



ROEMHELD
HILMA ■ STARK



STARK.easyclick

Zero point clamping system
Single acting, pneumatic



ROEMHELD
HILMA ■ STARK



**POWERFUL
INNOVATIVE
PROFICIENT
INDIVIDUAL
RELIABLE**

The high-tech company STARK Spannsysteme, founded in 1977, is regarded as a pioneer in the development and manufacture of zero point clamping systems, being the first company on the market to specialise exclusively in this technology for decades.

High quality and precision distinguish what is possibly the broadest product range available on the market in the field of highly productive workpiece clamping.

Production is more efficient and flexible with STARK components, products and systems.



AUTOMOTIVE



AVIATION



MACHINE & 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.

STARK.easyclick

Click: Clamping process by pushing in

Compact: Diameter 85 mm and only 19mm high

Powerful: 5 kN clamping force - 10 kN retention force

Economical: released at 4 bar

Fast: Release time 0.1 sec



STARK.basic



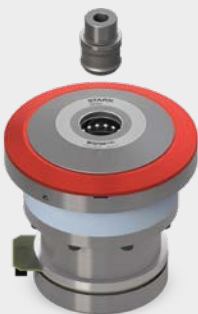
STARK.connect



STARK.hydratec



STARK.airtec



STARK.etc



STARK.sweeper



STARK.balance



STARK.classic



STARK.plaintec



STARK.metec

STARK Spannsysteme

More productivity through:

- maximum flexibility in production
- maximum process reliability
- reduced manufacturing costs thanks to set-up time optimisation



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Functions

click & hold

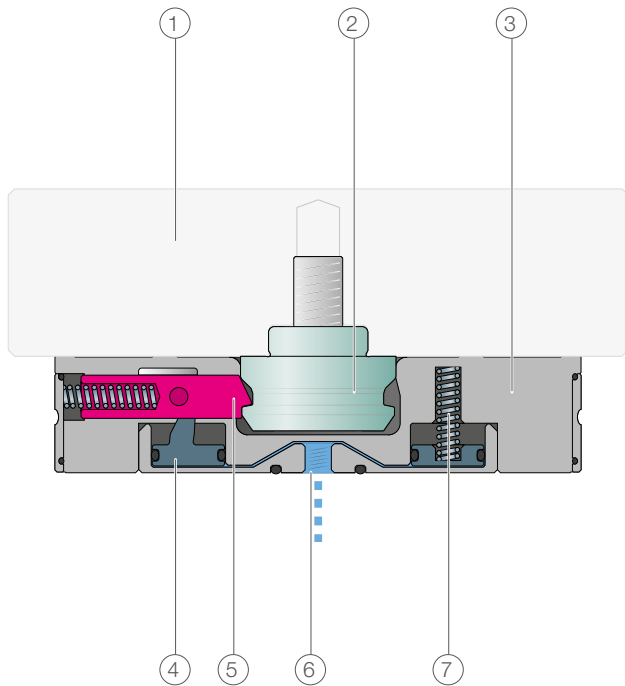
The STARK.easyclick is a mechanical fast closing clamp that clicks and holds instantly without energy input. For release, it only needs an air connection with 4 - 8 bar pressure (the volume of a hand pump is sufficient).

STARK.easyclick is used in non-cutting and cutting machining.

The mechanical click-in makes the STARK.easyclick particularly suitable for use as a robot gripper in automation technology.

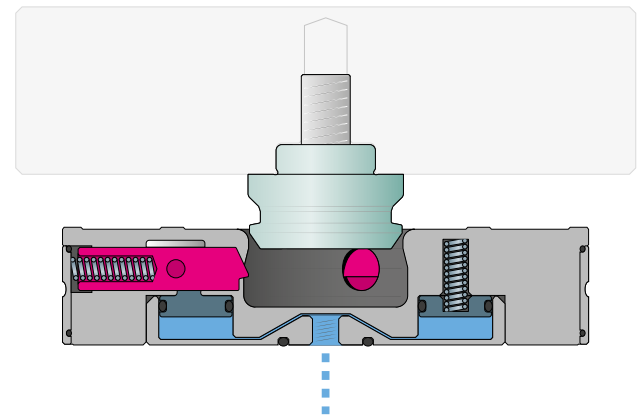
The fast clamping time (click) allows use as a construction element in production lines. The particularly compact design allows narrow pitches; short retractable nipples with a length of 15 mm ensure short lifting distances.

Integrated query options and oil-free operation extend the range of applications. The STARK.easyclick is also available with a seat check and blow-out.



click & hold

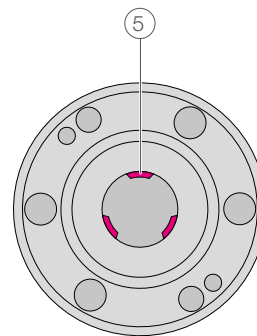
- The system is depressurised in the home position.
- The pallet is clicked in directly when feeding.
- In principle, it is also possible to retract the pressurised element with the retractable nipple. By switching off the pressure, the system is clamped with spring force.



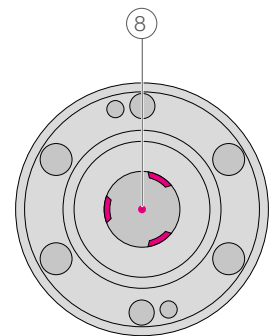
Release

The system is pressurised (4 - 8 bar); the pallet can be removed.

- 1 Workpiece/nipple pallet
- 2 Retractable nipple
- 3 STARK.easyclick housing
- 4 Piston
- 5 Clamping bolt
- 6 Pneumatic connection
- 7 Tension spring
- 8 Blow-out (Tornado)



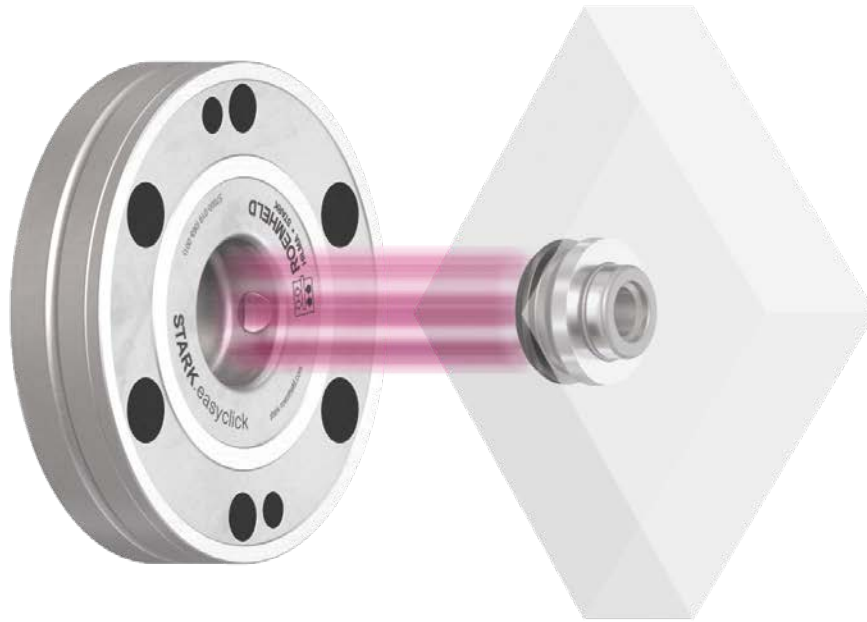
STARK.easyclick
Standard



STARK.easyclick
Tornado

Benefits

click & hold!



WELL THOUGHT OUT - TRIED AND TESTED - UNIQUE

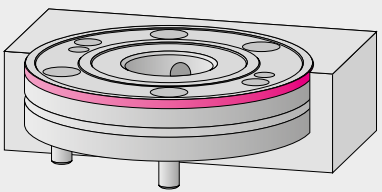
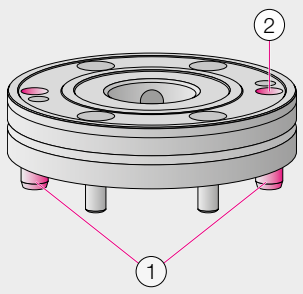
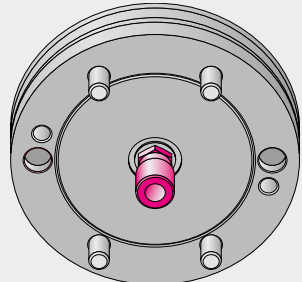
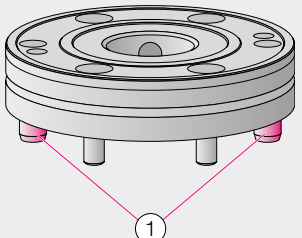
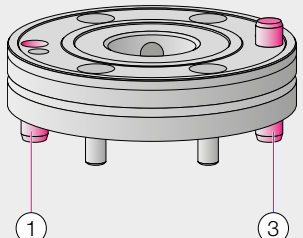
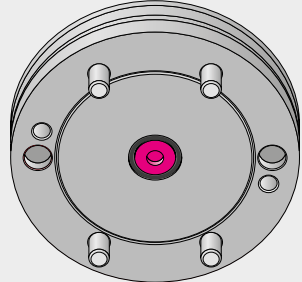
- **Click & hold**
- **Flat design**
Diameter 85mm and only 19mm high
- **Highest forces on the market**
In this size, the STARK.easyclick achieves the highest forces on the market
5 kN clamping force - 10kN retention force
- **Autonomous solution**
The volume of a manual air pump (e.g. hand pump) is sufficient to release the system
- **Easy to install**
Installation takes place without complex machining processes



STARK.easyclick – click & hold!



Installation versions

Installation situation	Single pallet clamping	Connection situation
 <p>Installation Positioning via Ø 85</p>	 <p>Positioning via two pins Ø 8 (#1) Indexing via locating pin in fit (#2)</p>	 <p>Connection via M5 screw connection</p>
 <p>Flange-mounted Positioning via two pins Ø 8 (#1)</p>	 <p>Positioning via two pins Ø 8 (#1, #3) Indexing via fit or groove in the pallet on the pin (#3)</p>	 <p>Connection via O-ring</p>

#1 Positioning on the base plate via cylindrical pin (S936-097)

#2 For single clamping via locating pin (S952-242)

#3 For single clamping via cylinder pin (S936-134)

► See positioning elements, page 20



Technical data

		STARK.easyclick	STARK.easyclick Tornado
Maintenance interval	Cycles	250,000	
Clamping force ¹	[N]	5,000	
Retention force ²	[N]	10,000	
Release pressure	[bar]	4	5.5–6
Max. operating pressure	[bar]	8	
Max. permitted lateral forces ³	[N]	2,500	
Air volume	[cm ³]	8	
Min. permitted clamping time	[s]	0.1	
Min. permitted release time	[s]	0.1	
Radial pre-positioning ⁴	[mm]	± 0.4	
Max. axial pre-positioning	[mm]	on support	
Repeat accuracy ⁵	[mm]	< 0.01	

- 1 Clamping force: *This clamping force is the load up to which the zero point of the retractable nipple is guaranteed. The specified clamping force must not be exceeded.*
- 2 Retention force: *This is the maximum overload at which the retractable nipple is still held but the zero point has already been left.*
- 3 Lateral force: *The permitted force only applies to retractable nipples with zero point and retractable nipples with equaliser 90° to the equaliser direction.*
- 4 Radial pre-positioning: *The loading device must be compliant for automated loading.*
- 5 Repeat accuracy: *This usually indicates the accuracy that refers to the change of the same pallet position-oriented on the same interface.*

Tilting moment calculation example

INFO

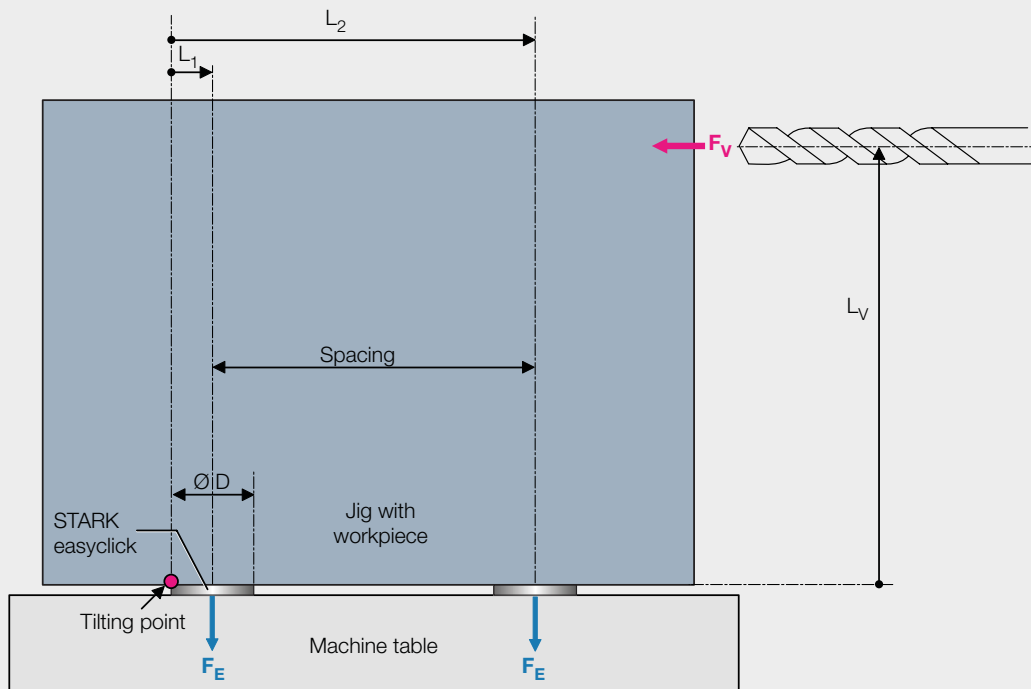
Tilting moment calculation example

Example:

Fast closing clamp plate 4 STARK.easyclick with spacing 200 x 200 and max. feed force of 4 kN with distance of 200 mm.

Question:

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



Solution:

$$M_E > 2 \times M_V ?$$

$$M_V = F_V \times L_V = 4,000 \text{ N} \times 0.2 \text{ m}$$

$$M_V = 800 \text{ Nm}$$

$$M_E = 2 \times (F_E \times L_1) + 2 \times (F_E \times L_2)$$

$$M_E = 2 \times F_E \times (L_1 + L_2)$$

$$L_1 = \text{Ø D} / 2$$

$$L_2 = \text{Ø D} / 2 + \text{Spacing}$$

$$L_1 + L_2 = \text{Ø D} + \text{Spacing}$$

$$L_1 + L_2 = 0.085 \text{ m} + 0.2 \text{ m} = 0.285 \text{ m}$$

$$M_E = 2 \times F_E \times (L_1 + L_2) = 2 \times 5,000 \text{ N} \times 0.285 \text{ m}$$

$$M_E = 2,850 \text{ Nm}$$

$$M_E / M_V > 2 ?$$

$$M_E / M_V = 2,850 \text{ Nm} / 800 \text{ N}$$

$$M_E / M_V = 3.56 > 2$$

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

(Enter all variables in SI units (metres, newtons))

M_V : Moment from feed force

M_E : Moment from insertion force

F_V : Feed force (4,000 N)

F_E : Insertion force (5,000 N)

Spacing = 200 mm = 0.20 m

Ø D (bearing ring) : 85 mm = 0.085 m

L_V : 200 mm = 0.2 m



ELEMENTS

STARK.easyclick D085, module

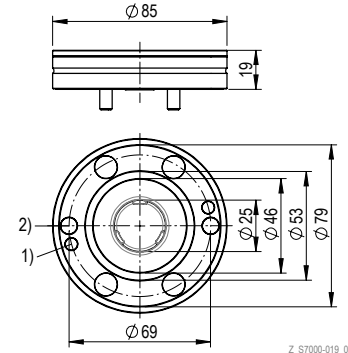


Fast closing clamp made of high-quality tool steel. System is pneumatically single acting (clamping by spring force).

Version as module ø85 mm with support ring.

Properties

- Retention force: 10,000 N
- Clamping force: 5,000 N
- Repeat accuracy: < 0.01 mm
- Pressure: min. 4 bar, max. 8 bar
- Weight: 0.62 kg
- Installation according to data sheet D113
- Operating Manual WM-020-337-xx-xx



Z_S7000-019_00

1) Draw-off thread M6 for dismantling
2) Positioning bore ø8, continuous
3) O-ring Ø 12.0 x 1.5 mm S933-054, enclosed separately

Order number	Article designation	Operating temperature	Material
S7000-019	SM E1 P 050 D085 ST NP	+ 10 to + 80 °C	Tool steel, NBR
S7000-019-01	SM E1 P 050 D085 ST NP ET	+ 10 to + 150 °C	Tool steel, FKM

STARK.easyclick D085, Module, Tornado

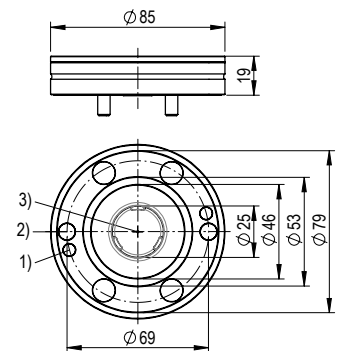


Fast closing clamp made of high-quality tool steel. System is pneumatically single acting (clamping by spring force).

Version as module ø85 mm with support ring and centre blow-out.

Properties

- Retention force: 10,000 N
- Clamping force: 5,000 N
- Repeat accuracy: < 0.01 mm
- Pressure: min. 5.5-6 bar, max. 8 bar
- Weight: 0.62 kg
- Installation according to data sheet D113
- Operating Manual WM-020-337-xx-xx



Z_S7000-119_00

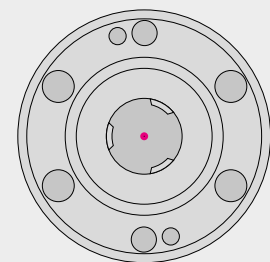
1) Draw-off thread M6 for dismantling
2) Positioning bore ø8, continuous
3) Blow-out
4) O-ring Ø 12.0 x 1.5 mm S933-054, enclosed separately

Order number	Article designation	Operating temperature	Material
S7000-119	SM E1 P 050 D085 TO NP	+ 10 to + 80 °C	Tool steel, NBR
S7000-119-01	SM E1 P 050 D085 TO NP ET	+ 10 to + 150 °C	Tool steel, FKM

INFO

Tornado blow-out

STARK.easyclick Tornado is a fast closing clamp with an additional central bore in the housing. This bore is connected to the release line and is used for blow-out and seat check. A maximum of 4 STARK.easyclick Tornadoes may be connected in one clamping circuit. See also Operating Manual WM-020-337



Fast closing plates STARK.easyclick



STARK.easyclick fast closing clamp made of high-quality tool steel

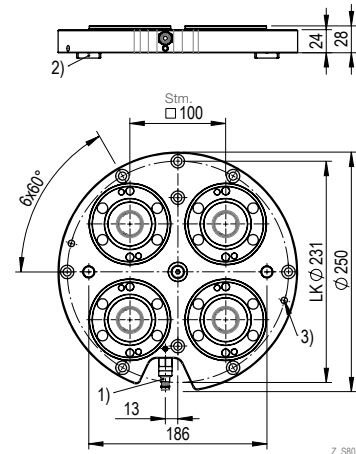
Application on 3/4/5-axis machines for all common machining operations such as milling, grinding, eroding

Properties

Fast closing clamp plate with STARK.easyclick (S7000-019). The pallet is clamped mechanically with 4 x 5 kN spring force and released pneumatically with 3-8 bar air pressure.

Particularly suitable for small machines due to a compact overall height of only 28 mm. King pin bore and fixing holes for machine tables with 4 or 6 star T-slots.

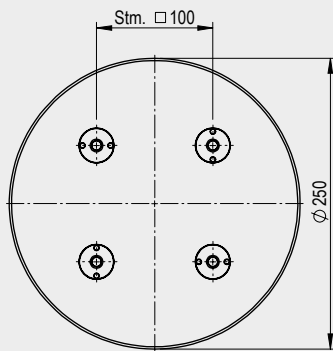
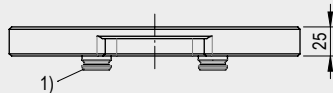
Operating Manual WM-020-337-xx-xx



Z_S805-100_00

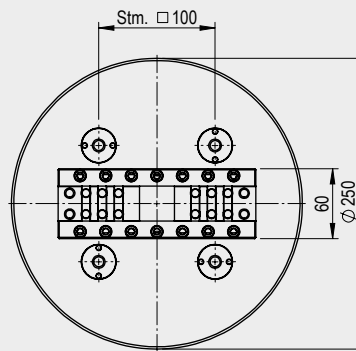
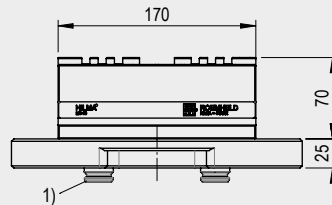
1) Release connection for STARK.easyclick
2) Slot nut with pin
3) Transport thread M8 (2x)

S805-101



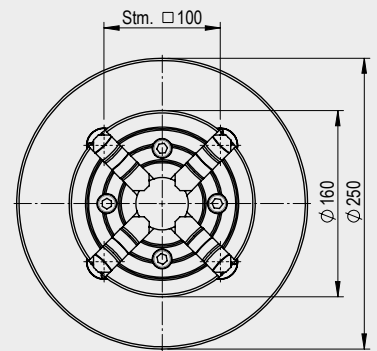
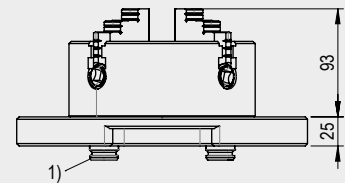
Z_S805-101_00

S805-102



Z_S805-102_00

S805-103



Z_S805-103_00

1) 1x retractable nipple with zero point, 1x retractable nipple with equaliser, 2x retractable nipple without centring

Order number	Designation	Material	Dimensions	Weight
S805-100	Fast closing clamp plate 4x STARK.easyclick (S7000-019)	Anodised aluminium	Ø 250 x 28	4.7 kg
S805-101	Rough pallet	Anodised aluminium	Ø 250 x 25	3.7 kg
S805-102	Pallet HILMA MC60	Anodised aluminium	Ø 250 x 25	8.4 kg
S805-103	Pallet jaw chuck	Anodised aluminium	Ø 250 x 25	13.7 kg



RETRACTABLE NIPPLE

Retractable nipple STARK.easyclick - NP

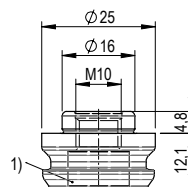


Retractable nipple suitable for all fast closing clamps of the STARK.easyclick family.

- Retractable nipple with zero point
- For screw M8, DIN 912 through or fastening to M10 internal thread
- Weight: 0.035 kg
- Installation according to data sheet D185
- Operating Manual WM-020-337-xx-xx

PREFERRED VERSIONS

- + Indexing
- + Screw countersink



Z_S7000-103_00

1) Countersink for M8 screw

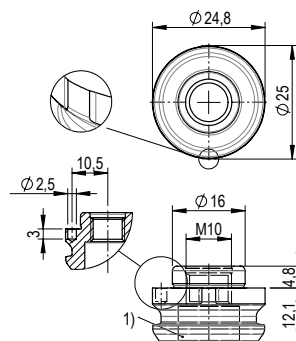
Order number	Article designation	Area of application	Material
S7000-103	EB E1 NP 160 10 048	Aluminium & steel pallets	Tool steel

Retractable nipple STARK.easyclick - AG



Retractable nipple suitable for all fast closing clamps of the STARK.easyclick family.

- Retractable nipple with equaliser in one axis (sword form)
- For screw M8, DIN 912 through or fastening to M10 internal thread
- With indexing for equalising direction
- Weight: 0.035 kg
- Installation according to data sheet D185
- Operating Manual WM-020-337-xx-xx



Z_S7000-104_00

1) Countersink for M8 screw
- Clamping pin ø 2.5x6mm, enclosed separately

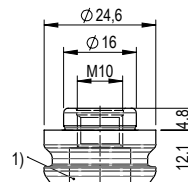
Order number	Article designation	Area of application	Material
S7000-104	EB E1 AG 160 10 048	Aluminium & steel pallets	Tool steel

Retractable nipple STARK.easyclick - OZ



Retractable nipple suitable for all fast closing clamps of the STARK.easyclick family.

- Retractable nipple without centring
- For screw M8, DIN 912 through or fastening to M10 internal thread
- Weight: 0.035 kg
- Installation according to data sheet D185
- Operating Manual WM-020-337-xx-xx



Z_S7000-105_00

1) Countersink for M8 screw

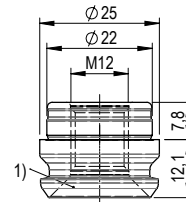
Order number	Article designation	Area of application	Material
S7000-105	EB E1 OZ 160 10 048	Aluminium & steel pallets	Tool steel

Retractable nipple STARK.easyclick - NP



Retractable nipple suitable for all fast closing clamps of the STARK.easyclick family.

- Retractable nipple with zero point
- For screw M10, DIN 7991 through or fastening to M12 internal thread
- Weight: 0.045 kg
- Installation according to data sheet D110
- Operating Manual WM-020-337-xx-xx



Z_S7000-100_00

1) Countersink for M10 screw

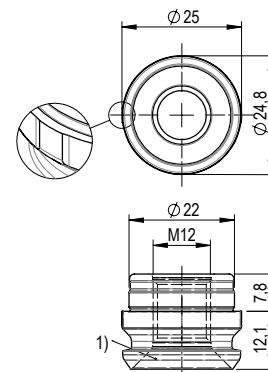
Order number	Article designation	Area of application	Material
S7000-100	EB E1 NP 220 12 078	Steel pallets	Tool steel

Retractable nipple STARK.easyclick - AG



Retractable nipple suitable for all fast closing clamps of the STARK.easyclick family.

- Retractable nipple with equaliser in one axis (sword form)
- For screw M10, DIN 7991 through or fastening to M12 internal thread
- Weight: 0.045 kg
- Installation according to data sheet D110
- Operating Manual WM-020-337-xx-xx



Z_S7000-101_00

1) Countersink for M10 screw

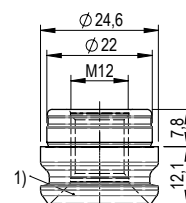
Order number	Article designation	Area of application	Material
S7000-101	EB E1 AG 220 12 078	Steel pallets	Tool steel

Retractable nipple STARK.easyclick - OZ



Retractable nipple suitable for all fast closing clamps of the STARK.easyclick family.

- Retractable nipple without centring
- For screw M10, DIN 7991 through or fastening to M12 internal thread
- Weight: 0.045 kg
- Installation according to data sheet D110
- Operating Manual WM-020-337-xx-xx

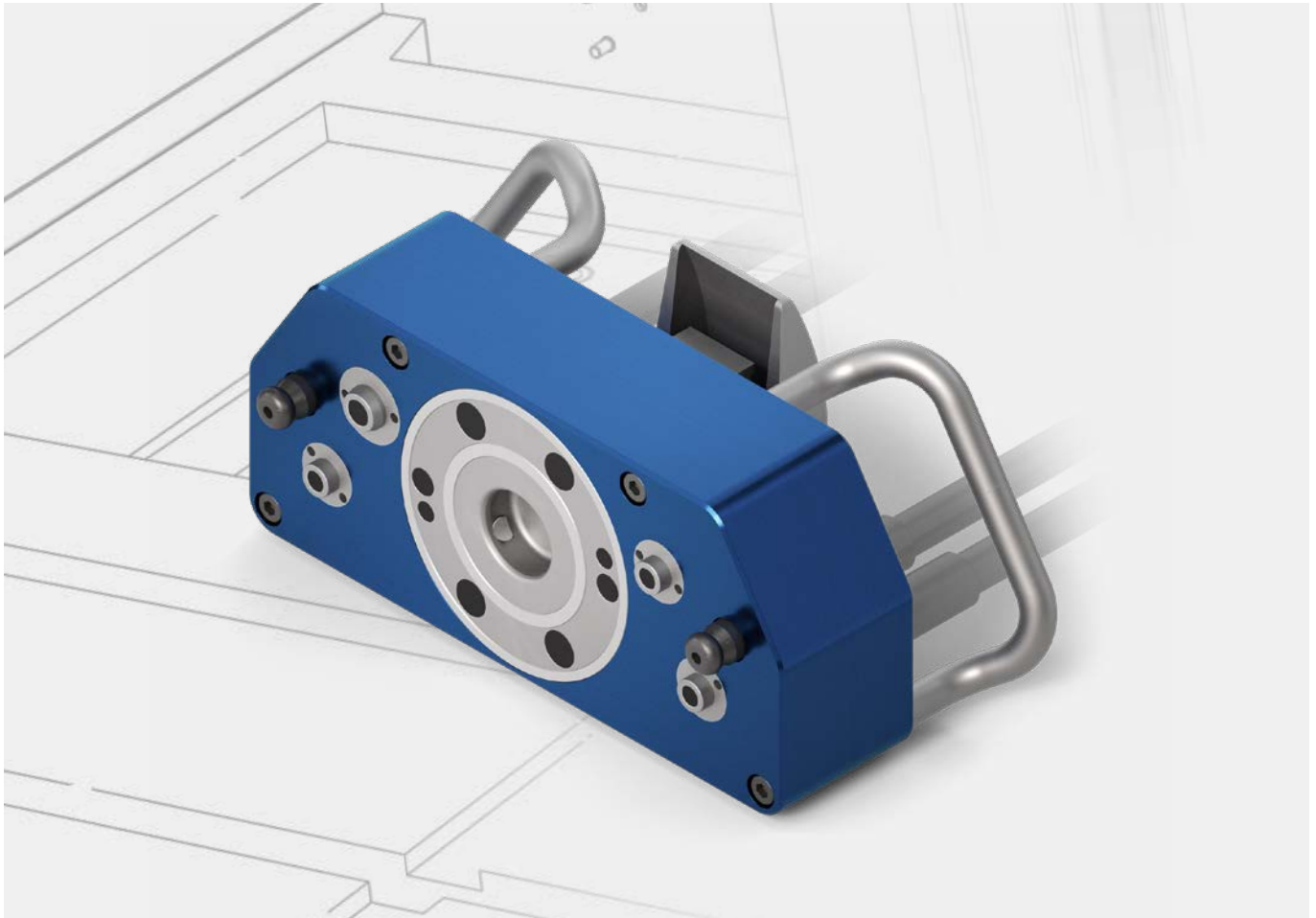


Z_S7000-102_00

1) Countersink for M10 screw

Order number	Article designation	Area of application	Material
S7000-102	EB E1 OZ 220 12 078	Steel pallets	Tool steel

Application example - Coupling unit



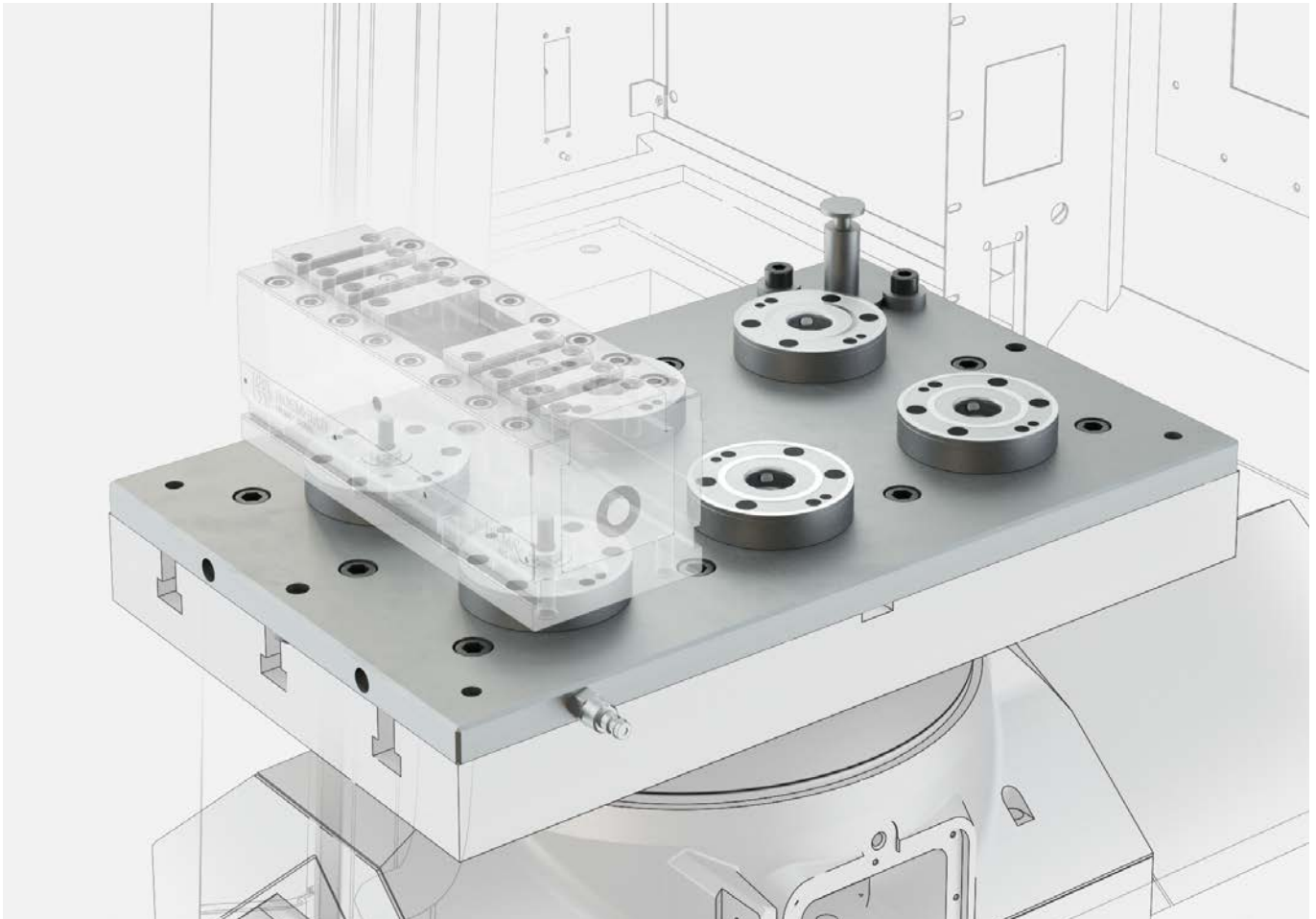
Coupling unit with STARK.easyclick

- Easiest connection of several hydraulic & pneumatic lines
- No mix-ups & fast
- Various safety features can be applied – e.g. no uncoupling under pressure, machine release, etc.
- System can be easily automated



- Zero point clamping system with blow-out, equipment check and clamp control
- Simple coupling – one hand grip is enough
- The machine is only released when the coupling unit is in the parking position

Application example - Milling machine



Typical application for milling machines

- Zero point clamping system with 6 STARK.easyclick elements (S7000-019)
- Vice HILMA MC100
- Easy handling
- Very low installation height

System options & features

- Optimal cleaning option
- Cleanliness due to completely covered machine table
- Integrated tool measuring system



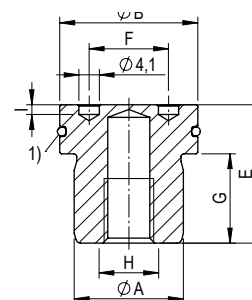
NIPPLE FASTENING

Nipple fastening D



Counterpart for assembling the retractable nipple according to fastening option "D"

- Allows to make the nipple fastening with one clamping
- Mounting key or face wrench recommended for counterholding
- Installation according to data sheet D029-2
- Operating Manual WM-020-369-xx-xx



Z_Nippelbefestigung_D_00

1) O-ring included in scope of delivery

Order number	Article designation	øA	øB	øC	øD	E	F	G	H	I	Weight
S809-125 ^{*1}	NB 28 28 22 18 M10 NI D	22	27.8	25.4	21	27.9	16	18	M10 x 18	2	0.09kg
S804-253 ^{*2}	NB 20 22 16 12 M08 NI D	16	19.8	17.4	15	21.9	14	12	M8 x 13	3	0.04 kg

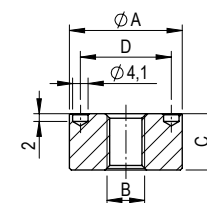
► ^{*1} S809-125 suitable for S7000-100/-101/-102 ^{*2} S804-253 suitable for S7000-103/-104/-105

Nipple fastening E.1



Counterpart for assembling the retractable nipple according to fastening option "E.1"

- Allows to make the nipple fastening with one clamping. Mounting key or face wrench recommended for counterholding.
- Installation according to data sheet D029-2
- Operating Manual WM-020-369-xx-xx



Z_Nippelbefestigung_E.1_00

Order number	Article designation	øA	O	C	D	Weight
S804-266 ^{*1}	NB 30 15 00 00 M10 NI E1	29.8	M10	14.9	24	0.07 kg
S809-128 ^{*2}	NB 25 15 00 00 M08 NI E1	24.8	M8	14.9	16	0.05 kg

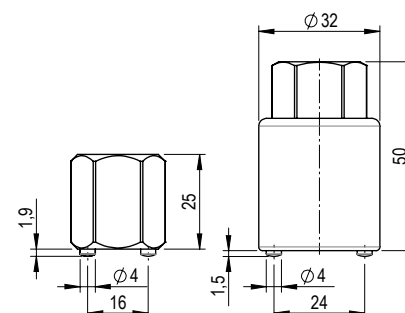
► ^{*1} S804-266 suitable for S7000-100/-101/-102 ^{*2} S809-128 suitable for S7000-103/-104/-105

Key for nipple fastening D & E.1



For assembly and disassembly of the retractable nipples according to versions "D & E.1"

- Width across flats SW22
- For tightening torque, see retractable nipple installation data sheets



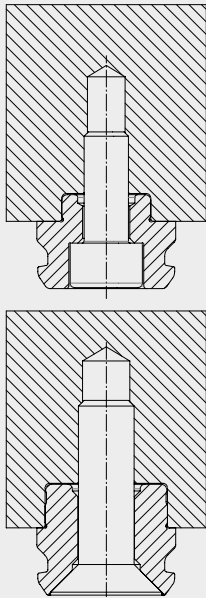
Order number	Article designation	Dimensions	Weight
S804-962	Key for nipple fastening 16 mm	SW22 / 25 mm	0.16 kg
S804-254	Key for nipple fastening 24 mm	ø32 mm / 50 mm	0.08 kg

INFO

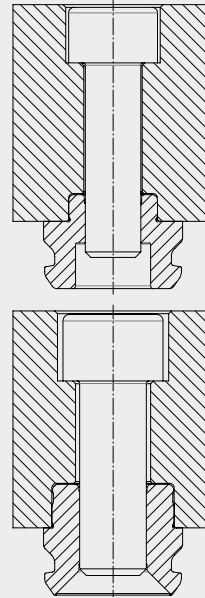
Retractable nipple fastening versions

Version A

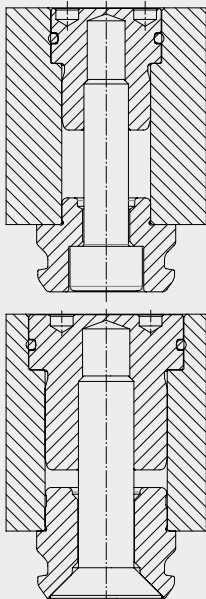
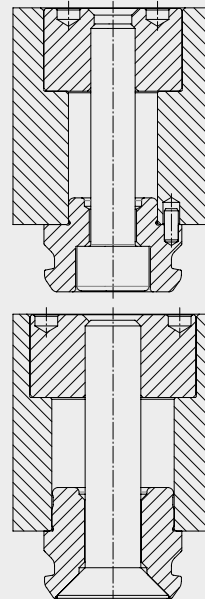
For applications where nipple bores are not permitted on the surface (e.g. pallet top) or for direct workpiece clamping.


Version B

Simple nipple fastening from above.


Version D

The fitting bores for the retractable nipples 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. Mounting version D is additionally sealed by an O-ring.


Version E.1


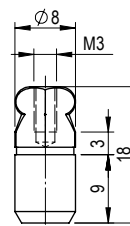


POSITIONING ELEMENTS

Locating pin



Locating pin for single clamping in combination with a zero point nipple



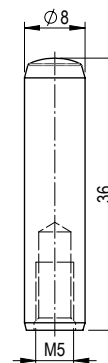
Z_S952-242_00

Order number	Article designation	Weight
S952-242	Locating pin ø8 flattened ball socket	0.006 kg

Cylinder pin



Cylinder pin for single clamping in combination with an equaliser nipple



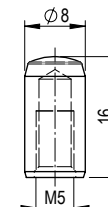
Z_S936-134_00

Order number	Article designation	Weight
S936-134	Cylinder pin ø8m6x36 DIN7979 form D	0.012 kg

Cylinder pin



Cylinder pin for positioning a STARK.easyclick fast closing clamp on a base plate



Z_S936-097_00

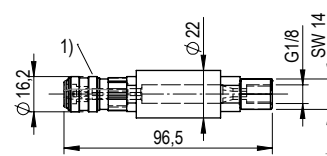
Order number	Article designation	Weight
S936-097	Cylinder pin ø8m6x16 DIN7979 form D	0.005 kg

ACCESSORIES

Sliding coupling



Pneumatic coupling unit with slide valve for connecting and operating STARK.easyclick fast closing clamps



Z_S5000-300_01

1) Coupling S954-208 suitable for coupling nipple S5000-301

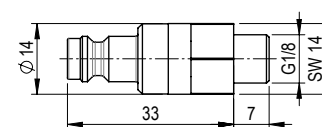
Order number	Connection	Weight
S5000-300	G1/8"	0.20kg

Coupling nipple



Coupling nipple for STARK.easyclick in conjunction with coupling S5000-300

For connecting STARK.easyclick fast closing clamps



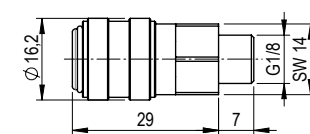
Z_S5000-301_01

Order number	Connection	Weight
S5000-301	G1/8"	0.05 kg

Coupling



Pneumatic coupling for connecting the STARK.easyclick fast closing clamps – suitable for S5000-301



Z_S954-208_01

Order number	Connection	Weight
S954-208	G1/8"	0.05 kg



List of order numbers STARK.easyclick

S5000-300	21	S804-254	18
S5000-301	21	S804-266	18
S7000-019	12	S804-962	18
S7000-019-01	12	S805-100	13
S7000-100	15	S805-101	13
S7000-101	15	S805-102	13
S7000-102	15	S805-103	13
S7000-103	14	S809-125	18
S7000-104	14	S809-128	18
S7000-105	14	S936-097	20
S7000-119	12	S936-134	20
S7000-119-01	12	S952-242	20
S804-253	18	S954-208	21

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STARK Spannsysteme

The ROEMHELD Group consists of 5 companies at locations in Germany and Austria, each with different products and orientations. With numerous subsidiaries, sales partners and service companies on all continents and in more than 50 countries, rapid and intensive customer support is provided in the mechanical engineering, medical technology, automotive, aviation and agricultural industries.

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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