



## Instruction Manual

# ***AQUA eco•wash•light***

*Dosing system for washing machines*









DECLARATION OF CONFORMITY

|                 |                                                           |
|-----------------|-----------------------------------------------------------|
| <b>Company:</b> | <b>AQUA S.p.A.</b>                                        |
| <b>Address:</b> | <b>Via T. Crotti, 1 - 42018 - San Martino in Rio (RE)</b> |

Hereby declares that the products named:

**• ECOWASH**

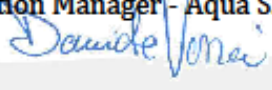
Responds to the principal features of the following European Directives:

- **2014/30/CE of 26/02/2014 - Harmonization of the laws of the Member States relating to electromagnetic compatibility – EMC Directive**
- **2014/35/CE of 26/02/2014 - Harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits – Low Voltage Directive**
- **2011/65/UE of 08/06/2011 with subsequent update 2015/863 of 31/03/2015 – ROHS III Directives**
- **2012/19/UE of 04/07/2012 - WEEE Directives for electrical and electronic waste**

**This declaration is issued under the responsibility of Aqua S.p.A.**

San Martino in Rio (RE) - 14 settembre 2020

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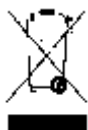
## 1. INTRODUCTION

The **eco•wash•light** system was designed to automatically dose the chemicals for washing machines. The **eco•wash•light** system meets every requirement. As a matter of fact, thanks to its modularity, you can assemble up to 8 pumps choosing among the low-capacity ones (LF model, max. capacity 20 l/h, adjustable from 30 to 100%) and the high-capacity ones (HF model, max. capacity 100 l/h, adjustable from 30 to 100%).

### 1.1 Reference standards

Our pumps are built in compliance with the general regulations in force, and with the following European directives:

- n° 2004/108/CE "e s.m.i.
- n° 2006/95/CE "DBT Low Voltage Directive" e s.m.i.
- n° 2011/65/UE , 2012/19/UE "direttive RoHs e WEEE" e s.m.i.



Notice is hereby given that, in compliance with art. 13 of the Italian DL no. 151, 25/07/2005 (implementation of 2002/95/EC, 2002/96/EC, 2003/108/EC):

Electrical and electronic devices shall not be considered domestic waste.

Consumers are obliged by law to return to the specific collection and recycling centres the electrical and electronic devices at the end of their useful life. Products labelled with the crossed-out wheeled bin or having this symbol placed on the instruction manual or on the packaging must be disposed of according to the regulations in force. Illegal disposal of the product involves the application of administrative sanctions provided by Italian DL no 151, 25/07/2005. Recycling, recovery and re-utilisation of waste devices are an important contribution to environmental protection.

### 1.2 Technical features

#### 1.2.1 Overview

| Description                     | Central module       | HF pump module | LF pump module | Relay Module | Standard console |
|---------------------------------|----------------------|----------------|----------------|--------------|------------------|
| <b>Power supply</b>             | 100 ÷ 240VCA 50/60Hz | 24VCC          | 24VCC          | 24VCC        | 24VCC            |
| <b>Absorption (max)</b>         | 130 W                | -              | -              | -            | -                |
| <b>Fuse</b>                     | 3.15 A T (5x20)      | -              | -              | -            | -                |
| <b>Communications</b>           | RS485                | RS485          | RS485          | RS485        | RS485            |
| <b>Protection degree</b>        | IP65                 | IP65           | IP65           | IP65         | IP65             |
| <b>Dimensions in mm (WxHxD)</b> | 138x230x138          | 138x230x138    | 138x230x138    | 138x230x138  | 110x85x35        |
| <b>Weight (Kg)</b>              | 1                    | 2              | 1.5            | 1.5          | 0.25             |

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#### 1.2.2 Flow rate

| Max flow rate | Min flow rate | Pipes      | Max. pressure |
|---------------|---------------|------------|---------------|
| 100 L/H       | 10 L/H        | Santoprene | 1 bar         |
| 20 L/H        | 2 L/H         | Santoprene | 1 bar         |

It is also possible to install silicone or Pharmed pipes on demand.

### 1.3 The box contains:

- Instruction manual
- **Eco•wash•light** device
- Screws and plugs for wall mounting
- Flushing kit

## 1.4 Installation Materials

- Three-conductor cable 3x1.75 sq. mm to connect the power supply on the central module.
- Multi-conductor cable 16x0.25 sq. mm to connect the signals on the signal module.
- PVC pipe 8x12 for the hydraulic connections of the pumps
- Pipe ø12mm for the output connection of the flushing inlet

## 2 INSTALLATION

### 2.1 Wall fastening

Position the **eco•wash•light** on a wall close to the washing machine and follow these instructions:

- Install a wall plug and place one of the upper holes of the system against it.
- Align the system and mark the other holes to drill on the wall (three min, two on the upper part and one on the lower part).
- Drill the wall and apply the other wall plugs.
- Place the system against the wall and fasten it.

### 2.2 Electric connections



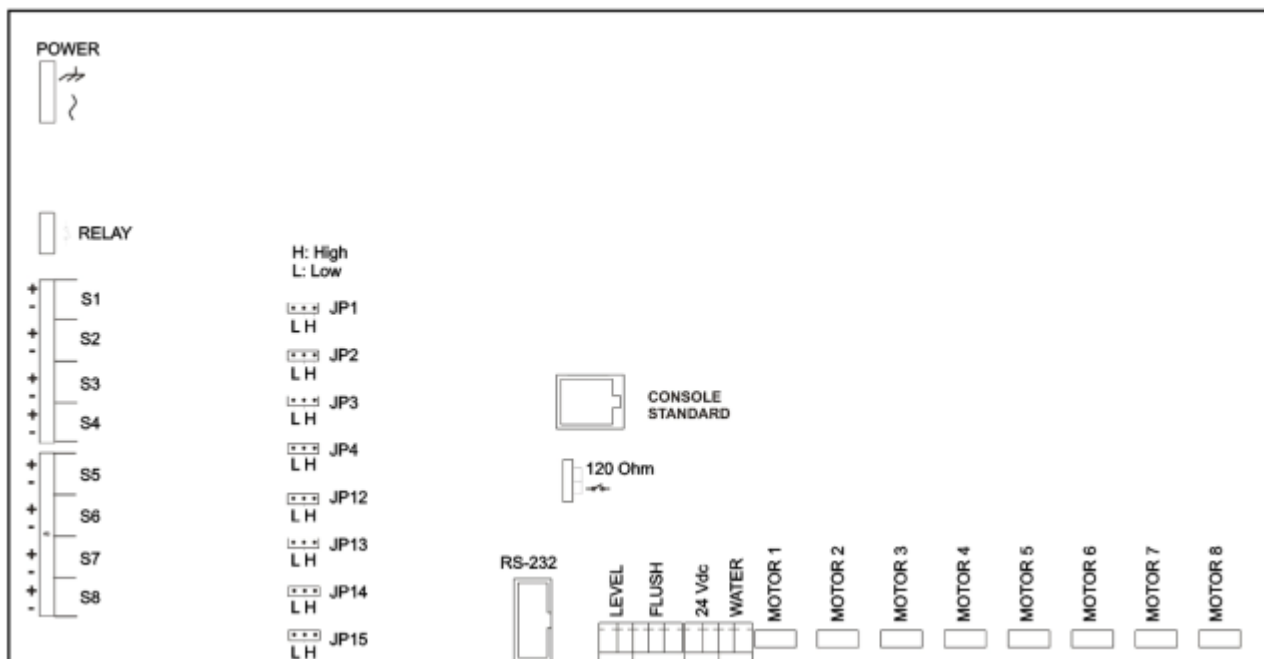
**WARNING:** Before the maintenance operations, always unplug the system from the power supply.



Always use a multimeter to check the electrical connections of the **eco•wash•light** system. A wrong voltage could provoke a damage not covered by the warranty. This manual must be kept for reference for any electrical connection.

All the electrical connections must be made in compliance with the local laws on electrical systems.

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### 2.3 Power supply

Connect a voltage between 100 and 240VAC - 50/60Hz to the terminal  of the card.

## 2.4 Electrovalve of the flushing kit – WATER terminal

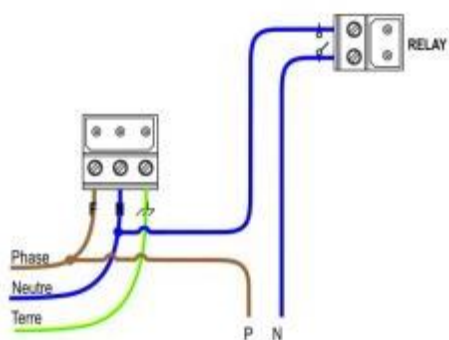
Connect the flushing valve (voltage 24VDC) on the **WATER** terminal.

## 2.5 Flow sensor – FLOW METER terminal

Connect the sensor on the flushing to the **FLOW METER** terminal respecting the colours:

- Terminal **S**, **BLUE** wire
- Terminal **+5V**, **RED** wire
- Earth terminal, **BLACK** wire

## 2.6 Relay output



The **RELAY** terminal is dry-contact (no voltage). You can set this output in NO (Normally Open) or NC (Normally Closed).

It is possible to use the **RELAY** terminal to obtain a voltage that equals the supply voltage. The following picture shows a possible connection to activate this work mode.

## 2.7 Alarm output – 24V OUT terminal

It is a repetition alarm output that provides pulse voltage (1 second ON and 1 second OFF) at **30VDC with a maximum absorption of 500mA**. This output is normally used to enable the alarm sirens. Connect the positive on the 24V terminal and the negative on the S one.

## 2.8 Level probe – LEVEL terminal connection

Input to connect more level probes in parallel. (on/off contact, without voltage).



The level input has a programmable filter which is 5 seconds by default.

## 2.9 Console

Connect the console cable on the **Console Standard** terminal and check that the jumper on JP22 is set to 120Ohm.

## 2.10 Washing machine signals – terminals from S1 to S8

Connect the signals coming from the washing machine on the **S1...8** terminals. In relay mode, the last signal that the machine activates during the dosing sequence (drain signal) must be connected to terminal s8.

The **eco•wash•light** system has 8 opto-isolated inputs that are compatible with any kind of electrical signal, both alternated or continuous. Moreover, the system is equipped with a jumper for every input (JP1,JP2,JP3,JP4,JP12,JP13,JP14,JP15) that detects and recognizes the level of the input signal.

- **HIGH Jumper position**

This position differentiates between 110VAC or 230VAC signals.

- **LOW Jumper position**

This position differentiates between 12VDC or 24VAC signals.

The position of the jumper must be compatible with the selection made through the configuration programme. This configuration is valid for all the inputs.



Continuous signals do require to respect the polarity as shown in the picture on page 6 .

## 2.11 Priming

Eight priming buttons.



During installation, check that the suction and discharge pipes are completely filled with liquid and free of air bubbles in order to prevent side effects during dosing after performing priming.

## 2.12 Ecowash light – PC Connection

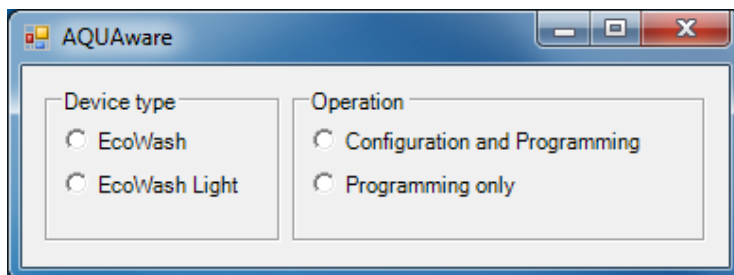
To programme **eco•wash•light** it is necessary to connect the device to the pc with an usb-microb cable:



### 3 AQUAWARE SOFTWARE

Install the "EcoWah Total" (AQUAWARE for Ecowash) software.

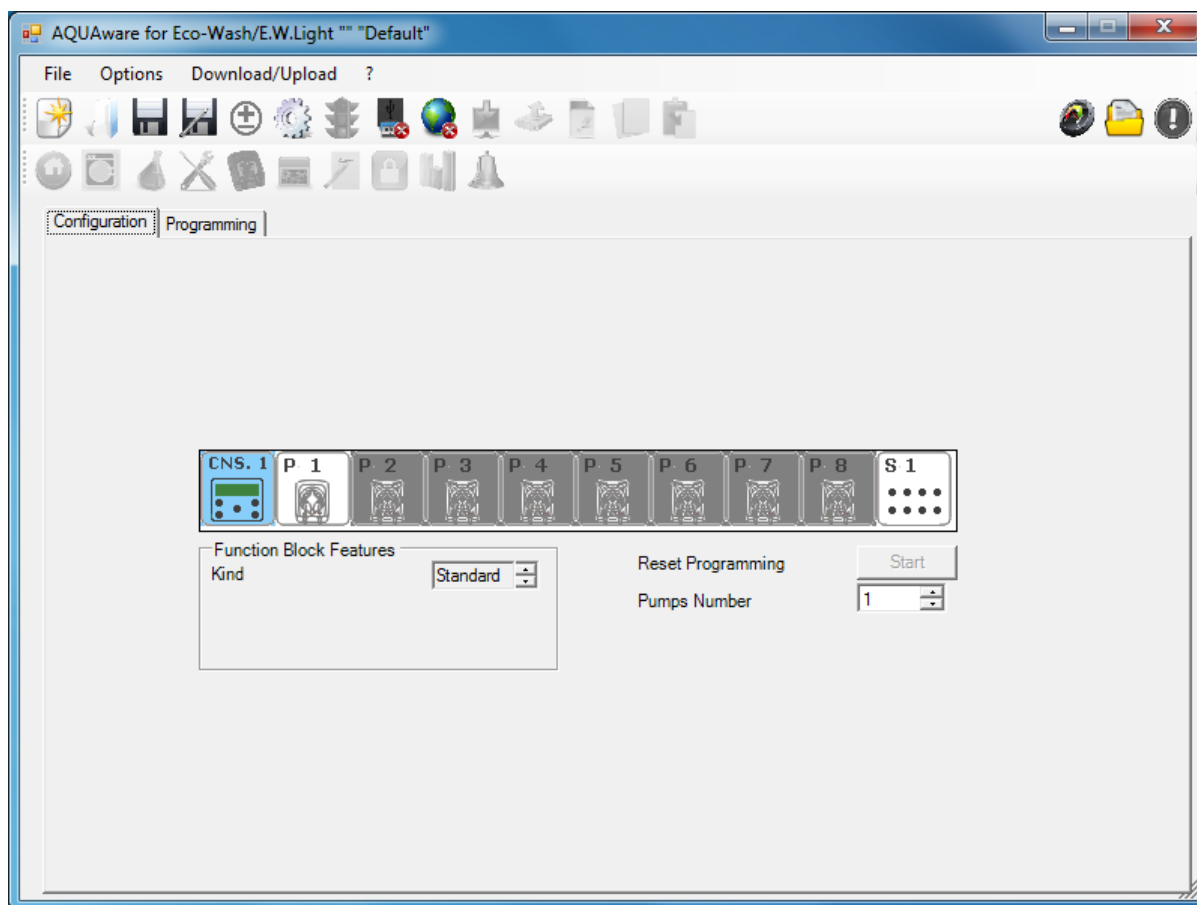
Run the programme by clicking on the icon  on the desktop. The following window will appear:



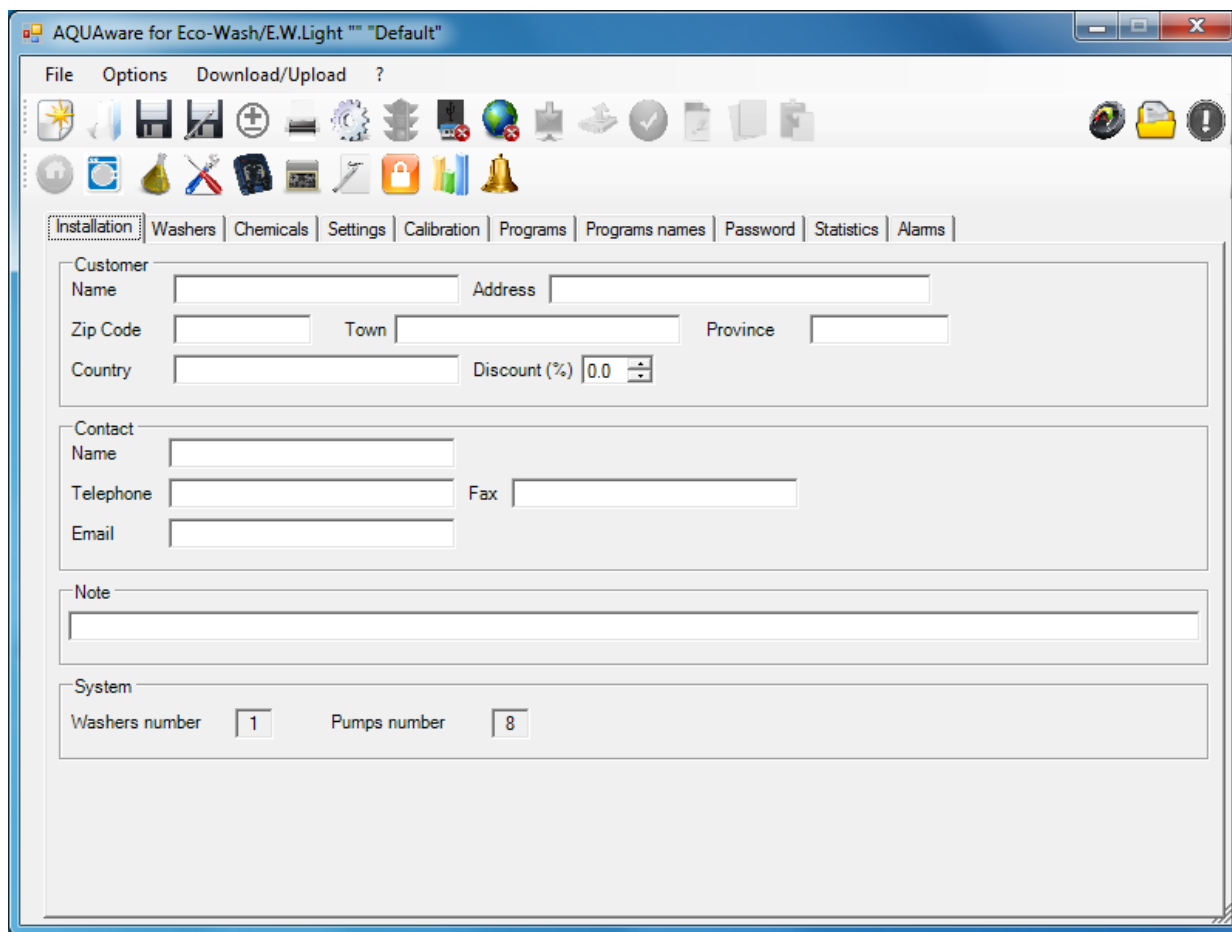
Select Device type "**EcoWash Light**" and:

- "**Configuration and Programming**" Operation to perform the configuration and then the system programming.
- "**Programming only**" Operation to perform the programming of already configured systems.

After a few seconds, the following window opens (**Configuration and Programming**):



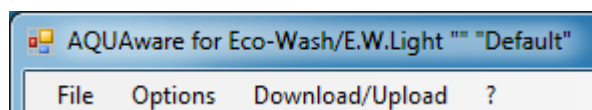
Or this window (**Programming only**):



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### 3.1 Menu and Icons

At the top of the window there is a text menu:



Below the text menu, the following icons are displayed; some are displayed or used only during the programming phase:



The description of the menu items and the first line of icons is shown in the following table:

| MENU                                | ICONA                                                                               | DESCRIZIONE                                                                                                                                                                               |
|-------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| File -> New                         |    | Opens a new project with the default settings (see annex 4).                                                                                                                              |
| File -> Open                        |    | Opens a saved project.                                                                                                                                                                    |
| File -> Save                        |    | Saves project.                                                                                                                                                                            |
| File -> Save as                     |    | Saves project as.                                                                                                                                                                         |
| File -> Change washers/pumps number |    | It allows you to change the number of washing machines and / or pumps in a project file.                                                                                                  |
| File -> Print                       |    | <u>Only in programming phase</u> : prints the report of the statistics and alarms, or the configured programs.                                                                            |
| Options                             |    | It allows you to view / modify the program configurations (for example language and directory selection, serial / USB port properties).                                                   |
|                                     |    | Indicates that the <b>eco•wash•light</b> system is stopped. You can re-activate it by clicking on the icon.                                                                               |
|                                     |   | Indicates that the <b>eco•wash•light</b> system is on. It can be stopped by clicking on the icon.                                                                                         |
|                                     |  | Indicates that usb connection is disabled. By clicking on the icon, you will activate usb communication.                                                                                  |
|                                     |  | Indicates that usb connection is active.                                                                                                                                                  |
| Download/Upload<br>→ Download       |  | Allows the download, i.e. the reading of the device configuration.                                                                                                                        |
| Download/Upload<br>→ Upload         |  | Allows the upload, i.e., the transfer of the set configuration to the device.                                                                                                             |
| Download/Upload<br>→ Verify         |  | <u>Only in programming phase</u> : makes a comparison between the data stored in Ecowash light and those displayed.                                                                       |
|                                     |  | Cancels the open washing program.                                                                                                                                                         |
|                                     |  | Copies the open washing program.                                                                                                                                                          |
|                                     |  | Pastes on the open washing program.                                                                                                                                                       |
|                                     |  | Indicates the validity status of the information present on the current page and, by clicking on the icon, allows you to view the validity of the information on the various pages.       |
|                                     |  | They indicate the origin of the information present in the current page and, by clicking on the icon, they allow to visualize the origin of the information present in the various pages. |

|   |                                                                                   |                                                                                                                                                 |
|---|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
|   |  | Indicates the modification status of the current page and, by clicking on the icon, allows you to view the editing status of the various pages. |
| ? |                                                                                   | It shows the software versions and (if the connection with the device is active), it also shows the firmware versions on the device.            |

The description of the icons on the second line (active only during the programming phase) is shown in the following table:

| ICON                                                                                | DESCRIPTION                                                      |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------|
|    | Opens the installation data tab (name, address, telephone etc.). |
|    | Opens the washing machine data Tab (brand, capacity etc.).       |
|    | Opens the chemicals data Tab.                                    |
|    | Opens the tab with the <b>eco•wash•light</b> system settings.    |
|    | Opens the pump calibration tab.                                  |
|    | Opens the programs tab.                                          |
|   | Opens the tab with the names of the programs.                    |
|  | Opens the system password tab.                                   |
|  | Opens the statistics tab.                                        |
|  | Opens the alarm settings tab.                                    |

**DOWNLOADS AND UPLOADS CAN BE DONE ONLY WHEN THE SYSTEM IS PAUSED (RED LIGHT). A SPECIFIC BAR WILL SHOW THE PROGRESS.**

## 4 CONFIGURATION

### 4.1 Features

The program configures the assembled system by setting the following parameters:

- Number of the pumps
- Type of pumps (100 l/h – 20 l/h) and capacity
- Presence of the console
- The type of signals (12 V / 24 V / 110 VAC / 230 VAC)

The blocks have different colours:

- White: block present within the system.
- Grey: block absent within the system. E.g.: in a 7-pump system, the P8 icon will be grey.
- Light blue: block selected. It is possible to read or modify the characteristics of the block.

### 4.2 Step 1 - USB Connection

After clicking the icon  a new window will open, with the following steps:

- confirm the connection request
- if the device connects, it will require the password
- insert the password, which is formed by 4 numerical characters



**Default password is 0000.**

### 4.3 Step 2 - System configuration

In case it is the first configuration of the device, it is necessary to program reset first (Start key beside to Reset Programming), which will last for some tens of seconds.



**To apply any modification to the system, it is necessary to pause it. The state of the system will be indicated by the "traffic light" icon:**

- **Green light: system active;**
- **Red light: system paused;**

To change the colour of the light, click on the icon.

**To configure the assembled system, insert:**

- **Pump type and number.**
- **Signal type**
- **Console Configuration**

#### **Pump configuration**

Set the number of the pumps that compose the system using the UP/DOWN keys close to the "Pump number" label.

Set the typology of each pump:

select the pump block (P). Set the type of pump (LF or HF) and the capacity (expressed in percentage) in the block characteristics.

- LF: maximum capacity 20 l/h
- HF: maximum capacity 100 l/h

#### **Signal configuration**

Select the signal block (S). In the block characteristics, it is possible to set the voltage of the electric signals coming from the washing machine. You can select one of these thresholds:

- 12 V
- 24 V
- 110 Vac

- 230 Vac

once configuration is complete, run the Upload (select Download/Upload → Upload or through the Upload icon ).

### Console Configuration

Set the presence or not of console using UP/DOWN keys after select Console block (**CNS.**). You can select:

- Standard
- NC (Not Connected)

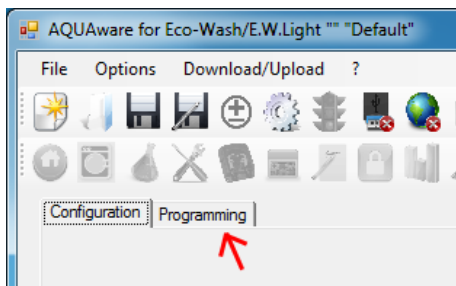


We recommend using the following minimum speeds for pumps In case of products that develop gas:

- LF (20L/H): flow-rate 100%
- HF (100L/H): minimum flow-rate 40%

## 4.4 Switching to the programming phase

At the end of the configuration phase, it is possible to move on to the system programming phase by simply clicking on the "Programming" tab:



## 5 PROGRAMMING

The "AQUAware for Ecowash Light" software allows to manage the **eco•wash•light** system completely. These are the steps to programme the system.

### 5.1 Step 1 - USB Connection

If the software is closed, start it (see chapter 3). After clicking  a new window will open with the following steps:

- confirm the connection request
- if the device connects, it will require the password
- insert the password, which is formed by 4 numerical characters



Default password is 0000.



**To modify the system settings**

**it is necessary to pause it by clicking the traffic light icon. Once the system is paused, the icon will turn red.**

### 5.2 Step 2 – Installation

The **Installation** tab allows you to enter all information about the client. To get a correct statistics report, you need to add the discount as well.

AQUAware for Eco-Wash/E.W.Light "" Default

File Options Download/Upload ?

Installation Washers Chemicals Settings Calibration Programs Programs names Password Statistics Alarms

Customer Name  Address

Zip Code  Town  Province

Country  Discount (%)

Contact Name

Telephone  Fax

Email

Note

System

Washers number  Pumps number

## 5.3 Step 3 - Washing machine

In the **Washing machine** tab, you need to enter all information about the washing machine. Add the capacity to get a direct reading of pump dosing in g/Kg on the Programmes tab.

It's possible Enable Partial Load (check on box), that allows a washing program at 25% or at 50% or 75% of laundry capacity.

The screenshot shows the 'Washer' tab in the AQUAware software. The interface includes a menu bar (File, Options, Download/Upload, ?), a toolbar with various icons, and a tabbed navigation system. The 'Washer' tab is active, displaying fields for 'Brand Name', 'Model', and 'Load Capacity (Kg)' (set to 'N.A.'). There is a checkbox for 'Enabling partial load' which is currently unchecked. Below these fields is a 'Note' section with a text area.

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## 5.4 Step 4 – Chemicals

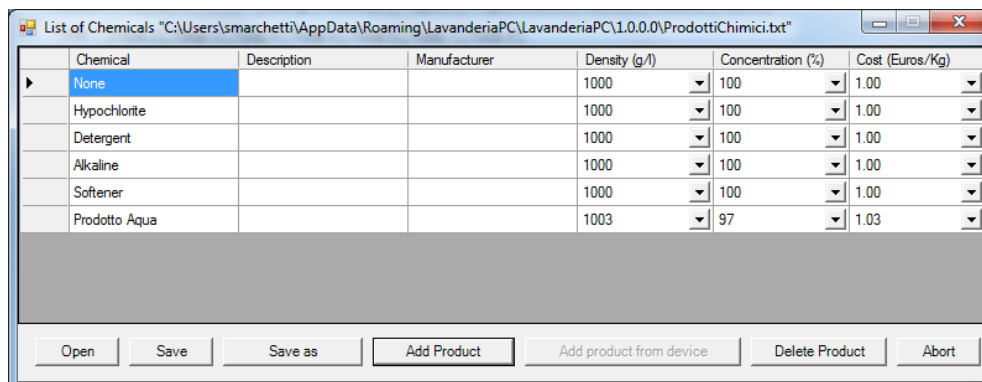
The **Chemicals** tab combines the chemicals to the pumps.

The screenshot shows the 'Chemicals' tab in the AQUAware software. The interface is similar to the previous one, with the 'Chemicals' tab selected. It features fields for 'Chemical's Name' (set to 'None'), 'Manufacturer', 'Description', 'Cost (Euros/Kg)' (set to '1.00'), 'Density (g/l)' (set to '1000'), and 'Concentration (%)' (set to '100'). There is also a 'List of Chemicals' button.

Also (by clicking on List of Chemicals key) it's possible add / edit / delete chemicals from a list. In case of an update of the Aquaware SW, before uninstalling the old SW, we recommend to save a prodottiChimici.txt file and, after the installation, to copy it to the new Aquaware directory.

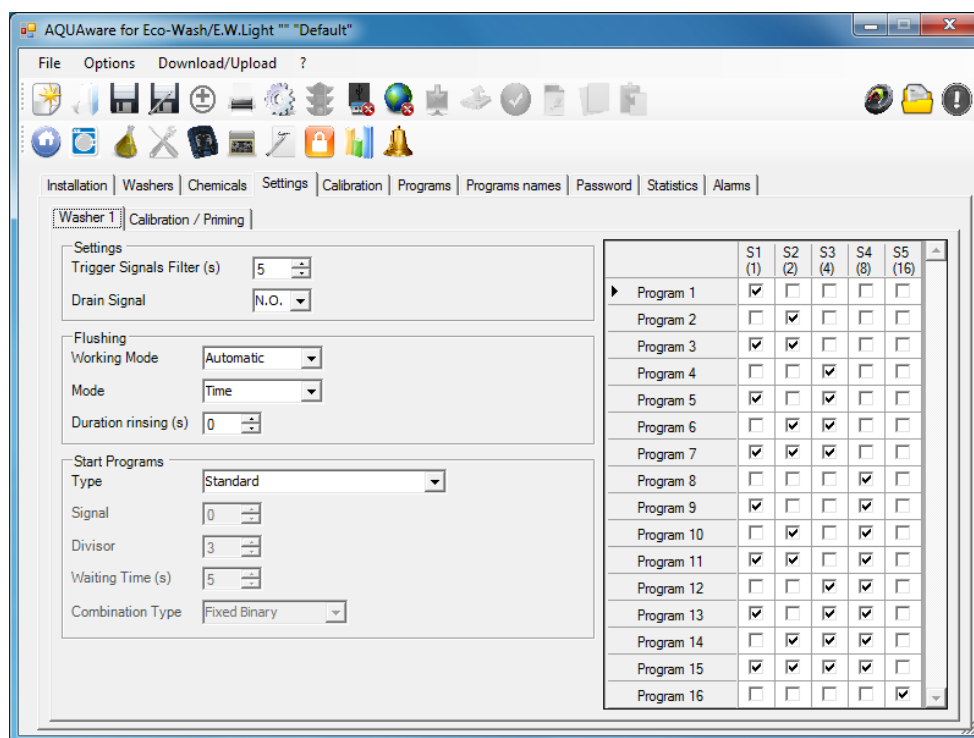
To delete a product, select the entire row by clicking on the first gray column and then press the Delete Product key.

It's possible (by clicking on Add product from device) add products directly reading those present in device.



## 5.5 Step 5 – Settings

The **Settings** tab programmes the duration of filtration on the input signals; the type of draining signal; the operating mode of the electrovalve of the flushing kit; the ignition of the washing programmes.



### 5.5.1 Input signals filter

Minimum time during which a signal must be kept high to be recorded as active.

This parameter prevents excessive dosing when the machine is using water and during the different washing phases. You can set a time from 0 to 99 seconds. Default value is 5 seconds.

### 5.5.2 Drainage signal

It is possible to set the type of drainage signal of the washing machine, in case you want to use it to synchronise the phases of the washing programme. Possible settings are N.O. (Normally Open) or N.C. (Normally Closed):

- **N.A.:** when the machine is on but the washing programme is not running, the signal module has the drainage signal led (#8) on.
- **N.C.:** when the machine is on but the washing programme is not running, the signal module has the drainage signal led (#8) off.

### 5.5.3 Flushing

If system is operating in "Programme" mode, it is possible to set the time of opening of the flushing kit electrovalve, both manually or automatically. In "Relay" mode, the electrovalve opening is only automatic.

#### Manual

In this case, the electrovalve must be considered as a pump. To open it, use the WATER instructions block during programming.

#### Automatic (Recommended)

The system automatically manages the opening of the electrovalve, activating it at the same moment a pump activates, and keeping it open for the whole dosing time, plus an extra time that can be programmed as follows:

- Automatic Operation - Time Mode  
Time is set directly in the "Duration" label
- Automatic Operation - Litres Mode

Time is set depending on the Litres set in the "Quantity" label. In this case, the system counts the number of litres that pass through the flushing kit after a dosing. A flow sensor is necessary to select this operating mode.

### 5.5.4 Programme Activation

This setting makes it possible to select the type of washing programmes activation, if the system is working in "Programme" mode. The 3 possible activations are: Standard, Combination Autostart and Timed Autostart. Combination Autostart and Timed Autostart can be used only with perforated card logic or electronically-managed machines. In this case, it is possible to identify a washing programme through a combination of signals or with the activation time of one of the input signals.

#### Standard

In the Settings Tab, select Standard. The user can select the washing programme from the standard console.

#### Fixed combination Autostart

In the Settings tab, select Combination Autostart, and choose as a combination typology "Fixed Binary". On the right side of the screen, you will find a table with the signal combinations that uniquely identify the dosing programmes. When a signal activates, the system activates a timer that lasts as long as the value set under "Wait time". When the timer times out, the active signals will identify the programme to run, according to the correspondences of the above-mentioned table.

#### Programmable combination Autostart

In the Settings Tab, Select a "Combination"-type Autostart on a "Programmable" combination typology. On the right side of the screen, you will find a table where you will be able to associate the signal combinations to the dosing programmes. In this case, the table is blank and it is necessary to define the signal combinations that activate a given programme by flagging the boxes. The activation of a programme is identical to the one described under "Fixed-combination Autostart", and therefore it is necessary to set the "Wait time" parameter. In case you set identical combinations for different programmes, only the first corresponding programme will be activated.

#### Timed Autostart

Select "Timed" Autostart. In this case, choose an input signal and a divisor. These parameters will be used to distinguish the different programmes. For example: if you are setting signal 1 and divisor is 3, the system runs a special washing programme depending on the activation time set for signal 1.

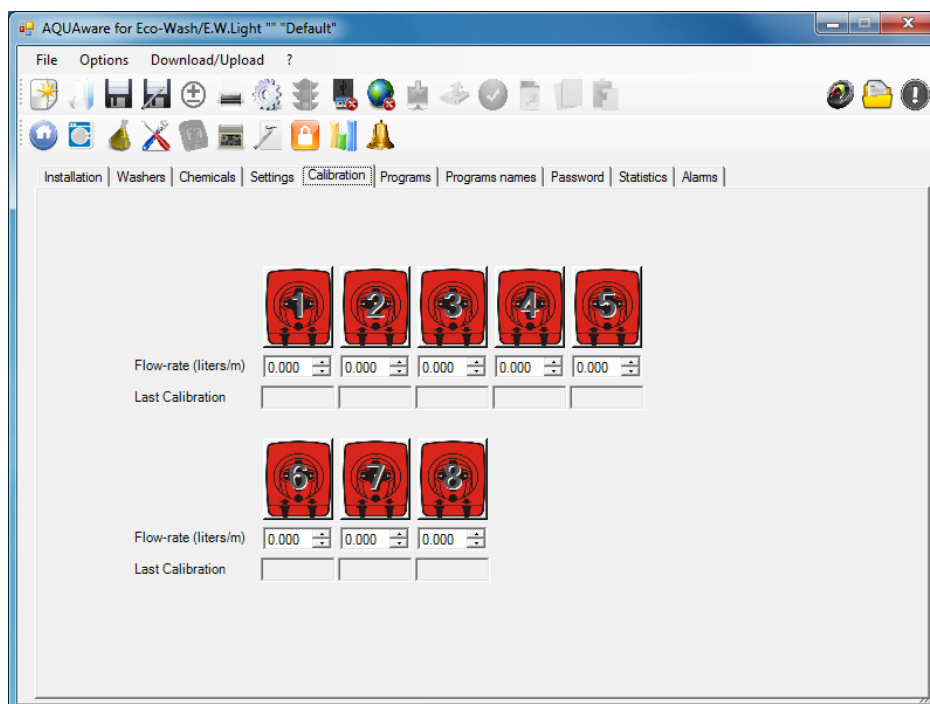
Signal 1 active for 15 seconds  $15:3 = 5 \Rightarrow$   
the system runs programme 5.

Signal 1 active for 29 seconds  $29:3 = 9.6 \Rightarrow$   
the system runs programme 10.

A divisor is higher than 2, for an easier discrimination of the activation times of the programmes.

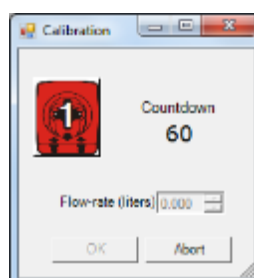
## 5.6 Step 6 - Calibration

In the **Calibration** tab you will have to set the pumps' capacity; calibration, together with the data of the chemicals and the washing machine load, allows to visualize the gr/Kg of product dosed and the statistics (expressed in Kg of product). During calibration, we recommend to use the same product the specific pump is going to dose.

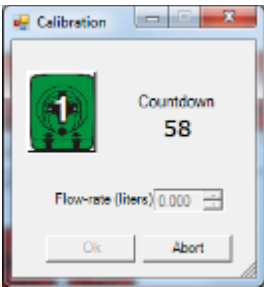


To properly proceed with the calibration, follow this procedure:

- 1 Switch the pump on, so that the chemical comes out from the outlet fitting.
- 2 Place a container (2 litres min.) on the pump outlet.
- 3 Click on the icon of the relevant pump, a new window will open.



- 4 Click on the pump from the newly open window. It will become green. The selected pump will start dosing for 60 seconds.



- 5 At the end of the dosing, take note of the litres of product delivered by each pump.
- 6 Repeat steps 1-4 for each pump.

The calibration can be stopped before the end of 60 seconds, by clicking again on icon pump.

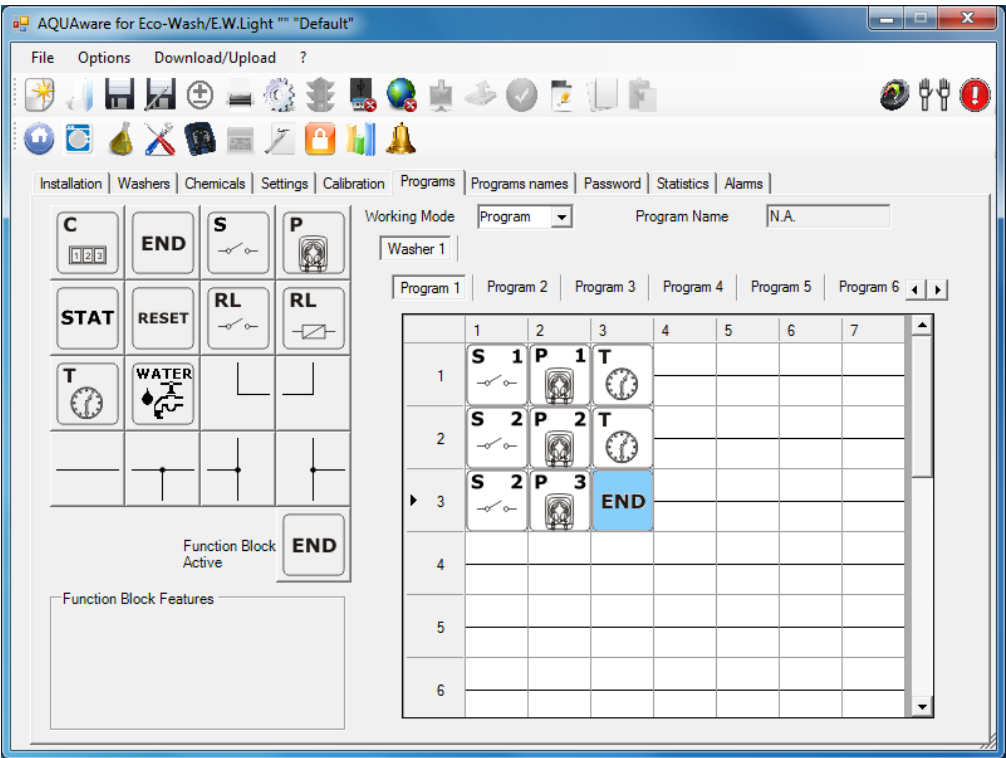
5.7 Step 7 – Programs

The **Programs** tab configures the system on Relay or Program operating mode.

The two work modes are described below: Relay or Program.

**Relay** every input signal coming from the washing machine is associated to a pump as follows: signal 1 - > pump 1, Signal 2 -> pump 2 etc. (This association is not programmable). The last signal that the machine actives during the dosing sequence must be connected to terminal s8; serves to signal to the system that the dosing sequence is terminated. In this mode, dosing times of the pumps depend on the duration of the signals. The dosing times of the pumps must be programmed operating on the activation times of the washing machine signals.

**Program**: this mode requires configuring the washing programs by putting the instruction blocks (on the left of the screen) on the editor window (on the right of the screen).



It is possible to configure up to 20 washing programs. The editor window of each program is composed by 15 lines and 7 column, for a total amount of 105 cells. Every line can contain up to 7 blocks. To place a block on the editor window, click on it and double clicking on the chosen cell (the block will appear in the cell).

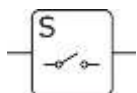
Therefore, during Program mode, instruction and connection blocks must be combined together in order to describe the washing program.

It is also possible to delete/copy-paste a program using the three icons



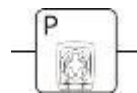
The **eco•wash•light** system analyses the editor window of the current program, analysing all the lines in parallel. The programme cycle ends when the system meets the **END** instruction block in one of the lines.

### 5.7.1 Input signal instruction block



This instruction tells the system to control the input signal.  
If the signal is active (voltage present) for a higher time than the one set in the input signals filters, the system runs the following instruction block.

### 5.7.2 Pump instruction block



This command tells the system to activate a pump.  
In this instruction set the pump number, the delay (activation) and dosing expressed in gr/Kg. Seconds of dosing are automatically calculated and displayed in Effective dosage box:

| Function Block Features    |        |
|----------------------------|--------|
| Pump #                     | 1      |
| Pump delay (s)             | 10     |
| Dosage wanted (g/kg)       | 4.0    |
| Effective dosage (s; g/Kg) | 8; 4.0 |

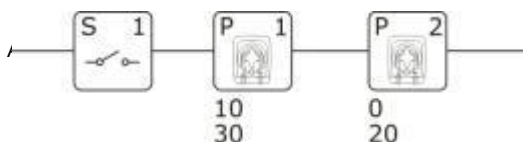
It's essential for the correct calculation of gr/Kg – seconds of dosing, that properly set the following parameters:

- Laundry Capacity
- Chemical associated to pump
- Pump Calibration

A warning icon appears if one of these conditions is not satisfied.

| Function Block Features    |         |
|----------------------------|---------|
| Pump #                     | 1       |
| Pump delay (s)             | 10      |
| Dosage wanted (g/kg)       | 7.0     |
| Effective dosage (s; g/Kg) | 14; 7.0 |

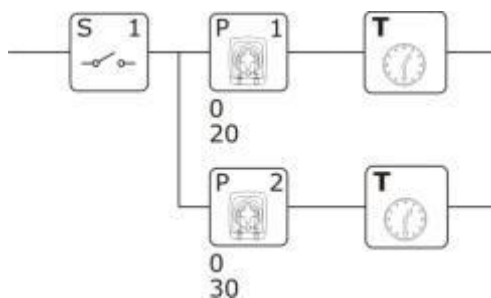
A message is displayed placing the mouse over this icon.  
The program activates the following instruction block at the end of pump dosing.



This is an example made on the basis of the instructions provided:

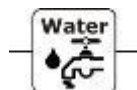
When signal #1 is activated, the system controls the activation time. If the activation time is higher than the value set on the input signals filter, the program will activate pump #1 with a 10-second delay, for a total dosing time of 30 seconds. At the end of the dosing of pump #1, the program activates pump #2 for a 20-second dosing time.

In case you want two pumps to work together, link them as follows:



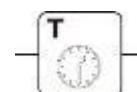
When signal #1 is activated, the system controls the activation time. If the activation time is higher than the value set on the input signals filter, the program will activate at once the dosing from pump #1 (20 seconds) and pump #2 (30 seconds). When Timer times out, if Signal S1 is still active, the sequence will be repeated. Nevertheless, in order to have an actual parallel operation, the timer on the 1st line ("Main line") must have a higher value than the Timer on the "Secondary lines" (that can be omitted).

### 5.7.3 Water instruction block



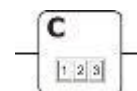
When the system meets this instruction block, it opens the solenoid valve of flushing kit (allowing the water to flow) of the flushing kit for the seconds or litres set in "Dosing Time/Quantity". "Dosing Time/Quantity" expresses the duration of the open position if Flushing is Manual and Timed. On the other hand, in case you have set a Manual/Litres Flushing, it would express the quantity (in litres) of liquid the solenoid valve of flushing kit lets go before cutting the flow. The program starts the following instruction block after opening.

### 5.7.4 Timer instruction block



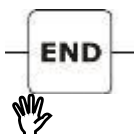
When the system finds this instruction block, it waits the set time (expressed in minutes) and then moves to the following block.

### 5.7.5 Counter instruction block



The system increases a counter in case the signal combined to the block is active (you need to combine a signal to the counter instruction block). Once the set value is reached (the signal activates as many time as the threshold value), the program moves to the following block and resets the counter.

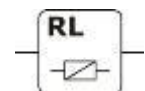
### 5.7.6 END instruction block



When the system meets this instruction block, it ends the programme in use and goes back to the Wait Mode, updating all the statistics.

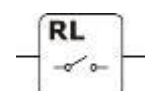
**This instruction waits for the flushing electrovalve to close in case it is set on Automatic before ending the programme.**

### 5.7.7 Conditional instruction block



When the system meets this block, it sets the state associated on 1. Every block is identified with a relay number and characterized by its state (on 1, the programme has reached the block, on zero it has not). This block is used to check if the system has run a certain programme line.

### 5.7.8 Conditional instruction control block



When the system meets this block, it controls the state of the combined conditional instruction block (*relay number*).

By setting the “Active state” to 1, the system checks the state of the conditional instruction block. If it is 1, it moves to the following instruction block. By setting “Active state” to 0, the system verifies the state of the combined conditional instruction block. If it is 0, it moves to the following instruction block.

|   | 1   | 2    | 3    | 4   | 5 | 6 | 7 |
|---|-----|------|------|-----|---|---|---|
| 1 | S 1 | P 1  | RL 1 | T   |   |   |   |
| 2 | S 2 | RL 1 | P 2  | END |   |   |   |
| 3 |     |      |      |     |   |   |   |

In this example the pump n.2 will always dose after the pump n.1; despite signal n.2 could arrive before signal n.1, since dosing pump n.2 is conditioned by the relay n. 1. Relay n.1 set to one in the first row of program (after pump n.1 dosing) and checked (RL 1 second row) if equal to one in second row. Then pump n.2 will dose only if RL 1 will be equal to one, which means that the system has performed the first row, and so pump n.1 dosed.

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### 5.7.9 RESET instruction block



When the system meets this instruction block, it resets all the conditional instruction block states of the program, in case only one washing program is used.

### 5.7.10 STAT instruction block



When the system finds this instruction block, it updates the statistics, in case only one washing program is used. Do not use this instruction if the program has an END instruction already.

### 5.7.11 Connection blocks

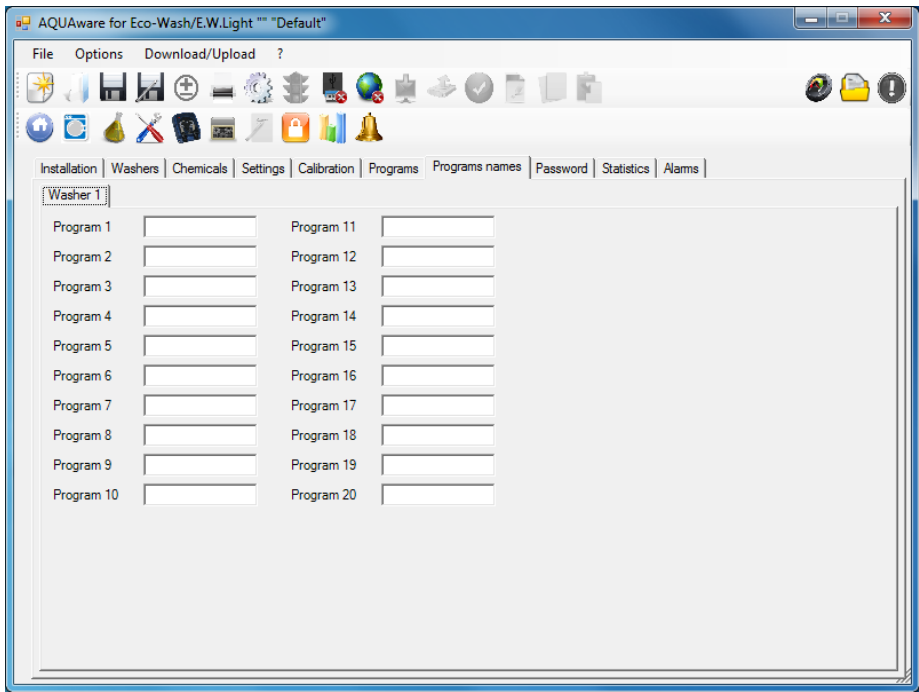
Six connection blocks are available to connect the instruction blocks.



**It is not possible to enter the connection block in the first column; otherwise the software shows a red exclamation point.**

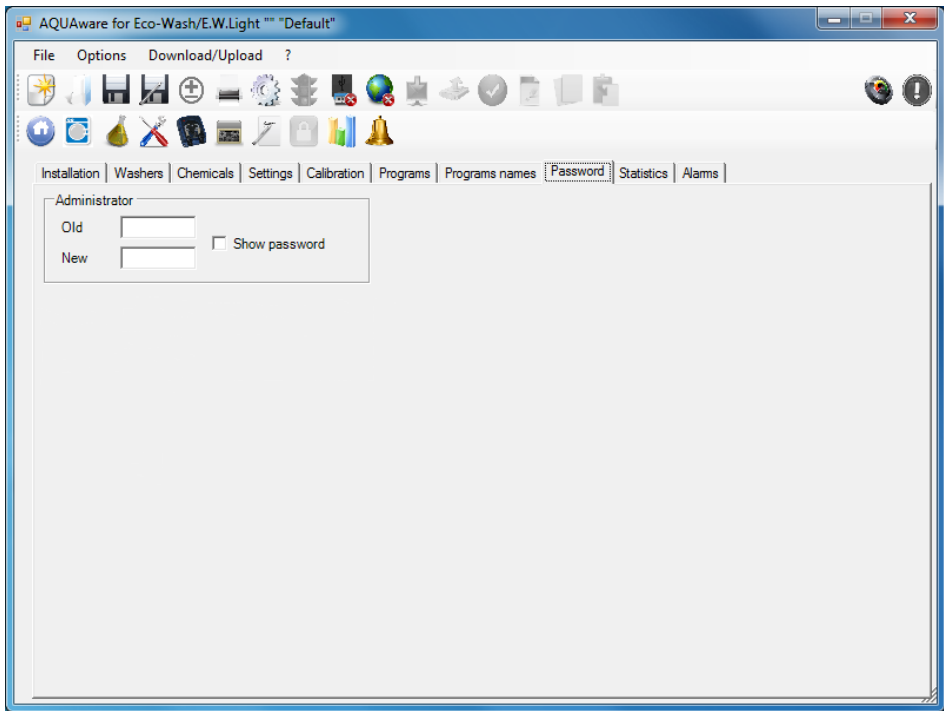
5.8 Step 8 - Programs names

In the **Programs names** tab it is possible to set the name of the 20 program. You can use up to 12 characters per name.



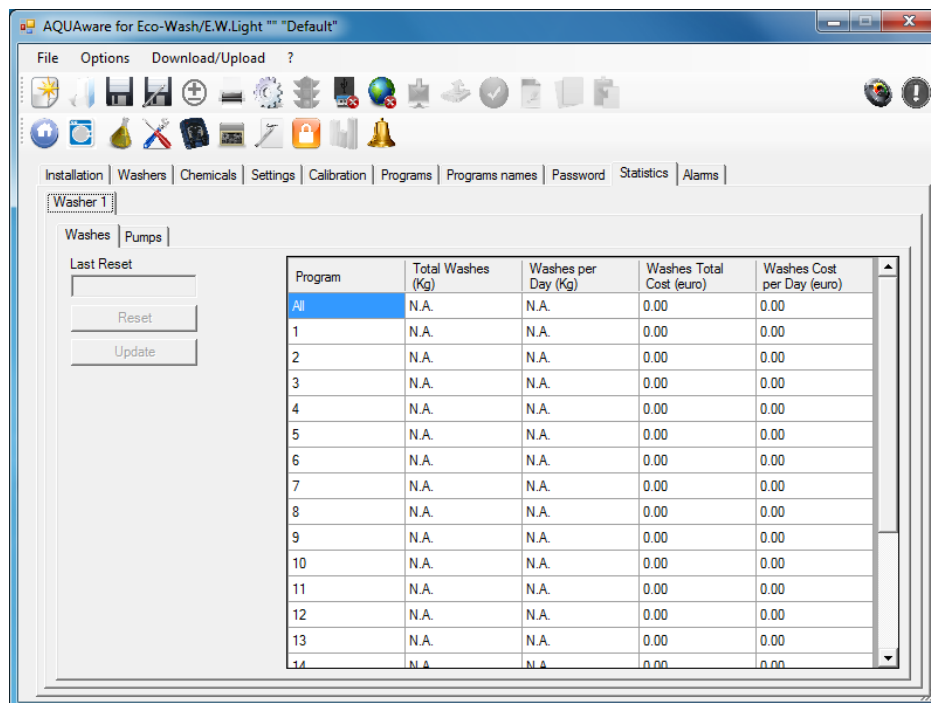
5.9 Step 9 – Password

In the **Password** tab it is possible to set a new access password (4 numerical characters). This password is “0000” by default.



## 5.10 Step 10 – Statistics

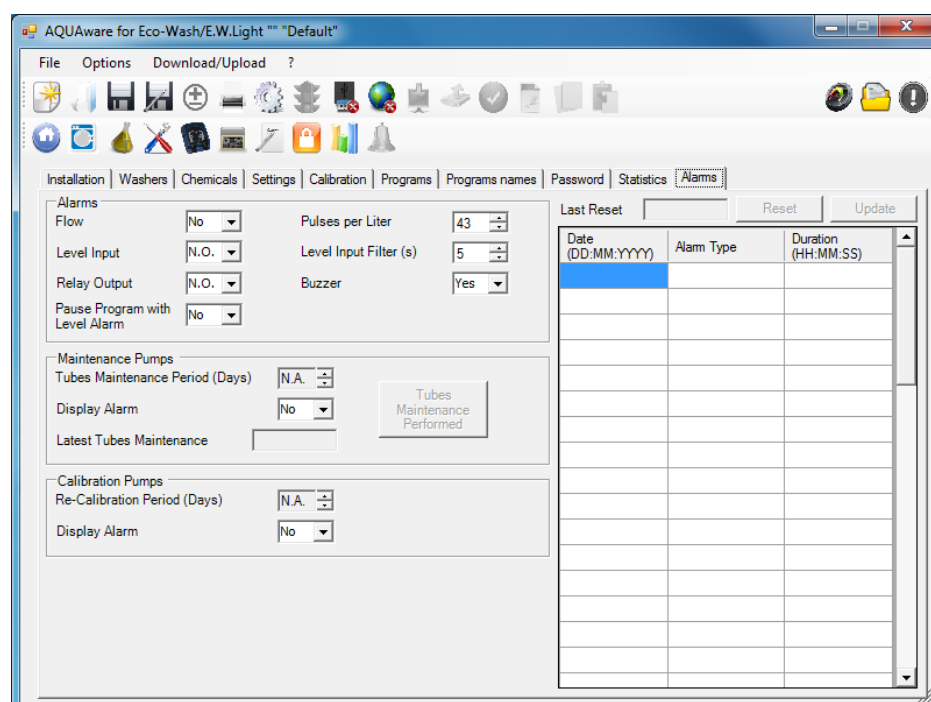
From the **Statistics** tab, it is possible to read the statistic data of all pumps and programs performed. Moreover, it is possible to save the data in a file, to print a report or reset.



## 5.11 Step 11 - Alarms

From the **Alarms** tab, it is possible to manage the alarm settings, beside accessing the history of the recorded alarms of the system.

Moreover, it is possible to save the data in a file, to print a report and reset.



### 5.11.1 Alarm settings

It is possible to perform the following operations:

- Activate or deactivate the flow alarm. This alarm checks that the water flows through the flushing kit.
- Specify whether the probes of the level alarms are NO (when product is over and the probe is in short-circuit) or NC (when product is over and the probe is in open-circuit). All our sensors are of the NO type.
- Set the relay alarm output on NO (when an alarm occurs, the relay contact is set to ON and creates a short-circuit) or on NC (when an alarm occurs, the relay contact is on OFF and creates an open circuit). It is on NO by default.
- Set the pulses of the flow sensor. We recommend to leave the default value.
- Activate or deactivate the buzzer for the alarm signals.
- Activate or deactivate pump stop during level alarm activation. It is set on No by default.

### 5.11.2 Pump maintenance alarm

It is possible to use this alarm as a reminder to perform maintenance operations on the pumps. To do so, you have to set a time. When it times out, the alarm goes off. It is possible to deactivate the visualization of this alarm, otherwise available on the Standard Console.

After maintenance, click on *Piping Maintenance Performed*.

### 5.11.3 Calibration alarm

This alarm can be used as a reminder to adjust the calibration. It is possible to set the days you do not need to calibrate the system. After this period, the system sends an alarm whose visualization can be disabled.

*After calibration, switch the system off and then back on to reset the previous alarm, otherwise it will remain active in the alarm list.*

The **eco•wash•light** system records the last 50 alarms.

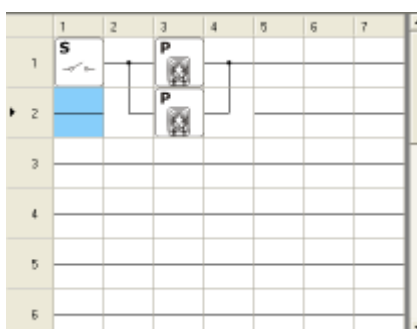
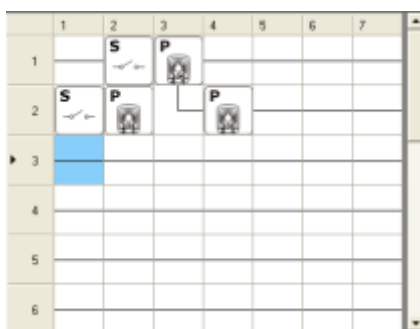
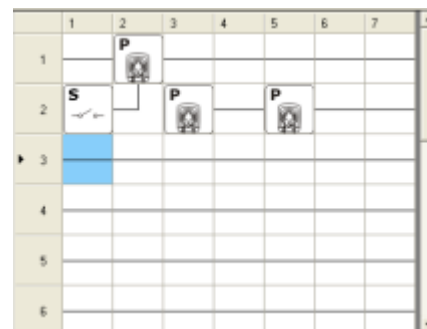
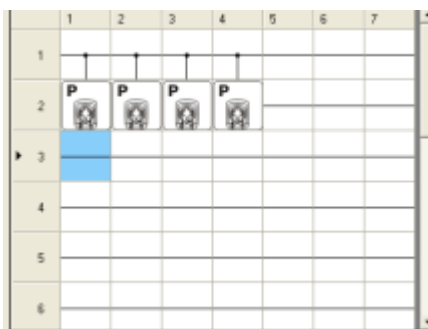
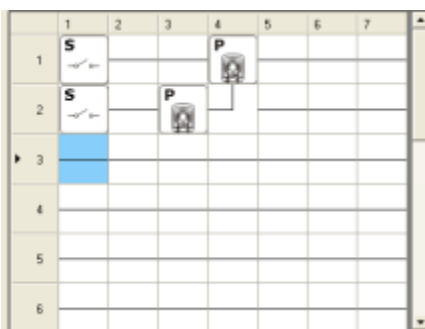
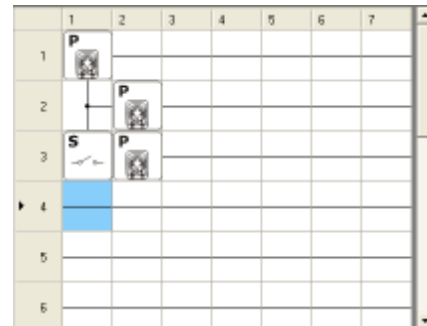
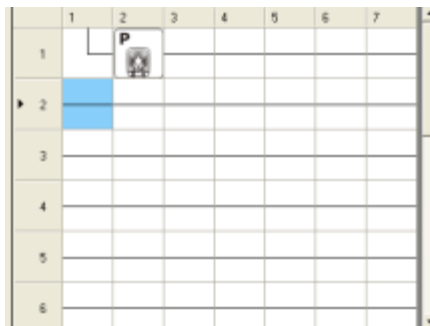
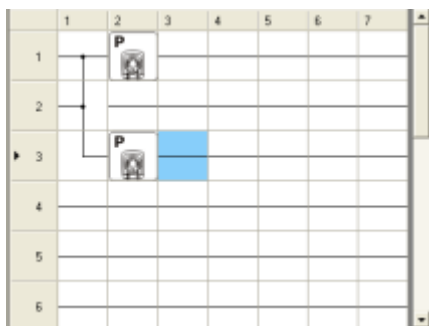
If the alarm is still active, an asterisk will appear close to the time value in the "Duration" column.

## 6 TROUBLESHOOTING

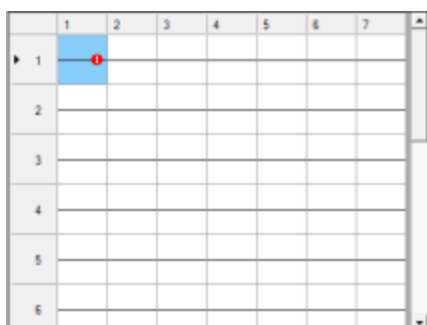
|                                              |                                                                                                                                                                                                                                                                                                         |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The system won't switch on                   | <ul style="list-style-type: none"> <li>▪ Control the fuse on the circuit.</li> <li>▪ Check that the voltage on the <b>F-N</b> terminals is between 100 and 240VAC 50/60Hz.</li> </ul>                                                                                                                   |
| The console doesn't switch on                | <ul style="list-style-type: none"> <li>▪ Check the connection cable and the central module console connection.</li> </ul>                                                                                                                                                                               |
| The pump is not working                      | <ul style="list-style-type: none"> <li>▪ On the circuit, check for possible unplugged wires on the terminals of the pump motor.</li> <li>▪ Check that the motor is not stuck.</li> <li>▪ Check the washing programme.</li> <li>▪ Check that the programme has been activated on the console.</li> </ul> |
| The pump is slow                             | <ul style="list-style-type: none"> <li>▪ Check that the motor is not stuck.</li> <li>▪ Check that the roller holder is not broken.</li> <li>▪ Check the programmed speed.</li> <li>▪ Check that the non-return valve of the flushing kit is not broken.</li> </ul>                                      |
| The pump does not prime                      | <ul style="list-style-type: none"> <li>▪ Check that the pump pipe is not broken</li> <li>▪ Check that the roller holder is not broken.</li> <li>▪ Check that the suction fitting is not broken.</li> <li>▪ Check that the non-return valve of the flushing kit is not broken.</li> </ul>                |
| Too much chemical                            | <ul style="list-style-type: none"> <li>▪ Check the programmed time and speed</li> </ul>                                                                                                                                                                                                                 |
| Chemical low                                 | <ul style="list-style-type: none"> <li>▪ Check the programmed time and speed</li> <li>▪ Check for possible chemical leaks on the outlet line.</li> <li>▪ Check that the non-return valve of the flushing kit is not broken.</li> </ul>                                                                  |
| Water does not flow through the flushing kit | <ul style="list-style-type: none"> <li>▪ Check that the electrovalve is properly connected to the WATER terminal in the central module.</li> <li>▪ Check that the electrovalve is programmed and operating.</li> <li>▪ Check that the water cock is open.</li> </ul>                                    |

## 7 ANNEX 1 - Invalid programmes

Here are some examples of invalid programmes

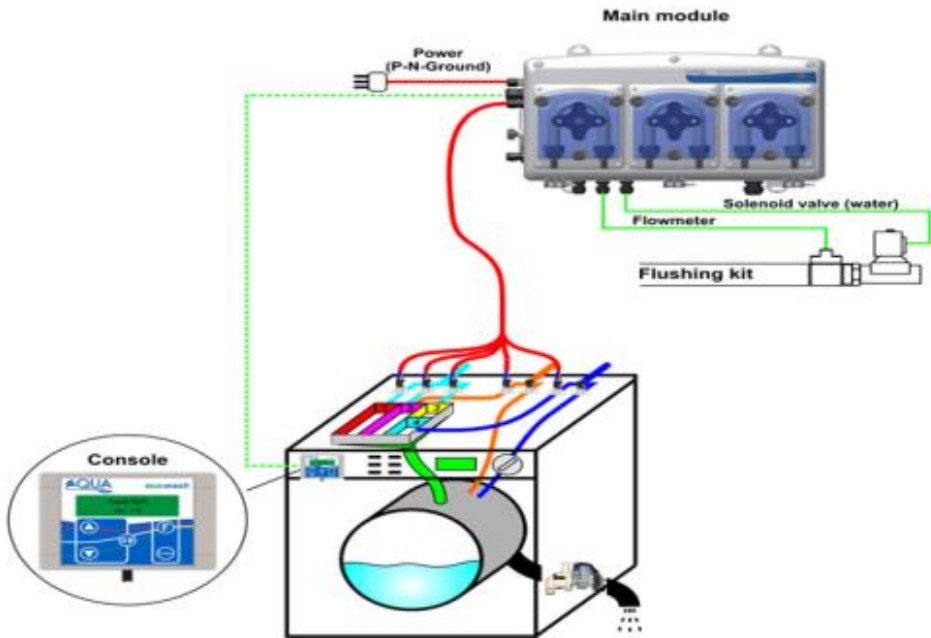


*In case you want to add an instruction block in the first column of the programme entering grid, the Aquaware software will show a red exclamation mark, indicating that this operation is not possible. To delete it, insert another instruction block.*

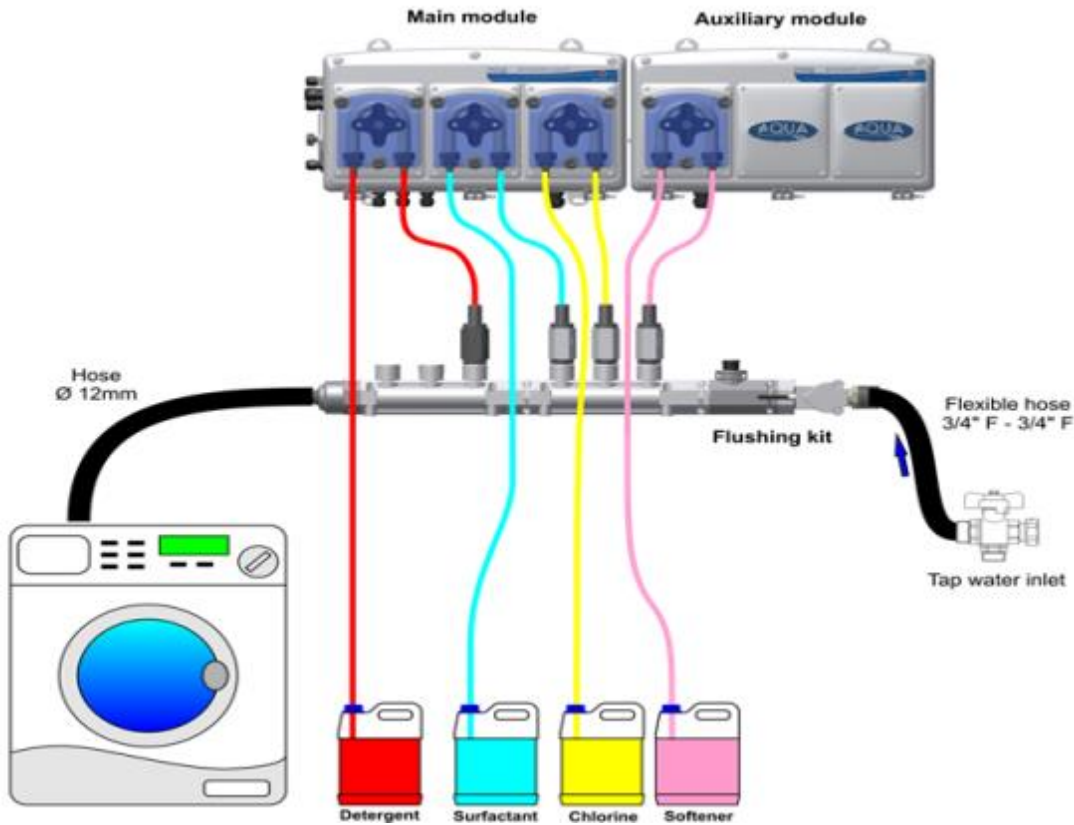


8 ANNEX 2 - Connections

Electrical connections



Hydraulic connections



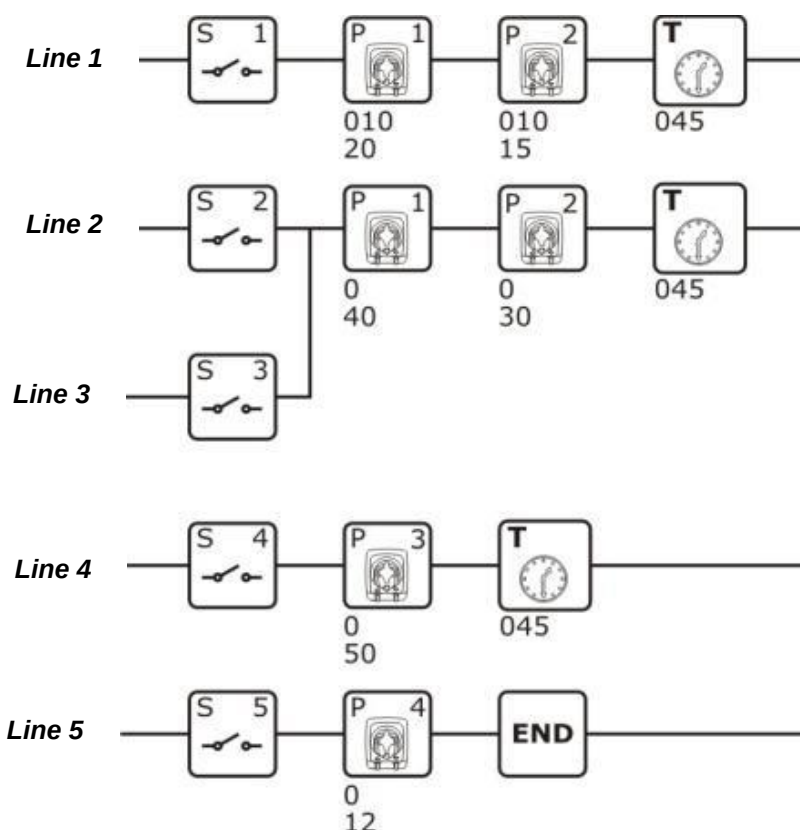
## 9 ANNEX 3 – Programming examples

### 9.1 Example 1:

Washing machine with four signals coming from the electrovalves of the following trays: pre-washing, washing, chlorine and softener. The washing programme must perform these operations:

| Phase    | Electrical signal | Pumps                                                                          |
|----------|-------------------|--------------------------------------------------------------------------------|
| Pre-wash | 1                 | Pump 1 – 10-second delay – 20 seconds<br>Pump 2 – 10-second delay – 15 seconds |
| Wash     | 2 or 3            | Pump 1 – 0-second delay – 40 seconds<br>Pump 2 – 0-second delay – 30 seconds   |
| Chlorine | 4                 | Pump 3 – 0-second delay – 50 seconds                                           |
| Softener | 5                 | Pump 4 – 0-second delay – 12 seconds                                           |

Instruction blocks:



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#### Explanation:

Line one performs the pre-washing by activating pumps 1 and 2 after signal 1 has been detected. Line two and three start the washing by activating pumps 1 and 2 after signal 2 or 3 has been detected. Line four performs the chlorine phase by activating pump 3 after signal 4 has been detected. Line five performs the softener phase by activating pump 4 after signal 5 has been detected. After dosing, the programme ends with the END block.



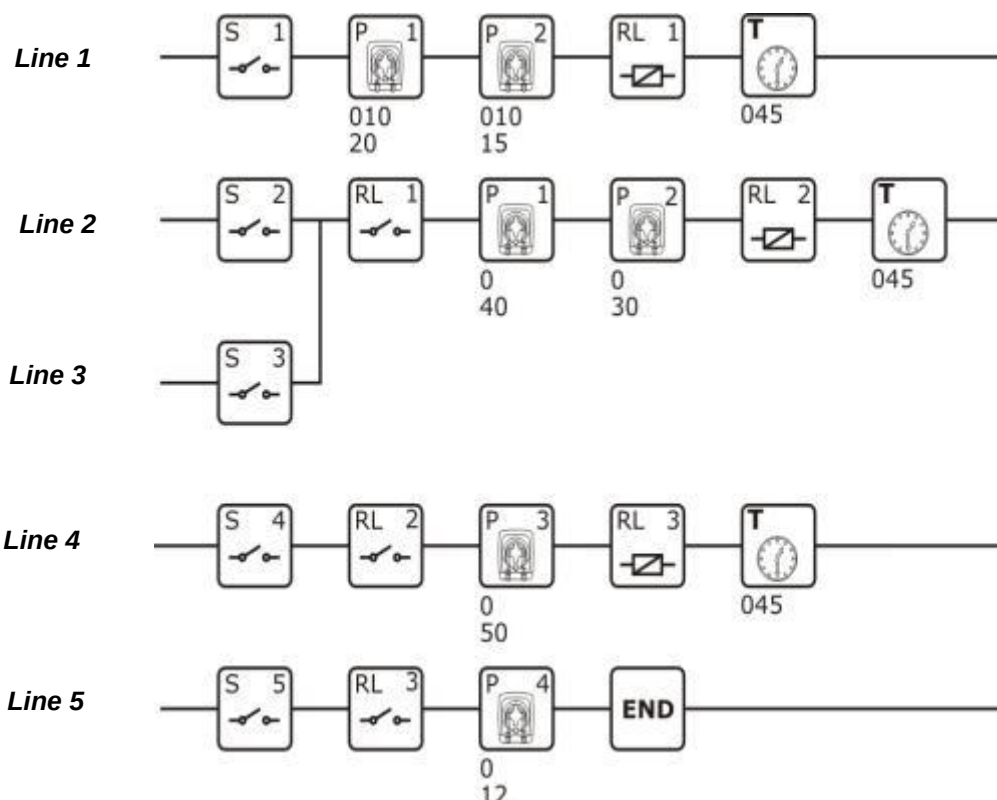
Timer blocks on line 1, 2 and 4 prevent the lines from being performed again in other phases of the same washing cycle. In this case, signals do not need to arrive at this exact sequence.

## 9.2 Example 2:

Washing machine with five signals coming from the electrovalves of the following trays: pre-washing, washing, chlorine and softener. The washing programme must perform these operations:

| Phase    | Electrical signal | Pumps                                                                          |
|----------|-------------------|--------------------------------------------------------------------------------|
| Pre-wash | 1                 | Pump 1 – 10-second delay – 20 seconds<br>Pump 2 – 10-second delay – 15 seconds |
| Wash     | 2 or 3            | Pump 1 – 0-second delay – 40 seconds<br>Pump 2 – 0-second delay – 30 seconds   |
| Chlorine | 4                 | Pump 3 – 0-second delay – 50 seconds                                           |
| Softener | 5                 | Pump 4 – 0-second delay – 12 seconds                                           |

### Instruction blocks:



### Explanation:

Line one performs the pre-washing by activating pumps 1 and 2 after signal 1 has been detected. If pre-washing has been performed (RL1 coil control), line two and three start the washing by activating pumps 1 and 2 after signal 2 or 3 has been detected. If washing has been performed (RL2 coil control), line four starts the chlorine phase activating pump 3 after signal 4 has been detected. If the chlorine phase has been performed (RL3 coil control), line five starts the softener phase by activating pump 4 after signal 5 has been detected. After that, the system exits the programme through the END block.



**Timer blocks on line 1, 2 and 4 prevent the lines from being run again in other phases of the same washing cycle**

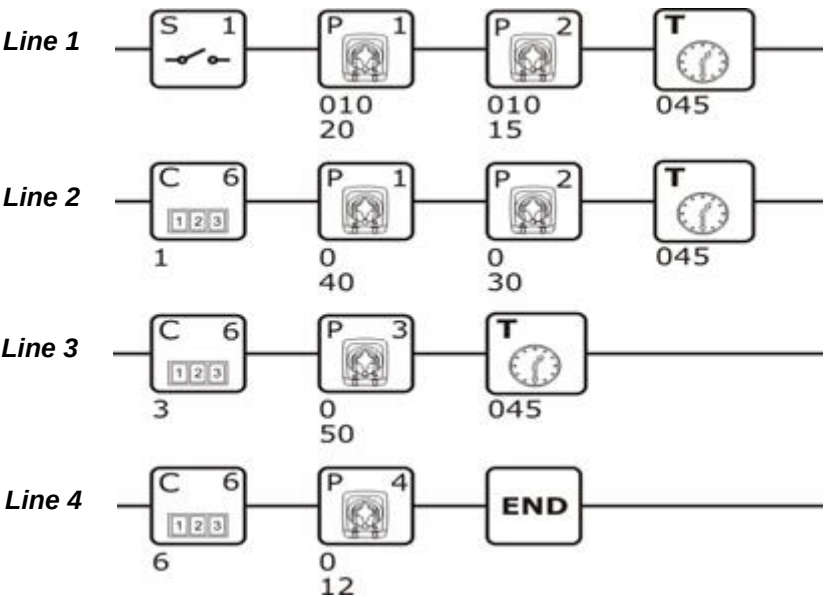
**In this case, signals must arrive in this exact sequence.**

9.3 Example 3:

Washing machine with two signals, pre-wash and drainage. The washing programme must run these operations:

| Phase    | Electrical signal | Pumps                                                                          |
|----------|-------------------|--------------------------------------------------------------------------------|
| Pre-wash | 1                 | Pump 1 – 10-second delay – 20 seconds<br>Pump 2 – 10-second delay – 15 seconds |
| Wash     | 6                 | Pump 1 – 0-second delay – 40 seconds<br>Pump 2 – 0-second delay – 30 seconds   |
| Chlorine | 6                 | Pump 3 – 0-second delay – 50 seconds                                           |
| Softener | 6                 | Pump 4 – 0-second delay – 12 seconds                                           |

Instruction blocks:



Explanation:

Line one performs the pre-washing by activating pump 1. After signal 1 has been detected, it activates pump 2. Line two performs the washing phase by activating pump 1, and pump 2 for every activation of signal 6. The third line performs chlorine phase, activating pump 3 every three activations of signal 6. Line four runs the softener programme by activating pump 4 at the sixth activation of signal 6. The system then exits the programme thanks to the END block.

**i** Timer blocks on lines 1, 2 and 3 prevent the lines from being performed again in other phases of the same washing cycle.

## 10 ANNEX 4 – Default parameters

When you open a new project on the “AQUAware for EcowashLight” software (see par. **Errore. L'origine riferimento non è stata trovata.**) the following default parameters are applied:

### Settings Tab

- Input signal filter (s): **5**
- Drainage signal: **NC**

### Flushing Tab

- Operation: **Automatic**
- Mode: **Time**
- Duration: **20 seconds**

### Programmes Tab

- Mode: **Relay**

### Alarms Tab

- Flow: **No**
- Pulses per litre: **30**
- Level input: **NO**
- Level input filter (s): **5**
- Relay output: **NO**
- Buzzer: **No**
- Programme Pause on Level Alarms: **No**
- Alarm visualizations: **No**

## 11 ANNEX 5 – System initialization

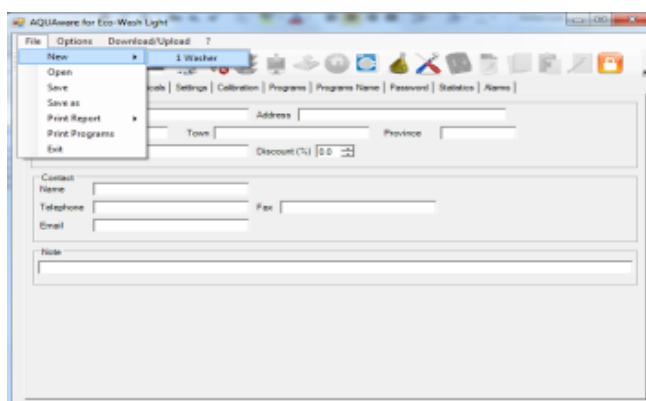
### 11.1

### Procedure



This procedure **must be followed** every time you need to install a new system, or after resetting the programming memory:

- Launch **AQUAWARE for Eco-Wash Light**.
- Connect the PC to the eco•wash•light system.
- Pause the system (red light).
- You can create a new file from the menu or from the icon, or upload an existing one. In the first case, you will only need to click on **File->New**.



In the second case, click **File->Open** and select the backup file to upload.

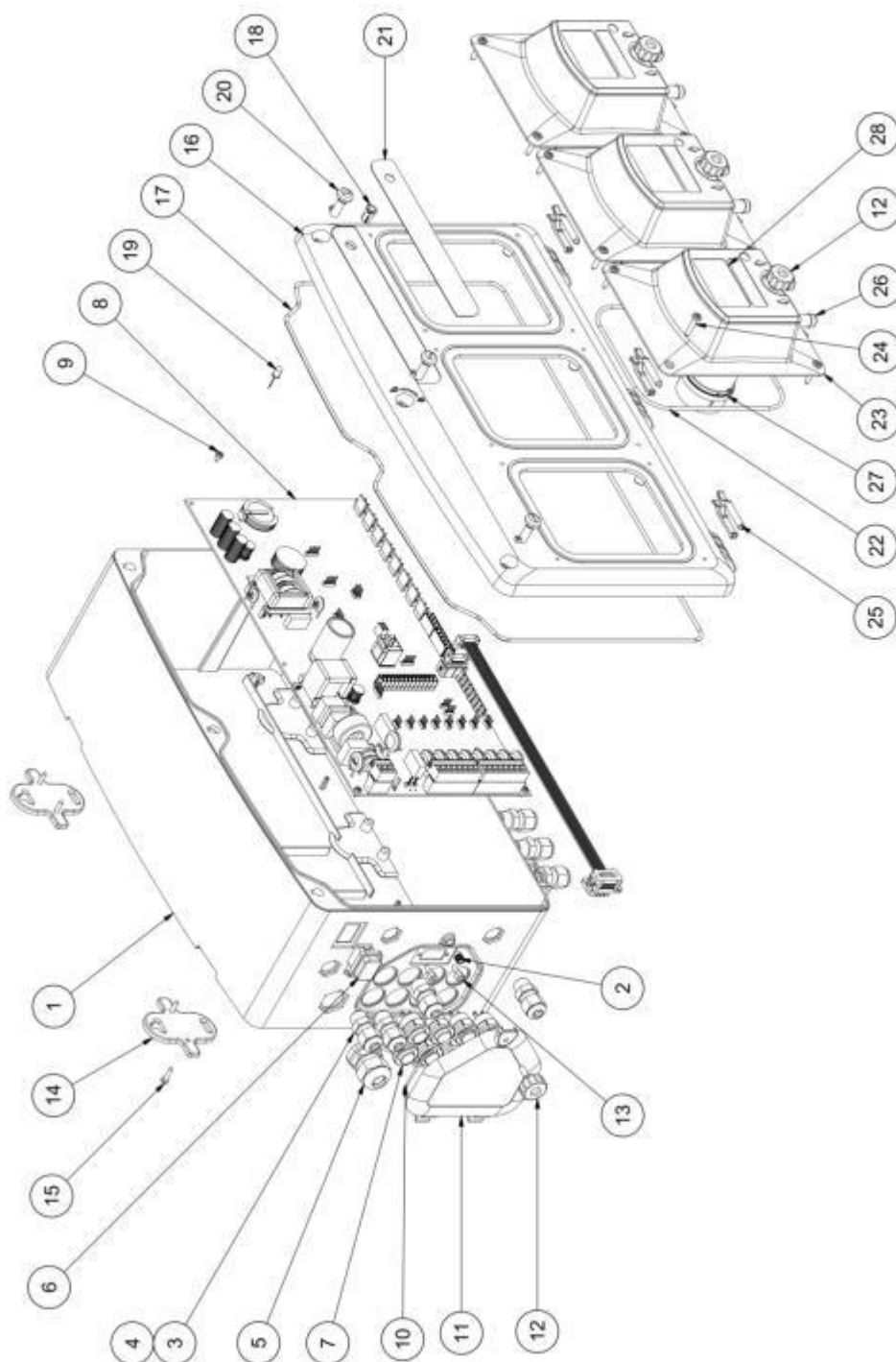
34



The backup file directory can be found under **Settings->Data Folder**.

- Run a **complete upload**.
- Reset the statistics.

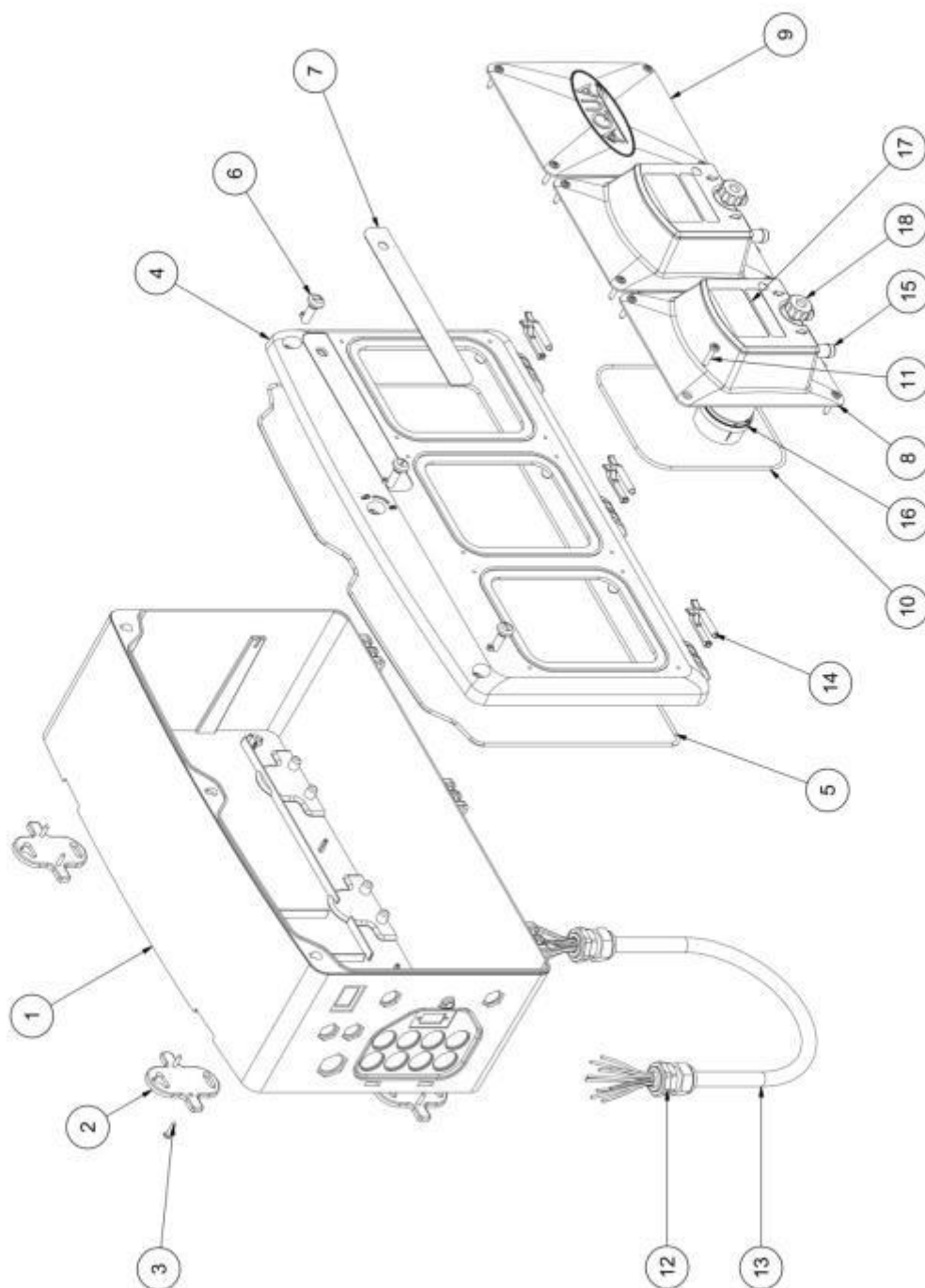
## ESPLOSI/EXPLODED VIEW



## MODULO CENTRALE

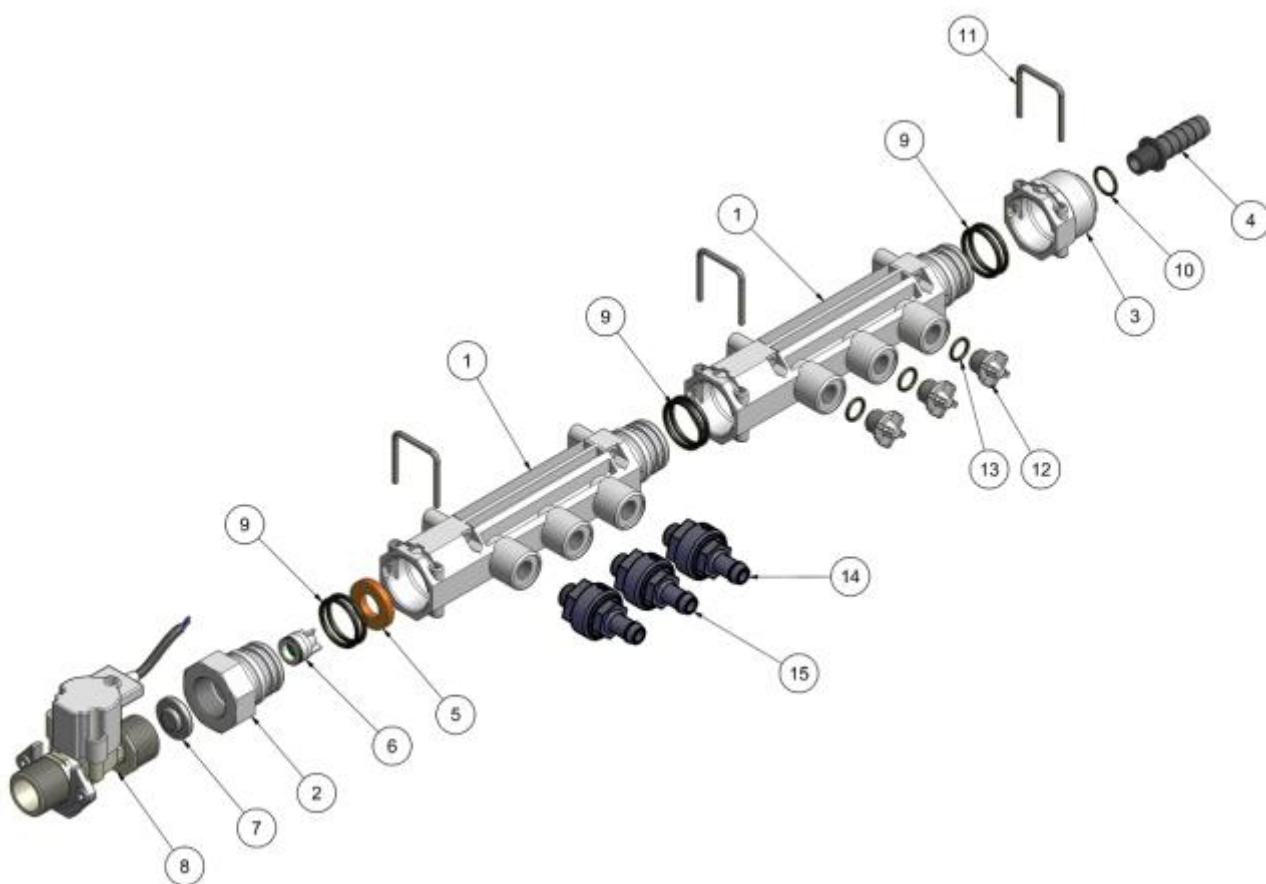
| N° | Codice       | Descrizione                                                            |
|----|--------------|------------------------------------------------------------------------|
| 3  | ADSP6000424  | PRESSACAVO PASSO PG7 - 1900.07 - NERO                                  |
| 4  | ADSP6000626  | DADO PG7 NERO                                                          |
| 5  | ADSP6000453  | PRESSACAVO + DADO PG11 NERO (vn)                                       |
| 6  | ADSP9400002  | INTERRUTTORE ON-OFF CON 2 FILI COMPLETO DI CAPOCORDA FASTON FEMMINA    |
| 7  | KC02PPU0030T | CAVO 2 POLI L= 300 CON PULSANTE - ECOWASH LIGHT                        |
| 8  | ADSP6000865  | SK - ECOWASH LIGHT 8 MOTORI CON PRED. CONSOLE STANDARD (85-265)Vac     |
| 9  | ADSP6000705  | VITE M 2,9 X 6,5 UNI 6954 (AF-TCTC) INOX A2                            |
| 10 | ADSP5007073  | OR - RIF. 2362 - NBR                                                   |
| 11 | ADSP3400029  | COPERCHIETTO CONNESSIONI ECOWASH LIGHT ABS BIANCO                      |
| 12 | ADSP8000029L | MANOPOLA FISSAGGIO COPERCHIO POMPE PER ECOWASH                         |
| 13 | JVESA13L200T | VITE ESAGONALE PER CONNETTORE BF0091P380FT L=13,2mm                    |
| 14 | ADSP3400010  | STAFFA FISSAGGIO A PARETE MODULO ECOWASH ABS BIANCO                    |
| 15 | ADSP6000749  | VITE 3X8 (TCTC) INOX A2 - SERIE HILO                                   |
| 17 | ADSP5007103  | GUARNIZIONE NBR A FILO D.2,62                                          |
| 19 | KC02PRN0055T | CAVO CON LED L.550 ROSSO NERO - ECOWASH LIGHT                          |
| 20 | ADSP3400007  | VITE CHIUSURA COPERCHIO CASSA ECOWASH ABS BIANCO                       |
| 22 | ADSP5007194  | OR - RIF. 3525 - NBR                                                   |
| 23 | EWLAP1LS000  | ASSIEME POMPA ECOWASH LIGHT 20LT TUBO SANTOPRENE                       |
|    | EWLAP1HS000  | ASSIEME POMPA ECOWASH LIGHT 100LT TUBO SANTOPRENE                      |
| 24 | ADSP6000767  | VITE M 3,5 X 19 UNI 6954 (AF-TCTC) INOX A2                             |
| 25 | ADSP3400031  | FORCELLA PER FISSAGGIO MODULO POMPA/COPERCHIO ECOWASH LIGHT ABS BIANCO |
| 26 | ADSP8000196  | TUBO SANTOPRENE ECOWASH 20L COMPLETO                                   |
|    | ADSP8000197  | TUBO SANTOPRENE ECOWASH 100L COMPLETO                                  |
| 27 | ADSP8000268R | MOTORE ROTALINK - 100L PER LAVANDERIA ECOWASH - (SP3500)               |
|    | ADSP8000270  | MOTORE 20L PER ECOWASH ALBERO D.6 24VDC                                |
| 28 | ADSP3400005  | VETRINO PER COPERCHIO POMPA ECOWASH 100LT                              |
|    | ADSP3400004  | VETRINO PER COPERCHIO POMPA ECOWASH 20LT                               |

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## MODULO AUSILIARIO

| N° | Codice       | Descrizione                                                            |
|----|--------------|------------------------------------------------------------------------|
| 2  | ADSP3400010  | STAFFA FISSAGGIO A PARETE MODULO ECOWASH ABS BIANCO                    |
| 3  | ADSP6000714  | VITE M 2,9 X 13 UNI 6954 (TCTC) INOX A2                                |
| 5  | ADSP5007103  | GUARNIZIONE NBR A FILO D.2,62                                          |
| 6  | ADSP3400007  | VITE CHIUSURA COPERCHIO CASSA ECOWASH ABS BIANCO                       |
| 8  | EWLAP1LS000  | ASSIEME POMPA ECOWASH LIGHT 20LT TUBO SANTOPRENE                       |
|    | EWLAP1HS000  | ASSIEME POMPA ECOWASH LIGHT 100LT TUBO SANTOPRENE                      |
| 9  | ADSP3400028  | TAPPO MODULO POMPE ECOWASH LIGHT ABS BIANCO                            |
| 10 | ADSP5007194  | OR - RIF. 3525 - NBR                                                   |
| 11 | ADSP6000767  | VITE M 3,5 X 19 UNI 6954 (AF-TCTC) INOX A2                             |
| 12 | ADSP6000453  | PRESSACAVO + DADO PG11 NERO (vn)                                       |
| 13 | ADSP6002480  | CAVO LIYY 10x0,75 DIN 47100 PER ECOWASH LIGHT                          |
| 14 | ADSP3400031  | FORCELLA PER FISSAGGIO MODULO POMPA/COPERCHIO ECOWASH LIGHT ABS BIANCO |
| 15 | ADSP8000196  | TUBO SANTOPRENE ECOWASH 20L COMPLETO                                   |
|    | ADSP8000197  | TUBO SANTOPRENE ECOWASH 100L COMPLETO                                  |
| 16 | ADSP8000270  | MOTORE 20L PER ECOWASH ALBERO D.6 24VDC                                |
|    | ADSP8000268R | MOTORE ROTALINK - 100L PER LAVANDERIA ECOWASH - (SP3500)               |
| 17 | ADSP3400004  | VETRINO PER COPERCHIO POMPA ECOWASH 20LT                               |
|    | ADSP3400005  | VETRINO PER COPERCHIO POMPA ECOWASH 100LT                              |
| 18 | ADSP8000029L | MANOPOLA FISSAGGIO COPERCHIO POMPE PER ECOWASH                         |



| TRONCHETTO DI FLUSSAGGIO |             |                                                                          |
|--------------------------|-------------|--------------------------------------------------------------------------|
| 1                        | A6012520    | COLLETTORE 3 VIE PER KIT FLUSSAGGIO ECOWASH LIGHT                        |
| 2                        | A6012600    | TAPPO COLLETTORE FILETTATO G3/4" - TRONCHETTO FLUSSAGGIO ECOWASH LIGHT   |
| 3                        | A6012530    | TAPPO COLLETTORE TRONCHETTO FLUSSAGGIO ECOWASH LIGHT C/FILETTO FG1/4"    |
| 4                        | MB050350    | PORTAGOMMA IN PLASTICA DITTO FILETTO M. 1/4" PER TUBO D.10               |
| 4                        | MB050380    | PORTAGOMMA IN PLASTICA DITTO FILETTO M. 1/4" PER TUBO D.13               |
| 5                        | ADSP4000648 | RONDELLA BLOCCO VRN IN -D15X29- KIT FLUSSAGGIO ECOWASH LIGHT             |
| 6                        | A9500500    | KIT VALVOLA DI NON RITORNO "VNR IN" PER VALVOLA A SFERA AQUA MIX         |
| 7                        | PD3314      | GUARNIZIONE CON FILTRO PER RACCORDO                                      |
| 8                        | ADSP6000671 | ELETTROVALVOLA 3/4" M/M 24VDC NC IP 67-2MT PER KIT FLUSSAGGIO ECOWASH    |
| 9                        | ADSP5007106 | OR - RIF. 3100 - VITON NERO                                              |
| 10                       | ADSP5007088 | OR - RIF. 2056 - DUTRAL                                                  |
| 11                       | MB010580    | CAVALLOTTO FORCELLA F.3 INOX PER TRONCHETTO FLUSSAGGIO ECOWASH LIGHT     |
| 12                       | A6013010    | TAPPO SFIATO G1/4" - LOGO AQUA                                           |
| 13                       | ADSP5007085 | OR - RIF. 2043 - DUTRAL                                                  |
| 14                       | ADVIL000A   | VALVOLA INIEZIONE ECOWASH MOD.AQUA 1/4"-8X12 PP-PTFE-DT-HAST BIANCA      |
| 15                       | ADVIL100A   | VALVOLA INIEZIONE ECOWASH MOD.AQUA 1/4"-8X12 PP-PTFE-VT-HAST BIANCA-NERA |



## ***AQUA eco•wash•light***

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