

INSTALLATION AND OPERATING INSTRUCTIONS

Energy elements

WER4000 series

DDOC01250

THE KNOW-HOW FACTORY

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1 Supporting documents

NOTICE



Read through the installation and operating instructions before installing or working with 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 lifetime.



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

- Installation and operating 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 installation and operating instructions, "product" refers to the product designation on the title page!

1.1 Notices and graphics in the installation and operating 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 for people or that may result in material or environmental damage. Ignoring these notices may result in slight, temporary injuries or damage to the product or to 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.

NOTICE



General notices contain usage tips and valuable information, but no warnings of dangers to health.

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

Installation, commissioning, maintenance and repairs may only be performed by qualified specialists in accordance with these installation and operating instructions.

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 installation and operating 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 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.
- ▶ Always adhere to the required maintenance intervals.
- ▶ When using the product under extreme conditions, adjust the maintenance interval according to the degree of contamination.

3 Proper use

NOTICE



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 installation and operating instructions.
- ▶ Operate the product only when it is in a technical condition that corresponds to the guaranteed parameters and operating conditions.

⇒ Zimmer GmbH shall accept no liability for any damage caused by improper use. The operator bears sole responsibility.

INFORMATION



Proper use also includes compliance with the threshold values for the electrical parameters shown in the corresponding data sheet.

- ▶ You can find the information in the technical data sheet on our website.
- ▶ Please contact Zimmer Customer Service if you have any questions.

4 Personnel qualification

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

5 Product description

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

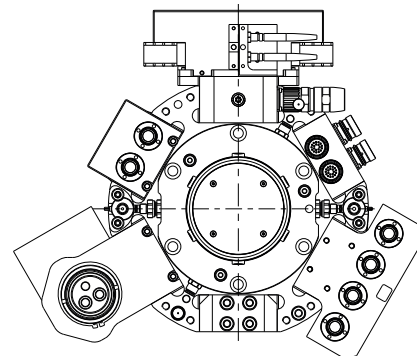
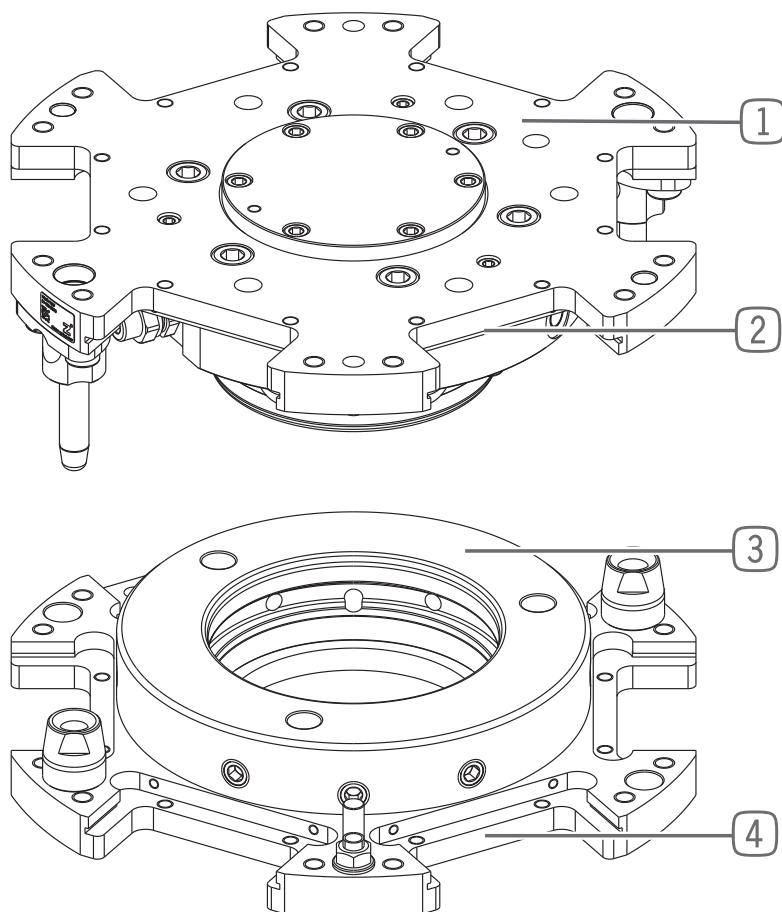
The WWR1000 series tool changers have five mounting positions for energy elements.

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, while the loose part is always on the tool side.

Example 1: WWR1160

WWR1160F with energy elements



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

INFORMATION

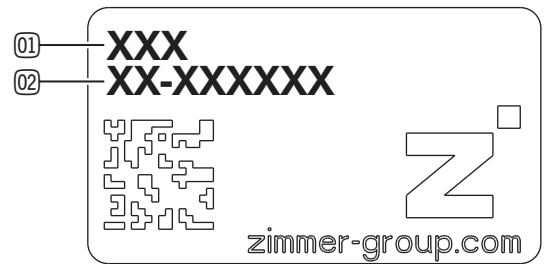


- Shut off electrical and hydraulic power before decoupling and in the decoupled state.

5.1 Type plate

A type plate is attached to the housing of the product.

The article number and the confirmation number are shown on the type plate.



01 Article number

02 Confirmation number

5.2 Product variants

INFORMATION



► You can find information about product variants and their compatibility on our website.

6 Functional description

The energy elements are suitable for the transfer of fluids and electrical energy.

7 Technical data

INFORMATION



- ▶ You can find the information in the technical data sheet on our website.
- This data varies within the series, depending on the specific design.
- ▶ Please contact Zimmer Customer Service if you have any questions.

7.1 Protection class

INFORMATION



- ▶ You can find the information in the technical data sheet on our website.

8 Accessories/scope of delivery

INFORMATION



- If any accessories not sold or authorized by Zimmer GmbH are used, the function of the product cannot be guaranteed. Zimmer 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/observe and adhere to the temperature range.
 - ▶ Avoid wind/drafts/water condensation formation.
 - ▶ Cover the product with a weatherproof, tear-resistant foil to prevent dust.
 - ▶ 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



Risk of injury in case of non-compliance

Risk of injury due to exposed pin contacts that are live at all times.

- ▶ Never mount the loose part of electrical products on the stationary part of a tool changer.

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.

NOTICE



- ▶ Installation may only be carried out by qualified personnel in accordance with these installation and operating instructions.
- ▶ Switch off the power supply before any assembly, installation or maintenance work.

INFORMATION



Requirements for the mounting surface:

- Permissible unevenness: 0.03 mm

Further installation information:

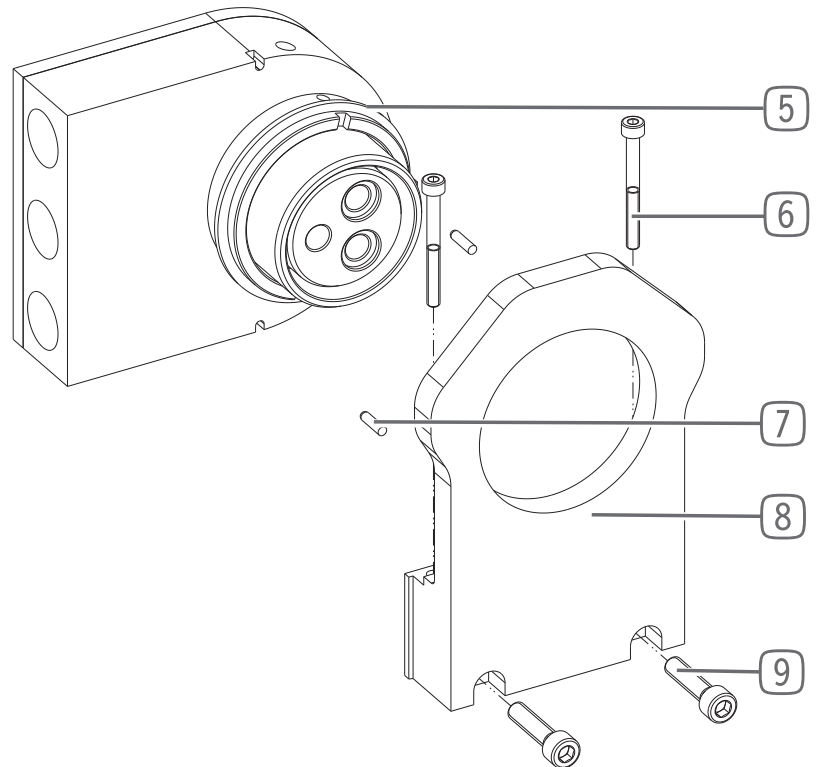
- The mounting screws are not included in the scope of delivery.
- Strength class of the mounting screws is at least 8.8 (DIN EN ISO 4762)
- ▶ Observe the tightening torque of the mounting screws.
- ▶ Verify the permitted load capacity of the required screw connections in accordance with VDI 2230.

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.
- ▶ Observe the tightening torque of the mounting screws.
- ▶ Position the product on the plate using straight pins.
- ▶ Mount the product on the plate again using the retaining ring.

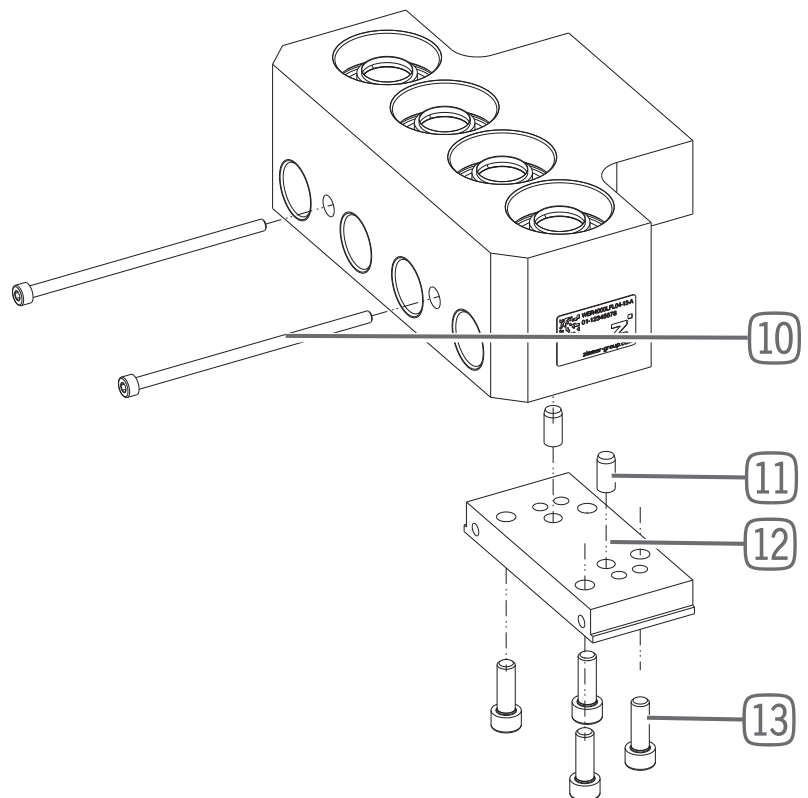
- ⑤ Circlip
- ⑥ Mounting screw M4
- ⑦ Straight pins
- ⑧ Plate
- ⑨ Mounting screw M6



10.1.2 Hydraulic products

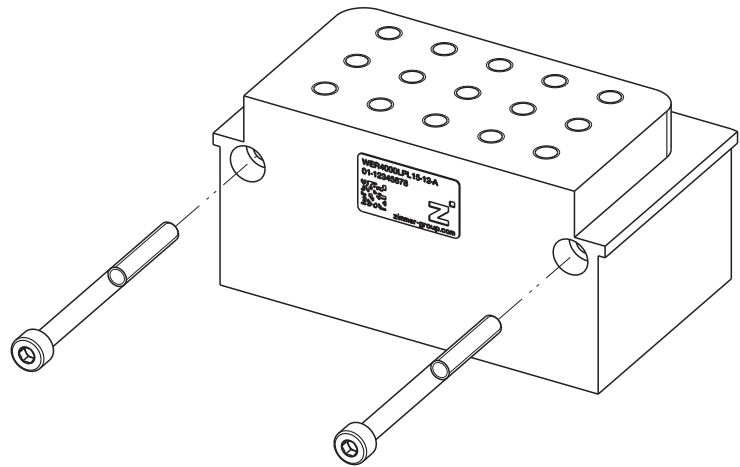
- ▶ Remove the adapter plate.
- ▶ Insert the adapter plate at the desired mounting position on the tool changer.
- ▶ Install the plate using the included mounting screws.
- ▶ Observe the tightening torque of the mounting screws.
- ▶ Position the product on the adapter plate using straight pins.
- ▶ Mount the product on the adapter plate using the mounting screws.

- ⑩ Mounting screw M4
- ⑪ Straight pins
- ⑫ Adapter plate
- ⑬ Mounting screw M6



10.1.3 Pneumatic products

- ▶ Insert the product at the desired mounting position on the tool changer.
- ▶ Mount the product using the mounting screws.
- ▶ Observe the tightening torque of the mounting screws.



10.2 Installing the energy supply

CAUTION



Non-compliance may result in material damage.

- ▶ When routing the supply lines, ensure that the joints of the robot arm or tool changer move easily enough.
- ▶ Switch off the power supply to the machine before carrying out any work.
- ▶ Secure the power supply against being switched on unintentionally.
- ▶ Use only supply lines of adequate length.
- ▶ Comply with the permitted bending radii of the supply lines.
- ▶ Use suitable protection systems and fastening points for the supply lines.
- ▶ When routing and securing the supply lines, make sure that they do not put any additional load on the product.

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

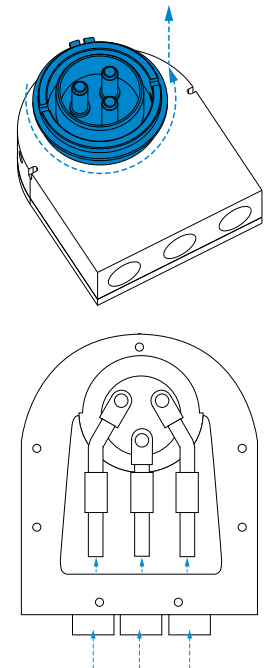


For easier installation, Zimmer GmbH recommends completing the electrical connection before installing the product on the tool changer.

Thanks to a quick-change system for the contact inserts, the inserts can be quickly and easily installed and removed for cable mounting.

The plug-in connectors for electrical power transmission are equipped with crimp connectors for plugging.

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



- ▶ Open the housing cover.
- ▶ Feed the cable through the cable gland.
- ▶ Pull the crimp connector off of the contact.
- ▶ Establish the cable connection using a crimping tool.
- ▶ Place the crimp connector on the corresponding contact again.
- ▶ Screw on the cable gland.
- ▶ Close the housing cover.

10.2.2 Hydraulic products

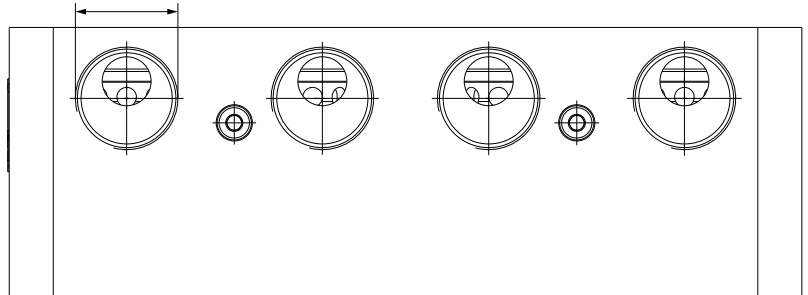
NOTICE



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.
- ▶ Close off unused connections using suitable dummy plugs.



10.2.3 Pneumatic products

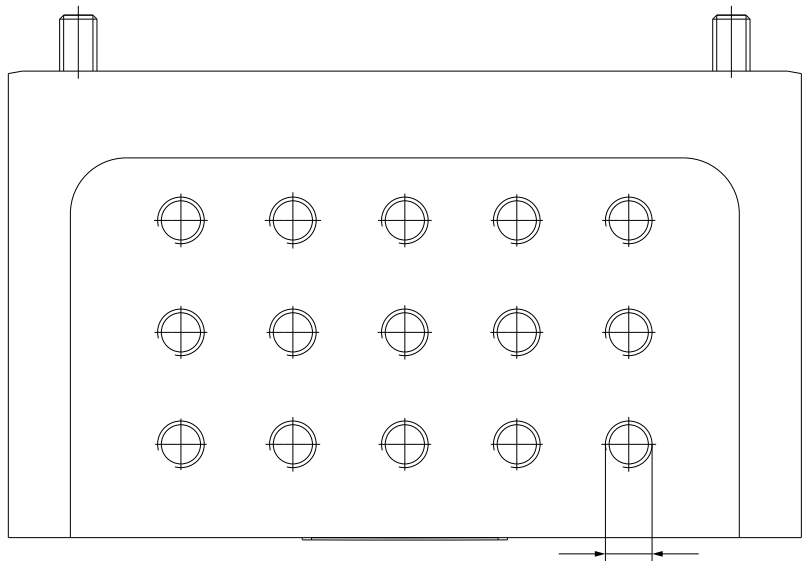
NOTICE



For easier installation and line feed, Zimmer GmbH recommends installing the supply lines only 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.
- ▶ Close off unused connections using suitable dummy plugs.



11 Service life

The following service life values can be expected if maintenance is carried out correctly.

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

12 Maintenance

This maintenance work includes inspection, maintenance and overhauling.

Maintenance-free operation includes the following number of cycles, depending on the version of the product:

Transmission type	Maintenance work
Electric	<ul style="list-style-type: none"> ▶ Carry out a visual inspection every 50,000 plug cycles or every 8 weeks. ▶ Clean the pins if there is a small amount of dirt or minor discoloration. ▶ Check the electrical function. ▶ Replace damaged products.
Hydraulic	<ul style="list-style-type: none"> ▶ Carry out a visual inspection every 50,000 plug cycles or every 8 weeks. ▶ Clean the contact surfaces if there is a small amount of dirt or minor discoloration. ▶ Check the leak-tightness. ▶ Replace damaged products.
Pneumatic	<ul style="list-style-type: none"> ▶ Carry out a visual inspection every 50,000 plug cycles or every 8 weeks. ▶ Clean the contact surfaces if there is a small amount of dirt or minor discoloration. ▶ Check the leak-tightness. ▶ Replace damaged products.

- ▶ Comply with the specifications for maintenance work in order to ensure failure-free operation.
 - ▶ Take into account the maintenance work in the maintenance plan of the complete system.
 - ▶ Document all maintenance work.
- ⇒ The operator is responsible for documenting maintenance work.

12.1 Visual inspection

The visual inspection merely includes visually inspecting component parts and their function.

If any irregularities or damage are identified during the visual inspection, a more detailed check of the component parts must be carried out.

12.2 Check for leaks

A check for leaks is carried out for pneumatic and hydraulic products. The check for leaks involves visually and acoustically inspecting the connection points of the supply lines and the transitions of the products themselves. The check can also be carried out using a leak tester.

- ▶ Replace leaky component parts immediately.

12.3 Cleaning

Clean products and contact surfaces are essentially important for the functional safety.

⇒ Contamination can lead to malfunctions.

12.3.1 Cleaning electrical products

NOTICE



Non-compliance may result in material damage.

Cleaning the contact pins with liquid or aggressive agents or hard brushes or other tools can lead to damage of the contact pins and to malfunctions.

- ▶ Do not clean the product with any cleaning agents that are liquid or contain solvents.
- ▶ Do not clean the product using any sharp-edged tools.

INFORMATION



If there is severe contamination that cannot be cleaned using a cloth or if there are deformations, cracks or other mechanical damage in the area of the contact pins or contact holder, these elements must be replaced completely.

- ▶ Please contact Zimmer Customer Service.

- ▶ Clean contamination from electrical contacts using suitable fiberglass pencils.
- ▶ In order to prevent damage, refrain from cleaning the socket contacts.

12.3.2 Cleaning hydraulic products

INFORMATION



- ▶ You can find the information in the technical data sheet on our website.
- ▶ Please contact Zimmer Customer Service if you have any questions.

- ▶ Use soft, lint-free cloths for cleaning.
- ▶ Replace damaged products.

12.3.3 Cleaning pneumatic products

NOTICE



Non-compliance may result in material damage.

The surface of the loose part serves as the sealing surface and must be free of damage and dirt. Cleaning the surface using liquid or aggressive agents or hard brushes or other tools can lead to damage.

- ▶ Do not clean the product with any cleaning agents that are liquid or contain solvents.
- ▶ Do not clean the product using any sharp-edged tools.

INFORMATION



If there is severe contamination that cannot be cleaned using a cloth or if there are deformations, cracks or other mechanical damage in the area of the contact pins or contact holder, these elements must be replaced completely.

- ▶ Please contact Zimmer Customer Service.

- ▶ Use soft, lint-free cloths for cleaning.
- ▶ Replace damaged products.

13 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.

14 RoHS declaration

in terms of the EU Regulation 2011/65/EU

Name and address of the manufacturer:

Zimmer GmbH

📍 Im Salmenkopf

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 series

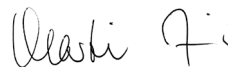
conforms to the requirements of the directive in its design and the version we put on the market.

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

15 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

Im Salmenkopf
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 series

conform 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.

Basic health and safety requirements:

No. 1.1.2, No. 1.1.3, No. 1.5, No. 1.3.2, No. 1.3.4, No. 1.3.7, No. 1.5.3, No. 1.5.4, No. 1.5.8, No. 1.6.4, No. 1.7.1, No. 1.7.4

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

16 Declaration of Conformity

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

Name and address of the manufacturer:

Zimmer GmbH

📍 Im Salmenkopf

77866 Rheinau, Germany

☎ +49 7844 9138 0

✉ info@zimmer-group.com

💻 www.zimmer-group.com

We hereby declare that the products described below

Product designation: Energy elements

Type designation: WER4000 series

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
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DIN EN 60204-1	Safety of machinery – Electrical equipment of machines - Part 1: General requirements
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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