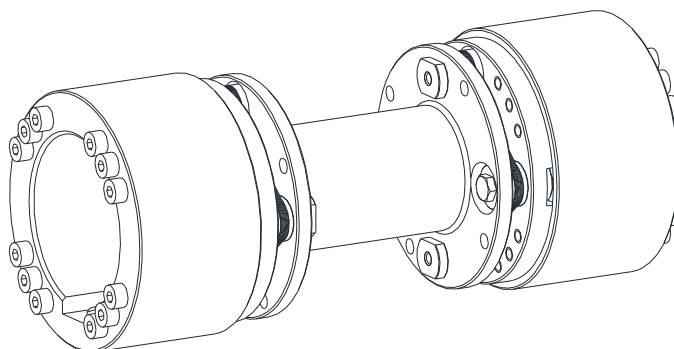




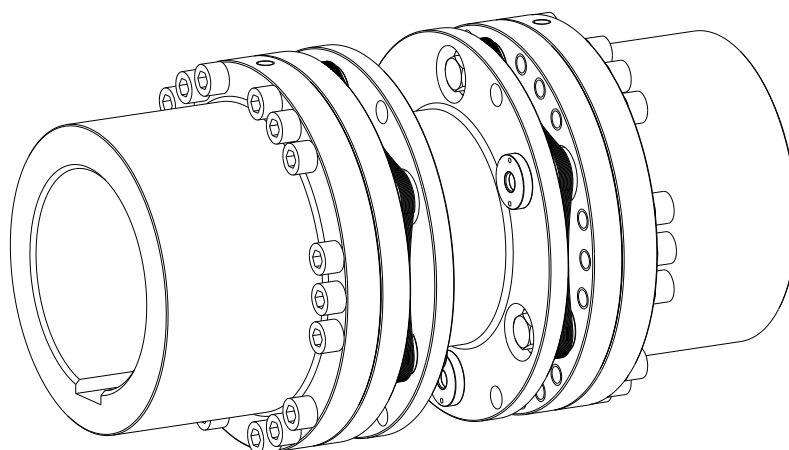
RIGIFLEX®-N

Torsionally stiff steel laminae coupling

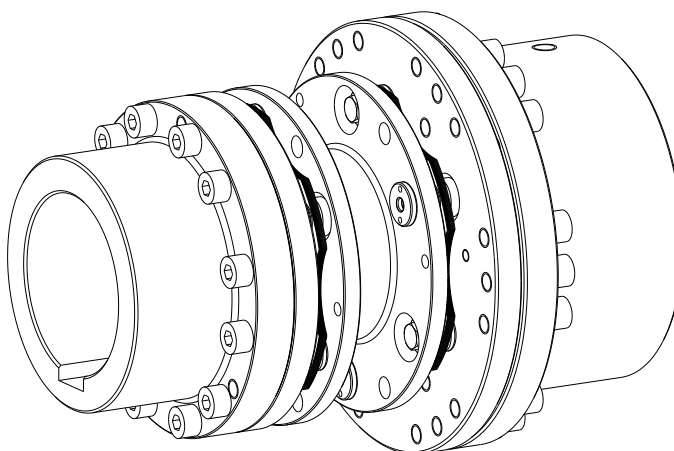
according to directive 2014/34/EU
and UK directive SI 2016 No.
1107



Type A, size 35



Type A, size 50 - 408



Type A-J

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RIGIFLEX®-N is a torsionally stiff flexible steel laminae coupling. It is able to compensate for shaft misalignment, for example caused by thermal expansion, etc.

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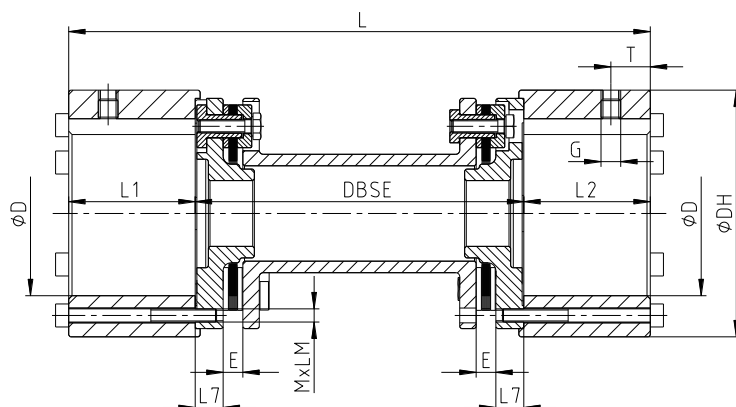

1 Technical data


Illustration 1: RIGIFLEX®-N type A, size 35

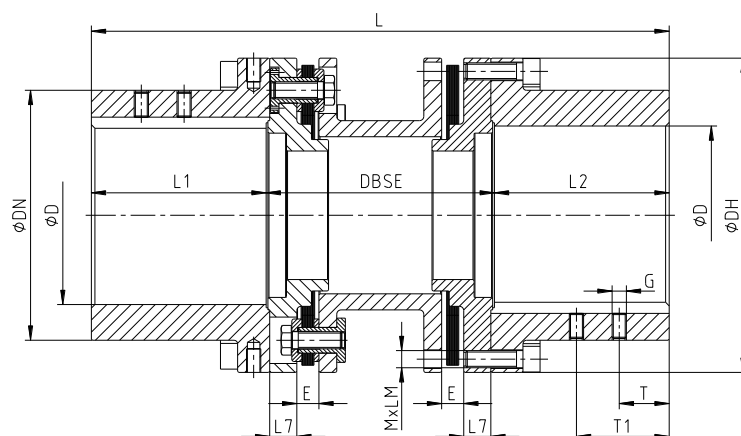


Illustration 2: RIGIFLEX®-N type A, size 50 - 408

Table 1: Dimensions - type A

Size	Dimensions in mm															
	Max. finish bore D	General										Centering of the coupling hub		Setscrew		
		DN	DH	L1, L2	L7	E	DBSE ¹⁾				D5	L5	G	T	T1	
35	50	-	75	38.5	8.5	6	100	140	-	-	-	70	1.5	M6	15	-
50	50	70	95	50	12	9	100	140	-	-	-	55	2.0	M6	10	-
65	70	100	126	63	12	11	100	140	180	-	-	75	2.0	M8	20	-
75	75	105	138	62.5	12	11	100	140	180	-	-	85	2.5	M8	20	-
85	90	120	156	72.5	15	12	-	140	180	200	250	95	2.5	M10	20	-
110	110	152	191	87	18	12	-	140	180	200	250	120	3.0	M10	25	-
120	120	165	213	102	20	12	-	-	180	200	250	130	3.0	M12	25	-
140	150	200	265	126	25	15	-	-	-	200	250	160	4.0	M12	30	-
160	165	230	305	145	31	15	-	-	-	-	250	170	5.0	M12	30	-
166	165	230	305	155	31	17	According to customer specification					184	5.0	M16	30	70
196	195	260	330	185	32	24						200	5.0	M16	40	90
216	210	285	370	205	32	26						220	5.0	M20	50	110
256	260	350	440	245	38	31						265	5.0	M20	70	130
306	305	400	515	295	43	36						310	5.0	M24	70	130
346	350	460	590	335	55	45						370	5.0	M24	95	175
406	405	530	675	395	58.5	50						420	5.0	M24	95	175
168	165	230	305	155	31	17						184	5.0	M16	30	70
198	195	260	330	185	32	24						200	5.0	M16	40	90
218	210	285	370	205	32	26						220	5.0	M20	50	110
258	260	350	440	245	38	31						265	5.0	M20	70	130
308	305	400	515	295	43	36						310	5.0	M24	70	130
348	350	460	590	335	55	45						370	5.0	M24	95	175
408	405	530	675	395	58.5	50						420	5.0	M24	95	175

1) Other shaft distance dimensions available on request

2) For figures MxLM see table 9

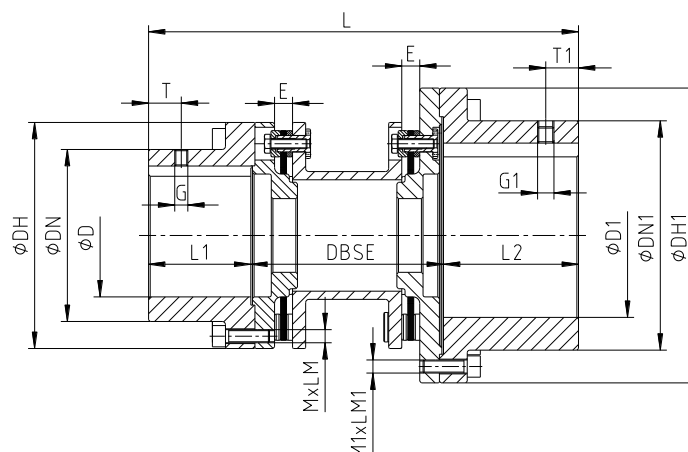

1 Technical data


Illustration 3: RIGIFLEX®-N, type A-J

Table 2: Dimensions - type A-J

Size	Dimensions in mm							
	Max. finish bore		Centering of the coupling hub J		Setscrew			
	D	D1	D5	L5	G	T	G1	T1
50	50	70	100	2.0	M6	10	M8	20
65	70	90	130	2.0	M8	20	M10	20
75	75	100	138	2.5	M8	20	M10	20
85	90	110	158	2.5	M10	20	M10	25
110	110	150	200	3.0	M10	25	M12	30
120	120	165	240	3.0	M12	25	M12	30
140	150	195	260	4.0	M12	30	M16	40/90
160	165	210	305	5.0	M12	30	M20	50/110

Size	Dimensions in mm											
	DN	DN1	DH	DH1	L1	L2	E	DBSE ¹⁾				
50	70	100	95	126	50	63.0	9	100	140	-	-	-
65	100	120	126	156	62	72.5	11	100	140	180	-	-
75	105	140	138	180	62	83.0	11	100	140	180	-	-
85	120	152	156	191	72	87.5	12	-	140	180	200	250
110	152	200	191	265	87	127	12	-	140	180	200	250
120	165	230	213	305	102	147	12	-	-	180	200	250
140	200	260	265	330	126	186	15	-	-	-	200	250
160	230	285	305	370	145	205	15	-	-	-	-	250

1) Other shaft distance dimensions available on request

2) For figures MxLM and M1xLM1 see table 10

Table 3: Torque and speed

Size	35	50	65	75	85	110	120	140	160	166	196	216
Torque in Nm	T _{KN}	130	270	550	1100	1900	3500	5750	10500	16000	19000	32000
	T _{K max.}	260	540	1100	2200	3800	7000	11500	21000	32000	38000	64000
	T _{KW}	65	135	275	550	950	1750	2875	5250	8000	9500	16000
Max. speed n in rpm	23000	18000	13600	12400	11000	9000	8000	6400	5600	5600	5200	4600

Size		256	306	346	406	168	198	218	258	308	348	408
Torque in Nm	T _{KN}	52500	86000	135000	210000	25000	30000	42500	70000	115000	180000	280000
	T _{K max.}	105000	172000	270000	420000	50000	60000	85000	140000	230000	360000	560000
	T _{KW}	26250	43000	67500	105000	12500	15000	21500	35000	57500	90000	140000
Max. speed n in rpm		3900	3300	2900	2500	5600	5200	4600	3900	3300	2900	2500



In case if a dimensional drawing was prepared for the coupling, the dimensions specified have to be primarily observed.

The operator of the machine must be provided with the dimensional drawing.



RIGIFLEX®-N couplings with attachments that can generate heat, sparks and static charging (e. g. combinations with brake drums, brake disks, overload systems such as torque limiters, fan impellers etc.) are **not** permitted for the use in potentially explosive atmospheres. A separate analysis must be performed.

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2 Advice

2.1 General advice

Read carefully through these operating/assembly instructions before you start up the coupling.
Pay special attention to the safety instructions!



The **RIGIFLEX®-N** coupling is suitable and approved for the use in potentially explosive atmospheres. When using the coupling in potentially explosive atmospheres, observe the special advice and instructions regarding safety in enclosure A.

The operating/assembly instructions are part of your product. Please store them carefully and close to the coupling. The copyright for these operating/assembly instructions remains with KTR.

2.2 Safety and advice symbols



Warning of potentially explosive atmospheres

This symbol indicates notes which may contribute to preventing bodily injuries or serious bodily injuries that may result in death caused by explosion.



Warning of personal injury

This symbol indicates notes which may contribute to preventing bodily injuries or serious bodily injuries that may result in death.



Warning of product damages

This symbol indicates notes which may contribute to preventing material or machine damage.



General advice

This symbol indicates notes which may contribute to preventing adverse results or conditions.



Warning of hot surfaces

This symbol indicates notes which may contribute to preventing burns with hot surfaces resulting in light to serious bodily injuries.

2.3 General hazard warnings



With assembly, operation and maintenance of the coupling it has to be made sure that the entire drive train is secured against accidental switch-on. You may be seriously hurt by rotating parts. Make absolutely sure to read through and observe the following safety indications.

- All operations on and with the coupling have to be performed taking into account "safety first".
- Make sure to switch off the power pack before you perform your work on the coupling.
- Secure the power pack against accidental switch-on, e. g. by providing warning signs at the place of switch-on or removing the fuse for current supply.
- Do not reach into the operating area of the coupling as long as it is in operation.
- Secure the coupling against accidental contact. Provide for the necessary protection devices and covers.

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2 Advice

2.4 Intended use

You may only assemble, operate and maintain the coupling if you

- have carefully read through the operating/assembly instructions and understood them
- are technically qualified and specifically trained (e. g. safety, environment, logistics)
- are authorized by your company

The coupling may only be used in accordance with the technical data (see chapter 1). Unauthorized modifications on the coupling design are not admissible. We will not assume liability for any damage that may arise. In the interest of further development we reserve the right for technical modifications.

The **RIGIFLEX®-N** described in here corresponds to the state of the art at the time of printing of these operating/assembly instructions.

2.5 Coupling selection



For a long-lasting and failure-free operation of the coupling it must be selected according to the selection instructions for the particular application (see catalogue drive technology "RIGIFLEX®-N").

If the operating conditions (performance, speed, modifications on engine and machine) change, the coupling selection must be reviewed.

Make sure the technical data regarding torque refer to the laminae set only. The transmittable torque of the shaft-hub-connection must be reviewed by the customer and is subject to his responsibility.

For drives subjected to torsional vibrations (drives with cyclic stress due to torsional vibrations) it is necessary to perform a torsional vibration calculation to ensure a reliable selection. Typical drives subject to torsional vibrations are e. g. drives with diesel engines, piston pumps, piston compressors etc. If requested, KTR will perform the coupling selection and the torsional vibration calculation.

2.6 Reference to EC Machinery Directive 2006/42/EG

The couplings supplied by KTR should be considered as components, not machines or partly completed machines according to EC Machinery Directive 2006/42/EC. Consequently KTR does not have to issue a declaration of incorporation. For details about safe assembly, start-up and safe operation refer to the present operating/assembly instructions considering the warnings.

3 Storage, transport and packaging

3.1 Storage

The couplings are supplied in preserved condition and can be stored in a dry and roofed place for a period of 6 - 9 months.



Humid storage rooms are not suitable.

Make sure that condensation is not generated. The best relative air humidity is less than 65 %.

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**3 Storage, transport and packaging****3.2 Transport and packaging**

In order to avoid any injuries and any kind of damage always make use of proper transport and lifting equipment.

The couplings are packed differently each depending on size, number and kind of transport. Unless otherwise contractually agreed, packaging will follow the in-house packaging specifications of KTR.

4 Assembly

The spacer is supplied fully assembled. Before assembly the coupling must be inspected for completeness.

4.1 Components of the coupling**Components of RIGIFLEX®-N type A**

Component	Quantity	Description
1	2	Coupling hub
2	1	Spacer complete
3	see table 4	Cap screws DIN EN ISO 4762
4	see table 4	Setscrew DIN EN ISO 4029

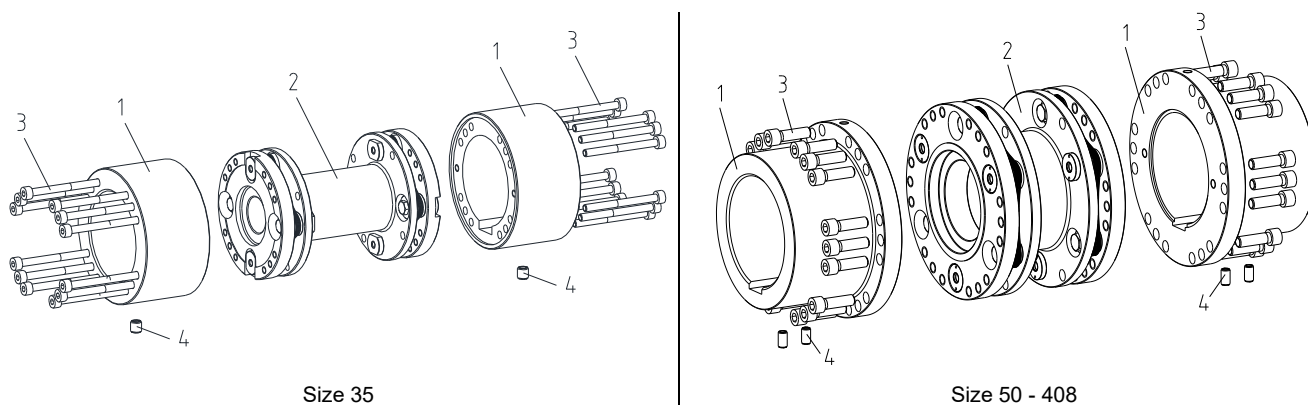


Illustration 4: RIGIFLEX®-N type A

Table 4:

Size	35	50	65	75	85	110	120	140	160	166	196	216
Number of cap screws ¹⁾	24	16	24	24	36	36	36	36	36	24	24	36
Number of setscrews ¹⁾	2	2	2	2	2	2	2	2	2	4	4	4

Size	256	306	346	406	168	198	218	258	308	348	408
Number of cap screws ¹⁾	36	36	36	36	32	32	48	48	48	48	48
Number of setscrews ¹⁾	4	4	4	4	4	4	4	4	4	4	4

1) Number per coupling

**4 Assembly****4.1 Components of the coupling****Components of RIGIFLEX®-N type A-J**

Component	Quantity	Description
1.1	1	Coupling hub
1.2	1	Coupling hub J
2	1	Spacer complete
3.1	see table 5	Cap screws DIN EN ISO 4762
3.2	see table 5	Cap screws DIN EN ISO 4762
4.1	see table 5	Setscrew DIN EN ISO 4029
4.2	see table 5	Setscrew DIN EN ISO 4029

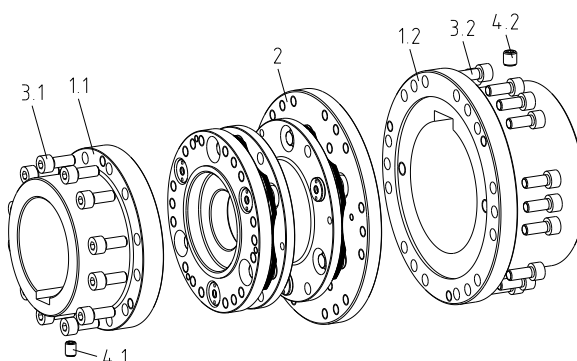


Illustration 5: RIGIFLEX®-N, type A-J

Table 5:

Size	Component	50	65	75	85	110	120	140	160
Number of cap screws	3.1	8	12	12	18	18	18	18	18
	3.2	12	18	18	18	18	18	12	18
Number of setscrews	4.1	1	1	1	1	1	1	1	1
	4.2	1	1	1	1	1	1	2	2

4.2 Advice for finish bore

The maximum permissible bore diameters D (see chapter 1 - technical data) must not be exceeded. If these figures are disregarded, the coupling may tear. Rotating particles may cause danger to life.

- Hub bores machined by the customer have to observe concentricity resp. axial runout (see illustration 6).
- Make absolutely sure to observe the figures for $\varnothing D$.
- Carefully align the hubs when the finish bores are drilled.
- Provide for a setscrew according to DIN EN ISO 4029 with a cup point or an end plate to fasten the hubs axially.

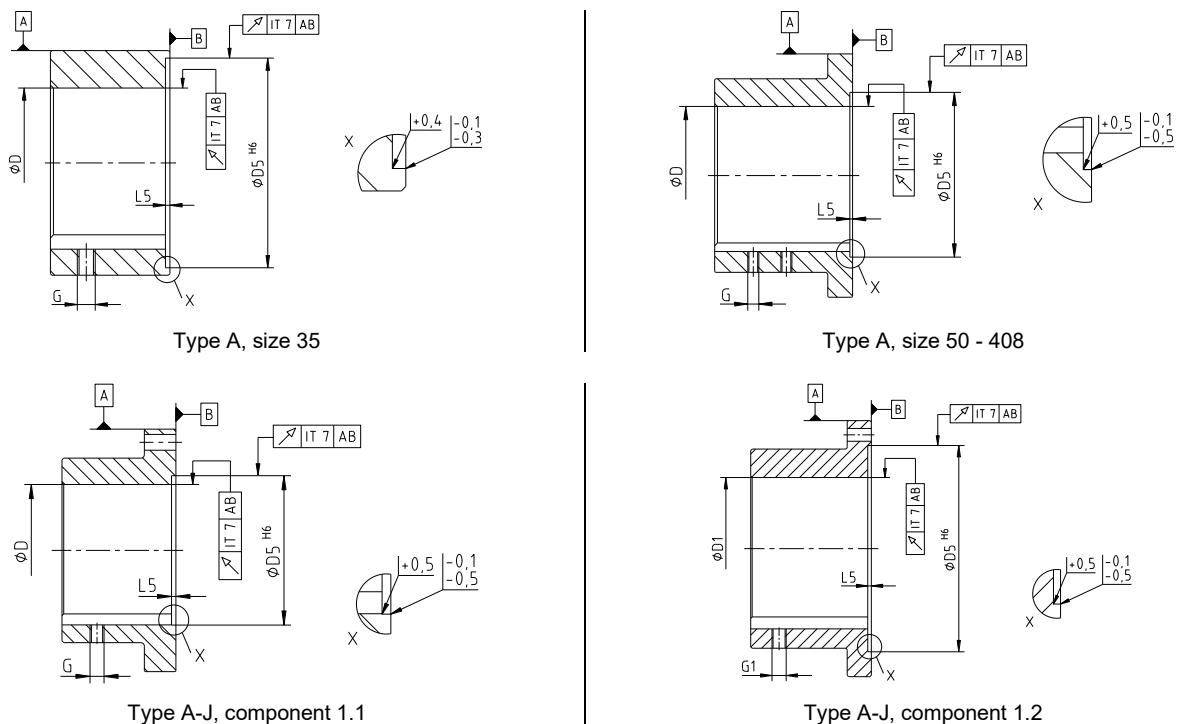


A centering is not available with pilot bored or unbored hubs, respectively. It has to be drilled according to illustration 6. Size and depth of the centering are shown in table 1 and 2.



4 Assembly

4.2 Advice for finish bore



The customer bears the sole responsibility for all machining processes performed subsequently on unbored or pilot bored as well as finish machined coupling components and spare parts. KTR does not assume any warranty claims resulting from insufficient remachining.



KTR supplies unbored or pilot bored coupling components and spare parts only upon explicit request of the customer. These parts are additionally marked with the symbol

Reference to unbored resp. pilot bored coupling components with explosion protection marking:

Basically the company KTR Systems GmbH supplies couplings resp. coupling hubs with explosion protection marking as an unbored or pilot bored type only on explicit request of the customer. The prerequisite is a declaration of exemption submitted by the customer assuming any responsibility and liability for respective remachining performed on the product of KTR Systems GmbH.

Table 6: Setscrew DIN EN ISO 4029 - type A

Size	35	50	65	75	85	110	120	140	160	166	196	216
Dimension G in mm	M6	M6	M8	M8	M10	M10	M12	M12	M12	M16	M16	M20
Tightening torque T_A in Nm	4.8	4.8	10	10	17	17	40	40	40	80	80	140

Size	256	306	346	406	168	198	218	258	308	348	408
Dimension G in mm	M20	M24	M24	M24	M16	M16	M20	M20	M24	M24	M24
Tightening torque T_A in Nm	140	240	240	240	80	80	140	140	240	240	240

Table 7: Setscrew DIN EN ISO 4029 - type A-J

Size	50	65	75	85	110	120	140	160
Dimension G in mm	M6	M8	M8	M10	M10	M12	M12	M12
Tightening torque T_A in Nm	4.8	10	10	17	17	40	40	40
Dimension G1 in mm	M8	M10	M10	M10	M12	M12	M16	M20
Tightening torque T_{A1} in Nm	10	17	17	17	40	40	80	140

Please observe protection
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**4 Assembly****4.3 Assembly of coupling hubs**

We recommend to inspect bores, shaft, keyway and feather key for dimensional accuracy before assembly.



Heating the hubs lightly (approx. 80 °C) allows for an easier mounting on the shafts.



Pay attention to the ignition risk in potentially explosive atmospheres!



Touching the heated hubs causes burns.
Please wear safety gloves.



With the assembly make sure that the distance dimension DBSE (see table 1 and 2) is observed so that the coupling components are not in contact with each other during the operation.

Disregarding this advice may cause damage to the coupling.



If used in potentially explosive atmospheres the setscrews to fasten the hubs as well as all screw connections must be secured against working loose additionally, e. g. conglomerating with LOCTITE® (average strength).

For axial alignment of the coupling the distance dimension DBSE (see table 1 and 2) is decisive. In order to set the right DBSE dimension, you should proceed as follows:

- Shift the coupling hubs onto the shaft of the driving and driven side.
- The internal sides of the coupling hubs must be flush with the front sides of the shafts (see illustration 7).
- Align the power pack in axial direction until the distance dimension DBSE is achieved (see table 1 and 2).
- Fasten the coupling hubs by tightening the setscrews DIN EN ISO 4029 with a cup point (see table 6 or 7).

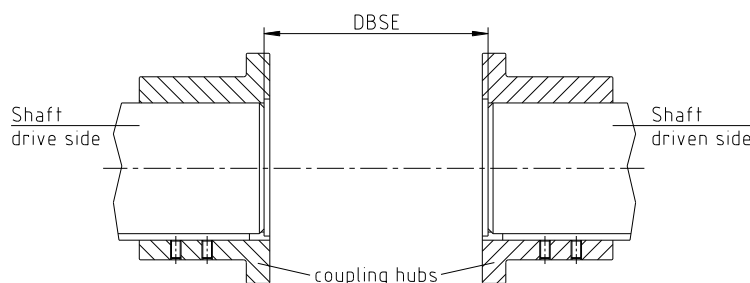


Illustration 7: Assembly of coupling hubs

Disassembly:

Parts released or falling down may cause injury to persons or damage on the machine.
Secure the components before disassembly.

- Release the setscrew in the hub and unscrew it by 2 - 3 pitches.
- Pull the hub from the shaft.



4 Assembly

4.4 Assembly of the spacer

If the coupling is supplied with a transportation lock (optionally), the following has to be observed:



The spacer sleeves (steel) must be removed for further assembly and operation (see illustration 8).

- Disassemble the transport screws and spacer sleeves.
- Afterwards the transport screws can be reassembled and used as retraction screws.

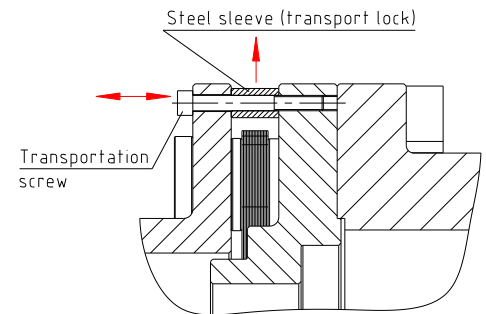


Illustration 8: Transport lock

If the coupling is supplied with limitation for axial clearance (optionally), the following has to be observed:

- Before mounting the spacer, remove the screws and sleeves for limitation of axial clearance.
- Having mounted the spacer completely, re-assemble the screws and sleeves for limitation of axial clearance (see illustration 9). Please observe the axial clearance S as per dimension sheet.
- Secure the screws against working loose by means of a high-strength adhesive (e. g. omniFIT® 230M or LOCTITE® 2701).

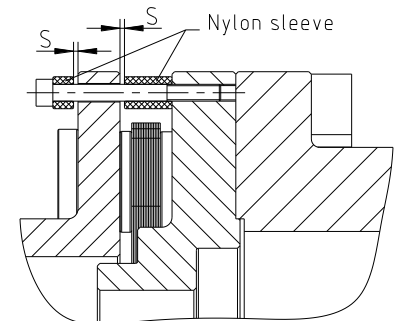


Illustration 9: Limitation of axial clearance



Please consider whether a limitation for axial clearance with two nylon sleeves per screw or one transport lock with one steel sleeve per screw was installed (see illustration 8 and 9).

- The coupling hubs have to be aligned such that the through holes of the coupling hubs line up.
- Clean and degrease the centerings and contact surfaces on the spacer and coupling hubs.
- Pull up the flanges of „spacer complete“ closer to the spacer each by the maximum value R (see table 8) by means of the retraction screws (see illustration 10).
The transport screws (see illustration 8) or cap screws (component 3, see illustration 4 and 5) can be used as retraction screws.
- Insert the spacer between the hubs, align the through hole flush with the threaded hole for screwing.

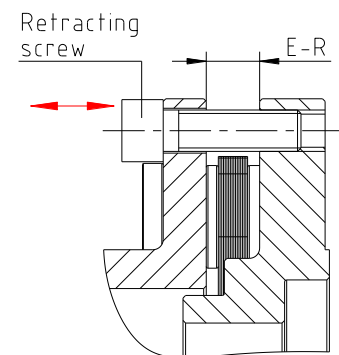


Illustration 10

Table 8

Size	35	50	65	75	85	110	120	140	160
Value R in mm	1.7	1.2	1.2	1.7	1.7	2.2	2.2	3.2	3.2

Size	166 / 168	196 / 198	216 / 218	256 / 258	306 / 308	346 / 348	406 / 408
Value R in mm	2.2	2.7	2.7	2.7	3.2	3.2	3.2



4 Assembly

4.4 Assembly of the spacer

- With assembly-balanced couplings make sure that the balancing marking X (Y) of the hub is flush with the balancing marking X (Y) of the spacer (see illustration 11) (optionally).
- Centre the spacer in the coupling hubs by unscrewing and removing the retraction screws.



The retraction screws must be removed for further assembly and operation.

- Hand-tighten the spacer to the coupling hubs via the cap screws (see illustration 12).
- Tighten the cap screws one after another and with several revolutions until all cap screws have reached the full tightening torque (see table 9 or 10).

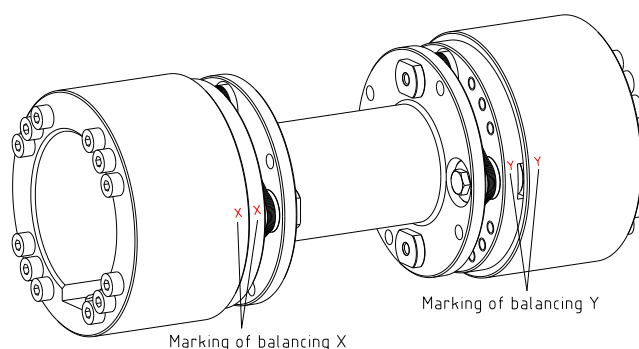


Illustration 11: Alignment of spacer

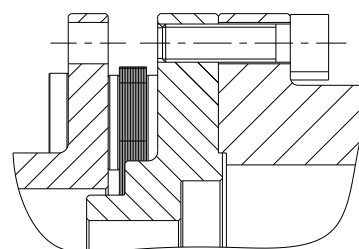


Illustration 12

Table 9: Tightening torques of the cap screws - type A

Size	35	50	65	75	85	110	120	140	160
Dimension MxLM in mm	M4x45	M6x22	M6x25	M8x30	M8x30	M10x35	M12x40	M16x50	M16x55
Tightening torque T_A in Nm	4.1	14	14	35	35	69	120	295	295

Size	166 / 168	196 / 198	216 / 218	256 / 258	306 / 308	346 / 348	406 / 408
Dimension MxLM in mm	M20x50	M20x50	M20x65	M24x80	M27x100	M30x110	M36x130
Tightening torque T_A in Nm	560	560	560	970	1450	1950	3300

Table 10: Tightening torques of the cap screws - type A-J

Size	50	65	75	85	110	120	140	160
Dimension MxLM in mm	M6x22	M6x25	M8x30	M8x30	M10x35	M12x40	M16x50	M16x55
Tightening torque T_A in Nm	14	14	35	35	69	120	295	295
Dimension M1xLM1 in mm	M6x25	M8x25	M8x30	M10x30	M16x45	M16x45	M20x45	M20x65
Tightening torque T_{A1} in Nm	14	35	35	69	295	295	560	560

**4 Assembly****4.5 Displacements - alignment of the couplings**

The displacement figures specified in table 11 provide for sufficient safety to compensate for external influences like, for example, thermal expansion or foundation settling.



In order to ensure a long service life of the coupling and avoid hazards with the use in potentially explosive atmospheres, the shaft ends must be accurately aligned.

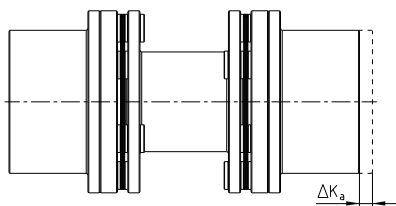
Absolutely observe the displacement figures specified (see table 11). If the figures are exceeded, the coupling will be damaged.

The more accurate the alignment of the coupling, the longer is its service life.

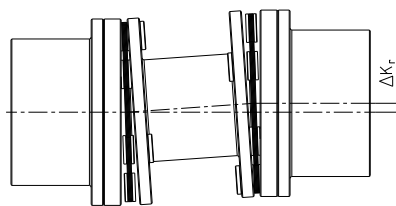
If used in potentially explosive atmospheres for explosion group IIC, only half of the displacement figures (see table 11) are permissible.

Please note:

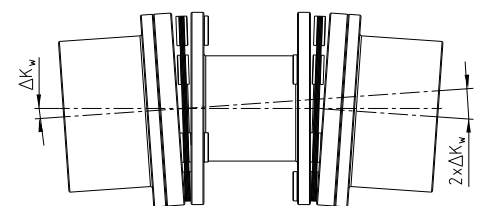
- The displacement figures specified in table 11 are maximum figures which must not arise in parallel. If axial, radial and angular displacement arises at the same time, these values must be reduced (see illustration 14).
- Inspect with a dial gauge, ruler or feeler gauge whether the permissible displacement figures specified in table 11 can be observed.



Axial displacements



Radial displacements



Angular displacements

Illustration 13: Displacements

Examples of the displacement combinations specified in illustration 14:

Example 1:

$$\Delta K_r = 10\%$$

$$\Delta K_w = 80\%$$

$$\Delta K_a = 10\%$$

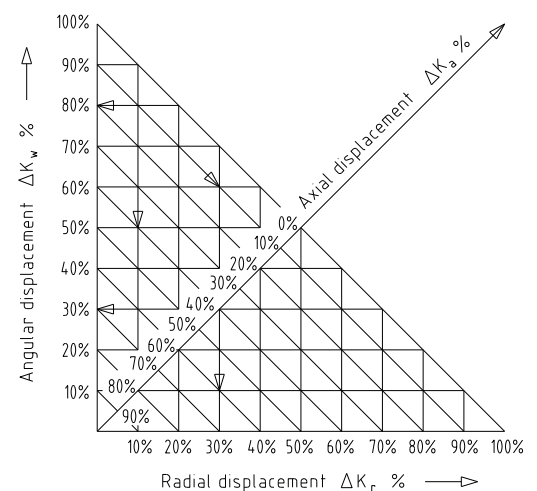
Example 2:

$$\Delta K_r = 30\%$$

$$\Delta K_w = 30\%$$

$$\Delta K_a = 40\%$$

$$\Delta K_{\text{total}} = \Delta K_a + \Delta K_r + \Delta K_w \leq 100\%$$

Illustration 14:
Combinations of displacement

4 Assembly

4.5 Displacements - alignment of the couplings

Table 11: Displacement figures

Size	Axial displacement ΔK_a in mm	Radial displacement ΔK_r in mm					Angular displacement ¹⁾ ΔK_w in °
		DBSE = 100	DBSE = 140	DBSE = 180	DBSE = 200	DBSE = 250	
35	1.2	0.90	1.40	-	-	-	0.7
50	1.4	0.77	1.26	-	-	-	0.7
65	1.5	0.75	1.23	1.72	-	-	0.7
75	1.8	0.73	1.22	1.71	-	-	0.7
85	2.1	-	1.14	1.62	1.87	2.48	0.7
110	2.4	-	1.05	1.54	1.78	2.39	0.7
120	2.6	-	1.00	1.49	1.73	2.35	0.7
140	3.3	-	-	-	1.55	2.16	0.7
160	3.8	-	-	-	-	1.99	0.7
166	3.7	$\Delta K_r = \tan \Delta K_w \times (DBSE - E - 2 \times L5 - 2 \times L7) \text{ } ^{2)}$					0.7
196	4.2						0.7
216	4.5						0.7
256	5.2						0.7
306	6.0						0.7
346	6.7						0.7
406	7.5						0.7
168	2.6						0.5
198	2.6						0.5
218	2.9						0.5
258	3.5						0.5
308	4.2						0.5
348	4.8						0.5
408	5.0						0.5

1) per laminae set

2) For dimensions see table 1



**In case if a dimensional drawing was prepared for the coupling, the dimensions specified have to be primarily observed.
The operator of the machine must be provided with the dimensional drawing.**

5 Start-up



Before start-up make absolutely sure that the transport lock (see illustration 8) and retraction screws (see illustration 10) have been removed.

Before start-up of the coupling, inspect the tightening of the setscrews in the hubs, the alignment and the distance dimension DBSE and adjust, if necessary, and also inspect all screw connections for the tightening torques specified.



If used in potentially explosive atmospheres the setscrews to fasten the hubs as well as all screw connections must be secured against working loose additionally, e. g. conglomerating with LOCTITE® (average strength).

Finally the coupling protection against accidental contact must be fitted. It is required in accordance with DIN EN ISO 12100 (Safety of Machinery) and directives 2014/34/EU and SI 2016 No. 1107 and must protect against

- access with a little finger
- falling down of solid foreign objects.

Please observe protection note ISO 16016.	Drawn:	2026-04-29 Fes	Replacing:	KTR-N dated 2023-12-22
	Verified:	2026-04-29 Fes	Replaced by:	

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5 Start-up

The coupling protection is not part of KTR's scope of delivery and is the customer's responsibility. It must have sufficient distance to the rotating components to safely avoid contact. We recommend a minimum distance of 15 mm from the outside diameter DH of the coupling.

Please check whether a proper enclosure (ignition protection, coupling protection, contact protection) has been mounted and the operation of the coupling is not affected by the enclosure. The same applies for test runs and rotational direction inspections.

The cover may provide for openings intended for necessary heat dissipation. These openings have to comply with DIN EN ISO 13857.

The cover must be electrically conductive and included in the equipotential bonding. Bell housings (magnesium share below 7.5 %) made of aluminium and damping rings (NBR) can be used as connecting element between pump and electric motor. The cover may only be taken off with standstill of the unit.



If the couplings are used in locations subject to dust explosion and in mining the user must make sure that there is no accumulation of dust in a dangerous volume between the cover and the coupling. The coupling must not operate in an accumulation of dust.

For covers with unlocked openings on the top face no light metals must be used if the couplings are used as equipment of equipment group II (*if possible, from stainless steel*). If the couplings are used in mining (equipment group I M2), the cover must not be made of light metal. In addition, it must be resistant to higher mechanical loads than with use as equipment of equipment group II.

During operation of the coupling, pay attention to

- different operating noise
- vibrations occurring.



If you note any irregularities with the coupling during operation, the drive unit must be switched off immediately. The cause of the breakdown must be specified by means of the table „Breakdowns“ and, if possible, be eliminated according to the proposals. The potential breakdowns specified can be hints only. To find out the cause all operating factors and machine components must be considered.

Coating of coupling:



If coated (priming, paintings, etc.) couplings are used in potentially explosive atmospheres, the requirements on conductivity and coating thickness must be considered. With paintings up to 200 µm electrostatic load does not have to be expected. If thicker paintings resp. coatings up to a layer thickness of a maximum of 2.0 mm are applied, the couplings are not permissible for gases and vapours of category IIC in potentially explosive areas, but only for gases and vapours of category IIA and IIB.

This also applies for multiple coatings exceeding an overall thickness of 200 µm. Make sure with painting or coating that the coupling components are conductively connected with the device/devices to be connected so that the equipotential bonding is not impeded by the paint or coat applied. Basically painting of the laminae set is not admitted to ensure an equipotential bonding.

In addition, make sure that the marking of the coupling remains legible.

Please observe protection note ISO 16016.	Drawn: 2026-04-29 Fes Verified: 2026-04-29 Fes	Replacing: KTR-N dated 2023-12-22 Replaced by:
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6 Breakdowns, causes and elimination

The below-mentioned failures can result in improper use of the **RIGIFLEX®-N** coupling. In addition to the specifications given in these operating/assembly instructions make sure to avoid such failures.

The errors listed can only be clues to search for the failures. When searching for the failure the adjacent components must generally be considered.



The coupling can become a source of ignition with improper use.

Directive 2014/34/EU and UK directive SI 2016 No. 1107 require special care by the manufacturer and the user.

General failures with improper use:

- Important data for the coupling selection are not forwarded.
- The calculation of the shaft-hub-connection is not considered.
- Coupling components with damage occurred during transport are assembled.
- If the heated hubs are assembled, the permissible temperature is exceeded.
- The clearance of the components to be assembled is not coordinated with one another.
- Tightening torques are fallen below/exceeded.
- Components are mixed up by mistake/assembled incorrectly.
- A wrong or no laminae set is inserted in the coupling.
- No original **KTR** components (purchased parts) are used.
- Maintenance intervals are not observed.

Breakdowns	Causes	Hazard notes for potentially explosive atmospheres	Elimination
Different operating noise and/or vibrations occurring	Misalignment	none	1) Set the unit out of operation 2) Eliminate the reason for the misalignment (e. g. loose foundation bolts, fracture of the engine mount, heat expansion of unit components, modification of the installation dimension E of the coupling) 3) For inspection of wear see chapter 10.2
	Cap screws working loose, low micro friction under the screw head and on the steel laminae set	Ignition risk due to hot surfaces	1) Set the unit out of operation 2) Inspect coupling components and replace coupling components that have been damaged 3) Tighten the cap screws until the permissible tightening torque has been reached 4) Inspect alignment, adjust if necessary
	Screws for axial fastening of hubs working loose	none	1) Set the unit out of operation 2) Inspect alignment of coupling 3) Tighten the screws to fasten the hubs and secure against working loose 4) For inspection of wear see chapter 10.2
Fracture of steel laminae set	Fracture of steel laminae set due to high impact energy/overload	Ignition risk due to sparking	1) Set the unit out of operation 2) Disassemble the coupling and remove remainders of the steel laminae sets 3) Inspect coupling components and replace coupling components that have been damaged 4) Insert spacer, mount coupling components 5) Find out the reason for overload
	Operating parameters do not comply with the performance of the coupling		1) Set the unit out of operation 2) Review the operating parameters and select a bigger coupling (consider mounting space) 3) Assemble new coupling size 4) Inspect alignment

Please observe protection note ISO 16016.	Drawn:	2026-04-29 Fes	Replacing:	KTR-N dated 2023-12-22
	Verified:	2026-04-29 Fes	Replaced by:	

6 Breakdowns, causes and elimination

Breakdowns	Causes	Hazard notes for potentially explosive atmospheres	Elimination
Fracture of steel laminae set	Operating error of the unit	Ignition risk due to sparking	1) Set the unit out of operation 2) Disassemble the coupling and remove remainders of the spacer 3) Inspect coupling components and replace coupling components that have been damaged 4) Insert spacer, mount coupling components 5) Instruct and train the service staff
Cracks in / fracture of the steel laminae sets / fastening screws	Vibrations of drive		1) Set the unit out of operation 2) Disassemble the coupling and remove remainders of the spacer 3) Inspect coupling components and replace coupling components that have been damaged 4) Insert spacer, mount coupling components 5) Inspect alignment, adjust if necessary 6) Find out the reason for vibrations



When operating with a faulty laminae set (see chapter 10.2), proper operation is not assured.

7 Disposal

In respect of environmental protection we would ask you to dispose of the packaging resp. products on termination of their service life in accordance with the legal regulations and standards that apply.

- **Metal**

Any metal components have to be cleaned and disposed of by scrap metal.

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8 Maintenance and service

Monitoring of the general condition of the coupling can be done both at standstill and during operation. If the coupling is tested during operation, the operator must ensure an appropriate and proven test procedure (e. g. stroboscopic lamp, high-speed camera, etc.) which is definitely comparable to testing at standstill. If any distinctive features occur, an inspection must be made with the machine stopped.

RIGIFLEX®-N is a low-maintenance coupling. We recommend to perform a visual inspection on the coupling **at least once a year**. Pay special attention to the condition of the laminae sets, alignment and screw connection of the coupling.

- Since the flexible machine bearings of the driving and driven side settle with increasing load time, inspect the alignment of the coupling and re-align the coupling, if necessary.
- If some individual laminae are broken, the laminae sets of the coupling must be replaced. The coupling components must be inspected for damages.
- The screw connections must be visually inspected.



With the use in potentially explosive atmospheres observe chapter 10.2 "Inspection intervals for couplings in  potentially explosive atmospheres".

9 Spares inventory, customer service addresses

We recommend to store major spare parts on site to ensure the readiness for use of the machine in case if a coupling fails.

Contact addresses of the KTR partners for spare parts and orders can be obtained from the KTR homepage at www.ktr.com.



KTR does not assume any liability or warranty for the use of spare parts and accessories which are not provided by KTR and for the damages which may incur as a result.

KTR Systems GmbH
Carl-Zeiss-Str. 25
D-48432 Rheine
Phone: +49 5971 798-0
E-mail: mail@ktr.com

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**10 Enclosure A**

Advice and instructions regarding the use in  potentially explosive atmospheres

Types available:

Type A

RIGIFLEX®-N with spacer made of steel only.

10.1 Intended use in potentially explosive atmospheres**Conditions of operation in potentially explosive atmospheres**

The **RIGIFLEX®-N** couplings are suitable for the use according to directives 2014/34/EU and SI 2016 No. 1107.

- Protection against hazards arising from lightning must follow the lightning protection concept of the machine or plant. The relevant regulations and policy for lightning protection must be observed.
- The equipotential bonding of the couplings is made by metal contact between coupling hub and shaft. This equipotential bonding must not be affected.

The couplings may only be used if their materials are resistant to mechanical and/or chemical influences with different operating conditions in a way that the explosion protection is not affected.

1. Industry (with the exception of mining)

- Equipment group II of category 2 and 3 (*coupling is not approved/not suitable for equipment group 1*)
- Substance group G (gases, fogs, vapours), zone 1 and 2 (*coupling is not approved/not suitable for zone 0*)
- Substance group D (dusts), zone 21 and 22 (*coupling is not approved/not suitable for zone 20*)
- Explosion group IIC (gases, fogs, vapours) (explosion groups IIA and IIB are included in IIC) and explosion group IIIC (dusts) (explosion groups IIIA and IIIB are included in IIIC)

Temperature class:

Temperature class	Ambient or operating temperature T_a ¹⁾	Max. surface temperature ²⁾
T2	-40 °C to +230 °C	+250 °C
T3	-40 °C to +175 °C	+195 °C
T4	-40 °C to +110 °C	+130 °C
T5	-40 °C to +75 °C	+95 °C
T6	-40 °C to +60 °C	+80 °C

Explanation:

The maximum surface temperatures each result from the maximum permissible ambient or operating temperature T_a plus the maximum temperature increase ΔT of 20 K to be considered. For the temperature classes T6 to T3 (≤ 200 °C) a safety margin subject to standard of 5 K and from temperature class T3 (≥ 200 °C) a safety margin subject to standard of 10 K is added.

1) The ambient or operating temperature T_a is limited to +250 °C due to the permissible permanent operating temperature (surface temperature).

2) The maximum surface temperature of +230 °C applies for the use in locations which are potentially subject to dust explosion.

In potentially explosive atmospheres

- the ignition temperature of dusts generated must at least be 1.5 times the surface temperature to be considered
- the glow temperature must at least be the surface temperature to be considered plus a safety distance of 75 K.
- the gases and vapours generated must amount to the temperature class specified.



10 Enclosure A

Advice and instructions regarding the use in  potentially explosive atmospheres

10.1 Intended use in potentially explosive atmospheres

2. Mining

Equipment group I of category M2 (*coupling is not approved/not suitable for equipment group M1*).
Permissible ambient temperature -40 °C to +130 °C.

10.2 Inspection intervals for couplings in potentially explosive atmospheres

Equipment category	Inspection intervals
3G 3D	For couplings operated in zone 2 or zone 22 the inspection and maintenance intervals of the usual operating/assembly instructions for standard operation apply. During the standard operation which must be taken as a basis of the ignition risk analysis the couplings are free from any ignition source. For gases, vapours and dusts generated the permissible glow and ignition temperatures specified in chapter 10.1 have to be considered and observed.
M2 2G 2D No gases and vapours of explosion group IIC	An inspection of the torsional backlash and a visual inspection of the laminae sets must be performed after 3,000 operating hours for the first time, at the latest 6 months after start-up of the coupling. If you note insignificant or no wear on the lamina sets upon this initial inspection, further inspections can each be performed after 6,000 operating hours or at the latest after 18 months, provided that the operating parameters remain the same. If you note significant wear during the initial inspection so that it would be recommendable to replace the laminae sets, find out the cause according to the table „Breakdowns“, if possible. The maintenance intervals must be adjusted to the modified operating parameters without fail.
2G 2D Gases and vapours of explosion group IIC	An inspection of the torsional backlash and a visual inspection of the laminae sets must be performed after 2,000 operating hours for the first time, at the latest 3 months after start-up of the coupling. If you note insignificant or no wear on the lamina sets upon this initial inspection, further inspections can each be performed after 4,000 operating hours or at the latest after 12 months, provided that the operating parameters remain the same. If you note significant wear during the initial inspection so that it would be recommendable to replace the laminae sets, find out the cause according to the table „Breakdowns“, if possible. The maintenance intervals must be adjusted to the modified operating parameters without fail.

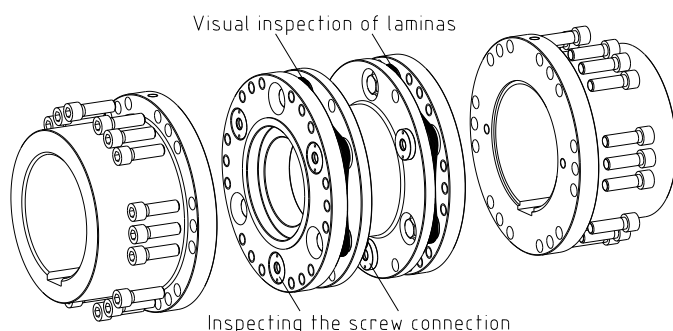


Illustration 15: RIGIFLEX®-N type A

During the visual inspection the laminae sets must be inspected for cracks and screws working loose. Screws working loose must be tightened at the screw tightening torque specified (consult with KTR). Regardless of the inspection intervals those laminae sets that are damaged or have cracks must be replaced by a new „complete spacer“ immediately.

**10 Enclosure A**

Advice and instructions regarding the use in  potentially explosive atmospheres

10.3 marking of coupling for potentially explosive atmospheres

The explosion protection marking of the RIGIFLEX®-N coupling is applied on the outer sheath or on the front side. The laminae sets are not marked.

For the complete marking refer to the operating/assembly instructions and/or the delivery note/package.

Marking is as follows:

- Marking for unpainted res. coated or painted couplings with a layer thickness < 200 µm

  UK CA I M2 Ex h I Mb X -40 °C ≤ T_a ≤ +130 °C
II 2G Ex h IIC T6 ... T2 Gb X
II 2D Ex h IIIC T80 °C ... T250 °C Db X
<Year> -40 °C ≤ T_a ≤ +60 °C ... +230 °C
KTR Systems GmbH, Carl-Zeiss-Str. 25, D-48432 Rheine

- Marking for painted couplings with a layer thickness of 0.2 mm to max. 2.0 mm

  UK CA I M2 Ex h I Mb X -40 °C ≤ T_a ≤ +130 °C
II 2G Ex h IIB T6 ... T2 Gb X
II 2D Ex h IIIC T80 °C ... T250 °C Db X
<Year> -40 °C ≤ T_a ≤ +60 °C ... +230 °C
KTR Systems GmbH, Carl-Zeiss-Str. 25, D-48432 Rheine

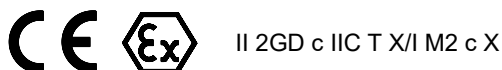
Short marking:

(A short marking is only made if not possible differently for reason of space or functioning.)

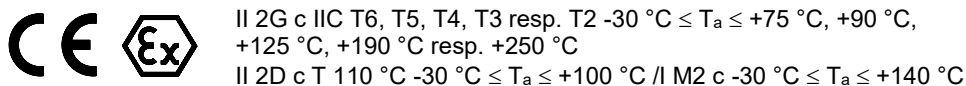
RIGIFLEX®-N
<Year>

**Deviating marking applied until 31st October 2019:**

Short marking:



Complete marking:



**10 Enclosure A**

Advice and instructions regarding the use in  potentially explosive atmospheres

10.3 marking of coupling for potentially explosive atmospheres**Comments on marking**

Equipment group I	Mining
Equipment group II	Non-mining
Equipment category 2G	Equipment ensuring a high level of safety, suitable for zone 1
Equipment category 2D	Equipment ensuring a high level of safety, suitable for zone 21
Equipment category M2	Equipment ensuring a high level of safety must be able to be switched off when an explosive atmosphere occurs
D	Dust
G	Gases and vapours
Ex h	Nonelectrical explosion protection
IIB	Gases and vapours of class IIB (including IIA)
IIC	Gases and vapours of class IIC (including IIA and IIB)
IIIC	Electrically conductive dusts of class IIIC (including IIIA and IIIB)
T6 ... T2	Temperature class to be considered, depending on the ambient temperature
T80 °C ... T250 °C	Maximum surface temperature to be considered, depending on the ambient temperature
-40 °C ≤ T _a ≤ +60 °C ... +230 °C, -40 °C ≤ T _a ≤ +230 °C or -40 °C ≤ T _a ≤ +130 °C	Permissible ambient temperature from -40 °C to +60 °C resp. -40 °C to +230 °C or -40 °C to +130 °C
Gb, Db, Mb	Equipment protection level, analogous to the equipment category
X	For a safe use of the couplings particular conditions apply

If the symbol  was punched in addition to marking , the coupling component was supplied by KTR as an un-bored or pilot bored version (see chapter 4.2 of the present operating/assembly instructions).

**10 Enclosure A**

Advice and instructions regarding the use in  potentially explosive atmospheres

10.4 EU Declaration of conformity

EU Declaration of Conformity resp. Certificate of Conformity

corresponding to EU directive 2014/34/EU dated 26 February 2014
and to the legal regulations adopted for its implementation

The manufacturer - KTR Systems GmbH, Carl-Zeiss-Str. 25, D-48432 Rheine - states that the

RIGIFLEX®-N Steel Lamina Couplings

in an explosion-proof design described in these assembly instructions are equipment resp. components corresponding to article 2, 1. of directive 2014/34/EU and comply with the general safety and health specifications according to enclosure II of directive 2014/34/EU.
This declaration of conformity is issued under the sole responsibility of the manufacturers KTR Systems GmbH.

The coupling described in here complies with the specifications of the following standards/rules:

EN ISO 80079-36:2016-12
EN ISO 80079-37:2016-12
EN ISO/IEC 80079-38:2017-10
CLC/TR 60079-32-1:2019-01

The RIGIFLEX®-N is in accordance with the specifications of directive 2014/34/EU.

According to article 13 (1) b) ii) of directive 2014/34/EU the technical documentation is deposited with the notified body (Project No.: IB-18-2-0020, IB-08-4-019, IB-07-4-004):

IBExU
Institut für Sicherheitstechnik GmbH
Identification number: 0637
Fuchsmühlenweg 7

09599 Freiberg

Rheine,
Place

2024-11-13
Date

ppa.


Dr. Norbert Partmann
Head of Engineering and
R&D

i. V.


Reiner Banemann
Product Manager



KTR-Group

RIGIFLEX®-N
Operating/Assembly instructions

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10 Enclosure A

Advice and instructions regarding the use in  potentially explosive atmospheres

10.5 UK Declaration of conformity

**UK Declaration of Conformity resp.
Certificate of Conformity**

corresponding to UK directive SI 2016 No. 1107 dated 26 February 2014
and to the legal provisions adopted for its implementation

The manufacturer - KTR Systems GmbH, Carl-Zeiss-Str. 25, D-48432 Rheine - states that the

RIGIFLEX®-N Steel Lamina Couplings

in an explosion-proof design described in these assembly instructions are equipment resp. components corresponding to directive SI 2016 No. 1107 and comply with the general safety and health requirements according to directive SI 2016 No. 1107.

This declaration of conformity resp. certificate of conformity is issued under the sole responsibility of the manufacturer KTR Systems GmbH.

The coupling described in here complies with the specifications of the following standards/rules:

EN ISO 80079-36:2016-12
EN ISO 80079-37:2016-12
EN ISO/IEC 80079-38:2017-10
CLC/TR 60079-32-1:2019-01

The RIGIFLEX®-N is in accordance with the specifications respectively the applicable specifications of directive SI 2016 No. 1107.

According to directive SI 2016 No. 1107 the technical documentation is deposited with the notified body:

Eurofins CML
Identification number: 2503

Rheine,
Place

2024-11-13
Date

ppa.


Dr. Norbert Partmann
Head of Engineering and
R&D

i. V.


Reiner Banemann
Product Manager

Please observe protection
note ISO 16016.

Drawn: 2026-04-29 Fes
Verified: 2026-04-29 Fes

Replacing: KTR-N dated 2023-12-22
Replaced by: