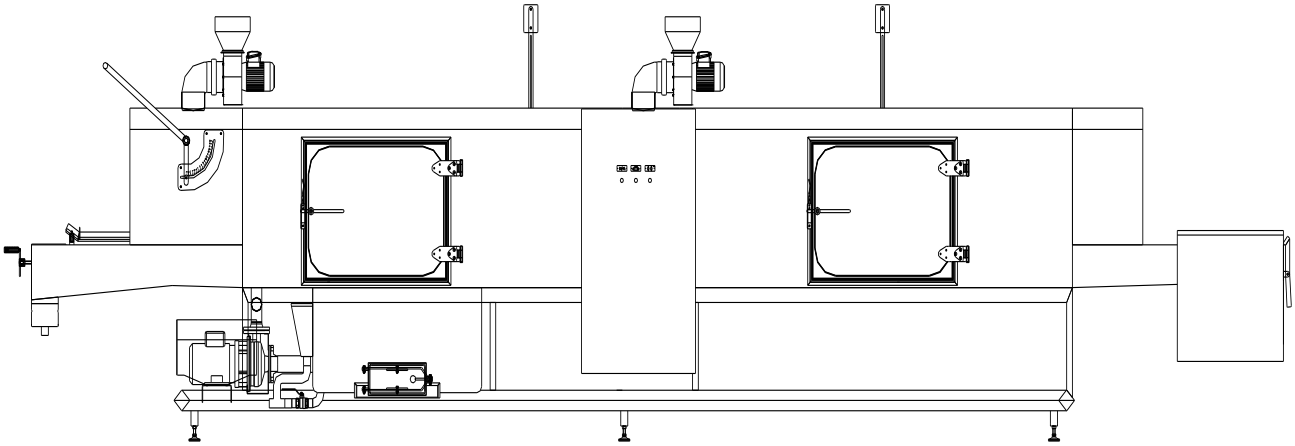
Operating instructions



Machine designation:	**Pass-through washing system**
Type designation:	**DLWA-280 BS2**
Machine No.:	**20-64705/1482**
Year of construction:	**2021**

Keep for future use!

Mohn GmbH

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Table of contents

General aspects

Importance of the operating manual

- The basic requirement for the safe handling and trouble-free operation of this machine is knowledge of the basic safety instructions and safety regulations.
- This operating manual contains the most important instructions for the safe operation of the machine.
- This operating manual and in particular the safety instructions are to be followed by all persons who work on the machine (e.g. maintenance personnel, operators, technical managers, foremen, industrial mechanics, electricians).
- Moreover, the rules and regulations for the prevention of accidents applicable to the place of use must be observed.

Intended purpose of use

This machine is a pass-through washing system
and is intended exclusively for the washing of:

Boxes, trays and inserts with the following dimensions:

700 x 700 x 100mm height, 700 x 700 x 15mm height, Ø 700
600 x 400 x 70mm & 600 x 400 X 325 mm height & 555 x 350 x 60mm height (transverse through-feed)
400 x 300 x 30mm & 360 x 270 x 50mm & 370 x 270 x 50mm height
400 x 300 x 110mm height & 400 x 300 x 120mm height (transverse through-feed)
300 x 200 x 110mm & 260 x 360 x 60mm height (two-lane longitudinal through-feed)
270 x 170 x 5mm & 360 x 270 x 50mm & 270 x 170 x 5mm height

Other items to be washed having different dimensions cannot be washed by the machine!

Any other use or use extending beyond that is deemed to be inappropriate use.
Mohn GmbH accepts no liability for damage resulting from such use.
Use for the intended purpose also includes

- following all instructions from the operating manual and
- Complying with the inspection and service requirements
- forbidding any kind of attachments or modifications to the machine without consulting

Scope of delivery

- Pass-through washing system DLWA-280 BS2

Additional equipment/additional features

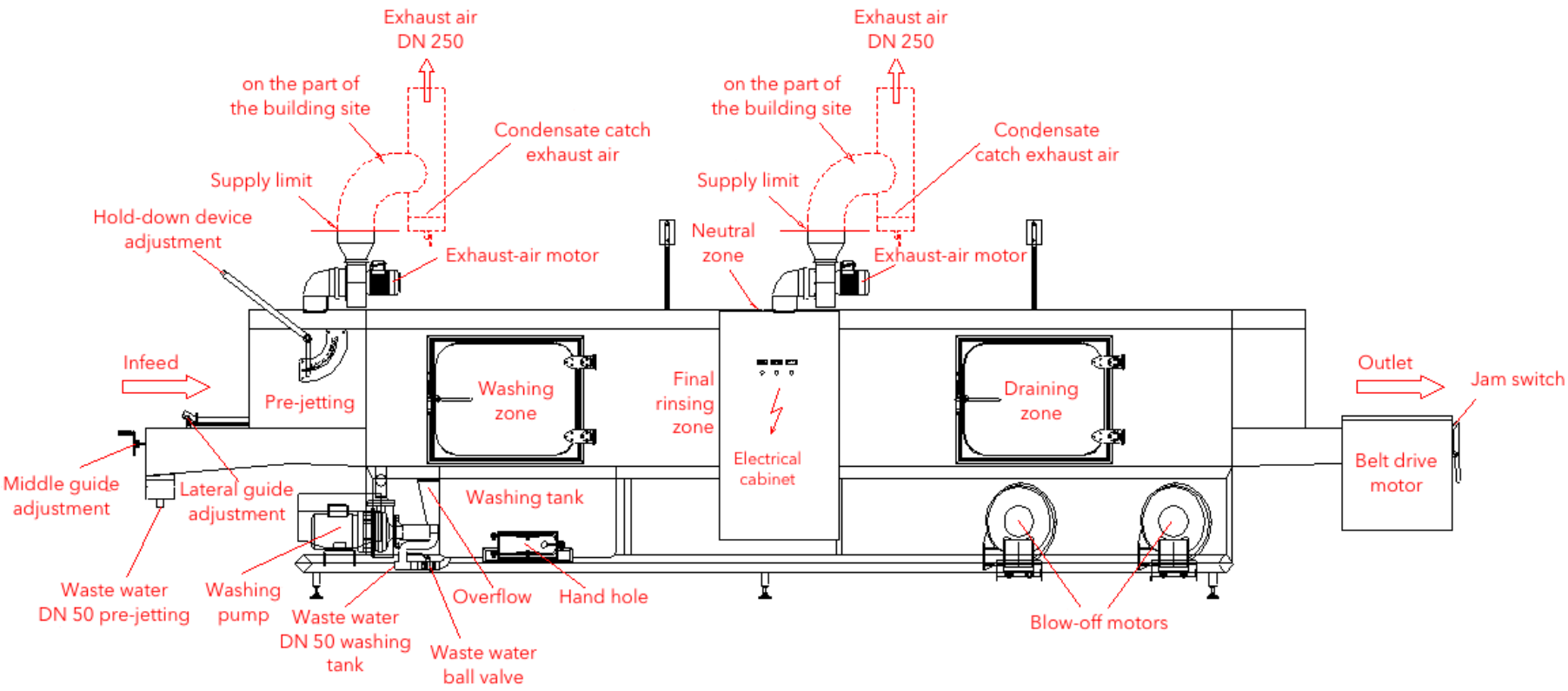
Rinsing agent pump and additive agent pump provided at the machine,

Possibility to connect a clear rinsing agent pump.

Remote maintenance

Network connection
Provided by the customer
for remote maintenance
(Control cabinet, front face)

Machine structure



Machine base frame

The machine base frame is a self-supporting structure made of stainless steel square tube and stands on height-adjustable stainless steel feet.

Covers

The machine is partly fitted with covers, the rear wall is provided with heat insulation.

Drive

Der drive motor drives the conveyor belt via a stainless steel Roller chain. An overload rocker, on which this drive motor was installed, triggers in case of overload and stops the conveyor belt.

Name plate

(one name plate is located on the control cabinet on the right side below the main switch and one on the inside of the control cabinet door)

Machine structure

The machine is very stable and self-supporting. Only sheet metal with a thickness of 2 to 4 mm is used. The machine can be set up free-standing or along a wall.
The machine has a total of 2 maintenance gates for convenient filter cleaning or for other works inside.

Two-man operation

Transport the items to be washed to the infeed, as described under the point "**Placing properly items to be washed**", while pushing the items to be washed applying slight pressure until it is taken along by the conveyor belt.

After the items to be washed have been taken up by the conveyor belt, they are automatically guided through pre-jetting, washing, clear rinsing, neutral zone and blow down.
At the end of the outfeed, the clean items to be washed are removed.

Washing should be carried out by two persons.

If the items to be washed are not taken off by the outfeed and thus the jam switch is operated, the belt operation and clear rinsing will stop. If the items to be washed are now removed by the outfeed, the belt operation and clear rinsing will start automatically.

When changing items to be washed, the height of the hold-down device, the setting of the lateral guide and the use of the middle guide have to be checked and readjusted, if necessary.

(for this see images in the annex)

Pre-jetting zone

Shortly behind the filling of items to be washed, there is a pre-jetting device. This is operated via a solenoid valve and is always in function when the belt operation is switched on.
The flow rate can be adjusted via a ball valve (see images in the annex)
Approx. 100 to 200 litres of fresh water are required per hour.

Zone washing

This zone is equipped with a stainless steel centrifugal pump with a capacity of 4.00 kW (1,500 l/min at approx. 1.50 bar), distributed to a total of 8 nozzle arms with 70 flat jet nozzles, which ensure a thorough cleaning of all 4 sides. Contaminants are rinsed into a big external filter box with funnel overflow and hand hole.
The washing tank has a volume of approx. 650 litres and is heated via electric flange heaters with a capacity of 11.00 kW.
The washing temperature is approx. 50 to 55°C.

Zone clear rinsing

Cleaned products in the machine are thoroughly rinsed with fresh water from all 4 sides.
Inflowing fresh water is heated to approx. 60 to 80°C via
a boiler with a capacity of 22.00 kW.
(Depending on the fresh water inlet temperature)
Approx. 300 to 400 litres of fresh water are required per hour.

The clear rinsing is used in multiple stages:

Fresh water clear rinsing

Replenishment of the washing tank

Zone neutral

The neutral zone is approx. 500 mm long and at this point vapour is continuously sucked off via a built-in Karl Klein stainless steel fan, the items to be washed drip off.

Zone blow down

By means of two high-pressure fans, the items to be washed are blown down here. The fans have a capacity of 4.00 kW each. Via flow-optimised air knives, air is brought to the items to be washed, blowing it down from all sides, with the blown down water being guided back into the washing.

Technical data

Designation, machine number

- Pass-through washing system DLWA-280 BS2
- Machine number: 20-64705/1482

Main machine data

Functional data

- Fresh water connection: G¾“, 3 to 6 bar, max. 5°dH, 10 to 85°C
  (tank filling, clear rinsing and pre-jetting)
- Fresh water consumption (clear rinsing): approx. 300 to 400 litres/hour
- Fresh water consumption (pre-jetting): approx. 100 to 200 litres/hour
- Tank volume washing: approx. 650 litres
- Exhaust-air connection: 2 x DN 250
- Drain: DN 50
- Max. Passage height: approx. 5 up to 310 mm
- Max. passage width: approx. 420 up to 820 mm
- Pump performance:
  - Washing pump: 4.00 kW; 1,500 l/min; 1.50 bar +- 0.5 bar
- Transmission performance:
  - Machine drive: 0.37 kW
- Fan capacity:
  - Blow down: 2 x 4.00 kW
  - Suction: 2 x 0.75 kW (capacity 1,500m3/h each at 500Pa)
- Heating power:
    - Washing tank: 3 x 11.00 kW electric flange heater
    - Clear rinsing boiler: 2 x 11.00 kW electric flange heater

Dimensions:

Washing system:

- Length: approx. 9,200 mm
- Width: approx. 2,150 mm
- Height: approx. 2,300 mm
- Weight: approx. 2.400 kg (without Water)

Material to be cleaned

See section “Intended purpose of use”

Noise emission

Operating state of the washing machine:

Full-load operation, drive motor belt running, washing pump activated, items to be washed in the wash cycle, washing medium at approx. 50°C.

Setup condition:

Free-field measurement

Sound pressure level specification:

Measurement according to EN/ISO 12100-2 (Safety of machinery)

- distance approx. 1.00 m
- height approx. 1.60 m
- Associated measuring point: Machine infeed and outlet

Maximum sound pressure value .....85 dB(A)

Ambient conditions

Permissible ambient temperature during operation:	from +10 °C to +45 °C
Permissible ambient temperature during storage:	from +5 ° to +45 °C
Permissible humidity:	90% rel. humidity.

Connected loads

Rated voltage:	400 V AC 3~ N/PE 50 Hz permissible deviation +/- 10%
Cross-sectional area of supply cable:	Must be decided on site (factory electrician)
Rated current of the main circuit breaker:	approx. 125 A
The regulations of the national electricity supply company are to be complied with (e.g. in case of long supply cable)	
Connected load:	approx. 70 KW

The main connection must be equipped with an RCD (Residual Current Device) that is also suitable for frequency converters!

Others

Suction device

- Outlet of suction fan — DN 250

Intake device for hot air

- - not applicable -

Load table for lifting equipment — - not applicable -

- Floor properties and load capacity

- - Type of floor: — Tiles, concrete Screed, foundation
- - Load capacity of floor — min. 0.15 N/mm^2
- Floor inclination: — max. 1.0 %

Safety regulations

Explanation of symbols and signs

The following designations and symbol conventions are used in the operating manual for hazards:

Danger

This symbol indicates a direct threat to the life and health of people.

Disregarding this sign will result in serious damage to health extending up to life-threatening injuries.

Warning

This symbol indicates a possible threat to the life and health of people.

Disregarding this sign can result in serious damage to health extending up to life-threatening injuries.

Caution

This symbol indicates a possibly dangerous situation.

Disregarding this sign can result in minor injuries or damage to property.

!

This symbol is used to indicate important information.

Symbols used on the machine

Symbols must meet the corresponding requirements (see standards), e.g. resistant to wiping, scratches, solvents and benzol (see drawing)

Warning: hazardous voltage

Caution: hot surface

Caution: risk of being squeezed

Caution: wear hearing protection

Organisational measures

- The necessary personal protective equipment, such as safety glasses, etc. (see section “Personal protective equipment”) must be provided by the operating company. Use only personal protective equipment (safety helmet, safety glasses, safety shoes, etc.) of the required quality and class.
- All existing safety devices must be checked on a regular basis.

Informal safety measures

- The operating manual must always be kept at the place of use of the machine.
- Supplementary to the operating manual, the generally applicable and local regulations for the prevention of accidents and the protection of the environment must be made available and complied with.
- All safety and danger signs on the machine (see section “Symbols used on the machine”) must be kept in a legible condition and replaced if necessary.

Training of personnel

- Only trained and instructed personnel may work on the machine.
- The operating personnel must have read and understood the operating manual.
- Occasionally (e.g. monthly), check that the personnel are working in a safety and hazard-conscious manner in compliance with the operating manual.
- The responsibilities of the personnel for assembly, commissioning, operation, maintenance, setup and repair must be clearly defined.
- Persons undergoing training may only work on the machine under the supervision of an experienced person.
- Only persons of at least 18 years of age may work on the machine.

Personal protective equipment

Personnel must not wear long hair hanging loose, loose clothing or jewellery, including rings.

There is a risk of injury due to being caught up on, or pulled in by the conveyor belt.

Danger

The operating personnel must wear the following personal protective equipment when working on the machine:

- Safety shoes
- Hearing protection

In addition, the national regulations must be complied with.

Transport and assembly

- Observe the permissible floor load. Adjust the machine base frame to the respective floor conditions using the adjustable feet.
- Transport and assembly by skilled personnel only.

Safety and protective devices

Danger

- All protective devices must be properly fitted and fully functional each time before commissioning the machine.
- Protective devices may only be removed
  - after the machine has come to a standstill and
  - after securing it against being switched on again (e.g. by locking the main switch).
- Do not bypass or remove safety switches or otherwise render them inoperative.
- Where subcomponents are delivered, the protective devices must be attached by the operating company in accordance with the regulations.

Machine control

- Only trained personnel are permitted to operate the controller.

Safety measures during production operation

- Operate the machine only if all protective devices are fully functional.
- Before switching the machine on, check that no-one can be endangered by the machine as it starts up.
- Observe switch-on and switch-off procedures and indicator lamps in accordance with the operating manual!
- Inspect the machine for externally recognisable damage and the correct functioning of the safety devices at least once per shift (see section “Service and maintenance”).
- Do not switch the suction and ventilation device off when the machine is running.

Dangers due to electrical power

Danger

- Allow only qualified electricians to work on the electricity supply.
- Check the electrical equipment of the machine on a regular basis (refer also to the national regulations, e.g. VBG 4). Defects such as loose connections or melted cables must be rectified immediately.
- The control cabinet must be kept locked at all times. Only authorised personnel with a key or tools are allowed access.
- Use only original fuses! The electrical system will be destroyed if fuses with too high a rating are used.
- Plug connectors may only be plugged in and unplugged when the power is switched off.
- If work on live parts should be necessary, a second person must assist who can actuate the EMERGENCY-STOP button or the main switch with voltage cut-off in the event of an emergency. Cordon off the working area with a red and white safety chain and a warning sign. Use only electrically insulated tools!

Particularly dangerous points

Danger

- Never reach into the running conveyor belt.
- Never touch rotating parts.
- Never let yourself be locked inside the machine.

Instructions in case of emergency

- In an emergency, always press the EMERGENCY-STOP button.
- Extinguish fires in the electrical controller using a CO_2 fire extinguisher
- Rinse chemical burns with fresh water
- If in doubt, always call the emergency doctor

Service and maintenance, troubleshooting

- Widely cordon off the maintenance area if necessary
- Carry out prescribed adjustment, maintenance and inspection work within the time limits (see section “Service and maintenance”).
- As part of the regular checks (see section “Service and maintenance”), check the perfect condition of connecting elements in the force flow.
- Inform the operating personnel before commencing with service and maintenance work.
- Secure all upstream and downstream machine parts and operating media such as water and electricity against commissioning inadvertently.
- Switch off the machine and secure the main switch against unexpected restarting before carrying out any maintenance, inspection and repair work.
  - Lock the main switch, remove the key and
  - attach a sign warning against restarting.
- Before exchanging larger subassemblies, carefully attach them to lifting equipment and secure them.
- Assign only experienced persons to attach loads and instruct crane drivers! The instructor must be in the field of view of the operator or in verbal contact with him.
- For assembly work above body height, use safe climbing aids and work platforms intended for the purpose. Do not use machine parts as climbing aids! Wear fall protection when working at greater heights!
- Keep all grips, steps, railings, pedestals, platforms and ladders free from dirt, snow and ice!

- Cleanse the machine - in particular connections and fittings - of oil, fuel or cleaning agents before commencing with maintenance/repair work! Do not use aggressive detergents! Use lint free cleaning cloths!
- Before cleaning the machine with water or a steam jet (high pressure cleaner) or other detergents, cover or mask off all openings into which water/steam/detergents must not be allowed to penetrate for safety or functional reasons. Electric motors and control cabinets are particularly at risk.
- Completely remove the covers/masking after cleaning!
- Check loosened screwed connections for tightness.
- Check the function of the safety devices after completion of the service work.

Structural modifications to the machine

- Do not make any structural modifications, additions or conversions to the machine without the manufacturer's permission. This also applies to welding on load-bearing parts.
    - All conversion measures require the written permission of

Mohn GmbH

- Replace machine parts immediately if they are not in perfect condition.
- Use only original spare and wearing parts. If parts are procured from third parties, it cannot be guaranteed that they have been designed and manufactured to meet the load and safety requirements.

Cleaning and disposal of the machine

- Substances and materials used must be handled and disposed of properly, especially
    - When working on lubricating systems and devices
    - When cleaning with solvents
    - The national regulations must be observed.

Machine noise

- The noise level emitted by the machine is:
  A-weighted equivalent continuous noise level .....85.. dB (A)
- Depending on the local conditions a higher level may develop that can cause noise-related hardness of hearing. In this case the operating personnel must be protected by appropriate protective equipment or safety measures (refer also to the national regulations, e.g. VBG 121 DA).

Residual risks

The machine has been built according to the state of the art and the recognised safety rules. Nevertheless, its use can result in danger to the life and limb of the operator or third parties or to damage to the machine itself or other property. The machine is to be used only

- for its intended purpose and
- if it is in a perfectly safe condition

Malfunctions that could impair safety must be rectified immediately.

Transport and storage

Dimensions and weight

Washing system:

- Length: approx. 9,200 mm
- Width: approx. 2,150 mm
- Height: approx. 2,300 mm
- Weight: approx. 2.400 kg (without Water)

Instructions and safety measures for transport

- Lash the machine and accessories firmly to the transport vehicle (e.g. truck).
- Transport the machine only when empty (not filled with water).
- If temperatures are around freezing, also drain the water out of the solenoid valve and the non-return valve.

Lifting equipment, eyebolts

- Use only tested and approved lifting equipment.
  - Shackles, e.g. according to DIN 82101
  - Chain slings, e.g. acc. to DIN 5687 quality grade 8
  - Rope slings, e.g. acc. to DIN 3088
  - Textile lifting equipment, e.g. round slings according to DIN 61360

CAUTION	**Ensure when selecting lifting equipment that it has an adequate load-bearing capacity!**

Unloading, loading, in-plant transport

Transport with the help of a crane

- Make sure that the fork-lifter has an adequate load-bearing capacity!
- Make sure that no components are damaged.
- Pick up the machine using only forks of a sufficient length, 3m long.
- In-plant movement should take place on 4 heavy-duty rollers fastened to the machine.

Checking on takeover by the recipient

On taking delivery of the machine, check it for transport damage, in particular to

- moving parts
- electrical cables

Packaging, insulation

Dispose of packaging and insulation in a proper, environmentally friendly manner. The national regulations must be observed.

Reporting and documenting transport damage

- Any transport damage found must be noted on the freight documents.
- The responsible deliverer (usually the truck driver) must confirm the damage found on the freight documents (by signing).
- Report transport damage as quickly as possible to the manufacturer.

Installation, assembly

Place of installation, place of use

- The machine may only be used in closed rooms (see section Ambient conditions).
- The machine has IP 54 protection and can alternatively be operated in the open air, in which case, however, it must be protected against heavy rain and frost.
- See installation diagram for the machine dimensions
- Foundation shape and foundation load

Installing, fastening and anchoring the machine

- Suspend the machine on boat lifting straps (see section “Instructions and safety measures for transport” and section “Lifting equipment, eyebolts”)
- Place the machine in the intended assembly position (see section “Instructions and safety measures for transport” and section “Lifting equipment, eyebolts”)

Connecting the energy and supply connections

Electrical energy supply

Allow only qualified electricians to work on the electrical system!

- Connected loads: see technical data
- Connect the machine in the terminal box in the control cabinet.
- Check the rotary field using a suitable measuring instrument.

CAUTION **The rotary field must be clockwise rotating!**

- If the direction of rotation is wrong, change the rotary field only by swapping the connections in the terminal box or in the plug connector.

Pneumatic energy supply

- - not applicable -

External energy supplies (e.g. water, heater, steam)

- Fresh water connection: G¾“, 3 to 6 bar, max. 5°dH, 10 to 85°C
  (tank filling, clear rinsing and pre-jetting)
- Electricity supply: approx. 70 kW; 125 A

Operation

Safety devices

Do not bypass or remove safety switches or otherwise render them inoperative.

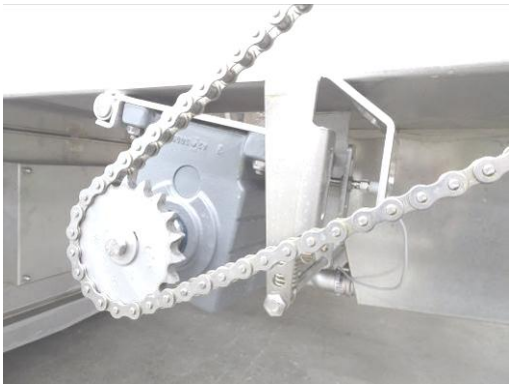
Danger

The machine has the following safety devices:

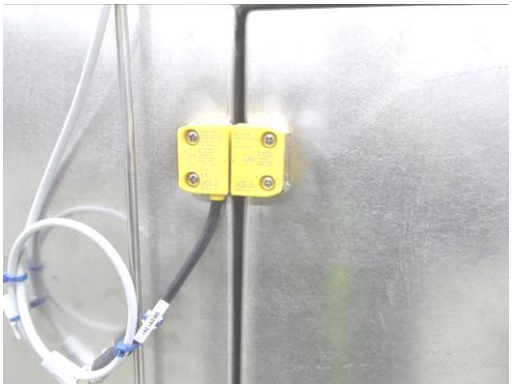
- EMERGENCY-STOP BUTTON
- Overload rocker, drive
- Maintenance gate protections

(Figures are partly similar)

EMERGENCY-STOP BUTTON



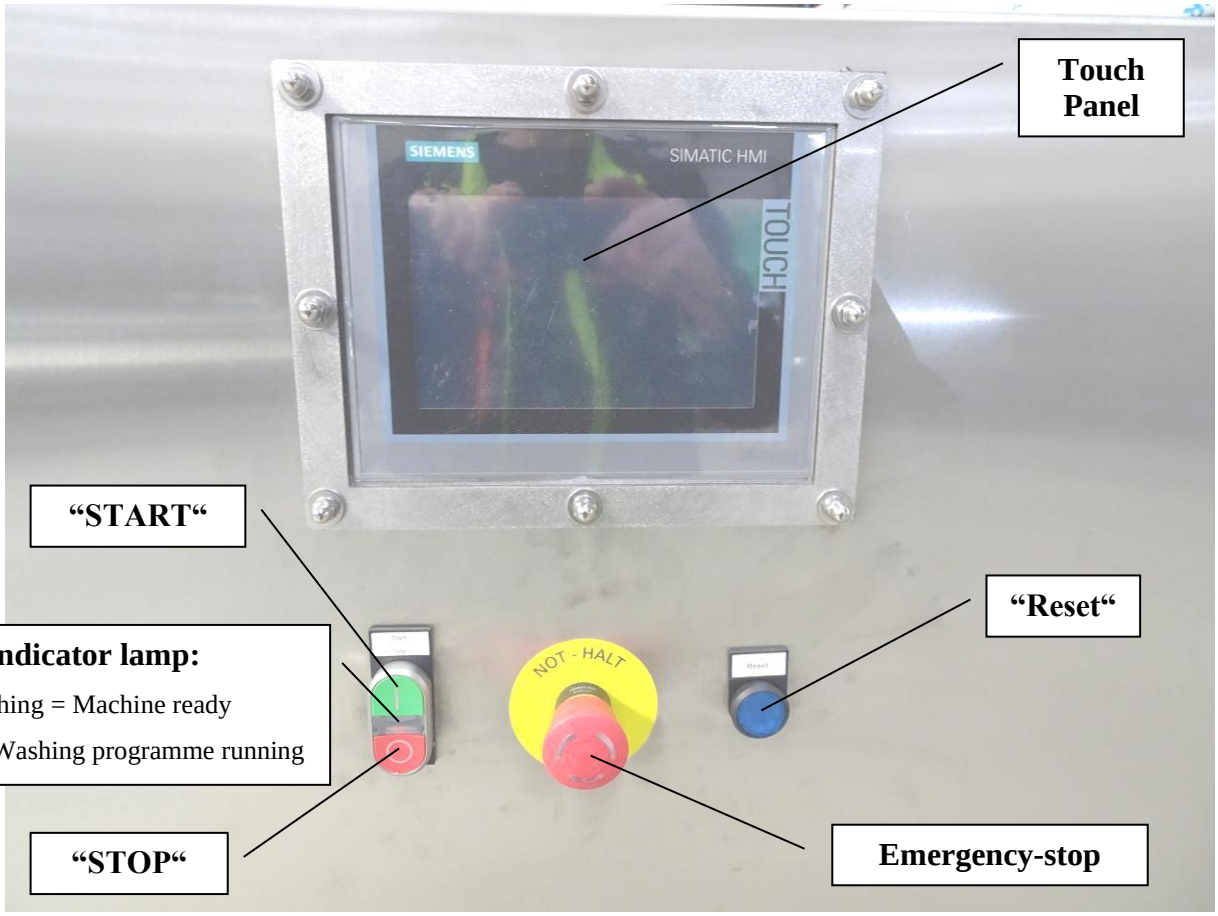
Overload rocker



Maintenance gate protection

Operating and display elements on the control cabinet

(Figures are partly similar)



Operating modes

General washing:

The system is turned on via the main switch. Provided that the washing tank is empty and the control voltage has been activated, it will be automatically filled and heated. Not until the washing tank has been filled, the heater will start to automatically heat the washing water.

Then washing can be started.

Washing items to be washed:

On the touch display, select the washing program, then press the button “START”. The washing programme starts automatically, the indicator lamp illuminates continuously. Now transport the items to be washed to the infeed, as described under the point “**Placing properly items to be washed**”, while pushing the items to be washed applying slight pressure until it is taken along by the conveyor belt.

Never push items to be washed through the system by hand!

If the items to be washed are not taken off by the outfeed and thus the jam switch is operated, the belt operation and clear rinsing will stop. If the items to be washed are now removed by the outfeed, the belt operation and clear rinsing will start automatically.

When changing items to be washed, the height of the hold-down device, the setting of the lateral guide and the use of the middle guide have to be checked and readjusted, if necessary.

(for this see images in the annex)

Initial commissioning

The initial commissioning is carried out by employees of

Mohn GmbH

Trial run

Before handover to the machine operator or the machine operating company, employees of

Mohn GmbH

will carry out a trial run.

Production operation

Switching the machine on

- Turn the main switch on the control cabinet to “I”.
- Switch the machine on - see “Normal operation”

Switching the machine off

- Emptying the machine
- Turn off conveyor belts, washing pumps und blow down
- Turn off the main switch

Operating instructions

Operation of the machine after an EMERGENCY STOP

After actuating the EMERGENCY-STOP button, the control voltage is interrupted. The automatic circuit breakers remain live!

- Determine the cause of the error
- Ascertain that the machine is no longer in an unsafe state
- Unlock EMERGENCY-STOP button
- Restart the machine

Placement of items to be washed

- Before placing the items to be washed, remove course contaminants (paper, solids, etc.) from the boxes!
- Make sure that no items to be washed other than those specially suitable for this machine are placed inside the machine. The items to be washed and the washing system can be damaged by placing other items to be washed inside!

Cleaning the washing system

The washing system must be thoroughly cleaned once or twice per week in parallel with the exchange of the washing water. Proceed as follows to do this:

- Empty the machine
- Switch off the dryer (if existent), pump and belt drive, then turn off the main switch
- Open the drain cock of the washing tank and allow water to flow out.
- Open the window
- Thoroughly rinse the interior, conveyor belt and outfeed table. Remove possibly existing solids (paper, labels etc.)

IMPORTANT: The filter sieves remain in the machine

- Clean the window, cover and covers
- After cleaning the interior, remove and clean the filter sieves. Rinse out the tanks
- Clean the intake sieves of the pumps, heating rods or heating coils
- Check that the nozzles are clear. If nozzles are blocked, remove the nozzle arm, clean and re-install. While doing so, make sure it is firmly fixed. Tighten the knurled nut **without tools**

- Clean the exterior of the washing system.
- **Never direct the water jet onto electrically conducting parts such as Electric motors, switches, control cabinet, etc.!**

Warning

- **Inspect the washing system inside and out for damage.**
- The exterior of the washing system should be treated approx. once per week (depending on the degree of soiling) with a stainless steel care product
- After completion of the cleaning, close the ball valve, insert the filter sieves and leave the window open until the next shift to speed up the drying of the system

- **Service and maintenance**

Caution

Comply with the time limits prescribed and specified in the operating manual for inspection and maintenance intervals!

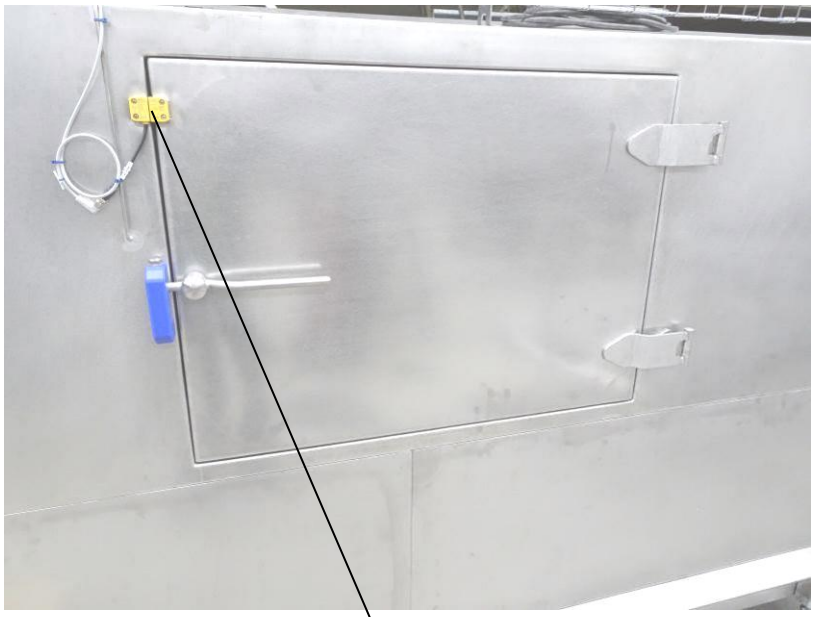
Maintenance and inspection list

When?	What?	Where?	How?	Who?	Remark
daily	Check the functionality of safety devices	EMERGENCY-STOP BUTTON	Press the button	Operator	Machine must not start up
daily	Pump pressure Smooth pump operation	Manometer pump	Visual inspection Audio test	Operator	Pumps must run quietly
daily	Passage nozzle pipes	In the machine	Visual inspection	Operator	
Weekly	Heaters/Heat exchanger	Tanks	Visual inspection	Operator	Clean if contaminated/calcified
weekly	Voltage/condition Conveyor belt	In the machine	Visual inspection	Skilled personnel	
weekly	Intake sieves of motors	Drives/Pumps	Visual inspection	Skilled personnel	Clean if dirty
weekly	Intake sieves of fans	Suction/blow down	Visual inspection	Skilled personnel	Clean if dirty
weekly	Float switch	Tanks	Visual inspection and cleaning	Skilled personnel	Observe the manufacturer's data

When?	What?	Where?	How?	Who?	Remark
weekly	Guide rails of the boxes	See infeed and outfeed of the machine	Visual inspection	Operator	Ensure proper fit and spacing
weekly	Conveyor cams for the boxes	Conveyor belt on the machine infeed	Visual inspection	Skilled personnel	Be mindful of damage
weekly	Box turner (Optional)	Machine infeed	Visual inspection	Skilled personnel	Be mindful of damage
After 10,000 h or 2 years	Check oil level of drive motors	See drawing	Visual inspection	Skilled personnel	Observe the manufacturer's data
weekly	Intake sieves from control cabinet fan	Control cabinet	Visual inspection	Skilled personnel	Clean if dirty

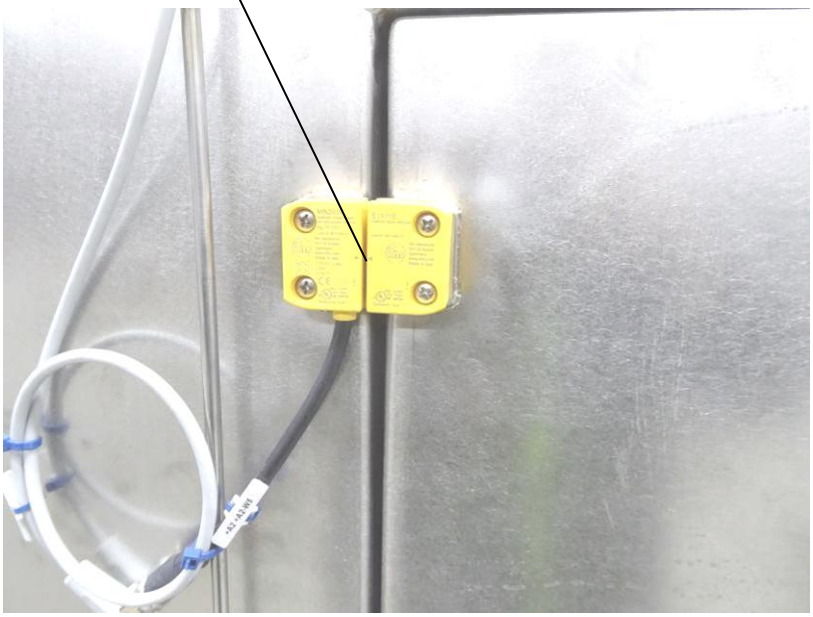
Maintenancegates (washing & blow down)

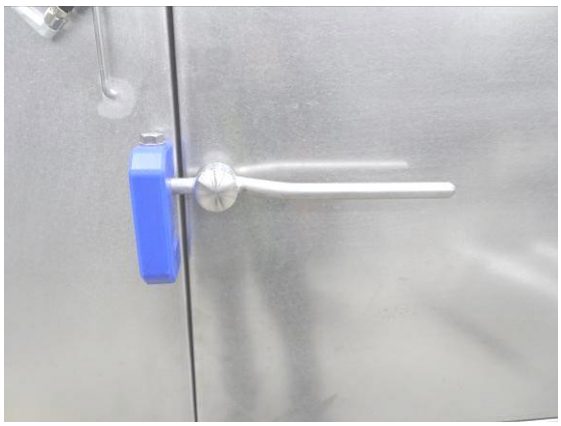
(Figures are partly similar)



Initiator, this monitors the maintenance gates. If the maintenance gates are opened during operation, the door switches will turn off the entire system.

Nevertheless, caution should be used, because hot splash water could escape!



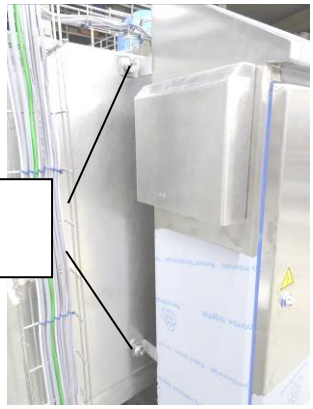


Air intake grille (neutral zone)

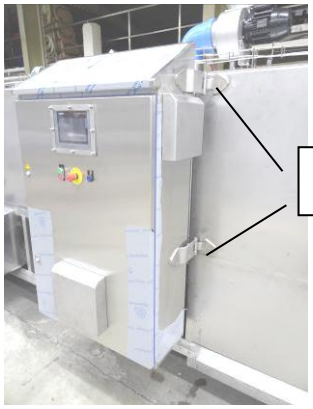
(Figures are partly similar)

On both sides of the system, there is a removable grille in the neutral zone.
(Rear side)

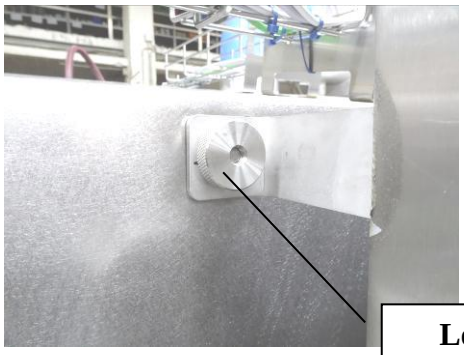
In order to get access to the grille of the neutral zone also on the front side, the main control cabinet must first be folded away.

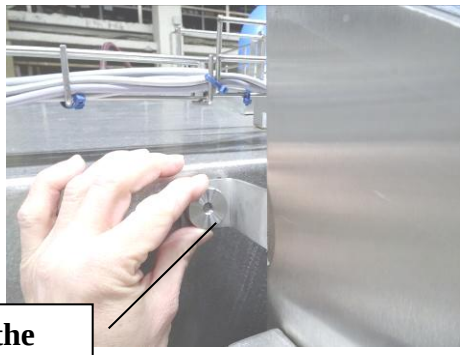


Knurled screws

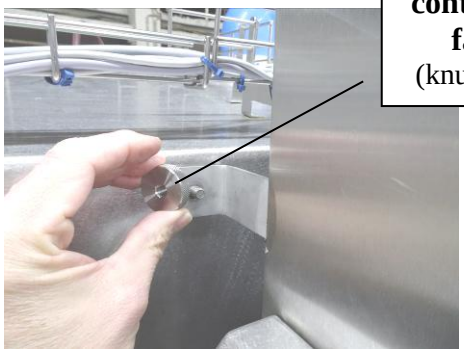


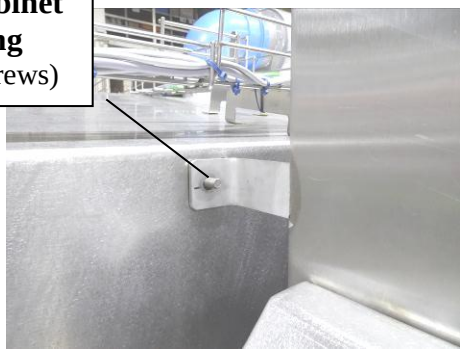
Hinges





Loosen the control cabinet fastening (knurled screws)





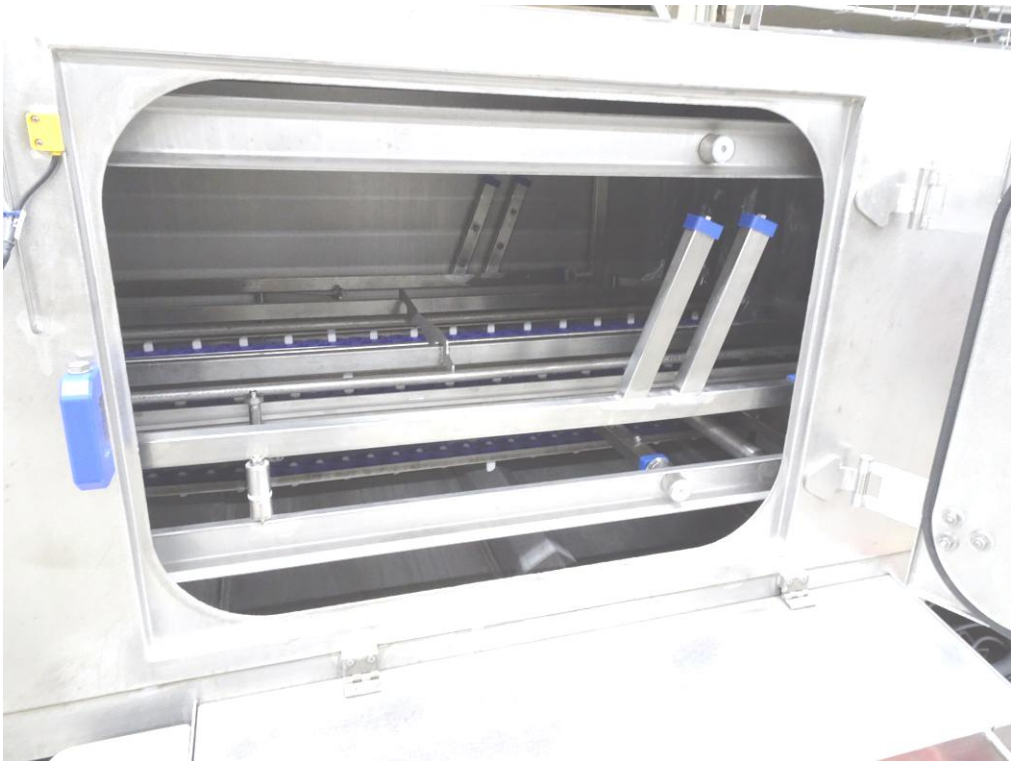
Remove grille of the neutral zone

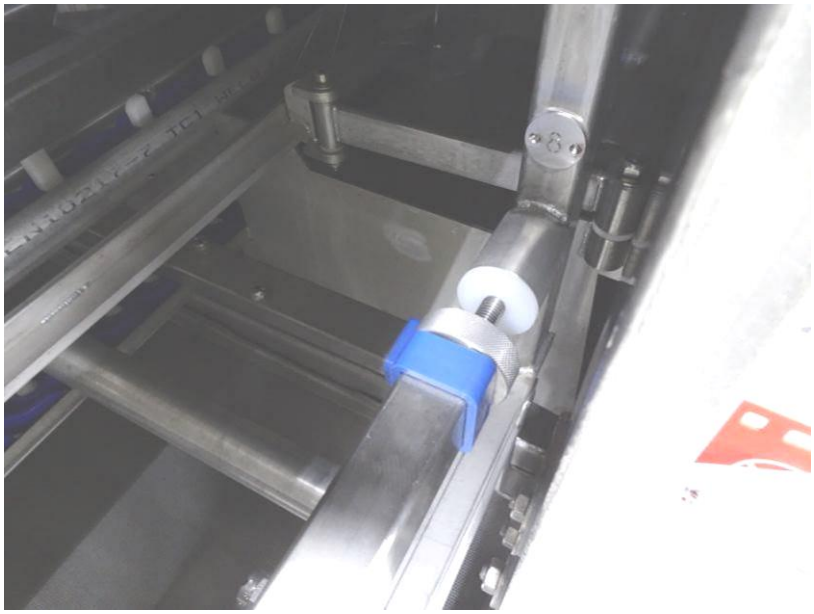
Control cabinet, folded

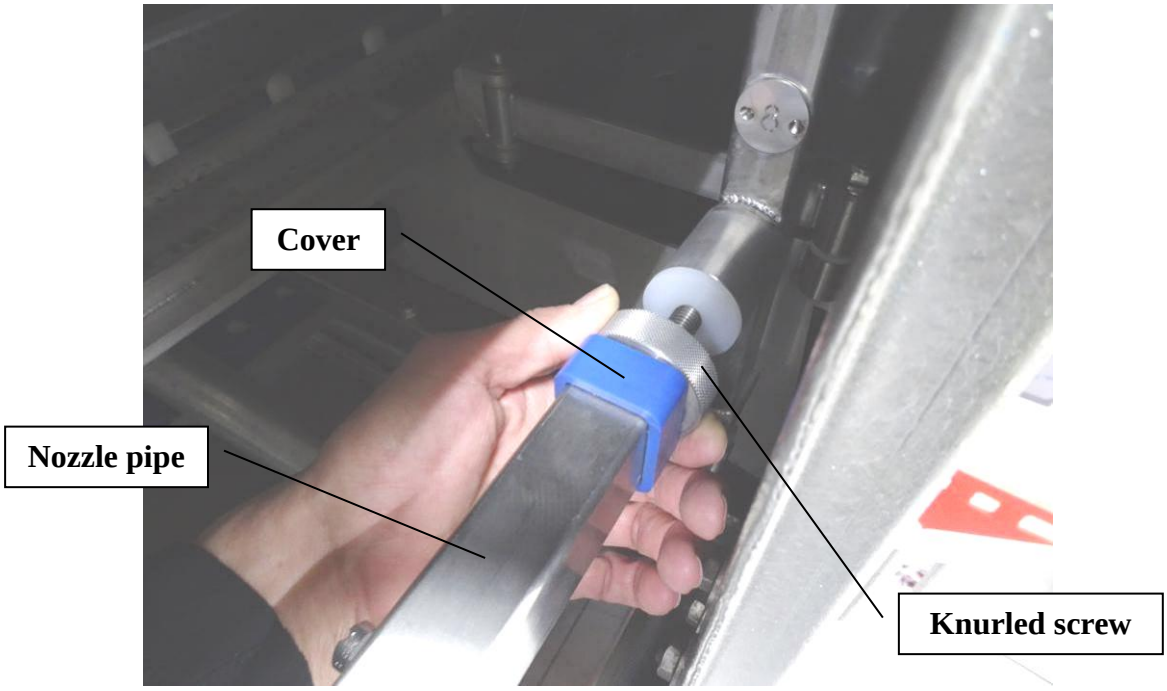
On both sides of the system, there is a removable grille in the neutral zone.
(front side)

Removal of nozzle pipes (washing)

(Figures are partly similar)







-Loosen the knurled screw

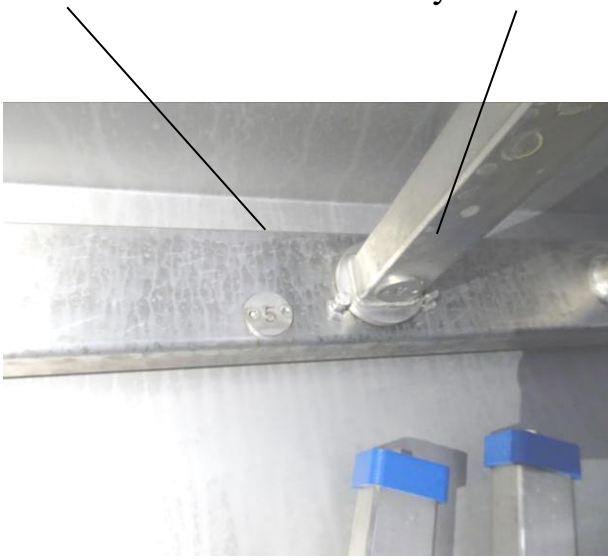
-Hold the nozzle pipe and cover

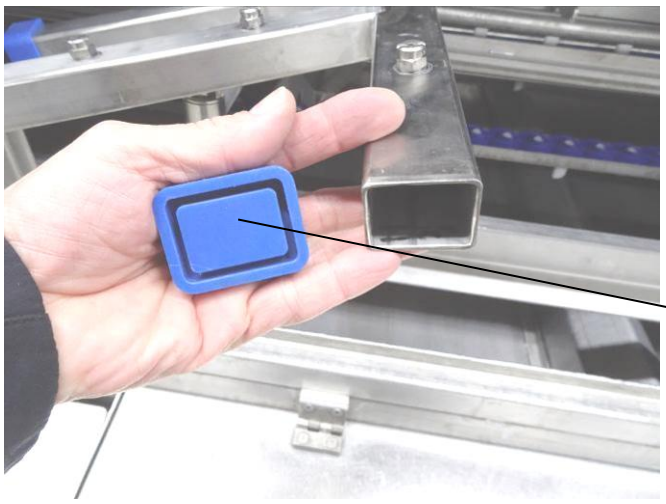
-Remove the nozzle pipe

-Clean the nozzle pipe and nozzles

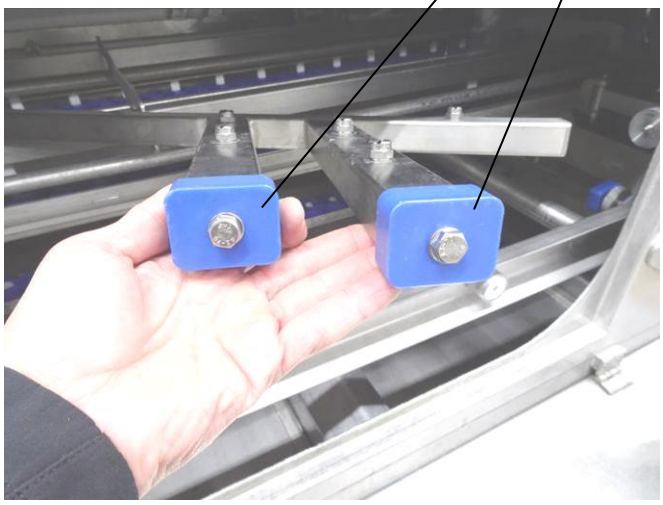
-Ensure the proper positioning when installing the nozzle pipes

It is not possible to mix up the nozzle pipes, because all nozzle pipes are “numbered” and additionally “coded”.





Cover

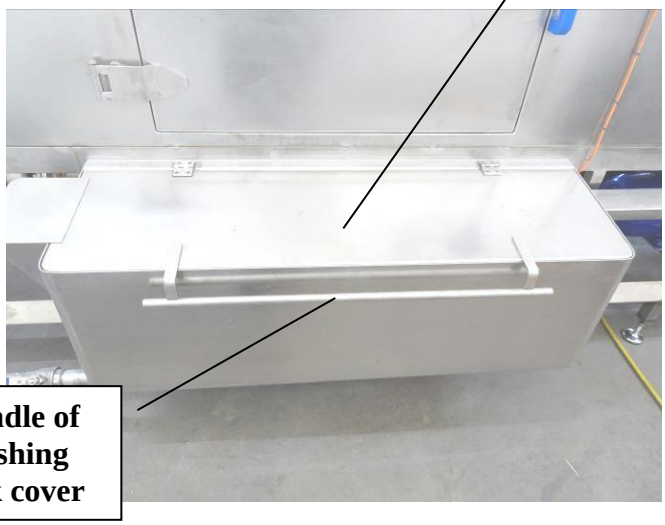


Do not forget the gasket when installing the nozzle pipes!

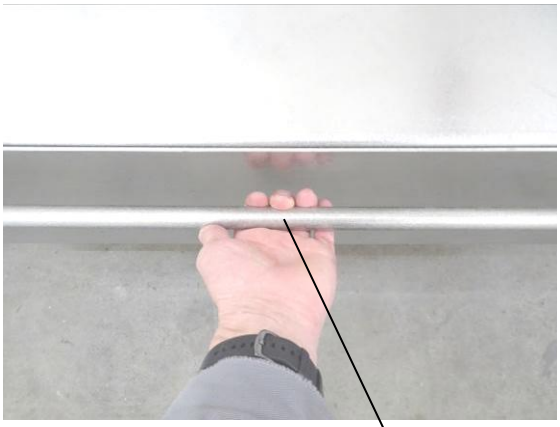
Filter removal (washing tank)

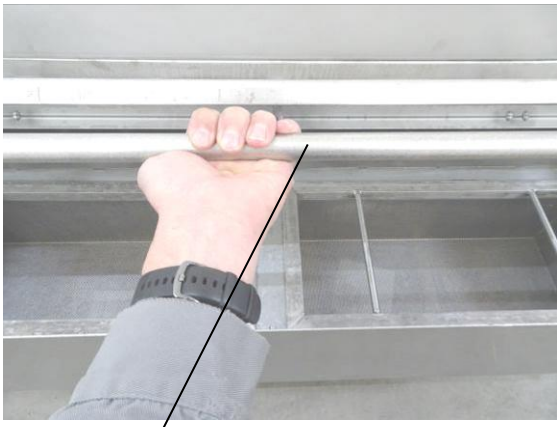
(Figures are partly similar)

Washing tank cover



Handle of washing tank cover





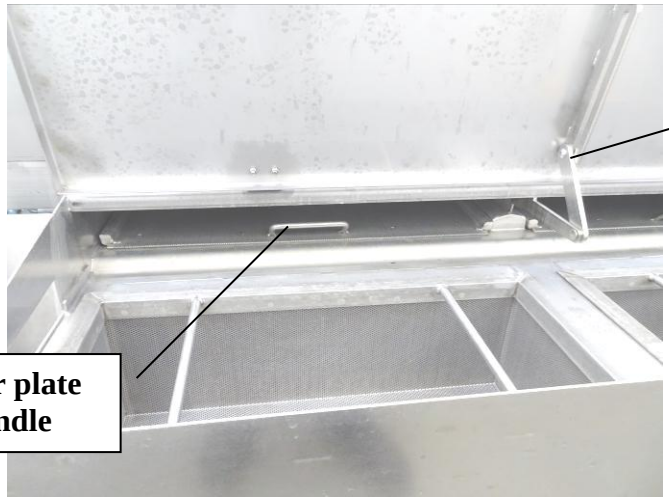
Washing tank cover

Using its handle, the washing tank cover can be simply folded upwards.

Locking hook of the washing tank cover

When opening the washing tank cover, it has to be ensured that the locking hook properly snaps into place!

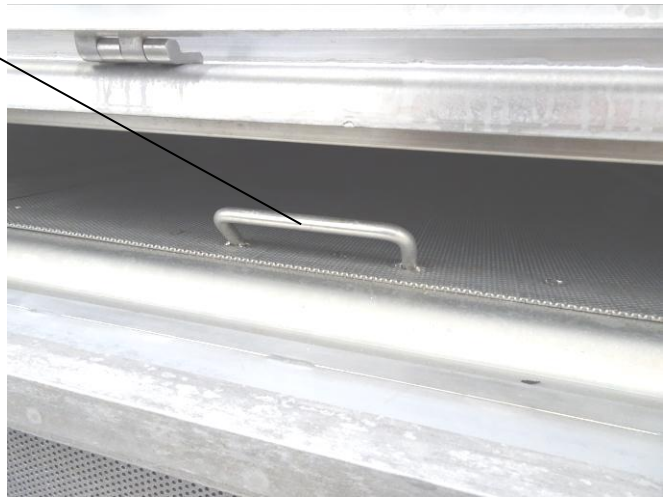
To close the washing tank cover, the locking hook must be pressed out of its snap-in position. While doing so, hold the cover and close it slowly.



Locking hook of the washing tank cover

Filter plate handle

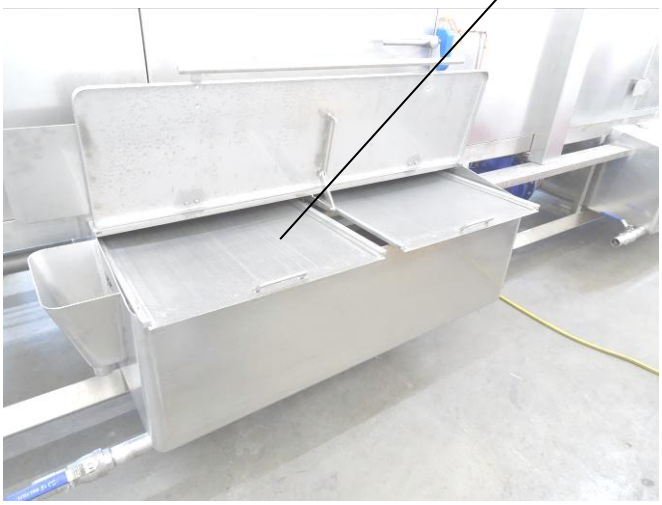
Filter plate handle



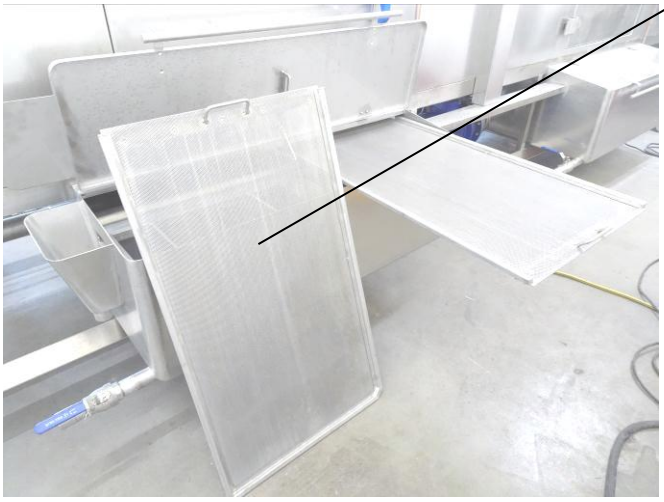
Filter plate handle

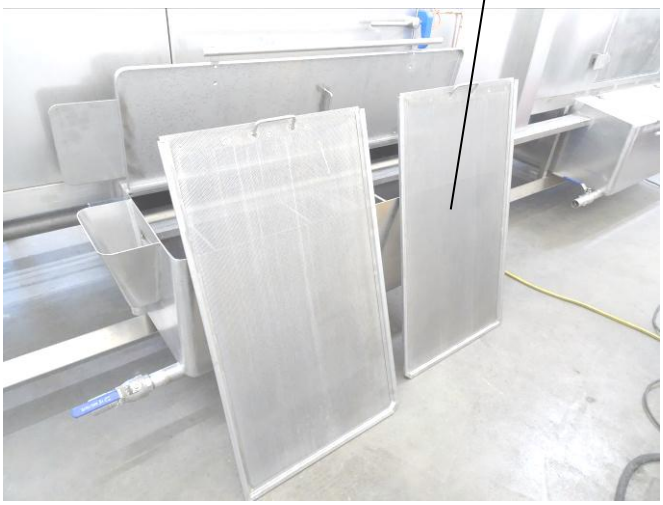
For cleaning purposes, raise the filter plates and lift or pull it out forward.

Filter plates

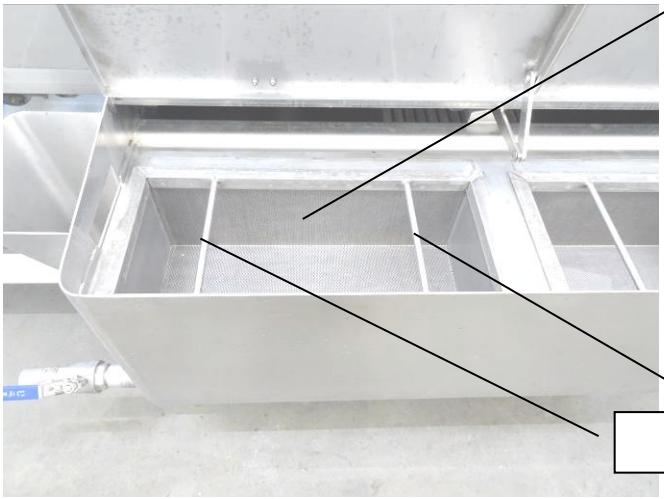


Filter plates



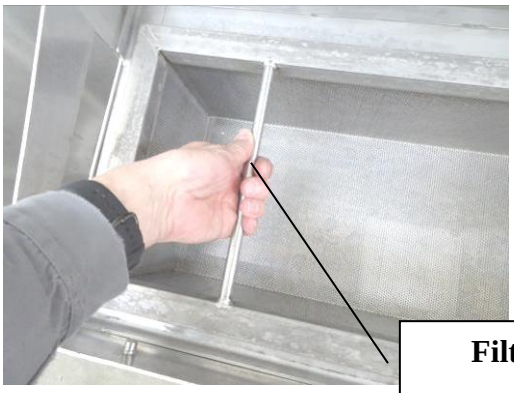


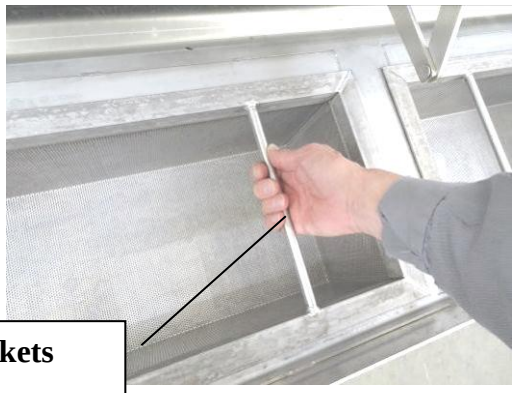
Filter baskets



Filter basket

Handles



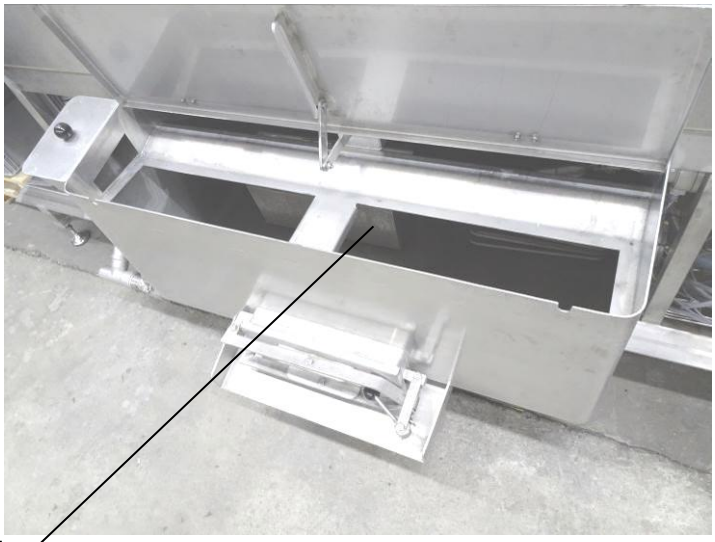


Filter baskets

Using both handles, the filter baskets can be simply lifted out upward out of the washing tank.

Filter baskets

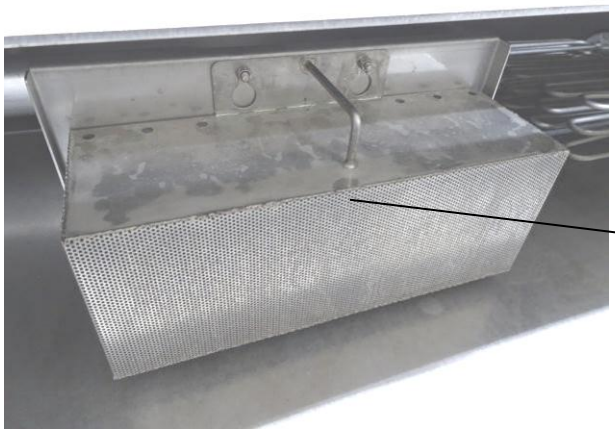
Filter baskets



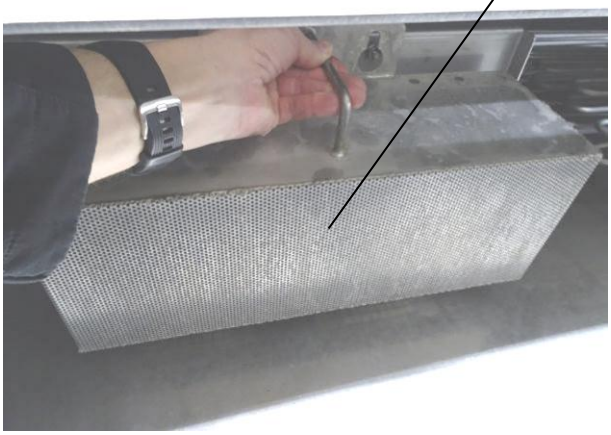
Pumps of the suction filter washing tank

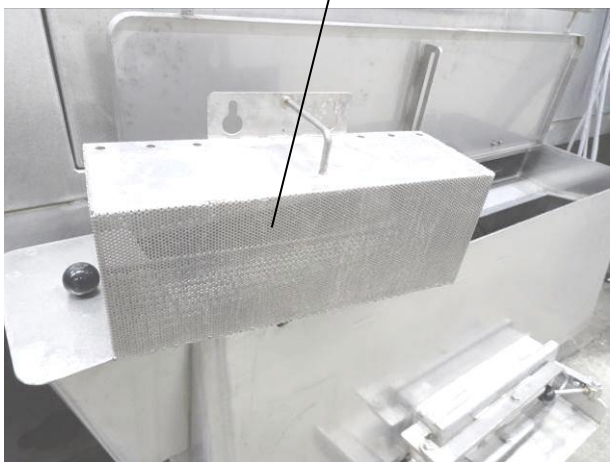
Pump suction filter (washing tank)

(Figures are partly similar)



Pump suction filter
(Washing tank)

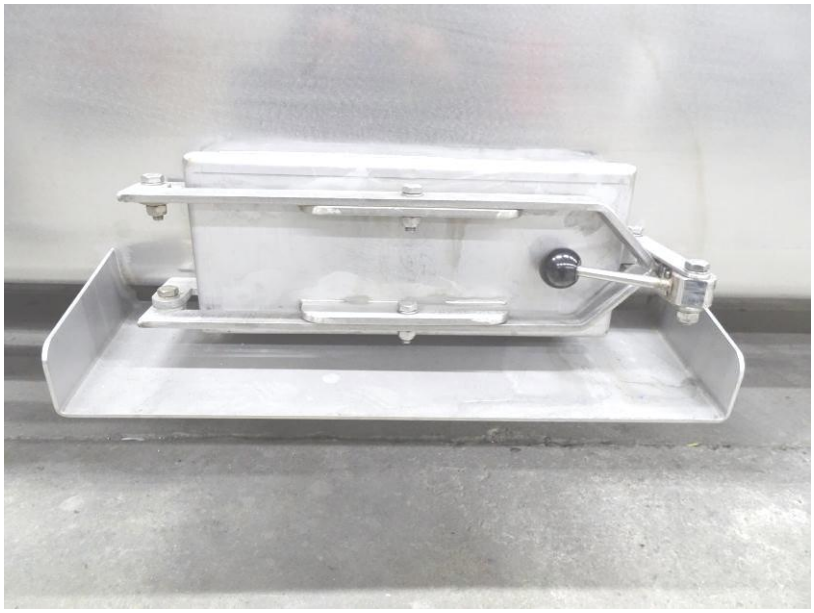




With each tank cleaning, both pump suction filters in the pre- and main washing tank must be cleaned!

Hand hole (washing tank)

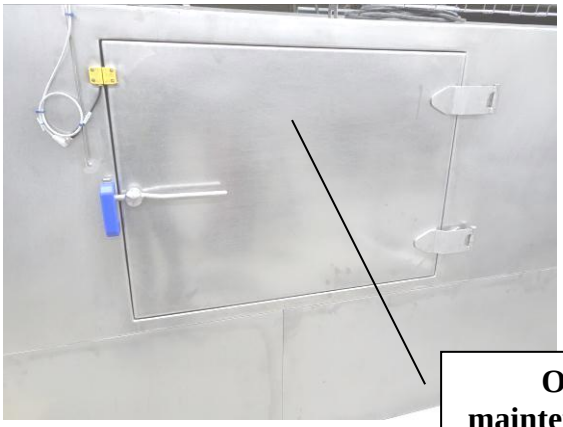
(Figures are partly similar)

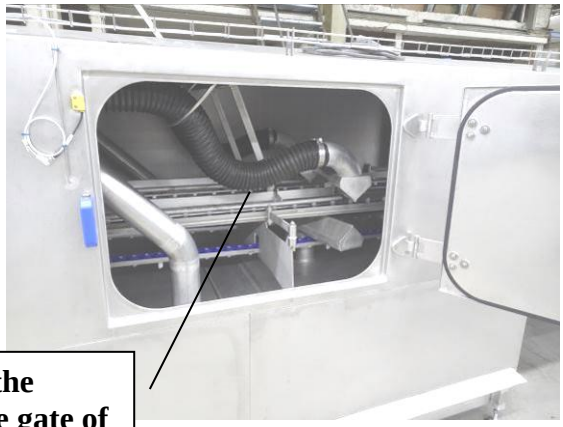


In case of coarse impurities, the hand hole in the washing tank can be additionally opened for cleaning.

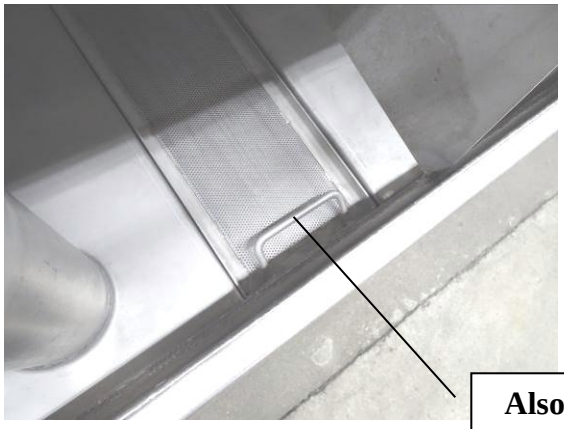
Filter channel (drainingzone)

(Figures are partly similar)

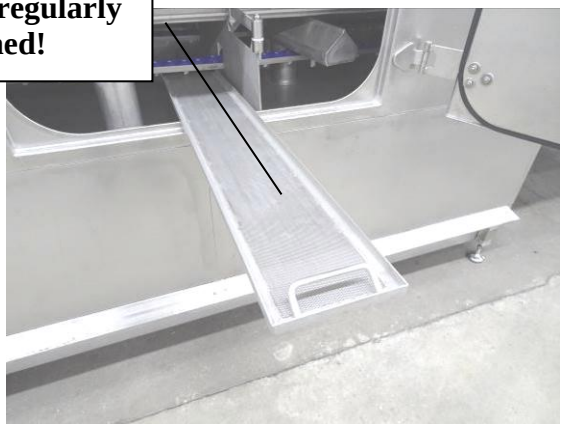


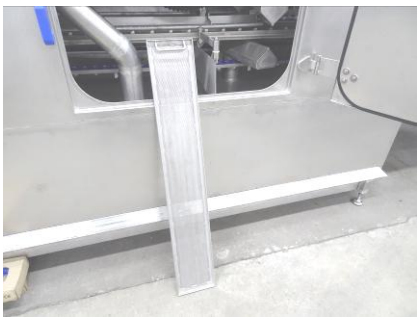


Open the maintenance gate of the blow down



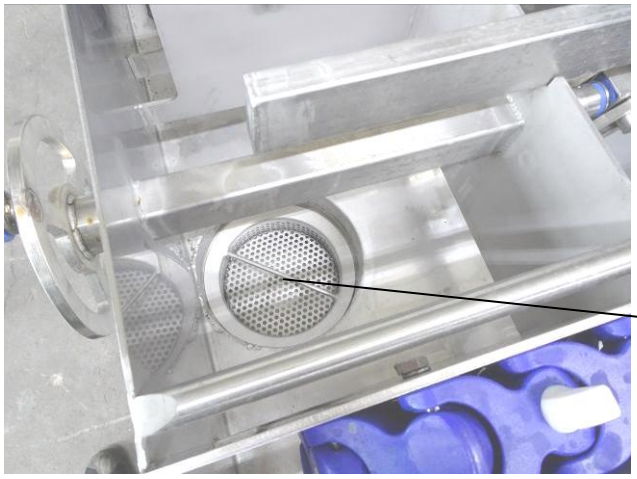
Also the filter sieve in the blow down should be regularly cleaned!



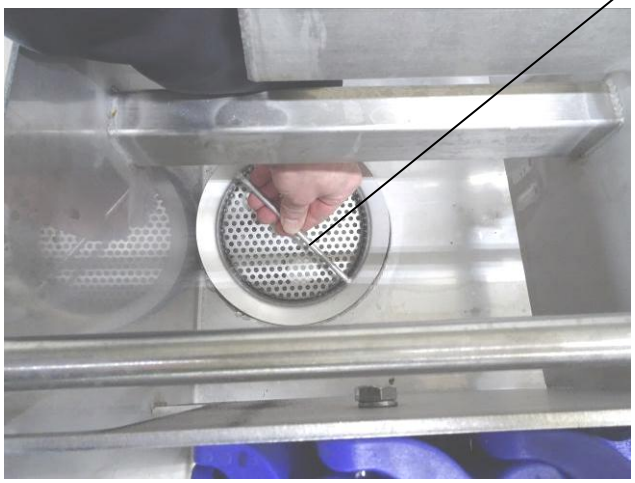


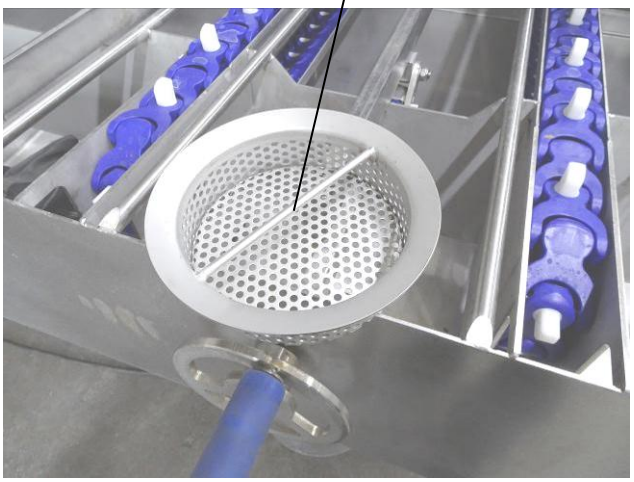
Filter sieve infeed (pre-jetting)

(Figures are partly similar)



Also the filter sieve in the infeed should be regularly cleaned!

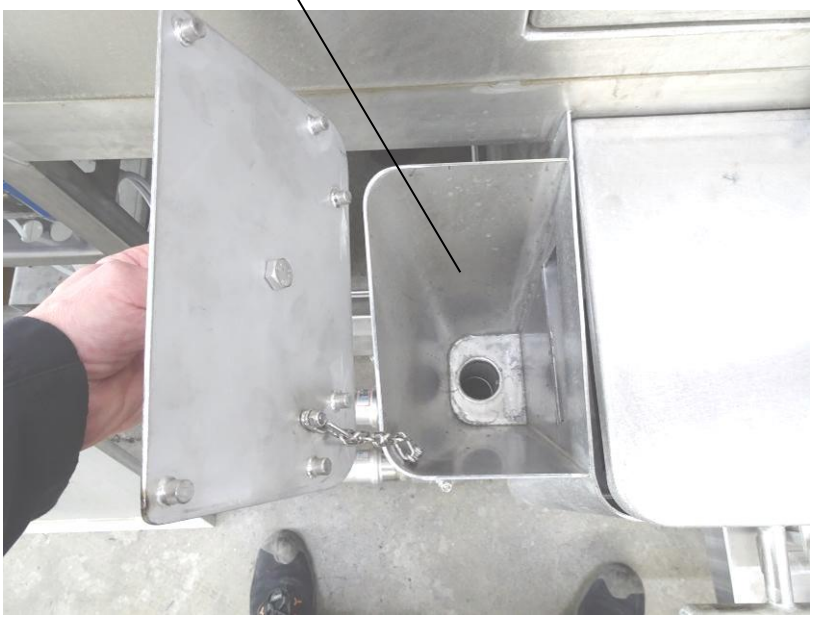




Overflow (washing tank)

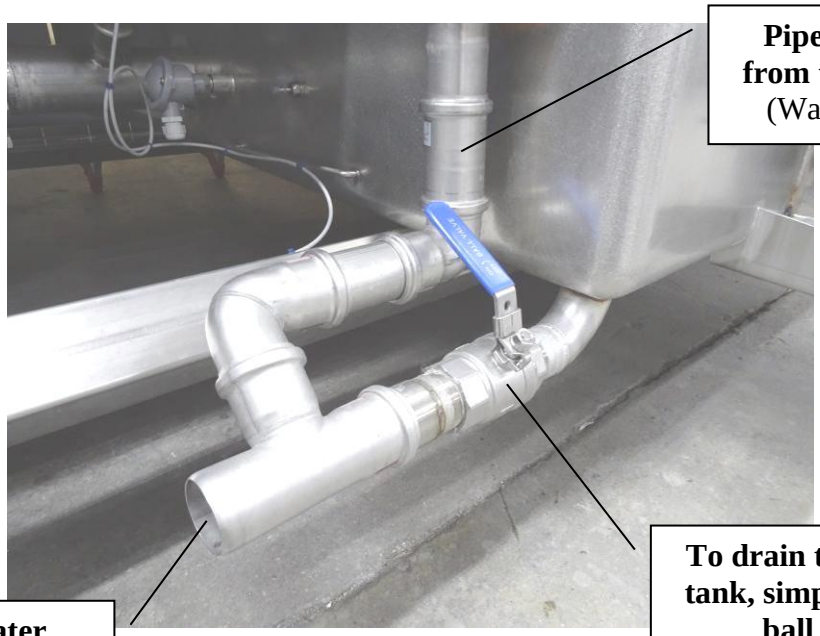
(Figures are partly similar)

The overflow of the washing tank is located above the waste water connection of the washing tank



Waste water

(Figures are partly similar)



Pipeline DN 50 from the overflow (Washing tank)

To drain the washing tank, simply open the ball valve.

Waste water connection DN 50 (Washing tank)

Waste water connection DN 50 (Pre-jetting)

Exhaust-airmotors

(Figures are partly similar)

Exhaust air funnel DN 250

Exhaust-air motor infeed

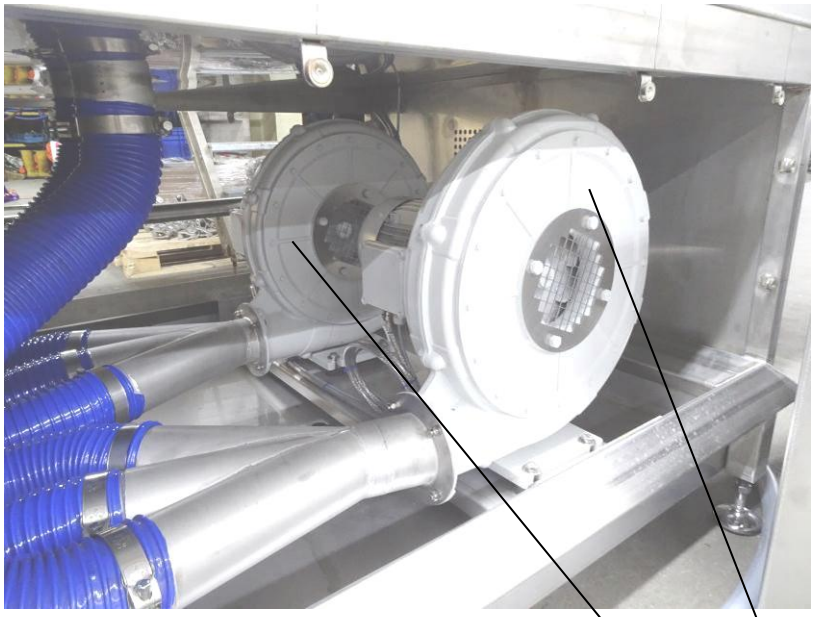
Exhaust air funnel DN 250

Exhaust-air motor neutral zone

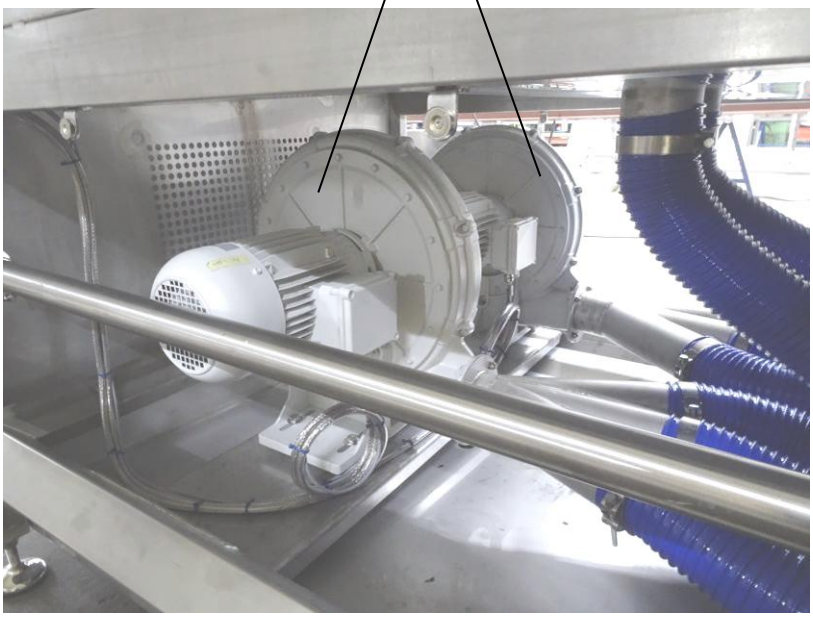
The exhaust-air motors are located above the system, mounted on the system roof.

Blow-off motors

(Figures are partly similar)



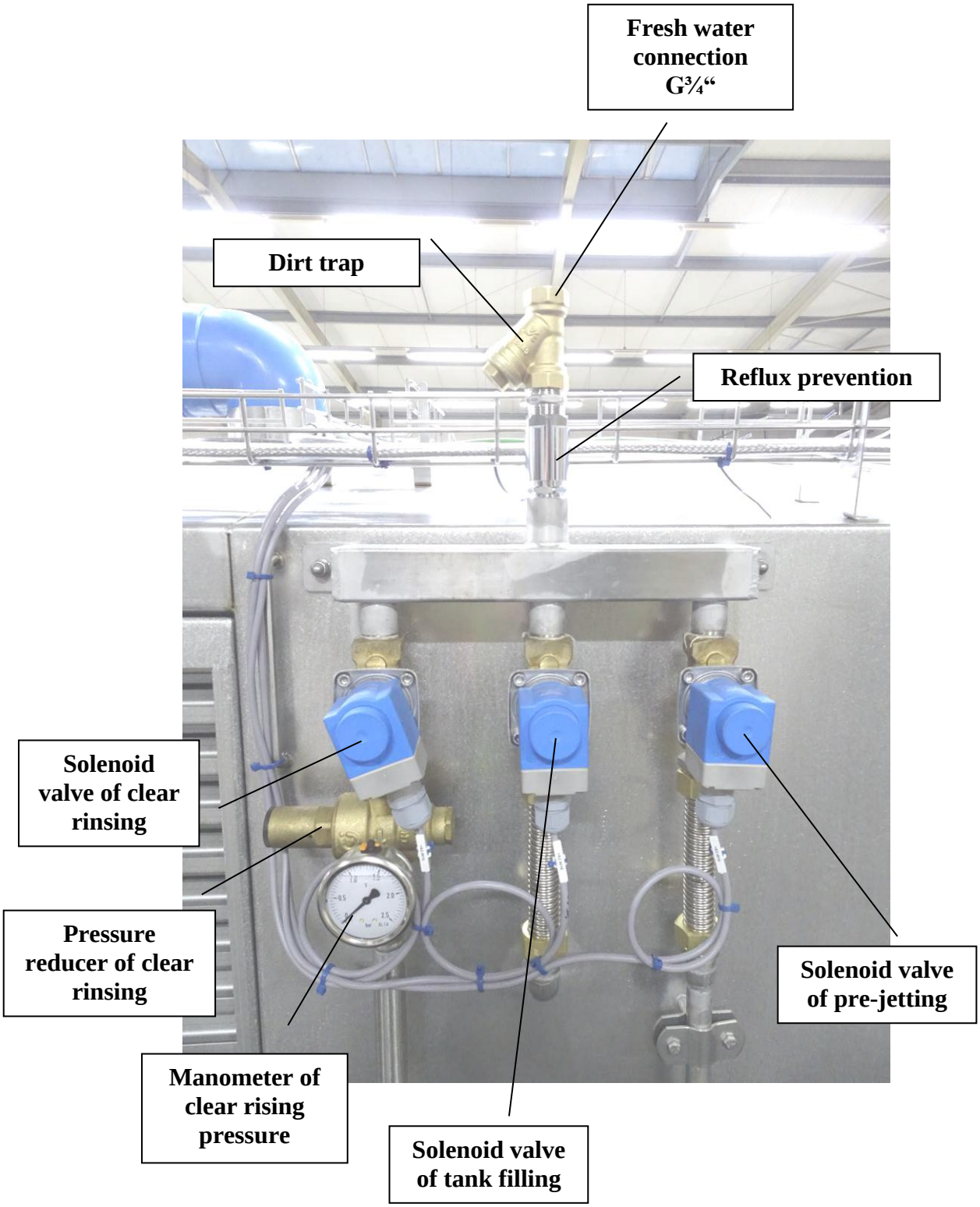
Blow-off motors



The blow-off motors are located below the draining zone.

Fresh water connection (tank filling, clear rinsing and pre-jetting)

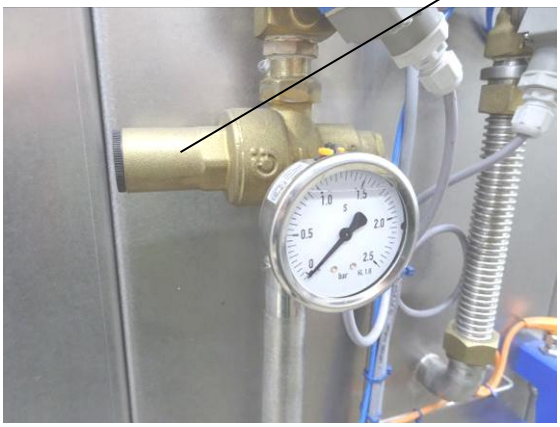
(Figures are partly similar)



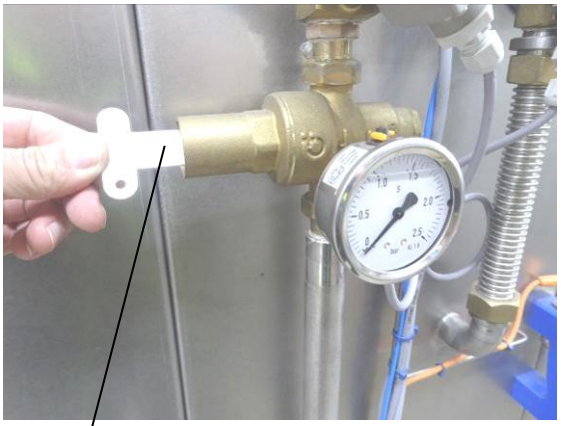
Setting the pressure reducer

(Figures are partly similar)

In order to be able to set the pressure reducer for clear rinsing,



the black protective cap must be removed

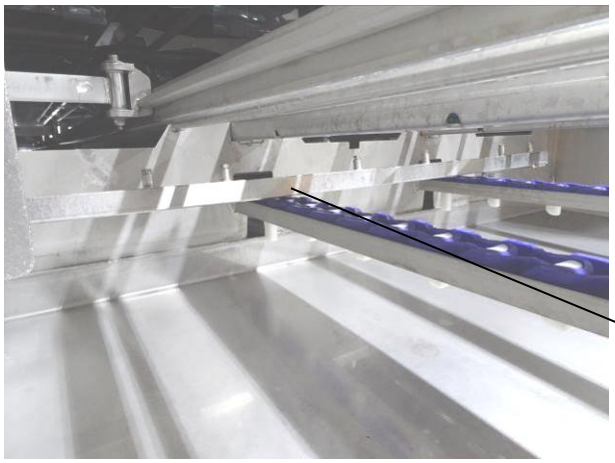


in order to be able to adjust the interior screw using a special wrench.
The pre-set pressure should be between 0.3 and 0.5 bar.

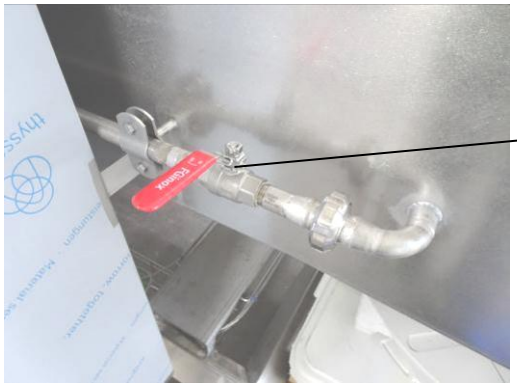
After turning on, screw on the protective cap back again!

Pre-jetting

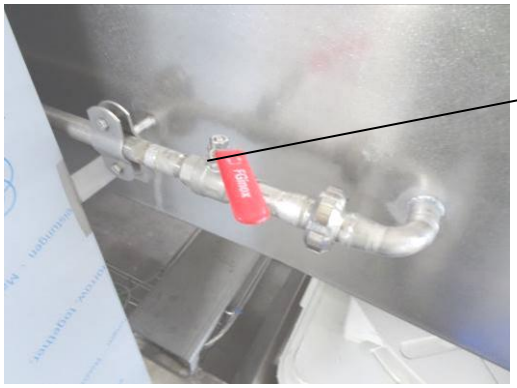
(Figures are partly similar)



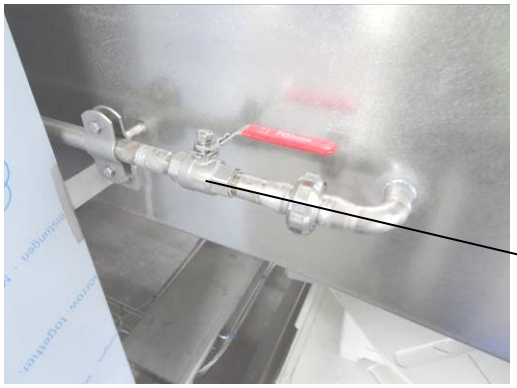
Spraying frame of the pre-jetting in the infeed of the system



Ball valve of the pre-jetting “closed“



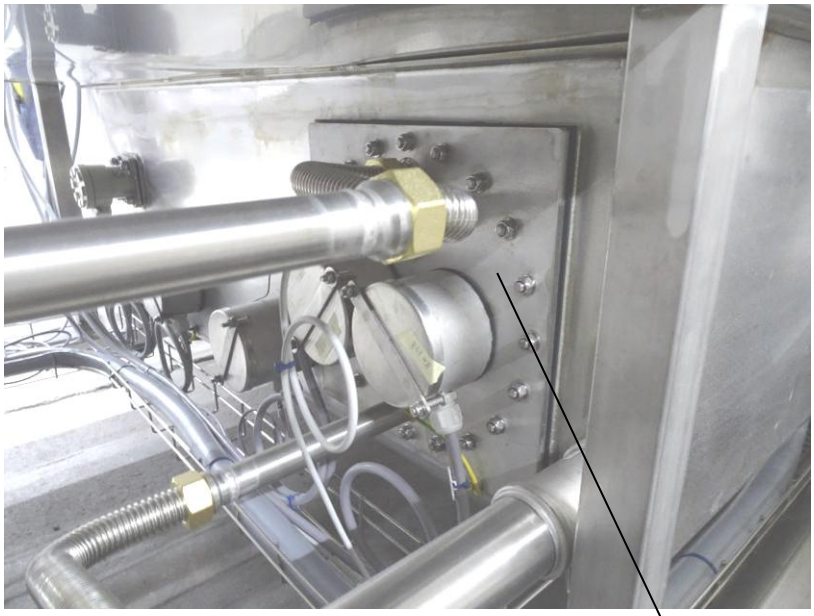
Ball valve of the pre-jetting “centre position“



Ball valve of the pre-jetting “opened“

Clear rinsing boiler (washing tank)

(Figures are partly similar)

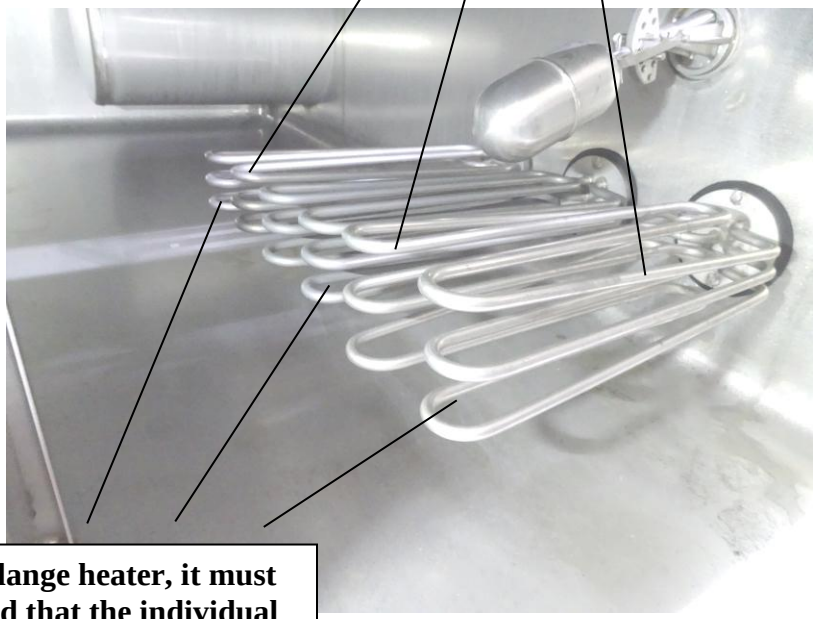


Clear rinsing boiler installed in the washing tank

Electric flange heater (installed in the washing tank)

(Figures are partly similar)

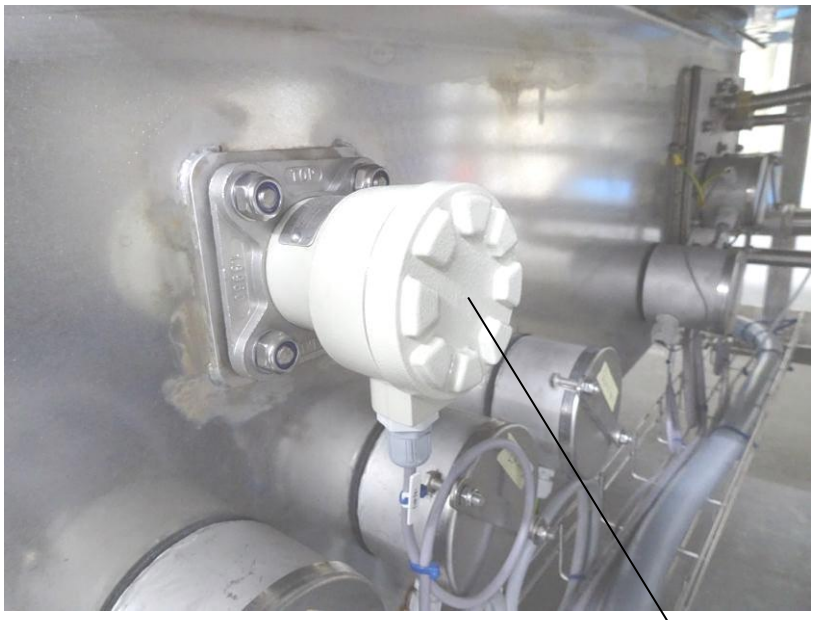
Electric flange heater installed in the washing tank



For the electric flange heater, it must always be ensured that the individual heating coils do not contact each other as this can result in a blown fuse!

Float switch (washing tanks)

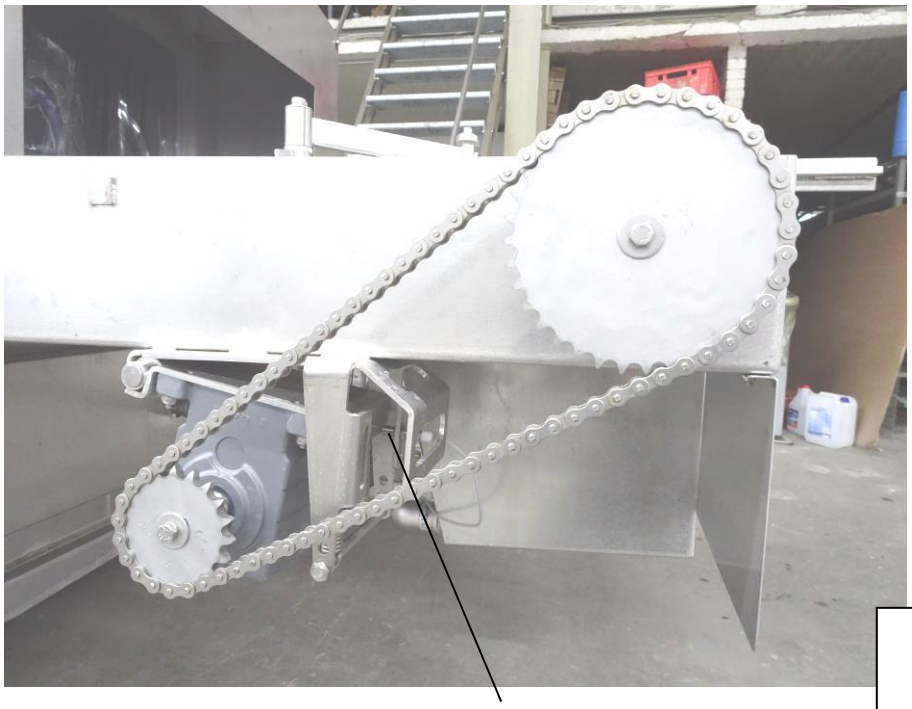
(Figures are partly similar)



Water supply is regulated with the float switches in the washing tank via the solenoid valve of the fresh water connection, which prevents the washing pump from running in a dry state.

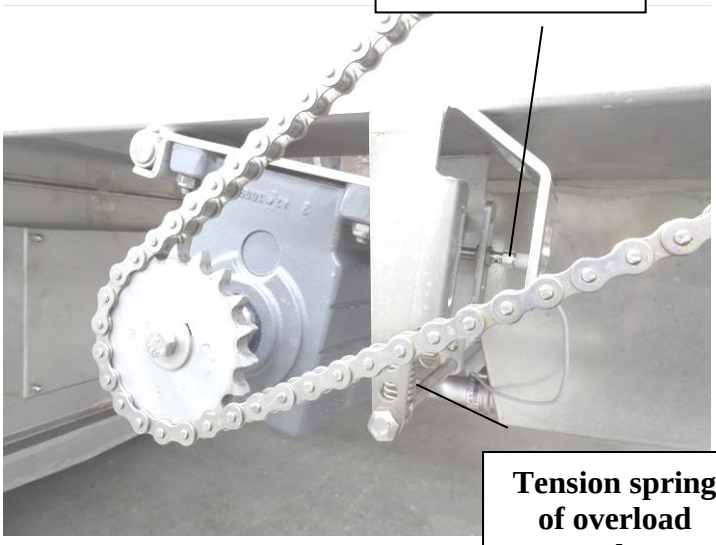
Overload rocker drive (belt drive)

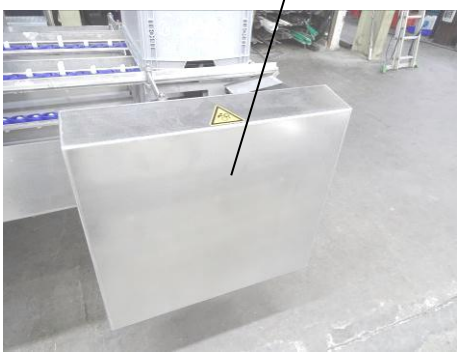
(Figures are partly similar)



Sensor of overload rocket

The belt drive is provided with a stainless steel covering, operation "without" it is not permissible!



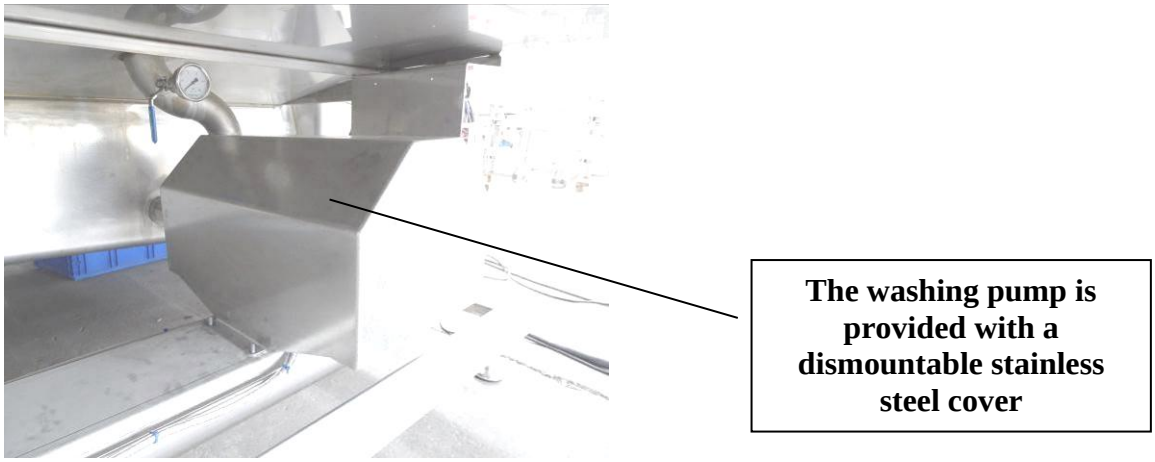


Tension spring of overload rocket

The overload rocket and the corresponding sensor may be maintained by trained personnel only!

Washing pump

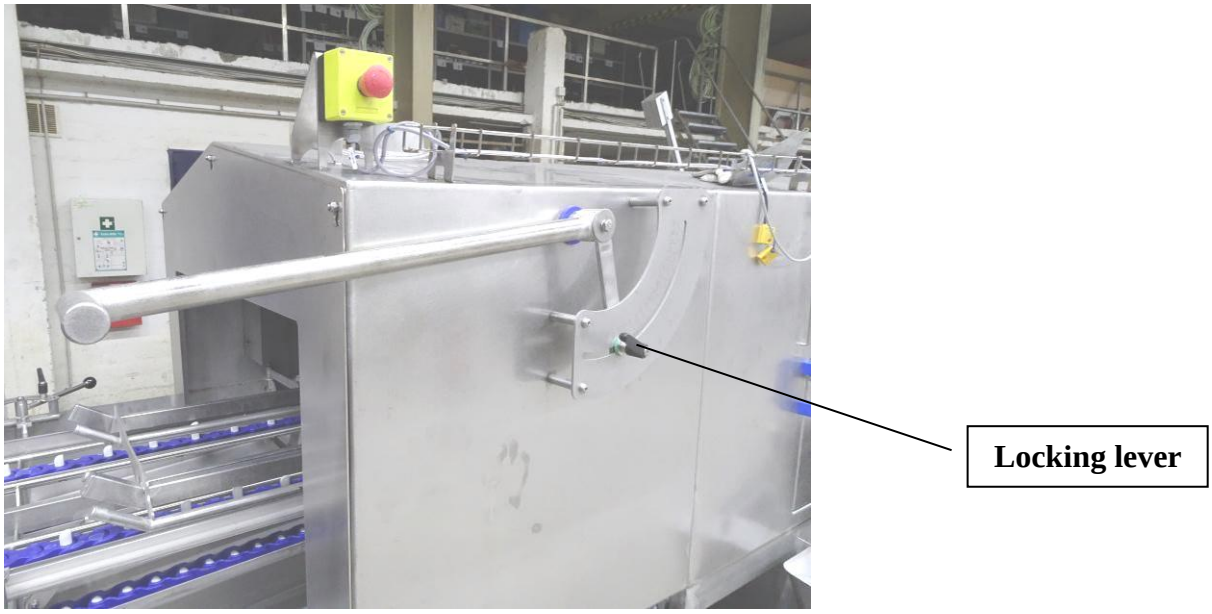
(Figures are partly similar)



The ball valve manometer should be opened only shortly for measuring purposes.
When the ball valve keeps being opened for a longer term, the manometer can be damaged!

Washing settings hold-down device

(Figures are partly similar)

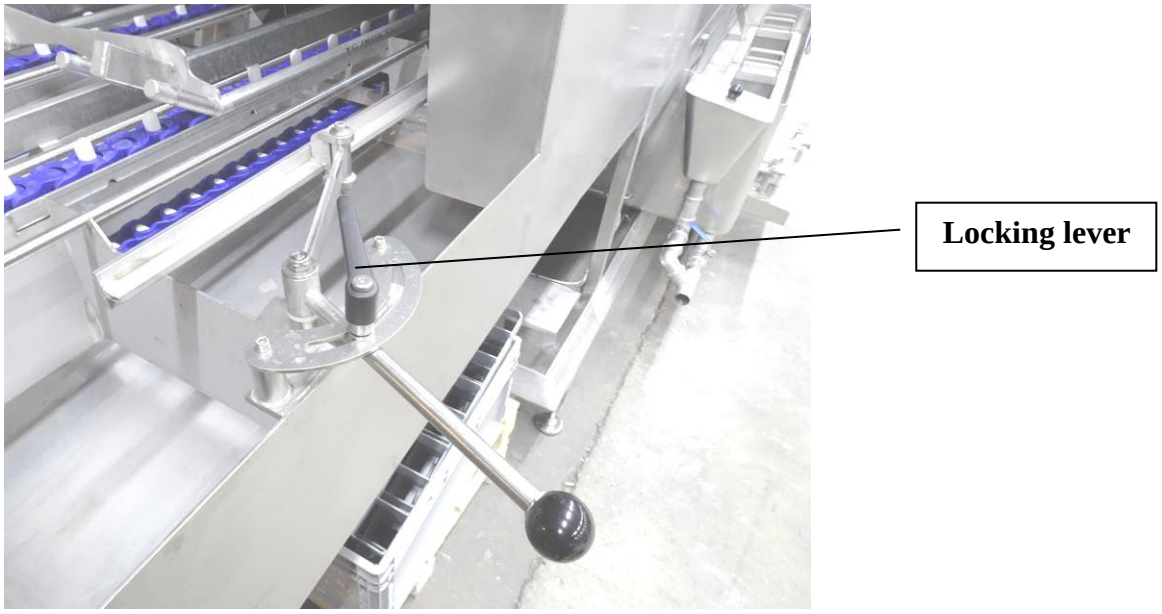


For each type or size change, the hold-down device has to be readjusted to the items to be washed! For this purpose, the locking lever is loosened, the hold-down device is brought into the desired position and the locking lever is tightened again.

Always adjust the hold-down device to the items to be washed.

Washing settings of the lateral guide

(Figures are partly similar)

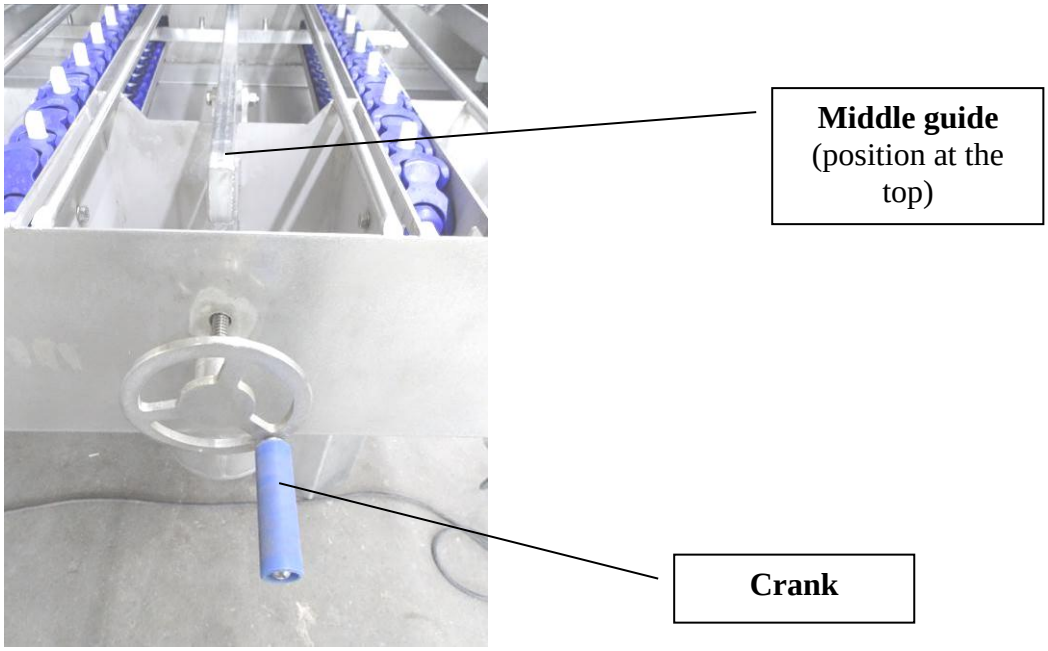


For each type or size change, the lateral guide has to be readjusted to the items to be washed! For this purpose, the locking lever is loosened, the lateral guide is brought into the desired position and the locking lever is tightened again.

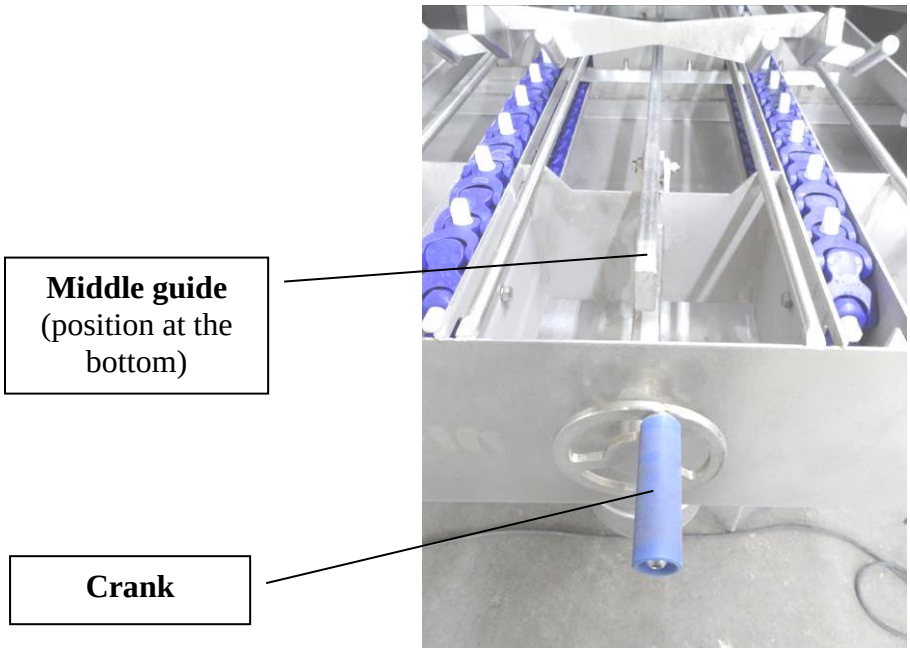
Always adjust the lateral guide to the items to be washed.

Adjustment of the of middle guide

(Figures are partly similar)



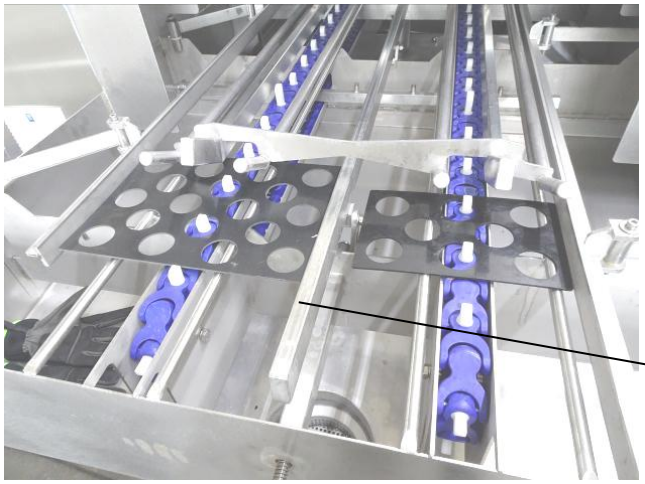
The middle setting is to be readjusted to the items to be washed for each type or size change! For this purpose, the crank is turned and the middle guide brought into the desired position.



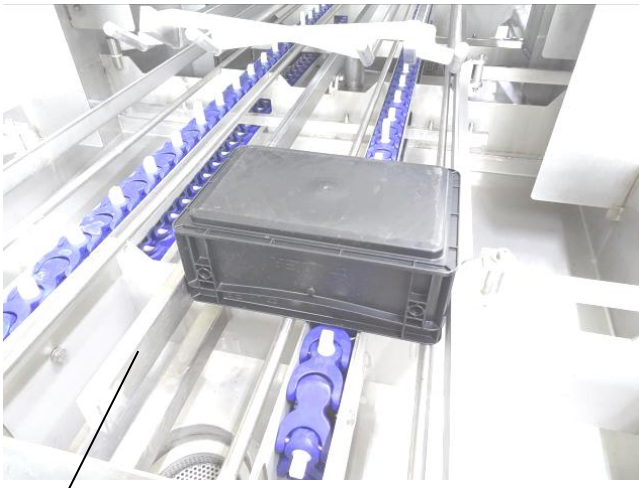
Always adjust the middle guide to the items to be washed.

Properly place the items to be washed

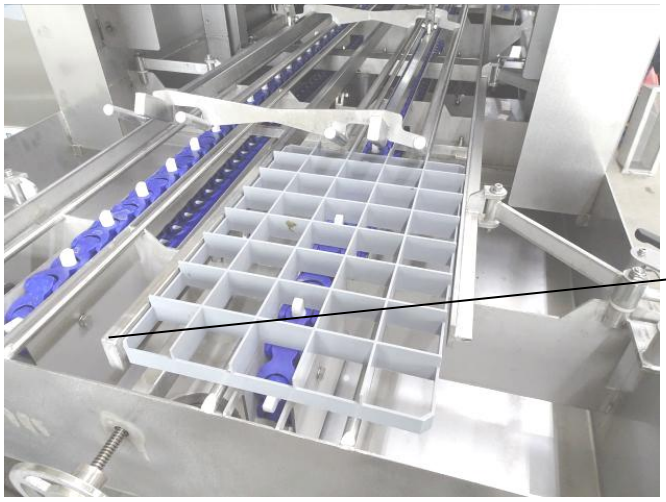
(Figures are partly similar)



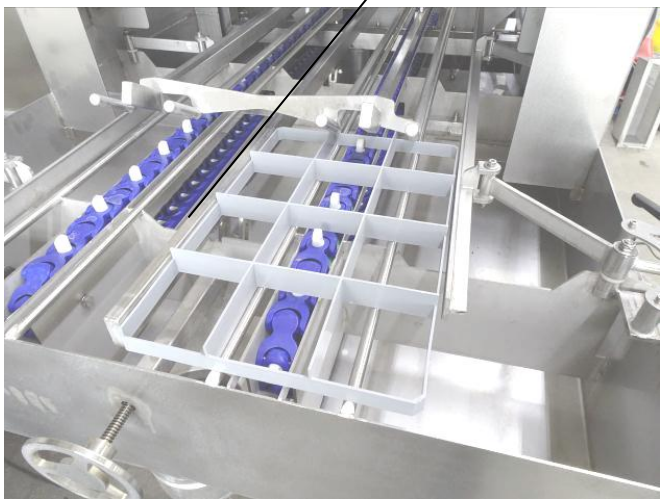
Middle guide at the top

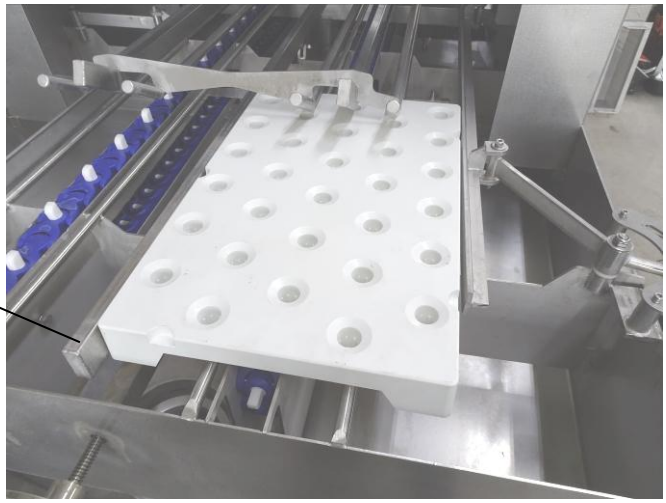


Middle guide at the top

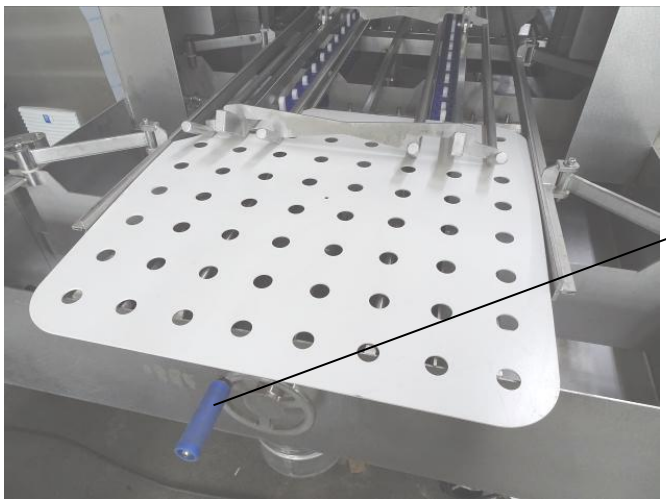


Middle guide at the top

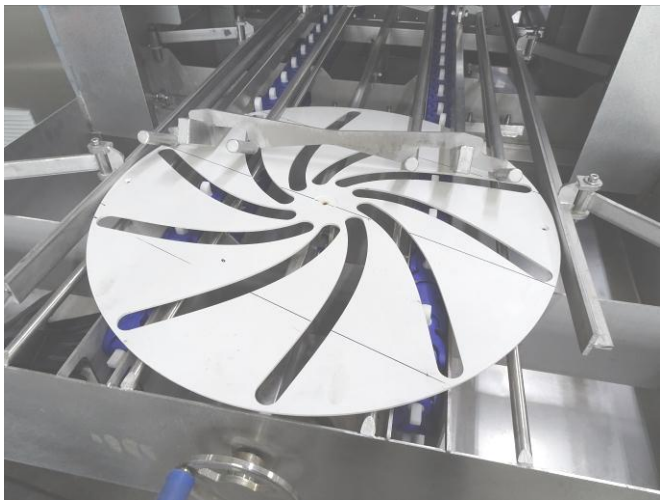




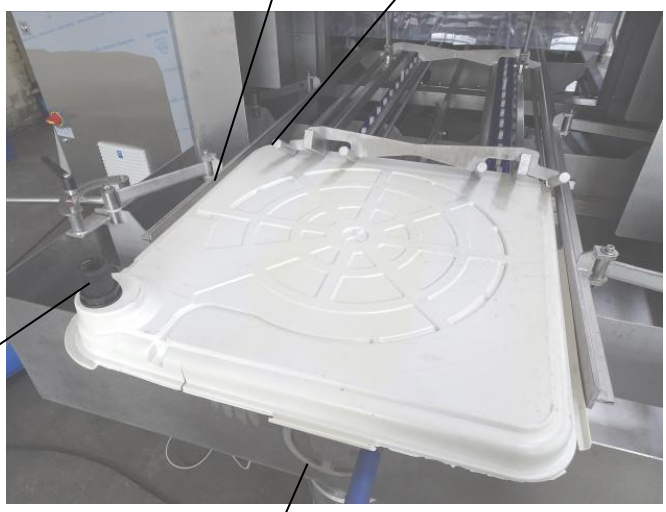
Middle guide at the top



Middle guide at the bottom

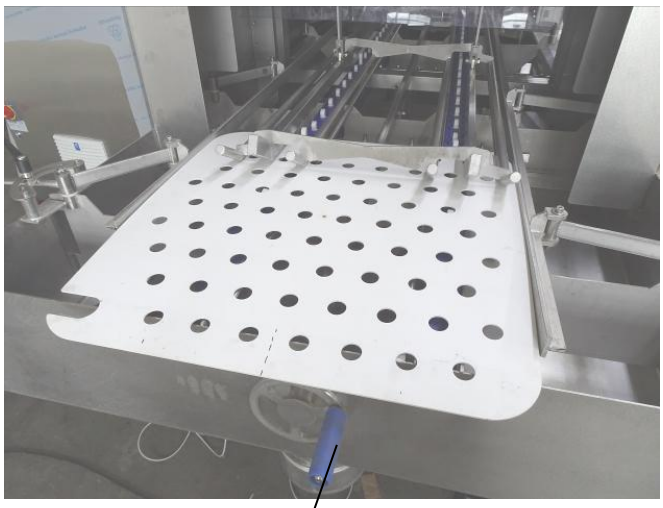


Adjust the lateral guide and hold-down device in such a way that the nozzle does not collide with them!

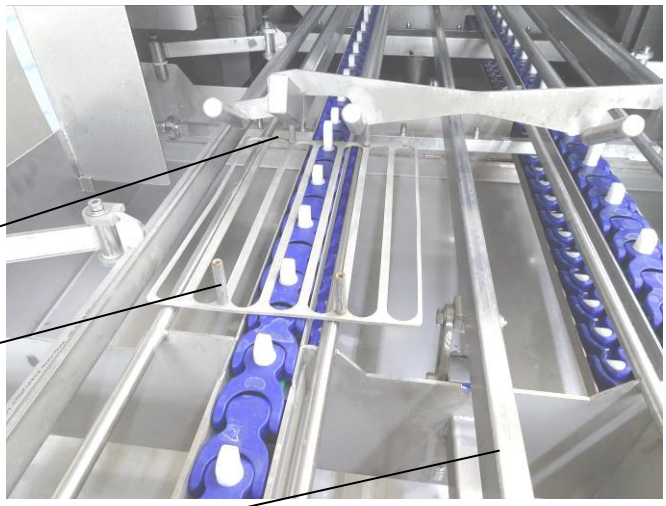


Nozzle/drain
Must always be on the left side when filling!
(Otherwise the items to be washed can be damaged)

Middle guide at the bottom



Middle guide at the bottom



Pay attention to the bolts when adjusting the hold-down device!

Middle guide at the top

Jam switch

(Figures are partly similar)

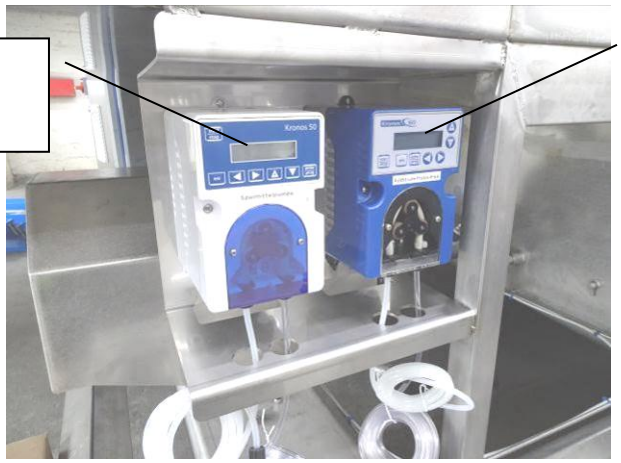
The jam switch is located on the outfeed of the system.

and is monitored by an initiator.

Rinsing agenttechnology

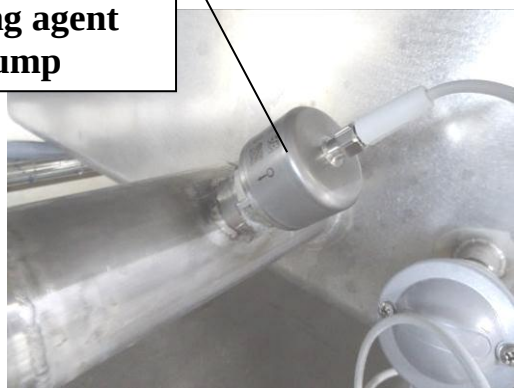
(Figures are partly similar)

Rinsing agent pump

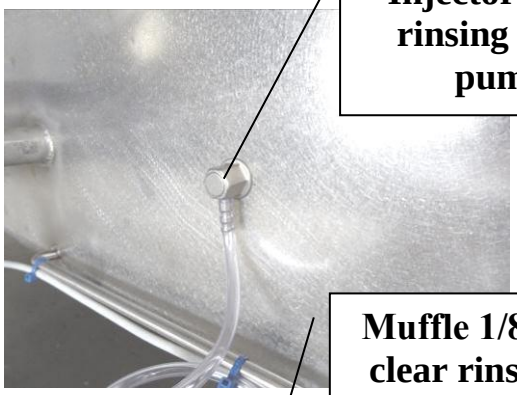


Additive agent pump (Time-controlled)

Probe of the rinsing agent pump

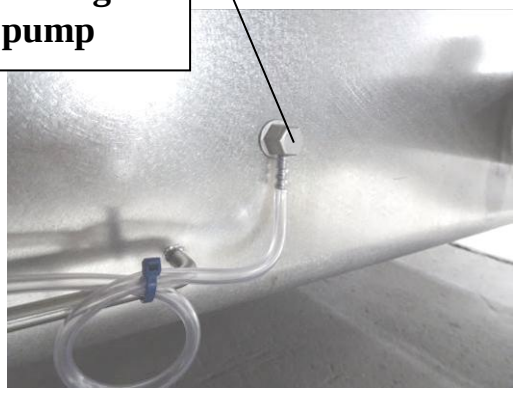


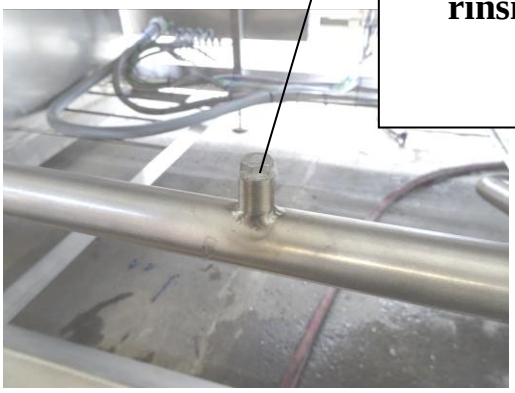
Injector of the rinsing agent pump



Muffle 1/8“ in the clear rinsing line prepared for later connection of clear rinsing agent

Injector of the additive agent pump



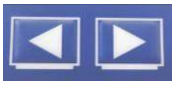


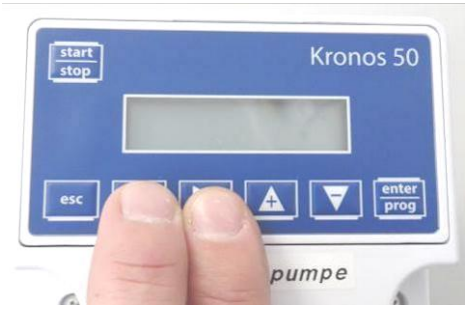
The clear rinsing agent pump and the additive agent pump are located at the front side of the system, the injectors are located laterally in the washing tank and the guide value measurement is in the suction line of the washing pump.

Resetting the rinsing agent pump (factory setting)

(Figures are partly similar)

First disconnect the power supply from the rinsing agent pump,

press the two buttons “left + right”  simultaneously,



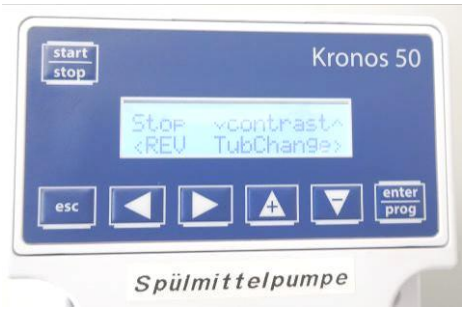
first restore the power supply of the pump.

The rinsing agent pump restarts.

Using the “minus“ button, set the display “Init. Default” from “No“ to “Yes“,

and confirm with the Enter button.

Now the rinsing agent pump is reset to the factory settings and can or must be newly set



Peristaltic hose change of the rinsing agent pump

(Figures are partly similar)

When the pump is in normal operating mode,

it must be first stopped by pressing the start/stop button.

Next, the plastic disc must be removed using a Phillips screwdriver.

Remove 2 screws

Now the access to the peristaltic hose is free.

Remove both connections (suction and pressure side) below the pump by screwing off the screw connection.

Both connections (suction and pressure side) below the pump have been dismounted.

On the “suction side”, pull the peristaltic hose out of the guide,

press the right arrow button until the pump wheel starts turning forward.

When the pump wheel is in forward movement, simply guide along the peristaltic hose until

it is completely out.
Now the “pressure side” can also be pulled out of the guide.

The peristaltic hose is now removed from the pump.

The forward movement of the pump wheel can now be completed by renewed pressing

of the 

or 

button.

On the “pressure side”, insert the new peristaltic hose into the guide,

press the left arrow button, (keep pressed) until the pump wheel start turning slowly backward.

When the pump wheel is in backward movement, simply guide along the peristaltic hose until

it is completely inserted. Now also insert the “suction side” into the guide.

The backward movement of the pump wheel can now be completed by renewed pressing

of the 

or 

button.

Reconnect and retighten both connections (suction and pressure side) below the pump.

Finally, the plastic disc must still be screwed down using the Phillips screwdriver.

Do not do that too tight, because it might be damaged!

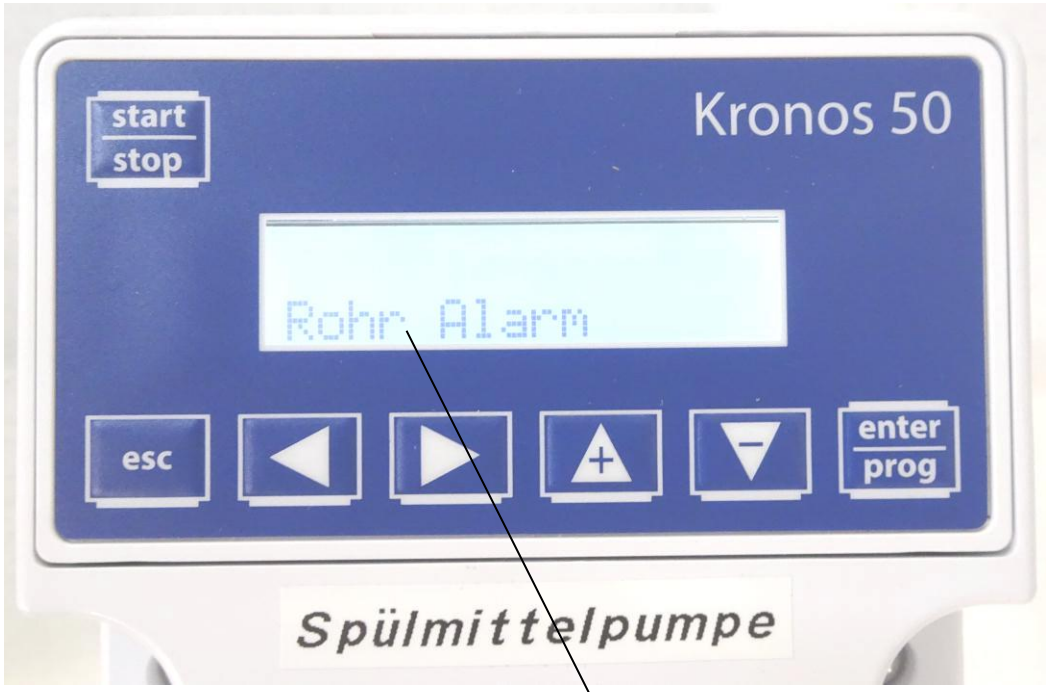
Now the rinsing agent pump with the new peristaltic hose is again ready for use.

Connection "suction side" (rinsing agent can)

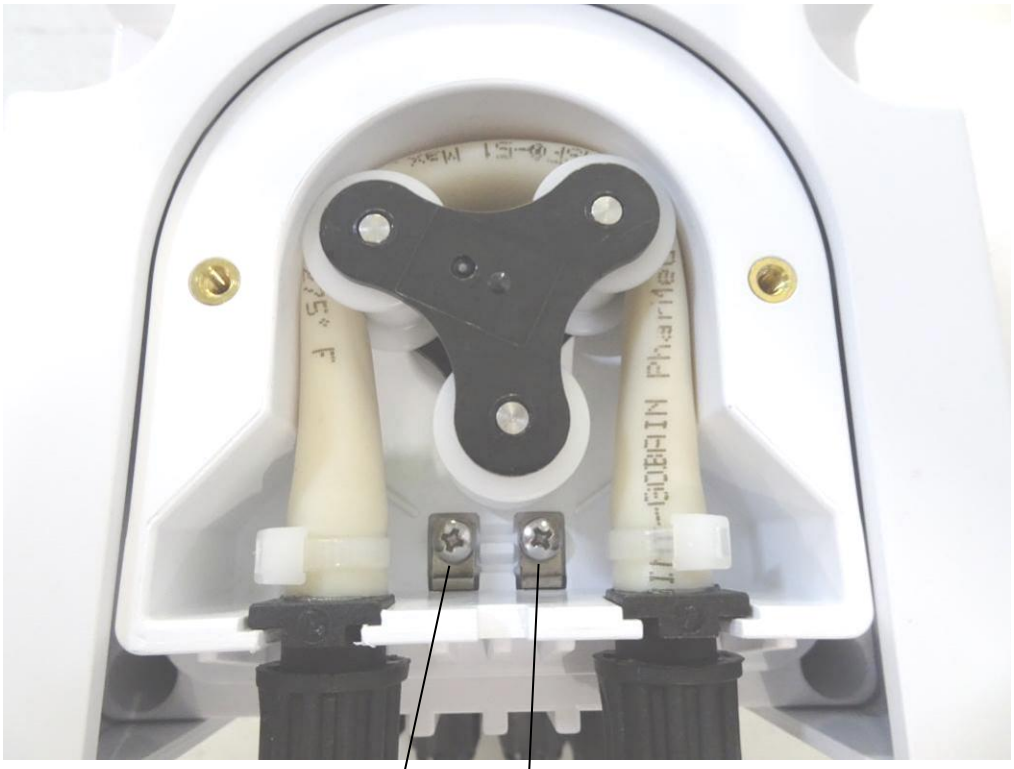
Connection "pressure side" (washing tank)

Error message “pipe alarm“ on the rinsing agent pump

(Figures are partly similar)



This error message of the pump states that the peristaltic hose of the pump is damaged and rinsing agent has escaped.



Via these measuring contacts it is measured if the hose has been damaged and thus rinsing agent has escaped.

In case of improper care of the pump, it might occur that the peristaltic hose is not damaged or worn, but that due to soiling of the pump or the measuring contacts this error message was triggered!

In this case, the pump should be first cleaned and checked if the peristaltic hose is actually damaged or worn!

In case of hose rupture, the peristaltic hose has to be immediately replaced and pump be cleaned!

Adjusting the additive agent pump (rinsing agent pump)

(Figures are partly similar)

Press start/stop 

, immediately press Enter 

Language appears on the menu

Press 

enter and language is selectable by using +/- 

Confirm the selected language by pressing Enter 

.

Once the arrow  to the left, it appears

„PROG configuration“

→ Press  Enter

It appears 

“Pump function”

→ Press  Enter

“mA mode“, “PPM mode:“, “1:N mode:“,“N:1 mode:“, “Batch mode:“, or “Manual mode“ is flashing,

Using +/-  change to 

“Pump function” Manual mode

and confirm with

→Confirm  .

Once press arrow left  , it appears the menu 

“Max. flow rate” → Press  Enter

using +/-  , change to “percentage”, thereby the hourly output will also change.

→ Enter 

Press five times the arrow left  , it appears the menu 

“Trigger” → Press  Enter

Using +/-  , set to “Trg 1” → Enter  → Esc 

It appears

“PROG configuration“

→Esc  → Save?

“Yes” is pre-set → Press Enter 

if “No“ all settings get lost!

Troubleshooting washing system

In principle: All relevant machine parts are activated; control voltage is activated; EMERGENCY-STOP button is not activated

No.	Symptoms	Possible cause	Remedial action
1	Non-functioning pumps and heaters	• Water level too low • Float switch defective • Safety switch tripped	✓ Check fluid level ✓ Check float switch ✓ Check the belt exit switch ✓ Check EMERGENCY-STOP button
2	Indicator lamp "FILL" does not turn off	• Fresh water pressure too low • Drain tap open • Float switch incorrectly configured or defective	✓ Check and adjust if necessary ✓ Close it ✓ Check and replace if necessary
3	Conveyor belt does not convey	• Conveyor belt turned off • Conveyor belt wedged • Overload rocker has triggered • Frequency regulator defective	✓ Switch on ✓ Check, eliminate the cause ✓ Check, eliminate the cause ✓ Check, replace if necessary
4	Individual pumps without function	• Pump blocked by foreign objects • Blown fuse	✓ Have pump checked by a qualified technician ✓ Clean intake paths, filter systems ✓ Have the safety switch of the control cabinet checked by a qualified technician
5	Washing temperature insufficient	• Fresh water supply temperature too low • Flow temperature of the heating medium too low (optional) • E-heating rods calcified/defective • Steam pipe leaky/defective (optional) • Thermostat setting incorrect	✓ Check temperature and adjust if necessary ✓ (see technical data) ✓ Clean ✓ Replace (qualified technician) ✓ Adjust (qualified technician)

6	Items to be washed are not conveyed by the belt	• Uneven washing height • Pump pressure too high	✓ Only wash items of a single type ✓ Place correctly in the guide rail ✓ Check pump (qualified technician)
7	Cleaning performance inadequate	• Belt speed too fast • detergent dosing pump defective • Washing temperature too low • Filter or nozzles blocked • Nozzle pipe incorrectly mounted • Suds very dirty	✓ Configure correctly ✓ Check and replace if necessary ✓ Check setting ✓ Clean ✓ Install correctly ✓ Change
8	Clearly visible pressure drop at the washing nozzles	• Clogged pump intake connector • Clogged filter	✓ Clean ✓ Clean
9	Tank is not filled with fresh water	• Closed inflow tap • Clogged water filter • Float switch defective • Sticking solenoid valve • Flow pressure too low • Non-return valve contaminated/defective • 2/2-way magnetic valve contaminated/defective	✓ Open ✓ Clean ✓ Check ✓ Check, replace if necessary ✓ Check, configure a higher setting ✓ Clean/Replace non-return valve ✓ Replace solenoid valve

Warranty and liability

Duties of the operating company

The operating company is obligated to allow only personnel to work on the machine

- who are familiar with the fundamental regulations for occupational health and safety and the prevention of accidents and have been trained to handle the machine.
- have read and understood this operating manual (in particular the section on safety and warning signs) and have confirmed this with their signature.

Regular checks shall be made to ensure that the personnel are working in a safety-conscious manner.

Duties of the personnel

All persons assigned to work on the machine obligate themselves before starting work

- to comply with the fundamental regulations for occupational health and safety and the prevention of accidents.
- to read the section on safety and the warning signs in this operating manual and to confirm with their signature that they have understood them.

Warranty and liability

As a matter of principle, our “General Terms and Conditions of Sales and Delivery” apply. These have been available to the operating company since conclusion of the contract at the latest. Warranty and liability claims in the case of personnel injuries and damage to property are excluded if they are attributable to one or more of the following reasons:

- Use of the machine other than for its intended purpose
- Incorrect assembly, commissioning, operation and maintenance of the machine
- operation of the machine with defective safety devices or safety and protective devices that have not been properly fitted or are not functional
- disregarding the instructions in the operating manual with regard to transport, storage, assembly, commissioning, operation, maintenance and setup of the machine
- Unauthorised structural modifications to the machine without consulting the manufacturer

- Inadequate monitoring of machine parts that are subject to wear and tear
- Repairs that have not been carried out properly

- catastrophes due to external influences and force majeure.

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Meinerzhagen, February 18, 2021