

Assembly and Operating Manual

NSE plus, NSL plus, NSD plus

VERO-S quick-change pallet system



Superior Clamping and Gripping



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.

Table of Contents

1	General	5
1.1	About this manual	5
1.1.1	Presentation of Warning Labels	5
1.1.2	Applicable documents	5
1.1.3	Sizes	6
1.2	Warranty	6
1.3	Scope of delivery	6
1.4	Accessories	7
2	Basic safety notes	8
2.1	Intended use.....	8
2.2	Not intended use.....	8
2.3	Constructional changes	8
2.4	Spare parts	8
2.5	Environmental and operating conditions	8
2.6	Personnel qualification.....	9
2.7	Personal protective equipment.....	10
2.8	Notes on safe operation	10
2.9	Transport	10
2.10	Malfunctions.....	11
2.11	Disposal	11
2.12	Fundamental dangers.....	11
2.12.1	Protection during handling and assembly	12
2.12.2	Protection during commissioning and operation	12
2.12.3	Protection against dangerous movements.....	12
2.12.4	Notes on particular risks.....	13
3	Technical data	15
3.1	Suitability for welding applications	16
4	Assembly	17
4.1	Pre-assembly	17
4.2	Installing and connecting.....	17
4.3	Fastening and connection	18
4.3.1	NSE plus 90	19
4.3.2	NSE plus 99	20
4.3.3	NSE plus 99-V1.....	21
4.3.4	NSE plus 138	22
4.3.5	NSE plus 138-V1.....	23
4.3.6	NSE-T plus 138	24
4.3.7	NSE-T plus 138-V1.....	25
4.3.8	NSE plus 176	26
4.3.9	NSE plus 176-V1.....	27

4.3.10	NSE plus 100-75	28
4.4	NSL plus / NSD plus modules for stationary use.....	30
4.4.1	NSL plus 150 / NSD plus 150.....	31
4.4.2	NSL plus 150-V1 / NSL plus 150-V1-T.....	32
4.4.3	NSL plus 200 / NSD plus 200.....	33
4.4.4	NSL plus 200-V1-T.....	35
4.4.5	NSL plus 400	36
4.4.6	NSL plus 600	37
4.4.7	NSL plus 800	38
4.5	Clamping pins SPA 40, SPB 40, SPC 40, SPG 40.....	39
4.5.1	Information to clamping pin SPG 40.....	41
4.6	Options	41
4.6.1	Dynamic pressure monitoring of the clamping slide position for quick-change pallet modules.....	41
4.6.2	Connecting strip ASL1-G1/8", ASL2-G1/8"	43
4.7	Pneumatic circuit diagram.....	45
4.8	Screw tightening torques	46
5	Operation	47
6	Maintenance and care	48
7	Troubleshooting	49
7.1	The clamping area does not unlock.....	49
7.2	The clamping area does not unlock properly	49
7.3	The quick-change pallet system no longer opens quietly	49
8	Seal kit and part lists.....	50
8.1	Seal kit lists	50
8.2	Part lists	52
9	Assembly Drawings.....	57
9.1	NSE plus (cylindrical version).....	57
9.2	NSE plus-V1 (cylindrical version)	58
9.3	NSE plus 100-75.....	59
10	Declaration of Incorporation.....	60
11	Appendix on Declaration of Incorporation, as per 2006/42/EC, annex II, No. 1 B.....	61

1 General

1.1 About this manual

This manual contains important information for a safe and appropriate use of the product.

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

Before starting work, the personnel must have read and understood this operating manual. Prerequisite for safe working is the observance of all safety instructions in this manual.

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

In addition to these instructions, the documents listed under ▶ 1.1.2 [□ 5] are applicable.

1.1.1 Presentation of Warning Labels

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



⚠ DANGER

Danger for persons!

Non-observance will inevitably cause irreversible injury or death.



⚠ WARNING

Dangers for persons!

Non-observance can lead to irreversible injury and even death.



⚠ CAUTION

Dangers for persons!

Non-observance can cause minor injuries.

NOTICE

Material damage!

Information about avoiding material damage.

1.1.2 Applicable documents

- General terms of business*
- Catalog data sheet of the purchased product *

The documents marked with an asterisk (*) can be downloaded on our homepage [schunk.com](https://www.schunk.com)

1.1.3 Sizes

This operating manual applies to the following sizes:

Quick-Change Pallet System

- NSE plus 90
- NSE plus 99 / NSE plus 99-V1
- NSE plus 138 / NSE plus 138-V1
- NSE-T plus 138 / NSE-T plus 138-V1
- NSE plus 176 / NSE plus 176-V1
- NSE plus 100-75

Clamping station

- NSL plus 150 / NSL plus 150-V1 / NSL plus 150-V1-T / NSD plus 150
- NSL plus 200 / NSL plus 200-V1-T / NSD plus 200
- NSL plus 400
- NSL plus 600
- NSL plus 800

1.2 Warranty

The warranty period is 24 months after delivery date from factory or 500 000 cycles*, if it is used as intended, under the following conditions:

- Observe the applicable documents, ▶ 1.1.2 [4 5]
- Observe the ambient conditions and operating conditions, ▶ 2.5 [4 8]
- Observance of the specified care and maintenance instructions ▶ 6 [4 48]

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

* A cycle consists of a complete clamping process ("Open" and "Close").

1.3 Scope of delivery

The scope of delivery includes

- Quick-change pallet system in the variant ordered
- Accessory pack
 - NSE plus 90:* 2 O-rings Ø 4 x 1.5, 2 set-screws M4 x 4
 - NSE plus 99:* 2 O-rings Ø 4.5 x 1.5, 6 cover caps, 6 mounting screws M6
 - NSE plus 99-V1:* 2 O-rings Ø 4.5 x 1.5, 6 cover caps, 6 mounting screws M6
 - NSE plus 138:* 3 O-rings Ø 9 x 1.5, 6 cover caps, 6 mounting screws M8
 - NSE plus 138-V1:* 3 O-rings Ø 9 x 1.5, 6 cover caps, 6 mounting screws M8
 - NSE-T plus 138:* 2 O-rings Ø 9 x 1.5, 6 cover caps, 6 mounting screws M8

NSE-T plus 138-V1: 2 O-rings \varnothing 9 x 1.5, 6 cover caps,
6 mounting screws M8

NSE plus 176: 3 O-rings \varnothing 9 x 1.5, 6 cover caps,
6 mounting screws M8

NSE plus 176-V1: 3 O-rings \varnothing 9 x 1.5, 6 cover caps,
6 mounting screws M8

NSE plus 100-75: 3 O-rings \varnothing 4.5 x 1.5, 4 cover caps,
4 mounting screws M8

- Clamping station in the version ordered
- Accessory pack and separate packing units
 - NSL plus 150*: 2 cylindrical clamp blanks (BRR 50)
 - NSL plus 150-V1*: 1 sealing ring G1/8", 1 sealing nipple G1/8",
1 pneumatic plug-in connection for nominal hose width \varnothing 4,
2 cylindrical clamp blanks (BRR 50)
 - NSL plus 150-V1-T*: 2 sealing rings G1/8", 2 sealing nipples
G1/8", 2 pneumatic plug-in connections for nominal hose width
 \varnothing 4, 2 cylindrical clamp blanks (BRR 50)
 - NSD plus 150*: 2 cylindrical clamp blanks (BRR 50)
 - NSL plus 200*: 1 sealing ring G1/8", 1 sealing nipple G1/8",
1 pneumatic plug-in connection for nominal hose width \varnothing 4,
4 cylindrical clamp blanks (BRR 50)
 - NSL plus 200-V1-T*: 2 sealing rings G1/8", 2 sealing nipples
G1/8", 2 pneumatic plug-in connections for nominal hose width
 \varnothing 4, 4 cylindrical clamp blanks (BRR 50)
 - NSD plus 200*: 4 cylindrical clamp blanks (BRR 50)
 - NSL plus 400*: 1 sealing ring G1/8", 1 sealing nipple G1/8",
1 pneumatic plug-in connection for hose nominal width \varnothing 6,
2 eye bolts M8, 4 cylindrical clamp blanks (BRR 50)
 - NSL plus 600*: 1 sealing ring G1/8", 1 sealing nipple G1/8",
1 pneumatic plug-in connection for nominal hose width \varnothing 6,
2 eye bolts M8, 6 cylindrical clamp blanks (BRR 50)
 - NSL plus 800*: 1 sealing ring G1/8", 1 sealing nipple G1/8",
1 pneumatic plug-in connection for nominal hose width \varnothing 6,
2 eye bolts M8, 8 cylindrical clamp blanks (BRR 50)

1.4 Accessories

(see catalog or data sheets when ordering separately)

- Clamping pallets PAL
- Clamping pins SPA, SPB, SPC, SPG
- Connecting strip ASL1-G1/8", ASL2-G1/8"
- BRR clamping ring
- Assembly and retrofit station MRS
- Dome-shaped centering bushing ZKA
- Protection cover SDE
- PBN fitted bolts

2 Basic safety notes

2.1 Intended use

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

- The product may only be used within the scope of its technical data, ▶ 3 [15].
- The product is intended for industrial and industry-oriented use.
- Appropriate use of the product includes compliance with all instructions in this manual.

2.2 Not intended use

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

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

2.3 Constructional changes

Implementation of structural changes

By conversions, changes, and reworking, e.g. additional threads, holes, or safety devices can impair the functioning or safety of the product or damage it.

- 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.

- Use only original spare parts or spares authorized by SCHUNK.

2.5 Environmental 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 to the product's life span.

- Make sure that the product is used only in the context of its defined application parameters, ▶ 3 [□ 15].
- Make sure that the product is a sufficient size for the application.
- Make sure that the contact surfaces of the interface are always clean.
- Make absolutely sure that no chips of any kind can enter the interface and that the interface does not fill with cooling emulsion, which is particularly possible with vertical positioning of the clamping pin axis. The best way to ensure both of these is to use the SDE protection covers. If the interface should fill with cooling emulsion, initiate the unlocking process and dry out the interface in actuated state.
- Only use high-quality cooling emulsions with anti-corrosive additives during processing.

2.6 Personnel qualification

Inadequate qualifications of the personnel

If the personnel working with the product is not sufficiently qualified, the result may be serious injuries and significant property damage.

- All work may only be performed by qualified personnel.
- Before working with the product, the personnel must have read and understood the complete assembly and operating manual.
- Observe the national safety regulations and rules and general safety instructions.

The following personal qualifications are necessary for the various activities related to the product:

Trained electrician	Due to their technical training, knowledge and experience, trained electricians are able to work on electrical systems, recognize and avoid possible dangers and know the relevant standards and regulations.
Qualified personnel	Due to its technical training, knowledge and experience, qualified personnel is able to perform the delegated tasks, recognize and avoid possible dangers and knows the relevant standards and regulations.
Instructed person	Instructed persons were instructed by the operator about the delegated tasks and possible dangers due to improper behaviour.
Service personnel of the manufacturer	Due to its technical training, knowledge and experience, service personnel of the manufacturer is able to perform the delegated tasks and to recognize and avoid possible dangers.

2.7 Personal protective equipment

Using personal protective equipment

Not wearing personal protective equipment while working with the product, may result in dangers that impact the personnel's safety and health.

- While working with the product, observe the health and safety regulations and wear the required personal safety equipment.
- Observe the valid safety and accident prevention regulations.
- In case of sharp edges and corners and rough surfaces, wear protection gloves.
- In case of hot surfaces, wear heat-resistant protection gloves.
- When dealing with hazardous substances, wear protection gloves and goggles.
- In case of moving parts, wear tight protection clothes.

2.8 Notes on safe operation

Incorrect handling of the personnel

Incorrect handling and assembly may impair the product's safety and cause serious injuries and considerable material damage.

- Avoid any manner of working that may interfere with the function and operational safety of the product.
- Use the product as intended.
- Observe the safety notes and assembly instructions.
- Do not expose the product to any corrosive media. This does not apply to products that are designed for special environments.
- Eliminate any malfunction immediately.
- Observe the care and maintenance instructions.
- Observe the current safety, accident prevention and environmental protection regulations regarding the product's application field.

2.9 Transport

Handling during transport

Incorrect handling during transport may impair the product's safety and cause serious injuries and considerable material damage.

- When handling heavy weights, use lifting equipment to lift the product and transport it by appropriate means.
- Secure the product against falling during transportation and handling.
- Stand clear of suspended loads.

2.10 Malfunctions

Behavior in case of malfunctions

- Immediately remove the product from operation and report the malfunction to the responsible departments/persons.
- Order appropriately trained personnel to rectify the malfunction.
- Do not recommission the product until the malfunction has been rectified.
- Test the product after a malfunction to establish whether it still functions properly and no increased risks have arisen.

2.11 Disposal

Handling of disposal

The incorrect handling of disposal may impair the product's safety and cause serious injuries as well as considerable material and environmental harm.

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

2.12 Fundamental dangers

General

- Observe safety distances.
- Never deactivate safety devices.
- Before commissioning the product, take appropriate protective measures to secure the danger zone.
- Disconnect power sources before installation, modification, maintenance, or calibration. Ensure that no residual energy remains in the system.
- If the energy supply is connected, do not move any parts by hand.
- Do not reach into the open mechanism or movement area of the product during operation.

2.12.1 Protection during handling and assembly

Incorrect handling and assembly

Incorrect handling and assembly may impair the product's safety and cause serious injuries and considerable material damage.

- Have all work carried out by appropriately qualified personnel.
- For all work, secure the product against accidental operation.
- Observe the relevant accident prevention rules.
- Use suitable assembly and transport equipment and take precautions to prevent jamming and crushing.

Incorrect lifting of loads

Falling loads may cause serious injuries and even death.

- Stand clear of suspended loads and do not step into their swiveling range.
- Never move loads without supervision.
- Do not leave suspended loads unattended.

2.12.2 Protection during commissioning and operation

Falling or violently ejected components

Falling and violently ejected components can cause serious injuries and even death.

- Take appropriate protective measures to secure the danger zone.
- Never step into the danger zone during operation.

2.12.3 Protection against dangerous movements

Unexpected movements

Residual energy in the system may cause serious injuries while working with the product.

- Switch off the energy supply, ensure that no residual energy remains and secure against inadvertent reactivation.
- Never rely solely on the response of the monitoring function to avert danger. Until the installed monitors become effective, it must be assumed that the drive movement is faulty, with its action being dependent on the control unit and the current operating condition of the drive. Perform maintenance work, modifications, and attachments outside the danger zone defined by the movement range.
- To avoid accidents and/or material damage, human access to the movement range of the machine must be restricted. Restrict unintentional access by persons to this range e.g. via a protective cover, protective fence or photoelectric barrier. The protective cover and protective fence must be rigid enough to withstand the maximum possible movement energy. EMERGENCY STOP switches must be easily and quickly accessible. Check the function of the EMERGENCY STOP before starting up the machine or system. If this protective equipment is not working properly, prevent the operation of the machine.

2.12.4 Notes on particular risks


⚠ DANGER
Risk of fatal injury from suspended loads!

Falling loads can cause serious injuries and even death.

- Stand clear of suspended loads and do not step within their swiveling range.
- Never move loads without supervision.
- Do not leave suspended loads unattended.
- Wear suitable protective equipment.


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

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


⚠ WARNING
Risk of injury when the clamping pin axis is in a horizontal position or during overhead application, as a result of the device or pallet falling down.

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


⚠ WARNING
The 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 the energy supply or after a power failure.

- Wait for the system to shut down completely.
- Do not reach into the clamping modules.
- Use pressure maintenance valves.



⚠ CAUTION

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

- Take appropriate protective measures to secure the danger zone.
- Wear personal protective equipment (safety goggles).



⚠ CAUTION

Risk of injury due to compressed air hoses coming loose when connected improperly.

- Use check valves or safety switches.
- Take appropriate protective measures to secure the danger zone.



⚠ CAUTION

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

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



⚠ CAUTION

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

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



⚠ CAUTION

Risk of burns due to workpieces with high temperatures.

There is a risk of burns due to workpieces with high temperatures.

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



⚠ CAUTION

Danger due to pneumatic exhaust noises.

Noise pollution from the exhaust system and whistling pneumatic equipment during the working process.

- Wear hearing protection.

3 Technical data

Type designation	ID no.	Holding force* (M10 / M12 / M16 / M20)	Pull-in force without turbo	Pull-in force with turbo
NSE plus 90	0471059	35 kN	2.5 kN	11 kN
NSE plus 99	0471120	35 kN / 50 kN / 75 kN	4.0 kN	16 kN
NSE plus 99-V1	0471125	35 kN / 50 kN / 75 kN	4.0 kN	16 kN
NSE plus 138	0471150	35 kN / 50 kN / 75 kN / 75 kN	7.5 kN	25 kN
NSE plus 138-V1	0471095	35 kN / 50 kN / 75 kN / 75 kN	7.5 kN	25 kN
NSE-T plus 138	0471076	35 kN / 50 kN / 75 kN / 75 kN	6.0 kN	20 kN
NSE-T plus 138-V1	0471077	35 kN / 50 kN / 75 kN / 75 kN	6.0 kN	20 kN
NSE plus 176	0471060	35 kN / 50 kN / 75 kN / 75 kN	9.0 kN	40 kN
NSE plus 176-V1	0471096	35 kN / 50 kN / 75 kN / 75 kN	9.0 kN	40 kN
NSE plus 100-75	0471130	30 kN / 50 kN / 75 kN	4.0 kN	14 kN

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

Actuation pressure	6 bar
Repeatability [mm]	< 0.005 mm
Installation position	Any
Operating temperature	+ 15°C – + 60°C
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: 7:4:4
IP rating	IP 67

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

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

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 bolt must always be kept clean to ensure the best possible contact with the clamping device.

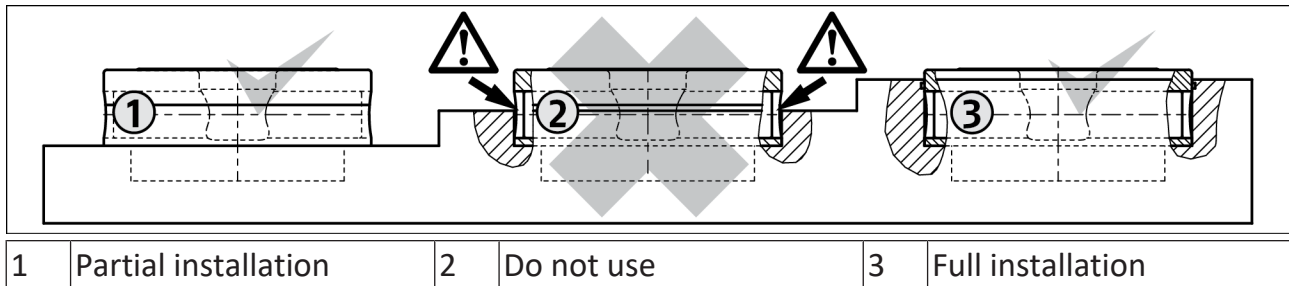
If the quick-change pallet system is to be used outside the specified welding currents, please contact your SCHUNK contact person.

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.



NOTICE

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

- Damage to the clamping module is possible.

4.2 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.
- Ensure that no residual energy remains in the system.



CAUTION

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

- Wear personal protective equipment, particularly protective gloves.

1. Check the flatness of the mounting surface, ▶ 4.3 [□ 18].
2. Screw the module with the clamping station,
 - ✓ Observe permissible tightening torques for the mounting screws and the strength class, ▶ 4.8 [□ 46].

3. Connect module ▶ 4.3 [□ 18]
 - ✓ via the hose-free direct connection, OR
 - ✓ via supply lines on the side G1/8" connections
 - unscrew locking screws
 - screw air connections
4. Connect turbo connection if necessary.

4.3 Fastening and connection

Flatness

If several linked clamping modules are mounted, make sure that the flatness and height deviation of the locating surfaces from module to module (based on a 200 mm gauge for bore holes) is ≤ 0.03 mm. The gauge deviation may not exceed ± 0.015 mm.

Agreement

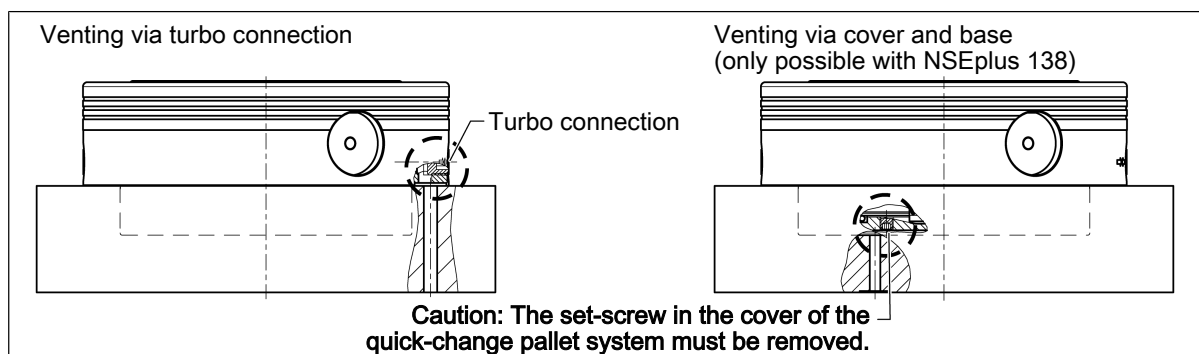
Due to redundancy, the clamping pins with positioning accuracy in one direction (SPB 40) should be used for clamping systems that are more than 50 mm apart or that do not show a positioning tolerance of ± 0.01 mm. For the clamping areas that are not intended for alignment of the device or pallet, clamping pins with centering clearance (SPC 40) can be used (also refer to chapter "Clamping pins" ▶ 4.5 [□ 39]).

Air bleed screw for the piston chamber

When connecting the quick-change pallet systems, it must be taken into consideration that it is only possible to completely ventilate the piston chamber via the air connections during the locking process. The relevant valves or shut-off valves should therefore be equipped with load relief.

This also applies to the turbo connection. **If the turbo connection is not used, the relevant side of the piston must have a way of being ventilated.** This is optimally done via the turbo connection itself.

Only with model size NSE plus 138: alternatively, a ventilation option can be created by removing the set-screw M5 x 4 in the module cover.



Ventilation methods

Turbo connection

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

Connecting hose lines

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

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

When disconnecting hose lines, the relevant openings must be secured with seal plugs to prevent ingress of dirt or cooling lubricant.

Detaching thread

Detaching threads (if available) facilitate the removal of the modules from the modules for stationary use / application.

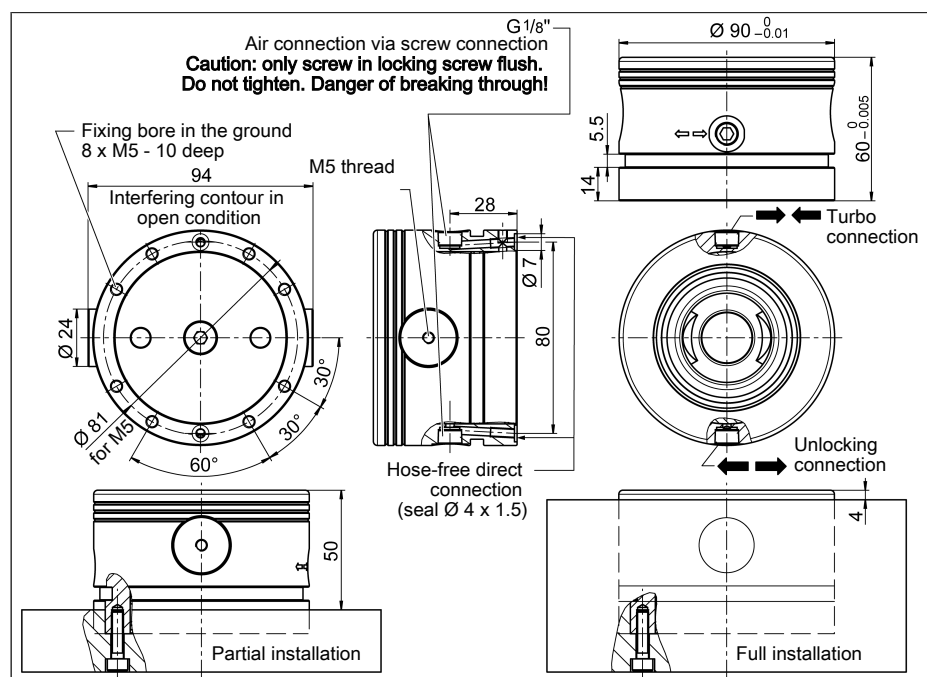
4.3.1 NSE plus 90

Fastening in the installation space with 8 M5 screws.

The assembly module is positioned using the centering diameter of the installation space: **Ø 90H6**.

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

Alternative connection option: two G1/8" connections on the side. In this case, the bottom openings must be sealed off with the two M4 x 4 set-screws.



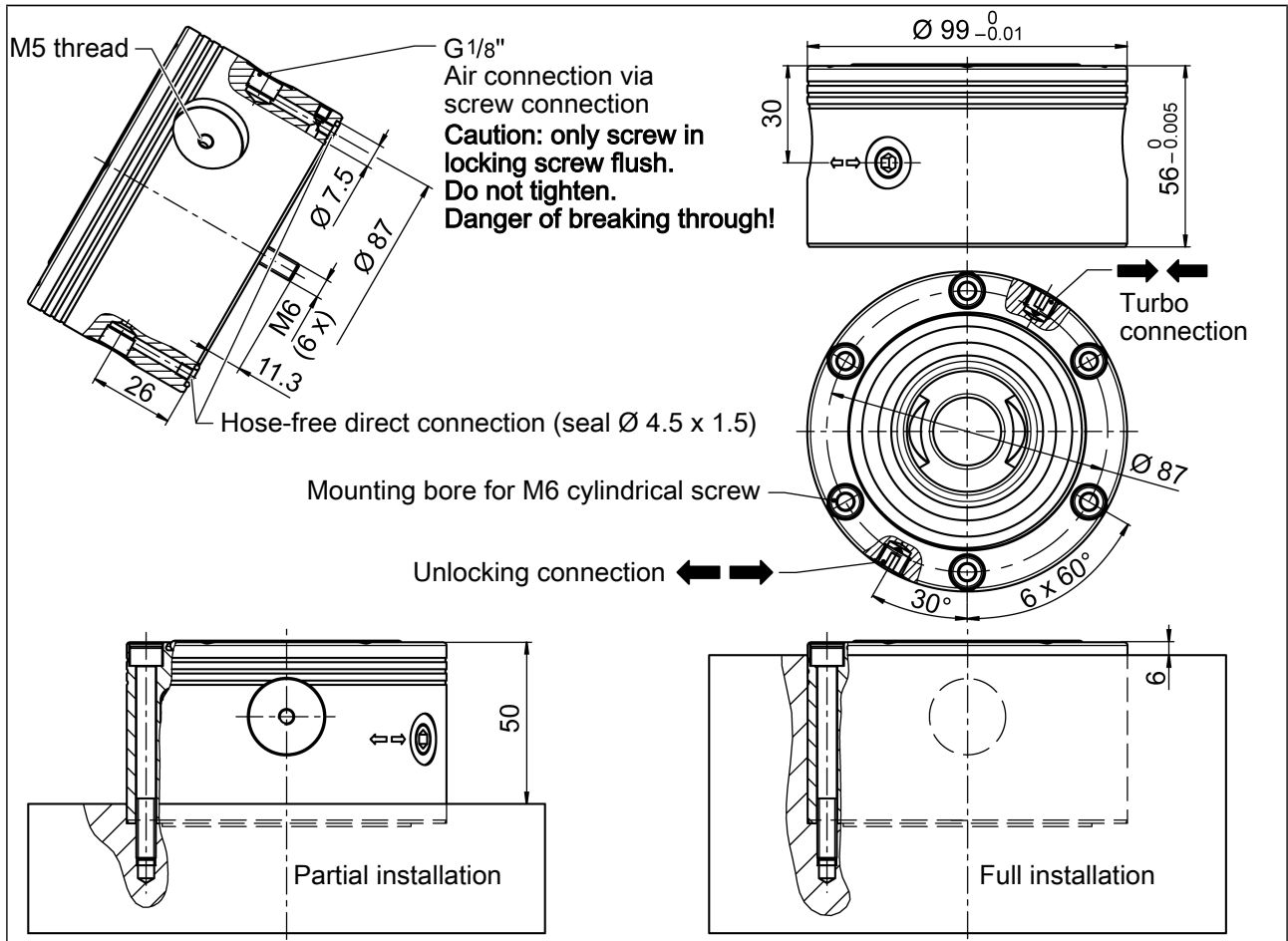
4.3.2 NSE plus 99

Fastening in the installation space with 6 M5 screws.

The assembly module is positioned using the centering diameter of the installation space: $\varnothing 99H6$.

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

Alternative connection option: two G1/8" connections on the side. In this case, the bottom openings must be sealed off with the two M4 x 4 set-screws.



4.3.3 NSE plus 99-V1

Fastening in the installation space with 6 M6 screws.

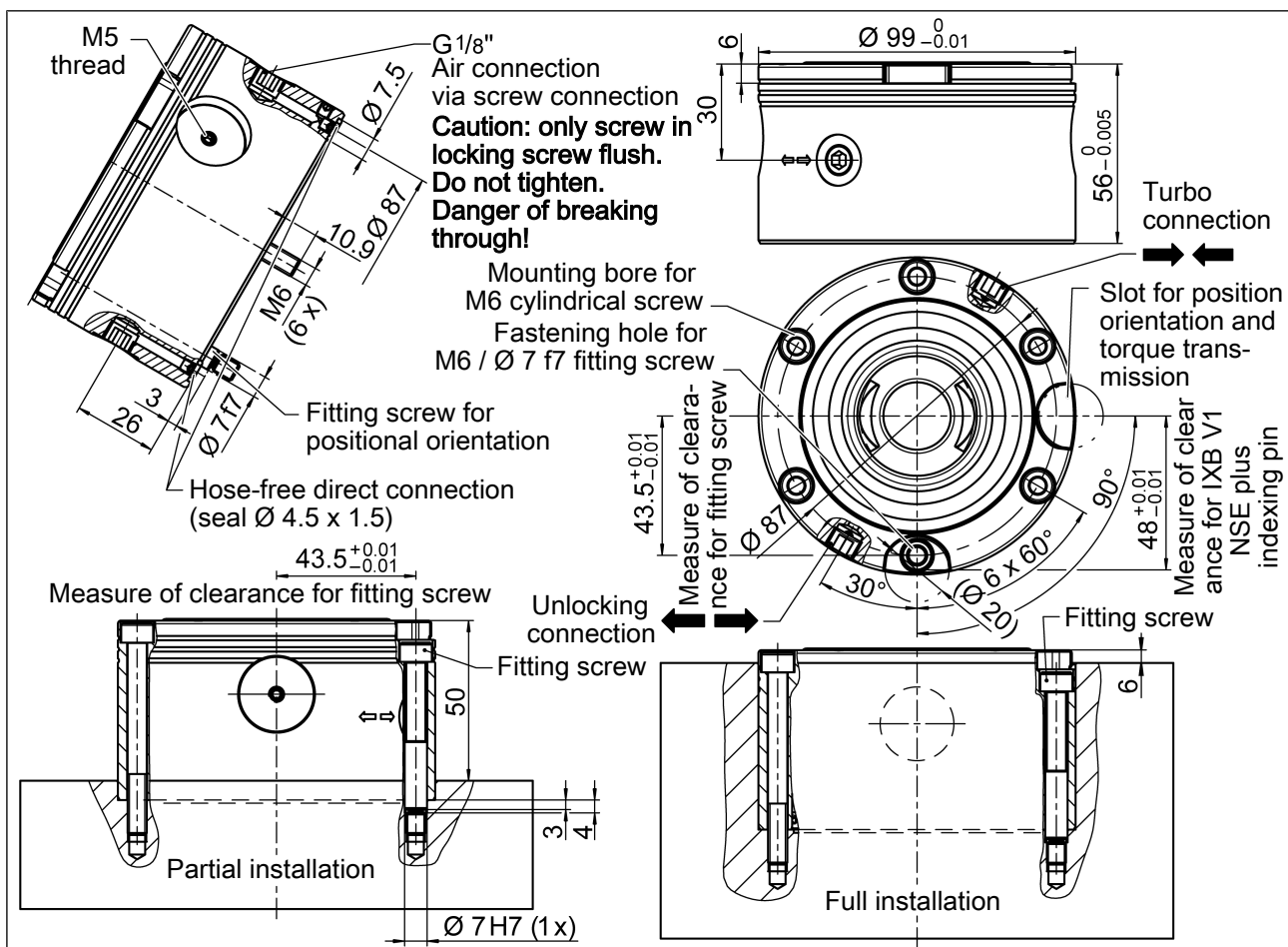
The assembly module is positioned using the centering diameter of the installation space: $\varnothing 99H6$.

The exact position orientation is carried out with a fitting screw with a diameter of $\varnothing 7 f7 \times 3$ mm.

Precise alignment and positioning of the quick-change pallet system requires precise positioning of the fitting bore $\varnothing 7 H7$ in the mounting position on the opposite side.

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

Alternative connection option: two G1/8" connections on the side. In this case, the bottom openings must be sealed off with the two M4 x 4 set-screws.



4.3.4 NSE plus 138

Fastening in the installation space with 6 M8 screws.

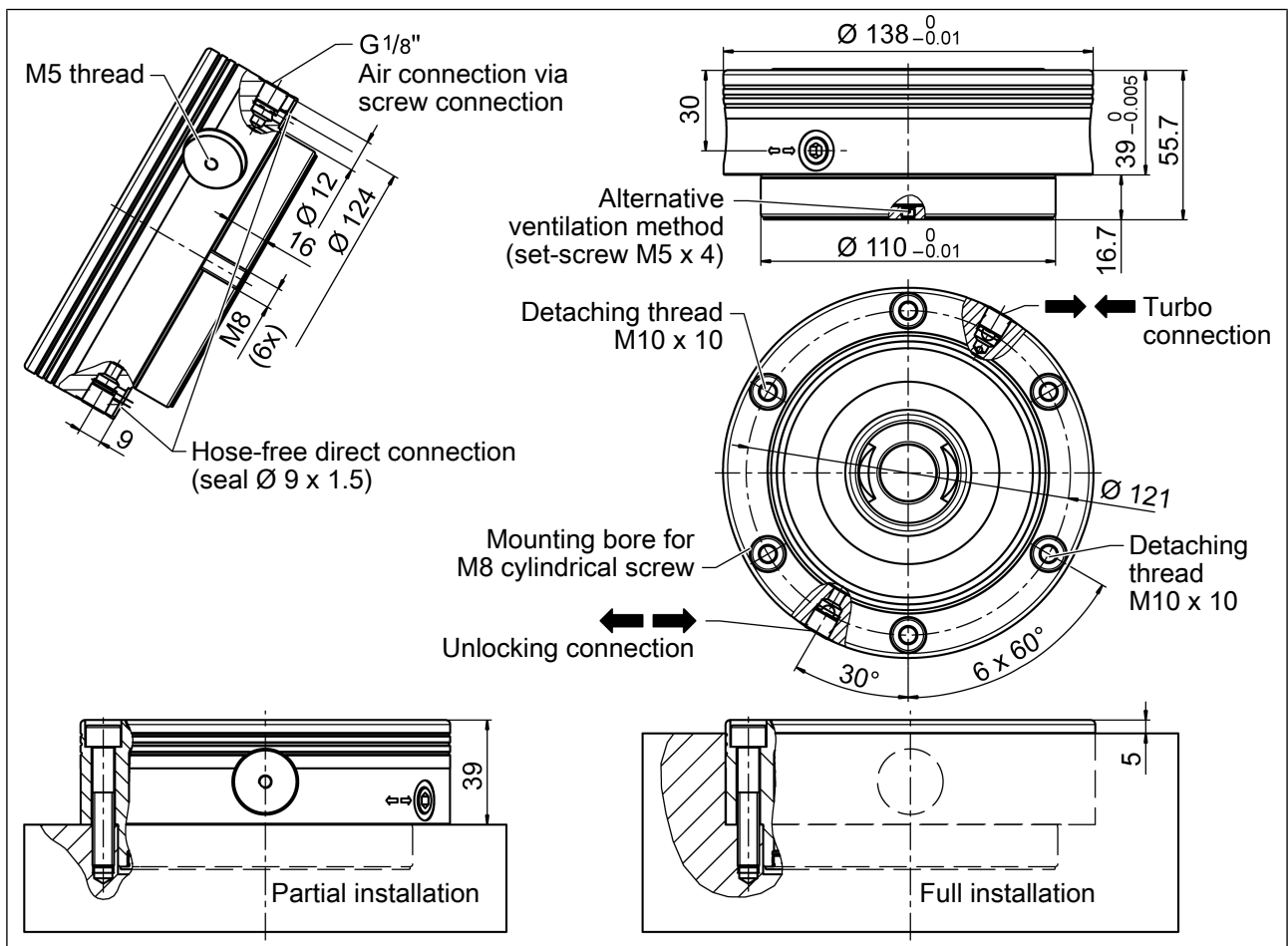
The assembly module can be positioned by means of two different centering diameters of the installation space:

Ø 138 H6 in the upper range

Ø 110 H6 in the lower range depending on the installation type

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

Alternative connection option: a side G1/8" connection, which is free when using the bottom centering diameter 110H6. In this case, the bottom opening must be sealed. Either by inserting the O-ring Ø 9 x 1.5 and applying to a flat version or with a sealing plug.



4.3.5 NSE plus 138-V1

Fastening in the installation space with 6 M8 screws.

The assembly module can be positioned by means of two different centering diameters of the installation space:

Ø 138 H6 in the upper range

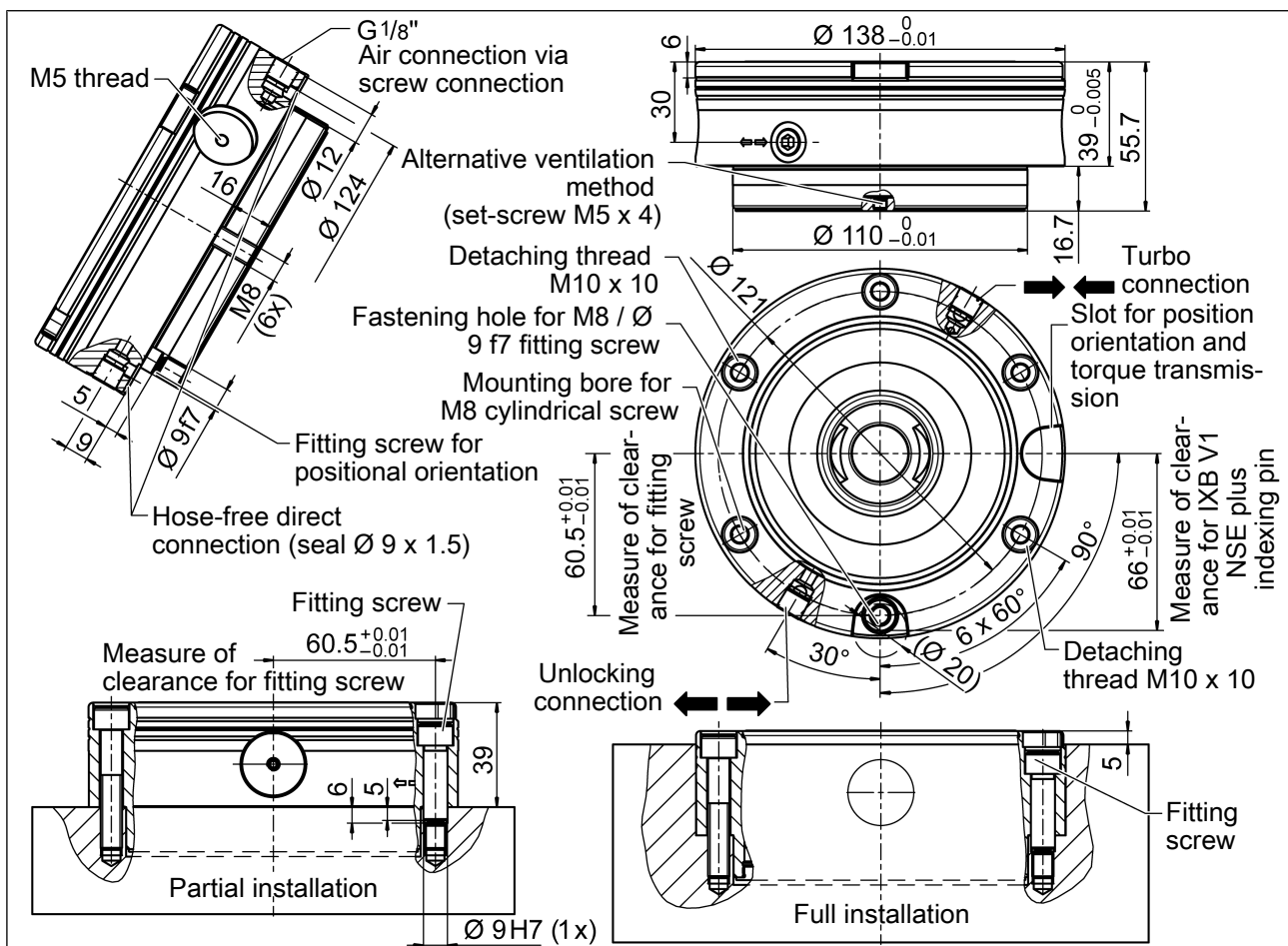
Ø 110 H6 in the lower range depending on the installation type

The exact position orientation is carried out with a fitting screw with a diameter of Ø 9 f7 x 5 mm.

Precise alignment and positioning of the quick-change pallet system requires precise positioning of the fitting bore Ø 9 H7 in the mounting position on the opposite side.

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

Alternative connection option: a side G1/8" connection, which is free when using the bottom centering diameter 110H6. In this case, the bottom opening must be sealed. Either by inserting the O-ring Ø 9 x 1.5 and applying to a flat version or with a sealing plug.



4.3.6 NSE-T plus 138

Fastening in the installation space with 6 M8 screws.

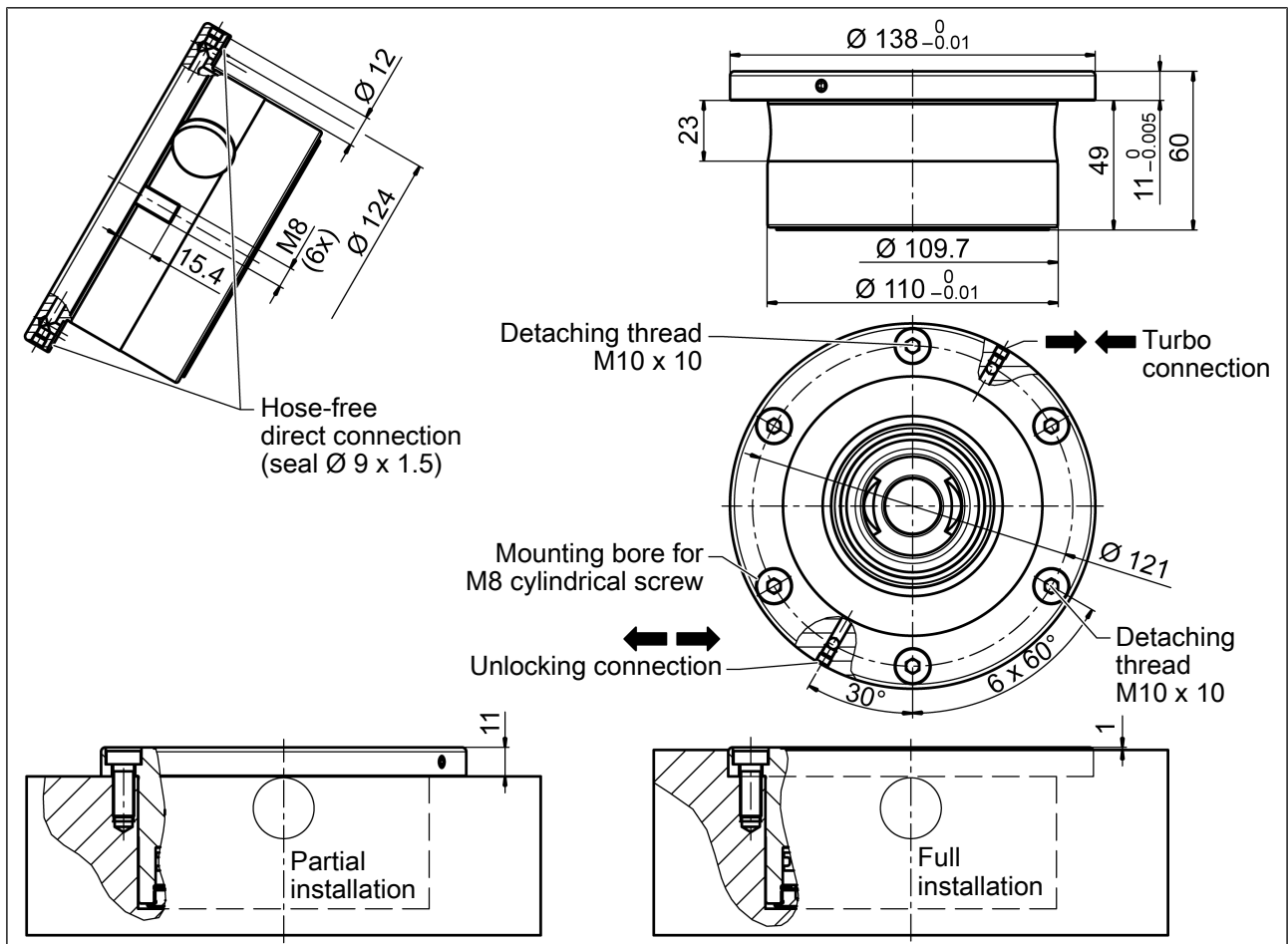
The assembly module can be positioned by means of two different centering diameters of the installation space:

Ø 138 H6 in the upper range

Ø 110 H6 in the lower range depending on the installation type

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

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



4.3.7 NSE-T plus 138-V1

Fastening in the installation space with 6 M8 screws.

The assembly module can be positioned by means of two different centering diameters of the installation space:

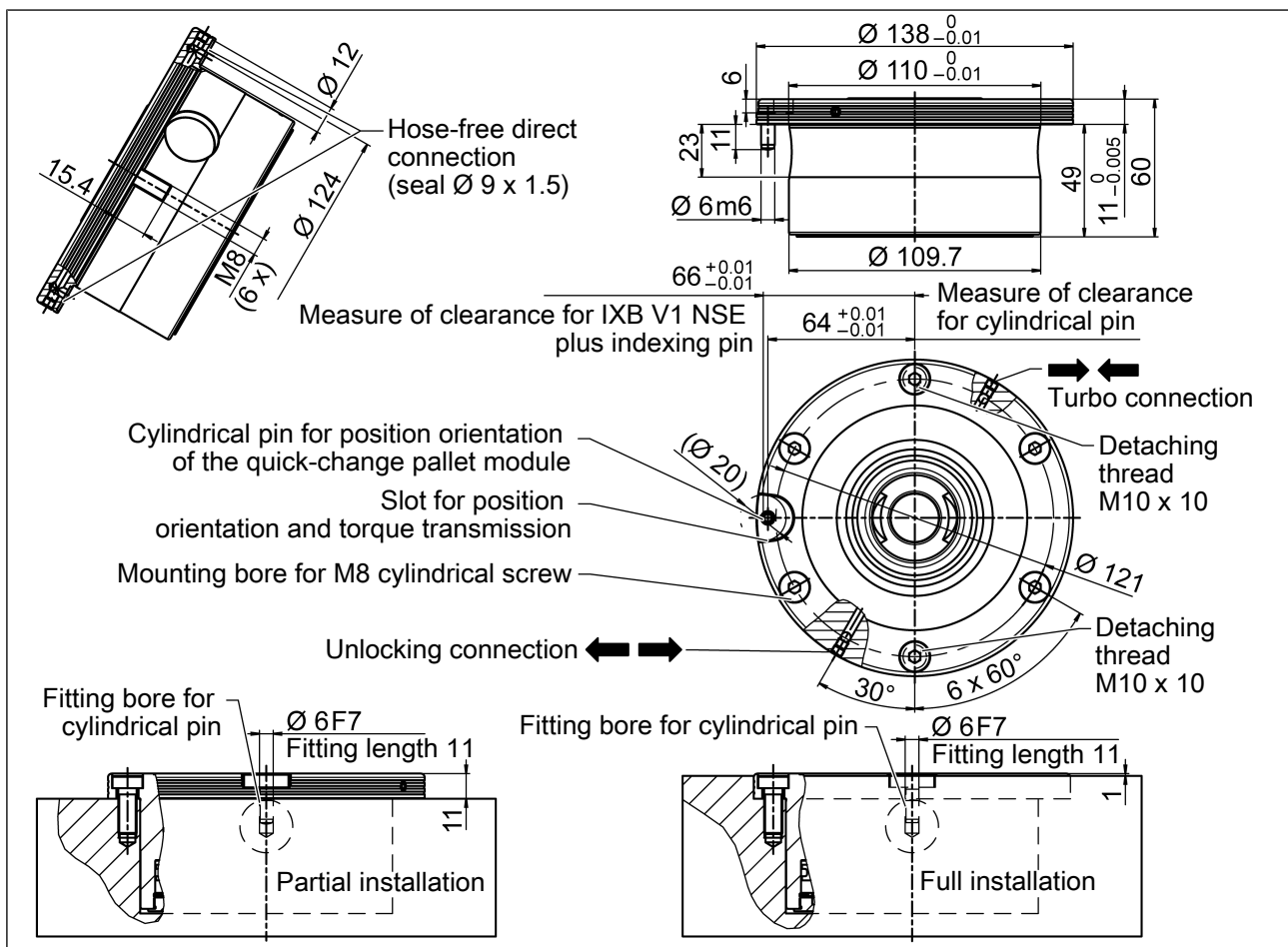
Ø 138 H6 in the upper range

Ø 110 H6 in the lower range depending on the installation type

The exact position orientation is done with a cylindrical pin with a diameter of $\text{Ø } 6 \text{ m6} \times 11 \text{ mm}$.

Precise alignment and positioning of the quick-change pallet system requires precise positioning of fitting bore $\text{Ø } 6 \text{ F7}$ in the mounting position on the opposite side.

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



4.3.8 NSE plus 176

Fastening in the installation space with 6 M8 screws.

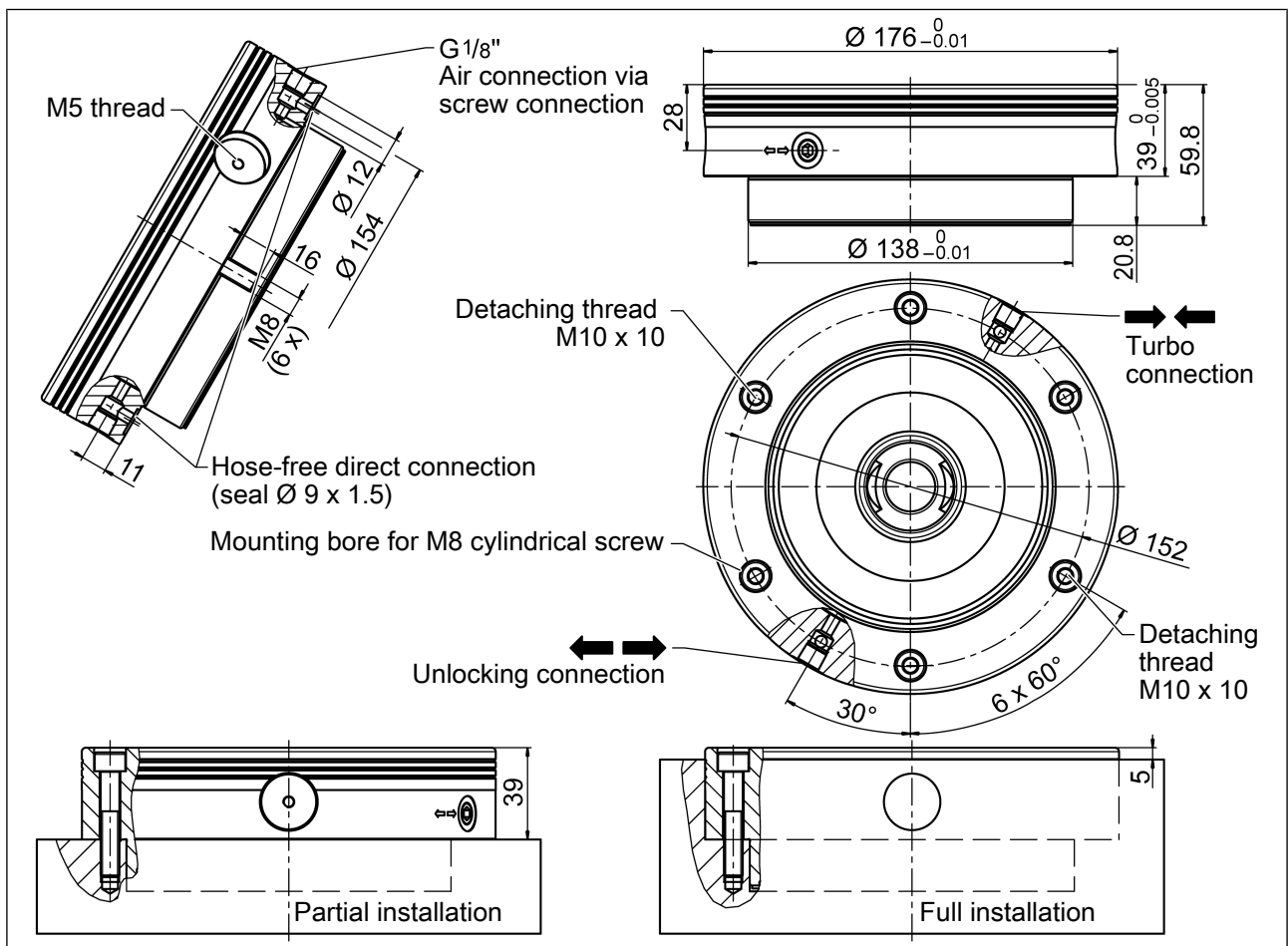
The assembly module can be positioned by means of two different centering diameters of the installation space:

Ø 176H6 in the upper range

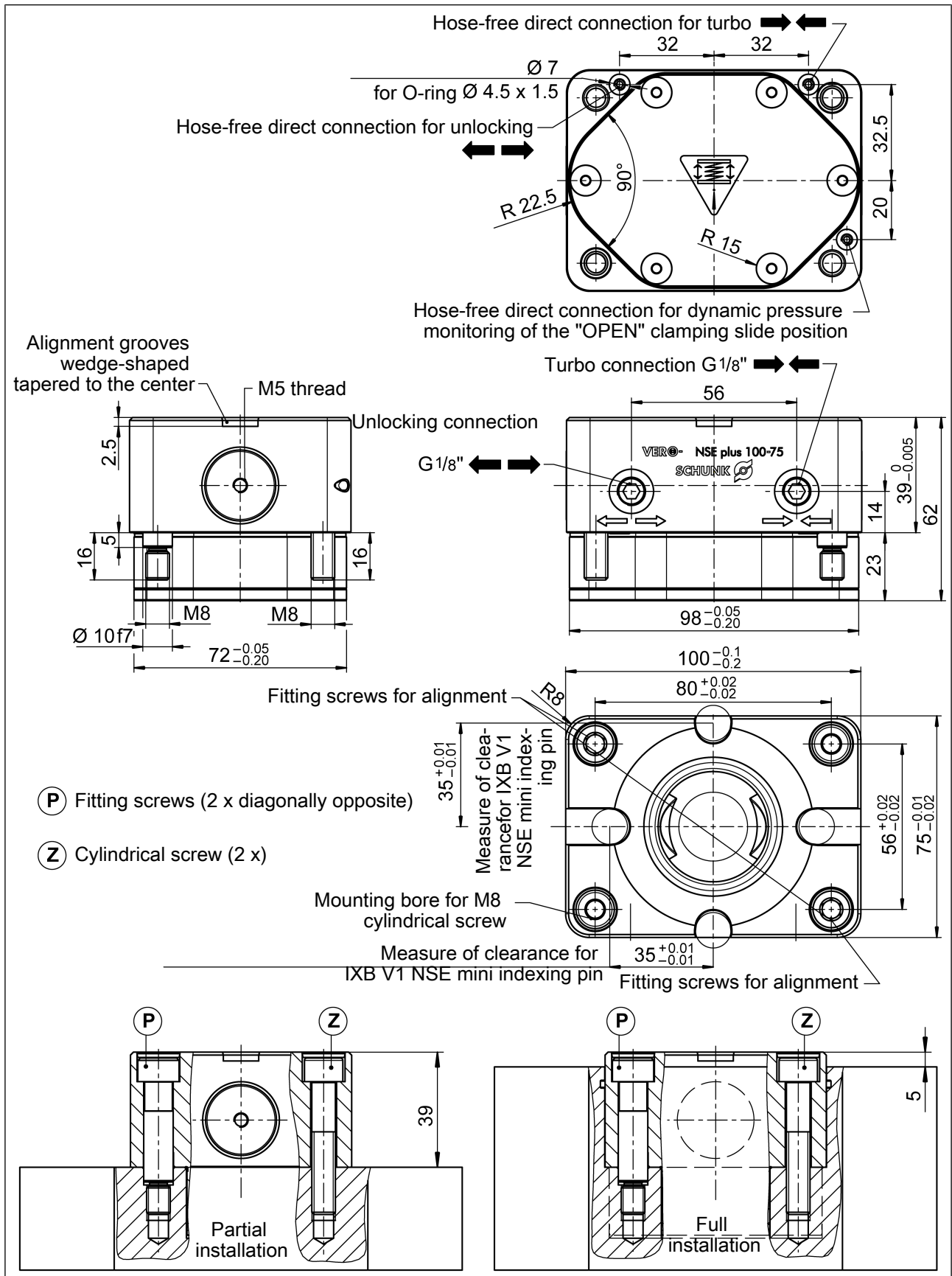
Ø 138H6 in the lower range depending on the installation type

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

Alternative connection option: a side G1/8" connection, which is free when using the bottom centering diameter 138H6. In this case, the bottom opening must be sealed. Either by inserting the O-ring Ø 9 x 1.5 and applying to a flat version or with a sealing plug.



4.3.10 NSE plus 100-75



- (P) Fitting screws (2 x diagonally opposite)
- (Z) Cylindrical screw (2 x)

Fastening in the installation space with 4 M8 screws.

Two screws are designed as fitting screws. The assembly module is positioned using two diagonally installed mounting screws with diameters $\varnothing 10 \text{ f7} \times 5 \text{ mm}$.

Precise alignment and positioning of the quick-change pallet system requires precise positioning of the fitting bore of the $s \varnothing 10 \text{ H7}$ in the mounting position on the opposite side.

The quick-change pallet system has three connection possibilities. The air connection for the "unlock" and "turbo" functions is standard via the hose-free direct connections in the base of the unit. An alternative connection option is the two G1/8" connections on the wide front side of the clamping module for the "unlock" and "turbo" functions.

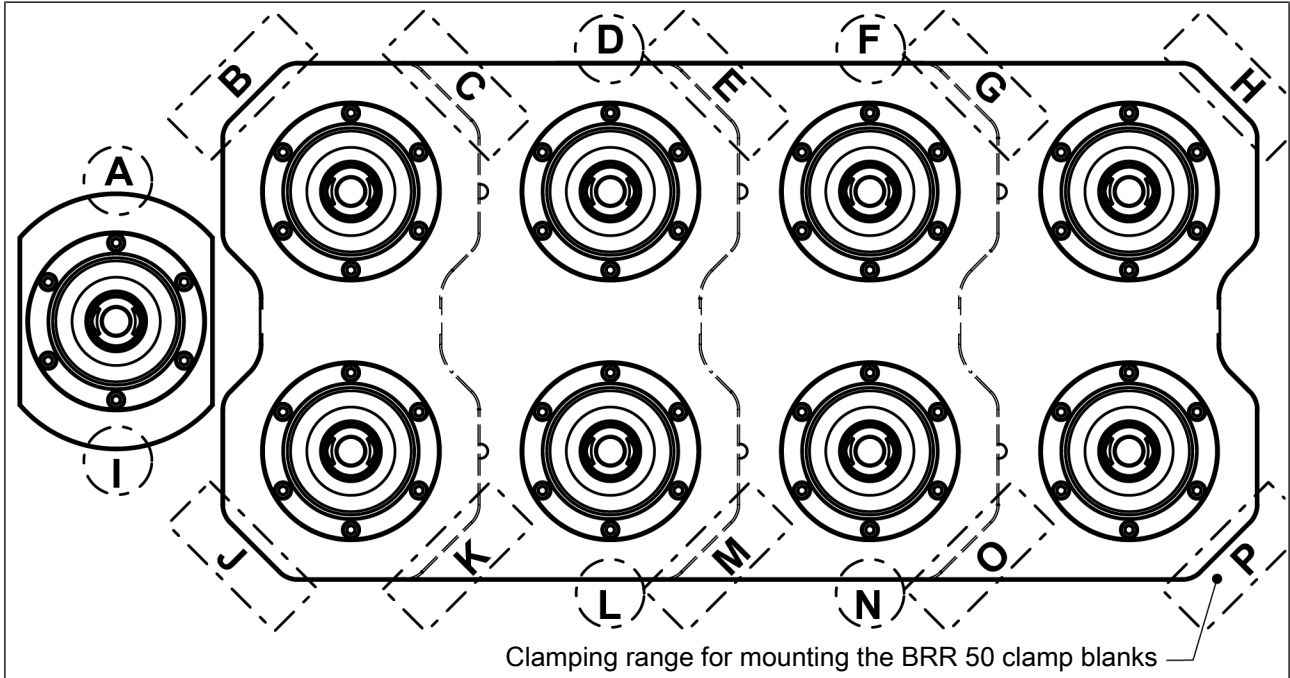
If the clamping system is actuated on the side connections using hoses, the base hose-free direct connections must be sealed air-tight:

- By axial sealing of the clamping system against the flat surface of the mounting location. For this, the O-rings $\varnothing 4.5 \times 1.5$ are inserted into the O-ring seats of the clamping module.
- Alternatively, the bottom air connections can be sealed with the Torx set screws provided.

Before installing the clamping system into the installation area, the tightness of the bottom connections must be inspected.

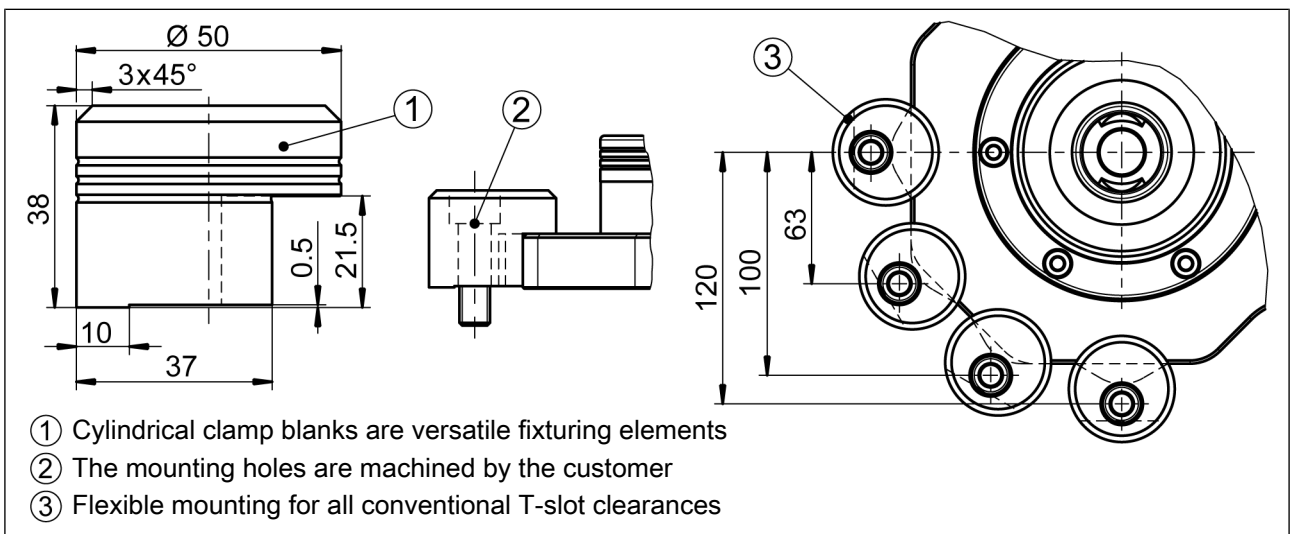
4.4 NSL plus / NSD plus modules for stationary use

The evenness in height of the modules on the clamping station is only guaranteed when clamped. The clamping station is fastened using the supplied BRR 50 clamping clips. See the clamping diagram for the arrangement of the BRR 50 clamping clips.



Clamping diagram

Clamping range				
NSL plus 150 / NSD plus 150	NSL plus 200 / NSD plus 200	NSL plus 400	NSL plus 600	NSL plus 800
A, I	B, C, J, K	B, E, J, M	B, D, G, J, L, O	B, D, F, H, J, L, N, P



Mounting clamp blanks

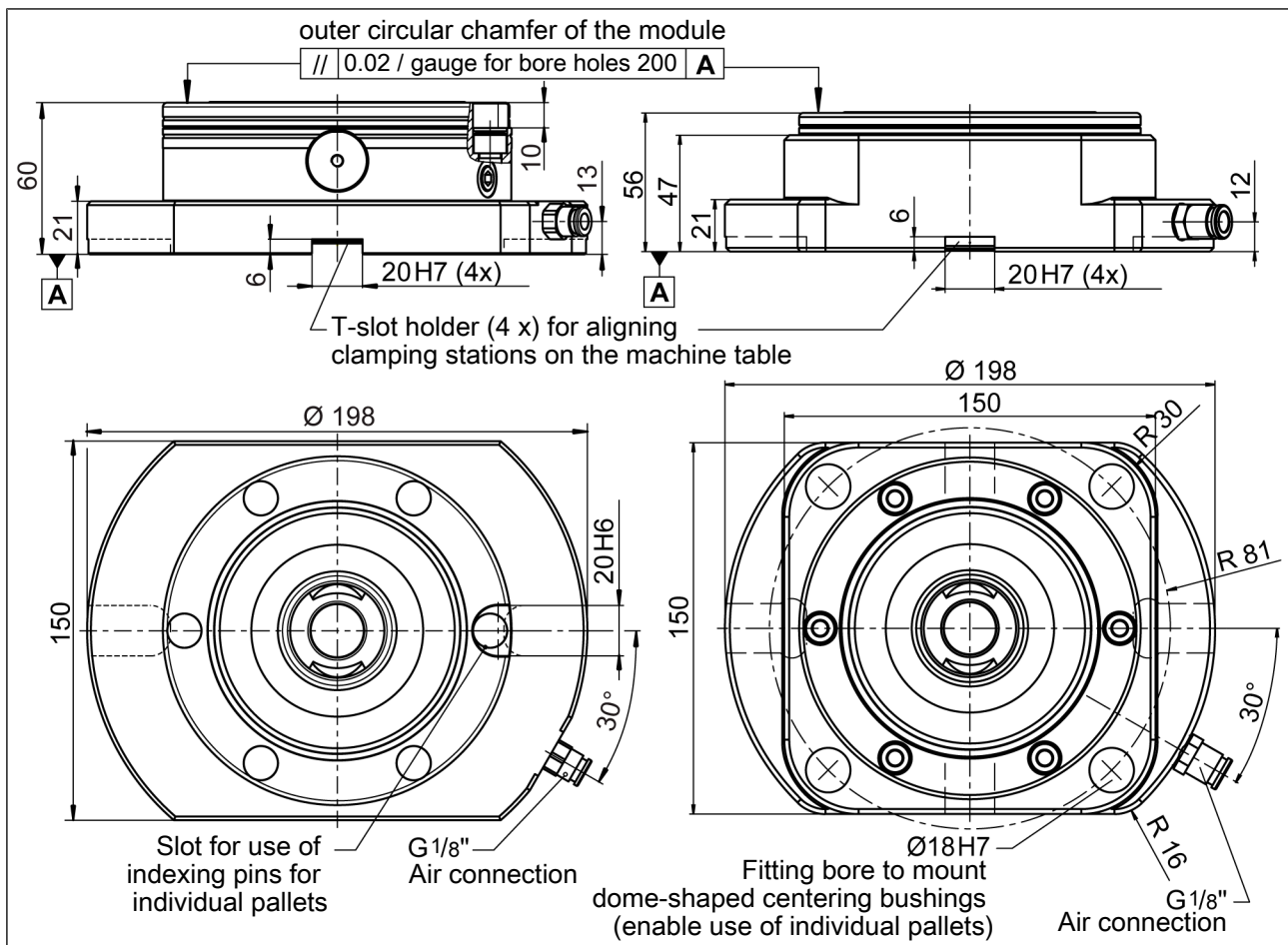
4.4.1 NSL plus 150 / NSD plus 150

Mounting using the two BRR 50 cylindrical clamp blanks supplied (see Fig. "Clamping diagram" ▶ 4.4 [□ 30]). There are slots on the bottom of the clamping stations to mount T-nuts in order to align the clamping stations to the machine table slots.

The NSL plus 150 and NSD plus 150 each have a G 1/8" air connection.

A plug-in connection for nominal hose width 4 mm is contained in the scope of delivery of the NSL plus 150 and NSD plus 150. The NSL plus 150 clamping station can be retrofitted at the air connection with a separately available connecting strip (chapter "connecting strip" ▶ 4.6.2 [□ 43]) to increase the accessibility of the connection points.

With the NSD plus 150, it is possible to use single clamping pallets on by installing a dome-shaped centering bushing ZKA 12.



Left: NSL plus 150, right: NSD plus 150

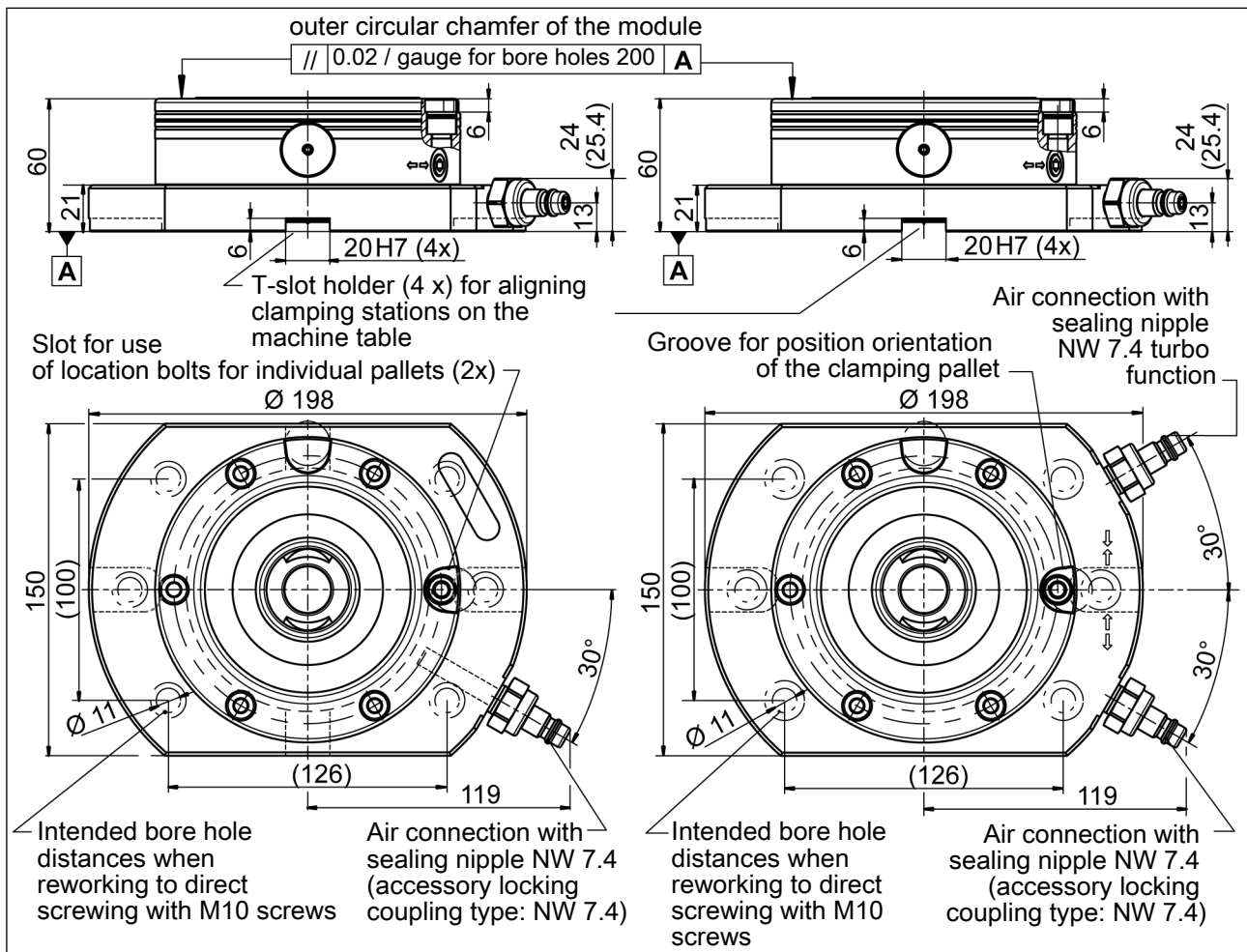
4.4.2 NSL plus 150-V1 / NSL plus 150-V1-T

Mounting using the two BRR 50 cylindrical clamp blanks supplied (see Fig. "Clamping diagram" ▶ 4.4 [□ 30]). There are slots on the bottom of the clamping stations to mount T-nuts in order to align the clamping stations to the machine table slots.

A plug-in connection for nominal hose width 4 mm and a sealing nipple are contained in the scope of delivery of the NSL plus 150-V1.

Two plug-in connections for nominal hose width 4 mm and two sealing nipples are contained in the scope of delivery of the NSL plus 150-V1-T. The sealing nipple is compatible with common locking couplings: NW 7.4.

The right sealing coupling is available as an accessory. The clamping station can be retrofitted at the two air connections with separately available connecting strips (chapter "connecting strip" ▶ 4.6.2 [□ 43]) to increase the accessibility of the connection points.



Left: NSL plus 150-V1, right: NSL plus 150-V1-T

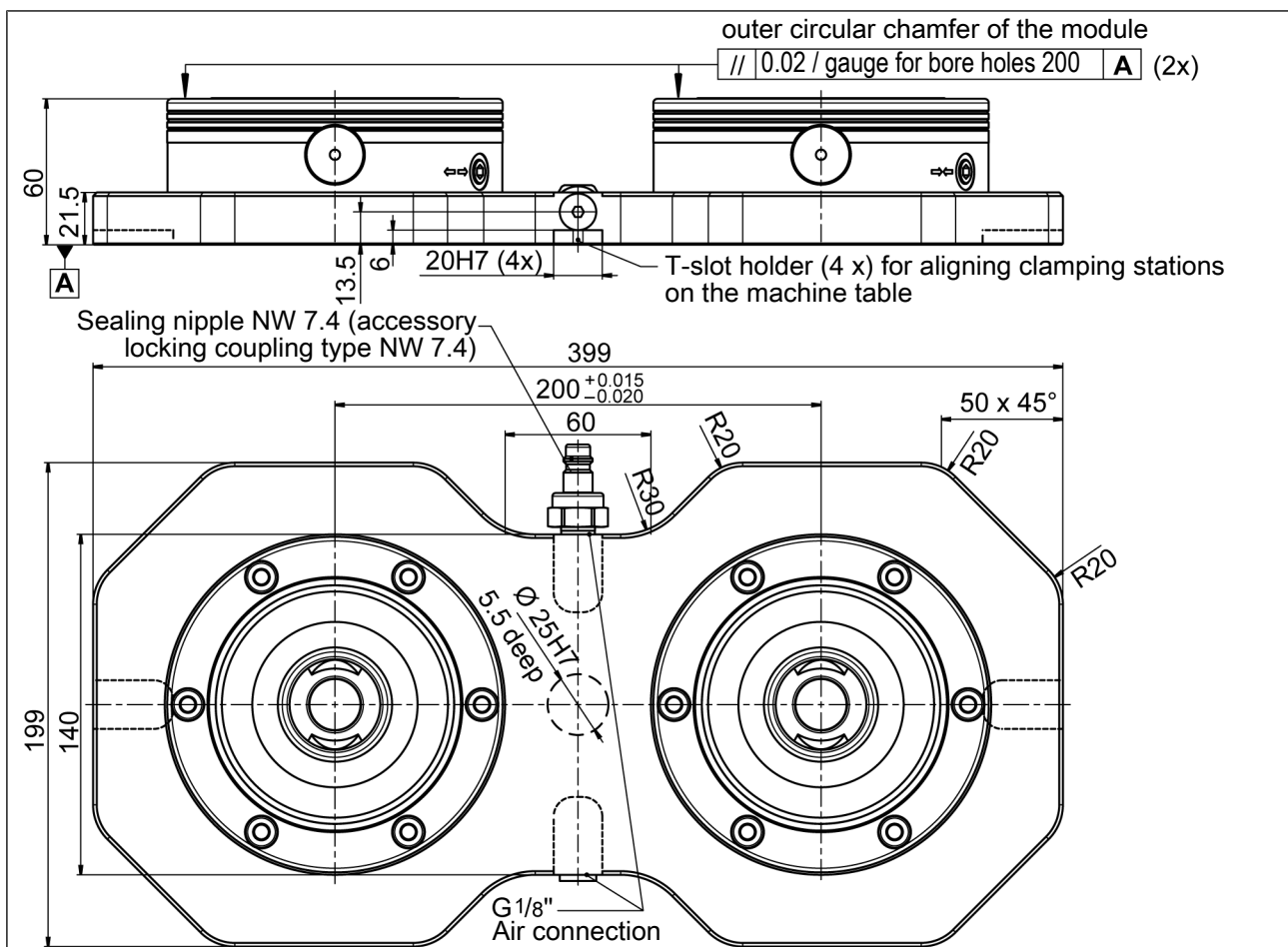
4.4.3 NSL plus 200 / NSD plus 200

Mounting using the four BRR 50 cylindrical clamp blanks supplied (see Fig. "Clamping diagram" ▶ 4.4 [□ 30]). There are slots on the bottom of the clamping stations to mount T-nuts in order to align the clamping stations to the machine table slots.

The NSL plus 200 has two G 1/8" connections, the NSD plus 200 has two G 1/4" connections. The connections are each connected with each other; each connection supplies both clamping areas.

The air supply can be connected to either the front or the back of the clamping station. The opposing connection point must be closed with the locking screw.

A pneumatic plug-in connection for nominal hose width 4 mm and a sealing nipple are contained in the scope of delivery of the NSL plus 200. The sealing nipple is compatible with common locking couplings: NW 7.4.

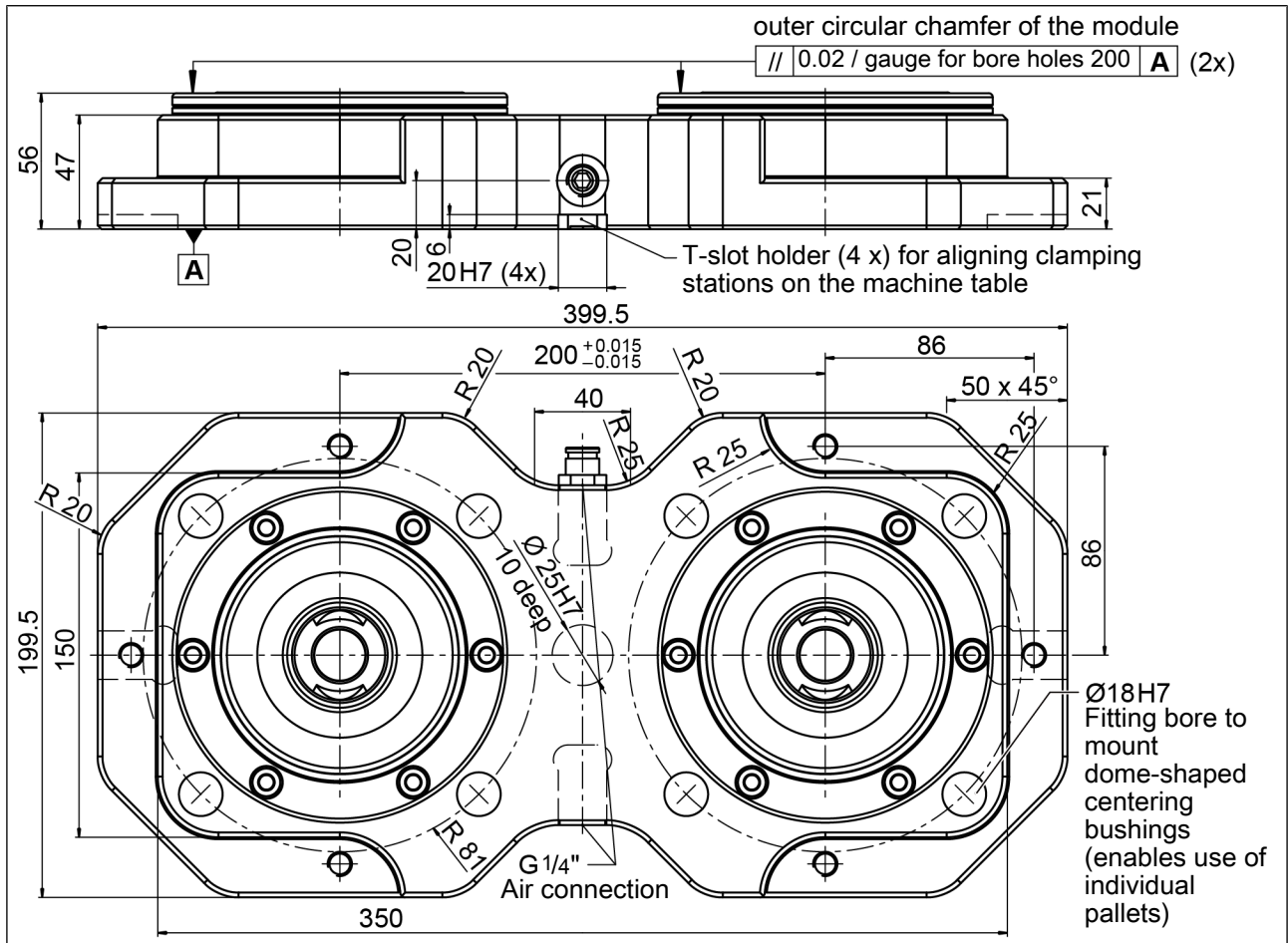


NSL plus 200

The right sealing coupling is available as an accessory. The clamping station can be retrofitted with a separately available connecting strip (chapter "connecting strip" ▶ 4.6.2 [□ 43]) to increase the accessibility of the connection point.

It is possible to use single clamping pallets on the NSD plus 200 by installing a dome-shaped centering bushing ZKA 12. Should the application require the separate control of the clamping areas, both connections can be separated from each other by installing a G 1/8" sealing plug.

To separate the air systems, the G 1/8" sealing plug is inserted about 80 mm into the supply bore hole and screwed into the thread. Each G 1/4" connection is now supplying a clamping area.



NSD plus 200

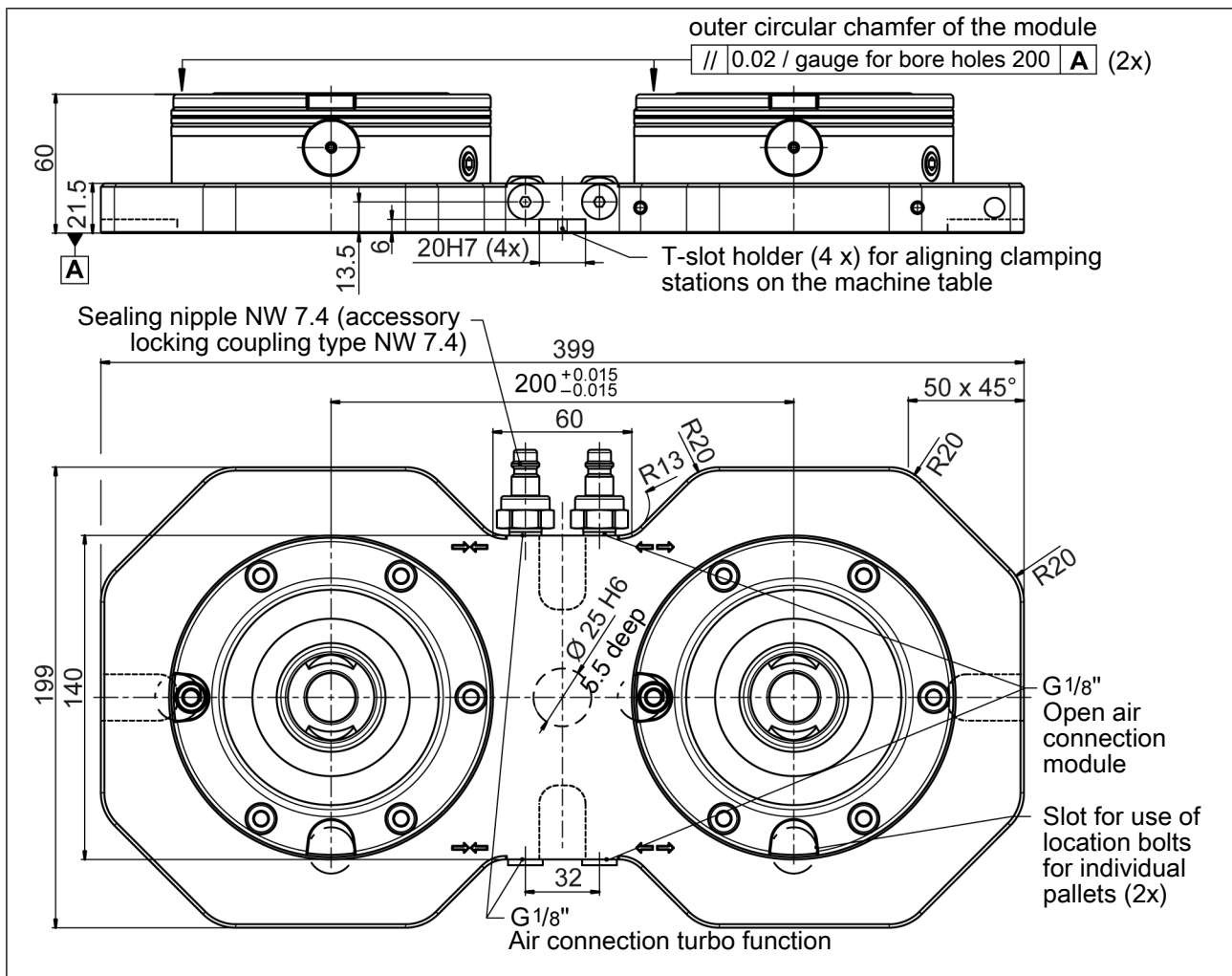
4.4.4 NSL plus 200-V1-T

Mounting using the four BRR 50 cylindrical clamp blanks supplied (see Fig. "Clamping diagram" ▶ 4.4 [□ 30]). There are slots on the bottom of the clamping stations to mount T-nuts in order to align the clamping stations to the machine table slots.

The NSL plus 200-V1-T has two G 1/8" connections. The connections are connected with each other; each connection supplies both clamping areas.

Two pneumatic plug-in connections for nominal hose width 4 mm and two sealing nipples are contained in the scope of delivery of the NSL plus 200. The sealing nipple is compatible with common locking couplings: NW 7.4.

The right sealing coupling is available as an accessory. The clamping station can be retrofitted with a separately available connecting strip (chapter "connecting strip" ▶ 4.6.2 [□ 43]) to increase the accessibility of the connection point.



NSL plus 200-V1-T

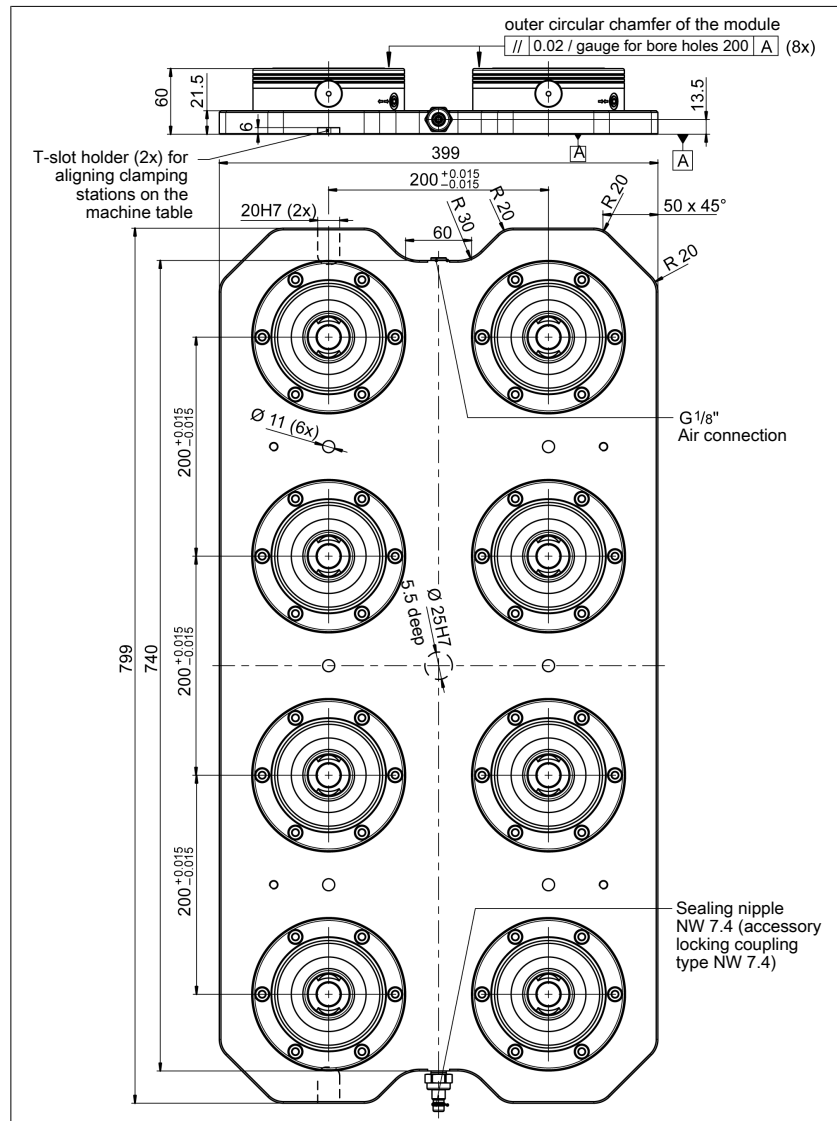
4.4.7 NSL plus 800

Mounting using the eight BRR 50 cylindrical clamp blanks supplied (see Fig. "Clamping diagram" ▶ 4.4 [□ 30]). There are slots on the bottom to mount T-nuts in order to align the clamping stations to the machine table slots.

The NSL plus 800 is equipped with two interconnected G 1/8" air connections for simultaneously unlocking all eight clamping points. The air supply can either be connected on the front or the back of the clamping station, while the opposing connecting point remains closed with a locking screw.

A pneumatic plug-in connection for nominal hose width 6 mm and a sealing nipple are contained in the scope of delivery. The sealing nipple is compatible with common locking couplings: NW 7.4.

The right sealing coupling is available as an accessory. The clamping station can be retrofitted with a separately available connecting strip (chapter "connecting strip" ▶ 4.6.2 [□ 43]) to increase the accessibility of the connection point.



NSL plus 800

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

NOTICE

Notes on clamping pins and mounting screws

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

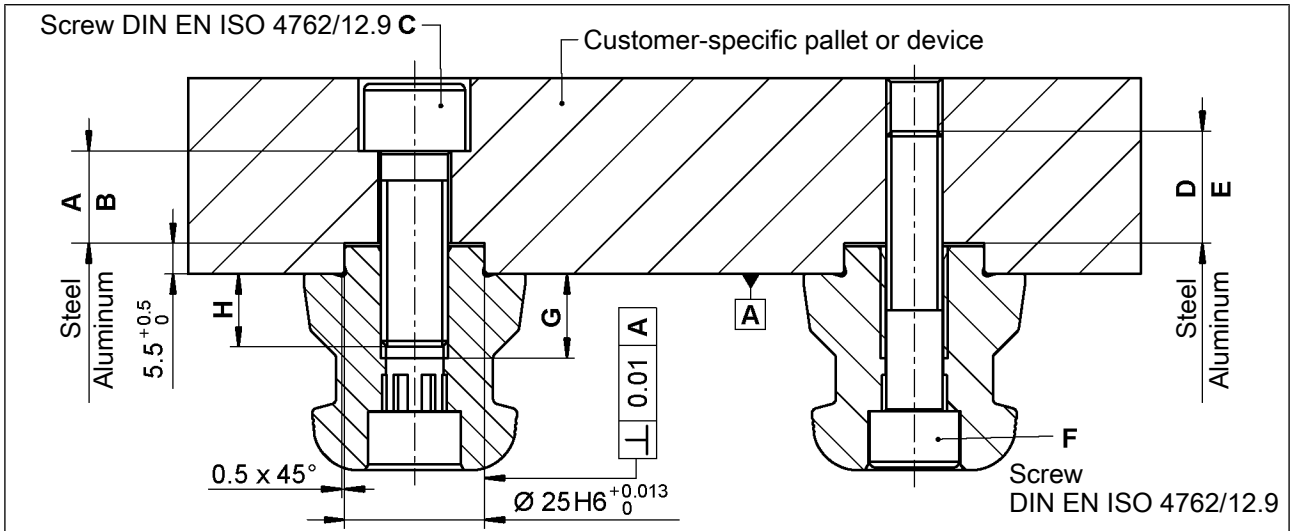
Only original SCHUNK clamping pins may be used.

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 in two different ways to the workpiece or pallet; the mounting variants are numbered in order of preference.

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 O-ring on the top of the quick-change pallet system.

Type designation	ID no.	Min. outer diameter on the support of the part
NSE plus 90	0471059	60 mm
NSE plus 99	0471120	75 mm
NSE plus 99-V1	0471125	75 mm
NSE plus 138	0471150	115 mm
NSE plus 138-V1	0471195	115 mm
NSE-T plus 138	0471076	60 mm
NSE-T plus 138-V1	0471077	60 mm
NSE plus 176	0471060	125 mm
NSE plus 176-V1	0471096	125 mm
NSE plus 100-75	0471130	100 mm

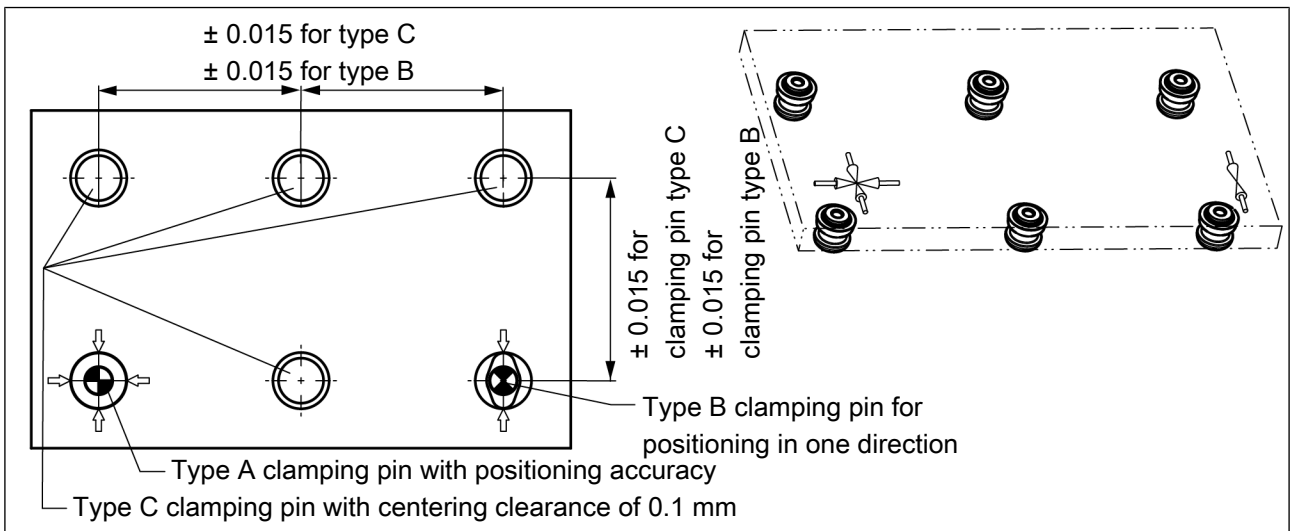


Tolerances and installation conditions

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/arrangement of the different types of clamping pins
(Application: pallet with 6 clamping positions)



4.5.1 Information to clamping pin SPG 40

The SPG 40 can be used with a clamping position instead of the SPA 40.

With several clamping positions, all three types of clamping pins can be replaced with the SPG 40.

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

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

4.6 Options

Further information

 [▶ 45](#)

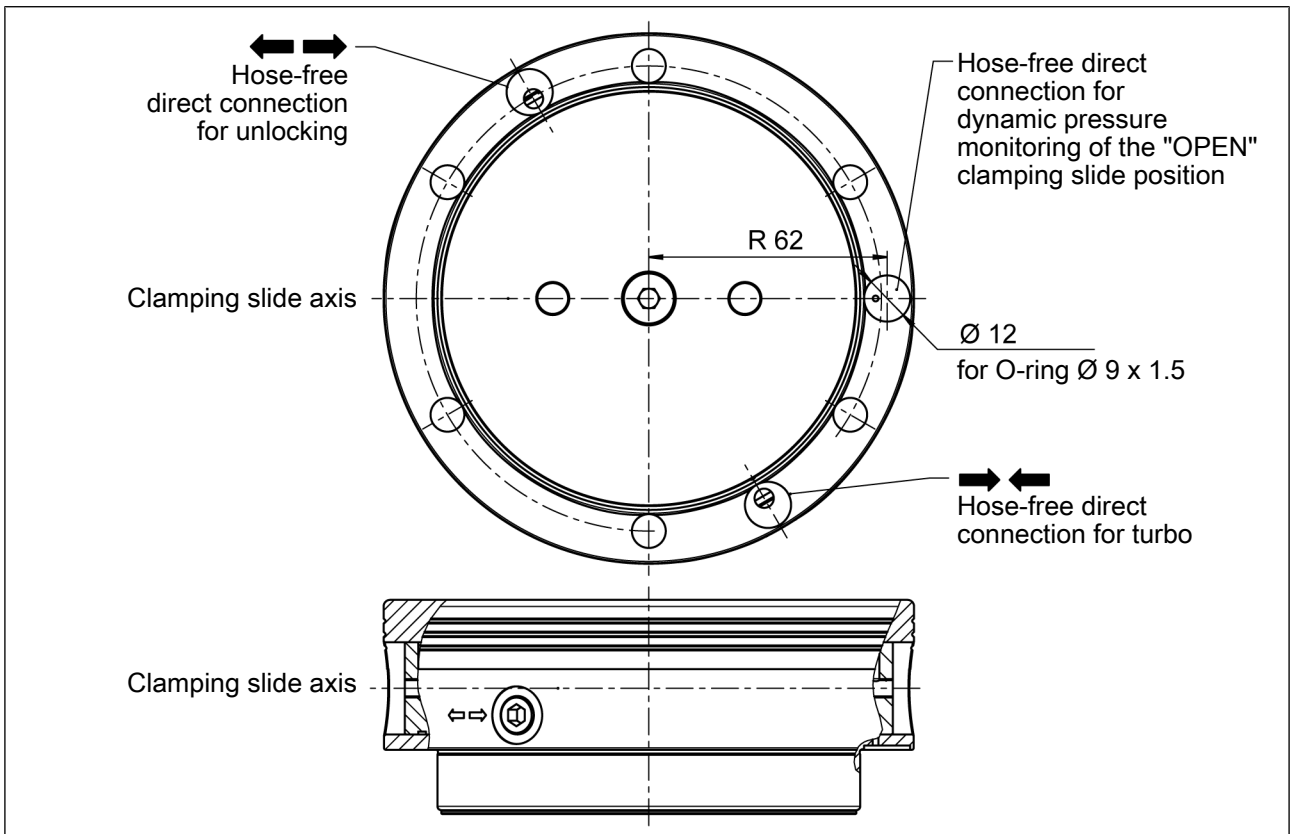
4.6.1 Dynamic pressure monitoring of the clamping slide position for quick-change pallet modules

For the sizes NSE plus 138, NSE plus 138-V1, NSE plus 176, NSE plus 176-V1 and NSE plus 100-75 dynamic pressure monitoring of the clamping slide is possible. Pressure build-up in "OPENED" status. Control of the clamping slide monitor requires a reduced pressure supply limited to 2 bar (see chapter "Pneumatic circuit diagram" [▶ 4.7 \[□ 45\]](#)).

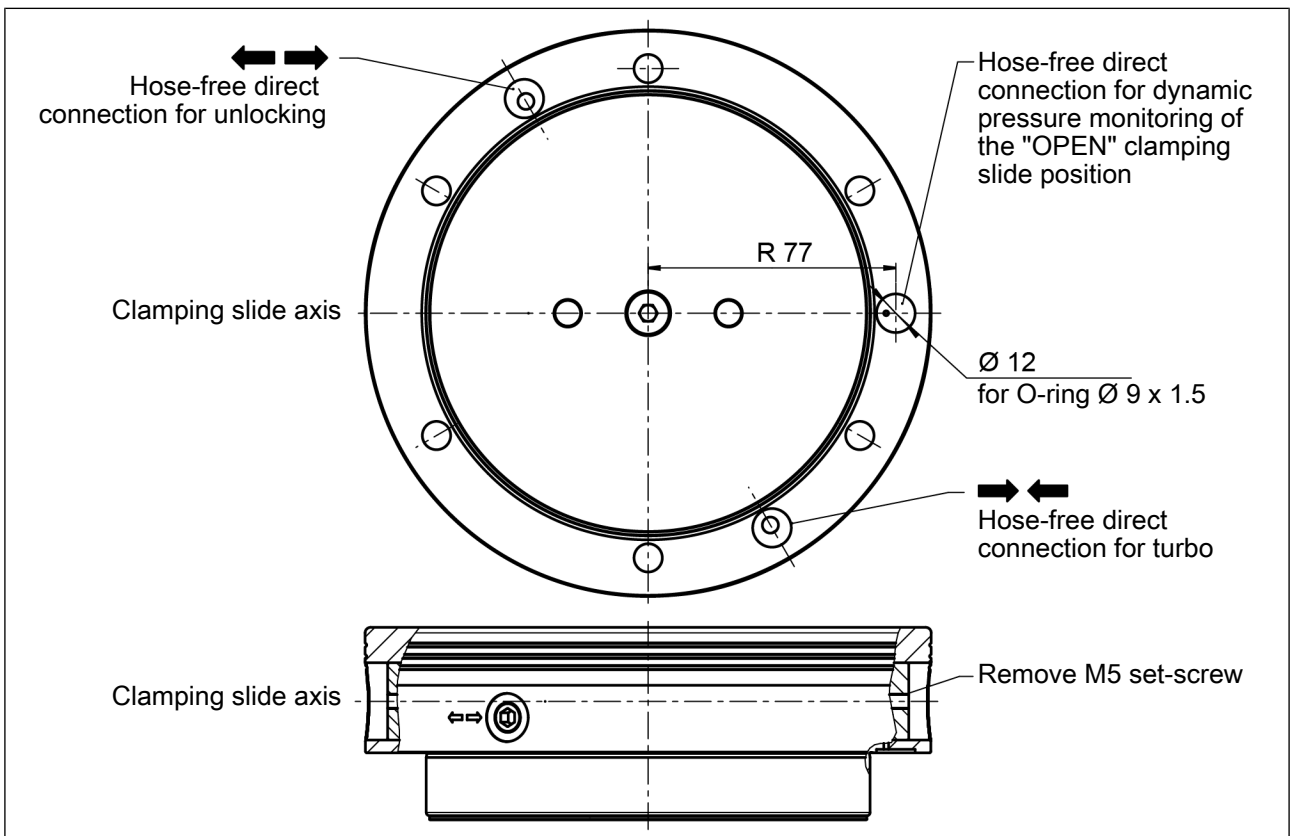
The measurable differential pressure must reach a minimum of 0.5 bar in order for a reliable evaluation to be done via the air gap sensor. The maximum pressure is 2 bar. Monitoring requires a pressure gauge, an adjustable throttle and an air gap sensor.

For monitoring of the clamping slide, the predefined connection must be accessed via a base side bore hole. For the NSE plus 100-75, the predefined connection must be accessed via a base side bore hole.

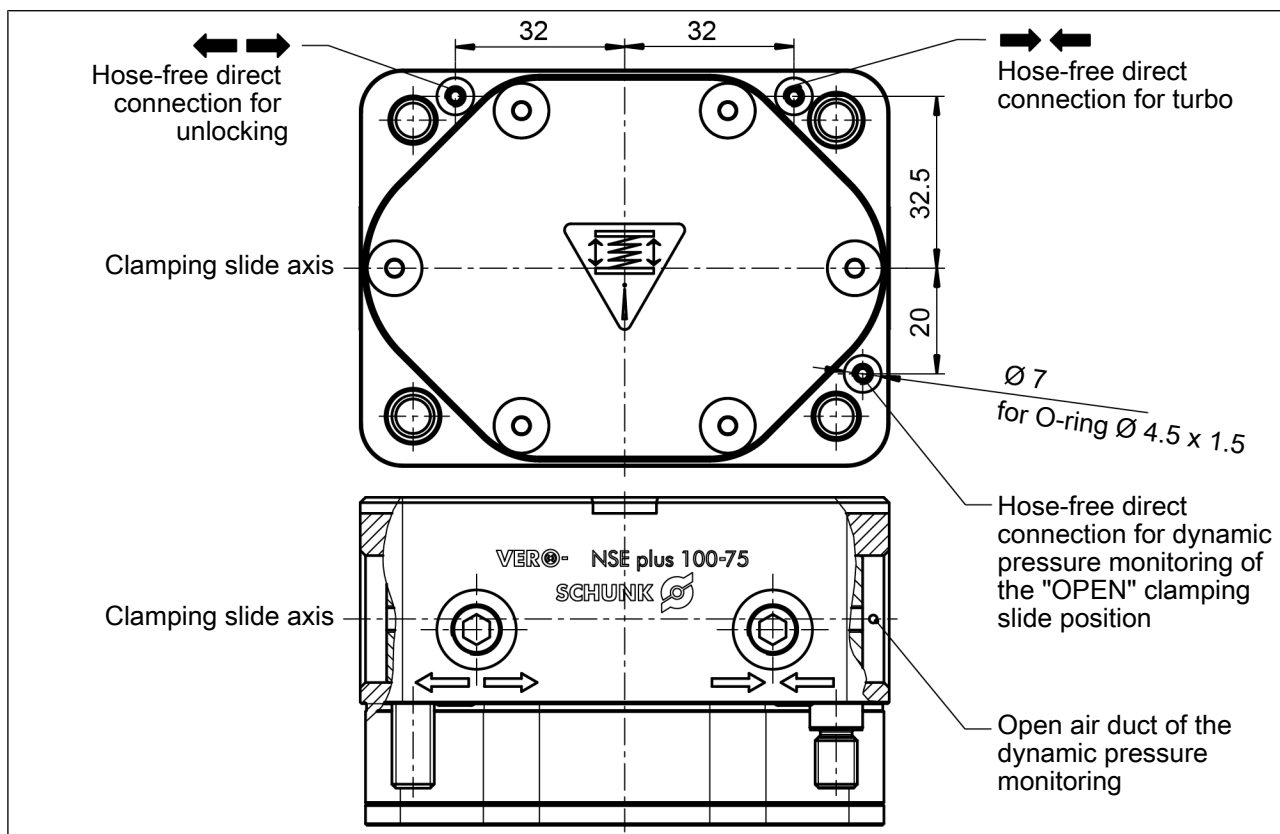
Request our installation drawings if doing the installation yourself.



NSE plus 138 / NSE plus 138-V1



NSE plus 176 / NSE plus 176-V1



NSE plus 100-75

4.6.2 Connecting strip ASL1-G1/8", ASL2-G1/8"

Upon customer request, a VERO-S terminal block can be mounted to the clamping station in order to facilitate access to the air supply point.

The connecting strip is equipped with an elevated connection point with a size NW 7.4 sealing nipple. A quick air relief valve is integrated into the connecting strip. The quick air relief reduces the opening and closing times of the clamping station as the air can escape rapidly through a sound absorber.

The valve strip is available in two different versions, a single connecting strip type ASL1-G1/8" and a coupled 2x connecting strip type ASL2-G1/8".

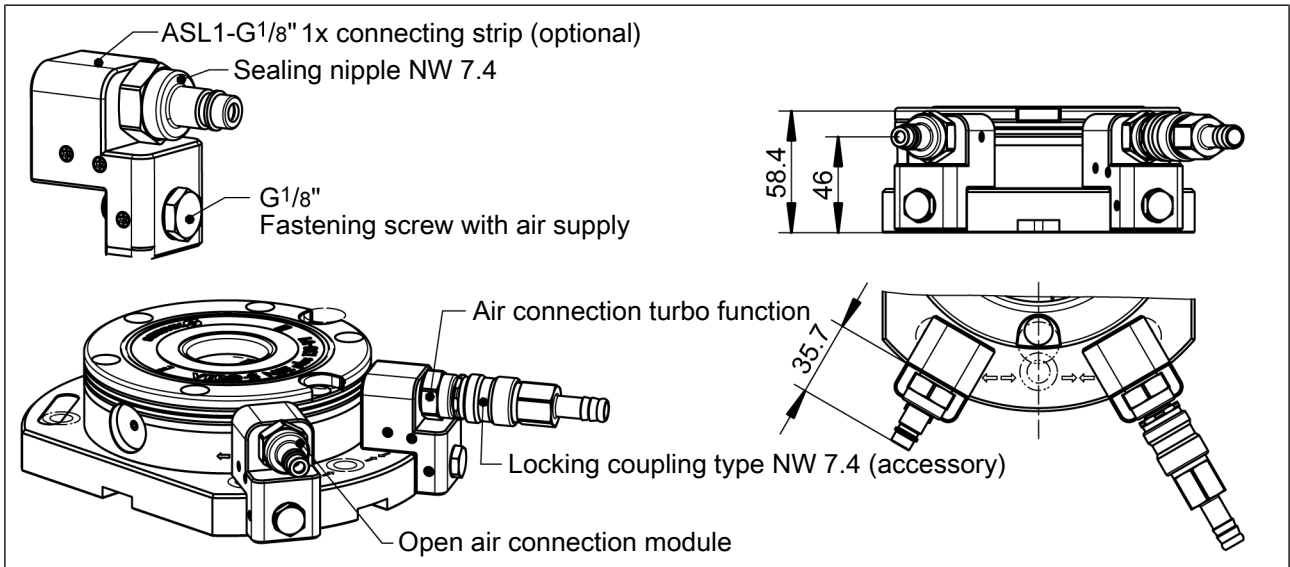
To mount the connecting strip, the front air connection (sealing nipple) is removed from the clamping station and in its place, the connecting strip is directly adjusted via the hollow screw. The rear air connection of the clamping station remains locked with the locking screw.

The NSL plus 200-V1-T is fitted with the 2x connecting strip, which supplies both air connections separately.

The circuit symbols for the "unlocking function" and the "turbo function" are engraved on the clamping stations NSL plus -V1.

1x connecting strip ASL1-G1/8" (ID no.: 1327465)
suitable for clamping stations

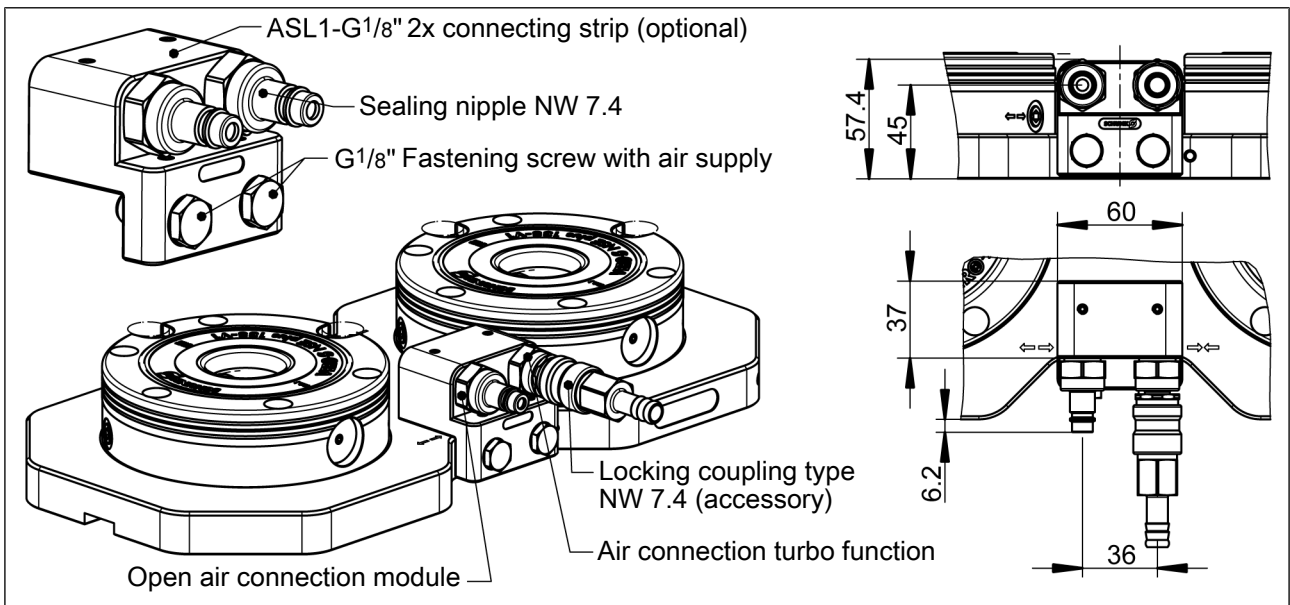
NSL plus 150-V1-T NSL plus 200 NSL plus 400 NSL plus 600 NSL plus 800
(installed 2x)



NSL plus 150-V1-T retrofitted with 1x connecting strip ASL1-G1/8" (option)

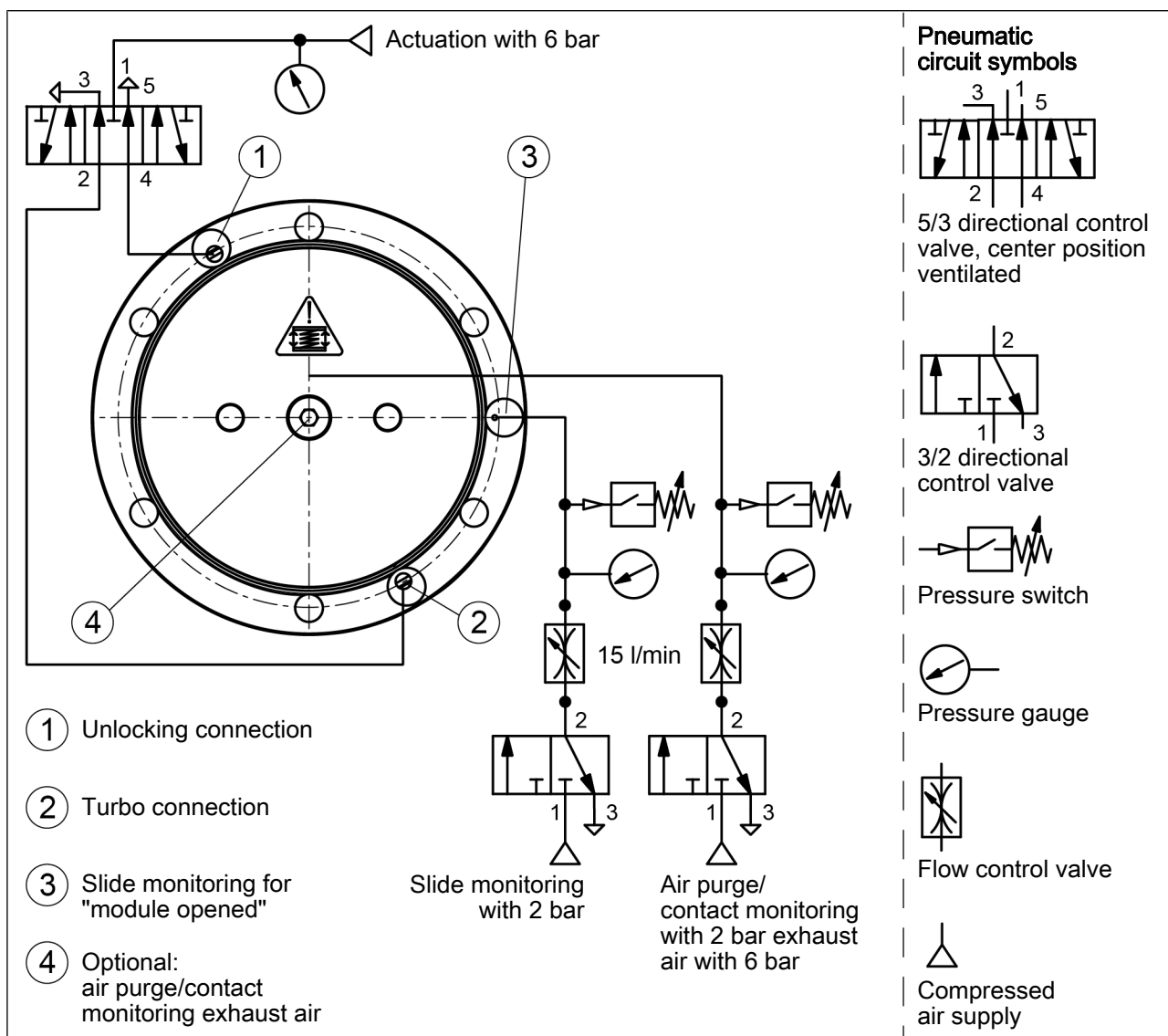
2x connecting strip ASL2-G1/8" (ID no.: 1315007)
suitable for clamping station

NSL plus 200-V1-T



NSL plus 200-V1-T retrofitted with 2x connecting strip ASL2-G1/8" (Option)

4.7 Pneumatic circuit diagram



Pneumatic circuit diagram

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

Turbo function:

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

Feeder query:

- The max. pressure of the feeder query is 2 bar.
- Limit volumetric flow to 15 l/min.
- Pressure difference upon failure of a module min. 1 bar.
- If the feeder query of several standard NSE plus modules is connected in series, only the evaluation of the OPEN position works (dynamic pressure = all modules open).

Air purge/contact monitoring (optional):

- Max. pressure 2 bar.
- Limit volumetric flow to 15 l/min.

Exhaust air (optional):

- Max. pressure 6 bar.
- The exhaust air must be switched off before the modules are locked, as 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 pressure switch and lead to incorrect measurement results. The length and cross-section of the line can affect the switching time of the control components. It may be necessary to readjust the control components. Check the control components of the monitoring functions at regular intervals. If errors occur in the monitoring control system, you must detect the cause of the error.

4.8 Screw tightening torques

Tightening torques for mounting 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 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

5 Operation

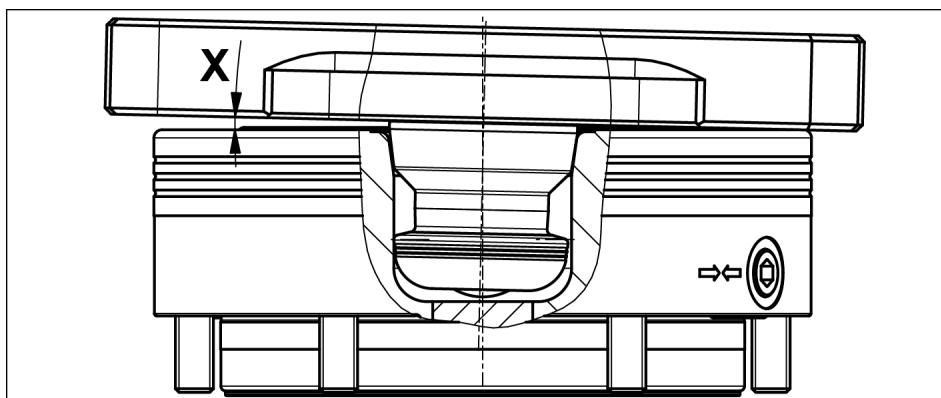
NOTICE

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

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

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

Only original SCHUNK spare parts may be used!



⚠ WARNING

Risk of injury due to losing pallets or workpieces in the case of incorrect actuation caused by incorrect operation.

Risk of injury due to compressed air hoses coming loose when connected improperly.

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



⚠ WARNING

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

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

6 Maintenance and care

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



⚠ CAUTION

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

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

The covers of the clamping modules are spring preloaded and may only be removed by trained specialist personnel. The covers can only be disassembled and assembled using a special assembly tool and by observing the corresponding disassembly and assembly instructions.

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

Pressure medium: Compressed air, compressed air quality according to ISO 8573-1:7 4 4

NOTICE

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

- Check the units at regular intervals (at least every two weeks or after 1000 clamping operations).
The system is functioning correctly if the clamping slides move smoothly at minimum system pressure (5 bar).
- Carry out regular visual/functional checks. In case of visible damage or signs of malfunction, shut down the quick-change pallet system immediately.
The system may only be commissioned again once the faults have been corrected. For example, by replacing the damaged unit.

7 Troubleshooting

7.1 The clamping area does not unlock

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

7.2 The clamping area does not unlock properly

Possible cause	Remedial measures
Pressure below minimum	Check operating pressure (min. 5 bar)
The module was not operated with oiled compressed air	Install maintenance unit with oiler
Hose diameter below minimum	Required hose diameters, see chapter "Securing and connecting" ▶ 4.3 [18]
The turbo connection is still pressurized	Ventilate the connection

7.3 The quick-change pallet system no longer opens quietly

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

8 Seal kit and part lists

8.1 Seal kit lists

NSE plus 90 (ID no. 0471219)

Item	Designation	Quantity
20	O-ring Ø 45 x 3	1
21	O-ring Ø 68 x 2	2
22	O-ring Ø 25 x 3	1
23	O-ring Ø 20 x 1.5	2
24	O-ring Ø 4 x 1.5	2
25	O-ring Ø 18 x 2	1
26	O-ring Ø 65 x 1.5	1
27	O-ring Ø 19 x 1	1
40	Slide washer	1

NSE plus 99, NSE plus 99-V1 (ID no. 0471122)

Item	Designation	Quantity
20	O-ring Ø 71.5 x 1.5	1
21	O-ring Ø 62 x 3	1
22	O-ring Ø 26 x 1.5	1
23	O-ring Ø 20 x 1.5	4
24	O-ring Ø 4.5 x 1.5	2
25	O-ring Ø 18 x 2	1
26	O-ring Ø 71.5 x 1.5	2
27	O-ring Ø 18 x 1.5	1
40	Slide washer	1

NSE plus 138, NSE plus 138-V1 (ID no. 0471052)

Item	Designation	Quantity
20	O-ring Ø 82 x 3	1
21	O-ring Ø 96 x 3	2
22	O-ring Ø 25 x 3	1
23	O-ring Ø 20 x 1.5	4
24	O-ring Ø 9 x 1.5	3
25	O-ring Ø 18 x 2.5	1
26	O-ring Ø 100 x 1	1
27	O-ring Ø 19 x 1	1
40	Slide washer	1

NSE-T plus 138, NSE-T plus 138-V1 (ID no. 0471164)

Item	Designation	Quantity
19	O-ring Ø 82 x 3	1
20	O-ring Ø 45 x 3	1
21	O-ring Ø 90 x 3	1
22	O-ring Ø 25 x 3	1
23	O-ring Ø 20 x 1.5	4
24	O-ring Ø 9 x 1.5	2
25	O-ring Ø 18 x 2.5	1
26	O-ring Ø 90 x 1	1
27	O-ring Ø 19 x 1	1
40	Slide washer	1

NSE plus 176, NSE plus 176-V1 (ID no. 0471225)

Item	Designation	Quantity
19	O-ring Ø 62 x 3	1
20	O-ring Ø 96 x 3	1
21	O-ring Ø 122 x 3	1
22	O-ring Ø 25 x 3	1
23	O-ring Ø 20 x 1.5	4
24	O-ring Ø 9 x 1.5	3
25	O-ring Ø 18 x 2.5	1
26	O-ring Ø 112 x 1.5	1
27	O-ring Ø 19 x 1	1
40	Slide washer	1

NSE plus 100-75 (ID no. 0471132)

Item	Designation	Quantity
23	O-ring Ø 4.5 x 1.5	3
24	O-ring Ø 3.5 x 1	1
25	O-ring Ø 6 x 1	4
26	O-ring Ø 20 x 1.5	4
27	Sealing element	1
30	Sealing element	1

Wearing parts - we recommend replacing when maintenance is performed

8.2 Part lists**NSE plus 90 (ID no. 0471059)**

Item	Designation	Quantity
1	Base body	1
2	Cover	1
3	Clamping slide	2
4	Piston	1
6	Plug	1
31	Cylindrical pin	2
32	G1/8" locking screw	2
33	Compression spring	14
35	Set-screw	3
36	Set-screw	2

NSE plus 99 (ID no. 0471120)

Item	Designation	Quantity
1	Base body	1
2	Cover	1
3	Clamping slide	2
4	Piston	1
6	Plug	1
30	Cylindrical screw	6
31	Cylindrical pin	2
32	G1/8" locking screw	2
33	Compression spring	12
36	Set-screw	2
37	Set-screw	3
45	Cover caps	6

NSE plus 99-V1 (ID no. 0471125)

Item	Designation	Quantity
1	Base body	1
2	Cover	1
3	Clamping slide	2
4	Piston	1
6	Plug	1
29	Fitting screw PSC NSE PLUS 99-V1	1
30	Cylindrical screw	6
31	Cylindrical pin	2
32	Locking screw	2
33	Compression spring	12
36	Set-screw	2
37	Set-screw	3
45	Cover caps	6

NSE plus 138 (ID no. 0471150)

Item	Designation	Quantity
1	Base body	1
2	Cover	1
3	Clamping slide	2
4	Piston	1
6	Plug	1
19	Ring cord	1
30	Cylindrical screw	6
31	Cylindrical pin	2
32	G1/8" locking screw	2
33	Compression spring	8
35	Set-screw	1
36	Set-screw	2
45	Cover caps	6

NSE plus 138-V1 (ID no. 0471095)

Item	Designation	Quantity
1	Base body	1
2	Cover	1
3	Clamping slide	2
4	Piston	1
6	Plug	1
19	Ring cord	2
29	Fitting screw PSC NSE PLUS 138-V1	1
30	Cylindrical screw	6
31	Cylindrical pin	2
32	G1/8" locking screw	2
33	Compression spring	8
35	Set-screw	1
36	Set-screw	2
37	Set-screw	1
45	Cover caps	6

NSE-T plus 138 (ID no. 0471076)

Item	Designation	Quantity
1	Base body	1
2	Cover	1
3	Clamping slide	2
4	Piston	1
6	Plug	1
30	Cylindrical screw	6
31	Cylindrical pin	2
32	Set-screw	2
33	Compression spring	10
35	Set-screw	1
45	Cover caps	6

NSE-T plus 138-V1 (ID no. 0471076)

Item	Designation	Quantity
1	Base body	1
2	Cover	1
3	Clamping slide	2
4	Piston	1
6	Plug	1
30	Cylindrical screw	6
31	Cylindrical pin	2
32	Set-screw	2
33	Compression spring	10
35	Set-screw	1
36	Cylindrical pin	1
45	Cover caps	6

NSE plus 176 (ID no. 0471060)

Item	Designation	Quantity
1	Base body	1
2	Cover	1
3	Clamping slide	2
4	Piston	1
6	Plug	1
30	Cylindrical screw	6
31	Cylindrical pin	2
32	G1/8" locking screw	2
33	Compression spring	8
35	Set-screw	1
36	Set-screw	2
45	Cover caps	6

NSE plus 176-V1 (ID no. 0471096)

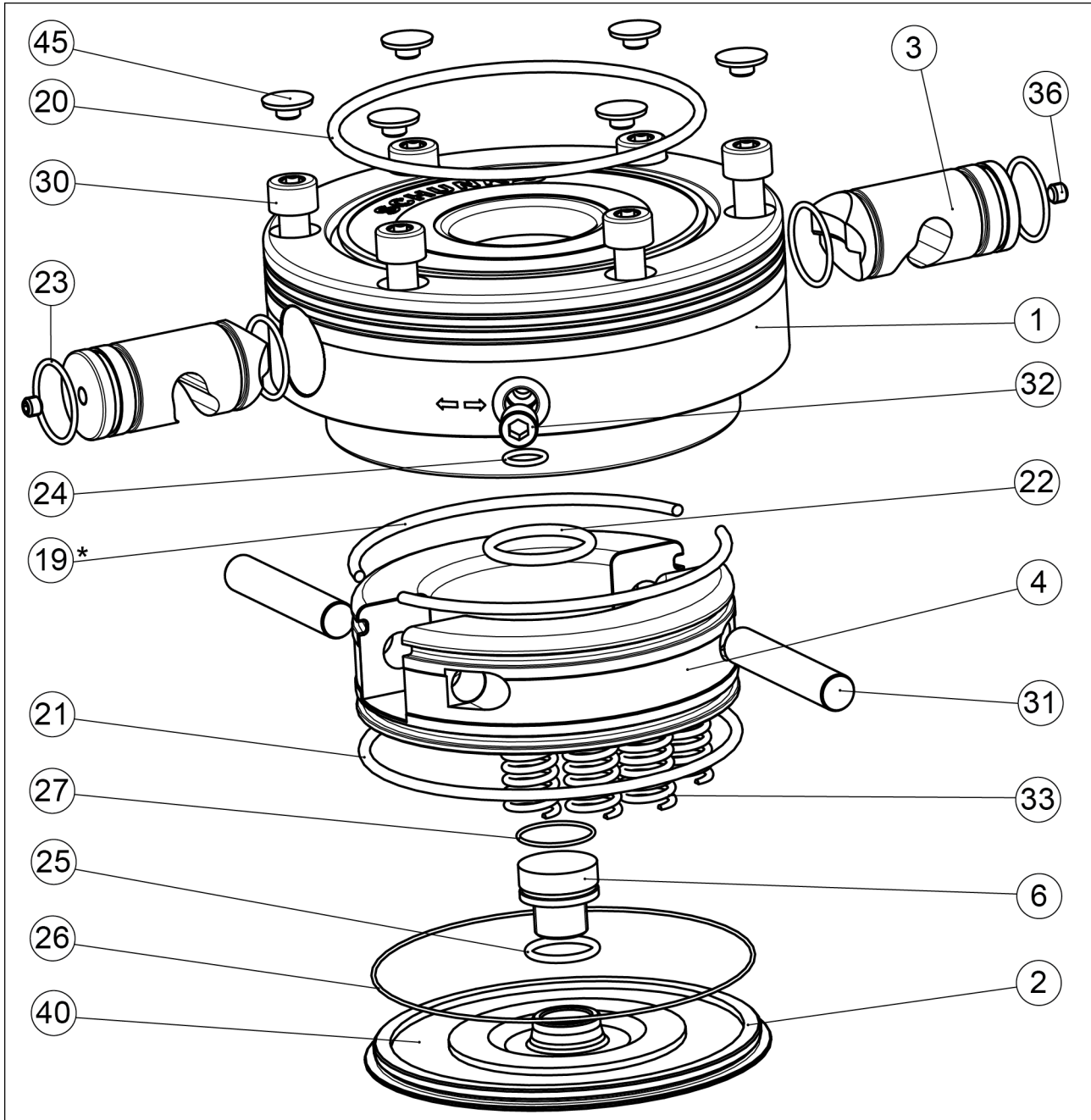
Item	Designation	Quantity
1	Base body	1
2	Cover	1
3	Clamping slide	2
4	Piston	1
6	Plug	1
29	Fitting screw PSC NSE PLUS 138-V1	1
30	Cylindrical screw	5
31	Cylindrical pin	2
32	G1/8" locking screw	2
33	Compression spring	8
35	Set-screw	1
36	Set-screw	2
45	Cover caps	6

NSE plus 100-75 (ID no. 0471130)

Item	Designation	Quantity
1	Base body	1
2	Clamping slide	2
3	Piston	1
4	Cover	1
5	Bearing bracket for cylindrical pin	2
6	Fitting screw NSE plus 100-75	2
7	Cover caps	4
9	Compression spring	8
19	Countersunk screw	6
20	Cylindrical screw	2
21	G1/8" locking screw	2
22	Set-screw	4
28	Cylindrical pin	2
29	Cylindrical screw	4

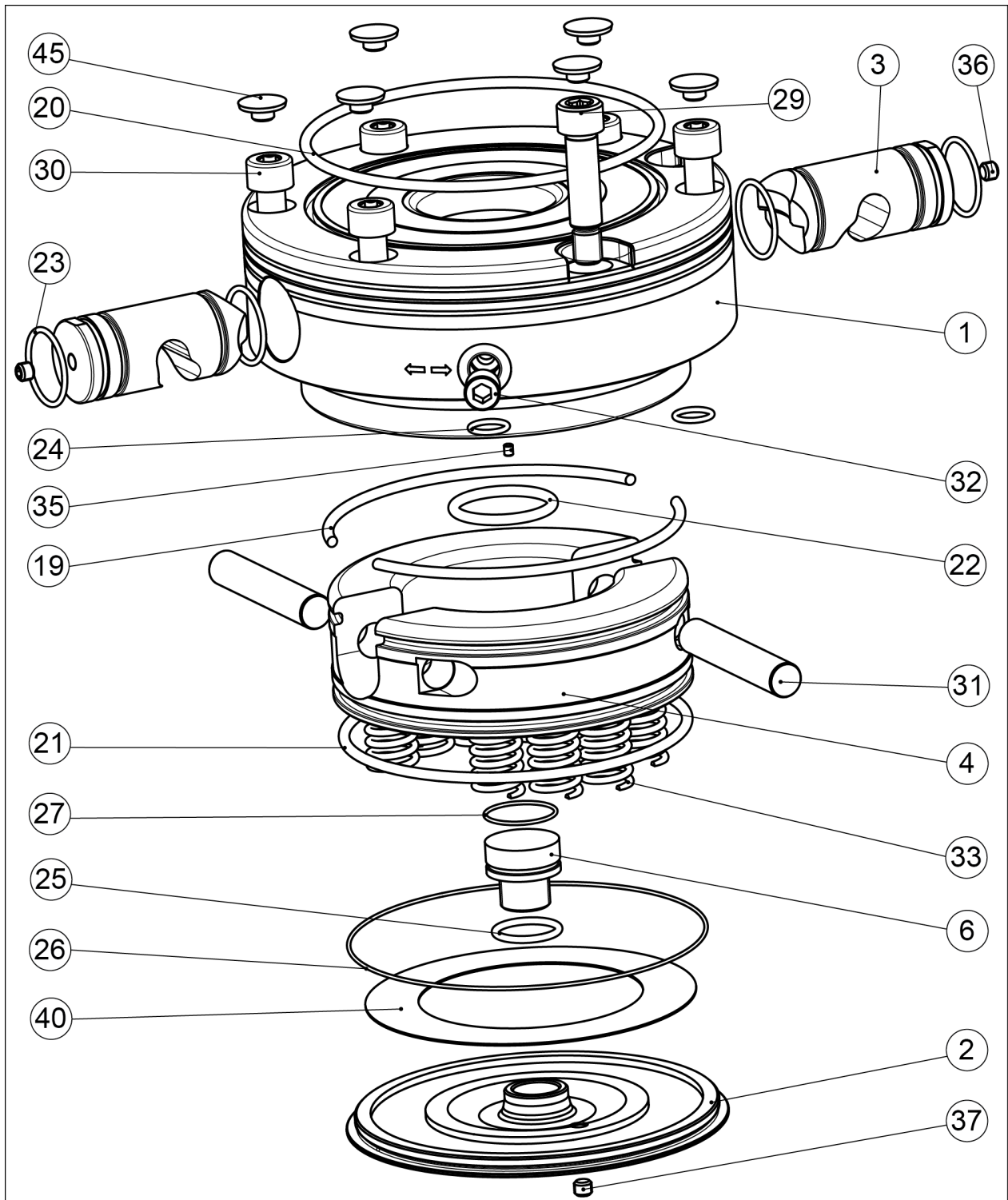
9 Assembly Drawings

9.1 NSE plus (cylindrical version)

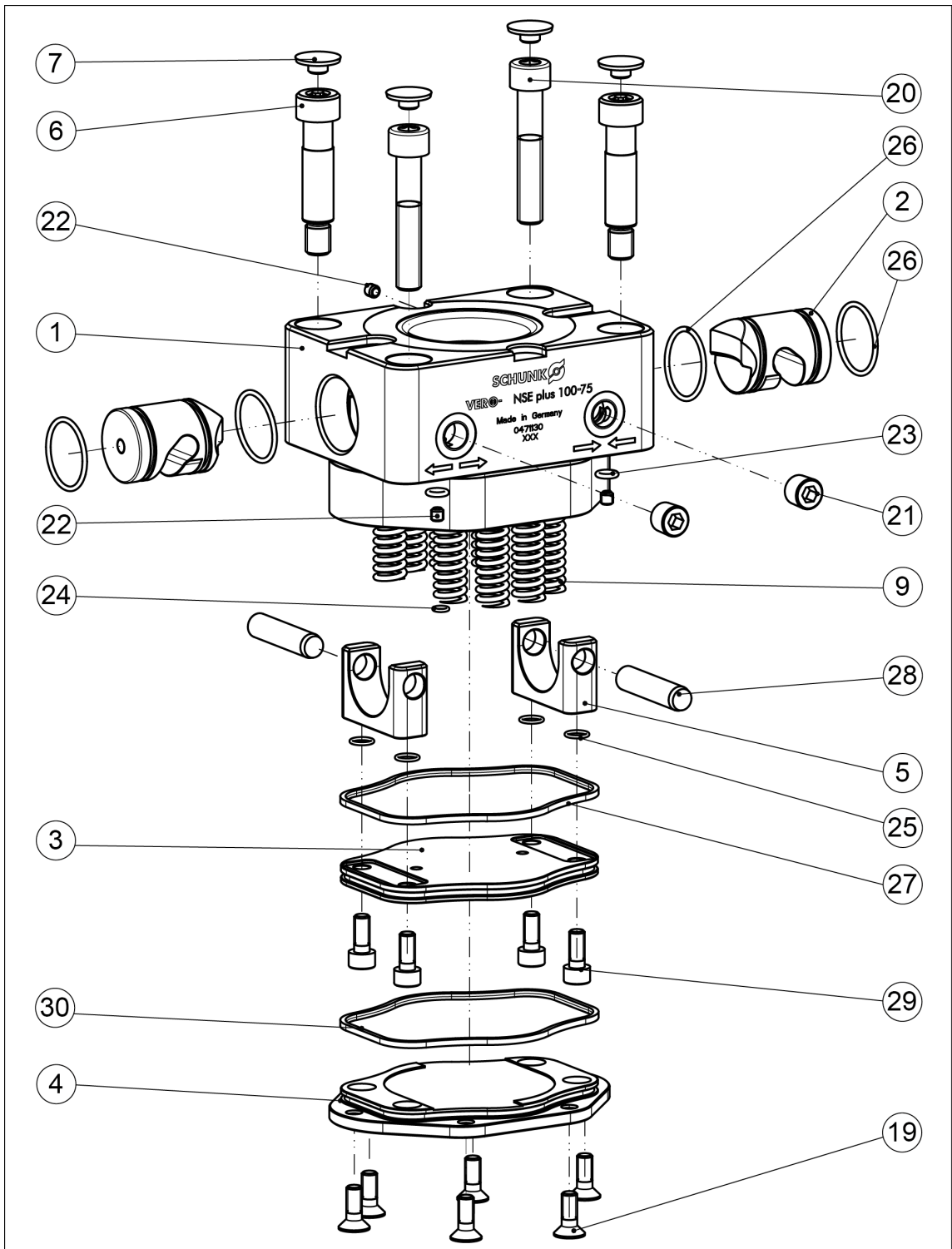


* for NSE plus 99, NSE plus 138, NSE-T plus 138 and NSE plus 176

9.2 NSE plus-V1 (cylindrical version)



9.3 NSE plus 100-75



10 Declaration of Incorporation

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

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

We hereby declare that on the date of the declaration the following partly completed machine complied with all basic safety and health regulations found in the directive 2006/42/EC of the European Parliament and of the Council on machinery. The declaration is rendered invalid if modifications are made to the product.

Product designation Quick-change pallet systems VERO-S
Type designation NSE plus 90; NSE plus 99; NSE plus 99-V1; NSE plus 138; NSE plus 138-V1; NSE-L plus 138; NSE-L plus 138-V1; NSE-T plus 138; NSE-T plus 138-V1; NSE plus 176; NSE plus 176-V1; NSE plus 100-75; NSL plus 150; NSL plus 150-V1; NSL-L plus 150-V1; NSL plus 150-V1-T; NSD plus 150; NSL plus 200; NSL plus 200-V1-T; NSL-L plus 200; NSD plus 200; NSL plus 400; NSL-L plus 400; NSL plus 600; NSL plus 800; NSL plus 300-140; NSL plus 300-200; NST plus 400-250; NST plus 500-300
ID number 0471059; 0471120; 0471125; 0471150; 0471095; 0472100; 0472105; 0471076; 0471077; 0471060; 0471096; 0471130; 0471045; 0471046; 0472210; 0471047; 0471044; 0471003; 0472220; 0471002; 0471048; 0472240; 0471082; 0471083; 0471570; 0471571; 0471540; 0471541

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

Applied harmonized standards, especially:

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

EN ISO 80079-36:2016 Fluid power - General rules and safety requirements for hydraulic systems and their components

Other related technical standards and specifications:

VDI 3035:2008-05 Design of machine tools, production lines and peripheral equipment for the use of metalworking fluids

The manufacturer agrees to forward on demand the relevant technical documentation for the partly completed machinery in electronic form to national authorities.

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

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

Signature: see original declaration

Mengen, October 2022

p.p. Philipp Schröder; Head of Engineering Design

11 Appendix on Declaration of Incorporation, as per 2006/42/EC, annex II, No. 1 B

1. Description of the basic safety and health protection requirements, as per 2006/42/EC, Annex I, that apply to and are fulfilled for the scope of the partly completed machinery:

Product designation	Quick-Change Pallet System VERO-S
Type designation	NSE plus 90; NSE plus 99; NSE plus 99-V1; NSE plus 138; NSE plus 138-V1; NSE-L plus 138; NSE-L plus 138-V1; NSE-T plus 138; NSE-T plus 138-V1; NSE plus 176; NSE plus 176-V1; NSE plus 100-75; NSL plus 150; NSL plus 150-V1; NSL-L plus 150-V1; NSL plus 150-V1-T; NSD plus 150; NSL plus 200; NSL plus 200-V1-T; NSL-L plus 200; NSD plus 200; NSL plus 400; NSL-L plus 400; NSL plus 600; NSL plus 800; NSL plus 300-140; NSL plus 300-200; NST plus 400-250; NST plus 500-300
ID number	0471059; 0471120; 0471125; 0471150; 0471095; 0472100; 0472105; 0471076; 0471077; 0471060; 0471096; 0471130; 0471045; 0471046; 0472210; 0471047; 0471044; 0471003; 0472220; 0471002; 0471048; 0472240; 0471082; 0471083; 0471570; 0471571; 0471540; 0471541

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

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

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

1.2	Control Systems			
1.2.6	Failure of the power supply			X
1.3	Protection against mechanical hazards			
1.3.1	Risk of loss of stability		X	
1.3.2	Risk of break-up during operation		X	
1.3.3	Risks due to falling or ejected objects		X	
1.3.4	Risks due to surfaces, edges or angles		X	
1.3.5	Risks related to combined machinery			X
1.3.6	Risks related to variations in operating conditions		X	
1.3.7	Risks related to moving parts		X	
1.3.8	Choice of protection against risks arising from moving parts			X
1.3.8.1	Moving transmission parts		X	
1.3.8.2	Moving parts involved in the process			X
1.3.9	Risks of uncontrolled movements		X	
1.4	Required characteristics of guards and protective devices			
1.4.1	General requirements			X
1.4.2	Special requirements for guards			X
1.4.2.1	Fixed guards			X
1.4.2.2	Interlocking movable guards			X
1.4.2.3	Adjustable guards restricting access			X
1.4.3	Special requirements for protective devices			X
1.5	Risks due to other hazards			
1.5.1	Electricity supply			X
1.5.2	Static electricity			X
1.5.3	Energy supply other than electricity			X
1.5.4	Errors of fitting		X	
1.5.5	Extreme temperatures		X	
1.5.6	Fire			X
1.5.7	Explosion			X
1.5.8	Noise		X	
1.5.9	Vibrations		X	
1.5.10	Radiation	X		
1.5.11	External radiation	X		
1.5.12	Laser radiation	X		
1.5.13	Emissions of hazardous materials and substances			X
1.5.14	Risk of being trapped in a machine			X
1.5.15	Risk of slipping, tripping or falling			X
1.5.16	Lightning			X

1.6	Maintenance			
1.6.1	Machinery maintenance		X	
1.6.2	Access to operating positions and servicing points		X	
1.6.3	Isolation of energy sources			X
1.6.4	Operator intervention			X
1.6.5	Cleaning of internal parts	X		

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

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

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