contact surfaces of shaft and hub bore (hollow shaft inside).

Disassembly

All clamping screws must be unscrewed evenly and successively. Do not completely unscrew the clamping screws off the thread. Usually the clamping elements release automatically.

Tolerances, surfaces

One accurate turning process is sufficient:

$$R_z \leq 16\mu\text{m}$$

Maximum permissible tolerances:

d = h8 for the shaft

Tolerances for dw

For **dw** from 18 to 30 mm **H6 / j6**

For **dw** from 31 to 50 mm **H6 / h6**

For **dw** from 51 to 80 mm **H6 / g6**

For **dw** from 81 to 500 mm **H7 / g6**

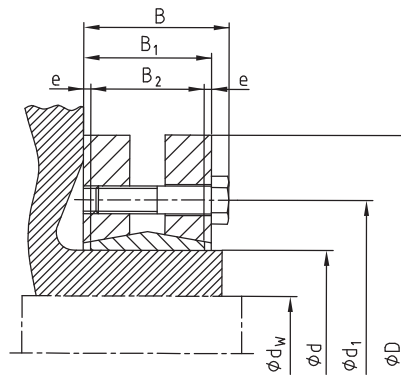
* In general bigger tolerances are possible. Please contact us!

Axial movement

KTR 603: During the tightening of the screws there is no axial movement of the hub towards the shaft.

Order form:	KTR 603	44	x	80
	Type	Size of inside diameter		Size of outside diameter

KTR 603 – Technical data



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 _{ges.} =0,10			Surface pressure clamping set/ hollow shaft	Weight [~kg]	Stock programme
		T [Nm]	F _{ax} [kN]	B	B ₁	B ₂	e	d ₁	M	z Number	T _A [Nm]	P _H [N/mm²]		
14 x 38	10	28	5											
	11	38	7	14,5	11	9	1,0	23	M5 ¹⁾	4	3,5	388	0,15	
	12	50	9											
16 x 41	12	50	9											
	13	70	10	18,5	15	11	2,0	26	M5 ¹⁾	5	4	310	0,20	
	14	90	13											
24 x 50	19	210	22											
	20	260	26	22,5	19	14	2,5	36	M5 ¹⁾	6	5	286	0,20	●
	21	310	29											
30 x 60	24	310	25											
	25	340	27	24,5	21	16	2,5	44	M5 ¹⁾	6	6	233	0,30	●
	26	380	29											
36 x 72	28	460	33											
	30	590	39	27	23	18	2,5	52	M6	5	12	307	0,45	●
	31	630	40											
44 x 80	32	630	40											
	35	780	44	29	25	20	2,5	61	M6	7	12	317	0,60	●
	36	860	48											
50 x 90	38	940	49											
	40	1100	55	31	27	22	2,5	70	M6	8	12	289	0,80	●
	42	1300	62											
55 x 100	42	1200	57											
	45	1500	66	34	30	23	3,5	75	M6	8	12	252	1,10	●
	48	1900	79											
62 x 110	48	1800	75											
	50	2200	88	34	30	23	3,5	86	M6	10	12	279	1,30	●
	52	2400	92											
68 x 115	50	2000	80											
	55	2500	91	34	30	23	3,5	86	M6	10	12	255	1,40	●
	60	3100	103											
75 x 138	55	2500	92											
	60	3200	107	37,5	32	25	3,5	100	M8	7	30	273	1,70	●
	65	3900	121											
80 x 145	60	3200	107											
	65	3900	120	37,5	32	25	3,5	100	M8	7	30	256	2,20	●
	70	4600	131											
85 x 155	65	4800	148											
	70	6100	175	43,5	38	30	4,0	114	M8	10	30	285	3,40	
	75	7400	201											
90 x 155	65	4700	145											
	70	6000	172	44,5	39	30	4,5	114	M8	10	30	271	3,30	●
	75	7200	194											

● Clamping sets available from stock.

¹⁾ The clamping screws are designed as per DIN EN ISO 4014 – 8.8 with μ_{ges.}=0,12.

Other sizes on request.

KTR 603 – Technical data

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 $\mu_{ges.}=0,10$			Surface pressure clamping set/ hollow shaft	Weight [~kg]	Stock programme
		T [Nm]	F _{ax} [kN]	B	B ₁	B ₂	e	d ₁	M	z Number	T _A [Nm]	P _H [N/mm ²]		
100 x 170	70	6900	199											
	75	7500	199	49,5	44	34	5,0	124	M8	12	30	258	4,60	●
	80	9000	225											
110 x 185	75	7200	194											
	80	9000	227	56,5	50	39	5,5	136	M10	9	59	244	5,90	●
	85	11000	259											
115 x 188	80	8500	213											
	85	10000	237	56,5	50	39	5,5	141	M10	9	59	234	6,30	
	90	12000	267											
120 x 215	80	10600	267											
	85	13300	312	58,5	52	42	5,0	160	M10	12	59	277	8,00	
	90	14500	324											
125 x 215	85	11000	261											
	90	13000	290	58,5	52	42	5,0	160	M10	12	59	266	8,60	●
	95	15000	318											
130 x 215	90	13700	306											
	95	15800	334	58,5	52	42	5,0	160	M10	12	59	285	8,20	
	100	18200	365											
140 x 230	95	15000	350											
	100	17000	342	67,5	60	46	7,0	175	M12	10	100	264	10,00	●
	105	20000	382											
155 x 263	105	20000	381											
	110	23000	415	71,5	64	50	7,0	192	M12	12	100	263	15,00	●
	115	26000	453											
165 x 290	115	36000	626											
	120	39000	648	78,5	71	56	7,5	210	M16	8	250	277	22,00	●
	125	44000	702											
175 x 300	125	40000	642											
	130	44000	677	81	71	56	7,5	220	M16	8	250	261	23,00	●
	135	49000	726											
185 x 330	135	55000	816											
	140	60000	855	96	86	71	7,5	236	M16	10	250	244	36,00	
	145	65000	902											
195 x 350	140	66000	943											
	150	76000	1013	96	86	71	7,5	246	M16	12	250	277	40,00	
	155	82000	1057											
200 x 350	150	74000	982											
	155	80000	1035	96	86	71	7,5	246	M16	12	250	270	48,00	
	160	86000	1081											
220 x 370	160	95000	1194											
	165	102000	1244	114	104	88	8,0	270	M16	15	250	248	54,00	
	170	110000	1293											
240 x 405	170	120000	1408											
	180	140000	1558	121,5	109	92	8,5	295	M20	12	490	272	67,00	
	190	160000	1690											
260 x 430	190	165000	1476											
	200	185000	1851	131,5	119	103	8,0	321	M20	14	490	262	82,00	
	210	205000	1950											
280 x 460	210	217000	2067											
	220	244000	2222	146,5	134	114	10,0	346	M20	16	490	251	102,0	
	230	270000	2352											
300 x 485	230	275000	2395											
	240	295000	2464	154,5	142	122	10,0	364	M20	18	490	246	118,0	
	245	315000	2574											

● Clamping sets available from stock.

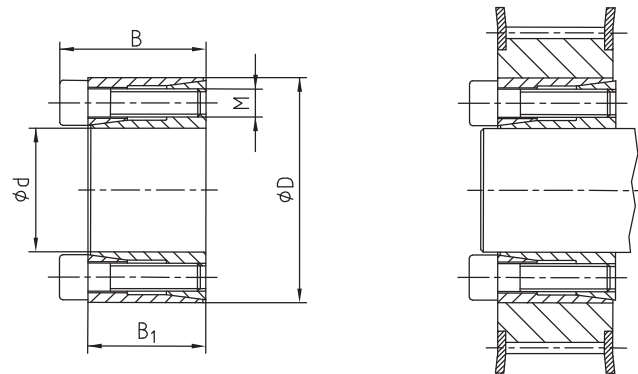
¹⁾ The clamping screws are designed as per DIN EN ISO 4014 – 8.8 with $\mu_{ges.}=0,12$.

Other sizes on request.

KTR 105 (self-centering)



- Compact design
- Short assembly times
- Suitable for small servo motors/pulleys
- QPQ surface protection on request
- Mounting instructions under www.ktr.com



Assembly

Clean the contact surfaces of the clamping set as well as the shaft and the hub and afterwards apply thin-bodied oil. Insert the clamping set into hub fit and push it onto the shaft. Tighten the clamping screws crosswise, evenly and by degrees to the tightening torque T_A mentioned by means of the torque wrench. Check the tightening torque of all clamping screws in the order of arrangement. The figures T and F_{ax} mentioned in the table were calculated for an assembly with oil.

Note: Oils and greases containing molybdenum disulphide or high-pressure additions, additions of teflon and silicone as well as sliding grease paste reducing the coefficient of friction considerably must not be used. For assembly of clamping set tapers without oil, the figures mentioned in the table and calculated figures deviate.

Disassembly

Unscrew the clamping screws. Screw the screws into the pull-off thread, tighten them crosswise by degrees and evenly until the rear taper ring is released. For repeated application oil the screws and threads.

Tolerances, surfaces

One accurate turning process is sufficient:

$$R_z \leq 16 \mu\text{m}$$

Maximum permissible tolerances:

h9 for the shaft - H9 for the hub

Axial movement

KTR 105: During the assembly a slight axial movement of the hub towards the shaft may arise.

Centering

The clamping element KTR 105 is **self-centering**. Between shaft and hub the concentricity of the clamping elements is between **0,02 mm** and **0,04 mm**.

Order form:	KTR 105	8	x	18
	Type	Size of inside diameter		Size of outside diameter

KTR 105 (self-centering) – Technical data

CLAMPEX® – KTR 105											
d x D [mm]	Dimensions [mm]		Clamping screws DIN EN ISO 4762 - 12.9 $\mu_{\text{total}}=0,14$			Transmittable torque or axial force		Surface pressure between clamping set		Weight [~kg]	Stock programme
	B	B ₁	M	z Number	T _A ¹⁾ [Nm]	T [Nm]	F _{ax} [kN]	Shaft P _W [N/mm²]	Hub P _N [N/mm²]		
5 x 16	13,5	11	M2,5	3	1,2	6	3	196	61	0,010	
6 x 16	13,5	11	M2,5	3	1,2	8	3	163	61	0,012	●
6,35 x 16	13,5	11	M2,5	3	1,2	8	3	154	61	0,012	
7 x 17	13,5	11	M2,5	3	1,2	9	3	140	58	0,013	
8 x 18	13,5	11	M2,5	3	1,2	10	3	123	54	0,015	●
9 x 20	15,5	13	M2,5	4	1,2	16	3	121	54	0,020	●
9,53 x 20	15,5	13	M2,5	4	1,2	16	3	115	54	0,020	
10 x 20	15,5	13	M2,5	4	1,2	17	3	109	54	0,019	●
11 x 22	15,5	13	M2,5	4	1,2	19	3	99	50	0,024	●
12 x 22	15,5	13	M2,5	4	1,2	21	3	91	50	0,022	●
14 x 26	20	17	M3	4	2,2	40	6	97	52	0,039	●
15 x 28	20	17	M3	4	2,2	43	6	90	48	0,044	●
16 x 32	21	17	M4	4	4,9	80	10	149	74	0,067	●
17 x 35	25	21	M4	4	4,9	85	10	112	54	0,090	●
18 x 35	25	21	M4	4	4,9	90	10	106	54	0,087	●
19 x 35	25	21	M4	4	4,9	95	10	100	54	0,083	●
20 x 38	26	21	M5	4	10	164	16	155	82	0,100	●
22 x 40	26	21	M5	4	10	180	16	141	78	0,110	●
24 x 47	32	26	M6	4	17	278	23	146	75	0,200	●
25 x 47	32	26	M6	4	17	289	23	140	75	0,190	●
28 x 50	32	26	M6	6	17	486	35	188	105	0,220	●
30 x 55	32	26	M6	6	17	520	35	175	96	0,270	●
32 x 55	32	26	M6	6	17	555	35	164	96	0,250	●
35 x 60	37	31	M6	8	17	810	46	173	101	0,360	●
38 x 65	37	31	M6	8	17	879	46	159	93	0,430	●
40 x 65	37	31	M6	6	17	925	46	151	93	0,400	●
42 x 75	44	36	M8	6	41	1346	64	170	95	0,670	
45 x 75	44	36	M8	8	41	1442	64	159	95	0,630	
48 x 80	44	36	M8	8	41	2052	85	198	119	0,740	●
50 x 80	44	36	M8	8	41	2137	85	191	119	0,700	●

● Clamping sets available from stock.

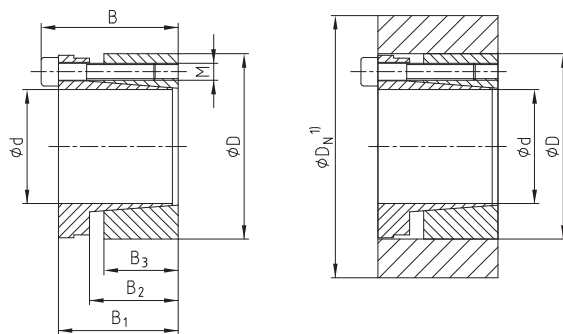
¹⁾ These are the maximum screw tightening torques. They can be reduced to max. 40% of the aforementioned figures with T, F_{ax}, P_W and P_N being reduced proportionally.

KTR 200 and KTR 201 (self-centering)



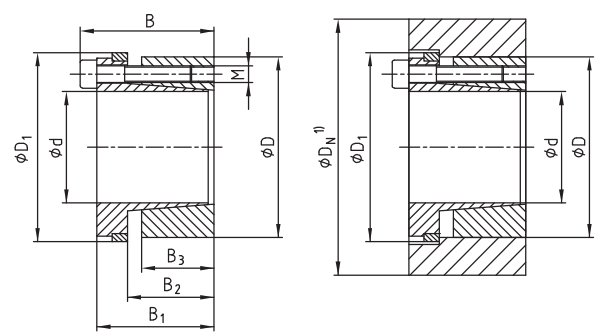
- Clamping element for universal use
- Wide range of applications
- Low-cost solution with average to high torques
- Mounting instructions under www.ktr.com

KTR 200



Considerably higher transmittable torque than KTR 201,
slight axial movement of the hub

KTR 201



No axial movement of the hub,
but lower transmittable torque than KTR 200

¹⁾ Dimension D_N : For calculation see page 296/297.

Assembly

Clean the contact surfaces of the clamping set as well as the shaft and the hub and afterwards apply thin-bodied oil. Insert the clamping set into the hub fit and push it onto the shaft. Tighten the clamping screws crosswise, evenly and by degrees to the tightening torque T_A mentioned by means of the torque wrench. Check the tightening torque of all clamping screws in the order of arrangement. The figures T and F_{ax} mentioned in the table were calculated for an assembly with oil.

Note: Oils and greases containing molybdenum disulphide or high-pressure additions, additions of teflon and silicone as well as sliding grease paste reducing the coefficient of friction considerably must not be used. For assembly of clamping set tapers without oil, the figures mentioned in the table and calculated figures deviate.

Disassembly

Unscrew the clamping screws. Screw the screws into the pull-off thread, tighten them crosswise by degrees and evenly until the rear taper ring is released. For repeated application oil the screws and threads.

Tolerances, surfaces

One accurate turning process is sufficient:

$$R_z \leq 16\mu\text{m}$$

Maximum permissible tolerances:

h8 for the shaft - H8 for the hub

Centering

The clamping elements KTR 200 and KTR 201 are **self-centering**. Between shaft and hub the concentricity of the clamping set is between **0,02** and **0,04** mm.

Order form:	KTR 200	40	x	65
	Type	Size of inside diameter		Size of outside diameter

KTR 200 and KTR 201 (self-centering) – Technical data

CLAMPEX® – KTR 200 and KTR 201																						
										KTR 200						KTR 201						
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 set		Weight [~kg]	Stock programme	Transmittable torque or axial force		Surface pressure between clamping set		Weight [~kg]	Stock programme
	B	B ₁	B ₂	B ₃	D ₁	M	z Number	T _A ¹⁾ [Nm]		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]					
							200	201														
20 x 47	48	42	31	26	53	M6	6	17	17	513	51	291	124	0,41	●	332	33	178	76	0,42	●	
22 x 47	48	42	31	26	53	M6	6	17	17	564	51	264	124	0,38	●	366	33	162	76	0,39	●	
24 x 50	48	42	31	26	56	M6	6	17	17	616	51	242	116	0,42	●	399	33	149	71	0,43	●	
25 x 50	48	42	31	26	56	M6	6	17	17	641	51	233	116	0,41	●	415	33	143	71	0,42	●	
28 x 55	48	42	31	26	61	M6	6	17	17	718	51	208	106	0,50	●	465	33	127	65	0,51	●	
30 x 55	48	42	31	26	61	M6	6	17	17	769	51	194	106	0,47	●	499	33	119	65	0,48	●	
32 x 60	48	42	31	26	66	M6	8	17	17	1094	68	242	129	0,56	●	709	44	149	79	0,57	●	
35 x 60	48	42	31	26	66	M6	8	17	17	1197	68	222	129	0,53	●	776	44	136	79	0,54	●	
38 x 65	48	42	31	26	71	M6	8	17	17	1299	68	204	119	0,62	●	842	44	125	73	0,63	●	
40 x 65	48	42	31	26	71	M6	8	17	17	1368	68	194	119	0,57	●	886	44	119	73	0,58	●	
42 x 75	59	51	35	30	81	M8	6	41	41	1990	95	222	124	1,01	●	1290	61	136	76	1,02	●	
45 x 75	59	51	35	30	81	M8	6	41	41	2132	95	207	124	0,98	●	1382	61	127	76	0,99	●	
48 x 80	59	51	35	30	86	M8	8	41	41	3033	126	259	155	1,09	●	1965	82	159	95	1,10	●	
50 x 80	59	51	35	30	86	M8	8	41	41	3159	126	248	155	1,07	●	2047	82	152	95	1,08	●	
55 x 85	59	51	35	30	91	M8	8	41	41	3475	126	226	146	1,15	●	2252	82	139	90	1,16	●	
60 x 90	59	51	35	30	96	M8	8	41	41	3791	126	207	138	1,23	●	2456	82	127	85	1,24	●	
65 x 95	59	51	35	30	101	M8	8	41	41	4107	126	191	131	1,32	●	2661	82	117	80	1,33	●	
70 x 110	70	60	45	40	119	M10	8	83	83	7023	201	211	134	2,18	●	4550	130	130	83	2,29	●	
75 x 115	70	60	45	40	124	M10	8	83	83	7524	201	197	129	2,30	●	4875	130	121	79	2,41	●	
80 x 120	70	60	45	40	129	M10	8	83	83	8026	201	185	123	2,44	●	5200	130	113	76	2,56	●	
85 x 125	70	60	45	40	134	M10	10	83	83	10659	251	217	148	2,55	●	6907	163	133	91	2,67	●	
90 x 130	70	60	45	40	139	M10	10	83	83	11286	251	205	142	2,67	●	7313	163	126	87	2,80	●	
95 x 135	66	60	45	40	144	M10	10	83	83	11373	239	186	131	2,80	●	7501	158	116	82	2,93	●	
100 x 145	80	68	52	45	155	M12	8	145	145	14607	292	191	132	3,90	●	9465	189	117	81	4,10	●	
110 x 155	80	68	52	45	165	M12	8	145	145	16068	292	174	123	4,20	●	10411	189	107	76	4,40	●	
120 x 165	80	68	52	45	175	M12	10	145	145	21910	365	199	145	4,50	●	14197	237	122	89	4,72	●	
130 x 180	80	68	52	45	188	M12	12	145	145	28483	438	221	159	5,50	●	18456	284	136	98	5,74	●	
140 x 190	90	76	58	50	199	M14	10	210	230	32023	457	193	142	6,60	●	22726	325	130	95	6,92	●	
150 x 200	90	76	58	50	209	M14	12	210	230	41173	549	216	162	6,90	●	29219	390	145	109	7,24	●	
160 x 210	90	76	58	50	219	M14	12	210	230	43918	549	202	154	7,40	●	31167	390	136	104	7,76	●	
170 x 225	90	76	58	50	234	M14	14	210	230	54440	640	222	168	8,60	●	38634	455	149	113	8,98	●	
180 x 235	90	76	58	50	244	M14	14	210	230	57642	640	210	161	9,10	●	40907	455	141	108	9,50	●	

● Clamping sets available from stock.

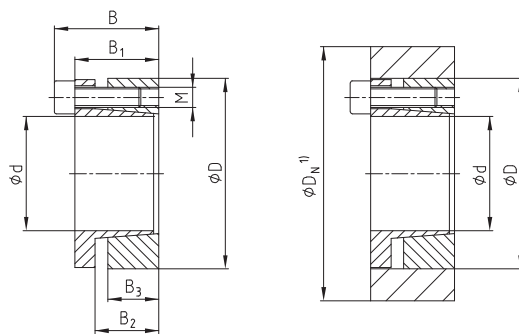
¹⁾ These are the maximum screw tightening torques. They can be reduced to max. 40% of the aforementioned figures with T, F_{ax}, P_W and P_N being reduced proportionally.

KTR 203 and KTR 206 (self-centering)



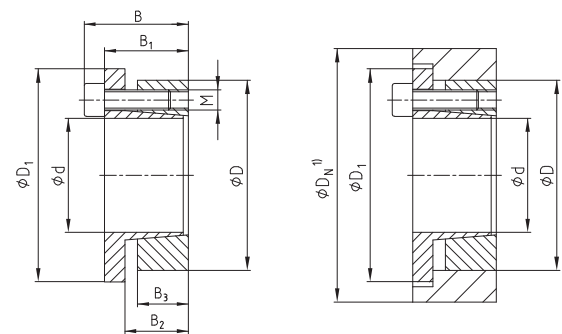
- Clamping set for universal applications
- Short dimensions
- Operation as with KTR 200/201
- Mounting instructions under www.ktr.com

KTR 203



Higher transmittable torque than KTR 206,
slight axial movement of the hub

KTR 206



No axial movement of the hub,
but lower transmittable torque than KTR 203

¹⁾ Dimension D_N : For calculation see page 296/297.

Assembly

Clean the contact surfaces of the clamping set as well as the shaft and the hub and afterwards apply thin-bodied oil. Insert the clamping set into the hub fit and push it onto the shaft. Tighten the clamping screws crosswise, evenly and by degrees to the tightening torque T_A mentioned by means of the torque wrench. Check the tightening torque of all clamping screws in the order of arrangement. The figures T and F_{ax} mentioned in the table were calculated for an assembly with oil.

Note: Oils and greases containing molybdenum disulphide or high-pressure additions, additions of teflon and silicone as well as sliding grease paste reducing the coefficient of friction considerably must not be used. For assembly of clamping set tapers without oil, the figures mentioned in the table and calculated figures deviate.

Disassembly

Unscrew the clamping screws. Screw the screws into the pull-off thread, tighten them crosswise by degrees and evenly until the rear taper ring is released. For repeated application oil the screws and threads.

Tolerances, surfaces

One accurate turning process is sufficient:

$$R_z \leq 16\mu\text{m}$$

Maximum permissible tolerances:

h8 for the shaft - H8 for the hub

Centering

The clamping elements KTR 203 and KTR 206 are **self-centering**. Between shaft and hub the concentricity of the clamping set is between **0,02** and **0,04** mm.

Order form:	KTR 203	40	x	65
	Type	Size of inside diameter		Size of outside diameter

KTR 203 and KTR 206 (self-centering) – Technical data

CLAMPEX® – KTR 203 and KTR 206																						
											KTR 203					KTR 206						
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 set		Weight [~kg]	Stock programme	Transmittable torque or axial force		Surface pressure between clamping set		Weight [~kg]	Stock programme
	B	B ₁	B ₂	B ₃	D ₁	M	z Number	T _A ¹⁾ [Nm]		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]			
								KTR 203	KTR 206													
20 x 47	34	28	22	17	53	M6	6	14	17	428	43	334	142	0,25	●	332	33	259	110	0,26	●	
22 x 47	34	28	22	17	53	M6	6	14	17	471	43	304	142	0,23	●	366	33	236	110	0,24	●	
24 x 50	34	28	22	17	56	M6	6	14	17	514	43	278	134	0,26	●	399	33	216	104	0,27	●	
25 x 50	34	28	22	17	56	M6	6	14	17	535	43	267	134	0,25	●	415	33	207	104	0,26	●	
28 x 55	34	28	22	17	61,5	M6	6	14	17	599	43	239	121	0,31	●	465	33	185	94	0,32	●	
30 x 55	34	28	22	17	61,5	M6	6	14	17	642	43	223	121	0,29	●	499	33	173	94	0,30	●	
32 x 60	34	28	22	17	67	M6	8	14	17	913	57	278	148	0,34	●	709	44	216	115	0,35	●	
35 x 60	34	28	22	17	67	M6	8	14	17	999	57	254	148	0,33	●	776	44	198	115	0,34	●	
38 x 65	34	28	22	17	72	M6	8	14	17	1084	57	234	137	0,38	●	842	44	182	106	0,39	●	
40 x 65	34	28	22	17	72	M6	8	14	17	1141	57	223	137	0,34	●	886	44	173	106	0,35	●	
42 x 75	41	33	25	20	84	M8	8	35	41	2207	105	332	186	0,59	●	1719	82	259	145	0,60	●	
45 x 75	41	33	25	20	84	M8	8	35	41	2364	105	310	186	0,58	●	1842	82	241	145	0,59	●	
48 x 80	41	33,5	24	20	89	M8	8	35	41	2522	105	290	174	0,64	●	1965	82	226	136	0,65	●	
50 x 80	41	33,5	24	20	89	M8	8	35	41	2627	105	279	174	0,63	●	2047	82	217	136	0,64	●	
55 x 85	41	33,5	24	20	91	M8	8	35	41	2890	105	253	164	0,69	●	2252	82	197	128	0,70	●	
60 x 90	41	33,5	24	20	99	M8	8	35	41	3152	105	232	155	0,73	●	2456	82	181	121	0,74	●	
65 x 95	41	33,5	24	20	104	M8	8	35	41	3415	105	214	147	0,79	●	2661	82	167	114	0,80	●	
70 x 110	50	40	29	24	119	M10	8	70	83	5934	170	268	170	1,47	●	4550	130	205	131	1,58	●	
75 x 115	50	40	29	24	124	M10	8	70	83	6358	170	250	163	1,55	●	4875	130	192	125	1,66	●	
80 x 120	50	40	29	24	129	M10	8	70	83	6782	170	234	156	1,65	●	5200	130	180	120	1,77	●	
85 x 125	50	40	29	24	134	M10	10	70	83	9007	212	276	187	1,72	●	6907	163	211	144	1,84	●	
90 x 130	50	40	29	24	139	M10	10	70	83	9537	212	260	180	1,81	●	7313	163	200	138	1,94	●	
95 x 135	50	40	29	24	144	M10	10	70	83	9611	202	235	166	1,90	●	7501	158	184	129	2,03	●	
100 x 145	56	44	31	26	154	M12	8	115	145	11719	234	239	165	2,48	●	9465	189	193	133	2,68	●	
110 x 155	56	44	31	26	164	M12	8	115	145	12891	234	217	154	2,66	●	10411	189	176	125	2,86	●	
120 x 165	56	44	31	26	174	M12	9	115	145	15821	264	224	163	2,84	●	12777	213	181	132	3,06	●	
130 x 180	64	52	39	34	189	M12	12	115	145	22853	352	211	152	4,45	●	18456	284	170	123	4,69	●	
140 x 190	68	54	39	34	199	M14	9	185	230	25699	367	205	151	4,62	●	20453	292	163	120	4,94	●	
150 x 200	68	54	39	34	209	M14	10	185	230	30595	408	212	159	4,80	●	24349	325	169	127	5,14	●	
160 x 210	68	54	39	34	219	M14	12	185	230	39161	490	239	182	5,18	●	31167	390	190	145	5,54	●	
170 x 225	78	64	49	44	234	M14	12	185	230	41609	490	225	170	7,33	●	33115	390	179	135	7,71	●	
180 x 235	78	64	49	44	244	M14	12	185	230	44056	490	212	163	7,77	●	35063	390	169	129	8,17	●	

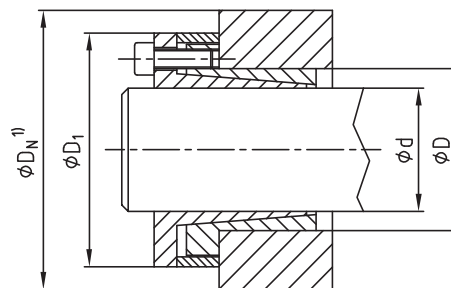
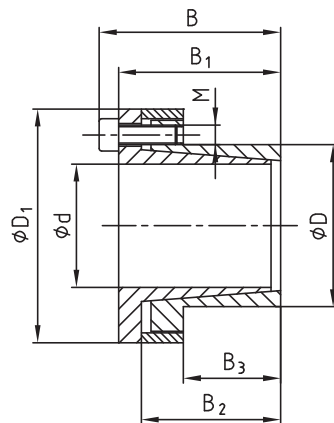
● Clamping sets available from stock.

¹⁾ These are the maximum screw tightening torques. They can be reduced to max. 40% of the aforementioned figures with T, F_{ax}, P_W and P_N being reduced proportionally.

KTR 250 (self-centering)



- Clamping set specifically suitable for hubs with a small wall thickness
- Reduction of costs by saving material
- Short assembly times
- Small radial mounting dimensions
- Clamping sets "stainless steel" on request (Please order dimension sheet M367697.)
- Mounting instructions under www.ktr.com



No axial displacement of the hub during the assembly

¹⁾ Dimension D_N : For calculation see page 296/297.

Assembly

Clean the contact surfaces of the clamping set as well as the shaft and the hub and afterwards apply thin-bodied oil. Insert the clamping set into the hub fit and push it onto the shaft. Tighten the clamping screws crosswise, evenly and by degrees to the tightening torque T_A mentioned by means of the torque wrench. Check the tightening torque of all clamping screws in the order of arrangement. The figures T and F_{ax} mentioned in the table were calculated for an assembly with oil.

Note: Oils and greases containing molybdenum disulphide or high-pressure additions, additions of teflon and silicone as well as sliding grease paste reducing the coefficient of friction considerably must not be used. For assembly of clamping set tapers without oil, the figures mentioned in the table and calculated figures deviate.

Disassembly

Unscrew the clamping screws. Screw the screws into the pull-off thread, tighten them crosswise by degrees and evenly until the rear taper ring is released. For repeated application oil the screws and threads.

Tolerances, surfaces

One accurate turning process is sufficient:

$$R_z \leq 16 \mu\text{m}$$

Maximum permissible tolerances:

h8 for the shaft - H8 for the hub

Centering

The clamping element KTR 250 is **self-centering**. Between shaft and hub the concentricity of the clamping set is between **0,02** and **0,04** mm.

Order form:	KTR 250	50	x	65
	Type	Size of inside diameter		Size of outside diameter

KTR 250 (self-centering) – Technical data

CLAMPEX® – KTR 250														
d x D [mm]	Dimensions ²⁾ [mm]					Clamping screws DIN EN ISO 4762 - 12.9 $\mu_{\text{total}}=0,14$			Transmittable torque or axial force		Surface pressure between clamping set		Weight [~kg]	Stock pro- gramme
	B	B ₁	B ₂	B ₃	D ₁	M	z Number	T _A ¹⁾ [Nm]	T [Nm]	F _{ax} [kN]	Shaft P _W [N/mm²]	Hub P _N [N/mm²]		
6 x 14	24	21	18,5	10	25	M3	4	2	14	5	252	108	0,10	●
8 x 15	29	25	22	11,5	27	M4	3	5	27	7	210	112	0,12	●
9 x 16	30	26	23	14	28	M4	4	5	40	9	207	116	0,15	●
10 x 16	30	26	22,5	14	29	M4	4	5	46	9	192	120	0,15	●
11 x 18	30	26	23	13,5	32	M4	4	5	49	9	169	103	0,18	●
12 x 18	30	26	22,5	13,5	32	M4	4	5	55	9	160	106	0,18	●
14 x 23	30	26	22,5	14	38	M4	6	5	64	9	137	83	0,20	●
15 x 24	42	36	28,5	16	44	M6	4	15	139	19	227	142	0,31	●
16 x 24	42	36	28,5	16	44	M6	4	15	148	19	213	142	0,30	●
18 x 26	44	38	31	18	47	M6	4	17	199	22	191	132	0,32	●
19 x 27	44	38	31	18	48	M6	4	17	210	22	181	127	0,35	●
20 x 28	44	38	31	18	49	M6	4	17	222	22	172	123	0,36	●
22 x 32	51	45	38	25	54	M6	4	17	244	22	112	77	0,45	●
24 x 34	51	45	38	25	56	M6	4	17	266	22	103	73	0,48	●
25 x 34	51	45	38	25	56	M6	4	17	277	22	99	73	0,50	●
28 x 39	51	45	38	25	61	M6	6	17	465	33	133	95	0,52	●
30 x 41	51	45	38	25	62	M6	6	17	499	33	124	91	0,53	●
32 x 43	51	45	38	25	65	M6	8	17	689	43	150	112	0,58	●
35 x 47	56	50	43	30	69	M6	8	17	776	44	118	88	0,69	●
38 x 50	56	50	43	30	72	M6	8	17	842	44	109	82	0,73	●
40 x 53	56	50	43	30	75	M6	8	17	886	44	103	78	0,80	●
42 x 55	65	57	49	32	78	M8	8	41	1665	80	170	130	0,83	●
45 x 59	73	65	57	40	85	M8	8	41	1842	82	127	97	1,40	●
48 x 62	78	70	62	45	87	M8	8	41	1909	80	103	80	1,42	●
50 x 65	78	70	62	45	92	M8	10	41	2559	102	127	98	1,60	●
55 x 71	83	75	67	50	98	M8	10	41	2815	102	104	81	1,90	●
60 x 77	83	75	67	50	104	M8	10	41	3070	102	95	74	2,05	●
65 x 84	83	75	67	50	111	M8	10	41	3326	102	88	68	2,15	●
70 x 90	101	91	80	60	119	M10	10	83	5688	163	108	84	3,35	●
75 x 95	101	91	80	60	126	M10	10	83	6094	163	101	80	3,60	●
80 x 100	106	96	85	65	131	M10	12	83	7801	195	105	84	3,75	●
85 x 106	106	96	85	65	137	M10	12	83	8288	195	99	79	4,05	●
90 x 112	106	96	85	65	143	M10	15	83	10970	244	116	93	4,32	●
95 x 120	106	96	85	65	153	M10	15	83	11579	244	110	87	4,50	●
100 x 125	114	102	85	65	162	M12	12	145	14197	284	122	98	4,80	●
110 x 140	140	128	114	90	180	M12	12	145	15174	276	78	61	6,15	●
120 x 155	140	128	115	90	198	M12	12	145	16554	276	71	55	10,14	●
130 x 165	140	128	115	90	203	M12	16	145	23911	368	88	69	11,89	●

● Clamping sets available from stock.

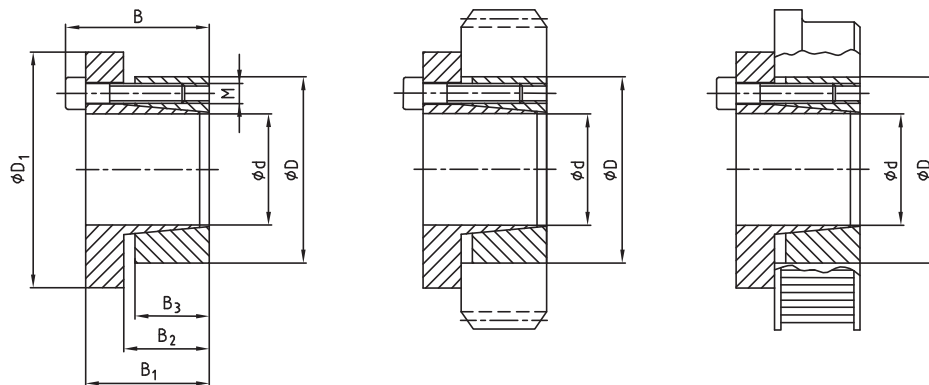
¹⁾ These are the maximum screw tightening torques. They can be reduced to max. 40% of the aforementioned figures with T, F_{ax}, P_W and P_N being reduced proportionally.

²⁾ For different dimensions for clamping sets "stainless steel" please see dimension sheet M367697.

KTR 225 for disk and flange shape drive components (self-centering)



- For the same diameter of the external ring various bore diameters are available
- Only one bore for each size necessary for the hub
- Reduction of components and costs
- Short assembly times
- Mounting instructions under www.ktr.com



Assembly

Clean the contact surfaces of the clamping set as well as the shaft and the hub and afterwards apply thin-bodied oil. Insert the clamping set into the hub fit and push it onto the shaft. Tighten the clamping screws crosswise, evenly and by degrees to the tightening torque T_A mentioned by means of the torque wrench. Check the tightening torque of all clamping screws in the order of arrangement. The figures T and F_{ax} mentioned in the table were calculated for an assembly with oil.

Note: Oils and greases containing molybdenum disulphide or high-pressure additions, additions of teflon and silicone as well as sliding grease paste reducing the coefficient of friction considerably must not be used. For assembly of clamping set tapers without oil, the figures mentioned in the table and calculated figures deviate.

Disassembly

Unscrew the clamping screws. Screw the screws into the pull-off thread, tighten them crosswise by degrees and evenly until the rear taper ring is released. For repeated application oil the screws and threads.

Tolerances, surfaces

One accurate turning process is sufficient:

$$R_z \leq 16\mu\text{m}$$

Maximum permissible tolerances:

h8 for the shaft - H8 for the hub

Axial movement

KTR 225: During the tightening of the screws there is no axial movement of the hub towards the shaft.

Centering

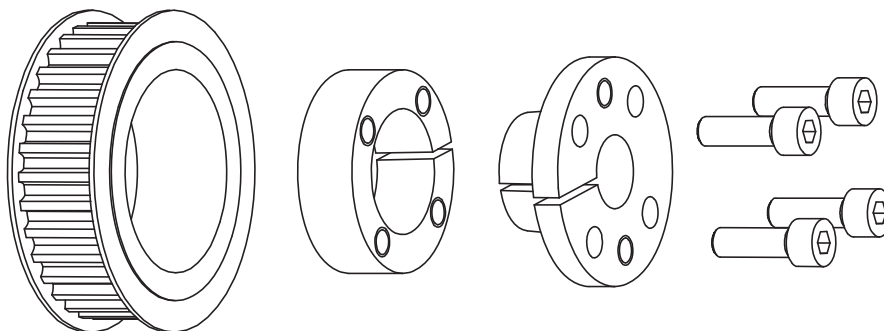
The clamping element KTR 225 is **self-centering**. Between shaft and hub the concentricity of the clamping set is between **0,02** and **0,04** mm.

Order form:	KTR 225	28	x	65
	Type	Size of inside diameter		Size of outside diameter

KTR 225 (self-centering) – Technical data

CLAMPEX® – KTR 225														
d x D [mm]	Dimensions [mm]					Clamping screws DIN EN ISO 4762 - 12.9 $\mu_{\text{total}}=0,14$			Transmittable torque or axial force		Surface pressure between clamping set		Weight [~kg]	Stock pro- gramme
	B	B ₁	B ₂	B ₃	D ₁	M	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	4	41	139	20	263	122	0,50	●
16 x 55									195	24	244	122	0,49	●
18 x 55	38	30	22	17	62	M8	4	41	250	28	228	122	0,48	●
19 x 55									278	29	221	122	0,47	●
20 x 55									306	31	214	122	0,46	●
22 x 55	38	30	22	17	62	M8	4	41	362	33	203	122	0,45	●
24 x 55									418	35	193	122	0,43	●
25 x 55									446	36	188	122	0,42	●
28 x 55	38	30	22	17	62	M8	4	41	529	38	177	122	0,39	●
30 x 55									585	39	170	122	0,37	●
24 x 65	38	30	22	17	72	M8	5	41	467	39	211	129	0,66	●
25 x 65									500	40	206	129	0,65	●
28 x 65									599	43	193	129	0,62	●
30 x 65	38	30	22	17	72	M8	5	41	665	44	186	129	0,60	●
32 x 65									731	46	179	129	0,58	●
35 x 65									830	47	171	129	0,54	●
38 x 65	38	30	22	17	72	M8	5	41	929	49	164	129	0,50	●
40 x 65									995	50	161	129	0,47	●
30 x 80									898	60	210	125	1,08	●
32 x 80	41	33	25	20	88	M8	7	41	985	62	202	125	1,05	●
35 x 80									1114	64	191	125	1,01	●
38 x 80									1244	65	182	125	0,97	●
40 x 80	41	33	25	20	88	M8	7	41	1331	67	177	125	0,94	●
42 x 80									1417	67	172	125	0,91	●
45 x 80									1547	69	166	125	0,85	●
48 x 80	41	33	25	20	88	M8	7	41	1677	70	161	125	0,79	●
50 x 80									1764	71	159	125	0,75	●

Assembly with belt drive



For different shaft diameters only one cylindrical bore dimension is necessary in the pulley in case of KTR 225.

● Clamping sets available from stock.

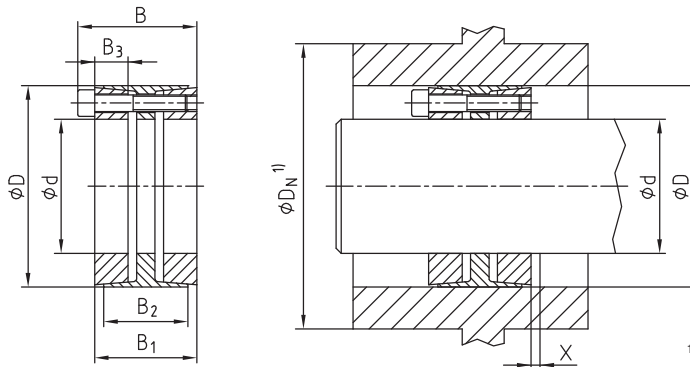
¹⁾ These are the maximum screw tightening torques. They can be reduced to max. 40% of the aforementioned figures with T, F_{ax}, P_W and P_N being reduced proportionally.

KTR 400 (self-centering)



- Clamping set suitable for high loads
- Specifically suitable for vibratory torques
- Typical applications: flywheels, belt drums
- Torque factor

1 off	1 x T
2 off	1,9 x T
3 off	2,7 x T
4 off	3,6 x T
- KTR 402 for shaft Ø 320 mm to Ø 560 mm and high torques, please order dimension sheet M483041.
- Mounting instructions under www.ktr.com



Formula to calculate
space x left
for disassembly:

$$x = \frac{(B1 - B2)}{2}$$

¹⁾ Dimension D_N: For calculation see page 296/297.

Assembly

Clean the contact surfaces of the clamping set as well as the shaft and the hub and afterwards apply thin-bodied oil. Insert the clamping set into the hub fit and push it onto the shaft. Tighten the clamping screws evenly and crosswise. Here please increase the tightening torque step by step. This must be repeated until reaching the indicated tightening torque with all clamping screws.

Note: Oils and greases containing molybdenum disulphide or high-pressure additions, additions of teflon and silicone as well as sliding grease paste reducing the coefficient of friction considerably must not be used. For assembly of clamping set tapers without oil, the figures mentioned in the table and calculated figures deviate.

Disassembly

Unscrew all clamping screws and screw them into the pull-off threads of the front taper ring. Tighten the screws crosswise by degrees and evenly to half the tightening torque T_A. Afterwards repeat this process to the full tightening torque. As soon as the front taper ring is released, screw the clamping screws into the pull-off threads of the spacer ring in order to release the rear taper ring.

Note: If the clamping element KTR 400 is reused, please make sure that the pull-off thread of the front taper ring and the spacer ring are situated in the original position. Here the slots of the front and of the back pressure ring and those of the external ring must be flush.

Tolerances, surfaces

One accurate turning process is sufficient:

$$R_z \leq 16\mu\text{m}$$

Maximum permissible tolerances:

h8 for the shaft - H8 for the hub

Axial movement

During the assembly a slight axial movement of the hub towards the shaft may arise.

Centering

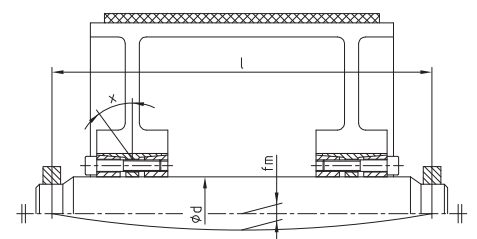
The clamping element KTR 400 is **self-centering**. Between shaft and hub the concentricity of the clamping set is between **0,02** and **0,04** mm.

Example of assembly

Drive of conveyor belt drum

The following conditions should be adhered to as limiting values for CLAMPEX® clamping sets with load by bending: Direction angles x on the contact position shaft-clamping set ≤ 6° or maximum shaft bending f_m in the bearing area:

$$f_m \leq l \cdot (1/2000 - 1/3000)$$



Order form:	KTR 400	100	x	145
	Type	Size of inside diameter		Size of outside diameter

KTR 400 (self-centering) – Technical data

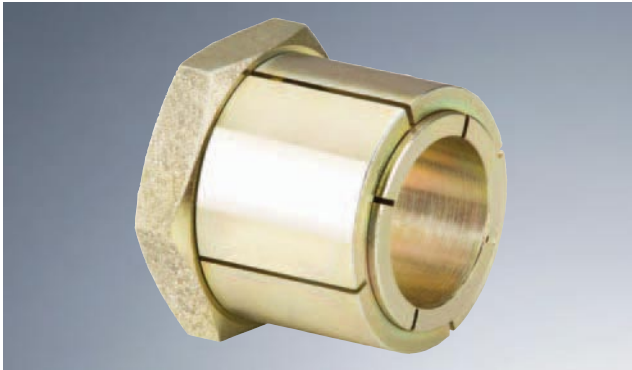
CLAMPEX® – KTR 400																							
					Standard industrial applications							Applications with components subject to bending and torsion											
d x D [mm]	Dimensions [mm]				Clamping screws DIN EN ISO 4762 - 12.9 $\mu_{\text{total}}=0,14$			Transmittable torque or axial force		Surface pressure between clamping set		Clamping screws DIN EN ISO 4762 - 12.9 $\mu_{\text{total}}=0,14$			Transmittable torque or axial force		Trans- mittable bending moment Mb _{perm.} [Nm]	Surface pressure between clamping set		Weight [~kg]	Stock programme		
	B	B ₁	B ₂	B ₃	M	z Number	T _A ¹⁾ [Nm]	T [Nm]	F _{ax} [kN]	Shaft P _W [N/mm²]	Hub P _N [N/mm²]	M	z Number	T _A ¹⁾ [Nm]	T [Nm]	F _{ax} [kN]		P _W [N/mm²]	P _N [N/mm²]				
24 x 50	51	45	41	16	M6	6	17	712	59	205	85	M6	6	14	537	45	315	232	87	0,54			
25 x 50	51	45	41	16	M6	6	17	742	59	197	85	M6	6	14	555	44	328	224	87	0,53			
28 x 55	51	45	41	16	M6	8	17	831	59	176	78	M6	8	14	608	43	367	203	81	0,50			
30 x 55	51	45	41	16	M6	8	17	1187	79	219	103	M6	8	14	880	58	459	250	106	0,47	●		
32 x 60	51	45	41	16	M6	8	17	1266	79	205	95	M6	8	14	926	57	490	237	99	0,77			
35 x 60	51	45	41	16	M6	8	17	1385	79	187	95	M6	8	14	993	56	536	219	100	0,71	●		
38 x 65	51	45	41	16	M6	10	17	1880	99	216	109	M6	10	14	1311	69	748	257	118	1,25			
40 x 65	51	45	41	16	M6	10	17	1979	99	205	109	M6	10	14	1361	68	787	247	118	1,21	●		
42 x 75	53	45	41	16	M8	8	41	3071	146	289	140	M8	8	35	2278	107	827	328	143	1,16			
45 x 75	53	45	41	16	M8	8	41	3290	146	269	140	M8	8	35	2408	107	886	309	145	1,08	●		
48 x 80	70	62	58	23	M8	8	41	3518	147	196	93	M8	8	35	2467	103	1494	207	99	1,45	●		
50 x 80	70	62	58	23	M8	8	41	3664	147	188	93	M8	8	35	2267	91	1779	196	97	1,38	●		
55 x 85	70	62	58	23	M8	8	41	4031	147	171	88	M8	8	35	2408	88	1957	182	93	1,49	●		
60 x 90	70	62	58	23	M8	10	41	5497	183	196	103	M8	10	35	3447	115	2134	203	107	1,60	●		
65 x 95	70	62	58	23	M8	10	41	5955	183	181	98	M8	10	35	3633	112	2312	190	103	1,70	●		
70 x 110	86	76	70	28	M10	10	83	10182	291	219	111	M10	10	69	6619	189	3659	222	113	3,12	●		
75 x 115	86	76	70	28	M10	10	83	10910	291	204	107	M10	10	69	6950	185	3920	210	110	3,29	●		
80 x 120	86	76	70	28	M10	12	83	13964	349	230	122	M10	12	69	9200	230	4181	231	123	3,46	●		
85 x 125	86	76	70	28	M10	12	83	14837	349	216	118	M10	12	69	9613	226	4443	220	120	3,64	●		
90 x 130	86	76	70	28	M10	12	83	15710	349	204	113	M10	12	69	10008	222	4704	210	116	3,81	●		
95 x 135	86	76	70	28	M10	12	83	16583	349	193	109	M10	12	69	10383	219	4965	201	113	3,98	●		
100 x 145	110	98	92	35	M12	12	145	25415	508	214	112	M12	12	120	16527	331	8687	219	115	6,12	●		
110 x 155	110	98	92	35	M12	12	145	27956	508	195	105	M12	12	120	17658	321	9445	203	110	6,62	●		
120 x 165	110	98	92	35	M12	14	145	35581	593	208	115	M12	14	120	22948	382	10304	214	119	7,12	●		
130 x 180	128	114	108	41	M14	12	230	45333	697	193	106	M14	12	190	28502	438	15350	201	110	9,98	●		
140 x 190	128	114	108	41	M14	14	230	56957	814	209	117	M14	14	190	36719	525	16531	215	120	10,62	●		
150 x 200	128	114	108	41	M14	16	230	69743	930	223	127	M14	16	190	45796	611	17712	226	129	11,26	●		
160 x 210	128	114	108	41	M14	16	230	74392	930	209	121	M14	16	190	47958	599	18893	215	124	11,91	●		
170 x 225	162	146	136	52	M16	14	355	96123	1131	189	109	M16	14	295	59316	698	32060	196	113	17,66	●		
180 x 235	162	146	136	52	M16	16	355	116317	1292	203	119	M16	16	295	73592	818	33946	209	122	18,49	●		
190 x 250	162	146	136	52	M16	16	355	122779	1292	193	112	M16	16	295	76340	804	35831	200	116	21,39	●		
200 x 260	162	146	136	52	M16	16	355	129241	1292	183	108	M16	16	295	78946	789	37717	192	113	22,36	●		
220 x 285	162	146	136	52	M16	18	355	177706	1616	208	123	M16	20	295	113209	1029	41489	213	125	26,59	●		
240 x 305	162	146	136	52	M16	20	355	213248	1777	210	126	M16	22	295	136190	1135	45261	214	129	28,70	●		
260 x 325	162	146	136	52	M16	22	355	233398	1795	185	122	M16	22	295	143090	1101	51099	193	127	31,23			
280 x 355	197	177	165	66	M20	18	690	336303	2402	192	121	M20	18	580	210027	1500	81312	200	126	46,77			
300 x 375	197	177	165	66	M20	20	690	400360	2669	199	127	M20	20	580	253018	1687	87120	206	132	49,72			
320 x 405	197	177	165	66	M20	21	690	448404	2803	196	124	M20	21	580	218947	1762	92928	203	128	60,52			
340 x 425	197	177	165	66	M20	22	690	499116	2936	193	123	M20	22	580	312383	1838	98736	201	128	63,86			
360 x 455	224	202	190	76	M22	21	930	627940	3489	188	119	M22	21	780	389170	2162	138624	196	124	86,78			
380 x 475	224	202	190	76	M22	22	930	694389	3655	186	119	M22	22	780	429232	2259	146325	195	125	91,04			
400 x 495	224	202	190	76	M22	24	930	797384	3987	193	125	M22	24	780	498899	2494	154027	201	130	95,30			

● Clamping sets available from stock.

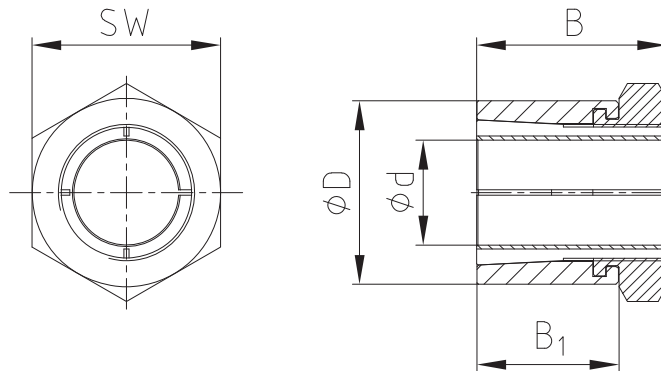
¹⁾ These are the maximum screw tightening torques. They can be reduced to max. 40% of the aforementioned figures with T, F_{ax}, P_W and P_N being reduced proportionally.

Other sizes on request.

KTR 130 (self-centering)



- Corrosion-protected surface
- Assembly and disassembly by using central clamping nut
- Self-centering
- Shaft diameters from 5 mm to 50 mm
- Tolerance h9/H9 for shaft and hub
- Mounting instructions under www.ktr.com



Assembly

Clean the contact surfaces of the clamping set as well as the shaft and the hub and afterwards apply thin-bodied oil. Unscrew the hexagon nut. Insert the clamping set into the hub fit and push onto the shaft. Lightly tighten the hexagon nut and align the clamping set with the hub element. Afterwards tighten the hexagon nut to the tightening torque T_A mentioned by means of a dynamometric screwdriver. The figures T and F_{ax} mentioned in the table were calculated for an assembly with oil.

Note: Oils and greases containing molybdenum disulphide or high-pressure additions, additions of teflon and silicone as well as sliding grease paste reducing the coefficient of friction considerably must not be used. For assembly of clamping set tapers without oil, the figures mentioned in the table and calculated figures deviate.

Disassembly

Unscrew the hexagon nut. Turn the hexagon nut left until the clamping set can be moved on the shaft. Afterwards remove the unscrewed clamping set between shaft and hub. In case of repeated use, please lubricate the hexagon nut and thread.

Tolerances, surfaces

One accurate turning process is sufficient:

$$R_z \leq 16\mu\text{m}$$

Maximum permissible tolerances:

h9 for the shaft - H9 for the hub

Axial movement

KTR 130: During the process of tightening the hexagon nut the hub opposite to the shaft is displaced axially.

Centering

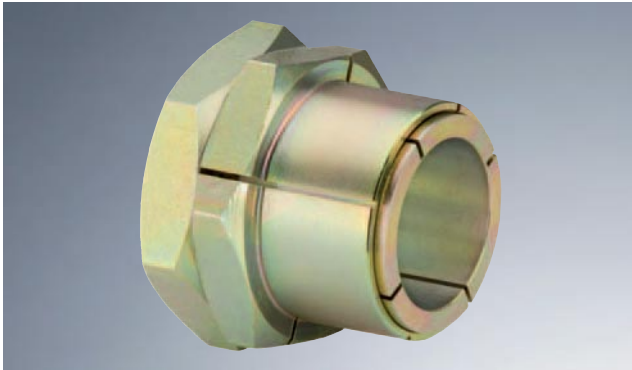
The clamping element KTR 130 is **self-centering**. Between shaft and hub the concentricity of the clamping set is between **0,02** and **0,04** mm.

Order form:	KTR 130	18	x	35
	Type	Size of inside diameter		Size of outside diameter

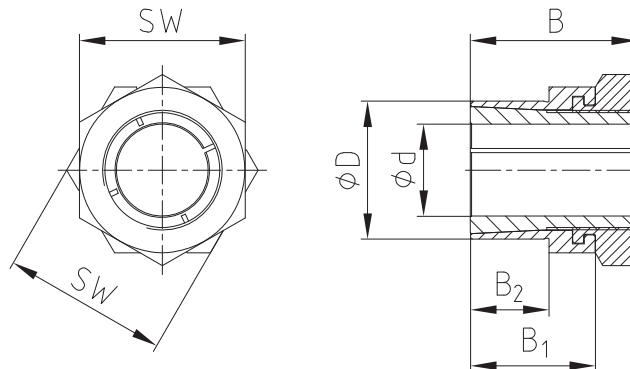
KTR 130 (self-centering) – Technical data

CLAMPEX® – KTR 130									
d x D [mm]	Dimensions [mm]		Hexagon nut		Transmittable torque or axial force		Surface pressure between clamping sets		Weight [~kg]
	B	B ₁	Width across flats SW	T _A [Nm]	T [Nm]	F _{ax} [kN]	Shaft P _W [N/mm ²]	Hub P _N [N/mm ²]	
5 x 14	19	15	14	10	10,1	4,0	264	96	0,018
6 x 14	19	15	14	10	12,1	4,0	220	96	0,017
8 x 16	22	17	17	17	23,4	5,8	179	91	0,024
9 x 20	24	19	22	35	43,2	9,7	248	112	0,042
10 x 20	24	19	22	35	48,6	9,7	223	112	0,045
12 x 22	24	19	22	44	65,3	10,9	206	117	0,048
14 x 26	28	22	27	65	93,0	13,3	178	99	0,081
15 x 26	28	22	27	65	99,0	13,3	166	99	0,076
16 x 26	28	22	27	65	106	13,3	156	99	0,071
18 x 35	36	27	36	161	223	24,8	224	125	0,197
19 x 35	36	27	36	161	235	24,8	212	125	0,191
20 x 35	36	27	36	161	248	24,8	201	125	0,181
22 x 42	41	30	46	250	349	31,8	197	110	0,342
24 x 42	41	30	46	250	381	31,8	180	110	0,321
25 x 42	41	30	46	250	397	31,8	173	110	0,309
30 x 47	44	33	50	355	605	40,4	162	110	0,372
32 x 55	51	38	55	490	764	47,8	166	102	0,627
35 x 55	51	38	55	490	836	47,8	151	102	0,566
40 x 62	58	43	65	800	1329	66,5	152	98	0,835
45 x 65	63	48	65	900	1605	71,0	142	98	0,855
48 x 75	73	58	75	1290	2227	92,0	121	77	1,470
50 x 75	73	58	75	1290	2320	92,0	116	77	1,380

KTR 131 (self-centering)



- Corrosion-protected surface
- Assembly and disassembly by using central clamping nut
- Hexagon locking nuts for clamping on slightly torsionable shafts
- Self-centering
- Shaft diameters from 5 mm to 35 mm
- Tolerance h9/H9 for shaft and hub
- Mounting instructions under www.ktr.com



Assembly

Clean the contact surfaces of the clamping set as well as the shaft and the hub and afterwards apply thin-bodied oil. Unscrew the hexagon nut. Insert the clamping set into the hub fit and push onto the shaft. Lightly tighten the hexagon nut and align the clamping set with the hub element. Afterwards tighten the hexagon nut along with the counter nut to the tightening torque T_A mentioned by means of a dynamometric screwdriver. The figures T and F_{ax} mentioned in the table were calculated for an assembly with oil.

Note: Oils and greases containing molybdenum disulphide or high-pressure additions, additions of teflon and silicone as well as sliding grease paste reducing the coefficient of friction considerably must not be used. For assembly of clamping set tapers without oil, the figures mentioned in the table and calculated figures deviate.

Disassembly

Unscrew the hexagon nut. Turn the hexagon nut left until the clamping set can be moved on the shaft. Afterwards remove the unscrewed clamping set between shaft and hub. In case of repeated use, please lubricate the hexagon nut and thread.

Tolerances, surfaces

One accurate turning process is sufficient:

$$R_z \leq 16\mu\text{m}$$

Maximum permissible tolerances:

h9 for the shaft - H9 for the hub

Axial movement

KTR 131: During the process of tightening the hexagon nut the hub opposite to the shaft is displaced axially.

Centering

The clamping element KTR 131 is **self-centering**. Between shaft and hub the concentricity of the clamping set is between **0,02** and **0,04** mm.

Order form:	KTR 131	16	x	24
	Type	Size of inside diameter		Size of outside diameter

KTR 131 (self-centering) – Technical data

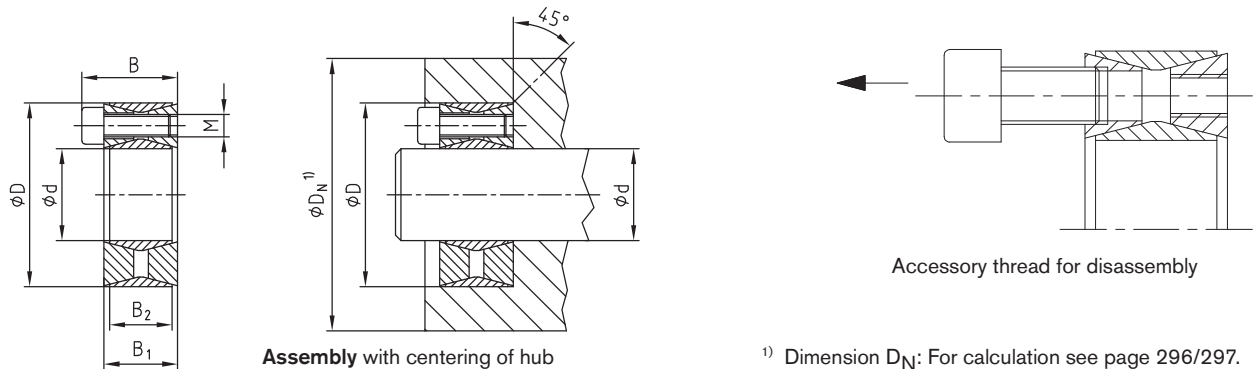
CLAMPEX® – KTR 131										
d x D [mm]	Dimensions [mm]			Hexagon nut/ counter nut		Transmittable torque or axial force		Surface pressure between clamping sets		Weight [~kg]
	B	B ₁	B ₂	Width across flats SW	T _A [Nm]	T [Nm]	F _{ax} [kN]	Shaft P _W [N/mm ²]	Hub P _N [N/mm ²]	
5 x 12	19	15	9	14	10	10,1	4,0	264	119	0,016
6 x 12	19	15	9	14	10	12,1	4,0	220	119	0,015
8 x 14	22	17	11	17	17	23,4	5,8	179	121	0,021
10 x 18	24	19	12	22	35	48,6	9,7	221	127	0,044
12 x 20	24	19	12	22	44	65,3	10,9	206	128	0,044
14 x 24	28	22	15	27	65	93,0	13,3	178	107	0,077
15 x 24	28	22	15	27	65	99,0	13,3	166	107	0,072
16 x 24	28	22	15	27	65	106	13,3	156	107	0,068
18 x 30	36	27	17	36	161	223	24,8	224	145	0,176
19 x 30	36	27	17	36	161	235	24,8	212	145	0,175
20 x 30	36	27	17	36	161	248	24,8	201	145	0,162
22 x 38	41	30	20	46	250	349	31,8	197	122	0,337
24 x 38	41	30	20	46	250	381	31,8	180	122	0,313
25 x 38	41	30	20	46	250	397	31,8	173	122	0,303
30 x 42	44	33	23	50	355	605	40,4	162	123	0,342
32 x 50	51	38	28	55	490	764	47,8	166	112	0,549
35 x 50	51	38	28	55	490	836	47,8	151	112	0,494

KTR 100 (not self-centering)



- „Typical clamping set“
- Axial fastening of the hub
- Torque factor

1 off	1 x T
2 off	1,9 x T
3 off	2,7 x T
4 off	3,6 x T
- KTR 114 for higher torques
(Please order dimension sheet M448436.)
- Mounting instructions under www.ktr.com



Assembly

Clean the contact surfaces of the clamping set as well as the shaft and the hub and afterwards apply thin-bodied oil. Insert the clamping set into the hub fit and push it onto the shaft. Tighten the chromated screws until the internal ring is in contact with the shaft and the external ring is in contact with the hub. Afterwards tighten the clamping screws crosswise by degrees and evenly until the tightening torque T_A mentioned in the table is achieved. The figures T and F_{ax} mentioned in the table were calculated for an assembly with oil.

Note: Oils and greases containing molybdenum disulphide or high-pressure additions, additions of teflon and silicone as well as sliding grease paste reducing the coefficient of friction considerably must not be used. For assembly of clamping set tapers without oil, the figures mentioned in the table and calculated figures deviate.

Disassembly

Unscrew all clamping screws. In normal cases the clamping element releases automatically. Otherwise lightly strike with a hammer onto the detached screws in order to push back the rear taper ring. By using the accessory threads the detached clamping set can be pulled-off.

Note: The accessory threads for the disassembly have approx. 3-5 supporting turns and are not cut. These are no threads for forcing screws.

Tolerances, surfaces

One accurate turning process is sufficient:

$$R_z \leq 16\mu\text{m}$$

Maximum permissible tolerances:

h11 for the shaft - H11 for the hub

Axial movement

KTR 100: During the tightening of the screws there is no axial movement of the hub towards the shaft.

Centering

The clamping element KTR 100 is **not self-centering**. The concentricity of the hub towards the shaft merely depends on the fit and length of the pilot.

Order form:	KTR 100	50	x	80
	Type	Size of inside diameter		Size of outside diameter

KTR 100 (not self-centering) – Technical data

CLAMPEX® – KTR 100												
d x D [mm]	Dimensions [mm]			Clamping screws DIN EN ISO 4762 - 12.9 $\mu_{\text{total}}=0,14$			Transmittable torque or axial force		Surface pressure between clamping set		Weight [~kg]	Stock programme
	B	B ₁	B ₂	M	z Number	T _A ¹⁾ [Nm]	T [Nm]	F _{ax} [kN]	Shaft P _W [N/mm²]	Hub P _N [N/mm²]		
18 x 47	26	20	17	M6	8	15	240	27	289	111	0,24	
19 x 47	26	20	17	M6	8	15	254	27	274	111	0,24	●
20 x 47	26	20	17	M6	8	15	267	27	260	111	0,23	●
22 x 47	26	20	17	M6	8	15	294	27	237	111	0,23	●
24 x 50	26	20	17	M6	8	15	320	27	217	104	0,26	●
25 x 50	26	20	17	M6	8	15	334	27	208	104	0,25	●
28 x 55	26	20	17	M6	12	15	560	40	279	142	0,30	●
30 x 55	26	20	17	M6	12	15	600	40	260	142	0,29	●
32 x 60	26	20	17	M6	12	15	641	40	244	130	0,34	●
35 x 60	26	20	17	M6	12	15	701	40	223	130	0,32	●
38 x 65	26	20	17	M6	15	15	951	50	257	150	0,36	●
40 x 65	26	20	17	M6	15	15	1001	50	244	150	0,34	●
42 x 75	32	24	20	M8	12	37	1506	72	283	159	0,60	●
45 x 75	32	24	20	M8	12	37	1614	72	264	159	0,57	●
48 x 80	32	24	20	M8	12	37	1721	72	248	149	0,60	●
50 x 80	32	24	20	M8	12	37	1793	72	238	149	0,60	●
55 x 85	32	24	20	M8	15	37	2465	90	270	175	0,63	●
60 x 90	32	24	20	M8	15	37	2690	90	248	165	0,69	●
65 x 95	32	24	20	M8	15	37	2914	90	229	156	0,73	●
70 x 110	38	28	24	M10	15	70	4992	143	282	179	1,26	●
75 x 115	38	28	24	M10	15	70	5349	143	263	171	1,33	●
80 x 120	38	28	24	M10	15	70	5705	143	246	164	1,40	●
85 x 125	38	28	24	M10	15	70	6092	143	232	158	1,49	●
90 x 130	38	28	24	M10	15	70	6418	143	219	152	1,53	●
95 x 135	38	28	24	M10	18	70	8130	171	249	175	1,62	●
100 x 145	44	32	26	M12	15	127	10881	218	278	191	2,01	●
110 x 155	44	32	26	M12	15	127	11969	218	252	179	2,15	●
120 x 165	44	32	26	M12	16	127	13927	232	247	179	2,35	●
130 x 180	50	38	34	M12	20	127	18860	290	218	157	3,51	●
140 x 190	50	38	34	M12	22	127	22341	319	222	164	3,85	●
150 x 200	50	38	34	M12	24	127	26113	348	226	170	4,07	●
160 x 210	50	38	34	M12	26	127	30175	377	230	175	4,30	●
170 x 225	58	44	38	M14	22	195	35710	420	216	163	5,78	●
180 x 235	58	44	38	M14	24	195	41248	458	222	170	6,05	●
190 x 250	66	52	46	M14	28	195	50796	535	203	154	8,25	●
200 x 260	66	52	46	M14	30	195	57289	573	206	159	8,65	●
220 x 285	72	56	50	M16	26	300	74838	680	205	158	11,22	●
240 x 305	72	56	50	M16	30	300	94202	785	217	171	12,20	●
260 x 325	72	56	50	M16	34	300	115659	890	227	182	13,20	
280 x 355	87	66	60	M18	32	410	139261	995	196	155	19,20	
300 x 375	87	66	60	M18	36	410	167860	1119	206	165	20,50	
320 x 405	101	78	72	M20	36	590	240190	1501	216	171	29,60	
340 x 425	101	78	72	M20	36	590	255201	1501	203	163	31,10	
360 x 455	116	90	84	M22	36	790	328186	1823	200	158	42,20	
380 x 475	116	90	84	M22	36	790	346419	1823	189	152	44,00	
400 x 495	116	90	84	M22	36	790	364651	1823	180	145	46,00	
420 x 515	116	90	84	M22	40	790	371953	1771	196	160	50,00	
440 x 545	130	102	96	M24	40	1000	453797	2063	188	152	64,60	
460 x 565	130	102	96	M24	40	1000	467548	2033	180	146	67,40	
480 x 585	130	102	96	M24	42	1000	512270	2134	181	148	71,00	
500 x 605	130	102	96	M24	44	1000	559025	2236	182	150	72,60	
520 x 630	130	102	96	M24	45	1000	603344	2321	179	148	80,00	
540 x 650	130	102	96	M24	45	1000	626549	2321	172	143	82,00	
560 x 670	130	102	96	M24	48	1000	683027	2439	177	148	85,00	
580 x 690	130	102	96	M24	50	1000	736897	2541	178	150	88,00	
600 x 710	130	102	96	M24	50	1000	773517	2578	172	145	91,00	

● Clamping sets available from stock.

¹⁾ The screw tightening torques can be increased by max. 1,1 times or reduced to 0,6 times of the aforementioned figures with T, F_{ax} and P_W, P_N being reduced proportionally.

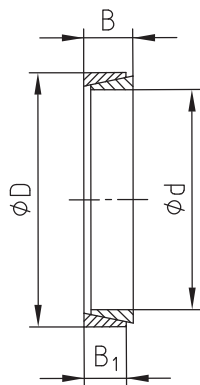
Other sizes on request.

KTR 150 (not self-centering)



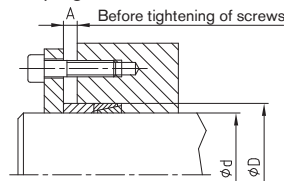
- Clamping set for small radial mounting dimensions
- Increase of torque by using several clamping sets in a series
- Mounting instructions under www.ktr.com

Before tightening
of screws



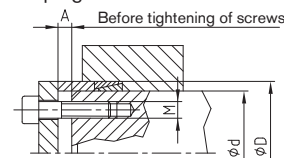
Assembly 1

Clamping on hub side



Assembly 2

Clamping on shaft side

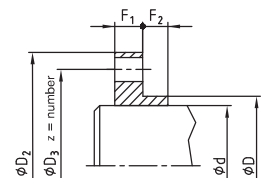
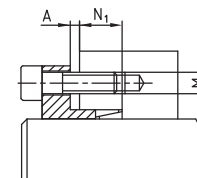


Up to 4 clamping sets can be used in a series.

The torques are increased as follows:

1 clamping element	torque = torque _{catalogue} x 1
2 clamping elements	torque = torque _{catalogue} x 1,55
3 clamping elements	torque = torque _{catalogue} x 1,85
4 clamping elements	torque = torque _{catalogue} x 2,02

Recommended pressure flanges*
(dimensions see table below)



Assembly

Clean the contact surfaces of the clamping set as well as the shaft and the hub and afterwards apply thin-bodied oil. Insert the clamping set, distance ring and clamping flange, tighten the clamping screws crosswise by degrees and evenly until the screw tightening torque defined for the corresponding screw size is achieved. The figures T and F_{ax} mentioned in the table were calculated for an assembly with oil.

Note: Oils and greases containing molybdenum disulphide or high-pressure additions, additions of teflon and silicone as well as sliding grease paste reducing the coefficient of friction considerably must not be used. For assembly of clamping set tapers without oil, the figures mentioned in the table and calculated figures deviate.

Disassembly

Unscrew all clamping screws. In normal cases the clamping element releases automatically. Otherwise lightly strike with a hammer onto the hub or shaft.

Tolerances, surfaces

One accurate turning process is sufficient:

$$R_z \leq 6\mu\text{m}$$

Maximum permissible tolerances:

Shaft h6 - hub H7 ($\leq \varnothing 38 \text{ mm}$)

Shaft h8 - hub H8 ($> \varnothing 38 \text{ mm}$)

Recommended dimensions of pressure flange* for 1 to 4 clamping elements KTR 150																																	
d ^{H6} x D _{g7}	9,1 x 12	10,1 x 13	12,1 x 15	13,1 x 16	14,1 x 18	15,1 x 19	16,2 x 20	17,2 x 21	18,2 x 22	19,2 x 24	20,2 x 25	22,2 x 26	24,2 x 28	25,2 x 30	28,2 x 32	30,2 x 35	32,2 x 36	35,2 x 40	36,2 x 42	38,2 x 44	40,2 x 45	42,2 x 48	45,2 x 52	48,2 x 55	50,2 x 57	55,2 x 62	56,2 x 64	60,2 x 68	63,2 x 71	66,2 x 73	70,2 x 79	71,2 x 80	75,2 x 84
D ₂	36	37	39	40	44	45	46	47	48	52	53	54	56	58	60	63	64	68	70	72	78	81	85	88	90	95	102	106	109	111	117	118	122
D ₃	28	29	31	32	35	36	37	38	39	42	43	44	45	48	50	53	54	58	60	62	65	68	72	75	77	82	86	90	93	95	101	102	106
M	M4	M4	M4	M4	M5	M5	M5	M5	M5	M6	M6	M6	M6	M6	M6	M6	M6	M6	M6	M6	M8	M8	M8	M8	M8	M8	M10	M10	M10	M10	M10	M10	M10
z	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	5	6	6	6	4	4	6	8	8	8	6	6	6	6	8	8	8
Tightening torque [Nm]	2,9	2,9	2,9	2,9	6	6	6	6	6	10	10	10	10	10	10	10	10	10	10	10	25	25	25	25	25	25	49	49	49	49	49	49	49
F ₁	5,5	5,5	5,5	5,5	7	7	7	7	7	8	8	8	8	8	8	8	8	8	8	8	10,5	10,5	10,5	10,5	10,5	10,5	13	13	13	13	13	13	13
F ₂	7	7	7	7	8,5	8,5	8,5	8,5	8,5	8,5	8,5	8,5	8,5	8,5	8,5	8,5	8,5	8,5	8,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	10,5	10,5	10,5	10,5	10,5	10,5	10,5
N ₁	The hollow depth results from the number of clamping elements (max. 4-off) and the dimensions = F ₀ - A.																																

* not part of the components delivered by KTR

Order form:	KTR 150	60	x	68
Type		Size of inside diameter		Size of outside diameter

KTR 150 (not self-centering) – Technical data

CLAMPEX® – KTR 150															
d x D [mm]	Dimensions [mm]		Distance dimension A [mm]				Necessary clamping force for clamping screws $\mu_{\text{total}} = 0,14$			Transmittable torque or axial force		Surface pressure between clamping set		Weight [~kg]	Stock pro- gramme
	B	B ₁	Clamping element				P _O [N]	P _S [N]	P _A = P _O + P _S [N]	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	2,5	2,5	3,0	4,0	**	3000	3000	2	0,67	80	53	0,0012	●
7 x 10	4,5	3,7	2,5	2,5	3,0	4,0	**	5300	5300	4	1,19	121	85	0,0014	●
8 x 11	4,5	3,7	2,5	2,5	3,0	4,0	**	5600	5600	5	1,25	112	82	0,0015	●
9 x 12	4,5	3,7	2,5	2,5	3,0	4,0	7947	6653	14600	7	1,50	119	89	0,0017	●
10 x 13	4,5	3,7	2,5	2,5	3,0	4,0	7063	8937	16000	10	2,00	143	110	0,0018	●
12 x 15	4,5	3,7	2,5	2,5	3,0	4,0	7808	8192	16000	11	1,80	110	88	0,0021	●
13 x 16	4,5	3,7	2,5	2,5	3,0	4,0	7007	9693	16700	14	2,20	120	97	0,0023	●
14 x 18	6,3	5,3	3,5	3,5	4,5	5,5	11957	14043	26000	22	3,10	112	87	0,0049	●
15 x 19	6,3	5,3	3,5	3,5	4,5	5,5	12106	14894	27000	25	3,30	111	88	0,0053	●
16 x 20	6,3	5,3	3,5	3,5	4,5	5,5	12478	14522	27000	26	3,20	102	91	0,0055	●
17 x 21	6,3	5,3	3,5	3,5	4,5	5,5	11678	16822	28500	32	4,10	120	90	0,0058	●
18 x 22	6,3	5,3	3,5	3,5	4,5	5,5	14630	18370	33000	37	3,70	102	94	0,0061	●
19 x 24	6,3	5,3	3,5	3,5	4,5	5,5	14186	18814	33000	40	4,20	111	88	0,0078	●
20 x 25	6,3	5,3	3,5	3,5	4,5	5,5	13339	19661	33000	44	4,40	110	88	0,0082	●
22 x 26	6,3	5,3	3,5	3,5	4,5	5,5	13689	20311	34000	50	4,50	103	87	0,0072	●
24 x 28	6,3	5,3	3,5	3,5	4,5	5,5	8676	25324	34000	68	5,70	118	101	0,0080	●
25 x 30	6,3	5,3	3,5	3,5	4,5	5,5	10190	26810	37000	75	6,00	120	100	0,0100	●
28 x 32	6,3	5,3	3,5	3,5	4,5	5,5	11275	28725	40000	90	6,40	115	101	0,009	●
30 x 35	6,3	5,3	3,5	3,5	4,5	5,5	10211	29789	40000	100	6,70	111	95	0,012	●
32 x 36	6,3	5,3	3,5	3,5	4,5	5,5	6487	33513	40000	120	7,50	117	104	0,010	●
35 x 40	7	6,0	3,5	3,5	4,5	5,5	9147	40853	50000	160	9,10	115	101	0,017	●
36 x 42	7	6,0	3,5	3,5	4,5	5,5	12910	43690	56600	176	9,80	120	103	0,020	●
38 x 44	7	6,0	3,5	3,5	4,5	5,5	15317	44683	60000	190	10,00	116	100	0,021	●
40 x 45	8	6,6	3,5	4,5	5,5	6,5	18614	51386	70000	230	11,50	116	103	0,023	●
42 x 48	8	6,6	3,5	4,5	5,5	6,5	14678	55322	70000	260	12,40	118	104	0,028	●
45 x 52	10	8,6	3,5	4,5	5,5	6,5	32549	77451	110000	390	17,30	119	103	0,042	●
48 x 55	10	8,6	3,5	4,5	5,5	6,5	29942	80058	110000	430	17,90	115	100	0,045	●
50 x 57	10	8,6	3,5	4,5	5,5	6,5	25995	84005	110000	470	18,80	116	102	0,047	●
55 x 62	10	8,6	3,5	4,5	5,5	6,5	25759	94241	120000	580	21,10	118	105	0,050	●
56 x 64	12	10,4	3,5	4,5	5,5	7,0	33227	117773	151000	738	26,40	120	105	0,067	●
60 x 68	12	10,4	3,5	4,5	5,5	7,0	34887	125113	160000	840	28,00	119	105	0,072	●
63 x 71	12	10,4	3,5	4,5	5,5	7,0	30510	132490	163000	934	29,70	120	107	0,077	●
65 x 73	12	10,4	3,5	4,5	5,5	7,0	22513	137487	160000	1000	30,80	121	108	0,079	●
70 x 79	14	12,2	3,5	5,0	6,5	7,5	34033	165967	200000	1300	37,10	115	102	0,110	●
71 x 80	14	12,2	3,5	5,0	6,5	7,5	36043	174957	211000	1390	39,20	120	106	0,120	●
75 x 84	14	12,2	3,5	5,0	6,5	7,5	41267	178733	220000	1500	40,00	116	104	0,130	●
80 x 91	17	15,0	4,0	6,0	6,5	8,0	65412	234588	300000	2100	52,50	116	102	0,190	●
85 x 96	17	15,0	4,0	6,0	6,5	8,0	54414	257586	312000	2450	57,60	120	106	0,200	●
90 x 101	17	15,0	4,0	6,0	6,5	8,0	51900	268100	320000	2700	60,00	118	105	0,220	●
95 x 106	17	15,0	4,0	6,0	6,5	8,0	52145	287855	340000	3060	64,40	120	107	0,230	●
100 x 114	21	18,7	5,0	6,0	7,0	9,0	64660	375340	440000	4200	84,00	119	105	0,380	●
110 x 124	21	18,7	5,0	6,0	7,0	9,0	100658	349342	450000	4300	78,20	101	89	0,410	●
120 x 134	21	18,7	5,0	6,0	7,0	9,0	80192	379808	460000	5100	85,00	100	90	0,450	●
130 x 148	28	25,3	5,0	7,0	9,0	11,0	93177	556823	650000	8100	124,60	101	88	0,850	●
140 x 158	28	25,3	6,0	7,0	9,0	11,0	89967	600033	690000	9400	134,30	101	89	0,910	●
150 x 168	28	25,3	6,0	7,0	9,0	11,0	64644	655356	720000	11000	146,70	103	92	0,970	
160 x 178	28	25,3	6,0	7,0	9,0	11,0	80303	774697	855000	13870	173,40	114	102	1,020	
170 x 191	33	30,0	7,0	9,0	10,0	12,0	128166	973834	1102000	18525	217,90	113	101	1,500	
180 x 201	33	30,0	7,0	9,0	10,0	12,0	142494	1057506	1200000	21300	236,70	116	104	1,580	
190 x 211	33	30,0	7,0	9,0	10,0	12,0	111751	1138249	1250000	24200	254,70	119	107	1,680	
200 x 224	38	34,8	7,0	9,0	11,0	13,0	182475	1407525	1590000	31500	315,00	120	107	2,320	
210 x 234	38	34,8	7,0	9,0	11,0	13,0	100300	1489700	1590000	34761	331,10	121	109	2,450	
220 x 244	38	34,8	7,0	9,0	11,0	13,0	117900	1552100	1670000	37941	344,90	120	109	2,490	
230 x 257	43	39,5	7,0	10,0	12,0	14,0	168900	1851100	2020000	47307	411,90	121	108	3,380	
240 x 267	43	39,5	7,0	10,0	12,0	14,0	160700	1929300	2090000	51449	428,70	121	109	3,520	
250 x 280	48	44,0	7,0	10,0	12,0	16,0	191000	2239000	2430000	52245	418,00	121	108	4,680	
260 x 290	48	44,0	7,0	10,0	13,0	16,0	182500	2328500	2511000	56506	434,70	121	108	4,820	
270 x 300	48	44,0	7,0	10,0	13,0	16,0	178000	2422000	2600000	61036	452,10	121	109	4,940	
280 x 313	53	49,0	7,0	11,0	14,0	17,0	207800	2792200	3000000	72971	521,20	121	108	6,270	
290 x 323	53	49,0	7,0	11,0	14,0	17,0	220700	2889300	3110000	77740	536,10	121	108	6,500	
300 x 333	53	49,0	7,0	11,0	14,0	17,0	215000	2990000	3205000	83224	554,80	121	109	6,700	
320 x 360	65	59,0	10,0	15,0	20,0	25,0	292000	3848000	4140000	114246	714,00	121	108	10,90	
340 x 380	65	59,0	10,0	15,0	20,0	25,0	275000	4085000	4360000	128863	758,00	121	108	11,50	
360 x 400	65	59,0	10,0	15,0	20,0	25,0	260000	4320000	4580000	141292	801,60	121	109	12,20	
380 x 420	65	59,0	10,0	15,0	20,0	25,0	270000	4570000	4840000	161122	848,00	121	109	12,80	
400 x 440	65	59,0	10,0	15,0	20,0	25,0	260000	4800000	5060000	178138	890,70	121	110	13,50	

● Clamping sets available from stock or in short term.

** Design with slot

Other sizes on request.

Calculation

For a properly working CLAMPEX® shaft-hub-connection the following technical details should be taken into account. Please contact us in case you have tolerances different from the table below.

CLAMPEX® – Tolerance, surface roughness and concentricity						
Type	d [mm]	d _w [mm]	Shaft diameter tolerance	Diameter of hub bore tolerance	Surface roughness [μm]	Concentricity (applies for the clamping set only)
KTR 250	-	-	h8	H8	Rz ≤ 16	0,02 - 0,04
KTR 200	-	-	h8	H8	Rz ≤ 16	0,02 - 0,04
KTR 201	-	-	h8	H8	Rz ≤ 16	0,02 - 0,04
KTR 203	-	-	h8	H8	Rz ≤ 16	0,02 - 0,04
KTR 206	-	-	h8	H8	Rz ≤ 16	0,02 - 0,04
KTR 225	-	-	h8	H8	Rz ≤ 16	0,02 - 0,04
KTR 100	-	-	h11	H11	Rz ≤ 16	1)
KTR 105	-	-	h9	H9	Rz ≤ 16	0,02 - 0,04
KTR 150	up to 38	-	h6	H7	Rz ≤ 6	1)
KTR 150	bigger than 38	-	h8	H8	Rz ≤ 6	1)
KTR 400	-	-	h8	H8	Rz ≤ 16	0,02 - 0,04
KTR 620	-	13-150 > 160	H7/h6 > H7/g6	H7/f7	Rz ≤ 16	0,02 - 0,04
KTR 603	-	18 - 30	j6	H6	Rz ≤ 16	0,02 - 0,04
KTR 603	-	31 - 50	h6	H6	Rz ≤ 16	0,02 - 0,04
KTR 603	-	51 - 80	g6	H6	Rz ≤ 16	0,02 - 0,04
KTR 603	-	81 - 500	g6	H7	Rz ≤ 16	0,02 - 0,04

¹⁾ Depending on the centering of the hub or shafts or the drive component and accuracy of assembly, respectively.

Fatigue strength and shape stability of components loaded under torsion and bending

The stress calculation figures β_k for the clamping elements, are worked out similar to those of hydraulic fittings. Please contact us for calculations. The stress concentration is dependent upon the load, the material and the clamping set type. Stress concentration factor on request.

Resulting torque T_R

The transmittable torque $T \approx T_R$ always has to exceed the highest torque peak T_B which may arise in the connection positions. The torque peaks arising during the acceleration of electric motors have to be considered.

$$T \approx T_R \geq \sqrt{T_B^2 + \left[\frac{F_a \cdot d}{2} \right]^2} \quad [\text{Nm}]$$

Transmittable axial force F_{ax}

The maximum transmittable axial force F_{ax} which is mentioned in the tables has to be reduced accordingly in case of additional torque transmission.

$$F_{ax} = \frac{2 \cdot T}{d} \quad [\text{kN}]$$

Calculation of the outside diameter of the hub D_N

The required outside diameter of the hub D_N depends on the cross section of the hub, the shape of the hub and the apparent yield point of the hub material. In order to facilitate the calculation the table on page 297 shows some figures by the help of which D_N can be determined.

Example:

Shaft diameter $d = 50 \text{ mm}$
Hub material: GGG 40
Apparent yield point of material
 $\sigma_{0,2} = 250 \text{ N/mm}^2$

Selected: CLAMPEX® clamping set KTR 100

with $d \times d = 50 \text{ mm} \times 80 \text{ mm}$ and $P_N = 149 \text{ N/mm}^2$ page 293
→ approximate value from table on page 297: $P_N = 150 \text{ N/mm}^2$
selected design see page 297. $C = 0,8$ (value C of hub shape)
→ figure as per table 1,69
→ $D_N = D \times 1,69 = 80 \text{ mm} \times 1,69 = 135,20 \text{ mm}$

Outside diameters of hubs which cannot be calculated based on the table are calculated with the following formula:

$$D_N \geq D \cdot \sqrt{\frac{\sigma_{N0,2} + P_N \cdot C}{\sigma_{N0,2} - P_N \cdot C}} \quad [\text{mm}]$$

Tangential tension on the inside diameter of hub

$$\sigma_{tiN} \approx P_N \frac{(1 + C_N^2)}{(1 - C_N^2)} \cdot C \quad [\text{N/mm}^2]$$

For clamping connections with hollow shafts the required inside diameter of the hollow shaft d_{iW} is calculated with the following formula:

$$d_{iW} \leq d \cdot \sqrt{\frac{\sigma_{W0,2} - 2 \cdot P_W \cdot 0,8}{\sigma_{W0,2}}} \quad [\text{mm}]$$

Tangential tension on the inside diameter of shaft

$$\sigma_{tiW} \approx \frac{2 \cdot P_W}{(C_W^2 - 1)} \quad [\text{N/mm}^2]$$

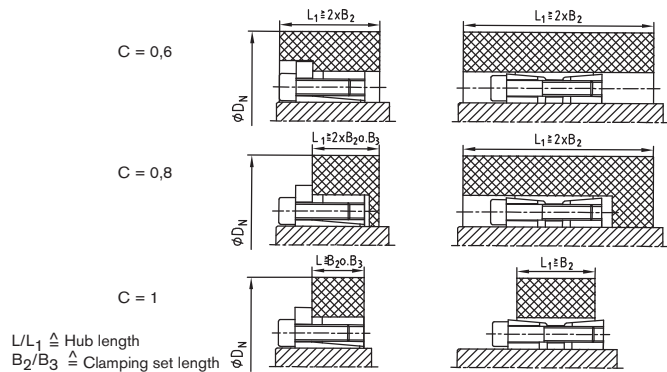
$\sigma_{N0,2}$ = Apparent yield point of the hub material [N/mm²]
 C = Value C of hub shape (see picture on page 297)
 P_N = Perm. surface pressure of clamping set/hub [N/mm²]
 D = Outside diameter of the clamping set [mm]
 T = Transmittable torque [Nm]
 T_R = Resulting transmittable torque [Nm]
 T_B = Operating torque to be transmitted [Nm]
 L/L_1 = Hub length [mm]

$\sigma_{W0,2}$ = Apparent yield point of the shaft material [N/mm²]
 P_W = Perm. surface pressure of clamping set/shaft [N/mm²]
 d = Inside diameter of the clamping set [mm]
 C_W = d_{iW} / d
 C_N = D / D_N
 F_a = Axial force arising during operation [N]
 F_{ax} = Maximum transmittable axial force [kN]
 F_V = Prestressed force [N]

Calculation of hubs

Table of screws						
Dimension M	Prestressed force F_V and tightening torque T_A with $\mu_{\text{total}} = 0,14$					
	Prestressed 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

Mounting conditions of clamping set Value C of hub shape



Selection table for the calculation of the required outside diameter of hub D_N												
Surface pressure between clamping set and hub		Average apparent yield point of material $\sigma_{0,2}$ in N/mm ² (more accurate stiffness data, depending on the diameter, as per details mentioned by the manufacturer)										
		150	180	200	220	250	270	300	350	400	450	600
P_N [N/mm ²]	Hub form C-value	Hub materials										
		GG 20	GG 25 GS 38	GG 30 GTS 35	GS 45 ST 37-2	GGG 40 GS 52 AlCuMgPb	ST 50-2 C 35	GGG 50 GS 60 ST 52-3	GGG 60 GS 62 C 45	GGG 70 GS 70 C 60	Tempering steel	Tempering steel
60	C = 0,6	1,28	1,25	1,20	1,18	1,15	1,14	1,12	1,10	1,09	1,08	1,06
	C = 0,8	1,39	1,30	1,24	1,23	1,22	1,20	1,18	1,15	1,12	1,11	1,08
	C = 1	1,52	1,42	1,36	1,32	1,28	1,25	1,22	1,18	1,16	1,14	1,10
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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	2,00	1,84	1,69	1,61	1,53	1,43	1,36	1,31	1,23
	C = 1	-	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	-	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	-	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	-	4,80	3,23	2,65	2,21	2,04	1,86	1,67	1,55	1,47	1,33

Assembly 1

Technical drawing of Assembly 1 showing a cross-section and two isometric views. The cross-section shows a shaft with a key and a hub with a bore. Dimensions include diameters (ϕD_H , ϕD , ϕd , ϕd_1 , $\phi d_{1\max EX}$, $\phi D_{1\max EX}$), lengths (l_2 , s , b , E , B), and a key length L . The isometric views show the assembly from the front and side.

KTR 200 with torsionally flexible ROTEX® coupling															
ROTEX® size	Pilot bore Ød [mm]	Hub material	Dimensions of CLAMPEX® KTR 200 [mm]				Dimensions of ROTEX® coupling [mm]								
			Maximum KTR clamping d x D	Transmittable torques and axial force		B	l ₁	E	s	b	D _H	D	D ₁	d _H	L
				T [Nm]	F _{ax} [kN]										
42	x	Steel part 1	30 x 55	769	51	48	50	26	3,0	20	95	-	95	46	Length L >> l ₁ + E + B (clamping set)
48	x		35 x 60	1197	68	48	56	28	3,5	21	105	-	105	51	
55	x		45 x 75	2132	95	59	65	30	4,0	22	120	-	120	60	
65	x		45 x 75	2132	95	59	75	35	4,5	26	135	115	-	68	
75	x		50 x 80	3159	126	59	85	40	5,0	30	160	135	-	80	
90	x	65 x 95	4107	126	59	100	45	5,5	34	200	160	-	100		
100	45	GGG40 part 1	65 x 95	4107	126	59	110	50	6,0	38	225	180	-	113	
110	58		70 x 110	7023	201	70	120	55	6,5	42	255	200	-	127	
125	58		80 x 120	8026	201	70	140	60	7,0	46	290	230	-	147	
140	56		95 x 135	11373	239	66	155	65	7,5	50	320	255	-	165	
160	78		110 x 155	16068	292	80	175	75	9,0	57	370	290	-	190	
180	80		120 x 135	21910	365	80	195	85	10,5	64	420	325	-	220	

CLAMPEX® – KTR 200																	
d x D [mm]	B [mm]	Transmittable torques and axial force		Clamping screws DIN EN ISO 4762 12.9 [mm]		d x D [mm]	B [mm]	Transmittable torques and axial force		Clamping screws DIN EN ISO 4762 12.9 [mm]		d x D [mm]	B [mm]	Transmittable torques and axial force		Clamping screws DIN EN ISO 4762 12.9 [mm]	
		T [Nm]	F _{ax} [kN]	z x M	T _A [Nm]			T [Nm]	F _{ax} [kN]	z x M	T _A [Nm]			T [Nm]	F _{ax} [kN]	z x M	T _A [Nm]
20 x 47	48	513	51	6 x M6	17	38 x 65	48	1299	68	8 x M6	17	65 x 95	59	4107	126	8 x M8	41
22 x 47	48	564	51	6 x M6	17	40 x 65	48	1368	68	8 x M6	17	70 x 110	70	7023	201	8 x M10	83
24 x 50	48	616	51	6 x M6	17	42 x 75	59	1990	95	6 x M8	41	75 x 115	70	7524	201	8 x M10	83
25 x 50	48	641	51	6 x M6	17	45 x 75	59	2132	95	6 x M8	41	80 x 120	70	8026	201	8 x M10	83
28 x 55	48	718	51	6 x M6	17	48 x 80	59	3033	126	8 x M8	41	85 x 125	70	10659	251	10 x M10	83
30 x 55	48	769	51	6 x M6	17	50 x 80	59	3159	126	8 x M8	41	90 x 130	70	11286	251	10 x M10	83
32 x 60	48	1094	68	8 x M6	17	55 x 85	59	3475	126	8 x M8	41	95 x 135	66	11373	239	10 x M10	83
35 x 60	48	1197	68	8 x M6	17	60 x 90	59	3791	126	8 x M8	41	Further details see page 279.					

This technical drawing shows a square frame assembly. It consists of four corner joints, each formed by a vertical plate and a horizontal plate. The vertical plates are connected by a central vertical rod, and the horizontal plates are connected by a central horizontal rod. The corner joints are secured with bolts and nuts. The drawing uses standard engineering conventions, including hatching to indicate different materials and a dashed line to represent a hidden internal feature.

A technical line drawing of a double-flange coupling. It features a central shaft passing through two flanges. Each flange is secured with a large hexagonal nut and a corresponding washer. The flanges have a series of bolt holes around their periphery. The drawing is a perspective view, showing the internal structure of the coupling.

You will find continuously updated data in our online catalogue at www.ktr.com

Series on request

SPH Clamping sleeve

Self-centering



- Fast assembly and disassembly with one screw only
- Suitable for hub dimensions
- Applications: sprockets, pulleys that are assembled to the shaft end

KTR 401

Self-centering, short design



- Clamping set for high load
- Specifically suitable for vibratory torques
- Typical applications: flywheels, belt drums
- Smaller dimensions than with KTR 400
- Please order our dimension sheet No. **M 367699**

KTR 125 and KTR 125.1



KTR 125

Not self-centering,
Short design

KTR 125.1

Self-centering,
Long design

- Clamping set for applications with low demands
- Very easy assembly
- Please order our dimension sheet No. **M 367700**

KTR 700

Rigid coupling

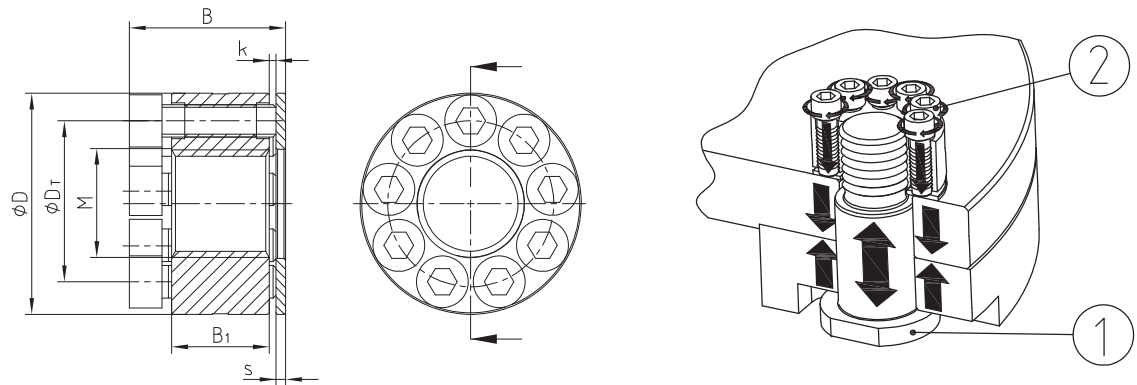


- Rigid, backlash-free torque transmission
- Well-aligned, bending and torsionally stiff shaft connection
- Shaft misalignment cannot be compensated
- Please order our **dimension sheet No. M 380931**

Large screw connections to be assembled easily and quickly



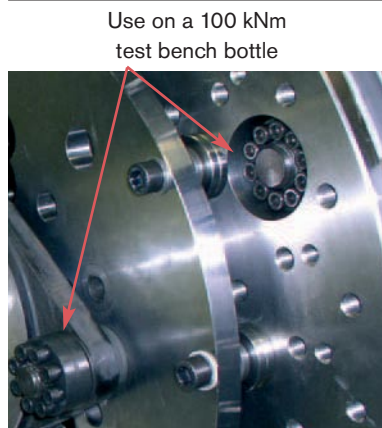
- Use of common dynamometric screwdrivers (up to approx. 100 Nm) even with big screws, e. g. M42 thread.
- Benefits with costs (easy and quick assembly or disassembly, respectively, no need for special tools).
- Optimum load of screws, because they are only loaded with extension (no torsional load like with usual screw connections).
- Ideal for narrow assemblies (e. g. gearbox housings), since it is not necessary to use large tools.
- For screw property classes 8.8 and 10.9.
- Mounting instructions under www.ktr.com



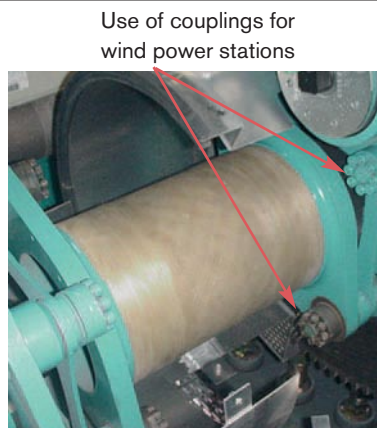
Clamping nut

KTR clamping nuts												
Size	Dimensions [mm]						Pressure screw part 2		Property class 8.8 screw part 1		Property class 10.9 screw part 1	
	D	D _T	B	B ₁	s	k	DIN EN ISO 4762	Number	Tightening torque * [Nm]	Prestress [N]	Tightening torque * [Nm]	Prestress [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 part 2



Use on a 100 kNm test bench bottle



Use of couplings for wind power stations



Also available as a complete unit including set screw

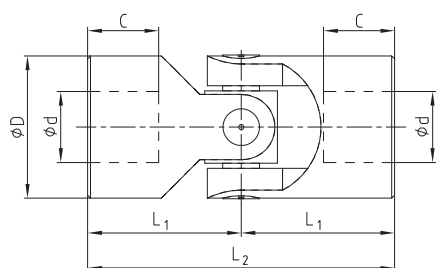
Order form:	KTR clamping nut		M33 x 3,5
	Type		Size

Type G and GD according to DIN 808 with plain bearing

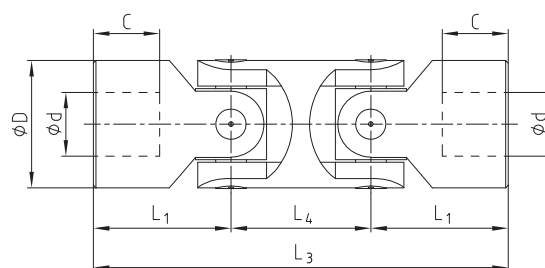


- Suitable for every application in the range of general engineering up to a maximum speed of 1000 rpm
- Type G precision single joint
- Type GD precision double joint
- Maximum articulation angle 45° for each joint
- Bearings designed as plain bearings
- Available with finish bore H7 – on request with keyway, hexagon bore or square bore

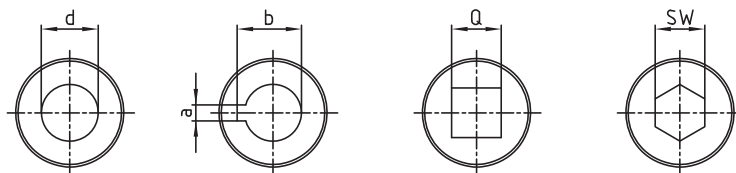
Precision single joint G



Precision double joint GD



Finish bores:



Type G and GD																
Types and size				Dimensions [mm]											Weight	
Size G	DIN description G	Size GD	DIN description GD	d [H7]	D	L ₂	L ₁	C	L ₄	L ₃	a [JS9]	b	Q [H8]	SW [H8]	G [kg]	GD [kg]
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	13	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	36	104	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	46	128	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	35	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	40	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	50	100	290	14	53,8	-	-	7,60	12,0

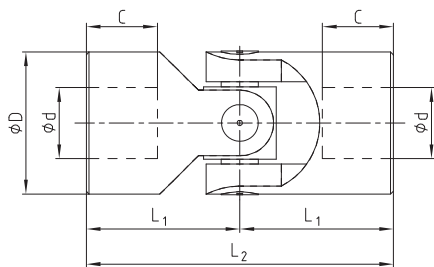
Order form:	04 G	Ø 12	Ø 12 keyway DIN
	Size/type of joint	Finish bore (H7)	Finish bore (H7) keyway to DIN 6885 sheet 1 (JS9)

Type H and HD according to DIN 808 with needle bearing

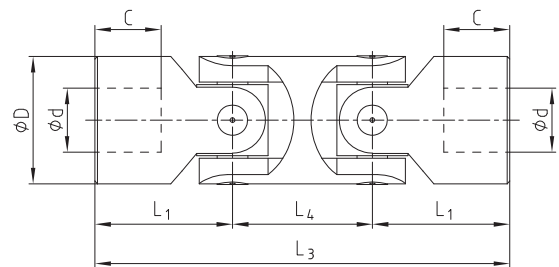


- Suitable for every application in the range of general engineering up to a maximum speed of 4000 rpm
- Type H precision single joint
- Type HD precision double joint
- Maximum articulation angle 45°
- High dynamic load - small bearing clearance
- Maintenance-free due to needle bearing
- Available with finish bore H7 – on request with keyway, hexagon bore or square bore

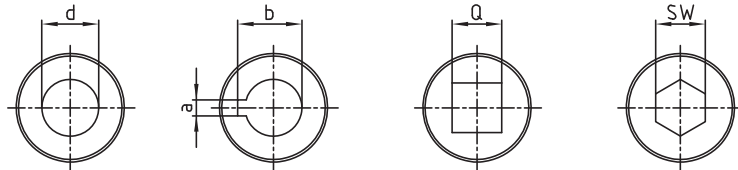
Precision single joint H



Precision double joint HD



Finish bores:



Type H and HD																
Types and size				Dimensions [mm]											Weight	
Size H	DIN description H	Size HD	DIN description HD	d [H7]	D	L ₂	L ₁	C	L ₄	L ₃	a [JS9]	b	Q [H8]	SW [H8]	H [kg]	HD [kg]
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	13	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	36	104	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	46	128	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	35	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	40	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	50	100	290	14	53,8	-	-	7,60	12,0

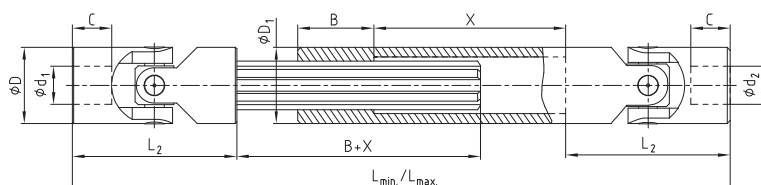
Order form:

1 H	Ø 16	Ø 16 keyway DIN
Size/type of joint	Finish bore (H7)	Finish bore (H7) keyway to DIN 6885 sheet 1 (JS9)

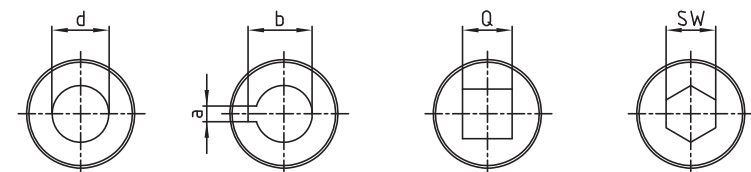
Type GA and HA acc. to DIN 808 with plain and needle bearing (extendable)



- Precision double joint - extendable, maximum articulation angle 45° for each joint
- Bridging of bigger shaft distances
- Type GA (plain bearing) $n_{max.} = 1000$ rpm
- Type HA (needle bearing) $n_{max.} = 4000$ rpm
- Available with quick locking GR; HR
- Available with finish bore H7 – on request available with keyway, thread for setscrews, square or hexagon bore



Finish bores:



Preferred lengths

Size	Dimensions [mm]									
	L _{min.} / L _{max.}									
	03	04	05	1	2	3	4	5	6	
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			

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 [H8]	SW [H8]		
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	13	← →	40	5	16,3	14	14	13 x 16 Z6	29
1 GA	1 HA	16	32	68	16	← as per customers' request →	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	← L _{min.} / L _{max.} →	50	6	24,8	22	22	23 x 28 Z6	47
5 GA	5 HA	25	50	108	26	← →	50	8	28,3	25	25	26 x 32 Z6	52
6 GA	6 HA	30	58	122	29	← →	60	8	33,3	30	30	32 x 38 Z8	58
7 GA	7 HA	35	70	140	35	← →	70	10	38,3	-	-	36 x 42 Z8	70
8 GA	8 HA	40	80	160	40	← →	80	12	43,3	-	-	42 x 48 Z8	80
9 GA	9 HA	50	95	190	50	← →	90	14	53,8	-	-	46 x 54 Z8	95

Calculation of mounting lengths L and X (Stroke)

$$\text{Stroke } X \leq \frac{L_{max.} - 2 \cdot L_2 - B}{2}$$

$$L_{min.} \geq \frac{L_{max.} + 2 \cdot L_2 + B}{2}$$

$$\text{Minimum dimension } L_{min.} \\ L_{min.} = L_2 + B + X + L_2$$

Order form:

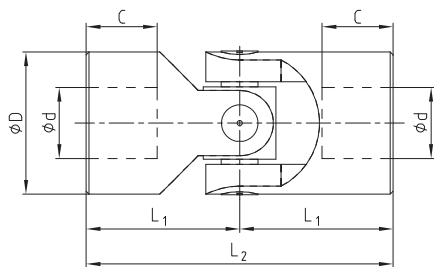
3 GA	d ₁ = Ø 20	d ₂ = Ø 20 keyway DIN	550/650
Size/type of joint	Finish bore (H7)	Finish bore (H7), keyway to DIN 6885 sheet 1 (JS9)	Mounting length L _{min.} /L _{max.}

Type X and XD acc. to DIN 808 with plain bearing (stainless steel 1.4301)

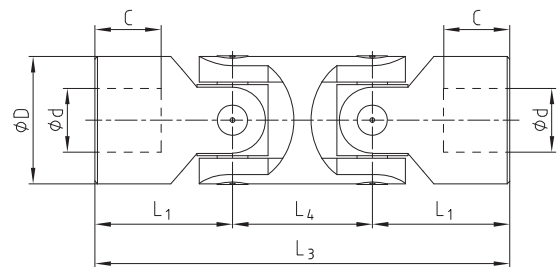


- Suitable for every application in the range of general engineering up to a maximum speed of 300 rpm
- Type X precision single joint
- Type XD precision double joint
- Maximum articulation angle 45° for each joint
- Available with finish bore H7 – on request with keyway, hexagon bore or square bore

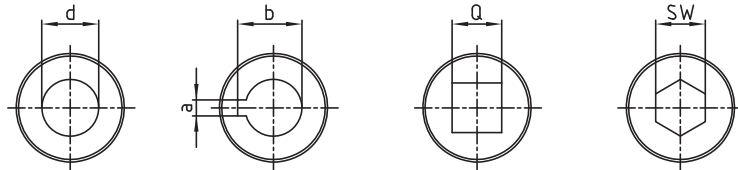
Precision single joint X



Precision double joint XD



Finish bores:

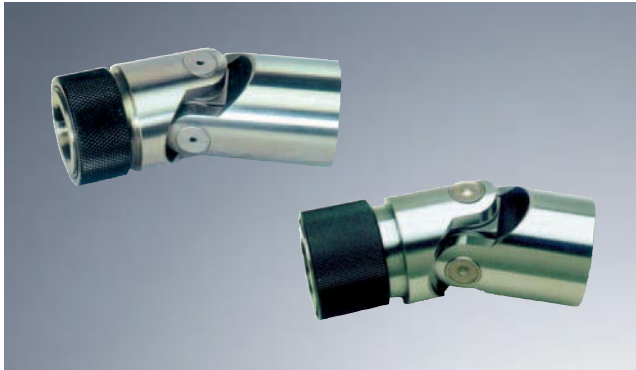


Type X and XD																
Types and size				Dimensions [mm]											Weight	
Size X	DIN description X	Size XD	DIN description XD	d [H7]	D	L ₂	L ₁	C	L ₄	L ₃	a [JS9]	b	Q [H8]	SW [H8]	X [kg]	XD [kg]
01 X	E6 x 16-G	01 XD	D6 x 16-G	6	16	34	17	8	22	56	2	7,0	6	6	0,05	0,08
02 X	E8 x 16-G	02 XD	D8 x 16-G	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
1 X	E16 x 32-G	1 XD	D16 x 32-G	16	32	68	34	16	36	104	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	46	128	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

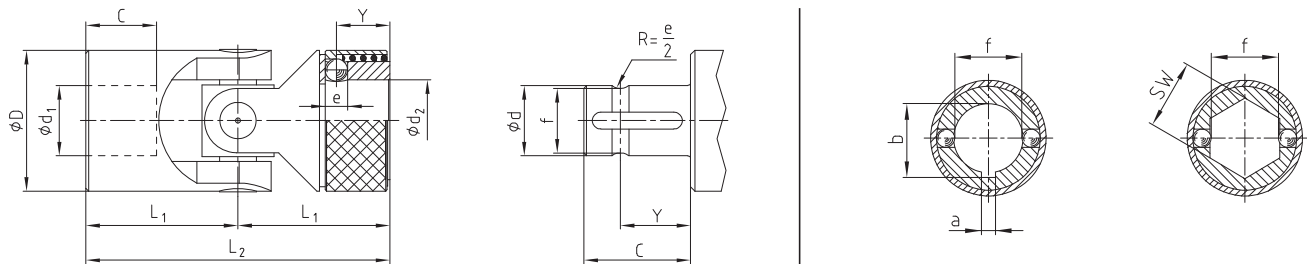
Order form:

04 X	Ø 12	Ø 12 keyway DIN
Size/type of joint	Finish bore (H7)	Finish bore (H7) keyway to DIN 6885 sheet 1 (JS9)

Type GR and HR with quick locking

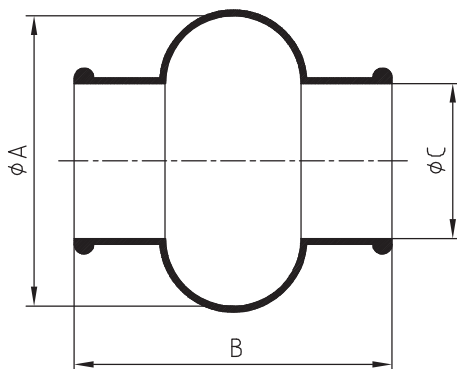


- Precision single joint with quick locking (separable)
- Type GR with plain bearing $n_{max.} = 1000$ giri/min
- Type HR with needle bearing $n_{max.} = 4000$ rpm
- Maximum articulation angle 45°
- Quick locking (d_2) available with H7 bore and keyway to DIN 6885 sheet 1 – JS9 or hexagon bore



Type GR with plain bearing $n_{max.} = 1000$ rpm and type HR with needle bearing $n_{max.} = 4000$ rpm												
Size		Dimensions [mm]										
GR	HR	d_1, d_2 [H7]	D	L_2	L_1	C	Y	e	f	a [JS9]	b	SW [H8]
02 GR	-	8	16	52	26	14	9,5	3,5	7,0	2	9,0	8
03 GR	03 HR	10	22	62	31	17	11,5	4,0	8,7	3	11,0	10
04 GR	04 HR	12	25	74	37	21	13,5	4,0	11,0	4	13,3	12
05 GR	05 HR	14	25	74	37	21	13,5	4,0	13,0	5	15,3	14
1 GR	1 HR	16	32	86	43	24	14,0	6,35	14,8	5	17,3	16
2 GR	2 HR	18	36	96	48	28	19,0	8,0	16,0	6	19,8	18
3 GR	3 HR	20	42	108	54	31	19,0	8,0	18,0	6	22,3	20
4 GR	4 HR	22	45	120	60	34	20,5	10,0	20,0	6	24,8	22
5 GR	5 HR	25	50	132	66	38	20,5	10,0	23,0	8	28,3	25
6 GR	6 HR	30	58	166	83	49	25,0	10,0	28,0	8	33,3	30

Protection muffs for joints type G, H, GA, HA and X

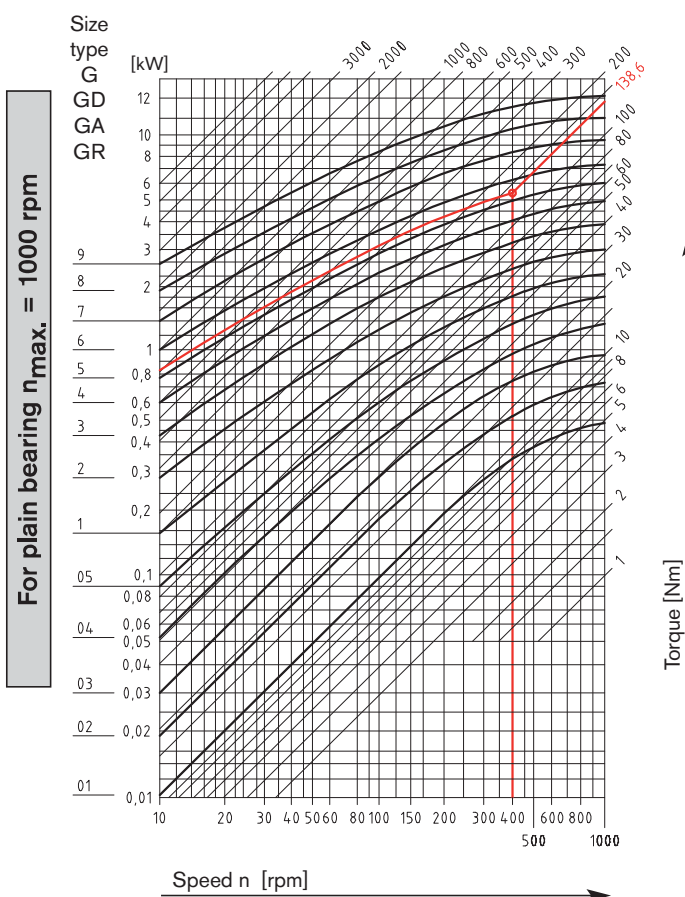


Protection muffs				
Size	Joints	A	B	C
M 01	01 G, 01 X	28	34	15
M 02	02 G, 02 X	32	40	16,5
M 03	03 G, 03 H, 03 GA, 03 HA, 03 X	40	45	20,5
M 04	04 G, 04 H, 04 GA, 04 HA, 04 X	48	50	24,5
M 05	05 G, 05 H, 05 GA, 05 HA	52	56	27,5
M 1	1 G, 1 H, 1 GA, 1 HA, 1 X	56	65	30,5
M 2	2 G, 2 H, 2 GA, 2 HA	66	72	35,5
M 3	3 G, 3 H, 3 GA, 3 HA, 3 X	75	82	40,0
M 4	4 G, 4 H, 4 GA, 4 HA	84	95	45,0
M 5	5 G, 5 H, 5 GA, 5 HA, 5 X	92	108	50,0
M 6	6 G, 6 G1, 6 H, 6 H1, 6 GA, 6 HA, 6 X	100	122	56,0

Order form:

03 HR	$d_1 = \emptyset 10$	$d_2 = \emptyset 10$ keyway DIN
Size/type of joint	Finish bore (H7)	Finish bore (H7) keyway to DIN 6885 sheet 1 (JS9)

Selection and determination of size acc. to DIN 808 with plain/needle bearing



Selection of precision joints type G, GD, GA, GR (max. 1000 rpm)

45°	4,0
40°	3,3
35°	2,6
30°	2,2
25°	1,8
20°	1,5
15°	1,25
10°	1,00
5°	0,8
Articulation angle [α]	Correction value

The selection of the precision joints with plain bearing is based on the driving torque, taking into account a correction value which depends on the articulation angle α and the operating speed. For the extendable joints in addition the overall length and the speed have to be considered to determine the size (please consult with KTR engineering department).

Torque $\cdot$ correction value = selected torque

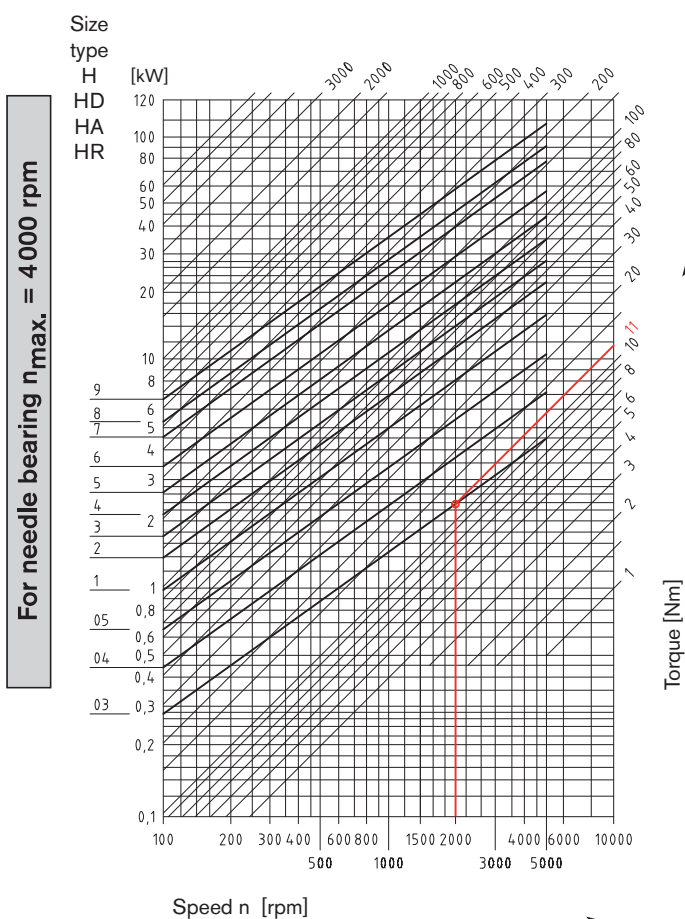
Example of selection

Driving torque	Correction value for articulation angle [α]	Selected torque Selection of size acc. to table
63 Nm	30°	
63 Nm	2,2	63 Nm $\cdot$ 2,2 = 138,6 Nm
Operating speed = 400 rpm		

The selection of the size according to the table is based on the driving torque (63 Nm) $\times$ correction value (30° = 2,2) = 138,6 Nm and the operating speed of 400 rpm.

Selected: Joint size 6

$$\text{Torque [Nm]} = 9550 \cdot \frac{\text{Power [kW]}}{\text{Speed [rpm]}}$$



Selection of precision joints type H, HD, HA, HR (max. 4000 rpm)

45°	4,0
40°	3,3
35°	2,5
30°	2,0
25°	1,4
20°	1,25
15°	1,1
10°	1,00
5°	0,8
Articulation angle [α]	Correction value

The selection of the precision joints with needle bearing is based on the driving torque, taking into account a correction value which depends on the articulation angle α and the operating speed. For the extendable joints in addition the overall length and the speed have to be considered to determine the size (please consult with KTR engineering department).

Torque $\cdot$ correction value = selected torque

Example of selection

Driving torque	Correction value for articulation angle [α]	Selected torque Selection of size acc. to table
8,8 Nm	20°	
8,8 Nm	1,25	8,8 Nm $\cdot$ 1,25 = 11 Nm
Operating speed = 2000 rpm		

The selection of the size according to the table is based on the driving torque (8,8 Nm) $\times$ correction value (20° = 1,25) = 11 Nm and the operating speed of 2000 rpm.

Selected: Joint size 03

$$\text{Torque [Nm]} = 9550 \cdot \frac{\text{Power [kW]}}{\text{Speed [rpm]}}$$



DATAFLEX®

Torque measuring shaft

Made for Motion



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DATAFLEX® 16 – High accuracy for low torques

The recently developed DATAFLEX® 16 extends the existing range of contactless torque measuring shafts and is available for measuring torque ranges of 10 Nm, 30 Nm and 50 Nm.

The torque is measured using the well-approved technology of wire strain gauges combined with the latest electronic components. The torque signals are processed without contact at a high resolution of 24 bit achieving an accuracy of 0,1 %. Supplementary to torque measuring the size 16 has a torque feeder providing two offset signals with a resolution of 360 pulses for each revolution.



DATAFLEX® 22, 42, 85, 140 – Patented technology

The DATAFLEX® torque measuring shafts sizes 22 to 140 measure the torques without contact and free from wear. Their secret is a patented measuring method acquiring the twisting of the torsion shaft by measuring the quantity of light. For that purpose the light is directed through two disks the transparency of which is amended proportionally to the torque. The overall electronics are situated in a stationary housing to make sure that no signals have to be transmitted by the rotating shaft and the torque is available accurately with a high band width of 16 kHz. This can measure and analyze highly dynamic processes accurately.

The analog output values are available both as a voltage signal from 0 – 10 V and as a current signal from 4 – 20 mA. In addition a speed counter is integrated providing a signal at a resolution of 60 pulses for each revolution.



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 pulse output points of the speed signals can be configured both for 5V (TTL) and 24V (HTL). This makes the output points compatible for data logging boards and SPS controls.
- In parallel with the pulse output points an integrated frequency voltage converter supplies a DC voltage from 0 – 10 V proportionally to the speed, the scaling of which can be changed individually. This makes an expensive meter circuit element superfluous so that the signal can either be processed as a voltage or be displayed.
- A direction signal indicates the torsional direction of the drive (with DATAFLEX® 16).



Couplings adjusted to every application

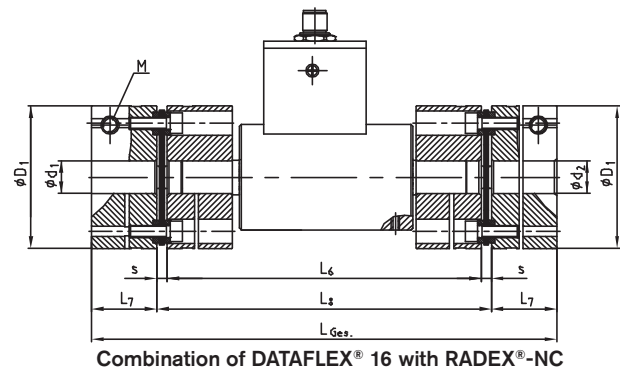
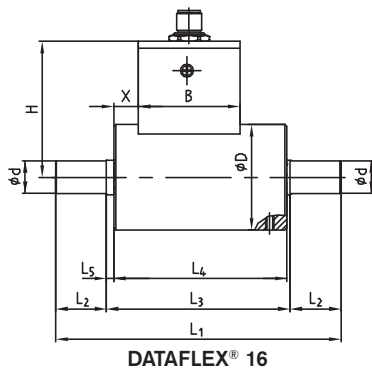
With all DATAFLEX® we recommend the servo lamina coupling RADEX®-NC and the steel lamina coupling RADEX®-N, a compact solution which can be quickly integrated having a high stiffness. In general it is also possible to use backlash-free plug-in couplings such as ROTEX® GS or integrate an overload coupling.



Type 16/10, 16/30, 16/50



- Precision measuring shaft for low torques
- Inaccuracy < 0,1 % of the final value
- Double channel speed measurement at 360 pulses/revolution
- Reliable values measured in the machine control, process control, test stand dynamometers
- Space-saving combination with servo lamina coupling RADEX®-NC
- Compensating for angular, radial and axial displacements



General features										
DATAFLEX® Type	Rated torque T _{KN} [Nm]		Distribution voltage [V]		Current consumption [mA]			Nominal temperature range [°C]		
16/10	-10 ... +10		24 ± 4		< 100			0 ... 55		
16/30	-30 ... +30									
16/50	-50 ... +50									
Technical data torque signal					Technical data speed signal					
DATAFLEX® Type	Inaccuracy ^{1, 2)} [%]	Output voltage [V]	Band width [kHz]	Influence of temperature ¹⁾ [%/10 °C]	Resolution (pulses/rev.)	Number of channels	Square wave signal ³⁾ [Vss]	Direct-voltage signal ³⁾ (V)	Direction signal ³⁾ [V]	
16/10	<0,1	-10 ... 10	2	0,05	360	2, 90° offset	5/24	0 ... 10 to be scaled	5/24	
16/30										
16/50										
Mechanical data of torque measuring shaft										
DATAFLEX® Type	Static load limit T _{K max} [%] ¹⁾	Breaking load T _{K Break} [%] ¹⁾	Max. bending moment [Nm]	Max. radial force [N]	Max. axial force [kN]	Weight [kg]	Torsion spring stiffness C _T [Nm/rad]	Twisting angle with T _{KN} [°]	Mass moment of inertia [kgmm²]	Max. speed [rpm]
16/10	150	300	1,07	12	1,1	0,69	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		

Dimensions (mm) of torque measuring shaft and coupling combination																		
DATAFLEX® Type	d	D	L ₁	L ₂	L ₃	L ₄	L ₅	H	B	X	RADEX®-NC Size	D ₁	d ₁ /d ₂ max	s	L ₆	L ₇	L ₈	L _{Ges.}
16/10											20	59	25	4	138	24	146	194
16/30	16	52	140	25	90	85	3,5	67	50	12	25	70	35	5	154	32	164	228
16/50																		

¹⁾ Referring to T_{KN}

²⁾ Errors in linearity incl. hysteresis

³⁾ See page 314: connection housing DF2

Type 16/10, 16/30, 16/50 – Accessories: RADEX®-NC Servo laminae coupling

Mechanical data of the combination DATAFLEX® 16 and RADEX®-NC									
DATAFLEX® Type	RADEX®-NC Size	Coupling				Mechanical data of the entire system			
		Torque [Nm]		Clamping screw M		Mass moment of inertia [kgmm²]	Torsion spring stiffness C_T [Nm/rad]	Weight [kg]	Max. speed [rpm] ⁴⁾
		T_{KN}	$T_{K \max}$	M	T_A [Nm]				
16/10	20	30	60	M6	10	177	860	1,30	6000
16/30	25	60	120	M8	25	416	2600	1,75	
16/50							3600	1,75	

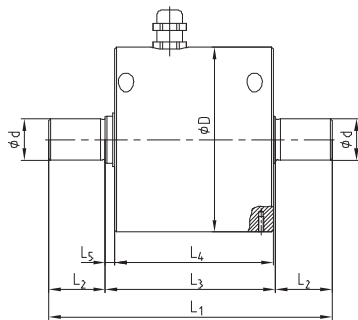
⁴⁾ Higher speed on request

Order form	DATAFLEX® 16/30	DF2	2 m	RADEX®-NC 25 EK Ø16/20-Ø16/30
Type of measuring shaft with measuring range	Connection housing (cannot be freely selected)		Length of connection cable in metres	In case that accessories are requested: coupling type, finish bores d/d ₁ -d/d ₂

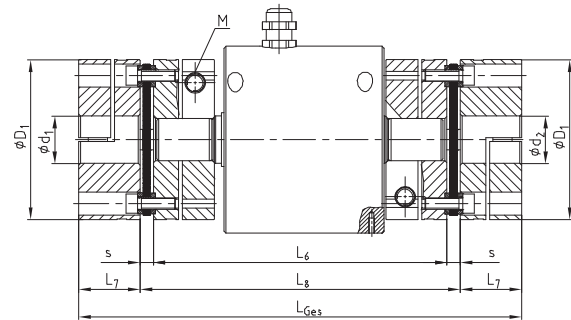
Type 22/20, 22/50, 22/100



- DATAFLEX® 22 for low torques
- Contactless measurement
- Integrated speed signal
- Very wide signal band width
- Reliable values measured in the machine control, process control and test stand dynamometers
- Space-saving combination with servo lamina coupling RADEX®-NC
- Compensating for angular, radial and axial displacements



DATAFLEX® 22



Combination of DATAFLEX® 22 with RADEX®-NC

General features										
DATAFLEX® Type	Rated torque T _{KN} [Nm]		Distribution voltage [V]			Current consumption [mA]		Nominal temperature range [°C]		
22/20	-20 ... +20		24 ±4			<100		0 ... 55		
22/50	-50 ... +50									
22/100	-100 ... +100									
Technical data torque signal						Technical data speed signal				
DATAFLEX® Type	Inaccuracy ¹) [%]	Output voltage [V]	Output of current [mA]	Band width [kHz]	Influence of temper- ature ¹)[%/10 °C]	Resolution (pulses/rev.)	Number of channels	Square wave signal ²) [Vss]	Direct-voltage signal ²) [V]	Direction signal ²) [V]
22/20	< ±0,5	0 ... 10	4 ... 20	16	0,5	60	1	5/24	0 ... 10, to be scaled	–
22/50										
22/100										
Mechanical data of torque measuring shaft										
DATAFLEX® Type	Static load limit T _K max [%] ¹)	Breaking load T _K Break [%] ¹)	Max. bending moment [Nm]	Max. radial force [N]	Max. axial force [kN]	Weight [kg]	Torsion spring stiffness C _T [Nm/rad]	Twist angle with T _{KN} [°]	Mass moment of inertia [kgm²]	Max. speed [rpm]
22/20	150	300	5	42	3	1,5	2865	0,4	0,000131	8000
22/50			10	84	5		7163		0,000132	
22/100			18	150	7,5		14325		0,000134	

Dimensions (mm) of torque measuring shaft and coupling combination															
DATAFLEX® Type	d	D	L ₁	L ₂	L ₃	L ₄	L ₅	RADEX®-NC Size	D ₁	d ₁ /d ₂ max	s	L ₆	L ₇	L ₈	L _{Ges.}
22/20	22	98	150	30	90	84	5	25	70	35	5	154	32	164	228
22/50								35	84	40	7	160	35	174	224
22/100															

¹⁾ Referring to T_{KN}

²⁾ See page 314: connection housing DF2

Type 22/20, 22/50, 22/100 – Accessories: RADEX®-NC Servo laminae coupling

Mechanical data of the combination DATAFLEX® 22 and RADEX®-NC									
DATAFLEX® Type	RADEX®-NC Size	Coupling				Mechanical data of the entire system			
		Torque [Nm]		Clamping screw M		Mass moment of inertia [kgm²]	Torsion spring stiffness C_T [Nm/rad]	Weight [kg]	Max. speed [rpm] ³⁾
		T_{KN}	T_K max.	M	T_A [Nm]				
22/20	25	60	120	M8	25	0,00094	2521	2,56	6000
22/50	35	100	200	M10	49	0,002	6383	3,15	
22/100							11448	3,16	

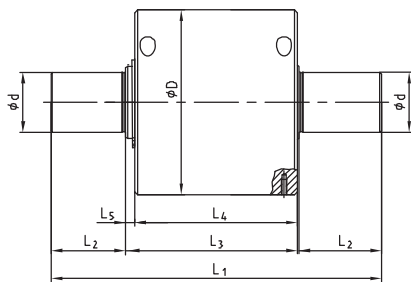
³⁾ Higher speed on request

Order form	DATAFLEX® 22/50	DF2	2 m	RADEX®-NC 35 EK Ø22/30-Ø22/35
	Type of measuring shaft with measuring range	Connection housing (cannot be freely selected)	Length of connection cable in metres	In case that accessories are requested: coupling type, finish bores d/d ₁ -d/d ₂

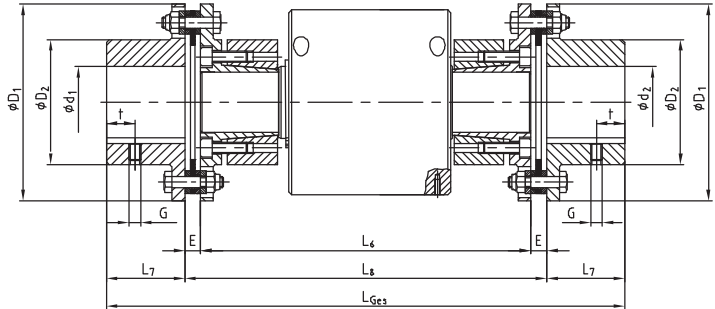
Type 42/200, 42/500, 42/1000



- DATAFLEX® 42 for middle torques
- Contactless measurement
- Integrated speed signal
- Very wide signal band width
- Reliable values measured in the machine control, process control and test stand dynamometers
- Space-saving combination with servo lamina coupling RADEX®-N
- Compensating for angular, radial and axial displacements



DATAFLEX® 42



Combination of DATAFLEX® 42 with RADEX®-N

General features										
DATAFLEX® Type	Rated torque T _{KN} [Nm]		Distribution voltage [V]			Current consumption [mA]		Nominal temperature range [°C]		
42/200	-200 ... +200		24 ± 4			< 100		0 ... 55		
42/500	-500 ... +500									
42/1000	-1000 ... +1000									
Technical data torque signal						Technical data speed signal				
DATAFLEX® Type	Inaccuracy ¹) [%]	Output voltage [V]	Output of current [mA]	Band width [kHz]	Influence of temper- ature ¹) [%/10 °C]	Resolution (pulses/rev.)	Number of channels	Square wave signal ²) [Vss]	Direct-voltage signal ²) [V]	Direction signal ²) [V]
42/200										
42/500	< ±0,5	0 ... 10	4 ... 20	16	0,5	60	1	5/24	0 ... 10, to be scaled	–
42/1000										
Mechanical data of torque measuring shaft										
DATAFLEX® Type	Static load limit T _K max [%] ¹)	Breaking load T _K Break [%] ¹)	Max. bending moment [Nm]	Max. radial force [N]	Max. axial force [kN]	Weight [kg]	Torsion spring stiffness C _T [Nm/rad]	Twist angle with T _{KN} [°]	Mass moment of inertia [kgm²]	Max. speed [rpm]
42/200			50	280	12	4,71	40929		0,0007343	
42/500	150	300	135	750	20	4,84	102321	0,28	0,0007603	6000
42/1000			270	1500	30	5,01	204643		0,0008048	

Dimensions (mm) of torque measuring shaft and coupling combination																
DATAFLEX® Type	d	D	L ₁	L ₂	L ₃	L ₄	L ₅	RADEX®-N Size	D ₁	D ₂	d ₁ /d ₂ max	E	L ₆	L ₇	L ₈	L _{Ges.}
42/200								60	138	88	60	11	232	55	254	364
42/500	42	130	232	55	122	114	6,5									
42/1000								80	179	117	80	14	242	75	270	420

¹⁾ Referring to T_{KN}

²⁾ See page 314: connection housing DF2

Type 42/200, 42/500, 42/1000 – Accessories: RADEX®-N Steel laminae coupling

Mechanical data of the combination DATAFLEX® 42 and RADEX®-N											
DATAFLEX® Type	RADEX®-N Size	Coupling						Mechanical data of the entire system			
		Torque [Nm]			Clamping screw M			Mass moment of inertia [kgm²]	Torsion spring stiffness C_T [Nm/rad]	Weight [kg]	Max. speed [rpm] ³⁾
		T_{KN}	T_K max.	T_{KW}	G	t	T_A [Nm]				
42/200	60	690	1380	±230	M8	20	10	0,0173	29605	13,90	6000
42/500								0,0174	52304	14,03	
42/1000	80	1500	3000	±500	M10	20	17	0,0569	86888	24,39	5100

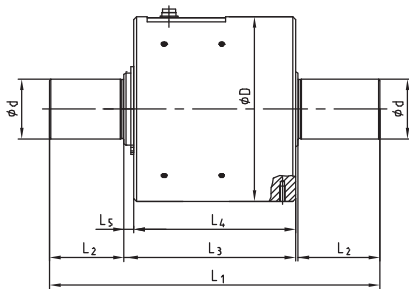
³⁾ Higher speed on request

Order form	DATAFLEX® 42/500	DF2	2 m	RADEX®-N 60 NN Ø42/50NnD-Ø42/60NnD
	Type of measuring shaft with measuring range	Connection housing (cannot be freely selected)	Length of connection cable in metres	In case that accessories are requested: coupling type, finish bores d/d ₁ -d/d ₂

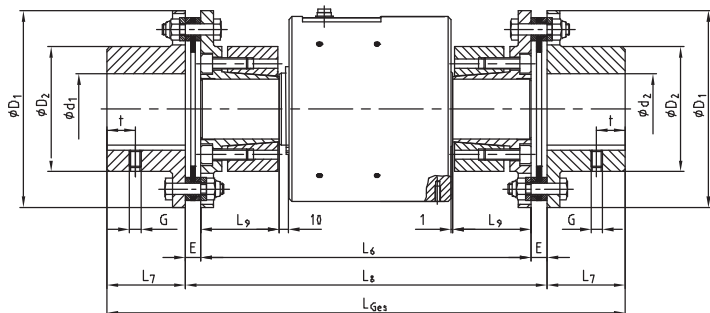
Type 85/2000, 85/5000, 85/10000



- DATAFLEX® 85 for high torques
- Contactless measurement
- Integrated speed signal
- Very wide signal band width
- Reliable values measured in the machine control, process control and test stand dynamometers
- Space-saving combination with servo lamina coupling RADEX®-N
- Compensating for angular, radial and axial displacements



DATAFLEX® 85



Combination of DATAFLEX® 85 with RADEX®-N

General features										
DATAFLEX® Type	Rated torque T _{KN} [Nm]		Distribution voltage [V]			Current consumption [mA]		Nominal temperature range [°C]		
85/2000	-2000 ... +2000		24 ±4			<100		0 ... 55		
85/5000	-5000 ... +5000									
85/10000	-10000 ... +10000									
Technical data torque signal						Technical data speed signal				
DATAFLEX® Type	Inaccuracy ¹) [%]	Output voltage [V]	Output of current [mA]	Band width [kHz]	Influence of temper- ature ¹) [%/10 °C]	Resolution (pulses/rev.)	Number of channels	Square wave signal ²) [Vss]	Direct-voltage signal ²) [V]	Direction signal ²) [V]
85/2000										
85/5000	< ±0,5	0 ... 10	4 ... 20	16	0,5	60	1	5/24	0 ... 10, to be scaled	–
85/10000										
Mechanical data of torque measuring shaft										
DATAFLEX® Type	Static load limit T _K max [%] ¹)	Breaking load T _K Break [%] ¹)	Max. bending moment [Nm]	Max. radial force [N]	Max. axial force [kN]	Weight [kg]	Torsion spring stiffness C _T [Nm/rad]	Twist angle with T _{KN} [°]	Mass moment of inertia [kgm²]	Max. speed [rpm]
85/2000			380	1500	50	22,61	382000	0,30	0,01636	
85/5000	150	300	760	3000	80	23,23	818570	0,35	0,01679	2500
85/10000			1270	5000	110	23,85	1273330	0,45	0,01742	

Dimensions (mm) of torque measuring shaft and coupling combination																	
DATAFLEX® Type	d	D	L ₁	L ₂	L ₃	L ₄	L ₅	RADEX®-N Size	D ₁	D ₂	d ₁ /d ₂ max	E	L ₆	L ₇	L ₈	L ₉	L _{Ges.}
85/2000								105	225	147	105	20	344	90	384	90	564
85/5000	85	215	344	90	164	153	10	115	265	163	115	23	364	100	410	100	610
85/10000								135	305	184	135	27	434	135	488	135	758

¹⁾ Referring to T_{KN}

²⁾ See page 314: connection housing DF2

Type 85/2000, 85/5000, 85/10000 – Accessories: RADEX®-N Steel laminae coupling

Mechanical data of the combination DATAFLEX® 85 and RADEX®-N											
DATAFLEX® Type	RADEX®-N Size	Coupling						Mechanical data of the entire system			
		Torque [Nm]			Clamping screw M			Mass moment of inertia [kgm²]	Torsion spring stiffness C_T [Nm/rad]	Weight [kg]	Max. speed [rpm] ³⁾
		T_{KN}	$T_{K \max}$	T_{KW}	G	t	T_A [Nm]				
85/2000	105	5100	10200	1700	M12	30	40	0,2250	29300	61,48	
85/5000	115	9000	18000	3000	M12	30	40	0,4735	55600	85,62	2500
85/10000	135	12000	24000	4000	M20	40	140	1,0067	92800	130,16	

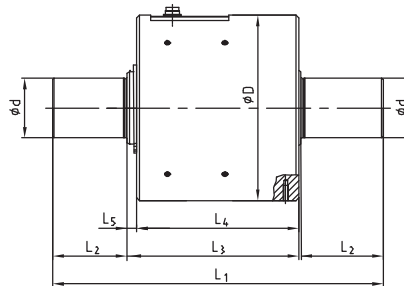
³⁾ Higher speed on request

Order form	DATAFLEX® 85/5000	DF2	2 m	RADEX®-N 115 NN Ø65/60NnD-Ø65/70NnD
	Type of measuring shaft with measuring range	Connection housing (cannot be freely selected)	Length of connection cable in metres	In case that accessories are requested: coupling type, finish bores d/d ₁ -d/d ₂

Type 140/20000, 140/50000



- DATAFLEX® 140 for high torques
- Contactless measurement
- Integrated speed signal
- Very wide signal band width
- Reliable values measured in the machine control, process control and test stand dynamometers
- Coupling on request



DATAFLEX® 140

General features										
DATAFLEX® Type	Rated torque T _{KN} [Nm]		Distribution voltage [V]			Current consumption [mA]		Nominal temperature range [°C]		
140/20000	-20000 ... +20000		24 ±4			< 100		0 ... 55		
140/50000	-50000 ... +50000									
Technical data torque signal						Technical data speed signal				
DATAFLEX® Type	Inaccuracy ¹) [%]	Output voltage [V]	Output of current [mA]	Band width [kHz]	Influence of temper- ature ¹)[%/10 °C]	Resolution (pulses/rev.)	Number of channels	Square wave signal ²)[Vss]	Direct-voltage signal ²) [V]	Direction signal ²) [V]
140/20000	< ±0,5	0 ... 10	4 ... 20	16	0,5	60	1	5/24	0 ... 10, to be scaled	—
140/50000										
Mechanical data of torque measuring shaft										
DATAFLEX® Type	Static load limit T _K max [%] ¹)	Breaking load T _K Break [%] ¹)	Max. bending moment [Nm]	Max. radial force [N]	Max. axial force [kN]	Weight [kg]	Torsion spring stiffness C _T [Nm/rad]	Twist angle with T _{KN} [°]	Mass moment of inertia [kgm²]	Max. speed [rpm]
140/20000	150	300	2750	8000	100	73,9	3935000	0,30	0,17	2000
140/50000			5500	16000	160	76,5	6750000	0,42	0,175	
Dimensions (mm) of torque measuring shaft										
DATAFLEX® Type	d	D	L ₁	L ₂		L ₃	L ₄		L ₅	
140/20000	140	280	486	140		206	191		13	
140/50000										

¹⁾ Referring to T_{KN}

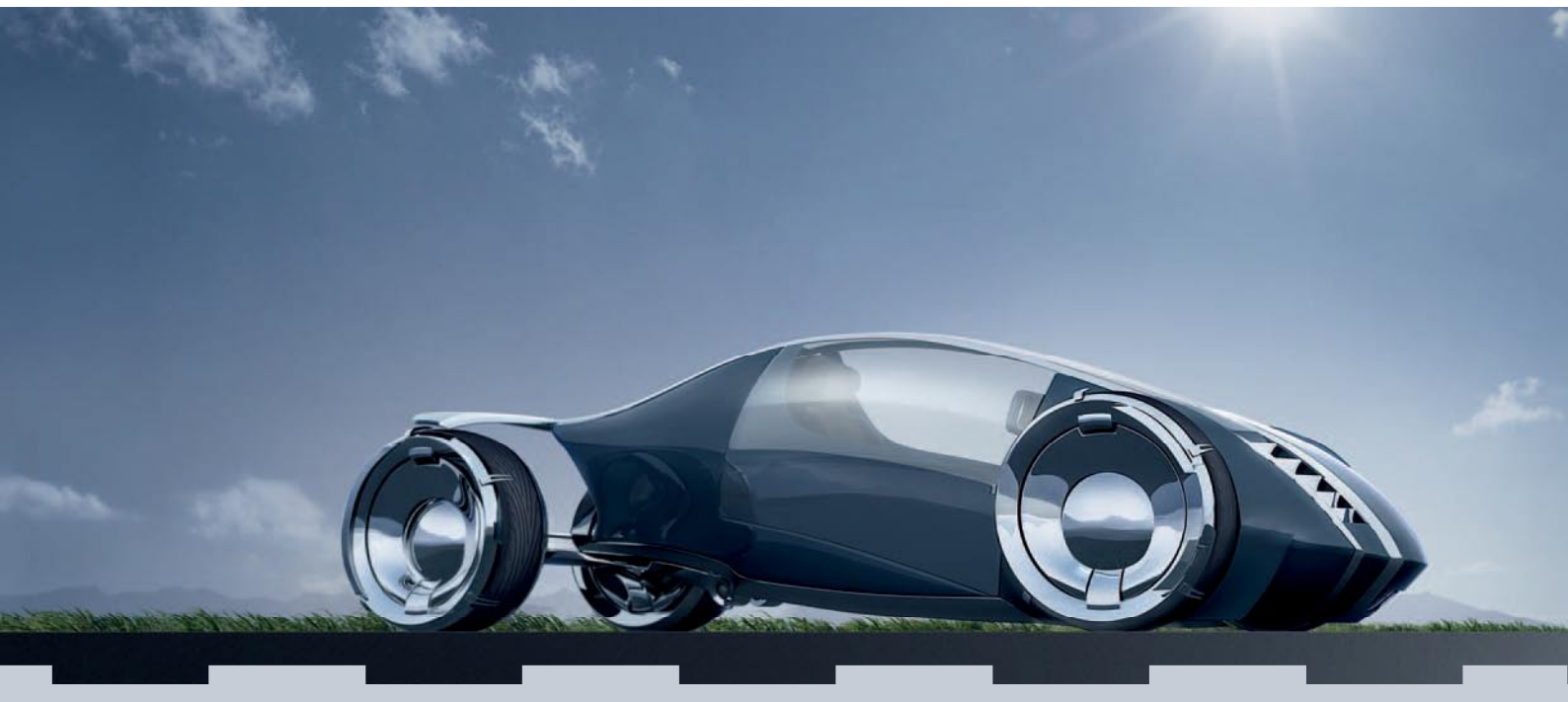
²⁾ See page 314: connection housing DF2

Order form	DATAFLEX® 140/50000	DF2	2 m
Type of measuring shaft with measuring range	Connection housing (cannot be freely selected)		Length of connection cable in metres

Connecting housing DF2 and connecting cable



- Overall solution for all DATAFLEX® series
- Comfortable speed output
Pulse output points with reversible signal levels (5V/24V)
Direct voltage output to be scaled via integrated frequency voltage converter (0 – 10V)
Direction signal (DATAFLEX® 16)
- Adjustable output filter for torque output
- Assembly of top hat rail
- Integrated caliper for automatic zero point correction
- Cable lengths of 2m, 5m and 10m available



Full speed ahead for green drives

Internal combustion engines are extensively used today, but times are changing. Fossil fuels are not available in sufficient quantities any longer. The future belongs to alternative types of energy. That is why the mobile world of the future needs hybrid and electric motors and energy efficient drives to use solar energy as well as wind and water power. Mechanical engineering is becoming greener.

Keeping up with the times: BoWex®

KTR shaft couplings are widely used in mechanical engineering, for example the curved-tooth gear coupling BoWex®. It has been successful for over 50 years and is said to be synonymous with maintenance-free, torsionally stiff shaft couplings in the international market. Today it is available in numerous designs and is indispensable, among others, in the automobile industry. It allows for a positive-locking power transmission and compensates for axial, radial and angular displacements.

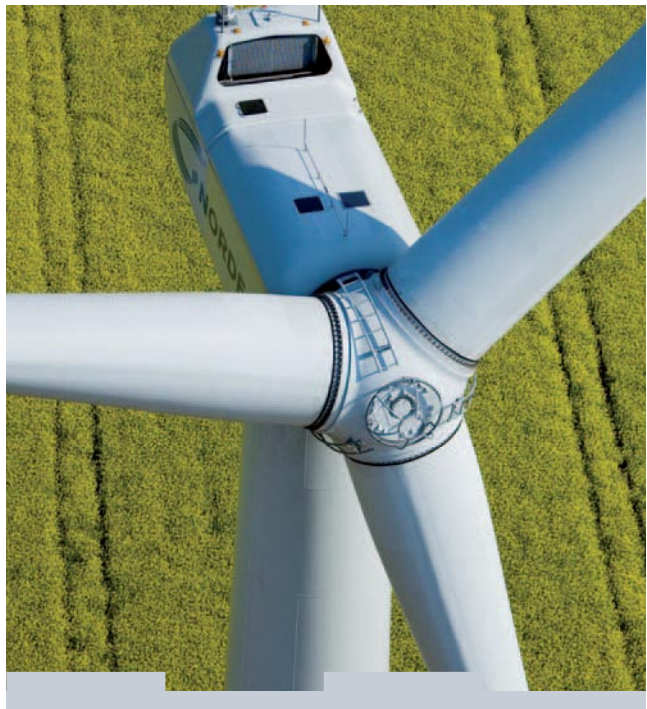
At the same time our experience in the wind energy technology where the electric insulation needs to be assured with larger dimensions and higher amps than with electric vehicles is proof of our competence with electric drives. Thus, for the automobile industry we can already offer a coupling covering all demands: a specifically adapted type of BoWex®. A further development of the classical BoWex® it is assembled directly between electric motor and cylindrical gear,

compensates for misalignment and prevents current flow.

The sun, the wind, the sea and more

For today's engineers the sun, the wind and the sea are not a hint to holidays, but work, along with a huge innovation potential. They are aiming at converting regenerative energy into usable power. KTR is the right partner for that purpose.

KTR products are indispensable in wind energy technology but they are part of many other future technologies as well. As an example, the backlash-free, flexible ROTEX® GS coupling, is most suitable for precision operations: for positioning pods of wind power stations, for aligning solar paddles and for the hybrid drives of some passenger vehicles. In hydropower plants KTR couplings can be used on main and auxiliary drives of Pelton or bulb turbines. This is only the very beginning.



Wind: Immeasurable power?

If a manufacturer wants to determine the power in the drive train in detail, it is possible to use the torque measuring shaft DATAFLEX® developed by KTR. It can easily be installed with the approved RADEX®-N, performing accurate torque and speed measurement continuously both on the main drive and on the azimuth and pitch drive. This allows for planned preventative maintenance to take place.

Water: Pure energy by motion

The use of wave energy is currently under development as well, for example in a wave power station off the Portuguese coast. Thick steel pipes form the segments of the "sea snake" having a length of 150 metres which is moved by sea waves in a way that the segments are displaced against each other. This movement is absorbed by a hydraulic system driving the generators to produce current. The power transmission is transmitted utilising the ROTEX® couplings from KTR.

**New Technology
for the Next Generation**

Alternative Drives and Renewable Energy

Made for Motion **KTR**

For further details please have a look at our latest leaflet „New Technology for the Next Generation“ which you can either order from us or download on our homepage.



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