



ROEMHELD
HILMA ■ STARK

Comfort 40 / 80 bar Pressure Booster

Operating Manual

WM-020-334-11-en BA Pressure Booster Comfort



precise, fast and powerful

Comfort 40 / 80 bar Pressure Booster

Art. No.: S804-432 / S804-433 / S804-432-SC / S804-433-SC



WM-020-334-11-en BA Pressure Booster Comfort

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2 Identification of the Partly Completed Machinery

Product:	Pressure booster
Function:	Transformation of pneumatic into hydraulic pressure, for releasing quick-clamping devices, Types "SC" with integrated seat check and blow-out
Product group:	Pressure booster
Article numbers:	S804-432, S804-433, S804-432-SC, S804-433-SC
Trade name:	corresponds to product group, see above

3 Instructions for the User

3.1 Purpose of the document

The present operating manual

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

3.2 Revision history

Date	Revision	Name
27.08.2018	Document creation	wavo
17.11.2020	Addition to 6.5.1 item 3. Term SPEEDY replaced by STARK / FCC. Changed order number system	japr

3.3 Referenced documents

Document	Version	Author
Operating manual of the respective clamping system	-	Stark Spannsysteme GmbH
Operating manual of the back-pressure switches	-	Mawomatic
Assembly drawings with parts lists	-	Stark Spannsysteme GmbH



3.4 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 impending risk for the life and health of persons (serious injuries or even death). Be sure to follow these instructions and the procedures described!



CAUTION

Potentially hazardous situation (minor injuries 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 pressure booster is used for releasing quick-clamping devices. The "SC" models also have an integrated seat check and flow-out function for the quick-clamping device.

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 can arise if the device is used for other than its intended purpose. Improper uses include e.g.:

- exceeding the technical values specified for normal operation

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

4.3 Modifications or alterations



Unauthorized modifications or alterations will void any liability and warranty on the part of the manufacturer!

Therefore do not make any modifications or alterations to the device without consultation with and the written approval of the manufacturer.

4.4 Spare and wear parts and auxiliary materials



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.

4.5 Obligations of the operating company



- The operating company is obliged to allow only persons to work on or with the pressure booster who
- are familiar with the fundamental occupational health & safety and accident prevention regulations
 - have been instructed in the use of the pressure booster 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.

4.6 Residual risks



Attention must be paid to the existence of residual mechanical, hydraulic and pneumatic energies at the pressure booster and the pressure in the cylinders and valves even after switching off the pressure booster!

4.7 Pressure hazards

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

Measure:

- protect hydraulic lines with pressure control valves
- observe the specified pressure limits

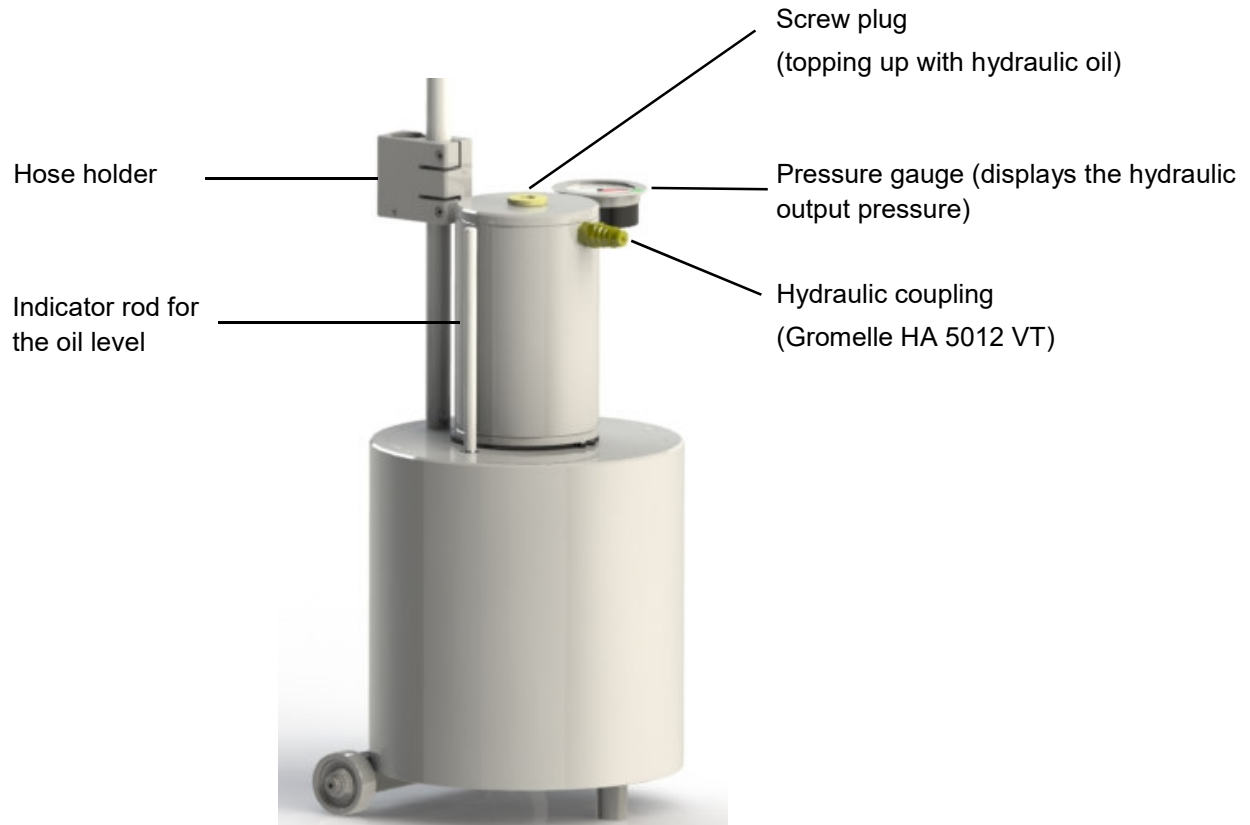


5 Description of the Pressure Booster

5.1 General

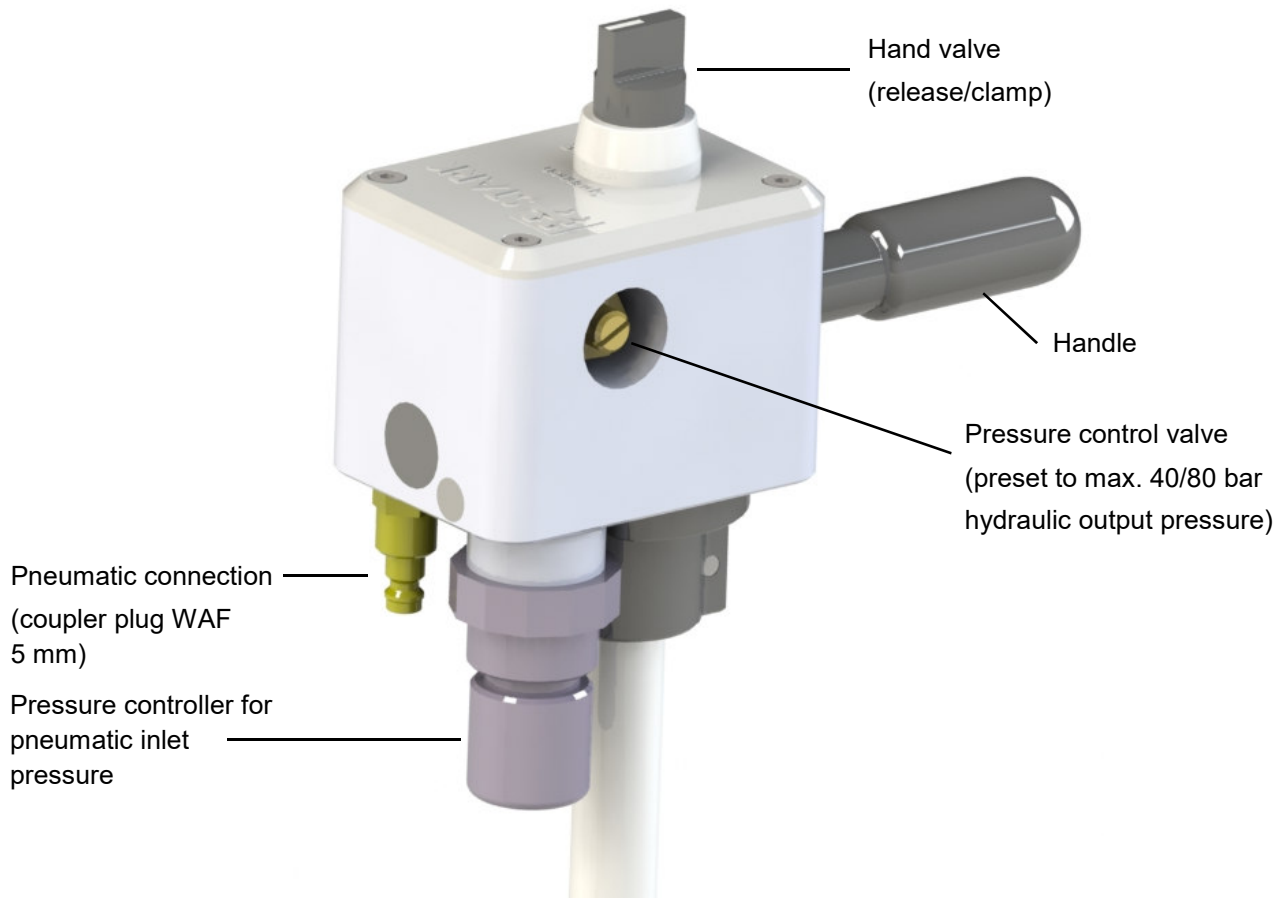
The pressure booster proportionally transforms the pneumatic inlet pressure into hydraulic output pressure.

5.2 Overview of basic unit



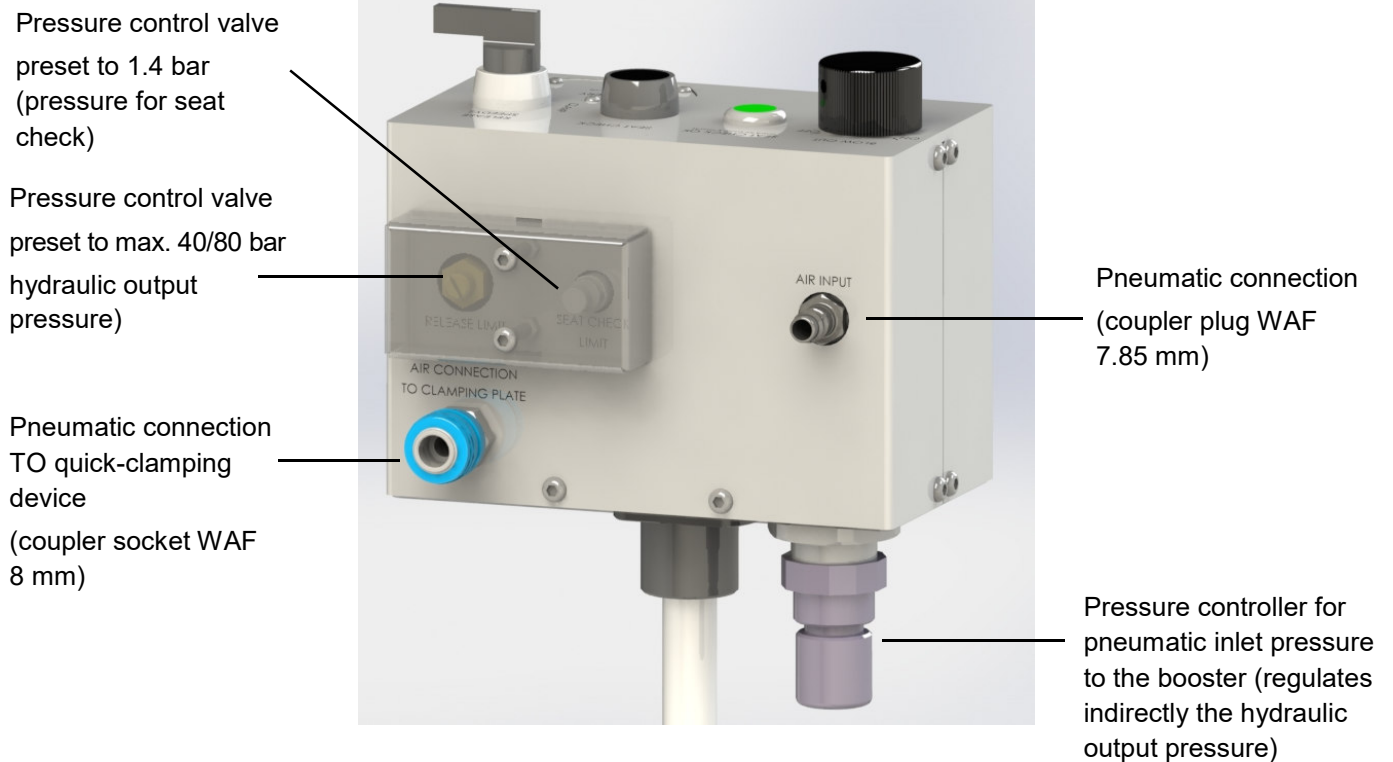
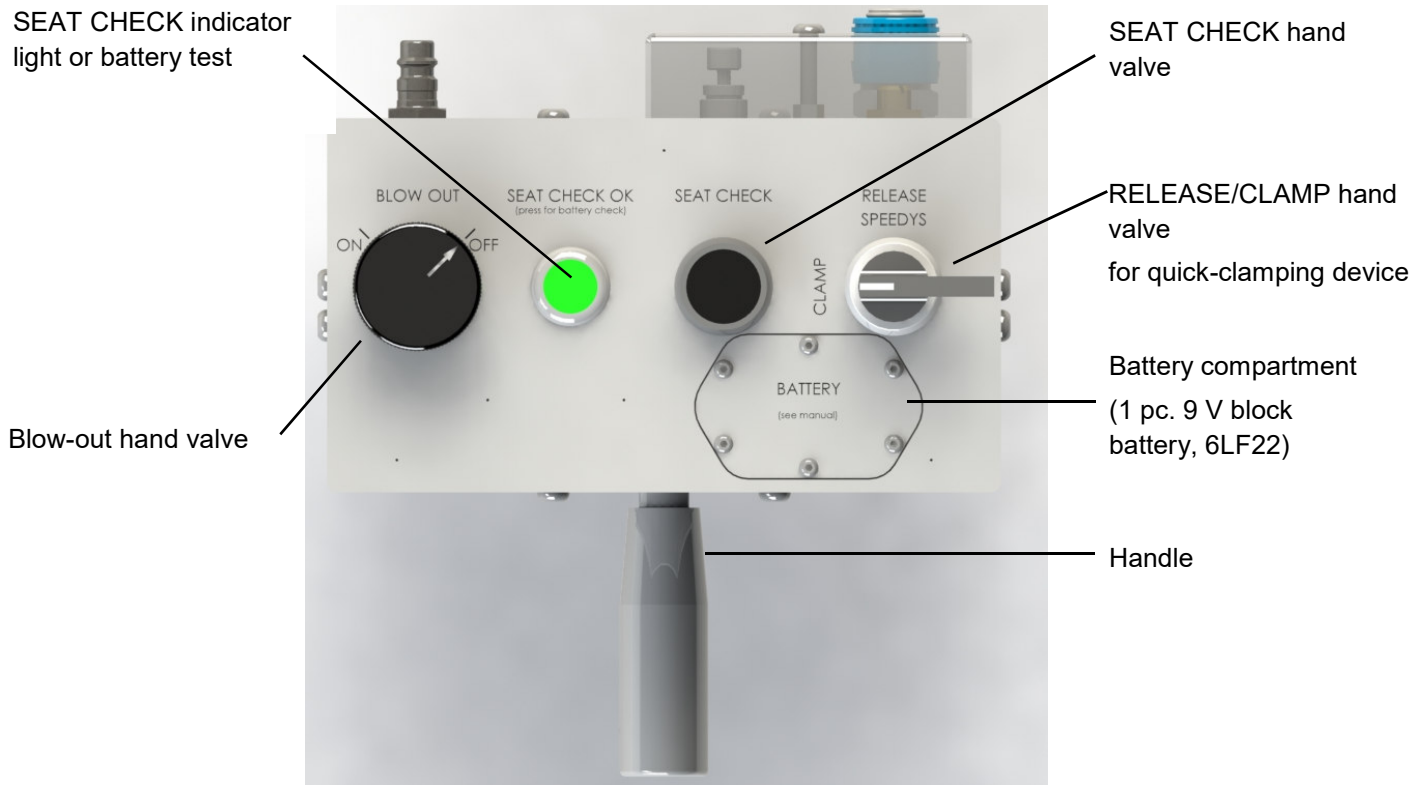


5.3 Operating unit for standard versions





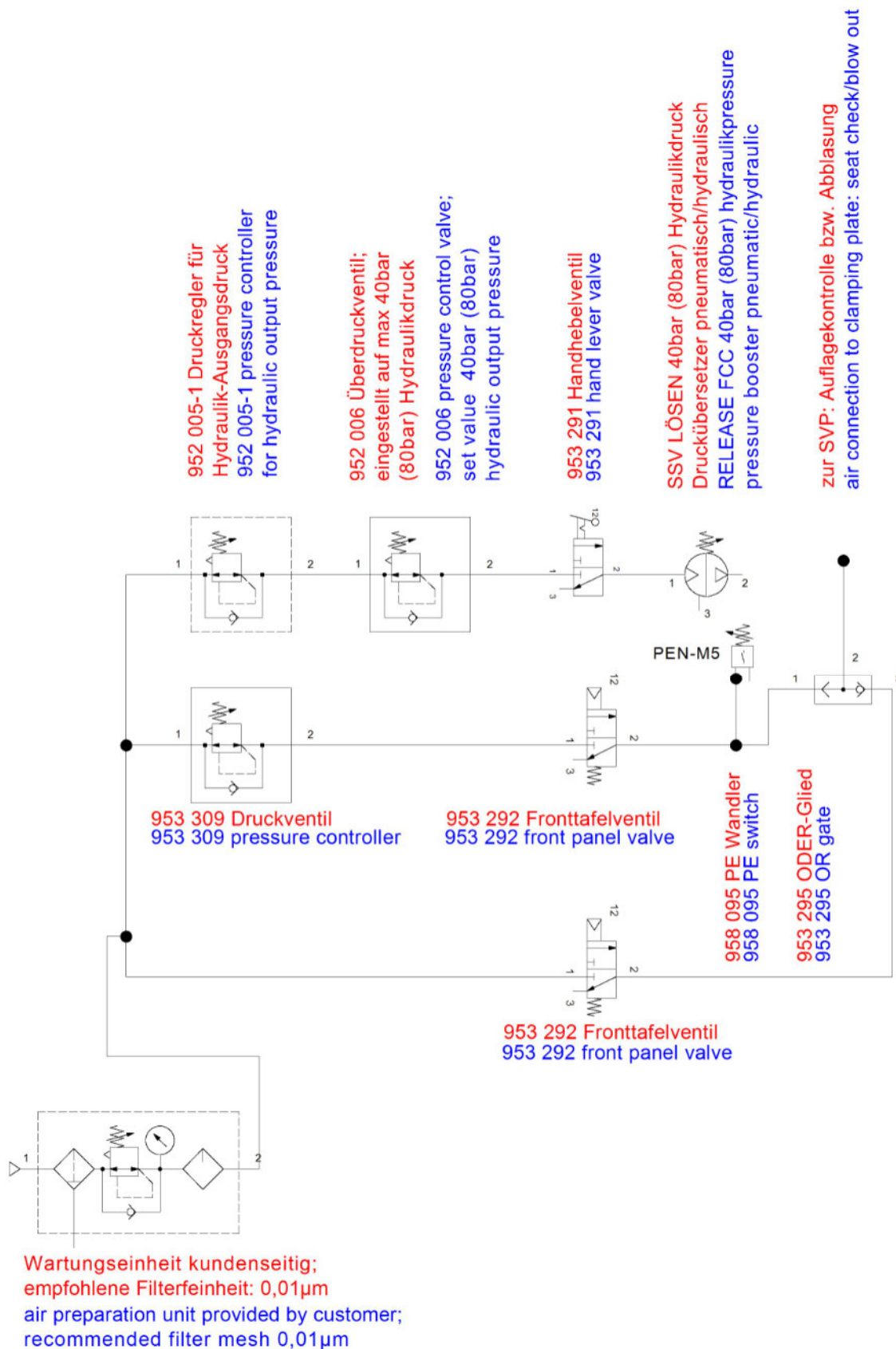
5.4 Operating unit for "SC" versions (integrated seat check and blow-out)





5.5 Pneumatic circuit diagram for "SC" models

(all article numbers are STARK article numbers)

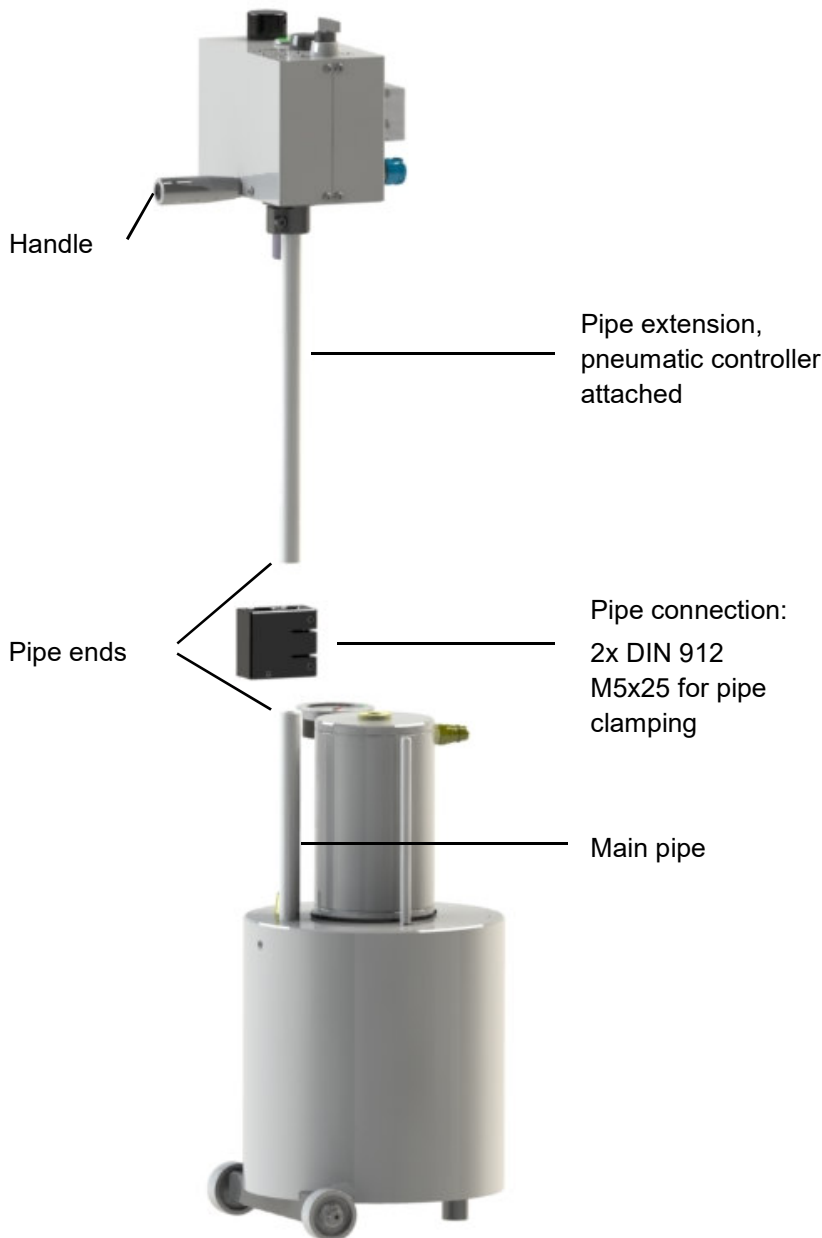




6 Commissioning and Operation

6.1 Commissioning

1. Unpack the device and inspect for damage
2. The pressure booster is partially dismantled for transport. Assemble the device as follows:



- a. Clean the two free pipe ends and grease slightly (e.g. Parker O-Lube)
- b. Push the pipe connector onto the main pipe: a slight resistance is felt when the connector passes over the O-ring on the inside. The pipe connector can later be pushed on completely
- c. Align the connection more or less parallel to the hydraulic coupler and then fix in place with the prefitted clamping screw
- d. Proceed in the same way for the pipe extension and fitted pneumatic controller; position the handle parallel to the hydraulic coupler in the direction of the wheels; on the "SC" models, the handle is also dismantled and can be fitted using an Allen key

3. Set up the pressure booster so that the necessary hoses do not pose a tripping hazard
4. Check that the fitted pneumatic and hydraulic couplers are compatible with their mating parts; otherwise they have to be replaced (pneumatic coupler plug and socket each with G1/4" male thread, hydraulic coupler plug with G1/4" female thread)
5. Turn "RELEASE/CLAMP" hand valve to the "CLAMP" position and "BLOW OUT" hand valve to the "OFF" position (on "SC" models only)
6. Connect the compressed air supply and turn the hand valve to "RELEASE fast clamps"
7. The desired hydraulic pressure can be set at the pressure controller; the pressure control valve in the pneumatic line is set at the factory before delivery such that 40/80 bar cannot or can be only slightly exceeded



The hydraulic output pressure must be adapted to the clamping system in use! The knob on the pressure controller can be locked by pressing in to prevent any unintentional adjustment!



An air preparation unit must be provided by the customer! The required filter mesh size for the back-pressure sensor is 0.01 µm (for "SC" models) - a possible air preparation device combination could be: MSB4-1/4:J1:13 (Festo).

On standard versions, a filter mesh size of 40 µm is sufficient.

6.2 Releasing / clamping quick-clamping devices

1. Turn "RELEASE/CLAMP" hand valve to the "CLAMP" position
2. Connect the compressed air supply
3. Clean the hydraulic couplers (no contamination (e.g. chips) may be allowed to get into the system)
4. Connect the hydraulic hose to the pressure booster and quick-clamping device
5. Turn the hand valve to "RELEASE fast clamp" → The quick-clamping device is released, the pallet can be changed
on "SC" models, the blow-out function can be activated during the changing procedure by turning the "BLOW OUT" hand valve to the "ON" position (provided the pneumatic line has been connected to the quick-clamping device)
6. Turn the hand valve to "CLAMP" → The quick-clamping device is locked and the hydraulic hose can be disconnected at both ends
7. When the pressure booster is not in use, the hand valve must be in the "CLAMP" position; during prolonged standstills, disconnect the compressed air supply



6.3 Seat check (available only on “SC” models)

1. Turn “BLOW OUT” hand valve to the “OFF” position and “RELEASE/CLAMP” hand valve to the “CLAMP” position
2. The quick-clamping device is positioned and locked, pneumatic and hydraulic hoses are connected
3. Actuate “SEAT CHECK” hand valve (self-resetting button)
4. Compressed air is admitted to the quick-clamping device via the integral back-pressure sensor
5. Depending on the presetting of the back-pressure sensor, a possible gap of > approx. 0.02 mm between pallet and quick-clamping device will be detected → the green indicator light only comes on when no gap is detected

6.4 Battery changing (necessary only on “SC” models)

The battery required for the back-pressure sensor and the indicator light can be checked by pressing the green button; if the integral LED does not light up when the button is pressed, replace the battery: loosen the screws of the battery compartment cover and remove the cover (Caution: there is a flat seal under the cover!). The actual battery compartment is now accessible and a new 9 V block battery (6LF22) can be installed. The battery compartment has reverse polarity protection, i.e. the battery cannot be installed the wrong way round.

6.5 Maintenance / service



Maintenance work may only be carried out on the depressurised device and only by qualified personnel!

Check the oil level at regular intervals: in “CLAMP” position, the indicator rod must not be below the “min” mark, in “RELEASE” position, the rod must not be above the “max” mark (the marks are printed on the identification plate).

If the former occurs, top up hydraulic oil (see below), in the second case drain off some hydraulic oil via the screw plug (only when depressurised!).

6.5.1 Topping up with hydraulic oil

Details of the oil to be used and the filling capacities can be found in chapter “Technical Data”.

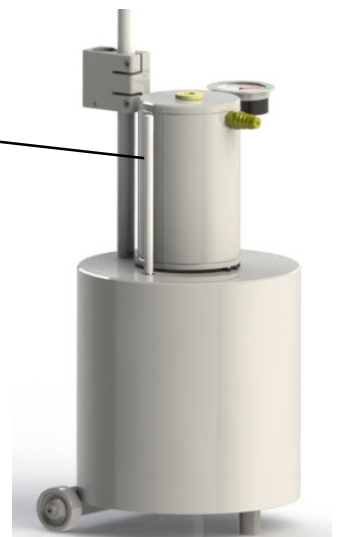


Unsuitable lubricants and oils can damage the seals!
 Mixing of oils is not permitted!

Procedure:

1. Disconnect the air and hydraulic hoses
2. Clean the device, particularly in the area of the screw plug
3. Remove the screw plug, push the piston with indicator rod for the oil level down
4. top up oil to the lower edge of the plug screw
5. Insert the plug screw and fasten finger-tight

Push indicator rod
 for the oil level
 down to refill



When pushing down the indicator rod for the oil level, make sure not to damage or deformed the rod.

Under NO circumstances, use a hammer to perform the above!



If the same pressure booster is used for releasing and clamping several quick-clamping devices, the following problems can arise:

As an undefined amount of oil always remains in the quick-clamping device after every release – clamp operation (i.a. depending on the number of STARK fast clamps and the line lengths), the oil volume in the pressure booster may drop so far that a quick-clamping device can no longer be properly released.

On the other hand, if the pressure booster is then topped up with hydraulic oil, it is possible that clamping of a quick-clamping device is no longer possible because the oil blocks the stroke of the clamping cylinders.

6.5.2 Cleaning

The device requires only external cleaning; particular attention should be paid to clean hydraulic and pneumatic couplers.



The pressure booster can be cleaned using compressed air, but we recommend that soiling is removed with a cloth or vacuum cleaner.

Damage to components



The product must not come into contact with corrosive or caustic materials or media. Cleaning agents containing organic solvents (e.g. cellulose thinners, acetone, etc.) must not be used (damage to seals).

6.5.3 Storage

- Store the pressure booster dry and dust-free in the original packaging until it is used for the first time
- If the pressure booster is not used for a prolonged time, clean it and protect it against corrosion
- After a prolonged standstill (approx. 3 years), the seals must be replaced before the pressure booster is used again

6.5.4 Disposal / recycling

All parts, auxiliary materials and process media of the pressure booster must be separated by material and disposed of in accordance with the local regulations and directives.

6.5.5 Spare and wear parts

The designation and the STARK article numbers of all the parts installed can be found in the assembly drawings with parts lists. Please have these details available whenever ordering spare or wear parts!



7 Technical Data

7.1 COMFORT 40 bar Pressure Booster (oil volume 1.0 l)

Order No.	Oil type	releases e.g. approx.	System pressure [bar]	P pneum. max. [bar]
S804-432 / S804-432-SC	Castrol Hyspin AWS 46	50 pcs. FCC elements 6.7 kN or 26 pcs. FCC elements 20 kN	40	8
		8 pcs. FCC elements 30 kN	30	

During trials, the following pressure ratios were measured:

Pneumatic inlet pressure [bar]	Hydraulic output pressure [bar]
5.0	30
5.5	33
6.0	37
6.5	39.5
7.0	43

7.2 COMFORT 80 bar Pressure Booster (oil volume 0.48 l)

Order No.	Oil type	releases e.g. approx.	System pressure [bar]	P pneum. max. [bar]
S804-433 / S804-433-SC	Castrol Hyspin AWS 46	22 pcs FCC elements 10 kN	80	8
		20 pcs. FCC elements 20 kN	60	

During trials, the following pressure ratios were measured:

Pneumatic inlet pressure [bar]	Hydraulic output pressure [bar]
5.0	67
5.5	74
6.0	80
6.5	88



Info: New order numbers!

In the course of a system modification within the ROEMHELD Group, the order numbers for STARK Spannsysteme have been adapted and standardised.

- NEW: all order numbers start with **S**
- NEW: hyphen - instead of blank space

S5000-104

instead of

5000 104

Examples

New order number	Old order number	Modifications
S04342	S04342	<i>No modification</i>
S5000-104	5000 104	S as prefix, hyphen - instead of blank space



8 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: Booster

No.: S804-432, S804-433, S804-432-SC, S804-433-SC

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 / Maschinen, Anhang II A

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

DIN EN ISO 4413 Safety of Machinery - Safety Requirements for Fluid Power Systems and Their
 Components - Hydraulics
 Sicherheit von Maschinen - Sicherheitstechnische Anforderungen an fluidtechnische
 Anlagen und deren Bauteile – Hydraulik

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, 17.11.2020

Martin Greif
Managing Director / Geschäftsführer