

Assembly and Operating Manual

NSE mikro 49

VERO-S quick-change pallet system



Superior Clamping and Gripping



Imprint

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Technical changes:

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

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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

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

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1 General

This operating manual is an integral component of the product and contains important information on safe and proper assembly, commissioning, operation, care, maintenance and disposal. This manual must be stored in the immediate vicinity of the product where it is accessible to all users at all times.

Before using the product, read and comply with this manual, especially the chapter “Basic safety notes”. ▶ 2 [6]

If the product is passed on to a third party, these instructions must also be passed on.

Illustrations in this manual are provided for basic understanding of the product and may differ from the actual product design.

We accept no liability for damage resulting from the failure to observe and comply with this operating manual.

1.1 Warnings

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



⚠ DANGER

Danger 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.

NOTICE

Material damage!

Information about avoiding material damage.



⚠ WARNING

Warning about hand injuries



⚠ WARNING

Warning about hot surfaces

1.2 Applicable documents

General terms of business

Katalogdatenblatt des gekauften Produkts

The documents listed here, can be downloaded on our homepage
www.schunk.com

2 Basic safety notes

Improper handling, assembly and maintenance of this product may result in risk to persons and equipment if this manual is not observed.

Report any damage and defects immediately and repair without delay to keep the extent of the damage to a minimum and avoid compromising the safety of the product.

Only original SCHUNK spare parts may be used.

2.1 Intended use

This product is intended solely for positioning and clamping workpieces or clamping pallets on machine tools or other suitable technical devices.

- The product may only be used within the scope of its technical data, ► 5 [13].
- 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

The product is not being used as intended if, for example:

- It is used as a pressing tool, a toolholder, a load-handling device or as lifting equipment.
- It is used for turning applications over 100 rpm without consulting SCHUNK.
- It is used in working environments that are not permissible.
- People work on machines or technical equipment that do not comply with the EC Machinery Directive 2006/42/EC, disregarding the applicable safety regulations.
- The technical data specified by the manufacturer are exceeded during usage.

2.3 Notes on particular risks

This product may pose a danger to persons and property if, for example:

- It is not used as intended;
- It is not installed or maintained properly;
- The safety and installation instructions, local applicable safety and accident prevention regulations or the EC Machinery Directive are not observed.



⚠ WARNING

Risk of injury due falling parts during transport, assembly and disassembly the Quick-Change Pallet System.

Improperly secured parts can break off and fall.

- Use a suitable lifting equipment and transport.
- During transport do not step into the danger area.
- Wear personal protective equipment.



⚠ WARNING

Risk of injury to persons due to falling down of the fixture, pallet or workpiece by erroneous or negligent loosening of the clamping pins.

- During operation, incorrect or incautious loosening of the clamping pin must be prevented by suitable measures (disconnection of power supply after locking, use of safety valves or safety switches).
- The machines and facilities must fulfill the minimum requirements of the EC Machinery Directive 2006/42/EC; specifically, they must have effective technical measures to protect against possible mechanical hazards.
- Wear personal protective equipment.



⚠ WARNING

Risk of injury to persons during transport of the system and in case of horizontally placed clamping pin axis or overhead applications due to falling down of the fixture or pallet.

- Use a crane or trolley for transport.
- In case of horizontal or overhead applications, secure the fixture or pallet against falling down during loosening the clamping modules.



⚠ WARNING

The system is spring-packaged. Risk of injury due to independent motions of components into its end positions after pressing the “Emergency stop” or switching off or failure of the energy supply.

- Wait until the system stops completely.
- Do not reach into the clamping modules.
- Use pressure maintenance valves.



⚠ CAUTION

Risk of injury due to impurities (e.g. metal shavings) in the exhaust and air purge ports of the clamping station.

- The danger zone must be surrounded by a protective enclosure during operation.
- Wear personal protective equipment (safety goggles).



⚠ CAUTION

Danger of injury due to loosening of incorrectly connected compressed air hoses.

- Wear safety valves or safety switches.
- The danger zone must be surrounded by a protective enclosure during operation.



⚠ CAUTION

There is a risk of limbs being crushed during manual loading and unloading of moving parts and during the clamping process.

- Do not reach into the clamping pin holder.
- Use loading aids.
- Wear protective gloves.



⚠ CAUTION

Risk of slipping or falling if the chuck's operational environment is not clean (e.g. contaminated with cooling lubricants or oil).

- Ensure that the working environment is clean before starting assembly and installation work.
- Wear suitable safety boots.
- Follow the safety and accident-prevention regulations when operating the chuck, especially when working with machine tools and other technical equipment.



⚠ CAUTION

Risk of burns due to workpieces with high temperatures

Workpieces with high temperatures pose the risk of burns.

- Wear protective gloves when removing the workpieces.
- Automatic loading is preferred.



⚠ CAUTION

Risk of exposure to pneumatic's exhaust noise

Noise from air system and pneumatic equipment during the machining process.

- Wear hearing protection.

2.4 Instructions for safe operation

The product may pose a danger to persons (risk of injury) and property if, for example:

- it is used other than as intended;
- it is not installed or maintained properly;
- the safety and installation instructions, the safety and accident prevention regulations valid at the usage site or the EC Machinery Directive are not observed.

Maintenance instructions

The maintenance and servicing intervals must always be complied with. The intervals indicated refer to a standard working environment. Operating the gripper in an environment in which it is subjected to abrasive dusts or corrosive and/or aggressive vapours and/or liquids requires the prior consent of SCHUNK.

Safety during assembly and maintenance

During assembly, connection, setting, commissioning and testing, it is important to eliminate the possibility of the fitter or any other persons accidentally activating the system.

Refrain from all work that could threaten safety.

2.4.1 Holding force and screw strength

The holding force of the System is essentially limited by the strength of the screwed connections with which the clamping pin is connected to the pallet or device. On this basis fastening screws of the property class 12.9 are to be used only.

Only original SCHUNK Clamping-Pins are to be used.

When the clamping pin is used in the customer's own assembly device, the customer is to provide for a sufficiently dimensioned tap and satisfactory strength of the fastening material.

2.4.2 Constructional changes, attachments, or modifications

Additional threads, bore holes or attachments which are not supplied as accessories by SCHUNK may affect safety. They may only be applied after obtaining the prior consent of SCHUNK.

2.5 Personnel qualification

The Quick Change Pallet System must only be installed, removed, started up, operated and serviced by qualified specialist personnel with the relevant safety training.

All persons charged with operating, maintaining and servicing this Quick Change Pallet System must have access to the operating manual, especially the chapter "Basic safety notes". We recommend that the operator creates in-house safety operating instructions.

Trainees may work on machines and technical equipment in which a Quick Change Pallet System is installed provided that they are supervised at all times by qualified specialist personnel.

2.6 Organizational measures

Compliance with the Regulations

The business operator must guarantee that suitable measures in organisation and instruction are taken to ensure that the appropriate safety rules and regulations are complied with by the persons entrusted with operation, maintenance and repair of the Quick Change Pallet System.

Supervision of Conduct

The business operator is required, at least from time to time, to check personnel's conduct regarding awareness of safety and hazards.

Hazard Notices

The business operator must ensure that the notes of safety and hazards for the machine to which the Quick Change Pallet System is mounted are observed and that the notice signs are clearly legible.

Troubles

If troubles occur at the system which could affect safety or production characteristics indicate that faults are in existence, the machine (to which the system is mounted) must be stopped immediately and stand still as long as required to locate and eliminate the fault. Only allow specialists to remedy faults.

Spare parts

Only use original SCHUNK spare parts.

Environmental Protection Requirements

The current environmental protection requirements must be observed during all maintenance and repair work.

2.7 Using personal protective equipment

When using this product, you must comply with the relevant health and safety at work rules and you must use the required personal safety equipment (minimum: category 2).

3 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 applicable documents, ▶ [1.2 \[5\]](#)
- Observe the ambient conditions and operating conditions
- Observe the maximum number of clamping cycles ▶ [5 \[13\]](#)
- Observance of the specified care and maintenance instructions ▶ [8 \[25\]](#)

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

4 Scope of delivery

- **NSE mikro 49, NSE mikro 49-V10 quick-change pallet system**
- **Assembly and Operating Manual**
- **NSE mikro 49 accessory pack:**
 - 4 O-rings Ø 3.5 x 1
 - 6 cover caps
 - 6 fastening screws M3
- **NSE mikro 49-V10 accessory pack:**
 - 4 O-rings Ø 3.5 x 1
 - 6 cover caps
 - 5 fastening screws M3
 - 1 fitting screw

4.1 Accessories

- Clamping pallets
- Clamping pins
- Indexing pin
- Fitting screws
- Protection cover

5 Technical data

Designation Type	ID No.	Holding force* (M3 / M4)	Pull-in force without turbo	Pull-in force with turbo
NSE mikro 49	0436100	3 / 5 kN	150 N	400 N
NSE mikro 49-V10	0436105	3 / 5 kN	150 N	400 N

* Holding force when fastening the clamping pin with cylindrical screw – DIN EN ISO 4762/12.9

Actuation pressure	6 bar
Repeatability [mm]	< 0.005 mm
Installation position	Any
Operating temperature	15°C – 60°C
Noise emission [dB(A)]	≤ 70
Pressure medium	Compressed air, requirements for compressed air quality as per ISO 8573-1: 6 4 4

A separate maintenance unit with oiler must be used for the air supply.

Warranty and maximum clamping cycles

Length of warranty	24 Months
Maximum clamping cycles	500 000

5.1 Suitability for welding applications

The clamping device can be used for welding applications with a **welding current of up to 525 A**. The welding current is allowed to flow through the clamping device.

NOTICE

In welding applications, special care must be taken to ensure that the operating temperature of the clamping device is not exceeded due to heat conduction in the workpiece.

NOTICE

The contact surfaces of the workpiece and the clamping bolt must always be kept clean to ensure the best possible contact with the clamping device.

If the quick-change pallet system is to be used outside the specified welding currents, please contact your SCHUNK contact person.

6 Assembly

Actions before starting assembly

Lift the quick-change pallet system carefully out of the packaging.



⚠ CAUTION

Risk of injury due to sharp edges and rough or slippery surfaces

Wear personal protective equipment, particularly protective gloves.

Check that the delivery is complete and that there is no transport damage.

Assembly, dismantling and modification work on the quick-change pallet system may only be carried out by specialist personnel.

Disconnect the power supply lines and ensure that there is no residual energy in the system before performing assembly, modification, maintenance, or adjustment work.

Wear protective equipment (gloves, protective shoes).

6.1 General assembly notes

Request our installation drawings if doing the installation yourself.

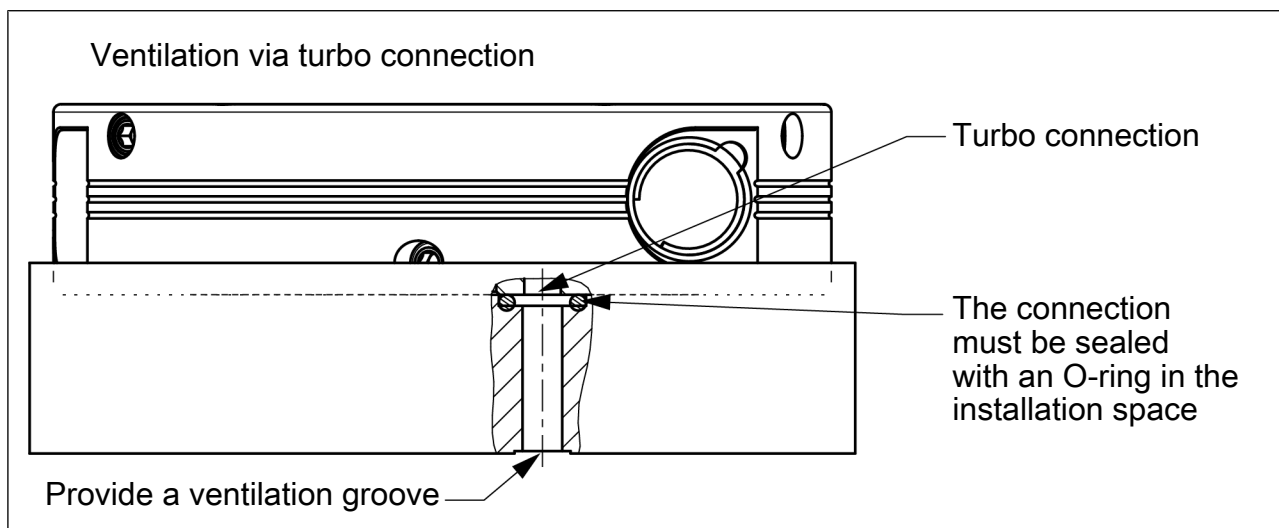
If several linked clamping units are mounted, make sure that the flatness and height deviation of the locating surfaces from module to module (based on a gauge of 50 mm) lies within 0.01 mm. The interface position deviation must not exceed ± 0.01 mm.

Due to redundancy, the clamping pins with positioning accuracy in one direction (SPB mikro 10) should be used for clamping systems that are more than 50 mm apart or that do not show a positioning tolerance of ± 0.01 mm. For the clamping areas that are not intended for alignment of the device or pallet, clamping pins with centering clearance (SPC mikro 10) can be used ▶ 6.3 [19].

NOTE

When connecting the pneumatically actuated quick-change pallet system, ensure that it is only possible to completely ventilate the piston chamber via the air connection on the base side during the locking process. The relevant valves or shut-off valves should therefore be equipped with load relief. This also applies to the turbo connection.

If the turbo connection is not used, the relevant side of the piston must have a way of being ventilated. Make sure you pay attention to the ventilation options.



If several units are activated via shared hose lines, feed lines with the following minimum cross-sections must be used.

Number of modules	Minimum nominal hose width
1, 2	4 mm
3, 4, 5, 6	6 mm

6.2 Fastening and connection

Request our installation drawings if doing the installation yourself.

6.2.1 NSE mikro 49

The NSE mikro 49 is fixed in the installation space with 6 M3 screws of strength class 10.9. ▶ 6.6 [□ 22]

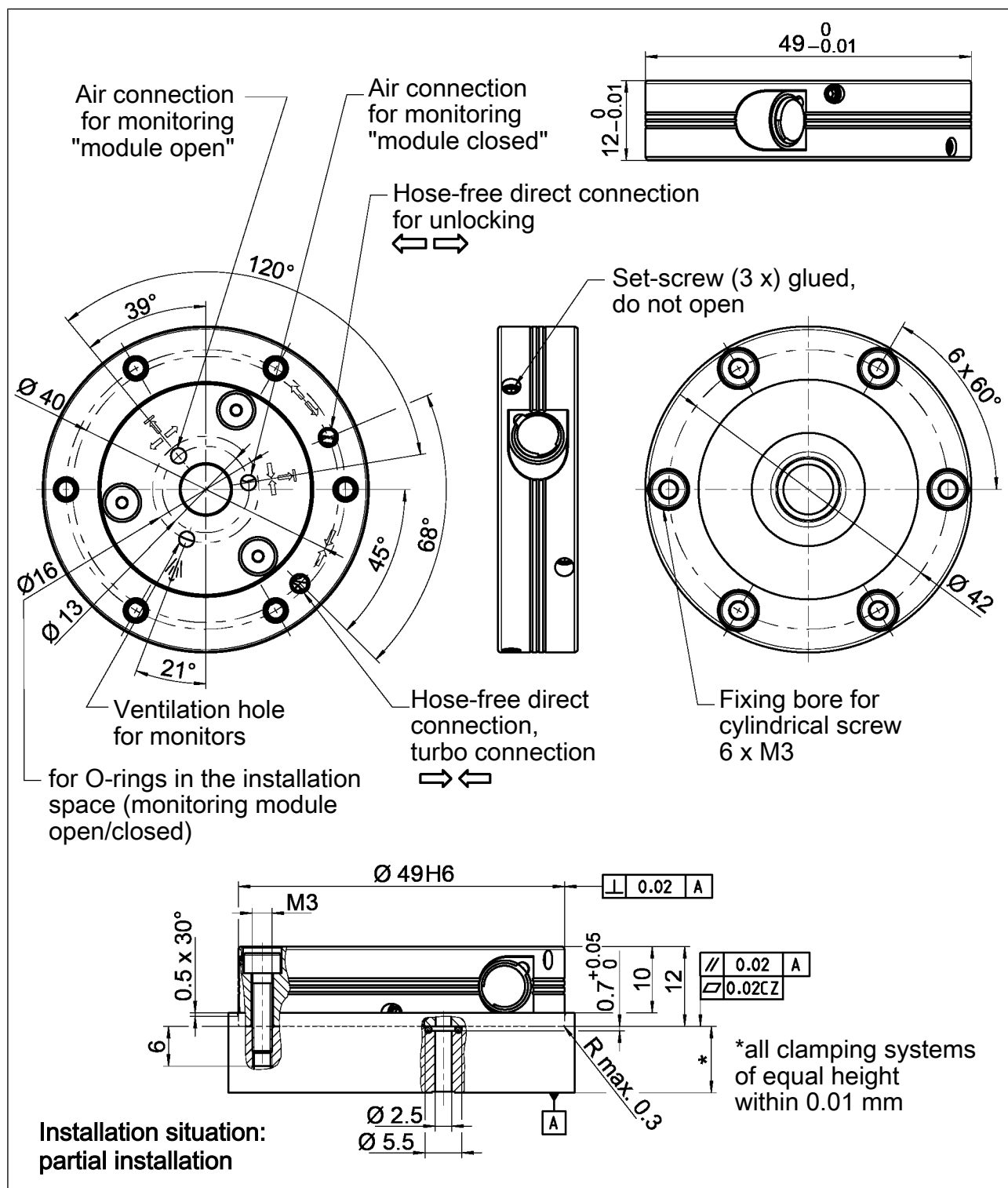
Positioning of the quick-change pallet system is performed using the centering diameter of the installation space: **Ø 49H6**.

The air connection is made the standard way via the coupling hose on the lower face side of the quick-change pallet module. This requires that the bottom opening be sealed with an O-ring, which is inserted into the O-ring seat in the table top.

Machine the axial sealing O-ring seat according to the following dimensions: $\text{Ø } 5.5^{+0.1} \times 0.7^{+0.05}$.

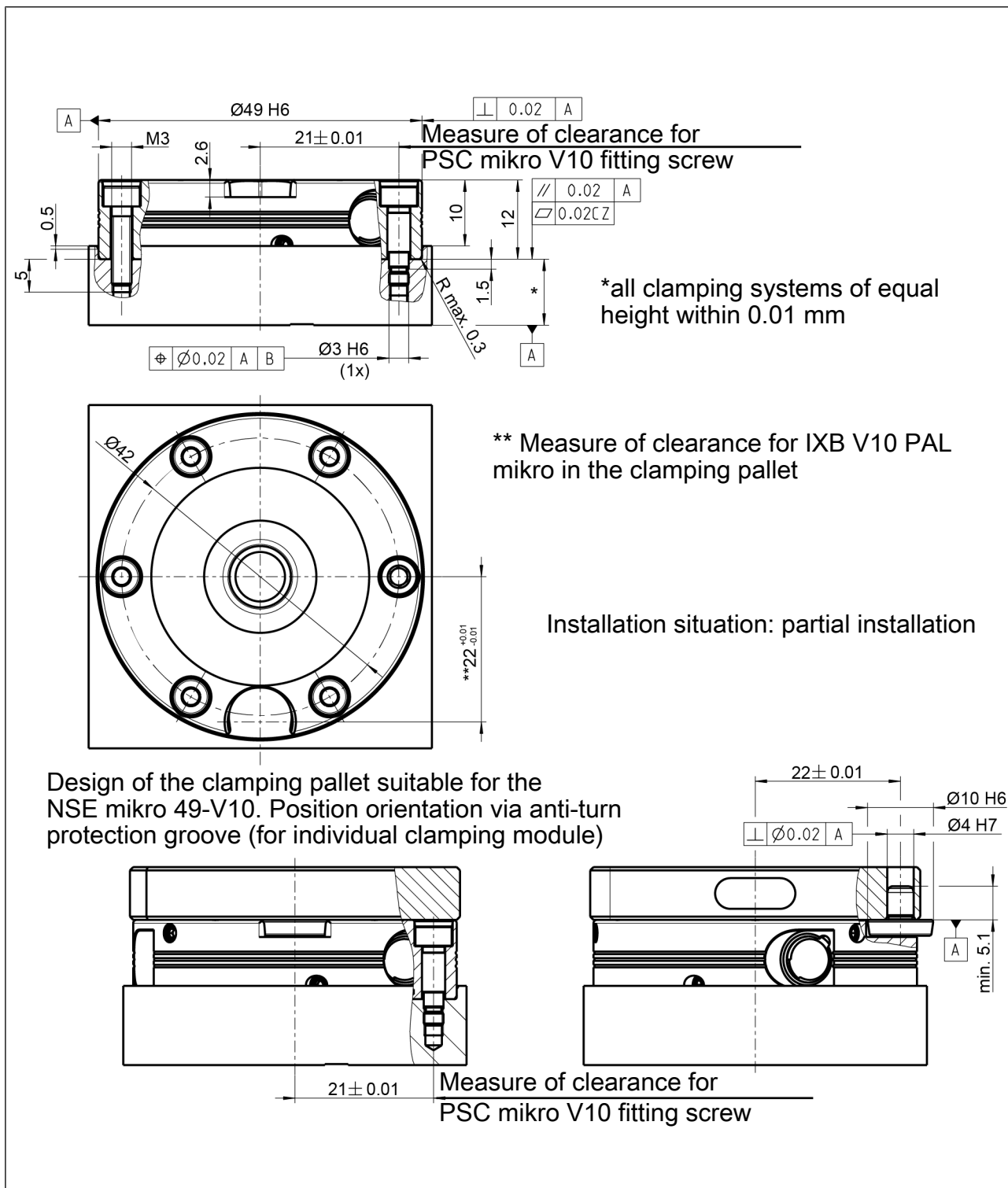
The accessory kit contains the O-rings $\text{Ø } 3.5 \times 1$ for sealing the hose-free direct connections on the base side.

When the turbo connection is used, the spring-actuated locking procedure is actively supported with air pressure. If the turbo connection is not used, the relevant side of the piston must be able to ventilate.



6.2.2 NSE mikro 49-V10

The NSE mikro 49-V10 has fitting grooves for position orientation of the clamping pallet. It is fixed in the installation space with 6 M3 screws of strength class 10.9 ▶ 6.6 [22]. One of these mounting locations is fixed with a fitting screw.



The fitting screw is designed for position orientation and anti-turn protection of the quick-change pallet module in the installation space. In the installation space an additional fitting bore is required for position orientation via the fitting screw.

The illustration shows how a clamping pallet is connected to the VERO-S NSE mikro 49-V10 quick-change pallet system. Individual clamping pallets and clamping devices can be attached to the interface of the NSE mikro 49-V10.

When producing clamping pallets in-house, pay attention to the exact positioning clearance of the indexing pin bore to the middle of the clamping pin. For dimensions, please refer to the illustration. The indexing pin IXB V10 PAL mikro is not included in the scope of delivery of the quick-change pallet system and must be ordered separately.

When the turbo connection is used, the spring-actuated locking procedure is actively supported with air pressure. If the turbo connection is not used, the relevant side of the piston must be able to ventilate.

6.3 Clamping pins SPA 10 mikro, SPB 10 mikro, SPC 10 mikro

NOTICE

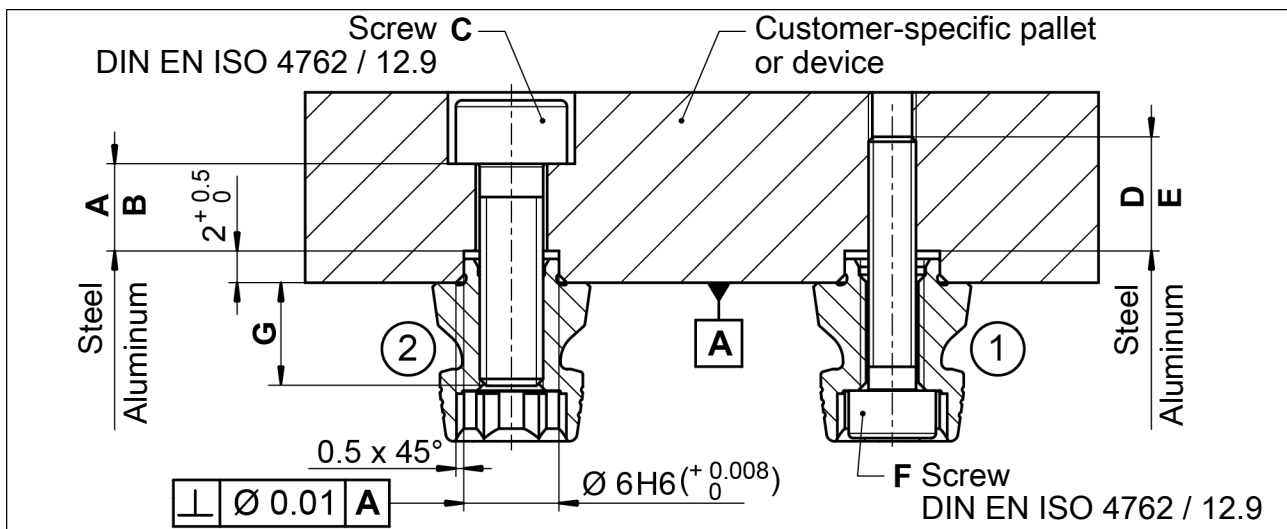
Notes on clamping pins and mounting screws

The holding force of the quick-change pallet system is limited essentially by the tightness of the screw connection which connects the clamping pin to the pallet or the device. This is why only screws of strength class 12.9 may be used. ▶ 6.6 [22]

Only original SCHUNK clamping pins may be used.

If the clamping pins are to be used in customer-owned devices, the customer must provide sufficiently dimensioned threaded holes or a sufficiently thick mounting material.

The clamping pins can be attached to the workpiece or pallet in two different ways, however the mounting variants are numbered in the preferred order.

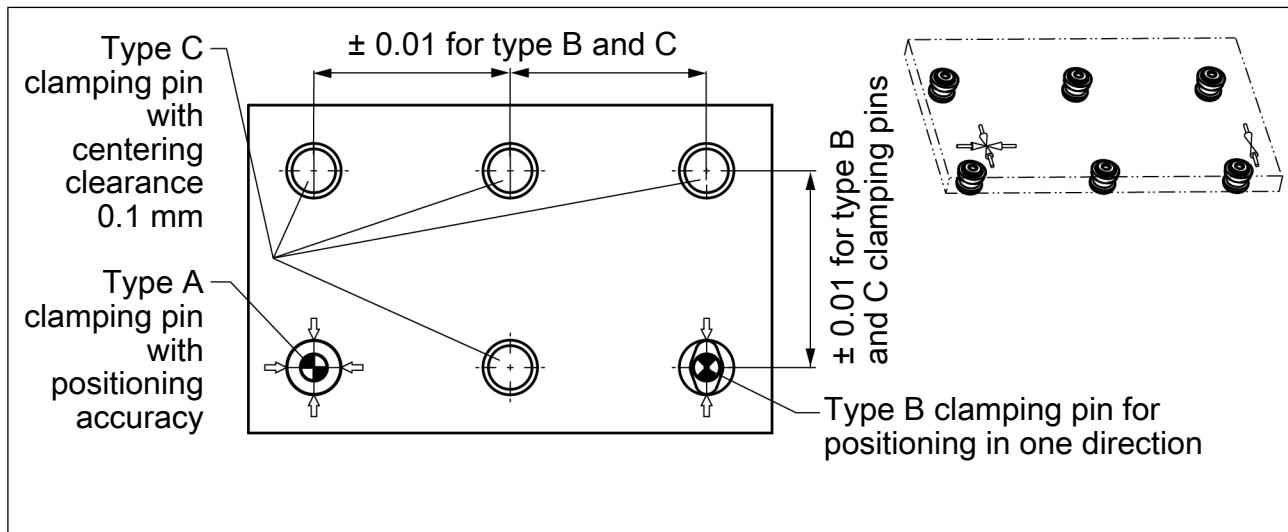


Tolerances and installation conditions

Type	ID	A	W	C	D	E	F	G*
SPA mikro 10	0436610	>5	>8	M4	>5	>6	M3	5
SPB mikro 10	0436620	>5	>8	M4	>5	>6	M3	5
SPC mikro 10	0436630	>5	>8	M4	>5	>6	M3	5

* The length of the inserted thread must not be lower than the "G" dimension!

Usage/arrangement of the different types of clamping pins (Workpiece: pallet with 6 clamping areas)



6.4 Note about pallet changing

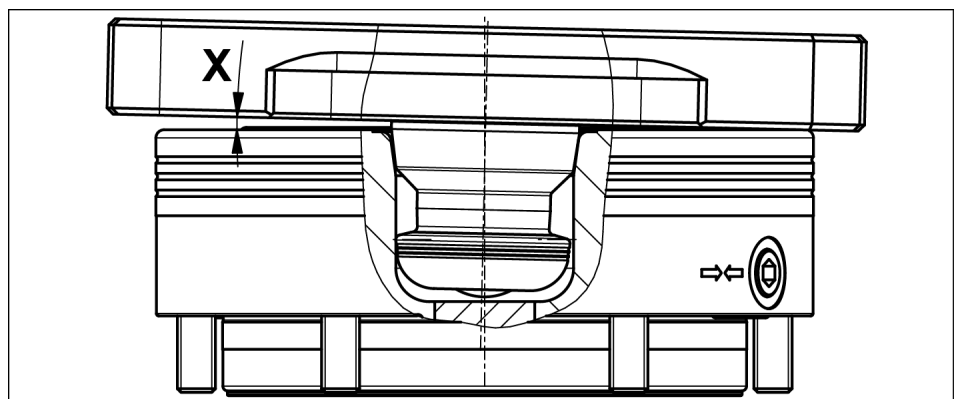
NOTICE

When changing the pallet using lifting equipment or a robot, ensure that the pallet is lifted exactly parallel to the modules.

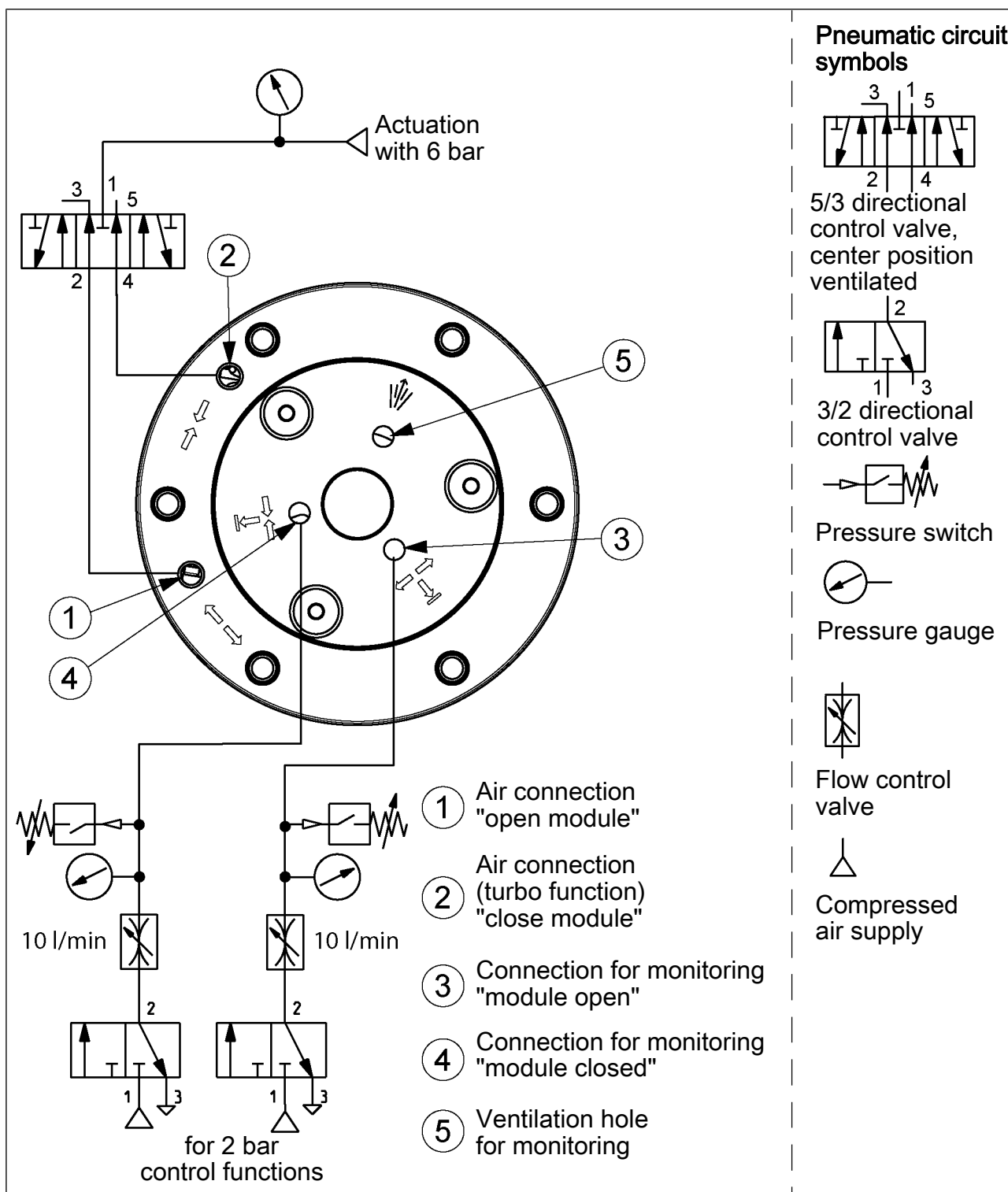
The inclination (X) during lifting may not exceed 1.2° .

If the inclination is larger, the clamping pins can jam and the system components could be damaged or destroyed. In this case, the system must be inspected and damaged parts must be replaced immediately.

Only original SCHUNK spare parts may be used!



6.5 Pneumatic circuit diagram



The pneumatic circuit diagram shows the supply lines and the pneumatic components for actuating the different functions of the clamping system. When the monitoring function is connected, the measurable differential pressure should reach at least 1 bar when one clamping module is shut down so that secure evaluation can be performed via the air gap sensor. The maximum pressure of the

monitoring function is 2 bar. In order for the monitoring function to be actuated, a flow control valve with a preset air volume flow of approx. 10 l/min must be connected upstream in the feed line. In order to guarantee reliable evaluation, the pressure and air volume must be held constant. Pressure fluctuations can affect the settings of the pressure switch and lead to incorrect measurement results.

The length and cross-section of the line can affect the switching time of the control components. It may be necessary to readjust the control components. Check the control components of the monitoring functions at regular intervals. If errors occur in the monitoring control system, you must detect the cause of the error.

6.6 Screw tightening torques

Tightening torques for mounting clamping pins

(Screw quality 12.9)

Screw size	M3	M4	M5	M6	M8	M10	M12	M14	M16
Tightening torque M_A (Nm)	2.4	5	9	15	32	62	108	170	262

Tightening torques for mounting clamping modules

(Screw quality 10.9)

Screw size	M3	M4	M5	M6	M8	M10	M12	M14
Tightening torque M_A (Nm)	1.7	4.2	7.5	13	28	50	88	120

7 Function

The item numbers specified for the corresponding individual components relate to chapter drawings. ▶ 11 [30]

7.1 Clamping functions in the pneumatically actuated clamping system

The pneumatically actuated clamping system is actuated with compressed air. An external compressed air supply is required for it to function.

Unlocking

1. Supply compressed air through the hose-free direct connection on the base side (operating pressure 6 bar).
2. The clamping slides (item 5) move outward in a radial direction and release the clamping pin.
3. The pallet can be removed.

The clamping pins can be delivered as separate accessories in three versions (see chapter "clamping pins" ▶ 6.3 [19]). The clamping pins are mounted on customized pallets or devices.

Locking

1. Depressurize the system.
2. The clamping slides are guided inwards by spring force. When locking, the pallet is pulled onto the contact surface of the clamping module and the clamping pin is clamped in the clamping module in a self-locking and form-fitting manner. It is therefore not necessary to apply pressure to the clamping module during machining.
3. When the turbo connection is used, the spring-actuated locking procedure is actively supported with air pressure. A turbo impulse is sufficient for a higher pull-in force. If the turbo connection is not used, the relevant side of the piston must be able to ventilate. The clamping pin is centered at the taper bore of the clamping module, which is why the angular alignment of the clamping system can be selected as desired.

7.2 Clamping slide position monitoring

The NSE mikro 49 and NSE mikro 49-V10 quick-change pallet systems have dynamic pressure monitoring of the clamping slide position.

This way, an electronic differential pressure switch can be used to monitor the dynamic pressure at the clamping sides of the quick-change pallet system. This means the slide position can be monitored electronically in order to ensure that the clamping slides are in an unlocked position as soon as the pallet can be

lifted. A pressure switch signals to the operator or the machine which position the clamping slides are in. This way, the clamping system can be protected from any possible damage.

The air connection is performed as standard via the base-side connection bore of the quick-change system on the cover (item 2). For information on sealing the air connection, please refer to chapter "Fastening and attachment".

Pressure build-up in the »OPEN« and/or »CLOSED« mode. One of the two monitors, or when necessary both monitoring connections, can be connected and overseen for mutual security. Control of the clamping slide monitor requires a reduced pressure supply **limited to 2 bar** (see "Pneumatic circuit diagram" ▶ 6.5 [□ 21]).

The measurable differential pressure must reach a minimum of 0.5 bar in order for a reliable evaluation to be done via the air gap sensor. The maximum pressure is 2 bar.

Monitoring requires a pressure gauge, an adjustable throttle and an air gap sensor.

The control of the module is performed using the hose-free direct connections.

For this purpose, the provided connections (see illustrations in chapter "Assembly") must be controlled via bore holes on the base side and the set-screw M3 in the cover (item 2) must be removed.

The air bleed screw must lead through an open groove in the table top. This requires that the bottom opening be sealed with an O-ring, which is inserted into the O-ring seat in the table top.

Machine the axial sealing O-ring seat according to the following dimensions: $\varnothing 5.5^{+0.1} \times 0.7^{+0.05}$.

The accessory pack contains the O-rings $\varnothing 3.5 \times 1$ (item 14) for sealing the hose-free direct connections on the base side.

Use of the dynamic pressure monitoring function is not mandatory for the basic operation of the clamping module.

If the pneumatic monitoring function for monitoring the clamping slide position is not used, it must be ensured that the quick-change pallet system can be loaded or unloaded without being damaged.

- **Before loading or unloading the clamping pallet** it must be ensured that all integrated clamping modules are unlocked.
- **Before beginning the machining process** it must be ensured that the integrated clamping modules are locked, and that the clamping pallet is placed flat on the locating surface.

Monitoring of the operating status can be ensured by lifting or shaking the clamping pallet.

8 Maintenance and care

The quick-change pallet system is designed for low-maintenance operation, so that opening and disassembling the clamping modules is only necessary in exceptional cases.



⚠ CAUTION

Risk of injury and risk of damage to the clamping module when opening the housing cover.

If the clamping module has to be disassembled, send the module to SCHUNK for repair.

The covers of the clamping modules are spring preloaded and must only be removed and installed by trained specialist personnel and in line with the appropriate removal and installation manual.

To ensure the quick-change pallet system operates perfectly, the following instructions are to be observed:

Pressure medium: compressed air - requirements for compressed air quality as per ISO 8573-1: 6 4 4.

NOTICE

A separate maintenance unit with oiler must be used for the air supply.

8.1 Ambient conditions and operating conditions

- Make sure that the contact surfaces of the interface are always clean.
- Make absolutely sure that no chips of any kind can enter the interface and that the interface does not fill with cooling emulsion, which is particularly possible with vertical positioning of the clamping pin axis. The best way to avoid both of these things is to use the SDE mikro 10 or SDE mikro 49 protective covers.
If the interface should fill with cooling emulsion, initiate the unlocking process and dry out the interface in actuated state.
- Only use high-quality cooling emulsion with anti-corrosive additives during processing.
- Check the units at regular intervals (at least every two weeks or after 1000 clamping operations). The system is functioning correctly if the clamping slides move smoothly at minimum system pressure (5 bar).
- Carry out regular visual/functional checks. In case of visible damage or signs of malfunction, shut down the quick-change pallet system immediately. The system may only be commissioned again once the faults have been corrected. For example, by replacing the damaged unit.

9 Trouble shooting

The clamping area does not unlock

Possible cause	Remedial measures
Defective air connections	Check air supply ► 6.2 [15]
Pressure below minimum	Check operating pressure (min. 5 bar)
A component is broken (e.g. due to overloading)	Replace the module or send it to SCHUNK for repair
Excess tensile load on clamping pins	Reduce support weight

The clamping area does not unlock properly

Possible cause	Remedial measures
Pressure below minimum	Check operating pressure (min. 5 bar)
The module was not operated with oiled compressed air	Install maintenance unit with oiler
Hose diameter below minimum	For required hose diameters see chapter "General Assembly Notes"
The turbo connection is still pressurized	Ventilate the connection

The quick-change pallet system no longer opens quietly

Possible cause	Remedial measures
The clamping faces on the clamping slides and on the clamping pin are dirty	Remove the clamping pin and clean the clamping faces on the clamping slides and on the clamping pin

9.1 Emergency release in the case of functional faults

The pneumatically actuated quick-change pallet systems can also be manually unlocked in the case of a functional fault or interrupted air supply. If the quick-change pallet system cannot be unlocked automatically, it is recommended that you unlock it manually.

On the perimeter of the base body (item 1) there are three seal plugs (item 7) at an angle of 3 x 120°. These seal plugs are each secured with a retaining ring (item 9). An emergency release of the quick-change pallet system can be performed at one of these three access points.

In order to manually actuate the quick-change pallet system, one of these three seal plugs must be removed.

1. Remove the retaining ring with a small screwdriver.
 2. Pressurize the quick-change pallet system at the "OPEN" connection and remove the seal plug. **CAUTION! Risk of injury due to the seal plug being hurled out of the machine. Wear protective goggles!**
 3. The piston (item 4) and a compression spring (item 10) are located behind this seal plug. **The piston and the compression spring must not be removed from the base body.**
 4. In order to initiate unlocking, carefully apply pressure to the end face of the piston against the spring force with a suitable tool.
- ✓ Now the clamping system can be opened and the clamping pin is unlocked.

When assembling the dismantled parts, please make sure that the O-rings (item 11) installed on the piston and on the seal plug (item 17) are not damaged. Reinsert the seal plugs back into the cylinder groove and secure with the retaining ring.

In order to start operation again, detect the cause of error and clean the clamping system.

10 Seal kit and part lists

10.1 Seal kit lists

NSE mikro 49 / NSE mikro 49-V10

Item	Description	Quantity
11	O-ring Ø 4 x 1	6
13	O-ring Ø 30 x 1	1
14	O-ring Ø 3.5 x 1	4
17	O-ring Ø 5 x 1	1

Wearing parts, it is recommended to be changed when maintenance

10.2 Parts list

NSE mikro 49

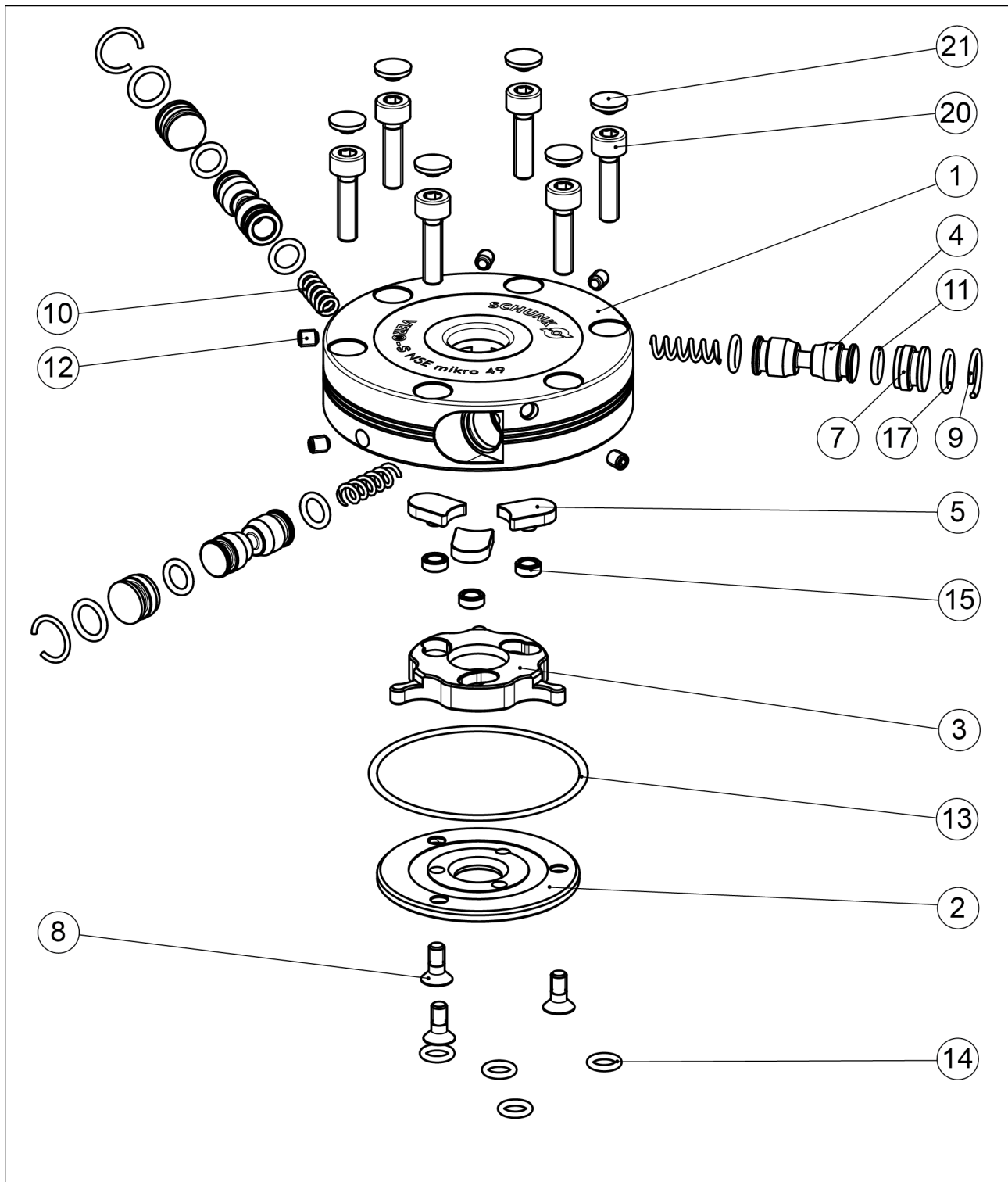
Item	Designation	Quantity
1	Base body	1
2	Cover	1
3	Drive ring	1
4	Piston	3
5	Clamping slide	3
7	Center plug	3
8	Countersunk screw M2.5 x 6 A2	3
9	Retaining ring	3
10	Compression spring	3
11	O-ring Ø 4 x 1	6
12	Set-screw M2.5 x 3	5
13	O-ring Ø 30 x 1	1
14	O-ring Ø 3.5 x 1	4
15	Bearing shell	3
17	O-ring Ø 5 x 1	3
20	Screw M3 x 12 A2	6
21	Cover plug	6

NSE mikro 49-V10

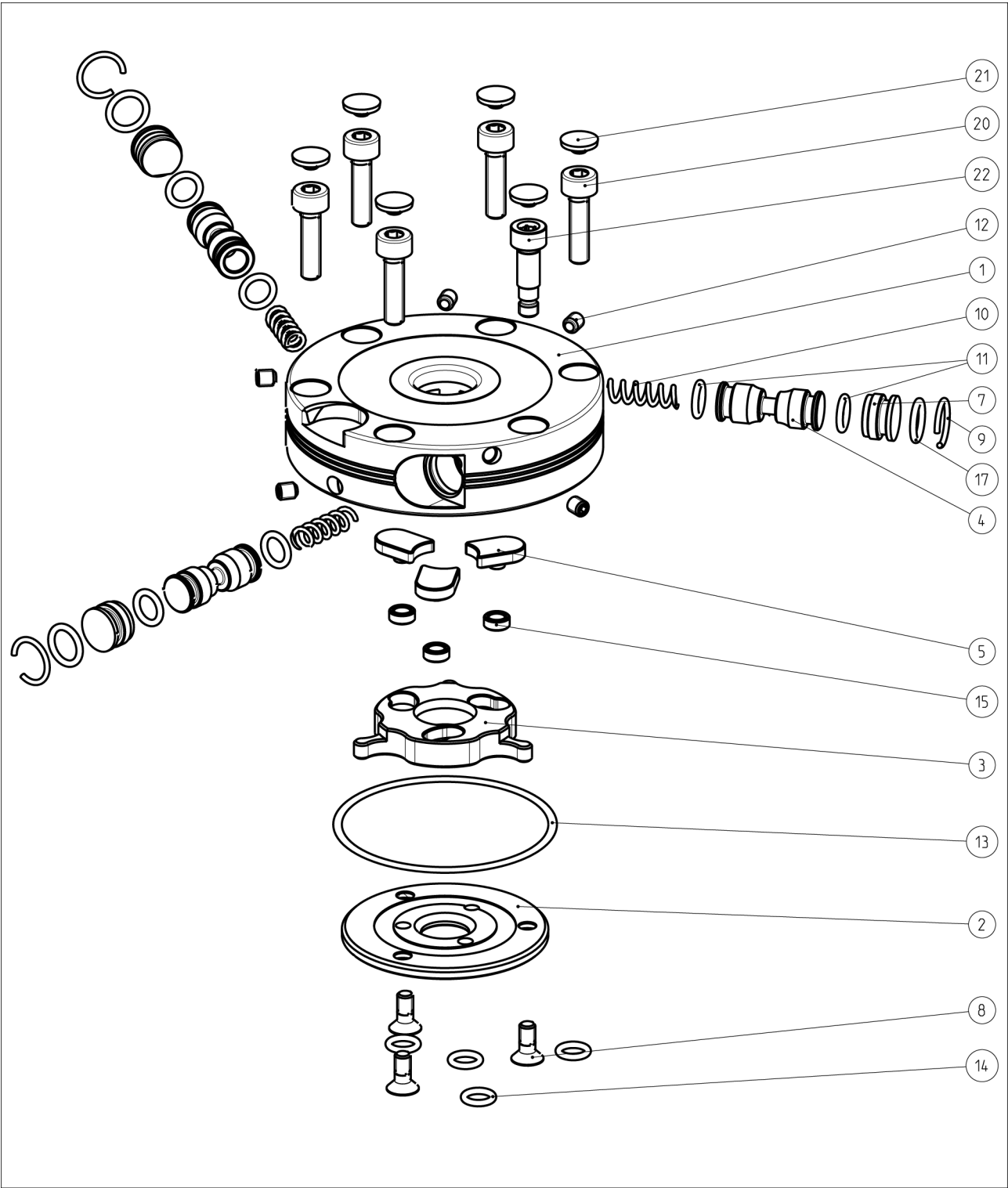
Item	Designation	Quantity
1	Base body	1
2	Cover	1
3	Drive ring	1
4	Piston	3
5	Clamping slide	3
7	Center plug	3
8	Countersunk screw M2.5 x 6 A2	3
9	Retaining ring	3
10	Compression spring	3
11	O-ring Ø 4 x 1	6
12	Set-screw M2.5 x 3	5
13	O-ring Ø 30 x 1	1
14	O-ring Ø 3.5 x 1	4
15	Bearing shell	3
17	O-ring Ø 5 x 1	3
20	Screw M3 x 12 A2	6
21	Cover plug	6
22	Fitting screw	1

11 Assembly drawings

NSE mikro 49



NSE mikro 49-V10



12 Translation of the original declaration of incorporation

in terms of the Directive 2006/42/EG, Annex II, Part 1.B of the European Parliament and of the Council on machinery.

Manufacturer/ Distributor	H.-D. SCHUNK GmbH & Co. Spanntechnik KG Lothringer Str. 23 D-88512 Mengen
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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 directive 2006/42/EC of the European Parliament and of the Council on machinery. The declaration is rendered invalid if modifications are made to the product.

Product designation:	VERO-S quick-change pallet system / NSE mikro 49
ID number	0436100, 0436104

The partly completed machine may not be put into operation until conformity of the machine into which the partly completed machine is to be installed with the provisions of the Machinery Directive (2006/42/EC) is confirmed.

Applied harmonized standards, especially:

EN ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN ISO 4414:2010	Pneumatic fluid power – General rules and safety requirements for systems and their components

Other related technical standards and specifications:

VDI 3035:2008-05	Design of machine tools, production lines and peripheral equipment for the use of metalworking fluids
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The manufacturer agrees to forward on demand the relevant technical documentation for the partly completed machinery in electronic form to national authorities.

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

Person authorized to compile the technical documentation:
Philipp Schröder, Address: see manufacturer's address

Signature: see original declaration

Mengen, November 2022

p.p. Philipp Schröder; Head of Engineering Design

13 Annex to Declaration of Incorporation

according 2006/42/EG, Annex II, No. 1 B

1. Description of the essential health and safety requirements pursuant to 2006/42/EC, Annex I that are applicable and that have been fulfilled with:

Product designation	VERO-S quick-change pallet system
Type designation	NSE mikro 49
ID number	0436100, 0436104

To be provided by the System Integrator for the overall machine	↓
Fulfilled for the scope of the partly completed machine	↓
Not relevant	↓

1.1	Essential Requirements			
1.1.1	Definitions		X	
1.1.2	Principles of safety integration		X	
1.1.3	Materials and products		X	
1.1.4	Lighting			X
1.1.5	Design of machinery to facilitate its handling		X	
1.1.6	Ergonomics			X
1.1.7	Operating positions			X
1.1.8	Seating			X

1.2	Control Systems			
1.2.1	Safety and reliability of control systems			X
1.2.2	Control devices			X
1.2.3	Starting			X
1.2.4	Stopping			X
1.2.4.1	Normal stop			X
1.2.4.2	Operational stop			X
1.2.4.3	Emergency stop			X
1.2.4.4	Assembly of machinery			X
1.2.5	Selection of control or operating modes			X
1.2.6	Failure of the power supply			X

1.3	Protection against mechanical hazards			
1.3.1	Risk of loss of stability		X	
1.3.2	Risk of break-up during operation		X	
1.3.3	Risks due to falling or ejected objects		X	
1.3.4	Risks due to surfaces, edges or angles		X	
1.3.5	Risks related to combined machinery			X
1.3.6	Risks related to variations in operating conditions		X	

1.3	Protection against mechanical hazards			
1.3.7	Risks related to moving parts		X	
1.3.8	Choice of protection against risks arising from moving parts			X
1.3.8.1	Moving transmission parts		X	
1.3.8.2	Moving parts involved in the process			X
1.3.9	Risks of uncontrolled movements		X	
1.4	Required characteristics of guards and protective devices			
1.4.1	General requirements			X
1.4.2	Special requirements for guards			X
1.4.2.1	Fixed guards			X
1.4.2.2	Interlocking movable guards			X
1.4.2.3	Adjustable guards restricting access			X
1.4.3	Special requirements for protective devices			X
1.5	Risks due to other hazards			
1.5.1	Electricity supply			X
1.5.2	Static electricity			X
1.5.3	Energy supply other than electricity			X
1.5.4	Errors of fitting		X	
1.5.5	Extreme temperatures		X	
1.5.6	Fire			X
1.5.7	Explosion			X
1.5.8	Noise		X	
1.5.9	Vibrations		X	
1.5.10	Radiation	X		
1.5.11	External radiation	X		
1.5.12	Laser radiation	X		
1.5.13	Emissions of hazardous materials and substances			X
1.5.14	Risk of being trapped in a machine			X
1.5.15	Risk of slipping, tripping or falling			X
1.5.16	Lightning			X
1.6	Maintenance			
1.6.1	Machinery maintenance		X	
1.6.2	Access to operating positions and servicing points		X	
1.6.3	Isolation of energy sources			X
1.6.4	Operator intervention			X
1.6.5	Cleaning of internal parts	X		

1.7	Information			
1.7.1	Information and warnings on the machinery		X	
1.7.1.1	Information and information devices			X
1.7.1.2	Warning devices			X
1.7.2	Warning of residual risks		X	
1.7.3	Marking of machinery			X
1.7.4	Instructions			X
1.7.4.1	General principles for the drafting of instructions		X	
1.7.4.2	Contents of the instructions			X
1.7.4.3	Sales literature		X	

	The classification from Annex 1 is to be supplemented from here forward.			
2	Supplementary essential health and safety requirements for certain categories of machinery			X
2.1	Foodstuffs machinery and machinery for cosmetics or pharmaceutical products			X
2.2	Portable hand-held and/or guided machinery			X
2.2.1	Portable fixing and other impact machinery			X
2.3	Machinery for working wood and material with similar physical characteristics			X
3	Supplementary essential health and safety requirements to offset hazards due to the mobility of machinery			X
4	Supplementary essential health and safety requirements to offset hazards due to lifting operations			X
5	Supplementary essential health and safety requirements for machinery intended for underground work			X
6	Supplementary essential health and safety requirements for machinery presenting particular hazards due to the lifting of persons			X

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