

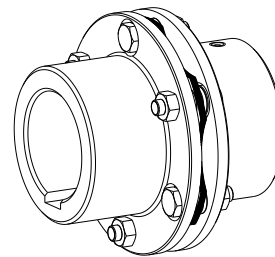


RADEX®-N

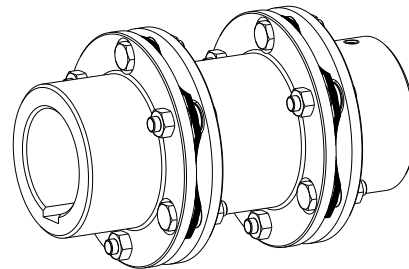
Steel laminae couplings types

NN, NANA 1 to 4,
NENA 1 and 2, NENE 1,
NNZ, NNW

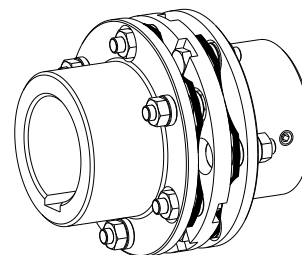
according to directive 2014/34/EU
and UK directive SI 2016 No. 1107



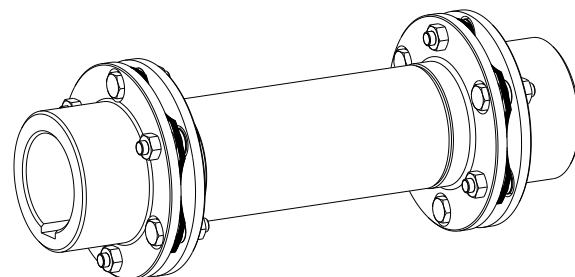
RADEX®-N type NN



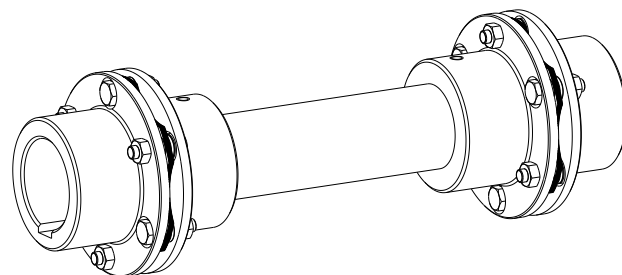
RADEX®-N type NANA 1



RADEX®-N type NNZ



RADEX®-N type NANA 4



RADEX®-N type NNW

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RADEX®-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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Please observe protection note ISO 16016.	Drawn: 2026-05-05 Fes Verified: 2026-05-05 Fes	Replacing: KTR-N dated 2022-07-26 Replaced by:
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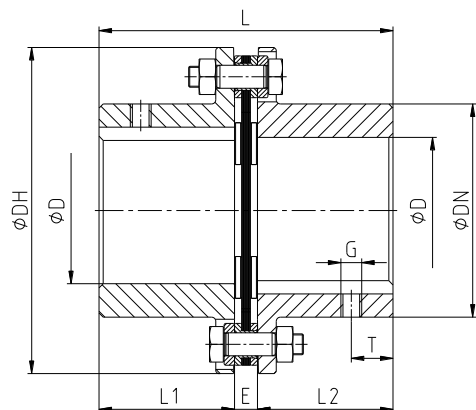
**1 Technical data**

Illustration 1: RADEX®-N type NN

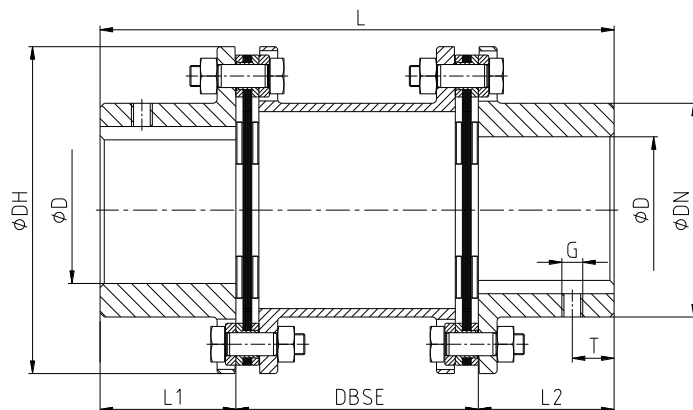


Illustration 2: RADEX®-N type NANA 1

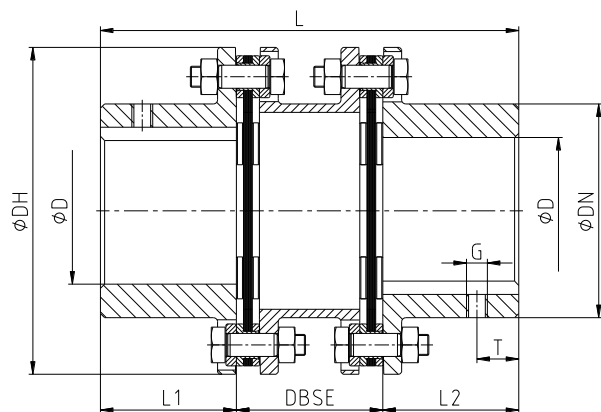


Illustration 3: RADEX®-N type NANA 2

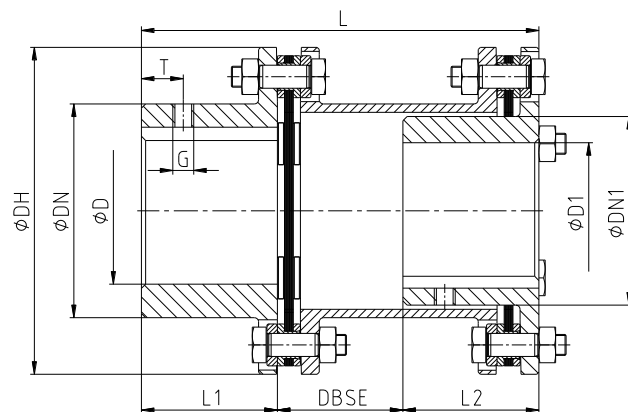


Illustration 4: RADEX®-N type NENA 1

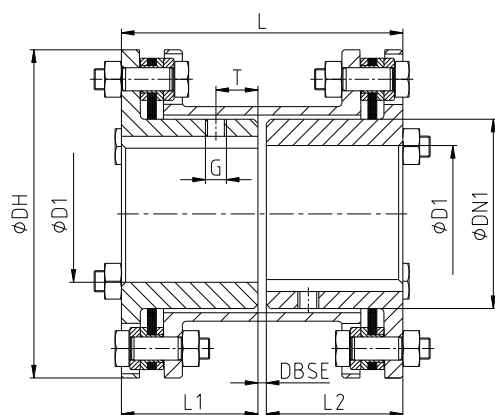


Illustration 5: RADEX®-N type NENE 1

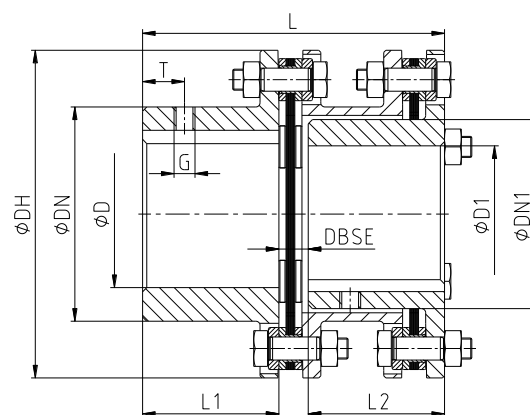


Illustration 6: RADEX®-N type NENA 2

Dimensions of couplings see table 1, sheet 4.


1 Technical data
Table 1: Types NN - NANA 1 - NANA 2 - NENA 1 - NENE 1 - NENA 2

Size	Max. finish bore in mm		Dimensions ¹⁾ in mm															
			General															
	D	D1	DN	DN1	DH	L1, L2	L						DBSE					
							NN	NANA1	NANA2	NENA1	NENE1	NENA2	NN	NANA1	NANA2	NENA1	NENE1	NENA2
20	20	-	32	-	56	20	45	100	-	-	-	-	5	60	-	-	-	-
25	25	-	40	-	68	25	56	110	-	-	-	-	6	60	-	-	-	-
35	38	-	54	-	82	40	86	150	-	-	-	-	6	70	-	-	-	-
38	42	-	58	-	94	45	98	170	-	-	-	-	8	80	-	-	-	-
42	50	-	68	-	104	45	100	170	-	-	-	-	10	80	-	-	-	-
50	55	-	78	-	126	55	121	206	-	-	-	-	11	96	-	-	-	-
60	65	55	88	77	138	55	121	206	170	160	114	124	11	96	60	50	4	14
70	75	65	102	90	156	65	141	246	200	190	134	144	11	116	70	60	4	14
80	85	75	117	104	179	75	164	286	233	220	154	167	14	136	83	70	4	17
85	90	80	123	112	191	80	175	300	246	232	164	178	15	140	86	72	4	18
90	100	85	132	119	210	80	175	300	251	233	166	184	15	140	91	73	6	24
105	110	90	147	128	225	90	200	340	281	263	186	204	20	160	101	83	6	24
115	120	100	163	145	265	100	223	370	309	288	206	227	23	170	109	88	6	27
135	135	115	184	160	305	135	297	520	-	-	-	-	27	250	-	-	-	-
136	135	-	180	-	300	135	293	According to customer specification					23	According to customer specification				
156	150	-	195	-	325	150	327						27					
166	170	-	225	-	350	165	361						31					
186	190	-	250	-	380	185	401						31					
206	210	-	275	-	420	200	437						37					
246	245	-	320	-	500	240	524						44					
286	290	-	383	-	567	280	612						52					
336	340	-	445	-	660	330	718						58					
138	135	-	180	-	300	135	293						23					
158	150	-	195	-	325	150	327						27					
168	170	-	225	-	350	165	361						31					
188	190	-	250	-	380	185	401						31					
208	210	-	275	-	420	200	437						37					
248	245	-	320	-	500	240	524						44					
288	290	-	383	-	567	280	612						52					
338	340	-	445	-	660	330	718						58					

1) For dimensions of setscrews (dimension G and T) see table 4.



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



There is a 1° slope (see illustration 7) in the area of the laminae set connection, on the flange hubs, clamping ring hubs as well as on the spacers sizes 20 to 135.

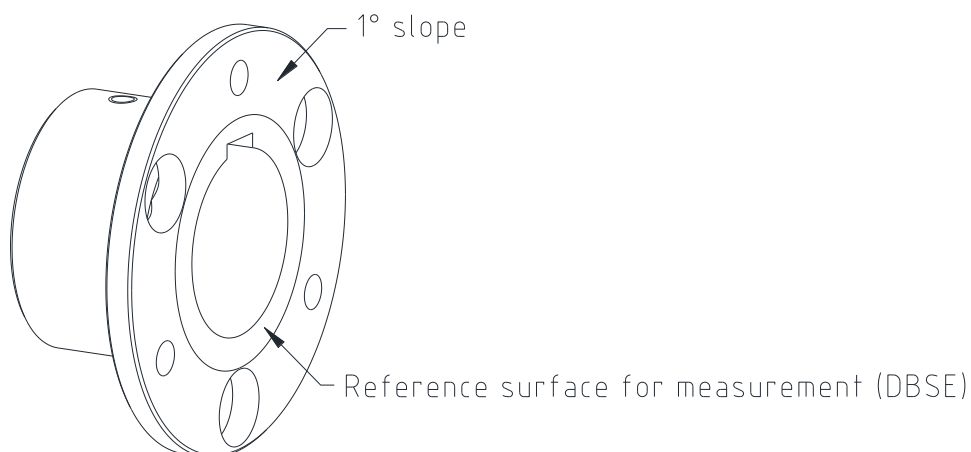


Illustration 7: 1° slope using the example of a flange hub

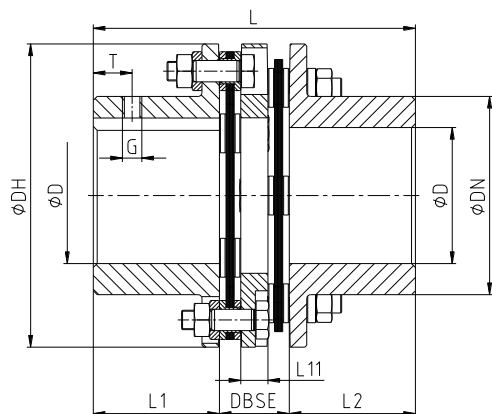
**1 Technical data**

Illustration 8: RADEX®-N type NNZ

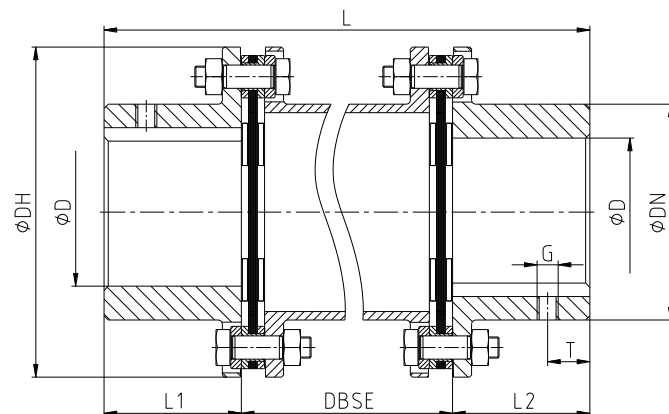


Illustration 9: RADEX®-N type NANA 3

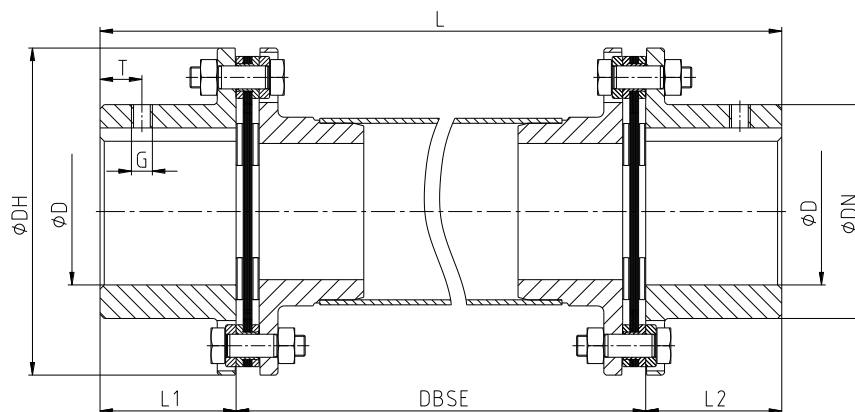


Illustration 10: RADEX®-N type NANA 4

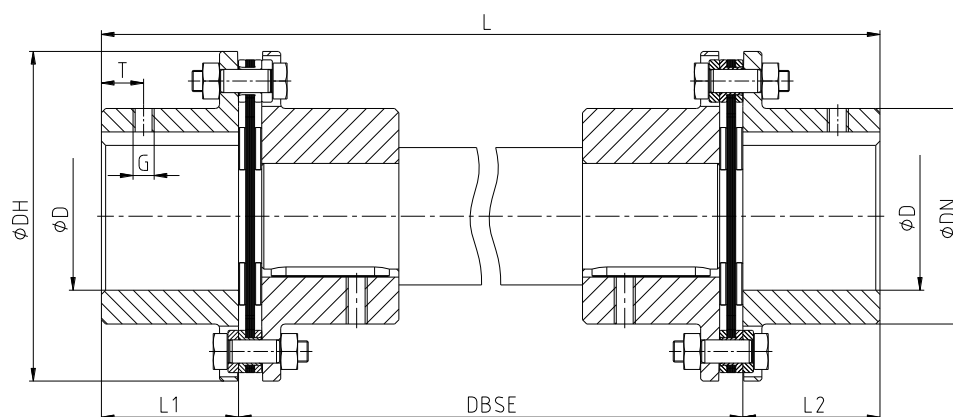


Illustration 11: RADEX®-N type NNW

Dimensions of couplings see table 2, sheet 6.

1 Technical data

Table 2: Types NNZ - NANA 3 - NANA 4 - NNW

Size	Max. finish bore in mm D	Dimensions ¹⁾ in mm								
		General								
		DN	DH	L1, L2	L			DBSE		
					NNZ	NANA4	NNW	NNZ	NANA4	NNW
20	20	32	56	20	58	L = L1 + L2 + DBSE		18	Intermediate shaft dimension according to customer specification	8
25	25	40	68	25	70			20		8
35	38	54	82	40	102			22		10
38	42	58	94	45	118			28		12
42	50	68	104	45	124			34		14
50	55	78	126	55	144			34		12
60	65	88	138	55	144			34		12
70	75	102	156	65	166			36		14
80	85	117	179	75	-			-		-
85	90	123	191	80	-			-		-
90	100	132	210	80	-			-		-
105	110	147	225	90	-			-		-
115	120	163	265	100	-			-		-
135	135	184	305	135	-			-		-
136	135	180	300	135	-			-		-
156	150	195	325	150	-			-		-
166	170	225	350	165	-			-		-
186	190	250	380	185	-			-		-
206	210	275	420	200	-			-		-
246	245	320	500	240	-			-		-
286	290	383	567	280	-			-		-
336	340	445	660	330	-			-		-
138	135	180	300	135	-			-		-
158	150	195	325	150	-			-		-
168	170	225	350	165	-			-		-
188	190	250	380	185	-			-		-
208	210	275	420	200	-			-		-
248	245	320	500	240	-			-		-
288	290	383	567	280	-			-		-
338	340	445	660	330	-			-		-

1) For further dimensions of type NANA 3 (L and DBSE) see table 3.
For dimensions of setscrews (dimension G and T) see table 4.

Table 3: Further dimensions of type NANA 3

Size	42		50			60			70			80			
L	190	230	210	250	290	210	250	290	230	270	310	250	290	330	400
DBSE	100	140	100	140	180	100	140	180	100	140	180	100	140	180	250

Size	85				90			105			115		135
L	260	300	340	410	300	340	410	320	360	430	380	450	520
DBSE	100	140	180	250	140	180	250	140	180	250	180	250	250

Size	136	156	166	186	208	246	286	336	138	158	168	188	208	248	288	338
L	As specified by the customer															
DBSE																



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



There is a 1° slope (see illustration 7) in the area of the laminae set connection, on the flange hubs, clamping ring hubs as well as on the spacers sizes 20 to 135.


1 Technical data
Table 4: Dimensions of setscrews

Size	20	25	35	38	42	50	60	70	80	85	90	105	115
G	M5	M5	M6	M6	M8	M8	M8	M10	M10	M10	M12	M12	M12
T	6	8	15	15	20	20	20	20	20	25	25	30	30
Number Z	1	1	1	1	1	1	1	1	1	1	1	1	1

Size	135	136	156	166	186	206	246	286	336	138	158	168	188	208	248	288	338
G	M20	M12	M12	M16	M16	M16	M20	M20	M24	M12	M12	M16	M16	M16	M20	M20	M24
T	As specified by the customer																
Number Z	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

Table 5: Torque and speed

Size		20	25	35	38	42	50	60	70	80	85
Torque in Nm	T _{KN}	30	60	120	240	320	470	900	1300	1800	2600
	T _{K max.}	60	120	240	480	640	940	1800	2600	3600	5200
	T _{KW}	15	30	60	120	160	235	450	650	900	1300
Max. speed n in rpm		20400	16800	13900	12000	11000	9000	8200	7300	6300	5900

Size		90	105	115	135	136	156	166	186	206	246
Torque in Nm	T _{KN}	4600	5600	9900	13500	17500	25000	35000	42000	52500	90000
	T _{K max.}	9200	11200	19800	27000	35000	50000	70000	84000	105000	180000
	T _{KW}	2300	2800	4950	6750	8750	12500	17500	21000	26250	45000
Max. speed n in rpm		5400	5000	4300	3700	3800	3500	3300	3000	2800	2300

Size		286	336	138	158	168	188	208	248	288	338
Torque in Nm	T _{KN}	150000	210000	23000	33000	45000	56000	70000	120000	200000	280000
	T _{K max.}	300000	420000	46000	66000	90000	112000	140000	240000	400000	560000
	T _{KW}	75000	105000	11500	16500	22500	28000	35000	60000	100000	140000
Max. speed n in rpm		2000	1800	3800	3500	3300	3000	2800	2300	2000	1800



RADEX®-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.

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 **RADEX®-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 Advice

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 must 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 must 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.

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

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2 Advice

2.5 Coupling selection



For a permanently failure-free operation of the coupling it must be selected according to the selection instructions (according to DIN 740 part 2) for the particular application (see catalogue drive technology "RADEX®-N").

Observe the critical whirling speed with types NANA 4 and NNW.

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.



If used in potentially explosive atmospheres clamping set connections and shrink fit connections (transverse interference fits) without feather key must be selected in that there is a minimum safety factor of $s = 2.0$ between the peak torque of the machine including all operating parameters and the frictional locking torque of the shaft-hub-connection. The responsibility for the shaft-hub-connection is subject to the customer. Please review the connection carefully.

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 subjected 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 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 %.

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.

Please observe protection note ISO 16016.	Drawn: 2026-05-05 Fes Verified: 2026-05-05 Fes	Replacing: KTR-N dated 2022-07-26 Replaced by:
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4 Assembly

The coupling is generally supplied in individual parts. Before assembly the coupling must be inspected for completeness.

4.1 Components of the coupling

Components of RADEX®-N type NN

Component	Quantity	Description	Component	Quantity	Description
1	2	Flange hub ¹⁾	5	see table 6	Spacer sleeve
2	1	Laminae set	6	see table 6	Washer
3	-	Spacer	7	see table 6	Hexagon nut/clamping nut
4	see table 6	Dowel screw	8	2	Setscrew DIN EN ISO 4029

1) Design as clamping ring hub (frictionally engaged shaft-hub-connection) on request

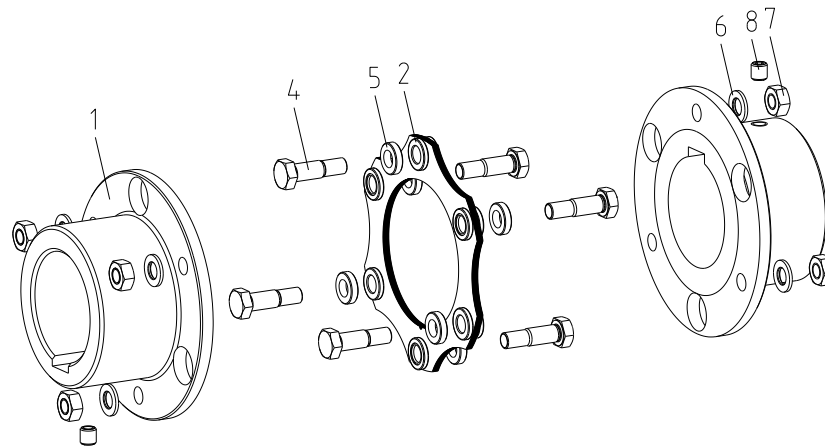


Illustration 12: RADEX®-N type NN

Components of RADEX®-N type NANA 1 to 3 - NENA 1 and 2 - NENE 1

Component	Quantity	Description	Component	Quantity	Description
1	2	Flange hub ¹⁾	5	see table 6	Spacer sleeve
2	2	Laminae set	6	see table 6	Washer
3	1	Spacer	7	see table 6	Hexagon nut/clamping nut
4	see table 6	Dowel screw	8	2	Setscrew DIN EN ISO 4029

1) Design as clamping ring hub (frictionally engaged shaft-hub-connection) on request

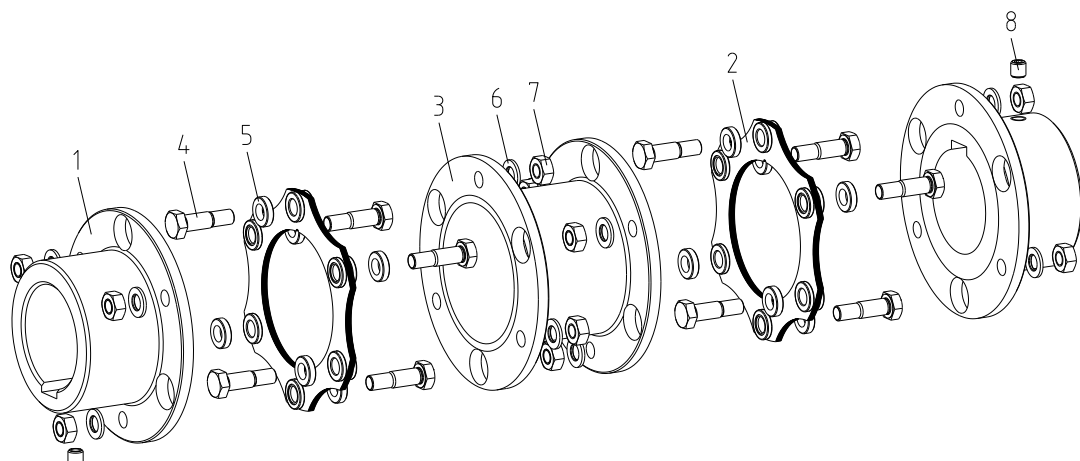


Illustration 13: RADEX®-N type NANA 1 (example)



4 Assembly

4.1 Components of the coupling

Components of RADEX®-N type NNZ

Component	Quantity	Description	Component	Quantity	Description
1	2	Flange hub ¹⁾	5	see table 6	Spacer sleeve
2	2	Laminae set	6	see table 6	Washer
3	1	Spacer	7	see table 6	Hexagon nut/clamping nut
4	see table 6	Dowel screw	8	2	Setscrew DIN EN ISO 4029

1) Design as clamping ring hub (frictionally engaged shaft-hub-connection) on request

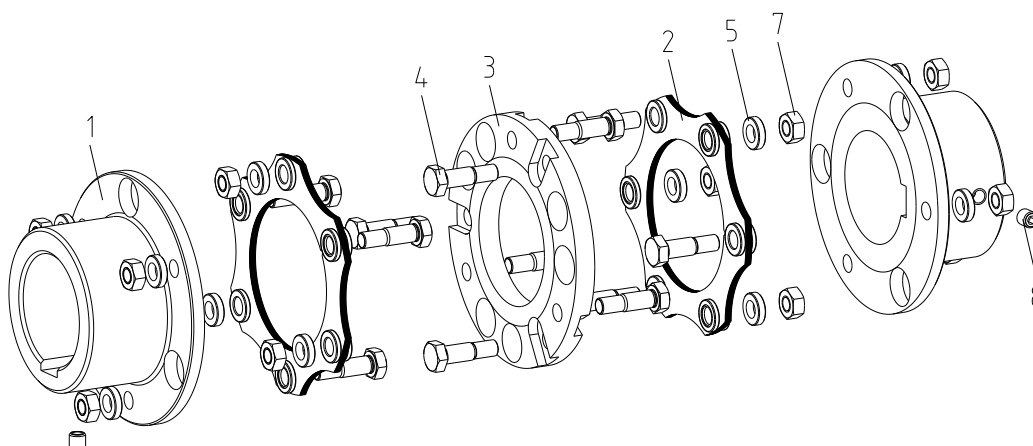


Illustration 14: RADEX®-N type NNZ

Components of RADEX®-N type NANA 4

Component	Quantity	Description	Component	Quantity	Description
1	2	Flange hub ¹⁾	5	see table 6	Spacer sleeve
2	2	Laminae set	6	see table 6	Washer
3	1	Intermediate pipe with 2 flange hubs spec. - welded	7	see table 6	Hexagon nut/clamping nut
4	see table 6	Dowel screw	8	2	Setscrew DIN EN ISO 4029

1) Design as clamping ring hub (frictionally engaged shaft-hub-connection) on request

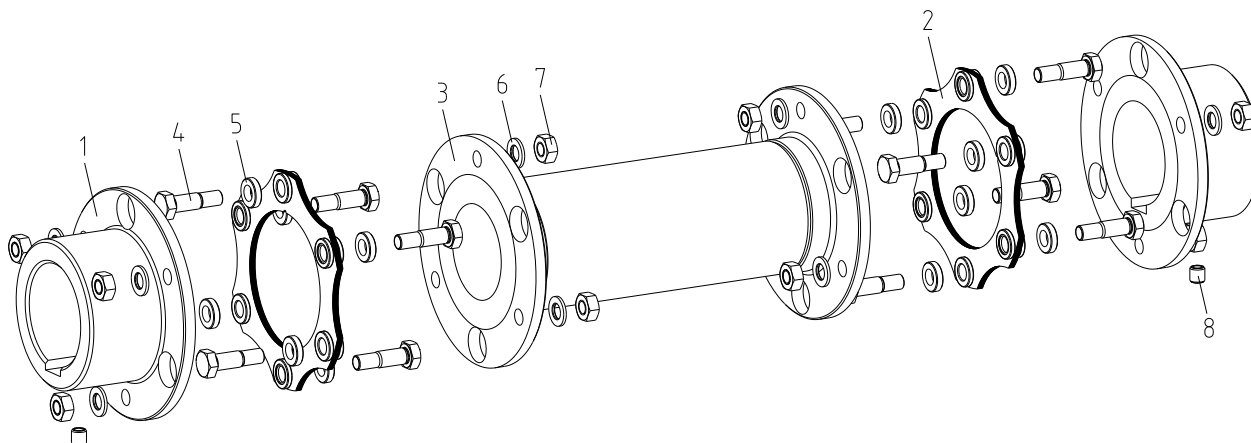


Illustration 15: RADEX®-N type NANA 4



4 Assembly

4.1 Components of the coupling

Components of RADEX®-N type NNW

Component	Quantity	Description	Component	Quantity	Description
1	4	Flange hub ¹⁾	5	see table 6	Spacer sleeve
2	2	Laminae set	6	see table 6	Washer
3	1	Intermediate shaft with 2 feather keys	7	see table 6	Hexagon nut/clamping nut
4	see table 6	Dowel screw	8	2	Setscrew DIN EN ISO 4029

1) Design as clamping ring hub (frictionally engaged shaft-hub-connection) on request

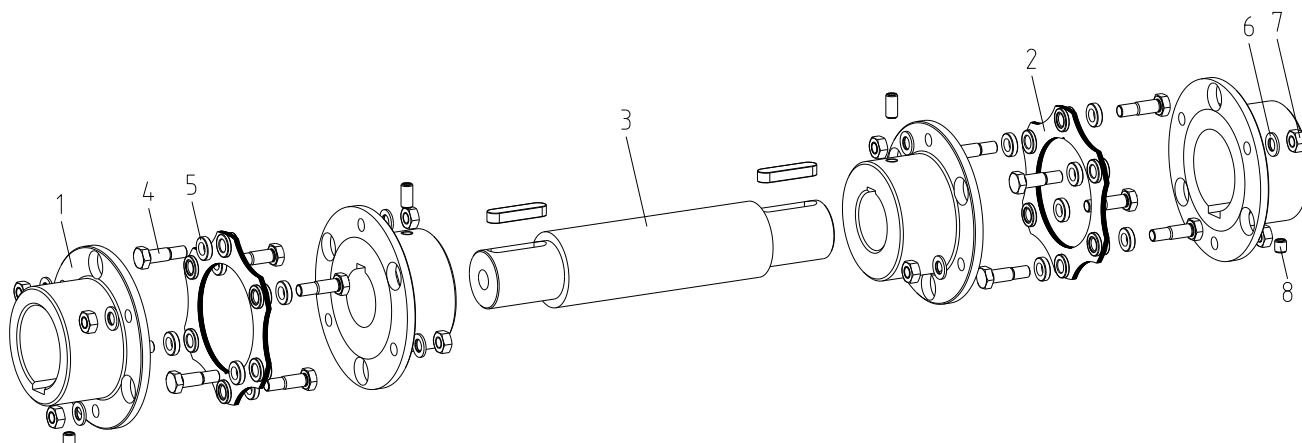


Illustration 16: RADEX®-N type NNW

Table 6: Number of single parts

Size	20	25	35	38	42	50	60	70	80	85
Dowel screw (item 4) ¹⁾	4	4	4	4	4	4	6	6	6	6
Spacer sleeve (item 5) ¹⁾	4	4	4	4	4	4	6	6	-	-
Washer (item 6) ¹⁾²⁾	-	-	-	-	-	-	-	-	6	6
Hexagon nut/Clamping nut (item 7) ¹⁾	4	4	4	4	4	4	6	6	6	6

Size	90	105	115	135	136	156	166	186	206	246
Dowel screw (item 4) ¹⁾	6	6	6	6	6	6	6	6	6	6
Spacer sleeve (item 5) ¹⁾	-	-	-	-	-	-	-	-	-	-
Washer (item 6) ¹⁾²⁾	6	6	6	6	-	6	-	-	-	-
Hexagon nut/Clamping nut (item 7) ¹⁾	6	6	6	6	6	6	6	6	6	6

Size	286	336	138	158	168	188	208	248	288	338
Dowel screw (item 4) ¹⁾	6	6	8	8	8	8	8	8	8	8
Spacer sleeve (item 5) ¹⁾	-	-	-	-	-	-	-	-	-	-
Washer (item 6) ¹⁾²⁾	-	-	-	8	-	-	-	-	-	-
Hexagon nut/Clamping nut (item 7) ¹⁾	6	6	8	8	8	8	8	8	8	8

1) Number per laminae set

2) With size 156 and 158 washer below the screw head



4 Assembly

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.

- Bores of flange hubs machined by the customer must observe concentricity resp. axial runout (see illustration 17).
- Make absolutely sure to observe the figures for $\varnothing D$.
- Carefully align the flange 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 flange hubs axially.

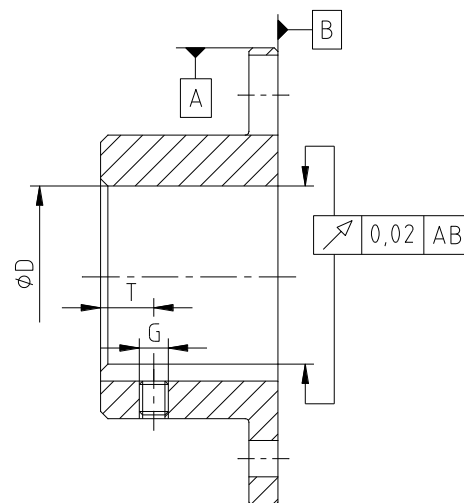


Illustration 17: Concentricity and axial runout



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 Ex .

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 7: Setscrew DIN EN ISO 4029

Size	20	25	35	38	42	50	60	70	80	85	90	105	115
G	M5	M5	M6	M6	M8	M8	M8	M10	M10	M10	M12	M12	M12
T	6	8	15	15	20	20	20	20	20	25	25	30	30
Number Z	1	1	1	1	1	1	1	1	1	1	1	1	1
Tightening torque T_A in Nm	2	2	4.8	4.8	10	10	10	17	17	17	40	40	40

Size	135	136	156	166	186	206	246	286	336	138	158	168	188	208	248	288	338
G	M20	M12	M12	M16	M16	M16	M20	M20	M24	M12	M12	M16	M16	M16	M20	M20	M24
T	As specified by the customer																
Number Z	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Tightening torque T_A in Nm	140	40	40	80	80	80	140	140	240	40	40	80	80	80	140	140	240



4 Assembly

4.3 Assembly/disassembly of flange hubs



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



Heating the flange hubs lightly (approx. 80 °C) allows for an easier mounting onto 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 to 3) 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® (medium strength).

For the axial alignment of the coupling the distance dimension DBSE (see table 1 to 3) is decisive. In order to set the right DBSE dimension, you should proceed as follows:

- Mount the flange hubs on the shaft of driving and driven side (see illustration 18).
- The internal sides of the flange hubs must be flush with the front sides of the shafts (see illustration 18).
- Shift the power packs in axial direction until the distance dimension DBSE is achieved (see table 1 to 3).
- Fasten the flange hubs by tightening the setscrews DIN EN ISO 4029 with a cup point (tightening torque see table 7).



There is a 1° slope (see illustration 7) in the area of the laminae set connection, on the flange hubs, clamping ring hubs as well as on the spacers sizes 20 to 135.

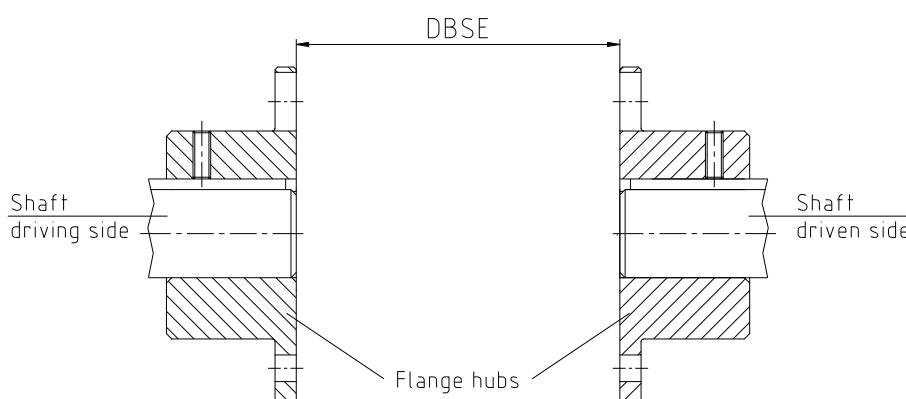


Illustration 18: Assembly of flange hubs

Disassembly:



Drive components falling down may cause injury to persons or damage on the machine.
Secure the drive 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/disassembly of clamping ring hubs


The stiffness and dimensions of the shafts (here specifically hollow shafts) must be designed in a way that sufficient safety against plastic deformation is provided for (if necessary, consult with company KTR).



We recommend to inspect bores and shafts for dimensional accuracy before assembly.



With the assembly make sure that the distance dimension DBSE (see table 1 to 3) 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® (medium strength).

For the axial alignment of the coupling the distance dimension DBSE (see table 1 to 3) is decisive. In order to set the right DBSE dimension, you should proceed as follows:

- Clean and degrease the hub bores and shafts, afterwards lubricate with a thin oil (e. g. Castrol 4 in 1 or Klüber Quietsch-Ex).



Oils and greases containing molybdenum disulfide or other high-pressure additives as well as internal lubricants must not be used.

- Lightly unscrew the clamping screws and pull the clamping ring from the clamping ring hub only marginally to make sure the clamping ring is fitted loosely.
- Mount the clamping ring hubs on the shaft of driving and driven side (see illustration 19).
- The internal sides of the clamping ring hubs must be flush with the front sides of the shafts (see illustration 19).
- Shift the power packs in axial direction until the distance dimension DBSE is achieved (see table 1 to 3).
- Tighten the clamping screws evenly crosswise first with 1/3 and afterwards 2/3 of the full tightening torque (see table 8). Afterwards tighten the clamping screws crosswise at the full tightening torque. The process must be repeated until the tightening torque has been achieved with all screws.



There is a 1° slope (see illustration 7) in the area of the laminae set connection, on the flange hubs, clamping ring hubs as well as on the spacers sizes 20 to 35.

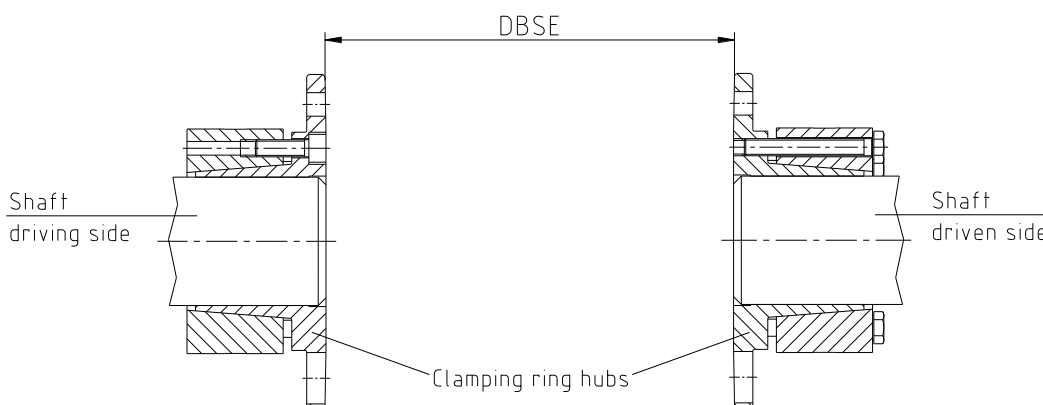


Illustration 19: Assembly of clamping ring hubs



4 Assembly

4.4 Assembly/disassembly of clamping ring hubs

Table 8: Tightening torques of clamping screws

Size	35	38	42	50	60	70	80	85	90	105	115	135
Clamping screws	M5	M6	M6	M8	M8	M8	M10	M12	M12	M12	M12	M16
Tightening torque T_A in Nm	8.5	14	14	35	35	35	69	120	120	120	120	295



Having started up the coupling, the coupling must be inspected for damages at regular maintenance intervals and it must be replaced, if necessary.

Disassembly:



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

- Unscrew the clamping screws evenly one after another. During each revolution every screw may only be unscrewed by half a turn. Unscrew all clamping screws by 3 - 4 pitches.
- Remove the screws located next to the extraction threads and screw them into the intended extraction threads until they fit.
- The clamping ring is released by tightening the screws in the extraction threads evenly gradually and crosswise.

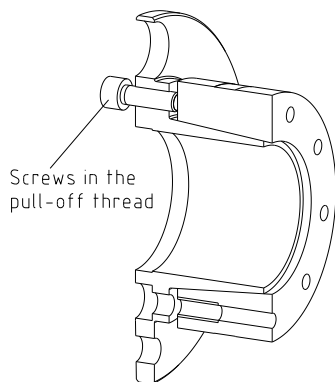


Illustration 20: Disassembly of clamping ring hub type 6.0

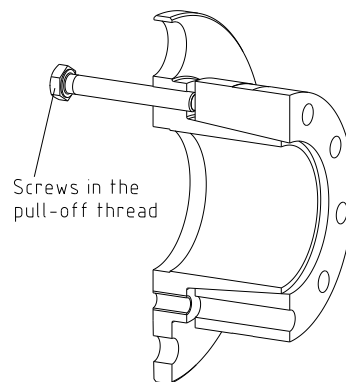


Illustration 21: Disassembly of clamping ring hub type 6.5

- Before re-assembly the hub bores and shafts must be cleaned and afterwards lubricated with a thin oil (e. g. Castrol 4 in 1 or Klüber Quietsch-Ex). The same applies for the taper surfaces of clamping ring hub and clamping ring.



If these hints are not observed, the operation of the clamping ring hub may be affected.


4 Assembly
4.5 General advice for assembly of spacer

If the coupling is supplied with a transport lock (optionally), the following must be observed:



The spacer sleeves (steel) must be removed for further assembly and operation (see illustration 22).

- Disassemble the transport screws and spacer sleeves.

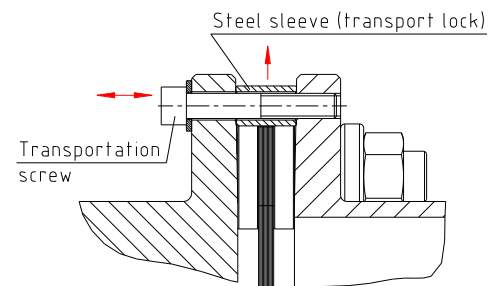


Illustration 22: Transport lock

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

- Before mounting the spacer, remove the screws and sleeves for axial clearance limitation.
- Having mounted the spacer completely, re-assemble the screws and sleeves for axial clearance limitation (see illustration 23). 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).

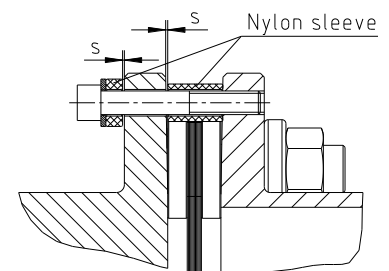


Illustration 23: Axial clearance limitation



Please consider whether an axial clearance limitation with two nylon sleeves per screw or one transport lock with one steel sleeve per screw was installed (see illustration 22 and 23).

Marking of balancing (optional)

- With the assembly of the spacer observe correct alignment of the marking for balancing. The marking for balancing X (Y) of the hub, as an example, must be flush with the marking for balancing X (Y) of the spacer (see illustration 24).

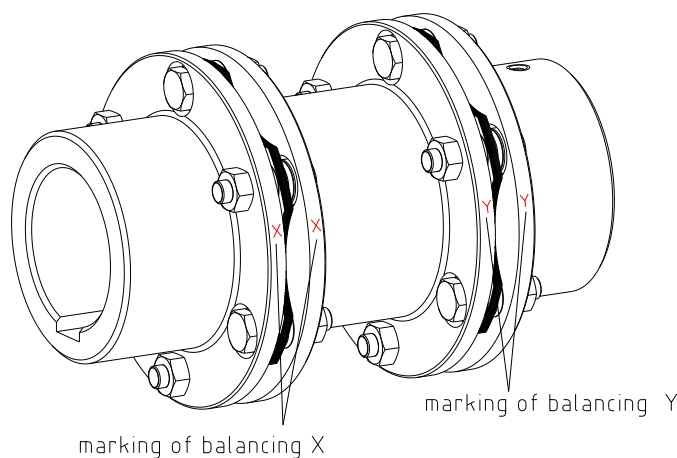


Illustration 24: Alignment of spacer


4 Assembly
4.6 Vertical assembly/disassembly


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® (medium strength).

For vertical alignment of the coupling the distance dimension DBSE (see table 1 to 3) is decisive. In order to set the right DBSE dimension, you should proceed as follows:

- Mount the flange hubs on the shaft of driving and driven side. Make sure the flange hub with the disk for vertical support is at the bottom (see illustration 25 and 26 as an alternative).
- The internal side of the flange hub on top resp. centering surface of the flange hub at the bottom must be flush with the front sides of the shafts (see illustration 25 and 26 as an alternative).
- Shift the power packs in axial direction until the distance dimension DBSE is achieved (see table 1 to 3).
- Fasten the flange hubs by tightening the setscrews DIN EN ISO 4029 with a cup point (tightening torque see table 7).



With the assembly of a spacer make sure the flange hub with the disk for vertical support is at the bottom.

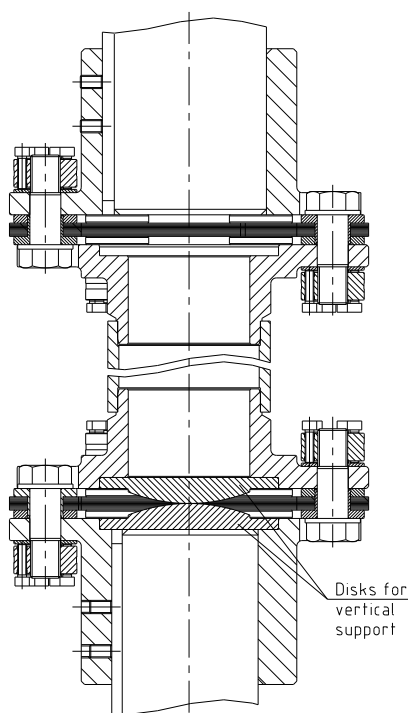


Illustration 25: Vertical assembly (preferred assembly version)

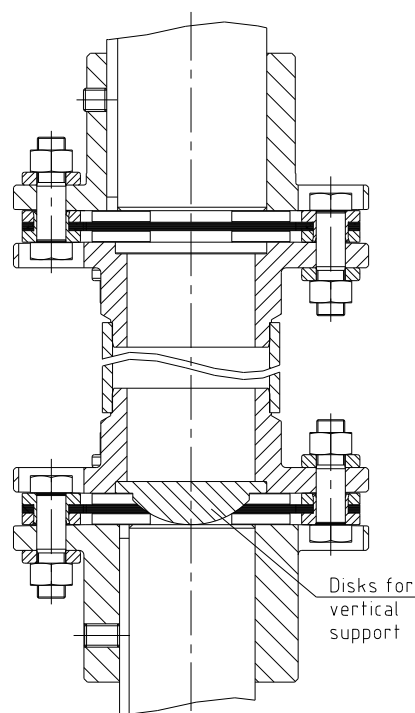


Illustration 26: Vertical assembly (as an alternative)

Disassembly:

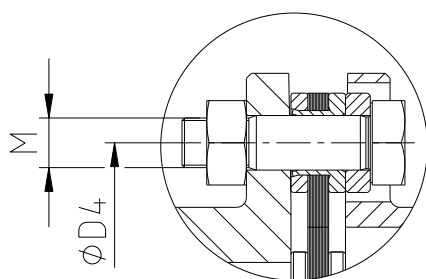

Drive components falling down may cause injury to persons or damage on the machine. Secure the drive components before disassembly.

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


4 Assembly
4.7 Assembly/disassembly of laminae sets, RADEX®-N size 20 - 135


With the assembly make sure that the laminae sets are installed free from distortion in axial direction. Disregarding this advice may cause damage to the coupling.

- Clean and degrease the contact surfaces of screw connections on the flange hub, laminae set and spacer.
- Assemble the laminae sets and the spacer (see illustration 27 respectively 28). With type NN only 1 laminae set is used (no spacer).
- Hand-tighten the components first, the dowel screws to be assembled reciprocally (see illustration 27 respectively 28).
- Tighten the hexagon nuts one after the other and with several revolutions to the tightening torque specified in table 11. Protect the dowel screw from rotating.



Laminae set

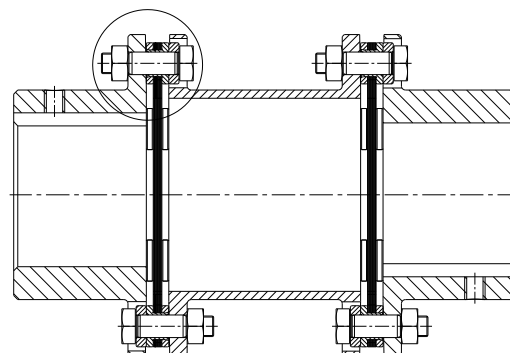
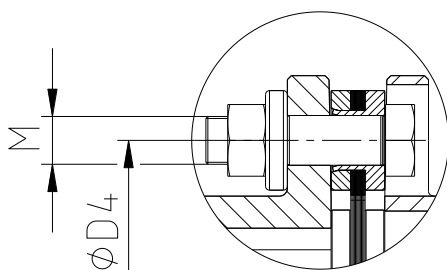


Illustration 27: Assembly of laminae sets, RADEX®-N size 20 - 70



Laminae set

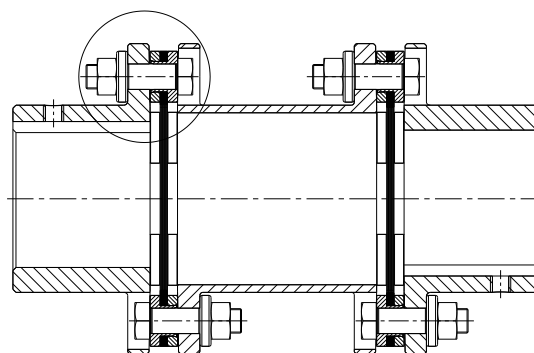


Illustration 28: Assembly of laminae sets, RADEX®-N size 80 - 135

Table 9:

Size	20	25	35	38	42	50	60	70	80	85	90	105	115	135
Pitch circle ØD4	44	53	67	75	85	100	112	128	148	158	170	185	214	240

Disassembly:


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

- Unscrew the hexagon nuts and remove along with the dowel screws and disks.
- Take out the laminae sets.


4 Assembly
4.8 Assembly/disassembly of laminae sets, RADEX®-N size 136 - 336 and 138 - 338


With the assembly make sure that the laminae sets are installed free from distortion in axial direction. Disregarding this advice may cause damage to the coupling.

- Clean and degrease the contact surfaces of screw connections on the flange hub, laminae set and spacer as well as the threads of the clamping nut and dowel screw.
- Insert the laminae sets and the spacer (see illustration 29). With type NN only 1 laminae set is used (no spacer).
- Hand-tighten the components first, the dowel screws to be assembled reciprocally (see illustration 29). With size 156 and 158 use a washer under the screw head.
- The pressure screws in the clamping nut must not protrude on the pressure side (see illustration 30).



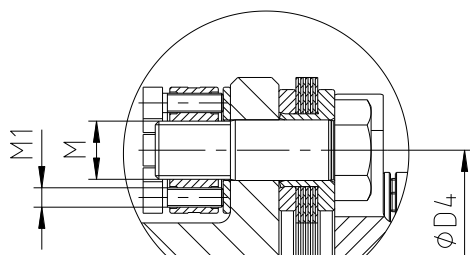
All components must be superimposed without any gap.

- Afterwards turn back the clamping nut until there is a gap of 1 - 2 mm (see illustration 30).
- Hand-tighten the pressure screws marked in illustration 32.
- Tighten these screws (see illustration 32) at half the tightening torque according to table 11 and afterwards at the full tightening torque according to table 11.
- Now tighten all pressure screws one after another and with several revolutions until all screws have achieved the full tightening torque (see illustration 33).



The pressure screws must not bear on the heads after assembly (see illustration 31).

- All clamping nuts must be mounted as per the aforementioned process.



Laminae set

Illustration 29: Assembly of the laminae sets, RADEX®-N size 136 - 336 and 138 - 338

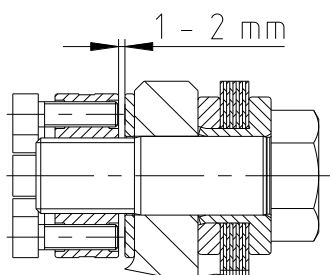
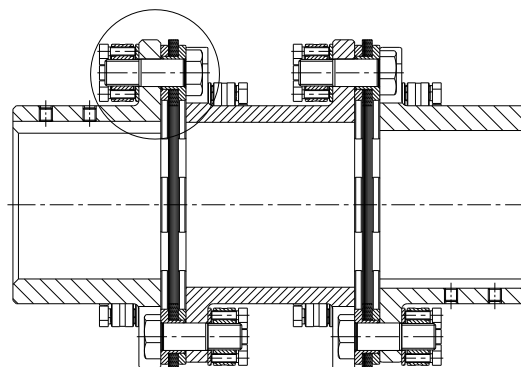


Illustration 30

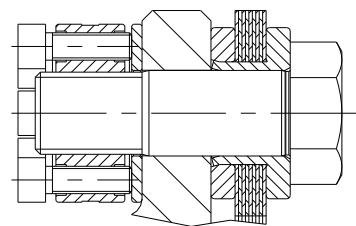
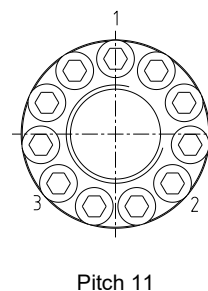
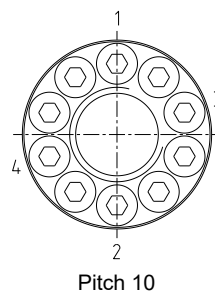
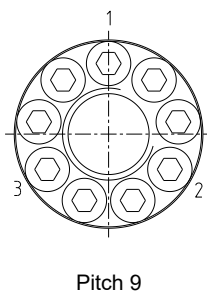
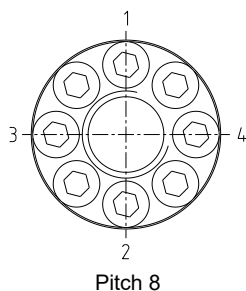
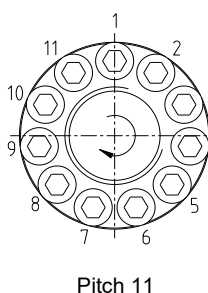
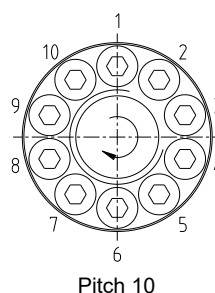
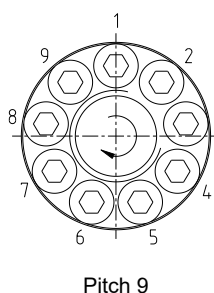
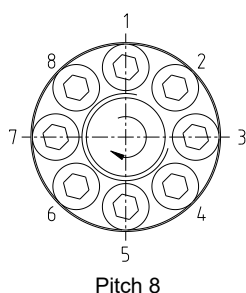


Illustration 31


4 Assembly
4.8 Assembly/disassembly of laminae sets, RADEX®-N size 136 - 336 and 138 - 338

Illustration 32: Tightening of pressure screws

Illustration 33: Tightening of pressure screws (one after another)
Table 10:

Size	136 / 138	156 / 158	166 / 168	186 / 188	206 / 208	246 / 248	286 / 288	336 / 338
Pitch circle ØD4	240	260	290	320	350	410	480	550

Disassembly:


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

- Untighten the pressure screws of the clamping nut with several revolutions by a quarter revolution until all screws are unpressurized.



Do not fully relieve and unscrew individual pressure screws in any case.

- Unscrew the clamping nuts and remove the washers.
- Take out the laminae sets.



4 Assembly

4.9 Tightening torques of screw connections on the laminae set

Table 11: Tightening torque of screw connections on the laminae set

Size	20	25	35	38	42	50	60
Dimension M in mm	M5	M6	M6	M8	M8	M10	M8
Tightening torque T_A in Nm	8.5	14	14	35	35	69	33

Size	70	80	85	90	105	115	135
Dimension M1 in mm	M10	M10	M12	M16	M16	M20	M24
Tightening torque T_A in Nm	65	65	115	280	280	550	900

Size	136 / 138	156 / 158	166 / 168	186 / 188	206 / 208	246 / 248	286 / 288	336 / 338
Dimension M in mm	M24	M27	M27	M27	M30	M36	M42	M48
Dimension M1 in mm	8 x M8	9 x M8	9 x M8	9 x M8	8 x M10	8 x M12	10 x M12	11 x M12
Pressure screw M1	30	30	30	30	60	105	105	105
Tightening torque T_A in Nm								



Having started up the coupling, the coupling must be inspected for damages at regular maintenance intervals and it must be replaced, if necessary.

4.10 Displacements - alignment of the coupling

The displacement figures specified in table 12 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.

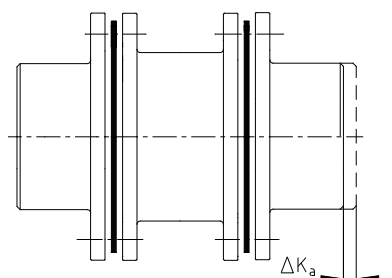
Absolutely observe the displacement figures specified (see table 12). If the figures are exceeded, the coupling will be damaged.

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

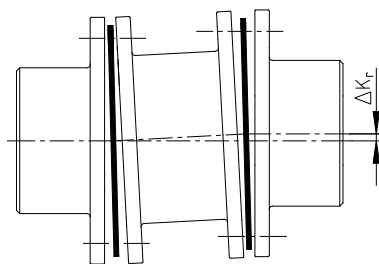
If used in potentially explosive atmospheres for explosion group IIC, only half of the displacement figures (see table 12) are permissible.

Please note:

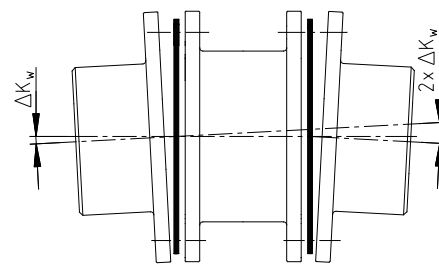
- The displacement figures specified in table 12 are maximum figures which must not arise in parallel. If axial, radial and angular displacement arises at the same time, these values must be reduced (see illustration 35).
- Inspect with a dial gauge, ruler or feeler gauge whether the permissible displacement figures specified in table 12 can be observed.



Axial displacements



Radial displacements



Angular displacements

Illustration 34: Displacements



4 Assembly

4.10 Displacements - alignment of the couplings

Examples of the displacement combinations specified in illustration 35:

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 35:
Combinations of displacement

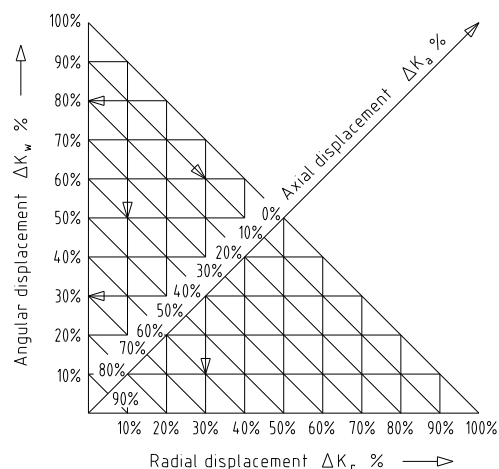


Table 12: Displacement figures

Size	Axial displacement ΔK_a in mm		Radial displacement ΔK_r in mm			Angular displacement ¹⁾ ΔK_w in degree
	Type NN	Type NANA1, NANA2	Type NN	Type NANA1	Type NANA2	
20	0.60	1.2	-	1.0	-	1.0
25	0.80	1.6	-	1.0	-	1.0
35	1.00	2.0	-	1.1	-	1.0
38	1.20	2.4	-	1.2	-	1.0
42	1.40	2.8	-	1.2	-	1.0
50	1.60	3.2	-	1.5	-	1.0
60	1.00	2.0	-	1.5	0.8	1.0
70	1.10	2.2	-	1.8	1.0	1.0
80	1.30	2.6	-	2.1	1.2	1.0
85	1.30	2.6	-	2.2	1.2	1.0
90	1.00	2.0	-	2.2	1.1	1.0
10	1.20	2.4	-	2.4	1.4	1.0
115	1.40	2.8	-	2.5	1.5	1.0
135	1.75	3.5	-	3.8	-	1.0
136	1.85	3.7	-	$\Delta K_r = \tan \Delta K_w \times (E_2 - E_1)$	$\Delta K_r = \tan \Delta K_w \times (E_3 - E_1)$	0.7
156	2.10	4.2	-			0.7
166	2.25	4.5	-			0.7
186	2.40	4.8	-			0.7
206	2.60	5.2	-			0.7
246	3.00	6.0	-			0.7
286	3.35	6.7	-			0.7
336	3.75	7.5	-			0.7
138	1.30	2.6	-			0.5
158	1.40	2.8	-			0.5
168	1.50	3.0	-			0.5
188	1.60	3.2	-			0.5
208	1.75	3.5	-			0.5
248	2.00	4.0	-			0.5
288	2.25	4.5	-			0.5
338	2.50	5.0	-			0.5

1) per laminae set

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5 Start-up



Before start-up make absolutely sure that the transport lock (see illustration 22) has been removed.

Before start-up of the coupling, inspect the tightening of the setscrews in the flange 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 flange 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.

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 must comply with DIN EN ISO 13857.

The cover must be electrically conductive and included in the equipotential bonding. Bellhousings (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.

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5 Start-up

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.

6 Breakdowns, causes and elimination

The below-mentioned failures can result in improper use of the **RADEX®-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.

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6 Breakdowns, causes and elimination

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
	Dowel screws working loose, low micro friction under the screw head and on the steel laminae set	Ignition risk due to sparking	1) Set the unit out of operation 2) Inspect coupling components and replace coupling components that have been damaged 3) Tighten the dowel screws until the specified tightening torque is reached 4) Inspect alignment, adjust if necessary
	Screws for axial fastening of flange hubs working loose	none	1) Set the unit out of operation 2) Inspect alignment of coupling 3) Tighten the screws to fasten the flange 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 steel laminae sets, assemble 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
	Operating error of the unit		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 steel laminae sets, assemble 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 steel laminae sets 3) Inspect coupling components and replace coupling components that have been damaged 4) Insert steel laminae sets, assemble 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.

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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.
All coupling components consist of metal. Any metal components must be cleaned and disposed of by scrap metal.

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.

RADEX®-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:

NN, NANA 1 to 4, NENA 1 and 2, NENE 1, NNZ, NNW and MK each with flange hubs and each with laminae sets type with 8 pins and closed circular laminae as well as assembly with KTR clamping nuts.

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

The **RADEX®-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.

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.

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 Enclosure A**

Advice and instructions regarding the use in  potentially explosive atmospheres

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 laminae 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 laminae 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.

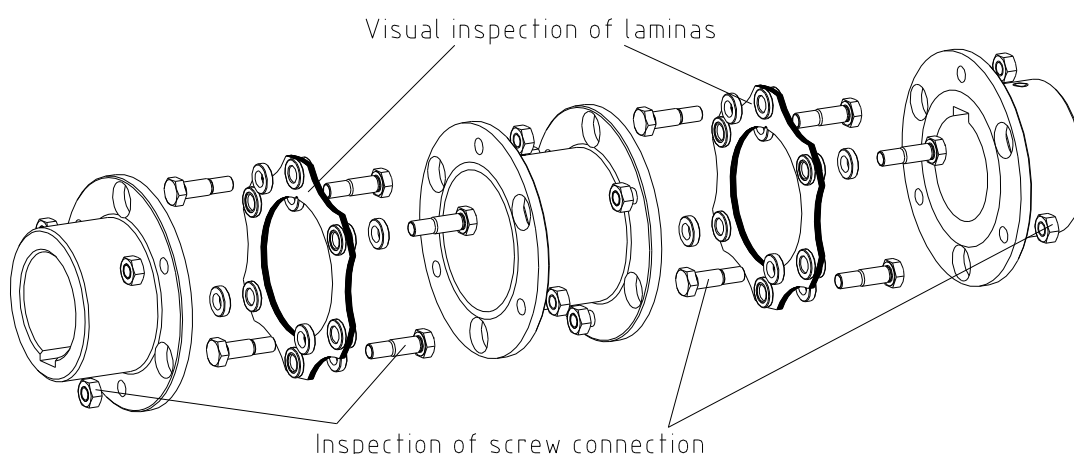


Illustration 36: RADEX®-N type NANA 1

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 indicated (see chapter 4.9). Regardless of the inspection intervals those laminae sets having cracks must be replaced by a new laminae set 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 RADEX®-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:

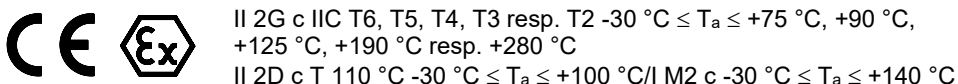
(A short marking is only made if not possible differently for reason of space or functioning.)

RADEX®-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 unbored 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

RADEX®-N Steel Laminae 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 RADEX®-N is in accordance with the specifications of the 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-08-4-19, IB-06-4-008, IB-04-4-016/2,

IB-04-4-005, IB-04-4-602/1, IB-02-4-602, IB-02-4-124/2):

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



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

RADEX®-N Steel Laminae 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 RADEX®-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