



**ROEMHELD**  
HILMA ■ STARK

# **SPEEDY Zero Point Clamping System**

**Operating Manual**

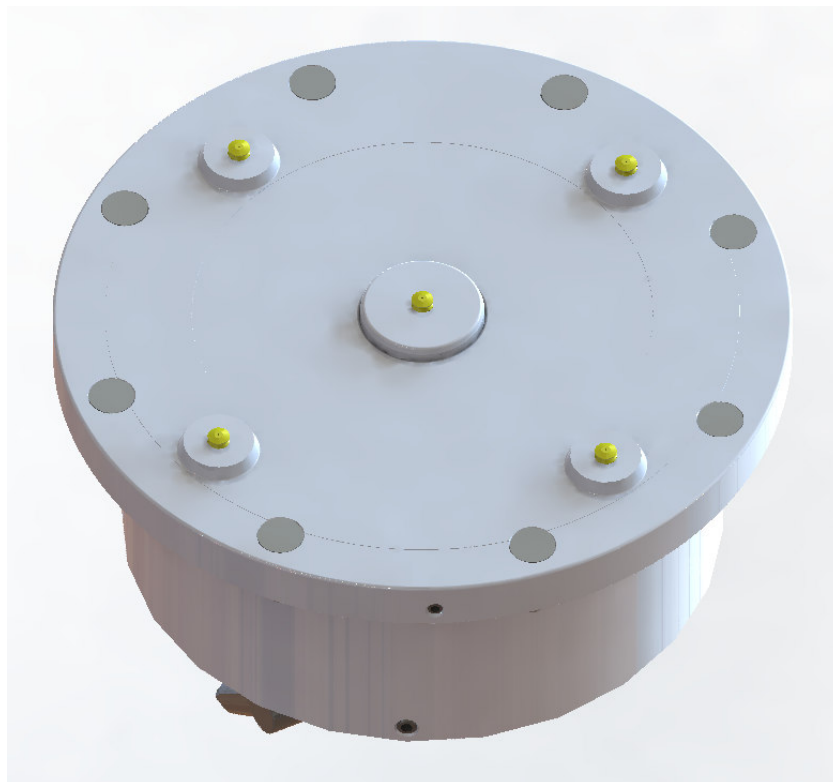
**WM-020-253-10-en BA Sweeper Module**



**precise, fast and powerful**

## **Sweeper Module**

**Art. no.: 809 100 ....809 112**



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## 2 Identification of the partly completed machinery

Product:	Fast closing clamp
Optional:	with clamp control valve
Function:	Clamping and centring of workpieces and workpiece pallets
Product group:	Speedy classic 4
Article numbers:	809 100, ..... 809 112,
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 Presentation of safety instructions

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



#### **DANGER**

**Immediate** imminent risk to life and health of persons (serious injury or death). Be sure to follow these instructions and the procedures described!



#### **CAUTION**

**Potentially** hazardous situation (minor injury or material damage) Be sure to follow these instructions and the procedures described!



#### **INFORMATION**

Tips for use and particularly useful information.



#### **INSTRUCTION**

Obligation to follow the described procedure or method for the safe use of the machine.



## 4 Fundamental 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 use other than that specified under "Intended use" or use beyond this is considered improper use!

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

- no compliance with 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 for the calculation and design of the fast closing clamps for rotating applications. Stark 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 without consultation with and the written approval of the manufacturer.



## 4.5 Spare and wear parts and auxiliary materials



The pallets with the clamping devices are manufactured by the operating company itself or on its behalf. Only retractable nipples from Stark Spannsysteme GmbH may be used on the clamping system and must be installed according to the appropriate data sheet.

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. The manufacturer will assume no liability for any injury or damage resulting from the use of spare and wear parts and auxiliary materials not approved by the manufacturer.

## 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 & 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, hydraulic and pneumatic residual energies at the fast clamping device and the pressure in the cylinders and valves after switching off the fast clamping device!

For example:

- preloaded springs
- pressure locked in by non-return valve
- pressure locked in by valve lock position
- etc.

### 4.7.1 Design for the pallet and fast closing plate



To ensure safe positioning on the fast closing clamp, make sure there is a grip point on the pallet. If such a grip point is not possible due to design reasons, make sure that no hands/fingers can get between the fast closing clamp and nipple or between the fast closing plate and the pallet. Only grab the pallet at the front during change procedures.

DIN EN 349 Safety of machinery – Minimum gaps to avoid crushing of parts of the human body must be observed.

When clamping, do not reach with your fingers into the gap between the fast closing plate and the pallet.



#### 4.7.2 Danger due to incorrect installation of the fast closing clamp



Improper tightening of the fixing screws or insufficient strength of the screws may cause the pallet to come loose.

Measure:

Observe the mounting instructions for strength class, tightening torque and arrangement. The product-related data is shown on the enclosed drawing with parts list and in chapter "6.1 Fast closing clamp installation".

#### 4.7.3 Danger due to changes in rotational speed



Excessive rotational speed, weight and unbalance can cause the fast closing clamp to break, resulting in the pallet being catapulted away.

Measure:

Observe the specifications and regulations of Stark Spannsysteme GmbH regarding maximum values.

(see chapter "9 Technical data")

#### 4.7.4 Pressure hazards



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

Measure:

- Observe the specified pressure limits

#### 4.7.5 Influences on service life

Negative influences include:

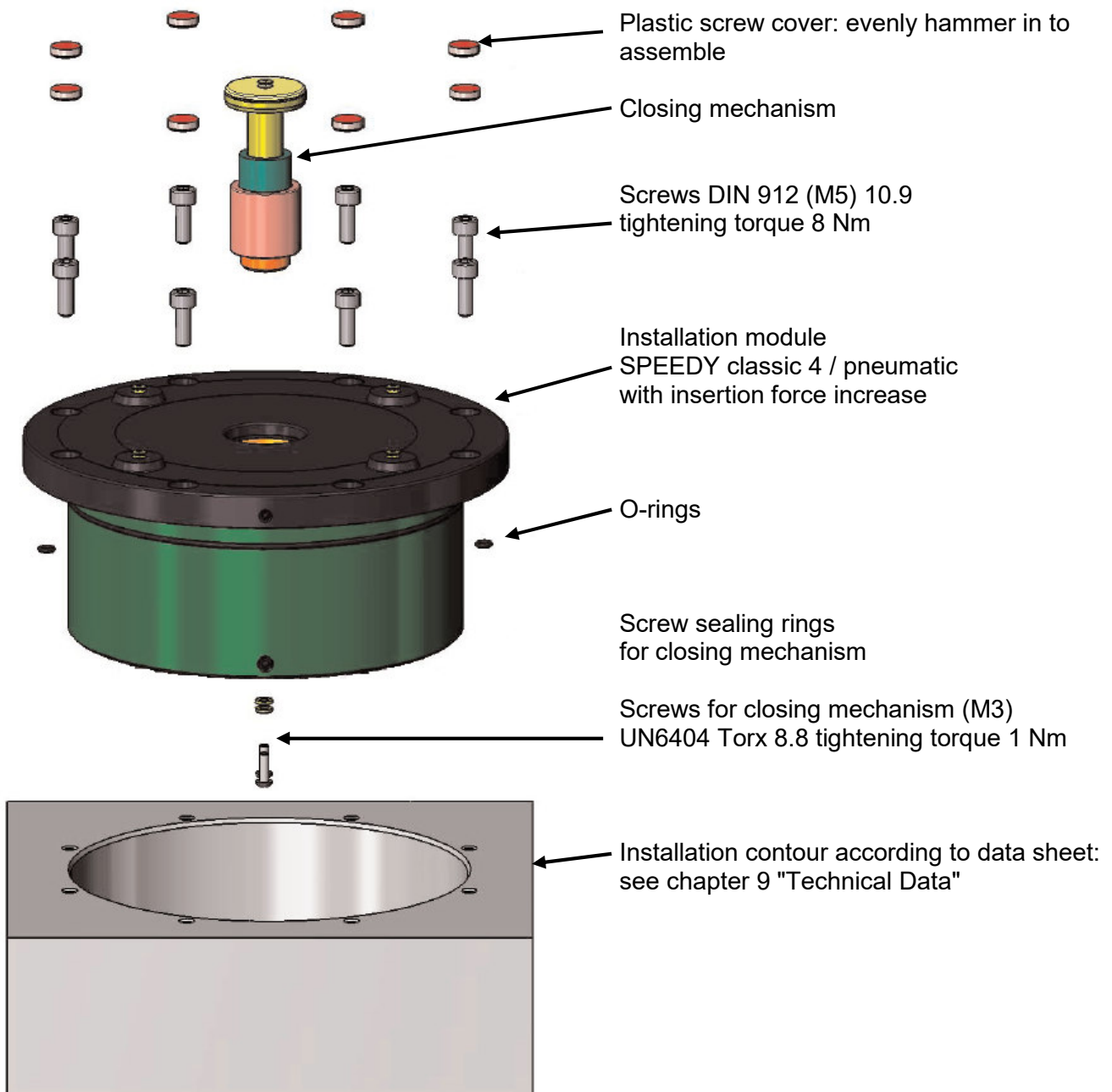
- Insufficient filtering of the oil; observe filter mesh size < 15µm
- Damage to components.
- Undefined forces or defined forces exceeded.
- Insufficient ventilation of the hydraulic circuit.
- Overloading due to sudden pressure peaks.
- Too high volume flow rates / piston speeds due to large pump delivery capacity.
- Heavy contamination (e.g. chips, casting or grinding dust.)
- Aggressive environment, e.g. cooling lubricants or cleaning agents which chemically attack seals / wipers.
- Incorrect preload position or loading position.

## 5 Description of the fast clamping device

The fast closing clamp connects the machine and the clamping device. It is used for fast setting-up. While one pallet is being processed, the other can be set up.

## 6 Assembly and installation

Installation and removal instructions for Speedy Sweeper 2000 Module





## 6.1 Fast closing clamp installation

1. Check installation contour for SPEEDY Sweeper Module 2000 for dimensional accuracy and surface condition.
2. Grease the O-rings well and insert them into the housing.
3. Insert the SPEEDY Sweeper Module 2000 correctly and carefully guide it into the installation contour.
4. Tighten the cover of SPEEDY Sweeper Module 2000 parallel to the system using the DIN 912 M5 screws supplied. Only use the supplied screws, or DIN 912 screws with quality 10.9. Tighten all 8 screws for the SPEEDY Sweeper Module to 8 Nm using a torque wrench.  
Note: To check the flat support around the cover, use a feeler gauge to try to penetrate between the plate and the cover. If this is successful, dismantle the SPEEDY according to the removal instructions (items 1–4) and start again at Item 1 of the installation instructions.
5. After installation of all SPEEDYs, pressurise the fast closing plate, observing the permissible pressure according to the package insert.



**Important:** Apply pressure to the fast closing plate only when screwed on. Check specification dimension A for each SPEEDY. Only when the specification dimension is complied with proper functioning of the SPEEDYs is guaranteed. If the specification dimension for one or more SPEEDYs cannot be complied with, the SPEEDYs concerned must be removed according to the removal instructions (items 1–4) and sent to the Stark Spannsysteme GmbH service.

6. Complete assembly by evenly hammering in the plastic screw covers.





## 6.2 Removing the fast closing clamp

1. The system must be completely depressurised before disassembly is started (disconnect the energy supply to the pressure generator).
2. Remove the screw covers. (They are unusable after disassembly)
3. Undo and remove all screws.
4. Two screw holes have an M6 thread. An M5 set screw must first be screwed into each of these two holes so that the threaded M5 hole cannot be damaged by the pressure of the M6 screw. Then use the two M6 screws to evenly push the SPEEDY Sweeper Module out of the fit.



## 7 Commissioning, handling and operation

### 7.1 During initial commissioning

- Perform a visual inspection of the entire machine and the quick-release lock.
- Expel any unauthorised persons from the vicinity of the machine.
- Check the filling levels of the hydraulic oil.
- Test the faultless function of the clamp control valve (if present).
- Check depth gauge A (see chapter "8.1 Specification dimension A").
- Check the fast closing clamp for hydraulic and pneumatic tightness.

### 7.2 Function check

- When all clamping elements connected to the same circuit have been installed as described so far and tightened with the appropriate tightening torque, the hydraulic pressure generator can be connected to the circuit.
- Slowly and carefully increase the hydraulic pressure to operating pressure. When doing so, check the clamping elements for leaks, switch off the pressure generator immediately if necessary and eliminate the leakage.
- Switch on the blow-out air and check whether sufficient air is flowing out of the nozzles and the closing piston. Check the nozzle(s) for ease of movement.

### 7.3 Handling and operation

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



### 7.4 Speedy with blow-out function

- First, apply pressurised air.
- Release Speedy after approx. 3 seconds.
- Change pallet / clamp Speedy.
- Only now turn off the air.

Ensure sufficient air supply.

## 8 Maintenance and repair

### 8.1 Specification dimension A



Check that the depth gauge A functions correctly. See table in chapter 9 "Technical Data".

Only if depth A is adhered to according to the enclosed description will the fast closing clamp function properly.



If the specification dimension A is exceeded, service must be carried out immediately by an authorised service technician. If the maximum number of clamping cycles has been reached, this element must be replaced. The elements can be sent to Stark Spannsysteme GmbH for overhaul.

If no service is performed, safe clamping of the retractable nipple is not possible. There is a risk of accident.

#### Weekly:

Check the nozzle(s) and closing piston for ease of movement.

#### Monthly:

Check the specification dimension when the clamping element is released.

#### Yearly:

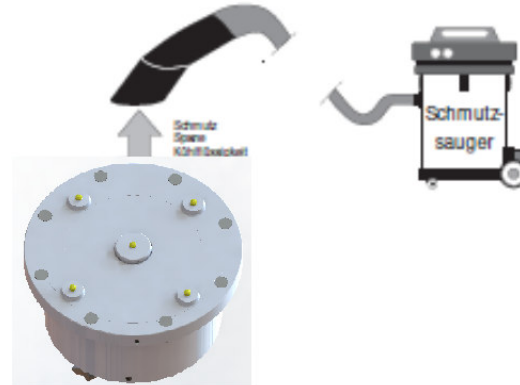
Measure the insertion force of the fast clamping element. To measure the insertion force, a suitable mechanical clamping force tester (order no. 504 003) can be obtained from Stark Spannsysteme GmbH.

### 8.2 Surface cleaning



#### Correct!

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



#### Possible!

The fast closing clamp may be blown off with compressed air or wiped off but only if the blow-out of the fast closing clamp is active at full pressure.



No contamination is permitted in the fast closing clamp. This is particularly true in the area of the closing mechanism. Dirt must not get under the closing mechanism during cleaning.

Cleaning depends on the application and replacement interval.



## Damage to components!



The nipple must be inserted into the elements at a speed of less than 100 mm/s, otherwise the nipples and elements may be damaged.

The product may not be cleaned with:



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

The element must be cleaned at regular intervals. In particular, the area of the piston or bolt housing must be cleaned of chips and other liquids.

In case of heavy contamination, cleaning must be carried out at shorter intervals.

## Lubricants and oils



Unsuitable lubricants and oils can damage the seals and will drastically shorten the service life.

**CAUTION:** Mixing of oils is not permitted.

## 8.3 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 "8.2 Surface cleaning") and take measures for corrosion protection.

### After a long period of storage:

After a long period of storage (approx. 3 years), replace the O-rings before use.

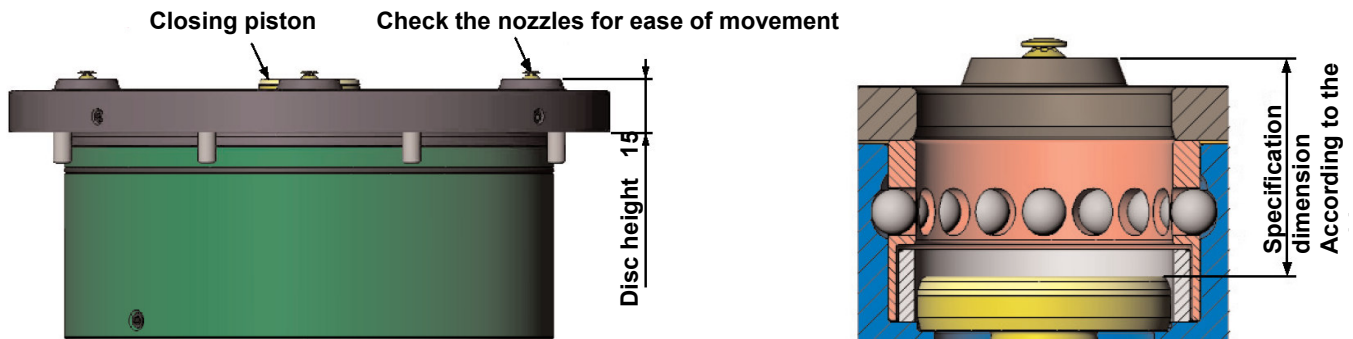
## 8.4 Disposal / recycling

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.



## 9 Technical data

Article numbers:	809 100, .....809 112
Drawing number:	062-0XX
Designation:	SWEEPER Module 2000
Specification dimension:	depending on type, see package insert
Lifting:	depending on type, see package insert
System accuracy:	<0.01 mm
Repeat accuracy:	<0.005 mm
Spring retraction force <sup>1</sup> :	20 kN
Lifting power:	8.5 kN
Max. operating pressure:	60 bar
Release pressure <sup>2</sup> :	50 bar
Blow-off:	100 l/min at 6 bar
Preset clamping time:	approx. 3.0 s
Default release time:	approx. 3.0 s
Nipple prepositioning, radial <sup>3</sup> :	±2 mm
Nipple prepositioning, axial:	±0.1 mm (consider retraction path)
Temperature range:	+10 °C to +80 °C
Maintenance cycles <sup>4</sup> :	150.000 / *500.000
Oil volume release:	65 cm <sup>3</sup>
Hydraulic oil:	according to DIN 51524 (HLP 32 or HLP 46)
Filter class:	Quality class 4
Sealing material:	NBR; other materials on request



Order number	Drawing number	Designation	Lifting [mm]	Installation data sheet	Specification designation [mm]
809 100	062-005	SPEEDY Sweeper Module, round with lifting	4	D 028	24
809 101	062-004	with integrated clamping control, without lifting	0	D 036	28.5
809 102	062-012	with lifting, without blow-out	4	D 028	21
809 103	062-013	with lifting, support islands to Ø160 mm	4	D 028	24
809 105	062-028	with lifting, integrated clamping control	4	D 036	24
809 106	062-017	with lifting, query via switch rod	2	on request	26
809 110	062-014	with lifting, query via switch rod	4	on request	24
809 111*	062-032	with lifting, integrated query	2	D 090	26
809 112**	062-047-02	with lifting, integrated query	2	D 090	26

\* increased maintenance cycles \*\* third hand position

1 "The retraction force can be up to minus 25% nominal."

2 Set overpressure safety valve to max. operating pressure

3 The Speedy Sweeper Module clamping element allows a radial offset of the nipples with: with rigid feed ±0.3 mm; with low-power, movable feed ±2 mm;

4 Only with optimum operating conditions



## 10 Manufacturer's declaration

### Declaration of Conformity Konformitätserklärung

We / Wir

**Stark Spannsysteme GmbH  
Römergrund 14  
A-6830 Rankweil  
Austria**

declare under our sole responsibility that the product  
erklären in alleiniger Verantwortung, dass das Produkt

**Type: SPEEDY sweeper  
No.: 809 100, ..... 809 112**

to which this declaration relates, corresponds to the following standards  
auf das sich diese Erklärung bezieht, mit den folgenden Normen übereinstimmt

2006/42/EC	Machines, Addendum II A
2006/95/EC	Low voltage
2004/108/EG	Electromagnetic compatibility / Elektromagnetische Verträglichkeit

and the following standards were applied.  
und dass die folgenden Normen zur Anwendung gelangten.

EN 292-1/2	Safety of machines, devices and equipment Sicherheit von Maschinen, Geräten und Anlagen
EN 60204-1	Electric equipment of industrial machines Elektrische Ausrüstung von Industriemaschinen
EN 414	Safety principles Sicherheitsgrundsätze

A technical documentation exists completely. The instruction manual for the product is available.  
Eine technische Dokumentation ist vollständig vorhanden. Die zum Produkt gehörende Betriebsanleitung liegt vor.

Stark Spannsysteme GmbH

Rankweil, 11/12/2018

Martin Greif  
Managing director / Geschäftsführer