



Ultrasonics.Steam.Ultraclean.

Operating Manual



Elmasteam 4⁵ • basic • basic HP • basic HPW • med • med P

Steam Jet Cleaner



• English •

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1

General

This operating manual is an integral part of the scope of delivery. It must be kept easily accessible near the machine and also remain with the machine in the event of resale.

We reserve the right to make changes from the design shown in this operating manual due to technical further developments.

An operating manual cannot take into account every conceivable possibility. For more information or for issues that are not or insufficiently covered in this manual, please consult your dealer or the manufacturer.

2

Important safety instructions



Strictly observe the following before start-up

Strictly observe the following before start-up!

Read through this manual carefully before use and only use this electric machine in accordance with the instructions included here. Also observe any country-specific safety regulations in addition to the instructions in this manual.

Exclusion of liability

The manufacturer shall not accept any liability in the event of injuries to persons, damage to the machine or product to be cleaned which has been caused by improper use contrary to the instructions in this operating manual. The owner shall be responsible for training the operating personnel.

2.1

Notes for using this manual

Read through this manual carefully before use and only use this electric machine in accordance with the instructions included here.

Symbols in this manual



This symbol warns about the risk of injury from electricity.



This symbol warns about the risk of injury from hot surfaces.



This symbol warns about the risk of injury from hot surfaces and vapours.



This symbol provides a general warning about the risk of injury.



This symbol indicates a risk of property damage.



This symbol indicates supplementary information.

Signal words in this manual

- Danger** The "danger" signal word warns about the risk of severe injuries that could be fatal.
- Warning** The "warning" signal word warns about the risk of severe injuries.
- Caution** The "caution" signal word warns about the risk of minor to medium injuries.
- Attention** The "attention" signal word warns about the risk of property damage.

2.2

Description of the warnings on the machine



Caution: Hot surfaces/Hot vapours



Notice (only applicable for machines with optional water pump):
For the connection to the water supply system, the minimum water pressure of 1.6 bar must not be undercut and the maximum water pressure of 6 bar must not be exceeded. Parts in the machine can be damaged.



Notice on pressure tank screw cap:

- Do not open at pressure above 0 bar
- Hot surfaces/Hot vapours
- Replace pressure tank screw cap annually (chapter 7.4.1)
- Only fill with water

2.3 Important instructions for using the machine

Use the Elmasteam steam jet cleaner in accordance with the operating instructions. The manufacturer shall not accept any responsibility for the safety of persons and the functionality of the machine in the case of improper use.

Intended use This steam jet cleaner is exclusively intended for cleaning objects. Living beings must never be sprayed with steam!
The machine is only permitted to be used in the industrial sector. For use as medical product, see additional instructions in *chapter 2.4*.

Operating personnel Only authorised qualified personnel who are familiar with the operating instructions are permitted to operate this steam jet cleaner. Unauthorised persons, particularly children must not operate this machine.

Inspection for possible transport damage Check the machine for possible transport damage after unpacking. Do not start up the machine in the event of recognisable damage. Contact the carrier and supplier immediately in this case.

Installation Install the machine on a stable, level and dry surface. Protect against ingress of moisture.

Mains power connection For safety reasons, the machine must only be connected to a grounded power socket in accordance with the regulations. The technical details of the rating plate must match the available connection conditions, particularly mains voltage and connected load.

Prevention of electrical accidents For the prevention of electrical accidents and damage to the machine, the machine must never be sprayed with steam or exposed to penetrating liquid.
In the event of damage to the machine or entry of moisture, strictly unplug the mains plug immediately.
The machine is only permitted to be opened by authorised qualified personnel. The mains plug must always be unplugged before opening the machine.

Do not put the machine into operation if any mains connection cable or important parts of the machine such as safety elements or steam nozzle are damaged.

Connector and coupling must be waterproof if an extension cable is used. Warning: unsuitable extension cables can be dangerous.

Pressure tank filling Only operate the Elmasteam steam jet cleaner with sufficiently filled pressure vessel. Any operation with empty pressure tank can result in damage to the machine!

No chemical additives The machine must not be operated with chemical additives in the pressure tank. Only operate the machine with water; see additional instructions in *chapter 5*.

Danger from hot surfaces Hot temperatures occur during operation, particularly on the rear panel of the machine and at the steam discharge nozzle.

Danger from hot steam	<p>There is a risk of scalding from hot steam in the case of incorrect operation!</p> <p>Do not open pressure tank screw cap on the filling tube of the pressure tank at pressure above 0 bar!</p> <p>There must not be any unauthorised third persons in the range of the steam jet. Handle hot steam carefully to avoid injuries.</p> <p>The pressure tank screw cap must be correctly sealed during operation.</p> <p>The outlet of the safety pressure valve is located in the tank cap. Attention! In the event of any possible tripping of the safety pressure valve, steam discharges on the underside of the tank cap.</p>
Electrostatic discharge	<p>The outflow of steam at high velocity causes electrostatic charge generated by friction to accumulate on the nozzle as well as on the product to be cleaned. The electrostatic charge developed on the handpiece is continuously dissipated via the ground connection of the device. Depending on external conditions such as insufficient conductivity of the floor and/or shoes, dissipation of electrostatic charge of the product to be cleaned may be impaired.</p> <p>This absolutely harmless but unpleasant state can be sensed as “tingling” or “electric shock” (a similar effect may occur, for example, in carpets or velvet car seats). The discharge that takes place here can be observed as a visible spark discharge from the product to be cleaned to the handpiece.</p> <p>It is recommended in such cases to ground the product to be cleaned or, if necessary, the wrist of the user (e.g. with an ESD wrist strap).</p>
Noise emission	<p>Steam jet cleaners can cause unpleasant noise levels during operation. Use personal hearing protection during the stay in the work area.</p>
Maintenance and repair	<p>Perform the maintenance work described in this manual (<i>chapter 7</i>) at regular intervals to guarantee the function and safety of the machine.</p> <p>Repairs must only be carried out by authorised qualified personnel. Always unplug the mains plug before servicing or opening the machine.</p> <p>Only original parts are permitted to be used for repairs.</p>
Machines with permanent water connection Upright Transport	<p>Close the water supply of the pump at the water tap after operation or if the machine is unsupervised.</p> <p>The machine is only permitted to be stored and transported upright when the pressure tank is filled; otherwise residues can clog the steam valve.</p>
Cleaning result	<p>The user is responsible for checking the cleaning result.</p>
Exclusion of liability	<p>Elma Schmidbauer GmbH shall not accept any damage and warranty claims if:</p> <ul style="list-style-type: none">• the product is used for any other than the intended purpose specified in the operating manual• unauthorised technical modifications have been made to the product by third parties

- the product is not serviced at a service point authorised by the manufacturer or has not been repaired using original spare parts
- the product is further used despite recognisable safety defects or damage
- external forceful impact
- the specified maintenance tasks have not been performed.

Storage and transport conditions

It must be ensured that damage is avoided during storage and transport of the machine. Storage or transport at temperatures below freezing point must always be avoided. Freezing water in the steam jet cleaner can have lasting adverse effects on the function. The unit before storage or transport empty see *cap. 7.2*

Temperature during storage: +5 C (+ 41 F) to + 40 C (+ 104 F)

Temperature during transport: -15 C (+ 5 F) to +60 C (+ 140 C)

Humidity and air pressure during storage and transport:

10% - 80% relative humidity; non-condensing

Pressure range 500 hPa – 1060 hPa absolute

2.4

Instructions for use as medical product

Intended purpose

The Elmasteam 4⁵ med and Elmasteam 4⁵ med P products are used for the precleaning of difficult to access places on medical instruments. This precleaning does NOT replace the subsequent cleaning, disinfection or sterilisation in automated standard processes (e.g. cleaning and disinfection unit or autoclave).

Elmasteam steam jet cleaners are particularly suitable for:

- cleaning of joint areas of jointed instruments
- cleaning of serrated areas of, for example, tweezers
- cleaning of scorched tissue material on electrosurgical instruments (e.g. bipolar tweezers)
- precleaning of drill bits and milling cutters (drill / milling head with, for example, tissue residues, bone meal)
- precleaning of the lumen of hollow medical instruments

In the case of thermolabile instruments, the steam cleaning must be clarified in advance with the instrument manufacturer (steam temperature *chapter 3.4*).

The plastic-coated part of the instrument is not permitted to be sprayed with steam (risk of detachment) for the precleaning of instruments made of composite material (e.g. steel/plastic for bipolar tweezers).

Intended use

Steam jet cleaner for manual precleaning or post-treatment of instruments.

Only reusable medical products authorised for the reprocessing are permitted to be steam cleaned (see the medical product manufacturer information according to EN ISO 17664). The machine is only permitted to be operated by trained personnel. Operation and placement must be performed in accordance with the conditions and media defined in the operating manual. The service intervals and regional regulations for checking the equipment must be complied with.

Disinfecting instruments before cleaning

Before the steam jet cleaning, instruments must be disinfected in accordance with the manufacturer information, e.g. in disinfectant solution according to the VAH list (Verbund für Angewandte Hygiene e.V.).

Protective measures for the user

Strict compliance with all safety instructions must be observed, particularly the wearing of suitable protective clothing (coat, hood, gloves (heat-resistant), mouth protection and face protection (visor)).

Hazard from aerosols

Aerosols which can contain pathogens are produced during steam cleaning of medical instruments.

For the protection of the personnel in the instrument cleaning area, it is strongly recommended to use suitable extraction equipment and drainage equipment (e.g. Elma steam workstation with autonomous extraction and Hepa filter).

3 Product description

3.1 Scope of delivery Elmasteam 4⁵ basic | basic HP | basic HPW | med basic | med P

- 1 basic machine with 4 litres tank capacity
- 1 service hose
- 1 mains cable
- 1 filling sieve
- 1 actuation clamp
- 1 flushing set
- 3 O-rings for pressure tank screw cap
- 1 pressure tank screw cap
- 1 water connection hose (Elmasteam 4⁵ med P)
- 1 fixed nozzle (Elmasteam 4⁵ basic)
- 1 wall bracket (optional accessory)
- 1 operating manual
- 1 information sheet first start-up
- 1 information sheet water quality and rinsing interval
- 1 information sheet warranty conditions

3.2 CE conformity

This Elmasteam steam jet cleaner fulfils the CE marking criteria according to the following EU Directives:

- Low Voltage Directive
- EMC Directive
- Medical Products Directive (Elmasteam 4⁵ med and Elmasteam 4⁵ med P)
- RoHS Directive

The declaration of conformity can be requested from the manufacturer.

3.3 Functionality

- | | |
|-----------------------------------|--|
| Pressure generation | Water is heated to approx. 155 °C using a powerful heater in a manually or automatically filled pressure tank. A relative steam pressure of approx. 4.5 bar is produced in this way. |
| Steam output | The steam is provided via the nozzle. |
| Operating medium | Tap water with the usual local water hardness or preferably deionised water. For operation with pump, the conductivity value of the water must be at least 15 µS/cm (for additional information, see <i>chapter 5</i>). |
| Saturated Steam (Optional) | Steam and hot water are thereby mixed from the pressure vessel. The mixing ratio can be adjusted via the rotary knob for wet/dry. |

3.4 Technical Data

	Elmasteam 4 ⁵ basic basic HP	Elmasteam 4 ⁵ med basic	Elmasteam 4 ⁵ med P basic HPW
Mains voltage (V)	220-240 115 - 120	220-240	220-240
Mains frequency (Hz)	50 / 60	50 / 60	50 / 60
Max. power consumption (W) 220 – 240 V	2800	2800	2850
Max. power consumption (W) 115 – 120 V	1650	-	-
Rated power at 230 V (W)	2130	2130	2180
Rated power at 115 V (W)	1540		
Pressure tank volume (litres)	4	4	4
Max. filling volume (litres)	3,3	3.3	3.3
Operating pressure (bar)	4,5	4.5	4.5
Steam temperature at the output of the nozzle (°C)	≤ 155	≤ 155	≤ 155
Min. water connection pressure (bar)	-	-	1.6
Max. water connection pressure (bar)	-	-	6
Dimensions with hand piece W x D x H (mm)	290 x 320 x 420	290 x 320 x 420	290 x 320 x 420
Dimensions with fixed nozzle W x D x H (mm)	250 x 320 x 420	250 x 320 x 420	-
Weight (kg)	6,75	6.75	8.05
Case material	PC/ABS	PC/ABS	PC/ABS

3.5 Safety devices

Elmasteam steam jet cleaners have all prescribed safety devices such as

- Safety relief valve
- Overtemperature protection
- Protection of the electrical contacts against spray water
- Contact protection at the ball valve

3.6 Product description

3.6.1 Elmasteam 4⁵ basic

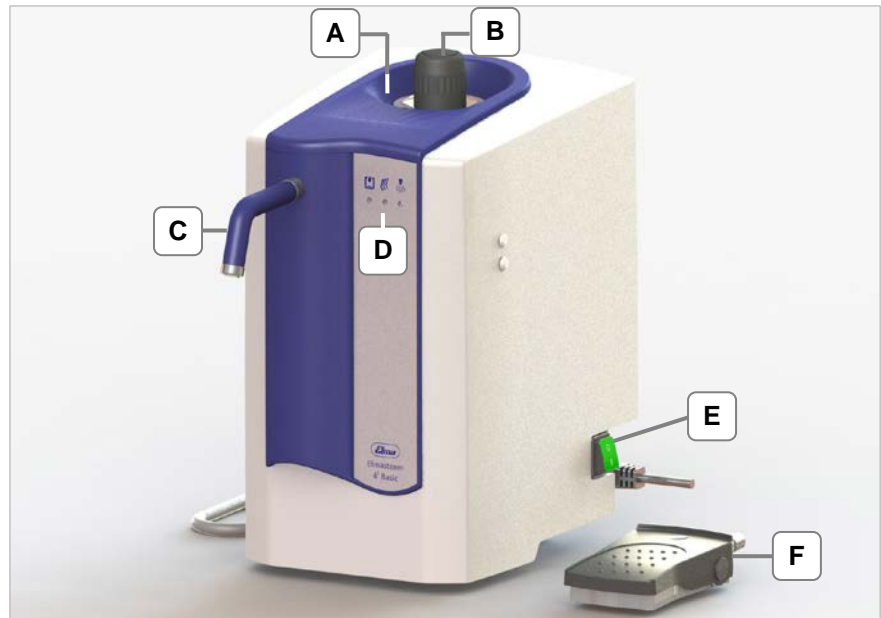


Fig. 3.6.1.1. Elmasteam 4⁵ basic

- A** Collecting basin for overflowing water
- B** Pressure tank screw cap: filling opening for manual filling
- C** Fixed nozzle
- D** Operation indicators
- E** Mains power switch (I) = ON / (0) = OFF
Reset after refilling and signalisation *pressure tank empty* (chapter 5.2)
- F** Foot switch

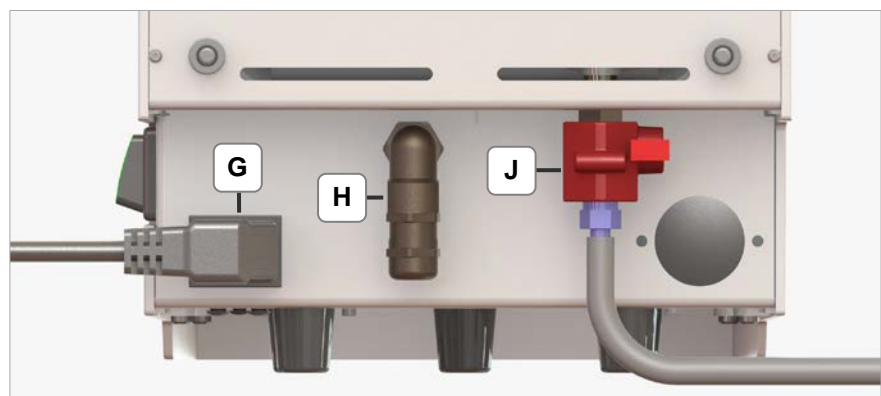


Fig. 3.6.1.2. Elmasteam 4⁵ basic rear side

- G** Device connector with mains cable
- H** Foot switch connector
- J** Ball valve with plastic contact protection and mounted service hose (chapter 7.2).

3.6.2 Elmasteam 4⁵ basic HP



Fig. 3.6.2.1. Elmasteam 4⁵ basic HP

- A** Collecting basin for overflowing water
- B** Pressure tank screw cap: filling opening for manual filling
- C** Flexible hand piece (*chapter 3.8*)
- D** Holder for hand piece | actuation clamp (*chapter 3.8 | 5.2*)
- E** Operation indicators
- F** Mains power switch (I) ON / (O) OFF
Reset after refilling and signalisation *pressure tank empty* (*chapter 5.2*).
- G** Steam hose

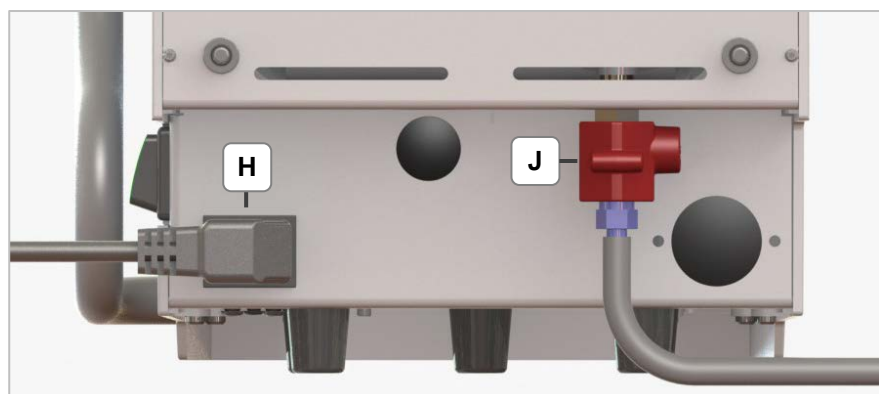


Fig. 3.6.2.2. Elmasteam 4⁵ basic HP rear side

- H** Device connector with mains cable
- J** Ball valve with plastic contact protection and mounted service hose (*chapter 7.2*).

3.6.3

Elmasteam 4⁵ med basic | med P



Fig. 3.6.3.1. Elmasteam 4⁵ med basic | med P

- A** Collecting basin for overflowing water
- B** Pressure tank screw cap: filling opening for manual filling
- C** Flexible hand piece (*chapter 3.8*)
- D** Holder for hand piece | actuation clamp (*chapter 3.8 | 5.2*).
- E** Operation indicators
- F** Pressure gauge (manometer)
- G** Mains power switch (I) ON / (0) OFF
Reset after refilling and signalisation *pressure tank empty* (*chapter 5.2*)
Reset for pump *med P* version (*chapter 7.7*)
- H** Steam hose

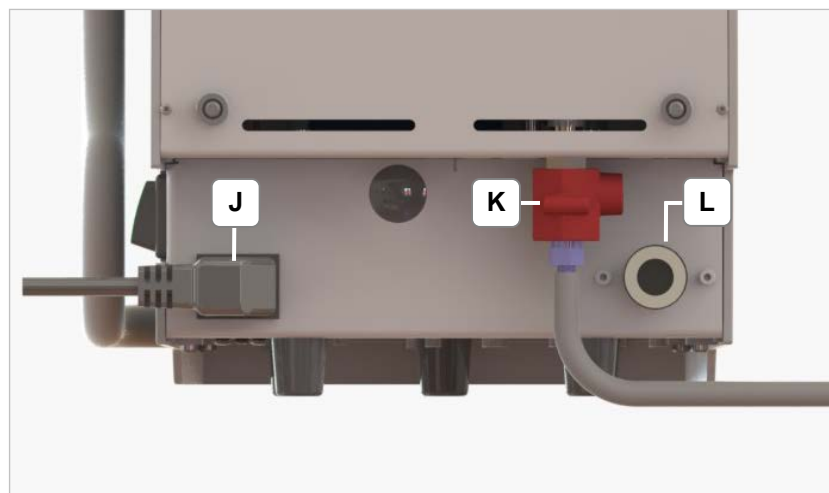


Fig. 3.6.3.2. Elmasteam 4⁵ med basic | med P rear side

- J** Device connector with mains cable
- K** Ball valve with plastic contact protection and mounted service hose (see *chapter 7.2*)
- L** Permanent water connection (only version *med P*)

3.7

Description of LED operation indicators

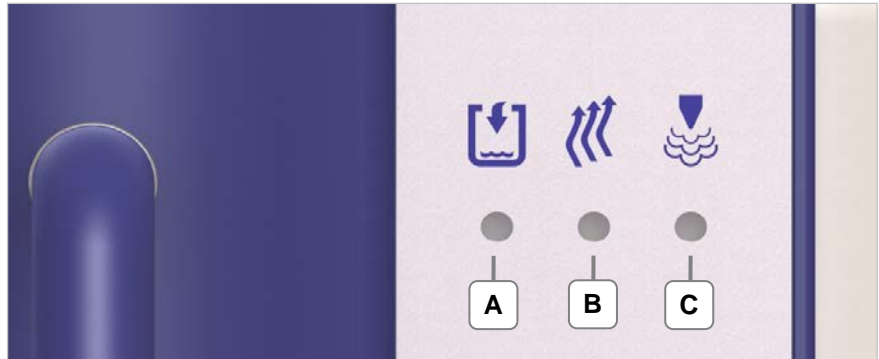


Fig. 3.7. View of front side

- A** Pressure tank empty LED indicator (red)
- B** Heater active (heat / reheat) LED indicator (orange)
- C** Operating pressure reached (indicator can extinguish during operation) LED indicator (green)

3.8

Hand piece description

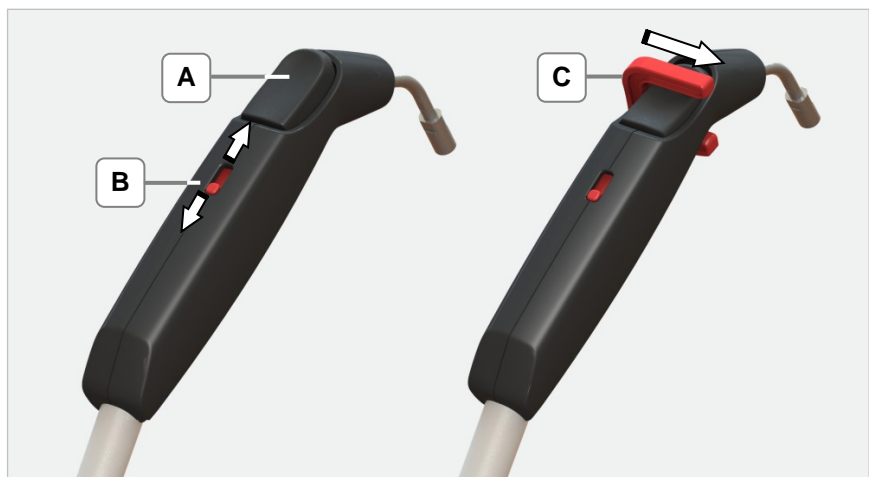


Fig. 3.8. Hand piece without and with actuation clamp

- A** Steam button for activation of the steam dispensing
 The amount of steam can be dosed by depressing the steam button differently:
 Slight pressing at the top edge of the steam button = weak steam
 Firm pressing of the steam button = strong steam
- B** Locking lever for locking the steam button against accidental pressing

Locking: Slide locking lever forward (in the direction of the steam nozzle)

Unlocking: Slide locking lever to the back (in the direction of the steam hose)

- C** Actuation clamp for holding the steam button in place when draining the boiler pressure (during refilling)

Attention! The actuation clamp must not be used for the operation of the hand piece (dispensing steam).

3.8.1

Luer-Lock connector (Elmasteam 4⁵ med basic | med P)

The Luer-Lock connector on the med basic and med P machines is used for the connection of special adapters that are designed for the internal cleaning of hollow body instruments (medical adapter set, catalogue number 102 8820, not included in the scope of delivery). A standard nozzle is attached to the Luer-Lock connector in the delivery condition (see *chapter 6.1.1*).

3.9 Saturated Steam wet/dry (basic HPW)

i Saturated steam is only available on the handpiece.

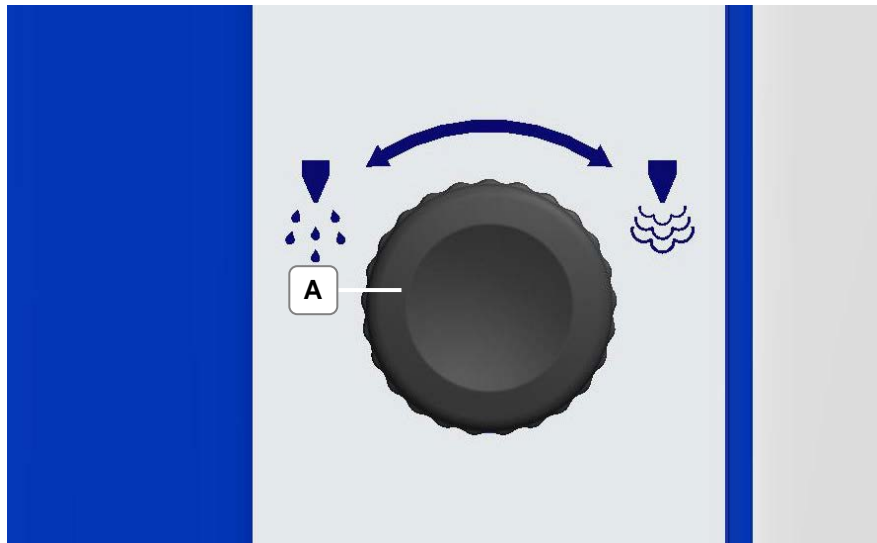


Figure 3.9 Rotary knob wet/dry

Wet Turn the rotary knob (A) to the end-limit "wet" = 100% operating with saturated steam

Dry Turn the rotary knob (A) to the end-limit "dry" = 100% operating with dry steam

The intensity of the mixing ratio of the steam function will be regulated by turning the rotary knob (A) as 0-100%. The mixing ratio can also be adjusted during the steam operation.

3.10 Safety valve

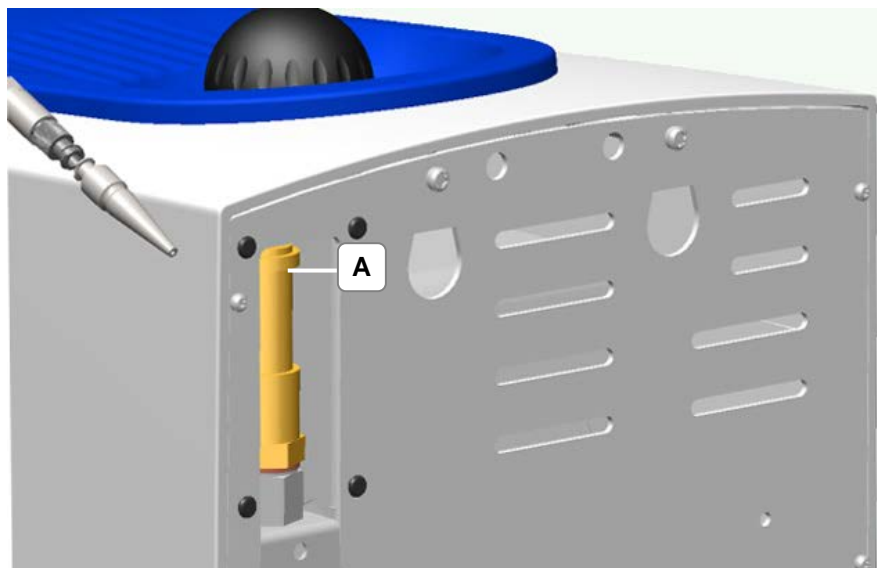


Fig. 3.10 safety valve (A)

i See chapt. 7.5.

4 First start-up

4.1 Installation and connection conditions

Packaging	Keep the packaging if possible or dispose of it properly in accordance with the applicable disposal regulations. You can also return the packaging (at your expense) to the manufacturer.
Inspection for transport damage	Inspect the Elmasteam steam jet cleaner for possible transport damage before start-up. In the case of recognisable damage, the machine must not be connected to the mains power supply. Contact the carrier and supplier immediately.
Installation conditions	Install the machine on a stable, level and dry surface. The air slits on the rear side of the machine must not be covered. Only the original wall bracket (accessory) is permitted to be used for wall mounting. Condensation not permitted.
Ambient conditions	The machine is only permitted to be operated: <ul style="list-style-type: none">• in well ventilated indoor areas• up to a height of 2,000 metres above sea level• at an ambient temperature of 5 - 40 °C [41 - 104 °F] *)• at maximum relative humidity of 80% at 31 °C [87.8 °F], decreasing linearly to 50% relative humidity at 40 °C [104 °F] *)• with mains power supply if the voltage fluctuations are not greater than 10 % of the rated value <p>*) From 5 - 30 °C [41 - 86 °F], the machine can be used with air humidity of up to 80%. At temperatures of 31 - 40 °C [87.8 - 104 °F], the air humidity must decrease proportionally to guarantee the operational readiness (e.g. at 35 °C [95 °F] = 65% air humidity, at 40 °C [104 °F] = 50% air humidity). The machine must not be operated at temperatures above 40 °C [104 °F].</p>
Connecting machine to mains power supply	Connect the Elmasteam steam jet cleaner to a suitable grounded power outlet. The technical details of the rating plate must match the available connection conditions, particularly mains voltage and connected load.

4.2

Fixed nozzle mounting (option)

Ensure that the Elmasteam is switched off and depressurised.

Procedure

1. Remove the blanking plug by unscrewing the nut (*Fig. 4.2.1.A*).
2. Screw the fixed nozzle with the nut (*Fig. 4.2.2.B*) onto the connection nozzle on the machine.
3. Tighten the nut with a $\frac{1}{4}$ turn using a 12 mm open-ended spanner.
4. Slide the black protection sleeve in the direction of the arrow over the nut (*Fig. 4.2.3*).



Fig. 4.2.1 Blanking plug in the delivery condition

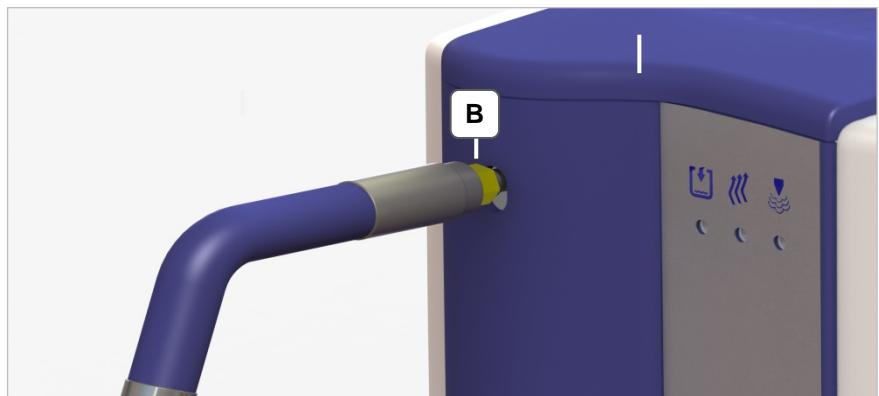


Fig. 4.2.2 Screwing on hand piece

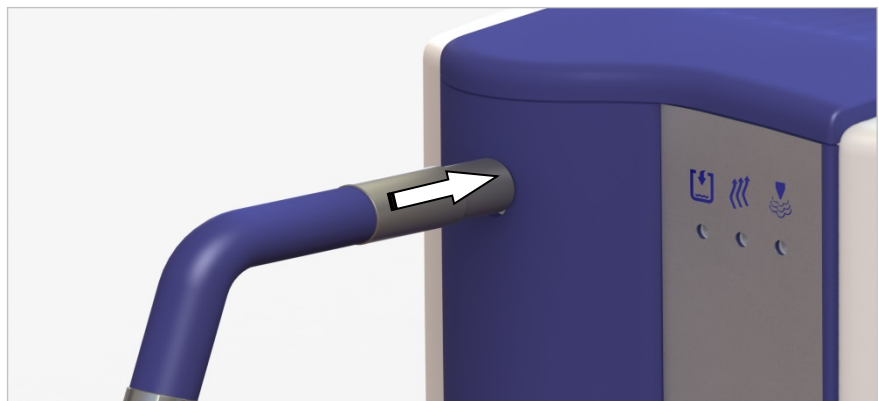


Fig. 4.2.3. Sliding protection sleeve over connection

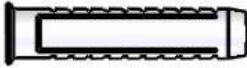



4.3 Mounting of the wall bracket (option)

Walls made of concrete, natural stone, dense structure, solid calcium silicate (lime sand) and solid plasterboard are suitable for attachment of the wall bracket.

Ensure there is a stable base.

Wall bracket fastening material

The following parts are supplied for the mounting of the wall bracket:

(A)	2		Art. No. 1058680 Plug
(B)	2		Art. No. 1058678 Suspension fitting
(C)	2		Art. No. 1066448 Screw
(D)	2		Art. No. 1063024 Spacer

- Procedure**
1. Drill 2 holes \varnothing 8 mm 90 mm apart and minimum 50 mm depth.
 2. Press the plugs (A) as far as they will go into the holes.
 3. Put the suspension fittings (B) on the screws (C) and align the heads of the suspension fittings (B) upwards with the slots.
 4. Turn the screws (C) into the plugs until only the suspension fittings (B) are still visible.
 5. Attach the 2 spacers (D) to the rear side of the machine.
 6. Attach the machine using the openings on the rear side (E) in the installed suspension fittings.

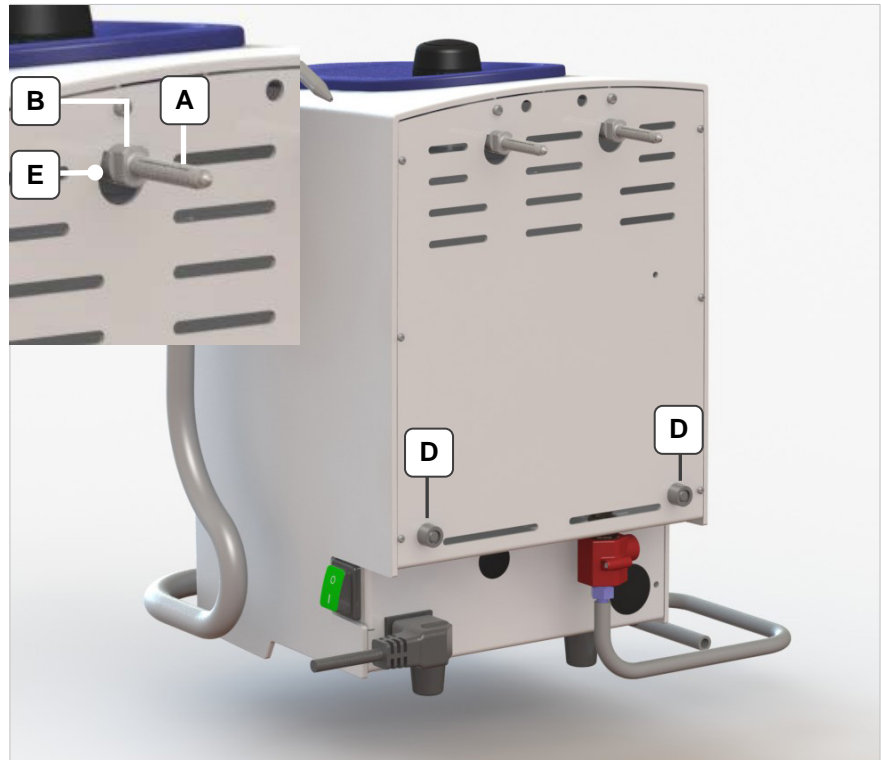


Fig. 4.3. View with plugs in the mounted state

Exclusion of liability

The manufacturer shall not accept any liability in the event of injuries to persons or damage to the machine that has been caused by incorrect mounting or defective quality of the attachment wall.

4.4

Permanent water connection Elmasteam 4⁵ med P

Mounting procedure

Ensure that the Elmasteam steam cleaner is switched off.

The minimum water pressure of 1.6 bar must not be undercut. The maximum water pressure of 6 bar must not be exceeded. Components in the machine can be damaged.

Use the supplied water hose. If required, an extension hose (2 m) can be ordered as optional accessory (106 5691).

1. Put the flat seals included in the delivery (Fig. 4.4.1.A) into the screw thread (Fig. 4.4.1 B and C).
2. Screw the connector (Fig. 4.4.1.B) of the water hose to the water hose connection of the Elmasteam (Fig. 4.4.2.D | 4.4.3.F)
3. Connect the water hose to the water line (Fig. 4.4.3.E).
Pay attention to correct and secure fastening of the water hose.



Fig. 4.4.1. Water hose (included in delivery)

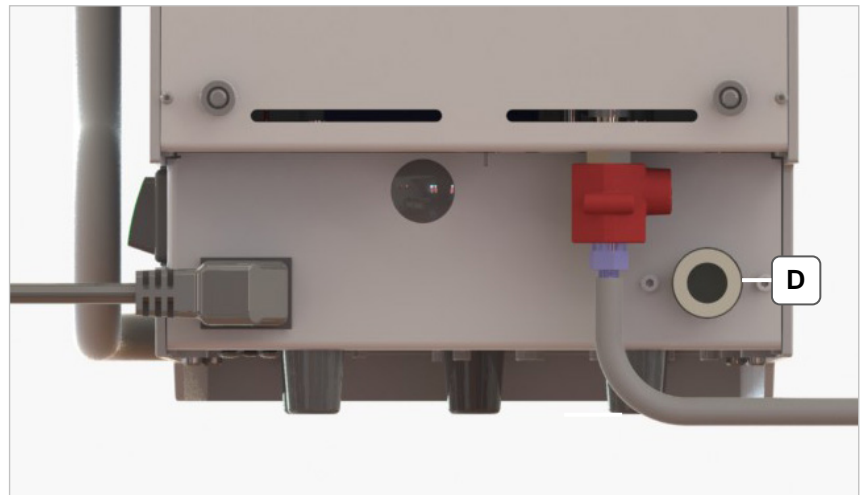


Fig. 4.4.2. Machine connection (D) to the water supply (water pipe)

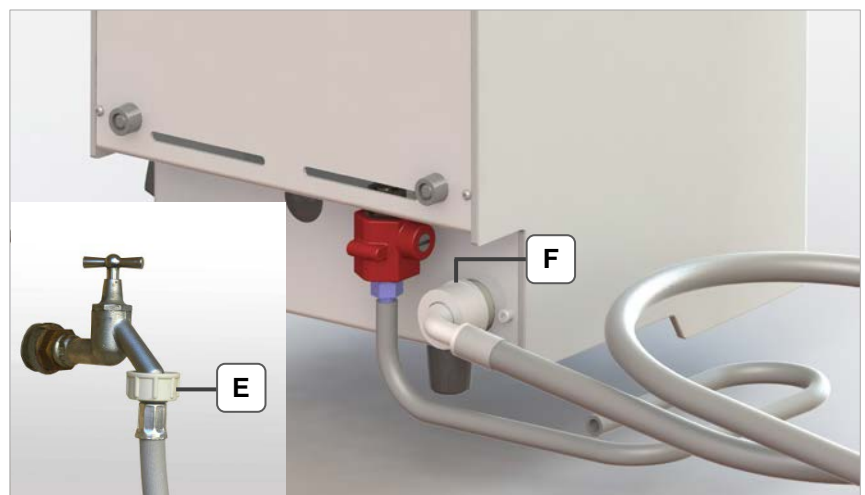


Fig. 4.4.3. Connected water hose

5 Filling the machine

5.1 Requirements for water quality



Basically, the machine is only permitted to be operated with drinking water or demineralised water*.

*Elmasteam 4⁵ med P with integrated pump:

If the conductivity of the water <math><15\mu\text{S}/\text{cm}</math> or if the conductivity is unknown, 1 level teaspoon of table salt must be added to the pressure tank during initial commissioning (one-time only!). Dissolve the salt in a glass of water and fill into the filling opening.



The salt does not pass into the steam phase and thus remains in the machine; therefore the addition is only necessary during initial commissioning or after decalcification of the machine (see *chapter 7.2*)



The Elmasteam should preferably be operated using demineralised water. This can significantly increase the service life of the machine.



The water quality significantly affects the maintenance intervals (see *chapter 7*).

5.2 Manual filling

Start the filling process from point 4 when the machine is depressurised.

First reduce the pressure when the machine is warmed up.



Risk of scalding from discharging steam!

Do not open pressure tank screw cap when the steam pressure is above 0 bar.

Pressure reduction for "Pressure tank empty" indicator

1. Let residual steam pressure escape through the steam nozzle.

1.1. Machine version with hand piece:

1.1.1 Fix the hand piece.

Ensure that the discharging steam does not present any hazard for persons or equipment.

1.1.2 For draining the residual pressure, lock the steam button on the hand piece using the actuation clamp (*Fig. 3.8.C*) or keep pressed manually until no more steam escapes (approx. 40 - 50 seconds).

1.2 Machine version with fixed nozzle:

1.2.1 For draining the residual steam pressure, keep the foot switch pressed until no more steam escapes (approx. 40 - 50 seconds).

Switch off mains power Let machine cool down

2. Switch off the machine at the mains power switch (0) (Reset).

3. After complete depressurisation, the machine must still cool down for approx. 5 minutes to prevent spontaneous steam formation during filling.

Fill pressure tank

4. Open pressure tank screw cap slowly (an integrated pressure-ventilation system lets a stem possibly still in the pressure tank escape sideways at the pressure tank screw cap during opening of the screw connection).
5. Place the sieve in the collecting basin (*Fig.5.2.1 | 5.2.2*).



CAUTION

Risk of scalding from discharging steam during filling!

Let pressure tank cool down (see *point 3*)!

Fill pressure tank slowly.

Do not bend over the filling opening of the pressure tank during filling.

6. Fill water slowly!
Note the maximum filling volume of the pressure tank capacity of approx. 3.2 litres.

7. Remove the sieve.



Wipe off water that has overflowed. Encrusted residues can impair the safety mechanism in the pressure tank screw cap.



8. Check the opening of the pressure tank screw cap. In the case of recognisable clogging, replace the pressure tank screw cap for safety reasons.

9. Close the pressure tank screw cap by hand (hand tight).

10. Switch on the machine at the mains power switch (I).

Switch on the mains power switch



If the machine has preciously signalled a minimum fill level using the red LED, this signal is reset by the power off and power on.

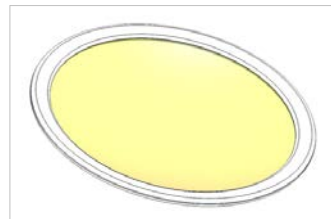


Fig. 5.2.1. Sieve for inserting in the collecting basin



Fig. 5.2.2. Sieve inserted in the collecting basin for the filling process

5.3

Automatic filling with pump (med P)



Risk of brackish water backflow into the water supply!

A system separator must be installed between the water connection on the building side and the Elmasteam to protect drinking water against non-potable water.

The operating company is responsible for the implementation of the measure.

Pump ensures optimum fill level

The pump fills the pressure tank with the optimum filling amount of water automatically. No waiting time are produced due to necessary cooling down phases as for manual filling.



ATTENTION

Risk of water damage from possible detachment of the water hose!

Close the water supply of the pump at the water tap after operation or if the machine is unsupervised.



ATTENTION

Risk of water damage from overfilling of the pressure tank!
Observe requirement for the water quality (see *chapter 5.1*).

1. Before the first filling, fill the pressure tank manually with approx. 2 litres of water (see *chapter 5.2*).

It is expedient for the first filling of the Elmasteam using the pump to unscrew the pressure tank screw cap to let the air escape from the system.

2. Open the water tap for the water supply.

Check the hose connections for leaks and tightness.

3. Switch on the machine.

After approx. 10 seconds, the machine starts filling and heating the pressure tank.

4. Screw the pressure tank screw cap closed again after the automatic filling.



ATTENTION



Further refilling is performed automatically during operation.

Note in the case of incorrectly dimensioned softening cartridges in the water supply line: When the solenoid valve for the water inlet closes, a natural rebound on the line occurs as is also produced when closing a water tap. This can result in damage in the case of too weakly dimensioned softening cartridges.

6

Handling in operation



Risk of scalding from hot steam!

Act cautiously when steam discharge is activated.

Avoid hazardous situations caused by unintended activation of the steam output.

There must not be any unauthorised third persons in the range of the steam jet during the steam spraying.

Lock the steam button using the red lock on the hand piece.

Use of the actuation clamp for the hand piece is only authorised for the pressure reduction process when the machine is switched off!



Danger from hot surfaces!

Hot temperatures occur during operation at the steam discharge nozzle and on the rear panel of the machine.

Requirements

Pressure tank must be filled

Switch on machine

Operational readiness

Holding the workpiece

Suitability of the product to be cleaned

Suitability of the instruments

Disinfection of the instruments before the cleaning

Distance from the steam discharge

Cleaning result

Put the machine into operation as described in *chapter 4*.

Ensure that the pressure tank is filled before starting work. Otherwise, fill the pressure tank as described in *chapter 5*.

Switch on the Elmasteam at the mains power switch.

The machine starts to build up pressure.

Depending on the fill level, the operating pressure of 4.5 bar is reached after approx. 15 - 20 minutes. The green LED indicator lamp signals the operational readiness.

The green LED indicator lamp can extinguish depending on the duration of the steam dispensing.

Steam can continue to be dispensed during the reheating.

Use a suitable aid for the safe holding of smaller workpieces.

Before starting the cleaning, ensure that the workpiece to be cleaned is suitable for this cleaning process. In particular, the thermal and mechanical load capacity must be taken into account.

Instruments must be resistant to steam.

Medical instruments must be disinfected before cleaning (see also *chapter 2.4*).

Keep the workpiece at least 1 cm away from the nozzle in the steam zone. Check the cleaning success at short time intervals (visual inspection) and possible adverse effects on sensitive surfaces of the product to be cleaned.

The user is responsible for checking the cleaning result.

6.1

Working with the flexible hand piece

Observe the safety instructions in *chapter 6*.



CAUTION

Risk of scalding from steam or hot water discharging from the hand piece in the area of the steam button!

Water that has entered the hand piece from outside can heat up strongly or evaporate.

Do not immerse hand piece in water.

Procedure

1. Remove the hand piece from the hand piece holder.
2. Unlock the locking lever (*Fig. 6.1.C*) in the direction of the steam hose.
3. Aim the hand piece into a container or sink for draining possible accumulations of condensation water. Press the steam button briefly until steam discharges.
4. Steam the product to be cleaned.



The amount of steam can be dosed by depressing the steam button differently:

A

Slight pressing at the top edge of the steam button = weak steam

B

Firm pressing of the steam button = strong steam

After the cleaning process

5. Lock the locking lever (*Fig. 6.1.C*) in the direction of the steam nozzle.
6. Put the hand piece back into the hand piece holder.

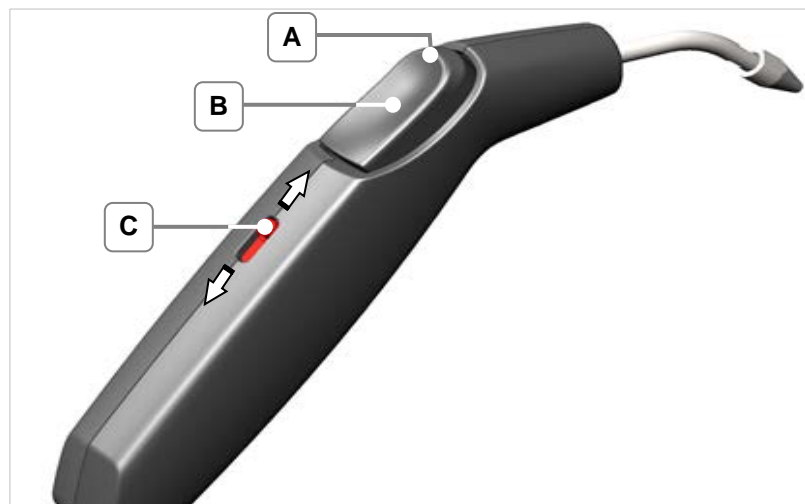


Fig. 6.1. Hand piece description



Accidental actuation of the steam button can be prevented by locking the locking lever:

Lock steam button
Unlock steam button

Slide locking lever forward (in the direction of the steam nozzle).

Slide locking lever to the back (in the direction of the steam hose).

6.1.1 Handling Luer-Lock attachment (med basic | P)



Fig. 6.1.1. Hand piece with Luer-Lock connector

Hollow body instruments that have a Luer-Lock connector can be directly connected to the hand piece of the steam jet cleaner. This guarantees particularly effective internal cleaning of the instrument.

Always observe the specifications of the instrument manufacturer for the conditioning. In particular, thermolabile instruments are not permitted to be precleaned with steam.

6.1.2 Operation with saturated steam wet/dry (basic HPW)

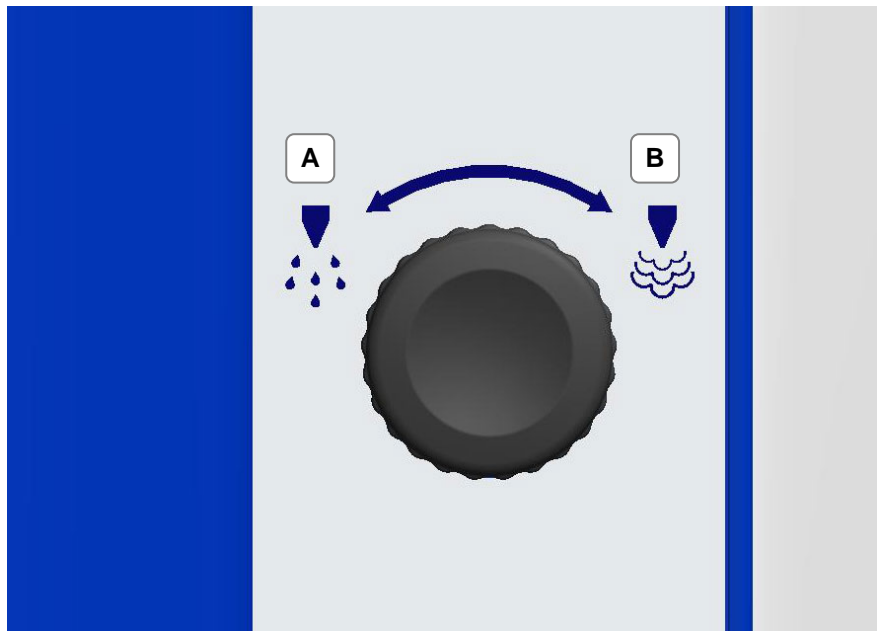


Figure 6.2: Setting the saturated steam function

The percentage of moisture in the saturated steam is set by utilising the rotary knob wet/dry.

wet (A) Regulating the **saturated steam proportion** for the mixing ratio of the saturated steam function.

dry (B) Regulating the **dry steam proportion** for the mixing ratio of the saturated steam function.

- Procedural Method**
1. Turn the rotary knob completely in the direction **wet (A)** for 100% saturated steam.
 2. Turn the rotary knob completely in the direction **dry (B)** for 100% dry steam.
 3. Turn the rotary knob during the steam operation towards wet or dry to adjust the mixing ratio.

6.2 Working with the fixed nozzle

Observe the safety instructions in *chapter 6*.

Actuation using foot switch The steam output at the fixed nozzle is activated with the foot switch.

Depress Activates steam at the fixed nozzle.

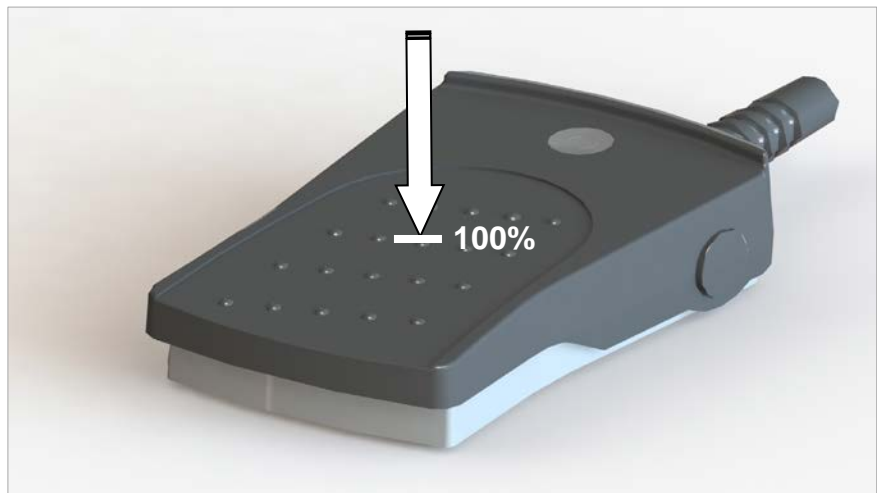


Fig. 6.2. Illustration of foot switch

7

Safety / Maintenance / Repair

Maintenance work is the obligation of the user. Damage to the machine that has been caused by not performing maintenance is not covered by the liability for defects of the manufacturer!

7.1

Regular visual inspections

The following components must be inspected for recognisable damage at regular intervals:

- the mains power cable
- the foot switch and the electrical supply line to the foot switch
- the steam hose, the hand piece and the steam button
- the pressure tank screw cap: replace in the event of internal soiling and residues (*chapter 7.4.1*).
- O-ring of the pressure tank screw cap (*chapter 7.4.2*)
- also check water hose for correct fastening.

In the event of recognisable damage, the steam jet cleaner must be taken out of operation for safety reasons. Restarting is only authorised after repair has been completed.

7.2

Rinse pressure tank regularly

Intervals

Depending on the local water quality, the maintenance intervals shown in the tables in *chapters 7.2.1 | 7.2.2* are applicable.



Use the rinsing set (*Fig 7.2*) included in the delivery.



CAUTION

Risk of chemical burns from steam containing acid!

Never fill decalcifiers or other chemicals in the pressure boiler!

Also only use water for the decalcification process.



Hazard from dangerous excess pressure in the machine!

Lime deposits can result in failure of the safety function of the safety valve.

The owner is responsible for regular rinsing to descale the pressure tank.



CAUTION

Risk of scalding from damaged pressure boiler!

Never fill decalcifiers or other chemicals in the pressure boiler! These can attack and damage the material of the pressure boiler.

Also only use water for the decalcification process.

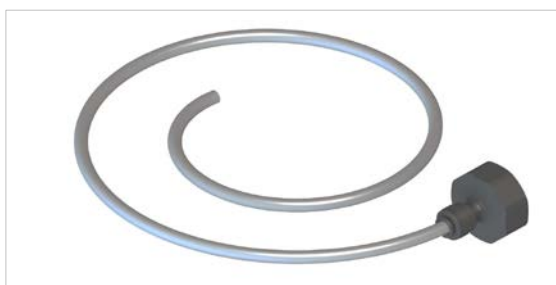


Fig.7.2. Rinsing set for connection to the water tap (3/4")

7.2.1

For water containing lime



Observe the safety instructions in chapter 7.2.

There is the risk of calcification of diverse machine components for operation with mains water containing lime (tap water). The pressure tank must be rinsed by the user in accordance with the table to avoid lime scale damage to the machine.



In the case of continuous operation with tap water, lime sludge and scale accumulate in the pressure tank depending on the hardness of the water. In addition, lime particles detaching from the pressure tank can clog diverse machine components such as valves and nozzles. Polished surfaces can be adversely affected (matted) by such lime particles.

Intervals The following cleaning intervals are specified, depending on the water hardness:

German hardness grade	< 5 °dH	5 °dH - 10 °dH	10 °dH - 15 °dH	15 °dH - 20 °dH	> 20 °dH
Rinsing interval	8 weeks	6 weeks	4 weeks	2 weeks	1 week

Preparation

- Switch off the machine.
- Unplug mains plug.
- Let the machine cool down until it is depressurised (0 bar). After complete depressurisation, the machine must still cool down for approx. 5 minutes to prevent spontaneous steam formation during rinsing.
- Have the maintenance hose included in the delivery ready.

Rinsing procedure

1. Open pressure tank screw cap.
2. Push maintenance hose onto connection nozzle on the ball valve.
3. Position machine so that the maintenance hose protrudes into a sink or sufficiently large container and so that the ball valve can be operated.



Risk of scalding when draining possibly still heated residual water from the pressure boiler!

Wear gloves for holding the hose.

4. Open ball valve using a screwdriver (*Fig. 7.2.1.2*) and first drain any still present residual water.
5. Connect rinsing set to a water tap (3/4" connection).
6. Using the hose from the rinsing set, spray the pressure tank in circular movements.

Continue this process until no more lime residues are rinsed out of the pressure boiler.

In doing so, the water should be able to flow out of the pressure tank quickly*.

7. Close ball valve (*Fig. 7.2.1.3*).
8. Remove maintenance hose.
9. For machines that are operated with a pump in combination with deionised water: Fill 1 level teaspoon of salt into the pressure tank after the rinsing (see *chapter 5.1*).

*If no water flows away despite opened ball valve, this is possibly closed by lime residues:

Remove maintenance hose and clear the opening in the ball valve using a thin object.

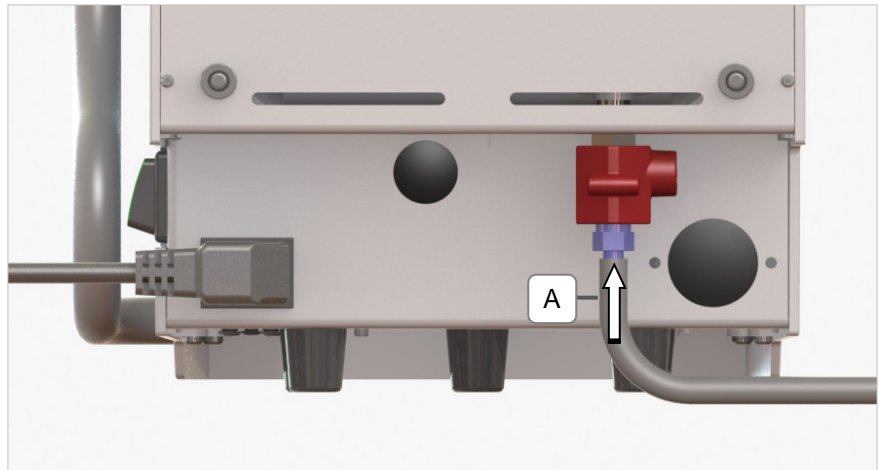


Fig. 7.2.1.1 Connect water hose to the ball valve



Fig. 7.2.1.2 Ball valve opened



Fig. 7.2.1.3 Ball valve closed

7.2.2

For water containing chloride



Regular rinsing is also required for water containing chloride. Otherwise, the chloride concentration in the pressure boiler continues to increase and the forming hydrochloric acid attacks the pressure tank.

Procedure as described in *chapter 7.2.1*.

Chloride content	200 mg/l	150 mg/l	100 mg/l	50 mg/l	0 mg/l
Rinsing interval	2 weeks	3 weeks	5 weeks	6 weeks	8 weeks

7.3

Clean sieve in the water connection (only med P)

The sieve in the water connection can be clogged by particles and minerals in the supply system and the water supply to the machine can be impaired.

Intervals Dependent on the water quality. At the latest if the pressure boiler is no longer filled correctly.

Preparation

- Unplug mains plug
- Close water supply to the machine

Procedure

1. Remove hose on the permanent water connection (*Fig. 4.4.3.F*)
2. Pull out sieve using pliers
3. Clean sieve under running water
4. Replace sieve
5. Install water connection again correctly; check for secure seating and leak tightness.

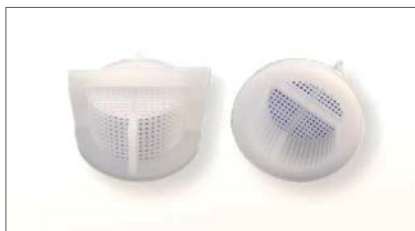




Fig. 7.2.3. Various views of sieve

7.4 Wear parts


7.4.1 O-ring in the pressure tank screw cap

Replacement interval	Dependent on the occurrence of leaks and condition of the material.	
Article number	107 0074	


7.4.2 hand piece-set (HP and med versions)

Replacement interval	Dependent on the function and occurrence of leaks (water drips from the hand piece). Tested service life 15,000 operations. Observe service instructions.	
Article number	108 8215	

7.4.3 O-ring nozzle

Replacement interval	Dependent on the function and occurrence of leaks (water drips from the screw cap). Observe service instructions.	
Article number	105 7949	

7.4.4 Sealing collecting basin

Replacement interval	Dependent on visible wear (e.g. cracks). Observe service instructions.	
Article number	105 7953	

Wear parts are excluded from the warranty.

7.5

Repair

Contact the supplier or manufacturer of this machine for repairs. Repairs require specialist knowledge and are only permitted to be performed by specialist personnel.



Danger of electric shock from live parts in the machine!
Disconnect the machine from the mains power supply before repair work.



Risk of scalding from discharging steam!
Do not open pressure tank screw cap on the filling nozzle of the pressure tank at pressure above 0 bar.
Do not remove parts in the machine that are pressurised above 0 bar.
Let the machine cool down before opening.



Danger of burns from hot surfaces!
Let the machine cool down first before opening.

Only original parts are permitted to be used for repairs.

Under certain circumstances, opening the machine can invalidate the CE conformity.

The manufacturer shall not accept any liability for consequential damage caused by unauthorised opening of the machine.

7.6

Prepare machine for shipment

The following points must be observed if it is required to send the machine to a service point or the manufacturer:

- Empty the machine completely before shipping.
- Disinfect the surfaces.
- Pack the machine securely for transport in a suitable container, if possible in the original carton.

7.7 Troubleshooting

Fault	Possible cause	Remedy
Devices with flexible handpiece: Water or steam escapes from the handpiece nozzle even if the handpiece is not operated.	<ul style="list-style-type: none"> Wear of the seals in the handpiece. 	<ul style="list-style-type: none"> Replace seals in the handpiece or handpiece. See chapter 7.4 and service instructions.
Pressure does not increase to 4.5 bar LED <i>heating</i> lights	<ul style="list-style-type: none"> Pressure tank screw cap is not closed leak-tight. 	<ul style="list-style-type: none"> Close pressure tank screw cap tightly. If necessary replace sealing ring
	<ul style="list-style-type: none"> Heater fault 	<ul style="list-style-type: none"> Send machine to a service point
The <i>Tank empty</i> LED lights even if the tank is full	<ul style="list-style-type: none"> Heavy scale on heater or thermostat 	<ul style="list-style-type: none"> Rinse pressure boiler (<i>chapter 7.2</i>)
	<ul style="list-style-type: none"> Heater already damaged by overheating due to heavy lime deposits 	<ul style="list-style-type: none"> Send machine to a service point
Steam suddenly discharges with short, loud noise development at the safety valve	<ul style="list-style-type: none"> Safety valve has tripped 	<ul style="list-style-type: none"> Take machine out of operation immediately. Send machine to a service point
For med P machines (with pump): Pump no longer delivers water	<ul style="list-style-type: none"> Water supply not opened 	<ul style="list-style-type: none"> Check water supply of the machine
	<ul style="list-style-type: none"> Machine has been switched on with empty pressure tank; thereby the maximum pump time of 2 minutes has been exceeded; pump goes into a fault state and is switched off automatically 	<ul style="list-style-type: none"> Perform initial filling with approx. 2 litres of water Switch mains power switch off and then on again (reset)
	<ul style="list-style-type: none"> Sieve in the water connection is clogged. 	<ul style="list-style-type: none"> Clean sieve (<i>chapter 7.3</i>).
	<ul style="list-style-type: none"> Water pressure too low 	<ul style="list-style-type: none"> ensure higher water pressure

8

Decommissioning and disposal



This machine must not be disposed of in domestic waste (municipal waste bin).

The machine can be sent back to the manufacturer for disposal or delivered to the local waste disposal in accordance with the local waste regulations.

Empty the machine.

Disinfect the surfaces.

9

Manufacturer address/contact address

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