



COMPANY WITH QUALITY MANAGEMENT
SYSTEM CERTIFIED BY DNV
= ISO 9001:2008 =

ULTRAVIOLET DISINFECTION
EQUIPMENT FOR THE TREATMENT OF DRINKING WATER

RACK LCD SERIES

UV 80/3 RACK LCD-LCD PLUS
UV 80/4 RACK LCD-LCD PLUS
UV 80/5 RACK LCD-LCD PLUS



MANUAL OF INSTALLATION, USE AND SERVICING



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1. Introduction

This manual is for the following models of Rack LCD Series:

UV 80/3 RACK LCD-LCD PLUS
UV 80/4 RACK LCD-LCD PLUS
UV 80/5 RACK LCD-LCD PLUS

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

2. General Principles

GENERAL PRINCIPLES

The UV disinfections 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 warrant 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 disinfection system, 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 disinfection, in fact the non-filtration and removal of suspended particles in the water has, as a consequence, a decrease of the disinfection system'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 disinfection system, 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).

The disinfection equipment is constituted by different electronical and electromechanical components assembled in such a way to realize effectively the disinfection process, giving a bacteriologically pure water.

• *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 DIRECTIONS*

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 vapours 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 centres for the recovery of dangerous materials, or to contact directly our technical department.

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

General premise

The installation of the “Rack LCD” disinfection units must be carried out by specialized staff, scrupulously following the instructions given hereby. It has been moreover considered necessary to give some general information about the electrical and water connections.

Caution:

Check that the general switch is in the position OFF (0) 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

Caution:

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 disinfection system in order to remove the suspended particles, eventually present in the water to be treated, which could limit the efficiency of disinfection.

CHECKS

The “Rack LCD” disinfection units 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.

SERVICING

The disinfection systems of “Rack LCD” series have been projected and realized by S.I.T.A. Srl 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

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 9000 hours

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

O-ring for quartz sleeve-once per year

RACK LCD Model :

The Rack LCD model is the cheapest and simplest one of the RACK LCD series, since, even if with the same excellent characteristics of performances and duration, it does not give the reading of the irradiance and temperature.

The Rack LCD series gives only a control of the lamp by the red led that indicates only its state and suggest when it is passed the lamp lifespan.

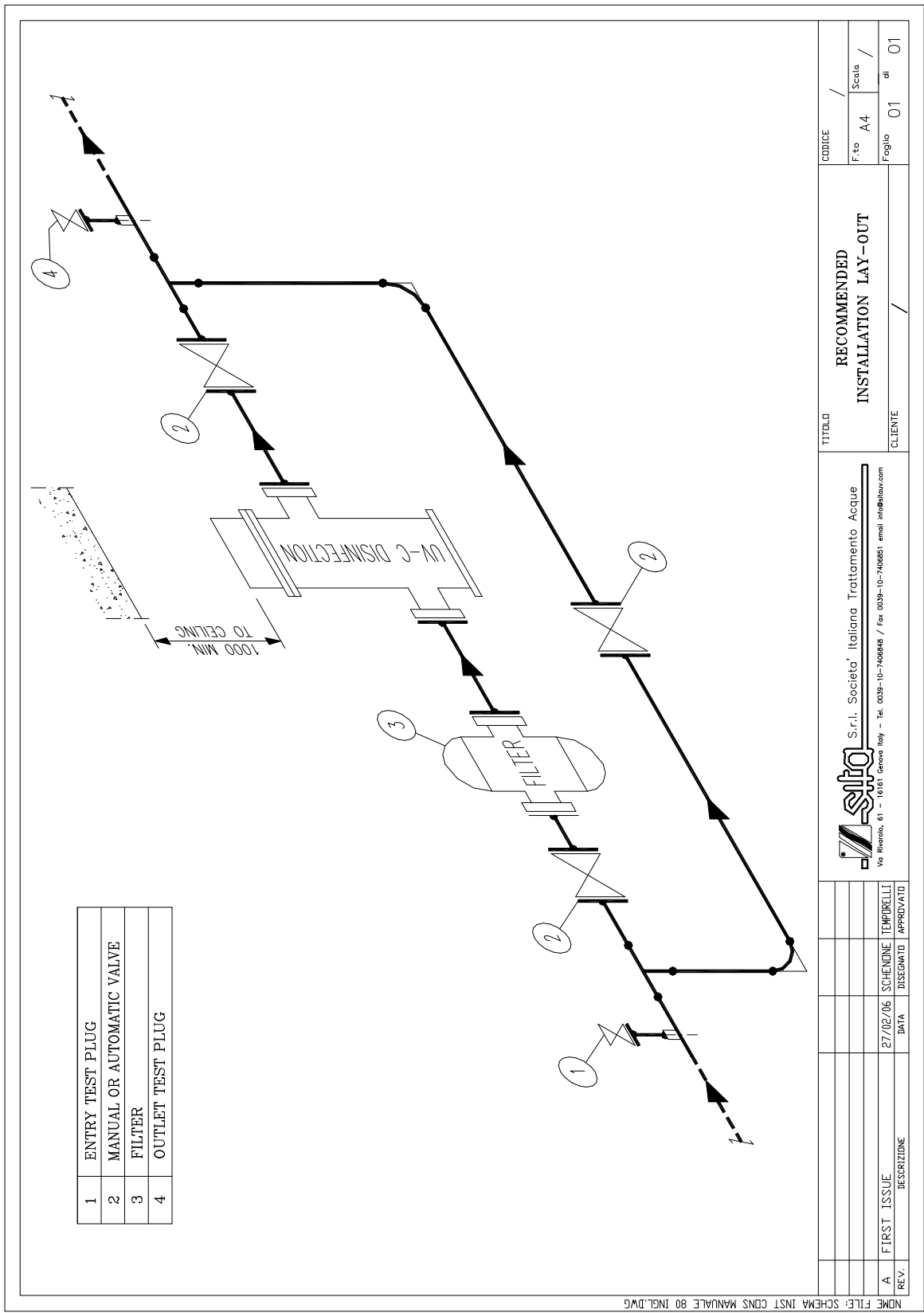
The Rack LCD series gives also a free contact and a 230 V contact for the alarms.

RACK LCD PLUS Model :

The RACK LCD PLUS model is, as the name its self indicates, the top of the series.

The system gives a more advanced control on the state of working of the lamp, permitting to monitor on a display, instant by instant, the situation of the irradiation and the temperature of working.

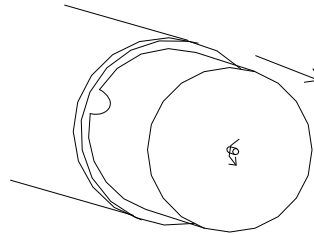
3.1 Installation scheme recommended



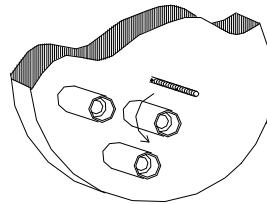
4. The UV Chamber Installation

4.1 Assembling of the UV chamber

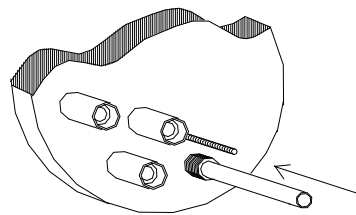
- Extract the inox cover.



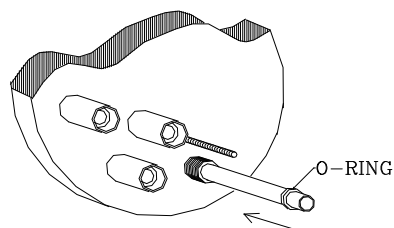
- Unscrew the nylon sleeves bolts.



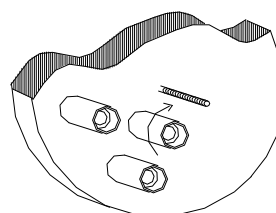
- Insert the quartz sleeves using the special guide bar supplied.



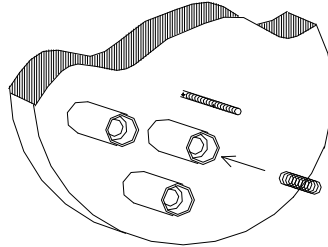
- Insert the o-ring on the sleeves.



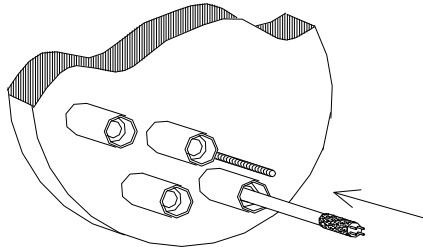
- Screw the nylon sleeve bolts, pressurize the plant and verify that are not water leaks from nylon sleeves bolt.



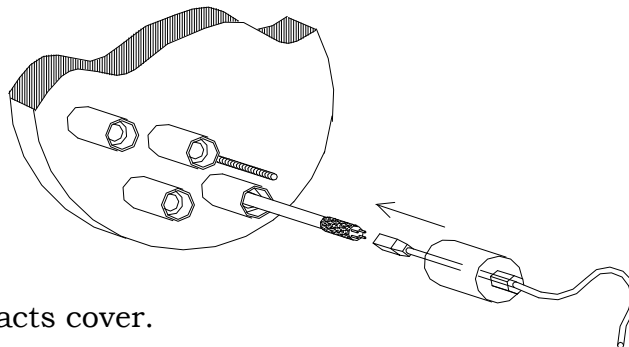
- Insert the sprigs into the quartz sleeves.



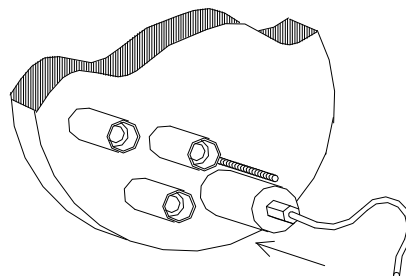
- Insert the UV-C lamps into the quartz sleeves.



- Connect the electrical four-pin sockets.



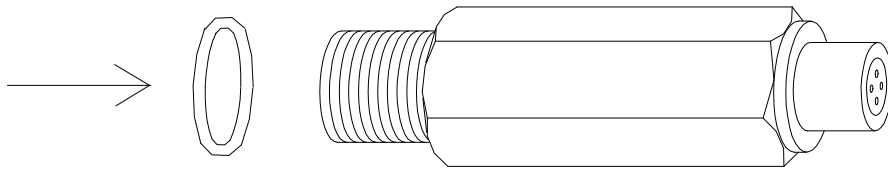
- Insert the pvc contacts cover.



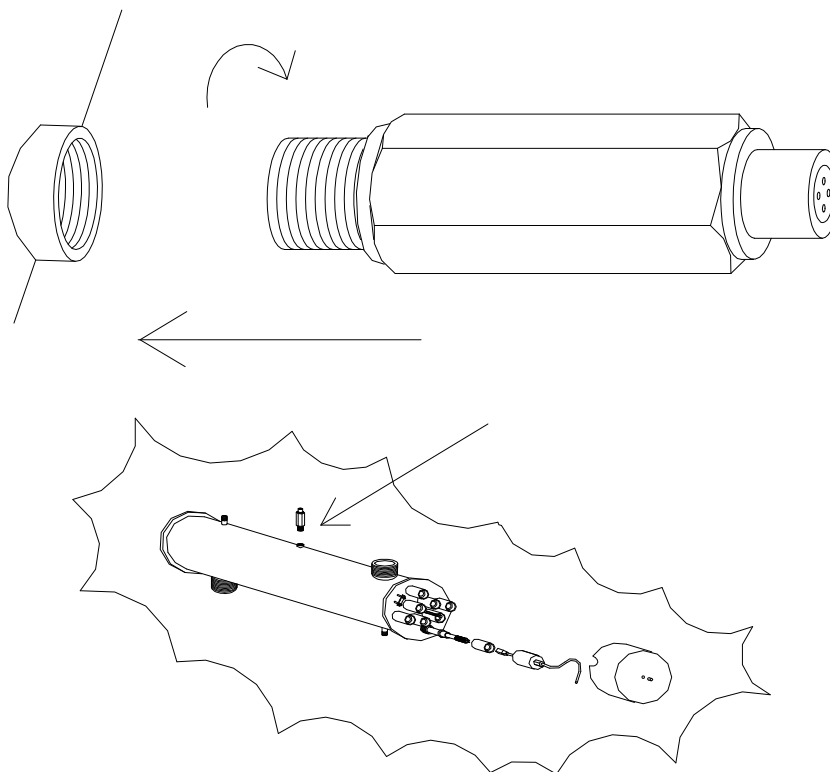
- Insert the inox cover.

ONLY FOR PLUS TOP MODELS

- Insert the o-ring in the screw side of the sensor

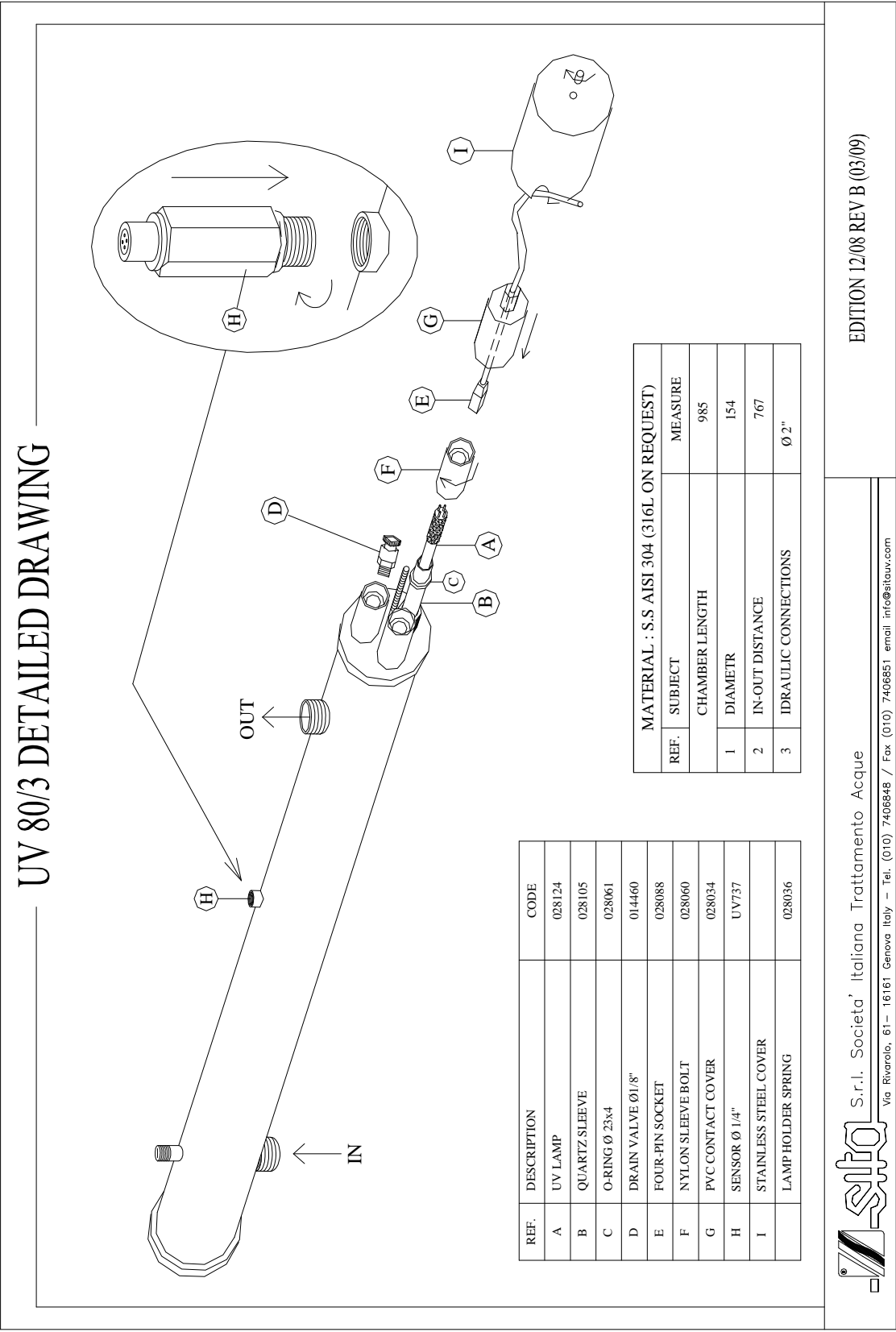


- To screw the sensor so composed on the UV collector.

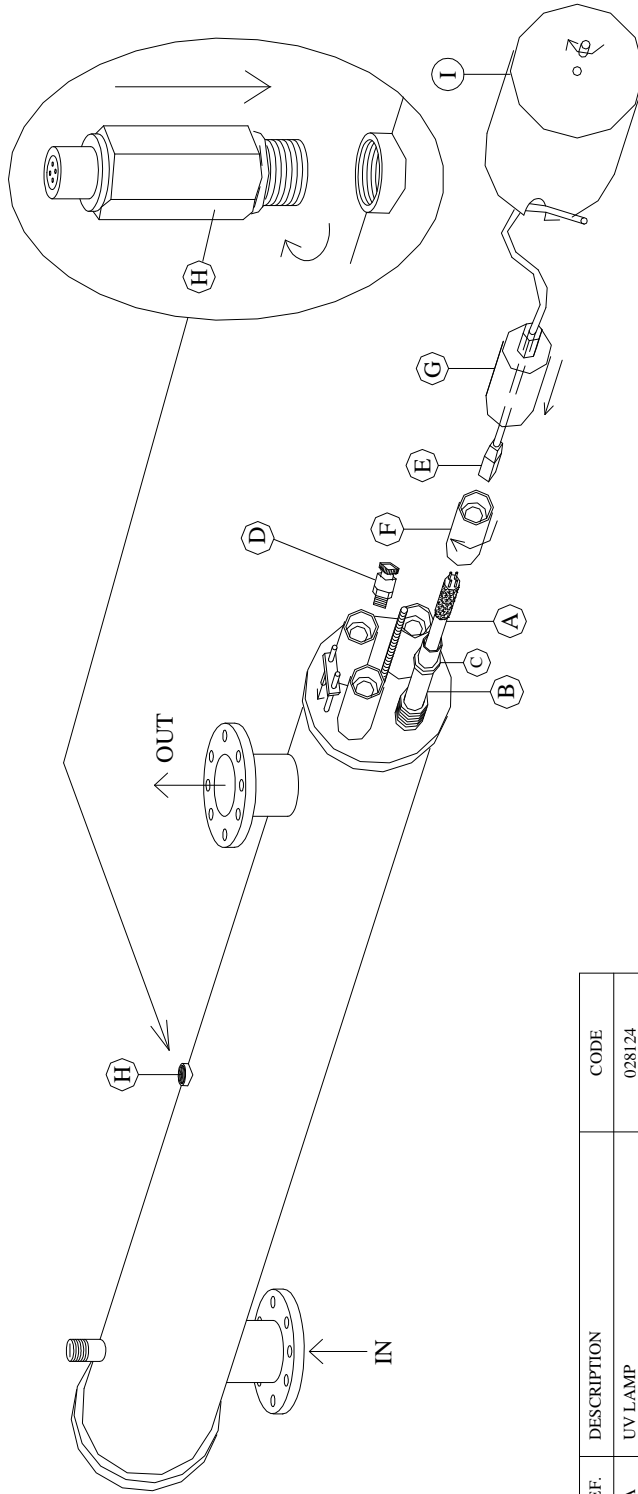


- At last to insert the electrical connector of the main board.

4.2 Detailed drawing of the UV-C chamber



UV 80/4 & 80/5 DETAILED DRAWING



| MATERIAL : S.S AISI 304 (316L ON REQUEST) | | |
|---|----------------------|-------------|
| REF. | SUBJECT | MEASURE |
| CHAMBER LENGTH | | 1080 |
| 1 | DIAMETR | 168 |
| 2 | IN-OUT DISTANCE | 724 |
| 3 | IDRAULIC CONNECTIONS | DN80 - PN10 |

| REF. | DESCRIPTION | CODE |
|------|-----------------------|--------|
| A | UV LAMP | 028124 |
| B | QUARTZ SLEEVE | 028105 |
| C | O-RING Ø 23x4 | 028061 |
| D | DRAIN VALVE Ø1/8" | 014460 |
| E | FOUR-PIN SOCKET | 028088 |
| F | NYLON SLEEVE BOLT | 028060 |
| G | PVC CONTACT COVER | 028034 |
| H | SENSOR Ø 1/4" | UV737 |
| I | STAINLESS STEEL COVER | |
| | LAMP HOLDER SPRING | 028036 |



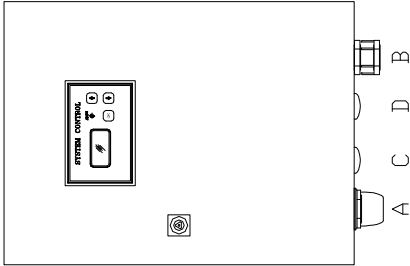
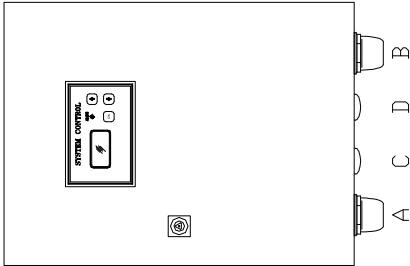

Sita S.r.l. Società Italiana Trattamento Acque

Via Riverolo, 61 - 16161 Genova Italy - Tel. (010) 7406848 / Fax (010) 7406851 email info@sitauv.com

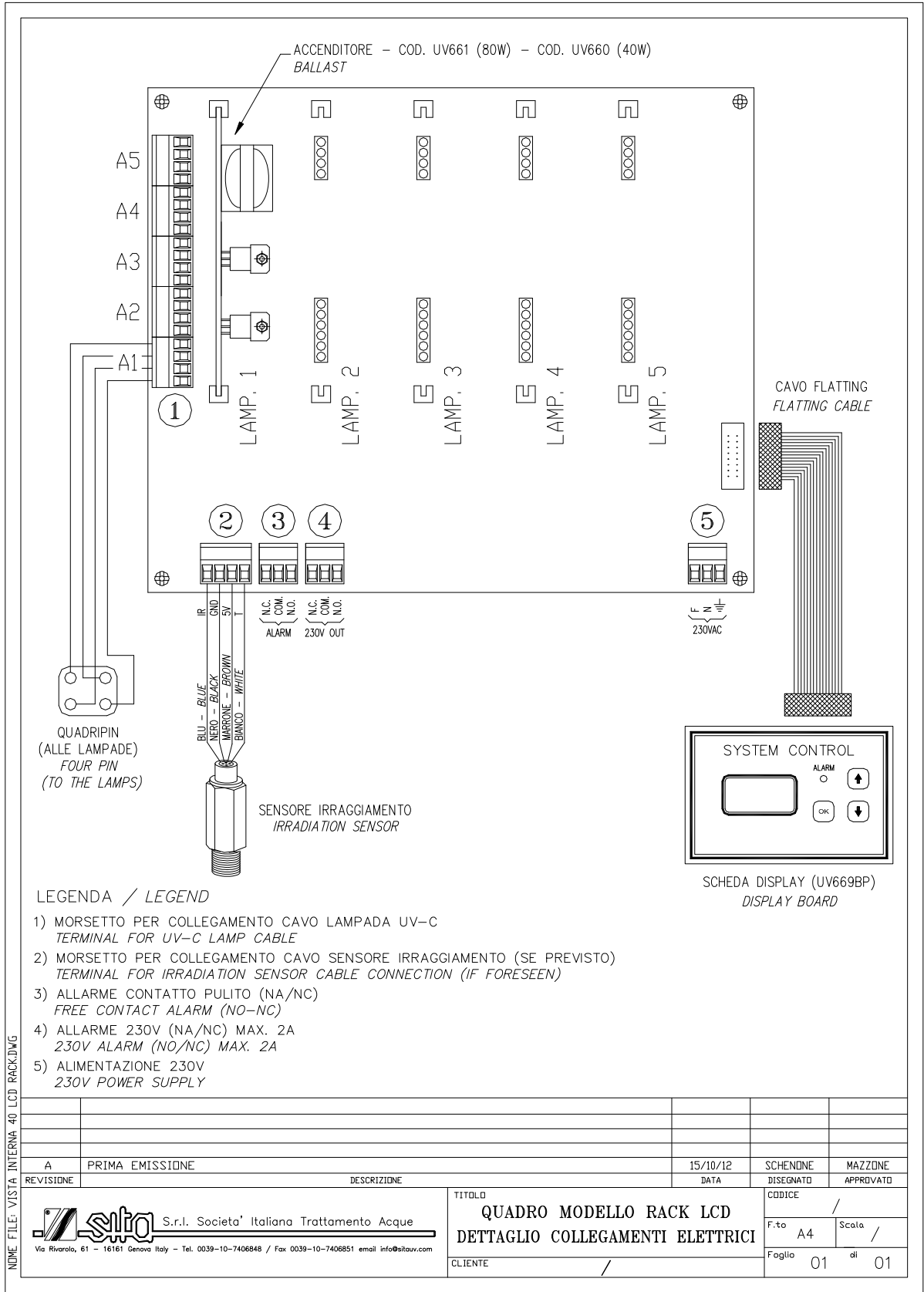
EDITION 12/08 REV B (03/09)

5. Control & Operation

5.1 Description of the Control Panel

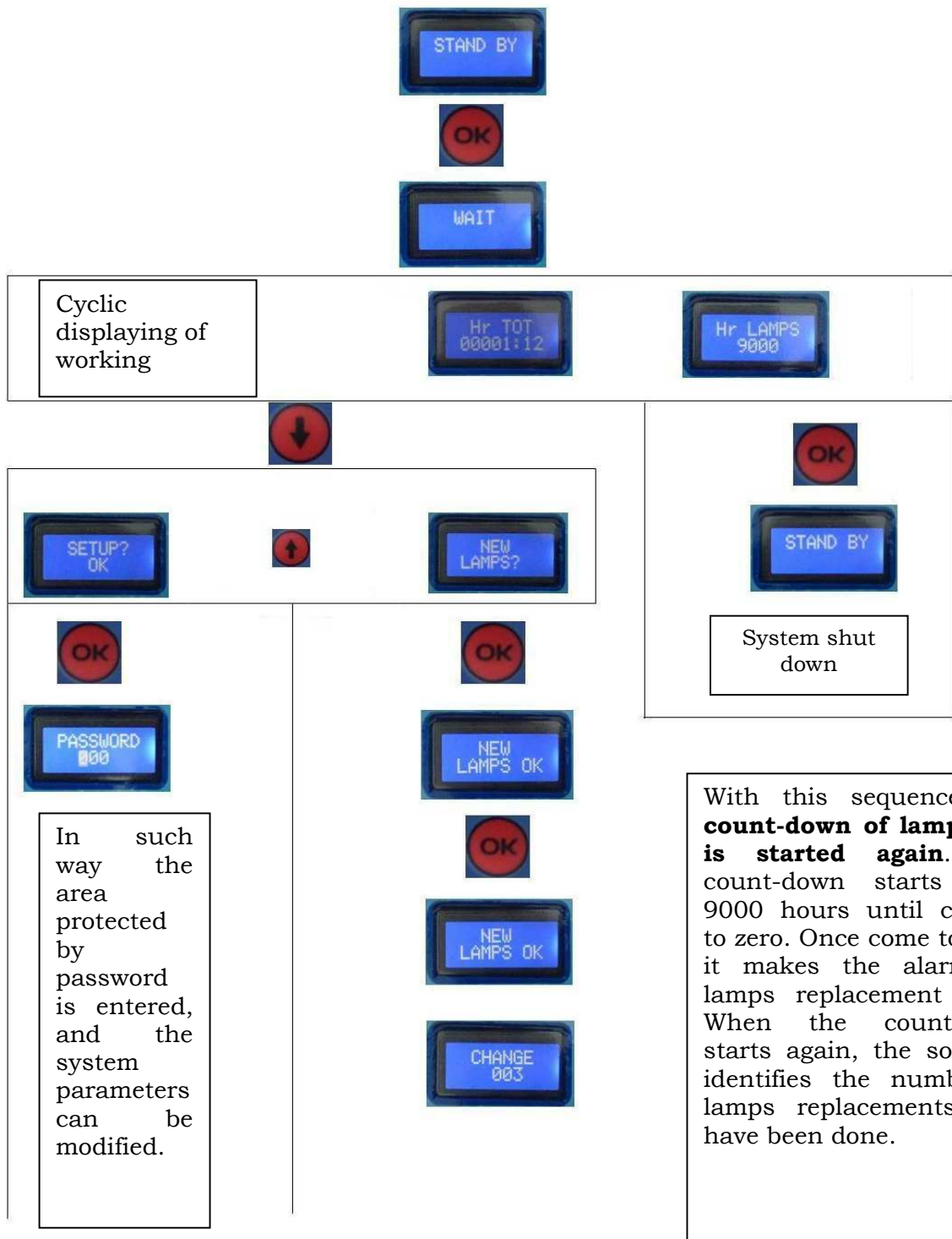
| ELECTRICAL PANEL DESCRIPTION | |
|---|--|
|  |  |
| UV 80/3 ; 80/4 ; 80/5 RACK LCD MODELS | UV 80/3 ; 80/4 ; 80/5 RACK LCD PLUS MODELS |
| A RIGHT CONNECTOR FOR THE ALIMENTATION CABLE OF THE LAMPS | A RIGHT CONNECTOR FOR THE ALIMENTATION CABLE OF THE LAMPS |
| B PG9 CONNECTOR FOR THE ALIMENTATION CABLE OF THE PANEL | B RIGHT CONNECTOR FOR THE ALIMENTATION CABLE OF THE PANEL |
| C PLUG (PREDISPOSING FOR FREE CONTACT) | C PLUG PREDISPOSING FOR SENSOR CABLE |
| D PLUG (PREDISPOSING FOR 230V CONTACT) | D PLUG (PREDISPOSING FOR 230V CONTACT) |
| ALARM AND CONTROL CONFIGURATION | |
| WORKING HOUR-METER | WORKING HOUR-METER |
| LAMP LIFE RESETTABLE HOUR METER | LAMP LIFE RESETTABLE HOUR METER |
| RED LED = ANOMALY | IRRADIATION AND TEMPERATURE DISPLAY |
| | ON ALARM UV<50% : COMMUTATION EXTERNAL OUTLET 230V AND FREE CONTACT N.O./N.C. TO N.C./N.O. |
| | ON ALARM *C>50 : COMMUTATION EXTERNAL OUTLET 230V AND FREE CONTACT N.O./N.C. TO N.C./N.O. |
|  S.r.l. Società Italiana Trattamento Acque Via Rivarolo, 61 - 16161 Genova Italy - Tel. (010) 7406848 / Fax (010) 7406851 email sito@tin.it | |
| EDITION 12/08 - REV. A | |

5.2 Rack LCD Electrical Board description



6. Display Informations (Troubleshooting)

6.1 Electrical Panel Rack LCD Model



ELECTRICAL PANEL RACK LCD MODEL – List of alarms:



In the case of a non-working lamp. If the system has 2 lamps the failed lamp is identified. Check that the lamp is not broken and/or that the lamp-lighter is working.



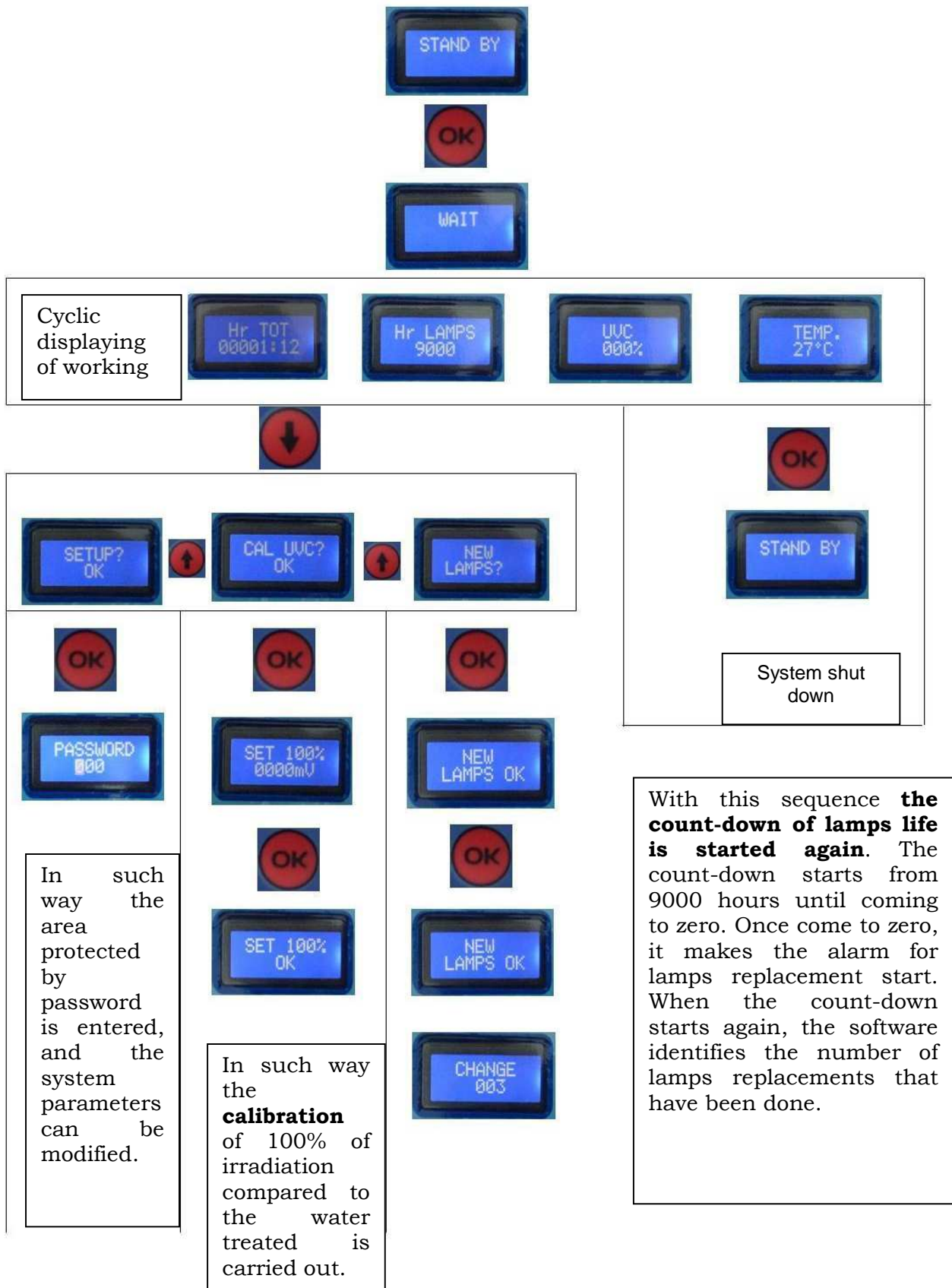
In the case the count-down of lamps-life has come to zero. In such case the lamps must be replaced and the count-down must be started again.

ELECTRICAL PANEL LCD MODEL Other problems:

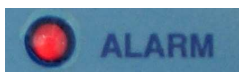


Display OFF in the case of no electrical feeling or burned fuses

6.2 Electrical Panel Rack LCD Plus Model



ELECTRICAL PANEL LCD PLUS MODEL – list of alarms:



In the case of a non-working lamp. If the system has 2 lamps the failed lamp is identified. Check that the lamp is not broken and/or that the lamp-lighter is working.



In the case of low irradiation caused by a fouled quartz sleeve or an exhausted lamp or a water with low uv transmittance or fouled quartz-disk of the sensor.


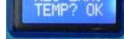



In the case the count-down of lamps-life has come to zero. In such case the lamps must be replaced and the count-down must be started again.



In the case of high temperature of the uv chamber. This may happen when there is no flow or there is air in the uv chamber. In such case the system switches off.

To cancel the alarm and start the system again, press 

then again  until the screenfull  is found, then press . Optionally switch off and start again.

ELECTRICAL PANEL LCD MODEL Other problems:



Display OFF in the case of no electrical feeling or burned fuses

7. Warranty Conditions

| |
|----------------------------|
| WARRANTY CONDITIONS |
|----------------------------|

SITA works in compliance with ISO 9001-2008 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.

8. Declaration of Conformity EC

Unit produced in the factory of:

S.I.T.A.
Società Italiana Trattamento Acque

EC DECLARATION OF CONFORMITY

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

UV DISINFECTION SYSTEM

RACK LCD SERIES

RACK LCD & RACK LCD PLUS MODELS

IS IN COMPLIANCE

2006/95/CE (low voltage directive)

2004/108/CE (electro-magnetical compatibility)

2002/95/CE (RoHS)

2002/96/CE (WEEE)

IEC -EN 60204-1 norms (safety of machinery-electrical equipment of machinery)

IEC -EN 55022 norms (characteristics of radio interference)

D.Lgs. 31/2001 (Implementation of Directive 98/83/CE on the quality of water intended for human consumption)

97/23/CE (art.3 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.