Couplings for pumps and compressors

Perfect power transmission for all media

Made for Motion KTR

www.ktr.com

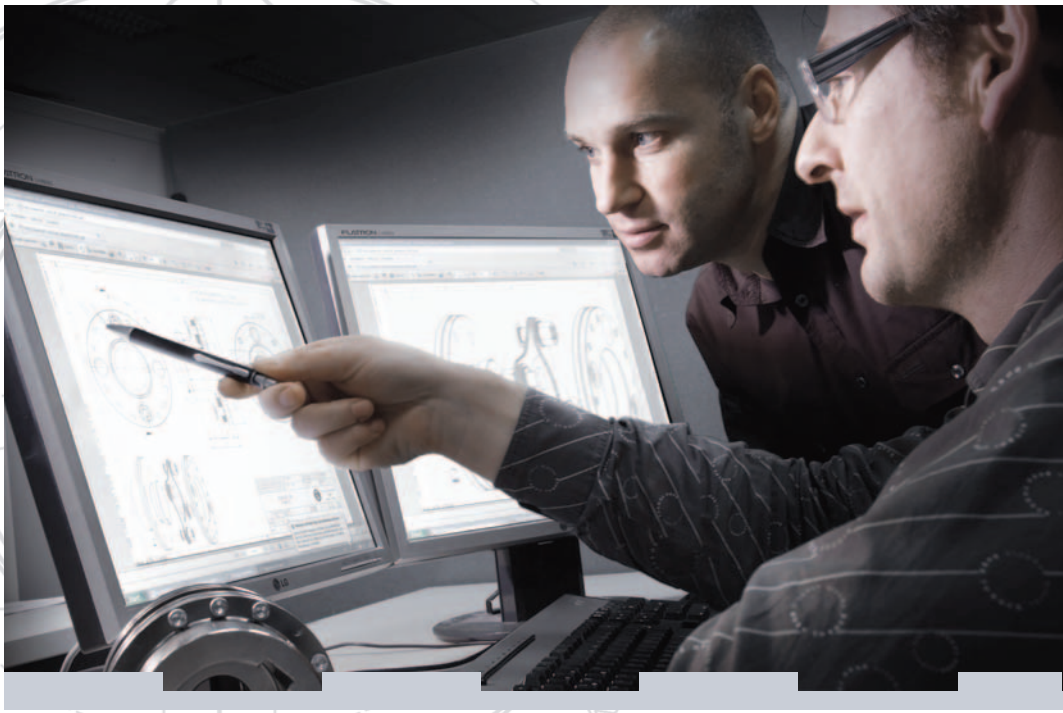
If you want to set things in motion: KTR

Competence meets creativity

As a leading manufacturer of high-quality drive components, KTR supplies mechanical couplings, clamping sets, torque limiters, torque measuring systems and hydraulic components 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 0,15 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 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 the uppermost satisfaction to our customers.

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. Depending on your application 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 Euro 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

Ask somebody who knows all about it

Pumps are the main energy users in the industry, while almost every pump drive requires a coupling compensating for shaft misalignment and reducing vibrations causing problems. The coupling can have a major influence both on the operating expenses and the service life of the pump. This is why KTR have extended their product range, specifically for pump drives, in recent times, so that they now offer the pump industry a full portfolio of torsionally flexible and torsionally rigid shaft couplings, covering very high torque ranges.

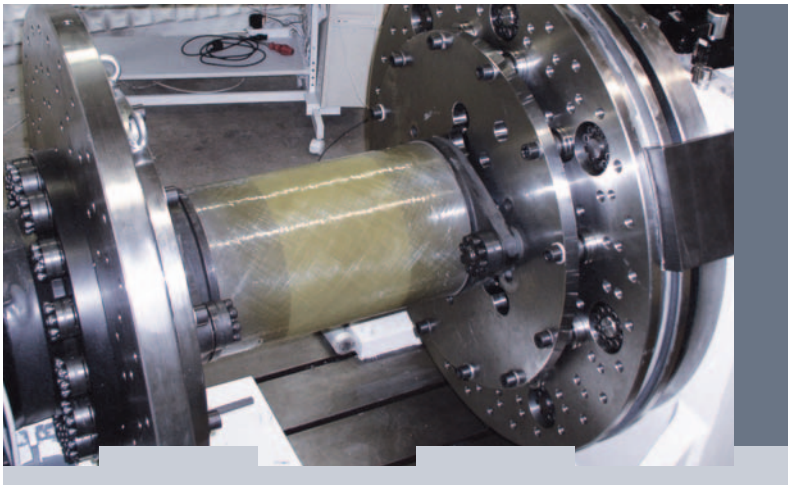
Product Manager for the pump industry

For customers requiring a qualified, technical support and advisory service, wishing to purchase couplings from one single source, we have dedicated product managers for the pump industry. As a result of this, we not only offer consultation, but detailed support with the selection of the correct coupling. KTR has sixty specialists working in our design & engineering department using the latest CAD software which enables us to design customers bespoke solutions in a matter of hours. KTR's test bench is available for the testing of entire drive systems including pumps. KTR's international presence in every main industrial market assures that users throughout the world get immediate support whenever necessary.

Perfect fit for every size

In addition to our extensive standard range of products, we develop thousands of customised solutions every year. The compact, maintenance-free KTR couplings are used on every kind of pumps, either for fluid or gaseous media, on vacuum pumps and compressors. Our range of applications covers everything from small water pumps to huge irrigating plants and large turbines. They are also used in nuclear power stations, with LCD production and isocyanate foaming processes. Last but not least KTR is one of the leading manufacturers of shaft couplings for the chemical industry.

Photo: KSB



Use approved products only!

Quality and safety

Our quality management system has been certified since 1993 to DIN EN ISO 9001 – now DIN EN ISO 9000-2000 – our environmental management is in accordance with DIN EN ISO 14001. This means that our couplings have not only been tested for quality, safety and environmental compatability, but also satisfy the requirements for all preparations starting with the correct selection of the products and the reliable handling of orders. In addition, we have approvals from most of the main classification approval companies.

In our Research and Development Centre we are testing new products to determine their technical parameters. Based on such parameters we reproduce simulations of torsional vibrations that are particularly important for pumps and compressors. Our in-house software ensures a safe selection of the couplings. It goes without saying that the KTR couplings correspond to the special requirements of the pump industry, in particular API 610, 671 and 685.

KTR is actively associated with governing associations, for example with the introduction of the ATEX product standard 94/9/EC, well-known as ATEX 95. The standard defines the use of products in flame-proof areas. We are here to support you, to make sure that you adhere to every safety standard and to advise you of the necessary markings. The ATEX certification of KTR couplings for pumps and compressors are listed at www.ktr.com.

Please read through our leaflet about explosion protection and consult with our technical sales engineers or your local KTR office. See our web site for your nearest location.

Full range for all media

Products for pumps and compressors

KTR offers you an extensive product range of flexible and torsionally stiff couplings, with or without a spacer, both for universal applications and particularly difficult ambient conditions.

- For Pumps:

The torsionally flexible jaw coupling ROTEX®, the short, axial plug-in, torsionally flexible, failsafe jaw coupling POLY-NORM® and the non-failsafe POLY coupling as well as the torsionally rigid, backlash-free steel lamina couplings RADEX®-N and RIGIFLEX®-N. The double-cardanic design was developed particularly for pump drives. It corresponds to API 610 or 671 and accepts temperatures between -30 °C and 280 °C thanks to its all-steel design. For a non-contact torque transmission in pumps for aggressive and toxic media the permanent magnetic coupling MINEX® is used. DATAFLEX® has proven its worth as an accurate measuring device for development and quality assurance.

- For mobile compressors:

The highly flexible flange coupling BoWex-ELASTIC® or DATAFLEX®

- For stationary compressors:

ROTEX®, RADEX®-N, RIGIFLEX®-N, BoWex-ELASTIC® or DATAFLEX®

- For vacuum pumps:

ROTEX® and ROTEX® FNN with fan, in addition BoWex®, POLY-NORM®, MINEX® or DATAFLEX®

Innovations and special designs

Pump drives often require compensation for large shaft displacements, particularly when delivering hot media. This compensation cannot be guaranteed by single-cardanic couplings, but only by double-cardanic couplings like ROTEX® ZS-DKM-H which was specifically developed for pump drives. This coup-

ling, which can be disassembled, is able to compensate for high shaft displacements, whilst at the same time transmitting the torque safely and in this way increasing the overall service life of all adjacent components and reducing the life cycle costs (LCC) considerably. Since the shell hubs can be assembled -and disassembled by means of 4 screws, ROTEX® ZS-DKM-H in addition facilitates the service.

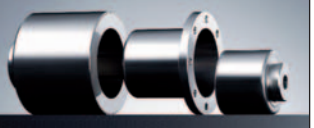
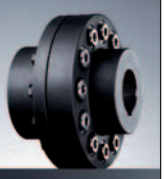
Thanks to our wide range of spider elastomers, the jaw couplings ROTEX® and POLY-NORM® meet with numerous different demands. The latest materials are characterised by highest temperature resistance and excellent resistance to wear. They are resistant to hydrolysis and chemicals and have excellent emergency running properties.

Another specific type is ROTEX® FNN with a fan either injection-moulded or screwed on. The compact system solution makes a separate fan superfluous even with high temperatures. This solution facilitates the assembly, saves space and cost.

The use of new technologies allows us to offer special types of steel lamina couplings RADEX®-N and RIGIFLEX®-N with highly stiff GFK or CFK spacers. This allows us to bridge large shaft distances without causing any weight problems – they are ideal for use on large pumps in irrigation systems.

Most suitable for high torques is the torsionally flexible, failsafe pin & bush coupling REVOLEX® KX which can be used up to 400.000 Nm. It can be plugged in axially and is extremely short so that it is able to meet very short shaft distance dimensions. REVOLEX® KX compensates for axial, radial and angular shaft misalignment. Its elastomer rings are resistant to petrol and oils and can be replaced whilst still assembled.

KTR couplings for pumps and compressors

Couplings	Performance parameters	Slide vane rotary vacuum pump	Roots vacuum pumps	Stationary screw compressors	Piston compressors/ turbocompressors	Mobile screw compressors	Rotary/centrifugal pumps	Rotary/centrifugal pumps for diesel engines	Pumps connected to magnets	API
RIGIFLEX®-N 	• Steel laminae coupling • Spacers up to a shaft distance dimension of 6 m • Temperature range up to 280 °C • Max. shaft diameter up to 400 mm • Torque range up to T_{KN} = 280.000 Nm			■	■		■			610 / 671
RADEX®-N 	• Steel laminae coupling • Spacers up to a shaft distance dimension of 6 m • Temperature range up to 280 °C • Max. shaft diameter up to 330 mm • Torque range up to T_{KN} = 280.000 Nm			■	■		■			610
MINEX®-S 	• Permanent-magnetic synchronous coupling • Contactless torque transmission • Hermetic separation of driving and driven side • In conformity with the environment and safe with processes • Maintenance-free • Temperature range up to 300 °C • Torque range up to T_{KN} = 1000 Nm								■	685
ROTEX® 	• Torsionally flexible jaw coupling • Fail-safe • Axial plug-in • Damping vibrations/reducing noise • Machined allover • Max. shaft diameter up to 200 mm • Torque range up to T_{KN} = 35.000 Nm	■	■	■						
POLY-NORM® 	• Torsionally flexible jaw coupling for short shaft distances • Fail-safe, axial plug-in • Available from stock with ATEX certification • Damping vibrations/reducing noise • Max. shaft diameter up to 180 mm • Torque range up to T_{KN} = 13.400 Nm			■			■			
POLY 	• High misalignments, low restoring forces • Increasing the entire service life of all adjacent components • Standard spacers up to 250 mm available from stock • Max. shaft diameter up to 180 mm • Torque range up to T_{KN} = 14.300 Nm	■	■	■			■			
REVOLEX® KX 	• Torsionally flexible pin & bush coupling • Maintenance-free, damping vibrations • Radial assembly • Fail-safe • Max. shaft diameter up to 450 mm • Torque range up to T_{KN} = 377.800 Nm		■	■			■			
BoWex-ELASTIC® 	• Highly flexible curved-tooth flange coupling • Elastomer made from natural rubber • Flange dimensions according to SAE 6 ½“ to 21” • Max. shaft diameter up to 150 Nm • Torque range up to T_{KN} = 9.000 Nm		■			■		■		

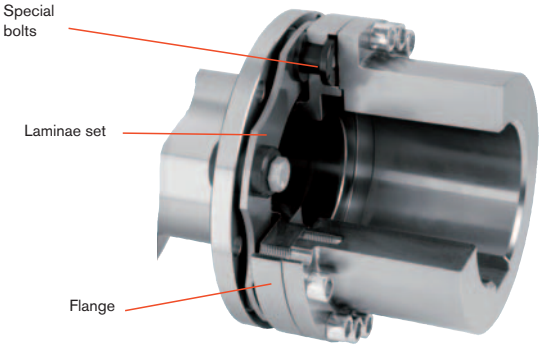
The table above shows the right coupling for every application.

Overview

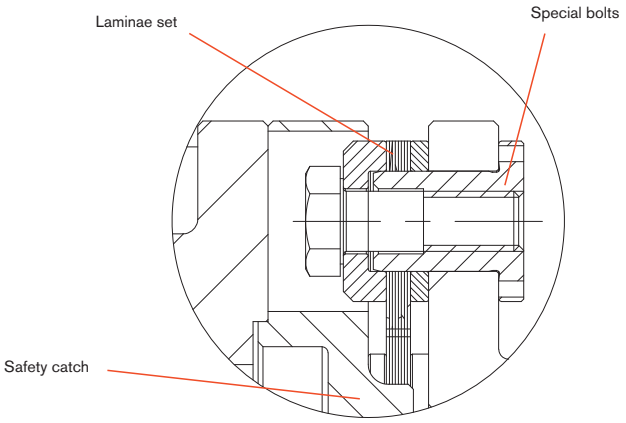
Description of coupling

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 developped 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 240 Nm to 280.000 Nm are available in 15 sizes for an optimum adjustment to the different applications.

RIGIFLEX® N laminae
RIGILFEX®-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 preassembled by the manufacturer.



Explosion protection use
RIGIFLEX®-N 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.
Further information about this topic under www.ktr.com.

Technical data

Torques, misalignments										
Size	Torque [Nm]			Permissible misalignments						
	T_{KN}	$T_{K\,max}$	T_{KW}	Angular $\pm K_W$ [1] [°]	Axial $\pm K_A$ [mm]	Radial $\pm K_R$ [mm]				
						E=100	E=140	E=180	E=200	E=250
NEW 50	240	480	120	0,7	1,4	0,79	0,128	-	-	-
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	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
168	23000	46000	11500	0,5	2,6					
198	30000	60000	15000	0,5	2,6					
218	42500	85000	21500	0,5	2,9					
258	70000	140000	35000	0,5	3,5	Mounting dimension E as indicated by the customer				
308	115000	230000	57500	0,5	4,2					
348	180000	360000	90000	0,5	4,8					
408	280000	560000	140000	0,5	5,0					

1) Angular misalignment each laminae

If axial, angular and radial shaft misalignment 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							
NEW 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
168	2,6	2,08	1,56	1,04	0,52	0,0	-	-
198	2,8	2,24	1,68	1,12	0,56	0,0	-	-
218	3,0	2,40	1,80	1,20	0,60	0,0	-	-
258	3,5	2,80	2,10	1,40	0,70	0,0	-	-
308	4,0	3,20	2,40	1,60	0,80	0,0	-	-
348	4,5	3,60	2,70	1,80	0,90	0,0	-	-
408	5,0	4,00	3,00	2,00	1,00	0,0	-	-

Permissible speeds, stiffness									
Size	Max. speed [rpm]	Complete coupling	Laminae		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
NEW 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
168	5600	1230	34000	13200000					
198	5200	1800	58000	18300000					
218	4600	2300	110000	26200000					
258	3900	2950	160000	52000000	Mounting dimension E as indicated by the customer				
308	3300	3400	220000	71000000					
348	2900	3700	290000	108000000					
408	2500	3800	550000	156000000					

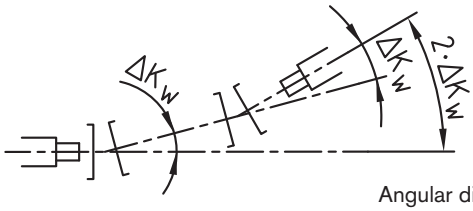
ca = axial stiffness cw = angular stiffness ct = torsion spring stiffness

Coupling selection steel laminae coupling

Description	Code	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 ≥ 10^5 times as spike load or 5 x 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

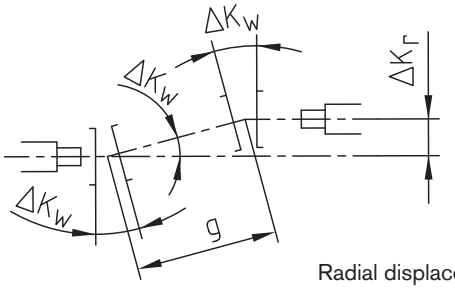
1. **Permissible displacements:**
   ΔK_a: Permissible axial displacement
   ΔK_w: Permissible angular displacement
   ΔK_r: Permissible radial displacement
   The steel laminae couplings are selected in a way that the maximum permissible angular excursion ΔK_w may be compensated by every laminae set. 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".



Angular displacement

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

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



Radial displacement

In the table “Technical data” (RADEX®-N page 17 and RIGIFLEX®-N page 11) 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 12)
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 super-imposed 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 12)
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

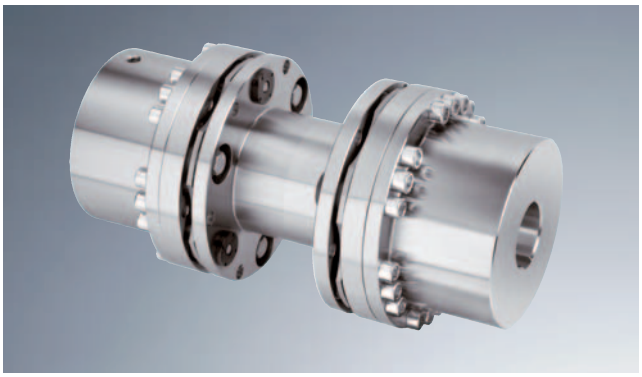
3.2 **Passing through resonance**
The peak torque T_{SR} arising while passing through resonance must not exceed the permissible maximum torque of the coupling T_{Kmax}.

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

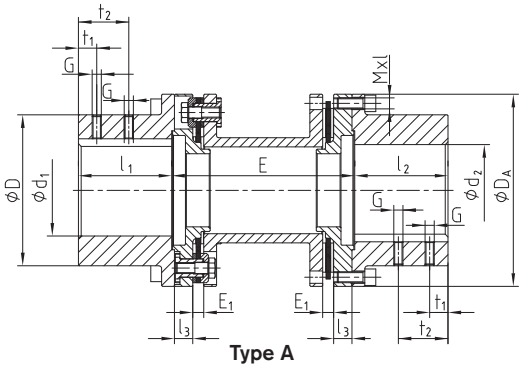
3.3 **Loading by vibratory torque**
The permissible vibratory torque of the coupling T_{KW} must not be exceeded by the maximum
periodic vibratory torque of the machine T_W.

$$T_{KW} \geq T_W$$

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)
- Ⓔx Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)



Type A

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	T_A
NEW 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	-	-	M6x20	14
75	940	1880	470	75	105	138	62,5	12	M8	20	-	10	100	140	180	-	-	M8x20	35
85	1700	3400	850	85	120	156	72,5	15	M10	20	-	12	-	140	180	200	250	M8x25	35
110	2700	5400	1350	110	152	191	87	18	M10	25	-	12	-	140	180	200	250	M10x30	69
120	4500	9000	2250	120	165	213	102	20	M12	25	-	12	-	-	180	200	250	M12x30	120
140	9000	18000	4500	140	200	265	126	25	M12	30	-	15	-	-	-	200	250	M16x40	295
160	13000	26000	6500	160	230	305	145	31	M20	50	-	15	-	-	-	-	250	M16x50	295
168	23000	46000	11500	165	230	305	155	31	M16	30	70	17						M20x50	490
198	30000	60000	15000	190	260	330	185	32	M16	40	90	24						M20x50	490
218	42500	85000	21500	210	285	370	205	32	M20	50	110	26						M20x50	490
258	70000	140000	35000	250	350	440	245	38	M20	70	130	31	acc. to customer's request					M24x60	840
308	115000	230000	57500	300	400	515	294	43	M24	70	130	36						M27x70	1250
348	180000	360000	90000	340	460	590	333	55	M24	95	175	45						M30x120	1700
408	280000	560000	140000	400	530	675	392,5	58,5	M24	95	175	50						M36x100	2800

1) Other shaft distances available on request

For selection of coupling see pages 12/13. Mounting instructions no. 47410 under www.ktr.com.

Weights [kg] / mass moments of inertia x 10^{-3} [kgm²]													
Size	Hub (max. bore)		Spacer complete [kg]					Spacer complete [kgm²]					
	[kg]	[kgm²]	E=100	E=140	E=180	E=200	E=250	E=100	E=140	E=180	E=200	E=250	
NEW 50	0,924	0,001019	2,262	2,442	-	-	-	0,00256	0,00263	-	-	-	
65	2,673	0,00541	3,922	4,183	4,445	-	-	0,00810	0,00830	0,00828	-	-	
75	2,424	0,00566	4,482	4,842	5,202	-	-	0,01143	0,01191	0,01239	-	-	
85	3,742	0,01135	-	7,154	7,548	7,746	8,239	-	0,02364	0,02427	0,02459	0,02538	
110	6,711	0,03222	-	12,492	13,478	13,972	15,205	-	0,06291	0,06540	0,06665	0,06976	
120	9,181	0,05238	-	-	17,324	17,842	19,137	-	-	0,10314	0,10458	0,10818	
140	18,211	0,15175	-	-	-	32,530	34,325	-	-	-	0,31901	0,32845	
160	29,868	0,33890	-	-	-	-	52,458	-	-	-	-	0,68640	
168	29,9	0,328											
198	39,9	0,557											
218	52,0	0,880											
258	98,8	2,431	Mounting dimension E as indicated by the customer										
308	141,7	4,780											
348	221,5	9,833											
408	325,1	19,220											

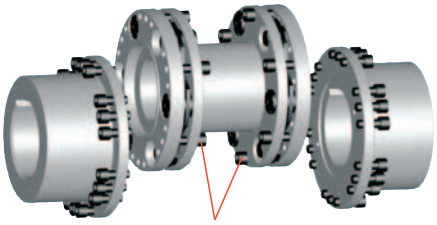
Order form:

RIGIFLEX®-N 120	A	Ø 100	Ø 120	200
Coupling size	Type	Bore d_1	Bore d_2	Shaft distance dimension E

Other types

Assembly

The spacers of RIGIFLEX®-N have with drawing screws, serving for disassembly and assembly. The screws make sure that the adapter flanges are drawn in the direction of the spacer and consequently slip off the centering in order to assure a radial disassembly of the spacer including the laminae sets.



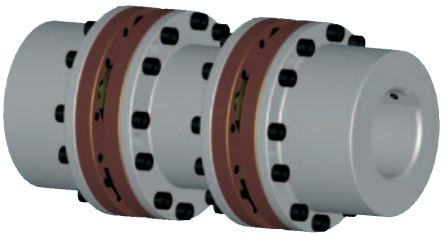
NON SPARKING

Basically the NON SPARKING couplings of KTR are provided with a safety stop as described in the API 671 standard. In this way it is assured that sparks cannot be produced by rotating coupling parts, since the spacer is kept inside the coupling in case that the laminae fail.

Moreover, the special materials of the parts that are stressed in case that the laminae fail avoid the production of impact or friction sparks.

The laminae and pins of RIGIFLEX®-N are made from MONEL. The spacers of NON SPARKING designs are basically made from stainless materials, since they are considered to be generally recognized as safe in combination with copper alloys.

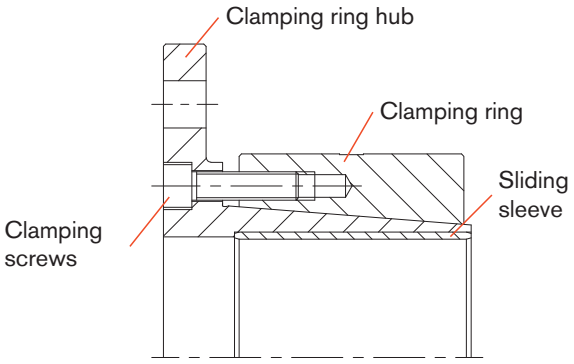
Due to the special materials used the transmittable torques are reduced compared to the standard series.



Integrated overload protection

A clamping ring hub with integrated sliding sleeve is used. If too high torques occur in the drive train, the clamping ring hub slips through on the shaft with the sliding sleeve. The shaft is not damaged; the sleeve serves as wearing part that must be exchanged if necessary.

The slipping torque can be adjusted through the tightening torque of the clamping screws.



RADEX®-N with an electrically insulating spacer from GRP.

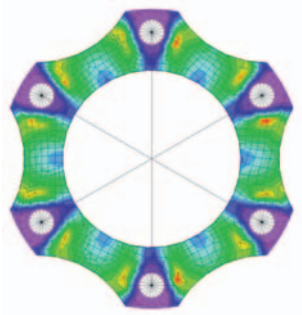
RADEX®-N with spacer from CFRP to bridge lager shaft distances with a very favourable weight ratio.

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.

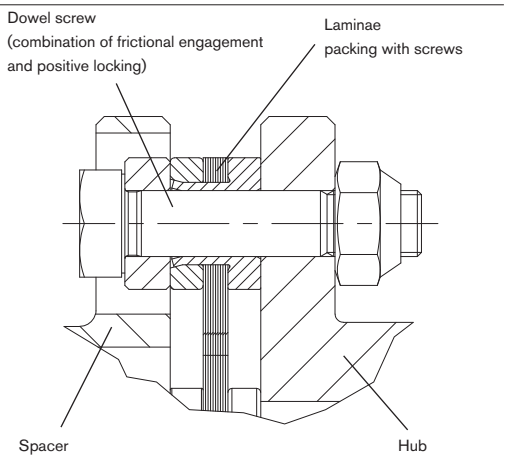
FEM-optimized laminae form

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 sdowel 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.

Technical data

Torques, misalignments								
Size	Torques [Nm]			Permissible misalignments				
				Angular [°]	Axial [mm]		Radial [mm]	
	T_{KN}	$T_{K\ max}$	T_{KW}	each laminae	NN	NANA 1/ NANA2/NNZ	NANA 1	NANA 2/NNZ
20	15	30	5	1,0	0,6	1,2	0,5	0,1
25	30	60	10	1,0	0,8	1,6	0,5	0,2
35	60	120	20	1,0	1,0	2,0	0,5	0,2
38	120	240	40	1,0	1,2	2,4	0,6	0,3
42	180	360	60	1,0	1,4	2,8	0,6	0,3
50	330	660	110	1,0	1,6	3,2	0,8	0,4
60	690	1380	230	1,3	1,0	2,0	1,7	1,0
70	1100	2200	370	1,3	1,1	2,2	2,1	1,2
80	1500	3000	500	1,3	1,3	2,6	2,5	1,5
85	2400	4800	800	1,3	1,3	2,3	2,5	1,5
90	4500	9000	1500	1,0	1,0	2,0	2,0	1,4
105	5100	10200	1700	1,0	1,2	2,4	2,5	1,6
115	9000	18000	3000	1,0	1,4	2,8	2,0	1,3
135	12000	24000	4000	1,0	1,75	3,5	4,0	–
138	23000	46000	11500	0,5	1,3	2,6	$\Delta K_r = \tan 0{,}5° \times (E_7 - E_1)$	–
158	33000	66000	16500	0,5	1,3	2,6		–
168	45000	90000	22500	0,5	1,45	2,9		–
208	70000	140000	35000	0,5	1,75	3,5		–
248	120000	240000	60000	0,5	2,1	4,2		–
288	200000	400000	100000	0,5	2,4	4,8		–
338	280000	560000	140000	0,5	2,5	5,0		–

Permissible speeds, 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	105	4000	2,540
25	16000	0,028	115	3400	3,480
35	13000	0,092	135	3000	6,850
38	12000	0,198	138	3800	13,200
42	10000	0,282	158	3500	18,300
50	8000	0,501	168	3300	26,200
60	6700	0,560	208	2800	52,000
70	5900	0,900	248	2300	71,000
80	5100	1,140	288	2000	108,000
85	4750	1,520	338	1800	156,000
90	4300	1,940			

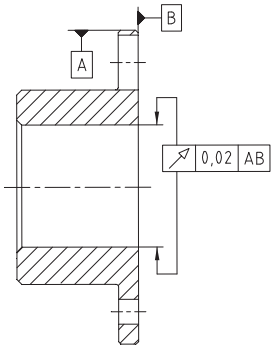
Weights and mass moments of inertia						
Size	Hub [1] [kg] / [kgm²]	Laminae set [kg] / [kgm²]	NN [1] complete [kg] / [kgm²]	NANA 1 [1] complete [kg] / [kgm²]	NANA 2 [1] complete [kg] / [kgm²]	NNZ [1] complete [kg] / [kgm²]
20	0,129 / 0,000043	0,044 / 0,00002	0,302 / 0,00011	0,596 / 0,000204	–	0,434 / 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	11,248 / 0,046	16,158 / 0,0734	15,519 / 0,0711	14,760 / 0,0650
90	6,195 / 0,0282	2,320 / 0,0162	14,710 / 0,073	21,977 / 0,121	21,278 / 0,119	20,112 / 0,108
105	7,601 / 0,0414	2,200 / 0,0180	17,402 / 0,101	25,753 / 0,165	24,637 / 0,159	23,028 / 0,145
115	11,951 / 0,0899	3,950 / 0,0433	27,852 / 0,223	42,770 / 0,381	41,230 / 0,372	38,251 / 0,333
135	18,900 / 0,187	7,260 / 0,105	45,060 / 0,478	71,308 / 0,835	–	61,711 / 0,714
138	16,263 / 0,146	9,900 / 0,148	42,426 / 0,439	71,598 / 0,800	–	–
158	19,611 / 0,206	14,836 / 0,252	54,058 / 0,665	93,430 / 1,226	–	–
168	29,486 / 0,361	15,200 / 0,318	74,172 / 1,040	117,092 / 1,781	–	–
208	54,171 / 0,974	22,382 / 0,679	130,724 / 2,627	202,271 / 4,398	–	–
248	84,221 / 2,151	38,160 / 1,605	206,602 / 5,907	324,549 / 10,066	–	–
288	142,962 / 4,846	53,823 / 3,056	339,747 / 12,747	513,276 / 20,756	–	–
338	221,020 / 10,239	77,500 / 5,778	519,540 / 26,255	783,992 / 42,741	–	–

[1] Hubs with maximum bore

General information

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.



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.

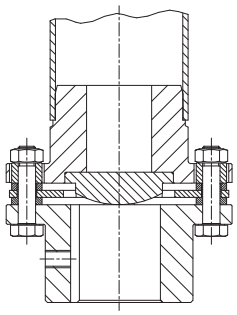
If the finish bore is machined by the customer, the concentric and axial running tolerances have to be observed (see sketch below).

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.

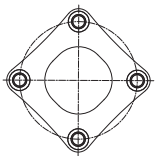


Installation:

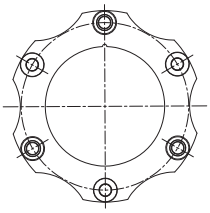
RADEX®-N couplings are designed for horizontal installation. For vertical installation the spacer has to be supported (see sketch below). Please contact.

The following laminae types are distinguished for RADEX®-N

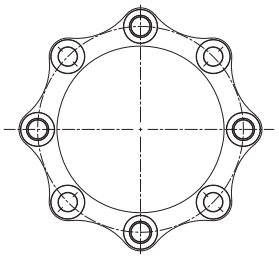
Size 20 – 50
(4 hole laminae)



Size 60 – 135
(6 hole laminae)



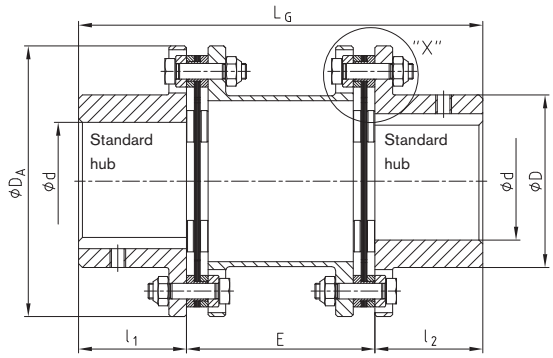
Size 138 – 338
(8 hole laminae)



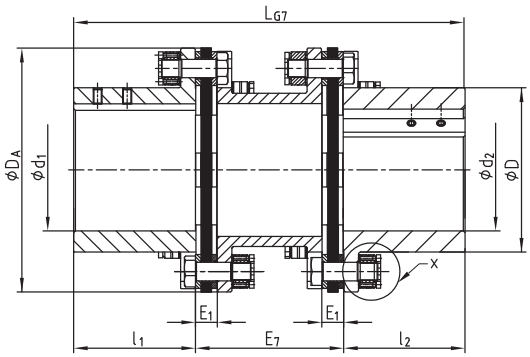
Screw tightening torques of laminae:					
Size	Screw	T_A [Nm]	Size	Screw	T_A [Nm]
20	4 x M5	8,5	105	6 x M16	280
25	4 x M6	14	115	6 x M20	550
35	4 x M6	14	135	6 x M24	900
38	4 x M8	35	138	8 x M24	8 x 30
42	4 x M8	35	158	8 x M27	9 x 30
50	4 x M10	69	168	8 x M27	9 x 30
60	6 x M8	33	208	8 x M30	8 x 60
70	6 x M10	65	248	8 x M36	8 x 105
80	6 x M10	65	288	8 x M42	10 x 105
85	6 x M12	115	338	8 x M48	11 x 105
90	6 x M16	280			

Standard line for pump drives according to API 610

- Standard line for pump drives
- Coupling according to API 610
- High balancing quality due to precise manufacture (AGMA class 9)
- Also available with large hub for larger bore diameters
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9
- Ex Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)



Type NANA 3



Type NANA 1

RADEX®-N type NANA 3							
Size	Dimensions [mm]					Perm. displacements	
	$d_{max.}$	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	1,3	2,0
70	70	102	156	100/140/180	65	1,3	2,2
80	80	117	179	100/140/180/250	75	1,3	2,6
85	85	123	191	100/140/180/250	80	1,3	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

1) Other E-dimensions available on request.

RADEX®-N type NANA 1											
Size	Torque [Nm]			max. Finishbore	Dimensions [mm]						
	T_{KN}	$T_{K\ max.}$	T_{KW}	d_1/d_2	D	D_A	l_1/l_2	E_1	L_{G1}	E_7	L_{G7}
138	23000	46000	11500	135	180	300	135	23	293	Indicated by the customer	Indicated by the customer
158	33000	66000	16500	150	195	325	150	27	327		
168	45000	90000	22500	165	225	350	165	31	361		
208	70000	140000	35000	200	275	420	200	37	437		
248	120000	240000	60000	240	320	500	240	44	524		
288	200000	400000	100000	280	383	567	280	52	612		
338	280000	560000	140000	330	445	660	330	58	718		

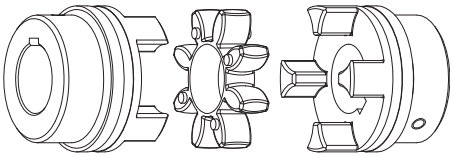
Order form:

RADEX®-N 60	NANA 3	Ø 50	Ø 60	140
Coupling size	Type	Bore d_1	Bore d_2	Shaft distance dimension

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.

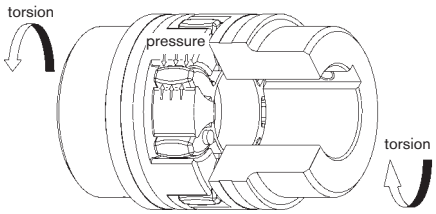
Their application is ideal for transmitting torque while damping torsional vibrations and absorbing shocks produced by the uneven operation of certain prime movers.



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 peripheral 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.

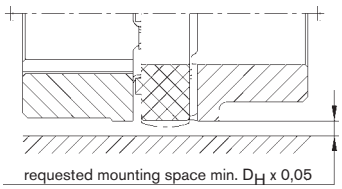
Load on spider



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.

Deformation with load



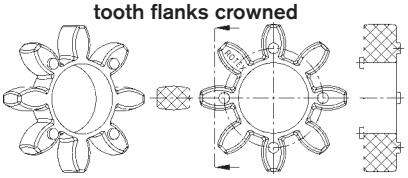
Explosion-proof use

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.

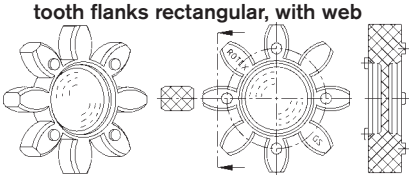
Spiders

An operating temperature range of - 40 °C to + 90 °C ensures perfect operation. Transient temperature peaks up to + 120 °C do not cause any damage on the coupling. Continuous improvement of materials has resulted in a standard spider of 92 Shore A which offers various advantages over usual polyurethane materials. For higher torques it is also possible to make use of a spider 95/98 Shore A or 64 Shore D-F.
The spiders are extremely resistant to wear, oil, ozone and ageing. In addition, they are resistant to hydrolysis (ideal for tropical climates).
The high internal damping protects the drive against dynamic overload.

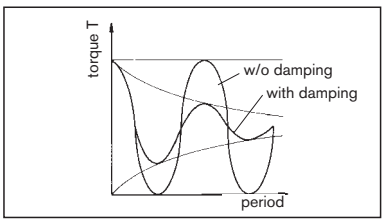
Standard spider
tooth flanks crowned



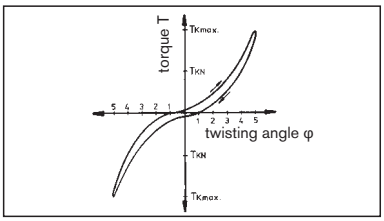
GS spiders
tooth flanks rectangular, with web



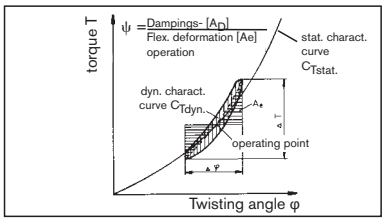
Comparison of loads



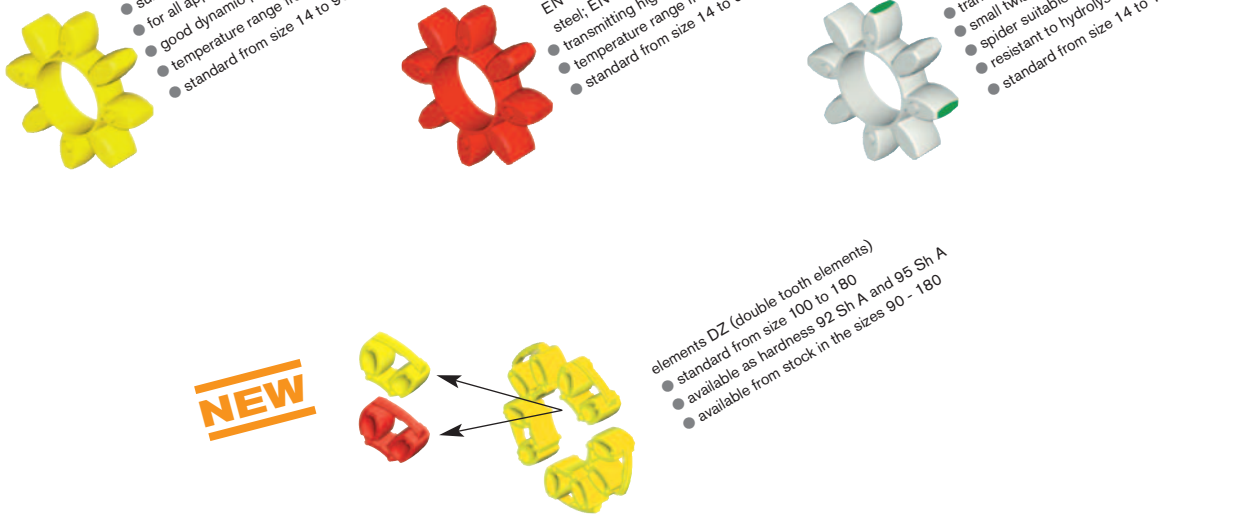
Twisting angle



Damping



Spider types - Materials, physics, properties



Standard spiders						
Spider type hardness (Shore)	Dentification colour	Material	Perm. temperature range (°C)		Available for coupling size	Typical applications
			Continuous temperature	Max. temperature short time		
92 Sh A	yellow	polyurethane	- 40 to + 90	- 50 to + 120	size 14 – 180	– for all applications in general engineering and hydraulics – Standard applications with average elasticity
95/98 Sh A	red	polyurethane	- 30 to + 90	- 40 to + 120	size 14 – 180	– good torque transmission with good damping properties
64 Sh D-F	natural white with green tooth flanks	polyurethane	- 30 to + 110	- 30 to + 130	size 14 – 180	– high air moisture, resistant to hydrolysis – displacement of critical speeds

Spiders for special applications on request for:					
Typical applications	Spider type hardness (Shore)	Identification colour	Material	Perm. temperature range (°C)	
				Continuous temperature	Max. temperature short time
For high dynamic load, high air moisture/resistant to hydrolysis	94 Sh A-T	blue with yellow tooth flanks	polyurethane	- 50 to + 110	- 60 to + 130
Drives with higher loads, small twisting angles - torsionally rigid, high ambient temperatures	64 Sh D-H	green	hytrel	- 50 to + 110	- 60 to + 150
Small twisting angles and high torsion spring stiffness, [1] high ambient temperature, good resistance to chemicals	polyamide	-	PA	- 20 to + 130 1)	- 30 to + 150 1)
Small twisting angles and high torsion spring stiffness, very high ambient temperature, good resistance to chemicals, resistant to hydrolysis	PEEK	light grey	PEEK	up to + 180 (ATEX release up to a max. +160)	to + 250

[1] Different properties depending on compound

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.

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 $T_{K\,max}$.

1.1 **Load produced by rated torque**

$$T_N\ [Nm] = 9550 \cdot \frac{P\ [kW]}{n\ [1/min]}$$

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

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.

1.2 **Load produced by torque shocks**

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

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.

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

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

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

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.

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**

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

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.

2.2 **Passing through the resonance range**

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

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.

2.3 **Load produced by vibratory torque shocks**

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

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.

$$P_{KW} \geq P_W$$

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	$T_{K\,max}$	Torque that can be transmitted as dynamic load ≥ 10^5 times or 5 x 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	$M_A = \frac{J_L}{(J_A + J_L)}$ $M_L = \frac{J_A}{(J_A + J_L)}$

Coupling selection

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

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 EN-GJL-250 (GG 25)	225 N/mm²
material nodular iron EN-GJS-400-15 (GGG 40)	225 N/mm²
material steel S355J2G3 (St 52.3)	250 N/mm²
for other steel materials p_{zul} =	$0,9 \cdot R_e$ ($R_{p0.2}$)

Example of calculation of standard IEC motors shown on page 60/61:

Given: Details of driving side

A. C. motor	type 315 L ⇛ S_A =1,8
Motor output	P = 160 kW
Speed	n = 1485 rpm
Moment of inertia driven side	J_A = 2,9 kgm²
Start-up frequency	z = 6 $^1/_h$ ⇛ S_Z =1,0
Ambient temperature	= + 60 °C ⇛ S_t =1,4

Given: Details of load side

Screw compressor	
Rated torque of load side	T_{LN} = 930 Nm
Moment of inertia of load side	J_L = 6,8 kgm²

Calculation

● Rated driving torque

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

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

Coupling selection:

● Load produced by rated torque:

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

$$T_{KN} \geq 930Nm \cdot 1,4 = \underline{1302\ Nm}$$

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

T_{KN} = 2400 Nm

$T_{K\ max}$ = 4800 Nm

● Load produced by torque shocks:

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

Drive-sided shock

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

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

● Driving torque

$$T_{AS} = 2,0 \cdot T_{AN}$$
$$= 2,0 \cdot 1029\ Nm = \underline{2058\ Nm}$$

T_S = 2058 Nm · 0,7 · 1,8 = <u>2593,1 Nm</u>

$T_{K\ max} \geq$ 2593,1 Nm · 1 · 1,4 = <u>3630,3 Nm</u>

$T_{K\ max}$ with 4800 Nm ≥ 3630,3 Nm ✓

Technical data

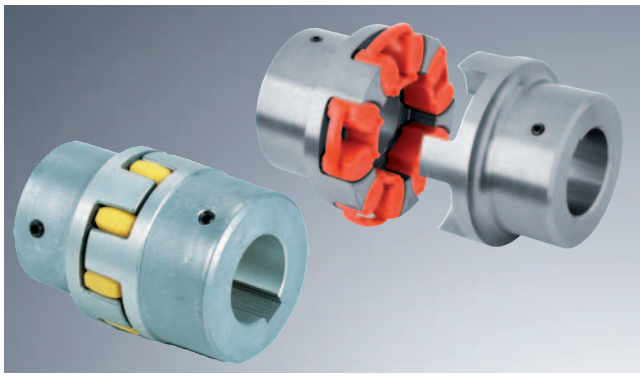
ROTEX® sizes for all designs and materials	Max. speed [1/min] with V = 30 m/s	40 m/s	Twisting angle with T_{KN} φ	$T_{K\,max}$ φ	Torque [Nm] Rated T_{KN}	Max $T_{K\,max}$	Vibratory T_{KW}	Damping power [W] with +30 °C P_{KW}	Torsion spring stiffness C_{dyn} [Nm/rad] 1,00 T_{KN}	0,75 T_{KN}	0,50 T_{KN}	0,25 T_{KN}
Spider from polyurethane 92 Shore A; colour yellow												
14	19000	–	6,4°	10°	7,5	15	2,0	–	0,38x10³	0,31x10³	0,24x10³	0,14x10³
19	14000	19000			10	20	2,6	4,8	1,28x10³	1,05x10³	0,80x10³	0,47x10³
24	10600	14000			35	70	9,1	6,6	4,86x10³	3,98x10³	3,01x10³	1,79x10³
28	8500	11800			95	190	25	8,4	10,90x10³	8,94x10³	6,76x10³	4,01x10³
38	7100	9500			190	380	49	10,2	21,05x10³	17,26x10³	13,05x10³	7,74x10³
42	6000	8000			265	530	69	12,0	23,74x10³	19,47x10³	14,72x10³	8,73x10³
48	5600	7100			310	620	81	13,8	36,70x10³	30,09x10³	22,75x10³	13,49x10³
55	4750	6300			410	820	107	15,6	50,72x10³	41,59x10³	31,45x10³	18,64x10³
65	4250	5600	3,2°	5°	625	1250	163	18,0	97,13x10³	79,65x10³	60,22x10³	35,70x10³
75	3550	4750			1280	2560	333	21,6	113,32x10³	92,92x10³	70,26x10³	41,65x10³
90	2800	3750			2400	4800	624	30,0	190,09x10³	155,87x10³	117,86x10³	69,86x10³
100	2500	3350			3300	6600	858	36,0	253,08x10³	207,53x10³	156,91x10³	93,01x10³
110	2240	3000			4800	9600	1248	42,0	311,61x10³	255,52x10³	193,20x10³	114,52x10³
125	2000	2650			6650	13300	1729	48,0	474,86x10³	389,39x10³	294,41x10³	174,51x10³
140	1800	2360			8550	17100	2223	54,6	660,49x10³	541,60x10³	409,50x10³	242,73x10³
160	1500	2000			12800	25600	3328	75,0	890,36x10³	730,10x10³	552,03x10³	327,21x10³
180	1400	1800			18650	37300	4849	78,0	2568,56x10³	2106,22x10³	1592,51x10³	943,95x10³
Spider from polyurethane 98 Shore A; from size 65 95 Shore A; colour red												
14	19000	–	6,4°	10°	12,5	25	3,3	–	0,56x10³	0,46x10³	0,35x10³	0,21x10³
19	14000	19000			17	34	4,4	4,8	2,92x10³	2,39x10³	1,81x10³	1,07x10³
24	10600	14000			60	120	16	6,6	9,93x10³	8,14x10³	6,16x10³	3,65x10³
28	8500	11800			160	320	42	8,4	26,77x10³	21,95x10³	16,60x10³	9,84x10³
38	7100	9500			325	650	85	10,2	48,57x10³	39,83x10³	30,11x10³	17,85x10³
42	6000	8000			450	900	117	12,0	54,50x10³	44,69x10³	33,79x10³	20,03x10³
48	5600	7100			525	1050	137	13,8	65,29x10³	53,54x10³	40,48x10³	24,00x10³
55	4750	6300			685	1370	178	15,6	94,97x10³	77,88x10³	58,88x10³	34,90x10³
65	4250	5600	3,2°	5°	940	1880	244	18,0	129,51x10³	106,20x10³	80,30x10³	47,60x10³
75	3550	4750			1920	3840	499	21,6	197,50x10³	161,95x10³	122,45x10³	72,58x10³
90	2800	3750			3600	7200	936	30,0	312,20x10³	256,00x10³	193,56x10³	114,73x10³
100	2500	3350			4950	9900	1287	36,0	383,26x10³	314,27x10³	237,62x10³	140,85x10³
110	2240	3000			7200	14400	1872	42,0	690,06x10³	565,85x10³	427,84x10³	253,60x10³
125	2000	2650			10000	20000	2600	48,0	1343,64x10³	1101,79x10³	833,06x10³	493,79x10³
140	1800	2360			12800	25600	3328	54,6	1424,58x10³	1168,16x10³	883,24x10³	523,54x10³
160	1500	2000			19200	38400	4992	75,0	2482,23x10³	2035,43x10³	1538,98x10³	912,22x10³
180	1400	1800			28000	56000	7280	78,0	3561,45x10³	2920,40x10³	2208,10x10³	1308,84x10³
Spider from polyurethane 64 Shore D-F; colour natural white with green tooth marking [1)]												
14	19000	–	4,5°	7,0°	16	32	4,2	9,0	0,76x10³	0,62x10³	0,47x10³	0,28x10³
19	14000	19000			21	42	5,5	7,2	5,35x10³	4,39x10³	3,32x10³	1,97x10³
24	10600	14000			75	150	19,5	9,9	15,11x10³	12,39x10³	9,37x10³	5,55x10³
28	8500	11800			200	400	52	12,6	27,52x10³	22,57x10³	17,06x10³	10,12x10³
38	7100	9500			405	810	105	15,3	70,15x10³	57,52x10³	43,49x10³	25,78x10³
42	6000	8000			560	1120	146	18,0	79,86x10³	65,49x10³	49,52x10³	29,35x10³
48	5600	7100			655	1310	170	20,7	95,51x10³	78,32x10³	59,22x10³	35,10x10³
55	4750	6300			825	1650	215	23,4	107,92x10³	88,50x10³	66,91x10³	39,66x10³
65	4250	5600	2,5°	3,6°	1175	2350	306	27,0	151,09x10³	123,90x10³	93,68x10³	55,53x10³
75	3550	4750			2400	4800	624	33,4	248,22x10³	203,54x10³	153,90x10³	91,22x10³
90	2800	3750			4500	9000	1170	45,0	674,52x10³	553,11x10³	418,20x10³	247,89x10³
100	2500	3350			6185	12370	1608	54,0	861,17x10³	706,16x10³	533,93x10³	316,48x10³
110	2240	3000			9000	18000	2340	63,0	1138,59x10³	933,64x10³	705,92x10³	418,43x10³
125	2000	2650			12500	25000	3250	72,0	1435,38x10³	1177,01x10³	889,93x10³	527,50x10³
140	1800	2360			16000	32000	4160	81,9	1780,73x10³	1460,20x10³	1104,05x10³	654,42x10³
160	1500	2000			24000	48000	6240	112,5	3075,80x10³	2522,16x10³	1907,00x10³	1130,36x10³
180	1400	1800			35000	70000	9100	117,0	6011,30x10³	4929,27x10³	3727,01x10³	2209,15x10³

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)] Hub material: EN-GJS-400-15 (GGG 40); steel

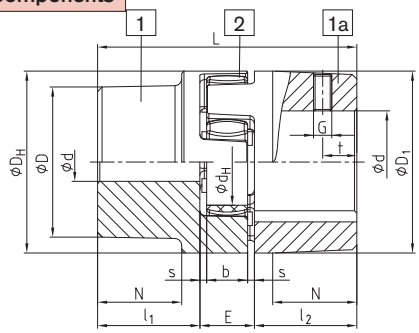
Spider from polyurethane	92 Shore A	95/98 Shore A	64 Shore D-F
Relative Damping ψ [-]	0,80	0,80	0,75
Resonance factor V_R [-]	7,90	7,90	8,50

Shaft coupling design No. 001 - casted materials

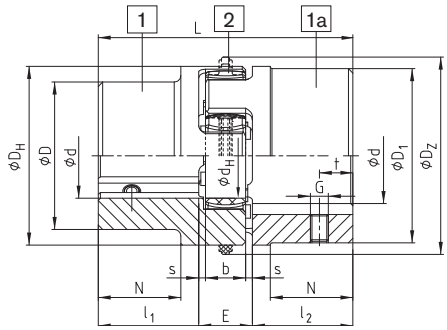


- Torsionally flexible, maintenance-free
- Damping vibrations
- Axial plug-in, fail-safe
- Allover machining – good dynamic properties
- Compact design/small flywheel effect
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9
- Ex Approved according to EC Standard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

Components

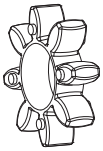


AL-D (thread opposite the keyway)



EN-GJL-250 / EN-GJS-400-15 (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



NEW

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

Size	Component	Spider (part 2) [1] Rated torque [Nm]			Finish bore	Dimensions [mm] General										Thread for setscrews		
		92 Sh A	98 Sh A	64 Sh D	d (min-max)	L	l_1; l_2	E	b	s	D_H	D_Z	d_H	D; D_1	N	G	t	T_A [Nm]
ROTEX® aluminium diecast (Al-D)																		
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 EN-GJL-250 (GG 25)																		
	1				12-40	114	45							66	37			
38	1a	190	325	405	38-48			24	18	3	80	-	38	78		M8	15	10
	1b				12-48	164	70								62			
	1				14-45	126	50							75	40			
42	1a	265	450	560	42-55			26	20	3	95	-	46	94		M8	20	10
	1b				14-55	176	75								65			
	1				15-52	140	56							85	45			
48	1a	310	525	655	48-62			28	21	3,5	105	-	51	104		M8	20	10
	1b				15-62	188	80								69			
55	1	410	685	825	20-60	160	65	30	22	4	120	-	60	98	52	M10	20	17
	1a				55-74									118				
65	1	625	940	1175	22-70	185	75	35	26	4,5	135	-	68	115	61	M10	20	17
75	1	1280	1920	2400	30-80	210	85	40	30	5	160	-	80	135	69	M10	25	17
90	1	2400	3600	4500	40-97	245	100	45	34	5,5	200	218	100	160	81	M12	30	40
ROTEX® nodular iron EN-GJS-400-15 (GGG 40)																		
100	1	3300	4950	6185	50-115	270	110	50	38	6	225	246	113	180	89	M12	30	40
110	1	4800	7200	9000	60-125	295	120	55	42	6,5	255	276	127	200	96	M16	35	80
125	1	6650	10000	12500	60-145	340	140	60	46	7	290	315	147	230	112	M16	40	80
140	1	8550	12800	16000	60-160	375	155	65	50	7,5	320	345	165	255	124	M20	45	140
160	1	12800	19200	24000	80-185	425	175	75	57	9	370	400	190	290	140	M20	50	140
180	1	18650	28000	35000	85-200	475	195	85	64	10,5	420	450	220	325	156	M20	50	140

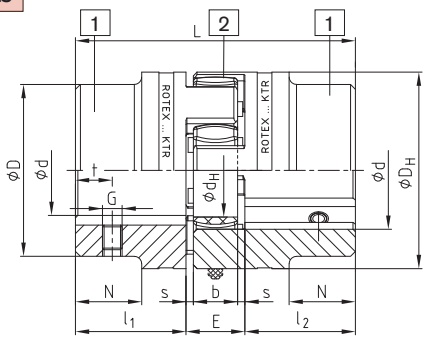
◣ = If no material is mentioned in the order, the calculation/order is based on the material marked with

[1] Maximum torque of the coupling $T_{Kmax.}$ = rated torque of the coupling $T_{K\ Nenn.}$ x 2 [2] Material Al-H.

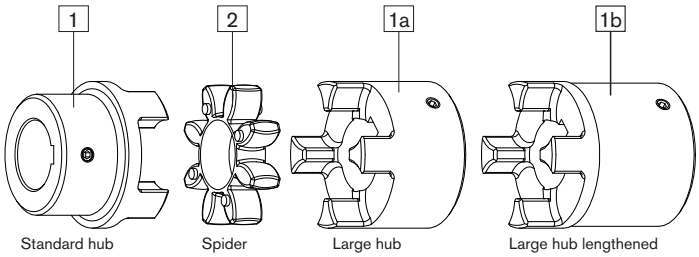
Shaft coupling design No. 001 - material steel

- 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
- 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
- Ex Approved according to EC Standard 94/9/EC
- Mounting instructions under www.ktr.com

Components



Steel (thread on the keyway)



ROTEX® steel

Size	Component	Spider (part 2) [1] Rated torque [Nm] 92 Sh A	98Sh A	64 Sh D	Finish bore d (min-max)	Dimensions [mm] General L	$l_1; l_2$	E	b	s	D_H	d_H	D	N	Thread for setscrews G	t	T_A [Nm]
14	1a	7,5	12,5	-	0-16	35	11	13	10	1,5	30	10	30	-	M4	5	1,5
	1b					50	18,5										
19	1a	10	17	-	0-25	66	25	16	12	2	40	18	40	-	M5	10	2
	1b					90	37										
24	1a	35	60	-	0-35	78	30	18	14	2	55	27	55	-	M5	10	2
	1b					118	50										
28	1a	95	160	-	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] Rated torque [Nm] 92 Sh-A	98 Sh-A	Finish bore d	Dimensions [mm] General L	$l_1; l_2$	E	b	s	D_H	d_H	D	N	Thread for setscrews 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

= 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

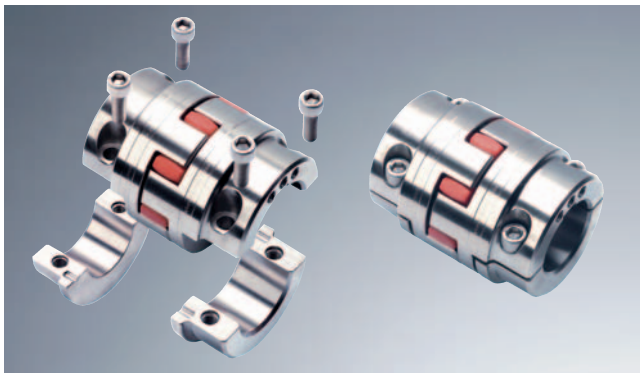
ROTEX® 19 – 48 from stainless steel available from stock

- 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:

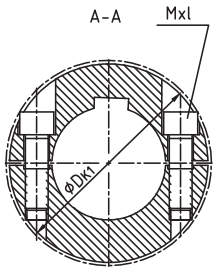
ROTEX®-38	St	92	1 – Ø 45		1 – Ø 25	
Coupling size	Material	Spider hardness Shore A]	Hub design	Finish bore	Hub design	Finish bore

Drop-out center design coupling type A-H

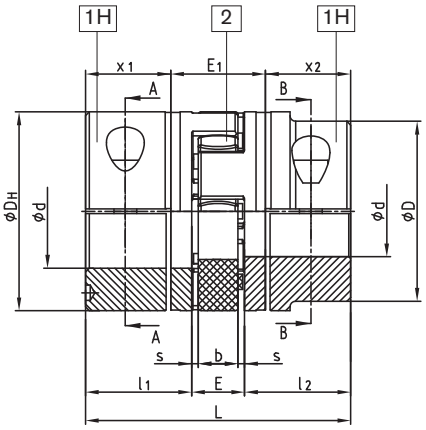


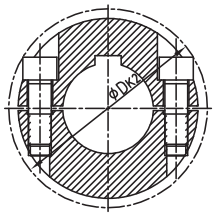
- Assembly/disassembly by means of 4 screws only
- Exchange of spider with no need to shift the driving and driven side (motor and pump)
- Positive-locking and frictionally engaged hub combinations to be assembled radially (dimension E_1 of design AFN = dimension E_1 of A-H)
- Finish bore according to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

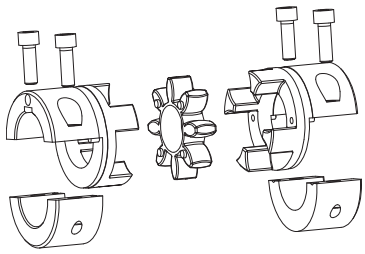
Components



Type A-H







Please note:
With maximum bore the feather keys are offset to each other by approx. 5°!
Hub materials: up to size 90 S355J2G3
from size 100 EN-GJS-400-15

[1] From size 100: 4 clamping screws for each clamping hub.

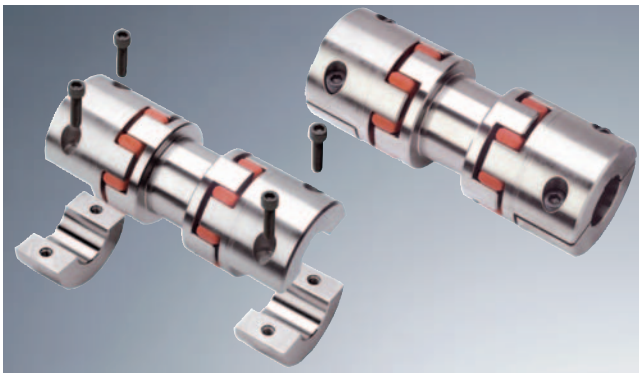
ROTEX® type A-H

Size	Compo-nent	Finish bore Ød$_{max.}$ [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

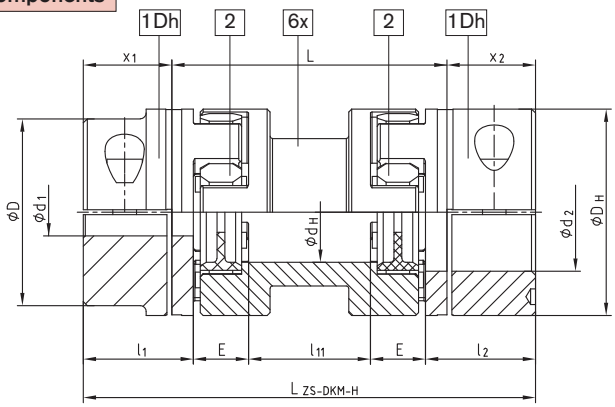
ROTEX® 38	A-H	98 Sh A	1H – Ø 38		1H – Ø 30	
Coupling size	Type	Spider hardness	Compo-nent	Finish bore	Compo-nent	Finish bore

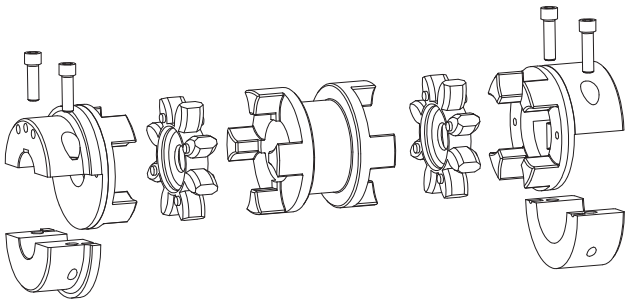
Double cardanic type ZS-DKM-H



- 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.)
- Ⓔx 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 lenght L [mm]	Finish bore-max. Ød1/d2 [mm]	Spider (part 2) 1) TKN [Nm]	Dimensions [mm] DH	dH	l1; l2	x1; x2	l11	E	LZS-DKM-H	Cap screw DIN EN ISO 4762 – 12.9 M	TA [Nm]	Max. displacements Axial [mm]	at n = 1500 1/min Radial [mm]	Angular [°]	at n = 3000 1/min Radial [mm]	Angular [°]	Weight2) [kg]
24	100	28	35	55	27	30	22,5	49	18	145	M6	14	1,4	1,17		0,87		1,40
	140							89		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							81		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							73		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							66		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							62		230				1,57		1,18		7,90
	100							10		200				0,70	1,0	0,52	0,75	9,50
55	140	70	410	120	60	65	50,0	50	30	240	M12	120	2,2	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
	140							25		275				1,13		0,85		23,60
75	180	90	1280	160	80	85	67,5	65	40	315	M16	295	3,0	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 $T_{K\,max.}$ = 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

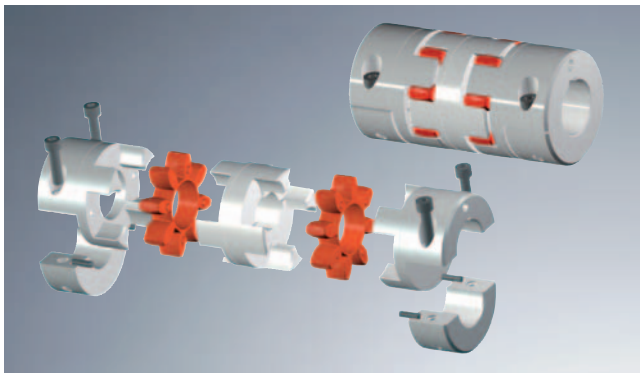
Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9

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

Order form

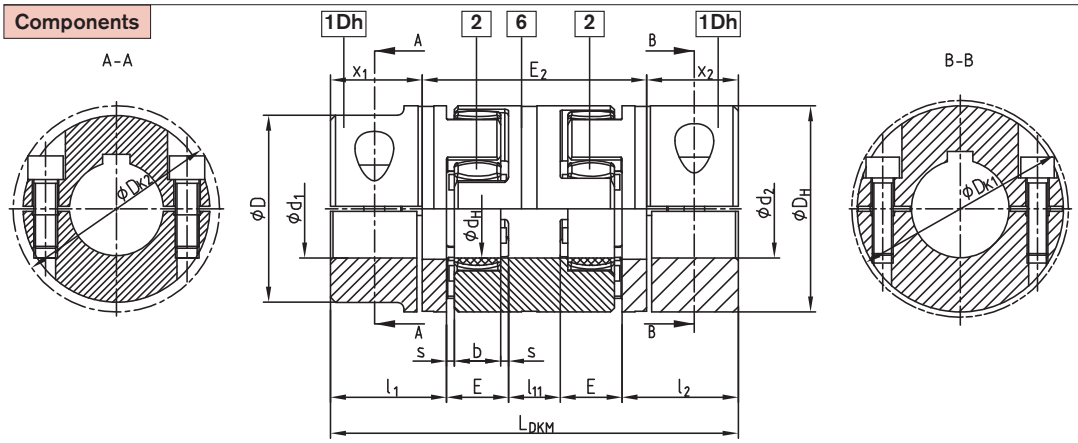
ROTEX® 38	ZS-DKM-H	140	98 Sh A	∅38	∅30
Coupling size	Type	Shaft distance dimension L	Spider hardness	Finish bore	Finish bore

Double cardanic type DKM-H

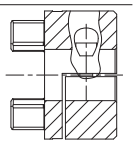


- Assembly/disassembly through 4 screws only
- Compensates for high shaft displacements due to double-cardanic design
- Reduced vibration and noise
- Low restoring forces ➔ Increase of the total lifetime of all adjacent components (bearings, seals etc.)
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9
- Ⓔx Approved according to EC Standard 94/9/EC
- Mounting instructions under www.ktr.com

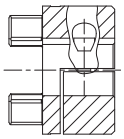
Components



Type DKM-H



Hub design 7.5 (DH clamping hub): Half-shell clamping hub without feather key for double-cardanic connection



Hub design 7.6 (DH clamping hub): Half-shell clamping hub with feather key for double-cardanic connection

ROTEX® DKM-H

Size	Com-ponent	Finish bore-max. Ød1/d2 [mm]	Spider (part 2) Rated torque [Nm] 92 Sh-A	98 Sh-A	Dimensions [mm] DH	D	DK1	DK2	dH	l1 ; l2	x1/x2	l11	E2	E	s	b	LDKM	Max. displacements at n=1500 1/min. Radial [mm]	Angular [°]	Axial [mm]
24	1Dh	28	35	60	55	-	57,5	-	27	30	22,5	16	67	18	2,0	14	112	0,53	0,90	+1,4/-1,0
28	1Dh	38	95	160	65	-	73	-	30	35	25,5	18	77	20	2,5	15	128	0,60	0,90	+1,5/-1,4
38	1Dh	45	190	325	80	-	83,5	-	38	45	35,5	20	87	24	3,0	18	158	0,77	1,00	+1,8/-1,4
42	1Dh	50	265	450	95	85	-	93,5	46	50	39,0	22	96	26	3,0	20	174	0,84	1,00	+2,0/-2,0
		55				-	97	-												
48	1Dh	55	310	525	105	95	-	105	51	56	45,0	24	102	28	3,5	21	192	1,00	1,10	+2,1/-2,0
		60				-	108,5	-												
55	1Dh	65	410	685	120	110	-	119,5	60	65	50,0	28	118	30	4,0	22	218	1,11	1,10	+2,2/-2,0
		70				-	122	-												
65	1Dh	70	625	940	135	115	-	123,5	68	75	60,0	32	132	35	4,5	26	252	1,40	1,20	+2,6/-2,0
		80				-	132,5	-												
75	1Dh	80	1280	1920	160	135	-	147,5	80	85	67,5	36	151	40	5,0	30	286	1,59	1,20	+3,0/-3,0
		90				-	158	-												
90	1Dh	90	2400	3600	200	160	-	176	100	100	81,5	40	167	45	5,5	34	330	1,78	1,20	+3,4/-3,0
		110				-	197	-												

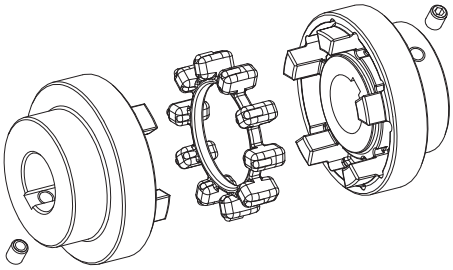
Order form

ROTEX® 38	DKM-H	98 Sh A	7.6 - ∅38		7.6 - ∅42	
Coupling size	Type	Spider hardness	Hub design	Finish bore	Hub design	Finish bore

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-roof 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.

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 kW	
Speed	n = 1485 rpm	
Mass moment of inertia	J_A = 1,06 kgm²	⇒ S_A = 1,5
Starting frequency	z = 6 $^1/_h$	⇒ S_z = 1,0
Ambient temperature	= + 60 °C	⇒ S_t = 1,4

Given: Details of load side

Pump

Nominal torque	T_{LN} = 400 Nm	
Peak torque [1]	T_{LS} = 300 Nm	[1] Peak value with shock load
Mass moment of inertia	J_L = 2,3 kgm²	⇒ S_L = 1,5

Calculation

● Rated driving torque

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

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

Coupling selection

● Load produced by rated torque:

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

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

Selected: POLY-NORM® AR Size 75:

T_{KN} = 850 Nm

$T_{K\,max}$ = 1700 Nm

● Load produced by torque shocks:

$T_{K\,max} \geq T_S \cdot S_z \cdot S_t$

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

● Driving torque:

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

$= 2 \cdot 484\ Nm = 968\ Nm$

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

T_S = 968 Nm · 0,68 · 1,5 = <u>987 Nm</u>

$T_{K\,max} \geq$ 987 Nm · 1 · 1,4 = <u>1381Nm</u>

$T_{K\,max}$ with 1700 Nm ≥ 1381 Nm ✓

$T_{K\,max} \geq T_S \cdot S_z \cdot S_t$

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

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

T_S = 300 Nm · 0,32 · 1,5 = 144 Nm

$T_{K\,max} \geq$ 144 Nm · 1,0 · 1,4 + 400 Nm · 1,4 = 762 Nm

$T_{K\,max}$ with 1700 Nm ≥ 762 Nm ✓

Technical data

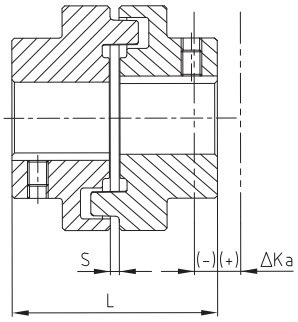
POLY-NORM® Technical data

Size	Torque [Nm]			Max. speed [rpm] at V = 30 m/s	Twisting angle with		Torsion spring stiffness C_{dyn} [Nm/rad]				Max. permissible misalignment [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	8300	4,5	6,0	5200	3318	1867	897	± 1,0	0,20	1,2
32	60	120	24	7300			7820	4989	2821	1349	± 1,0	0,25	1,4
38	90	180	36	6500			13540	8639	4885	2336	± 1,0	0,25	1,5
42	150	300	60	5900			26250	16748	9471	4528	± 1,0	0,25	1,7
48	220	440	88	5400			29896	19074	10786	5157	± 1,5	0,30	1,8
55	300	600	120	4800			38500	24563	13891	6641	± 1,5	0,30	2,0
60	410	820	164	4400	4,0	5,5	67600	43129	23200	11661	± 1,5	0,30	2,2
65	550	1100	220	4100			81800	52188	26994	14111	± 1,5	0,35	2,4
75	850	1700	340	3600			122900	78410	40557	21200	± 1,5	0,40	2,7
85	1350	2700	540	3150			243045	155063	74858	41925	± 1,5	0,40	3,0
90	2000	4000	800	2900			361571	230682	111364	62371	± 1,5	0,45	3,4
100	2900	5800	1160	2600			548200	349752	168846	94565	± 3,0	0,50	3,9
110	3900	7800	1560	2300			792300	505487	244028	136672	± 3,0	0,60	4,3
125	5500	11000	2200	2050	2,5	3,5	1023240	652827	315158	176509	± 3,0	0,60	4,8
NEW 140	7200	14400	2880	1825			1640430	1046594	508533	282974	± 3,0	0,60	5,5
NEW 160	10000	20000	4000	1625			2090930	1334013	648188	360685	± 3,0	0,65	6,1
NEW 180	13400	26800	5360	1425			2670700	1703907	827917	460696	± 3,0	0,65	6,0

1) Misalignment at n = 1500 rpm.
Angular and radial misalignment can occur at the same time. The sum of all misalignments must not exceed the figures set forth in the table. Couplings may be dynamically balanced on request.

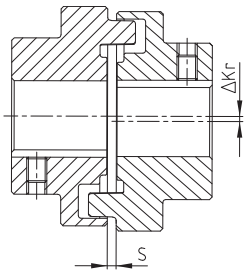
Misalignment

Axial misalignment ΔKa

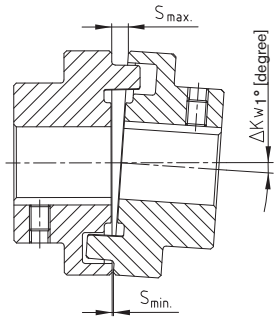


$L_{max./min} = L + \Delta Ka$ [mm]

Radial misalignment ΔKr



Angular misalignment ΔKw



$\Delta Kw = S_{max.} - S_{min.}$ [mm]

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 misalignments 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 misalignments which cannot be avoided must not exceed the figures indicated in the table. Angular and radial misalignments can occur at the same time but the sum of these misalignments 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.

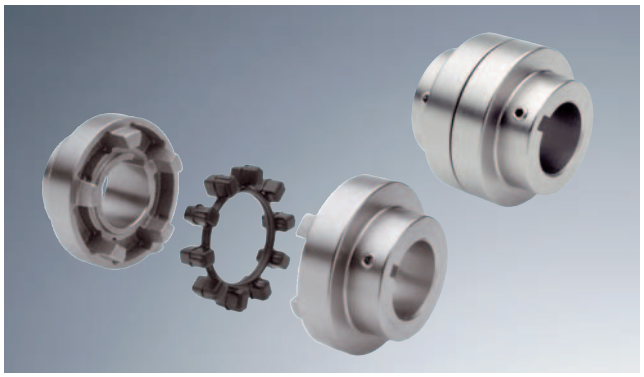
General information about the elastomer

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

Elastomer ring

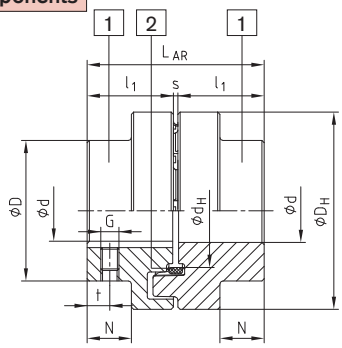
Supplement to our programme: elastomeres for the high-temperature range

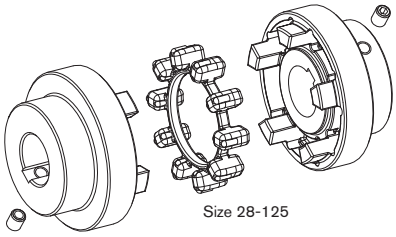
Type AR



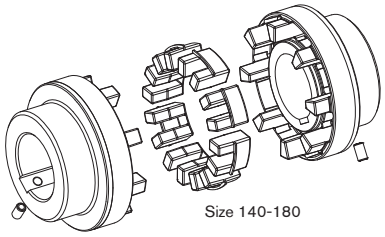
- Torsionally flexible, reduces vibrations
- Failsafe
- Maintenance-free
- Very short design
- Axial plug-in
- According to DIN 740
- Ex Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)
- Detailed mounting instructions and further information available at www.ktr.com

Components





Size 28-125



Size 140-180

1 = Standard hub
2 = Elastomer ring

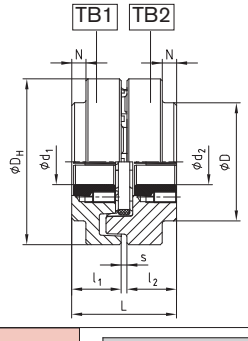
Componets:
Type AR
(EN-GJL-250)
(NBR 78 ShA)

POLY-NORM® type AR

Size	Elastomer ring (part 2) [1] Torque [Nm] T_{KN}	$T_{K\,max.}$	Finish-bore Ø d_{max} [2]	Dimensions [mm] General L_{AR}	l_1	s	D_H	D	d_H	N	Feststellgewinde [2] G	t	Mass moment of inertia [kgm²] [3]	AR [3] Weight [kg]
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
NEW 140	7200	14400	65-140	286	140	6	315	235	216	76,5	M20	35	1,030	92,6
NEW 160	10000	20000	75-160	326	160	6	350	265	246	94,5	M20	45	1,746	126,9
NEW 180	13400	26800	75-180	366	180	6	400	300	290	111,5	M20	50	3,239	181,8

[1] Standard material perbunane (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

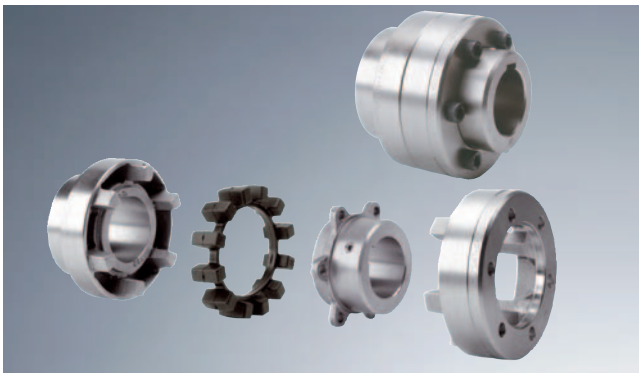
Size	Taper clamping sleeve	Dimensions [mm] max. d_1; d_2	l_1; l_2	Fixing screws [1] for taper sleeve Größe [Zoll]	Länge [mm]	SW [mm]	T_A [Nm]	Size	Taper clamping sleeve	Dimensions [mm] max. d_1; d_2	l_1; l_2	Fixing screws [1] for taper sleeve Größe [Zoll]	Länge [mm]	SW [mm]	T_A [Nm]
32	1108	25	25,5	1/4"	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 TB 1 Cam-sided screwing TB 2 Verschraubung bundseitig
Combination possible Please ask for our seperate data sheet M407045

Order form:

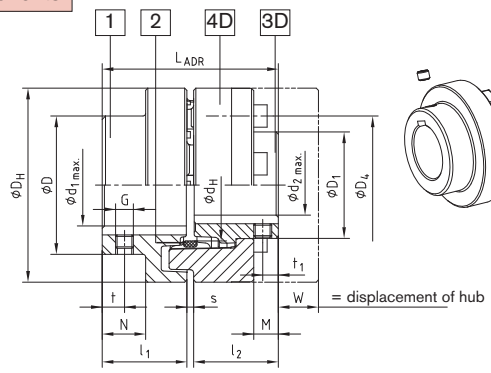
POLY-NORM® 65	AR	∅38	∅30
Coupling size	Type	Finish bore	Finish bore

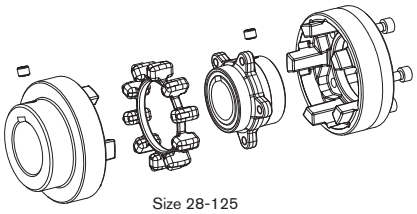
Type ADR (3-part design)



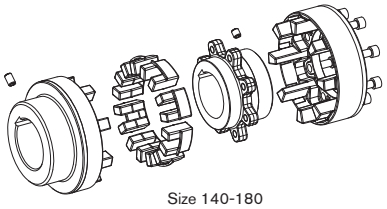
- Torsionally flexible, reduces vibrations
- Elastomer ring can be exchanged in assembled condition
- Failsafe
- Maintenance-free
- Short design
- Axial plug-in
- According to DIN 740
- Ex Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)
- Detailed mounting instructions and further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

Components





Size 28-125



Size 140-180

Components:

Type ADR (3-part)

1	=	Standard hub	(EN-GJL-250)
2	=	Elastomer ring	(NBR 78 ShA)
3D	=	Flange hub	(EN-GJS-400-15)
4D	=	Cam ring	(EN-GJL-250)

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	32	80	38	4	87	62	48	50	19,5	11,0	12	M8	10	7	10
42	150	300	42	35	88	42	4	96	69	54	55,5	20	12,0	16	M8	10	7	10
48	220	440	48	42	101	48	5	106	78	62	64	24	13,7	16	M8	15	7	10
55	300	600	55	48	115	55	5	118	90	72	73	29	18,7	15	M8	14	14	10
60	410	820	60	55	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	65	155	75	5	158	123	98	100	42,5	27,8	16	M10	20	20	17
85	1350	2700	85	75	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	90	206	100	6	224	165	136	143	55	37,5	28	M12	25	25	40
110	3900	7800	110	100	226	110	6	250	185	150	158	60	39,5	30	M16	30	30	80
125	5500	11000	125	110	256	125	6	280	210	168	178	70	48,0	35	M16	35	35	80
NEW 140	7200	14400	65-140	55-130	286	140	6	315	235	195	216	76,5	47,0	59	M20	35	35	140
NEW 160	10000	20000	75-160	65-150	326	160	6	350	265	225	246	94,5	65,0	43	M20	45	45	140
NEW 180	13400	26800	75-180	65-170	366	180	6	400	300	255	290	111,5	79,0	33	M20	50	50	140

1) Standard material perbunane (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

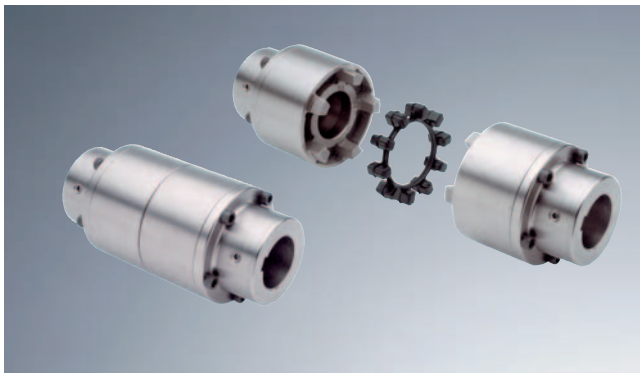
Classification of cap crews DIN EN ISO 4762–12.9

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:

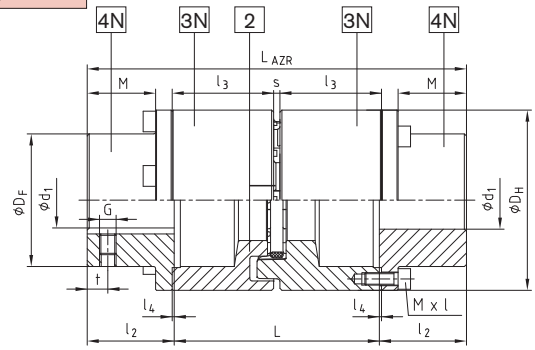
POLY-NORM® 65	ADR	d_1 = ∅55	d_2 = ∅60
Coupling size	Type	Finish bore part 1	Finish bore part 3D

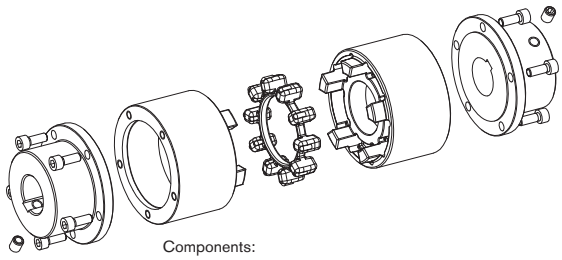
Type AZR



- 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)
- ⟨Ex⟩ 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	(EN-GJS-400-15)
4N	=	Coupling flange	(S355J2G3)

POLY-NORM® type AZR

Size	Drop out center length L [mm] *	Elastomer ring (p. 2) [1] torque [Nm] T_{KN}	T_{Kmax}	Finish bore [2] Ø d_1 max	Dimensions [mm] General L_{AZR}	l_2	l_3	s	l_4	D_H	D_F	M	Mxl	T_A [Nm]	Thread for setscrew [2] G	t	Mass moment of inertia [3] [kgm²]	AZR Weight [3] [kg]
28	100	40	80	30	170	35	49,5	3	1	69	46	26	M6x18	14	M5	7	0,0020	2,4
	140				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
	140				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
	140				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
	140				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
	140				244		69										0,0216	7,5
	100				210		49										0,0188	9,4
55	140	300	600	60	250	55	69	5	1,5	118	88	43,5	M8x25	35	M8	14	0,0240	10,8
	180				290		89										0,0232	12,2
	100				220		49										0,0326	11,2
60	140	410	820	65	260	60	69	5	1,5	129	97	47,5	M8x25	35	M18	15	0,0414	13,0
	180				300		89										0,0504	14,6
	100				230		49										0,0564	14,0
65	140	550	1100	70	270	65	69	5	1,5	140	105	51,5	M8x25	35	M10	20	0,0730	15,8
	180				310		89										0,0894	17,5
	140				290		69										0,0824	23,2
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										0,1332	29,8
	140				310		69										0,1570	32,1
85	180	1350	2700	90	350	85	89	5	1,5	182	139	69,5	M10x30	69	M10	25	0,1658	35,2
	250				420		124										0,1812	40,7
	140				320		69										0,2466	38,2
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										0,3566	49,3
	140				340		69										0,3988	50,0
100	180	2900	5800	110	380	100	89	6	2	224	165	83	M12x35	120	M12	25	0,4450	54,8
	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 lengthes (L=120/160/195/215) it is possible to combine two driving flanges 3N with various lengthes (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).

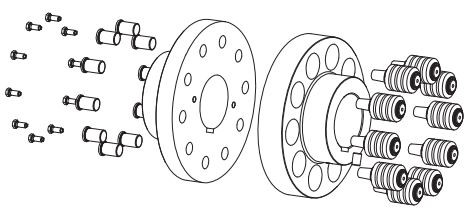
Order form:

POLY-NORM® 42	AZR	140	∅38	∅42
Coupling size	Type	Drop out center lenght L	Finish bore	Finish bore

Coupling description

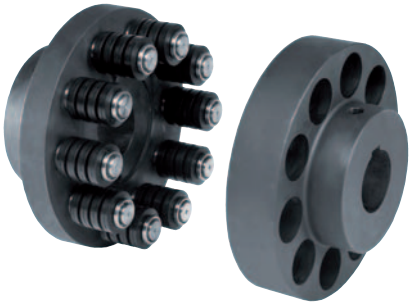
General description

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; one pin hub with the corresponding pins and a bush hub. The torque is transmitted via the steel pins with their taper elastomer rings and the corresponding bores in the bush hub.
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, 14-off sizes are available covering torques up to 377.800 Nm. Apart from the standard programme customized solutions are available.



General information about the elastomer ring

Material	Perbunan
Hardness	80 Shore A
Permanent temperature range [°C]	- 30 to + 80
Max. temperature (short-term) [°C]	- 50 to + 120
Applications	General engineering
	Heavy industry
	Pump industry
	Conveyor technology
	Standard applications of average elasticity
Resistant to	Gasoline, diesel
	Acids, bases
	Tropics
	(Salt-) Water (hot/cold)
	Oils, greases
	Propane, butane
	Natural gas, city gas
	...

Other elastomer materials on request.

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.

Technical data

REVOLEX® KX Technical data

Size	Torque [Nm] NBR 80Sh-A			Max. speed	Max.	Dyn. Torsion spring stiffness				Max. permissible misalignment [mm] 1)		
	Nominal T_{KN}	Max. $T_{Kmax.}$	Alternating T_{KW}	[rpm] at V = 35 m/s	bore [mm]	0,25xT_{KN} [Nm/rad]	0,50xT_{KN} [Nm/rad]	0,75xT_{KN} [Nm/rad]	1,00xT_{KN} [Nm/rad]	Axiale ΔKa	Radiale ΔKr	Angular ΔKw
KX 105	6485	12970	2594	2000	110/125	1,053x10⁶	1,545x10⁶	2,225x10⁶	3,060x10⁶	±2,0	0,25	0,45
KX 120	10080	20160	4032	1800	125/145	1,242x10⁶	1,675x10⁶	2,350x10⁶	3,167x10⁶	±2,0	0,3	0,6
KX 135	14030	28060	5612	1600	140/150	1,728x10⁶	2,331x10⁶	3,270x10⁶	4,407x10⁶	±2,0	0,3	0,6
KX 150	17960	35920	7184	1450	160	2,213x10⁶	2,985x10⁶	4,187x10⁶	5,643x10⁶	±2,0	0,3	0,6
KX 170	26360	52720	10544	1250	180	3,250x10⁶	4,480x10⁶	7,500x10⁶	9,970x10⁶	±2,5	0,3	0,9
KX 190	36160	72320	14464	1100	205	4,458x10⁶	6,145x10⁶	1,029x10⁷	1,367x10⁷	±2,5	0,4	0,9
KX 215	48160	96320	19264	1000	230	5,938x10⁶	8,185x10⁶	1,370x10⁷	1,822x10⁷	±2,5	0,4	0,9
KX 240	65740	131480	26296	900	250	7,850x10⁶	1,675x10⁷	2,575x10⁷	3,465x10⁷	±2,5	0,5	1,2
KX 265	91480	182960	36592	800	285	1,092x10⁷	2,331x10⁷	3,583x10⁷	4,822x10⁷	±2,5	0,5	1,2
KX 280	123530	247060	49412	720	315	1,475x10⁷	3,147x10⁷	4,838x10⁷	6,511x10⁷	±2,5	0,5	1,2
KX 305	152840	305680	61136	675	330	1,830x10⁷	3,904x10⁷	6,002x10⁷	8,076x10⁷	±2,5	0,6	1,6
KX 330	188470	376940	75388	625	355	2,250x10⁷	4,802x10⁷	7,382x10⁷	9,934x10⁷	±4,0	0,75	2,2
KX 355	230110	460220	92044	575	380	2,748x10⁷	5,863x10⁷	9,013x10⁷	1,213x10⁸	±4,0	0,75	2,2
KX 370	302500	605000	121000	535	450	3,614x10⁷	7,712x10⁷	1,186x10⁸	1,595x10⁸	±4,0	0,75	2,2

REVOLEX® KX-D Technical data

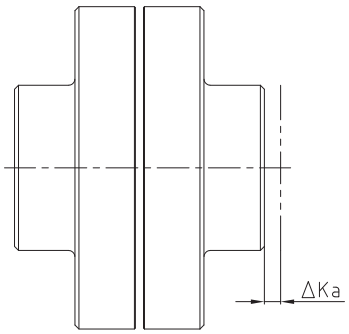
Size	Torque [Nm] NBR 80Sh-A			Max. speed	Max.	Dyn. Torsion spring stiffness				Max. permissible misalignment [mm] 1)		
	Nominal T_{KN}	Max. $T_{Kmax.}$	Alternating T_{KW}	[rpm] at V = 35 m/s	bore [mm]	0,25xT_{KN} [Nm/rad]	0,50xT_{KN} [Nm/rad]	0,75xT_{KN} [Nm/rad]	1,00xT_{KN} [Nm/rad]	Axiale ΔKa	Radiale ΔKr	Angular ΔKw
KX-D 105	8650	17300	3460	2000	110	1,404x10⁶	2,060x10⁶	2,967x10⁶	4,081x10⁶	±2,0	0,25	0,45
KX-D 120	14110	28220	5640	1800	125	1,742x10⁶	2,350x10⁶	3,297x10⁶	4,443x10⁶	±2,0	0,3	0,6
KX-D 135	18690	37380	7476	1600	140	2,304x10⁶	3,108x10⁶	4,360x10⁶	5,876x10⁶	±2,0	0,3	0,6
KX-D 150	23100	46200	9240	1450	160	2,880x10⁶	3,885x10⁶	5,450x10⁶	7,345x10⁶	±2,0	0,3	0,6
KX-D 170	36900	73800	14760	1250	180	4,550x10⁶	6,272x10⁶	1,050x10⁷	1,396x10⁷	±2,5	0,3	0,9
KX-D 190	48210	96420	19284	1100	205	5,980x10⁶	8,243x10⁶	1,380x10⁷	1,834x10⁷	±2,5	0,4	0,9
KX-D 215	61900	123800	24760	1000	230	7,634x10⁶	1,052x10⁷	1,762x10⁷	2,342x10⁷	±2,5	0,4	0,9
KX-D 240	92030	184060	36812	900	250	1,101x10⁷	2,350x10⁷	3,613x10⁷	4,861x10⁷	±2,5	0,5	1,2
KX-D 265	121900	243800	48760	800	285	1,456x10⁷	3,108x10⁷	4,778x10⁷	6,429x10⁷	±2,5	0,5	1,2
KX-D 280	158800	317600	63520	720	315	1,896x10⁷	4,047x10⁷	6,221x10⁷	8,371x10⁷	±2,5	0,5	1,2
KX-D 305	191060	382120	76424	675	330	2,287x10⁷	4,880x10⁷	7,502x10⁷	1,009x10⁸	±2,5	0,6	1,6
KX-D 330	251200	502400	100480	625	355	3,001x10⁷	6,403x10⁷	9,843x10⁷	1,324x10⁸	±4,0	0,75	2,2
KX-D 355	299100	598200	119640	575	380	3,572x10⁷	7,622x10⁷	1,172x10⁸	1,577x10⁸	±4,0	0,75	2,2
KX-D 370	377800	755600	151120	535	450	4,518x10⁷	9,640x10⁷	1,482x10⁸	1,994x10⁸	±4,0	0,75	2,2

1) Misalignment at n = 500 rpm.

Angular and radial misalignment can occur at the same time. The sum of all misalignments must not exceed the figures set forth in the table. Couplings may be dynamically balanced on request (semi-spline balancing G 6,3 with 500 rpm). For peripheral speeds exceeding V = 30 m/sec., we would recommend only steel or nodular iron, respectively. Dynamic balancing required. For circumferential speeds exceeding 35 m/s please consult with KTR's engineering department.

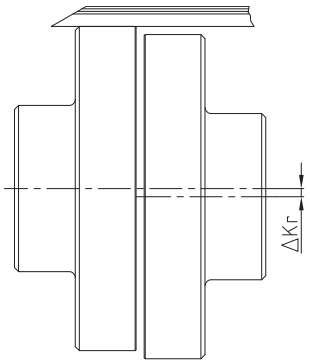
Misalignment

Axial misalignment ΔKa

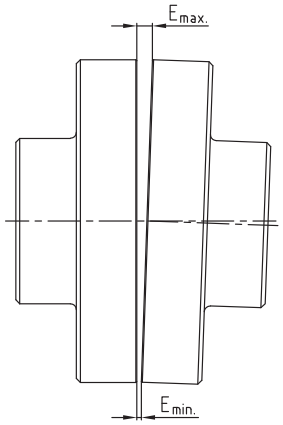


$L_{max./min} = L + \Delta Ka$ [mm]

Radial misalignment ΔKr



Angular misalignment ΔKw



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

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 an operating speed n = 500 1/min as well as an ambient temperature of + 30° 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.

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.

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 $T_{K\,max}$.

1.1 **Load by rated torque**

Determination of the actual rated torque T_N of the machine.

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

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.

$$T_{K\,max} \geq 2 \cdot T_{KN}$$

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 37)
- 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	$T_{K\,max}$	Torque that can be transmitted as dynamic load $\geq 10^5$ times or 5 x 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 EN-GJL-250 (GG 25)	225 N/mm²
material nodular iron EN-GJS-400-15 (GGG 40)	225 N/mm²
material steel S355J2G3 (St 52.3)	250 N/mm²
for other steel materials p_{zul} =	0,9 · 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 kW
Speed	n = 991 rpm

General details:

Ambient temperature	= +40 °C

Coupling selection:
Load by rated torque:

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

Operating factor S_B = 1,75 (see page 39)
Temperature factor S_t = 1,2 (see table)

Calculation of coupling torque:

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

➔ **Selected: REVOLEX® KX-170**

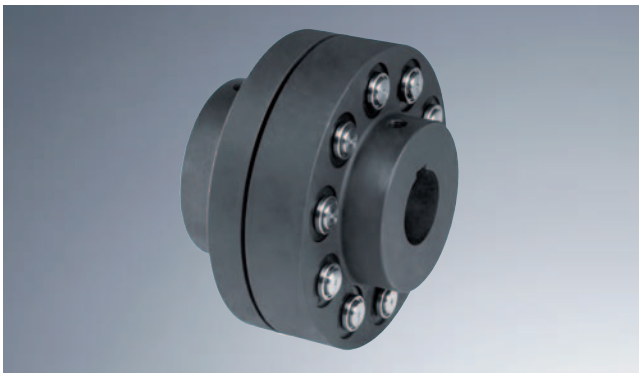
Coupling selection

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

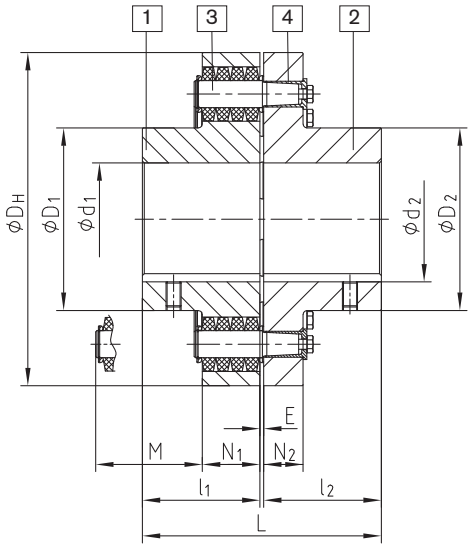
Operating factor S_B	
Machine tools	
Levelling machines	1,75
Hammers	1,75
Presses	1,75
Forging presses	1,75
Metal industry	
Plate tilters	1,25
Wire pulls	1,25
Winders	1,25
Crawlersr	1,25
Roller levellers	1,25
Winding drums	1,50
Wire drawing machines	1,75
Roller tables (light)	1,75
Plate shears	1,75
Block 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

Standard type KX

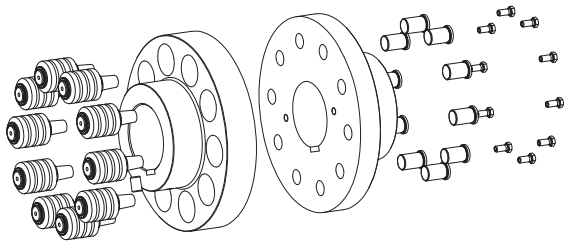


- Vibration-reducing, short design
- Radial assembly/disassembly
- Axial plug-in, failsafe
- All-side machining ➔ good dynamical features
- Protected surfacees
- Standard hub material EN-GJL-250, (EN-GJS-400-15 or steel on request)
- Ex Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)

Components



Components
Type KX
1 = Hub part 1 (Bush)
2 = Hub part 2 (Pin)
3 = Complete pin
4 = KX sleeve



REVOLEX® KX																	
Size	Torques [1] [Nm]		Max. speed [2] [rpm]	Finish bore [min. - max.]		Dimensions [mm]									Moment of inertia [3]	Approx. weight [3]
	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*	[kgm²]	[kg]
KX 105	6485	12970	2000	34-110	34-125	237	117	3	330	180	202	56	30	15	0,771	61,5
KX 120	10080	20160	1800	50-125	50-145	270	132	6	370	206	232	76	46	40	1,611	96,3
KX 135	14030	28060	1600	70-140	70-150	300	147	6	419	230	240	76	46	30	2,685	123
KX 150	17960	35920	1450	82-160		336	165	6	457	256	260	76	46	10	3,887	162
KX 170	26360	52720	1250	95-180		382	188	6	533	292	292	92	63	35	9,165	273
KX 190	36160	72320	1100	110-205		428	211	6	597	330	330	92	63	10	14,765	360
KX 215	48160	96320	1000	125-230		480	237	6	660	368	368	92	63	0	22,771	465
KX 240	65740	131480	900	140-250		534	264	6	737	407	407	122	76	25	43,484	695
KX 265	91480	182960	800	160-285		590	292	6	826	457	457	122	76	0	70,143	910
KX 280	123530	247060	720	180-315		628	311	6	927	508	508	122	76	0	112,637	1183
KX 305	152840	305680	675	180-330		654	324	6	991	533	533	122	76	0	146,974	1369
KX 330	188470	376940	625	200-355		666	330	6	1067	572	572	122	76	0	198,005	1598
KX 355	230110	460220	575	225-380		718	356	6	1156	610	610	122	76	0	293,894	2069
KX 370	302500	605000	535	225-450		770	382	6	1250	720	720	122	76	4	433,554	2629

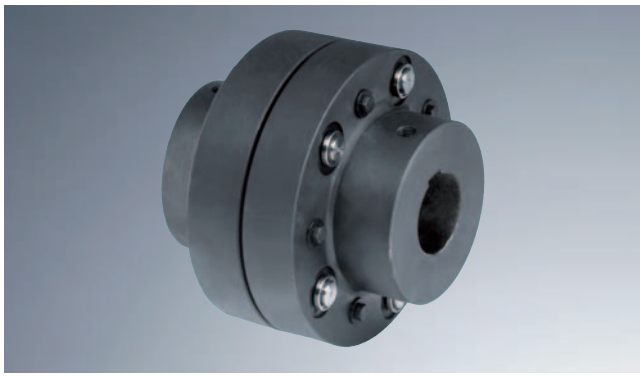
* Drop-out center dimension
[1] Standard material NBR 80 Shore A
[2] Higher speeds on request
[3] Relating to max. bore
Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9.

◣ = with pilot bore available from stock

Order form:

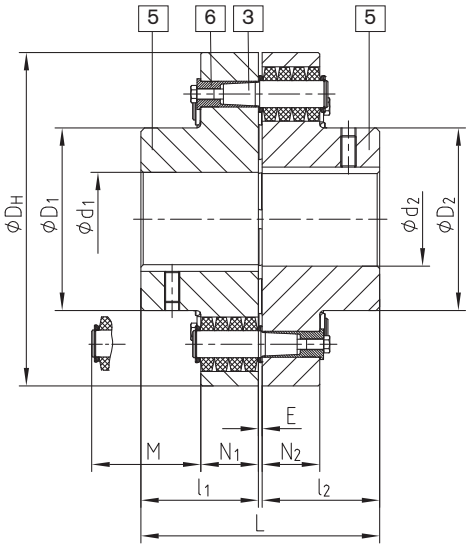
REVOLEX® KX 170	Teil 1 ∅120	Teil 2 ∅150
Coupling type/size	Finish bore Bush	Finish bore Pin

Type KX-D

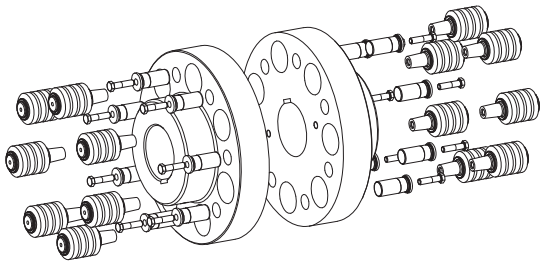


- Vibration-reducing, short design, protected surfacees
- Radial assembly/disassembly
- Axial plug-in, failsafe
- All-side machining ➔ good dynamical features
- Standard hub material EN-GJL-250, (EN-GJS-400-15 or steel on request)
- Pins are arranged alternately
- Increase of transmittable torque by up to 40 % compared to REVOLEX® KX
- Symmetrical arrangement of pin and bush nut
- Ⓔx 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



REVOLEX® KX-D

Size	Torque [1] [Nm]		Max. speed [2] [rpm]	Finish bore [min. - max.]	Dimensions [mm]							Moment of inertia [3]	Approx. weight [3]
	T_{KN}	$T_{Kmax.}$		d_1	L	l_1; l_2	E	D_H	D_1; D_2	N_1; N_2	M*	[kgm²]	[kg]
KX-D 105	8650	17300	2000	34-110	237	117	3	330	180	56	15	0,907	69,2
KX-D 120	14110	28220	1800	50-125	270	132	6	370	206	76	45	1,867	109
KX-D 135	18690	37380	1600	70-140	300	147	6	419	230	76	30	3,144	147
KX-D 150	23100	46200	1450	82-160	336	165	6	457	256	76	15	4,573	182
KX-D 170	36900	73800	1250	95-180	382	188	6	533	292	92	43	10,259	296
KX-D 190	48210	96420	1100	110-205	428	211	6	597	330	92	10	16,601	390
KX-D 215	61900	123800	1000	125-230	480	237	6	660	368	92	0	25,495	504
KX-D 240	92030	184060	900	140-250	534	264	6	737	407	122	20	50,147	768
KX-D 265	121900	243800	800	160-285	590	292	6	826	457	122	0	80,796	1006
KX-D 280	158800	317600	720	180-315	628	311	6	927	508	122	0	129,979	1311
KX-D 305	191060	382120	675	180-330	654	324	6	991	533	122	0	170,016	1521
KX-D 330	251200	502400	625	200-355	666	330	6	1067	572	122	0	227,451	1769
KX-D 355	299100	598200	575	225-380	718	356	6	1156	610	122	0	338,145	2291
KX-D 370	377800	755600	535	225-450	770	382	6	1250	720	122	0	492,353	2869

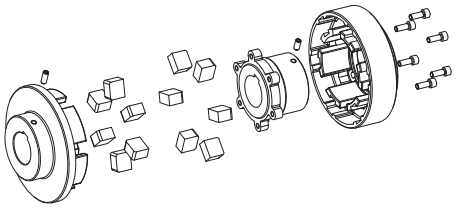
* Drop-out center dimension
[1] Standard material NBR 80 Shore A
[2] Higher speeds on request
[3] Relating to max. bore
Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9.

Order form:

REVOLEX® KX-D 170	∅120	∅150
Coupling type/size	Finish bore	Finish bore

Coupling description

General description:
The POLY coupling is a torsionally flexible, shear shaft coupling for general machinery. It is assembled by axially pluging 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 65,000 Nm and is stocked in 21 different sizes and 4 designs for immediate availability. In addition to our standard coupling models, a variety of flange, drop out center and spacer options are available.

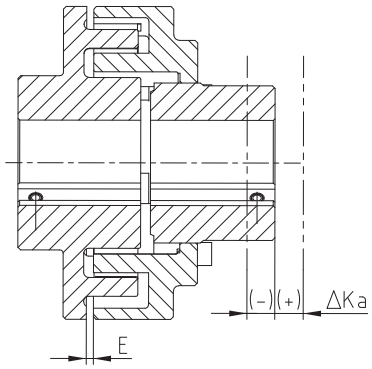
Explosion-proof use
POLY couplings are suitable for the use in drives in hazardous areas. The couplings are certified according to EC Standard 94/9/EC (ATEX 95) and belong to category 2G/2D, are confirmed and thus suitable for the use in hazardous areas of zone 1, 2, 21 and 22. Please read our information 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.

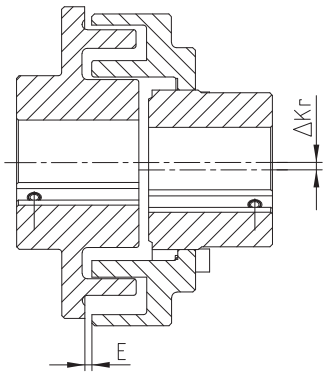
General information about the elastomer packing

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

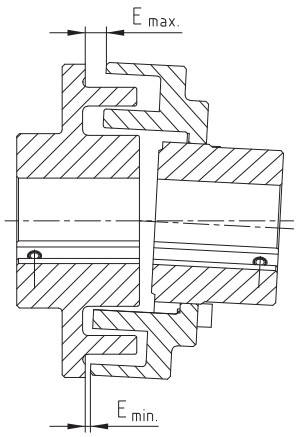
Displacements — Elastomer elements — Screws



Axial displacement



Radial displacement



Angular displacement

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

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 .

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	n = 750 min^{-1}	0,8	0,8	0,8	0,8	0,8	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,2	1,2	1,2	1,2
max. angular displacement ΔK_w	n = 1000 min^{-1}	0,7	0,7	0,7	0,7	0,7	0,9	0,9	0,9	0,9	0,9	0,9	0,9	1,1	1,1	1,1	1,1
or sum V	n = 1500 min^{-1}	0,5	0,5	0,5	0,5	0,5	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,9	0,9	0,9

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	8	9
Number of elements		8	10	10	10	10	12	12	12	12	16	16	16	16	20	20	20
Dimensions of elastomer	b	18,4			24,9		27,2		27,7	34,9	26,9	34,9	40	43,3	45,7	52,1	58,1
elements	t	10			15,3		16,1		18,4	19,6	18,4	19,6	22,2	28,6	25,0	28,6	29,3
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	60,0	59,7	69

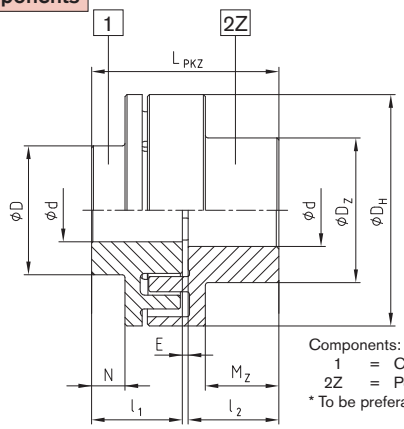
Type PKD — Dimension cyl. screw DIN EN ISO 4762																	
Couplingsize		8	9	10	12	14	15	17	19	20	22	25	28	30	35	40	45
Screw size	M	—	—	—	—	—	M8	M8	M8	M10	M8	M10	M10	M12	M12	M16	M16
	l	—	—	—	—	—	30	25	25	30	30	30	40	40	55	55	60
Number		—	—	—	—	—	6	6	6	6	8	8	8	8	10	10	10
Tigthening torque T_A [Nm]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

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

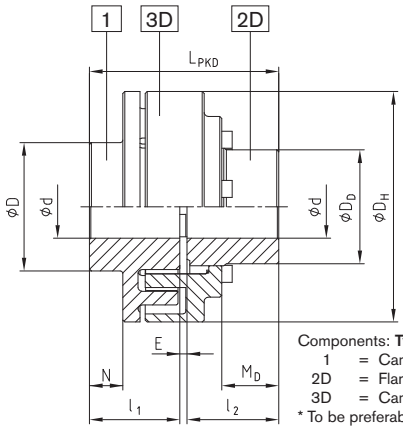
- Torsionally flexible / maintenance-free
- Reduced vibrations
- Shear type
- Axial plug-in assembly
- Short overall length / minimum distance between shafts
- In PKD the elastomer elements can be changed without moving driver or driven
- Approved according to EC Standard 94/9/EC (Explosion Certificate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

Components



Components: **Type PKZ (Z)**
1 = Cam section (EN-GJL-250)
2Z = Pocket section * (EN-GJL-250)
* To be preferably used drive-sided

Type PKZ (Z) – (Size 8 to 30)



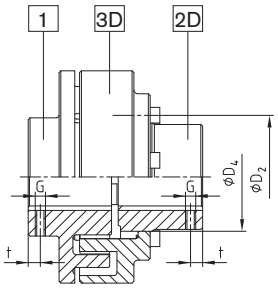
Components: **Type PKD (D)**
1 = Cam section * (EN-GJL-250)
2D = Flange hub (EN-GJS-400/steel)
3D = Cam ring (EN-GJL-250)
* To be preferably used drive-sided

Type PKD (D) – (Size 15 to 45)

POLY type 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

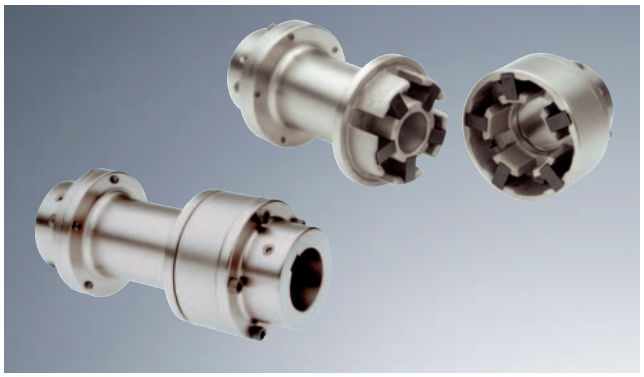
[1] Maximal torque $T_{Kmax} = T_{KN} \times 2$; Standard material Perbunan (NBR) 92 Shore-A; Standard hub material: EN-GJL-250
[2] For v = 30 m/sec. For peripheral speeds exceeding v = 30 m/sec. we recommend a dynamical balancing; hub material EN-GJS-400-15
[3] Refer to medium bore



Order form:

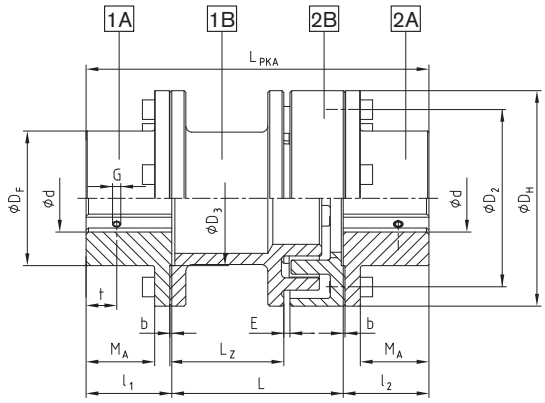
POLY	PKD	28	d_1 ∅90	d_2 ∅80
Coupling	Type	Size	Finish bore part 1	Finish bore part 2

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
- Ex Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)
- Detailed mounting instructions and further information at www.ktr.com

Components



Components: **Type PKA**
1A/2A = Coupling flange (steel)
1B = Spacer (EN-GJL-250)
2B = Driving flange (EN-GJL-250)
1A and 1B to be preferably used drive-sided

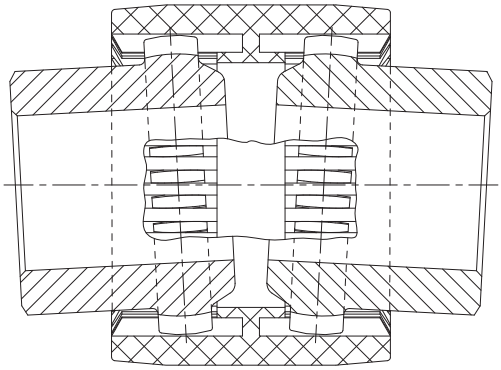
POLY type PKA

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
												100	230	53				14,77
15	320	4300	70	157	110	135	110	65	1,5	49,5	4	140	270	93	M8	25	10	15,63
												180	310	133				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
												140	290	91				24,62
19	660	3500	90	195	135	160	120	75	1,5	59,5	4	180	330	131	M8	30	10	25,91
												250	400	201				28,15
												140	300	81				30,96
20	820	3300	100	205	150	175	130	80	2,0	61,0	4	180	340	121	M8	30	10	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
28	2500	2350	140	288	215	250	170	110	2,0	91,0	5	180	400	114	M12	45	40	77,84
												250	470	184				82,41

Order form:

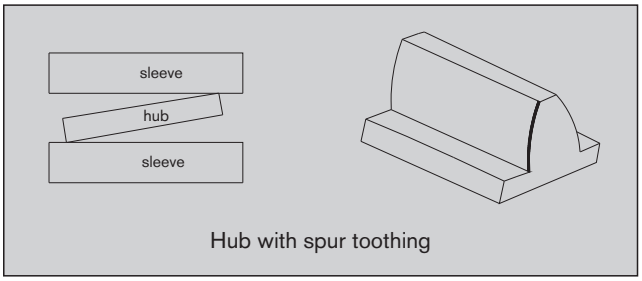
POLY	PKA	28	140	∅38	∅40
Coupling	Type	Size	Dismountable L	Finish bore part 1A	Finish bore part 2A

Operating description



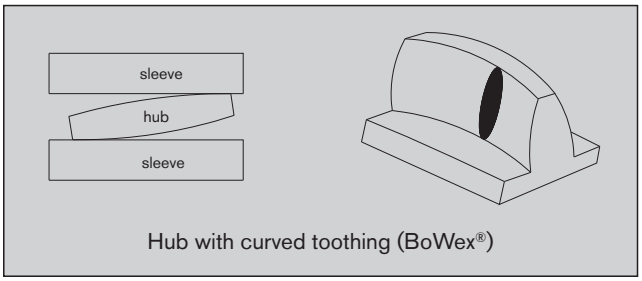
BoWex® Curved-tooth gear couplings are flexible shaft connections for a positive torque transmission and specifically suitable to compensate for axial, radial and angular shaft misalignment.

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.



Hub with spur toothing

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



Hub with curved toothing (BoWex®)

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 insructions at www.ktr.com.

Technical data

Power, torque and speed

Design and size		Power $\frac{P\ [kW]}{n\ [1/min]}$		Torque T_K [Nm]			Max. speed [1/min]
		Rated	Maximum	T_{KN}	$T_{K\ max.}$	T_{KW}	
Type plug-in coupling / junior M	junior 14 / M-14	0,0005	0,010	5	10	2,5	6000
	junior 19 / M-19	0,0008	0,0017	8	16	4	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	0,012	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	42 HE 40Sh	0,014	0,041	130	390	36	
	42 HE 50Sh	0,016	0,047	150	450	45	6200
	42 HE 65Sh	0,019	0,057	180	540	54	
	48 HE 40Sh	0,021	0,063	200	600	60	
	48 HE 50Sh	0,024	0,072	230	690	69	5600
	48 HE 65Sh	0,029	0,088	280	840	84	
	65 HE 40Sh	0,037	0,110	350	1050	105	
	65 HE 50Sh	0,042	0,126	400	1200	120	4500
	65 HE 65Sh	0,052	0,157	500	1500	150	
	G 65 HE 40Sh	0,045	0,135	430	1290	129	
	G 65 HE 50Sh	0,052	0,157	500	1500	150	4300
	G 65 HE 65Sh	0,065	0,195	620	1860	186	
	80 HE 40Sh	0,089	0,267	750	2250	225	
	80 HE 50Sh	0,096	0,298	950	2850	285	3600
	80 HE 65Sh	0,126	0,372	1200	3600	360	
	G 80 HE 40Sh	0,130	0,39	1250	3750	375	
	G 80 HE 50Sh	0,16	0,50	1600	4800	480	3000
	G 80 HE 65Sh	0,21	0,62	2000	6000	600	
	100 HE 40Sh	0,21	0,62	2000	6000	600	
	100 HE 50Sh	0,26	0,78	2500	7500	750	2700
	100 HE 65Sh	0,36	1,00	3200	9600	960	
	125 HE 40Sh	0,31	0,942	3000	9000	900	
	125 HE 50Sh	0,41	1,256	4000	12000	1200	2300
	125 HE 70Sh	0,52	1,570	5000	15000	1500	
	G 125 HE 40Sh	0,42	1,26	4000	12000	1200	
	G 125 HE 50Sh	0,54	1,63	5200	16000	1600	2100
	G 125 HE 70Sh	0,68	2,04	6500	20000	2000	
	150 HE 40Sh	0,58	1,73	5500	16500	1650	
	150 HE 50Sh	0,73	2,20	7000	21000	2100	1800
	150 HE 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**

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

$$T_N\,[Nm] = 9550 \cdot \frac{P_{AN/LN}\,[kW]}{n\,[1/min]}$$

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.

3 **Load produced by torque shocks**

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

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

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

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

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.

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

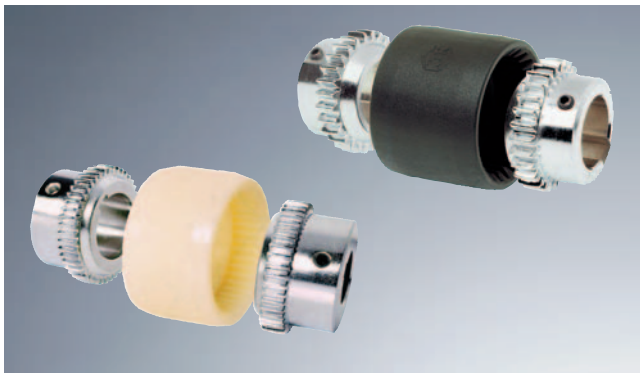
The shaft-hub-connection has to be verified by the customer.
Permissible surface pressure according to DIN 6892 (method C).

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 $p_{perm.}$ =	$0{,}9 \cdot R_e$ ($R_{p0.2}$)

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 $\geq 10^5$ 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
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.

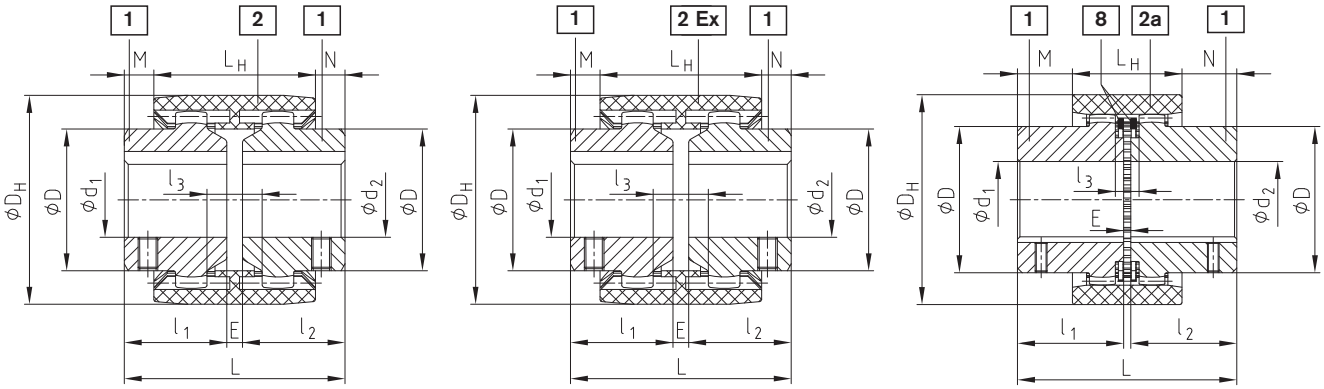
Description	Symbol	Definition or explanation
Peak torque of load side	T_{LS}	Peak torque with torque shock on load side, e. g. braking.
Vibratory torque of machine	T_W	Amplitude of the vibratory torque effective on the coupling.
Damping power of the machine	P_W	Damping power which is effective on the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

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
- Ex 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)
- For performance data see page 47

Components



Type M | Type M...C | Type I

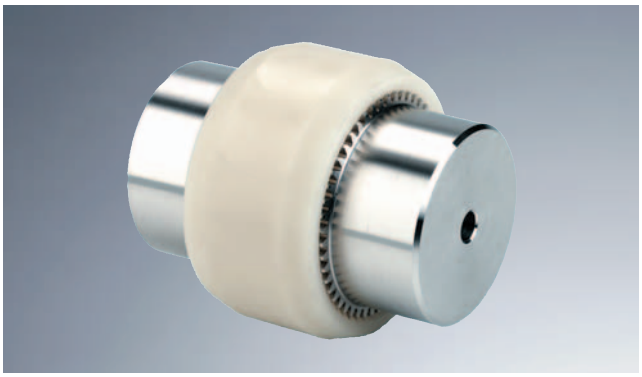
BoWex® type M, type I and type M...C

Size		Finish bore d_1, d_2			Dimensions [mm]										Weight with max. bore-Ø			Massmoment of inertia J with max. bore-Ø		
	Ex	Pilot bored		max.	l_1, l_2	E	L	L_H	M, N	l_3	D	D_H	Tip circle ØDz of hub	Lengthened l_1, l_2 max.	Sleeve [kg]	Hub [kg]	Total [kg]	Sleeve [kgcm²]	Hub [kgcm²]	Total [kgcm²]
M-14	M-14C	-	Finish bores see company catalogue page 75	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	26 70 lg.		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	175	145	-	1,13	5,20	11,53	68,9	150,8	370,5
I-100		35		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:

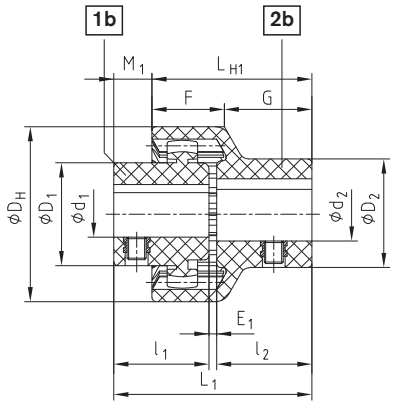
BoWex® M-28	d_1 Ø 20	d_2 Ø 28
Size and type of coupling	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)

made from corrosion-proof material

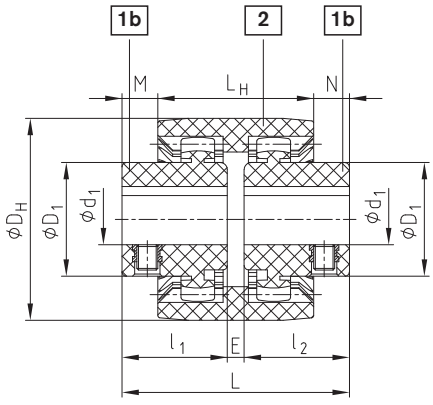


- BoWex® shaft couplings made from polyamid or stainless steel (material-no. 1.4571 and V4A respectively)
- BoWex® junior plug-in coupling (2 parts)
- BoWex® junior M (3 parts) from polyamide
- BoWex® M with sleeve made from polyamide and hubs from stainless steel (1.4571), available with finish bore acc. to ISO fit H7, keyway to DIN 6885, sheet 1 - JS9 and thread for setscrews (page 51)
- For performance data please see page 47

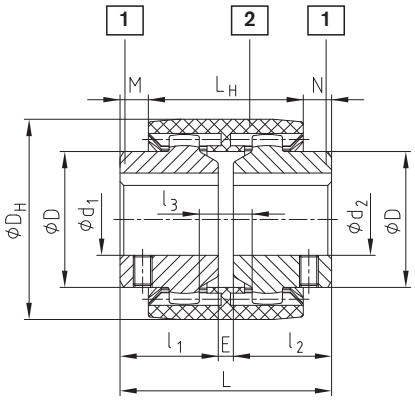
Components



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 d_1	D_1	Plug-in-sleeve part 2b d_2	D_1	D_H	l_1, l_2	E_1	E	L_{H1}	L_H	L_1	L	M_1	M, N
14	Ø6, Ø7, Ø8, Ø9	22	Ø8	22										
M-14	Ø10, Ø11	25	Ø10, Ø11	25	40	23	2	4	40	37	48	50	8	6,5
	Ø12, Ø14	26	Ø12, Ø14	26										
19	Ø12, Ø14	27	Ø14, Ø15	29										
	Ø16	30			48	25	2	4	42	37	52	54	10	8,5
M-19	Ø19	32	Ø19	35										
	Ø10, Ø11, Ø12	26	Ø14, Ø16	32										
24	Ø14, Ø15, Ø16	32			53	26	2	4	45	41	54	56	9	7,5
M-24	Ø18, Ø19, Ø20	36	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	84	18

Further sizes on request.

Application areas:
Food processing industry, print and paper, textile industry, sewage technology, wash-mobiles, chemical and pharmaceutic industry, offshore units ...
For applications in aggressive atmospheres (air, water, chemicals etc.).

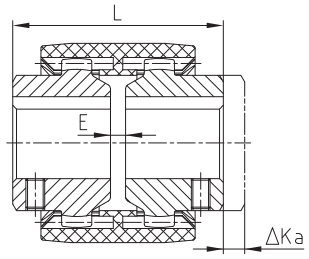
Order form:

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)

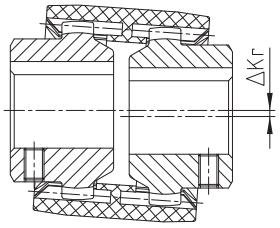
Displacements and threads for setscrews

Displacements

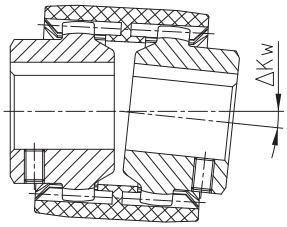
BoWex® couplings are double cardanic and in addition to transmitting the power compensate for axial, radial and angular shaft displacements in a way to prevent damages from the driving or driven machine, respectively.



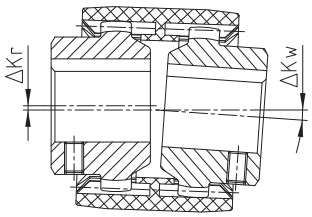
Parallel shafts



Shafts subject to radial displacement



Shafts subject to angular displacement

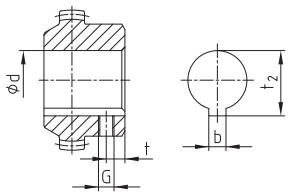


Shafts subject to radial and angular displacement

Displacements						
Type and size	Overall length L of the coupling assembled (standard design) [2] [mm]	Can the coupled power pack be disassembled vertically without axial displacement?	Shift distance dimension E [1] [mm]	Max. axial displacement ΔKa [mm]	Max. permissible displacements ΔKr radial [mm]	or ΔKw angular [°]
junior 14 (plug-in coupling)	48					
junior 19 (plug-in coupling)	52	no	2	± 1	± 0,1	
junior 24 (plug-in coupling)	54					
junior M-14; M-14	50				± 0,3	
junior M-19; M-19	54	no				
junior M-24; M-24; Special I-24	56					
24 AS; 24 SSR		yes				
24 SG	76					
M-28; Special I-28		no				
28 AS; 28 SG; 28 SSR		yes				
M-32; Special I-32	84	no	4		± 0,4	
32 AS; 32 SG; 32 SSR		yes				
M-38		no				
M-42		no		± 1		± 1° each hub
45 AS; 45 SG; 45 SSR	88	yes				
Special I-45		no				
M-48	104					
M-65; Special I-65	114	no			± 0,6	
65 AS; 65 SG; 65 SSR		yes				
80 AS; 80 SSR	186		6		± 0,7	
I-80; Special I-80; 80 SG		no				
100 AS; 100 SSR	228	yes	8		± 0,8	
I-100; Special I-100; 100 SG		no				
125 AS; 125 SSR	290	yes	10		± 1,1	
I-125; Special I-125; 125 SG		no				

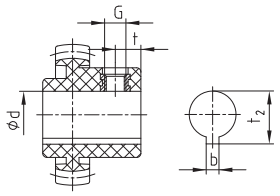
The assembled hubs must in every case be flush with the shaft ends. If it is difficult to determine the distance dimension E, reference may be made to the overall assembled length.
The shaft ends to be connected should be supported close to each coupling half.
1) The listed distance dimension E for the different couplings must be observed in every case, particularly for radial and angular misalignments.
2) If the coupling hubs have been shortened or lengthened on the outside, the overall length of the coupling assembled will be reduced by the corresponding figure.
3) The permissible displacement figures depend on speed and performance. We shall be glad to send you a displacement diagramme if required.
Prior to operation of the BoWex® coupling please make sure that the coupling sleeves are readily capable of axial movement.
The customer must provide guards in order to ensure that rotating parts cannot cause injury (Safety of Machines, DIN EN 292 part 2).

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®

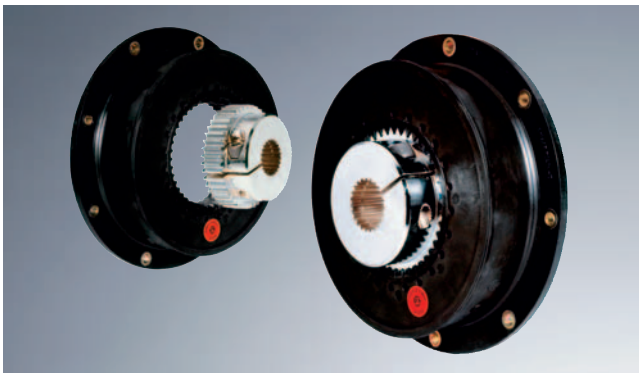
junior plug-in coupling and junior M-coupling

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

1) Hub length 55 mm t = 15 mm, 70 mm t = 20 mm

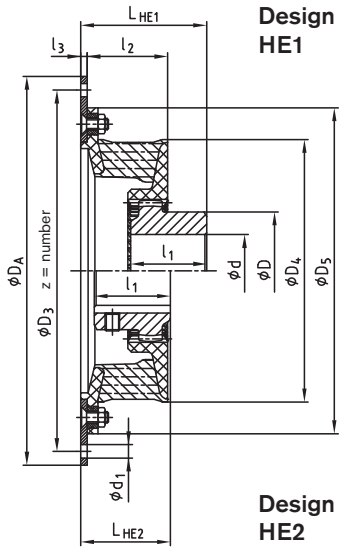
BoWex® junior – coupling hubs			
Size Dimensions	14	19	24
Thread G	M5	M5	M5
Hub 1b - Distance t	6	6	6
Plug-in sleeve 2b - Distance t	8	10	10
Tightening torque T_A [Nm]	1,4	1,4	1,4

Type HE



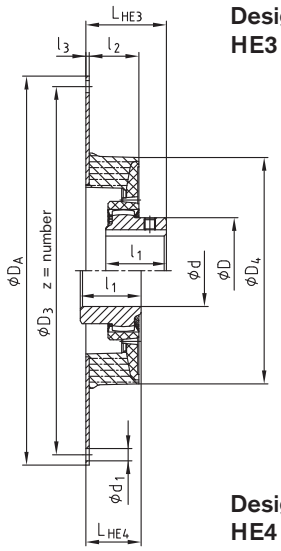
- Flange coupling with flanges according to SAE and special dimensions for mounting to I. C.-engines
- Easy assembly by axial plug-in
- Compensation of misalignment on driving and driven side
- Use of coupling hubs from the BoWex standard programme
- Finish bore according to ISO fit H7, keyway to DIN 6885, sheet 1 (JS9) - inch bores, taper bores, spline clamping hub
- Available in the hardness 40, 50 and 65 Shore A
- Ⓔx Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95) until size 80 including

Design HE1



Design HE2

Design HE3



Design HE4

Flange dimensions according to SAE J 620 [mm]				
Size	D_A	D_3	z	d_1
6 ½"	215,90	200,02	6	9
7 ½"	241,30	222,25	8	9
8"	263,52	244,47	6	11
10"	314,32	295,27	8	11
11 ½"	352,42	333,37	8	11
14"	466,72	438,15	8	14
16"	517,50	489,00	8	14
18"	571,50	542,90	6	18

BoWex-ELASTIC® type HE

Size	Design		Bore d [mm]		Flange connection according to SAE - J 620								Dimensions [mm]							Weight with pilot bored coupling	Mass moment of inertia with pilot bored coupling	
	HE1 HE2	HE3 HE4	Pilot bored	max.	6 ½"	7 ½"	8"	10"	11 ½"	14"	16"	18"	l_3	l_2	D_4	D_5	D	l_1	L_{HE1} L_{HE3}	L_{HE2} L_{HE4}	[kg]	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
	●				●	●															2,9	0,0106	0,0019
48 HE	●		-	48			●						4	45	164	198	68	50	78	50	3,1	0,0148	0,0019
	●							●													3,9	0,0298	0,0019
65 HE	●		-	65				●					5	55	205	244	96	55	85	62	6,4	0,0377	0,0064
	●								●												7,2	0,0594	0,0064
G 65 HE		●	-	65				●					3	45	205	-	96	55	73	50	5,3	0,0242	0,0076
		●							●												5,7	0,0372	0,0076
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					●				-	80	302	-	124	90	136	84	12,5	0,0402	0,0428
	●									●			6			356			142	90	17,3	0,2251	0,0428
100 HE		●	35	100						●			4	80	350	-	152	110	150	82	24,1	0,1951	0,1019
125 HE		●	45	125						●			-	98	416	-	192	140	186	103	45,8	0,3013	0,2861
		●									●		6						192	109	47,7	0,4123	0,2861
G 125 HE		●	45	125							●		6	89	440	-	192	140	179	91	48,4	0,4781	0,2916
		●										●				-					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® 42	HE 1	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

Technical data

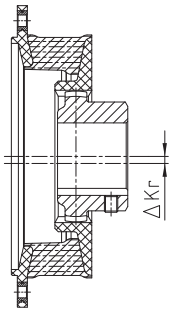
Technical data																							
Coupling sizes		42 HE			48 HE			65 HE			80 HE			100 HE			125 HE			150 HE		
								G 65 HE			G 80 HE						G 125 HE					
Elastomer hardness [Shore A]	Shore A	40 Sh	50 Sh	65 Sh	40 Sh	50 Sh	65 Sh	40 Sh	50 Sh	65 Sh	40 Sh	50 Sh	65 Sh	40 Sh	50 Sh	65 Sh	40 Sh	50 Sh	70 Sh	40 Sh	50 Sh	70 Sh
Rated torque	T_{KN} [Nm]	130	150	180	200	230	280	350 430	400 500	500 620	750 1250	950 1600	1200 2000	2000	2500	3200	3000 4000	4000 5200	5000 6500	5500	7000	9000
Maximum torque	$T_{K\ max.}$ [Nm]	390	450	540	600	690	840	1050 1290	1200 1500	1500 1860	2250 3750	2850 4800	3600 6000	6000	7500	9600	9000 12000	12000 16000	15000 20000	16500	21000	27000
Vibratory torque with 10 Hz	T_{KW} [Nm]	36	45	54	60	69	84	105 129	120 150	150 186	225 375	285 480	360 600	600	750	960	900 1200	1200 1600	1500 2000	1650	2100	2700
Permissible damping power 60 °C	P_{KW} [W]	20			27			45 51			90 135			160			180 200			225		
Permissible damping power 80 °C	P_{KW} [W]	6,5			9			15 17			30 45			53			60 67			75		
Max. perm. operating speed	$n_{max.}$ [min^{-1}]	6200			5600			4500 4300			3600 3000			2700			2300 2100			1800		
Twisting angle with rated torque	φ_{TKN} [°]	16	13	8	16	13	8	16 12	13 10	8 6	14 12	13 10	6 6	12	10	6	12 11	10 9	6 5	10	8	5
Dynamic torsion spring stiffness	C_{dyn} [Nm/rad]	550	850	2700	850	1300	3500	1600 2350	2200 3000	6000 8500	4500 7500	6500 12000	18000 32000	12000	19000	48000	19000 30000	30000 44000	75000 110000	42000	67000	166000
Relative damping	ψ	0,6	0,8	1,2	0,6	0,8	1,2	0,6	0,8	1,2	0,6	0,8	1,2	0,6	0,8	1,2	0,6	0,8	1,2	0,6	0,8	1,2
Resonance-factor $V_R \approx \frac{2 \cdot \pi}{\psi}$	V_R	10,5	7,9	5,2	10,5	7,9	5,2	10,5	7,9	5,2	10,5	7,9	5,2	10,5	7,9	5,2	10,5	7,9	5,2	10,5	7,9	5,2
Radial spring stiffness	C_r [N/mm]	142	219	697	176	269	724	209 259	288 346	784 975	351 476	507 762	1404 2031	366	570	1200	617 560	974 920	2434 1915	714	1200	2500
Perm. rad. coupling misalignment with n = 1500 min^{-1}	ΔKr [mm]	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
Max. perm. rad. coupl. misalignment for short-term start	$\Delta Kr_{max.}$ [mm]	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 coupl. misalignment with n = 1500 min^{-1}	ΔKw [°]	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
Perm. angular coupl. misalignment with n = 3000 min^{-1}	ΔKw [°]	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
Max. perm. angular coupl. misalignment for short-term start	$\Delta Kw_{max.}$ [mm]	1,5			1,5			1,5			1,5			1,5			1,5			1,5		
Perm. axial coupling misalignment	ΔKa [mm]	± 2			± 2			± 2			± 2 ± 3			± 3			± 3			± 5		

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

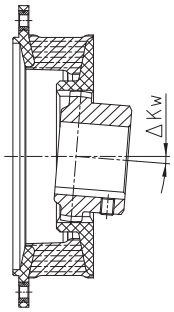
Displacements

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

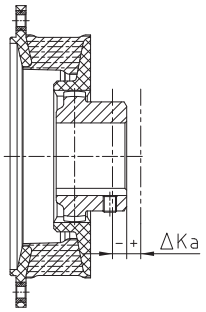
$$\Delta Kr_{perm.} = \Delta Kr \cdot S_t \cdot \sqrt{\frac{1500}{n_x}}$$



Radial displacement ΔKr



Angular displacement ΔKw



Axial displacement ΔKa

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

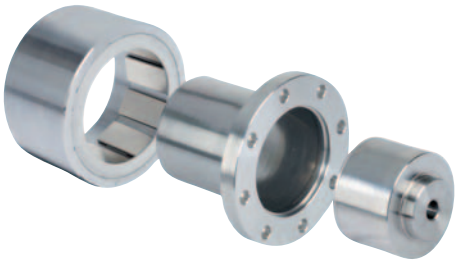
Coupling description

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 occuring.

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

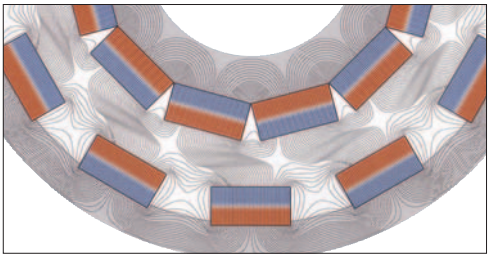
The coupling consists of an external and an internal rotor. The external rotor has high-quality, permanent magnets of changing polarity on the inner side and the internal rotor has them on the outside. The external rotor is normally fixed on the drive side and the magnets are glued in the keyways. The 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.

Internal rotor

External rotor

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.



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.

Containment shroud

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.

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: Standard material Hub	External rotor: Standard material Magnets	External rotor: Max. operating-temperature $t_{max.}$ [°C]	External rotor: Weight unbored [kg]	External rotor: Mass moment of inertia with min. bore Ø [kgm²]	Internal rotor: Standard material Hub	Internal rotor: Standard material Magnets	Internal rotor: Max. operating-temperature $t_{max.}$ [°C]	Internal rotor: Weight pilot bored [kg]	Internal rotor: Mass moment of inertia with min. bore Ø [kgm²]	Containment shroud: Standard material 2) Flange	Containment shroud: Standard material 2) Can	Containment shroud: Max. pressure resistance $p_N/p_{max.}$ 1) [bar]	Containment shroud: Max. operational speed [min⁻¹]
SA 22/4	0,15	Structural steel S355J2G3	NdFeB	150	0,129	30,01 x 10⁻⁶	1.4462	NdFeB	150	0,039	1,912 x 10⁻⁶	Stainless steel 1.4571	Stainless steel 1.4571	60/90	3600 min⁻¹ using metal stationary cans as per KTR standard
SA 34/10	1				0,256	117,4 x 10⁻⁶				0,093	12,1 x 10⁻⁶			16/24	
SA 46/6	3		Samarium-cobalt (Sm_2Co_{17}) or neodymium-iron-boron (NdFeB)	300 °C (Sm_2Co_{17}) or 150 °C (NdFeB)	0,619	458,6 x 10⁻⁶				0,317	125 x 10⁻⁶				
SA 60/8	7				1,751	2279 x 10⁻⁶				0,563	221 x 10⁻⁶			40/60	
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		Stainless steel 1.4571 or Hastelloy	16/24 bar with 1.4571, 25/375 bar with Hastelloy	
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	Stainless steel 1.4571	Samarium-cobalt (Sm_2Co_{17})	300	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			25/37.5	
SD 135/20	200				6,061	36870 x 10⁻⁶				9,497	22387 x 10⁻⁶				
SC 165/24	210		Samarium-cobalt (Sm_2Co_{17})	300	5,305	45480 x 10⁻⁶				11,400	37917 x 10⁻⁶		Hastelloy		
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				

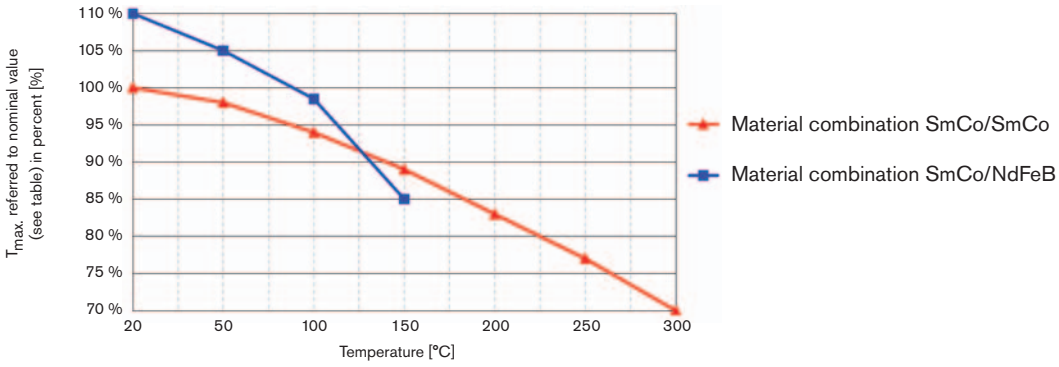
1) Resistances to higher pressures can be realized on request of the customer.

2) Alternative materials of stationary cans like oxide ceramics (see page 58) or PEEK are available on request.

Description	Reference	Definition or explanation
Static tear torque of coupling	$T_{K\ max.}$	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 magntic field. Exceeding irretrievable losses of magnetization.

Torque reduction with temperature increase

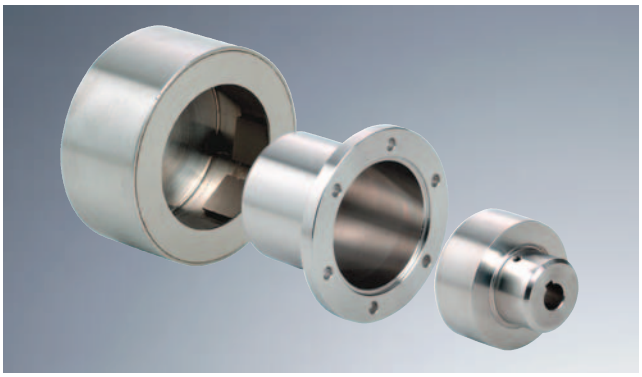


Temporary torque reduction with increased temperature for alternative material combinations [%]

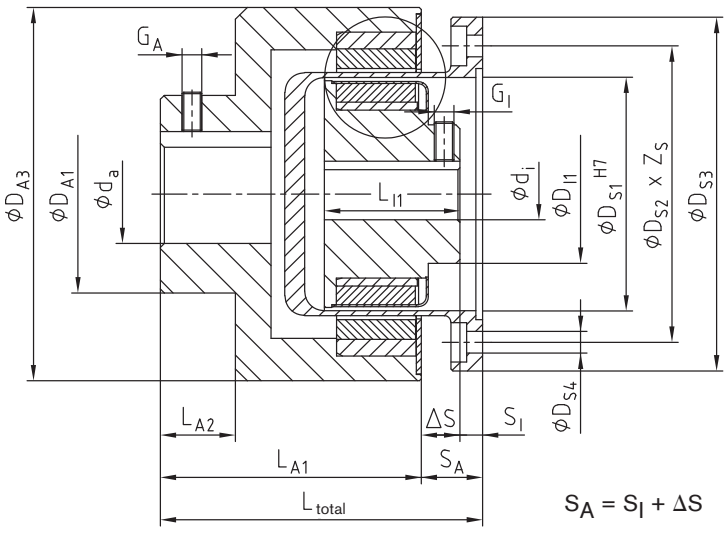
Please note:

To reduce expenses KTR would recommend to use NdFeB magnets for the external rotor if the operating temperature falls below 150 °C.

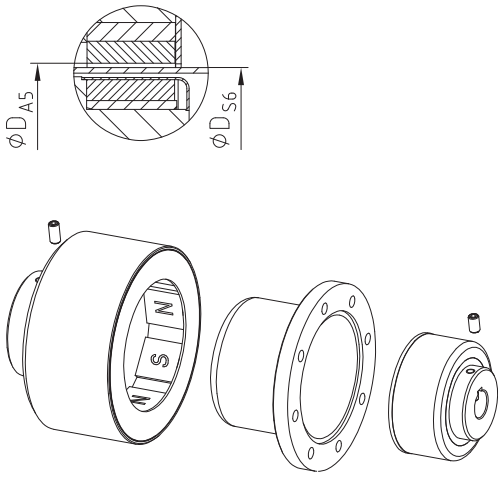
Sizes SA 22/4 to SB 60/8



- 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
- Ⓔx Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)
- Mounting instructions available at www.ktr.com



$S_A = S_I + \Delta S$



External rotor | Containment shroud | Internal rotor

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	35	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

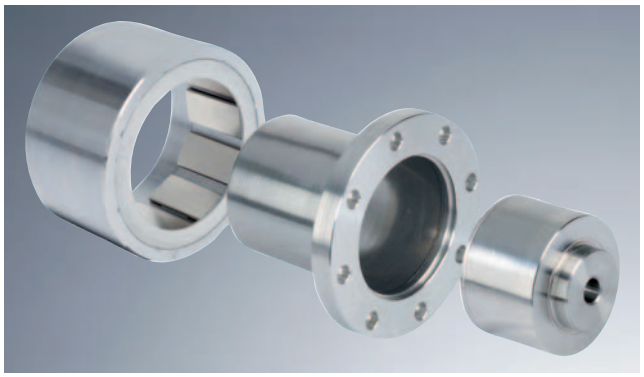
Size	Dimensions [mm]											
	External rotor								General			
	Finish bore 1) d_a		D_{A1}	D_{A3}	L_{A1}	L_{A2}	ΔS	G_A	D_{S6}	D_{A5}	L_{total}	
	min.	max.									min.	max.
SA 22/4	5	11	18	38	35	8,5	5,0	M4	23,5	24,8	42	42
SA 34/10	5	14	22	53	38,5	10,5	5,5	M4	36,0	37,3	46	49,5
SA 46/6	5	19	30	69,5	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]

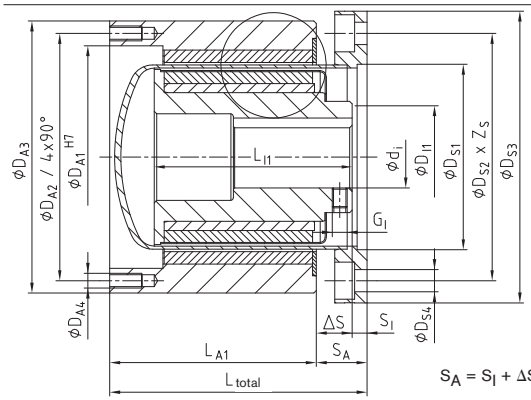
Order form:

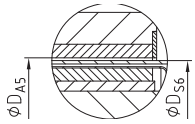
MINEX® SA 60/8	Design	d_i Ø 20 mm	d_a Ø 24 mm
Coupling size	NdFeB – $t_{max.}$ = 150 °C Sm_2Co_{17} – $t_{max.}$ = 300 °C	Finish bore (H7) feather keyway DIN 6885 sheet 1 (JS9)	

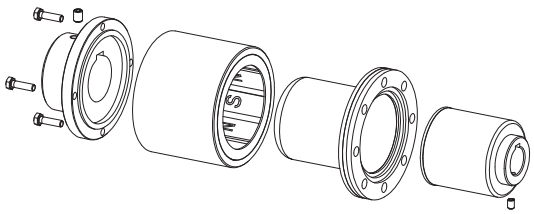
Sizes SA 75/10 to SE 200/30



- 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
- Ⓔx Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)







Optional flange hub | External rotor | Containment shroud | Internal rotor

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	38	90	130	135	6	18,0	M16	200	252	278	11	12
SE 200/30	550												

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	12,5			
SB 75/10	90	100	110	M6	61		74,6	76,2	102
SC 75/10					83,5	14,5			
SA 110/16					41				
SB 110/16	126	135	145	M6	61	19,0	111,5	112,8	115
SC 110/16					81				
SB 135/20					70	18,5			
SC 135/20	150	160	170	M6	90		136,5	138,2	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	168,5	170
SE 165/24					130				
SD 200/30	212	222	232	M6	130	26,0	198,0	199,5	180
SE 200/30									

1) Bore H7 with feather keyway DIN 6885 sheet 1 [JS9]

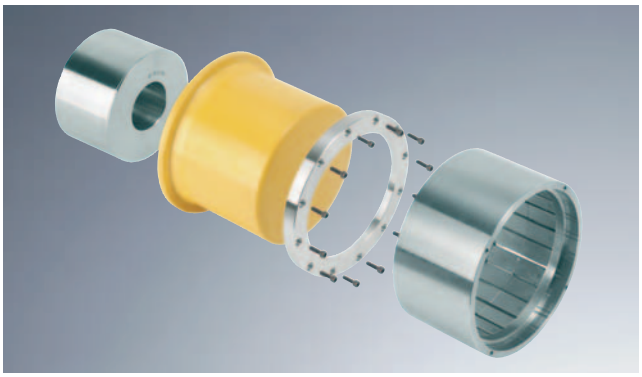
Please order our company catalogue for sizes SD 250/38 to SF 250/38.

Futher sizes on request.

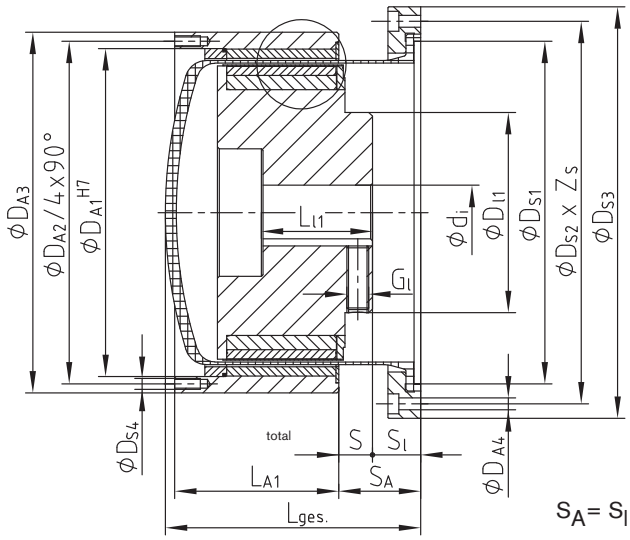
Order form:

MINEX® SB 75/10	Design	d_i Ø 20 mm	d_a Ø 24 mm	Containment shroud type
Coupling size	NdFeB – $t_{max.}$ = 150 °C Sm_2Co_{17} – $t_{max.}$ = 300 °C	Finish bore (H7), feather keyway DIN 6885 sheet 1 (JS9)		Stainless steel 1.4571 or Hastelloy

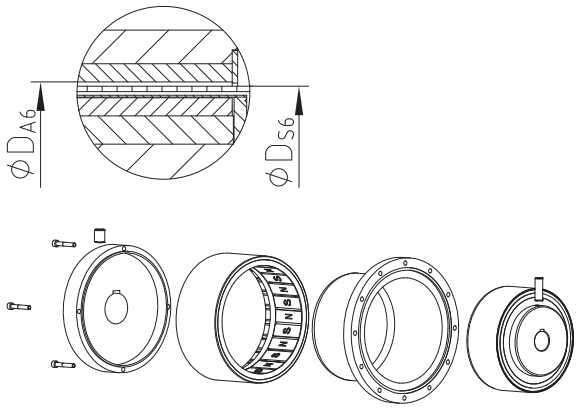
Sizes SB 135/20 to SE 200/30 with stationary can from ceramics



- 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 SB 135/20 to SE 200/30 available from stock, other sizes on request
- Ex Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)



$S_A = S_I + \Delta S$



Optional flange hub | External rotor | Containment shroud with clamping ring | Internal rotor

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.						
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	38	90	130	135	6,0	14,0	M16	242	272	294	9,0	12
SE 200/30	550												

Technical data – external rotor and general

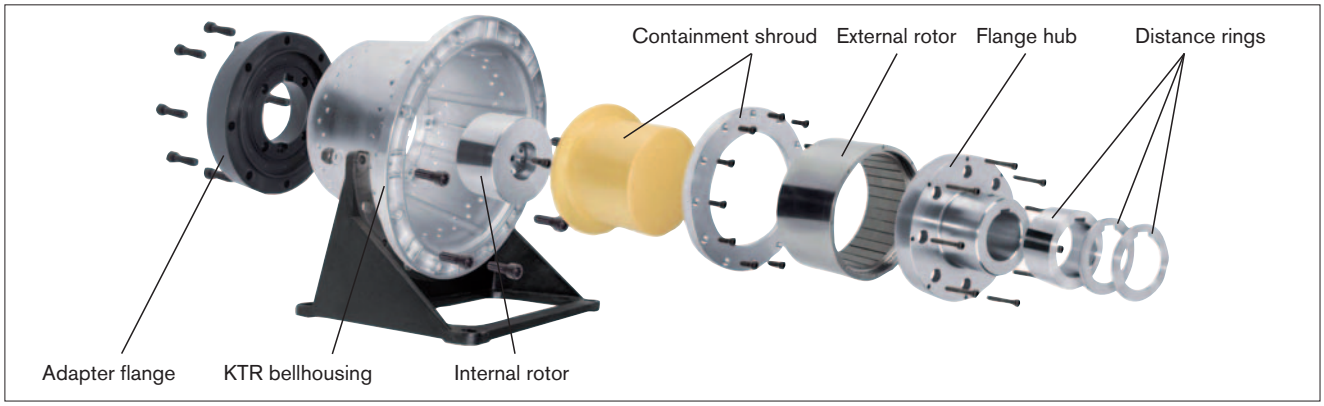
Size	Dimensions [mm]								
	External rotor						General		
	D_{A1}	D_{A2}	D_{A3}	D_{A4}	L_{A1}	ΔS	D_{S6}	D_{A5}	L_{total}
SB 135/20					70	18,5			
SC 135/20	150	160	170	M6	90		136,5	138,2	139
SD 135/20					110	22,0			
SC 165/24					90	18,5			
SD 165/24	180	188	198	M6	110	21,0	167,0	168,5	170
SE 165/24					130				
SD 200/30	212	222	232	M6	130	26,0	198,0	199,5	180
SE 200/30									

1) Bore H7 with feather keyway DIN 6885 sheet 1 [JS9]
Futher sizes on request.

Order form:

MINEX® SB 135/20	Design	d_i Ø 20 mm	Containment shroud type
Coupling size	NdFeB – $t_{max.}$ = 150 °C Sm_2Co_{17} – $t_{max.}$ = 300 °C	Finish bore (H7), feather keyway DIN 6885 sheet 1 (JS9)	Oxide ceramics ZrO_2MgO

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

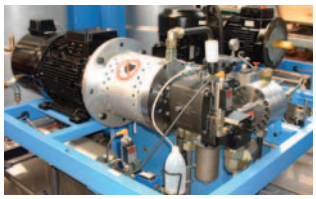
Conveying and proportioning the media polyol and isocyanate in the processing plants for PUR, ambient air has to be prevented from penetrating into the process, since otherwise unwanted reactions may be produced.

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

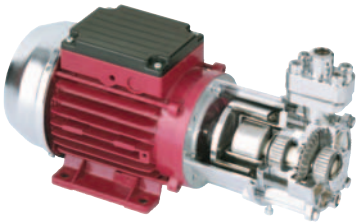
The assemblies are available for all motor-pump-combinations and in various materials.

Axial piston pump REXROTH type A2VK

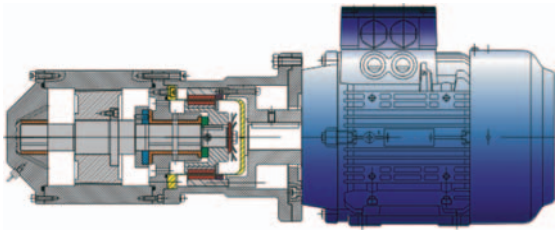


Maintenance-free sealing of dosing pump for polyde and isocyanate in high-pressure reaction casting machines

Examples of application

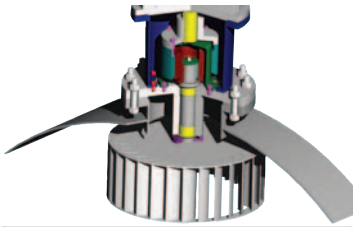


Use of the MINEX®-S in a small centrifugal pumps



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

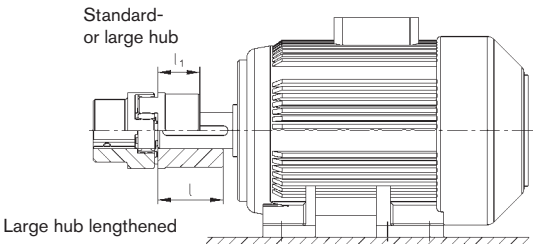


MINEX®-S for the separation of autoclaves (T.B.M./STERICHEM) in laboratories and clinics

Technical data for coupling selection/selection of components

Motor type	_____	Pump type	_____
Power	_____ kW	Speedl	_____ min^{-1}
Pressure	_____ bar	Temperature	_____ °C
Viscosity of medium	_____ mm^2/s	Max. perm. dimensions	_____ $ØDxL_{total}$

Selection



KTR couplings for standard IEC motors, protection IP 54/IP 55 with motor output n = 3000 1/min., 2-pole

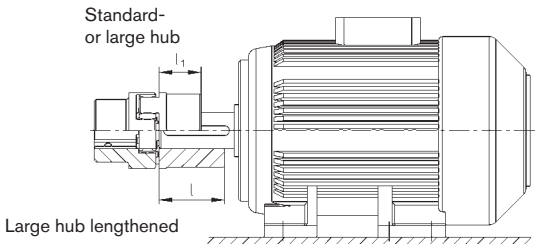
Selection of standard IEC motors (motor output n=3000 1/min., 2-pole)

A. C. motor 50 Hz		Motor output n = 3000 1/min.		Coupling size	Coupling size	Coupling size	Coupling size	Coupling size
Size	Shaft end d x l [mm]	Output P [kW]	Torque T [Nm]	**RIGIFLEX®-N**	**RADEX®-N**	**ROTEX®** (92 Sh A)	**POLY-NORM®**	**POLY**
56	9 x 20	0,09	0,32			9 [1]		
		0,12	0,41					
63	11 x 23	0,18	0,62					
		0,25	0,86		20	14		8
71	14 x 30	0,37	1,3					
		0,55	1,9					
80	19 x 40	0,75	2,5				28/32	
		1,1	3,7			19		
90S	24 x 50	1,5	5,0		25			
90L		2,2	7,4					
100L	28 x 60	3,0	9,8		35	24		9
112M		4,0	13					
132S	38 x 80	5,5	18					
		7,5	25			28	38	10
132M					42			
160M	42 x 110	11,0	36					
		15,0	49			38	42	12
160L		18,5	60					
180M	48 x 110	22	71		50		48	
180L						42		
200L	55 x 110	30	97					
		37	120				55	15
225S				65	60			
225M		45	145					
250M	60 x 140	55	177			48	60	17
280S	65 x 140	75	241			55		
280M		90	289				65	19 [3]
315S		110	353		70			
315M		132	423	75		65	75	20 [3]
		160	513					
315L		200	641					
						75	85	22 [3]
315		250	802	85				
		315	1010		80			
355	75 x 140	355	1140				90	
		400	1280			90		
		500	1600	110				
400	80 x 170	560	1790		85		100	
		630	2020					
		710	2270	120		100	110	
450	90 x 170	800	2560					
		900	2880		90	110	125	
		1000	3200	140				

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 ($T_{Kmax.}$).
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
3) dynamical balancing is necessary

Selection



KTR couplings for standard IEC motors, protection IP 54/IP 55 with motor output n = 1500 1/min., 4-pole

Selection of standard IEC motors (motor output n=1500 1/min., 4-pole)								
A. C. motor 50 Hz		Motor output n = 1500 1/min.		Coupling size	Coupling size	Coupling size	Coupling size	Coupling size
Size	Shaft end d x l [mm]	Output P [kW]	Torque T [Nm]	RIGIFLEX®-N	RADEX®-N	ROTEX® (92 Sh A)	POLY-NORM®	POLY
56	9 x 20	0,06	0,43			9 [1]		
		0,09	0,64					
63	11 x 23	0,12	0,88					
		0,18	1,3		20	14		8
71	14 x 30	0,25	1,8					
		0,37	2,5					
80	19 x 40	0,55	3,7				28/32	
		0,75	5,1			19		
90S	24 x 50	1,1	7,5		25			
90L		1,5	10					
100L	28 x 60	2,2	15			24		9
		3,0	20		35			
112M		4,0	27					
132S	38 x 80	5,5	36			28	38	10
132M		7,5	49		42			
160M	42 x 110	11,0	72			38	42	12
160L		15,0	98					
180M	48 x 110	18,5	121		50	42	48	14
180L		22	144					
200L	55 x 110	30	196	65	60		55	15
225S	60 x 140	37	240			48	60	17
225M		45	292			55		19
250M	65 x 140	55	356		70		65	
280S	75 x 140	75	484	75		65 [2]	75	20
280M		90	581					
315S	80 x 170	110	707		80	75 [2]	85	22
315M		132	849	85				25
		160	1030			90	90	
315L		200	1290					28
	85 x 170			110				
315		250	1600		85		100	
		315	2020					
		355	2280	120		100	110	30
355	95 x 170	400	2570		105			
		500	3210			110		
		560	3580			125	125	35
400	110 x 210	630	4030	140	115			
		710	4540					
		800	5120			140		40
450	120 x 210	900	5760		160			
		1000	6400	160		160		

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 ($T_{Kmax.}$).
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
3) dynamical balancing is necessary

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