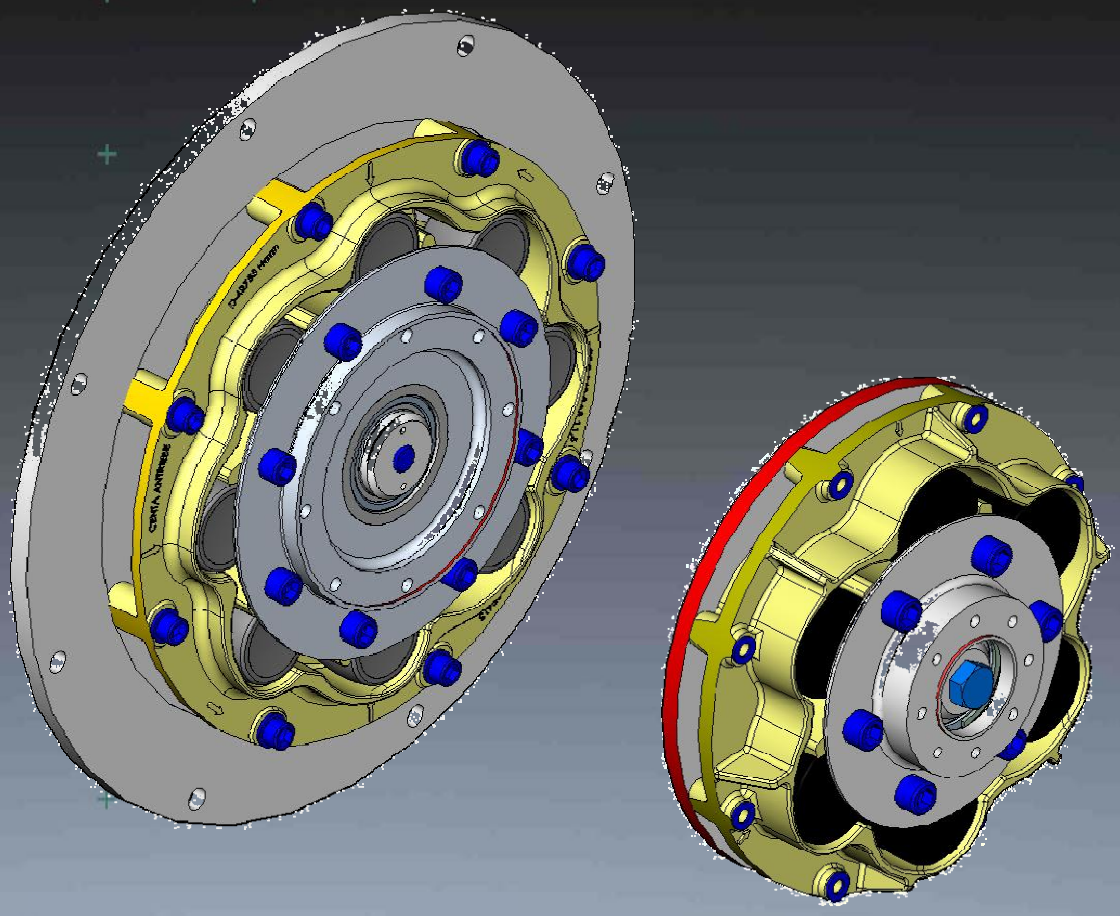
CENTAFLEX-R

Assembly and operating instructions

CR-RV-136...318

M026-00008-EN

Rev. **1**



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1 General remarks

These assembly and operating instructions form a constituent part of the coupling delivery and must be kept in an easily accessible place at all times.

CENTA products are developed and produced to quality standard DIN EN ISO 9001:2000.

In the interests of further development, CENTA reserves the right to make technical changes.

IMPORTANT

CENTA is unable to accept liability for damage and operating faults caused by failure to observe the operating instructions.

In case of technical questions, please enquire with our head office:

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2 Safety

The purpose of these operating instructions is to enable users to:

- use the coupling safely and correctly
- maximize efficiency
- ensure that care and maintenance are carried out correctly

For this reason, these operating instructions must be thoroughly read and understood prior to work on and with the coupling.

WARNING	
	**Injury and material damage can occur as a result of:** ▪ Failure to adhere to the safety and accident prevention regulations valid at the relevant installation site The safety and accident prevention regulations valid at the installation site in question must be adhered to when performing any of the tasks described in these operating instructions.

2.1 Safety remarks

In these operating instructions, safety remarks are indicated by a pictogram and a signal word.

2.1.1 Signal words

The following signal words are used in the safety remarks:

DANGER	Denotes the immediate threat of danger. If not prevented, fatal or extremely serious injuries can result.
WARNING	Denotes a potentially dangerous situation. If not prevented, fatal or extremely serious injuries can result.
CAUTION	Denotes a potentially dangerous situation. If not prevented, minor injuries and/damage to property may result.
IMPORTANT	Denotes application tips and particularly useful information. This is not a signal word denoting a dangerous or damaging situation.

2.1.2 Pictograms

Possible pictograms in the safety precautions:

Warning of a hazardous area

Do not switch

Use protective gloves

Use protective goggles

2.2 Qualification of deployed personnel

All the work described in these operating instructions may only be performed by authorized persons with adequate training and instruction.

WARNING	
	**Injury and material damage can occur as a result of:** ▪ Work at the coupling which is not described in these instructions Only carry out work which is described in these operating instructions.

2.3 Intended application

WARNING	
	**Injury and material damage can occur as a result of:** ▪ Application not in compliance with the intended use The couplings are intended exclusively for use in accordance with the relevant design. They may only be used under the specified conditions.

WARNING	
	**Injuries can occur as a result of:** ▪ Contact with rotating parts Shield the coupling in accordance with the applicable accident prevention regulations with an enclosure. **Exception:** The coupling is encased by the driving and driven units.

The scope of delivery provided by CENTA does not include a protective enclosure.

This enclosure must fulfil the following criteria:

- Provide protection against persons gaining access to rotating parts
- Restrain any rotating parts which may be work loose
- Guarantee sufficient ventilation for the coupling

This enclosure must be made of stable steel components. In order to ensure adequate ventilation for the coupling, the enclosure must be fitted with regular openings. For safety reasons, these openings must not exceed the dimensions outlined in table 2-1.

Component	Circular openings [mm]	Rectangular openings [mm]
Top of the enclosure	Ø 8	□ 8
Side elements of the enclosure	Ø 8	□ 8

Table 2-1 Shape and size of ventilation holes

The enclosures must be positioned a minimum of 15 mm distant from rotating parts. The enclosure must be electrically conductive and be included in the equipotential bonding.

Before commencing long-term operation, the plant must successfully complete a test run.

2.4 Application not in compliance with the intended use

WARNING	
	**Injury and material damage can occur as a result of:** ▪ Inadmissibly high torque ▪ Inadmissibly high or low speeds ▪ Exceeding the specified ambient temperature ▪ Inadmissible ambient medium ▪ Inadmissible coupling enclosure ▪ Exceeding the admissible overall misalignment values Only use the coupling for the specified application.

CENTA bears no liability for damage resulting from application not in compliance with the intended use of the equipment.
Should there be a change of plant parameters, the coupling design must be reviewed by CENTA (address see chapter 1).

3 Delivery, transport, storage and disposal

3.1 Delivery

After delivery, the coupling:

- must be checked for completeness and correctness of the delivery.
- must be examined for possible transport damage (which must be reported immediately to the carrier).

3.2 Transport

CAUTION	
	**Injury and material damage can occur as a result of:** ▪ Incorrect transportation of couplings Ensure that the coupling is correctly transported.

CAUTION	
	**Material damage to coupling components can occur as a result of:** ▪ Contact with sharp-edged objects Protect coupling components for transportation. Only hoist coupling components with nylon belts or ropes. Always cushion parts when supporting them from below.

Following transportation damage:

- Check the coupling carefully for damage.
- Consult the manufacturer (Address see chapter 1).

3.3 Storage

CAUTION	
	**Material damage to elastic elements and rubber parts can occur as a result of:** ▪ Incorrect storage These parts must be stored laid flat and so they cannot distort, and protected from ozone, heat, light, moisture and solvents.

IMPORTANT
Rubber parts are marked where possible with their production date. From this date, they may only be stored for a maximum of 5 years.

3.3.1 Storage location

Requirements imposed on the storage location:

- Moderately ventilated and low in dust
- Dry (max. 65% humidity)
- Temperature stabilized (-10°C to +25°C)
- Free of ozone-producing devices such as light sources and electric motors
- Free of UV light sources and direct sunlight
- Do not store solvents and disinfectants, fuels or lubricants, acids, chemicals etc. in the same location

For more details, refer to DIN 7716.

3.3.2 Storage of couplings / flexible elements

- ➢ Unpack the parts.
- ➢ Check the packaging for damage. Replace if necessary.
- ➢ Check that the wax protection on steel components is intact. If necessary, patch or renew.
- ➢ Package the parts (for prolonged periods of storage, enclose desiccant and weld into film).
- ➢ Place the parts into storage.

3.4 Disposal

RECYCLING	
	Ensure safe, environmentally responsible disposal of operating supplies and exchange parts. For this, locally provided recycling facilities and regulations must be utilized.

For disposal, the coupling parts must be separated where possible and sorted according to material type.

4 Technical description

4.1 Characteristics

- Progressive characteristic with low rigidity and increased but moderate rigidity at high torques
- Anti-spin
- Simple, reliable, no vulcanisation, the rubber elements are only subjected to strain when pressure applied
- Specially developed, temperature-resistant elastomer CENTALAN with high damping effect, can be used at high ambient temperatures up to 120°C (248°F)
- For difficult operating conditions or applications, we recommend the use of our special "HD" rollers, these are also resistant to oil and can be used at ambient temperatures up to 140°C (284°F)
- Well proven in use
- High dissipation due to intensive internal and external ventilation
- Economical and service-friendly
- Simple mounting
- Protected by international patents
- Direction of motor rotation **only** counterclockwise (CCW) (looking onto the motor flywheel)
- Maintenance-free bearing support system
- Dampens unwanted torsional vibrations and gear noises

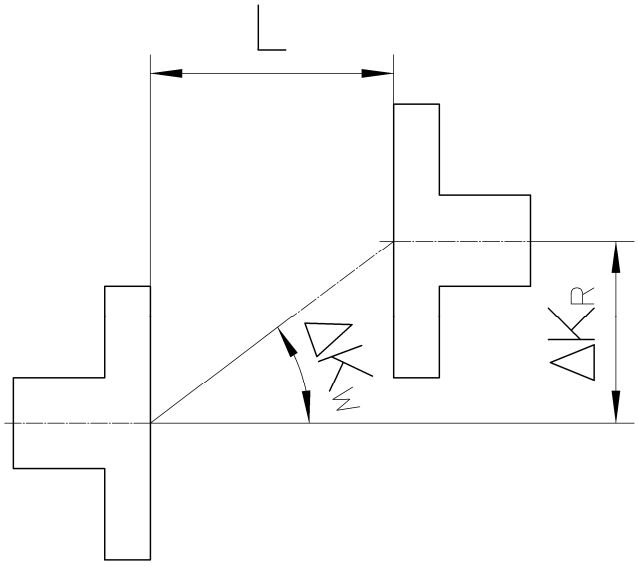
4.2 Specifications

The specifications can be found in the catalogue and the dimensions in the installation drawing.

5 Alignment of the units being connected

IMPORTANT

- The units should be aligned during assembly.
- Align the units that are to be connected as accurately as possible. In this way, a long service life for the coupling can be achieved.
  After completion of assembly, check the alignment of the coupling again and if necessary correct.



5.1 Angular alignment

Permissible angular alignment tolerance:
$\Delta K_{W\,max}$=3°

➢ Align the units (calculated deviation **≤$\Delta K_{W\,max}$**).

5.2 Radial alignment

Permissible radial alignment tolerance:

$$\Delta K_{R\max} = L \cdot \tan(\Delta K_{W\max})$$

➢ Align the units (calculated deviation **≤$\Delta K_{R\,max}$**).

6 Mounting

6.1 General assembly instructions

Any work method which impairs the safety of the coupling is prohibited.
The user undertakes to notify the manufacturer immediately of any changes occurring at the coupling which could impair safety (address see chapter 1).

WARNING	
	**Injuries can occur as a result of:** ▪ Contact with rotating parts Before starting work at the coupling, switch off the plant and secure against unintentional start-up.

WARNING	
	**Injury and material damage can occur as a result of:** ▪ Assembly of the coupling in the wrong sequence Only ever assemble the coupling in the described sequence.

WARNING	
	**Injury and material damage can occur as a result of:** ▪ Falling coupling components Secure coupling components against falling to the floor.

WARNING	
	**Injuries and material damages can occur as a result of:** ▪ Incorrect screw firmness and tightening torque at screw connections on SAE flywheels Screws and tightening torques according to CENTA data sheet D013-017 (see Annex).

CAUTION	
	**Material damage can occur as a result of:** ▪ Soiled joint surfaces The surfaces that are to be joined must be free of dirt, preservatives and lubricants.

IMPORTANT

- Use suitable lifting devices for assembly.
- Elements for connection of the coupling to customer components do not form part of the delivery.
- Part illustration and marking may different slightly from installation drawing and delivery state.

6.2 Mounting the coupling to the flywheel

- Mount the coupling to the flywheel as appropriate for the supplied design (see installation drawing).
  - Mounting the coupling to the flywheel, see chapter 6.2.1 .
  - Mounting the coupling with adapter to the flywheel, see chapter 6.2.2 .

6.2.1 Mounting the coupling to the flywheel

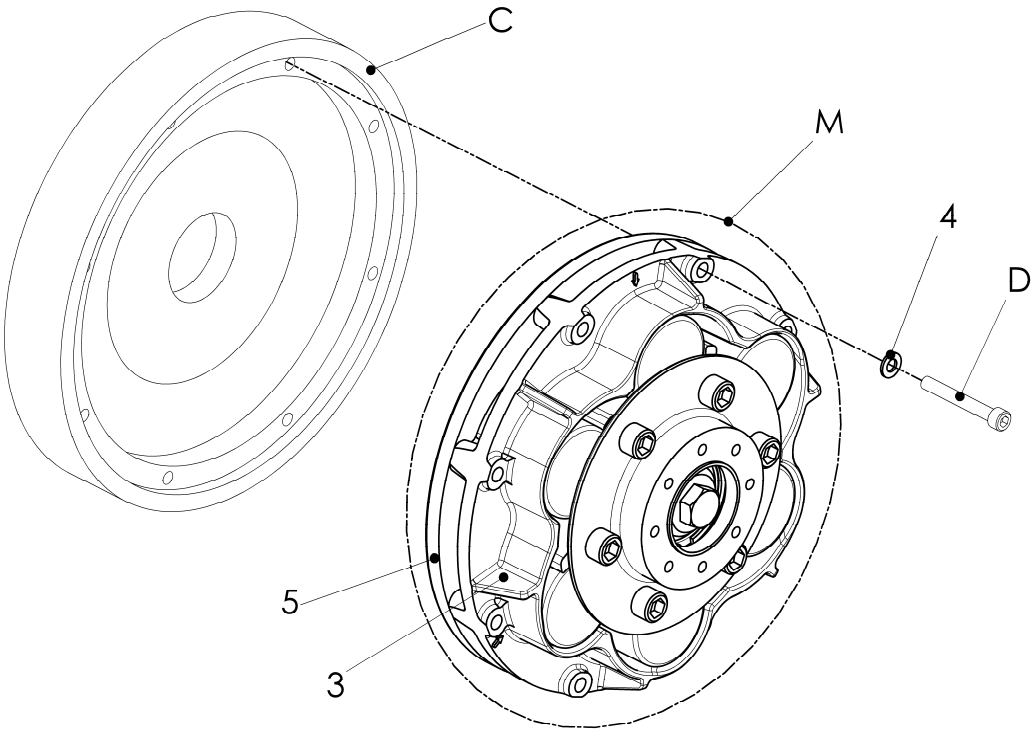


Fig. 6-1 Mounting the coupling to the flywheel

Item	Info	Designation	Remark
3		Outer part	
4		Washer	
5		Flange	If existing
C		Flywheel	Customer part
D		Screw	No scope of supply
M		Coupling	Pre-mounted by CENTA, see installation drawing

- Push the coupling (M) into the centring of the flywheel (C).
- Screw the coupling (M) with screws (D) and washers (4) to the flywheel (C). Use the washers provided (4).

6.2.2 Mounting the coupling with adapter to the flywheel

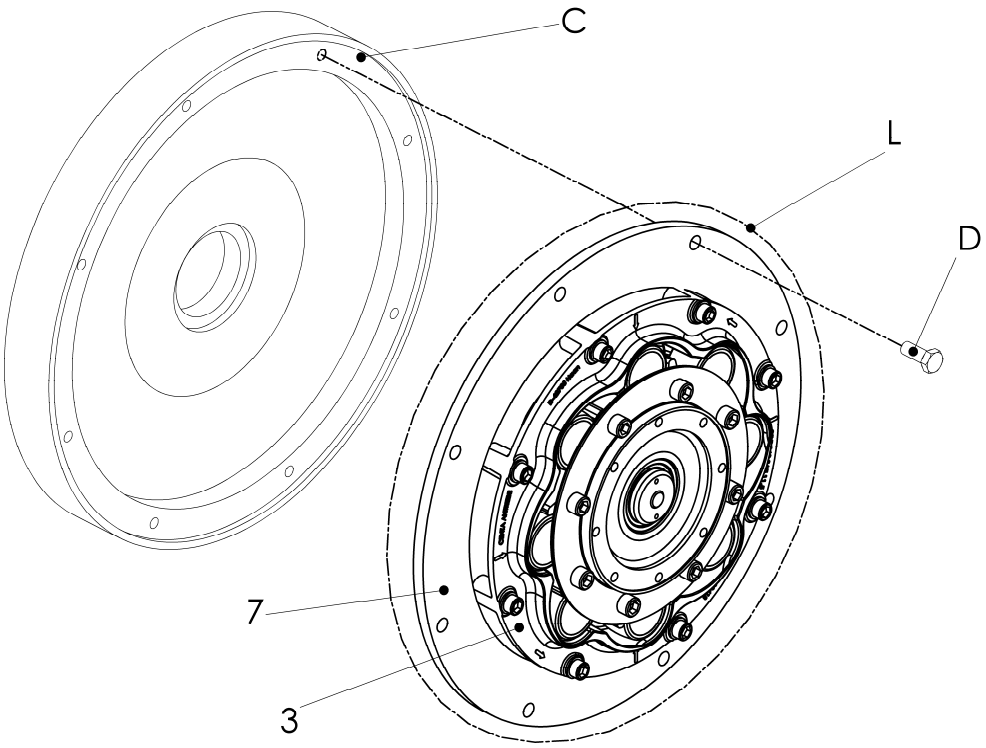


Fig. 6-2 Mounting the coupling with adapter to the flywheel

Item	Info	Designation	Remark
3		Outer part	
7		Adapter	
C		Flywheel	Customer part
D		Screw	No scope of supply
L		Coupling with adapter	Pre-mounted by CENTA, see installation drawing

- Push the coupling with adapter (L) into the centring of the flywheel (C).
- Screw the adapter (7) with screws (D) to the flywheel (C).

6.3 Aligning the units

➢ Align the units to be connected (see chapter 5).

6.4 Mounting the cardan shaft

➢ Assemble the cardan shaft, as described in the manufacturer's instructions.

6.5 After completed mounting

WARNING	
	**Injury and material damage can occur as a result of:** ▪ Loose screw connections Before commissioning, the tightening torque levels of all screws must be checked and corrected if necessary.

CAUTION	
	**Motor damage can occur as a result of:** ▪ High axial forces at the axial bearings of the crank shaft Prior to commissioning the system, ensure that the crank shaft has axial play.

Before commencing long-term operation, the plant must successfully complete a test run.

7 Operation

WARNING	
	**Injury and material damage can occur as a result of:** ▪ Worn coupling components If the running noises change and/or vibrations occur turn the plant off immediately.

Determine the fault and its root cause, and remedy.
The troubleshooting process is simplified by the table in the next chapter.
On principle in case of a fault, an analysis of the entire plant should be performed.

7.1 Operating faults, root causes and remedy

Faults	Possible root causes	Remedy
Running noises or vibrations in the plant	Tolerance error	1. Switch off the plant 2. Check the concentricity tolerances of the connections on the driving and driven units 3. Trial run
	Loose bolts	1. Switch off the plant 2. Check screw torque levels and correct if necessary 3. Trial run
Breakage of the rubber rollers	Tolerance error	1. Switch off the plant 2. Exchange the rubber rollers 3. Check the concentricity tolerances of the connections on the driving and driven units 4. Trial run
	Damage due to rotary oscillation: • Motor idle running speed too low • Cylinder failure	1. Switch off the plant 2. Exchange the rubber rollers 3. Trial run
	Inadmissibly high torque	1. Switch off the plant 2. Exchange the rubber rollers 3. Trial run

Table 7-1 Troubleshooting table

In case of uncertainty or if you have questions, please contact our head office (address see chapter 1).

8 Care and maintenance

WARNING	
	**Injuries can occur as a result of:** ▪ Contact with rotating parts Shield the coupling in accordance with the applicable accident prevention regulations with an enclosure. **Exception:** The coupling is encased by the driving and driven units.

The coupling requires low maintenance. We recommend a visual inspection at the regular scheduled maintenance intervals for the whole unit.

8.1 Work to be performed

8.1.1 Cleaning the coupling

➢ Remove any loose dirt from the coupling.

8.1.2 Visual inspection of the coupling

➢ Inspect the coupling for cracks, chips or missing parts.

➢ Replace faulty and missing parts.

8.1.3 Visual inspection of the rubber rollers

➢ Visual inspection/Exchanging of the rubber rollers, see chapter 8.2 .

8.1.4 Inspection of the screw connections

➢ Check the tightening torque levels of all screws and if necessary, correct.

8.2 Visual inspection/Exchanging of the rubber rollers

8.2.1 Dismantling the cardan shaft

➢ Dismantle the cardan shaft, as described in the assembly instruction of the manufacturer.

8.2.2 Dismantling the adapter

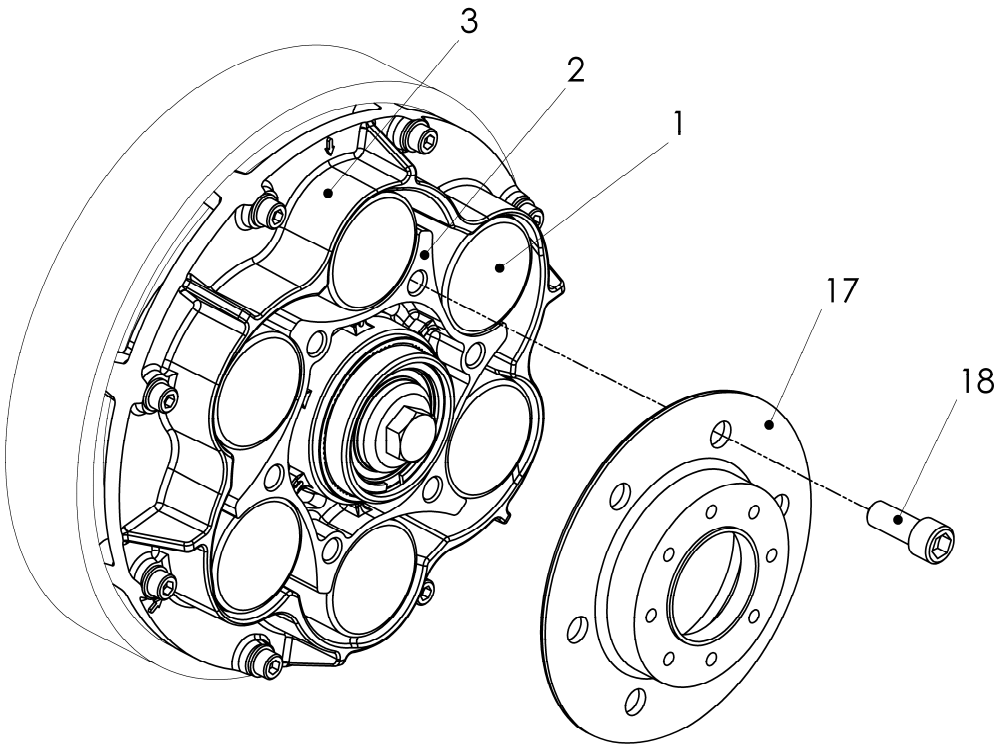


Fig. 8-1 Dismantling the adapter

Item	Info	Designation	Remark
2		Inner part	
3		Outer part	
17		Adapter	
18		Screw ISO4762-8.8	

- Loosen and remove the screws (18) of the connection adapter (17) and inner part (2).
- Pull the adapter (17) off the centring of the inner part (2) and remove it.

8.2.3 Checking the rubber roller for cracks

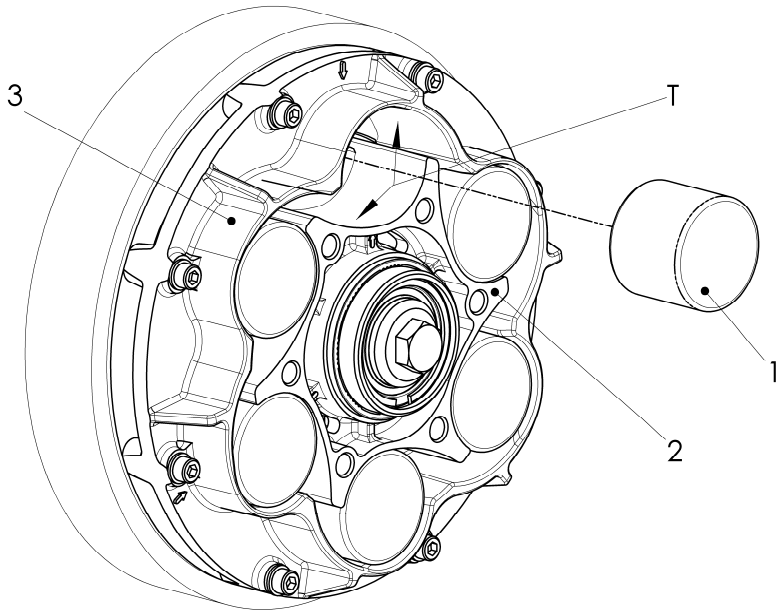


Fig. 8-2 Dismantling the rubber rollers

Item	Info	Designation	Remark
1		Rubber roller	
2		Inner part	
3		Outer part	
	T	Pocket	

IMPORTANT

Deposits of rubber dust are normal.

- Remove the rubber rollers (1) out of the pockets (T).
- Check all rubber rollers (1) for cracks.
  - **without** cracks:
    If all rubber rollers are crackless, the oval deformation of all rubber rollers has to be checked (see chapter 8.2.4).
  - **with** cracks:
    If a crack exists in only one of all rubber rollers, the complete set of rubber rollers has to be exchanged.
    Reassembling the rubber rollers (see chapter 8.2.5).

IMPORTANT

Exchange the rubber rollers in the event of:

- Damage

8.2.4 Oval deformation of the rubber roller

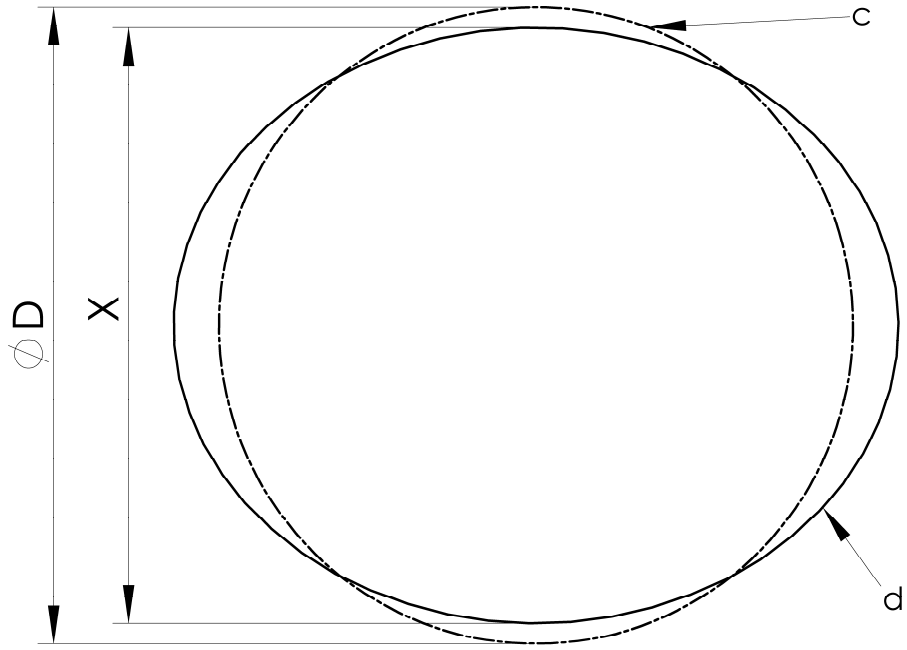


Fig. 8-3 Oval deformation of the rubber roller

Item	Info	Designation	Remark
	c	Rubber roller Delivery condition	
	d	Rubber roller Limiting value of the oval deformation	

- Check the dimension „X“ of the rubber rollers.
  Dimensions “X” and øD of the rubber rollers have to be taken from the following table.

  - If the measured dimension of only one of all rollers is smaller than the dimension "X", the complete set of rubber rollers has to be exchanged. Reassembling the rubber rollers, see chapter 8.2.5 .

CF-R Size	øD [mm]	X [mm]
94	40	36
114	55	50
136	55	50
178	55	50
216	75	70
268	81	75
318	81	75
420	81	75
520	81	75

Table 8-1 Rubber roller

8.2.5 Reassembling the rubber rollers

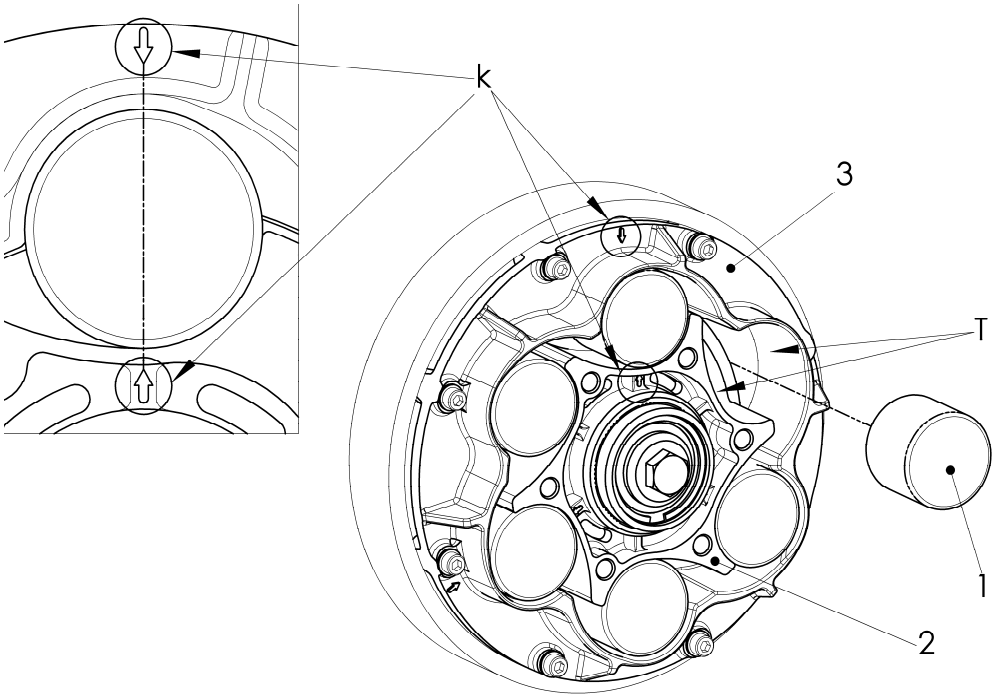


Fig. 8-4 Reassembling the rubber rollers

Item	Info	Designation	Remark
1		Rubber roller	
2		Inner part	
3		Outer part	
	k	The arrows must be congruent	

IMPORTANT

Always replace the full set of rubber rollers.

CAUTION

Material damage can occur as a result of:

- Incorrect positioning of outer and inner parts

The arrows on the outer part and inner part must match up (see previous fig.).

- Clean the pockets (T) of the outer and inner part (3 and 2).
- Moisten the pockets (T) of the outer and inner part (3 and 2) with a soap solution or silicone spray.
- The arrows (k) of the outer part (3) and inner part (2) must be congruent.
- Push the rubber rollers (1) into the pockets (T) of the inner and outer part (2 and 3).

8.2.6 Reassembling the adapter

See Fig. 8-1:

- Push the adapter (17) in/onto the centring of the inner part (2).
- Screw the adapter (17) with screws (18; tightening torque see installation drawing) to the inner part (2).

8.2.7 Checking the alignment

- Check the alignment and correct if necessary (see chapter 5).

8.2.8 Mounting the cardan shaft

- Assemble the cardan shaft, as described in the manufacturer's instructions.

8.2.9 After completed mounting

WARNING	
	**Injury and material damage can occur as a result of:** ▪ Loose screw connections Before commissioning, the tightening torque levels of all screws must be checked and corrected if necessary.

CAUTION	
	**Motor damage can occur as a result of:** ▪ High axial forces at the axial bearings of the crank shaft Prior to commissioning the system, ensure that the crank shaft has axial play.

Before commencing long-term operation, the plant must successfully complete a test run.

9 Dismantling

9.1 General dismantling instructions

Any work method which impairs the safety of the coupling is prohibited.
The user undertakes to notify the manufacturer immediately of any changes occurring at the coupling which could impair safety (address see chapter 1).

IMPORTANT

The coupling is dismantled in reverse order to the assembly process.

WARNING

Injuries can occur as a result of:

- Contact with rotating parts

Before starting work at the coupling, switch off the plant and secure against unintentional start-up.

WARNING

Injury and material damage can occur as a result of:

- Falling coupling components

Secure coupling components against falling to the floor.

WARNING

Injury and material damage can occur as a result of:

- Dismantling of the coupling in the wrong sequence

Only ever dismantle the coupling in the described sequence.

IMPORTANT

Use suitable lifting devices for dismantling.

9.2 Dismantling the cardan shaft

- Dismantle the cardan shaft, as described in the assembly instruction of the manufacturer.

9.3 Dismantling the coupling from the flywheel

- Dismantle the coupling as appropriate for the supplied design (see installation drawing).
  - Dismantling the coupling from the flywheel, see chapter 9.3.1 .
  - Dismantling the coupling with adapter from the flywheel, see chapter 9.3.2 .

9.3.1 Dismantling the coupling from the flywheel

See Fig. 6-1:

- Loosen the screws (D) of the connection coupling (M) and flywheel (C) and remove with washers (4).
- Remove the coupling (M) out of the flywheel (C).

9.3.2 Dismantling the coupling with adapter from the flywheel

See Fig. 6-2:

- Loosen and remove the screws (D) of the connection coupling with adapter (L) and flywheel (C).
- Remove the coupling with adapter (L) out of the flywheel (C).

9.4 Reassembling the coupling

- Reassemble the coupling as described in chapter 6.

10 Wearing and spare parts

WARNING	
	**Injury and material damage can occur as a result of:** ▪ Mounting and/or utilization of non-original CENTA parts Never use parts from other manufacturers.

A stock of the most important wearing and spare parts is the most important condition to ensure that the coupling is functional and ready for operation at all times.

We only provide a warranty for CENTA original parts.

Wearing parts of this coupling:

- Rubber rollers

IMPORTANT
Always replace the full set of rubber rollers.

When ordering a spare, specify:

- Order no.
- Coupling order no.
- Drawing no.

11 Annex

11.1 CENTA data sheet D013-017 (SAE flywheel screw connection)

Validity:
For all dynamically non-stressed screw connections on SAE flywheels with headless screws according to ISO 4014, ISO 4017 and ISO 4762 (DIN 912) with standard metric thread according to DIN ISO 262 and further threads indicated in the following table, if no deviating data are specified in CENTA documents.

Preparation of components to be screwed
Joining areas must be free of dirt, preservative and lubricant agents.

Preparation of oiled screws:
Additionally lubricate screws under the screw head and on the thread with motor oil.
Use tightening torque for **oiled** screws.

Preparation of non-oiled screws:
Use screws as delivered.
Use tightening torque for **non-oiled** screws.

Screw tightening procedure:
rotating (by hand with torque wrench).

Flywheel SAE J620c		Thread size	Strength class	Tightening torques for			
				non-oiled screws		oiled screws	
				[Nm] ±5%	[in lbs] ±5%	[Nm] ±5%	[in lbs] ±5%
165	6 ½	M8	DIN 8.8 or 10.9	23	205	21	185
		5/16-18	SAE 5 or 8	24	212	18	160
190	7 ½	M8	DIN 8.8 or 10.9	23	205	21	185
		5/16-18	SAE 5 or 8	24	212	18	160
200	8	M10	DIN 8.8 or 10.9	46	410	41	360
		3/8-16	SAE 5 or 8	42	370	31	275
255	10	M10	DIN 8.8 or 10.9	46	410	41	360
		3/8-16	SAE 5 or 8	42	370	31	275
290	11 ½	M10	DIN 8.8 or 10.9	46	410	41	360
		3/8-16	SAE 5 or 8	42	370	31	275
355	14	M12	DIN 8.8 or 10.9	79	700	71	630
		1/2-13	SAE 5 or 8	100	885	77	680
405	16	M12	DIN 8.8 or 10.9	79	700	71	630
		1/2-13	SAE 5 or 8	100	885	77	680
460	18	M16	DIN 8.8 or 10.9	195	1725	170	1500
		5/8-11	SAE 5 or 8	205	1820	155	1370
530	21	M16	DIN 8.8 or 10.9	195	1725	170	1500
		5/8-11	SAE 5 or 8	205	1820	155	1370
610	24	M18	DIN 8.8 or 10.9	245	2170	245	2170
		3/4-10	SAE 5 or 8	360	3200	270	2400

11.2 CENTA data sheet D026-902 Declaration of incorporation according to the EC Machinery Directive 2006/42/EC, Appendix II B

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www.centa.info

We herewith declare that the **incomplete** machine

Product:	Highly elastic coupling CENTAFLEX-RV
Model / series code:	CF-RV / 026V
Installation size:	114…318
Design:	all
Serial number:	according to shipping documents, if applicable

- provided this is possible as far as the scope of supply is concerned - complies with the following basic requirements of the **Machinery Directive 2006/42/EC** Appendix I, subchapters 1.1.2, 1.1.3, 1.1.5, 1.3.2, 1.3.3, 1.3.4 and 1.5.4.

In addition, we declare that the special technical documents for this incomplete machine were compiled according to Appendix VII Part B and undertake to forward these to the market monitoring authorities by request via our "Documentation Department".

Commissioning of the incomplete machine is interdicted until the incomplete machine has been incorporated in a machine and the latter complies with the provisions of the EC Machinery Directive and the EC Declaration of Conformity according to Appendix II A is on hand.

The declaration is invalidated by every modification to the delivered parts.

Authorised representative for the compilation of the relevant technical documents:

i.A. Anderseck

by order of Gunnar Anderseck
(Authorised Person Documentation)

Declaration of incorporation was issued:

i.V. Exner

Haan, 14.12.2009

by proxy Dipl.-Ing. Jochen Exner
(Design Management)