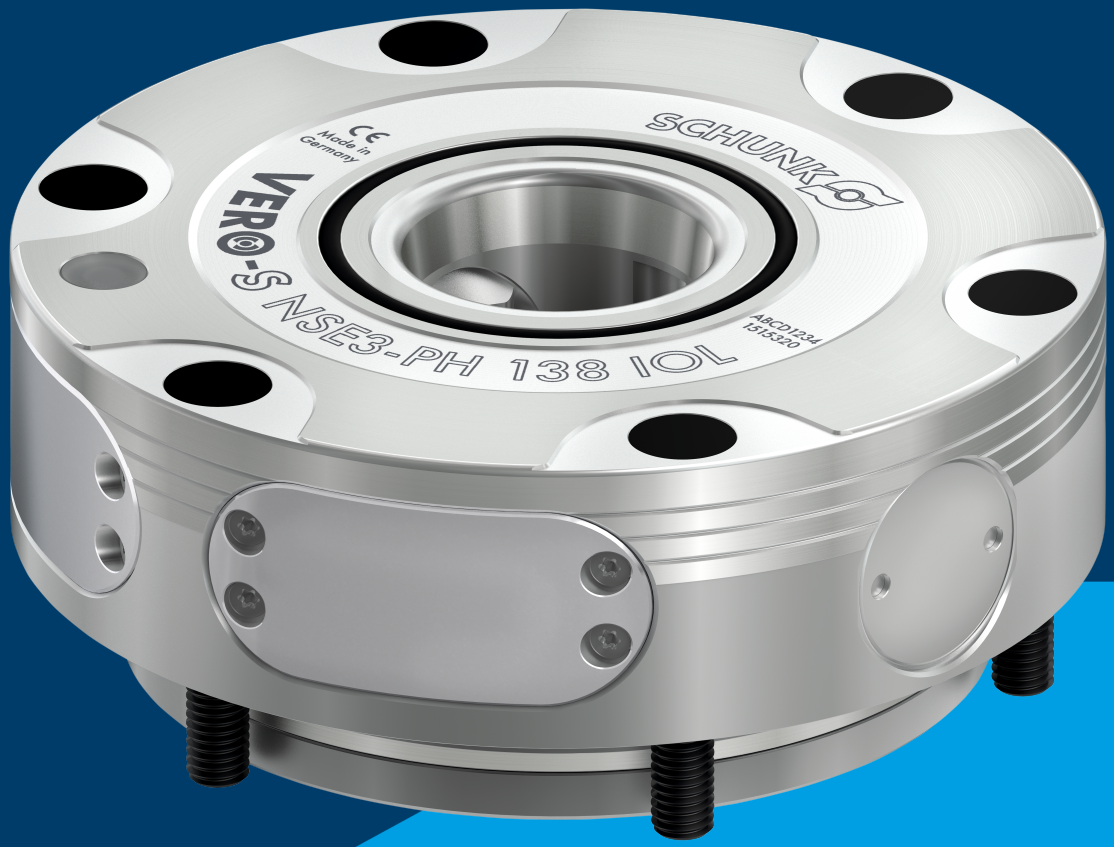

VERO-S quick-change pallet system NSE3-PH 138 IOL

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.

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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 *
- Installation drawing
- Software manual *
- IO-Link Device Description (IODD) *

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 ▸ 3.1 [🗋 14]

Quick-Change Pallet System

- Size NSE3-PH 138 IOL

Cone seal

- KVS 40

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 version ordered
- Accessory kit
- IO-Link Device Description (IODD)

1.4 Accessories

(see catalog or data sheets when ordering separately)

- Clamping pins (in particular SPA 40, SPB 40, SPC 40)
- Plug (conversion)
- Cone seal KVS 40 (retrofitting)
- Air bleed screw for monitoring face contact to KVS 40
- Weaker pressure spring for cone seal
- Monitoring systems
- Protection cover SDE
- Indexing pins IXB V1
- Rigid-contact interface

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 or other suitable technical facilities.
- 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 15°C and 60°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 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 of the drive unit, 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.

⚠ 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

There is a risk of limbs being crushed during manual loading and unloading if the gaps on moving parts are too big, as well as during the clamping procedure.

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

⚠ WARNING

Risk of injury due to rotation movements of the product.

When the product is commissioned, resulting rotation and swivel movements may catch or pull in adjoining components or limbs.

- The danger zone must be surrounded by a protective enclosure during operation.
- Follow the safety and accident-prevention regulations when operating the product, especially when working with machine tools and other technical equipment.

⚠ WARNING

Risk of injury due to hot surfaces!

Touching hot surfaces can cause burns.

- Before carrying out any work on the product, make sure that all surfaces have cooled down to the ambient temperature.
- Wear suitable protective equipment, especially protective gloves.

⚠ CAUTION

Risk of injury due to crushing.

- Install the product carefully.
- Do not place any limbs into the gaps or between the product and the machine.
- Wear protective gloves.

⚠ CAUTION

Risk of injury due to contamination (e.g. coolant or splashing water) in the change interface.

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

3 Product description

3.1 Description of design and variant

Clamping module Variant	Basic Version	Torque pin V1	Cone seal
NSE3-PH 138 IOL	x	-	-
NSE3-PH 138-V1 IOL	-	x	-
NSE3-PH 138-K IOL	-	-	x
NSE3-PH 138-V1-K IOL	-	x	x

3.2 Technical data

Supply voltage IO-Link [VDC]	24
Supply voltage drive system [VDC / A]	24 / 2
Repeat accuracy [mm]	< 0.005
Pull-in stroke [mm]	max. 0.9
Loading weight for versions with cone seal [kg]	min. 3.2
Loading weight for cone seal when using a weaker compression spring (optionally available) [kg]	min. 2
Installation position	any
Operating temperature [°C]	+15 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
Protection class	IP 67

Designation Variant	ID	Holding force* (M10 / M12 / M16) [kN]	Pull down force [kN]
NSE3-PH 138 IOL	1515320	35 / 50 / 75	20
NSE3-PH 138-V1 IOL	1515321	35 / 50 / 75	20
NSE3-PH 138-K IOL	1580206	35 / 50 / 75	20
NSE3-PH 138-V1-K IOL	1580207	35 / 50 / 75	20

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

3.2.1 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.

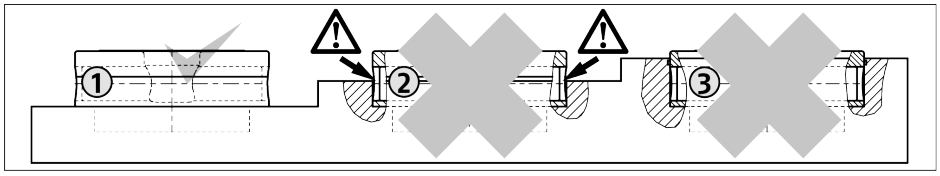
If the quick-change pallet system is to be used outside the specified welding currents, please contact your SCHUNK contact person.

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	Do not use

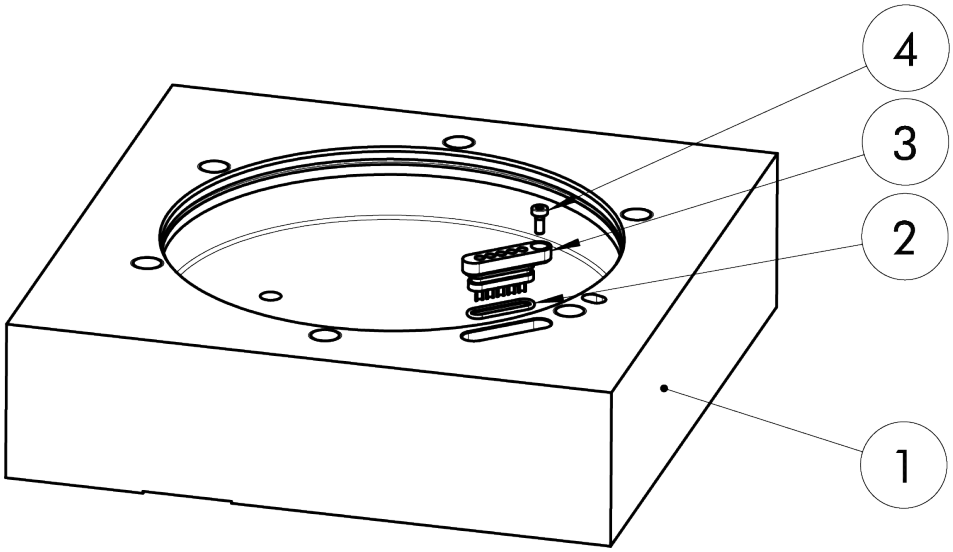
CAUTION

In installation positions 2 and 3, the emergency release of the system is no longer accessible. These installation positions should be avoided.

The electrical rigid contact interface must be installed in the clamping station by the customer, electrically connected and tested. The screw tightening torques ▶ 4.5 [🗋 27] and the cable cross-sections must be observed. The rigid-contact interface is not included in the scope of delivery of the module and must be ordered as an accessory in the desired version.

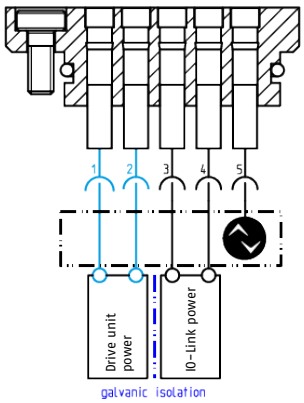
CAUTION

Do not use excessive temperatures when attaching the cables to the rigid contacts. This can damage the rigid contacts.



1	Customer-side clamping station
2	Sealing
3	Rigid-contact interface
4	Screw

Circuit diagram & pin assignment

Circuit diagram	Pin	Assignment	Function	minimum cross section	IO-Link class
	1	2 L+	Drive unit +24 VDC Power	0.25 mm²	B
	2	2 L-	Drive unit GND	0.25 mm²	B
	3	L+	IO-Link +24 VDC Power	0.25 mm²	B
	4	L-	IO-Link GND	0.25 mm²	B
	5	C/Q	IO-Link Communication	0.25 mm²	B

CAUTION

The rigid contact interface is only protected against the ingress of water when the module is installed. Do not bring it into contact with moisture or water before installing the module!

4.2 Installing and connecting

⚠ WARNING

Risk of injury due to unexpected movements!

If the power supply of the drive unit 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.

⚠ WARNING

Risk of injury due to unexpected movements when installing and removing the cone seal!

This can cause components to move unexpectedly when working on the cone seal, resulting in injuries.

- Before starting all work on the product, refer to the cone seal chapter, ▸ 4.3.2 [🗋 22].
- Make sure that components of the gate unit are fitted in accordance with the installation guidelines and safely locked in place.

⚠ CAUTION

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

- Wear personal protective equipment, particularly protective gloves.

⚠ CAUTION

Risk of injury from electric shock if the clamping device is not yet fitted (open interface)

Only connect the interface to the power supply after installation is complete

⚠ CAUTION

Risk of injury due to short circuit if the clamping device has not yet been fitted (open interface)

Only connect the interface to the power supply after installation is complete

Assembly sequence:

1. Disconnect the electrical interface from the power supply and secure against reconnection.
2. Check the flatness of the mounting surface, ▸ 4.3 [🗋 19].
3. Clean the interface and dry if necessary.

CAUTION

The interface is only splash-proof when the module is installed (IP 67). Only clean open interfaces dry.

CAUTION

Humidity in the interface leads to corrosion of the contacts during operation and can lead to module failure. Humidity on the interface must be removed before assembling the module.

4. Screw the module with the O-rings inserted onto the clamping station.

   Observe the orientation of the electronic interface or orientation pin.

   Observe permissible tightening torques for the mounting screws and the strength class, ▸ 4.5 [🗋 27].
5. Connecting the power supply and IO-Link communication.

4.3 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 pin with positioning accuracy in one direction (SPB 40, 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 SPB 40 clamping pin must be aligned at right angles to the longitudinal axis between clamping pins SPA 40 and SPB 40. 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 pins with centering clearance (SPC 40) must be used (see ▸ 4.4 [🗋 23]).

Removal from the installation space

Detachable threads facilitate removal of the modules from the installation space of the clamping stations. To pull the clamping module out of the installation space, two levering tools (e.g. long cylindrical screws) are screwed diagonally into two existing internal threads of the mounting holes. The power supply must be disconnected before dismantling.

4.3.1 Size NSE3-PH 138 IOL

The quick-change pallet module can be positioned using the centering diameter **Ø110 H6** in the lower range.

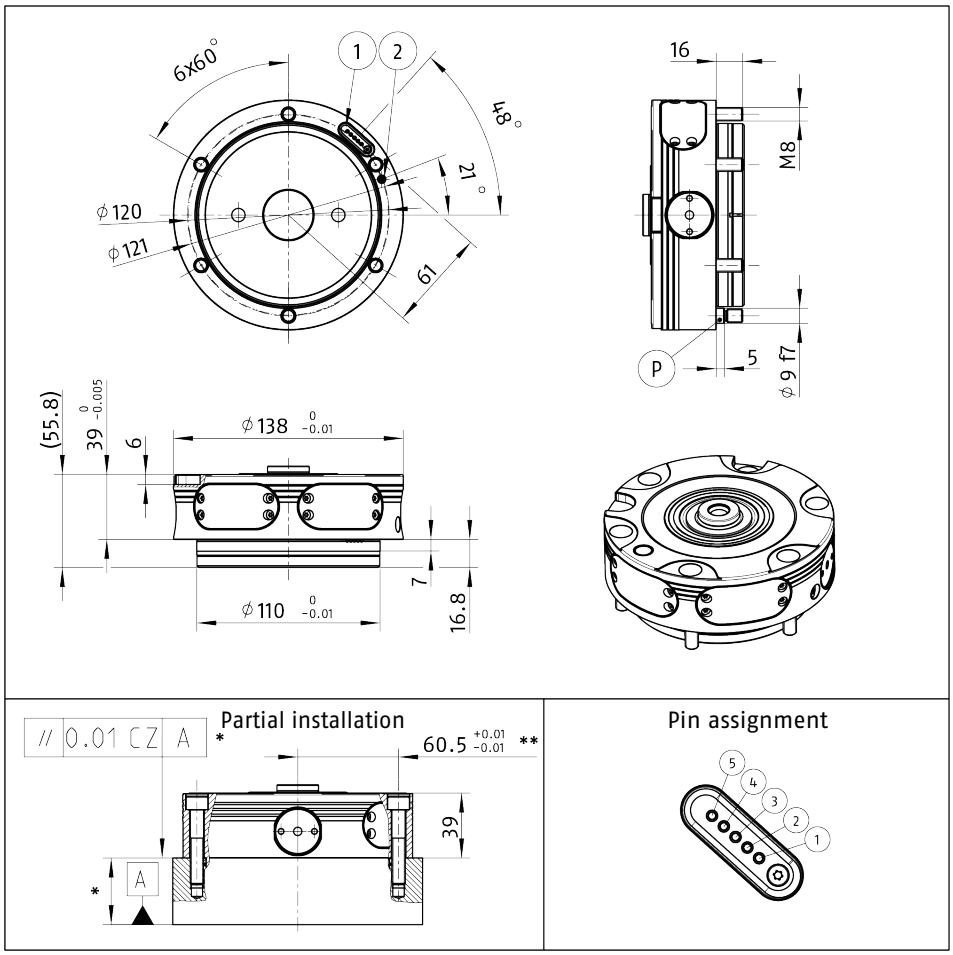
The orientation pin ② must be observed for positional orientation.

Fastening in the installation space with 6 screws Ⓩ ▸ 4.5 [🗋 27].

For variants with anti-rotation protection ▸ 3.1 [🗋 14], one screw is designed as a fitting screw Ⓟ, which ensures exact position orientation via a fitting bore **Ø9 H7** in the counterpart.

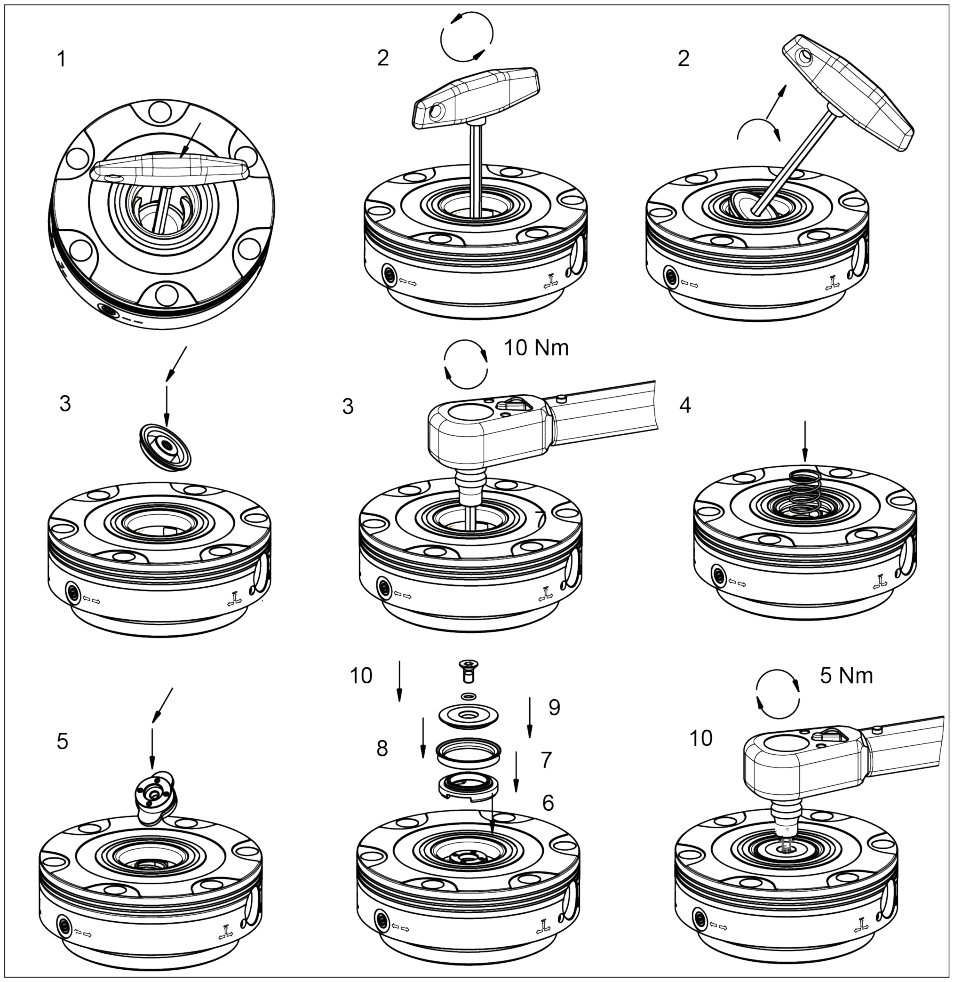
The interface for IO-Link communication and the power supply for the drive is provided via the spring contact interface on the floor. The rigid contact interface (not included in the scope of delivery) must be implemented and connected by the customer. Two connection variants are possible here ▸ 4.1 [🗋 16]:

1. Connection to master with Class A port (Pin 3-5) and to galvanically isolated power supply unit (Pin 1-2).
2. Connection to master with Class B port (Pin 1-5).

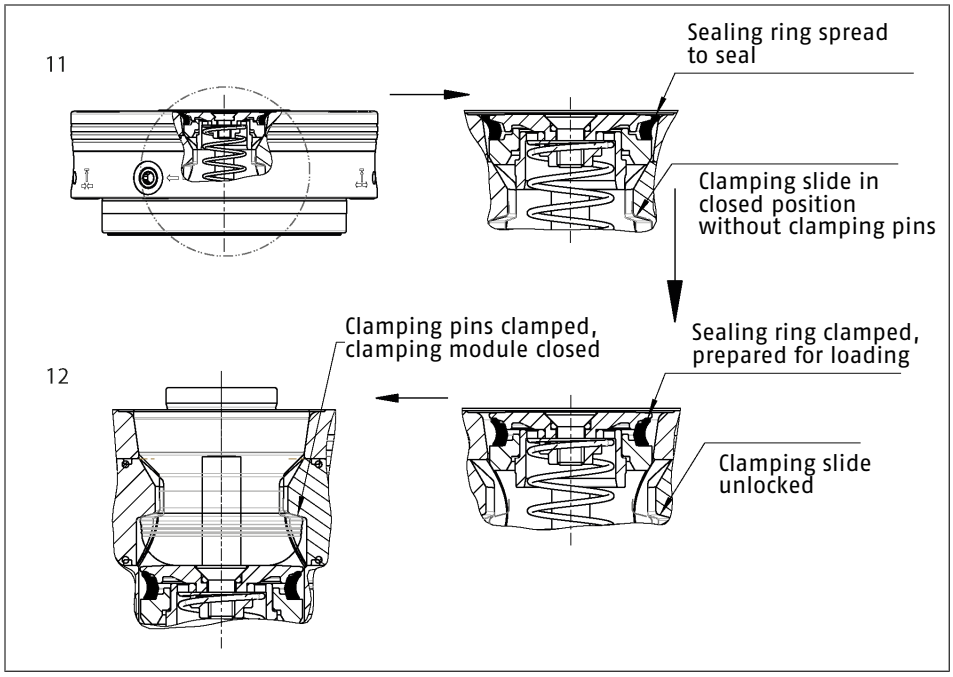


*	All clamping systems of equal height within 0.02 mm
**	Clearance for fitting screw for variants with anti-rotation protection

4.3.2 KVS 40 cone seal

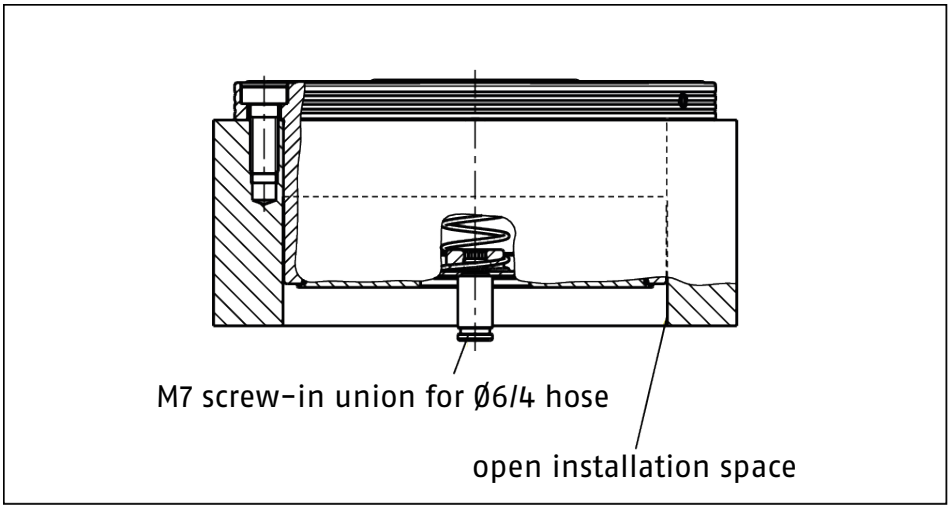


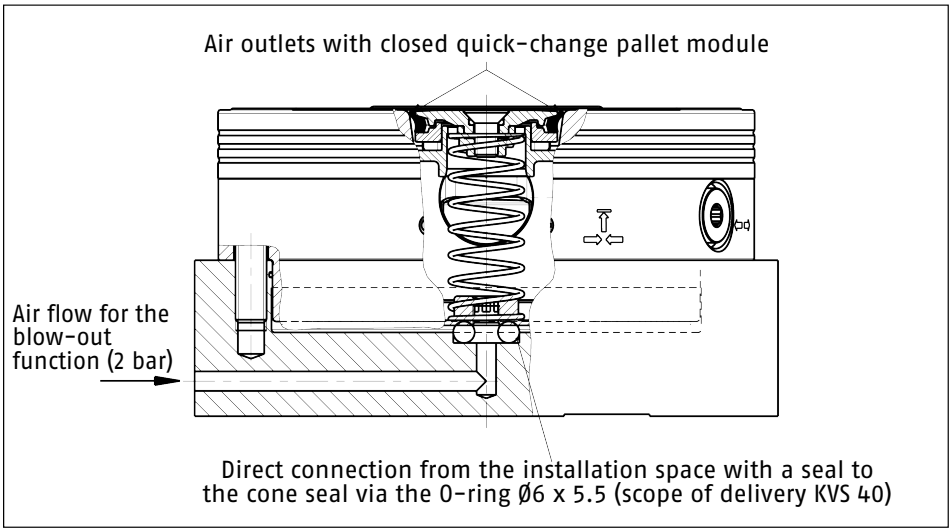
Sequence when inserting the cone seal



Check the cone seal when loading with the clamping pallet.

The air connection for the blow-out air / air purge is achieved via the base M7 connection thread with the installation of a screw-in union. Alternatively, the air supply can be actuated from a drilled channel hole leading out of the installation location of the clamping module. To do this, a drilled channel hole with seal seat must be made in the installation space. To seal this, the enclosed O-ring Ø 6 x 5.5 must be inserted in the seal seat.





Blow-out air:

For NSE3-PH 138 (-V1) IOL, by subsequently incorporating the connection thread in the center of the plug. For versions with cone seal ▸ 3.1 [🗋 14] centrally at the bottom via M7 connection thread:

- 3 to max. 6 bar.
- The blow-out air must be switched off before the pallet is placed on top, otherwise a pressure cushion may form or vibrations may occur.
  Recommendation:
  - Switch off blow-off air → before placing the pallet (approx. 1 mm)
  - Switch on blow-off air → only after lifting the pallet (approx. 1 mm)

4.4 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 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.
Only original SCHUNK clamping pins may be used.
If the clamping pins are to be used in customer-owned devices, the customer must provide sufficiently dimensioned threaded holes or a sufficiently thick mounting material.

The clamping pins can be attached to the workpiece or pallet in two different ways. Preference should be given to the left mounting option in the illustration "Mounting the clamping pins". 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.

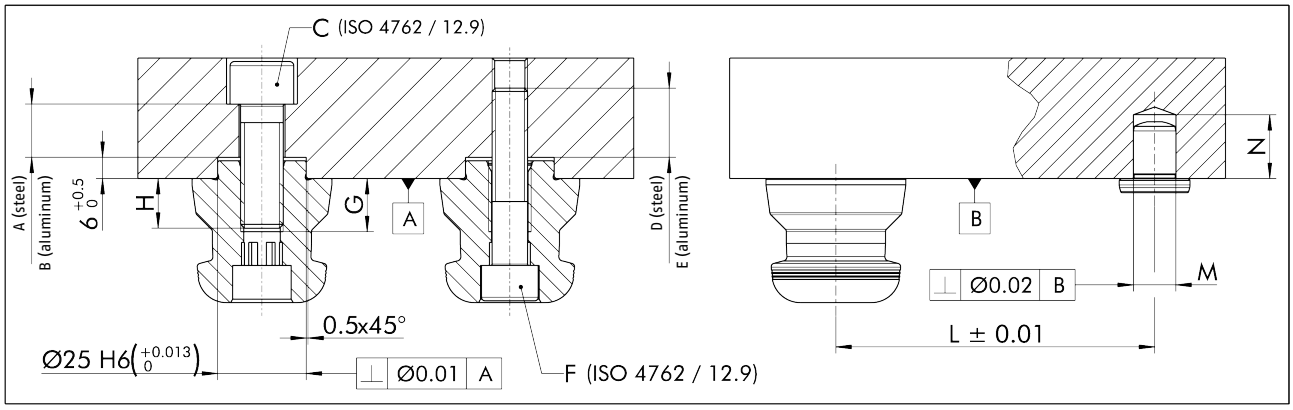
If clamping pins are used outside of SCHUNK pallets, for example in customer-specific devices or workpieces, the outer diameter of the part to be clamped must be large enough to completely cover the inner support area of the quick-change pallet system and the outer support areas of the system must be at least partially covered.

Note

It must be ensured that the customer's device or the workpiece is covered in a width direction that fully covers the outer support area of the quick-change pallet system on both sides. To ensure that the pallet presence detection function works properly, the sensor embedded in the flat surface must be completely covered and the counterpart (pallet) must be a metallic object.

Size	min. outer diameter on the support of the workpiece
NSE3-PH 138 IOL	68 mm

Size	Indexing pin	Indexing pin ID number	L [mm]	M [mm]	N [mm]
NSE3-PH 138 V1(-K) IOL	IXB V1	0471980	66	Ø12 H7	>16



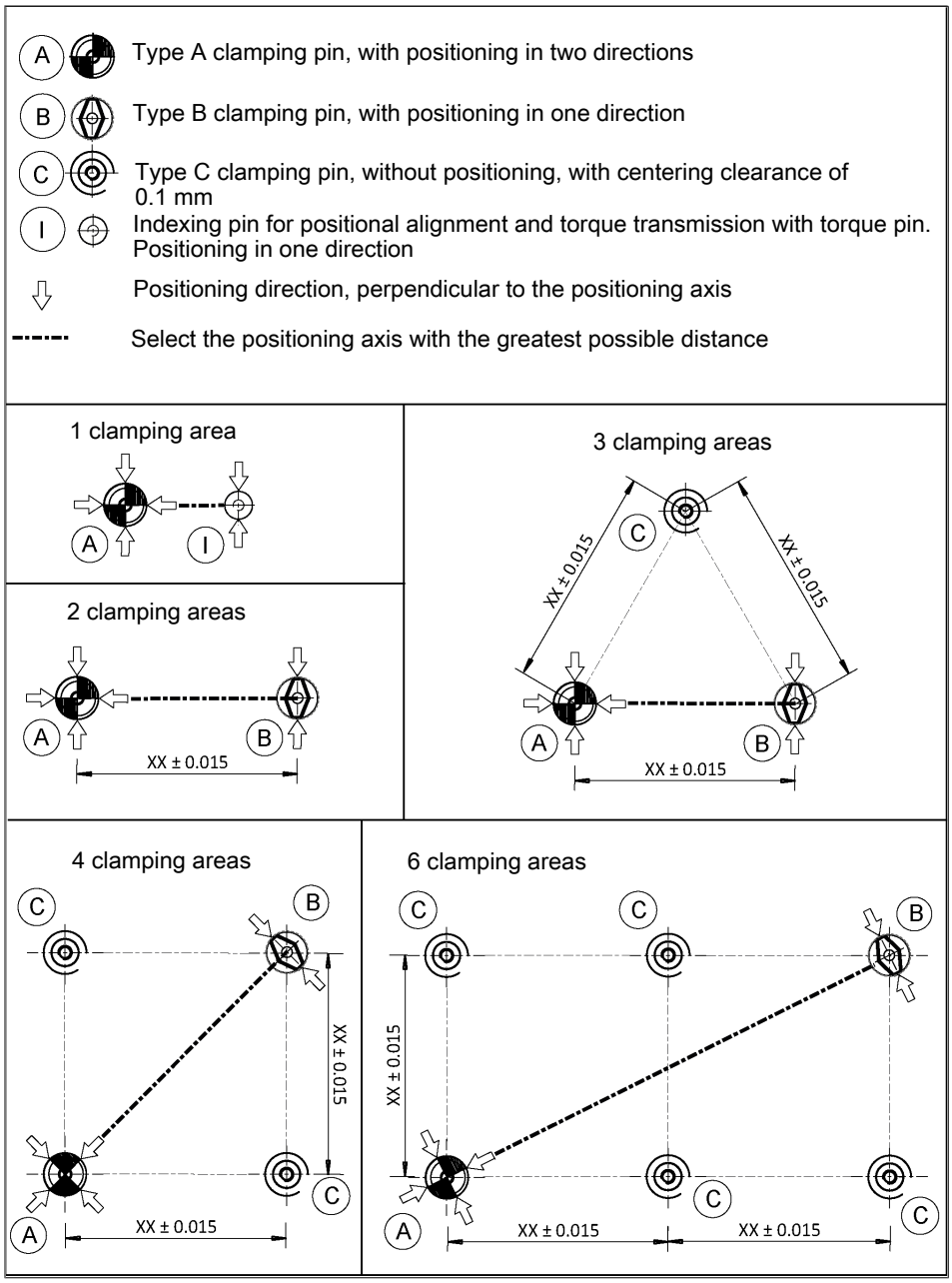
Mounting the clamping and indexing pins

Tolerances and installation conditions

Type	ID	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-in thread must not exceed the dimension "G" under any circumstances!

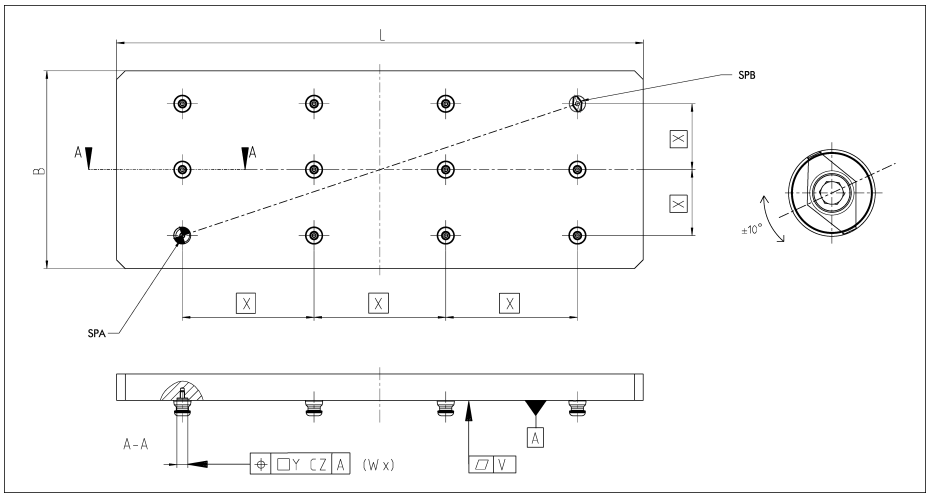
Usage/arrangement of the different types of clamping pins



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

Furthermore, the customer workpiece or the clamping pallet must always have the described flatness.

The clamping pin type B may deviate in its twisting position by max. +/-10°.



X = gauge of the clamping pins is variable

W = number of clamping pin interface

Plate size [mm] L x B	Position when using clamping pin type A, B and C [mm] Y	Recommended flatness for optimal results [mm] V	Prescribed flatness to ensure the function [mm] V
0 – 600	0.03	0.02	0.05
600 – 1200	0.04	0.04	0.08
1200 – 1800	0.05	0.05	0.10

4.4.1 Information to clamping pin SPG 40

The SPG 40 can be used at a clamping area instead of the SPA 40.

If there are several clamping areas, only the clamping area with clamping bolt type SPA may be exchanged for the SPG 40.

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

When connecting the screws from above, a 10 mm longer M12 screw of strength class 12.9 must be used according to the mounting option on the left in the illustration.

4.5 Screw tightening torques

Tightening torques for mounting the clamping pins
(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	M2	M8
Tightening torque (Nm)	0.3	28

Tightening torque for the countersunk screw on the cone seal
(Screw quality A2-70)

Screw size	M6
Tightening torque (Nm)	5

Tightening torques for the plug and cover conversion parts in the clamping pin mounting

Component	Plug (basic version)	Bottom cover
Tightening torque (Nm)	10	10

5 Function

The VERO-S NSE3-PH 138 IOL is an electromechanical quick-change pallet system. Communication takes place via the IO-Link protocol. The customer can adapt the communication to the higher-level fieldbus level by selecting the IO-Link master. The module, including the IODD, is fieldbus-independent.

The module opens and closes via an integrated actuator. The "open", "closed" and "pallet present" positions are also output. Detailed information on control and signals can be found in the software manual.

5.1 KVS 40 cone seal

The -K versions of the NSE3-PH 138 IOL quick-change pallet system are equipped with a cone seal to protect the change interface. The sealing unit can be sunk spring-loaded and reset when the module is unlocked.

The change interface is sealed when the clamping module is closed without clamping pins. On the base, the cone seal has an air connection to actuate a cleaning or air purge function. The seal can be optionally retrofitted without removing the unit from the installation space.

Note

The blow-out function must be actuated with the clamping module closed without clamping pins. In this case, the blow-out air is discharged at the sealing position, and in doing so, blows coolant and chips from the bearing surface. When using this function, to load the change interface, the quick-change pallet system must be supplied with blow-out air before unlocking. When using the blow-out function for air-purge face contact monitoring, the sealing ring on the bearing surface of the module must be removed. A step-by-step installation assembly makes retrofitting the multi-part sealing unit easier.

Note

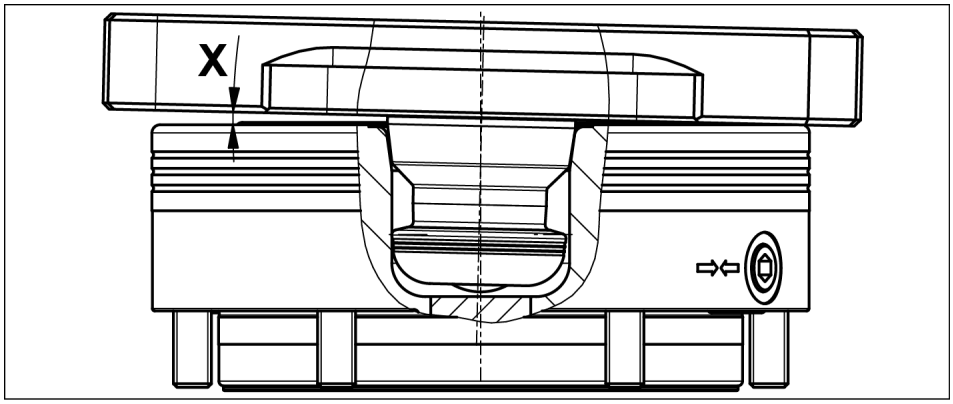
If several clamping modules with a cone seal are fitted in a clamping station, the clamping pallet to be installed or the device must have a corresponding handling system so that no lifting occurs.

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.

- Disconnect the energy supply of the drive unit after locking.
- Use safety switches.
- The danger zone must be surrounded by a protective enclosure during operation.

⚠ WARNING

Risk of injury due to sudden movements!

- Before starting any work on the product: Switch off the energy supply of the drive unit and secure against re-connection.
- Ensure that no residual energy remains in the system.

7 Maintenance and care

⚠ 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 side 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 all signals are transmitted correctly and no error messages are displayed during operation.
- 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 Seal kit and part lists

8.1 Sealing Kit List

Size / Sealing kit*	ID
Cone seal KVS 40	1153525

* 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.

8.2 Parts lists

8.2.1 Size NSE3-PH 138 IOL

NSE3-PH 138 IOL (ID number 1515320)
NSE3-PH 138-V1 IOL (ID number 1515321)
NSE3-PH 138-K IOL (ID number 1580206)
NSE3-PH 138-V1-K IOL (ID number 1580207)

Item	Designation	Quantity	Note
1	Base body	1	
2	Screw	6	*
3	Cover cap	6	
4	Cover	1	all, except K-variants
	Cone seal KVS 40	1	K-variants
5	O-ring	1	
6	O-ring	1	

* For variants with anti-rotation protection -V1, one screw is designed as a fitting screw.

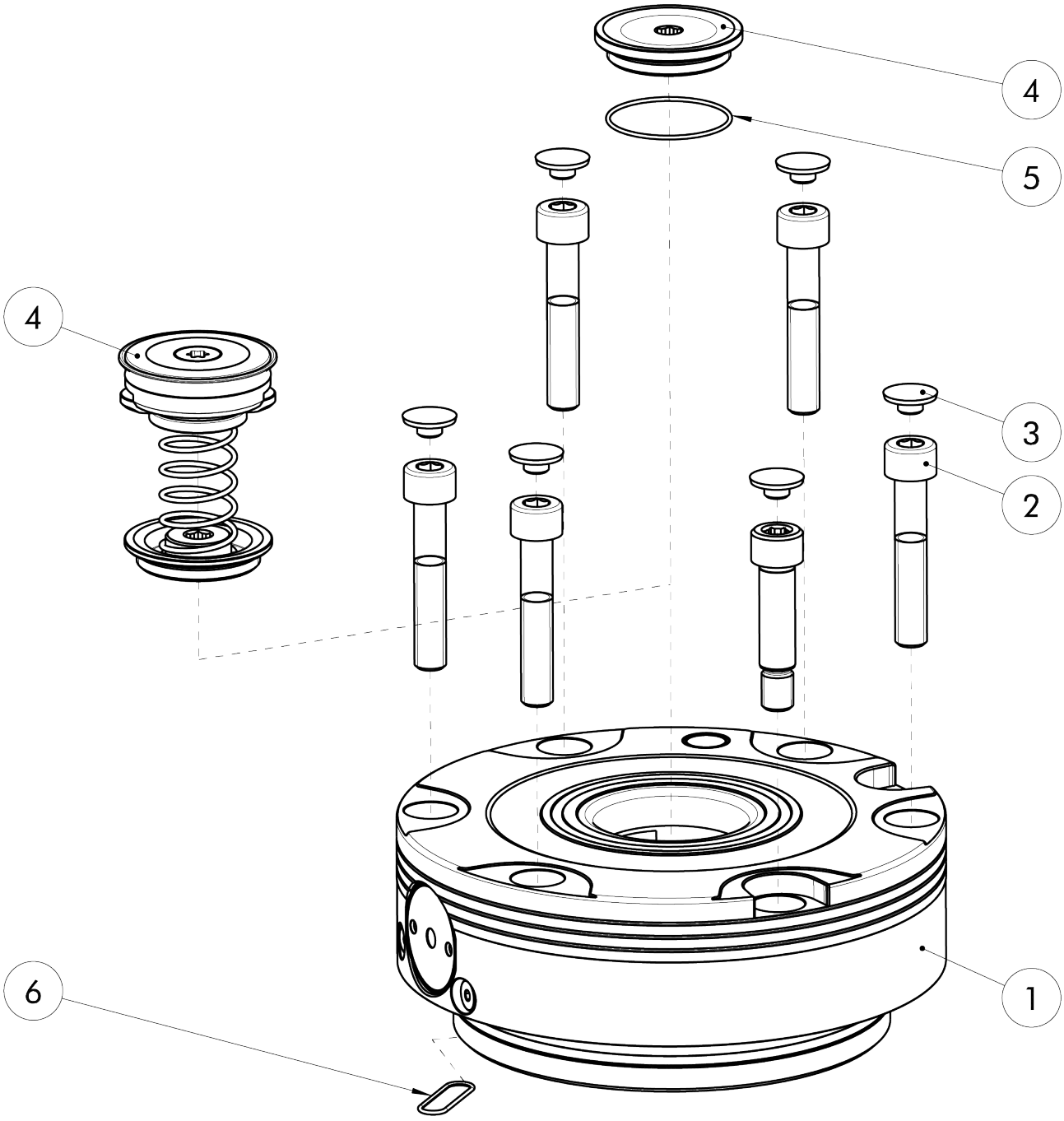
8.2.2 Cone seal KVS 40 (ID 1313742)

Item	Description	Quantity	Note
1	Mount	1	
2	Thrust washer	1	
3	Cover plate	1	
4	Cover	1	
5	Sealing ring	1	**X**
6	Compression spring	1	**X**
7	Countersunk screw	1	**X**
8	O-ring	1	**X**
9	O-ring	1	**X**
10	O-ring	1	*

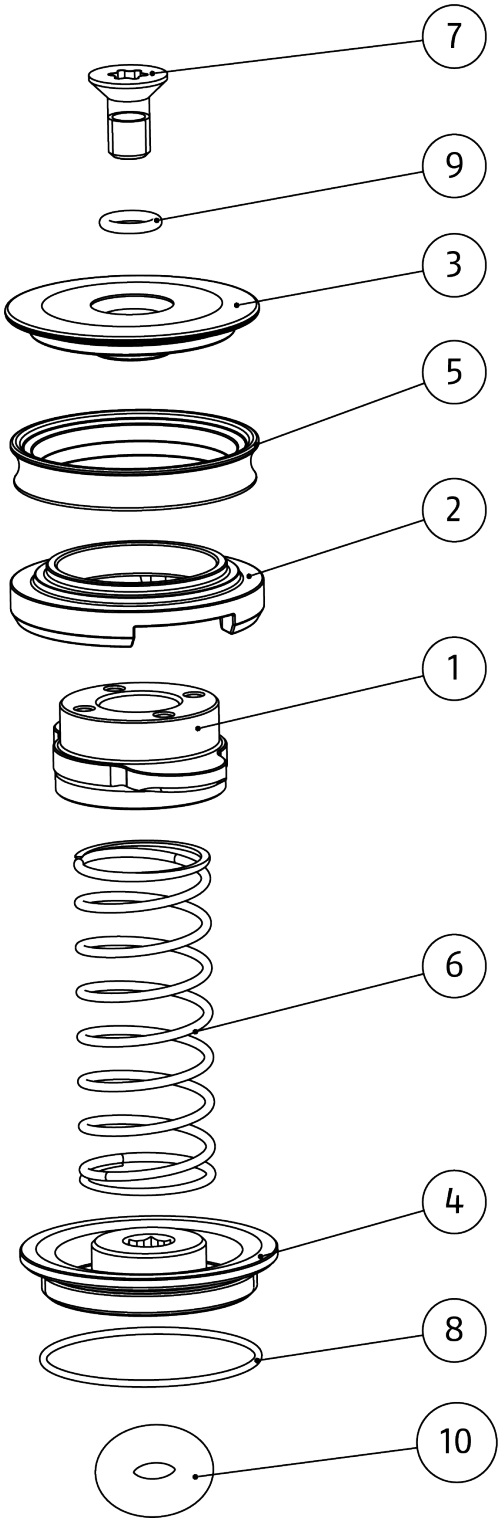
Parts list key			
*	Component for sealing within the installation space for the supply of blow-out air	**X**	Included in the sealing kit

9 Assembly Drawings

9.1 Size NSE3-PH 138 IOL



9.2 KVS 40 cone seal



Manufacturer certificate

Manufacturer / Distributor:	Heinz-Dieter SCHUNK GmbH & Co. Spanntechnik KG. Lothringer Str. 23 D-88512 Mengen
Product:	**Electromechanical clamping system**
Description:	Electromechanical zero point clamping system
Type designation:	VERO-S NSE3-PH 138(-K) IOL / VERO-S NSE3-PH 138-V1(-K) IOL

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 A to C 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 MTTFD value of 150 years can be estimated for mechanical components using the informative procedure in Table C.1 of ISO 13849-1:2015.
- the **fault exclusion** against the fault "Breakage during operation" regarding Annex A to C in compliance with the parameters, limitations, ambient conditions, characteristic values and maintenance intervals, etc., specified in the operating manual.

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, 04/18/2024

i.V. Ph-Schr

p.p. Philipp Schräder / Head of Development standard products

FB- No. 832M ; V.: 01 Created / date: S. Briemle / 04/19/2024; Reviewed and approved / date: P. Schräder / 04/19/2024

Revision status 00/10/16/2021

EC declaration of conformity

in accordance with the Directive 2014/30/EU (electromagnetic compatibility), Annex IV, of the European Parliament and of the Council of 26 February 2014.

The manufacturer is solely responsible for the issuing of this EU declaration of conformity.

Manufacturer: H.-D. SCHUNK GmbH & Co. Spanntechnik KG
Lothringer Str. 23
D-88512 Mengen

We hereby declare that on the date of the declaration the following mentioned product, based on its construction and design as well as the version thereof released by ourselves commercially, complies with all basic safety and health regulations found in the directive 2014/30/EU.
This declaration is no longer valid if the product is modified.

Product designation: electromechanical zero point clamping system

Type designation: VERO-S NSE3-PH 138(-V1)(-K) IOL

Ident number: 1515320; 1515321; 1580206; 1580207

Serial number: …

The object of declaration described above satisfies the following harmonization legislation:

2011/65/EU RoHS Directive

Applied harmonized european standards:

DIN EN ISO 12100:2011-03
EN 55011:2016 Klasse B
EN 61000-6-2:2005

Applied technical standards and specifications:
IEC 61131-9:2022
IO-Link Interface und System Specification 1.1.3:2019

Authorized person to compile the technical documentations:
Philipp Schräder, Address: see manufacturer´s address

Mengen, 08.04.2024

i. V. Philipp Schräder

Philipp Schräder
Head of the development department clamping technology

FB 156 M_EMV / Änderungsstand 01; Geändert: P. Schräder; Geprüft: M. Rieger

H.-D. SCHUNK GmbH & Co.
Spanntechnik KG

Lothringer Str. 23
D-88512 Mengen
Tel. +49-7572-7614-0
info@de.schunk.com
schunk.com

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