

**Installation and Operating Instructions for
Expanding Sleeve Mandrels HDDS**

E 01.868e



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| RINGSPANN® Clamping Fixtures | Installation and Operating Instructions for Expanding Sleeve Mandrels HDDS | | | E 01.868e | |
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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

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



Warning!

Do not let the fixture rotate without component or inspection ring!
Without clamped component or inspection ring there is a danger for life or physical condition.

1.3 Further Applicable Documents

Catalogue 10 with further technical notices in the appendix
 E01.601e Installation and operating instructions for RINGSPANN Discs and Disc Packs

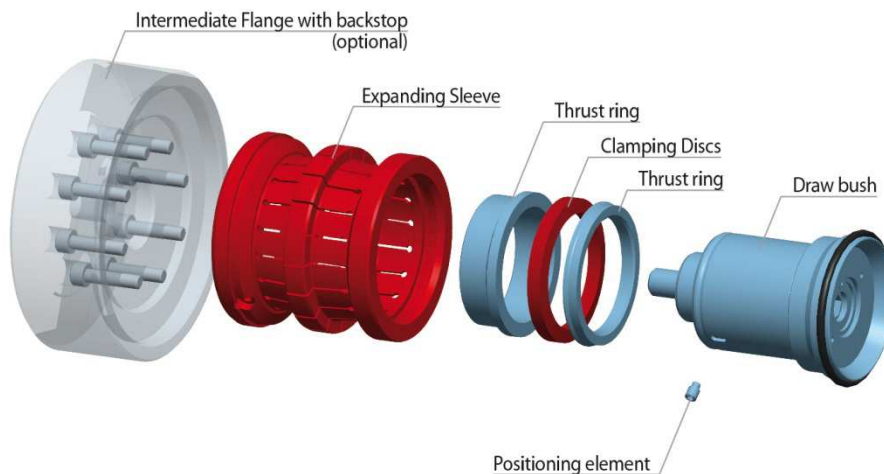


Note:

You will find the current versions of RINGSPANN data sheets, RINGSPANN catalogues and Installation and Operating Instructions at www.ringspann.com

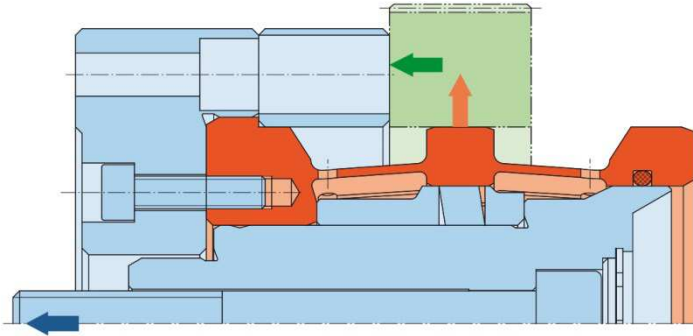
2. Design And Function

2.1 Design



The Expanding Sleeve Mandrel is composed of the assembly group draw bush and the assembly group expanding sleeve. For manual clamping the addition of a threaded plate is required. The adaptation to a machine table or the machine spindle, the spacer for connection with the power clamping device and an intermediate flange with backstop is optionally available. The Expanding Sleeve Mandrel is screwed together with the adaptor to the machine connection. The clamping fixture is operated by the central assembly group draw bush which is connected to the power clamping device of the machine.

2.2 Clamping Principle



Key:

 Axial actuating force
  Radial clamping force
  Axial pull-back force

A pack of RINGSPANN clamping discs sits on the draw bush between thrust rings. Above that there is a slotted expanding sleeve screwed together with a flange / adaptor. When the Expanding Sleeve Mandrel is operated the clamping discs are evenly expanded over their entire circumference - and the expanding sleeve at the same time as a result. Reinforced by tapered deformation webs the slotted expanding sleeve shortens causing the the clamped workpiece to be pulled back against the backstop. An additional tailstock or centering tip gives the Expanding Sleeve Mandrel a greater total stiffness. The tailstock / centering tip centres and supports the expanding sleeve only. The axial force of the tailstock / centering tip must not exceed 10% of the max. actuating force (see catalogue 10).

3. Intended Use

The Expanding Sleeve Mandrel is designed for the mechanical processing or inspection of workpieces. Clamping takes place in a pre-processed cylindrical bore hole.

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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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 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 Expanding Sleeve Mandrel is delivered fully assembled and in accordance with the ordered size and the specified bore diameter at the workpiece. The clamping diameter of the expanding sleeve used is produced with the tolerance f7.

An intermediate flange with integrated backstop face or with separate backstop ring, its fastening screws as well as an adapter for the power clamping device are usually provided by the customer.

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7. Installation And Commissioning

7.1 Installation In The Machine

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

The intermediate flange and eventually the backstop ring will be assembled with the expanding sleeve mandrel. After that the complete fixture will be assembled with the machine spindle and bolted down.

Set the axial position of the power clamping device in such a way that the expanding sleeve can be relaxed completely. A gap of 0.5mm max. is permissible between the thrust ring and the RINGSPANN discs. An adapter is usually required between the power clamping device and the draw bush of the expanding sleeve mandrel. The adapter and the draw bush must be firmly connected with each other on their front side.

Please note as well chapter **8.2 – Setting-Up The Fixture For A New Clamping Diameter**

7.2 Commissioning

Maximum true running accuracy is reached by actuating the fixture after assembly once without a workpiece (the clamping discs can be pressed flat here) and then three times with a workpiece before being relaxed again. Processing of the workpieces and/or checking 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).

The slots of the expanding sleeve are rubberized. 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 is no defect.

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8.2 Setting-Up The Fixture For A New Clamping Diameter

Setting-up the fixture for a new clamping diameter requires the exchange of the expanding sleeve mandrel.



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 machine tool.

- Disassemble from the front side the circlip and the thrust ring sitting in the expanding sleeve mandrel.
- Loosen and remove central screw. The connection with the power clamping device in the machine spindle is interrupted.
- Disassemble the clamping fixture from the machine spindle
- Loosen and remove the fixing screws intermediate flange / expanding sleeve mandrel from the rear side
- Push the expanding sleeve mandrel off the intermediate flange by push-off screws from the rear side and remove the expanding sleeve mandrel.

Check the expanding sleeve mandrel and all other components regarding damage and wear. Exchange defective and worn items.

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.

8.3 Wear

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.

We recommend a preventive maintenance of the expanding sleeve mandrel by RINGSPANN GmbH when 50.000 clamping cycles are reached

The expanding sleeve mandrel is a wear part. When accuracy is lost or you see a reduced transmissible torque the expanding sleeve mandrel must be substituted.

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9. Storage

If the clamping fixture together with the expanding sleeve mandrel 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.