



INSTALLATION AND OPERATING INSTRUCTIONS

GS series
O-ring assembly gripper
pneumatic

DDOC00228

THE KNOW-HOW FACTORY

Contents

1	Supporting documents.....	3
1.1	Hazard levels of warning notices	3
2	Safety notices	4
3	Proper use	4
4	Personnel qualification	5
5	Product description	5
5.1	Forces and torques	5
5.2	Type plate.....	5
6	Function	5
6.1	Protection class.....	6
6.2	Technical data.....	6
7	Installation.....	7
7.1	General installation information	7
7.2	Installing the mechanical system	8
7.3	Installing the power supply.....	9
7.3.1	Installing the pneumatic system	9
7.3.2	Flow chart	10
7.3.3	Technological procedure for installing an O-ring	10
7.4	Installing accessories.....	12
7.5	Setting the stroke limitation	14
8	Error diagnosis	15
9	Maintenance.....	15
10	Accessories/scope of delivery.....	16
11	Transportation/storage/preservation	16
12	Decommissioning/disposal	16
13	RoHS declaration	17
14	REACH declaration.....	17
15	Declaration of Incorporation	18

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
- Spare parts list
- 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 Hazard levels of warning notices

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 and workplace safety.

2 Safety notices

CAUTION



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

Non-compliance may result in severe injuries!

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.

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

- ▶ Make sure that the power cables are disconnected before you install, retool, maintain or repair the product.
- ▶ When the product is used under extreme conditions, the maintenance interval must be adapted depending on the extent of the contamination.
- ▶ In the event of maintenance, conversion or expansion work, remove the product from the machine and carry out the work outside the danger zone.
- ▶ When commissioning or testing, make sure that the product cannot be actuated by mistake.

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 exclusively for pneumatic operation within the agreed-upon parameter limits and conditions of usage. The product is not suitable for operation with operating media other than compressed air.

Unauthorized mechanical modifications must not be made. The product is used as defined under "Proper use" in enclosed rooms for temporarily gripping and handling O-rings.

The product is only suited for the exterior installation of O-rings. Using it for other applications is considered to be improper use. 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



For information on the forces and torques for the following component, please refer to our website www.zimmer-group.com:

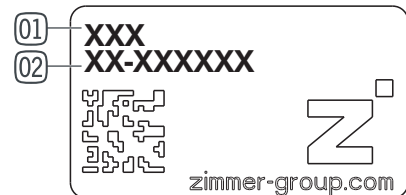
- GS series

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 ① and confirmation number ② are shown on the type plate.



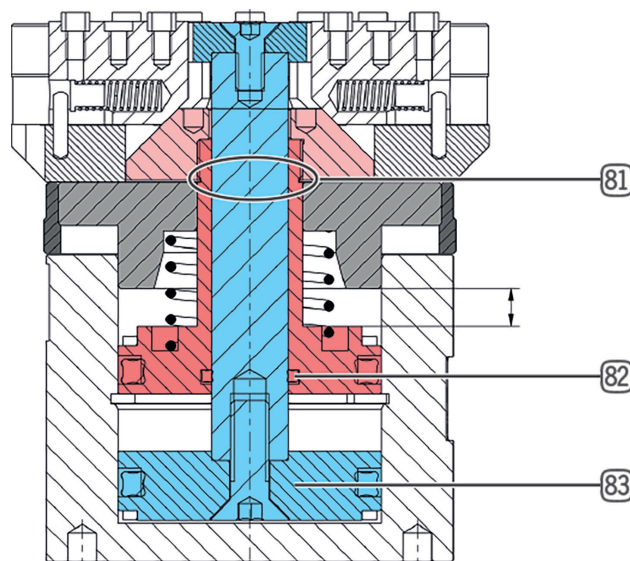
6 Function

The product implements the movement sequence for picking up, inserting and wiping when installing O-rings in outer annular grooves using two single-action pneumatic cylinders ⑧② ⑧③.

By using the adjustable expanding stroke, the operator can prevent the O-ring from being overstretched and can ensure consistent production quality.

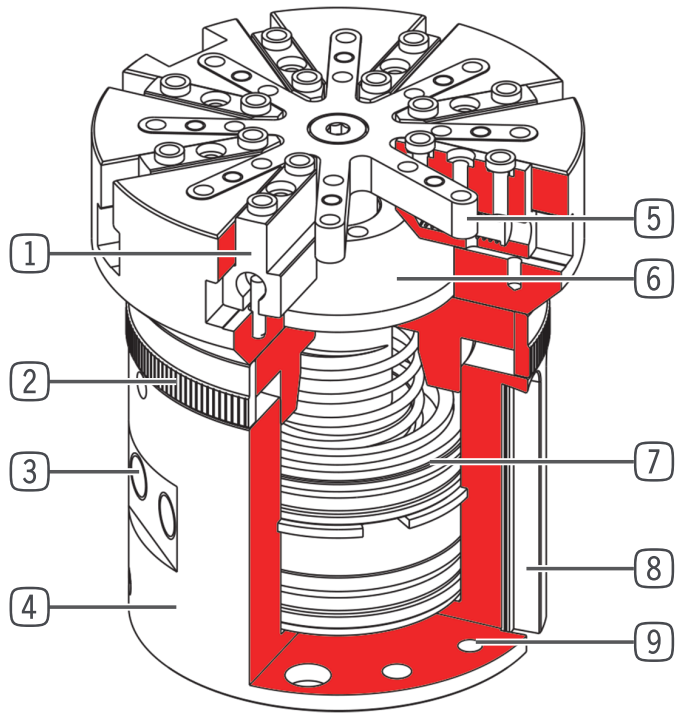
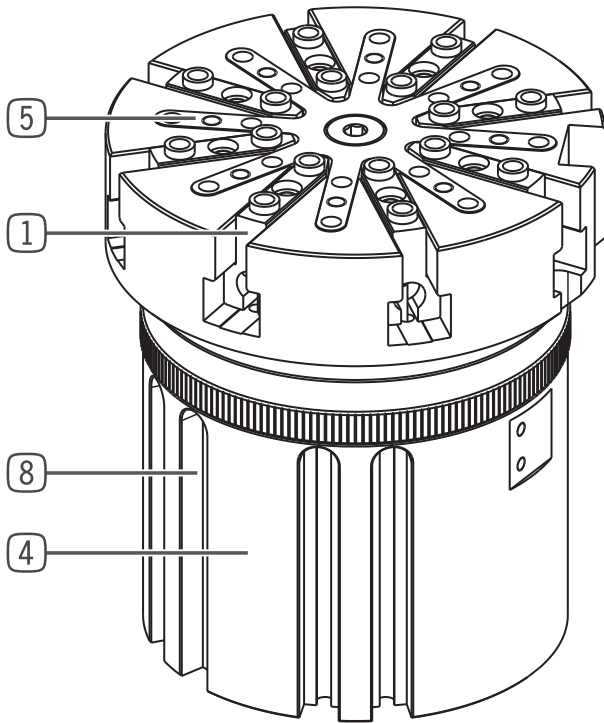
Detecting the end position enables shorter cycle times and continuous control.

- ⑧① 2-piece piston rod
- ⑧② Piston for the spread jaws
- ⑧③ Piston for the wiper



An adjustable stroke (2) for the spread jaws (9) prevents the O-rings from becoming overstretched.

- | | |
|------------------|----------------------------|
| ① Gripper jaw | ⑥ Force transmission |
| ② Stroke setting | ⑦ Drive |
| ③ Power supply | ⑧ Integrated slot |
| ④ Housing | ⑨ Mounting and positioning |
| ⑤ Removal jaws | |



6.1 Protection class

NOTICE



The product achieves protection class IP30 in all mounted positions of installation.

6.2 Technical data

INFORMATION



For technical data, refer to our website at www.zimmer-group.com:

- GS series

This data varies within the series, depending on the specific design.

Please contact Zimmer Customer Service if you have any questions.

7 Installation

7.1 General installation information

WARNING



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

- ▶ Switch off the power supply to the machine before all work.
- ▶ Secure the machine against being switched on unintentionally.
- ▶ Check the machine for any residual energy.

CAUTION



Risk of injury in the event of unexpected movement of the product when the power supply is connected.

- ▶ Switch off the power supply to the product before all work.
- ▶ Secure the power supply against being switched on unintentionally.
- ▶ Check the product for any residual energy.

NOTICE



Switch off the power supply before any assembly, installation or maintenance work.

The product must be installed on a suitable mounting surface in accordance with the flatness specifications.

⇒ Permissible unevenness: 0.03

- The mounting screws are not included in the scope of delivery.
- Strength class of the mounting screws: ≥ 8.8 (DIN EN ISO 4762)
- ▶ Observe the tightening torque of the mounting screws.

⇒ Zimmer GmbH recommends verifying the permitted load-carrying capacity of the required screw connections in accordance with VDI 2230.

- ▶ The exact installation positions can be found on the technical data sheet on our website.

7.2 Installing the mechanical system

NOTICE



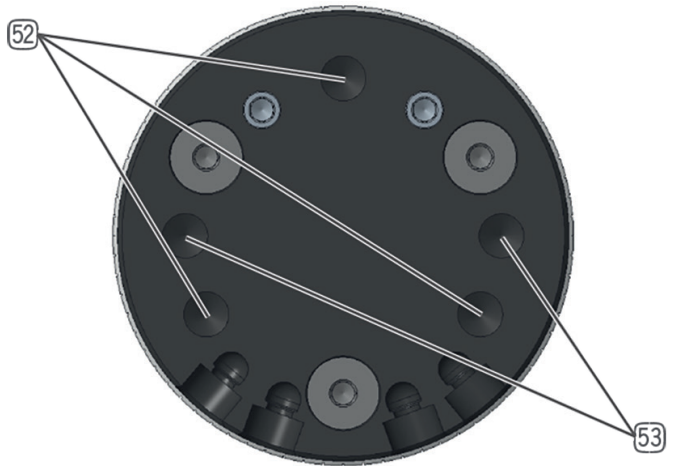
Non-compliance may result in material damage.

The product is mounted by means of the three tapped holes **52**.

The product is positioned by straight pins in the two fits **53**.

The following work steps must be observed during installation:

- ▶ Insert straight pins into the fits **53** provided on the product for this.
- ▶ Use straight pins to position the product on the designated mounting piece.
- ▶ Use the mounting screws to secure the product on the mounting piece.



7.3 Installing the power supply

7.3.1 Installing the pneumatic system

NOTICE



Close off any unused pneumatic connections using suitable dummy plugs.

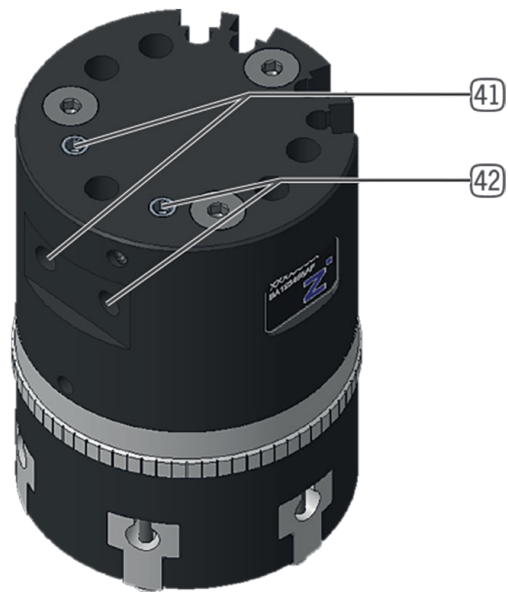
The authorized pneumatic connections that are available can be found in the accessories list, which is available on our website.

You will also find the necessary ordering information there.

► Use compressed air in accordance with DIN ISO 8573-1 [2:4:1].

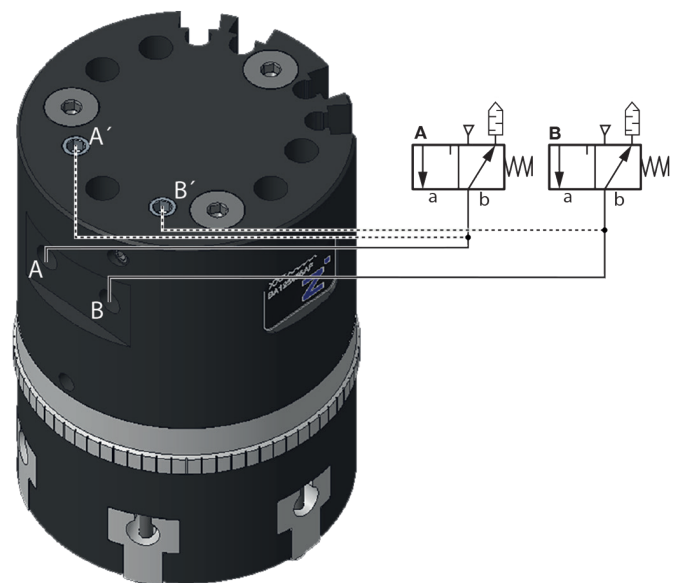
The pneumatic fittings for connecting to the power supply can be mounted directly on the product.

- Spread jaws (41)
 - ⇒ Connection A/A' - Retracted in a depressurized state
- Ejector (42)
 - ⇒ Connection B/B' - Retracted in a depressurized state



Activation of the product with two 3/2 directional valves is shown in the image.

The chronological sequence of the activation is illustrated in chapter „Ablaufdiagramm“.



7.3.2 Flow chart

NOTICE



During the return movement, the valve B/B' for the wiper must always be bled first for approx. 0.5 seconds. Afterward, the valve A/A' for the spread jaws can be bled.

- ⇒ As a result, no air cushion can form between the piston for the wiper (83) and the piston for the spread jaws (82).
- ⇒ This air cushion prevents the complete retraction of the spread jaws (82).

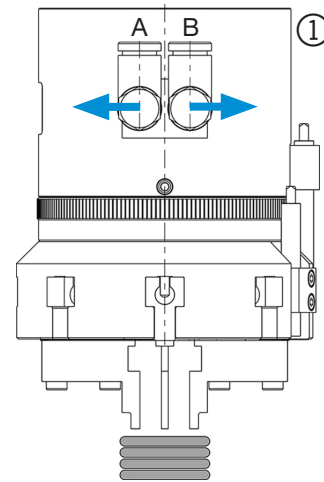
Action on the O-ring				Grasp the O-ring	Expand the O-ring	Positioning for gripping		
Valve	Status	Step	1 23456	1 2 3456	12 3 456	123 4 56	1234 5 6	12345 6
A	a							
	b							
B	a							
	b							
Operating situation			Approach (return movement)	Plunge into position	Moving to installation position	In installation position	Leaving installation position	Return movement (approach)

7.3.3 Technological procedure for installing an O-ring

① Positioning over an O-ring carrier

Completely bleed the product at the A and B or A' and B' connections.

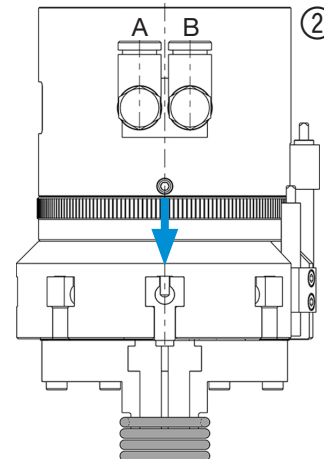
- ⇒ Wiper is retracted.
- ⇒ Spread jaws are retracted.



② Grasping an O-ring

Move the product into the O-ring carrier.

- ⇒ Move in only in the width of an O-ring.

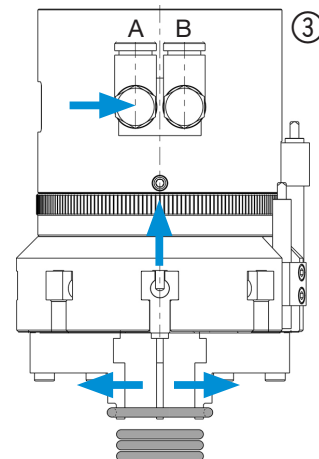


③ Expanding an O-ring

Ventilate connection A or A'.

⇒ Spread jaws are extended.

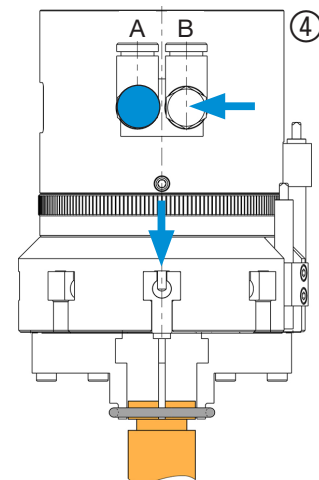
⇒ O-ring is grasped and expanded.



④ Positioning above the workpiece / plunging

Position the product above the workpiece in such a way that the upper edge of the spread jaws and the lower edge of the annular groove are aligned with one another.

Ventilate connection B or B'.

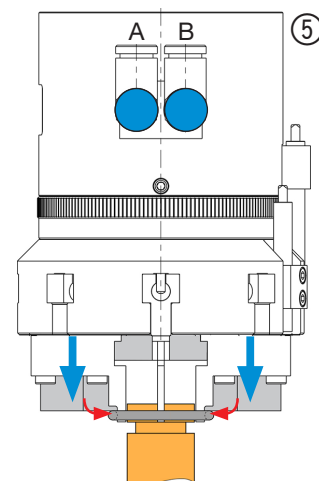


⑤ Wiper/installation

⇒ Wiper is extended.

⇒ As this happens, the spread jaws push the O-ring.

⇒ O-ring slides into the annular groove of the workpiece.



⑥ Return movement

Withdraw the product from the workpiece.

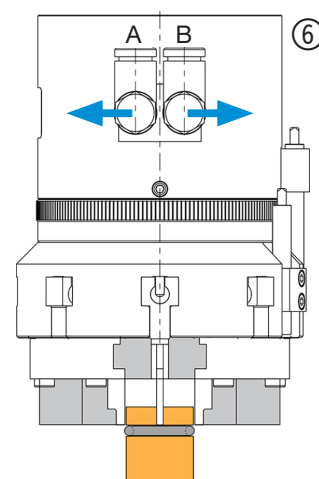
First, bleed connection B or B'.

⇒ Wiper is retracted.

Then, bleed connection A or A'.

⇒ Spread jaws are withdrawn.

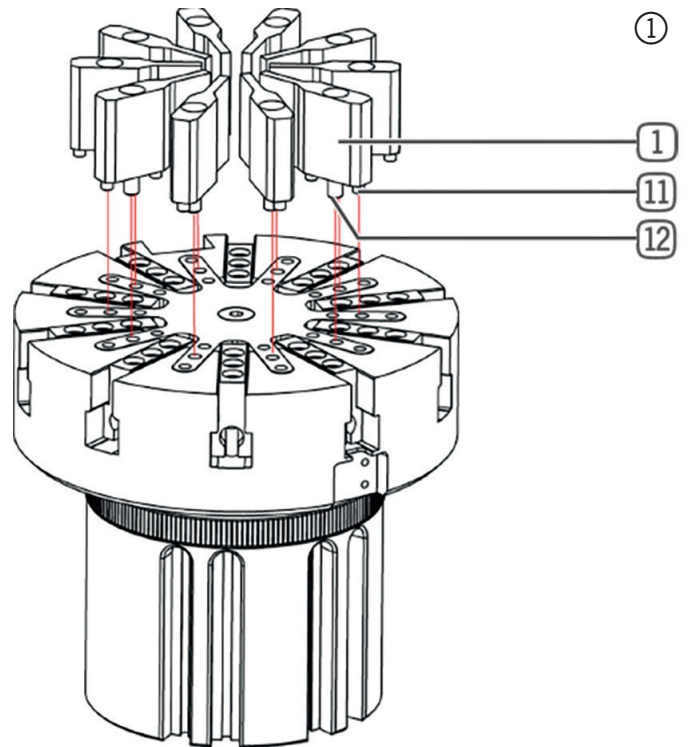
Start of a new cycle.



7.4 Installing accessories

① Removal jaws

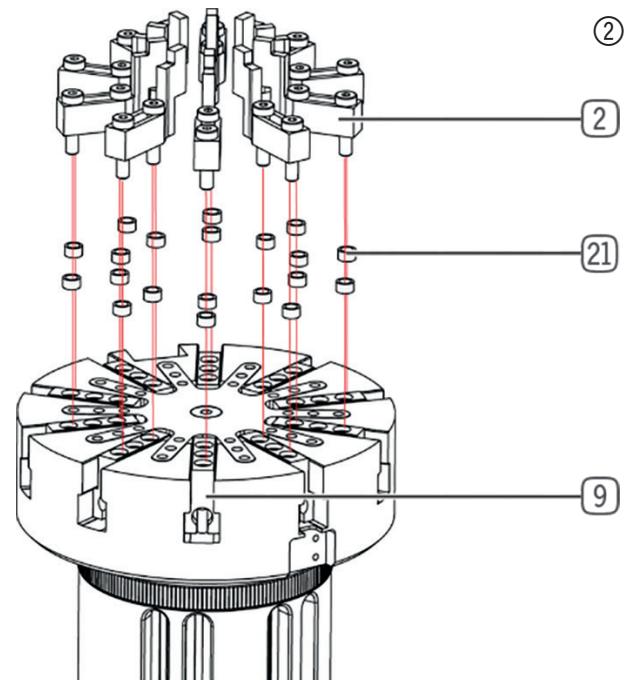
- ▶ Insert the centering pins ⑪ into the drilled holes of the wiper intended for them.
 - ▶ After that, position the removal jaws ① on the centering pins ⑪.
 - ▶ Attach the removal jaws ① using the cylinder screw ⑫.
- ⇒ Only use screws with a strength class of 8.8.
- ⇒ Observe the permitted tightening torque.



② Spread jaws

The gripper fingers ⑨ are prepared for installation of the spread jaws ② by inserting the centering sleeves ⑳.

- ▶ Position the spread jaws ② on the centering sleeves ⑳ and align them with each other.
- ⇒ The spread jaws ② must be exactly centered when positioned.
- ⇒ To align the spread jaws ②, use an adjusting ring with the diameter of the later O-rings when not under tension.
- ▶ Attach the spread jaws ② using the cylinder screws.
- ⇒ Only use screws with a strength class of 8.8.
- ⇒ Observe the permitted tightening torque.



Notice:

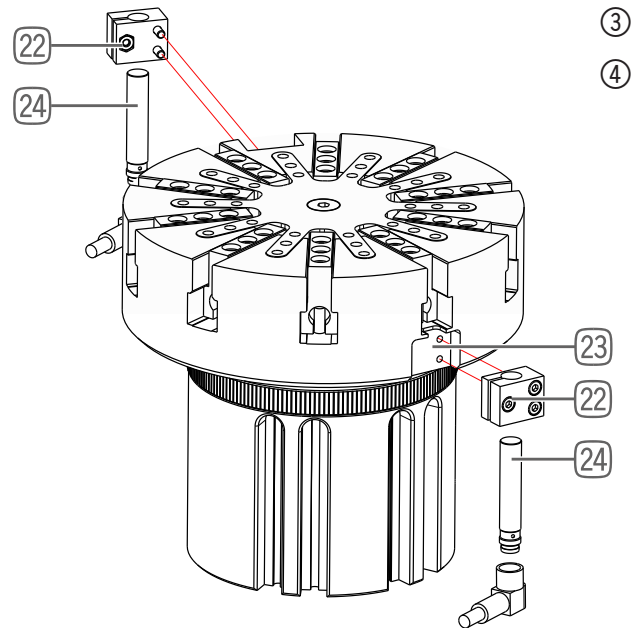
The standard version of the UB65-4 variant is mounted without centering sleeves!

③ Sensors

Detecting the end position enables a shorter cycle time and continuous control.

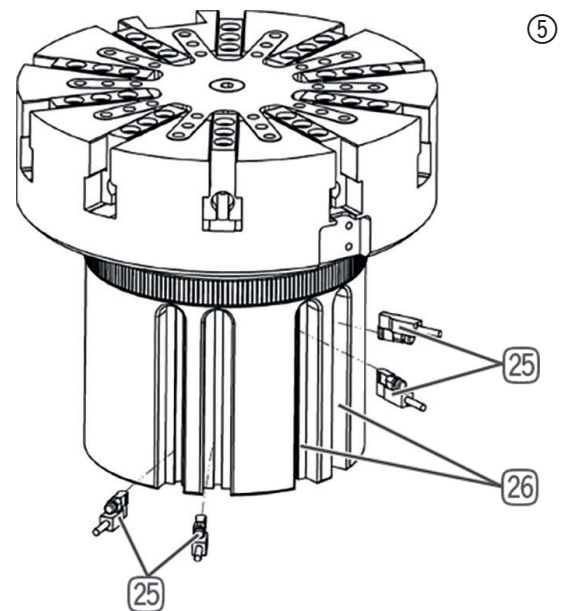
④ Inductive proximity switches

- ▶ Install the mounting block ②② on the mounting surface ②③ below the spread jaws.
- ▶ Insert the proximity switch ②④ into the mounting block ②② .
- ▶ Then, flare the spread jaws and adjust the proximity switch.
- ▶ Clamp the proximity switch ②④ by tightening the screws on the mounting block ②② .



⑤ Magnetic field sensor

- ▶ Insert four magnetic field sensors ②⑤ into the corresponding grooves ②⑥ .
- ▶ Bleed the product completely and adjust one magnetic field sensor ②⑤ to the lower position of each of the two pistons.
- ⇒ LED lights up.
- ▶ Mark this position on the housing.
- ▶ Insert the magnetic field sensor ②⑤ far enough that the LED goes out.
- ⇒ LED out.
- ▶ Mark this position on the housing.
- ▶ Then, push the magnetic field sensors ②⑤ back to the initial position until the LED lights up.
- ⇒ The optimum magnetic field sensor position ②⑤ is between the two marked positions.
- ▶ Extend the spread jaws and the ejector.
- ⇒ Repeat the adjustment process at the other magnetic field sensors ②⑤ as described.

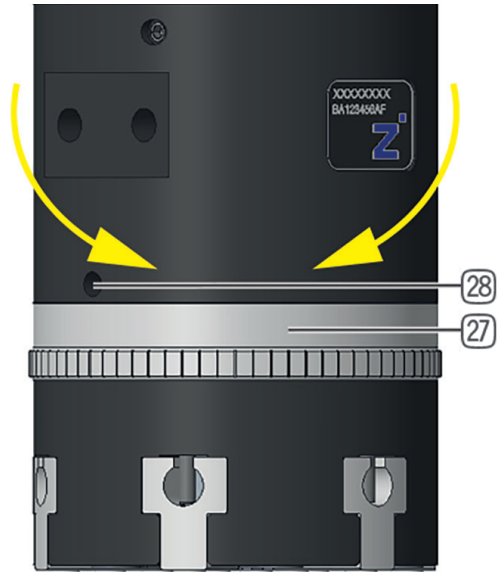


7.5 Setting the stroke limitation

The stroke limitation of the product is to be set as described in the following:

- By turning the adjustment ring (27), you can adjust the stroke of the spread jaws to the respective O-ring.

To prevent the stroke limitation from being unintentionally adjusted, the adjustment ring (27) must be secured using a locking screw (28).



- (27) Adjustment ring (stroke limitation)
- (28) Locking screw

NOTICE



The adjustment ring (27) can be turned a maximum of 3.5 revolutions.
 ⇒ This maximum number of revolutions is only possible when the bleeding has been done!

Turning clockwise:

⇒ Expansion decreases (product in position as shown in the adjacent image).

Turning counterclockwise:

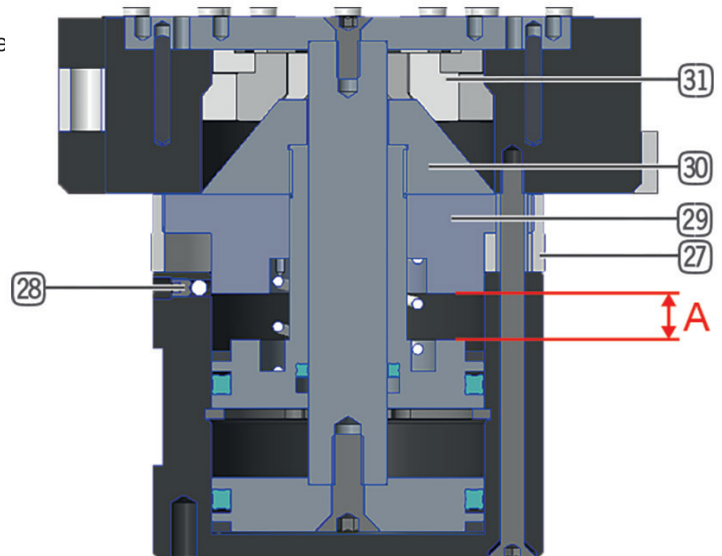
⇒ Expansion increases (product in position as shown in the adjacent image).

Rotating the adjustment ring (27) modifies the path that the piston for the spread jaws (28) can travel.

⇒ Dimension A

The position of the limit stop (29) determines the opening stroke of the spread jaws (28).

⇒ Piston pushes the taper between the spread jaws (28).



Revolution	Height adjustment	Expansion
1	1 mm	± 1 mm
3/4	0.75 mm	± 0.75 mm
1/2	0.5 mm	± 0.5 mm
1/4	0.25 mm	± 0.25 mm


8 Error diagnosis

Error	Possible cause	Measures
O-ring not installed or pulled out again.	<ul style="list-style-type: none"> After being picked up by the product, the O-ring position on the spread jaws is not correct. 	<ul style="list-style-type: none"> ▶ Check the pickup position.
	<ul style="list-style-type: none"> The O-ring is not correctly picked up by the spread jaws. 	<ul style="list-style-type: none"> ▶ Check the plunge depth of the spread jaws. ▶ Check the pick-up position of the product.
	<ul style="list-style-type: none"> The position relative to the workpiece or O-ring does not match the recess. 	<ul style="list-style-type: none"> ▶ Check the exact position.
	<ul style="list-style-type: none"> The O-ring is wiped off as the product moves into the workpiece. 	<ul style="list-style-type: none"> ▶ Check the installation position. ▶ The product must be recalibrated so that it is exactly centered above the workpiece as it moves in.
	<ul style="list-style-type: none"> The distance between the spread jaws and workpiece is too small. The product cannot move in above the shaft. As a result, the O-ring cannot slide into the annular groove and remains situated on the workpiece. 	<ul style="list-style-type: none"> ▶ Increase the stroke of the spread jaws using the adjustment ring.

9 Maintenance

CAUTION



When a product with integrated springs (recognizable by the spring symbol  on the housing) is disassembled, this must be done using a device.

This device should prevent the piston or piston cover from being ejected by the pre-tensioned spring.



⇒ Risk of injury

⇒ Disassembly is to be performed only by Zimmer Customer Service.

NOTICE



Zimmer GmbH recommends allowing maintenance and seal replacement to be carried out by Zimmer Customer Service.

Dismantling and reassembling the product without authorization may result in complications, as special installation equipment is required in some cases.

Please contact Zimmer Customer Service if you have any questions.

Maintenance-free operation of the product is guaranteed for up to **5 million cycles**.

The maintenance interval may shorten under the following circumstances:

- Dirty environment
- Improper use and use that does not comply with the power specifications.
- Observe the ambient temperature; lubricants harden faster!

Even though the product is maintenance-free as mentioned above, perform a regular visual inspection to check for any corrosion, damage or contamination.

We recommend allowing maintenance and seal replacement to be carried out by Zimmer Customer Service.

Dismantling and reassembling the product without authorization may result in complications as special installation equipment is required in some cases.

10 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.

Optional accessories and those included in the scope of delivery can be found at www.zimmer-group.com.

11 Transportation/storage/preservation

- ▶ The product must be transported and stored only in 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 unintentional movements can occur. Before commissioning and after transporting the product, 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.
 - Pack the product and do not expose it to direct sunlight during storage.
- ▶ Clean all components. There must be no dirt left on the components.
- ▶ Visually inspect all of the components.
- ▶ Remove all foreign substances.
- ▶ Properly remove potential corrosion spots.
- ▶ Seal electrical connections using suitable covers.

12 Decommissioning/disposal

INFORMATION



When the product reaches the end of its service life, it can be completely disassembled and disposed of.

Completely disconnect the product from the power supply.

The product can be disassembled and properly disposed of according to material groups.

When disposing of it, observe the locally applicable environmental regulations and codes and regulations for disposal.

13 RoHS declaration

in terms of the EU Directive 2011/65/EU

Name and address of the manufacturer:

- Zimmer GmbH
- 📍 Im Salmenkopf 5, 77866 Rheinau, Germany
- ☎ +49 7844 9138 0
- 📠 +49 7844 9138 80
- 🌐 www.zimmer-group.com

We hereby declare that the incomplete machine described below

Product designation: O-ring assembly gripper, pneumatic
Type designation: GS series

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

Authorized representative for the compilation of relevant technical documents

Michael Hoch	See manufacturer's address	Rheinau, Germany, 2020-11-15	Martin Zimmer
First name, last name	Address	(Place and date of issuance)	(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 5, 77866 Rheinau, Germany
- ☎ +49 7844 9138 0
- 📠 +49 7844 9138 80
- 🌐 www.zimmer-group.com

REACH stands for Registration, Evaluation, Authorisation and Restriction of Chemicals.

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").

Authorized representative for the compilation of relevant technical documents

Michael Hoch	See manufacturer's address	Rheinau, Germany, 2020-11-15	Martin Zimmer
First name, last name	Address	(Place and date of issuance)	(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 5, 77866 Rheinau, Germany
- +49 7844 9138 0
- +49 7844 9138 80
- www.zimmer-group.com

We hereby declare that the incomplete machines described below

- Product designation:** O-ring assembly gripper, pneumatic
- Type designation:** GS series

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

Basic health and safety requirements:

No. 1.1.2, No. 1.1.3, No. 1.1.5, No. 1.3.1, No. 1.3.2, No. 1.3.4, No. 1.3.7, No. 1.5.1, No. 1.5.3, No. 1.5.4, No. 1.6.4, No. 1.7.1, No. 1.7.3.

The following harmonized standards have been used:

- DIN EN ISO 12100:2011-03 Safety of machinery – General principles for design – Risk assessment and risk reduction
- DIN EN ISO 4414 Pneumatic fluid power – General rules and safety requirements for systems and their components

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.

Authorized representative for the compilation of relevant technical documents

Kurt Ross	See manufacturer's address	Rheinau, Germany, 11/30/2020	Martin Zimmer
First name, last name	Address	(Place and date of issuance)	(Legally binding signature) Managing Partner

