



DGTEC

Model OPL









DECLARATION OF CONFORMITY

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Address:	Via T. Crotti, 1 - 42018 - San Martino in Rio (RE)

Hereby declares that the products named:

• DGTEC

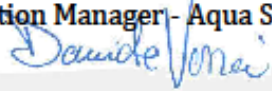
Responds to the principal features of the following European Directives:

- **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) - 08 settembre 2020

Davide Vezzani
Certification Manager - Aqua S.p.A.



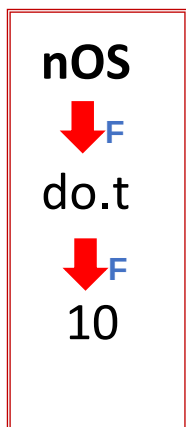
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 Società soggetta al controllo della Consob (Codice di Borsa: AQUA) - Cap. Sociale: 10.000.000,00 - Sede Legale: 42018 San Martino in Rio (RE) - 42018 San Martino in Rio (RE) - Sede Operativa: Via Crotti, 1 - 42018 San Martino in Rio (RE) - Tel. 0522/848100 - Fax 0522/848101 - Email: aqua@acqua.it



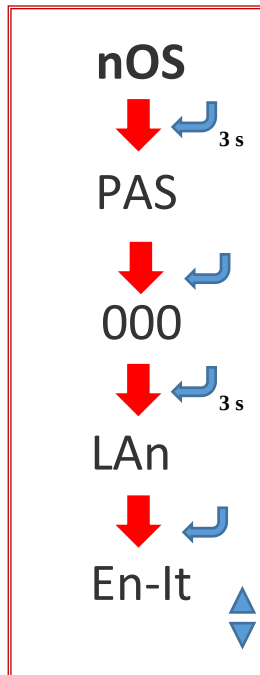
QUICK START

The first time, with solenoid valve not active, it will read "noS", indicating that the signal is absent.

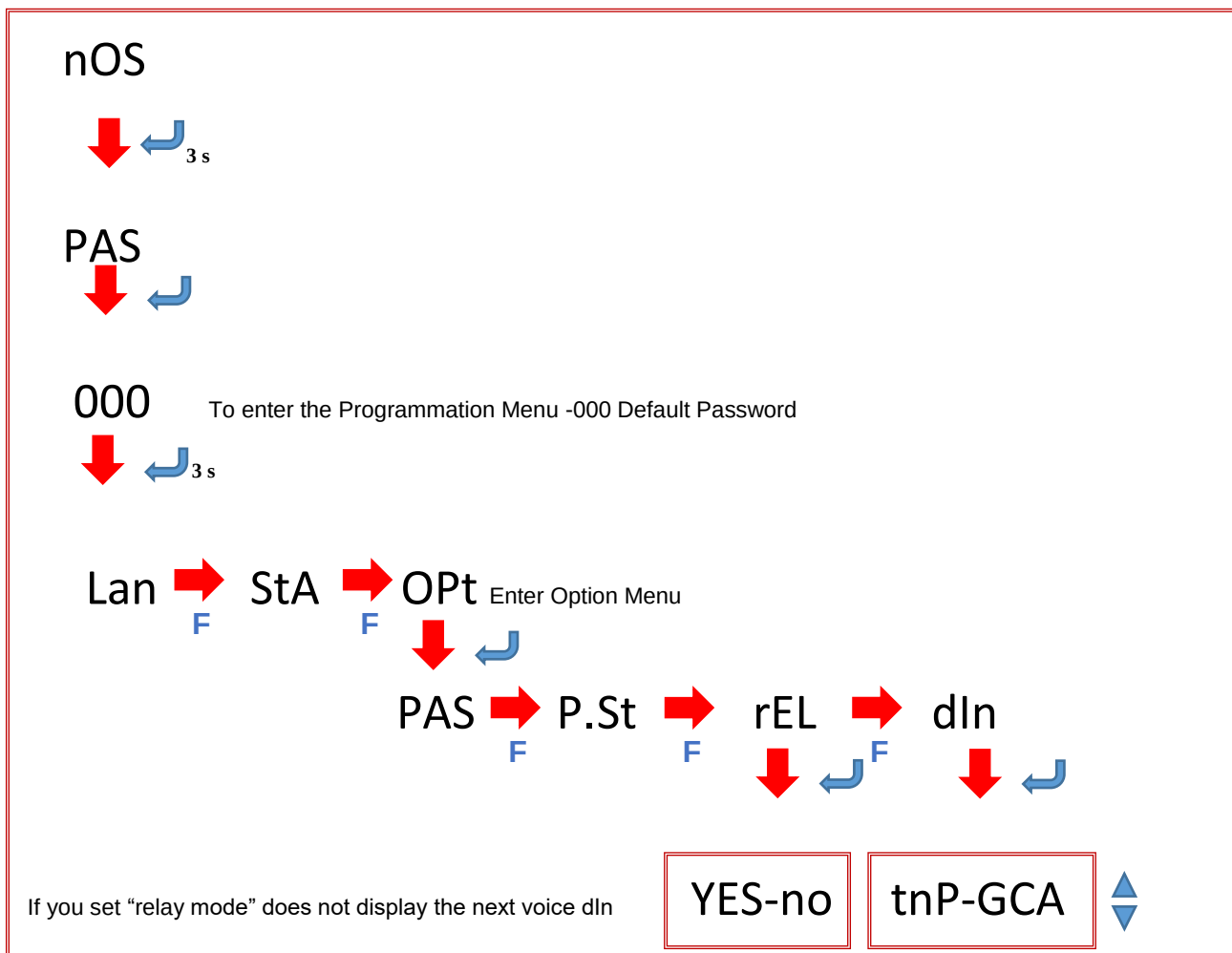
USER Menu



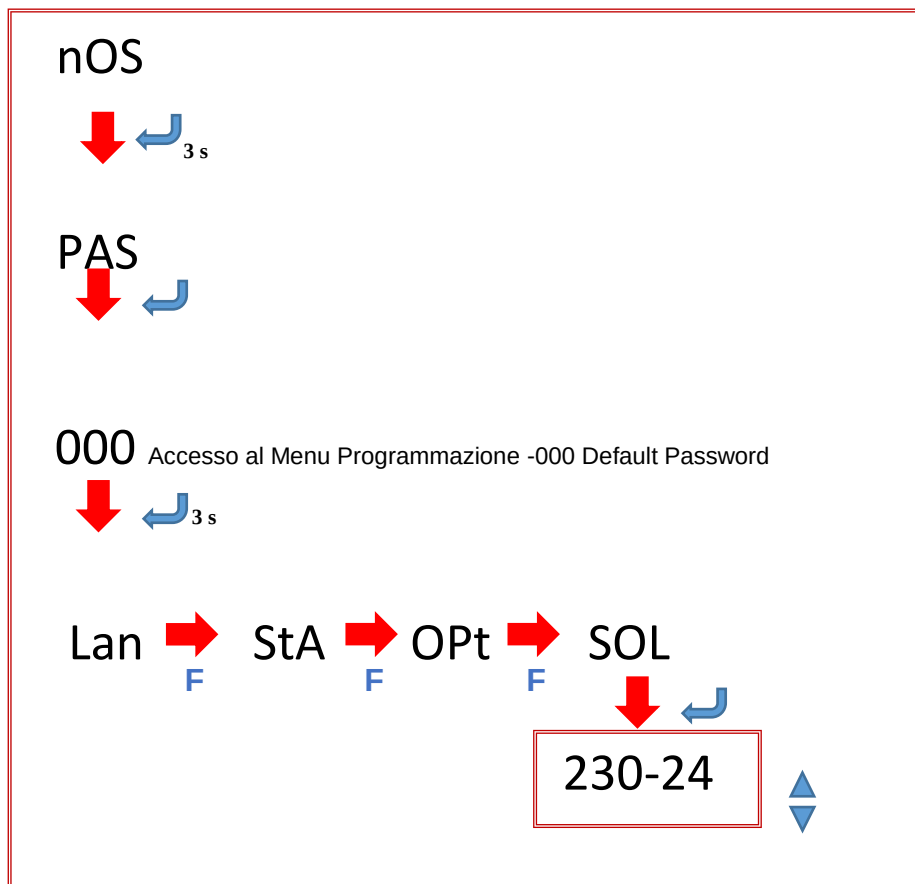
Change language - Default Language: English



Change Operating Mode



To confirm press Enter; to come back to Initial Menu from Programming Menu press Enter for 3 s.

Set solenoid valve 24 V (Lingua Italiano- Elettrovalvola non attiva- Modo Funzionamento Relè)

To confirm press Enter

To come back to Initial Menu from Programming Menu press Enter for 3 s.

INSTALLATION

- Make sure the suction tube is placed in the product container and then connected to the pump suction fitting (marked with the ▲ symbol on the cover) and tightened with the correct clamp.
- The delivery pipe must be connected to the delivery fitting of the pump (marked on the cover with ▼) and tightened with the correct clamp. Insert it in the detergent dosing tank of the washing machine.



The pump can operate with input signals at 230 V or 24 V

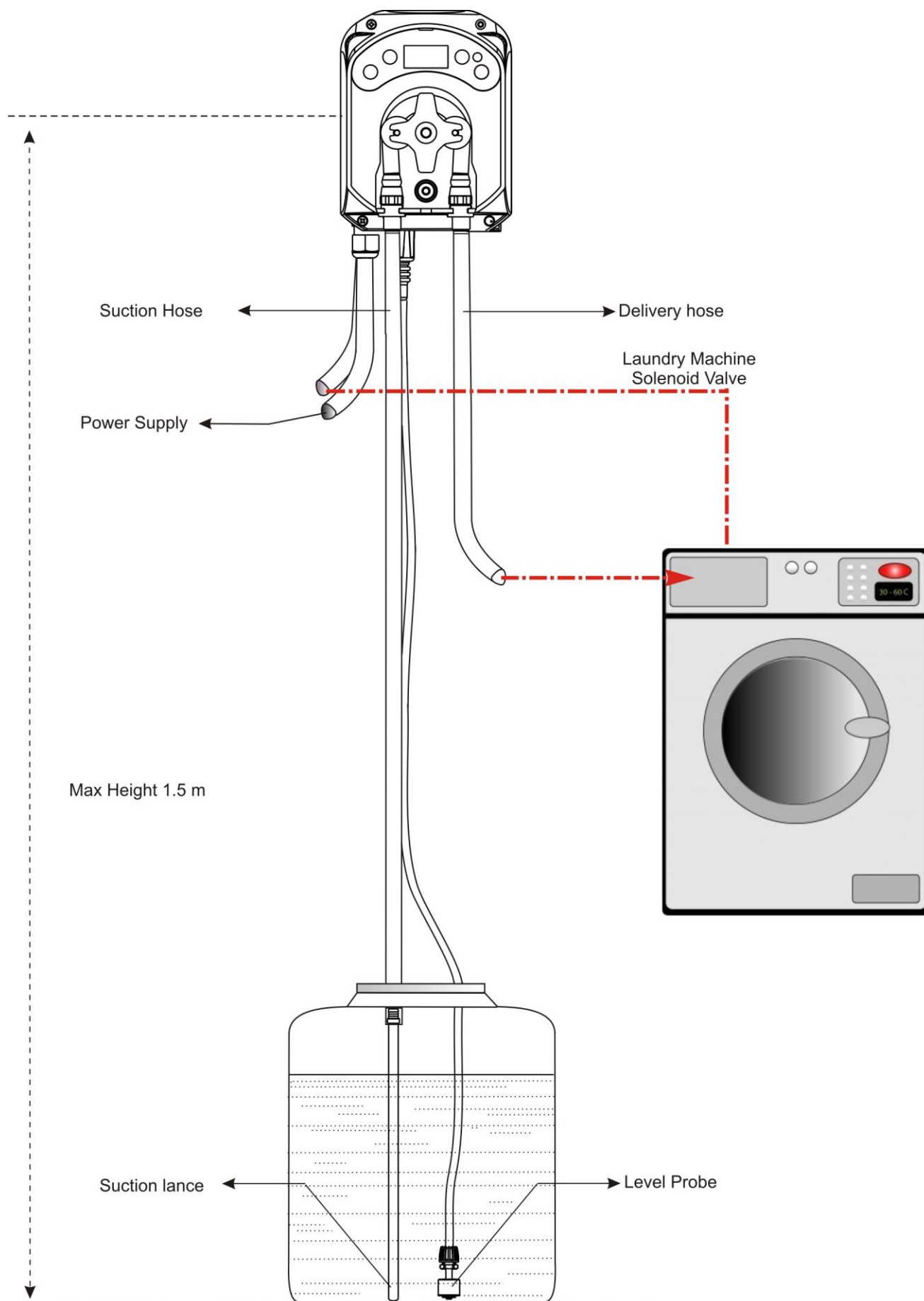


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1.0 INTRODUCTION

The range of “**Dgtec**” programmable digital peristaltic pumps is designed to manage dishwashers and/or washing machines and consists of the following models:

- *ST Model: single solenoid valve programmable digital pump*
- *2ST Model: double solenoid valve programmable digital pump*
- *CD Model: adjustable digital pump with conductivity reading*
- *OPL Model: programmable digital pump for washing machine*
- *Timer Model: for weekly or daily programmable timed dosage*

The OPL model allows an easy, flexible and precise dosing of products for washing machines.

The pump can be programmed in 2 modes:

- **DOSING CYCLE**

- **RELAY**

The "Dosing Cycle" mode will allow the adjustment of the dosing depending on the time set, or on the quantity of product in g/kg (grams for Kg of laundry). The Relay mode enables dosing by directly controlling the inhibitory signal coming from the electrovalve of the washing machine.

1.1 WARNINGS



Before starting assembly, carefully read these instructions and follow them during installation.



Failure to follow the instructions of this manual may cause personal harm and damage to the device and/or the system.

We recommend reading the label reported on the pump and following the directions below:

- ✓ ***The pressure of the injection point must be lower or equal to the pump rated value!***
- ✓ ***When you receive the product, check the integrity of the pump and all of its parts. Should there be any anomalies, promptly notify qualified personnel before performing any operations.***
- ✓ ***This manual must be kept in a safe place for future references.***
- ✓ ***Before installing the pump make sure that the details provided on the adhesive plate attached to the pump correspond to those of the electrical system.***
- ✓ ***Do not use the device with wet hands or feet!***
- ✓ ***Do not leave the device exposed to the weather!***
- ✓ ***Make sure the peristaltic tube is compatible with the liquid to be dosed!***
- ✓ ***The device must be used by trained personnel!***
- ✓ ***If any irregularities are experienced during pump operation, cut off the power supply and contact one of our customer care centres for any repairs!***
- ✓ ***In order for the pump to operate correctly it is necessary to use original spare parts or accessories. The producer will not be held responsible for any fault or damaged provoked by tampering or non-original spare parts and accessories***
- ✓ ***The electrical system must be complying with the standards of the Country it is installed in.***
- ✓ ***The operating ambient temperature must not exceed 40°C with a relative humidity of 90% at 90°C.***

1.2 REFERENCE STANDARDS

Our pumps are manufactured according to General Standards in force and in compliance with the following European Directives:

n° 2014/30/CE “ E.M.C.

n° 2014/35/CE “DBT Low Voltage Directive”

n° 2011/65/UE , 2012/19/UE “direttive RoHs e WEEE”

1.3 TECHNICAL FEATURES

1.3.1 ELECTRICAL FEATURES



For the power supply value we recommend reading the label on the pump!

1.3.2 PERFORMANCES

- Maximum height of the suction tube: 1.5 m
- Flow rate and back-pressure: see Tab. 1, read the label on the pump to identify the corresponding model.

Codes	Power supply (*)	Motor Type	Signal Input (V)	Flow rate (l/h)	Backpressure (bar)	Peristaltic Tube
ADD7020000P0L000 (hose 8x12)	230 VAC	24 VDC	24/ 230	20	0	Pharmed
ADD7020000B0L000 (hose 8x12)	230 VAC	24 VDC	24/230	20	0	Silicone
ADD702000000L000 (hose 8x12)	230 VAC	24 VDC	24/230	20	0	Santoprene
ADD7020000P00000 (hose 6x9)	230 VAC	24 VDC	24/ 230	20	0	Pharmed
ADD7020000B00000 (hose 6x9)	230 VAC	24 VDC	24/230	20	0	Silicone
ADD7020000000000 (hose 6x9)	230 VAC	24 VDC	24/230	20	0	Santoprene

Tab. 1

(*) Available to order versions with 24V power supply.

- Temperature of the environment: 0 ÷ 45°C
- Packaging and transport temperature: -10 ÷ 50 °C
- Protection degree: IP65

2.0 INSTALLATION

2.1 GENERAL RULES

Pump installation must be carried out as follows:

- Away from sources of heat in dry locations, at a maximum temperature of 40°C and a minimum of 0°C.
- In a ventilated location that can be easily accessed for periodical maintenance.
- Above the level of the liquid that needs to be dosed, at a maximum height of 1.5 metres.
- Do not install the pump above the tank when using liquids that emit fumes, unless it is sealed shut.

2.2 INSTALLATION KIT

The pump is supplied with all items required for correct installation, especially:

- Crystal PVC ø 6x9 suction and delivery tubes (cod. ADSP6000379- 6 m);
Crystal PVC ø 8x12 suction and delivery tubes (cod. ADSP6000651- 6 m);
- Fixing bracket (code ADSP8000025);
- Wall plugs and screws (code ADSP6000041);
- Blocking clamps (2) of the suction and delivery pipe

The pump can be connected to a level probe that is not supplied as standard:

- Level probe with BNC (code ADSLG4) in Fig. 2 ;

Optional will also:

- Suction lance with hose (cod. ADSP3400019) in Fig.3;

The complete kit is shown in Figure 1.

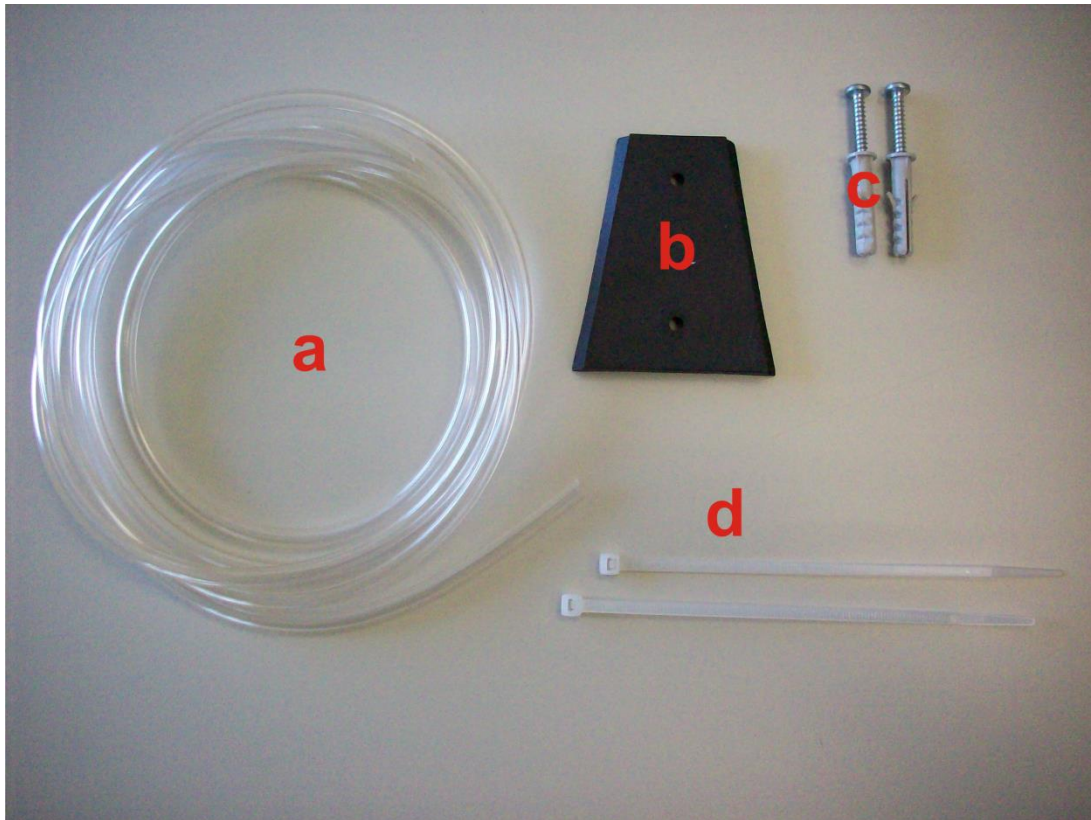


Fig. 1 - Installation Kit



Fig. 2 - Level probe (Optional)



Fig. 3 – Suction Lance (Optional)

2.3 ASSEMBLY



We always recommend wearing protective masks, gloves, goggles and any other PPE during all installation steps and when handling chemical products.

WALL MOUNTING

Proceed as follows to secure the pump to the wall:

- Fix the bracket to the wall using the wall plugs and screws supplied.
- Place the pump on the bracket.
- Ensure the fixing is stable.



It is also recommended to install the pump in a dry environment, away from heat sources and exhaust vapours.

2.4 ELECTRICAL CONNECTIONS



Before performing any intervention on the pump, disconnect the power supply voltage of the machine!

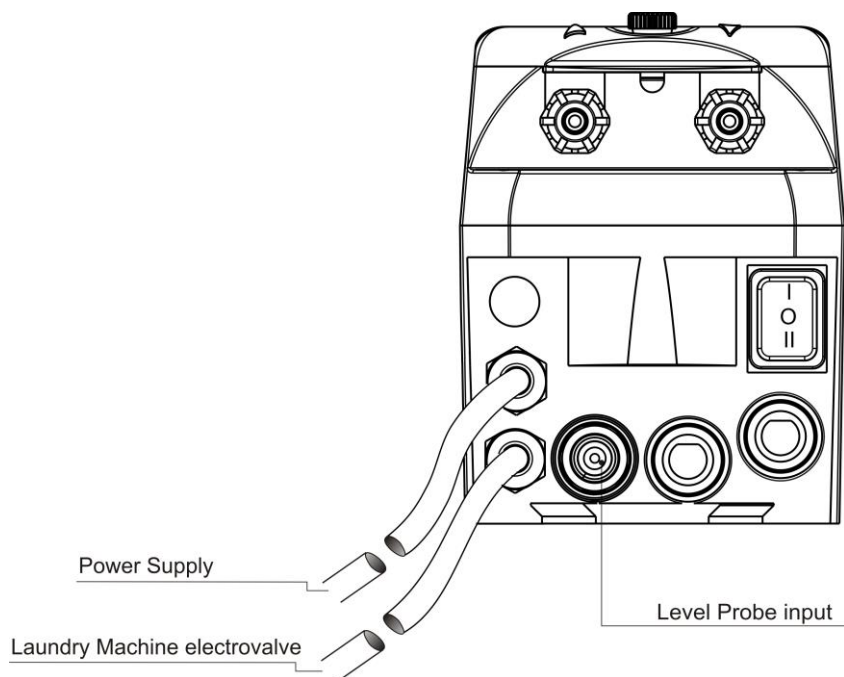


Fig. 4- View from below

Connect the pump cable to a voltage that is compatible with the one on the label.
For the connections refer to Fig. 4.

2.5 HYDRAULIC CONNECTIONS

Refer to the "Installation" section of the Quick Start.

3.0 PROGRAMMING

3.1 MAIN FEATURES

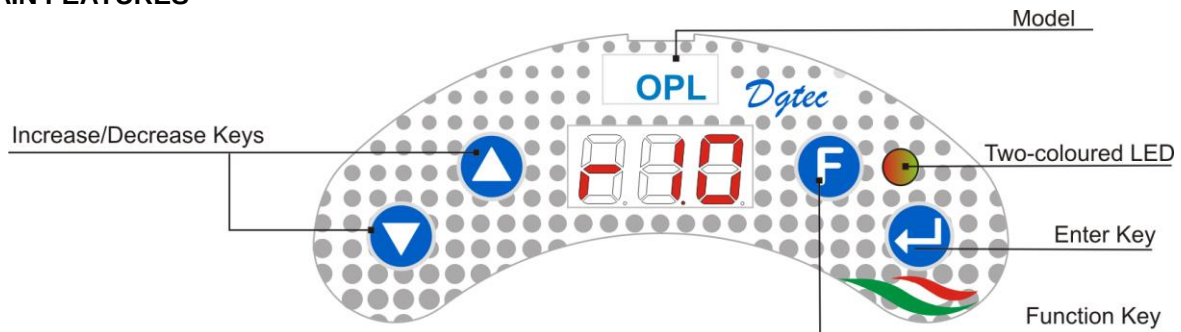


FIG. 5- USER INTERFACE



The Increase/Decrease keys allow to change the numerical values and scroll through the lists of options for all the available menu entries.



The Enter key allows to access and exit from the various entries of the submenu. Pressing the key for 3 seconds allows, from the Initial Menu, to access the Programming Menu and to go back to the Menu one level up from the main entries on a Menu;



The Function key allows to browse through the Menu entries. By pressing the key for 3 seconds from the initial page, you can access the User Menu;

TWO-COLOURED LED

The two-coloured LED displays the following conditions:

- **Steady green:** the pump is active;
- **Flashing green:** the pump is dosing;
- **Steady red:** the pump is not active;
- **Flashing red:** there is an alarm;
- **Steady Orange:** if you are browsing the Programming Menu;
- **Flashing orange:** Pump priming in progress;



The switch has three positions:

— : the pump is active (ON)

O : the pump is off (OFF)

≡ : the pump is priming (MOM)

The MOM position is monostable, therefore after setting the switch to MOM, when it is released the switch automatically goes back to OFF.

The pump doses for 60 seconds at the maximum speed; if the MOM key is pressed again before the 60 seconds elapse, the priming is interrupted.

OPERATION

The OPL pump doses chemicals to adjust the washing in the tank of the washing machine, in two different modes:

- **programmable cyclic mode:** runs several *Dosing Cycles* composed by a Delay, a Dosing and a Block phase at the activation of a signal coming from the electrovalve of the washing machine. You can adjust the duration of the phases;
- **relay mode:** the pump starts dosing at the activation of a signal coming from the electrovalve of the washing machine, and stops dosing when the alarm is deactivated;

A dosing cycle is activated when the signal from the washing machine is active and stabilized. A delay time, adjustable from 0 (disabled) and 999 seconds, will then start: during this time, the pump is steady and awaits to start the dosing. Afterwards, the product dosing will be activated, which will last from 1 second to 999 seconds. At the end of the dosing phase, the pump waits for the Block phase to end. The duration of this phase is adjustable from 0 (block deactivated) to 99 minutes.

At the end of the dosing cycle, the pump will be ready to run another one, which will start in case the signal of the electrovalve is active and stabilized.



Once the start-up of the dosing cycle is detected (signal active and stabilized), the Delay, Dosing and Block phases will start, ignoring the transitions of the signal coming from the electrovalve of the washing machine

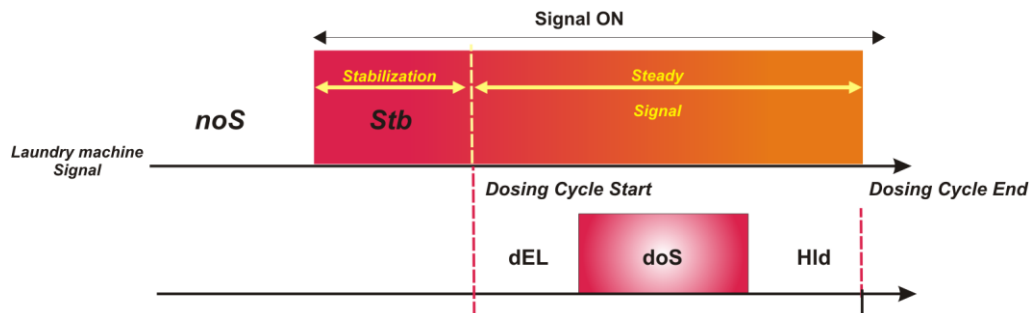


Fig. 6 Start-up of the Dosing Cycle according to the signal of the washing machine

Figures 8 and 9 show the operation schemes of the “Dosing Cycle” and “Relay” modes, in case the signal from the electrovalve is active and stabilized.

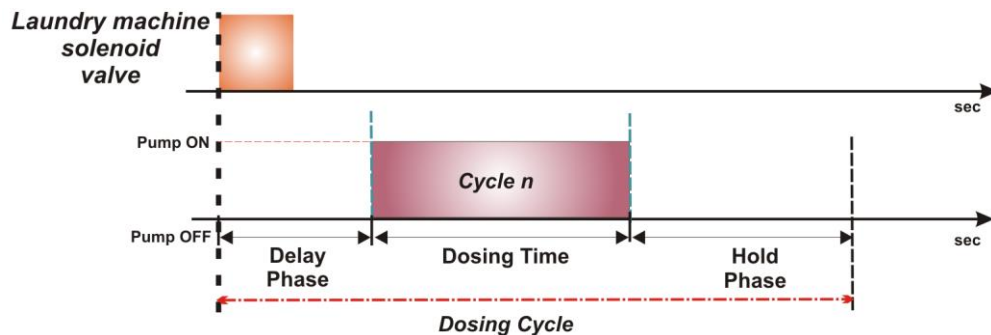


Fig. 7 - Operation scheme of the Dosing Cycle mode

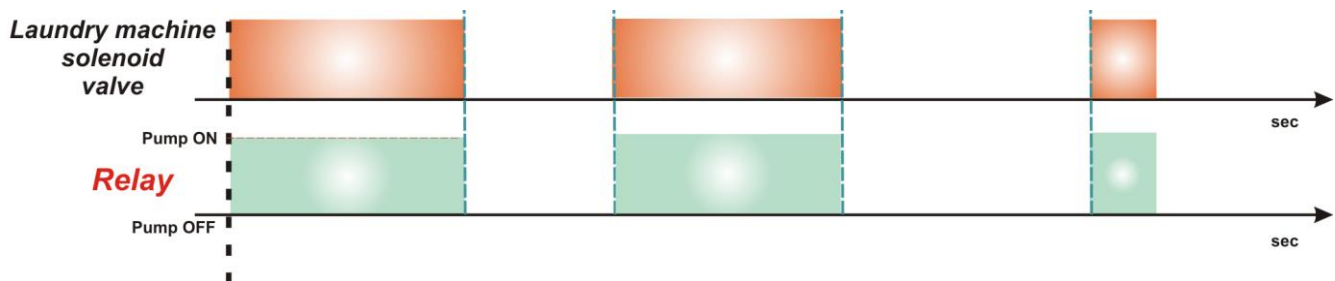


Fig. 8 - Operation scheme of the Relay mode

Depending on the operating mode chosen, the dosing time can be programmed directly (*Timed Dosing Cycle*), or calculated on the basis of the capacity of the washing machine and of the quantity of product to be dosed for each kg of laundry (*Quantity Dosing Cycle*).

The amount of product per kg of laundry will be calculated on the basis of the following parameters:

- desired amount of active principle per kg of laundry;
- percentage concentration of the active principle of the product used;
- density (in g/l) set for the product used.

Formulas [3-1,2] indicate the calculation made to obtain the dosing time of the pump in the *Quantity Dosing Cycle*.

$$\text{dos.t. (sec)} = \frac{\text{g/kg Active Princ.} * \text{kg Laundry Mach.}}{\text{Product Density g/l} * \text{Concentr. in \%}} \times \frac{3600}{\text{Flow rate (l/h)}} \quad [3-1]$$

with:

$$\text{Product Quantity (l/kg)} = \frac{\text{g/kg Active Princ.}}{\text{Product density g/l} * \text{Concentr. in \%}} \quad [3.2]$$

Example: (Quantity dosing cycle mode)

Washing machine capacity = 8 kg

Active Principle Quantity = 3.0 g/kg

Active Principle Concentration = 20%

Product density = 1150 g/l

Pump flow rate = 6.2 l/h (actual)

$$\text{Product Quantity (l/kg)} = \frac{3.0 \text{ g/kg}}{1150 \text{ g/l} * 0,2} = 0,013 \text{ l/kg} = 13 \text{ ml/kg}$$

$$\text{t. dos. (sec)} = \frac{0,013 \text{ l/kg} * 8 \text{ kg} * 3600 \text{ sec/h}}{6,2 \text{ l/h}} = 60 \text{ sec}$$

The flow rate of the pump can be adjusted by calibration. Calculating the actual flow rate of the pump allows to adjust time or speed, depending on the operation mode chosen (quantity or timed).

In the **Quantity Dosing Cycle** mode, the dosing time is calculated depending on the effective flow rate of the pump (see [3.1]); if the calibration is not carried out, the dosing times will be calculated on the basis of the nominal flow rate value of the pump (see value on the label).

In the **Timed Dosing Cycle** mode, the correction on the basis of the calibrated flow rate (Actual Flow Rate) is carried out on the basis of the speed of the pump, (see [3.3]), while the time set does not change.

$$\% \text{ Speed} = \frac{100\% * \text{Nominal Flow Rate}}{\text{Actual Flow Rate}} \quad [3-3]$$

Example: (Timed dosing cycle mode)

Nominal flow rate = 6 l/h

Actual flow rate = 6.3 l/h

Dosing time: 20 sec.

$$\% \text{ Speed} = \frac{100\% * 6 \text{ l/h}}{6,3 \text{ l/h}} = 95\%$$

During 20 seconds, the dosing speed of the pump will be 95% of the nominal flow rate (see label).

MENU

When the pump is powered, regardless of the status of the switch, for a second the display shows the firmware version as "**r1.2**". It then displays the first entry of the Initial Menu.

You can browse the whole Menu both when the switch is ON and when it is OFF.

The Menu consists of the following submenus:

- **Initial Menu**, which allows to display the status of the pump;
- **User Menu**, which allows to change the main operating parameters;
- **Programming Menu**, which allows to set all of the operating parameters and to display the statistics: this menu can be accessed only by entering a password;

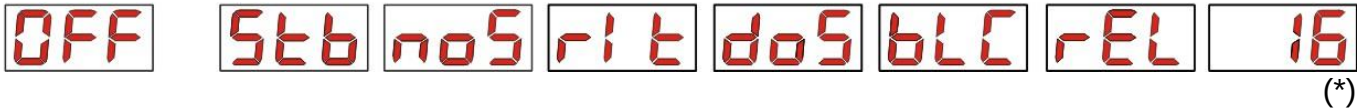
To browse through the Menus refer to ANNEX G - *Menu Map*.

Initial Menu

The first entry of the Initial menu displays one of the following pages, depending on the status of the switch:

Interruttore OFF

Interruttore ON



(*) Value of the countdown expressed in seconds or minutes, displayed alternately to "dL.t", "doS", or "bLC": if the value is in minutes, it will be obtained by the speed of decrease of the value itself;



In case a time in seconds higher than 900 (15 minutes) is selected, the value will be displayed in minutes

noS (Signal not active): displayed in case the signal of the washing machine's electrovalve is not active;

Stb (Stabilizing Signal): blinking value displayed in case the signal coming from the electrovalve of the washing machine is active, but not stabilized yet;

dL.t (Delay Phase): displayed during the programmed Delay (Dosing Cycle functioning), alternately to the countdown values expressed in minutes or seconds;

doS (Dosing Phase): displayed during the dosing of the pump (Dosing Cycle functioning), alternately to the countdown values expressed in minutes or seconds;

bLC (Block Phase): displayed during the block of the pump (Dosing Cycle functioning) after the actual Detergent Dosing phase, alternately to the countdown values expressed in minutes or seconds;

rEL (Relay Mode): displayed during Relay mode, when the switching-on and switching-off phases of the pump are directly controlled by the washing machine through the opening and closing of the electrovalve;

By pushing **F** from the initial page, it is possible to browse through the other sections of the Menu and to display, depending on the modes set:

Timed dosing cycle mode

- set value of dosing time **do.t**, from 1 to 999 seconds;

Quantity dosing cycle mode

- value of the quantity of active principle **G.C.A** set in grams per kg of laundry, from 0.1 to 20.0;
- value of the calculated dosing time **do.t**, from 0 to 999 seconds;



In case the dosing time calculated (Quantity Dosing) is higher than 999 seconds, the dosing time will be saturated to the value of 999 seconds, and the C.d.t. value will blink!

By pushing the **F** key from the set or calculated time value, you will go back to the first section.

In Relay mode, no section will be displayed when pushing **F**.

From any entry of the Initial Menu you can go to the:

- **Programming Menu** by pressing **Enter** for 3 seconds;
- **User Menu** by pressing the **F** key for 3 seconds;

User Menu

The User Menu allows to set the main pump dosing parameters.

You can browse through the User Menu with the **F** key and display, depending on the set modes:

- **Prl**: allows to prime the pump without using the switch. You can start or stop the priming with the **Enter** key. The display shows a flashing "**Prl**" and the pump starts running at top speed.

Timed dosing cycle mode

- **do.t**: duration of the Dosing Phase, that can be set from 1 to 999 seconds;

Quantity dosing cycle mode

- **G.C.A**: grams per kg of laundry, that can be set within a range from 0.1 to 20.0;

It will be possible to modify the parameters only in case they have been enabled from the Settings Menu, i.e.:

- **OnL** (On-line change) enabled;

From the User Menu you can go back to the Initial Menu by pressing the **F** key for 3 seconds.



If there are one or several active alarms, every page of the Initial Menu and of the User Menu will be alternated to the entry that reports the alarm with the top priority. (see Alarm section)

Programming Menu

The Programming Menu allows to set all of the pump operating parameters and can be accessed only by entering the password.

The Programming Menu can be accessed only using the Initial Menu: after pressing **Enter** for 3 seconds, the display shows "**PAS**", the LED turns orange and is steady. Then press **Enter** again and on the password selection menu the first digit of "000" starts flashing. With the **▲** and **▼** keys you can increase/decrease the value displayed, with **Enter** you can scroll and select the desired digit. After setting the correct password, press **Enter** again for 3 seconds.

3.2 QUICK START-UP

This section features the steps to carry out to use the pump straight away. For further details on operation, refer to section 3.3 "Advanced Programming".

3.2.1 QUICK START-UP - Timed Dosing Cycle Mode

These are the fundamental parameters to be set to activate the pump:

Delay Time – Dosing Time – Block Time

From the User Menu you can proceed quickly with the steps below:

- Prime the pump;
- Dosing time setting;

Here below are the pump default parameters:

- On-line Change from User Menu values enabled;
- Delay Phase Duration: 10 sec.;
- Block Phase Duration: 10 min.;
- Time of Stabilization of the Signal from the electrovalve of the washing machine: 10 sec.;

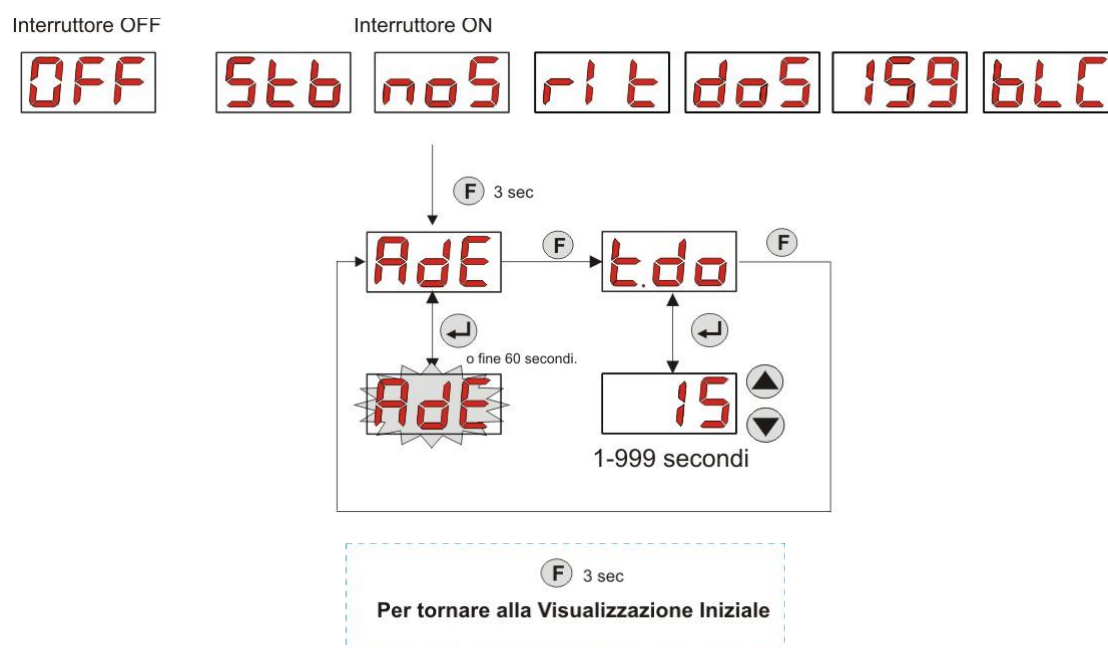
USER MENU Timed dosing cycle

Fig. 9 - Standard programming from Timed Mode User Menu

3.2.2 QUICK START-UP - Quantity Dosing Cycle Mode

These are the necessary parameters to ensure pump operation:

***Delay Time – Grams per kg of laundry – Product Density – Product Concentration –
Block Time – Washing machine capacity***

From the User Menu you can proceed quickly with the steps below:

- Prime the pump;
- Setting the quantity of active principle to be dosed per kg of laundry;

Here below are the pump default parameters:

- On-line Change from User Menu values enabled;
- Delay Phase Duration: 10 sec.;
- Block Phase Duration: 10 min.;
- Time of Stabilization of the Signal from the electrovalve of the washing machine: 10 sec.;
- Washing machine capacity: 8 kg;
- Product Concentration: 100%;
- Product Density: 1000 g/l;

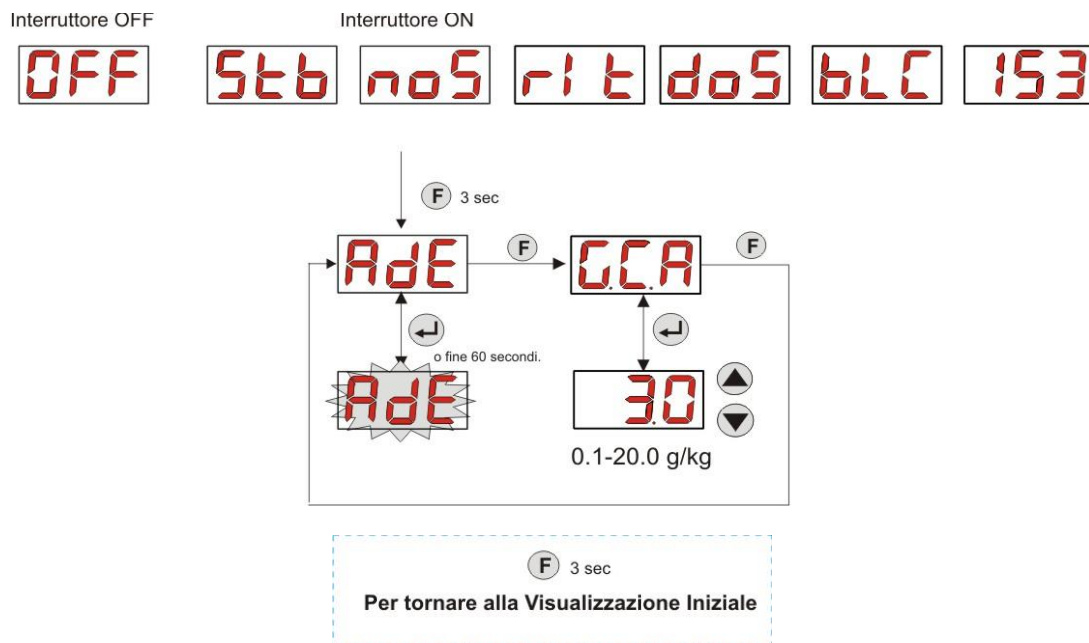
Quantity Dosing cycle USER MENU

Fig. 10 - Standard programming from Quantity Mode User Menu

3.3 ADVANCED PROGRAMMING

Here below are the various features of the **Programming Menu** in greater detail.

 **Every parameter that is changed in the pump programming is saved when you go back to the initial display. If the pump power supply is disconnected before going to the stand-by display, programmed data is lost.**

3.3.1 Setting the Language

From the **LAn** entry you can choose between Italian **It** and English **En** via the ▲ ▼ keys. Use **Enter** to enter and exit. (Fig. 12)

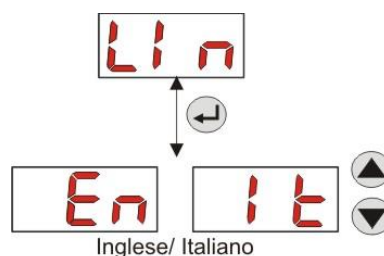


Fig. 11- Setting the Language

3.3.2 Displaying and Resetting Statistics

By browsing the Programming Menu with the **F** key after **OPT**, the **StA** will be displayed. From this section, you will access the pump statistics Submenu.

These are the parameters saved during pump operation:

- Number of activations of the **CIC** signal coming from the electrovalve of the washing machine, within a range from 0 to 999999, with the following format:
 - **0 - 999** : number of cycles from 0 to 999;
 - **1.00 - 9.99** : number of cycles from 1000 to 9999;
 - **10.0 - 99.9** : number of cycles from 10000 to 99999;
 - **100. - 999.** : number of cycles from 100000 to 999999;

- The pump's overall operating time (dosing) **P.d.t**, from 0 to 999 hours, with the following format:
 - **h.mm** up to 9 h and 59 m
 - **hh.m** up to 99 h and 59 m (minutes expressed in tens)
 - **hhh** up to 999 h
- The total amount of product dosed by the pump **P.d.t**, from 0 to 999999 litres, with the following format:
 - **0 - 999** : quantity of product from 0 to 999 l;
 - **1.00 - 9.99** : quantity of product from 1000 to 9999 l;
 - **10.0 - 99.9** : quantity of product from 10000 to 99999 l;
 - **100. - 999.** : quantity of product from 100000 to 999999 l;

To reset each of the above-mentioned fields, just access from the numerical value the **rSt** reset entry with the F key and from there select **YES**, confirming with **Enter**: the corresponding reset value will be visualized.

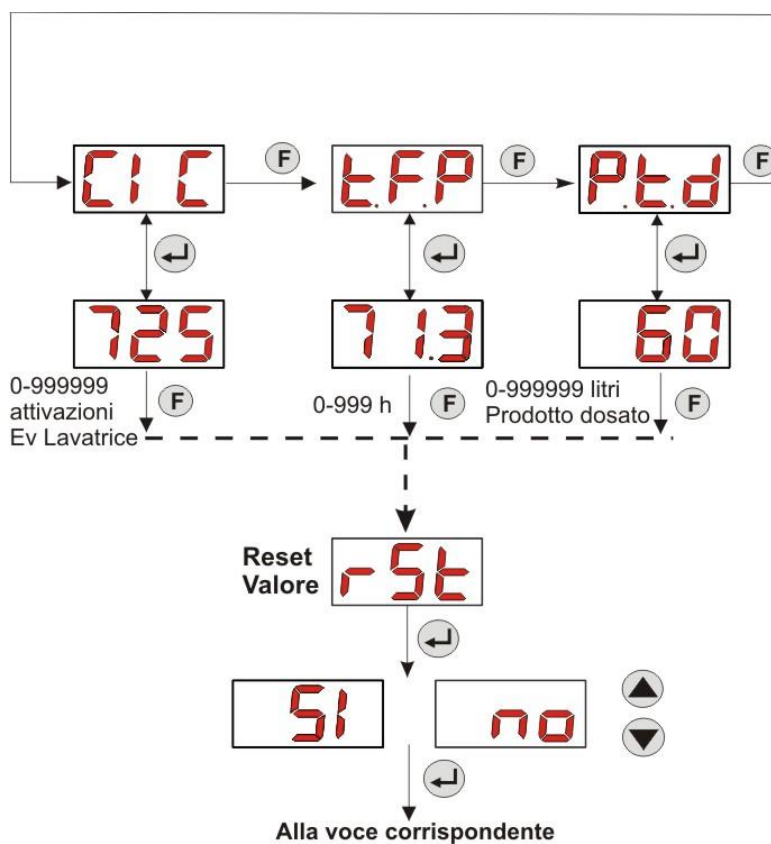


Fig. 12- Statistics Menu

To go back to the Programming Menu press **Enter** for 3 seconds.

3.3.3 Selection of the Parameters - Timed Dosing Cycle

By browsing the Programming Menu with the **F** key after **OPt**, in case the Timed Dosing Cycle operation was selected, the parameters to set the duration of the phases will be displayed:

- **dE.t**: duration of the Delay phase, within a range from 0 (block deactivated) to 999 seconds, selectable through the keys ▲ and ▼;
- **do.t**: duration of the Dosing phase, selectable within a range from 1 to 999 seconds through the keys ▲ e ▼;
- **do.t**: duration of the Block phase, selectable within a range from 0 (block deactivated) to 99 minutes through the keys ▲ e ▼;

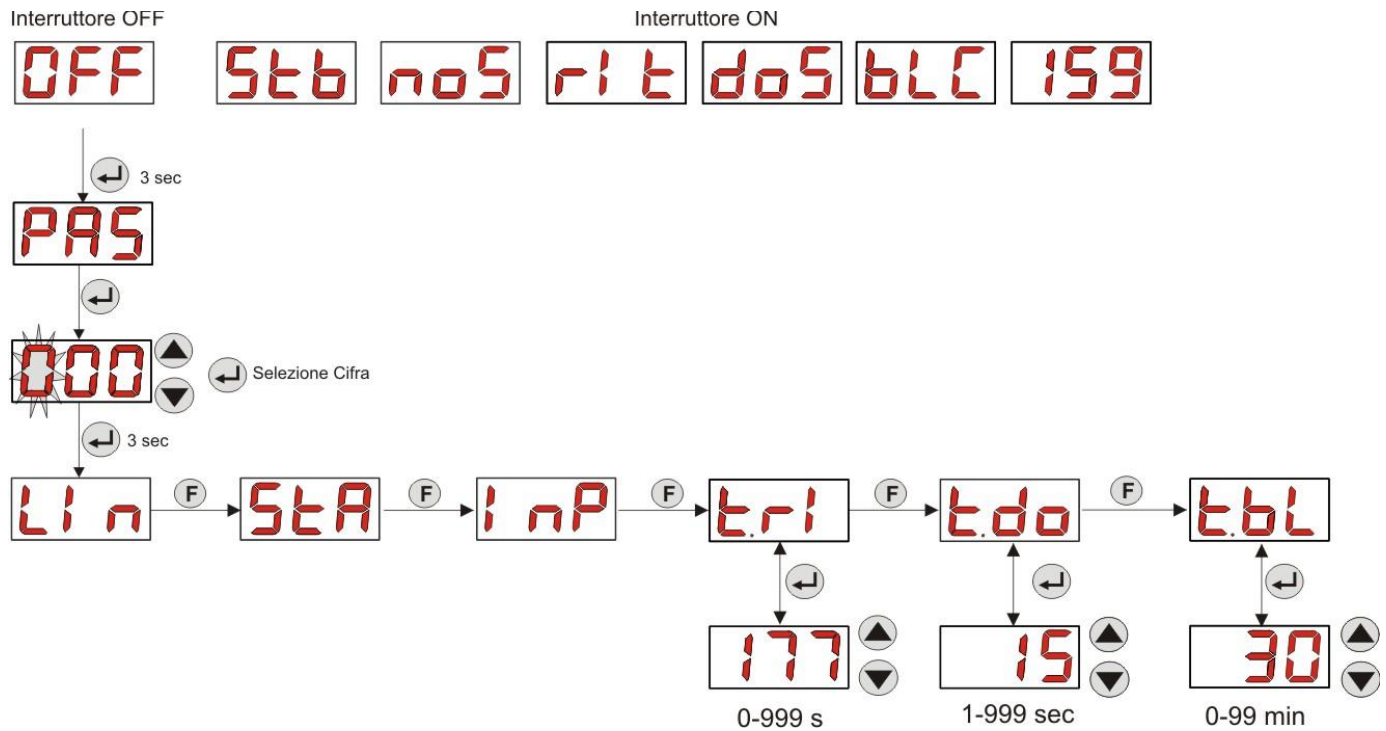


Fig. 13- Selection of the Parameters for the Timed Dosing Cycle mode

3.3.4 Selection of the Parameters - Quantity Dosing Cycle

By browsing the Programming Menu with the **F** key after **Opt**, in case the Quantity Dosing Cycle operation was selected, the parameters to set the duration of the phases will be displayed:

- **dE.t**: duration of the Delay phase, within a range from 0 (block deactivated) to 999 seconds, selectable through the keys ▲ and ▼;
- **G.C.A**: grams of active principle per kg of laundry in the washing machine, that can be selected within a range 0.1-20.0 g/kg, through the keys ▲ and ▼;
- **Con**: concentration expressed in percentage value of product used, from 1% to 100%, to be selected through the keys ▲ and ▼;
- **dEn**: density of the product to be dosed expressed as the difference from the reference value of 1000 g/l within a range of -50 ÷ 500, i.e. from 950 g/l to 1500 g/l, to be selected through the keys ▲ and ▼;
- **C.LA**: Capacity of the washing machine, expressed in kg from 1.0 to 20.0, to be selected through the keys ▲ and ▼;
- **t.do**: duration of the Block phase, selectable within a range from 0 (block deactivated) to 99 minutes through the keys ▲ e ▼;

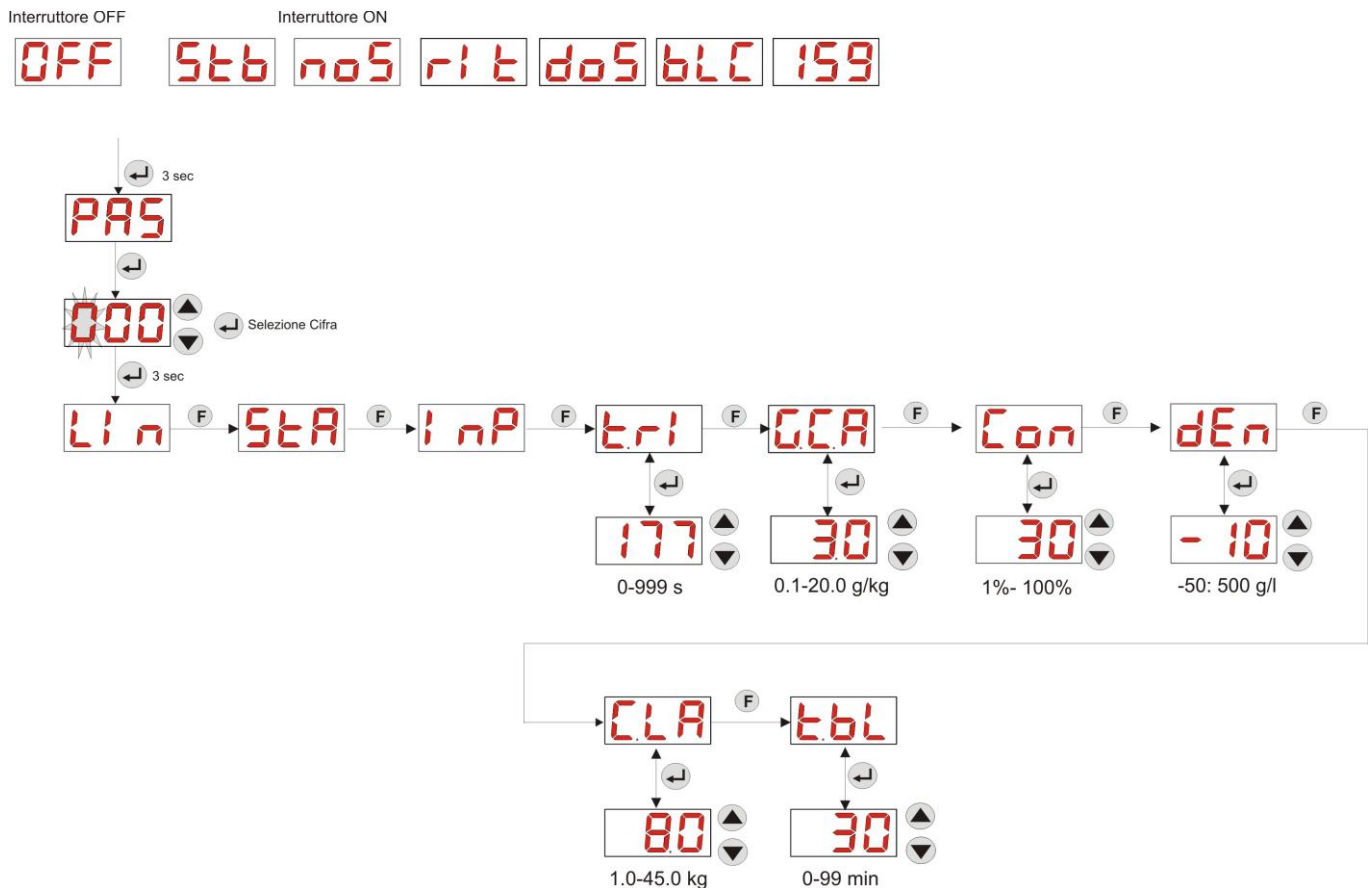


Fig. 14- Selection of the Parameters for the Quantity Dosing Cycle mode

3.3.5 Choosing Electrovalve Type

From the voice ELE (SOL) of Programming Menu you can select the type of solenoid valve of the washing machine.

It will be possible to set the type of solenoid valve 230 V or 24 V and press the Enter key



Figura 1 Change Electrovalve type

3.3.6 Calibrating the Pump

The calibration of the pump guarantees a more precise dosing, as it allows to correct the dosing time or speed depending on the actual flow rate of the pump (see section *Operation* Chap. 3.1). In case calibration is not carried out, the dosing times will be calculated depending on the value of the nominal flow rate of the pump (see the value on the label), and the speed will always be equal to 100% of the nominal flow rate.

The rated flow rate and the actual flow rate could differ for a number of reasons related to the use of the device (wear of the peristaltic tube, etc.).

From the **CH.P** entry, you will be able to calibrate the pump for a fixed time of 60 seconds, thereby measuring the amount of liquid dosed via a graduated container used as a reference: from the start label "**StA**", launch the count by pressing **Enter** and the pump will start dosing at top speed. Finally, just set the amount in ml (from 0 to 300).

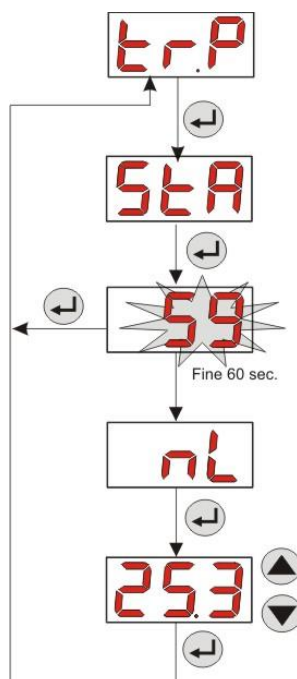


Fig. 16- Pump Calibration Menu

3.3.6 Resetting Default Parameters

From the **d.P.r** entry you will be able to reset the equipment default parameters (refer to the **Default Parameters Table** - ANNEX E); If you choose to reset the initial values, you will go back to the initial display. See Fig. 17
Once you confirm with **YES**, you cannot go back.

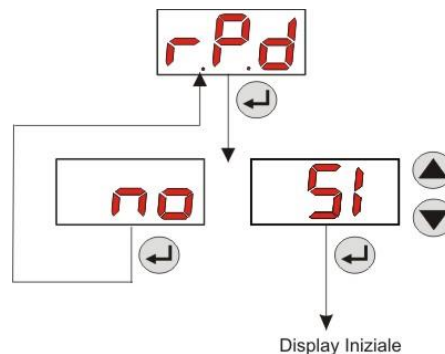


Fig. 17- Default parameter reset

3.3.7 Settings Menu

From the **InP (Opt)** entry of the Programming Menu, via the **Enter** key, you can access the **Settings Menu**
From the Settings Menu you can carry out the following operations (refer to **Figure 18**):

- Set the password to access the programming section **PAS**: with **Enter** you can go to the “000” selection page, with the ▲ and ▼ keys you can increase/decrease the value displayed and with **Enter** you can scroll to the figure you intend to set. After choosing the new password, press **Enter** for 3 seconds to go back to the **PAS** entry;
- Enable the pump stop in case of a **P.St** level alarm: to enter and exit the submenu, use the **Enter** key, use the ▲ and ▼ keys to choose “YES/no”;
- Select the Relay operating mode **rEL**: to enter and exit the submenu, use the **Enter** key, and ▲ and ▼ to choose “YES/no”;
- Choose the Data Input Mode **dIn** of the Dosing Cycle Operation mode: to enter and exit the submenu, use the **Enter** key, to browse through the “tIn/ G.C.A” entries use ▲ and ▼. This section of the Menu will not be displayed if the Relay mode has been selected from the previous **rEL** entry;
- Set the stabilization time of the signal **Stb**, coming from the electrovalve of the washing machine, within a range of 1-999 seconds: to enter and exit the submenu, use **Enter**, to scroll through the values use the ▲ and ▼ keys;
- Set the time of the pump maintenance alarm, **O.F.d**, from 0 (disabled) to 999 hours, based on the following format:
 - **h.mm** up to 9 h and 59 m
 - **hh.m** up to 99 h and 59 m (minutes expressed in tens)
 - **hhh** up to 999 h

To enter and exit the submenu use **Enter** and increase/decrease the value with the ▲ and ▼ keys;

- Access the **u.S.t** electrovalve signal recognition window: to enter and exit the submenu use **Enter**. The display will show the status identified by the pump for the input signal:
Steady “HI”: enabling signal identified as active;
Steady “Lo”: enabling signal identified as not active;
Flashing “HI”: enabling signal identified as active, but slightly above the identification voltage threshold;
Flashing “Lo”: enabling signal identified as not active, but slightly below the identification voltage threshold;
 If the status displayed does not correspond to the actual status of the signal or if the status displayed is flashing, just scroll with the ▲ and ▼ keys to change the threshold, namely:
 Signal not active (Electrovalve OFF):
 →if the signal is identified as active (steady or flashing **HI**) or not active but near the threshold (flashing **Lo**), press ▼ to reduce the threshold voltage until a steady “Lo” is displayed;

→ if the signal is permanently identified as not active (steady **Lo**), conduct a check when the signal is activated;

Signal active (Electrovalve ON):

→ if the signal is identified as not active (**Lo** steady or flashing), or active but near the threshold (flashing **HI**), press **▲** to increase the threshold voltage until a steady "**HI**" is displayed;

→ if the signal is permanently identified as not active (steady **HI**), conduct a check when the signal is disabled;

- Choose if you want to enable modification of the parameters from the online User Menu, **OnL**: to enter and exit the submenu, use the **Enter** key, use the **▲** and **▼** keys to choose "YES/no";
- Enable the **bu.E** buzzer when an alarm is activated: to enter and exit the submenu, use the **Enter** key, use the **▲** and **▼** keys to choose "YES/no";

To go back to the Programming Menu, to the **Opt** entry, just press **Enter** for 3 seconds from any entry of the Menu. **Voce Visibile se rEL = no**

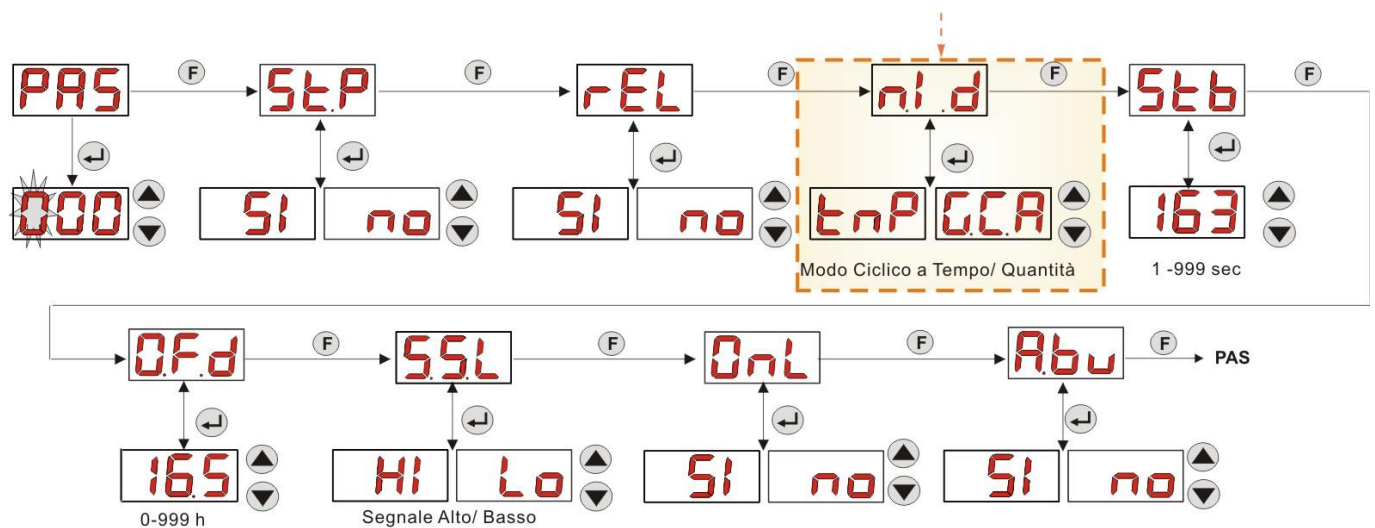


Fig. 18- Settings Menu

4.0 ALARMS

4.1 MOTOR ALARM

Every OPL pump with direct current motors are equipped with an motor alarm.

In case of an excessive absorption of the motor caused by possible malfunctioning, or in case the supply voltage of the pump (30 Volt) goes under 24 Volt, the pump will try to reactivate the motor three times. These three attempts will be carried out after 5, 10 and 15 seconds from the stop, before the alarm goes off. The alarm will be signalled as follows:

- Audio signal via the buzzer (if there is one on the pump) with a frequency of 1 second on and 1 second off;
- flashing red LED;
- “**not**” flashing on the display;

In this alarm status the motor is stationary. The device is reset when it gets switched off/turned on through the proper switch, or by acting on the power supply.

4.2 MAINTENANCE ALARM

The maintenance alarm is activated when the pump has been running for longer than the time set in the relevant **O.F.d** submenu (see *Settings Menu*).

If you set 0.00 (h.mm) as a time value for the maintenance alarm, it will be disabled.

This is reported by the pump as follows:

- Audio signal via the buzzer (if there is one on the pump) if enabled (see **bu.E** in the "Settings Menu") with a frequency of 1 second on and 1 second off;
- flashing red LED;
- “**OFd**” flashing on the display;

In this alarm status the motor is stationary. To disable the alarm, you need to go to the **P.d.t** entry (pump operating time) in the Statistics Menu and reset the value.

4.3 LEVEL ALARM (only for the model with the level probe)

A level probe can be connected to the pump to report the end of the product, which is indicated by the pump in the following way:

- Audio signal via the buzzer (if there is one on the pump) if enabled (see **bu.E** in the "Settings Menu") with a frequency of 1 second on and 1 second off;
- flashing red LED;
- “**uLo**” flashing on the display;

The inlet has a 3-second recognition filter to identify false contacts and unwanted level alarm signals.

This alarm may or may not imply the pump stop, depending on the option chosen in the “**P.st**” submenu (Settings Menu: **P.St**=YES → the pump is stopped; **P.St** =no → the pump keeps on dosing).

The alarm is automatically reset when the level of the chemical product to be dosed is restored.



In priming mode, the level alarm is not indicated.

4.4 OFF STATUS ALARM

If the switch is left on the OFF position, after 20 minutes the switch alarm is activated and signalled by the pump in the following way:

- Audio signal via the buzzer (if there is one on the pump) if enabled (see **bu.E** in the "Settings Menu") with a frequency of 1 second on and 1 second off;
- flashing red LED;
- “**OFF**” flashing on the display;

Just set the switch to ON to disable it.

5.0 MAINTENANCE

This section reports the general rules you need to follow to operate the pump correctly and the steps to carry out periodically to ensure optimal conditions are maintained over time.

5.1 GENERAL RULES

Maintenance operations must be conducted systematically and accurately by following the recommendations reported below to the letter.

It is difficult to define the standard times required for maintenance beforehand, as there are a number of factors that determine the wear of the pump and in particular the parts that are in contact with the liquid.

This also applies to the type of product used to clean the materials that are in contact with it (valves, etc.) as it depends on the compatibility of the material with the chemical product being dosed.

Having said this, we can take as an example a product, such as sodium hypochlorite, that develops crystals, which is often used with our pumps, and with which we have a great deal of experience, and identify the type of maintenance required.

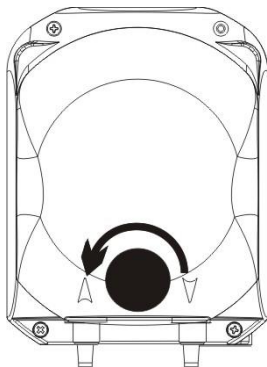
5.2 PERIODIC MAINTENANCE

- Check the foot strainer and clean it periodically from any residuals of crystallised product or dirt deposits;
- Ensure there are no impurities in the suction and delivery tubes, because they may damage the peristaltic tube and, at the same time, cause anomalies in the flow rate;
- **The pump materials that are in contact with the chemical product, such as the foot strainer, must be checked and cleaned at least every three months.** If the products are particularly aggressive increase the frequency of cleaning;
- Calibrate the pump periodically;

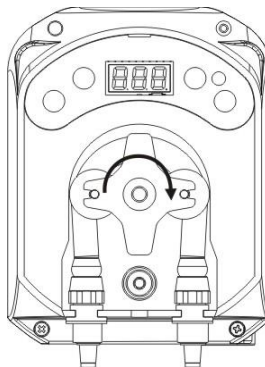
To remove and reassemble the peristaltic tube refer to the steps described respectively in Figures 19 and 20.

Removing the peristaltic tube

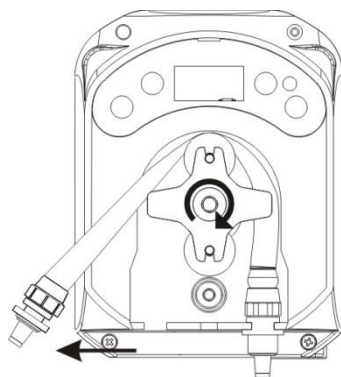
Step 1 - Open the front glass



Step 2- Turn the roller clockwise and release the (left) suction ring nut



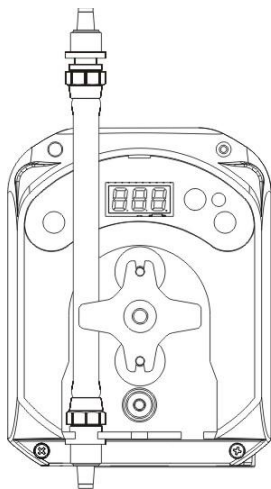
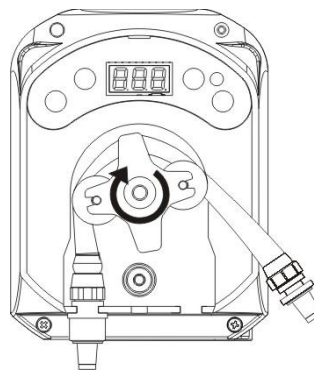
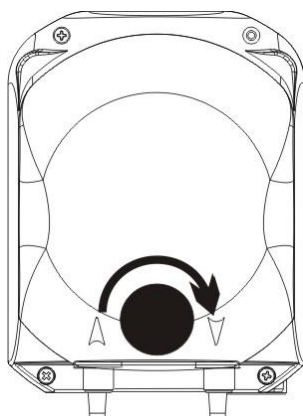
Step 3 - Remove the tube



Step 4 - Release the (right) delivery ring nut and remove it completely



Fig. 19 - Removal of the peristaltic tube

Reassembly of the peristaltic tube**Step 1** - Position the tube and secure it on the left-hand side**Step 2** - Insert it in the bell by turning the roller**Step 3** - Close the front glass**Fig. 20 - Reassembly of the peristaltic tube**

5.3 TROUBLESHOOTING

Problem: the pump does not turn on, the LED and display remain off

Solution:

1. Make sure the connection to the electrical network has been set up correctly in accordance with the information provided on the pump identification plate.
2. The electronic board may be damaged as well: call the support Service.

Problem: the pump works well but it doesn't measure out the product into the washing machine

Solution:

1. Check the product level.
2. Make sure the foot strainer is not clogged up.
3. Make sure that the delivery pipe is correctly inserted in the tank of the washing machine.
4. Check the status of the peristaltic tube. If evident malformations are detected, make sure that the material is compatible with the product being dosed by consulting the chemical compatibility table (see ANNEX D), and then go ahead with the replacement.

Problem: liquid leaking from the peristaltic tube

Solution:

1. Make sure the delivery and suction tubes are inserted properly.
2. Check the status of the peristaltic tube. If evident malformations are detected, make sure that the material is compatible with the product being dosed by consulting the chemical compatibility table (see ANNEX D), and then go ahead with the replacement.

Problem: no alarm has gone off, but the pump is not dosing

Solution:

1. Make sure the switch is not set to OFF.
2. Make sure that the device is not on Delay or Block time;
3. Make sure that the calculated dosing time (Quantity Mode) is not 0 seconds;
4. Make sure that the enabling signal from the washing machine is active and stabilized;

Problem: the threshold of the electrovalve signal of the washing machine cannot be set correctly (from the *u.S.t* entry of the Settings Menu)

Solution:

1. Check whether the electrovalve signal is connected correctly.
2. Call the Support Service;

5.0 Returning material to the After-sales service

The material must be sent back in its packaging with all the original protections before the end of the guarantee period.

The system must be clean and the chemical product removed from the tubes.

In case these conditions are not observed, the producer will not be held responsible for possible damages occurred during transportation.

6.0 WARRANTY CERTIFICATE

The manufacturer provides warranty covered for pumps made by them for a period of 12 months, starting from the delivery date to the first user ().*

Within the above terms the producer agrees to provide spare parts for any parts that they, or their authorised representative, believe present factory or material defects free of charge; or to carry out the repair directly or through authorised workshops.

The producer is nevertheless excluded from any other responsibility and obligation regarding other expenses, direct or indirect damage and losses deriving from the use or from the impossibility, either total or partial, to use the pumps.

Repairs or spare parts will not extend nor renew the guarantee period.

Costs to assemble and disassemble the pump from the system, shipping costs and consumables (filters, valves, etc.) are borne by the user.

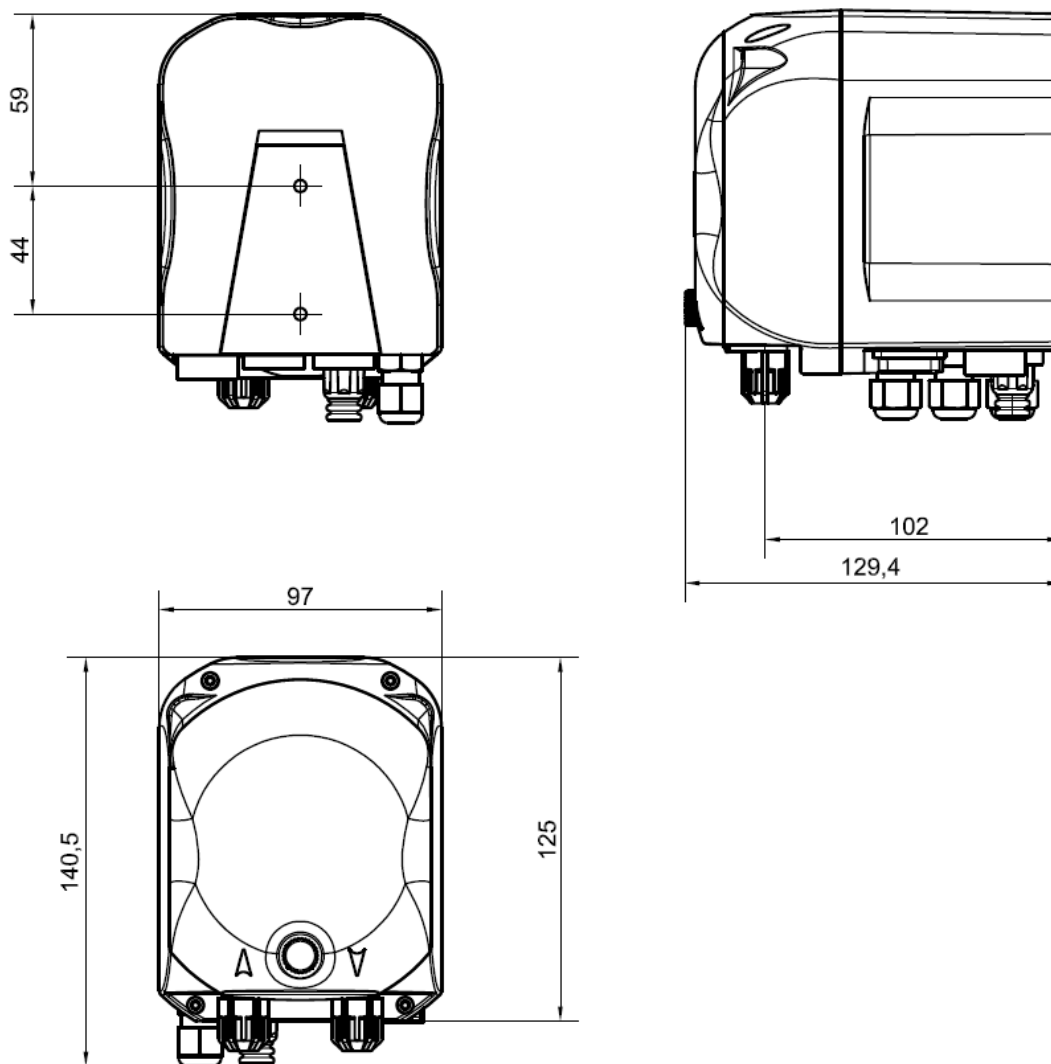
The above-mentioned obligations for the producer will not be valid in case:

- *The pumps are not used in compliance with the instructions provided on the operating and maintenance booklet;*
- *The pumps are repaired, dismantled or modified by workshops that have not been authorised by the manufacturer;*
- *Non-original spare parts have been used;*
- *The injection systems have been damaged by non-compliant products;*
- *The electric system is damaged due to external factors like over-voltage, electric discharges, etc.;*

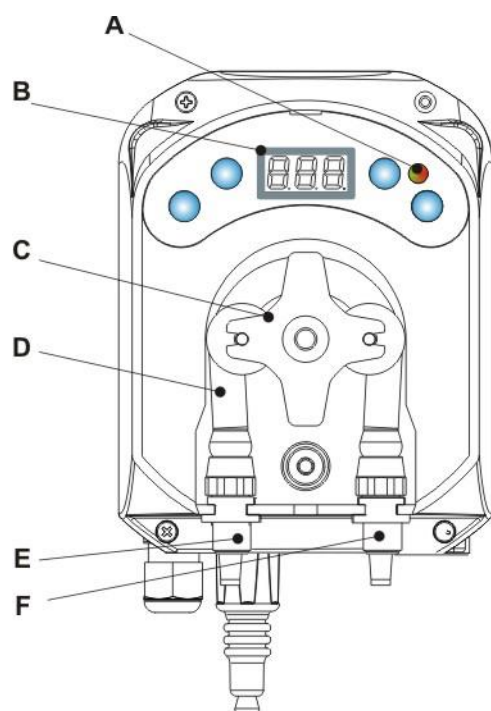
When the warranty period expires, 12 months after delivery of the pump, the manufacturer is relieved of any responsibility and obligations described in the above paragraphs

() as attested by the serial code and the invoice issue date*

ANNEX A - Overall dimensions

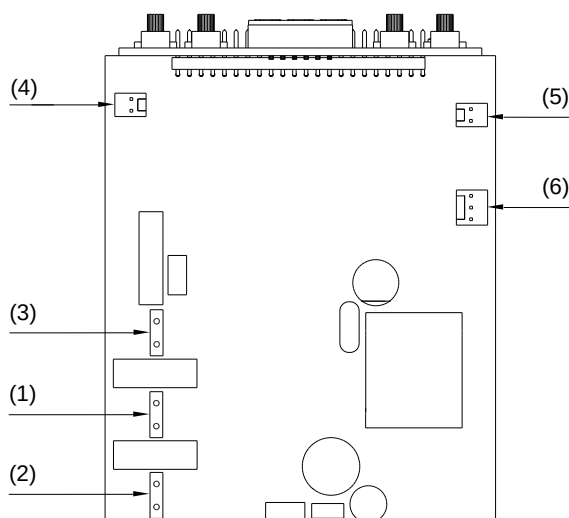


ANNEX B - Reference Figures



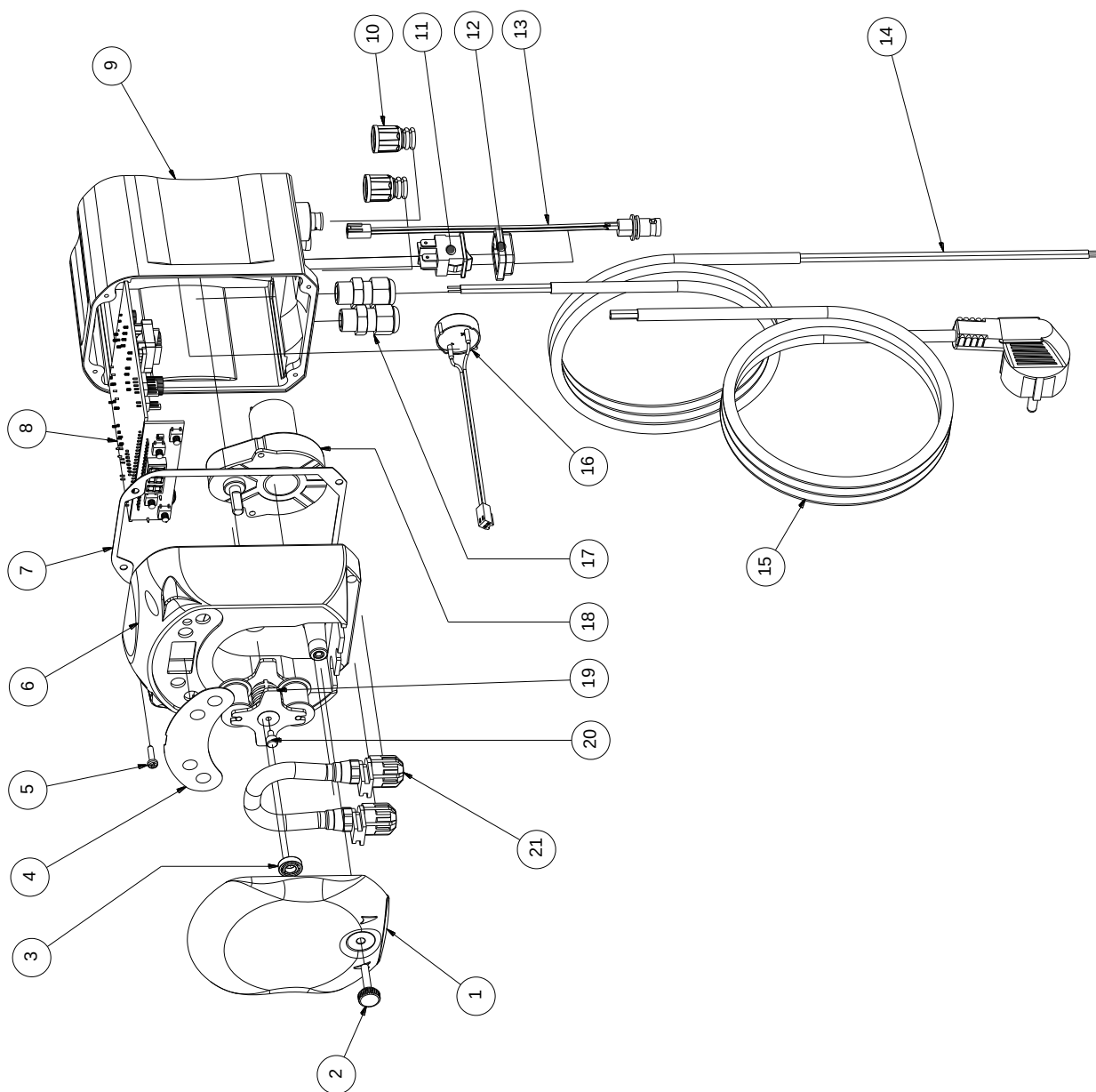
Ref.	Description
A	Two-coloured LED
B	3-digit display with 7 segments
C	Roll-holder
D	Peristaltic tube
E	Intake fitting
F	Delivery fitting

Electronic Board layout



Ref.	Description
1	Connector VAC1- Power supply
2	Connector VAC2- Washing machine electrovalve
3	Motor connector
4	Level Connector
5	Buzzer Connector
6	Switch Connector

ANNEX C - Exploded views



No.	CODE	DESCRIPTION	QTY
1	ADSP8000195	PERISTALTIC NEUTRAL SMOKED FRONT COVER	1
2	ADSP8000029	KNOB TO SECURE CLEAR TEC COVER	1
3	ADSP4100207	SKF 618/6 BEARING FOR COVER PUMP 100LT	1
4	ADSP7000646	DGTEC OPL– AQUA PERISTALSTIC POLYCARBONATE LABEL	1
5	ADSP6000714	STAINLESS STEEL A2 M 2.9 X 13 SCREW UNI 6954 (slotted pan head)	4
6	ADSP9600005	DGTEC PERISTALTIC FRONT FRAME	1
7	ADSP6000059	PAPER GASKET FOR DIGITAL PERISTALTIC	1
8	ADSP6000970	SKD DGTEC 230 VAC	1
9	ADSP9600006	DGTEC PERISTALTIC BACK FRAME	1
10	ADSP6000948	FEMALE BNC PROTECTION FROM BLACK RUBBER PANEL	2
11	ADSP6000685	3A 250V ON/OFF/PAUSE FLIP SWITCH	1
12	ADSP6000686	CLEAR PROTECTIVE COVER FOR ON/OFF SWITCH	1
13	ADSP6000292	CRIMP. CONN.FEMALE BNC CONNECTOR 2.54 L160 R/N CABLED (Conn. Level)	1
14	ADSP6020051	BIPOLAR CABLE 2 X 0.75 3 METRES - H05VV-F 2X0.75 -	1
15	ADSP6000419	THREE-POLE CABLE 3X0.75 1.5 METRES WITH SCHUKO PLUG - - H05VV-F 3G0.75 -	1
16	ADSP6000627B	PIEZO. BUZZER ASSEMBLY CONN. HAND WHEEL 2 POLES P2.54 WIRES AWG24 L=120	1
17	ADSP6000424	PG7 PITCH CABLE GLAND - 1900.07 - B	3
18	ADSP8000217	MOTOR RPM 111 RAP 45 24V AL.70965370 TYPE 82048 BASE 5000 S2	1
19	ADSP8000023B	COMPLETE PER-R 4/6-1 ROLLER-HOLDER	1
20	ADSP8000028	PER-R ROLLER-HOLDER GUIDE PIN	1
21	ADSP8000196	COMPLETE SANTOPRENE TUBE 8X12	1
	ADSP8000169	COMPLETE PHARMED TUBE 8X12	1
	ADSP8000340	COMPLETE SILICONE TUBE 8X12	1
	ADSP8000149	COMPLETE PHARMED TUBE 6x9	1
	ADSP8000124	COMPLETE SILICONE TUBE 6x9	1
	ADSP8000178	COMPLETE SANTOPRENE TUBE 6x9	1

ANNEX D - Default Parameters

Default Parameters Table

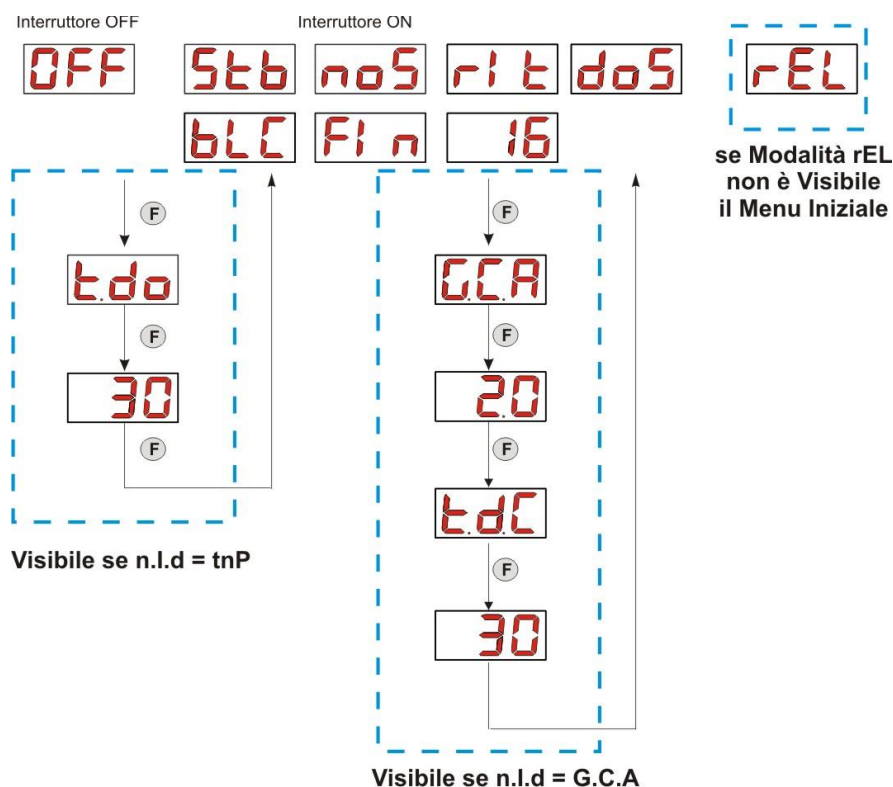
IT parameter	EN Parameter	Meaning	Value
A.bu	bU.E	Buzzer Enabling	SI
C.LA	u.m.C	Washing Machine Capacity	8.0 kg
Con	With	Product concentration	100%
dEn	dEn	Product Density	0 (1000 g/l)
G.C.A	G.C.A	g/kg of Active Principle	1.0
LIn	LAn	Language	En
n.I.d	d.I.n	Data Input Mode	tIn
O.F.d	O.F.d	Maintenance Time	0 sec (disabled)
OnL	OnL	On Line	SI
PAS	PAS	Password	000
rEL	rEL	Relay Mode	no
S.S.L	u.S.t	Washing Machine Signal Threshold	2 Volt
Stb	Stb	Stabilization Time	10 seconds
St.P	P.St	Pump Stop (due to Level Alarm)	no (disabled)
t.bL	bL.t	Block time	10 min
t.do	Do.t	Dosing time	10 min
t.rI	dE.t	Delay Time	10 sec

ANNEX E- Acronyms Table

IT acronym	En acronym	Meaning
A.bu	bU.E	Buzzer Enabling
AdE	PrI	Priming
bLC	bLC	Ongoing Block Phase
CIC	CIC	Number of electrovalve activations
C.LA	u.m.C	Washing machine capacity
Con	With	Product concentration
dEn	dEn	Product Density
doS	doS	Ongoing Dosing Phase
Err	Err	Error
G.C.A	G.C.A	Grams per Kg of Active Principle
HI /Lo	HI /Lo	High / Low (Electrovalve Signal Level)
InP	Opt	Settings
LIn	LAn	Language
n.I.d	d.I.n	Data Input Mode
nL	nL	ml
noS	noS	Signal not active
O.F.d	O.F.d	Maintenance Time
OnL	OnL	On-line Calibration
PAS	PAS	Password
P.d.t	n.F.r	Nominal Flow Rate
P.t.d	t.d.P	Total product dosed
P.UO	r.F.r	Desired Flow Rate
rEL	rEL	Relay Mode
rlt	dEL	Dosing Delay
r.P.d	d.P.r	Default Parameters Reset
rSt	rSt	Reset
SI / no	YES / no	SI/ NO
S.S.L	u.S.t	Electrovalve Signal Threshold
StA	StA	Statistics / Pump Calibration Start
Stb	Stb	Stabilization Time / Stabilization ongoing
St.P	P.St	Pump Stop (due to Level Alarm)
t.bL	bL.t	Block time
t.d.C	C.d.t	Calculated Dosing Time
t.do	do.t	Dosing time
t.F.P	P.d.t	Pump Operating Time
tnP	tl n	Timed Cyclic Mode
t.rl	dE.t	Delay Time
tr.P	CH.P	Pump Calibration

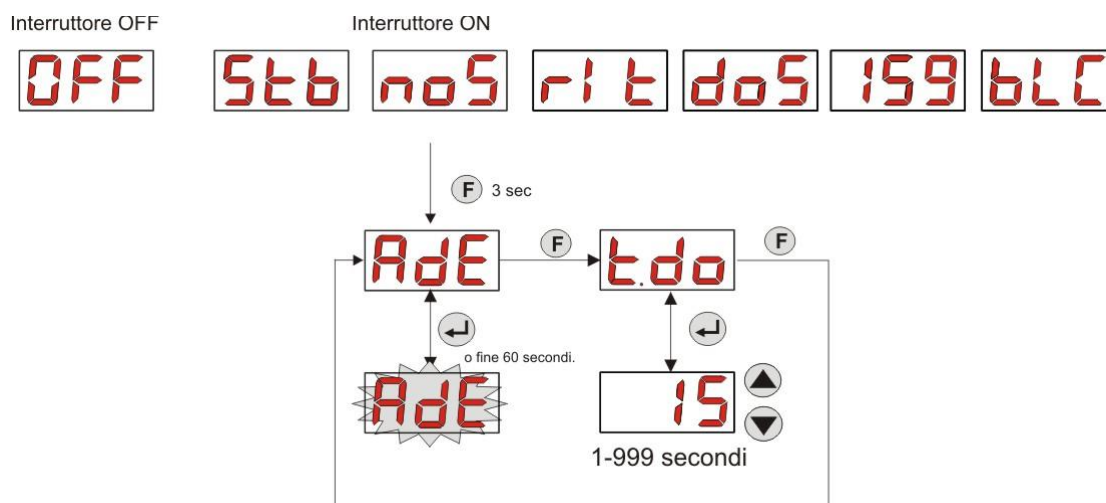
ANNEX F - Menu Layouts

Initial Menu



User Menu

Timed Cyclic Mode



Quantity Cyclic Mode

Interruttore OFF

OFF

Interruttore ON

Stb

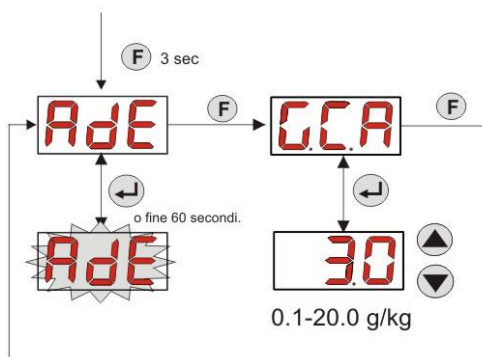
noS

r1E

doS

bLC

153

Relay Mode

Interruttore OFF

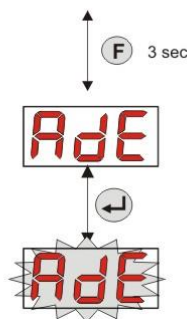
OFF

Interruttore ON

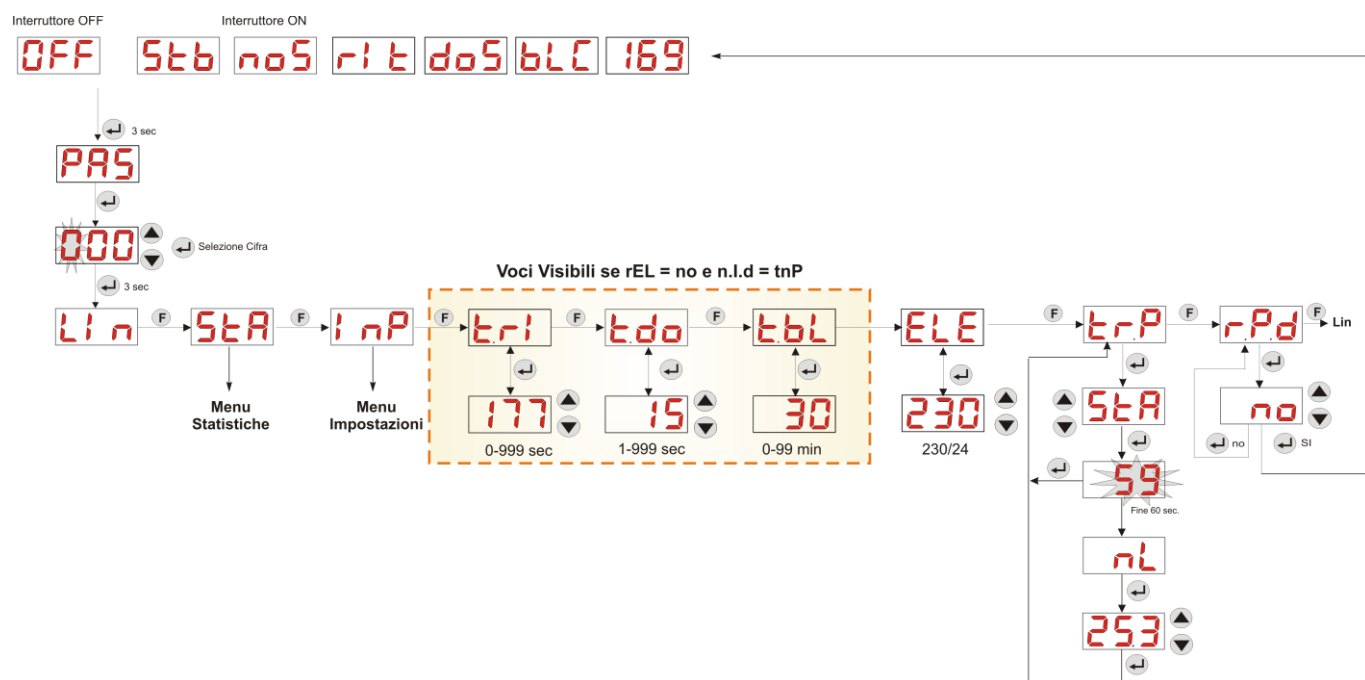
Stb

noS

rEL



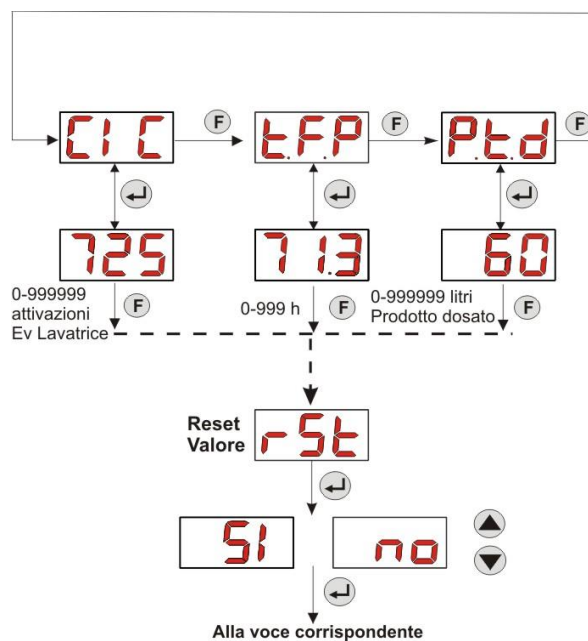
Programming Menu



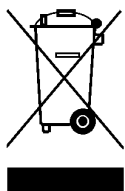
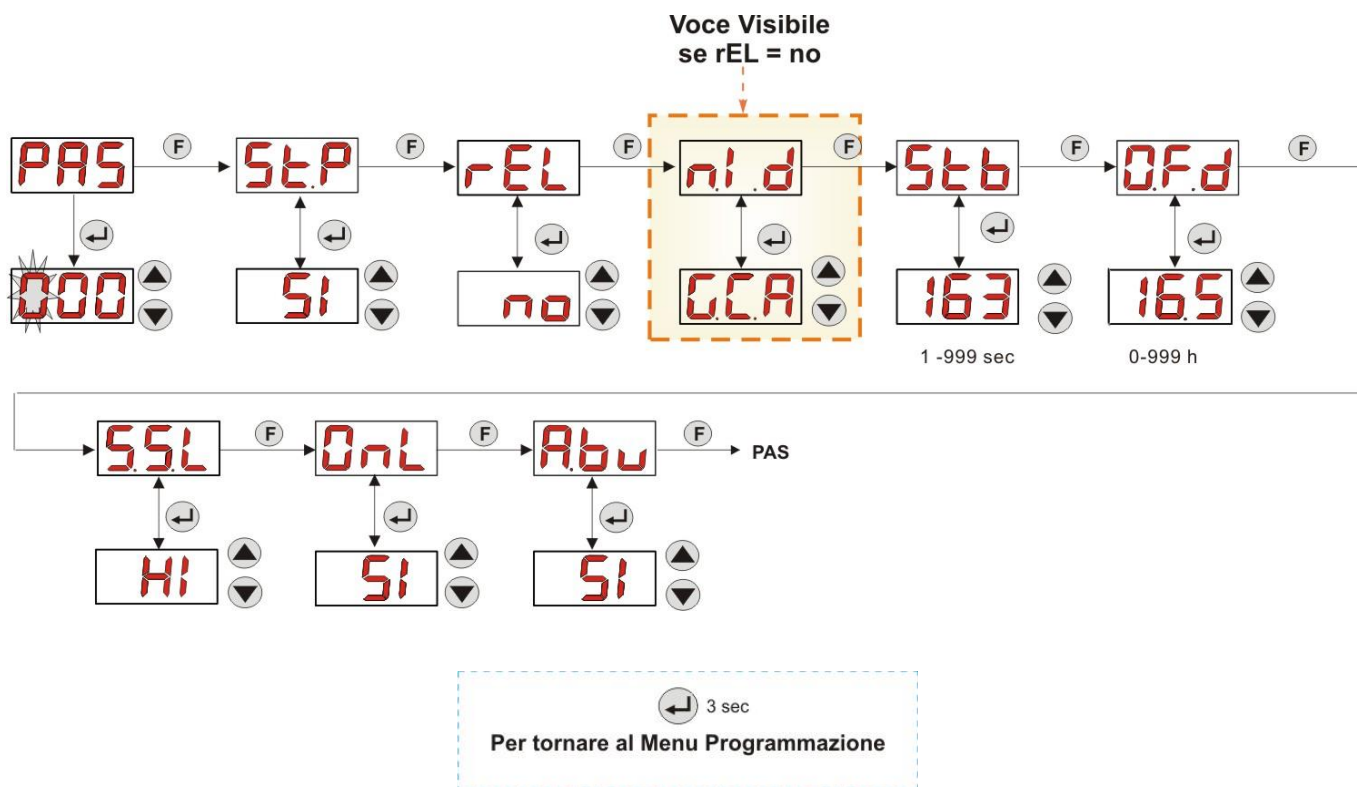
Voci Visibili se rEL = no e n.l.d = G.C.A



Statistics Menu



Settings Menu



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 and 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.



DGTEC OPL

