

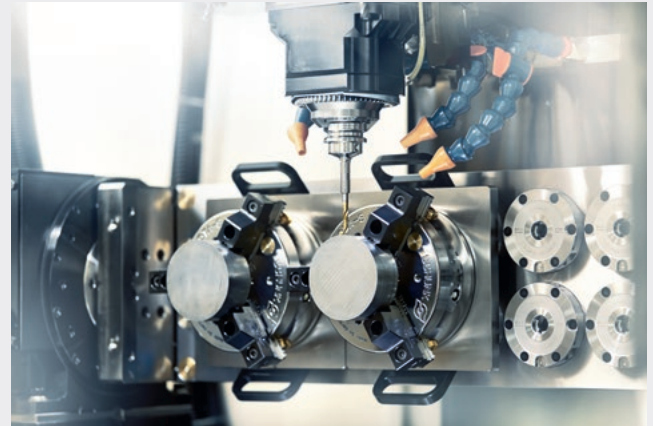


VERO-S NSE mini 90-25

**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

The VERO-S NSE mini 90-25 was developed to close the gap in terms of pull-down force between NSE mini 90 and NSE3. Due to the drive kinematics via piston, the quick-change pallet module achieves even higher pull-down forces with a constant small gauge of 100 mm. This module is also hermetically sealed by the two round clamping slides. The high pull-down forces make this module very suitable for light milling and it is also used in automated machine loading.



Advantages – Your benefits

- + SCHUNK modular system**
Innumerable combinations of standard clamping devices to suit all different types of machines
- + Low height design**
Expands your machine's workspace
- + All pneumatic modules can be operated at a system pressure of 6 bar**
Additional pressure intensifiers are not required
- + 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
- + Form-fit, self-retained locking**
Full pull-down force is maintained even in the event of a pressure drop
- + Corrosion-free stainless steel design**
Long life time and maximum process reliability
- + Turbo integrated by default**
Pull-down force increased up to 300% for optimal utilization of the machine's performance, hence high efficiency.
- + One consistent clamping pin size for all NSE mini-modules**
No danger of confusion or incorrect operation
- + Integrated slide monitoring**
Can be used in automated applications

Function NSE 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 **High-precision short taper centering**
Ensures μ -precise connection
- 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**
Via dynamic pressure possible
- 8 **Cover plugs for mounting screws**
Therefore no accumulation of coolant or chips possible
- 9 **Insertion radii on the clamping pin**
For fast and safe connecting even in the event of tilt angle and eccentricity
- 10 **Pneumatic system**
Actuation with 6 bar

Made of stainless steel – long service life

All functional components are made of hardened stainless steel.



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.



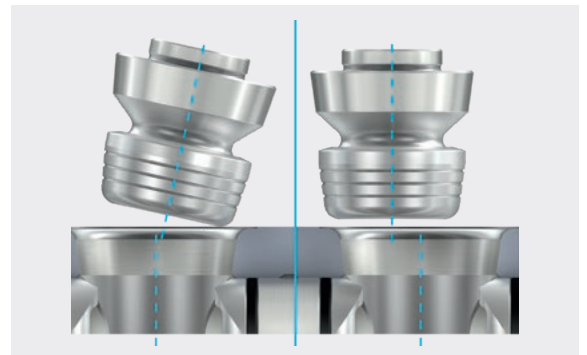
Locking via clamping slides

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



Easy joining – more user-friendly

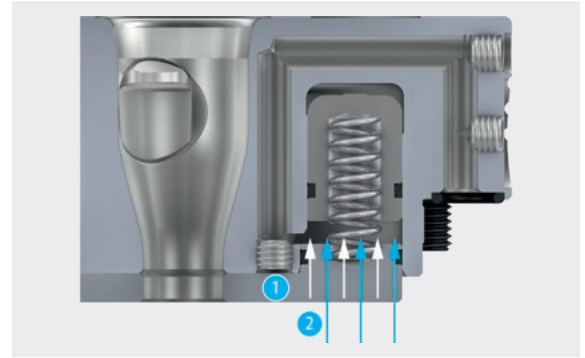
Insertion radii on the clamping pin enable quick and safe joining even at a tilt angle and in case of eccentricity. Benefit: More user friendly for manual and automatic loading.



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.



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.



Monitoring of the clamping slide position

The open and closed positions of the clamping slide can be monitored via dynamic pressure.

- ① **Deaeration**
The compressed air can escape because the clamping slide is not positioned above the bore hole.
- ② **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:

- ❶ **Type A**
Fixed
- ❷ **Type B**
Positioned – diamond shaped
- ❸ **Type C**
With a centering play



Fast and clamping stroke – the patented force



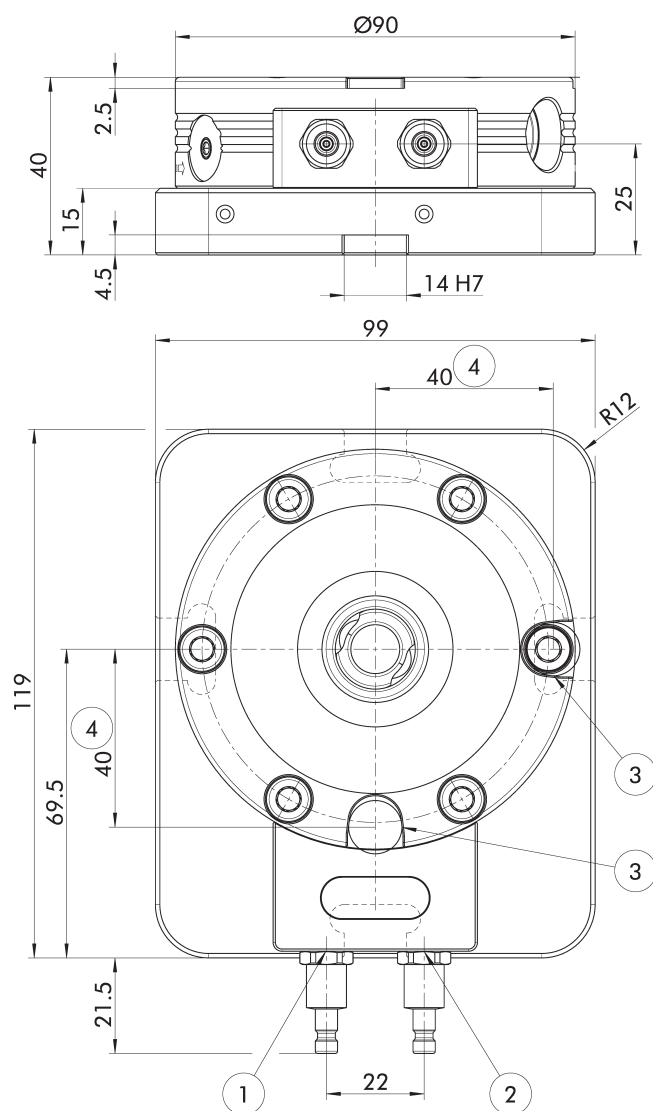
The patented dual stroke system provides the best transmission ratios and maximum pull-down force.

- 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.

1-way clamping station with anti-rotation protection V1 and turbo function

Clamping station, operating manual; without clamping pins, without indexing pins, without cylindrical clamps

Description	ID	Pull-down force [kN]	Pull-down force with turbo [kN]	Unlocking pressure [bar]	Weight [kg]
NSL mini 100-25-V1	1460952	1.5	6	6	3.3



Subject to technical changes.

- ① G1/8 air connection, open module
② G1/8 air connection, turbo function
③ Fitting groove for positional alignment of the clamping pallet
④ Clearance 40 ± 0.01 mm for indexing pins

Clamping station

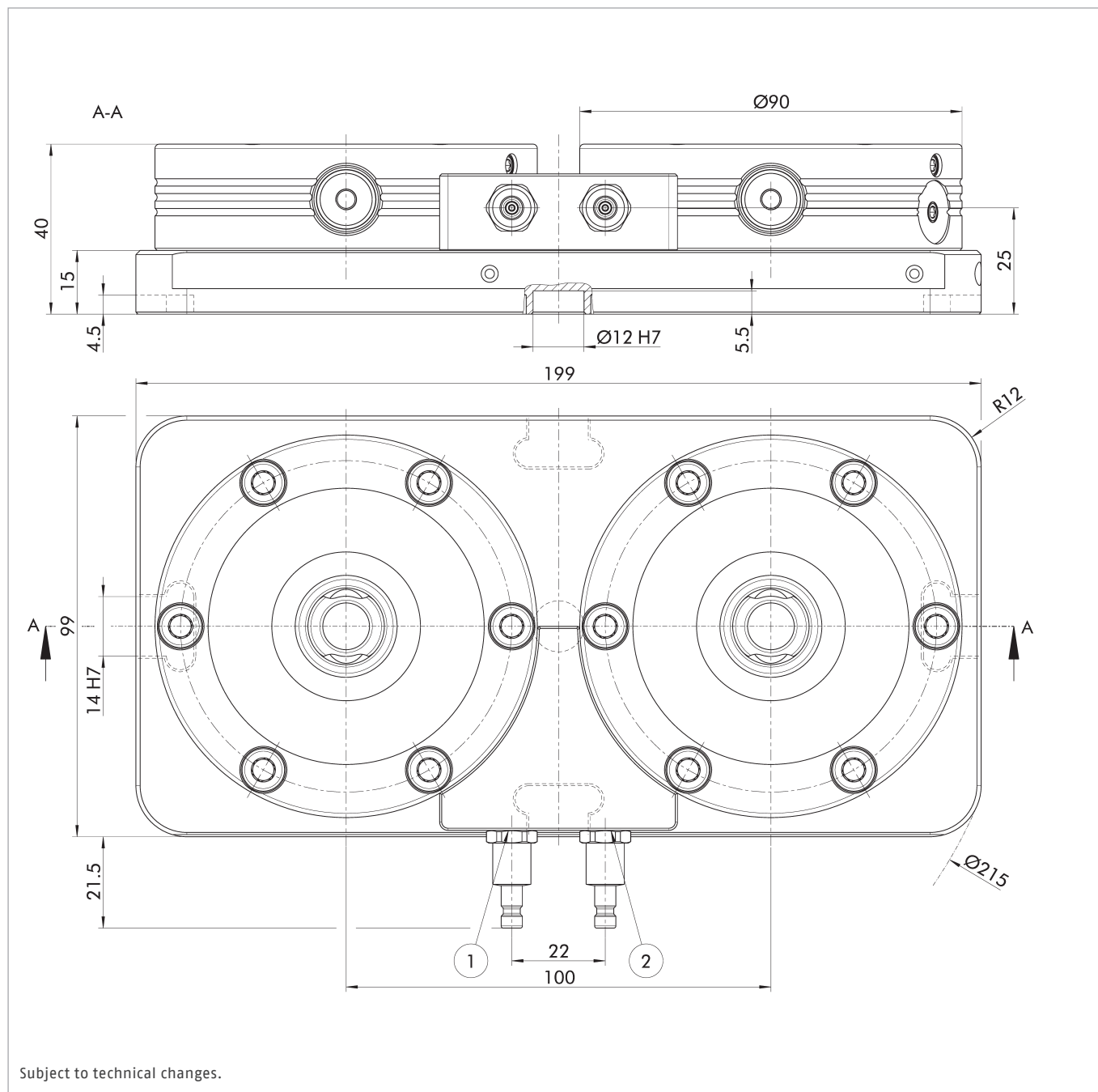
2-way clamping station with turbo function

Scope of delivery

Clamping station, operating manual; without clamping pins, without cylindrical clamps

Technical data

Description	ID	Pull-down force [kN]	Pull-down force with turbo [kN]	Unlocking pressure [bar]	Weight [kg]
NSL mini 100-25-2	1357102	3	12	6	5.2



Subject to technical changes.

① G1/8 air connection, open modules

② G1/8 air connection, turbo function

Clamping station

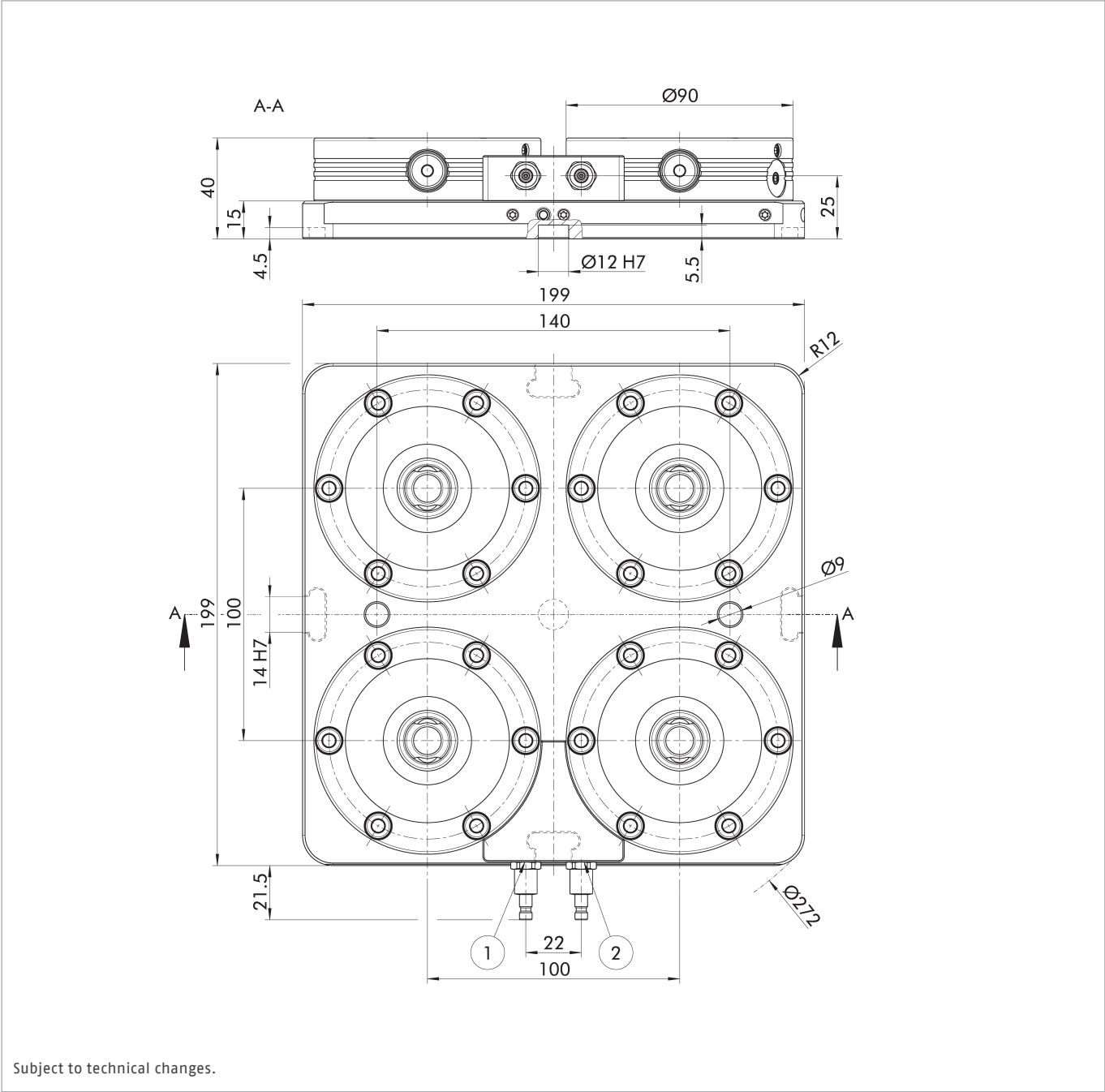
4-way clamping station with turbo function

Scope of delivery

Clamping station, operating manual; without clamping pins, without cylindrical clamps

Technical data

Description	ID	Pull-down force [kN]	Pull-down force with turbo [kN]	Unlocking pressure [bar]	Weight [kg]
NSL mini 100-25-4	1357103	6	24	6	9.3



① G1/8 air connection, open modules

② G1/8 air connection, turbo function

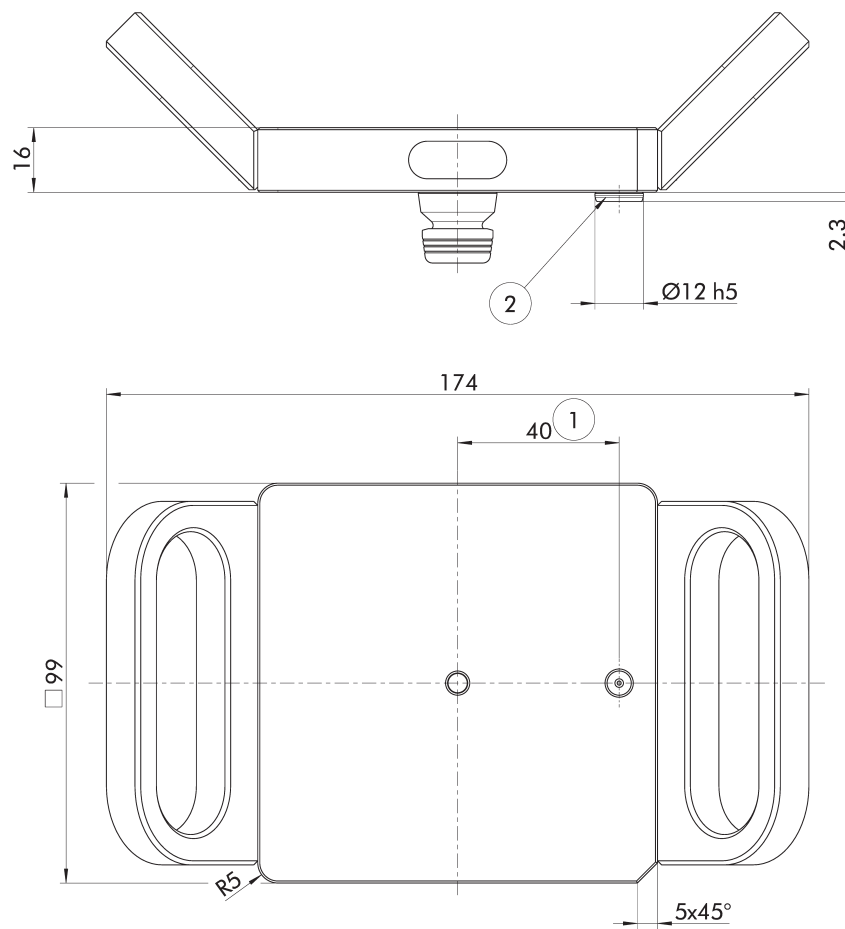
Clamping Pallet

Scope of delivery

Clamping pallet, clamping pin, aluminum handles, indexing pin

Technical data

Description	ID	Material	Plane parallelism [mm]	Weight [kg]
PAL S mini 99 x 99-V1	0435310	Steel	0.02	1.4



Subject to technical changes.

- ① 40 ± 0.01 mm for in-house production ② IXB V1 mini indexing pin for position orientation on the NSE mini 90-V1

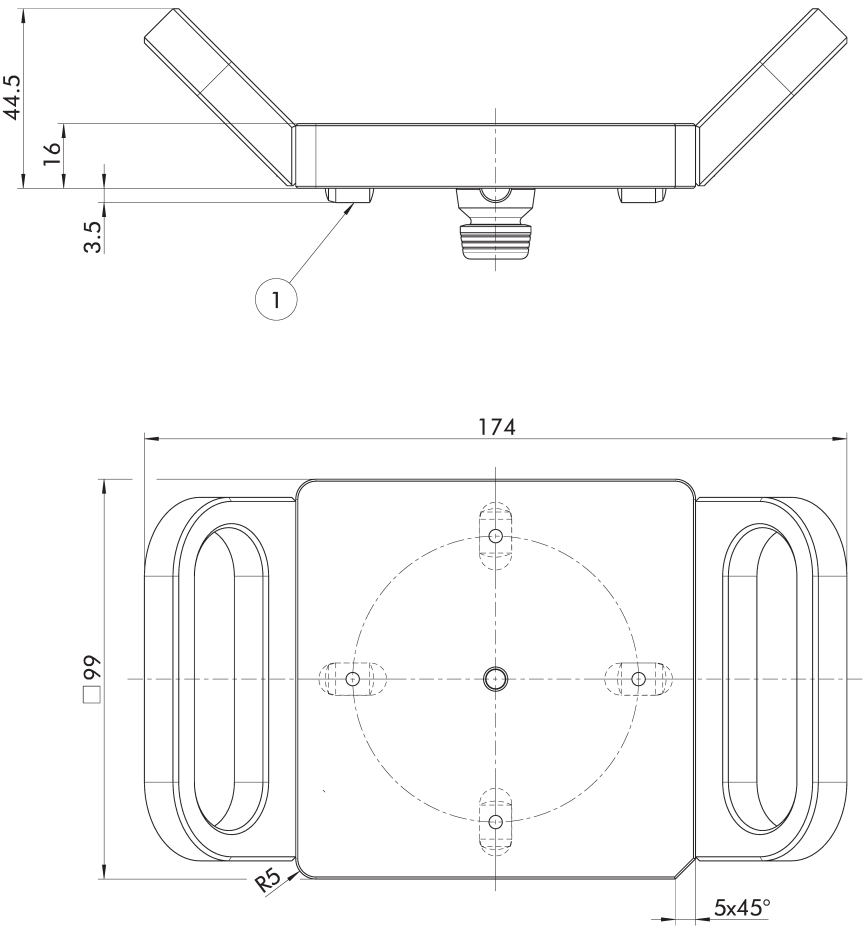
Clamping Pallet

Scope of delivery

Clamping pallet, clamping pins, aluminum handles, cylindrical pins, screw

Technical data

Description	ID	Material	Plane parallelism [mm]	Weight [kg]
PAL S mini 99 x 99-V4	1435607	Steel	0.02	1.4



Subject to technical changes.

① Cylindrical pin for position orientation

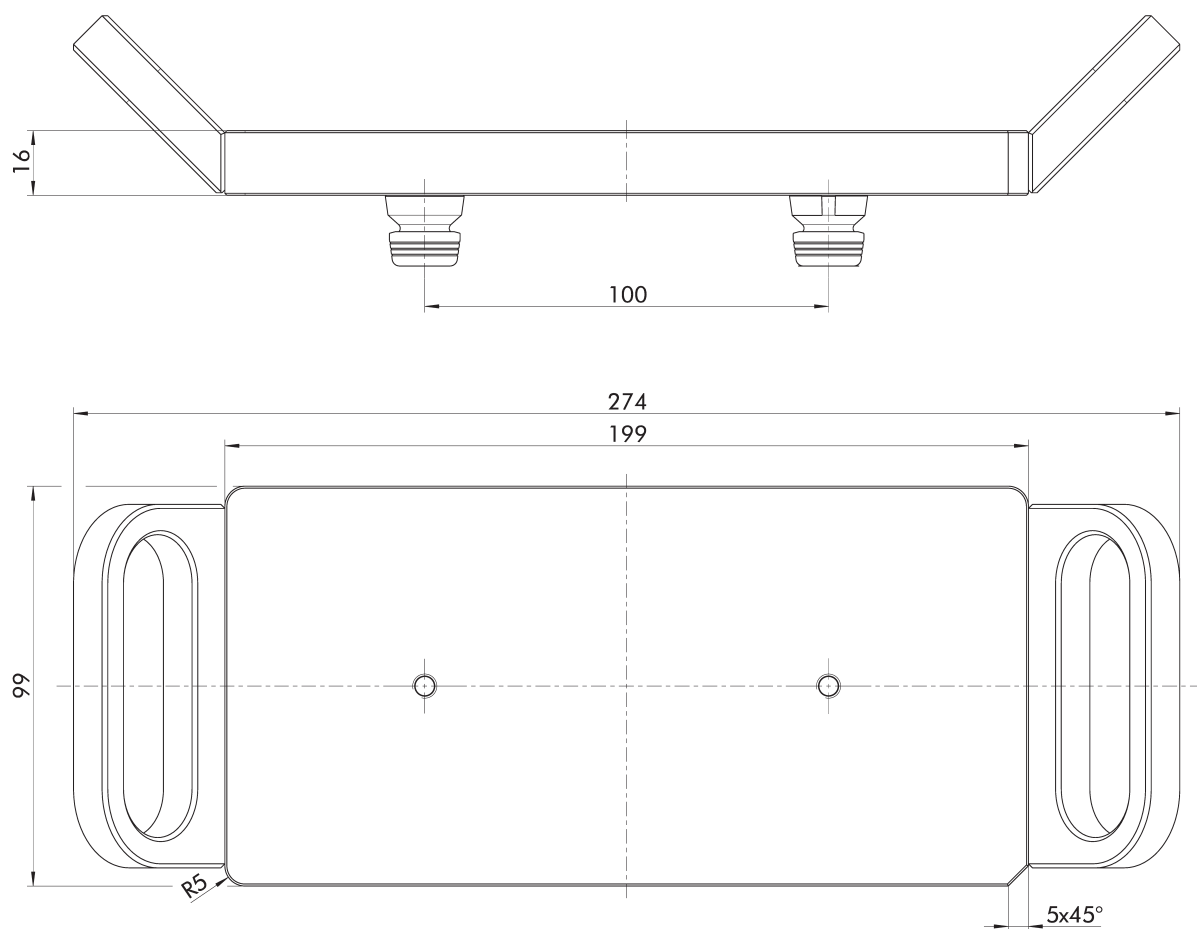
Clamping Pallet

Scope of delivery

Clamping pallets, clamping pins, aluminum handles

Technical data

Description	ID	Material	Plane parallelism [mm]	Weight [kg]
PAL S mini 199 x 99	0435320	Steel	0.02	2.7



Subject to technical changes.

Clamping Pallet

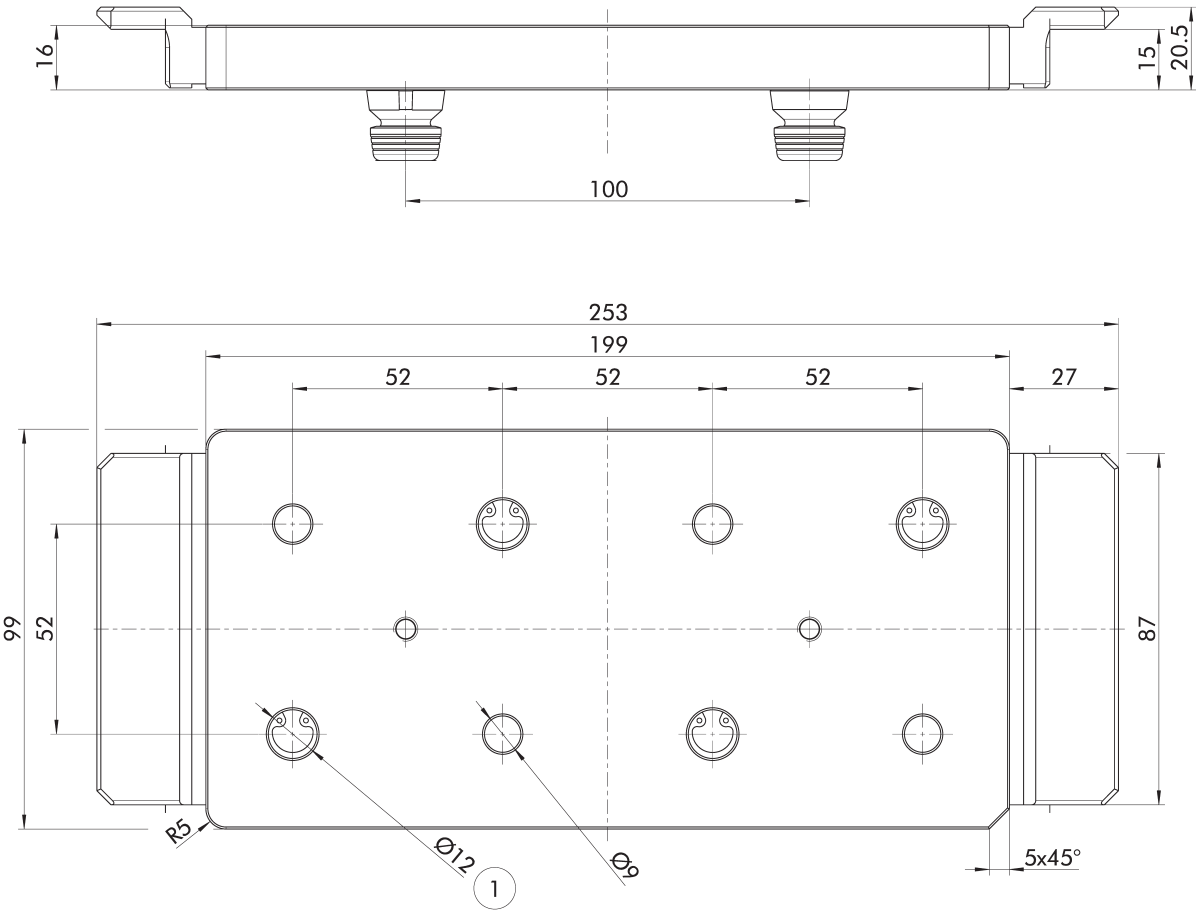
Clamping pallet with prepared bore hole grid for clamping devices.
Suitable clamping devices:
KSC mini 70-80, KSC mini 70-100, KSC3(-K) 80-130, KSC3(-K) 80-190

Scope of delivery

Clamping pallet, clamping pins, handles; without clamping device

Technical data

Description	ID	Material	Plane parallelism [mm]	Weight [kg]
PAL-K S mini 199 x 99	1551644	Steel	0.02	2.6



Subject to technical changes.

① Prepared for alignment pins Ø 12m6

② Prepared for M8 screws

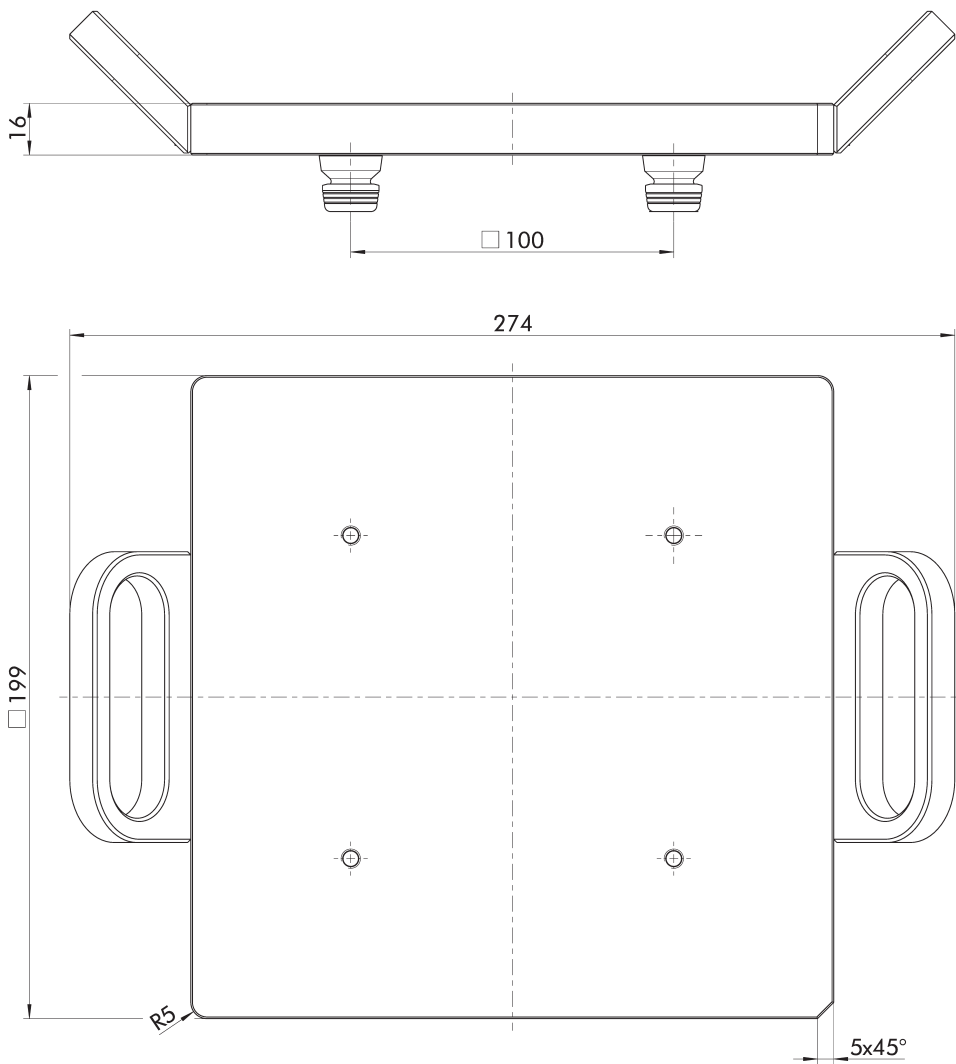
Clamping Pallet

Scope of delivery

Clamping pallets, clamping pins, aluminum handles

Technical data

Description	ID	Material	Plane parallelism [mm]	Weight [kg]
PAL S mini 199 x 199	0435340	Steel	0.02	5.2



Subject to technical changes.

Clamping Pallet

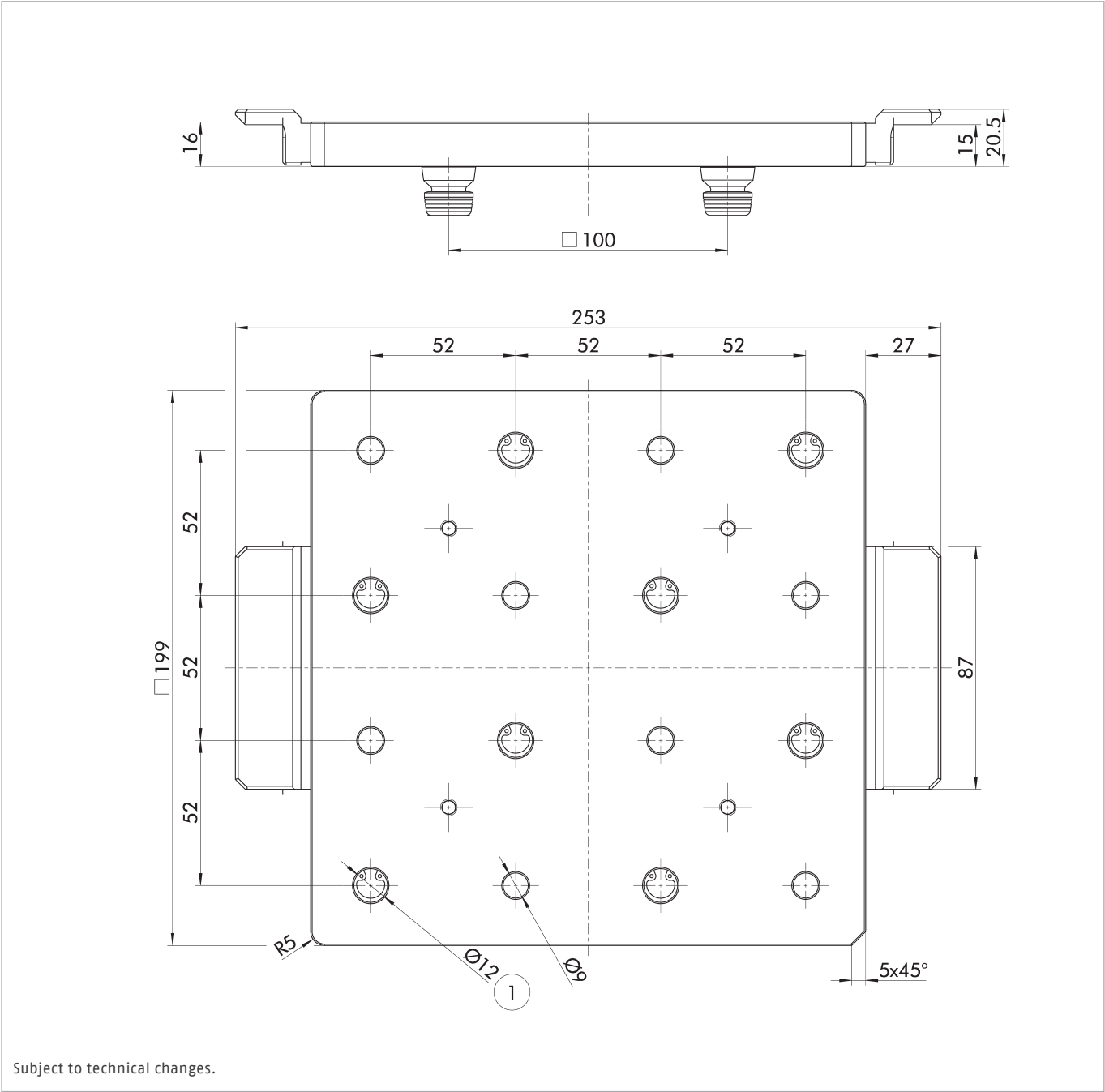
Clamping pallet with prepared bore hole grid for clamping devices.
Suitable clamping devices:
KSC mini 70-80, KSC mini 70-100, KSC3(-K) 80-130, KSC3(-K) 80-190

Scope of delivery

Clamping pallet, clamping pins, handles; without clamping device

Technical data

Description	ID	Material	Plane parallelism [mm]	Weight [kg]
PAL-K S mini 199 x 199	1551645	Steel	0.02	5



① Prepared for alignment pins $\varnothing 12$ m6

② Prepared for M8 screws

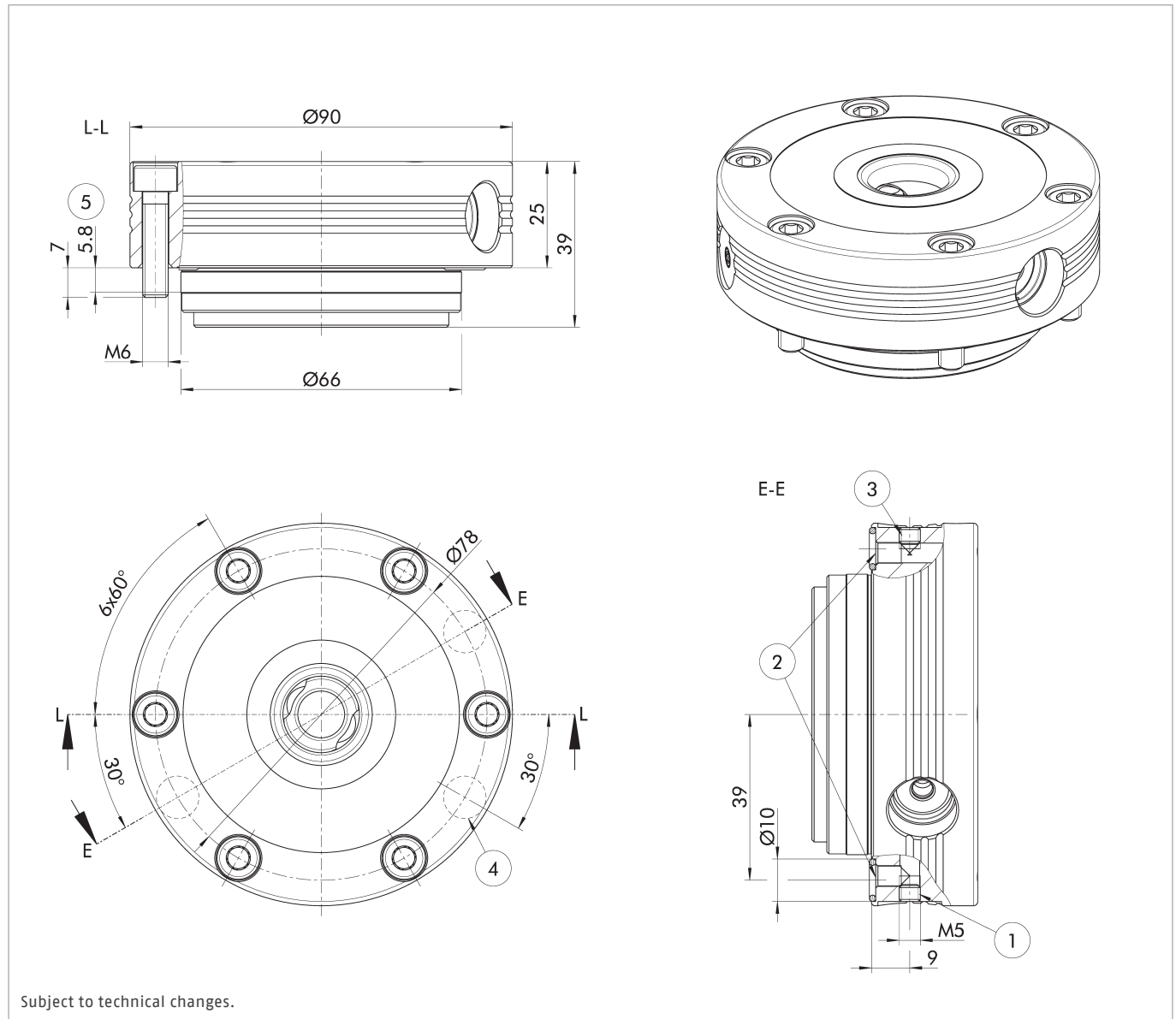
Quick-change pallet module

Scope of delivery

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

Technical data

Description	ID	Pull-down force [kN]	Pull-down force with turbo [kN]	Unlocking pressure [bar]	Repeat accuracy [mm]	Weight [kg]
NSE mini 90-25	1319696	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 Fitting length module's seat

Quick-change pallet module

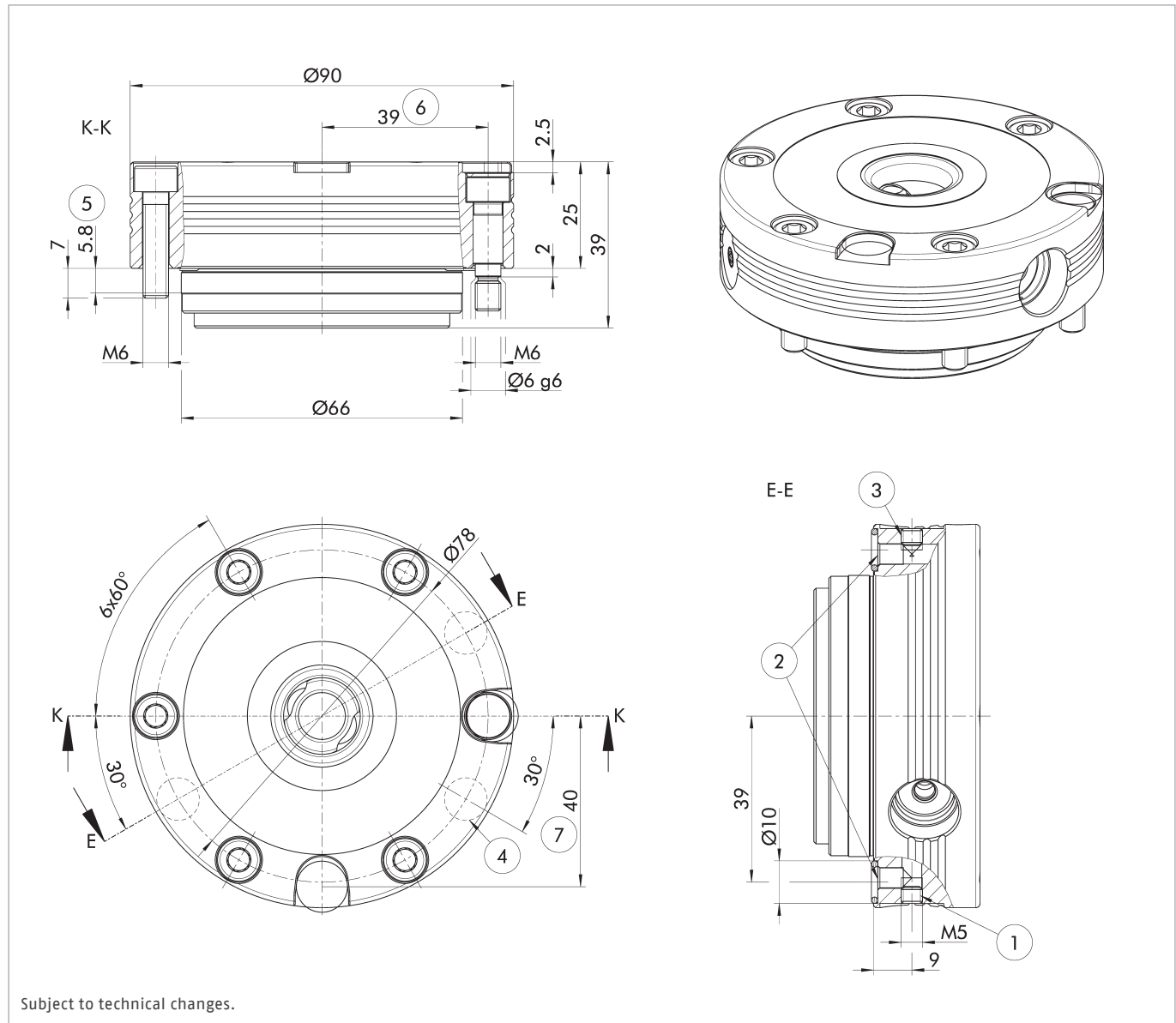
With anti-rotation protection V1

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	Pull-down force [kN]	Pull-down force with turbo [kN]	Unlocking pressure [bar]	Repeat accuracy [mm]	Weight [kg]
NSE mini 90-25-V1	1460873	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 Fitting length module's seat
- ⑥ Clearance 39 ± 0.01 mm for fitting screw PSC mini V1 (ID 0435921) in the clamping station
- ⑦ Clearance 40 ± 0.01 mm for IXB V1 mini in the clamping pallet

Quick-change pallet module

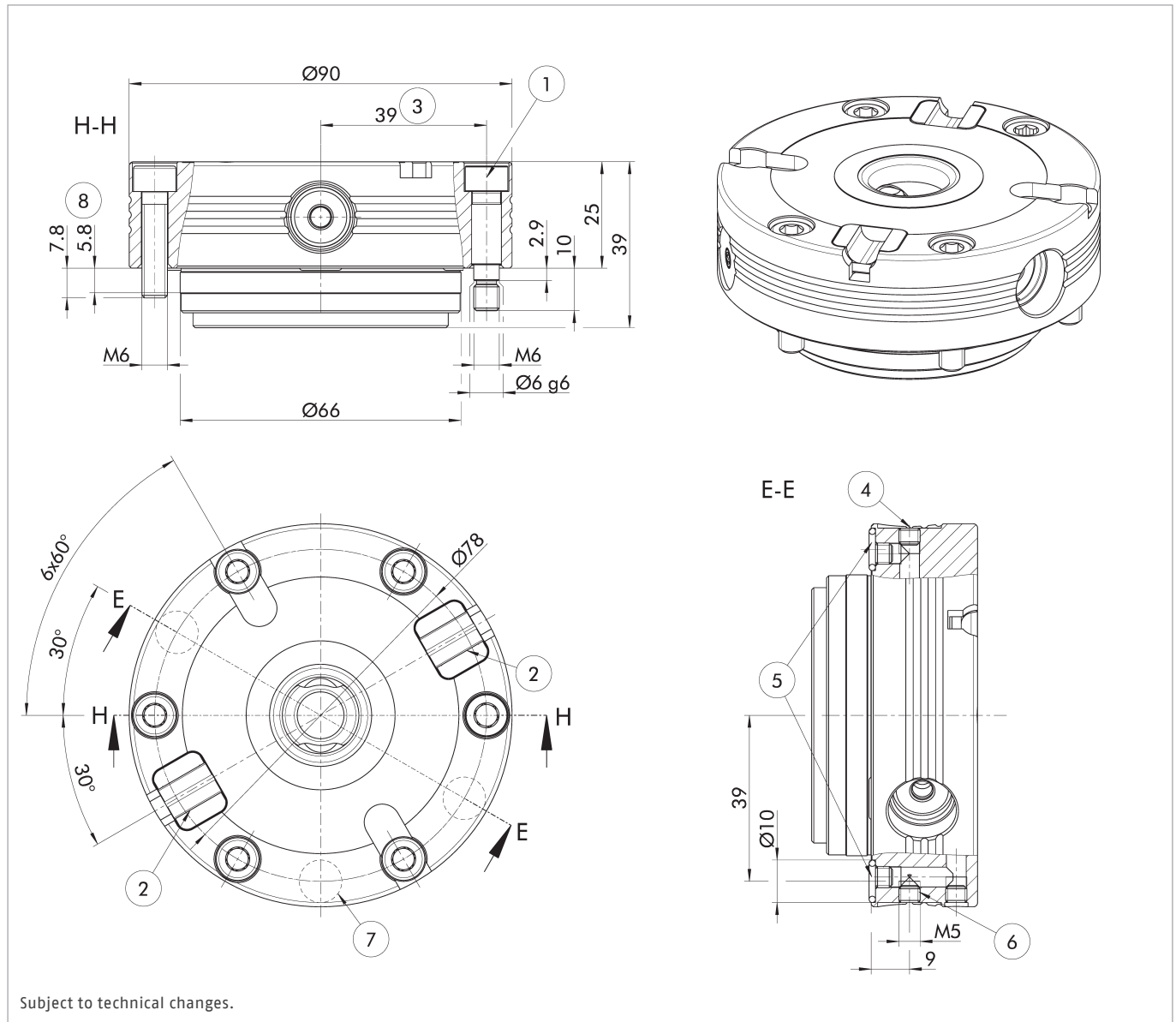
With anti-rotation protection V4

Scope of delivery

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

Technical data

Description	ID	Pull-down force [kN]	Pull-down force with turbo [kN]	Unlocking pressure [bar]	Repeat accuracy [mm]	Weight [kg]
NSE mini 90-25-V4	1435606	1.5	6	6	< 0.005	1.3



- ① Fitting screw M6 for the modules orientation of position in the base plate
- ② Fitting groove for positional alignment of the clamping pallet
- ③ Clearance 39 ± 0.01 mm for fitting screw PSC mini V1 (ID 0435921) in the clamping station
- ④ Unlocking connection via screw connection M5
- ⑤ Hose-free direct connection
- ⑥ Turbo connection via screw connection M5
- ⑦ Hose-free direct connection for monitoring module open
- ⑧ Fitting length module's seat

Accessories

Clamping pins SPx mini

Clamping pin for positive connection with NSE mini clamping modules.



Suitable for	Description	ID
NSL mini 100-25-V1		
NSL mini 100-25-2		
NSL mini 100-25-4		
NSE mini 90-25		
NSE mini 90-25-V1		
NSE mini 90-25-V4	SPA mini 20	0435610
NSL mini 100-25-2		
NSL mini 100-25-4		
NSE mini 90-25		
NSE mini 90-25-V1		
NSE mini 90-25-V4	SPB mini 20	0435620
NSL mini 100-25-4		
NSE mini 90-25		
NSE mini 90-25-V1		
NSE mini 90-25-V4	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
NSL mini 100-25-V1		
NSL mini 100-25-2		
NSL mini 100-25-4		
NSE mini 90-25		
NSE mini 90-25-V1		
NSE mini 90-25-V4	SP-VL mini 30-6-SPA	0435640
NSL mini 100-25-V1		
NSL mini 100-25-2		
NSL mini 100-25-4		
NSE mini 90-25		
NSE mini 90-25-V1		
NSE mini 90-25-V4	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
NSL mini 100-25-V1		
NSE mini 90-25-V1	IXB V1 mini	0435930

Indexing pins

Used as an anti-rotation protection for VERO-S modules with anti-rotation protection V4.



Suitable for	Description	ID
NSE mini 90-25-V4	IXB V4 mini	1445599

Locking coupling

Quick-change coupling for easy actuation of VERO-S clamping stations or module height extensions.



Suitable for	Description	ID
NSL mini 100-25-V1		
NSL mini 100-25-2		
NSL mini 100-25-4	VSK G1/8-NW2.7	9985830

Protection covers

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



Suitable for	Description	ID
NSL mini 100-25-V1		
NSL mini 100-25-2		
NSL mini 100-25-4		
NSE mini 90-25		
NSE mini 90-25-V1		
NSE mini 90-25-V4	SDE mini 90	0435670

Protection covers

For closing the changing interface.



Suitable for	Description	ID
NSL mini 100-25-V1		
NSL mini 100-25-2		
NSL mini 100-25-4		
NSE mini 90-25		
NSE mini 90-25-V1		
NSE mini 90-25-V4	SDE mini 20	0435660

Cylindrical clamp blanks

For individual fastening of the clamping stations or console plates on all common machine table slot spacings



Suitable for	Description	ID
NSL mini 100-25-V1		
NSL mini 100-25-2		
NSL mini 100-25-4	BRR mini 40	8508199

Cover caps

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



Suitable for	Description	ID
NSE mini 90-25	ADK M6-SW5	9985503
NSE mini 90-25-V1		
NSE mini 90-25-V4	ADK M6-SW4	0435911



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

Lothringer Str. 23
D-88512 Mengen
Tel. +49-7572-7614-1300
Fax +49-7572-7614-1039
CMM@de.schunk.com
schunk.com