

# INSTALLATION AND OPERATING INSTRUCTIONS



## Handling technology

GEN9000 series  
Needle gripper, electric

DDOC00207

**THE KNOW-HOW FACTORY**

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## 1 Supporting documents

### NOTE:



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.de](http://www.zimmer-group.de)  
Only the 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!

1. Installation, commissioning, maintenance and repairs may only be performed by qualified experts in accordance with these installation and operating instructions.
2. The element 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 element may cause a hazard:
  - - the element is not properly fitted, used or maintained
  - - the element is not used for its intended purpose
  - - failure to observe the local regulations (legislation, guidelines, directives), such as the EC Machinery Directive,
  - the Accident Prevention Regulations and installation and operating instructions.
3. The element may only be used in accordance with its intended 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. Make sure that the energy supply is disconnected before you install, retool, maintain or repair the element.
6. In the event of maintenance, conversion or expansion work, remove the element from the machine and carry out the work outside the danger zone.
7. When commissioning or testing, make sure that the element cannot be actuated by mistake.
8. Modifications to the element, such as adding drill holes or threads, may be made only with prior approval from ZIMMER GmbH.
9. The specified maintenance intervals are to be observed; also refer to the "Maintenance" section. When the element is used under extreme conditions, the maintenance interval must be adapted depending on the extent of the contamination. For this purpose, please contact ZIMMER GmbH Service.
10. Use of the element under extreme conditions, such as aggressive liquids and abrasive dusts, is subject to prior approval from Zimmer GmbH.

### 3 Proper use

**NOTE:**



The element is only to be used in its original state with its original accessories, with no 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 element is designed exclusively for electric operation using a 24 VDC power supply.  
The element is to be used as intended in enclosed rooms for temporary gripping, handling and holding.  
The element is not suitable for clamping workpieces during a machining process.  
Direct contact with perishable goods/food is not permitted.

### 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.

**DANGER:**



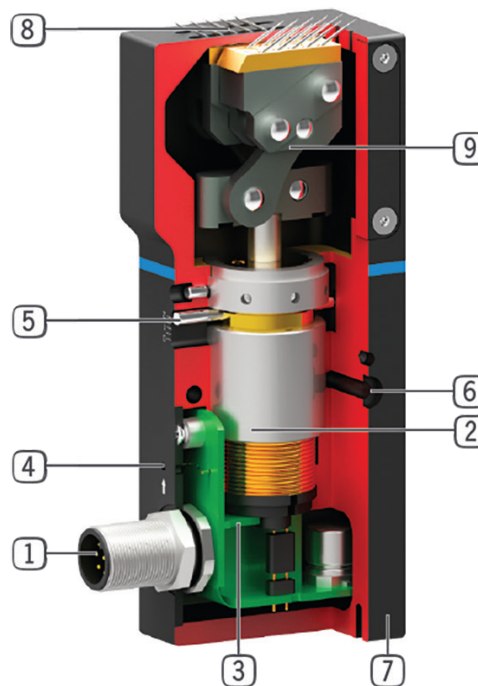
Intervention is not permitted and can lead to serious injuries.  
⇒ Warranty and disclaimer.

### 5 Product description/function

A current pulse sets the integrated moving coil drive into motion (2) .  
The travel path generated in this process is conveyed via kinematics (9) , resulting in the extension of the needles (8) .  
The needles travel united in 2 groups, arranged crosswise to each other.

#### 5.1 Sectional view of GEH6000IL

①	Energy supply
②	Drive
③	Position sensing
④	Status control
⑤	Stroke setting
⑥	Mounting and positioning
⑦	Robust, lightweight housing
⑧	Extendable needles
⑨	Kinematics



## 6 Installation

### CAUTION:



Non-compliance may result in a system failure of the gripper!  
Switch off the operating voltage for the gripper before any assembly, installation or maintenance work.

### 6.1 Installation of the element

The needle gripper can be fitted from several sides on a mounting surface which corresponds to the specifications regarding evenness.

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

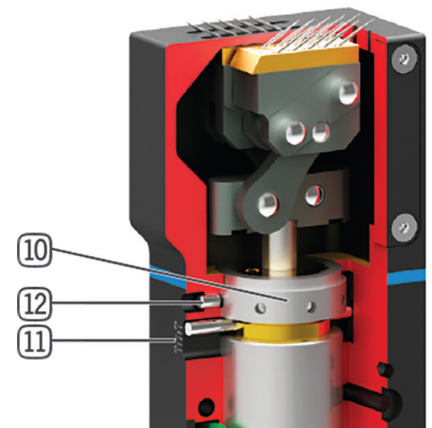
- ▶ Insert straight pins in the intended fits on the gripper.
- ▶ Use straight pins to position the gripper on the surface.
- ▶ Secure gripper with strength class 8,8 cylinder screws.
- ▶ Mount KAG1000B8 power supply cable (straight plug) or KAW1000B8 (angled plug).

Refer to the "Technical Data" section for information on evenness, tightening torque and screw diameter.

### 6.2 Setting needle stroke

Carry out the following work steps to set the needle stroke:

- ▶ Loosen the setscrew (12) that locks the adjustment wheel.
- ▶ Set the needle stroke by turning the adjustment wheel (10) to the desired dimension.
- ▶ Use a size 1,5 Allen key to turn the wheel.
- ▶ Read out the needle stroke using the dial (11).
- ▶ Tighten the setscrew that locks the adjustment wheel.



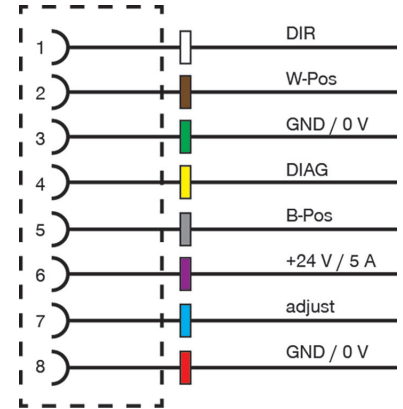
## 7 Commissioning

### 7.1 Control

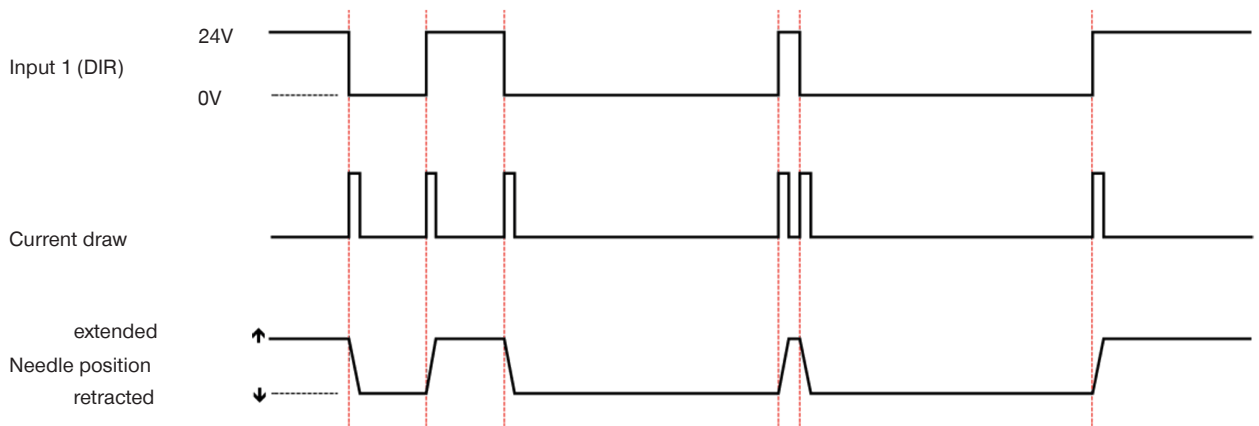
To operate the needle gripper, a voltage supply is required at inputs 3 and 8 (0 V) as well as at input 6 (+24VDC/5A). Input 1 (DIR) serves as the control input to activate the needle gripper. Input 1 (DIR) signals must remain present until the needle gripper's movement in the opposite direction is required. The energy consumption during the movement of the needles is  $\leq 5A$ . At resting position, the energy consumption of the needle gripper is 0,02A.

### 7.2 Cable assignment

PIN	Color	Function	Explanation
1	White	DIR	IN 24 V DC needle gripper control input for extension / retraction
2	Brown	W-POS	OUT 1 needle extended signal
3	Green	GND	Voltage supply 0V DC
4	Yellow	DIAG	OUT 2 diagnostic output
5	Gray	B-POS	OUT 3 needle retracted signal
6	Pink	+24V DC	Voltage supply +24V DC/5A
7	Blue	Adjust	IN input: Set end position
8	Red	GND	Voltage supply 0V DC



### 7.3 Flow diagram



## 8 Maintenance

The element is maintenance-free for up to 5 million cycles. The operating time may shorten under the following circumstances:

- Dirty environment
- Improper use
- Unapproved performance data and parameters for use

#### INFORMATION:



We recommend using ZIMMER GmbH repair service for repairs. Unauthorized dismantling and reassembly of the element can result in complications, as in some cases, special mounting equipment is required.

- ▶ Opening the element without authorization will void the warranty.

## 9 Troubleshooting

### 9.1 LED display



### 9.2 Error diagnostics

Error	Causes	Remedy
Temperature outside of permitted range. LED display flashes 	<ul style="list-style-type: none"> <li>• Adapter plate made from a material with a coefficient of thermal conductivity that is too small.</li> <li>• Surrounding temperature too high</li> </ul>	<ul style="list-style-type: none"> <li>▶ Improve the adapter plate heat convection by changing material.</li> <li>▶ Provide sufficient ventilation.</li> </ul>
Defective position sensor, no coil current. LED display flashes 	<ul style="list-style-type: none"> <li>• Faulty power supply.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Check power supply cable for defects.</li> <li>▶ Check connected current and voltage.</li> <li>▶ Send in needle gripper for inspection.</li> </ul>
Voltage outside of permitted range. LED display flashes 	<ul style="list-style-type: none"> <li>• Faulty power supply</li> </ul>	<ul style="list-style-type: none"> <li>▶ Check power supply cable for defects.</li> <li>▶ Check connected current and voltage.</li> <li>▶ Send in needle gripper for inspection.</li> </ul>
Plunger does not move.	<ul style="list-style-type: none"> <li>• Faulty power supply</li> <li>• Damage to one or more functional parts due to overload.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Check power supply cable for defects.</li> <li>▶ Check supply voltage and current.</li> <li>▶ Send in needle gripper for inspection.</li> </ul>
End position signal is not displayed.	<ul style="list-style-type: none"> <li>• End position is outside of preset range.</li> <li>• Defective power supply cable.</li> <li>• Magnetic source of interference</li> <li>• Defective integrated Hall sensor.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Calibrate end position sensing via automatic traversing routine.</li> <li>▶ Replace power supply cable.</li> <li>▶ Remove all magnetic products within a distance of 15 mm from the housing.</li> <li>▶ Send in needle gripper for inspection.</li> </ul>

### 9.3 Status table

**NOTE:**



No signal is on while energizing the coil and until positions are stabilized.

Status	Outputs			LED display flashes	
	OUT 1	OUT 2	OUT 3	W-POS	B-POS
Temperature outside of permitted range	0				0
Defective position sensor					
Voltage outside of permitted range			0	0	

### 10. Accessories / scope of delivery

**NOTE:**



If any accessories not sold or authorized by ZIMMER GmbH are used, the function of the needle gripper cannot be guaranteed.

The range of accessories from ZIMMER GmbH is specially tailored to the individual needle gripper.

Corresponding optional accessories and those included in the scope of delivery can be found at [www.zimmer-group.com](http://www.zimmer-group.com).



## 11 Sensors

### 11.1 Sensing of the end position

The needle gripper's end position sensing is preset at the factory. If necessary, end positions can be reset by means of an automatic traversing routine.

- ▶ To do so, a signal (+24V) must be applied to input 7 (adjust) for at least 10 seconds. After 3 seconds, the traversing routine begins and is completed after approx. 20 cycles.
- ▶ If the signal (+24V) is interrupted before the end of the traversing routine, the new end positions are not saved in the internal control system.
- ▶ End position confirmation occurs via outputs 2 (W-POS) and 5 (B-POS).
- ▶ The statuses are shown on the needle gripper via the LED display.

### 11.2 LED display



### 11.3 Status table

**NOTE:**



No signal is on while energizing the coil and until position is stabilized.

Status	Outputs			LED display flashes	
	OUT 1	OUT 2	OUT 3	W-POS	B-POS
Needles extended		0	0		0
Needles retracted	0	0		0	

## 12 Installer's declaration

In terms of the EU Machinery Directive 2006/42/EC (Appendix II 1 B)

Name and address of the manufacturer:

Zimmer GmbH, Im Salmenkopf 5, D-77866 Rheinau, Germany, Phone: +49 7844 91380, www.zimmer-group.de

We hereby declare that the incomplete machines described below

**Product designation:** Electric needle gripper

**Type designation:** GEN9□□□IL series

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

The following harmonized standards have been used:

Basic health and safety requirements:

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.

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.

**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).**

**Authorized representative for the compilation of relevant technical documents**

Kurt Ross	See manufacturer's address	Rheinau, Germany, 2019-01-11	Martin Zimmer
First name, last name	Address	(Place and date of issuance)	(Legally binding signature) Managing Partner

### 13 Declaration of conformity

in terms of the EC Directive 2014/30/EC on electromagnetic compatibility

Name and address of the manufacturer:

Zimmer GmbH, Im Salmenkopf 5, D-77866 Rheinau, Germany, Phone: +49 7844 91380, www.zimmer-group.de

We hereby declare that the products described below

**Product designation: Electric needle gripper**

**Type designation: GEN9□□□IL series**

conform to the requirements of the Electromagnetic Compatibility Directive 2014/30/EU in their design and the version we put on the market.

The following harmonized standards have been used:

EN 61000-6-2:2005 Electromagnetic Compatibility (EMC) - Part 6-2:  
Generic standards; stability; area of industry

EN 61000-6-4:2007 Electromagnetic Compatibility (EMC) - Part 6-4:  
Generic standards; electromagnetic interference; industrial sector

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

#### Authorized representative for the compilation of relevant technical documents

Kurt Ross	See manufacturer's address	Rheinau, Germany, 2019-01-11	Martin Zimmer
First name, last name	Address	(Place and date of issuance)	(Legally binding signature) Managing Partner

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