VERO-S NSR mini

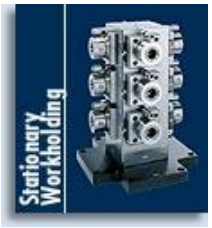
Stationary Workholding

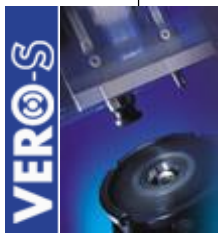
Superior Clamping and Gripping

SCHUNK

VERO-S NSR mini

Product overview





VERO-S overview

VERO-S
NSE mikro 49

VERO-S
NSE mini 90

VERO-S
NSE plus 99
NSE plus 138
NSE plus 176
NSE plus 100-75

VERO-S
NSR 160
NSR maxi 220

VERO-S
NSA plus 120
NSA plus 160

VERO-S overview

Description	NSA plus 120	NSA plus 160	NSR mini 100	NSR 160	NSR maxi 220	NSE mikro 49	NSE mini 90	NSE plus 99	NSE plus 138	NSE plus 176
Pull-down force (kN)	3	5	1	4	12	0,15	0,5	4	7,5	9
Pull-down force with Turbo (kN)	9	15	4	15	50	0,4	1,5	15	25	40
Weight (Kg)	2,5	4	0,4	1,6	21	0,2	1	2,5	4,4	7,9
Lifting force (kN)	1	2	-	-	-	-	-	-	-	-
Module height (mm)	59	70	38	62	111	12	20	56	56	60
Clamping Pin type Ø	-	-	mini 10	SPA 40	SPA 80	mikro 10	mini 20	SPA 40	SPA 40	SPA 40
Holding force (kN)	50	75	-	-	-	3(M3) 5(M4)	15(M6) 25(M8)	35(M10) 50(M12) 75(M16)	35(M10) 50(M12) 75(M16)	35(M10) 50(M12) 75(M16)
Automated Machine Loading	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Manual Machine Loading	-	-	-	-	-	Yes	Yes	Yes	Yes	Yes

VERO-S NSR mini

Existing modules of our product range.

Supplement of modul for pallet handling.

NSR

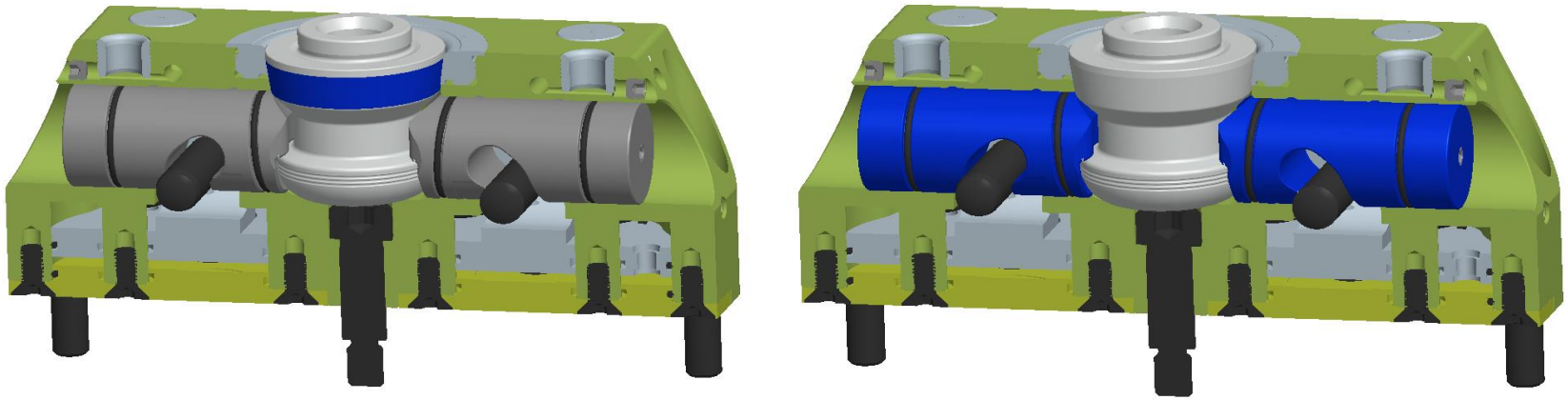
NSR mini

VERO-S NSR mini

Short description

- compact pneumatic modul
- patented principle of operation (completely self-locking)
- opening with 6 bar pressure
- clamping via spring force
- clamping pins SPA
- inductive monitoring presence of a pallet
- air purge connection

VERO-S NSR mini



2 main functions

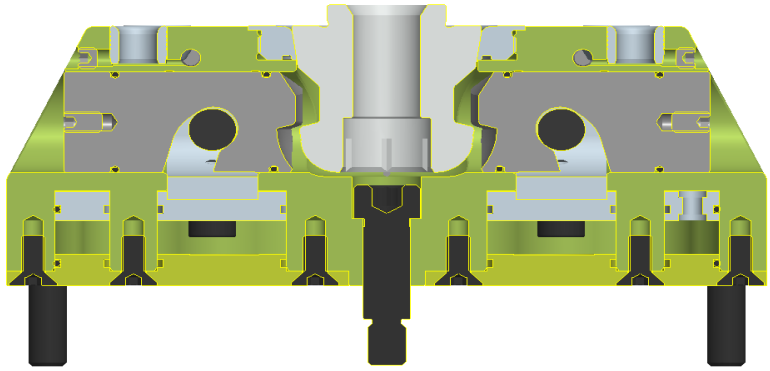
position + clamping

=

Quick-change pallet system

VERO-S NSR mini

Active principle



Modul opened

- modul is admitted with 6 bar (bottem)
- piston works against the pressure springs
- clamping slide pistons are moving translational outwards
- clamping pin is free

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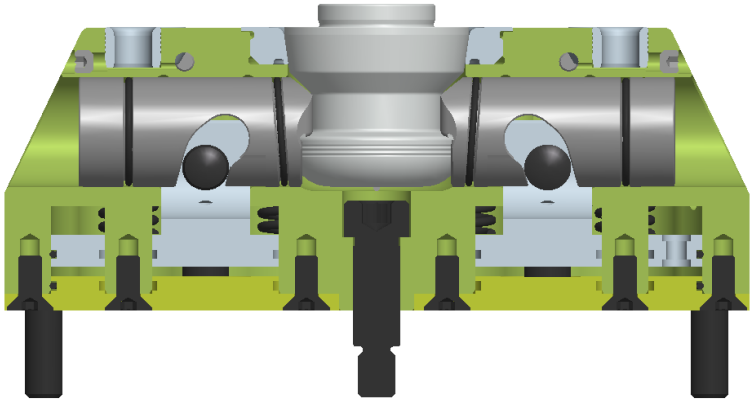
Active principle



Modul closed

- modul is pressure-free
- piston moves via pressure springs
- clamping slide pistons are moving translational inwards
- clamping pin is pulled
- turbo function is possible

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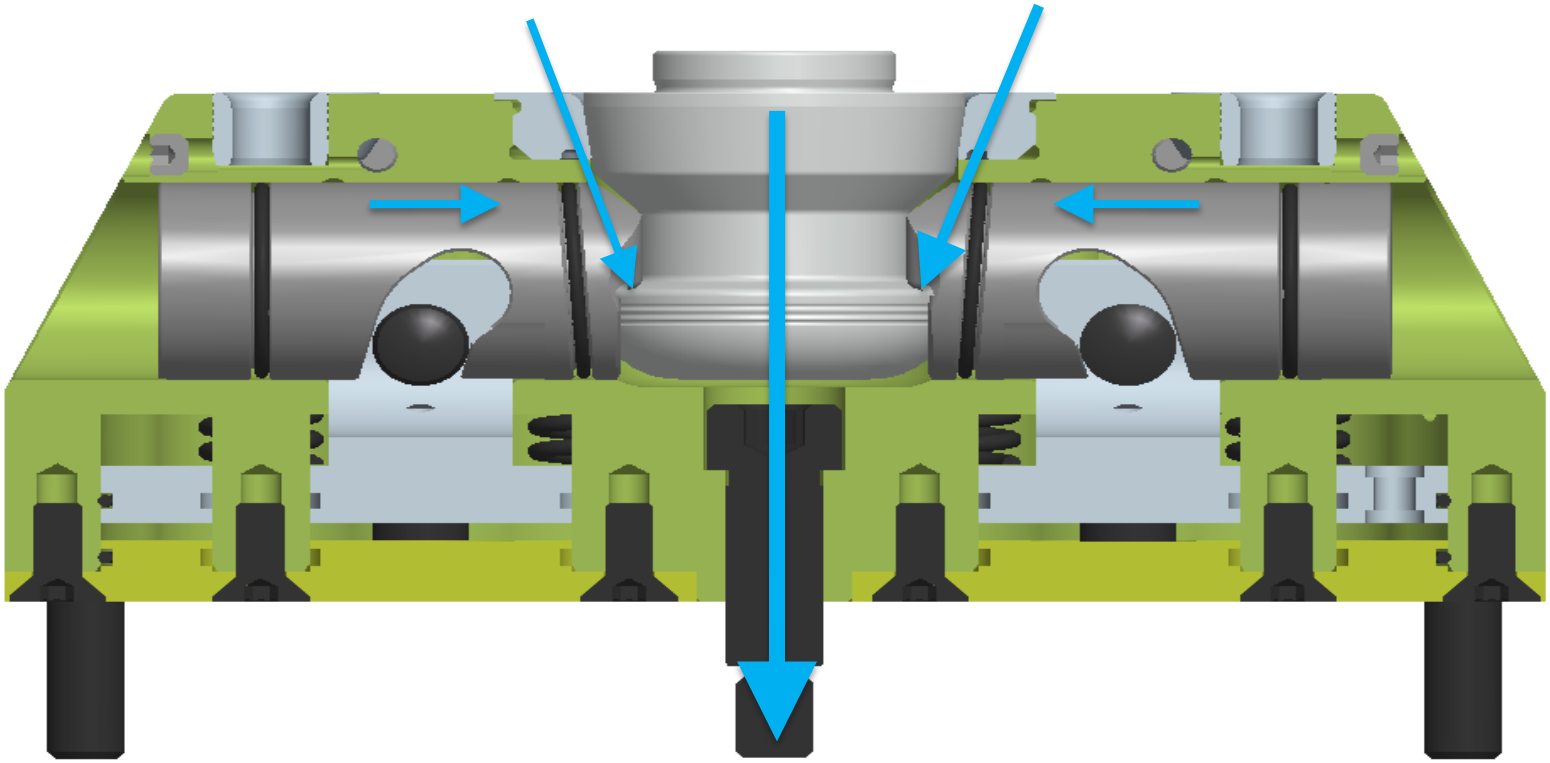
Pull-in force of module



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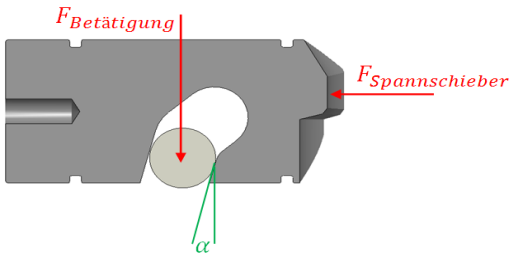
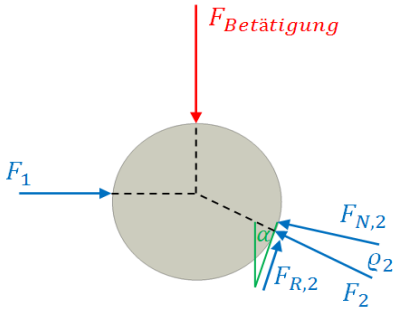
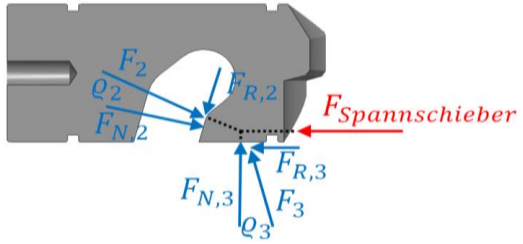
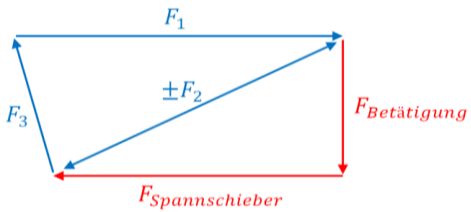
Force transmission of piston on clamping slide









$$F_{Betätigung} = F_{Feder} \cdot n_{Feder} + (\rho \cdot A_{Kolben})$$

$$F_2 = \frac{F_{Betätigung}}{\sin(\alpha + \varrho_2)}$$

$$F_{Spannschieber} = F_{Betätigung} \cdot \frac{1 - \tan(\alpha + \varrho_2) \cdot \tan(\varrho_3)}{\tan(\alpha + \varrho_2)}$$

$$F_{Spannschieber} \approx F_{Betätigung} \cdot 1{,}8$$

$$F_2 \approx F_{Betätigung} \cdot 2{,}3$$

Randbedingungen

$\alpha = 15°$

$\beta = 15°$

$\varrho_1, \varrho_2, \varrho_3, \varrho_4, \varrho_5 = 11{,}3°$ (arctan (0,2))

$F_{Feder} = 120\ N$

$n_{Feder} = 8\ Stück$

$\rho = 6\ bar$

$A_{Kolben} = 5610\ mm^2$

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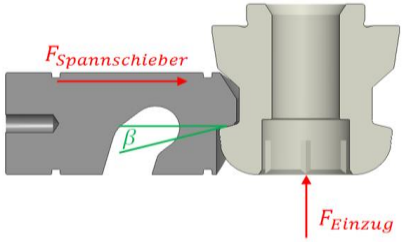
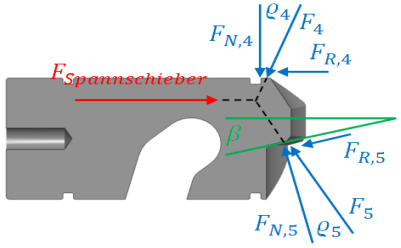
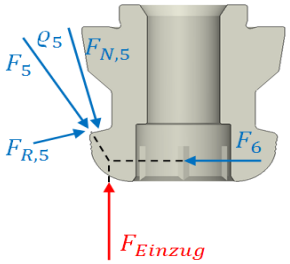
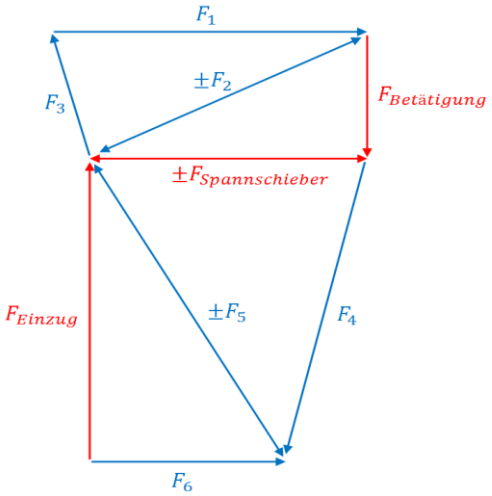
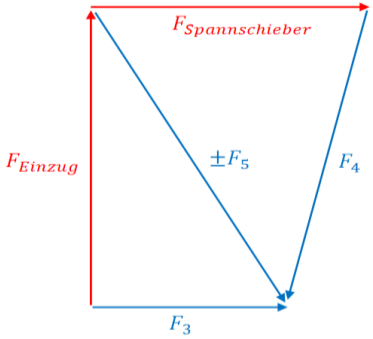
Force transmission of clamping slide on clamping pin











$$F_5 = F_{Spannschieber} \cdot \frac{\sin(90° - \varrho_4)}{\sin(\beta + \varrho_4 + \varrho_5)}$$

$$F_{Einzug} = F_{Spannschieber} \cdot \frac{\cos(90° - \varrho_4) \cdot \cos(90° - \varrho_4)}{\sin(\beta + \varrho_4 + \varrho_5) \cdot 0{,}5}$$

$$F_{Einzug} = F_{Betätigung} \cdot \frac{1 - \tan(\alpha + \varrho_2) \cdot \tan(\varrho_3)}{\tan(\alpha + \varrho_2)} \cdot \frac{\cos(90° - \varrho_4) \cdot \cos(90° - \varrho_4)}{\sin(\beta + \varrho_4 + \varrho_5) \cdot 0{,}5}$$

$$F_{Einzug} \approx F_{Spannschieber} \cdot 2{,}8$$

$$F_{Einzug} \approx F_{Betätigung} \cdot 5$$

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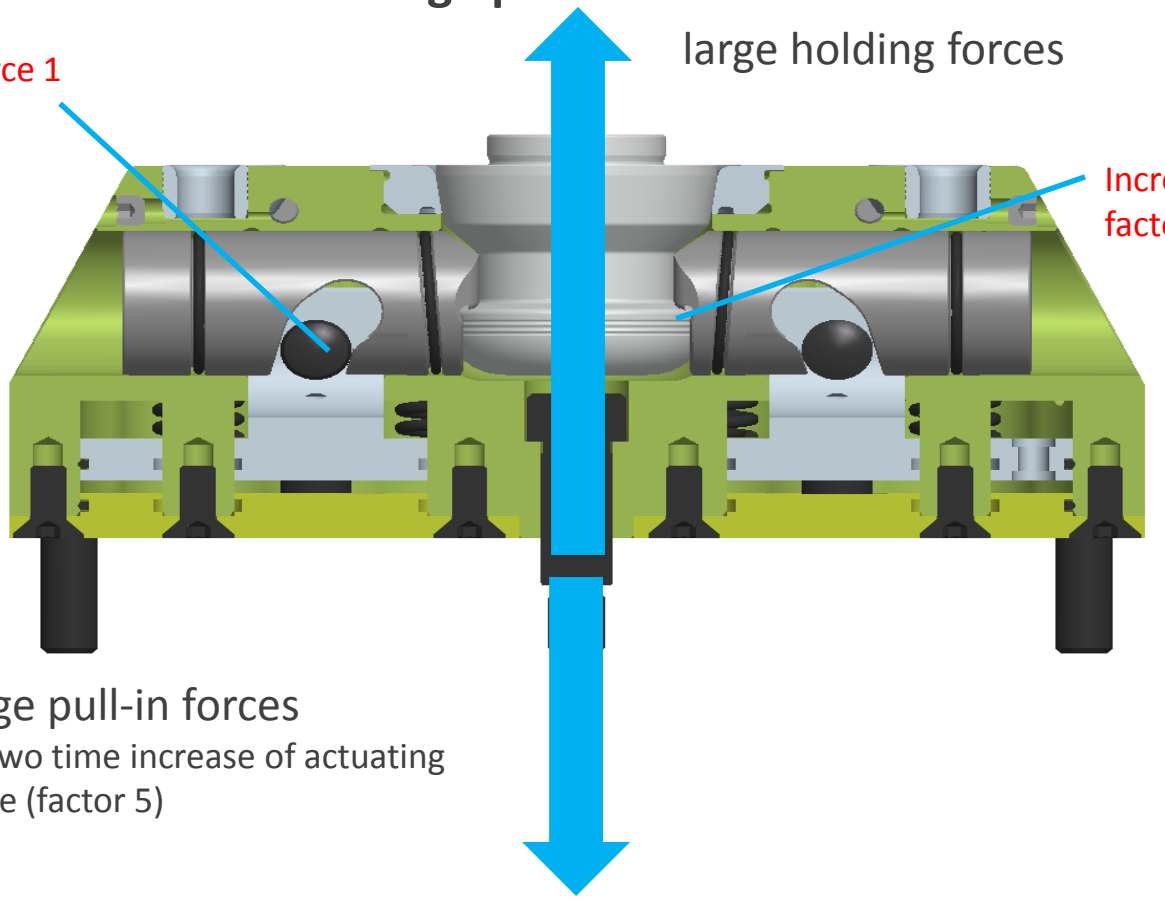
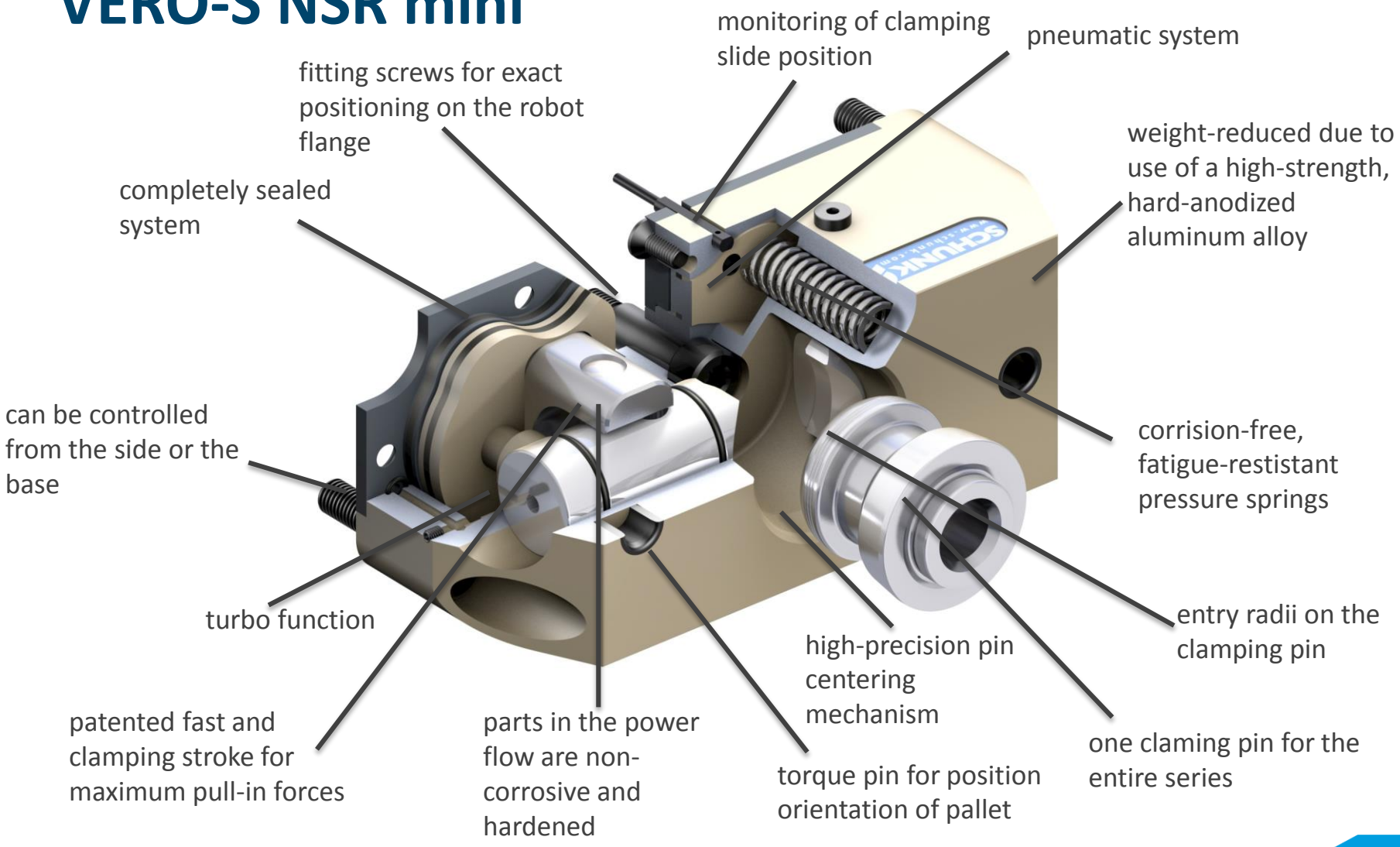
Increase of force leads to a large pull-in force



VERO-S NSR mini



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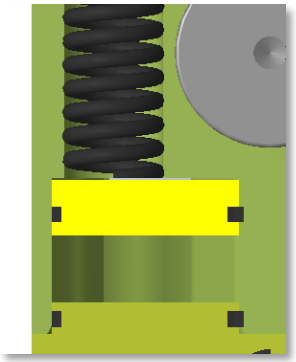
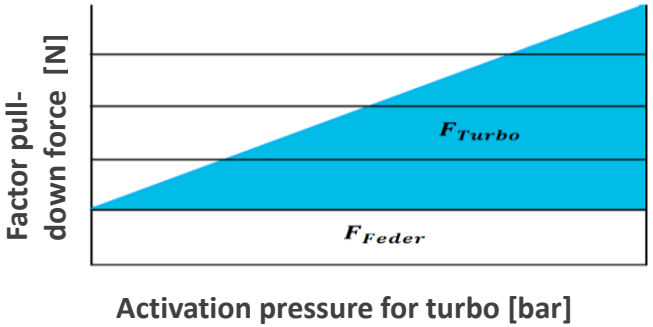
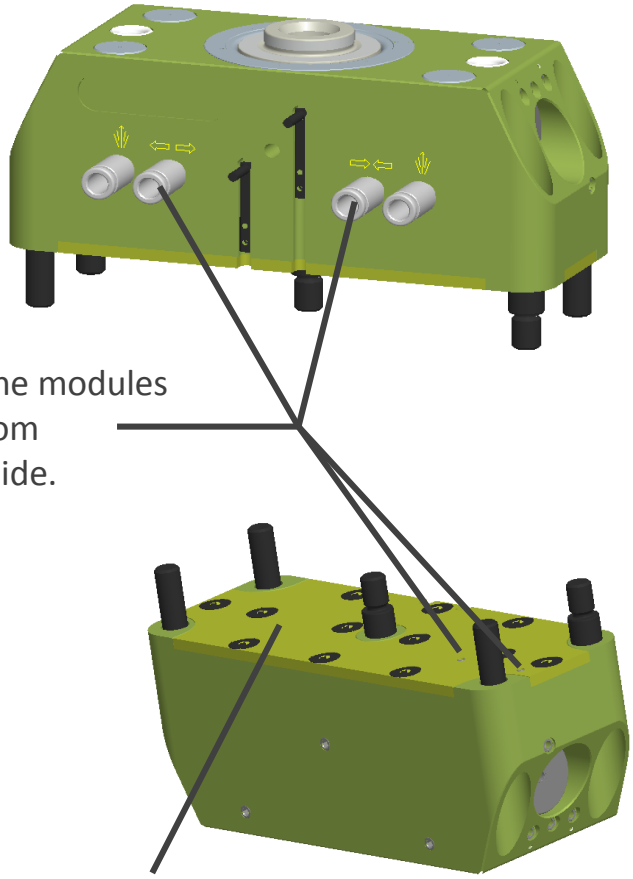
Details



Support of the spring force by the turbo function offers extremely high pull-down forces.





Triggering of the modules
From the bottom
and from the side.

Total sealed system through the cover plate on the bottom of the piston housing.

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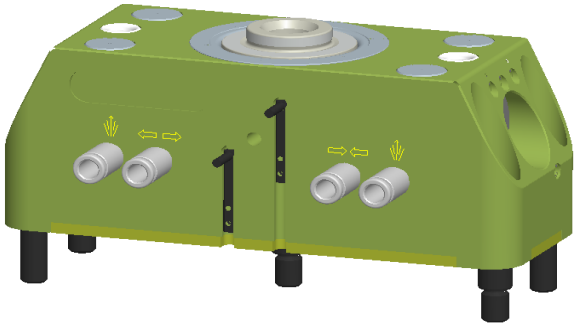
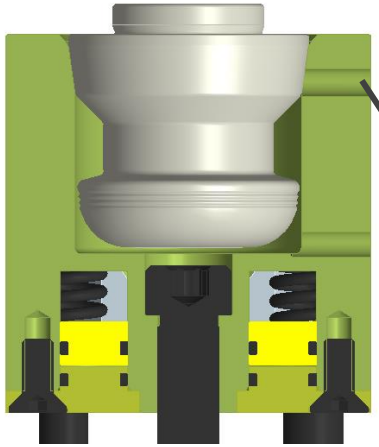
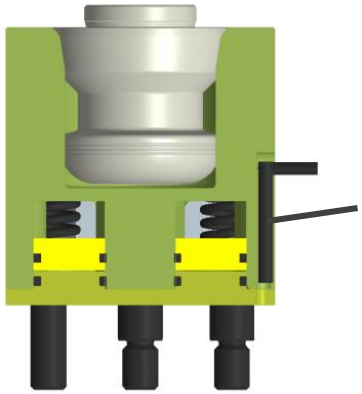
Inductive mounting

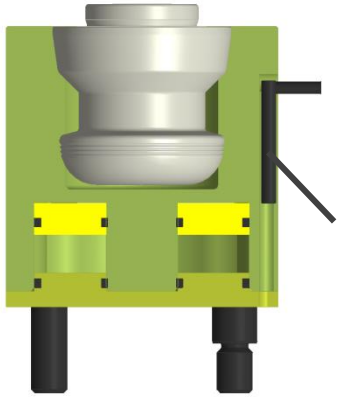




Monitoring of the pallet position by inductive proximity switch IN 50/S-M12



Monitoring of the lower piston position by inductive magnetic switch MMS 22



Monitoring of the upper piston. Position by inductive magnetic Switch MMS 22

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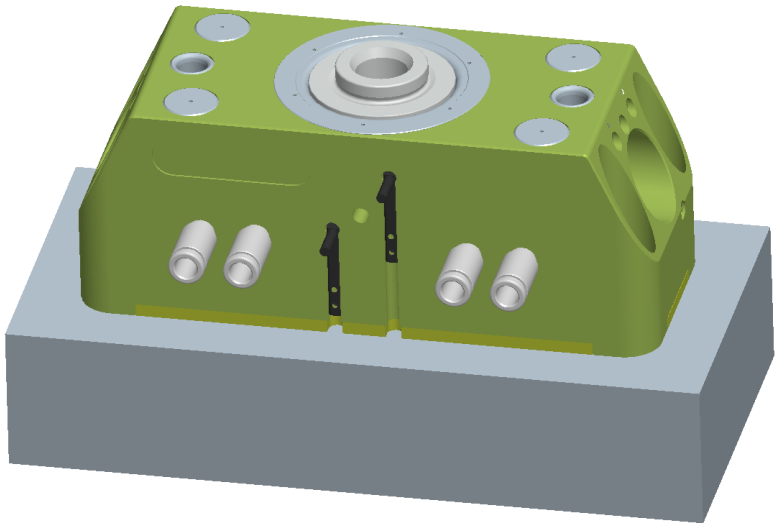
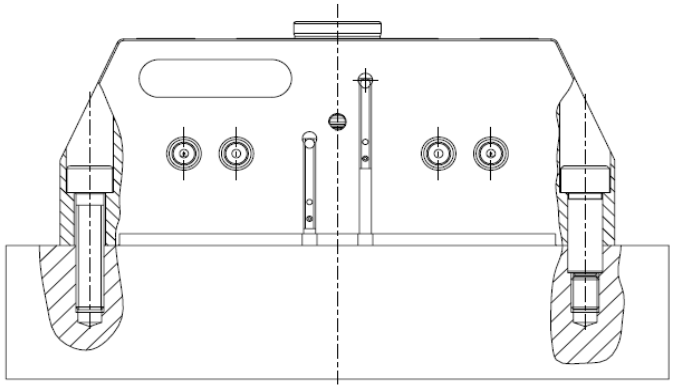
Installation of robot module

Mounting by 5 mounting screws on the robot adapter plate. Centering by a fit screw under the clamping pin. Fine positioning by a further setting screw.





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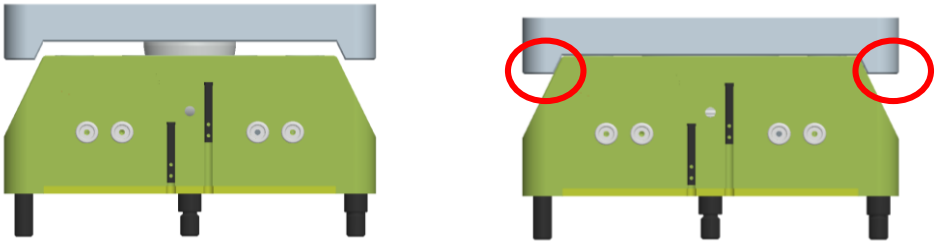
Two possibilities of lock against rotation



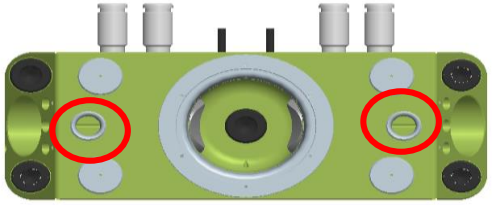
Locking system is designed by chamfered edges each at the robot module and at the pallet coupling.

Avantages:

- large surface for best support
- easy insertion operations by highest accuracy

VERO-S NSR mini

Two possibilities of lock against rotation



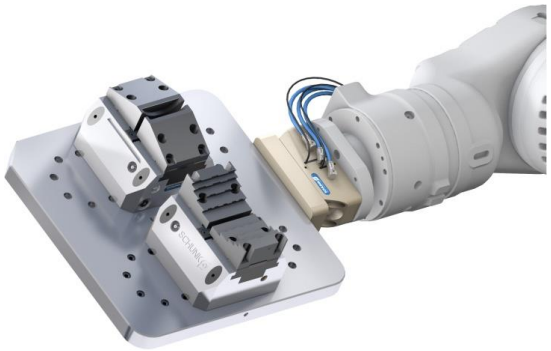
Second way of locking by two cylinder pins at the pallet coupling.

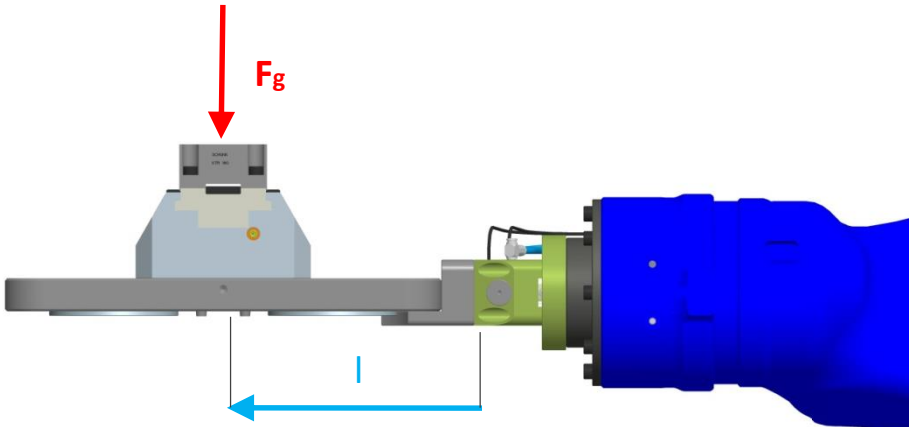
VERO-S NSR mini

Pallet handling

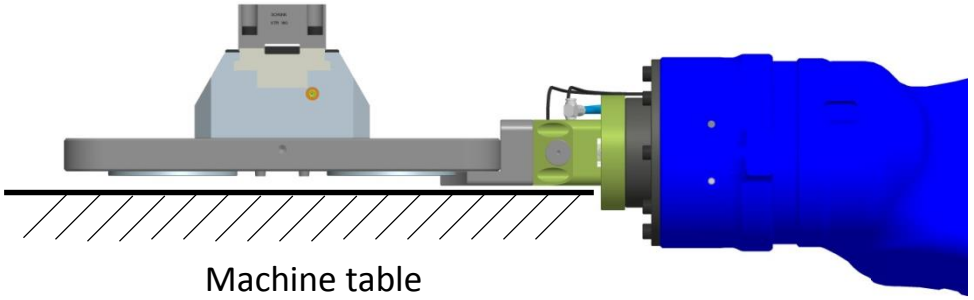
- **NSR 160**
  max. permitted weight: 350 kg
  permitted torque: 700 Nm

- **NSR mini 100**
  max. permitted weight: 100 kg
  permitted torque: 100 Nm





Weight force and lever arm of module front



Machine table

Minimal space to robot arbor to machine table (30,5 mm)

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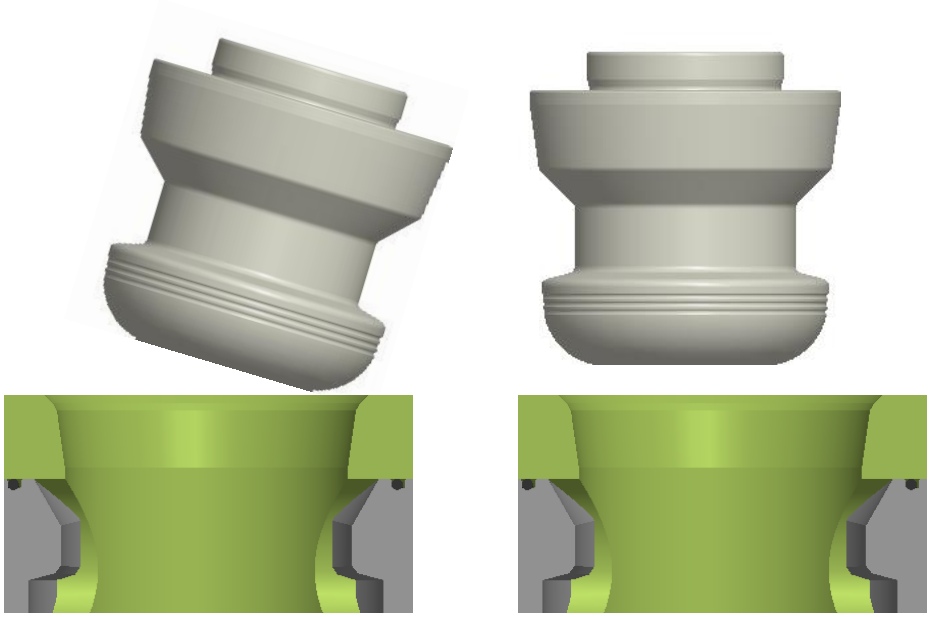
Clamping pins „stainless“



Stainless and hardened version of all components in flux

Entry radii on the clamping pin enable quick and safe joining even with a tilt angle and eccentricity.

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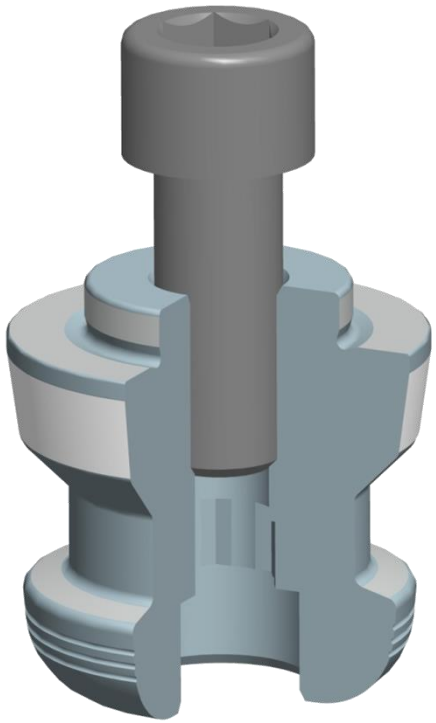
Clamping pins „stainless“

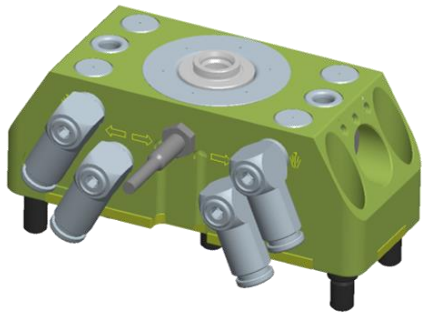


Fixture of clamping pin with cylinder head bolt M16 DIN EN ISO 4762 12.9

VERO-S NSR mini

Performance data NSR mini 160

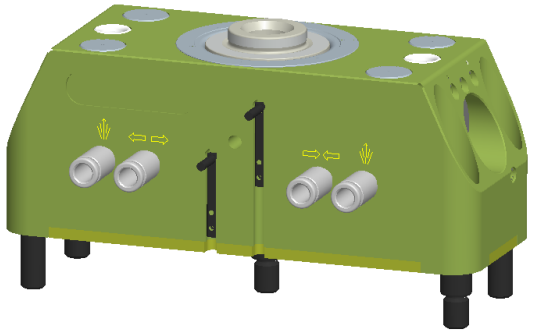
- pull- in force: 1 kN / 4 kN (Turbo)
- holding force: 15 kN / 25 kN (M6 / M8)
- moment X: 75 Nm (75 kg with a centroidal distance of 0,1 m)
- repeat accuracy: 0,02 mm
- weight without pallet coupling: 500 g
- weight of pallet coupling: 300 g
- unlocking pressure: 5 bar
- dimensions: 100 mm x 38 mm
- design height: 34 mm



VERO-S NSR

Performance data NSR 160

- pull-in force without turbo: 4 kN
- pull-in force with turbo: 15 kN
- unlocking pressure: 6 bar
- repeat accuracy: < 0,02 mm
- weight: 1,6 kg
- dimension: 159 mm x 60 mm
- height: 62 mm
- acceptable torque: 700 Nm



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brand ambassador of SCHUNK,
the family-owned company since 2012

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