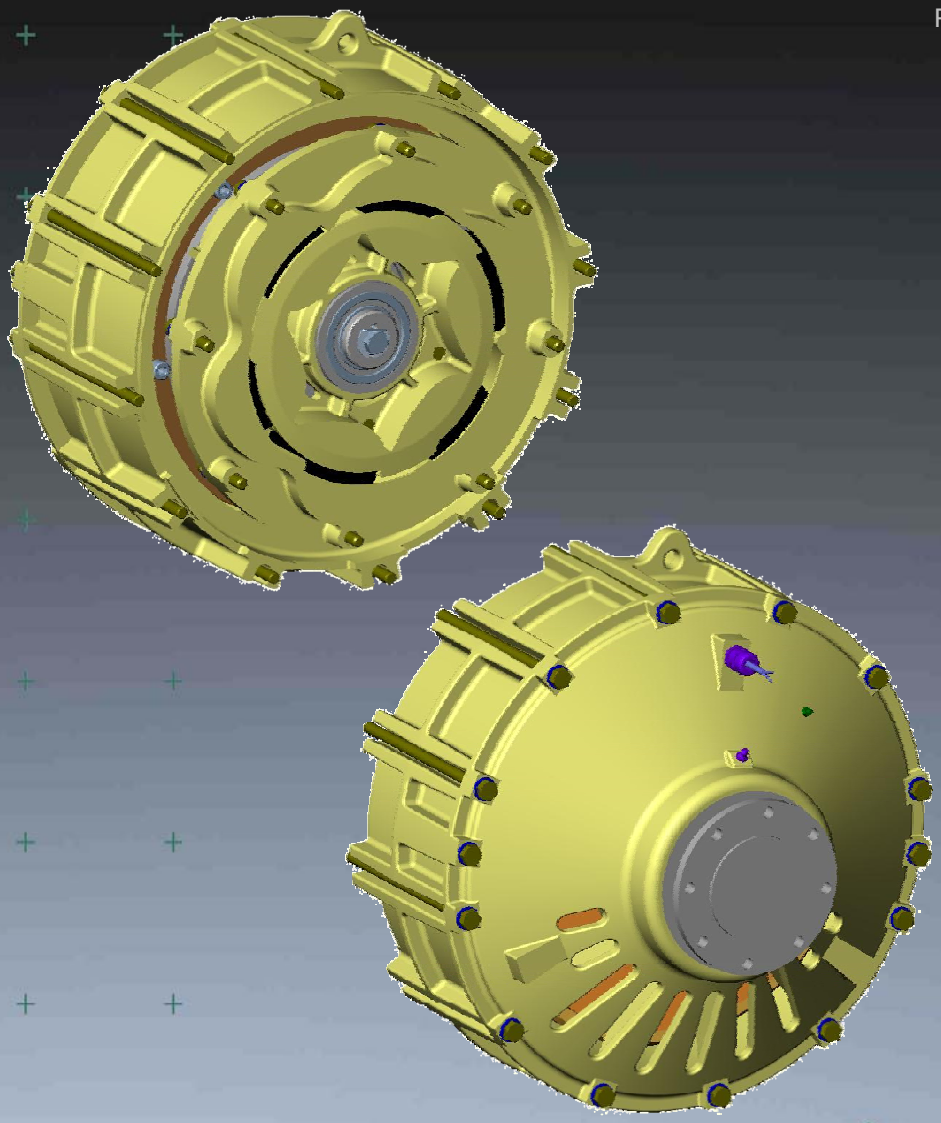
CENTA-CP clutch pack

Assembly and operating instructions

CP-3...8-F...

M32-001-EN

Rev. **4**



CENTA

Power Transmission
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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:

CENTA Antriebe
Kirschey GmbH
Bergische Strasse 7
42781 Haan
GERMANY
Phone +49-2129-912-0
Fax +49-2129-2790
centa@centa.de
www.centa.info

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 precaution:

Warning of a hazardous area

Warning of electrical current hazard

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

The CENTA-CP unites the benefits of the CENTA-FH (flange bearing housing) with an electro-magnetic pole friction coupling and torsionally flexible CENTA coupling, see the following illustration.

The clutch pack of the CENTA-CP is fixed directly to the motor housing and the output takes place via a cardan connection flange.

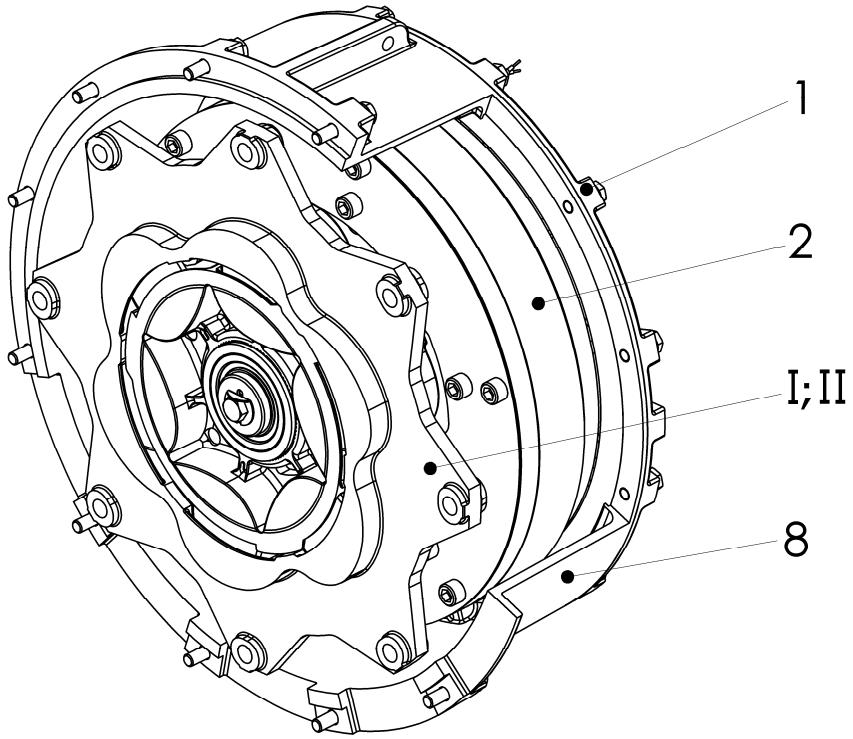

Fig. 4-1 Structure of the CENTA-CP

Item	Info	Designation	Remark
1		Flange bearing housing CENTA-FH	
2		Pole friction coupling	
I; II		Torsionally flexible coupling CENTAFLEX-R or CENTAMAX	
8		Spacer (Intermediate flange)	

Spacifications and dimensions can be found in the catalogue or a special installation drawing. The output data of the pole friction coupling can be found on the nameplate of the clutch pack.

4.1 Characteristics of the flange bearing housing CENTA-FH

CENTAFLEX-A couplings are proven, extremely simple, versatile and offer good torsional flexibility.

- Simple, compact smooth-faced design.
- Low weight, low moment of inertia.
- High output, high admissible speeds, large bores permitted, rupture-proof
- Large angle of twist with almost linear curve (appr. 6-8° at nominal torque).
- High elasticity and considerable flexibility in any direction (radial, axial, angular) with low counter forces acting on shafts and bearings.
- The CENTAFLEX coupling has a shock and vibration absorbing action.
- Torque transmission is absolutely free of play, uniform, silent and electrically insulating.
- The coupling is low-maintenance. The rubber parts are not subject to wear, resulting in a long service life and no generation of dirt (rubber particles).
- The rubber element is air flushed all round, resulting in good dissipation of the generated heat. The rubber element remains cool.
- By slackening the radial screws, the drive can be conveniently separated and rotated without dismantling.
- Because of the torque, no axial reaction forces at all are applied to the shaft and bearings.
- The rubber elements are available in a number of different shore hardnesses.
- This allows the torsional stiffness to be varied within wide limits and so adjusted to the vibration-specific requirements.
- Material: Normal version: Natural rubber, capable of withstanding dynamic loads and temperature resistant.

4.2 Characteristics of the electro-magnetic pole friction coupling

- Backlash-free torque transmission.
- Simple structure, low maintenance.
- High switching frequencies can be achieved with good heat dissipation.
- Separates the coupling halves quickly and without residual torque when switched off.

4.3 Torsionally flexible coupling

The torsionally flexible coupling used is either a CENTAFLEX-R or a CENTAMAX coupling (see following illustrations). Which type is more suitable is assessed by means of a torsional vibration analysis.

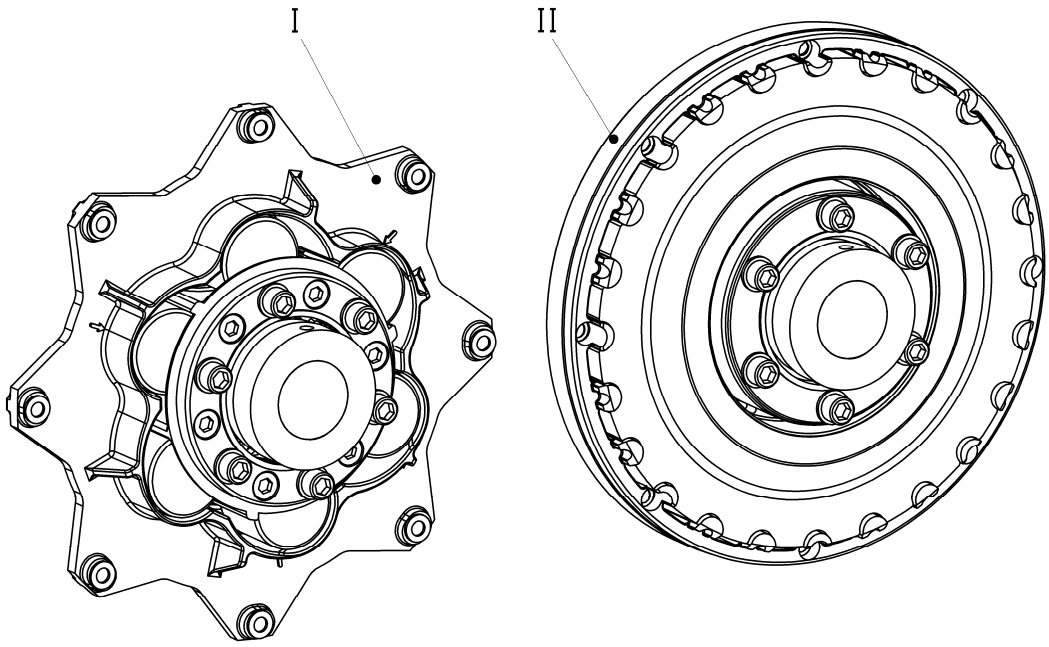

Fig. 4-2 Torsionally flexible couplings

Item	Info	Designation	Remark
I		CENTAFLEX-R	
II		CENTAMAX	

4.3.1 Characteristics of the CENTAFLEX-R

- 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)
- In small gearboxes with splined shafts at the input shaft, the coupling may move in an axial direction. For this reason, there is a retainer plate mounted on the outer flange that secures the coupling axially
- Well proven in use and approved by classification organisations
- High dissipation due to intensive internal and external ventilation
- Economical and service-friendly
- Simple mounting - axial plug-in capability
- Protected by international patents
- Direction of motor rotation **only** counterclockwise (CCW) (looking onto the motor flywheel)

4.3.2 Characteristics of the CENTAMAX

- Highly torsional elasticity / backlash-free
- Linear curve
- Due to different shore hardness levels, the torsional rigidity can be adjusted to vibration-related requirements
- Dampens vibrations and impacts - compensates axial, radial and angular alignment errors
- Low-wear – durability – operational reliability – low maintenance
- Compact, short design – connection dimensions in accordance with SAE J 620 or for connection of two shafts
- Free axial movement
- All-round ventilation (cooling) of the rubber washer
- Suitable for high speeds
- Large admissible bores
- Simple mounting - axial plug-in capability
- Temperature-resistant

5 Mounting

5.1 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.

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.

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.

CAUTION	
	**Material damage to coupling components can occur as a result of:** ▪ Anaerobic adhesives (e.g. Loctite) used for screw locking This type of screw locking medium may not be in contact with rubber parts.

IMPORTANT

- Use suitable lifting devices for assembly.
- The following assembly stages are described for coupling CP-6-F-….
- Part illustration and marking may different slightly from installation drawing and delivery state.

5.2 Mounting the CENTA-CP

Mount the coupling as appropriate for the type supplied. For the type supplied please refer to the installation drawing.

- Mounting the CENTA-CP with CENTAFLEX-R coupling, see chapter 5.3 .
- Mounting the CENTA-CP with CENTAMAX coupling, see chapter 5.4 .

5.3 Mounting the CENTA-CP with CENTAFLEX-R coupling

5.3.1 Mounting the outer part

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 D13-017 (see Annex).

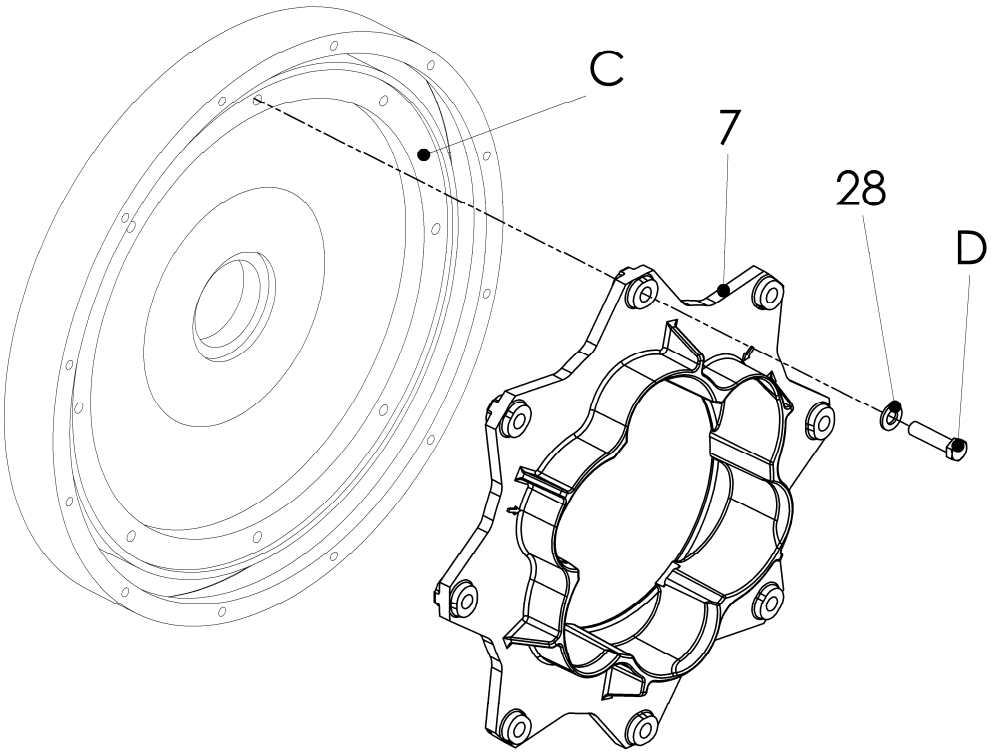

Fig. 5-1 Mounting the outer part

Item	Info	Designation	Remark
7		Outer part	
28		Washer ISO7089 300HV	
C		Flywheel	Customer part
D		Screw	Customer part

- Push the outer part (7) into the centring of the flywheel (C).
- Screw the outer part (7) to the flywheel (C) using the screws (D) and the attached washers (28).

5.3.2 Inserting the rubber rollers

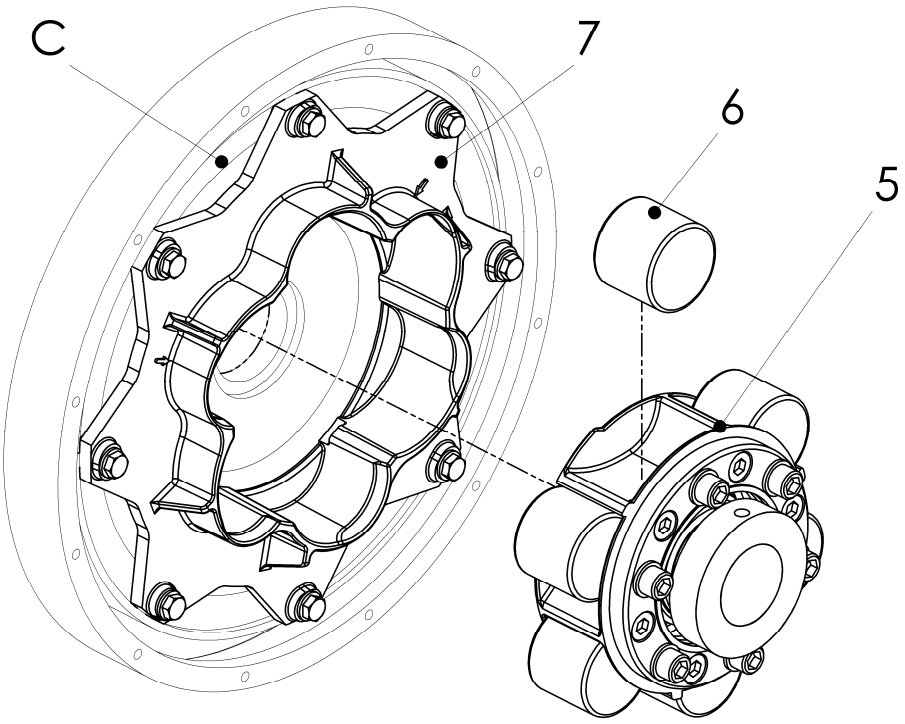

Fig. 5-2 Inserting the rubber rollers

Item	Info	Designation	Remark
6		Rubber roller	
5		Inner part	
7		Outer part	
C		Flywheel	Customer part

- Insert the rubber rollers (6) into the pockets of the inner part (5).

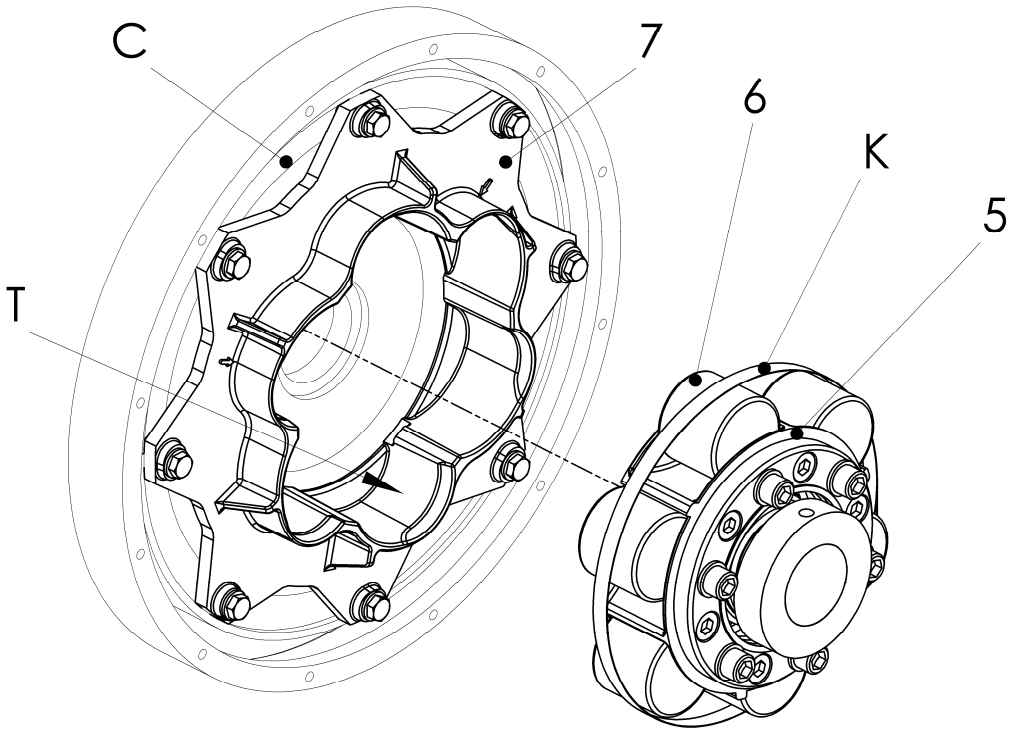

Fig. 5-3 Assembling tape / cord

Item	Info	Designation	Remark
6		Rubber roller	
5		Inner part	
7		Outer part	
C		Flywheel	Customer part
K		Assembling tape / cord	
T		Pocket	

- Secure the rubber rollers (6) against falling down using an assembling tape/cord (K).
- Moisten the pockets (T) of the outer part (7) with soap solution or silicone spray.

IMPORTANT

To easy assembly, only moisten the pockets of the outer part with soap solution (10% liquid soap with 90% water) or silicone spray.

5.3.3 Connecting driving and driven units

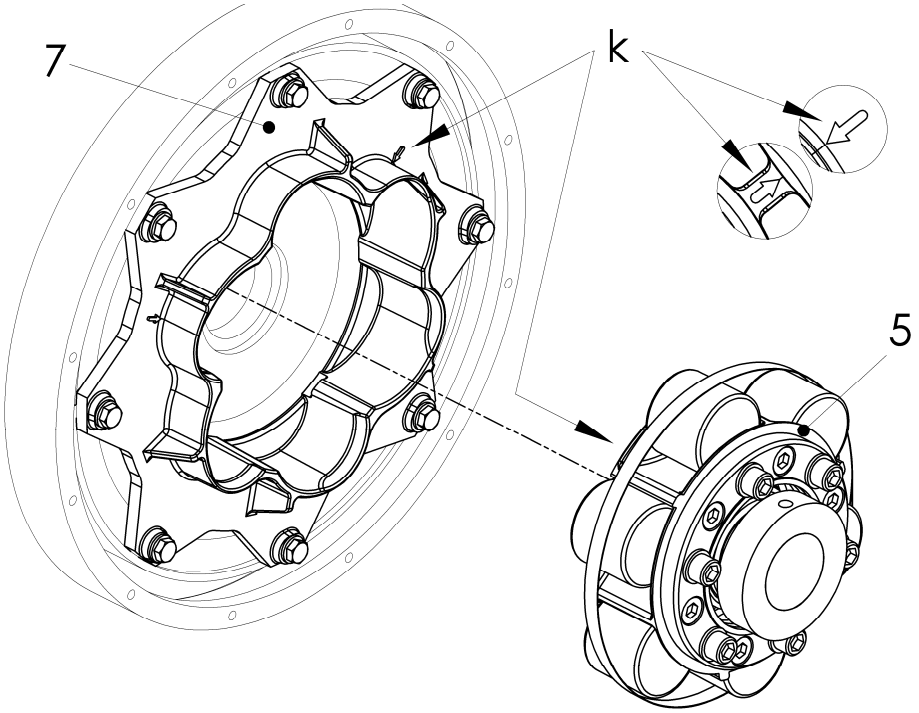

Fig. 5-4 Assembling arrows

Item	Info	Designation	Remark
5		Inner part	
7		Outer part	
	k	The arrows must be congruent	

➢ Move the arrows (k) of the outer part (7) and the inner part (5) until they are congruent.

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.).

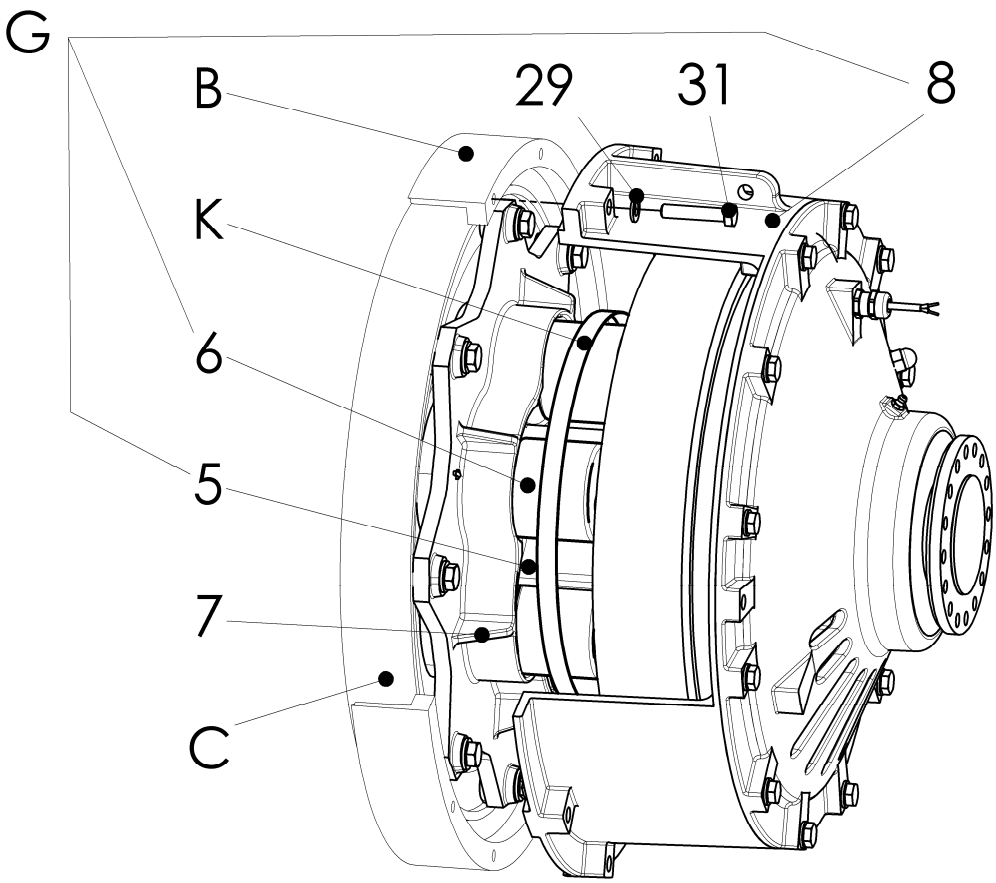

Fig. 5-5 Pushing together the outer and the inner part

Item	Info	Designation	Remark
6		Rubber roller	
5		Inner part	
7		Outer part	
8		Spacer	
29		Washer ISO7089 300HV	
31		Screw	If ordered
B		Motor housing	Customer part
C		Flywheel	Customer part
G		Clutch pack	
K		Assembling tape / cord	

- Push the clutch pack (G) towards the motor housing (B) until the rubber rollers (6) are held by the outer part (7) and the inner part (5).
- Remove the assembling tape / cord (K).
- Continue pushing the outer part (7) and the inner part (5) together.
- Push the spacer (8) with the clutch pack (G) into the centring of the motor housing (B).
- Screw the spacer (8) of the clutch pack (G) to the motor housing (B) using the screws (31) and the attached washers (29).

5.4 Mounting the CENTA-CP with CENTAMAX coupling

5.4.1 Mounting the flange

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 D13-017 (see Annex).

IMPORTANT
For design reasons, unmounted coupling flanges can be slightly out of round. These adjust to the centering fixture of the flywheel when mounting.

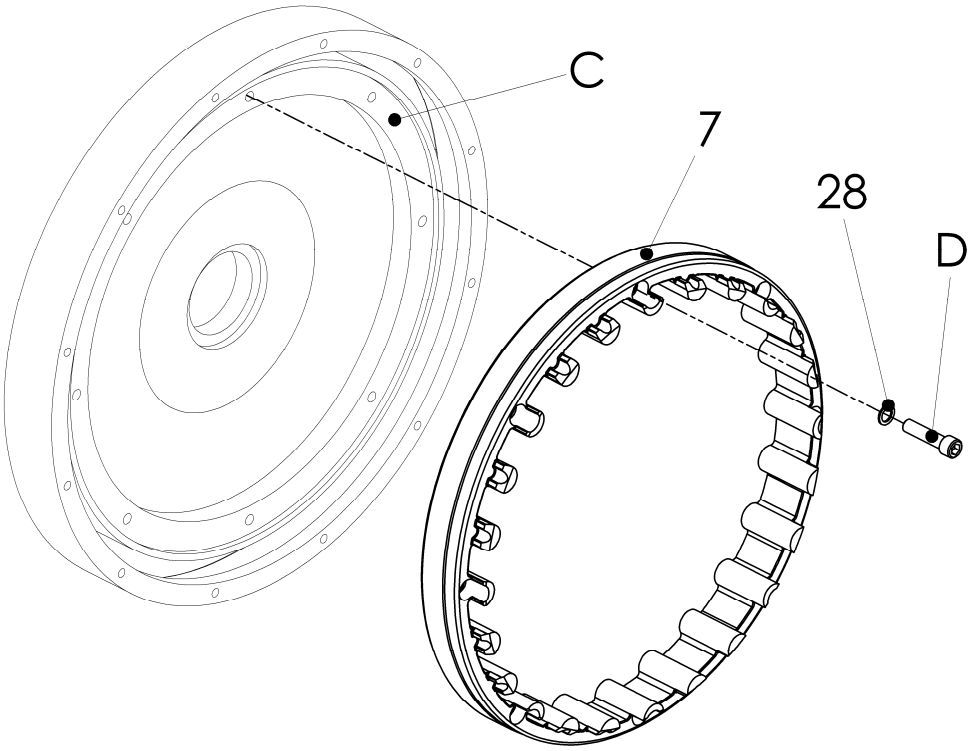

Fig. 5-6 Mounting the flange

Item	Info	Designation	Remark
7		Flange	
28		Washer ISO7089 300HV	
C		Flywheel	Customer part
D		Screw	Customer part

- Push the flange (7) into the centring of the flywheel (C).
- Screw the flange (7) to the flywheel (C) using the screws (D) and the attached washers (28).

5.4.2 Connecting driving and driven units

IMPORTANT
The toothing on the rubber element must be free of oil and grease. If necessary, use soap or talcum powder.

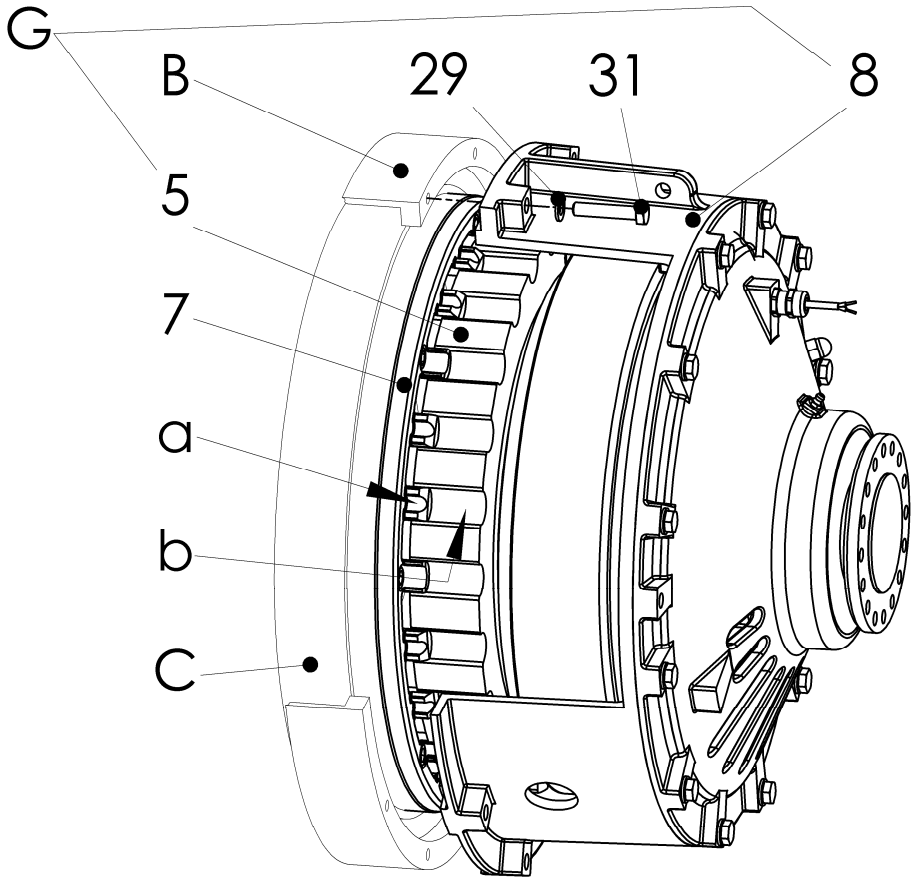

Fig. 5-7 Connecting driving and driven units

Item	Info	Designation	Remark
5		CENTAMAX rubber element	
7		Flange	
8		Spacer	
29		Washer ISO7089 300HV	
31		Screw	If ordered
B		Motor housing	Customer part
C		Flywheel	Customer part
G		Clutch pack	
	a	Toothing of flange	
	b	Toothing of rubber element	

- Position the clutch pack (G) with CENTAMAX rubber element (5) in front of the flange (7) and support.
- Turn the rubber element (5) towards the flange (7) until it is possible to push the toothing (b) of the rubber element (5) into the toothing (a) of the flange (7).
- Push the spacer (8) with clutch pack (G) into the centring of the motor housing (B).
- Screw the spacer (8) of the clutch pack (G) to the motor housing (B) using the screws (31) and the attached washers (29).

5.5 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.

6 Electrical connection

VORSICHT	
	**Material damage can occur as a result of:** ▪ Faulty electrical mounting Only qualified and authorized electrical specialists are allowed to execute the operations described in this chapter!

The electro-magnetic pole friction coupling of the CP may only be operated with direct current.
The following table provides an overview of the electrical data for the individual coupling sizes.

CP Size	Voltage U [V]	Strength of current I [A]	Output P [W]
3	12±5%	8.5	102
	24±5%	5.66	136
4	12±5%	19.25	231
	24±5%	8.5	205
5	24±5%	10.15	243,5
6	24±5%	15.1	363,5
8	24±5%	12.8	307

Table 6-1 Voltage, strength of current, output

WARNUNG	
	**Injury and material damage can occur as a result of:** ▪ No compliance with protection measures Prior to commissioning, check all the protection measures that have been taken to ensure that they work correctly.

6.1 Overvoltage protection

During the switching-off process, high self-induction voltages occur. These endanger the switching contacts (risk of damage by electric arcs) and the coil (insulation damage). For effective protection, the clutch is fitted with overvoltage protection as a standard feature. Due to this measure, the spread of switching off times is also considerably limited.

6.2 Voltage drop due to length of connecting cable

VORSICHT	
	**Material damage can occur as a result of:** ▪ A voltage drop in leads with cross sections which are too small. Ensure that connecting cables are large enough.

Designation	Formula symbol	Unit
Voltage drop	U_v	Volt [V]
Mains voltage	U	Volt [V]
Cable cross section	A	mm^2
Total power	I	Ampère [A]
Total output	P	Watt [W]
Conductivity	χ	[m/Ωmm²] (Cu = 56,2 m/ Ωmm²)
Length of the lead	L	m

Table 6-2 Voltage drop/Length of connecting cable

$$U_V = \frac{2 \cdot L \cdot P}{\chi \cdot A \cdot U}$$

Formel 6-1 Voltage drop

6.3 Suggested connection

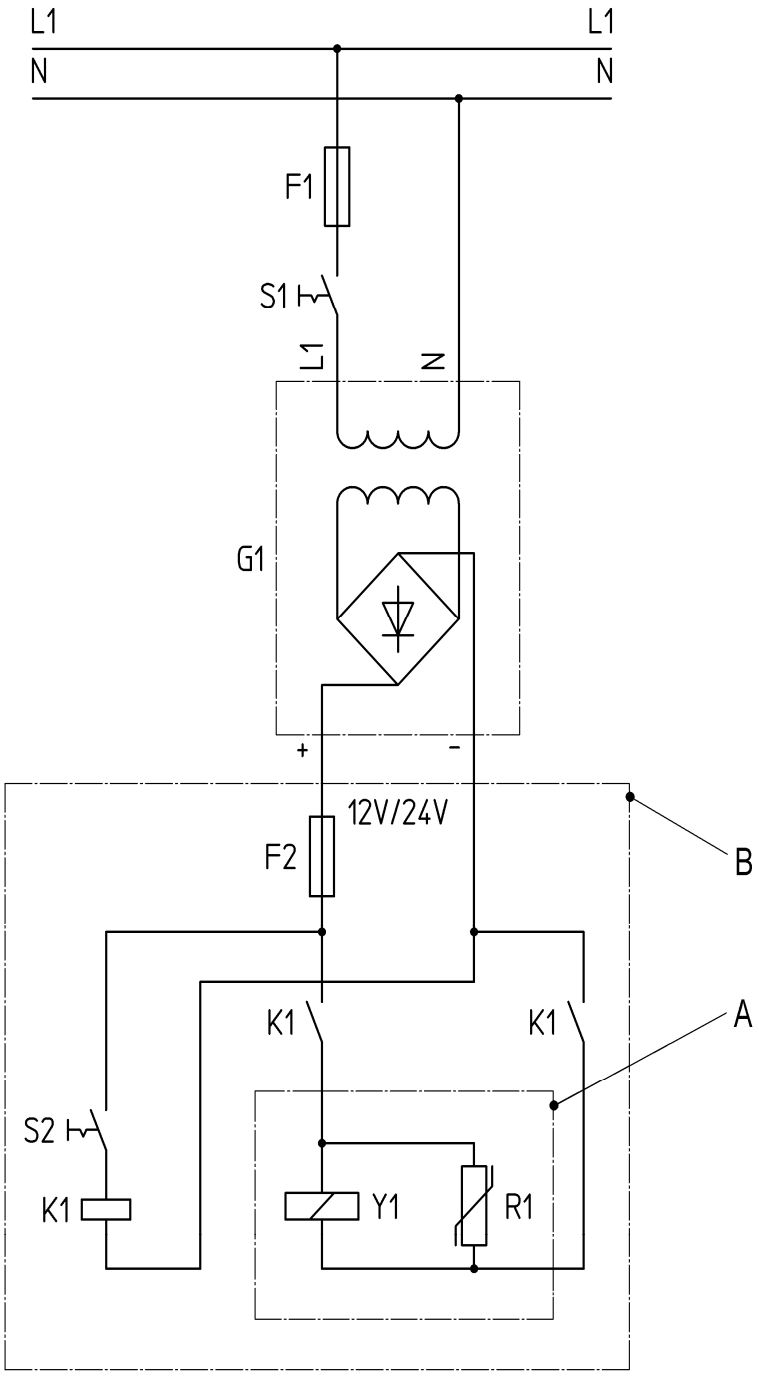

Fig. 6-1 Suggested connection

Item	Designation	Remark
F1	Fuse, AC side	
F2	Fuse, DC side	(generally 1.2 x coupling current)
S1	Switch, AC side	(slow switching off)
S2	Switch, DC side	(fast switching off)
G1	Power pack	(e.g. transformer with rectifier)
K1	DC relay	
R1	Overvoltage protection	
Y1	Coil of the electro-magnetic coupling in the CP	
A	Scope of delivery	
B	12V±5% or 24V±5%	

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

7 Operation

VORSICHT	
	**Material damage can occur as a result of:** ▪ A change in running noise ▪ Occuring vibrations Switch 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.

The basic operating conditions that must be observed for trouble-free operation of the pole friction coupling (clutch pack) can be found in DIN VDE 0580.

The pole friction coupling has protective system IP00.

The thermal behaviour of the pole friction coupling during operation demands protective measures to be taken against fire, burns and overheating in accordance with DIN VDE 0100 Part 420. The choice of position for installation and operation must comply with the requirements of these standards.

7.1 Operating faults, root causes and remedy

Fault	Possible root causes	Remedy
Coupling does not switch on	Power supply interrupted Power supply faulty	Check power supply and supply lead
	Coil has shorted coil or short to earth	1. Measure resistance of the coil. 2. Compare measured resistance with rated resistance. 3. If the resistance is too low, replace the magnet element assembly and send in for repairs. 1. Check the coil for short to earth. 2. If there is a short to earth, replace the magnet element assembly and send in for repairs.
	Wiring incorrect or faulty	1. Check wiring 2. Check cables for transmission.
	Air gap set too large	Have the air gap set to the rated measurement (by CENTA).
Coupling does not produce the nominal torque	The friction surfaces are slightly soiled with oil or grease	Start the coupling again, the friction surfaces will clean themselves.
	The friction surfaces are heavily soiled with oil or grease	1. Dismantle the coupling. 2. Have the friction surfaces cleaned (by CENTA).
	The friction surfaces have been overstrained during the running-in process	1. Dismantle the coupling. 2. Have the friction surfaces adjusted with abrasive paper on a flat surface (by CENTA). 3. Let the coupling run in again.
Coupling does not switch off	Air gap is too small	Have the air gap set to the rated measurement (by CENTA).
	Membrane is damaged or permanently warped	Remove the armature and the magnet element assembly and have them replaced (by CENTA).

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

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

The intervals for inspecting wear and for maintenance and repairs depend on the operating conditions in the place of use. For this reason, it is not possible to make reliable statements about the maintenance intervals in advance. A heavy strain on the clutch pack due to high torques, high switching frequencies and the ambient temperature demands shorter maintenance intervals.

8.1 Work to be performed

VORSICHT	
	**Injuries can occur as a result of:** ▪ Contact with voltage carrying parts Have the power supply disconnected by a qualified electrical specialist.

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 rubber rollers / rubber elements

IMPORTANT
Deposits of rubber dust are normal.

➢ Inspect the rubber rollers / rubber elements for cracks.

IMPORTANT
Exchange the rubber rollers / rubber elements in the event of: • Damage

8.1.4 CENTA-Flange bearing housing

IMPORTANT
To lubricate the tapered roller bearing use the following grease only: • Isoflex Topas L 152 (order-no. 004144) Manufacturer: Klüber Lubrication München KG

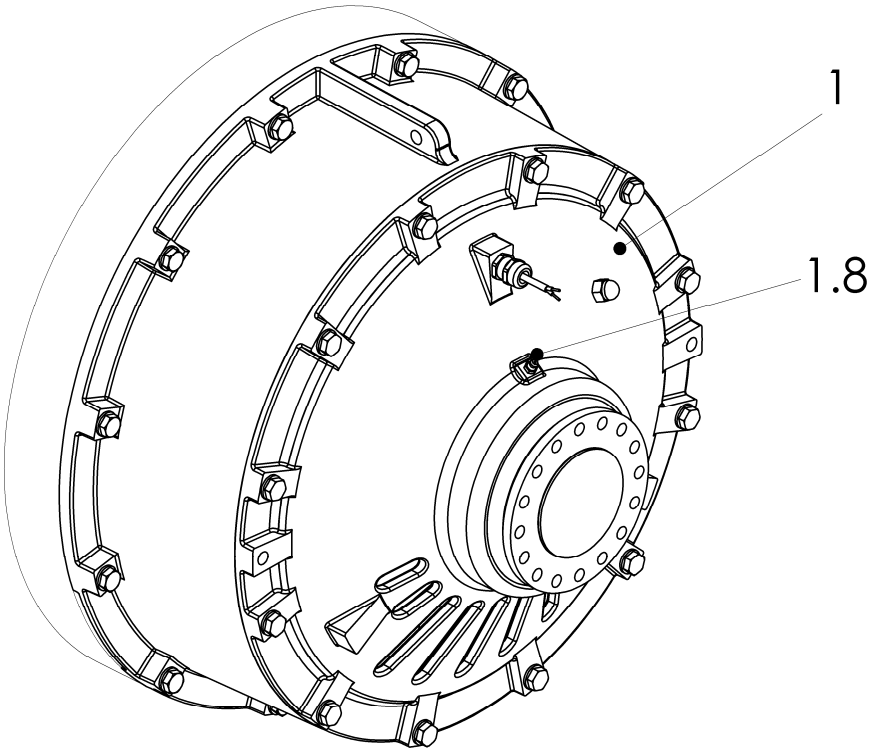

Fig. 8-1 Lubricating nipple

Item	Designation	Remark
1	Flange bearing housing	
1.8	Lubricating nipple	

- Clean the lubricating nipple (1.8) at the flange bearing housing (1).
- Lubrication. Intervals and grease quantity in accordance with the following table.

CP size	Lubrication interval (h)	Quantity of grease (cm^3)	Grease
CP-3	4000	5	Isoflex Topas L 152 (Art.-Nr. 004144) Klüber Lubrication München KG
CP-4/5/6	3000	25	
CP-8	2500	45	

Table 8-1 Lubrication of the tapered roller bearing

8.1.5 Deep groove ball bearings in the hub for torsionally flexible coupling

The deep groove ball bearings in the hub for the torsionally flexible coupling (CF-R or CENTAMAX) are sealed at both sides and filled with grease, so it is not necessary to lubricate these bearings.

8.1.6 Pole friction coupling

If the pole friction coupling of the CENTA-CP no longer produces the necessary torque due to wear on the friction surfaces, it can be readjusted once by our Service Department.

Measurement of the air gap is carried out with a feeler gauge through a hole in the spacer (see Fig. dimension "x")
The permissible values can be found in the table below.

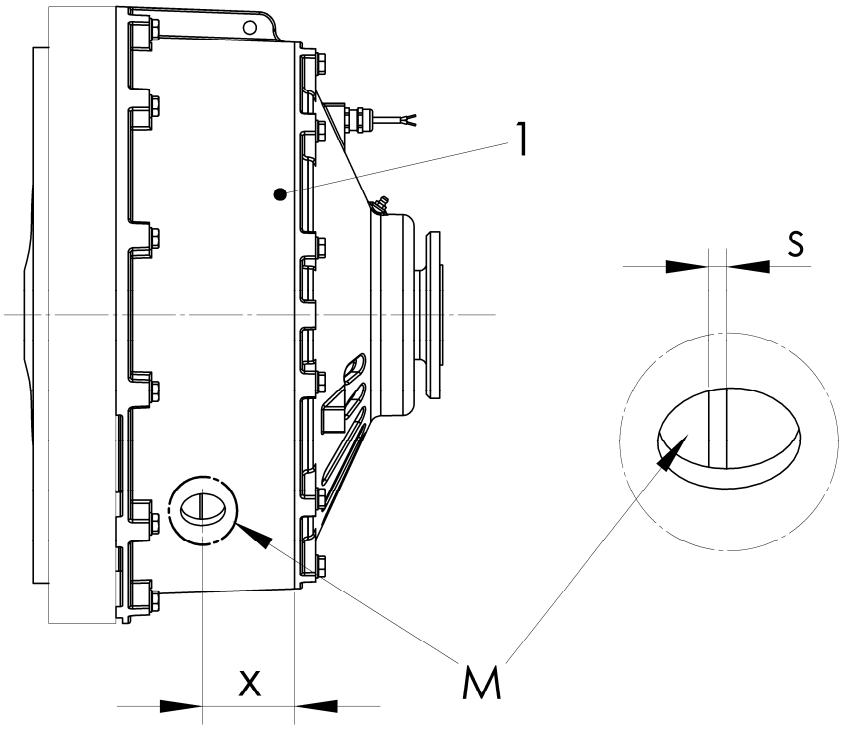

Fig. 8-2 Measuring point for air gap

Item	Info	Designation	Remark
1		Flange bearing housing	
M		Hole in the spacer	
	s	Air gap	With the coupling switched to off-position

CP-size	Air gap s [mm]	Dimension x [mm]
CP 8	0.6 + 0.2	97
CP 6	0.5 + 0.2	86
CP 5	0.5 + 0.2	86
CP 4	0.5 + 0.2	86
CP 3	0.4 + 0.2	60

Table 8-2 Air gap of the pole friction coupling

8.1.7 Inspection of the screw connections

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

8.1.8 Replacing defective parts

- Dismantle the coupling as described in chapter 9.
- Replace defective parts.
- Mount the coupling as described in chapter 5.

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).

WICHTIG

The coupling is dismantled in reverse order to the assembly process.
Please refer to the illustrations in chapter 5.

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.

VORSICHT

Injuries can occur as a result of:

- Contact with voltage carrying parts

Have the power supply disconnected by a qualified electrical specialist.

VORSICHT	
	**Injuries and material damage can occur as a result of:** ▪ Loose fastening screws of the spacer **Never** loosen the fastening screws of the spacer.

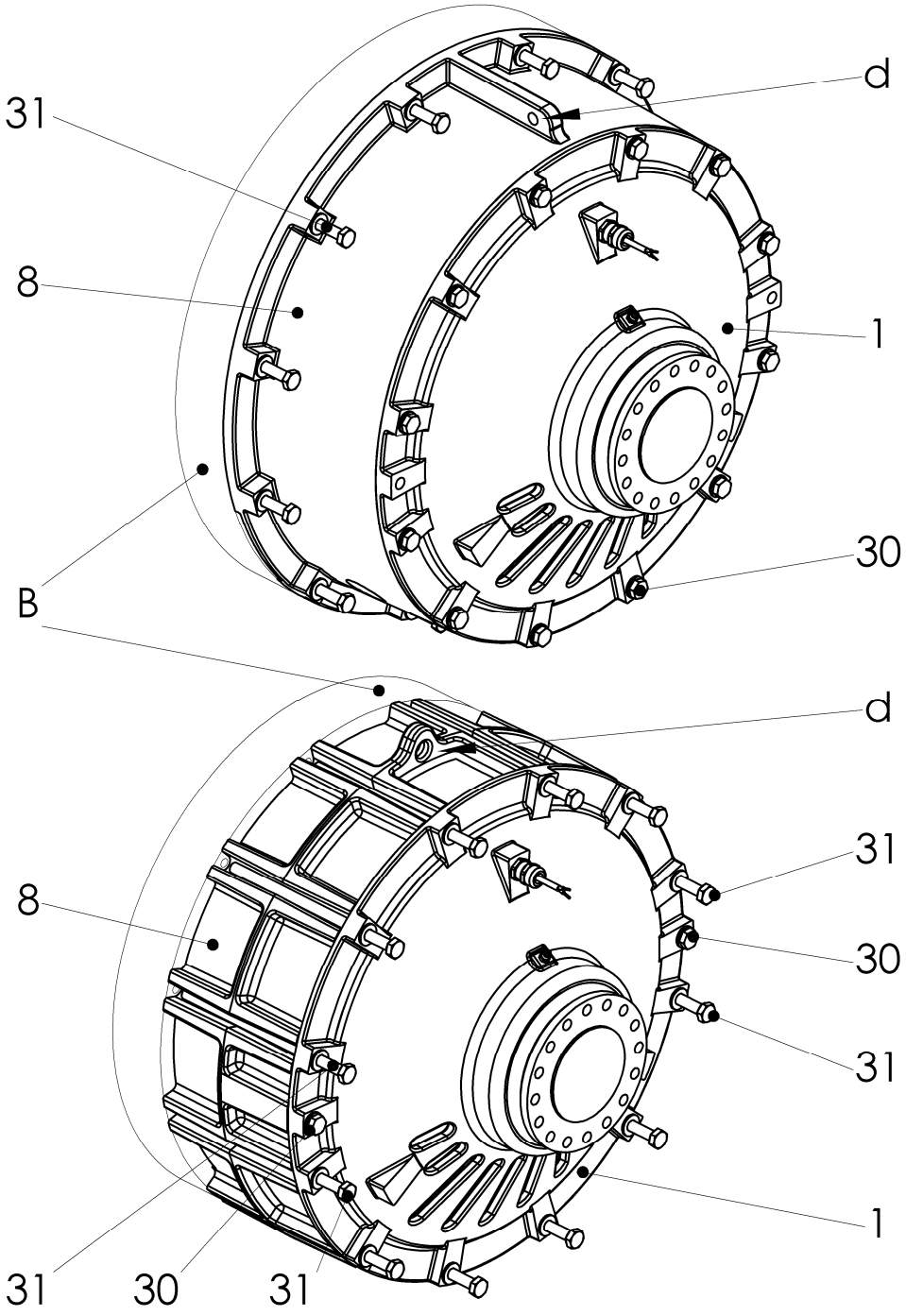

Fig. 9-1 Fastening screws of the spacer

Item	Info	Designation	Remark
1		Flange bearing housing	
8		Torsionally flexible coupling	
30		Screw	Fastening screw for the spacer
B		Motor housing	Customer part
31		Screw (to fit the clutch pack to the motor housing)	If ordered
	d	Lifting eye	

9.2 Dismantling the coupling

Dismantle the coupling as appropriate for the type supplied. For the type supplied please refer to the installation drawing.

- Dismantling a CENTA-CP with CENTAFLEX-R coupling, see chapter 9.2.1
- Dismantling a CENTA-CP with CENTAMAX coupling, see chapter 9.2.2

9.2.1 Dismantling a CENTA-CP with CENTAFLEX-R coupling

See Fig. 5-5:

- Loosen the screws (31) of the connection motor housing (B) and spacer (8) and remove.
- Pull the clutch pack (G) off the centring of the motor housing (B) and remove. By doing so, secure the rubber rollers (6) against falling down.

If necessary, see Fig. 5-1:

- Loosen the screws (D) of the connection outer part (7) and flywheel (C) and remove with the washers (28).
- Pull the outer part (7) off the centring of the flywheel (C) and remove.

9.2.2 Dismantling a CENTA-CP with CENTAMAX coupling

See Fig. 5-7:

- Loosen the screws (31) of the connection motor housing (B) and spacer (8) and remove.
- Pull the clutch pack (G) off the centring of the motor housing (B) and remove.

If necessary, see Fig. 5-6:

- Loosen the screws (D) of the connection outer part (7) and flywheel (C) and remove with the washers (28).
- Pull the outer part (7) off the centring of the flywheel (C) and remove.

9.3 Reassembling the coupling

- Reassemble the coupling as described in chapter 5.

10 Annex

10.1 CENTA data sheet D13-017 (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

10.2 Tightening torques for housing screw fittings

Housing SAE J617	Screw	Strength	Tightening torque	
			[Nm]	[in.lb]
00	M12	DIN 8.8	79	699
	SAE ½ - 13	SAE 5	102	903
0	M12	DIN 8.8	79	699
	SAE ½ - 13	SAE 5	102	903
1	M10	DIN 8.8	79	699
	SAE 7/16 – 14	SAE 5		
2	M10	DIN 8.8	46	407
	SAE 3/8 – 16	SAE 5	42	372
3	M10	DIN 8.8	46	407
	SAE 3/8 – 16	SAE 5	42	372