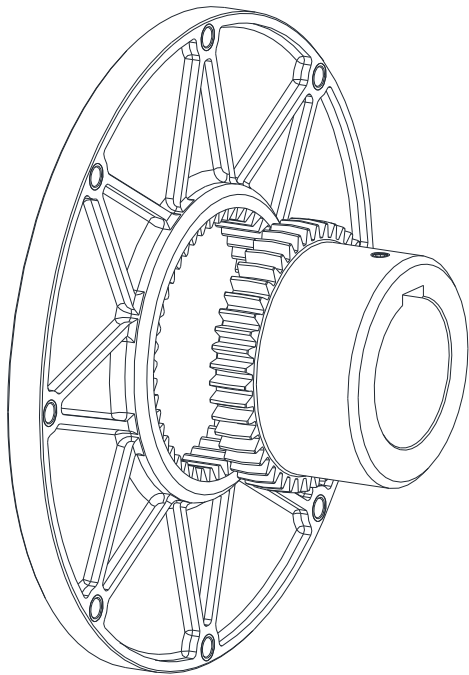
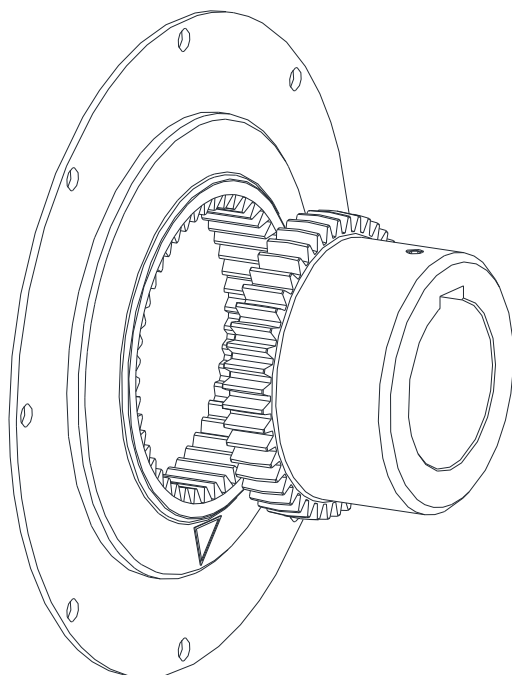




**BoWex® FLE-PA / FLE-PAC** is a torsionally rigid flange coupling. It is able to compensate for shaft misalignment, for example caused by manufacturing inaccuracies, thermal expansion, etc.



**BoWex® FLE-PA**



**BoWex® FLE-PAC**

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**1 Technical data**

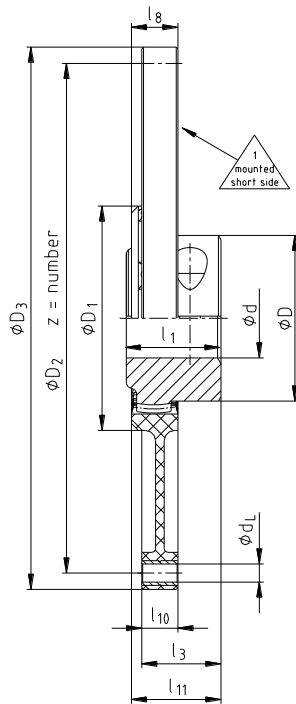


Illustration 1: BoWex® FLE-PA - short mounting

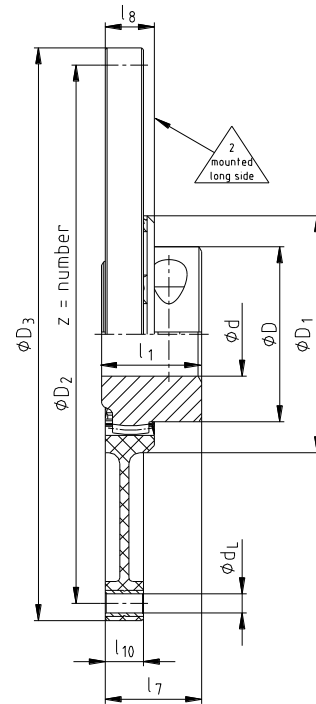


Illustration 2: BoWex® FLE-PA - long mounting

**Table 1: Dimensions - BoWex® FLE-PA**

Size	Pilot bore [mm]	Bore d [mm]		Dimensions [mm]								Special length [mm] l <sub>1 max.</sub>	Nominal size acc. to SAE (D <sub>3</sub> )					
		Min.	Max.	D	D <sub>1</sub>	l <sub>1</sub>	l <sub>3</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>10</sub>	l <sub>11</sub>		6½"	7½"	8"	10"	11½"	14"
48	-	20	48	68	100	50	41	50	20	13	48	up to 60	•	•	•	•		
T 48	13	20	48	68	100	50	38	45	20	13	46	-	•	•	•	•		
T 55	17	20	55	85	115	50	37	48	24	13	48	-	•	•	•	•		
65 / T 65	21	30	65	96	132	55	45	54	27	21	51	up to 70			•	•	•	
T 70	26	30	70	100	153	60	48	56	30	21	57	-				•		
80 / T 80	31	35	80	124	170	90	78	87	30	21	87	-				•	•	
100 / T 100	38	40	100	152	265	110	78	108	35	21	110	-					•	•
125 / T 125	45	50	125	192	250	140	103	133	50	28	140	-					•	•

**Table 2: Technical data - BoWex® FLE-PA**

Size	Torque [Nm]			Weight / mass moment of inertia J	Hub with max. bore Ø	Flange connection acc. to SAE - J620					
	T <sub>KN</sub>	T <sub>K max</sub>	T <sub>KW</sub>			6½"	7½"	8"	10"	11½"	14"
48	240	600	120	[kg]	0.79	0.32	0.43	0.51	0.64	-	-
				[kgm <sup>2</sup> ]	0.0007	0.0021	0.0035	0.0049	0.0085		
T 48	300	750	150	[kg]	0.79	0.32	0.43	0.51	0.64	-	-
				[kgm <sup>2</sup> ]	0.0007	0.0021	0.0035	0.0049	0.0085		
T 55	450	1125	225	[kg]	1.20	0.34	0.62	0.45	0.646	-	-
				[kgm <sup>2</sup> ]	0.0016	0.0022	0.0053	0.0044	0.0086		
65	650	1600	325	[kg]	1.50	-	-	0.63	0.64	0.89	-
				[kgm <sup>2</sup> ]	0.0027			0.0064	0.0065	0.012	
T 65	800	2000	400	[kg]	1.60	-	-	0.63	0.64	0.89	-
				[kgm <sup>2</sup> ]	0.0035			0.0064	0.0065	0.012	
T 70	1000	2500	500	[kg]	2.60	-	-	-	0.941	-	-
				[kgm <sup>2</sup> ]	0.0059				0.0132		
80	1200	3000	600	[kg]	5.20	-	-	-	1.05	1.12	-
				[kgm <sup>2</sup> ]	0.0151				0.015	0.022	



**1 Technical data**

**Page 3 continued:**

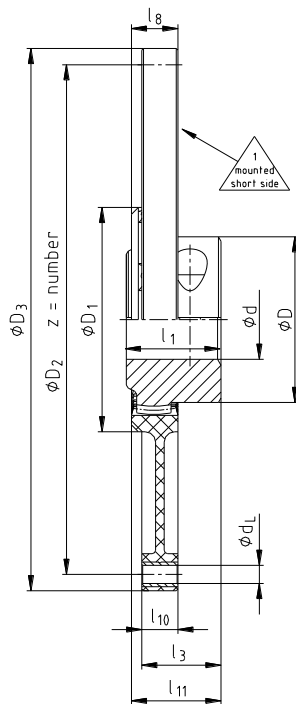


Illustration 1: BoWex® FLE-PA - short mounting

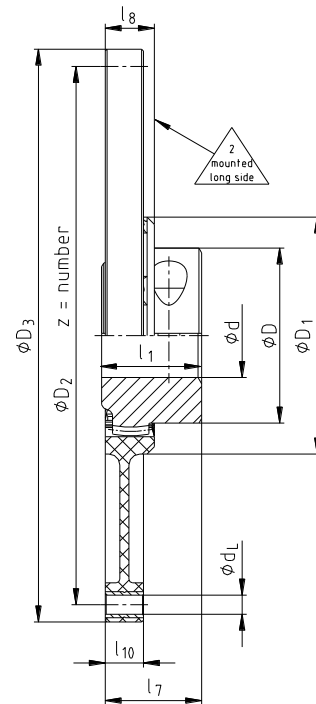


Illustration 2: BoWex® FLE-PA - long mounting

**Table 2: Technical data - BoWex® FLE-PA**

Size	Torque [Nm]			Weight / mass moment of inertia J	Hub with max. bore Ø	Flange connection acc. to SAE - J620					
	T <sub>KN</sub>	T <sub>K max</sub>	T <sub>KW</sub>			6½"	7½"	8"	10"	11½"	14"
T 80	1500	3750	750	[kg]	5.20	-	-	-	1.05	1.12	-
				[kgm <sup>2</sup> ]	0.0151				0.015	0.022	
100	2050	5150	1025	[kg]	9.37	-	-	-	1.16	8.45	
				[kgm <sup>2</sup> ]	0.0401				0.021	0.234	
T 100	2500	6250	1250	[kg]	9.37	-	-	-	1.16	8.45	
				[kgm <sup>2</sup> ]	0.0401				0.021	0.234	
125	4250	10700	2125	[kg]	19.73	-	-	-	2.09	9.85	
				[kgm <sup>2</sup> ]	0.1359				0.043	0.306	
T 125	5300	13250	2650	[kg]	19.73	-	-	-	2.09	9.85	
				[kgm <sup>2</sup> ]	0.1359				0.043	0.306	



**In case if a dimensional drawing was created for the coupling, the dimensions entered have to be primarily observed.**

Please observe protection note ISO 16016.	Drawn:	2018-09-06 Pz/Hk	Replacing:	KTR-N dated 2018-08-30
	Verified:	2018-09-06 Pz	Replaced by:	



1 Technical data

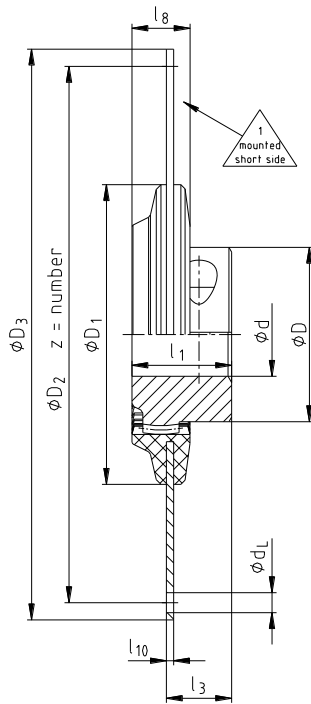


Illustration 3: BoWex® FLE-PAC - short mounting

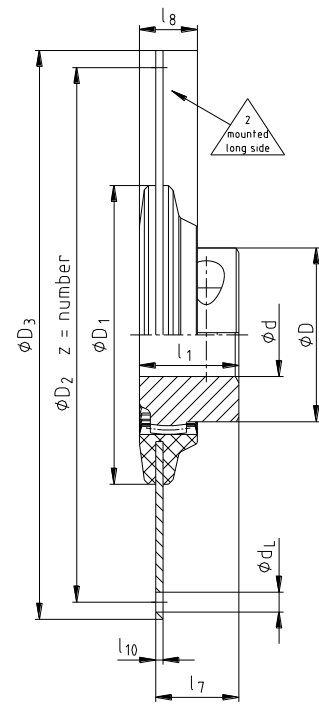


Illustration 4: BoWex® FLE-PAC - long mounting

Table 3: Dimensions - BoWex® FLE-PAC

Size	Pilot bore [mm]	Bore d [mm]		Dimensions [mm]							Special length [mm] l <sub>1 max.</sub>	Nominal size acc. to SAE (D <sub>3</sub> ) <sup>1)</sup>					
		Min.	Max.	D	D <sub>1</sub>	l <sub>1</sub>	l <sub>3</sub>	l <sub>7</sub>	l <sub>8</sub>	l <sub>10</sub>		6½"	7½"	8"	10"	11½"	14"
48 / T 48	13	15	48	68	110	50	35	46	25	3	up to 60	•	•	•	•		
T 55	17	20	55	85	148	50	32	42	28	3	-	•	•	•	•		
65 / T 65	21	30	65	96	165	55	36	46	32	4	up to 70	•	•	•	•	•	
80 / T 80	31	35	80	124	220	90	72	76	35	4	-				•	•	•
100 / T 100	38	40	100	152	280	110	85	102	47	5	-					•	•
125 / T 125	45	50	125	192	250	140	37	133	50	28	-					•	•

1) Special flange dimensions available.

Table 4: Technical data - BoWex® FLE-PAC

Size	Torque [Nm]			Weight / mass moment of inertia J	Hub with max. bore Ø	Flange connection acc. to SAE - J620					
	T <sub>KN</sub>	T <sub>K max</sub>	T <sub>KW</sub>			6½"	7½"	8"	10"	11½"	14"
48	300	600	150	[kg]	0.79	0.77	0.98	1.19	1.73	-	-
				[kgm <sup>2</sup> ]	0.0007	0.0049	0.0077	0.0109	0.0221		
T 48	370	740	185	[kg]	0.79	0.77	0.98	1.19	1.73	-	-
				[kgm <sup>2</sup> ]	0.0007	0.0049	0.0077	0.0109	0.0221		
T 55	550	1100	275	[kg]	1.20	0.74	0.95	1.16	1.7	-	-
				[kgm <sup>2</sup> ]	0.0016	0.0049	0.0077	0.0109	0.0222		
65	800	1600	400	[kg]	1.50	0.93	1.21	1.48	2.20	2.83	-
				[kgm <sup>2</sup> ]	0.0027	0.0065	0.0101	0.0145	0.0294	0.0467	
T 65	1000	2000	500	[kg]	1.60	0.93	1.21	1.48	2.20	2.83	-
				[kgm <sup>2</sup> ]	0.0035	0.0065	0.0101	0.0145	0.0294	0.0467	
80	1500	3000	750	[kg]	5.20	-	-	-	2.27	2.90	5.20
				[kgm <sup>2</sup> ]	0.0151	-	-	-	0.0312	0.0485	0.1462



1 Technical data

Page 5 continued:

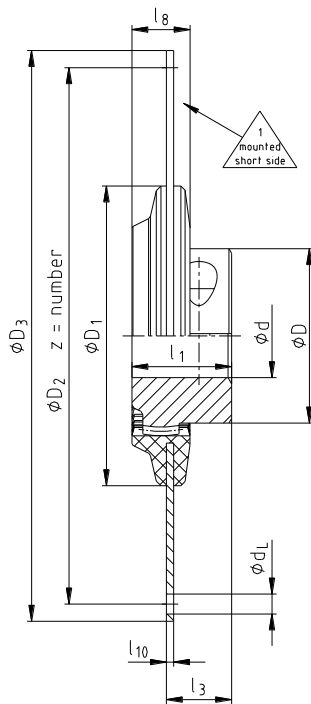


Illustration 3: BoWex® FLE-PAC - short mounting

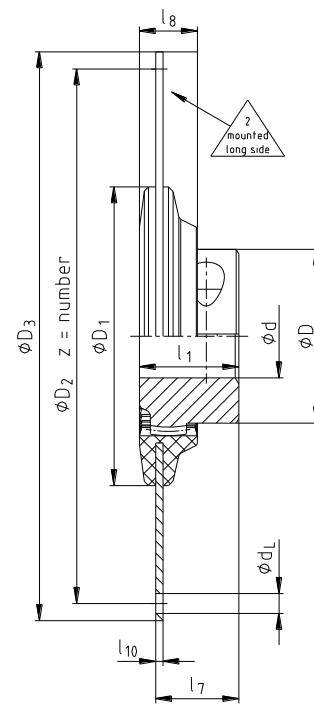


Illustration 4: BoWex® FLE-PAC - long mounting

Table 4: Technical data - BoWex® FLE-PAC

Size	Torque [Nm]			Weight / mass moment of inertia J	Hub with max. bore Ø	Flange connection acc. to SAE - J620					
	T <sub>KN</sub>	T <sub>K max</sub>	T <sub>KW</sub>			6½"	7½"	8"	10"	11½"	14"
T 80	1850	3700	925	[kg]	5.20	-	-	-	2.27	2.90	5.20
				[kgm <sup>2</sup> ]	0.0151				0.0312	0.0485	0.1462
100	2550	5100	1275	[kg]	9.37	-	-	-	3.35	6.22	
				[kgm <sup>2</sup> ]	0.0401				0.0606	0.1828	
T 100	3100	6200	1550	[kg]	9.37	-	-	-	3.35	6.22	
				[kgm <sup>2</sup> ]	0.0401				0.0606	0.1828	
125	5350	10700	2675	[kg]	19.73	-	-	-	2.09	9.85	
				[kgm <sup>2</sup> ]	0.1359				0.043	0.306	
T 125	6600	13200	3300	[kg]	19.73	-	-	-	2.09	9.85	
				[kgm <sup>2</sup> ]	0.1359				0.043	0.306	



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

Table 5: Flange dimensions according to SAE J 620

Nominal size	Flange dimensions [mm]					
	6½"	7½"	8"	10"	11½"	14"
Dimension D <sub>3</sub>	215.90	241.30	263.52	314.32	352.42	466.72
Dimension D <sub>2</sub>	200.02	222.25	244.47	295.27	333.37	438.15
Quantity z	6	8	6	8	8	8
Dimension d <sub>L</sub>	9	9	11	11	11	13

Please observe protection note ISO 16016.	Drawn:	2018-09-06 Pz/Hk	Replacing:	KTR-N dated 2018-08-30
	Verified:	2018-09-06 Pz	Replaced by:	

**2 Advice****2.1 General advice**

Please read through these operating/assembly instructions carefully before you start up the coupling.

Please pay special attention to the safety instructions!

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

**2.2 Safety and advice symbols****Warning of personal injury**

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

**Warning of product damages**

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

**General advice**

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

**Warning of hot surfaces**

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

**2.3 General hazard warnings**

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

- All operations on and with the coupling have to be performed taking into account "safety first".
- Please 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.
- Please secure the coupling against accidental contact. Please 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
- had technical training
- 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 **BoWex**® described in here corresponds to the technical status at the time of printing of these operating/assembly instructions.

**2 Advice****2.5 Coupling selection**

**For a long-lasting and 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 „BoWex® flange couplings“).**  
**If the operating conditions (performance, speed, modifications on engine and machine) change, the coupling selection must be reviewed.**  
**The transmittable torque of the shaft-hub-connection must be reviewed by the customer and is subject to his responsibility.**

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

**2.6 Reference to EC Machinery Directive 2006/42/EC**

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 please refer to the present operating/assembly instructions considering the warnings.

**3 Storage, transport and packaging****3.1 Storage**

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

The flange is supplied packed in foil and remains unchanged up to 5 years if stored with package.



**The storage rooms must 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 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 please always make use of proper transport and lifting equipment.**

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





**4 Assembly**

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

**4.1 Types of hubs**

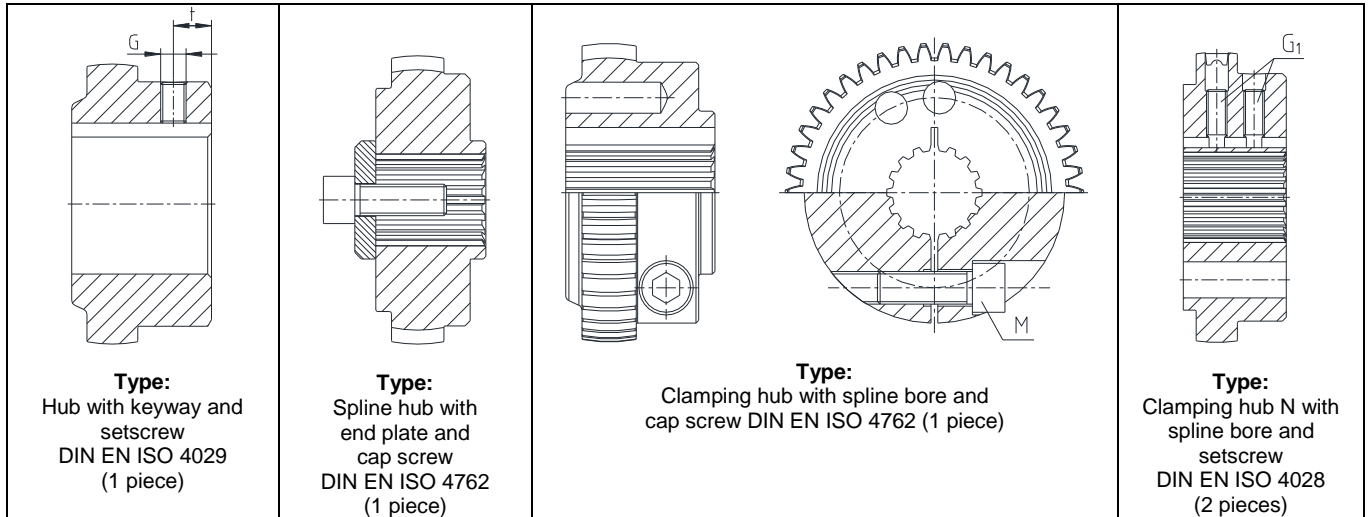


Illustration 5: Types of hubs

**4.2 Components of the couplings**

Component	Quantity	Description
1	1	BoWex® flange
2	1	BoWex® hub <sup>1)</sup>
3	1 <sup>2)</sup>	Setscrew DIN EN ISO 4029 <sup>2)</sup>

- 1) Different types of hubs as per illustration 5 are available.
- 2) Each depending on hub type (see illustration 5).

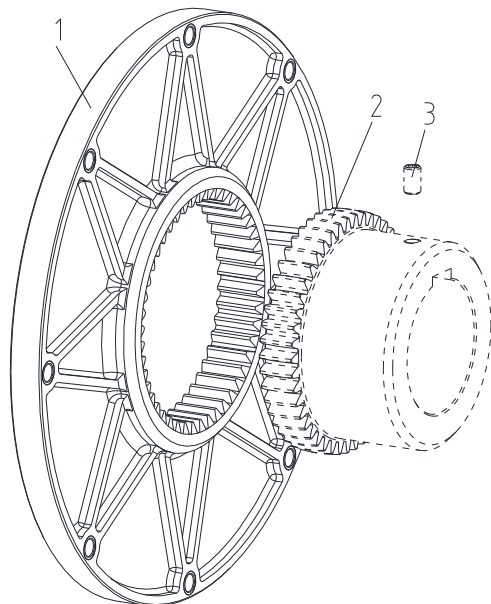


Illustration 6: BoWex® type FLE-PA

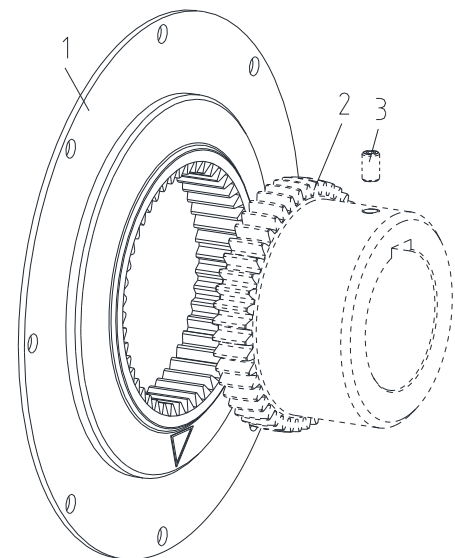


Illustration 7: BoWex® type M

Please observe protection note ISO 16016.	Drawn:	2018-09-06 Pz/Hk	Replacing:	KTR-N dated 2018-08-30
	Verified:	2018-09-06 Pz	Replaced by:	

**4 Assembly**

**4.3 Advice for finish bore**



The maximum permissible bore diameters  $d$  (see table 1 or 3 in chapter 1 - technical data) must not be exceeded. If these figures are disregarded, the coupling may tear. Rotating particles may cause danger to life.

- Hub bores (steel hubs) machined by the customer have to observe concentricity or axial runout, respectively (see illustration 8).
- Please make absolutely sure to observe the figures for  $\varnothing d_{max}$ .
- Carefully align the hubs when the finish bores are drilled.
- Please provide for a setscrew according to DIN EN ISO 4029 with a cup point or an end plate to fasten the hubs axially.

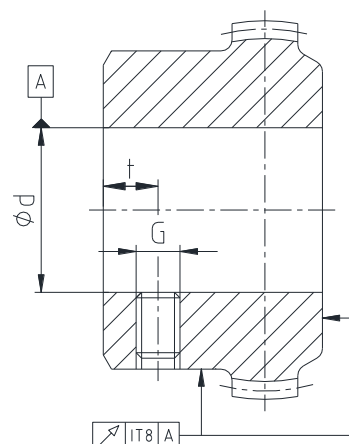


Illustration 8: Concentricity and axial runout



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.

**Table 6: Setscrews DIN EN ISO 4029**

Size	48 / T 48	T 55	65 / T 65	T 70	80 / T 80	100 / T 100	125 / T 125
Dimension G	M8	M8	M10	M10	M10	M12	M16
Dimension t	10	10	15 / 20 <sup>1)</sup>	15	20	30	40
Tightening torque $T_A$ [Nm]	10	10	17	17	17	40	80

1) Length of hub 55 mm t = 15 mm, 70 mm t = 20 mm

**Table 7: Recommended fit pairs acc. to DIN 748/1**

Bore [mm]		Shaft tolerance	Bore tolerance
above	up to		
	50	k6	H7 (KTR standard)
50		m6	

If a feather keyway is intended to be used in the hub, it should correspond to the tolerance ISO JS9 (KTR standard) with normal operating conditions or ISO P9 with difficult operating conditions (frequently alternating torsional direction, shock loads, etc.).

The transmittable torque of the shaft-hub-connection must be reviewed by the customer and is subject to his responsibility.

**4 Assembly****4.4 Assembly of hub**

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



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



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

- Shift the hub (component 2) onto the shaft of the driven side and align accordingly.
- Fasten the coupling hub by tightening the setscrew DIN EN ISO 4029 via a cup point (tightening torque  $T_A$  see table 6).

**4.5 Assembly of spline hub**

We recommend to inspect spline bore and shaft for dimensional accuracy before assembly.

- Shift the hub (component 2) onto the shaft of the driven side and align accordingly.
- Fasten the coupling hub by a proper end plate with a screw.

**4.6 Assembly of clamping hub or clamping hub N**

We recommend to inspect spline bore and shaft for dimensional accuracy before assembly.

- Lightly unscrew the clamping screw or setscrews.
- Shift the hub (component 2) onto the shaft of the driven side and align accordingly.
- Tighten the clamping screw or setscrews at the tightening torques specified in table 8 or 9.

**Table 8: Clamping hub with clamping screws DIN EN ISO 4762**

Size	48 / T 48	T 55	65 / T 65	T 70	80 / T 80	100 / T 100	125 / T 125
Dimension M	M10	M12	M12	M12	M16	M16	M20
Tightening torque $T_A$ [Nm]	49	86	86	86	210	210	410

**Table 9: Clamping hub N with setscrews DIN EN ISO 4028**

Size	T 70	80	100 / T 100	125 / T 125
Dimension $G_1$	M14	M16	M16	M16
Tightening torque $T_A$ [Nm]	70	120	120	120



4 Assembly

4.7 Assembly of the flange

- Shift the flange (component 1) into the centering of the flywheel.
- **Short mounting**  
If you require short mounting, the side with marking 1 must be visible when being mounted (illustration 9).
- **Long mounting**  
If you require long mounting, align the flange such that the marking is visible (illustration 10).



Make sure the alignment of the flange is correct.

**Mounting short version**

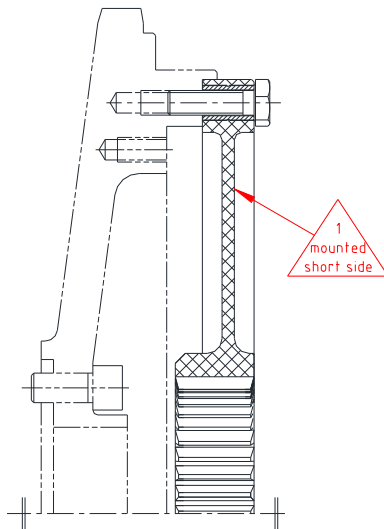


Illustration 9: Alignment of the coupling with short mounting (Example: BoWex® FLE-PA)

**Mounting long version**

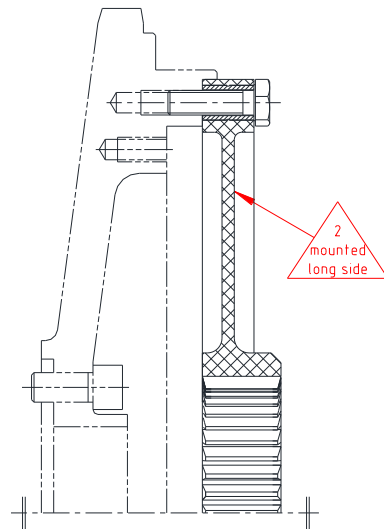


Illustration 10: Alignment of the coupling with long mounting (Example: BoWex® FLE-PA)

- Hand-tighten the flange to the flywheel first.
- Tighten the screws with a suitable torque key at the tightening torques T<sub>A</sub> specified in table 10 or 11.
- Secure the screws against working loose by means of an adhesive (e. g. Loctite 243).



Please observe the manufacturer's instructions regarding the use of adhesives.

Table 10: Screw tightening torques for screwing the flange with nylon connection to the engine flywheel

Size of flywheel acc. to SAE J620d	6 1/2"	7 1/2"	8"	10"	11 1/2"
Screw size	M8		M10		
Tightening torque [Nm]	25		49		
Minimum screw strength	8.8				
Inch screw	5/16 - 18		3/8 - 16		
Tightening torque [Nm]	24		42		
Minimum screw strength	5				

Please observe protection note ISO 16016.	Drawn:	2018-09-06 Pz/Hk	Replacing:	KTR-N dated 2018-08-30
	Verified:	2018-09-06 Pz	Replaced by:	

**4 Assembly****4.7 Assembly of the flange****Table 11: Screw tightening torques for screwing the flange with steel connection to the engine flywheel**

Size of flywheel acc. to SAE J620d	6 1/2"	7 1/2"	8"	10"	11 1/2"	14"
Screw size	M8		M10			M12
Tightening torque [Nm]	35		69			120
Minimum screw strength	10.9					
Inch screw	5/16 - 18		3/8 - 16			1/2 - 13
Tightening torque [Nm]	33		62			150
Minimum screw strength	8					

- Shift the power packs in axial direction until the mounting dimension  $l_3$  or  $l_7$  (table 1 or 3) has been achieved.



**With the assembly please make sure that the spline of the hub is fully covered by the internal spline of the flange. (Please observe mounting dimensions  $l_3$  or  $l_7$ .) Disregarding this advice may cause damage to the coupling.**

- If the power packs are already firmly assembled, shifting the hub axially on the shaft allows for setting the distance dimension.

**4.8 Displacements - alignment of the couplings**

The **BoWex**® flange couplings compensate for positional deviations of the machine components to be connected up to the data specified in table 12.

With alignment, the radial and angular displacement should be kept as small as possible, because the service life is increased in this way if the operating conditions are otherwise maintained.

The **BoWex**® flange coupling has to be aligned from the coupling hub on the shaft side towards one of the machined surfaces of the flywheel or machine.



**In order to ensure a long service life of the coupling, the shaft ends have to be accurately aligned. Please 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 is its service life.**

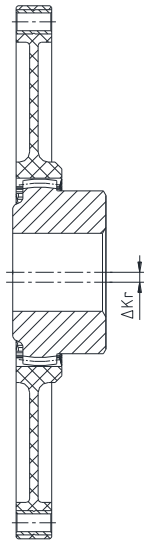
**Please note:**

- The displacement figures specified in table 12 are maximum figures which must not arise in parallel. If radial and angular displacements arise at the same time, the permissible displacement values may only be used proportionally (see illustration 12).
- The displacement figures specified are general standard figures that apply up to an ambient temperature of 80 °C, ensuring a sufficient service life of the **BoWex**® coupling.
- Please inspect with a dial gauge, ruler or feeler gauge whether the permissible displacement figures specified in table 12 can be observed.

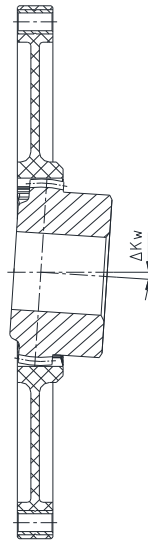


4 Assembly

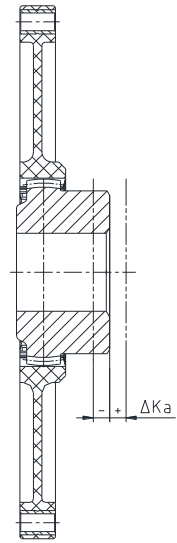
4.8 Displacements - alignment of the couplings



Radial displacement



Angular displacement



Axial displacement

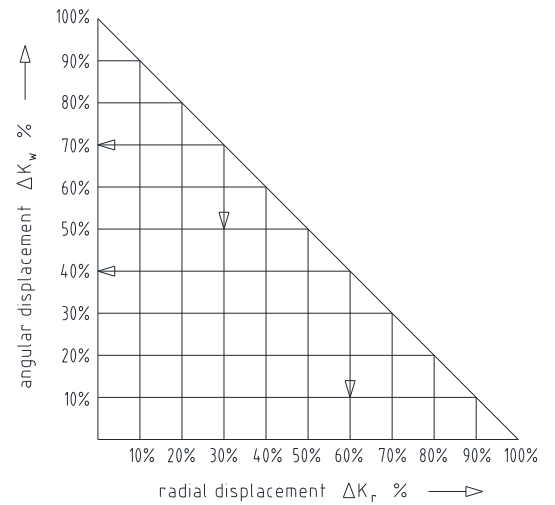
Illustration 11: Displacements

Examples of the displacement combinations specified in illustration 12:

Example 1:  
ΔKr = 30 %  
ΔKw = 70 %

Example 2:  
ΔKr = 60 %  
ΔKw = 40 %

Illustration 12:  
Combinations of displacement



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

## 4 Assembly

### 4.8 Displacements - alignment of the couplings

**Table 12: Displacement figures**

Size	Perm. axial displacement $\Delta K_a$ [mm]	Perm. radial displacement $\Delta K_r$ [mm]	Perm. angular displacement $\Delta K_w$ [degree]
Type FLE-PA			
48	± 2	0.3	± 0.9
T 48	± 1	0.3	± 0.7
T 55	± 2	0.3	± 0.7
65	± 2	0.3	± 0.7
T 65	± 1	0.3	± 0.5
T 70	± 2	0.3	± 0.6
80	± 2	0.3	± 0.6
T 80	± 1	0.3	± 0.4
100	± 2	0.4	± 0.6
T 100	± 1	0.4	± 0.4
125 / T 125	± 2	0.5	± 0.4 / ± 0.3
Type FLE-PAC			
48 / T 48	± 3	0.3	± 0.9 / ± 0.7
T 55	± 3	0.3	± 0.7
65 / T 65	± 3	0.3	± 0.7 / 0.5
80 / T 80	± 3	0.3	± 0.6 / ± 0.4
100 / T 100	± 3	0.4	± 0.6 / ± 0.4
125 / T 125	± 3	0.5	± 0.4 / ± 0.3

## 5 Start-up

Before start-up of the coupling, please inspect the tightening of the setscrews in the hubs, the alignment and the distance dimension  $l_3$  or  $l_7$  and adjust, if necessary, and also inspect all screw connections for the tightening torques specified.

Finally the coupling protection against accidental contact must be fitted. It is required in accordance with DIN EN ISO 12100 (Safety of Machinery) and must protect against

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

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

The cover must be electrically conductive and included in the equipotential bonding. The cover may only be taken off with standstill of the unit.

During operation of the coupling, please 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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**6 Breakdowns, causes and elimination**

The below-mentioned failures can result in a use of the **BoWex®** coupling other than intended. In addition to the specifications given in these operating and assembly instructions please 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.

General failures with use other than intended:

- Important data for the coupling selection were not forwarded.
- The calculation of the shaft-hub-connection was not considered.
- Coupling components with damage occurred during transport are assembled.
- If the heated hub is assembled, the permissible temperature is exceeded.
- The clearance of the components to be assembled is not coordinated with one another.
- Tightening torques have been fallen below/exceeded.
- Components are mixed up by mistake/assembled incorrectly.
- No original KTR components (purchased parts) are used.
- Old/already worn out flanges or flanges stored for too long are used.
- Maintenance intervals are not observed.

Breakdowns	Causes	Elimination
Different operating noise and/or vibrations occurring	Micro friction by faulty alignment on the spline of the flange	1) Set the unit out of operation 2) Eliminate the reason for the misalignment (e. g. loose foundation bolts, breaking of the engine mount, thermal expansion of unit components, modification of the installation dimension $l_3$ and $l_7$ of the coupling)
	Screws for axial fastening of hubs working loose	1) Set the unit out of operation 2) Inspect alignment of coupling 3) Tighten the screws to fasten the hubs and secure against working loose
Fracture of flange/spline	Fracture of flange/spline caused by high dynamic energy/overload	1) Set the unit out of operation 2) Disassemble the coupling and remove remainders of the flange 3) Inspect coupling components and replace coupling components that are damaged 4) Insert flange, assemble coupling components 5) Find out the reason for overload
	Operating parameters do not meet 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 flange 3) Inspect coupling components and replace coupling components that are damaged 4) Insert flange, assemble coupling components 5) Instruct and train the service staff



**6 Breakdowns, causes and elimination**

Breakdowns	Causes	Elimination
Excessive wear on the spline of flange	Vibrations of drive	<ol style="list-style-type: none"> <li>1) Set the unit out of operation</li> <li>2) Disassemble the coupling and remove remainders of the flange</li> <li>3) Inspect coupling components and replace coupling components that are damaged</li> <li>4) Insert flange, assemble coupling components</li> <li>5) Inspect alignment, adjust if necessary</li> <li>6) Find out the reason for vibrations</li> </ol>
	Ambient/contact temperatures which are too high for the nylon flange, max. permissible e. g. 130 °C	<ol style="list-style-type: none"> <li>1) Set the unit out of operation</li> <li>2) Disassemble the coupling and remove remainders of the flange</li> <li>3) Inspect coupling components and replace coupling components that are damaged</li> <li>4) Insert flange, assemble coupling components</li> <li>5) Inspect alignment, adjust if necessary</li> <li>6) Inspect and adjust ambient/contact temperature</li> </ol>
	e. g. contact with aggressive liquids/oils, ozone influence, too high/low ambient temperatures etc. causing physical modification of the flange	<ol style="list-style-type: none"> <li>1) Set the unit out of operation</li> <li>2) Disassemble the coupling and remove remainders of the flange</li> <li>3) Inspect coupling components and replace coupling components that are damaged</li> <li>4) Insert flange, assemble coupling components</li> <li>5) Inspect alignment, adjust if necessary</li> <li>6) Make sure that further physical modifications of the flanges are excluded</li> </ol>

**7 Disposal**

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

- **Metal**  
Any metal components have to be cleaned and disposed of by scrap metal.
- **Nylon materials**  
Nylon materials have to be collected and disposed of by a waste disposal company.

**8 Spares inventory, customer service addresses**

A basic requirement to ensure the readiness for use 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 at [www.ktr.com](http://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.**

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