



# INSTALLATION AND OPERATING INSTRUCTIONS

Rotary distributor  
DVR

DDOC00222

THE KNOW-HOW FACTORY

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## 1 Introduction

### 1.1 Supporting documents

#### NOTICE



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

The instructions contain important notes for your personal safety. They must be read and understood by all persons who work with or handle the product during any phase of the product lifetime.



The documents listed below are available for download on our website [www.zimmer-group.com](http://www.zimmer-group.com).

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

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

### 1.2 Notices and graphics in the instructions

#### DANGER



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

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

#### WARNING



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

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

#### CAUTION



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

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

#### NOTICE



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

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

#### INFORMATION



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

## 2 Safety notices

### CAUTION



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

The product is state-of-the-art.

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

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

### 3 Proper use

#### NOTICE



#### Material damage and malfunction in case of non-compliance

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

Any other or secondary use is deemed improper.

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

- The product is designed for forwarding electric and pneumatic energy through rotating connections.
- Direct contact with perishable goods/food is not permitted.
- The product is designed exclusively for pneumatic operation.

### 4 Personnel qualification

#### WARNING



#### Inadequate qualification can cause injury and material damage

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

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

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

#### 4.1 Electricians

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

#### 4.2 Specialists

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

#### 4.3 Instructed personnel

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

#### 4.4 Service personnel

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

#### 4.5 Additional qualifications

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

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

## 5 Product description

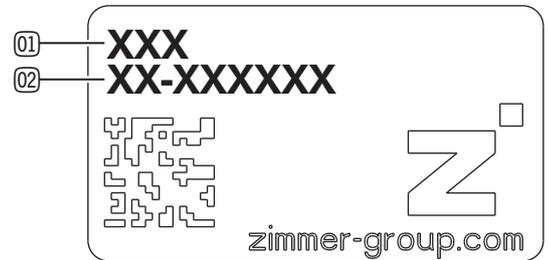
The product serves as a media transfer system for electrical and pneumatic energy.

The media transfer without external cables and hoses means that there are no interference contours, nor can there be any cable breaks, damage or tearing of hoses.

### 5.1 Type plate

A type plate is attached to the product.

- 01 Article number
- 02 Confirmation number



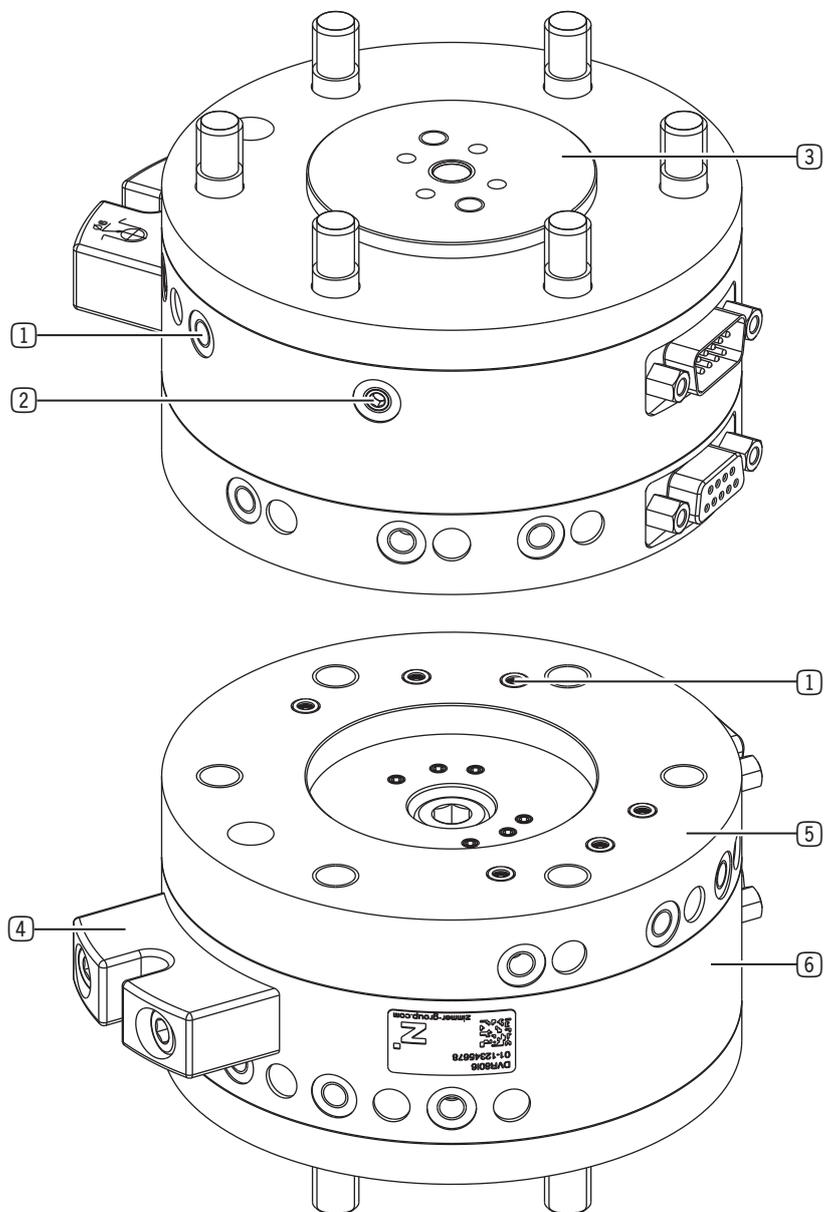
## 6 Functional description

The product consists of a robot flange, a stator, and a tool-side rotor.

When the robot flange is moved, the rotary motion is transmitted to the rotor via the central screw.

The torque support is used to stabilize the robot during rotational movements.

Air and electrical signals are transmitted through integrated pneumatic feed-throughs and a slip ring inside the product.



- 1 Integrated pneumatic feed-through
- 2 Sealing air connection
- 3 Robot flange
- 4 Torque support
- 5 rotor
- 6 stator

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

## 9 Transportation/storage/preservation

- ▶ Transport and storage of the product must be done only with the original packaging.
- ▶ If the product has already been installed on the superordinate machine unit, care must be taken during transport to ensure that no unexpected movements can occur.
  - ▶ Before commissioning the product and after transport, check all power and communication connections as well as all mechanical connections.
- ▶ If the product is stored for an extended period, the following points are to be observed:
  - ▶ Keep the storage location as dust-free and dry as possible.
  - ▶ Avoid temperature fluctuations.
  - ▶ Avoid wind/drafts/water condensation formation.
  - ▶ Pack the product and do not expose it to direct sunlight during storage.
- ▶ Clean all components. There must be no soiling left on the components.
- ▶ Visually inspect all components.
- ▶ Remove all foreign substances.
- ▶ Properly remove potential corrosion spots.
- ▶ Close off unused connections using pressure-resistant closures.
- ▶ 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



#### Material damage and malfunction in case of non-compliance

If the rotor and stator are disconnected from each other, material damage and malfunctions may occur.

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

### Assembly requirements

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

### INFORMATION



Further installation information:

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

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

## 10.1 Installing the product

### INFORMATION



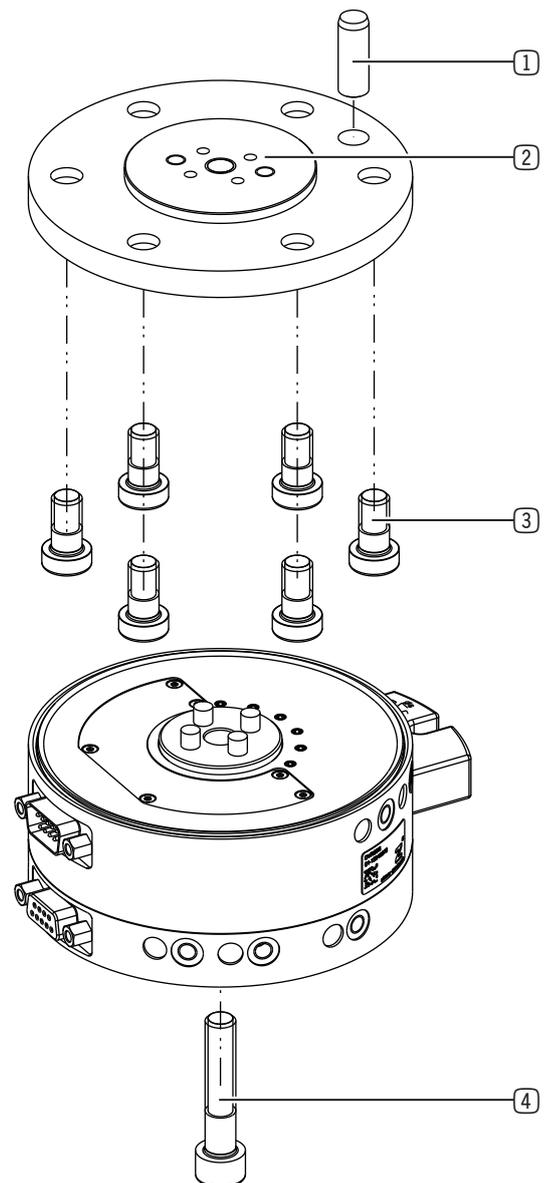
When selecting the installation size and design of the product, the type of connecting flange on the robot in accordance with DIN EN ISO 9409-1 and the functions to be implemented on the tool are the deciding factors.

Installation size [mm]	Thread size	Strength class of the central screw
40	M5	12.9
50	M5	12.9
63	M8	12.9
80	M8	12.9
100	M14	12.9
125	M14	12.9
160	M14	12.9

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

### 10.1.1 Installing the product on the robot

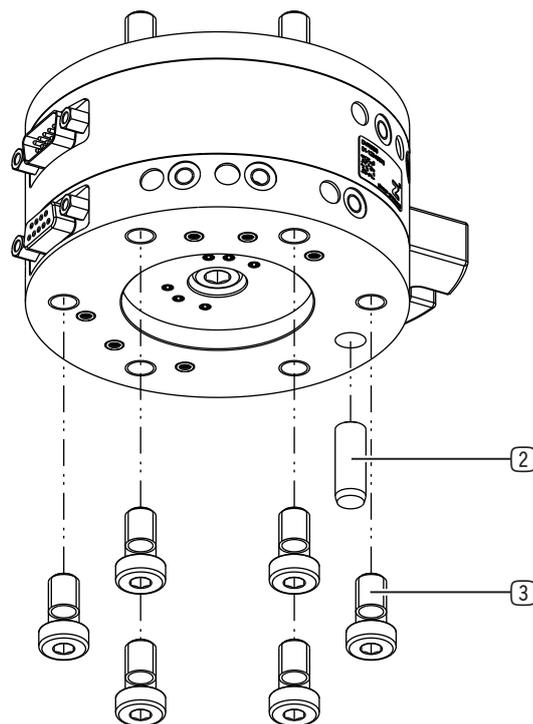
- ▶ Remove the central screw.
- ▶ Remove the robot flange.
- ▶ Insert the straight pin into the designated fit.
- ▶ Position the robot flange on the robot with the straight pin.
- ▶ Install the robot flange with the mounting screws.
- ▶ Reattach the stator and rotor to the robot flange using the central screw.



- ① Straight pins
- ② Robot flange
- ③ Mounting screw
- ④ Central screw

### 10.1.2 Installing the tool on the product

- ▶ Insert the straight pin into the designated fit.
- ▶ Position the tool on the product using the straight pin.
- ▶ Install the tool on the product using the mounting screws.



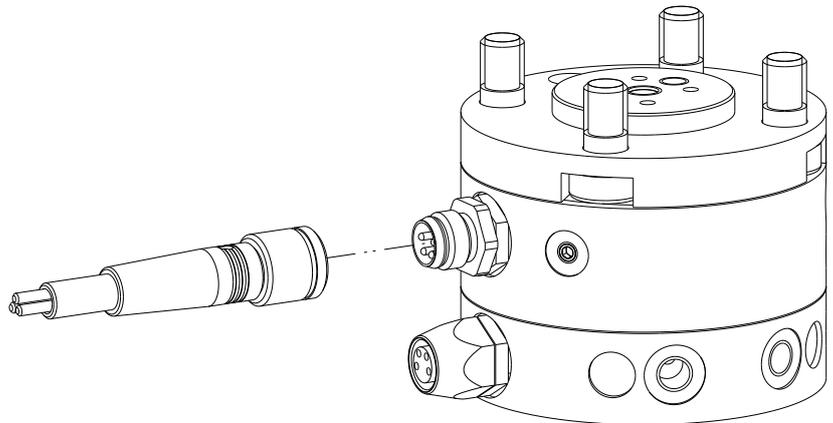
- ① Straight pins
- ② Mounting screw

## 10.2 Installing the energy supply

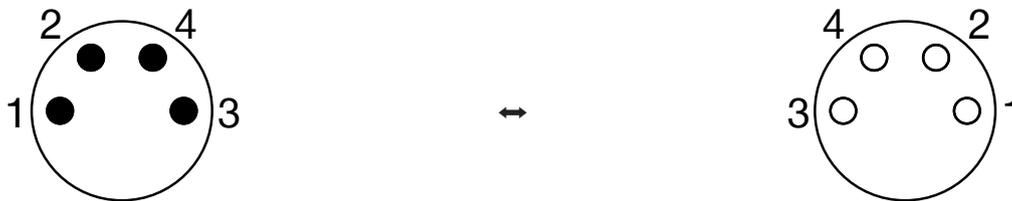
### 10.2.1 Installing the electronics

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

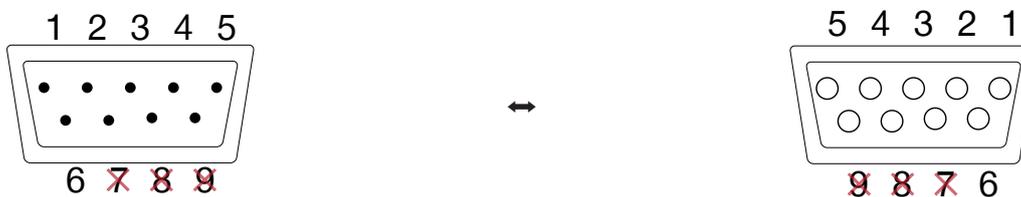
- ▶ Connect the power supply cable to the control system of the product.



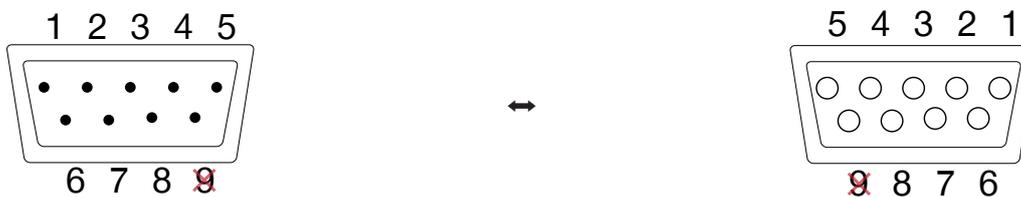
#### 10.2.1.1 Pin assignment for DVR40I4 and DVR50I4



#### 10.2.1.2 Pin assignment for DVR63I6 and DVR80I6



#### 10.2.1.3 Pin assignment for DVR100I4 and DVR100I8



#### 10.2.1.4 Pin assignment for DVR125I4, DVR125I8, DVR160I4 and DVR160I8



### 10.2.2 Installing the pneumatic system

#### NOTICE



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

- ▶ You can find the information in the technical data sheet on our website.
- ▶ Close off unused connections using pressure-resistant closures.
- ▶ The authorized connections that are available can be found in the accessories list on our website.
- ▶ Use compressed air in accordance with DIN ISO 8573-1 [7:4:4].

#### INFORMATION

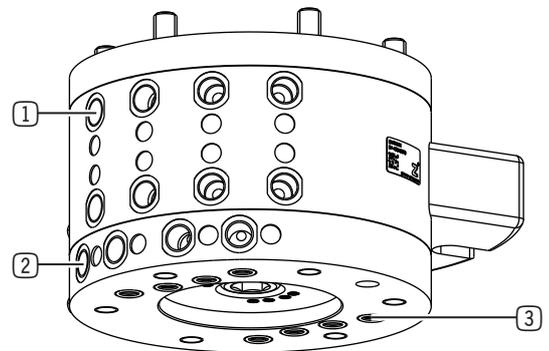


In addition to the air transfer from the jacket surface of the rotor to the tool, there is also an integrated pneumatic feed-through via the front side of the rotor. If this is used, the air outlets on the jacket surface must be closed.

The number of integrated pneumatic feed-throughs varies within the series.

The assignment of the inputs and outputs can be labeled by numbering. Corresponding stickers are included in the scope of delivery.

- ▶ Mount the screw fittings in the provided connections.



- ① Air inlet from the robot
- ② Air outlet to the tool
- ③ Integrated pneumatic feed-through to the tool changer

### 10.3 Connecting the sealing air

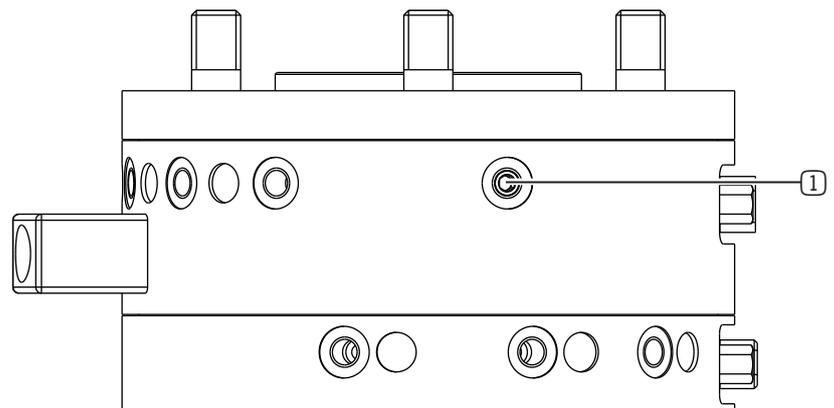
#### NOTICE



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

Using the wrong compressed air can damage the electronic components.

- ▶ Use compressed air in accordance with DIN ISO 8573-1 [2:4:1].
- ▶ Comply with the maximum pressure of 0.5 bar.



- ① 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.
- ▶ Please note that replacing the torque support arm with a fixed 2-point screw fitting on the stator can damage the seals and the slip ring.

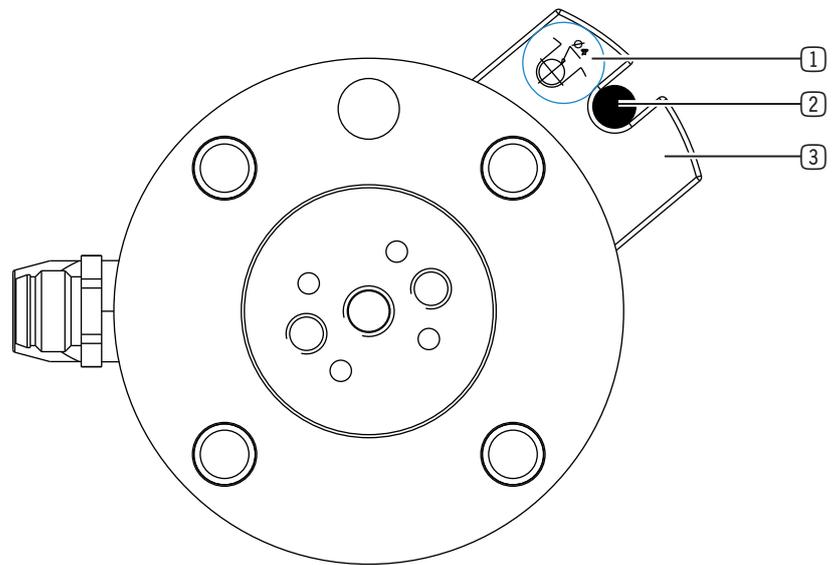
### INFORMATION



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 parallel to the turning axis or jacket surface of the product.
  - ▶ Maintain a parallelism tolerance of 0.1 mm.



- ① Specification for pin diameter
- ② Torque support
- ③ Pin

## 10.5 Installing accessories

### NOTICE



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

- ▶ Before installing an accessory, make sure it is suitable for use with the selected variant.
- ▶ You can find information on our website.
- ▶ Please contact Customer Service if you have any questions.

## 11 Commissioning

### INFORMATION



Each slip ring track has two receivers, which ensures a high quality of signal transmission.

- ▶ Please note that, depending on the service life, very brief interruptions in signal transmission may occur.
- ▶ Take these potential interruptions into account on the control side.

## 12 Maintenance

### NOTICE



#### Material damage resulting from blowing out with compressed air

Blowing out the product with compressed air can cause malfunctions.

- ▶ Never purge the product with compressed air.

### NOTICE



#### Material damage caused by unsuitable cleaning materials

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

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

The use of the following cleaning agents is strictly prohibited:

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

### NOTICE



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

- ▶ In the event of continuous operation with sealing air, have the product removed and relubricated by Customer Service at least every 6 months.

### NOTICE



#### 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.

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

## 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 Group GmbH

Am Glockenloch 2  
77866 Rheinau, Germany

+49 7844 9138 0

[info@zimmer-group.com](mailto:info@zimmer-group.com)

[www.zimmer-group.com](http://www.zimmer-group.com)

We hereby declare that the incomplete machine described below

**Product designation:** Rotary distributor

**Type designation:** DVR

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

## 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 Group GmbH**

📍 Am Glockenloch 2  
77866 Rheinau, Germany

☎ +49 7844 9138 0

✉ [info@zimmer-group.com](mailto:info@zimmer-group.com)

🌐 [www.zimmer-group.com](http://www.zimmer-group.com)

We hereby declare that the incomplete machine described below

**Product designation:** Rotary distributor

**Type designation:** DVR

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

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

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

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

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

Kurt Ross

Authorized representative for the compilation of relevant technical documents

Rheinau, Germany, 2021-03-25

(Place and date of issuance)



Martin Zimmer  
(Legally binding signature)  
Managing Partner