

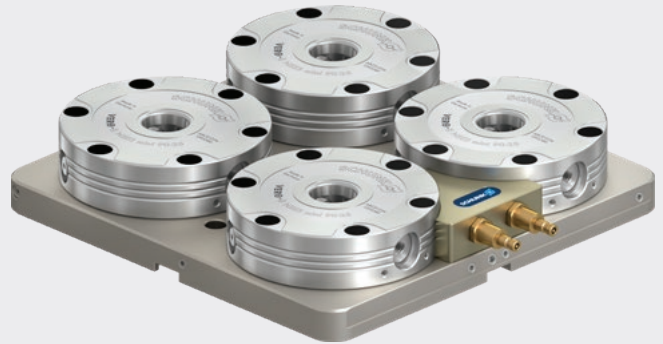


VERO-S NSE3 mini 90-25

**High-performance modules
for the smallest variable
gauges**

Force combined with compactness – sealed miniature clamping modules with significantly increased pull-down force with small pitches

With the VERO-S NSE3 mini 90-25, SCHUNK has closed the gap between the NSE mini 90 and the powerful NSE3. Thanks to the drive kinematics via a piston, the module achieves significantly higher pull-down forces while maintaining the same small pitch of just 100 mm. Two round clamping slides ensure a hermetic seal and reliably protect the interior against dirt and coolant. The new generation also impresses with the optimized dimensional stability of the module body, which means that significantly higher tilting moments and shear forces can be absorbed. Whether for light milling operations or automated machine loading – the NSE3 mini 90-25 is the ideal solution for demanding applications in compact spaces.



Advantages – Your benefits

- + SCHUNK modular system**
Innumerable combinations of standard clamping devices to suit all different types of machines
- + Optional cone seal**
For protecting the change interface from coolant, dust, and chips
- + Positioning via short taper**
Very easy joining process at a repeat accuracy of < 0.005 mm
- + Patented dual stroke system for highest pull-down forces**
Therefore extremely rigid clamping without vibrations
- + Turbo integrated by default**
Increase of pull-down force up to 400% for optimal utilization 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
- + One consistent clamping pin size for all NSE mini-modules**
No danger of confusion or incorrect operation
- + Integrated slider monitoring for "open" and "locked" position**
Can be used in automated applications
- + All pneumatic modules can be operated at a system pressure of 6 bar**
Additional pressure intensifiers are not required
- + The modules are corrosion-free and completely sealed**
Long life time and maximum process reliability

Function of NSE3 mini 90-25

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 pin. 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.



- 1 Optional cone seal**
For protection of the changing interface
- 2 Patented dual stroke system**
A patented dual stroke system between piston and clamping slide ensures maximum pull-down forces
- 3 Turbo function**
For amplification of the pull-down force
- 4 Large contact surfaces**
For transmitting the pull-down and holding forces
- 5 Completely sealed system**
Therefore absolutely maintenance-free
- 6 Large flat surface**
For best support and highest rigidity
- 7 Monitoring of the clamping slide position "open condition" and "locked condition"**
Via dynamic pressure possible
- 8 Cover plugs for mounting screws**
Therefore no accumulation of coolant or chips possible
- 9 Sliding bearings in the force flow**
For maximum pull-down forces with a long service life
- 10 Lower-lying countersunk screws**
For easy cleaning of the flat surface
- 11 Pneumatic system**
Actuation with 6 bar

100% compatible with the NSE mini 90-25 generation

The quick-change pallet modules of the NSE3 mini 90-25 generation are 100% compatible with the modules of the NSE mini 90-25 generation. This means all modules are 1:1 interchangeable.



Exchangeability of the plug against a cone seal

All quick-change pallet modules from the NSE3 mini 90-25 generation are equipped for integrating a cone seal by default. The standard plug can easily be replaced by a cone seal at a later point.



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

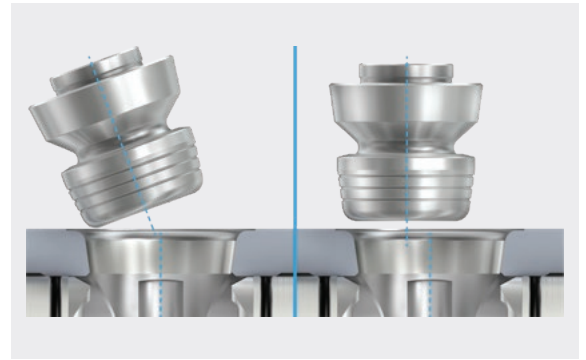
Large contact surfaces between clamping slides and clamping pin ensure a low surface pressure, resulting in a long service life.



Easy joining

Insertion radii on the clamping pin enable quick and safe joining even at a tilt angle and in case of 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 4 (max. 6,000 N) compared to clamping merely based on 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.



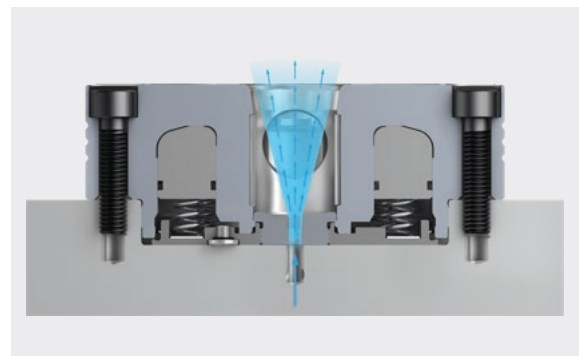
Rolling friction between piston and clamping slide

In order to further increase the pull-down force, plain bearing bushings are integrated in the piston for bearing the cylinder pin. Therefore the efficiency is increased and wear minimizes at the same time.



Air purge connection

For a blow-out function, the base plate under the clamping pin opening can be provided with a bore.



Hermetically sealed – maintenance-free

The cover plate at the lower piston chamber and the O-rings on the round clamping slides completely seal the system.
Benefit: No penetration of chips, dirt or coolant. The module is maintenance-free.



Made of stainless steel – long service life

All functional components are made of hardened stainless steel.



Monitoring the clamping slide position – opened status

All NSE3 mini 90-25 clamping modules are equipped as standard with monitoring of the clamping slide positions via dynamic pressure. Depending on the position of the clamping slide, one side is under dynamic pressure and the other side is ventilated.

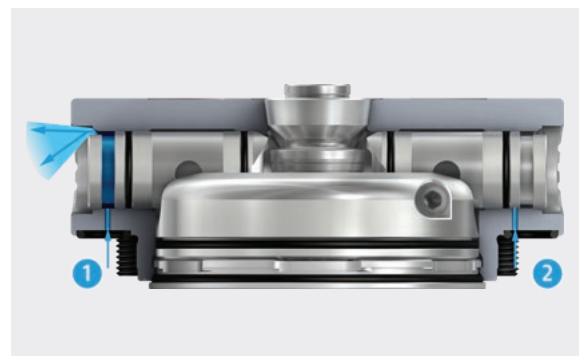
- ❶ **Dynamic pressure**
The compressed air cannot escape because the clamping slide is above the bore hole.
- ❷ **Deaeration**
The compressed air can escape because the clamping slide is not positioned above the bore hole.



Monitoring the clamping slide position – locked status

All NSE3 mini 90-25 clamping modules are equipped as standard with monitoring of the clamping slide positions via dynamic pressure. 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.



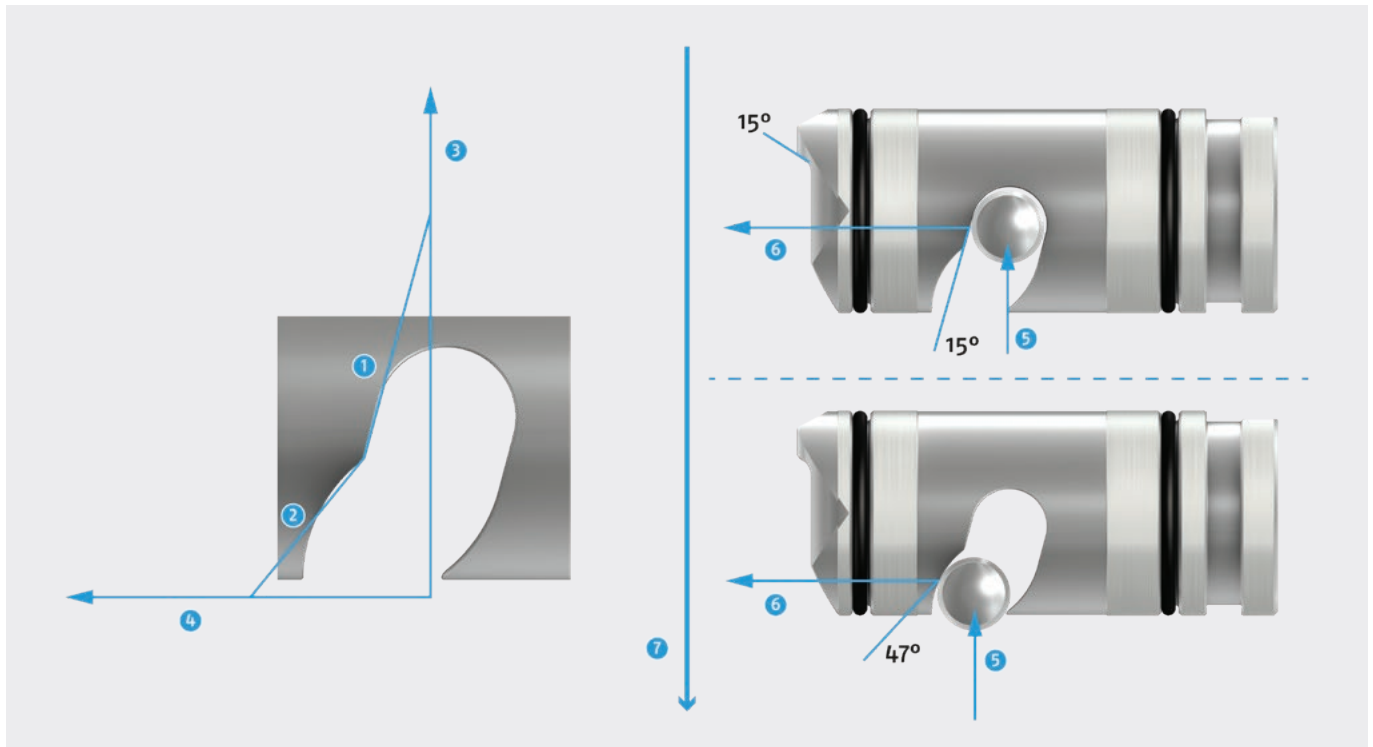
Arrangement of clamping pins type A, B, and C

The clamping pin is used for clamping and positioning the workpieces or devices to be converted. Basically, there are three different types of clamping pins:

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



Fast and clamping stroke – the patented force



The patented dual stroke system provides the best transmission ratios and maximum pull-down force.

- 1 Clamping stroke**
 Minimum clamping slide movement and an enormous increase in pull-down force due to the small angle.
- 2 Fast stroke**
 The upstream stroke of the clamping stroke has low forces but a long stroke.
- 3 Y-axis**
 Shows the increase in the resulting force due to the various angles.
- 4 X-axis**
 Shows the distance traveled by the clamping slide due to the various angles.
- 5 Actuation force**
 Force transferred from the piston to the clamping slide.
- 6 Force on the clamping slide**
 Force-amplified clamping slide due to angular relations.
- 7 Pull-down force on the clamping pin**
 Due to the different surfaces, the pull-down force is five times higher than the actuating force.

Optional cone seal

Due to the optional cone seal, the changing interface is reliably protected against the ingress of coolant, dust, and chips.



1. Module locked without clamping pin

In the ventilated status, the seal is applied to the short taper, completely sealing the changing interface.



2. Module opens without clamping pin

When the module is opened, the seal contracts into its initial state.



3. Module open with clamping pin

The cone seal is pushed downwards by introducing the clamping pin into the module, which releases the changing interface.



Quick-change pallet module

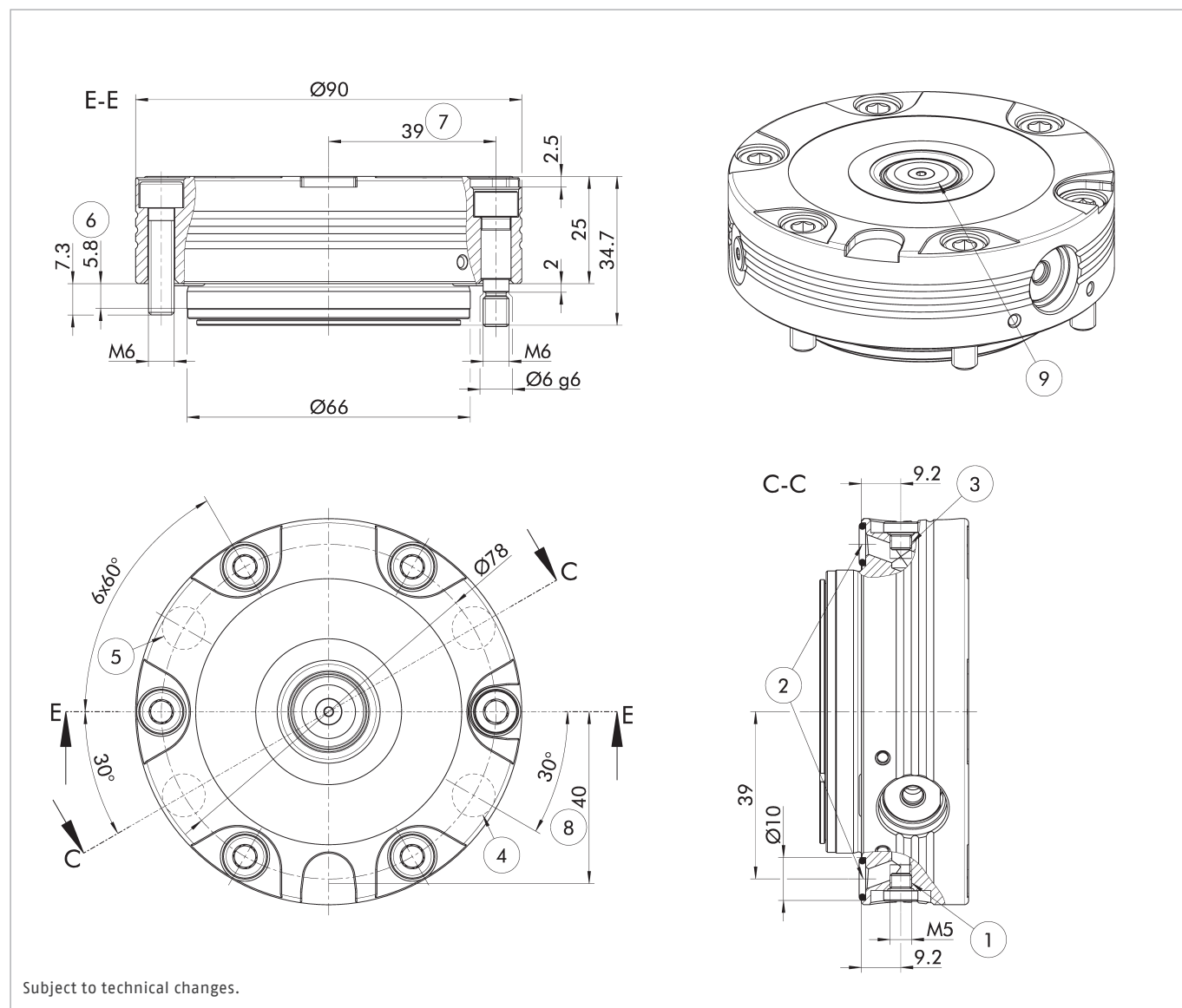
With anti-rotation protection V1

Scope of delivery

Clamping module, mounting screws, fitting screws, O-rings, cover caps, operating manual; without clamping pins, without indexing pins

Technical data

Description	ID	Cone seal	Pull-down force [kN]	Pull-down force with turbo [kN]	Unlocking pressure [bar]	Repeat accuracy [mm]	Weight [kg]
NSE3 mini 90-25-V1	1595383		1.5	6	6	< 0.005	1.3
NSE3 mini 90-25-V1-K	1595384	●	1.5	6	6	< 0.005	1.3



- ① Unlocking connection via screw connection M5
- ② Hose-free direct connection
- ③ Turbo connection via screw connection M5
- ④ Hose-free direct connection for monitoring module open
- ⑤ Hose-free direct connection for slide monitoring module closed
- ⑥ Fitting length module's seat
- ⑦ Clearance 39 ± 0.01 mm for fitting screw PSC mini V1 (ID 0435921) in the clamping station
- ⑧ Clearance 40 ± 0.01 mm for IXB V1 mini in the clamping pallet
- ⑨ Optional: Cone seal

Accessories

Clamping pins SPx mini

Clamping pin for positive connection with NSE mini clamping modules.



Suitable for	Description	ID
NSE3 mini 90-25-V1	SPA mini 20	0435610
NSE3 mini 90-25-V1	SPB mini 20	0435620
NSE3 mini 90-25-V1	SPC mini 20	0435630

Clamping pin extension

For lifting the workpiece from the machine table, and for improving the accessibility of the machine spindle.



Suitable for	Description	ID
NSE3 mini 90-25-V1	SP-VL mini 30-6-SPA	0435640
NSE3 mini 90-25-V1	SP-VL mini 60-6-SPA	0435650

Indexing pin

Used as an anti-rotation protection for VERO-S modules with anti-rotation protection V1.



Suitable for	Description	ID
NSE3 mini 90-25-V1	IXB V1 mini	0435930

Cone seal

For quick and easy retrofitting of existing NSE3 mini 90-25 modules without cone seal to protect the change interface.



Suitable for	Description	ID
NSE3 mini 90-25-V1	KVS mini 20	1541908

Protection covers

Used to close the changing interface and to cover the contact surface.



Suitable for	Description	ID
NSE3 mini 90-25-V1	SDE mini 90	0435670

Protection covers

For closing the changing interface.



Suitable for	Description	ID
NSE3 mini 90-25-V1	SDE mini 20	0435660

Cover caps

Used to cover the mounting screws and to avoid the accumulation of chips.



Suitable for	Description	ID
NSE3 mini 90-25-V1	ADK M6-SW4	0435911



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