devatec

Technical manual



Steam generator for hammam

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IMPORTANT

Please read, heed and follow the enclosed safety information and the warning labels inside the humidifier before installation or maintenance.

Warnings & safety symbols



Warning : This symbol is used to designate a danger of injury or potential damage to the system.



Caution : High voltages are present inside the steam generator. All works concerned with the electrical installation must be carried out by skilled and qualified personnel.



Caution : Danger of scalding ! The ElectroVap MC2 Steam Bath generates steam during operation and therefore surfaces and pipe-work become very hot. Ensure that equipment not sustaining high temperatures be kept away.



Warning : the end user should ensure that the equipment be disposed of according to the local prevailing regulations.

Delivery and storage

Any loss or damage during delivery should be reported to carrier by registered letter within 3 working days and be advised to **devatec** or to authorized dealer.

It is recommended that the ElectroVap MC2 steam generator be kept in its transit packaging for as long as possible prior to maintenance. If the humidifier is to be put into storage prior to installation, it must be stored under cover and protected from physical damage, dust, frost, rain and humidity. More than 6 months storage is not recommended.

Pictures for illustrating purposes only

IMPORTANT



This section should be read carefully to ensure safe and correct installation of your steam bath generator.

GENERAL

This manual contains all details necessary for the planning and installation of the ElectroVap MC2 Steam Bath. In addition commissioning and maintenance details are included.
The manual is intended for use by engineers and properly trained technical personnel. Maintenance, servicing or repair work must only be carried out by suitable skilled and qualified personnel, the customer must be responsible for ensuring their suitability.
Any risks or hazards, especially when working from ladders or towers should be identified by a skilled and Health and Safety representative and effective control measure put in place.
No liability will attach to the Distributor if any damage, injury or accident is attributable to inattentive, inappropriate, negligent or incorrect operation of the machinery whether or not caused deliberately. Always isolate all electrical and water supplies before commencing any maintenance.
Every effort has been made to ensure details contained in this manual are correct, however, in view of the wide range of conditions experienced in air handling systems, the information provided should only be used as a guide. Please contact your Agent if any doubt.

Correct use

The ElectroVap Steam MC2 Bath is ONLY intended for use of steam inside hammam rooms and controlled by temperature within specific working conditions . ANY OTHER APPLICATION IS NOT CONSIDERED USE FOR THE INTENDED PURPOSE. THE MANUFACTURER CANNOT BE MADE LIABLE FOR ANY DAMAGE OR HARM RESULTING FROM INCORRECT USE.

Water

The ElectroVap MC2 Steam Bath is designed to be used with mains, demineralized R/O with a minimum conductivity of 30 µs or softened water. On no account attempt to introduce any other fluid or chemical into the system. Water supply should not exceed 6.0 bar and installation should comply with local regulations.



Electricity

All work concerned with electrical installation MUST only be performed by skilled and qualified technical personnel (eg electrician or technicians with appropriate training). The customer MUST be responsible for ensuring their suitability.
It is the duty of the installer to ensure that suitable sized cables and MCB protection is provided. Please observe the local regulations concerning the provision of electrical installations.

Warranty

A two year warranty term—cost and labor—is applicable to the parts of the ElectroVap MC2 Steam Bath to the exception of the consumable parts (valves, cylinders or parts of cylinders) provided our recommendations of use & maintenance have been adhered to. Failure to specify and fit original parts and accessories will invalidate our warranty.

NOTE

The manufacturer's policy is one of continuous research and development. He therefore reserves the right to amend without notice the specifications given in this document.

The photographs are for illustrating purposes only.

DIRECTIVES CE APPLIED

Electromagnetic Compatibility Directive :	**89/336/EEC, 2004/108/EC**
Low Voltage Directive :	**73/23/EEC, 2006/95/EC**
« Machinery » Directive:	**98/37/EC, 2006/42/CE**

The humidifier complies with :

EN 61000-6-3: Electromagnetic compatibility generic requirements (residential, commercial and light industries)

- EN 55022 class B; conducted and radiated emission limits

EN 61000-6-2: Electromagnetic compatibility (EMC) - Generic standards—Immunity for industrial environments;

- EN 61000-4-3: Radiated, radio frequency, electromagnetic field immunity test
- EN 61000-4-6: Immunity to conducted distrubances induced by radio frenquency fields
- EN 61000-4-4: Electrical fast transient/burnt immunity test
- EN 61000-4-5: Surge immunity test
- EN 61000-4-2: Electrostatic discharge immunity test.

EN 60335-1: Low voltage : safety of electrodomestical devices and similar

EN 60335-2-88: Low voltage : safety of electrodomestical devices and similar, concerning humidifiers

EN 60204-1: Safety of machinery - Electrical Equipment of machines - Part 1 : General requirements

Manufacturer's name & address

devatec SAS
87 Rue Feu Saint Eloi
76550 Ambrumesnil - FRANCE

Type of equipment

Steam humidifier

Model name & series

ELECTROVAP MC / ELMC

Year of manufacturing

2001

We the undersigned, hereby declare that the equipment specified above complies with the above-mentioned Directive(s) and Standard(s).

Name : FRAMBOT Jean-François
Position : General Manager
Date : 05.06.2008
Signature:



Pictures for illustrating purposes only

RoHS declaration

devatec sas
Rue Feu St Eloi
76550 Ambrumesnil
France

Confirms that the ElectroVap ELMC steam generator is manufactured in compliance with the European regulations 2002/95/EU (RoHS).

This guideline regulates after July 1st 2006 the use of mercury, cadmium, lead (soldering processes), chrome VI as well as PBB and PBDE. ELMC steam humidifiers manufactured previously to this date may contain above materials.

Name : MINFRAY Jean-Marie
Position : R&D Engineer
Date : 05.06.2008

Signature:



Pictures for illustrating purposes only

Delivery contents

Any loss or damage during delivery should be reported to carrier by registered letter within 3 working days and be advised to **devatec** or to authorized dealer.

It is recommended that the ElectroVap Steam MC2 Bath be kept in its transit packaging for as long as possible prior to maintenance. If the generator is to be put into storage prior to installation, it must be stored under cover and protected from physical damage, dust, frost, rain and humidity. More than 6 months storage is not recommended.

What is in the box :

1. One temperature controlled ElectroVap MC2 steam bath fitted with disposable or cleanable cylinder(s) (at purchaser's request) and one user's manual.

2. 3 wire temperature sensor with 10 m. long connecting cable.

3. One 500mm long flexible hose with 3/4″ thread (with washers) for tap water connection.

4. Ø 25 mm drain hose :
   ELMC 1 cylinder : 1 m. long
   ELMC 2 cylinders : 2 hoses of 1 m. long and 1.2 m. long respectively
   ELMC 3 cylinders : 3 hoses of 1 m. long, 1.2 m. long and 1.8 m. long

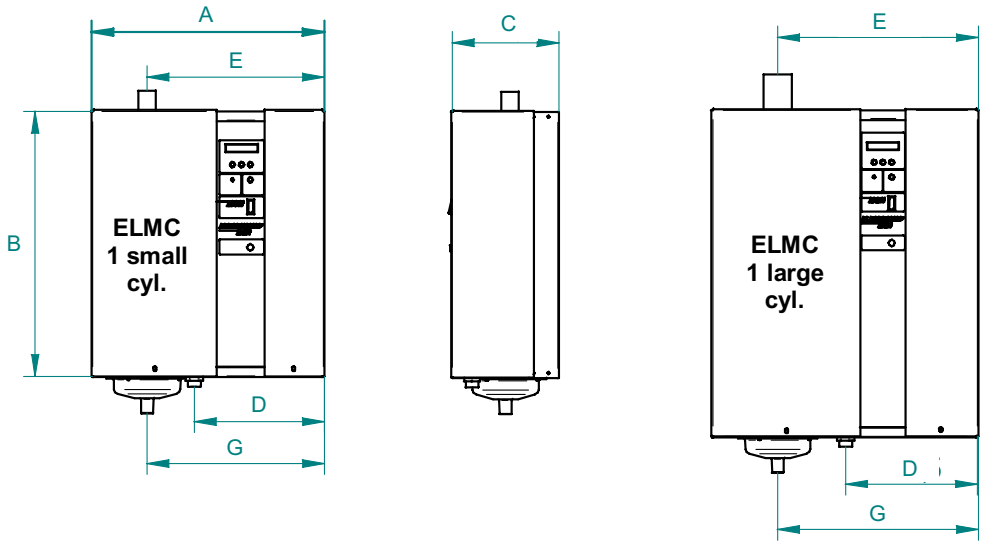
4. Hose clamps :
   ELMC 1 cylinder : 3 clamps (2 pieces for the steam hose & 1 piece for the drain hose)
   ELMC 2 cylinders : 6 clamps (4 pieces for the steam hoses & 2 pieces for the drain hoses)
   ELMC 3 cylinders : 9 clamps (6 pieces for the steam hoses & 3 pieces for the drain hoses)

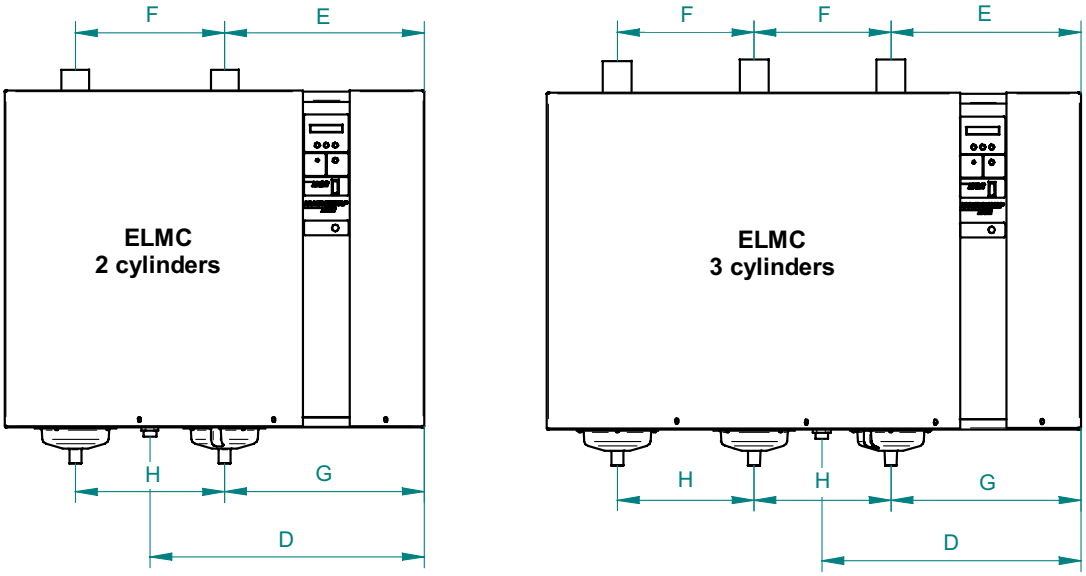


Pictures for illustrating purposes only

ELECTROVAP MC2 STEAM BATH

Dimensions & Weight



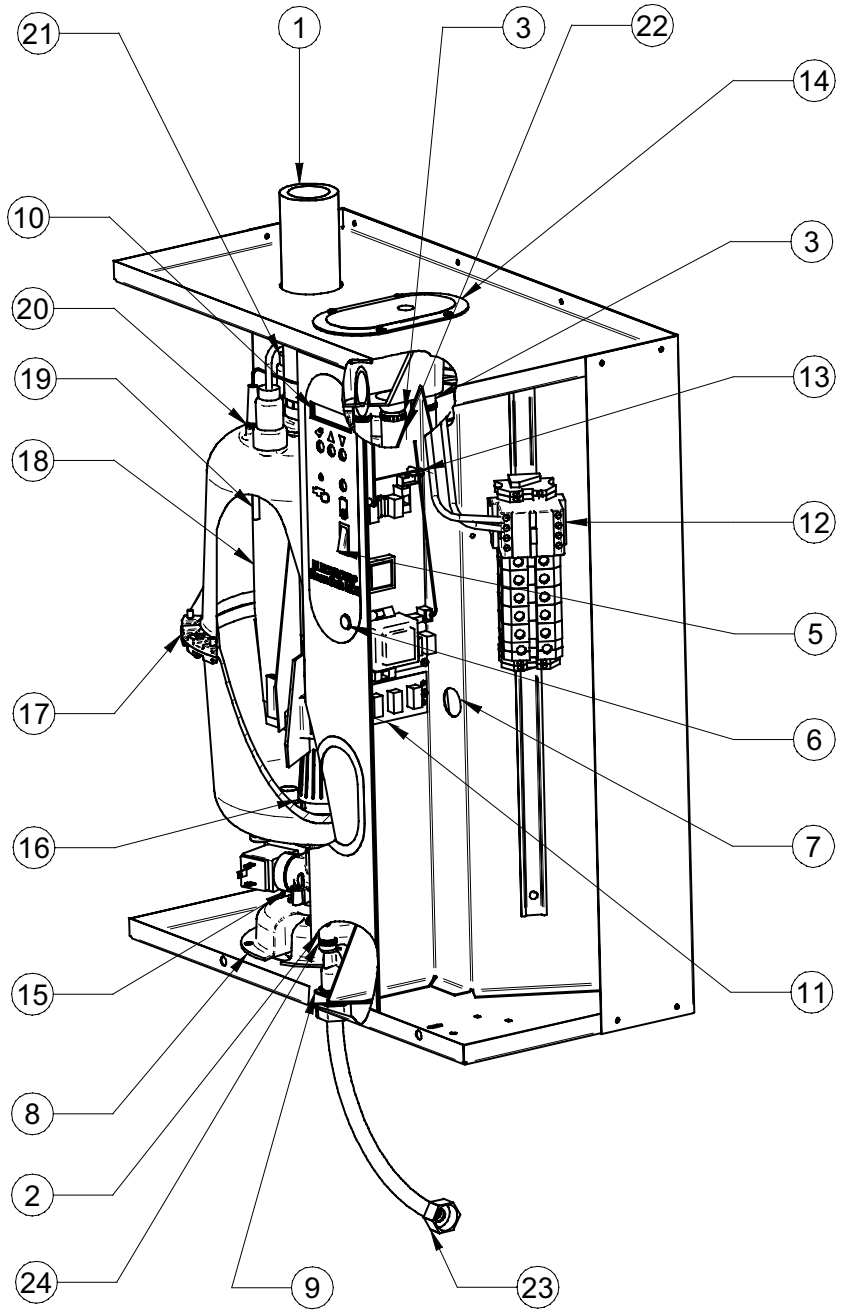


	Dimensions in mm								Weight in Kg	
	Humidifier			Water inlet	Steam outlet	Steam outlet spacing	Drain outlet	Drain outlet spacing	Empty	Opera-ting
Model	A	B	C	D	E	F	G	H		
ELMC 1 SM CYL	475	540	217	215	355		355		15	23
ELMC 1 LG CYL	550	680	272	270	410		410		22	37
ELMC 2 CYL	845	680	272	270	400	300	400	300	30	60
ELMC 3 CYL	1075	680	272	270	380	275	380	275	45	90

- SM CYL = small cylinder, LG CYL = large cylinder

Pictures for illustrating purposes only

ELMC 5-30 humidifier split view



1	Steam hose
2	Water feed hose 12x16mm
3	Hose clamp 16x25mm
4	Overflow water hose 18x22m
5	On/off rocker switch
6	Stand-by lamp
7	Grommet
8	Drain cup (upper)
9	Water inlet valve
10	LCD display board (Ref 500600/3)
11	Remote information board (option)
12	Power contactor
13	Main circuit board (Ref 500101/05)
14	Filling cup
15	Drain valve
16	Cylinder strainer
17	Steam cylinder
18	Stainless steel electrode plate
19	High water level electrode
20	High water level electrode cable
21	Electrode live power cable
22	Cylinder water feed hose 18x22 mm
23	Flexible water feed hose 3/4″ F
24	Hose clamp 12x22 mm

Pictures for illustrating purposes only

All works concerned with electrical installation must be carried out by a skilled and qualified personnel.

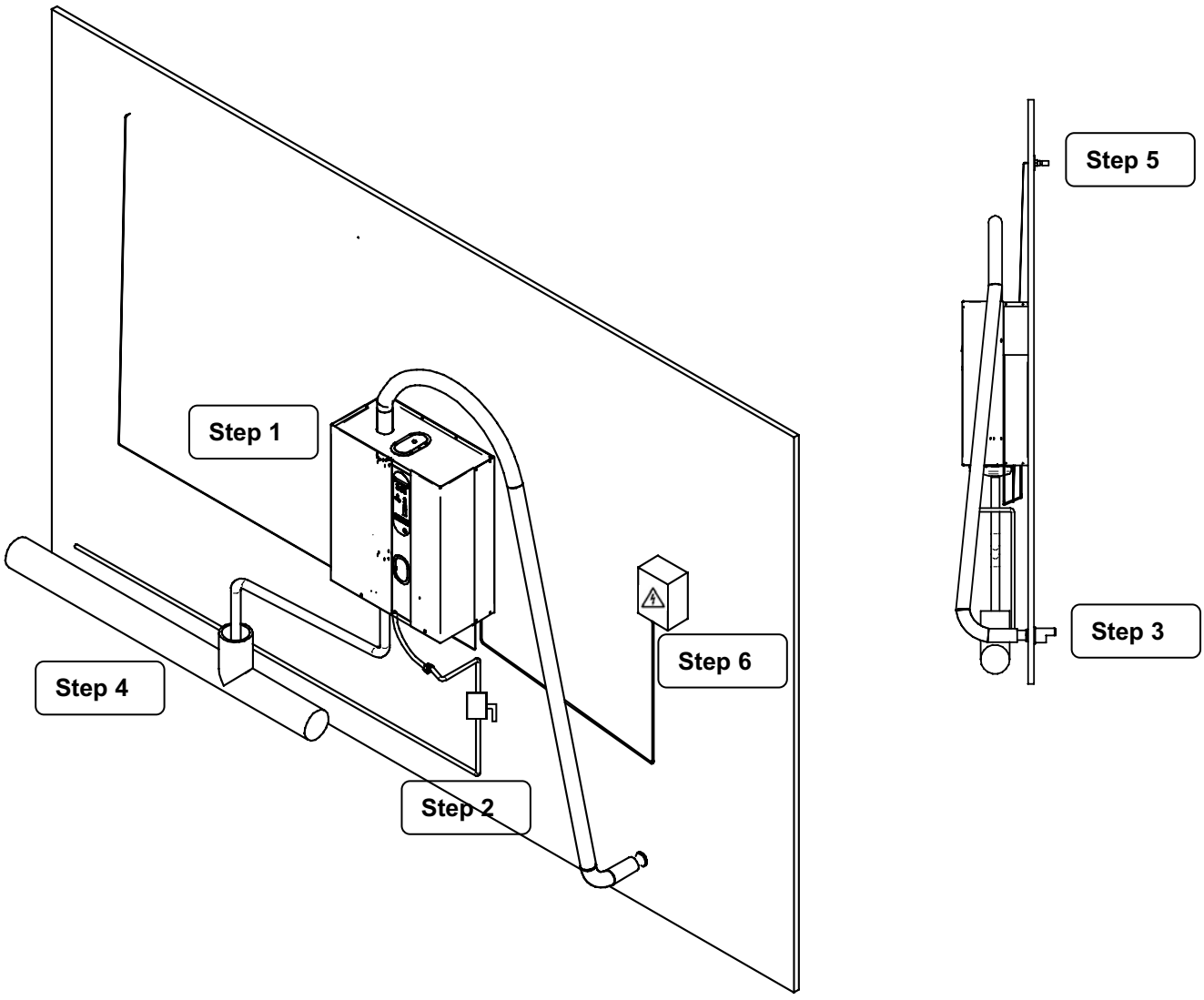
Please read, heed and follow the enclosed information for the installation of the humidifier and the steam, water and electrical networks.

For further technical assistance, feel free to call devatec.

Failure to adhere to manufacturer's installation recommendations will invalidate your warranty.

Installation steps

Step 1 - Placing and wall attachment
Step 2 - Water connection
Step 3 - Steam nozzle and temperature sensor positioning
Step 4 - Draining outlet
Step 5 - Temperature sensor and options
Step 6 - Electrical connections



Pictures for illustrating purposes only

How to install the humidifier on wall

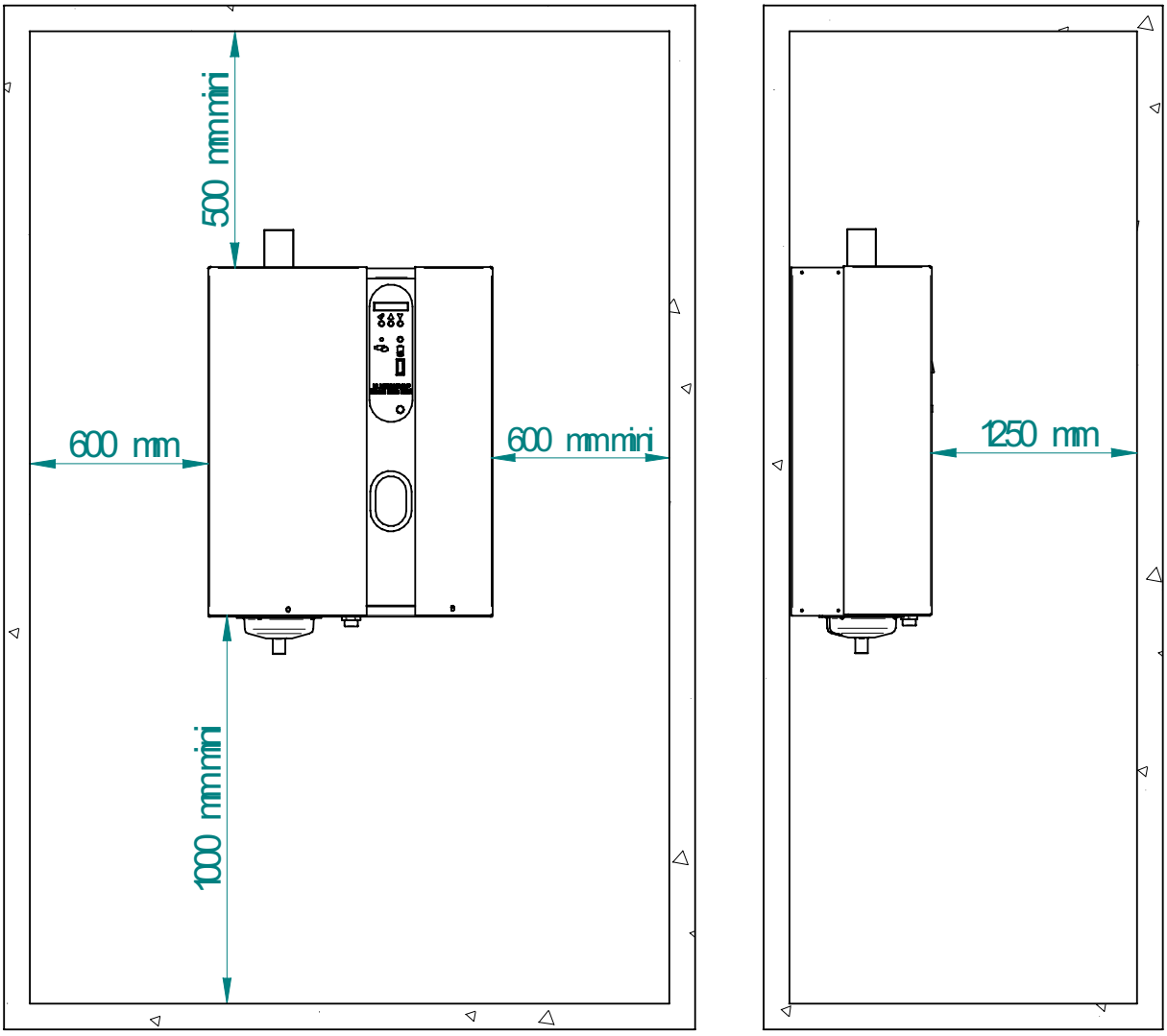
Installation tips :

The steam generator should be operated within 5°C and 40°C in a room with less than 80% of humidity.

When in operation, the rear panel becomes hot (60°C) so do not hang the generator on a heat sensitive surface.

The **devatec** steam generators have been developped to be hanged on wall. Before installation, make sure that the surface material is strong enough to hold the steam bath.

Consider free space around the generator to allow easy access for maintenance purposes (s.a. here under sketches).



Pictures for illustrating purposes only

Installation on wall

Nota :

Use installation equipment and material appropriate to the surface on which the unit should be hanged .

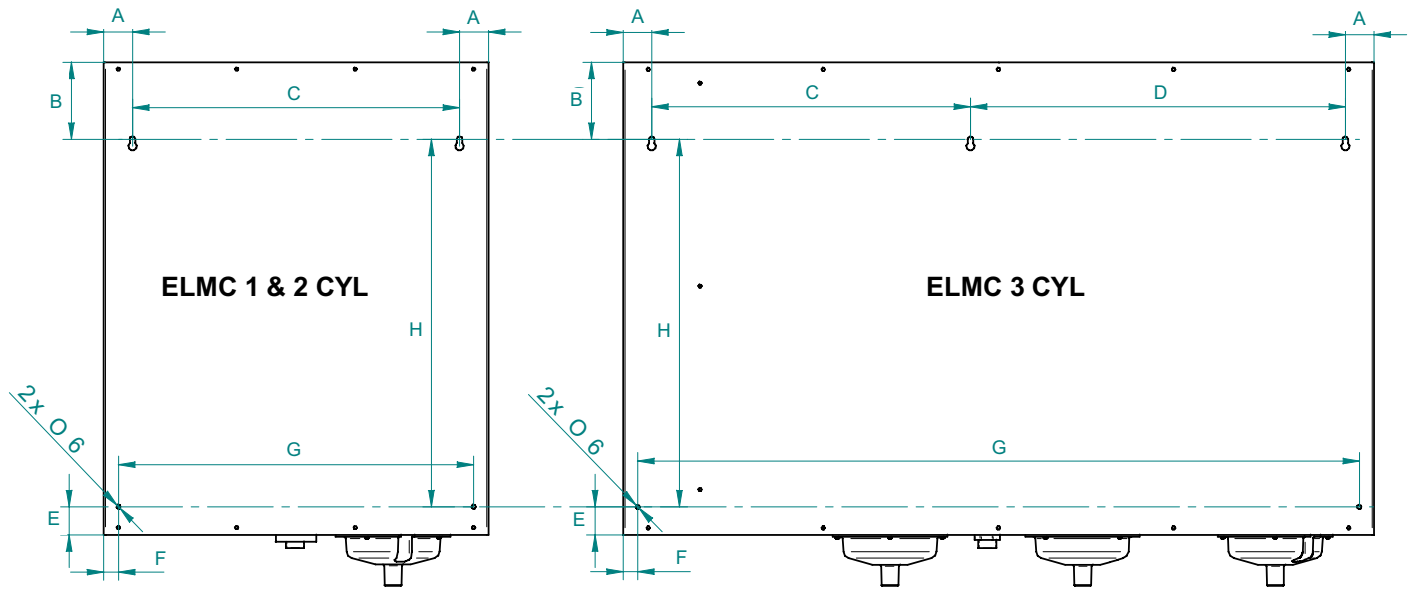
The dimensions mentioned underneath are for cabinets without doors.

Method:

Mark and drill the mounting holes for 6 mm screws (s.a. the drilling distance table) : ELMC 1 & 2 cylinders : 4 mounting screws—ELMC 3 cylinders : 5 mounting screws

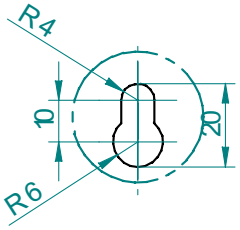
Insert pegs in holes and the upper screws. Allow about 10 mm for hanging the cabinet.

Hang the cabinet and level it vertically and horizontally. Screw up the upper screws and then screw up the lower screws.



- CYL= Cylinder

	Drilling distances in mm							
Model	A	B	C	D	E	F	G	H
ELMC 1 SM CYL	21	110	425		40	21	425	385
ELMC 1 LG CYL	41	110	467		40	21	507	525
ELMC 2 CYL	41	110	760		40	21	800	525
ELMC 3 CYL	41	110	455	535	40	21	1030	525



Detail of hanging hole

- SM CYL = small cylinder, LG CYL = large cylinder (s.a. electrical table)

Pictures for illustrating purposes only

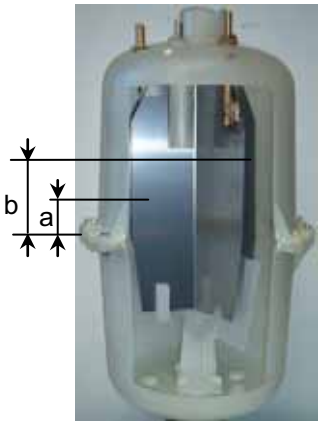
WATER CONNECTION

Recommendations :

The operating principle of the electrode steam generator is the electrolyse where an electrical current runs through stainless steel electrode plates immersed in water made conductive by the mineral salts it contains.

The ElectroVap MC2 Steam Bath can produce steam from 3 water qualities having the following characteristics :

The water level must be between « a » and « b » for the maximum capacity of the cylinder.



Town water or raw water : the water TH should be **between 0 and 40° French grade** for a conductivity **between 1000µ and 350µS/cm (Micro Siemens per centimetre).**

Softened water: water treated by sodium/calcium permutation on resins.
The titration value TH should be kept as constant as possible and **between 0° and 2°**.
It is essential that the salt maintenance of softeners be programmed for the water volume consummed in order to prevent an excessive salt concentration to humidifer once the regeneration cycle is finished (please refer to the softener's user manual). Duplex softeners are best suited to your humidifier in this regard. In doubt, please consult **devatec**.

Demineralised water: this is a water treatment by reverse osmosis or running through resins.
The ElectroVap MC2 Steam Bath can work with demineralised waters having a minimum water quality of **30µS/cm**. A tea spoon of bicarbonate of soda must be added on start-up to initiate steam production.

No chemical agent whatsoever (chlorine, disinfectant, ozone…) must be added to the water. Some water qualities may generate foam that can disturb the correct functionning of the generator. If this occurs to your humidifier, please refer to devatec for further assistance.

Recommendations on water tapping :

A fresh mains cold water service should be used to supply the unit. The water pressure should not exceed 6 bar and should not be inferior to 1 bar with a temperature less than 40°C.

The water supply connection is on the bottom of the unit. All the ELMC are supplied with a 500 mm long water inlet hose with a 3/4″ female connection to the cold water supply. **A check valve should be located on the mains and cold water service connection to the unit**.

The ELMC2 Steam Bath uses water to produce steam so leakage may happen causing potential damage. Ensure that the floor below the generator is constructed from waterproof materials (with draining facilities) to withstand any water spilling during servicing or if a problem occurs.

Pictures for illustrating purposes only

STEAM DISTRIBUTION NOZZLE

Steam from the cylinder enters the hammam via a steam distribution nozzle. This nozzle is made of material designed to prevent scalding. In order to obtain optimum performance of your generator, it is recommended that these instructions be adhered to as far as possible.

There are two steam inlet diameters available : Ø 25 mm and Ø 40 mm



1	Steam inlet Ø 25mm
2	Steam inlet Ø 40mm

Steam nozzle selection table

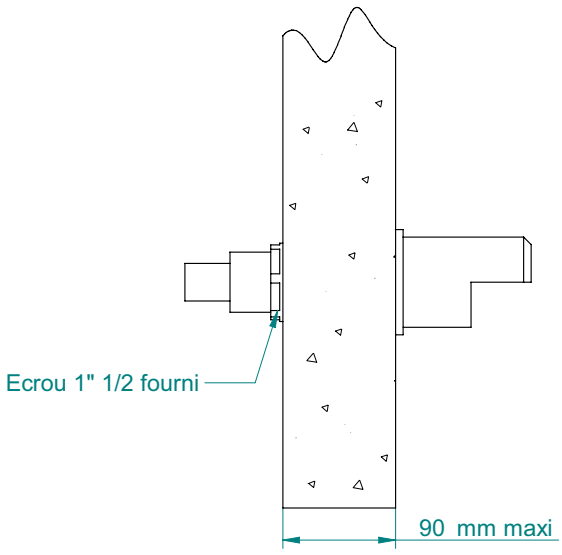
The number of distribution nozzles and the diameters depend on the steam generator model.

ELMC model	1 SM CYL	10 single phase	1 LG CYL	2 CYL	3 CYL
Number of steam nozzle(s)	1	1	1	2	3
Steam inlet diamenter	Ø 25mm	Ø 25mm	Ø 40mm	Ø 40mm	Ø 40mm

- SM CYL = small cylinder, LG CYL = large cylinder (s.a. electrical tables)

Wall installation

- The installation wall should be no thicker than 90 mm.
- Bore a hole of Ø 41mm
- Insert the nozzle body in the hole
- And tighten the 1"1/2 nut to secure the nozzle on wall



Pictures for illustrating purposes only

Steam outlet

1. We would recommend to use the steam hose from Devatec supply.
NB : when the steam generator is started up for the first time, a smell of burning may be smelt especially when brand new hoses are installed. This is normal and will eventually dispel.

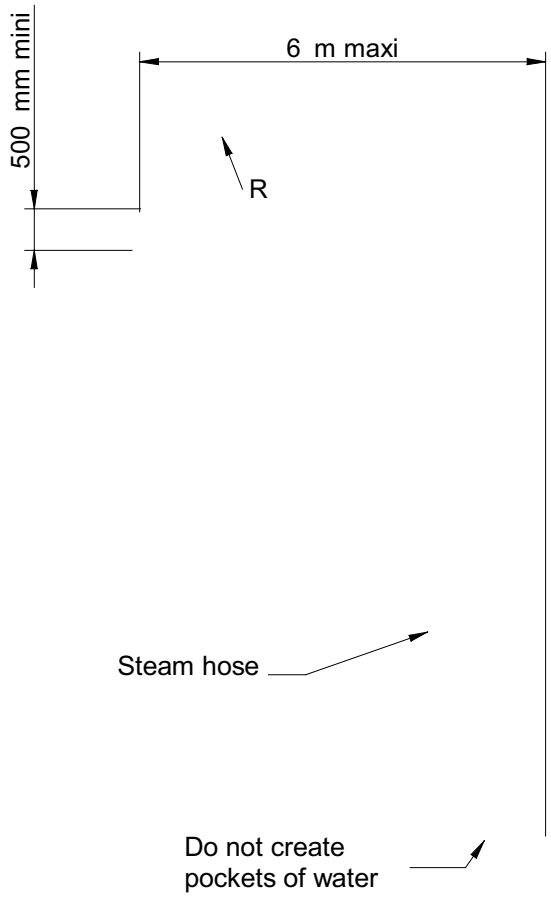
2. Steam hose selection :

ELMC model	1 SM CYL	1 LG CYL	2 CYL	3 CYL
Nb of steam outlets	1	1	2	3
Steam outlet Ø	Ø 25mm	Ø 40mm	Ø 40mm	Ø 40mm

- SM CYL = small cylinder, LG CYL = large cylinder (s.a. electrical tables)

4. Please adhere to the recommendations given underneath for the installation of the steam hose . A set of hose clamps is supplied for ensuring a correct installation.

The steam generator should be located within 6 m. of the steam distribution nozzle. If the distance is superior to 6 m., insulated steel or copper pipe of a slightly larger diameter must be used.



Radius of bend for steam hose :
- Ø 25 mm hose = 250 mm minimal radius
- Ø 40 mm hose = 400 mm minimal radius

Pictures for illustrating purposes only

Condensate draining

The following drawing shows the water draining connections that should be made.

1. The **devatec** supplied steam hose should be used :

   ELMC 1 cylinder : 1m Ø25mm hose with 1 hose clamp (supplied).
   ELMC 2 cylinders : 1m + 1.2m Ø25mm hose with 2 clamps (supplied).
   ELMC 3 cylinders : 1m + 1.2m + 1.8m Ø25mm hose with 3 clamps (supplied).
   These hoses are designed to be connected to the draining system. Regular replacement is recommended.

2. If rigid piping is used, it must be heat (100°C) and pressure resistant PVC material and have a 60 mm wide diameter.

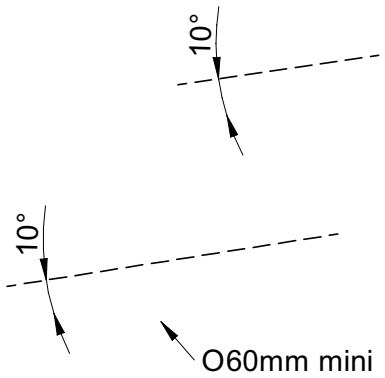
3. The discharge hose must be free from any obstacle. It is recommended that each steam cylinder has its own drain pipe and tank arrangement.

4. Use water tanks with a lid that have water collecting facilities.

5. A funnel can also be used but it should be offset from the underside of the unit to prevent any steam and/or condensation from getting into the cabinet. The installation of a siphon (as per the draining hose) is recommended and arrangements for holding water spilling should also be made.

6. **CAUTION :** keep a minimum pitch of 10° for both the draining hose of the generator and for general drain pipe (s.a. picture 1).

Fig.1



Pictures for illustrating purposes only

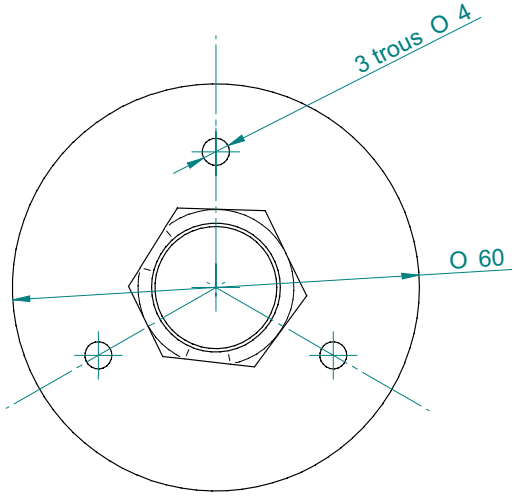
Temperature sensor

A temperature sensor located inside the hammam measures the temperature value which is sent to the steam generator for command.



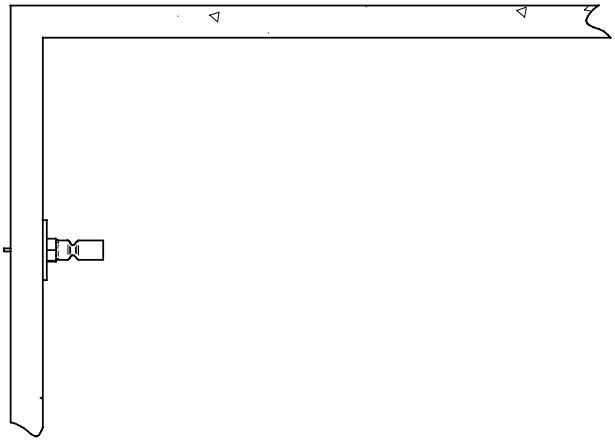
Attachement

- Bore a hole of Ø 25mm.
- Pass the sensor cable through the hole from inside the hammam.
- Mark and drill three holes and insert pegs.
- Apply a silicon film between the Ø 60 mm disk and the wall. Screw up the three screws.
- To prevent any steam leakage, the cable hole can be stuffed with silicon.

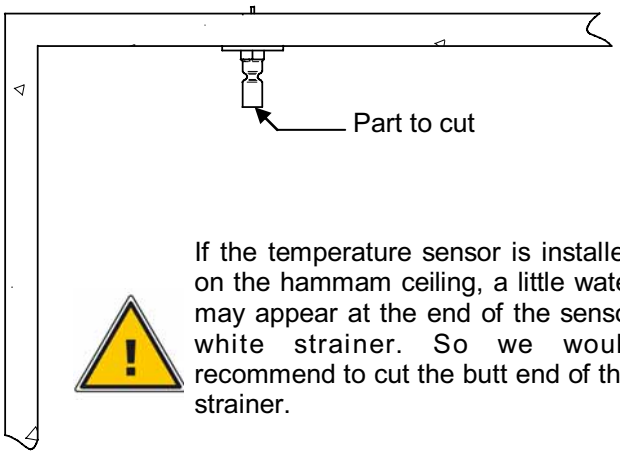


Positioning

Recommended installation



Exceptional installation



If the temperature sensor is installed on the hammam ceiling, a little water may appear at the end of the sensor white strainer. So we would recommend to cut the butt end of this strainer.

Pictures for illustrating purposes only

Option 1



The Option 1 includes a Steam Bath remote control, a 12V supply transformer together with a 3 dry contact control board. It may also include an RS485 board. The 12V supply transformer powers the light (12V bulb or skylike ceiling) and the remote control.
The Remote Control (IP54) makes it possible to communicate with the steam generator and to display information. As well, the steam production, the hammam light, the pre-set temperature together with the perfume diffusion (if this option has been activated in the menu) can be programmed on a weekly basis. For further information, please revert to the Remote Control manual.

Option 2

The Option 2 just differs from the Option 1 by the control board that has 8 dry contacts instead of 3. Please revert to the Remote Control manual for further information.

Option 3 - Emergency button



The Option 3 is an Emergency Button to be installed inside the Hammam room. A push on this button stops immediately the steam generator, starts the ventilation device or the exhaust air system and shuts a relay that can be linked to a warning light, a bell alarm or to some other warning device. Please revert to the Optional feature documentation for further information.

Option 4 - Time bath



The Option 4 includes a push button, a 3 dry contact control board and a two-colour green/red lamp. When there is no Remote Control, a mere push on this button powers the steam generator for about 30 minutes (adjustable time). A red ligth is shown when the steam bath steams up and it turns green when it is ready for use. Further details can be found in our documentation for optional features.

Perfume dispensor



This optional perfume dispensor consists in a dosing pump, a 7L perfume tank and a coil assy to be connected to the steam hose. This option is powered by the steam generator through terminals 3 & 4. The injection time and period can be selected either in the steam bath « changing parameters » menu or through the Steam Bath Remote Control (option 1 or 2 compulsory). Please consult the Perfume Dispensor manual for further information.

Disinfection dispensor

This optional disinfection dispensor consists in a dosing pump, a 7L disinfectant tank and a check valve assy to be connected onto the water piping . This option is powered by the steam generator through terminals 3 & 4 or trough the 3 or 8 dry contact board (if option 1 or 2 is installed). The disinfection time and period can be selected in the steam bath « changing parameters » menu. Please consult the Perfume Dispensor manual for further information.

Pictures for illustrating purposes only



RECOMMENDATION:



All works concerned with the electrical installation must be carried out by skilled and qualified personnel (eg electrician with appropriate training). The customer is responsible for ensuring their suitability. Please observe local regulations concerning the provision of electrical installations.



Check all electrical terminal screws at commissioning, after 50 hours operation and at every service thereafter.



Take care : the ElectroVap Steam MC2 Steam Bath electronic components are very sensitive to electrostatic shocks. Appropriate steps must be taken before any operation.

Pictures for illustrating purposes only

ELECTRICAL TABLES

MC2 Steam Bath Generator in 2 X 220V - 50/60 Hz

ELMC	Steam production (KG/Steam)	In (A)	Imaxi (A)	Pmaxi (KW)	Cylinder size	Steam diameter	Torroidal Transformer wiring
5	5,00	17	18,4	4,05	Small	25	Straight through
10	10,00	34	36	7,92	25 large	25	Split

MC2 Steam Bath Generator in 2 X 230V - 50/60 Hz

ELMC	Steam production(KG/ Steam)	In (A)	Imaxi (A)	Pmaxi (KW)	Cylinder size	Steam diameter	Torroidal Transformer wiring
5	5,00	16,3	17,6	4,05	Small	25	Straight through
10	10,00	32,7	34,8	8,00	25 large	25	Split

ALL WORKS CONCERNED WITH ELECTRICAL INSTALLATION MUST BE CARRIED OUT BY A SKILLED AND QUALIFIED PERSONNEL

Pictures for illustrating purposes only

MC2 Steam Bath Generator in 3 X 208V - 50/60 Hz

ELMC	Steam production (KG/Steam)	In (A)	Imaxi (A)	Pmaxi (KW)	Cylinder size	Steam diameter	Torroidal transformer wiring
5	5	9,6	10,5	4,13	Small	25	Straight
8	8	15,3	16,5	6,49	Small	25	Straight
10	10	19,1	20,5	8,07	Small	25	Straight
15-2	15	28,7	30,6	12,04	25 large	25	Split
20	20	38,2	40,6	15,98	40 large	40	Split
25	30	47,8	50,7	19,95	40 large	40	Split
30	32	62,9	66,6	26,21	2 x 40 large	40	Split
40	40	76,5	81	31,84	2 x 40 large	40	Split
50	50	95,6	101,1	39,75	3 x 40 large	40	Split
60	60	114,7	121,2	47,66	3 x 40 large	40	Split

MC2 Steam Bath Generator in 3 X 220V - 50/60 Hz

ELMC	Steam production (KG/Steam)	In (A)	Imaxi (A)	Pmaxi (KW)	Cylinder size	Steam diameter	Torroidal transformer
5	5	10	10,9	4,2	Small	25	Straight through
8	8	15,8	17	6,5	Small	25	Straight through
10	10	19,7	21,1	8,1	Small	25	Straight through
15-2	15	29,6	31,6	12	25 large	25	Split
20	20	39,4	41,9	16	40 large	40	Split
25	30	49	52	19,8	40 large	40	Split
30	32	64,9	68,7	26,2	2 x 40 large	40	Split
40	40	78,9	83,5	31,8	2 x 40 large	40	Split
50	50	99	104,6	39,9	3 x 40 large	40	Split
60	60	119	125,7	47,9	3 x 40 large	40	Split
70	70	138	145,7	55,5	3 x 40 large	40	Split

ALL WORKS CONCERNED WITH ELECTRICAL INSTALLATION MUST BE CARRIED OUT BY A SKILLED AND QUALIFIED PERSONNEL

Pictures for illustrating purposes only

MC2 Steam Bath Generator in 3 X 230V - 50/60 Hz

ELMC	Steam production (KG/Steam)	In (A)	Imaxi (A)	Pmaxi (KW)	Cylinder size	Steam diameter	Torroidal Transformer wiring
5	5	9,6	10,5	4,13	Small	25	Straight through
8	8	15,3	16,5	6,49	Small	25	Straight through
10	10	19,1	20,5	8,07	Small	25	Straight through
15-2	15	28,7	30,6	12,04	25 large	25	Split
20	20	38,2	40,6	15,98	40 large	40	Split
25	25	47,8	50,7	19,95	40 large	40	Split
30	32	62,9	66,6	26,21	2 x 40 large	40	Split
40	40	76,5	81	31,84	2 x 40 large	40	Split
50	50	95,6	101,1	39,75	3 x 40 large	40	Split
60	60	114,7	121,2	47,66	3 x 40 large	40	Split
70	70	133,8	141,3	55,57	3 x 40 large	40	Split

MC2 Steam Bath Generator in 3 X 380V - 50/60 Hz

ELMC	Steam production (KG/Steam)	In (A)	Imaxi (A)	Pmaxi (KW)	Cylinder size	Steam diameter	Torroidal Transformer wiring
5	5	5,7	6,4	4,2	Small	25	Loop
8	8	9,1	10	6,6	Small	25	Straight through
10	10	11,4	12,4	8,2	Small	25	Straight through
15-2	15	17,1	18,4	12,1	Small	25	Straight through
20	20	22,8	24,5	16,1	40 large	40	Straight through
30	30	34,3	36,5	24	40 large	40	Split
40	40	45,7	48,5	31,9	2 x 40 large	40	Straight through
50	50	57,1	60,5	39,8	2 x 40 large	40	Split
60	60	68,5	72,6	47,8	2 x 40 large	40	Split
90	90	102,8	108,7	71,5	3 x 40 large	40	Split

ALL WORKS CONCERNED WITH ELECTRICAL INSTALLATION MUST BE CARRIED OUT BY A SKILLED AND QUALIFIED PERSONNEL

Pictures for illustrating purposes only

MC2 Steam Bath Generator in 3 X 400V - 50/60 Hz

ELMC	Steam production (KG/Steam)	In (A)	Imaxi (A)	Pmaxi (KW)	Cylinder size	Steam diameter	Torroidal Transformer wiring
5	5	5,5	6,2	4,24	Small	25	Loop
8	8	8,8	9,7	6,63	Small	25	Straight through
10	10	11	12	8,21	Small	25	Straight through
15-2	15	16,5	17,8	12,18	Small	25	Straight through
20	20	22	23,5	16,07	40 large	40	Straight through
30	30	33	35,1	24,01	40 large	40	Split
30 HC	33	36,3	38,6	26,42	40 large	40	Split
40	40	44	46,7	31,94	2 x 40 large	40	Straight through
50	50	55	58,3	39,88	2 x 40 large	40	Split
60	60	66	69,8	47,74	2 x 40 large	40	Split
60 HC	66	72,6	76,8	52,56	2 x 40 large	40	Split
90	90	98,9	104,6	71,55	3 x 40 large	40	Split
90 HC	99	108,9	115,1	78,71	3 x 40 large	40	Split

MC2 Steam Bath Generator in 3 X 415V - 50/60 Hz

ELMC	Steam production (KG/Steam)	In (A)	Imaxi (A)	Pmaxi (KW)	Cylinder size	Steam diameter	Torroidal Transformer wiring
5	5	5,3	6	4,26	Small	25	Loop
8	8	8,5	9,3	6,60	Small	25	Straight through
10	10	10,6	11,6	8,23	Small	25	Straight through
15-2	15	15,9	17,1	12,14	Small	25	Straight through
20	20	21,2	22,7	16,11	40 large	40	Straight through
30	30	31,8	33,9	24,06	40 large	40	Split
40	40	42,4	45	31,93	2 x 40 large	40	Straight through
50	50	53	56,2	39,88	2 x 40 large	40	Split
60	60	63,6	67,3	47,76	2 x 40 large	40	Split
90	90	95,4	100,8	71,53	3 x 40 large	40	Split

ALL WORKS CONCERNED WITH ELECTRICAL INSTALLATION MUST BE CARRIED OUT BY A SKILLED AND QUALIFIED PERSONNEL

Pictures for illustrating purposes only

MC2 Steam Bath Generator in 3 X 480V - 50/60 Hz

ELMC	Steam production (KG/Steam)	In (A)	Imaxi (A)	Pmaxi (KW)	Cylinder size	Steam diameter	Torroidal Transformer wiring
5	5	4,6	5,2	4,25	Small	25	Loop
8	8	7,3	8	6,58	Small	25	Straight through
10	10	9,2	10,1	8,27	Small	25	Straight through
15-2	15	13,7	14,9	12,22	Small	25	Straight through
20	20	18,3	19,6	16,09	40 large	40	Straight through
30	30	27,5	29,3	24,06	40 large	40	Split
40	40	36,6	38,9	31,95	2 x 40 large	40	Straight through
50	50	45,8	48,5	39,85	2 x 40 large	40	Split
60	60	55	57,7	47,37	2 x 40 large	40	Split
90	90	82,4	87	71,43	3 x 40 large	40	Split

MC2 Steam Bath Generator in 3 X 575V - 50/60 Hz

ELMC	Steam production (KG/Steam)	In (A)	Imaxi (A)	Pmaxi (KW)	Cylinder size	Steam diameter	Torroidal Transformer wiring
5	5	3,8	4,4	4,33	Small	25	Loop
8	8	6,1	6,8	6,69	Small	25	Straight through
10	10	7,6	8,4	8,26	Small	25	Straight through
15-2	15	11,5	12,5	12,29	Small	25	Straight through
20	20	15,3	16,5	16,22	40 large	40	Straight through
30	30	22,9	24,6	24,19	40 large	40	Split
40	40	30,6	32,6	32,05	2 x 40 large	40	Straight through
50	50	38,2	40,7	40,02	2 x 40 large	40	Split
60	60	45,9	48,7	47,88	2 x 40 large	40	Split
90	90	68,8	72,9	71,68	3 x 40 large	40	Split

ALL WORKS CONCERNED WITH ELECTRICAL INSTALLATION MUST BE CARRIED OUT BY A SKILLED AND QUALIFIED PERSONNEL

Pictures for illustrating purposes only

MC2 Steam Bath Generator in 3 X 600V - 50/60 Hz

ELMC	Steam production (KG/Steam)	In (A)	Imaxi (A)	Pmaxi (KW)	Cylinder size	Steam diameter	Torroidal Transformer wiring
5	5	3,7	4,3	4,41	Small	25	Loop
8	8	5,9	6,6	6,77	Small	25	Straight through
10	10	7,3	8,1	8,31	Small	25	Straight through
15-2	15	11	12	12,31	Small	25	Straight through
20	20	14,7	15,8	16,21	Large 40	40	Straight through
30	30	22	23,5	24,11	Large 40	40	Split
40	40	29,3	31,3	32,11	2 x Large 40	40	Straight through
50	50	36,6	39	40,01	2 x Large 40	40	Split
60	60	44	46,7	47,91	2 x Large 40	40	Split
90	90	66	69,8	71,61	3 x Large 40	40	Split

MC2 Steam Bath Generator in 3 X 690V - 50/60 Hz

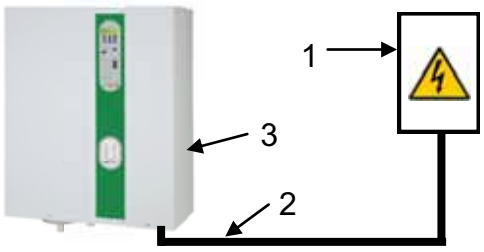
ELMC	Steam production (KG/Steam)	In (A)	Imaxi (A)	Pmaxi (KW)	Cylinder size	Steam diameter	Torroidal Transformer wiring
5	5	3,2	3,8	4,48	Small	25	Loop
8	8	5,1	5,8	6,84	Small	25	Straight through
10	10	6,4	7,1	8,38	Small	25	Straight through
15-2	15	9,6	10,5	12,39	Small	25	Straight through
20	20	12,7	13,8	16,28	Large 40	40	Straight through
30	30	19,1	20,5	24,19	Large 40	40	Split
40	40	25,5	27,2	32,09	2 x Large 40	40	Straight through
50	50	31,9	33,9	40	2 x Large 40	40	Split
60	60	28,2	40,7	48,02	2 x Large 40	40	Split
90	90	57,4	60,8	71,74	3 x Large 40	40	Split

ALL WORKS CONCERNED WITH ELECTRICAL INSTALLATION MUST BE CARRIED OUT BY A SKILLED AND QUALIFIED PERSONNEL

Pictures for illustrating purposes only

ELECTRICAL CONNECTIONS

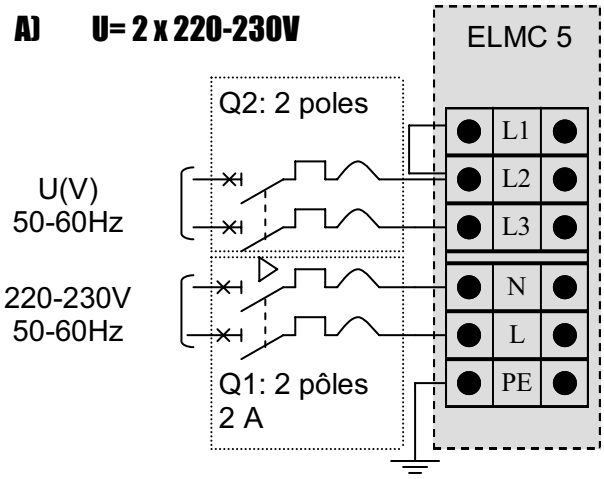
All works concerned with electrical installation must be carried out by a skilled and qualified personnel.
Make sure that all incoming power supplies are isolated before installation and maintenance of the ElectroVap MC2 humidifier.



1 - Power supply isolator and MCB
2 - Power supply cable
3– Electrical compartment

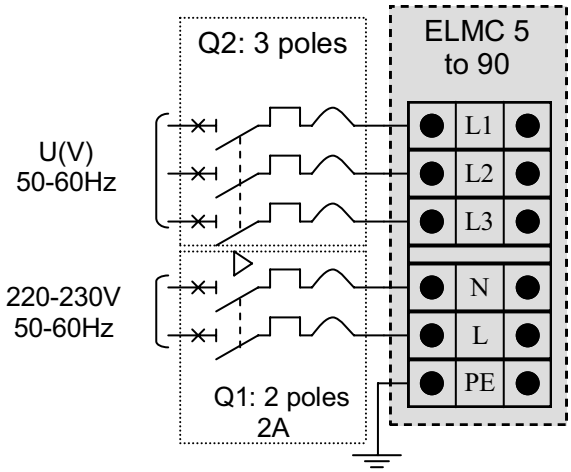
WARNING :
Failure to fit an electrical power isolator and MCB as part of the electrical installation significantly increases the risk of electric shock, which can be fatal.

A) U= 2 x 220-230V



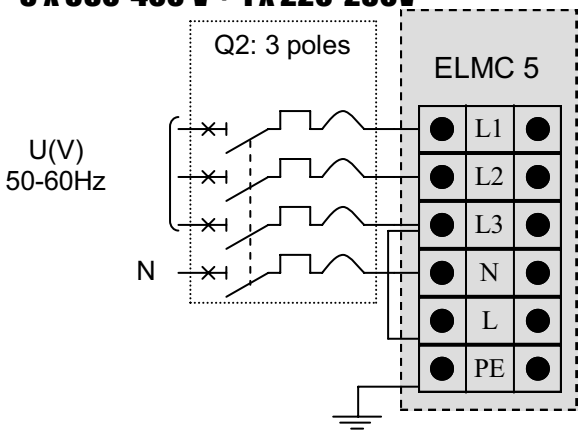
Q1 and Q2: MCB and electrical power isolation

B) U = 3 x 380-400V



The symbol Δ between Q1 & Q2 means that these MCB are coupled. The power MCB Q2 and control MCB Q1 are mechanically linked together. So if a fault is detected, the power and the control circuits are switched off and there is no voltage on the unit. The unit is really off voltage.

C) 3 phases + neutral: U =3 x 380-400 V + 1 x 220-230V



D) 3 phases without neutral: 3 x 380-400 V

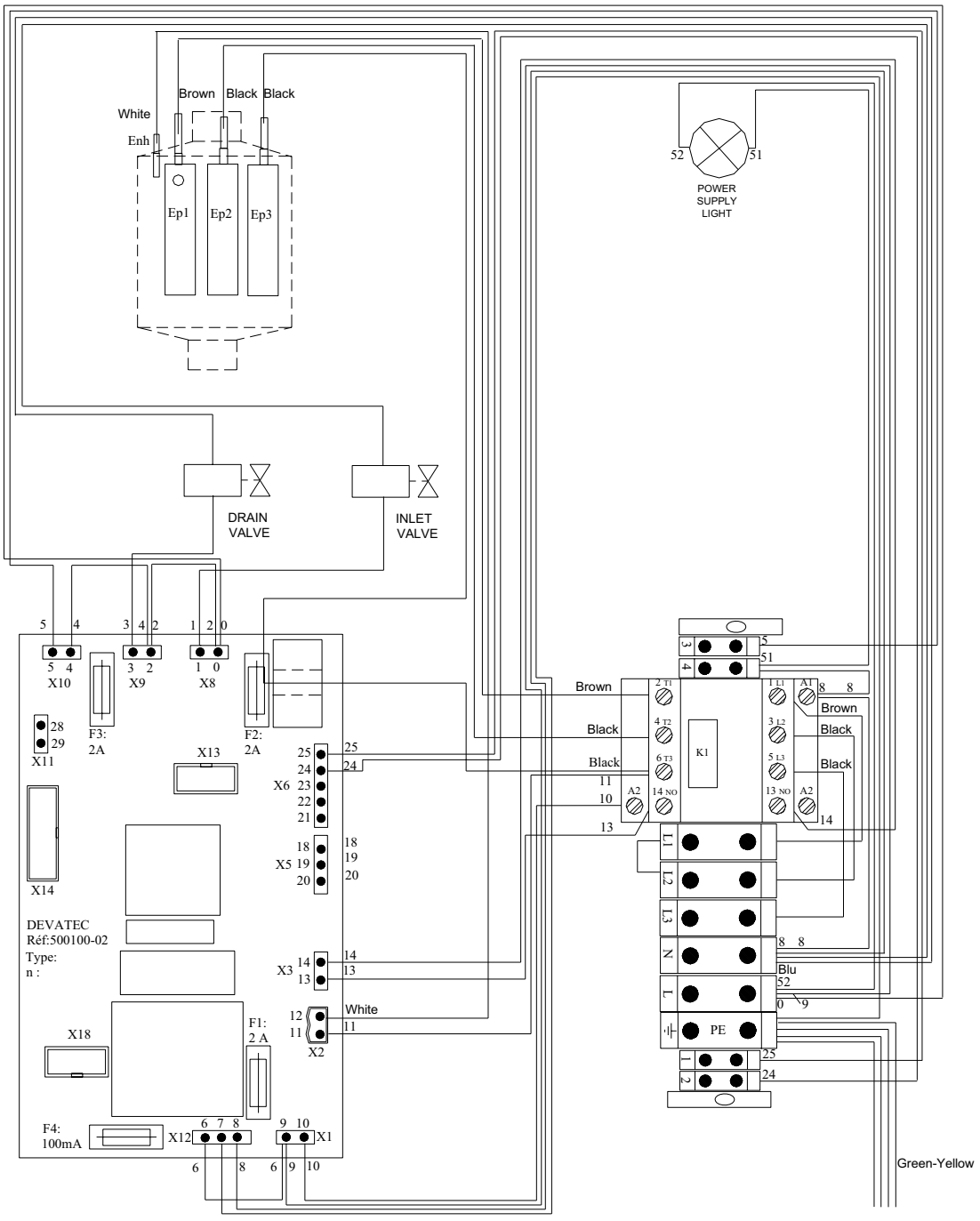
In this case, a transformer (option) must be Installed.

Failure to observe manufacturer's installation recommendations will invalidate the manufacturer's warranty.

ALL WORKS CONCERNED WITH ELECTRICAL INSTALLATION MUST BE CARRIED OUT BY A SKILLED AND QUALIFIED PERSONNEL

Pictures for illustrating purposes only

ELMC 5 WIRING SCHEME (2 x 220-230 V)

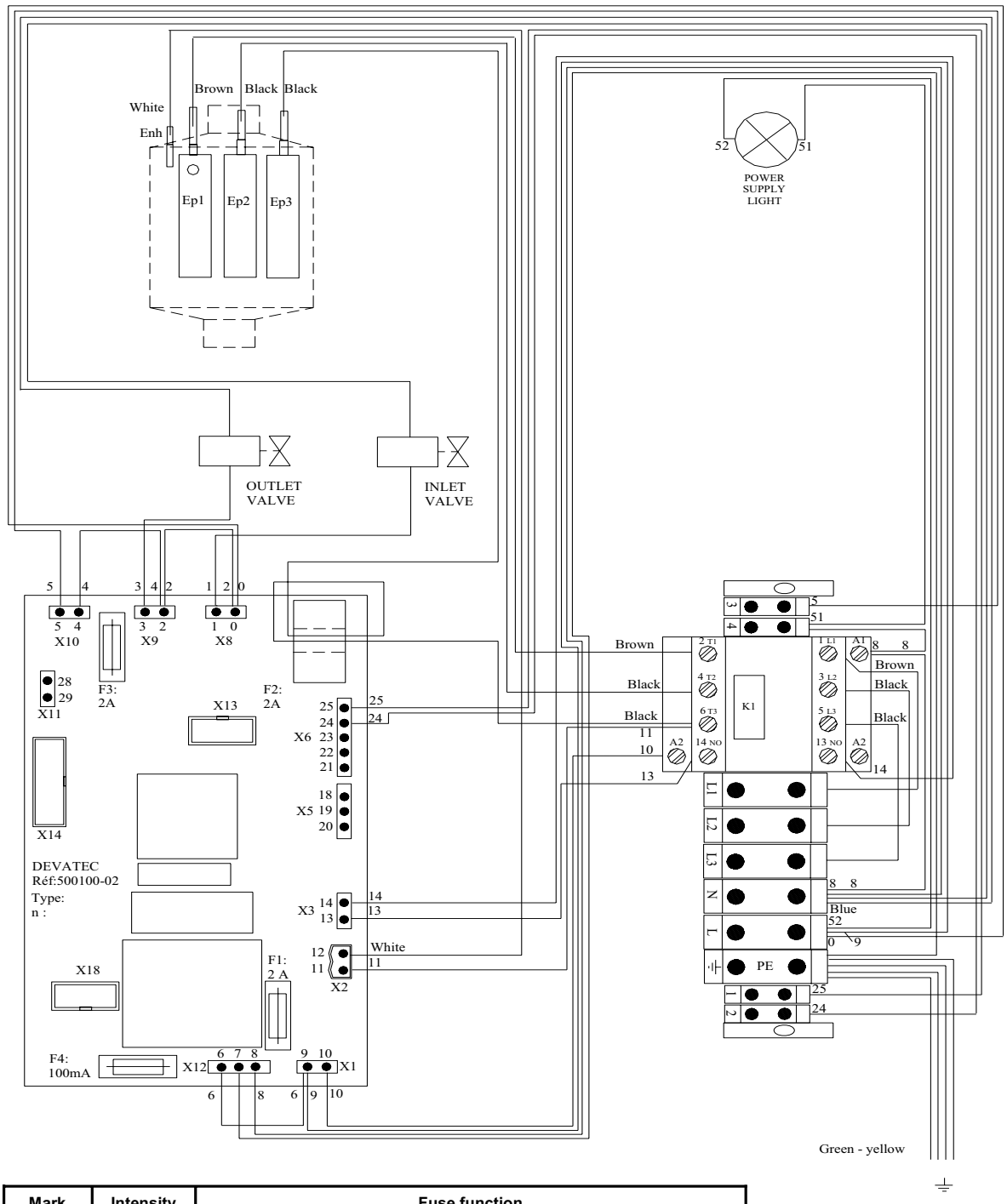


Mark	Intensity	Fuse function
F1	2A	Protection of the power contactor coil
F2	2A	Protection of the inlet valve coil
F3	2A	Protection of the drain valve coil
F4	100mA	Protection of the electronic boards

ALL WORKS CONCERNED WITH ELECTRICAL INSTALLATION MUST BE CARRIED OUT BY A SKILLED AND QUALIFIED PERSONNEL

Pictures for illustrating purposes only

ELMC 5 to 25 WIRING SCHEME - 3 x 208 - 230 V
ELMC 5 to 30 WIRING SCHEME - 3 X 380 to 690 V

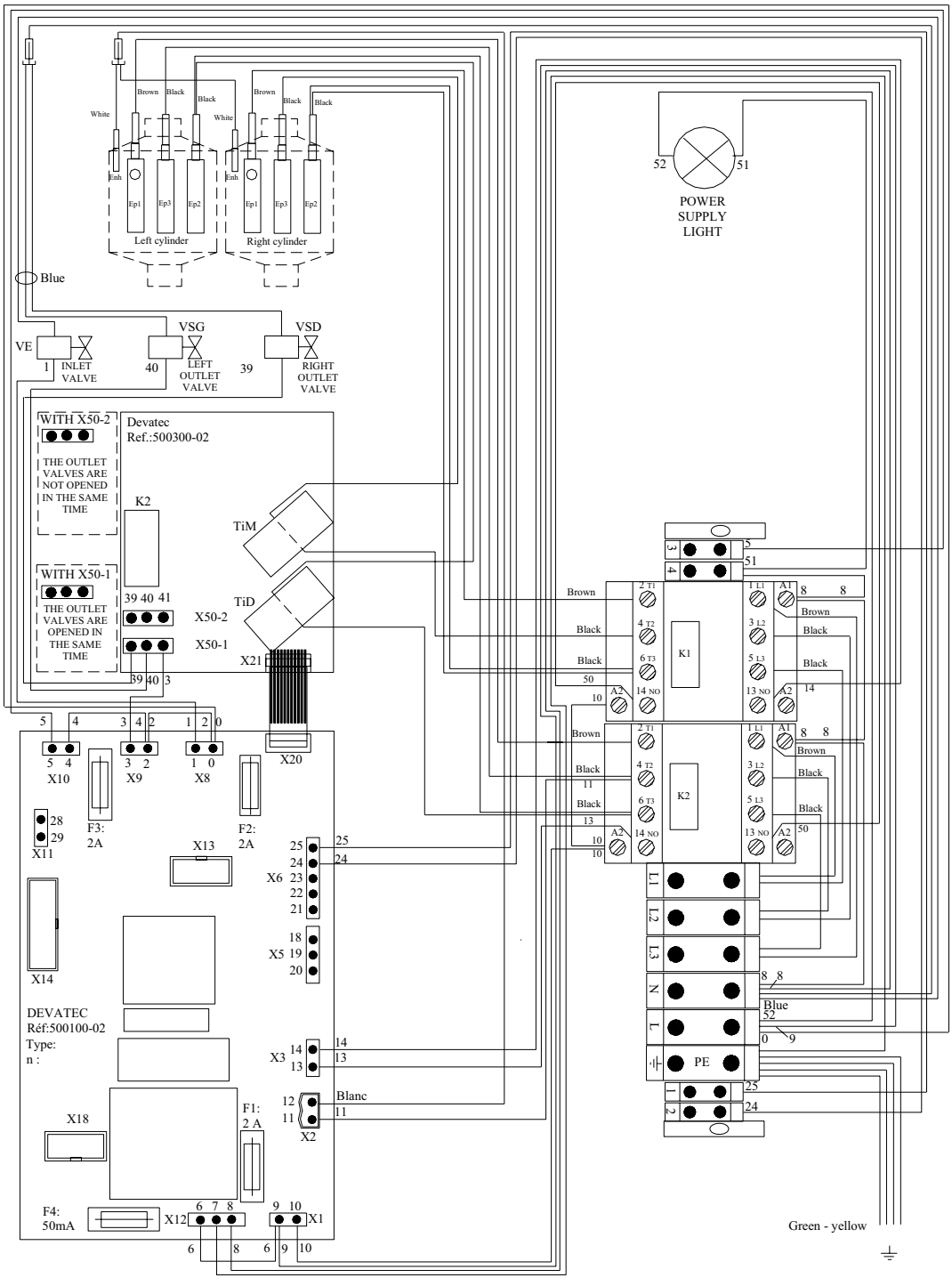


Mark	Intensity	Fuse function
F1	2A	Protection of the power contactor coil
F2	2A	Protection of the inlet valve coil
F3	2A	Protection of the drain valve coil
F4	100mA	Protection of the electronic boards

ALL WORKS CONCERNED WITH ELECTRICAL INSTALLATION MUST BE CARRIED OUT BY A SKILLED AND QUALIFIED PERSONNEL

Pictures for illustrating purposes only

ELMC 30 –40 WIRING SCHEME - 3 x 208 to 230 V
ELMC 40 to 60 WIRING SCHEME –3 x 380 to 690 V

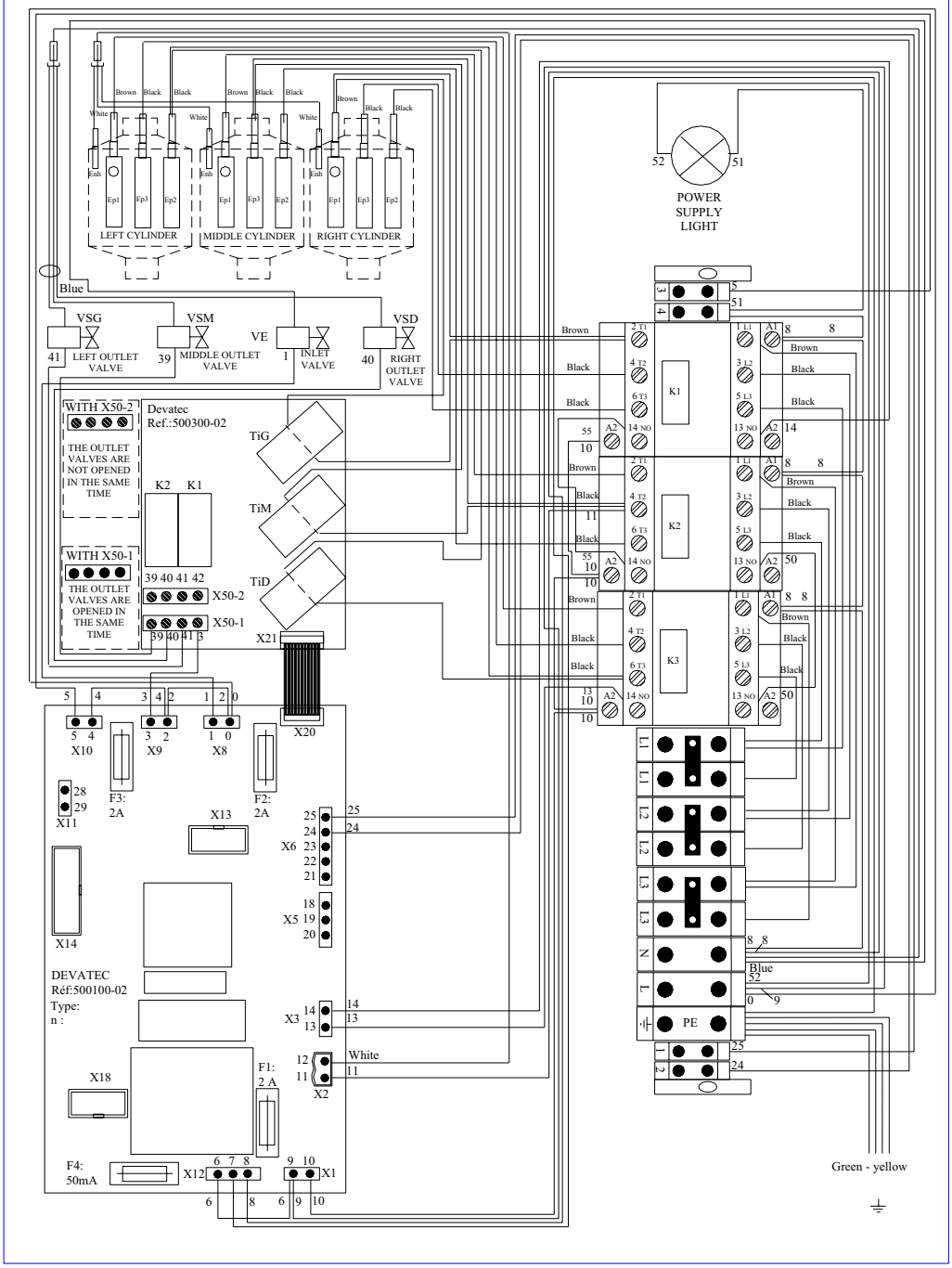


Mark	Intensity	Fuse function
F1	2A	Protection of the power contactor
F2	2A	Protection of the inlet valve coil
F3	2A	Protection of the drain valve coil
F4	100mA	Protection of the electronic boards

ALL WORKS CONCERNED WITH ELECTRICAL INSTALLATION MUST BE CARRIED OUT BY A SKILLED AND QUALIFIED PERSONNEL

Pictures for illustrating purposes only

ELMC 50-60 WIRING SCHEME –3 x 208 V
ELMC 50 to 70 WIRING SCHEME –3 x220-230 V & ELMC 90

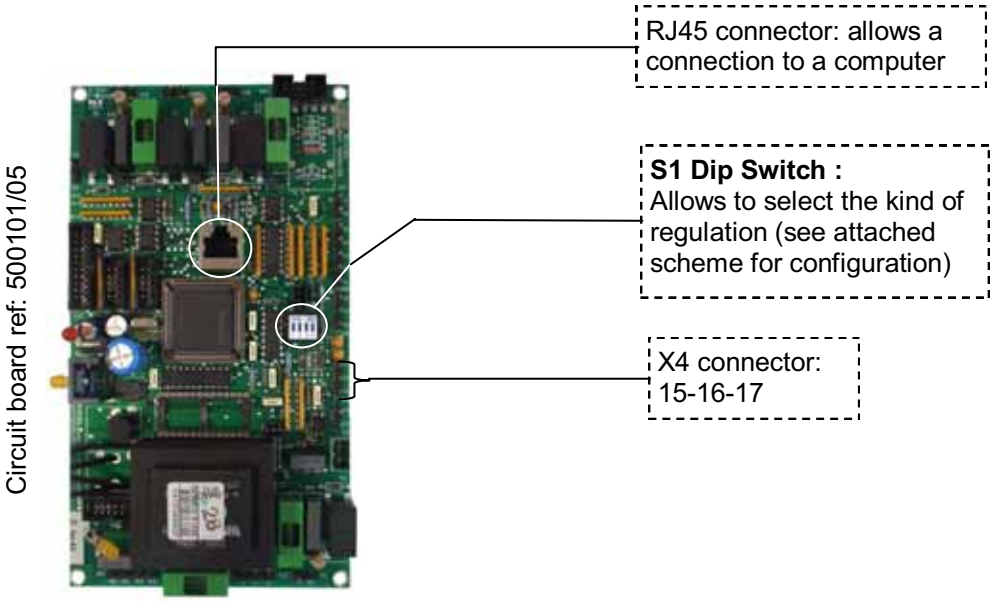


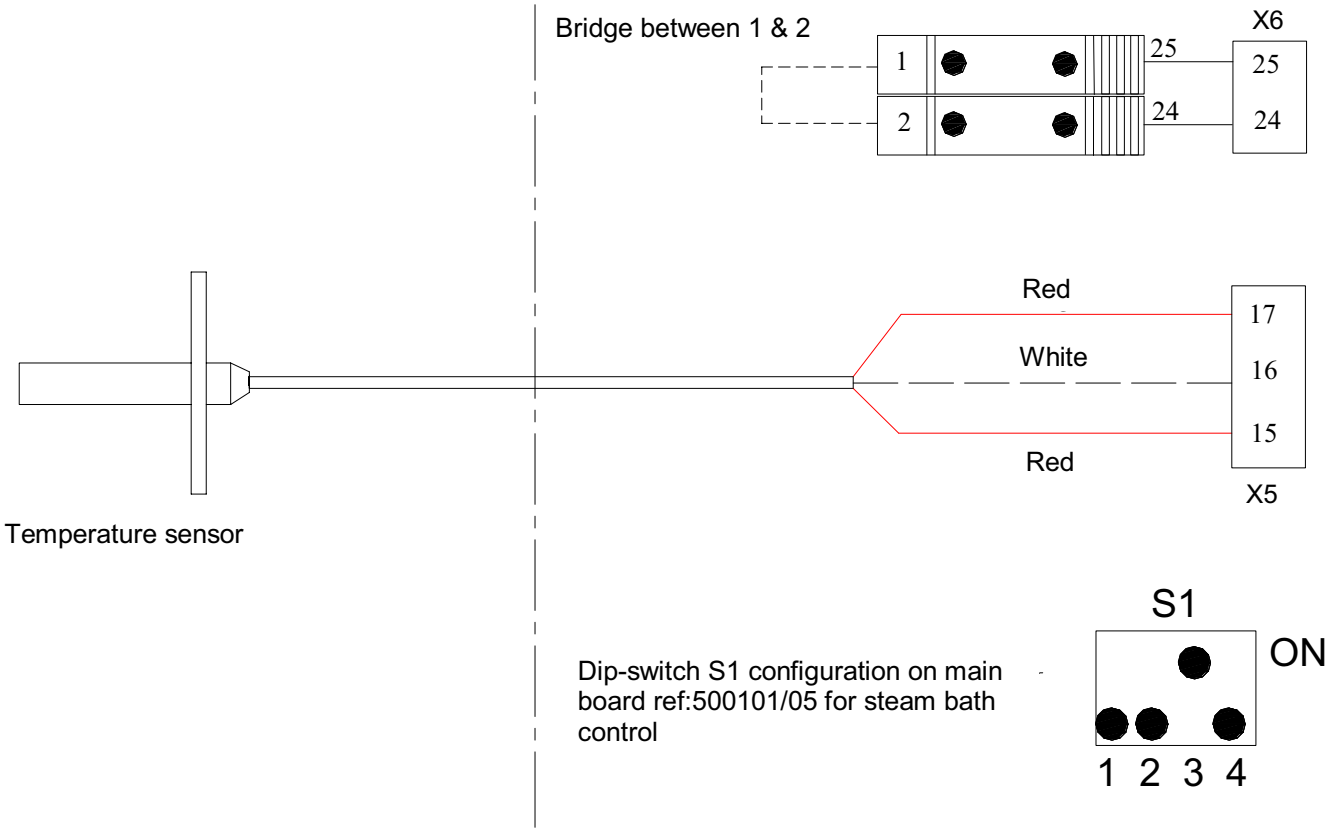
Mark	Intensity	Fuse function
F1	2A	Protection of the power contactor coil
F2	2A	Protection of the inlet valve coil
F3	2A	Protection of the drain valve coil
F4	100mA	Protection of the electronic boards

ALL WORKS CONCERNED WITH ELECTRICAL INSTALLATION MUST BE CARRIED OUT BY A SKILLED AND QUALIFIED PERSONNEL

Pictures for illustrating purposes only

Steam bath control





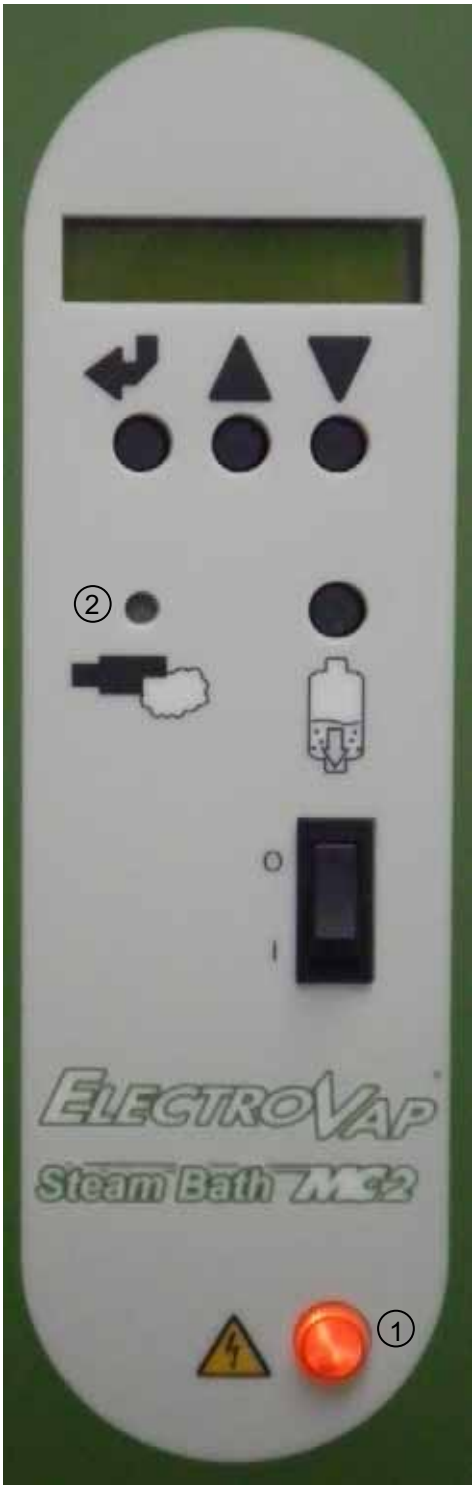
Dip-switch S1 configuration on main board ref:500101/05 for steam bath control

ALL WORKS CONCERNED WITH ELECTRICAL INSTALLATION MUST BE CARRIED OUT BY A SKILLED AND QUALIFIED PERSONNEL

Pictures for illustrating purposes only

Before putting your steam generator in operation, please make sure that your installation be in conformity with the manufacturer's technical specifications.

- Open the water valve of the main water line.
- Switch on the main power supply contactors (voltage and command).
- The power-on light must be illuminated ①.
- Switch on I the I/O (on/off) rocker switch.
- The display will default to show the rate of steam produced. You are in the user information menu.
- As soon as the humidifier is prompted by the temperature sensor, the contactor of the DIN rail turns on and the power heating is on (the steam production LED is illuminated ②).
- 2 minutes after the humidifier is switched on, the inlet valve opens and the cylinder/s is/are flushed with water. The electrode plates then heat the water up and after about 10 minutes (the heating time depends on the model of humidifier and the water conductivity), the humidifier steams up.

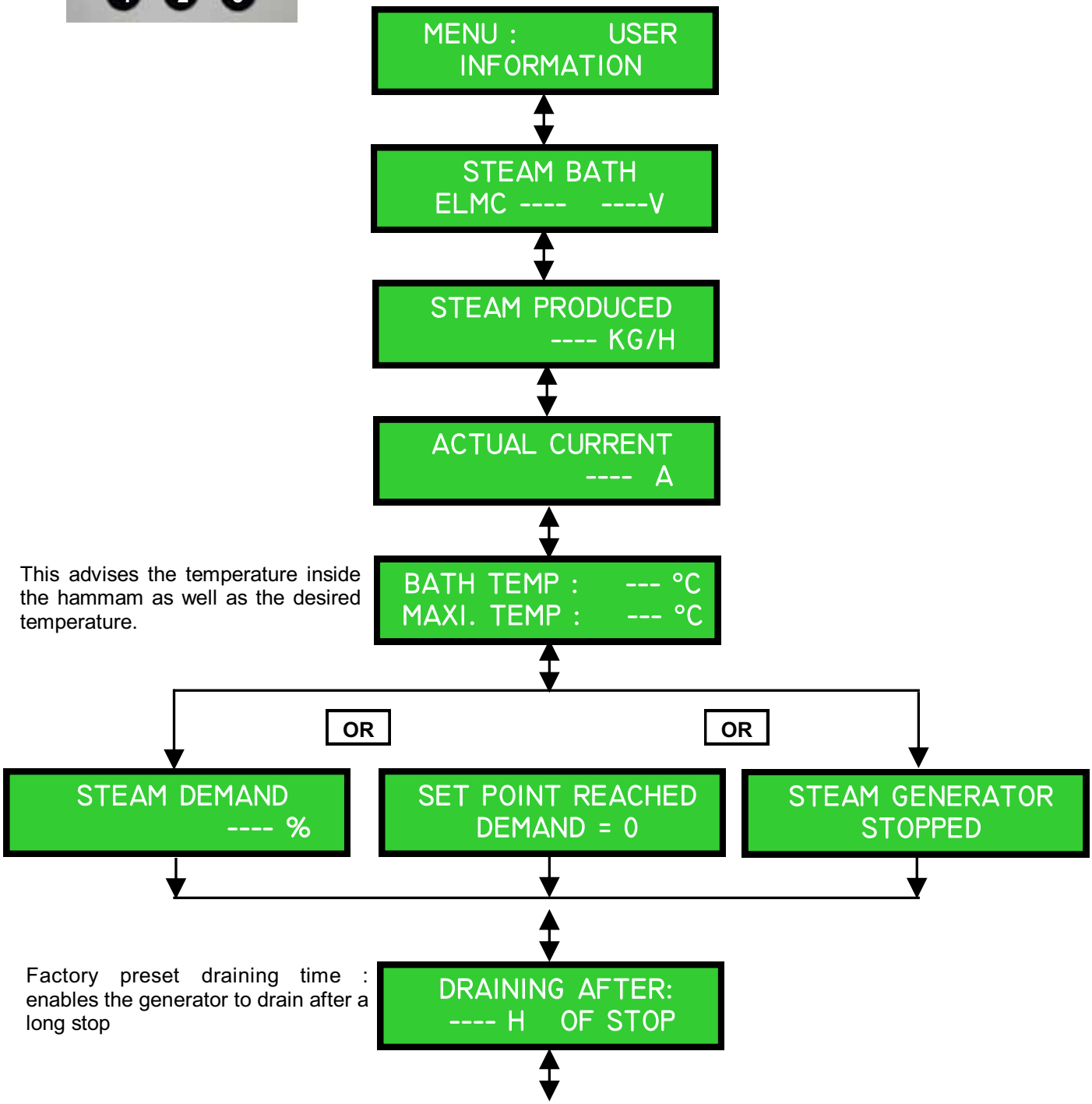


Pictures for illustrating purposes only

ATTENTION



- Any press on button 1 will allow you to shift menu
- Use the up (2) and down (3) keys to scroll menu



This advises the temperature inside the hammam as well as the desired temperature.

Factory preset draining time : enables the generator to drain after a long stop

Pictures for illustrating purposes only

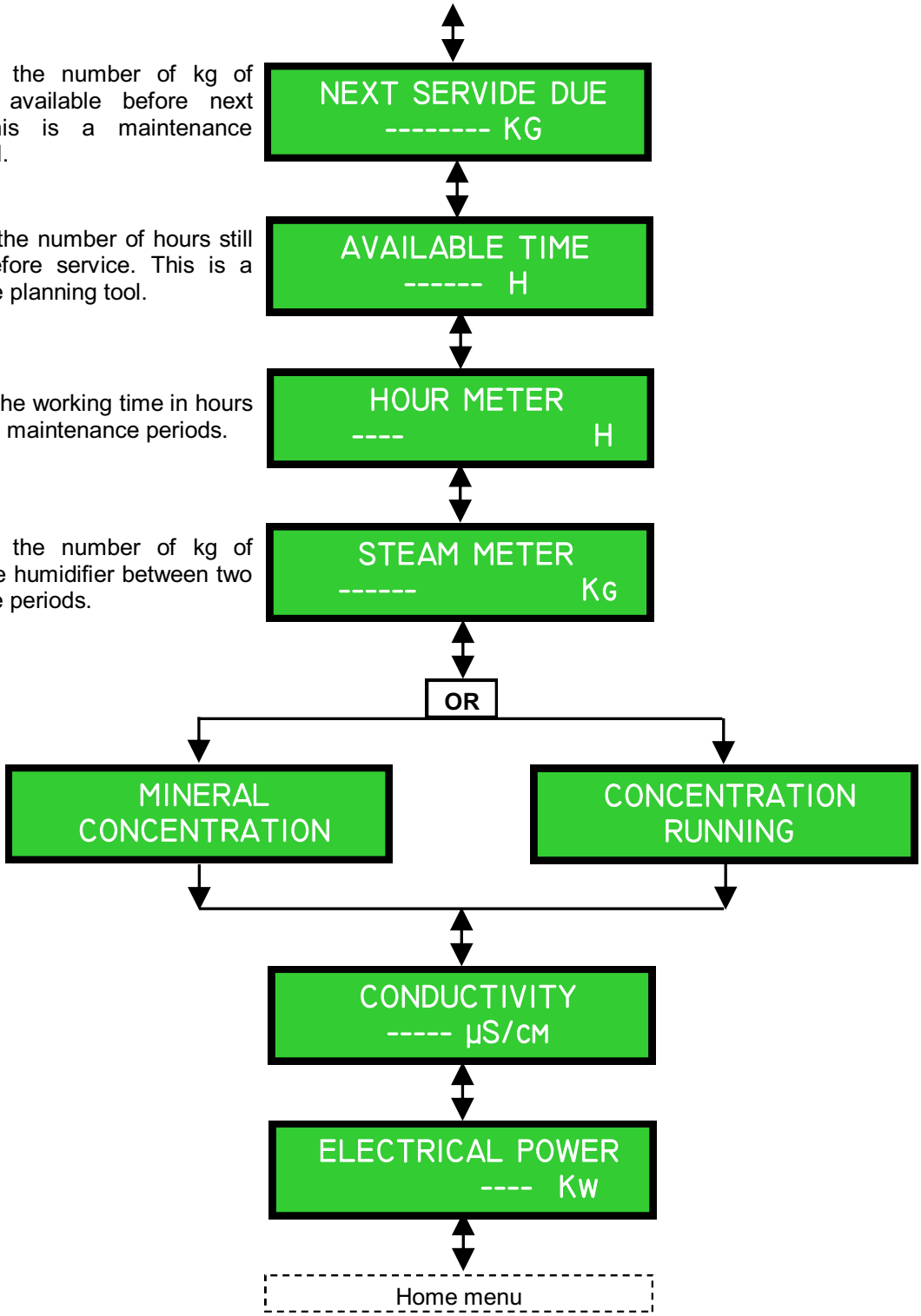
Continued

This shows the number of kg of steam still available before next service. This is a maintenance planning tool.

This shows the number of hours still available before service. This is a maintenance planning tool.

This shows the working time in hours between two maintenance periods.

This shows the number of kg of steam by the humidifier between two maintenance periods.



Pictures for illustrating purposes only

ATTENTION



- Any press on button 1 will allow you to shift menu
- Use the up (2) and down (3) keys to scroll menu

HUMIDIFIER CONFIGURATION

CONTROL TYPE TEMP. SENSOR T°C

TOTAL STEAM PRODUCED KG

Shows the quantity of steam produced by the humidifier since it has been set up.

TOTAL HOUR RUN ------- H

Shows the number of hours of operation of the humidifier since it has been set up.

WATER QUALITY ----------

CYLINDER USED ----------

POWER SUPPLY ---------- V

MAXIMUM POWER INSTALL ------ Kw

Home menu

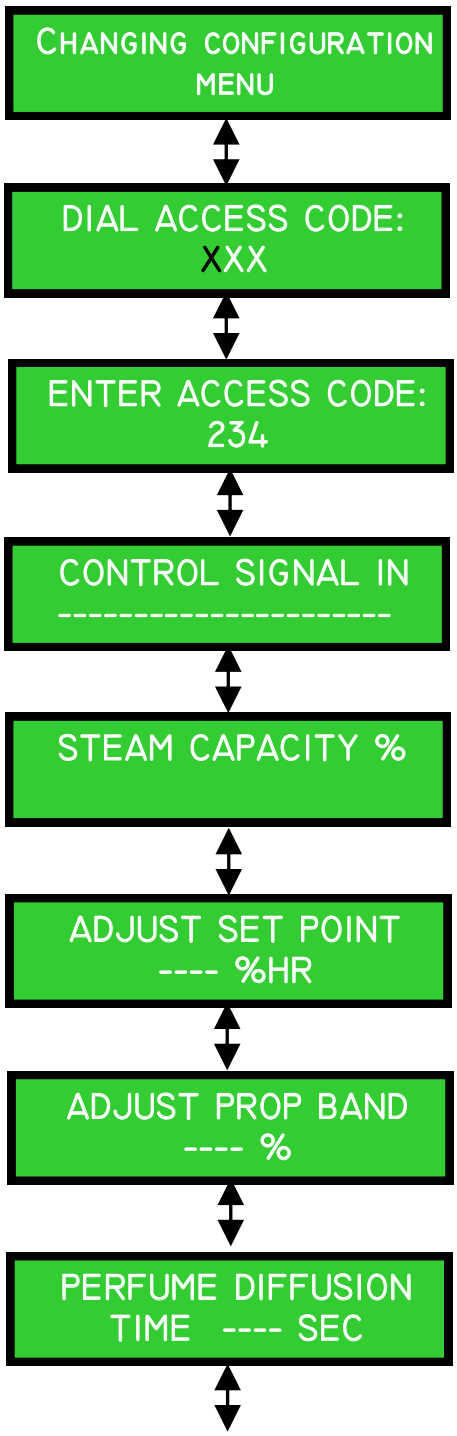
Pictures for illustrating purposes only

ATTENTION



- A press on button 1 will allow you to shift to sub-menu for changing configuration parameters.
- Then scroll display using the up (2) or down (3) keys.
- The selected parameter will flash and press return key (1) for recording.

With the humidifier switched on, press the ┘ key and the first digit will flash. Press the ↑ (2) key to increase or ↓ (3) key to decrease the first figure to enter of the access code. Press ┘ (1) to confirm. The next digit will start to flash. Repeat for a second and third digit of the access code.



This allows to limit the steam production capacity from 100% to 20%

This allows to adjust the set point of the desired temperature between 25°C and 55°C.

This allows to tune the control signal (from 0 to 50 %)

This allows to adjust the perfume injection time from 0 to 99 seconds.

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Continued

This allows to adjust how frequent the perfume injections must be (from 1 to 99 mn).

This allows to adjust how long the disinfection injection time must be (from 1 to 99 mn). This requires the optional disinfection system.

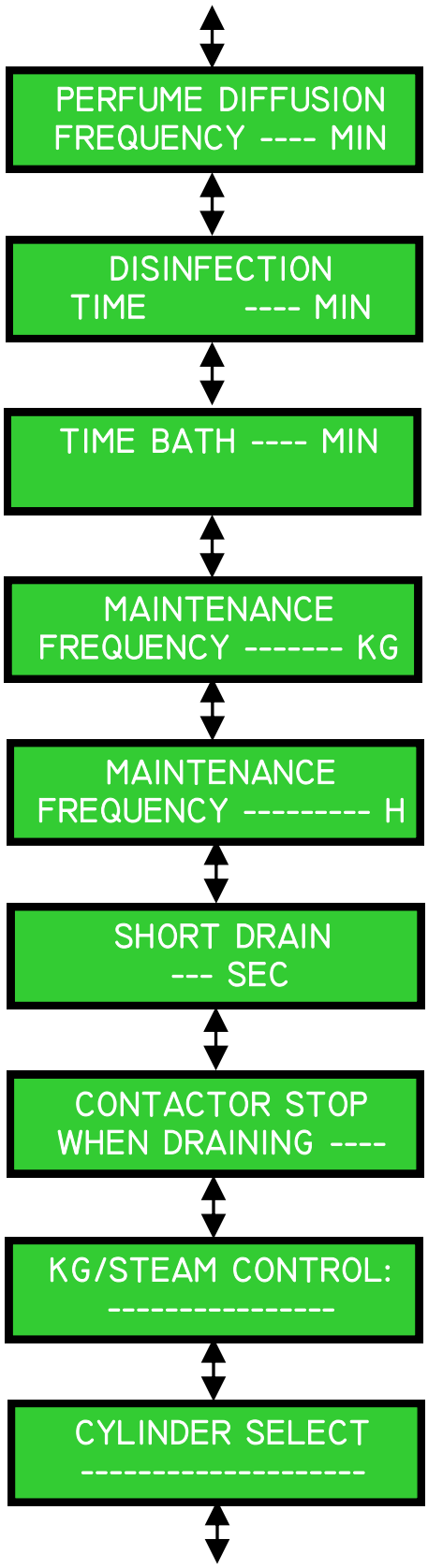
This allows to adjust the estimated number of produced steam in kg or of working time before a visual control be made. If a cylinder maintenance is to be done, please refer to the cylinder maintenance pages of this manual. If not, this parameter can be adjusted for a higher value (factory default time : 300h).

This parameter allows to adjust the time of the small drain (0 to 10 sec) that takes place whenever the humidifier takes in water. This time can be increased when foam is seen inside the cylinder (particularly when using softened waters).

This allows to shut down the contactor(s) during draining to prevent leakage currents.

This allows to select how the unit reduces its output : either by evaporation (required for demineralized water) or by draining.

This allows to select the type of cylinder used.



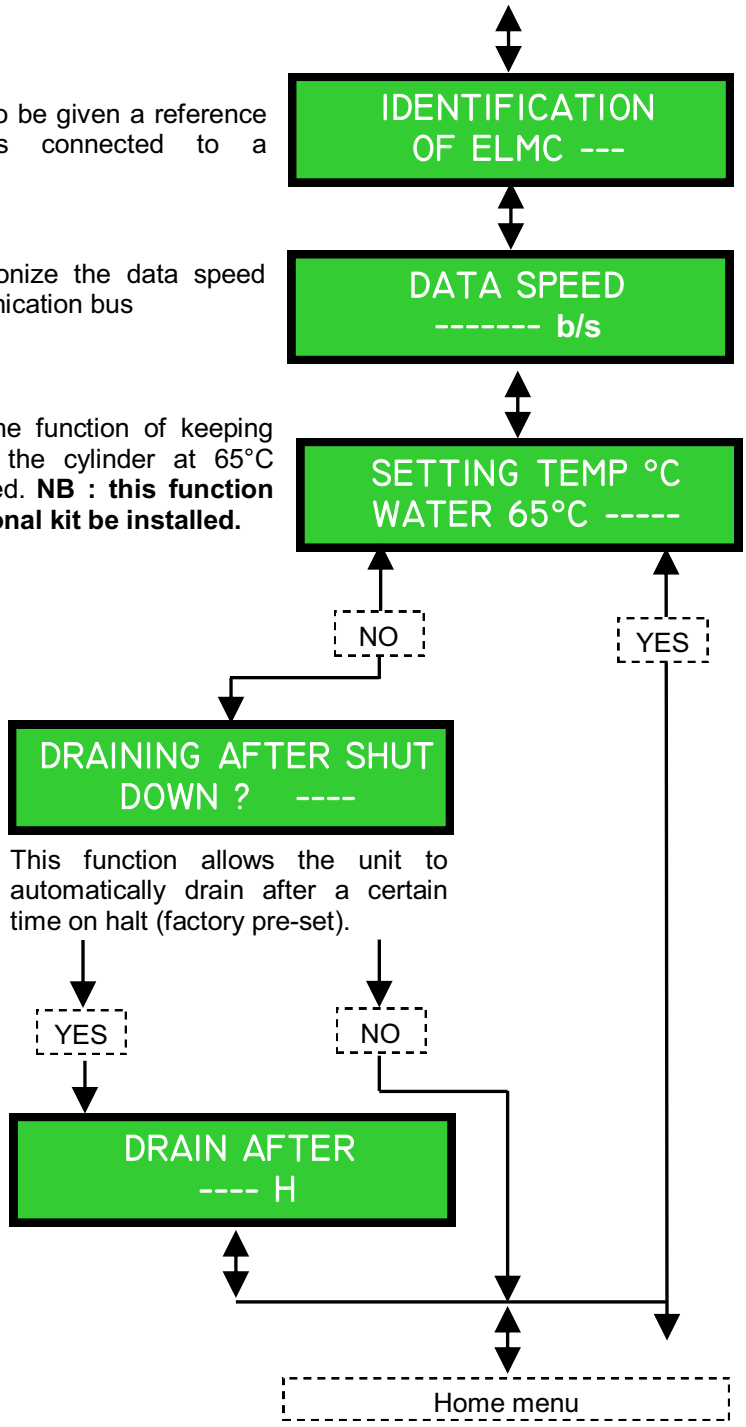
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This allows each unit to be given a reference number when it is connected to a communication bus.

This allows to synchronize the data speed with the ELMC communication bus

This enables or not the function of keeping water temperature of the cylinder at 65°C when the unit is stopped. **NB : this function requires that the optional kit be installed.**

This allows the time for the above to be selected (adjustable from 24 to 168 h.)



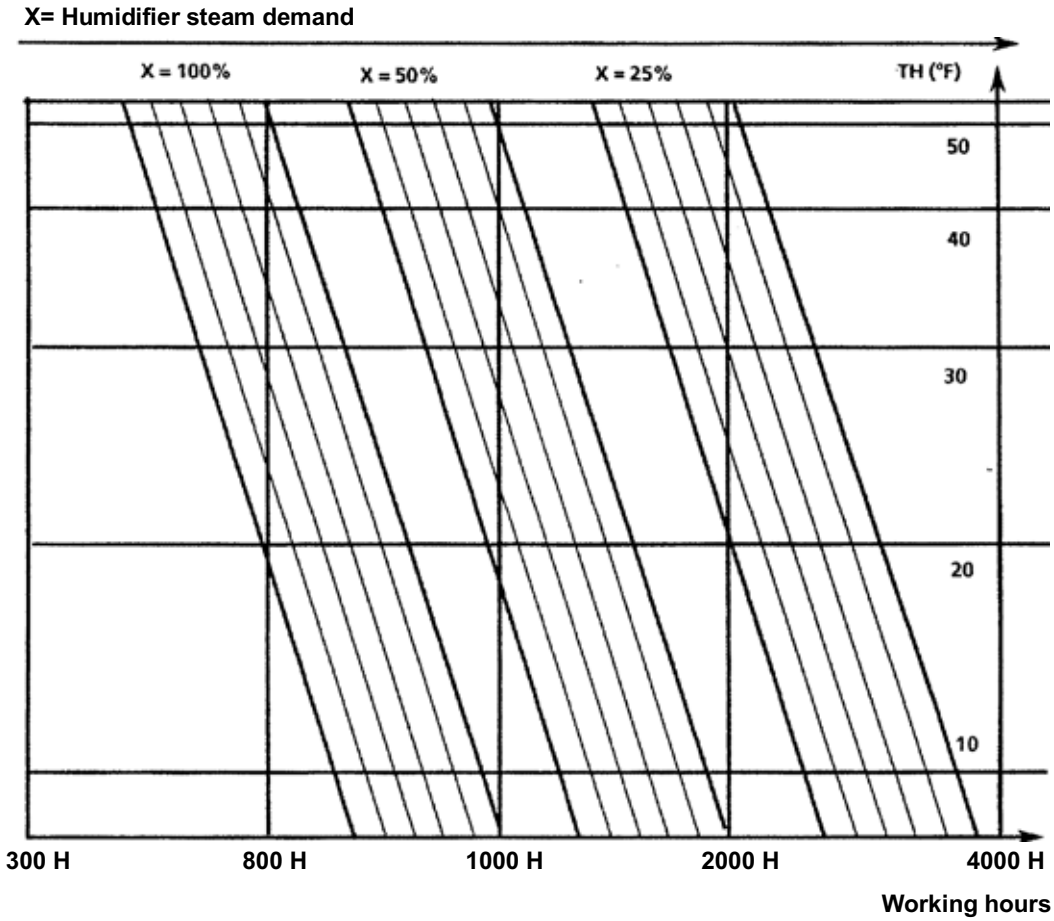
IMPORTANT NOTICE

The units have a factory default maintenance time of 300 hours that suits most cases. The exact maintenance frequency is variable and depends on water quality, hours of run and steam demand. New installations should be inspected or serviced frequently to enable a suitable maintenance routine to be established.
For hard or very hard waters, the use of a cleanable cylinder is recommended.

A cleanable cylinder maintenance guide can be found on the next page. This should be seen as an help only and not be considered as a binding information from **devatec** in any case.

Pictures for illustrating purposes only

Estimated cylinder maintenance curve



Example given: it is recommended to maintain (if cleanable type) or change (if disposable type) the steam cylinder every 800 to 900 hours of operation for a generator running at full capacity and using a water of TH20.

- The water tightness is indicated in French grade, the said value is the water hydrotimetric content (TH).
- The water quality is to be mentioned on your request so that to fit the most appropriate steam cylinder for the best working of the humidifier.

Length of the genuine stainless steel electrode plates

Model	ELMC 5 to 15-2	ELMC 10 single phase	ELMC 20 to 90
Length (mm)	160	270	250

During cylinder maintenance (page n° 44), it is recommended to measure the length of the electrode plates. The latter should be replaced when the lenght is shorter than 1/3 or 1/2 of the original lenght (s.a. above table).

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ROUTINE SERVICE

- After the steam generator has run for about one hour time, check for any water leakage at the cylinder gasket and at the drain valve.
- The cylinder should be inspected after about 50 hours of run. Make sure there is no arcing nor sparkling between the electrodes when the unit is in operation. As well, when switched off, all the contactor screws and the steam, drain and internal hose clamps should be retightened.
- A complete inspection of all the generator hoses should be made after one year of operation. Any faulty or damaged hose must be replaced to prevent leakage.

WARNINGS

When the steam generator is used for a long time or operates with a very conductive water, solid deposits built-up on the electrode plates which can make the water even more conductive.

If electrical arcs can be seen inside the steam cylinder, the steam generator doesn't operate properly. Switch off the humidifier immediately. This arcing involves :

- Excessive heat on the plastic shells that can eventually make the material melt and make a hole from where scalding water can escape.
- Circuit breaking caused by excessive intensity.
- Faster corrosion of the electrode plates.
- Burning of the electrode power cables.

Points to check in case of arcing

- If the steam generator works with softened water, ensure that the softener does not supply salt water to the humidifier.
- Ensure that the drain valve works properly and clean it up (see after page n° 45).
- Ensure that the F3 drain valve fuse is still in order (ref : 500101/05).

CAUTION



Always isolate all electrical and water supplies to the humidifier before commencing any maintenance and refer to the instructions given in this manual.

The ELMC2 steam generator includes live electrical components and the steam cylinder contains boiling water. All maintenance must only be carried out by skilled and qualified personnel.

Pictures for illustrating purposes only



Press Select button 1 to rotate between the menus and press the up or down buttons to enter the desired menu

INSPECTION DUE
50 H - SEE MANUAL

50 HOURS AFTER SWITCHING ON
- A « 1st inspection see after manuel » warning message is shown on the window.
- The unit works on.
- The remote maintenance contact is trigged on.
-The remote general failure contact is off.

Please refer to checklist on page 39

- To reset the warning message, press key 3 for over 5 seconds
- This 50 hours timer cannot be suppressed nor modified.

SERVICE DUE
SEE MANUAL

SERVICE TIME ELAPSED (service message)
- A « CYLINDER MAINTENANCE - SEE AFTER TECH MANUAL » service message is shown.
- The unit works on.
- The remote maintenance contact is trigged on.
- The remote general failure contact is off.

Maintenance to the cylinder(s) (s.a. page 44) and to the valves (s.a. pages 45-46) should be done.

- This service message is removed only when the manual draining is completed (about 6 mn). The « DRAINING CYCLE OVER » service message is then displayed.
- This timer (300 H factory preset) can be adjusted (access code 2.3.4 : « MAINTENANCE FREQUENCY (HR) » but not removed.

SERVICE OVERDUE
SYSTEM OFF

SERVICE TIME OVERDUE (service message)
- If the previous alert has not been cleared, a new alert « SERVICE OVERDUE / SYSTEM OFF » is shown 100 hours thereafter.
- **The humidifier is brought to a halt**.
-The remote maintenance contact is trigged on.
-The remote general fault alert is trigged on.

Maintenance to the cylinder(s) (s.a. page 44) and to the valves (s.a. pages 45-46) must be done.

- This alert message is removed only when the manual draining is completed (in about 6 mn). A « DRAINING CYCLE OVER » message is then shown on the display. Press button 1 to bring the humidifier back to operation.

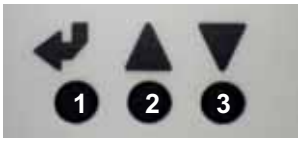
- This 100 H timer cannot be suppressed nor modified.

REPLACE CONTACTORS
10000 HR RUN

CONTACTOR TO REPLACE (service message)
- «10000 H REPLACE CONTACTOR» is shown after he humidifier has been running for 10000 hours. This means that the contactor(s) has/have been trigged on and off for 10000 hours and that its/their replacement is/are highly recommended.
- The unit works on.
- The remote maintenance contact is trigged on.
- The remote general fault contact is trigged on.

- To reset this alert message, press key 3 for over 5 seconds
- This 10000 H timer cannot be suppressed nor modified.

Pictures for illustrating purposes only



Press Select button 1 to rotate between the menus and press the up or down buttons to enter the desired menu

CONTACTOR COIL FAILURE PI

« CONTACTOR COIL FAILURE P1» ALERT

- When the alert « CONTACTOR COIL FAILURE P1 » is shown, the generator is stopped and the remote general fault contact is trigged on (the remote maintenance contact is kept off).
- Check : F1 (2A) fuse, contactor coil(s), connection of wires at terminals 13 & 14 and attachement of X4 connector onto the main board.
- The only way to remove the alert is to trace the cause of the failure and solve the problem (check contactor(s) order). Switching off the steam bath will clear the window only but will not remove the failure message which will be shown again 4 mn after the steam bath redetects the failure.
- This fault can be disabled inside the menu (please contact your authorized distributor).This will suppress the detection.
- Simulation : disconnect connector X4 from main board while the contactor is activated. The failure is detected 4 mn afterwards.

SEE CONTACTOR BLOCKED P2

« CONTACTOR BLOCKED P2» ALERT

- When a « CONTACTOR BLOCKED P2 » information is shown, this means that the cylinder power electrodes are still supplied though the steam generator is on a halt.

CAUTION : switch the generator off before any handling !

Status : unit off—remote general fault alert initiated—remote maintenance alert off.
- Items to check : contactor(s) order.
- The only way to remove the alert is to trace the cause of the failure and solve the problem (check contactor(s) order). Switching off the steam bath will clear the window only but will not remove the failure message which will be shown again 2 mn after the generator redetects the failure.

Simulation : jump connector X4 of the main board when the unit is stopped (demand = 0%) - The failure is detected and a message is displayed after 2 mn.

LEAKAGE : INLET WATER VALVE P3

« INLET WATER VALVE P3» ALERT

- When this alert is shown, the remote general fault alert contact is activated. The steam bath goes on working. The remote maintenance contact is kept off.
- Item to check : water at the base of the cylinder
- Switching off and on will clear the message only for a short while from display but will not remove the alert (s.a. page 46). It will reappear after the generator detects the fault again 20 mn afterwards.
- This fault can be disabled inside the menu (please contact your authorized distributor). This will suppress the detection.
- Simulation : constantly supply the inlet valve in 230 V.

Pictures for illustrating purposes only



« NO INLET WATER P4» ALERT

- a « NO INLET WATER P4 » information is shown when the cylinder is not correctly filled.
In this case, the steam generator is stopped and the remote general fault alert is initiated. The remote maintenance alert is kept off.
- Items to check : F2 inlet valve fuse, drain valve (could be clogged by pieces of calcius) - steam hose (pockets of water) - power voltage—TI voltage reading (condition of the torroidal of intensity—power wire passing through TI hole).
- Reset : switching off and on the generator will clear the display but will not remove the message which will be shown again after a while. .
- This fault can be disabled inside the menu (please contact your authorized distributor).This will suppress the detection.
- Simulation : Tap off the water supply. Time before detection : about 8 mn.



« SEE DRAIN CIRCUIT P5» ALERT

- This alert is shown when the draining is incorrectly operated.
In this case, the steam bath is stopped and the remote general fault alert is initiated. The remote maintenance alert is kept off.
- Items to check : F3 fuse (if found faulty, replace fuse and drain valve solenoid), correct water draining by pressing manual drain button). If no drain, clean cylinder and draining circuit.
- Reset : switching off and on the generator will clear the display but will not remove the message which will be shown again after a while.
- This fault can be disabled inside the menu (please contact your authorized distributor).This will suppress the detection.
- Simulation : disconnect the solenoid coil of the dain valve. Time before detection : sereval hours.



« WATER LEAKAGE DETECTION P6» ALERT

- **REMINDER** : to enable this function, the optional water leakage detection board should be installed first.
- When the alert message is shown, the remote general fault alert is initiated, the cylinder is drained fully and the generator is brought to a halt. The remote maintenance alert contact is kept off.
- Items to check : water at the water sensor in the steam bath humidity compartment.
- Switching off and on the generator will clear the message only for a while but will not remove the alert which will be shown again 15 seconds after the generator detects it again.
- This fault can be disabled inside the menu (please contact your authorized distributor).This will suppress the detection.
- Simulation : drop a water drop on the water sensor.

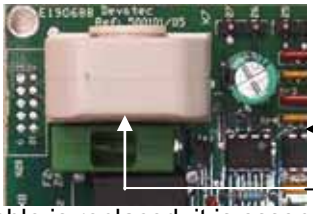


«CLEAN CYLINDER + DRAIN VALVE P8» ALERT

- This alert is shown when the draining cannot be operated.
In this case, the steam generator is stopped and the remote general fault contact is trigged on. The remote maintenance contact is kept off.
- Items to check : F3 fuse (if found faulty, replace it and replace drain valve solenoid coil); operate a manual draining to control correct water flowing. If incorrect, check or replace cylinder and water piping.
- Switching off and on will clear the message only for a while from the display but will not remove the alert which will be detected and displayed again some minutes after.
- This fault can be disabled inside the menu (please contact your authorized distributor).This will suppress the detection. - Simulation : generate over currents - Time before detection : several minutes

Pictures for illustrating purposes only

Transformer of intensity (TI)



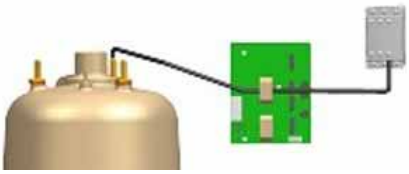
When the PCB or a power cable is replaced, it is essential for correct operation to use the method of wiring appropriate to your exact model of humidifier.
For steam generators with multiple cylinders, wire up each corresponding Torroidal Transformer with relevant method.

TORROIDAL TRANSFORMER WIRING METHOD

	ElectroVap MC2 from 208V to 230V											
	5	5	8	10	10_2	15-2	20	30	40	50	60	70
Nb of phases	1	3	3	3	1	3	3	3	3	3	3	3
Method n°1	X	X	X	X								
Method n°3					X	X	X	X	X	X	X	X

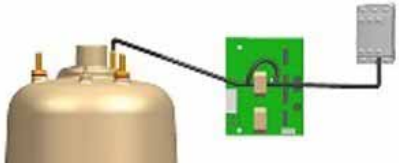
	ElectroVap MC2 from 380V to 690V												
	5	8	10	15-2	20	30	30HC	40	50	60	60HC	90	90HC
Nb of phases	3	3	3	3	3	3	3	3	3	3	3	3	3
Method n°1		X	X	X	X			X					
Method n°2	X												
Method n°3						X	X		X	X	X	X	X

Method n°1



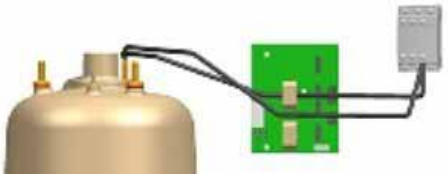
The power cable is run once through the torroidal transformer, then into the contactor.

Method n°2



The power cable is once run through and looped over the torroidal transformer and back through the transformer hole. Fix the cable into the contactor.

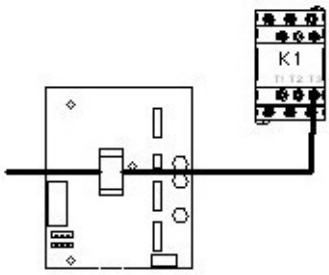
Method n°3



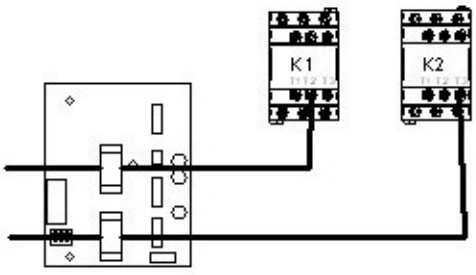
Use the specialised split power cable. Run one of the power cable cores once through the torroidal transformer then into the contactor. Run the second power cable core directly to the contactor.

CONNECTING THE TI POWER CABLE INTO THE CONTACTOR

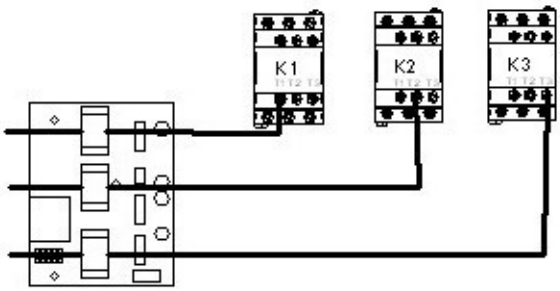
ELMC 5 to 30



ELMC 40 to 60



ELMC 70 to 90



The power cable identified with a brown sticker must be connected into the T1 terminal of the contactor.

ALL WORKS CONCERNED WITH ELECTRICAL INSTALLATION MUST BE CARRIED OUT BY A SKILLED AND QUALIFIED PERSONNEL

Pictures for illustrating purposes only

1. 

2. 

3. 

4. 

The ELMC steam generators are currently fitted with disposable cylinder(s).The latter can however be easily substitued for cleanable type at customer's choice.

REPLACING THE STEAM CYLINDER

Drain the steam cylinder(s) fully using the manual drain key. When the cylinder(s) is/are drained fully (a « DRAINING CYCLE OVER » will appear on the display). Isolate the power both at the general switchboard and at the humidifier (rocker power switch).



The steam cylinder(s) may be very hot. Allow it/them to cool down before removing.

Remove the front panel from the generator to access the cylinder compartment. Remove power and high water level electrode cables from top of the cylinder(s) (picture 1).
Disconnect the steam hose(s) from the top of the cylinder(s) (pict. 2).

Lift the cylinder upwards until it is clear off the drain valve. Ensure that the gasket remains in the drain valve (picture 3).
Release the top of the cylinder from the retaining clip and pull out the cylinder (picture 4).
The disposable cylinder(s) will be merely replaced by new ones either disposable or cleanable.
Retighten gently the steam hose on the cylinder outlet when the cylinder has cooled down only to prevent deformation.

CLEANING THE CLEANABLE STEAM CYLINDER

This method is intended for use with the cleanable cylinder only.

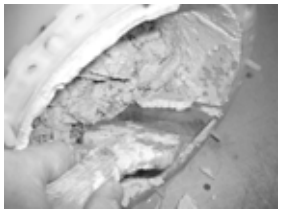
- Mark the edge of the cylinder halves so that they can be matched up when reassembled (picture 5).
  Remove the maintaining nuts and bolts, split the cylinder halves and remove the gasket and the strainer that must be cleaned (pict 6).
- Scrap mineral deposits off the electrode plates and the shells (a weak descaling solution can also be used) (pictures 7, 8 & 9).
- Rince the electrodes, the cylinder shells and the divider. It is important that the strainer at the cylinder bottom be also cleaned.

5. 

6. 

7. 

8. 

9. 

Take care : never chock the shell rims to get rid of the deposits



Relocate the strainer into the cylinder bottom. **Replace the cylinder gasket**, and fit it inside the groove of the lower shell and attach the upper shell with the electrodes .



When re-assembling, take care to align both shells. Refit the bolts and nuts. Retigthen them gently (when the cylinder is still cold). Rinse the drain valve 'o' ring and grease it or replace it if needed.



Important

At this stage, the drain valve must be maintained.

NB : Refit the cylinder to the steam generator once the drain valve is maintained.

Pictures for illustrating purposes only

DRAIN VALVE MAINTENANCE

The drain valve should be maintained whenever the steam cylinder is maintained or changed.



Once the steam cylinder has been pulled out (please refer to the « cleaning of the steam cylinder » page), disconnect the drain valve supply wires.



Unscrew the solenoid retaining nut and remove the washer. Put them on the cylinder compartment tray.



Remove the coil from the valve stem.



Unscrew and remove the valve stem and the filling hose from the valve body.
Important : Apply some soap on the O-ring and the cylinder draining outlet



Remove the « O » ring and the drain valve collar. Remove any pieces of calcius, rinse the steam and the body with fresh water.

Assemble in reverse order.

It is now time to locate the new or cleaned steam cylinder in its compartment in proceeding this way : set the maintaining clip on the steam cylinder outlet, engage the drain outlet into the drain valve and push the cylinder downward. Reconnect the power cables. Make sure that the power cable with the brown identification mark be connected to the cylinder connection identified with a brown spot. If the brown spot is missing, the cylinder electrode connection can be identified as the one closest to the high water level probe. Locate the steam hose and fasten the clamp.

Ensure that all the clamps are properly tightened whenever the steam generator is maintained.

Pictures for illustrating purposes only

INLET VALVE MAINTENANCE

The inlet valve should be maintained every 6 months as a minimum and after 50 hours operation.



Isolate the water supply and remove the water supply hose from the valve.



Disconnect the electrical wires from the coil.



Untighten the collar clamp and remove the water feed hose.

Unscrew the black nut ① and lay it on the cylinder compartment tray.



Take the valve out and remove the basket filter from the base of the valve with a pair of long nose pliers. Pull the coil out with a flat screw driver.



Wash the basket filter under clean water to remove any dirt and debris.

Replace whole valve if cleaning is not practical or replace coil if necessary.

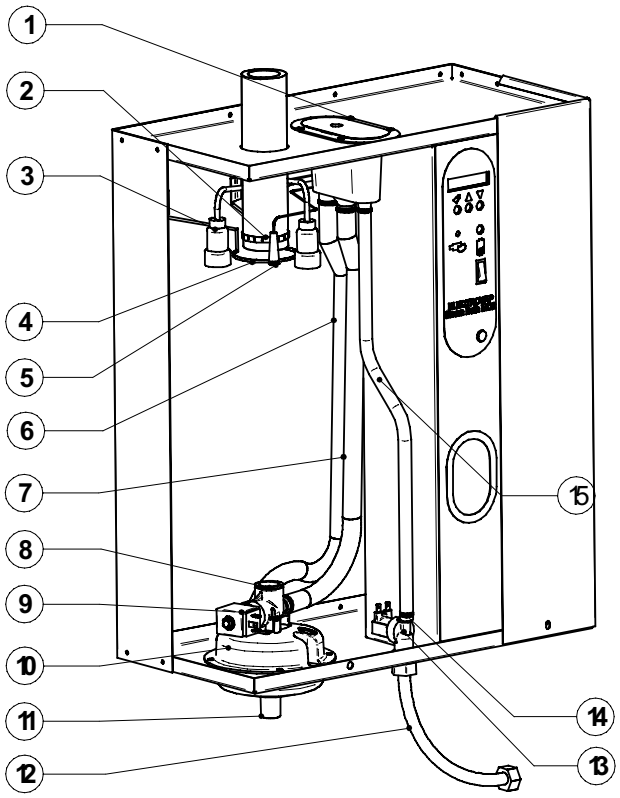
Assemble in reverse order taking care to replace collar clamp if necessary.

Ensure that everything is correctly assembled and switch the humidifier on.

Ensure that all the clamps are properly tightened whenever the steam generator is maintained.

Pictures for illustrating purposes only

Rep	Code	Description
1	930058 930059 930060 930061 930062	Filling cup with hoses for ELMC 1 small sized cylinder Filling cup with hoses for ELMC 1 large sized cylinder Filling cup with hoses for ELMC 2 cylinders Filling cup with hoses for ELMC 3 cylinders (left hand side) Filling cup with hoses for ELMC 3 cylinders (right hand side)
2	930301 930302	Hose clamp Ø25x40mm Hose clamp Ø40x60mm
3	930085 930086 930087	Power cable kit n° 1 (3 single cables with sockets and boots) Power cable kit n°2 (2 single cables + 1 split cable with sockets and boots) Power cable kit n° 3 (3 single cables + 1 split cable with sockets and boots)
4	930079 930080	Cylinder retaining clip ELMC small sized cylinder Cylinder retaining clip ELMC large sized cylinder
5	930088 930089 930090	High water level electrode cable ELMC 1 cylinder High water level electrode cable ELMC 2 cylinders High water level electrode cable ELMC 3 cylinders
6	930136	Overflow hose Ø18/22mm (per meter)
7	930136	Water feed hose Ø18/22mm (per meter)
8	930189	Bag of 10 drain valve 0-rings
9	930153 930307 930220 930161	230V complete drain valve Plastic drain valve body Drain valve stem with 230V solenoid 230V solenoid
10	930072 930074 930075	Drain cup upper half ELMC 1 cylinder, 2 cylinders left hand side, 3 cylinders right hand side Drain cup upper half ELMC 2 cylinders right hand side, 90 middle Drain cup upper half ELMC 3 cylinders left hand side
11	930078	Drain cup lower half
12	930084	Water inlet hose
13	930150 930151 930152 930160	Inlet valve ELMC 1 small sized cylinder Inlet valve ELMC 1 large sized cylinder Inlet valve ELMC 3 cylinders 230V inlet valve solenoid
14	930081 930082 930083	Hose clamp Ø12x22mm Hose clamp Ø16x27mm Hose clamp Ø20x32mm
15	930135	Water feed hose Ø12/16mm (per meter)

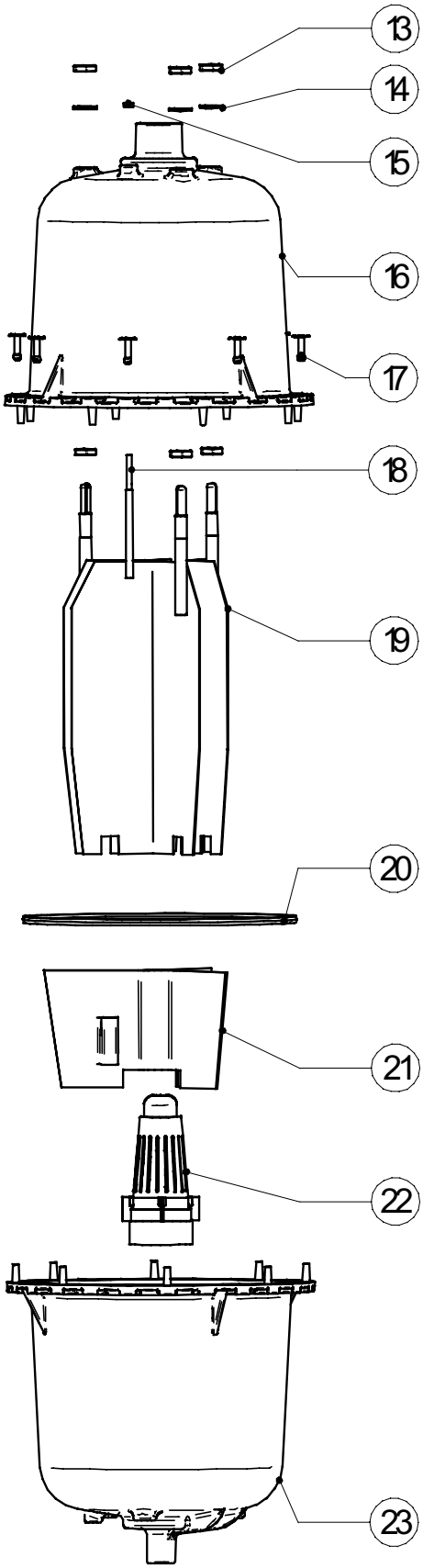


- SM= Small model, LM= Large model
  (Seer after electrical tables)

Pictures for illustrating purposes only

Rep	Code	Description
13	930190	Brass nut Ø8mm
14	930301	Bag of 3 fibre washers
15+18	930211	High water level electrode + nut Ø4mm
16		Cylinder upper half—Please consult factory
17	930203 930223	Bag of bolts & nuts ELMC small sized cylinder (cleanable cylinder) Bag of bolts & nuts ELMC large sized cylinder (cleanable cylinder)
19		Cylinder maintenance kit ELMC 5 to 15-2 Cylinder maintenace kit ELMC 20 to 90
20	930162 930166	Cylinder gasket ELMC small sized cylinder Cylinder gasket ELMC large sized cylinder
21	930169	Electrode plate divider ELMC large sized cylinder
22	930168 930159	Cylinder strainer ELMC small sized cylinder Cylinder strainer ELMC large sized cylinder
23		Cylinder lower half—please consult factory

- SM= Small model, LM= Large model (see after electrical tables)

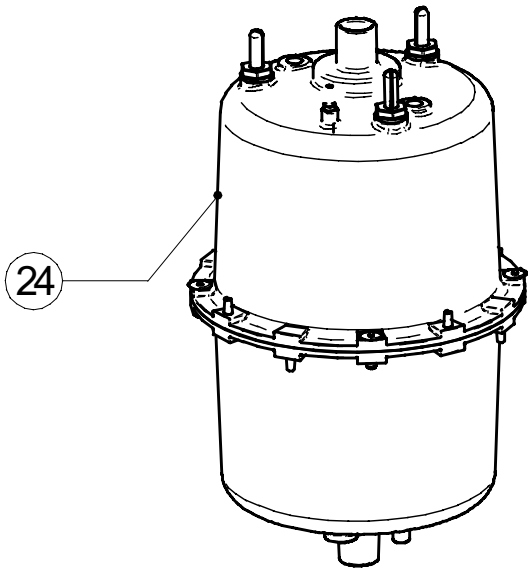


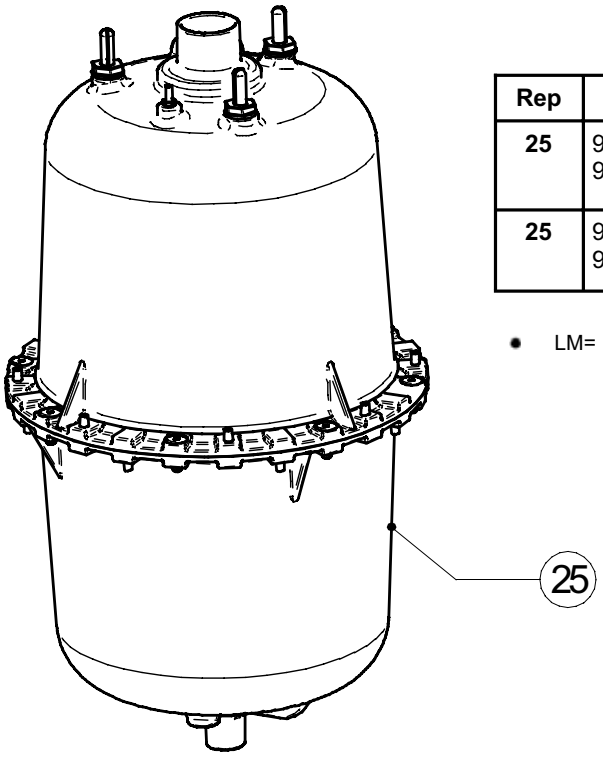
Pictures for illustrating purposes only

- In standard production, the steam generators are fitted with disposable cylinder(s)
- EA= Softened water

Rep	Code	Description
24	930010 930020	Small sized disposable cylinder Small sized isposable cylinder EA
24	930028 930037	Small sized cleanable cylinder Small sized cleanable cylinder EA

- SM = Small model (see after electrical tables)



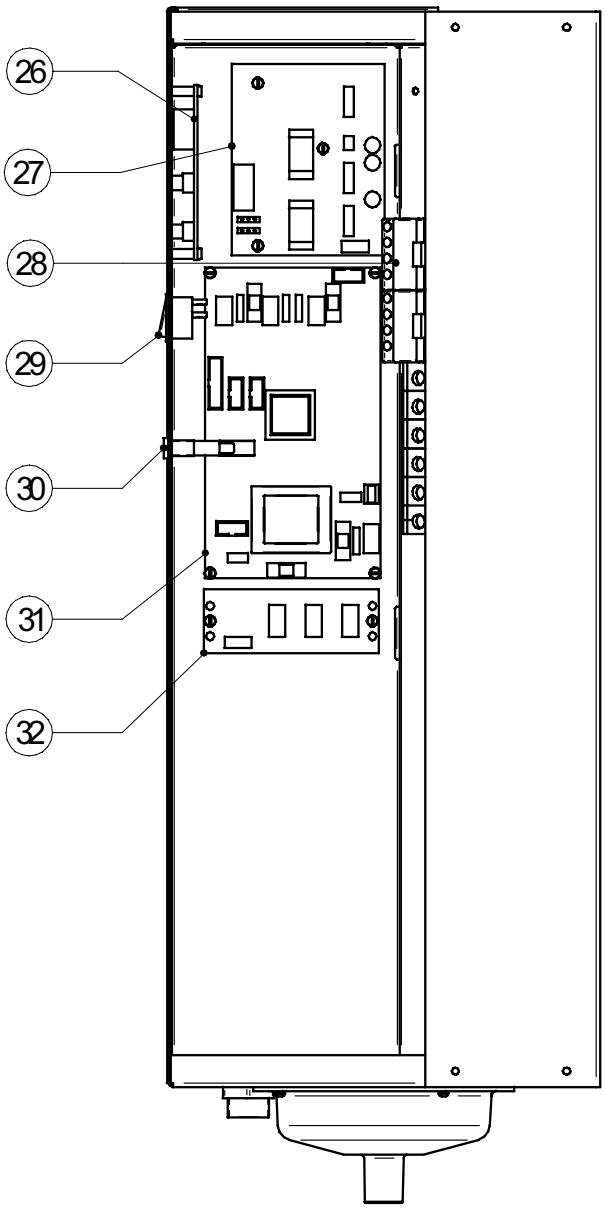


Rep	Code	Description
25	930014 930023	Large sized disposable cylinder Large sized disposable cylinder EA
25	930032 930040	Large sized cleanable cylinder Large sized cleanable cylinder EA

- LM= Large model (see after electrical tables)

Pictures for illustrating purposes only

Rep	Code	Description
26	930101	ELMC digital display (ref : 500600/03)
27	930104 930105	Auxiliary board ELMC 40-50-60 (ref: 500301/05-2TI) Auxiliary board ELMC 90 (ref: 500301/05-3TI)
28	930091 930207 930093 930283	Power contactor D18 Power contactor D25 Power contactor D32 Power contactor DPE32P7
29	930100	On/off rocker switch
30	930099	Stand-by power lamp
31	930326 930350 930327	Main PCB ELMC 5 to 30 (ref: 500101/05) Main PCB ELMC 20 to 30 (ref: 500101/05) Main PCB ELMC 40 to 90 (ref: 500101/05)
32	930106	ELMC remote board (ref: 500400/02)



Pictures for illustrating purposes only

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