

Installation and operating instructions for grid couplings RES ... EYO/ ... ETO

E 06.704



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Important

Before installation and commissioning of the product takes place, these installation and operating instructions must be read carefully. Notes of caution and hazard warnings are to be paid particular attention to.

These installation and operating instructions apply on condition that the product meets the selection criteria for its proper use. The selection and dimensioning of the product are not the subject of these installation and operating instructions.

If these installation and operating instructions are not observed or are interpreted wrongly, this shall invalidate any product liability and warranty of RINGSPANN GmbH; the same also applies in the case that our product is taken apart or changed.

These installation and operating instructions are to be kept in a safe place and must, in the event of onward delivery of our product – be it individually or as part of a machine – be passed on along with the product so that the user has access to them.

Safety information

- The installation and commissioning of our product may only be carried out by trained personnel.
- Repair work may only be performed by the manufacturer or by authorised RINGSPANN agencies.
- If there is suspected malfunctioning, the product, or the machine into which it is built, must be taken out of operation immediately and RINGSPANN GmbH or an authorised RINGSPANN agency is to be informed.
- The power supply is to be switched off during work on electrical components.
- Rotating parts must be secured by the buyer against unintentional touching.
- In the case of supplies made to a foreign country, the safety regulations applicable in that country are to be taken into consideration.

German original version!

If there should be any discrepancies between the German original and versions of these installation and operating instructions in other languages, the German version shall take precedence.

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1. General information

1.1. Function

The main function of the grid coupling consists in transferring the torque of a shaft end to another element. Additionally, the coupling is designed to compensate angular, radial and axial misalignments.

1.2. General safety instructions

Safety takes the highest priority for all works with and on the coupling.

To ensure this, the following safety instructions must be observed:

- During installation and maintenance work, the drive motor must be secured against unintended start-up and the load side against turning back.
- Accidental touching of the coupling during operation must be prevented with a suitable cover or protective device.
- Do not reach into the working area of the coupling during operation.

1.3. Other applicable provisions, standards etc.

The coupling is designed with the help of operating factors based on experience (see RINGSPANN catalogue "shaft coupling"). If the operating conditions (e.g. output, speed) should change, the original design of the coupling must be reviewed along with the load-bearing capacity of the shafts and the used shaft-hub-connections.

1.4. Classification in accordance with EC Machinery Directive 2006/42/EC

Type RES ... EYO/... ETO couplings are a machine element. Since machine elements do not fall under EC Machinery Directive 2006/42/EC, RINGSPANN does not draw up a declaration of incorporation. All important information with regards to the installation, commissioning and operation is explained in the following.

2. Design and function / parts list

2.1. Labelling

Depending on the coupling size, the parts are labelled as follows:

Hubs:

- RINGSPANN logo
- Abbreviated designation

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2.2. Dimensions

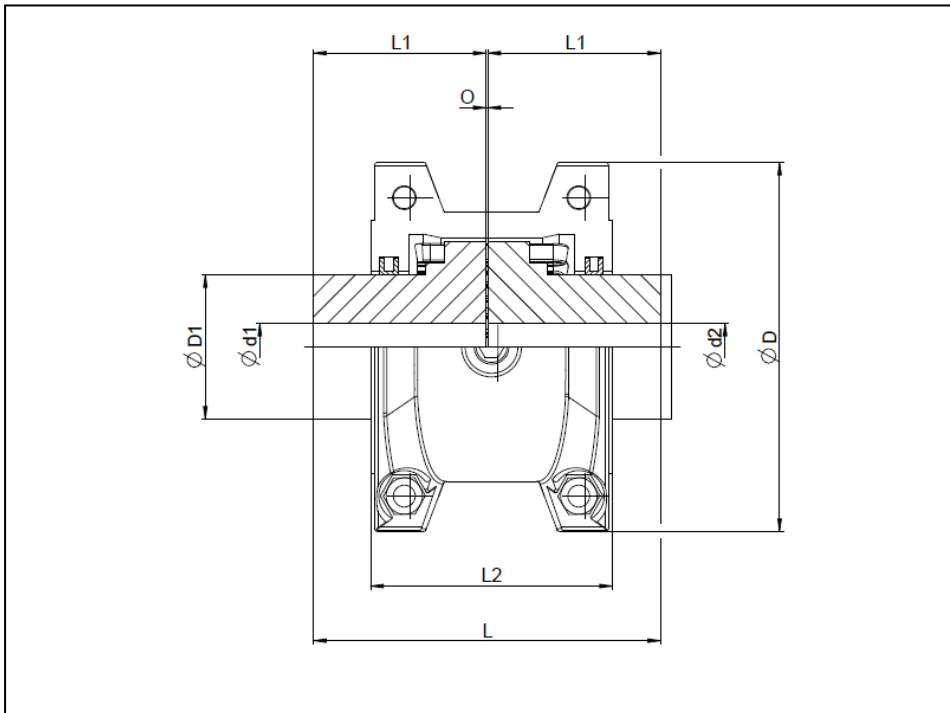


Figure 2.1: Drawing RES ... EYO

Size	D mm	D1 mm	L mm	L1 mm	L2 mm	O mm	Weight at max. bore kg
1020	102	39.7	98	47.5	66.5	3	1.9
1030	110	49.2	98	47.5	68	3	2.6
1040	118	57.1	104.5	51	70	3	3.4
1050	138	66.7	123.5	60	79.5	3	5.4
1060	151	76.2	130	63.5	92	3	7.3
1070	162	87.3	155.5	76	95	3	10
1080	194	104.8	181	89	116	3	18
1090	213	123.8	200	98.5	122	3	25
1100	250	142	245.5	120.5	155.5	4.5	42
1110	270	160.3	258.5	127	161.5	4.5	54
1120	308	179.4	304.5	149.5	191.5	6	81
1130	346	217.5	330	162	195	6	121
1140	384	254	371.5	183	201	6	178
1150	453	269.2	372	183	271	6	234
1160	502	304.8	402	198	279	6	317
1170	567	355.6	438	216	304	6	448
1180	630	393.7	483.5	239	321	6	619
1190	676	436.9	524.5	259	325	6	776
1200	757	497.8	565	279.5	355.5	6	1058
1210	845	533.4	622.5	305	432	12.7	1424
1220	921	571.5	663	325.1	490	12.7	1785

Table 2.1: Dimensions RES ... EYO

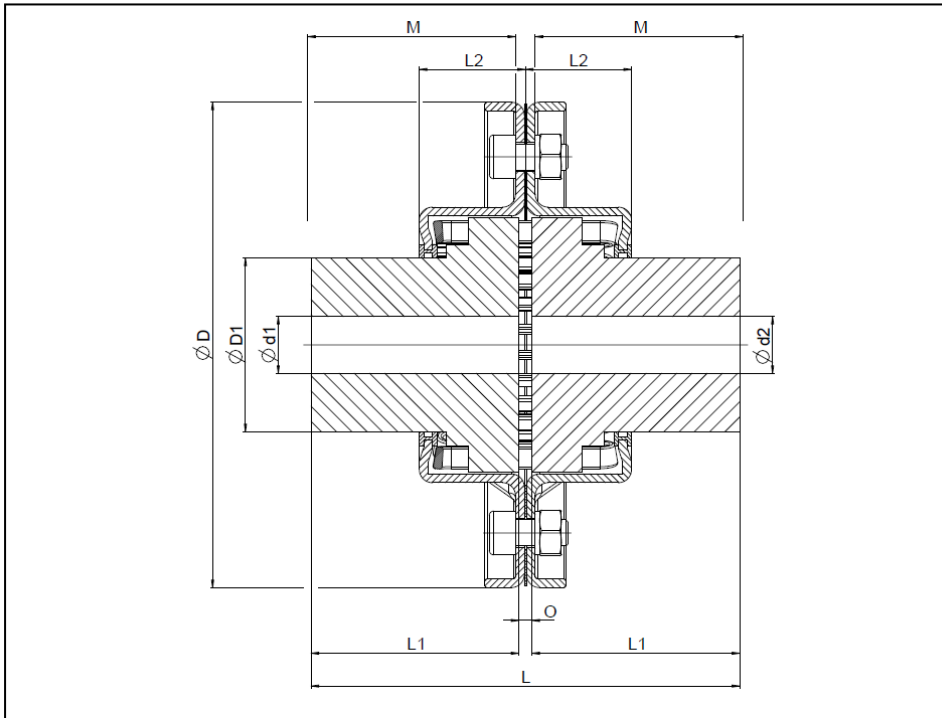


Figure 2.2: Drawing RES ... ETO

Size	D mm	D1 mm	L mm	L1 mm	L2 mm	M mm	O mm	Weight at max. bore kg
1020	111	39.7	98	47.5	24	47.5	3	1.9
1030	121	49.2	98	47.5	25	47.5	3	2.6
1040	128.5	57.1	104.5	51	25.5	51	3	3.4
1050	147.5	66.7	123.5	60.5	31	60.5	3	5.4
1060	162	76.2	130	63.5	32	63.5	3	7.3
1070	173	87.3	155.5	76	33.5	76	3	10.4
1080	200	104.8	181	89	44	89	3	17.7
1090	232	123.8	200	98.5	47.5	98.5	3	25.4
1100	267	142	245.5	120.5	60	120.5	4.5	42.2
1110	286	160.3	258.5	127	64	127	4.5	54.4
1120	319	179.4	304.5	149	73.5	149	6	81.6
1130	378	217.5	330	162	75	162	6	122.5
1140	416	254	371.5	183	78	183	6	180.1
1150	476.5	269.2	372	183	107	183	6	230
1160	533.5	304.8	402	198	114.5	198	6	321.1
1170	584	355.6	438	216	120	216	6	448.2
1180	630	393.7	483.5	239	130	239	6	591
1190	685	436.9	524	260	135	259	6	761
1200	737	497.8	565	279.5	145	279.5	6	1021

Table 2.2: Dimensions RES ... ETO

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2.3. Parts list

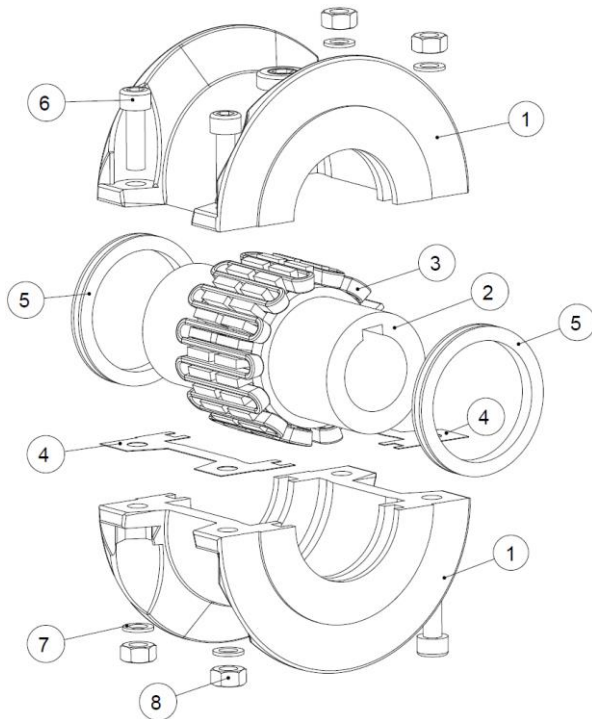


Figure 2.3: RES ... EYO

Position	Quantity	Description
1	2	Half horizontal split cover
2	2	Hub
3	Size dependent	Grid segment
4	2	Gasket
5	2	Seal ring
6	Size dependent	Screw
7	Size dependent	Spring ring
8	Size dependent	Nut

Table 2.3: Parts list RES ... EYO

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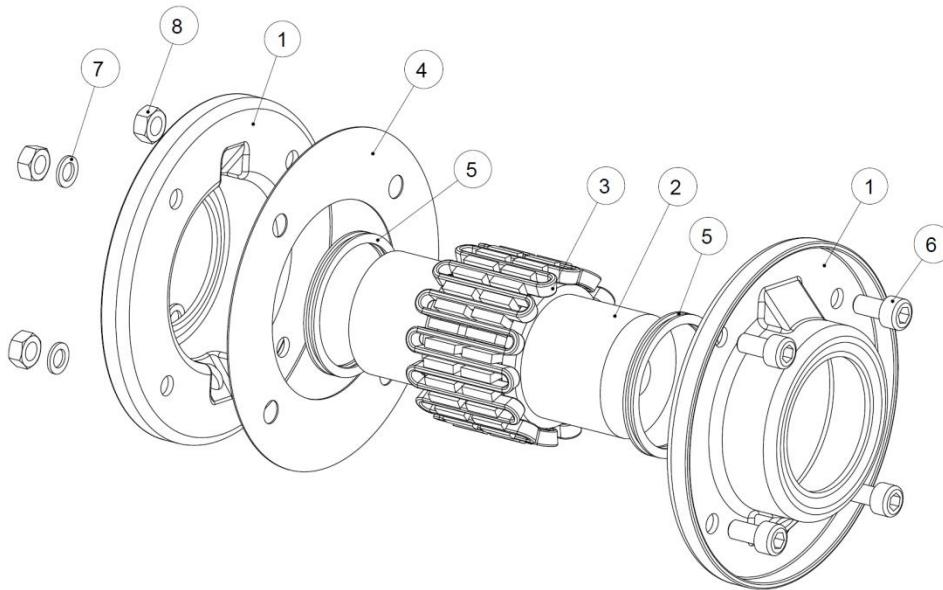


Figure 2.4: RES...ETO

Position	Quantity	Description
1	2	Half vertical spilt cover
2	2	Hub
3	Size dependent	Grid segment
4	1	Gasket
5	2	Seal ring
6	Size dependent	Screw
7	Size dependent	Spring ring
8	Size dependent	Nut

Tabelle 2.4: Parts list RES...ETO

3. Intended use

The coupling may only be installed, operated and serviced if

- the operating instructions have been read and understood,
- the executing person possesses the necessary qualifications,
- authorisation has been given by the company.

The couplings type RES ... EYO and RES ... ETO may only be operated within the operating limits specified in section "7. Technical prerequisite for reliable operation"..

RINGSPANN shall not assume any liability for damages that result from unauthorised constructional changes or an unintended use.

4. Warning signs / impermissible use

An impermissible use is given if:

- the shaft-hub-connection was not designed correctly
- the coupling hubs have been thermally overloaded during assembly
- the fit pair for parts to be joined has not been coordinated correctly
- the parameters necessary for the selection of the coupling were not communicated
- the tightening torques of the screw connection do not correspond with the specifications
- the coupling is wrongly fitted

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- parts from other manufacturers are used
- damaged coupling parts are used.

The further operation of couplings type RES ... EYO/...ETO is not permissible under the following conditions:

- if the permissible limits of use (torque, speed, permissible misalignments, ...) are exceeded
- exceeding or falling below the permissible temperature limits
- if the wear limit of the parts is reached
- changed running noises or the occurrence of vibrations

If the unit should be operated despite the aforementioned states, it can result in damages to the coupling and the drivetrain.



Attention!

RINGSPANN shall not assume any liability for any damages that result in the event of any impermissible use.

5. Condition as delivered

Couplings are generally delivered ready-for-installation in individual parts. Upon customer request, pre-bored hubs are also available. If the hub bores are manufactured by the customer, the information in chapter 7.3 must be observed.

6. Storage

The coupling hubs can be stored in a roofed, dry room. The hubs and coupling halves, as well as all screws and nuts, are supplied in preserved condition and can be stored for up to 6 months. In the event of a longer storage, the corrosion protection should be refreshed.

The maximum storage duration of the O-rings, under optimal storage conditions, amounts to approx. 3 years. The storage, cleaning and maintenance should be carried out in accordance with the provisions of DIN 7716 and ISO 2230. The storage is best realised in heat-sealed polyethylene bags.

The coupling can achieve the optimum service life when the storage rooms:

- have a roof and be dry,
- be free of ozone-producing equipment,
- have a relative humidity of less than 65%,
- have a storage temperature between +5 °C and +20 °C,
- be free of condensation.

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7. Technical prerequisite for reliable operation

7.1. Permissible operating parameters

Size	RES ... EYO				RES ... ETO			
	Nominal torque T_{KN} Nm	Nominal power at 100 min ⁻¹ P_{K100} kW	Max. speed n_{max} min ⁻¹	Weight at max. bore kg	Nominal torque T_{KN} Nm	Nominal power at 100 min ⁻¹ P_{K100} kW	Max. speed n_{max} min ⁻¹	Weight at max. bore kg
1020	48	0.5	4 500	1.9	48	0.5	4 500	1.9
1030	136	1.42	4 500	2.6	136	1.42	4 500	2.6
1040	226	2.36	4 500	3.4	226	2.36	4 500	3.4
1050	395	4.14	4 500	5.4	395	4.14	4 500	5.4
1060	621	6.50	4 350	7.3	621	6.50	4 350	7.3
1070	903	9.46	4 125	10	903	9.46	4 125	10.4
1080	1 863	19.51	3 600	18	1 863	19.51	3 600	17.7
1090	3 387	35.47	3 600	25	3 387	35.47	3 600	25.4
1100	5 702	59.71	2 400	42	5 702	59.71	2 400	42.2
1110	8 468	88.67	2 250	54	8 468	88.67	2 250	54.4
1120	12 420	130.05	2 025	81	12 420	130.05	2 025	81.6
1130	18 066	189.17	1 800	121	18 066	189.17	1 800	122.5
1140	25 969	271.93	1 650	178	25 969	271.93	1 650	180.1
1150	36 131	378.34	1 500	234	36 131	378.34	1 500	230.0
1160	50 810	532.04	1 350	317	50 810	532.04	1 350	321.1
1170	67 746	709.38	1 225	448	67 746	709.38	1 225	448.2
1180	93 941	983.68	1 100	619	93 941	983.68	1 100	591.0
1190	124 201	1 300.53	1 050	776	124 201	1 300.53	1 050	761.0
1200	169 365	1 773.46	900	1058	169 365	1 773.46	900	1 021.0
1210	248 822	2 605.47	820	1424				
1220	335 768	3 515.89	730	1785				

Table 7.1: Permissible operating parameters

7.2. Permissible misalignments

Size	Max. permissible misalignments in operation RES ... EYO/... ETO			
	Axial ΔK_a [mm]	Radial ΔK_r [mm]	Angular ΔK_w [°]	Angular $X_{max}-X_{min}$ [mm]
1020	±0.3	0.3	0.25	0.24
1030				0.29
1040				0.32
1050				0.39
1060				0.45
1070				0.5
1080	±0.45	0.4	0.25	0.61
1090				0.7
1100				0.82
1110	±0.6	0.5	0.25	0.9
1120				1.01
1130				1.19
1140				1.34
1150				1.56
1160				1.77
1170	0.6	0.6	0.25	2
1180				2.26
1190				2.44
1200				2.72
1210	±0.6	0.76	0.25	
1220				

Table 7.2: Max. permissible misalignments

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The maximum permissible misalignment values (table 7.2) must be adhered to and may not occur at the same time. In the event of the simultaneous occurrence of radial and angular misalignment, misalignments must be exploited differently percentage-wise (see figure 7.2). If not observed, damage to the coupling may result.

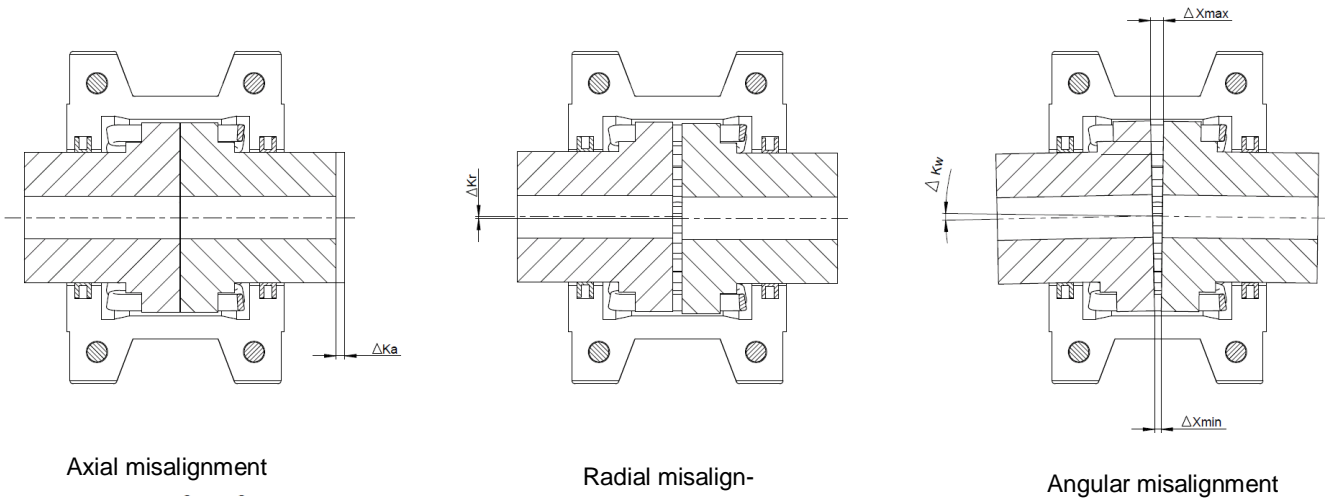


Figure 7.2: Misalignment types

Figure 7.3 shows the relationship for radial (K_r) and angular misalignments (K_w) occurring at the same time:

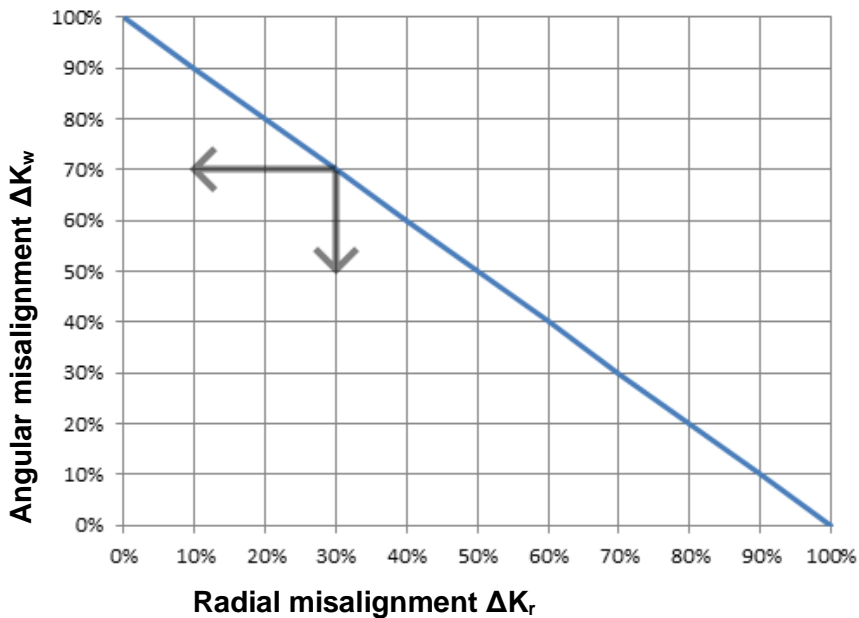


Figure 7.3: Misalignment combination

The misalignment as a percentage is calculated as follows:

$$\Delta K [\%] = \frac{\Delta K}{\text{max. permissible misalignment}} * 100$$

7.3. Manufacturing the hub bore



Life-threatening danger!

The max. permissible bore diameters specified in table 7.3 may not be exceeded. If the permissible values are exceeded, the hub could tear during operation. Here, there is life-threatening danger due to flying parts.

When manufacturing the hub bore, it must be ensured that:

- the hub is precisely aligned,
- the form and positional tolerances in accordance with DIN ISO 286 are adhered to (see figure 7.3).



Attention!

The sealing surfaces may not be damaged during reworks. The operator bears the sole responsibility for damages that may occur as a result of defective rework on the unbored / pre-bored coupling parts.

RES ... EYO			RES ... ETO		
Size	Bore d1/d2 [mm]		Size	Bore d1/d2 [mm]	
	min.	max.		min.	max.
1020	18	30	1020	18	30
1030	18	36	1030	18	36
1040	18	44	1040	18	44
1050	18	51	1050	18	51
1060	20	57	1060	20	57
1070	20	68	1070	20	68
1080	27	82	1080	27	82
1090	27	95	1090	27	95
1100	42	110	1100	42	110
1110	42	120	1110	42	120
1120	61	140	1120	61	140
1130	67	170	1130	67	170
1140	67	200	1140	67	200
1150	108	215	1150	108	215
1160	121	240	1160	121	240
1170	134	280	1170	134	280
1180	153	300	1180	153	300
1190	153	335	1190	153	335
1200	178	360	1200	178	360
1210	178	390			
1220	203	420			

Table 7.3: Permissible bore diameter

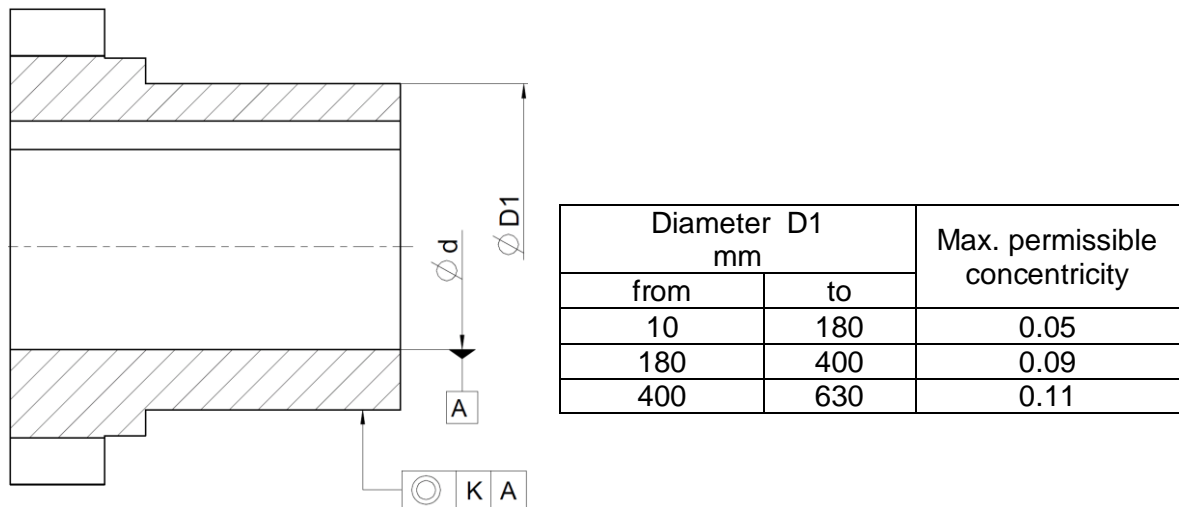


Figure 7.3: Specifications for the form and positional tolerance of the bore

The design and inspection of the keyway connection falls to the operator and is his responsibility.

The grid couplings in the catalogue are designed with bore tolerance H7 and a keyway nut in accordance with DIN 6885, sheet 1. Deviating fits are possible and should be communicated to RINGSPANN as part of any query.

The following fit pairs are recommended:

Type of shaft-hub-connection	Shaft tolerance	Bore tolerance
Transition fit with keyway	h6	P7
	k6	M7
	m6	K7
	n6	J7
	p6	H7
	s6	F7
Shrink fit without keyway	u6	H6
	v6	
	x6	

Table 7.4: Recommended fit pairs

The hub tension must be checked with fit pair H6 / v6 or x6.

The axial position is normally achieved through the correct fit on the shaft and does not require any additional securing. In the event of a loose fit between the shaft and hub or vertical installation, additional measures must be taken to secure the axial position. In such cases, a locking screw in accordance with DIN EN ISO 4029 or a spring washer could be used for this purpose. The need for additional axial securing should be communicated to RINGSPANN as part of any query.

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Locking screws in accordance with DIN EN ISO 4029 should be used for axial securing. Here are the following applies:

Size	1020	1030	1040	1050	1060	1070	1080	1090
Size locking screw	M5	M5	M6	M6	M6	M8	M8	M10
Tightening torque [Nm]	2,8-3	2,8-3	4,75-5	4,75-5	4,75-5	9,5-10	9,5-10	19-20

Table 7.5: Size and tightening torques of the locking screws



Attention!

RINGSPANN shall not assume any liability for any resulting damages that arise from work carried out by the operator.

8. Assembly

8.1. General assembly instructions

Before beginning with assembly, check for the completeness of the delivery (see chapter 2.3 Parts list) and the dimensional accuracy of the bores, the shaft, the nut and the keyway (see 7. Technical prerequisite for reliable operation).

The parts are to be cleaned of the preservatives, the seal rings may not come into contact with solvent or cleaning agents.

8.2. Assembly description RES ... EYO.

1. First, lubricate the seal rings (item 5) and slide them onto the shafts.
2. Mount the hubs (item 2) on the input and output side. The shaft end may not protrude out of the hub for normal applications.
 - facilitated sliding onto the shaft can be achieved by heating up the hub (approx. 80°C)
 - The seal rings (item 5) may not touch the heated-up hubs



Attention!

Use suitable means of protection when working with the heated hubs. Touching the heated hubs without safety gloves causes burns.

3. Slide the units in axial direction until the O measure is achieved (see chapter 2.2 Dimensions)
 - if the units have already been securely installed, the O measure can be adjusted by sliding the hubs onto the shaft. A sufficient supporting length of the keyway nut must be ensured.
 - if O is not adhered to, the coupling may be damaged.
4. Align the hubs (item 2) radially and angularly to one another. (see also chapter 8.4)
5. Lubricate the steel band and steel band segments and the gearing of the hubs.

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6. Insert the steel band and steel band segments into the gearing of the hubs. Ensure that the open ends of the steel band segments show in the same direction. Drive the steel band with a rubber hammer into the gearing until the steel band lies on the hub.
7. Apply sufficient grease onto the steel bands (see table 9.2)
8. Position the seal rings onto the hub, so that they fit in to the sealing grooves of the half shells (item 1).
9. Mount the half shells (item 1) with the seals (item 4), screws (item 6), spring rings (item 7) and nuts (item 8).
→ Ensure that that assembly marks of the housing halves are on the same side

Size	Number of screws	Screw size	Tightening torque T_A [Nm]	
1020	4	M6 x 25	8.3	
1030		M6 x 25		
1040		M6 x 25		
1050		M8 x 30	20	
1060		M8 x 30		
1070		M8 x 35		
1080		M8 x 35		
1090		M8 x 35	40	
1100		M10 x 35		
1110		M10 x 35		
1120	6	M12 x 45	69	
1130		M12 x 45		
1140		M12 x 45		
1150		M12 x 80		
1160		M12 x 80		
1170		M12 x 80		
1180		M16 x 100	170	
1190		8	M20 x 120	340
1200			M20 x 120	
1210			M20 x 120	
1220	M20 x 140			

Table 8.1: Number and tightening torque of housing screws RES ... EYO

8.3. Assembly description RES ... ETO.

1. First, grease the half shells (item 1) and the seal rings (item 5) and slide them onto the shafts.
2. Mount the hubs (item 2) on the input and output side. The shaft end may not protrude out of the hub for normal applications.
→ facilitated sliding onto the shaft can be achieved by heating up the hub (approx. 80°C)
→ The seal rings (item 5) may not touch the heated-up hubs



Attention!

RINGSPANN shall not assume any liability for any resulting damages that arise from work carried out by the operator.

3. Slide the units in axial direction until the O measure is achieved (see chapter 2.2 Dimensions)
 - if the units have already been securely installed, the O measure can be adjusted by sliding the hubs onto the shaft. A sufficient supporting length of the keyway nut must be ensured.
 - if O is not adhered to, the coupling may be damaged.
4. Align the hubs (item 2) radially and angularly to one another. (see also chapter 8.4)
5. Place the seal (item 4) loosely on one of the shafts.
6. Lubricate the steel band and steel band segments and the gearing of the hubs.
7. Insert the steel band and steel band segments into the gearing of the hubs. Ensure that the open ends of the steel band segments show in the same direction. Drive the steel band with a rubber hammer into the gearing until the steel band lies on the hub.
8. Apply sufficient grease onto the steel bands (see table 9.2).
9. Slide the half shells (item 1) and the seal rings (item 5) over the hubs and screw the half shells (item 1) and the seal (item 4) together.
 - Ensure that the lubricant openings up to size 1140 stand at an angle of 180° to one another, and from size 1150 at an angle of 90° to one another.

Size	Number of screws	Screw size	Tightening torque T_A [Nm]	
1020	4	M6 x 15	8.3	
1030	6			
1040				
1050				
1060				
1070				
1080	8	M8 x 15	20	
1090				
1100		M10 x 20	40	
1110		M10 x 25		
1120		M14 x 30		
1130	12	M12 x 35	110	
1140				
1150				
1160				14
1170				16
1180				20
1190	24		69	
1200				

Table 8.2: Number and tightening torque of housing screws RES ... ETO

8.4. Alignment procedure

For simplification, the suitable measurement method for each type of misalignment will be described. Whereby all misalignment types can occur simultaneously.

The remaining misalignments should generally be as small as possible. The size of the misalignments that may occur during assembly are listed in table 8.2.



Attention!

When putting it into operation, the actual misalignments should be no more than 25% of the max. permissible misalignment values (see chapter 7.2 Permissible misalignments). The remaining 75% of misalignments provide security against influences that arise during operation, such as deformation in the machine and thermal expansion.

Size	Recommended misalignment values during installation RES ... EYO/... ETO			
	Axial ΔK_a [mm]	Radial ΔK_r [mm]	Angular ΔK_w [°]	Angular $X_{max}-X_{min}$ [mm]
1020	±0.3	0.15	0.063	0.06
1030				0.07
1040				0.08
1050		0.2		0.10
1060				0.11
1070				0.13
1080				0.15
1090	0.18			
1100	±0.45	0.25		0.21
1110	0.23			
1120	±0.6	0.28		0.25
1130		0.3		0.30
1140				0.34
1150				0.39
1160		0.38	0.44	
1170			0.50	
1180		0.57		
1190	0.61			
1200	0.68			
1210	0.06			
1220	0.07			

Table 8.3: Permissible initial misalignments

8.4.1. Check the radial misalignment

Measure the radial misalignment by laying the straightedge on both hubs (item 1) and measuring the gap between the hubs with the help of a feeler gauge (see figure 8.1). The straightedge must be aligned with the axis of the hub. This measurement should be repeated multiple times until the point with the largest gap has been found. The size of the gap indicates the radial misalignment at that point. The maximal radial misalignment is given at the point of the largest gap. Alternatively, a depth gauge or dial gauge can also be used.

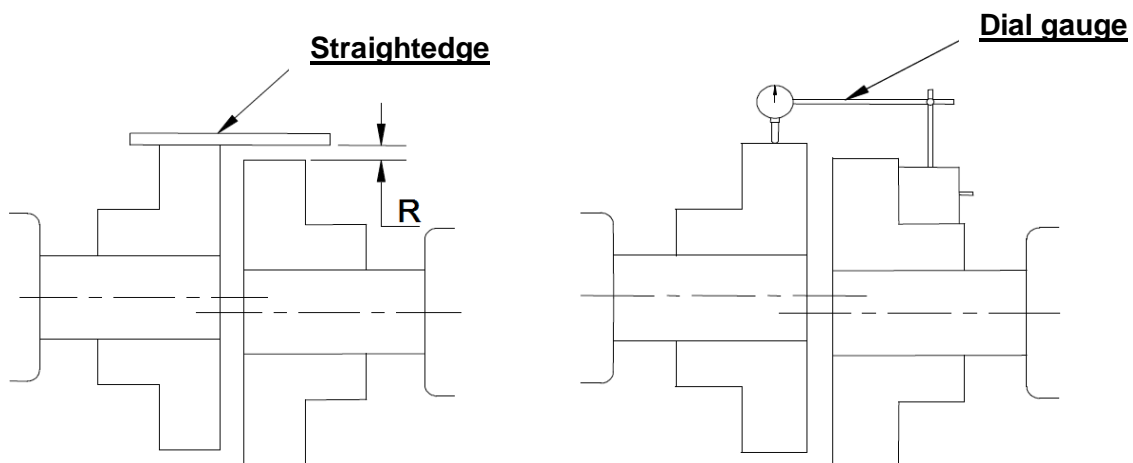


Figure 8.1: Measurement of the radial misalignment

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8.4.2. Check the angular misalignment

Determine the maximum ($X_{max.}$) and minimum ($X_{min.}$) distance between the hubs (see figure 7.4) with a feeler gauge. The difference between the values provides the indicator value for the angular misalignment in mm. The indicator value belonging to the respective angular misalignment can be found in table 7.2.

Alternatively, a measurement can be carried out with the dial gauge. To do so, position the dial gauge stand on a hub (item 1) and the volumetric flask onto the machined plane surface of the other hub (item 2), as shown in figure 7.5. It should be positioned as close to the outer diameter as possible. Turn the hub at the coupling REK...DQO one full revolution and note the full deflection value. The deflection gives the indicator value for the angular misalignment.

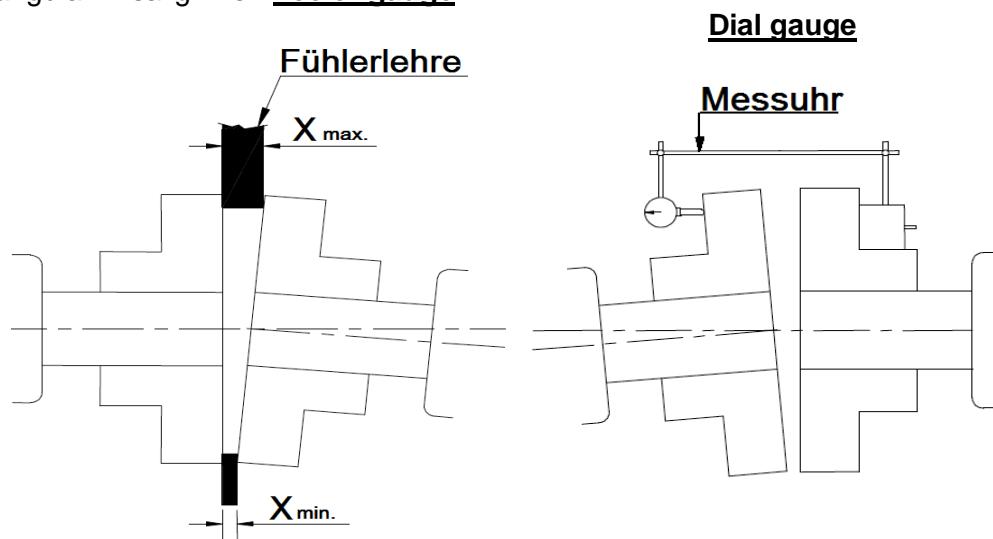


Figure 8.2: Measurement of the angular misalignment

9. Start-up and lubrication

9.1 Start-up

Before first start, the following parameters need to be checked:

- the tightening torque of all screws,
- the tightness of the set screws,
- the alignment of the coupling,
- the clearance O.



The operator has the task of attaching a suitable coupling protection to prevent the unintended touching of the coupling during operation. It may only be removed when the machine is at a standstill.

During commissioning, attention must be paid to vibrations and running noises. If any vibrations or unusual running noises should occur, the drive unit must be immediately switched off.

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9.2 Lubrication

The initial filling of the coupling with lubricant is described in the following. Only lubricants that have been approved by RINGSPANN may be used.

Manufacturer		ExxonMobil	
Lubricant	Fibrax 370	Ronex MP	Alvania Grease #2

Manufacturer	Mobil [™]	KLÜBER LUBRICATION	
Lubricant	Mobilith SHC 1500 Mobilux EP111 Mobilgrease XTC	Klubertplex	Marfak 1 Marfak EPO




Manufacturer			
Lubricant	Gulfcrown Grease #2	Energrease LS-EP2	EP Conolith #2

Table 9.1 Lubricants approved by RINGSPANN

Before filling the coupling with lubricant, the quantity must be measured in accordance with table 9.2. After the assembly of the steel band, the lubricant should be applied evenly in the cavity between loops of the steel band. Afterwards, the seal (item 4) should be inserted and the two housing halves should be screwed together. Excess lubricant must be completely collected and disposed of in an environmentally friendly manner.

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Size	RES ... EYO Lubricant quantity [kg]	RES ... ETO Lubricant quantity [kg]
1020	0.03	0.03
1030	0.03	0.03
1040	0.05	0.05
1050	0.05	0.05
1060	0.09	0.09
1070	0.11	0.11
1080	0.17	0.17
1090	0.25	0.25
1100	0.43	0.43
1110	0.51	0.51
1120	0.73	0.73
1130	0.91	0.91
1140	1.13	1.13
1150	1.95	1.95
1160	2.81	2.81
1170	3.49	3.49
1180	3.76	3.76
1190	4.4	4.4
1200	5.62	5.62
1210	10.5	
1220	16.1	

Table 9.2: Lubricant quantity



Attention!

You may not mix different lubricants. The lubricant must be replaced after 6 months.

To replace the lubricant, we recommend disassembling the housing halves and thoroughly cleaning all parts. Afterwards, the re-filling with lubricant should then subsequently take place as described above.

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10. Operational disturbances

The possible operational disturbances are listed in the following table. In order to remedy them, **first bring the unit to a standstill** and then follow the further instructions in the column "Remedy". This table only provides a starting point for the search for the cause. All neighbouring components should also be subjected to an examination.

Disturbances	Causes	Remedy
Changes in sounds or vibrations	Alignment error	<ol style="list-style-type: none"> 1) Eliminate the cause of the alignment error 2) Carry out wear inspection 3) Re-align the coupling
	Lack of lubricant	<ol style="list-style-type: none"> 1) Carry out wear inspection 2) Replace lubricant 3) Check seals and replace if necessary
Impermissible gearing wear	Vibrations in the drivetrain	<ol style="list-style-type: none"> 1) Disassemble coupling 2) Replace damaged parts 3) Find and eliminate cause for the vibrations 4) Align coupling
	Misalignment is outside the permissible range	<ol style="list-style-type: none"> 1) Disassemble coupling and examine 2) Replace worn parts 3) Check alignment, correct if necessary
	Lack of lubricant	<ol style="list-style-type: none"> 1) Carry out wear inspection 2) Replace lubricant 3) Check seals and replace if necessary
Untightness / lubricant leaks out	Seal rings worn	<ol style="list-style-type: none"> 1) Carry out wear inspection 2) Clean coupling 3) Replace seal rings 4) Fill with lubricant
	Seal ring porous due to false storage or damaged during assembly	<ol style="list-style-type: none"> 1) Carry out wear inspection 2) Clean coupling 3) Optimise storage and eliminate the reason for assembly errors 4) Replace seal rings 5) Fill with lubricant
	Seal rings damaged due to contact with aggressive media, ozone or hot surfaces	<ol style="list-style-type: none"> 1) Carry out wear inspection 2) Clean coupling 3) Eliminate negative influences 4) Replace seal rings 5) Fill with lubricant
Gearing or steel band break	Break due to overload	<ol style="list-style-type: none"> 1) Disassemble coupling 2) Replace damaged parts 3) Eliminate cause of the overload 4) Align coupling

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	The coupling selected was too weak	1) Disassemble coupling 2) Check the design of the coupling 3) Install, align and lubricate larger coupling
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Table 10.1: Operational disturbances

11. Maintenance and repair

The coupling must be regularly inspected and relubricated. The scope of the inspection includes:

- checking the coupling alignment,
- checking the coupling for damages,
- checking the screw connections,
- checking for leakages,
- checking the wear

The tightening torques of the screws must be examined at regular intervals.

To ensure that the coupling can be safely operated, the specified wear values may not be exceeded. The thickness of the steel band must amount to at least 70% of the thickness in a non-worn state in each position.



Attention!

RINGSPANN shall not assume any liability for any occurring damages if spare parts from other manufacturers are used.

12. Disposal

At the end of its operating life:

- plastics must be disposed of via a disposal company,
- metals must be cleaned and disposed of properly with other scrap metal
- the lubricant must be disposed of in accordance with the applicable regulations

Please also properly dispose of the packaging.