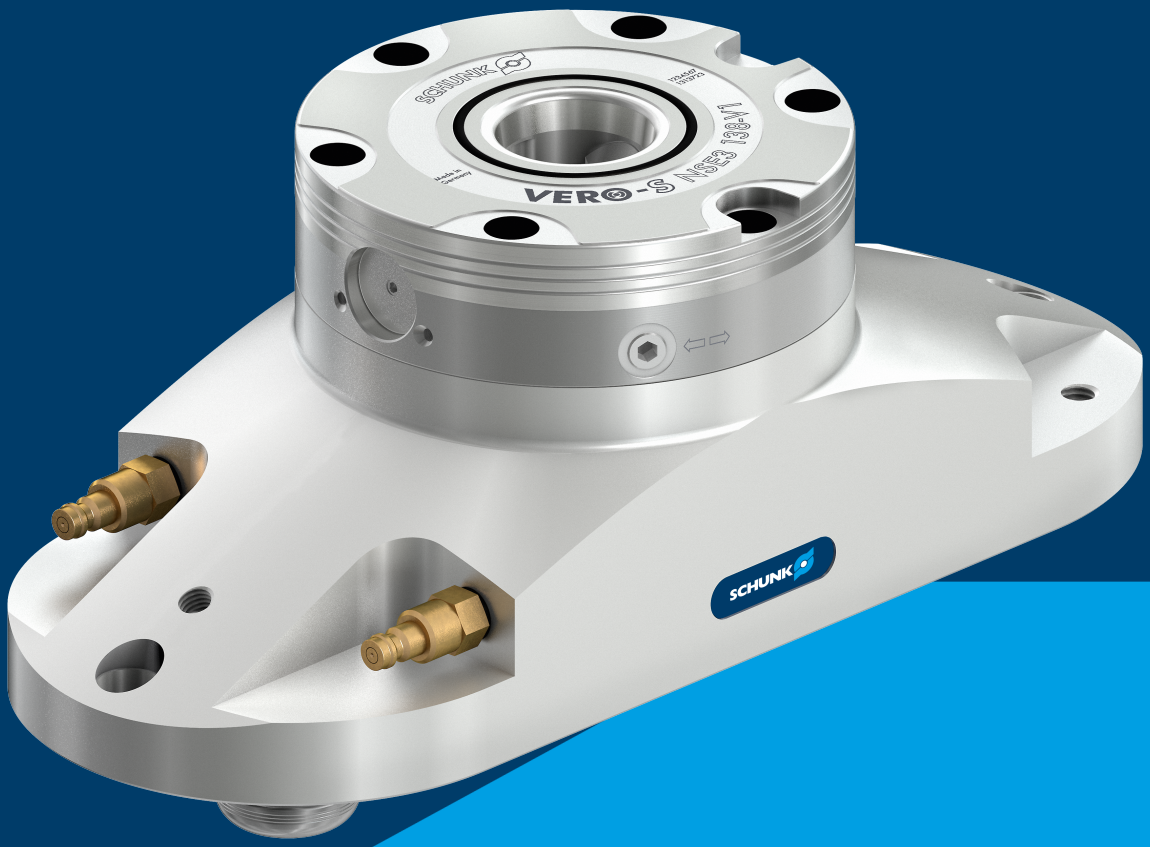


Quick-change pallet system VERO-S MES3, MEQ3, MEW3

Assembly and Operating Manual

Translation of Original Operating Manual

Hand in hand for tomorrow

Imprint

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

Document number: 1343374

Version: 03.00 | 06/02/2025 | 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. +49-7572-7614-1300
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 *
- Assembly and Operating Manual for quick-change pallet system VERO-S NSE3 *
- Approval drawings

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

1.1.3 Sizes

This operating manual applies to the following sizes:

Module height extension

- MES3 120-1, MES3 150-1
- MES3 120-2, MES3 150-2
- MEQ3 200-2
- MEW3 45-4

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

- Module height extension in the variant ordered
- Assembly and Operating Manual

1.4 Accessories

(see catalog or data sheets when ordering separately)

- Clamping stations NSL3
- Tombstones VAT3
- Clamping pallets PAL-S, PAL-A
- Clamping pins SPA, SPB, SPC, SPG
- Protection cover SDE
- Indexing pin IXB V1 NSE plus
- Handles for MEW3 45-4
- Cone seal NSE3
- Locking coupling for air supply VSK Ø10-NW7.4
- Torque wrench

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 Type	ID	Holding force* (M10 / M12) [kN]	F_{max} ** [kN]	F_{maxT} *** [kN]	Weight [kg]
MES3 120-1	1337140	35 / 50	8	28	16.3
MES3 150-1	1337141	35 / 50	8	28	17.9
MES3 120-2	1337151	35 / 50	8	28	21.6
MES3 150-2	1337152	35 / 50	8	28	24.9
MEQ3 200-2	1337153	70 / 100	16	56	54.8
MEW3 45-4	1337154	70 / 100 per clamping side	16	-	51.6

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

** Total pull-down force without TURBO (total sum of pull-down forces of all the clamping modules mounted in the module height extension)

*** Total pull-down force with TURBO function (total sum of pull-down forces with TURBO of all the clamping modules mounted in the module height extension)

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
Noise emission [dB(A)]	≤ 70
Pressure medium	Compressed air, compressed air quality according to ISO 8573-1:2010 [7:4:4]
IP rating	IP 67

The actuating pressure for the unlocking function must be set to at least 5 bar up to a maximum of 6 bar.

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

4 Assembly

4.1 General Installation Notes

Pre-assembly measures

Lift the quick-change pallet system carefully out of the packaging (e.g. using suitable lifting equipment). For larger module height extensions, eye bolts or swiveling load brackets are supplied for transport. The eye bolts or load brackets must be fastened in the transport threads at the front or between the clamping modules installed, depending on the design of the module height extension, and removed again after assembly. Before assembly, the interfaces (bottom of the module height extension, the clamping pins and support areas of the clamping modules installed in the clamping station) must be clean and free of any dirt or damage.

⚠ 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.

4.2 Mounting and connection of the module height extension

Flatness and distances

In order to attach the module height extension to a clamping station, the clamping surface must have a flatness of ≤0.03 mm (based on the offset support areas of the clamping modules). If several linked module height extensions are mounted, make sure that the flatness and height deviation of the locating surfaces from module to module (based on a 200 mm gauge for bore holes) is ≤0.03 mm. The gauge deviation between the separate clamping stations must not exceed ±0.015 mm from module to module.

Redundancy

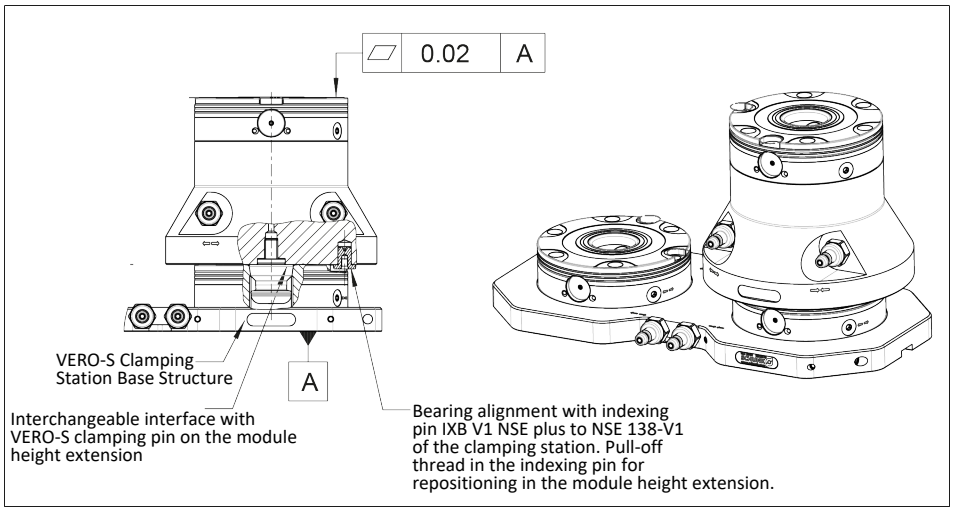
For the sake of conformity, clamping pins with positioning accuracy in one direction (SPB 40) should be used for clamping modules inside a module height extension or multiple linked module height extensions that are more than 160 mm apart or that do not show a positioning tolerance of ±0.01 mm. If clamping areas are arranged over multiple module height extensions, clamping pins with centering clearance (SPC 40) can be used for the clamping areas that are not intended for aligning the device or pallet (also refer to chapter "Clamping pins" ▶ 4.3 [🗋 22]).

Evenness in height of the clamping modules

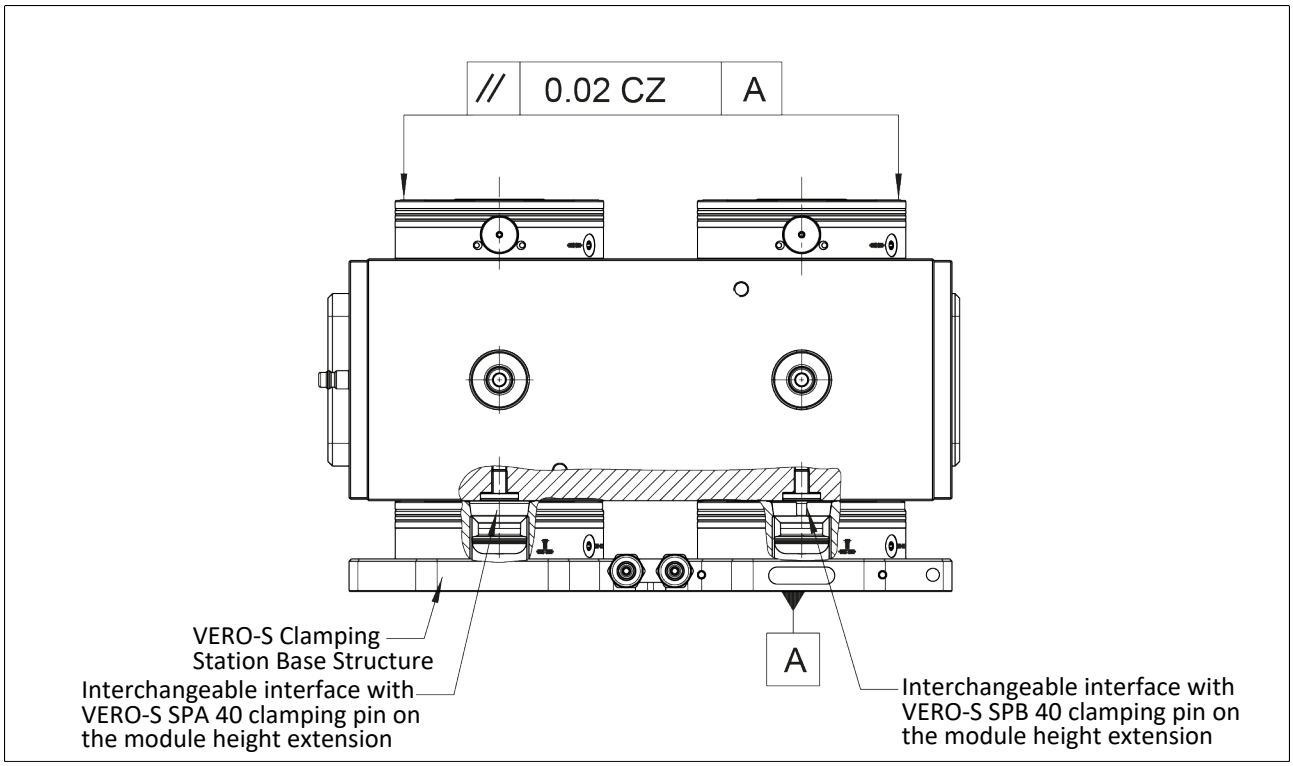
The evenness in height of the clamping modules on the module height extension requires a fixed clamping station as the basic structure of the machine table. For secure mounting on a clamping station, the module height extension must be fastened at all clamping pin interfaces, interchangeable interfaces and, in the case of single module height extension, additionally with the intended anti-rotation device IXB V1 NSE plus in the relevant position.

Repeat accuracy of the module height extension

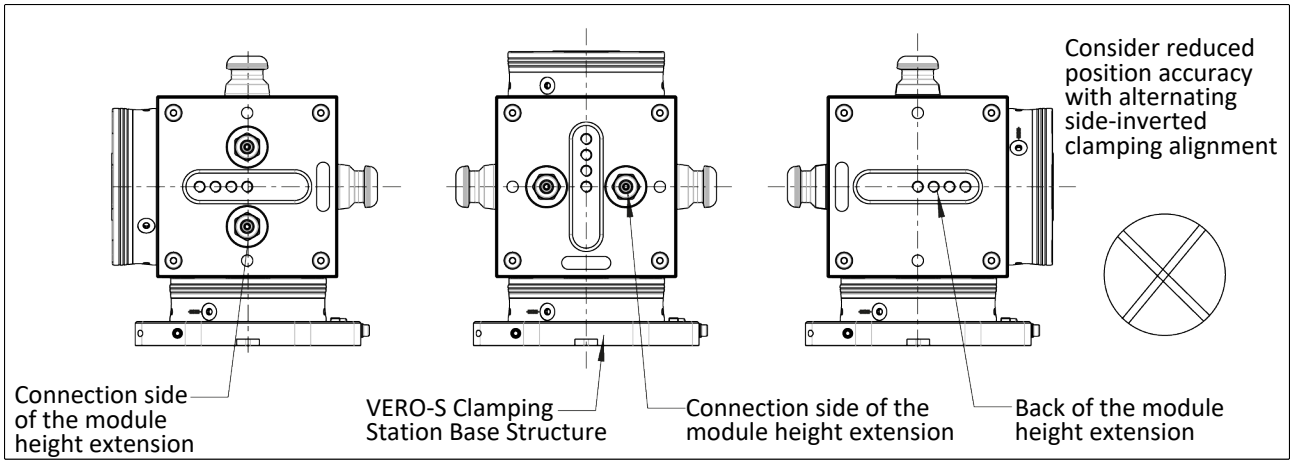
The repeat accuracy of the module height extension is determined by the clamping position. Therefore, the clamping position must always be aligned the same. Alternating repositioning of clamping position may require separate teaching of the reference surfaces to the interchangeable interfaces. A single module extension is attached to the clamping station via the indexing pin IXB V1 NSE plus in the correct position (basic assembly with VERO-S clamping systems with fitting groove for position orientation).



MES3 150-1 Set-up 1



MEQ3 200-2 Set-up 2



Repeat accuracy with alternating clamping alignment

Alternating ventilation for the clamping modules when connecting and disconnecting the air supply at the module height extension

When connecting the module height extension, it must be taken into consideration that full ventilation of the piston chambers in all clamping modules during the locking process is only possible via the air connection. For safe pressure ventilation, use the appropriate valves, shut-off valves with discharge or sealing nipples with air bleed screw.

Module height extension MEW3 45-4 without turbo function

For the MEW3 45-4 module height extension without turbo function, the clamping modules are ventilated as a result of pressure applied to the unlocking connection via its own

ventilation hole along the bottom of the base body of the module height extension. When setting up the VERO-S clamping station, make sure that the ventilated compressed air is able to escape unobstructed along the bottom of the base plate. Make sure that the bottom of the module height extension is not located within the water bath. For this reason, make sure the coolant in the machine compartment has completely drained when actuating the air connections.

Module height extension with turbo function

For module height extensions with turbo function type MES3, MEQ3, piston chambers are ventilated alternately via one of the two free air connections. For this reason, the air connections or connected supply lines must have a ventilation option. Actuating the turbo connection allows the spring-actuated locking procedure at the quick-change pallet modules to be actively supported with air pressure. This results in a higher pull-down force. The increase in the pull-down force on the clamping modules is achieved with a pressure pulse at the air connection. After actuation of the turbo function, the compressed air supply can be disconnected again.

Connecting hose lines

Choosing the minimum cross section for the hose line depends on the number of quick-change pallet modules installed inside one module height extension or in several module height extensions actuated with shared hose lines. Then, supply lines with the following minimum cross sections must be used.

Number of clamping modules installed	min. nominal hose width (hose inner diameter)
1	4 mm
2, 3, 4	6 mm
5	8 mm

When decoupling hose lines, the pneumatic plug-in connection or the sealing nipple must be protected against ingress of dirt or coolant. The sealing nipple comes with a plastic cover plate.

4.2.1 MES3 120-1, MES3 150-1

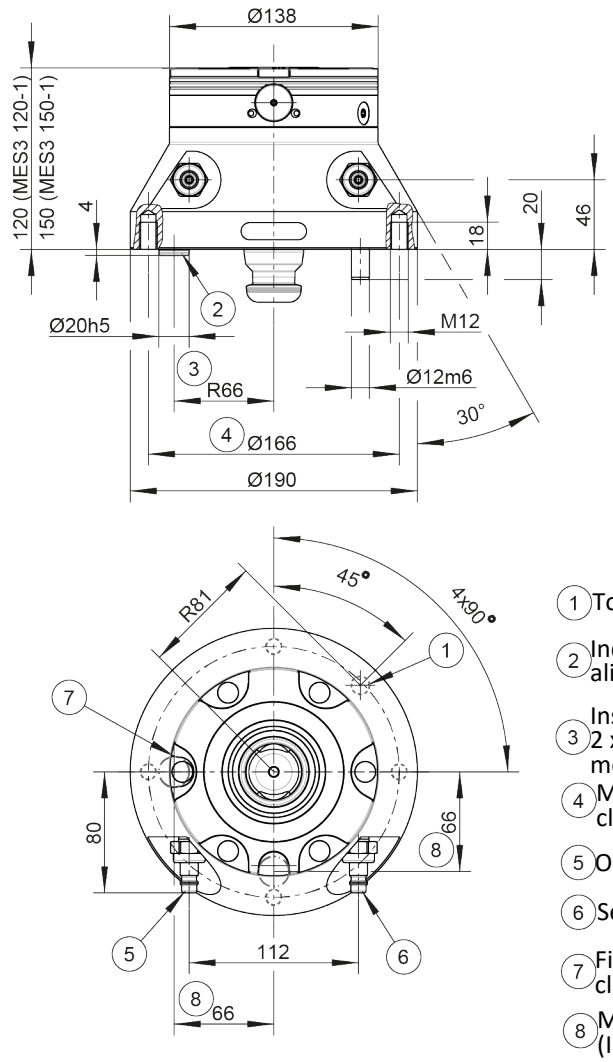
The module height extension can be mounted on clamping stations with VERO-S NSE 138 preferably NSE 138-V1 quick-change pallet modules via the zero point interchangeable interface. Direct mounting on clamping pallets is possible via the M12 mounting threads on the bottom, without clamping pins. The position of the module height extension can be aligned on the clamping area in two ways. If it is mounted is on a VERO-S

clamping module with fitting groove for position alignment (version -V1), the indexing pin IXB V1 NSE plus included in the accessory kit must be installed on the bottom. The position can be aligned and torques absorbed via the cylinder pin supplied. This engages in a centering calotte positioned outside the clamping module.

Depending on the interchangeable interface, it can thus be mounted on a VERO-S clamping station or a VERO-S tombstone.

The clamping system has one air connection G1/8" for unlocking and one air connection G1/8" for the turbo function. Supply is via the sealing nipple for quick locking coupling size NW 7.4, type VSK Ø10-NW7.4 (accessory).

The workpiece side of the interchangeable interface of the module height extension is equipped with a quick-change pallet module with two fitting grooves for positional alignment of the clamping pallet or for the use of a clamping membrane type SPM plus 138.



1 Torque pin for VERO-S tombstones

2 Indexing pin (ID 0471980) for position alignment on the VERO-S NSE 138-V1

3 Installation of the indexing pin on R66 below 2 x 180°. Therefore a change of position of the module height extension by 4 x 90° is possible

4 Mounting thread M12 for direct mounting on clamping pallet

5 Open sealing nipple for module

6 Sealing nipple for turbo function

7 Fitting groove for positional alignment of the clamping pallet

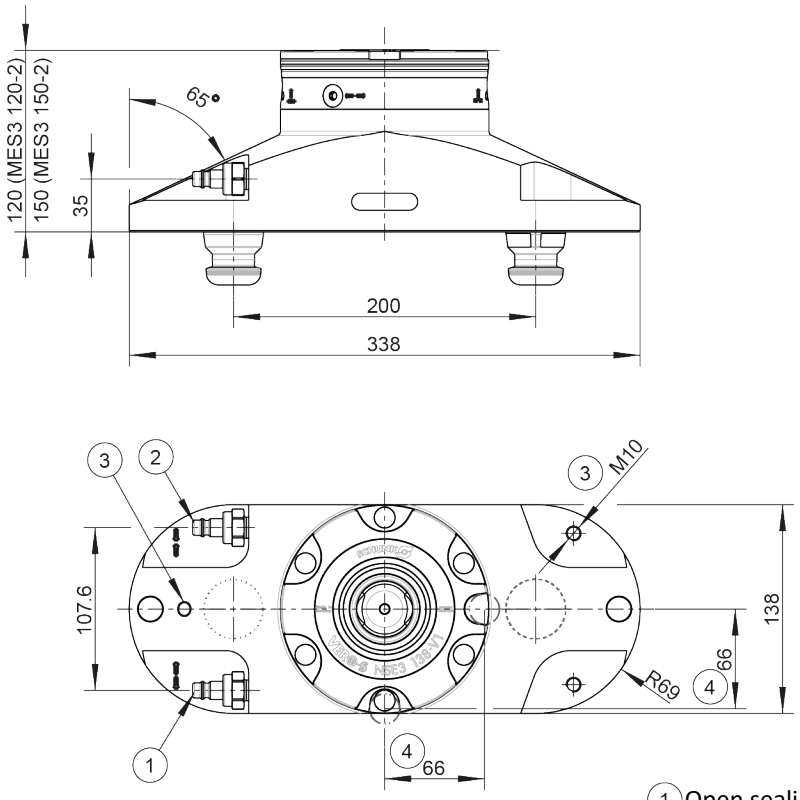
8 Measure of clearance for indexing pin (ID 0471980) in the clamping pallet

MES3 120-1

4.2.2 MES3 120-2, MES3 150-2

The module height extension can be mounted on VERO-S NSE 138 quick-change pallet modules via two zero point interchangeable interfaces. The position of the module height extension is aligned via the clamping pins, which specify an exact clamping direction. Installation is possible on a VERO-S clamping station or a VERO-S tombstone with a gauge distance of two clamping modules of 200 mm.

The clamping system has one air connection G1/8" for unlocking the clamping module and one air connection G1/8" for the turbo function. Supply is via the sealing nipple for quick locking coupling size NW 7.4, type VSK Ø10-NW7.4 (accessory). The workpiece-side interchangeable interface of the module height extension is equipped with a quick-change pallet module with two fitting grooves for positional alignment of the clamping pallet or for the use of a clamping membrane type SPM plus 138. For transport, the module height extension is equipped with three M10 mounting threads for the eye bolts supplied.



1 Open sealing nipple for module

2 Sealing nipple for turbo function

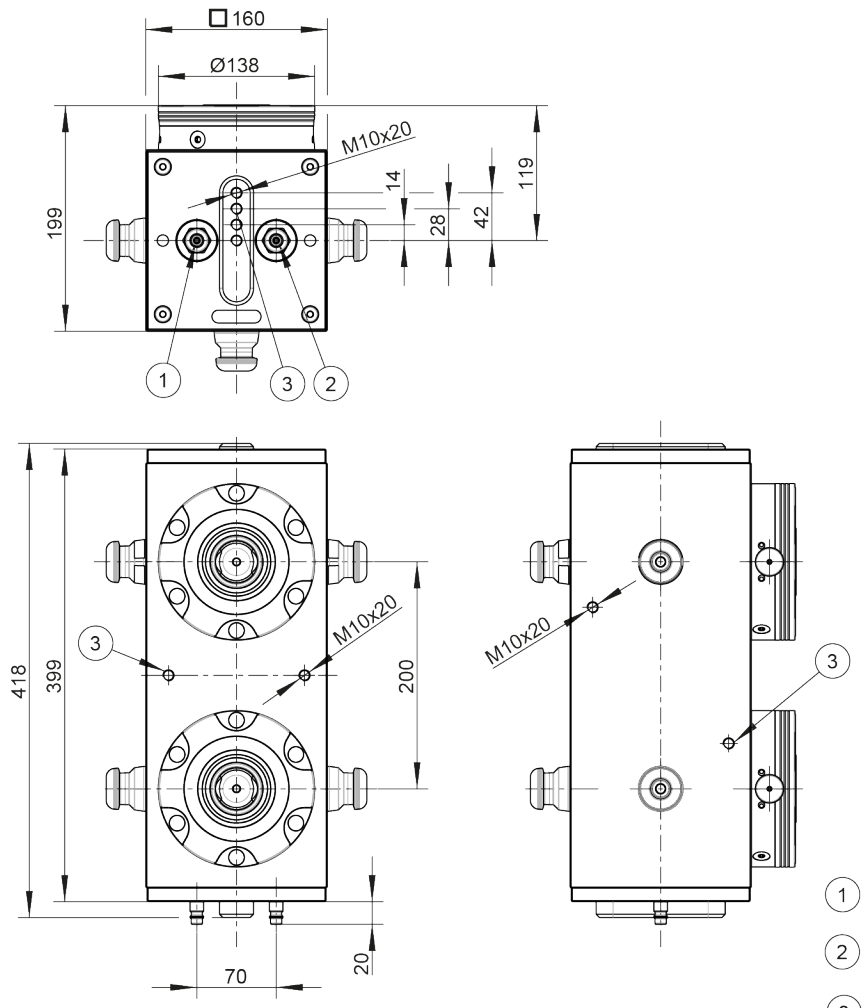
3 Mounting thread for eye bolts

4 Measure of clearance for indexing pin (ID 0471980) in the clamping pallet

MES3 120-2

4.2.3 MEQ3 200-2

The module height extension can be mounted on three clamping sides, each via two zero point interchangeable interfaces on VERO-S NSE 138 quick-change pallet modules. All three clamping sides are equipped with VERO-S clamping pins. The position of the module height extension is aligned via the clamping pins, which specify an exact clamping alignment. Installation is possible on a VERO-S clamping station or a VERO-S tombstone with a gauge distance of two clamping modules of 200 mm. The clamping system has one air connection G1/8" for unlocking the clamping modules and one air connection G1/8" for the turbo function. Supply is via the sealing nipple for quick locking coupling size NW 7.4, type VSK Ø10-NW7.4 (accessory). For transport, the module height extension has an M10 mounting thread on five sides for the rotatable load brackets supplied. It can be swiveled onto another clamping surface with the workpiece clamped on. For this purpose, mounting threads for the load brackets are provided, which are offset in height at the end faces.



1 Open sealing nipple for modules

2 Quick coupling for turbo function

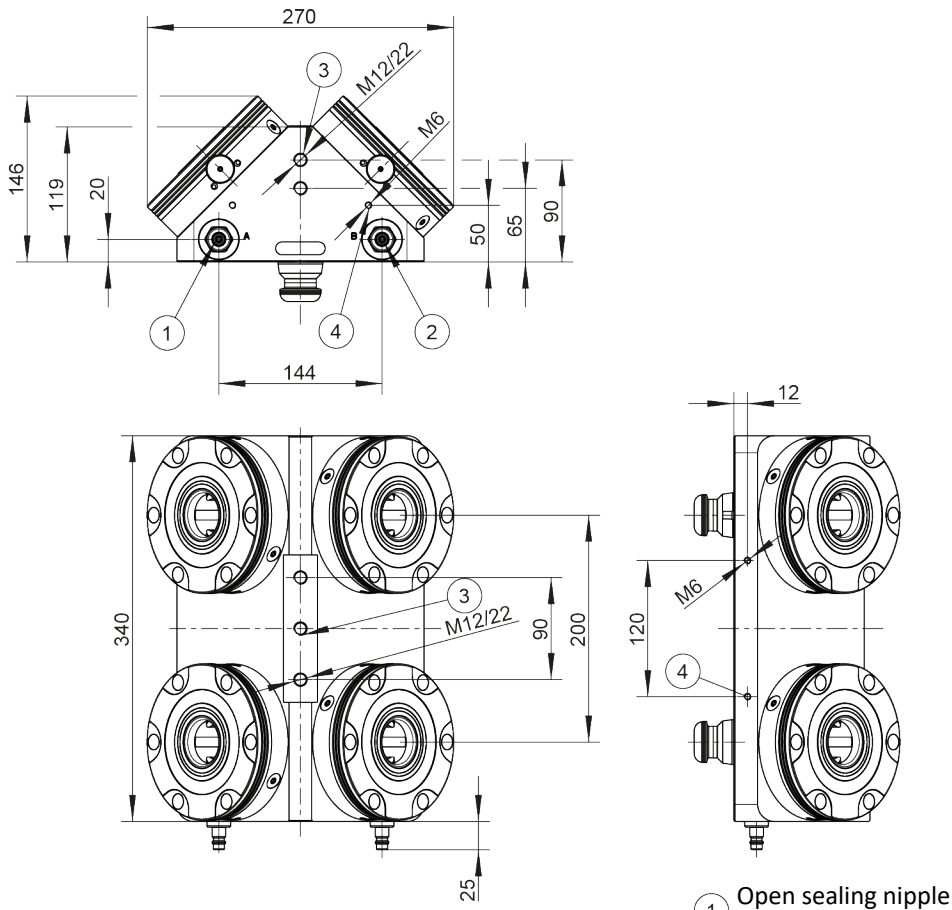
3 Load bracket mounting thread for transport and for balancing the weight distribution during swiveling

MEQ3 200-2

4.2.4 MEW3 45-4

The module height extension can be mounted on VERO-S NSE 138 quick-change pallet modules via two zero point interchangeable interfaces. The position of the module height extension is aligned via the clamping pins, which specify an exact clamping alignment. Installation is possible on a VERO-S clamping station or a VERO-S tombstone with a gauge distance of two clamping modules of 200 mm.

The clamping system has a separate air connection G1/8" for each clamping side for simultaneous unlocking of both clamping modules mounted on it. Supply is via the sealing nipple for locking coupling size NW 7.4, type VSK Ø10-NW7.4 (accessory). Mounting threads for the supplied eye bolts are provided between the clamping modules as well as on the front side for transport. Handles can be added to the module height extension for easier handling (accessories).



MEW3 45-4

4.3 Clamping pins SPA 40, SPB 40, SPC 40, SPG 40

CAUTION

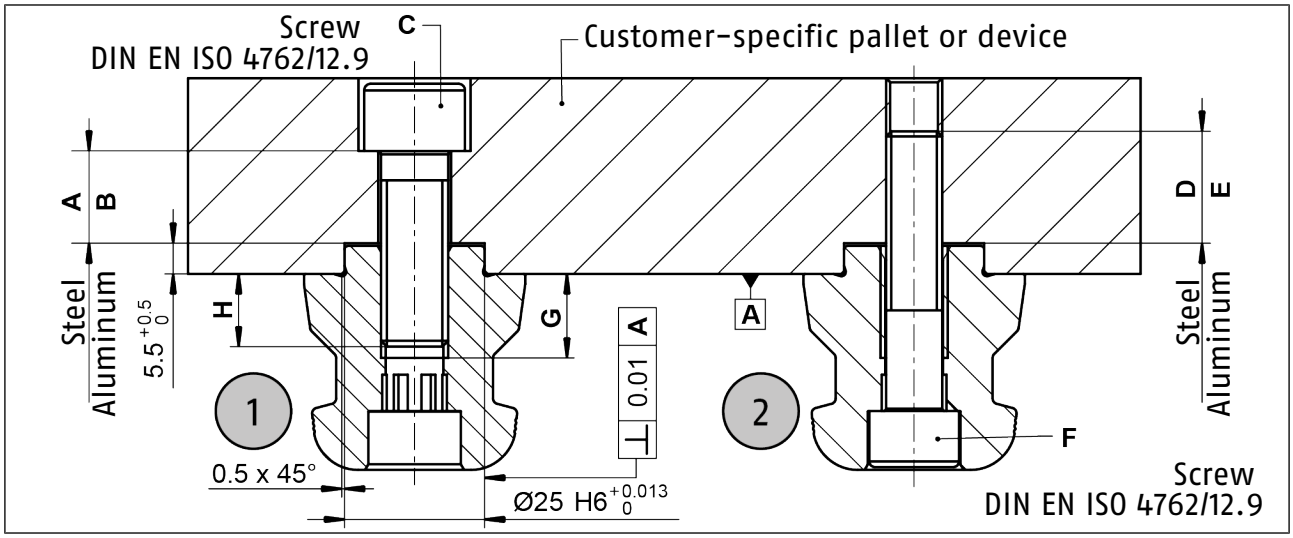
Notes on clamping pins and mounting screws

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 for connections to the pallet or device.
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 and sufficiently thick mounting material.

The clamping pins can be attached to the workpiece or pallet in two different ways. The left mounting option in the illustration "Mounting the clamping pins" is the preferred option. With this variant, if there is a module failure then the device or pallet can be removed after disassembling the clamping pins. The mounting screw is supplied for the right mounting option as shown in the illustration.

If clamping pins are used outside of SCHUNK pallets, for example in customer-specific devices or workpieces, the outer diameter of the part to be clamped must be large enough to completely cover the flat sealing ring on the top of all quick-change pallet systems involved in the clamping function.

Type designation	ID no.	min. outer diameter on the support of the workpiece, the clamping pallet
NSE3 138 (-K)	1313721, 1313722	68 mm
NSE3 138-V1 (-K)	1313723, 1313724	68 mm

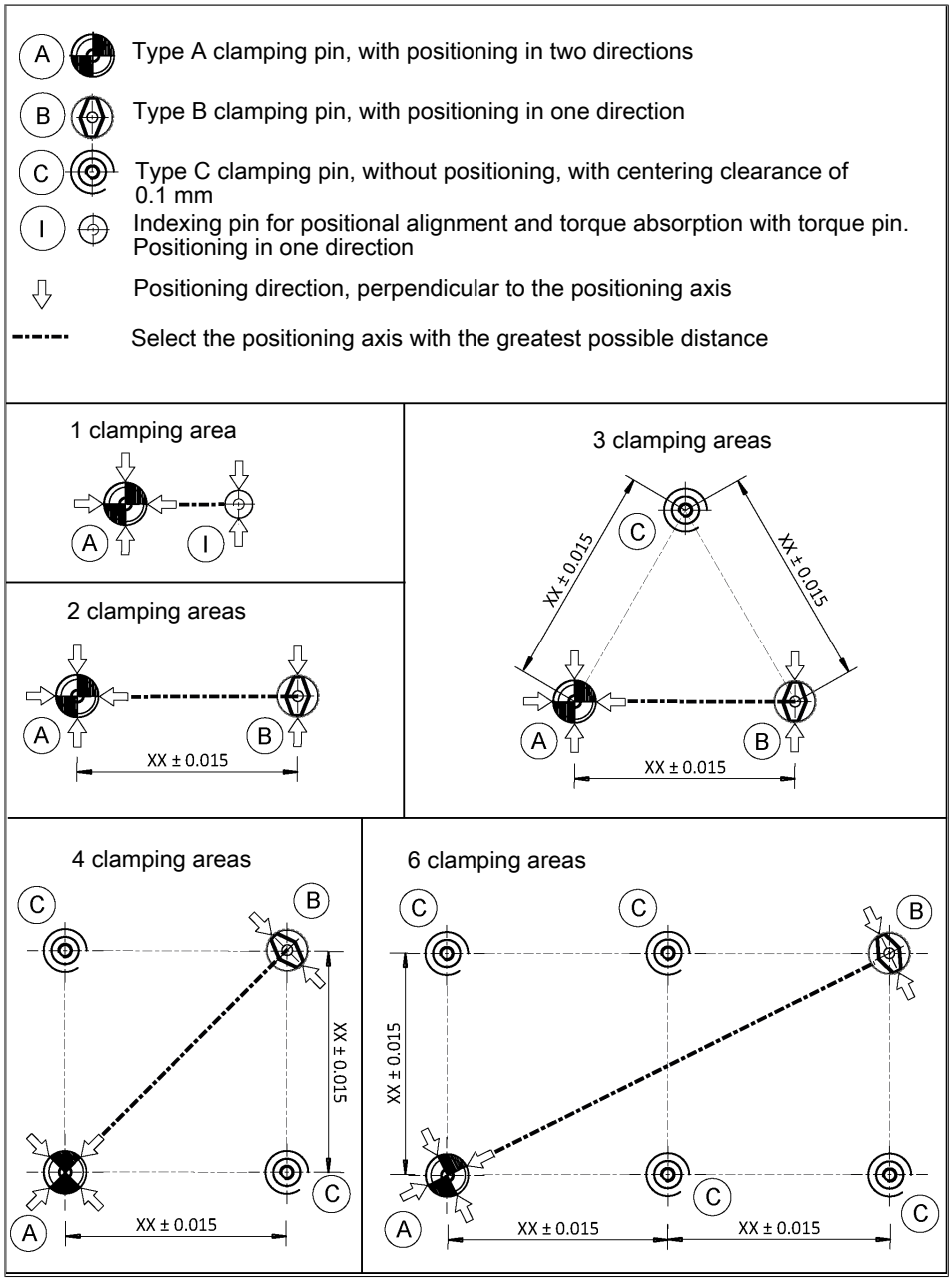


Tolerances and installation conditions

Type	ID no.	A	B	C	D	E	F	G*	H
SPA 40	0471151	> 12	> 17	M12	> 15	> 20	M10	15	>12
SPB 40	0471152	> 12	> 17	M12	> 15	> 20	M10	15	>12
SPC 40	0471153	> 12	> 17	M12	> 15	> 20	M10	15	>12
SPG 40	0471154	> 12	> 17	M12	> 15	> 20	M10	25	>22
SPA 40-16	0471064	> 13	> 18	M16	> 18	> 24	M12	20	>16
SPB 40-16	0471065	> 13	> 18	M16	> 18	> 24	M12	20	>16
SPC 40-16	0471066	> 13	> 18	M16	> 18	> 24	M12	20	>16

* The length of the screwed thread must not exceed the dimension "G" under any circumstances!

(Usage case: arrangement of the different types of clamping pins)



4.3.1 Information to clamping pin SPG 40

The SPG 40 can be used at one clamping area (clamping pallet or workpiece) instead of the SPA 40.

For module height extensions with two clamping areas, clamping pin type SPA 40 can be replaced by the SPG 40 both on the module extension itself and on the clamping pallet to be coupled. The clamping bolt type SPB 40 installed should not be replaced.

The repeat accuracy increases to <0.002 mm when using the SPG 40.

When connecting the screws from above, according to order preference 2, an M12 screw 10 mm longer of strength class 12.9 must be used.

4.4 Screw tightening torques

Tightening torques for mounting clamping pins to the module extension, workpiece or to the clamping pallet.

(Screw quality 12.9)

Screw size	M8	M10	M12
Tightening torques (Nm)	32	62	108

5 Function

The VERO-S module height extension guarantees rapid changing of VERO-S clamping pallets, devices or workpieces in the machine room with a high level of repeat accuracy. In the VERO-S quick-change pallet modules, the clamping pallet is positioned via the connected VERO-S clamping pin and locked. The clamping systems guarantee optimum access to workpiece machining by means of interchangeable interfaces that are raised or inclined at an angle. With module height extensions MEW3 200-2 and MEQ 200-2, machining on several sides is possible by aligned positioning of the clamping position. The MEQ3 200-2 module height extension can be swiveled to the respective clamping side at both ends using the swiveling load brackets supplied. The transport threads, which are offset several times in the center, enable balanced suspension even with the workpiece clamped on.

5.1 Module height extension connections

The VERO-S module height extension has an unlocking connection and, depending on the version, an additional connection for the turbo function. The air connection for each is actuated via a sealing nipple for a quick-release coupling. The sealing nipple is included in the accessory kit for the module height extension. The locking couplings are not included in the scope of delivery for the module height extension. The required locking coupling is the industry standard-size NW 7.4 (type: VSK Ø10-NW7.4 ID. 1344010, accessory).

CAUTION

The pressure chambers of the quick-change pallet modules must be able to vent during actuation.

- When using customer-specific air connection plug-in systems. Use sealing nipples without shut-off function (with an open through-hole) to vent the clamping module piston chambers.
- The corresponding valves, sound absorbers or shut-off valves should be fitted with a ventilation function.

CAUTION

When disconnecting hose lines, the relevant air connections (sealing nipples) must be closed with cover plates to prevent the ingress of dirt or coolant. The attachable cover plates are made of plastic and are included in the scope of delivery.

5.2 Unlocking connection

If the unlocking connection on the clamping station is pressurized with compressed air, all modules on one clamping side are unlocked simultaneously. Clamping pallets, devices and workpieces can be exchanged or removed from the module height extension.

Since VERO-S NSE3 (-V1) clamping modules are spring-operated clamping systems, the connection must remain pressurized with compressed air (at least 5 bar) during the set-up / changing process.

After decoupling the air supply at the unlocking connection, all clamping modules are locked simultaneously. The exchanged clamping pallet is firmly fastened and aligned with high precision. If no clamping pallet is used in the module height extension, the clamping slides of the quick-change pallet modules move to the closed position. Exchanging the clamping pallet is not possible with clamping modules that are not locked.

⚠ WARNING

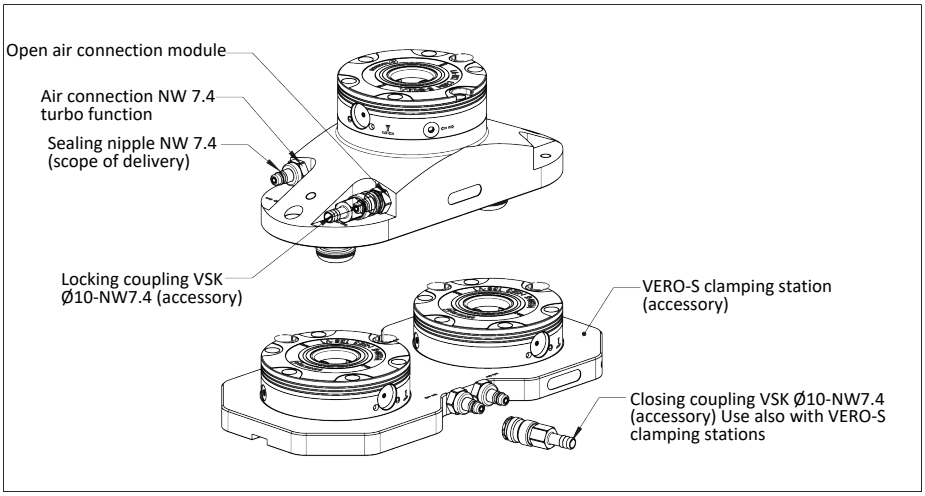
Risk of injury due to module height extension falling from the clamping station or clamping pallet falling from the module height extension if the unlocking connection is not pressurized as scheduled.

- The unlocking connection may only be operated if the clamping pallet has been prevented from falling.

5.3 TURBO connection (for MES3, MEQ3)

The module height extensions are equipped with an additional turbo connection. When compressed air is applied at the connection for the turbo function, this function actively provides air pressure to support the spring-actuated locking procedure of the quick-change pallet module. This increases the pull-down force in all the modules.

One pressure pulse is sufficient to increase the pull-down force until the maximum permissible value is reached. Afterwards, the module height extension can be switched back to depressurized. The pull-down force is retained due to the self-locking function of the spring-loaded system.



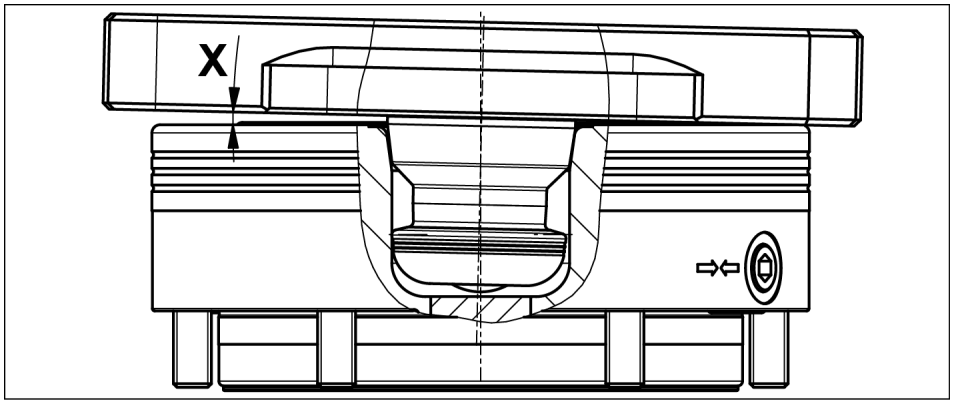
Module height extension connections

6 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.

7 Maintenance and care

The module height extensions and integrated quick-change pallet systems are designed for low-maintenance operation, so that opening and disassembling the fitted 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 must be observed:

Compressed air, compressed air quality according to ISO 8573-1:2010 [7:4:4]

CAUTION

A separate maintenance unit must be used for the air supply. The quick-change pallet system is designed for operation with dry compressed air. If oiled compressed air is used for operation, this must be done every time. The compressed air should be prepared with 1 to 2 drops of oil for an air volume of 1000 liters.

- Check the module height extensions at regular intervals (at least every two weeks or after 1000 clampings). The system is functioning correctly if the clamping slides on all simultaneously actuated clamping modules move smoothly at the minimum system pressure of 5 bar and open completely.
- 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 eliminated. For example, by replacing the damaged unit.

- During maintenance work on the quick-change pallet modules or the air supply of the module height extension, new seals must be fitted and lubricated with Renolit HLT 2 or a similar grease before assembly.
- Check the supply hose line to the pressure supply of the module height extension for damage at regular intervals. The supply hose line must be of the appropriate nominal hose width and be completely inserted into the air connections and securely clamped. Protect the supply hose line from kinking and avoid tensile loads. After replacing the hose line, perform a leak test.

CAUTION

Only polyurethane hydrolysis-resistant air hoses with appropriate diameters are to be used.

Detaching thread on the clamping modules

The clamping modules installed in the module height extensions have two detaching threads located opposite each other. This allows, for example, the clamping modules to be more easily removed from the module height extension for performing maintenance work.

7.1 Leak test

As part of a leak test, the air and plug-in connections, the hose connections if necessary and the coupling mechanism should be tested for leaks.

The following components are required for the leak test: pressure gauge, supply line with coupling nipple.

Performing the leak test

1. Connect the components to the air connection in the following order: pressure gauge, supply line with coupling nipple.
2. Pressurize the clamping system with compressed air.
3. Check the module height extension in the unlocking position and for versions with turbo function for tightness in both switching positions.

To determine the tightness of the module height extension, no clamping pallet should be fitted.

If the clamping system has leaks, check the entire pneumatic system (e.g. using leak detector spray). If any leaks are identified, check the seals and replace them if necessary. Leaks at the plug-in connections or in the pneumatic lines, for example, must be sealed and any defective components replaced.

8 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.

9 Troubleshooting

9.1 The clamping areas do 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

9.2 The clamping areas do not unlock perfectly

Possible cause	Remedial measures
Pressure below minimum	Check operating pressure (min. 5 bar)
The modules were not operated with oiled compressed air	Install maintenance unit with oiler
Hose diameter below minimum	for required hose diameters, see chapter "Securing and connecting" ▶ 4.2 [🗋 14]
The turbo connection is still pressurized, this is applicable for module height extensions or the clamping station with turbo function required for mounting	Ventilate the connection

9.3 The quick-change pallet systems no longer open quietly

Possible cause	Remedial measures
The clamping faces on the clamping slides and on the clamping pin are dirty	Remove the clamping pallet and clean the clamping faces on the clamping slides and on the clamping pins. Clean all clamping modules installed on the clamping slides

10 Part lists

MES3 120-1 (ID number 1337140)
MES3 150-1 (ID number 1337140)

Item	Designation	Quantity
1	Base body	1
2	VERO-S NSE3 138-V1	1
3	SPA 40-16 Clamping pin	1
4	Indexing pin IXB V1	1
5	Sealing ring	2
6	Sealing nipple	2
7	O-ring	1
8	Cylindrical pin	1

MES3 120-2 (ID number 1337151)
MES3 150-2 (ID number 1337152)

Item	Designation	Quantity
1	Base body	1
2	SPA 40 Clamping pin	1
3	SPB 40 Clamping pin	1
4	VERO-S NSE3 138-V1	1
6	Sealing ring	2
7	Sealing nipple	2
11	Eye bolt	3

MEQ3 200-2 (ID number 1337153)

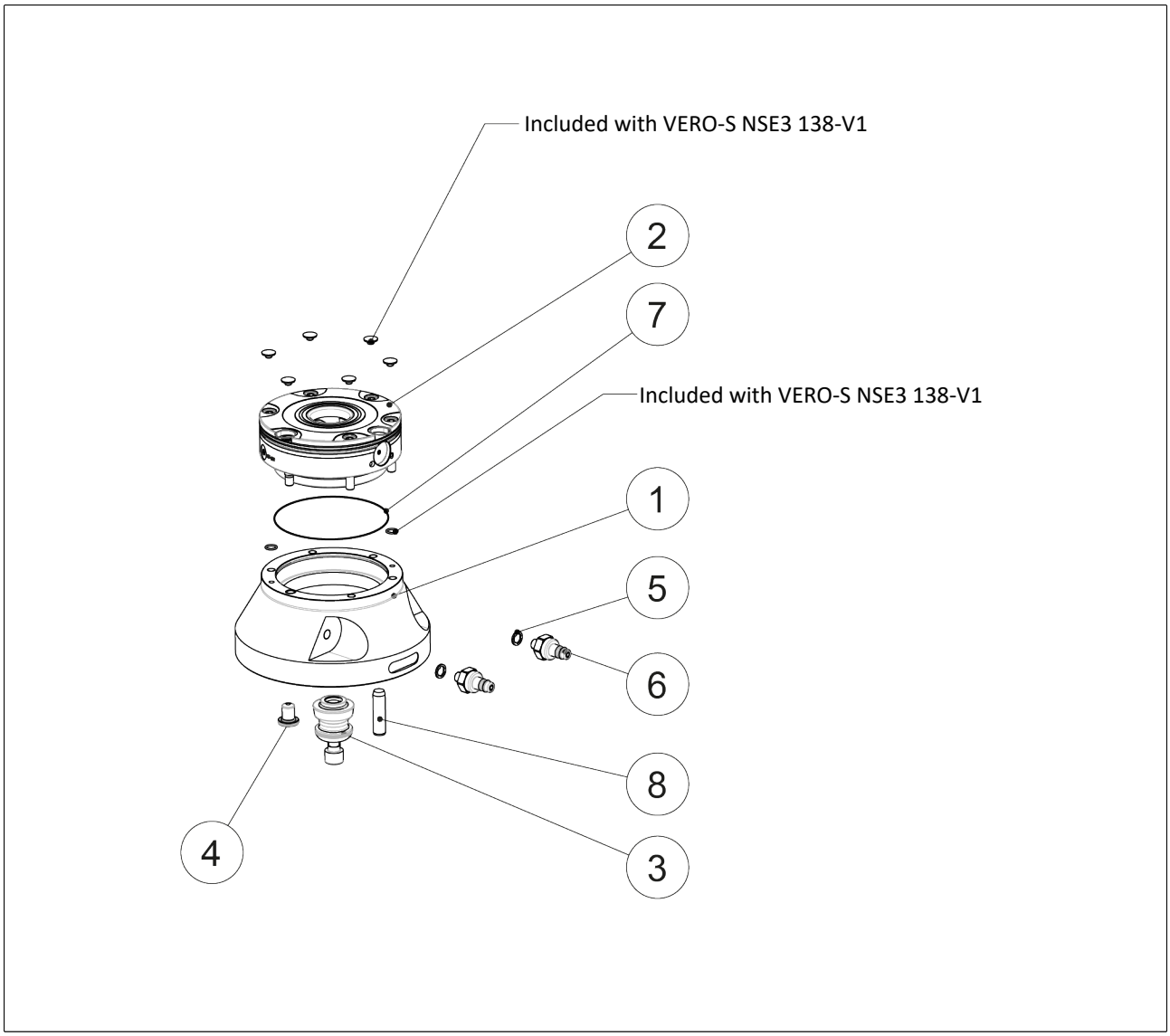
Item	Designation	Quantity
1	Base body	1
2	Connecting plate	1
3	Cover plate	1
4	SPA 40 Clamping pin	3
5	SPB 40 Clamping pin	3
6	VERO-S NSE3 138	2
7	Straight screw-in union M7	4
8	T-connection	2
9	Straight screw-in union G1/8"	2
10	Sealing ring	2
11	Sealing nipple	2
12	Cylindrical pin	4
13	Screw	8
14	O-ring	2
21	Load bracket rotatable M10	2

MEW3 45-4 (ID number 1337154)

Item	Designation	Quantity
1	Base body	1
2	SPA 40 Clamping pin	1
3	SPB 40 Clamping pin	1
4	VERO-S NSE3 138	4
5	Sealing ring	2
6	Sealing nipple	2
7	O-ring	4
12	Eye bolt	2

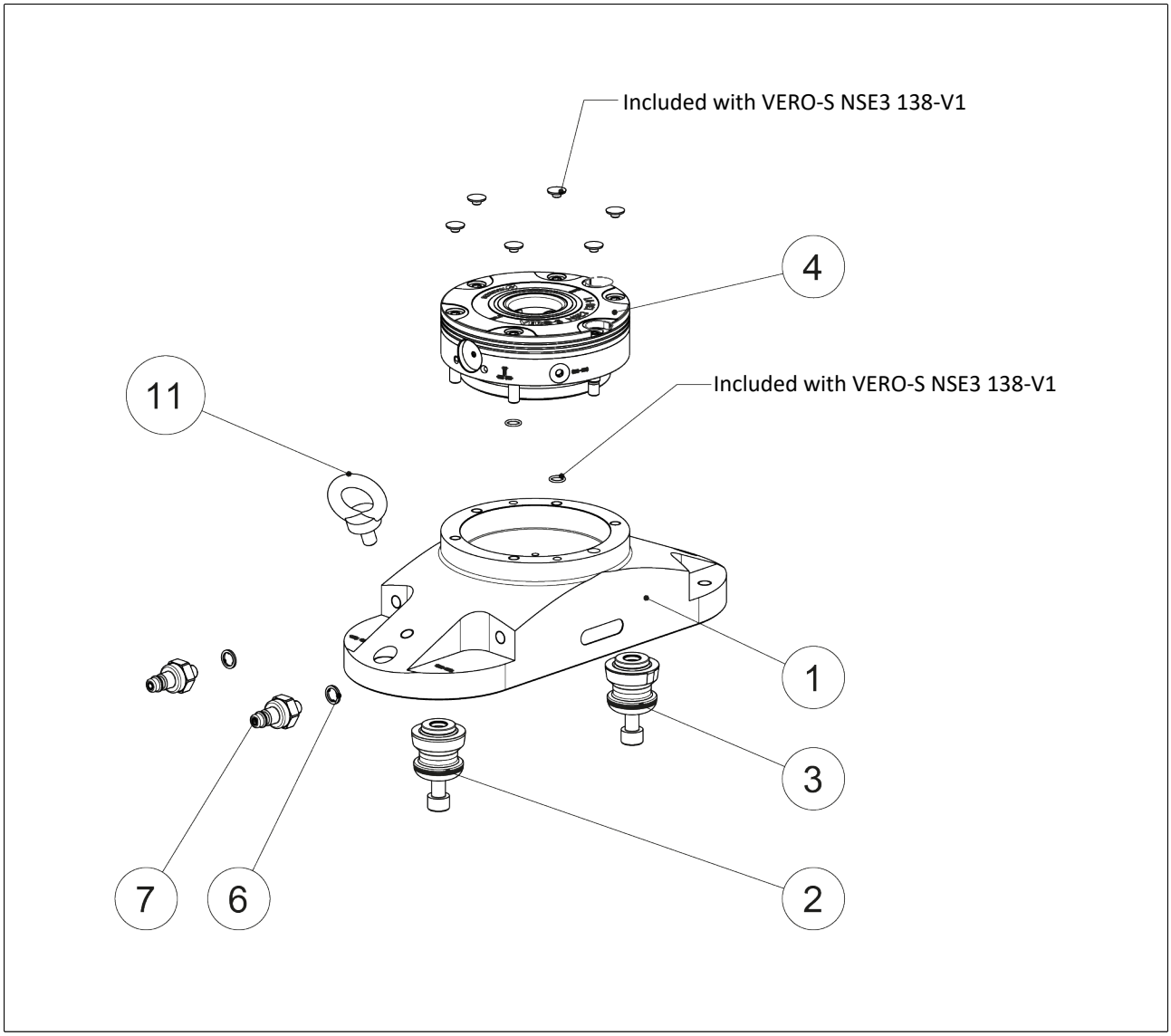
11 Assembly Drawings

11.1 MES3 120-1, MES3 150-1



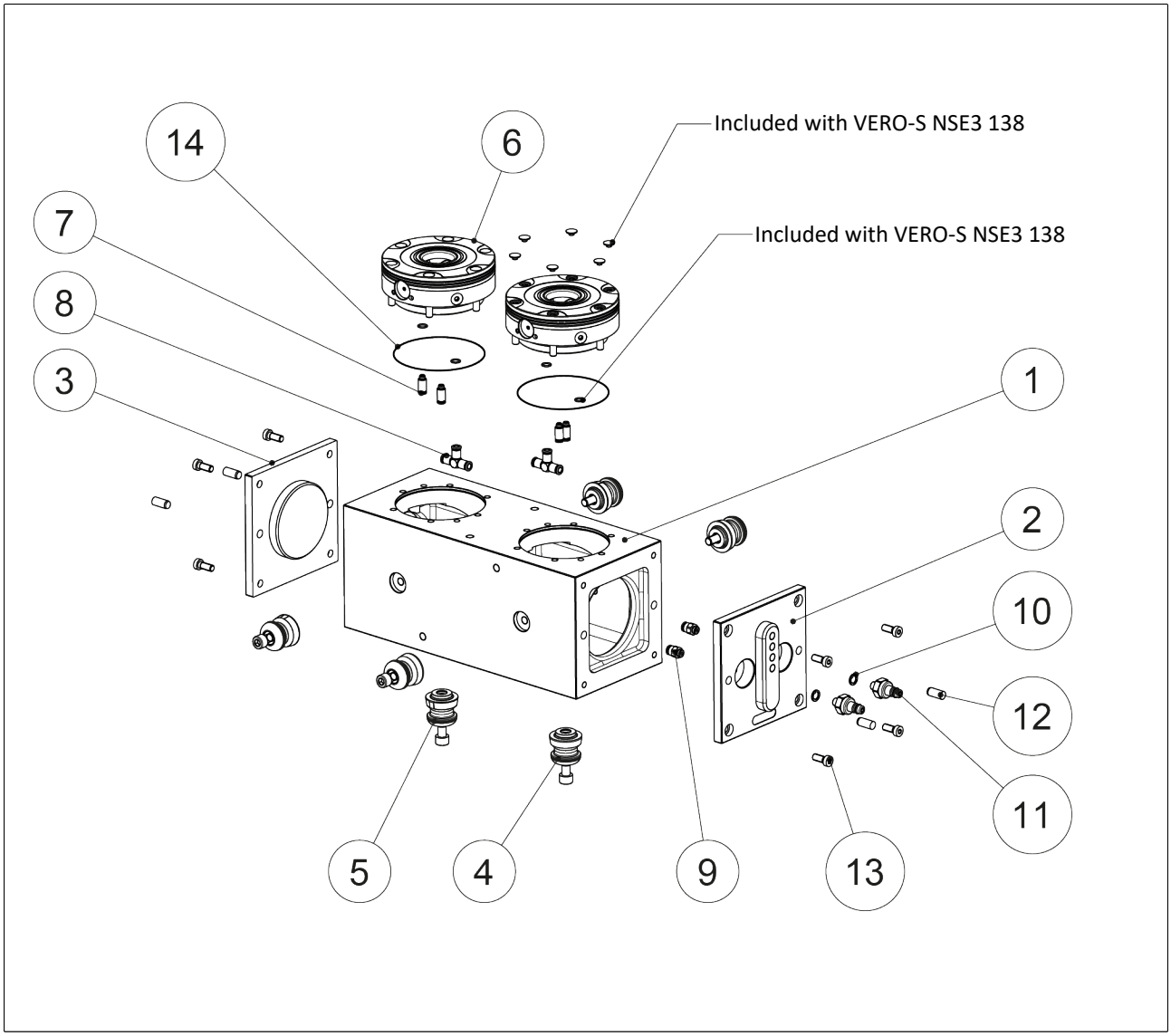
MES3 120-1

11.2 MES3 120-2, MES3 150-2



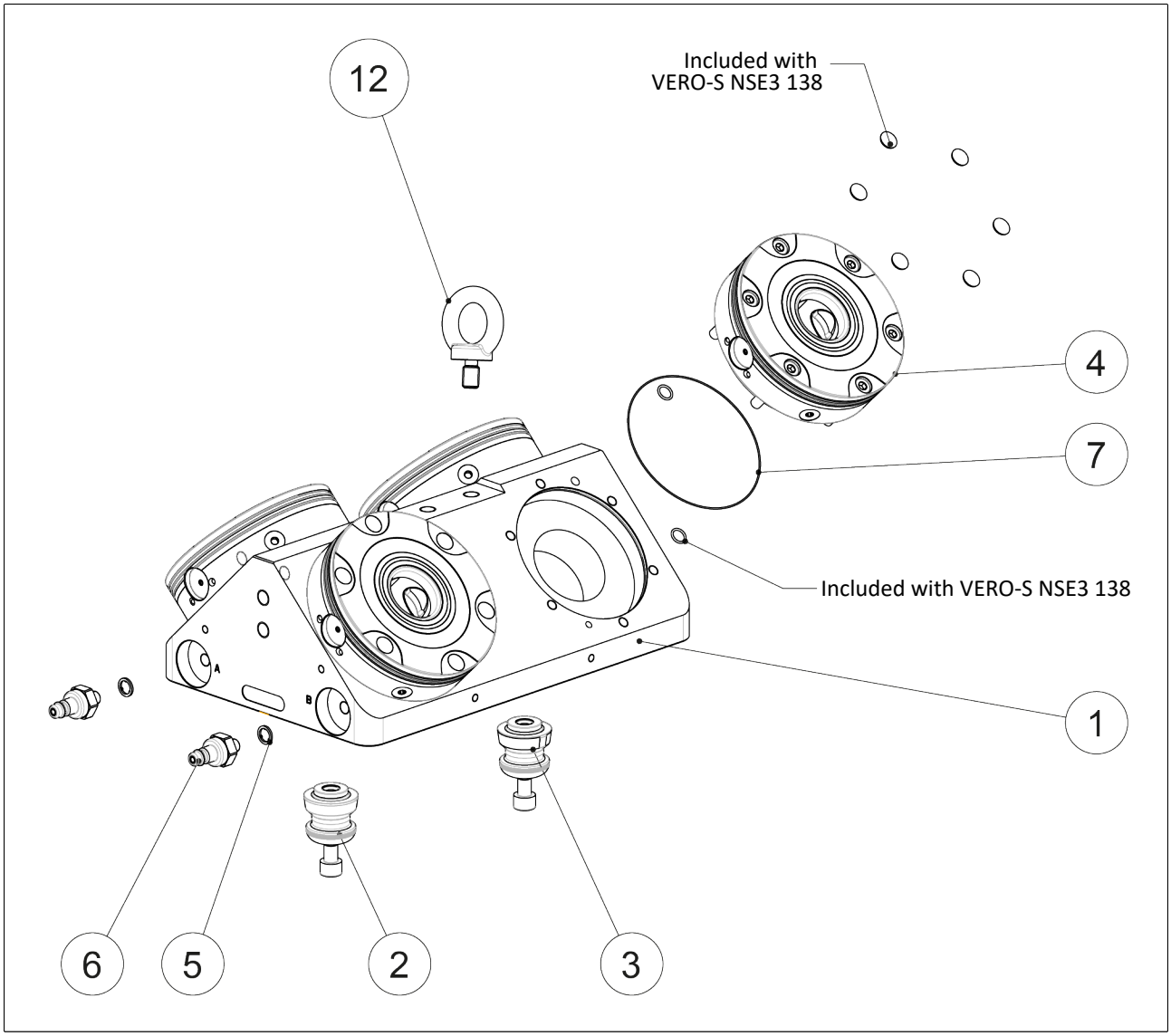
MES3 120-2

11.3 MEQ3 200-2



MEQ3 200-2

11.4 MEW3 45-4



MEW3 45-4

12 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:	MES, MEQ, MEW, HMP, APK, WSM

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, 25th of April 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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