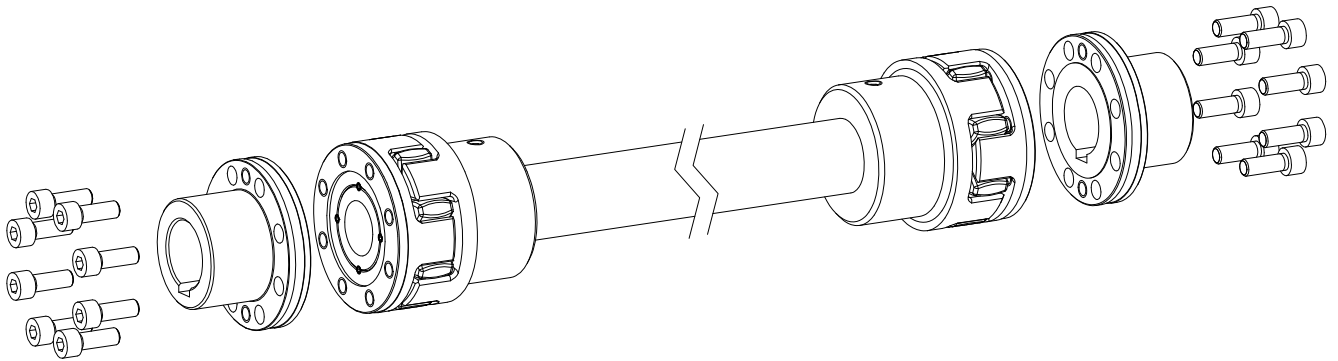




ROTEX®

Torsionally flexible jaw-type couplings
type ZWN and ZWNV
and their combinations



ROTEX® is a torsionally flexible jaw coupling. It is able to compensate for shaft displacement caused by, as an example, inaccuracies in production, heat expansion, etc.
The double-cardanic arrangement of the coupling allows to compensate for bigger radial displacements.

- Type ZWN is intended for horizontal assembly only.
- Type ZWNV is intended for vertical assembly only.

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1 Technical Data

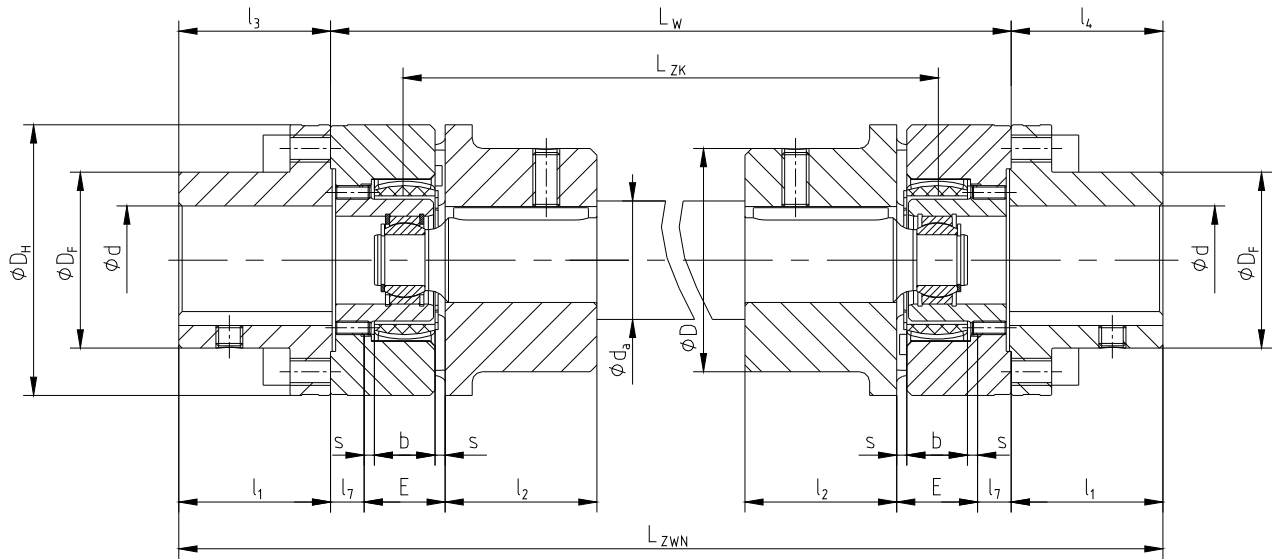


Illustration 1: dimensional drawing (example: type ZWN)

Table 1: Dimensions ZWN and ZWNV

Size	Finish bore $d_{max.}$ [mm]	Spider rated torque [Nm] ¹⁾			Dimensions [mm]				
		92 Sh A	98 Sh A	64 Sh D	D _H	D _F	D	l ₁ ; l ₂	E
24	24	35	60	75	55	36	55	30	18
28	28	95	160	200	65	42	65	35	20
38	38	190	325	405	80	52	66	45	24
42	41	265	450	560	95	62	75	50	26
48	48	310	525	655	105	70	85	56	28
55	55	410	685	825	120	80	98	65	30
65	65	625	940	1175	135	94	115	75	35
75	75	1280	1920	2400	160	108	135	85	40
90	100	2400	3600	4500	200	142	160	100	45
100	110	3300	4950	6185	225	158	180	110	50
110	125	4800	7200	9000	255	178	200	120	55
125	145	6650	10000	12500	290	206	230	140	60
140	165	8550	12800	16000	320	235	255	155	65

Size	Dimensions [mm]					Cap screws DIN EN ISO 4762 – 12.9			
	s	b	l ₃ ; l ₄	l ₇	L _{ZWN}	d _a	MxI	z ²⁾	T _A [Nm]
24	2,0	14	30,5	8	L _{ZWN} = L _W + 2 x l ₃	25	M5x16	8	10
28	2,5	15	35,5	10		25	M6x20	8	17
38	3,0	18	45,5	10		35	M8x22	8	41
42	3,0	20	51,0	12		35	M8x25	12	41
48	3,5	21	57,0	12		45	M8x25	12	41
55	4,0	22	66,0	16		45	M10x30	8	83
65	4,5	26	76,0	16		50	M10x30	12	83
75	5,0	30	86,5	19		65	M12x40	15	120
90	5,5	34	101,5	20		75	M16x40	15	295
100	6,0	38	111,5	25		85	M16x50	15	295
110	6,5	42	122,0	26		95	M20x50	15	580
125	7,0	46	142,0	30		110	M20x60	15	580
140	7,5	50	157,5	34		130	M20x60	15	580

1) maximum torque of the coupling T_{Kmax.} = rated torque of the coupling T_{KN} x 2

2) each flange connection

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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 ROTEX® catalogue).

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

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

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



2 Hints

2.5 Proper Use

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

- 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 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 **ROTEX® ZWN and ZWNV** 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 spiders (elastomers) remain unchanged for up to 5 years in case of appropriate 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 below 65%.

4 Assembly

The coupling is generally delivered in assembled/pre-assembled condition. Before assembly the coupling has to be controlled for completeness.

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4 Assembly

4.1 Components of Couplings

Components of ROTEX®, type ZWN and ZWNV

Component	Quantity	Designation
1	2	Coupling flange
2	1	ZWN or ZWNV spacer with driving flange N design A (2 pieces) and spiders (2 pieces)
3	see table 1	Cap screws DIN EN ISO 4762
4	2	Setscrew DIN EN ISO 4029

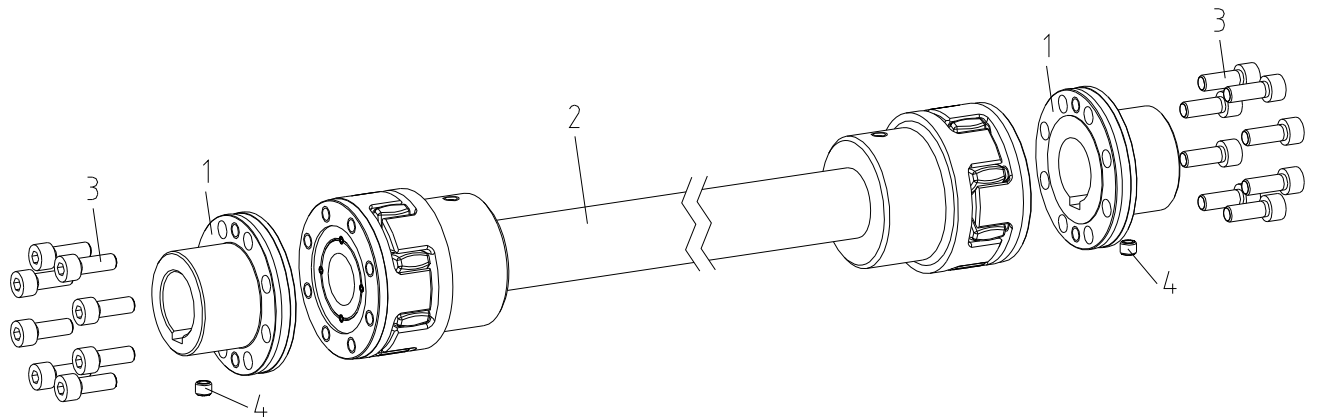





Illustration 2: ROTEX® type ZWN and ZWNV

Features of the standard spiders

Spider hardness (Shore)	92 Shore-A	95/98 Shore-A	64 Shore-D
	T-PUR®	T-PUR®	T-PUR®
Marking (colour)			

4.2 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 not observed, the coupling may tear. Rotating particles may cause serious danger.

- Bores machined by the customer have to observe concentric running or axial running, respectively (see illustration 3).
- Please make absolutely sure to observe the figures for d_{max} .
- Carefully align the coupling flange when the finish bores are brought in.
- Please use a set screw or an end plate to axially fasten the coupling flanges.

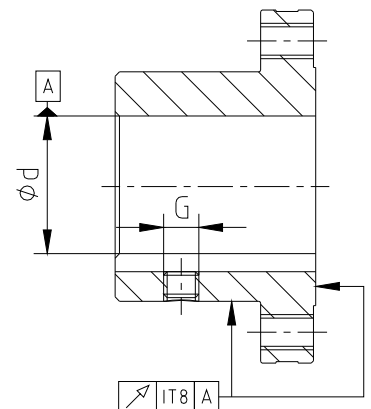


Illustration 3: concentric running and axial running

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4 Assembly

4.2 Hint Regarding the Finish Bore



CAUTION!

The buyer 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 2: setscrew – DIN EN ISO 4029

Size	24	28	38	42	48	55	65	75	90	100	110	125	140
Dimension G	M5	M8	M8	M8	M8	M10	M10	M10	M12	M12	M16	M16	M20
Tightening torque T_A [Nm]	2	10	10	10	10	17	17	17	40	40	80	80	140

4.3 Assembly of the Coupling Flanges



ATTENTION!

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

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



DANGER!

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



CAUTION!

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

- Assemble the coupling flanges onto the shaft of driving and driven side (see illustration 4).
- The internal sides of the coupling flanges must occlude flushly with the faces of the shafts.
- Move the power packs in axial direction until the dimension L_w is achieved.
- Fasten the coupling flanges by tightening the setscrews DIN EN ISO 4029 with cup point or by an end disc (tightening torque see table 2).

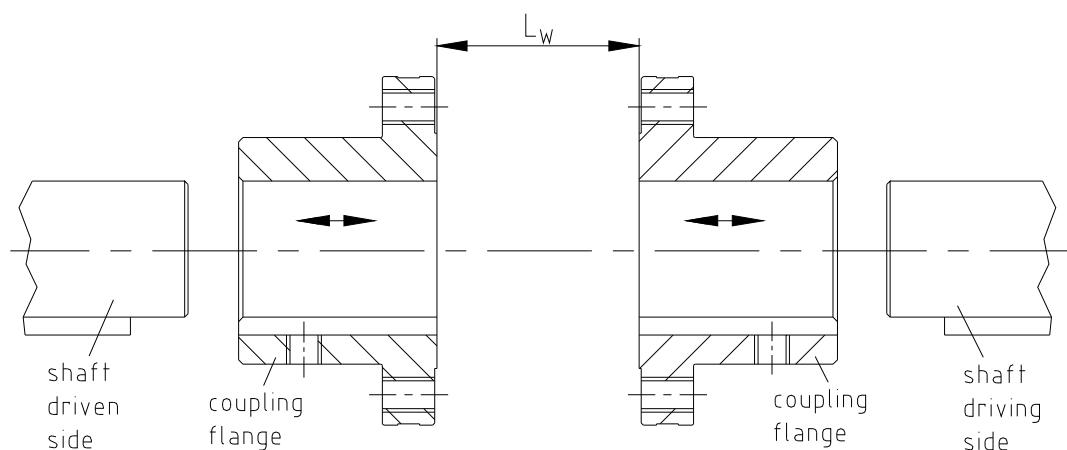


Illustration 4: assembly of the coupling flanges

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4 Assembly

4.4 Assembly of the Type ZWN

- Insert the pre-assembled intermediate shaft between the coupling flanges (see illustration 5).
- At first hand-screw the parts. The screws have to be tightened with a suitable torque wrench to the tightening torques T_A indicated in table 1.
- Center the spiders between the driving flange and the hub and check the dimension E and s (see illustration 1 and table 1).

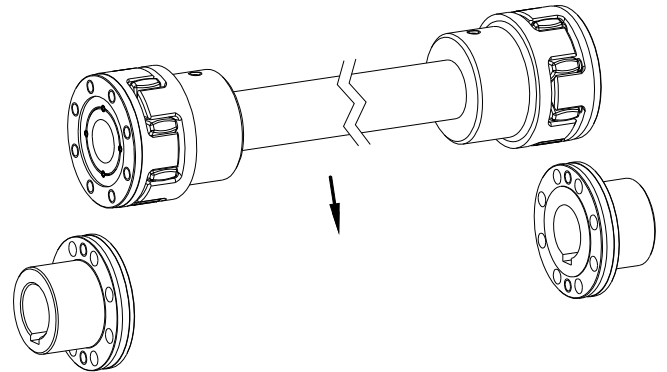


Illustration 5: assembly of the ZWN spacer

4.5 Assembly of the Type ZWNV

- Insert the pre-assembled intermediate shaft between the coupling flanges (see illustration 6).



CAUTION!
Please make sure that the axial joint bearing is at the bottom with the assembly.

- At first hand-screw the parts. The screws have to be tightened with a suitable torque wrench to the tightening torques T_A indicated in table 1.
- Center the spiders between the driving flange and the hub and check the dimension E and s (see illustration 1 and table 1).

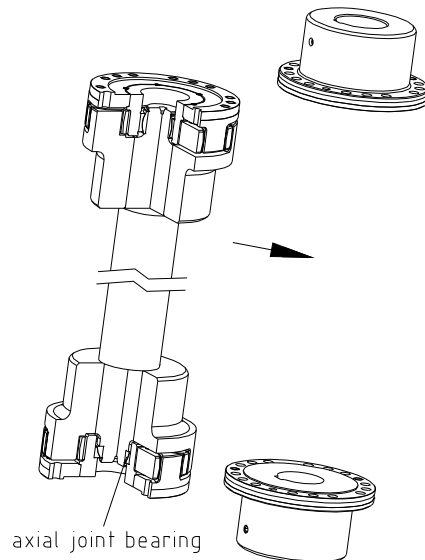


Illustration 6:
assembly of the
ZWNV spacer

4.6 Displacements - Alignment of the Couplings

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



CAUTION!
In order to ensure a long lifetime of the coupling the shaft ends must be accurately aligned. Please absolutely observe the displacement figures indicated (see table 3). If the figures are exceeded, the coupling is damaged.
The more accurate the alignment of the coupling, the longer is its service life.

Please note:

- The displacement figures mentioned in table 3 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 (see illustration 8).
- Please check with a dial gauge, ruler or feeler whether the permissible displacement figures of table 3 can be observed.

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4 Assembly

4.6 Displacements - Alignment of the Couplings

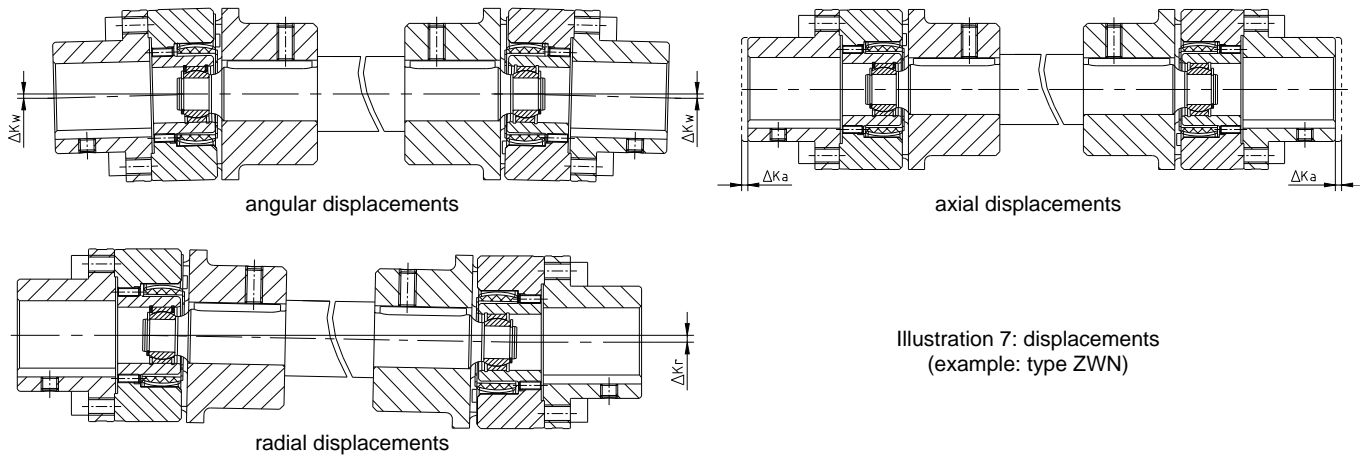


Illustration 7: displacements (example: type ZWN)

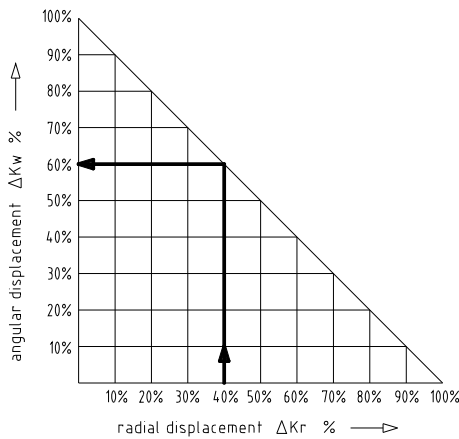


Illustration 8: combinations of displacement

Example:

ROTEX 24 ZWN,
speed 1500 1/min,
coupling length $L_W = 667$ mm
max. radial displacement $\Delta K_r = 10$ mm
max. angular displacement $\Delta K_w = 1^\circ$

with radial displacement of 4 mm = 40 % of the max. radial displacement 10 mm,

results in an allowable angular displacement of 60 % of the max. angular displacement $1^\circ = 0,6^\circ$

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

Table 3: displacement figures for design ZWN

Size	Max. axial displacement ΔK_a [mm]	Max. angular displacement ΔK_w [degree] with n =		Max. radial displacement ΔK_r [mm]
		1500 rpm	3000 rpm	
24	1,4	1,0	0,75	1) Determine the distance from the center of one spider to the center of the other spider L_{ZK} (see illustration 1) $L_{ZK} = L_{ZWN} - 2 \times l_1 - 2 \times l_7 - E$ 2) Determine the maximum radial displacement ΔK_r (see illustration 7) $\Delta K_r = \tan \Delta K_w \times L_{ZK}$
28	1,5			
38	1,8			
42	2,0			
48	2,1			
55	2,2			
65	2,6			
75	3,0			
90	3,4			
100	3,8			
110	4,2			
125	4,6			
140	5,0			



4 Assembly

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 at www.ktr.com.



ATTENTION!

KTR does not assume any liabilities or guarantees regarding the use of spare parts and accessories which are not provided by KTR and for the damages resulting herefrom.

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