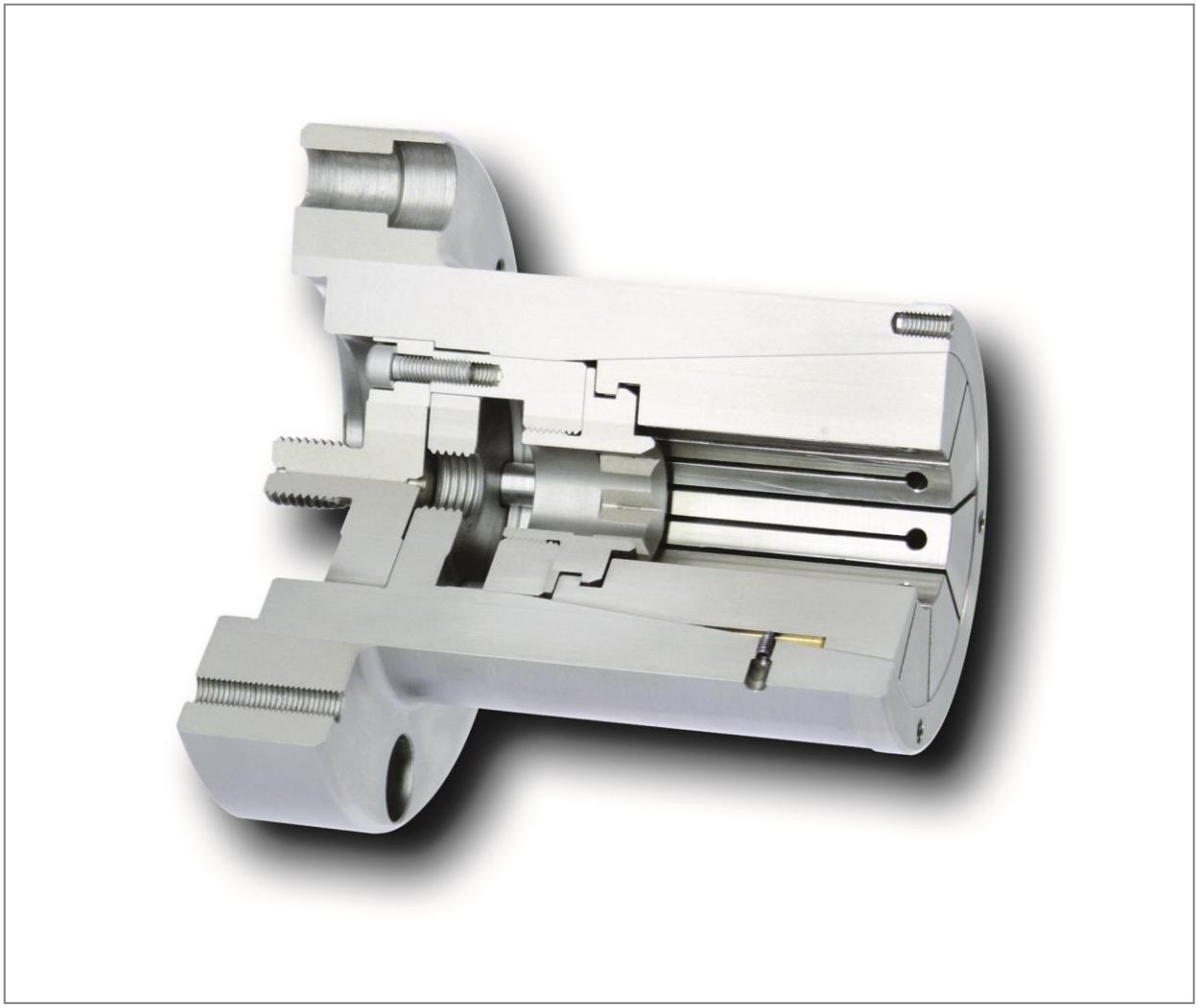
RINGSPANN®
Clamping Fixtures

Installation and Operating Instructions for Taper Collet Flange Chuck BKFF

E 01.814e



RINGSPANN GmbH

Schaberweg 30-38
61348 Bad Homburg
Germany

Phone +49 6172 275-0
Fax +49 6172 275-275

www.ringspann.com
info@ringspann.com

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.

Contents

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 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

1.3 Further Applicable Documents

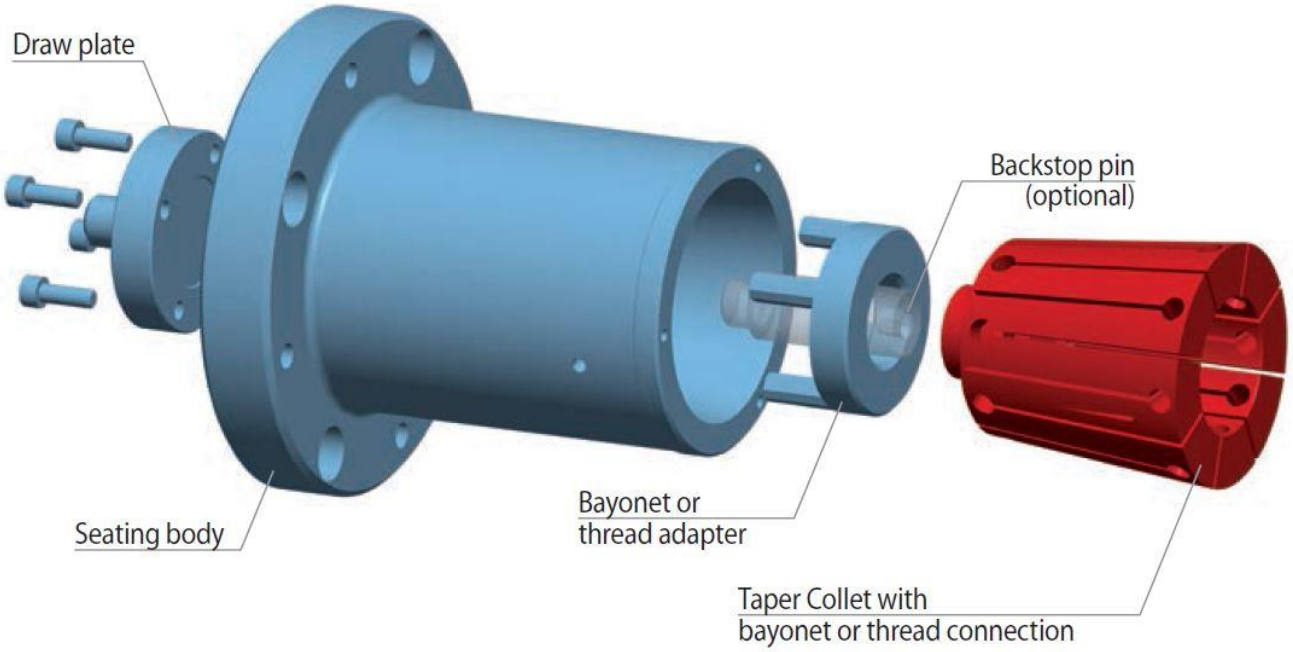
Catalogue 10 with further technical notices in the appendix

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**

2. Design And Function

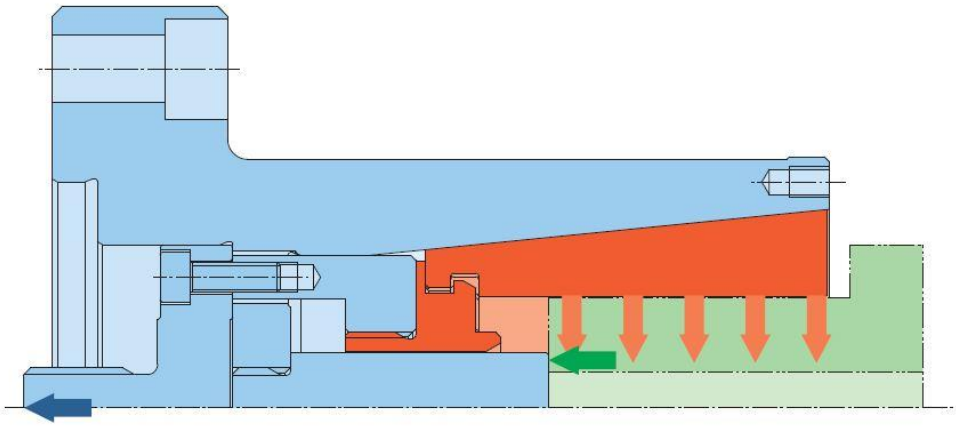
2.1 Design



The Taper Collet Flange Chuck consists of a draw plate, a seating body, a bayonet or threaded adaptor and a taper collet. A backstop pin is also available as an option. Depending on its size the taper collet has a bayonet or threaded connection. It is taken up by the seating body in a form-fitting connection and connected via the bayonet or threaded adaptor. The Taper Collet Flange Chuck 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.

In addition intermediate flanges and spring force actuators can be provided.

2.2 Clamping Principle



Key:

Axial actuating force Radial clamping force Axial pull-back force

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

The cylindrical form of the component diameter in the clamping area has to be smaller than the tolerance class IT7 independent of the component bore tolerance.

3. Intended Use

The Taper Sleeve Flange Chuck BKFF is designed for the machining or inspection of components. The component will be clamped on a premachined cylindrical diameter.

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

5. Technical Prerequisites For Safe Operation

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

Caution!
Clamping on a diameter with a cylindricity outside an IT7 tolerance is not permissible.

Clamping takes place in a pre-processed cylindrical diameter. The backstop face of the workpiece is ideally machined in the same set-up with the clamping diameter.

Caution!
Clamping may only take place on clamping diameters with an actual dimension that is within the maximum permissible diameter change ΔD".
If the diameter change is greater than ΔD, 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**

6. Condition As Delivered

The Taper Collet Flange Chuck BKFF is delivered fully assembled and in accordance with the ordered size and the specified clamping diameter at the workpiece.

A backstop pin and an adaptor for the power actuating device are usually provided by the customer.

In the case a backstop pin is ordered he will be shown and shipped as a separate order position. He must be assembled by the customer.

7. Installation And Commissioning

7.1 Mounting of The Backstop Pin

Put on the backstop pin (usually provided by the customer) and screw him in. Tighten it in accordance with the thread size. Tighten always with the same tightening torque after changing / new set-up.

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 In The Machine / Pallet etc.

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.

Set the axial position of the power clamping unit in such a way that the taper collet can be relaxed completely. The taper collet shows in relaxed position a maximum 0,5mm distanz to the front side of the seating body. An adapter is usually required between the power clamping unit and clamping fixture. The draw bolt must be screwed in the adaptor until the bottom of the thread and tighten.

7.3 Commissioning

Caution!
The actuating force of the power actuating unit must be set before the clamping actuation with or without component. The actuating force must not exeed the maximum actuating force related to the size of the Taper Collet Flange Chuck BKFF.

Maximum true running accuracy is reached by clamping the clamping fixture after assembly once without a workpiece with max. stroke (look to the data sheet in catalogue 10) and then three times with a component before being relaxed again. Machining of the workpieces and/or inspection can then be commenced.

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 workpiece 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).

In the case the clamping element is rubberised.
The rubber is elastic but takes the new shape with the duration of the deflection (stressrelaxation). This might lead into a non full movement back to the original shape. The guide in clearance will be reduced and the removal or the load in of the component might be hindered.
The stressrelaxation of the rubberisation is no engineering defect.

8.2 Exchanging of The Clamping Element

Caution!
Extend the unclamping unit of the machine spindle (upper position of the unclamping unit) and thus release the clamping device.

Ensure that the clamping force device cannot be moved during disassembly/assembly of the clamping device.

Clamping element BKF 35 and BKF 44

- Untighten and remove the backstop pin.
- Remove the radial anti rotational device a threaded pin.
- Loosen the bayonet lock by turning the taper collet 30°
- The taper collet can now be removed.

Clamping element BKF 56 , BKF 79 and BKF 110

- Untighten and remove the backstop pin.
- (it is not necessary to remove the radial anti-twist device)
- Loosen the threaded adapter and remove it together wiht the taper collet

Check all components for damage and wear. Exchange defective components.
Assembly is carried out in reverse order. Screw tightening torque in accordance with 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.

The angular position of the taper collet is determined by a radial located anti rotational device..
A threaded pin reaches in an axial groove in the taper collet.
This anti-rotational device is for positioning of the taper collet only. It is not meant for transmitting torques.

8.3 List of Wearing Parts And Spare Parts

The taper collet with the bayonet or the threaded connection 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 collet needs exchanging.

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

9. Storage

If the clamping fixture is to remain on the machine, it is to be put into released 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.

Note:
You will find the current versions of RINGSPANN data sheets and RINGSPANN catalogues at **www.ringspann.com**