



## MANUAL INSTALLATION:

### MODELS:

NT-UV16  
NT-UV40 and NT-UV40-T  
NT-UV75 and NT-UV75-T  
Nano-Tech UV-C Ozone NT-UV87-TO  
NT-UV130F and NT-UV130-TF

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## 1.-SAFETY WARNINGS:

**IMPORTANT:** The instruction manual you are holding includes essential information on the safety measures to be implemented for installation and start-up. Therefore, the installer as well as the user must read the instructions before beginning installation and start-up. Keep this manual for future reference.

The following safety instructions have to be taken into consideration when installing or using the Ultraviolet Unit: The unit is for swimming pool and Spas only. Do not use this device for potable water sanitation (drinking water). The system must be connected only to a supply circuit that is protected by a Ground Fault Circuit Interrupter (GFCI), otherwise could result in electrical shock causing serious bodily injuries, including death.

- Disconnect all power supplies during installation.
- Do not operate the Ultraviolet unit if the power supply lead is damaged.
- Replace damaged cords immediately.
- To avoid possible electrical shock, special care should be taken keeping all connections dry and off the ground. Do not touch the plug with wet hands.
- For each of the following situations, do not attempt repairs yourself; return the unit to an authorized service facility for servicing:

- If the appliance falls into the water, DO NOT reach for it! First unplug it and then retrieve it. If electrical components of the appliance get wet, unplug the appliance immediately.

- Do not operate any unit if it has a damaged cord or plug, or if it is malfunctioning or if it is dropped or damaged in any manner.

- Never view the ultraviolet lamp directly while operating as it could cause eyes injuries, burns or even blindness.
- Lamps and quartz sleeves are extremely delicate. Care should be taken when handling or replacing these components:

- Wear cotton gloves when handling lamps or sleeves.

- Hold bulbs by the ends only and never touch the glass with bare hands, since it would leave dirt which would reduce its working life.

- If any fingerprint, clean it with alcohol.

- Allow the ultraviolet lamps to cool before handling.
- Check that the nut, washer and O'ring are correctly positioned, otherwise the quartz sleeves could be expelled from their holder at speed and injure you.

Special safety warning must be taken into consideration for the model Nano-Tech UV-C Ozone NT-UV87-TO:

- The UV lamp generates ozone that emits a strong odor, even in very small quantities, and can be harmful for eyes, nose and skin.
- Check the system for any leakage. A proper installation and the correct position of the sealing rings are of crucial importance.

## 2.-INTRODUCTION:

Ozone and UV-C are the two most efficient disinfection processes in water treatment. By mixing these two concepts in one unique equipment you will keep your swimming pool water always fresh, crystal clear and totally disinfected, reducing the use of chlorine to a minimum.

### 2-1.-HOW DOES THE UV WORK?

Ultraviolet technology is a non-chemical approach to disinfection. In this method of disinfection, nothing is added which makes this process simple, inexpensive and requires very low maintenance. UV-C light is becoming increasingly favored by the pool industry as its ability to break down and remove chloramines, which will cause eye, skin and nose irritation, and breathing difficulties.

UV-C light at a particular wavelength 253.7nm is a very powerful germicide. It deactivates the DNA of bacteria, viruses and other pathogens and thus destroys their ability to multiply and cause disease. (Fig 1)

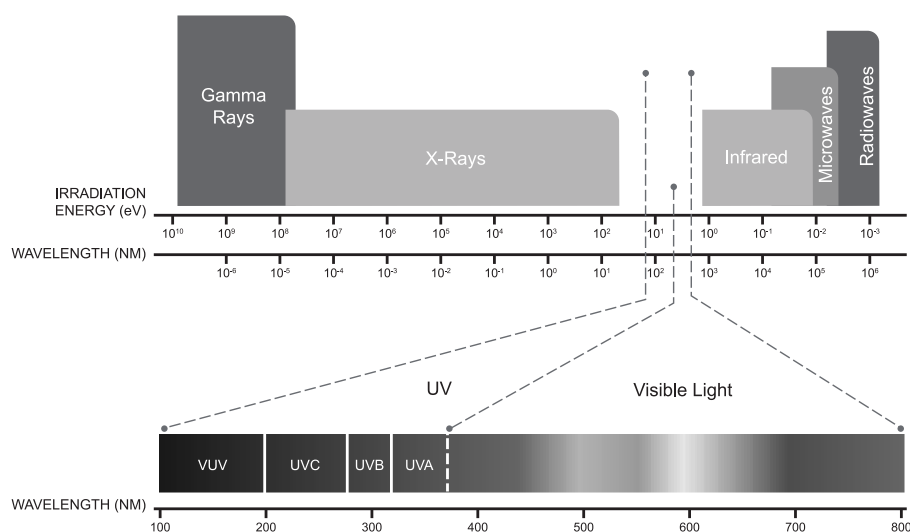


Fig 1

UV dose of  $30\text{mJ}/\text{cm}^2$ , is sufficient for disinfection of the water and protection against 99.9% chlorine-resistant microorganisms.

### 2-2.-HOW DOES THE OZONE WORK?

Emaux has developed a different model which combines the ozone and UV-C technology in one unique equipment. See Technical specifications for model Nano-Tech UV-C Ozone NT-UV87-TO.

Nano-Tech UV-C Ozone NT-UV87-TO model contains a high intensity Ultraviolet lamp different than the other UV models. This special lamp emits two separates wavelengths within the UV spectrum: 254 nm and 185 nm.

While the 254 nm wavelength deactivates the DNA of bacteria, viruses and other pathogens, the 185 nm wavelength is responsible for converting the oxygen contained in the quartz sleeve area into ozone.

The ozone produced is introduced into the water stream by Venturi effect.

Finally, the Ozone and UV will work together to destroy micro-organism such as molds, Legionella bacteria, parasites, algae or viruses, and also breaks down urine, transpiration, cosmetics and sun cream lotion particles without leaving any by-products. (Fig 2)

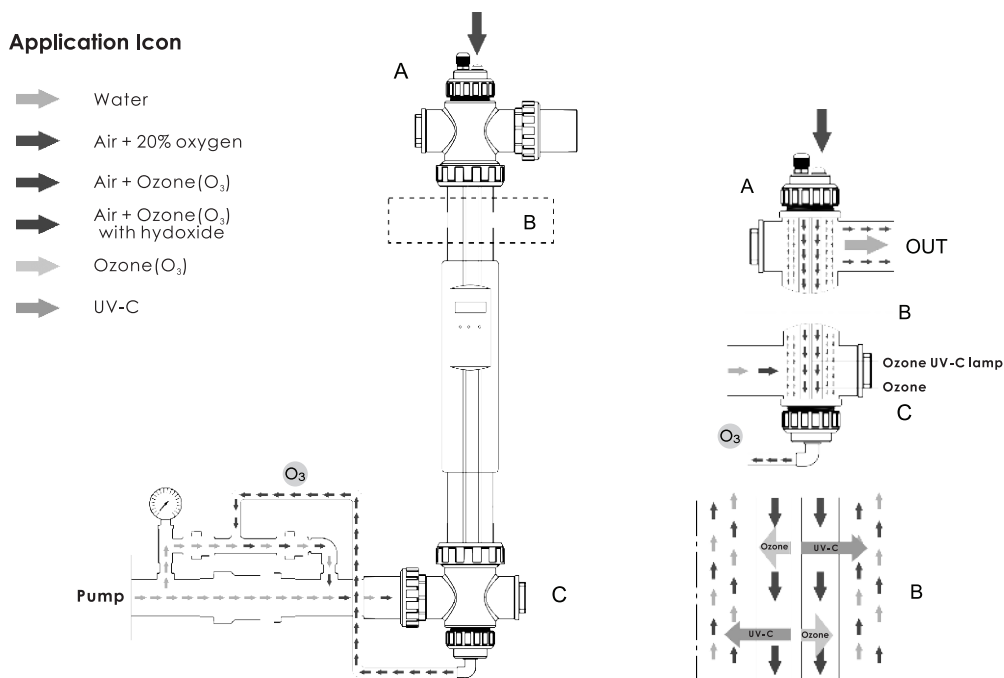


Fig 2

### 3.- MAIN ADVANTAGES:

Ultraviolet advantages:

- Protects your pool against pathogenic organism and algae.
- Environmental friendly.
- No risk of allergies.
- Non-irritation to skin.
- Corrosion and Odor-free.
- Reduces chlorine consumption up to 85%.
- UV-C low pressure lamp life for 9000 hours. Amalgam lamp life for 10000 hours.
- The device indicates when the lamp must be replaced. (Only T models).

- Housing with mirror polished Stainless Steel AISI-316L that increases the UV-C radiation reflection, thereby increasing the efficiency by up to 35%.
- Easy installation and maintenance.

Ozone advantages (Only available for Model NT-UV87-TO):

- Protects your pool against pathogenic organism and algae.
- Environmental friendly.
- No risk of allergies.
- Non-irritation to skin.
- Corrosion and Odor-free.
- Low maintenance.
- Urine, sun cream, cosmetics and transpiration are broken down by Ozone.
- Can reduce the use of chlorine by up to 90%.
- Ozone lamp life for 10000 hours.
- The device indicates when the lamp must be replaced.
- Cost-saving

#### 4.- PRE-INSTALLATION:

Install the unit taking into consideration the access and space for servicing, and in a position where the lamp can be taken out easily.

It is important to design the equipment according to the flow rate required for the installation. If water passes through the unit too fast, the exposure time required for its maximum efficiency will be not enough.

For this reason, the Ultraviolet equipment selected for your pool has to allow a maximum flow rate equal to the filtration pump(s) system.

We also recommend to install the unit in a by-pass.

#### 5.- TECHNICAL SPECIFICATIONS:

MODELS	Main Feature	Max.flow rate(m <sup>3</sup> /h)	Input Power (W)	Type of UV-lamp
UV16	UV	7	16	TUV Model 16W 4P SE
UV40	UV	20	40	TUV Model 36T5 HE 4P SE
UV40-T	UV with timer			
UV75	UV	25	75	TUV Model 36T5 HO 4P SE
UV75-T	UV with timer			
Nano-Tech UV-C Ozone UV87-TO	UV and Ozone System with timer	25	87	GHO36T5VH
UV130-F	UV with flow switch	30	130	Amalgam UV-C lamp. Model TUV 130W XPT SE
UV130-TF	UV with timer and flow switch			

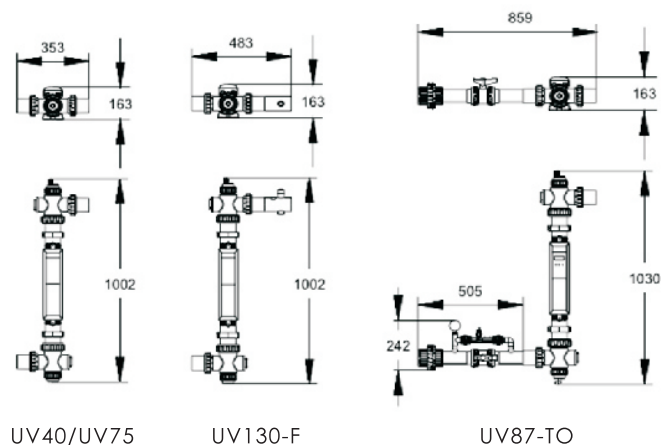
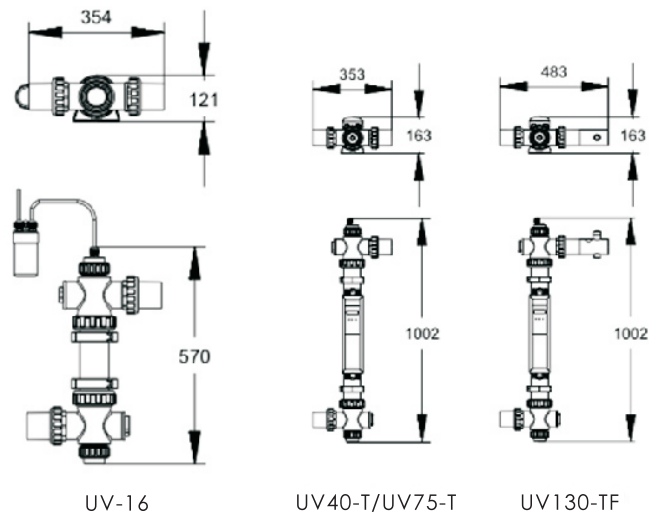
## 5-1.-SPECIFICATIONS FOR UV SYSTEMS:

Power Supply	120/230 V;50-60 Hz
Max.Pressure	3 bar
Connection	1 ½ " ; 2"
Performance at recommended flow rate	30 mJ/cm <sup>2</sup>
Low Pressure Lamp. Life time	9000 hr.
Amalgam lamp.Life time	12000 hr.
IP Protection	IP 54

## 5-2.-SPECIFICATIONS FOR NANO-TECH UV-C OZONE NT-UV87-TO:

Power Supply	230 V;50-60 Hz
Max.Pressure	3 bar
Connection	1 ½ " ; 2"
Performance at recommended flow rate	30 mJ/cm <sup>2</sup>
Max. Ozone production	0.6 gram
UV and Ozone lamp. Life time	10000 hr.
IP Protection	IP 54

## 6.- SIZING:



## 7.- PLUMBING INSTALLATION:

The UV System comes with all internal components already assembled and ready to be installed. Only the pipes connections need to be installed before starting up the equipment.

Never install the unit in an area exposed to full sunlight. The installation must be always taken in a dry and ventilated area.

The device must be always fitted in vertical position, and leaving a minimum space of 30 cm underneath and 1.5 meters at the top of the equipment for servicing and replacing the lamp.

The Ultraviolet equipment will need to be plumbed into the swimming pool / spa / water feature circuit, always after the filter and before pH regulator or salt electrolysis system (if any).

If the filtration pump exceeds the maximum flow rate allowed for the UV system, a by-pass circuit will be required.

Fit the UV system with the supplied clamps in a fixed position and hand-tighten the 3 part couplings. Never use a wrench, tongs or other tools to tighten synthetic parts.

Connect the UV connections 1 ½" or 2" to the circuit pipes.

Activate the pump and check that there is not any leakage in the system.

### 7-1.-SPECIAL PLUMBING INSTALLATION REQUIRED FOR THE MODEL NANO-TECH UV-C OZONE:

The following instructions will be required for the installation of the model Nano-Tech UV-C Ozone:

- 1.- Fit the manometer onto the Venturi circuit using Teflon tape. Hand-tighten the manometer.
- 2.- Insert the thread socket into the inlet UV connection. The other side of the socket will be connected with PVC glue to the entire Venturi circuit. The Venturi circuit must be installed in a horizontal position. (Fig 4)



Fig 4



- 3.- Take the hose of the non-return valve. Fit the longest section of the hose to the bottom side of the device on the air valve and press the clamp inwards. Place the short section of the hose onto the adapter of the venturicircuit. Important: the air coupling on the top of the ozone device is intended to suck the air for ozone generation, so no hose is fitted there.
- 4.- Mount the complete device, including the Venturi circuit at the desired place between the piping.
- 5.- The quality of the ozone air in the system can be adjusted using the ball valve. The closer the ball valve is positioned; the more ozone air will enter the venture. The ideal range on the manometer is between 0.4 and 0.7 bar. (Fig 5).

## 8.- ELECTRICAL INSTALLATION:

The UV System operates on 110/270V 50/60 Hz.

The connections of the device to the electric power supply must be done by the electrical control box of the pumps, so that the filtration pump and the UV System will be connected simultaneously.

The flow switch in the models UV130-F and UV130-TF will automatically switch the device off if no water is flowing through it.

In order to install the earth cable, proceed as follows (Fig 6):

- Pull the cable through the strain relief before fitting the synthetic strain relief onto the earth bolt. The position of the relief will be approximately 10 cm from the eye of the earth cable.
- Place the end of the cable onto the earth bolt fitted to the housing.
- Place a hexagonal nut between two toothed washers on the top of the end of the earth cable.
- Fit the strain relief on top, creating a loop.
- Finally place the lock nut onto the earth bolt.
- Tight the final nut with a spanner or a ring spanner number 8. Do not tighten too firmly, otherwise you may crack the strain relief.
- The transparent nut that was screwed on the earth bolt on delivery has not further use, and can be discarded.

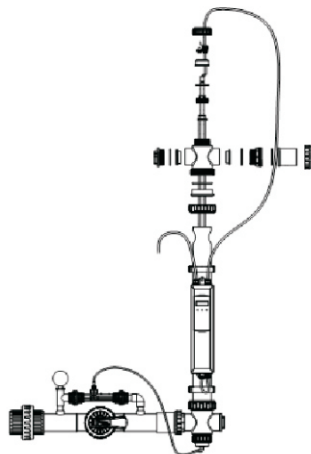


Fig 5

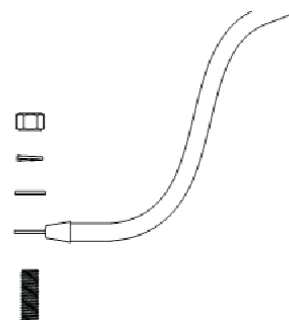


Fig 6

## 9.- START-UP:

Backwash the filter and ensure it is completely clean.

Ensure the pool does not contain Copper, Iron nor algae.

Check the pool balance and adjust the parameters as follow:

- pH: 7.2 – 7.6
- Total alkalinity: 60 – 120 ppm
- Hardness: less than 120 mg/l
- Turbidity: less than 1 NTU
- TSS: less than 10 mg/l
- UV Transmittance: more than 75%.

This will help to reduce drastically the need for chemicals sanitizers, but they will be always required for a proper pool chemical balance.

Check the hydraulic connections and ensure there is not any leakage.

Drain the air from the circuit though the air relief valve installed on the filter (if so equipped).

## 10.- USER INSTRUCTIONS:

### 10.1.- DIGITAL TIMER.

ONLY FOR THE MODELS UV40-T; UV75-T; UV130-TF AND UV87-TO:

Three different options can be selected with the digital timer (Fig 7):

a)- UV lamp life time meter:

As soon as the above mentioned model with Timer is switched on '**MENU**' , the program will carry out a self-test. The display will automatically show the following code: 8888 (display test); rand software version number; 50H or 60H indication of the mains frequency.

Following this, the display will show the meter reading as following:



Fig 7

- For the models UV40-T and UV75-T:When the UVC lamp is switched on for the first time, or after the 'Reset' function has been used, the value '9000' will appear on the display. A dot next to the digit on the far right of the display will blink every second; this indicates that the counter is running.
- For the models UV130-T and UV87-TO: When the UVC lamp is switched on for the first time, or after the 'Reset' function has been used, the value '9000' will appear on the display. A dot next to the digit on the far right of the display will blink every second; this indicates that the counter is running.

For both models, if the UV-C lamp had already been used previously, and is switched on again, the display will indicate the value it had at the time it was switched off earlier.

If you had increased or reduced the value of the time meter by yourself, the display will indicate the latest counter reading it had before it was switched off.

The settings of the time meter can be modified if you wish. This is carried out as follows:

- Press the bottom **'MENU'** and select the option 'Hr' pushing **'MENU'** again.
- The flushing number shown on the screen will indicate the hours left for replacing the lamp.
- Press the bottom **'MENU'** to modify the hours.
  - Pushing the buttons ▲ and ▼ the counter value will increase or decrease in steps of 500 hours from the initial value up to a maximum value of 9500 and minimum of 500.
  - After reach to the hours desired, stand off for 10 seconds until stop flushing and confirm the set hour chosen.

The time meter will indicate in the following manner that the lamp must be replaced:

- From hour position 0672; the display will blink every second. The lamp is to be replaced in 4 weeks' time.
- From hour position 0336; the display will blink every half second; The lamp is to be replaced in 2 weeks' time.
- From hour position 0168; the display will blink every 1/4 second; The lamp is to be replaced in 1 weektime.
- At an hour position of 0000; the digits will blink continuously, and the meter will not continue to count down. The lamp must be replaced.

## b)- Schedule timer:

This option allows you to schedule the working hours desired for the proper disinfection of the pool.

- Press the bottom **'MENU'** and push ▲ or ▼ until option 'UV'. Press **'MENU'** to select.
- 'UV00' means midnight 00:00h; Pressing ▲ or ▼ you will move through all the hours in a day (from 0h to 24h.) UV01 means 01:00 am; UV02 means 02:00 am ...
- Press the bottom **'MENU'** to select one hour.
- The select hour will be flashing. Pushing ▲ or ▼ you will select if at this hour the device will be switched on or off. Wait for 10 seconds until stop flashing and confirm the selection.
- Press the bottom **'MENU'** if you want to go back or select another hour.
- Proceed with the same steps for the other hours.

## c)- Clock:

This option allows you to modify the clock according to the current time.

- Press the bottom **'MENU'** and push ▲ or ▼ until option 'rest'. Press **'MENU'** to select.
- The hour indicator will flash. Press ▲ or ▼ to select the current hour. Wait for 10 seconds until stop flashing to confirm the hour.
- Press **'MENU'** to select the minute indicator will flash. Press ▲ or ▼ to select the current minutes. Wait for 10 seconds until stop flashing and confirm the setting automatically.

## 10.2.- FLOW SWITCH.

ONLY FOR THE MODELS UV130-F; UV130-TF:

These models are supplied with Amalgam UV-light, which is recognized as the strongest UV-C light that can be obtained in the UV-C market.

Consequently, it is very important that the lamp works always with a minimum flow rate. For that reason, the flow switch installed in the chamber will automatically switch the device off if no water is flowing through it.

## 11.- MAINTENANCE:

### 11.1.- REPLACING THE LAMP AND THE QUARTZ GLASS:

The device must be cleaned twice a year. If there is an increase in algae and/or scale, the quartz glass tube in which the lamp is positioned must be cleaned using spirit vinegar or acid in a soft cloth.

The UV-C lamps must be replaced according to the following times:

Model	Operation hours
UV16	9000hr.
UV40	
UV40-T	
UV75	
UV75-T	10000hr.
UV87-TO	
UV130-F	12000hr.
UV130-TF	

Always switch off the power supply when replacing the lamp. And keep the spare parts drawing during replacing, maintenance or dismantling.

The procedure for replacing the lamp is as follows:

- 1.- Stop the circulation pump so that no water is flowing into the unit.
- 2.- Allow the Ultraviolet lamp to cool for at least 30 minutes before handling.
- 3.- Untighten the external union nuts, and drain the water from the device.
- 4.- Unthread the top union nut with the cable and carefully remove the lid with the cable gland from the housing.
- 5.- Helped by its own cable, remove the lamp from the UV system through the central hole in the quartz glass holder. As these parts are very fragile, caution is essential. Do not touch the lamp with your hands; use a soft cloth to handle the lamp. If the lamp has been touched, it is recommended to clean it again using a soft cloth and some alcohol.
- 6.- If the quartz glass needs cleaning or replacing, unthread the quartz glass holder and carefully remove the quartz glass with the sealing ring. Use a soft cloth to handle the quartz glass. If it has been touched, it is recommended to clean it again using a soft cloth.
- 7.- Introduce the new quartz glass. Ensure that it is introduced exactly in the initial position. Do not forget the sealing ring on the top of the quartz glass.
- 8.- Hand-tighten again the quartz glass holder and introduce the new lamp carefully into the quartz glass through the same hole in the quartz glass holder.
- 9.- Install the cable gland for water proofing to the new lamp cable and thread the external union nut to the UV system again.

#### 11.2.- STAINLESS STEEL HOUSING MAINTENANCE:

The stainless steel interior can be cleaned with a soft brush: First of all, the UV-C and quartz lamps have to be removed following the below steps.

- a)- Unthread the adaptor male - male 2 ½" – 2". Remove the sight glass from the opposite side of the adaptor. There are two more threaded adaptors inside the connections. These adaptors make the SS housing holes to be aligned with the connections and sight glass. These two adaptors are placed in the thread of the connection and in the thread of the sight glass.
- b)- Unthread the main union nut from the SS housing, and remove the pressuring connector from inside the nut.
- c)- Remove the PVC tee connections from the SS housing using a plastic hammer.
- d)- Remove the sealing ring from the SS housing.
- e)- Once the Stainless Steel housing has been cleaned, proceed to assemble the UV system again:
  - Introduce the sealing ring on the SS housing.
  - Assemble the PVC tee connections taking into consideration that the connections must coincide with the holes of the SS housing.

- Assembly again the pressuring connector and all the union nuts accordingly. Note that the adaptors that keep the position of the connections aligned with the SS housing have to be threaded in a specific position so that the two holes can be used for an unscrew to help you to thread the adaptor.

### 11.3.- REPLACING THE ELECTRICAL UNIT:

If the electrical unit needs to be replaced, first of all the earth connection must be disconnected from the electrical housing. The entire box must be unscrewed and the earth wiring must be disconnected from the device.

Unscrew the screw top and carefully disconnect the lamp holder from the lamp. All these parts must be carefully retained, as they are not supplied with the new housing or electrical unit.

### 12.- TROUBLESHOOTING:

TROUBLE	POSSIBLE SOLUTION
The lamp has been disconnected from the lamp connector.	<p>Disconnect the power cord from the electrical outlet, disassemble the lamp and confirm the lamp connector is firmly in place.</p> <p>Verify that the electric cable is connected into an energized circuit. Test the electrical circuit.</p> <p>Make sure you have not connected the unit into any power source other than specified on the unit's label. If you have done so in error, the electrical unit has been damaged and needs to be replaced. Contact your supplier for the replacement (Not warranted).</p>
The UV lamp is no longer lit	<p>The lamp has burned out. Replace the UV lamp.</p> <p>The electrical unit has burned out. Contact the supplier and replace a new unit.</p> <p>Verify that the electrical outlet where the UV System is plugged into has the proper voltage and the cable is securely plugged into the outlet.</p>
The pool water is green	<p>Check the pool balance.</p> <p>Check the UV-C lamp to make sure it is on.</p> <p>Run the UV System longer. Run the circulation pump longer to allow the UV System to function fully. If the UV System is operating on a time clock, allow more working hours</p> <p>Replace the UV lamp if it is nearing the 4500 hours useful life. At 4500 hours of operation, the lamp efficiency drops up to 80%. This is normal for all Low-pressure type UV lamps.</p>
The UV System makes noise when operating	<p>Check all the connections and sealing rings. Specially those which are near to the UV lamps and the quartz glass.</p> <p>Check the screws on the installation, and pay attention to those vibration points.</p>
Water is coming out. The system is leaking	<p>Check all the connections and sealing rings.</p> <p>Check that all the connections have been threaded properly.</p> <p>Check the quartz glass if it is broken or damaged.</p>

## 13.- WARRANTY POLICY:

Emaux manufactures its products with the highest standard of workmanship, using the best materials available through state of the art process. Emaux proudly warrants its products as follows:

<b>EXTENDED WARRANTY FOR SPECIFIC PRODUCTS (OFFERED FROM DATE OF INVOICE).</b>	
Product	Warranty Period
Filters & Filter Systems	2 years
Pumps	1 years
Underwater Lights	1 years (bulbs 90 days)
Ladders	1 years
Control devices	1 years
Heat Pumps & Heat Exchangers	1 years
Salt Chlorinators & UV Systems	1 year (2 years for cell material)
Pool Fittings	1 years
Cleaning Equipment & All others	1 years

### 13.1.- EXCEPTIONS THAT MAY RESULT IN DENIAL OF A WARRANTY CLAIM:

- 1.- Damage caused by careless handling, improper repackaging or shipping.
- 2.- Damage due to misapplication, misuse, abuse or failure to operate and install the equipment as specified in this manual.
- 3.- Damage caused by a misuse, abuse or failure to operate and install the equipment out of the scope of a professional level demanded in similar equipment or installation type.
- 4.- Damage due to unauthorized product modifications or failure to use Emaux original replacement parts.
- 5.- Damaged caused by negligence or failure to properly maintain products as specified in this manual.
- 6.- Damage caused by failure to maintain water chemistry in conformity with the standards of the swimming pool industry for any length of time.
- 7.- Damage caused by water freezing inside the product.
- 8.- Accident damage, fire or other circumstances outside the control of Emaux.
- 9.- Items had been repaired or altered in any way by any person that is not authorized by Emaux.
- 10.- Wear & tear parts.

### 13.2.- CLAIM PROCESS:

Summary of Emaux Claim Process in 3 steps:

- a) Claim: Customer contacts Emaux salesperson and provides completed details of the claim which includes:
  - Information about the failed product such as the part number(s) and serial number(s).

- Description of the complaint/failure.
- Pictures

b) Once the complaint is received, the product quality incident will then be reviewed by Emaux's Quality Department following the "Emaux Warranty Policy".

c) Conclusion: After the investigation is completed, Emaux will inform the distributor accordingly.

### 13.3.- WARRANTY OBLIGATION:

Emaux warrants any of above items from workmanship and/or material(s).

Should a defect become evident during the term of warranty, Emaux will, at its option, repair or replace such item or part at its own cost and expense. Customer will need to follow the warranty claim procedures from Emaux in order to obtain the benefit on this warranty.

Emaux is not, however, responsible under this warranty for any cost of shipping or transportation of the equipment or parts thereof "to" or "from" our technical operations. Emaux is not liable for any loss of time, inconvenience, incidental expenses such as labor cost, phone calls, legal cost or material cost incurred in connection with the replacement or removal of the equipment, or any other consequential or incidental damage on persons or assets. Emaux will be not responsible for any business profit loss operation stop due to the non-conformity product equipment. No indemnity or damages can be claimed on any account whatever.

### 13.4.- WARRANTY OR REPRESENTATIONS BY OTHERS:

No dealer or other person has authority to make any warranty or representation concerning Emaux or its products.

Accordingly, Emaux is not responsible for any such warranty or representation.