

INSTALLATION AND OPERATING INSTRUCTIONS



Handling Technology

ST series
Pneumatic needle gripper

THE KNOW-HOW FACTORY

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1 Supporting documents

NOTICE:



Read through the installation and operating instructions carefully before installing 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 life time.



The documents listed below are available for download on our website.
⇒ www.zimmer-group.com
Only those documents currently available on the website are valid.

- Catalogs, drawings, CAD data, performance data
- Information on accessories
- Detailed installation and operating instructions
- Technical data sheets
- General Terms and Conditions of Business, including warranty information

2 Safety notes

CAUTION:

Non-compliance may result in severe injuries!



These installation and operating instructions are intended for installation and maintenance technicians as well as design engineers requiring the gripper for applications. Please read through all of the installation and operating instructions carefully before start-up and pay special attention to the following hazard warnings and notes.

1. Installation, commissioning, maintenance and repairs may only be performed by qualified experts in accordance with the installation and operating instructions.
2. The gripper is state-of-the-art. It is fitted to industrial machines and is used to hold workpieces. The following are examples of situations in which the gripper may cause a hazard:
 - The gripper is not properly installed, used or maintained.
 - The gripper is not used for its intended purpose.
 - Local regulations (legislation, ordinances, guidelines), such as the EC Machinery Directive, accident prevention regulations and the installation and operating instructions, are not observed.
3. The gripper may be used only in accordance with its proper use and technical data. Zimmer GmbH shall accept no liability for any damage caused by improper use.
4. Any use other than the intended use requires written approval from Zimmer GmbH.
5. Do not reach into the operating range of the gripper.
6. Make sure that the transmission lines are disconnected before you install, retool, maintain or repair the gripper.
7. In case of maintenance, conversion or expansion work, remove the gripper from the machine and perform the work outside the danger zone.
8. When commissioning or testing, make sure that the gripper cannot be actuated by mistake.
9. Modifications to the gripper, such as adding drilled holes or threads, may be made only with prior approval from Zimmer GmbH.
10. Comply with the prescribed maintenance intervals and specifications for compressed-air quality; also refer to the "Maintenance" section. Please contact our Service hotline for this purpose.
11. Use of the gripper under extreme conditions, such as aggressive liquids and abrasive dusts, is subject to prior approval from Zimmer GmbH.

3 Proper use

NOTE:



The ST series gripper should only be used in its original state with its original accessories, without any unauthorized changes and within the scope of its defined parameters for use. Zimmer GmbH shall accept no liability for any damage caused by improper use.

The gripper is designed for operation with compressed air only. It is not suited for operation with other media such as liquids or gases.

The gripper is used as defined under "Proper use" in enclosed rooms for temporarily gripping, handling and holding workpieces.

It is not suitable for clamping workpieces during a machining process or for direct contact with perishable goods.

Proper use of the gripper also includes the forces and torques that may be acting in addition to the gripping force (see product data sheets at www.zimmer-group.com).

4 Personnel qualification

Installation, commissioning and maintenance may only be performed by qualified personnel. They must have read and understood the installation and operating instructions in full.

5 Function

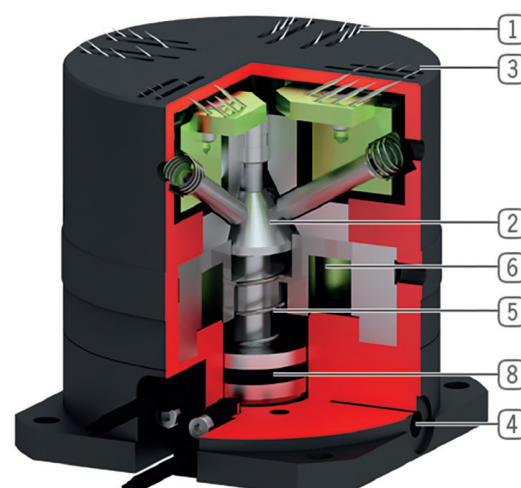
The gripper operates with a single-acting pneumatic cylinder. Pressurizing the cylinder actuates a mechanism that pushes a taper between the gripper jaws, on which the needles are positioned at an angle. The gripper jaws are pushed out by this and the needles extend a defined length. The object being gripped is gripped by piercing. The return is accomplished by a spring and by venting the cylinder. To reliably remove the object being gripped, compressed air is blown through the needle slots at the same time as the return.

①	Extending needles
②	Force transmission
③	Needle wiper
④	Stroke setting
⑤	Integrated spring
⑥	Blast-air connection
⑦	Energy supply
⑧	Drive
⑨	Integrated slot
⑩	Mounting and positioning

Fig. 1: ST36-B gripper



Fig. 2: ST40-B gripper cross-section



6 Installation

DDOC00259 / a EN / 2019-08-19

NOTE:



Non-compliance may result in damage to the system

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

CAUTION:



Non-compliance may result in minor to serious injuries

- Risk of injury in case of unexpected movement of the gripper when pneumatic energy is connected.
- Switch off the power supply before all work.
- Secure the pneumatic circuit against being switched on unintentionally.
- Check the pneumatic circuit for any existing residual energy; bleed if necessary.

6.1 Installing the gripper

The gripper may only be mounted on a surface intended for this purpose. The mounting surface must correspond to the necessary flatness.

Make sure the mounting piece is sufficiently rigid.

Depending on the design size, cylinder screws from M4 to M5 and of strength class 8.8 are used.

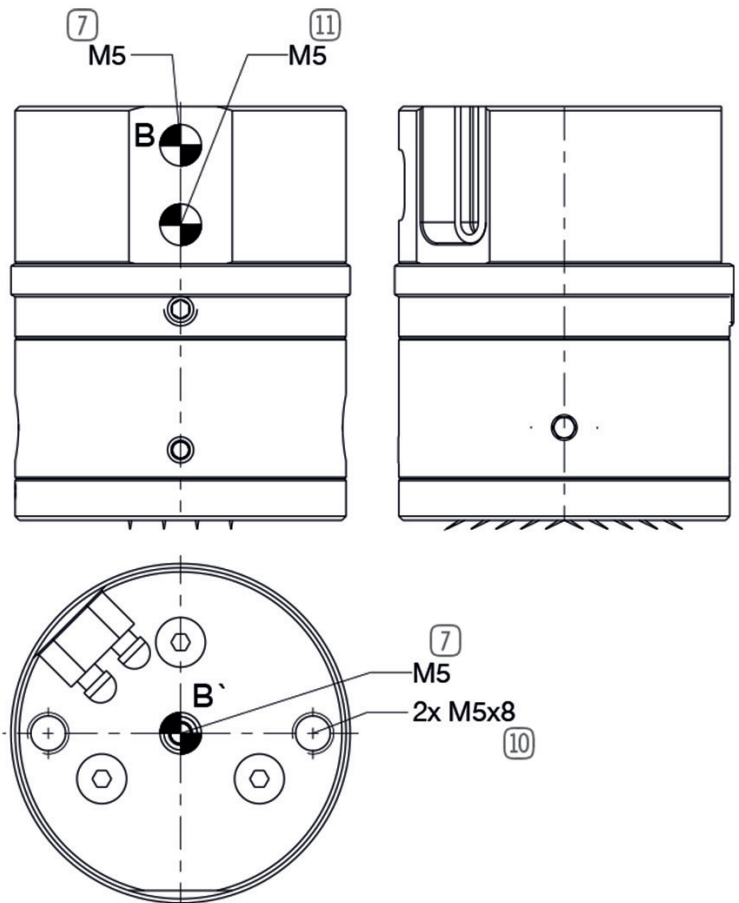
The following tightening torques must be observed during installation:

Screw size	M4	M5
Tightening torques [Nm]	2,9	6,0

ST36-B:

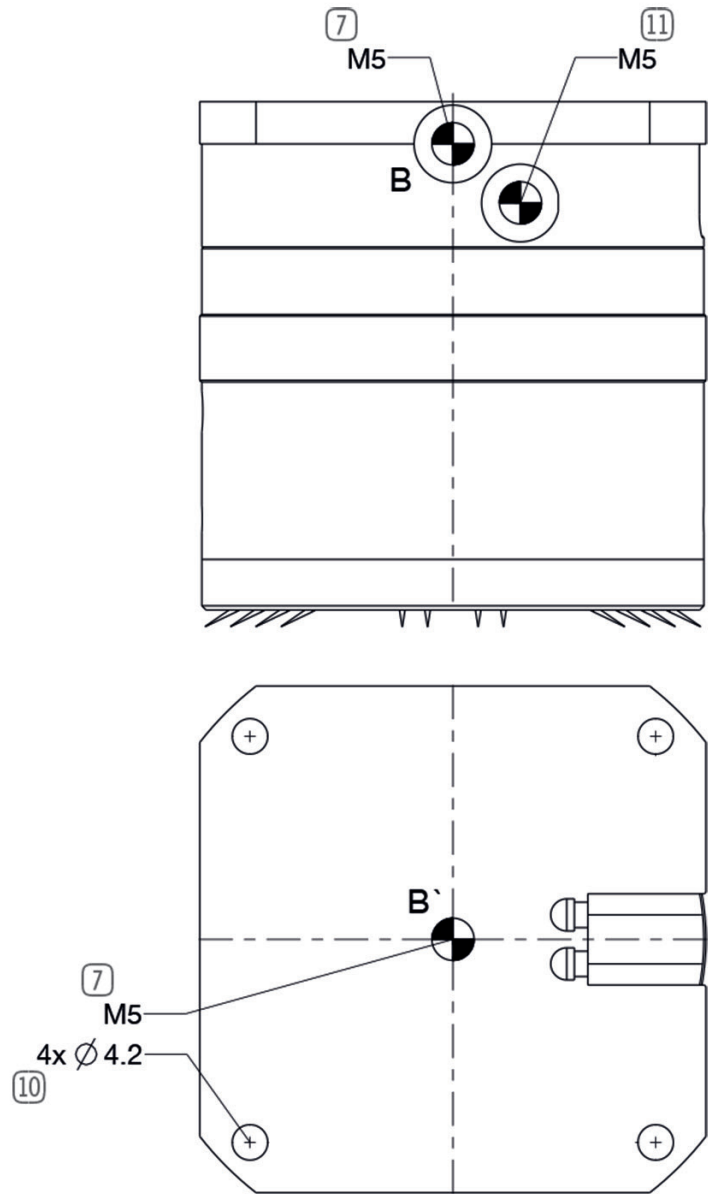
The following work steps are to be carried out to install the gripper:

- ▶ The mounting piece must cover the gripper surface completely.
- ▶ Fasten the gripper using cylinder screws.
 - When doing so, use threadlocker to secure the cylinder screws.
 - Threadlocker: Use a threadlocker suitable for the application area.
 - Be sure to comply with the screw depth specified on the drawing.



ST40-B:

- ▶ The mounting piece must cover the gripper surface completely.
- ▶ Fasten the gripper using cylinder screws.
 - When doing so, use threadlocker to secure the cylinder screws.
 - Threadlocker: Use a threadlocker suitable for the application area.



6.2 Installing the pneumatic connections

- ▶ The pneumatic system is connected at connection (7) with the identifier "B" on the casing surface of the gripper.
- ▶ An alternative connection (7) is centered on the end face of the gripper with the identifier "B".
- ▶ The connection for the blast air (11) is above connection "B" on the casing surface of the gripper.
- ▶ No alternative option exists for this connection.
 - Close off unused pneumatic connections with dummy plugs.

6.3 Checking operational readiness

After the gripper has been properly installed, use the following characteristics to check whether it is ready to be operated:

- ▶ Look and listen for leaks in the pneumatic connections.
- ▶ Check all mounting screws for their prescribed tightening torque.
- ▶ Look and listen for leaks in the pressurized gripper.
- ▶ Check to make sure the gripping process is functioning properly by opening and closing the gripper manually.

6.4 Installation of accessories

INFORMATION:



For a complete overview of accessories for the gripper, visit our website.

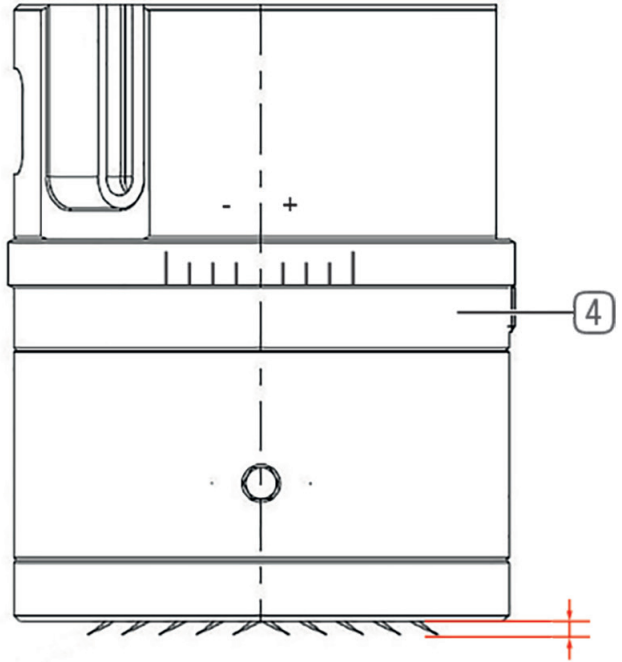
⇒ www.zimmer-group.com

If you still have questions about accessories, please contact Zimmer Customer Service.

6.5 Adjusting the needle stroke

The needle stroke can be steplessly adjusted in accordance with the specifications in the technical data. The needle stroke can be adjusted and measured only when the needles are extended.

- ▶ Turn the adjustment ring (4) to the right ⇒ the needle stroke increases.
- ▶ Turn the adjustment ring (4) to the left ⇒ the needle stroke decreases.
- The scale on the adjustment ring (4) provides orientation for the adjustment.
- 5 scale lines correspond to a stroke adjustment of 0,03 mm.
- One complete revolution of the adjustment ring (4) corresponds to a stroke adjustment of 0,3 mm.



7 Technical data

INFORMATION:



Please refer to our website ⇒ www.zimmer-group.com for "technical data."

This data varies within the type series depending on the specific design. If you should have further questions about products or "technical data," please contact Zimmer Customer Service.

8 Maintenance

Maintenance-free operation of the gripper is guaranteed for up to 5 million gripping cycles (at 6 bar).

The maintenance interval may shorten under the following circumstances:

- Operation with compressed air that does not comply with DIN ISO 8573-1 quality class 4.
- Dirty environment.
- Improper use and use that does not comply with the performance data.
- Ambient temperature of more than 60 °C; lubricants harden faster!

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

Clean the gripper as needed using a commercially available cleaning agent.

Dismantling and reassembling the gripper without authorization may result in complications, as special installation equipment and tools are sometimes required.

Zimmer GmbH shall not be liable in the event of unauthorized dismantling and reassembling of the gripper or in the event of any malfunction or damage resulting from this.

Zimmer GmbH recommends having repairs be carried out by Zimmer Customer Service.

9 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
 77866 Rheinau, Germany, Im Salmenkopf 5
 +49 7844 9138 0
 +49 7844 9138 80
 www.zimmer-group.com

We hereby declare that the incomplete machine described below,

Product designation: pneumatic needle gripper
Type designation: ST□□□

satisfies the following basic requirements of the Machinery Directive 2006/42/EC:

No. 1.1.2., No. 1.1.3., No. 1.1.5., No. 1.3.2., No. 1.3.4., No. 1.3.7., No. 1.5.3., No. 1.5.4., No. 1.5.8., No. 1.6.4., No. 1.7.1., No. 1.7.4

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, 2019-02-14	Martin Zimmer, Managing Director
First name, last name	Address	(Place and date of issuance)	(Legally binding signature)