



Quick-change pallet system

VERO-S NSA3

Assembly and Operating Manual

Imprint

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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

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 [6]

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.

NOTICE

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 guide applies to the following sizes in all variants

Quick-Change Pallet System

- Size NSA3 120
- Size NSA3 160

1.2 Warranty

The warranty for standard products is 24 months from the date of delivery from the factory, or 500,000 cycles* assuming appropriate use in accordance with the following conditions:

- Observe the applicable documents, ▶ [1.1.2](#) [6]
- 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 version ordered
- Accessory kit
- Assembly and Operating Manual

1.3.1 Accessories

on separate order, see catalog or data sheets

- Clamping rings Types SRA, SRB, SRC

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 is 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.

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 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.
- Only use cooling emulsions with anti-corrosive additives when machining.

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 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 ring is loosened erroneously or as a result of negligence.

- During operation, unintentional loosening of the 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.



⚠ WARNING

Risk of injury when the 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.



⚠ 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).

3 Technical data

Actuating pressure [bar]	6
Repeat accuracy [mm]	< 0.005
Lifting height [mm]	0.5
Installation position	any
Operating temperature [°C]	+5 to +60
Required level of cleanliness	dry cleaned interfaces, not permanently exposed to humidity, use with coolant with corrosion protection additive
Noise emission [dB(A)]	≤ 70
Pressure medium	Compressed air, compressed air quality according to ISO 8573-1:2010 [7:4:4]
Protection class	IP 67

Designation Variant	ID number	Holding force* [kN]	Lifting force [kN]	Pull down force without turbo [kN]	Pull down force with turbo [kN]
NSA3 120	1531269	50	1	3	10
NSA3 160	1531280	75	2	5	18

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

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

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. For an air volume of 1000 liters, the compressed air should be prepared with 1 to 2 drops of oil.

Functions and queries of the quick-change pallet system

Type designation	Function	Type / Connection
All variants	Pneumatic dynamic pressure monitoring	<ol style="list-style-type: none"> Clamping slide position clamped (hose-free direct connection) Clamping slide position opened (hose-free direct connection)
All variants	Air system monitoring	<ol style="list-style-type: none"> Plane surface air system monitoring (hose-free direct connection)
All variants	Exhaust function	<ol style="list-style-type: none"> Plane surface exhaust function (hose-free direct connection) Clamping ring exhaust function (hose-free direct connection)

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.

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 ring 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 Function

NOTICE

In order to achieve the maximum lifting force, the clamping system must be actuated with an operating pressure of 6 bar. A lower operating pressure avoids proper decoupling of the clamping system

4.1 Clamping function

Open

1. To unlock the clamping system, compressed air has to be supplied (operating pressure 6 bar).
2. The positively driven piston (Item 4) is moved upwards when it is actuated with compressed air.
3. The clamping slides (Item 3) and the piston (Item 4) are connected by a bevel joint. They move inwards and thus release the clamping ring. The lifting pins (item 6) are moving upwards at the same time and lift the pallet.
The clamping rings are available as a separate accessory in three versions (see ► 5.4 [□ 22]). The clamping rings are assembled to customer-specific pallets or devices.
4. The pallet can be removed.

Close

1. Before inserting a pallet, the clamping system has to be supplied with compressed air (operating pressure 6 bar), so that the clamping slides retract and the system is in unlocked status.
2. The pallet can be inserted now.
3. To lock, depressurize the system.
4. The piston (Item 4) is led upwards by spring force. The locking process of the fast stroke is carried out first, then the one for the power stroke is actuated which leads to a very high pull-down force.
When the turbo connection is actuated, the springactuated locking process is actively supported by compressed air. If the turbo connection is not used, the concerned piston side must be able to deaerate.
5. The lifting pins (Item 6) lower and the pallet gets to the contact surface.
6. An air flow on the locating surface is created via a blow out groove. This way the clamping ring support is cleaned, so that when a pallet is set down, the flat surface is clean.
7. The clamping slides (Item 3) move outside and lock the clamping ring at the pallet self-locking as well as form-fit. Therefore pressure actuation of the clamping module during machining is not necessary.
Centering of the clamping rings is done at the conical surface of the clamping module. The angular alignment of the clamping slide (Item 3) is freely selectable.

4.2 Lifting function

The quick-change pallet system has a lifting function for lifting the pallets after opening. During the locking process the clamping ring is self-centering and slowly clamped at the supporting surface. The lifting function is also used for air control (see ▶ 4.4 [17]).

Two axially moveably lifting pins (Item 6) are integrated in the base body (Item 1). The lifting pins are sealed with O-rings (Item 12) against ingress of coolant, dust and chips. The lift-out function is started by the clamping slides (Item 3) and is transmitted by the steel balls (Item 7). The lifting pins are located within the clamping ring. Therefore lifting is carried out directly at the bottom side of the pallet.

The maximum admissible lifting force per clamping module is limited (see ▶ 3 [13]). The admissible total weight of the device's setup which is to be lifted onto a clamping module, should not be exceeded. A higher weight can lead to warping during removal of the pallet. This could cause a malfunction and damage to the clamping system. The stroke range of the lifting pin amounts to 0.5 mm.

In the locked condition the pins lower by about 0.1 mm. The lifting pins lower without any effort. No minimum tracking force of the clamping pallet is necessary.

4.3 Dynamic pressure monitoring of the clamping slide position

All sizes have two integrated pressure sensors. With these, the respective clamping slide position effects a build up of pressure in the "OPEN" or in the "CLAMPED" condition. Either just one of the two monitoring functions or both simultaneously can be used for alternative control monitoring.

Actuating clamping slide monitoring requires a reduced pressure supply that is limited to 2 bar, ▶ 5.5 [24].

The measurable differential pressure must reach a minimum of 1 bar for assessment via the air gap sensor to be reliable. 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 hole in the bottom.

Request our installation drawings if performing the installation yourself.

NOTICE

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

- Before **loading or unloading** the clamping pallet, ensure that all integrated clamping modules are unlocked.
- **Before beginning the machining process**, ensure that the integrated clamping modules are locked, and that the clamping pallet is placed flat on the bearing surface.

4.4 Air control and blow-out function

Channel holes are located on all four raised clamping ring locating surfaces of the clamping system in order to monitor the dynamic pressure. In this way the dynamic pressure at the supporting surface of the quickchange pallet module can be monitored with an electronic pressure switch. When the clamping module is unlocked or locked, differentiated pressure conditions prevail at the supporting surface. Moreover, the bore holes of the air control are used as blow-out function for cleaning the plane surfaces.

When using this control and cleaning function, it must be ensured that the clamping ring is in the right position orientation. The cylinder head countersinks of the clamping ring must not be positioned on the air outlet holes of the clamping module, since otherwise the blast air will escape and it will not be possible to build up a measurable dynamic pressure.

The measurable differential pressure must be minimal 1 bar so that a reliable evaluation is possible, via the air gap sensor. The maximum pressure is 2 bar.

For supervision, a pressure gauge, an adjustable throttle and an air gap sensor are needed.

The clamping modules of a clamping station (connected in parallel up to a certain number) can be monitored on a pressure switch.

Channel holes for the exhaust function are located on the centering cone in the same orientation as the holes on the clamping ring support surfaces.

5 Assembly

5.1 Pre-assembly

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

5.2 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.

1. Check the flatness of the mounting surface, ▶ 5.3 [18].

2. Screw the module with the O-rings (Item 40) inserted onto the clamping station.

⇒ Observe permissible tightening torques for the mounting screws and the strength class, ▶ 5.6 [25].

3. Connect module, ▶ 5.3 [18].

⇒ via the hose-free direct connection in the base of the quick-change pallet system.

4. If necessary, connect the monitoring functions.

5.3 Fastening and connection

Flatness

If several linked clamping modules are mounted, make sure that the flatness and height deviation of the outer ring bearing surfaces from clamping module to clamping module (with respect to a 200 mm gauge) is ≤ 0.02 mm. The gauge deviation from module to module must not be greater than ± 0.015 mm. The position tolerance of all module seats must not exceed a total value of 0.05 mm.

Redundancy

Due to redundancy, a clamping ring with positioning accuracy in one direction (SRB, positioned diamond shaped) must be used for clamping systems that are more than 160 mm apart or that do not show a positioning tolerance of ± 0.01 mm. The diamond-shaped alignment surfaces on the SRB clamping ring must be aligned at right angles to the longitudinal axis between clamping

rings SRA and SRB. This allows for compensation of a distance offset between the clamping areas to be aligned. For the clamping areas that are not intended for aligning the device or pallet, clamping rings with centering clearance (SRC) must be used (see ▶ 5.4 [📄 22]).

Turbo connection

When using the turbo connection (if supply is connected), the spring-actuated locking procedure is actively supported with air pressure, thereby enhancing the achievable pull down force. One pressure pulse is sufficient to increase the force. The pressure line can be decoupled afterwards without the pull down force being impaired. 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 pallet systems are activated via jointly connected hose lines, feed lines with the following minimum cross-sections must be used.

Number of modules	At least 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 cover plates to prevent the entry of dirt or coolant.

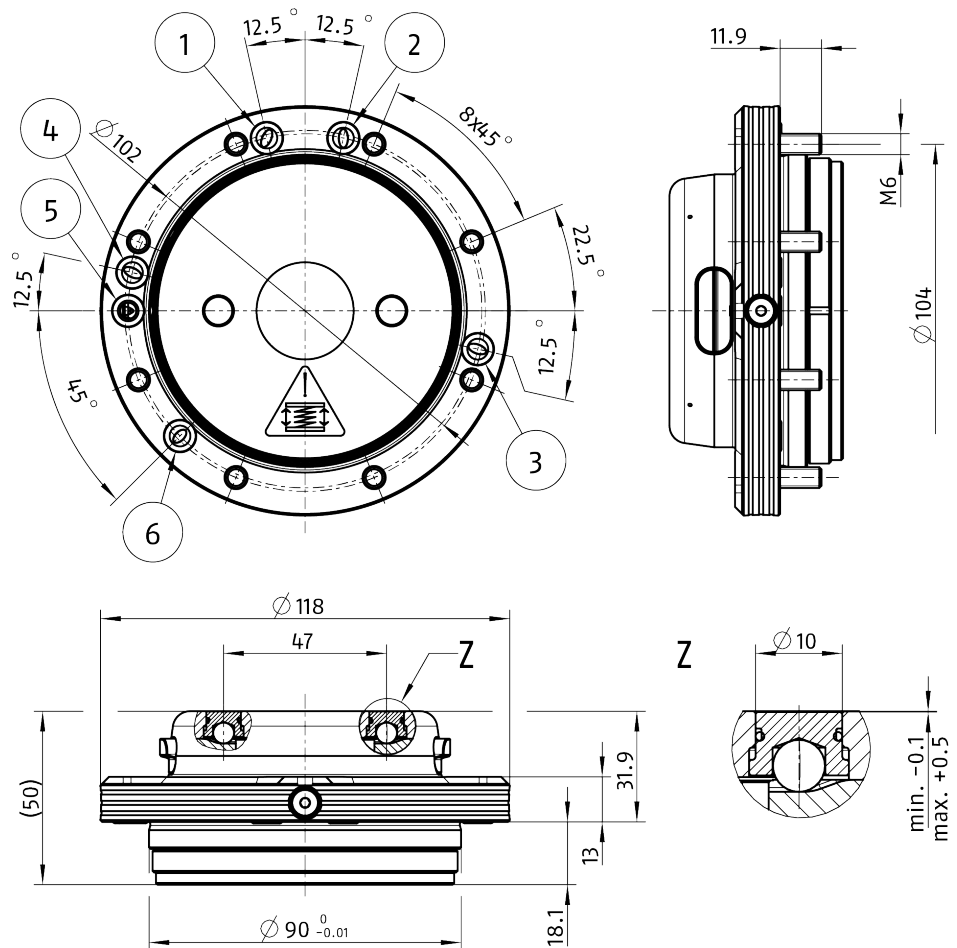
5.3.1 Size NSA3 120

The quick-change pallet module is positioned using the centering diameter $\varnothing 90 \text{ H6}$ of the installation space.

Fastening in the installation space with 8 M6 screws, ▶ 5.6 [□ 25].

The air connection for opening ① and for turbo function ② is via the bottom-sided connection holes.

The openings ① and ② on the bottom side as well as the dynamic pressure monitoring opening ▶ 4.3 [□ 16] for Open ③, Clamped ④ and the air control / exhaust function for the plane system ⑤ and the exhaust function for the centering cone ⑥ must be sealed against the flat bearing surface with O-rings $\varnothing 6 \times 1.5$ (Item 40).



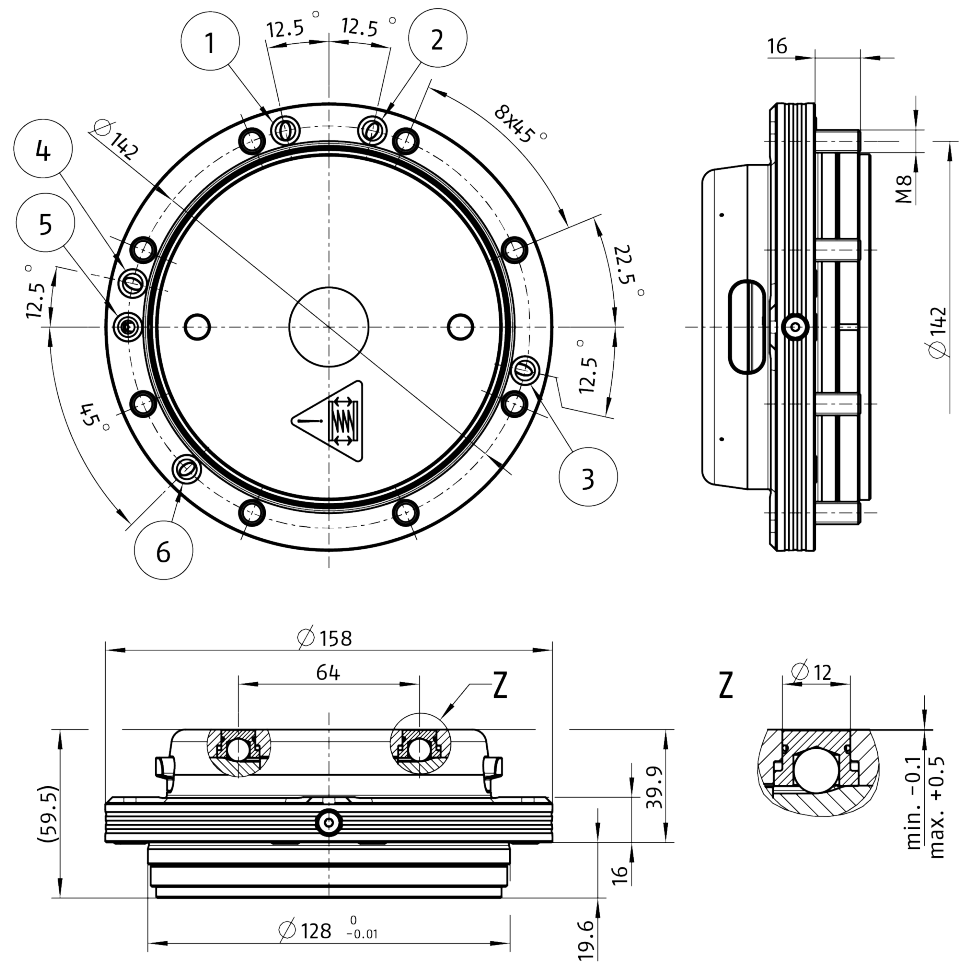
5.3.2 Size NSA3 160

The quick-change pallet module is positioned using the centering diameter $\varnothing 128$ H6 of the installation space.

Fastening in the installation space with 8 M8 screws, ▶ 5.6 [25].

The air connection for opening ① and for turbo function ② is via the bottom-sided connection holes.

The openings ① and ② on the bottom side as well as the dynamic pressure monitoring opening ▶ 4.3 [16] for Open ③, Clamped ④ and the air control / exhaust function for the plane system ⑤ and the exhaust function for the centering cone ⑥ must be sealed against the flat bearing surface with O-rings $\varnothing 7 \times 1.5$ (Item 40).



5.4 Clamping rings SRA, SRB, SRC

NOTICE

Notes on clamping rings 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 ring to the pallet or the device. This is why only screws of strength class 12.9 may be used.

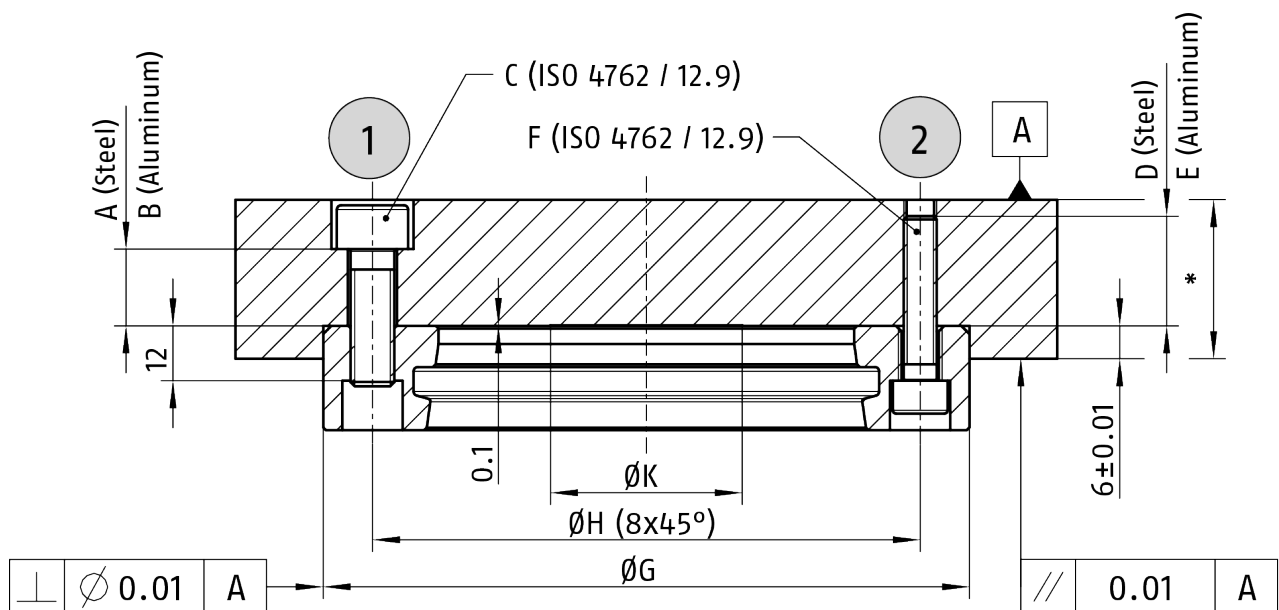
Only original SCHUNK clamping rings may be used.

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

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

When using the air control function, it must be ensured that the clamping ring is in the right position orientation. The air outlet holes on the raised support surfaces of the clamping module must be fully covered by the plane surface of the clamping ring. The cylinder head countersinks of the clamping ring must not be positioned on the air outlet holes.

Request our installation drawings of the clamping rings if doing the installation yourself.



Mounting the clamping rings

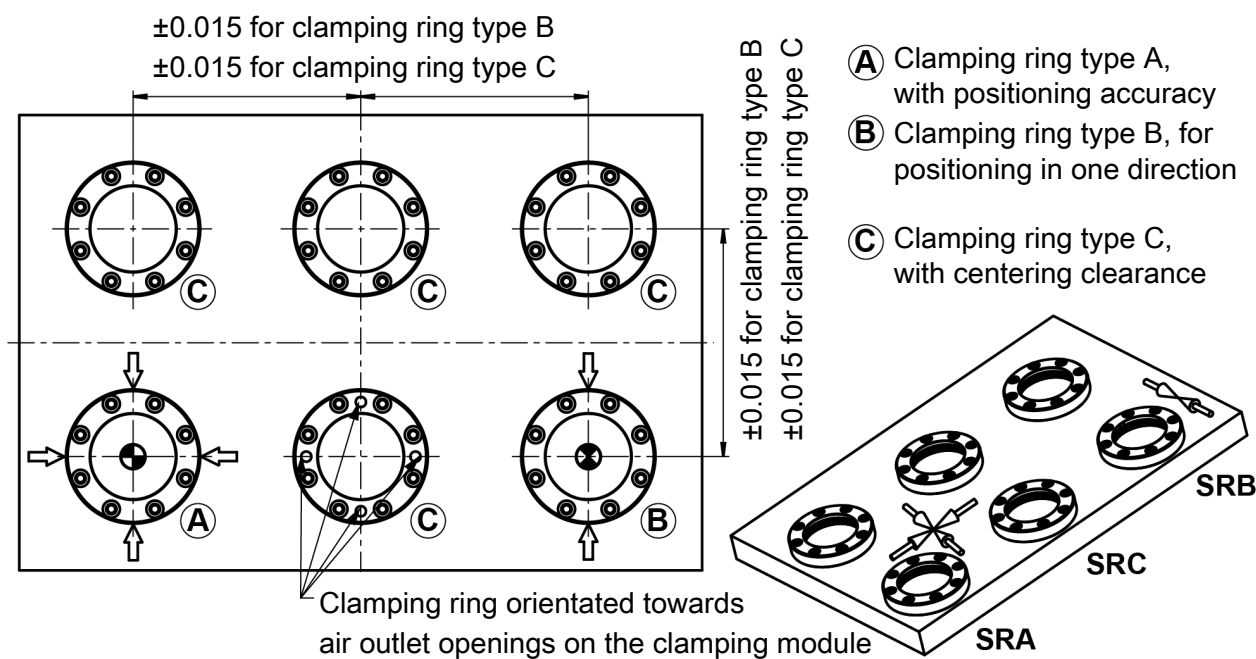
Tolerances and installation conditions

Type	ID number	A	B	C	D	E	F	G (H6)	H (± 0.2)	K
SRA 120	0471650	> 8	> 13	M8	> 9	> 12	M6	$\varnothing 118$	$\varnothing 100$	$\varnothing 35$
SRB 120	0471651	> 8	> 13	M8	> 9	> 12	M6	$\varnothing 118$	$\varnothing 100$	$\varnothing 35$
SRC 120	0471652	> 8	> 13	M8	> 9	> 12	M6	$\varnothing 118$	$\varnothing 100$	$\varnothing 35$
SRA 160	0471750	> 14	> 18	M10	> 12	> 15	M8	$\varnothing 158$	$\varnothing 140$	$\varnothing 55$
SRB 160	0471751	> 14	> 18	M10	> 12	> 15	M8	$\varnothing 158$	$\varnothing 140$	$\varnothing 55$
SRC 160	0471752	> 14	> 18	M10	> 12	> 15	M8	$\varnothing 158$	$\varnothing 140$	$\varnothing 55$

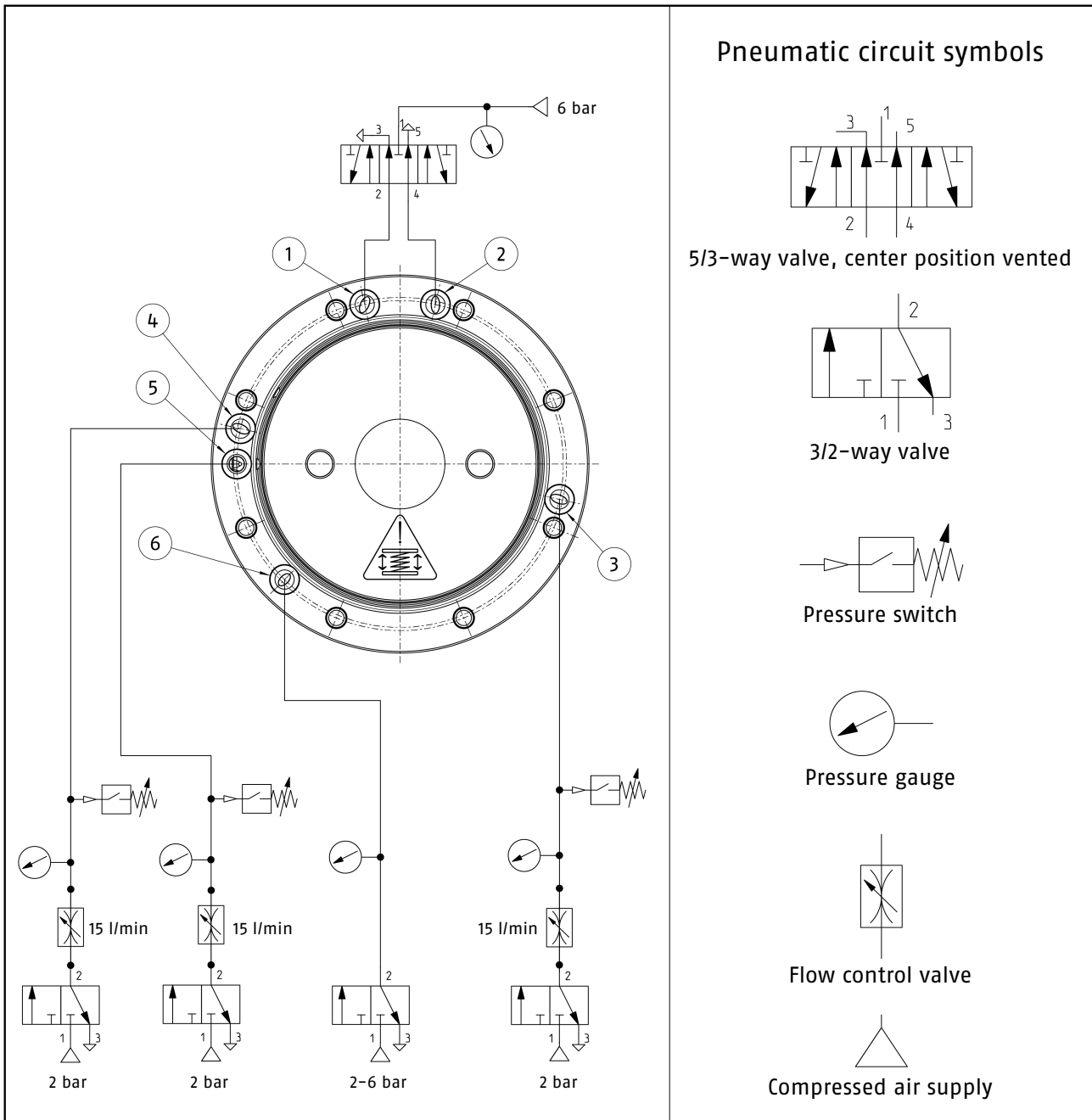
Use / arrangement of the different types of clamping rings

When positioning the clamping rings, deviating from the previous arrangement examples, the position tolerances given in the following illustration must be observed.

The clamping ring type B may deviate in its twisting position by max. $\pm 10^\circ$.



5.5 Pneumatics circuit diagram



- | | |
|---|--|
| 1 | Unlocking connection [6 bar] |
| 2 | Turbo connection [6 bar] |
| 3 | Clamping slide monitoring for module "OPEN" [2 bar / 15 l/min] |
| 4 | Clamping slide monitoring for module "CLAMPED" [2 bar / 15 l/min] |
| 5 | Air control system / exhaust function for flat installation [2 bar / 15 l/min] |
| 6 | Exhaust function for Centering cone [2 to 6 bar] |

Observe the following when controlling quick-change pallet systems:

Turbo function:

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

Clamping slide monitoring:

- The max. pressure for clamping slide monitoring is 2 bar.
- Limit volumetric flow to 15 l/min.
- Pressure difference upon failure of a module min. 1 bar.

Air control system / exhaust function for flat installation:

- The max. pressure of the air control function is 2 bar.
- Limit volumetric flow to 15 l/min.
- The measurable pressure difference must reach at least 1 bar.

Exhaust function Centering cone:

- The max. pressure of the exhaust function is 6 bar.
- The purge air must be switched off again immediately before the pallet coupling is fully locked, otherwise an air cushion may form.

In order to guarantee reliable evaluation, the pressure and air volume must be held constant. Pressure fluctuations can affect the settings of the differential pressure sensor and lead to incorrect measurement results. The length and cross-section of lines 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.

5.6 Screw tightening torques

Tightening torques for mounting the clamping rings

(Screw quality 12.9)

Screw size	M6	M8	M10	M12	M14	M16
Tightening torque (Nm)	15	32	62	108	170	262

Tightening torques for mounting the clamping modules

(Screw quality 10.9)

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

6 Operation

NOTICE

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

The inclination during lifting may not exceed 5°.

If the inclination is larger, 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 falling parts during transport of the quick change pallet system, when the axis of the clamping ring is in a horizontal position, or in the case of overhead application

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



⚠ WARNING

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

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



⚠ 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 ring holder.
- Work with the smallest possible clamping and opening strokes.
- Use loading devices.
- Wear protective gloves.

7 Maintenance and care

NOTICE

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.

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

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



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 back cover of the clamping module is spring preloaded and must only be removed by trained specialist personnel. The cover can only be disassembled and assembled using a special assembly tool and by observing the corresponding disassembly and assembly instructions.

- Check the units at regular intervals (at least every two weeks or after 1000 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 removed. For example, by replacing the damaged unit.

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 area does not unlock

Possible cause	Solution(s)
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 rings	Reduce tensile load on clamping ring

9.2 The clamping area does not unlock properly

Possible cause	Solution(s)
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 ▶ 5.3 [18]
The turbo connection is still pressurized	Ventilate turbo connection

9.3 The quick-change pallet system no longer opens quietly

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

10 Seal kit and part lists

10.1 Sealing Kit List

Size / Sealing kit*	ID number
NSA3 120	1588704
NSA3 160	1588706

* For included items, see note **X** in the Parts List chapter below. Seals are wearing parts and are recommended to be replaced during maintenance. The sealing kit can only be ordered as a complete kit.

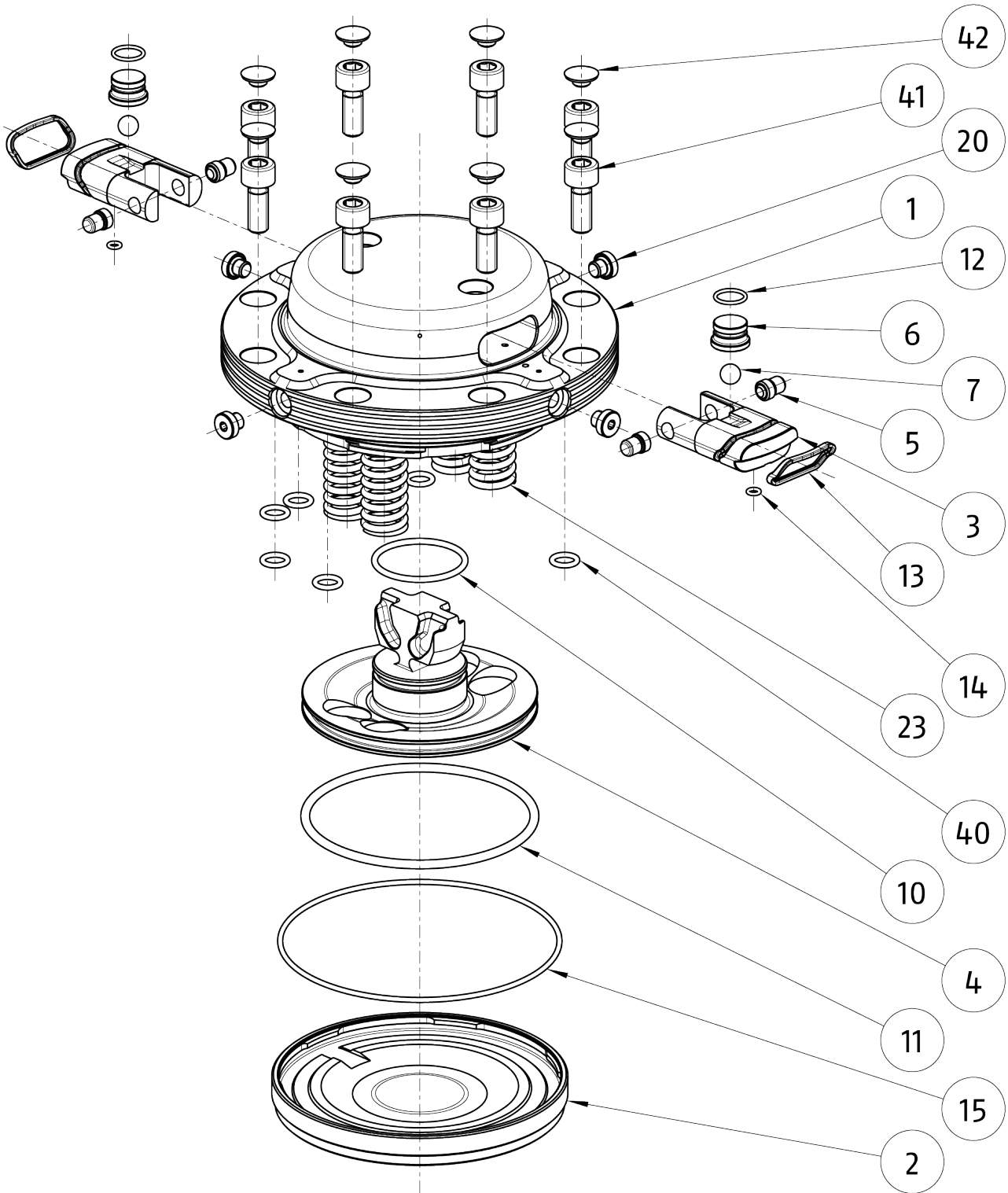
10.2 Parts lists

Size NSA3 120 (ID number 1531269)

Size NSA3 160 (ID number 1531280)

Item	Designation	Quantity	Note
1	Base body	1	
2	Cover	1	
3	Clamping slide	2	
4	Piston	1	
5	Guiding pin	4	X
6	Lifting pin	2	
7	Steel ball	2	
10	O-ring	1	X
11	O-ring	1	X
12	O-ring	2	X
13	O-ring	2	X
14	O-ring	2	X
15	O-ring	1	X
20	Locking screw	4	
23	Pressure spring	4	NSA3 120
	Pressure spring	6	NSA3 160
40	O-ring	6	X
41	Screw	8	
42	Cover cap	8	X

11 Assembly Drawing



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:	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

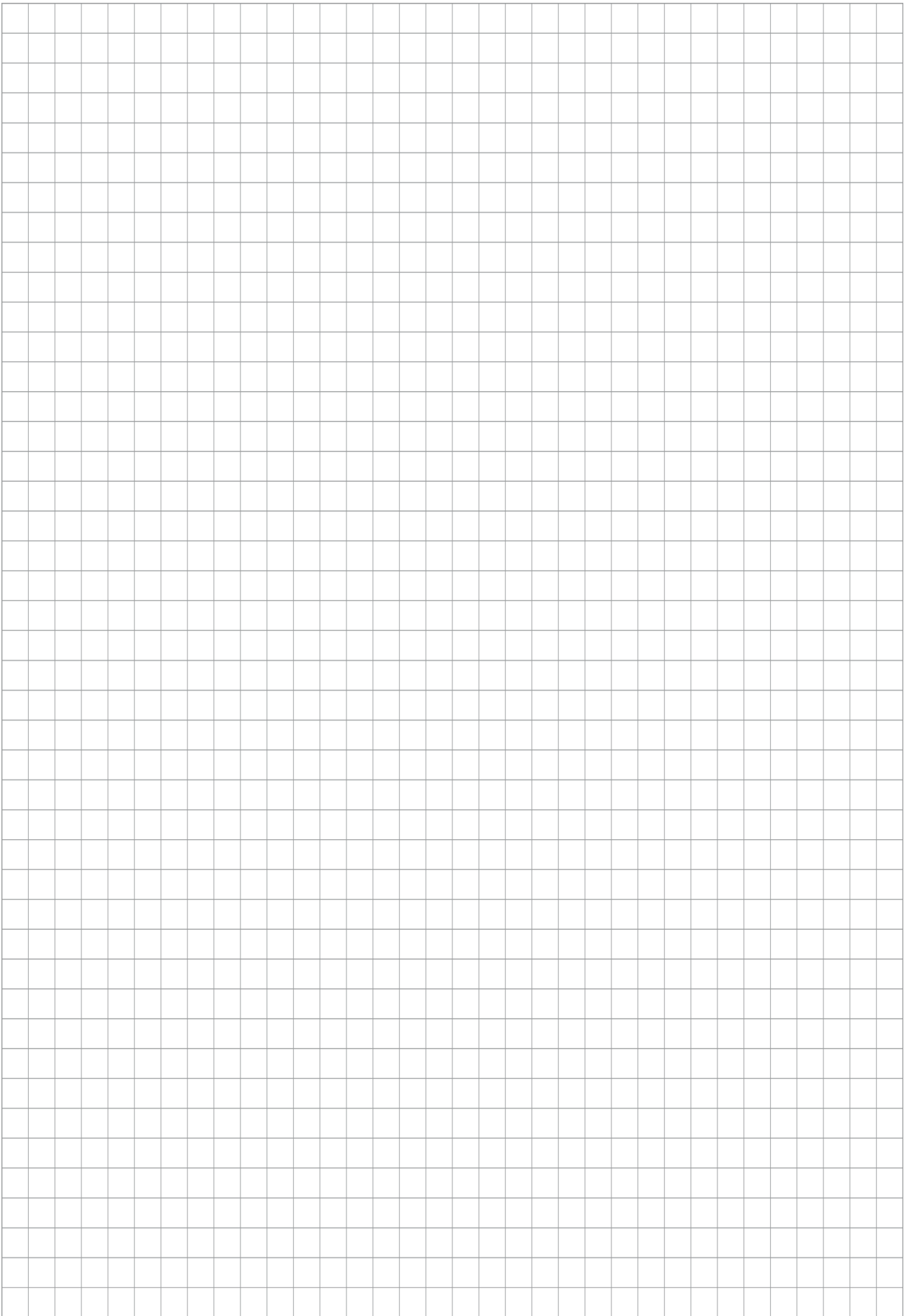
Mengen, 19th of July 2023

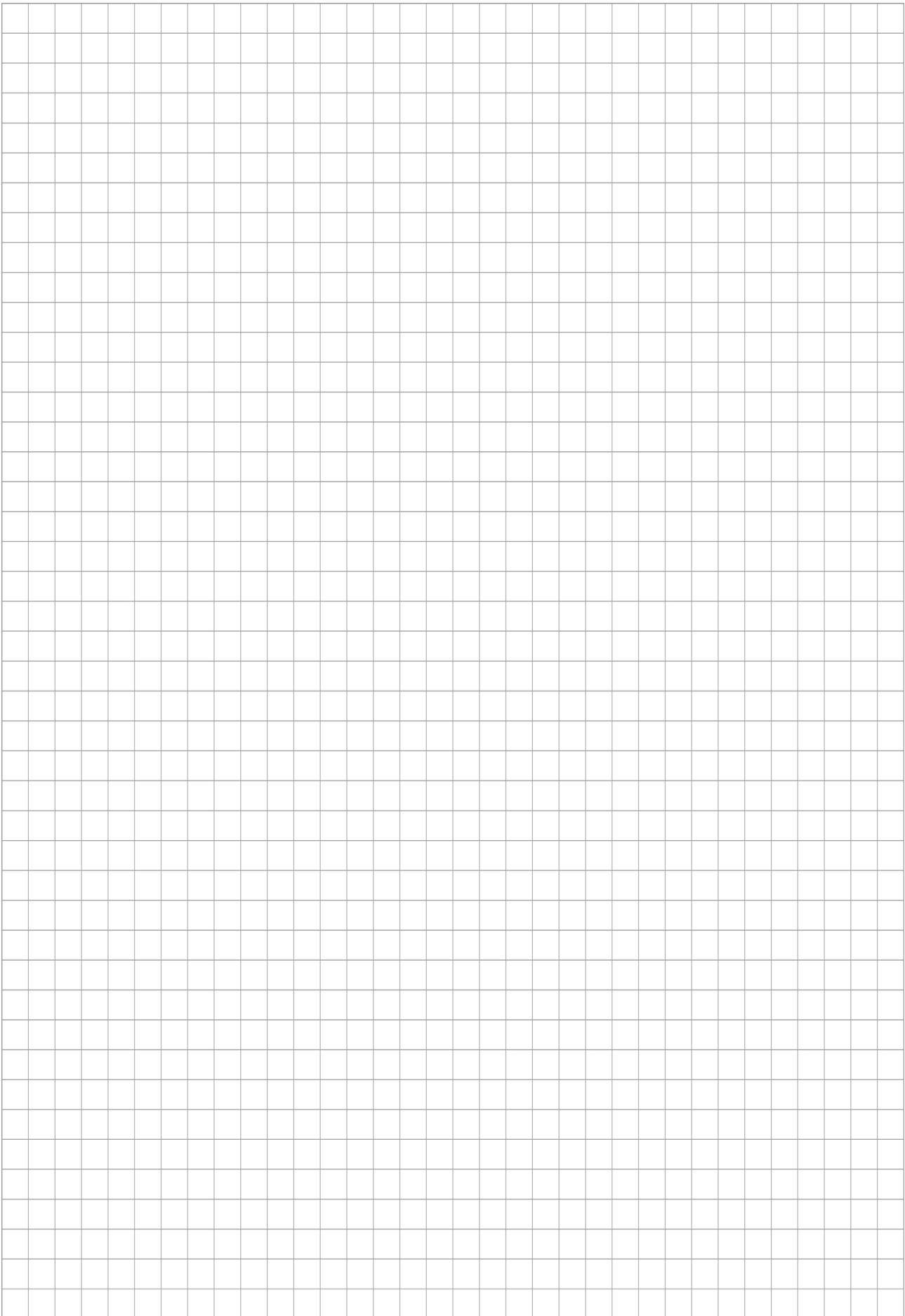
Signature: see original declaration

Signature: see original declaration

p.p. Philipp Schröder
Head of Development standard products

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