Camlab Cub-GW3060
CubExtra-GW4090

GLASSWARE WASHER

TECHNICAL MANUAL

www.camlab.co.uk

camlab

CAREFULLY READ THE INSTRUCTION MANUAL

Failure to read or fully understand the instruction manual, or incorrect interpretation of the instructions herein may cause damage to the appliance as well as being a source of danger for the operator and lowering the performances provided by the machine to a considerable extent.

CAMLAB declines all liability for uses differing from those listed below.

The appliance should only be installed, serviced and repaired by Camlab's authorized personnel.

The warranty provided will immediately become void if the machine is installed and used in a way that FAILS TO CONFORM to the instructions given by CAMLAB.

This manual is for informational purposes only. The contents of this manual and the appliance described herein may be liable to modification without prior notice. In no case may CAMLAB be held liable for any direct or accidental damages deriving from or concerning the use of this manual.

Do you need information or Assistance?

Please contact us from 8:30 to 17:00 hrs at the following numbers and addresse:

01954-233130 (Service)	
01954-233103 (Sales)	
http://www.camlab.co.uk	Internet Home Page
service@camlab.co.uk	Service E-Mail Address

Our Sales Department staff will provide information about prices and offers. You can examine our entire product range in our Internet web site along with our innovations.

Our Technical Assistance Department can tell you anything you need to know about how to use your appliance in the proper way and can also put you in contact with your nearest authorized Assistance Centre if necessary.

International customers, please contact our Export Depatment on +44 1954 233180.

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1 KEY TO THE SYMBOLS USED IN THE MANUAL AND ON THE MACHINE

Read with the utmost care

Warning, danger

Warning, hot surfaces

2 INTRODUCTION

This manual is an integral part of the machine
It must be kept in a good condition and ready to hand for the entire life cycle of the machine.
You are advised to *carefully read* this manual and all the instructions it contains before using the appliance.

This appliance conforms to directives currently in force and to the applicable reference standards.

This appliance has been built for the following function:
- Washing various kinds of glassware by means of Chemical Disinfection or Thermal disinfection;
- The appliance cannot be used for sterilizing the instruments or any other device.
All other use is considered improper

The manufacturer declines all liability for uses differing from those indicated.

Camlab declines all liability for damage caused by washing, in the machine, instruments which have not explicitly been authorized for automatic decontamination.

3 TECHNICAL SPECIFICATIONS

Electronic control	3 microprocessors (+1 on the optional LAN comm. Module)
Standard programs memorized	6
Programs that can be entered	20 (expandable up to 50)
Back lighted LCD graphic display	128 x 64 pixels
Clock and date indicator	YES
Programmable phases	6
Phase parameters	Type of water, amount of detergent, target temperature, extension time in minutes, drying temperature and duration
Temperature inside wash chamber	From 5°C to 95°C
Precision	0.1°C
Temperature sensors in wash chamber	1 PT 1000 CLASS B IEC 60751
Time display	5 digits
Peristaltic pumps (0-50 ml)	4 (max)
Security lock	YES, with electromagnetic release
Alarm indications	Approx. 80
Troubleshooting menu	YES
Programme editing	YES (by means of password)
Password	4 levels
Languages	4: 4: Italian, English, French, German (on request: Spanish, Polish, Swedish, Russian, Japanese)
AUXILIARY FUNCTIONS	
Duct for inserting external probes	NO
Drain separating solenoid valve control	YES
RS232 printer output	YES
RS232 serial port for PC	YES
USB serial port (on demand)	YES
LAN connection (on demand)	YES
Cycle filing	YES
Cycle archive downloading	YES
DRYING SYSTEM	
Drying fan	0.4 kW
Heating elements for drying	2.5 kW
Class C 98% prefilter	YES
Class S 99.999% HEPA filter	YES
Temperature of the drying air	75°C-100°C
WATER SUPPLY (PRESSURE 1.0-5 BAR)	
Cold/hot mains water hardness	Max 42° F
Demineralised water conductivity	<20µS/cm
Pump for demineralised water	Optional according to supply
Built-in softener	YES
Recirculation pump	400L/MIN
WATER HEATING	
Electrical	7.0 kW MAX
STEAM CONDENSER	Optional
DIMENSIONS L x D x H mm	
External (with built-in top)	900 x 630 x 850 (830)
Internal	520 x 515 x 545
Net weight (kg)	80 (GW3060); 100 (GW4090).
STEEL	
Wash chamber	AISI 316L
External cladding	AISI 304
ELECTRIC POWER SUPPLY	
Max. power/voltage rating	1/N/PE 230V ~ 50Hz 2.8 kW 1/N/PE 230V – 50Hz 7.0 kW 3/N/PE 400V ~ 50Hz 7.0 kW
NOISE LEVEL	50 dB
CONFORMITY	2006/95/EEC (low voltage equipment), 2004/108/EEC (emc) EN61010-1, EN61326

4 INSTALLATION

The appliance should be positioned against the wall (10 cm away at most) and should be installed by one of Camlab's authorized technicians, in compliance with the laws in force. The installer is responsible for ensuring that the appliance operates correctly after it has been installed. Moreover, he must provide all the information required for correct use of the appliance. Remove the scratchproof film from the external steel surfaces when the appliance is installed.

All adjustments, servicing work and so forth must be carried out with the appliance disconnected from the electricity main.

4.1 LIFTING AND TRANSPORT

Before leaving the factory, the base of the appliance is fixed to a pallet, which is also used for lifting and transporting the machine itself.
The appliance must be handled with a lift truck or pallet truck.

4.2 POSITIONING

The accessory kit for assembly purposes (containing filters, seals) is packed inside the washing wash chamber.
The appliance can be located to the side of the adjacent furniture. In this case, make sure that the steam vent at the rear is not obstructed in any way. It is therefore advisable for the wall at the back to be made of brickwork or impermeable material.
The heat must also be prevented from reaching any electrical circuits or sockets at the rear.
The appliance is equipped with pipes for supplying the water and draining it away. They can be positioned towards the right or left to allow the appliance to be installed properly.
The appliance can also be installed under a work top.

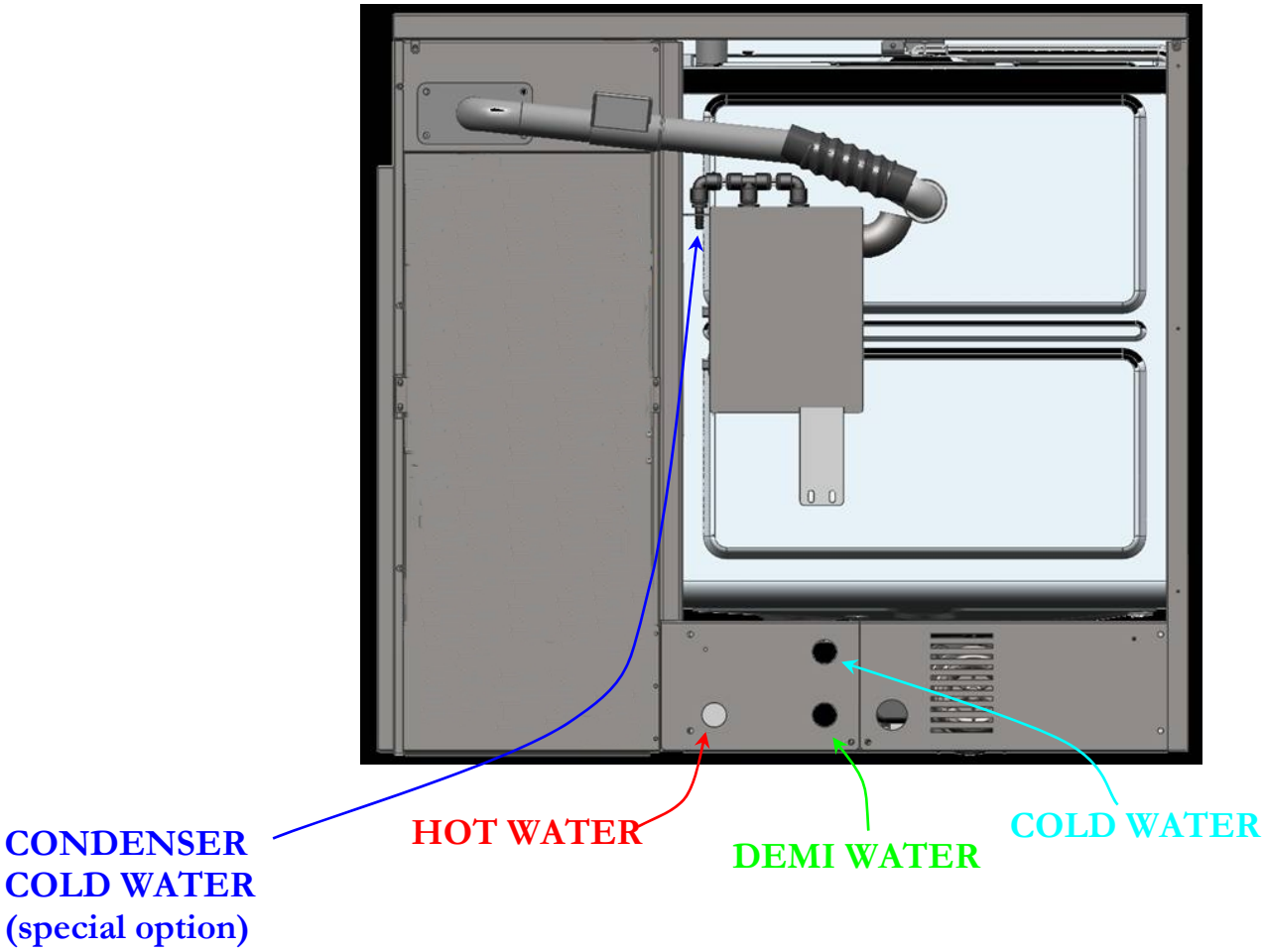
4.3 LEVELLING

Once the machine has been set in position, screw in the feet or unscrew them so as to regulate the height of the machine and level it until it is horizontal (the tolerance permitted is 2 degrees).
Good levelling will ensure that the machine operates in the correct way and will keep the door flush.

4.4 WATER TAP CONNECTIONS

The machine is supplied with three water supply pipes that join to a non-return device inside the machine, in accordance with CENELEC HD27451 directives.
The pipes are designed for connection to taps with ¾" BSP connections.

The following pipes must be connected to the water main:
. cold water pipe;
. hot water pipe;
. pressurized demineralised water pipe (min. 1 bar max. 5 bar)
(if DI water supply is between 0.2 and 1 bar via the DI boost pump).



If the connections are made to new pipes, it is advisable to allow the water to flow through in order to eliminate any rusty deposits or sludge.

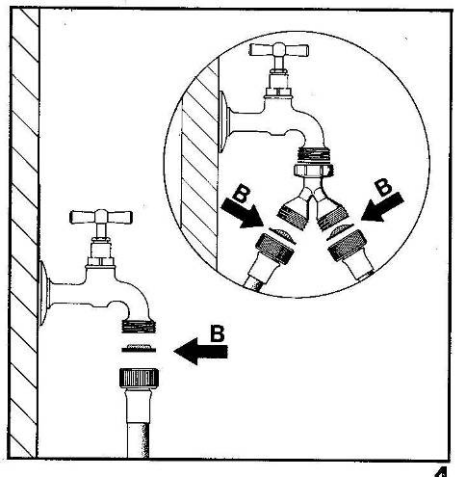


fig. 2.3.2

WARNING
If the double hot / cold water supply is not available, the two black supply pipes (cold and hot) must be connected together by means of the relative Y connection (see fig. 2.3.2 circled figure above).

Make sure that the pressure at which the mains water is supplied is within the operating limits: min. 1 bar; max 5 bar.

The temperature of the hot water must not exceed 50°C.
Higher temperatures could impair the efficiency of the built-in water softener and damage the resins it contains.

The water supply taps must be accessible.
Always shut off the water supply taps when the machine is not operating.

WARNING
Chemical characteristics of the mains water incompatible with good washing actions

Washing glassware and stainless steel materials
If the supply water contains $Fe2^{+}/Fe3^{+}$ ions in an amount greater than 2 ppm and/or the supply water is harder than 45°F, the water must be pre-treated by installing water softening system to which the appliance must then be connected.

4.5 DEMINERALISED WATER CONNECTION

The appliances are engineered for connection to a pressurized demineralised water supply line at a minimum pressure of 1 bar and a maximum pressure of 5 bar via the supplied hose and connected directly to the demin water valve.
Here again, install the relative tap in an accessible position.
Always shut off the water supply taps when the machine is not operating.

If the demin water supply is from a bench or wall mounted reservoir, use the supplied hose connected to the rear mounted boost pump. Do not use small bore nylon tubing from the reservoir as the flow capacity is usually too low.
(To test:- put a 1 litre container on the floor. Open the tap. The container should be filled within 30secs to ensure sufficient water flow.)

4.6 OPERATION WITHOUT THE DEMINERALISED WATER CONNECTION

Final rinsing with demineralised water is recommended as it completely eliminates the saline residues in the water and ensures optimum results.
However, good washing results can also be obtained without the use of demineralised water.

WARNING - IMPORTANT

If a demineralised water connection is not available, only the first three programs are available.

WARNING

IF THE WATER SUPPLY FOR THE PURIFIED WATER FINAL RINSE IS NOT AVAILABLE, AND PROGRAMS 4, 5 OR 6 ARE USED, THE APPLIANCE WILL STOP AT THE FIRST DEMINERALIZED WATER RINSE AND THE FOLLOWING ERROR MESSAGE WILL APPEAR ON THE DISPLAY:
NO WATER INLET

IF THIS HAPPENS, FIRST MAKE A RESET AND THEN MODIFY THE SETTINGS OF THE WATER CONNECTIONS OR SELECT PROGRAM 1-3.

4.7 DRAIN PIPE CONNECTION

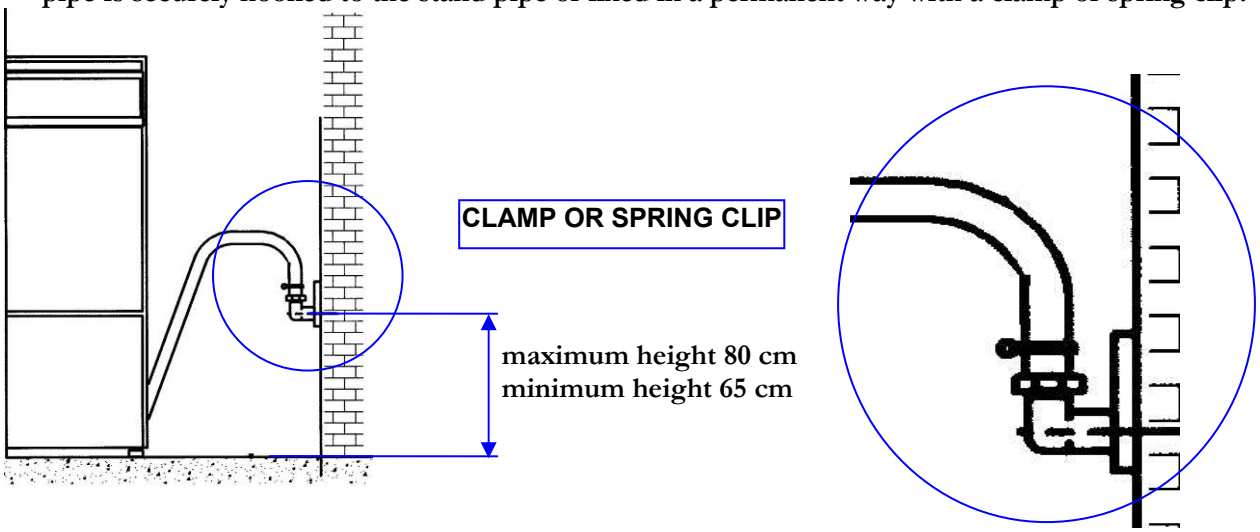
Models with steam condensers(OPTIONAL)

These models have 2 drain pipes 1/2 an inch in diameter. We strongly recommend to have two separate drains, in order to avoid interferences and backflows between the 2 drain hoses.

General instructions for installing the drain pipe

Use a drain pipe with trap. Take the following precautions when installing:

- **Since the temperature of the drained water can reach as much as 93°C, ensure that the end of the drain pipe is securely hooked to the stand pipe or fixed in a permanent way with a clamp or spring clip.**



- There must be no sharp bends and consequent throttles in the drain pipe.
- The end of the drain pipe must be neither more than 80 cm higher nor 65 cm lower than the bearing surface of the appliance. In no case must the end of the pipe be immersed in water
- The inner diameter of the drain pipe must be at least 40 mm.
- Install a 50 mm diameter drain pipe if possible.
- The models with steam condensers have two 1/2" drain pipes: an adapter union is available in order to connect the 2 drain pipes straight to a 50 mm diameter drain pipe.
- Extensions to the drain pipe/pipes must be no longer than 1 meter and must possess the same inner diameter, while the maximum height at which the free end must be positioned must be reduced from 80 to 50 cm.

WARNING: The draining system must comply with the international standard. Our company declines all liability if improper use of the machine gives rise to pollution.

Models equipped with the drain separating device (optional)

Models fitted with valves to separate the polluted drained water (conveyed to a storage tank) from the clean drained water (conveyed to the normal sewer) must be installed in compliance with the instructions (supplied with the valves) for assembly of the separation valves.

4.8 ELECTRICAL CONNECTIONS

The appliances have been designed for connection to electricity mains with the following voltage ratings:
- 3 / N / PE ~ 400/230V 50Hz
- 1 / N / PE ~ 230V 50Hz 13 or 30amp

The appliances must be PERMANENTLY connected to the electricity main.

All the metal surfaces of the machine must be grounded: during the installation phase, check to make sure that the connection to the ground terminal that protects the system is securely made.

The appliances leave Camlab already pre-engineered for 3 / N / PE **~** 400/230V 50Hz voltage and are supplied with a 5x2.5 mm² power flex **OR** for 1 / N / PE ~ 230V 50Hz voltage for single-phase connection.

230V 13A single-phase connection is inadvisable since it considerably lowers the performances of the appliance when it comes to operating speed since the time it takes to heat the water is tripled and the overall cycle time (considering the same cycle) is more than double that obtained with a three phase connection.

Power flex specifications:
. 5 core x 2.5 mm², 450V (three phase version)
. 3 core x 2.5 mm², 230V (30A single-phase version)

The electricity main to which the appliance is connected must comply with the standards in force. Camlab declines all liability for damage to persons or property caused by a defective electricity supply or incorrect installation.

4.9 AFTER INSTALLATION

After the machine has been connected to the electricity and water mains by the technician, certain operating parameters must be entered via the keyboard if different from default settings.
The parameters listed below must be entered and will be described in detail in the following chapters:

- Salt addition to the softener/1st regeneration start
- Language of the dialog menus
- Hardness of the water supply
- Type of water effectively connected
- Volume of the liquid detergents to dispense (if Camlab's default programs are changed).

Before using the machine, make sure that it has been correctly connected to the electricity main, that the water pipes have been connected to the taps and that these are open, and that the drain pipe has been positioned as indicated.

GENERAL OPERATING INSTRUCTIONS

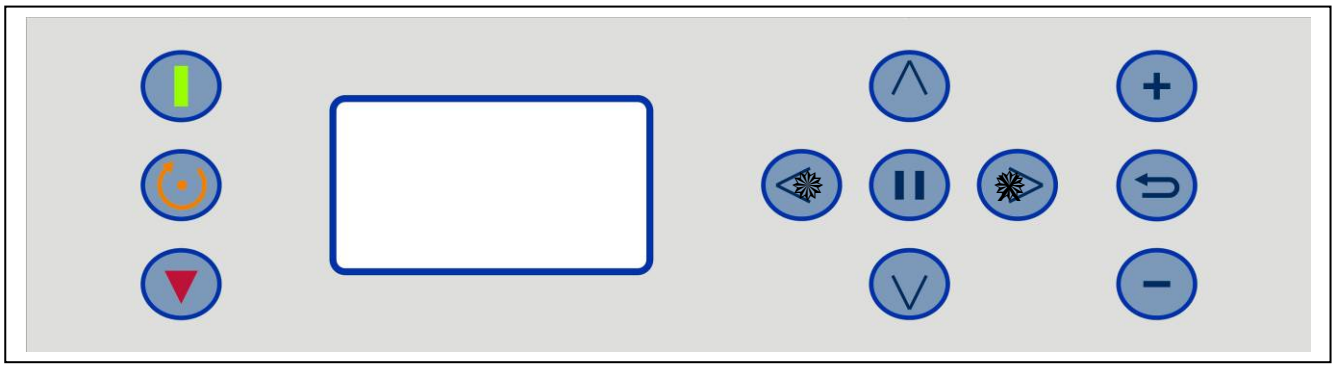
5.1 POWER SUPPLY

Switch S1, that switches ON model GW4090, is situated in the cabinet at the side and can only be accessed after the door of the side compartment has been opened. The door to the side compartment is opened by pressing on the top left-hand side.

GW3060 is switched ON by the knob on the door.

5.2 CONTROLS

The keyboard is divided into two separate sections:



. The left-hand part of the display with keys for starting and stopping a program, and for the reset process;

. The right-hand part of the display, which contains the keys used for selecting/editing programs, selecting the machine parameters and the various functions/adjustments.

A complete list of the keys and their relative functions is given below:

START: starts the selected program

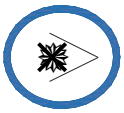
STOP: stops the current program

RESET: forces the machine to run through a reset procedure (both in the case of a deadlock and in other situations, such as those after an alarm has occurred)

ARROW UP: selection key

ARROW DOWN: selection key

ARROW LEFT – DRYER ON: key used to select the separate drying cycle (GW4090); it is also used for moving to the **left** in each menu

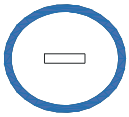


ARROW RIGHT – DRYER OFF: selection key for deactivating the drying cycle (GW4090); it is also used for moving to the **right** in each menu.

ENTER: confirms the selection made/program selection; door opening

INC: increases the value in question/selects yes

ESC: quits the current screen and goes back to the previous step



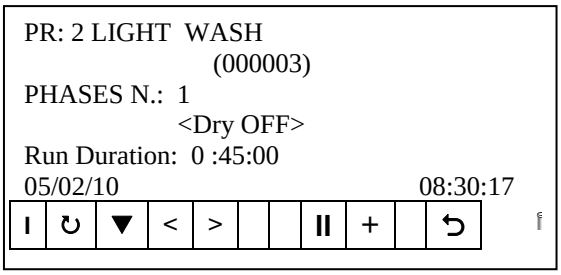
DEC: decreases the value in question/selects no

The keys appear on the bottom line of the display when activated.

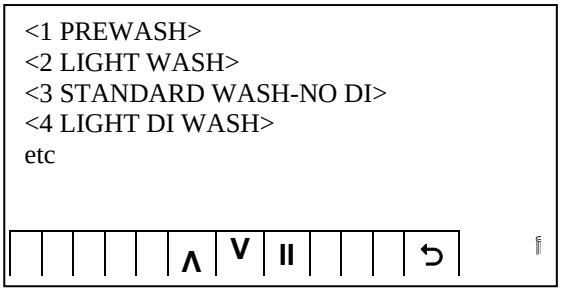
N.B.
If the LANGUAGE on the DISPLAY is not in ENGLISH, refer to chapter 7 first, in order to follow the procedure for changing the language.

6 ADJUSTMENT OF THE WASHING PARAMETERS

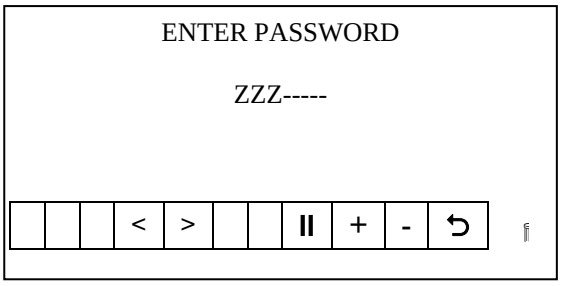
The basic machine parameters can be entered via the console (the operator must have a superuser password level) Switch ON the machine. After the logo appears, the following initial screen will appear.



Press ESC to access the program selection menu:



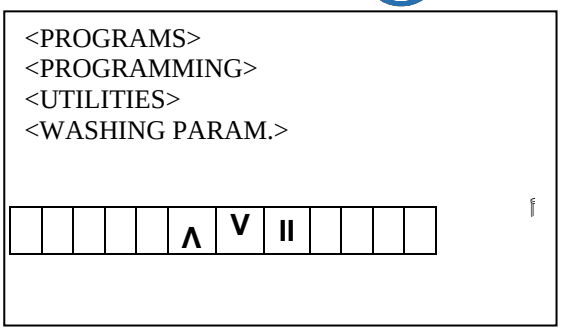
Press ESC again to reach the menu where the various sub-menus can be selected through the super user password:



Press / to enter the first letter / number of the Password.

Press to move to the right and enter the next letter/number.

Then, by pressing ENTER, you reach the following submenu. Use arrows, to scroll:



Press ENTER on the "**WASHING PARAM**" item to access the menu with the basic settings, which include the items listed below:

<Water Connections>
≤Extra Fill Time≥
<Sump Rinse>
<Regeneration>
<Cooled Drainage>
<Condenser On>
<Conduct. Sensor>
<PAD On>
<Temp Calibration>
<Triphase supply>
<Drying Blower>
<Auto Door Open>
The meanings of these settings will now be described one by one.

Saving the changes

Every time parameters are changed, the modifications are saved in two cases:

1) if the confirmation key (ENTER) can be pressed on the modification menu, the changes become permanent immediately.
2) If the changes cannot be confirmed by pressing the ENTER key on the menu, the changes will become permanent only after the machine is turned **off** and turned **on** again.

6.1 WATER CONNECTIONS

The washing programs have been formulated so as to ensure that the most suitable type of water (cold, hot or demineralised) is used for the required function.
If all three types of water are not available, the washing program can be corrected automatically so as to use the most appropriate alternative.
Select "Water Connections" to access the menu where the type of water is selected.

Press ⋁ / ⋀ to move to the type of water and press ENTER ▯▯ to confirm.

Cold Water	<Y>
Hot Water	<Y>
Demi Water	<Y>
Softened Water	<N>
Cold/Warm Water	<Y>

∧ ∨ II + - ⮌

Cold/Warm Water MUST always be <**Y**>

Use the + and – keys to select or deselect the type of water. Once the selection has been made, press ENTER ▯▯ to confirm it.

If softened mains water is available, the built-in softener must be inhibited (by changing N to Y) from the standard operating mode and salt must not be added to the Salt container.

6.2 EXTRA FILLING TIME

(the technical level password is necessary. See chapter 6)

Press ⋁ to move to Extra Filling Time and confirm with ENTER ▯▯

Extra Filling Time

<000>

II + - ⮌

If the pressure of the water in the supply main is below the minimum value, the filling time of the solenoid valve on the inlet can be increased so as to prevent an alarm from appearing. Enter the required time in seconds (using the + and – keys). However, it is advisable to restore the right pressure in the water supply system if the times and costs of each cycle are to be optimized.

Press Enter ▯▯ to confirm after setting the extra time in seconds

6.3 SUMP RINSE

Flushing out the water trap is a function that rinses the internal pump and hydraulic circuits between one phase and the next. This completely removes the additive used for the previous wash and/or eliminates any mains water residues when rinses with demineralised water are required.
The "water trap flushing" function:

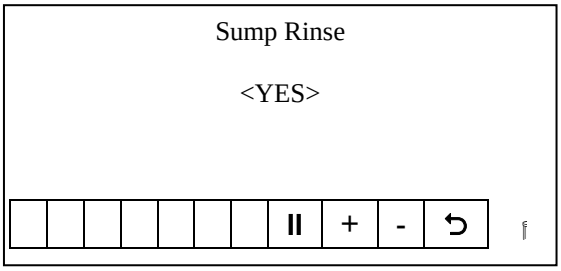
- improves the quality of the washing action

but:

- increases the amount of water used
- lengthens the washing cycle by several minutes

Users can therefore choose whether to program the function or to inhibit it in the following way:

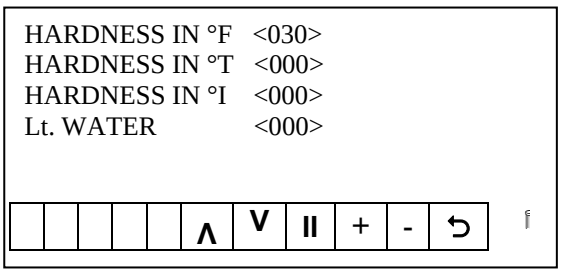
Press ⋁ to move to Sump Rinse, press Enter ▯▯ and then select YES or NO with **+** or **-**



Press ENTER ▯▯ to confirm.

6.4 REGENERATION

Press ⋁ to move to Regeneration, press Enter ▯▯ and then press ⋁ to move to the Hardness expressed in °F (French), °T (German), °I (Italian) or Litres of Water. With **+** or **–** insert the value according to the Table indicated below.



If the user himself enters the volume of water in litres, after which regeneration must take place, this value will be given priority over the other values.

After inserting the value of the hardness or litres of water, press Enter ▯▯ to confirm.

Conversion table			
Unit of measurement	°F	°T	°I
1°F	1	0,56	0,7
1°T	1,79	1	1,25
1°I	1,43	0,8	1

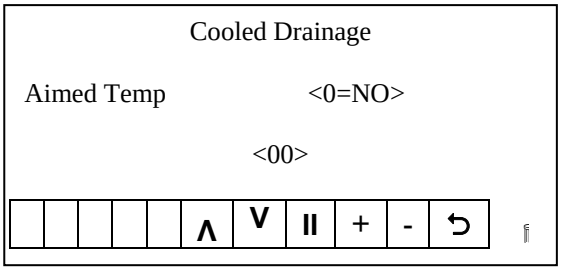
The following table gives an initial estimation as to the correspondence between degrees of hardness and number of phases to conduct before regeneration need be done.

Hardness in French degrees [°F]	Hardness in German degrees [°T]	Hardness in Italian degrees [°I]	Litres of Water
<10	5.6	<7.0	160
15	8.4	10.5	150
20	11.2	14.0	140
25	14	17.5	135
30	16.8	21.0	110
35	19.7	24.5	80
40	22.5	32.0	60
45	25	31.5	50
50	28	35.0	40

6.5 COOLED DRAINAGE

A minimum temperature of about 75°C can be reached by selecting this option.

Press ⋁ to move to Cooled Drainage, press Enter ▯▯ and with + or – insert the Temperature required.



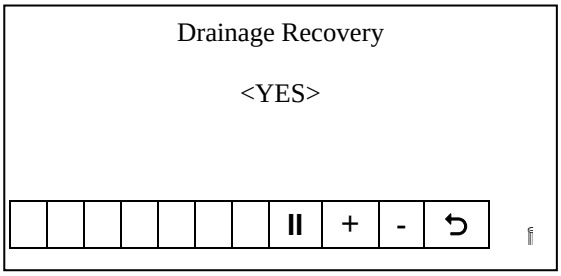
Press Enter ▯▯ to confirm.

6.6 DRAINAGE RECOVERY

(the technical level password is necessary. See chapter 6)

Press ⋁ to move to Cooled Drainage, press Enter ▯▯ , insert Password, press ▯▯ and select YES or No with + or – . Press Enter ▯▯ to confirm.

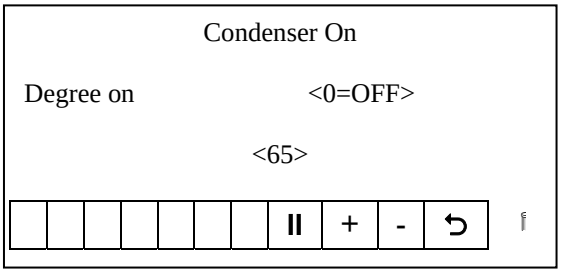
Enter "**Yes**" always even if a double draining valve is **NOT** installed, so that the liquid is transferred to the appropriate drain (for example: a recovery or filter drain) .



6.7 CONDENSER ON-(if fitted)

(the technical level password is necessary. See chapter 6)

Press ⋁ to move to Condenser On, press Enter ▯▯ , insert Password, press and select the Temperature with + or – . Press Enter ▯▯ to confirm.

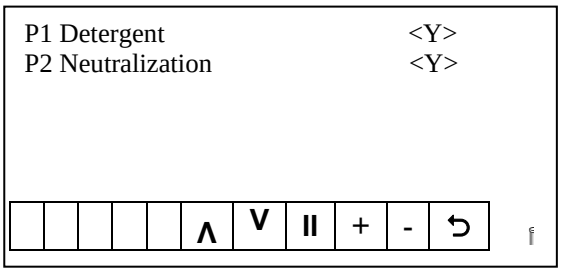


The steam condenser can be inhibited by entering a temperature of 0°C.If a temperature is entered, that will be the temperature at which the condenser starts operating.

6.8 PERISTALTIC DETERGENT/ACID PUMPS

(the technical level password is necessary. See chapter 6)

Press to move to Detergent Pumps, press Enter , press to select the pump and with + or – select Yes or No. Press Enter to confirm.



6.9 DETERGENT FLOWMETERS

NOT APPLICABLE

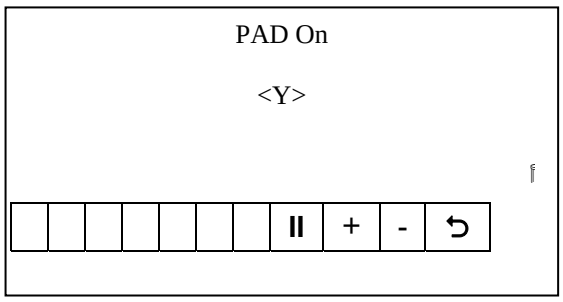
6.10 CONDUCTIVITY SENSOR

NOT APPLICABLE

6.11 PAD ON

(the technical level password is necessary. See chapter 6)

Press to move to PAD On, press Enter , insert Password, press and select the PAD with + or – (Yes or No). Press Enter to confirm.



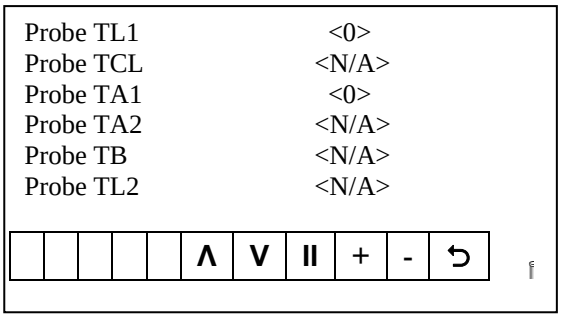
The auxiliary pump ("PAD" pump for demineralised water) is to be activated if the pressure of the demineralised water is less than 1 bar.

6.12 TEMPERATURE CALIBRATION

(the technical level password is necessary. See chapter 6)

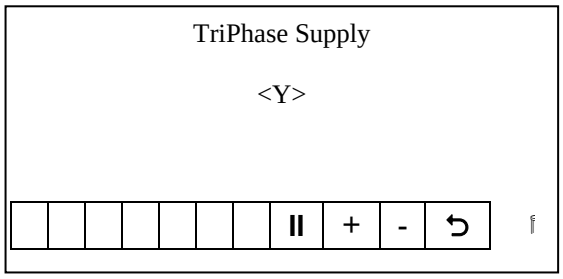
As time goes by, the settings of the temperature probes may need to be adjusted. The tenths of a degree required to raise or lower the settings of each individual probe can be entered in this screen.

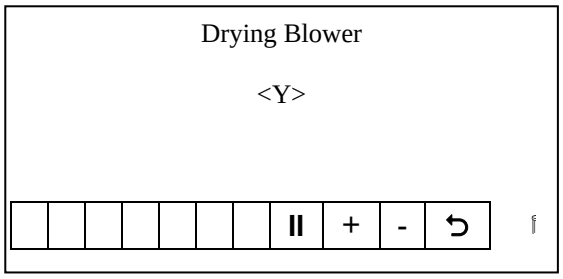
Press ⋁ to move to Temp Calibration, press Enter ▯▯ , insert Password, press ⋁ / ⋀ to select the temperature Probe and with **+** or **–** , make the adjustments. Press Enter ▯▯ to confirm.

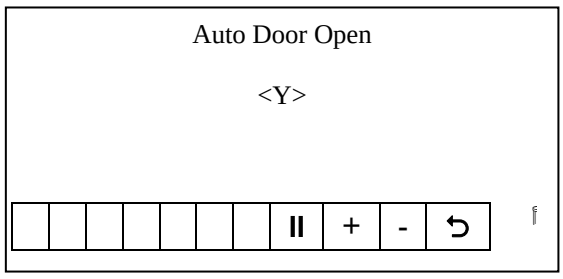


TL1 = probe that monitors the temperature in the wash chamber
TL2 = auxiliary probe (optional) probe that monitors the temperature in the wash chamber
TCL = probe that independently monitors the temperature in the wash chamber (not installed in this model)
TA1 = probe that monitors the temperature of the drying air
TA2 = probe that monitors the temperature of the drying air (not installed in this model)
TB = probe that monitors the temperature of the external boiler (not installed in this model)

Follow the same procedure indicated above for the following:

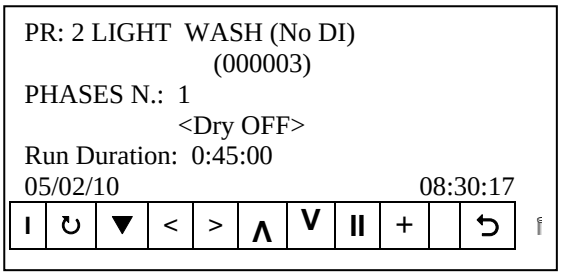




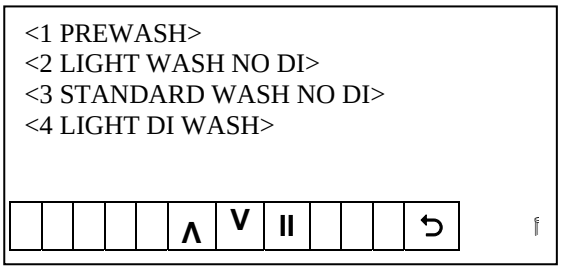


7 UTILITIES

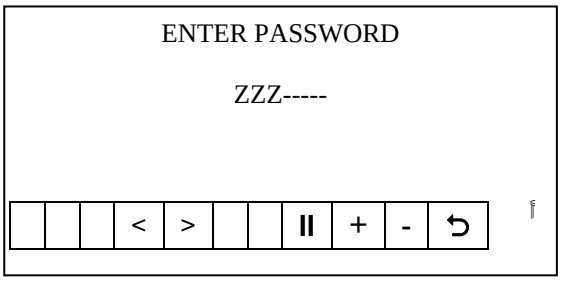
The basic parameters concern the washing cycle, but there is another series of parameters concerning the general machine settings and that can be selected by means of various menus.
Access the initial screen:



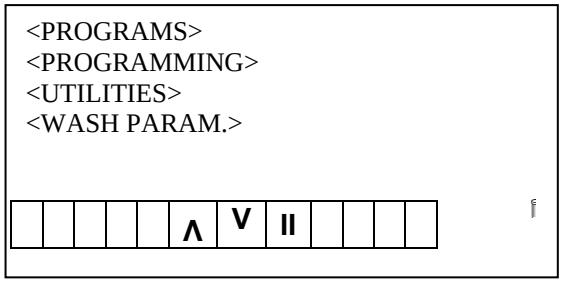
Press ESC to access the program selection menu:



Press ESC again to reach the menu where the various sub-menus can be selected through the super user password:



Enter the Super User Password **ZZZ**. This password can be changed if necessary. **See page 30**.



Press ENTER again to reach the following submenu. Use, / arrows to scroll:

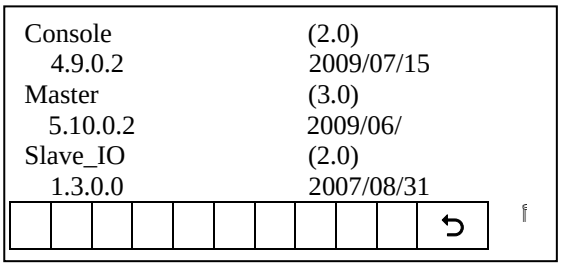
Press **ENTER** on "**UTILITIES**" item to access the menu with the basic settings, which include the 12 items listed below:

<About>	(can only be accessed with a SUPERUSER password)
<Modify PSW>	(can also be accessed with the user password. Can only be changed with the operator's personal password)
< Language Selection >	(can only be accessed with a SUPERUSER password)
<Calendar>	(can only be accessed with a SUPERUSER password)
<Archive>	(can only be accessed with a SUPERUSER password)
<Run Time Print >	(can only be accessed with a SUPERUSER password)
<User Check >	(can only be accessed with a SUPERUSER password)
<Buzzer Enable>	(can only be accessed with a SUPERUSER password)

<Communication>	(can only be accessed with a SUPERUSER password)
< LAN Config >	(can only be accessed with a SUPERUSER password)
<Default Values>	(can only be accessed with a SUPERUSER password)
<Machine Code>	(can only be accessed with a SUPERUSER password)
<Printer Setup>	(can only be accessed with a SUPERUSER password)
<Service>	(can only be accessed with a TECHNICAL password)
<Output State>	(can only be accessed with a SUPERUSER password)
<Input State>	(can only be accessed with a SUPERUSER password)

7.1 ABOUT

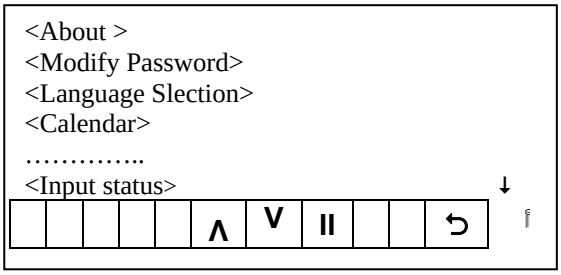
The software version installed on the machine can be read in this menu. The information regarding the three microprocessors can also be read: the master and slave on the motherboard and the console on the console card. The boot version of the system is provided as well (a low level routine is loaded onto each microprocessor). For example on the Console (2.0) is the boot version and 4.9.0.2 is the firmware version.



Press Enter on About and the version of the firmware will appear

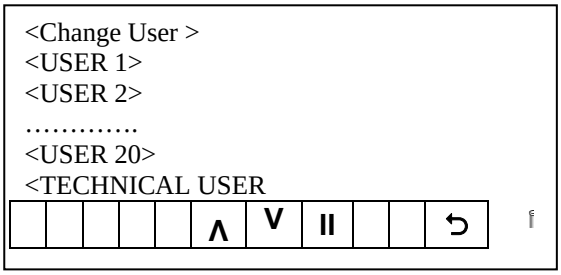
Press to return to the previous mask

7.2 MODIFY PASSWORD



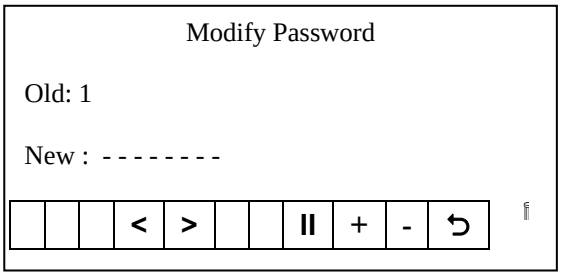
Press to select Modify Password and

Press Enter



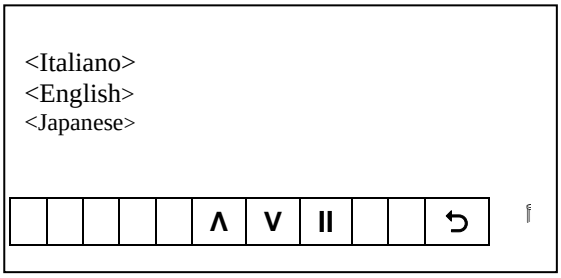
The passwords can be changed by means of these two screens; only a personal password or a lower level password can be changed (if authorization is provided).
Super user password will allow you to change up to USER 20. The Technical Password will allow you change all passwords + the Technical user password.

Press ENTER after having gone to the selected item. The following window will appear:



If, for example, <USER 1> is selected, the screen appears as shown .
After writing the new password, confirm it by pressing ENTER . If no more changes are to be made, press

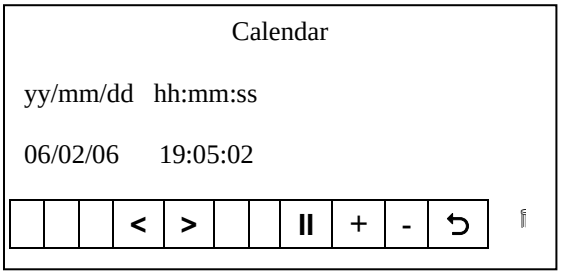
7.3 LANGUAGE SELECTION



Press ∨ to select Language Selection and Press Enter . Select the language required with ∨ / ∧ . Press ENTER to confirm.

7.4 CALENDAR

The machine is equipped with a clock/date indicator. The current time and date can be entered in this menu.



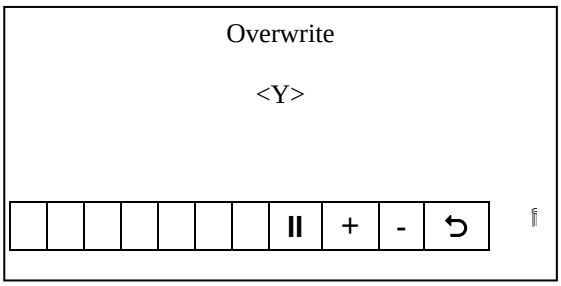
Press ∨ to select Calendar and press ENTER.

With move forwards and with **+ / -** modify date/time.

Press ENTER to confirm.

7.5 ARCHIVE

The memory in which all the cycle data is stored is of limited entity. If "YES" ,<Y>, is entered in this menu, the machine will continue to file (overwrite)the data even when there is no more space in the memory.
If "NO" , <N>,is entered, the relative warning message will appear on the display: the data must now be downloaded by linking to the serial port.



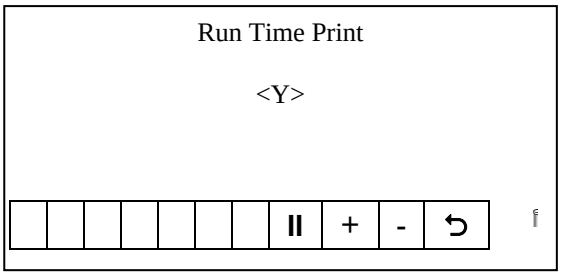
Press ∨ to select Archive and press ENTER.

Press **+ / -** to select Y or N.

Press ENTER to confirm.

7.6 RUN TIME PRINT

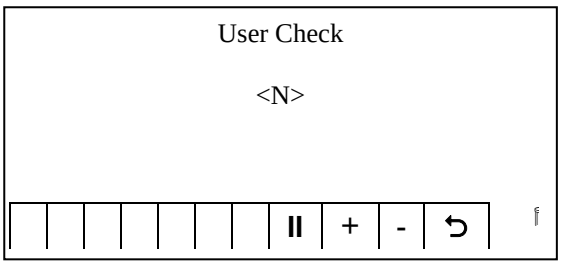
Select this option and the most significant data will be printed on paper as the cycle advances.



Press ▽ to select Run Time Print and
press ENTER
Press + / - to select Y or N.
Press ENTER to confirm.

7.7 USER CHECK

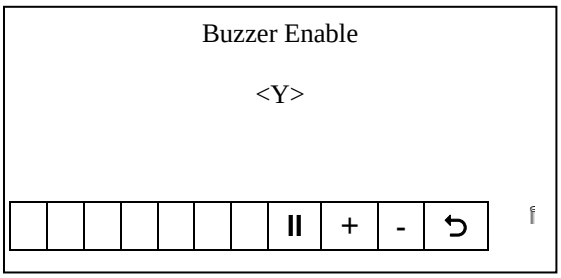
If this option is selected, the program will ask for the password before beginning a cycle.
You are advised to disable this option unless there are effective security problems and you need to exercise rigid controls over the operators who use the machine.



Press ▽ to select User Check and
press ENTER
Press + / - to select Y or N.
Press ENTER to confirm.

7.8 BUZZER ENABLE

The buzzer may be switched off if not required.



Press ▽ to select Buzzer Enable and
press ENTER
Press + / - to select Y or N.
Press ENTER to confirm.

7.9 COMMUNICATION

The GW3060 & GW4090 automatically selects the type of connection.

In no case may CAMLAB be held liable if a procedure is executed incorrectly or files other than those sent by Camlab are downloaded into the control system.

The machine must be turned off when the physical connection via USB or RS232 is being carried out.

In no case may Camlab be held liable if this procedure is executed incorrectly and the data archive goes lost or more serious damages occur.

7.10 DOWNLOAD PROCEDURE OF THE UPDATED FIRMWARE VIA FRONT END

(Usually performed by the Camlab Engineer).

Under the front panel there is a serial connection through which it is possible to download the new firmware or check the machine status.

1. Connect your PC to the RS-232 port;

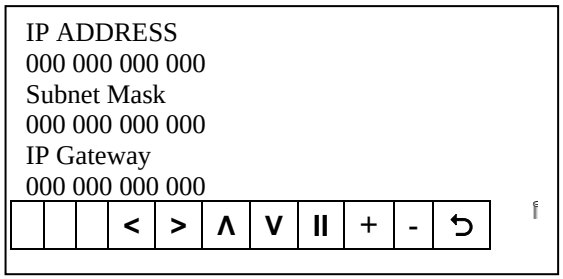
2. Turn ON the machine and wait for a few seconds.

3. Launch the program WDTRACE® from the PC and follow the steps shown.

NB: On the GW3060, the connection is at the rear.

7.11 LAN CONFIGURATION

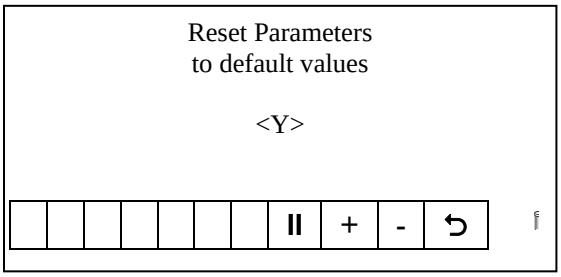
The network data for the machine can be set (once the WD-LAN card is installed) on this screen (LAN config.). To confirm, press ENTER and then ESCAPE to save the setting. However, the machine must also be shut off and turned on again.
The network settings configuration is only permitted using the keyboard. It cannot be done using WDTRACE®.



Press ∨ to select Lan Configuration and press ENTER II . With the help of **<, >, + / -** to insert the required values.
Press ENTER II to confirm.

7.12 THE MACHINE'S DEFAULT PARAMETERS

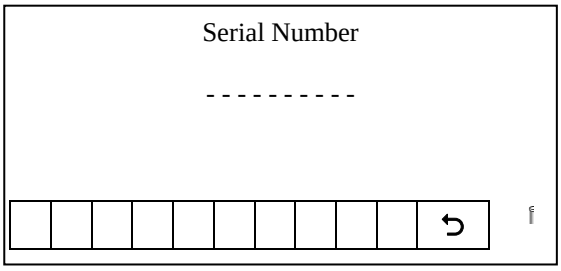
Select "Yes" and then proceed with updating, and the operating parameters memorized in the factory will be restored



Press ∨ to select Default Values and press ENTER II . Press **<, >, + / -** to select Y/N.
Press ENTER II to confirm.

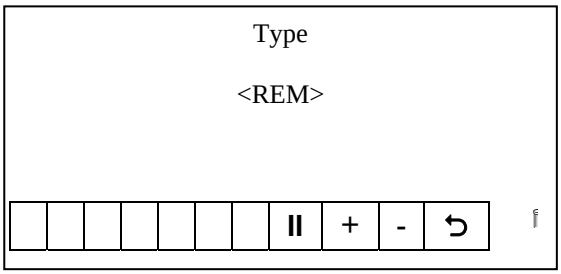
7.13 SERIAL NUMBER OF THE MACHINE

The machine's serial number is indicated in this screen.



7.14 PRINTER SET UP

The machine can either have a printer on board (other models) or can be connected to a table printer (GW3060/GW4090 model); in this last case, REM must be set.



Press ⋁ to select Printer Set Up and

press ENTER ▯▯

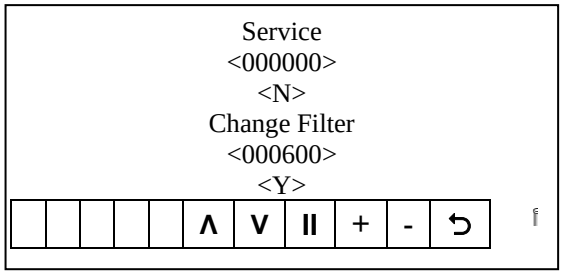
Press **Λ , V ,** to choose Local or Remote and with **+ / -** to select Y or N.

Press ENTER ▯▯ to confirm.

7.15 SERVICE

This screen shows the number of cycles accomplished by the machine and can also be used to enter a reminder as to when the Service Centre must be called for the service required.

A filter replacement reminder can also be activated for the air filter of the drying system. (GW4090).



Press ∨ to select Service and

press ENTER II

Press **∧**, **∨** , to choose Service or Change Filter and with **+ / -** to select Y or N.

Press ENTER II to confirm.

N.B.
The number in <000600> indicates the number of cycles carried out by the machine.
After carrying out service on the machine and if <Y> is selected, automatically the cycle counter will return to <000000>
To carry out this change a Technical Password is required.

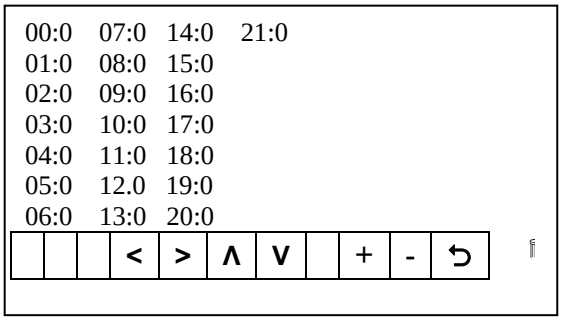
Saving the changes

Every time parameters are changed, the modifications are saved in two cases:

If the confirmation key (ENTER) can be pressed on the modification menu, the changes become permanent immediately. Use the WDTRACE management software to verify this Instantly

If the changes cannot be confirmed by pressing the ENTER key on the menu, the changes will become permanent only after the machine is turned off and turned on again.

7.16 STATUS OF THE OUTPUTS



Press ∨ to select Outputs State. Press ENTER

Press **∧ , ∨ , <, >** to select the Output and with **+ / -** to activate or deactivate the same. 1= activated; 0= deactivated
N.B. Before exiting make sure that all outputs are deactivated.

Press ESC to exit.

.00 = (EK) EVCC condenser filling solenoid valve (optional)

.01 = (EA) EVSA alternative draining solenoid valve (optional)

.02 = (ER) EVR regeneration solenoid valve

.03 = P3 peristaltic pump P3

.04 = (EU) EVU outlet solenoid valve (not available in this model)

.05 = (ED) EVD demineralised water solenoid valve

.06 = (EC) EVC hot water solenoid valve

.07 = (EF) EVF cold water solenoid valve

.08 = (BP) BPE1 door lock 1 solenoid valve

.09 = (SC) PSC condenser drain pump(optional)

.10 = P1 peristaltic pump P1

.11 = (A1) MA1 drying motor 1

.12 = P2 peristaltic pump P2

.13 = MS drain pump motor

.14 = P4 peristaltic pump P4

.15 = (A1) MA1 drying motor – high speed

.16 = (RA) RA1 drying heating element 1

.17 = (PD) MD demineralised water pump motor (optional)

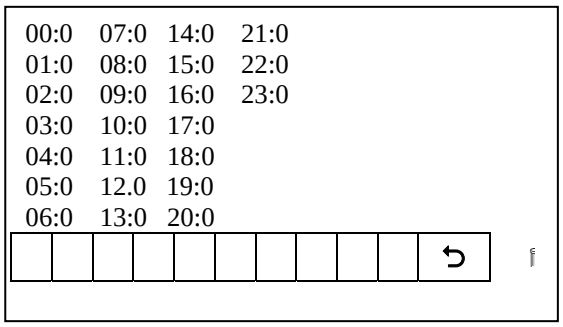
.18 = (M1) ML1 washing motor 1

.19 = (R3) CR3 heating element 3 relay actuation

.20 = (R2) CR2 heating element 2 relay actuation

.21 = (R1) CR1 heating element 1 relay actuation

7.17 STATUS OF THE INPUTS



Press ∨ to select Inputs State. Press ENTER

1= activated; 0= deactivated

Press ESC ⇦ to exit.

It may be useful to consult this mask for checking the status of the inputs after an alarm or "abnormal" situation.

.00 = N.o. (door micro 2)

.01 = (M1) MCM1 door lock 1 mechanical opening micro switch

.02 = (C1) MCP1 door lock 1 electrical opening micro switch

.03 = (AS) MCA acqua stop micro switch (not installed in this model)

.04 = (H1) PAP1 washing pump 1 motor high pressure switch

.05 = (M2) MCM2 door lock 2 mechanical opening micro switch (not installed in this model)

.06 = PS safety level pressure switch

.07 = PL washing level pressure switch

.08 = SS softener salt sensor

.09 = T1 temperature sensor

.10 = T2 temperature sensor (optional)

.11 = TL washing temperature sensor (T3)

.12 = TB boiler temperature sensor (T4) (optional)

.13 = (H2) PAP2 washing pump 2 motor high pressure sensor (not installed in this model)

.14 = (P4) SP4 can 4 level sensor

.15 = (SF) SFS flow sensor on drain (not installed in this model)

.16 = (P3) SP3 can 3 level sensor

.17 = (SC) SSC condenser safety level sensor

.18 = (P2) SP2 can 2 level sensor

.19 = (LC) SSL condenser work level sensor

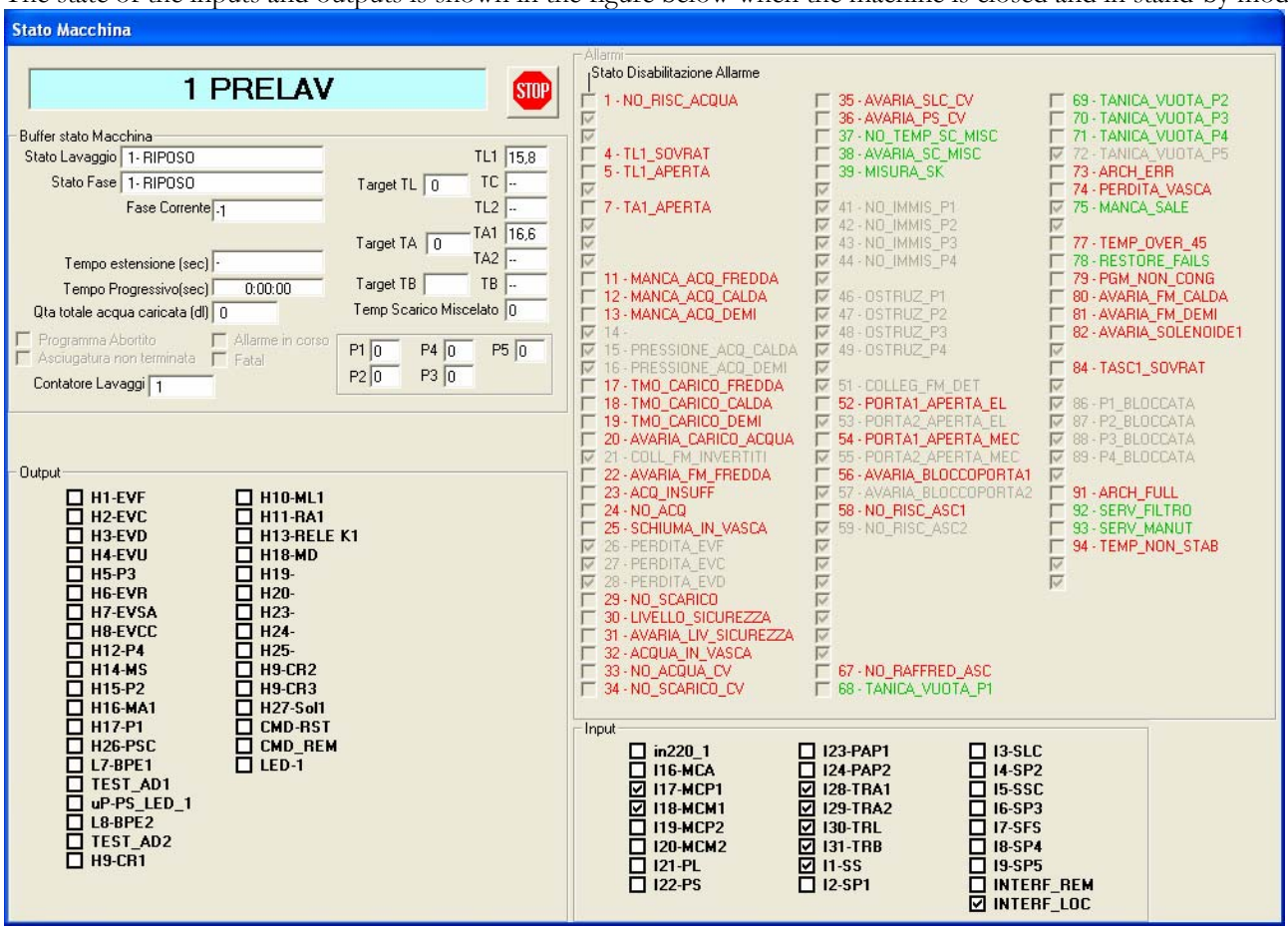
.20 = (P1) SP1 can 1 level sensor

.21 = (P5) SP5 can 5 level sensor

.22 = IR INTERF_REM

.23 = IL INTERF_LOC

The state of the inputs and outputs is shown in the figure below when the machine is closed and in stand-by mode.



Note: In this case I1-SS is flagged because of the lack of salt (that therefore must be added).

8 PROGRAMMING AND PROGRAM EDITING

The GW3060 & GW4090 glasswasher has an extremely flexible programmable control that allows highly sophisticated washing cycles to be programmed and all the parameters that affect the quality and type of washing process to be entered.
Thanks to this flexible system, users can enter the washing programs that suit their requirements and that take the least possible time.

The machine's memory already contains 6 programs that should cover the washing requirements of most laboratories.

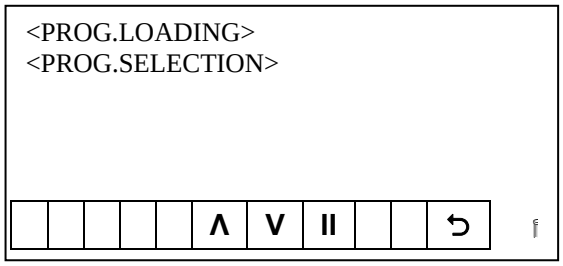
We advise users to process the materials with one of the basic programs, which should be chosen to suit the case in question.
If it is necessary to edit an existing program or create a new one, we advise you to only modify one parameter at a time (e.g. to shorten the washing time or change the washing temperature) and to then test the program with dirty materials in order to find out whether there have been any improvements.
If several parameters are changed at the same time, it often becomes difficult to ascertain which parameter has worsened or improved the quality of the wash obtained.

8.1 PROGRAMMING MENU

There are 6 programs in the memory of the microprocessor.
These programs reside in a permanent memory.
The 6 programs are installed in the operating memory (similar to the hard disk of a personal computer) by means of the installation procedure described below.
Besides the 6 positions filled by standard programs, this operating memory also contains further vacant positions where another 20 programs can be memorized.
Each time a new program is created, the first free position, of the 20 vacant ones, will be occupied.

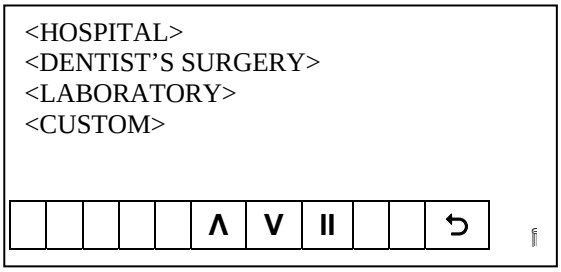
In order to be edited or executed, the washing programs must be transferred to a work memory (similar to the RAM of a PC) one at a time.
This operation takes place automatically.

8.2 MAIN PROGRAMMING MENU



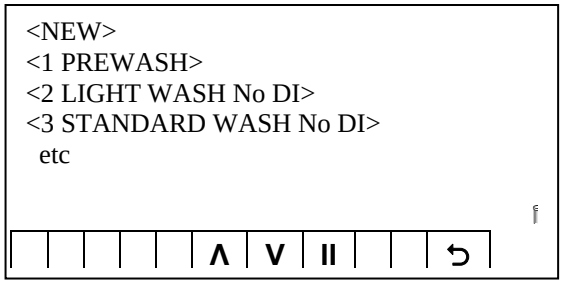
Refer to page 28 to enter in the <PROGRAMMING> mode and press ENTER to confirm.

Select "PROG.LOADING" to access the following:



NB: Only **CUSTOM** programs are used.

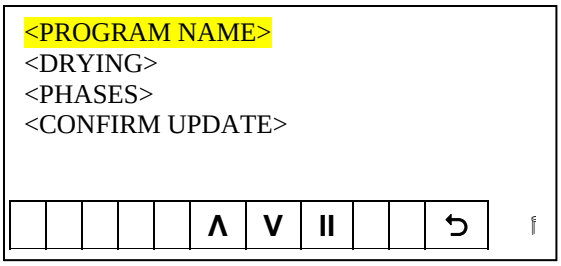
Select "Prog.Selection" to access the following:



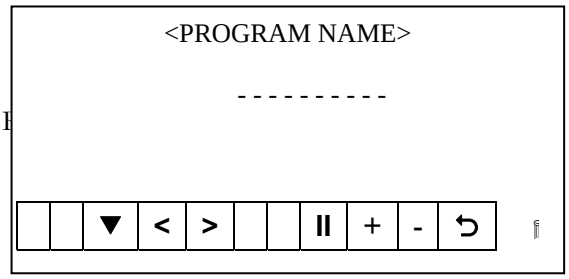
A new program can be created or an existing one edited in this mask, depending on the program selected.

8.3 HOW TO CREATE A NEW PROGRAM

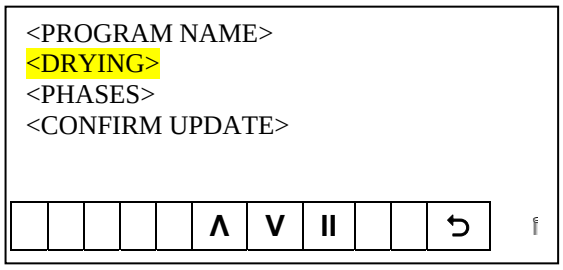
If "NEW" has been selected in the previous menu, you will access the first menu for formulating your new program:



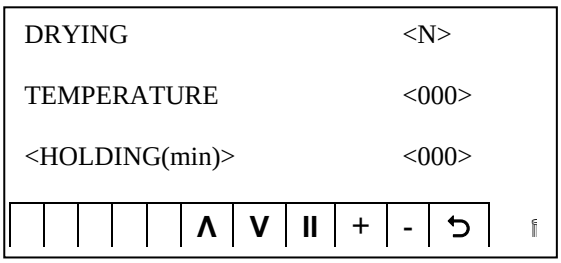
The first information to enter is the name of the new program. Select the "PROGRAM NAME" option to access the screen below:



Create the name of the new program using the +, -, <, > keys. To delete a wrong letter or number press ▼.
Confirm with ENTER to go back to the previous screen.



Select "DRYING" to access the menu where this phase can be entered:

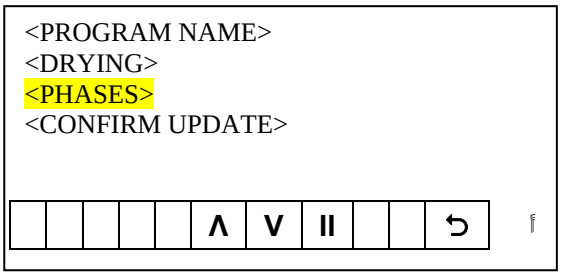


Confirm the entered data to go back to the previous menu.
Having entered the name of the program and the drying phase, you can now proceed by editing the true phases of the washing program.

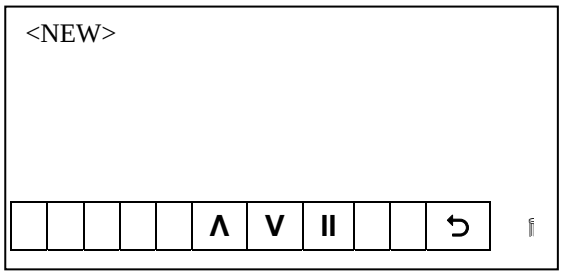
8.3.1 How to select the program phases

Each washing program consists of up to 6 different phases.
The actions required can be programmed for each of the 6 phases, i.e.:
1. define the type of water used in the phase (cold, hot or demineralised)
2. define whether the washing water must be heated or not, and at what temperature
3. define how long the materials are to be washed at the selected temperature
4. define the type of detergent to add to the washing water by activating one or more of the dispenser pumps.
5. define whether to activate an auxiliary function or not, e.g. activation of an alternative drain valve
6. define the thermal disinfection

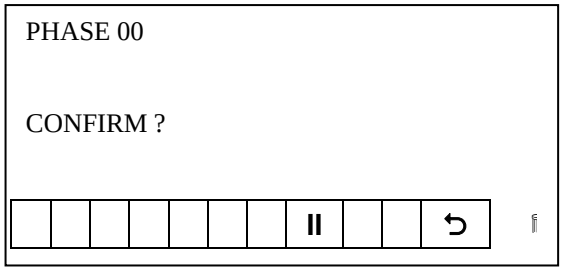
These data must be defined for **each** of the 6 phases.
Access the main menu for creating the new program and select the "PHASES" item:



Now proceed by creating a new phase:

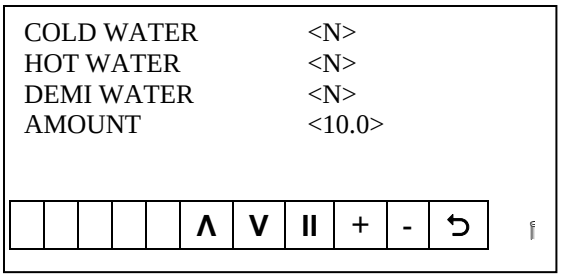


Press "ENTER" to access:

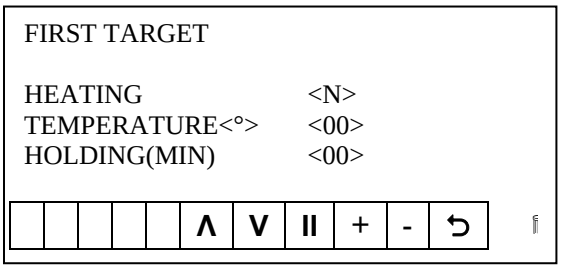


Confirm, to access the setup menu of the individual phase.

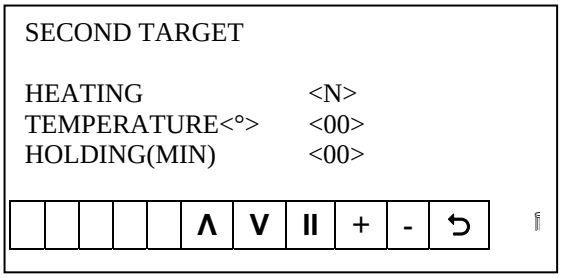
8.3.2 How to edit each individual phase



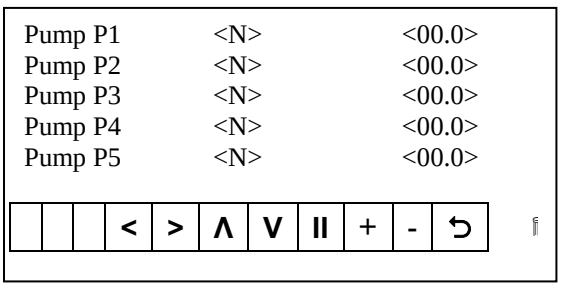
Mask for selecting the type and amount of water (expressed in litres)



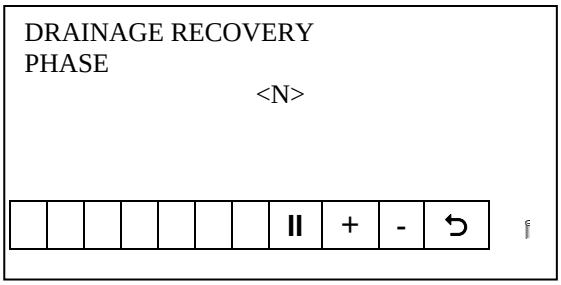
"FIRST TARGET" means the temperature required for the washing/thermal disinfection phase. A temperature can be fixed, or the "Heating" option selected without a precise temperature. Heating will last for the time entered for the "Extension" item (expressed in seconds).

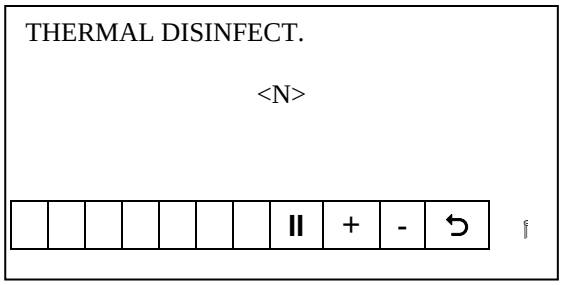


"SECOND TARGET" means the temperature required for the washing/thermal disinfection phase. A temperature can be fixed, or the "Heating" option selected without a precise temperature. Heating will last for the time entered for the "Extension" item (expressed in seconds).



Pay close attention to the measuring unit: the value are given in **ml/lt.** Take into account that the machine loads **10 lt/phase.**

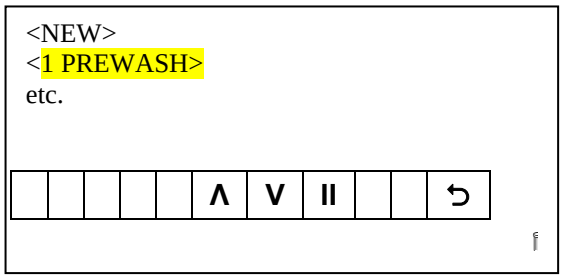




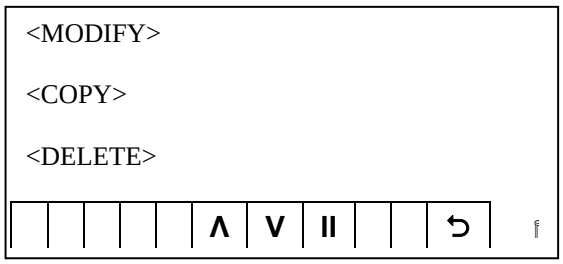
Press ENTER and select "PHASES" if you wish to add another phase to the program. Press "NEW" and confirm.
After inserting the number of Phases required, select "Confirm Update". The new program will occupy the first vacant position in the program list.

8.4 HOW TO EDIT AN EXISTING PROGRAM

If, for example, the "PREWASH" program is selected from the program selection menu ("PROGRAMMING" sub-menu) instead of "NEW",

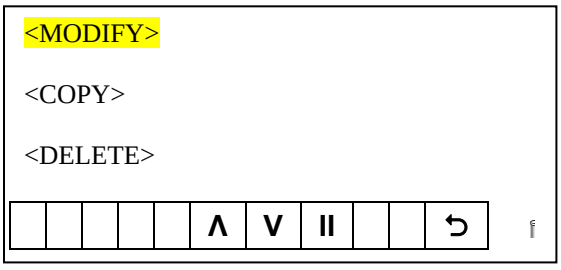


you will access the following screen:

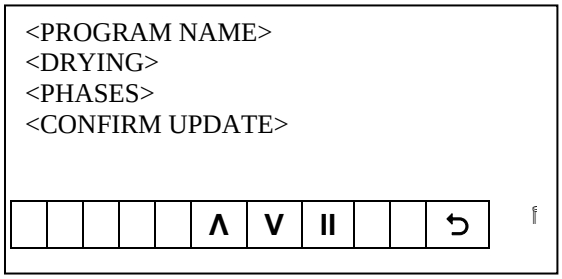


There are 3 options to choose from.

8.4.1 How to modify an existing program

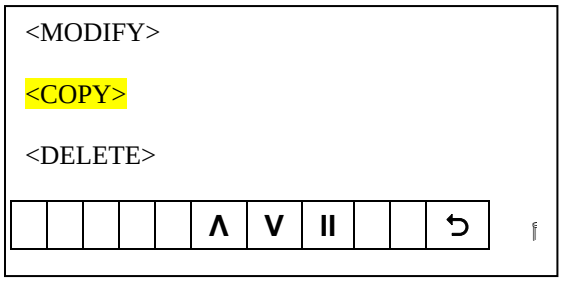


Once you have confirmed the selection made, you will access the following menu:

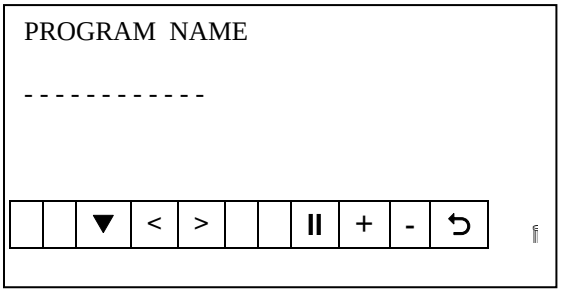


Apart from the name of the program, you can change the drying parameters and the various phases. However, in relation to these latter, only the quantities of detergent can be modified . Once modification is complete, select <CONFIRM UPDATE> and confirm with the ENTER key.

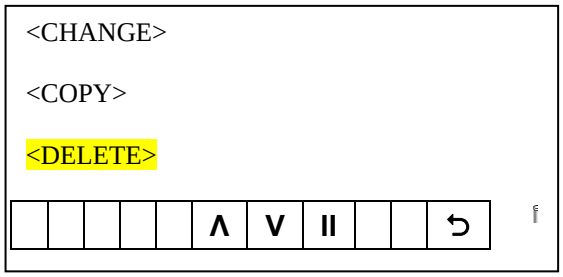
8.4.2 How to copy an existing program



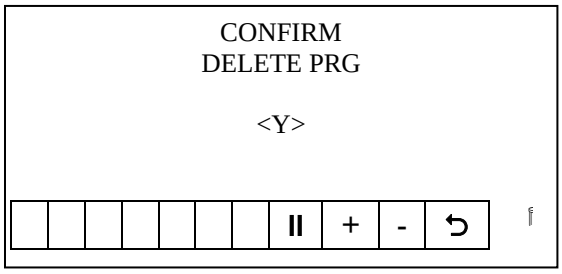
Confirm, to access the following menu, where the copy of the program about to be copied can be renamed.



8.4.3 How to delete an existing program



Once the DELETE option has been selected, it must be confirmed on the following screen.



The selection is confirmed by selecting the response with the + and – keys and pressing ENTER.

9 SUPPLEMENTARY MAINTENANCE

9.1 PUMP BLOCKED AFTER A LONG IDLE PERIOD

During long periods at a standstill, the motor's rotating carbon seal may block owing to lack of lubrication or simply because it has remained without water.
This will be evident when the first cycle starts as the motor will fail to function.

WARNING:
DO NOT ALLOW THE MOTOR TO FUNCTION IN THE BLOCKED CONDITION FOR LONG PERIODS AS IT MAY BURN OUT.

Attempt to release the motor in the following way:

- Remove the coarse filter
- You will see 2 holes at the bottom of the trap:
  One is vertical in the central position
  The other hole is horizontal, towards the bottom of the machine
- The pump vanes can be seen through the hole
- Try to turn the vanes without forcing with a finger
- If they fail to turn by the simple force exercised by a finger, use a large wide screwdriver to delicately lever (take care not to break the vanes) in one direction or the other, shifting the vanes step by step until the pump releases.
- Attempt to start the machine again.

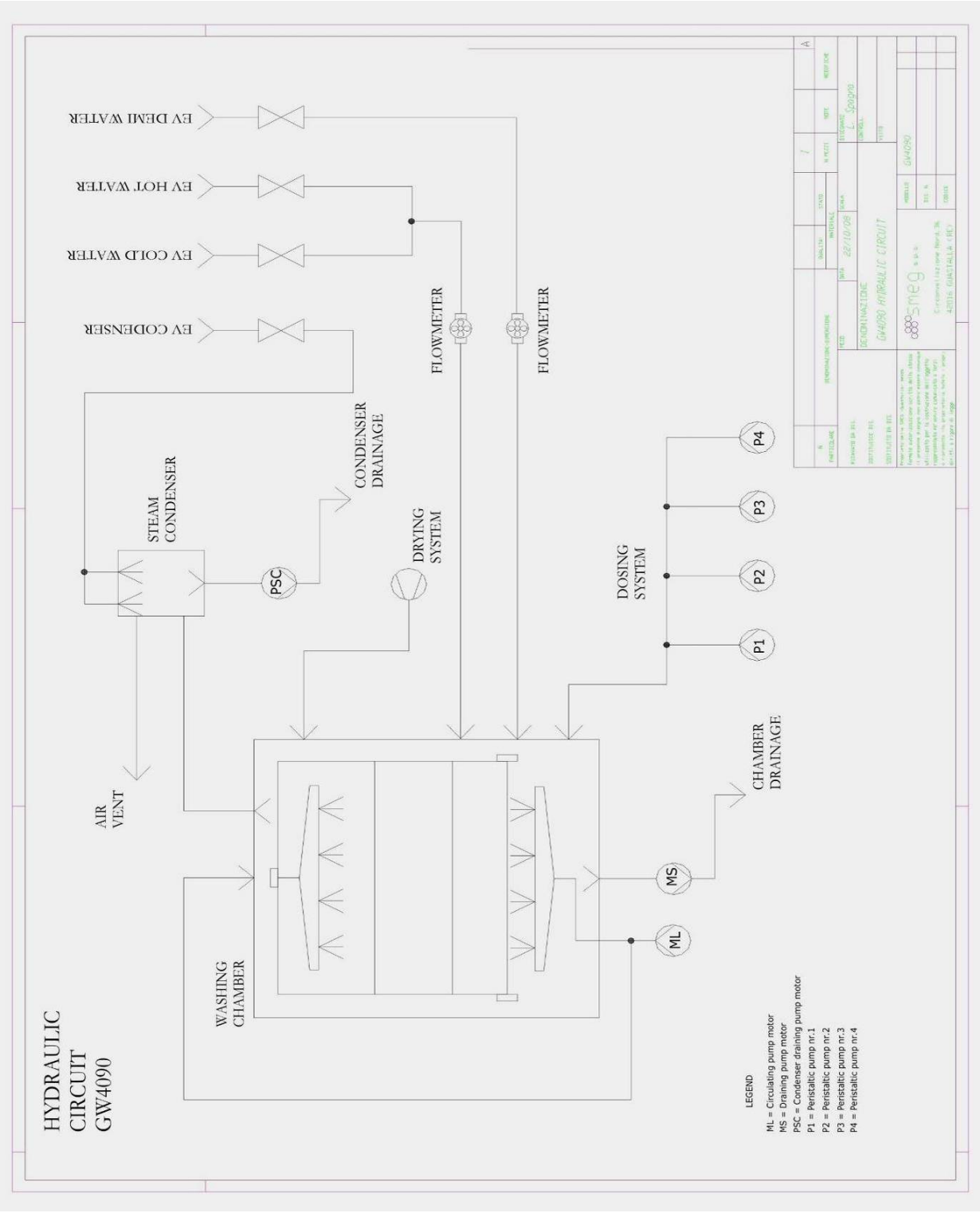
10.1 DESCRIPTION OF PROGRAMS

PROG	PROGRAM NAME	PHASE 0	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	CYCLE TIME (MIN)
1	PREWASH	COLD RINSE 5 mins						7
2*	LIGHT WASH No DI	PRE-WASH 3 mins	WASH AT 60C +5 MINS +DETERGENT	ACID RINSE 2 mins	RINSE 2 mins	HOT RINSE AT 75 °C +3 mins		45
3*	STANDARD WASH No DI	PRE-WASH 3 mins	WASH AT 75C +5 MINS +DETERGENT	ACID RINSE 2 mins	RINSE 2 mins	RINSE 2 mins	HOT RINSE AT 90C +3 mins	55
4*	LIGHT DI WASH	PRE-WASH 3 mins	WASH AT 60C +5 MINS +DETERGENT	ACID RINSE 2 mins	RINSE 2 mins	HOT DI RINSE AT 75 °C +3 mins		45
5*	STANDARD DI WASH	PRE-WASH 3 mins	WASH AT 75C +5 MINS +DETERGENT	ACID RINSE 2 mins	RINSE 2 mins	DI RINSE 2 mins	HOT RINSE AT 90C +3 mins	55
6	INTENSE DI WASH	PRE-WASH 3 mins	WASH AT 90C +10 MINS +DETERGENT	ACID RINSE 2 mins	RINSE 2 mins	DI RINSE 2 mins	HOT RINSE AT 90C +3 mins	70

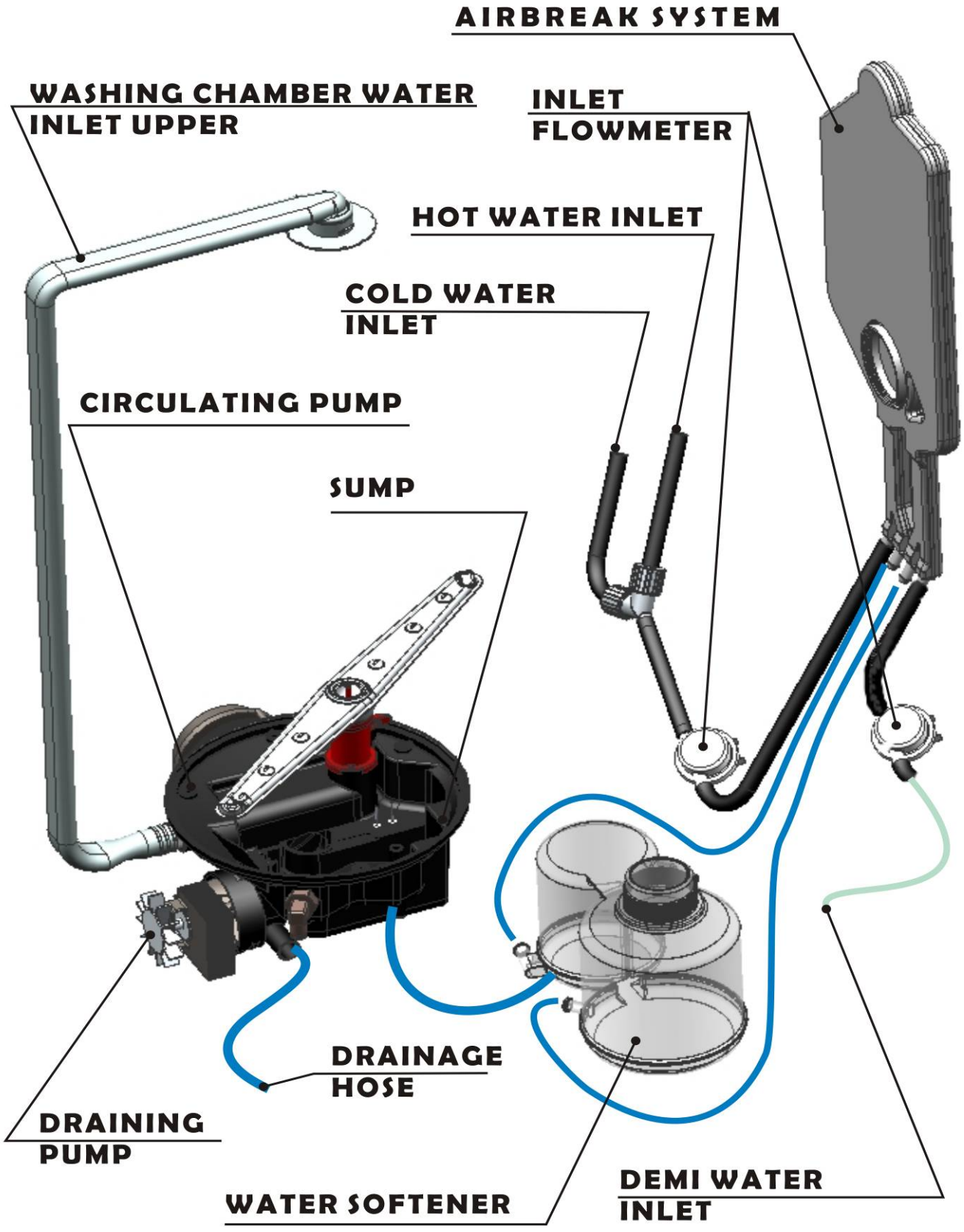
PROG	PROGRAM NAME	PHASE 0	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	CYCLE TIME (MIN)
7	**ENGINEER TEST**	WASH AT 60C +4 MINS +DETERGENT	ACID RINSE 2 mins	DI RINSE 1 mins				20

11 HYDRAULIC CIRCUIT

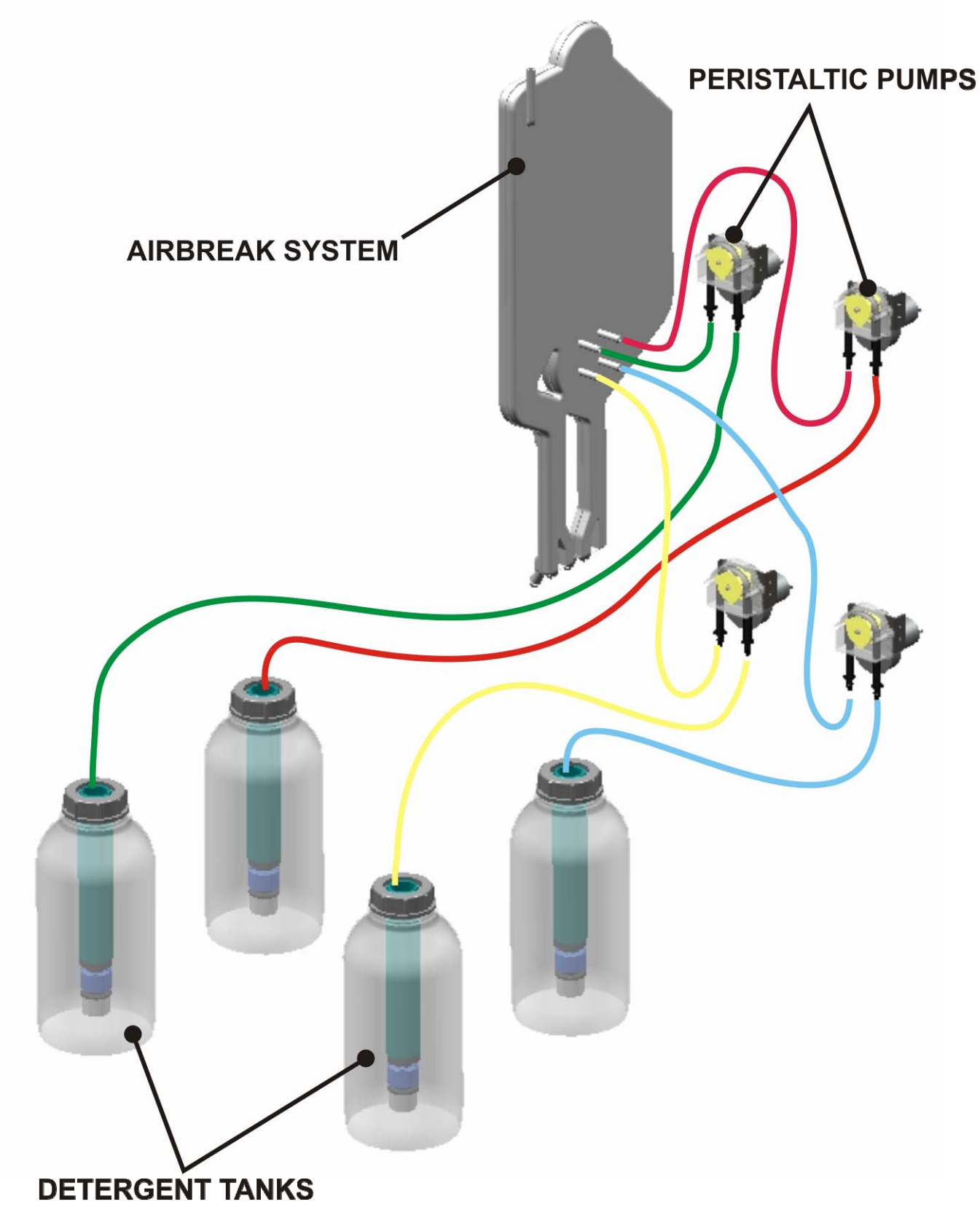
11.1 SYSTEM OVERVIEW



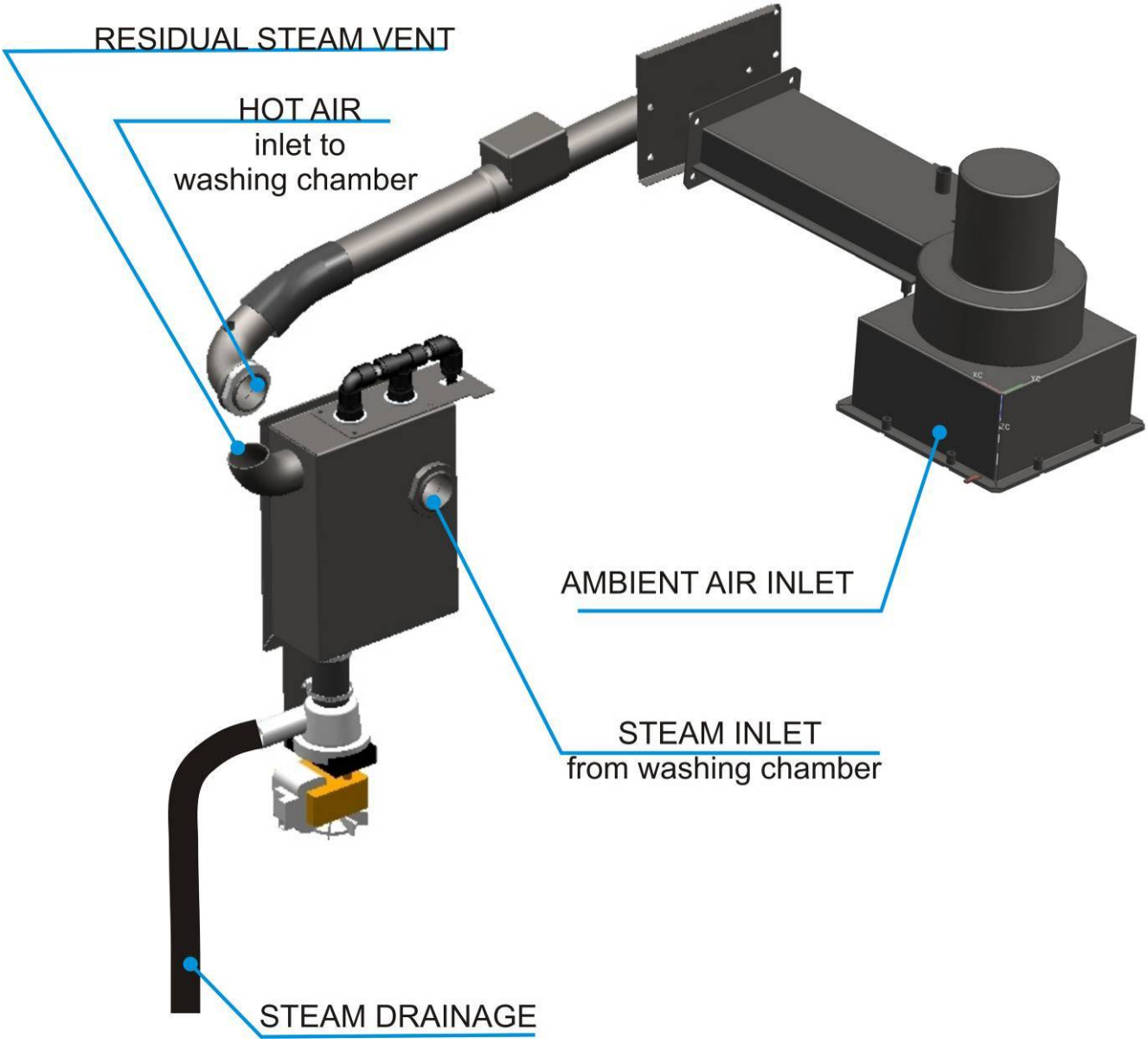
11.2 *MAIN HYDRAULIC CIRCUIT - CONNECTIONS*



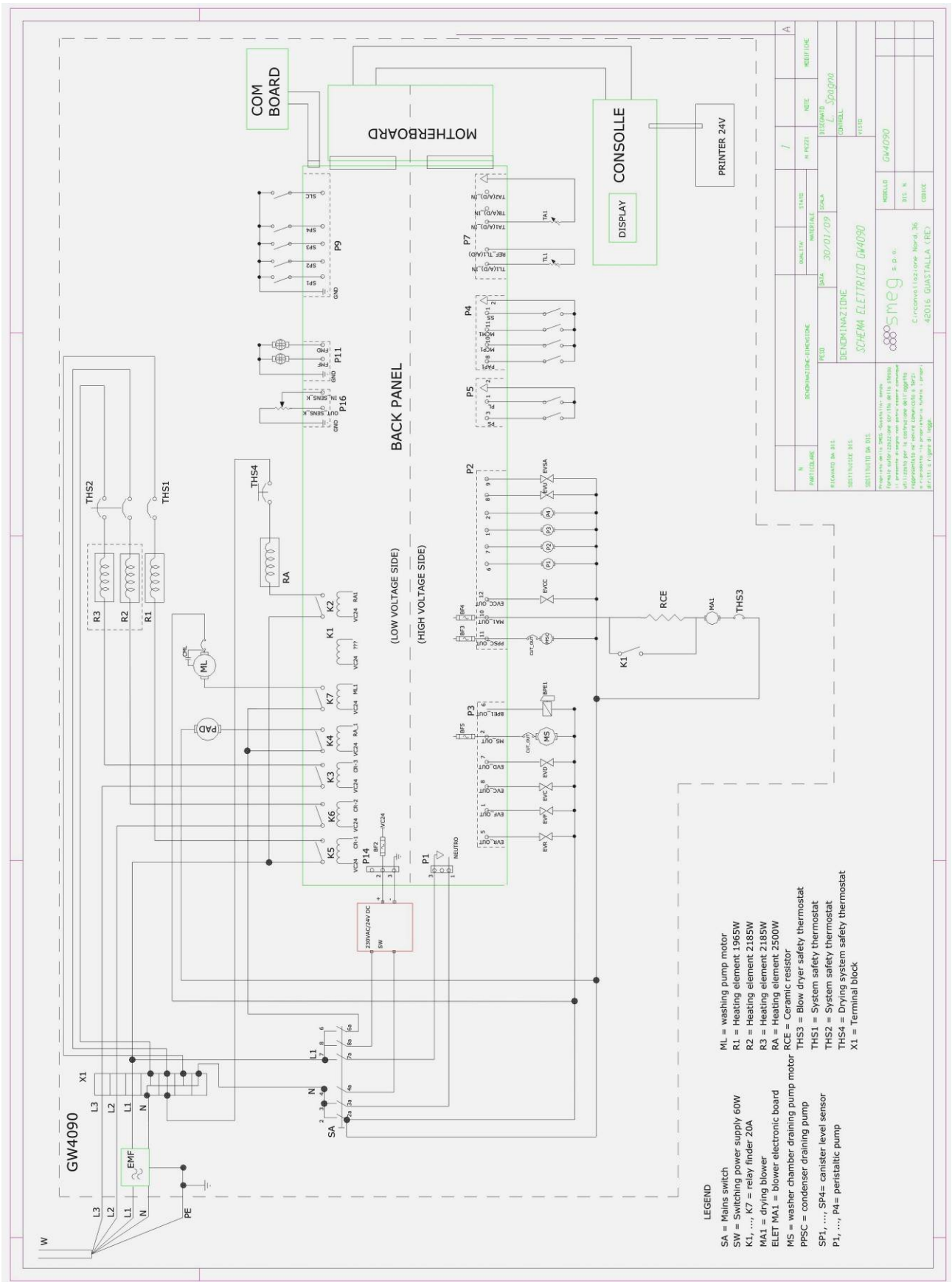
11.3 *DETERGENT DISPENSING SYSTEM*



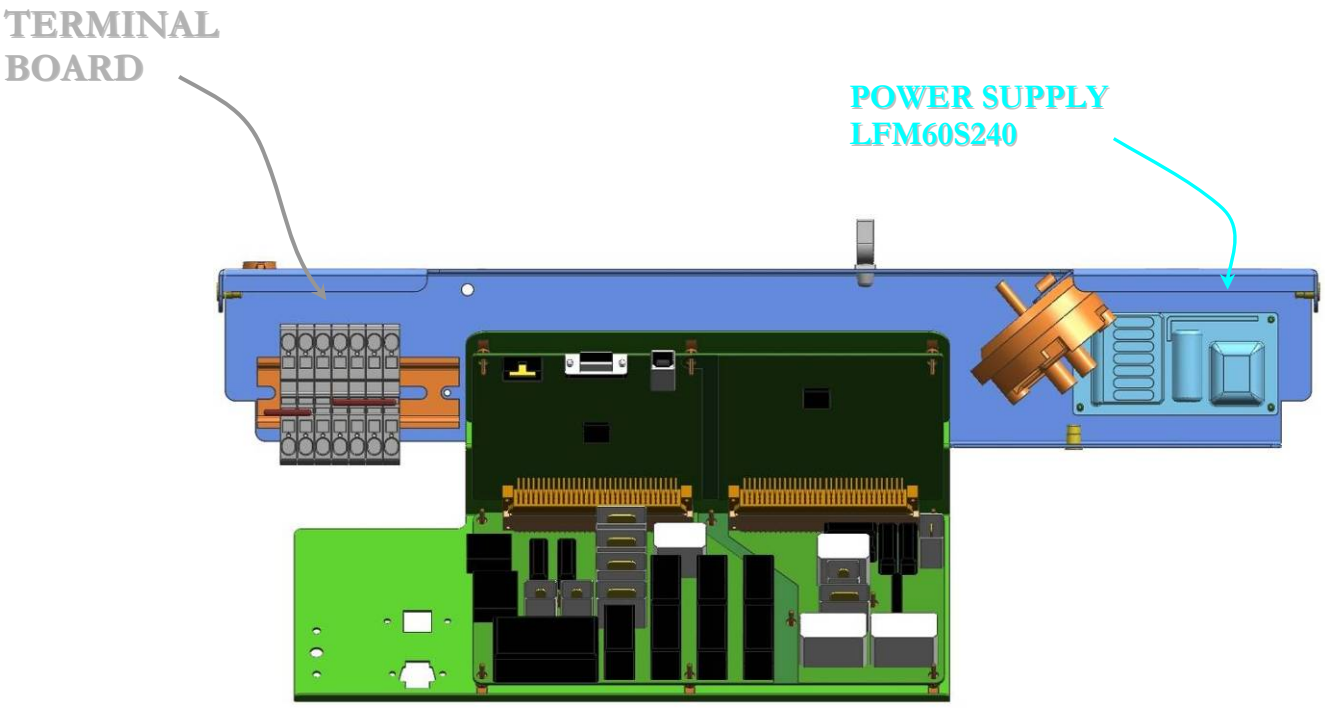
11.4 DRYING SYSTEM



12 -WIRING DIAGRAMS

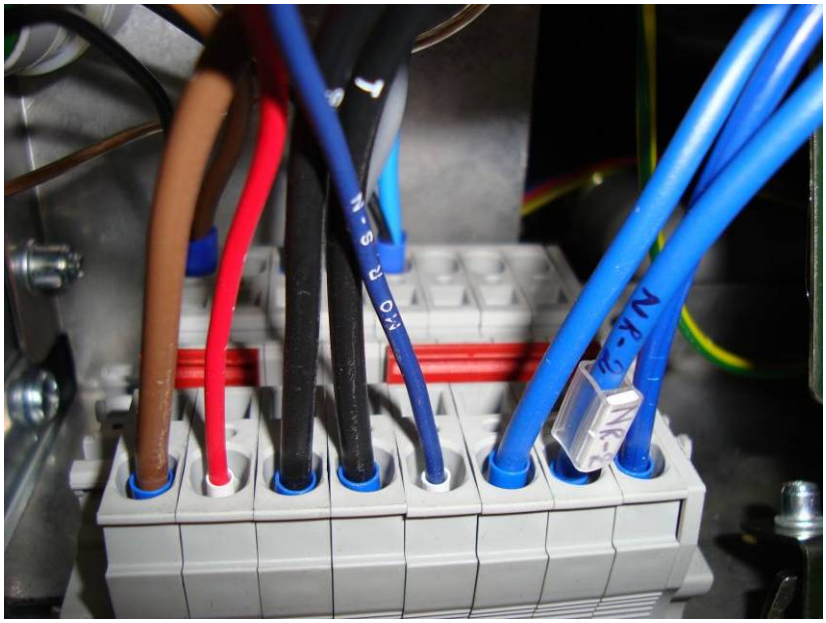


12.1 RACK BEHIND THE FRONT LOWER DOOR



12.2 TERMINAL BOARD

center-star configuration (the picture below is for reference only eg.GW3060-3phase)

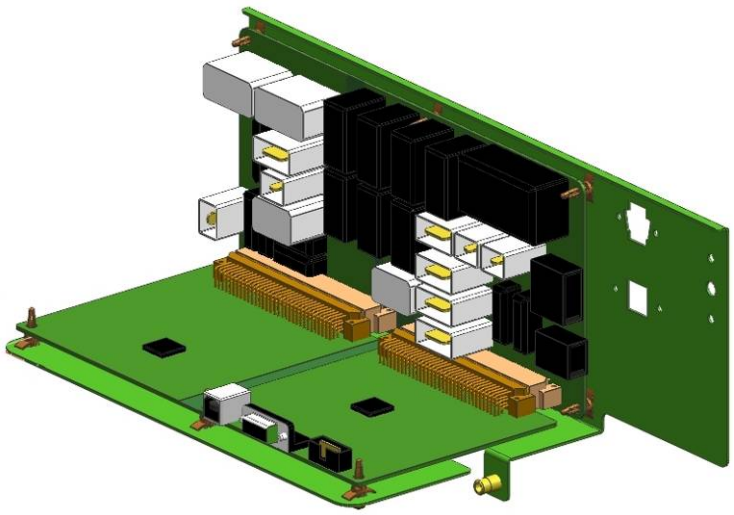


Grey terminal board (GW3060 wire configuration):

Front: from right to left
NR1: neutral for washing heating element R1
NR2: neutral for washing heating element R2
NR3: neutral for washing heating element R3
Mors – N: neutral from terminal board
T phase: phase for washing heating element R3
S phase: phase for washing heating element R2
Mors- R (red wire): phase for electronics and controls
R phase: phase for washing heating element R1

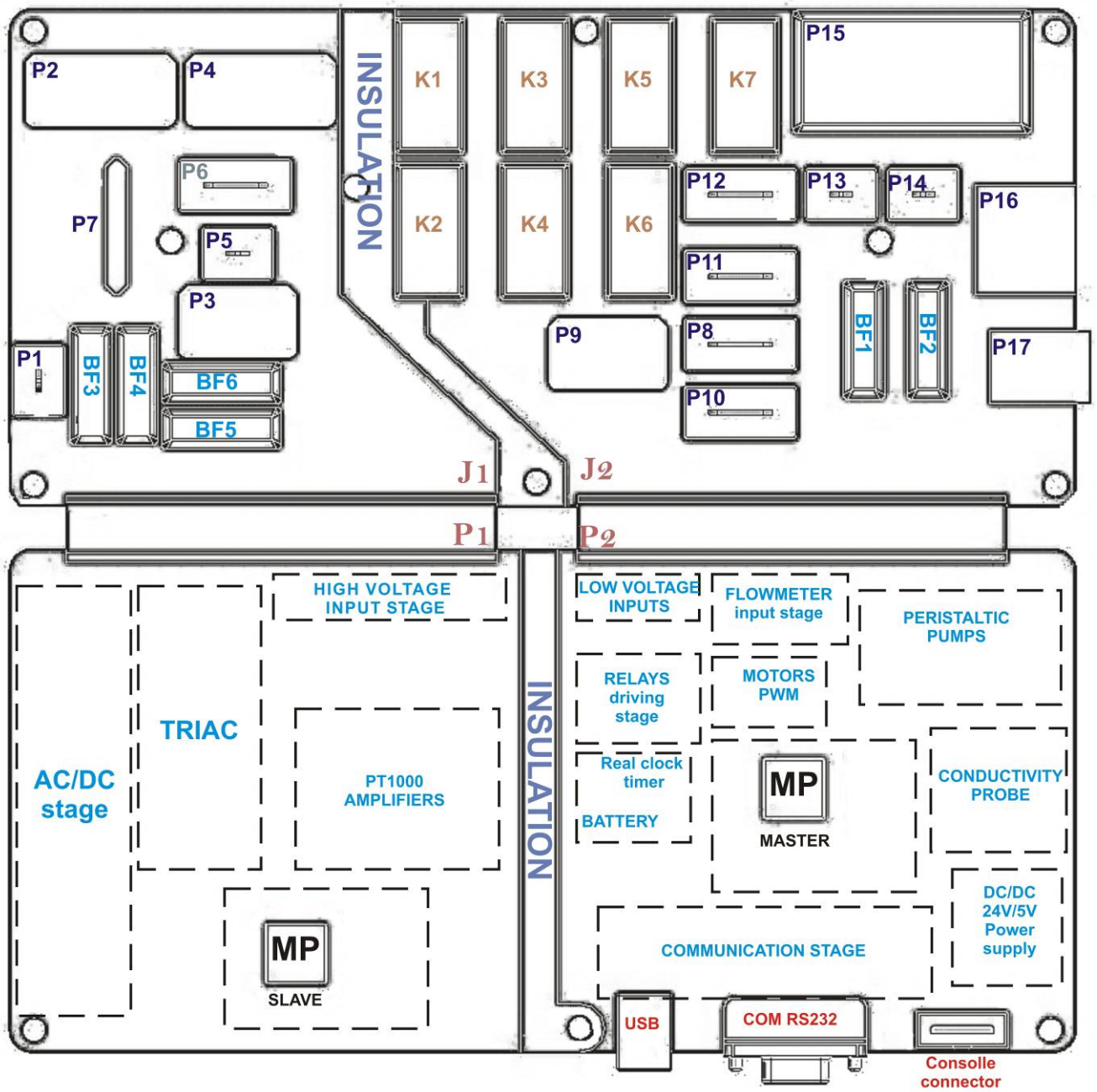
Back :
Supply cable entry
(In case of GW4090 model, there are two more wires: blue and brown (neutral + phase) for the cabinet

12.3 ELECTRONICS



The rack has two electronic boards joined by connectors: motherboard and daughterboard.

12.4 ELECTRONIC BOARD - layout



The list of connectors is given below with an indication as to the signals:

. **P1**

1. Neutral (blue)
2. Phase (brown)

. **P2**

1.P3 (peristaltic pump)
2. P4 (peristaltic pump)
6. P1(peristaltic pump)/Detergent Dispenser
7. P2 (peristaltic pump) / Acid batcher
8. EVU output solenoid valve: not installed in this model
9. EVSA alternative draining solenoid valve: optional
10. MA1 drying motor 1
11. PSC condenser draining pump
12. EVCC condenser filling solenoid valve

. **P3**

1. EVF cold water filling solenoid valve
2. MS draining pump motor
3. ..
4. ..
5. EVR regeneration solenoid valve
6. BPE1 door lock 1
7. EVD demineralised water filling solenoid valve
8. EVC hot water filling solenoid valve

. **P4**

1. SS salt sensor
2. common contact
3. ..
4. ..
5. ..
6. ..
7. ..
8. PAP1 high pressure switch on was pump
9. MCA acqua stop micro switch (not installed in this model)
10. MCP1 door lock electric opening micro switch
11. MCM1 door lock mechanical opening micro switch

. **P5**

1. PL washing level pressure switch
2. common contact
3. PS safety level pressure switch

. **P6** (not used in this model)

. **P7**

1. TA1 drying temperature probe
2.
3. TL1 temperature probe of the washing chamber
4.
5. TB temperature probe in external boiler (not installed)
6. TL2 additional temperature probe of the washing chamber (optional)

. **P8** (not used in this model)

1. IN
2. OUT
3. +24
4. GND
5. GND
6. ..

. **P9**

1. SP1 can 1 level probe
2. SP4 can 4 level probe
3. GND ground reference signal
4. SP3 can 3 level probe
5. SP5 can 5 level probe
6. SLC operating level probe of condenser
7. SP2 can 2 level probe

. **P10**

..

. **P11**

1.. ..
2. ..
3. FMD demineralised water flow meter
4. FMF cold/hot water flow meter
5. ..
6. GND ground reference signal

. **P12** (not used in this model)

. **P13** (not used in this model)

. **P14**

1. --
2. +24V
3. GND

List of relays on the back panel

K1 = maximum speed MA1
K2 = RA1
K3 = R3
K4 = booster pump for demi water
K5 = R1
K6 = R2

The list of fuses on the back panel board is given below:

. BF1 = not present

. BF2 = **T2A, 250V, 5x20 mm** (power supply +24V)

. BF3 = **T2A, 250V, 5x20 mm** (PPSC)

. BF4 = **T2A, 250V, 5x20 mm** (MA1)

. BF5 = **T2A, 250V, 5x20 mm** (MS)

. BF6 = **T2A, 250V, 5x20 mm** (P1/Detergent dispenser)

13TROUBLESHOOTING – Failure search and solutions

13.1PROBLEMS or FAILURES NOT ASSOCIATED WITH A FAULT

The GW3060/4090 is a complex system equipped with many sensors used to control the machine and make searching for failures easier. One or more faults correspond to each sensor. The appearance of these faults help the search for the cause of the failure.
In any case, "malfunctions" may appear that are not associated with any fault or that present the user with problems that cannot be solved immediately.
In this paragraph, we will try to identify the possible causes at the heart of the most common malfunctions.

13.1.1 The machine does not turn on

Check, in the following order:
. connection to the electrical cabinet
. fuses in the main terminal board (see §11.2) or clamps that have not been locked
. green light on the power supply in the lower electrical box
. defective console card

13.1.2 Water leaks

If water is leaking from the front of the machine, it probably is temporary. In any case, make sure that:
. the water load is correct
. there is no water in the tank at the end of the drain pipe. If this is not the case, clean the water trap filters and check the drain pipe position
. the pressure switch trips (in any case, the relative alarm should intervene), using WDTRACE®
. the problem could be due to water leakage from the water trap or from the various holes present on the bottom of the wash chamber. In this case, incline the machine and check where traces of limestone are found or humid parts. Then, replace the component/gasket.
If water is leaking from the back of the machine, remove the rear guard and make sure that:
. the condenser is not leaking
. the condenser is draining correctly

13.1.3 Problems regarding drying

The most important parameters that influence drying are temperature and duration. The higher these values are, the more effective is drying. In any case, we recommend not exceeding 110°C.
If the glassware is still wet when removed from the machine after the drying phase has completed, do the following:
. make sure that the glassware is not placed in a manner that allows water to collect on concave surfaces.
. try to increase the time and temperature of the drying phase (without exceeding 110°C)
. leave the material in the washing chamber for 10 minutes, if possible, with the door open so that the external air helps the evaporation process of the residual water drops present on the glassware.

13.1.4 Problems with the quality of washing results

If a customer has a problem with poor washing results, first make sure that the following factors were taken into consideration:
. the glassware should be arranged in the washing trolley/jet rack in the best way possible for optimal washing results
. the quality and quantity of the water used
. the water pressure in the washing ducts
. the temperature of the machine during washing
. detergents used and correct dosage

13.1.4.1Arrangement of the instruments in the washing trolley/jet rack

Take the following precautions:
. do not fill the trolleys/racks with too much glassware at the same time
. make sure that the items are positioned so that they do not overlap each other
. if the items have articulated parts, open the articulations as far as they will go
. do not place items covered with blood or other substances that have been allowed to dry, into the trolleys
. bulky instruments must be put in the baskets in a manner that prevents "shadow areas" from being created, as these areas obstruct cleaning of other items
. position the items so that they are unable to obstruct the spraying arms

13.1.4.2Quality and quantity of water

It is essential that good quality water is used. Have the water in the water supply system periodically checked. Connect to the demineralised water supply when possible (conductivity < 8-10 μS).
It may be advisable to increase the amount of water used for each phase (by means of the relative menu) according to the selected washing trolley and program. Be careful when using this parameter and do not exceed 12-13 litres.

13.1.4.3Water pressure

The correct water pressure in the machine's hydraulic circuit is assured by correct operation of the washing pump and the entire hydraulic circuit. If the pressure is not correct, a fault is activated on the display. However, the sprayers must be checked to see if its holes are blocked/clogged. Also check that the chamber filters are clean and not clogged by paper label/adhesive debris.

13.1.4.4Washing temperature

The optimum temperature at which washing takes place depends on the type of detergent used and the glassware to process. However, washing temperatures must usually exceed 45°C, otherwise the chemicals will not be effective.

13.1.4.5Detergents used

The detergents used and the time they are in action represent the most important factors for obtaining an optimum washing result. This element is essential to reach the desired washing results.

A list of the products which Camlab recommends:

alkaline detergents: CAMCLEAN

acid neutralizers: CAMACID

13.1.4.6Spots on the instruments

The possible causes may be:
. salt residue in the chamber due to incorrect sealing or a deformity of the salt pot cap (most likely)
. items arranged incorrectly
. poor quality mains water used in the glass washer
. demineralised water or good quality softened water missing from the final washing phase. This usually represents the decisive factor: we recommend always using demineralised water in the final washing phase
. excessive detergent dosage and washing temperature too high
. not enough neutralizer added

13.2FAILURES ASSOCIATED WITH A FAULT

There are two different situations, depending on how serious the fault is:
. *warning messages*;
. *true alarm signals*.
In the first case, a message will appear on the display allowing the user to ignore the warning and proceed with the selected cycle. In the second case, the user must press the Reset button and comply with the relative procedure in order to resolve the situation.

By and large, an alarm indicates that the machine is operating in a faulty way and needs to be repaired by a technician. Sometimes, however, the alarm may be caused by a temporary situation.

The possible alarm messages are indicated below.

To release the machine when one of these messages appears, press the RESET key for a couple of seconds in order to activate the RESET cycle.
If a cycle has been stopped during a high temperature phase, remember that the temperature must drop below 45°C before the door can be opened.

Alarm ID	Message	Action
1	WATER HEATING FAILED	*This alarm is only active during the heating phase.* *If a three-phase machine is being used, the alarm is issued if the temperature does not increase by 3°C in 2 min.* *If a single-phase machine is being used, the alarm is issued if the temperature does not increase by 2°C in 1 min.* *Check the condition of the safety thermostat (first plunger on the upper wall of the detergent reservoir). Use WDTRACE® to make sure that the resistor drive relay activates. Check the state of the fuses R1, R2, R3 in the main terminal board.*
2	TEMP. PROBE TL1-TC	*This alarm is always active during cycle execution, except during the sub-phases, namely: loading, unloading or mixed unloading, reset and drying.* *It intervenes when* $TL1 > TC + 2°C$ *Repeat the cycle: It could be a temporary alarm. Check the state of the two probes in the water trap. Clean their surfaces, if necessary. If the problem persists, replace one of the two on the basis of a comparison made with an external thermometer.*
4	OVERTEMPERATURE TL1	*This alarm is always active during cycle execution, except during the sub-phases, namely: loading, unloading, reset and drying.* *It intervenes when* $TL1 > T_{MAX} + 5°C$ *, where* T_{MAX} *is the max. target temperature value of the phase being executed.* *Repeat the cycle: It could be a temporary alarm. Otherwise, act as indicated in the previous case (point 2).*
5	PROBE TL1 DISCONNECTED	*Probe TL1 is damaged or disconnected.* *Check the connection and replace the probe, if necessary.*
7	PROBE TA1 DISCONNECTED	*Probe TA1 is damaged or disconnected.* *Check the connection and replace the probe, if necessary.*
9	PROBE TB DISCONNECTED	*Probe TB (optional boiler) is damaged or disconnected.* *Check the connection and replace the probe, if necessary.*
10	PROBE TCL DISCONNECTED	*Probe TCL is damaged or disconnected.* *Check the connection and replace the probe, if necessary.*
11	LACK OF COLD WATER	*This alarm is active during the loading phase.* *It intervenes when the relative turbine does not count any impulses for 30 min. and the state of the pressure switch does not change.* *Check the water supply:* *. tap and connection pipe open/closed* *. solenoid valve input* *. mains water pressure*

		. the state of the pressure switch *. turbine operation*
12	LACK OF WARM WATER	*This alarm is active during the loading phase. It intervenes when the relative turbine does not count any impulses for 30 min. and the state of the pressure switch does not change.* *Check the water supply:* *. tap and connection pipe open/closed* *. solenoid valve input* *. mains water pressure* *. the state of the pressure switch* *. turbine operation*
13	LACK OF DEMI WATER	*This alarm is active during the loading phase. It intervenes when the relative turbine does not count any impulses for 30 min. and the state of the pressure switch does not change.* *Check the demineralised water supply:* *. tap open/closed* *. tank/can empty* *. solenoid valve input* *. when the tank is loaded, check water input into the wash chamber;* *. connection pipe* *. connection/program correspondence* *. turbine*
14	COLD WATER PRESSURE	*Check:* *. water input pressure* *. the input pipe should not be restricted in any way*
15	WARM WATER PRESSURE	*Check:* *. water input pressure* *. the input pipe should not be restricted in any way*
16	DEMI WATER PRESSURE	*Check:* *. water input pressure* *. the input pipe should not be restricted in any way*
17	COLD WATER LOAD TIME EXCEEDED	*The machine took too much time to load the cold water. Check the input pressure. Increase the loading timeout (see Extra Loading Time menu). It has a maximum of 180 minutes.*
18	WARM WATER LOAD TIME EXCEEDED	*The machine took too much time to load the hot water. Check the input pressure. Increase the loading timeout (see Extra Loading Time menu) . It has a maximum of 180 minutes*
19	DEMI WATER LOAD TIME EXCEEDED	*The machine took too much time to load the demineralised water. Check the input pressure. Increase the loading timeout (see Extra Loading Time menu . It has a maximum of 180 minutes*
20	WATER LOAD SYSTEM FAILURE	*This alarm is active in the loading phase with the exception of static loads and water trap washing. It intervenes if: {water load ok & water quantity. >7.5 litres} & {PAP1 = off}, where PAP1 is the high pressure switch. Therefore, check PAP1. PAP1 status is identified only after the load has been completed.* *Note: Do not set static loads with higher water quantities than 7.5 litres.*

21	FLOWMETER CONNECT. INVERTED	*The flow meter connections relative to the detergents are not correct. Check the correspondence between the number of FM's and the associated peristaltic pump.*
22	COLD WATER FLOWMETER FAILURE	*Check the water supply (tap open/closed, water pressure, connection pipe, etc.)* *Repeat the cycle because there may be a temporary malfunction.* *Check the cold water turbine.*
23	INSUFFICIENT WATER IN CHAMBER	*There is not enough water in the wash chamber. It intervenes if:* $\{PL(ON) \rightarrow PL(OFF)\} and (PAP1 = 1)$. *That is, the PL level pressure switch closes and opens while PAP1 is closed at the same time (the high pressure switch. The one regarding the hydraulic unit pressure).* *Check the water supply (tap open/closed, water pressure, connection pipe, etc.) and pressure switch operation.*
24	NO WATER IN CHAMBER	*The alarm is active from the end of the loading phase to unloading. It intervenes when:* $\{PL(ON) \rightarrow PL(OFF)\} and (PAP1 = 0)$. *That is, there is enough water to trip the level pressure switch, but not enough to trip the high pressure switch.* *Check the water supply (tap open/closed, water pressure, connection pipe, etc.).*
25	NO PRESS IN HYD SYS: FOAM	*Check the type of detergent used. Be careful with the quantity used.* *Contact Camlab if any doubts.* *Make sure the glassware is not placed in the machine before eliminating detergent residue used in previous manual decontamination treatments.* *Repeat the cycle after cleaning the foam from the wash chamber.* *It intervenes when:* $\{PL(ON) = 0\} and (PAP1 = 0)$ *for more than 3 min.* *There is water in the wash chamber, but no pressure in the hydraulic circuit.*
26	EVF LEAKAGE (EVF = cold water valve)	*Check the water supply (tap open/closed, water pressure, connection pipe, etc) .and solenoid valve operation. Make sure the turbine is operating correctly (by exchanging the connections between the supply pipes).*
27	EVC LEAKAGE (EVC = hot water valve)	*Check the water supply (tap open/closed, water pressure, connection pipe, etc.) and solenoid valve operation.* *Make sure the turbine is operating correctly (by exchanging the connections between the supply pipes).*

28	EVD LEAKAGE (EVD= demi water valve)	*Check the water supply (tap open/closed, water pressure, connection pipe, etc).* *Check solenoid valve operation.* *Make sure the turbine is operating correctly (by exchanging the connections between the supply pipes).*
29	WASHING CHAMBER DRAINAGE FAILURE	*It intervenes when:* $(PAP1oPL) = 1$ *after 3' from the start of the unloading phase.* *Make sure the drain is positioned as shown in the manual.* *Make sure the drain pump operates and that the pressure switch activates.* *Check the positions of the instruments: do not insert objects such as basins with the concave side up.*
30	SAFETY CHAMBER LEVEL EXCEEDED	*Active during the washing cycle.* *It intervenes if* $(PS = 0)$ *. That is, the safety level has tripped for at least 5 min.* *Make sure that the upstream solenoid valve is not leaking. Check loading pressure switch operation (work + safety level).*
31	SAFETY LEVEL FAILED	*This alarm only appears after alarm 32 appears if PS does not reset.*
32	SUMP FULL	*Active when the loading pressure switch trips, even though there is no cycle being executed.* *Check the state of the solenoid valve input and make sure that the machine is able to drain.*
33	LACK OF WATER IN THE STEAM CONDENSER	*Indicates that there is no water in the vapor condenser when there should be due to sprayer nozzle activation. Make sure the solenoid valve input to the condenser activates and operates correctly. Also make sure that the drain pump does not remain activated permanently.*
34	CONDENSER DRAINAGE FAILED	*Intervenes if SLC (work level sensor of the condenser) does not deactivate after 120 min. from drain pump activation.* *Make sure the drain pump operates correctly. Also make sure that the condenser drain respects the recommended values and it not obstructed.* *Replace the level sensor, if necessary.*
35	CONDENSER LEVEL SWITCH FAILED	*Not active*
36	CONDENSER DRAINING PUMP FAILED	*Not active*
37	NOT REACHED TARGET DRAINAGE AT T=	*Alarm active during the mixed draining phase if the target temperature is not reached. The alarm appears at the end of the cycle.* *This may be a temporary malfunction. However, if this is not the case, make sure cold water is poured into the wash chamber during draining.*
38	COOLED DRAINAGE FAILED	*Intervenes if TL1 does not start dropping when the mixed draining phase begins.* *See previous case.*

41	DETERGENT 1 INFLOW FAILED (flow meter nr.1 optional)	*Intervenes during the phase when the detergent is put into the wash chamber. The flow meter associated with P1 does not count any impulses for 60 min.* *Make sure that the suction lift pipes of can P1 are in good condition and not crushed. Make sure P1 activates correctly. Check the delivery pipe path to the wash chamber inlet.*
42	DETERGENT 2 INFLOW FAILED (flow meter nr.2 optional)	*See previous case associated to P2.*
43	DETERGENT 3 INFLOW FAILED (flow meter nr.3 optional)	*See previous case associated to P3.*
44	DETERGENT 4 INFLOW FAILED (flow meter nr.4 optional)	*See previous case associated to P4.*
46	PUMP 1 WASH CHAMBER CLOGGED	*Alarm active during P1 activation. It intervenes if FM1 (flow meter associated to P1) does not reach the ml target number within 90 min.*
47	PUMP 2 TUBE CLOGGED	*See previous case associated to P2.*
48	PUMP 3 TUBE CLOGGED	*See previous case associated to P3.*
49	PUMP 4 TUBE CLOGGED	*See previous case associated to P4.*
51	VERIFIY CONNECTIONS FLOWMETER/PUMPS	*Alarm disabled.*
52	DOOR 1 ELECTRICALLY OPEN	*Alarm active during the entire washing cycle (from the beginning to the end of the cycle). It intervenes if MCP=0. That is, if the micro switch for electric door closing is in an incorrect state. Check MCP operation and make sure the door closes properly.*
54	DOOR 1 MECHANICALLY OPEN	*Alarm active during the entire washing cycle (from the beginning to the end of the cycle). It intervenes if MCM=0. That is, if the micro switch for mechanical door closing is in an incorrect state.* *Check MCM operation and make sure the door closes properly. Above all, make sure that door opening/closing is not obstructed at the bottom of the door.*
56	DOORLOCK 1 FAILURE	*Make sure that door opening/closing is not obstructed at the bottom of the door.* *Make sure the solenoid valve stroke is not obstructed in any way.*
58	DRYING 1 FAILURE	*Alarm active during heating of the drying phase. Make sure the temperature measured by the drying probe increases as time passes.* *Check connection to the probe.* *Make sure the drying cycle safety thermostat has not tripped.*
60	DRYING 1 SAFETY SWITCH ON	*It activates if the temperature of the drying resistor exceeds the safety limit value. There may be a serious problem. Therefore, shut the machine*

		off immediately and check the state of the drying system. Make sure, in particular, that the filter at the can inlet is not clogged and that the valve in the wash chamber air inlet duct is not blocked. Press the 2nd button on the bottom of the drawer (see §11.1) to restart the machine.
62	HEATING THERMOSTAT ON	*It activates if the temperature of the drying resistor exceeds the safety limit value. There may be a serious problem. Therefore, shut the machine off immediately and check the state of the heating elements in the wash chamber. It is not a problem if the surface darkens slightly. Press the 1st button on the bottom of the drawer (see §11.1) and repeat the cycle. If the problem persists, call for Technical Assistance Service.*
63	BLOWER 1 FAILED	*Not active*
65	FAN SENSOR 1 FAILED	*Not active*
67	COOLING FAILED - WARNING: HIGH TEMP	*The drying cycle ends with a cooling phase. If the final temperature is not lower than 80°C, the alarm intervenes. Execute a drying phase. Make sure the motor operates and check the temperature variations on the display. Check the temperature probe.*
68	TANK 1 EMPTY	*Fill the relative can.*
69	TANK 2 EMPTY	*Fill the relative can.*
70	TANK 3 EMPTY	*Fill the relative can.*
71	TANK 4 EMPTY	*Fill the relative can.*
73	ARCHIVE ERROR	*Error regarding archive management of the processes saved in the microprocessor. It may be a temporary problem. If the problem remains, re-download the firmware on the master processor (motherboard). Replace the motherboard if necessary.*
74	CHAMBER LEAKAGE	*Not active*
75	LACK OF SALT	*Fill the softener's salt reservoir (Salt Cap in wash chamber).*
76	BOILER SAFETY SWITCH ON	*Not active (present on another machine model).*
77	TEMPERATURE > 45°C	*Intervenes (once the relative option is selected) if the water inlet temperature is higher than 45°C during the first phase. If a cycle has just ended, leave the wash chamber door open for 10 minutes to cool it (especially if a drying cycle was not performed).*
78	RECOVERY FAILED	*Internal microprocessor error. This may occur when firmware download is completed. This is a temporary alarm. Therefore, perform the operation again. If the problem persists, contact headquarters.*

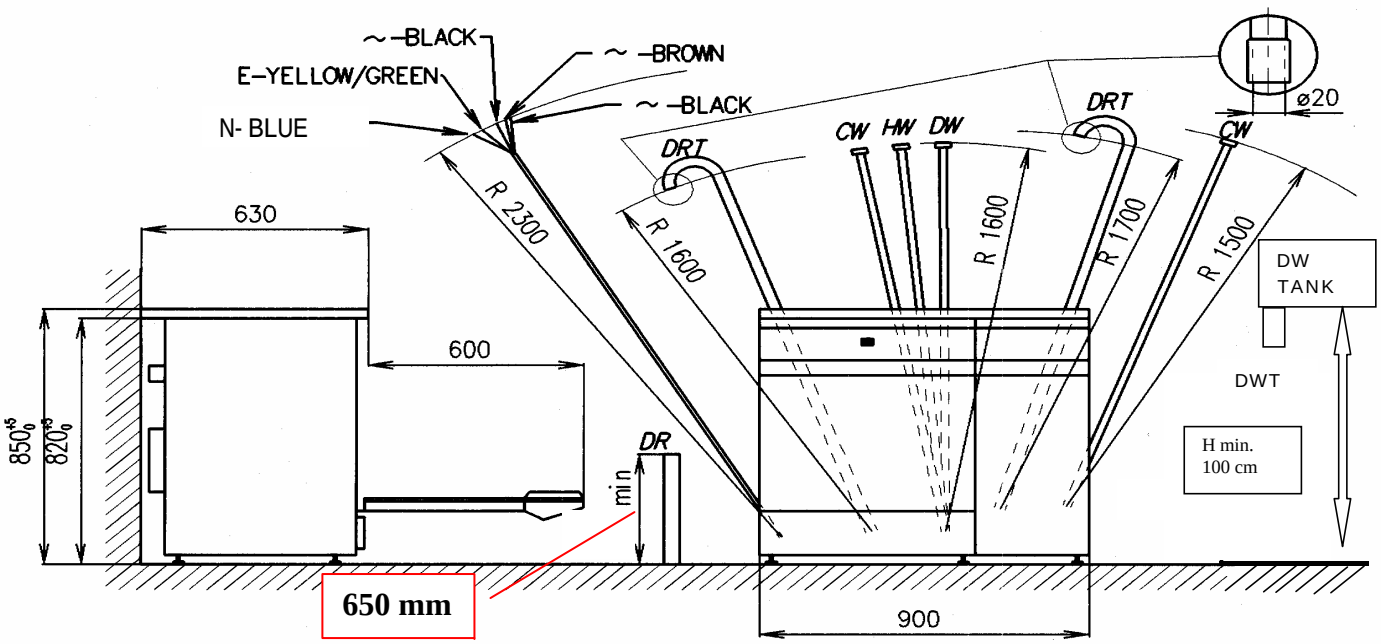
79	PROGRAM NOT CONGRUENT	*Non-congruent program error. Make sure the settings regarding the desired cycle to be executed are not in contrast with setting the washing parameters.*
80	WARM WATER FLOWMETER FAILURE	*Check the water supply (tap open/closed, water pressure, connection pipe, etc).* *Repeat the cycle as the malfunction may be temporary.* *Check the hot water turbine.*
81	DEMI WATER FLOWMETER FAILURE	*Check the water supply (tap open/closed, water pressure, connection pipe, etc).* *Repeat the cycle as the malfunction may be temporary.* *Check the demineralised water turbine.*
82	SYSTEM FAILURE SOL.1	*Alarm active during the open door phase.* *It intervenes if the door remains closed after a series of opening impulses have been provided.* *Make sure the solenoid valve stroke is not blocked and that the opening button on board the wash chamber trips correctly.*
84	OVERTEMPERATURE TA1	*It intervenes if the drying probe measures a temperature above 140°C for over 5 min.* *Make sure the probe is inserted correctly in the air duct and that nothing is blocking passage through the wash chamber inlet.* *The relative safety thermostat may trip after this alarm appears.*
86	PUMP P1 BLOCKED	*Peristaltic pump blocked. Check and replace it if necessary.*
87	PUMP P2 BLOCKED	*Peristaltic pump blocked. Check and replace it if necessary.*
88	PUMP P3 BLOCKED	*Peristaltic pump blocked. Check and replace it if necessary.*
89	PUMP P4 BLOCKED	*Peristaltic pump blocked. Check and replace it if necessary.*
91	ARCHIVE FULL	*Indicates the archive of saved cycles is full.* *Delete the archive once the data is unloaded.*
92	CHANGE FILTER	*Replace the air filter.*
93	MAINTENANCE REQUEST	*Periodic maintenance.*
94	NOT STABILIZED TEMPERAT.	

NOTES:

14INSTALLATION LAYOUTS

14.1 MODEL GW4090

KEY	
E-YELLOW/GREEN	GROUND (YELLOW GREEN)
N- BLUE	NEUTRAL
- BROWN -	PHASE 1- BROWN
- BLACK -	PHASE 2 – BLACK
- BLACK or GREY -	PHASE 3 – BLACK or GREY
CW	COLD WATER CONNECTION



ELECTRICAL AND HYDRAULIC CONNECTIONS REQUIRED				
TYPE OF VOLTAGE PERMITTED ± 10 %	400V 3 PHASES WITH NEUTRAL - 50 Hz 230V 1 PHASE – 50Hz		230V MONOFASE - 50Hz	
POWERRATING	7.0 kW		2.8 kW	
ELECTRICAL CONNECTION	**CIRCUIT-BREAKER 3PHASE = 16A --- (OR) – 1PHASE = 30A**		**O 1P+N In=13A**	
WET CONNECTIONS	CW	HW	DW	DW TANK
TYPE OF WATER	cold	hot	purified	purified
TYPE OF CONNECTION	**standard threaded 3/4" BSP**	**standard threaded 3/4" BSP**	**standard threaded 3/4" BSP**	**standard threaded 3/4" BSP diam.10 mm hose nipple**
QUALITY OF THE WATER	DRINKING WATER	DRINKING WATER	DEMINERALIZED	DEMINERALIZED
PRESSURE IN BAR MIN - MAX	1 -6	1 - 6	1 - 6	0.2-1
MAX° FHARDNESS total max (CONDUCTIVITY)	42°F	42°F	0°F (30 µS)	0°F (30 µS)
iron PPM Fe max	< 0.5 ppm	< 0.5 ppm	absent	absent
WATER DRAIN PIPE	**FLOOR LEVEL**	**ON WALL**		
height	minimum height 650 – Max 1000mm	Minimum height 650 - maximum height 1000 mm		minimum height 650 mm
diameter	minimum 30 mm	hose nipple 21 mm		