



ULTRAVIOLET DISINFECTION  
*EQUIPMENT FOR THE TREATMENT OF DRINKING WATER*

# **SINGLE LAMP AL-AL<sup>2</sup>**

**Chamber Mod. 405-405C-412-440-480**

**Power supply model: AL-AL<sup>2</sup>**



***MANUAL OF INSTALLATION, USE AND SERVICING***

# INDEX

1. Introduction.....	1
2. General Principles.....	2
3. Instruction for installation and setting at work .....	3
3.1 Installation scheme recommended.....	4
4. UV Installation .....	5
4.1 UV chamber assembling .....	5
4.2 Lamp connection.....	6
4.3 Detailed drawing of the UV-Chamber .....	7
5. Electrical scheme .....	8
6. Display Information (Troubleshooting).....	9
6.1 AL version (without display).....	9
6.2 AL <sup>2</sup> version (with display) .....	10
7. Technical data sheet .....	12
8. Maintenance .....	12
9. Warranty Conditions .....	14
10. Declaration of Conformity EC.....	15

## 1. Introduction

This manual is for the following models of SINGLE LAMP AL-AL2 SERIES:

This Pressure UV Systems is manufactured by **S.I.T.A. s.r.l.**

*Warning: This equipment requires regular maintenance to ensure the requirements of the drinking water treated and the maintenance of the improvements as stated by the manufacturer.*

These operating instructions contain important information for the operation and maintenance of the equipment.

Please ensure that these operating instructions are carefully read by all relevant persons before putting into operation, to ensure the safe use of the UV system. The operating instructions are an integral part of the equipment supply.

Before putting into operation, all the conditions necessary for safe operation of the equipment must be fulfilled.

The installation, commissioning and maintenance of the equipment should only be carried out by qualified personnel.

The equipment should only be operated by authorized personnel who have been trained accordingly.

No modifications should be made to the equipment without consulting S.I.T.A., as this could effect the safe operation of the unit. S.I.T.A. shall not be held responsible for damage resulting from unapproved modifications.

### INSTRUCTION:



*The operating instructions are to be kept where they will be accessible for operating and maintenance personnel.*

## 2. General Principles

### *Information about UV irradiation*

The UV sterilizers of the SINGLE LAMP series have been planned specially for destroying harmful bacteria and viruses present in your water.

Their working is based on a physical principle which is a warranty of security: the output of ultra-violet irradiation.

The UV light given out by special mercury fumes lamps (UV-C rays  $\lambda = 254\text{nm}$ ) is highly germicidal because it interacts with DNA and RNA, at a molecular level.

The deep bio-structural disorder caused by such irradiation interferes with the development and the ability of reproduction of every kind of micro-organism, making it harmless.

Generally it is better to mount a pre-filter before the UV sterilizer, in this way the impurities of every nature and consistence are kept.

This system comes to be necessary if we want to have a high degree of sterilization, in fact the non-filtration and removal of suspended particles in the water has, as a consequence, a decrease of the sterilizer's efficiency.

If the water to be treated contains sulphydric acid or more than 0.3 p.p.m. of iron or filtrable solids, once passed through the sterilizer,

it leaves a residual sediment on the quartz sleeve, which, therefore, must be periodically cleaned (the frequency depends on the quantity and quality of water treated).

### *General directions*

According to the European rules EN 60204-1 (safety of the set-up off the electrical equipment-general rules) the low tension electrical instruments (rule 2006/95/CE) must be connected to a current-tap provided with grounding.

### *Safety direction*



The light of ultra-violet lamps can cause serious burns to unprotected skin and eyes, therefore it is recommended not to connect it to the current tap without having before ensured the UV lamp in its housing and inserted the PVC cover.

### *Indications for the disposal*

We remind that, according to what is fixed by D.L.25 July 2005, № 151 “Accomplishment of directives 2002/CE, 2002/96/CE and 2003/108/CE, concerning the reduction of the use of dangerous substances in electric and electronic equipments, and the disposal of waste” both mercury vapors lamps and electrical panels, when no more used, must be considered as special waste, and in the same way disposed of.

To do that, it is possible to address to specialized centers for the recovery of dangerous materials, or to contact directly our technical department.



INFORMATION TO USERS pursuant to art. 14 of the 2012/19 / EU DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 on waste electrical and electronic equipment (WEEE)

The crossed bin symbol on the appliance or on its packaging indicates that the product at the end of its useful life must be collected separately and not disposed of together with other mixed urban waste.

Please contact your municipality, or local authority, for all information regarding the separate collection systems available in the area. The retailer is obliged to collect the old equipment free of charge when buying new equipment of an equivalent type, for the purpose of starting the correct recycling / disposal.

Appropriate separate collection for the subsequent start-up of the disused equipment for recycling, treatment and environmentally compatible disposal helps to avoid possible negative effects on the environment and on health and favors the re-use and / or recycling of the materials it is composed of the equipment.

### **3. Instruction for installation and setting at work**

**General premise:** The installation of the SINGLE LAMP sterilization units must be carried out by specialized staff, scrupulously following the instructions hereby given. It has been moreover considered necessary to give some general information about the electrical and water connections.

**Cautions:** check that the UV panel is not connected to the power supply and that the tap of the water to be treated is turned off.

- Connect the delivery of the water to be treated to the special water connection
- Turn on water and check for possible leaks in any part of the unit
- Connect the plug to the current tap
- Check that the disinfected water comes out and that the LEDS on the panel of the control board, signal the correct working

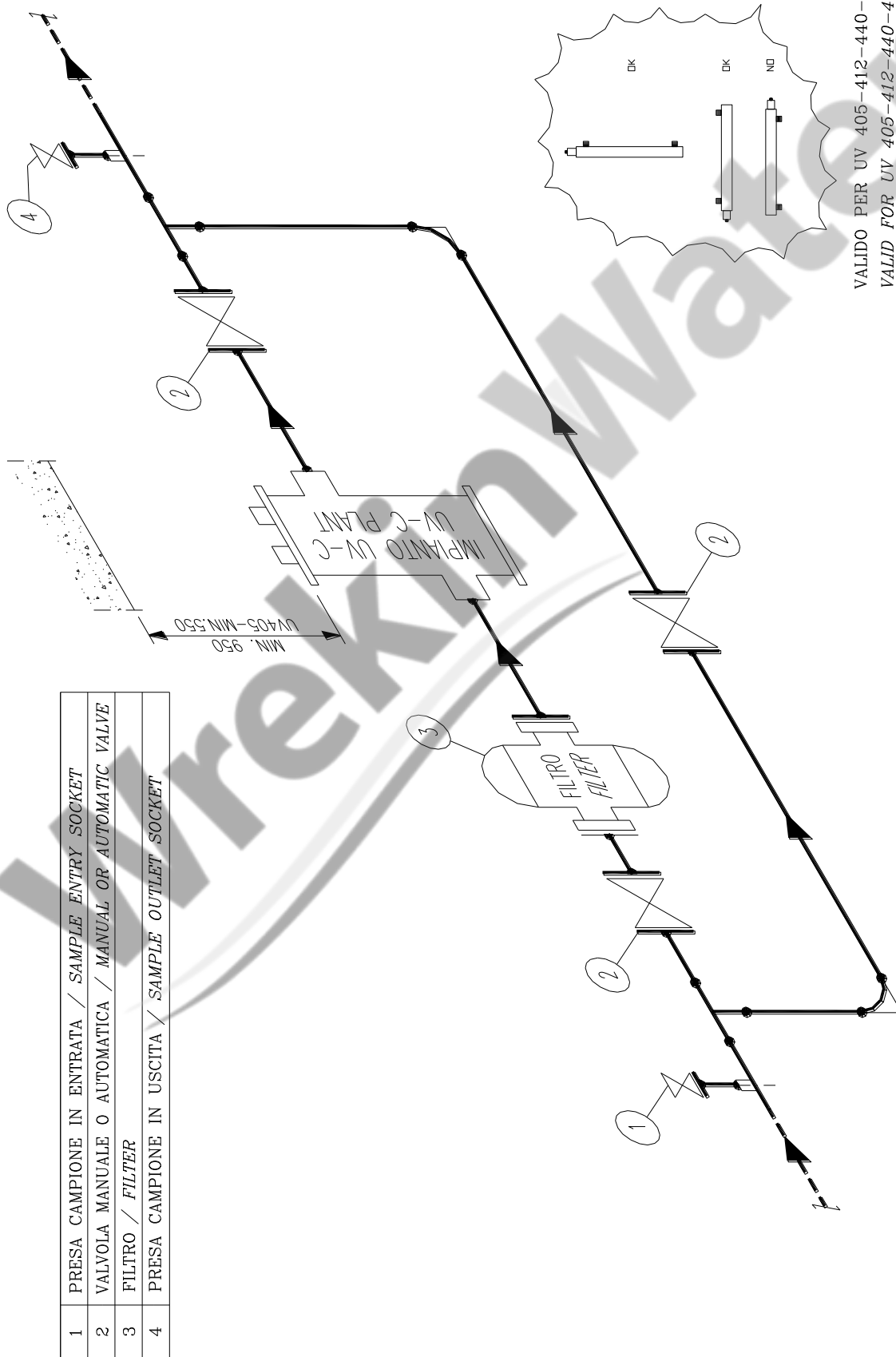
Let the disinfected water flow down to outlet for at least 10 minutes before using it, in order to make the possible impurities present in the unit drain out.

NOTE: it is recommended to install a water filter directly before the UV sterilizer in order to remove the suspended particles, eventually present in the water to be treated, which could limit the efficiency of sterilization.

#### **CHECKS**

The SINGLE LAMP UV System is ready for producing disinfected water, once the connection to the water system and to the electrical grid is carried out. The unit works automatically, the electronical boards which control the signals reaching the control panel, allow the visualization (or the sonorization) of the correct working or of anomalies which may occur during the operating of the unit.

### 3.1 Installation scheme recommended



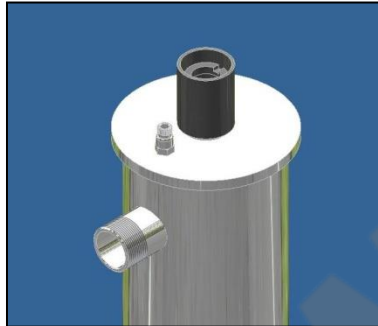
1	PRESA CAMPIONE IN ENTRATA / SAMPLE ENTRY SOCKET
2	VALVOLA MANUALE O AUTOMATICA / MANUAL OR AUTOMATIC VALVE
3	FILTRO / FILTER
4	PRESA CAMPIONE IN USCITA / SAMPLE OUTLET SOCKET

## 4. UV Installation

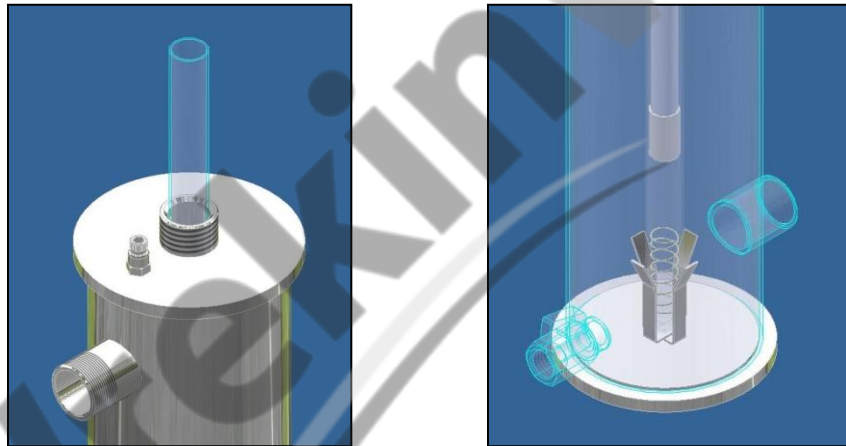
### 4.1 UV chamber assembling

Mount the valves kit supplied with the system .

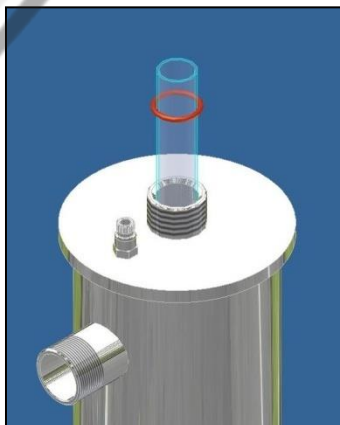
Unscrew the sleeve bolts:



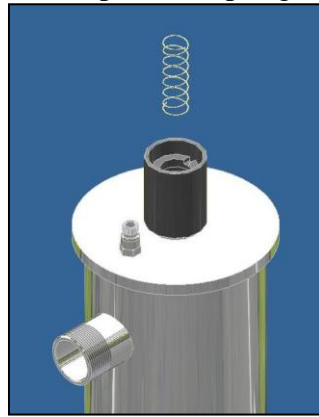
Insert the quartz sleeves carefully centring the spring at the bottom plate of the UV chamber:



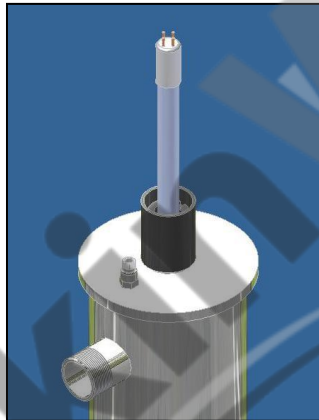
Insert the o-ring Ø 23x4 into the quartz sleeve:



Screw again the sleeve bolts and insert the lamp holder spring into the sleeve:



Carry out the hydraulic test, verifying that o-rings are watertight and that there're not water leaks outside the sleeve bolts or inside the quartz sleeves. Insert the UVC lamp into the quartz sleeve:

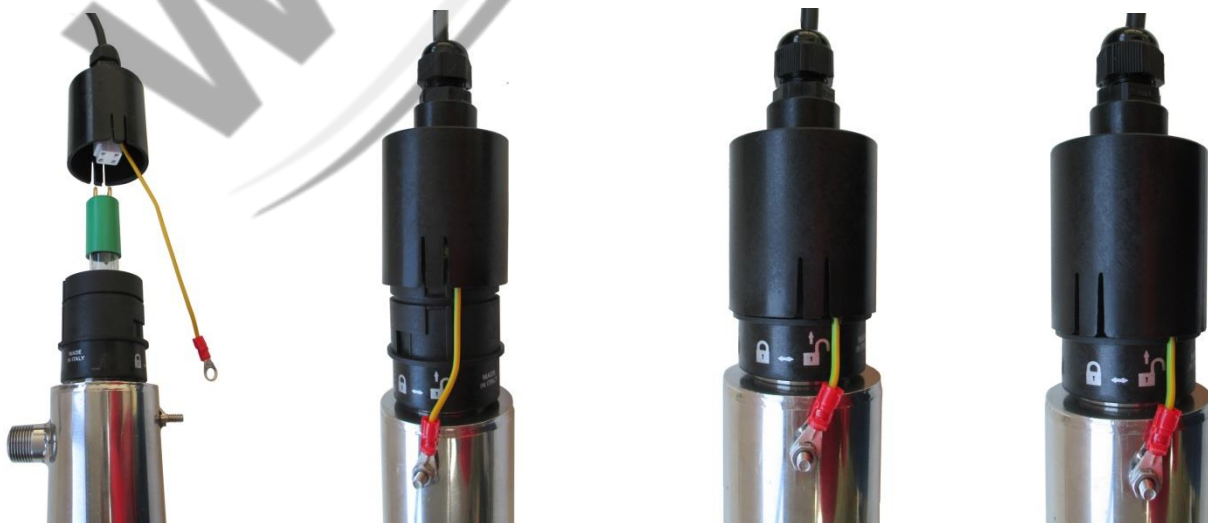


***Important!***

Handle the lamps using gloves

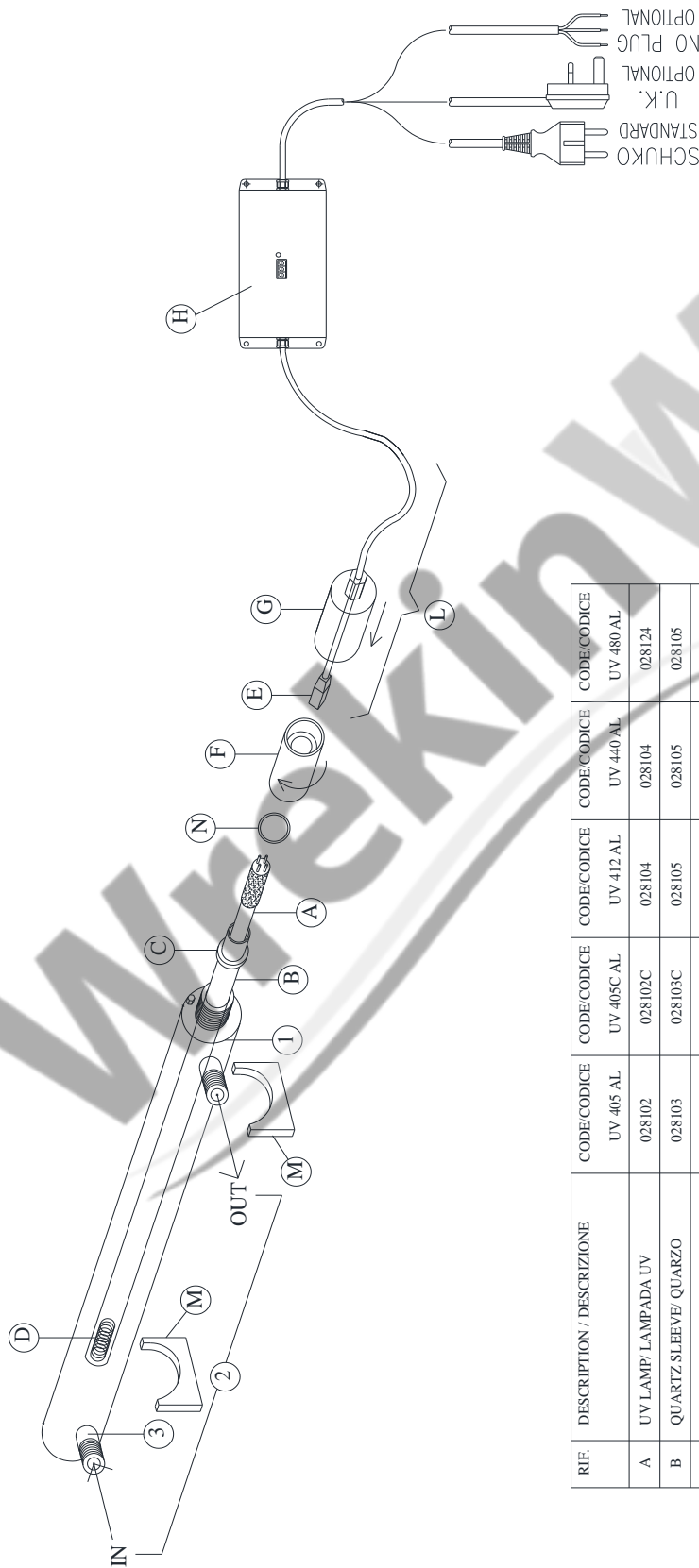
**4.2 Lamp connection**

Connect the lamp socket to the lamp, place the ground wire in the slot along the sleeve bolt and connect its terminal to the M4 bolt welded on the UV chamber, insert the contact cover bringing it up to the beat, then rotate it in closed position.



Finally connect the power cable to the socket

### 4.3 Detailed drawing of the UV-Chamber



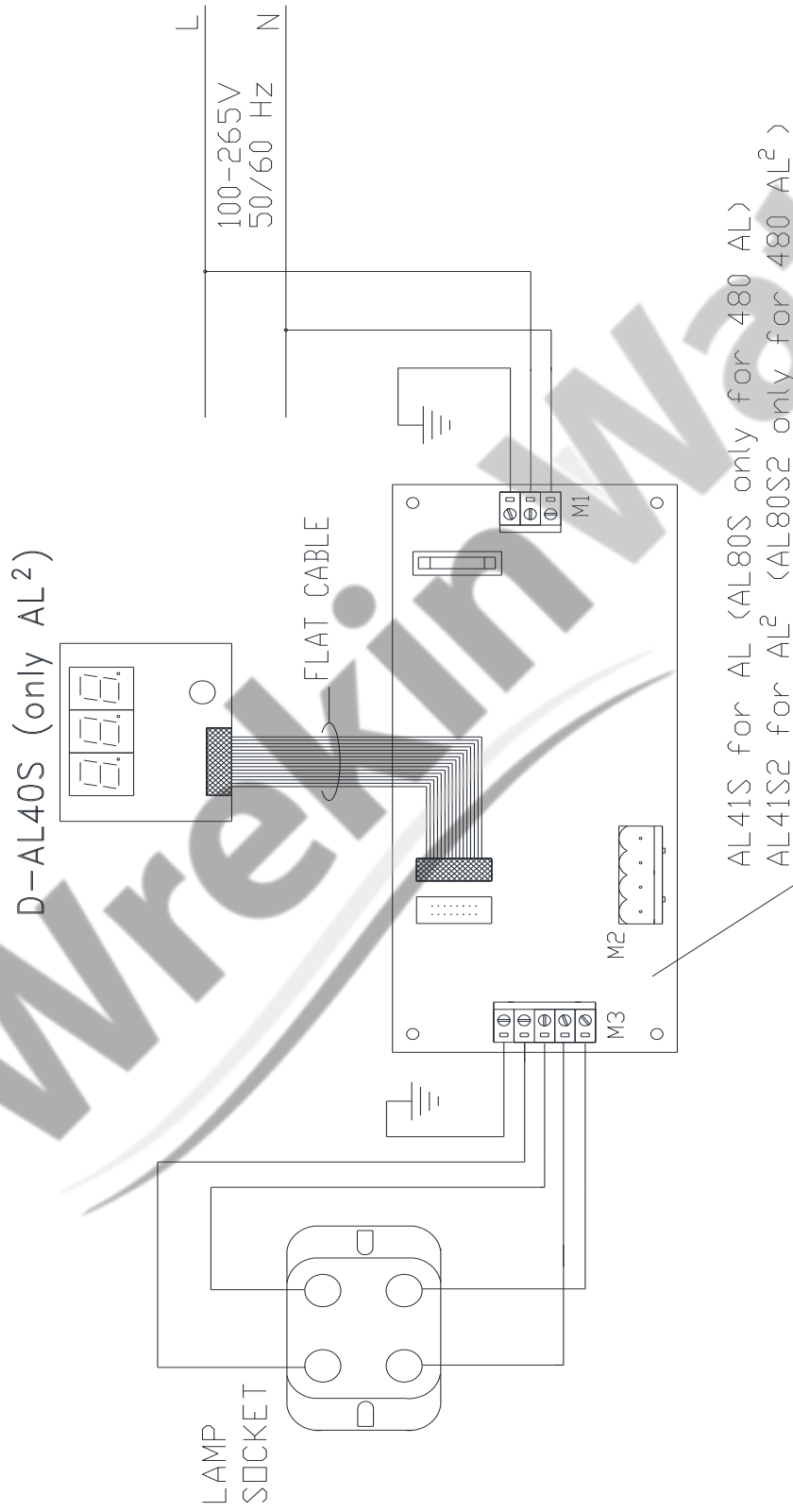
RIF.	DESCRIPTION / DESCRIZIONE	CODE/CODICE	CODE/CODICE	CODE/CODICE	CODE/CODICE	CODE/CODICE	CODE/CODICE
A	UV LAMP/ LAMPADA UV	UV 405 AL	UV 405C AL	UV 412 AL	UV 440 AL	UV 480 AL	
B	QUARTZ SLEEVE/ QUARZO	028102	028102C	028104	028104	028124	
C	O-RING 23x4/ O-RING 23x4	028103	028103C	028105	028105	028105	
D	SPRING/ MOLLA	028061	028061	028061	028061	028061	
E	FOUR-PIN HOLDER / QUADRI PIN	028036	028036	028036	028036	028036	
F	SLEEVE BOLT/ BLOCCAGUAINA	028088	028088	028088	028088	028088	
G	CONTACT COVER/ COPRICONTATTO	028060D	028060D	028060D	028060D	028060D	
H	POWER SUPPLY (SCHUKO - U.K. - AUS - NO PLUG)	028034D	028034D	028034D	028034D	028034D	
L	CONTACT COVER KIT E + G + 1 m LAMP CABLE	2740***	2740***	2740**	2740**	2756/**	
M	CLIP/ CLIP	026427/B	026427/B	026427/B	/	/	
N	O-RING/ O-RING	V141	V141	V141	V141	V141	

AL	*****S	AL - SHUKO PLUG
AL	*****U	AL - UK PLUG
AL	*****A	AL - AUS PLUG
AL	*****Z	AL - NO PLUG
AL2	*****YS	AL2 - SHUKO PLUG
AL2	*****YU	AL2 - UK PLUG
AL2	*****YA	AL2 - AUS PLUG
AL2	*****YZ	AL2 - NO PLUG



## 5. Electrical scheme

### AL CONNECTING SCHEME



## 6. Display Information (Troubleshooting)



405-405C-412-440-480 AL

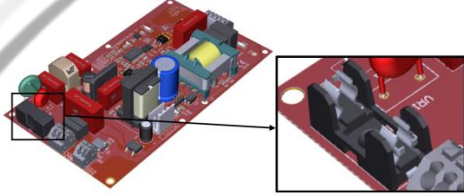


405-405C-412-440-480 AL<sup>2</sup>  
Vertical



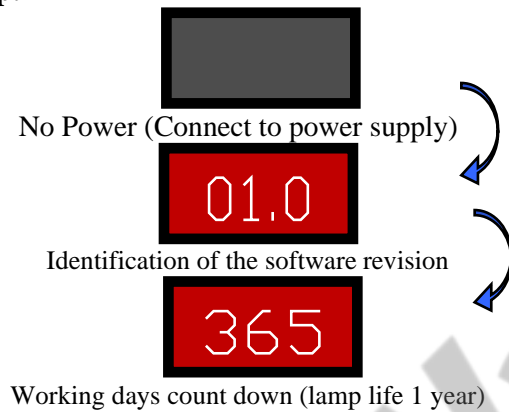
405-405C-412-440-480 AL<sup>2</sup>  
Horizontal

### 6.1 AL version (without display)

ANOMALY	POSSIBLE CAUSES	SOLUTIONS
NO SIGN OF LIFE	<input type="checkbox"/> NO FEED <input type="checkbox"/> BURNED FUSES	<input type="checkbox"/> CHECK <input type="checkbox"/> REPLACE: 
RED LED ON	<input type="checkbox"/> LAMP DISCONNECTED <input type="checkbox"/> EXHAUSTED LAMP <input type="checkbox"/> DEFECTIVE LAMP LIGHTER	<input type="checkbox"/> CHECK <input type="checkbox"/> REPALCE

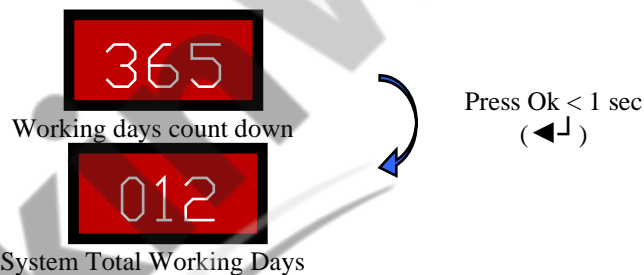
## 6.2 AL<sup>2</sup> version (with display)

### DISPLAY MESSAGES – Start up:



### DISPLAY INFORMATIONS – Working hours:

Press (◀↓) for less than 1 sec to show the lamp working hours:



### DISPLAY ALARMS – Troubleshooting:

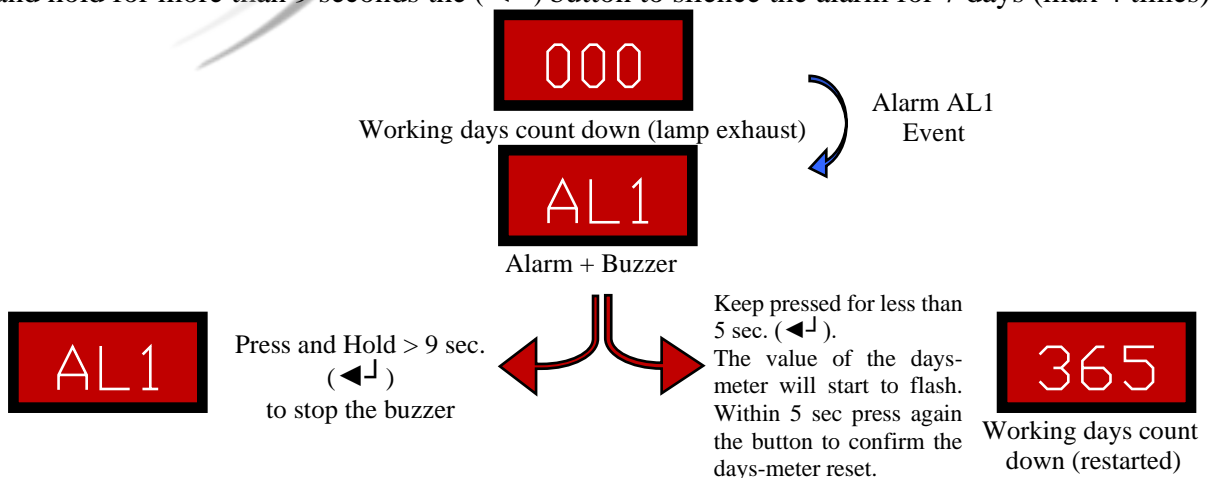
**AL1:** Indicates the end of lamp life(count-down timer shows 0 days). In such case replace the lamp and restart the working days count down.

To restart the working days count down replace the lamp and press and hold for less than 5 seconds the (◀↓) button. The value of the days-meter will start to flash. Within 5 sec press again the button to confirm the days-meter reset.



**ATTENTION:** Do not replace the lamp with powered panel!!!

Press and hold for more than 9 seconds the (◀↓) button to silence the alarm for 7 days (max 4 times).



**Note:** if within 5 sec it is not "confirmed", the days-meter comes back to the current counting value

**AL2:** Indicates lamp failure. Check:

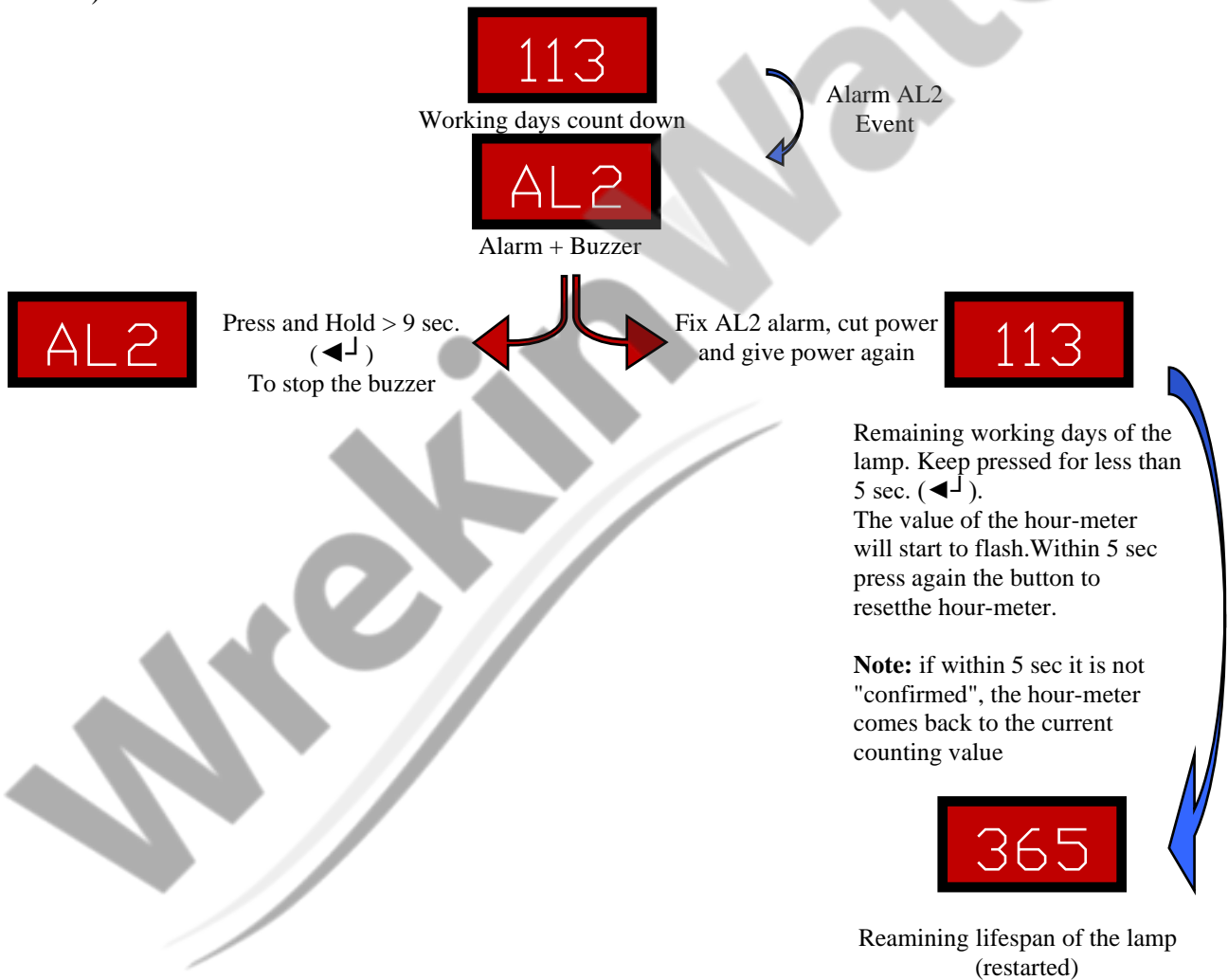
- o Lamp connection.
- o If lamp is burned by testing another lamp.
- o If lamp starter has failed by testing a new lamp.

In case of lamp replacement press and hold for less than 5 seconds the (◀↓) button to restart the working days count down.

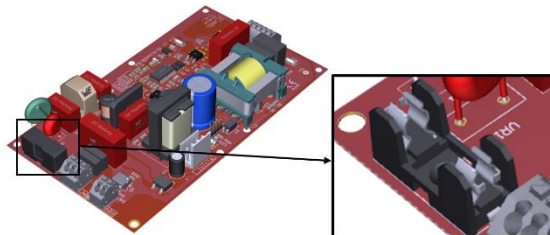


**ATTENTION:** Do not replace the lamp with powered panel!

Press and hold for more than 9 seconds the (◀↓) button to silence the alarm for 7 days (max 4 times).



**DISPLAY OFF:** The fuse of the pcb is blown. Unscrew the cap of the power supply box. Open the small black box closed to the power supply plug (see picture below), replace the fuse:



## 7. Technical data sheet

GENERAL INFORMATION	405	405C	412	440	480
Max flow rate (l/min)	20	30	45	60	85
UVC transmittance	99%- 1 cm				
UVC dose	300 J/m <sup>2</sup>				
Water Temperature range	5-50° C				
Total consumption (W)	28	33	44	44	88
Mounting	Vertical or horizontal				
Quartz sleeve cleaning system	NO				
Manual	ON request (only 440-480)				

UV REACTOR					
Material	Stainless Steel 304 (optional 316L)				
Connections	¾" M	¾" M	1" M	1 ½" M	1 ½" M
Drain/Air Valve	1/8" - 1/2" M thread				
Total Volume (l)	1	1,6	1,8	7,9	7,9
Total weight (kg)	1,5	1,8	2,5	6	6
Max working pressure	10 bars g				
Protection class	IP 55				
Shape	U	U	U	Z	Z
Flow direction	From bottom to top				

UV LAMP					
Number	1				
Lifespan	365 days				
Type	028102	028102C	028104	028104	028124

CONTROL PANEL	AL-AL <sup>2</sup>
Material	Thermoplastic (Bromine/Chlorine free; UL94 flame rating V0)
Dimensions (mm)	217 x 118 x 61 mm
Protection class	IP 54
Ambient temperature range	5 – 45 °C
Power supply	100-265V - 50/60 Hz
Lamp cable length	1 m
Power supply cable	1 m
Feed plug	SCHUKO, UK or no plug
Monitor display (only AL <sup>2</sup> )	Digital SITA
Days meter (only AL <sup>2</sup> )	Yes for total system life
Resettable days meter (only AL <sup>2</sup> )	Yes for lamp life control
Audio alarm (only AL <sup>2</sup> )	With silence options
Alarm Digital Output (only AL <sup>2</sup> )	Optional N/O max 100 mA-250V

Rev. 03-2022

## 8. Maintenance

The UV System of SINGLE LAMP series have been projected and realized by producter with simple and functional principles which make the checking procedures and the periodical servicing particularly easy.

The main points which characterize the ordinary servicing are the following: check quarterly the quartz sleeves, which contain the UV lamps, in order to ensure the maximum disinfection, for the cleaning.

Maintenance work may only be carried out by personnel who have been trained and authorized for this work by the owner and/or user. The owner and/or user must ensure that the maintenance personnel are familiar with the safety measures and regulations, and that they also comply with them, in addition to having read and understood the operating instructions.

Only original replacement parts from the supplier must be used. The following are the recommended service intervals for replacement parts:

UV lamp change - once per 365 days.

UV quartz sleeve clean - frequency depends on the quality of the water.

O-ring for quartz sleeve-once per year.

***Procedure for the UV lamp replacement (365 days max.)***

- 1) disconnect the electrical box from the electrical grid
- 2) lift the cover slightly turning, carefully loosen the electrical 4-pins connection, and extract the lamp from the quartz sleeve
- 3) remove the lamp from the packing, handling it carefully by its ends
- 4) insert the new lamp into the quartz sleeve of the UV System
- 5) connect the lamp to the electrical connection and put again the cover
- 6) connect again the equipment.

Note: for the replacement of the lamp it is not necessary to turn water off

***Procedure for the quartz sleeve cleaning***

- 1) disconnect the electrical box from the electrical grid and turn off water
- 2) remove the lamp, as for the replacement
- 3) unscrew the sleeve-bolt and extract the quartz sleeve with care
- 4) clean the quartz sleeve by wiping it with a cloth soaked with an acid solution such as vinegar or lemon
- 5) reassemble the sleeve being sure to center the guide-spring fixed on the bottom, put the o-ring on the quartz sleeve, then tighten the sleeve-bolt; place the o-ring in the seat of the sleeve-bolt, insert the sleeve inside it, till it leans, then screw on the S/S chamber.
- 6) turn on water checking for eventual leaks
- 7) remount the lamp, its electrical connection and cover
- 8) turn on the sterilizer.

## 9. Warranty Conditions

### WARRANTY CONDITIONS

SITA works in compliance with ISO 9001-2015 quality procedures and subjects all equipments to accurate checks and tests.

**The SITA supplies and progressing are anyway guaranteed only in the limits of technical specifications and request and/or of the certificates and/or of the specific checks as agreed, for 24 months from the delivery date or 30 days from the purchase date, provided that eventual defects are stated as fixed by art. No. 1495 of the civil code.**

**The stainless steel chamber is covered by warranty of 5 years only if used for compatible liquids and correctly installed.**

In no case the integral replacement of the product is foreseen and any responsibility of sita is excluded for delays in the delivery of the goods to the customer, for claims of third parties towards the customer, for losses of goods, costs (installation, servicing and maintenance, transports, and so on) and damages of the customer due to the defect.

Moreover the product repaired or tampered by non-authorized third parties, and the product on which an intervention has been made for defect of for convenience tests, is excluded from the warranty.

Repairs are normally carried out in SITA warehouse or in authorized after-sales service centers signalled by SITA.

**The warranty does not cover:**

1. Accidental breakages due to the transport.
2. Breakages due to the use of equipments not in compliance with what is indicated on the use and maintenance manual or to carelessness.
3. Breakages to the connection to a power grid feeded with a tension different than the foreseen one ( $\pm 10\%$  of the nominal value as fixed by CEI rules)

**DO NOT TAMPER THE ADHESIVE LABELS OF IDENTIFICATION**

The adhesive label with the QC (Quality Control) number must be intact and readable; such number allows to enter the data bank of tests and to find the values obtained in the electrical test of the equipment.

The adhesive label with the S/N (Serial Number) number must be intact and readable; such number allows to enter the data bank of tests and to find the values obtained in the hydraulic test of the equipment.

In case of dispute the court of Genova will be competent.

## 10. Declaration of Conformity EC

Unit produced in the factory of:

**S.I.T.A.**  
**Italian Company for Water Treatment**

### **EC DECLARATION OF CONFORMITY**

The undersigned hereby declares, under full responsibility, that the unit:

**UV STERILIZER**

**SINGLE LAMP SERIES**

**Chamber Mod. 405-405C-412-440-480**

**Power supply model: AL-AL2**

**IS IN COMPLIANCE WITH**

- 2014/35/UE (low voltage directive)
- 2014/30/UE (electromagnetic compatibility)
- 2015/863/UE (RoHS3)
- 2012/19/UE (WEEE)
- IEC -EN 60204-1 norms (safety of machinery-electrical equipment of machinery)
- IEC -EN 55022 norms (characteristics of radio interference)
- D.M. 14 June 2017 (Implementation of Directive 2015/1787/UE on the quality of water intended for human consumption)
- 2014/68/UE (art.4 comm.3) (PED)

The validity of CE marking is subordinated to the equipment integrity. Any modification, if not authorized, will cancel the use of the CE marking. This will occur in case the relevant risks have not been previously analyzed by our company, and a new EC Declaration of Conformity has been issued.