



INSTALLATION AND OPERATING INSTRUCTIONS

GEP9000 series
2-jaw parallel grippers

DDOC00190

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!

1. Installation, commissioning, maintenance and repairs may only be performed by qualified specialists in accordance with these installation and operating instructions.
2. The grippers are state-of-the-art. They are fitted to industrial machines and are used to hold workpieces. The grippers will only be dangerous if, for instance:
 - The grippers are not properly installed, used or maintained.
 - The grippers are not used for their intended purpose.
 - The local regulations (legislation, decrees, guidelines), such as the EC Machinery Directive, accident prevention regulations and the assembly 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 operational range of the gripper.
6. Make sure that the power cables are disconnected before you install, modify, maintain or repair the gripper.
7. In case of maintenance, modification or attachment 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 drill holes or threads, may be made only with prior approval from Zimmer GmbH.
10. The specified maintenance intervals and compressed air quality specifications are to be observed; also refer to the Maintenance section. When the gripper is used under extreme conditions, the maintenance interval must be adapted depending on the extent of contamination. Please contact our hotline for this purpose.
11. Use of the gripper under extreme conditions, such as aggressive liquids and abrasive dust, is subject to prior approval from Zimmer GmbH
12. When disassembling grippers with integrated springs, exercise heightened caution because spring tension is always present.

3. Proper use

NOTICE:



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

Use outside of the defined parameters is not permitted. Unauthorized electrical or mechanical modifications must not be made.

The gripper is designed exclusively for electric operation using a 24 V power supply.

The gripper is designated for use in enclosed rooms for temporarily gripping, handling and holding parts.

The gripper 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 specialists. These personnel must have read and understood the installation and operating instructions in full.

5. Product description

5.1 Forces and torques

INFORMATION:



For information on forces and torques, please visit our website.

Zimmer Customer Service is available to provide you with assistance if you have any further questions.

5.2 Type plate

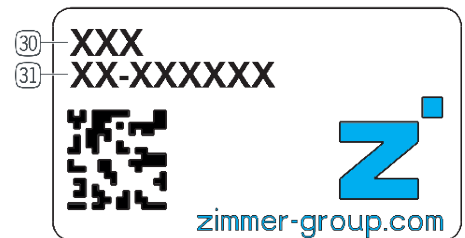
A type plate is attached to the housing of the gripper.

The serial number and the article number are shown on this type plate.

► The serial number should be assigned to the project.

⇒ Article number: 30

⇒ Serial number: 31



INFORMATION:



Please state the serial number in the event of damage or a complaint.

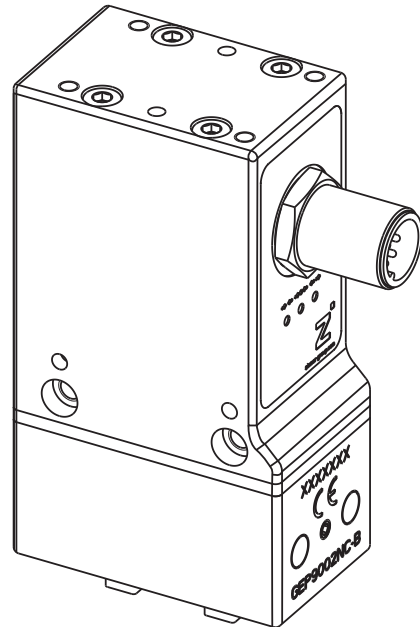
Zimmer Customer Service is available to provide you with assistance if you have any further questions.

6. Function

A current pulse sets the integrated moving coil drive into motion. The travel path generated in this process is transferred to the gripper jaws by kinematics, producing the stroke.

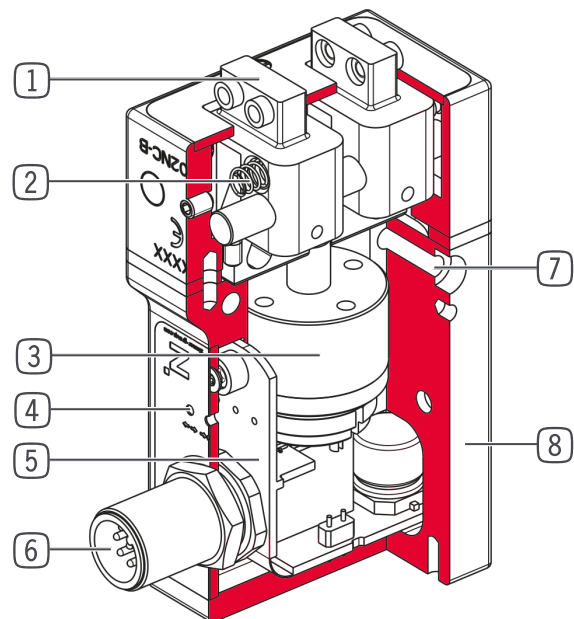
NC is suitable for outside gripping ► ◀ and NO is suitable for inside gripping ◀ ►.

Fig. 1: GEP9000 gripper



- | | |
|---|---|
| ① | Gripper jaw |
| ② | Positively driven wedge hook transmission |
| ③ | Drive |
| ④ | Position sensing |
| ⑤ | Status control |
| ⑥ | Power supply |
| ⑦ | Mounting and positioning |
| ⑧ | Robust, lightweight housing |

Fig. 2: Cutaway view of the GEP9000 gripper



6.1 Technical data

INFORMATION:



For technical data, please visit our website.
This data varies within the series, depending on the specific design.

Zimmer Customer Service is available to provide you with assistance if you have any further questions.

7. Installation

7.1 Safety notes

NOTICE:



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

- ▶ Electronics may get damaged.

CAUTION:



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

- ▶ Injuries are possible.

WARNING:



Risk of injury in case of unexpected movement of the machine or system into which the gripper 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.

7.2 General installation information

The gripper must be installed on a mounting surface in accordance with the specifications for flatness.

Length < 100 mm → permitted flatness imperfection < 0.02 mm

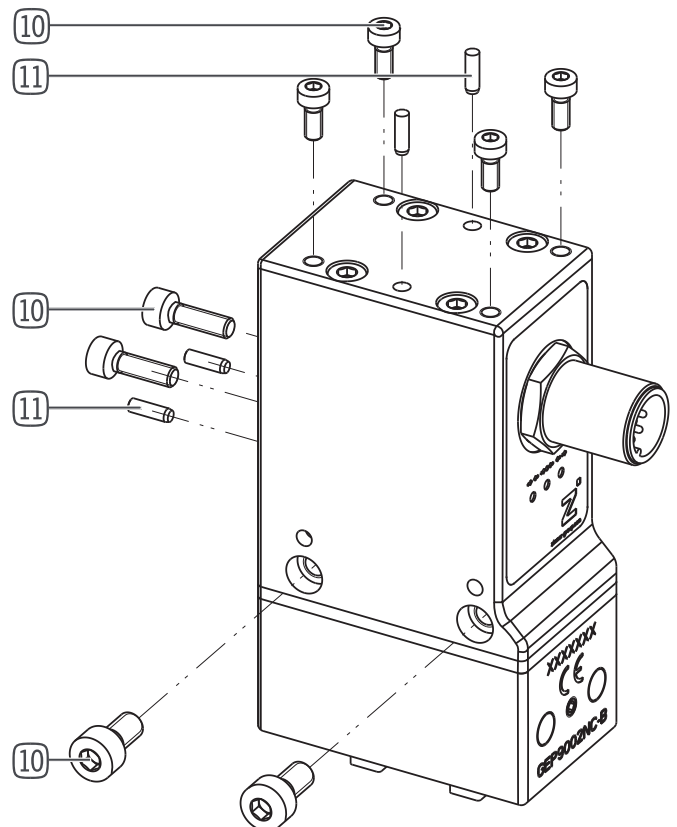
Length > 100 mm → permitted flatness imperfection < 0.05 mm

- ⇒ The mounting screws and the pins 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.
- ⇒ Make sure the mounting surface is sufficiently rigid and flat.
- ⇒ Refer to the technical data sheet for the exact positions.

7.3 Installing the gripper

The gripper can be installed from multiple sides on the mounting piece via the threads on the housing. The following work steps must be observed during installation:

- ▶ Insert the straight pin ⑪ into the designated fits on the gripper.
- ▶ Use the straight pin ⑪ to position the gripper on the designated mounting piece.
- ▶ Use the mounting screws ⑩ to secure the gripper onto the mounting piece.
- ▶ Install the power supply cable.



7.4 Installing the gripper fingers

NOTICE:

Before installing the gripper fingers, make sure they are of a suitable length for the selected gripper variant.

For more information, refer to our website.
Zimmer Customer Service is available to provide you with assistance if you have any further questions.

7.5 Installing accessories

NOTICE:

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

For information on all available accessories, please visit our website.

8. Commissioning

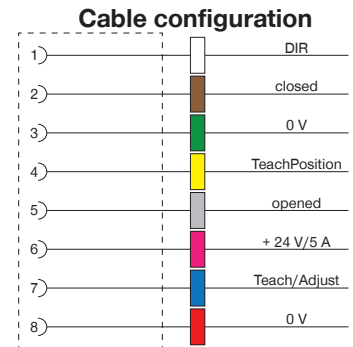
8.1 Control

To use the gripper, a power supply is required at inputs 3 and 8 (0 V) as well as at input 6 (+24 V DC/5 A). Input 1 (DIR) is used as the control input by means of which the gripper is opened or closed. The signal of input 1 (DIR) must remain present until an opposite movement of the gripper jaws is required.

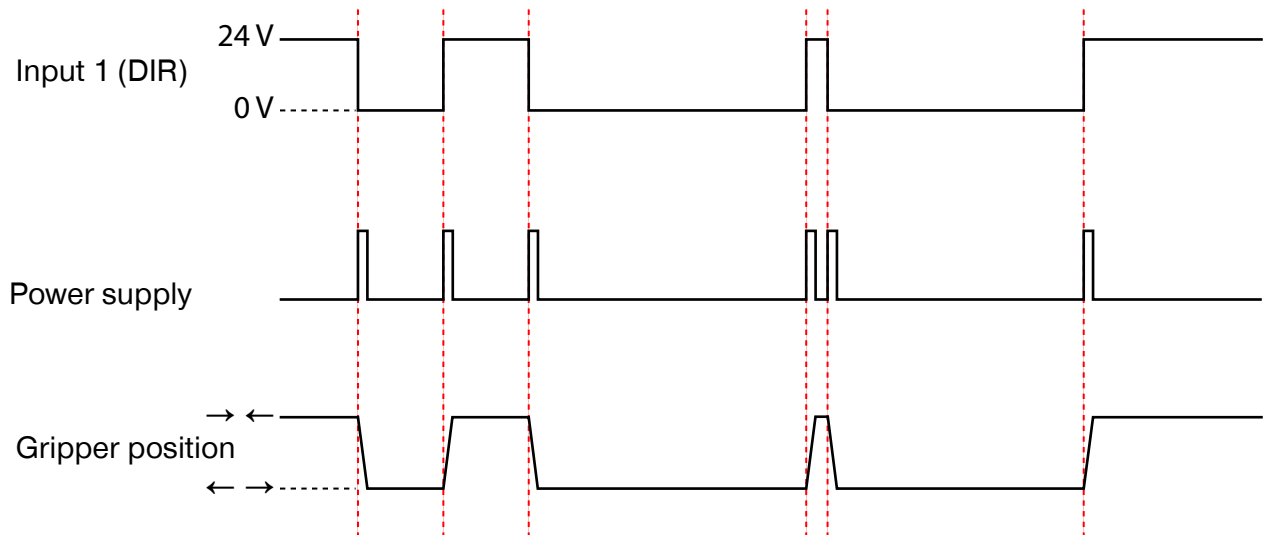
The power consumption during the movement of the gripper jaws is ≤ 5 A.

At resting position, the power consumption of the gripper is 0.02 A.

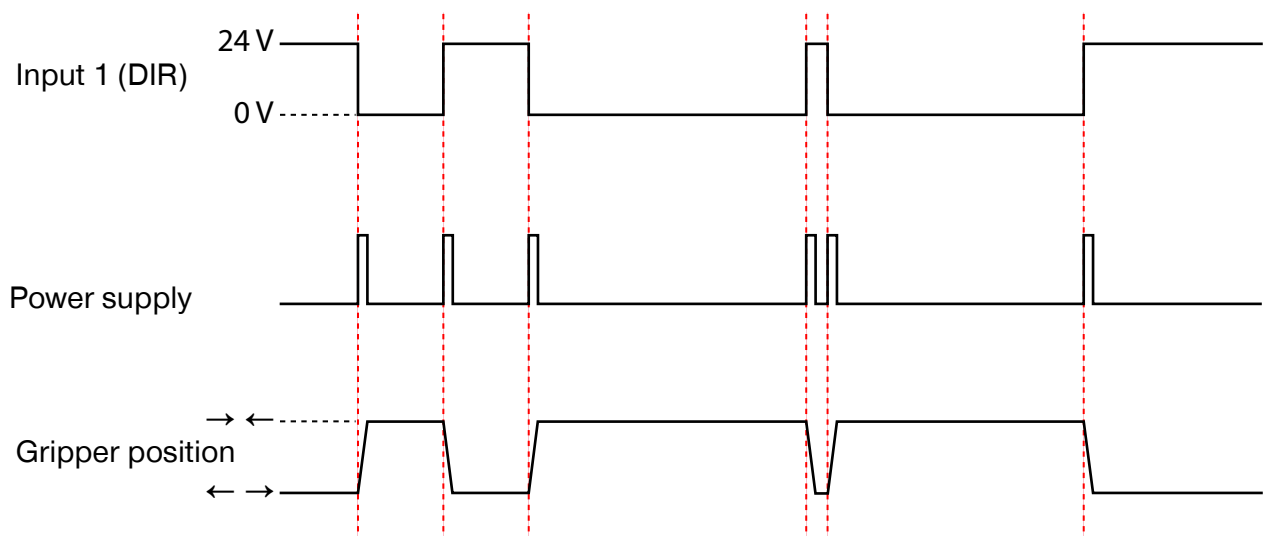
PIN	Color	Function	Explanation
1	White	DIR	IN open/close gripper control input 24 V DC
2	Brown	closed	OUT gripper closed message
3	Green	GND	0 V GND DC/5 A power supply
4	Yellow	teached position	OUT workpiece gripped message
5	Gray	opened	OUT gripper open message
6	Pink	+24 V DC	24 V DC/5 A power supply
7	Blue	teach/adjust	IN programming input
8	Red	GND	0VDC power supply



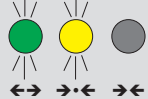
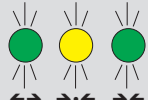
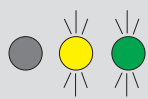

8.2 Flow diagram NC Version



8.3 Flow diagram NO Version



9. Error diagnosis

Error code	Error	Possible cause	Measure
	Temperature outside of permitted range LED display flashes 	Adapter plate made from a material with a coefficient of thermal conductivity that is too small	Improve the adapter plate heat convection by changing material
		Surrounding temperature too high	Provide sufficient ventilation
	Defective position sensor, no coil current LED display flashes 	Faulty power supply	Check power supply cable for defects Check connected current and voltage Send in the gripper for inspection
	Voltage outside of permitted range LED display flashes 	Faulty power supply	Check the power supply cable for defects. Check the given current and voltage. Send in the gripper for inspection.
	Programmed gripper position is not recognized LED display flashes 	Workpiece tolerance outside of sensing range	Reprogram the gripper position
		Clamp the gripper jaws	Relubricate Check flatness of mounting surface Compare actual length of gripper jaws with permitted length
	Gripping force is not attained	Spring fracture	Send in the gripper for inspection
		Contamination, inadequate lubrication	Clean the guide and relubricate
	Gripper jaws do not move	Faulty power supply	Check power supply cable for defects Check connected current and voltage
		Damage to one or more functional parts due to overload	Send in the gripper for inspection
		Spring fracture	Send in the gripper for inspection
	End position signals are not displayed	End position is outside of preset range	Calibrate end position query via automatic traversing routine
		Defective power supply cable	Replace power supply cable
		Defective integrated Hall sensor	Send in the gripper for inspection

9.1 Status table

NOTICE:



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

Status	Outputs			LED display flashes		
	opened	teached position	closed	opened ↔	teached position →•←	closed ↔↔
Programmed gripper position is not recognized	1	0	1	1	0	1
Defective position sensor	1	1	1	1	1	1
No coil current	1	1	1	1	1	1
Temperature outside of permitted range	1	1	0	1	1	0
Voltage outside of permitted range	0	1	1	0	1	1

10. Sensors

10.1 Sensing the intermediate position

The intermediate position, also referred to as "workpiece gripped," can be programmed as needed. For this purpose, a signal (+24 V) must be applied to input 7 (teach/adjust) for a maximum of 3 seconds. In this process, feedback is provided via output 4 (teached position). The status is visualized on the gripper via the LED display.

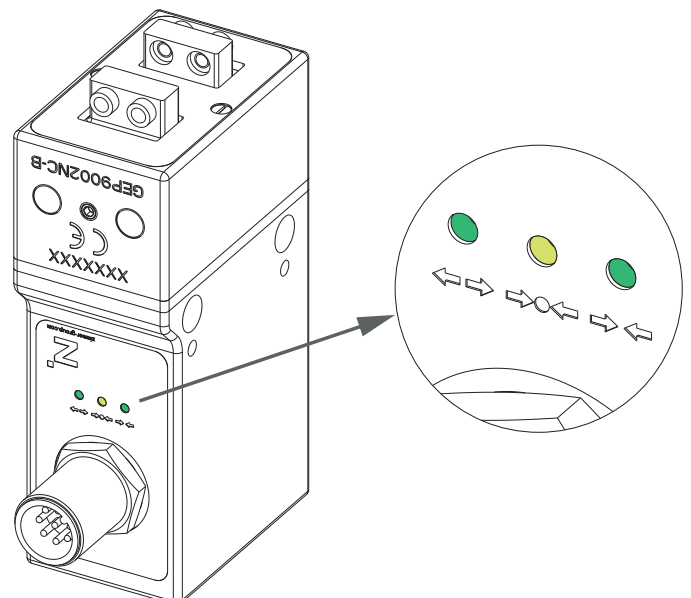
10.2 Sensing the end positions

The gripper's end position sensing is preset at the factory. If necessary, end positions can be reset by means of an automatic traversing routine. For this purpose, a signal (+24 V) must be applied to input 7 (teach/adjust) for at least 10 seconds.

After 3 seconds, the traversing routine begins and is completed after approx. 20 gripping cycles. If the signal (+24 V) is interrupted before the end of the traversing routine, the new end positions are not stored in the internal control system.

End position feedback takes place by means of outputs 2 (closed) and 5 (opened). The statuses are visualized on the gripper by means of the LED display.

10.3 LED display



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10.4 Status table

NOTICE:



There is no signal while the coil is being energized and up until the position is stabilized.

Status	Outputs			LED display		
	opened	tached position	closed	opened ↔	tached position →•←	closed →←
Open	1	0	0	1	0	0
Closed	0	0	1	0	0	1
Programmed gripper position "tached position"	0	1	0	0	1	0

11. Maintenance

Maintenance-free operation of the gripper is guaranteed for up to **30 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.
- Ambient temperature of more than 60°C; lubricants harden faster!

Even though the gripper is, as mentioned, maintenance-free, 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 gripper without authorization may result in complications, as special installation equipment is required in some cases.

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.

12. Accessories/scope of delivery

INFORMATION:



If any accessories not marketed or authorized by Zimmer GmbH are used, the function of the gripper cannot be guaranteed.

The accessories from Zimmer GmbH are specifically fitted for the individual grippers.

Information on the corresponding optional accessories included in the scope of delivery can be found at

www.zimmer-group.com.

13. Transportation/storage/preservation

- ▶ The transport and storage of the gripper must take place exclusively in the original packaging.
- ▶ If the gripper has already been installed on the higher-level machine unit, it must be ensured during transport that no unintentional movements may take place. Before commissioning the machine 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.
 - ⇒ Package the product.
 - ⇒ During storage, it must be kept from direct sunlight.
- ▶ Clean all components. There must be no soiling left on the components.
- ▶ Visually inspect all of the components.
- ▶ Remove all foreign objects.
- ▶ Properly remove potential corrosion spots.
- ▶ Close electrical connections using suitable covers.

14. Decommissioning and disposal

INFORMATION:



If the gripper reaches the end of its operational phase, the gripper can be completely disassembled and disposed of. Disconnect the gripper from the power supply completely. The gripper 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.

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

We hereby declare that the incomplete machines described below

Product designation: 2-jaw parallel gripper, electric

Type designation: GEP9[][] 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. 1.3.1, 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.

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 1A.

Authorized representative for the compilation of relevant technical documents

Kurt Ross	See manufacturer's address	Rheinau, Germany, 2020-02-03	Martin Zimmer
First name, last name	Address	(Place and date of issuance)	(Legally binding signature) Managing Partner

16. Declaration of Conformity

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

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 products described below

Product designation: 2-jaw parallel gripper, electric

Type designation: GEP9[][] series

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

The following harmonized standards have been used:

DIN EN 61000-6-2 EMC Generic standard, Immunity for industrial environments
 Electromagnetic Compatibility – Part 6-2

DIN EN 61000-6-4 EMC Generic standard, Emission standard for industrial environments
 Electromagnetic Compatibility – Part 6-4

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, 2020-02-03	Martin Zimmer
First name, last name	Address	(Place and date of issuance)	(Legally binding signature) Managing Partner

