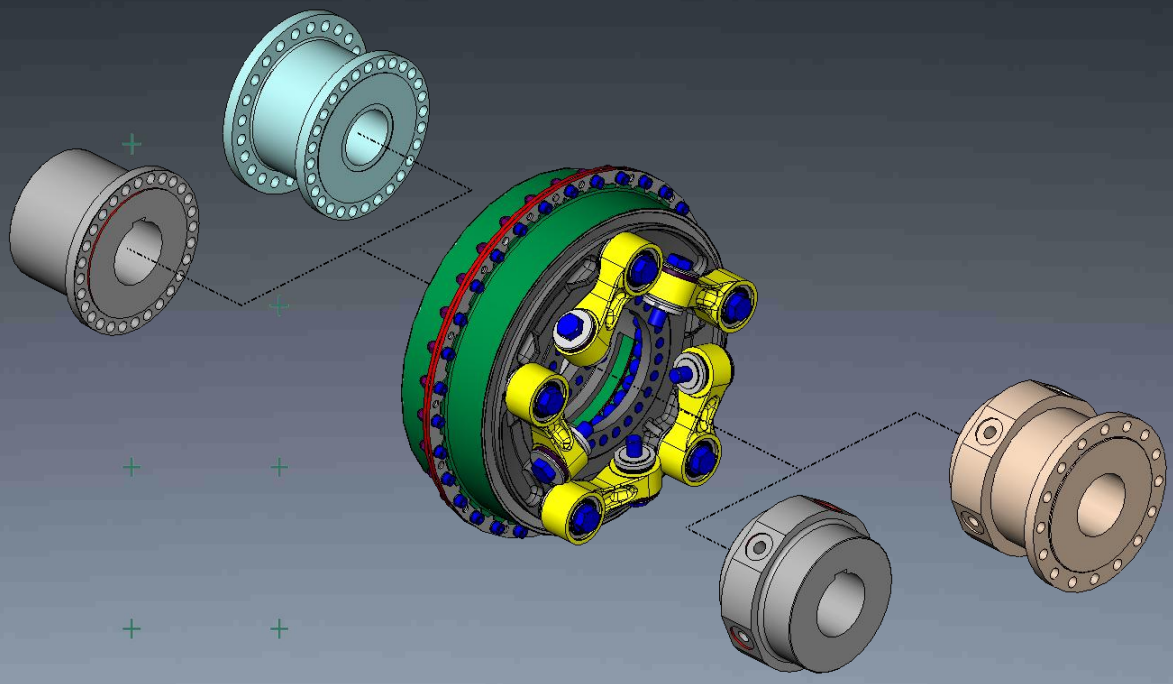
CENTAX-L

Assembly and operating instructions
016L-00050…00090-SS/FS/FF20

M016-00004-EN

Rev. **2**



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:

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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

The CENTAX-SEC series L coupling have the following excellent characteristics, due to the combination of a torsionally flexible CENTAX element and the CENTA link coupling with axial angular movement:

- Compensation of torsional vibrations and impacts without wear.
- Compensation of major axial, radial and angular displacement with minimal restoring forces.
- Silent operation and noise damping.
- Backlash free, torsionally rigid and radially rigid.
- Low-maintenance, free of wear.
- Easy visual inspection.
- Fast exchange of components.
- No special tools required.
- The design is protected by international patents.
- Type approval from leading classification agencies.
- Tried and tested thousands of times over in tough daily operation since 1992.

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

Determine the axial misalignment (see Fig. 5-1).

- Take installation length **L** from the installation drawing.
- Align the units (installation dimension = **$L \pm \Delta K_{A\ max}$**).

Permissible axial alignment tolerance:
$\Delta K_{A\ max}$=0.5 **mm**

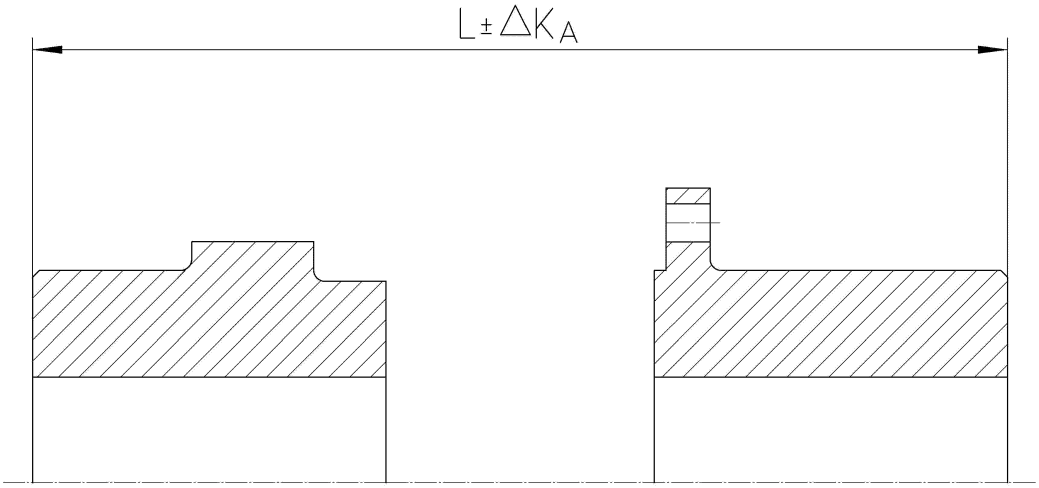

Fig. 5-1 Axial misalignment

5.2 Radial alignment

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 hub.
- ➢ Set the sensor of the dial gauge radially against the centering.
- ➢ Turn the hub with dial gauge and hub slowly by 360°.
- ➢ Align the units (calculated deviation $\leq \Delta K_{R\ max}$).

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

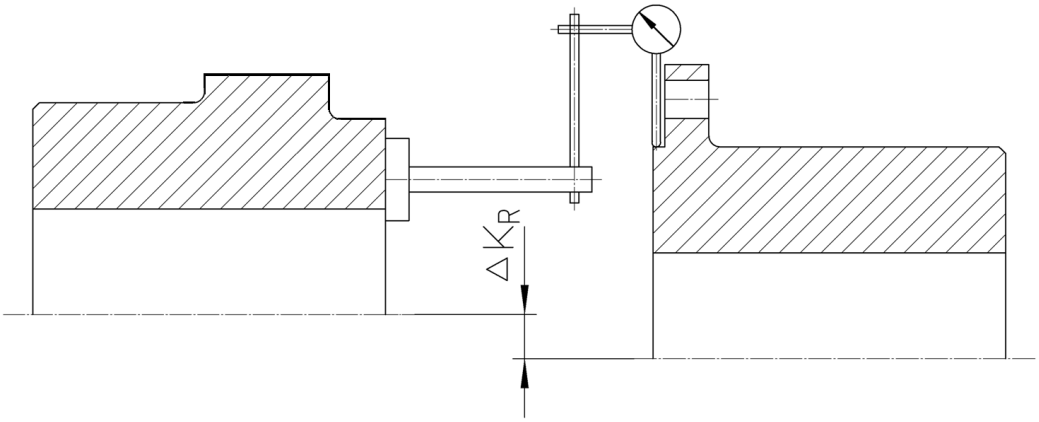

Fig. 5-2 Radial misalignment

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

Measure the angular misalignment with a dial gauge (see Fig. 5-3).

- Attach the dial gauge to the hub.
- Position the sensor of the dial gauge radially against flat surface at a distance R.
- Turn the hub with dial gauge and hub 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 calculated according to formula below.

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

Permissible angular alignment tolerance:
$\Delta K_{W\,max}$=0.15°

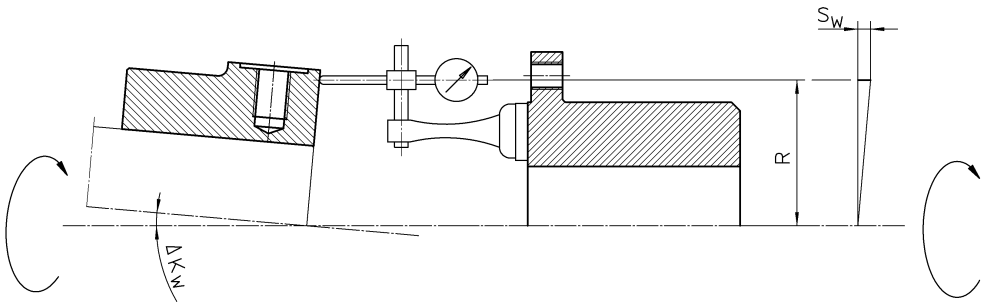

Fig. 5-3 Angular misalignment

$$S_W = R \cdot \tan(\Delta K_W)$$

$$S_W = R \cdot 0{,}0026$$

Formula 5-1 Calculated dimension S_W

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 016L-000..-SS/FS/FF20.
- Part illustration and marking may different slightly from installation drawing and delivery state.

6.2 Mounting overview

The following figures are showing examples of possible design.

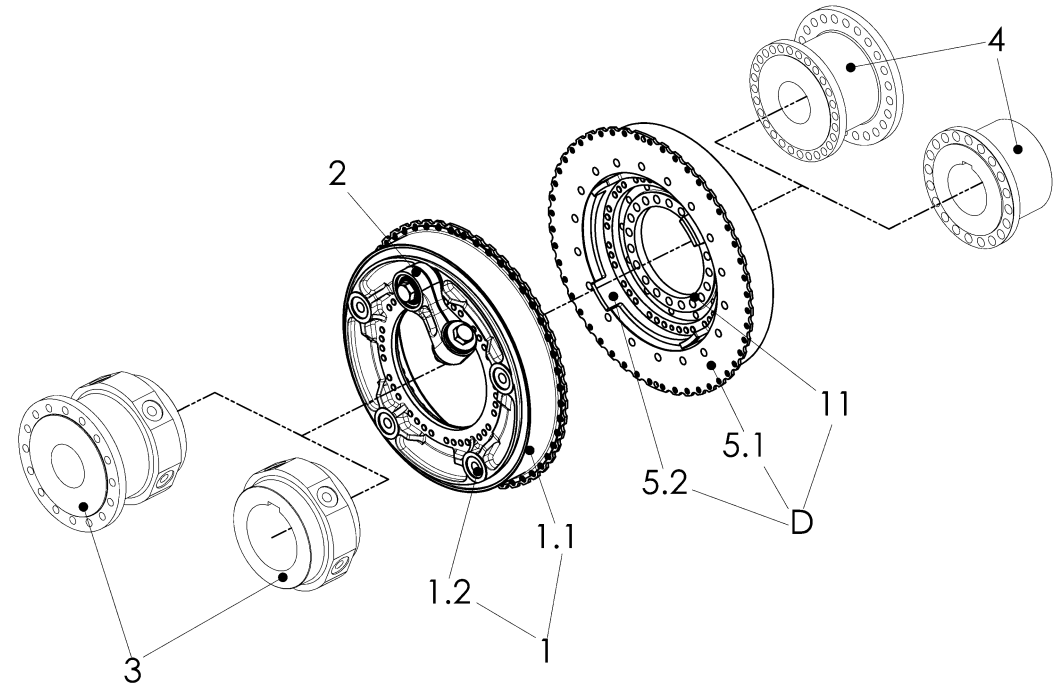

Fig. 6-1 Example: 016L-00050…00080 and 00082…00090-..20

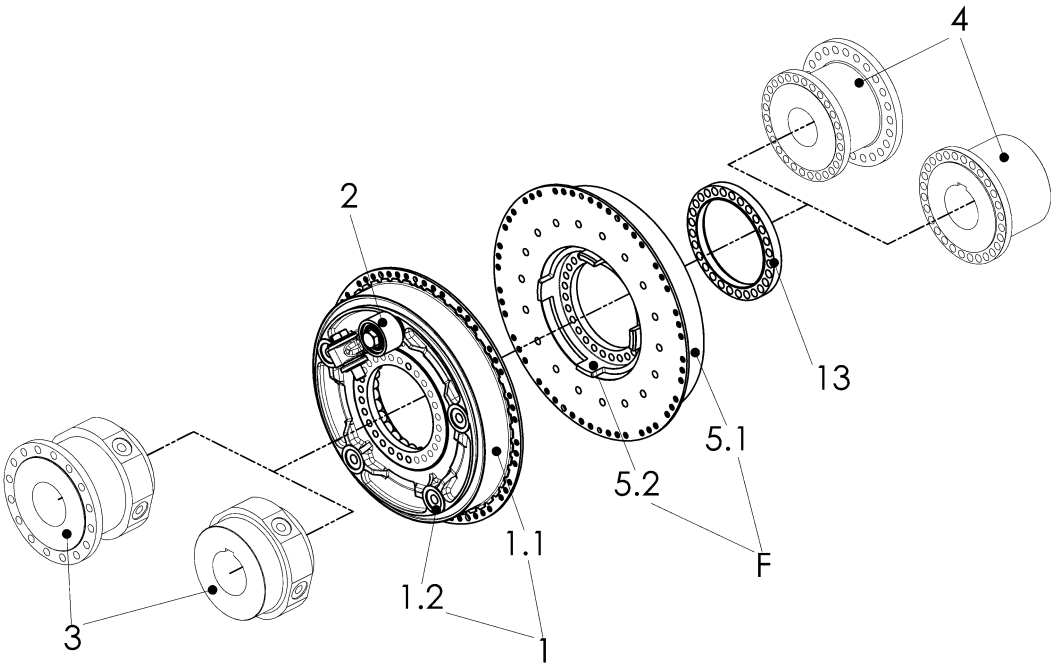

Fig. 6-2 Example: 016L-00081-..20

Item	Info	Designation	Remark
1		Link flange assembly	Pre-mounted by CENTA
1.1		Rubber element	
1.2		Link flange	
2		Link	See installation drawing for the direction of rotation "cw/ccw"
3		Hub for link/Flange hub	Scope of supply see installation drawing
4		Hub/Adapter	Scope of supply see installation drawing
5.1		Rubber element	
5.2		Ring	
11		Ring	Scope of supply of sizes -00050…00080 and -00082…00090
13		Ring	Scope of supply of size -00081
D		Centrifugal protection assembly	Pre-mounted by CENTA; Scope of supply of sizes -00050…00080 and -00082…00090
F		Centrifugal protection assembly	Pre-mounted by CENTA; Scope of supply of size -00081

- Mount the coupling as appropriate for the supplied design, according to the sequence described below. For supplied design and the parts built-in, see installation drawing.
  - Mounting the hub for link/flange hub (3), see chapter 6.3 .
  - Mounting the hub/adapter (4), see chapter 6.4 .
  - Aligning the units, see chapter 5 .
  - Positioning the link flange assembly (1), see chapter 6.6 .
  - Mounting the centrifugal protection assembly (D/F), see chapter 6.7 .
  - Mounting the rubber elements (1.1 and 5.1), see chapter 6.8 .
  - Removing the mounting supports, see chapter 6.9 .
  - Mounting the links (2), see chapter 6.10 .
  - After completed mounting, see chapter 6.11 .

6.3 Mounting the hub for link/flange hub (3)

- Mount the hub for link/flange hub (3) as appropriate for the type supplied (see installation drawing):
  - Mounting the hub for link (3) with cylindrical bore and keyway, see chapter 6.3.1 .
  - Mounting the hub for link (3) with conical oil interference fit, see chapter 6.3.2 .
  - Mounting the flange hub (3), see chapter 6.3.3 .

6.3.1 Mounting the hub for link (3) with cylindrical bore and keyway

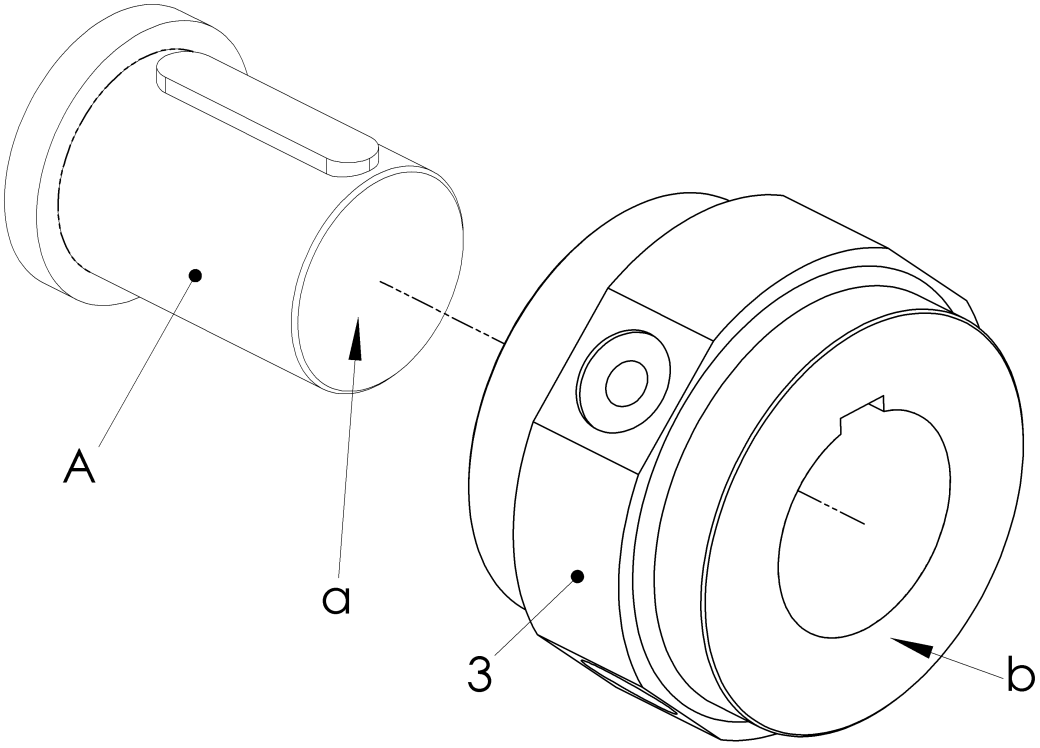

Fig. 6-3 Mounting the hub for link (3) with cylindrical bore and keyway

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

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.

- ➢ Warm the hub for link (3) to a temperature of 170° - 200°C.
- ➢ Push the hub for link (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 for link (3) with conical oil interference fit

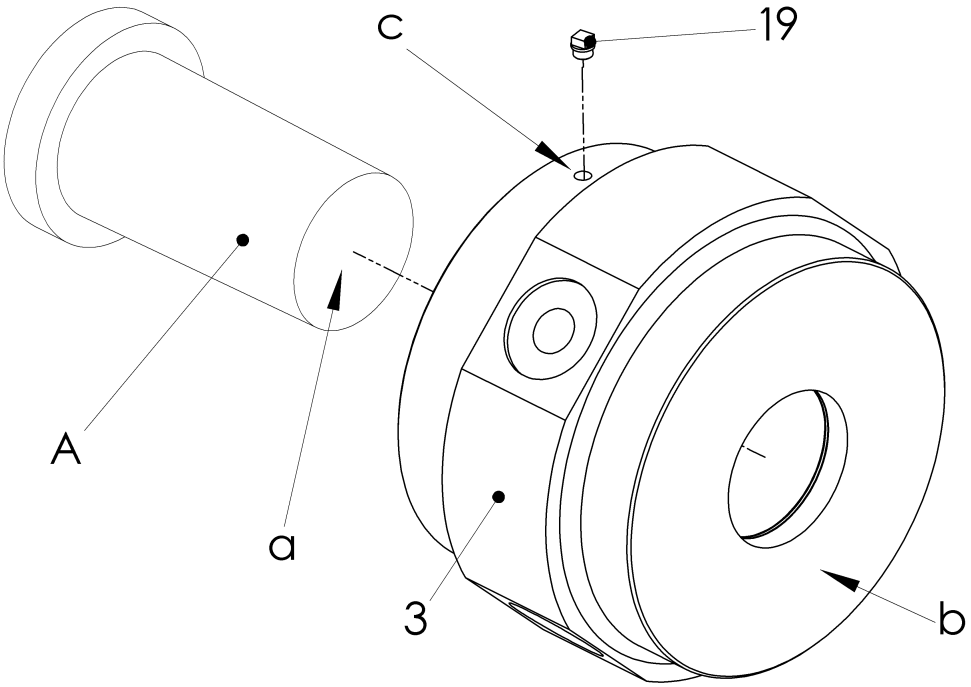

Fig. 6-4 Mounting the hub for link (3) with conical oil interference fit

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

- Lightly oil the cone of the shaft (A).
- Push the hub for link (3) onto the shaft (A).
- Remove the screw plug (19) from the hub for link (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 for link (3) to the thread G¼ or G¾ (c).
- Screw the pump for pushing on the hub for link to the shaft.
- Build up the oil pressure to push on the hub for link.

WARNING

Material damage can occur as a result of:

- Too fast increase of the expanding pressure in the hub

The increase of the expanding pressure may not exceed **35 bar/minute**.

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.

- Slowly build up the oil pressure for expanding the hub for link.
- Build up the oil pressure alternately until the lift path (p up) of the hub for link (3) is reached (for p up and reference faces, see installation drawing).
- Decrease the oil pressure for expanding the hub for link.
- Remove the pump for expanding the hub for link from the hub for link (3).
- Maintain the oil pressure for pushing on the hub for link for one hour.
- Decrease the oil pressure for pushing on the hub for link.
- Remove the pump for pushing on the hub for link from the shaft.
- Turn the hub for link (3), drain oil out of the thread G¼ or G¾ (c) and dispose correctly.
- Screw the screw plug (19) into the hub for link (3).

IMPORTANT

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

IMPORTANT

The front edge of the shaft must not project. Otherwise, radial replacement of the rubber elements is not guaranteed.

6.3.3 Mounting the flange hub (3)

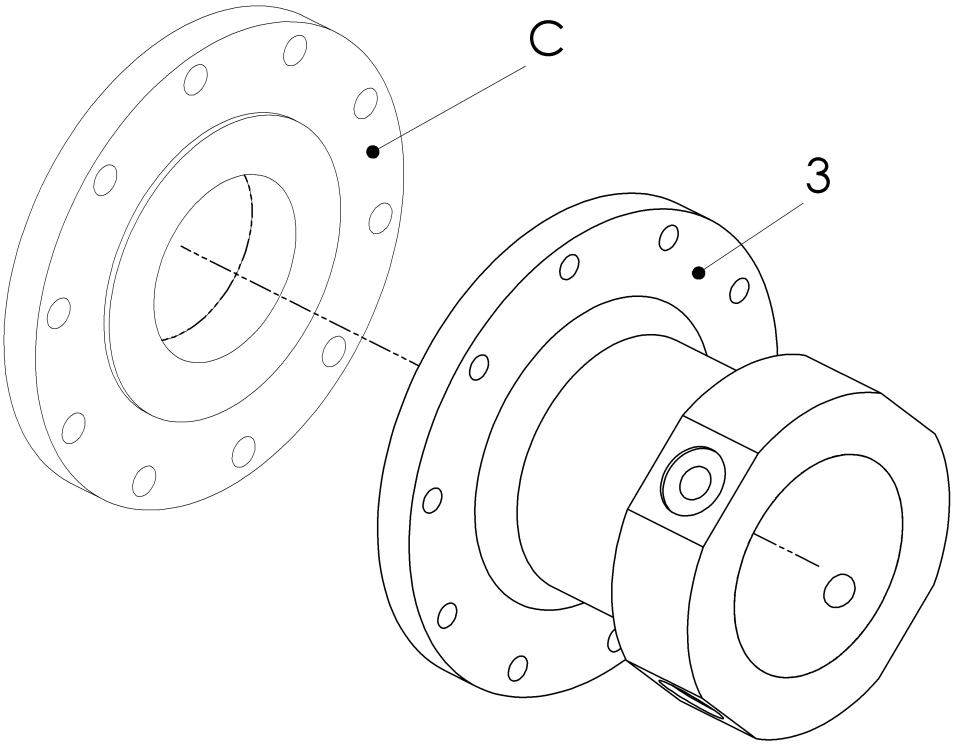

Fig. 6-5 Mounting the flange hub (3)

Item	Info	Designation	Remark
3		Flange hub	
C		Flange	Customer part

- Push the flange hub (3) onto/into the centring of the flange (C).
- Screw the flange hub (3) to the flange (C).

6.4 Mounting the hub/adapter (4)

- Mount the hub/adapter (4) as appropriate for the type supplied (see installation drawing):
  - Mounting the hub (4) with cylindrical bore and keyway, see chapter 6.4.1 .
  - Mounting the hub (4) with conical oil interference fit, see chapter 6.4.2 .
  - Mounting the adapter (4), see chapter 6.4.3 .

6.4.1 Mounting the hub (4) with cylindrical bore and keyway

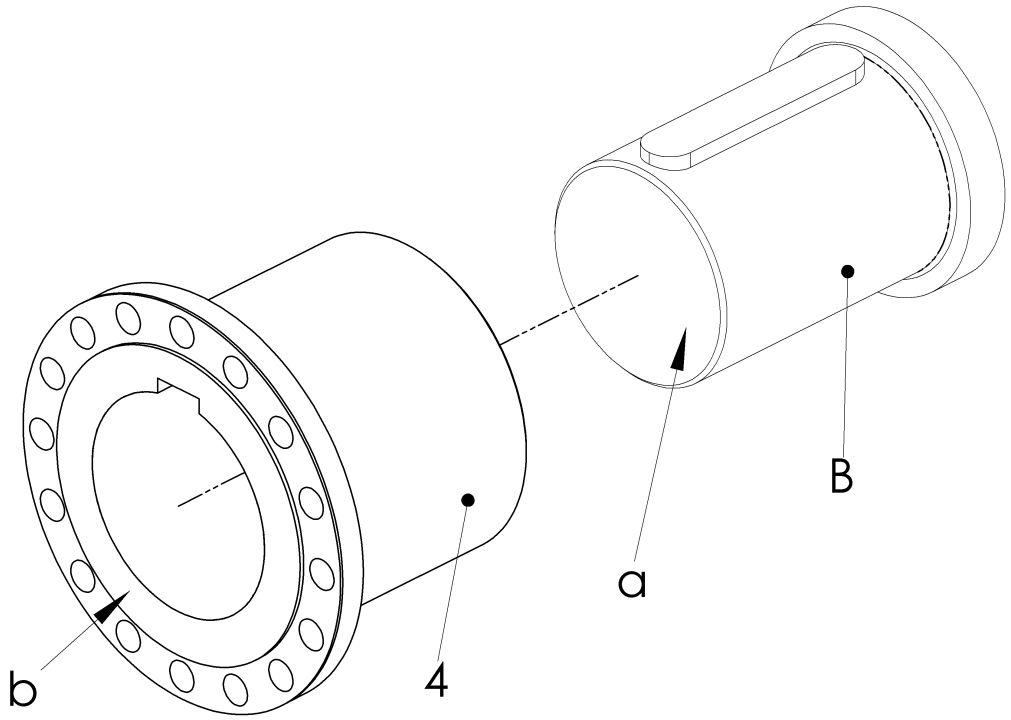

Fig. 6-6 Mounting the hub (4) with cylindrical bore and keyway

Item	Info	Designation	Remark
4		Hub	
B		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 (4) to a temperature of 170° - 200°C.
- ➢ Push the hub (4) onto the shaft (B).

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.

6.4.2 Mounting the hub (4) with conical oil interference fit

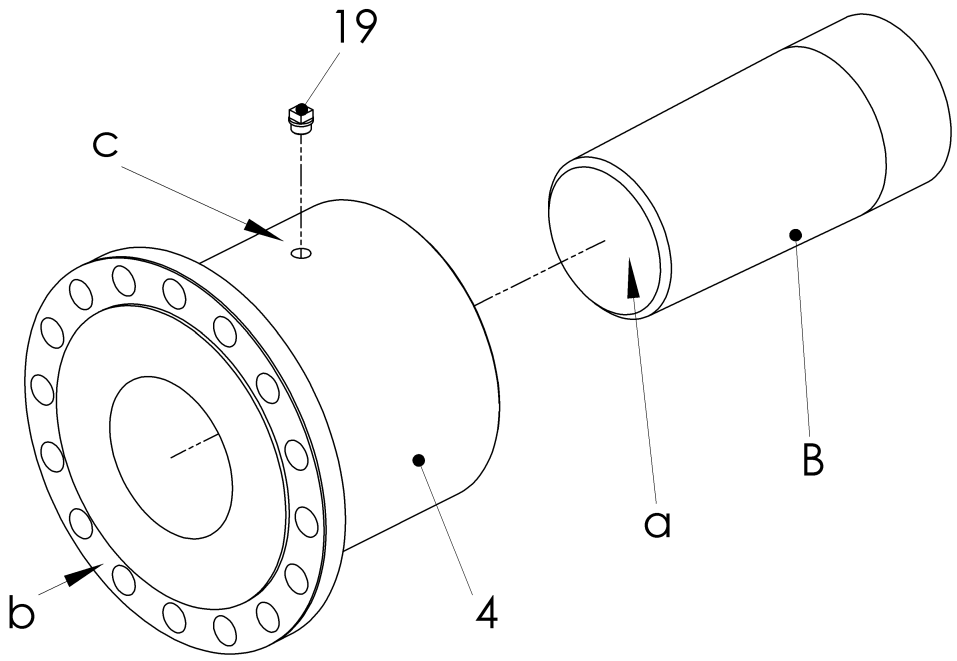

Fig. 6-7 Mounting the hub (4) with conical oil interference fit

Item	Info	Designation	Remark
4		Hub	
19		Screw plug	G¼ or G¾ see installation drawing
B		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 (B).
- Push the hub (4) onto the shaft (B).
- Remove the screw plug (19) from the hub (4).

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 (4) 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:** ▪ Too fast increase of the expanding pressure in the hub The increase of the expanding pressure may not exceed **35 bar/minute**.

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.

- Slowly build up the oil pressure for expanding the hub.
- Build up the oil pressure alternately until the lift path (p up) of the hub (4) 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 (4).
- 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 (4), drain oil out of the thread G¼ or G¾ (c) and dispose correctly.
- Screw the screw plug (19) into the hub (4).

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.

6.4.3 Mounting the adapter (4)

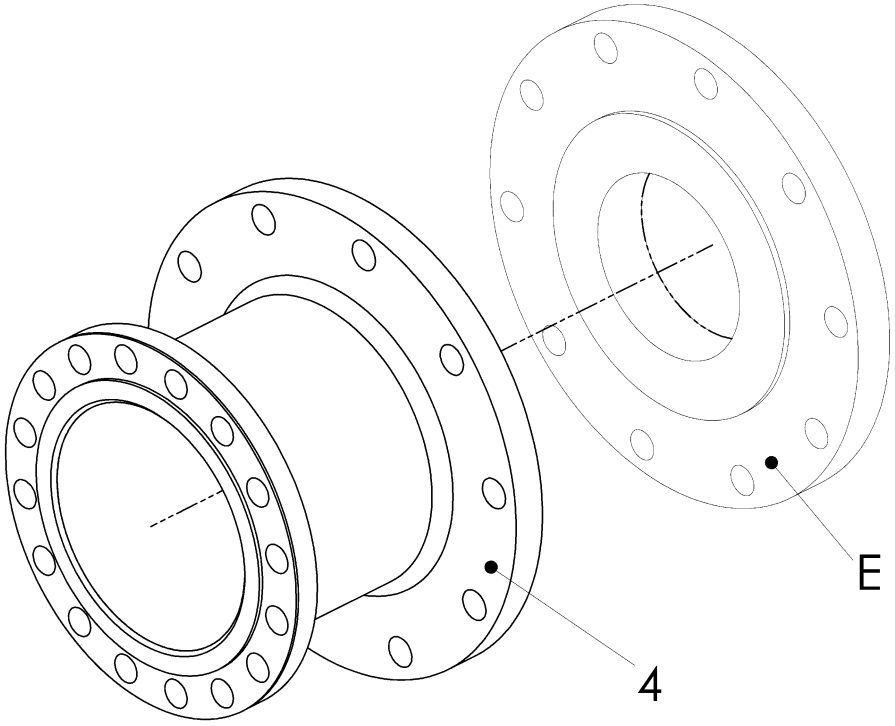

Fig. 6-8 Mounting the adapter (4)

Item	Info	Designation	Remark
4		Adapter	
E		Flange	Customer part

- Push the adapter (4) onto/into the centring of the flange (E).
- Screw the adapter (4) to the flange (E).

6.5 Aligning the units

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

6.6 Positioning the link flange assembly

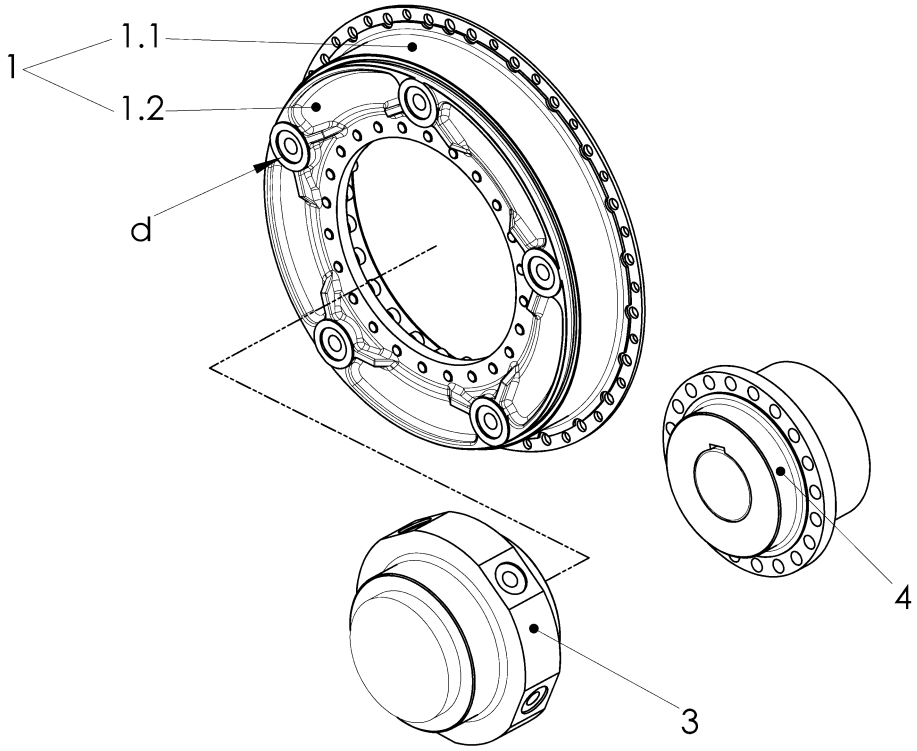

Fig. 6-9 Positioning the link flange assembly

Item	Info	Designation	Remark
1		Link flange assembly	Pre-mounted by CENTA
1.1		Rubber segment	
1.2		Link flange	
3		Hub for link/Flange hub	Illustrated is the hub for link
4		Hub/Adapter	Illustrated is the hub
	d	Centring for link	

- Position the link flange assembly (1) between the hub for link/flange hub (3) and the hub/adapter (4).
- Slide the link flange assembly (1) over the hub for link/flange hub (3) and place it on the hub for link/flange hub (3).
  The centrings for the links (d) must point towards the hub for link/flange hub (3).

6.7 Mounting the centrifugal protection (D/F) assembly

- Mount the centrifugal protection assembly (D/F) as appropriate for the type supplied (see installation drawing):
  - Mounting the centrifugal protection assembly (D), sizes 00050…00080 and 00082…00090, see chapter 6.7.1 .
  - Mounting the centrifugal protection assembly (F), size 00081, see chapter 6.7.2 .

6.7.1 Mounting the centrifugal protection assembly (D), sizes 00050…00080 and 00082…00090

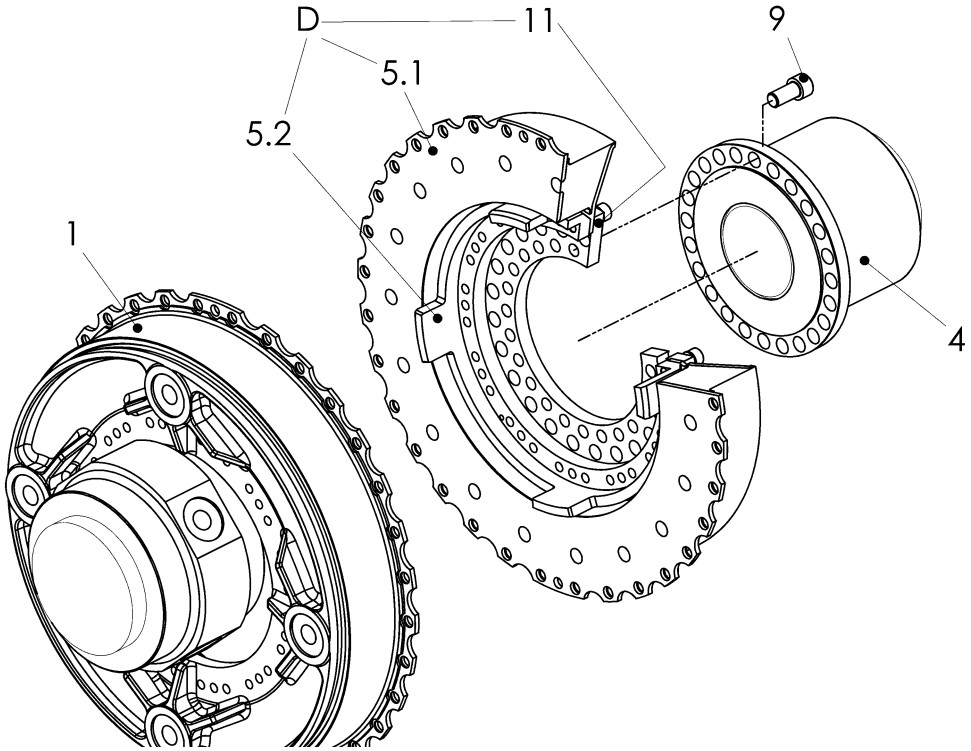

Fig. 6-10 Mounting the centrifugal protection assembly (D)

Item	Info	Designation	Remark
1		Link flange assembly	
4		Hub/Adapter	Illustrated is the hub
5.1		Rubber element	
5.2		Ring	
9		Screw ISO 4762-10.9	
11		Ring	
D		Centrifugal protection assembly	Pre-mounted by CENTA

- Push the centrifugal protection assembly (D) onto the centring of the hub/adapter (4).
- Screw the hub/adapter (4) to the centrifugal protection assembly (D) using the screws (9).

6.7.2 Mounting the centrifugal protection assembly (F), size 00081

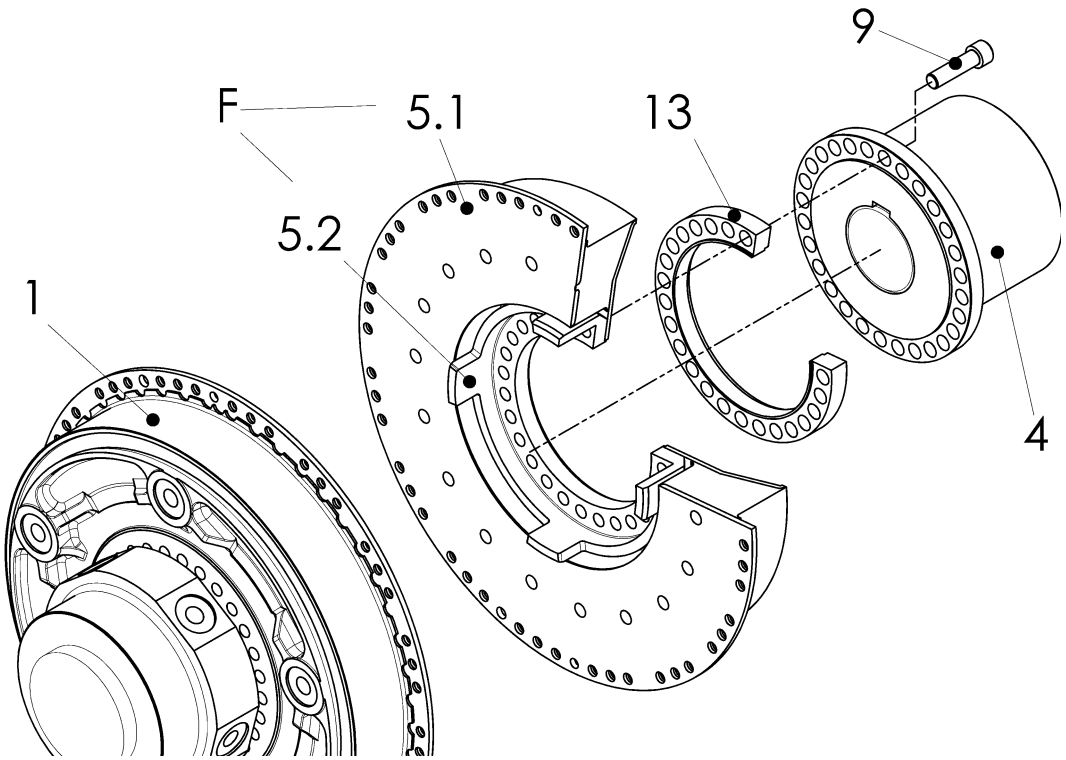

Fig. 6-11 Mounting the centrifugal protection assembly (F)

Item	Info	Designation	Remark
1		Link flange assembly	
4		Hub/Adapter	Illustrated is the hub
5.1		Rubber element	
5.2		Ring	
9		Screw DIN912-10.9	
13		Ring	
F		Centrifugal protection assembly	Pre-mounted by CENTA

- Place the centrifugal protection assembly (F) between the link flange assembly (1) and the hub/adapter (4) and support it.
- Push the ring (13) onto the centring of the hub/adapter (4).
- Push the centrifugal protection assembly (F) onto the centring of the ring (13).
- Screw the hub/adapter (4) and the ring (13) to the centrifugal protection assembly (F) using the screws (9).

6.8 Connecting the rubber elements

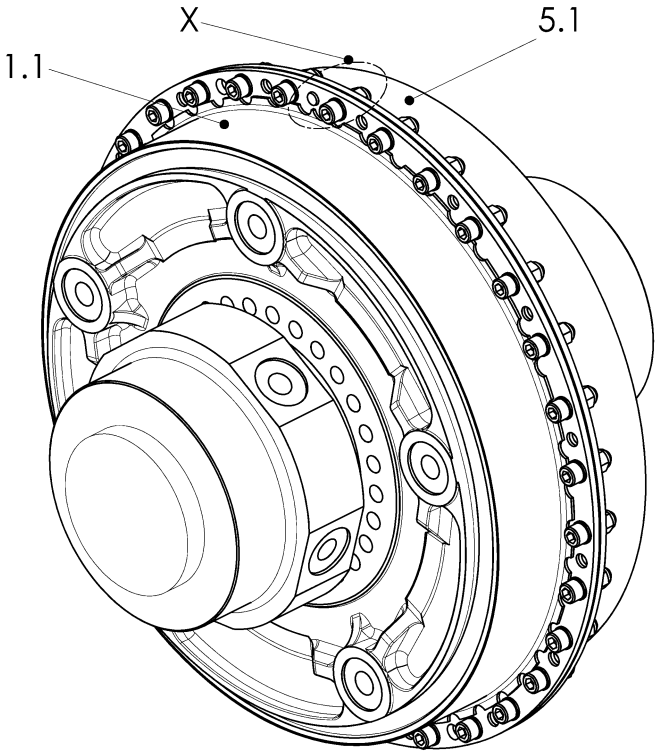

Fig. 6-12 Connecting the rubber elements

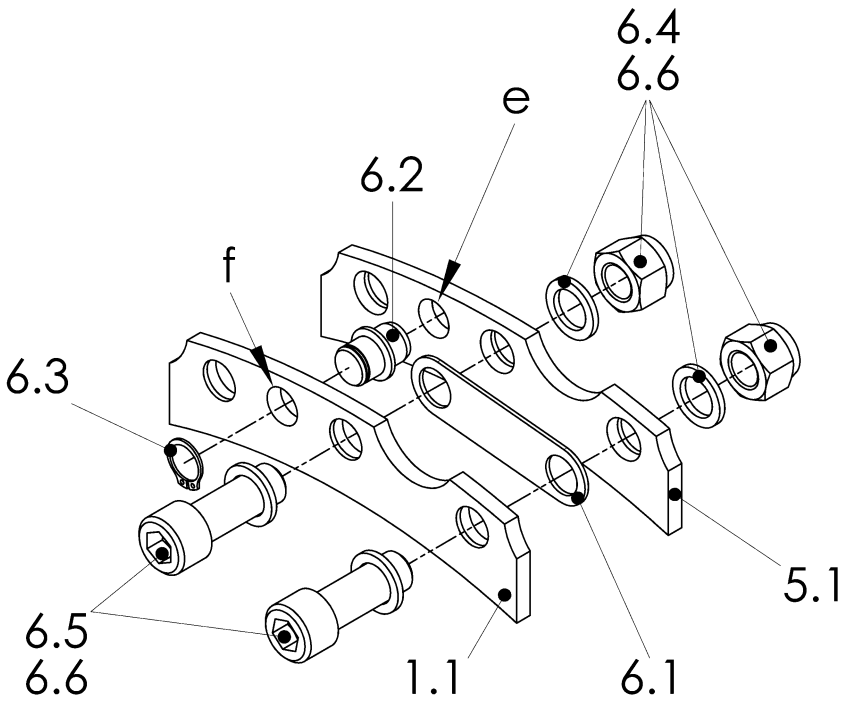

Fig. 6-13 Detail X

Item	Info	Designation	Remark
1.1		Rubber element	Part of link flange assembly
5.1		Rubber element	Part of centrifugal protection assembly
6.1		Sheet	
6.2		Bolt	2x180°
6.3		Circlip DIN 471	2x180°
6.4		Nut	
6.5		Screw ISO4762-10.9	
6.6		Washer	
X		Detail	See Fig. 6-13
	e	Drilling for bolt	In rubber element (5.1)
	f	Drilling for bolt	In rubber element (1.1)

IMPORTANT

Ensure during installation that the bolts are in the right position.

- Place the bolts (6.2; 2x180°) in the drillings (f) of the rubber element (1.1).
- Secure the bolts (6.2; 2x180°) using the circlip (6.3).
- Turn the rubber element (1.1) towards the rubber element (5.1) until the drillings (e) in the rubber element (5.1) and the bolts (6.2) are aligned.
- Push together the rubber element (1.1) and the rubber element (5.1) until a distance of approx. 5 mm is reached.
  By doing so, place the bolts (6.2) into the drillings (e) of the rubber element (5.1).

  - Push two screws (6.5) with washers (6.5) through the drillings of the rubber element (1.1).
  - Push the sheet (6.1) onto the screws (6.5).
  - Screw the rubber element (1.1), the sheet (6.1) and the rubber element (5.1) loosely using the screws (6.5), washers (6.6) and nuts (6.4).
- Repeat the mounting section above until all sheets (6.1) are screwed loosely.
- Fasten all screws (6.5) by required tightening torque (see chapter 11.1).

6.9 Removing the mounting supports

- Remove all mounting supports.

6.10 Mounting the links

IMPORTANT

- The links must be mounted in such a way that they are subjected to tensile load.A differentiation is made between the direction of rotation left **(ccw)** and right **(cw)**, looking towards the driving end.
- Links are packaged in sets.
- All links of a link set are the same weight.
- Only mount links in complete sets "crosswise".
- Instructions on how to mount **one** link are provided following. Item numbers and the part illustrations may differ slightly from the delivery state.

The following table gives an overview of the number of size of the links used.

CENTAX-L Size	Link Size	Quantity
50/52/55/56	2	4
64/65/67		5
68		6
69/70/71	3	4
72		5
75 176/276		6
78 177/277	4	4
80/81 179/181/279/281		5
82/84/85 183/184/283/284		6
88		8
90		9

Table 6-1 Guide to links

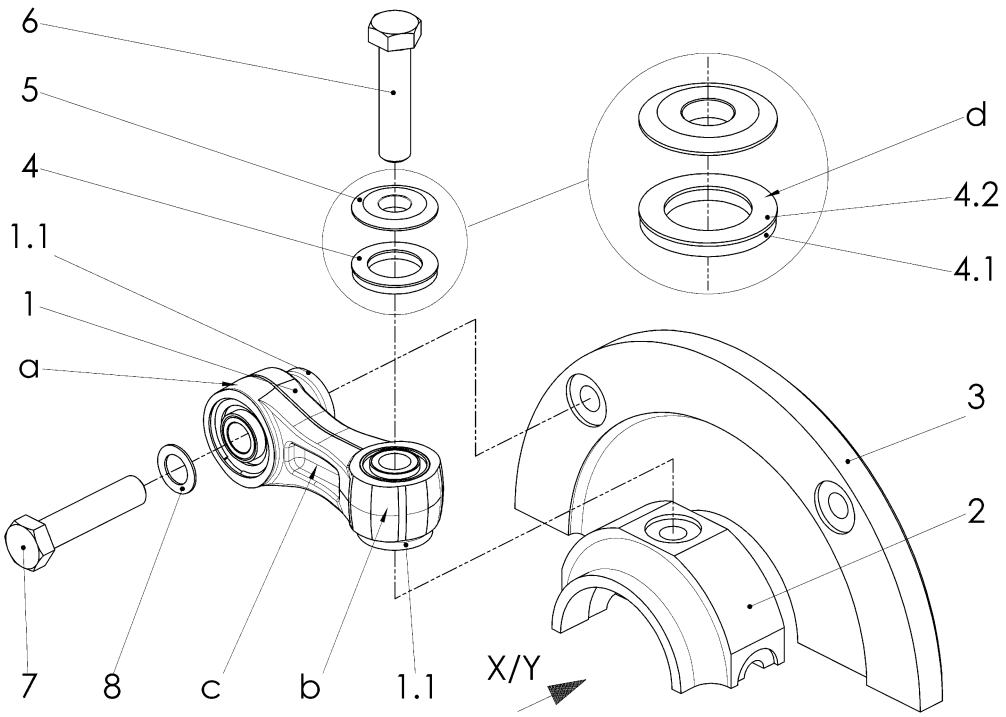

Fig. 6-14 Mounting the links ("ccw" counterclockwise rotation)

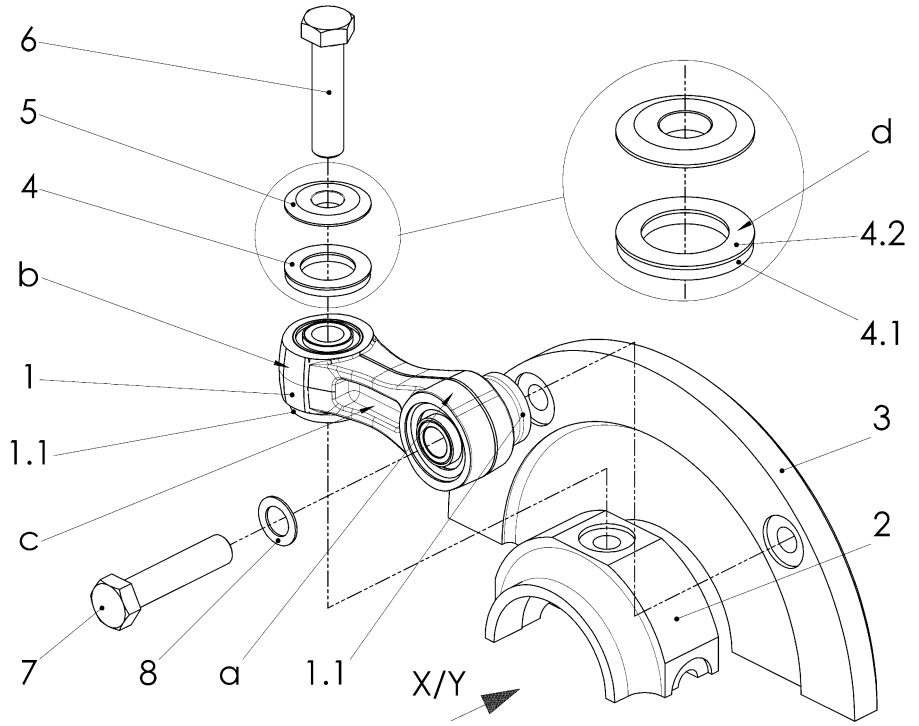

Fig. 6-15 Mounting the links ("cw" clockwise rotation)

Item	Info	Designation	Remark
	X/Y	Looking	at the flange
1		Link unit	
	a	Label "Flange"	
	b	Label "Hub"	
	c	The recess must be pointing towards the flange	
1.1		Collar sleeve	
2		Hub/Tube	
3		Flange	
4		Bearing unit comprising:	
4.1		PU bearing	
4.2		Sliding bearing	
	d	PTFE coating must be at the top	
5		Washer for centrifugal bearing	
6		Screw ISO4014-10.9 M..	Dimensions as shown in parts list
7		Screw ISO4014-10.9 M..	Dimensions as shown in parts list
8		Washer	Only at size 3 and 4

- Set the link unit (1) marked "Flange" on the centring fixture of the flange (3).
- Position the link side with the inscription "Hub" against the centring fixture of the hub/tube (2).
- Tighten the screw (7; "Flange") with the washer (8; only at size 3 and 4) and the screw (6; "Hub"), washer for centrifugal bearing (5) and the bearing unit (4; PTFE coating must be at the top) alternately by hand until the centring fixtures of the collar sleeves (1.1) are seated in the centring fixtures of the hub/tube (2) / flange (3).

- Repeat the mounting section above until all links are mounted (for quantity of the links, please see the table guide to links).
- Fasten the screws (6 and 7) of the link unit (1) by required tightening torque "crosswise".

6.11 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
Running noises or vibrations in the plant	Alignment error	1. Switch off the plant 2. Check alignment, correct if applicable 3. Trial run
	Loose screws	1. Switch off the plant 2. Check alignment, correct if applicable 3. Check screw torque levels and correct if necessary 4. Trial run
Breakage of the rubber element	Alignment error	1. Switch off the plant 2. Exchange defective parts 3. Check alignment, correct if applicable 4. Trial run
	Inadmissibly high torque	1. Switch off the plant 2. Exchange defective parts 3. Check alignment, correct if applicable 4. 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 links

➢ Make a visual inspection of the links every **12** months.

Pay particular attention to the rubber bushes of the links. Squash folds and small cracks of up to 1 mm may be considered normal.
In the case of crack depths in excess of 1 mm, or detachment of the rubber-to-metal bond, the links must be exchanged.

IMPORTANT

Exchange the links:

- In the event of damage
- When replacing the rubber elements

IMPORTANT

- Links are packaged in sets.
- All links of a link set are the same weight.
- Only mount or replace links in complete sets.

8.1.4 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.

8.1.5 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 Dismantling the links

See Fig. 6-14 or 6-15:

- Loosen the screws (6 and 7) of the links (1) alternately ("Flange"/"Hub") and remove with washers (8; with link size 3 and 4 only), bearing unit (4) and washers for centrifugal bearing (5).
- Remove the links (1).

9.3 Disconnecting the rubber elements

See Fig. 6-12 and 6-13:

- Loosen the screws (6.5) of the connection rubber element (1.1) and rubber element (5.1).
- Support the rubber element (1.1).
- Separate the rubber element (1.1) approx. 10mm from the rubber element (5.1).
- Remove the screws (6.5) with the washers (6.6), the nuts (6.4) and the sheets (6.1).
- Place the rubber element (1.1) on the hub for link/flange hub (3), see fig. 6.9 .
- Pull the circlips (6.3) from the bolts (6.2) and remove them as well as the bolts. (2x180°).

9.4 Dismantling the centrifugal protection assembly (D/F)

- Dismantle the centrifugal protection assembly (D/F) as appropriate for the size supplied (see installation drawing):
  - Dismantling the centrifugal protection assembly (D), sizes 00050…00080 and 00082…00090, see chapter 9.4.1 .
  - Dismantling the centrifugal protection assembly (F), size 00081, see chapter 9.4.2 .

9.4.1 Dismantling the centrifugal protection assembly (D), sizes 00050…00080 and 00082…00090

See Fig. 6-10:

- Loosen the screws (9) of the connection hub/adapter (4) and centrifugal protection assembly (D) and remove.
- Pull the centrifugal protection assembly (D) off the centring of the hub/adapter (4) and remove.

9.4.2 Dismantling the centrifugal protection assembly (F), size 00081

See Fig. 6-11:

- Loosen the screws (9) of the connection hub/adapter (4), ring (13) and centrifugal protection assembly (F) and remove.
- Pull the centrifugal protection assembly (F) and ring (13) off the centring of the hub/adapter (4) and remove.

9.5 Dismantling the link flange assembly (1)

See Fig. 6-9:

- Remove out of the installation space the link flange assembly (1).

9.6 Removing the mounting supports

- Remove all mounting supports.

9.7 Dismantling the hub/adapter (4; if necessary)

- Dismantle the hub/adapter (4) as appropriate for the supplied design (see installation drawing):
  - Dismantling the hub (4) with cylindrical bore and keyway, see chapter 9.7.1 .
  - Dismantling the hub (4) with conical oil interference fit, see chapter 9.7.2 .
  - Dismantling the adapter (4), see chapter 9.7.3 .

9.7.1 Dismantling the hub with cylindrical bore and keyway

See Fig. 6-6:

- Remove the hub (4) from the shaft (B).

9.7.2 Dismantling the hub with conical oil interference fit

See Fig. 6-7:

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 (4).
- Connect the pump (p_{max}**= 3000 bar**) to the thread G¼ or G¾ (c) of hub (4) to expand the hub.
- Screw the pump to the shaft (B), in order to hold the hub.
- Build up oil pressure in order to hold the hub.

WARNING

Material damage can occur as a result of:

- Too fast increase of the expanding pressure in the hub

The increase of the expanding pressure may not exceed **35 bar/minute**.

- Slowly build up oil pressure to expand the hub (p_{max}**= 1500 bar**).
  - Slowly reduce the oil pressure for holding the hub.
  - Slowly 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 (B).
- Remove pump for expanding the hub from the hub (4).
- Turn the hub (4), drain oil out of the thread G¼ or G¾ (c) and dispose correctly.
- Screw the screw plug (19) into the hub (4).
- Remove the hub (4) from the shaft (B).

9.7.3 Dismantling the adapter (4)

See Fig. 6-8:

- Loosen and remove the screws of the connection adapter (4) and flange (E).
- Pull the adapter (4) out of/off the centring of the flange (E) and remove.

9.8 Dismantling the hub for link/flange hub (3; if necessary)

- Dismantle the hub for link/flange hub (3) as appropriate for the supplied design (see installation drawing):
  - Dismantling the hub for link (3) with cylindrical bore and keyway, see chapter 9.8.1 .
  - Dismantling the hub for link (3) with conical oil interference fit, see chapter 9.8.2 .
  - Dismantling the flange hub (3), see chapter 9.8.3 .

9.8.1 Dismantling the hub for link (3) with cylindrical bore and keyway

See Fig. 6-3:

- Remove the hub for link (3) from the shaft (A).

9.8.2 Dismantling the hub for link (3) with conical oil interference fit

See Fig. 6-4:

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 for link (3).
- Connect the pump ($\mathbf{p_{max}}$**= 3000 bar**) to the thread G¼ or G¾ (19) of hub for link (3) to expand the hub.
- Screw the pump to the shaft (A), in order to hold the hub for link.
- Build up oil pressure in order to hold the hub for link.

WARNING

Material damage can occur as a result of:

- Too fast increase of the expanding pressure in the hub

The increase of the expanding pressure may not exceed **35 bar/minute**.

- Slowly build up oil pressure to expand the hub for link ($\mathbf{p_{max}}$**= 1500 bar**).
  - Slowly reduce the oil pressure for holding the hub for link.
  - Slowly reduce the oil pressure for expanding the hub for link.
- Repeat the above mounting section until the hub for link is completely released from the shaft.
- Remove the pump for holding the hub for link from the shaft (A).
- Remove pump for expanding the hub for link from the hub for link (3).
- Turn the hub for link (3), drain oil out of the thread G¼ or G¾ (19) and dispose correctly.
- Screw the screw plug (19) into the hub for link (3).
- Remove the hub for link (3) from the shaft (A).

9.8.3 Dismantling the flange hub (3)

See Fig. 6-5:

- Loosen and remove the screws of the connection flange hub (3) and flange (C).
- Pull the flange hub (3) out of/off the centring of the flange (C) and remove.

9.9 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:

- The link kits. These contain all screws, washers and bearing units. In the event that links or rubber bushes of the link are faulty, they must be replaced as a complete set.
- The rubber element(s). When exchanging the rubber element(s), all screw connections must be renewed. These must be ordered separately.

IMPORTANT
• Links are packaged in sets. • All links of a link set are the same weight. • Only mount or replace links in complete sets.

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 D016-900 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-L
Model / series code:	CX-L / 016L
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, 09.12.2009

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