Installation and Operating Instructions for RLK 250 and RLK 250 L Cone Clamping Elements

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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 warranty; 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 agents.
- If a malfunction is indicated, the product or the machine into which it is installed, should be stopped immediately and either we or an accredited 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.

1. General information

1.1 Function:

RLK 250 and RLK 250 L 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.

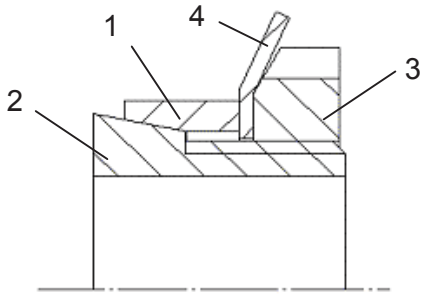
1.2 General safety instructions:

Caution! Danger of injury!
The immediate vicinity of the rotating shrink disc must be kept clear of body parts, hair, clothing and other objects at all times.

2. Configuration and function

The RLK 250 / RLK 250 L Cone Clamping Element devices consists of a slotted outer ring 1 with inside cone and a slotted inner ring 2 with outside cone and a keyed nut 3 with a tab washer 4. (optional model: hex nut without tab washer instead of keyed nut with tab washer) The inner ring are drawn against each other by tightening the keyed nut (hex nut). Radial clamping forces are generated by the conical surfaces which are dependent on the torques of the keyed nut (hex nut), the cone angel and the friction coefficients at the nuts and conical surface. The radial clamping forces press the outer ring 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.

3. Drawing (cross-section) and parts list



Part.	Nomenclature
1	Outer ring
2	Inner ring
3	Keyed nut
4	Tab washer

4. Proper use

The RLK 250 / RLK 250 L Cone Clamping Elements are designed for installation between the shaft and the hub bore. They are intended solely for the friction-tight connection of hubs and shafts for the purpose of transmitting torque and/or axial forces. Use for any other purpose is regarded as improper use. We accept no liability for damages resulting from improper use and associated risks shall be borne by the user.

5. Improper use

The RLK 250 / RLK 250 L Cone Clamping Elements are not suitable for:

- the direct attachment of hollow shafts to solid or hollow shafts or
- use as torque-limiting safety devices.

6. Condition on delivery

The clamping elements are delivered complete and ready to install. They are packed in special paper to protect against corrosion.

7. Technical requirements for safe and effective operation

In order to achieve full transmission of torque and/or axial forces, **tolerance** on contact-pressure surfaces

- may not exceed tolerance class h8 for shafts
- or tolerance class H8 for hub bores.

In addition, pressure-contact **surfaces** on shafts and hubs must have a mean peak-to-valley height R_a < 3,2 µm.

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

- E-module about 170 kN/mm^2

Regarding fixed hubs the values for M, F, P_W and P_N shown in the catalogue have to be reduced by 37%, possibly resulting in a reduced value for K_{min}.

8. Installation

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

8.2 Oil the clamping element lightly.

Do not use oil containing molybdenum sulphide or high-pressure additives or grease of any kind!

8.3 Push the hub onto the shaft and insert the clamping element into the component to be clamped. Ensure that the inner ring does not extend beyond the end of the shaft.

8.4 Tighten the keyed nut (hex nut) by hand until the element grips. Press the tab washer against the nut.

8.5 Tighten the keyed nut to a tightening torque of M_s with a torque wrench inserted at a right angle to the square bore of the special ‘C’ spanner or the hex nut with a torque wrench and a fixed spanner or open-ring spanner.

8.6 When a keyed nut is used: Bend the tabs on the tab washer into the nearest groove.

9. Disassembly

9.1 When a keyed nut is used: Bend the tabs on the tab washer out of the grooves of the keyed nut.

9.2 Loosen the keyed nut with a hook spanner or the hex nut with a fixed spanner or open-ring spanner and turn clockwise by hand.

9.3 When a keyed nut is used: Retract the tab washer.

9.4 If the clamping element does not release automatically, apply light blows to the keyed nut (hex nut) axially and uniformly over the circumference of the hub.

10. Maintenance

The RLK 250 / RLK 250 L Cone Clamping Elements require no maintenance. However, signs of settling may appear in connections during operation. We therefore recommend checking the tightness of the clamping nuts each time maintenance is performed on the machine.

11. Tightening torque M_s

Size d x D [mm]	Keyed nut	Tightening torque M_s [Nm]		Hex nut	Tightening torque M_s [Nm]
		RLK 250	RLK 250 L		RLK 250 L
15 x 25	KM 4	46	53	–	–
16 x 25	KM 4	49	56	–	–
17 x 25	KM 5	–	72	–	–
18 x 30	KM 5	–	83	–	–
19 x 30	KM 5	72	90	–	–
20 x 30	KM 5	76	100	–	–
22 x 35	KM 6	–	130	–	–
24 x 35	KM 6	110	160	–	–
25 x 35	KM 6	120	160	–	–
28 x 40	KM 7	–	220	–	–
30 x 40	KM 7	170	230	–	–
35 x 45	KM 8	250	320	SW 55	308
36 x 45	KM 8	260	–	–	–
40 x 50	KM 9	–	440	SW 60	392
40 x 52	KM 9	410	–	–	–
45 x 55	KM 10	–	550	–	–
45 x 57	KM 10	500	–	–	–
48 x 62	KM 11	590	–	–	–
50 x 60	KM 11	–	660	–	–
50 x 62	KM 11	610	–	–	–
55 x 65	KM 12	–	770	–	–
55 x 68	KM 12	770	–	–	–
56 x 68	KM 12	770	–	–	–
60 x 70	KM 13	–	890	–	–
60 x 73	KM 13	890	–	–	–
63 x 79	KM 14	1100	–	–	–
65 x 79	KM 14	1100	–	–	–
70 x 84	KM 15	1250	–	–	–