

INSTALLATION AND OPERATING INSTRUCTIONS

Zero-point clamping system

SPN series

DDOC00836

THE KNOW-HOW FACTORY

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1 Supporting documents

NOTICE



Read through the installation and operating instructions before installing or working with the product.

The installation and operating instructions contain important notes for your personal safety. They must be read and understood by all persons who work with or handle the product during any phase of the product lifetime.



- Installation and operating instructions
 - Catalogs, drawings, CAD data, performance data
 - Information on accessories
 - Technical data sheets
 - General Terms and Conditions, including warranty information.
- ⇒ Only the documents currently available on the website are valid.

In these installation and operating instructions, "product" replaces the product designation on the title page.

1.1 Notices and graphics in the installation and operating instructions

DANGER



This notice warns of an imminent danger to the life and health of people. Ignoring these notices can lead to serious injury or even death.

- ▶ You absolutely must comply with the described measures for avoiding these dangers.
- ⇒ The warning symbols are assigned according to the type of danger.

WARNING



This notice warns of a situation that is potentially hazardous to personal health. Ignoring these notices can cause serious injury or damage to health.

- ▶ You absolutely must comply with the described measures for avoiding these dangers.
- ⇒ The warning symbols are assigned according to the type of danger.

CAUTION



This notice warns of a situation that is potentially hazardous for people or that may result in material or environmental damage. Ignoring these notices may result in slight, temporary injuries or damage to the product or to the environment.

- ▶ You absolutely must comply with the described measures for avoiding these dangers.
- ⇒ The warning symbols are assigned according to the type of danger.

NOTICE



General notices contain usage tips and valuable information, but no warnings of dangers to health.

INFORMATION



This category contains useful tips for handling the product efficiently. Failure to observe these tips will not result in damage to the product. This information does not include any information relevant to health or workplace safety.

2 Safety notices

WARNING



Risk of injury during manual loading

Risk of injury due to parts moving independently after the power supply has failed or is switched off (including an emergency stop).

- ▶ Do not reach into the product.
- ▶ Do not reach between the clamping surfaces.
- ▶ Wait for the system to come to a complete standstill.

Risk of injury due to parts moving independently after accidental or careless actuation of the release actuation.

- ▶ Do not insert a clamping pin into a clamped product.
- ▶ Do not place a clamping pin onto a clamped product.



Risk of injury from parts flying and being flung

Various components of the product are continuously under spring tension.

- Spring package
- Cover
- ▶ Do not loosen the screws of the cover.
- ▶ Do not remove the cover.

⇒ Warranty and disclaimer

CAUTION



Risk of injury and material damage in case of non-compliance

Installation, commissioning, maintenance and repairs may only be performed by qualified specialists in accordance with these installation and operating instructions.

The product is state-of-the-art.

It is fitted to industrial machines and is used to hold, transport and store workpieces.

The following are examples of situations in which the product may cause a hazard:

- The product is not properly installed, used or maintained.
- The product is not used for its designated purpose.
- The locally applicable regulations, laws, directives or guidelines are not observed.
- ▶ The product may only be used in accordance with these installation and operating instructions and the product's technical data. Any changes or additions to the intended use of the product, as well as modifications to the product, such as those in the following examples, require the written permission of the manufacturer:
 - Use of the product under extreme conditions, such as aggressive fluids or abrasive dusts
 - Additional drilled holes or threads
- ⇒ Zimmer GmbH shall accept no liability for any damage caused by improper use. The operator bears sole responsibility.
- ▶ Make sure that the power supply is disconnected before you mount, adjust, modify, maintain or repair the product.
- ▶ Whenever work is carried out on the product, make sure that the product cannot be actuated by mistake.
- ▶ Perform maintenance tasks, retrofitting or attachment work outside of the machine's danger zone when possible.
- ▶ Do not reach into the operational range of the product.
- ▶ Observe the specified maintenance intervals and specifications regarding the quality of the operating material.
- ▶ When using the product under extreme conditions, adjust the maintenance interval according to the degree of contamination.
- ▶ Note that, due to the spring tension, you should exercise increased caution when uninstalling products with integrated springs.

3 Proper use

NOTICE



The product is only to be used in its original state with its original accessories, with no unauthorized changes and within the stipulated parameter limits and operating conditions.

Any other or secondary use is deemed improper.

- ▶ Operate the product only in compliance with the associated installation and operating instructions.
 - ▶ Operate the product only when it is in a technical condition that corresponds to the guaranteed parameters and operating conditions.
- ⇒ Zimmer GmbH shall accept no liability for any damage caused by improper use. The operator bears sole responsibility.

The product is used exclusively for positioning and clamping workpieces, clamping pallets or other clamping devices on tooling machines or other suitable technical equipment.

The product is designed exclusively for pneumatic operation.

The product is designed for use in commercial or industrial applications.

For questions regarding use outside of the stipulated parameters, please contact Zimmer Customer Service.

INFORMATION



The permitted position deviation of center axes is 0.03 mm for the simultaneous use of multiple products and clamping pins.

Improper use occurs when the product is used in rotary applications without consulting Zimmer GmbH and the following parameters are exceeded:

- Speed: 1500 rpm
- Peripheral speed, relative to the center axis of the product: 35 m/s

4 Personnel qualification

Installation, commissioning and maintenance may only be performed by trained specialists. These persons must have read and understood the installation and operating instructions in full.

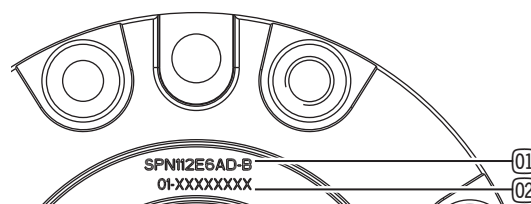
5 Product description

5.1 Type plate

There is a laser engraving in the housing of the product.

The laser engraving includes the part number and confirmation number.

- ① Part number
- ② Confirmation number



6 Functional description

The pneumatically operated product is designed for clamping workpieces and pallets with extremely high repetition accuracy. Due to its structural design, the system is clamped without pneumatic pressure applied.

The clamping force can be significantly increased by using an additional impulse on the PLUS connection. The form-fit lock cannot be released until the opening connection is actuated and the PLUS connection is simultaneously vented.

The product is optimally adapted to the clamping contour of the clamping pin. The resulting surface contact creates an extremely rigid system that can absorb high forces and torques.

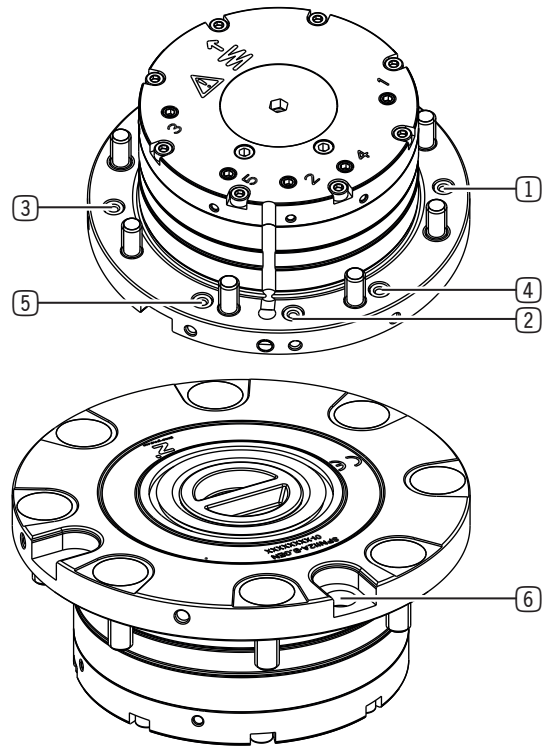
The basic version features two rotation prevention devices.

The blow-out or cleaning function prevents dirt or liquid from collecting in the pin holder and contact surface. When clamped, the seal on the contact surface prevents dirt or liquids from penetrating into the product. When the product is not in use, a manually inserted locking bolt or automatic seal prevents dirt or liquid from penetrating the opening of the pin.

Safe operation can be verified by the following statuses by means of piston position sensing and a positioning check.

All functions can be controlled directly by means of the contact surface and the standard connections with O-rings. There is also the option to control the product by means of alternative connections on the bottom of the product, see section "10.5.3 Tube connection".

- | | |
|--|--|
| ① Open | ④ Piston position sensor: Connection 4 |
| ② PLUS connection | ⑤ Piston position sensor: Connection 5 |
| ③ Blowing out/cleaning/positioning check | ⑥ Rotation prevention |



6.1 Open

INFORMATION



A spring package acts as an energy store and preserves the clamped state in the event of a power failure or interruption.

► Please contact Zimmer Customer Service if you have any questions.

The product is clamped without pneumatic pressure applied. It is opened when the *Open* connection is supplied with compressed air.

6.2 PLUS connection

NOTICE



For dynamic applications, it is recommended to use the product with a pulse at the PLUS connection.

A pulse of compressed air at the PLUS connection supports the clamping process and increases the clamping force. The product remains spring-loaded.

6.3 Blowing out/cleaning

INFORMATION



This connection is only available in the Advanced series.

NOTICE



The pressure must be able to be switched between the operating pressure for blowing out/cleaning and the pressure of 1.5 bar for the positioning check.

By actuating the connection, the product is blown out/cleaned via the opening of the pin.

The connection must be switched off before the workpiece and/or pallet is mounted because otherwise a pressure cushion will build and this could lead to vibrations.

If using with an automatic seal, the *Blow out* function can only be actuated in the *Product closed* status.

NOTICE



Recommendation:

- ▶ Switch the exhaust air off before the workpiece or pallet is mounted (approx. 1 mm).
- ▶ Switch the exhaust air on after the workpiece or pallet has been lifted (approx. 1 mm).

- ▶ Comply with permitted operating pressure.

6.4 Positioning check

INFORMATION



This connection is only available in the Advanced series.

NOTICE



Malfunctions in case of non-compliance

Pressure fluctuations can influence the settings of the pressure switch or flow sensors and lead to incorrect measurement results.

- ▶ Keep the pressure and the air volume constant for dynamic pressure sensing.

Line lengths and line cross-sections can influence the switching time of control components.

- ▶ Check the control components of the sensing functions regularly.
- ▶ If necessary, replace the control components.
- ▶ In case of errors in the sensor control, rectify the cause of the errors, see “Error diagnosis” section.

INFORMATION

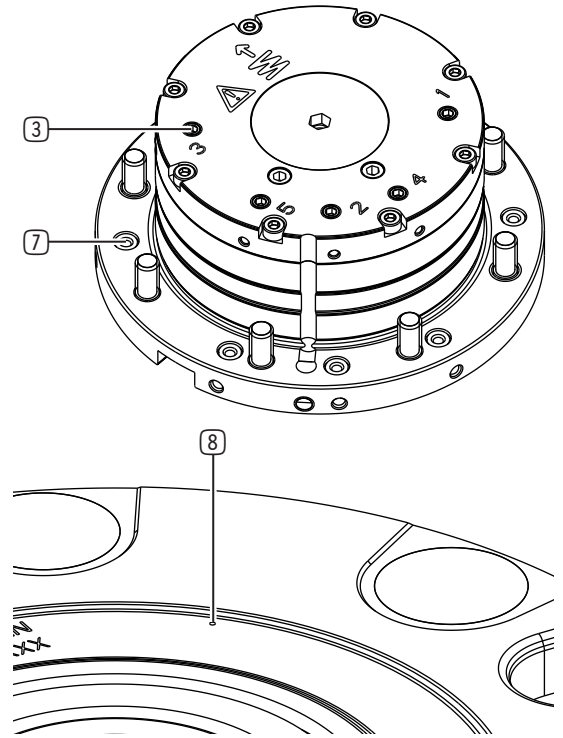


The operator of the product has sole responsibility for sensing.

- ▶ Make sure that the entire contact surface of the product is covered.
- ▶ Please contact Zimmer Customer Service if you have any questions.

The connection is used as a positioning check and checks whether the workpiece or pallet is positioned correctly on the product.

- ▶ Use a pressure switch or flow sensor for monitoring.
- ▶ Use a pressure of 1.5 bar to control the positioning check.



- ③ Blowing out/cleaning/positioning check
- ⑦ Alternatively: Blowing out/cleaning/positioning check
- ⑧ Borehole for measuring the flow or dynamic pressure

6.4.1 Circuit diagram of workpiece positioning check

	Operating pressure [bar]	Not positioned correctly	Positioned correctly	
Connection 3	1.5	1	0	Status 0 = dynamic pressure Status 1 = flow

6.4.2 Dynamic pressure sensing via a pressure switch

It is recommended to have a measurable differential pressure in an amount that enables reliable evaluation via a pressure switch.

The pressure is 1.5 bar. A pressure manometer, an adjustable throttle valve and a pressure switch are required for monitoring.

- Recommendation:
 - Setting range of the pressure switch: 0.5 bar - 2 bar
 - Threshold value of the pressure switch: 1 bar
 - Throttle valve setting:
 - Status 1 (flow): maximum 0.7 bar
 - Status 0 (dynamic pressure): minimum 1.3 bar
- The hysteresis of the pressure switch may not exceed ±0.2 bar.
- When sensing multiple products, it may be required to adjust the threshold value of the pressure switch at status 0 (dynamic pressure) to the respective installation.

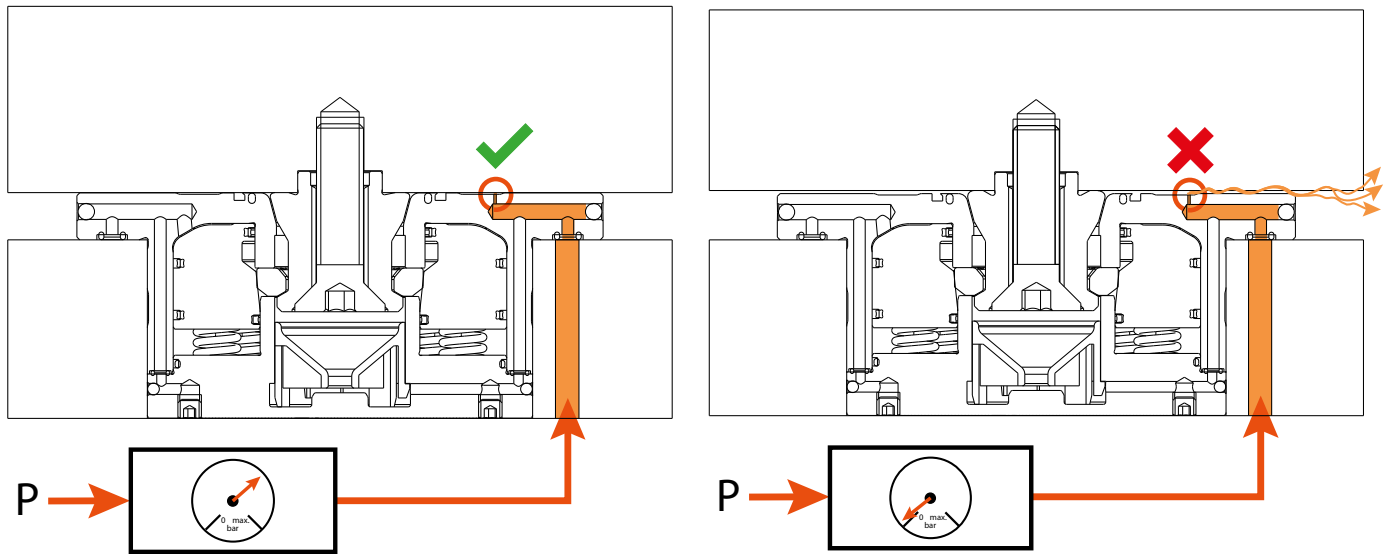
6.4.3 Dynamic pressure sensing via a flow sensor

It is recommended to have a measurable differential volume flow in an amount that enables reliable evaluation via a flow sensor.

The pressure is 1.5 bar. A pressure manometer, an adjustable throttle valve and a flow sensor are required for monitoring.

- Recommendation:
 - Measurement range of the flow sensor: 0.5 l/min - 25 l/min
 - Switching point of the flow sensor: 4.5 l/min
 - Throttle valve setting:
 - Status 1 (flow): minimum 7 l/min
 - Status 0 (dynamic pressure): maximum 2 l/min
- When sensing multiple products, it may be required to adjust the values of the volume flow and the setting of the throttle valve to the respective installation.

Schematic diagram of a positioning check with a pressure switch:



The clamped product is positioned correctly on the contact surface.

⇒ This generates dynamic pressure.

The clamped product is not positioned correctly on the contact surface.

⇒ No dynamic pressure is generated (leakage).

6.5 Piston position sensor

INFORMATION



This connection is only available in the *Advanced* series.

NOTICE



Malfunctions in case of non-compliance

- ▶ Make sure that products can be loaded or unloaded without damage if pneumatic piston position sensing is not being used.

Air flows out of the boreholes when piston position sensing is being used. An unobstructed air discharge must be ensured so that piston position sensing can function.

Pressure fluctuations can influence the settings of the pressure switch or flow sensors and lead to incorrect measurement results.

- ▶ Keep the pressure and the air volume constant for dynamic pressure sensing.

Line lengths and line cross-sections can influence the switching time of control components.

- ▶ Check the control components of the sensing functions regularly.
- ▶ If necessary, replace the control components.
- ▶ In case of errors in the sensor control, rectify the cause of the errors, see “Error diagnosis” section.

INFORMATION



The operator of the product has sole responsibility for piston position sensing.

- ▶ Make sure that the entire contact surface of the product is covered.
- ▶ Please contact Zimmer Customer Service if you have any questions.

Two dynamic pressure sensors are integrated for piston position sensing.

Here the position of the piston causes a pressure build-up in the opened status or clamped status. Only one of the two sensing functions or even both simultaneously for reciprocal control queries can be used.

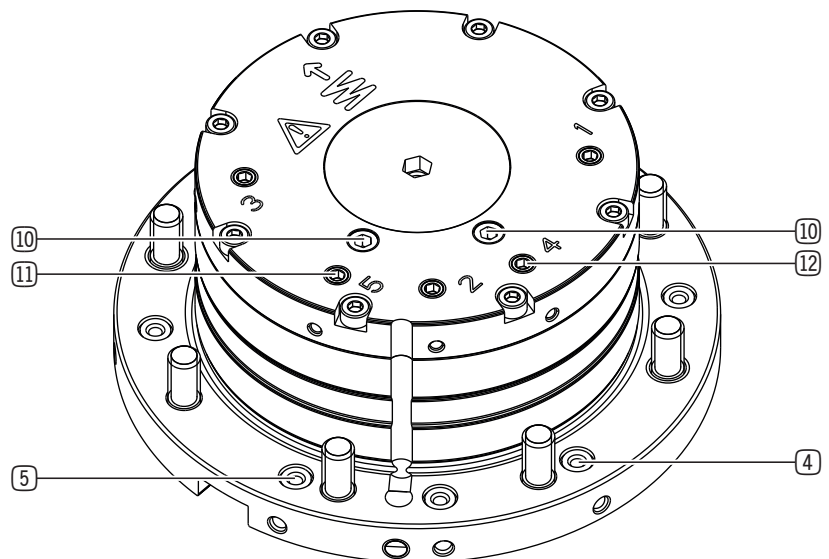
Controlling the dynamic pressure sensing requires a reduced pressure supply limited to 1.5 bar.

The connection designated for this must be controlled for piston position sensing.

Dynamic pressure sensing can be performed with a pressure switch or flow sensor.

Piston position sensor:

- Open
- Clamped



- ④ Piston position sensor: Connection 4
- ⑤ Piston position sensor: Connection 5
- ⑩ Air discharge
- ⑪ Alternatively: Piston position sensor: Connection 5
- ⑫ Alternatively: Piston position sensor: Connection 4

6.5.1 Circuit diagram of piston position sensing

	Operating pressure [bar]	Open	Clamped	Closed
Connection 4	1.5	0	1	1
Connection 5	1.5	1	0	1

Status 0 = dynamic pressure
Status 1 = flow

6.5.2 Dynamic pressure sensing via a pressure switch

It is recommended to have a measurable differential pressure in an amount that enables reliable evaluation via a pressure switch.

The pressure is 1.5 bar. A pressure manometer, an adjustable throttle valve and a pressure switch are required for each connection for monitoring.

- Recommendation:
 - Setting range of the pressure switch: 0.5 bar - 2 bar
 - Threshold value of the pressure switch: 1 bar
 - Throttle valve setting:
 - Status 1 (flow): maximum 0.7 bar
 - Status 0 (dynamic pressure): minimum 1.3 bar
- The hysteresis of the pressure switch may not exceed ± 0.2 bar.
- When sensing multiple products, it may be required to adjust the threshold value of the pressure switch at status 0 (dynamic pressure) to the respective installation.

6.5.3 Dynamic pressure sensing via a flow sensor

It is recommended to have a measurable differential volume flow in an amount that enables reliable evaluation via a flow sensor.

The pressure is 1.5 bar. A pressure manometer, an adjustable throttle valve and a flow sensor are required for each connection for monitoring.

- Recommendation:
 - Measurement range of the flow sensor: 0.5 l/min - 25 l/min
 - Switching point of the flow sensor: 4.5 l/min
 - Throttle valve setting:
 - Status 1 (flow): minimum 7 l/min
 - Status 0 (dynamic pressure): maximum 2 l/min
- When sensing multiple products, it may be required to adjust the values of the volume flow and the setting of the throttle valve to the respective installation.

7 Technical data

INFORMATION



- ▶ For information refer to the technical data sheet.
- This data varies within the series, depending on the specific design.
- ▶ Please contact Zimmer Customer Service if you have any questions.

8 Accessories/scope of delivery

INFORMATION



- If any accessories not sold or authorized by Zimmer GmbH are used, the function of the product cannot be guaranteed. The accessories from Zimmer GmbH are specifically tailored to the individual products.
- ▶ For information on optional accessories and those included in the scope of delivery, refer to our website.

9 Transportation/storage/preservation

- ▶ Store the product in its original packaging.
- ▶ During transport, make sure that no uncontrolled movements can occur if the product is already mounted on the higher-level machine unit.
 - ▶ Prior to commissioning and after transport, check all power and communication connections as well as all mechanical connections.
- ▶ Observe the following points when storing the product for longer periods of time:
 - ▶ Keep the storage location as dust-free and dry as possible.
 - ▶ Observe the temperature range and avoid temperature fluctuations.
- ▶ Clean all components until all contamination has been removed.
- ▶ Seal pneumatic connections with suitable covers.

10 Installation

WARNING



Risk of injury due to uncontrolled movement

Risk of injury in case of uncontrolled movements of the machine or system into which the product is to be installed.

- ▶ Switch off the power supply of the machine before all work.
- ▶ Secure the power supply against being switched on unintentionally.
- ▶ Check the machine for any residual energy that may be present.

WARNING



Risk of injury due to objects being ejected

Spring-loaded components can jump out when installing or uninstalling the device.

- ▶ Do not remove the cover.

CAUTION



Risk of injury due to uncontrolled movement

Risk of injury in the event of uncontrolled movement of the product when the power supply is connected.

- ▶ Switch off the power supply to the product before all work.
- ▶ Secure the power supply against being switched on unintentionally.
- ▶ Check the product for any residual energy that may be present.

NOTICE



▶ Installation may only be carried out by qualified personnel in accordance with these installation and operating instructions.

▶ Switch off the power supply before any assembly, installation or maintenance work.

▶ Install the product on an appropriate mounting surface in accordance with the flatness specifications.

INFORMATION



Requirements for the mounting surface:

- Permitted flatness deviation: 0.02 mm

▶ Comply with the tightening torques of the mounting screws.

- The tightening torque of the mounting screws depends on the mounting piece.

▶ Verify the permitted load capacity of the required screw connections in accordance with VDI 2230.

▶ Check the product for possible transport damage before installation.

10.1 Installing the product

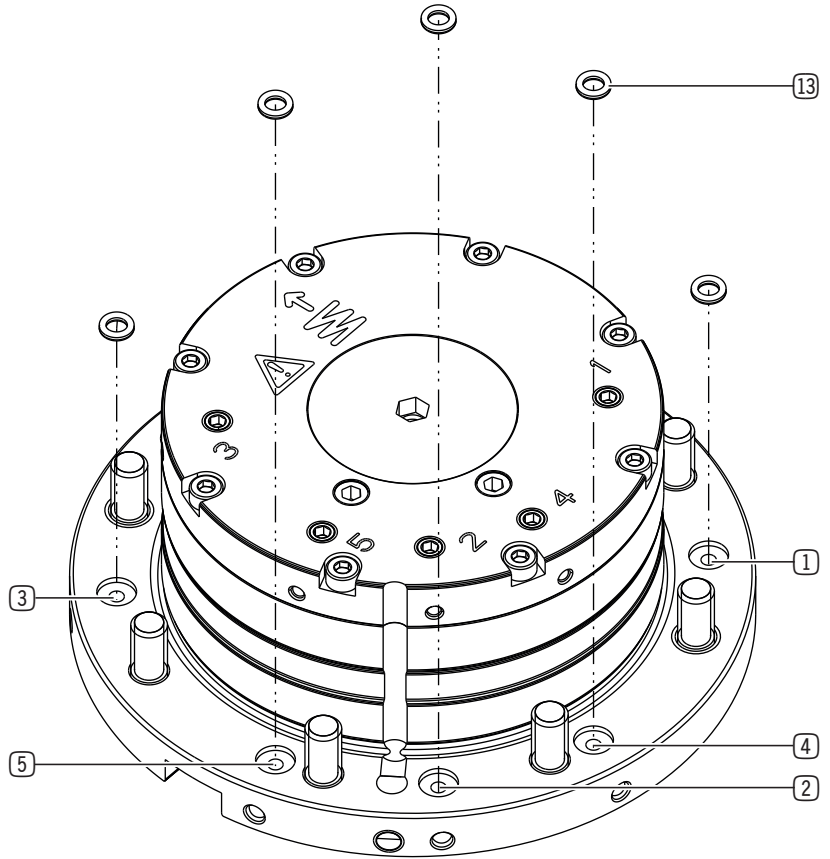
INFORMATION



Further installation information:

- Mounting screws, cover caps and filters are included in the scope of delivery.
- ▶ Strength class of the mounting screws 10.9 (DIN EN ISO 4762)
- ▶ Comply with the maximum tightening torque.

- ▶ If the PLUS connection is not in use, insert a filter into the connection.
 - ▶ Make sure that the filter closes flush with the product, see section "10.5.1 Venting the piston chamber".
- ▶ Insert the O-rings.
 - ▶ Lubricate the O-rings.



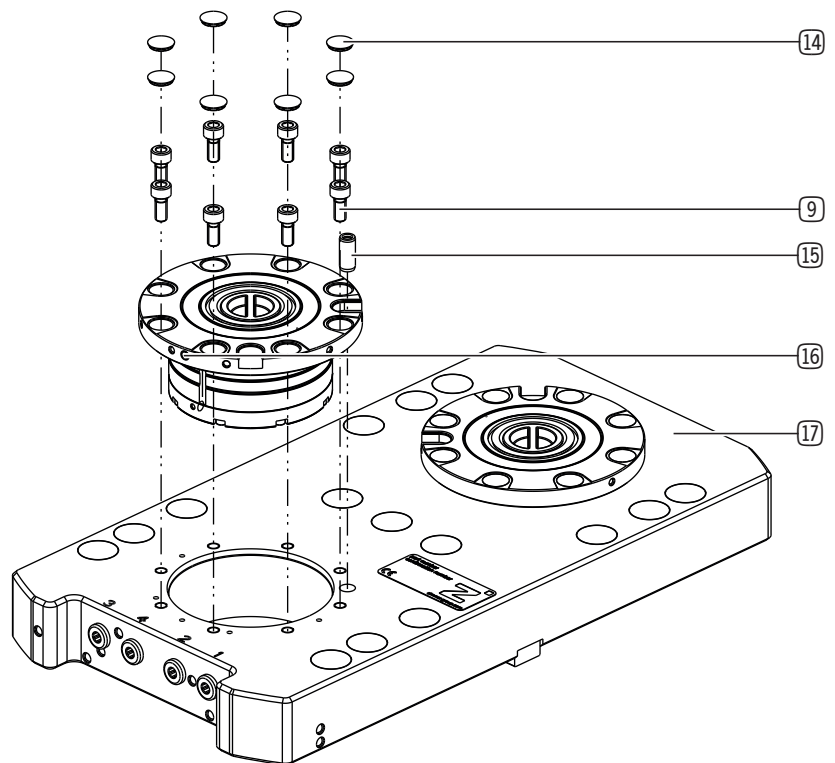
- ① Open
- ② PLUS connection
- ③ Blowing out/cleaning/positioning check
- ④ Piston position sensor: Connection 4
- ⑤ Piston position sensor: Connection 5
- ⑬ O-ring

INFORMATION



► For information on the mounting piece refer to the technical data sheet.

- Insert the product into the intended position on the mounting piece.
 - Make sure that the standard connections for the tubeless connection are positioned correctly.
- If necessary, insert the straight pin for the rotation prevention.
- Manually screw the mounting screws into the thread until the product is in contact.
- Make sure that the vent holes and filters are completely open to the passage of air over their entire cross section and protected against liquids and chips.
- Tighten the mounting screws with the corresponding tightening torque.
- Attach the cover caps.



- ⑨ Mounting screw
- ⑭ Cover cap
- ⑮ Straight pin
- ⑯ Vent hole
- ⑰ Mounting piece

10.2 Overview of clamping pins

INFORMATION



► You can find more information in the technical data sheet on our website.

Part number	Centering pin	Retention pin	Sword pins
SPN062E6SD-B SPN062E4SD-B SPN062E6AD-B SPN062E4AD-B	SPZ062BZ08-B	SPZ062BE08-B	SPZ062BS08-B
SPN112E6SD-B SPN112E4SD-B SPN112E6AD-B SPN112E4AD-B	SPZ112BZ10-B SPZ112BZ12-B	SPZ112BE10-B SPZ112BE12-B	SPZ112BS10-B SPZ112BS12-B
SPN138E6SD-B SPN138E4SD-B SPN138E6AD-B SPN138E4AD-B	SPZ138BZ12-B SPZ138BZ16-B	SPZ138BE12-B SPZ138BE16-B	SPZ138BS12-B SPZ138BS16-B

10.3 Installing clamping pins

NOTICE



The holding force of the product depends on the strength of the screw connection with which the clamping pin is connected to a workpiece, device or pallet.

It is not permitted to install the clamping pin using incorrect components, e.g., a mounting screw that is too short.

- ▶ Only use original clamping pins from Zimmer GmbH.
- ▶ When using the clamping pin make sure that the screw-in depth or thickness of the mounting material in the workpiece or pallet is sufficient.

NOTICE



Zimmer GmbH is not liable for specially made devices or pallets that do not comply with the specifications described in these installation and operating instructions.

The operator is responsible for ensuring functionality, accuracy and safety.

- ⇒ The prefabricated holes can be used for installation of the clamping pins on Zimmer GmbH pallets.
- ⇒ For installation on other workpieces, devices or pallets, centering holes must be made for the clamping pins.

INFORMATION



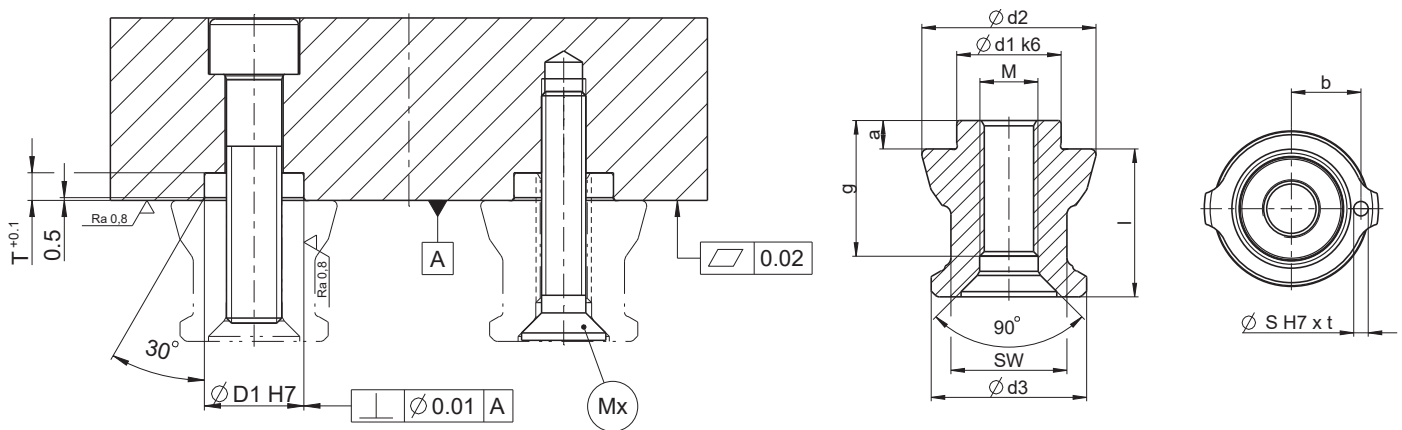
▶ Verify the permitted load capacity of the required clamping pin screw connections in accordance with VDI 2230.

- Strength class of the mounting screws ≥ 10.9
- ▶ Comply with the maximum tightening torque.

INFORMATION



▶ You can find more information in the technical data sheet on our website.



SPZ062

Technical data (General Tolerances, ISO 2768-m)			
Order No.	SPZ062BZ08-B	SPZ062BE08-B	SPZ062BS08-B
Ød1 [mm]	12	12	12
Ød2 [mm]	17	16.85	17
Ød3 [mm]	14.3	14.3	14.3
ØD1 [mm]	12	12	12
a [mm]	2.9	2.9	2.9
g [mm]	12	12	12
b [mm]	7.25	7.25	7.25
S [mm]	1.5	1.5	1.5
t [mm]	1.5	1.5	1.5
l [mm]	19.5	19.5	19.5
SW [mm]	12	12	12
D [mm]	3	3	3
M*	M8	M8	M8
Mx**	M6	M6	M6

SPZ112

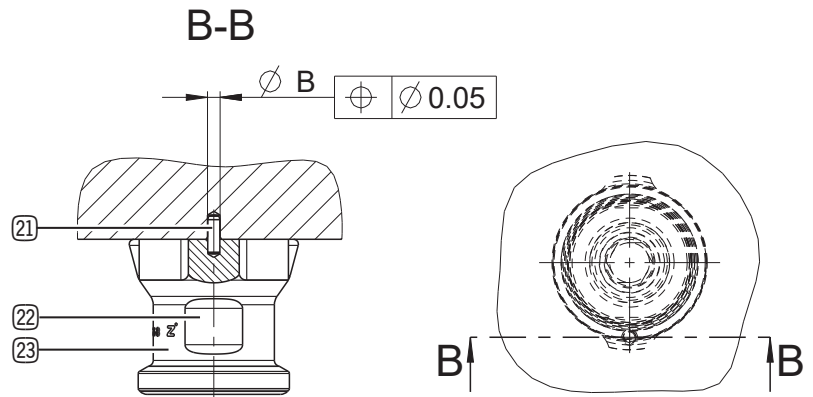
Technical data (General Tolerances, ISO 2768-m)						
Order No.	SPZ112BZ10-B	SPZ112BZ12-B	SPZ112BE10-B	SPZ112BE12-B	SPZ112BS10-B	SPZ112BS12-B
Ød1 [mm]	18	18	18	18	18	18
Ød2 [mm]	30	30	29.85	29.85	30	30
Ød3 [mm]	26.8	26.8	26.8	26.8	26.8	26.8
ØD1 [mm]	18	18	18	18	18	18
a [mm]	4.9	4.9	4.9	4.9	4.9	4.9
g [mm]	24	24	24	24	24	24
b [mm]	12	12	12	12	12	12
S [mm]	2.5	2.5	2.5	2.5	2.5	2.5
t [mm]	3	3	3	3	3	3
l [mm]	25.5	25.5	25.5	25.5	25.5	25.5
SW [mm]	20	20	20	20	20	20
D [mm]	5	5	5	5	5	5
M*	M10	M12	M10	M12	M10	M12
Mx**	M8	M10	M8	M10	M8	M10

10.3.1 Positioning the sword pins

The positioning of the sword pins can be defined using a straight pin.

If the straight pin is used, the clamping pins must be secured on the wrench flats during installation with a flat wrench so that the straight pin cannot be sheared off.

Installation size	Ø B [mm]
SPN062	1.6
SPN112	2.6
SPN138	2.6



- ②1 Straight pin
- ②2 Wrench flats
- ②3 Sword pins

10.3.2 Arrangement of the clamping pins

NOTICE



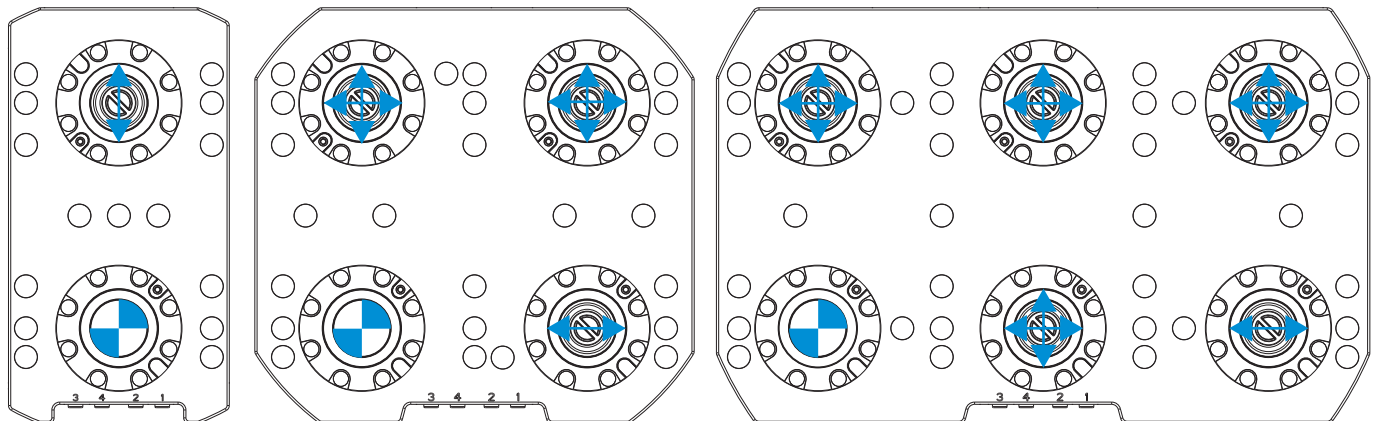
► Maintain a position tolerance of 0.03 mm when spacing the clamping pins.

INFORMATION



► You can find more information in the technical data sheet on our website.

	<ul style="list-style-type: none"> • Centering pin • No degree of freedom
	<ul style="list-style-type: none"> • Sword pins • Degree of freedom in the direction of the arrow
	<ul style="list-style-type: none"> • Retention pin • Degree of freedom in the direction of the arrow



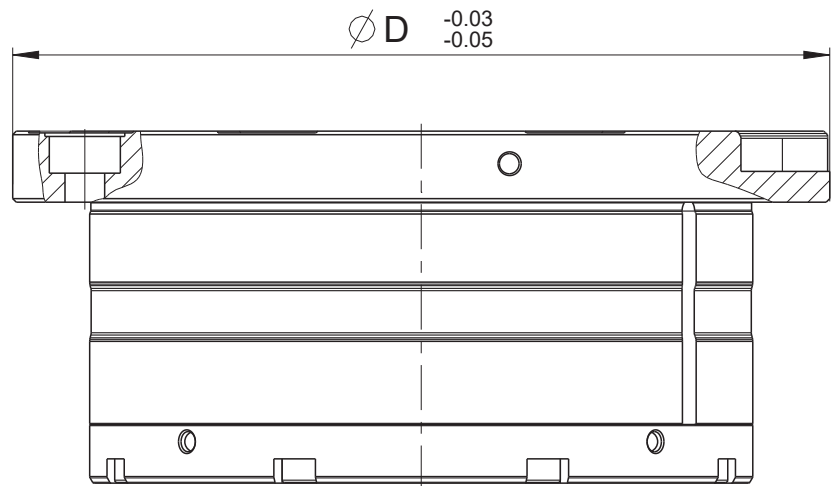
10.3.3 Minimum diameter on the support

NOTICE



It is not permitted to install the clamping pin using incorrect components, e.g., a mounting screw that is too short.
 ► When using customer-specific devices, workpieces or pallets, make sure that the minimum outside diameter is large enough to completely cover the contact surface of the product.

Installation size	Min. Ø D on the support [mm]
SPN062	62
SPN112	112
SPN138	138



10.3.4 Tightening torques

INFORMATION



The screw-in thread of the mounting piece and workpiece or pallet is made of the material 16MnCr5.

ISO 4762			ISO 10642		
Thread size	Strength class	Tightening torque [Nm]	Thread size	Strength class	Tightening torque [Nm]
M6	12.9	15	M6	12.9	12
M8	12.9	38	M8	12.9	29
M10	12.9	75	M10	12.9	57
M12	12.9	128	M12	12.9	99
M16	12.9	313	M16	12.9	183
M6	10.9	13	M6	10.9	10
M8	10.9	33	M8	10.9	25
M10	10.9	64	M10	10.9	49
M12	10.9	110	M12	10.9	84
M16	10.9	268	M16	10.9	156

10.4 Installing the automatic seal

WARNING

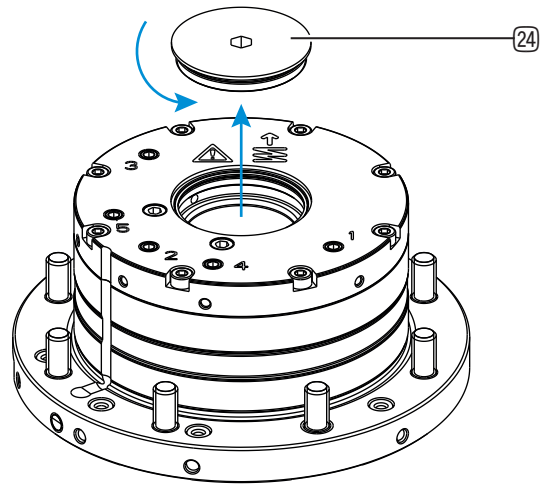


Risk of injury from parts flying and being flung

Various components of the product are continuously under spring tension.

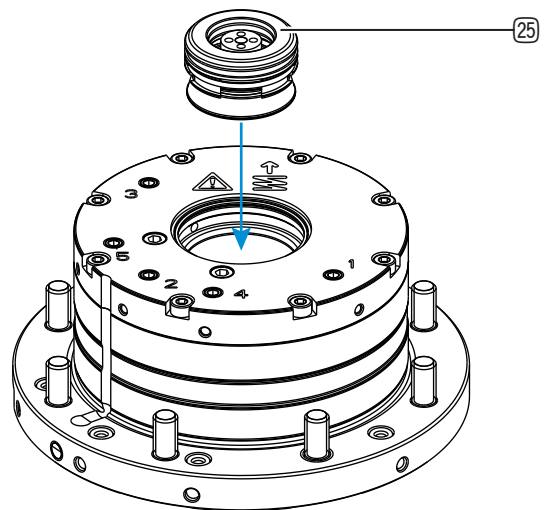
- Spring package
- Cover
- ▶ Do not loosen the screws of the cover.
- ▶ Do not remove the cover.
- ⇒ Warranty and disclaimer

- ▶ Make sure that the opening of the pin is free of foreign objects.
- ▶ Open the product with operating pressure.
- ▶ Remove the locking cover.



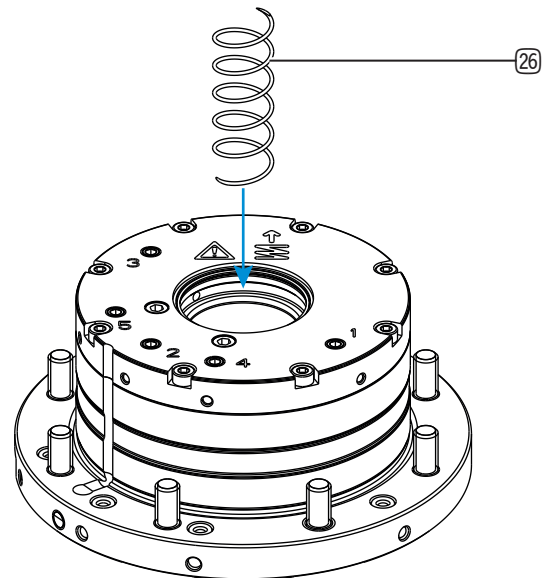
24 Locking cover

- ▶ Slide the automatic seal with the seal ring into the lower end position in the product.



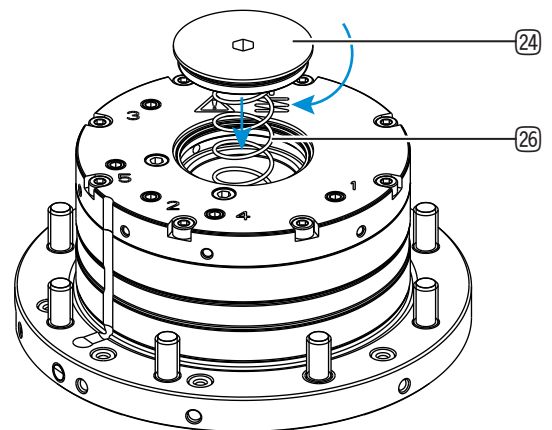
25 Automatic seal

- ▶ Slide the pressure spring into the automatic seal.



26 Pressure spring

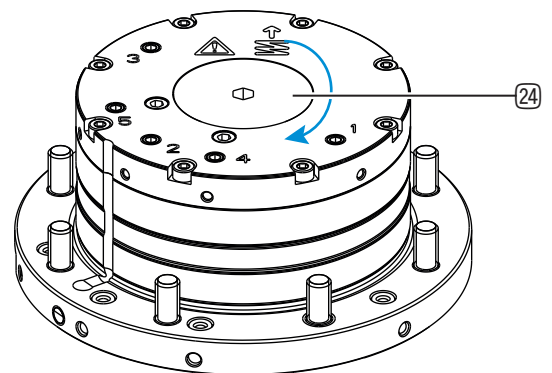
- ▶ Install the locking cover against the pre-load of the pressure spring.



24 Locking cover

26 Pressure spring

- ▶ Tighten the locking cover to 1 Nm.



24 Locking cover

- ▶ Check the automatic seal by pressing it down manually with a clamping pin.

⇒ The automatic seal is installed correctly if it closes the opening of the pin independently when the clamping pin is removed.

10.5 Installing the power supply

NOTICE



- ▶ For more information refer to the pneumatic diagram SPL000101.
- ▶ For more information refer to the technical data sheet.
- ▶ Close off unused connections using suitable dummy plugs.
- ▶ Use compressed air in accordance with ISO 8573-1 [4:4:4].

INFORMATION



The filter is included in the scope of delivery.

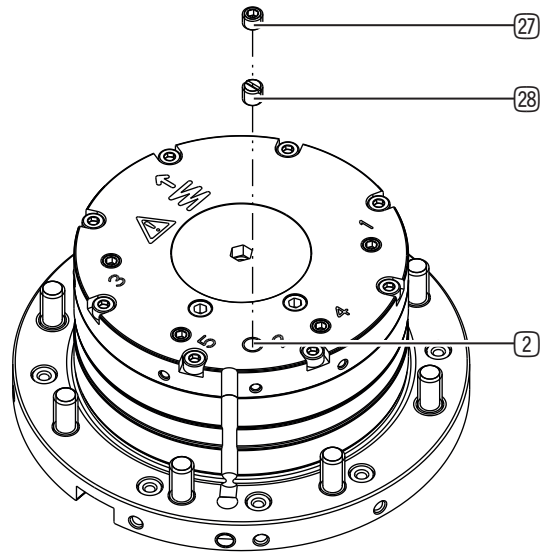
10.5.1 Venting the piston chamber

When connecting the product, a complete ventilation of the piston chamber when clamping is only possible via the pneumatic connections.

- ▶ Release the valves or shut-off valves.

If the PLUS connection is not used, the filter must be installed to enable the piston chamber to be vented.

- ▶ Remove the grub screw in the cover of the product.
- ▶ Install the filter in the PLUS connection.
- ▶ Make sure that the filter closes flush with the product.

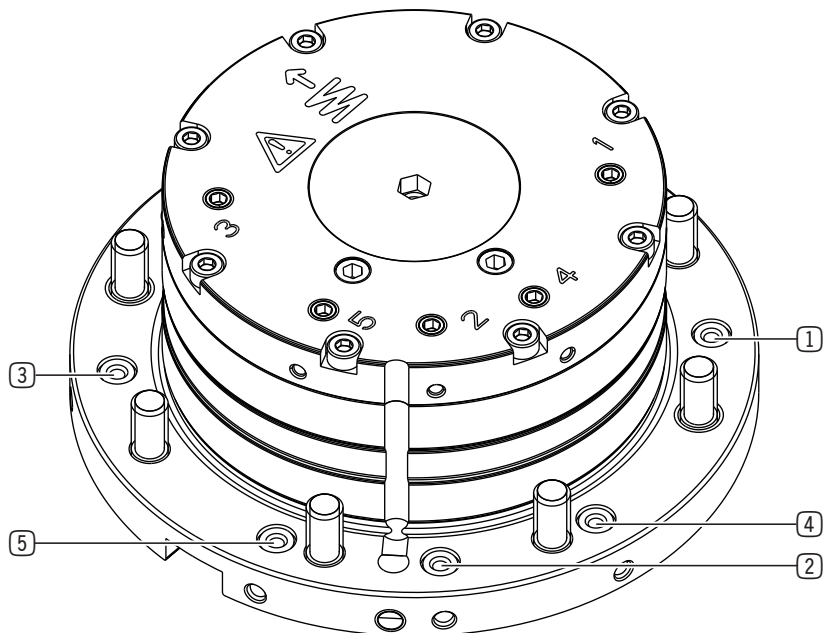


- ② PLUS connection
- ②⑦ Grub screw
- ②⑧ Filter

10.5.2 Tubeless connection

The tubeless connection is used by default.

- ▶ For more information refer to the section "10.1 Installing the product".

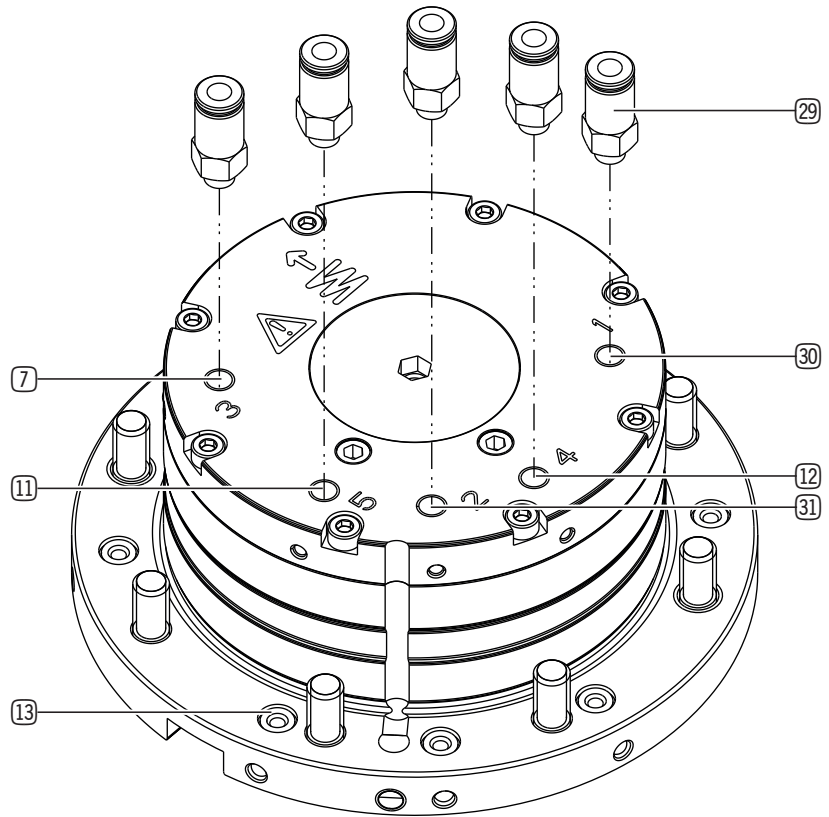


- ① Open
- ② PLUS connection
- ③ Blowing out/cleaning/positioning check
- ④ Piston position sensor: Connection 4
- ⑤ Piston position sensor: Connection 5

10.5.3 Tube connection

The tube connection is an alternative to the tubeless connection.

- ▶ Unscrew the grub screws.
- ▶ Insert the O-rings into the tubeless connection.
 - ▶ Lubricate the O-rings.
- ▶ Install suitable pneumatic connections.
- ▶ Make sure that the mounting piece is sealed in the area of the alternative connections.
- ▶ If the PLUS connection is not in use, insert a filter into the connection.
 - ▶ Make sure that the filter closes flush with the product, see section "10.5.1 Venting a filter into the piston chamber".
- ▶ Seal the alternative connections if the standard connections are to replace the alternative connections.



- ⑦ Alternatively: Blowing out/cleaning/positioning check
- ⑪ Alternatively: Piston position sensor: Connection 5
- ⑫ Alternatively: Piston position sensor: Connection 4
- ⑬ O-ring
- ⑲ Pneumatic connection
- ⑳ Alternatively: Open
- ㉑ Alternatively: PLUS connection

11 Commissioning

11.1 Checking operational readiness

- ▶ After the product has been properly installed, check the following properties to verify that it is ready to be operated:
 - ▶ Check the pneumatic connections for leaks by looking and listening.
 - ▶ Check all mounting screws for their prescribed tightening torque.
 - ▶ Check the product for leaks while it is pressurized by looking and listening.

12 Operation

- ▶ During operation, cover the entire contact surface of the product so that dirt cannot penetrate.
- ▶ Before any clamping, thoroughly clean the contact surfaces between the product, the clamping pin and the material to be clamped.
- ▶ Protect the opening of the pin from dirt when the product is not in use.
 - ▶ To do this, use accessories such as the sealing pin or automatic seal.
- ▶ During operation, secure the product against unintentional loosening.

13 Maintenance

CAUTION



Material damage resulting from blowing out with compressed air

Blowing out the product with compressed air can cause malfunctions and pose a risk of accidents.

- ▶ Never purge the product with compressed air.

CAUTION



Material damage caused by liquid and solvent-based cleaning agents

Liquid and solvent-based cleaning agents can cause malfunctions and pose a risk of accidents.

- ▶ Do not clean the product with any cleaning agents that are liquid or contain solvents.

NOTICE



▶ Take the product immediately out of operation if there is any visible damage or signs of malfunctions.

▶ Replace any worn components.

▶ Do not put the product into operation again until the damage has been repaired.

The maintenance interval depends on the respective application. The higher the strain, the more frequently maintenance must be carried out.

▶ Have maintenance work be performed by Zimmer Customer Service whenever possible.

⇒ Dismantling and reassembling the product without authorization may result in complications, as special installation equipment is required in some cases. Zimmer GmbH accepts no liability for any resulting malfunctions or damage.

Interval	Maintenance work
After 10,000 cycles or every 3 weeks	<p>Visual inspection</p> <p>The visual inspection merely involves visually inspecting component parts and their function. If any irregularities or damage are identified during the visual inspection, a more detailed check of the component parts must be carried out.</p> <ul style="list-style-type: none"> ▶ Carry out a visual inspection. ▶ Clean the product if it is dirty. ▶ Check the screw fitting of the clamping pin for a secure hold.
After 50,000 cycles or every year	<p>Clamping force measurement</p> <ul style="list-style-type: none"> ▶ Measure the clamping force. <ul style="list-style-type: none"> • Suitable devices for measuring the clamping force are available as accessories. ⇒ If the clamping force falls short by less than 15%: <ul style="list-style-type: none"> ▶ Further use of the product is at your own discretion. ▶ Or allow Zimmer GmbH to perform a check. ⇒ If the clamping force falls short by more than 15%: <ul style="list-style-type: none"> ▶ Allow Zimmer GmbH to perform a check.

14 Error diagnosis

NOTICE



Malfunction due to contamination

When dirt penetrates the product, this can lead to malfunctions.

- ▶ Always completely cover the contact surface of the product.

Error/fault	Cause	Measure
Product does not open.	<ul style="list-style-type: none"> • Operating pressure is too low • Leakage/blockage/pinching of the power supply lines 	<ul style="list-style-type: none"> ▶ Increase the operating pressure (4 to 6 bar). ▶ Check the supply lines.
	<ul style="list-style-type: none"> • Excess force is acting upon the clamping pin. 	<ul style="list-style-type: none"> ▶ Reduce the tensile load or compressive load on the product.
	<ul style="list-style-type: none"> • Clamping piston does not move. 	<ul style="list-style-type: none"> ▶ Vent the PLUS connection.
Long response time (too little air is fed in)	<ul style="list-style-type: none"> • Valve is too small (product opens after a delay) 	<ul style="list-style-type: none"> ▶ Select a larger valve.
	<ul style="list-style-type: none"> • Power supply lines from the valve to the product are too long (product opens after a delay) 	<ul style="list-style-type: none"> ▶ Shorten the supply lines. <ul style="list-style-type: none"> ▶ Keep the distance of the product to the valve as short as possible. ▶ Increase the cross section of the supply lines.
Air leak or blow-off noise	<ul style="list-style-type: none"> • Housing parts are leaky. • Installation error 	<ul style="list-style-type: none"> ▶ Realign the product. ▶ Re-install the product. ▶ Check the pneumatic connections and sealing locations. ▶ Check the O-rings. ▶ Open and close the product multiple times.
	<ul style="list-style-type: none"> • Connecting cables are leaky. 	<ul style="list-style-type: none"> ▶ Check the supply lines.
Dimensional deviations/chatter marks	<ul style="list-style-type: none"> • Centering pin is not correctly retracted. • Contamination of the product 	<ul style="list-style-type: none"> ▶ Clean the product.
	<ul style="list-style-type: none"> • Product worn 	<ul style="list-style-type: none"> ▶ Replace the product.

15 Decommissioning/disposal

INFORMATION



When the product reaches the end of its operational phase, it can be completely disassembled and disposed of.

- ▶ Disconnect the product completely from the power supply.
- ▶ Dispose of the components properly according to the material groups.
- ▶ Comply with the locally applicable environmental and disposal regulations.

16 RoHS declaration

In terms of the EU Directive 2011/65/EU

Name and address of the manufacturer:**Zimmer GmbH**

Im Salmenkopf
77866 Rheinau, Germany

+49 7844 9138 0

info@zimmer-group.com

www.zimmer-group.com

We hereby declare that the incomplete machine described below

Product designation: Zero-point clamping system

Type designation: SPN series

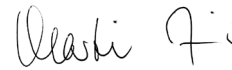
conforms to the requirements of the directive in its design and the version we put on the market.

Michael Hoch

Authorized representative for
compiling the relevant technical
documents

Rheinau, Germany, 2020-03-31

(Place and date of issue)



Martin Zimmer
(Legally binding signature)
Managing Partner

17 REACH declaration

In terms of the EU Regulation 1907/2006

Name and address of the manufacturer:**Zimmer GmbH**

Im Salmenkopf
77866 Rheinau, Germany

+49 7844 9138 0

info@zimmer-group.com

www.zimmer-group.com

REACH stands for **R**egistration, **E**valuation, **A**uthorisation and **R**estriction of **C**hemicals.

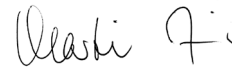
A full declaration of REACH can be obtained from the manufacturer due to the duty to notify in accordance with Art. 33 of the REACH regulation ("Duty to communicate information on substances in articles").

Michael Hoch

Authorized representative for
compiling the relevant technical
documents

Rheinau, Germany, 2020-03-31

(Place and date of issue)



Martin Zimmer
(Legally binding signature)
Managing Partner

18 Declaration of Conformity

In terms of the EU Machinery Directive 2006/42/EC (Annex II 1 A)

Name and address of the manufacturer:

Zimmer GmbH

📍 Im Salmenkopf
77866 Rheinau, Germany
☎ +49 7844 9138 0
✉ info@zimmer-group.com
🌐 www.zimmer-group.com

We hereby declare that the products described below

Product designation: Zero-point clamping system

Type designation: SPN series

conform to the requirements of the 2006/42/EC directive in their design and the version we put on the market.

The following harmonized standards have been used:

- DIN EN ISO 12100:2011-03 Safety of machinery – General principles for design – Risk assessment and risk reduction
- DIN EN ISO 13849-1/-2 Safety of machinery – Safety-related parts of control systems
- DIN EN ISO 349:1993+A1:2008 Safety of machinery – Minimum gaps to avoid crushing of parts of the human body

A full list of applied standards can be obtained from the manufacturer.

Clemens Kimmig
Authorized representative for
compiling the relevant technical
documents

Rheinau, Germany, 2021-04-30
(Place and date of issue)



Martin Zimmer
(Legally binding signature)
Managing Partner