Assembly and Operating Manual
MWS
Miniature-Change-System

Translation of the original manual

Hand in hand for tomorrow

Imprint

Technical changes:
We reserve the right to make alterations for the purpose of technical improvement.

Document number: 389230

Version: 05.00 | 21/03/2024 | en

Dear Customer,

Thank you for trusting our products and our family-owned company, the leading technology supplier of robots and production machines.

Our team is always available to answer any questions on this product and other solutions. Ask us questions and challenge us. We will find a solution!

Best regards,

Your SCHUNK team

Customer Management
Tel. +49-7133-103-2503
Fax +49-7133-103-2189
cmg@de.schunk.com

Please read the operating manual in full and keep it close to the product.

Table of Contents

1 General

1.1 About this manual

This manual contains important information for a safe and appropriate use of the product.

This manual is an integral part of the product and must be kept accessible for the personnel at all times.

Before starting work, the personnel must have read and understood this operating manual. Prerequisite for safe working is the observance of all safety instructions in this manual.

In addition to these instructions, the documents listed under ▸ 1.1.2 [🗋 6] are applicable.

NOTE: The illustrations in this manual are intended to provide a basic understanding and may deviate from the actual version.

1.1.1 Presentation of Warning Labels

To make risks clear, the following signal words and symbols are used for safety notes.

⚠ DANGER

Dangers for persons!

Non-observance will inevitably cause irreversible injury or death.

⚠ WARNING

Dangers for persons!

Non-observance can lead to irreversible injury and even death.

⚠ CAUTION

Dangers for persons!

Non-observance can cause minor injuries.

CAUTION

Material damage!

Information about avoiding material damage.

1.1.2 Applicable documents

- General terms of business *
- Catalog data sheet of the purchased product *

Die mit Stern (*) gekennzeichneten Unterlagen können unter **schunk.com/downloads** heruntergeladen werden.

1.2 Warranty

If the product is used as intended, the warranty is valid for 24 months from the ex-works delivery date under the following conditions:

- Observe the specified maintenance and lubrication intervals
- Observe the ambient conditions and operating conditions

Parts touching the workpiece and wear parts are not included in the warranty.

1.3 Scope of delivery

The scope of delivery includes

- Miniature Change Head MWK in the version ordered
- Miniature Change Adapter MWA in the version ordered
- Accessory pack

1.4 Accessories

The following accessories, which must be ordered separately, are required for the product:

- Electro module

2 Basic safety notes

2.1 Intended use

The miniature change system MWS (changeover head MWK + AC adapter MWA) has been designed for the fast change of parts and automation components on a robot in line with the technical data.

- The product may only be used within the scope of its technical data, ▶ 3 [🗋 13].
- When implementing and operating components in safety-related parts of the control systems, the basic safety principles in accordance with DIN EN ISO 13849-2 apply. The proven safety principles in accordance with DIN EN ISO 13849-2 also apply to categories 1, 2, 3 and 4.
- The product is intended for installation in a machine/automated system. The applicable guidelines for the machine/automated system must be observed and complied with.
- The product is intended for industrial and industry-oriented use.
- Appropriate use of the product includes compliance with all instructions in this manual.

2.2 Not intended use

Inappropriate use includes using the product as a press tool, punching tool, lifting equipment, tool guide, cutting tool, clamping device, drilling tool, or screwing tool for example.

- Any utilization that exceeds or differs from the appropriate use is regarded as misuse.

2.3 Constructional changes

Implementation of structural changes

Modifications, changes or reworking, e.g. additional threads, holes, or safety devices, can damage the product or impair its functionality or safety.

- Structural changes should only be made with the written approval of SCHUNK.

2.4 Spare parts

Use of unauthorized spare parts

Using unauthorized spare parts can endanger personnel and damage the product or cause it to malfunction.

- Use only original spare parts or spares authorized by SCHUNK.

2.5 Ambient conditions and operating conditions

Required ambient conditions and operating conditions

Incorrect ambient and operating conditions can make the product unsafe, leading to the risk of serious injuries, considerable material damage and/or a significant reduction to the product's life span.

- Make sure that the product is used only in the context of its defined application parameters, ▸ 3 [🗋 13].
- Make sure that the product is a sufficient size for the application.
- Make sure that the environment is free from splash water and vapors as well as from abrasion or processing dust. Exceptions are products that are designed especially for contaminated environments.

2.6 Personnel qualification

Inadequate qualifications of the personnel

If the personnel working with the product is not sufficiently qualified, the result may be serious injuries and significant property damage.

- All work may only be performed by qualified personnel.
- Before working with the product, the personnel must have read and understood the complete assembly and operating manual.
- Observe the national safety regulations and rules and general safety instructions.

The following personal qualifications are necessary for the various activities related to the product:

Trained electrician

Due to their technical training, knowledge and experience, trained electricians are able to work on electrical systems, recognize and avoid possible dangers and know the relevant standards and regulations.

Qualified personnel Due to its technical training, knowledge and experience, qualified personnel is able to perform the delegated tasks, recognize and avoid possible dangers and knows the relevant standards and regulations.

Instructed person Instructed persons were instructed by the operator about the delegated tasks and possible dangers due to improper behaviour.

Service personnel of the manufacturer Due to its technical training, knowledge and experience, service personnel of the manufacturer is able to perform the delegated tasks and to recognize and avoid possible dangers.

2.7 Personal protective equipment

Use of personal protective equipment

Personal protective equipment serves to protect staff against danger which may interfere with their health or safety at work.

- When working on and with the product, observe the occupational health and safety regulations and wear the required personal protective equipment.
- Observe the valid safety and accident prevention regulations.
- Wear protective gloves to guard against sharp edges and corners or rough surfaces.
- Wear heat-resistant protective gloves when handling hot surfaces.
- Wear protective gloves and safety goggles when handling hazardous substances.
- Wear close-fitting protective clothing and also wear long hair in a hairnet when dealing with moving components.

2.8 Notes on safe operation

Incorrect handling of the personnel

Incorrect handling and assembly may impair the product's safety and cause serious injuries and considerable material damage.

- Avoid any manner of working that may interfere with the function and operational safety of the product.
- Use the product as intended.
- Observe the safety notes and assembly instructions.
- Do not expose the product to any corrosive media. This does not apply to products that are designed for special environments.
- Eliminate any malfunction immediately.
- Observe the care and maintenance instructions.

- Observe the current safety, accident prevention and environmental protection regulations regarding the product's application field.

2.9 Transport

Handling during transport

Incorrect handling during transport may impair the product's safety and cause serious injuries and considerable material damage.

- When handling heavy weights, use lifting equipment to lift the product and transport it by appropriate means.
- Secure the product against falling during transportation and handling.
- Stand clear of suspended loads.

2.10 Malfunctions

Behavior in case of malfunctions

- Immediately remove the product from operation and report the malfunction to the responsible departments/persons.
- Order appropriately trained personnel to rectify the malfunction.
- Do not recommission the product until the malfunction has been rectified.
- Test the product after a malfunction to establish whether it still functions properly and no increased risks have arisen.

2.11 Disposal

Handling of disposal

The incorrect handling of disposal may impair the product's safety and cause serious injuries as well as considerable material and environmental harm.

- Follow local regulations on dispatching product components for recycling or proper disposal.

2.12 Fundamental dangers

General

- Observe safety distances.
- Never deactivate safety devices.
- Before commissioning the product, take appropriate protective measures to secure the danger zone.

- Disconnect power sources before installation, modification, maintenance, or calibration. Ensure that no residual energy remains in the system.
- If the energy supply is connected, do not move any parts by hand.
- Do not reach into the open mechanism or movement area of the product during operation.

2.12.1 Protection during handling and assembly

Incorrect handling and assembly

Incorrect handling and assembly may impair the product's safety and cause serious injuries and considerable material damage.

- Have all work carried out by appropriately qualified personnel.
- For all work, secure the product against accidental operation.
- Observe the relevant accident prevention rules.
- Use suitable assembly and transport equipment and take precautions to prevent jamming and crushing.

Incorrect lifting of loads

Falling loads may cause serious injuries and even death.

- Stand clear of suspended loads and do not step into their swiveling range.
- Never move loads without supervision.
- Do not leave suspended loads unattended.

2.12.2 Protection during commissioning and operation

Falling or violently ejected components

Falling and violently ejected components can cause serious injuries and even death.

- Take appropriate protective measures to secure the danger zone.
- Never step into the danger zone during operation.

2.13 Notes on particular risks

⚠ WARNING

Risk of injury from objects falling and being ejected!

Falling and ejected objects during operation can lead to serious injury or death.

- Take appropriate protective measures to secure the danger zone.

Possible electrostatic energy

Components or assembly groups may become electrostatically charged. When the electrostatic charge is touched, the discharge may trigger a shock reaction leading to injuries.

- The operator must ensure that all components and assembly groups are included in the local potential equalisation in accordance with the applicable regulations.
- While paying attention to the actual conditions of the working environment, the potential equalisation must be implemented by a specialist electrician according to the applicable regulations.
- The effectiveness of the potential equalisation must be verified by executing regular safety measurements.

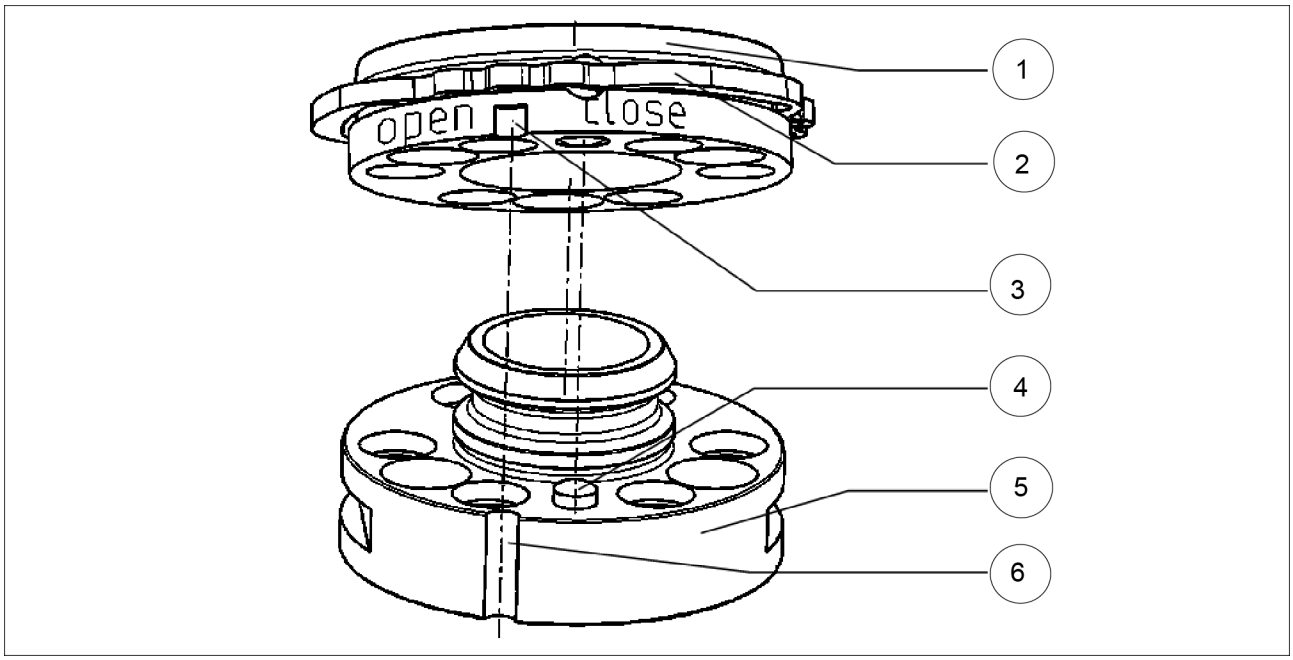
3 Technical Data

Type	MWS 20	MWS 30
Operating temperature range [°C]	+5 to +60	
Number of pneumatic energy transmissions	2	
Number of electric energy transmissions	4 (optional)	8 (optional)
Electric energy transmission Min. Max.	 Umin=5VDC, Imin=120 mA Umax=24VDC, Imax=1A	
Standard interface similar to	ISO 29262 / DIN 32565	
Pressure medium	Compressed air, compressed air quality according to ISO 8573-1:2010 [7:4:4]	

More technical data is included in the catalog data sheet. Whichever is the latest version.

4 Design and description

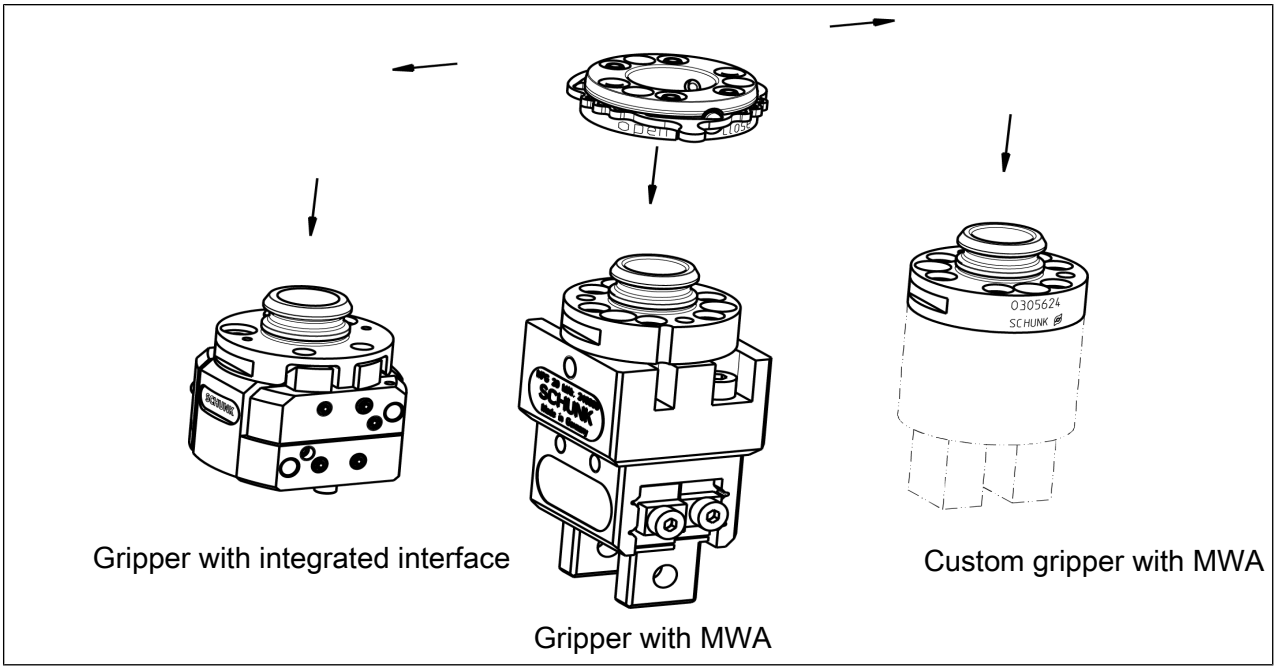
4.1 Product design



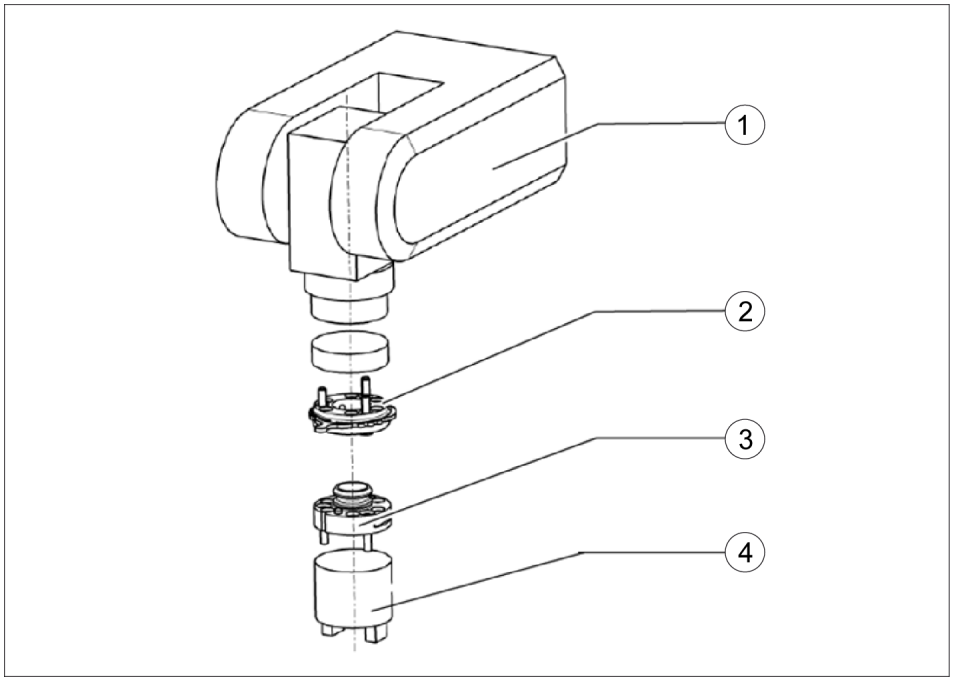
Structure of the MWS

1	Miniature Change Head (MWK)	2	actuating ring with lever
3	milled groove (marking)	4	centering pin
5	Miniature Change Adapter (MWA)	6	milled groove (marking)

4.2 Application possibilities



5 Mounting



Mounting example

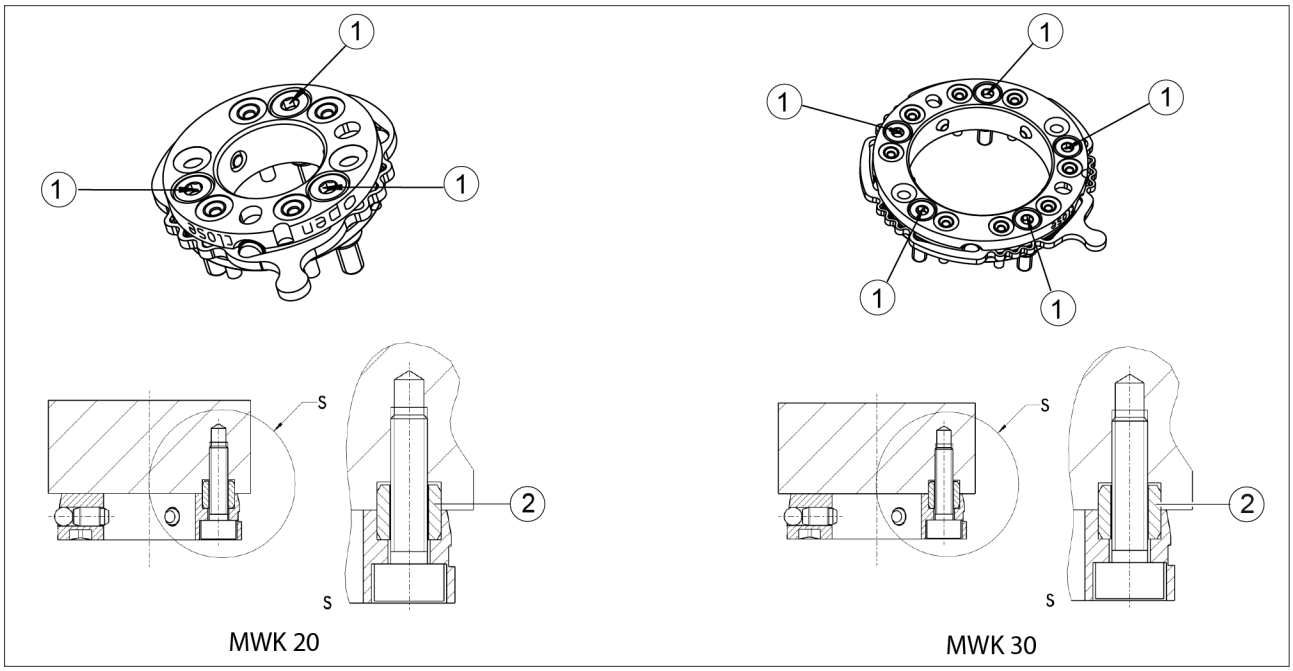
1	Robot arm	2	MWK
3	MWA	4	Tool (for example a gripper)

5.1 Mounting the MWK at the robot

⚠ WARNING

Risk of injury during connection!

- Switch off the energy supply.



Screw position

1	Screw (ISO 4762)	2	Centering sleeve

- The required pins for the electrical feed-through are already mounted at the factory. If additional pins are required by the customer, these must be installed before assembly.

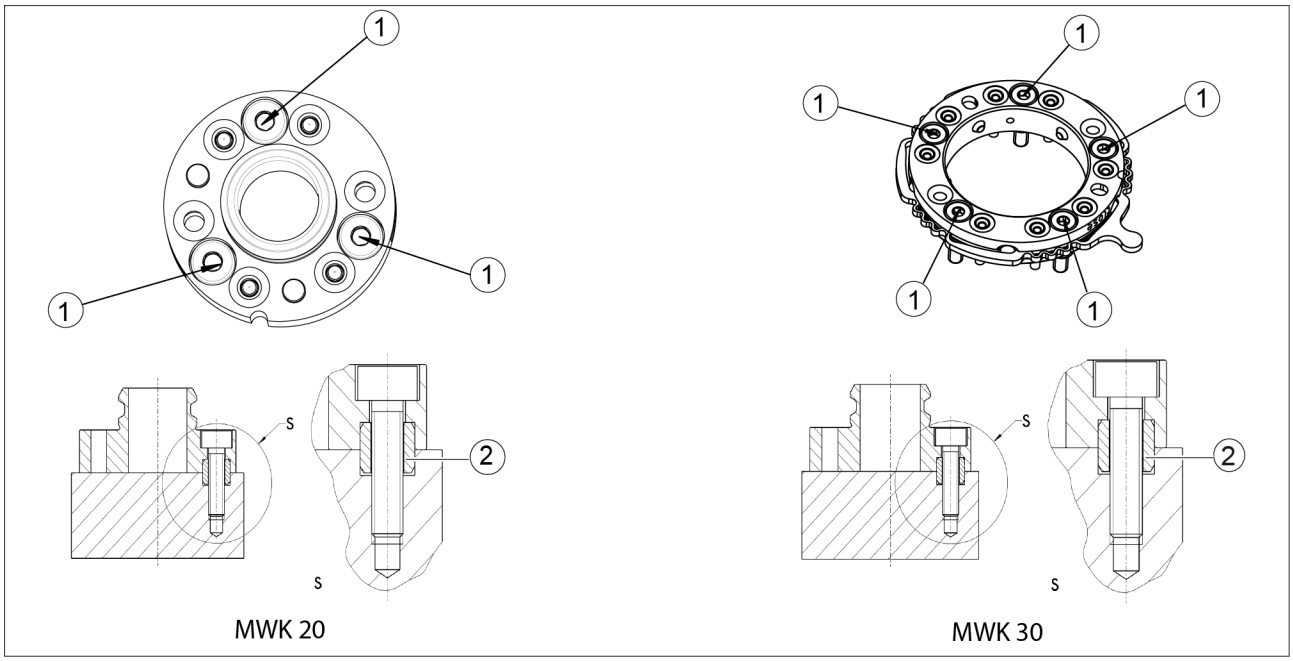
1. Use cylindrical screws (1) from the accessory kit.
   MWK 20: 3 M2x8 screws
   MWK 30: 5 M2x8 screws
2. If precise alignment is required, also use the centering sleeves (2) from the accessory kit.

5.2 Mounting the MWA to the tool

⚠ WARNING

Risk of injury during connection!

- Switch off the energy supply.



Screw position with MWA 20

1	Screw (ISO 4762)	2	Centering sleeve

- The required pins for the electrical feed-through are already mounted at the factory. If additional pins are required by the customer, these must be installed before assembly.

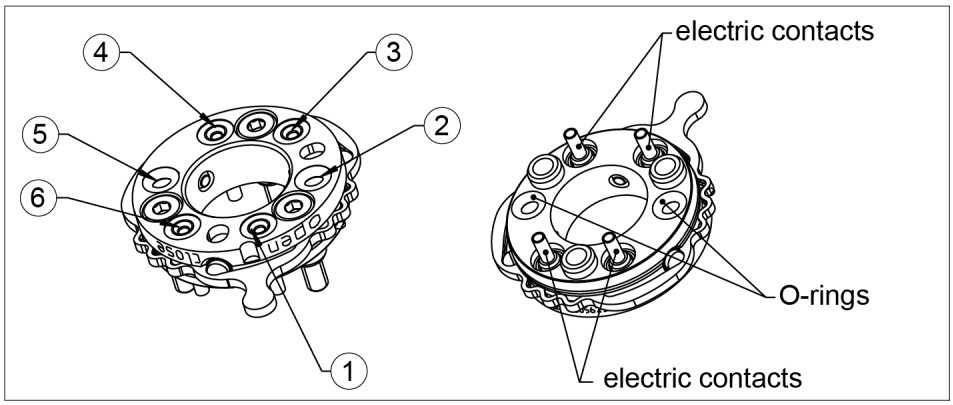
1. If there are no mounting options on the tool itself, an additional adapter plate must be created.
2. Use cylindrical screws (1) to fasten the MWA.
   MWK 20: 3 screws M2x8
   MWK 30: 5 screws M2x8

5.3 Assignment

5.3.1 Assignment MWK

NOTE
Electrical pins are not suitable for the transmission of measuring signals!

MWS 20

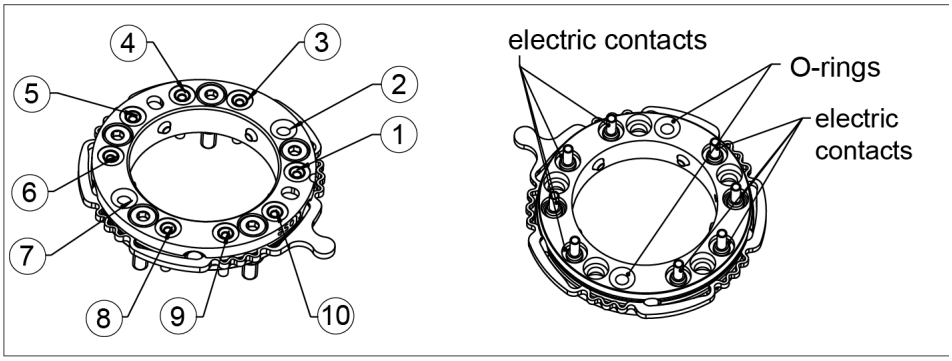


View of MWK 20 with combined occupancy (looking at the connection side to the MWA)

Item	2P-0E	2P-4E
1	-	E
2	P	P
3	-	E
4	-	E
5	P	P
6	-	E

Feed through: P= pneumatic E= electrical

MWS 30



View of MWK 30 with combined occupancy (looking at the connection side to the MWA)

Item	2P-4E	2P-6E	2P-8E
1	E	E	E
2	P	P	P
3	E	E	E
4	E	E	E
5	-	E	E
6	-	E	E
7	P	P	P
8	-	-	E
9	-	-	E
10	E	E	E

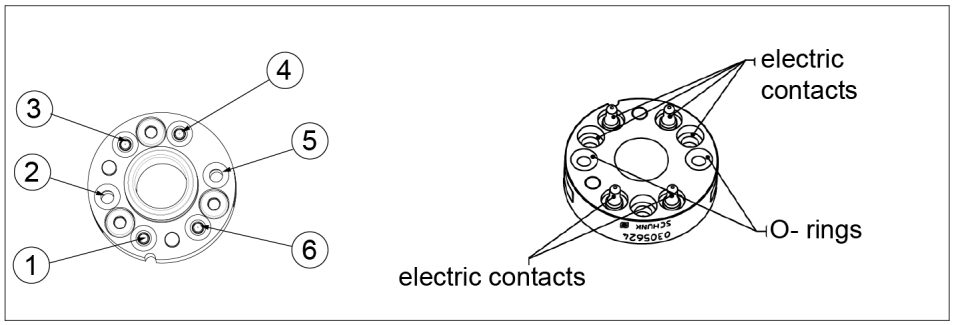
Feed through: P= pneumatic E= electrical

5.3.2 Assignment MWA

NOTE

Electrical pins are not suitable for the transmission of measuring signals!

MWS 20

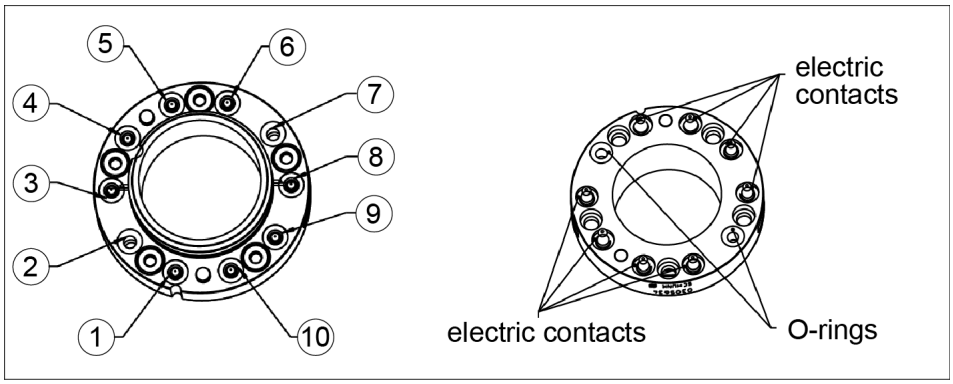


View of the MWA 20 in combined assignment (with view to the connection side to the MWK)

Item	2P-0E	2P-4E
1	-	E
2	P	P
3	-	E
4	-	E
5	P	P
6	-	E

Feed through: P= pneumatic E= electrical

MWS 30



View of the MWA 30 in combined assignment (with view to the connection side to the MWK)

Item	2P-4E	2P-6E	2P-8E
1	E	E	E
2	P	P	P
3	E	E	E
4	E	E	E
5	–	E	E
6	–	E	E
7	P	P	P
8	–	–	E
9	–	–	E
10	E	E	E

Feed through: P= pneumatic E= electrical

5.4 Installation of additional 0-rings

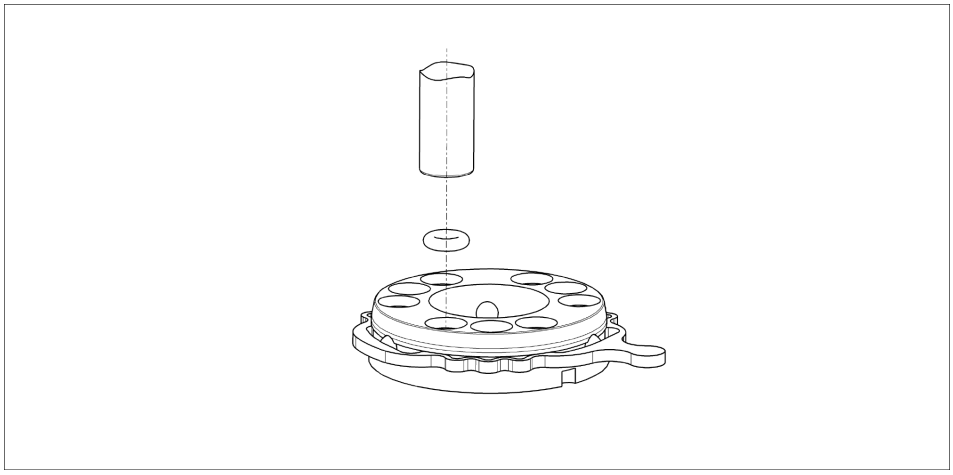
NOTE

The electrical feed-throughs can also be replaced by 0-rings. This allows the maximum number of air feed-throughs to be increased. On the other hand, the 0-rings can also be replaced by electrcial feed-throughs.

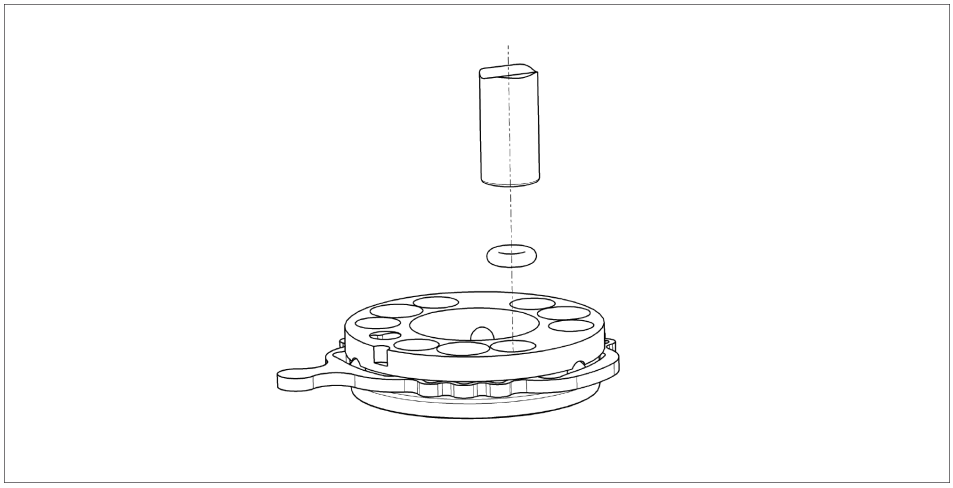
Size	Number
MWS 20	max. 6
MWS 30	max. 10

Mounting the 0-rings for the compressed air feed-through

MWK

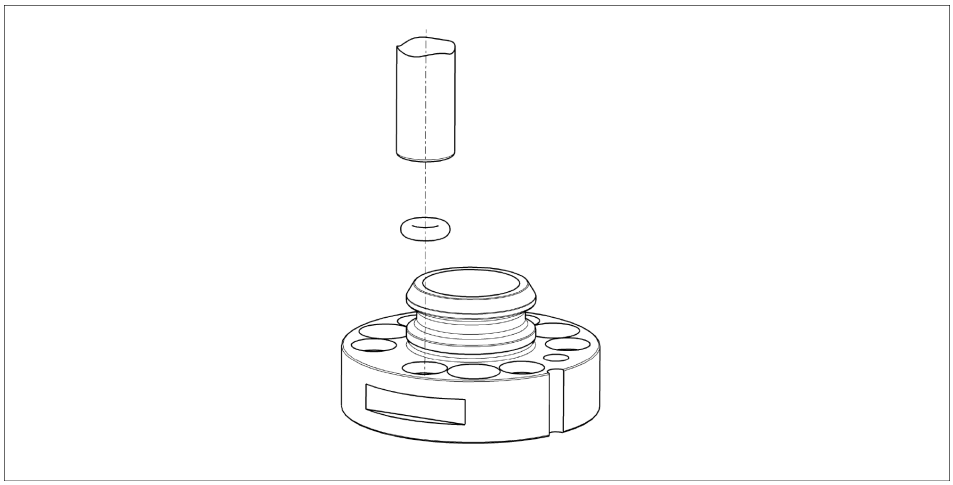


View of the connection side toward the robot

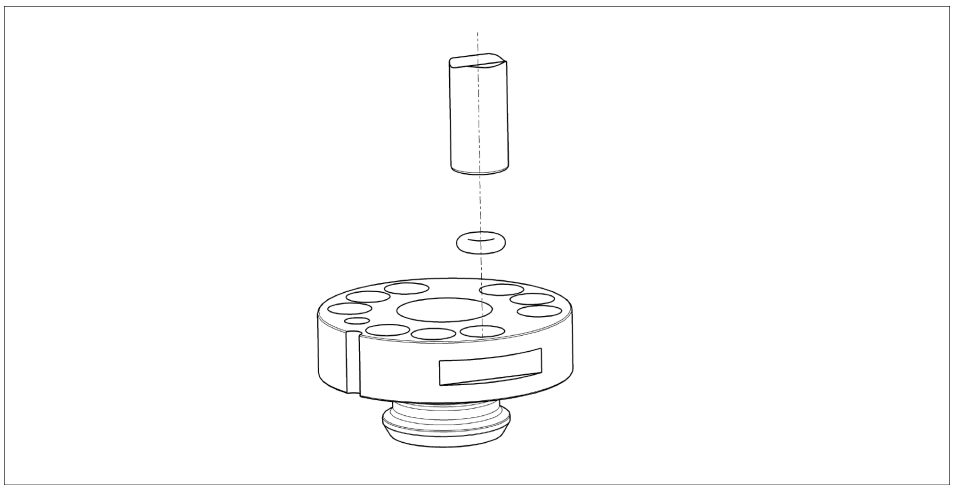


View of the connection side toward the MWA

MWA



View of the connection side toward the MWK



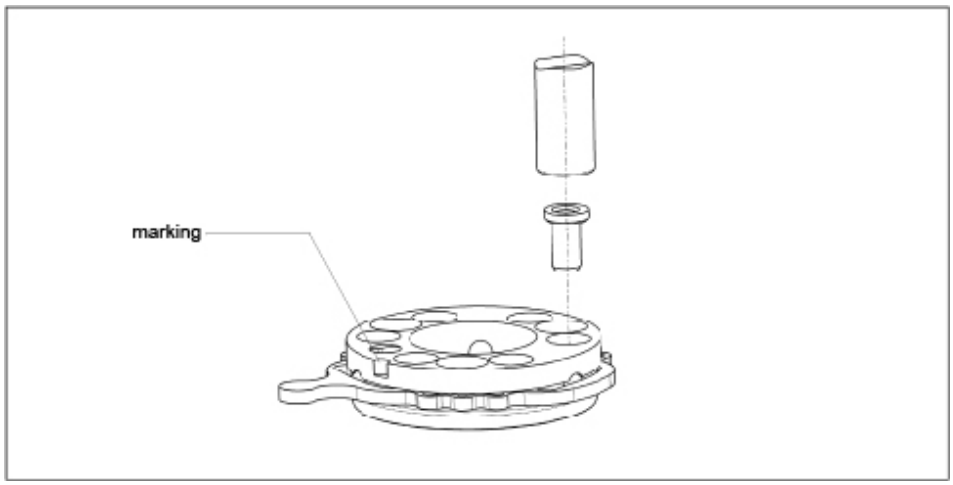
View of the connection side toward the gripper

1. Place o-rings centrically at the positions provided.
2. Press in the 0-rings using a suitable tool, e.g. a punch (see Figure) in axial direction.
3. Turn unit over.
4. Press in the 0-rings in axial direction on the opposite side of the mounted 0-rings.

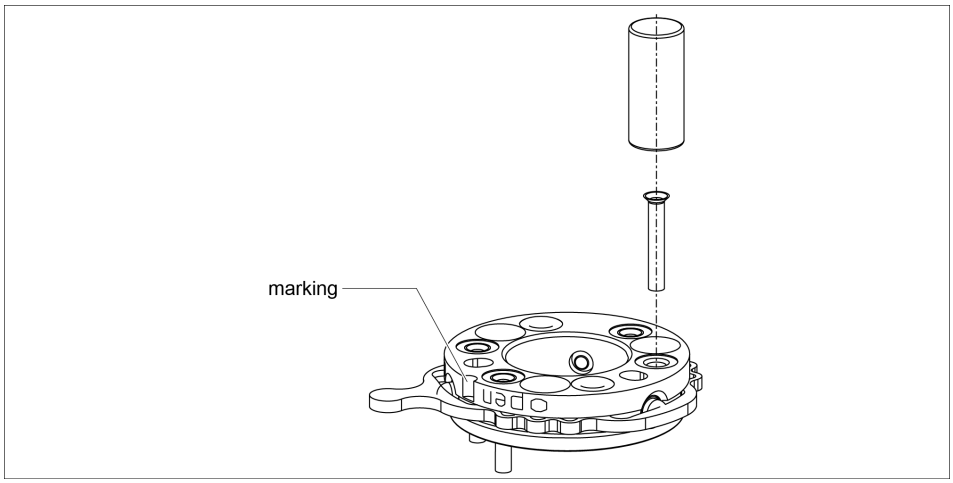
5.5 Mounting of additional pins

Mounting of the electric pins

MWK



MWK view of connection side toward MWA

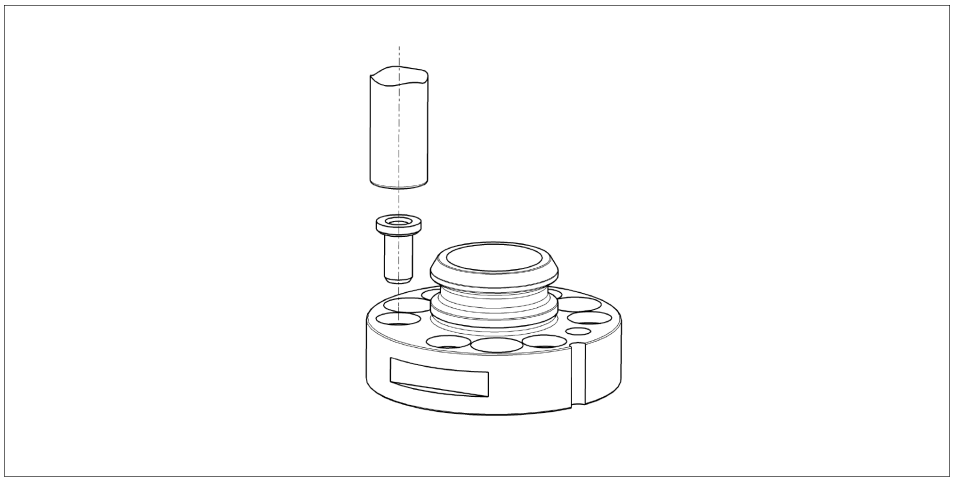


Insertion of electric contact pin – MWK

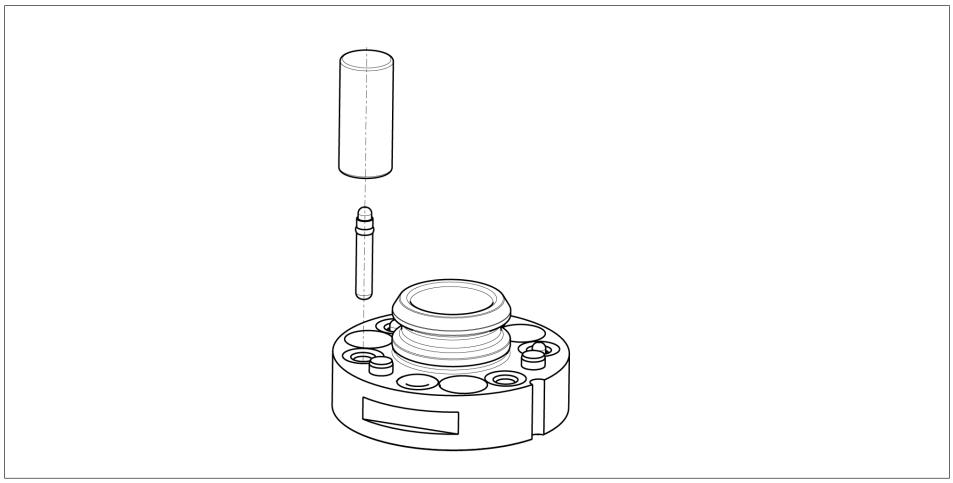
1. Press in the electric pins (optional) at the positions provided, starting from the connection side toward the MWA.
2. **CAUTION Important: watch out for correct mounting side! Observe the marking.** First, press in the sleeve in axial direction until the stop.
3. **CAUTION Important: watch out for correct mounting side! Observe the marking.** Insert the ferrule with the broad side (cone) pointing upward axially until the stop.

⇨ The ferrule protrudes on the opposite side beyond the housing.

MWA



MWA view of connection side toward MWK



Insertion of electric contact pin – MWA

1. Starting from the connection side toward the MWK / MWA, press in the electric pins (optional) at thepositions provided.
2. First press in the sleeve in axial direction until the stop.
3. Insert the spring-loaded contact pin with the golden side pointing upward axially until the stop.

⇨ The contact pin then protrudes on both sides.

Soldering the electric contacts

CAUTION

Danger of short circuit!

- Shut off power supply during installation!
- Watch out for correct connection – do not interchange contacts!
- Solder should not reach up to the housing!
- Attach shrink tube over the solder joint.

- For the assignment of the electrical contacts of the relevant unit.
- MWK is solded on robot side ▸ 5.3.1 [🗋 18].
- MWA is solded tool side ▸ 5.3.2 [🗋 20].

6 Commissioning

⚠ CAUTION

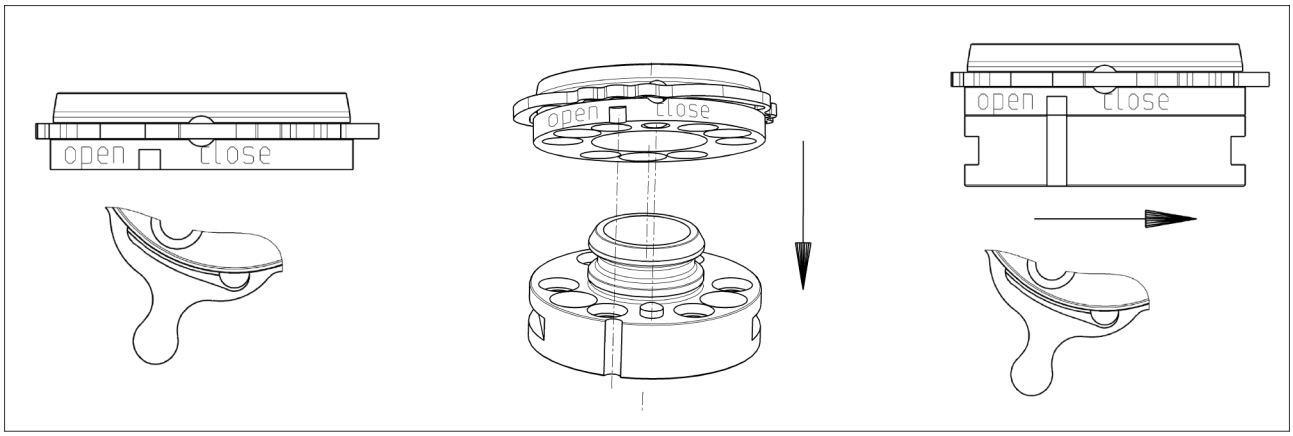
Power supply must be switched off during commissioning!

The MWS is operated manually. A distinction is made between connecting and disconnecting the system.

NOTE

The example shows MWS 20. The handling of MWS 30 is identical.

Connecting



Connecting the MWS

- Lever at the MWK must be in "open" position.

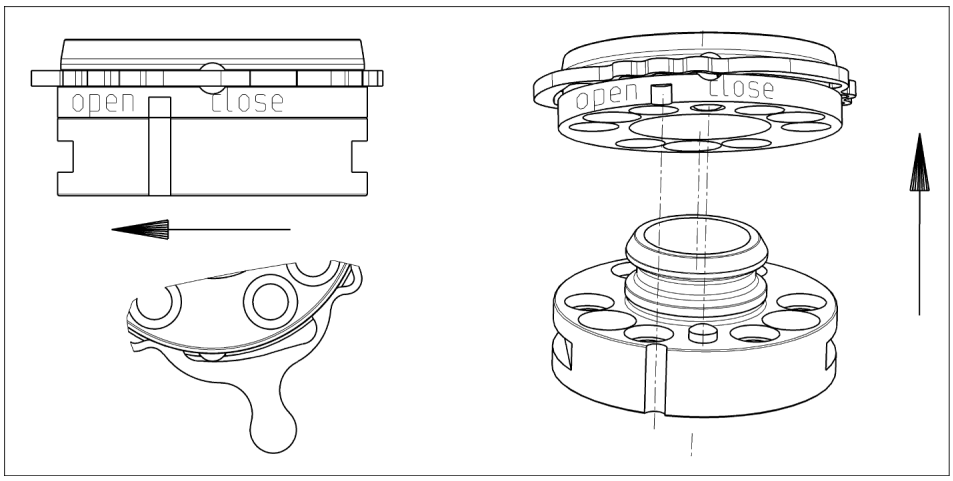
1. Join the change head (MWK) and adapter (MWA) in axial direction so that the milled grooves at MWA and MWK are aligned.
2. Turn the actuating ring on the lever in the “close” direction until you feel it lock into place.

⇨ The system is now ready for operation. Switch on the power supply for the connected feed-throughs.

Disconnecting

NOTE

The example shows MWS 20. The handling of MWS 30 is identical.



Disconnecting the MWS

1. Turn the actuating ring manually in “open” direction until the stop.
2. Pull adapter (MWA) from head (MWK) in axial direction.

7 Troubleshooting

7.1 The system cannot be connected?

Possible cause	Corrective action
The actuating ring is set to “close”. The locking elements of the system are blocking the MWK.	Turn the actuating ring on the lever to the "open" position and connect the system ▶ 6 [🗋 27].

7.2 The system cannot be locked by the actuating ring?

Possible cause	Corrective action
There is a gap between the MWK and the MWA and the system cannot be locked correctly.	Switch off the power supply and check to ensure that: • the screws were mounted at the correct position. • the groove on the MWK is lined up with the groove on the MWA. • all o-rings were inserted correctly and are flush with the housing.

7.3 No signal is arriving at the tool?

Possible cause	Corrective action
The electrical contact is interrupted.	Check to ensure that: • the markings line up. • the voltage supply to the system is sufficient. • the electrical connections were soldered correctly, and shrink tubing are mounted so that short circuits are avoided.

7.4 Air is escaping from the MWS?

Possible cause	Corrective action
There is a leak in the system.	Switch off the power supply and check to ensure that: • the markings line up. • all o-rings were mounted / are still present. • all o-rings were mounted at the right position.

8 Maintenance

8.1 Maintenance instructions

- Unless otherwise specified, secure all screws and nuts with Loctite no. 243 and tighten with the appropriate tightening torque.
- Send damaged changing system for repair to SCHUNK.

8.2 Maintenance and lubrication intervals

interval [operating cycles]	50.000

This information refers to the use of the MWS under normal operating conditions and normal ambient conditions Environmental and operating conditions.

8.3 Lubricants/Lubrication points (basic lubrication)

During maintenance, treat all greased areas with lubricant. Thinly apply lubricant with a lint-free cloth.

SCHUNK recommends the lubricants listed.

Greasing area	Lubricant
Locking elements	SCHUNK grease 9

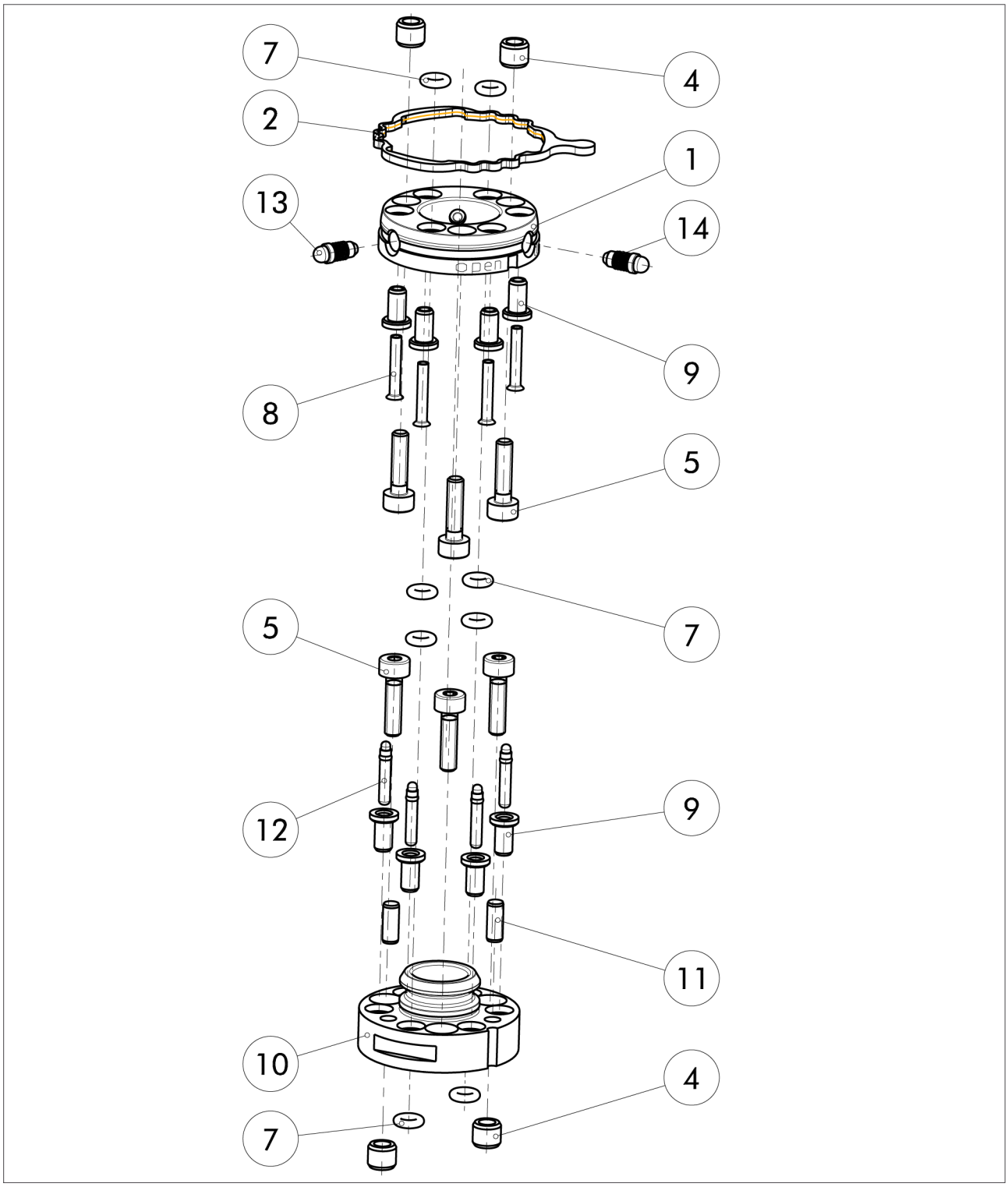
Details regarding SCHUNK lubricant designations are available at **schunk.com/lubricants**.

The product contains food-compliant lubricants as standard.
The requirements of standard EN 1672-2:2020 are not fully met.

NOTE

- Change contaminated food-compliant lubricant.
- Observe information in the safety data sheet from the lubricant manufacturer.

8.4 Assembly drawing



Assembly MWS

* Grease during maintenance

9 Translation of the original declaration of incorporation

in terms of the Directive 2006/42/EG, Annex II, Part 1 Section B.

Manufacturer/ Distributor	SCHUNK SE & Co. KG Spanntechnik | Greiftechnik | Automatisierungstechnik Bahnhofstr. 106 – 134 D–74348 Lauffen/Neckar

We hereby declare that the partly completed machine described below

Product designation:	Miniature–Change–System / MWS /
ID number	0305623, 0305624, 0305611, 0305612, 0305633, 0305634, 0305641, 0305642, 0305643, 0305644, 0305693, 0305694

meets the following basic occupational health and safety of the Machinery Directive 2006/42/EC:

The partly completed machinery may not be put into operation until it has been confirmed that the machine into which the partly completed machinery is to be installed complies with the provisions of the Machinery Directive (2006/42/EC). The declaration shall be rendered invalid if modifications are made to the product.

Applied harmonized standards, especially:

EN ISO 12100:2010	Safety of machinery – General principles for design – Risk assessment and risk reduction

The special technical documentation according to Annex VII, Part B, belonging to the partly completed machine, has been created.

Person authorized to compile the technical documentation:
Stefanie Walter, Address: see manufacturer's address

Signature: see original declaration

Lauffen/Neckar, March 2024

Dr.–Ing. Manuel Baumeister,
Head of Systems Engineering,
Technology & Innovation

10 UKCA declaration of incorporation

in accordance with the Supply of Machinery (Safety) Regulations 2008.

Manufacturer/ Distributor	SCHUNK Intec Limited Clamping and gripping technology 3 Drakes Mews, Crownhill MK8 0ER Milton Keynes

We hereby declare that on the date of the declaration the following partly completed machine complied with all basic safety and health regulations found in the
"Supply of Machinery (Safety) Regulations 2008".
The declaration shall be rendered invalid if modifications are made to the product.

Product designation:	Miniature-Change-System / MWS /
ID number	0305623, 0305624, 0305611, 0305612, 0305633, 0305634, 0305641, 0305642, 0305643, 0305644, 0305693, 0305694

The partly completed machine may not be put into operation until it has been confirmed that the machine into which the partly completed machine is to be installed complies with the provisions of the "Supply of Machinery (Safety) Regulations 2008".

Applied harmonized standards, especially:

EN ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction

The special technical documentation according to Annex VII, Part B, belonging to the partly completed machine, has been created.

Person authorized to compile the technical documentation:
Marcel Machado, address: refer to manufacturer's address

Lauffen/Neckar, March 2024

Dr.-Ing. Manuel Baumeister,
Head of Systems Engineering,
Technology & Innovation

11 Information on the RoHS Directive, REACH Regulation and Substances of Very High Concern (SVHC)

RoHS Directive

SCHUNK products are classified as "large-scale stationary installations" or as "large-scale stationary industrial tools" within the meaning of Directive 2011/65/EU and its extension 2015/863/EU "on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)", or fulfill their intended function only as part of one. Therefore products from SCHUNK do not fall within the scope of the directive at this time.

REACH Regulation

Products from SCHUNK fully comply with the regulations of Regulation (EC) No. 1907/2006 "concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)" and its amendment 2022/477. SCHUNK attaches great importance to completely avoiding chemicals of concern to humans and the environment wherever possible.

Only in rare exceptional cases do SCHUNK products contain SVHC substances on the candidate list with a mass content above 0.1%. In accordance with Article. 33 (1) of Regulation (EC) No. 1907/2006, SCHUNK complies with its duty to "communicate information on substances in articles" and lists the components concerned and the substances used in an overview that can be viewed at **schunk.com\SVHC**.

Signature: see original declaration

Lauffen/Neckar, March 2024

Dr.-Ing. Manuel Baumeister,
Head of Systems Engineering,
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SCHUNK SE & Co. KG
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