RINGSPANN®
CORPORATION
Power Transmission

Installation and operating instructions for torsionally stiff gear couplings RDZ … DTO/… DFO

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Important

Before installation and commission of the product begins, these installation and operating instructions must be read carefully. Notes of caution, and hazard warnings, should be read and understood.

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 incorrectly, this shall invalidate any product liability and warranty of RINGSPANN CORPORATION; 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 a suspected malfunction, the product, or the machine into which it is built, must be taken out of operation immediately and RINGSPANN CORPORATION or an authorised RINGSPANN agency must be informed.
- The power supply must be turned off during work on electrical components.
- Rotating parts must be secured by the operator against unintentional contact.
- In the case of supplies made to a foreign country, the safety regulations applicable in that country must 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.

Contents

1. General information

1.1. Function

The main function of the torsionally stiff gear coupling consists of transferring the torque of one shaft end onto another shaft. Additionally, the coupling is designed to compensate for angular, radial and axial misalignments.

1.2. General safety instructions

Safety takes the highest priority during installation and operation

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 locked against turning.
- Accidental contact with 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 standards.

The design of the coupling is carried out with the help of operating factors that come from 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 to determine if it is still the proper selection.

2. Design and function / parts list

2.1. Labeling

Depending on the coupling size, the parts are labeled as follows:
Hubs:

- RINGSPANN logo
- Abbreviated designation

2.2. Dimensions

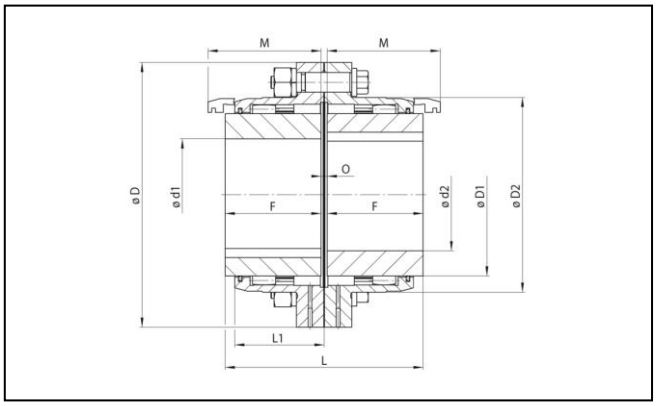


Figure 2.1: Drawing RDZ … DTO

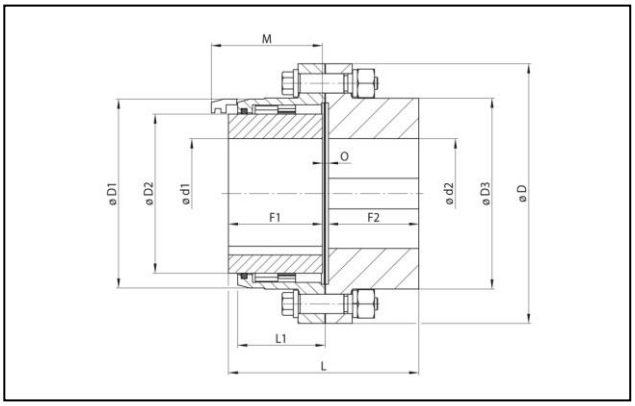


Figure 2.2: Drawing RDZ … DFO

Size	D inch	D1 inch	D2 inch	F inch	L inch	L1 inch	M inch	O inch
0010	4.56	2.72	3.31	1.69	3.50	1.54	2.01	0.12
0015	6.00	3.39	4.13	1.97	4.06	1.89	2.40	0.12
0020	7.00	4.13	5.00	2.44	5.00	2.36	2.99	0.12
0025	8.38	5.16	6.10	3.03	6.26	2.83	3.62	0.20
0030	9.44	5.98	7.13	3.58	7.36	3.31	4.17	0.20
0035	11.00	7.01	8.31	4.21	8.66	3.86	5.12	0.24
0040	12.50	8.27	9.84	4.76	9.76	4.37	5.71	0.24
0045	13.63	9.25	10.79	5.31	10.94	4.84	6.50	0.31
0050	15.31	10.00	12.05	6.02	12.36	5.55	7.20	0.31
0055	16.75	10.98	13.15	6.61	13.54	6.22	7.99	0.31
0060	18.00	12.01	14.41	7.40	15.12	6.65	8.98	0.31
0070	20.75	14.02	16.73	8.70	17.76	7.72	10.47	0.35
0080	23.23	15.16	19.09	9.80	20.00	9.57	11.81	0.39
0090	26.00	16.54	21.06	10.87	22.24	10.43	12.80	0.51
0100	28.00	18.50	23.43	12.01	24.53	11.57	13.98	0.51

Table 2.1: Dimensions RDZ … DTO

Size	D inch	D1 inch	D2 inch	D3 inch	F1 inch	F2 inch	L inch	L1 inch	M inch	O inch
0010	4.56	2.72	3.31	3.31	1.69	1.57	3.43	1.54	2.01	0.16
0015	6.00	3.39	4.13	4.21	1.97	1.85	3.98	1.89	2.40	0.16
0020	7.00	4.13	5.00	5.12	2.44	2.32	4.92	2.36	2.99	0.16
0025	8.38	5.16	6.10	6.18	3.03	2.91	6.14	2.83	3.62	0.20
0030	9.44	5.98	7.13	7.17	3.58	3.46	7.24	3.31	4.17	0.20
0035	11.00	7.01	8.31	8.35	4.21	4.02	8.46	3.86	5.12	0.24
0040	12.50	8.27	9.84	9.84	4.76	4.57	9.65	4.37	5.71	0.31
0045	13.63	9.25	10.79	10.87	5.31	5.16	10.79	4.84	6.50	0.31
0050	15.31	10.00	12.05	12.17	6.02	5.83	12.20	5.55	7.20	0.35
0055	16.75	10.98	13.15	13.15	6.61	6.81	13.78	6.22	7.99	0.35
0060	18.00	12.01	14.41	14.41	7.40	7.28	15.12	6.65	8.98	0.39
0070	20.75	14.02	16.73	16.73	8.70	8.58	17.80	7.72	10.47	0.51
0080	23.23	15.16	19.09	18.50	9.80	9.80	20.12	9.57	11.81	0.51
0090	26.00	16.54	21.06	20.39	10.87	10.87	22.32	10.43	12.80	0.59
0100	28.00	18.50	23.43	22.52	12.01	12.01	24.65	11.57	13.98	0.63

Table 2.2: Dimensions RDZ … DFO

Size	Weight with max. bore [lbs]	
	RDZ … DTO	RDZ … DFO
0010	10	10
0015	20	21
0020	33	34
0025	59	61
0030	88	91
0035	143	147
0040	211	220
0045	288	297
0050	409	429
0055	543	574
0060	657	695
0070	1 041	1 100
0080	1 500	1 573
0090	1 976	2 132
0100	2 732	2 770

Table 2.3: Weight with max. bore RDZ … DTO/… DFO

2.3. Parts list

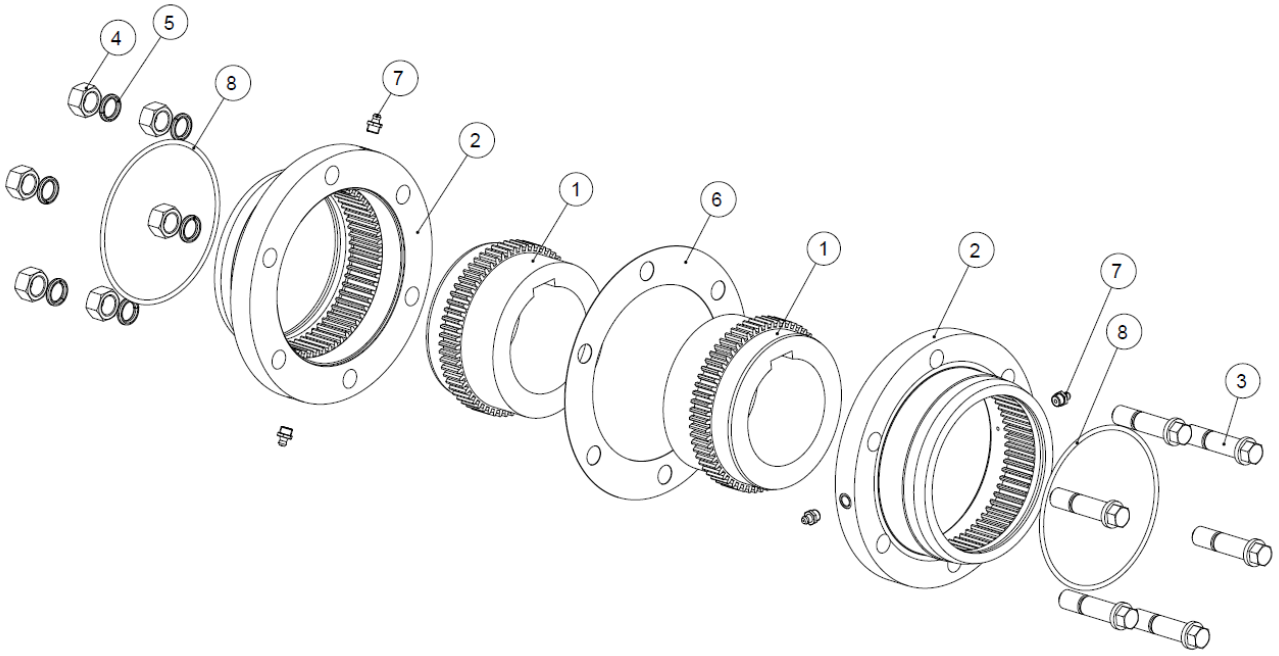


Figure 2.3: RDZ … DTO

Position	Quantity	Description
1	2	Hub
2	2	Coupling halves, flexible
3	Size dependent	Flange bolt
4	Size dependent	Hexagon nut
5	Size dependent	Spring washer
6	1	Seal
7	4	Lubricating plug
8	2	O-ring

Table 2.3: Parts list RDZ … DTO

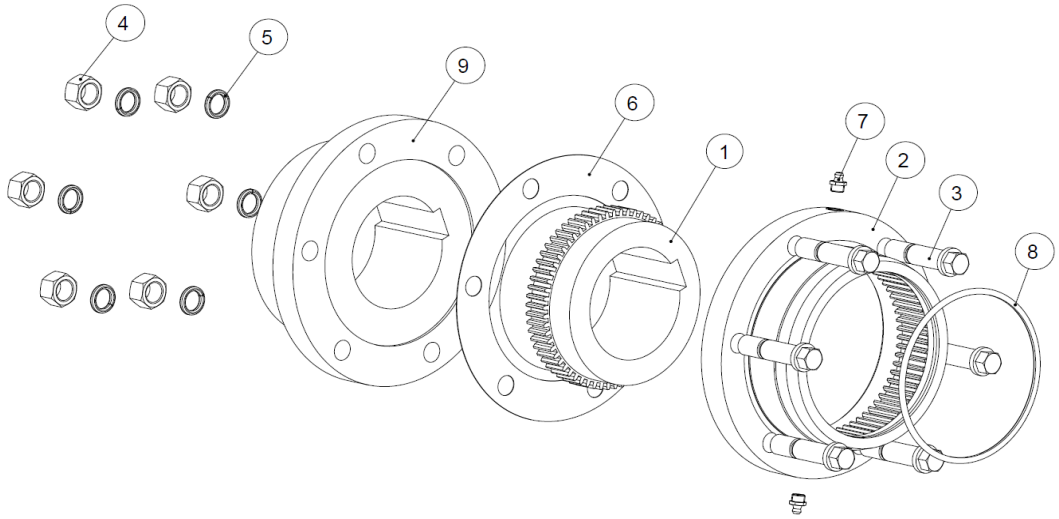


Figure 2.4: RDZ … DFO

Position	Quantity	Description
1	1	Hub
2	1	Coupling halves, flexible
3	Size dependent	Flange bolt
4	Size dependent	Hexagon nut
5	Size dependent	Spring washer
6	1	Seal
7	2	Lubricating plug
8	1	O-ring
9	1	Coupling half, rigid with hub

Table 2.4: Parts list RDZ … DFO

3. Intended use

The coupling may only be installed, operated and serviced if
- the operating instructions have been read and understood,
- the executing person(s) are properly trained / qualified,
- authorization has been given by the company.

The coupling type RDZ … DTO and RDZ … DFO may only be used within the operating limits specified in section “7. Technical prerequisites for reliable operation”.

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

4. Warning signs / non permissable use

Non permissible use is determined if:

- the coupling hubs have been overheated during assembly
- the fit of the parts to be connected has not been coordinated correctly
- the parameters necessary for the selection of the coupling were not considered properly, and/or communicated to RINGSPANN
- the tightening torques of any screw connections do not match specifications
- the coupling is not properly selected for form, fit, and function
- the shaft-hub-connection (if any used) was not designed correctly
- parts from other manufacturers are used in conjunction with this coupling
- damaged coupling parts are used in conjunction with the coupling

The further operation of coupling type RDZ … DTO/… DFO is not permissible under the following conditions:
- if the permissible limits of use (torque, speed, misalignments, …) are exceeded
- exceeding or falling below the permissible temperature limits
- if the wear limit of the parts is reached
- Changes in resonance 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 non permissible 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 room that has a roof and is dry. The hubs and coupling halves, as well as all screws and nuts, are delivered 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 is approx. 3 years under optimum storage conditions. The storage, cleaning and maintenance should be carried out in accordance with the provisions of ISO 2230 or DIN 7716. Storage is best carried out in sealed polyethylene bags.

Optimum service life of the coupling is given if the storage rooms:

- have a roof and are dry,
- are free of ozone-producing equipment,
- have a relative humidity of less than 65 %,
- have a storage temperature between +41 °F and +70 °F,
- are free of condensation.

7. Technical prerequisites for reliable operation

7.1. Permissible operating parameters

Size	RDZ … DTO				RDZ … DFO			
	Nominal torque T_{KN} lb-in	Nominal power at 100 rpm P_{K100} HP	Max. speed n_{max} rpm	Moment of inertia with max. bore J_K lb-in^2	Nominal torque T_{KN} lb-in	Nominal power at 100 rpm P_{K100} HP	Max. speed n_{max} rpm	Moment of inertia with max. bore J_K lb-in^2
0010	10 600	17	8 000	18	10 600	17	8 000	19
0015	22 100	35	6 500	66	22 100	35	6 500	70
0020	44 200	70	5 600	140	44 200	70	5 600	149
0025	77 000	122	5 000	359	77 000	122	5 000	379
0030	114 000	181	4 400	667	114 000	181	4 400	718
0035	171 500	273	3 900	1 551	171 500	273	3 900	1 630
0040	269 500	428	3 600	2 939	269 500	428	3 600	3 144
0045	369 500	587	3 200	4 750	369 500	587	3 200	5 016
0050	504 000	801	2 900	8 646	504 000	801	2 900	9 329
0055	716 500	1 138	2 650	13 088	716 500	1 138	2 650	14 352
0060	840 500	1 335	2 450	17 804	840 500	1 335	2 450	19 478
0070	1 292 000	2 051	2 150	37 589	1 292 000	2 051	2 150	41 177
0080	1 947 000	3 090	1 750	70 804	1 947 000	3 090	1 750	74 392
0090	2 451 000	3 891	1 550	119 431	2 451 000	3 891	1 550	125 070
0100	3 469 000	5 507	1 450	191 192	3 469 000	5 507	1 450	192 286

Table 7.1: Permissible operating parameters

7.2. Permissible misalignments

Size	Max. permissible misalignments RDZ … DTO			Max. permissible misalignments RDZ … DFO	
	Axial ΔK_a [inch]	Radial ΔK_r [inch]	Angular ΔK_w [°]	Axial ΔK_a [inch]	Angular ΔK_w [°]
0010	± 0.020	0.020	1.5	± 0.020	0.75
0015		0.031			
0020		0.039			
0025		0.047			
0030		0.055			
0035	± 0.039	0.067		± 0.039	
0040		0.079			
0045		0.083			
0050		0.102			
0055		0.114			
0060	± 0.079	0.126		± 0.079	
0070		0.146			
0080		0.165			
0090		0.189			
0100	±0.118	0.217		±0.118	

Table 7.2: Maximum permissible misalignments

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 offset, misalignments need to be calculated percentage-wise (see figure 7.2). If not observed, damage to the coupling may result.

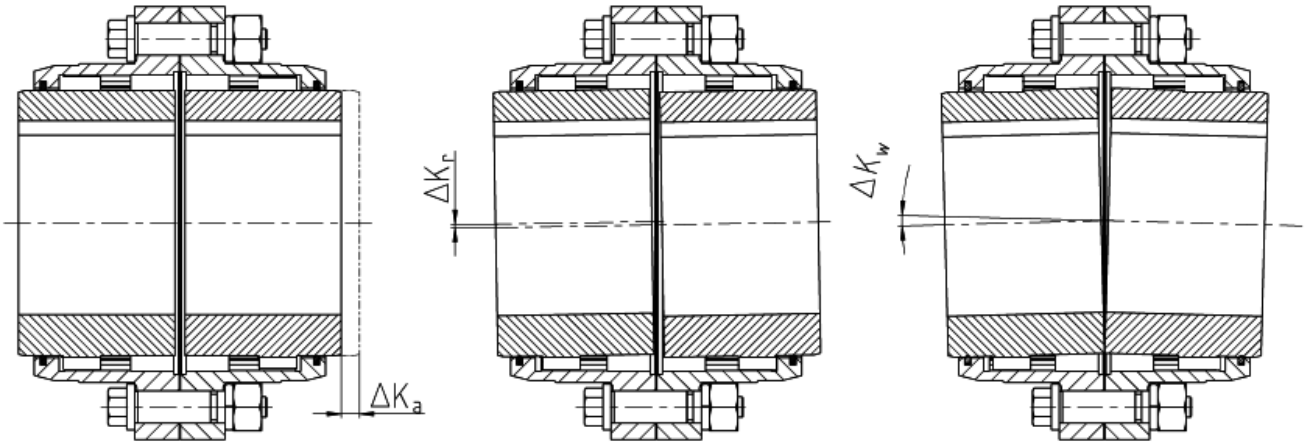


Figure 7.2: Misalignment types

The figure 7.2 shows the relationship for radial (K_r) and angular misalignments (K_w) occurring at the same time:

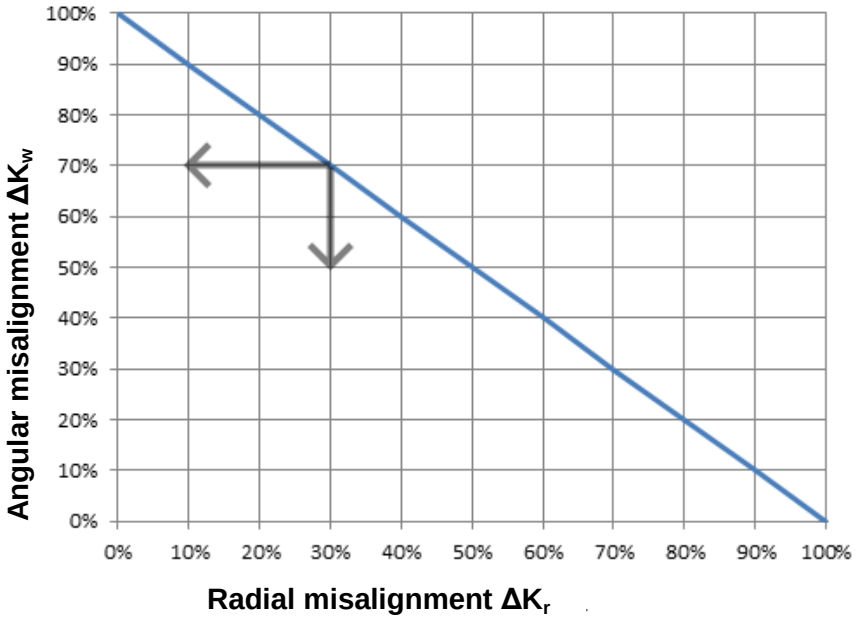


Figure 7.2: Misalignment combination

The misalignment as a percentage is calculated as follows:

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

7.3. Hub bore specifcations

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 crack during operation. This could cause life-threatening danger due to flying parts.

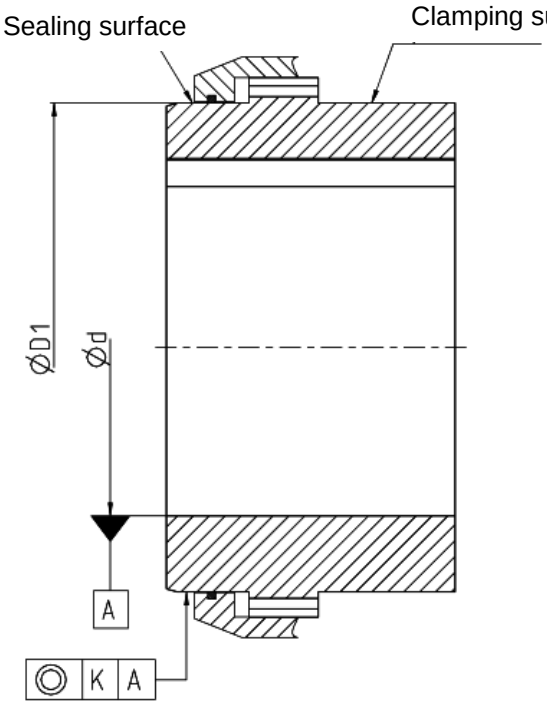
When boring, or reboring the hub, it must be ensured that:
- the hub is precisely aligned,
- the form and positional tolerances in accordance with DIN ISO 286 are adhered to (see figure 7.3).

Attention!

Never clamp onto the sealing surface! The operator bears the sole responsibility for any damages that may occur due to defective rework on the unbored / roughly bored coupling parts.

Size	RDZ … DTO Bore d1/d2 [inch]		RDZ … DFO Bore d1 [in]		RDZ … DFO Bore d2 [inch]	
	min.	max.	min.	max.	min.	max.
0010	0.59	1.88	0.59	1.88	0.59	2.38
0015	0.83	2.36	0.83	2.36	0.83	2.94
0020	1.10	2.84	1.10	2.84	1.10	3.63
0025	1.26	3.54	1.26	3.54	1.26	4.38
0030	1.50	4.13	1.50	4.13	1.50	5.13
0035	1.50	4.92	1.50	4.92	1.50	5.88
0040	1.50	5.71	1.50	5.71	1.50	7.25
0045	2.05	6.75	2.05	6.75	2.05	8.13
0050	2.80	7.38	2.80	7.38	2.80	9.00
0055	2.76	8.25	2.76	8.25	2.76	10.00
0060	4.33	9.13	4.33	9.13	4.33	11.00
0070	4.33	10.88	4.33	10.88	4.33	13.00
0080	4.33	13.19	4.33	13.19	4.33	13.09
0090	5.91	14.57	5.91	14.57	5.91	15.03
0100	6.30	15.94	6.30	15.94	6.30	16.03

Table 7.3: Permissible bore diameter



Diameter D1 [inch] from	to	Max. permissible concentricity [inch]
0.3937	7.0866	0.0020
7.0866	15.7480	0.0035
15.7480	24.8032	0.0043

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 gear couplings in the catalogue are designed with bore tolerance and keyway tolerance per AGMA 9002-C14. Deviating fits are possible and should be communicated to RINGSPANN as part of any query.

The following shaft / hub fits are recommended:

Nominal bore[1] diameters		Shaft tolerance[2]	Clearance fit[3], [4]		Interference fits	
From	To (Incl.)		Bore tolerance	Fit	Bore tolerance	Fit
0.4375	1.5000	+0.0000 -0.0005	+0.0010 -0.0000	+0.0015 +0.0000	-0.0005 -0.0010	-0.0000 -0.0010
1.5000	2.0000	+0.0000 -0.0010	+0.0010 -0.0000	+0.0020 +0.0000	-0.0010 -0.0020	-0.0000 -0.0020
2.0000	3.0000		+0.0015 -0.0000	+0.0025 +0.0000		
3.0000	4.0000				-0.0015 -0.0030	-0.0005 -0.0030
4.0000	5.0000				-0.0020 -0.0035	-0.0010 -0.0035
5.0000	6.5000				-0.0025 -0.0040	-0.0015 -0.0040
6.5000	7.0000		- -	- -	-0.0025 -0.0040	-0.0015 -0.0040
7.0000	8.0000				-0.0030 -0.0050	-0.0020 -0.0050
8.0000	9.0000				-0.0035 -0.0055	-0.0025 -0.0055
9.0000	10.0000				-0.0040 -0.0060	-0.0030 -0.0060
10.0000	11.0000				-0.0045 -0.0065	-0.0035 -0.0065
11.0000	12.0000				-0.0050 -0.0070	-0.0040 -0.0070
12.0000	13.0000				-0.0055 -0.0075	-0.0045 -0.0075
13.0000	14.0000	+0.0000 -0.0015			-0.0065 -0.0085	-0.0050 -0.0085
14.0000	15.0000				-0.0070 -0.0090	-0.0055 -0.0090
15.0000	16.0000				-0.0075 -0.0100	-0.0060 -0.0100
16.0000	17.0000				-0.0080 -0.0105	-0.0065 -0.0105
17.0000	18.0000				-0.0085 -0.0110	-0.0070 -0.0110

NOTES:

1) Preferred nominal shaft sizes:
0.500, 0.625, 0.750, 0.875, 0.9375, 1.000, 1.125, 1.1875, 1.250, 1.375, 1.4375, 1.500, 1.625, 1.750, 1.875, 1.9375, 2.000, 2.125, 2.250, 2.375, 2.4375, 2.500, 2.625, 2.750, 2.875, 2.9375, 3.000, 3.250, 3.375, 3.500, 3.625, 3.750, 4.000, 4.250, 4.500, 4.750, 5.000, 5.250, 5.500, 5.750, 6.000, 6.250, 6.500, 6.750, 7.000
2) Agrees with NEMA standard MG 1-4.9 (2010), thru 6.500.
3) Non-shaded areas are preferred.
4) Previously defined as Class 1 clearance fits.

Table 7.4: Recommended fits

The axial position is normally achieved through the correct interference fit on the shaft and does not require any additional securing. In the event of a loose fit between 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 locking washer, for example, could be used. The need for additional axial securing should be communicated to RINGSPANN.

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 fasteners and the keyway (see 7. Technical prerequisite for reliable operation).

The parts are to be cleaned of preservative agents, the O-rings may not come into contact with solvents or cleaning agents as a result.

8.2. Assembly description

1. Firstly, insert the O-rings (item 8) into the groove of the coupling halves (item 2). To ensure that they don't fall out, you can apply some grease into the groove. Also lubricate the sealing plane surfaces of the coupling halves.
2. Slide the coupling halves (item 2) onto the shaft ends. Ensure hereby that the O-rings (item 8) are not damaged.
3. Mount the hub (item 1) 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 O-rings (item 8) may not touch the heated-up hubs here

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

4. Slide the units in axial direction until the O measurement is achieved (see chapter 2.2 Dimensions)
   → if the units are already mounted, the O measurement can be adjusted by sliding the hubs onto the shaft. Here, a sufficient supporting length of the keyway must be ensured.
   → if O is not adhered to, the coupling may be damaged.
   - align the hubs (item 1) to one another.
   - the available misalignments should be measured using suitable measuring equipment e.g. dial gauge, straightedge, feeler gauge or depth gauge.
   - the maximum permissible misalignments may not be exceeded.
5. Lightly lubricate the gearing of the coupling halves (item 2) with lubricant and slide on the hubs (item 1).
6. Align the fit bores of coupling halves (item 2 and 9) to one another.
7. Insert the seal (item 6) between coupling halves and screw together the coupling halves with fitting screws, as well as spring washers and nuts and tighten to the specified tightening torque (see table 8.1).

Size	Number of screws	Tightening torque T_A [lb-in]
0010	6	53
0015	8	186
0020	6	443
0025	6	859
0030	8	859
0035	8	1478
0040	8	1478
0045	10	1478
0050	8	2345
0055	14	2345
0060	14	2345
0070	16	3505
0080	16	2956
0090	18	5780
0100	18	5780

Table 8.1: Number and tightening torque of fitting screws

Information

In the event of repeated assembly, it is recommended to replace the seal (item 6), fitting screws (item 3), and spring washers (item 5) and nuts (item 4).

8.3. Alignment procedure

9. For simplication, the suitable measurement methods for each type of misalignment will be described. Whereby all misalignment types can occur simultaneously.
10. The remaining misalignments should generally be as small as possible. The size of the misalignments that may occur during assembly are specified 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 external influences that arise during operation, such as deformation in the machine and thermal expansion.

Size	RDZ … DTO				RDZ … DFO		
	Angular misalignment		Radial misalignment [inch]	Axial misalignment [inch]	Angular misalignment		Axial misalignment [inch]
	Angle per flex. coupling halve [°C]	X [inch]			Angle per flex. coupling halve [°C]	X [inch]	
0010	±0.5°	0.012	0.006	±0.005	±0.5°	0.012	±0.002
0015		0.016	0.008			0.016	
0020		0.020	0.010			0.020	
0025		0.024	0.012			0.024	
0030		0.028	0.014			0.028	
0035		0.032	0.017	±0.010		0.032	±0.005
0040		0.035	0.020			0.035	
0045		0.039	0.021			0.039	
0050		0.043	0.026			0.043	
0055		0.047	0.029			0.047	
0060		0.051	0.032	±0.020		0.051	±0.010
0070		0.059	0.037			0.059	
0080		0.067	0.041			0.067	
0090		0.075	0.047			0.075	
0100		0.083	0.054	±0.030		0.083	±0.015

Table 8.2: Permissible initial offsets

Coupling RDZ … DFO cannot compensate any radial misalignment.

7.3.1 Check the radial misalignment

Measure the radial misalignment by laying a 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 hereby 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 maximum radial misalignment is given at the point of the largest gap. Alternatively, a depth gauge or dial gauge can also be used.

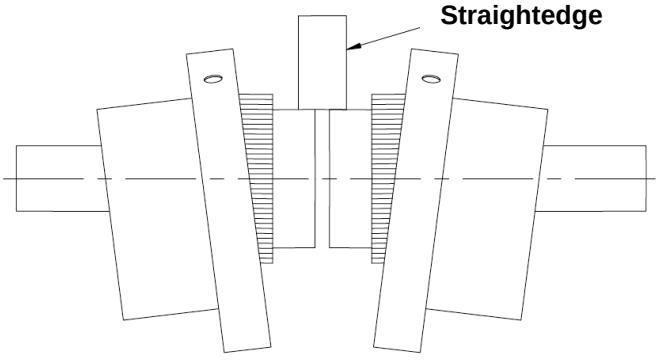


Figure 8.1: Measuring the radial misalignment

7.3.2 Check the angular misalignment

Check the angular offset with the help of dial gauges by measuring the axial run-out at the inner plane surface of the hub (item 1). The dial gauge must hereby be positioned as close to the outer diameter as possible. The angular offset 'X' in inch amounts to half of the calculated total value (see figure 8.2). The values of the angular offsets should not exceed the permissible initial offsets specified in table 8.2.

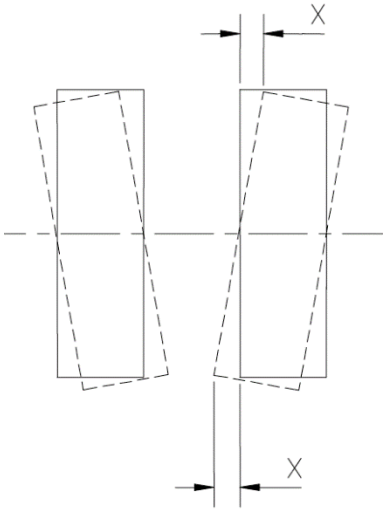


Figure 8.2: Measuring the angular misalignment

9. Start-up and lubrication

9.1 Start-up

Before putting it into operation for the first time, 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 L.

The operator has the task of mounting 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.

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	TOTAL	ExxonMobil	RAVENOL
Lubricant	**CERAN MS**	**MOBILGREASE XTC**	**RAVENOL Amber Getriebefließfett**

Manufacturer	Mobil	KLÜBER LUBRICATION	KLÜBER LUBRICATION
Lubricant	**Mobilux EP 111**	**GRAFLOSCON C-SG 0 ULTRA, C-SG 1000 ULTRA**	**CENTOPLEX GLP 500**

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 assembly of the flexible coupling halve, the lubricant should be applied in the cavity between the hub (item 1) and the flexible coupling halve (item 2). This approach should be carried out for all flexible coupling halves. Afterwards, seal (item 6) should be inserted and the two halves should be screwed together via fitting screws. Excess lubricant must be completely collected and disposed of in an environmentally friendly manner.

Lubricant quantity				
Size	RDZ … DTO (Full Flex)		RDZ … DFO (Flex Rigid)	
	lbs.	oz.	lbs.	oz.
0010	0.07	1.06	0.03	0.53
0015	0.13	2.11	0.07	1.06
0020	0.38	6.00	0.19	2.99
0025	0.51	8.11	0.25	4.06
0030	0.75	12.00	0.38	6.00
0035	0.99	15.87	0.50	7.94
0040	1.74	27.87	0.87	13.94
0045	2.38	38.10	1.19	19.06
0050	3.51	56.08	1.75	28.05
0055	4.26	68.08	2.13	34.05
0060	7.63	122.05	3.81	61.02
0070	14.00	223.98	7.00	112.00
0080	21.16	338.62	10.58	169.31
0090	29.32	469.14	14.66	234.58
0100	39.14	626.24	19.07	305.12

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 flexible coupling halves and thoroughly cleaning all parts. The re-filling with lubricant should then subsequently take place as described above.

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	1) Eliminate the cause of the alignment error 2) Carry out wear inspection 3) Re-align the coupling
	Lack of lubricant	1) Carry out wear inspection 2) Replace lubricant 3) Check seals and replace if necessary
Excessive gearing wear	Vibrations in the drivetrain	1) Disassemble coupling 2) Replace damaged parts 3) Find and eliminate cause for the vibrations 4) Align coupling
	Misalignment is outside the permissible range	1) Disassemble coupling and examine 2) Replace worn parts 3) Check alignment and correct if necessary
	Lack of lubricant	4) Carry out wear inspection 5) Replace lubricant 6) Check seals and replace if necessary
Lubricant leaking	O-rings worn	1) Carry out wear inspection 2) Clean coupling 3) Replace O-rings 4) Fill with lubricant
	O-ring porous due to false storage or damaged during assembly	1) Carry out wear inspection 2) Clean coupling 3) Optimise storage and eliminate the reason for assembly errors 4) Replace O-rings 5) Fill with lubricant
	O-rings damaged due to contact with aggressive media, ozone or hot surfaces	1) Carry out wear inspection 2) Clean coupling 3) Eliminate negative influences 4) Replace O-rings 5) Fill with lubricant
Gearing or coupling half breaks	Break due to overload	1) Disassemble coupling 2) Replace damaged parts 3) Eliminate cause for the overload 4) Align coupling
	The coupling selected was too weak	1) Disassemble coupling 2) Check the design of the coupling 3) Install, align and lubricate larger coupling

Table 10.1: Operational disturbances

11. Maintenance and repair

11.1 General maintenance work

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

- examining the coupling alignment,
- examining the coupling for damages,
- examining the screw connections,
- checking the tightness,
- check the torsional backlash.

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 wear due to torsional backlash is measured for the gear coupling.

Size	0010	0015	0020	0025	0030	0035	0040	0045
Torsional backlash X_{max} [inch]	0.04	0.04	0.04	0.06	0.06	0.06	0.08	0.08

Size	0050	0055	0060	0070	0080	0090	0100
Torsional backlash X_{max} [inch]	0.08	0.10	0.10	0.10	0.12	0.16	0.16

Table 11.1: Wear limit per hub

The inspection of these wear values is to be carried out as follows:

- Turn hub (item 1) in one direction of rotation
- Make a marking on the hub (item 1) and coupling halve (item 2) as shown in figure 11.1 (a)
- Turn the hub (item 1) in the other direction of rotation until stop
- The markings move apart
- Measure the distance X_{max} (see figure.1 (b)) between the markings and compare with table 11.1
- If value X_{max} is reached, the coupling needs to be replaced.

11.2 Changing the lubricant

To ensure reliable operation of the coupling, the lubricant should be changed regularly. The following must be observed:

- The prescribed grease quantities must be observed
- The used grease must be collected completely and disposed of in accordance with the applicable regulations.
- The grease manufacturer's instructions must be observed.

The lubricant change intervals depend on the operating conditions such as ambient temperature, shaft misalignment, speed, load and operating duration. In general, the following

intervals are recommended:

Operating temperature < 158°F: approx. 8,000 operating hours, but after 24 months at the latest.
Operating temperature > 158°F: approx. 3,000 operating hours after 12 months at the latest.

The residual quantity in the coupling should be as small as possible. When changing the lubricant manufacturer, the compatibility with the old grease should be confirmed.

Attention!
The wear measurement needs to be carried out on both coupling halves for coupling RDZ … DTO.

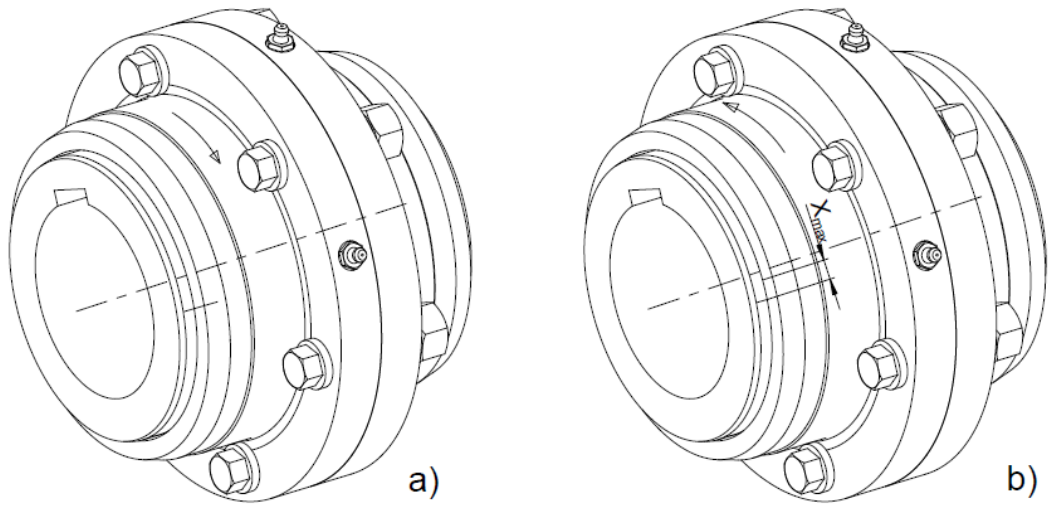


Figure 11.1: Checking the wear limit

12. Spare part stockpiling

In order to keep disturbances in operation to a minimum, it is advisable to keep a stock of spare parts directly at the deployment site in order to be able to guarantee optimal operational capability.

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

13. 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,
- dispose of the lubricant under observation of the applicable provisions

Please also properly dispose of the packaging.