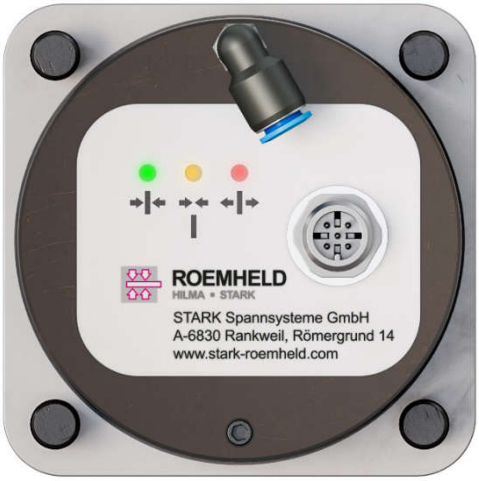
STARK.airtec zero point clamping system

Translation of the original operating manual
WM-020-168-14-en BA STARK.airtec



STARK.airtec

Art. no.: S5000-001 - S5000-…
S03674, S03675, S04342, S04718

Manufacturer:

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1 Table of contents

2 Identification of the partly completed machinery

Product:	Fast closing clamp
Function:	Clamping and centring of workpiece pallets, machine or plant elements
Product group:	STARK.airtec
Article number:	S5000-001 to S5000-XXX, S03674, S03675, S04342, S04718
Trade name:	Corresponds to product group, see above

3 User instructions

3.1 Purpose of the document

This operating manual

- describes the function, operation and maintenance of the fast clamping device
- gives important instructions for safe and efficient use of the fast clamping device

3.2 Revision history

Date	Revision	Name
02/07/2014	Document creation	reeg
05/11/2018	New product versions added	wavo
28/09/2020	Technical data adapted	mafr
12/01/2023	General revision, permissible leakage note	wavo
28/08/2023	STARK.airtec/connect programming aid added	chgo
04/11/2024	9 Technical data 10 Declaration of Incorporation	wavo

3.3 Presentation of safety instructions

Safety instructions are identified by a pictogram. The associated signal word describes the extent and severity of the impending hazard.

	**DANGER**	**Immediate** imminent risk to life and health of persons (serious injury or death). Be sure to follow these instructions and procedures!
	**CAUTION**	**Potentially** dangerous situation (minor injuries or property damage). Be sure to follow these instructions and procedures!
	**INFORMATION**	Application tips and particularly useful information.
	**INSTRUCTION**	Obligation for special conduct or an activity for the safe handling of the machine.

4 Essential safety instructions

4.1 Intended use

The fast closing clamp is used for clamping pallets with mounting devices for workpieces.
The workpieces are intended for processing, transporting and measuring.

The intended use also presupposes:

- compliance with all the instructions in the operating manual
- observance of the inspection and maintenance intervals
- use of only OEM parts.

4.2 Foreseeable misuse

Any other use than that described in chapter
“4.1 Intended use“ or any use going beyond this is considered a misuse and is not permitted!

Risks may occur if the product is not used as intended. Improper uses include e.g.:

- exceeding the technical values specified for normal operation
- application for hoist operation and load transportation

The operating company bears sole responsibility for any injury or damage resulting from such improper use. The manufacturer assumes no liability.

4.3 When using rotating machine tools

For rotating applications, the fast closing clamp may only be operated if it is ensured that it is securely clamped. It must also be ensured that the permissible forces acting on the fast closing clamp are not exceeded according to the technical data.
Specialists must be consulted to calculate and design the fast clamping clamps for rotating applications. STARK Spannsysteme GmbH provides this service.

4.4 Modifications or alterations

Unauthorised modifications or alterations of the fast clamping device will void any liability and warranty on the part of the manufacturer!
Therefore do not make any modifications or alterations to the fast closing clamp and retractable nipple without consultation with and the written approval from the manufacturer.

4.5 Spare and wear parts and auxiliary materials

Only retractable nipples from STARK Spannsysteme GmbH may be used on the remote station and must be installed according to the appropriate data sheet of STARK Spannsysteme GmbH.
The use of spare and wear parts from third-party manufacturers can result in risks. Use only OEM parts or parts approved by the manufacturer. STARK Spannsysteme GmbH accepts no liability for damage resulting from the use of spare and wear parts or auxiliary materials not approved by STARK Spannsysteme GmbH.

4.6 Obligations of the operating company

The operating company is obliged to allow only persons to work on the fast clamping device who

- are familiar with the fundamental occupational health an safety and accident prevention regulations
- have been instructed in the use of the fast clamping device and have read and understood this operating manual.

The requirements of EC Directive 2007/30/EC on the use of work equipment must be observed.

4.7 Residual risks

Attention must be paid to the existence of mechanical or pneumatic residual energies at the fast clamping device and the pressure in the cylinders and valves after switching off the fast clamping device!

4.7.1 Spring forces

Improper disassembly of the fast closing clamp can result in material damage or even injury due to the internally preloaded springs. Assembly work may only be carried out by STARK Spannsysteme GmbH.

4.7.2 Malfunction in the pneumatics during operation

Malfunctions in the pneumatics may cause an unintentional pressure increase in the release line and subsequently release the fast closing clamp. Particularly in rotating applications, this can result in a significant hazardous situation.

Possible measures to prevent accidental release:

- Mechanical disconnection of the release pressure line (decouple). This means that a pressure increase is no longer possible during operation.
- Decouple the safety valves from the machine pneumatics. This means that a pressure increase is no longer possible during operation.
- When the pneumatics are decoupled, the temperature in the system/pallet must not increase, e.g. due to hot chips or machining operations.
- With integrated pressure monitoring in the release circuit of the fast closing clamp, the machine can be stopped in the event of an unintentional pressure increase.

4.7.3 Excess pressure hazards

Lines or hoses bursting due to excessive pressures can endanger persons and the environment.

Measure:

- Protect pneumatic lines with overpressure safety valves
- Observe the specified pressure limits.

4.7.4 Danger due to incorrect assembly of the fast closing clamp

Incorrect tightening of the fixing screws or insufficient strength of the screws can cause the pallet to come loose.

Measure:

The mounting instructions for arrangement, strength class and tightening torque must be observed.

4.7.5 Danger during use when rotating

Excessive rotational speed, excessive weight or unbalance can lead to failure of the fast closing clamp. As a result, the pallet could be slung away.

Measure:

It is essential to observe the manufacturer's specifications and regulations regarding maximum values!

4.7.6 Influences on service life

Negative influences include:

- Insufficient filtering of the compressed air: a filter fineness of <15 µm must be guaranteed.
- External mechanical damage to functional components.
- Exceeding the specified forces or unintended load conditions.
- Overloading due to sudden pressure peaks.
- Excessive piston speeds: The specified release or clamping times must not be undercut by excessively high volume flows (observe the delivery rate of the compressor)!
- Heavy contamination of the functional parts (e.g. chips, casting or grinding dust, etc.)
- Aggressive media or environmental influences, e.g. coolants or lubricants, cleaning agents, UV radiation. This attacks seals and wipers.
- Incorrect preload position or loading position.
- Damage due to excessive loading and unloading speed.
- Staying too long in the release position leads to unnecessary loads on the seals and springs.

5 Description of the fast clamping device

5.1 General

The products of the STARK.airtec series are fast closing clamps made of high-quality tool steel and housings (for module versions) made of anodised, high-strength aluminium with very small space requirements due to compact external dimensions. The system is mechanically tensioned with springs and pneumatically released. The integrated spring assembly makes the STARK.airtec self-locking.

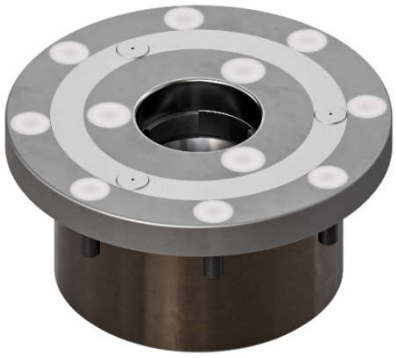
The integrated interrogation unit (type-dependent) detects and signals the clamping state using three signals (clamped, released, incorrectly clamped) via LEDs directly on the rear of the element and digitally for transmission to a higher-level control system. The query is designed to be fail-safe and suitable for use in welding systems.

The product series is designed for installation in systems for vehicle shell construction, assembly systems and for connecting machine elements. It is suitable for use in welding environments (weld-proof). It can also be used for all common machining processes such as milling, grinding, eroding, as well as on test benches and assembly devices. Ideal for automatic loading.

5.2 Product versions

Three sizes with different disc designs are available in the STARK.airtec families:

- STARK.airtec 155, round
- STARK.airtec 100, round (with and without islands, with and without indexing slot)
- STARK.airtec 80, square


Within the two sizes 100 and 80, a distinction must be made between the design variants:

- Installation
- Module
- Module with integrated interrogation technology

In the case of the STARK.airtec 80 product, an additional distinction can be made between two areas of application, which is reflected in the degree of accuracy and fastening of the elements.

- STARK.airtec G080 10 µm system accuracy, 8x M5 screws

- STARK.airtec GX080 100 µm system accuracy, 4x M8 screws

General formulations are used in the following chapters. If deviating specifications are necessary for an individual product version or variant, this is identified accordingly.

5.3 Surface-mounted element

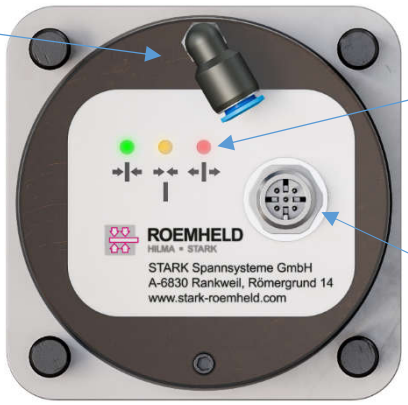
The STARK.airtec is also available as a surface-mounted element. Currently there are two construction heights. The S5000-151 surface-mounted element with 85 mm and the S5000-152 surface-mounted element with 135 mm total height. The S5000-104 element is installed. The element is released by means of the coupling located on the side.

The centring of the surface-mounted element is done via a central pin (Ø 12 mm) on the underside.

5.4 Operating principle

The STARK.airtec is a pneumatically operated zero point clamping system. A piston is held in the clamping position by springs. The piston has a single-acting pneumatic design. The position of the release connection varies depending on the type (flush mount or module, with / without interrogation unit), for elements with integrated interrogation unit, the pneumatic connection for release or the electrical control and visual display of the clamping state are located at the rear.

Release pressure
min. 5 / max. 10 bar



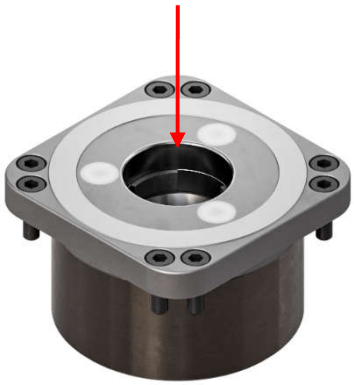
LEDs
- red "released"
- yellow "incorrectly clamped"
- green "clamped"

Signal connector
M12 5-pin
+24 VDC supply

Release
When the release pressure is applied, the piston is moved into the release position against the spring force. The clamping segments are moved radially outwards and the retractable nipple is released - signal: "released" (elements with integrated interrogation unit).

The piston movement during the clamping or release process creates a breathing volume inside the fast closing clamp. As a result, a certain negative pressure is created in the locating bore of the retractable nipple during clamping, or an overpressure during release.

Locating bore of the retractable nipple
Overpressure / negative pressure due to breathing volume



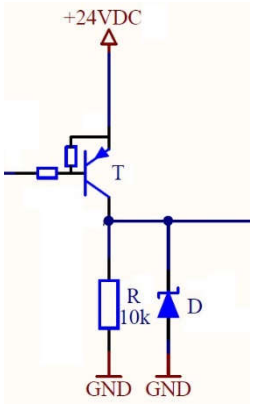
Clamping without retractable nipple or faulty tensioning
If the release pressure is relieved, the piston retracts. If there is no retractable nipple in the system, the end position is reached - signal: "clamped without retractable nipple" (elements with integrated interrogation unit).

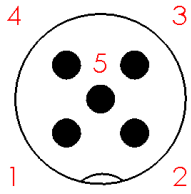
Clamping with retractable nipple
If there is a retractable nipple in the fast clamping device, it is locked by the clamping segments. This is done by the radial retraction of the clamping segments, controlled by a sliding gate and driven by the movement of the piston. The piston is held in a distinct intermediate position by spring force - signal "clamped with retractable nipple" (elements with integrated interrogation unit).

The locking mechanism remains in place until pressure is applied to the release connection. This must be observed on the control side with regard to personal safety.

5.5 Electrical control (elements with integrated query)

The integrated interrogation unit must be supplied with a nominal voltage of +24 VDC. The respective clamping condition is indicated by an individual signal ("clamped without nipple", "nipple clamped" or "released"). The signal lines are designed as PNP outputs with a 10 kΩ pull-down resistor and each have a maximum continuous current capacity of 200 mA[1].





M12 connector, male,
5-pin, A-coding

Assignment	Description	Signal
Pin 1	+24 VDC	Supply
Pin 2	Signal "clamped without nipple"	PNP
Pin 3	GND	Supply
Pin 4	Signal "nipple clamped"	PNP
Pin 5	Signal "released"	PNP
Shield	Not applied	

Depending on the application, the individual information of the elements can be further processed or sum information can be generated by a simple parallel connection.[2] Please note, however, that a clamping element without a signal (e.g. dirty voltage) cannot be detected!

Commercially available T-distributors or Y-cables can be used for a parallel connection. It must also be ensured that all interconnected elements are in the same supply circuit, otherwise equalising currents can impair the function. If you need support with the selection, then just contact us.

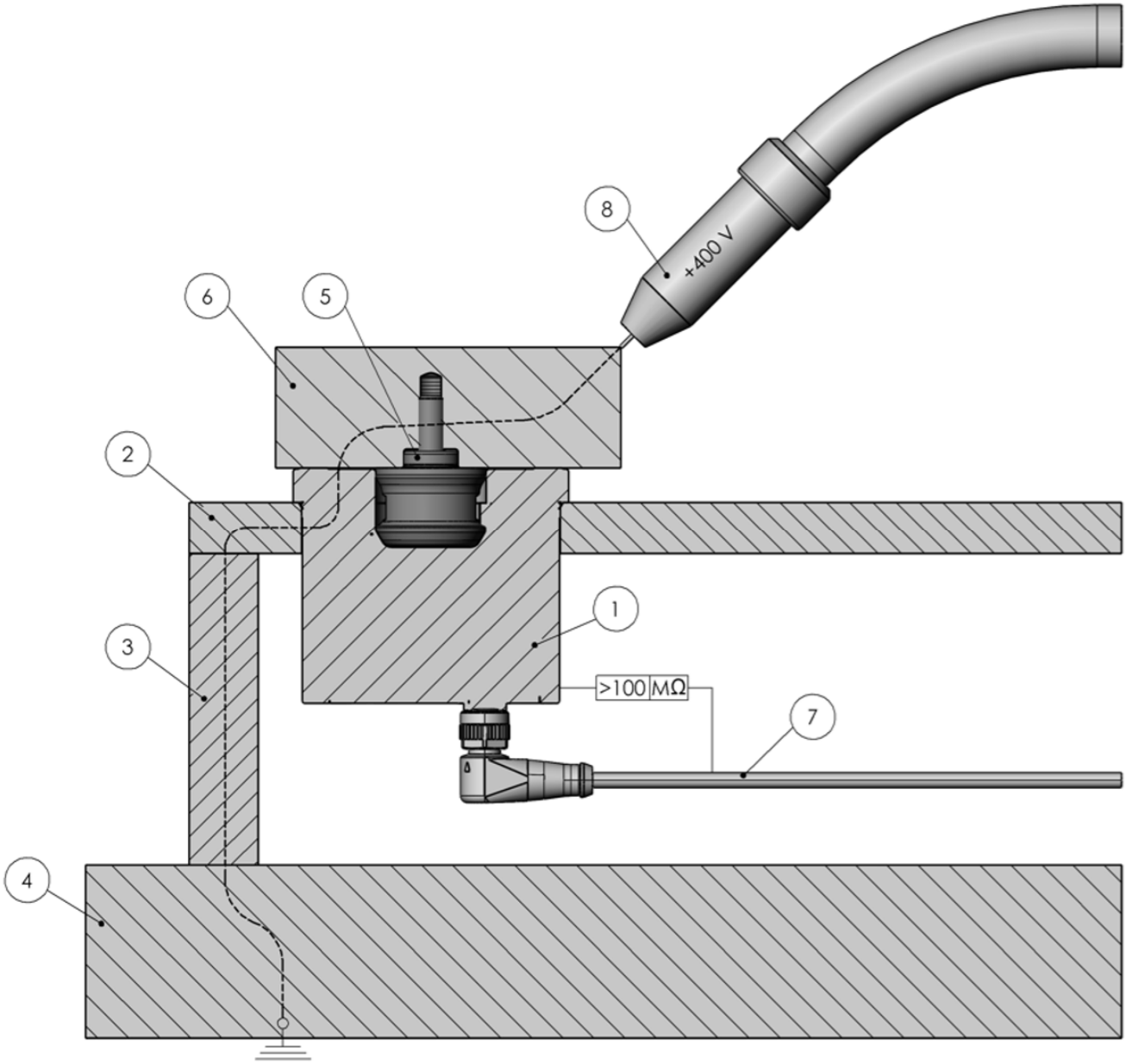
Example 1: An element is properly clamped and displays the "green" signal. A second element is also clamped, but with contamination between the support surface and pallet - this element does not produce any signal at all. If these two clamping elements are connected in parallel, the sum information is "green".

Example 2: An element is properly released and therefore displays the "red" signal. Another element could not be released (e.g. pneumatic hose torn out). This still produces the "green" signal for clamped. In this case, two signals, "green" and "red", are displayed as sum information.

[1] 100 mA for a delivery date before 30/11/2018

[2] A parallel connection is only possible from delivery date 01/12/2018

5.6 Welding currents



1 - Fast closing clamp

2, 3, 4 - Installation situation/foundation

5 - Retractable nipple

6 - Pallet/workpiece

7 - Connection cable, 5-pin

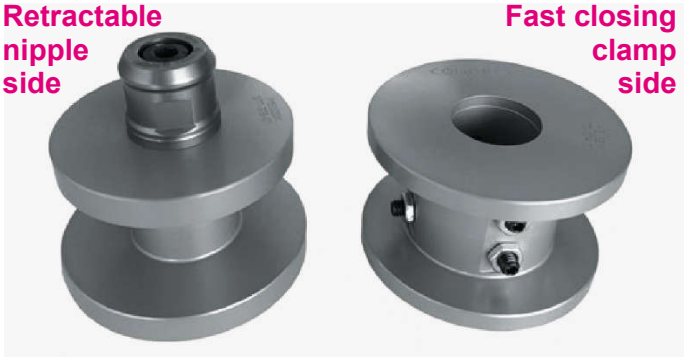
8 - Welding torch

The clearances and creepage distances were designed for a potential of 400V. Thus, the use in welding applications is possible.

The shield connection is not electrically connected on the clamping element side (rear connector). The extent to which an insulated or non-insulated cable should be used depends on the application.

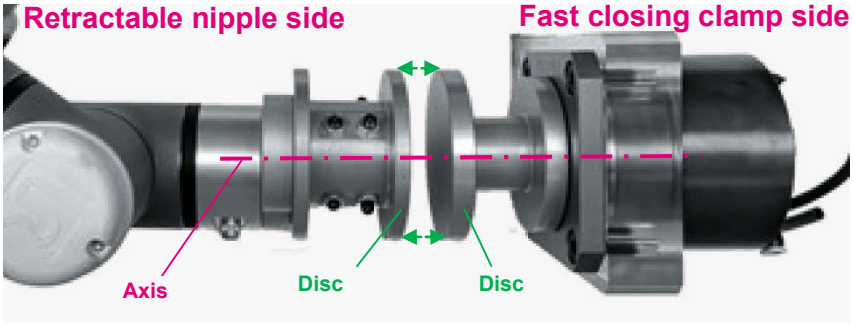
5.7 Programming aid STARK.airtec/connect

The programming aid is used to support the teach-in of a work cycle with a robot. The programming aid case contains three sets for the STARK.airtec and STARK.connect. One set consists of a 50 mm attachment for the side of the retractable nipple EZN and a 50 mm attachment for the side of the fast closing clamp SSV. Both attachments together thus result in a distance of 100 mm. After the coordinates have been successfully determined, the 2 x 50 mm can be corrected again in the programming.



Application:

When teaching-in, it must be ensured that both sides of the programming aid (retractable nipple & fast closing clamp) are on one axis and that the discs are on the stop at the end. Only then is the alignment correct.



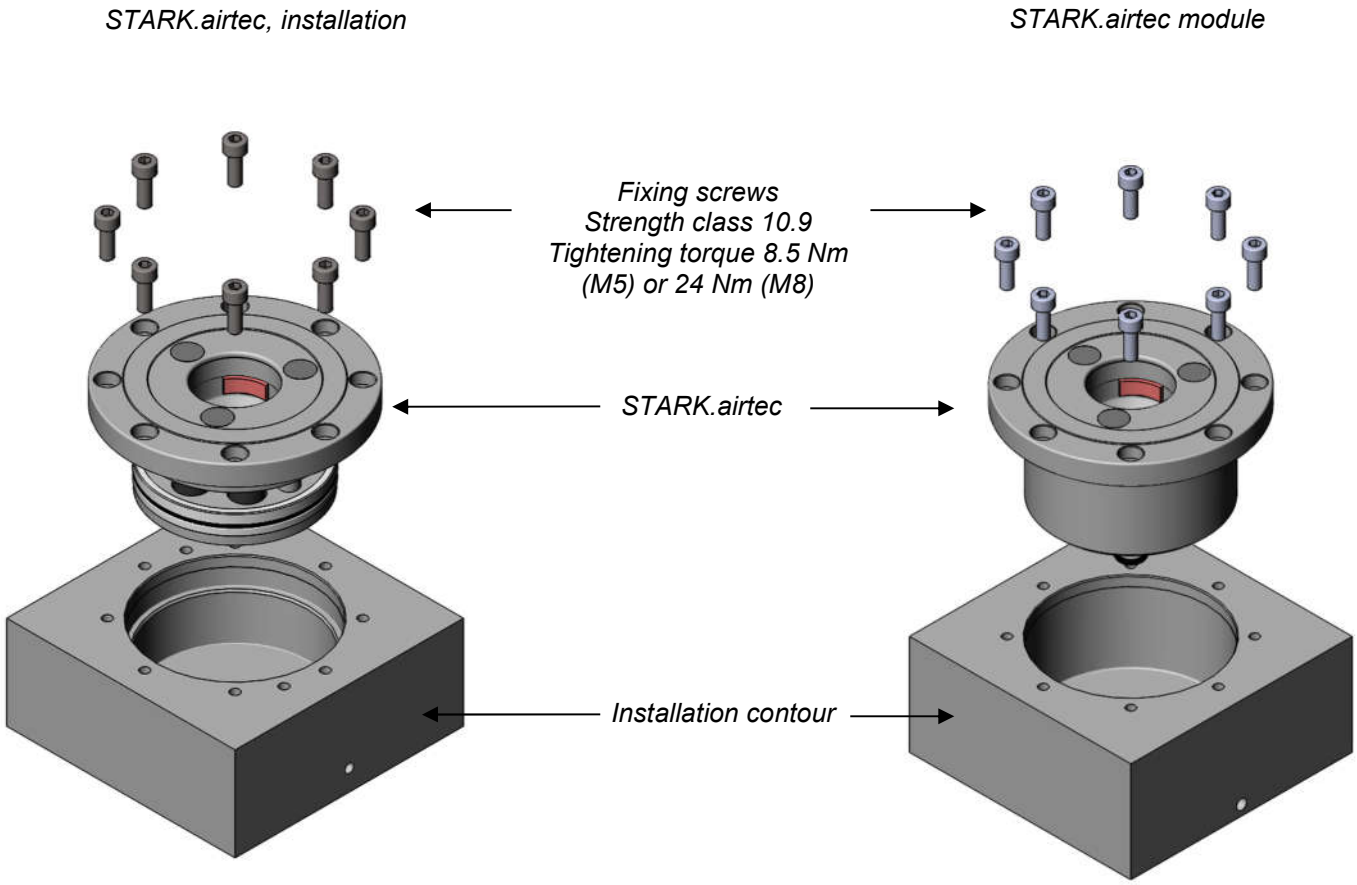
Programming aid for fast closing clamps
of type STARK.connect and STARK.airtec
Art. no. S9000-901

- 1x case with foam insert and associated tool
- 3x nipple side (STARK.airtec/connect turning attachment)
- 3x element side with pre-assembled STARK.connect nipple with zero point
- 3x nipple for STARK.airtec with zero point

6 Assembly and installation

The element is completely pre-assembled when supplied. Installation is carried out using the fixing screws provided. The elements with integrated interrogation unit also include a pre-assembled 90° push-in fitting for connecting the release line (for external hose diameter of 6 mm).

6.1 Assembly of the flush mount and module design

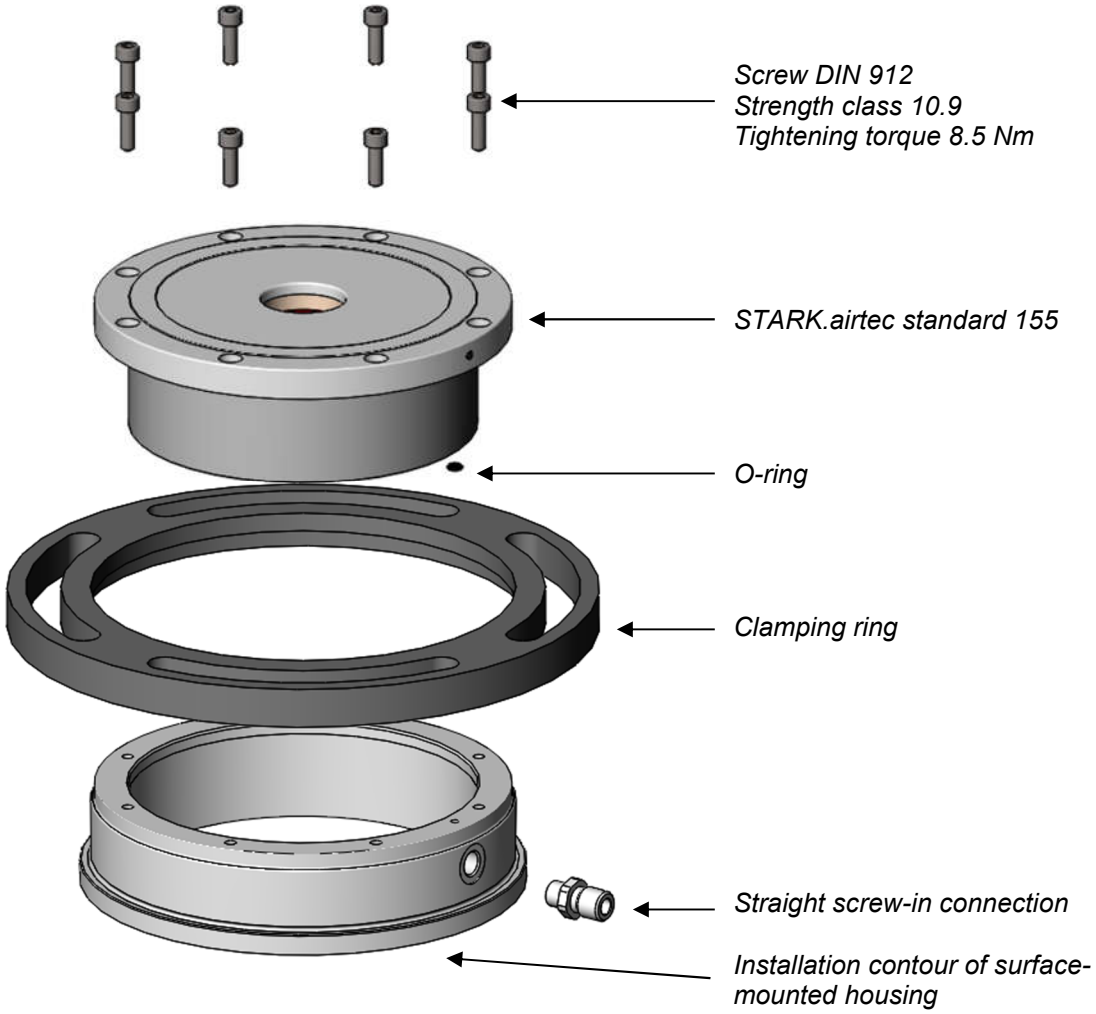


1. Check installation contour and, if necessary, deep hole drills for dimensional accuracy, surface quality and cleanliness.
2. Grease installation contour.
3. Insert the element, pull it evenly into the fitting of the installation contour with the fixing screws (light press fit) and tighten all screws to the appropriate torque.
4. If necessary, connect pneumatic hose and electrical connection cable.

For elements with integrated interrogation unit, the **rotatory orientation** of the connections is undefined due to the design. The pneumatic connection can be rotated, but the locking of the connector is specified. When designing the system, space must therefore be provided for the cable outlet.

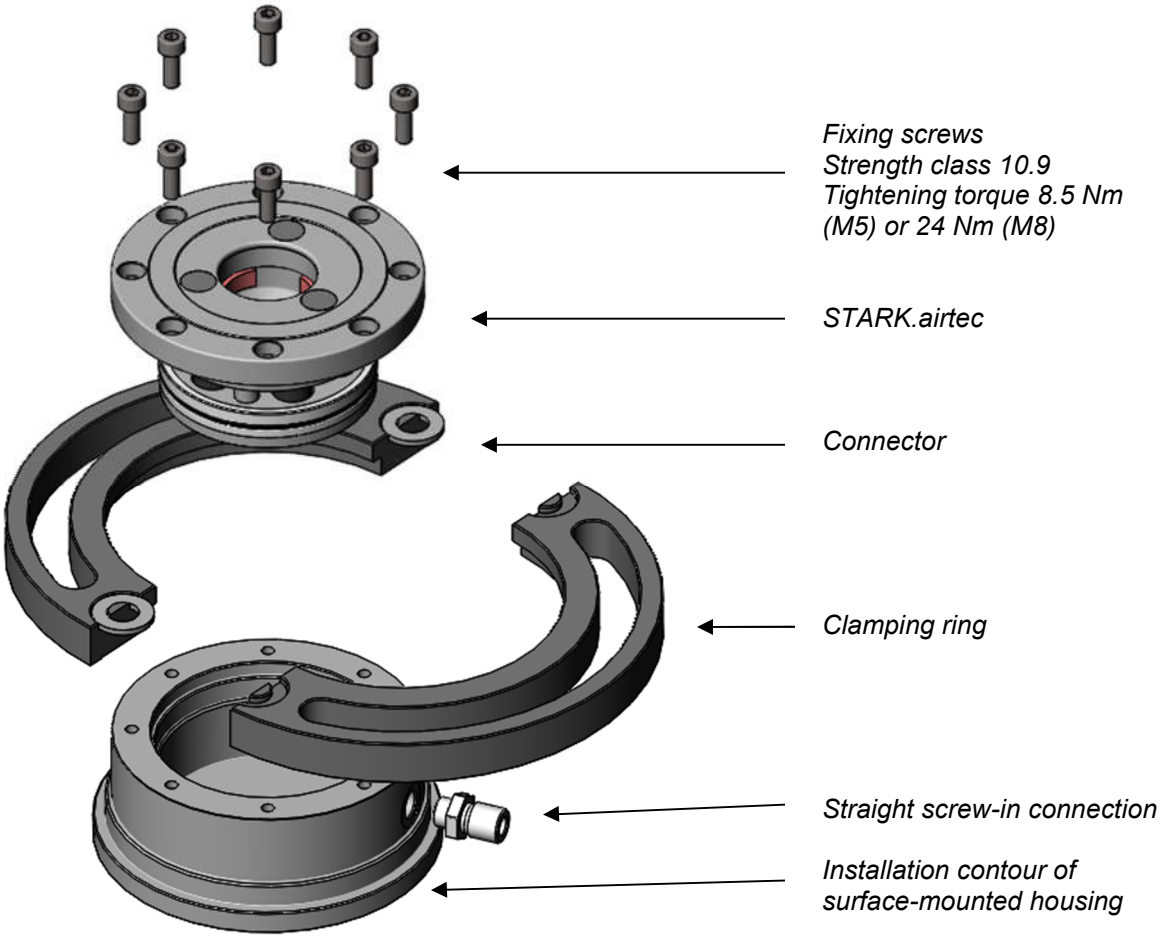
6.2 Assembly of the surface-mounted types

6.2.1 Model standard Ø 155



1. Grease the O-ring Ø 3x1.5 provided and insert it into the washer from below.
2. Insert the element (observe position of air connection), pull it evenly into the fitting of the installation contour with the fixing screws (light press fit), tighten all screws to the appropriate torque.
3. The installed element can now be fastened to the machine table with the clamping ring.
4. Install release line, check for leaks.

6.2.2 Other models



1. Grease installation contour.
2. Insert the element, pull it evenly into the fitting of the installation contour with the fixing screws (light press fit) and tighten all screws to the appropriate torque.
3. The installed element can now be fastened to the machine table with the clamping ring.
4. Install release line, check for leaks.

6.3 Removing the fast closing clamp

The system must be completely depressurised before disassembly is started. Disconnect the energy supply to the pressure generator, prevent unintentional commissioning and reduce possible residual pressures (e.g. non-return valves, stopcocks and similar).

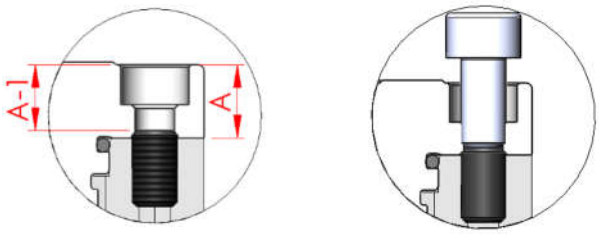
The pneumatic and electrical connections must be disconnected from the element before disassembly, if necessary, or it must be ensured that the lines are of an appropriate length so that they can be disconnected after removal of the element.

Disassembly of the module elements: Simply loosen all the screws one by one and then proceed to point "6.3.1 Pressing off the fast closing clamp".

Disassembly of the installation elements: Look for draw-off thread (loosen single screw, look for draw-off thread, if not present, screw in again, loosen next screw, etc.). Leave the screw screwed in next to the draw-off thread and 3 additional screws (rotated 90° to each other), remove the remaining screws.

6.3.1 Pressing off the fast closing clamp

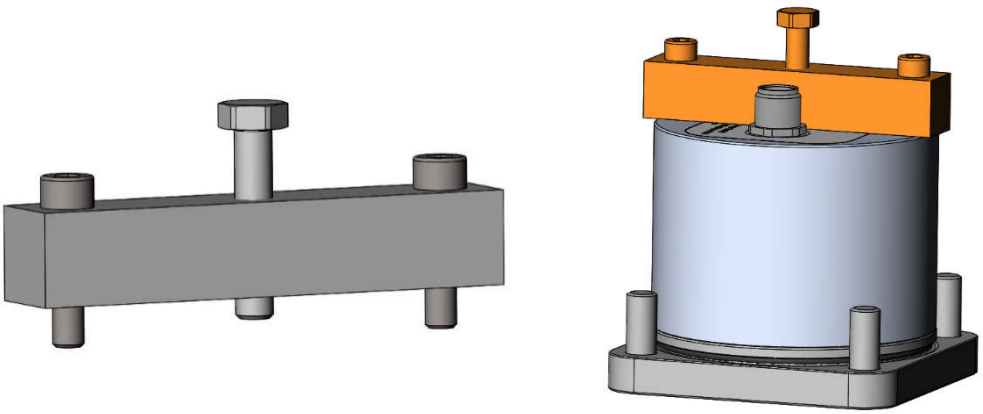
To press off the fast closing clamp, screw the set screws (M5x10 or M8x16, or shorter) under the draw-off threads (observe dimension A - 1 mm!) and then press off with suitable screws (M6 or M10). After removing the fast closing clamp, unscrew the set screws again.



6.4 Emergency release

If the compressed air supply fails or the clamping element cannot be released for any other reason, an emergency release can be carried out as follows (only for elements with integrated interrogation unit):

1. Remove the pneumatic connection, the grub screw in the opposite bore and the electrical plug connection.
2. There is a through hole, Ø 6.5 mm (in the centre of the cylindrical cubature) in the cover under the glued film; the film can be pierced in this area.
3. A "bridge" can now be fitted in the 2 M5 threaded holes, the clamping piston can be pressed into the released position.
4. The retractable nipple is released.



The article "Emergency release bridge" is available under order number S9000-900.

7 Commissioning, handling and operation

7.1 During initial commissioning

- Perform a visual inspection of the entire machine and/or system and the fast closing clamp.
- Check the fast closing clamp for pneumatic tightness.
- Check the release pressure and, if necessary, the electrical connection of the element.

7.2 Function check

- If all clamping elements connected to the same circuit are installed as described above and tightened with the appropriate torque, the pneumatic pressure generator can be connected to the circuit and, if necessary, the electrical connection can be established.
- Release: Slowly and carefully increase the pressure to the release pressure. When doing so, check the clamping elements for leaks, switch off the pressure generator immediately if necessary and eliminate the leakage.
- Clamp: Reduce the release pressure, the clamping piston moves to the "clamped" position by spring force and the clamping segments move together radially.
- The clamping condition is indicated on the rear LEDs (elements with integrated interrogation unit) - Check that the LEDs match the existing clamping condition ("released", "clamped with nipple" and "clamped without nipple")

7.3 Operation

The speed when retracting the retractable nipples into the fast clamping elements must be less than 100 mm/s, otherwise the retractable nipples and fast clamping elements may be damaged.

Only pressurise the fast closing clamp for the actual change procedure.
Do ***not*** leave under permanent pressure (released)!

- Set the release pressure of the fast clamping clamps (see chapter "9 Technical data")
- Monitor the max. operating pressure of the fast closing clamps. Set the excess pressure safety valve to max. 5 bar above the max. operating pressure (see chapter "9 Technical data")

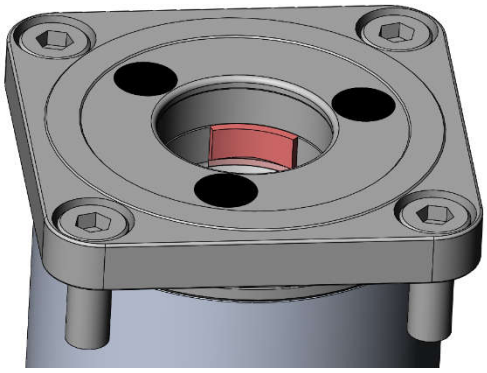
In order to ensure that the elements function permanently, the appropriate **air quality** must be provided. STARK's data therefore refer to a purity according to ISO 8573-1:2010 [7:4:4].

8 Maintenance and repair

8.1 Function check

Check the fast closing clamp for proper function: When the fast closing clamp is released, check that all clamping segments move back. If the retractable nipple cannot be inserted and removed without force into the locating bore when loosened, servicing by STARK Spannsysteme GmbH is required immediately.

If no service is performed, safe clamping of the retractable nipple is not possible.



Monthly:
Check that all clamping segments move back when the clamping element is released.

Yearly or after 5000 clamping cycles:
Check all functions of the fast clamping element. If one or more functions are no longer in perfect working order, servicing by STARK Spannsysteme GmbH is necessary immediately.

8.2 Maintenance interval

When the clamping cycles or replacement intervals have been reached, the fast closing clamp must be serviced by STARK Spannsysteme GmbH (see chapter "9 Technical data" Maintenance interval).

Please contact us to coordinate the service work:
Tel.: +43 5522 37 400
Mail: info@stark-roemheld.com

8.3 Cleaning

In principle, no contamination is permitted in the fast closing clamp. Cleaning depends on the application and replacement interval.

Possible!
The fast closing clamp may be blown out and off with compressed air.

Correct and improved!
Extraction and suction of chips, dirt and coolant from the fast closing clamp.

8.4 General cleaning

For general cleaning, the fast closing clamp must be dismantled. Assembly work may only be carried out by STARK Spannsysteme GmbH. The necessary safety measures must be observed in their entirety and without exception during all work.

Hazard information: The fast closing clamp is permanently under spring pressure! Do not open the housing. There is a risk of personal injury or material damage!

The product may not be cleaned with:

- corrosive or caustic components
- organic solvents such as halogenated or aromatic hydrocarbons and ketone (nitro thinner, acetone etc.) These could destroy the seals.

The element must be cleaned at regular intervals. In particular, the area of the bore - clamping segments - housing must be cleaned of chips and other liquids. In case of heavy contamination, cleaning must be carried out at shorter intervals.

8.5 Storage

Until first use:
If you do not use the fast closing clamp immediately, please store it dry and dust-free in its original packaging.

Long period of storage after use:
Before storage, clean the fast closing clamp (see chapter "8.4 General cleaning") and carry out suitable measures for corrosion protection.

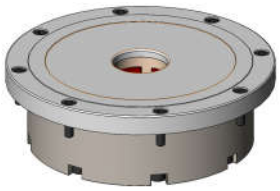
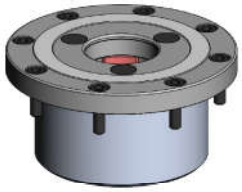
After a long period of storage:
After a long period of storage (approx. 3 years), the seals must be replaced before the system is used again. This must always be done by STARK Spannsysteme GmbH.

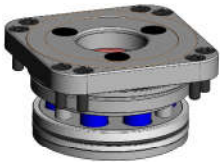
8.6 Disposal/recycling

All parts, auxiliary materials and process media of the fast clamping device must be separated according to type and disposed of in accordance with the local regulations and directives.

Hazard information: The fast closing clamp is permanently under spring pressure! Do not open the housing. There is a risk of personal injury or material damage!

9 Technical data

		SM A1 P 200 D155 SO NP (S 155) S5000-001	SM A1 P 200 D100 ST NP (S 100) S5000-101	SM A1 P 200 D100 ST NP EA (S 100) S5000-110
				
Housing cover	[mm]	Ø 155	Ø 100	Ø 100
Electrical query		no		Yes
Maintenance interval	Cycles	700,000	2,000,000	
Clamping force [1]	[N]	20,000		
Retention force [2]	[N]	55,000		
Release pressure	[bar]	6	5	
max. pressure	[bar]	10		
max. lateral force [3]	[N]	7,000		
Tilting moment	[Nm]	800	500	
Air volume	[cm3]	46	19	
Operating temperature	[°C]	+10 to +80		
Min. permitted clamping time	[s]	0.2		
Min. permitted release time	[s]	0.2		
Radial pre-positioning[4]	[mm]	± 2		
Max. axial pre-positioning	[mm]	on support		
Repeat accuracy[5]	[mm]	< 0.005		
System accuracy[6]	[mm]	< 0.01		
Weight	[kg]	4.80	1.10	1.45
Electrical connection	[mm]	-		M12 5-pin
Voltage range	[V]	-		24 (18 to 34)
Protection class		-		IP67
Typ. current consumption	[mA]	-		40
Continuous current[7]	[mA]	-		200
MTTF / MTTFD sensors [40 °C]	[years]	-		1.300 / 2.600
MTTF / MTTFD sensors [70 °C]	[years]	-		430 / 860
MTTFD mechanical components[8]	[years]	-		150

		SM A1 P 200 GX080 ST NP (EC 80) S5000-210	SM A1 P 200 G080 ST NP EA (ES 80) S5000-220	SM A1 P 200 GX080 ST NP EA (EC 80) S5000-230	SE A1 P 200 G080 ST NP (ES 80) S5000-202
					
Housing cover	[mm]	80 x 80			
Electrical query		no	yes		no
Maintenance interval	Cycles	2,000,000			
Clamping force [1]	[N]	20,000			
Retention force [2]	[N]	55,000			
Release pressure	[bar]	5			
max. pressure	[bar]	10			
max. lateral force [3]	[N]	7,000			
Tilting moment	[Nm]	500			
Air volume	[cm3]	19			
Operating temperature	[°C]	+10 to +80			
Min. permitted clamping time	[s]	0.2			
Min. permitted release time	[s]	0.2			
Radial pre-positioning[4]	[mm]	± 2			
Max. axial pre-positioning	[mm]	on support			
Repeat accuracy[5]	[mm]	< 0.05	< 0.005	< 0.05	< 0.005
System accuracy[6]	[mm]	< 0.1	< 0.01	< 0.1	< 0.01
Weight	[kg]	1.10	1.35		1.00
Electrical connection	[mm]	-	M12 5-pin		-
Voltage range	[V]	-	24 (18 to 34)		-
Protection class		-	IP67		-
Typ. current consumption	[mA]	-	40		-
Continuous current [7]	[mA]	-	200		-
MTTF / $MTTF_D$ sensors [40 °C]	[years]	-	1.300 / 2.600		-
MTTF / $MTTF_D$ sensors [70 °C]	[years]	-	430 / 860		-
$MTTF_D$ mechanical components[8]	[years]	-	150		-

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 90° equalisation to the equalising 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.

6 **System accuracy**: This indicates the accuracy that refers to the change of the same pallet position-oriented on the same interface.

7 **Continuous current**: This specification refers to the maximum continuous current of an output.

8 **MTTFD mechanical components**: estimated according to the informative procedure in Table C.1 of ISO 13849-1:2015 for mechanical components.

10 Declaration of Incorporation

This document refers to the Declaration of Incorporation according to Machinery Directive 2006/42/EC Annex II No. 1 letter B:

Manufacturer: **STARK Spannsysteme GmbH**

Römergrund 14
A-6830 Rankweil
Austria

Authorised representative to compile the technical documentation:

Mr. Martin Greif, Managing Director, address: See manufacturer.

Product:	Fast closing clamp
Function:	Clamping and centring of workpiece pallets, machine elements or system elements
Product group:	STARK.airtec
Article number:	S5000-001 to S5000-XXX, S03674, S03675, S04342, S04718
Trade name/ general designation:	Fast closing clamp

The manufacturer undertakes to provide the specific technical documentation relating to the incomplete machinery to national authorities in electronic or written form upon justified request.

Before it is established that the complete machine complies with the provisions of the Machinery Directive 2006/42/EC, it is prohibited to put the incomplete machinery into service.

The manufacturer certifies that the above-mentioned products are safe within the meaning of the national regulations when used as intended and in compliance with the operating instructions and the warnings on the product and that

- a risk assessment has been carried out in accordance with ISO 12100:2010.
- the relevant basic and proven safety principles of the annexes of ISO 13849-2:2012 are observed for the products, taking into account the specifications of the documentation. The parameters, limitations, ambient conditions, characteristic values, etc. for intended operation are defined in the operating instructions.
- fault exclusion with regard to the fault ‘Unexpected release without release signal applied’.
- fault exclusion with regard to the fault ‘Breakage during operation’ in compliance with the parameters, limitations, ambient conditions, characteristic values and maintenance intervals etc. specified in the operating instructions.

If applicable, there are additional guidelines for the machine integrator, among others, to observe and implement completely and correctly before commissioning:
EN ISO 12100; EN ISO 4413
- in the respective valid version of the legally prescribed date.

STARK Spannsysteme GmbH Rankweil, 04/11/2024

Martin Greif
Managing Director / Geschäftsführer

The following part of the Declaration of Incorporation according to the Machinery Directive 2006/42/EC Annex II No. 1 letter B describes which parts of the Machinery Directive 2006/42/EC have already been fulfilled for the system used at the time of handover of the product(s) or still have to be fulfilled subsequently by the integrator of the complete machine. The list is drawn up in accordance with the Machinery Directive 2006/42/EC Annex I.

If a superordinate provision is marked and the sub-items are not indicated, this shall apply collectively to all subordinate provisions which are thus to be fulfilled or have already been fulfilled.

If individual aspects are not relevant to the system described in this document by the manufacturer or distributor, this does NOT necessarily mean that the integrator of the complete machine does not have to consider these aspects in general.

If two columns are marked, this means that parts of the provisions have already been partially or fully complied with, but the integrator is responsible for full compliance.

	Not relevant: ↓	Fulfilled on the part of the system manufacturer: ↓	To be fulfilled by the system integrator: ↓
1. Essential health and safety requirements			
1.1. General remarks			
1.1.1. Definitions		X	X
1.1.2. Principles of safety integration		X	X
1.1.3. Materials and products		X	X
1.1.4. Lighting			X
1.1.5. Design of a machinery product to facilitate its handling		X	X
1.1.6. Ergonomics			X
1.1.7. Operating positions			X
1.1.8. Seating			X
1.2. Control systems			X
1.3. Protection against mechanical hazards			
1.3.1. Risk of loss of stability			X
1.3.2. Risk of break-up during operation		X	
1.3.3. Risks due to falling or ejected objects			X
1.3.4. Risks due to surfaces, edges or angles		X	
1.3.5. Risks related to a combined machinery product			X
1.3.6. Risks related to variations in operating conditions			X
1.3.7. Risks related to moving parts			X
1.3.8. Choice of protection against risks arising from moving parts			X
1.3.8.1. Moving transmission parts			X
1.3.8.2. Moving parts involved in the process			X
1.3.9. Risks of uncontrolled movements			X
1.4. Required characteristics of guards and protective devices			X
1.5. Risks due to other causes			
1.5.1. Electricity supply			X
1.5.2. Static electricity			X
1.5.3. Energy supply other than electricity			X
1.5.4. Errors of fitting		X	X
1.5.5. Extreme temperatures			X
1.5.6. Fire	X		
1.5.7. Explosion	X		
1.5.8. Noise			X
1.5.9. Vibrations	X		

1.5.10.				Radiation	X		
1.5.11.				External radiation	X		
1.5.12.				Laser radiation	X		
1.5.13.				Emissions of hazardous materials and substances			X
1.5.14.				Risk of being trapped in a machine			X
1.5.15.				Risk of slipping, tripping or falling			X
1.5.16.				Lightning			X
1.6.				Maintenance			X
1.7.				Information			
1.7.1.				Information and warnings on the machinery product		X	X
1.7.1.1.				Information and information devices			X
1.7.1.2.				Warning devices			X
1.7.2.				Warning of residual risks			X
1.7.3.				Marking of a machinery product			X
1.7.4.				Instructions		X	X
1.7.4.1.				General principles for the drafting of instructions		X	X
1.7.4.2.				Content of the instructions		X	X
1.7.4.3.				Sales literature		X	X
2.				Supplementary essential health and safety requirements for certain categories of machinery products			X
3.				Supplementary essential health and safety requirements to offset risks due to the mobility of machinery			X
4.				Supplementary essential health and safety requirements to offset hazards due to lifting operations			X
5.				Supplementary essential health and safety requirements for machinery products intended for underground work			X
6.				Supplementary essential health and safety requirements for machinery products presenting particular risks due to the lifting of persons			X

Alle derzeit verfügbaren Sprachen finden Sie unter:
All currently available languages can be found at:
https://www.stark-roemheld.com/download