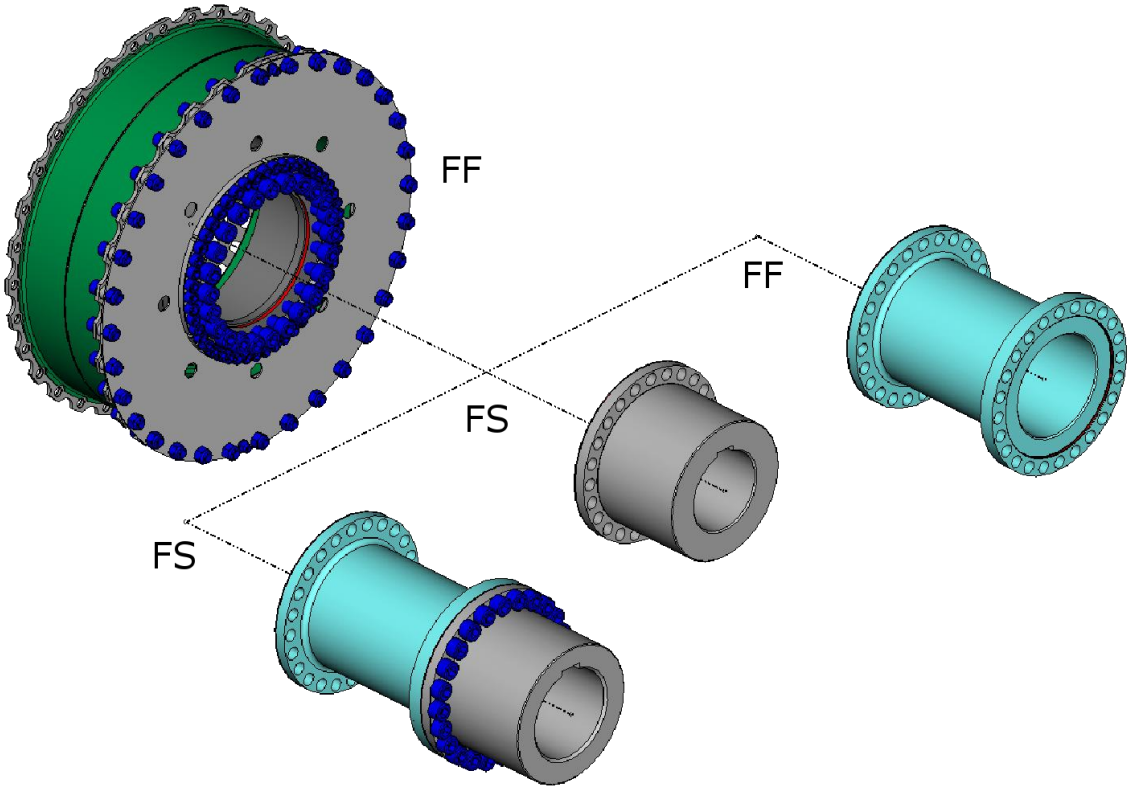
CENTA POWER TRANSMISSION
LEADING BY INNOVATION



CENTAX-G

Assembly and operating instructions

020G-00050…00090-F.20
M020-00005-EN
Rev. 5

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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

CENTAX-SEC series G couplings have the following excellent characteristics:

- Sufficient elasticity to take up axial, radial and angular misalignment, movements, installation errors and heat expansion in units with rigid or elastic bearings.
- High torsional elasticity with linear curve. One or more elements with different shore hardnesses can be used in series, in which case the necessary torsional rigidity for optimal vibration behaviour of the unit can be ensured.
- All sides of the rubber element are ventilated all round in order to guarantee good heat dissipation and high heat capacity.
- High dynamic capacity and balancing quality.
- Simple, cost-effective design with compact dimensions, low weight and mass moment of inertia.
- Wear free, low maintenance, simple to install. In all the series, the elements can be replaced radially – without having to move the connected machine components. Suitable dimensioning of bolts and clamping forces for torque transmission by friction.
- Available with or without failsafe device.

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

- Align the units during the assembly.
- Align the units that are to be connected as accurately as possible. In this way, a long service life for the coupling and maximum operating misalignment values can be achieved.
  The overall misalignment is composed of the misalignment and the operating misalignment. The permissible overall misalignment values can be found in the corresponding catalogue and must not be exceeded.
- All permissible alignment tolerances apply to arrangements at operating temperatures.
  If the arrangement would be aligned at a different temperature, there would be additional deviations in the arrangement, which were produced by the difference between the aligning and operating temperature.
  For alignment, this has to be taken into account.
- After completion of assembly, check the alignment of the coupling again and if necessary correct.

5.1 Axial alignment

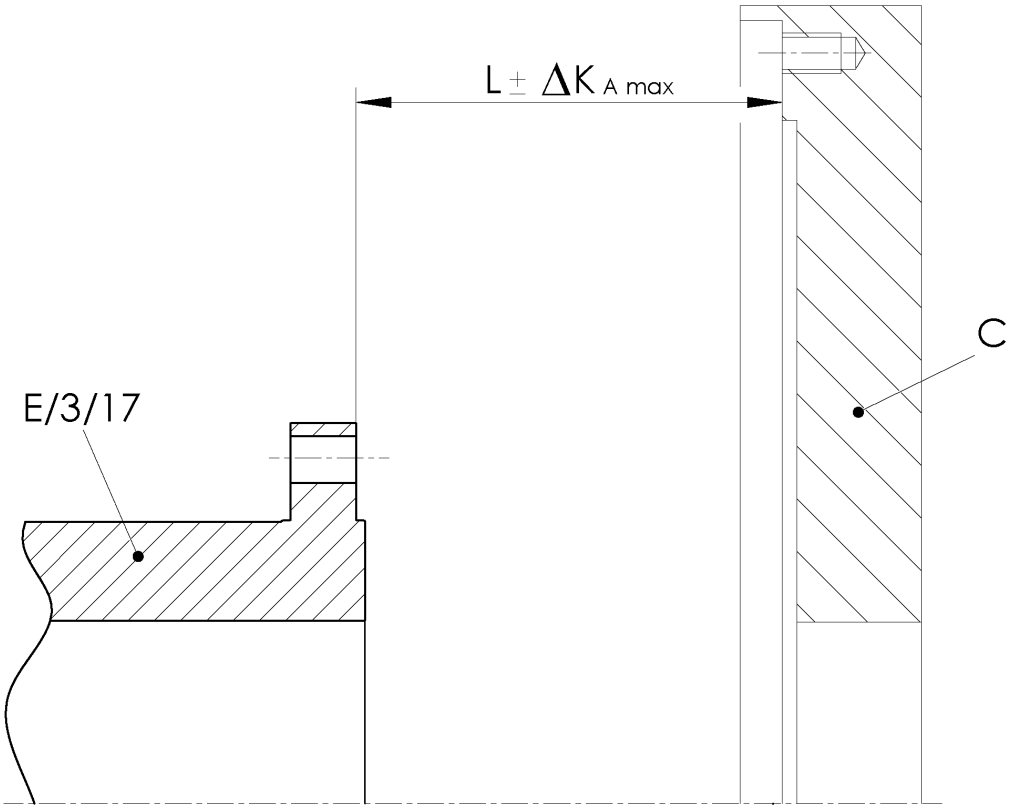

Fig. 5-1 Axial misalignment

Item	Info	Designation	Remark
3		Hub	If scope of supply
17		Adapter	If scope of supply
C		Flywheel	Customer part
E		Flange	Customer part

- Determine the axial misalignment (see Fig. 5-1).
- Take installation length **L** from the installation drawing.
- Align the units (installation dimension = **L±ΔK$_{A\ max}$**).

Permissible axial alignment tolerance:
ΔK$_{A\ max}$=0.5 **mm**

5.2 Radial alignment

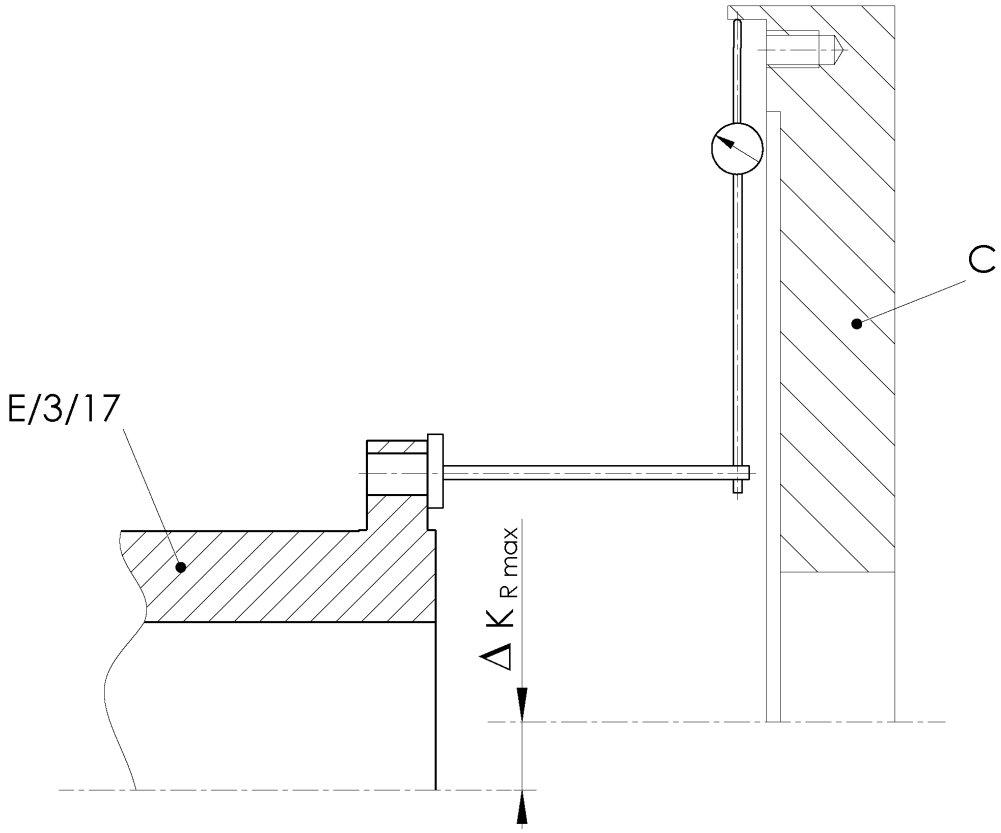

Fig. 5-2 Radial misalignment

Item	Info	Designation	Remark
3		Hub	If scope of supply
17		Adapter	If scope of supply
C		Flywheel	Customer part
E		Flange	Customer part

CAUTION

Material damage to elastically installed engines can occur as a result of:

- Disregard to which extent the engine mounts may settle during alignment

During vertical alignment, take into account the extent by which the engine mounts settle. Please enquire about specifications for the degree of settling from the engine manufacturer or engine mounts manufacturer.

- Measure the radial misalignment with a dial gauge (see Fig. 5-2).
  - Attach the dial gauge to the flange/hub/adapter (E/3/17).
  - Set the sensor of the dial gauge radially against the centring.
  - Turn the flange/hub/adapter (E/3/17) with dial gauge and flywheel (C) slowly by 360°.
- Align the units (calculated deviation **≤$\Delta K_{R\ max}$**).

The permissible radial alignment tolerance **$\Delta K_{R\ max}$** can be found in the following table.

Size	**Shorehardeness [Shore A]**	**$\Delta K_{R\ max}$ [mm]**
50 - 56	45 / 50 / 60	±0.9
	70	±0.3
64, 65, 67	50 / 60	±0.9
	70	±0.3
66, 69 - 71	50 / 60	±1.2
	70	±0.36
72	50 / 60	±1.5
	70	±0.45
75	50 / 60	±1.65
	70	±0.51
78	50 / 60	±1.8
	70	±0.6
80	50 / 60	±2.1
	70	±0.66
81	50 / 60	±2.1
	70	±0.75
82 - 90	50 / 60	±2.4
	70	±0.75

Table 5-1 Permissible radial alignment tolerance

5.3 Angular alignment

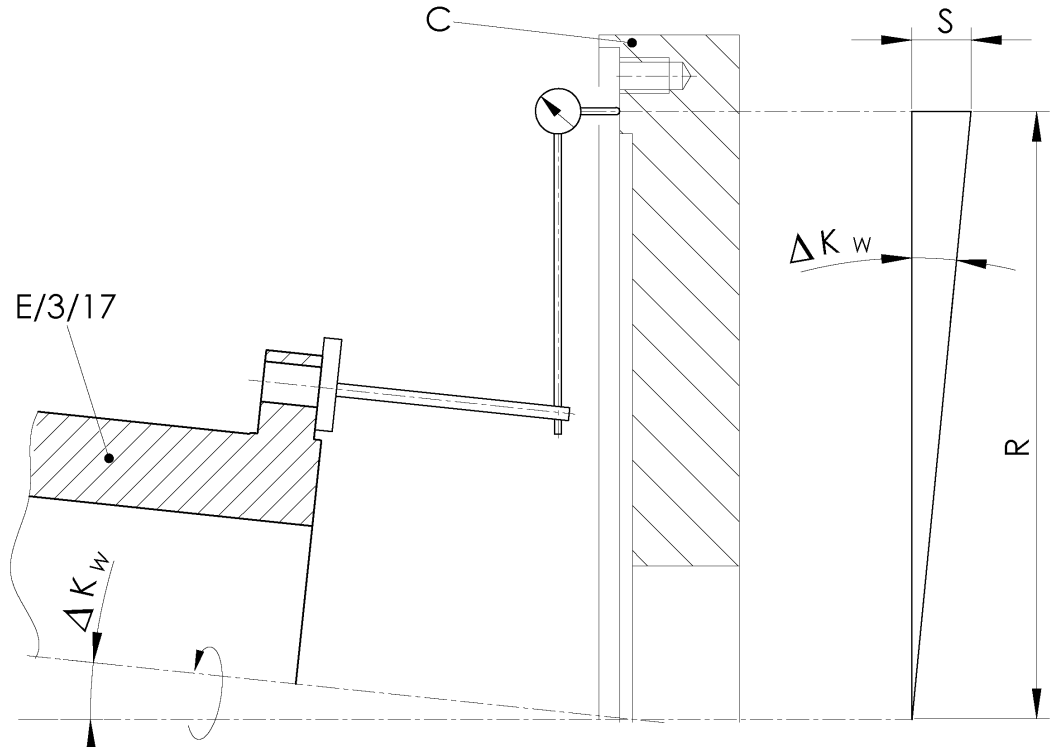

Fig. 5-3 Angular misalignment

Item	Info	Designation	Remark
3		Hub	If scope of supply
17		Adapter	If scope of supply
C		Flywheel	Customer part
E		Flange	Customer part

- Measure the angular misalignment with a dial gauge (see Fig. 5-3).
  - Attach the dial gauge to the flange/hub/adapter (E/3/17).
  - Position the sensor of the dial gauge radially against flat surface at a distance R.
  - Turn the flange/hub/adapter (E/3/17) with dial gauge and flywheel (B) slowly by 360°.

The maximum dial gauge deflection must not exceed the value $2xS_w$ at any point. The permissible tolerance $S_{W\ max}$ should be taken from the table below.

- Align the units (calculated deviation $\leq \Delta K_{W\ max}$).

Permissible angular alignment tolerance:
$\Delta K_{W\ max}$=0.05°

Size	R [mm]	$S_{W\ max}$ [mm]
50 - 64	225	0,20
66 - 70	250	0,22
71 - 72	300	0,26
75	325	0,28
78	355	0,31
80	405	0,35
81	425	0,37
82 - 85	505	0,44
88	590	0,51
90	630	0,55

Table 5-2 Permissible angular alignment tolerance

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.

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

- Screw preparation and tightening torque levels in accordance with CENTA data sheet D013-013 (see chapter 11.1).
- Use suitable lifting devices for assembly.
- The following assembly stages are described for coupling 020G-00078-F.20.
- Part illustration and marking may different slightly from installation drawing and delivery state.

6.2 Mounting overview

The following figure shows examples of possible design.

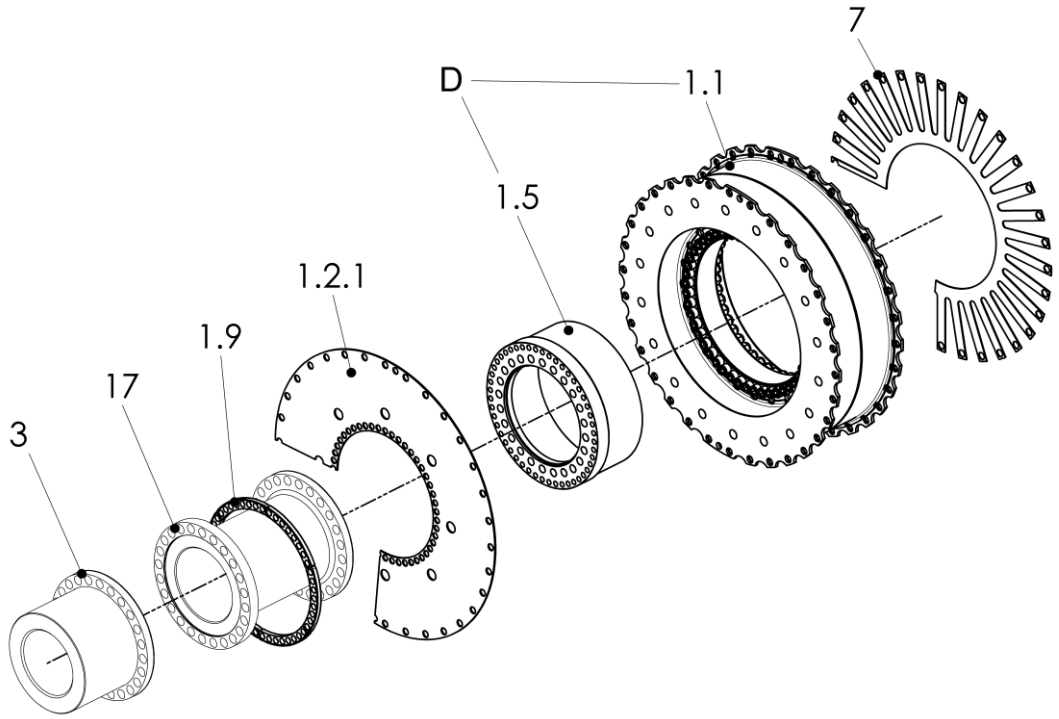

Fig. 6-1 Example: 020G-00050...00090-F.20

Item	Info	Designation	Remark
1.1		Assembly	CX-intermediate ring; pre-mounted by CENTA
1.2.1		Membrane	
1.5		Pot	
1.9		Ring	Design and size see installation drawing
3		Hub	If scope of supply
7		Sheet	If scope of supply
17		Adapter	If scope of supply
D		Pre-mounted assembly	CX-intemediate ring

IMPORTANT

This assembly instruction describes the mounting of several design.
Mount the coupling as appropriate for the supplied design (see installation drawing).

- Mount the coupling according to the order described below as appropriate for the supplied design. For delivered design and built-in parts, see installation drawing.
  - Mounting the hub (3), see chapter 6.3 .
  - Mounting the adapter (17), see chapter 6.4 .
  - Aligning the units, see chapter 5 .
  - Positioning the membrane (1.2.1), see chapter 6.6 .
  - Positioning the pot (1.5) inside the assembly (1.1), see chapter 6.7 .
  - Mounting the pre-mounted assembly (D) to the flywheel, see chapter 6.8.
  - Mounting the pot (1.5), see chapter 6.9 .
  - Mounting the membrane (1.2.1), see chapter 6.10 .
  - Connecting the assembly (1.1) and the membrane, see chapter 6.11 .
  - After completed mounting, see chapter 6.12 .

6.3 Mounting the hub

- Mount the hub as appropriate for the supplied design (see installation drawing):
  - Mounting the hub with cylindrical bore and keyway, see chapter 6.3.1
  - Mounting the hub with conical oil interference fit, see chapter 6.3.2
  - Mounting the hub with cylindrical oil interference fit, see chapter 6.3.3
  - Mounting the CENTA conical clamping hub, see chapter 6.3.4

6.3.1 Mounting the hub with cylindrical bore and keyway

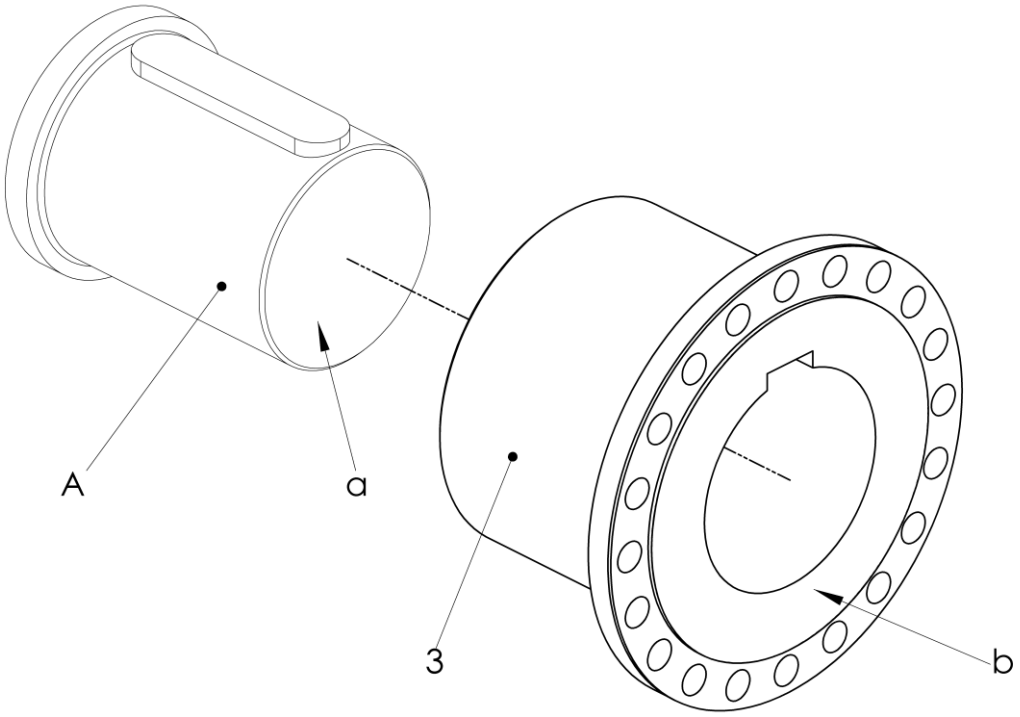

Fig. 6-2 Mounting the hub with cylindrical bore and keyway

Item	Info	Designation	Remark
3		Hub	
A		Shaft	Customer part
	a	Face of shaft	
	b	Face of hub	

CAUTION	
	**Material damage can occur as a result of:** ▪ Incorrect heating of the hubs/flange hubs Heat the hubs/flange hubs steadily in an oil bath, a fan oven, on an electric hot plate, either inductive or with a flame (ring burner).

CAUTION	
	**Injuries can occur as a result of:** ▪ Hot coupling components Use suitable protective gloves.

- ➢ Heat the hub (3) to a temperature of 170° - 200°C.
- ➢ Push the hub (3) onto the shaft (A).

IMPORTANT
Face of shaft must not protrude to face of hub. Otherwise radial replacement of other coupling parts is not guaranteed.

CAUTION	
	**Material damage can occur as a result of:** ▪ Hot hubs/flange hubs Before further mounting of hubs/flange hubs, allow them to cool to ambient temperature.

6.3.2 Mounting the hub with conical oil interference fit

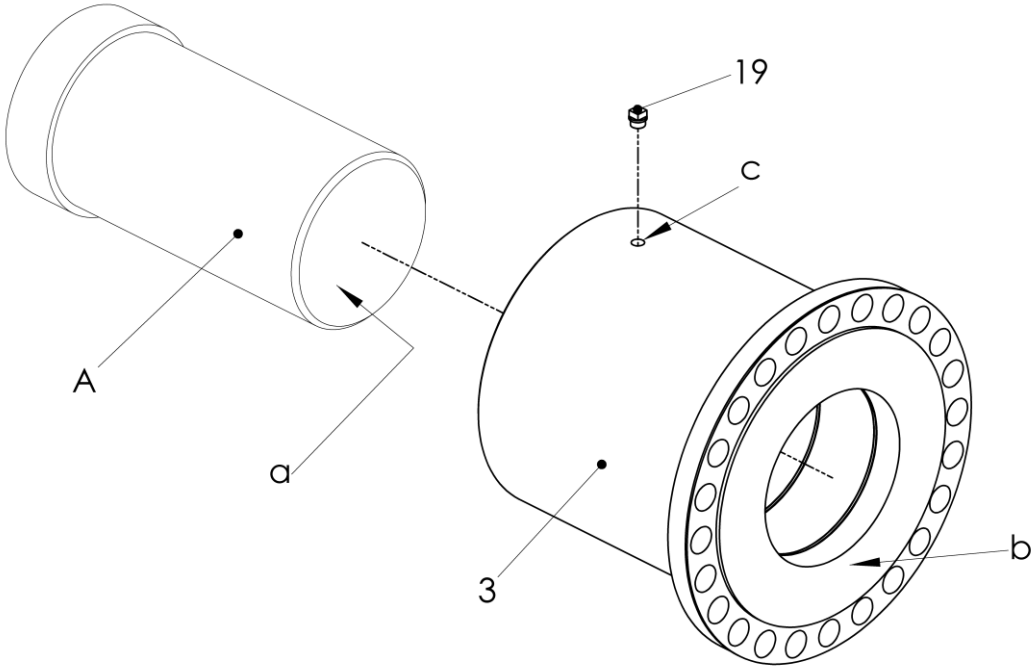

Fig. 6-3 Mounting the hub with conical oil interference fit

Item	Info	Designation	Remark
3		Hub	
19		Screw plug	G¼ or G¾ see installation drawing
A		Shaft	Customer part
	a	Face of shaft	
	b	Face of hub	
	c	Thread	G¼ or G¾ see installation drawing

- Lightly oil the cone of the shaft (A).
- Push the hub (3) onto the shaft (A).
- Remove the screw plug (19) from the hub (3).

WARNING	
	**Injury and material damage can occur as a result of:** ▪ Non-compliance with the operating instructions for the hydraulic pumps Before carrying out work with the hydraulic pumps, do not fail to read their operating instructions. Only ever work with hydraulic pumps as described in their operating instructions.

WARNING	
	**Injury and material damage can occur as a result of:** ▪ Hydraulic fluid spraying out Use protective goggles.

IMPORTANT

We recommend the following mounting fluids:

- For mounting:
  Oil with a viscosity 300 mm^2/s at 20°C, e.g. SKF LHMF300
- For dismantling:
  Oil with a viscosity 900 mm^2/s at 20°C, e.g. SKF LHDF900

- ➢ Connect the pump (p_{max}**= 3000 bar**) for expanding the hub (3) to the thread G¼ or G¾ (c).
- ➢ Screw the pump for pushing on the hub to the shaft.
- ➢ Build up the oil pressure to push on the hub.

WARNING	
	**Material damage can occur as a result of:** ▪ Insufficient expanding pressure in the hub If the expanding pressure is too low, the necessary pushing pressure is too high.

- ➢ Build up the oil pressure for expanding the hub.
- ➢ Build up the oil pressure alternately until the lift path (p up) of the hub (3) is reached (for p up and reference faces, see installation drawing).
- ➢ Decrease the oil pressure for expanding the hub.
- ➢ Remove the pump for expanding the hub from the hub (3).
- ➢ Maintain the oil pressure for pushing on the hub for one hour.
- ➢ Decrease the oil pressure for pushing on the hub.
- ➢ Remove the pump for pushing on the hub from the shaft.

- Turn the hub (3), drain oil out of the thread G¼ or G¾ (c) and dispose correctly.
- Screw the screw plug (19) into the hub (3).

IMPORTANT
Do not place a load on the hub for 24 hours.

IMPORTANT
Face of shaft must not protrude to face of hub. Otherwise radial replacement of other coupling parts is not guaranteed.

6.3.3 Mounting the hub with cylindrical oil interference fit

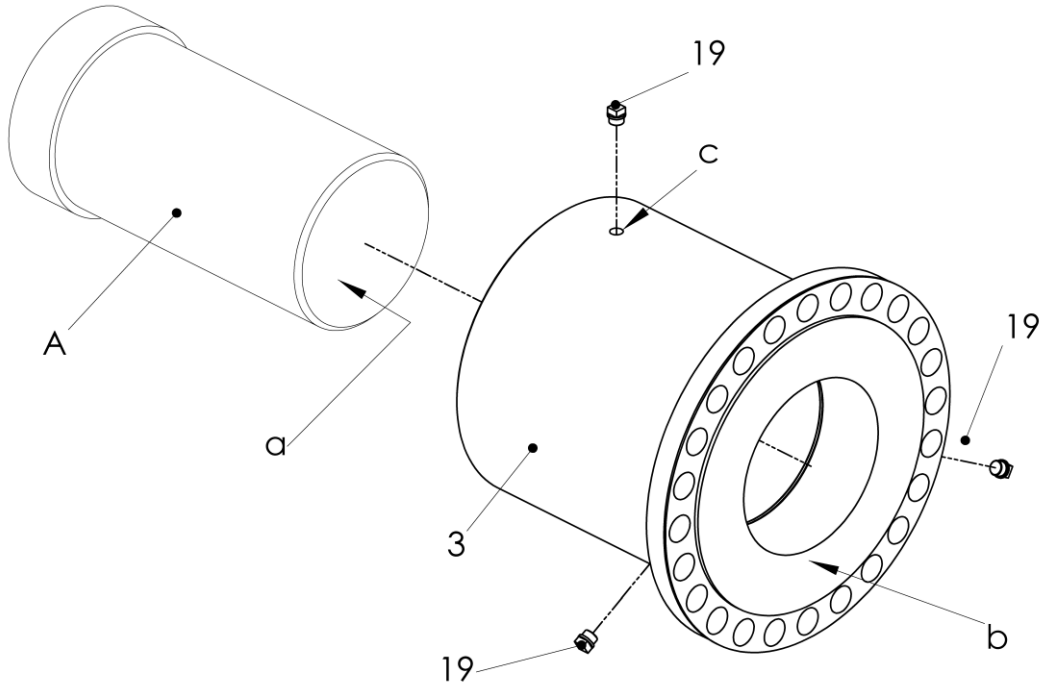

Fig. 6-4 Mounting the hub with cylindrical oil interference fit

Item	Info	Designation	Remark
3		Hub	
19		Screw plug	3 x 120° offset
A		Shaft	Customer part
	a	Face of shaft	
	b	Face of hub	
	c	Thread G¼	3 x 120° offset

CAUTION	
	**Material damage can occur as a result of:** ▪ Incorrect heating of the hubs/flange hubs Heat the hubs/flange hubs steadily in an oil bath, a fan oven, on an electric hot plate, either inductive or with a flame (ring burner).

CAUTION	
	**Injuries can occur as a result of:** ▪ Hot coupling components Use suitable protective gloves.

- ➢ Remove all screw plugs (19) from the hub (3).
- ➢ Warm the hub (3) to a temperature of 280°C - 320°C.
- ➢ Push the hub (3) onto the shaft (A).

IMPORTANT
Face of shaft must not protrude to face of hub. Otherwise radial replacement of other coupling parts is not guaranteed.

CAUTION	
	**Material damage can occur as a result of:** ▪ Hot hubs/flange hubs Before further mounting of hubs/flange hubs, allow them to cool to ambient temperature.

- ➢ Screw all screw plugs (19) into the hub (3).

6.3.4 Mounting the CENTA conical clamping hub (3)

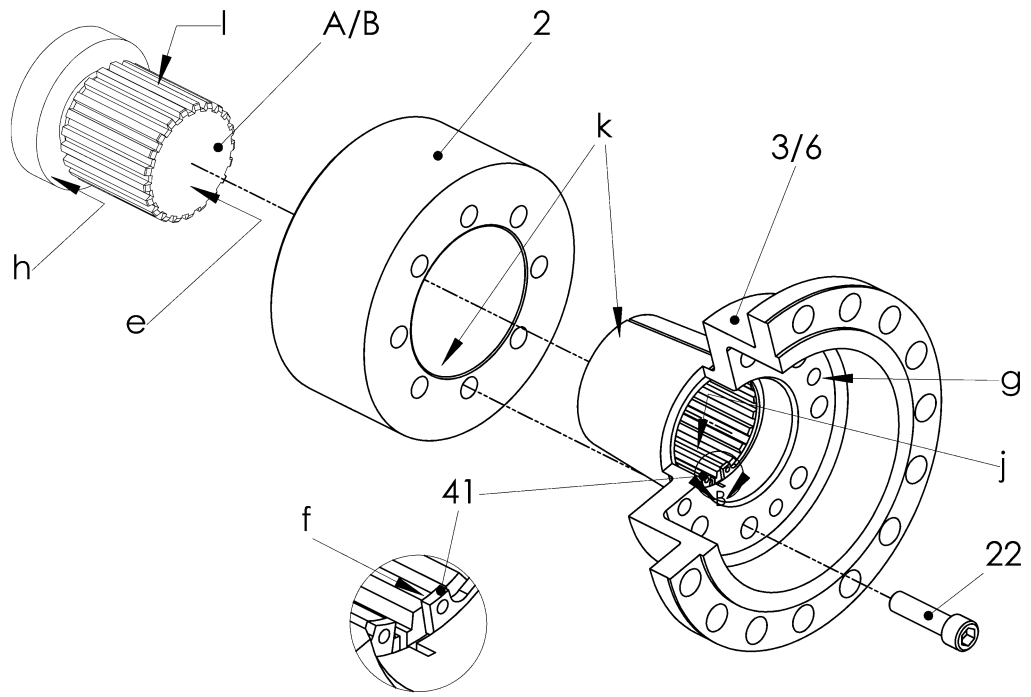

Fig. 6-5 Mounting the CENTA conical clamping hub (3)

Item	Info	Designation	Remark
2		Ring	
3		Hub	Pre-mounted
22		Screw	
41		Circlip	Design of the hub see installation drawing
A		Shaft	Customer part
	e	Shaft end	
	f	Rear side of circlip	
	g	Forcing thread	
	h	Shaft shoulder	
	j	Drilling	
	k	Conical surface	
	l	Shaft extension	

IMPORTANT

The surfaces of the conical clamping connection and the hub-shaft connection must be free of oil, grease and dirt.

- Preparing the hub (3), the ring (2) and the shaft (A) for mounting:
  - Clean and degrease the drilling (j) and the conical surface (k) of the hub (3).
  - Clean and degrease the conical surface (k) of the ring (2).
  - Clean and degrease the shaft extension (l) of the shaft (A).
- Insert the hub (3) into the ring (2).
- Loosely screw the hub (3) to the ring (2) using the screws (22).
- Push the hub (3) onto the shaft (A) as appropriate for the supplied design **with / without** circlip (41; see installation drawing):
  - **With** circlip (41):
    Push the hub (3) and the ring (2) onto the shaft (A) until the shaft end (e) touches the rear side (f) of the circlip (41).

IMPORTANT

Ensure that the hub is correctly positioned on the shaft (against shaft end).
If necessary brace hub with washer against the shaft.

  - **Without** circlip (41):
    Push the hub (3) and the ring (2) onto the shaft (A) against the shaft shoulder (h).

IMPORTANT

Ensure that the hub is correctly positioned on the shaft (against shaft shoulder).
If necessary brace hub with washer against the shaft.

- Evenly tighten the screws (22) in three steps crosswise, until the tightening torque (see installation drawing) has been achieved for all screws.
  First step: 40 % of the specified tightening torque.
  Second step: 60 % of the specified tightening torque.
  Third step: 100 % of the specified tightening torque.
- Check the tightening torque of the screws (22) one after the other.

6.4 Mounting the adapter (17; if existing)

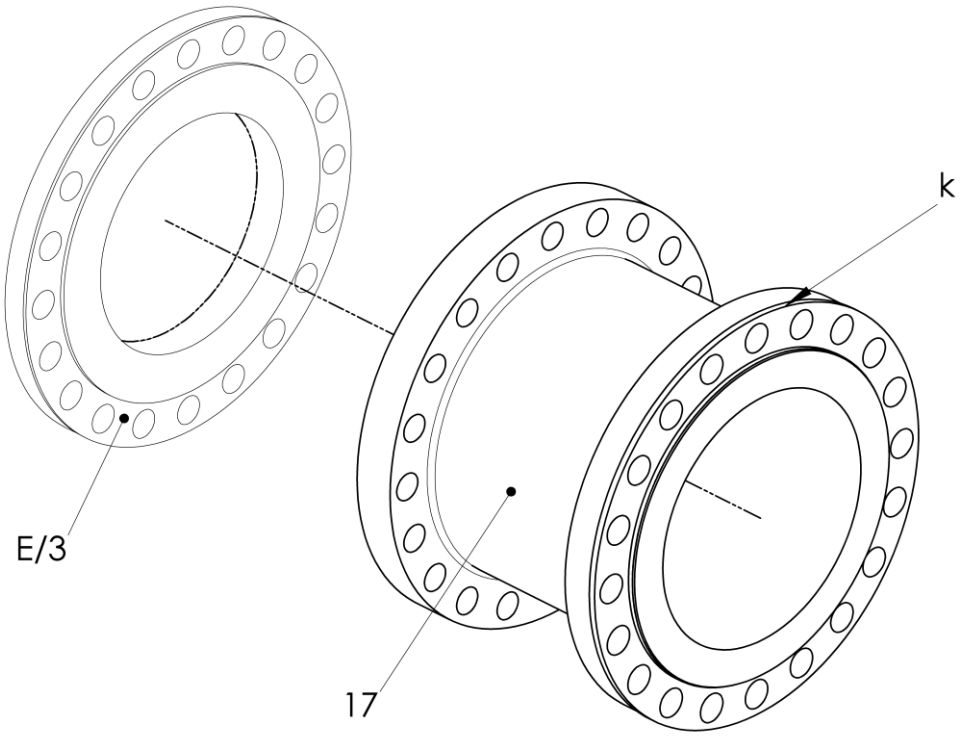

Fig. 6-6 Mounting the adapter (17; if existing)

Item	Info	Designation	Remark
3		Hub	If scope of supply
17		Adapter	
E		Flange	Customer part
	k	Centring	For the membrane

- Push the adapter (17) onto/into the centring of the flange/hub (E/3, see installation drawing).
  The centring (k) must be directed towards the membrane (1.2.1).
- Screw the adapter (17) to the flange/hub (E/3). The screwing can be taken from the installation drawing.

IMPORTANT

Tightening torques for elements to connect couplings with customer parts could deviate from CENTA data sheet D013-013.
Consider specifications on installation drawing.

6.5 Aligning the units

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

6.6 Positioning the membrane (1.2.1)

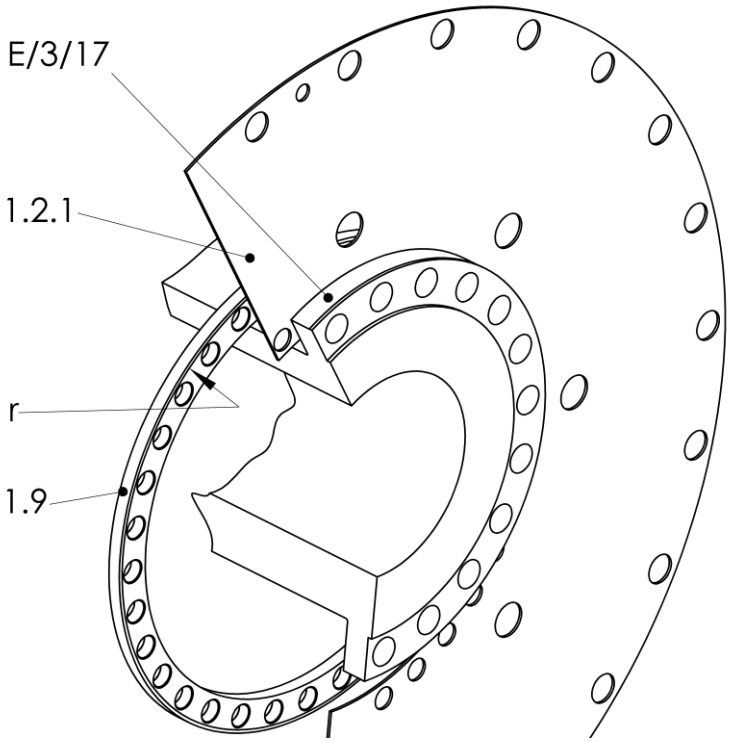

Fig. 6-7 Positioning the membrane (1.2.1)

Item	Info	Designation	Remark
1.2.1		Membrane	
1.9		Ring	Only at sizes 00050…00075
3		Hub	If scope of supply
17		Adapter	If scope of supply
E		Flange	Customer part
	r	Radius	

- Position the membrane (1.2.1) as appropriate for the coupling size supplied (see installation drawing).
  - **Positioning the membrane and the ring (coupling sizes 00050…00075)**
    Place the ring (1.9) and the membrane (1.2.1) on the flange/hub/adapter (E/3/17; see installation drawing).
    The radius (r) of the ring (1.9) must point towards the membrane (1.2.1).
  - **Positioning the membrane (coupling sizes 00078…00090)**
    Place the membrane (1.2.1) on the flange/hub/adapter (E/3/17; see installation drawing).

6.7 Placing the pot (1.5) inside the assembly (1.1)

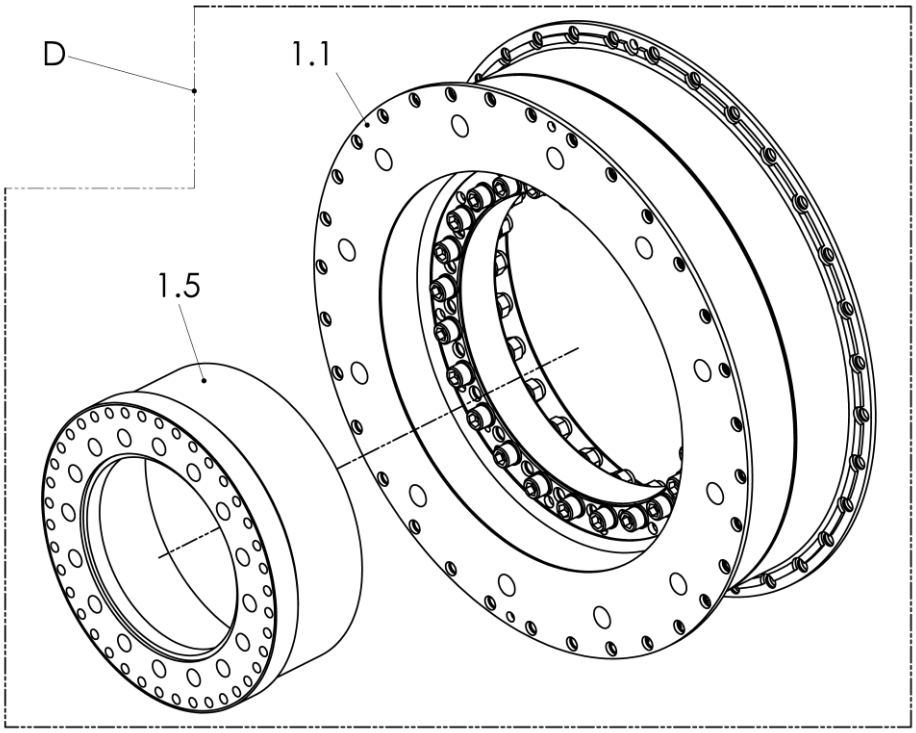

Fig. 6-8 Placing the pot (1.5) inside the assembly (1.1)

Item	Info	Designation	Remark
1.1		Assembly	CX-intermediate ring pre-mounted by CENTA
1.5		Pot	
D		Pre-mounted assembly	CX-intermediate ring

- Place the pot (1.5) inside the assembly (1.1).

6.8 Mounting the pre-mounted assembly (D)

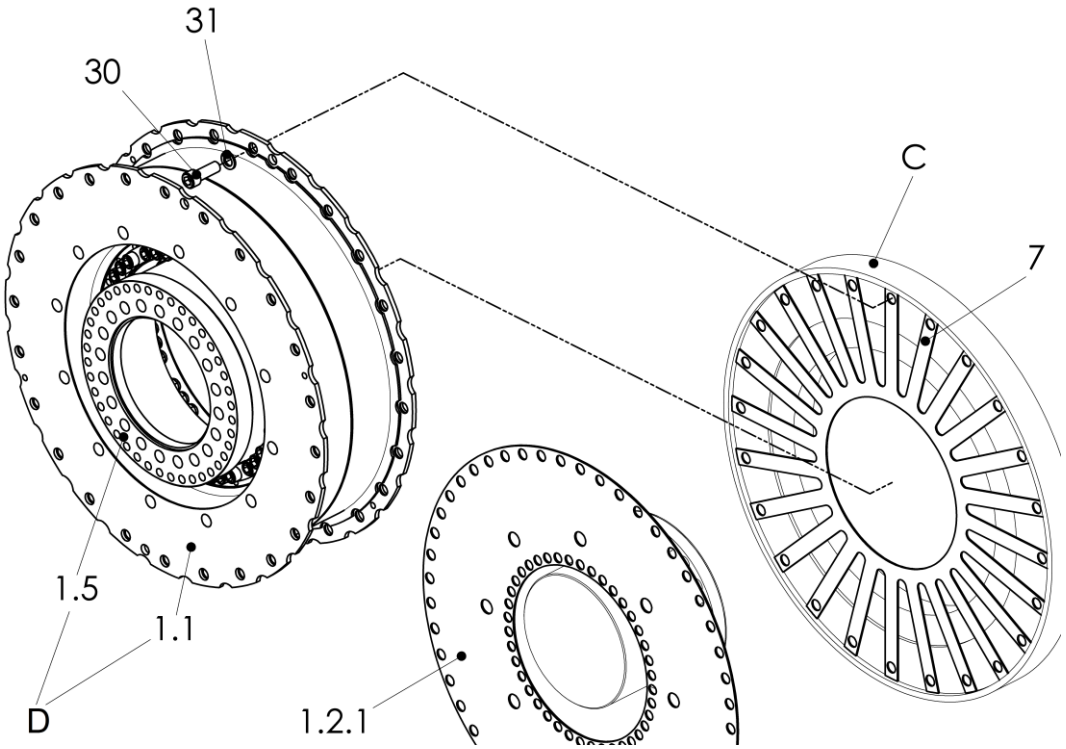

Fig. 6-9 Mounting the pre-mounted assembly (D)

Item	Info	Designation	Remark
1.1		Assembly	CX-intermediate ring pre-mounted by CENTA
1.2.1		Membrane	
1.5		Pot	
7		Sheet	
30		Screw	If ordered
31		Washer	If ordered
D		Pre-mounted assembly	CX-intermediate ring
C		Flywheel	Customer part

- Push the sheet (7) into the centring of the flywheel (C).
- Push the pre-mounted assembly (B) into the centring of the flywheel (C). The pot (1.5) must be on the side of the membrane (1.2.1).
- Screw the pre-mounted assembly (B) and the sheet (7) to the flywheel (C) using the screws (30) and the washers (31).

IMPORTANT

Tightening torques for elements to connect couplings with customer parts could deviate from CENTA data sheet D013-013.
Consider specifications on installation drawing.

6.9 Mounting the pot (1.5)

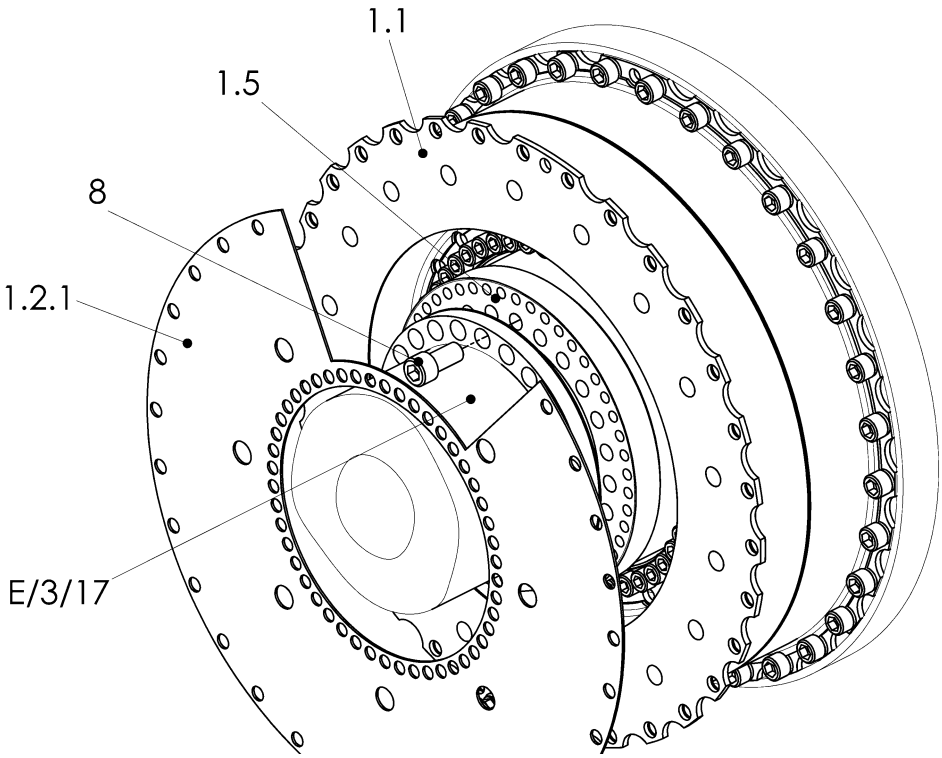

Fig. 6-10 Mounting the pot (1.5)

Item	Info	Designation	Remark
1.1		Assembly	CX-intermediate ring
1.2.1		Membrane	
1.5		Pot	
3		Hub	If scope of supply
8		Screw ISO4762-10.9	
17		Adapter	If scope of supply
E		Flange	Customer part

- Pull the pot (1.5) onto the centring of the flange/hub/adapter (E/3/17; see installation drawing).
- Screw the flange/hub/adapter (E/3/17) to the pot (1.5) using the screws (8).

6.10 Mounting the membrane

- Mount the membrane as appropriate for the coupling size supplied:
  - Mounting the membrane (coupling sizes 00050…00075), see chapter 6.10.1 .
  - Mounting the membrane (coupling sizes 00078…00090), see chapter 6.10.2 .

6.10.1 Mounting the membrane (coupling sizes 00050…00075)

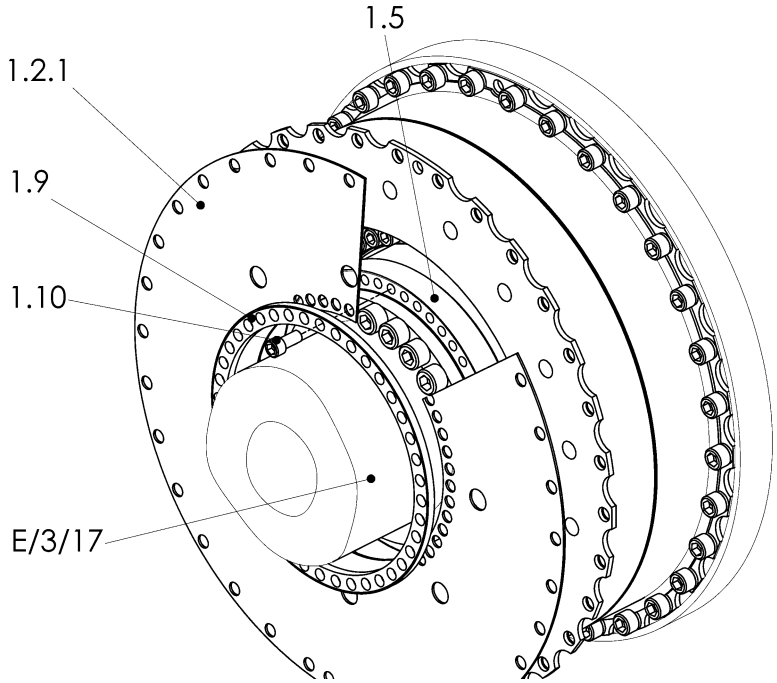

Fig. 6-11 Mounting the membrane (coupling sizes 00050…00075)

Item	Info	Designation	Remark
1.2.1		Membrane	
1.5		Pot	
1.9		Ring	
1.10		Screw ISO4762-10.9	
3		Hub	
17		Adapter	
E		Flange	Customer part

- Push the membrane (1.2.1) onto the centring of the flange/hub/adapter (E/3/17; see installation drawing).
- Push the ring (1.9) onto the centring of the flange/hub/adapter (E/3/17).
- Screw the ring (1.9) and the membrane (1.2.1) to the pot (1.5) using the screws (1.10).

6.10.2 Mounting the membrane (coupling sizes 00078…00090)

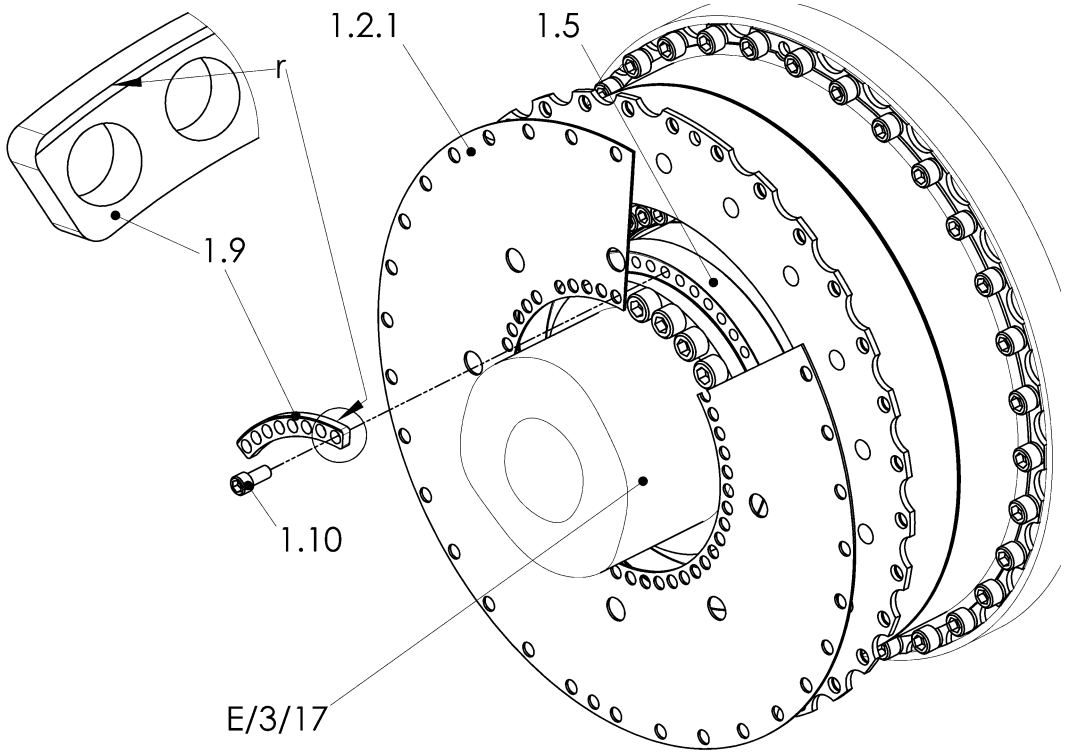

Fig. 6-12 Mounting the membrane (coupling sizes 00078…00090)

Item	Info	Designation	Remark
1.2.1		Membrane	
1.5		Pot	
1.9		Ring (segmented)	
1.10		Screw ISO4762-10.9	
3		Hub	
17		Adapter	
E		Flange	Customer part
	r	Radius of ring (segmented)	

- Push the membrane (1.2.1) onto the centring of the flange/hub/adapter (E/3/17; see installation drawing).
  - Screw the ring (segmented; 1.9) and the membrane (1.2.1) to the pot (1.5) using the screws (1.10).
    The radius (r) of the ring (segmented; 1.9) must be on the side of the membrane (1.2.1).
- Repeat the mounting section above, until the ring (segmented; 1.9) is completely mounted.

6.11 Connecting the assembly (1.1) and the membrane

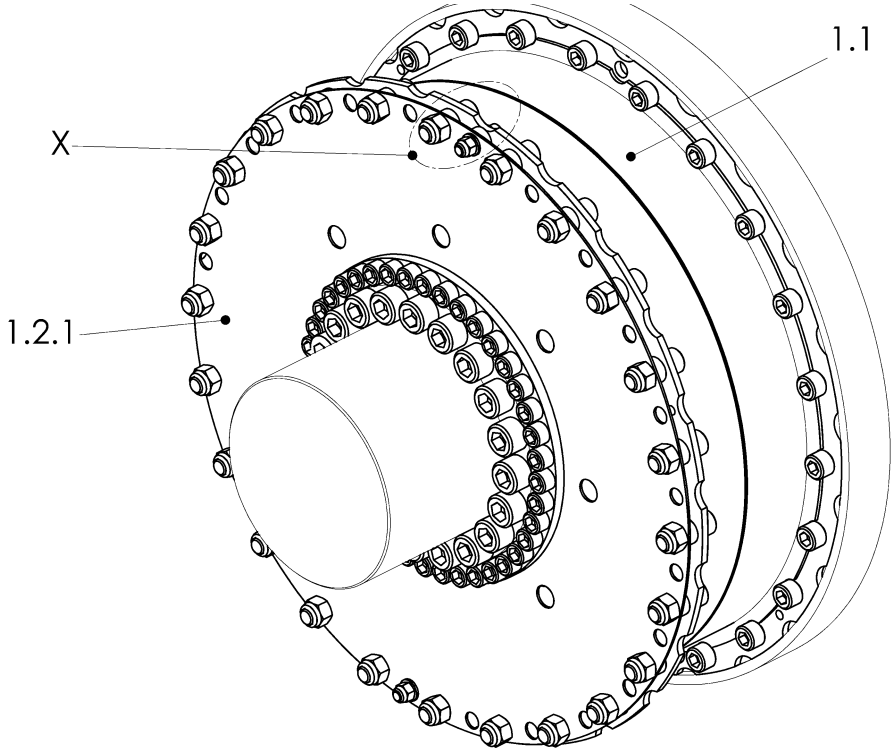

Fig. 6-13 Connecting the assembly (1.1) and the membrane

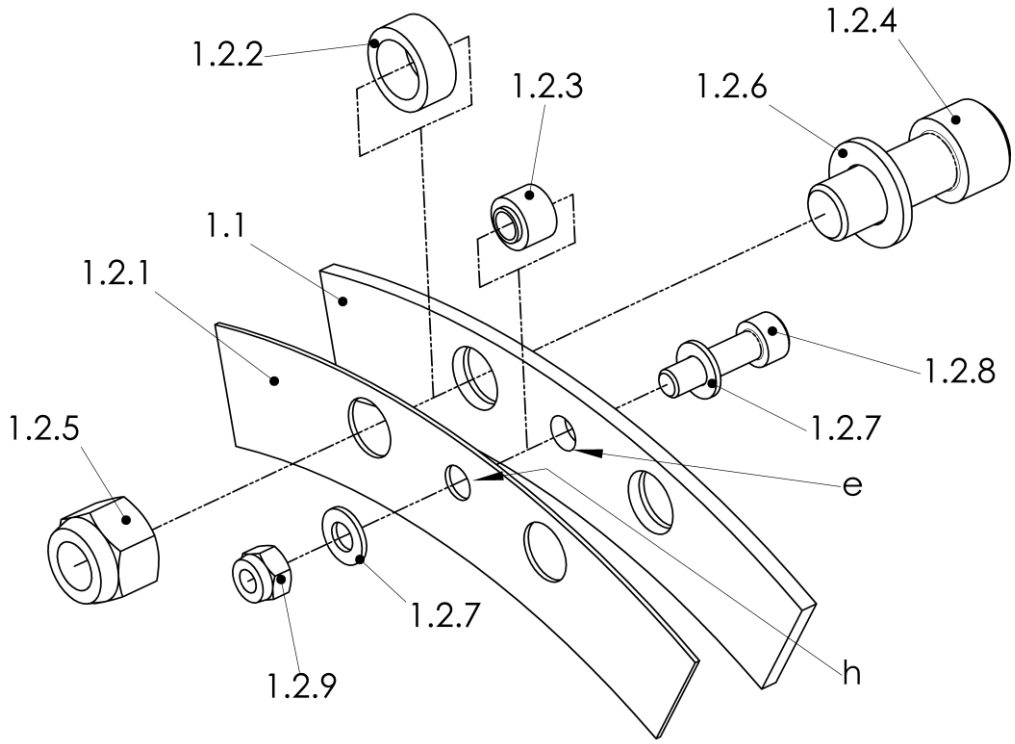

Fig. 6-14 Detail X

Item	Info	Designation	Remark
1.1		Assembly	CX-intermediate ring
1.2.1		Membrane	
1.2.2		Ring	
1.2.3		Bush	2x180°
1.2.4		Screw	
1.2.5		Nut	
1.2.6		Washer	
1.2.7		Washer	2x2x180°
1.2.8		Screw	2x180°
1.2.9		Nut	2x180°
	e	Drilling for bush	In the assembly (1.1)
	h	Drilling for bush	In the membrane
X		Detail	

IMPORTANT

Ensure during installation that the bushes are in the right position. The hole diameters depending on coupling size are: ø10H7 or ø18H7.

- Turn the membrane (1.2.1) towards the assembly (1.1) until the drillings (e and h) for the bushes (1.2.3) are aligned.
- Push the bushes (1.2.3) into the drillings (e and h; 2x180°) of the assembly (1.1) and the membrane (1.2.1).
- Screw the assembly (1.1), the bushes (1.2.3) and the membrane (1.2.1) using the screws (1.2.8), the washers (1.2.7) and the nuts (1.2.9), (2x180°).
- Screw the assembly (1.1) and the membrane (1.2.1) using the screws (1.2.4), the washers (1.2.6), the rings (1.2.2) and the nuts (1.2.5).

6.12 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.

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
Prior to all kinds of remedies		• Switch off the plant
Running noises or vibrations in the unit	Alignment error	• Check alignment and correct • Check screw torque levels and correct
	Loose screws	
Membrane or rubber element damaged	Alignment error	• Check alignment and correct • Replace defective parts • Eliminate the cause for inadmissibly high torque
	Inadmissibly high torque	
After all remedies		• 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).

7.2 Admissible overall misalignment of the coupling

The overall misalignment values can be found in the catalogue.

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. It is possible to perform a visual inspection during the regular scheduled maintenance intervals for the complete unit. Every 12 month a visual inspection is strictly required.

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 elements / rubber segments

IMPORTANT
Exchange the rubber elements / rubber segments in the event that: • The wear specifications given in W000-00002 are exceeded

➢ Assess the rubber elements / rubber segments as described in CENTA guidelines W000-00002.

8.1.4 Inspection of the screw connections

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

8.2 Replacing defective parts

➢ Remove the coupling as described in chapter 9.

➢ Replace wearing parts.

➢ Mount the coupling as described in chapter 6.

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.
Please refer to the illustrations in chapter 6.

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:

- Dismantling of the coupling in the wrong sequence

Only ever dismantle 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.

IMPORTANT

Use suitable lifting devices for dismantling.

9.2 Disconnecting the assembly (1.1) and the membrane

See Fig. 6-14 and 6-13:

- Loosen the screws (1.2.4) of the connection assembly (1.1) and membrane (1.2.1) and remove with the nuts (1.2.5), the washers (1.2.6) and the rings (1.2.2).
- Loosen the screws (1.2.8) of the connection assembly (1.1) and membrane (1.2.1) and remove with the nuts (1.2.9), the washers (1.2.7) and the bushes (1.2.3).

9.3 Dismantling the membrane

- Dismantle the membrane as appropriate for the supplied coupling size:
  - Dismantling the membrane (coupling sizes 00050…00075), see chapter 9.3.1
  - Dismantling the membrane (coupling sizes 00078…00090), see chapter 9.3.2

9.3.1 Dismantling the membrane of the coupling sizes 00050…00075

See Fig. 6-11:

- Loosen and remove the screws (1.10) of the connection ring (1.9), membrane (1.2.1) and pot (1.5).
- Pull the ring (1.9) off the centring of the flange/hub/adapter (E/3/17; see installation drawing) and place it on the flange/hub/adapter (E/3/17).
- Pull the membrane (1.2.1) off the centring of the flange/hub/adapter (E/3/17) and place it on the flange/hub/adapter (E/3/17).

9.3.2 Dismantling the membrane of the coupling sizes 00078…00090

See Fig. 6-12:

- Loosen the screws (1.10) of the connection ring (segmented; 1.9), membrane (1.2.1) and pot (1.5) and remove with the ring (segmented; 1.9).
- Repeat the mounting section above, until the ring (segmented; 1.9) is completely dismantled.
- Pull the membrane (1.2.1) off the centring of the flange/hub/adapter (E/3/17; see installation drawing) and place it on the flange/hub/adapter (E/3/17).

9.4 Dismantling the pot (1.5)

See Fig. 6-10:

- Loosen and remove the screws (8) of the connection flange/hub/adapter (E/3/17; see installation drawing) and pot (1.5).
- Pull the pot (1.5) off the centring of the flange/hub/adapter (E/3/17) and place inside the assembly (1.1).

9.5 Dismantling the pre-mounted assembly (D) from the flywheel

See Fig. 6-9:

- Support the pre-mounted assembly (D).
- Loosen the screws (30) of the connection pre-mounted assembly (D), sheet (7) and flywheel (C) and remove with the washers (31).
- Pull the pre-mounted assembly (D) out of the centring of the flywheel (C) and remove.
- Remove all supports.
- Pull the sheet (7) out of the centring of the flywheel (C) and remove.

9.6 Removing the pot (1.5)

See Fig. 6-8:

- Pull the pot (1.5) out of the assembly (1.1) and remove.

9.7 Removing the membrane (1.2.1)

See Fig. 6-7:

- Remove the membrane (1.2.1) and the ring (1.9; only at sizes 00050…00075) from the flange/hub/adapter (E/3/17).

9.8 Dismantling the adapter (17; if existing/ necessary)

See Fig. 6-6:

- Loosen the screws of the connection adapter (17) and the flange/hub (E/3) and remove.
- Push the adapter (17) off/out of the centring of the flange/hub (E/3) and remove.

9.9 Dismantling the hub (if existing/necessary)

- Dismantle the hub (3) as appropriate for the supplied design (see installation drawing):
  - Dismantling the hub with cylindrical bore and keyway, see chapter 9.9.1
  - Dismantling the hub with conical oil intereference fit, see chapter 9.9.2
  - Dismantling the hub with cylindrical oil intereference fit, see chapter 9.9.3
  - Dismantling the CENTA conical clamping hub, see chapter 9.9.4

9.9.1 Dismantling the hub with cylindrical bore and keyway

See Fig. 6-2:

➢ Remove the hub (3) from the shaft (A).

9.9.2 Dismantling the hub with conical oil interference fit

See Fig. 6-3:

WARNING

Injury and material damage can occur as a result of:

- Non-compliance with the operating instructions for the hydraulic pumps

Before carrying out work with the hydraulic pumps, do not fail to read their operating instructions. Only ever work with hydraulic pumps as described in their operating instructions.

WARNING

Injury and material damage can occur as a result of:

- Hydraulic fluid spraying out

Use protective goggles.

WARNING

Injuries and material damages can occur by:

- Suddenly loosening hubs

Secure the hub with a hydraulic tool against sudden axial loosening.

IMPORTANT

We recommend the following mounting fluids:

- For mounting:
  Oil with a viscosity 300 mm^2/s at 20°C, e.g. SKF LHMF300
- For dismantling:
  Oil with a viscosity 900 mm^2/s at 20°C, e.g. SKF LHDF900

➢ Remove the screw plug (19) from the hub (3).

➢ Connect the pump (**p_{max}= 3000 bar**) to the thread G¼ or G¾ (c) of hub (3) to expand the hub.

➢ Screw the pump to the shaft (A), in order to hold the hub.

➢ Build up oil pressure in order to hold the hub.

➢ Build up oil pressure to expand the hub (**p_{max}= 2000 bar**).

➢ Slowly reduce the oil pressure for holding the hub.

➢ Reduce the oil pressure for expanding the hub.

- Repeat the above mounting section until the hub is completely released from the shaft.
- Remove the pump for holding the hub from the shaft (A).
- Remove pump for expanding the hub from the hub (3).
- Turn the hub (3), drain oil out of the thread G¼ or G¾ (c) and dispose correctly.
- Screw the screw plug (19) into the hub (3).
- Remove the hub (3) from the shaft (A).

9.9.3 Dismantling the hub with cylindrical oil interference fit

WARNING

Injury and material damage can occur as a result of:

- Non-compliance with the operating instructions for the hydraulic pumps

Before carrying out work with the hydraulic pumps, do not fail to read their operating instructions. Only ever work with hydraulic pumps as described in their operating instructions.

WARNING

Injury and material damage can occur as a result of:

- Hydraulic fluid spraying out

Use protective goggles.

WARNING

Injury and material damage can occur as a result of:

- Large quantity of hydraulic fluid spraying out

Close the hub with a cover.
Take up leaked hydraulic fluid.

IMPORTANT

We recommend the following mounting fluids:

- For mounting:
  Oil with a viscosity 300 mm^2/s at 20°C, e.g. SKF LHMF300
- For dismantling:
  Oil with a viscosity 900 mm^2/s at 20°C, e.g. SKF LHDF900

- Remove the screw plugs (19) from the hub (3) (see Fig. 6-4).

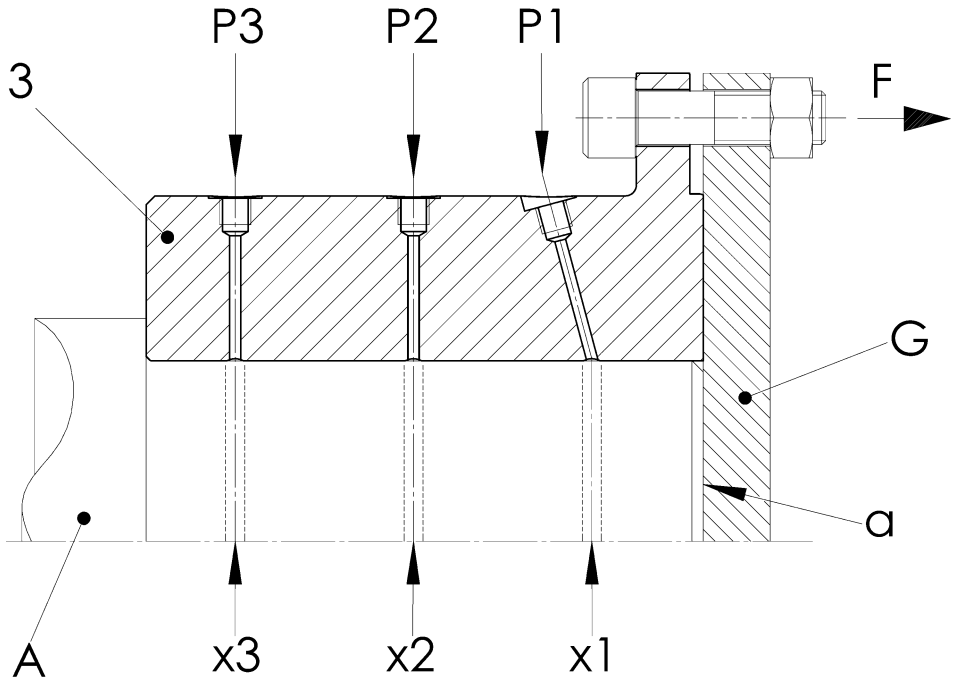

Fig. 9-1 Dismantling the hub with cylindrical oil interference fit

Item	Info	Designation	Remark
3		Hub	
A		Shaft	Customer part
F		Force in tensile direction	
G		Cover with fasteners	Customer part
P		Connection for hydraulic pump	P1, P2, P3
	a	Face of shaft	
	x	Oilgroove	x1, x2, x3

- Mount the cover (G) to the hub (3).
- Connect the high-pressure pumps with the connections (P1, P2 and P3).
- Slowly build up the oil pressure for expanding the hub (**p_{max}= 1500 bar**).
- Pull the hub (3) with force (F) continuously in shown direction, until the hub (3) is dismantled.
- Remove the high-pressure pumps from the hub (3).
- Dismantle the cover (G) from the hub (3).
- Pick up leaked hydraulic fluid and dispose properly.
- Screw the screw plugs (19) into the hub (3, see fig. 6-4).

9.9.4 Dismantling the CENTA conical clamping hub

See Fig. 6-5:

- Loosen the screws (22) and equally unscrew approx. 10 mm.
- Unscrew and loosely insert one screw (22) into each forcing thread (g).
- By the aid of the screws (22) in the forcing threads (g) separate the ring (2) from the hub (3).
- Remove the screws (22).
- Remove the ring (2) and the hub (3) from the shaft (A).

9.10 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 elements
  These are delivered pre-assembled as rubber element assemblies. When exchanging the rubber elements also all screw connections must be renewed. These must be ordered separately.

When ordering a spare, specify:

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

11 Annex

11.1 CENTA data sheet D013-013 (lubricated screw connections)

Validity:
For all non-dynamically stressed screw connections with **lubricated** shank bolts in accordance with ISO 4014, ISO 4017 and ISO 4762 (DIN 912) with metric standard thread in accordance with DIN ISO 262, unless other specifications are given on CENTA documents.

Preparation of parts that are to be screwed together:
The joining areas must be free of dirt, preservatives and lubricants.

Preparation of screws that ARE NOT secured with liquid screw locking medium:
Give the screws extra lubrication with motor oil under the screw head and in the thread.

Preparation of screws that ARE secured with liquid screw locking medium:
Give the screws extra lubrication with motor oil under the screw head. Remove all grease from the thread.

Screw tightening method:
Screw in (by hand with torque wrench).

Thread size				Thread size			
d	Strength class	Tightening torques [Nm] ±5%	Tightening torques [in lbs] ±5%	d	Strength class	Tightening torques [Nm] ±5%	Tightening torques [in lbs] ±5%
M6	8.8	9	80	M22	8.8	470	4160
	10.9	13	115		10.9	670	5930
	12.9	15	135		12.9	780	6900
M8	8.8	21	185	M24	8.8	600	5310
	10.9	30	265		10.9	850	7520
	12.9	35	310		12.9	1000	8850
M10	8.8	41	360	M27	8.8	750	6640
	10.9	60	530		10.9	1070	9470
	12.9	71	630		12.9	1250	11060
M12	8.8	71	630	M30	8.8	1000	8850
	10.9	104	920		10.9	1450	12830
	12.9	121	1070		12.9	1700	15050
M14	8.8	113	1000	M33	8.8	1400	12400
	10.9	165	1460		10.9	1950	17250
	12.9	195	1725		12.9	2300	20350
M16	8.8	170	1500	M36	8.8	1750	15500
	10.9	250	2210		10.9	2500	22150
	12.9	300	2660		12.9	3000	26550
M18	8.8	245	2170	M39	8.8	2300	20350
	10.9	350	3100		10.9	3300	29200
	12.9	410	3630		12.9	3800	33650
M20	8.8	350	3100				
	10.9	490	4340				
	12.9	580	5130				

11.2 CENTA data sheet D020-900 Declaration of incorporation according to the EC Machinery Directive 2006/42/EC, Appendix II B

Manufacturer:

CENTA Antriebe Kirschey GmbH
Bergische Strasse 7
42781 Haan / GERMANY

Contact:

Phone +49-2129-912-0
Fax +49-2129-2790
centa@centa.de
www.centa.info

We herewith declare that the **incomplete** machine

Product:	Highly elastic coupling CENTAX-G
Model / series code:	CX-G / 020G
Installation size:	50…90
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. S. Anderseck

by order of Gunnar Anderseck
(Authorised Person Documentation)

Declaration of incorporation was issued:

i.V. J. Exner

Haan, 19.11.2009

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