

Installation and Operating Instructions for RIMOSTAT®-Friction Torque Limiter RSHD

E 04.694e



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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 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.

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1. General notes

1.1 General safety instructions

Read these installation/operating instructions carefully before putting the torque limiter into operation. Consider these instructions as well as the drawings in the individual paragraphs.

All work with and on the torque limiter is to be carried out taking into account that “safety is top priority”.

Switch the drive unit off before carrying out work on the torque limiter.

Rotating parts (e.g. V-belt pulley) must be secured by the operator against unintentional touching.

1.2 Special safety instructions



Life-threatening danger!

When assembling, operating and maintaining the brake it is to be ensured that the entire drive train is secured against being switched on unintentionally. Moving parts can cause severe injury. Rotating parts (e.g. V-belt pulley) must be secured against by the operator unintentional touching.

2. Design and function / parts list

2.1 Function

RINGSPANN torque limiters are safety couplings and are deployed wherever machines and drive units need to be protected against overloading.

In the event of an overload, i.e. when the load torque exceeds the set limit torque, the built-in component, for example a V-belt pulley, slips, the limit torque however continues to be transferred. A relative movement results between the built-in component part and the hub.

If the load torque falls below the set limit torque, the built-in component and the hub once again rotate at the same speed.

The limit torque is determined by the number of the compression springs in operation, see the chapter on start-up.

2.2 Identification

These operating instructions apply for:

- the execution RIMOSTAT torque limiter according to the catalogue
- the execution with a special hub
- the execution with the built-in component (e.g. V-belt pulley, chain wheel, drive plate etc.)

There is a type plate on the torque limiter with a 16-digit material number. The exact design of the torque limiter is defined by this material number only.

As well as these instructions, please also consider the catalogue data for the torque limiter at www.ringspann.de and the drawings in the individual sections.

2.3 Drawing and parts list

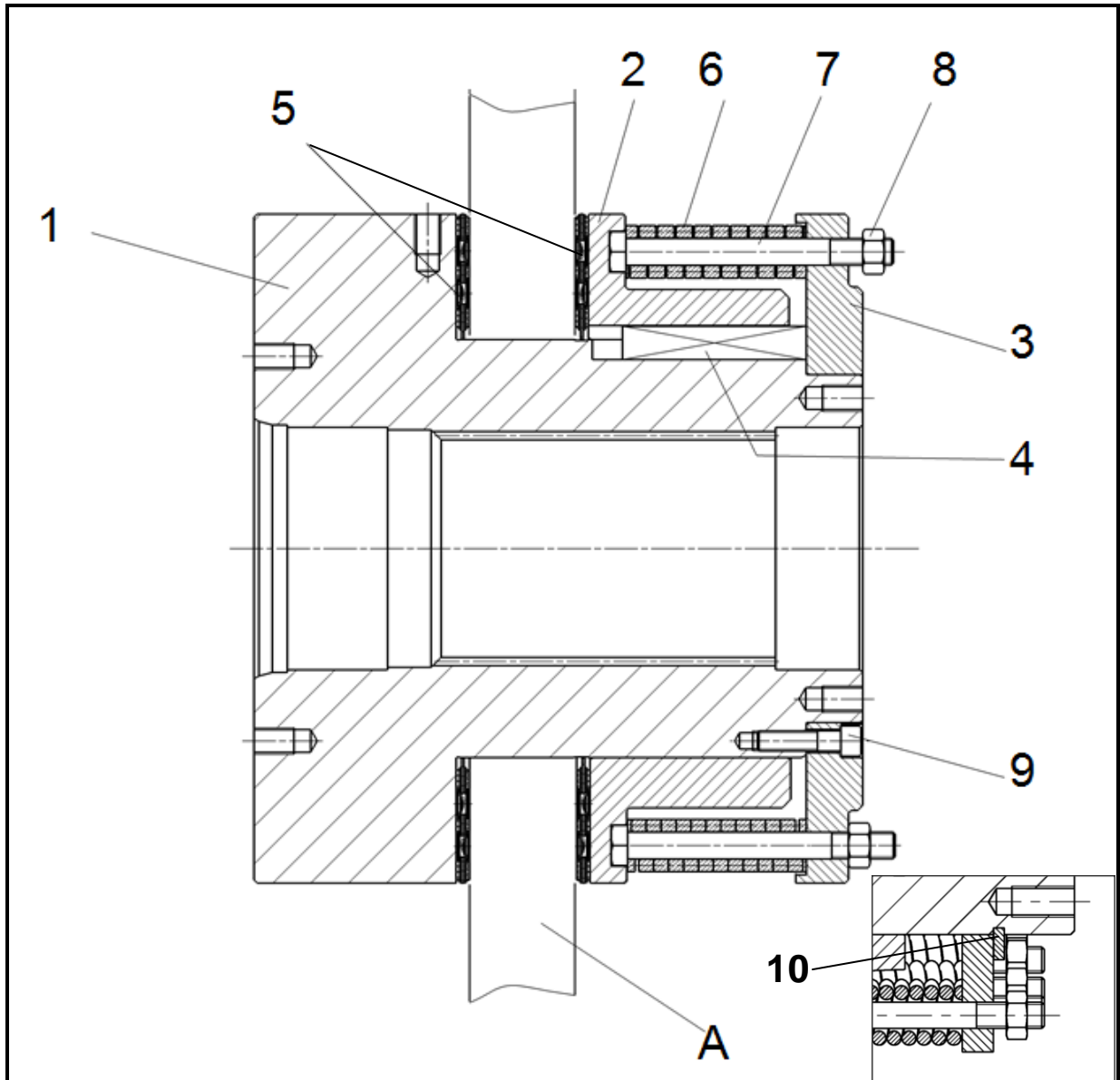


Fig. 2.1

Part	Designation
A	Customer connected part / built-in component
1	Hub
2	Pressure ring
3	Spring carrier
4	Parallel key
5	Friction lining
6	System spring
7	Hexagon screw
8	Hexagon nut
9	Cylinder screw
10	Circlip

3. Intended use

The torque limiter has been designed for use as an overload protection device. Use for any other purpose will be deemed improper.

4. Impermissible use

It not permissible to operate the torque limiter as a clutch coupling. Unauthorised constructional changes to the torque limiter are also not allowed.

5. Condition as delivered

The torque limiter is tested or set up prior to delivery.
The torque limiters are pre-drilled or are fully drilled in accordance with the order, and supplied with internal gear teeth.

6. Handling and storage

The technical data of the torque limiter such as max. / min. torque and weight are shown on the catalogue pages for the torque limiter. The current data can also be found on the RINGSPANN website www.ringspann.com. The torque limiter is delivered in preserved condition and can be stored for 12 months in an enclosed and dry place.

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The torque limiter may under no circumstances be treated with preservative oil for storage, as this makes the friction linings unusable, and a safe and precise torque setting is then no longer guaranteed.

It is to be made sure that no condensation develops. Damp storage rooms are not suitable. If storing the brake for a period longer than 12 months, as well as after any transport, the torque limiter must be activated once in order to guarantee a proper function. Prior to installation it must be ensured that the torque limiter does not exhibit any damages.

7. Technical prerequisite for reliable operation

Fastening the product to stable and low-vibration machine parts will ensure quiet operation, as well as an optimum service life.

In the event of slipping, the slip time must be limited by the drive unit being switched off in a timely manner. It is the customer's responsibility to protect the slip clutch against overloading. The sensors required for this task and the speed monitor can optionally be supplied.

8. Installing the torque limiter

8.1 General instructions regarding assembly and installation

Before installing the torque limiter, the customer connected part must be cleaned with alcohol – e.g. spirit (ethanol) or isopropyl alcohol – or with water-based tenside solutions (soapy water or the like).

If cleaning the customer connected part with a diluent, acetone or brake cleaning agent, it must be ensured that these agents, as well as any residues from these agents, do not come into direct contact with the friction linings.



Important!

Residues from oil and anti-rust agents considerably reduce the coefficient of friction and thus also the slipping and holding torque!



Important!

Risk of damage: The torque limiter may not be fitted with hammer blows!



Important!

All screws are to be tightened using the tightening torque in accordance with VDI 2230 Sheet 1 $\mu=0.12$ and secured with a screw lock (e.g. Loctite 243).

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8.2 Assembly of the complete torque limiter

The complete torque limiter is pushed up onto the shaft. Then the torque limiter is to be secured axially with an end piece, which is held in place by a screw / screws, or optionally with a threaded pin, which tightens radially onto the feather key.

8.3 Assembly of the customer built-in component

Prior to assembly, check whether the customer built-in component in the area of the friction linings is level and that the axial run-out lies within the tolerance of 0.1 mm. The surface quality in this area should exhibit a surface roughness of Rz10 or better.

The connection dimensions of the torque limiter and the customer built-in component must be checked for dimensional accuracy. For this, the connection dimensions must be checked in accordance with the catalogue data sheet or the installation drawing.

If supplied in another manner, all compression springs (6) must be tightened flush with the help of the hexagon nuts (8). The nuts are subsequently to be turned back 45°-60°.

- Place the hub (1) onto the firm and stable surface with the axis vertical
- Remove the screws (9) and the circlip (10) and remove the spring carrier assembly group (3) from the hub (1)
- Remove the pressure ring (2), parallel key (4) and friction lining (5) from the hub (1)
- Prepare the built-in component with the plain bearing bush (A) in accordance with the general instructions in Chapter 8.1. The plain bearing bush must be suitable for a pure dry operation. The clearance fit may under no circumstances come into contact with the grease/oil. For the requirements of the bore hole of the mounting part and the assembly instructions, please refer to the specifications of the plain bearing bushes manufacturer.



Important!

Check whether the connected part on the hub can be freely rotated.

- Insert the first friction lining (5), the mounting part with the plain bearing bush (A) and then the second friction lining (5) onto the hub
- Insert the parallel key (4) and slide the pressure ring (2) on
- Slide the assembly group spring carrier (3) with flushly tightened pre-loaded compression springs (6) onto the hub (1). It should hereby be ensured that all screw heads of the screws (7) are sunken into the pressure ring (2) groove (rotation lock)
- Depending on the design, tighten the cylinder screws (9) and mount the circlip (10) by turning back the nuts (8) against the on-site mounted upsetting at the screw end, the compression springs are put into operation.

9. Start-up

The torque limiter needs to run in before torque adjustment. The run-in procedure serves to increase the percentage contact area of the friction surfaces of the friction linings and to increase the friction value in the friction pairings. During the run-in process, the friction surfaces should heat up locally to 160 ... 200°C.

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The running-in process is not necessary if RINGSPANN supplies the torque limiter with the built-in component (A) and a finished bore, as well as a set torque.

After running in, let the torque limiter cool down.

No parts need to be disassembled for torque adjustment. The torque is determined by the number of the compression springs in operation. If the torque limiter was installed with the built-in component without torque adjustment, all compression springs are in operation, i.e. the nuts are turned back against the screw end. Compression springs are taken out of operation by tightening the nut that sits at the end of the screw by turning it to the right, until the compression spring is tightened flush. The head of the hexagon screw may hereby however not slip out of the groove of the pressure ring.

Afterwards, the nut must be turned back again by 45° - 60°.



Important!

Under all circumstances ensure that a rotationally symmetrical distribution of the compression springs in operation is carried out!

Using the formula below it is possible to determine which torque will approximately be reached depending on the number of compression springs. The number of springs may vary in practice as a result of friction coefficient changes, material selection, spring force and component tolerances.

$$A = \frac{M}{F}$$

A = Approx. number of compression springs in operation

M = Slip or limit torque in Nm

F = Calculated factor Nm (for each compression spring)

The calculated maximum torque is $M_{max.} = A_{max.} * F$

RSHD 250: $A_{max.} = 30$; $F = 200 \text{ Nm}$; $M_{max.} = 6000 \text{ Nm}$

RSHD 310: $A_{max.} = 20$; $F = 530 \text{ Nm}$; $M_{max.} = 10595 \text{ Nm}$

RSHD 400: $A_{max.} = 30$; $F = 750 \text{ Nm}$; $M_{max.} = 22500 \text{ Nm}$



Important!

A torque measurement is essential for determining the exact setting of the torque.

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10. Disassembling the torque limiter



Life-threatening danger!

When assembling, operating and maintaining the brake it is to be ensured that the entire drive train is secured against being switched on unintentionally. Moving parts can cause severe injury. Rotating parts (e.g. V-belt pulley) must be secured against by the operator unintentional touching.

The torque limiter can be removed from the shaft after the axial fastening is removed.

11. Maintenance

11.1 General maintenance

Depending on how much the torque limiter is used in operation, maintenance is to be carried out on it at intervals of 4 to 12 weeks.

The following is to be carried out when performing maintenance:

- Check the friction linings for wear.
- Check the screw connections.
- Check the axial fastening of the torque limiter.

11.2 Permissible friction lining wear and exchanging of the friction linings



Life-threatening danger!

Friction linings may only be changed when the system or the working machine is stationary!



Important!

The standard friction lining has a thickness of 7.9 mm when new. After 0.8 mm of abrasion or a residual lining thickness of 7.1 mm, the friction linings are to always be exchanged in pairs, i.e. on both sides.

Only original RINGSPANN friction linings may be used.

Before replacing the friction linings, ensure that the mass held by the torque limiter is secured against moving, since parts of the torque limiter need to be loosened for this purpose.

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Important!

The compression springs are live! It is essential that you adhere to the following steps when removing the torque limiter.

- Check that a hexagon nut is located on all hexagon screws on the screw ends.
- Put the compression springs out of operation by tightening the nuts by turning them to the right until the compression springs are tightened flush. Then turn the nuts back again 45°- 60°.
- Remove the cylinder screws (9) or the circlip (10).
- Disassemble assembly group "spring carrier with screws, compression springs and nuts from the hub (1).
- Remove the pressure ring (2) and remove the parallel key (4).
- First remove the friction lining and then the customer connected part (e.g. V-belt pulley or drive plate) with the sliding bush, and then the second friction lining from the hub.

The assembly is carried out in the reverse order.



Important!

After changing friction linings, a running-in process should be performed in order to reach the maximum slipping torque.

12. Appendix

12.1 Special versions

