



INSTALLATION AND OPERATING INSTRUCTIONS

HWR series
Manual tool changers

DDOC00112

THE KNOW-HOW FACTORY

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1. Supporting documents

NOTICE:



Read through the installation and operating instructions carefully before installing the product! The installation and operating instructions contain important notes for your personal safety. They must be read and understood by all persons who work with or handle the product during any phase of the product life time.



The documents listed below are available for download on our website (www.zimmer-group.com). Only those documents currently available on the website are valid.

- Catalogs, drawings, CAD data, performance data
- Information on accessories
- Detailed installation and operating instructions
- Technical data sheets
- General Terms and Conditions of Business, including warranty information

2. Safety notes

CAUTION:



Non-compliance may result in severe injuries!

1. Installation, commissioning, maintenance and repairs may only be performed by qualified specialists in accordance with these installation and operating instructions.
2. The tool changer is state-of-the-art. It is fitted to industrial machines and is used to hold workpieces. The following are examples of situations in which the tool changer may pose a hazard:
 - the tool changer is not properly installed, used or maintained
 - the tool changer is not used for its intended purpose
 - local regulations (legislation, ordinances, guidelines), such as the EC Machinery Directive, accident prevention regulations and the installation and operating instructions, are not observed.
3. The tool changer may be used only in accordance with its proper use and technical data. Zimmer GmbH shall accept no liability for any damage caused by improper use.
4. Any use other than the intended use requires written approval from Zimmer GmbH.
5. Make sure that the power cables are disconnected before you install, retool, maintain or repair the tool changer.
6. In the event of maintenance, retrofitting or working with attachments, remove the tool changer from the machine and perform the work outside the danger zone.
7. When commissioning or testing, make sure that the tool changer cannot be actuated by mistake.
8. Modifications to the tool changer, such as adding drilled holes or threads, may be made only with prior approval from Zimmer GmbH.
9. The specified maintenance intervals are to be observed; also refer to the "Maintenance" section. When the tool changer is used under extreme conditions, the maintenance interval must be adapted depending on the extent of soiling. Please contact our hotline for this purpose.
10. Use of the tool changer under extreme conditions, such as aggressive liquids and abrasive dusts, is subject to prior approval from Zimmer GmbH.
11. Do not reach into the operating range of the tool changer!

3. Proper use

NOTICE:



The tool changer is to be used only in its original state with its original accessories, without any unauthorized changes and within the scope of its defined parameters of use.
Zimmer GmbH shall accept no liability for any damage caused by improper use.

Use outside of the defined parameters is not permitted. Unauthorized mechanical modifications must not be made.
The tool changer is designed exclusively for manual operation.
The tool changer is properly used in closed rooms for handling and holding.
Direct contact with perishable goods/food is not permitted.

4. Personnel qualification

Installation, commissioning and maintenance may only be performed by specialists. These personnel must have read and understood the installation and operating instructions in full.

5. Product description

5.1 Forces and torques

INFORMATION:



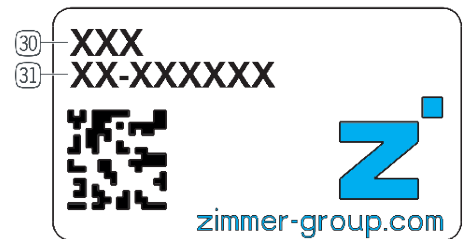
For information on forces and torques, please visit our website.

Zimmer Customer Service is available to provide you with assistance if you have any further questions.

5.2 Type plate

A type plate is attached to the housing of the tool changer.
The confirmation number and the article number are shown on this type plate.

- ▶ The confirmation number should be assigned to the project.
- ⇒ Article number: 30
- ⇒ Confirmation number: 31



INFORMATION:



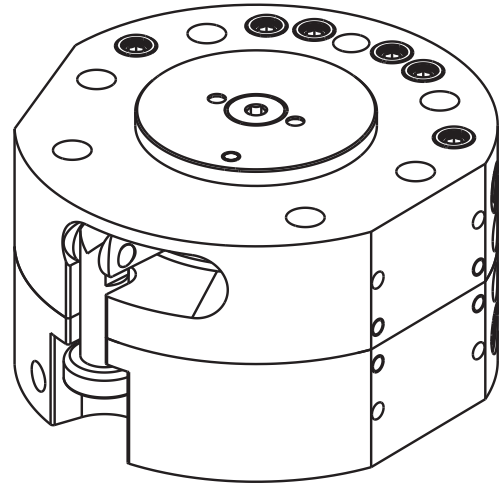
Please state the confirmation number in the event of damage or a complaint.

Zimmer Customer Service is available to provide you with assistance if you have any further questions.

6. Function

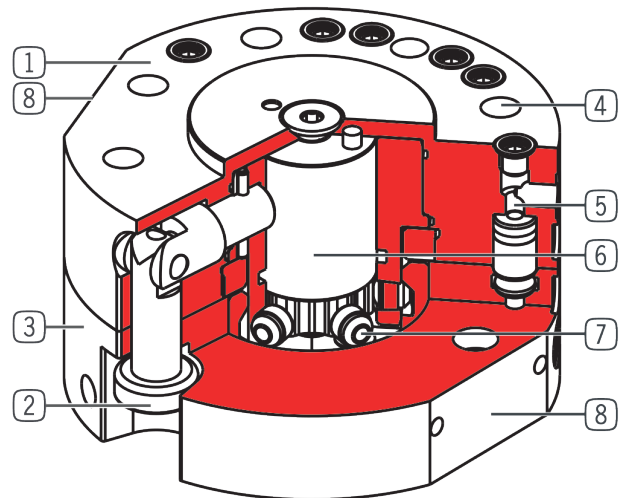
The tool changer is a two-piece machine element. Install the fixed part ① on a handling system. Install the loose part ③ directly on the tool. The two elements are positively connected using the locking bolts ⑦. The manually rotatable devices ② and ⑥ create the required stroke. After being locked, the locking lever ② is folded up completely and therefore does not create any interference contours. A fixed part ① can be operated with as many loose parts as desired. That significantly reduces set-up times during tool exchanges.

Fig. 1: HWR series tool changer



①	Fixed part
②	Locking lever
③	Loose part
④	Robot flange
⑤	Integrated pneumatic feed-through, 6 x M5
⑥	Interlock cam
⑦	Locking bolt
⑧	Mounting surface for the energy element

Fig. 2: Cutaway view of the HWR series tool changer



6.1 Technical data

INFORMATION:



For information on technical data, please visit our website.

This data varies within the series, depending on the specific design.

Zimmer Customer Service is available to provide you with assistance if you have any further questions.

7. Installation

NOTICE:



Switch off the power supply before any assembly, installation or maintenance work.

CAUTION:



Switch off the power supply before any assembly, installation or maintenance work.

- ▶ Switch off the power supply before all work.
- ▶ Switch off the power supply to the machine or the system before all work.
- ▶ Secure the power supply against being switched on unintentionally.
- ▶ Check the power supply for any residual energy.

WARNING:



Risk of injury in the event of unexpected movement of the machine or system into which the tool changer is to be installed.

- ▶ Switch off the power supply to the machine before all work.
- ▶ Secure the machine against being switched on unintentionally.
- ▶ Check the machine for any residual energy.

7.1 General installation information

- ⇒ Screw-in depth $\geq 1.2 \times \varnothing$
- ⇒ The mounting screws are not included in the scope of delivery.
- ⇒ Strength class of the mounting screws ≥ 8.8 (DIN EN ISO 4762)
- ⇒ Observe the tightening torque of the mounting screws.
- ⇒ Make sure the mounting surface is sufficiently rigid and flat.

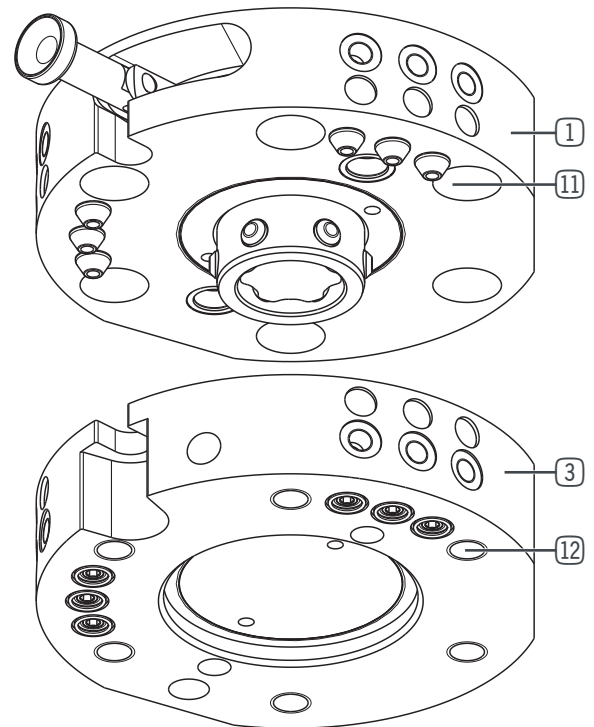
7.2 Installation of the mechanical system

Fixed part **1** :

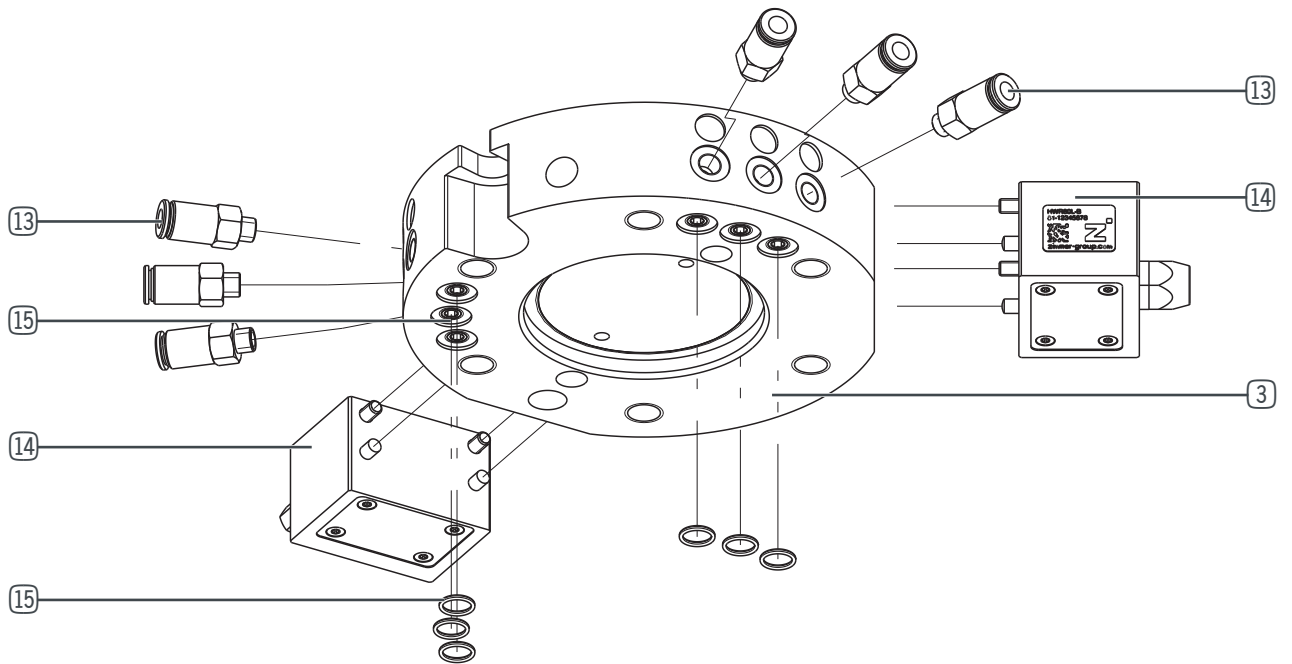
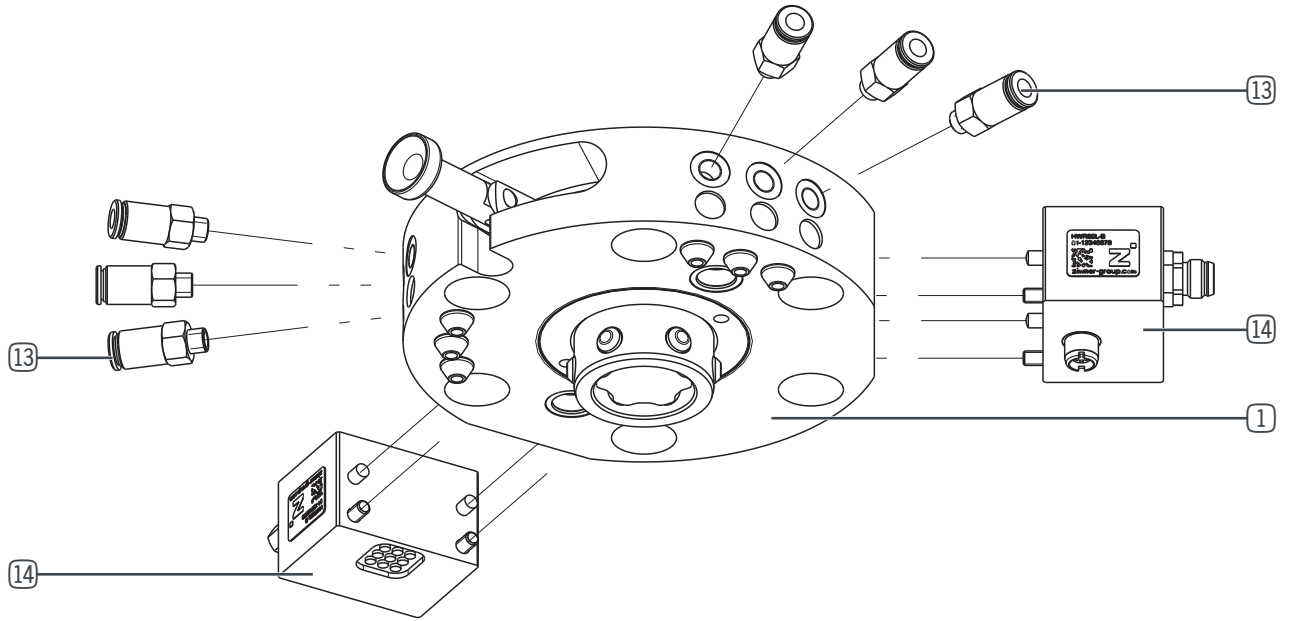
- ▶ Insert cylinder screws in the designated fits **11** on the fixed part **1** .
- ▶ Installation from the fixed-part side, against the handling system.

Loose part **3** :

- ▶ Insert cylinder screws in the designated tool fits.
- ▶ Installation from the tool side, into the tapped holes **12** of the loose part.



7.3 Installation of accessories



Fixed part **1** :

- ▶ 6 pneumatic connections **13** with M5 threads.
- ▶ 2 connecting surfaces for mounting additional energy elements **14** .
- ▶ For this purpose, the following are available for selection:
 - WER03, electrical transmission element
 - ⇒ With flat plug, 9-pin
 - ⇒ With round plug, 4-pin
 - WER2000, electrical transmission element
 - ⇒ With flat plug, 32-pin
 - WER2000, pneumatic transmission element
 - ⇒ With 6 connections, M5

Loose part **3** :

- ▶ 6 pneumatic connections **13** with M5 threads.
- ▶ 6 pneumatic connections, tubeless with O-rings **15** .
- ▶ 2 connecting surfaces for mounting additional energy elements **14** .
- ▶ For this purpose, the following are available for selection:
 - WER03, electrical transmission element
 - ⇒ With flat plug, 9-pin
 - ⇒ With round plug, 4-pin
 - WER2000, electrical transmission element
 - ⇒ With flat plug, 32-pin
 - WER2000, pneumatic transmission element
 - ⇒ With 6 connections, M5

NOTICE:



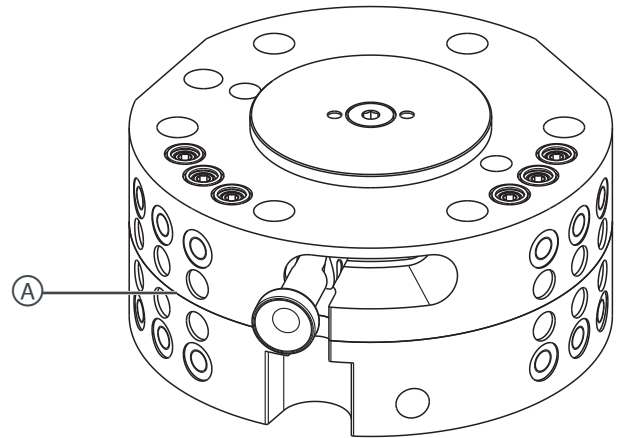
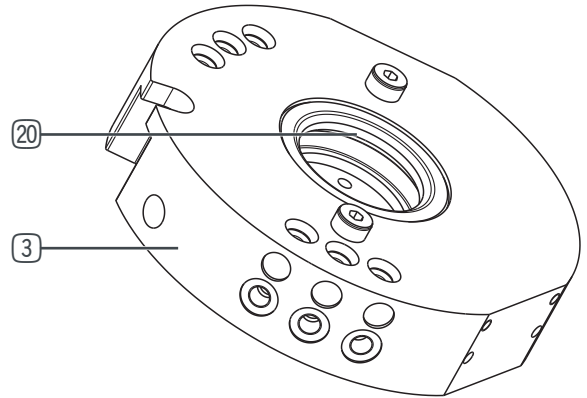
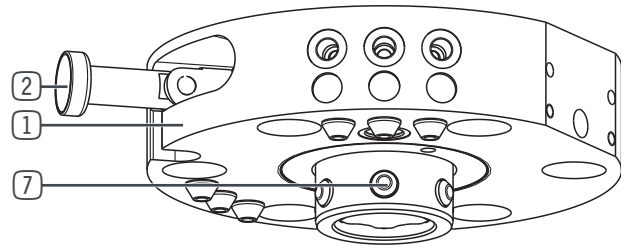
Observe the separate installation and operating instructions for installing the accessories, especially the energy elements.
The documents are available for download on our website.

8. Setting the clamping force

The clamping force is independent from the quality of the form fit of the clamping elements of both parts.

This quality is determined by how exactly the locking bolts (7) of the fixed part (1) can sink into the annular groove (20) of the clamping nut (18) of the loose part (3).

Both elements are factory set to match each other exactly. The clamping force, measured at the locking lever (2), should be between 30 and 50 N.

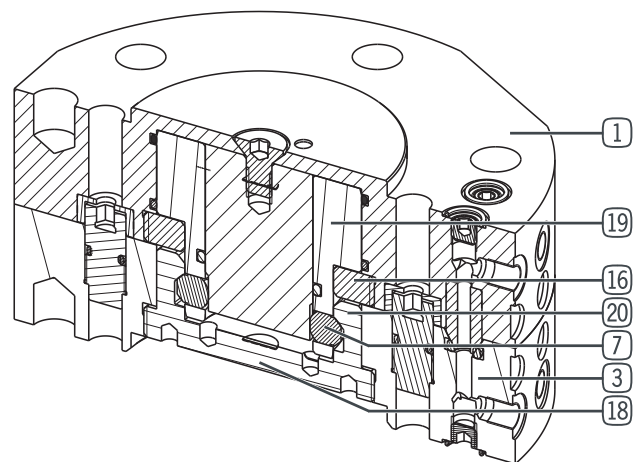


The gap dimension (A) between the fixed and loose part must be 0.0 mm.

A gap between the fixed and the loose part indicates that inside the element the end face of the clamping sleeve (18) of the loose part (3) and of the clamping ring (16) of the fixed part (1) are touching each other and thus prevent complete closure.

In this condition, the energy elements also cannot connect completely. That results in malfunctions.

The highest clamping force is achieved when the locking bolts (7) can sink into the annular groove (20) of the clamping nut (18) completely and without play.



DANGER:



Non-compliance may result in severe injuries!

If multiple loose parts are operated by one fixed part, this adjustment procedure may be carried out only on the loose parts!

⇒ Otherwise, individual combinations lead to faulty locking.

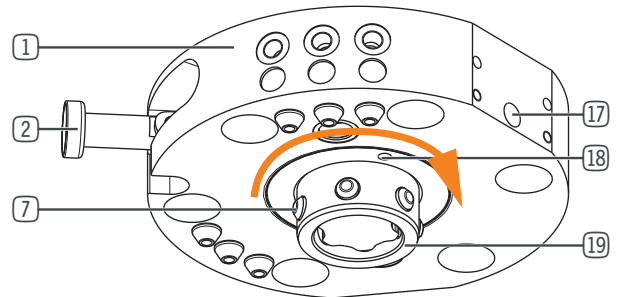
The fixed part and the loose part must always be completely flat and without gaps when they abut.

► Risk of accident!

8.1 Setting the clamping force at the fixed part

This adjustment procedure changes the position of the clamping mechanism (19) with the locking bolts (7) in relation to the clamping ring in the loose part (3).

- ▶ Move the locking lever (2) into the horizontal position and release the tool changer.
- ▶ Loosen the grub screw (17) – do not completely unscrew it.
- ▶ Turn the clamping nut (18) to adjust it.
 - By turning clockwise,
 - ⇒ the play between the locking bolt (7) in the fixed part (1) and the annular groove (20) in the loose part (3) decreases.
- ▶ Repeatedly close the element and actuate the clamping lever (2).
- ▶ Repeat the adjustment until the clamping force is approx. 30 N to 50 N.
- ▶ At the end of the adjustment procedure, tighten the grub screw (17) again.



NOTICE:

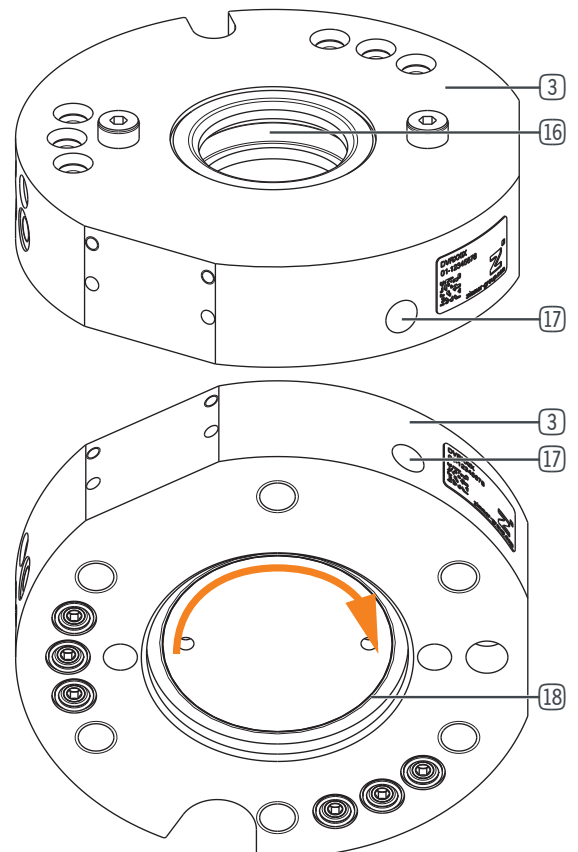


The pitch of the clamping nut is 1 mm.
 1 revolution of the clamping nut = 1.00 mm height adjustment on the clamping mechanism.
 3/4 revolution of the clamping nut = 0.75 mm height adjustment on the clamping mechanism.
 1/2 revolution of the clamping nut = 0.50 mm height adjustment on the clamping mechanism.
 1/4 revolution of the clamping nut = 0.25 mm height adjustment on the clamping mechanism.

8.2 Setting the clamping force at the loose part (normal case)

This adjustment procedure changes the position of the clamping ring (16) in relation to the position of the locking bolts (7) in the fixed part (1).

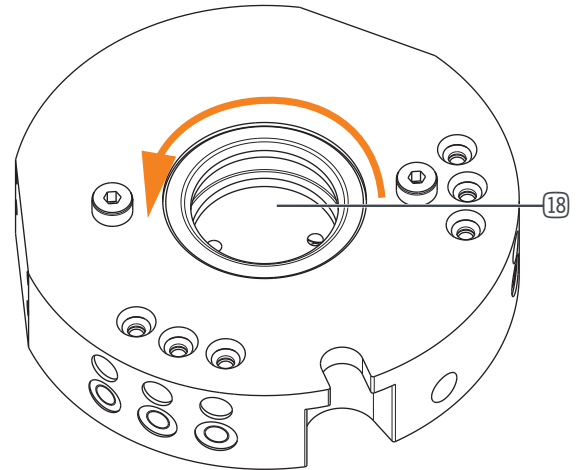
- ▶ Move the locking lever (2) into the horizontal position and release the tool changer.
- ▶ Loosen the grub screw (17) of the loose part (3) – do not completely unscrew it.
- ▶ Turn the clamping nut (18) to adjust it.
 - By turning clockwise,
 - ⇒ the play between the clamping pin in the fixed part (1) and the clamping ring (16) in the loose part (3) increases.
- ▶ Repeatedly close the element and actuate the clamping lever (2).
- ▶ Repeat the adjustment until the clamping force is approx. 30 N to 50 N.
- ▶ At the end of the adjustment procedure, tighten the grub screw (17) again.



INFORMATION:



If the loose part (3) is mounted on a tool, it does not have to be dismantled for the adjustment procedure. The clamping nut (18) can also be operated from the inside.



NOTICE:



The pitch of the clamping nut is 1 mm.

1 revolution of the clamping nut = 1.00 mm height adjustment on the clamping mechanism.

3/4 revolution of the clamping nut = 0.75 mm height adjustment on the clamping mechanism.

1/2 revolution of the clamping nut = 0.50 mm height adjustment on the clamping mechanism.

1/4 revolution of the clamping nut = 0.25 mm height adjustment on the clamping mechanism.

9. Operation

WARNING:



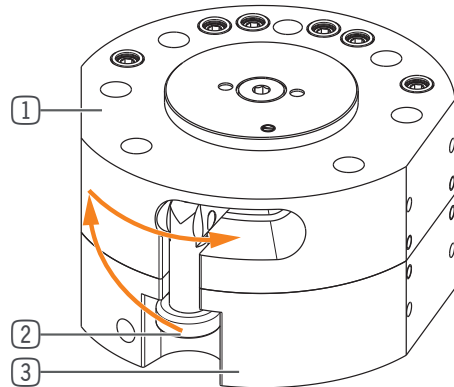
Risk of injury in case of unexpected movement of the machine or system in which the tool changer is installed.

- ▶ Switch off the power supply to the machine before all work.
- ▶ Secure the machines against being switched on unintentionally.
- ▶ Check the machine for any residual energy.

The manual HWR tool changer is operated as follows:

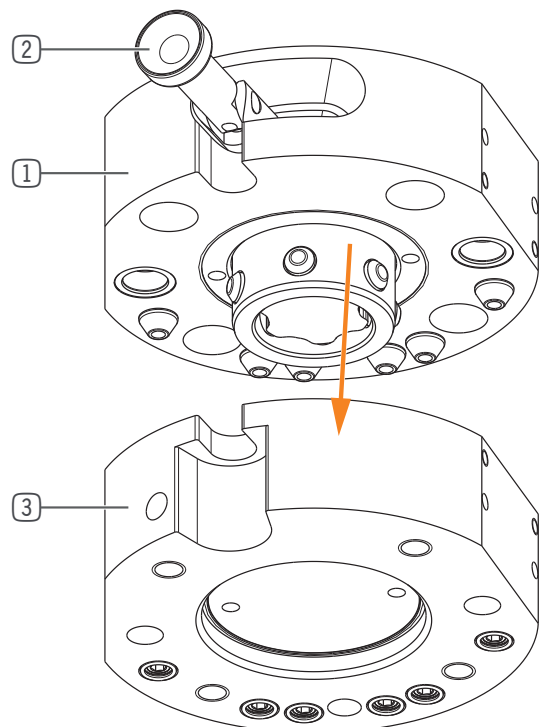
Pick up and lock the loose part:

- ▶ Unfold the locking lever (2) and move it into the horizontal position.
- ▶ Move the locking lever (2) into the "open" position.
- ▶ Position the fixed part (1) of the tool changer above the tool using the installed loose part (3).
- ▶ Lower the fixed part (1):
 - ⇒ If there are any additionally mounted energy elements (see accessories), watch closely to make sure the coupling is clean.
 - ⇒ The fixed part and the loose part must be completely flat and without gaps when they abut.
- ▶ Move the locking lever (2) into the "lock" position.
- ▶ Fold in the locking lever (2) completely and move it into the vertical position.
 - ⇒ The tool changer is reliably locked only in this position!



Put down and unlock the loose part:

- ▶ Use the fitted tool to put down the loose part (3).
 - ⇒ Secure this unit against falling over, sliding away or falling down.
- ▶ Unfold the locking lever (2) and move it into the horizontal position.
- ▶ Move the locking lever (2) into the "open" position.
- ▶ Carefully move the fixed part (1) of the tool changer upwards.



WARNING:



Risk of injury from falling load when opening the tool changer.

- ▶ Actuate the locking lever (2) only if the fixed part (1) has not picked up any load.
- ▶ Actuate the locking lever (2) only if the load that has been picked up is secured.

10. Maintenance

The tool changer is maintenance-free.

We recommend a visual inspection every eight weeks!

The maintenance interval may shorten under the following circumstances:

- Dirty environment
- Ambient temperature of more than 60 °C; lubricants harden faster!

Dismantling and reassembling the tool changer without authorization may result in complications, as special installation equipment is required in some cases.

Zimmer GmbH shall not be liable in the event of unauthorized dismantling and reassembly of the tool changer or in the event of any malfunctions or damage resulting therefrom.

11. Accessories/scope of delivery

INFORMATION:



If any accessories not sold or authorized by Zimmer GmbH are used, the function of the tool changer cannot be guaranteed.

Zimmer GmbH accessories are specifically fitted for the individual tool changers.

Please refer to our website for information on corresponding accessories.

12. Transportation/storage/preservation

- ▶ Transport and storage of the tool changer must be made only using the original packaging.
- ▶ If the tool changer has already been installed on the superordinate machine unit, you must ensure that no unintentional movements can take place during transport. Before commissioning the machine after transport, check all power and communication connections as well as all mechanical connections.
- ▶ If the product is stored for an extended period, the following points are to be observed:
 - ⇒ Keep the storage location as dust-free and dry as possible.
 - ⇒ Avoid temperature fluctuations/observe and adhere to the temperature range.
 - ⇒ Avoid wind/drafts/water condensation formation.
 - ⇒ Package the product.
 - ⇒ During storage, it must be kept from direct sunlight.
- ▶ Clean all components. There must be no soiling left on the components.
- ▶ Visually inspect all of the components.
- ▶ Remove all foreign objects.
- ▶ Properly remove potential corrosion spots.
- ▶ Close electrical connections using suitable covers.

13. Decommissioning and disposal

INFORMATION:



When the tool changer reaches the end of its operational phase, it can be completely disassembled and disposed of. The tool changer must be completely disconnected from the power supply. The tool changer can be disassembled and properly disposed of according to material groups. When disposing of it, observe the locally applicable environmental regulations and codes and regulations for disposal.

14. RoHS declaration

In terms of the EU Directive 2011/65/EU

Name and address of the manufacturer:

Zimmer GmbH,
 77866 Rheinau, Germany, Im Salmenkopf 5
 +49 7844 9138 0
 +49 7844 9138 80
 www.zimmer-group.com

We hereby declare that the incomplete machine described below

Product designation: Manual tool changers

Type designation: HWR series

conforms to the requirements of the directive in its design and the version we put on the market.

Authorized representative for the compilation of relevant technical documents

Michael Hoch	See manufacturer's address	Rheinau, Germany, 2020-01-15	Martin Zimmer
First name, last name	Address	(Place and date of issuance)	(Legally binding signature) Managing Partner

15. REACH declaration

In terms of the EU Regulation 1907/2006

Name and address of the manufacturer:

Zimmer GmbH,
 77866 Rheinau, Germany, Im Salmenkopf 5
 +49 7844 9138 0
 +49 7844 9138 80
 www.zimmer-group.com

REACH stands for **R**egistration, **E**valuation, **A**uthorisation and **R**estriction of **C**hemicals.

A full declaration of REACH can be obtained from the manufacturer due to the duty to notify in accordance with Art. 33 of the REACH regulation ("Duty to communicate information on substances in articles").

Authorized representative for the compilation of relevant technical documents

Michael Hoch	See manufacturer's address	Rheinau, Germany, 2020-01-15	Martin Zimmer
First name, last name	Address	(Place and date of issuance)	(Legally binding signature) Managing Partner

16. Declaration of Incorporation

In terms of the EU Machinery Directive 2006/42/EC (Annex II 1 B)

Name and address of the manufacturer:

Zimmer GmbH,
 77866 Rheinau, Germany, Im Salmenkopf 5
 +49 7844 9138 0
 +49 7844 9138 80
 www.zimmer-group.com

We hereby declare that the incomplete machines described below

Product designation: Manual tool changers

Type designation: HWR series

conform to the requirements of the Machinery Directive, 2006/42/EC, Article 2g, Annex VII,b – Annex II,b, in their design and the version we put on the market.

The following harmonized standards have been used:

Basic health and safety requirements:

No. 1.1.2, No. 1.1.3, No. 1.1.5, No. 1.3.1, No. 1.3.2, No. 1.3.4, No. 1.3.7, No. 1.5.1, No. 1.5.3, No. 1.5.4, No. 1.6.4, No. 1.7.1, No. 1.7.3.

DIN EN ISO 12100:2011-03 Safety of machinery – General principles for design – Risk assessment and risk reduction

DIN EN 60204-1 Safety of machinery – Electrical equipment of machines, part 1

DIN EN ISO 13849-1 Safety of machinery – Safety-related parts of control systems

DIN EN ISO 13849-2 Safety-related parts of control systems

A full list of applied standards can be obtained from the manufacturer.

Commissioning of the incomplete machine is prohibited until it has been found that—where applicable—the machine in which the above-mentioned incomplete machine is to be installed complies with the Machinery Directive (2006/42/EC).

Authorized representative for the compilation of relevant technical documents

Kurt Ross	See manufacturer's address	Rheinau, Germany, 2020-01-15	Martin Zimmer
First name, last name	Address	(Place and date of issuance)	(Legally binding signature) Managing Partner