RINGSPANN®
Power Transmission

Installation and Operating Instructions for Shrink Discs RLK 608 and RLK 608 E

E 03.621e

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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 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 608 shrink discs are used to effect friction-tight, no-play connections between hollow shafts and shaft ends for the purpose of transmitting torque, shear and axial forces.

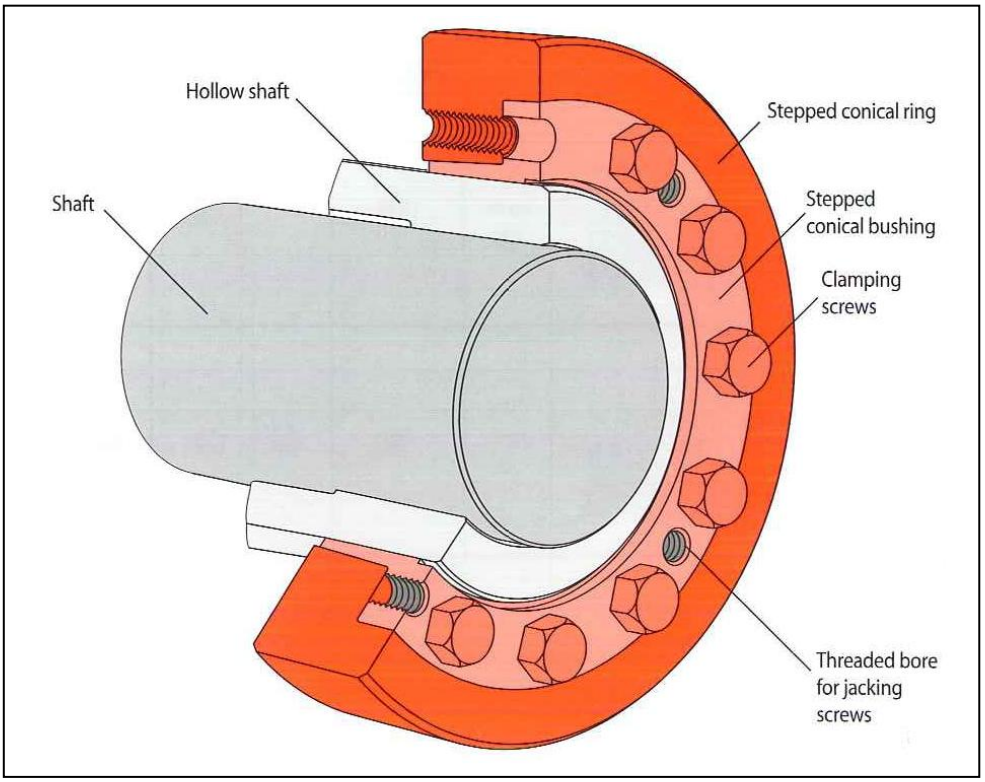
1.2 General safety instructions:

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

These installation and operating instructions are valid for Shrink Discs RLK 608 and RLK 608 E. The RLK 608 shrink disc consists of an outer stepped conical ring and an inner stepped conical bushing, as well as a number of clamping screws. The stepped conical ring is pulled onto the stepped conical bushing by tightening the clamping screws. A radial clamping force is generated by the conical surfaces, which is independent of the friction coefficients at the screws and conical surfaces. The radial clamping force presses the hollow shaft onto the shaft and creates a frictional connection at the contact surfaces beween the shaft and the hollow shaft. Thereby, torque and/or axial forces can be transmitted between the shaft and the hollow shaft
During the clamping process, the position of the stepped conical bushing relative to the hollow shaft remains unchanged. The connection is released by tightening clamping screws in the threaded bores for the jacking screws.

3. Cross-sectional diagram and parts list



Picture 3.1

4. Purpose and proper use

RLK shrink discs are external clamping elements. They are designed exclusively for rigid hollow-to-solid shaft connections for the purpose of transmitting torque and axial forces through friction-tight connection. Use for any other purpose is regarded as improper use. RINGSPANN shall not be liable for damages resulting from improper use. All resulting risks shall be borne by the user.

5. Improper use

RLK shrink discs are not suitable for use:

- as torque-limiting safety devices.

6. Condition on delivery

The shrink discs are delivered ready for installation. They have been sprayed with rust-proofing oil and are wrapped in anti-corrosion paper.

7. Technical requirements for safe operation

In order to ensure full transmission of torque and axial forces, the fitting **tolerance** for the outside diameter of the hollow shaft must not exceed tolerance class f7.
It is also important to ensure compliance with the following clearance combinations between the hollow shaft bore and the outside diameter of the shaft:

Other diameter of solid shaft d_W		Hollow shaft	Solid shaft	Joint clearance	
>	≤	bore	diameter	min.	max.
mm	mm	ISO	ISO	mm	mm
24	30	H7	h6	0	0,034
30	50			0	0,041
50	80			0	0,049
80	120			0	0,057
120	160			0	0,065
160	180	H7	g6	0,014	0,079
180	250			0,015	0,090
250	315			0,017	0,101
315	400			0,018	0,111
400	500			0,020	0,123
500	630			0,022	0,136

Failure to adhere to these fitting **tolerances** may

- cause changes in transmissible torques and/or axial forces and
- render proper installation impossible.

In addition, the contact **surfaces** of the shaft ends and hollow shaft must have a mean roughness depth of $R_a \leq 3{,}2$ µm.
Shaft and the hollow shaft must be manufactured from **materials** with the following mechanical properties:

- Yielt strength $R_e \geq 360$ N/mm^2
- E-module about 206 kN/mm^2

The **MoS_2 paste** between the tapered surfaces of the inner segment and outer segment, on the threads and unter the head of the screws must not be removed. Proper installation is not possible without this MoS_2 paste.

8. Installation

8.1 Clean the hollow shaft bore and the shaft thoroughly to remove all dirt, oil and grease and ensure a friction coefficient of μ ≥ 0,15 on all contact surfaces. This surfaces are not allowed to oil or grease.

8.2 Apply a light coat of grease to the outer diameter of the hollow shaft at the point at which the shrink disc is positioned (picture 8.1, diameter d).

8.3 Insert the shaft into the hollow shaft.

8.4 Push the shrink disc onto the hollow shaft.

A shaft must always be inserted in the hollow shaft when mounting the shrink disc!

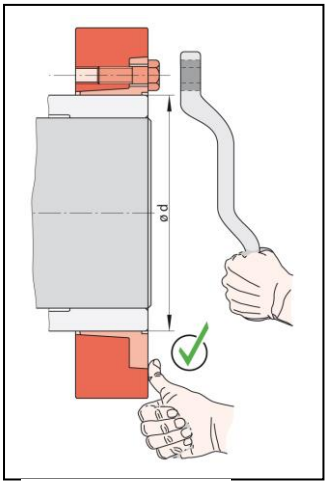
8.5 Tighten the clamping crews by hand. Then tighten all screws with a suitable tool in a clockwise sequence, turning each screw by a ¼ revolution in each step.

8.6 Continue to tighten the clamping screws uniformly in sequence by a ¼ revolution until the stepped tapered ring and the stepped tapered bushing are flush with the screw-side face.

Note: When installing shrink discs with slotted stepped tapered bushing, begin with the screw to the left of the slot and tighten the screws as described in Section 8.6.

Installation is distance-controlled. Therefore, it is not necessary to use a torque wrench!

Replace missing or damaged clamping screws with equivalent screws of quality grade 12.9 only, grease new screws like described under 10.2!



Picture 8.1

9. Disassembly

9.1 Loosen the clamping screws uniformly in multiple steps by ¼ revolution for each step to prevent misalignment of the clamping surfaces and breaking of screws.

Do not remove clamping screws completely from threaded bores under any circumstances, as this poses the risk of injury.

9.2 Do not separate the two rings directly. Instead, remove as many clamping screws as threaded press-off bores in the stepped tapered bushing and turn them into the press-off bores uniformly until the stepped tapered ring is pressed free of the stepped tapered bushing.

9.3 Remove the shrink disc from the hollow shaft.

10. Remounting removed shrink discs

Please observe the following instructions when reusing previously removed shrink discs:

10.1 Completely dismantle the shrink disc and clean thoroughly to remove residues of lubricants applied to the tapered surfaces by the manufacture prior to delivery.

Shrink discs with damaged tapered surfaces may not be reused and must be replaced with fully functional elements.

It is essential to ensure that the original pairing of stepped tapered bushing and stepped tapered ring remains intact following cleaning and lubrication.

10.2 Lubricate the tapered surfaces of the cone ring, the threads of the clamping screws and head contact surfaces thoroughly with MoS_2 paste (“gleitmo 100“ from FUCHS LUBRITEC (www.fuchs-lubritec.de) or a molybdenum-sulphide lubricant of equivalent quality).

11. Maintenance

RLK 608 shrink discs are maintenance free. However, signs of settling may appear in connections during operation. We therefore recommend checking the tightness of the clamping screws each time maintenance is performed on the machine