

**Installation and Operating Instructions for
RINGSPANN Clamping Discs And Disc Packs**

E 01.601e



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RINGSPANN® Clamping Fixtures	Installation and Operating Instructions for RINGSPANN Clamping Discs And Disc Packs	E 01.601e			
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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.

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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

1.3 Further Applicable Documents

Catalogue 10 with further technical notices in the appendix

**Notes:**

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

The series LFF and LGD are phase out products. The product information E01.321e and E01.322e compares the old and the new series. You can check the replaceability old vs. new in your applications. You will receive the product information upon request.

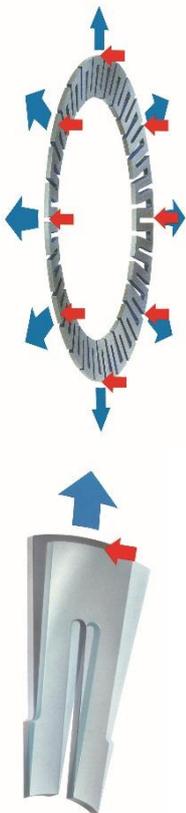
2. Design And Function

RINGSPANN Clamping Discs are items for clamping, aligning and centring of components for machining and inspection. They can be used as single items or as a set.

RINGSPANN Disc Packs are containing a set of clamping discs which are bonded by an elastic rubber compound.

The transmissible torque depends on the number of RINGSPANN Clamping Discs.

Both RINGSPANN Disc Packs and RINGSPANN Clamping Discs are components of a system for the self design and self manufacturing of customized precision clamping fixtures which are working according the RINGSPANN-principle.



The basis of the RINGSPANN system is the RINGSPANN Clamping Disc, a flat tapered ring made of special hardened spring steel. The characteristic slotting provides for especially high elasticity.

The axial actuating force causes an elastic change in the taper angle and thus alters the diameter of the Clamping Discs. If its inside diameter is supported by a mandrel, the outside diameter expands. If the outside diameter of the Clamping Disc is supported, the inside diameter decreases.

Especially advantageous is the so called RINGSPANN effect. The initiated actuating force is transposed friction-free into a radial force that is 5 to 10 times higher, which is then used to clamp the component.



The actuating force simultaneously induces a tipping movement of the Clamping Disc. This movement is used to press the component against a longitudinal backstop during clamping.

3. Intended Use

The RINGSPANN Clamping Discs / Disc Packs are developed and designed for the clamping of components via a cylindrical diameter and a true running face.

RINGSPANN Clamping Discs / Disc Packs type LAF, LHF and LFF: clamping on a cylindrical outer diameter of the workpiece.

RINGSPANN Clamping Discs / Disc Packs type LBD, LID and LGD: clamping on a cylindrical inner diameter of the workpiece.

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 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

5. Technical Prerequisites For Safe Operation



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

Caution!

Clamping on diameters with a cylindricity outside an IT7 tolerance is not permissible.



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

Caution!

Clamping may only take place on 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 hydraulically powered clamping fixture, it must be ensured that, during workpiece processing, there is always the necessary actuating pressure for the processing forces/processing torques.

**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 RINGSPANN Clamping Discs / Disc Pack is delivered in accordance with the ordered size, the specified seating diameter and the specified clamping diameter.

The clamping diameter of the type LAF, LHF and LFF is made within the tolerance E7.

The clamping diameter of the type LBD, LID and LGD is made within the tolerance e6.

**Note:**

An inspection of the clamping diameter of the RINGSPANN Clamping Discs / Disc Pack can only be done in a fixture for grinding. Due to the elasticity of these RINGSPANN clamping elements an inspection of the clamping diameter is impossible and guides to wrong results when they are not built in.

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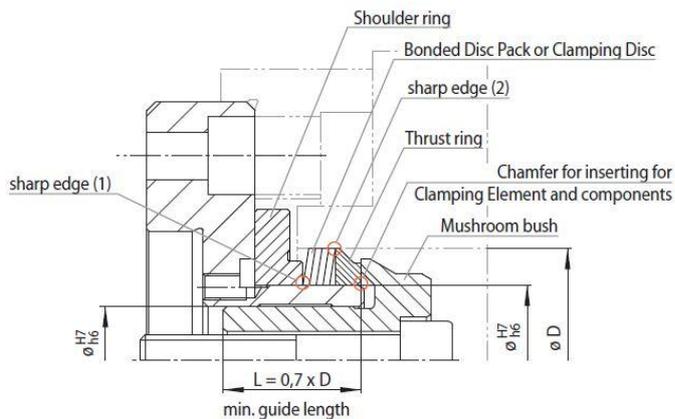
7. Installation And Commissioning

7.1 Grinding of RINGSPANN Clamping Discs/ Disc Pack by the customer

For the grinding of RINGSPANN Clamping Discs / Disc Pack the following needs to be observed:

- The RINGSPANN Clamping Discs / Disc Pack must be clamped between precisely ground and touched-up conical rings.
- The angle between the conical faces of the rings and the plane perpendicular to the ring axis must be as follows:
For RINGSPANN Clamping Discs / Disc Pack type LAF and LBD = 9°
For RINGSPANN Clamping Discs / Disc Pack type LFF, LHF and LGD, LID = 15°
- RINGSPANN Clamping Discs / Disc Pack type LAF, LHF and LFF are to be ground in a chuck with a seating diameter tolerance H7
RINGSPANN Clamping Discs / Disc Pack type LBD, LID and LGD are to be ground on mandrel with a seating diameter tolerance h6
- The grinding and inspection of the ground clamping diameter takes place in the chuck / on the mandrel clamped between the conical rings
- A true running of all diameters and faces must be guaranteed.

7.2 Installation



Push the RINGSPANN Clamping Discs / Disc Pack slightly oiled in / on the seating diameter. For an easier assembly the seating body can show a small guiding chamfer. The RINGSPANN Clamping Discs / Disc Pack are sitting on the seating diameter with a light pre-tension. I ^

The transition from the seating diameter to the contact surface for the RINGSPANN Clamping Discs / Disc Pack must have a sharp edge (1) without rounding and without undercut. The RINGSPANN Clamping Discs / Disc Pack must be in contact with the sharp edge (1) on the full circumference.

The picture shows the situation in a mandrel. For assembly of the RINGSPANN Clamping Discs / Disc Pack in a chuck the same conditions are applicable.

The RINGSPANN Disc Pack is rubberized and therefore protected against the ingress of chips and swarf. In the case RINGSPANN Clamping Discs are used a protection against the ingress of chips and swarf must be foreseen by the customer.

7.3 Commissioning

Maximum true running accuracy is reached by clamping the clamping fixture after assembly once without a workpiece (the bonded disc 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.

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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 RINGSPANN Clamping Discs 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.

8.2 Worn RINGSPANN Clamping Discs / Disc Pack



Caution!

Are RINGSPANN Clamping Discs used in one set and you notice wear on a single disc or discs the whole set of RINGSPANN Clamping Discs must be replaced. RINGSPANN Clamping Discs from different sets must not be used for a new set.

9. Storage

If the clamping fixture with RINGSPANN Clamping Discs / Disc Pack is to remain on the machine tool, it is to be put into relaxed position.

If put into storage, the RINGSPANN Clamping Discs / Disc Pack 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 type and size. See the data sheet in catalogue 10



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