



MATCH

INSTALLATION AND OPERATING INSTRUCTIONS

MATCH needle gripper

LWR50L-27 series

DDOC01645

THE KNOW-HOW FACTORY

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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
 - 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 Notices and graphics in the installation and operating 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 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 or workplace safety.

2 Safety notices

WARNING



Risk of injury caused by suspended loads

Improper handling of suspended loads can cause serious injury.

- ▶ Always keep an adequate safety distance from suspended loads.
- ▶ Never walk underneath a suspended load.

CAUTION



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

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.
- ▶ 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.

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.

The product is intended for industrial use.

The product is to be used as intended in enclosed rooms for temporary gripping, handling and holding.

The product is not suitable for clamping workpieces during a machining process.

Direct contact with perishable goods/food is not permitted.

Observance of the technical data and of the installation and operating instructions are part of proper use.

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

CAUTION



Reduction of the gripping force can cause personal injury and material damage

When flexible components are gripped, the gripping force of the product is reduced.

Reduced gripping force can lead to personal injury or material damage, because the components that are being gripped can no longer be securely gripped and transported.

NOTICE



► Make sure that the setting of the gripping force and the selection of the gripper finger length are correct to prevent incorrect bracing of the gripper jaws.

⇒ An incorrect configuration or selection can lead to malfunction

The MATCH End-of-Arm Ecosystem is equipped with an extensive range of functions and universal communication interfaces. MATCH is compatible with all common lightweight robots. The system can be mounted on the robot flange and set up with a few manual adjustments.

The product is a safe quick-change system (MATCH gripper).

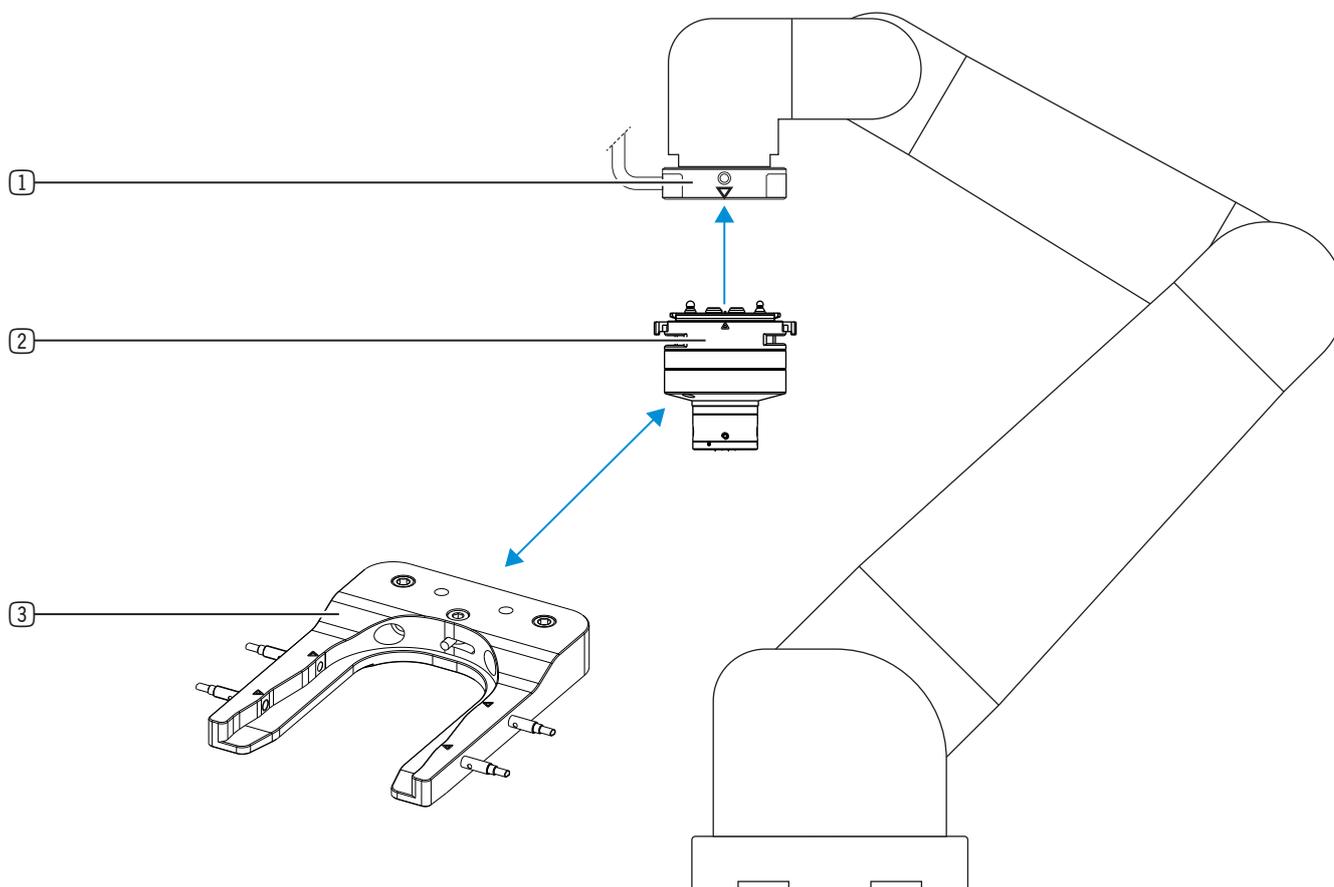
A needle gripper is installed in the product.

The basic and proven safety principles from DIN EN 13849-1 can be complied with only if original parts from Zimmer GmbH are used.

The original parts from Zimmer GmbH required for the safety principles are:

- ① MATCH robot module (LWR50F-XX)
- ② MATCH gripper (LWR50L-XX)
- ③ MATCH storage station (ALWR1-50-A) (sensors optional)

For the overall safety of the function, all three components (MATCH robot module, MATCH gripper, and MATCH storage station) must be taken into account (see "Functional Safety" section).

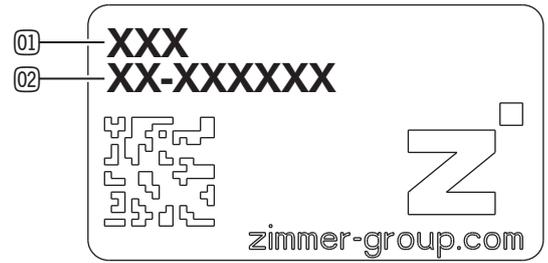


5.1 Type plate

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

The article number and confirmation number are shown on the type plate.

- ① Article number
- ② Confirmation number



5.2 Product variants and compatibility

INFORMATION



- ▶ You can find information on our website.
- ▶ Please contact Zimmer Customer Service if you have any questions.

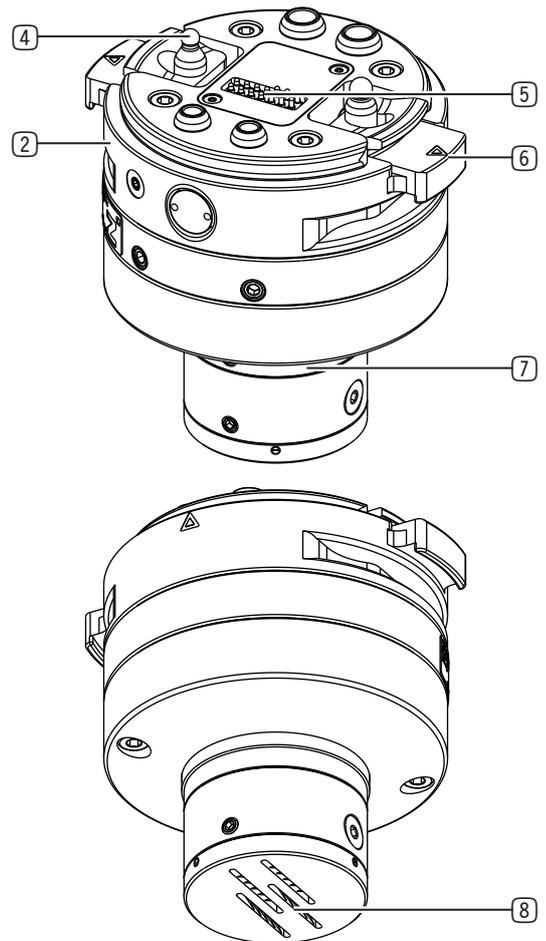
6 Functional description

By aerating the pneumatic cylinder, the jaws are pushed outward and the needles extend a defined length.

The workpieces are gripped by piercing.

The return movement is done by a spring and by de-aerating the pneumatic cylinder. To reliably remove the workpieces, compressed air is blown through the needle slots during the return movement.

- ② MATCH gripper for quick-change system
- ④ Rotation prevention/torque absorption
- ⑤ Signal transmission
- ⑥ Locking
- ⑦ Stroke setting ring
- ⑧ Needle



6.1 Sensors

Example image of a combination consisting of a MATCH robot module, MATCH gripper, and MATCH storage station. Check up to two sensors in the storage position to see whether the MATCH gripper is present in the MATCH storage station. Then move the MATCH robot module onto the MATCH gripper from above. The centering pins of the MATCH gripper help in insertion.

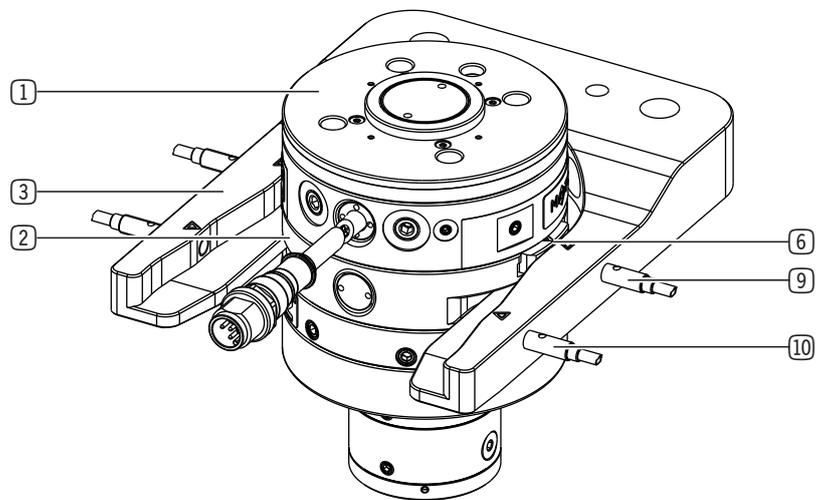
The robot, along with the MATCH robot module and MATCH gripper, moves to the inspection position sensors in the MATCH storage station.

The two sensors in the inspection position (test channel) respond if the lockings are extended and make contact in the MATCH robot module.

When the MATCH robot module and MATCH gripper are joined, the internal spring-pin contacts for signal transmission are contacted.

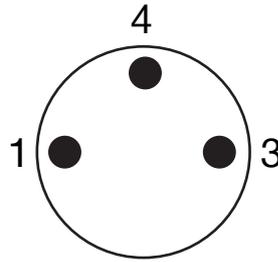
Then the Connect LED changes color from red to green and a Connect signal (depending on the variant) is passed to the higher-level control system.

- ① MATCH robot module for quick-change system
- ② MATCH gripper for quick-change system
- ③ MATCH storage station
- ⑥ Locking
- ⑨ Sensor in storage position (MATCH gripper present)
- ⑩ Sensor in inspection position (test channel, locking extended)

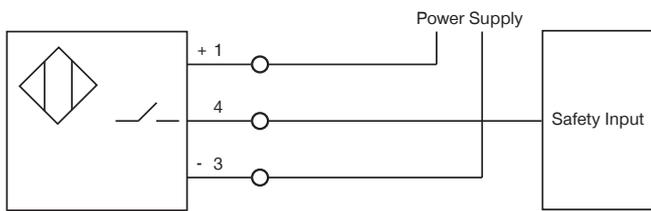


6.1.1 Wiring diagram sensor system

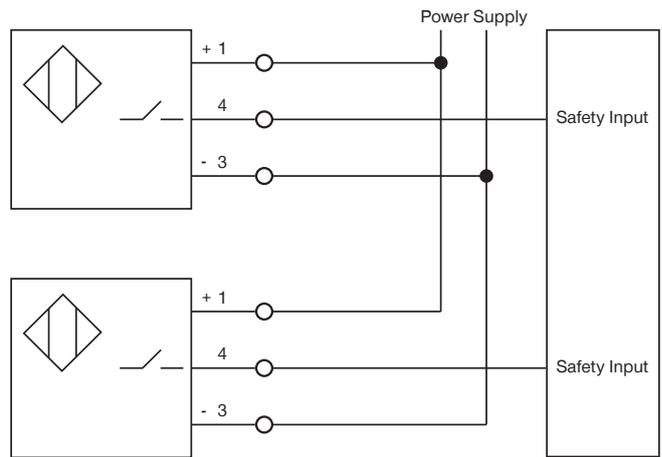
Sensor plug connection M8 3-pin:



Graphical symbol for sensor in storage position

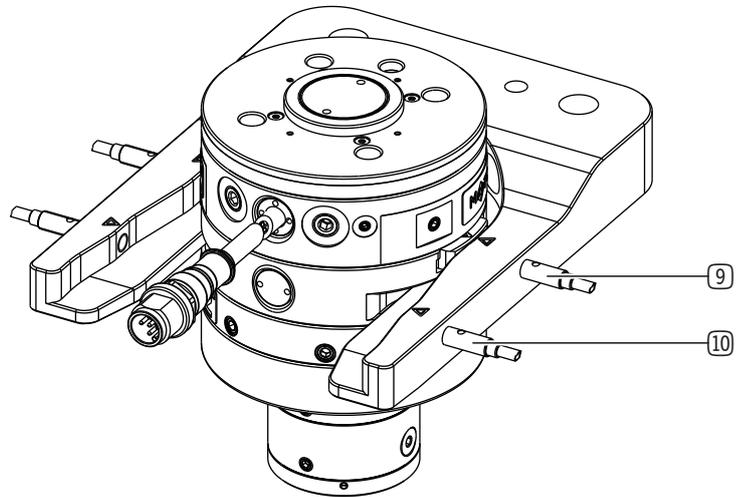


2 sensors in inspection position connected in series



6.1.2 Adjust the sensors in the inspection position

- ▶ Bring the markings on the locking elements of the MATCH gripper to the position of the front markings of the MATCH storage station.
- ▶ Turn in the sensors until they emit a signal.
- ▶ Fasten the sensors at this position.
- ▶ Coat the sensors with sealing lacquer.



6.1.3 Adjust the sensors in the storage position

- ▶ Position an MATCH gripper in the MATCH storage station.
- ▶ Turn in the sensors until they emit a signal.
- ▶ Coat the sensors with sealing lacquer.

- ⑨ Sensor in storage position (MATCH gripper present)
- ⑩ Sensor in inspection position (test channel, locking extended)

6.2 Functional safety

For the overall safety of the function, all three components (MATCH robot module, MATCH gripper and MATCH storage station) must be taken into account.

Fault elimination in accordance with DIN EN ISO 13849-2, Annex A, Table A2 and A3 for the helical compression springs used can be given.

6.3 Control

INFORMATION



- ▶ You can find the information in the technical data sheet on our website.
- ▶ Please contact Zimmer Customer Service if you have any questions.

6.4 Self-locking mechanism

INFORMATION



- The loose part of the product has a mechanical self-locking mechanism to ensure that the workpiece remains held by the product in the event of power supply failure (e.g. an emergency stop).
- ▶ Please contact Zimmer Customer Service if you have any questions.

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.
- ▶ Please contact Zimmer Customer Service if you have any questions.

8 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.
- ▶ 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/observe and adhere to the temperature range.
 - ▶ Avoid wind/drafts/water condensation formation.
 - ▶ Cover the product with a weatherproof, tear-resistant foil to prevent dust.
 - ▶ 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 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.

CAUTION



Risk of injury due to uncontrolled movements

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

- ▶ Switch off the power supply to the machine before carrying out any work.
- ▶ Secure the power supply against being switched on unintentionally.
- ▶ Check the machine for any residual energy that may be present.

NOTICE



- ▶ Installation may only be carried out by qualified personnel in accordance with these installation and operating instructions.
- ▶ Switch off the power supply before any assembly, installation or maintenance work.

10.1 Installing the product

INFORMATION



- ▶ For information, refer to the installation and operating instructions of the MATCH robot module on our website.
 - LWR50F

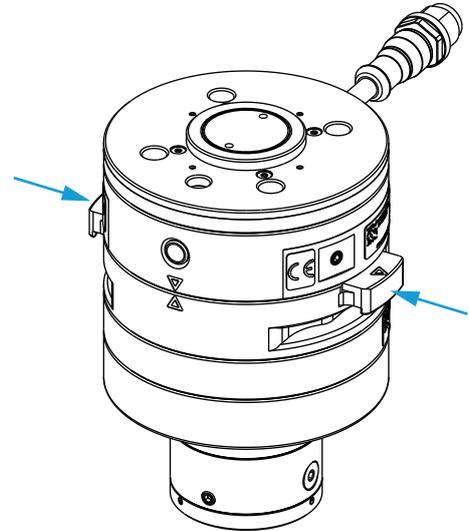
Fasten the product on the MATCH robot module. No assembly work is necessary for the product. The end effector is already connected to the loose part.

10.1.1 Installing the MATCH robot module and MATCH gripper

Example image of a combination consisting of a MATCH robot module, MATCH gripper, and MATCH storage station.

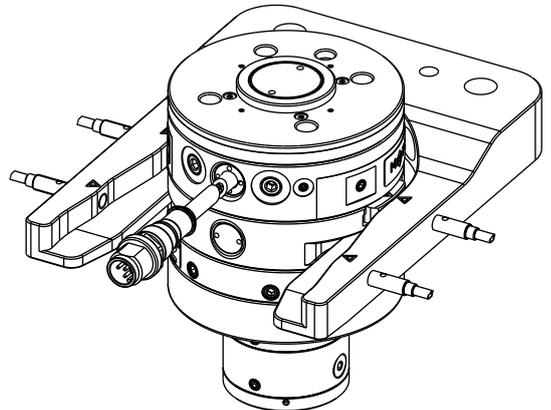
Manual exchange:

The MATCH gripper can be installed on the MATCH robot module and locked manually.



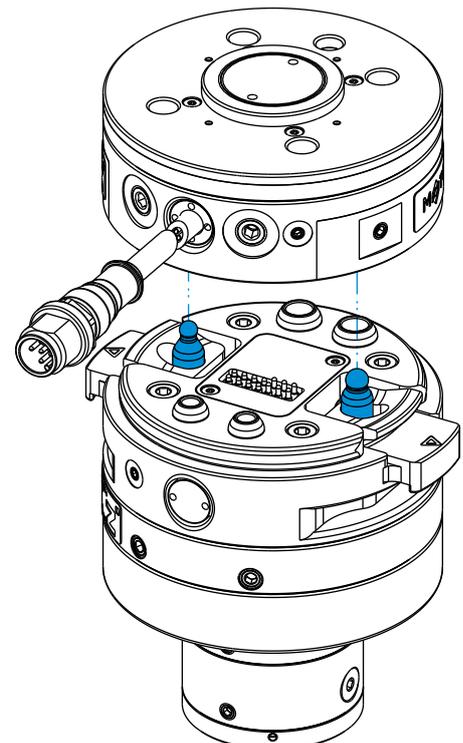
Automatic exchange:

The MATCH robot module is moved to the MATCH gripper in the MATCH storage station and locked by means of the MATCH storage station (see "Sensors" section).



Rotation prevention:

The design rules out incorrect joining, as the MATCH gripper is equipped with two different bolts.



10.2 Installing the energy supply

NOTICE



Installation of voltage supply is done internally. This means that the MATCH gripper is equipped with internal contacts. These contacts transmit all signals.

- ▶ The contacts of the energy supply must be dry, clean and undamaged at all times.
- ⇒ Damage to the contacts can result in malfunction of the product.

10.3 Static charge

CAUTION



Non-compliance may result in material damage.

Grounding the product is recommended if ESD sensitive parts come into contact with the product.

Grounding is also recommended in applications that require high EMC shielding.

The movement of the needles creates low voltages as a result of static charging. These charges cannot be dissipated if the product is mounted on an insulating surface and if discharge is not possible through the workpiece.

INFORMATION



⇒ The cycle time must therefore be reduced as the temperature increases.

10.4 Installing accessories

NOTICE



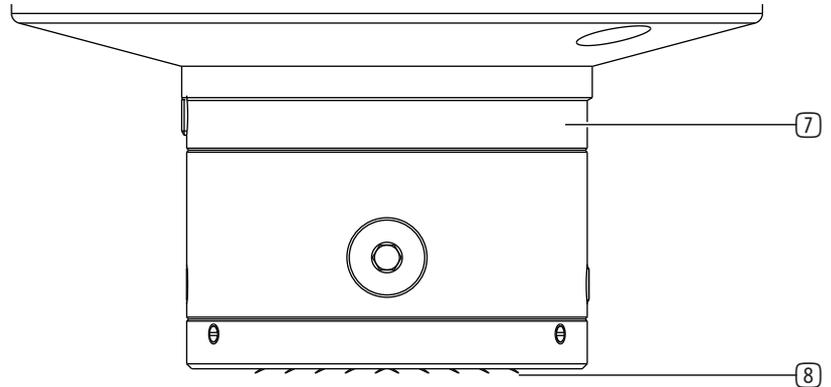
Before installing an accessory, make sure it is suitable for use with the selected variant.

- ▶ You can find information on our website.
- ▶ Please contact Zimmer Customer Service if you have any questions.

11 Commissioning

11.1 Setting the needle stroke

- ▶ Extend the needles.
- ▶ Turn the stroke setting ring to adjust the needle stroke.
 - Turning clockwise: Needle stroke is made larger.
 - Turning counterclockwise: Needle stroke is made smaller.
 - Complete revolution: The needle stroke is enlarged or reduced by 0.3 mm.



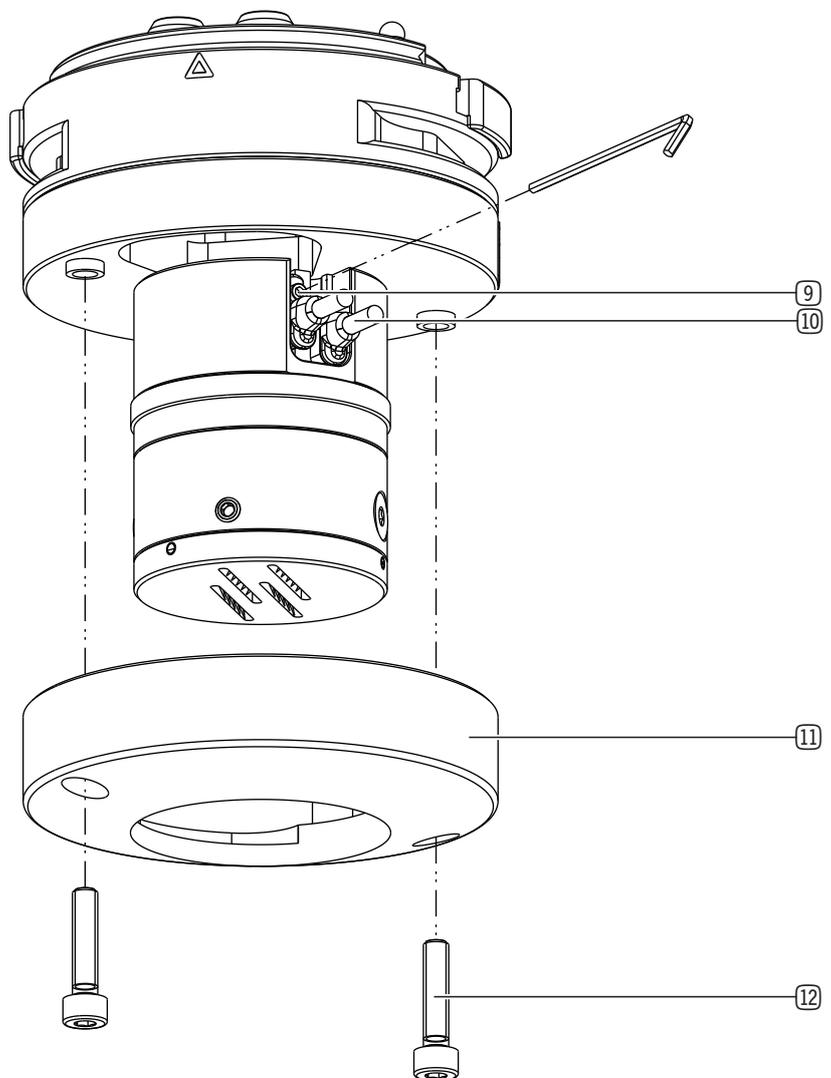
7 Stroke setting ring

8 Needle

11.2 Setting the sensors

The sensors query whether the needles are extended or retracted.

- ▶ Remove the mounting screws.
- ▶ Remove the adapter plate.
- ▶ Turn the adjustment screw using an Allen key.



9 Adjustment screw

10 Sensor

11 Adapter plate

12 Mounting screw

INFORMATION



- ▶ More information can be found in the installation and operating instructions of the sensor.
 - MFS01-S-KHC-P1-PNP

12 Maintenance

CAUTION



Material damage resulting from blowing out with compressed air

Blowing out the product with compressed air can cause malfunctions and pose a risk of accidents.

- ▶ Never purge the product with compressed air.

CAUTION



Material damage caused by liquid and solvent-based cleaners

Liquid and solvent-based cleaning agents can cause malfunctions and pose a risk of accidents.

- ▶ Do not clean the product with any cleaning agents that are liquid or contain solvents.

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

Maintenance-free operation of the MATCH gripper for quick-change system is guaranteed for up to **100,000 change cycles** (hot plug).

The maintenance interval may be shortened under the following circumstances:

- Dirty environment
 - Improper use and use that does not comply with the power specifications.
 - Ambient temperature is too high.
 - ▶ Even though the product is maintenance-free as mentioned above, perform a regular visual inspection to check for any corrosion, damage or contamination.
 - ▶ Have maintenance work be performed by Zimmer Customer Service whenever possible.
- ⇒ Dismantling and reassembling the product without authorization may result in complications, as special installation equipment is required in some cases. Zimmer 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 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
77866 Rheinau, Germany
- ☎ +49 7844 9138 0
- ✉ info@zimmer-group.com
- 🌐 www.zimmer-group.com

We hereby declare that the incomplete machine described below

- Product designation:** MATCH needle gripper
- Type designation:** LWR50L-27 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. 1.5, 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.

Kurt Ross

Authorized representative for the compilation of relevant technical documents

Rheinau, Germany, 2022-05-17

(Place and date of issuance)



Martin Zimmer
(Legally binding signature)
Managing Partner