

HPC SOLAR BOOSTER

Instructions Manual



Symbols used to mark instructions



Before using the high-pressure washer, be sure to also read the enclosed operating instructions and keep them within reach at all times.



This symbol is used to mark safety instructions that must be observed to prevent damage to the machine and its performance.



Safety instructions in these operating instructions which must be observed to prevent risks to persons are marked with this danger symbol.



This indicates tips and instructions to simplify work and to ensure safe operation.

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1 Description

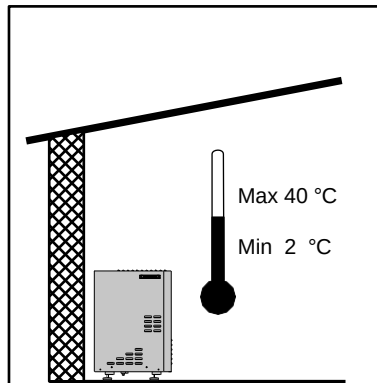
1.1 Application

This high-pressure hot water washer has been developed for stationary installation and professional use within the maritime industry.

The safety precautions must be observed to prevent damage to the machine, the surface to be cleaned or severe personal injuries.

2 Installation

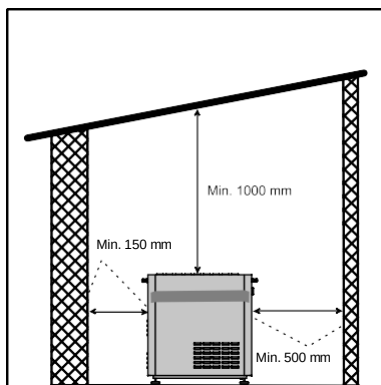
2.1 Temperature conditions



The machine should be installed in a frost-free room. This applies to pump as well as pipelines incl. of outlet points. If connected to outdoor outlet points it should be possible to close and empty that part of the line which is exposed to frost. The maximum ambient Temperature for the machine is 40°C.

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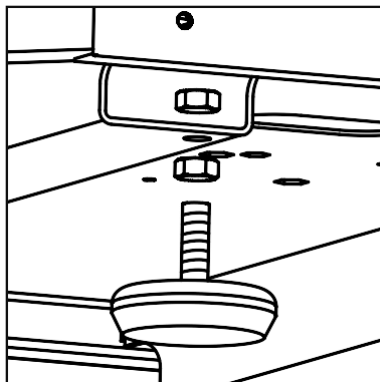
2.2 Condition of distance



In consideration of the cooling system of the machine and the accessibility of service, there must be free wall space on both sides of the machine. To the right 500 mm at a minimum and to the left 150 mm at a minimum. To the ceiling there must be at least 1000 mm and from the rear point of the machine to the back wall there must be at least 100 mm. There must not be any other objects in this area either, such as pipes etc.

2.3 Mounting of feet and levelling of machine

The machine is delivered without feet mounted. Loosen the machine from the pallet and



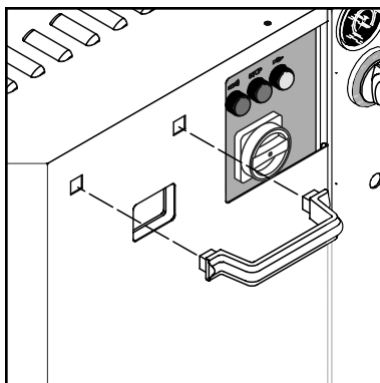
mount the 4 feet by fastening them to the flange underneath the machine by means of a 19 mm open-end wrench.

Place the machine on the plane floor.

To level the machine, loosen the lock nut on the appropriate feet and adjust the height by screwing the foot up or down.

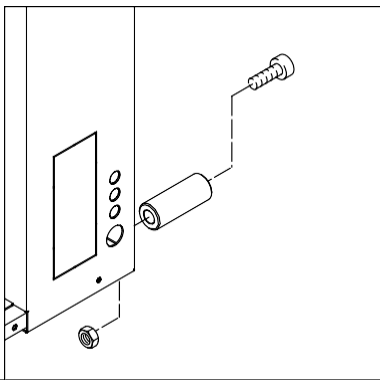
Next cross-tighten the lock nuts around the flange. It is important that all 4 feet are in contact with the floor.

2.4 Mounting of handle



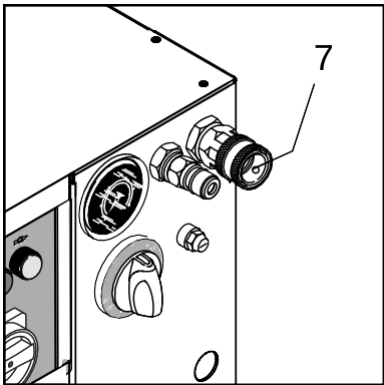
Mount the enclosed handles on the machine by pressing them into the suitable openings in the cabinet.

2.5 Mounting of spacers



Mount the enclosed spacers at the back of the machine.

2.6 Water connection



The water connection is made through a flexible hose connected to the quick coupling on the water inlet (7) of the machine.

Make sure that the supply hose is suited for the purpose (temperature and flow rate). If in doubt, contact your WSS representative.

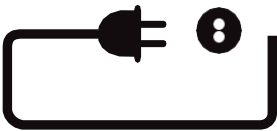
A shut-off cock should be mounted on the water supply line in the immediate vicinity of the machine. Make sure The following precautions must be observed:

that the water supply is within the following specifications and that the water does not contain particles such as floating sand.
Min. water inlet pressure: 1 bar (at the required flow rate of the machine - see data plate.
Max. water pressure: 10 bar
Max. water inlet temp. (EH/GH): 85°C.

All machines feature a water tank, and no further protection against back-flowing water into the supply network is required. The machine complies with EN 1717.

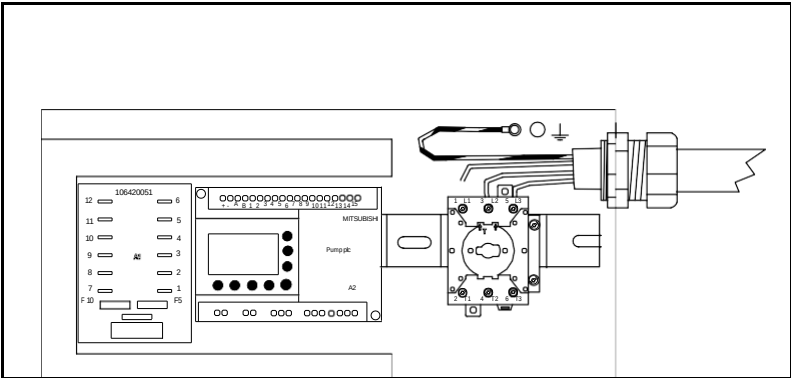
Clean the water inlet filter (7) once a month or in case of poor throughput (inlet pressure below 1 bar at the flow rate required by the machine).

2.7 Mains power connection



CAUTION! An authorized electrician must perform the electrical connection of the machine to the main power supply.

- Make sure that the supply cable is of the correct dimension (see voltage and load on the data plate of the machine) and is suitable for the specific environment.



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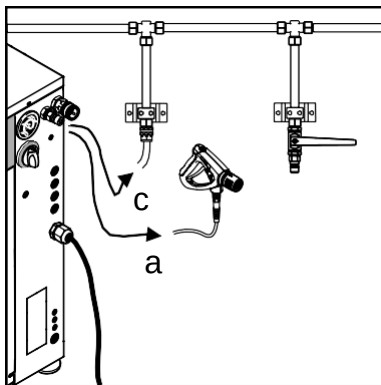
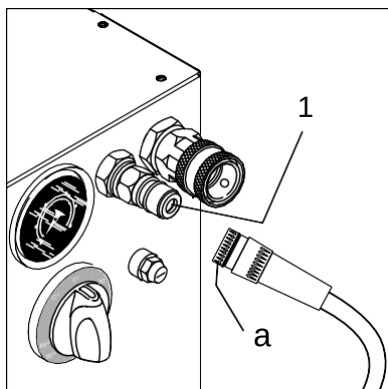
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- Guide the supply cable through the strain relief grommet on the frame (9) and through the strain relief grommet on the electric box into the electric box.
- Connect the phase cords of the supply cable to the connection terminals L1(1), L2(3) and L3(5) of the main switch of the machine. For single phase machines use L1(1) and L2(3) to connect phase and zero cords.
- Connect protective earth wire to the terminal marked  and located above the main switch on the metal chassis (6). Ensure the connection by the use of toothed washers.
- Check and measure the protective earth connection according to legislation.
- Connect the other end of the cable to an approved socket of a correct dimensioned main supply.

Make sure that the cable is properly guided and relieved between the fixed installation and the machine and that the cable is without any damage to the insulation.

2.8 High pressure connection



The outlet of the machine (1) can be connected directly to a standard high pressure hose (a) or to a pipeline with fixed outlet points (c).

IMPORTANT: When connecting to a pipeline always use a flexible hose connection from the outlet of the machine (pos. 1).

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2.9 Venting

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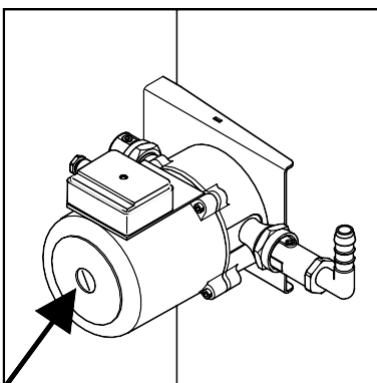
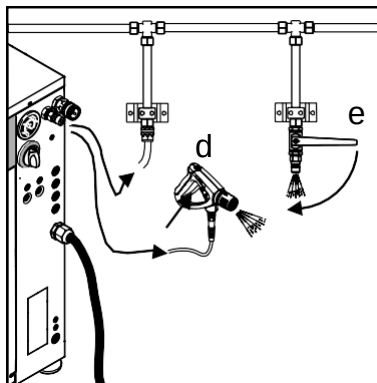
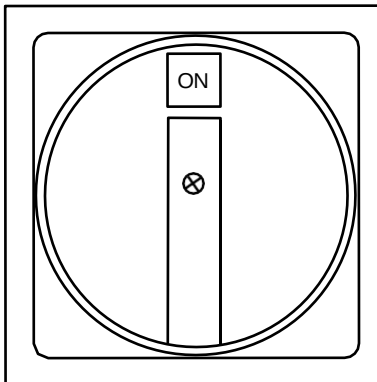
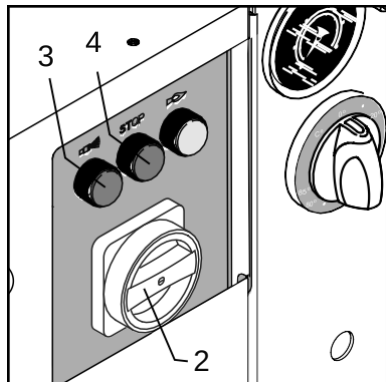
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When the machine is properly connected to supply water, electrical installation and a high pressure hose (or pipeline) the high pressure pump must be vented before it is operational.

1. Turn on the water inlet and wait until the water tank has been filled with water.
2. Turn the main switch (2), to position "ON".
3. Otherwise push the "START" button (3), and the machine will start.



button (3), and the machine will start.

4. Open the outlet point - spray handle on high pressure hose, (d) or outlet on piping system (e) without having a spray lance connected.
5. Let the water run until all air has escaped from the pump (even water flow). If little or no water flows from the system, it may be necessary to vent the internal feed pump separately. The service technician should perform this by loosening the centre screw on the feed pump, see arrow.
6. In the case of a recently installed piping system, or if the pipeline and the pump have been emptied in any other way, the system should be vented by starting the pump and then letting the water run at each outlet point of the pipeline at turns. It is recommended to begin with most distant outlet (height and/or length).
7. When connecting the high pressure hose directly to the machine, starting the pump and activating the trigger of the spray handle without having attached the spray lance should vent the system.
8. Stop the machine by pressing the "STOP" push button (4).

The machine is now vented.

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3 Operation

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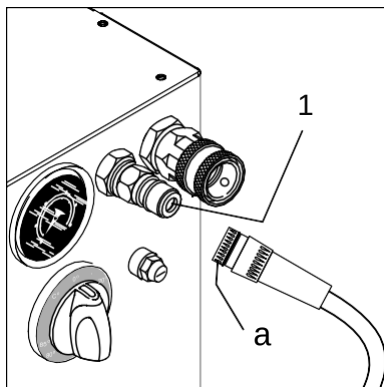
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3.1 Connections

3.1.1 High pressure hose - directly on the machine



The WSS high pressure hose with imprinted max. working pressure and temperature should be attached to the outlet connection of the machine (1) by the quick coupling (a).

Max.extension hose: 50 m.

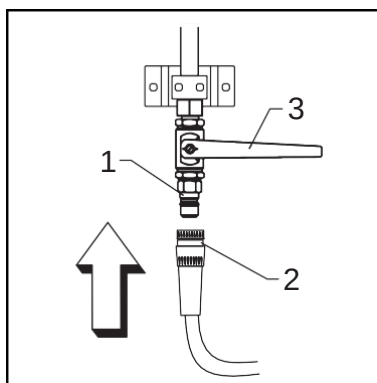
Danger of scalding!

Never dismount high pressure hoses at water temperatures above 50°C.

IMPORTANT: Prior to dismounting of the high pressure hose, the machine should be cooled down. After cooling down, stop the machine and close the shut-off cock. Then activate the trigger of the spray handle to relieve the high pressure hose of pressure.



3.1.2 High pressure hose - to outlet point



In the case of a pipeline with fixed outlet points the high pressure hose with imprinted working pressure and temperature should be attached to the nipple of the high pressure cock (1) by the quick coupling (2). Upon attachment turn the handle of the high pressure cock (3) to open position.

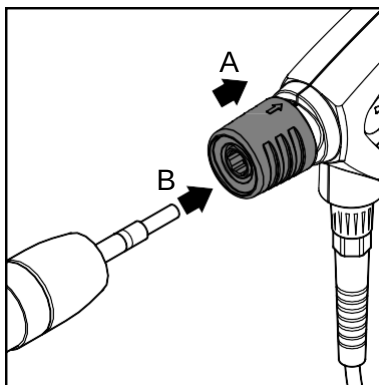
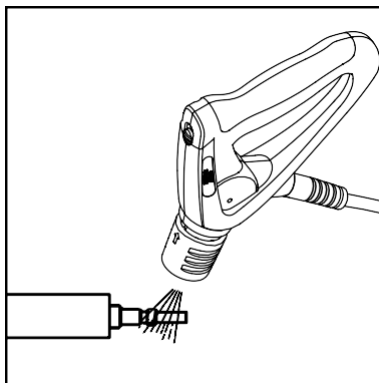
Danger of scalding!

Never dismount high pressure hoses at water temperatures above 50°C.

IMPORTANT: Prior to dismounting of the high pressure hose or when changing to another outlet point, the machine should be cooled down. After cooling down, stop the machine and close the high pressure cock carefully. Then activate the trigger of the spray handle to relieve the high pressure hose of pressure.



3.1.3 Spray handle - accessories



NOTE!

Clean nipple of any impurities each time the spray lance has been dismantled, see illustration.

1. Pull backward the quick coupling trigger (A) of the spray handle.
2. Insert the nipple of the spray lance (B) in the quick coupling and release the quick coupling again.
3. Pull forward the spray lance or any other accessory to ensure correct mounting before starting the machine.

3.1.4 Selection of spray lance

You may use a double spray lance as well as a single spray lance with the machine. The recommended nozzle size of the lance is printed on the data plate of the machine – i.e. 0530. The working pressure of the machine can be reduced by using nozzles with a wider diameter.

Never use lances with smaller nozzles (nominal value / diameter) than stated on the data plate.

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3.1.5 Application of detergents (external)

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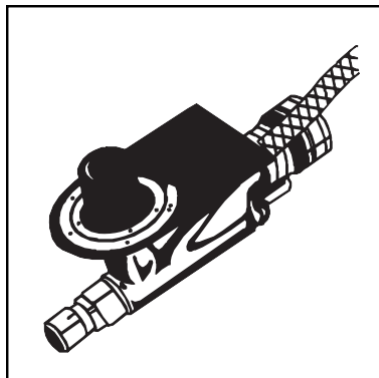
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If you want to apply detergents or disinfectants, these can be dosed to the water through an external injector. In conjunction with the injector it may be advantageous to use a wall rack on which spray lances, 2 pcs. of 25 l containers as well as 10 m high pressure hose can be placed.

Refer to your Wilhelmsen sales representative for your optimal solution.

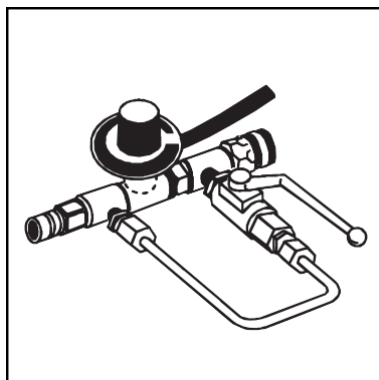
Below you will find various types of outlet points with injectors.



Outlet point with detachable injector

To be attached to the quick coupling of the high pressure cock. To be used for dosing of low-foaming detergents or disinfectants.

Dosage 1-8%.



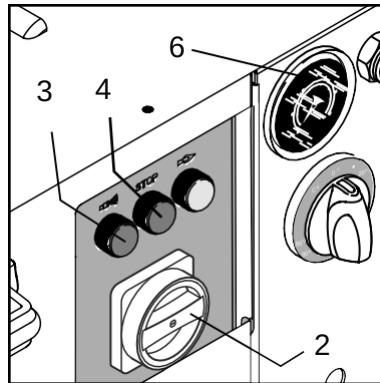
Outlet point with detachable foam injector

To be attached to the quick coupling of the high pressure cock. To be used in conjunction with foam lance for application of high-foaming detergents or disinfectants.

Dosage 1-5%.

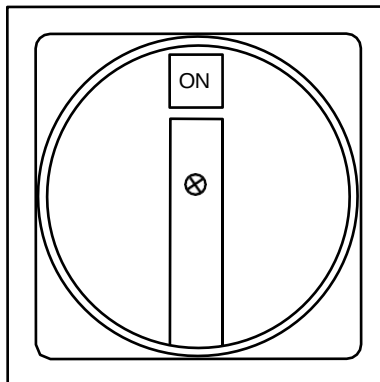
3.2 Operation

3.2.1 Starting up



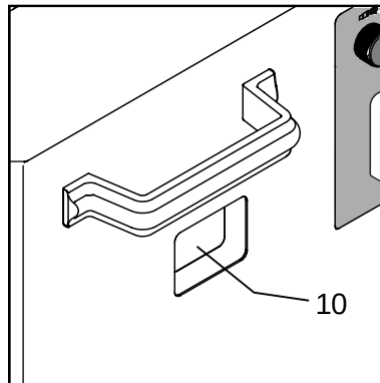
The shut-off cock on the water inlet should be open, and the spray handle on the high pressure hose should be closed.

1. Turn the main switch (2) to position - **ON** -.
2. Push the green "**START**" push button (3).



Check on the pressure gauge (6) that a pressure is being built up in the system and that the motor of the machine stops within appr. 20 seconds with the green "START" push button (3) lit. The machine is now in "Stand-by" mode waiting for the operator to activate the spray handle.

If a pressure is not being built up, vent the machine as described above.

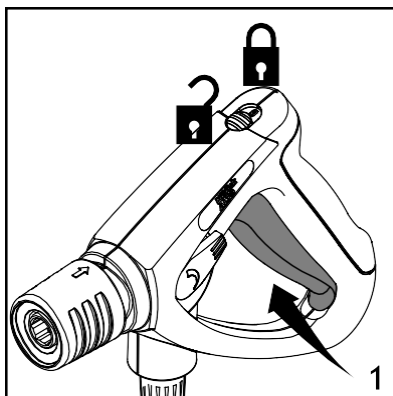


If the motor of the Does not start or stops unintendedly with the red "STOP" push button (4) flashing, an error is present. Read the error message through the "Inspection window" and refer to section "**5 Troubleshooting**".



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3.2.2 Automatic start/stop



Always hold the spray lance with both hands!

The machine will automatically start when the trigger (1) of the spray handle is activated and will automatically stop and enter standby mode when the trigger is released. If the handle has not been activated within 20 seconds, the machine will enter stand-by mode.

When the machine is not in use, the trigger should be locked with locking device.

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3.2.3 Running with hot water

The machine is equipped with a heating source (electrical) to heat the water.

The heating source can be switched on or off at convenience by pushing the yellow "Heating" push button (5). Pushing the button once will turn on the lamp in the button and switch ON the heating source.

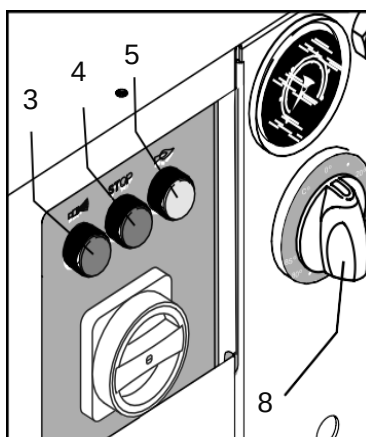
Pushing the button again will turn out the lamp in the button and switch OFF the heating source.

machine will monitor the water temperature and regulate the

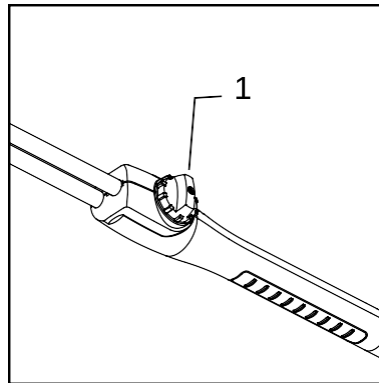
heating source to provide the preset temperature.

with heating tanks on the suction side of the high pressure pump, heating will be performed independently of the spraying operation - "Working mode" as well as "Standby mode". The temperature is controlled by a temperature sensor in the water tank. Thus the water will always be preheated to the desired value – ready for use when the spray handle is activated.

(8): Thermostat.



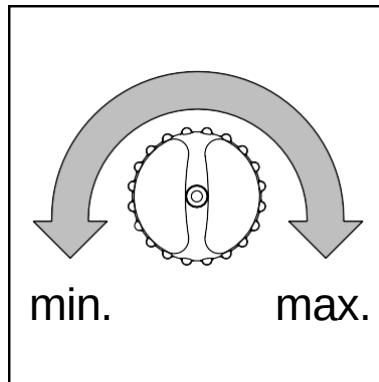
3.2.4 Double spray lance, pressure regulation



The spray lance features 2 nozzles, a high pressure nozzle and a low pressure nozzle.

High pressure mode

When the pressure reducing valve (1) is completely closed (turned clockwise - **B**), only the high pressure nozzle is used - **high pressure mode**.



Low pressure mode

When the reducing valve (1) is completely opened (turned counterclockwise - **A**), both spray lances are used - **low pressure mode** / possibility of dosing detergents.

The pressure may be regulated between these positions.

3.2.5 Stop



Danger of scalding!

Never detach high pressure hoses at a water temperature above 50°C.

Prior to dismounting of the high pressure hose, the machine should be cooled down. After cooling down, stop the machine and close the shut-off cock.

Never detach the high pressure hose while the machine is in operation.

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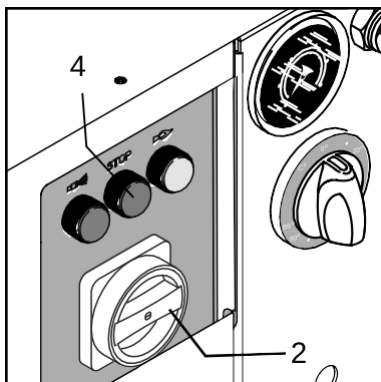
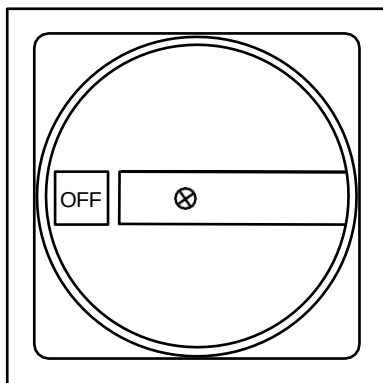
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1. To stop the machine push the red "STOP" button (4). The red light will come on. To disconnect the machine completely from mains, turn the main switch (2) to position - **OFF** -.

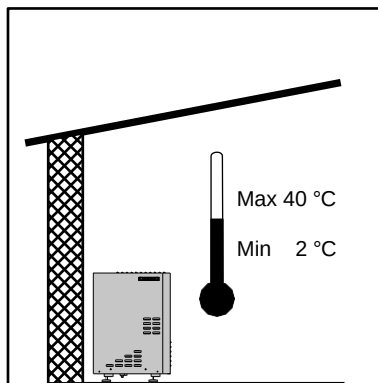
2. Close the shut-off cock of the water inlet and activate the spray lance or open the high pressure cock to relieve the pipeline / high pressure hose of pressure.

3.2.6 Automatic "system shut-down"

Your machine features a function called "system shut-down".

If this function is activated the machine will automatically shut down if it has not been used in a period preset by the user (1 sec. - 9 hours).

3.2.7 Frost protection



The machine should be installed in a frost-free room. This applies to pump as well as pipelines incl. of outlet points. Concerning outdoor outlet points it should be possible to empty that part of the line which is exposed to frost.

IMPORTANT: For safety reasons, hoses, spray lances and other accessories should always be thawed prior to use.

4 Maintenance

Though paying attention to a few things will ensure a prolonged and reliable operation of your machine. Therefore, it will be a good idea to make a habit of the following:

Prior to attaching the water hose and the high-pressure hose, the quick couplings should be cleaned of dust and sand. Flush if necessary. This will prevent premature clogging of filters.

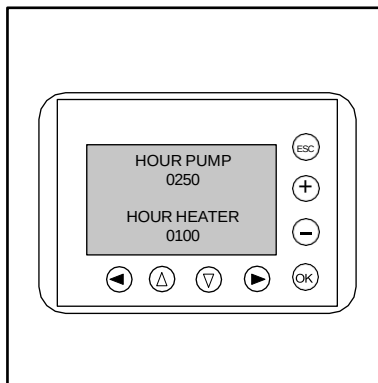
Prior to attaching the spray lance or other accessories to the spray handle, the machine should be started and the quick coupling cleaned of dust and sand.

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Maintenance Schedule

		Weekly	After the first 50 operating hours	Every six months or 500 operating hours	As required
6.2	Checking pump oil level	●			
-	Changing pump oil		●	●	
6.3	Cleaning water filter	●			●
6.5	Fuel filter		●		●

4.1 Hour counters

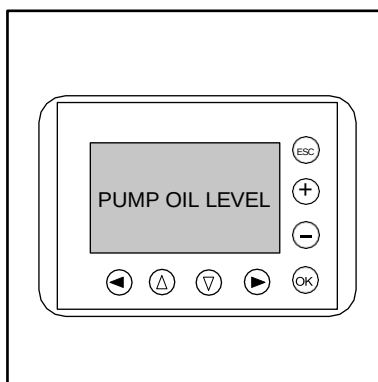


Your machine features built-in hour counters that keep track of the number of working hours on your machine.

By depressing the red "STOP" button and keeping it depressed, you will be able to see the number of working hours on the pump and the heating system through the inspection window.

Letting go of the "STOP" button will switch off the hour counter display again.

4.2 Oil

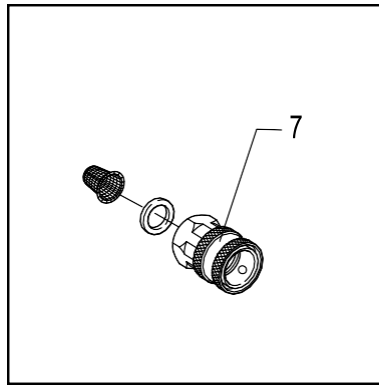


Your machine is equipped with an electronic "oil sensor", which monitors the level of lubricant oil in the high-pressure pump. If the oil level (by malfunction or excessive wear) should drop to a low level, your machine will stop (or not be able to start) with an error indication "PUMP OIL LEVEL" in the inspection window.

PROTECT THE ENVIRONMENT

Waste oil and oil sludge must be removed as laid down in the instructions.

4.3 Water filter



To avoid debris entering the high pressure pump, a water filter (fine) is fitted at the water inlet. Dependent on the purity of the water, this filter will have to be cleaned at regular intervals. The filter can be removed when the quick coupling (7) has been unscrewed.

4.4 Cleaning of high pressure nozzle

A clogging up in the nozzle will cause the pump pressure to increase above normal operating pressure, and cleaning of the nozzle is required immediately.

1. Stop the cleaner and detach the spray lance.
2. Clean the nozzle with the cleaning tool.

IMPORTANT: ONLY use the cleaning tool when the spray lance is detached.

3. Flush the spray lance backwards with water.
4. If the pressure is still too high, repeat items 1-3.

4.5 Disposable waste

This high-pressure hot water washer consists of parts which can affect the environment when thrown away. Parts that can pollute are as follows:

Oil, painted/zinc-coated parts, plastics/plastic-coated parts. Therefore, it is important to follow the laws concerning the removal of polluting and dangerous materials when replacing spare parts or disposing of high-pressure hot water washer.

It is recommended that you bring the rejected parts to waste disposal areas or recycling plants that are approved for the destruction of these types of materials.

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5 Troubleshooting

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You have chosen the best quality and therefore deserve the best service. All machines feature an "Error detection system" that will stop the machine in case of a severe error that needs immediate attention. The red light of the STOP button will flash, and the display in the inspection window will indicate the nature of the error.

Though the user can correct some of these errors, you should note the error and contact the WSS To avoid unnecessary disappointments, you should check section "**5.1 General trouble shooting**" beforehand.

5.1 General trouble shooting

Symptom	Reason	Action
Machine will not start (NO ERROR indication)	> A fuse has blown > Power disconnected	• Change the fuse. • Connect power.
Fuses blow	> Installation does not correspond to the ampere consumption of the machine	• Change to an installation corresponding to the ampere consumption of the machine at a minimum. • Change the fuse.
Working pressure too low	> Nozzle worn > Wrong spray lance > Reduction valve of spray lance not adjusted to max. pressure. > Nozzle partly clogged up	• Replace the nozzle. • Replace the spray lance • Turn reduction valve completely counter-clockwise • Clean the nozzle
Working pressure fluctuating	> Insufficient water supply > High pressure hoses too long	• Dismount the cabinet and check that the water tank is not drained of water during operation of the machine. If it is, clean the water inlet filter of the machine. If that does not solve the problem, the water supply for the machine is insufficient. NB! Avoid long, thin hoses (min. 3/4"). • Dismount high pressure extension hoses and retry. Extension hose max. 50 m. NB! Avoid long extension

Symptom	Reason	Action
		hoses with many couplings.
	> Air in the system	• Vent the system
	> Detergent container empty	• Refill or close dosing valve.
	> Water inlet filter clogged up	• Clean filter
No working pressure	> Nozzle clogged up	• Clean nozzle
	> No inlet water	• Check that the shut off cock of the water inlet is open. Check that the water supply meets the requirements
	> High pressure cock of outlet point open	• Close all high pressure cocks not in use.
Machine starts and stops	> Leaky hose/ pipeline/spray handle	• Repair leak.

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5.2 Errors messages,

If heating cannot be switched on or is switched off without any error messages, it is likely that the overheat protection has tripped. Unscrew the dust cap and push the rod to reset the overheat protection switch. If this error re-occurs, call WSS.

Error Message (red STOP light flashing)	Reason	Action
Pump oil level low E3	> Level of lubricant oil of HP pump is at a low-level	• Remove cabinet and top up oil if no leakage is present. • Call WSS if oil is leaking or if water is mixed in the oil (creamy white or transparent)
Water shortage E1	> Lack of water in heating tank	• perform Venting • Check your water supply – open? sufficient pressure? • Check and clean inlet filter
Motor cut out E10	> Motor is not running	• Motor overheated – let the machine cool down and retry. Check pressure and check nozzle size and clean nozzle if necessary. • Cooling of motor disturbed – call WSS.

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Technical Data

PROGRAM	HPC SOLAR BOOSTER
Product number.	651100
Performance data:	
Pump pressure [bar]	160
Flow rate [l/h]	1110
Cleaning Impact [kg-force]	5.8
Δ temp - (Full flow) [°C]	14
Heating power [kW]	18
Efficiency [%]	99
Weight (empty) [kg]	178
Max. sound power level [LwA]	97
Motor / Pump :	
Nozzle type	680
Qmax [l/h]	1200
Pump type	C3
Pump oil. type	Castrol Alphasyn T 150
Motor output power [kW]	6.5
Motor / pump [rpm]	1450
Pump drive	Direct
Connection requirements:	
Voltage [V]	440
Current - Max. consumption [amp]	39.4/~3
Power consump. (heating + motor) [kW]	18 + 7.5
Frequency [Hz]	60
Min. inlet water pressure (full flow) [bar]	1.0
Heating:	
Boiler type	Water tank
Max. inlet temperature [°C]	85
Max. outlet temperature [°C]	85