

Installation and Operating Instructions for Cone Clamping Element RLK 235 TC

E 03.670e



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Issue: 14.05.2020	Version: 01	Drawn: RAQM Checked: EISF	Pages: 5	Page: 2

Important

Please read these instructions carefully before installing and operating the product. Your particular attention is drawn to the notes on safety.

These installation and operating instructions are valid on condition that the product meets the selection criteria for its proper use. Selection and design of the product is not the subject of these installation and operating instructions.

Disregarding or misinterpreting these installation and operating instructions invalidates any product liability or guarantee by RINGSPANN; the same applies if the product is taken apart or changed.

These installation and operating instructions should be kept in a safe place and should accompany the product if it is passed on to others -either on its own or as part of a machine- to make it accessible to the user.

Safety Notice

- Installation and operation of this product should only be carried out by skilled personnel.
- Repairs may only be carried out by the manufacturer or accredited RINGSPANN agents.
- If a malfunction is indicated, the product or the machine into which it is installed, should be stopped immediately and either RINGSPANN or an accredited RINGSPANN agent should be informed.
- Switch off the power supply before commencing work on electrical components.
- Rotating machine elements must be protected by the purchaser to prevent accidental contact.
- Supplies abroad are subject to the safety laws prevailing in those countries.

This is a translation of the German original version!

In case of inconsistencies between the German and English version of this installation and operating instruction, the German version shall prevail.

1. General information

1.1 Function:

RLK 235 TC Cone Clamping Elements are internal clamping connections for backlash free fastening of hubs on shafts. By tightening clamping screws surfaces are pulled together generating radial forces; these forces create a frictional connection between the Cone Clamping Element and the shaft as well as the hub. Torques or axial forces can be transmitted from the shaft via the Cone Clamping Element to the hub.

1.2 General Safety Instructions



Caution! Danger of injury!

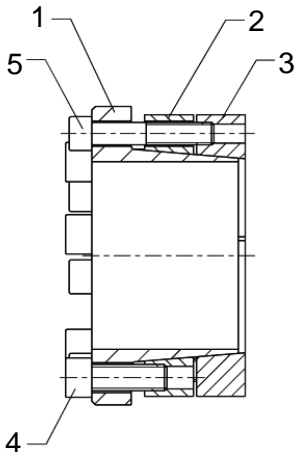
The immediate vicinity of the rotating Cone Clamping Set must be kept clear of body parts, hair, clothing and other objects at all times.

2. Configuration and function

RLK 235 TC Cone Clamping Elements consist of two slotted outer rings 2 + 3 with inside cone and a slotted inner ring 1 with outside cone as well as a number of clamping screws 4 + 5. By tightening the screws, the outer rings will be drawn against the inner ring. Radial clamping forces are generated by the conical surfaces which are dependent on the tightening torques of the clamping screws, the cone angle and the friction coefficients at the screws and conical surface. The radial clamping forces press the outer rings into the hub bore and the inner ring onto the shaft and create a friction connection at the respective contact surfaces. In this way, torque and/or axial force can be transmitted between the shaft and the hub.

The flange ring (inner ring 1) assures that there is no axial movement between inner ring (1) and outer rings (2 + 3) during assembly.

3. Cross-sectional drawing and parts list



Pos.	Denomination
1	Inner Ring
2	Outer Ring
3	Outer Ring
4	Clamping Screw
5	Clamping Screw

4. Proper use

RLK 235 TC Cone Clamping Elements are designed for installation between the shaft and the hub bore. They are intended solely for the friction-tight mounting of hubs and shafts in order to transmit torque and/or axial forces. All other uses are prohibited. RINGSPANN shall not be liable for damages caused by improper use. The user bears all resulting risks.

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5. Improper use

RLK 235 TC Cone Clamping Elements are not suitable:

- for the direct mounting of hollow shafts to solid shafts or
- as torque-limiting safety devices.

6. Condition on delivery

The clamping elements are wrapped in anti-corrosive packing material and are ready to install as delivered.

7. Technical requirements for safe, reliable operation

In order to achieve full transmission of torque and/or axial forces, **tolerances** on contact-pressure surfaces may not exceed

- tolerance class h8 for shafts
- tolerance class H8 for hub bores.

In addition, pressure-contact **surfaces** on shafts and hubs must have a mean peak-to-valley height of $R_z = 10 \dots 25 \mu\text{m}$.

Shaft and hub must be manufactured from **materials** with the following mechanical properties:

- E-module about 170 kN/mm^2

8. Mounting

8.1 Clean the contact surfaces between the shaft and the hub thoroughly.

8.2 Apply a light coat of oil to the clamping element.



Do not use oil which contains molybdenum disulphide or high-pressure additives and do not use grease!

8.3 Release all screws a few turns.

8.4 Transfer at least three screws (4) to the release threads of (1) to assure a certain distance between inner ring and outer rings.

8.5 Place clamping element between shaft and hub.

8.6 Transfer screws from release threads to threads in outer ring (2)

8.7 Tighten clamping screws (5) and outer ring (3), firstly crosswise and by hand, aligning the hub. Afterwards, tighten clamping screws (4) and outer ring (2) crosswise and by hand.

8.8 Follow same order as per 8.7, but using a torque wrench, applying 50% of tightening torque M_s as per table in no. 11. crosswise for clamping screws (5) and (4). Afterwards clockwise apply 50% of tightening torque M_s .

8.9 Apply full tightening torque for all clamping screws (clockwise).



The tightening process is only completed when none of the screws can be turned at the full specified torque M_s any further.



Replace missing or damaged clamping screws with identical screws of strength class 12.9!

9. Dismantling

- 9.1 Release clamping screws 4 a few turns.
- 9.2 Transfer clamping screws 4 to release threads in inner ring 1.
- 9.3 Tighten the screws in the release holes crosswise in multiple steps (1/2 revolution by each step). Outer ring 2 will be released from inner ring 1. Outer ring 3 remains clamped.
- 9.4 Release clamping screws 5 a few turns.
- 9.5 Continue tightening the screws until outer ring 3 will be released as well.
- 9.6 Dismantle and thoroughly clean the clamping element.
- 9.7 Check if clamping element has been damaged.



Only undamaged clamping sets may be reused!

- 9.8 When reusing the clamping element, apply oil to all contact surfaces, incl. threads and base of head of screws.



Do not use oil which contains molybdenum disulphide or high-pressure additives and do not use grease!

10. Maintenance

RLK 235 TC Cone Clamping Elements are maintenance-free. However, signs of loosening may occur in connections during operation. We therefore recommend checking the tightening torques of the clamping screws during each time maintenance is performed on the machine.

11. Tightening Torque Ms

Size d x D [mm]	Clamping Screws	Tightening Torque M _s [Nm]	Clamping Screws	Tightening Torque M _s [Nm]	Size d x D [mm]	Clamping Screws	Tightening Torque M _s [Nm]	Clamping Screws	Tightening Torque M _s [Nm]
70 x 115	M 12	145	M 10	83	280 x 365	M 24	1200	M 20	690
80 x 125	M 12	145	M 10	83	300 x 385	M 24	1200	M 20	690
90 x 135	M 12	145	M 10	83	320 x 405	M 24	1200	M 20	690
100 x 150	M 14	230	M 12	145	340 x 425	M 24	1200	M 20	690
110 x 160	M 14	230	M 12	145	360 x 445	M 24	1200	M 20	690
120 x 170	M 14	230	M 12	145	380 x 465	M 24	1200	M 20	690
130 x 190	M 16	355	M 14	230	400 x 485	M 24	1200	M 20	690
140 x 200	M 16	355	M 14	230	420 x 505	M 24	1200	M 20	690
150 x 210	M 16	355	M 14	230	440 x 525	M 24	1200	M 20	690
160 x 220	M 16	355	M 14	230	460 x 545	M 24	1200	M 20	690
170 x 240	M 20	690	M 16	355	480 x 565	M 24	1200	M 20	690
180 x 250	M 20	690	M 16	355	500 x 585	M 24	1200	M 20	690
190 x 260	M 20	690	M 16	355	520 x 605	M 24	1200	M 20	690
200 x 270	M 20	690	M 16	355	540 x 625	M 24	1200	M 20	690
220 x 290	M 20	690	M 16	355	560 x 645	M 24	1200	M 20	690
240 x 310	M 20	690	M 16	355	580 x 665	M 24	1200	M 20	690
260 x 330	M 20	690	M 16	355	600 x 685	M 24	1200	M 20	690