RADEX® MK
Steel Diaphragm Coupling

RADEX® - N
Steel Disc Coupling

RADEX® - NC
Servo Disc Coupling

RIGIFLEX®
Steel Disc Coupling

Catalog Contents

RADEX® MK

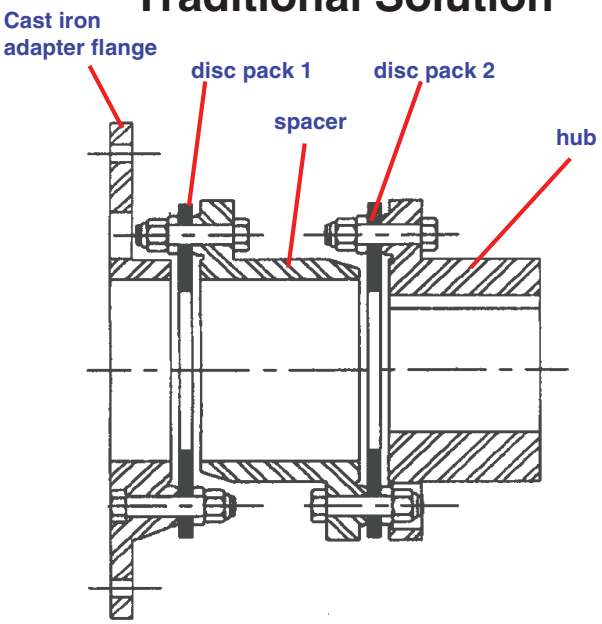
Steel Diaphragm Coupling

For advanced drive technology KTR®

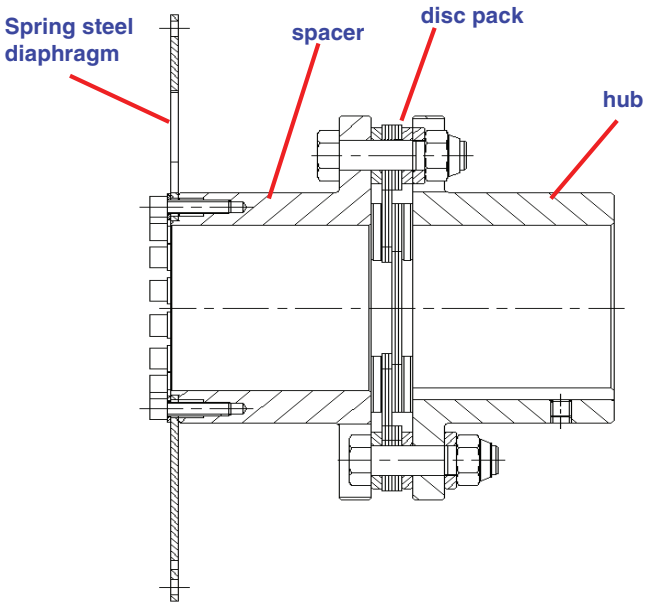
High Performance and Durability

- Steel diaphragm disk coupling for engine drives
- Diaphragm adapts directly to flywheel allowing high misalignments
- Short / Compact design
- Simple/Reliable Cost Effective

Traditional Solution



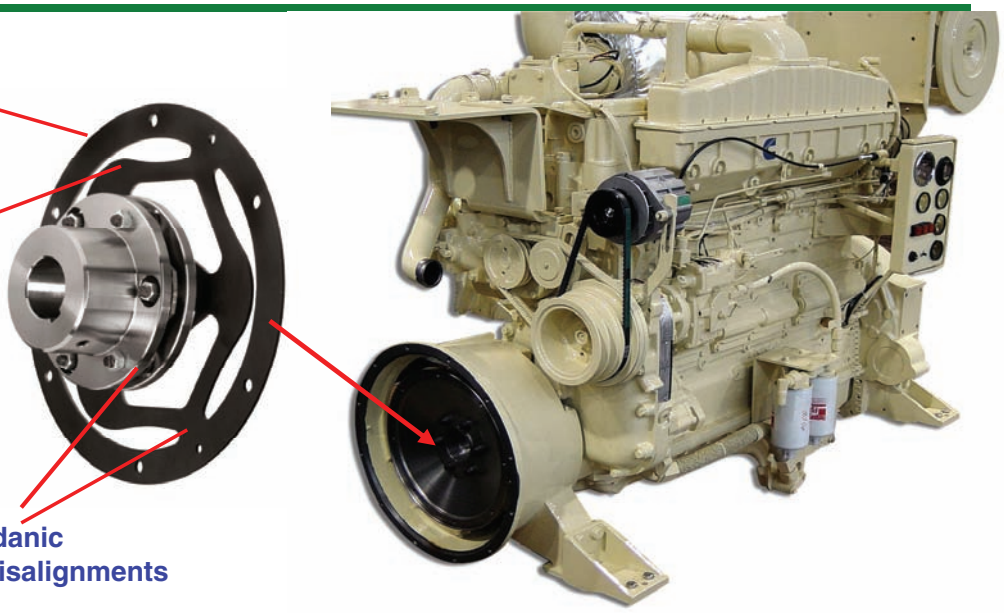
KTR RADEX® MK



Diaphragm handles misalignment and connects the coupling directly to the engine flywheel

Relieved diaphragm accommodates higher angular misalignment and decreases stress concentrations for longer coupling life

Diaphragm & RADEX® MK disk pack creates double cardanic compensation for complex misalignments



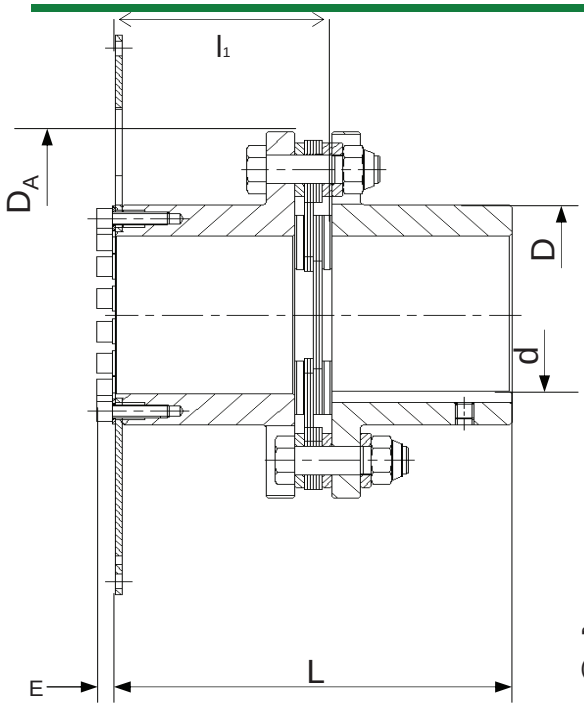
RADEX® MK

Steel Diaphragm Coupling

For advanced drive technology KTR

High Performance and Durability

- A variety of flywheel adapters are available (see table below) for fast delivery
- Hubs are available with std. bore & keyway or spline (clamping style hubs are avaliable)
- Air & Gas Compressors, API/ANSI Pumps, Hydraulics, Marine (special designs on request)
- Torsionally Rigid (torsional analysis available)



Coupling size	AVAILABLE SAE J 620 FLYWHEEL ADAPTERS									
	SAE	6 1/2"	7 1/2"	8"	10"	11 1/2"	14"	16"	18"	21"
RADEX-MK	O.D.	8 1/2"	9 1/2"	10 3/8"	12 3/8"	13 7/8"	18 3/8"	20 3/8"	22 1/2"	26 1/2"
60		■	■	■	■					
70		■	■	■	■	■				
80		■	■	■	■	■	■			
85		■	■	■	■	■	■	■	■	
90					■	■	■	■	■	
105					■	■	■	■	■	
115						■	■	■	■	
135						■	■	■	■	■
160							■	■	■	■
180							■	■	■	■
190								■	■	■
220								■	■	■

"E" = Review flywheel clearance
(spacers may be required)

Size	Torques [Lb.Ft.]			Dimensions (inch)						Misalignment			Stiffness
	Nominal	Peak	Alt.	max. bore "d"	D_A	D	L	l_1	E	Axial (in)	Angular °	Radial (in)	lb in / rad
60	509	1020	170	2.36	5.43	3.46	4.76	2.60	0.40	0.079	1.3	0.041	$354x10^6$
70	810	1620	260	2.76	6.06	4.02	5.55	2.99	0.40	0.087	1.3	0.048	
80	1110	2220	370	3.15	7.05	4.61	6.46	3.50	0.40	0.102	1.3	0.056	
85	1770	3540	590	3.35	7.52	4.84	6.89	3.70	0.40	0.091	1.3	0.059	
90	3320	6640	1116	3.54	8.27	5.20	6.89	3.70	0.50	0.079	1.0	0.059	$1717x10^6$
105	3760	7520	1250	4.13	8.86	5.79	7.87	4.33	0.50	0.094	1.0	0.069	
115	6640	13280	2210	4.53	10.43	6.42	8.78	4.84	0.50	0.110	1.0	0.077	$3080x10^6$
135	8850	17700	2950	5.31	12.01	7.24	11.69	6.38	0.80	0.138	1.0	0.101	$6062x10^6$
160	11060	22120	3690	6.30	13.39	8.39	13.94	7.64	0.80	0.217	0.7	0.084	$7526x10^6$
180	18440	36880	5900	7.09	15.35	9.53	15.51	8.43	0.80	0.236	0.7	0.093	$965x10^7$
190	25810	51620	8850	7.48	17.32	10.43	16.54	9.06	0.80	0.276	0.7	0.101	$1168x10^7$
220	36880	73760	11800	8.66	19.49	12.01	18.90	10.24	0.80	0.315	0.7	0.115	$1558x10^7$

The **RADEX®-N** steel disc couplings are zero-backlash and maintenance free. The torsionally stiff flexible element consists of thin stainless steel discs designed to compensate for angular and axial misalignment. The shape of the stainless steel disc packets were optimized using finite element analysis to allow high misalignment without sacrificing transmittable torque.

RADEX®-N NANA

Zero-Backlash

Special shoulder bolts, along with a strong frictional connection between the disk pack bushing and hub flanges allow the coupling to transmit torque with zero-backlash.

Maintenance Free

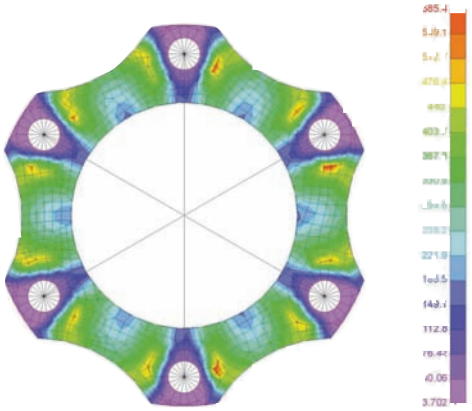
The stainless steel disk packs require no lubrication. The coupling is completely maintenance free

Floating Shaft Designs

The radial stiffness of the disk packs is ideal for supporting the weight of floating shafts. Our selection of floating shafts accommodate shaft gaps up to 16 feet.

Low Restoring Forces

Symmetrical Cuts in the outer diameter of the disk packs allow the coupling to compensate for misalignment with low restoring forces on supporting bearings.



RADEX®-N Disc Pack under Finite Element Analysis

High Temperature Resistance

The all-steel design can sustain temperatures up to 525˚ F.

Infinite Life

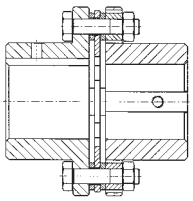
When applied within the guidelines set forth in this catalog, the **RADEX®-N** disc packs are designed for infinite life.

API Standards

An optional design is available to meet **API 610 & 671** standards.

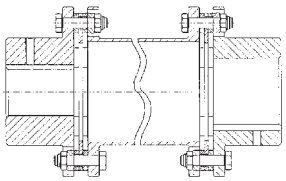
- Dynamic Balancing available on request.

Design and Applications



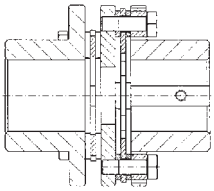
Style NN
- Compact dimensions
- Supports axial and angular misalignment only

Applications
- Mixers and Agitators
- Fans
- Vertical Pumps



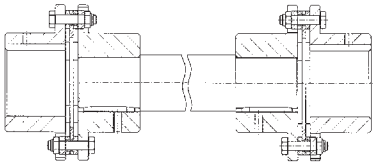
Style NANA
- Available with inch/metric and custom spacers up to 16 ft.
- API standard couplings available

Applications
- Process Pumps
- Turbines and Compressors
- Generators



Style NNZ
- Compact dimensions
- Supports axial, parallel and angular misalignments

Applications
- Robotics & Machine Tools
- Paper Machinery
- Converting Machinery



Style NNW
- Low speed applications
- Solid floating shaft design

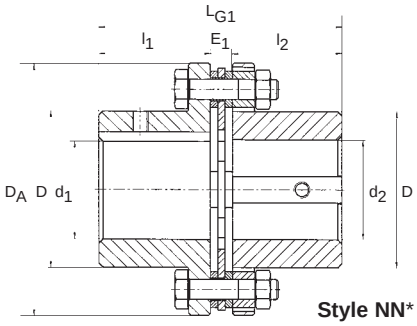
Applications
- Agitators
- Packaging Machinery
- Presses

Style NN

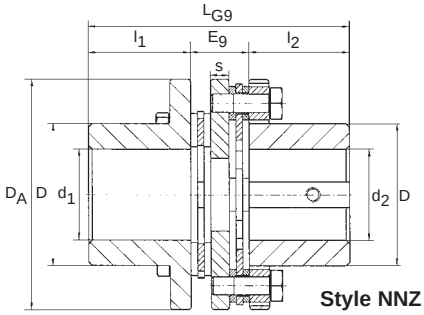
Style NNZ

- Zero-backlash and lubrication free, torsionally stiff steel coupling
- Single-disk (NN) or double-disk (NNZ) designs for close coupled applications
- Inch bore sizes machined to AGMA 9002-A86 class 1 fit
  Inch key sizes machined to ANSI B17.1
- Metric bore sizes machined to ISO H7 fit
  Metric key sizes machined to DIN 6885 JS9
- Stainless steel discs

CLOSE COUPLED DESIGNS



Style NN*

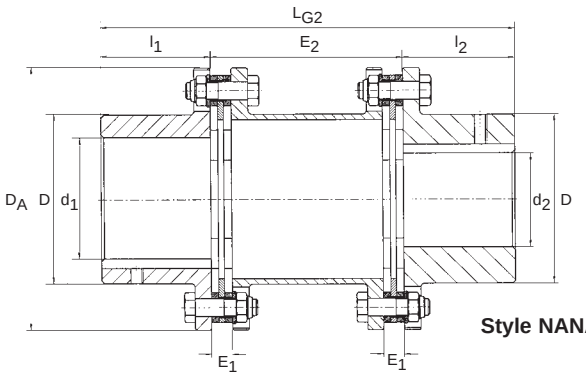


Style NNZ

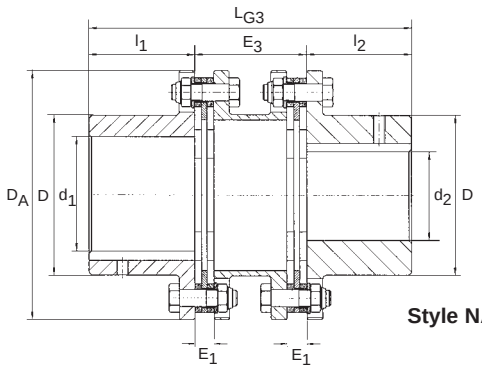
* Single-disk style NN does not support parallel misalignment

Size	Maximum Bore $d_1;d_2$ [in]	Dimensions [in]											
		D	D_A	$l_1;l_2$	s	L_{G1}	E_1	L_{G9}	E_9	L_{G2}	E_2	L_{G3}	E_3
20	0.813	1.26	2.20	0.79	0.20	1.77	0.20	2.17	0.59	3.94	2.36	-	-
25	1.000	1.57	2.68	0.98	0.24	2.20	0.24	2.68	0.71	4.33	2.36	-	-
35	1.375	2.13	3.23	1.57	0.24	3.39	0.24	3.86	0.71	5.91	2.76	-	-
38	1.500	2.28	3.70	1.77	0.31	3.86	0.31	4.49	0.94	6.69	3.15	-	-
42	1.688	2.68	4.09	1.77	0.31	3.94	0.39	4.64	1.10	6.69	3.15	-	-
50	2.000	3.07	4.96	2.17	0.47	4.76	0.43	5.67	1.34	8.11	3.78	-	-
60	2.344	3.46	5.43	2.17	0.47	4.76	0.43	5.67	1.34	8.11	3.78	6.69	2.36
70	2.750	4.06	6.06	2.56	0.47	5.55	0.43	6.46	1.34	9.69	4.57	7.87	2.76
80	3.125	4.61	7.05	2.95	-	6.46	0.55	-	-	11.26	5.35	9.17	3.27
85	3.313	4.84	7.52	3.15	-	6.89	0.59	-	-	11.81	5.51	9.69	3.39
90	3.540	5.20	8.27	3.15	-	6.89	0.59	-	-	11.81	5.51	9.88	3.58
105	4.125	5.79	8.86	3.54	-	7.87	0.79	-	-	11.39	6.30	11.06	3.98
115	4.500	6.42	10.43	3.94	-	8.78	0.91	-	-	14.57	6.69	12.17	4.29
135	5.313	7.24	12.00	5.31	-	11.70	1.06	-	-	20.47	9.84	-	-
160	6.250	8.39	13.39	6.30	-	13.94	1.34	-	-	24.41	11.81	-	-
180	7.000	9.53	15.35	7.09	-	14.72	1.34	-	-	25.98	11.81	-	-
190	7.500	10.43	17.32	7.48	-	16.54	1.57	-	-	26.77	11.81	-	-
220	8.625	12.01	19.49	8.62	-	18.90	1.57	-	-	29.13	11.81	-	-

METRIC SPACER DESIGNS



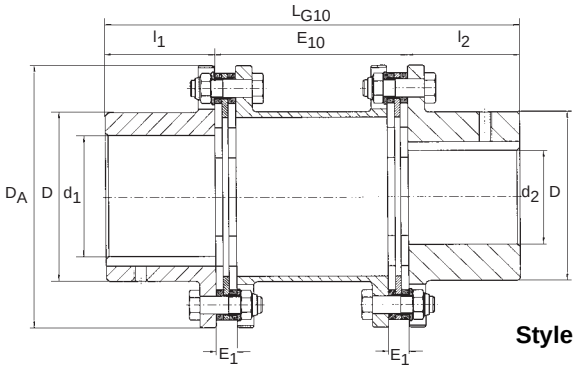
Style NANA1



Style NANA2

- Spacer couplings for extended shaft gaps such as ANSI and API process pumps
- Drop-out spacer design allows removal of the coupling without moving drive components
- Stainless steel disks and steel hubs with metric and inch bores to AGMA standards
- Floating shaft design NANA4 for shaft gaps up to 16 feet

INCH SPACER DESIGN



Style NANA5

Size	Maximum Bore $d_1;d_2$ [in]	Dimensions [in]															
							Standard E_{10} dimensions										
		D	D_A	$l_1;l_2$	L_{G10}	E_1	3 1/2	4 3/8	5	5 1/2	7	7 1/2	8	L_{G7}	E_7	L_{G8}	E_8
20	0.813	1.26	2.20	0.79		0.20											
25	1.000	1.57	2.68	0.98		0.24	•										
35	1.375	2.13	3.23	1.57		0.24	•	•	•								
38	1.500	2.28	3.70	1.77		0.31	•	•	•								
42	1.688	2.68	4.09	1.77		0.39	•	•	•	•	•						
50	2.000	3.07	4.96	2.17		0.43	•	•	•	•	•						
60	2.344	3.46	5.43	2.17		0.43	•	•	•	•	•						
70	2.750	4.06	6.06	2.56		0.43		•	•	•	•						
80	3.125	4.61	7.05	2.95		0.55			•	•	•						
85	3.313	4.84	7.52	3.15		0.59			•	•	•						
90	3.500	5.20	8.27	3.15		0.59			•	•	•						
105	4.125	5.79	8.86	3.54		0.79			•	•	•	•					
115	4.500	6.42	10.43	3.94		0.91					•	•	•				
135	5.313	7.24	12.00	5.31		1.06											
160	6.250	8.39	13.39	6.30		1.34											
180	7.000	9.53	15.35	7.09		1.34				by request							
190	7.500	10.43	17.32	7.48		1.57											
220	8.625	12.00	19.49	8.62		1.57											

$L_{G10} = E_{10} + l_1 + l_2$

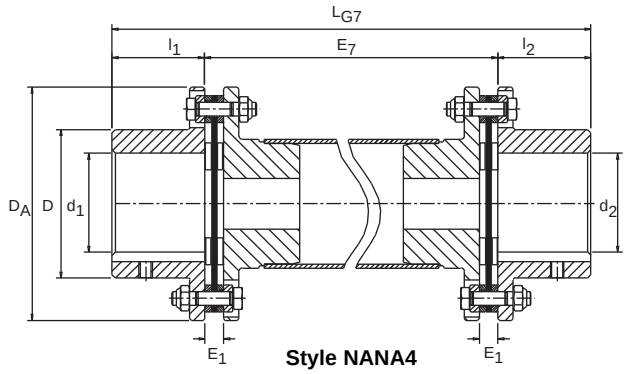
$L_{G7} = E_7 + l_1 + l_2$

$L_{G8} = E_8 + l_1 + l_2$

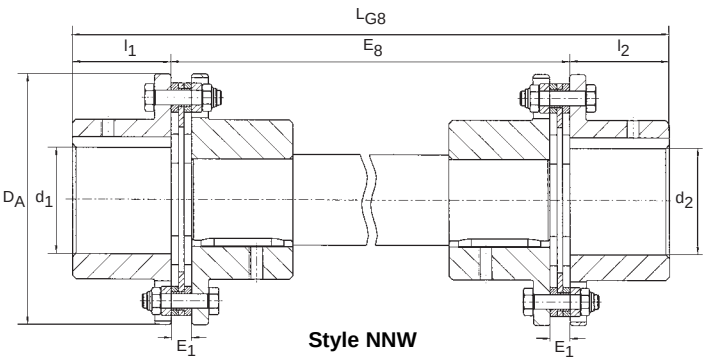
Dimension according to customer's specification

Dimension according to customer's specification

CUSTOM SPACER DESIGNS



Style NANA4



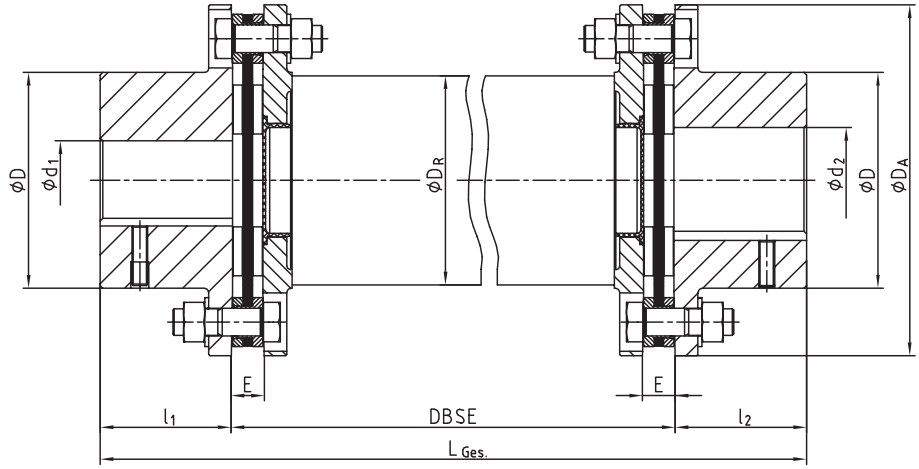
Style NNW

Composite

Corrosion-resistant design for large shaft distance dimensions (e. g. cooling tower drives)

NEW

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



Size	Torque [lb in]		Dimensions [in]								
	T_{KN}	$T_{Kmax.}$	D_A	max. d_1/d_2	D	l_1/l_2	E	DBSE	$L_{Ges.}$	Composite Pipe D_R	max. DBSE[1] at 1500 RPM^{-1}
RADEX®-N 70 NANA 4 CFK	7080	14160	6.14	2.750	4.02	2.56	0.43	customer's specifications	$l_1 + l_2$ + DBSE	3.74	137.8
RADEX®-N 85 NANA 4 CFK	15930	31860	7.52	3.313	4.84	3.15	0.59			4.61	153.5
RADEX®-N 90 NANA 4 CFK	22125	44250	8.27	3.500	5.31	3.15	0.59			5.04	161.4
RADEX®-N 115 NANA 4 CFK	39825	79650	10.43	4.500	6.42	3.94	0.91			6.22	181.1

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

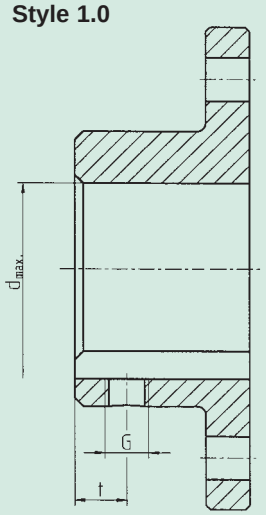
RADEX®-N Composite

Particularly the steel disk couplings are wellsuited for applications with especially large distance dimensions between the drive and the driven side (e. g. cooling towers, ventilators etc.) due to their design.
In order to be able to realize high speeds with large distance dimensions, RADEX®-N couplings with intermediate shafts made from fiberglass or carbon fiber reinforced nylon (GFK or CFK) are used, if necessary.
Please order our separate leaflet RADEX®-N Composite.

Standard Hub - Design 1.0

Size	Maximum Bore d_1/d_2 [in]	Set Screw Size G	Set Screw Location t
20	0.813	M5	0.24
25	1.000	M5	0.31
35	1.375	M6	0.59
38	1.500	M6	0.59
42	1.688	M8	0.79
50	2.000	M8	0.79
60	2.344	M8	0.79
70	2.750	M10	0.79
80	3.125	M10	0.79
85	3.313	M10	0.98
90	3.500	M12	0.98
105	4.125	M12	1.18
115	4.500	M12	1.18
135	5.313		
160	6.250		
180	7.000	by request	
190	7.500		
220	8.625		

Style 1.0



Standard bores and keyways 3)

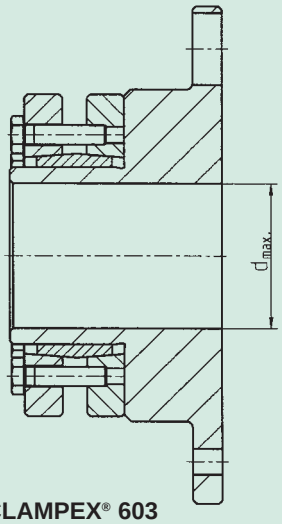
Inch Sizes 1)	
Bore Range (inches)	Keyway (inches)
1/2 to 9/16	1/8
5/8 to 7/8	3/16
15/16 to 1 1/4	1/4
1 5/16 to 1 3/8	5/16
1 7/16 to 1 3/4	3/8
1 13/16 to 2 1/4	1/2
2 5/16 to 2 3/4	5/8
2 13/16 to 3 1/4	3/4
3 5/16 to 3 3/4	7/8
3 13/16 to 4 1/2	1
4 9/16 to 5 1/2	1 1/4
5 9/16 to 6 1/2	1 1/2
6 9/16 to 7 1/2	1 3/4
7 9/16 to 8	2

Metric Sizes 2)	
Bore Range (mm)	Keyway (mm)
9 to 10	3
11 to 12	4
13 to 17	5
18 to 22	6
23 to 30	8
31 to 38	10
39 to 44	12
45 to 50	14
51 to 58	16
59 to 65	18
66 to 75	20
76 to 85	22
86 to 95	25
96 to 110	28
111 to 130	32
131 to 150	36
151 to 170	40
171 to 200	45
201 to 230	50

Notes:
1) AGMA 9002-A86 (class 1)
2) DIN 6885
3) Special bore & key combinations available upon request.

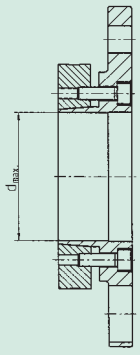
Standard Hub with CLAMPEX® 603

- **RADEX®-N** hubs can be machined to accept the **CLAMPEX®** 603 (shrink disc clamping device)
- High transmittable torque with zero-backlash
- Symmetric design allows high speed operation
- Available for inch and metric bores without keyways
- For information on maximum bores and transmittable torques, please contact KTR or see pages 164-165 KTR 603 in the CLAMPEX® section of this catalog.



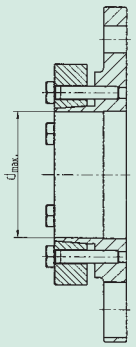
CLAMPEX® 603

Special Hubs - Style 6.0 / 6.5



Design 6.0

- **RADEX®-N** clamping ring hubs with internal access to bolts
- High transmittable torque with zero-backlash
- Symmetric design allows high speed operation
- Available for inch and metric bores without keyways



Design 6.5

- **RADEX®-N** clamping ring hubs with external access to bolts
- High transmittable torque with zero-backlash
- Symmetric design allows high speed operation
- Available for inch and metric bores without keyways

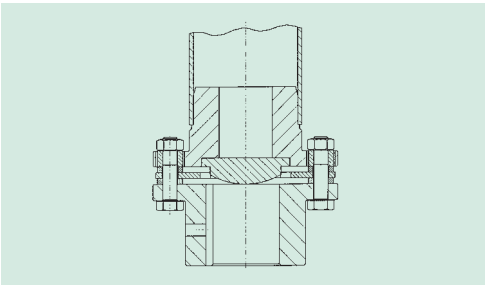
Size	Maximum Speed [RPM] (unbalanced)	Torque [lb in] Nominal	Maximum	Alternating	Misalignments Angular [degree] per disk	Axial [in] per disk	Parallel [in] NNZ	Parallel [in] NANA1	Parallel [in] NANA2	Parallel [in] NANA5 E_{10} Dimensions [in] 3 1/2	4 3/8	5	5 1/2	7	7 1/2	8
20	20000	130	260	45	1.0	0.024	0.004	0.020	0.007							
25	16000	260	530	88	1.0	0.031	0.008	0.020	0.007	0.029						
35	13000	530	1,060	175	1.0	0.039	0.008	0.020	0.007	0.025	0.031	0.036				
38	12000	1,060	2,120	350	1.0	0.047	0.011	0.024	0.011	0.026	0.033	0.038				
42	10000	1,590	3,180	530	1.0	0.055	0.011	0.024	0.011	0.026	0.033	0.038	0.041	0.053		
50	8000	2,920	5,840	970	1.0	0.063	0.015	0.031	0.015	0.029	0.036	0.042	0.046	0.058		
60	6700	6,105	12,210	2,035	1.3	0.039	0.039	0.067	0.039	0.062	0.077	0.089	0.097	0.124		
70	5900	9,735	19,470	3,100	1.3	0.043	0.047	0.083	0.047		0.079	0.091	0.100	0.127		
80	5100	13,275	26,550	4,425	1.3	0.051	-	0.098	0.059			0.092	0.101	0.129		
85	4750	21,240	42,480	7,080	1.3	0.051	-	0.098	0.059			0.089	0.098	0.125		
90	4300	39,825	79,650	13,275	1.0	0.039	-	0.079	0.055			0.071	0.079	0.100		
105	4000	45,135	90,270	15,045	1.0	0.047	-	0.098	0.063			0.078	0.086	0.109	0.117	
115	3400	79,650	159,300	26,550	1.0	0.055	-	0.079	0.051					0.082	0.088	0.094
135	3000	106,200	212,400	35,400	1.0	0.069	-	0.157	0.110							
160	2800	132,750	265,500	44,250	0.7	0.108	-	0.126	-							
180	2400	221,250	442,500	70,800	0.7	0.118	-	0.126	-	by request						
190	2150	309,750	619,500	106,200	0.7	0.138	-	0.126	-							
220	1950	442,500	885,000	141,600	0.7	0.157	-	0.126	-							

Size	Bolt Tightening Torque Bolt Size	[lb in]	Components Hub	Disc	Mass Moment of Inertia (1) [lb in sec²] Coupling Style NN	NNZ	NANA1	NANA2	NANA5 w/ E_{10} Dimension of [in] 3 1/2	4 3/8	5	5 1/2	7	7 1/2	8	Torsional Stiffness x 10^6 [lb in/rad] 1 Disk	2 Disks
20	4 x M5	75	0.00038	0.00009	0.0009	0.0009	0.0010	-								0.1504	0.0752
25	4 x M6	124	0.00103	0.00027	0.0023	0.0022	0.0026	-	0.0045							0.2478	0.1239
35	4 x M6	124	0.00372	0.00053	0.0071	0.0075	0.0084	-	0.0143	0.0148	0.0152					0.8142	0.4071
38	4 x M8	310	0.00646	0.00133	0.0142	0.0133	0.0159	-	0.0253	0.0261	0.0266					1.7520	0.8761
42	4 x M8	310	0.01089	0.00177	0.0239	0.0212	0.0257	-	0.0398	0.0411	0.0420	0.0427	0.0449			2.4950	1.2478
50	4 x M10	610	0.02575	0.00266	0.0540	0.0708	0.0885	-		0.0899	0.0915	0.0927	0.0965			4.4330	2.2169
60	6 x M8	292	0.03345	0.00531	0.0726	0.0885	0.1151	0.1062		0.1162	0.1176	0.1186	0.1217			4.9560	2.4780
70	6 x M10	575	0.06319	0.00797	0.1345	0.1770	0.2124	0.1947			0.2146	0.2172	0.2251			7.9650	3.9825
80	6 x M10	575	0.11859	0.01770	0.2567	-	0.3894	0.3717				0.3905	0.4022			10.0890	5.0445
85	6 x M12	1,018	0.17258	0.02655	0.3717	-	0.5930	0.5664				0.5928	0.6072			13.4520	6.7260
90	6 x M16	2,478	0.24957	0.07080	0.5664	-	0.9381	0.9116				0.9379	0.9578			17.1690	8.5845
105	6 x M16	2,478	0.36639	0.08850	0.8231	-	1.3098	1.2656				1.2932	1.3243	1.3347		22.4790	11.2395
115	6 x M20	4,867	0.79562	0.17700	1.7612	-	3.0444	2.9471					3.0552	3.0728	3.0905	30.7980	15.3990
135	6 x M24	7,965															
160	6 x M24	7,965	by request														
180	6 x M30	16,372															
190	6 x M33	21,682															
220	6 x M36	27,877															

(1) Mass moment of inertia given are for hubs with maximum bores.

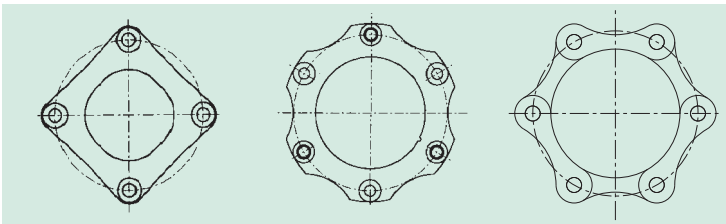
Assembly and Operating Advise
During assembly, it is important that the disks are not deformed in the axial direction. Please use tightening torques provided above. For additional information, please consult KTR Corporation.

Vertical Installation
The couplings are designed for horizontal installations. Should a vertical installation be necessary, the spacer must be supported (see drawing below).



RADEX®-N Disk Styles

Size 20 - 50 (4 holes) | Size 60 - 135 (6 holes) | Size 160 - 220 (6 holes)



Coupling Balancing
At the request of the customer, the **RADEX®-N** coupling can be balanced. However for most applications, due to the precise machining of this coupling, balancing is not necessary.

1. Drives without periodic torsional vibrations:
For example, centrifugal pumps, fans, screw compressors, etc. The coupling selection requires that the nominal torque T_{KN} and the maximum torque T_{Kmax} are checked.

1.1 Loading due to nominal torque:
The nominal torque of the coupling T_{KN} must be larger than or equal to the nominal torque of the system T_N multiplied by the operating service factor S_B.

$$T_{KN} \geq T_N \times S_B$$

1.1 Loading due to spike loads:
The maximum torque T_{Kmax} of the coupling must be larger than or equal to the sum of the peak torque T_S and the nominal torque T_N of the system. This is valid when a shock load is superimposed on the nominal torque of the system (for example motor starting).
For drives with AC motors and large mass moment of inertia on the load side, KTR recommends a calculation of the start up torque with our simulation program. Consult KTR for this free service.

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

2. Drives with periodic torsional vibrations:
For example, piston compressors, combustion engines, piston pumps, generators, etc. For these types of applications, a torsional vibration analysis is required. Please consult KTR.

2.1 Loading due to nominal torque:
The nominal torque of the coupling T_{KN} must be larger than or equal to the nominal torque of the system T_N multiplied by the operating service factor S_B.

$$T_{KN} \geq T_N \times S_B$$

2.2 Passing through resonance:
The peak torque T_{SR} experienced while passing through resonance cannot exceed the maximum torque of the coupling T_{Kmax}.

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

2.3 Loading due to alternating torque:
The alternating torque of the coupling T_{KW} cannot be exceeded by the alternating torque of the system T_W.

$$T_{KW} \geq T_W$$

Table of Terms:

Term	Abbreviation	Definition
Nominal coupling torque	T_{KN}	Torque that can be transmitted continuously throughout the entire coupling speed range
Maximum coupling torque	T_{Kmax}	Torque to be transmitted $1x10^5$ occurences of peak load or $0.5x10^4$ occurences of alternating load during the entire life of the coupling
Alternating coupling torque	T_{KW}	The maximum amplitude of an alternating torque with a frequency of 10 Hz and a base load of T_{KN}.

Operating Service Factors:

Application	S_B	Application	S_B	Application	S_B
Agitators	1 - 2	Generators	1	Packaging Machinery	1
Centrifugal Pumps	1.5	Rotary Screw Compressors	1.5	Fans / Blowers / Centrifuges	1.5
Woodworking Machinery	1.5	Calenders	2	Machine Tools	2
Mixers / Extruders	2	Construction Machinery	2	Conveyor Belts	2
Elevators	2	Textile Machinery	2	Turbo Compressors	2
Crushers	2.5	Grinders	2.5	Piston Compressors	2.5
Piston Pumps	2.5	Rolling Mills	2.5	Presses	2.5

Ordering standard RADEX® N:

Coupling				First Hub			Second Hub		
Qty.	Size	Style	Spacer Length	Shaft	Keyway	Clamping	Shaft	Keyway	Clamping
5	42	NANA5	3.5	1.125"	0.250"	1.0	1.125"	0.250"	603

20 through 185

Type NN / NNZ / NNW
Type NANA1 / NANA2 / NANA4 / NANA5

1.0 - with keyway & set screw
603 - CLAMPEX® 603 (shrink disk)

The **NEW** **RADEX®-NC** steel disk **servo-motor couplings** were designed specifically for the motion control technology, which requires not only zero-backlash torque transmission, but high torsional stiffness.

Application Examples

Indexing table, planetary or worm gears with low transmission for highly precise positioning, ball screws with large diameters and/or low ratio pitch.

High Temperature Resistance

The all steel style can be used in temperatures up to **535° F**.

Backlash Free

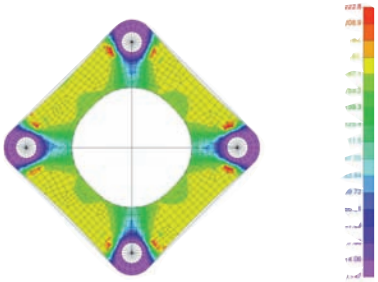
Special shoulder bolts along with a **strong frictional connection** between the disk pack bushing and hub flanges allow the coupling to transmit torque with zero-backlash.

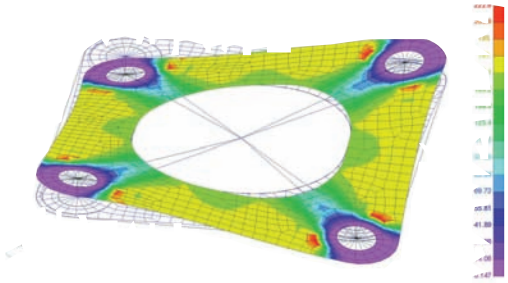
Maintenance Free

The **stainless steel** disk packs require no lubrication allowing the coupling to be completely maintenance free

Finite Element Analysis (F.E.A.)

Through FEA, we have been able to analyze and re-design the **RADEX®-NC** thin layered disk packets to reduce high stress points and optimize performance.





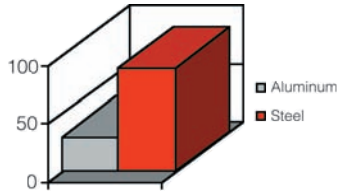
Misalignment Capabilities

The thin layered disk packets of the **RADEX®-NC** compensate axial, angular and parallel misalignment producing **low restoring forces**, therefore increasing the lifetime of adjacent support bearings.

Aluminum Hubs and Spacers

The **RADEX®-NC** hubs and spacers are **precisely machined** from high quality aluminum bar stock. As a result there are **low mass moments of inertia**, which is highly beneficial for the dynamic characteristics of the entire drive system.

Comparison of Mass Moment of Inertia



Cross clamped **RADEX®-NC** hub

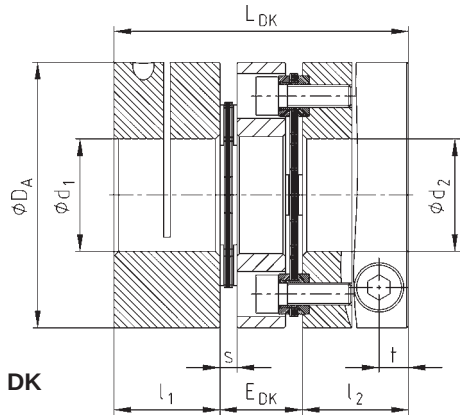
Frictionally Engaged Cross Clamped Hubs

All **RADEX®-NC** hubs are manufactured with a cross clamped style hub for **frictionally engaged** torque transmission. This design satisfies the need of **continuous reversing** applications for the motion control industry.

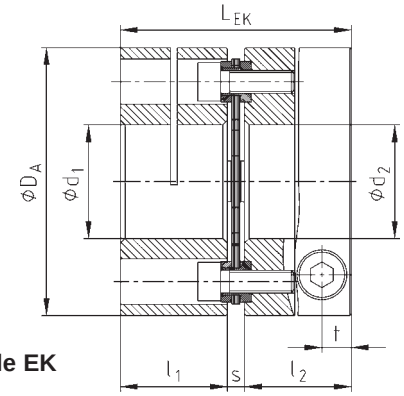
RADEX®-NC

Servo Motor Couplings

- **Zero-Backlash** torque transmission for precision drives
- High torsional stiffness
- Zero-Backlash cross clamped hubs
- Low mass moment of inertia
- High speed capability
- Operating temperatures up to 535˚ F



Style DK



Style EK

Size	Technical Data				Misalignment Style DK			Misalignment Style EK		
	T_{KN} [lb in]	T_{Kmax} [lb in]	Max. Speed [rpm]	Torsional Stiffness 1) [lb in / rad]	Parallel [in]	Axial [in]	Angular [degree]	Parallel [in]	Axial [in]	Angular [degree]
10	66	132	20000	49560	0.005	0.031	1	-	0.016	1
15	177	354	16000	106200	0.006	0.039	1	-	0.020	1
20	265	531	12000	265500	0.010	0.047	1	-	0.024	1
25	531	1062	10000	531000	0.012	0.063	1	-	0.031	1
35	885	1770	9000	637200	0.016	0.079	1	-	0.039	1

1) EK design

Size	Dimensions [in]								Cross Bolt		Mass Moment of Inertia	
	Max. d_1; d_2	D_A	l_1; l_2	L_{DK}	E_{DK}	L_{EK}	s	t	Size	Torque [lb in]	DK [lb in s²]	EK [lb in s²]
10	0.563	1.38	0.63	1.73	0.47	1.38	0.12	0.20	M4	26	0.0001239	0.0000885
15	0.750	1.85	0.83	2.17	0.51	1.77	0.12	0.27	M6	88	0.0004779	0.0003540
20	1.000	2.32	0.94	2.68	0.79	2.09	0.20	0.26	M6	88	0.0016815	0.0013275
25	1.500	2.76	1.26	3.46	0.94	2.72	0.20	0.35	M8	221	0.0040710	0.0030975
35	1.563	3.31	1.38	3.86	1.10	3.03	0.28	0.41	M10	433	0.0088500	0.0070800

Inch Bore Available

1. Drives without periodic torsional vibrations:
For example, centrifugal pumps, fans, screw compressors, etc. The coupling selection requires that the nominal torque T_{KN} and the maximum torque T_{Kmax} are checked.

1.1 Loading due to nominal torque:
The nominal torque of the coupling T_{KN} must be larger than or equal to the nominal torque of the system T_N multiplied by the operating service factor S_B.

$$T_{KN} \geq T_N \times S_B$$

1.1 Loading due to spike loads:
The maximum torque T_{Kmax} of the coupling must be larger than or equal to the sum of the peak torque T_S and the nominal torque T_N of the system. This is valid when a shock load is superimposed on the nominal torque of the system (for example motor starting).
For drives with AC motors and large mass moment of inertia on the load side, KTR recommends a calculation of the start up torque with our simulation program. Consult KTR for this free service.

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

2. Drives with periodic torsional vibrations:
For example, piston compressors, combustion engines, piston pumps, generators, etc. For these types of applications, a torsional vibration analysis is required. Please consult KTR.

2.1 Loading due to nominal torque:
The nominal torque of the coupling T_{KN} must be larger than or equal to the nominal torque of the system T_N multiplied by the operating service factor S_B.

$$T_{KN} \geq T_N \times S_B$$

2.2 Passing through resonance:
The peak torque T_{SR} experienced while passing through resonance cannot exceed the maximum torque of the coupling T_{Kmax}.

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

2.3 Loading due to alternating torque:
The alternating torque of the coupling T_{KW} cannot be exceeded by the alternating torque of the system T_W.

$$T_{KW} \geq T_W$$

Table of Terms:

Term	Abbreviation	Definition
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Maximum coupling torque	T_{Kmax}	Torque to be transmitted $1x10^5$ occurences of peak load or $0.5x10^4$ occurences of alternating load during the entire life of the coupling
Alternating coupling torque	T_{KW}	The maximum amplitude of an alternating torque with a frequency of 10 Hz and a base load of T_{KN}.

Operating Service Factors:

Application	S_B	Application	S_B	Application	S_B
Agitators	1 - 2	Generators	1	Packaging Machinery	1
Centrifugal Pumps	1.5	Rotary Screw Compressors	1.5	Fans / Blowers / Centrifuges	1.5
Woodworking Machinery	1.5	Calenders	2	Machine Tools	2
Mixers / Extruders	2	Construction Machinery	2	Conveyor Belts	2
Elevators	2	Textile Machinery	2	Turbo Compressors	2
Crushers	2.5	Grinders	2.5	Piston Compressors	2.5
Piston Pumps	2.5	Rolling Mills	2.5	Presses	2.5

Order form for RADEX®-NC:

Coupling			First Hub		Second Hub	
Qty.	Size	Style	Shaft	Keyway	Shaft	Keyway
5	25	DK	1.125"	0.250"	1.125"	0.250"

10 through 35

Style DK / EK

Quality Approval

Development

Partnership

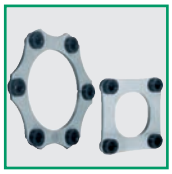
Research

Service

www.ktr.com

INDUSTRIE FORUM
DESIGN HANNOVER

For advanced drive technology KTR



RIGIFLEX®-N

NEW

Steel disk couplings

RIGIFLEX®-N

Steel Disk Coupling

For advanced drive technology KTR®

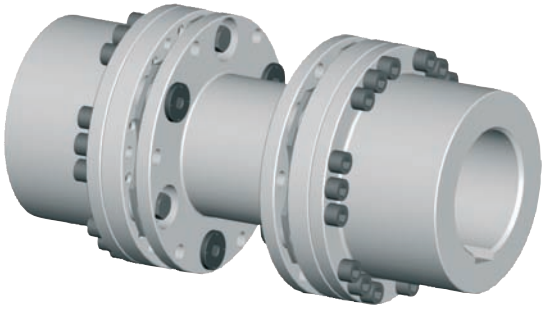
NEW

Backlash-free, torsionally rigid and maintenance-free couplings

RIGIFLEX®-N couplings are maintenance-free and provide reliable torque transmission while compensating for shaft misalignment.

RIGIFLEX®-N was developed specifically for the pump market. This coupling system meets API 610 specifications and can also be supplied to API 671. (API = American Petroleum Institute)

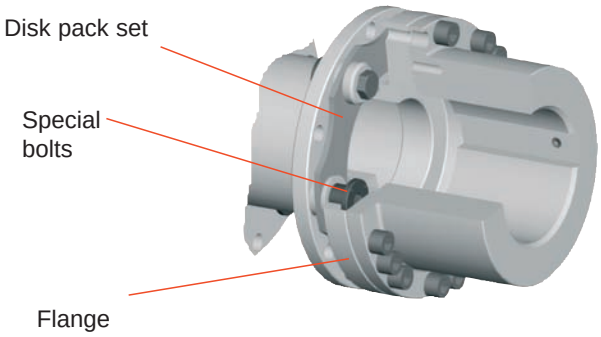
Torques from 4,000 lbin to 115,000 lbin are available in 7 sizes for an optimum adjustment to the different applications.



RIGIFLEX® N disk pack

RIGILFEX®-N disk packs are arranged in layers. They are connected to the hubs or flanges, respectively, in an absolute backlash-free fit by means of positive-locking set screws.

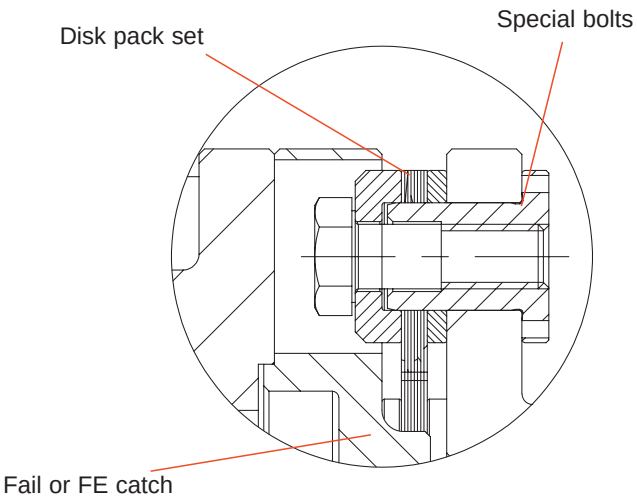
The number of the layers of individual disk packs allows one to vary torques, displacement figures and stiffness for special designs.



Securing the spacer

The main idea of the RIGIFLEX®-N was to comply with the API 610 and API 671 standards. The spacer is furnished with a “safety catch” so that if a disk pack breaks, the spacer is retained within the coupling.

Normally the spacer is supplied from the factory with the disk packs pre-assembled by KTR.



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 G1, G2, D21 and D22. Further information about this topic under www.ktrcorp.com.

Technical data

Torques, misalignments

Size	Torque [lbin]			Permissible misalignments						
	T_{KN}	$T_{K\,max.}$	T_{KW}	Angular $\pm K_W$ [1] [°]	Axial $\pm K_A$ [in]	Radial $\pm K_R$ [in]				
						E=100	E=140	E=180	E=200	E=250
65	3983	7965	1991	0.7	0.06	0.03	0.05	0.07	-	-
75	8319	16638	4160	0.7	0.07	0.03	0.05	0.07	-	-
85	15045	30090	7523	0.7	0.08	-	0.04	0.06	0.07	0.10
110	23895	47790	11948	0.7	0.09	-	0.04	0.06	0.07	0.09
120	39825	79650	19913	0.7	0.10	-	0.04	0.06	0.07	0.09
140	79650	159300	39825	0.7	0.13	-	-	-	0.06	0.09
160	115050	230100	57525	0.7	0.15	-	-	-	-	0.08

1) Angular mIsalignment each disk pack

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							
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

Permissible speeds, stiffness

Size	Max. speed unbalanced [cpm]	Stiffness							
		ca [lb/in]	cw [lbft/rad]	Disk Pack ct [lbft/rad]	ct for mounting length [lbft/rad]				
					E=100	E=140	E=180	E=200	E=250
65	8000	776	635	265680	107764	95894	86380	-	-
75	6700	1941	1107	531360	225935	205445	188363	-	-
85	5900	2198	1697	783756	-	300101	272639	260710	235004
110	4750	2226	2066	1077480	-	490242	470539	461271	439621
120	4300	3425	3026	3321000	-	1326937	1208514	1156890	1045265
140	3400	3311	4723	4132800	-	-	-	1744145	1643253
160	3000	3539	7232	5055300	-	-	-	-	1959312

2) Higher speeds balanced on request

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

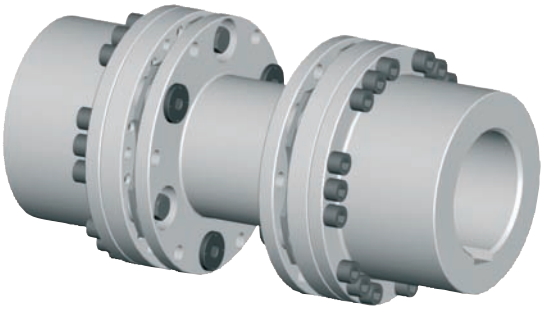
Weights and mass moments of inertia

Size	Weights [lbs] / Mass moments of inertia x 10^{-3} [$lbfts^2$]											
	Hub (max. bore)		Spacer complete [lbs]					Spacer complete [$lbfts^2$]				
	[lbs]	[$lbfts^2$]	E=100	E=140	E=180	E=200	E=250	E=100	E=140	E=180	E=200	E=250
65	5.54	0.04345	8.64	9.21	9.79	-	-	0.07177	0.07346	0.07505	-	-
75	5.33	0.05009	9.86	10.65	11.44	-	-	0.10116	0.10540	0.10965	-	-
85	8.23	0.10045	-	15.74	16.61	17.04	18.13	-	0.20921	0.21479	0.21762	0.22461
110	14.76	0.28515	-	27.48	29.65	30.74	33.45	-	0.55675	0.57879	0.58985	0.61738
120	20.20	0.46356	-	-	38.11	39.25	42.10	-	-	0.91279	0.92553	0.95739
140	40.06	1.34299	-	-	-	71.57	75.52	-	-	-	2.82324	2.90678
160	63.31	2.82554	-	-	-	-	113.92	-	-	-	-	5.97472

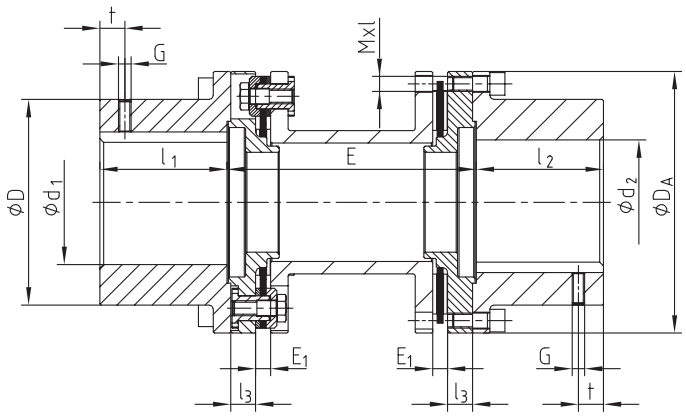
For advanced drive technology KTR

NEW

Standard designs



- Designed for pump drives
- Easy Maintenance without moving components (motor and pump)
- API 610 compliant (API 671 on request)
- Spacers supplied pre-assembled (easy installation)
- Oversized hubs available for extra large bores
- Inch bore sizes machined to AGMA 9002-A86 class 1 fit
  Inch key sizes machined to ANSI B17.1
- Metric bore sizes machined to ISO H7 fit
  Metric key sizes machined to DIN 6885 JS9
- Ⓔx Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)



Type A

Size	Torque [lbin]			Finish bore	Dimensions [in]												Bolts DIN EN ISO 4762	
	T_{KN}	$T_{K\,max.}$	T_{KW}	d_1/d_2 max.	D	D_A	l_1/l_2	l_3	G	t	E_1	E 1)					Mxl	T_A
65	3983	7965	1991	2.559	3.94	4.96	2.44	0.47	M8	0.79	0.39	3.94	5.51	7.09	-	-	M6x20	124
75	8319	16638	4160	2.953	4.13	5.43	2.44	0.47	M8	0.79	0.39	3.94	5.51	7.09	-	-	M8x20	310
85	15045	30090	7523	3.346	4.72	6.14	2.83	0.59	M10	0.79	0.47	-	5.51	7.09	7.87	9.84	M8x25	310
110	23895	47790	11948	4.331	5.98	7.52	3.43	0.71	M10	0.98	0.47	-	5.51	7.09	7.87	9.84	M10x30	611
120	39825	79650	19913	4.724	6.50	8.39	4.02	0.79	M12	0.98	0.47	-	-	7.09	7.87	9.84	M12x30	1062
140	79650	159300	39825	5.512	7.87	10.43	4.96	0.98	M12	1.18	0.59	-	-	-	7.87	9.84	M16x40	2611
160	115050	230100	57525	6.299	9.06	12.01	5.71	1.22	M12	1.18	0.59	-	-	-	-	9.84	M16x50	2611

1) Other shaft distances available on request

Mounting instructions no. 47410 under www.ktrcorp.com.

Order form:

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

RIGIFLEX®-N

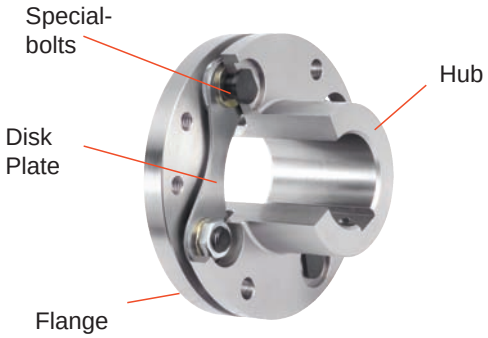
Steel Disk Couplings

zero backlash, torsionally rigid and maintenance-free couplings

KTR Corporation manufactures of the time tested RIGIFLEX® coupling.
By adding the **RIGIFLEX®** to the product range KTR has extended its performance range to a max. torque of more than 1,100,000 Nm and a shaft diameter of 660 mm.

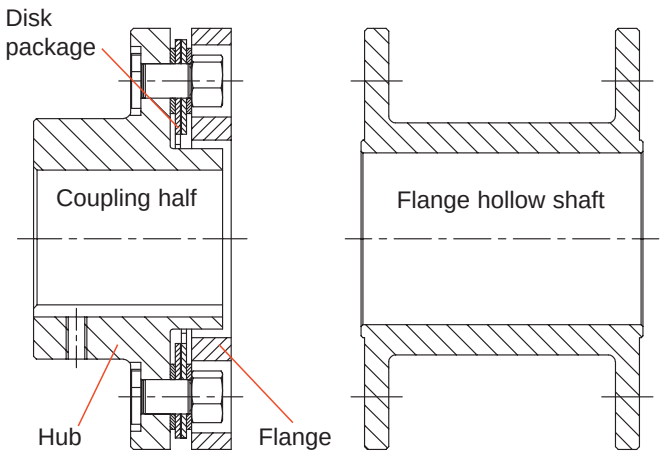
RIGIFLEX® disk plate

The disks of the RIGIFLEX® are connected to the hubs and flanges by press-fit studs ensuring zero-backlash. Depending on the number of single disk plates the torque, misalignment performance and stiffness can be varied.



Pre-assembled disks, hubs and flanges

Compared to the RADEX®-N steel disk coupling the RIGIFLEX® is supplied in pre-assembled sections or (coupling halves). Hubs, disk packs and flanges are factory-assembled as one unit. Press-fit studs are used to connect the disks with hubs and flanges. This ensures backlash-free torque transmission. These modular coupling halves make assembly a snap.



RIGIFLEX® torsionally rigid steel disk couplings, are horizontally assembled and suitable for 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 G1, G2, D21 and D22.
See **www.ktrcorp.com**.

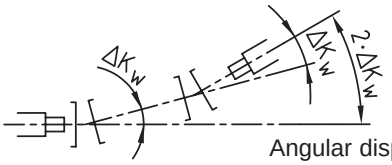
Coupling selection

1. **Permissible displacements:**
   DK_a: Permissible axial displacement
   DK_w: Permissible angular displacement
   DK_r: Permissible radial displacement

   RIGIFLEX® couplings are selected in a way that the max. permissible angular displacement DK_w must be as follows in every coupling element (coupling half)

from size	32 to 300	DK_w = 1.00°
from size	350 to 460	DK_w = 0.75°
from size	530 to 580	DK_w = 0.50°

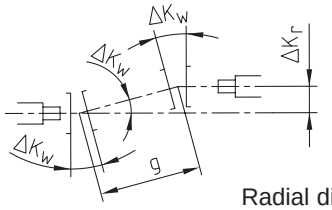
   The max. possible angular displacement of two shafts connected with each other is thus 2 . DK_w.



Angular displacement

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

$$DK_r = g \cdot \tan(DK_w)$$



Radial displacement

In the table **"Technical data"** you can see the max. permissible radial displacements DK_r for every size and type based on the given standard lengths of the flange hollow shaft as well as the permissible angular displacement DK_w of the coupling elements.

The max. permissible axial displacements DK_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 DK_a the permissible angular displacement DK_w decreases and thus the radial displacement DK_r.

If the permissible axial displacement DK_a is used by 35 % when using a coupling (2 joints), you have only 40 % of the indicated permissible radial displacement available in case of an angular displacement of DK_w = 0.25°.

2. **Selection of the coupling size**
   The nominal torque T_{KN} of the coupling is:

$$T_{KN} \geq T_N \cdot K \cdot f_R \cdot f_T$$

   The shock torque T_{Kmax} of the coupling is:

$$T_{Kmax} \geq T_N \cdot A_1 \cdot f_R \cdot f_T$$

   T_N = Torque of the machine

   K = Operating factor (see table page 103)

   A_1 = Shock factor (see table page 103)
   The max. shocks occuring must not strain the coupling above the shock torque mentioned in the catalogue.
   The operating factor is the figure that the nominal torque T_N of the machine must be multiplied with in order to get a fictive torque $T_{KN} = K \cdot T_N$. This fictive torque must ensure the same safety against coupling damages like the really active, timely changeable torque in case of a constant and any long influence on the coupling.
   Hints are given in the VDI Standard 2151.

   f_R = Factor of direction
   = 1.00 same torque direction
   = 1.70 changing torque direction

   f_T = Operating temperature
   Temperature factor

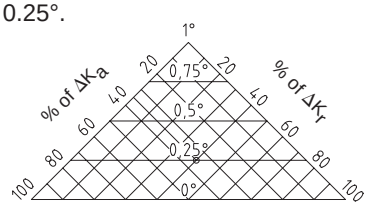
°C	- 30	0	+ 150	+ 200	+ 230	+ 270
Factor	1.00	1.00	1.00	1.10	1.25	1.43

3. **Operating and shock factors**
   Extract of applications from VDI Standard 2151.
   The deciphered figures mentioned are valid for the load figure A_1 (medium), i. e. the dynamical behaviour is neither very favourable nor very infavourable or it is unknown.

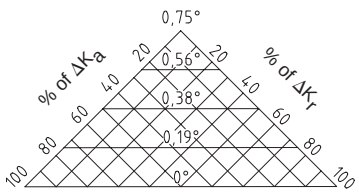
   In case of deviating dynamical behaviour, i. e. in case of a very favourable or infavourable behaviour and for further applications, the regulations of VDI Standard 2151 must be considered.

   The factors mentioned refer to four groups of drive machines:

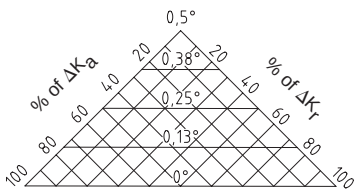
Group I:	Electro motors with low starting shocks
Group II:	Electro motors with high starting shocks (see page 103)
Group III:	Piston power machines with more than 2 cylinders, water turbines, hydraulic engines
Group IV:	Piston power machines with one or two cylinders



Angular displacement ΔK_w
Size 32 - 300



Angular displacement ΔK_w
Size 350 - 460



Angular displacement ΔK_w
Size 530 - 580

Selection factors

Operating and shock factors

Machine	Group/Kind	Shock factors	Operating factors
Elevator	I	3.15	1.60
Excavator	I III	5.00 5.00	2.00 2.00
Crusher	I III	6.30 6.30	2.24 2.24
Rotating furnace	I III	4.00 4.00	1.80 1.80
Conveyor belt	I	4.00	1.80
Windlass	I	4.00	2.00
Generator	I III IV	3.15 4.00 5.00	1.25 1.25 1.60
Rubber roller	I	4.00	1.60
Suspension track	I III	3.15 4.00	1.40 1.80
Wood working machine	I III IV	2.50 4.00 5.00	1.60 1.80 2.00
Piston compressor	I III IV	3.15 4.00 5.00	1.60 1.80 2.24
Turbo compressor	I III	2.50 3.15	1.25 1.40
Converter	I	5.00	1.80
Crane	I III IV	4.00 5.00 6.30	1.60 2.24 2.24
Mixer	I III IV	3.15 5.00 6.30	1.80 1.80 2.24

Machine	Group/Kind	Shock factors	Operating factors
Paper machine	I I IV	3.15 5.00 5.00	2.00 2.50 2.50
Propeller	I III	2.50 4.00	1.40 1.40
Pump excavator	I III	4.00 5.00	1.80 1.80
Piston pump (1 to 2 cylinders)	I III IV	5.00 5.00 5.00	1.80 1.80 1.80
Piston pump (3 and more cylinders)	I III IV	4.00 4.00 5.00	1.60 1.60 1.60
Centrifugal pump	I III IV	2.50 3.15 4.00	1.25 1.40 1.80
Positive displacement pump	I III IV	2.50 4.00 5.00	1.40 1.40 1.40
Agitator (light liquids)	I	2.50	1.25
Agitator (semi liquids)	I	4.00	1.60
Textile machine	I	3.15	1.80
Ventilator (large)	I III	3.15 5.00	2.00 2.00
Ventilator (small)	I	2.00	1.25
Roller mill	I	4.00	2.00
Machine tool	I	3.15	1.60
Ball-and-pebble mill	I	6.30	2.00
Drawing machine	I	3.15	1.80

Operating and impulse factors

Group I: Electric motors with neglibible impulse load during start-up

Group II: Electric motors with high-impulse load during start-up

Group III: Reciprocating engines with more than two cylinders, water turbines, hydraulic motors

Group IV: Reciprocating engines with one or two cylinders

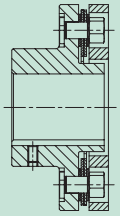
Technical advice

1. The bores in the coupling hubs are AGMA CL-1 with keyways. Other bore and keyway designs are possible on request.
2. Optional shaft-hub connections (like taper bores, hydraulic releases, frictionally engaged connections etc.) are also available on request.
3. Standard hubs are supplied with setscrews, if not ordered differently.
4. Couplings with long flange hollow shafts must be checked to critical speed. Please consult with our Engineering Department.
5. If the coupling is assembled vertically, the flange hollow shaft must be supported. Please consult with our Engineering Department.
6. Materials:
   The coupling hubs and flanges are made from steel. Precise machining of these parts allows a low residual imbalance.
   The disks are made from hardened alloy. For the connection with coupling flanges ground, hardened bolts are used.
7. Please look at our RIGIFLEX® mounting instructions for the assembly at **www.ktrcorp.com**.

Styles

Standard style “Coupling half“

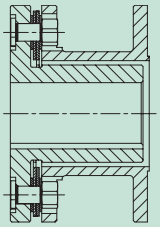
Style 01



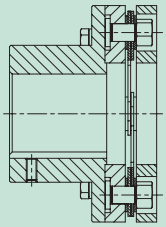
Style 02

Style 03

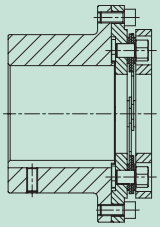
Style 04



Style 05

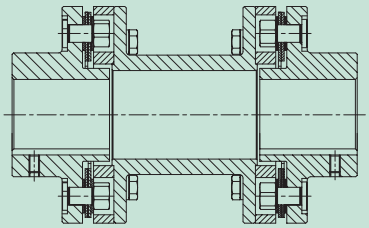


Style 06

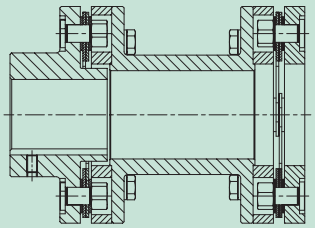


Standard style with flange hollow shaft

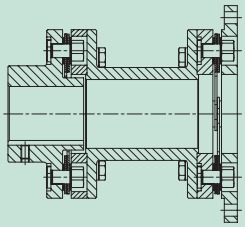
Style 11



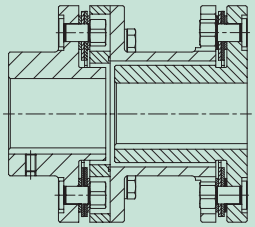
Style 12



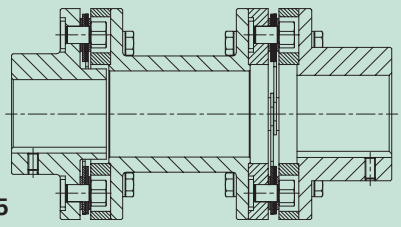
Style 13



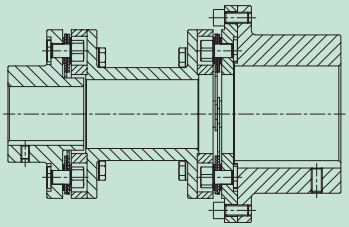
Style 14



Style 15



Style 16



Technical data

Torques, speeds and displacements

Coupling size		Torques [Nm]		Max. speed [min^{-1}]	Permissible displacements [mm]			
New KTR size	Former size	T_{KN}	T_{Kmax}		Angular [°] each disk	Axial		Radial style 11 M = standard
						Coupling half	Double-cardanic with flange hollow shaft	
32	**20**	200	300	20000	1.00	1.25	2.5	1.3
48	**32**	320	480	14000	1.00	1.75	3.5	1.5
60	**100**	1000	1500	11200	1.00	1.50	3.0	2.5
65	**160**	1600	2400	10000	1.00	1.75	3.5	2.5
75	**200**	2000	3000	9000	1.00	2.0	4.0	3.0
80	**251**	2500	6250	8300	1.00	1.0	2.0	3.0
90	**321**	3200	8000	7700	1.00	1.0	2.0	3.0
100	**401**	4000	10000	7000	1.00	1.5	3.0	4.0
110	**501**	5000	18000	6300	1.00	2.0	4.0	4.0
120	**631**	6300	22500	5800	1.00	2.5	5.0	5.0
130	**801**	8000	28000	5400	1.00	3.0	6.0	5.0
140	**1001**	10000	34900	5100	1.00	3.0	6.0	5.0
150	**1251**	12500	43000	4800	1.00	3.0	6.0	6.0
160	**1601**	16000	54500	4600	1.00	3.0	6.0	6.0
180	**2001**	20000	68000	4200	1.00	4.0	8.0	6.5
190	**2501**	25000	84000	4000	1.00	4.0	8.0	7.0
200	**3201**	32000	106000	3800	1.00	4.0	8.0	7.0
210	**4001**	40000	131500	3400	1.00	4.0	8.0	7.5
230	**5001**	50000	160000	3200	1.00	4.0	8.0	8.0
260	**6301**	63000	205000	2900	1.00	5.0	10.0	8.5
280	**8001**	80000	254000	2700	1.00	5.0	10.0	9.0
300	**10001**	100000	314000	2500	1.00	5.0	10.0	10.0
350	**12501**	125000	376000	2350	0.75	4.0	8.0	7.0
390	**16001**	160000	490000	2170	0.75	5.0	10.0	7.5
420	**20001**	200000	606000	2020	0.75	5.0	10.0	8.0
460	**25001**	250000	750000	1890	0.75	5.0	10.0	8.5
530	**32001**	320000	870000	1600	0.50	5.0	10.0	6.0
580	**40001**	400000	1145000	1480	0.50	50	10.0	6.5

Mass moments of inertia (further styles on request)

Coupling size		Mass moments of inertia [kgm^2]			Coupling size		Mass moments of inertia [kgm^2]		
New **KTR** size	Former size	Style 01 (hubs pilot bored/unbored)	Style 02	Style 11 [1] (hubs pilot bored/unbored)	New **KTR** size	Former size	Style 01 (hubs pilot bored/unbored)	Style 02	Style 11 [1] (hubs pilot bored/unbored)
32	**20**	0.0014	0.014	0.003	**180**	**2001**	3.082	2.592	8.059
48	**32**	0.005	0.004	0.015	**190**	**2501**	3.823	3.084	10.069
60	**100**	0.012	0.011	0.040	**200**	**3201**	5.351	4.108	14.102
65	**160**	0.035	0.031	0.095	**210**	**4001**	8.717	6.638	22.704
75	**200**	0.045	0.040	0.128	**230**	**5001**	12.224	8.872	31.798
80	**251**	0.105	0.090	0.271	**260**	**6301**	19.263	13.708	49.882
90	**321**	0.145	0.122	0.377	**280**	**8001**	26.981	17.976	68.626
100	**401**	0.234	0.192	0.606	**300**	**10001**	38.748	26.534	98.056
110	**501**	0.372	0.316	0.983	**350**	**12501**	53.729	29.000	139.020
120	**631**	0.566	0.486	1.482	**390**	**16001**	79.866	43.000	206.357
130	**801**	0.815	0.666	2.145	**420**	**20001**	120.300	61.000	305.131
140	**1001**	1.085	0.886	2.853	**460**	**25001**	161.823	85.000	414.587
150	**1251**	1.554	1.298	4.008	**530**	**32001**	310.275	131.632	799.409
160	**1601**	2.007	1.558	5.360	**580**	**40001**	481.777	197.413	1222.622

1) In case of spacer length M = standard

Technical data, weights

Axial, angular and torsion spring stiffness

Coupling size		Axial stiffness total coupling (2 coupling halves) [N/mm]	Angular spring stiffness (1 coupling half) [Nm/rad]	Torsion spring stiffness [10^6 Nm/rad]		
New **KTR** size	Former size			(1 coupling half)	Flange hollow shafts	
					M-dimension (standard)	More length of 1 m each
32	**20**	52.00/450.0[1]	58/850[1]	0.0580/0.15[1]	0.14	0.00875
48	**32**	45.0/177.0[1]	109/355[1]	0.0125/0.25[1]	0.53	0.043
60	**100**	78.0/240.0[1]	264/800[1]	0.4500/0.71[1]	1.12	0.112
65	**160**	74.5/408.0[1]	292/1650[1]	0.2800/0.95[1]	1.55	0.175
75	**200**	69.0/375.0[1]	315/1800[1]	0.3550/1.18[1]	1.95	0.257
80	**251**	562.5	3250	1.60	2.80	0.400
90	**321**	450.0	3000	1.95	3.15	0.515
100	**401**	354.0	3000	2.43	5.00	0.850
110	**501**	562.5	11688	3.07	8.75	1.60
120	**631**	502.5	12376	3.87	7.30	1.40
130	**801**	637.5	18151	5.30	8.75	1.75
140	**1001**	562.5	18151	6.00	11.80	2.50
150	**1251**	750.0	28327	7.50	16.00	3.55
160	**1601**	600.0	25439	8.25	42.50	10.30
180	**2001**	817.5	38503	10.90	26.50	6.70
190	**2501**	945.0	51566	13.60	28.00	7.50
200	**3201**	1162.5	72880	17.50	38.70	10.90
210	**4001**	900.0	68755	21.20	58.00	17.50
230	**5001**	945.0	84569	27.20	67.00	20.60
260	**6301**	945.0	103132	35.50	100.00	32.50
280	**8001**	975.0	123759	43.70	128.00	46.20
300	**10001**	1035.0	154011	54.50	150.00	63.00
350	**12501**	1418.0	126854	115.00	224.00	90.00
390	**16001**	1418.0	154698	155.00	300.00	132.00
420	**20001**	1463.0	185639	185.00	380.00	175.00
460	**25001**	1553.0	231017	230.00	355.00	175.00
530	**32001**	1950.0	247518	503.00	609.00	335.00
580	**40001**	2070.0	308022	627.00	787.00	472.00

1) Figures valid for disk set package/massive disk sets

Calculation of the torsion spring stiffness of a complete coupling:

$$\frac{1}{C_{tot.}} = \frac{1}{C_{coupling\ half}} + \frac{1}{C_{coupling\ half}} + \frac{1}{C_{standard\ hollow\ shaft}} + \frac{1}{C_{more\ length}}$$

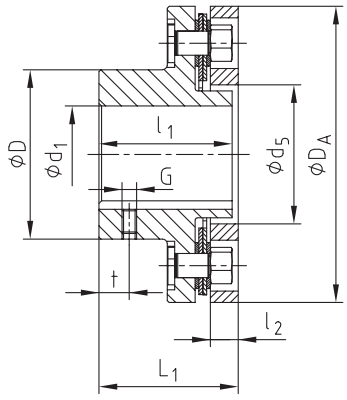
Weights (further styles on request)

Coupling size		Weight [kg]			Coupling size		Weight [kg]		
New **KTR** size	Former size	Style 01 (hubs pilot bored/unbored)	Style 02	Style 11 [1] (hubs pilot bored/unbored)	New **KTR** size	Former size	Style 01 (hubs pilot bored/unbored)	Style 02	Style 11 [1] (hubs pilot bored/unbored)
32	**20**	1.6	1.0	4.0	**180**	**2001**	141.2	79.6	356.4
48	**32**	3.7	1.9	10.1	**190**	**2501**	168.0	88.7	425.0
60	**100**	6.5	3.5	16.4	**200**	**3201**	217.5	106.9	550.0
65	**160**	9.5	5.3	25.5	**210**	**4001**	291.9	139.9	723.8
75	**200**	12.2	6.7	31.7	**230**	**5001**	365.9	161.9	894.8
80	**251**	19.2	11.3	48.4	**260**	**6301**	470.7	205.9	1142.4
90	**321**	21.5	12.9	56.0	**280**	**8001**	596.6	231.3	1409.2
100	**401**	30.3	16.0	78.6	**300**	**10001**	723.4	291.4	1746.8
110	**501**	39.6	23.2	103.2	**350**	**12501**	886.9	260.9	2088.8
120	**631**	50.2	30.0	129.4	**390**	**16001**	1124.3	325.3	2664.6
130	**801**	64.3	35.2	162.6	**420**	**20001**	1246.9	396.9	3338.8
140	**1001**	78.5	43.7	201.0	**460**	**25001**	1689.1	500.1	3992.2
150	**1251**	94.1	53.4	241.2	**530**	**32001**	2454.0	482.0	5830.0
160	**1601**	114.3	56.5	289.6	**580**	**40001**	3292.0	613.0	7750.0

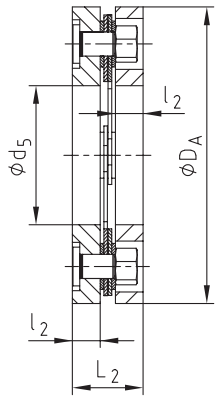
1) In case of spacer length M = standard

Half couplings

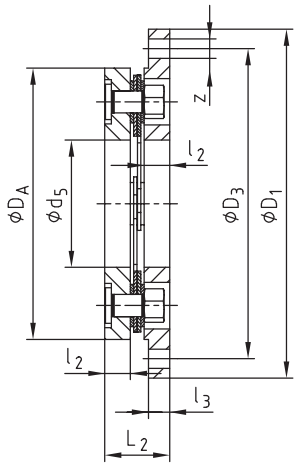
- Standard coupling halves
- Supplied as assembled units
- Can be combined with different spacers, flanges, etc.
- Half couplings only compensate for axial and angular misalignments
- Standard shaft-hub connection with keyway and set screw
- Keyless shaft-hub connection available with KTR CLAMPEX® clamping sets
- Ⓔx Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)



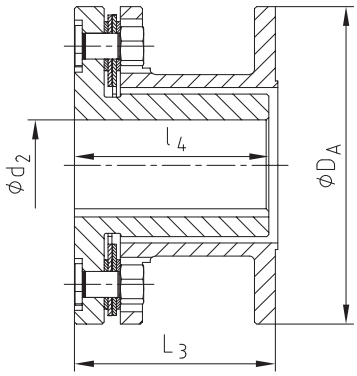
Style 01



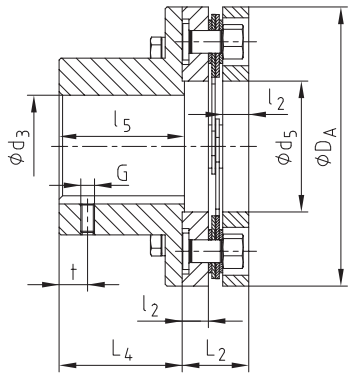
Style 02



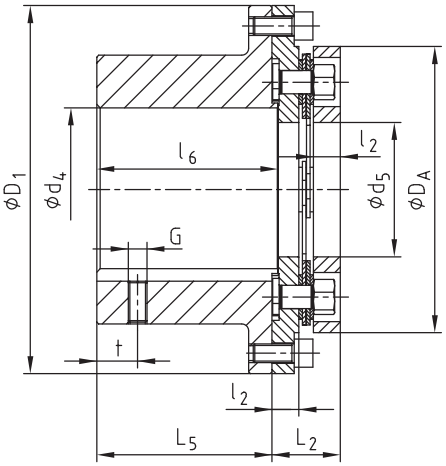
Style 03



Style 04



Style 05

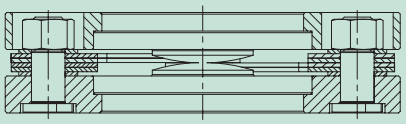


Style 06

Half couplings

Coupling size		Max. bore [mm]				Dimensions [mm]													
New **KTR** size	Former size	d_1	d_2	d_3	d_4	D	D_A	D_1	d_5	l_1	L_1	l_2	L_2	l_3	l_4	L_3	l_5	L_4	l_6	L_5
32	**20**	32	22	42	50	60	95	145	39	60	78,5	11	29.5	8	50	55	70	68	80	78
48	**32**	48	38	55	65	80	135	190	65	70	76	11	30.5	8	70	70	80	75	100	98
60	**100**	60	50	75	90	90	170	225	80	80	87	15	40.5	12	80	85	90	85	125	122
65	**160**	65	55	80	100	100	190	250	90	90	96	16	42.5	12	90	92.5	95	90	135	132
75	**200**	75	60	85	120	110	210	265	100	95	101	16	43.5	12	95	98.5	100	95	140	137
80	**251**	80	65	100	130	125	230	300	105	110	115	22	56.5	18	135	140	105	103	150	146
90	**321**	90	70	110	140	140	245	315	115	110	115	23	58.5	19	150	155	110	108	155	150
100	**401**	100	80	120	160	155	270	340	135	125	132	25	62.5	21	150	155	120	118	165	160
110	**501**	110	90	140	175	165	300	365	150	130	138	27	73.5	23	160	165	130	127.5	185	180
120	**631**	120	105	150	190	185	325	390	160	130	138	30	81.5	26	160	170	140	137.5	205	200
130	**801**	130	115	160	200	210	350	430	180	145	153	31	85.5	27	165	178	145	142	210	205
140	**1001**	140	125	170	215	225	370	450	190	155	164	33	89.5	29	180	186	155	152	225	220
150	**1251**	150	130	185	230	230	395	470	200	170	179	37	100.5	33	210	215	160	157	240	235
160	**1601**	160	140	190	250	255	415	495	220	190	199	37	100.5	33	230	235	175	172	255	250
180	**2001**	180	145	210	260	260	450	530	230	195	204,5	44	117.5	40	270	275	185	182	265	260
190	**2501**	190	155	220	270	280	470	565	240	220	227	44	119.5	39	285	290	195	192	285	280
200	**3201**	200	170	240	290	305	500	595	260	255	265	46	127.5	40	325	330	210	207	305	300
210	**4001**	210	190	255	325	340	550	665	290	275	285	51	137.5	46	330	335	230	227	345	340
230	**5001**	230	210	280	350	370	590	705	320	305	315	52	141.5	46	335	340	250	247	370	365
260	**6301**	260	245	310	405	420	650	770	360	310	325	55	151.5	49	335	340	270	267	430	425
280	**8001**	280	265	325	440	450	690	810	400	360	375	58	159.5	52	375	380	300	297	465	460
300	**10001**	300	285	350	475	480	750	900	430	375	390	61	168.5	53	430	435	320	317	520	515
350	**12501**	350	300	390	-	560	810	990	500	375	390	52	141.5	46	460	465	360	355	-	-
390	**16001**	390	330	430	-	620	880	1060	550	395	410	55	151.5	49	520	525	400	395	-	-
420	**20001**	420	355	460	-	680	945	1115	580	440	455	58	159.5	52	550	555	430	425	-	-
460	**25001**	460	360	500	-	720	1010	1240	600	460	475	61	168.5	53	580	585	460	455	-	-
530	**32001**	530	500	610	-	810	1180	1370	850	530	545	58	159.5	50	530	535	560	555	-	-
580	**40001**	580	550	660	-	890	1290	1480	930	580	595	61	168.5	53	580	585	600	595	-	-

Further style:



Style 07

Vertical installation

(Dead weight is taken up by built-in, hardened thrust pieces.)

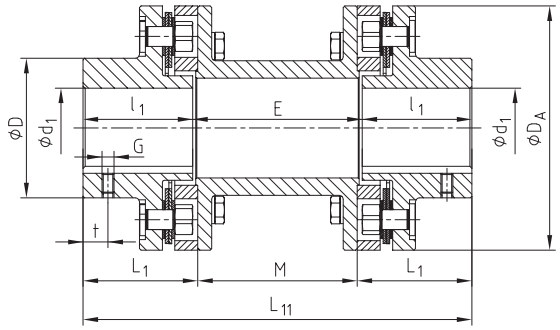
If only one coupling is used, it will be possible to compensate for angular misalignment only, not for axial or radial misalignment!

Order form:

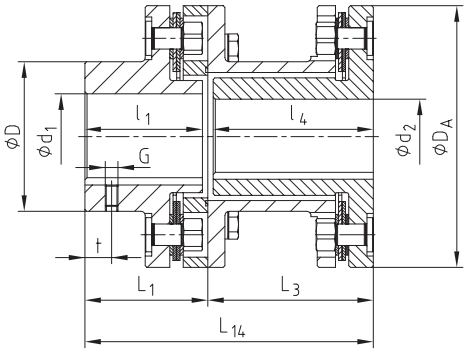
RIGIFLEX® 130	01	d_1 Ø 120
Coupling size	Style	Bore

Couplings with spacers

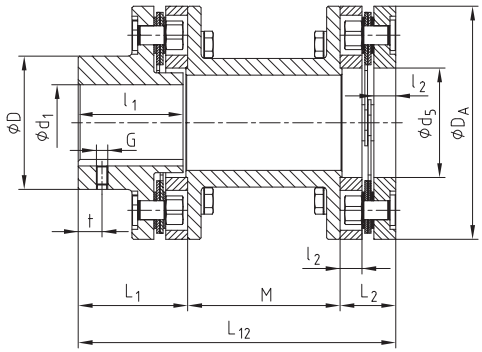
- Standard couplings with spacers
- Shaft gaps up to 6000mm are possible
- Coupling halves are supplied in assembled condition
- Standard hubs furnished with keyway and set screw
- Ⓔx Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)
- **Coupling design acc. to API 671**



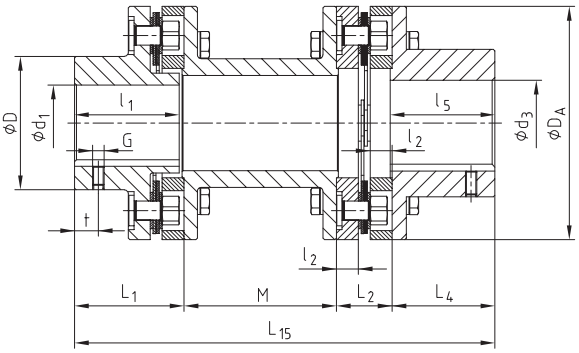
Style 11



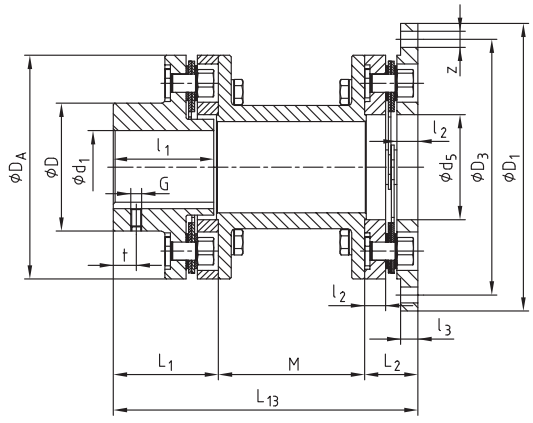
Style 14



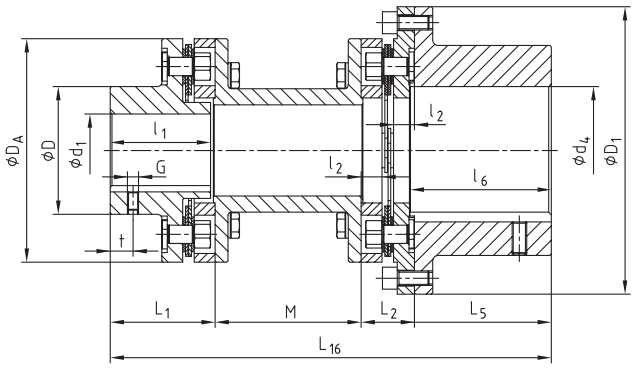
Style 12



Style 15



Style 13



Style 16

Couplings with spacers

Coupling size		Dimensions [mm]											
New **KTR** size	Former size	M	E	L_{11}	L_{12}	L_{13}	L_{14}	L_{15}	L_{16}	D_2	Z_1	D_3	Z_2
32	**20**	63	100	220	171	171	133,5	239	249	120	4 x 11	120	4 x 11
48	**32**	80	92	232	186.5	186.5	146	261.5	284.5	160	4 x 14	160	4 x 14
60	**100**	100	114	274	227.5	227.5	172	312.5	349.5	200	8 x 12	200	8 x 12
65	**160**	110	122	302	248.5	248.5	188,5	338.5	380.5	220	8 x 14	220	8 x 14
75	**200**	130	142	332	274.5	274.5	199,5	369.5	411.5	240	8 x 18	265	8 x 18
80	**251**	140	150	370	311.5	311.5	255	414.5	457.5	265	8 x 14	240	8 x 14
90	**321**	160	170	390	333.5	333.5	270	441.5	483.5	280	8 x 18	280	8 x 18
100	**401**	170	184	434	364.5	364.5	287	482.5	524.5	305	12 x 18	305	12 x 18
110	**501**	180	196	456	391.5	391.5	303	519	571.5	330	12 x 18	330	12 x 18
120	**631**	190	206	466	409.5	409.5	308	547.0	609.5	360	12 x 18	360	12 x 18
130	**801**	200	216	506	438.5	438.5	331	580.5	643.5	395	12 x 22	395	12 x 22
140	**1001**	210	228	538	463.5	463.5	350	615.5	683.5	410	12 x 22	410	12 x 22
150	**1251**	225	243	583	504.5	504.5	394	661.5	739.5	435	12 x 22	435	12 x 22
160	**1601**	240	258	638	539.5	539.5	434	711.5	789.5	360	12 x M24	455	12 x 26
180	**2001**	253	272	662	575.5	575.5	479	757.5	835.5	390	12 x M24	490	12 x 26
190	**2501**	268	282	722	614.5	614.5	517	806.5	894.5	410	12 x M30	520	12 x 26
200	**3201**	280	300	810	672.5	672.5	595	879.5	972.5	445	12 x M30	550	12 x 26
210	**4001**	300	320	870	722.5	722.5	620	949.5	1062.5	490	12 x M30	610	12 x 33
230	**5001**	310	330	940	766.5	766.5	655	1013.5	1131.5	530	12 x M30	650	12 x 33
260	**6301**	330	360	980	806.5	806.5	665	1073.5	1231.5	580	12 x M30	710	12 x 33
280	**8001**	360	390	1110	894.5	894.5	755	1191.5	1354.5	610	12 x M36	750	12 x 39
300	**10001**	420	450	1200	978.5	978.5	825	1295.5	1493.5	650	12 x M42	825	12 x 39
350	**12501**	400	430	1180	931.5	931.5	855	1286.5	-	730	18 x M42	900	18 x39
390	**16001**	440	470	1260	1001.5	1001.5	935	1396.5	-	790	18 x M42	980	18 x 45
420	**20001**	460	490	1370	1074.5	1074.5	1010	1499.5	-	850	18 x M48	1050	18 x 45
460	**25001**	500	530	1450	1143.5	1143.5	1060	1598.5	-	910	18 x M48	1130	18 x 52
530	**32001**	550	580	1640	1254.5	1254.5	1080	1809.5	-	1100	24 x M42	1280	24 x 45
580	**40001**	600	630	1790	1363.5	1363.5	1180	1958.5	-	1200	24 x M42	1390	24 x 45

A complete RIGIFLEX® coupling comprises two coupling halves and an intermediate spacer:

Examples of combinations:

- Two Style 01 coupling halves can be combined to produce a Style 11 RIGIFLEX® coupling
- One Style 02 coupling half and one Style 05 coupling half can be combined to produce a Style 25 RIGIFLEX® coupling
- One Style 01 coupling half and one Style 07 coupling half can be combined to produce a Style 17 RIGIFLEX® coupling
- One Style 03 coupling half and one Style 04 coupling half can be combined to produce a Style 34 RIGIFLEX® coupling (the short-type 04 coupling half does not necessitate the use of a spacer

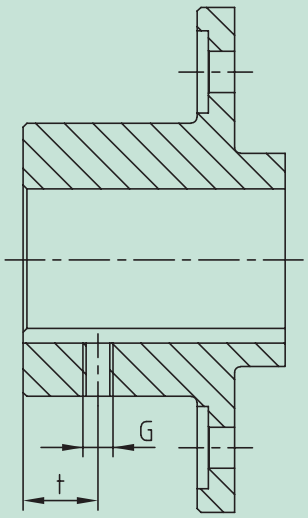
Order form:

RIGIFLEX® 130	style 15	M 100	d_1 Ø 110 mm	d_3 Ø 140 mm
Coupling size	Design	M dimensions	Bore	Bore

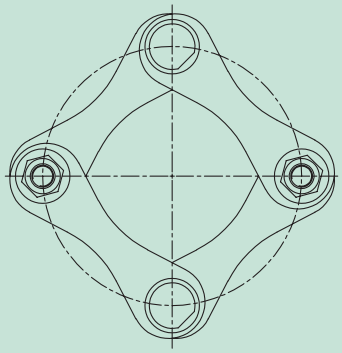
zero backlash, torsionally rigid and maintenance-free couplings

Standard hub with keyway according to DIN 6885 sheet 1

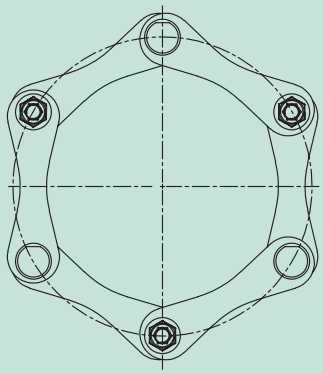
New **KTR** size	Former size	G	t
32	20	M6	15
48	32	M8	20
60	100	M8	20
65	160	M10	20
75	200	M10	20
80	251	M10	20
90	321	M12	25
100	401	M12	30
110	501	M12	30
120	631	M12	30
130	801	M20	35
140	1001	M20	35
150	1251	M20	40
160	1601	M20	40
180	2001	M20	40
190	2501	M20	50
200	3201		
210	4001		
230	5001		
260	6301		
280	8001		
300	10001	on request of customer	
350	12501		
390	16001		
420	20001		
460	25001		
530	32001		
580	40001		



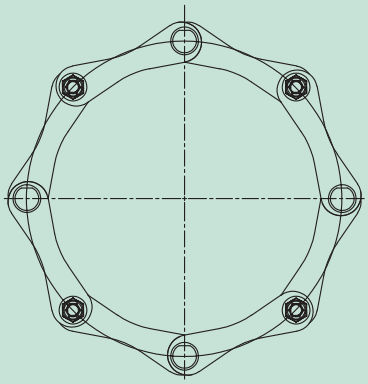
Following disk forms of RIGIFLEX® have to be distinguished:



Size 32 - 300
(4 hole disk plates)

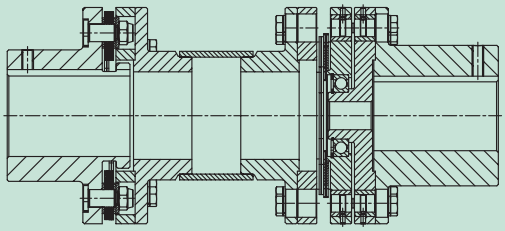


Size 350 - 460
(6 hole disk plates)



Size 530 - 580
(8 hole disk plates)

Further styles

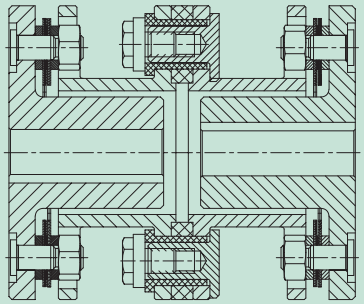


RIGIFLEX® BKN

Shear pin safety coupling

Limits torque through shear pins

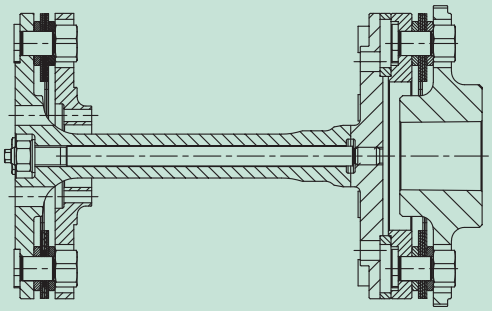
Please indicate the break away torque on the order!



RIGIFLEX®

Electrically insulated

Used to insulate electricalcurrent from the drive side to the driven side.



RIGIFLEX®
in the train and traffic technology

Connection of hollow shaft engines and gearboxes mounted on axle drives.