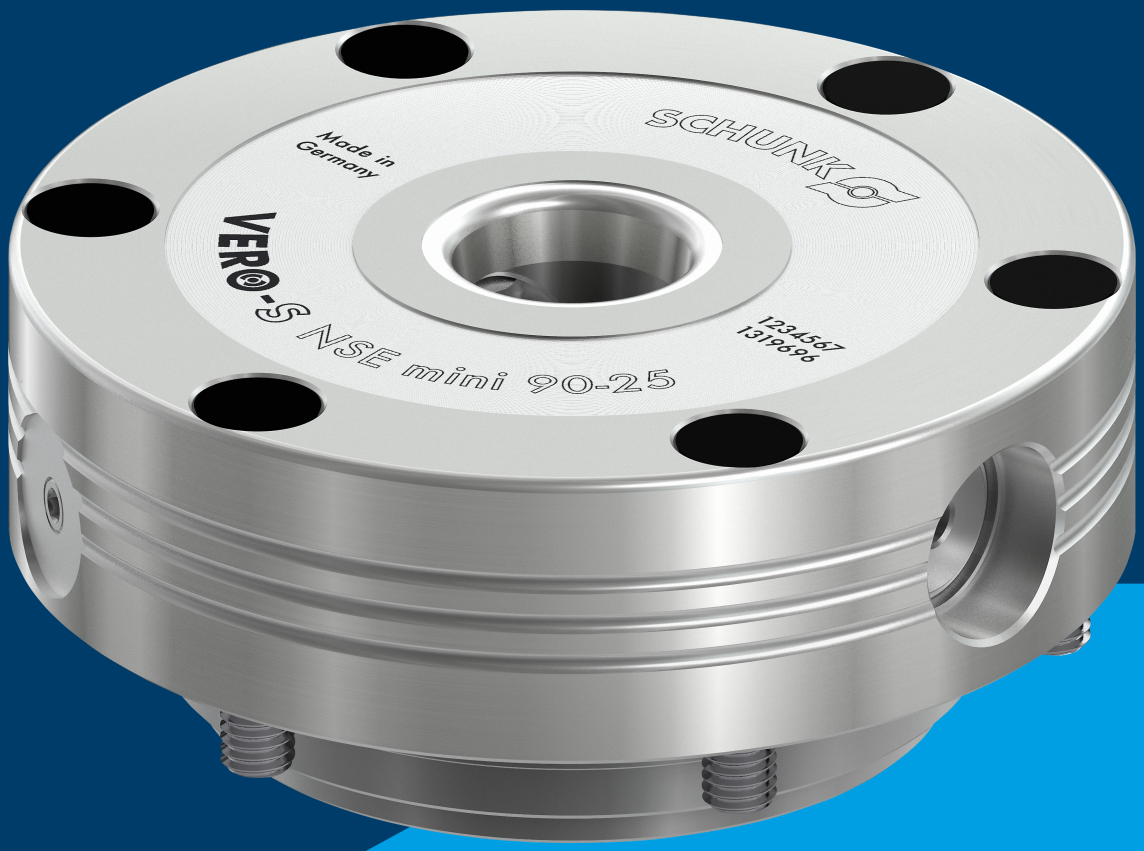

Quick-change pallet system VERO-S NSE mini 90-25

Assembly and Operating Manual

Translation of Original Operating Manual

Hand in hand for tomorrow

Imprint

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

Document number: 1155185

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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

Customer Management
Tel. +49-7572-7614-1300
Fax +49-7572-7614-1039
cmm@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 the safe, correct use of the product.

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

Personnel must have read and understood this manual before beginning any work. The observance of all safety notes in this manual is a prerequisite to ensure safe work processes.

The illustrations are intended to provide a basic understanding and may deviate from the actual version.

Besides this manual, other documents which apply are those listed under ▸ 1.1.2 [🗋 5]

1.1.1 Illustration of safety notes

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

⚠ DANGER

Denotes a hazard with a high degree of risk that, if not avoided, will result in death or serious injury.

⚠ WARNING

Denotes a hazard with a medium degree of risk that, if not avoided, could result in death or serious injury.

⚠ CAUTION

Denotes a hazard with a low degree of risk that, if not avoided, could result in a minor or moderate injury.

CAUTION

Information about avoiding material damage.

1.1.2 Applicable documents

- General Terms and Conditions *
- Catalog data sheet for the attached product *
- Technical data sheet for optional attachments *
- Approval drawings

The documents labeled with an asterisk (*) can be downloaded from **schunk.com**.

1.1.3 Design

This manual applies to the following sizes in all variants ▸ 3 [🗋 13]

Quick-Change Pallet System

- Size NSE mini 90-25

1.2 Warranty

The warranty for standard products is 24 months from the date of delivery from the factory, or 50,000 cycles* for manually operated clamping devices and 500,000 cycles* for power operated clamping devices. For special clamping devices, it is 12 months from the date of delivery from the factory, assuming appropriate use in accordance with the following conditions:

- Observe the applicable documents, ▸ 1.1.2 [🗋 5]
- Observance of the ambient conditions and operating conditions
- Observe the care and maintenance instructions

Parts touching the workpiece and wearing parts are not covered by the warranty.

* One cycle comprises one complete clamping procedure ("opening" and "closing").

1.3 Scope of delivery

The scope of delivery includes

- Quick-change pallet system in the variant ordered
- Accessory kit

1.4 Accessories

(see catalog or data sheets when ordering separately)

- SPA mini, SPB mini, SPC mini clamping pins
- Indexing pins IXB V1 mini
- Indexing pins IXB V10 mini
- Fitting screw
- Protection cover SDE mini

2 Basic safety notes

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

2.1 Appropriate use

- This product and the compatible add-on components are intended for positioning and clamping workpieces or clamping pallets on machine tools.
- The product may only be used within the scope of its technical data.
- The product is intended for industrial and commercial use.
- Appropriate use of the product includes compliance with all instructions in this manual.
- Clamping of pallets and workpieces with temperatures between 0°C and 100°C, with clamping devices for higher temperatures (HT variant) up to 200°C.

2.2 Inappropriate use

The product is not being used appropriately if:

- the product is used as a pressing tool, a toolholder, a load-handling device or as lifting equipment.
- the technical data specified are exceeded during usage.
- the clamping pin or clamping ring is not mounted properly.
- the product is used for turning applications over 100 RPM without consulting SCHUNK.
- the product is not fully covered by the pallet, the fixture or the workpiece.
- the product is brought into contact with aggressive media, especially acids.
- the product is used in abrasive blasting processes, especially sandblasting.

2.3 Structural 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.

- Only use original spare parts and 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 in the service life of the product.

- Ensure that the product is only used within its technical data.
- Ensure that the product is of a sufficient size for the application.
- Ensure that the contact surfaces of the interface and recesses towards the locating surfaces above the mounting points are kept clean at all times.
  Prevent chips from entering the interface and cooling emulsion from filling the interface.
- Only use cooling emulsions with anti-corrosive additives when machining.
- When using the cone seal, protect it from direct high-pressure spraying with cooling emulsion.

2.6 Material limitations

The product is made of steel alloys, elastomers and aluminum alloys. In addition, Branotect anti-rust oil and Renolit HLT2 are incorporated into the product as auxiliary and operating materials.

2.7 Personnel qualification

Inadequate qualification of personnel

Any work on the product by inadequately qualified personnel can lead to serious injuries and considerable material damage.

- All work must be performed by appropriately qualified personnel.
- Personnel must have read and understood the complete manual before beginning any work on the product.
- Observe country-specific accident prevention regulations and the general safety notes.

The following personnel qualifications are required for the various activities on the product:

Qualified electrician Qualified electricians have the professional training, knowledge, and experience to work on electrical systems, to recognize and avoid potential dangers, and know the relevant standards and regulations.

Specialist personnel Specialist personnel have the specialized training, knowledge, and experience to perform the tasks entrusted to them, to recognize and avoid potential dangers, and know the relevant standards and regulations.

Instructed person Instructed persons have been instructed by the operator regarding the tasks entrusted to them and the potential dangers of inappropriate behavior.

Manufacturer's service personnel The manufacturer's service personnel have the specialized training, knowledge, and experience to perform the work entrusted to them and to recognize and avoid potential dangers.

2.8 Personal protective equipment

Use of personal protective equipment

Personal protective equipment serves to protect staff in the event of a danger that may interfere with their health or safety at work.

2.9 Transport

Handling during transport

Incorrect handling during transport can make the product unsafe and risks the danger of serious injuries and considerable material damage.

- During transport and handling, secure the product to prevent it from falling.

2.10 Protection during handling and assembly

Incorrect handling and assembly

Incorrect handling and assembly can make the product unsafe and can risk the danger of serious injuries and considerable material damage.

- All work must only be performed by appropriately qualified personnel.
- Secure the system against accidental operation during all work.
- Use suitable assembly and transport equipment and take precautions to prevent jamming and crushing.

2.11 Protection during commissioning and operation

Falling or violently ejected components

Falling and ejected components can lead to serious injury or death.

- Take suitable protective measures to secure the danger zone.

Manual loading

- If the clamping device is closed, the clamping pallet rests on the clamping slides after loading. When the clamping device is opened, the clamping pallet falls down. This poses a risk of crushing.

2.12 Notes on safe operation

Incorrect manner of working by personnel

An incorrect manner of working can make the product unsafe and risks serious injuries and considerable material damage.

- Observe the safety notes and assembly instructions.
- Do not expose the product to any corrosive media. Products for special ambient conditions are excluded here.
- Do not expose the product to any media that lead to swelling or corroding of seals.
- Rectify malfunctions as soon as they occur.
- Observe the care and maintenance instructions.
- Observe the current safety, accident prevention, and environmental protection regulations for the application field of the product.
- The machine spindle must not be started until the clamping pressure in the clamping device has built up.
- Unclamping may only occur once the machine spindle has come to a standstill.

2.13 Disposal

Handling of disposal

Incorrect handling of disposal can make the product unsafe and lead to risks of environmental harm.

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

2.14 Fundamental dangers

General

- Disconnect power sources before installation, modification, maintenance, or calibration. Ensure that no residual energy remains in the system.
- Do not reach into the open mechanism or movement area of the product during operation.

2.15 Protection against dangerous movements

Safe condition

Quick-change pallet system with or without chuck jaws clamped and without energy.

Unexpected movements

If the system still retains residual energy, serious injuries can be caused while working on the product.

- Establish a safe state, switch off the energy supply, ensure that no residual energy remains and secure against inadvertent reactivation.

2.16 Notes on particular risks

⚠ WARNING

Risk of injury due to falling device, pallet or workpiece if the clamping pin or clamping ring is loosened erroneously or as a result of negligence.

- During operation, unintentional loosening of the clamping pin or clamping ring must be prevented by suitable countermeasures (implementation of the safety functions according to the risk assessment of the integrator).
- Wear personal protective equipment.

⚠ WARNING

Risk of injury during commissioning due to a falling unlocked device, pallet or workpiece.

- During loading, check that the coupling elements, devices, pallets or workpieces are positioned so they are aligned to each other.
- Clamping pallets with torque pin must be fed to the module in the correct orientation before locking.
- For modules with media transfer units, ensure the loading weight on the change interface is sufficient to ensure the surface of the interface is level with the module.

⚠ WARNING

Risk of injury when the clamping pin or clamping ring axis is in a horizontal position or during overhead applications due to the device or pallet falling down.

- Use a crane or a transport truck when transporting workpieces or clamping pallets.
- During horizontal or overhead applications, the device or clamping pallet must be secured before loosening to prevent it from falling.

⚠ WARNING

The quick-change pallet system clamps using spring force. Risk of injury due to parts automatically moving to their end positions following actuation of an >>emergency stop<< or after switching off or failure of the power supply.

- Wait for the system to come to a complete standstill in safe state.
- Do not reach into the clamping module.

⚠ CAUTION

Risk of injury due to contamination (e.g. coolant or splashing water) in the blow-out and air purge connections of the clamping module or in the change interface.

- Clean the quick-change pallet system before loading.
- Wear personal protective equipment (safety goggles).

⚠ CAUTION

Risk of injury from pressurized media transfer unit interfaces. The actuated clamping device on top of these may move unexpectedly as a result.

- Do not control the media transfer units until the device is clamped on the quick-change pallet systems.
- Take suitable protective measures to secure the danger zone.

3 Technical data

Designation	NSE mini 90-25	NSE mini 90-25-V1	NSE mini 90-25-V4	NSE mini 90-25-V10
ID	1319696	1460873	1435606	1313269

Holding force* (M6 / M8) [kN]	15 / 25
Pull down force without turbo [kN]	1.5
Pull down force with turbo [kN]	6
Actuating pressure [bar]	6
Repeatability [mm]	< 0.005
Installation position	any
Operating temperature [°C]	+5 to +60
Required level of cleanliness	IP 30 in accordance with DIN EN 60529
IP rating	IP 67
Noise emission [dB(A)]	≤ 70
Pressure medium	Compressed air, compressed air quality according to ISO 8573-1:2010 [7:4:4]

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

The actuating pressure for the turbo function must not exceed 6 bar.

3.1 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.

CAUTION

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.

CAUTION

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.

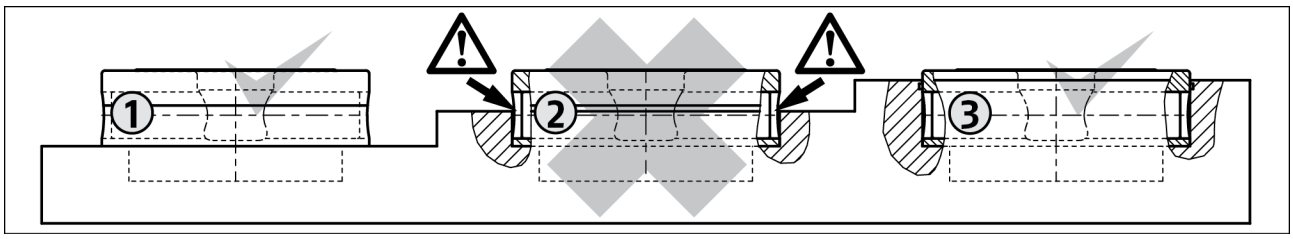
If the quick-change pallet system is to be used outside the specified welding currents, please contact your SCHUNK contact person.

4 Assembly

4.1 Pre-assembly

Request our installation drawings if installing the module in the customer's clamping stations yourself.

The installation position must be observed when performing the installation yourself.



1	Partial installation	2	Do not use	3	Full installation

CAUTION

With installation location 2, the clamping slide can be blocked by chips and dirt. For this reason, do not use this installation position.

- Damage to the clamping module is possible.

4.2 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 the clamping modules

(Screw quality ≥ 10.9)

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

4.3 Installing and connecting

⚠ WARNING

Risk of injury due to unexpected movements!

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.

⚠ CAUTION

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

- Wear personal protective equipment, particularly protective gloves.

1. Check the flatness of the mounting surface, ▸ 4.4 [🗋 15].
2. Screw the module with the clamping station.
   ⇨ Observe permissible tightening torques for the mounting screws and the strength class, ▸ 4.2 [🗋 14].
3. Connect module ▸ 4.4 [🗋 15]
   ⇨ via the hose-free direct connection, OR
   ⇨ via supply lines on the side M5 connections
   – unscrew set-screws
   – screw air connections
4. Connect turbo connection if necessary.

4.4 Fastening and connection

Flatness

If several linked clamping modules are mounted, make sure that the flatness and height deviation of the locating surfaces from module to module (based on a 100 mm gauge for bore holes) is ≤ 0.01 mm. The gauge deviation may not exceed ± 0.015 mm.

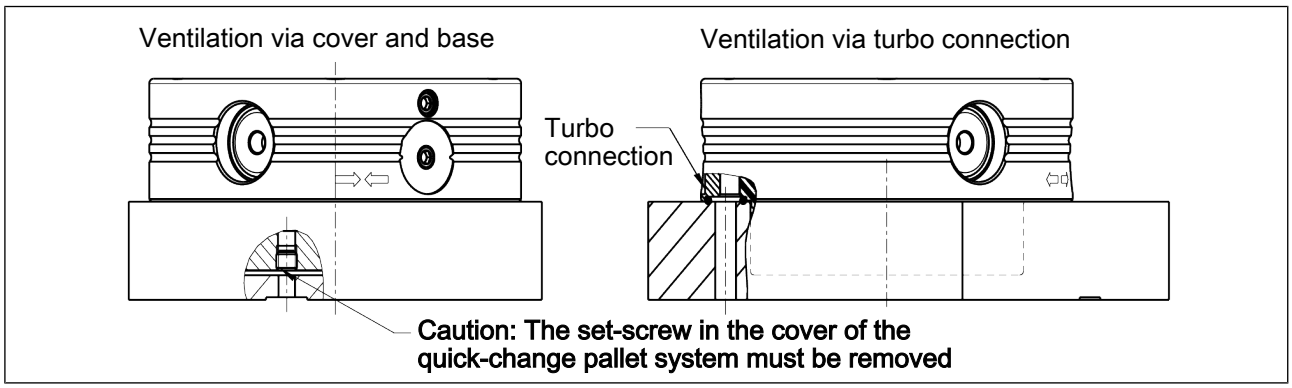
Agreement

Due to redundancy, the clamping pins with positioning accuracy in one direction (SPB mini 20) should be used for clamping systems that are more than 100 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 mini 20) can be used (refer to ▸ 4.5 [🗋 20]).

Air bleed screw for the piston chamber

When connecting the quick-change pallet systems, it must be taken into consideration that it is only possible to completely ventilate the piston chamber via the air connections 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.** This is optimally done via the turbo connection itself.
Alternatively, a ventilation option can be created by removing the set-screw M5 x 4 in the module cover.



Turbo connection

When using the turbo connection (if supply is connected), the spring actuated locking procedure is actively supported with air pressure and in so doing strengthens the achievable pull-in force of the quick-change clamping system. For force amplification, a pressure pulse is sufficient, the pressure line can be decoupled, the pull-in force remains intact. If the turbo connection is not used, the relevant side of the piston must be able to ventilate.

Connecting hose lines

If several quick-change systems are activated via jointly connected hose lines, feed lines with the following minimum cross-sections must be used.

Number of modules	Minimum nominal hose width
1	4 mm
2, 3, 4	6 mm
from 5	8 mm

When disconnecting hose lines, the relevant openings of the air supply connections must be protected with seal plugs or sealing caps to prevent the ingress of dirt or cooling lubricant.

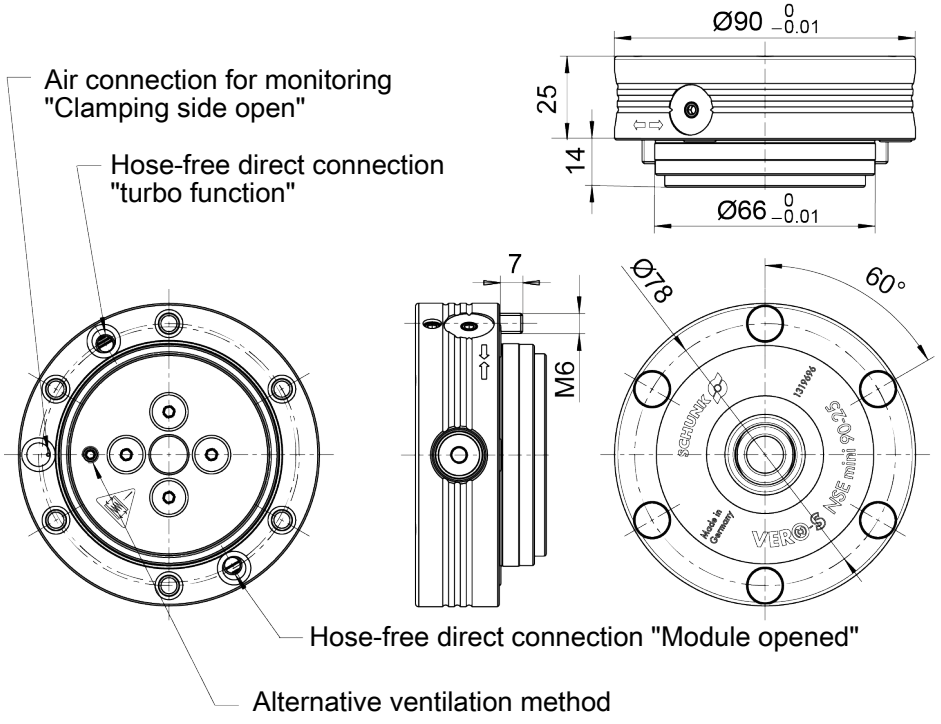
4.4.1 NSE mini 90-25

Fastening in the installation space with 6 M6 screws, ▶ 4.2 [🗋 14].

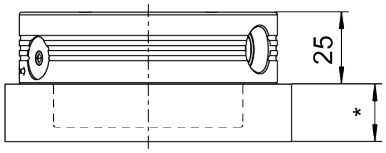
The assembly module is positioned using the centering diameter of the installation space: **Ø66 H6**.

The air connection is normally made via the coupling holes in the floor of the unit.

Alternative connection option: two M5 connections on the side. In this case, the bottom opening must be sealed. Either by inserting the O-ring Ø7 x 1.5 and placing it on a flat support or by screwing in M5 x 4 set-screws.



Installation situation: partial installation



*all clamping systems of equal height within 0.01 mm

4.4.2 NSE mini 90-25-V1, NSE mini 90-25-V4, NSE mini 90-25-V10

Fastening in the installation space with 6 M6 screws, ▶ 4.2 [🗋 14].

The assembly module is positioned via the centering diameter of the installation space: **Ø66 H6**.

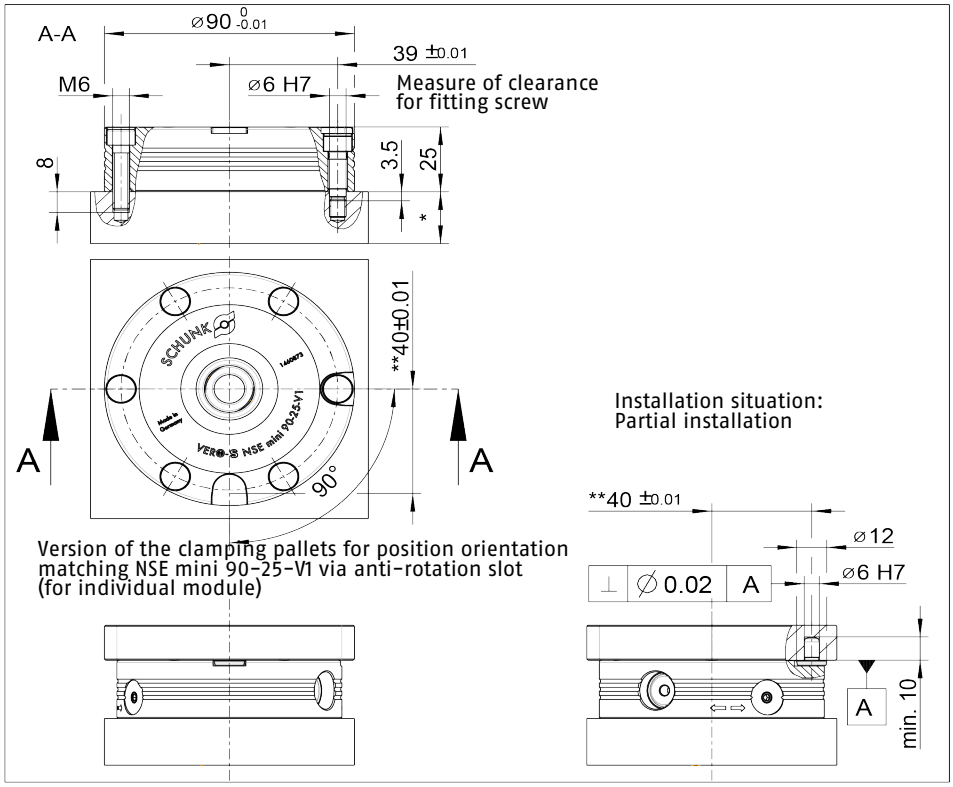
The exact position orientation is aligned using a fitting screw with a diameter of Ø6 f7 x 3 mm.

Precise alignment and positioning of the quick-change pallet system requires that the fitting bore Ø6 H7 on the opposite side is positioned precisely in the mounting position.

The air connection is normally made via the coupling holes in the floor of the unit.

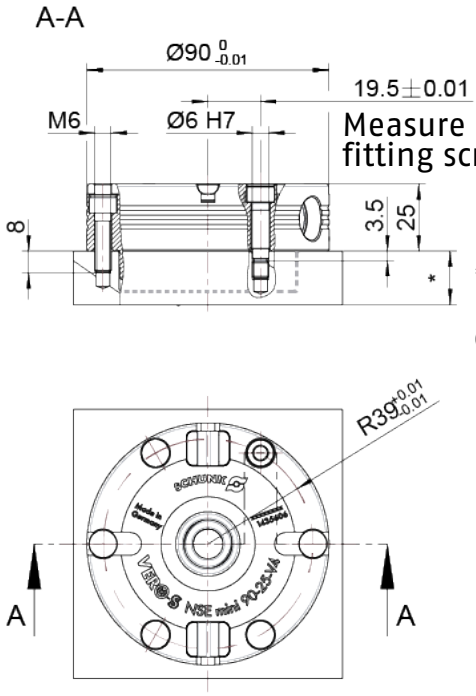
Alternative connection option: two M5 connections on the side. In this case, the bottom opening must be sealed. Either by inserting the O-ring Ø7 x 1.5 and placing it on a flat support or by screwing in M5 x 4 set-screws.

Torque pin V1

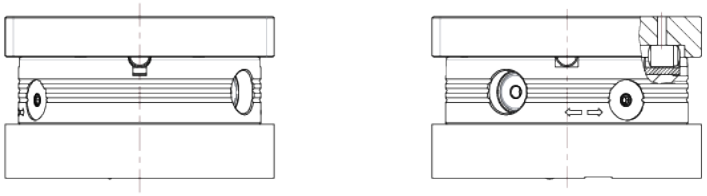


Torque pin V4

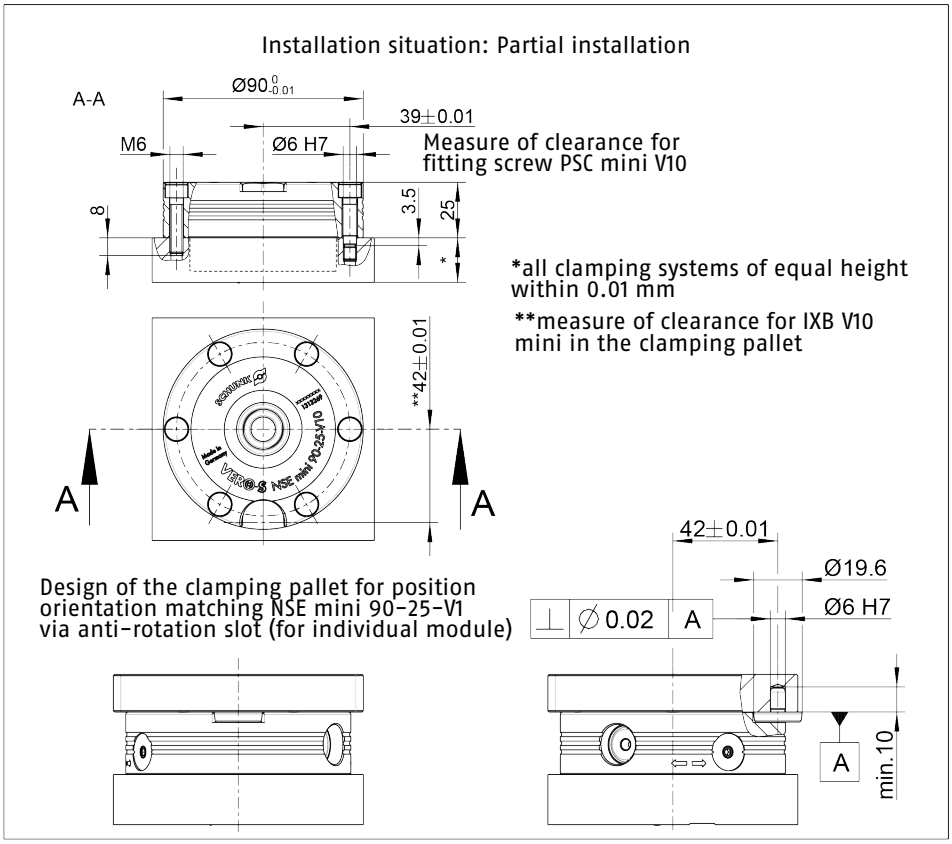
Installation situation: Partial installation



Design of the clamping pallet matching NSE mini 90-25-V4 Positioning via anti-rotation slot (in case of individual modules)



Torque pin V10



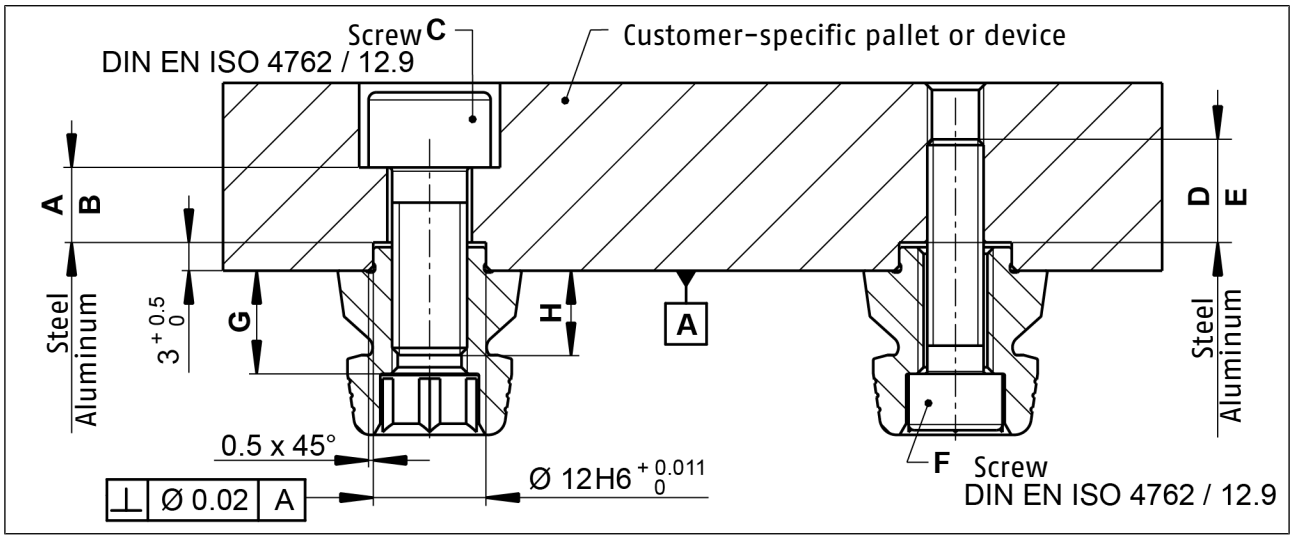
4.5 SPA mini 20, SPB mini 20, SPC mini 20 clamping bolts

CAUTION

Notes on clamping pins and mounting screws

The holding force of the quick-change pallet system is essentially limited by the tightness of the screw connection connecting the clamping pin to the pallet or the device. This is why only screws of strength class 12.9 may be used, ▶ 4.2 [🗋 14].
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 device or pallet in two different ways. The mounting variant on the left in the illustration, which is screwed from above, is the preferred variant. With this variant, if there is a module failure then the device or pallet can be removed after disassembling the clamping pins.

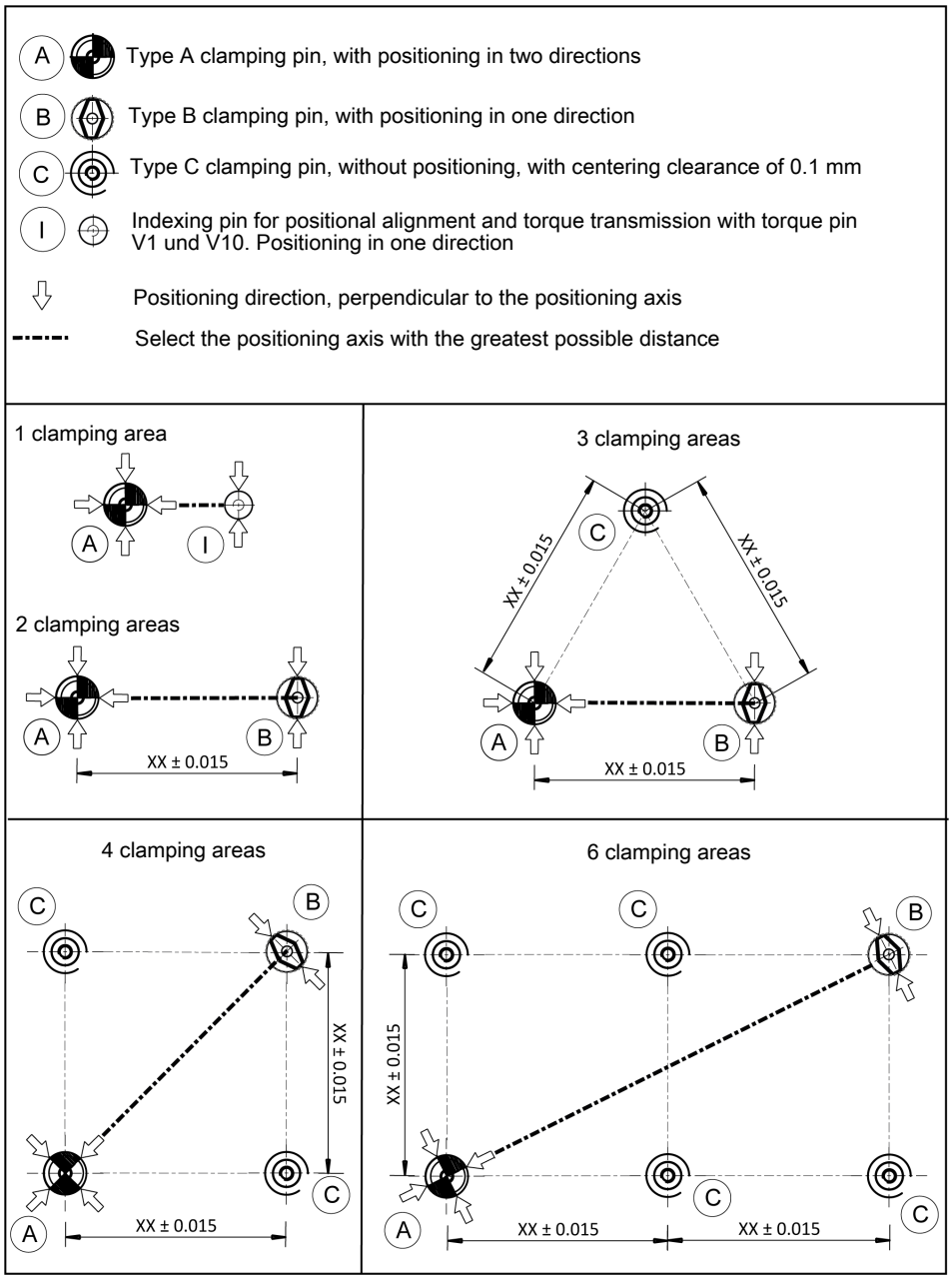


Mounting the clamping pins

Tolerances and installation conditions

Type	ID	A	B	C	D	E	F	G	H
SPA mini 20	0435610	> 8 mm	> 13 mm	M8	> 9 mm	> 11 mm	M6	11 mm	> 8 mm
SPB mini 20	0435620	> 8 mm	> 13 mm	M8	> 9 mm	> 11 mm	M6	11 mm	> 8 mm
SPC mini 20	0435630	> 8 mm	> 13 mm	M8	> 9 mm	> 11 mm	M6	11 mm	> 8 mm

Usage/arrangement of the different types of clamping pins

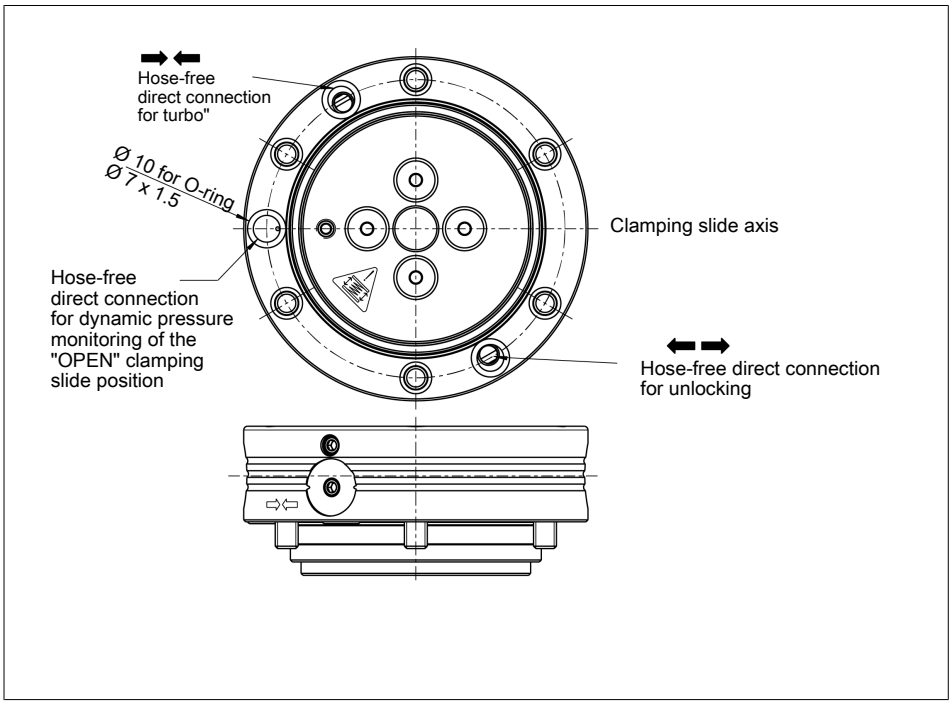


4.6 Options

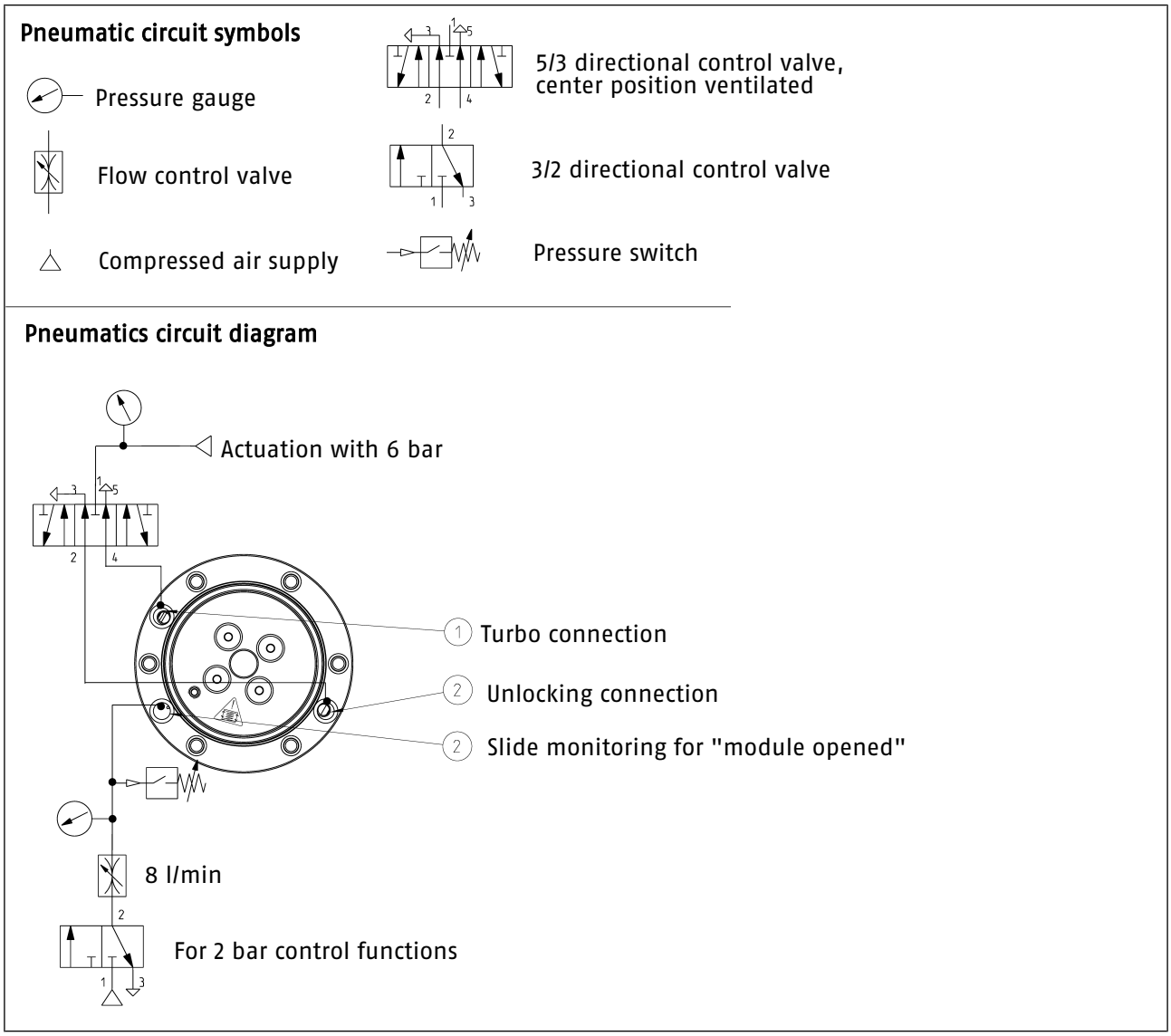
It is possible to monitor the dynamic pressure of the clamping slide position. Pressure build-up in "OPENED" status. Actuating clamping slide monitoring requires a reduced pressure supply that is limited to 2 bar (see ▶ 4.7 [🗋 24]).

The measurable differential pressure must reach a minimum of 1 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.

For clamping slide monitoring, the designated connection must be actuated via a floor-side bore hole.
Request our installation drawings if performing the installation yourself.



4.7 Pneumatic circuit diagram



Pneumatic circuit diagram

When controlling the NSE mini quick-change pallet system, the following must be observed:

Turbo function:

- The actuating pressure for the turbo function must not exceed 6 bar.

Slide monitoring:

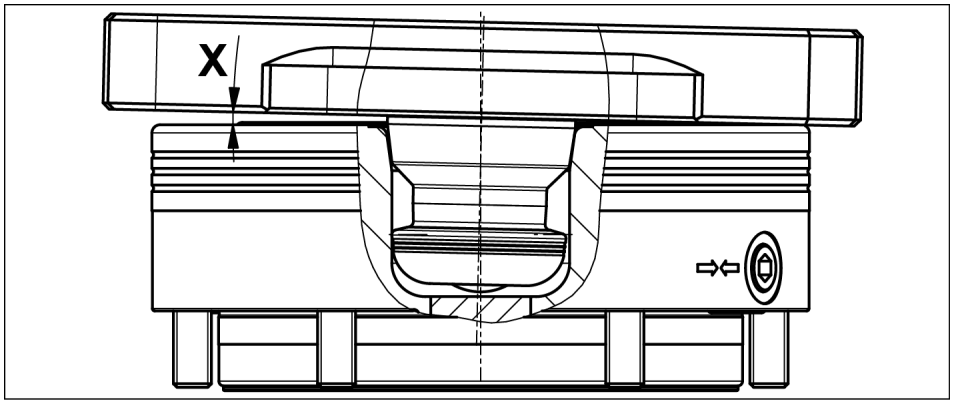
- The max. pressure of the slide monitoring is 2 bar.
- Limit volumetric flow to 8 l/min.
- Pressure difference upon failure of a module min. 1 bar.
- If the feeder query of several standard NSE mini modules is connected in series, only the evaluation of the OPEN position works (dynamic pressure = all modules open).

5 Operation

CAUTION

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!



⚠ WARNING

Risk of injury due to losing pallets or workpieces in the case of incorrect actuation caused by incorrect operation.
Risk of injury due to compressed air hoses coming loose when connected improperly.

- Disconnect the energy supply after locking.
- Use check valves or safety switches.
- The danger zone must be surrounded by a protective enclosure during operation.

⚠ WARNING

Risk of injury due to losing pallets or workpieces if the supply of compressed air drops or fails, and due to the clamping pins immediately closing

- Do not reach into the clamping module.
- Use pressure maintenance valves.
- Use loading devices.

6 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 may only be removed by trained specialist personnel. The covers can only be disassembled and assembled using a special assembly tool and by observing the corresponding disassembly and assembly instructions.

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

- Pressure medium: Compressed air, compressed air quality according to ISO 8573-1:2010 [7:4:4]
- Check the units at regular intervals (at least every two weeks or after 10.000 clampings). 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.

7 Storage

When storing the product for a longer period of time, observe the following points:

- Clean the product and lubricate it lightly.
- Store the product in a suitable transport container.
- Only store the product in dry rooms.
- Protect the product from major temperature fluctuations.

NOTE: Before recommissioning, clean the product and all attachments, check for damage, functionality and leaks.

8 Troubleshooting

8.1 The clamping area does not unlock

Possible cause	Remedial measures
Defective air connections	Check air supply
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

8.2 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	Required hose diameters, see chapter "Securing and connecting" ▶ 4.4 [🗋 15]
The turbo connection is still pressurized	Ventilate the connection

8.3 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 Seal kit and part lists

9.1 Seal kit lists

Sealing kit*	ID
NSE mini 90-25	1486243
NSE mini 90-25-V1	1486243
NSE mini 90-25-V4	1486243
NSE mini 90-25-V10	1486243

* For included items, see note **X** in the Parts List chapter. Seals are wearing parts and are recommended to be replaced during maintenance.

9.2 Part lists

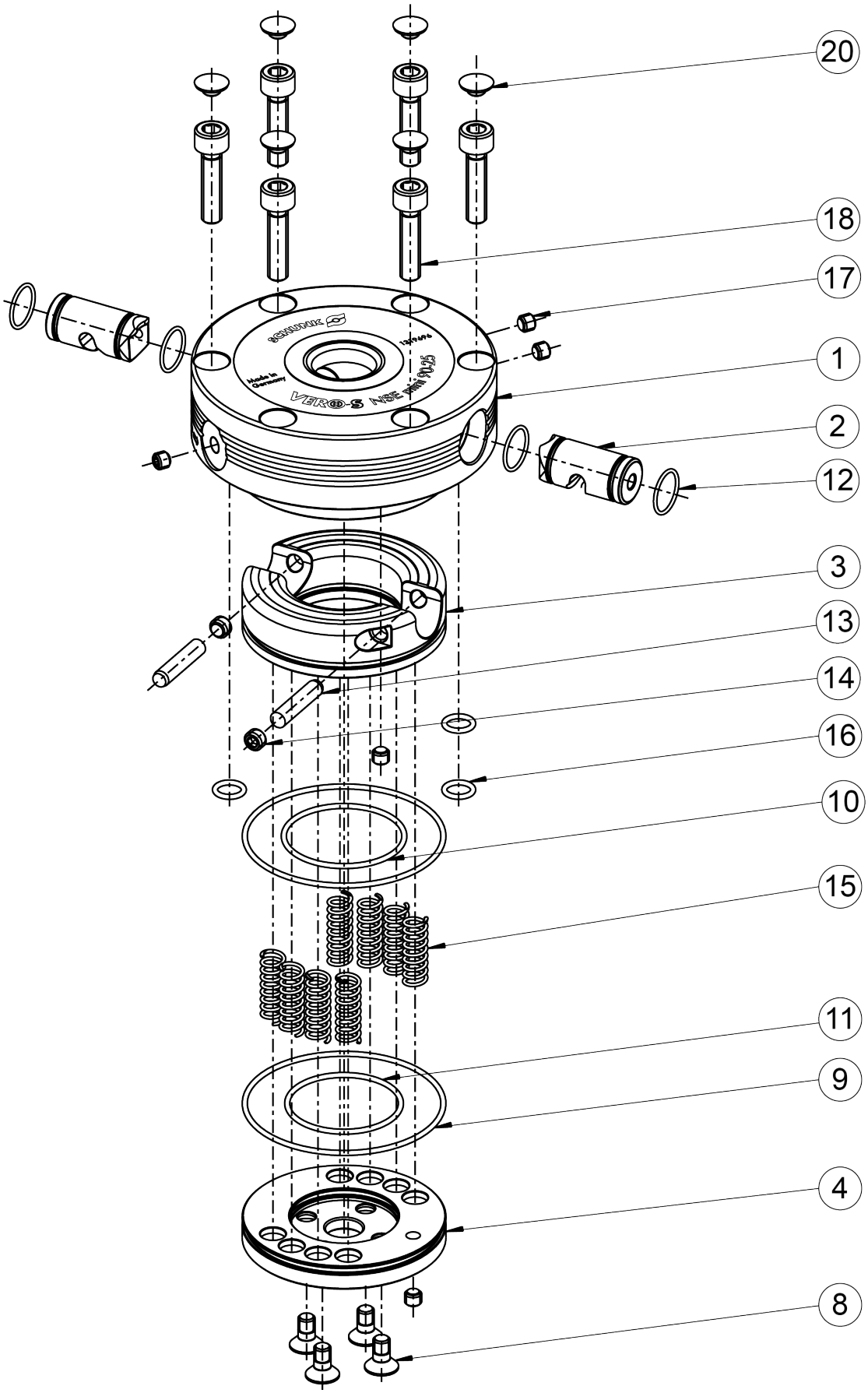
NSE mini 90-25 (ID 1319696)
NSE mini 90-25-V1 (ID 1460873)
NSE mini 90-25-V4 (ID 1435606)
NSE mini 90-25-V10 (ID 1313269)

Item	Designation	Quantity	Note
1	Body	1	
2	Clamping slide	2	
3	Piston	1	
4	Cover	1	
6	Fitting screw	1	V1 / V4 / V10
8	Countersunk screw	4	
9	O-ring Ø 55 x 1.5	2	**X**
10	O-ring Ø 32 x 1.5	1	**X**
11	O-ring Ø 35 x 1.5	1	**X**
12	O-ring Ø 11 x 1	4	**X**
13	Cylindrical pin	2	
14	Set-screw	2	
15	Compression spring	8	
16	O-ring Ø 7 x 1.5	3	**X**
17	Set-screw	5	
18	Screw	5	V1 / V4 / V10
	Screw	6	
20	Cover cap	6	**X**
30	Insert	2	V4

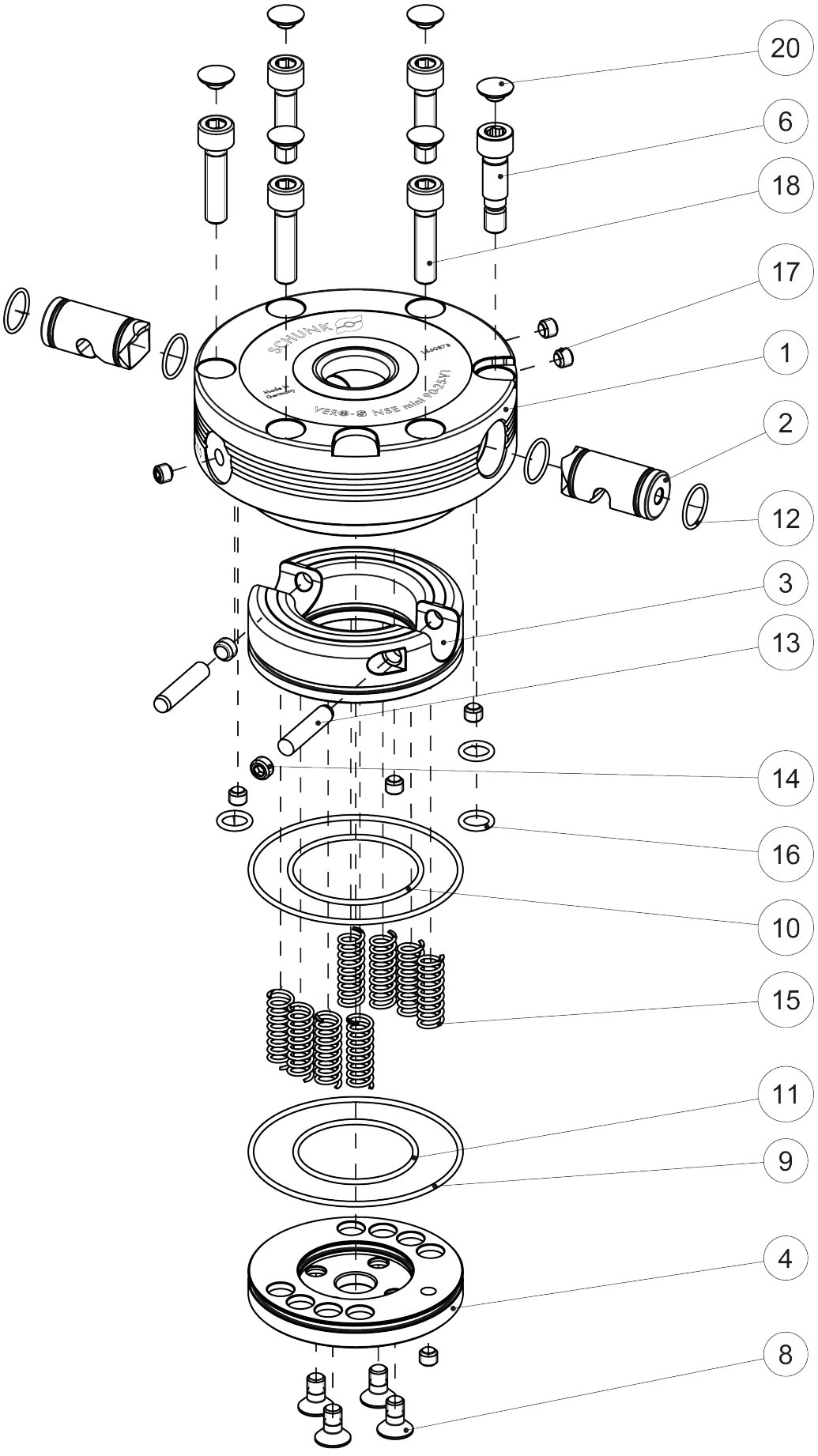
Parts list key			
V1	only for NSE mini 90-25-V1	V10	only for NSE mini 90-25-V10
V4	only for NSE mini 90-25-V4	**X**	included in the sealing kit

10 Assembly Drawings

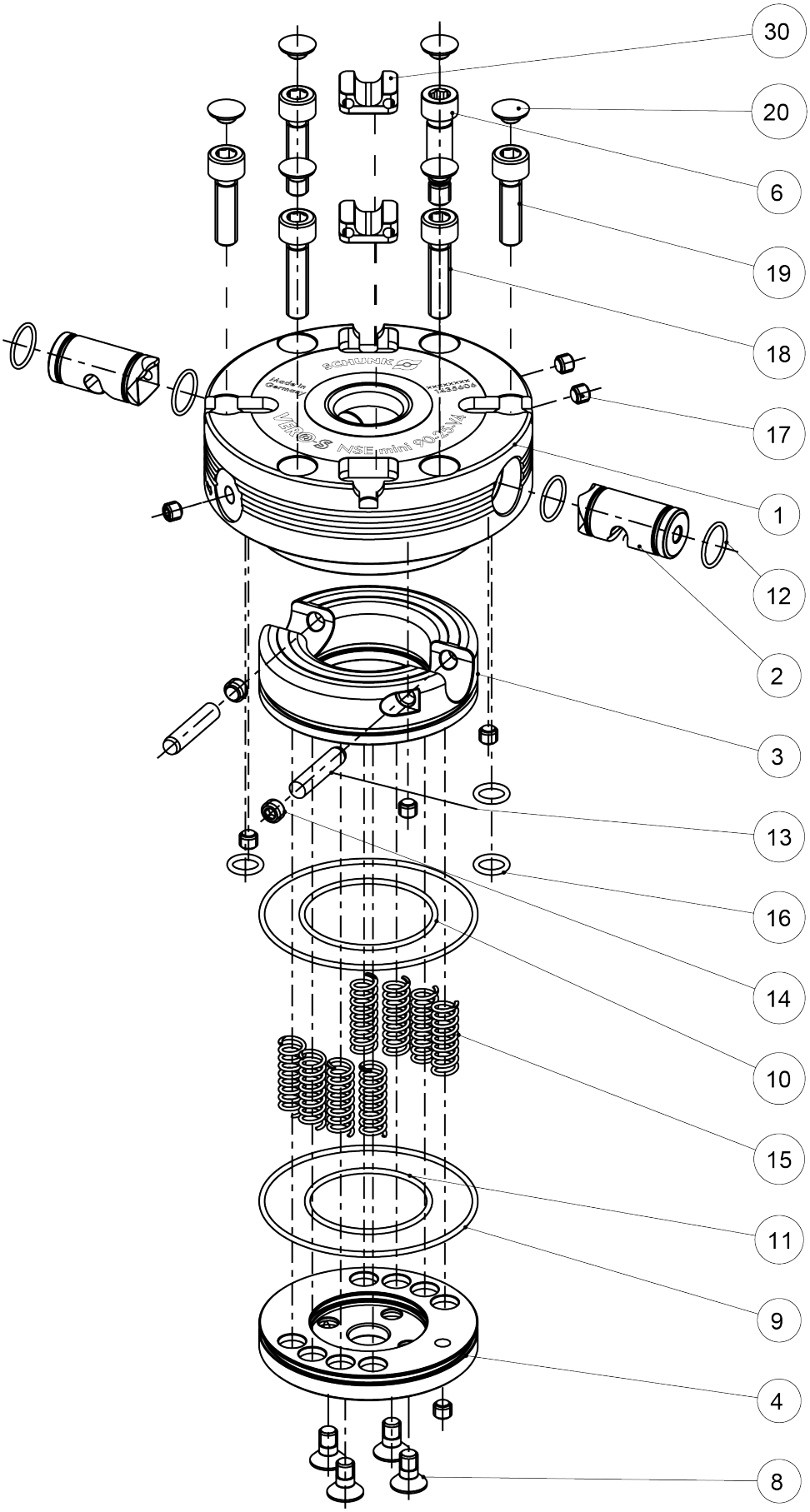
10.1 NSE mini 90-25



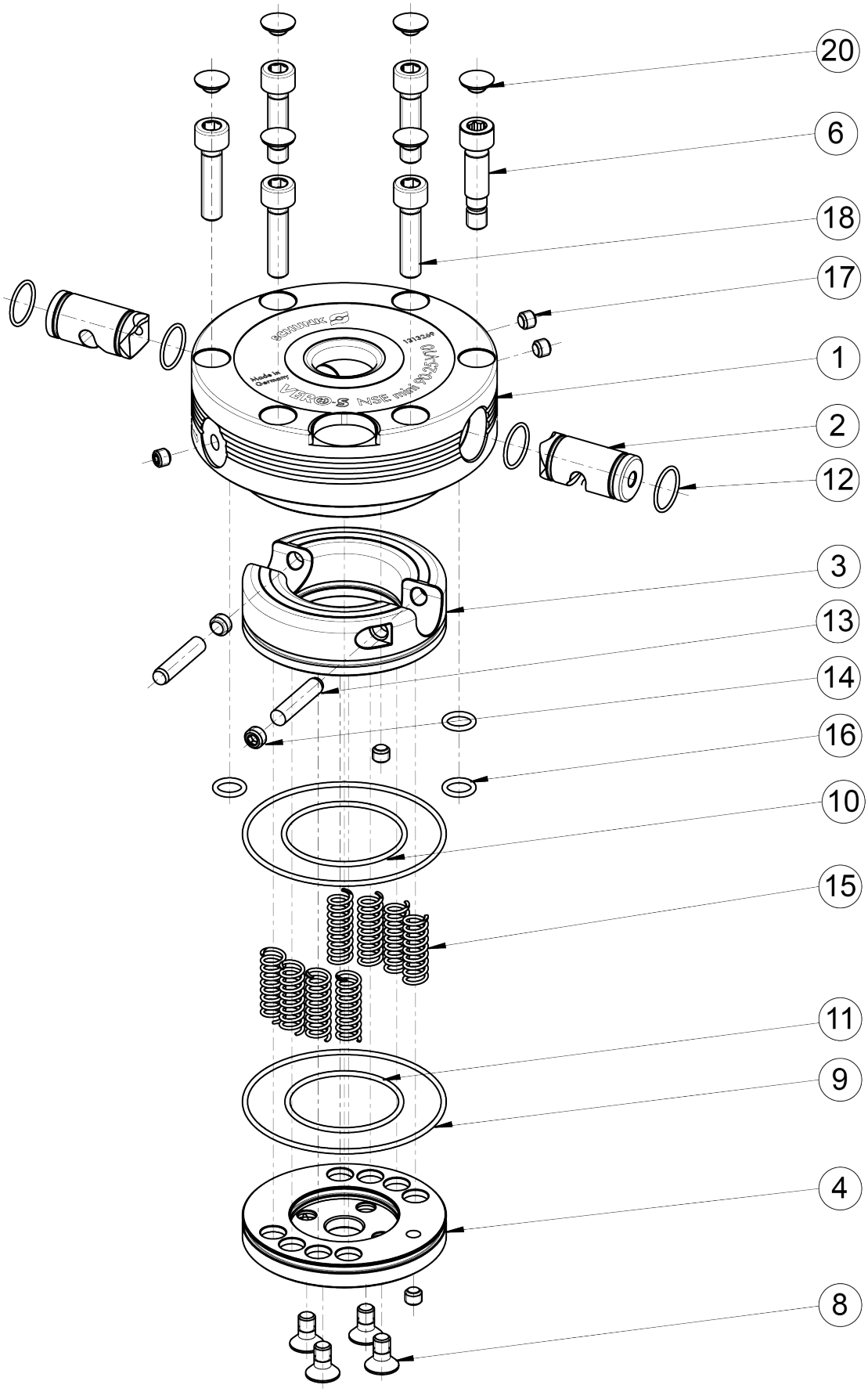
10.2 NSE mini 90-25-V1



10.3 NSE mini 90-25-V4



10.4 NSE mini 90-25-V10



11 Manufacturer certificate

Manufacturer / Distributor:	H.-D. SCHUNK GmbH & Co. Spanntechnik KG Lothringer Str. 23 D-88512 Mengen
Product:	Quick-change pallet system
Designation:	VERO-S
Type designation:	NSA, NSE, E-compact, AV CU

Heinz-Dieter SCHUNK GmbH & Co. Spanntechnik KG certifies that the above-mentioned products, when used as intended and in compliance with the operating manual and the warnings on the product, are safe according to the national regulations and:

- a **risk assessment** has been carried out in accordance with ISO 12100:2010.
- an **operating manual** for the assembly instructions has been created in accordance with the contents of the Machinery Directive 2006/42/EC Annex I No. 1.7.4.2. and the contents of the provisions of Annex VI of the Machinery Directive 2006/42/EC.
- **Markings** have been made in accordance with EN 1550:1997+A1:2008 Section 6.3.1, VDMA 34192:2019 Section 6.3 or ISO 16156:2004 Section 6.3. The requirements of Annex I No. 1.7.3. of the Machinery Directive 2006/42/EC have been complied with.
- the relevant basic and proven safety principles of the Annexes of **ISO 13849-2:2012**, taking into account the requirements of the documentation have been observed for the component. The parameters, limitations, ambient conditions, characteristic values, etc. for proper operation are defined in the operating manual.
- an $MTTF_D$ value of 150 years can be estimated for mechanical components using the informative procedure in Table C.1 of ISO 13849-1:2015.
- **fault exclusion** against the fault "Unexpected release without pending release signal".
- the **fault exclusion** against the fault "Breakage during operation" in compliance with the parameters, limitations, ambient conditions, characteristic values and maintenance intervals, etc., specified in the operating manual.
- that internal bore diameters in the **pipe or control lines** are at least 2 mm for pneumatic clamping systems and at least 3 mm for hydraulic clamping systems

Harmonized Standards applied:

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

Other related technical Standards and specifications:

- **VDMA 34192:2019** Safety requirements for clamping devices for use on machines

Mengen, 19th of July 2023

Signature: see original declaration

p.p. Philipp Schräder
Head of Development standard products

Signature: see original declaration

p.p. Alexander Koch
Head of Engineering Design special products

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