

CENTAX-TT

Assembly and operating instructions

024T-00130...00460

M024-00001-EN

Rev. 6



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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.

These operating instructions are protected under copyright to CENTA Antriebe Kirschey GmbH.

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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	
	<p>Injury and material damage can occur as a result of:</p> <ul style="list-style-type: none"> ▪ Work at the coupling which is not described in these instructions <p>Only carry out work which is described in these operating instructions.</p>

2.3 Intended application

WARNING	
	<p>Injury and material damage can occur as a result of:</p> <ul style="list-style-type: none"> ▪ Application not in compliance with the intended use <p>The couplings are intended exclusively for use in accordance with the relevant design. They may only be used under the specified conditions.</p>

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	
	<p>Injury and material damage can occur as a result of:</p> <ul style="list-style-type: none">▪ 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 <p>Only use the coupling for the specified application.</p>

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	
	<p>Injury and material damage can occur as a result of:</p> <ul style="list-style-type: none"> ▪ Incorrect transportation of couplings <p>Ensure that the coupling is correctly transported.</p>
CAUTION	
	<p>Material damage to coupling components can occur as a result of:</p> <ul style="list-style-type: none"> ▪ Contact with sharp-edged objects <p>Protect coupling components for transportation. Only hoist coupling components with nylon belts or ropes. Always cushion parts when supporting them from below.</p>

Following transportation damage:

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

3.3 Storage

CAUTION	
	<p>Material damage to elastic elements and rubber parts can occur as a result of:</p> <ul style="list-style-type: none"> ▪ Incorrect storage <p>These parts must be stored laid flat and so they cannot distort, and protected from ozone, heat, light, moisture and solvents.</p>
 IMPORTANT	
<p>Rubber parts are marked where possible with their production date. From this date, they may only be stored for a maximum of 5 years.</p>	

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 TT couplings have the following excellent characteristics:

- Rubber segments in Shear – linear torsional stiffness characteristic, several stiffness values are available for each size.
- Two rubber sections are acting in parallel, therefore high torque capacity.
- Rubber segments with precompression, therefore higher reliability and higher damping.
- Well ventilated elements and high grade temperature resistant rubber provide good heat dissipation and high permissible energy loss.
- Compensation for all kinds of misalignment, especially axial and angular.
- Compact design with short overall dimensions.
- High design flexibility, flanges can easily be tailored to all kinds of flywheels and flanges.
- Easy assembly of the coupling and exchange of the elements without disturbing the shafts, good access to all bolts.
- For the time being four sizes of elements provide 14 sizes of couplings with 42 different torque ratings and stiffness values in a torque range from 16 to 1000 kNm.
- Well proven in service and approved by many classification societies.
- Protected by international patents.

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

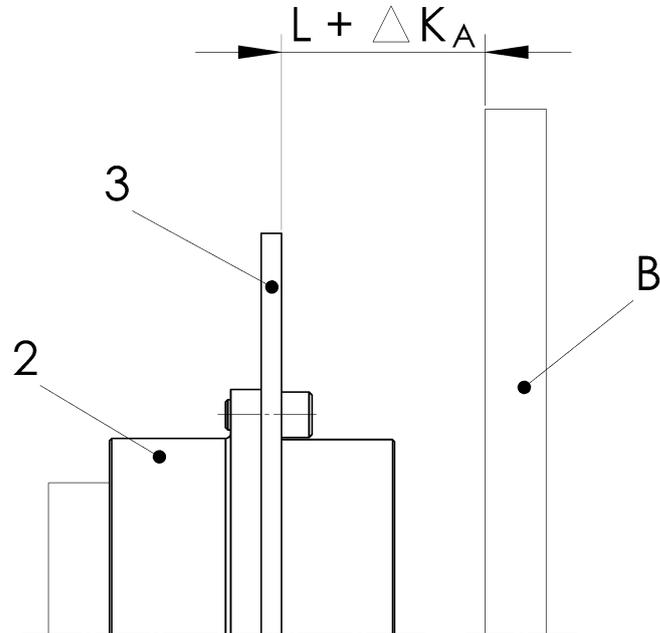


Fig. 5-1 Axial misalignment

Item	Info	Designation	Remark
2		Hub	
3		Adapter	
B		Flywheel	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}**).

The permissible axial alignment tolerance **ΔK_{A max}** can be found in the following table.

Size	ΔK_{A max} [mm]
130 - 160	0.5
240 - 260	0.6
340 - 360	0.7
440 - 460	1.0

Table 5-1 Permissible axial alignment tolerance

5.2 Radial alignment

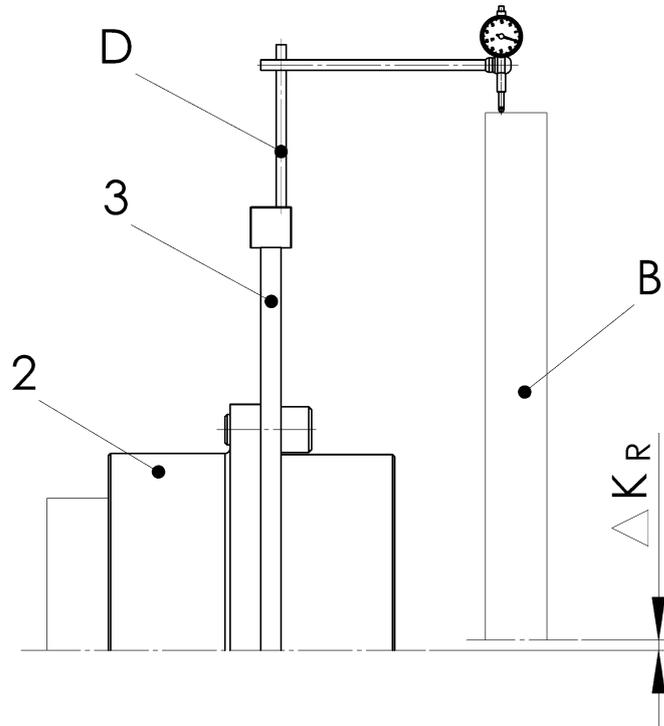


Fig. 5-2 Radial misalignment

Item	Info	Designation	Remark
2		Hub	
3		Adapter	
B		Flywheel	Customer part
D		Dial gauge	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 (D) to the adapter (3).
 - Set the sensor of the dial gauge (D) radially against the flywheel (B).
 - Turn the adapter (3) with the dial gauge (D) and the flywheel (B) 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.

Size	$\Delta K_{R \max}$ [mm]
130 - 260	0.1
340 - 360	0.12
440 - 460	0.15

Table 5-2 Permissible radial alignment tolerance

5.3 Angular alignment

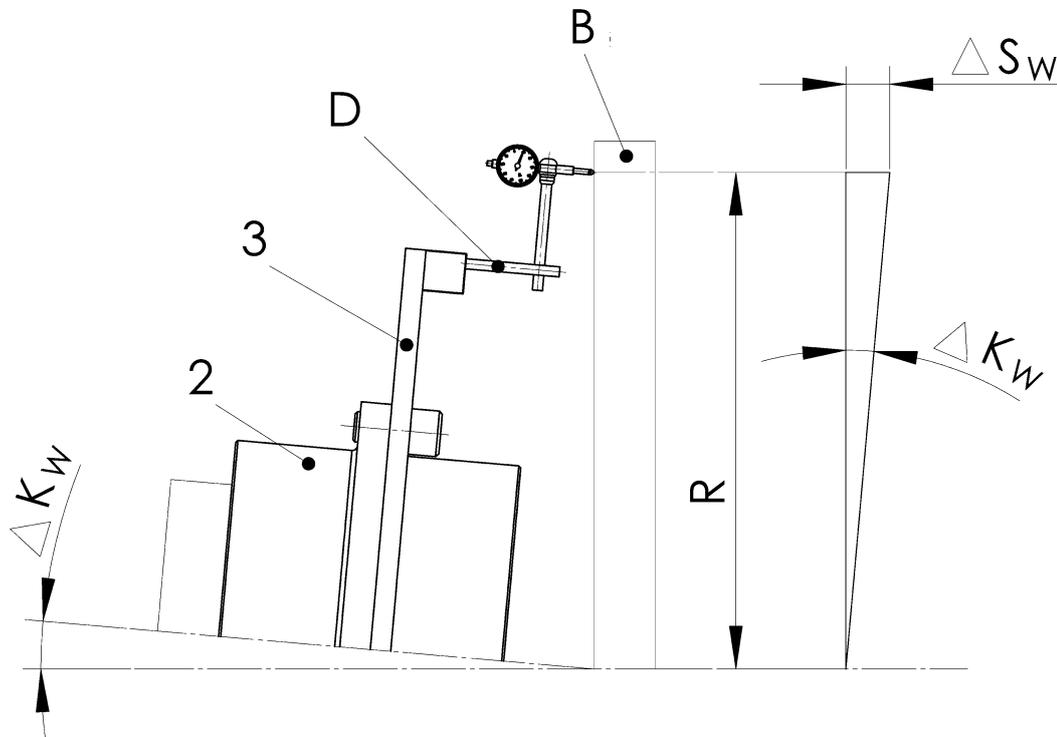


Fig. 5-3 Angular misalignment

Item	Info	Designation	Remark
2		Hub	
3		Adapter	
B		Flywheel	Customer part
D		Dial gauge	Customer part

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

The maximum dial gauge deflection must not exceed the value $2 \times S_w$ 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:

$$\Delta K_{w \max} = 0.1^\circ$$



Size	R [mm]	S _{w max} [mm]
130 + 140 - 673	310	0.54
140 - 733	335	0.58
140 + 150 - 850	400	0.70
160 - 925	440	0.77
240 + 250 - 1090	515	0.90
260 - 1180	560	0.98
340 + 350 - 1340	635	1.10
360 - 1460	695	1.20
440 + 450 - 1685	795	1.39
460 - 1840	870	1.52

Table 5-3 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	
	<p>Injuries can occur as a result of:</p> <ul style="list-style-type: none"> ▪ Contact with rotating parts <p>Before starting work at the coupling, switch off the plant and secure against unintentional start-up.</p>
WARNING	
	<p>Injury and material damage can occur as a result of:</p> <ul style="list-style-type: none"> ▪ Assembly of the coupling in the wrong sequence <p>Only ever assemble the coupling in the described sequence.</p>
WARNING	
	<p>Injury and material damage can occur as a result of:</p> <ul style="list-style-type: none"> ▪ Falling coupling components <p>Secure coupling components against falling to the floor.</p>
CAUTION	
	<p>Material damage to coupling components can occur as a result of:</p> <ul style="list-style-type: none"> ▪ Contact with sharp-edged objects <p>Protect coupling components for transportation. Only hoist coupling components with nylon belts or ropes. Always cushion parts when supporting them from below.</p>
CAUTION	
	<p>Material damage can occur as a result of:</p> <ul style="list-style-type: none"> ▪ Soiled joint surfaces <p>The surfaces that are to be joined must be free of dirt, preservatives and lubricants.</p>

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 024T-00250-.S.
- Part illustration and marking may differ slightly from installation drawing and delivery state.

6.2 Mounting the hub/adapter (2)

- Mount the hub/adapter (2) as appropriate for the type supplied (see installation drawing):
 - Mounting the hub with cylindrical bore and keyway, see chapter 6.2.1
 - Mounting the hub with conical oil interference fit, see chapter 6.2.2
 - Mounting the adapter, see chapter 6.2.3

6.2.1 Mounting the hub with cylindrical bore and keyway

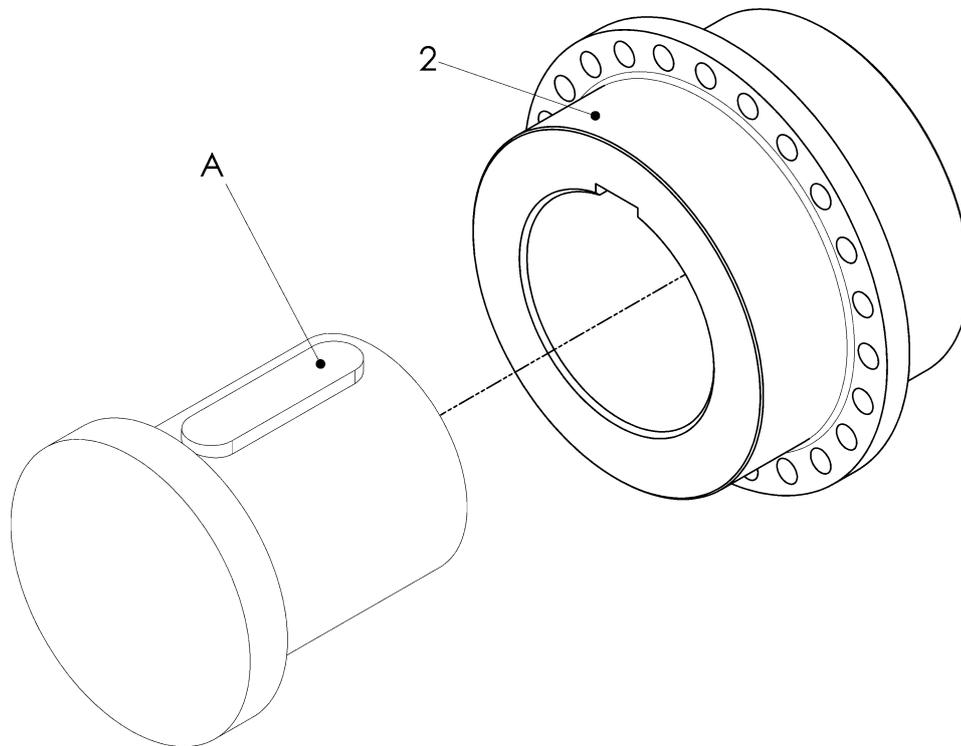


Fig. 6-1 Mounting the hub with cylindrical bore and keyway

Item	Info	Designation	Remark
2		Hub	
A		Shaft	Customer part

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, 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 (2) to a temperature of 170° - 200°C.
- Push the hub (2) onto the shaft (A).

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.

6.2.2 Mounting the hub with conical oil interference fit

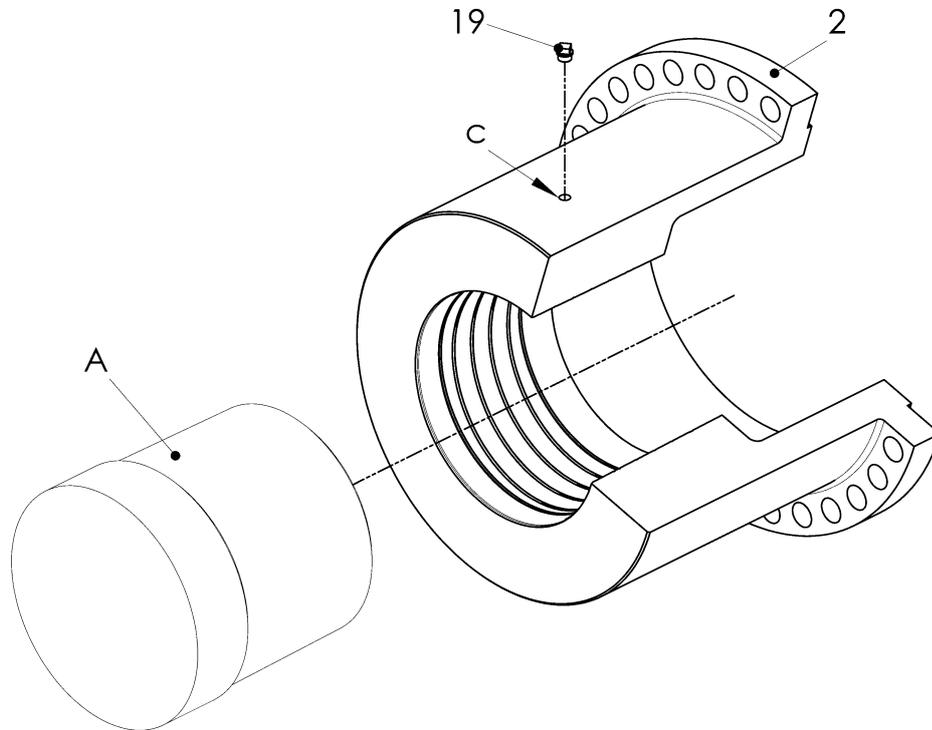


Fig. 6-2 Mounting the hub with conical oil interference fit

Item	Info	Designation	Remark
2		Hub	
19		Screw plug	G $\frac{1}{4}$ or G $\frac{3}{4}$ see installation drawing
A		Shaft	Customer part
	c	Thread	G $\frac{1}{4}$ or G $\frac{3}{4}$ see installation drawing

- Lightly oil the cone of the shaft (A).
- Push the hub (2) onto the shaft (A).
- Remove the screw plug (19) from the hub (2).

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 mm²/s at 20°C, e.g. SKF LHM300
- For dismantling:
Oil with a viscosity 900 mm²/s at 20°C, e.g. SKF LHDF900

- Connect the pump (**p_{max} = 3000 bar**) for expanding the hub (2) to the thread G¹/₄ or G³/₄ (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 (2) 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 (2).
- 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 (2), drain oil out of the thread G¹/₄ or G³/₄ (c) and dispose of it correctly.
- Screw the screw plug (19) into the hub (2).

**IMPORTANT**

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

6.2.3 Mounting the adapter

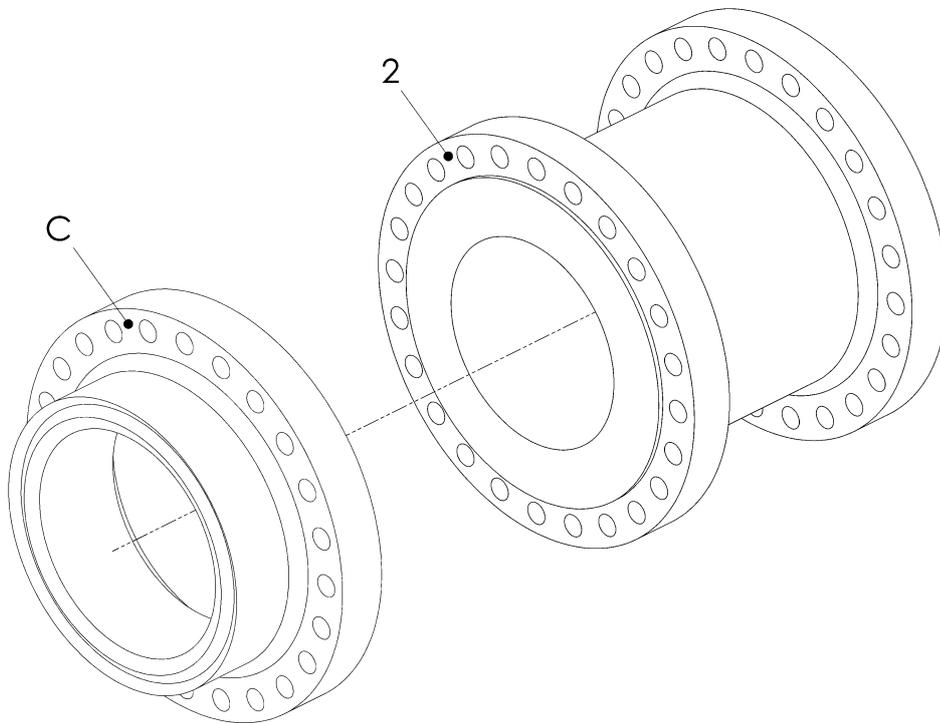


Fig. 6-3 Mounting the adapter

Item	Info	Designation	Remark
2		Adapter	
C		Flange	Customer part

- Push the adapter (2) onto/into the centring of the flange (C).
- Screw the adapter (2) to the flange (C).

6.3 Mounting the adapter (3)

- Mount the adapter (3) as appropriate for the coupling size supplied.
 - Mounting the adapter of coupling size 130-360, see chapter 6.3.1
 - Mounting the adapter of coupling size 440-460, see chapter 6.3.2

6.3.1 Mounting the adapter of coupling size 130-360

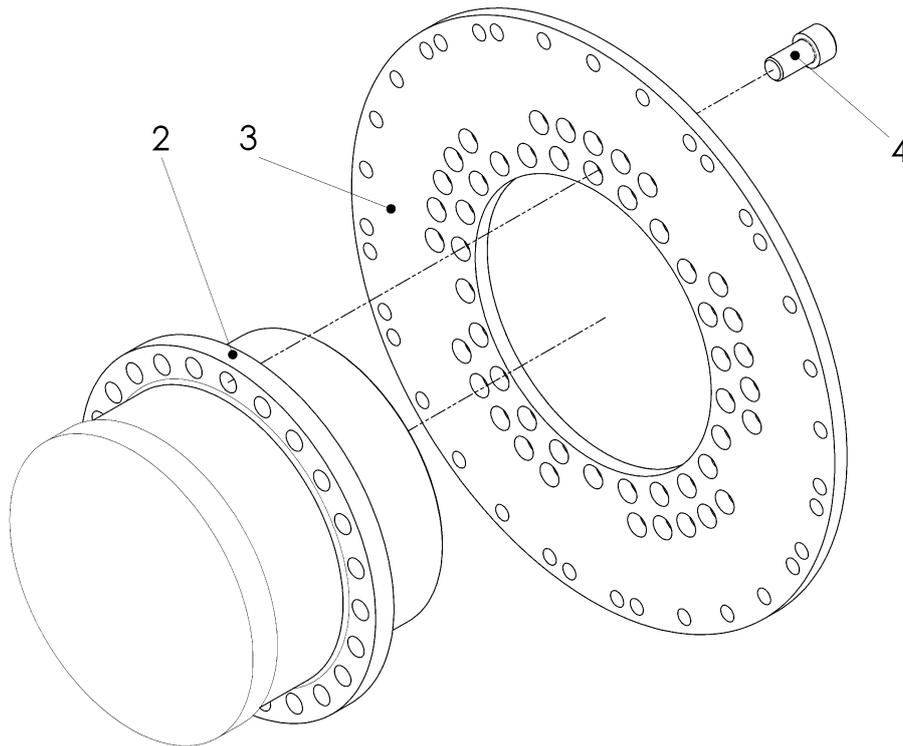


Fig. 6-4 Mounting the adapter of coupling size 130-360

Item	Info	Designation	Remark
2		Hub/Adapter	illustrated is the hub (2)
3		Adapter	
4		Screw ISO4762-10.9	

- Push the adapter (3) onto the centring of the hub/adapter (2).
- Screw the adapter (3) to the hub/adapter (2) using the screws (4).

6.3.2 Mounting the adapter of coupling size 440-460

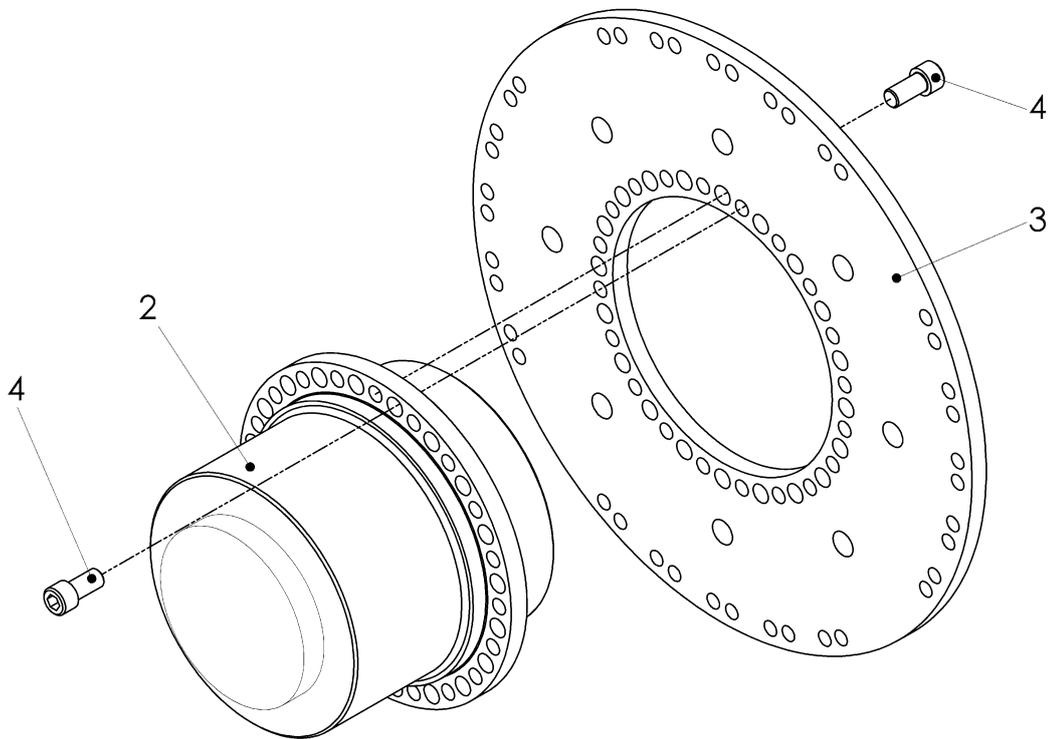


Fig. 6-5 Mounting the adapter of coupling size 440-460

Item	Info	Designation	Remark
2		Hub/Adapter	illustrated is the hub (2)
3		Adapter	
4		Screw ISO4762-10.9	

- Push the adapter (3) onto the centring of the hub/adapter (2).

Alternating:

- Screw the adapter (3) to the hub/adapter (2) using the screws (4).
- Screw the hub/adapter (2) to the adapter (3) using the screws (4).

6.4 Aligning the units

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

6.5 Positioning the adapter (6) to the flywheel (type FS)

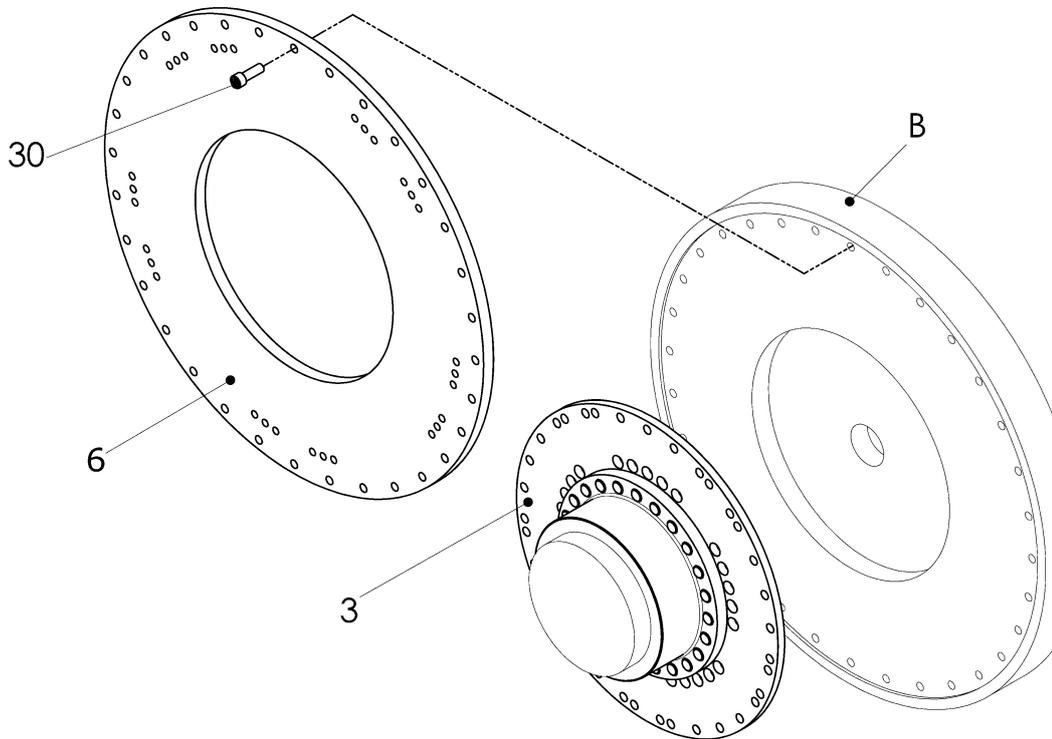


Fig. 6-6 Positioning the adapter (6) to the flywheel (type FS)

Item	Info	Designation	Remark
3		Adapter	
6		Adapter	
30		Screw	If ordered
B		Flywheel	Customer part

- Push the adapter (6) into the centring of the flywheel (B) and secure against falling down using one screw (30).

6.6 Positioning the rubber elements

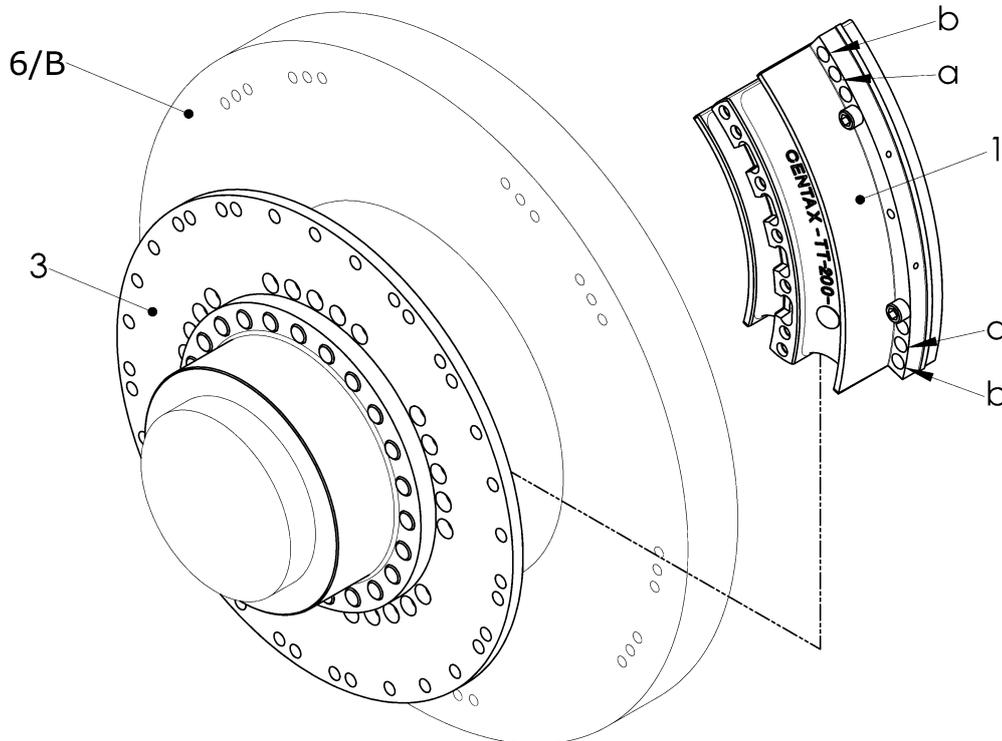


Fig. 6-7 Positioning the rubber elements

Item	Info	Designation	Remark
1		Rubber element	
3		Adapter	
6		Adapter	
B		Flywheel	Customer part
	a	Drilling for screw (7/30)	Coupling size 130 - 260
	b	Drilling for screw (7/30)	Coupling size 360 - 460

- Position the first rubber element (1) between the adapter (3) and the adapter/flywheel (6/B).
- Push one screw (7/30) into each marked drilling (-a- for coupling sizes 100 and 200, or -b- for coupling sizes 300 and 400).
- Loosely screw the rubber element (1) to the adapter/flywheel (6/B) using the screws (7/30).
- Repeat the mounting section described above until all rubber elements (1) are positioned.



6.7 Mounting the rubber elements

- Mount the rubber elements as appropriate for the coupling size supplied.
 - Mounting the rubber elements of coupling size 100, see chapter 6.7.1
 - Mounting the rubber elements of coupling size 200, see chapter 6.7.2
 - Mounting the rubber elements of coupling size 300, see chapter 6.7.3
 - Mounting the rubber elements of coupling size 400, see chapter 6.7.4

6.7.1 Mounting the rubber elements of coupling size 100**WARNING**

Injury and material damage can occur as a result of:

- Loosening of the illustrated screws of the precompressed rubber elements

The screws "X" shown in the following illustration may not be unscrewed.

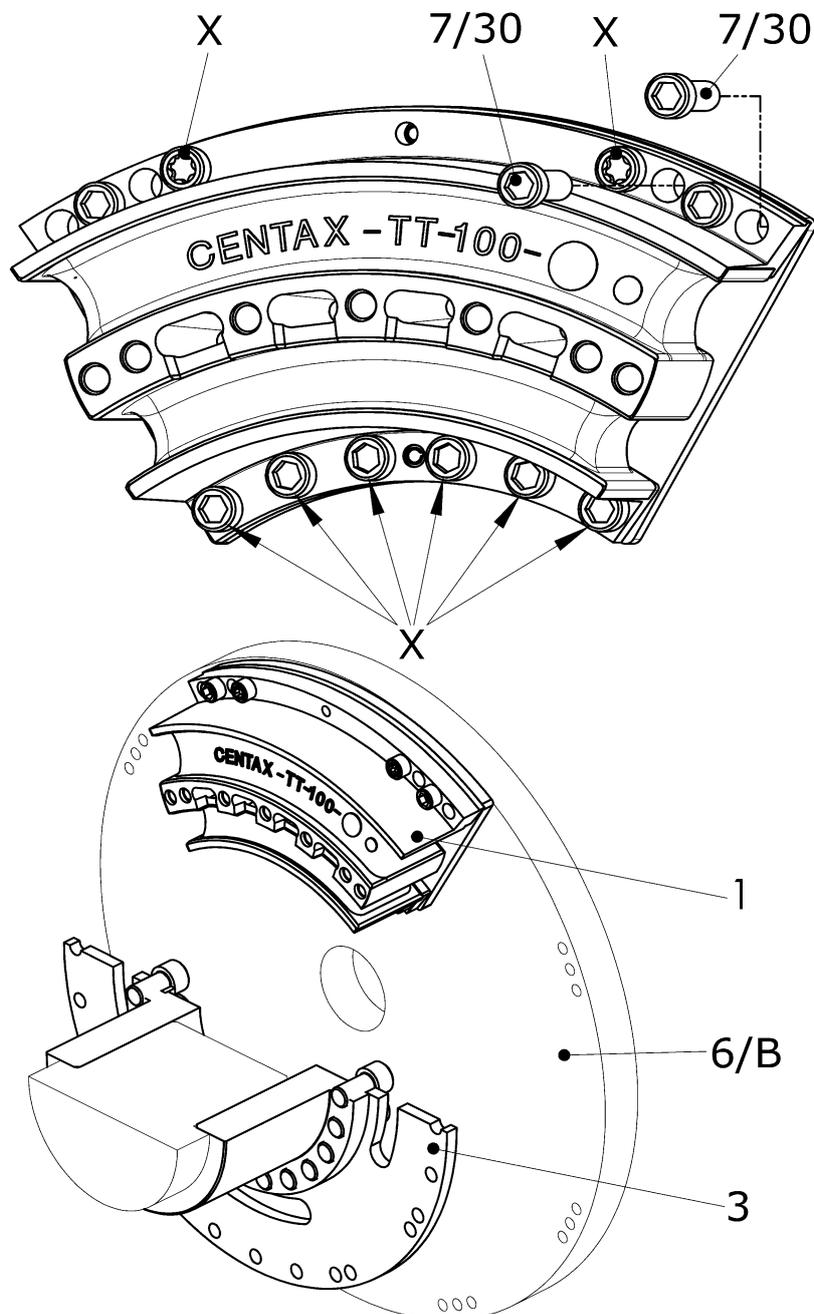


Fig. 6-8 Mounting the rubber elements of coupling size 100



Item	Info	Designation	Remark
1		Rubber element	
3		Adapter	
6		Adapter	
7		Screw ISO4762	
30		Screw ISO4762	If ordered
B		Flywheel	Customer part
X		Screw	Don't unscrew

- Loosely screw the rubber elements (1) to the flywheel (B) using the remaining screws (30).
- Tighten all the screws (30) according to the requested tightening torque.

Alternative for type FS:

- Loosely screw the rubber elements (1) to the adapter (6) using the screws (7).
- Tighten all the screws (7) according to the requested tightening torque.

6.7.2 Mounting the rubber elements of coupling size 200

WARNING



Injury and material damage can occur as a result of:

- Loosening of the illustrated screws of the precompressed rubber elements

The screws "X" shown in the following illustration may not be unscrewed.

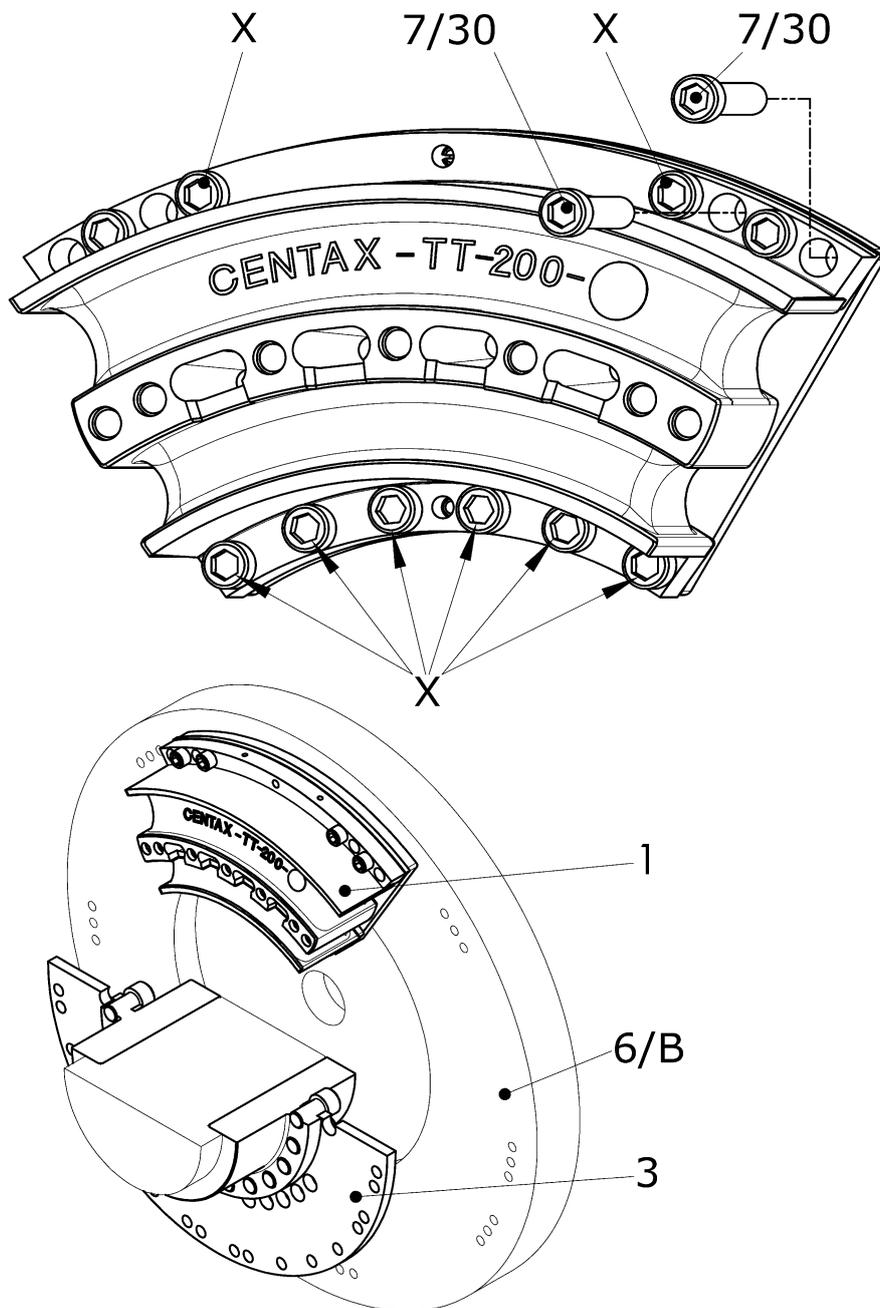


Fig. 6-9 Mounting the rubber elements of coupling size 200



Item	Info	Designation	Remark
1		Rubber element	
3		Adapter	
6		Adapter	
7		Schraube ISO4762	
30		Screw ISO4762	If ordered
B		Flywheel	Customer part
X		Screw	Don't unscrew

- Loosely screw the rubber elements (1) to the flywheel (B) using the remaining screws (30).
- Tighten all the screws (30) according to the requested tightening torque.

Alternative for type FS:

- Loosely screw the rubber elements (1) to the adapter (6) using the screws (7).
- Tighten all the screws (7) according to the requested tightening torque.

6.7.3 Mounting the rubber elements of coupling size 300

WARNING



Injury and material damage can occur as a result of:

- Loosening of the illustrated screws of the precompressed rubber elements

The screws "X" shown in the following illustration may not be unscrewed.

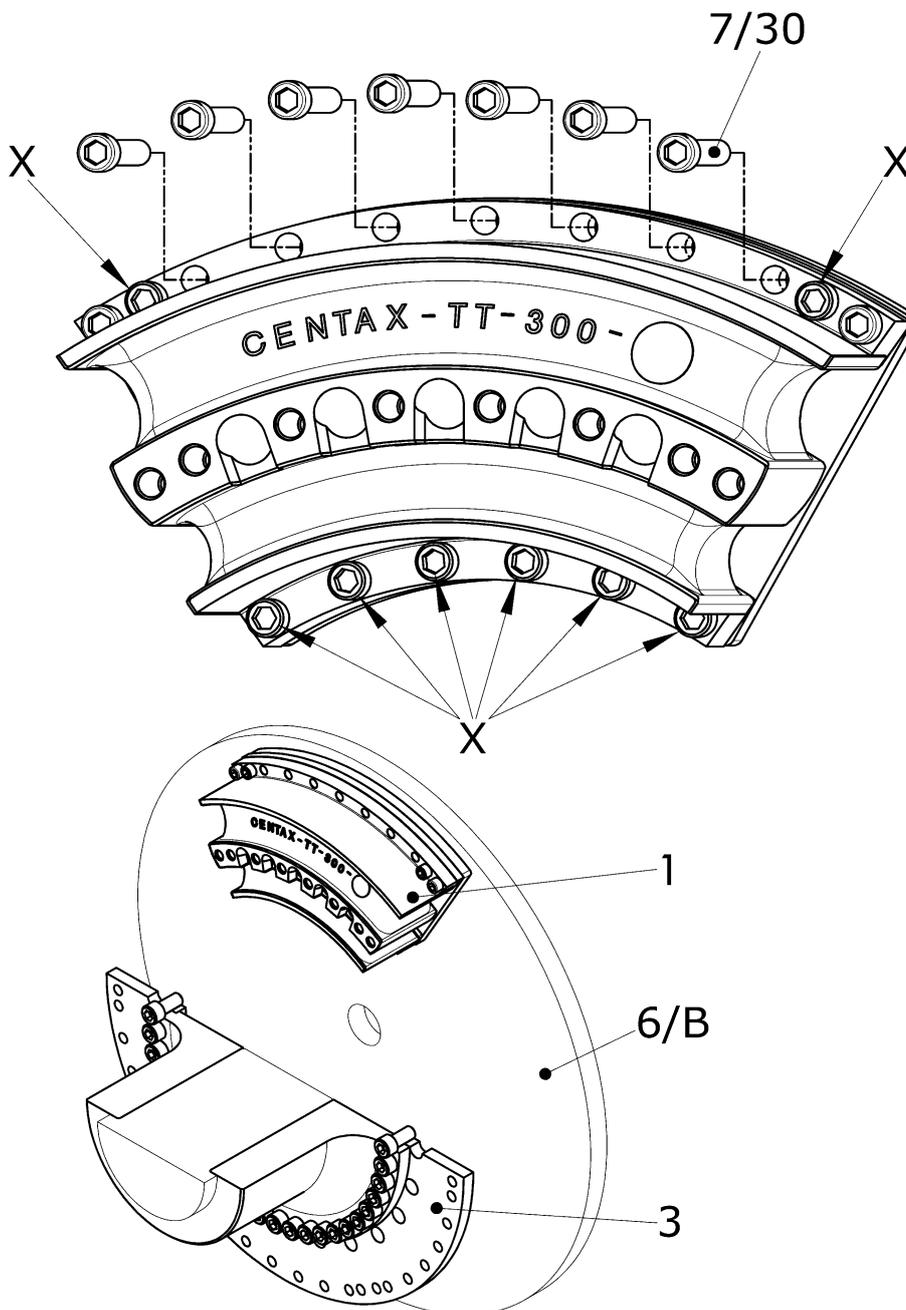


Fig. 6-10 Mounting the rubber elements of coupling size 300



Item	Info	Designation	Remark
1		Rubber element	
3		Adapter	
6		Adapter	
7		Schraube ISO4762	
30		Screw ISO4762	If ordered
B		Flywheel	Customer part
X		Screw	Don't unscrew

- Loosely screw the rubber elements (1) to the flywheel (B) using the remaining screws (30).
- Tighten all the screws (30) according to the requested tightening torque.

Alternative for type FS:

- Loosely screw the rubber elements (1) to the adapter (6) using the screws (7).
- Tighten all the screws (7) according to the requested tightening torque.

6.7.4 Mounting the rubber elements of coupling size 400**WARNING****Injury and material damage can occur as a result of:**

- Loosening of the illustrated screws of the precompressed rubber elements

The screws "X" shown in the following illustration may not be unscrewed.

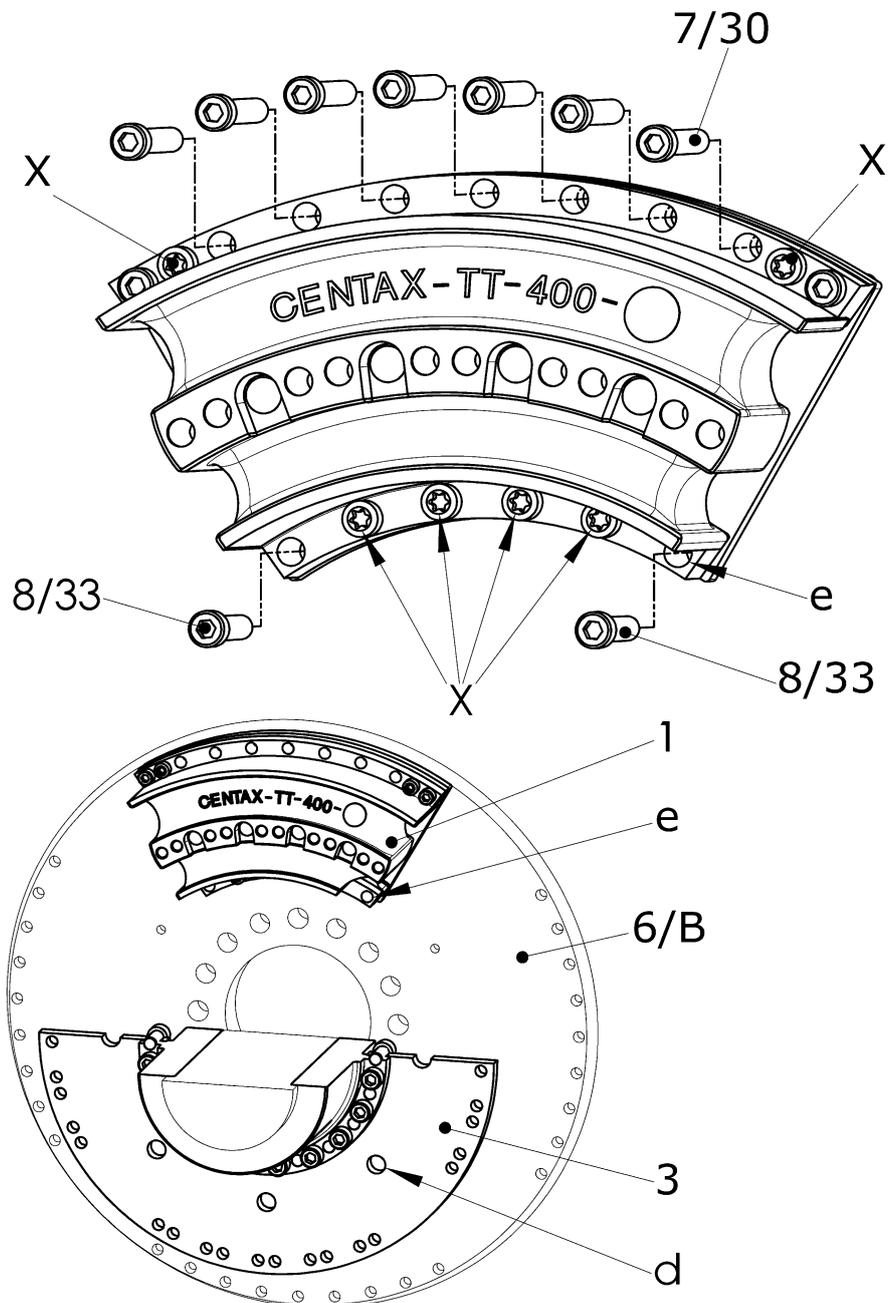


Fig. 6-11 Mounting the rubber elements of coupling size 400



Item	Info	Designation	Remark
1		Rubber element	
3		Adapter	
6		Adapter	
7		Schraube ISO4762	
8		Screw ISO4762	
30		Screw ISO4762	If ordered
33		Screw ISO4762	If ordered
B		Flywheel	Customer part
X		Screw	Don't unscrew
	d	Drilling Ø50	For mounting
	e	Drilling	For screw (33)

- Loosely screw the rubber elements (1) to the flywheel (B) using the remaining screws (30).
 - Turn the adapter (3) together with the hub (2) until the drillings (d and e) are aligned.
 - Push the screw (33) through the drilling (d) into the drilling (e) and screw the rubber element (1) to the flywheel (B).
- Repeat the mounting section described above until all screws (33) are bolted.
- Tighten all the screws (30) according to the requested tightening torque.

Alternative for type FS:

- Loosely screw the rubber segments (1) to the adapter (6) using the remaining screws (7).
 - Turn the adapter (3) together with the hub (2) until the drillings (d and e) are aligned.
 - Push the screw (8) through the drilling (d) into the drilling (e) and screw the rubber segment (1) to the adapter (6).
- Repeat the mounting section described above until all screws (8) are bolted.
- Tighten all the screws (7) according to the requested tightening torque.

6.8 Mounting the adapter to the flywheel (type FS)

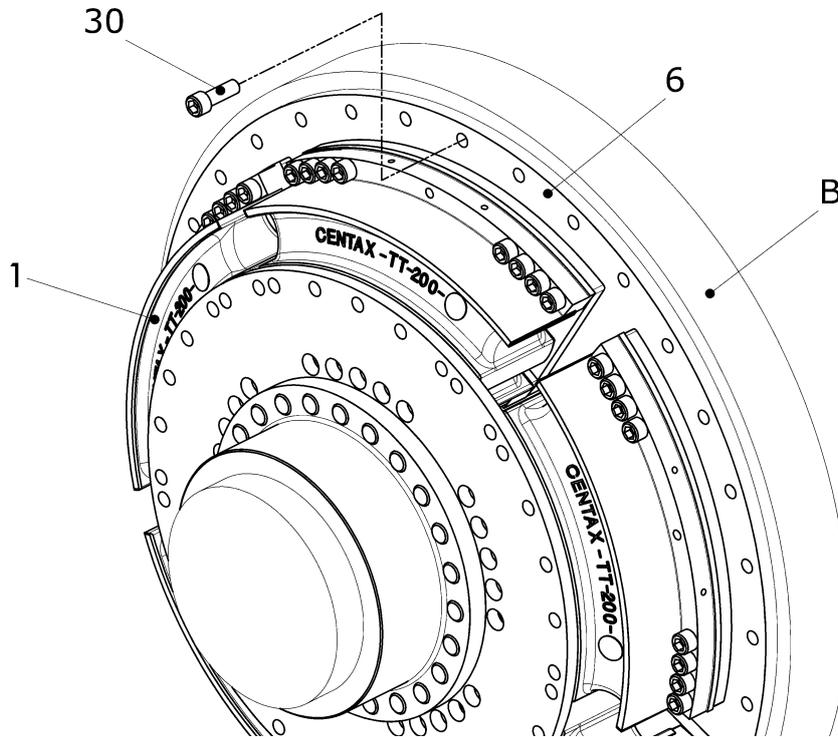


Fig. 6-12 Mounting the adapter to the flywheel (type FS)

Item	Info	Designation	Remark
1		Rubber segment	
6		Adapter	
30		Screw	If ordered
B		Flywheel	Customer part

- Screw the adapter (6) to the flywheel (B) using the screws (30).

6.9 Mounting the adapter (3) to the rubber element

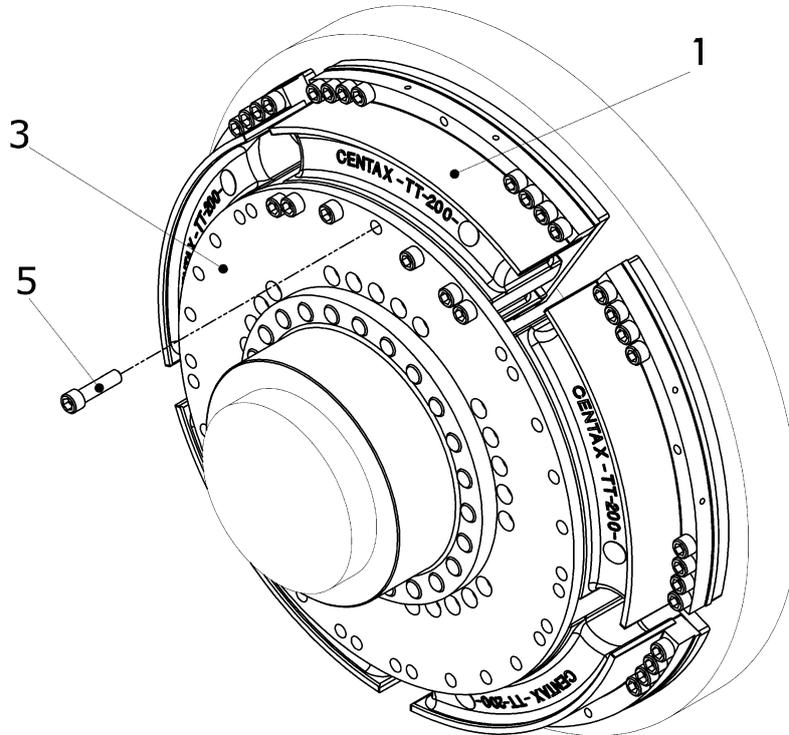


Fig. 6-13 Mounting the adapter (3) to the rubber element

Item	Info	Designation	Remark
1		Rubber element	
3		Adapter	
5		Screw ISO4762-10.9	

WARNING



Injury and material damage can occur as a result of:

- Wrong tightening torques

Only use oiled screws of strength class 10.9 screwed with a tightening torque according to the following table.

- Screw the adapter (3) to the rubber elements (1) using the screws (5). Tightening torque CX-TT; see table 6-1.

CX-TT Size	Thread size d	Strength class	Tightening torques	
			[Nm] ±5%	[in lbs] ±5%
130-160	M16	10.9	215	1903
240-260	M20		380	3363
340-360	M24		655	5797
440-460	M30		1120	9913

Table 6-1 Tightening torques CX-TT

6.10 After completed mounting

WARNING	
	<p>Injury and material damage can occur as a result of:</p> <ul style="list-style-type: none"> ▪ Loose screw connections <p>Before commissioning, the tightening torque levels of all screws must be checked and corrected if necessary.</p>
 IMPORTANT	
<p>After completion of assembly, check the alignment of the coupling again and if necessary correct.</p>	

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		<ul style="list-style-type: none"> • Switch off the plant
Running noises or vibrations in the unit	Alignment error	<ul style="list-style-type: none"> • Check alignment and correct • Check screw torque levels and correct
	Loose screws	
Rubber element damaged	Alignment error	<ul style="list-style-type: none"> • Replace defective parts • Check alignment and correct • Eliminate the cause for inadmissibly high torque
	Inadmissibly high torque	
After all remedies		<ul style="list-style-type: none"> • 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 months 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



IMPORTANT

Exchange the rubber elements in the event that:

- The wear specifications given in W000-00006 are exceeded

- Assess the rubber elements as described in CENTA guidelines W000-00006 .

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 rubber elements and the adapter

See Fig. 6-12:

- Loosen and remove the screws (5) of the connection adapter (3) and rubber elements (1).

9.3 Dismantling the connection adapter (6) and flywheel (type FS)

See Fig. 6-11:

- Loosen the screws (30) of the connection adapter (6) and flywheel (B) and remove.
- To prevent the adapter (6) of falling to floor, reinsert one screw (30) and hand-tighten.

9.4 Dismantling the rubber elements

- Dismantle the rubber elements as appropriate for the coupling size supplied.
 - Dismantling the rubber elements of coupling size 400, see chapter 9.4.1
 - Dismantling the rubber elements of coupling size 300, see chapter 9.4.2
 - Dismantling the rubber elements of coupling size 100-200, see chapter 9.4.3

9.4.1 Dismantling the rubber elements of coupling size 400**WARNING****Injury and material damage can occur as a result of:**

- Loosening of the illustrated screws of the precompressed rubber elements

The screws "X" shown in the following illustration may not be unscrewed.

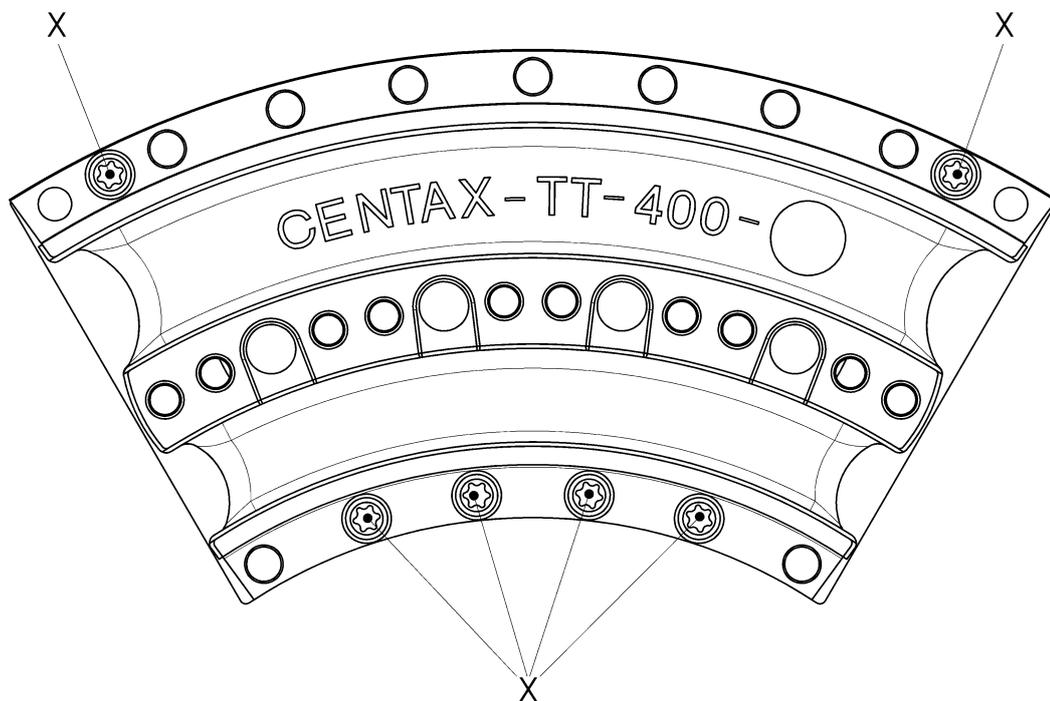


Fig. 9-1 Precompressed rubber element size 400

See Fig. 6-10:

- Loosen the screws (8/33) of the connection rubber element (1) and adapter/flywheel (6/B) and remove.
In order to do so, turn the adapter (3) together with the hub (2) until the drillings (d and e) are aligned.
- Loosen the screws (7/30) of the connection rubber element (1) and adapter/flywheel (6/B) and remove.
- Remove the rubber element (1) from between the adapter (3) and the adapter/flywheel (6/B).
- Repeat the dismantling section described above until all the rubber elements (1) are dismantled.

9.4.2 Dismantling the rubber elements of coupling size 300**WARNING****Injury and material damage can occur as a result of:**

- Loosening of the illustrated screws of the precompressed rubber elements

The screws "X" shown in the following illustration may not be unscrewed.

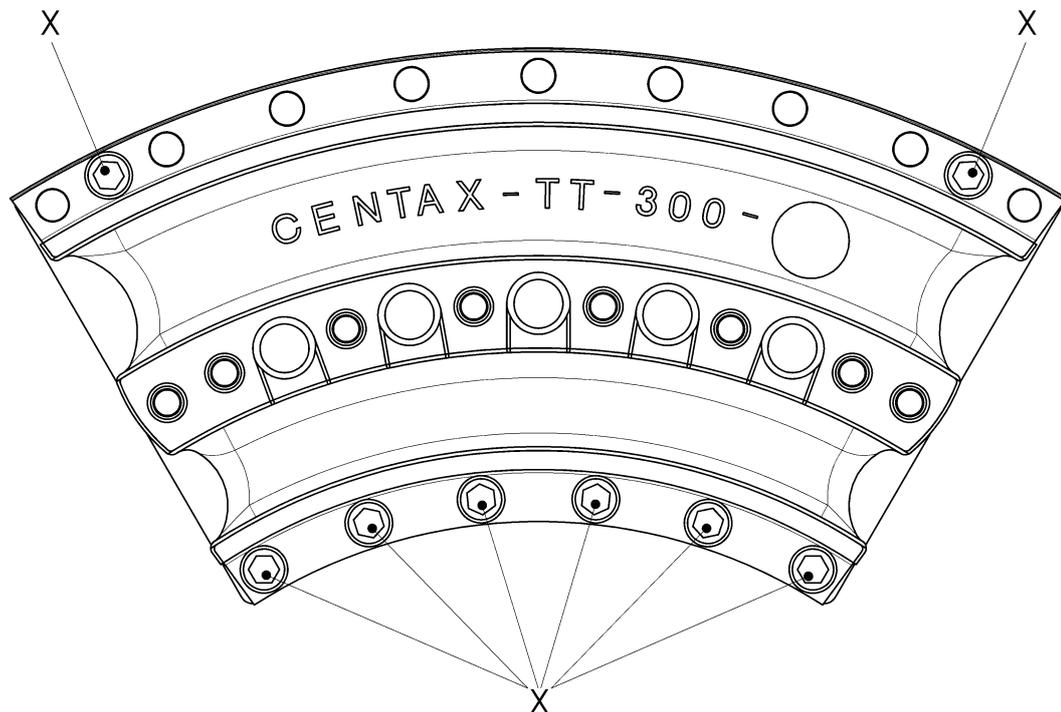


Fig. 9-2 Precompressed rubber element size 300

See Fig. 6-9:

- Loosen the screws (7/30) of the connection rubber element (1) and adapter/flywheel (6/B) and remove.
- Remove the rubber element (1) from between the adapter (3) and the adapter/flywheel (6/B).
- Repeat the dismantling section described above until all the rubber elements (1) are dismantled.

9.4.3 Dismantling the rubber elements of coupling size 100-200**WARNING****Injury and material damage can occur as a result of:**

- Loosening of the illustrated screws of the precompressed rubber elements

The screws "X" shown in the following illustration may not be unscrewed.

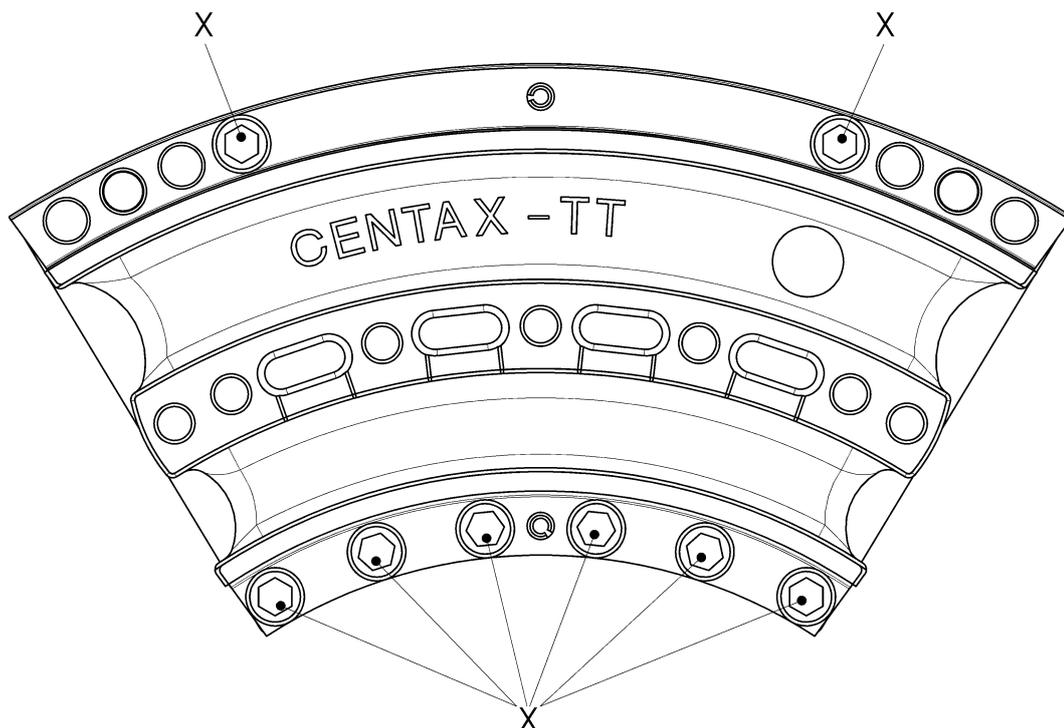


Fig. 9-3 Precompressed rubber element size 100-200

See Fig. 6-8 and 6-7:

- Loosen the screws (7/30) of the connection rubber element (1) and adapter/flywheel (6/B) and remove.
- Remove the rubber element (1) from between the adapter (3) and the adapter/flywheel (6/B).
- Repeat the dismantling section described above until all the rubber elements (1) are dismantled.

9.5 Dismantling the adapter (6) from the flywheel (type FS; if necessary)**See Fig. 6-5:**

- Loosen the screw (30) of the connection adapter (6) and flywheel (B) and remove.
- Pull the adapter (6) out of the centring of the flywheel (B) and remove.

9.6 Dismantling the adapter (3; if necessary)**See Fig. 6-4 and 6-3:**

- Loosen and remove the screws (4) of the connection adapter (3) and hub/adapter (2).
- Pull the adapter (3) from the centring of the hub/adapter (2) and remove.

9.7 Dismantling the hub/adapter (2; if necessary)

- Dismantle the hub/adapter (2) as appropriate for the supplied design (see installation drawing):
 - Dismantling the hub with cylindrical bore and keyway, see chapter 9.7.1
 - Dismantling the hub with cylindrical bore and keyway, see chapter 9.7.2
 - Dismantling the adapter (2), see chapter 9.7.3

9.7.1 Dismantling the hub with cylindrical bore and keyway**See Fig. 6-1:**

- Remove the hub (2) from the shaft (A).

9.7.2 Dismantling the hub with conical oil interference fit**See Fig. 6-2:****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 mm²/s at 20°C, e.g. SKF LHM300
- For dismantling:
Oil with a viscosity 900 mm²/s at 20°C, e.g. SKF LHDF900

- Remove the screw plug (19) from the hub (2).
- Connect the pump (**p_{max} = 3000 bar**) to the thread (c) of the hub (2) to expand the hub.
- Screw the pump to the shaft (A), in order to hold the hub.
- Repeat the following mounting section, until the hub is completely released from the shaft:
 - 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.
- Remove the pump for holding the hub from the shaft (A).
- Remove the pump for expanding the hub from the hub (2).
- Turn the hub (2), drain oil out of the thread (c) and dispose correctly.
- Screw the screw plug (19) into the hub (2).
- Remove the hub (2) from the shaft (A).

9.7.3 Dismantling the adapter**See Fig. 6-3:**

- Loosen and remove the screws of the connection adapter (2) and flange (C).
- Pull the adapter (2) off/out of the centring of the flange (C) and remove.

9.8 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.

Wear parts of this coupling:

- Rubber elements
- Rubber elements must be replaced as a complete set.

When exchanging, 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 Annex

11.1.1 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).

d	Thread size		d	Thread size	
	Strength class	Tightening torques [Nm] ±5% [in lbs] ±5%		Strength class	Tightening torques [Nm] ±5% [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 D024-900

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-TT

Model / series code: CX-TT / 024T

Installation size: 120...460

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. J. Anderseck

by order of Gunnar Anderseck
(Authorised Person Documentation)

Declaration of incorporation was issued:

i.v. J. Exner

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

Haan, 20.11.2012