



Read the instruction sheet and the safety instructions before putting into operation and observe them!



Safety Instructions

UK

1. Do not operate machine in fire and explosion hazard areas.
2. Always wear protective clothing when using the Dry Steamer.
3. Do not allow children or untrained personnel to operate the machine.
4. Do not use in areas being used by other operators.
5. The electric supply connection must be installed by experts and must comply with IEC 364.
6. If extension cords are used, plug and socket must be of water-tight construction. The quality of the cord and the cross-section of the conductor must comply with the instructions and the electrical requirements of the machine
7. Use only fuel oil EL DIN 51603.
8. Only use cleaning and preserving agents approved by the manufacturer. Special instructions of use must be observed.
9. The thread connection for the steam hose located at each end and the thread connection at the spray lance must be screwed pressure-tight
10. Do not open the cover during operation. To open first disconnect the machine from the power source
11. DANGER: HOT AREAS: Do not touch hot parts - especially the non-insulated parts of the steam spray lance, the exhaust gas socket and the cover near the exhaust gas socket and non-insulated steam hose couplings.
12. Do not direct the steam jet at people, electrical components or the machine itself.
13. Provide adequate ventilation when operating oil and gas fired machines. Ensure that flue gases are properly discharged.
14. The operator must supervise the machine at all times during operation.
15. Set main switch to "0" and lock "Emergency OFF Key switch" for prolonged stoppage, for maintenance and repair purposes.
16. 15. Be aware of the kickback force of the spray lance. The operator must have a safe stand and hold the gun with the lance with both hands.
17. Do not use the machine if there is damage to the supply cord or other important parts - for example connecting cable, steam hose or spray gun.

18. Disconnect the machine from the electrical power supply for maintenance purposes. Maintenance may only be carried out by qualified personnel.
19. When descaling the heating coil, use only a descaling agent approved by the supplier. Wear protective clothing
20. Only use original spare parts and accessories approved by the manufacturer.

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Appendix

- Trolley with holder for steam hose

1. Use of application

The hot steam jet of this oil-heated machine removes rough grime, oil, grease, graphite and other dirt from industrial and production machines, plant equipment and can be used for decontamination and disinfection.

2. Technical data

Volume flow	
	DRY 23 kg/h
	WET 48 kg/h
Steam temperature	
	DRY 180 °C
	WET 160 °C
Mains connection	400 V 3 AC 60 Hz
Remote control, protective low voltage	24V DC
Nominal consumption	18,5 kW 25 A
Heat capacity	18 kW
Fuel oil consumption, fuel oil EL	max. 72 dB (A)
Fuel oil tank – contents	23 Liter
Noise emission, sound levell	max. 75 dB (A)
Measured outside at a distance of 1,6 m from the machine surface and 1,6 m above the ground.	
Dimensions	
	Length with trolley 1150 mm
	Length without trolley 980 mm
	Width 640 mm
	Height 1040 mm
Weight	140 kg

3. Description

3.1 Configuration

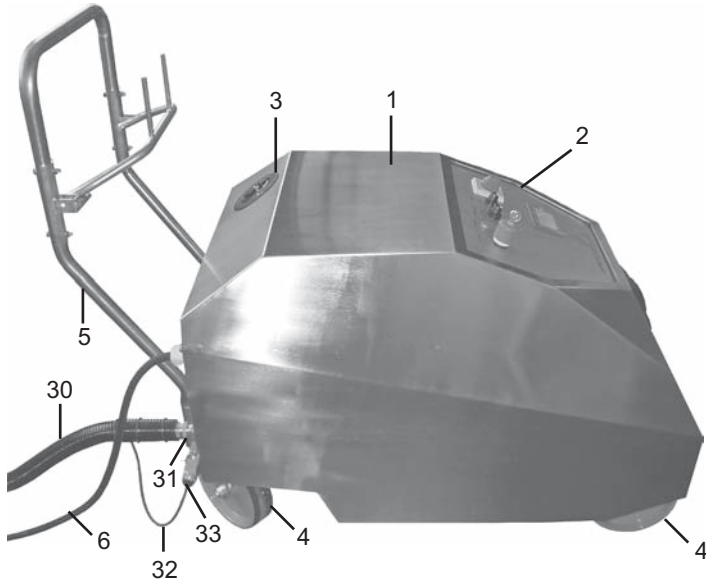
The dry steamer is a mobile, electrically heated machine consisting of trolley, steam generator, water pump with electrical motor, detergent dosing pump , electrical housing, water tank, anti-scale protection system and steam jet lance with remote control gun.

The water tank is equipped with level monitors.

On the pressure side of the pump, the machine is equipped with a pressure gauge and a non return valve.

The steam hose at the outlet of the steam generator is equipped with:

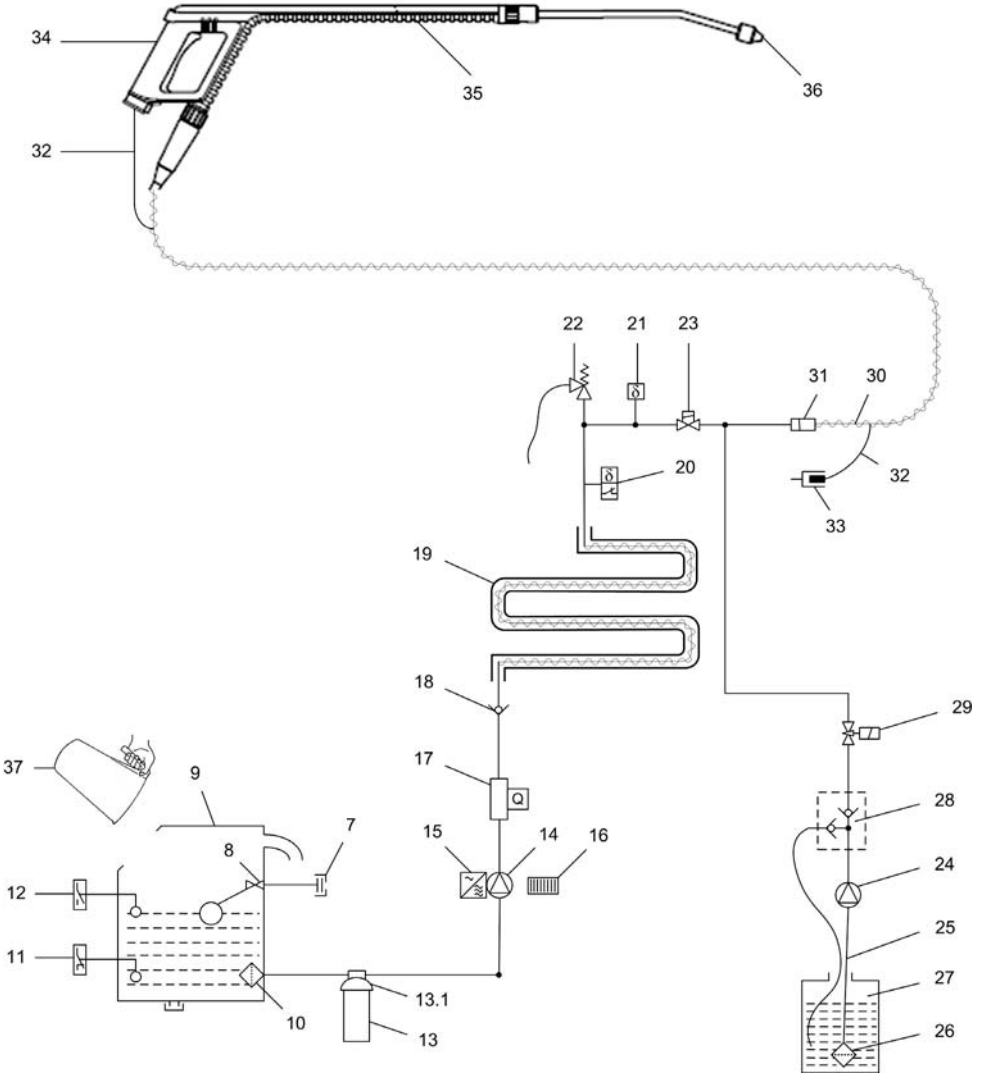
- Safety valve
- Temperature gauge for the control of the heating elements and for the signal “READY FOR OPERATION”
- Temperature limiter for failure control
- Solenoid valve
- Cleaning and preserving agents are added to the steam in different concentrations by means of a dosing pump



- | | | | |
|------|--|----|---------------------------------|
| 1 | Stainless steel hood cover | 19 | Heating elements |
| 2 | Control panel | 20 | Temperature limiter |
| 3 | Opening for alternative water filling | 21 | Temperature monitor |
| 4 | Plastic wheels | 22 | Safety valve |
| 5 | Trolley with steam hose holder | 23 | Solenoid valve START –STOP |
| 6 | Connecting cable | 24 | Dosing pump |
| 7 | Water supply connection | 25 | Suction hose for detergents |
| 8 | Float valve | 26 | Filter at suction hose |
| 9 | Water tank | 27 | Detergent tank |
| 10 | Water filter | 28 | Kickback valve/Air relief valve |
| 11 | Level monitor – Lack of water | 29 | Regulating valve for detergents |
| 12 | Level monitor – Water level too high | 30 | Steam hose with protective hose |
| 13 | Anti-scale protection filter | 31 | Steam hose plug-in coupling |
| 13.1 | Anti-scale protection filter cartridge | 32 | Control cable |
| 14 | Water pump with motor | 33 | Control cable plug-in coupling |
| 15 | Frequency converter | 34 | Remote control gun |
| 16 | Operating hour counter | 35 | Steam jet lance |
| 17 | Flow monitor | 36 | Steam jet nozzle |
| 18 | Backflow valve | 37 | Alternative water filling |

3.2 How it functions

3.2.1 Functional diagram



3.2.2 Water and cleaning and preserving agent system

The incoming water from the main water supply flows past the float valve into the water tank. The water is then pumped to the steam generator. The water tank can be filled from a separate tank. The water volume flow is regulated by means of speed control via a frequency converter. The generated steam is supplied to the steam jet lance by means of the remote control gun. The nozzle at the front end of the steam jet lance then creates the steam jet.

Cleaning and preserving agents are added by means of a dosing pump via kick back/air valves - depending on the program selected.

3.2.3 Steam jet lance with remote control gun

The remote control gun is equipped with an ON/OFF program switch and selector switch for detergents.



The steam jet lance with remote control gun is a safety device. Replacements and repairs may only be carried out by qualified personnel. In case of replacement, only parts authorized by the manufacturer may be used.

3.2.4 Anti-scale protection

The water is descaled by means of a special filter system.

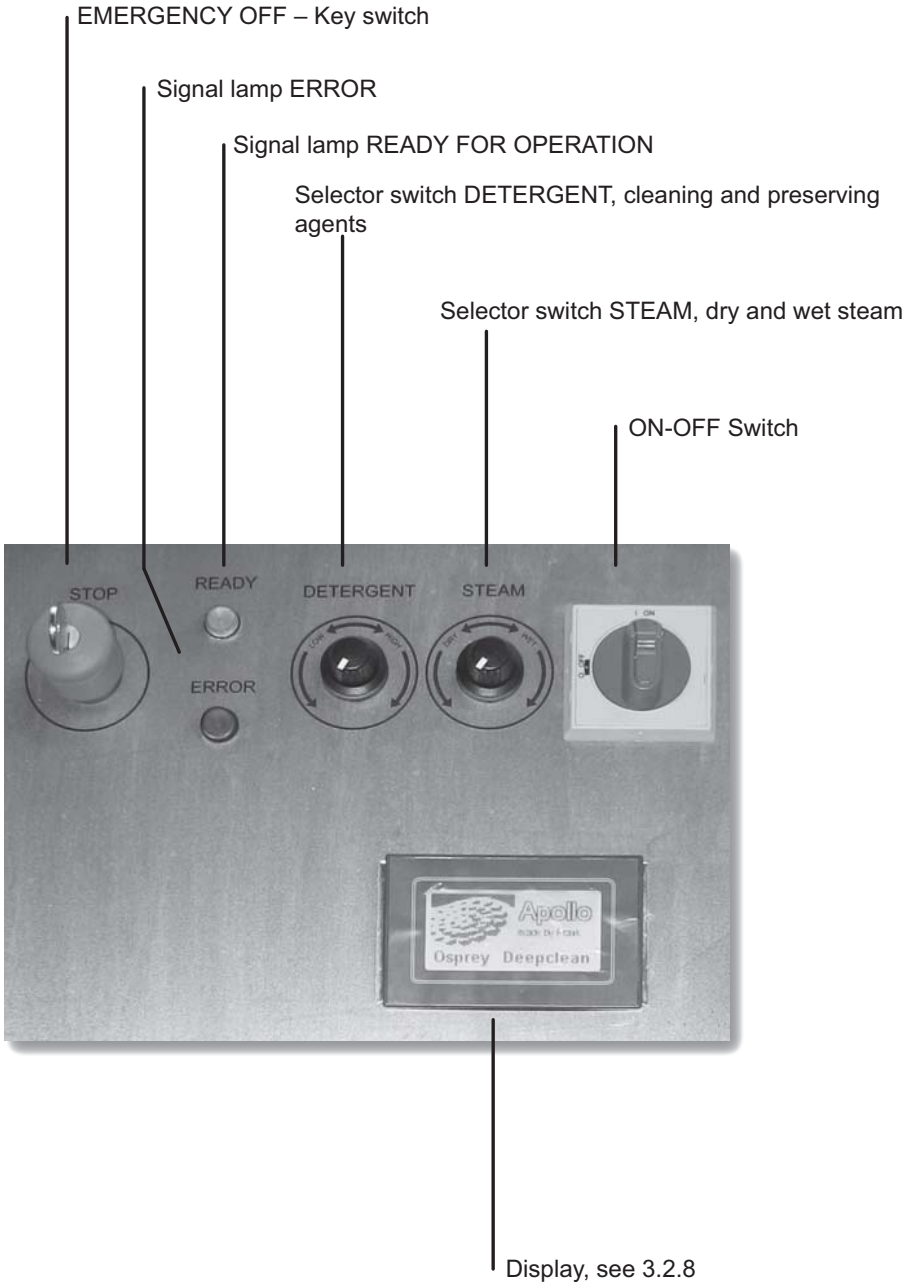
3.2.5 Switch on and off delays

The machine is switched on by actuating the ON/OFF switch of the machine. Thereafter the remote control gun can be used with the following functions:

- With the setting “Steam” or “Steam with detergents” the function of the switch lever is released.
- When actuating the gun switch lever the following actions are released:
- The water pump and the anti-scale protection pump are switched on without delay. The solenoid valve at the steam outlet of the machine is opened. The operating hour counter is switched on.
- The heating elements are switched on with delay
- When releasing the spray gun lever, the following actions are released.

The water pump, heating elements, dosing pump and operating hour counter are switched off with delay

3.2.6 Switches and lamps in the front panel of the machine

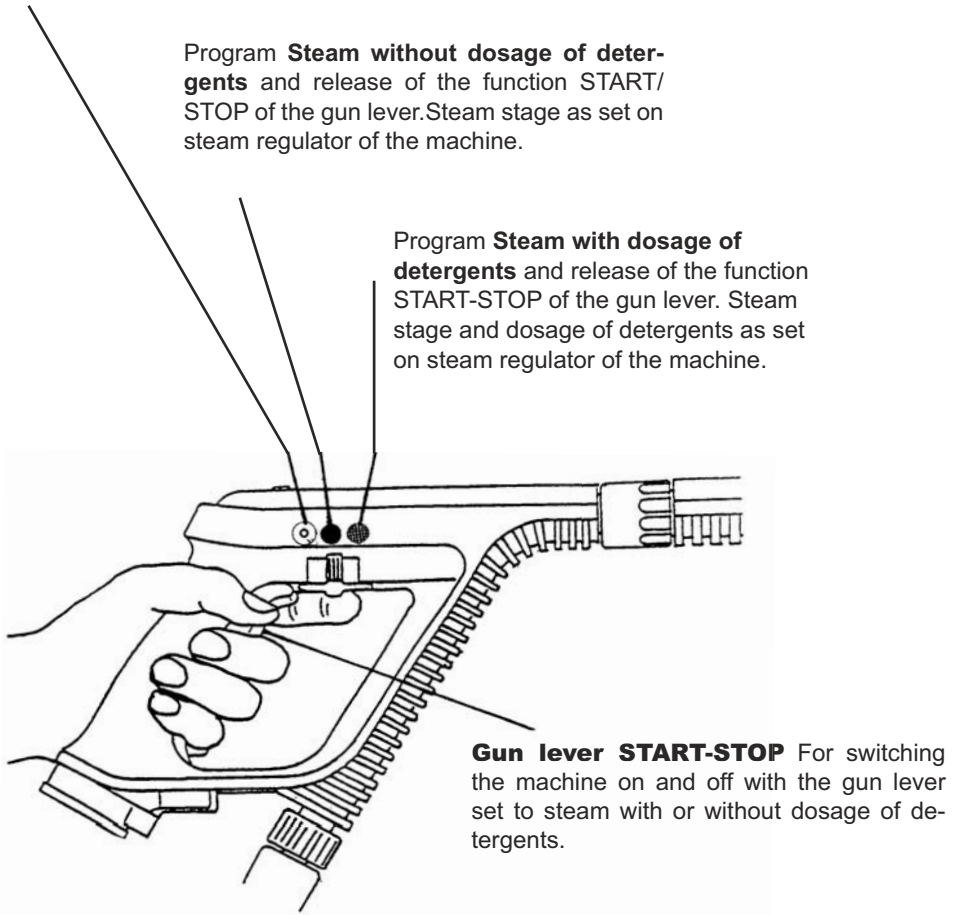


3.2.7 Remote control gun

Remote control with safety extra-low voltage 24 V AC

The gun is to be operated as follows:

Blocks the function of the gun lever



3.2.8 Display of the machine

Following message appears on the display:



<div data-bbox="80 564 299 676" style="border: 1px solid black; padding: 5px; text-align: center;"> <p>error emergency stop</p> </div>	<p>Error message With safety stop of the complete machine</p> <ul style="list-style-type: none"> emergency stop → EMERGENCY/OFF- Key switch is actuated water deficient → Lack of water detergent → Lack of detergents Pump not ready → Malfunction of pump control over temperature → Malfunction of pump control switch temperature → Excessive operating temperature, Temperature limiter blocks complete operation
<div data-bbox="80 834 299 946" style="border: 1px solid black; padding: 5px;"> <p>ready temp.:***C°</p> </div>	<p>ready Status message "Ready for switching on" with temperature indication...°C</p>
<div data-bbox="80 1042 299 1153" style="border: 1px solid black; padding: 5px;"> <p>heating temp.:***C°</p> <div style="background-color: black; width: 100px; height: 15px; margin-top: 5px;"></div> </div>	<p>heating Heating elements are switched on Temperature indication ...°C</p>
<div data-bbox="80 1265 299 1393" style="border: 1px solid black; padding: 5px;"> <p>steam temp.:***C° flow :***ml/min</p> </div>	<p>steam Desired temperature is achieved, machine is ready for operation indication of temperature ...°C and of volume flow ...ml/min.</p>

3.2.9 3.2.9 Flow monitor

Heating elements are switched off in case of low water flow.

3.2.10 Safety valve

The safety valve protects the machine from inadmissible high pressure.

3.2.11 Temperature control

At 140°C, the temperature controller signals “readiness for operation” by means of the green lamp. At a steam temperature of 185 °C there is a fault shutdown by means of a red trouble signal and the blocking of the operation. For restarting the machine the de-locking device must be switched on, see section 5.7 The temperature limiter switches-off the machine completely at a steam temperature of 200 °C. This is a serious failure and has to be cleared and remedied by an expert.

3.2.12 Lack of water

Low water level in the water tank causes a fault shutdown by means of a red trouble signal and the blocking of the operation. Provide sufficient water level and switch on de-locking process, see section 5.7.

3.2.13 Operating hour counter

The operating time of the water pump is counted.

4. Installation

4.1 Location

The machine is not restricted to any particular location. However, it must neither be installed nor operated in fire and/or explosion hazard areas.

5. Operation

5.1 Operating media

5.1.1 Cleaning and preserving agents



Only the cleaning, preserving and anti-scale protection agents approved by the manufacturer may be used since material compatibility can only be guaranteed in this case. Observe the instructions for the use of these agents.

5.2 Preparations for commissioning, factory settings

Compare the specifications on the machine label to the technical data of this operation manual.

Factory settings: In our factory the machine is set and tested for the values specified under section 2. Technical Data.

5.2.1 Trolley, holder for steam hose and tank for cleaning and preserving agents

Mount trolley and holder, see annex.

5.2.2 Electrical supply



The machine comes with a supply cable with mains plug. Insert plug into a properly earthed socket. The electrical supply with socket must conform to the latest issue of the applicable ICE standards and must be installed by a qualified electrician. The socket must be secured with a 32 A slow fuse.

It is recommended to equip the electrical supply of the unit with a fault current monitor type B (AC/DC sensitive) breaking the circuit when the leakage current to the ground exceeds 30 mA for a period of 30 ms.



When using an extension cable this cable must conform to HO7RN-F quality and have a grounded lead wire properly connected to the plug-in connections. The lead wires of the extension cable must have a minimum cross section of 4 mm². The plug-in connections must be splash-proof and must not be placed on wet ground.

ATTENTION: Too long extension cables will cause a voltage drop and thus operating and start-up problems.

5.2.3 Steam hose with control cable and steam jet lance

Tightly screw-fasten the steam hose to the steam supply of the machine by means of the plug-in connection in a way that it is sealed against pressure. Connect control cable to the machine by means of the plug-in coupling. Tightly fasten the steam jet lance to the remote

control gun in a way that it is sealed against pressure. The steam hose and steam lance, which are both a part of the machine equipment, are made of high-quality material, adapted to the operating conditions of the machine.



In case spare parts are needed, only those parts may be used which have been approved and marked by the manufacturer. The steam hose and steam lance must not be run over, excessively tugged at or twisted.

5.2.4 Water connection

The machine must be connected to the water supply using a ½“ hose with an inner diameter of 13 mm suitable for the supply pressure. A minimum supply corresponding to the maximum flow rate of the applicable machine type must be ensured. Flow pressure must be minimum 2 bar. Static pressure must not exceed 10 bar.

5.2.5 Cleaning and preserving agents

Fill suitable cleaning and preserving agents into a 5 l tank. Put full tank on the bracket holder. Insert appropriate suction hose with filter as deeply as possible into the tank.

5.2.6 Hood cover



The machine must not be operated without its hood cover.

5.3 Winter operation

The machine must be installed in such a way that it is protected against frost, especially during operational interruptions.

5.4 Commissioning

Operating personnel must wear protective clothes, protective gloves, ear protectors and safety goggles.

- Connect machine to the power net
- Connect machine to the water network or fill water from a separate tank into the water tank. A too high water level is reported by an acoustic signal
- Fill in cleaning agents
- EMERGENCY - OFF - Unlock key switch
- Set ON/OFF switch to 1-ON, green signal light appears on the display
- Set gun selector switch to STEAM
- Set gun selector switch to DETERGENT

- Set gun selector switch to STEAM WITHOUT DETERGENT
- Actuate gun lever – machine starts

Machine is ready for operation when the green signal lamp is on. After long operational interruptions, when the machine is cold, the green signal appears approx. 3 minutes after having taking the machine into operation. Set steam regulator and dosage of detergents as required.

5.5 Operational interruptions

For short interruptions, release gun lever. Set gun selector switch to 0.

5.6 Taking the machine out of operation

- Release gun lever
- Set gun selector switch to 0
- Set ON/OFF switch on the machine to 0-OFF
- EMERGENCY OFF– Lock key switch
-

5.7 Unlocking after fault shutdowns

Set gun selector switch to 0

6. Maintenance



Maintenance and repair works may only be done by qualified personnel.

6.1 Descaling

The integrated anti-scale protection system prevents limescale deposits in the steam generator and in the steam pipes. In case the anti-scale protection cartridge is not refilled in good time, there will be limescale deposits in the steam system if no softened water is used.



Descaling may only be carried out by qualified personnel. Only use anti-scale agents which are approved by the manufacturer. Observe the instructions for use of the descaling agent. Descaling dilution is corrosive. Protective clothes must be worn. Contact with skin must be immediately rinsed off with water. After completion of the descaling process, the descaling dilution must be properly disposed of.

Fill descaling agent into the 20 l tank and dilute it with hot water as per instructions for use. Unfasten suction connection on water pump. Connect a descaling hose to the water pump inlet and put the other end into the tank. Put steam jet lance with gun and steam hose into the tank in a way that the descaling dilution can flow into the tank.

Switch on the ready-to-use machine as follows:

- Set steam regulator to WET
- Set ON/OFF switch to 1-ON
- Set gun selector switch to Steam without detergents

Actuate gun lever and fix position ON for the descaling process only. The water pump pumps the descaling agent into the circuit system. The descaling process is completed as soon as the liquid does not foam any longer.

- Set ON/OFF switch to 0 – water pump is switched off.

Empty tank. Dispose of descaling agent according to the regulations. Fill in approx. 16 l of clear, cold water and add 0.5 l of alkaline cleaning agent. Put descaling hose and steam lance back into the tank.

- Set ON-/OFF switch to 1-ON and rinse the machine with the alkaline liquid for approx. 5 minutes.
- Set ON/OFF switch to 0-OFF, tightly connect suction hose of the water tank of the machine to the suction connection of the water pump
- Remove fixation of gun lever

For commissioning the machine, refer to section 5.4. For taking the machine out of operation, refer to section 5.6.

7. Tests

The machines must be checked by an expert in accordance with the “Guidelines for Liquid Spray Appliances (VBG87)”, but, if required, at least every 12 months to ensure that safe operation is still guaranteed. The test results have to be recorded.

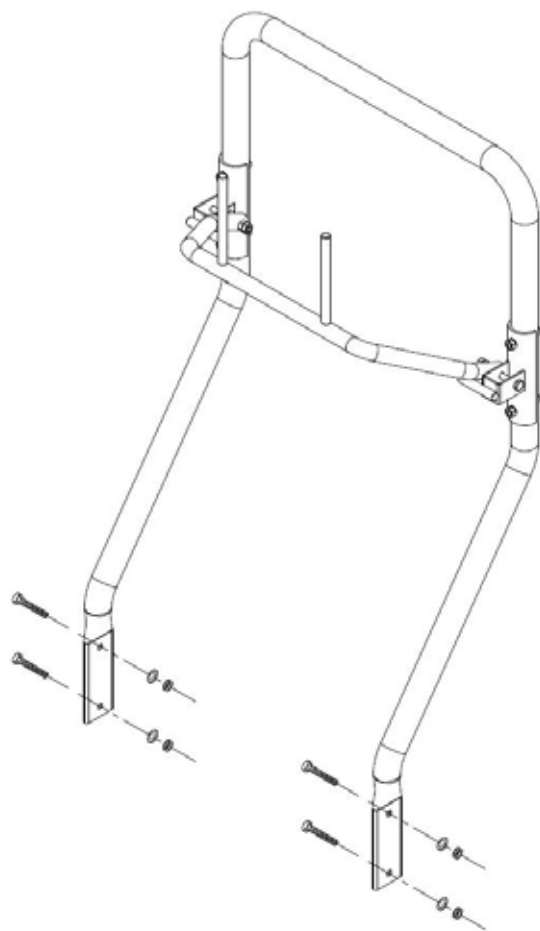
8. Prevention of accidents

The machine has been designed as to exclude accidents if used properly. The “Guidelines for Liquid Spray Appliances” should be observed.

9. Safety, Quality

The manufacturer may only be responsible for effects on safety, reliability, and machine performance, if the machine is used in accordance with the operating instructions.

These operating instructions should be made available to the operator.



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