



VERO-S NSA3

**Third-generation palletizing
modules for high-end
palletizing**

Enhancing the tried-and-tested: Optimized for the modern requirements involved in handling pallets

Flatter, more stable and more high-performance: SCHUNK has further developed its VERO-S NSA plus palletizing module especially for automated machine tool loading and upgraded it to its new NSA3 generation. The height of the new, more compact NSA3 has been further reduced. The special shape of the module prevents formation of chips or accumulation of cooling lubricant. In addition, the integrated cleaning function has been enhanced. In addition to the flat contact surface, an even more powerful blow-off function now keeps the short taper and clamping slides free of chips. This and the additional monitoring of the flat contact surfaces using dynamic pressure enable smooth operation around the clock.

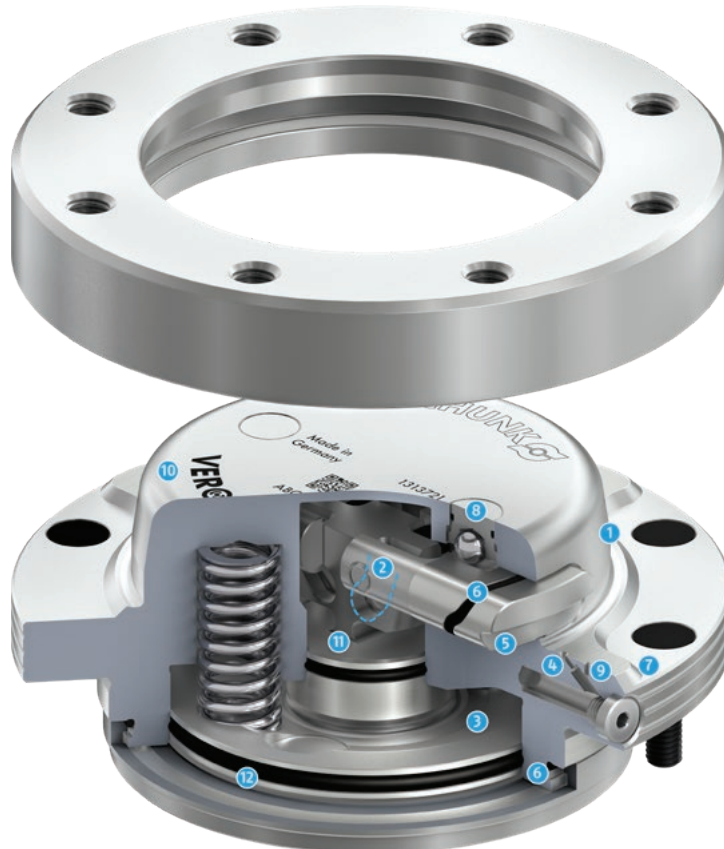


Advantages – Your benefits

- + Perfectly suitable for automation**
With integrated monitoring and cleaning function
- + High process reliability**
No tilting of heavy pallets thanks to pallet lift-off function
- + Extremely flat design**
For maximum utilization of the machine room
- + Integrated cleaning function**
No chips or coolant on the flat work surface
- + Completely compatible with VERO-S NSA plus modules**
No danger of confusion or incorrect operation
- + Patented dual stroke system for highest pull-down forces**
Therefore extremely rigid clamping without vibrations
- + High changing repeatability**
Due to high-precision short taper centering <0.005 mm
- + The modules are corrosion-free and completely sealed**
Long life time and maximum process reliability
- + Turbo integrated by default**
Pull-down force increased up to 360% to make the most of the machine's performance, hence high efficiency
- + Form-fit, self-retained locking**
Full pull-down force is maintained even in the event of a pressure drop
- + All modules can be operated with a system pressure of 6 bar**
Additional pressure intensifiers are not required

Function NSA3

The clamping procedure of the module is carried out by an integrated spring assembly. An axial piston and a patented drive kinematics convert the spring force into a maximum pull-down force on the clamping ring. Clamping is carried out by two clamping slides and is self-retained. In addition, the pull-down force can be increased by means of an integrated turbo function. The module is opened pneumatically with a system pressure of 6 bar. A standard integrated lift-off function raises the pallet slightly when opening to prevent the pallet from tilting.



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| <p>1 High-precision short taper centering
Ensures μ-precise connection</p> <p>2 Patented dual stroke system
The patented dual stroke system between piston and clamping slide ensures maximum pull-down forces</p> <p>3 Integrated turbo function
For amplification of the pull-down force</p> <p>4 Air barrier holes on functional surfaces
Optimal cleaning of the centering cone and the contact surfaces of the clamping slides</p> <p>5 Large contact surfaces
For transmitting the pull-down and holding forces</p> <p>6 Completely sealed system
Therefore absolutely maintenance-free</p> | <p>7 Aligning surface at outer diameter
For best support and highest rigidity</p> <p>8 Lifting function when opening the modules
No tilting of the clamping pallet during removal</p> <p>9 Contact monitoring
For monitoring the presence of the pallet and for cleaning the flat work surfaces</p> <p>10 Entry radii on the module
For fast and safe connecting even in the event of tilt angle and eccentricity</p> <p>11 Flexible piston
For pulling in the pallet without lateral forces</p> <p>12 Pneumatic system
Actuation with 6 bar</p> |
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Centering via short taper

The precise short taper centering combined with the form-fit and self-retaining locking characterizes the SCHUNK quick-change pallet system.



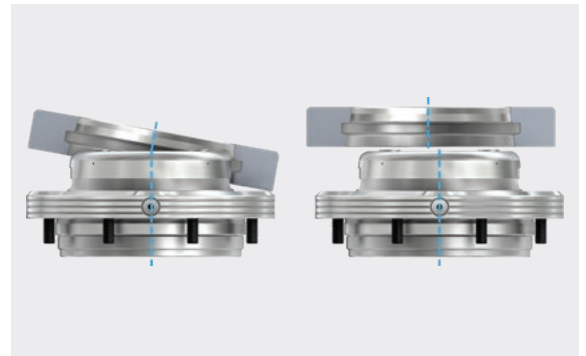
Locking via clamping slides

Large contact surfaces between clamping slide and clamping ring ensure low surface pressure when locking. Long service life without wear.



Easy joining

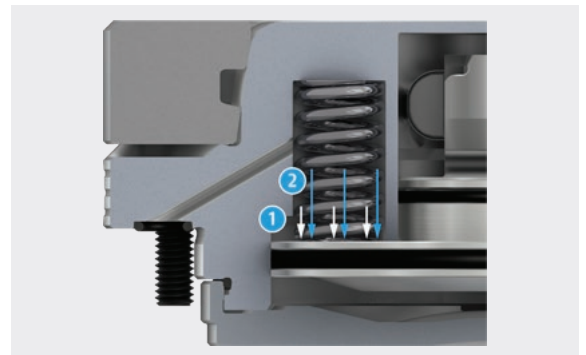
Entry radii on the clamping module enable quick and secure joining, even with a tilt angle and eccentricity. Benefit: more user friendly for manual and automatic loading.



Integrated turbo function

In order to raise the pull-down force, the quick-change pallet module is additionally pressurized with compressed air during clamping. The turbo function increases the pull-down force by up to a factor of 3.6 (max. 18 kN) compared to pure clamping via spring force. With the active turbo function, higher cutting parameters in the machining process are facilitated.

- 1 **Spring force**
Stainless, fatigue-resistant pressure springs.
- 2 **Additional force**
Resulting from the turbo function.



Extremely flat design

Due to its extremely flat design, the quick-change pallet system NSA3 requires only minimal space in the machine. The largest part of the machine room is still available for the workpiece and for machining. NSA3 plus can be retrofitted to any machine table.



Low installation depth

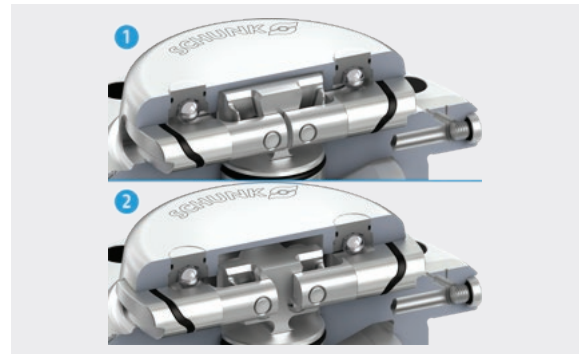
A key and visual aspect of the new NSA3 clamping modules is the smaller "backpack". Depending on the module size, this could be reduced by up to 10 mm compared to the NSA plus version. Benefit: clamping solutions can be designed with a lower profile.



Lifting function

The standard version of the NSA3 plus is equipped with an integrated lifting function for pallets. A control cam is integrated in the clamping slide and lifts the pallet by up to 0.5 mm when opening the quick-change pallet module. As a result of lifting, the clamping ring is lifted out of the taper centering – this prevents jamming of the pallet when it is taken out (e.g. due to robot handling).

- 1 **Module opened**
The lifting function raises the pallet.
- 2 **Module closed**
The lifting function is pushed back by the weight of the pallet.



Aligning surface at outer diameter

The clamping ring rests on four surfaces on the outer diameter of the quick-change pallet module. This ensures ideal support for transmission of high torques.

- 1 **Contact surfaces**



Cleaning and monitoring of the aligning surface

All NSA3 clamping modules have an integrated contact monitoring by default (dynamic pressure monitoring). When the pallet is loaded, the contact surface and the functional surfaces are cleaned at the same time. This ensures a process reliable sequence.



Cleaning the functional surfaces

The standard integrated cleaning function of the flat contact surface has been extended to include additional air purge holes on the short taper and below the clamping slides. This means that all functional surfaces involved in the clamping procedures are now kept clean with an air film.

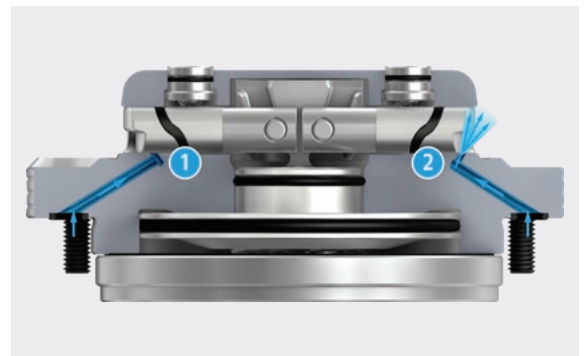
- ❶ **Short taper**
An air film keeps the short taper free of chips.
- ❷ **Clamping slide**
An angled air opening on the flat work surface creates an air film on the contact surfaces of the clamping slides.



Monitoring the clamping slide position – opened status

All NSA3 clamping modules are equipped with monitoring of the clamping slide positions via dynamic pressure by default. Depending on the position of the clamping slide, one side is under dynamic pressure and the other side is ventilated.

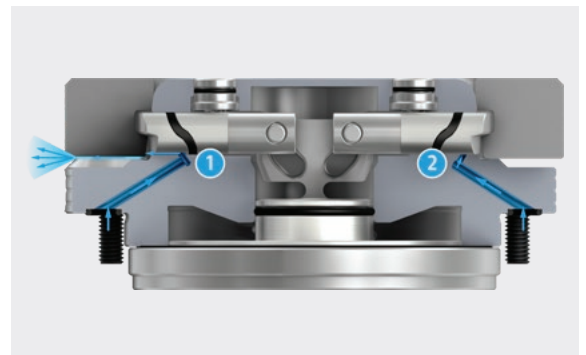
- ❶ **Dynamic pressure**
The compressed air cannot escape because the clamping slide is above the bore hole.
- ❷ **Deaeration**
The compressed air can escape because the clamping slide is not positioned above the bore hole.



Monitoring the clamping slide position – locked status

All NSA3 clamping modules are equipped with monitoring of the clamping slide positions via dynamic pressure by default. Depending on the position of the clamping slide, one side is under dynamic pressure and the other side is ventilated.

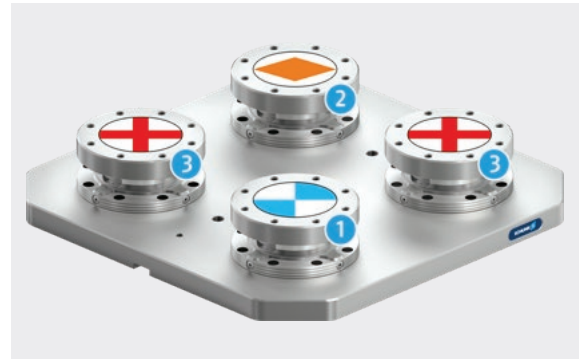
- ❶ **Deaeration**
The compressed air can escape because the clamping slide is not positioned above the bore hole.
- ❷ **Dynamic pressure**
The compressed air cannot escape because the clamping slide is above the bore hole.



Configuration of clamping rings type A, B and C

The clamping rings are used for clamping and positioning the clamping pallets or devices to be re-equipped. There are three different types of clamping rings:

- ① **Type A**
Fixed
- ② **Type B**
Positioned – diamond shaped
- ③ **Type C**
With a centering play



Made of stainless steel – long service life

All functional components are made of hardened stainless steel.



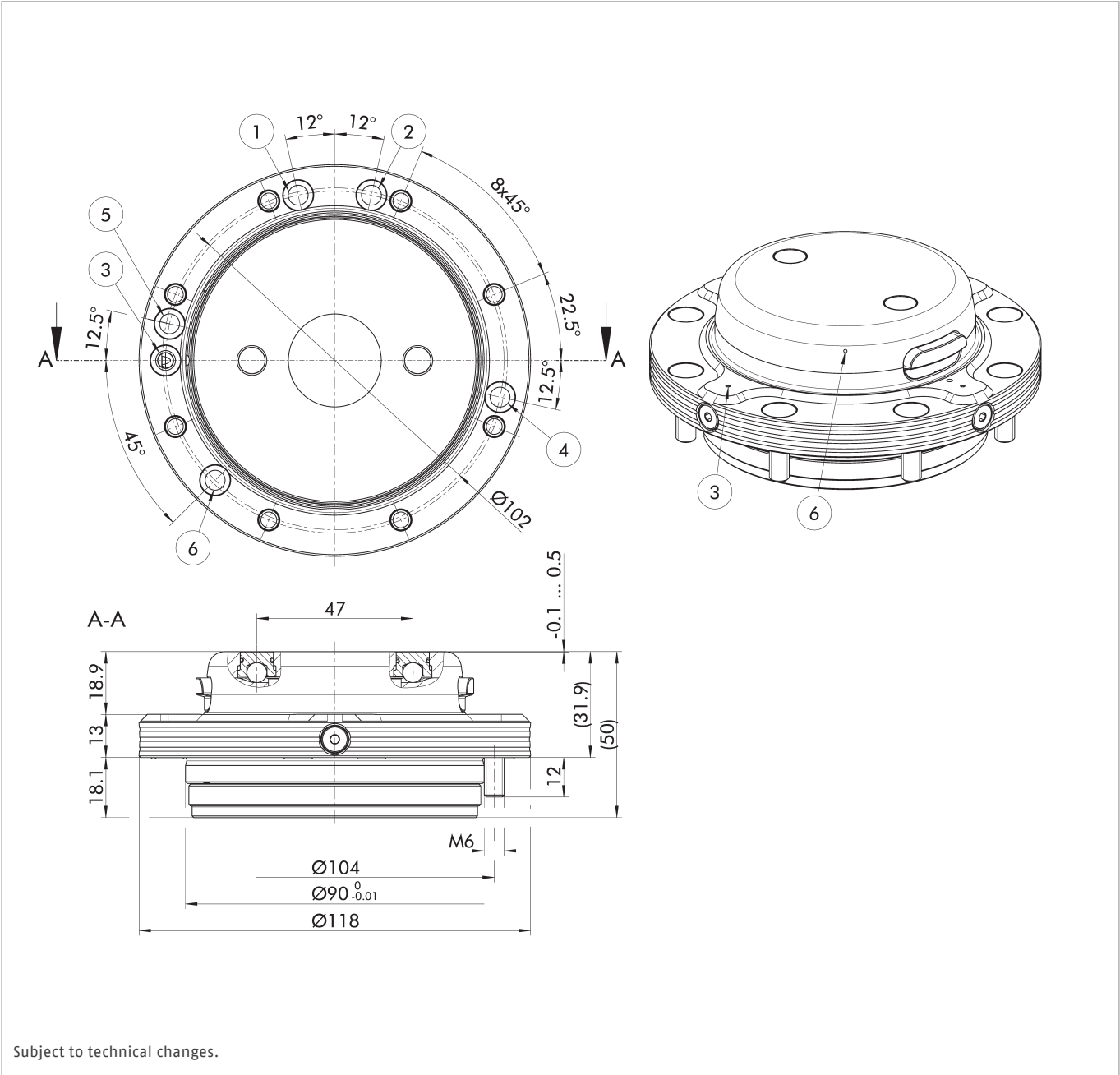
Palettizing module

Scope of delivery

Clamping module, mounting screws, O-rings, cover plugs, operating manual; without clamping ring

Technical data

Description	ID	Pull-down force	Pull-down force with turbo	Lifting force	Unlocking pressure	Repeat accuracy	Weight
		[kN]	[kN]	[kN]	[bar]	[mm]	[kg]
NSA3 120	1531269	3	10	1	6	< 0.005	2



- ① Hose-free direct connection module open
- ② Hose-free direct connection turbo function
- ③ Hose-free direct connection for cleaning of flat work surface
- ④ Hose-free direct connection for monitoring module open
- ⑤ Hose-free direct connection for slide monitoring module closed
- ⑥ Hose-free direct connection for cleaning cone systems



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