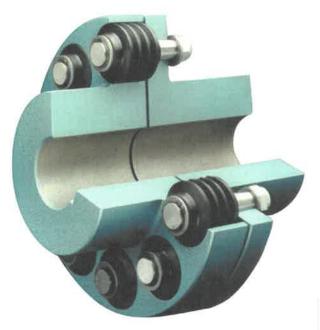




Operation manual KWN 32017 Edition i

# Operation manual Flexible pin type coupling according to KWN 22014





Author:	DiplIng V. Hausdorf	24.01.2005	gez. V. Hausdorf
Approved:	DrIng. Ch. Spensberger	. Spensberger 24.01.2005 gez. DrIng. Ch. Spen	
	Name	Date	Signature

### KWD Kupplungswerk Dresden GmbH

Löbtauer Straße 45 - D - 01159 Dresden Postfach 270144 - D - 01172 Dresden Tel.: + 49(0)351 - 4999-0 Fax: + 49(0)351 - 4999-233

kwd@kupplungswerk-dresden.de http://www.kupplungswerk-dresden.de





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## Manufacturer's Declaration

Product:

Flexible pin type couplings

BOKU-N according to KWN 22014



In accordance with the EU Machine Directive 98/37/EG, Appendix IIB

we

#### KWD Kupplungswerk Dresden GmbH Löbtauer Straße 45 - D – 01159 Dresden P.O. Box 270144 – D – 01172 Dresden

hereby declare, that the

Flexible pin type couplings BOKU-N according to KWN 22014

described in this operation manual are intended for installation in a machine. Commissioning of the machine is prohibited until it is established whether the machine, in which these components are fitted complies with the EU directive (original issue 89/392/EWG, including all subsequent amendments).

All harmonized standards published by the EU Commission in the Official Gazette of the European Union – insofar as they apply to this product – have been taken into consideration.

Date/ Manufacturer's signature

04.01.2005 signed C. Spensberger





## **Safety and Information Symbols**



Danger! Danger of injury to personnel



Attention! Follow instructions

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#### 1. General and Safety instructions

This Operation Manual (OM) is a constituent part of the scope of delivery of the coupling. Only the observance of all instructions and information will guarantee trouble-free operation of the coupling within the specified parameters. The coupling must be used only under conditions specified in the specification sheets (specification leaflet). Any deviation from this requires prior consultation of the manufacturer as well as his approval.

The following general safety instructions must be observed at all times when working on the coupling:

- The coupling may only be serviced, repaired or operated by authorized and properly trained personnel.
- All work must be performed according to the principle "safety first".
- As a matter of principle, any work on the coupling may only be performed at a complete standstill. The motive power aggregate must be secured against accidental operation (for example, by interrupting energy supply). A warning sign must be affixed to the switch-on device when work is performed on the coupling.
- The motive power aggregate must be shut down immediately if changes are observed on the coupling during operation.
- The coupling must be secured against accidental contact by means of appropriate protective equipment.

Due to the emergency running properties the coupling has, metal contact may cause sparks to form in the event of the flexible transmission elements seizing up. This characteristic must be taken into account by the operator or project planners if the coupling is to be used in potentially-explosive atmospheres or machinery. To eliminate the risk of explosion, care must be taken that the permissible extent of wear is not exceeded, that the maximum permissible deviations are observed, and overloading is avoided.

#### 2. Transport and Storage

The contents of the delivery are listed in the delivery papers. The delivery must be checked for completeness upon receipt. Possible transport damage and incomplete delivery must be reported immediately in writing. The coupling is delivered in individual components or subassemblies ready for installation.

During transport the couplings must be secured against impact, shock and contact damage. For transport or lifting of the coupling and for installation, non-metallic load suspension devices with a sufficient safety margin must be used exclusively.



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The couplings must be stored indoors in enclosed and dust-free storerooms, with the exclusion of harmful influences, such as condensates, excessive humidity (< 70%) and ozone.



In case of possible damage the coupling may not be put into operation.

The couplings are delivered with temporary corrosion protection, allowing, under the above described conditions, storage of up to 6 months from the date of delivery.

#### 3. Function

Flexible bolt couplings are torsionally-elastic couplings which even out radial, axial and angular misalignments in the shafts to be connected. The torque is transmitted through the flexible buffers and the corresponding buffer bore holes in the buffer section. The service life of the buffer depends on the type of drive, the temperatures at the coupling and the existing misalignments.

The couplings are supplied with the individual buffer section and in

- model A: the bolt section is complete with buffer and bolts
- model P: the brake drum is complete with buffer and bolts
- model S: the brake disk is complete with buffer and bolts
- model H: the hub and spacer are complete with buffer and bolts

#### 4. Assembly

The fitting position and the arrangement of the coupling halves on the driving or the driven side is optional. However, in the case of vertical fitting the appropriate measures must be taken to secure both coupling halves axially.





Flexible bolt couplings must be provided with a cover against unintentional touch.

#### 4.1. Mounting the coupling parts

A distinction must be made here between models A, P, S1, S2 and model H. The following applies to all designs:

- remove dirt and preservative residue from the bore hole and groove in the coupling parts;
- the coupling parts may be heated to facilitate assembly (remove buffers and bolts beforehand);



- never force the coupling parts on by hitting them
- in nominal size 1000 and larger, the bolts and buffer parts or brake drums (model P) and the hubs (model H) may be provided with threading to facilitate removal

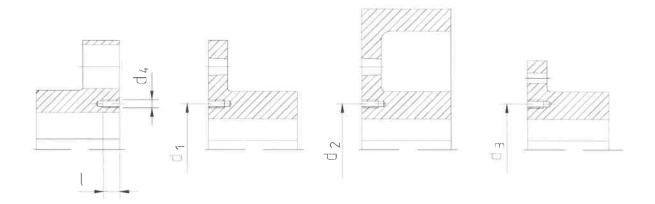
(see picture 1 or table 1 for position and size of tapped holes.)

Table 1

	Nominal size										
	1000	1600	2500	4000	6300	10000	16000	25000	40000	63000	100000
d1	150	183	205	230	258	273	336	384	432	432	480
d2	176	176									
d3	150	183	205	230	258	273					
d4	М	20	M	24	M 30						
	30		35		40						



#### Picture 1



#### Features peculiar to model H:

Spacer and hub can be separated by loosening the screwed connection. The buffer section and the hub must be mounted as described above. The spacer can now be screwed to the hub again. The tightening torque's are listed in table 2.

Table 2

Nominal size	4	25	100	250	630	1600	4.000	6300
	6,3	40	160	400	1000	2500		10000
	10	63						
	16							
Tightening torque (Nm)	14	34	68	117	285	558	961	1.050

#### 4.2. Aligning the coupling elements

Having mounted the coupling elements. the axial, radial and angular alignment of the coupling must be attained. Different methods can be used depending on the degree of accuracy necessary. In general however the extent of the remaining alignment error has a decisive influence on the service life of the flexible components. Once the coupling has been aligned, the buffers and bolts must be mounted again. The nuts must be tightened with the torque's shown in table 3.

Table 3

Nominal size	Tightening Torque			
	Type A, P, H	Type S1, S2		
4; 6,3	2,4	_		
10	4	-		
16 - 63	9,8	43		
100	36	85		
160, 250	36	172/187		
400; 630	90	340/372		
1000, 1600	308	1053/1142		
2.500	400	2.150		
4000 - 100000	400	-		

The permissible axial or angular misalignment (K w) can be checked by means of the maximum and minimum measurements of e1, the permissible radial misalignment by means of the measurement Kr. The permissible values can be taken from table 4.

Table 4

Nominal size	Maximum dim. e 1	Minimum dim. e 1	Kr	Kw'
4; 6,3	2,5	0,5	0,2	0,5; 0,6
10	3	1	0,3	0,7
16; 25; 40; 63	4	2	0,4	0,8; 0,9; 0,9;1,1
100	5,5	1,5	0,5	1,4
160; 250	6	2	0,7	1,7; 1,9
400; 630	7	3	0,8	2,1; 2,4
1000; 1600	9	5	1,1	2,7; 3,2
2.500	15	7	1,3	3,1
4000; 6300; 10000	22	14	1,5	2,7;2,9; 3,4

Values for K r and K w' are valid for a speed of 600 rpm up to 1500 rpm

#### 4.2.1. Aligning with a hairline gauge, feeler gauge or measuring wedge

At 3 points each 120° away from the others, check the actual distance "e1" between the buffer and the bolt part using a measuring wedge or feeler gauge and then align them to an even measurement. The actual measurement of "e1" should lie within the limits given in table 4. the shaft ends are aligned by acquiring the same measurement "e1" and resting the hairline gauge in the light gap on both sides.



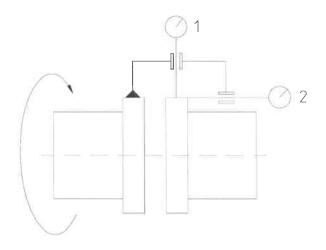
#### 4.2.2. Aligning by means of a dial gauge and instrument

If the demands are higher with respect to the remaining positional deviation after alignment, the alignment can be attained by means of a dial gauge and instrument as shown in picture 2. While aligning, turn the coupling part to which the instrument is fixed and observe the dial gauge's needle. The positional tolerances can be found in table 4.

dial gauge 1: half difference between the maximum and the minimum deflections of the needle corresponds to Kr

dial gauge 2: difference corresponds to Kw'

#### Picture 2



#### 5. Commissioning



Improper use and modifications of the coupling that have not been approved by KWD will render the manufacturer's warranty null and void. This also applies to the use of spare parts other than original spare parts by KWD.



Original KWD spare parts must be used exclusively.

Check and, if required, retighten all screw connections prior to putting the coupling into operation.



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Finally, protection against accidental contact must be provided. If there is a change in the noises coming from the coupling during operation or it starts to vibrate. The drive must be turned off and the cause eliminated.



If no cause of the noise or vibration is found, consult the customer service of the manufacturer!

The following visual checks must be performed during commissioning:



- Check that rotating parts do not contact anything
- Check for unusual noise
- Refer Trouble Shooting for instructions on how to eliminate the causes of possible operating trouble.

#### 6. Maintenance and repair

Maintenance on the flexible bolt coupling is restricted to checking the extent of wear in the buffers and the actual misalignment. If the wear is extensive, (see table 5 for measuring wear) or if the buffers are damaged, they must be replaced by a complete set.

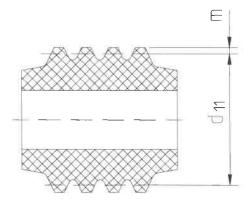




Tabelle 5

Nenngröße	Maß m	d 11
6	1,35	11
8	2,85	14
10	3,25	18
14	3,2	28
16	4,6	30
22	7	40
30	6,8	60
42	9	85
65	13,5	120

In model S2 the brake disk can be removed radially without moving the coupling parts. The buffers and the bolts must be removed first and the two locking screws loosened.

#### 6.1. Dismantling bolts type A,P,H

The bolts are fitted with a thread for dismounting. By using these threads the dismounting of the bolt can be facilitated. Size and length of the thread are given in the following table 6.

Table 6

Bolt Nominal size	Thread	Length
6	-	-
- 8	-	-
10	-	-
14	M8	12
16	M8	12
22	M8	12
30	M8	12
42	M12	20
65	M24	30





#### 6.2. Special features according to type H

It is possible to remove the spacer from this model without moving the coupling parts. The following steps must be taken:

- 1. Remove the buffers and bolts.
- 2. Loosen the screwed connection between the spacer and the hub.
- 3. Move the spacer towards the buffer part axially.
- 4. Take out the spacer radially.

#### 7. Spare parts

Specified spare parts for flexible bolt couplings: buffers and bolts. The size and quantity can be found in the product standard.