



INSTALLATION AND OPERATING INSTRUCTIONS

Energy elements
WER4000

DDOC01250

THE KNOW-HOW FACTORY

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1 Introduction

1.1 Supporting documents

NOTICE



Read through the instructions before installing or working with the product.

The 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 lifetime.



The documents listed below are available for download on our website www.zimmer-group.com.

- Instructions
 - Catalogs, drawings, CAD data, performance data
 - Information on accessories
 - Technical data sheets
 - General Terms and Conditions, including warranty information.
- ⇒ Only those documents currently available on the website are valid.

In these instructions, "product" refers to the product designation on the title page!

1.2 Notices and graphics in the instructions

DANGER



This notice warns of an imminent danger to the life and health of people. Ignoring these notices can lead to serious injury or even death.

- ▶ You absolutely must comply with the described measures for avoiding these dangers!
- ⇒ The warning symbols are assigned according to the type of danger.

WARNING



This notice warns of a situation that is potentially hazardous to personal health. Ignoring these notices can cause serious injury or damage to health.

- ▶ You absolutely must comply with the described measures for avoiding these dangers!
- ⇒ The warning symbols are assigned according to the type of danger.

CAUTION



This notice warns of a situation that is potentially hazardous to persons. Ignoring these notices can cause minor, reversible injuries.

- ▶ You absolutely must comply with the described measures for avoiding these dangers!
- ⇒ The warning symbols are assigned according to the type of danger.

NOTICE



This notice warns of possible material and environmental damage. Ignoring these notices can result in damage to the product or the environment.

- ▶ You absolutely must comply with the described measures for avoiding these dangers!
- ⇒ The warning symbols are assigned according to the type of danger.

INFORMATION



This category contains useful tips for handling the product efficiently. Failure to observe these tips will not result in damage to the product. This information does not include any information relevant to health or workplace safety.

2 Safety notices

CAUTION



Risk of injury and material damage in case of non-compliance

The product is state-of-the-art.

The following are examples of situations in which the product may cause a hazard:

- The product is not properly installed, used or maintained.
- The product is not used for its designated purpose.
- The locally applicable regulations, laws, directives or guidelines are not observed.
- ▶ The product may only be used in accordance with these instructions and the product's technical data. Any changes or additions to the intended use of the product, as well as modifications to the product, such as those in the following examples, require the written permission of the manufacturer:
 - Use of the product under extreme conditions, such as aggressive fluids or abrasive dusts
 - Additional drilled holes or threads
- ⇒ Zimmer Group GmbH shall accept no liability for any damage caused by improper use. The operator bears sole responsibility.
- ▶ Make sure that the power supply is disconnected before you mount, adjust, modify, maintain or repair the product.
- ▶ Whenever work is carried out on the product, make sure that the product cannot be actuated by mistake.
- ▶ Perform maintenance tasks, renovation work or attachment work outside of the machine's danger zone when possible.
- ▶ Do not reach into the operational range of the product.
- ▶ Always adhere to the required maintenance intervals.
- ▶ When using the product under extreme conditions, adjust the maintenance interval according to the degree of contamination.
- ▶ Check the completeness and tightening torques of all mounting screws.

3 Proper use

NOTICE



Material damage and malfunction in case of non-compliance

The product is only to be used in its original state with its original accessories, with no unauthorized changes and within the stipulated parameter limits and operating conditions.

Any other or secondary use is deemed improper.

- ▶ Operate the product only in compliance with the associated instructions.
 - ▶ Operate the product only when it is in a technical condition that corresponds to the guaranteed parameters and operating conditions.
- ⇒ Zimmer Group GmbH shall accept no liability for any damage caused by improper use. The operator bears sole responsibility.

- The product is designated for use in closed facilities.
- The product is intended for industrial use.
- The product is not suited for use in a potentially explosive atmosphere.
- The product is mounted on the tool changer and is used for media transfer.

4 Personnel qualification

WARNING



Inadequate qualification can cause injury and material damage

If inadequately qualified personnel perform work on the product, this can cause serious injuries and significant material damage.

- ▶ All work on the product must be performed by qualified personnel.
- ▶ Before working with the product, read the document in its entirety and make sure that you have understood everything.
- ▶ Observe country-specific accident prevention regulations and the general safety notices.

The following qualifications are a prerequisite for performing various work on the product.

4.1 Electricians

Electricians are able to perform work on electrical systems, can recognize and avoid possible dangers and know the relevant standards and provisions due to their technical training, knowledge and experience.

4.2 Specialists

Specialists are able to perform the assigned work, can recognize and avoid possible dangers and know the relevant standards and provisions due to their technical training, knowledge and experience.

4.3 Instructed personnel

Instructed personnel have been trained by the operating company on the tasks and possible dangers of improper behavior.

4.4 Service personnel

Service personnel are able to perform the assigned work and can recognize and avoid possible dangers due to their technical training, knowledge and experience.

4.5 Additional qualifications

Persons who work with the product must be familiar with the valid safety regulations and laws as well as the standards, guidelines and laws listed in this document.

Personnel who work with the product must have facility-issued authorization to commission, program, configure, operate, maintain and also decommission this product.

5 Product description

The products are connected directly to tool changers of the WWR1000 series.

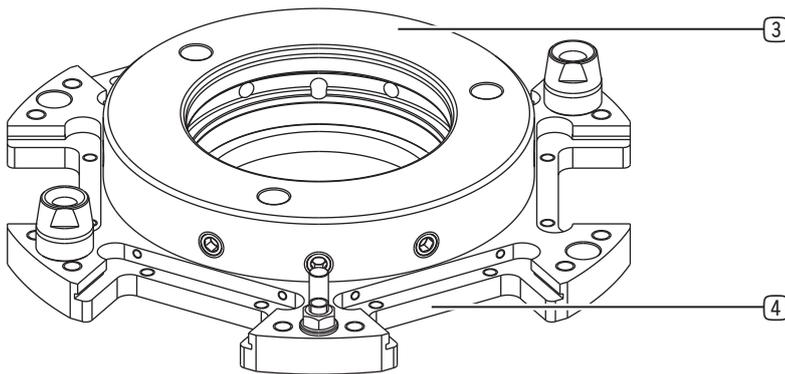
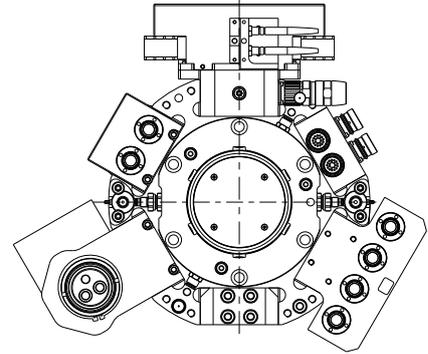
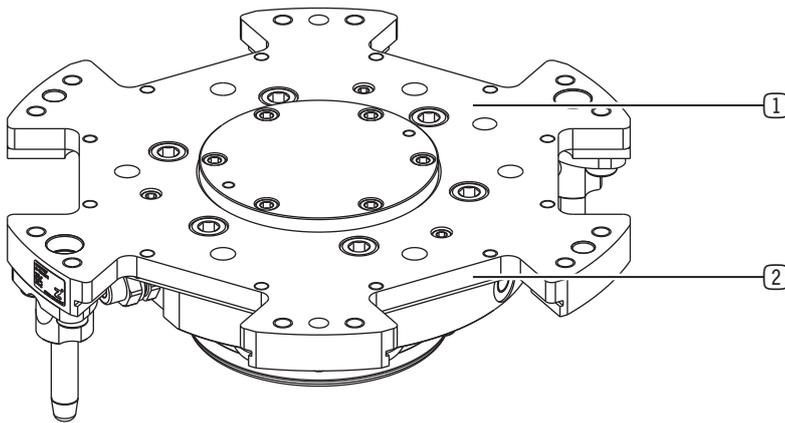
The WWR1000 series tool changers have five mounting positions for energy elements.

The products also differ with respect to loose parts and stationary parts in accordance with the designations of the tool changer's parts.

The stationary part of the product is always on the robot side. The loose part is always on the tool side.

Example 1: WWR1160

WWR1160F with energy elements



- ① Tool Changer Fix Part
- ② Installation location for stationary part of energy element
- ③ Tool Changer Loose Part
- ④ Installation location for loose part of energy element

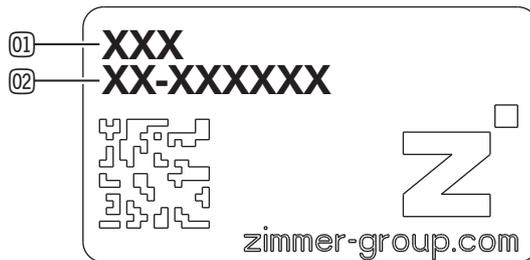
INFORMATION



Only specific product variants may be decoupled while connected to the energy supply.

5.1 Type plate

A type plate is attached to the product.



01 Article number

02 Confirmation number

5.2 Product variants

INFORMATION



- ▶ You can find information about product variants and their compatibility on our website.
- ▶ Please contact Customer Service if you have any questions.

6 Functional description

Depending on the product variant, they are suitable for the transfer of fluids and electrical energy.

7 Technical data

INFORMATION



- ▶ You can find the information in the technical data sheet or Configurator on our website.
- ▶ This data varies within the series, depending on the specific design.

8 Accessories/scope of delivery

INFORMATION



- ▶ If any accessories not sold or authorized by Zimmer Group GmbH are used, the function of the product cannot be guaranteed. Zimmer Group GmbH accessories are specifically tailored to the individual products.
- ▶ For optional accessories and those included in the scope of delivery, refer to our website.

9 Transportation/storage/preservation

- ▶ Transport and storage of the product must be done only with the original packaging.
- ▶ If the product has already been installed on the superordinate machine unit, care must be taken during transport to ensure that no unexpected movements can occur.
 - ▶ Before commissioning the product and 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.
 - ▶ Avoid wind/drafts/water condensation formation.
 - ▶ Pack the product and do not expose it to direct sunlight during storage.
- ▶ Clean all components. There must be no soiling left on the components.
- ▶ Visually inspect all components.
- ▶ Remove all foreign substances.
- ▶ Properly remove potential corrosion spots.
- ▶ Close electrical connections using suitable covers.

10 Installation

DANGER



Potentially life-threatening hazard due to electrical voltage

For electrical products, there is a risk of injury due to exposed contacts that are live at all times.

- ▶ Never mount the loose part of electrical products on the stationary part of a tool changer.
- ▶ Shut off the electrical energy supply before decoupling and in the decoupled state.
- ▶ Make sure that the power supply is disconnected before you mount, modify, maintain or repair the product.

WARNING



Risk of injury due to uncontrolled movements

Risk of injury in case of unexpected movement of the machine or system into which the product is to be installed.

- ▶ Switch off the energy supply of the machine before any work.
- ▶ Secure the power supply against being switched on unintentionally.
- ▶ Check the machine for any residual energy that may be present.

WARNING



Risk of injury from crushing

There is a risk of crushing injuries during coupling.

- ▶ Always keep an adequate safety distance.

Assembly requirements

Permissible flatness tolerance [mm]	0,03
Strength class of the mounting screws	8.8

INFORMATION



Further installation information:

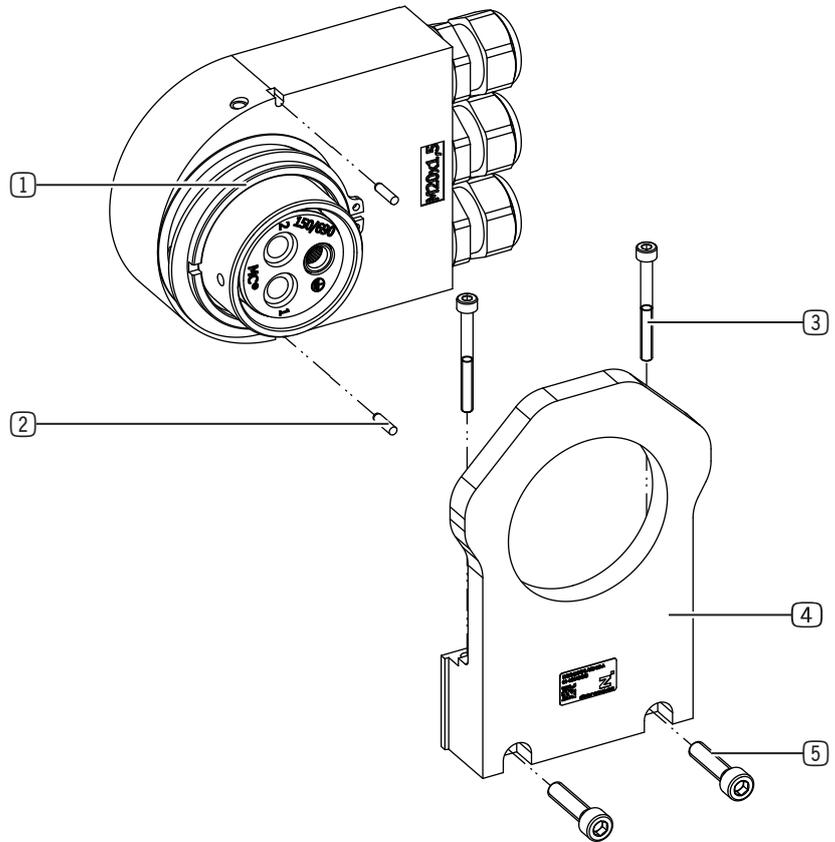
- The mounting screws are not included in the scope of delivery.

- ▶ Install the product on an appropriate mounting surface in accordance with the flatness specifications.
- ▶ Make sure that the mounting piece is sufficiently rigid.
- ▶ Ensure the cleanliness of the connection surfaces.
- ▶ Please note the permitted tightening torques of the mounting screws at www.zimmer-group.com/en/td.

10.1 Installing the product

10.1.1 Electrical products

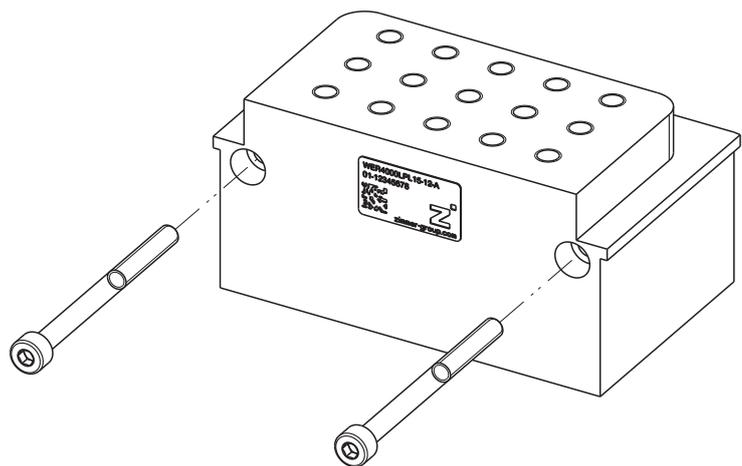
- ▶ Detach the product from the plate by unscrewing the retaining ring.
- ▶ Insert the plate at the desired mounting position on the tool changer.
- ▶ Install the plate using the included mounting screws.
- ▶ Comply with the permitted tightening torques of the mounting screws.
- ▶ Position the product on the plate using straight pins.
- ▶ Mount the product on the plate again using the retaining ring.



- ① Circlip
- ② Mounting screw M4
- ③ Straight pins
- ④ Plate
- ⑤ Mounting screw M6

10.1.2 Pneumatic products

- ▶ Insert the product at the desired mounting position on the tool changer.
- ▶ Mount the product using the mounting screws.
- ▶ Comply with the permitted tightening torques of the mounting screws.



10.1.3 Hydraulic products

WARNING



Risk of injury in case of non-compliance

At operating pressures of 30 bar and higher, high forces are exerted that require the fluidic products to have an additional support or be locked.

- Support on the robot and tool.
 - Pneumatic locking
- ⇒ Without appropriate measures, leaks may result.

WARNING



Risk of injury in case of non-compliance

- ▶ Note that the products reduce the maximum possible axial force of the tool changer.
 - ▶ The pressure-dependent axial force of the products must be subtracted from the maximum possible axial force of the tool changer.
- ▶ You can find the information in the technical data sheet on our website.

INFORMATION



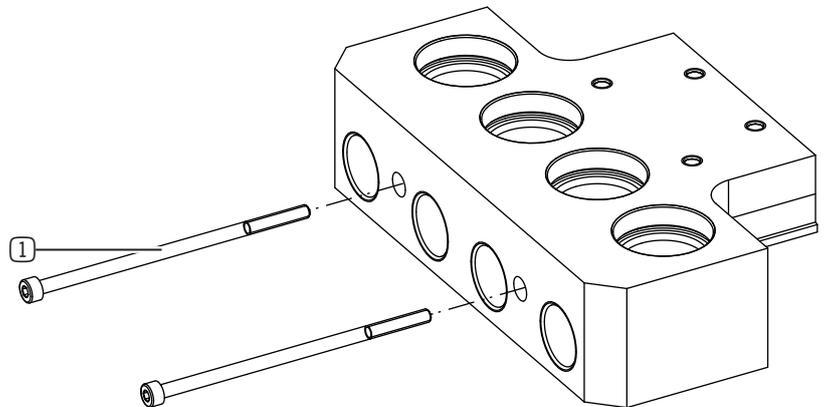
This chapter pertains to the products WER4000FFL01-13-A, WER4000FFL02-13-A, WER4000FFL04-13-A, WER4000LFL01-13-A, WER4000LFL02-13-A and WER4000LFL04-13-A.

INFORMATION



- ▶ Make sure that the loads are spaced out evenly when arranging the products.

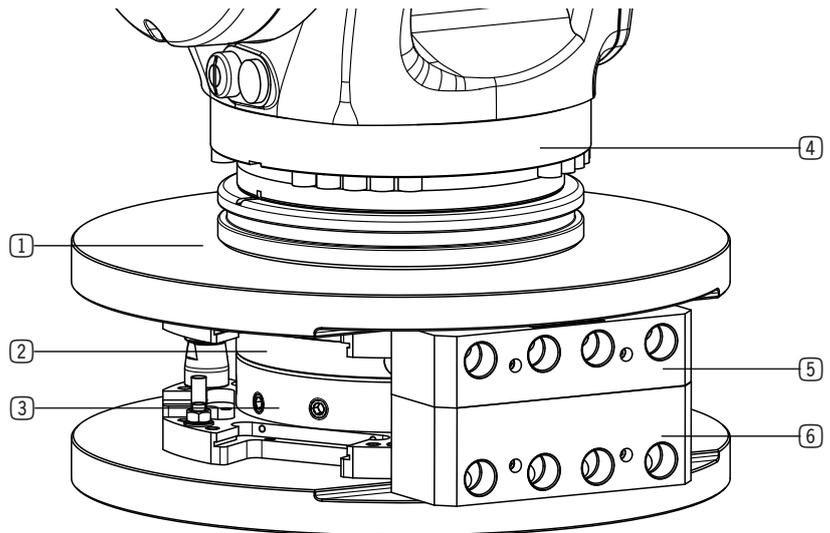
- ▶ Insert the product at the desired mounting position on the tool changer.
- ▶ Mount the product using the mounting screws.
- ▶ Comply with the permitted tightening torques of the mounting screws.



- ① Mounting screw M4

► Make sure that fluidic products are completely covered in their width and at least 70% towards the outside.

- ① Bracing
- ② Stationary part of the tool changer
- ③ Loose part of the tool changer
- ④ Robot
- ⑤ Stationary part of the energy element
- ⑥ Loose part of the energy element



10.1.3.1 Determining the support thickness for the WWR1000 series

INFORMATION



In the following table, the thickness of the support corresponds to the minimum requirement.

Number of products	Pressure [bar]	Bracing thickness [mm]	
		Steel	Aluminum
1	30	4	5
1	50	6	8
1	100	7	9
1	150	9	11
1	200	10	13
1	250	12	16
2	30	5	7
2	50	7	10
2	100	9	12
2	150	11	15
2	200	13	17
2	250	15	21
4	30	6	9
4	50	9	13
4	100	11	16
4	150	13	19
4	200	16	23
4	250	19	27

10.2 Installing the energy supply

INFORMATION



The pneumatic and hydraulic products are connected to the respective line system using the connecting thread.

- ▶ Make sure that the pressure class is correct when selecting suitable hoses.
- ▶ You can find the information about connecting threads on the technical data sheet on our website.

10.2.1 Electrical products

NOTICE



- ▶ If necessary, install the energy supply for electrical products before installing the product on the tool changer.

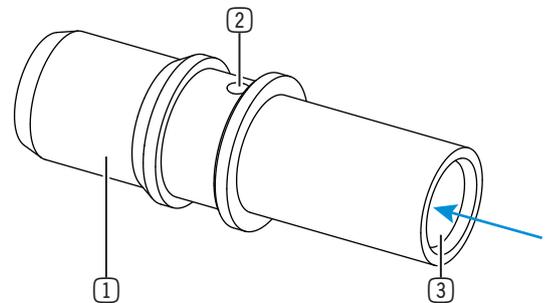
There are sockets that are crimped directly to the line for electric power transmission.

Sockets are available for 25 and 35 mm² cable cross-sections.

10.2.1.1 Assembling lines

- ▶ Remove the insulation on the line at a length of 16 ± 0.5 mm.
- ▶ Guide the line into the crimping sleeve until you can see it in the viewing hole.
- ▶ Establish the cable connection using a crimping tool.
- ▶ Mark the ground wire.

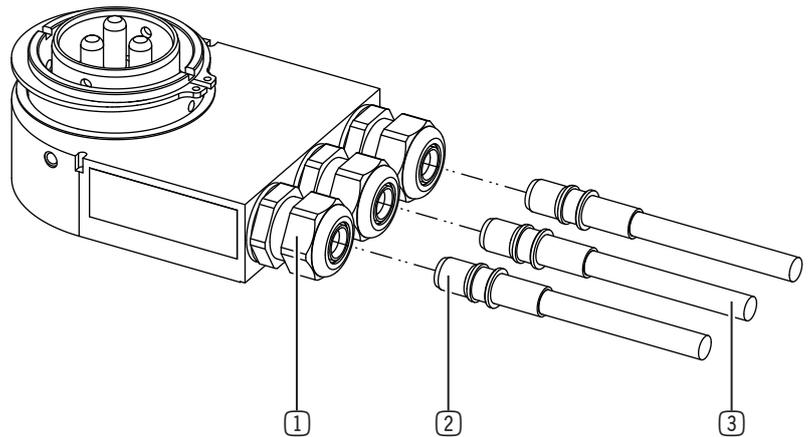
- ① Socket
- ② Viewing hole
- ③ Crimping sleeve



10.2.1.2 Connecting the lines

- ▶ Loosen the cable screws.
- ▶ Place the cable screws on the lines.
- ▶ Insert the sockets into the connection on the housing until they engage.
 - ▶ First, connect the ground wire in the middle.
- ▶ Tighten the cable screws.
 - ▶ Comply with the maximum tightening torque of 3 Nm.

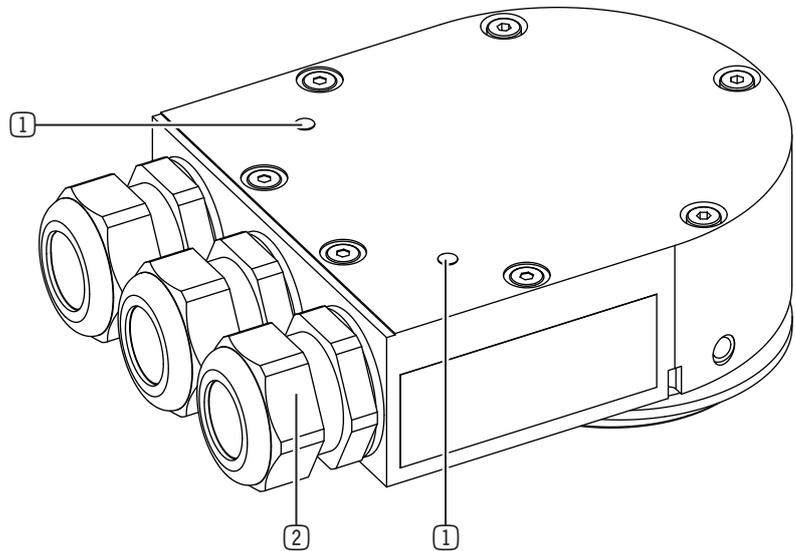
- ① Cable screw
- ② Socket
- ③ Ground wire



10.2.1.3 Removing lines

- ▶ Loosen the cable screws.
- ▶ Using a suitable tool, press on the pressure point on the opposite side of the housing.
 - ▶ To loosen the middle line, press both pressure points on the housing at the same time.
- ▶ Pull the line out with a slight turning movement.

- ① Pressure point
- ② Cable screw



10.2.2 Pneumatic products

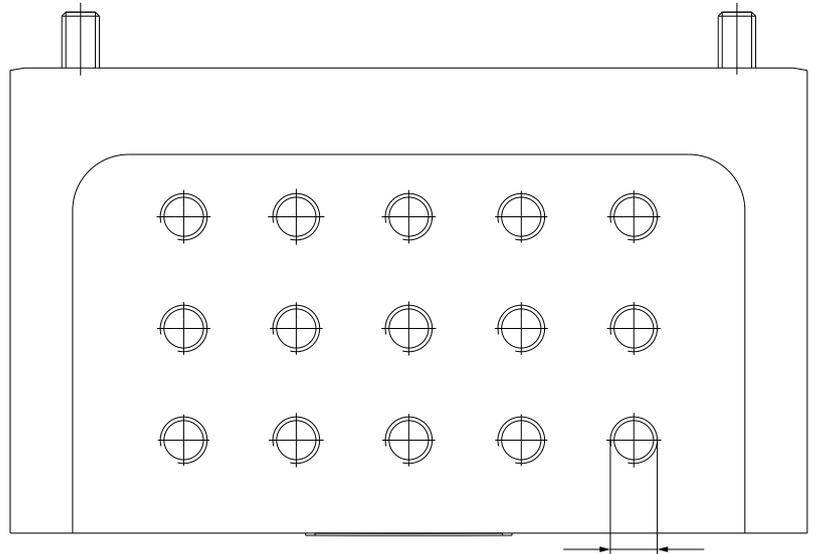
NOTICE



For easier installation and line feed, the supply lines should only be installed after the product is installed on the tool changer.

The adjacent image serves as an example.

- ▶ Screw the connections into the provided threads.
- ▶ For the thread size and number, refer to the technical data sheet on our website.



10.2.3 Hydraulic products

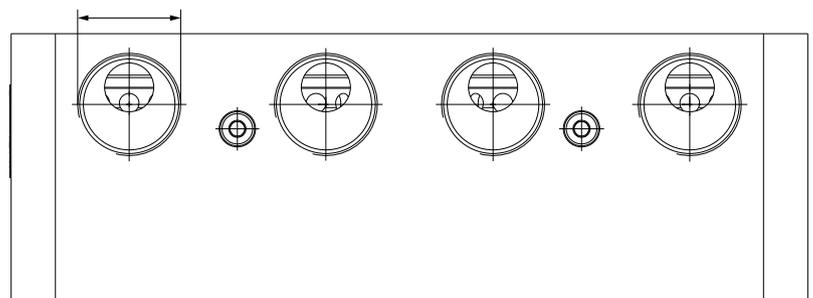
NOTICE



For easier installation and line feed, the supply lines should only be installed after the product is installed on the tool changer.

The adjacent image serves as an example.

- ▶ Screw the connections into the provided threads.
- ▶ For the thread size and number, refer to the technical data sheet on our website.



11 Maintenance

CAUTION



Risk of burns from hot surfaces

During operation and commissioning, the surfaces of the product may become hot.

- ▶ Observe the recommended cooling temperature in accordance with standard EN ISO 13732-1.
- ▶ Wear suitable protective equipment.

NOTICE



Material damage resulting from blowing out with compressed air

Blowing out the product with compressed air can cause malfunctions.

- ▶ Never purge the product with compressed air.

NOTICE



Material damage caused by unsuitable cleaning materials

Seals, insulation, coatings and other surfaces may be damaged by solvent-based cleaning agents.

- ▶ Make sure that no liquids penetrate the product.
- ▶ Use chemically and biologically neutral cleaning agents.
- ▶ Use cleaning agents that are categorized as being nonhazardous to health.
- ▶ Use soft, lint-free cloths for cleaning the surface.

The use of the following cleaning agents is strictly prohibited:

- Acetone
- Cleaning solvent
- Nitrocellulose thinner/turpentine oil (solvents)

NOTICE



Material damage caused by sharp-edged tools

Hard scrubbers, brushes or blades can damage contacts and flat surfaces.

- ▶ Do not clean the product using any sharp-edged tools.

NOTICE



Non-compliance may result in material damage.

- ▶ Perform regular leak tests on pneumatic and fluidic products.
- ▶ Replace leaky component parts immediately.

Maintenance-free operation of the product is guaranteed for a specified number of cycles.

Transmission type	Mating cycles
Electric	500,000
Hydraulic	1 million
Pneumatic	5 million

- ▶ Note that the product could become damaged under the following circumstances:
 - Operation with impermissible compressed air
 - Dirty environment
 - Improper use and use that does not comply with the performance data
 - Permissible temperature range not observed
 - ▶ Even though the product is maintenance-free as mentioned above, perform a regular visual inspection to check for any damage or contamination.
 - ▶ Have maintenance work that requires disassembly of the product performed by customer service only.
- ⇒ Dismantling and reassembling the product without authorization may result in complications, as special installation equipment is required in some cases. Zimmer Group GmbH accepts no liability for any resulting malfunctions or damage.

12 Decommissioning/disposal

INFORMATION



When the product reaches the end of its operational phase, it can be completely disassembled and disposed of.

- ▶ Disconnect the product completely from the power supply.
- ▶ Dispose of the components properly according to the material groups.
- ▶ Comply with the locally applicable environmental and disposal regulations.

13 RoHS declaration

in terms of the EU Regulation 2011/65/EU

Name and address of the manufacturer:

Zimmer Group GmbH

 Am Glockenloch 2
77866 Rheinau, Germany

 +49 7844 9138 0

 info@zimmer-group.com

 www.zimmer-group.com

We hereby declare that the incomplete machine described below

Product designation: Energy elements

Type designation: WER4000

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

Michael Hoch

Authorized representative for the
compilation of relevant technical
documents

Rheinau, Germany, 2021-07-01

(Place and date of issuance)



Martin Zimmer
(Legally binding signature)
Managing Partner

14 Declaration of Incorporation

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

Name and address of the manufacturer:

Zimmer Group GmbH

 Am Glockenloch 2
77866 Rheinau, Germany

 +49 7844 9138 0

 info@zimmer-group.com

 www.zimmer-group.com

We hereby declare that the incomplete machine described below

Product designation: Energy elements

Type designation: WER4000

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

We hereby confirm that all the relevant basic health and safety requirements for the product have been observed and implemented.

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

We also declare that the specific technical documents were produced in accordance with Annex VII Part B of this Directive. We undertake to provide the market supervisory bodies with electronic versions of special documents for the incomplete machine through our documentation department, should they have reason to request them.

The incomplete machine may only be commissioned if it has been ascertained, if applicable, that the machine or system in which the incomplete machine is to be installed satisfies the requirements of Directive 2006/42/EC on Machinery and an EC Declaration of Conformity has been drawn up in accordance with Annex II 1 A.

Kurt Ross

Authorized representative for the compilation of relevant technical documents

Rheinau, Germany, 2021-07-01

(Place and date of issuance)



Martin Zimmer
(Legally binding signature)
Managing Partner

15 Declaration of Conformity

In terms of the EU Directive 2014/35/EU (Low voltage directive)

Name and address of the manufacturer:

Zimmer Group GmbH

Am Glockenloch 2

77866 Rheinau, Germany

+49 7844 9138 0

info@zimmer-group.com

www.zimmer-group.com

We hereby declare that the product described below

Product designation: Energy elements

Type designation: WER4000

conforms to the requirements of the 2014/35/EC directive in its design and the version we put on the market.

The following harmonized standards have been used:

DIN EN ISO 12100	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: General requirements

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

Kurt Ross

Authorized representative for the compilation of relevant technical documents

Rheinau, Germany, 2021-07-01

(Place and date of issuance)



Martin Zimmer
(Legally binding signature)
Managing Partner