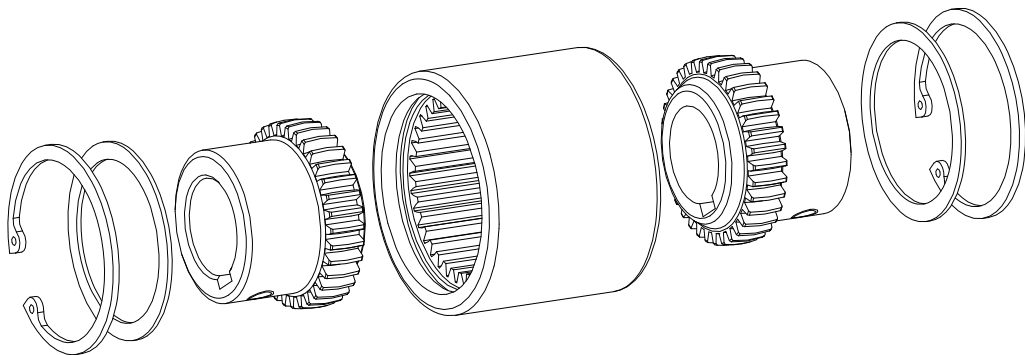


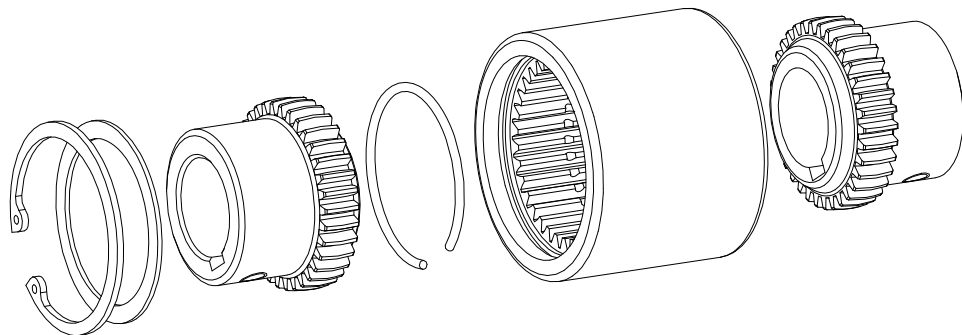


BoWex[®]

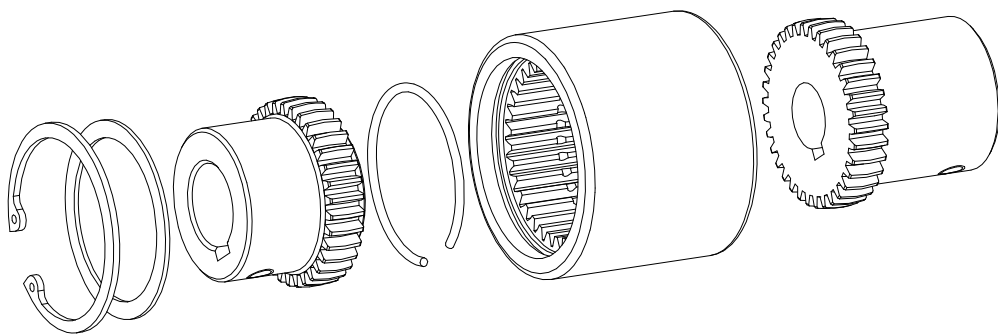
puncture curved-tooth gear couplings types
AS, Spec.-I, Spec.-I/CD and their combinations



Type AS



Type Spec.-I



Type Spec.-I/CD

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BoWex® curved-tooth gear couplings are flexible shaft connections. They compensate for shaft displacements, caused by e. g. inaccuracies in production, heat expansion etc.

Table of Contents

1 Technical Data

2 Hints

- 2.1 Coupling Selection
- 2.2 General Hints
- 2.3 Safety and Advice Hints
- 2.4 General Hints to Danger
- 2.5 Proper Use

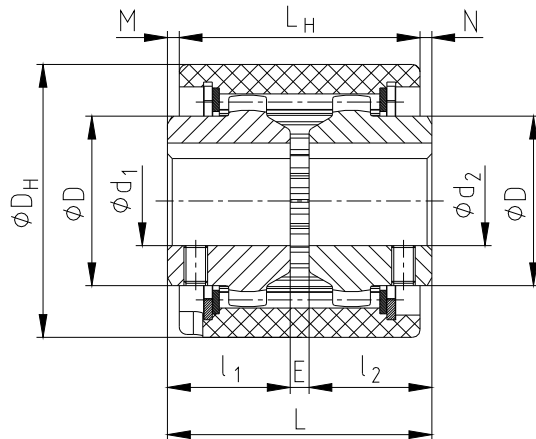
3 Storage

4 Assembly

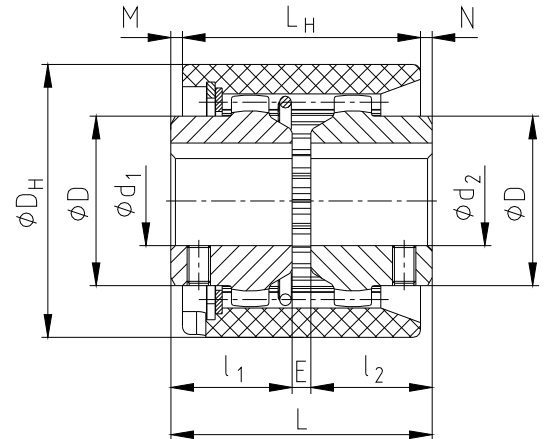
- 4.1 Components of the Couplings
- 4.2 Hint Regarding the Finish Bore
- 4.3 Assembly of the Coupling (General)
- 4.4 Assembly of the Type AS
- 4.5 Assembly of the Type Spec.-I and Spec.-I/CD
- 4.6 Displacements - Alignment of the Couplings
- 4.7 Spares Inventory, Customer Service Addresses



1 Technical Data



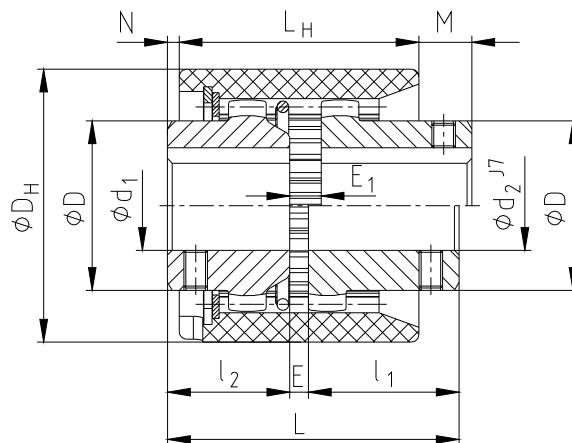
picture 1: BoWex® type AS



picture 2: BoWex® type Spec.-I

Table 1: dimensions type AS and Spec.-I

size	pilot bore		max. finish bore d ₁ ; d ₂	dimensions [mm]							
	un-bored	pilot bored		l ₁ ; l ₂	E	L	L _H	M; N	D	D _H	lengthened l ₁ ; l ₂ max.
24	x	-	24	26	4	56	51	2,5	36	58	50
28	x	-	28	40	4	84	56	14	44	70	55
32	x	-	32	40	4	84	58	13	50	84	55
45	x	-	45	42	4	88	60	14	65	100	60
65	x	26 70 lg.	65	55	4	114	84	15	96	140	70
80	-	31	80	90	6	186	93	46,5	124	175	-
100	-	38	100	110	8	228	102	63	152	210	-
125	-	45	125	140	10	290	134	78	192	270	-



picture 3: BoWex® type Spec.-I/CD

Table 2: dimensions type Spec.-I/CD

size	pilot bore		finish bore		dimensions [mm]										
	un-bored	pilot bored	min.	max.	L	L ₁	L _H	E	E ₁	l ₂	l ₁	D _H	D	M	N
24	x	-	10	24	70	73,5	51	4	7,5	26	40	58	36	20	2,5
28	x	-	10	28	94,5	98	56	4	8,5	40	50,5	70	44	28	14
32	x	-	12	32	94,5	-	58	4	8,5	40	50,5	84	50	27	13
45	x	-	20	45	101,5	-	60	4	8,5	42	55,5	100	65	32	14
65	x	26	30	65	123	-	84	4	10	55	64	140	96	28,5	15
80	-	31	35	80	179	-	93	6	13	90	83	175	124	44	46,5

Schutzvermerk ISO 16016 beachten.	Gezeichnet:	25.02.10 Pz	Ersatz für:	KTR-N vom 17.12.99
	Geprüft:	05.03.10 Pz	Ersetzt durch:	



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 BoWex® 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 sleeve. 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.

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 25.02.10 Pz	Ersatz für: KTR-N vom 17.12.99
	Geprüft: 05.03.10 Pz	Ersetzt durch:



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 (see table 1 and 2 in chapter 1).

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 **BoWex®** described in here corresponds to the technical status at the time of printing of these mounting instructions.

3 Storage

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

The features of the coupling sleeves remain unchanged for up to 5 years in case of favourable stock conditions.



CAUTION!

The storage rooms may not include any ozone-generating devices, like e. g. fluorescent light sources, mercury-vapour lamps or electrical high-voltage appliances.

Humid storage rooms are not suitable.

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

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 25.02.10 Pz Geprüft: 05.03.10 Pz	Ersatz für: KTR-N vom 17.12.99 Ersetzt durch:
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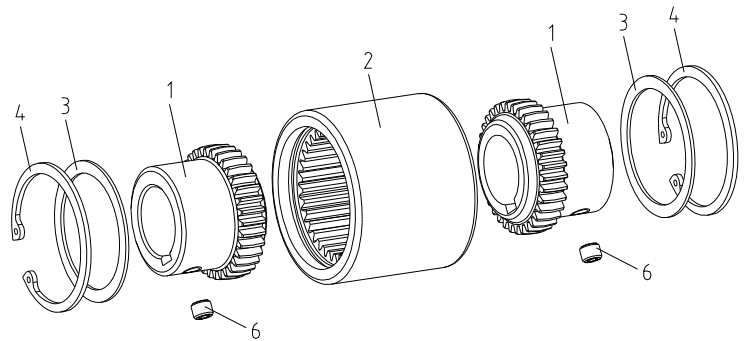
4 Assembly

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

4.1 Components of the Couplings

Components of BoWex® type AS

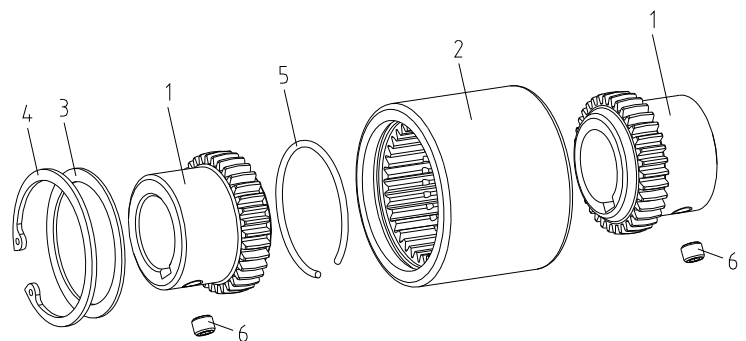
Component	Quantity	Designation
1	2	hub
2	1	sleeve AS
3	2	stop ring
4	2	circlip DIN 472
6	2	setscrew DIN EN ISO 4029



picture 4: BoWex® type AS

Components of BoWex® type Spec.-I

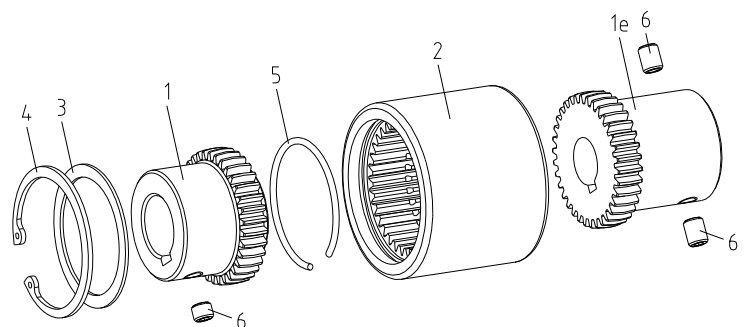
Component	Quantity	Designation
1	2	hub
2	1	spec. sleeve I
3	1	stop ring
4	1	circlip DIN 472
5	1	snap ring DIN 7993/ circlip DIN 472
6	2	setscrew DIN EN ISO 4029



picture 5: BoWex® type Spec.-I

Components of BoWex® type Spec.-I/CD

Component	Quantity	Designation
1	1	hub
1e	1	hub CD
2	1	spec. sleeve I
3	1	stop ring
4	1	circlip DIN 472
5	1	snap ring DIN 7993/ circlip DIN 472
6	3	setscrew DIN EN ISO 4029



picture 6: BoWex® type Spec.-I/CD



4 Assembly

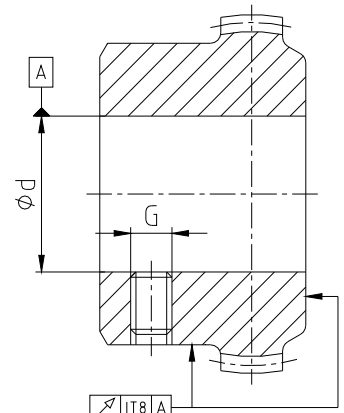
4.2 Hint Regarding the Finish Bore



DANGER!

The maximum permissible bore diameters d (see table 1 and 2 in chapter 1 - Technical Data) must not be exceeded. If these figures are disregarded, the coupling may tear. Rotating particles may cause serious danger.

- Hub bores (steel hubs) machined by the customer have to observe concentric running or axial running, respectively (see picture 7).
- Please make absolutely sure to observe the figures for d_{max} .
- Carefully align the 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 hubs axially.



picture 7: 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 3: setscrews DIN EN ISO 4029

BoWex® size	24	28	32	45	65	80	100	125
dimension G	M5	M8	M8	M8	M10	M10	M12	M16
tightening torque T_A [Nm]	2	10	10	10	17	17	40	80

4.3 Assembly of the Coupling (General)



ATTENTION!

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

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



DANGER!

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



CAUTION!

For the assembly please make sure that the distance dimension E or E_1 (see table 1 and 2) is kept to ensure that the sleeve can be moved axially. Disregarding this hint may cause damage on the coupling.

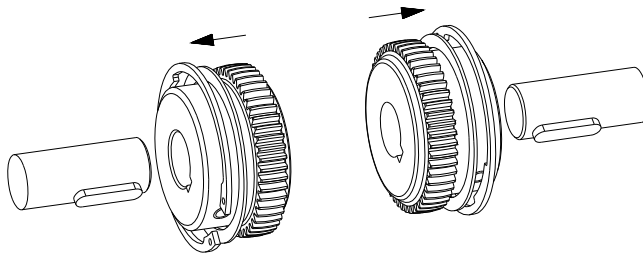
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	Geprüft: 05.03.10 Pz	Ersetzt durch:



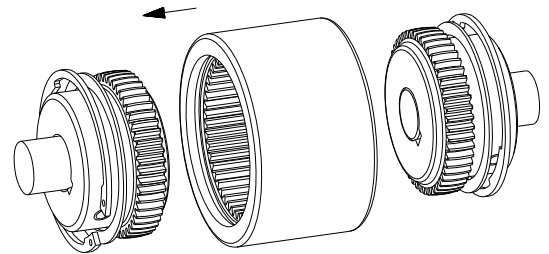
4 Assembly

4.4 Assembly of the Type AS

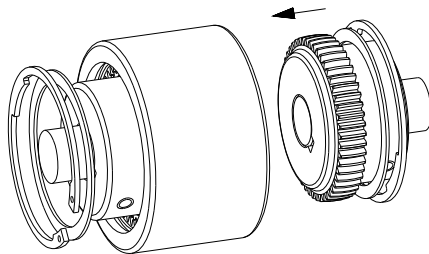
- Push the hubs with stop ring and circlip onto the shafts of the driving side and the driven side (see picture 8).
- Fasten the hubs by tightening the setscrews DIN EN ISO 4029 with cup point or an end plate.
- Put the coupling sleeve onto the toothing of a coupling hub (see picture 9).
- Move the power packs in axial direction until the dimension E is achieved (see picture 10).
- If the power packs are already firmly assembled, axial movement of the hubs on the shafts allows for adjusting the dimension E.
- Put the circlips in the keyways of the coupling sleeves in order to protect the sleeve against axial displacement (see picture 11).



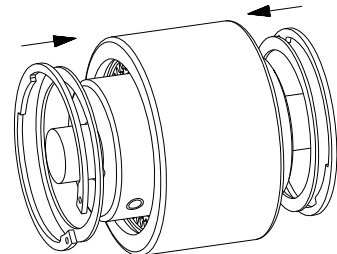
picture 8



picture 9



picture 10



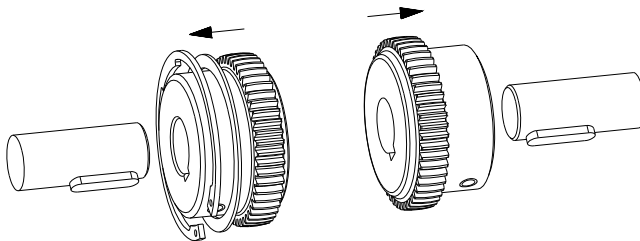
picture 11



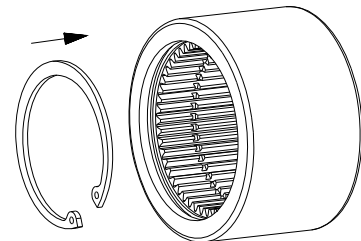
4 Assembly

4.5 Assembly of the Type Spec.-I and Spec.-I/CD

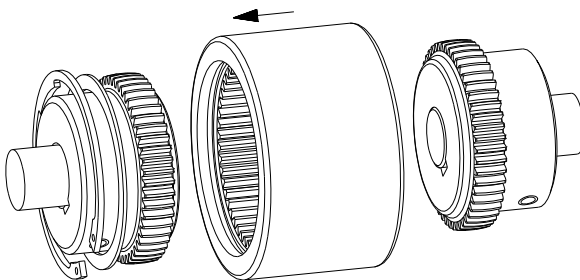
- Push one hub and one hub with stop ring and circlips onto the shafts of the driving side and the driven side (see picture 12).
- Fasten the hubs by tightening the setscrews DIN EN ISO 4029 with cup point or an end plate.
- Insert the the snap ring or circlip (component 5) into the sleeves (see picture 13).
- Put the coupling sleeve onto the tothing of the coupling hub with the circlip and the stop ring pushed onto the hub collar (see picture 14).
- Protect the coupling sleeve against axial displacement by inserting the circlips into the ring keyways of the coupling sleeves (see picture 15).
- Move the power packs in axial direction until the dimension E or E_1 is achieved (see picture 16).
- If the power packs are already firmly assembled, axial movement of the hubs on the shafts allows for adjusting the dimension E.



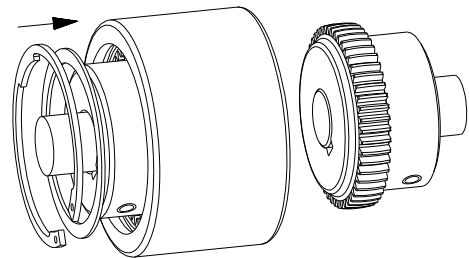
picture 12



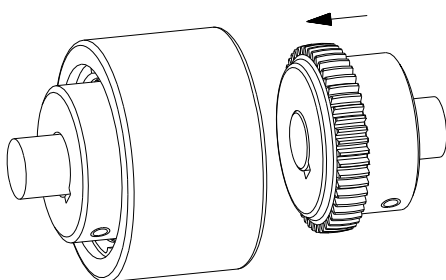
picture 13



picture 14



picture 15



picture 16

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 25.02.10 Pz	Ersatz für: KTR-N vom 17.12.99
	Geprüft: 05.03.10 Pz	Ersetzt durch:



4 Assembly

4.6 Displacements - Alignment of the Couplings

The displacement figures shown in table 4 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 aligned accurately. Please absolutely observe the indicated displacement figures (see table 4). If these figures are exceeded, the coupling is damaged.

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

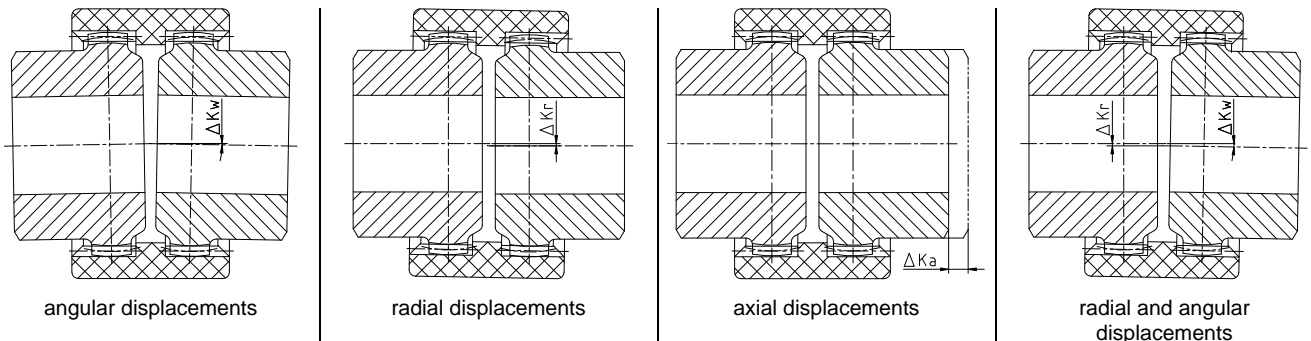
Please note:

- The displacement figures mentioned in table 4 are maximum figures which must not arise in parallel. If radial and angular displacement arises at the same time, the permissible radial displacements of the coupling halves have to be reduced as follows:

$$\Delta K_{r_{perm}} = \Delta K_r - \frac{\Delta K_r}{2\Delta K_w} \cdot \Delta W_w$$

ΔW_w = angular shaft displacement

- The displacement figures mentioned are general figures that apply up to an ambient temperature of 80 °C, ensuring a sufficient service life of the **BoWex®** coupling. Displacement figures between the speeds indicated have to be interpolated accordingly. If necessary, please ask about the displacement for the corresponding coupling type.
- Please check with a dial gauge, ruler or feeler whether the permissible displacement figures of table 4 can be observed.



picture 17: displacements

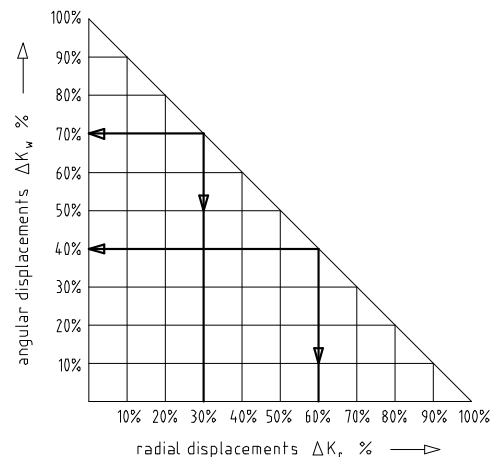
Example for the misalignment combinations given in picture 18:

Example 1:
 $\Delta K_r = 30 \%$
 $\Delta K_w = 70 \%$

Example 2:
 $\Delta K_r = 60 \%$
 $\Delta K_w = 40 \%$

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

picture 18:
combinations of displacement





4 Assembly

4.6 Displacements - Alignment of the Couplings

Table 4: Displacement figures

coupling size	24	28	32	45	65	80	100	125
max. axial displacement ΔK_a [mm]	± 1	± 1	± 1	± 1	± 1	± 1	± 1	± 1
max. radial displacement with $n=1500$ 1/min ΔK_r [mm]	0,35	0,35	0,35	0,40	0,45	0,45	0,45	0,45
max. radial displacement with $n=3000$ 1/min ΔK_r [mm]	0,23	0,23	0,23	0,25	0,28	0,28	0,28	0,28
ΔK_w max. angular displacement with $n=1500$ 1/min [degree]	0,9	0,9	0,9	0,9	0,7	0,6	0,6	0,4
ΔK_w max. angular displacement with $n=3000$ 1/min [degree]	0,6	0,6	0,6	0,6	0,5	0,4	0,4	0,3

4.7 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.

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 25.02.10 Pz	Ersatz für: KTR-N vom 17.12.99
	Geprüft: 05.03.10 Pz	Ersetzt durch: