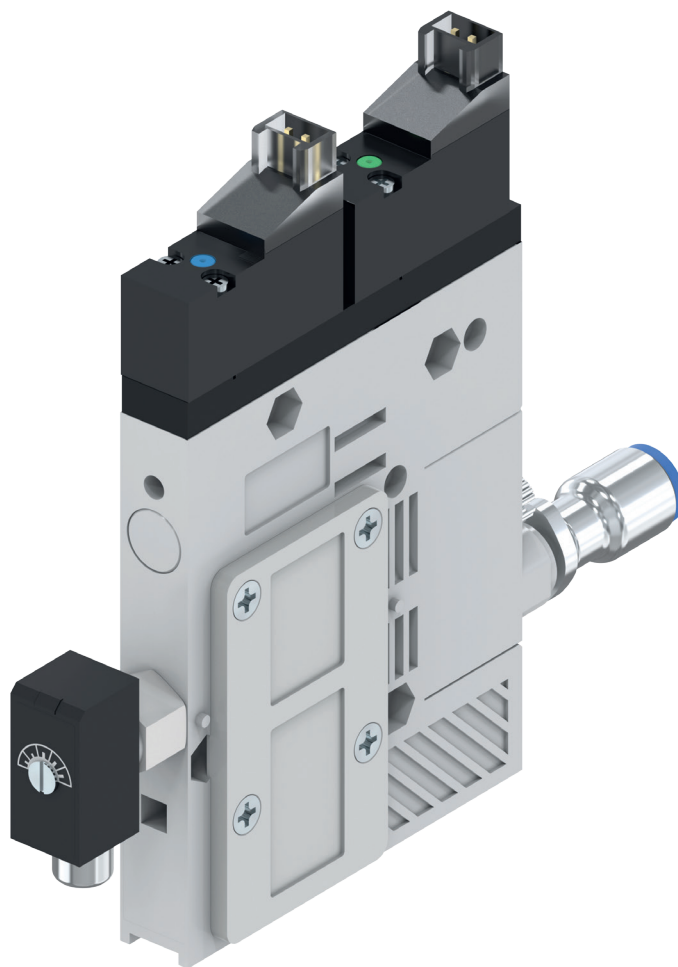




INSTALLATION AND OPERATING INSTRUCTIONS

Vacuum ejector

ZK

DDOC02391

THE KNOW-HOW FACTORY

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1 Introduction

1.1 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 (GTCs), including warranty information.

⇒ Only the documents currently available on the website are valid.

In these installation and operating instructions, “product” replaces the product designation on the title page.

1.2 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 people. 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 or 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 Group GmbH accepts no liability for any damage caused by improper use. The operator bears sole responsibility.
- ▶ Perform maintenance tasks, retrofitting or attachment work outside of the machine's danger zone when possible.
- ▶ When using the product under extreme conditions, adjust the maintenance interval according to the degree of soiling.
- ▶ Note that all suction cups release simultaneously, thus releasing the workpiece as soon as the vacuum circuit is interrupted.
- ▶ Check the completeness and tightening torques of all mounting screws.

NOTICE



Material damage and malfunction in case of non-compliance

- ▶ Observe the regulations for the vacuum switch and vacuum breaker.

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 Group GmbH accepts no liability for any damage caused by improper use. The operator bears sole responsibility.

- The product must not be operated in an environment that is subjected to vibrations and impacts.
- The product must not be operated in an environment that is subjected to corrosive gases, chemicals, seawater, water or steam.
- The product is intended for industrial use.
- The product is not suited for use in a potentially explosive atmosphere.
- Protection, such as a cover, must be provided in areas exposed to direct sunlight.
- The product must be protected from thermal radiation near heat sources.
- Suitable protective measures must be taken in areas where splashes of water, oil or solder, etc. may occur.

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 types of 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

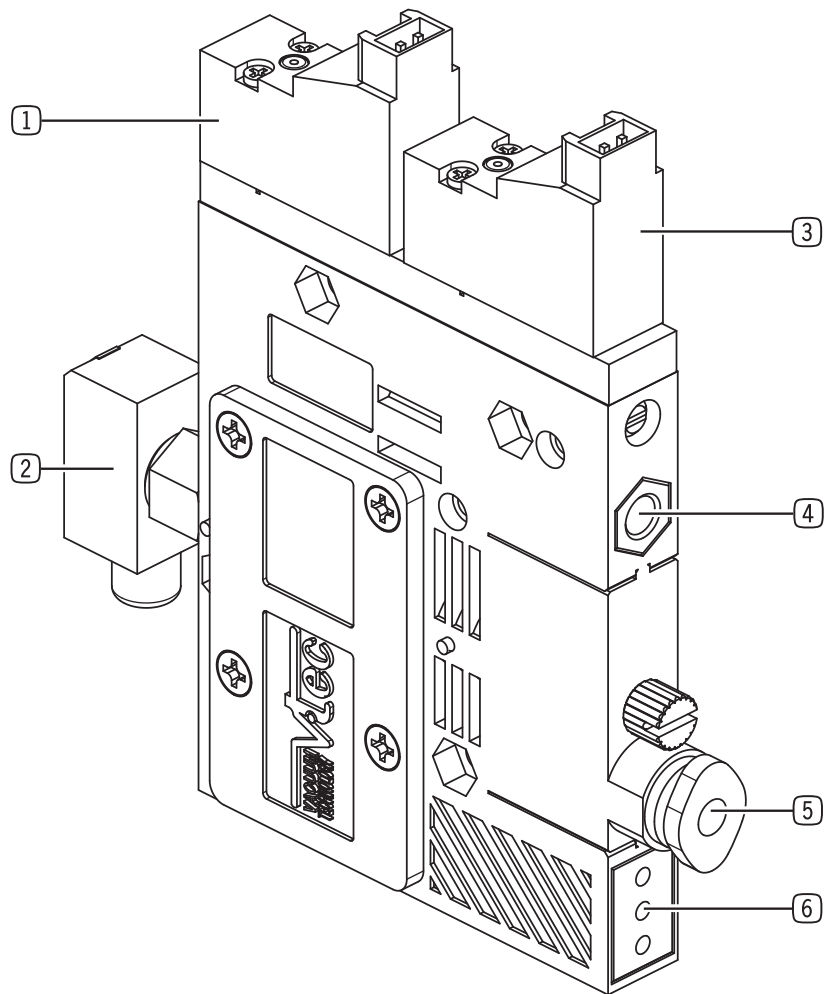
Personnel who work with the product must be familiar with the valid safety regulations and laws as well as the standards, guidelines and laws listed in this document.

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 product is used to generate a vacuum. The individual ejectors can also be used in combination with up to eight ejectors as a multi-unit. In this case, each ejector generates its own vacuum circuit.

The figure shows an example of a product variant.



- ① Air control valve
- ② Vacuum switch
- ③ Blow-off control valve
- ④ Pneumatic connection
- ⑤ Vacuum connection
- ⑥ Exhaust air

6 Functional description

The air control valve regulates the air supply to create the vacuum. The blow-off control valve ensures that the suctioned workpiece is released in a controlled manner. Larger installation sizes also have an adjustment screw below the air connection that can be used to increase the blow-off impulse. A vacuum filter prevents dust and dirt from entering the product via the vacuum connection.

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.

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. The accessories from Zimmer Group GmbH are specifically tailored to the individual products.
- For information on optional accessories and those included in the scope of delivery, refer to our website.

9 Storage

- ▶ Visually inspect all components.
- ▶ Clean all components until all contamination has been removed.
- ▶ Remove potential corrosion spots properly.
- ▶ Seal electrical connections with suitable covers.
- ▶ Seal pneumatic connections with suitable covers.
- ▶ Observe the following points when storing the product for longer periods of time:
 - ▶ Monitor the relative air humidity in the storage area.
 - ▶ Keep the storage location as dust-free and dry as possible.
 - ▶ Observe the temperature range and avoid temperature fluctuations.
 - ▶ Avoid wind, drafts and formation of condensation.
 - ▶ Avoid direct sunlight.

10 Installation

WARNING



Risk of injury due to uncontrolled movement

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

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

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 the mounting piece is sufficiently rigid.
- ▶ Ensure the cleanliness of the connection surfaces.
- ▶ Comply with the permitted tightening torques of the mounting screws.

10.1 Installing the product

- ▶ Mount the product on the mounting surface using the mounting screws.
 - ▶ Refer to the technical data sheet for information on the position of the drilled holes.
 - ▶ Tighten the mounting screws without distortion.

10.2 Installing the suction cup

- ▶ Install the corresponding lines and the desired suction cup to the vacuum connection.

10.3 Installing the power supply

NOTICE



Material damage in case of non-compliance

- ▶ You can find the information in the technical data sheet on our website.
- ▶ Keep the supply lines as short as possible and ensure a sufficiently large cross-section.
- ▶ Make sure that the hoses cannot be pinched.

NOTICE



Malfunction in case of non-compliance

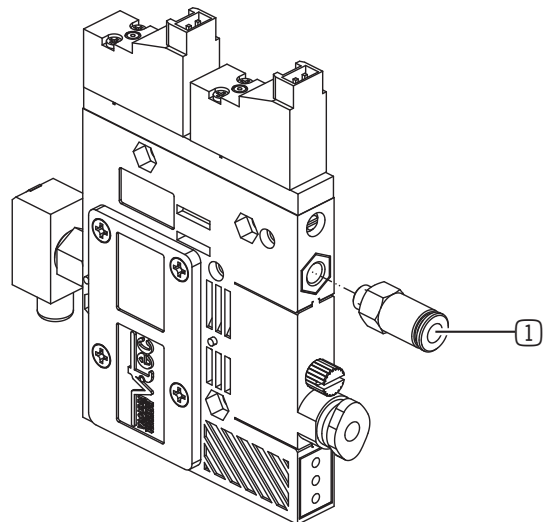
An inner diameter that is too small on the compressed-air side results in an insufficient supply of compressed air. Because of this, the maximum output of the system cannot be achieved.

An inner diameter that is too small on the vacuum side results in an increased flow resistance along the hose. This reduces the suction capacity and increases suction times.

An inner diameter that is too large also results in longer suction times due to the larger volume of air to be evacuated.

- ▶ Select the correct screw fittings and pneumatic hoses.

- ▶ Install the screw fitting on the pneumatic connection.
- ▶ Install the pneumatic hose.



① Screw fitting

11 Commissioning

11.1 Setting the sensor for ZKM101/ZKX101

CAUTION



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

- ▶ Do not use corrosive or flammable gases or liquids in conjunction with the product.
- ▶ Observe the maximum permitted pressure.
- ▶ Avoid vibrations and impacts.
 - ▶ Please note that internal components may be damaged by vibrations and impacts, even if the housing is undamaged.
- ▶ Do not use the product in environments with steam or oil mist.
- ▶ Do not use the product in a potentially explosive atmosphere.

11.1.1 Pin assignment

NOTICE



Material damage in case of non-compliance

- ▶ Switch off the power supply before connecting the cable.
- ▶ Do not lay sensor cables parallel to power supply cables or high-voltage cables.
 - ▶ Please note that interference and malfunctions may occur when used in the same circuit.

Pin	Color	Function	Explanation	Plug, M8
1	Brown	PWR	24V DC supply voltage	
3	Blue	GND	0V DC supply voltage	
4	Black	OUT	Digital output	

11.1.2 Setting the pressure

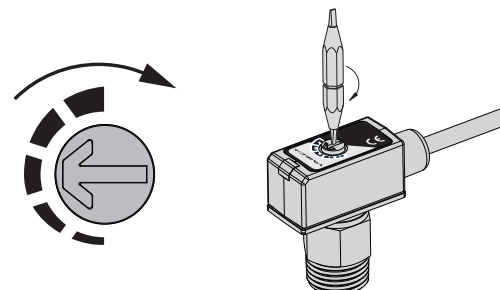
NOTICE



Material damage in case of non-compliance

- ▶ Use a suitably sized screwdriver to move the controller.
- ▶ Always turn the controller carefully and stop turning if you notice any resistance.

- ▶ Turn the controller clockwise to increase the pressure setpoint.
- ▶ Turn the control counterclockwise to reduce the pressure setpoint.



11.2 Setting the sensor for ZKM202/ZKX202 and ZKM304/ZKX304

INFORMATION



- ▶ You can find the information in the download area of the ZSB series on our website.

11.3 Performing a function test

- ▶ Block the vacuum connection or place the suction cup on the workpiece.
- ▶ Apply compressed air to the product.
- ▶ Use a pointed object to press in the operating element on the air control valve.
- ▶ Check whether the workpiece is suctioned.
- ▶ Depending on the product variant selected, make sure that the sensor displays the corresponding vacuum level.
- ▶ Release the control element on the air control valve.
- ▶ Use a pointed object to press in the control element on the blow-off control valve.
- ▶ Check the blow-off function.
- ▶ For the corresponding product variants, adjust the blow-off impulse via the adjustment screw under the pneumatic connection if necessary.
 - ▶ Turn the adjustment screw to the right to increase the blow-off impulse.
 - ▶ Turn the adjustment screw to the left to reduce the blow-off impulse.

12 Operation

WARNING



Risk of injury and material damage due to falling workpieces

If the suction capacity is insufficient, the workpiece can fall off.

- ▶ Make sure that no personnel are present underneath the product.

CAUTION



Risk of injury in case of non-compliance

Air streams can injure the eye.

- ▶ Do not look directly into the vacuum openings or into the air streams.
- ▶ Wear protective goggles.

NOTICE



Malfunction in case of non-compliance

- ▶ Make sure that the exhaust air can escape unimpeded.
- ▶ Make sure that there is no grease, water or dirt on the connections.

- ▶ Apply compressed air to the product.

13 Maintenance

NOTICE



Material damage caused by unsuitable cleaning materials

Liquid and solvent-based cleaning agents can cause malfunctions.

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

- ▶ 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
- ▶ Visually check the product regularly for damage and dirt.
- ▶ Have maintenance work that requires disassembly of the product and which is not described in these installation and operating instructions 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.

13.1 Spare parts

Installation size	Designation	Part number
ZKM101/ZKX101	Filter element	ZVFA-ZK101
ZKM202/ZKX202	Filter element	ZVFA-ZK202
ZKM304/ZKX304	Filter element	ZVFA-ZK304

13.2 Replacing the filter element

NOTICE

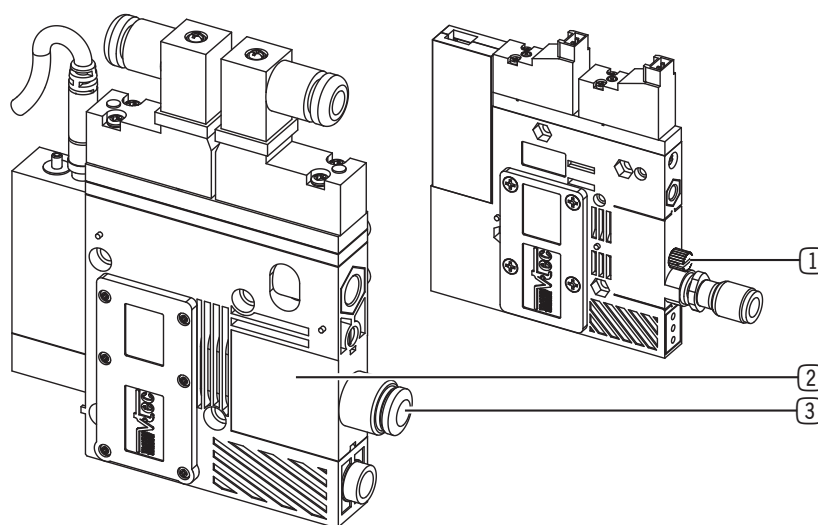


Malfunction in case of non-compliance

- Replace the filter element at regular, suitable intervals.

- Depending on the installation size, loosen either the mounting screw above the vacuum connection with a flat-head screwdriver or the mounting screw in the vacuum connection with an Allen key.
- Remove the filter element housing together with the filter element.
- Make sure that the seal does not shift.
- Replace the filter element in the housing.
- Insert the housing together with the new filter element into the product.
- Tighten the mounting screw.

- ① Mounting screw
- ② Filter element housing
- ③ Vacuum connection



14 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.

15 RoHS

In terms of the EU Directive 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: Vacuum ejector

Type designation: ZK

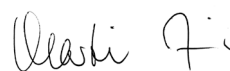
conforms to the requirements of the directive in its design and the version we put on the market.

Nicolas Steiger

Authorized representative for
compiling the relevant technical
documents

Rheinau, Germany, 2025-04-28

(Place and date of issue)



Martin Zimmer
(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 Group 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: Vacuum ejector

Type designation: ZK

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.

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 1012-2	Compressors and vacuum pumps – Safety requirements – Part 2: Vacuum pumps

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.

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) and an EC Declaration of Conformity has been drawn up in accordance with Annex II 1 A.

Nicolas Steiger

Authorized representative for
compiling the relevant technical
documents

Rheinau, Germany, 2025-01-07

(Place and date of issue)



Martin Zimmer
(Legally binding signature)
Managing Partner