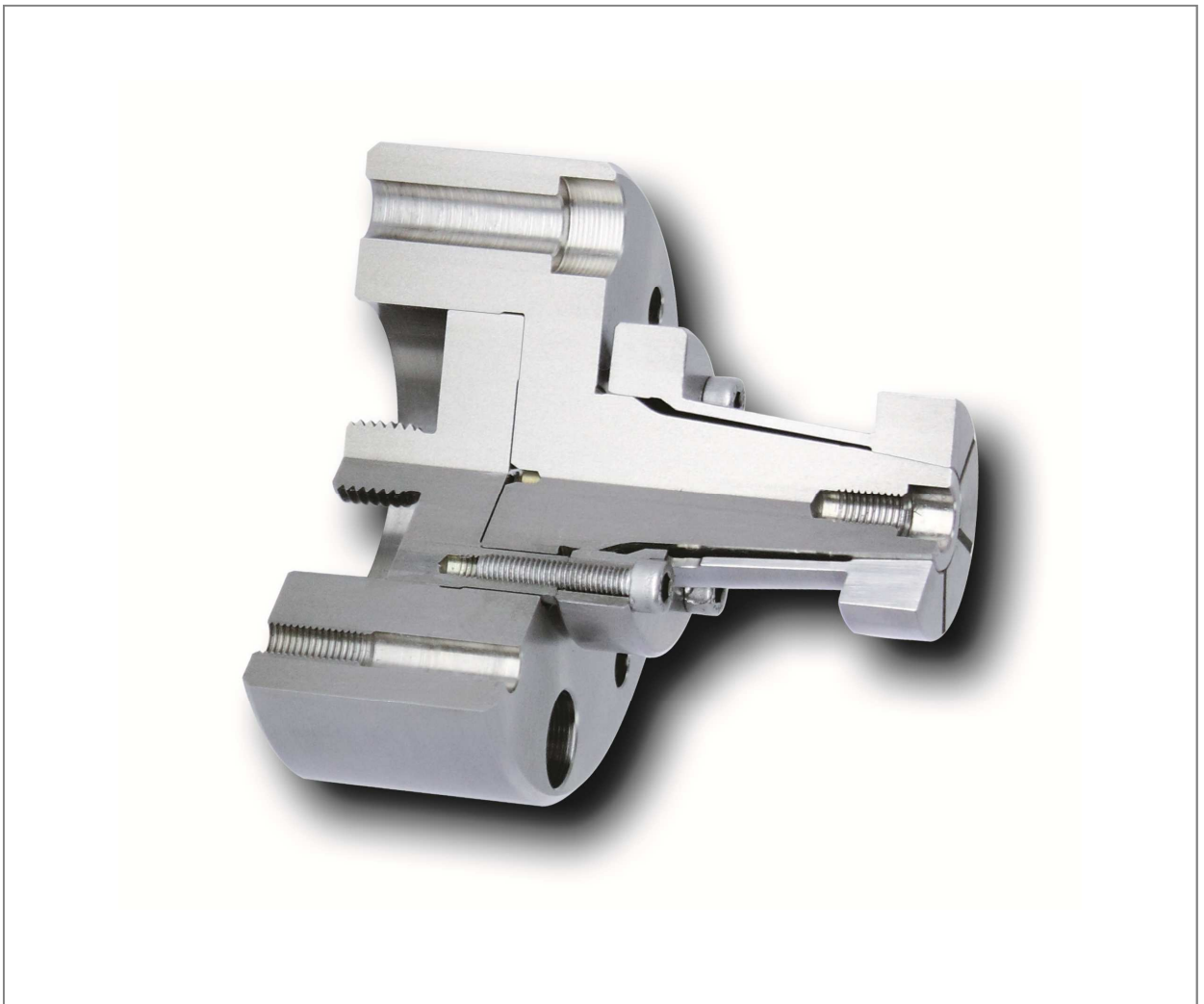


**Installation and Operating Instructions for  
Taper Sleeve Flange Mandrel HKDF**

**E 01.841e**



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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.

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## 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

### 1.1 General Safety Notices

The following hazard notices and warnings are used in these installation and operating instructions:



**Warning!**

This symbol indicates a situation where there is a risk of injury or danger for life or physical condition.



**Caution!**

This symbol indicates risks for the RINGSPANN product described and thus for equipment and machinery.



**Note:**

This symbol indicates notices, user tips and useful information.

- Only use RINGSPANN products in a technically impeccable condition.
- Consider all notices written on the product.
- Comply with the intended use.
- Before commissioning, ascertain and document that the machine the RINGSPANN product is to be built into is compliant with the country-specific regulations, rules of safety and standards.
- Perform a risk analysis for all parts and equipment of the machine with which safe operation of the RINGSPANN products is associated.

### 1.2 Product-related Safety Notices



**Warning!**

In the case of design modifications to the workpiece in the area of the clamping point, the clamping fixture must be checked to ensure it is suitable.

Such changes include:

- Changes to the workpiece diameter at the clamping point
- Changes to the workpiece tolerances at the clamping diameter
- Changes to the clamping length at the workpiece

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## 1.3 Further Applicable Documents

Catalogue 10 with further technical notices in the appendix

VDI 2230 Systematic calculation of highly stressed screw connections

Cylindrical screw connections

You can also find an excerpt of VDI 2230 in the appendix of catalogue 10

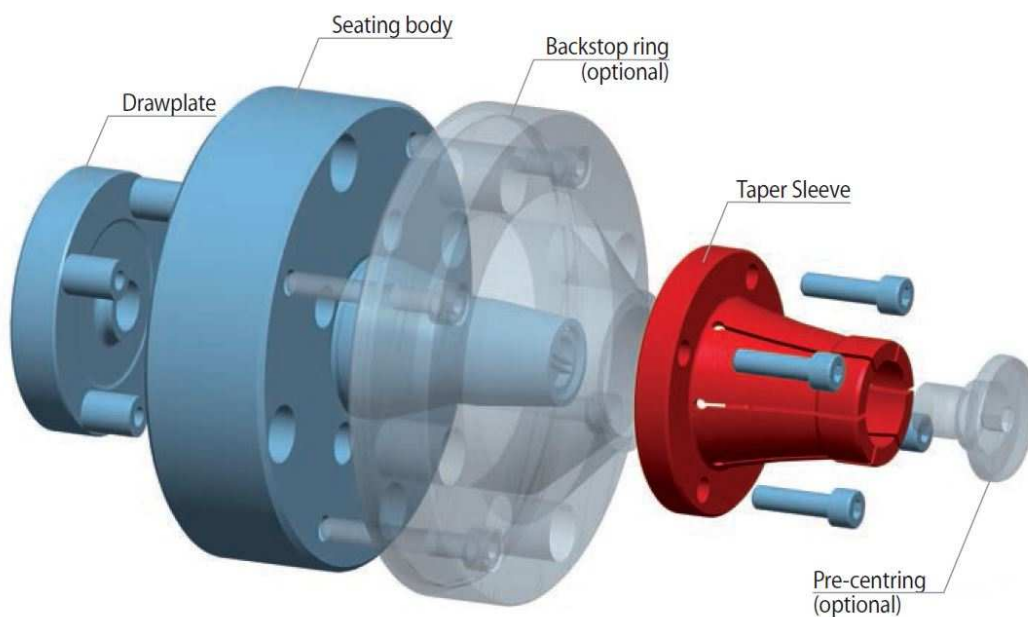


### Note:

You will find the current versions of RINGSPANN data sheets and RINGSPANN catalogues at [www.ringspann.com](http://www.ringspann.com)

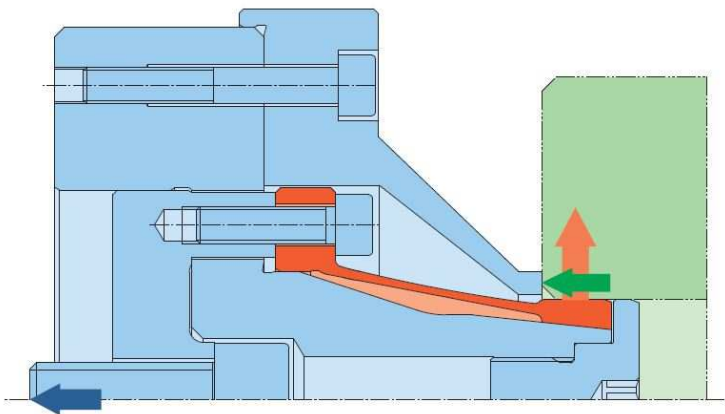
## 2. Design And Function

### 2.1 Design






The Taper Sleeve Flange Mandrel consists of a draw plate, a seating body and a taper sleeve. A backstop ring and a pre-centring are optionally available. The Taper Sleeve Flange Mandrel is attached to the machine with the seating body. The clamping fixture is actuated by the draw plate, which is connected to the machine power actuating unit.

## 2.2 Clamping Principle



Key:

 Axial actuating force     
  Radial clamping force     
  Axial pull-back force

For clamping the seating body is pulled against the seating body. The component is centred, pressed against the backstop and aligned flush.

## 3. Intended Use

The Taper Sleeve Flange Mandrel HKDF is designed for the machining or inspection of components. The component will be clamped in a premachined cylindrical bore. The backstop face and the cylindrical bore is manufactured in the same set-up

## 4. Improper Use / Warnings



### Warning!

Applications that deviate from those given in Chapter 3. **Intended use**, are not permissible.



### Warning!

In the case of design modifications to the workpiece in the area of the clamping point, the clamping fixture must be checked it ensure it is suitable.

Such changes include:

- Changes to the workpiece diameter at the clamping point
- Changes to the workpiece tolerances at the clamping diameter
- Changes to the clamping length at the workpiece

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**Caution!**

Do not rotate without inspection ring or component.  
Without inspection ring or component the max. speed 100 rpm is permitted for inspection and cleaning of the fixture. The max. speed with inspection ring or component is 3000 rpm.

## 5. Technical Prerequisites For Safe Operation



Clamping takes place in a pre-processed cylindrical bore hole. The bore diameter must be within an IT7 tolerance over its entire length.

**Caution!**

Clamping in bore holes with a cylindricity outside an IT7 tolerance is not permissible.



Clamping takes place in a pre-processed cylindrical bore hole. The face of the workpiece is ideally processed with the same clamping as the bore diameter.

**Caution!**

Clamping may only take place in bore holes with an actual dimension that is within the maximum permissible diameter change  $\Delta D$ ".  
If the diameter change is greater than  $\Delta D$ , it may be that the workpiece is not clamped and/or the necessary transmissible torque is not reached.



**Caution!**

When using a pneumatic or hydraulic power clamping fixture, it must be ensured that, during workpiece processing, there is always the necessary actuating pressure for the processing forces/processing moments.



**Caution!**

During clamping / declamping it must be ensured by practical technical methods that peak forces do not exceed the maximum actuating force.  
The maximum actuating force depends on the size of the fixture. You will see the maximum actuating force in the currently valid datasheet which can be found under [www.ringspann.com](http://www.ringspann.com)

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## 6. Condition As Delivered

The Taper Sleeve Flange Mandrel is configured for power actuation and delivered fully assembled and in accordance with the ordered size and the specified bore diameter at the workpiece. The clamping diameter of the taper sleeve is produced with the tolerance e6. All other components are shipped as separate items and are to be assembled by the customer.

The sizes HKDF 30 until 125 will be shipped including a plug which closes the access to the central screw. The slots of the taper sleeve are sealed with a rubber compound.

A backstop ring, fixing screws as well as an adapter for the power clamping device are usually provided by the customer.

## 7. Installation And Commissioning

### 7.1 Installation In The Machine With Power Actuation

The way of installation of the clamping fixture is to be chosen according to the machine. There might be more than one option. Below you will find described one option.

Clean interfaces at machine spindle or adapter flange and the clamping fixture thoroughly. All centring diameters and all surfaces that are in contact with one another must be free of adhesions and be even.

- Assemble all relevant adaptors on the power actuation unit and on the machine spindle
- Loosen the fixing screws of the taper sleeve from the front and remove them.
- Remove the taper sleeve
- Remove the screw plate
- Move the power actuation unit towards the front of the machine spindle.
- Screw the draw plate on the power actuation unit (size HKDF 4 to 19) or assemble the draw plate with the enclosed central screw (size HKDF 30 to 125). The adaptor and the draw plate must be fixed tightly.
- Push the seating body over the assembled draw plate and the extended power actuation unit.
- Put the taper sleeve on. Insert all screws and screw them in. Tighten all screws with a pre-set torque wrench across.
- Pull the clamping fixture carefully on the machine spindle by the power actuation unit. Take care to the fixing holes in the flange of the clamping fixture. They must match with the threads in the adaptor / machine spindle.
- Bolt the flange of the clamping fixture down to the machine spindle / adaptor.
- Push the power actuation out until the stop (inside the clamping fixture). The taper sleeve must release fully



**Note:**

Select screw torques according to VDI 2230 for minimum screw quality 8.8. An excerpt from VDI 2230 can be found in the appendix of catalogue 10.



## 7.2 Installation of The Assembly Group Hand Actuation

The sizes HKDF 30 up to HKDF 200 can be equipped with a hand clamping device. The draw plate must be replaced with the assembly group handclamping.

The actuation screw has an left handed thread. This means:

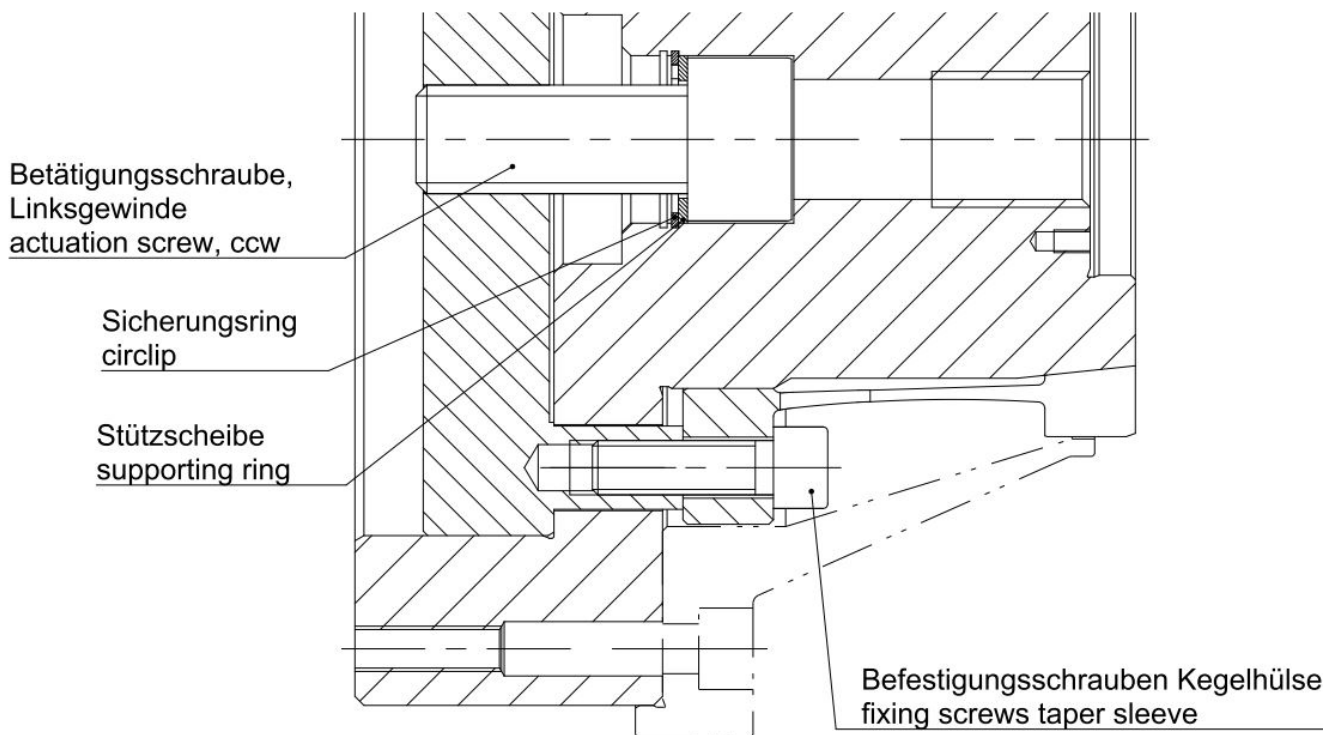
- Clamping: clockwise
- Unclamping: counter clockwise

Disassembly of the drawplate for power actuation:

- Loosen the fixing screws of the taper sleeve from the front side. Remove the fixing screws.
- Remove the taper sleeve from the front side.
- Remove the draw plate from the flange side.

Assembly of the assembly group hand actuation:

- Insert the actuation screw together with the supporting ring from the flange side
- Assemble the circlip from the flange side
- Insert the drawplate and turn the actuation screw counter clockwise. The drawplate will move in until the stop.
- Fit the taper sleeve from the front side.
- Screw the fixing screws of the taper sleeve from the front side in and tighten them with the presetted torque wrench.



**Note:**

Select screw torques according to VDI 2230 for minimum screw quality 8.8. An excerpt from VDI 2230 can be found in the appendix of catalogue 10.

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### 7.3 Installation In The Machine With Hand Actuation

Clean interfaces at machine spindle or adapter flange and the clamping fixture thoroughly. All centring diameters and all surfaces that are in contact with one another must be free of adhesions and be even.

- Bolt the flange of the clamping fixture down to the machine spindle / adaptor.



**Note:**

Select screw torques according to VDI 2230 for minimum screw quality 8.8. An excerpt from VDI 2230 can be found in the appendix of catalogue 10.

### 7.4 Assembly of The Backstop Ring

Put the backstop ring (normally customer's supply) in place and fix him with screws. Tighten all fixing screws (customer's supply) with a presetted torque wrench across.

## 8 Maintenance And Repair

### 8.1 General Notices

The operating and ambient conditions for RINGSPANN clamping fixtures and clamping elements are different for each application. With its geometry, hardness, surface quality and kind of feed, the work-piece itself exerts influences on the clamping fixture. RINGSPANN can therefore not make any indications as to the wear properties of the clamping fixture and can only give general notices on maintenance.

The maintenance and cleaning of the clamping fixture should be carried out when the machine is maintained at the latest. More frequent maintenance intervals may be necessary depending on what is observed during operation and upon regular visual inspection (at the start of a shift for example).



**Note!**

When a full clamping / unclamping stroke is not possible and the taper sleeve can not fully expand or release it might be a sign for fouling.  
We recommend a dismantling of the fixture and complete cleaning.

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## 8.2 Exchanging of The Clamping Element

Taper sleeves will be changed

- For another set-up of the clamping diameter
- To change the worn clamping element against a new taper sleeve.



### Caution!

Put the power clamping device in the machine spindle into relaxed position. Ensure that the power clamping fixture cannot be moved during the disassembly/assembly of the clamping fixture.

Switch off the machine.

- Loosen the fixing screws of the backstop ring. Remove the fixing screws and the backstop ring.
- Loosen the fixing screws of the taper sleeve. Remove the fixing screws and the taper sleeve.

Check all components on damage and wear. Exchange defective components. Assembly takes place in reverse order. Use tightening torques according VDI2230.



Thoroughly clean and lightly oil all components before assembly.

### Caution!

No lubricants with friction-reducing additives may be used on the clamping elements and the components in contact with these.

## 8.4 List of Wearing Parts And Spare Parts

The taper sleeve is a wearing part.

The operating and ambient conditions for RINGSPANN clamping fixtures and clamping elements are different for each application. With its geometry, hardness, surface quality and kind of feed, the workpiece itself exerts influences on the clamping fixture or clamping element. RINGSPANN can therefore not make any indications as to the wear properties of the clamping fixture or clamping element and can only give general notices on maintenance. This means that no recommendation can be made as to the number of clamping cycles after which the taper sleeve needs exchanging.

All spare parts (components) are specified in the catalogue 10. They are available individually or as part of a sub assembly.

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## 9. Storage

If the clamping fixture is to remain on the machine tool, it is to be put into relaxed position.

If put into storage, the clamping fixture is to be lightly oiled with an anti-corrosive oil (not wax) wrapped in anti-corrosive paper and kept in a sturdy box.

The corrosion protection is to be renewed every 6 months.

## 10. Technical Data

The technical data is dependent on the size. See the data sheet in catalogue 10 – Precision Clamping Fixtures for this. Or you will find the up to date version of the data sheet in the download section (Catalogues Precision Clamping Fixtures) or under Products – Workholding Technology.