

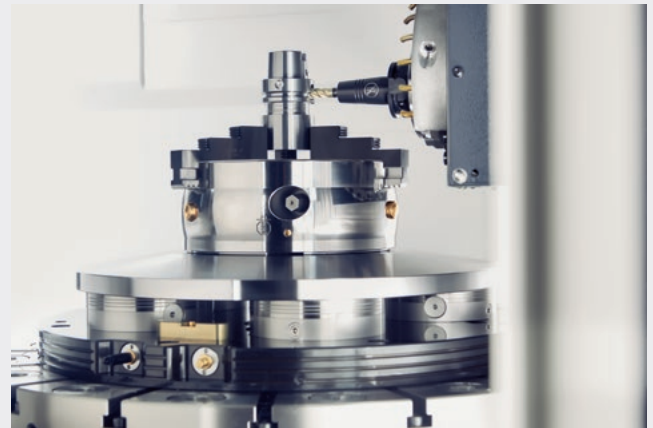


VERO[®]-S NSL3 turn

**The clamping station for all
common mill/turn centers**

The set-up time killer for mill/turn centers for all common machine types with visual monitoring of the turbo function

VERO-S NSL3 turn – SCHUNK competence from lathe chuck technology and stationary clamping technology combined in a clamping station. This set-up time killer for turn/mill centers ensures high pull-down forces of modules used for achieving extremely rigid and safe device clamping. Visual monitoring provides information on the current clamping state (turbo function).



Advantages – Your benefits

- + An operating pressure of 6 bar is sufficient**
Additional pressure intensifiers are not required
- + Positioning via flexible taper**
Very simple joining behavior at a run-out accuracy of < 0.01 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
- + 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 300% for optimal utilization of the machine's performance, hence high efficiency.
- + Constant pull-down force even at high speeds**
Reliable clamping with top rigidity
- + Visual safety device**
Maximum operating safety

Technical data

Description	Version	Pull-down force	Pull-down force with turbo	Manual lathe chucks up to size	Max. rotational speed
		[kN]	[kN]	[mm]	[min ⁻¹]
NSL3 turn 450-3	3-way clamping station	24	84	315	2000
NSL3 turn 570-5	5-way clamping station	40	140	630	1400

Function NSL3 turn

The clamping device or workpiece is centered in the middle of the clamping station using a high-precision flexible taper. The clamping device or workpiece is form-fitted to the clamping station by closing the clamping modules. The pull-down force is also increased through the turbo function that is integrated in the standard model. A pneumatic system pressure of 6 bar is sufficient to open the modules.

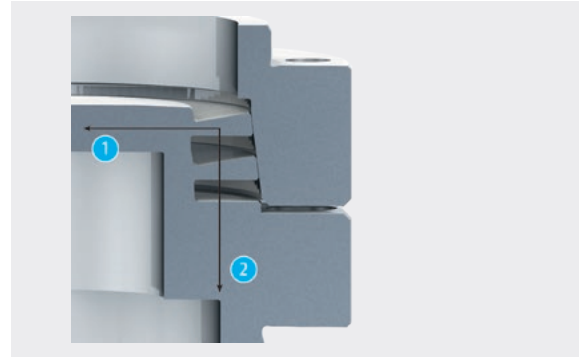


- 1 **Highly precise flexible taper centering**
Ensures micron-precise connection
- 2 **Turbo function**
For amplification of the pull-down force
- 3 **Indicator pin**
For visual turbo monitoring
- 4 **Pneumatic system**
Actuation with 6 bar
- 5 **Alignment with centering bolts**
For exact positioning on the machine table
- 6 **Mounting using alignment bolts**
For position orientation of the clamping station
- 7 **Mounting via T-nuts**
For a reliable force-fit and form-fit connection on the machine table
- 8 **Quick-change pallet system NSE3 138**
Generates the required high pull-down forces for a vibration-free machining
- 9 **Ring-shaped air distribution**
For energy supply of all modules
- 10 **Orientation of the clamping slides always tangential**
Constant pull-down force and force distribution even under speed

Flexible taper

For optimum positioning, a flexible taper is installed in the turning center of the quick-change pallet system in the z-version. The flexible taper is radially rigid and axially flexible – thus ensuring highly precise centering (run-out accuracy < 0.01 mm).

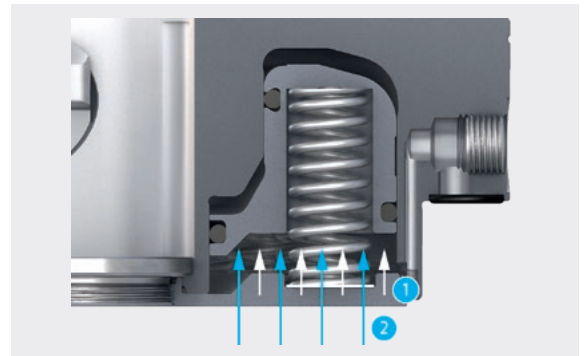
- 1 Radially rigid
- 2 Axially flexible



Turbo function

In order to ensure the maximum connecting force between the clamping station NSL3 turn and the clamping device, and to ensure safe working, the turbo function of the quick-change pallet module must be activated. The turbo function increases the pull-down force by the factor of 3.5.

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



Visual display of the turbo function

For visual monitoring of the turbo function, the clamping station NSL3 turn is equipped with an indicator pin by default. If the indicator pin is extended, the turbo function is activated and machining can commence.

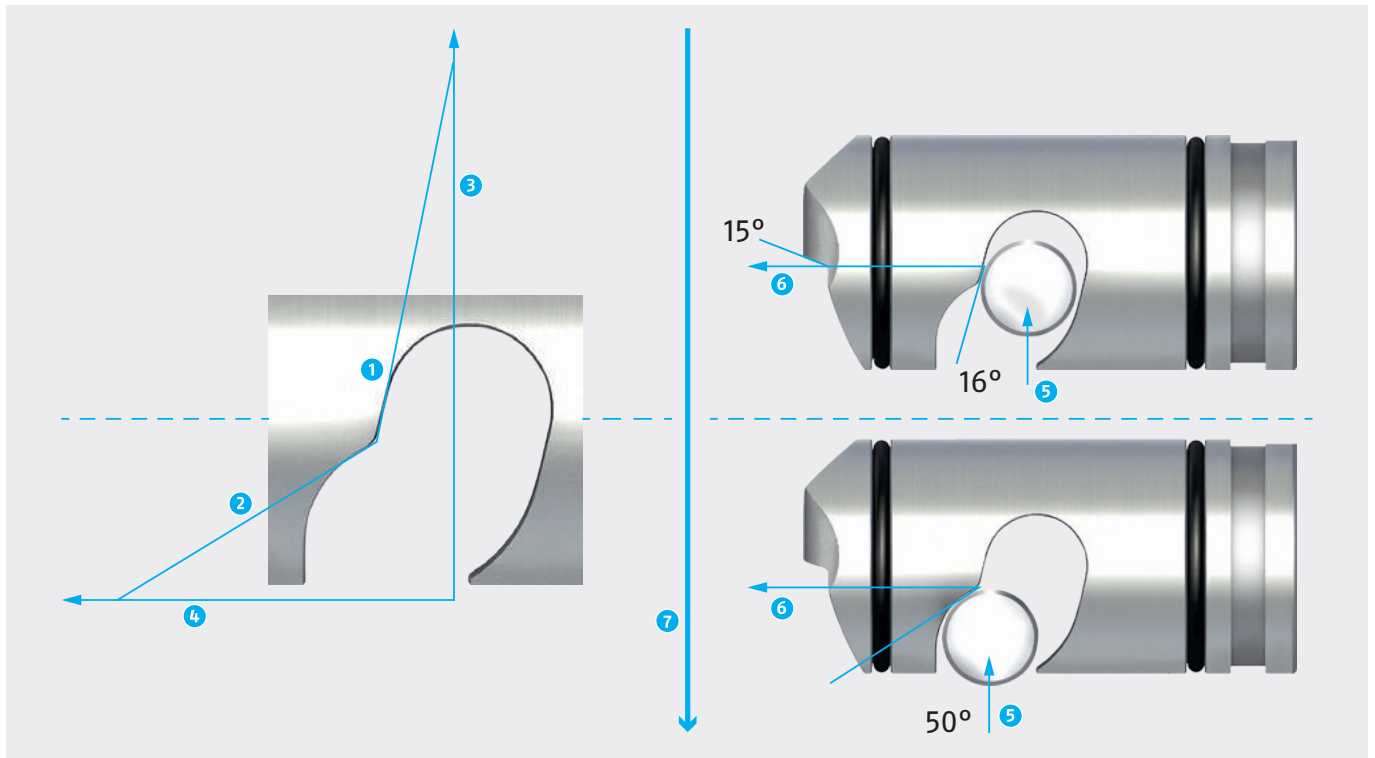


Clamping slide arrangement

The tangential alignment of the two clamping slides on module installation does not result in centrifugal force losses under speed. The pull-down force of the clamping modules remain constant.



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.

Clamping station

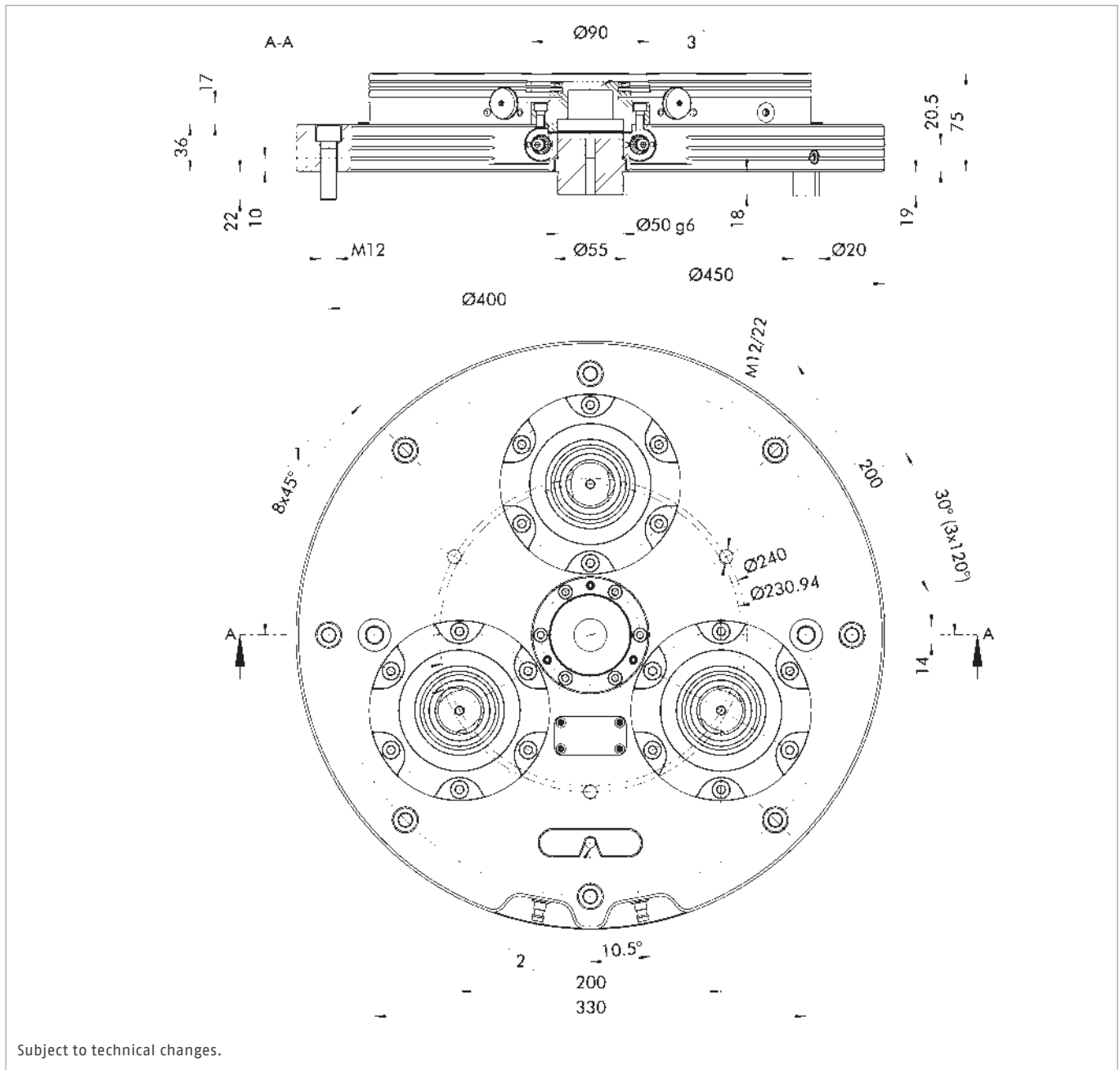
3-way clamping station with visual display of the turbo function
For manual lathe chucks up to size 315 mm

Scope of delivery

Clamping station, mounting screws, centering pins, adjustment pins, T-nuts, locking coupling, eye bolts, operating manual; without clamping pins

Technical data

Description	ID	Pull-down force [kN]	Pull-down force with turbo [kN]	Unlocking pressure [bar]	Run-out accuracy [mm]	Max. rotational speed [min ⁻¹]	Weight [kg]
NSL3 turn 450-3	1323582	24	84	6	< 0.02	2000	52.4
NSL3 turn 450-3-Z	1323583	24	84	6	< 0.01	2000	53.1



- ① Fastening bores for mounting on the machine tables with star-shaped grooves
- ② Visual display of the turbo function
- ③ Optionally: Short taper size A4 (Z-version)

Clamping station

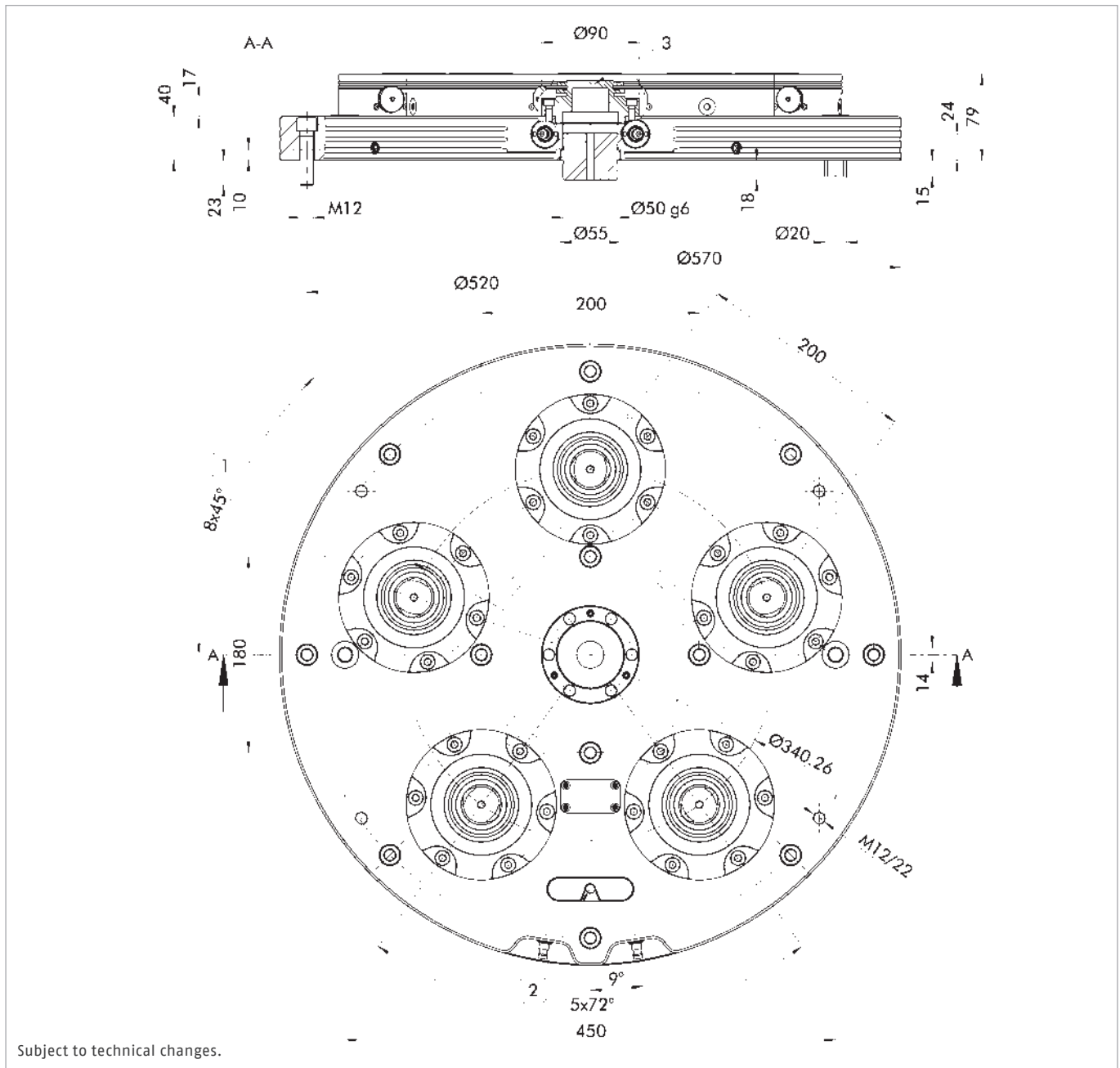
5-way clamping station with visual display of the turbo function
For manual lathe chucks up to size 630 mm

Scope of delivery

Clamping station, mounting screws, centering pins, adjustment pins, T-nuts, locking coupling, eye bolts, operating manual; without clamping pins

Technical data

Description	ID	Pull-down force [kN]	Pull-down force with turbo [kN]	Unlocking pressure [bar]	Run-out accuracy [mm]	Max. rotational speed [min ⁻¹]	Weight [kg]
NSL3 turn 570-5	1323584	40	140	6	< 0.02	1400	93
NSL3 turn 570-5-Z	1323585	40	140	6	< 0.01	1400	93.7



① Fastening bores for mounting on the machine tables with star-shaped grooves

② Visual display of the turbo function

③ Optionally: Short taper size A4 (Z-version)

Accessories

Clamping pins SPx

Standard clamping pins for form-fit connection of workpieces or devices with the NSE3 clamping modules.



Suitable for	Description	ID
NSL3 turn 450-3		
NSL3 turn 570-5	SPA 40	0471151
NSL3 turn 450-3		
NSL3 turn 570-5	SPB 40	0471152
NSL3 turn 450-3		
NSL3 turn 570-5	SPC 40	0471153

Clamping pins SPx

Standard clamping pins with M16 thread for form-fit connection of workpieces or devices with NSE3 clamping modules.



Suitable for	Description	ID
NSL3 turn 450-3		
NSL3 turn 570-5	SPA 40-16	0471064
NSL3 turn 450-3		
NSL3 turn 570-5	SPB 40-16	0471065
NSL3 turn 450-3		
NSL3 turn 570-5	SPC 40-16	0471066

Centering taper

Centering taper for customer-side retrofitting on application clamping stations NSL turn or NSL3 turn for precise positioning of the clamping pallet.



Suitable for	Description	ID
NSL3 turn 450-3		
NSL3 turn 570-5	ZKE-A4	0471452

Centering ring

Centering ring for retrofitting clamping pallets on NSL turn or NSL3 turn clamping stations.



Suitable for	Description	ID
NSL3 turn 450-3		
NSL3 turn 570-5	ZRI-A4	0471460

Cone seal

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



Suitable for	Description	ID
NSL3 turn 450-3		
NSL3 turn 570-5	KVS 40	1313742

Locking coupling

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



Suitable for	Description	ID
NSL3 turn 450-3		
NSL3 turn 570-5	VSK Ø6-NW5	9659007

Media transfer unit

Plug & Work media transfer unit for universal use.



Suitable for	Description	ID
NSL3 turn 450-3		
NSL3 turn 570-5	MDN 3-2	0471102



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