



**ROEMHELD**  
HILMA ■ STARK



## **STARK.basic**

Zero point clamping system  
Pneumatic single acting





# STARK INNOVATIVE PROFICIENT INDIVIDUAL RELIABLE

The high-tech company STARK Spannsysteme was established in 1977 in Rankweil, Austria. It manufactures zero-point clamping systems and vices of the highest quality and precision for international clients in the automotive, aviation and medical industries.

STARK Spannsysteme products are a byword for minimal set-up times, faster production and high flexibility.

HILMA vices can be complemented and combined perfectly with STARK zero point clamping systems.



AUTOMOTIVE



AVIATION



MACHINE AND TOOL  
CONSTRUCTION



MEDICINE

# FOCUS ON INDUSTRIES & MARKETS.

Every customer has specific requirements. Our established and extensive industry expertise allows us to offer you the best solutions, services and products for sustainable and efficient use in your market.



- Simple:

Economic:

Price-conscious:

Compact:
- modular design

simple assembly and installation

cost effective entry-level models

smallest STARK zero point clamping system



STARK  
Spannsysteme

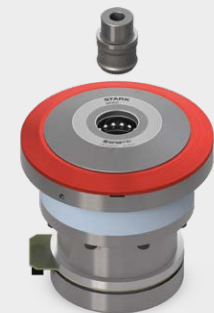
- More productivity through:
- maximum flexibility in production
  - highest process reliability
  - reduced manufacturing costs thanks to set-up time optimisation



STARK.classic



STARK.airtec



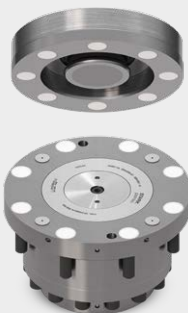
STARK.etec



STARK.balance



STARK.metec



STARK.plaintec



STARK.connect



STARK.hydratec



STARK.sweeper



STARK.easyclick

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ELEMENTS

ELEMENTS		ORDER NUMBER	
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STARK.basic.S	■ Standard	S8000-002	12
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STARK.basic.M	■ Standard	S8000-202	14
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RETRACTABLE NIPPLE

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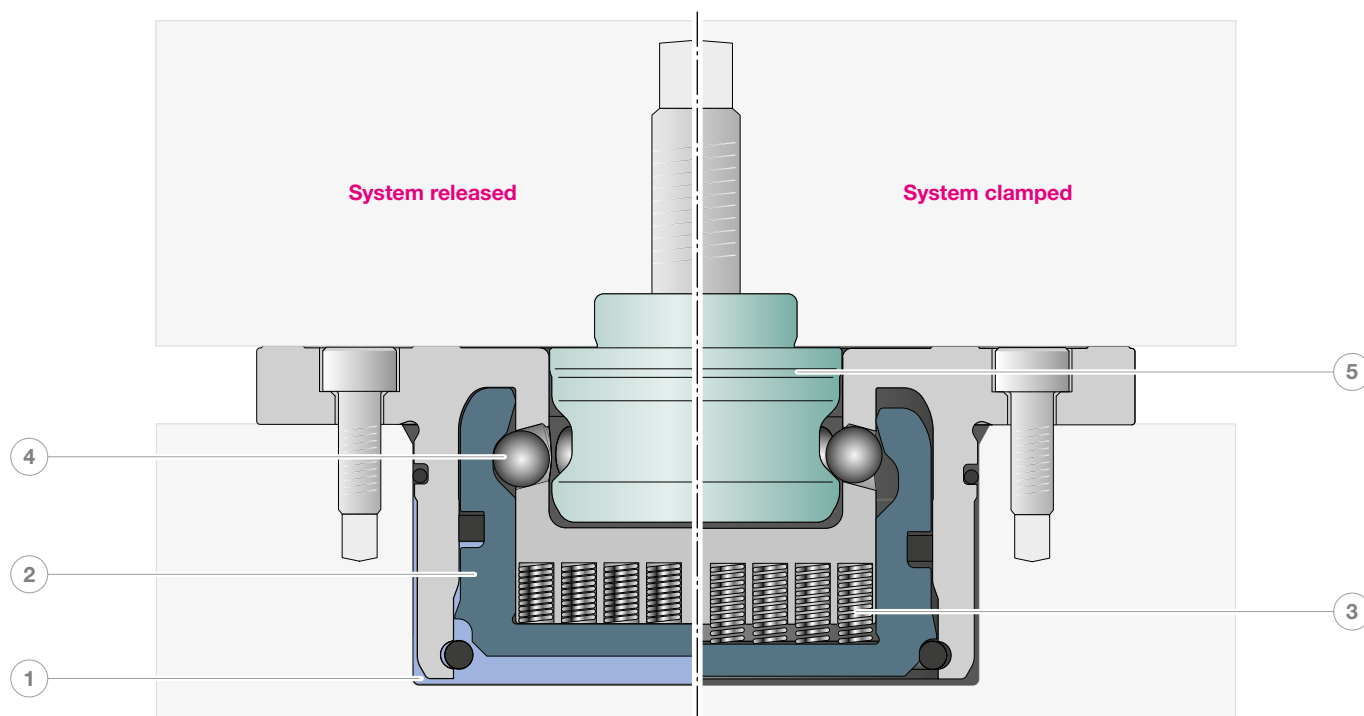
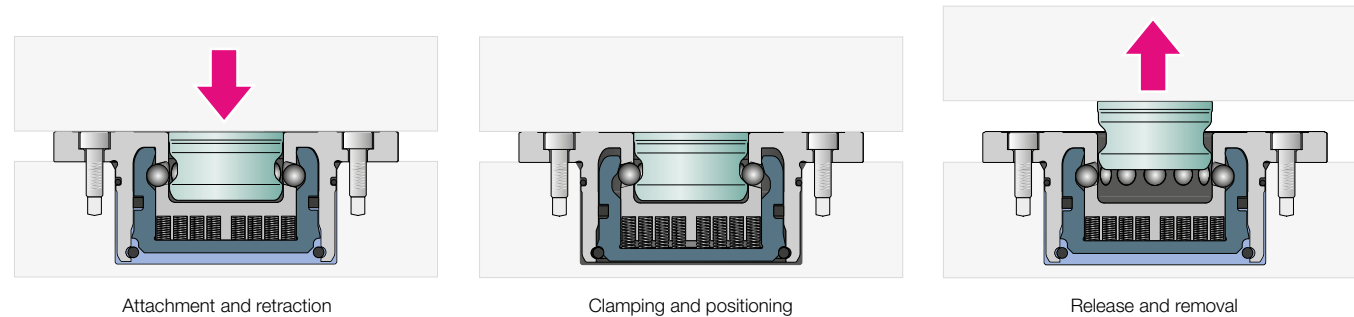
ACCESSORIES

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## Functions and benefits

### Positioning and clamping in one function

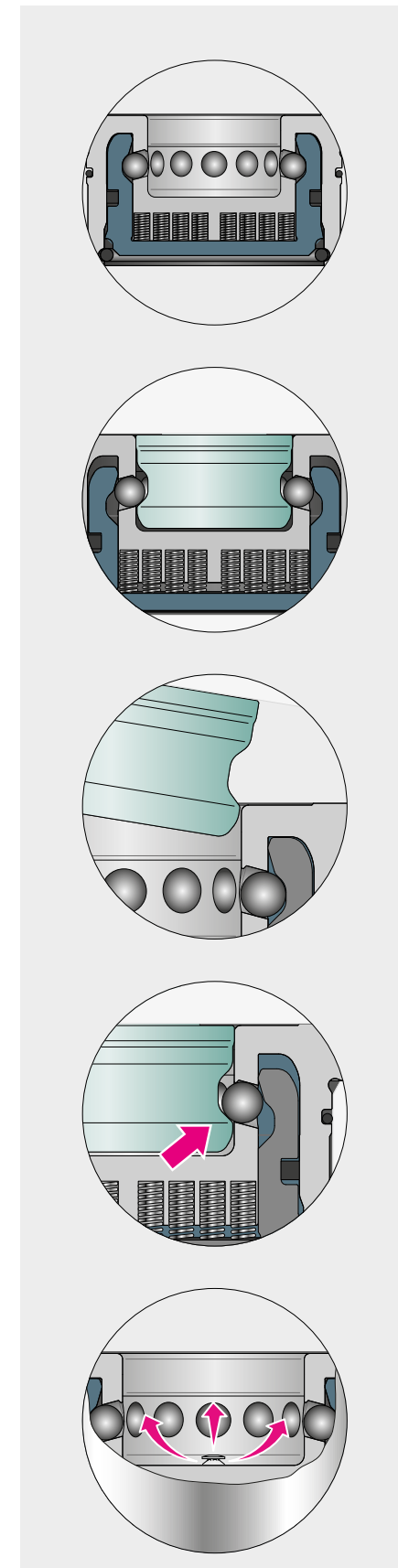


#### Release:

- The piston (2) is subjected to the release pressure (1) and moves upwards.
- The springs (3) are pressed together.
- The balls (4) move to the parking position.
- The retractable nipple (5) is released.

#### Clamp mechanically:

- The pressure is relieved and drops to 0 bar.
- The spring pre-tensioning force is initiated via the piston (2) which moves down.
- The balls (4) are pressed inwards by the piston (2) and enclose the retractable nipple.
- The retractable nipple is securely clamped by the spring pre-tensioning force.



#### DESIGN

- Compact design with high clamping forces and low installation depth
- Modular design
- Simple installation contour
- Easy to clean
- Easy to maintain - easy replacement
- Made of high-quality, stainless tool steel
- Internal piston seal

#### SPACE-SAVING, ALSO ON THE PALLET SIDE

- The STARK.basic retractable nipple can be mounted easily
- Extremely space-saving installation form (for the STARK.basic.S, the retractable nipple protrudes only 15.5 mm)
- Easy handling of pallets due to short lifting paths

#### SLANTED LIFTING OUT/IN

- Workpieces, devices and pallets can be changed without tilting. Particularly important with asymmetrical weight distribution on the pallet

#### POSITIONALLY ACCURATE UP TO THE MAXIMUM LOAD

- The spring force permanently fixes the retractable nipples precisely with positive locking
- Vibrations are damped, the quality of the surfaces to be machined is increased and the service life of the tools is extended

#### INTELLIGENT BLOW-OUT TECHNOLOGY

- Particularly effective cleaning due to the extending nozzle
- Suitable for partial automation and reduces cleaning effort

## Technical data

		STARK.basic.Y	STARK.basic.S		STARK.basic.M	
Order number		S8000-802	S8000-002	S8000-004	S8000-202	S8000-204
Spring assembly maintenance interval	Cycles	80,000				
Retention force <sup>1)</sup>	[N]	1500	5000		9000	
Release pressure	[bar]	4.5	5.5	6	4	4.5
Max. pressure <sup>2)</sup>	[bar]	10				
Air volume	[cm <sup>3</sup> ]	1.60	4.50		12	
Operating temperature	[°C]	10–80				
Min. permitted clamping time	[s]	1				
Min. permitted release time	[s]	1				
Radial pre-positioning <sup>3)</sup>	[mm]	± 1				
Max. axial pre-positioning	[mm]	–0.30				
Repeat accuracy <sup>4)</sup>	[mm]	<0.01				
Weight	[kg]	approx. 0.06	approx. 0.50		approx. 1.50	

- <sup>1)</sup> Retention force: This is the maximum overload at which the retractable nipple is still held but the zero point has already been left.
- <sup>2)</sup> Max. pressure: Provide overpressure safety valve
- <sup>3)</sup> Radial pre-positioning: The loading device must be compliant for automated loading.
- <sup>4)</sup> Repeat accuracy: This usually indicates the accuracy that refers to the change of the same pallet position-oriented on the same interface.
- Note: Spacing tolerance: ±0.01 mm for fast closing clamp and retractable nipple.

## Tilting moment calculation example

### INFO

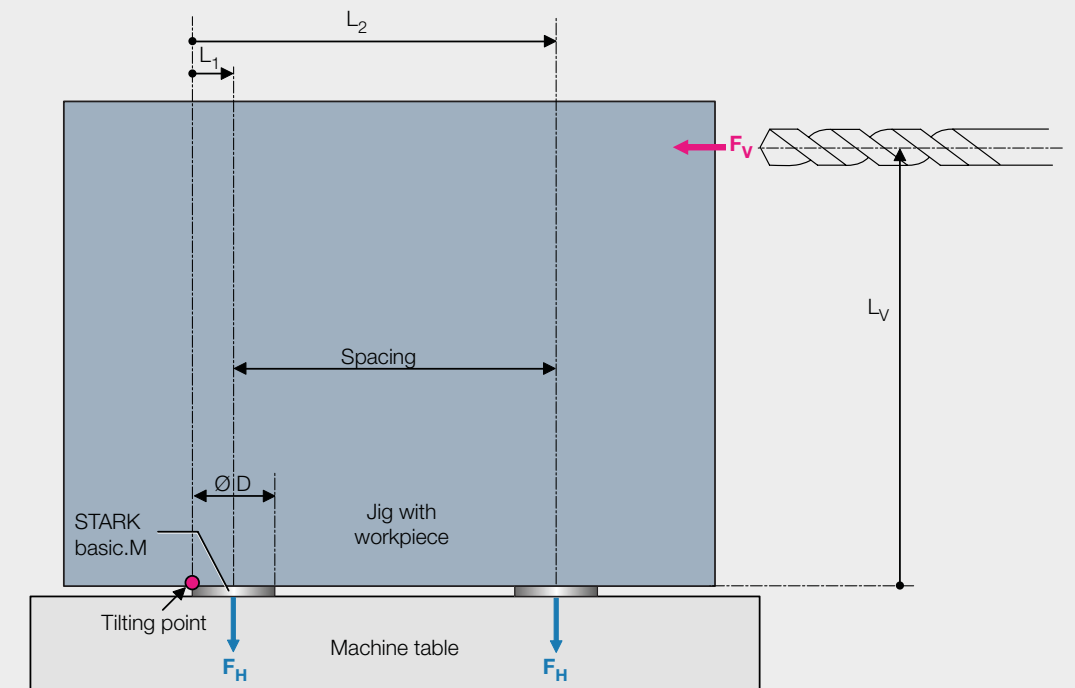
### Tilting moment calculation example

#### Example:

Fast closing clamp plate 4 STARK.basic.M with spacing 200 x 200 and max. feed force of 8 kN with distance of 300 mm.

#### Question:

Due to the predominance of roughing work, the system is to be checked for a double safety factor. Are the number of fast closing clamps and the spacing selected adequate?



#### Solution:

$$M_H > 2 \times M_V ?$$

$$M_V = F_V \times L_V = 8'000 \text{ N} \times 0,3 \text{ m}$$

$$M_V = 2'400 \text{ Nm}$$

$$M_H = 2 \times (F_H \times L_1) + 2 \times (F_H \times L_2)$$

$$M_H = 2 \times F_H \times (L_1 + L_2)$$

$$L_1 = \text{ØD} / 2$$

$$L_2 = \text{ØD} / 2 + \text{Spacing} = 0,256 \text{ m}$$

$$L_1 + L_2 = \text{ØD} + \text{Spacing} = 0,312 \text{ m}$$

$$L_1 + L_2 = 0,112 \text{ m} + 0,20 \text{ m} = 0,312 \text{ m}$$

$$M_H = 2 \times F_H \times (L_1 + L_2) = 2 \times 9'000 \text{ N} \times 0,312 \text{ m}$$

$$M_H = 5'616 \text{ Nm}$$

$$M_H / M_V > 2 ?$$

$$M_H / M_V = 5'616 \text{ Nm} / 2'400 \text{ Nm}$$

$$M_H / M_V = 2,34$$

$$M_V : \text{Moment from feed force}$$

$$M_H : \text{Moment from retention force}$$

$$F_V : \text{Feed force (8'000 N)}$$

$$F_H : \text{Retention force (9'000 N)}$$

$$\text{Spacing} = 200 \text{ mm} = 0,20 \text{ m}$$

$$\text{Ø D (bearing ring)} : 112 \text{ mm} = 0,112 \text{ m}$$

$$L_V : 300 \text{ mm} = 0,30 \text{ m}$$

With this design there is a safety factor of around two.

Enter all variables in SI units (metres, newtons)

## STARK.basic.Y

### STARK.basic.Y D026, installation module



#### Properties:

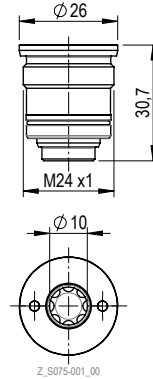
- Fast closing clamp installation module made of high-quality, stainless tool steel.
- The low installation height results in a low space requirement.
- Mechanically clamped and pneumatically released.

#### Area of application:

- For installation in machines, machine pallets, plates, brackets, cubes, clamping towers and swing bridges.

#### Machine element:

- Can be used for all common machining operations such as milling, grinding, eroding as well as on test benches and assembly devices.



Fixing screws included in scope of delivery.

Z\_S075-001\_00

Order number	Article designation	Retention force	Max. pressure	Release pressure	Weight	Data sheet
S8000-802	SE BY P 010 D026 ST NP NI	1500 N	10 bar	5 bar	0.53 kg	D162

#### INFO

#### STARK.basic.Y application example



### STARK.basic.Y retractable nipple with zero point

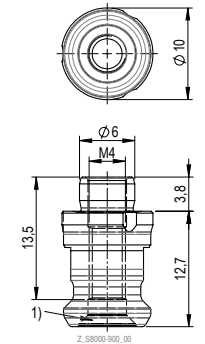


#### Properties:

- Retractable nipple with zero point.

#### Area of application:

- For positioning and clamping on machine pallets, machine vices, chucks, devices, workpiece direct clamping.



1) Countersink for screw DIN 7991

Order number	Article designation	Tightening torque M3	Tightening torque M4	Weight	Data sheet
S8000-900	EB BY NP 060 04 038 NI	1 Nm	2 Nm	0.006 kg	D152

### STARK.basic.Y retractable nipple with equaliser

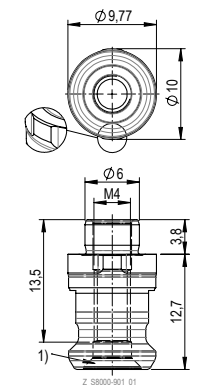


#### Properties:

- Retractable nipple with equaliser in one axis (sword form).

#### Area of application:

- For positioning and clamping on machine pallets, machine vices, chucks, devices, workpiece direct clamping.



1) Countersink for screw DIN 7991

Order number	Article designation	Tightening torque M3	Tightening torque M4	Weight	Data sheet
S8000-901	EB BY AG 060 04 038 NI	1 Nm	2 Nm	0.006 kg	D152

### STARK.basic.Y retractable nipple without centring

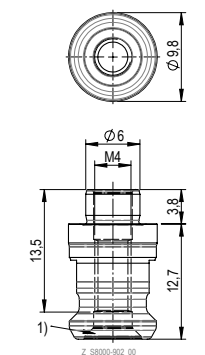


#### Properties:

- Retractable nipple without centring.

#### Area of application:

- For positioning and clamping on machine pallets, machine vices, chucks, devices, workpiece direct clamping.



1) Countersink for screw DIN 7991

Order number	Article designation	Tightening torque M3	Tightening torque M4	Weight	Data sheet
S8000-902	EB BY OZ 060 04 038 NI	1 Nm	2 Nm	0.006 kg	D152

► For notes on the fastening versions of the retractable nipples, see page 16.



## STARK.basic.S

### STARK.basic.S D078, installation module



#### Properties:

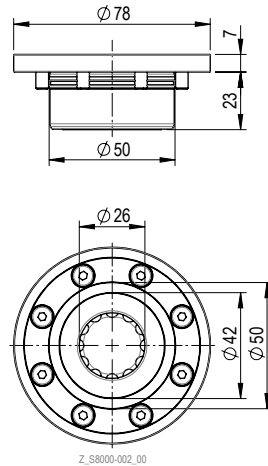
- Fast closing clamp installation module made of high-quality, stainless tool steel.
- The low installation height results in a low space requirement.
- Mechanically clamped and pneumatically released.

#### Area of application:

- For installation in machines, machine pallets, plates, brackets, cubes, clamping towers and swing bridges.

#### Machine element:

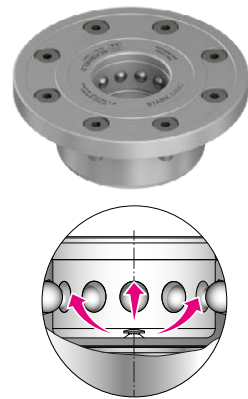
- Can be used for all common machining operations such as milling, grinding, eroding as well as on test benches and assembly devices.



Fixing screws included in scope of delivery.

Order number	Article designation	Retention force	Max. pressure	Release pressure	Weight	Data sheet
S8000-002	SE BS P 008 D078 ST NP NI	5000 N	10 bar	5.5 bar	0.50 kg	D148

### STARK.basic.S D078, installation module, Tornado



#### Properties:

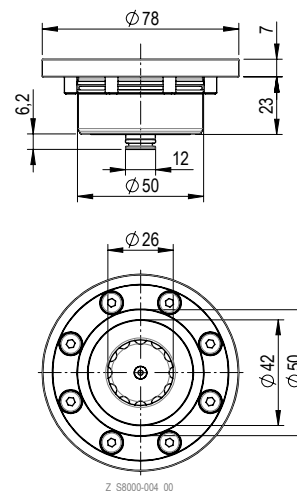
- Fast closing clamp installation module made of high-quality, stainless tool steel.
- The low installation height results in a low space requirement.
- Mechanically clamped and pneumatically released.
- Intelligent blow-out technology for cleaning the fitting bore. Seat check via differential pressure or sealing air possible.

#### Area of application:

- For partial automation, reduces the cleaning effort. For installation in machines, machine pallets, plates, brackets, cubes, clamping towers and swing bridges.

#### Machine element:

- Can be used for all common machining operations such as milling, grinding, eroding as well as on test benches and assembly devices.



Fixing screws included in scope of delivery.

Order number	Article designation	Retention force	Max. pressure	Release pressure	Weight	Data sheet
S8000-004	SE BS P 008 D078 TO NP NI	5000 N	10 bar	6 bar	0.50 kg	D154

### STARK.basic.S retractable nipple with zero point

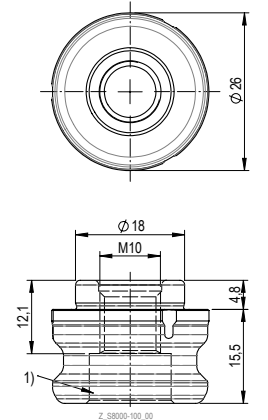


#### Properties:

- Retractable nipple with zero point.

#### Area of application:

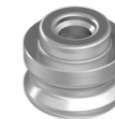
- For positioning and clamping on machine pallets, machine vices, chucks, devices, workpiece direct clamping.



1) Countersink for screw DIN 912

Order number	Article designation	Tightening torque M8	Tightening torque M10	Weight	Data sheet
S8000-100	EB BS NP 180 10 048 NI	36 Nm	36 Nm	0.05 kg	D152

### STARK.basic.S retractable nipple with equaliser

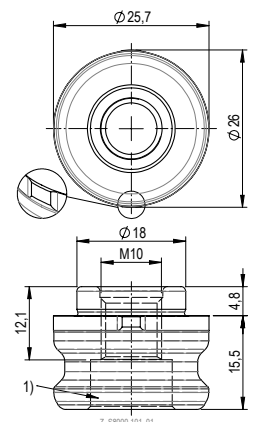


#### Properties:

- Retractable nipple with equaliser in one axis (sword form).

#### Area of application:

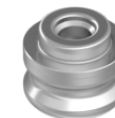
- For positioning and clamping on machine pallets, machine vices, chucks, devices, workpiece direct clamping.



1) Countersink for screw DIN 912

Order number	Article designation	Tightening torque M8	Tightening torque M10	Weight	Data sheet
S8000-101	EB BS AG 180 10 048 NI	36 Nm	36 Nm	0.05 kg	D152

### STARK.basic.S retractable nipple without centring

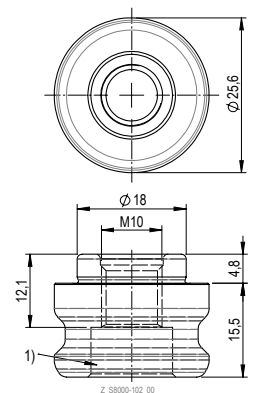


#### Properties:

- Retractable nipple without centring.

#### Area of application:

- For positioning and clamping on machine pallets, machine vices, chucks, devices, workpiece direct clamping.



1) Countersink for screw DIN 912

Order number	Article designation	Tightening torque M8	Tightening torque M10	Weight	Data sheet
S8000-102	EB BS OZ 180 10 048 NI	36 Nm	36 Nm	0.05 kg	D152

► For notes on the fastening versions of the retractable nipples, see page 16.

## STARK.basic.M

### STARK.basic.M D112, installation module



#### Properties:

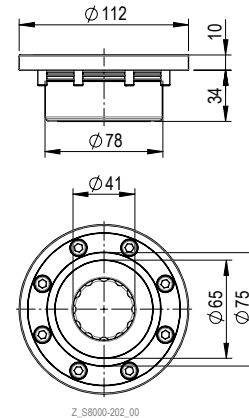
- Fast closing clamp installation module made of high-quality, stainless tool steel.
- The low installation height results in a low space requirement.
- Mechanically clamped and pneumatically released.

#### Area of application:

- For installation in machines, machine pallets, plates, brackets, cubes, clamping towers and swing bridges.

#### Machine element:

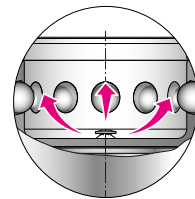
- Can be used for all common machining operations such as milling, grinding, eroding as well as on test benches and assembly devices.



Fixing screws included in scope of delivery.

Order number	Article designation	Retention force	Max. pressure	Release pressure	Weight	Data sheet
S8000-202	SE BM P 090 D112 ST NP NI	9000 N	10 bar	4 bar	1.50 kg	D148

### STARK.basic.M D112, installation module, Tornado



#### Properties:

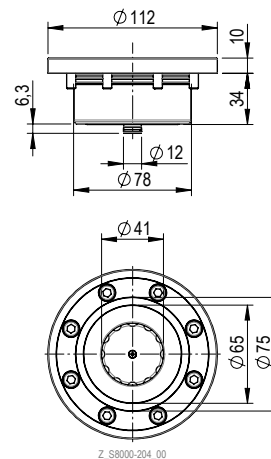
- Fast closing clamp installation module made of high-quality, stainless tool steel.
- The low installation height results in a low space requirement.
- Mechanically clamped and pneumatically released.
- Intelligent blow-out technology for cleaning the fitting bore. Seat check via differential pressure or sealing air possible.

#### Area of application:

- For partial automation, reduces the cleaning effort. For installation in machines, machine pallets, plates, brackets, cubes, clamping towers and swing bridges.

#### Machine element:

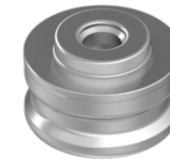
- Can be used for all common machining operations such as milling, grinding, eroding as well as on test benches and assembly devices.



Fixing screws included in scope of delivery.

Order number	Article designation	Retention force	Max. pressure	Release pressure	Weight	Data sheet
S8000-204	SE BM P 017 D112 TO NP NI	9000 N	10 bar	4.5 bar	1.50 kg	D154

### STARK.basic.M retractable nipple with zero point

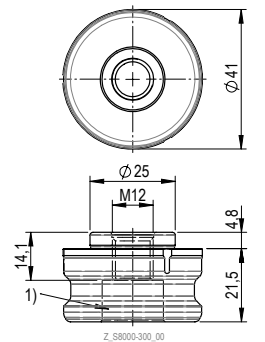


#### Properties:

- Retractable nipple with zero point.

#### Area of application:

- For positioning and clamping on machine pallets, machine vices, chucks, devices, workpiece direct clamping.



1) Countersink for screw DIN 912

Order number	Article designation	Tightening torque M10	Tightening torque M12	Weight	Data sheet
S8000-300	EB BM NP 250 12 048 NI	45 Nm	45 Nm	0.20 kg	D152

### STARK.basic.M retractable nipple with equaliser

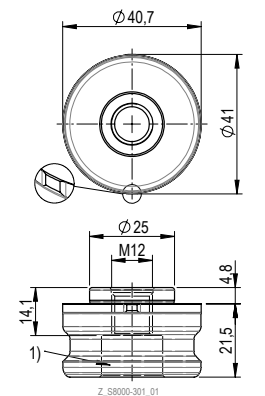


#### Properties:

- Retractable nipple with equaliser in one axis (sword form).

#### Area of application:

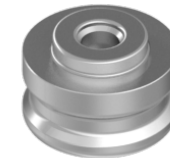
- For positioning and clamping on machine pallets, machine vices, chucks, devices, workpiece direct clamping.



1) Countersink for screw DIN 912

Order number	Article designation	Tightening torque M10	Tightening torque M12	Weight	Data sheet
S8000-301	EB BM AG 250 12 048 NI	45 Nm	45 Nm	0.20 kg	D152

### STARK.basic.M retractable nipple without centring

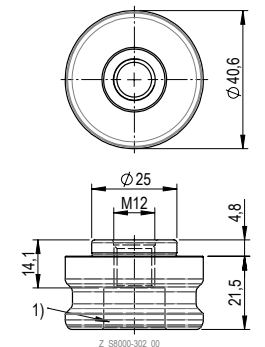


#### Properties:

- Retractable nipple without centring.

#### Area of application:

- For positioning and clamping on machine pallets, machine vices, chucks, devices, workpiece direct clamping.



1) Countersink for screw DIN 912

Order number	Article designation	Tightening torque M10	Tightening torque M12	Weight	Data sheet
S8000-302	EB BM OZ 250 12 048 NI	45 Nm	45 Nm	0.20 kg	D152

► For notes on the fastening versions of the retractable nipples, see page 16.



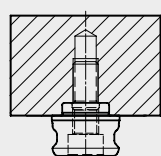
## Retractable nipple fastening versions

### INFO

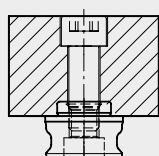
#### Retractable nipple fastening versions

The fastening versions shown are possible for STARK.basic.S and STARK.basic.M.

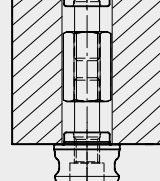
Version A



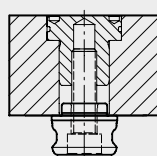
Version B



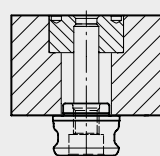
Version C



Version D



Version E



#### Version A:

For applications where nipple bore holes are not permitted on the pallet surface or for direct workpiece clamping.

#### Version B:

Simple nipple fastening from above when no particular accuracy is required between the position of the nipples and the top of the pallet.

#### Version C:

Ideal fastening version for clamping in laterally inverted manufacturing. Highest level of accuracy is guaranteed because the nipples are fastened in the same locating bore.

#### Version D, E:

These fastening versions are preferable. The fitting bore for the nipple and all necessary positioning bores on the pallet can be produced in one operation. This results in the highest level of accuracy of the positions to each other.

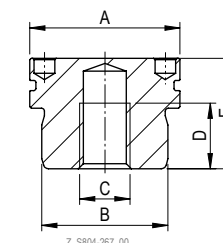
## NIPPLE FASTENING

### Nipple fastening D



For mounting the retractable nipple according to fastening option "D"

- Enables the nipple fastening bore hole to be produced from above in one clamping procedure
- Mounting key or face spanner recommended for counterhold
- Operating Manual WM-020-332-xx-xx



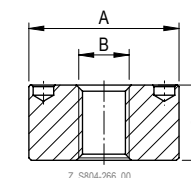
Order number	for retractable nipple	Ø A	Ø B	C	D	E	Data sheet
S809-127	basic.S	24.8 mm	18 mm	M8	12 mm	21.9 mm	D152
S804-267	basic.M	29.8 mm	25 mm	M10	13 mm	21.9 mm	D152

### Nipple fastening E



For mounting the retractable nipple according to fastening option "E"

- Enables the nipple fastening bore hole to be produced from above in one clamping procedure
- Operating Manual WM-020-332-xx-xx



Order number	for retractable nipple	Ø A	Ø	C	Data sheet
S809-128	basic.S	24.8 mm	M8	14.9 mm	D152
S804-266	basic.M	29.8 mm	M10	14.9 mm	D152

## FAST CLOSING PLATES (SVP)

### STARK.basic standard fast closing plate

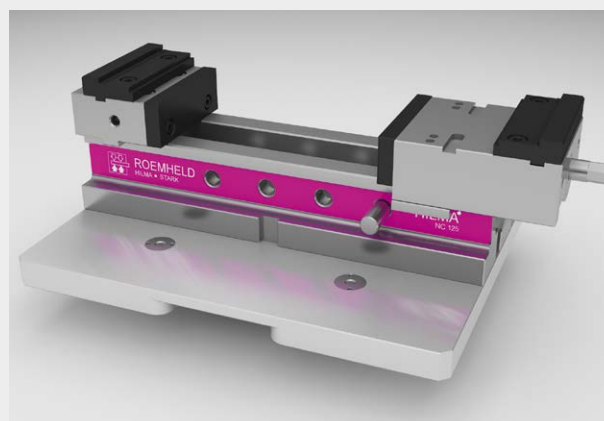
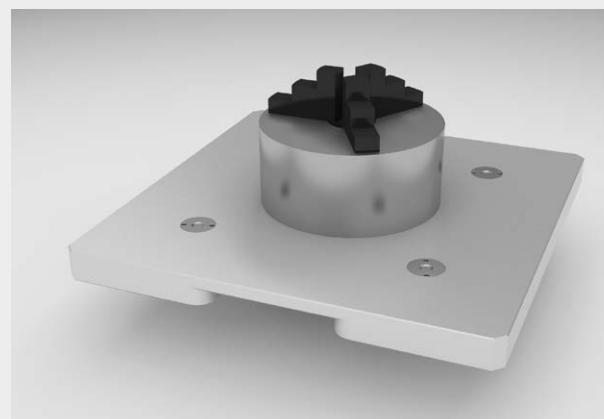
- Pneumatic release system
- up to 54 kN retention force



Order number	Article designation	Size	Spacing
S805-307	Fast closing plate with 4 STARK.basic.M (S805-202)	4-fold 396 × 346 × 46 mm	200 × 200 mm
S805-308	Fast closing plate with 6 STARK.basic.M (S805-202)	6-fold 596 × 346 × 46 mm	200 × 200 mm

#### INFO

#### STARK.basic standard pallet application options



#### Raw pallets

Raw pallets are available in various designs complete with clamping devices.

### STARK.basic fast closing plate adapter

- 5-axis machining / component direct clamping
- Increase including STARK.basic.M (S805-202) and retractable nipple (S8000-300) on the housing underside
- Slot for optional clamping option
- Pneumatic release system – up to 9 kN retention force
- suitable for standard STARK.basic.M fast closing plate



Order number	Article designation	Pneumatic connection
S805-309	STARK.basic.M fast closing plate adapter 1-fold Ø 112 × 75 mm	G 1/8"
S805-310	STARK.basic.M fast closing plate adapter 1-fold Ø 112 × 100 mm	G 1/8"

#### INFO

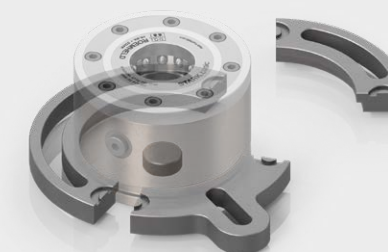
#### STARK.basic fast closing plate adapter fastening versions

In addition to the standard fastening with retractable nipple, fast closing plate adapters can be positioned by means of pins and fastened with clamping claws.

#### Fastening with retractable nipple



#### Fastening with positioning pin for clamping claws



INFO

STARK.basic application examples



**STARK.basic.S**

STARK.basic.S with interchangeable pallets for 5-axis production machine in medical technology



**STARK.basic.M**

Zero point clamping system with fast closing plate 2-fold STARK.basic.M with HILMA.MCP 60 vice system

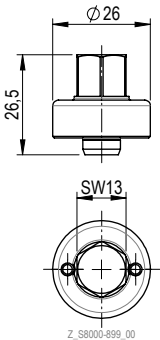
ACCESSORIES

STARK.basic.Y mounting key



Properties:

- Mounting key for safe installation of the STARK.basic.Y.



Order number	Article designation	Width across flats	Tightening torque	Weight
S8000-899	Mounting key	SW13	15 Nm	0.05 kg

INFO

STARK.basic.Y installation with mounting key



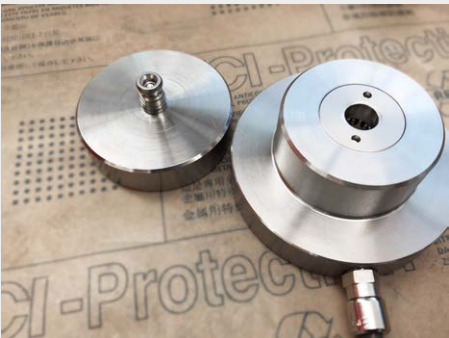
Insert STARK.basic.Y in installation bore



Attach the mounting key



Tighten with mounting key (15 Nm)



STARK.basic.Y installed with pallet (left)

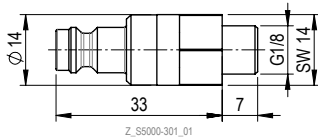


Coupling nipple



Coupling nipple for STARK fast closing plate

- For connection of pneumatic line
- Suitable for S5000-300, S954-208



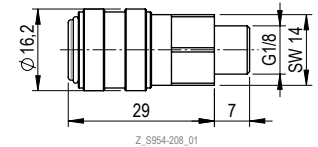
Order number	Article designation	Connection	Weight
S5000-301	Coupling nipple	G1/8 "	0.05 kg

Plug coupling



Pneumatic coupling (hose side) for connection of the STARK fast closing plate

- Suitable for S5000-301



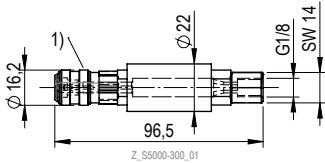
Order number	Article designation	Connection	Weight
S954-208	Plug coupling	G1/8 "	0.05 kg

Sliding coupling



Pneumatic coupling unit (hose side) with slide valve for connecting and operating the STARK fast closing clamp

- Suitable for S5000-301



Order number	Article designation	Connection	Weight
S5000-300	Sliding coupling	G1/8 "	0.20 kg

List of order numbers

S8000-802	10	S8000-302	15
S8000-900	11	S804-266	17
S8000-901	11	S804-267	17
S8000-902	11	S809-127	17
S8000-002	12	S809-128	17
S8000-004	12	S805-307	18
S8000-100	13	S805-308	18
S8000-101	13	S805-309	19
S8000-102	13	S805-310	19
S8000-202	14	S8000-899	21
S8000-204	14	S5000-300	22
S8000-300	15	S5000-301	22
S8000-301	15	S954-208	22

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As part of the ROEMHELD Group, STARK benefits from the security and experience of a family-run traditional company as well as from the worldwide sales and service network. At the same time, this background provides the independence to pursue dynamic and innovative goals for new market-driven developments and customer-specific solutions with which STARK maintains its leading technological position.



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