

## RADEX<sup>®</sup>-N Composite

RADEX<sup>®</sup>-N is a torsionally stiff, flexible steel laminae coupling which is able to compensate for shaft misalignment caused by, for example, thermal expansion.

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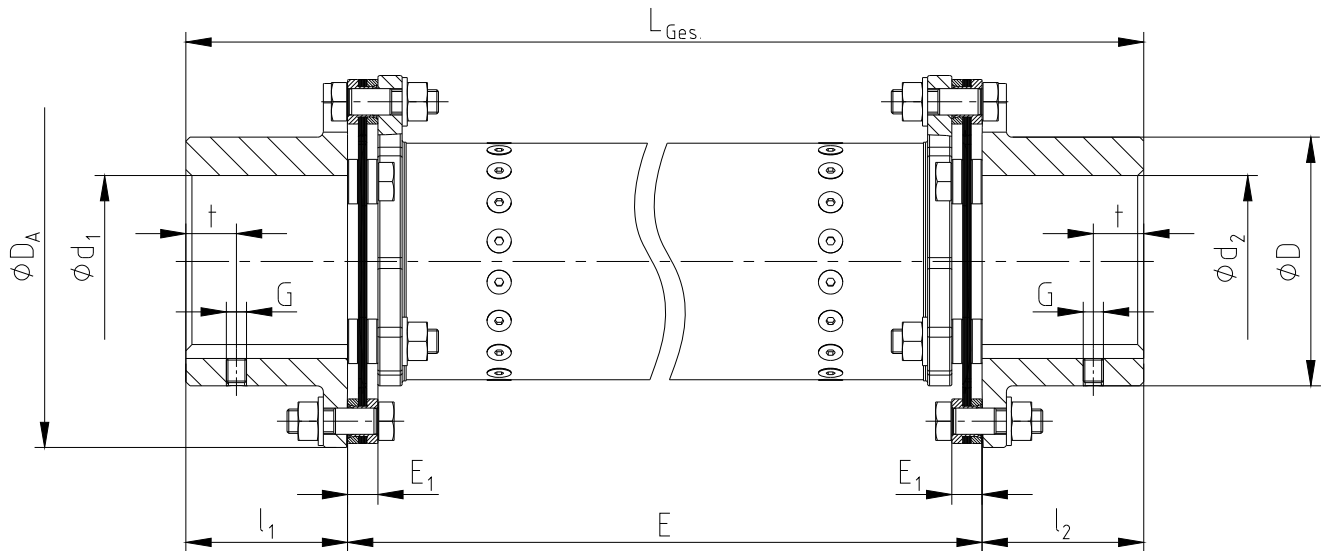
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**1 Technical Data**



picture 1: RADEX<sup>®</sup>-N Composite

**Table 1: dimensions**

RADEX <sup>®</sup> -N Size	max. finish bore $d_1, d_2$ [mm]	Dimensions [mm]								
		General						Thread for setscrews		
		D	$D_A$	$l_1, l_2$	$L_{Ges.}$	$E_1$	E	G	t	$T_A$ [Nm]
70	70	102	149	65	$l_1+l_2+E$	11	Indicated by the customer	M10	20	14
85	85	123	184	80		15		M10	25	14
90	90	135	200	80		15		M12	25	35
115	115	163	253	100		23		M12	30	35

**Table 2: coupling data**

RADEX <sup>®</sup> -N Size		70	85	90	115
Torque [Nm]	$T_{KN}$	800	1800	2500	4500
	$T_{K max.}$	1600	3600	5000	9000
	$T_{KW}$	265	600	830	1500
Speed [rpm]	n	max. speed depending on dimension E – please consult with company KTR			
Operating temperature [°C]	t	-30 till +100			



**CAUTION!**  
Pay attention to the max. speed and operating temperature.

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**1 Technical Data**

The displacement figures shown in table 3 offer sufficient safety to compensate for environmental influences like, for example, heat expansion or lowering of foundation.



**CAUTION!**

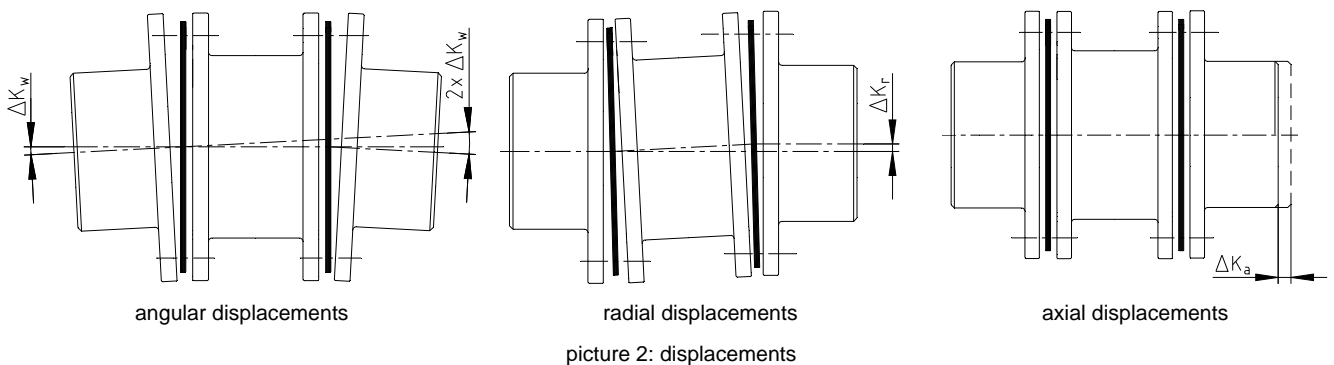
In order to ensure a long lifetime of the coupling, the shaft ends must be accurately aligned (see chapter 4.4).

The displacement figures mentioned in table 3 are maximum figures which must not arise in parallel. If the figures are exceeded, the coupling is damaged.

The exacter the alignment of the coupling, the higher is its lifetime.

**Please note:**

- The displacement figures mentioned in table 3 are maximum figures which must not arise in parallel. In case of a simultaneous radial, axial and angular displacement, these values must be reduced (see picture 3).



Example for the misalignment combinations given in picture 3:

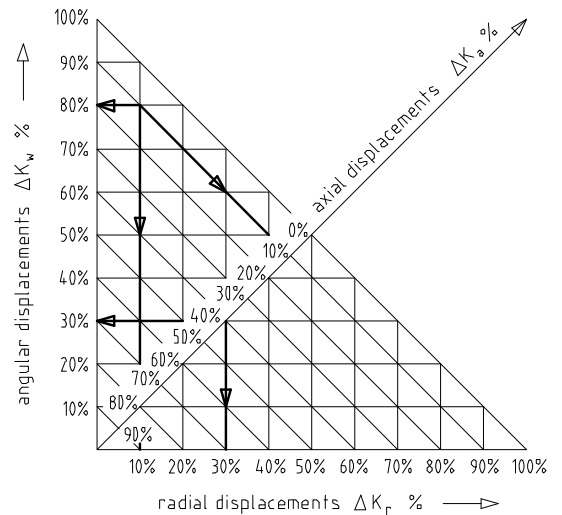
Example 1:

- $\Delta K_r = 10\%$
- $\Delta K_w = 80\%$
- $\Delta K_a = 10\%$

Example 2:

- $\Delta K_r = 30\%$
- $\Delta K_w = 30\%$
- $\Delta K_a = 40\%$

picture 3:  
combinations of displacement



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

**Table 3: max. permissible displacement figures**

RADEX®-N Size	max. angular displacements each laminae package $\Delta K_w$ [°]	max. radial displacements of the coupling $\Delta K_r$ [mm]	max. axial displacements of the coupling $\Delta K_a$ [mm]
70	1,3	0,0226 x (E - 11)	±2,2
85	1,3	0,0226 x (E - 15)	±2,3
90	1,0	0,0174 x (E - 15)	±2,0
115	1,0	0,0174 x (E - 23)	±2,8



## 2 Hints

### 2.1 Coupling Selection



**CAUTION!**

For a continuous and troublefree operation of the coupling it must be designed according to the selection instructions (according to DIN 740 part 2) for the particular application (see RADEX®-N catalogue).

If the operating conditions (performance, speed, changes at engine and machine) change, the coupling selection must be checked again.

Please make sure that the technical data regarding torque only refers to the lamina package. The transmissible torque of the shaft/hub connection must be checked by the orderer, and he is responsible for the same.

For drives with endangered torsional vibration (drives with periodical load on torsional vibration) it is necessary to make a torsional vibration calculation to ensure a perfect selection. Typical drives with endangered torsional vibration are e. g. drives with diesel engines, piston pumps, piston compressors etc. On request KTR makes the coupling selection and the torsional vibration calculation.

### 2.2 General Hints

Please read through these mounting instructions carefully before you set the coupling into operation.

Please pay special attention to the safety instructions!

The mounting instructions are part of your product. Please keep them carefully and close to the coupling.

The copyright for these mounting instructions remains with KTR Kupplungstechnik GmbH.

### 2.3 Safety and Advice Hints



**DANGER!**

**Danger of injury to persons**



**CAUTION!**

**Damages on the machine possible**



**ATTENTION!**

**Pointing to important items**

### 2.4 General Hints of Danger



**DANGER!**

With assembly, operation and maintenance of the coupling it has to be made sure that the entire drive train is protected against unintentional engagement. You can be seriously hurt by rotating parts. Please make absolutely sure to read through and observe the following safety instructions.

- All operations on and with the coupling have to be performed taking into account "safety first".
- Please make sure to disengage the power pack before you perform your work.
- Protect the power pack against unintentional engagement, e. g. by providing hints at the place of engagement or removing the fuse for current supply.
- Do not touch the operation area of the coupling as long as it is in operation.
- Please protect the coupling against unintentional touch. Please provide for the necessary protection devices and caps.

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## 2 Hints

### 2.5 Proper Use

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

- have carefully read through the mounting instructions and understood them
- had technical training
- are authorized to do so by your company

The coupling may only be used in accordance with the technical data. Unauthorized modifications on the coupling design are not admissible. We do not take any warranty for resulting damages. To further develop the product we reserve the right for technical modifications.

The **RADEX<sup>®</sup>-N coupling** described in here corresponds to the technical status at the time of printing of these mounting instructions.

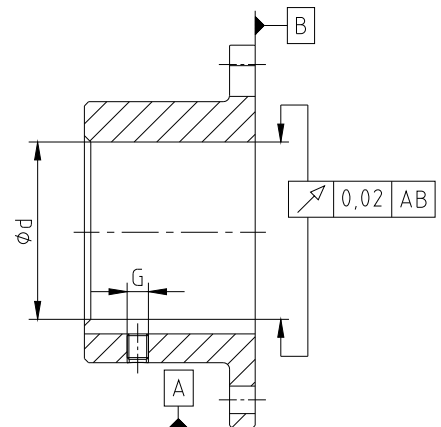
### 2.6 Hint Regarding the Finish Bore



#### **DANGER!**

**The maximum permissible bore diameters  $d$  (see table 1 in chapter 1 - Technical Data) must not be exceeded. If these figures are disregarded, the coupling may tear. Rotating particles may cause serious danger.**

- Flange hub bores machined by the customer have to observe concentric running or axial running, respectively (see picture 4).
- Please make absolutely sure to observe the figures for  $d_{max}$ .
- Carefully align the flange hubs when the finish bores are brought in.
- Please use a setscrew according to DIN EN ISO 4029 with a cup point or an end plate to fasten the flange hubs axially.



picture 4: concentric running and axial running



#### **CAUTION!**

**The orderer is responsible for all subsequently made machinings to unbored or pilot bored and to finish machined coupling parts and spare parts. KTR does not assume any warranty claims resulting from insufficient refinish.**

**Table 4: Setscrews DIN EN ISO 4029**

RADEX <sup>®</sup> -N Size	70	85	90	115
Dimension G [mm]	M10	M10	M12	M12

## 3 Storage

The coupling hubs are supplied in preserved condition and can be stored at a dry and roofed place for 6 - 9 months.



#### **CAUTION!**

**Humid storage rooms are not suitable.**

**Please make sure that there is no condensation. The best relative air humidity is under 65%.**

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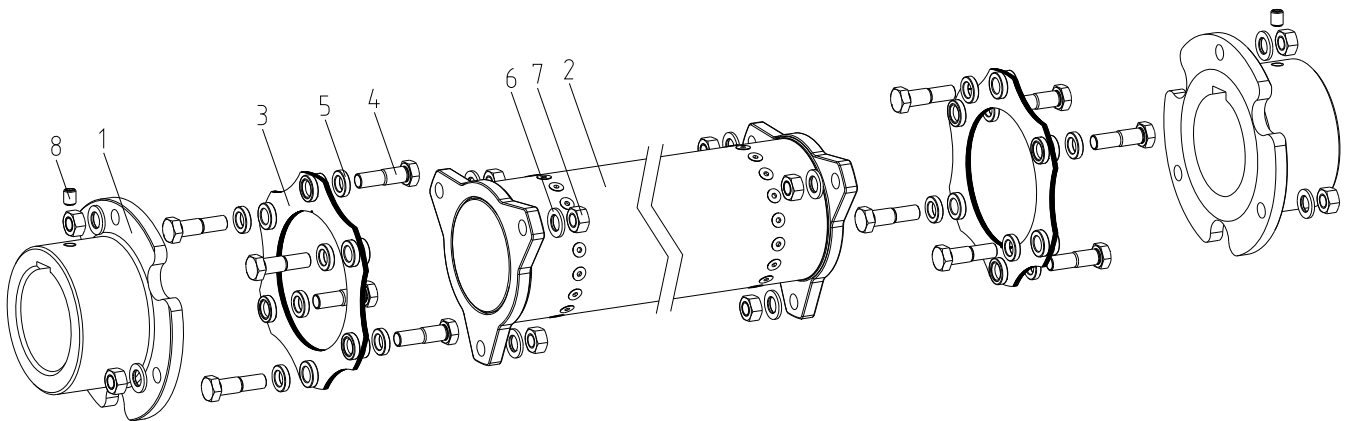
#### 4 Assembly

Basically the coupling is supplied in single parts. Before assembly the coupling has to be controlled for completeness.

#### 4.1 Components of the Couplings

##### Components of RADEX®-N Composite

Component	Quantity	Designation
1	2	Flange hub
2	1	Spacer with CFK pipe
3	2	Laminae package
4	see Table 5	Fitting screw
5	see Table 5	Distance sleeve
6	see Table 5	Washer
7	see Table 5	Hexagonal nut
8	2	Setscrew DIN EN ISO 4029



picture 5: RADEX®-N Composite

**Table 5: Quantity fitting screws, distance sleeves, washers and hexagonal nuts**

Coupling size	70	85	90	115
Quantity fitting screws <sup>1)</sup>	6	6	6	6
Quantity distance sleeves <sup>1)</sup>	6	-	-	-
Quantity washers <sup>1)</sup>	-	6	6	6
Quantity hexagonal nuts <sup>1)</sup>	6	6	6	6

1) each laminae package



## 4 Assembly

### 4.2 Assembly of the Flange Hub



#### ATTENTION!

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

Heating the flange hubs slightly (approx. 80 °C) allows for an easier installation onto the shaft.



#### DANGER!

Touching the heated flange hubs causes burns.  
We would recommend to wear safety gloves.

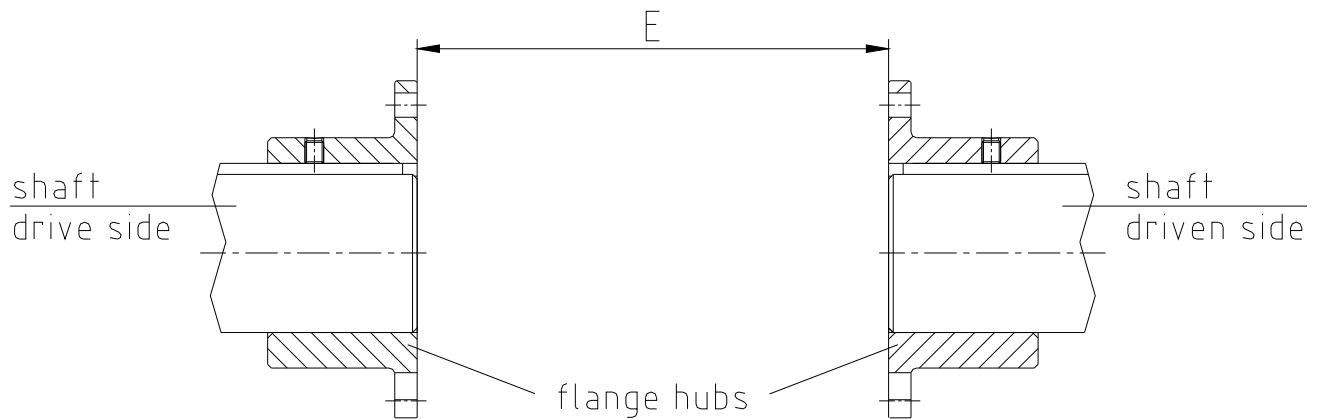


#### CAUTION!

During the assembly please make sure that the E dimension (see table 1) is observed, so that the coupling parts do not contact each other during the operation.  
Disregarding this hint may cause damage on the coupling.

For the rough axial alignment of the coupling the dimensions E (see table 1) are decisive. In order to adjust the right dimension E you should proceed as follows:

- Assemble the flange hubs onto the shaft of the drive and driven side (picture 6).
- The inner side of the flange hubs must end flushly with the front sides of the shafts.
- Move the power pack in axial direction until you have reached dimension E (see table 1).
- If the power packs are already firmly assembled, the dimension E has to be adjusted by moving the flange hubs axially on the shafts.
- Secure the hubs by tightening the grub screws DIN EN ISO 4029 with cup point (see table 1).



picture 6: assembly of the flange hubs

#### Disassembly:



#### DANGER!

Falling parts can lead to personal injury or damage to the machine.  
Secure the driving parts during disassembly.

- Untighten the setscrew in the hub and unscrew it by 2 – 3 convolutions.
- Pull the hub from the shaft.

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**4 Assembly**

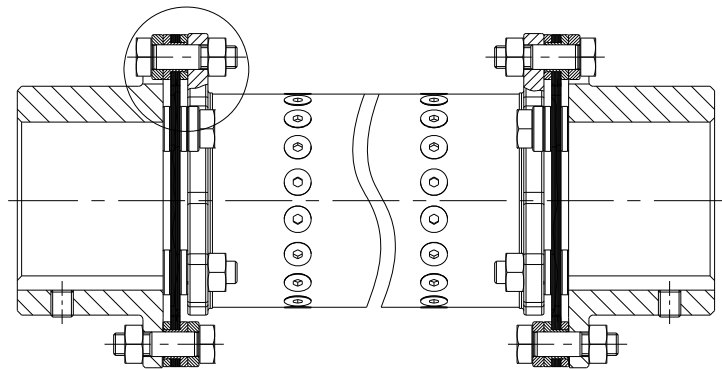
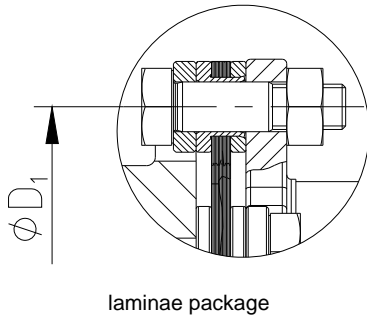
**4.3 Assembly of Laminae Packages**



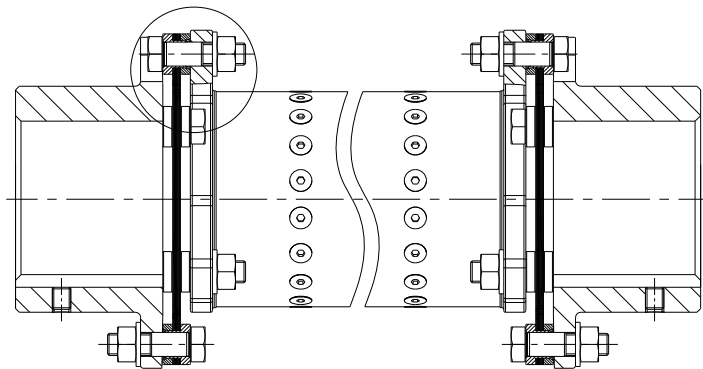
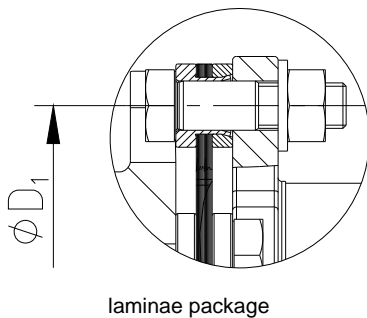
**CAUTION!**

**For the assembly please make sure that the laminae packages are assembled in axial direction free from distortion. Disregarding this hint may cause damage on the coupling.**

- Clean and degrease the contact surfaces of screw connections on the flange hub, laminae package and spacer.
- Please assemble the laminae packages and the spacer part (see picture 7 and 8, respectively).
- Initially tighten the parts hand-tight, the screws to be assembled reciprocally (see picture 7 or 8, respectively).
- Tighten the nuts one after another and with several revolutions until the tightening torque mentioned in table 7 is achieved. Secure the fitting screws against twisting.



picture 7: assembly of the laminae packages RADEX<sup>®</sup>-N size 70



picture 8: assembly of the laminae packages RADEX<sup>®</sup>-N size 85-115

**Table 6: pitch circle diameter**

RADEX <sup>®</sup> -N Size	70	85	90	115
Pitch circle $\phi D_1$ [mm]	128	158	170	214

**Table 7: tightening torques**

RADEX <sup>®</sup> -N Size	70	85	90	115
Screw dimension	M10	M12	M16	M20
Tightening torque $T_A$ [Nm]	49	86	210	410



**CAUTION!**

**Having set the coupling into operation, the tightening torque of the fitting screws has to be investigated at regular maintenance intervals.**

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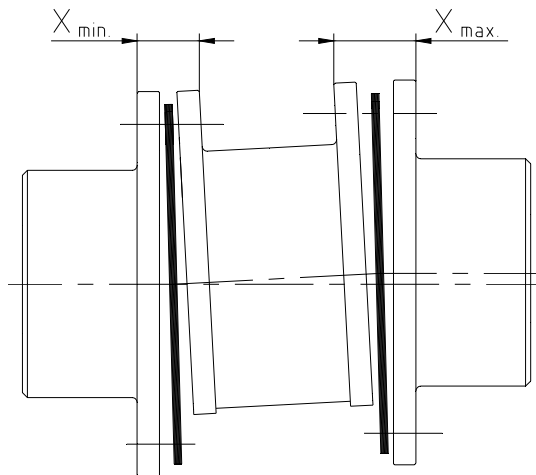




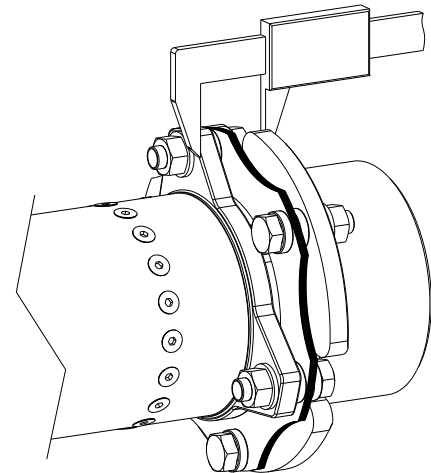
**4 Assembly**

**4.4 Alignment of the Couplings**

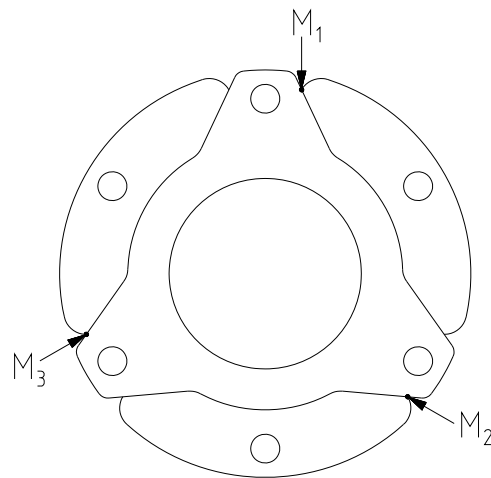
Determine the minimum and maximum distance dimension ( $X_{min.}$  and  $X_{max.}$ ) of the external flange surfaces on the finish-assembled coupling (see picture 9) by measurements, as shown in picture 10, at the measuring points indicated (see picture 11). Afterwards turn the drive train by 180° and repeat the measurements. If a value measured falls below the minimum figure or exceeds the maximum figure (see table 8), the drive or driven side should be aligned more accurately.



picture 9: measuring of existing distance dimensions



picture 10: measuring process



picture 11: measuring points

**Table 8: limiting values for alignment**

RADEX®-N Size	70	85	90	115
Nominal distance dimension X [mm]	29	39	41	59
Distance dimension $X_{min.}$ [mm]	28,6	38,5	40,5	58,4
Distance dimension $X_{max.}$ [mm]	29,4	39,5	41,5	59,6

**4.5 Spares Inventory, Customer Service Addresses**

A basic requirement to guarantee the operational readiness of the coupling is a stock of the most important spare parts on site.

Contact addresses of the KTR partners for spare parts and orders can be obtained from the KTR homepage under [www.ktr.com](http://www.ktr.com).

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