

 KTR Kupplungstechnik GmbH D-48407 Rheine	ROTEX® mounting instructions design 009 (BKN)	KTR-N 40213 E sheet: 1 edition: 2

The **ROTEX® BKN** is a torsionally flexible jaw-type coupling with shear pins. It is able to compensate for shaft displacement and to protect the following drive components against destruction.

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.

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Safety and Advice Hints



DANGER ! Danger of injury to persons.



CAUTION ! Damages on the machine possible.



ATTENTION ! Pointing to important items.

General Hints to 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.

Proper Use

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

- have carefully read through the mounting instructions and understood them
- and if you are authorized and have proper skills

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

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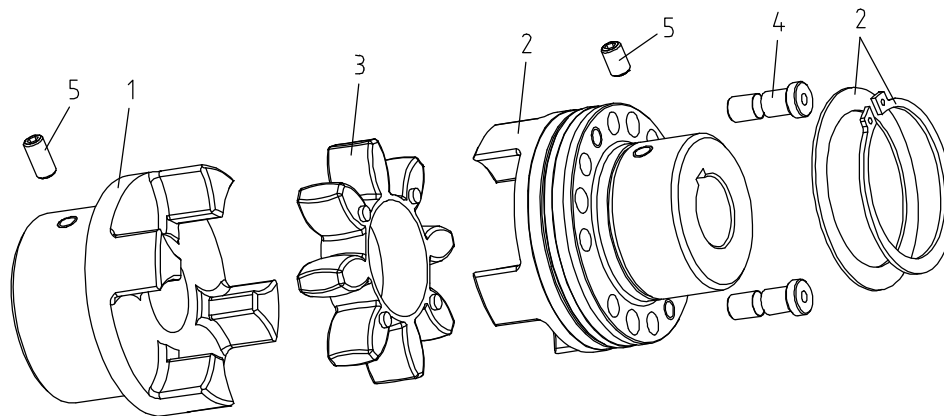
The shear pin coupling is delivered in preassembled condition. Before assembly the coupling has to be controlled for completeness.

Components of ROTEX® BKN design No. 009

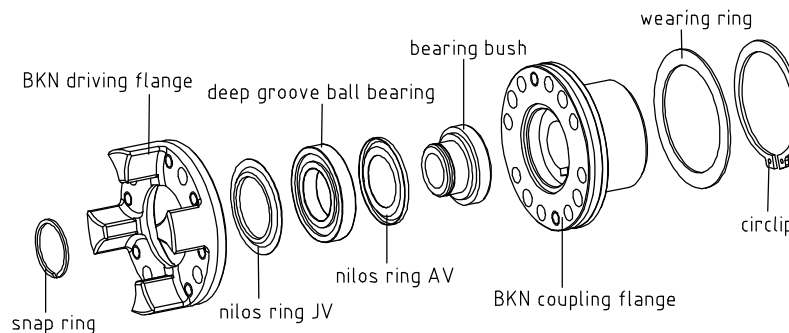
Standard - Zahnkränze

component	quantity	designation	spider hardness (Shore)	marking (colour)
1	1	hub	92 Sh A	yellow
2	1	subassembly BKN coupling and driving flange	95/98 Sh A	red
3	1	spider	64 Sh D-F	natural white with green marking of teeth
4	2	shear pin ¹⁾		
5	2	grub screw DIN 916		

1) Larger amount of shear pins dependent on the occurring ultimate moment.



picture 1: ROTEX® BKN



picture 2: subassembly BKN coupling and driving flange

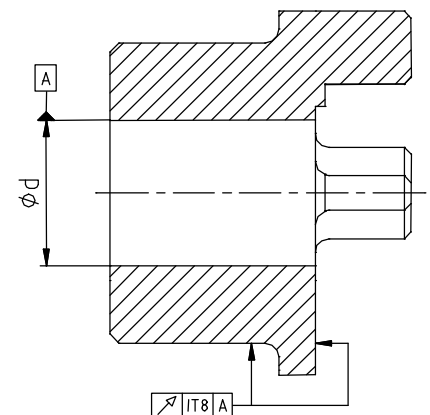
Mounting Hint



DANGER !

The maximum permissible bore diameters d_{1max} and d_{2max} must not be exceeded. If these figures are disregarded, the coupling may tear. Rotating particles may cause serious danger.

- If the customer machines the hub or the coupling flange bore, please make sure that the true and axial running (see picture 3) is maintained.
- Please make absolutely sure to observe the figures for d_{1max} and d_{2max} .
- Carefully align the hubs when the finish bores are brought in.
- Please provide for a setscrew or an end plate for the axial fastening of the hubs.



picture 3: concentric running and axial running

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Assembly of the coupling



ATTENTION !

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

Heating the hub and the BKN coupling flange 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 !

Leaked bearing grease must be renewed after the assembly.

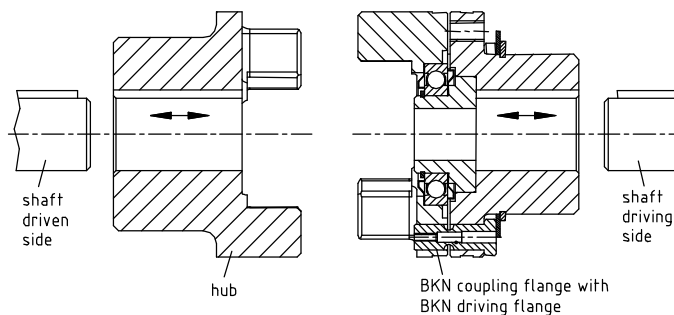
Axial alignment



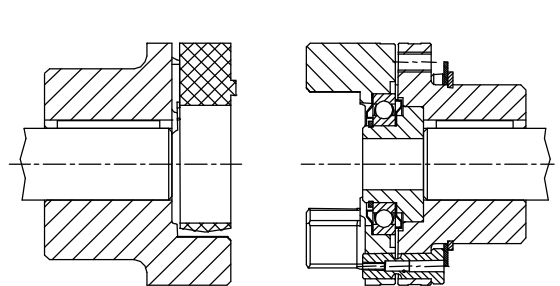
CAUTION !

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

- Assemble the BKN coupling flange with assembled BKN driving flange and shear pins onto the shaft of the driving side and the hub onto the shaft of the driven side (see picture 4). The inside of the parts must finish flush with the fore-parts of the shaft.
- Secure the hub and the BKN coupling flange by tightening the grub screws DIN 916 with cup point or by an end plate.
- Insert the spider into the cam part of the hub (see picture 5).
- Push the machines to be coupled together until reaching the E-dimension.



picture 4: assembly of the BKN coupling flange and the hub



picture 5: assembly of the spider



CAUTION !

After putting the coupling into operation, the wear of the spider must be checked at usual intervals.

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Displacements

The displacement figures shown in table 1 offer sufficient safety to compensate for environmental influences like, for example, heat expansion or lowering of foundation.

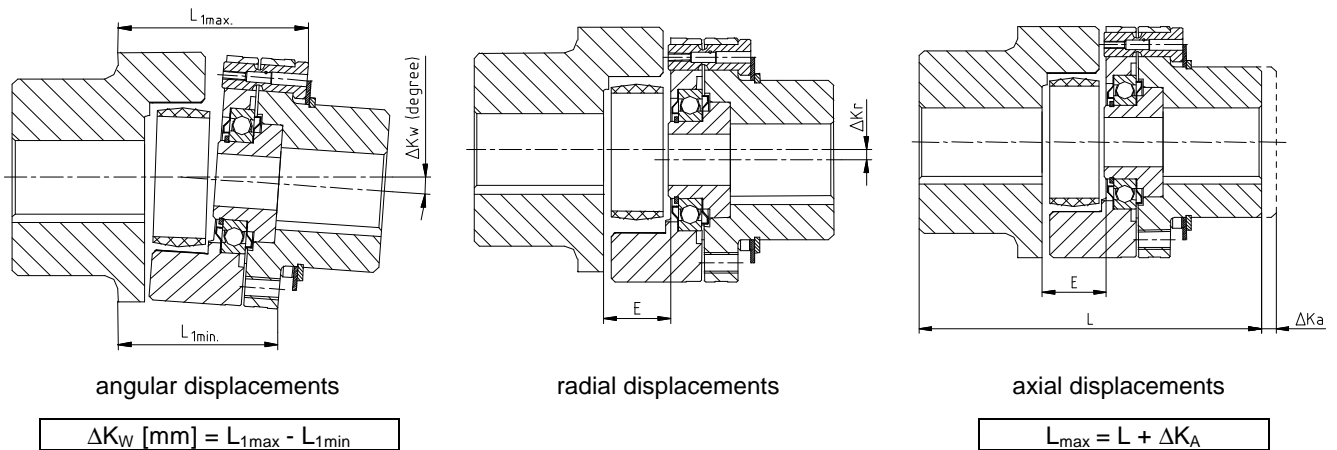


CAUTION !

In order to ensure a long lifetime of the coupling, the shaft ends have to be aligned accurately. Please absolutely observe the displacement figures indicated (see table 1). If the figures are exceeded, the coupling is damaged. When exceeding the figures, the ultimate moment of the shear pins is reduced by additional radial forces and leads to a premature reaction of the overload safety device.

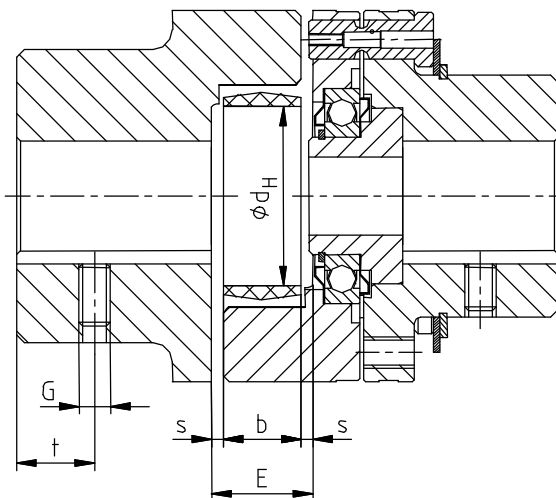
Please note:

- The displacement figures mentioned in table 1 are maximum figures which must not arise in parallel. If radial and angular displacement arises at the same time, the permissible displacement values may only be used in part.
- Please check with a dial gauge, ruler or feeler whether the permissible displacement figures of table 1 can be observed.

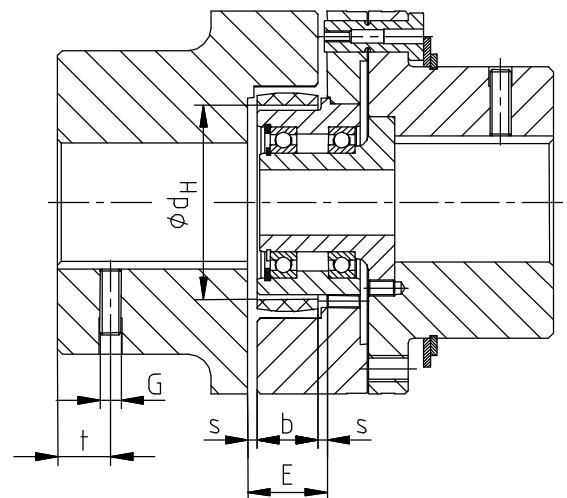


picture 6: displacements

Technical Data



picture 7: coupling installation size 24 to size 75



picture 8: coupling installation size 90 to size 180

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Technical Data

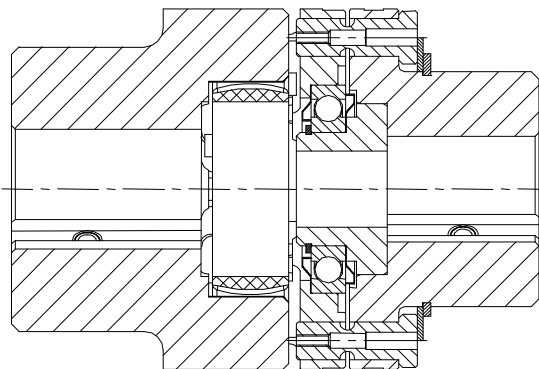
Table 1:

coupling type	24	28	38	42	48	55	65	75	90	100	110	125	140	160	180
installation dimensions															
distance dimension E	18	20	24	26	28	30	35	40	45	50	55	60	65	75	85
dimension s	2	2,5	3	3	3,5	4	4,5	5	5,5	6	6,5	7	7,5	9	10,5
dimension b	14	15	18	20	21	22	26	30	34	38	42	46	50	57	64
dimension d _H	27	30	38	46	51	60	68	80	100	113	127	147	165	190	220
quantity z of the shear pins - standard ¹⁾	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
thread for grub screws															
dimension G	M5	M6	M8	M8	M8	M10	M10	M10	M12	M12	M16	M16	M20	M20	M20
dimension t	10	15	15	20	20	20	20	25	30	30	35	40	45	50	50
tightening torque T _A	2	4,8	10	10	10	17	17	17	40	40	80	80	140	140	140
displacements															
max. axial displacement ΔK _a [mm]	1,4	1,5	1,8	2,0	2,1	2,2	2,6	3,0	3,4	3,8	4,2	4,6	5,0	5,7	6,4
max. radial displacement with n=1500 1/min ΔK _r [mm]	0,11	0,13	0,14	0,16	0,18	0,19	0,21	0,24	0,25	0,26	0,28	0,30	0,31	0,32	0,34
max. radial displacement with n=3000 1/min ΔK _r [mm]	0,08	0,09	0,10	0,11	0,13	0,13	0,14	0,16	0,17	0,18	0,19	-	-	-	-
ΔK _w [degree]	0,5	0,5	0,5	0,5	0,6	0,6	0,6	0,6	0,6	0,6	0,7	0,7	0,6	0,6	0,6
max. angular displacement with n=1500 1/min ΔK _w [mm]	0,43	0,53	0,68	0,85	1,00	1,15	1,35	1,65	2,15	2,40	2,80	3,25	3,30	3,80	4,50
ΔK _w [degree]	0,4	0,4	0,4	0,4	0,5	0,5	0,5	0,5	0,6	0,6	0,6	-	-	-	-
max. angular displacement with n=3000 1/min ΔK _w [mm]	0,38	0,42	0,55	0,70	0,80	1,00	1,15	1,45	1,80	2,10	2,50	-	-	-	-

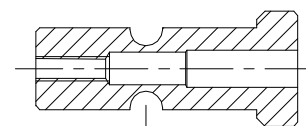
1) Larger amount of shear pins dependent on the occurring ultimate moment.

Overload Safety Device Element for Shear Pins

For the first assembly of the shear pin coupling the shear pins are installed ex works.



picture 9: coupling assembled with BKN shear pins



rated break point
ultimate moment according
to customer specification

picture 10: undamaged BKN shear pin

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Disassembly of the Sheared-Off Shear Pins

- Loosen the circlip and remove the wearing ring from the BKN coupling flange (see picture 11).
- The disassembly of the shear pin half (part 1) is effected by lifting with a screw driver or a similar tool which is set between part 1 and the coupling flange (see picture 12). Part 2 is not disassembled.
- The disassembly of the shear pin half (part 2) is effected with a plain washer and a correspondingly long screw (see table 2) which is screwed into the back half of the shear pin (part 2) (see picture 13). By tightening the screw the shear pin half part 2 is drawn into the front coupling flange until touching the plain washer.
- Afterwards detach the screw in a way that there is a slot between plain washer and coupling flange.
- Lift the shear pin half part 2 with a screw driver or a similar tool which is inserted into the slot between plain washer and coupling flange (see picture 14).

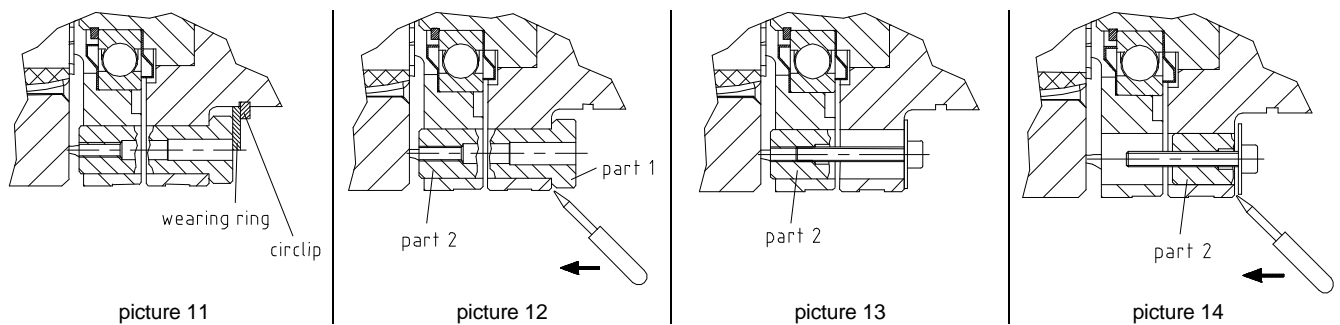


Table 2:

coupling type	24	28	38	42	48	55	65	75	90	100	110	125	140	160	180
cap screw DIN 912 - 12.9	-	M2,5	M3	M3	M3	M3	M4	M4	M5	M5	M6	M8	M8	-	-
screw length	-	20	20	20	20	25	25	35	35	45	45	55	60	-	-

Assembly of New Shear Pins

- Check the shear pin bores in the driving and coupling flange regarding damage and, if necessary, refinish.



CAUTION !

The shear pin bores in the driving and coupling flange must be flush.

- Insert shear pins until limit stop.



CAUTION !

The rated break point of the shear pin must be centrally in the slot between driving and coupling flange.

- Secure the shear pins axially by assembling the wearing ring and the circlip.



ATTENTION !

Clean and degrease the damaged coupling parts and scrap them.

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