OPERATING MANUAL

U.V. – SYSTEM MODEL

SH-2200

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GENERAL INDEX

1.0 GENERAL DESCRIPTION

The SH-2200 sterilisation system are of one, vertically positioned, purification chambers.
All of the parts that come into contact with the fluid are made of AISI 304 stainless steel or quartz glass, with o-ring in Viton tight.

The chamber are longitudinally trasversed by 1 tube of protective quartz, the insides of which house the germicidal lamp that contain 38W of power.

The purpose of the protective quartz is to thermally isolate the lamps from the fluid, allowing it to operate under conditions of optimal temperature.

Whit this aim, the used tubes are made of ultra pure quartz, obtained through extrusion and having a minimum permeability of 95% at 2537 A°.

The germicidal lamps are the mercury vapour type, of the low pressure, with peak point of emission at 2537 A°.
The exterior of the lamps is designed to absorb the peak of emission at 1800 A°, preventing the formation of ozone in the surrounding air.

The electric control panel is integrating part of the machine.

The above mentioned model are suitable for the sterilisation of pre-filtered water with an iron content no more than 0.5 ppm and a low content of organic substances. Under this conditions the system is able to guarantee the destruction of 95% of the bacteria, at the nominal capacity.

For particular applications involving fluids of various characteristics, we advise you to consults our technical services that, on the basis of a complete chemical analysis, will be able to indicate to you the optimal setting for the equipment.

2.0 INSTALLATION

Before proceeding to the installation of the equipment, we advise you to take out the quartz tube from the sterilisation chamber in order to avoid any accidental damage of them.

To dismount the quartz tube:

- Loosen the plastically pressure tube, rotating it in a anti-clockwise direction until it comes off.
- Take out the quartz with extreme caution and store it in a safe place.

2.1) Positioning

Before proceeding to the installation of the equipment, verify that there is sufficient space above it so that the quartz and the lamp can be easily removed. Check to see if it is possible to position the electric control panel within the immediate vicinity of the machine, in an area that is sheltered from accidental splashing or dripping caused by condensation.

For positioning and piping referrer to the drawing 7076 (overall dimension) and 7076 (installation example).

Do not position the electric panel in environments that are particularly hot, humid or dusty.

The facility of maintenance and the long-term reliability of the machines depend upon a correct though-out positioning of it.

2.2) Hydraulic installation

It is indispensable to provide appropriate sluice-gates for the interception of the fluid at both the entrance and the exit of the systems.

Moreover, we advise the installation of a by-pass system that permits the maintenance and the possible disinstallation of the systems, while maintaining the flow of water in practice.

It is always advisable to place a flexible, anti vibrating coupling between the system and the hydraulic tubing.
Possible vibration or water hammers on the tubing could damage the quartz tubes, or endanger the seal of the plastic pressure tubes.

After the hydraulic installation is completed, reinsert the quartz tubes inside the sterilisation chamber.
Pay close attention when inserting the tube, the blind end of which must be laid down inside the blocking bowl.
If the tubes is incorrectly inserted into the blocking bowl, the pressure necessary for the glow of liquid could cause immediate damage.

Position the grommet O-Ring on the exterior of the quartz preventively lubrificating it with Vaseline.

Insert the pressure tube and screw it in clockwise without forcing it.

Once all the quartz tubes are inserted, slowly pressurise the system, verifying that no liquid has been lost.
After it is clear that the system is sealed, one can proceed to the introduction of the lamps and their connection of the electric control panel.
Connect the electric control panel to the current network through the special low tension transformer (separately provided).

2.3) Functioning

insert the germicidal lam inside the tube of protective quartz.
Insert the special quadric-polar connector, stemming from the electric control panel, into the head of each lamp.

- screw the covering lamp nut without forcing.
- Tighten the press cable connector.

Attention

The quartz tube is slightly longer than the germicidal lamp. Hold the lamp with your hands and insert the electric connector on the bottom before releasing the lamp.
If the lamp is released before the connector is inserted, it would fall inside the quartz tube and could, at the extreme, cause its breakage.

Once the connector is hooked up, delicately push the lamp inside of the quartz tube, until the rabbet.
Connect the electrical board power to the electric network through the special low tension transformer (separately provided).
The led should illuminate (green).

Verify the correctness of the linkage and turn on the machine by acting on the general switch (on the electrical board side).
If all of the linkages have been properly connected, the system, after a warm-up period of 30 seconds, will begin to function.
The led indicating the functioning state of the lamp (yellow) should be illuminated; if this is not the case, check to see if the plug originating from the electric control panel is correctly inserted in the head of the lamp.

Always take away any tension from the electric control panel before removing the lamp from it's position.
Do not stare at the lamps while they are functioning; the emitted rays could irritate your eyes.

2.4) Sanitation

The system using ultraviolet rays guarantee the destruction of the bacteria inside the sterilisation chamber.

Since no substance is added to the water, the system will not be able to affect possible colonies of bacteria that are found inside the tubing, downstream from the system.

For this reason it is essential to proceed to the sterilisation of the tubing, before making use of the water or putting into practice a monitoring analysis.

In order to sanitize the tubing, a solution of sodium hypochlorite can be used, to be dosed in quantity and concentration depending on the dimensions of the distribution system.

Such a procedure can be repeated periodically, as needed and according to analytic reports.

At the end of the sanitation operations it is recommended to let water run plentifully though the entire network until the total elimination of the sterilization solution is obtained.

3.0 ORDINARY MAINTENANCE

The functioning of the system occurs completely automatically.

The only indispensable operations are the periodic substitution of the germicidal lamp and the cleaning of the protective quartz, as needed.

Under normal functioning conditions the usable lifespan of the lamps can be estimated between 7000 and 9000 hours, with parameters depending on various factors, the first of which is number of ignitions per day.

The period of effective functioning of the system can be read on the special hour counter found on the electric control panel.

In any case it is recommended to replace the lamps at least once a year.

3.1) Procedure to substitute lamps:

- Take away any tension from the electric control panel.
- Turn out the press-cable connector.
- Screw the covering lamp nut until a complete extraction.
- Delicately take of the lamps from its respective tubes of protective quartz.
- As soon as it is possible to firmly grab the body of the lamp, disattach the quadrupolar connector feeder.

Attention:
Hold the lamp in your hands until is completely taken out.
If the lamp is released before the connector is inserted, it would fall inside the quartz tube and could, at the extreme, cause its breakage.

* Completely take out the tube of protective quartz and store it in a safe place.

The germicidal lamps contain a notable amount of mercury, highly pollutive, and must be discharger according to the laws in force.

Insert the new lamps inside the quartz tubes and restart the system in the way already described beginning with " installation".

3.2 Cleaning of the tubes of protective quartz

During the normal functioning of the systems, substance suspended in the water can become deposited on the tubes of protective quartz or from encrustments due to salt precipitation.

Such deposits impede the passage of ultraviolet light rays and reduce the performance of the process.

For it is reason it is necessary to provide for the periodic cleaning of the quartz.
It is no possible to establish a priori the frequency of cleaning. This depend essentially on the quality of the entering water.
If it becomes necessary to provide for the cleaning with excessive frequency, a suitable pre treatment process (filtration and/or softening) might be worth while.

The systems equipped with a U.V.-Meter attachment allow you, as a preliminary approximation, to estimate how dirty the quartz are.
Always be sure to clean the protective quartz if, under conditions of normal functioning, the dosage of radiation indicated by the meter falls below 80% of the approved value.

3.3 To provide for the cleaning:

- Isolate the system from the water-supply network by closing the interception valves at both the entrance and the exit of the system.

- Flush out the liquid present inside the sterilisation chamber by opening the special drainage valve.

- Take out the protective quartz according to the way indicated in the chapter titled “Installation”.

The quartz must be cleaned using only a soft cloth and soapy water.
If calcareous incrustations were present, finish the cleaning by emerging the quartz in a slightly acid solution.
In no case should sharp or abrasive objects be used.
At the end of the cleaning rinse generously with drinkable water.

Attention:

The tubes of protective quartz are extremely fragile and, if broken, can cause serious wounds.
Handle them with extreme caution, always protecting your hands with special safety gloves.

Reinsert the quartz inside the sterilization chamber and restart the system according to the way indicated in the chapter titled “Installation”.