

INSTALLATION AND OPERATING INSTRUCTIONS

Energy elements

WER1000, WER2000

DDOC00213

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 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

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.
- ▶ 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 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 Customer Service if you have any questions.

4 Personnel qualification

WARNING



Injuries and material damage due to inadequate qualification

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

INFORMATION



- ▶ You can find information about suitable installation sizes of tool changers in the technical data sheet on our website.
- ▶ Please contact Customer Service if you have any questions.

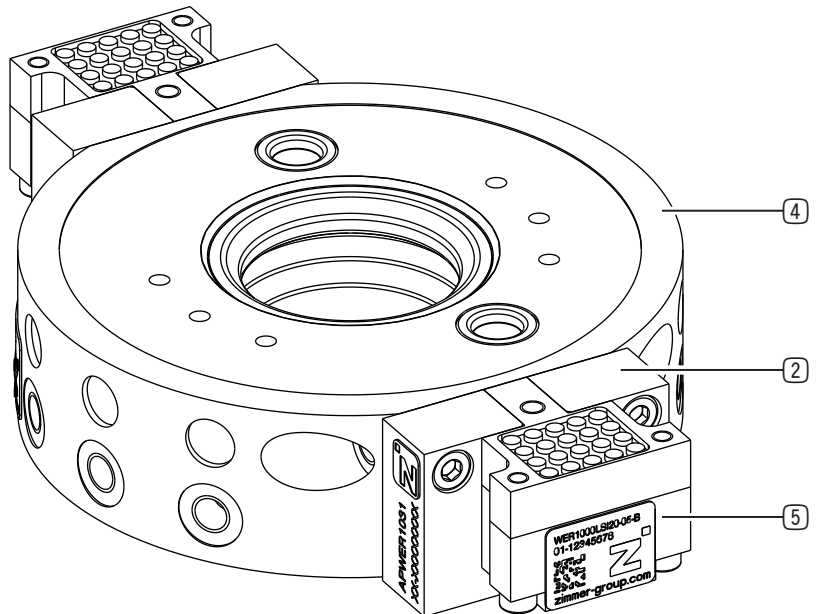
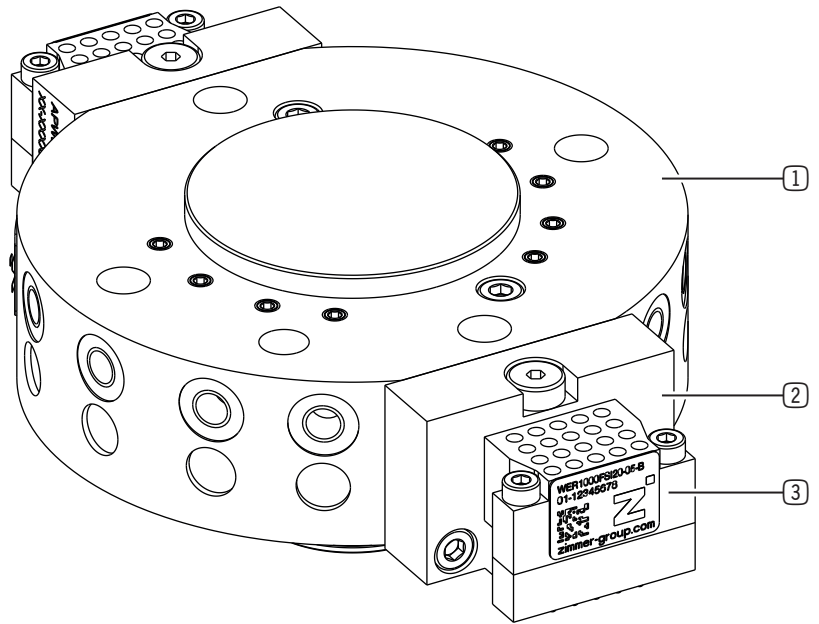
The products are connected to tool changers by adapter plates. Depending on the version of the adapter plate, multiple products can be connected.

The stationary part and loose part can be differentiated by the identifier on the type plate:

- Stationary part: WER1000F
- Loose part: WER1000L

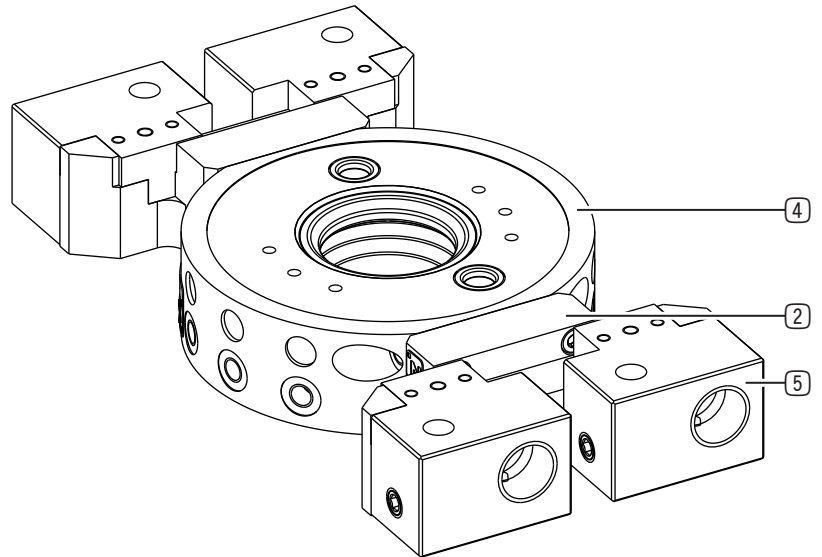
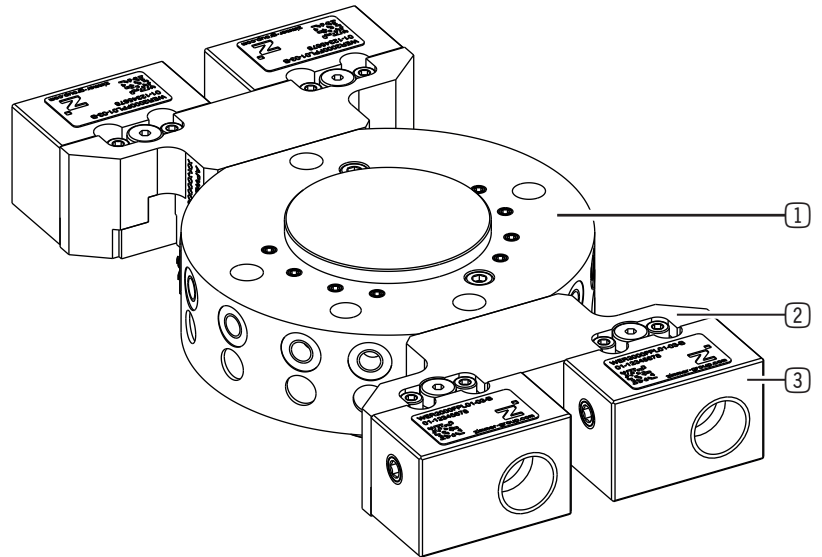
The stationary part of the product is always on the robot side, while the loose part is always on the tool side.

Example: WWR63-B with WER1000



- ① Tool Changer Fix Part
- ② Adapter plate
- ③ Energy Element Fix Part
- ④ Tool Changer Loose Part
- ⑤ Energy Element Loose Part

Example: WWR63-B with WER2000



- ① Tool Changer Fix Part
- ② Adapter plate
- ③ Energy Element Fix Part
- ④ Tool Changer Loose Part
- ⑤ Energy Element Loose Part

INFORMATION

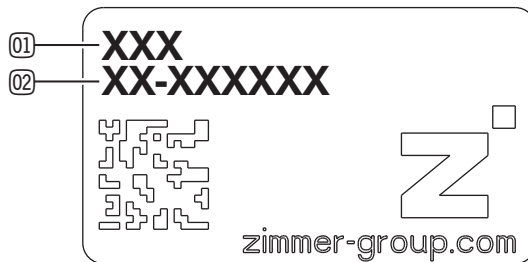


► Shut off electrical and hydraulic power before decoupling and in the decoupled state.

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.



① Article number

② 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 compressed air and electrical energy.

Products that have the hot plug function allow coupling or decoupling of energized fixed and loose parts.

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 Customer Service if you have any questions.

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.
 - ▶ 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

**Risk of injury in case of non-compliance**

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

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

**Non-compliance may result in material damage.**

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.

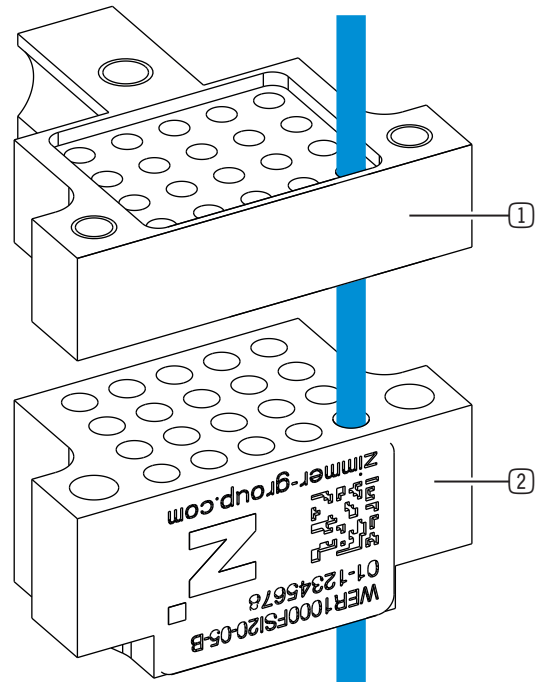
INFORMATION



Except for the products WER2000Fxxx-05-B, WER1000Fxxx-05-B, WER2000Lxxx-05-B and WER1000Lxxx-05-B, all others are already mounted when delivered.

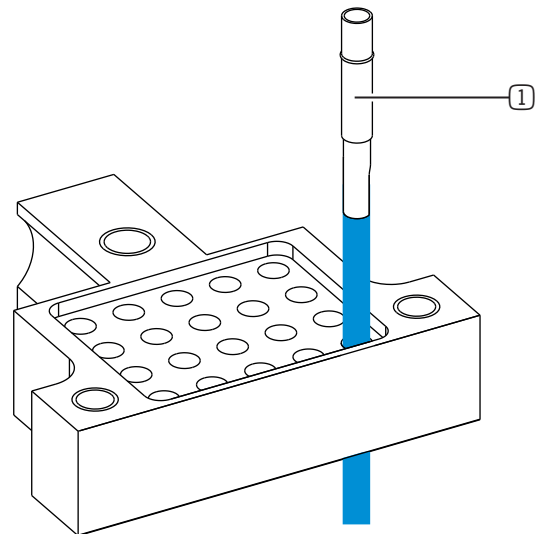
10.1 Installing energy element stationary part WERx000FSlxx-05-B

► Guide the cables through the cover and intake.



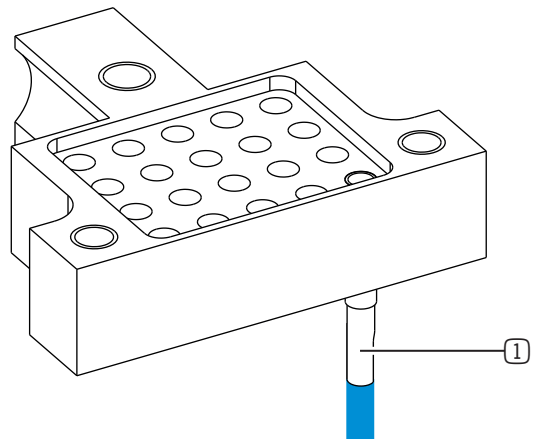
- ① Intake
- ② Cover

► Strip the cables.
► Solder the cables with the sleeves.



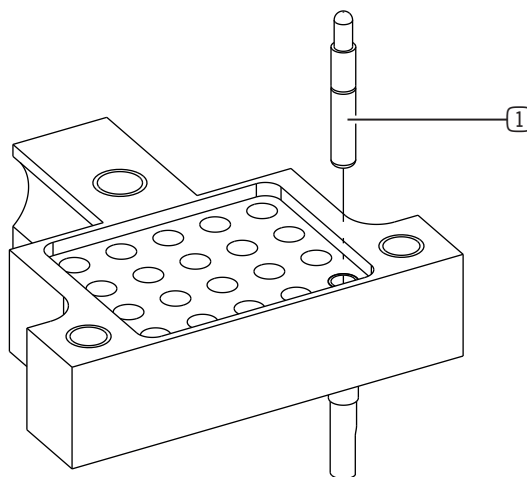
- ① Sleeve

► Push the sleeves back.
► Press the sleeves into the intake so they are flush with the surface.
► Make sure that the tool used has a larger diameter than the sleeves.



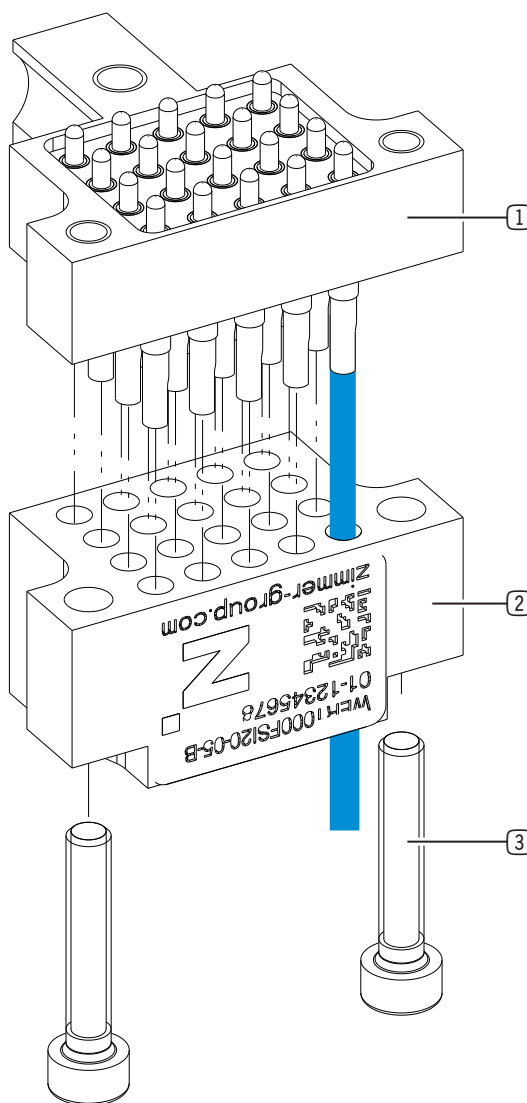
- ① Sleeve

- ▶ Press the spring contacts into the sleeves.
- ▶ Hold the sleeves from below to stabilize them.



① Spring contact

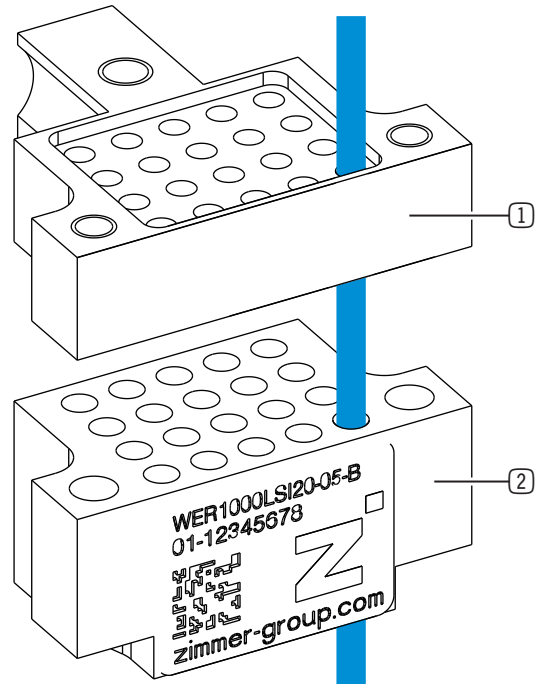
- ▶ Carefully pull the cables taut into the drilled holes on the cover.
- ▶ Slide the cover flush onto the intake.
 - ▶ Make sure that the cables are not twisted or clamped.
- ▶ Mount the cover on the intake with the mounting screws.



① Intake
 ② Cover
 ③ Mounting screw

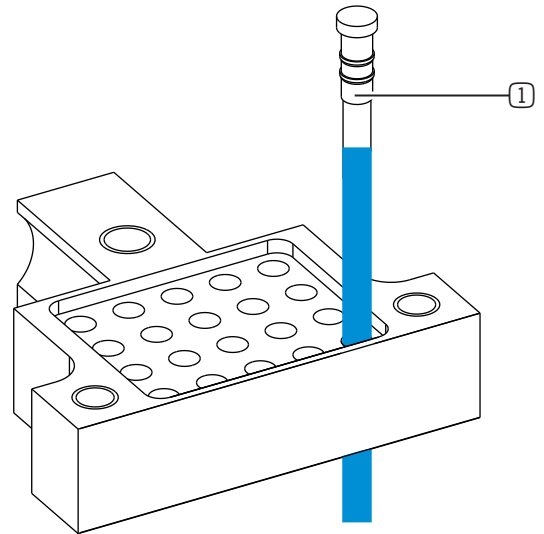
10.2 Installing energy element loose part WERx000LSixx-05-B

► Guide the cables through the cover and intake.



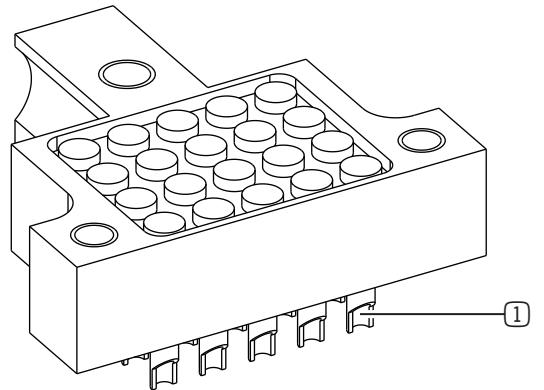
- ① Intake
- ② Cover

► Strip the cables.
► Solder the cables with the contacts.



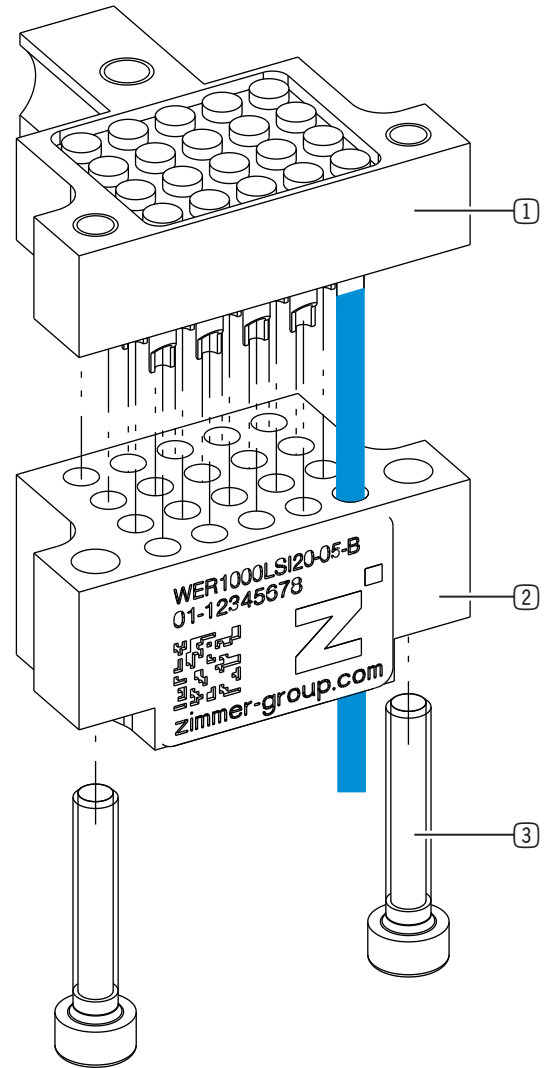
- ① Contact

► Push the contacts back.
► Press the contacts into the intake so they are flush with the surface.



- ① Contact

- ▶ Carefully pull the cables taut into the drilled holes on the cover.
- ▶ Slide the cover flush onto the intake.
 - ▶ Make sure that the cables are not twisted or clamped.
- ▶ Mount the cover on the intake with the mounting screws.



- ① Intake
- ② Cover
- ③ Mounting screw

10.3 Installing the product

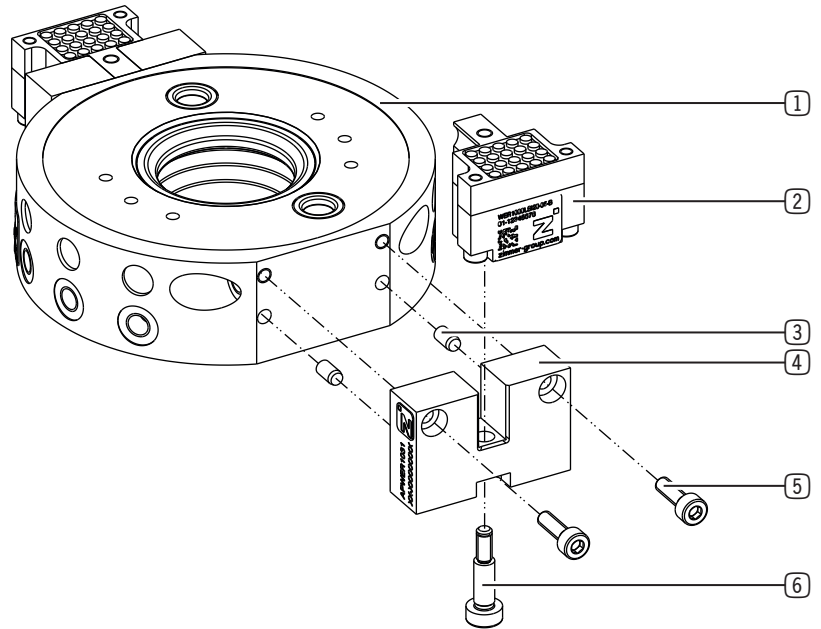
INFORMATION



The number of fitting screws varies within the series.

The installation is illustrated using the example of a WWR63-B series tool changer.

- ▶ Position the adapter plate on the tool changer with the straight pins.
- ▶ Mount the adapter plate on the tool changer by using the included mounting screws.
- ▶ Place the product in the adapter plate from above.
- ▶ Install the product with the fitting screw.



- ① Loose-part tool changer
- ② Loose-part energy element
- ③ Straight pins
- ④ Adapter plate
- ⑤ Mounting screw
- ⑥ Fitting screw

10.4 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.

10.4.1 Electrical products

NOTICE



For easier installation, the power supply should only be installed before the product is installed on the tool changer.

INFORMATION



- ▶ You can find the information about round plugs on the technical data sheet on our website.

- ▶ Connect the cables to the product using a round plug.

10.4.2 Pneumatic products

INFORMATION



- ▶ You can find the information about connecting threads on the technical data sheet on our website.

When they are coupled, pneumatic products seal using the pre-load of the seal. The pre-load is ensured by having the elements at a defined distance from each other.

- ▶ Connect the products to the power system using connecting threads.
 - ▶ Make sure that the pressure class is correct when selecting suitable hoses.

10.5 Installing the protective elements

NOTICE



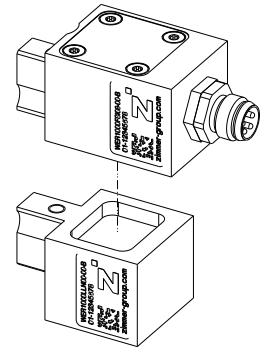
Non-compliance may result in material damage.

The products are open while decoupled. Protective elements are necessary to protect products that are temporarily not being used.

- ▶ While the products are uncoupled, protect them from dirt from the outside.

Protective elements protect unneeded stationary parts of the products from outside contamination.

For electrical products, the side with the exposed parts for the contacts must point in the direction of the product to be protected. The adjacent image shows a combination with WER1000FSI04-00-B as an example.



10.6 Installing the sensors

INFORMATION



► You can find information on our website.

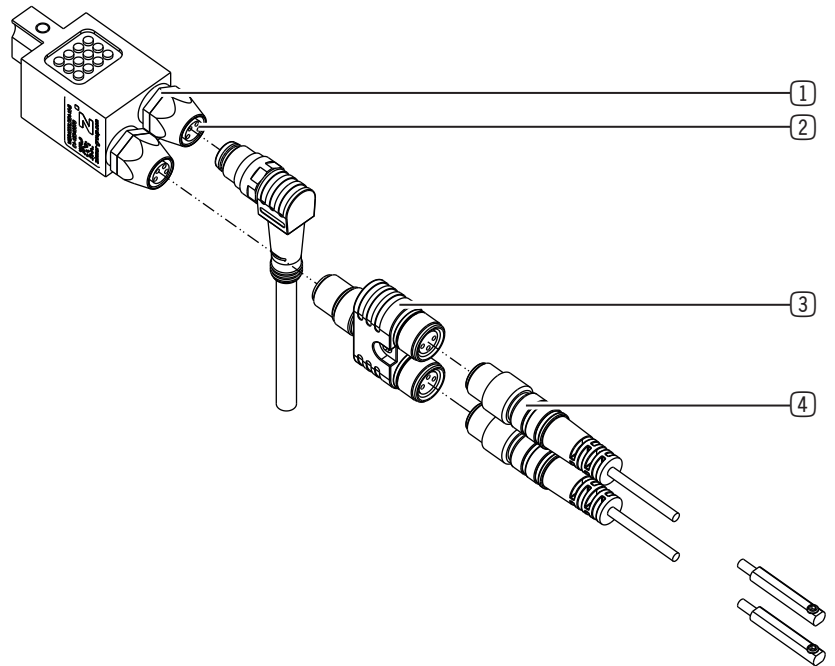
INFORMATION



Using a Y-distributor, you can connect two sensors.

The orientation of the round plug on the product can be changed.

- Loosen the lock nut.
- Turn the round plug to the desired position.
- Retighten the lock nut.



- ① Lock nut
- ② Round plug
- ③ Y-distributor
- ④ Sensor

11 Service life

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

Transmission type	Mating cycles
Electric	1 million
Electrical, hot plug	100,000
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.
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 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 contacts with liquid or aggressive agents or hard brushes or other tools can lead to damage of the contacts 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 contacts or contact holder, these components must be replaced completely.

- ▶ Please contact Customer Service.

- ▶ Clean contamination from electrical contacts using suitable fiberglass pencils.

12.3.2 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 contacts or contact holder, these components must be replaced completely.

- ▶ Please contact 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: WER1000, WER2000

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, 2021-08-20
(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:** WER1000, WER2000

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. 1.1.5, No. 1.3.2, No. 1.3.4, No. 1.3.7, No. 1.5.3, No. 1.5.4, 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	Rheinau, Germany, 2021-08-20	
Authorized representative for the compilation of relevant technical documents	(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:** WER1000, WER2000

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, 2021-08-20
(Place and date of issuance)

Martin Zimmer
(Legally binding signature)
Managing Partner