



WEED MANAGEMENT

# Manual **EMPAS** **MCP**

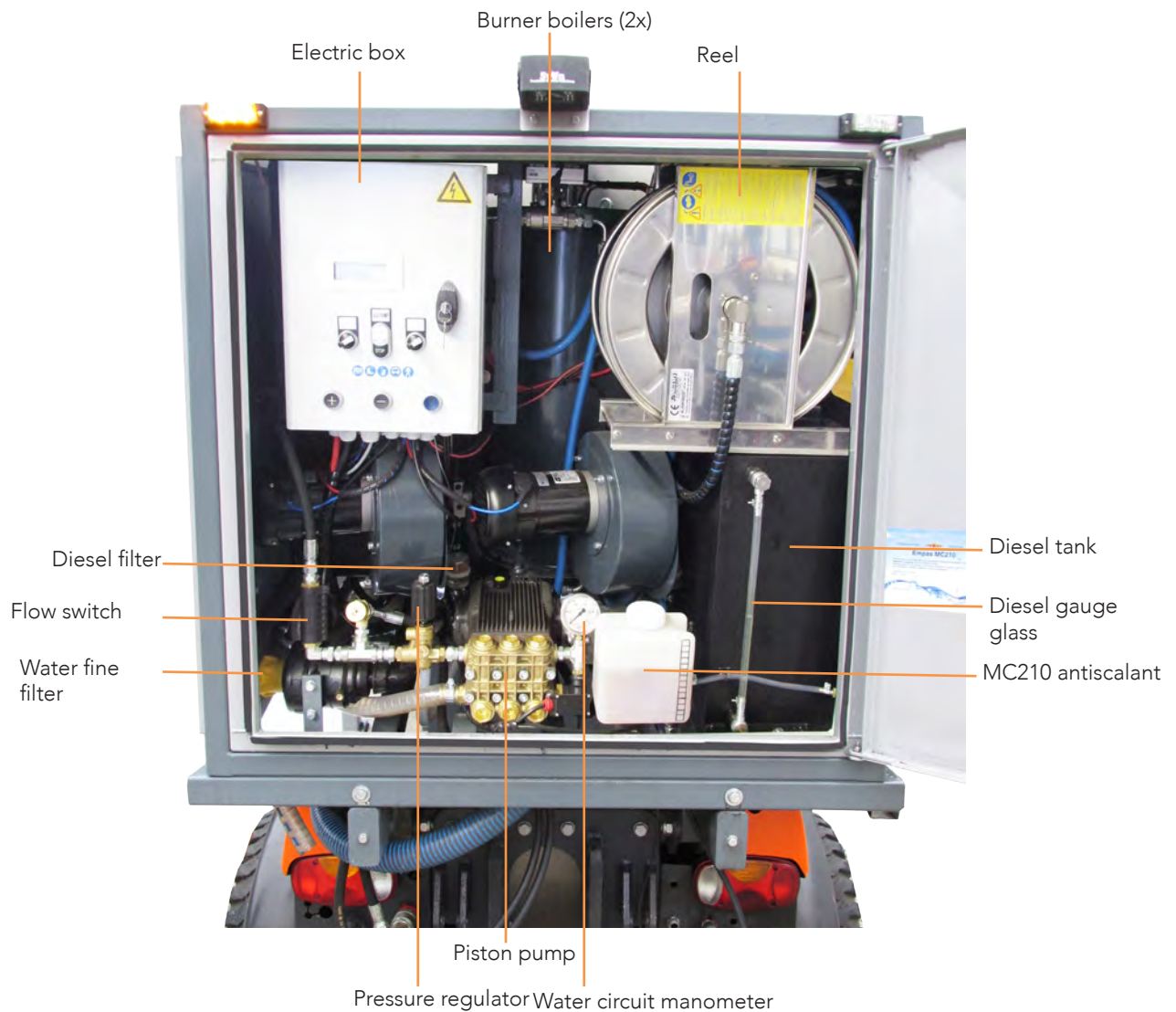
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# The Empas MCP at a glance





**INSTRUCTION** In order to avoid injury or damage, it is important that you read the **major safety and usage data** before you get started (page 8 to 13).

**Intended use** The hot water unit is only intended to control weed with boiling water of approximately 102 °C on (semi) hard surfaces. Depending on the presence of the high pressure cleaning option, the unit will be suitable for cleaning at high pressure.

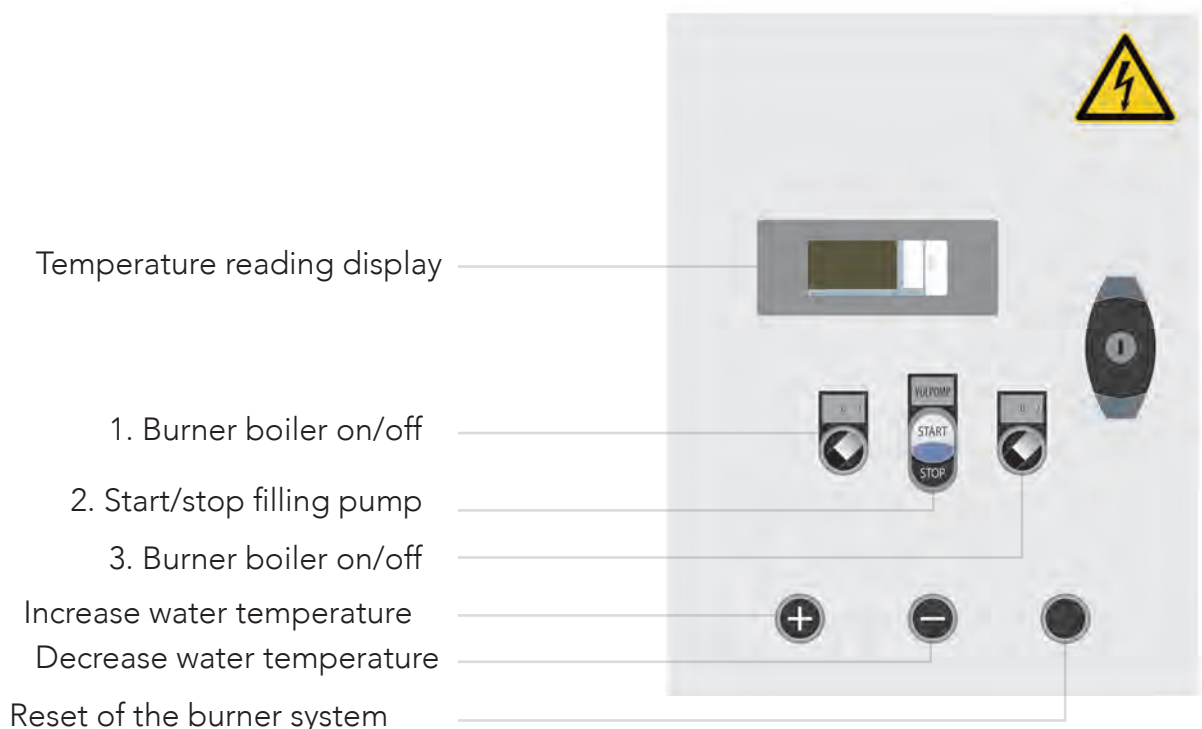
## Starting the hot water unit

**Filling the fuel tank with diesel** You will be able to fill the fuel tank with diesel by unscrewing the tank cap and then start filling up. You will find the tank opening at the side of the unit. Level reading in the machine room at the rear of the hot water unit.

**Filling the water tank** You can fill the water tank by means of the filling pump (optional). Place the end of the hose with the coarse filter in the water and switch on the filling pump by means of button 2 on the electric box in the machine room at the rear of the hot water unit. If you do not have a filling pump, it will be possible to fill the tank manually via the coupling at the bottom left of the cabinet. If necessary, you will be able to empty the water tank with the tap at the side of the tank.

**IMPORTANT** Add MC210 antiscalant while filling the water tank. You will find the tank at the rear of the unit (see page 2). This will prevent problems as a result of scaling in pipes and components. For Dosages, see appendix 1 on page 15. While surface water is being taken in, the MCP must be operational. You must close the flow tray via the control box in the cabin (see page 5 'switching the main switch for the flow tray on/off') and set the tool carrier to the parking position.

**Switching the burner boilers on/off** Open the rear valve of the hot water unit. At the top left you will see the electric box. By means of switches 1 and 3 you can switch both burner boilers on and off separately. These switches may be on at all times. Boiler one will heat the water to approx. 60 °C, boiler two will heat the water to 105 °C.



Manual Empas MCP

## Switching the complete hot water unit on / off

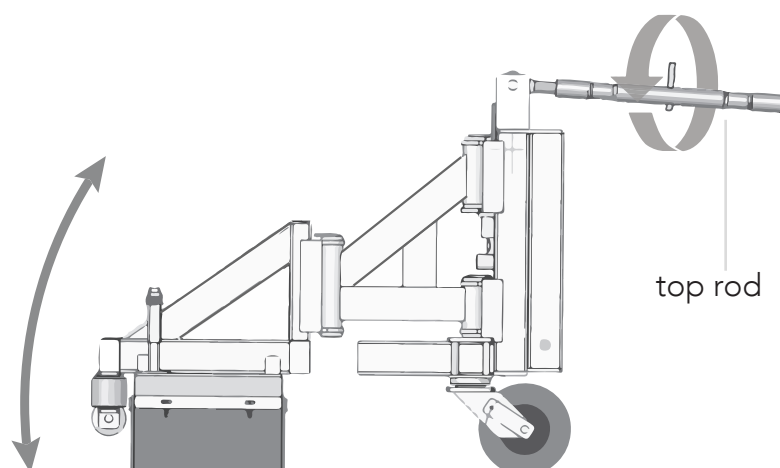
You can switch the complete system on or off by switching the hydro PTO and the power supply on or off. The operation for this is different for each tool carrier. Below you will find an overview of the most common tool carriers (more information can be found in the manual for your tool carrier).

Holder:	Hydro PTO + tools switch
Kärcher MIC50:	Hydro PTO + tools switch
Multihog:	Hydro PTO + switch beacon

**IMPORTANT** Check the outside for visible deviations each day before starting the unit for the first time. Do note the fumes produced by the unit. Contact a mechanic or your dealer if the fumes remain visible.

## Adjusting and operating the flow tray

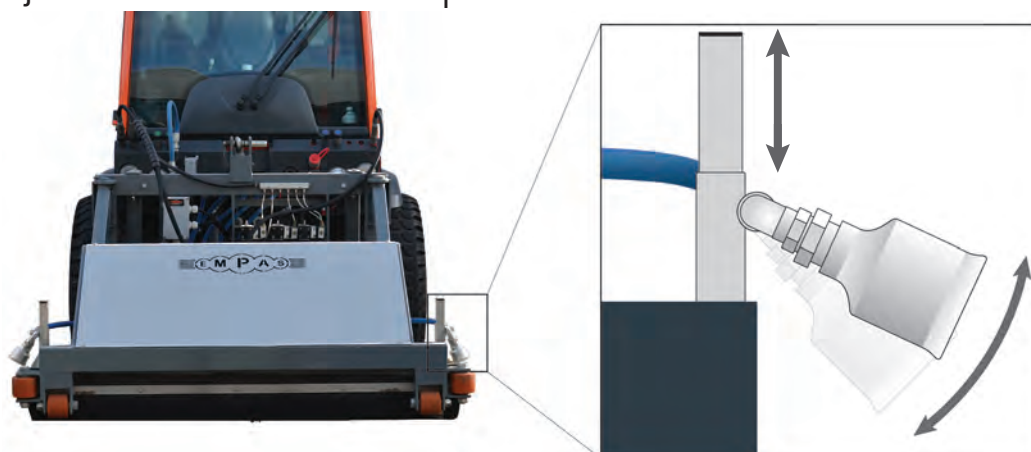
Lowering and lifting the flow tray is done by means of the joystick. Moving forwards and backwards is moving the tray up and down, left and right are used for the tray's side shift. By means of the top rod you will be able to adjust the position of the flow tray. By turning left or right you will make the top rod shorter or longer, as a result the front of the flow tray will go up or down. When adjusting, the swivel casters on the ground must be in the forward driving direction (as shown). The rubber flaps should not make contact with the ground.



**IMPORTANT** If the swivel casters, while adjusting the flow tray, are not in forward direction, this will ensure that the flow tray is pressed down in contrary direction (low in forward direction, down in reverse direction). This will lead to excess wear of the rubber flaps and the flow tray.

## Adjusting the nozzles

Manual adjustment of the height, manual adjustment of the angle. Adjust the nozzle to the lowest point of the weed.



**IMPORTANT** Set the nozzles to the lowest point. For the best result you will spray the weeds as low as possible.



**INSTRUCTION** Always wear protective gloves while adjusting the nozzles. When working with hot water, the materials will also become hot.

**Reversing camera** The reversing camera is started at the same time as the machine and is on continuously, so you can always see what is happening behind you.

## Operating the hot water unit



**INSTRUCTION** When using the hot water unit, keep a close eye on the surroundings, immediately stop the unit when people or animals are at risk due to your activities.

**Switching the flow tubes in the flow tray on / off** You can switch the flow tray on and off by means of the buttons on the control box in the cabin. The left flow tube in the tray is switched off with selection switch 1, the central flow tube (only in case of MCP-32) with selection switch 2, and the right flow tube with selection switch 3.

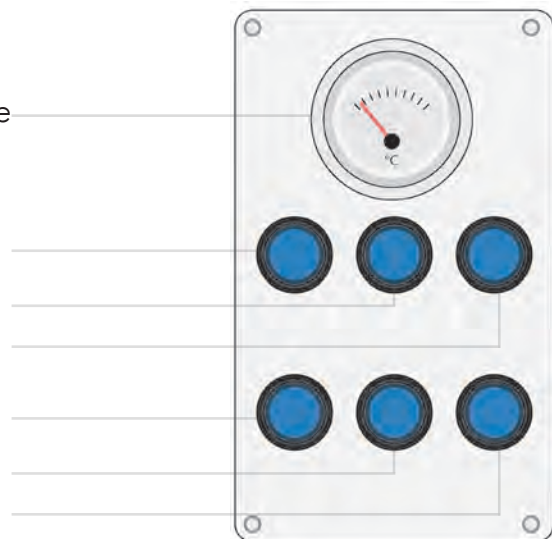
**Note** The driving speed used depends on the weed load, if the weeds are plentiful and high, we recommend adjusting the speed to 1.5 km per hour. If the weeds are low, you can drive with 3 km per hour.

**Switching the nozzles on / off** You can switch the nozzles on and off by means of the control box in the cabin. Selection switch 4 is the left nozzle, Selection switch 6 is the right nozzle,

**Switching flow tubes and nozzles on / off** You can switch the flow tubes and nozzles on or off in one go by means of switch 5. This is the main switch for the flow tubes in the flow tray and the nozzles.

Temperature gauge

1. Left flow tube in flow tray on/off
2. Central flow tube in flow tray on/off
3. Right flow tube in flow tray on/off
4. Left nozzle on/off
5. main switch flow tray and nozzles
6. Right nozzle on/off

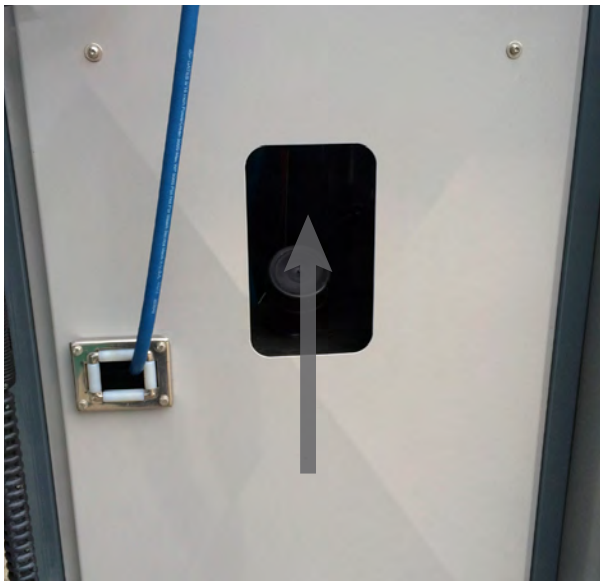


**IMPORTANT** While working with the hot water unit, keep an eye on the temperature gauge on the control box in the cabin. If the temperature on the gauge does not get above 90 °C, this could indicate a failure. Then check the temperature indicated by the digital gauge on the electric box at the rear of the unit. If the indicated temperature is too low here as well, you must contact your dealer for service.



### Switching between the flow tray and the work lance

In the unit you will find the three-way valve, it will allow you to switch between flow tray and work lance. It is easiest to reach the three-way valve via the hole in the side of the unit that is also used for filling the fuel tank (you will see the three-way valve if you look upwards into the hole).



**Operating the reel** In order to unwind the reel you must pull the hose. During unwinding you will hear a rattle at each rotation. Allow the hose to veer in the middle of the rattle, so that the blocking is placed on it. For rewinding the hose you must first pull further to release the blocking (rattle stops). Then calmly allow it to veer until the hose has been rewound.

**Operating the work lance and work gun** Squeeze the handle of the work gun to allow the water to flow from the pouring head. After a few seconds the water will be at the right temperature and you will be able to control weed.



**IMPORTANT** Spray the weed as low as possible near the ground. In case of higher weeds, work from the bottom to the top for the best result.

**Note** After use, store the lance and switch the three-way valve back to the flow tray.

### Cleaning application work lance

The pouring head can simply be screwed off the work lance. Then you will screw the high pressure nozzle on the lance and the lance will be ready for cleaning work.



**INSTRUCTION** When working with the reel and work lance, always wear protective clothing as described in the **Major safety data** on page 8 to prevent injuries through burns.

**IMPORTANT** Take into account that local legislation can prescribe a licence for operating a high pressure sprayer with a high water temperature from 102 ° C.

### Switching the compressor on / off

You can find the switch for switching the compressor on and off next to the opening for filling the fuel tank with diesel. **The compressor is always on and should remain on at all times.** It is possible that it is switched off as a result of the overpressure safeguard.

**After use** Switch off the electric control after use (See page 4 'Switching the complete unit on / off'). Leave the flow tubes open and then wait approximately 30 seconds before you switch off the PTO. These actions allow the machine to cool down.

**IMPORTANT** Not observing the above-mentioned actions will result in overloading the material and a short life span of the unit.





**INSTRUCTION** If you do not observe the safety instructions below, this may lead to physical harm to you or bystanders, damage to the hot water unit or other properties. Read all safety information below, prior to using the hot water unit.

**Use** Always handle the hot water unit with great care. The unit is made from technical and electronic components and has a steel or aluminium housing. The unit can be damaged if it is penetrated, dented, or if it makes contact with other fluids than water. If the unit is damaged and shows signs of leaks, there is a risk of injury or environmental damage, and you should not use the unit. When using the hot water unit, observe the applicable laws and regulations.

**Note** The hot water unit is only intended to control weed with boiling water of approximately 102 °C on (semi-) hard surfaces. Depending on the presence of the high pressure cleaning option, the unit will be suitable for cleaning at high pressure.

**Protective clothing** While working with the hot water unit, always wear the required protective clothing. Important are: protective gloves, work shoes or boots and protective trousers or overall.

**Meaning of warning symbols** Symbols have been attached to the unit to support major safety measures, including warning and operating symbols. These should be easy to see, never remove these symbols.



Prior to using the hot water unit, read the manual and the safety instructions.



Wear protective shoes.



Wear protective gloves.



Wear protective clothes.



Warning: hazardous (hot) vapours.



Warning: high pressure cleaning with hot water.



Warning: hot surfaces due to cleaning or weed control with boiling water.

**Safeguards in the unit** The burner boilers have been provided with a temperature and pressure sensor. The boilers are switched off if the temperature gets too high or if the pressure gets too high or too low.

For additional safety, the circuit consists of a thermostatic safeguard. This safeguard will block the supply to the boiler in case of a temperature that is too high.

The flow safeguard ensures that the boilers are switched off when there is no flow in the circuit.

**Note** All safeguards run via the unit's PLC placed in the switch box.

**Tool carrier** For an optimum and safe operation of the hot water unit, different requirements have been imposed on the tool carrier:

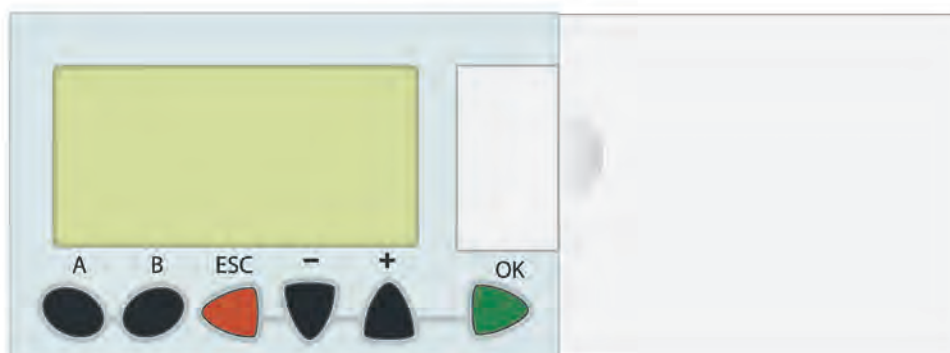
- Dynamo minimum 60 Ampere free for the unit
- PTO capacity: minimum 35 litres of oil per minute (MCP32), 28 litres of oil per minute (MCP24). Oil pressure 180 bar at 1600 RPM
- 1500 kg bearing capacity on the rear axle of the tool carrier
- pressure free hydro return
- front lift

**IMPORTANT** Due to working with boiling water and the potential hazard of burns, the tool carrier must be provided with beacons. When driving on public roads, it must be switched on.

**Temperature during use** The hot water unit was designed for use in an environment between 0 and 40°C. The unit's components can get damaged if this temperature is lower or higher.

**Resetting the unit** You can reset the burners by pressing the reset button on the electric box (See figure page 3). You must do this when the reset button flashes, in that case you will have a burner failure. For resetting the electric circuit, you must use the tool switch in the cabin or the beacon switch (depends on your tool carrier).

**Information on usage** The MCP has an hour counter, you can read the hours via the display in the electric box. The electric box is opened by means of the key and the handle. Then you will press buttons A and B. The tool carrier has its own hour counter, for this you can consult the tool carrier's manual.



**Transportation** When driving with the tool carrier equipped with the hot water unit, you will participate in traffic. Observe the applicable traffic regulations.



**INSTRUCTION** When driving with a hot water unit filled with water there is a hazard of tipping. Due to the large mass, the combination is top heavy. Therefore drive carefully and do not take sharp bends.

## Important maintenance data

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**Check** Regularly check the fluids and the condition of all components, parts and pipes in order to use the hot water unit without problems and safely. For the benefit of maintenance, observe the diagram below. For the maintenance diagram for your tool carrier, consult the accompanying manual.



**INSTRUCTION** Prior to maintenance or repairs, always switch off the unit, burners and tool carrier (See page. 4 'Switching the complete unit on / off').

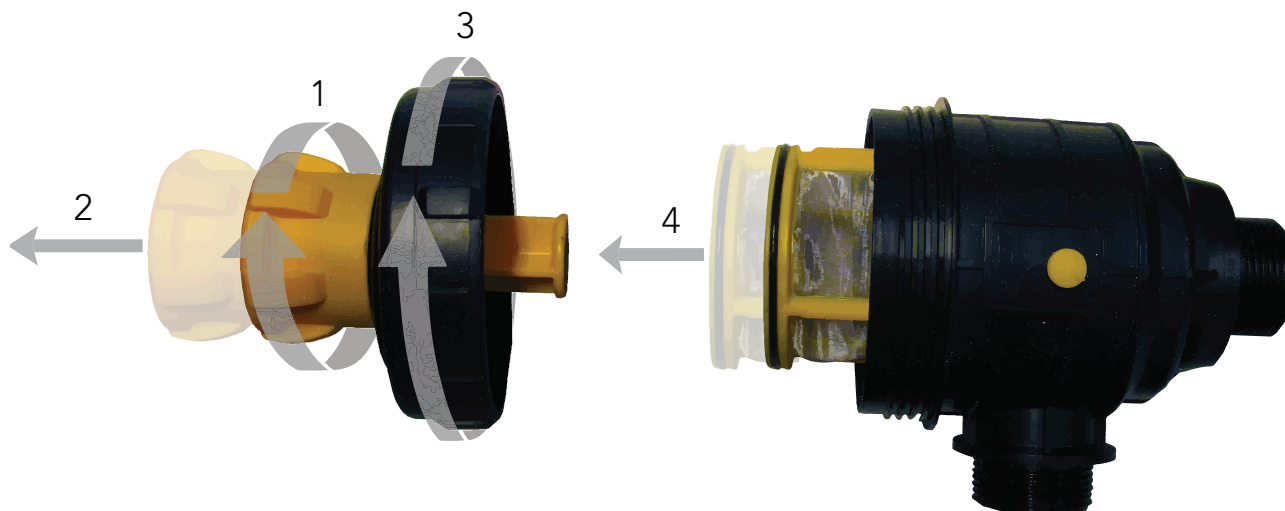


### Cleaning the fine filter

The fine filter must be flushed clean regularly. In case of dirty water, it is recommended to flush more often. See chapter 1 for the location of the filter.

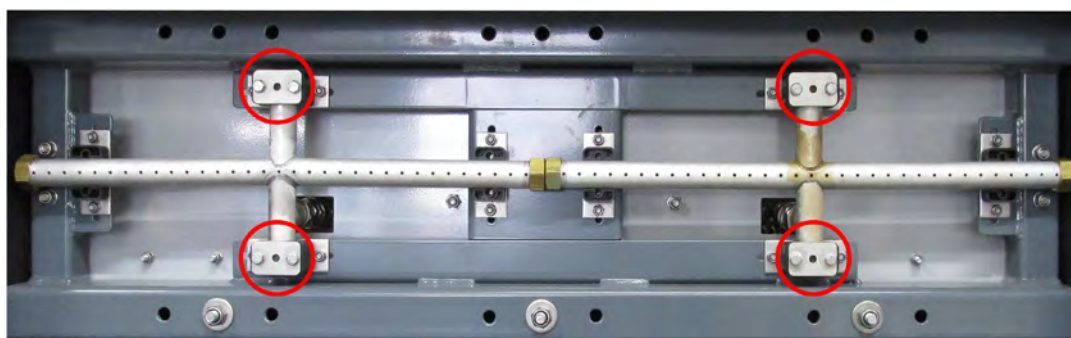
General method for cleaning filter:

1. Turn yellow button a  $\frac{1}{4}$  turn anti-clockwise
2. Remove yellow button
3. Loosen filter
4. Disassemble filter house
5. Flush out filter
6. Mount filter
7. Mount, tighten filter house
8. Place back yellow button

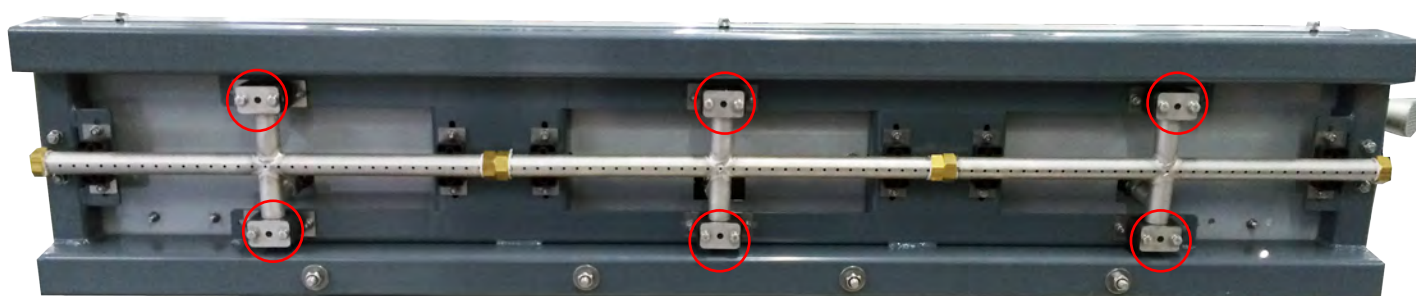


### Cleaning the flow tubes of the flow tray

If necessary, thoroughly clean the spray tubes (flush clean, blow clean). The spray tubes will have to be disassembled. Loosen 4 bolts - per tube - (**1 metre flow tray and 1.5 metre front tray**). Remove the 2 split pins (**1.4 metre flow tray**), the split pins will then have to be replaced when the spray tubes are mounted again.

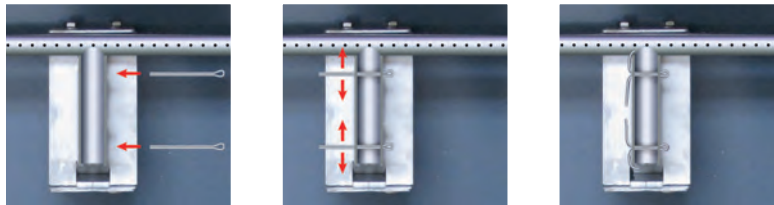
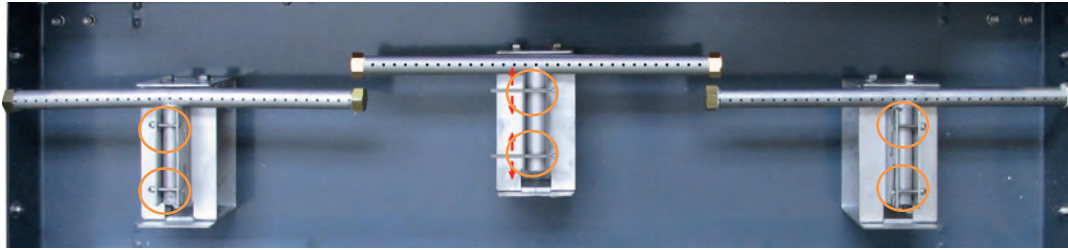


**Bolts 1 metre flow tray**



**Attach bolts 1.5 metre flow tray**





**Attach split pins 1.4 metre flow tray**

## Failures

Below you will find failures related to the hot water unit and failures that could be related to the pump. In the diagram you will find the possible causes and remedies for the failure. Do not hesitate to contact your dealer when you have questions or if there are problems concerning a failure.

### Possible pump failures and remedies

Failure	Cause	Remedy
Insufficient pressure / No water	Pump insufficiently bled Pump sucks in air  Supply blocked The valves are dirty or worn The sleeves or plungers are leaking	Bleed Check fluid in tank Check supply hose and Couplings Check water filters Check, clean or replace Check, clean or replace
Water in the oil	High air humidity  Worn plunger seal and worn oil catcher	Check and double the oil replacement frequency Check and replace
Pump is leaking fluid	Worn plunger/seal Worn O-rings of the plunger guide	Check and replace Check and replace
Pump is leaking oil	Oil level too high Worn oil catcher / carter	Check and adjust Check and replace
Pump is not running	Hydraulic circuit not switched on Hydro safeguard flow/pressure	Check Check adjustment

### Possible hot water unit failures and remedies

Failure	Cause	Remedy
Temperature water too low	Diesel depleted; Sprayer contaminated	Fill; Clean sprayers
Too little water	Filter blocked Nozzles intake point blocked Too little supply of hydraulic oil by pump on tool carrier	Clean Clean nozzles  Check hydraulics tool carrier for delivery capacity
No water	Possible that high pressure water pump is defective	Replace / revise pump
No power	Dynamo of tool carrier is not working  Machine switched off	Check power delivery of complete tool carrier; check fuse of dynamo; if necessary, replace dynamo. Switch on machine (by means of tool or beacon switch)
No power	machine switched off	Switch on machine

In case of professional personal use, the warranty period will be six months after the date of purchase. This warranty applies if a failure occurs with the product within the applicable warranty period, under normal working conditions. A recognised Empas dealer will replace the part concerned in accordance with the warranty conditions.

**Note** Transportation costs for defective, repaired or new parts, components or accessories are not compensated.

**IMPORTANT** The following cases do not fall under the warranty condition:

- a. Any failure that is the result of neglecting the user instructions, adjustments and maintenance as described in this manual.
- b. Damage resulting from accidents, incorrect use, negligence, changes to the machine or the use of other parts, components or accessories not recommended by Empas.
- c. Replacing the filters.
- d. Wear of parts, such as: rubber flaps, (high pressure) hose, pump parts (valves and sleeves).
- e. Additional or consequential damage.

**Note** Your legal rights are not affected by this warranty condition.

# Appendix 1: Antiscalant dosage

Addition of MC 210 in ml.

In order to avoid scaling in the spiral, it is necessary to check the hardness of the water and correct it, if necessary, by adding MC 210.

In the following table you can see how many ml of fluid must be added.

		Toegevoegde hoeveelheid water (in liters)												
		1300	1200	1100	1000	900	800	700	600	500	400	300	200	100
Aantal graden dat de hardheid moet worden vermindert	25	618	570	523	475	428	380	333	285	238	190	143	95	48
	24	593	547	502	456	410	365	319	274	228	182	137	91	46
	23	568	524	481	437	393	350	306	262	219	175	131	87	44
	22	543	502	460	418	376	334	293	251	209	167	125	84	42
	21	519	479	439	399	359	319	279	239	200	160	120	80	40
	20	494	456	418	380	342	304	266	228	190	152	114	76	38
	19	469	433	397	361	325	289	253	217	181	144	108	72	36
	18	445	410	376	342	308	274	239	205	171	137	103	68	34
	17	420	388	355	323	291	258	226	194	162	129	97	65	32
	16	395	365	334	304	274	243	213	182	152	122	91	61	30
	15	371	342	314	285	257	228	200	171	143	114	86	57	29
	14	346	319	293	266	239	213	186	160	133	106	80	53	27
	13	321	296	272	247	222	198	173	148	124	99	74	49	25
	12	296	274	251	228	205	182	160	137	114	91	68	46	23
	11	272	251	230	209	188	167	146	125	105	84	63	42	21
	10	247	228	209	190	171	152	133	114	95	76	57	38	19
	9	222	205	188	171	154	137	120	103	86	68	51	34	17
	8	198	182	167	152	137	122	106	91	76	61	46	30	15
	7	173	160	146	133	120	106	93	80	67	53	40	27	13
	6	148	137	125	114	103	91	80	68	57	46	34	23	11
	5	124	114	105	95	86	76	67	57	48	38	29	19	10
	4	99	91	84	76	68	61	53	46	38	30	23	15	8
	3	74	68	63	57	51	46	40	34	29	23	17	11	6
	2	49	46	42	38	34	30	27	23	19	15	11	8	4
	1	25	23	21	19	17	15	13	11	10	8	6	4	2



## EU DECLARATION OF CONFORMITY

Trade name

Empas BV

Address

Kruisboog 43, 3905 TE Veenendaal, The Netherlands

Product description

Hot water unit weed control

Model

MCP

**Applicable directives and standards**

Directives

2006/42/EC (Machinery)

2014/30/EU (EMC)

2000/14/EC (Noise emission)

Standards

NEN-EN-ISO 12100

NEN-EN-IEC 60204-1

NEN-EN-ISO 3744

**Additional information**

- This declaration of conformity is issued under the sole responsibility of the manufacturer.
- The technical construction file was compiled by Empas.
- The pressure equipment is manufactured in accordance with sound engineering practice (max. operating temp. 110 °C).
- This declaration pertains to the machine from Empas and the connections to the underlying tool carrier. The tool carrier itself falls outside the responsibility of Empas and is not covered by this declaration.
- Noise emission in accordance with internal control of production as referred to in annex V
  - measured sound power level:
  - guaranteed sound power level:

**Declaration**

**We hereby declare that the aforementioned product conforms to the applicable requirements of the directives and standards specified in this declaration.**

Name / Position:

Date:

H.G. Doornenbal  
Director

01/07/2017

A handwritten signature in blue ink, consisting of a large, stylized 'S' shape with a loop at the top and a long, sweeping tail that ends in a small hook.

Signature

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