

INSTALLATION AND OPERATING INSTRUCTIONS



Handling
technology

HWR2000 series
Manual tool changers

THE KNOW-HOW FACTORY

1. Supporting documents



NOTE:

The following documents are available for download on our website. Only the documents currently available on the website are valid.

- Catalog
- Drawings, performance data, information about accessory parts, etc.
- Technical data (data sheets)
- General terms and conditions, including warranty information

2. Proper use



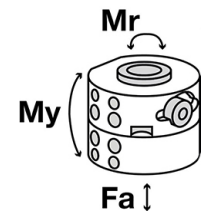
NOTE:

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

The HWR2000 tool changer is designed exclusively for manual operation.

The tool changer is properly used in closed rooms for handling and holding workpieces. Forces and torques that the tool changer has to absorb must not exceed the recommended parameters.

	HWR2031	HWR2040	HWR2050
Torsional moment Mr [Nm]	30	55	80
Tilting moment, vertical axis My [Nm]	25	50	70
Max. permitted force Fa [N]	1000	1200	1600



Only the accessories permitted for this type series are allowed to be installed on the tool changer.

⇒ Regarding this, see Handling technology catalog 2

The design of the locking mechanism prevents the tool from falling unintentionally.

When used properly, the tool changers of the HWR2000 series guarantee maximum safety for people and the machine.

Depending on the size, 4 or 8 integrated air transfer units are available to supply the pneumatic actuators.

The transfer of other fluid media shall be regarded as improper use.

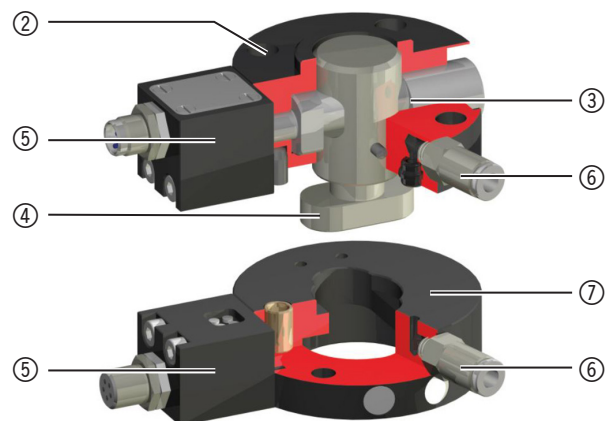
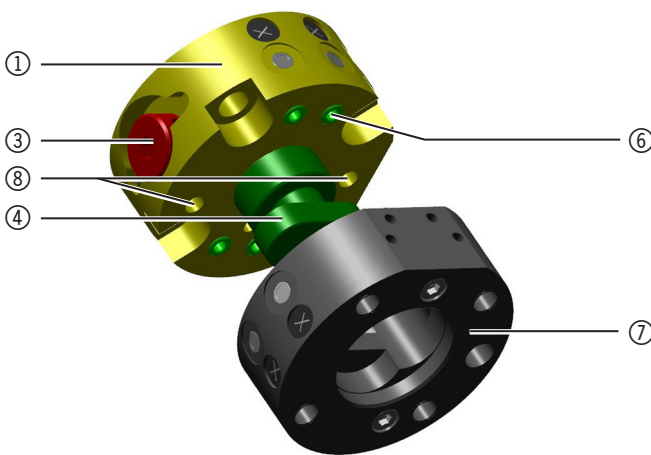
3. Function

The tool changer is a two-piece machine element. The fixed part ① is installed on a handling system.

The loose part ⑦ is installed directly on the tool. A positive-fit and friction-locked connection of the two elements is achieved using the locking bolts ④ and straight pins ⑧, which determine the exact position of fixed and loose parts with respect to each other.

The required stroke is generated by an eccentric spindle that can be rotated manually ③. The loose part is lifted from the fixed part by means of the eccentric spindle. By then rotating the loose part by 90° it can be pulled off of the locking bolt.

A fixed part can be operated with as many loose parts as desired. That significantly reduces set-up times for changing tools.



- ①: Fixed part
- ②: Robot flange
- ③: Eccentric spindle for locking
- ④: Locking bolt

- ⑤: Standard energy element
- ⑥: Integrated pneumatic feed-through
- ⑦: Loose part
- ⑧: Holes for straight pins/positioning

4. Technical data

* 1)		HWR2031	HWR2031	HWR2040	HWR2040	HWR2050	HWR2050
		Fixed part	Loose part	Fixed part	Loose part	Fixed part	Loose part
Pitch circle installation holes in accordance with EN ISO 9409-1	[mm]	Ø 31.5		Ø 40		Ø 50	
Centering diameter Robot flange	[mm]	Ø 20 h7	-	Ø 25 h7	-	Ø 31.5 h7	-
Straight pin hole	[mm]	Ø 5H7 x 6		Ø 6H7 x 6		Ø 6H7 x 6	
Mounting screws in accordance with DIN 7984		4 x M5		4 x M6		4 x M6	
Permitted tightening torque	[Nm]	6		10.2		10.2	
Handling weight	[kg]	5		10		20	
Pneumatic transfers, connections		4 M5		4 M5		8 M5	
Electrical transfers		Optional with energy elements					
Self limitation when locking		Mechanical					
Locking stroke	[mm]	4	-	4	-	4	-
Repeatability Z-axis	[mm]	0.01	0.01	0.01	0.01	0.01	0.01
Repeatability XY-axis	[mm]	0.02	0.02	0.02	0.02	0.02	0.02
Operating temperature min./max.	°C	+5 to +80					
Moment of inertia	[kg/cm ²]	0.13	0.1	0.33	0.26	0.86	0.67
Weight	[kg]	0.09	0.04	0.145	0.07	0.23	0.115

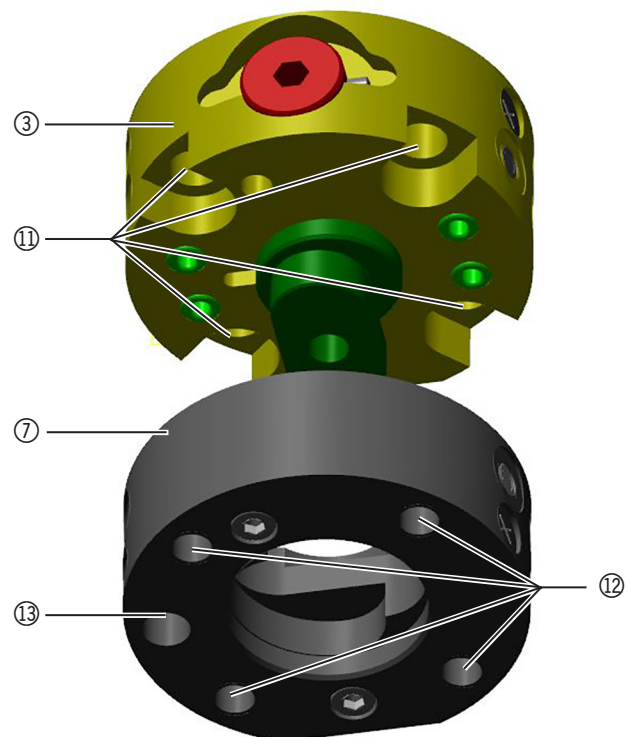
*1) Please always compare the technical data with the corresponding tables on the Internet at www.zimmer-group.de!

5. Installation
Fixed part ③:

- ▶ Installation with 4 hexagon socket head cap screws ⑪ in accordance with ISO 7984, strength class 8.8
- ▶ Installation from the fixed-part side, against the handling system
 - ⇒ Insert the straight pin
 - ⇒ Insert the centering diameter on the robot flange
- ▶ Screw-in depth must be at least 1.2 X Ø
Example: M6 = screw-in depth 7.2 mm
- ▶ Observe the permitted tightening torque!

Loose part ⑦:

- ▶ Installation with 4 hexagon socket head cap screws in accordance with ISO 7984, strength class 8.8
- ▶ Installation from the tool side, into the tapped holes ⑫ of the loose part
 - ⇒ Insert the straight pin into the hole ⑬
 - ⇒ Position the loose part on the tool
- ▶ Observe the screw-in depth of 9 mm in the loose part
- ▶ Observe the permitted tightening torque



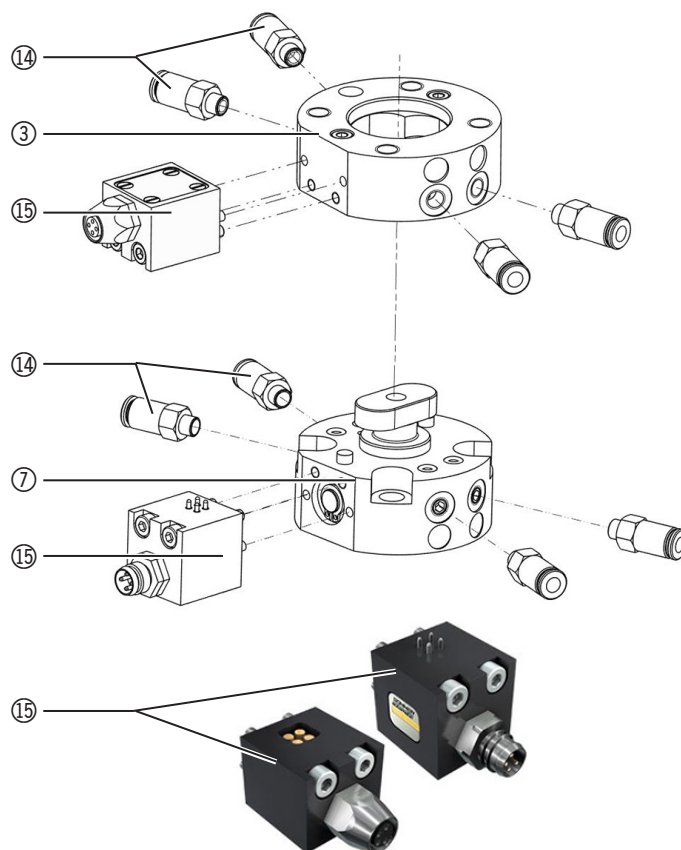
6. Installation of accessories

Fixed part ③:

- 4 or 8 pneumatic connections ⑭, depending on the size
 - Connecting thread M5
 - Outer Ø of hose: 4 mm
- 1 connection surface for installing an additional WER 201 energy element ⑮
 - WER 201, electrical transmission element
 - with round plug, 4-pin
 - Nominal current 3 A
 - 60 VAC or 75 VDC

Loose part ⑦:

- 4 or 8 pneumatic connections ⑭, depending on the size
 - Connecting thread M5
 - Outer Ø of hose: 4 mm
- 1 connection surface for installing an additional WER 201 energy element ⑮
 - WER 201, electrical transmission element
 - with round plug, 4-pin
 - Nominal current 3 A
 - 60 VAC or 75 VDC



NOTE:

Observe the separate installation and operating instructions for installing the accessories, particularly the energy elements.

7. Operation



WARNING:

Risk of injury in case of unexpected movement of the machine or system into which the tool changer has been 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

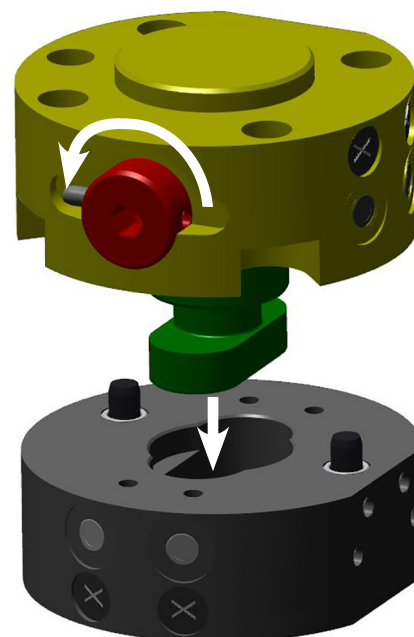
7.1 Attaching and locking the loose part (tool)



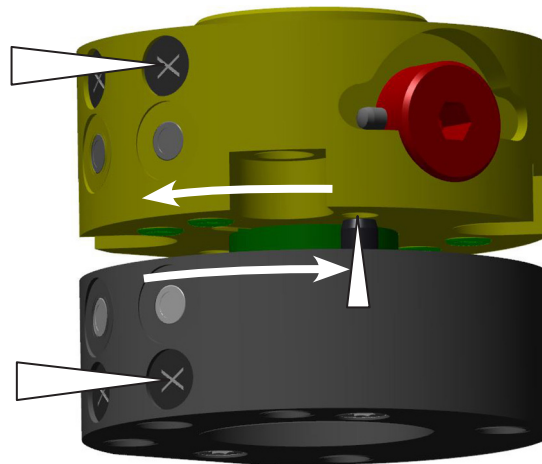
NOTE:

Use an Allen wrench of the right size to move the eccentric shaft.

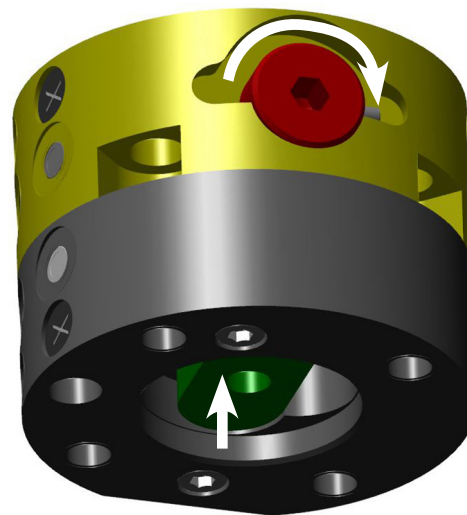
- ▶ Rotate the eccentric shaft into the loosening position
 - ⇒ Clamping pin has moved out
- ▶ Rotate the loose part by 90°
 - ⇒ In this position, the clamping pin must be able to move in through the slotted hole of the loose part



- ▶ Rotate the fixed part and loose part by 90° with respect to each other so that the corresponding connections line up exactly.
 - ⇒ Pay attention to the numbering
 - ⇒ Locking can occur only in this position
 - ⇒ In this position the loose part (tool) is already securely attached to the fixed part. It cannot fall unintentionally.



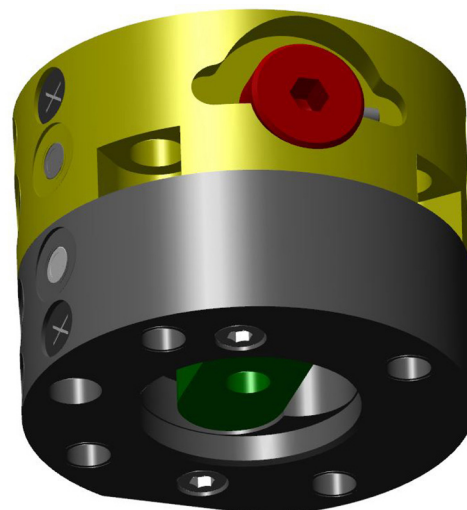
Turn the eccentric shaft into the locking position
 - The fixed and loose parts are pulled together



NOTE: Shortly before reaching the “clamping” position of the eccentric shaft you need to overcome a noticeable pressure point. It marks the build-up of the actual holding force and the beginning of the locking function.

7.2 Unlocking and removing the loose part (tool)

- ▶ Position the tool changer over the removal position of the tool
- ▶ Depressurize the pneumatic connections
- ▶ Switch off the electrical connections



- ▶ Rotate the eccentric shaft into the loosening position
 - ⇒ The loose part decouples from the fixed part
 - ⇒ Due to the mechanical connection, the loose part cannot fall off



NOTE:

Remove or position the tool changer in such a way that the loose part cannot fall off along with the mounted tool.

- ▶ Rotate the fixed part and loose part by 90° with respect to each other so that in this position the clamping pin can move out of the slotted hole of the loose part.

