



INSTALLATION AND OPERATING INSTRUCTIONS

Rotary distributor

DVR series

DDOC00222

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.

It is fitted to industrial machines and is used to hold, transport and store workpieces.

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.
- ▶ Observe the specified maintenance intervals and specifications regarding the quality of the operating material.
- ▶ When using the product under extreme conditions, adjust the maintenance interval according to the degree of contamination.
- ▶ Note that, due to the spring tension, you should exercise increased caution when uninstalling products with integrated springs.

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.

The product is designed for forwarding electric and pneumatic energies through rotating connections.

The product is designed exclusively for operation within the parameter limits and operating conditions stipulated in the order confirmation.

The product is designated for use in closed facilities.

Direct contact with perishable goods/food is not permitted.

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

5.1 Forces and torques

INFORMATION



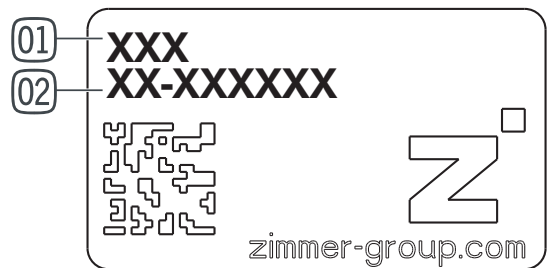
- ▶ You can find the information in the technical data sheet on our website.
- ▶ Please contact Zimmer Customer Service if you have any questions.

5.2 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



6 Functional description

The products are designed to be media exchangers.

The compact design reduces the torque loads for the handling system to a minimum.

The product avoids interference contours and thus prevents cable breaks, damage or tears caused by exposed wires.

All currents from fine currents up to 250 V and a maximum of 6 A can be transmitted reliably.

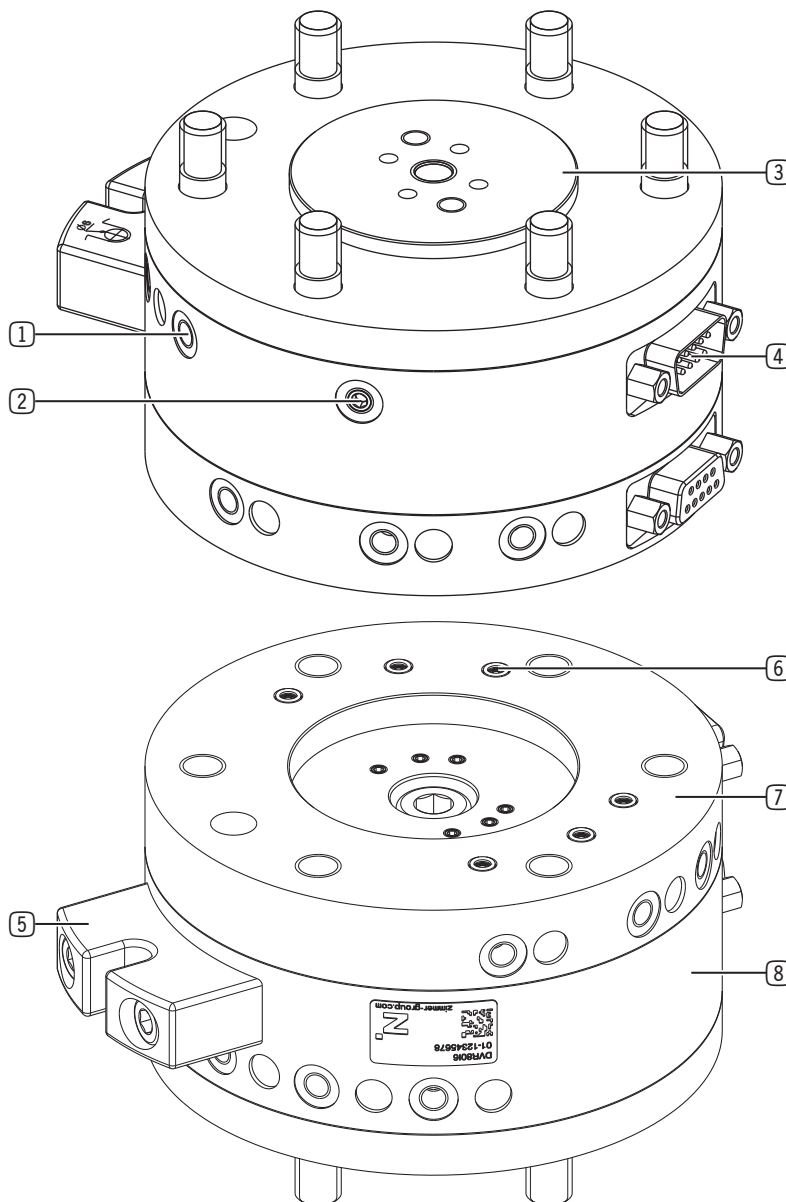
Inside, the contacts on the slip ring allow for high flexibility in electrical transmission.

The housing acts as a stator by means of the torque support arm. The energy/media to be transferred is brought in here.

The robot flange and the connecting flange on the tool are the rotating elements.

The structural design of the connecting flange is based on the specifications from DIN EN ISO 9409-1.

- ① Pneumatic feed-through
- ② Sealing air connection
- ③ Connecting flange on the robot
- ④ Energy and data transmission
- ⑤ Torque support
- ⑥ Hoseless air connection to the tool changer
- ⑦ Connecting flange on the tool
- ⑧ Case



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.

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

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.

NOTICE



Non-compliance may result in material damage.

Malfunctions and unit damage if the tool flange and housing are disconnected from each other.

- ▶ Make sure that the tool flange and housing are not disconnected from each other during disassembly.
- ▶ If the tool flange and housing are accidentally disconnected, observe the following instructions.
 - ▶ Do not touch the electrical sliding contacts in the interior.
 - ▶ Carefully reconnect the tool flange and housing.

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)
- Screw-in depth in accordance with DIN EN ISO 9409-1

- ▶ 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

INFORMATION



When selecting the installation size and design of the product, the type of connecting flange on the robot in accordance with DIN EN ISO 9409-1 and the functions to be implemented on the tool are the deciding factors.

INFORMATION



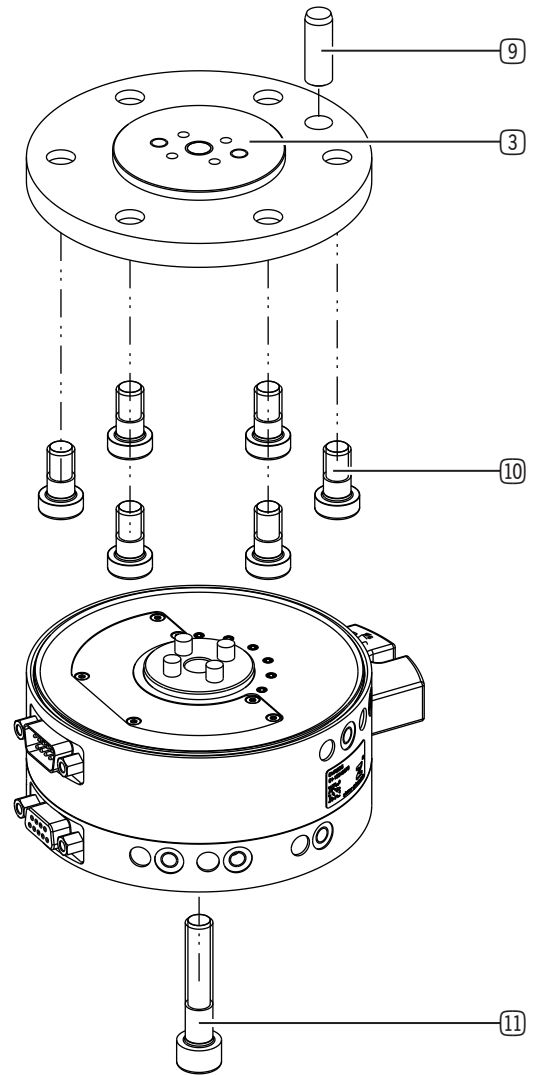
More installation information for the central screw:

- Strength class 12.9 (DIN EN ISO 4762)
- Tightening torque in accordance with VDI 2230:2015 Table A1
- Friction value 0.14

| Design size | 40 | 50 | 63 | 80 | 100 | 125 | 160 |
|---------------------------|----|----|----|----|-----|-----|-----|
| Thread size central screw | M5 | M5 | M8 | M8 | M14 | M14 | M14 |

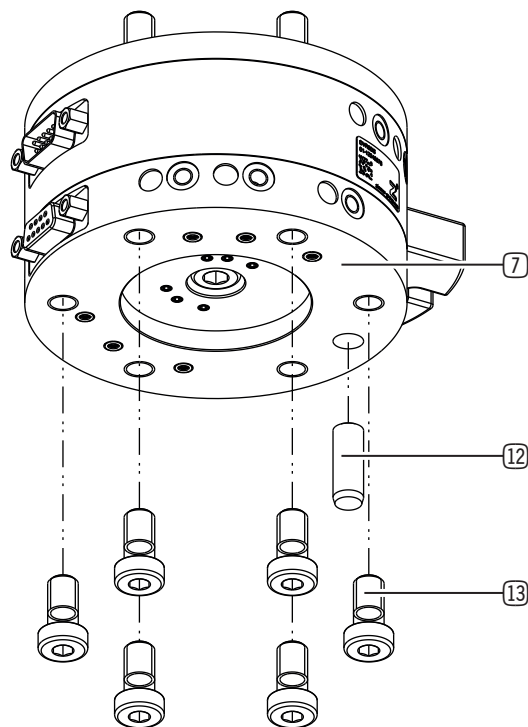
The product is installed between the robot flange and the tool. Installation begins on the robot flange. The tool or tool changer can then be installed on the product.

- ▶ Remove the central screw.
- ▶ Remove the robot-side connecting flange.
- ▶ Insert the straight pin into the designated fit on the robot-side connecting flange.
- ▶ Position the robot-side connecting flange onto the robot flange by using the straight pin.
- ▶ Install the robot-side connecting flange onto the robot flange by using the mounting screws.
- ▶ Reinstall the housing onto the robot-side connecting flange by using the central screw.



- ③ Connecting flange on the robot
- ⑨ Straight pins
- ⑩ Mounting screw
- ⑪ Central screw

- ▶ Insert the straight pin into the designated fit on the tool-side connecting flange.
- ▶ Position the tool on the tool-side connecting flange by using the straight pin.
- ▶ Use the mounting screws to mount the tool on the tool flange.



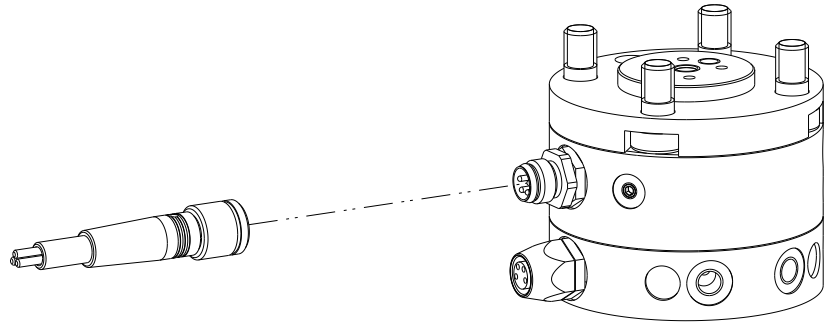
- 7 Connecting flange on the tool
- 12 Straight pins
- 13 Mounting screw

10.2 Installing the energy supply

10.2.1 Installing the wiring

The connection with the pins is located on the stator and the connection with the sockets is located on the rotor.

- ▶ Connect the power supply cable to the control system of the product.



10.2.1.1 Pin assignment of DVR4014 and DVR5014

| Pin | | Socket |
|-----|---|--------|
| | ↔ | |
| 1 | ↔ | 1 |
| 2 | ↔ | 2 |
| 3 | ↔ | 3 |
| 4 | ↔ | 4 |

10.2.1.2 Pin assignment of DVR6316 and DVR8016

| Pin | | Socket |
|-----|---|--------|
| | ↔ | |
| 1 | ↔ | 1 |
| 2 | ↔ | 2 |
| 3 | ↔ | 3 |
| 4 | ↔ | 4 |
| 5 | ↔ | 5 |
| 6 | ↔ | 6 |
| 7 | - | 7 |
| 8 | - | 8 |
| 9 | - | 9 |

10.2.1.3 Pin assignment of DVR10014 and DVR10018

| Pin | | Socket |
|-----|---|--------|
| | ↔ | |
| 1 | ↔ | 1 |
| 2 | ↔ | 2 |
| 3 | ↔ | 3 |
| 4 | ↔ | 4 |
| 5 | ↔ | 5 |
| 6 | ↔ | 6 |
| 7 | ↔ | 7 |
| 8 | ↔ | 8 |
| 9 | - | 9 |

10.2.1.4 Pin assignment of DVR12514, DVR12518, DVR16014 and DVR16018

| Pin | | Socket |
|-----|---|--------|
| | ↔ | |
| 1 | ↔ | 1 |
| 2 | ↔ | 2 |
| 3 | ↔ | 3 |
| 4 | ↔ | 4 |
| 5 | ↔ | 5 |
| 6 | ↔ | 6 |
| 7 | ↔ | 7 |
| 8 | ↔ | 8 |
| 9 | ↔ | 9 |
| 10 | ↔ | 10 |
| 11 | ↔ | 11 |
| 12 | ↔ | 12 |
| 13 | - | 13 |
| 14 | - | 14 |
| 15 | - | 15 |

10.2.2 Installing the pneumatic system

INFORMATION

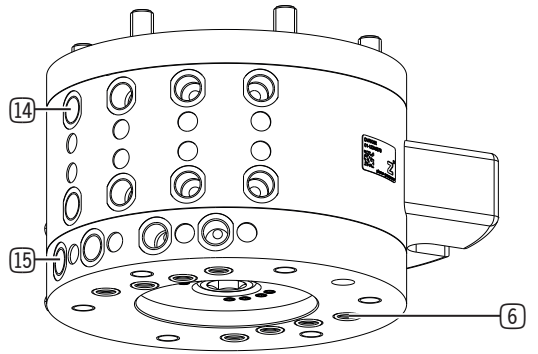


The number of integrated air transmitters varies within the series.

- ▶ Insert the screw fittings into the provided connections.

In addition, there is the option of a hoseless pneumatic feed-through to the front of the tool flange. If this connection is used, the outputs on the outer edge of the tool flange must be sealed.

The assignment of the inputs and outputs can be identified by numbering. Labels for numbering are included in the scope of delivery.



- ⑥ Hoseless air connection to the tool changer
- ⑭ Outer edge of housing
Robot input
- ⑮ Outer edge of tool flange
Tool output

NOTICE



- ▶ Close off unused connections using suitable dummy plugs.
- ▶ The authorized connections that are available can be found in the accessories list on our website. The necessary ordering information can also be found there.
- ▶ Use compressed air in accordance with DIN ISO 8573-1 [2:4:1].

10.3 Connecting the sealing air

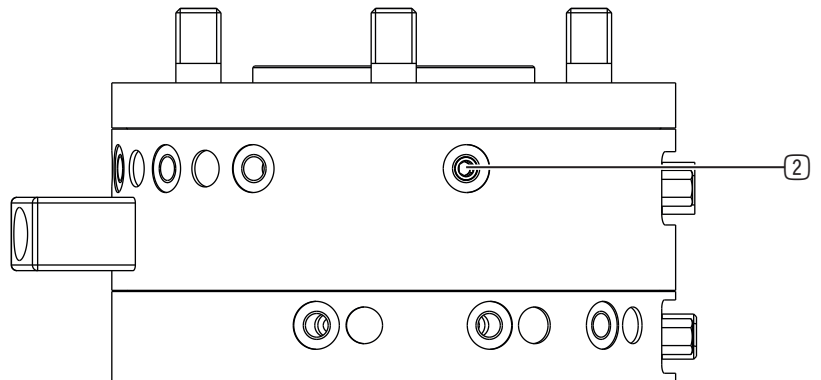
NOTICE



Non-compliance may result in material damage.

- ▶ Damage to the electronic transmission elements is possible if the wrong compressed air is used.
- ▶ Use compressed air in accordance with DIN ISO 8573-1 [2:4:1].

p max = 0.5 bar



- ② Sealing air connection

10.4 Attaching the torque support arm

NOTICE



Non-compliance may result in material damage.

The torque support arm is designed so that lateral torques are not applied to the middle part with floating bearing.

- ▶ Implement the torque support arm as shown.

Exchanging the standard torque support arm for a 2-point screw fitting in the middle part may damage the seals and the inner electric slip ring system.

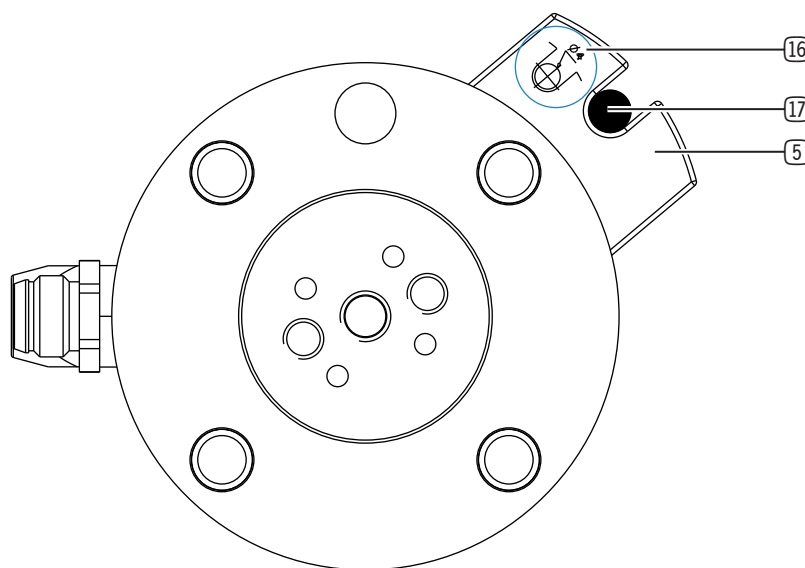
INFORMATION



The pin must be manufactured according to DIN ISO 2768 - fH.

- ▶ Calculate the pin diameter for the torque support arm using the dimensions from the dimensional drawing on the data sheet.

- ▶ Arrange the pin of the torque support arm parallel to the turning axis or casing surface of the product.
- ▶ Maintain a parallelism tolerance of 0.1 mm.



- ⑤ Torque support
- ⑬ Specification for pin diameter
- ⑰ Pin

10.5 Installing accessories

NOTICE



Before installing an accessory, make sure it is suitable for use with the selected variant.

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

11 Maintenance

CAUTION



Material damage resulting from blowing out with compressed air

Blowing out the product with compressed air can cause malfunctions and pose a risk of accidents.

- ▶ Never purge the product with compressed air.

CAUTION



Material damage caused by liquid and solvent-based cleaners

Liquid and solvent-based cleaning agents can cause malfunctions and pose a risk of accidents.

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

INFORMATION



Non-compliance may result in material damage.

If the product is constantly subjected to an alternating direction of rotation, the maximum number of rotations will no longer be reached.

The actual service life depends on the following factors:

- Speed
- Changes in direction of rotation
- Environmental conditions (humidity, temperature)
- Handling weight
- Electrical voltage and amperage
- Continuous operation with sealing air and its quality

Maintenance-free operation of the product is guaranteed for up to 10 million cycles.

The maintenance interval may be shortened under the following circumstances:

- Dirty environment
 - Improper use and use that does not comply with the power specifications.
 - Ambient temperature is too high.
 - ▶ Even though the product is maintenance-free as mentioned above, perform a regular visual inspection to check for any corrosion, damage or contamination.
 - ▶ Have maintenance work be performed by Zimmer Customer Service whenever possible.
- ⇒ Dismantling and reassembling the product without authorization may result in complications, as special installation equipment is required in some cases. Zimmer 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.

NOTICE



Continuous operation with sealing air

- ▶ Have the product removed and relubricated by Zimmer Customer Service at least every 6 months.

13 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: Rotary distributor

Type designation: DVR 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, 2021-03-25
(Place and date of issuance)



Martin Zimmer
(Legally binding signature)
Managing Partner

14 REACH declaration

In terms of the EC Regulation 1907/2006

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

REACH stands for **R**egistration, **E**valuation, **A**uthorisation and **R**estriction of **C**hemicals.

A full declaration of REACH can be obtained from the manufacturer due to the duty to notify in accordance with Art. 33 of the REACH regulation ("Duty to communicate information on substances in articles").

Michael Hoch
Authorized representative for the
compilation of relevant technical
documents

Rheinau, Germany, 2021-03-25
(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: Rotary distributor

Type designation: DVR 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:

Nr.1.1.2, Nr.1.1.3, Nr.1.1.5, Nr.1.3.2, Nr.1.3.4, Nr.1.3.7, Nr.1.5.3, Nr.1.5.4, Nr.1.5.8, Nr.1.6.4, Nr.1.7.1, Nr.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.

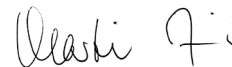
The incomplete machine may only be commissioned if it has been ascertained, if applicable, that the machine or system in which the incomplete machine is to be installed satisfies the requirements of Directive 2006/42/EC on Machinery and an EC Declaration of Conformity has been drawn up in accordance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

Kurt Ross

Authorized representative for the
compilation of relevant technical
documents

Rheinau, Germany, 2021-03-25

(Place and date of issuance)



Martin Zimmer
(Legally binding signature)
Managing Partner