



WATER UV STERILIZERS

Made in Poland

WATER UV STERILIZERS

AP-POOL-N SERIES



MANUAL

Patent No. 204935

- October 2023 -

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User Safety



WARNING

This device may only be operated and installed by qualified personnel. Before installation, servicing or repairs verify the qualifications of personnel and limit these activities to such personnel. Any activities on this device can only proceed after thorough familiarization with this instruction. Noncompliance with the precautions listed hereon might expose personnel to serious bodily harm (damage to human skin from UV radiation), or damage to the device alone. The manufacturer, TMA, is not responsible for damage to the device caused by improper installation, maintenance and operation.

READ THE MANUAL

Before proceeding with any activity with the sterilizers read the manual.

RETAIN THE MANUAL

Retain the manual for reference during the whole time the device is in operation. All precautions and warnings shall be obeyed by the user at all times during the operation of the device.

POWER SUPPLY

Device is exclusively designed to be supplied from 220-230V 50Hz mains. It shall be installed and grounded in accordance with this manual and the local electrical code. To guard against electrical shock, unplug the device every time work is to be done on it.

GROUNDING

Operation of the device without connected grounding is inadmissible. Ungrounded operation might lead to occurrence of electrical shock and serious bodily harm with death included.

ULTRAVIOLET RADIATION

Direct exposure to UV radiation is harmful to human skin and sight, which can cause from reddening of skin to serious burns, or ultimately loss of eyesight, depending on the time of exposure. In such cases one shall contact physician as soon as possible.



The used electrical and electronic equipment with the crossed-out rubbish bin symbol shall be collected separately. It is prohibited to put the used equipment with other waste. Inadequate use of the used equipment may have a negative impact on the environment and people's health. Separate collection of the equipment contributes to its re-use and recycling. The obligation of the used equipment selective collection rests on the user, who should provide it to the used equipment collector.

TMA devices are equipped with lamps that emit UV radiation, light sources that contain mercury. The owners of waste lamps containing mercury are obliged to collect them separately for further re-use and disposal.

INSTALLATION AND OPERATION INSTRUCTIONS

UV sterilizers for swimming pool water, AP-POOL-N series

A breakthrough in the technique of UV disinfection of swimming pool water.

Thank you and congratulations on your purchase of TMA manufactured UV sterilization product. Sterilizers made by TMA are made from highest quality stainless steel. The thickness of the chamber wall guarantees high factor of safety in operation. All the raw materials and components are of best quality and were processed or manufactured in the EU countries. Plastics used in production of the lamp hoods withstand 110°C working temperatures. Devices completed successfully 30 Atm pressure trials.

A breakthrough is the use of amalgam radiators with two radiation ranges. As a result, they are characterized by significantly increased chloramine removal efficiency.

We hold high hopes that the implementations of these innovative solutions fulfill your expectations for new and more efficient products from TMA.

1. GENERAL INFORMATION

The device delivered to you is disassembled and shall be protected from severe shocks and drops, as the quartz sleeve and lamps are brittle and fragile. The sterilizer shall be exclusively transported in horizontal position. The manufacturer is not responsible for damage arising from the conditions of transport.

Before installation and operation one shall read the instructions and implement the precautions listed.

Noncompliance with these precautions is grounds for releasing the manufacturer from warranty obligations.

All sterilizers produced by TMA have current PZH certificates - available for download in PDF version.

<https://tma.pl/do-pobrania/>

2. APPLICATIONS

Disinfection with UV radiation is a reliable, simple and inexpensive method of sterilization. The use of this method is warranted every time microbiological risk exists.

Following applications might be listed, among many others:

- Water in swimming pools
- Control of green algae in ponds
- Technological waters for cooling machines
- And many others

The primary advantage of UV sterilization is water without microbes and damaging chlorine so often used in sterilization of water.

Sterilizer uses special low pressure UV lamp to produce UV radiation of wavelength of 254 nm and 185nm, which causes photochemical reaction **damaging DNA of microorganisms leading to death or sterility.**

For disinfection to be effective, a limit dose of UV radiation is required. According to the relevant guidelines, this dose is at least 400J/m² for disinfection of drinking water and min. 600J/m² for swimming pool water.

Water flowing from the sterilizer is ready for immediate use.

**THERE IS NO POSSIBILITY OF OVERDOSING UV RADIATION
DURING WATER STERILIZATION IN THE CHAMBER**

**THERE IS NO REQUIRED MINIMUM FLOW OF WATER/LIQUIDS THROUGH THE STERILIZER
CHAMBER**

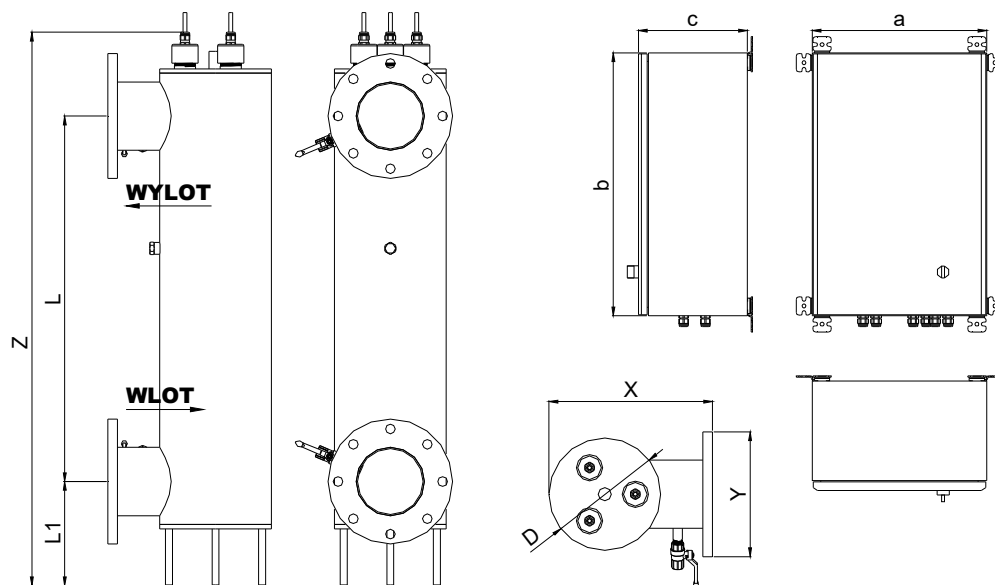
Turning off radiators occurs at a temperature of approx. 85°C. Resuming at approx. 65°C

**MINIMAL FLOW OF WATER IS NOT REQUIRED.
INCREASED FLOW THROUGH THE STERILIZER LOWERS THE DOSAGE DELIVERED TO
MICROORGANISMS AND LOWERS EFFICIENCY OF DISINFECTION**

MANUFACTURER RESERVES THE RIGHT TO CHANGE THE CONSTRUCTION WITHOUT NOTICE

3. TECHNICAL SPECIFICATIONS

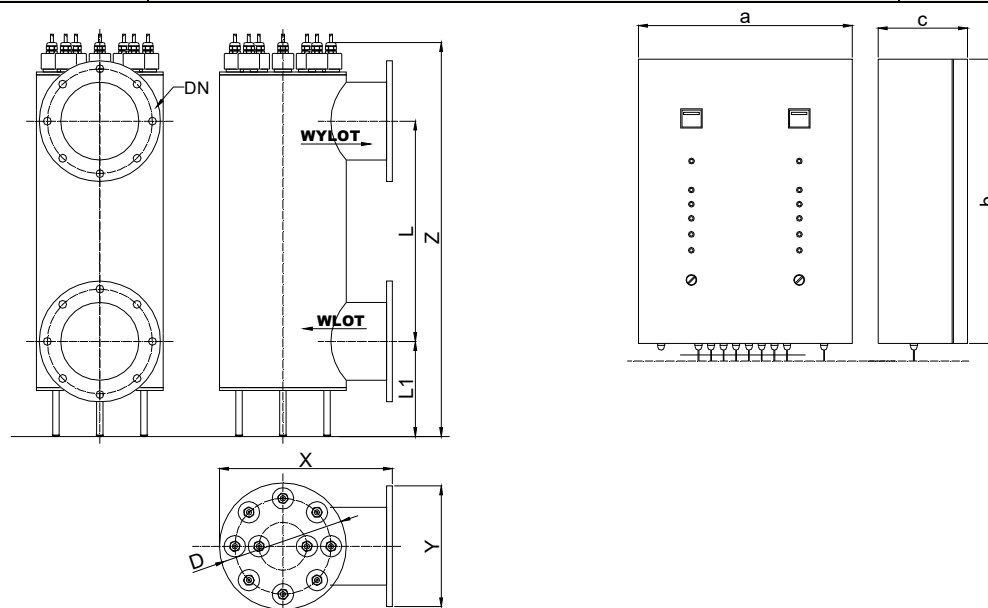
PRODUCENT: TMA Białostoczek 26; gm. Zabłudów, 15-592 Białystok	WATER STERILIZERS- SERIES AP-POOL-N	www.tma.pl e-mail: biuro@tma.pl NIP: 542-000-84-13
	Model: AP-POOL-N 0 - AP-POOL-N 5	



TECHNICAL SPECIFICATIONS:

Model			AP-POOL-N0	AP-POOL-N1	AP-POOL-N2	AP-POOL-N3	AP-POOL-N4	AP-POOL-N5
Power Supply			~220V-240V 50-60Hz					
Safety Class			IP 66					
Chamber Material			Stainless Steel					
Finish			Satin					
Dimensions	X / Y / Z	[mm]	250/130/1125	320/200/1260	320/220/1260	375/285/1270	420x340x1270	420x340x1270
	L / L1	[mm]	L=918	905 / 200,5	886 / 210	834 / 238	770 / 270	770 / 270
	DN / D	[mm]	DN50(R2")	DN80 / 220	DN100 / 220	DN150 / 256	DN200 / 300	DN200 / 300
No. of UV Lamps x Nominal Power			1 X 210W	1 X 210W	2 x210 W	3x210 W	4 x210 W	5 x210 W
Life of UV Lamps			16 000 h					
Operating Temperature			0,5-50°C					
Operating Pressure			10bar(1MPa)					
Nominal Power			220W	220 W	440 W	660 W	880 W	1100 W
Nominal Flow at transmittance T10=95%, dose 600J/m2			12,5 m3/h	18,5 m3/h	35,0 m3/h	64,0 m3/h	103,5 m3/h	138,0 m3/h
Sight glass Muff			1pcs.	1pcs.	2pcs.	3pcs.	4pcs.	5pcs.
Drain Valve			Yes	Yes	Yes	Yes	Yes	Yes
Temperature sensor			No	No	Yes	Yes	Yes	Yes
Orientation			Horizontal/Vertical					
ELECTRICAL ENCLOSURE								
Material			Plastic			Steel		
Safety Class			IP 65			IP42	IP42	IP42
Dimensions		[mm]	325x250x120		400x400x200	400x600x250	400x600x250	400x600x250
Audible UV Lamp Fault Alarm			Yes					
Optical UV Lamp Fault Indicator			Yes					
Working Hours Counter			Yes					
Alarm System			Yes					
Solenoid Cut-Off Valve Terminals			Yes					
Terminals for Remote Alarm Indicator			Yes					
Remote ON/OFF Switch Terminals			Yes					
Weight with Enclosure			13,0kg	39,0kg	52,0kg	68,0kg	73,0kg	98,0kg
UV Intensity Measurement System			On demand /Optional/					

PRODUCENT: TMA Białostoczek 26; gm. Zabłudów, 15-592 Białystok	WATER STERILIZERS- SERIES AP-POOL-N	www.tma.pl e-mail: biuro@tma.pl NIP: 542-000-84-13
	Model: AP-POOL-N 6 - AP-POOL-N 14	



TECHNICAL SPECIFICATIONS:

Model			AP-POOL-N6	AP-POOL-N8	AP-POOL-N10	AP-POOL-N12	AP-POOL-N14
Power Supply			~220V-240V 50-60Hz				
Safety Class			IP 66				
Chamber Material			Stainless Steel				
Finish			Satin				
Dimensions	X / Y / Z	[mm]	420/ 340/ 1270	420 / 340/ 1270	544 / 445/ 1280	544 / 445/ 1280	544 / 445/ 1280
	L /L1	[mm]	770 / 270	770 / 270	670 / 323	670 / 323	670 / 323
	DN / D	[mm]	DN200 / 300	DN200 / 300	DN300 / 406	DN300 / 406	DN300 / 406
No. of UV Lamps x Nominal Power			6 x210 W	8 x210 W	10 x210 W	12 x210 W	14 x210 W
Life of UV Lamps			16 000 h				
Operating Temperature			0,5-50°C				
Operating Pressure			10bar(1MPa)				
UV Power at 254nm			1320 W	1760 W	2200 W	2640 W	3080 W
Nominal Flow at transmittance T10=95%, dose 600J/m2			172,0 m3/h	229,0 m3/h	347,0 m3/h	427,0 m3/h	488,0 m3/h
Sight glass Muff			6 pcs.	8 pcs.	10 pcs.	12 pcs.	14 pcs.
Drain Valve			Yes	Yes	Yes	Yes	Yes
Temperature sensor			Yes	Yes	Yes	Yes	Yes
Orientation			Horizontal/Vertical				
ELECTRICAL ENCLOSURE							
Material			Steel				
Safety Class			IP 42				
Dimensions a / b / c		[mm]	400x600x250	600x800x250	600x800x250	800x800x250	800x800x250
Audible UV Lamp Fault Alarm			Yes				
Optical UV Lamp Fault Indicator			Yes				
Working Hours Counter			Yes				
Alarm System			Yes				
Solenoid Cut-Off Valve Terminals			Yes				
Terminals for Remote Alarm Indicator			Yes				
Remote ON/OFF Switch Terminals			Yes				
Weight with Enclosure			120,0kg	140,0kg	180,0kg	186,0kg	200,0kg
UV Intensity Measurement System			On Demand /Optional/				

Standard features:

- Sterilizer chamber made from stainless steel (AISI 316/316L),
- Electrical enclosure, with control system,
- Set of quartz sleeves
- Set of UV lamps
- Set of O-rings + backup set of O-rings
- Terminals for connecting electromagnetic valve shutting off flow in case of power or lamp failure

Optional Accessories:

- UV intensity sensor
- Sterilizer supports

4. TECHNICAL DESCRIPTION

Sterilizer's chamber is totally made from stainless steel. Quartz sleeves with UV lamps are mounted in the chamber.

When mounted vertically, the inlet should be located in the bottom part of the chamber and the outlet in the upper part. When mounted horizontally, the arrangement is optional.

At the bottom of the chamber the drain plug is located, which is used to empty the chamber from fluid. The power supply system is mounted in the electrical enclosure and connected with the sterilizer by hi-potential wires. The enclosure houses, besides the power supply, is equipped lamp working hours counter, the audible and optical alarm, and indicating lights with the terminals for electromagnetic shutoff valve in case of lamp or power failure.

Power supply is 180-240V \pm 10%, 50-60 Hz (or 3 x 220-230V 50/60Hz). The device has anti-shock protection by earth terminal.

Sight glass muff enables indication of working condition of the UV lamps.

4.1. LEADING OUT THE ALARM SIGNAL IN AP-POOL-N 0, AP-POOL-N 1 MODEL

Connect alarm signal wires to the terminals 1 & 2 on electronic plate /neutral – without voltage/.

The contacts 1 and 2 operate with a preset delay of about 2-3 minutes - this is the time to reach the full efficiency of the device. During this period, terminals 1 and 2 are open. After 2-3 minutes, the device operates as follows:

• CONTACTS 1-2 CLOSED	- sterilizer working properly
• CONTACTS 1-2 OPEN	- UV lamp damage - Alarm on - Power cut off

4.2. CONNECTION OF SOLENOID VALVE IN AP-POOL-N 0,AP-POOL-N 1 MODEL

There is possible to connect solenoid valve [max. 2A] to the terminals 1 & 2 /neutral/ on the electronic plate in electrical enclosure.

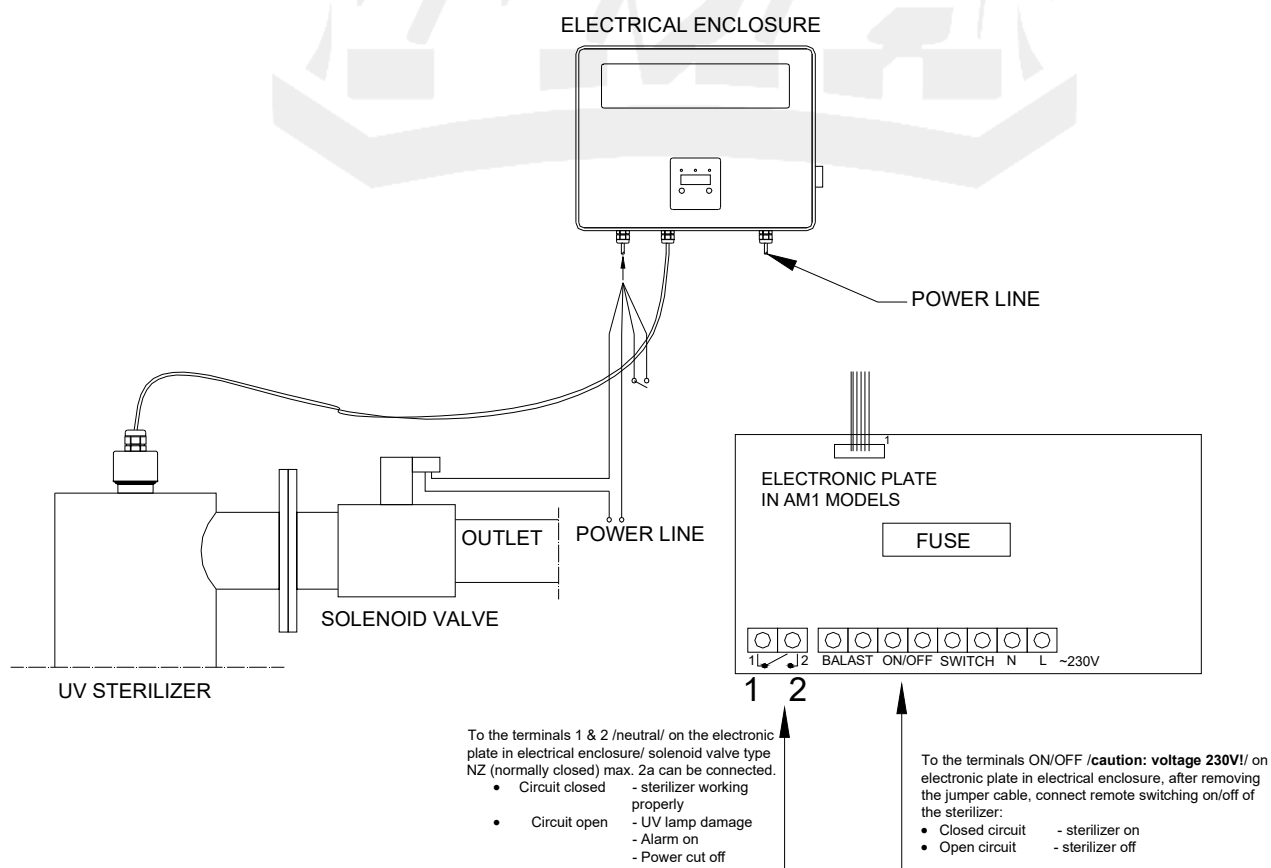
The contacts 1 and 2 operate with a preset delay of about 2-3 minutes - this is the time to reach the full efficiency of the device. During this period, terminals 1 and 2 are open. After 2-3 minutes, the device operates as follows:

• CONTACTS 1-2 CLOSED	- sterilizer working properly
• CONTACTS 1-2 OPEN	- UV lamp damage - Alarm on - Power cut off

4.3. REMOTE-CONTROLLED ON/OFF SWITCH IN AP-POOL-N0,AP-POOL-N1 MODEL

After removing the bridge, it is possible to connect remote-controlled switch to the ON/OFF terminals /**caution: voltage 230V!**/.

• CONTACTS 1-2 CLOSED	- sterilizer on
• CONTACTS 1-2 OPEN	- sterilizer off



AP-POOL-N0,AP-POOL-N1 – Diagram for solenoid valve, alarm signal and outside connection of the device.

4.4. LEADING OUT THE ALARM SIGNAL IN OTHER MODELS

Connect the alarm signal wires to the terminals 1 & 2 /neutral/ on the terminal blocks in electrical enclosure /in the right bottom corner/.

The contacts 1 and 2 operate with a preset delay of about 2-3 minutes - this is the time to reach the full efficiency of the device. During this period, terminals 1 and 2 are open - this is indicated by the green "SYSTEM OPERATION CONTROL" diode flashing. After 2-3 minutes, the device operates as follows:

• CONTACTS 1-2 CLOSED	- sterilizer working properly
• CONTACTS 1-2 OPEN	- UV lamp damage - Alarm on - Power cut off

4.5. CONNECTION OF SOLENOID VALVE IN OTHER MODELS

There is possible to connect solenoid valve [max. 2A] to the terminals 1 & 2 /neutral/ on the electronic plate in electrical enclosure.

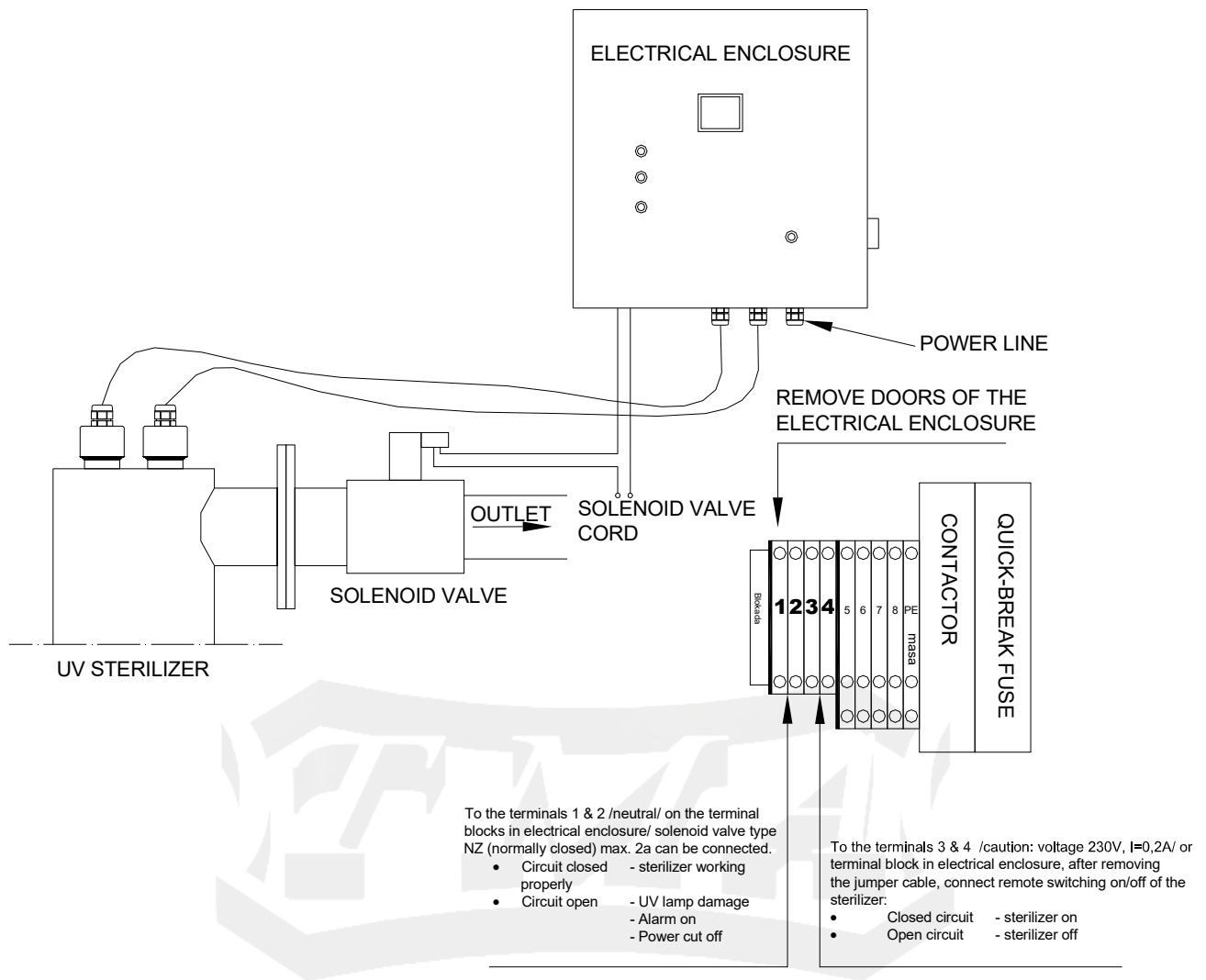
The contacts 1 and 2 operate with a preset delay of about 2-3 minutes - this is the time to reach the full efficiency of the device. During this period, terminals 1 and 2 are open - this is indicated by the green "SYSTEM OPERATION CONTROL" diode flashing. After 2-3 minutes, the device operates as follows:

• CONTACTS 1-2 CLOSED	- sterilizer working properly
• CONTACTS 1-2 OPEN	- UV lamp damage - Alarm on - Power cut off

4.6. REMOTE-CONTROLLED ON/OFF SWITCH IN OTHER MODELS

After removing the bridge, it is possible to connect remote-controlled switch to the terminals 3 & 4 /**caution: voltage 230V!, I=0,2A/**.

• CONTACTS 1-2 CLOSED	- sterilizer on
• CONTACTS 1-2 OPEN	- sterilizer off

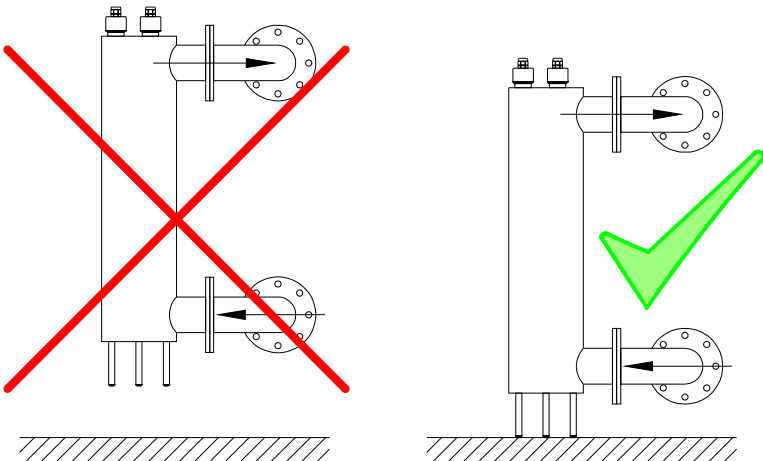
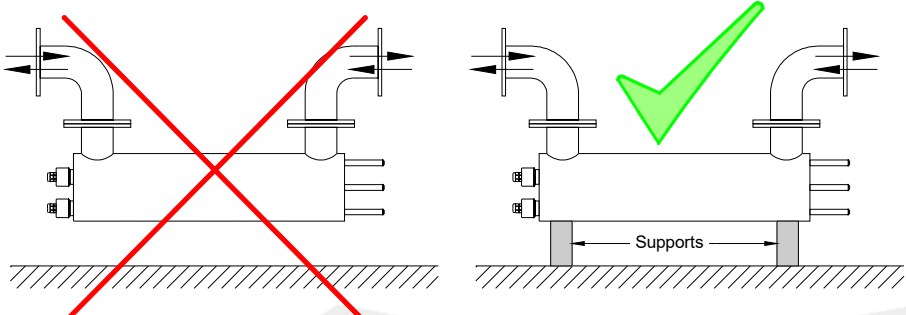

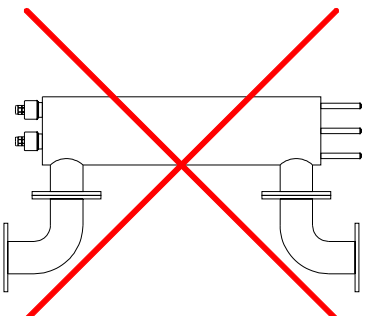


AP-POOL-N 2 - Diagram for solenoid valve, alarm signal and outside connection of the device.

5. INSTRUCTION FOR INSTALLATION AND OPERATION

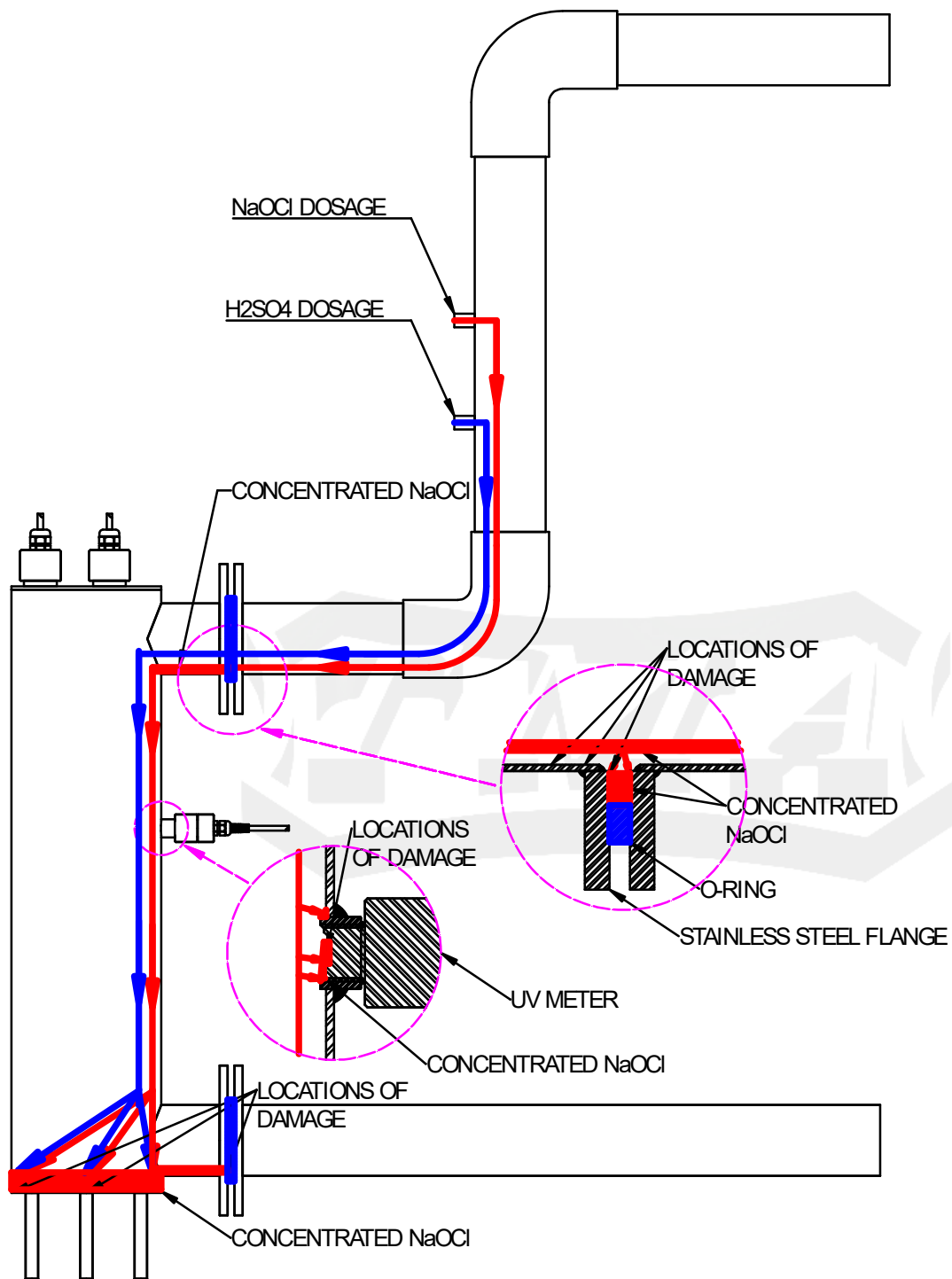
5.1. CHAMBER ASSEMBLY

- Device assembles in horizontal position. Temperature range for installation is from 0.1 to 35°C. **DO NOT ALLOW THE CHAMBER TO FREEZE.**
- Correct assembly shall prevent the creation of air gap in the chamber.
- By-pass installation is recommended.
- Assembly cannot cause strain on the nipples.**
- It is forbidden to mount the sterilizer on flanges without appropriate support.**
- Upstream of the intake install potable water filter, minimum rating 0.1 mm, recommended 0.05 mm. Water shall not contain more than 0.3mg Fe and 0.1 Mn.
- Install cut-off valves on both sides.

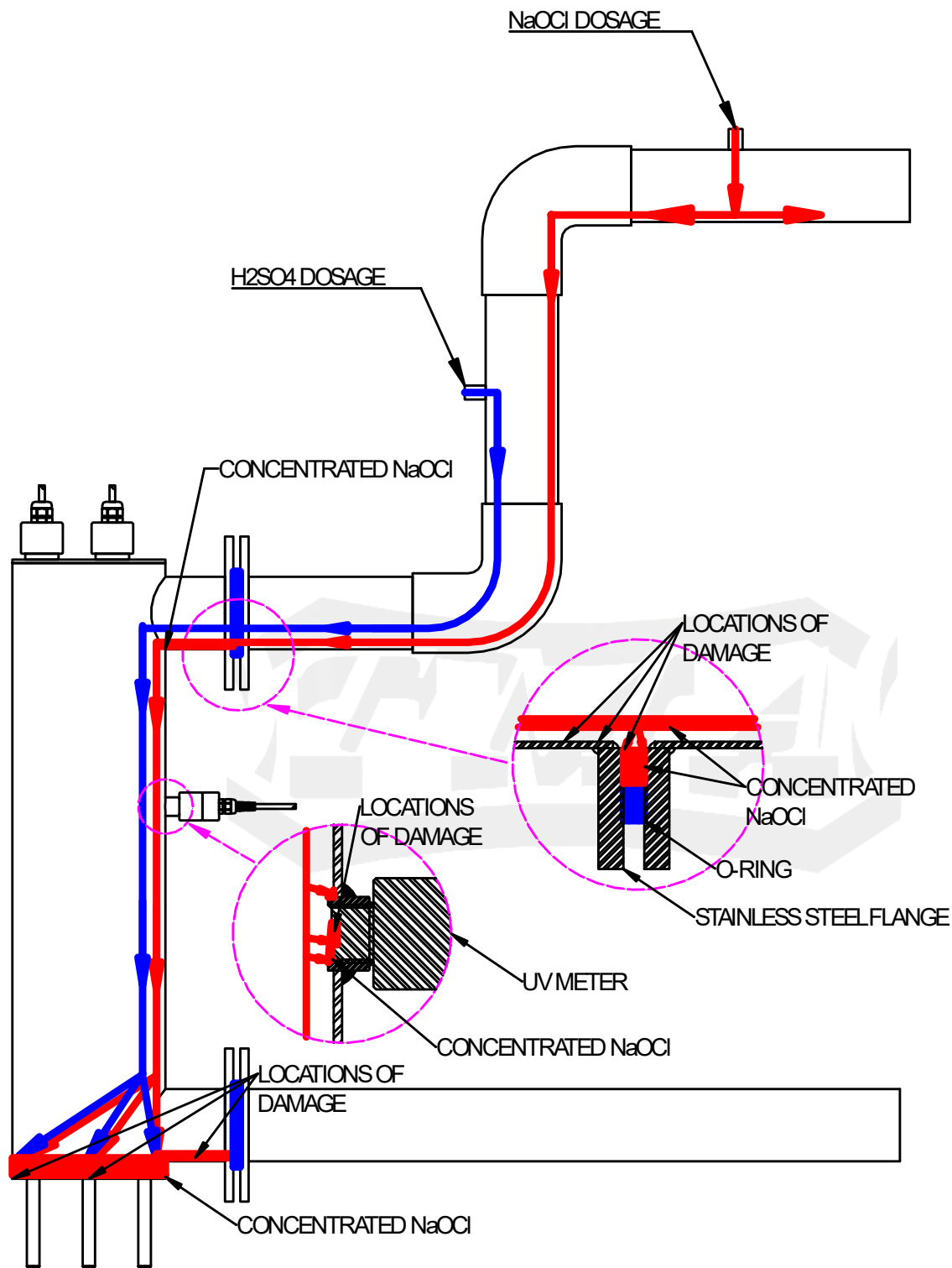
	Vertical
	Horizontal
	Horizontal
	Horizontal Forbidden

5.2. LOCALIZATION OF DISPENSERS IN THE INSTALLATION

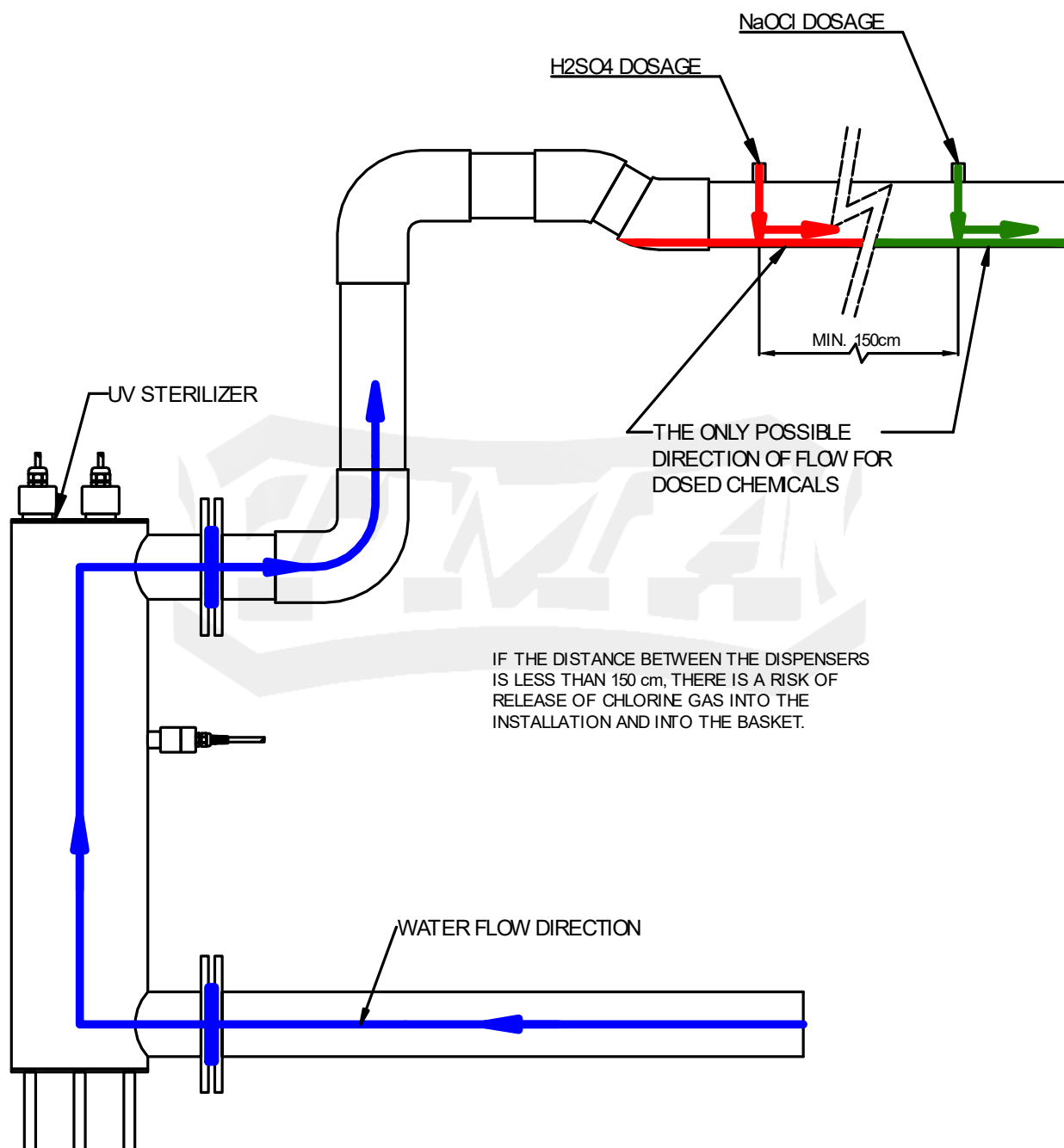
Incorrect placement of dispensers in the installation!!!



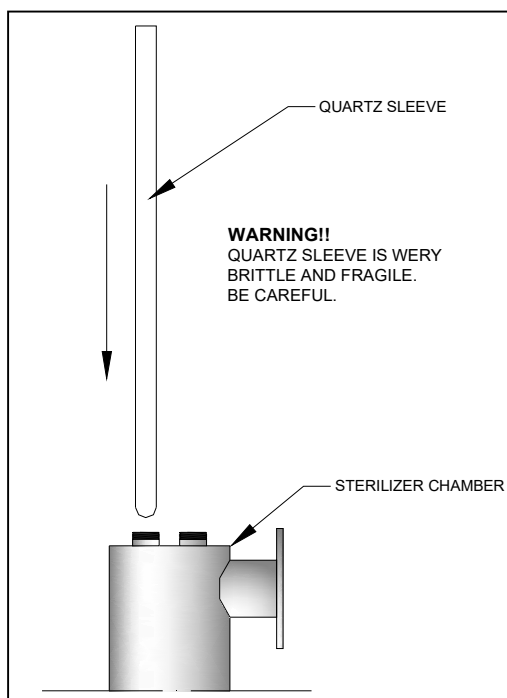
Incorrect placement of dispensers in the installation!!!



correct placement of dispensers in the installation



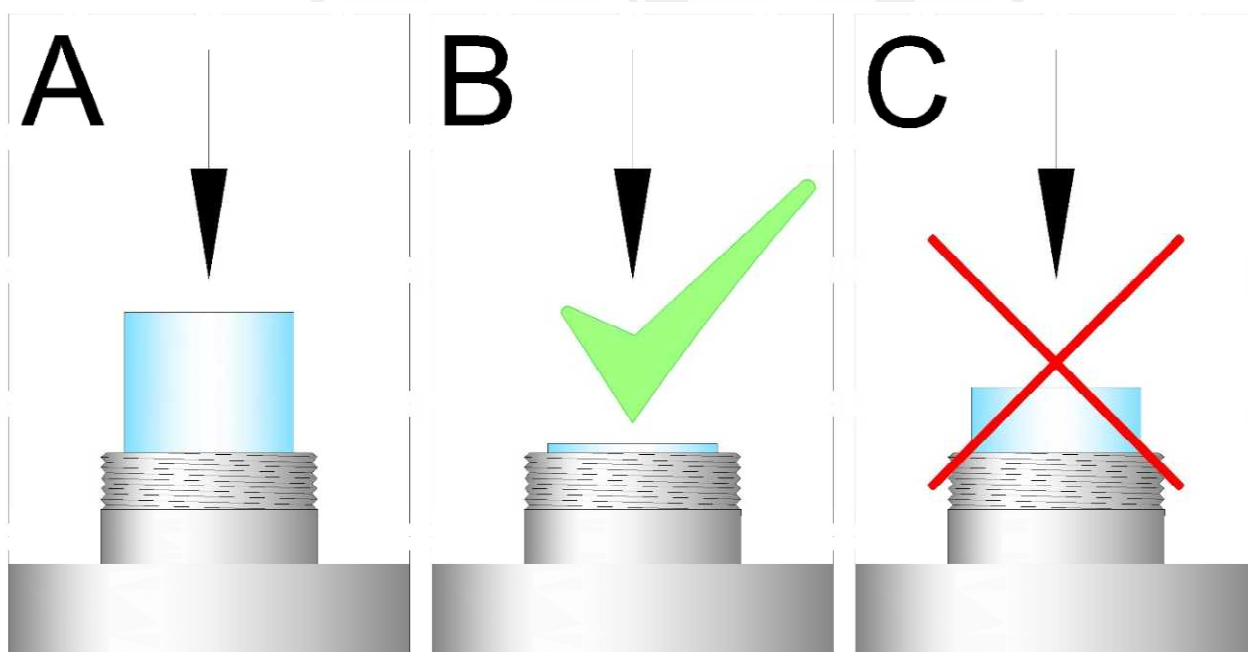
5.3. QUARTZ SLEEVES ASSEMBLY



(GRAPHICAL MOUNTING INSTRUCTION AT THE END)

- Slide in gently through the nipple the quartz sleeves; continue through sleeve guides onto nests at the bottom.
 - Press the Quartz sleeve into the chamber with your hand to check whether it is properly seated on the spring
- (drawing A)
- When installed correctly, the Quartz sleeve should be almost flush with the metal nipple
- (drawing A)
- If the Quartz sleeve still protrudes by more than 10 mm despite being pressed in (picture C), check the position of the Quartz

sleeve in the chamber again. If the problem persists, it may mean that there are impurities at the bottom of the spring that prevent it from working normally (sand, gravel, small stones). In such a situation, thoroughly rinse/clean the sterilizer chamber to remove impurities.



Position of the quartz sleeve after placing it in the bottom socket	Correct position of the quartz sleeve after pressing by hand	Incorrect positioning of the pipe when trying to press it by hand
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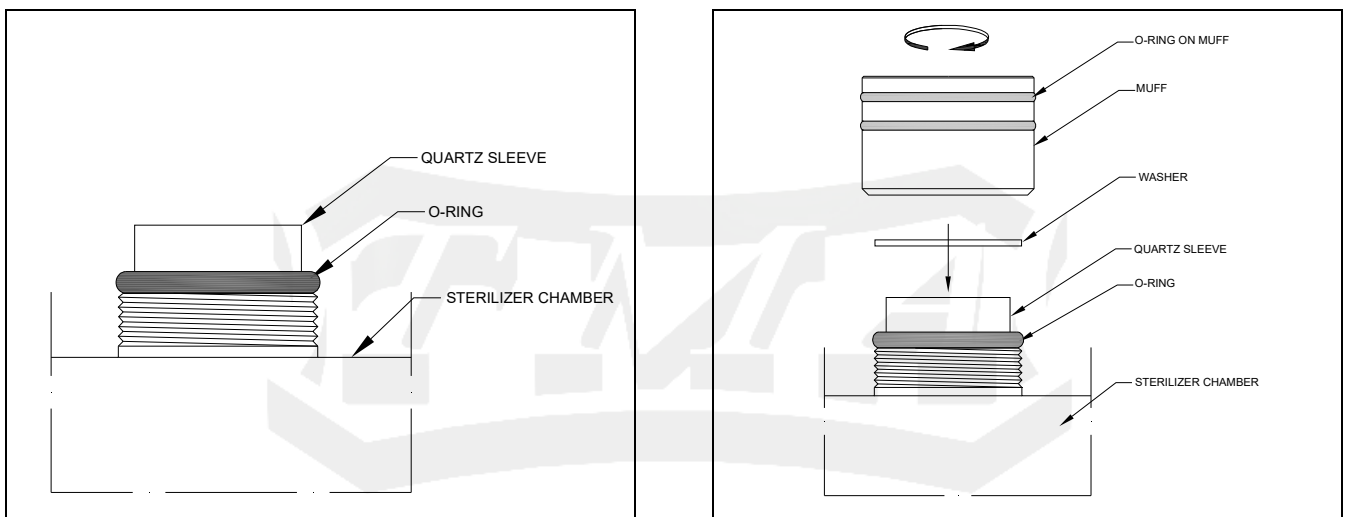
!!! ATTENTION !!!

Tightening the MUFF when installing the QUARTZ SLEEVE incorrectly may damage them.

- d) Place the O-ring over quartz sleeve and against the lip of the nipple. Next place the washer over the O-ring, screw the muff onto this assembly with the provided tool. Turn the muff to considerable resistance in order to tighten the seal. Tightening the muff shall not break the sleeve.
- e) **Fill the chamber under full pressure and check the seal tightness.**

!!! ATTENTION !!!

Tightening the muffs with other tools may cause quartz sleeves breakage.



5.4. UV LAMPS AND ELECTRICAL ENCLOSURE ASSEMBLY

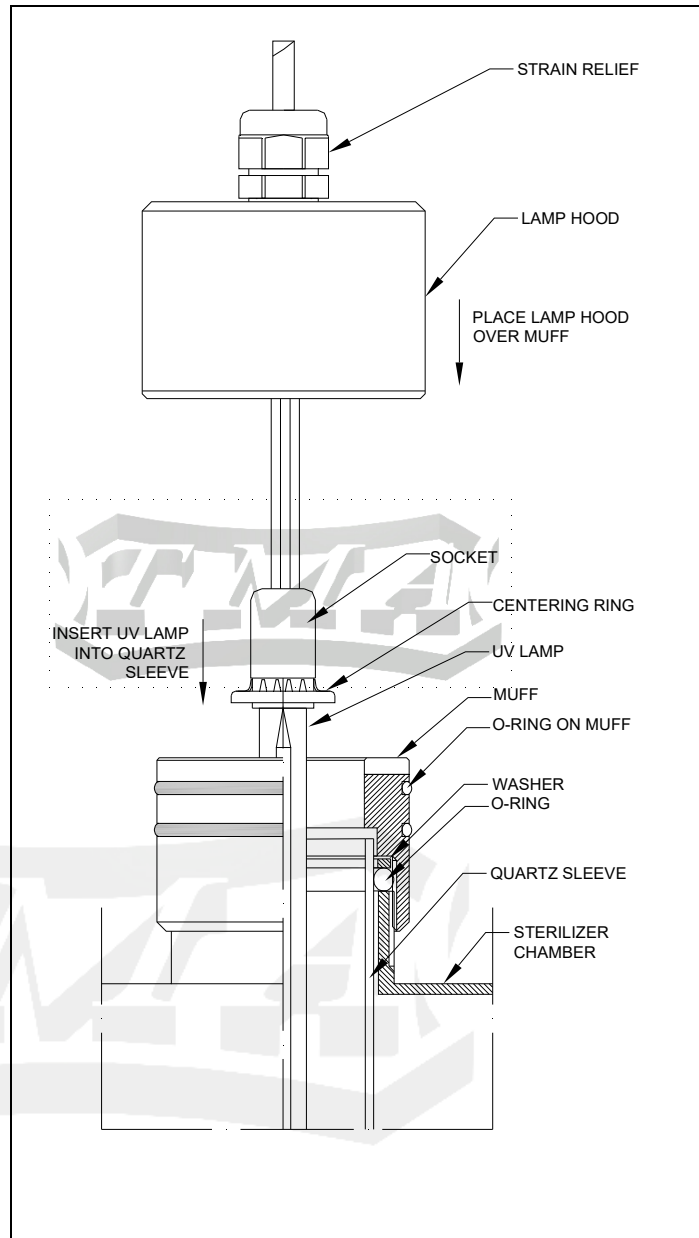
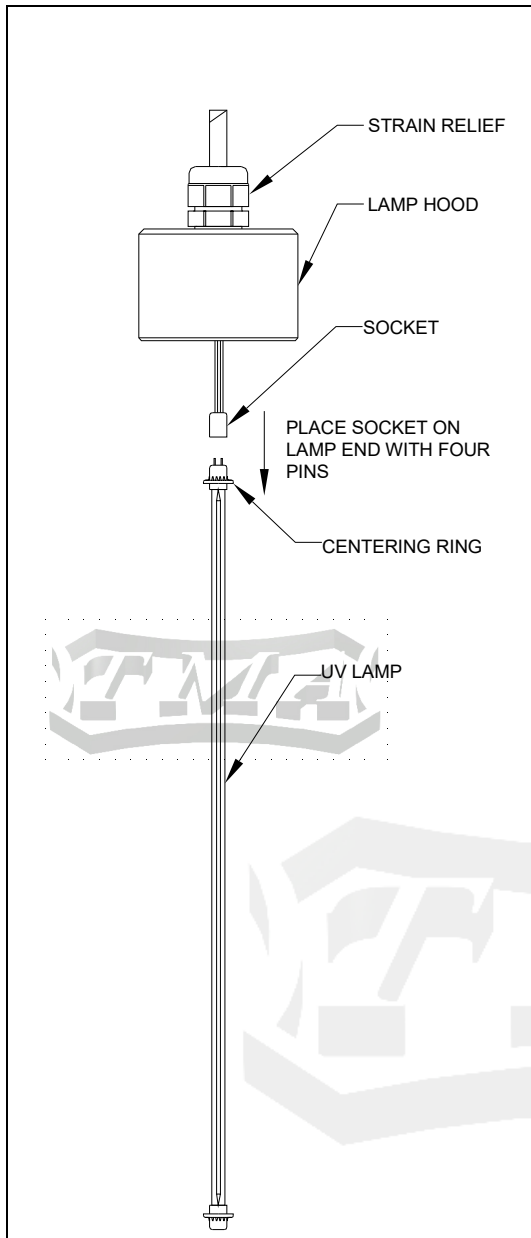
(GRAPHICAL INSTRUCTIONS AT THE END)

- a) Mount electrical enclosure on wall, at least 60 cm from the floor.
- b) Place the socket on the end of UV lamp with four pins. Gently slide the fully connected lamp into the quartz sleeve.

!!! CAUTION !!!

MOUNT UV LAMPS IN PROTECTIVE, PREFERABLY COTTON GLOVES.

If not done as required, the UV lamps may break after turning on the device.



c) Place lamp hood over muff.

d) Plug in to mains 230V, 50 Hz, in the electrical enclosure, according to the labels.

e) Turn device on by using switch on the side or front of electrical enclosure.

Green indicator light goes on when device is connected to power and powered up.

f) Replace UV lamps after its end of life time.

ATTENTION!

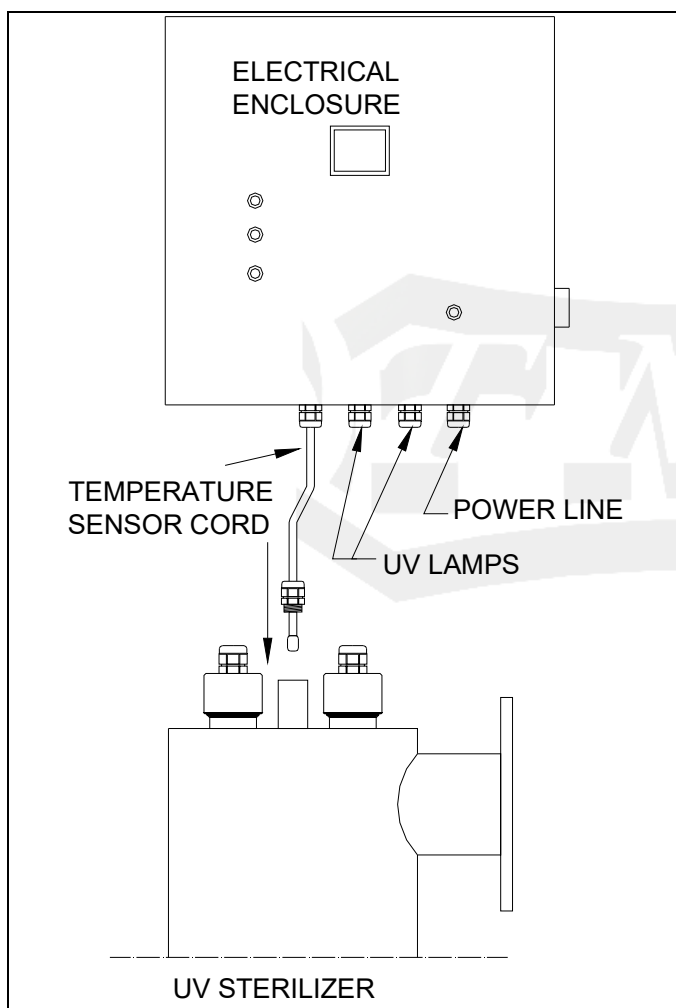
1. Any fault of UV lamp, including burn out, is signalized by lighting up of red indicator lamp and tripping of audible alarm.
2. Incidental powering of the electrical enclosure without connected UV lamps may cause damage to electronic ballast driving UV lamps.

ATTENTION!

In case of installing solenoid shut-off valve (terminals 1 & 2) upstream /or downstream/ of the sterilizer, tripping alarm or power interruption causes immediate shutting off of fluid flow to the chamber of the sterilizer / **Section 4.3-4.6**/. Terminals 1 & 2 are neutral. Power to solenoid shut-off valve shall be connected through terminals 1 & 2.

Solenoid shut-off valve serves the purpose of preventing unsterilized fluid entering the installation downstream of the sterilizer in the case of power interruption or lamp failure.

5.5. MOUNTING TEMPERATURE SENSOR (MODELS AP-POOL-N2- AP-POOL-N14)




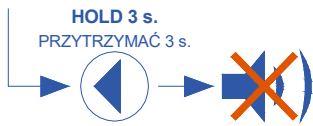

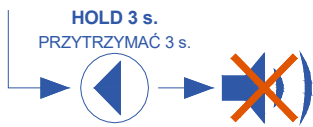



- Choose the temperature sensor cord (ended with strain relief PG11).
- Loosen the cable gland
- Install the strain relief into the hole at the center of sterilizer (between the UV lamps mountings)
- Move the wire to the end of the hole.
- Tighten the strain relief.

ATTENTION!

Improper mounting of temperature sensor can cause a short circuit, resulting in failure of whole device

Turning off radiators occurs at a temperature of approx. 85°C. Resuming at approx. 65°C

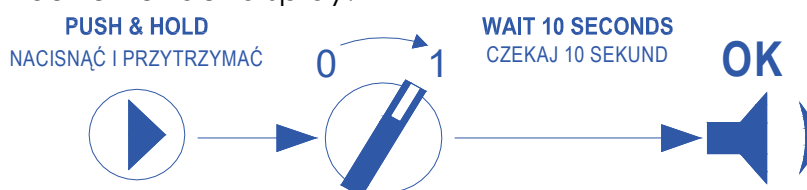
6. DESCRIPTION OF ALARMS IN ELECTRICAL CABINET/AP-POOL-N0,AP-POOL-N1 /

Display indications	Cause	Solving the problem
 <ul style="list-style-type: none"> - Blinking digit 7 on the display. - An intermittent sound signal 	<ul style="list-style-type: none"> - 7 days left to the end of life time of UV lamp - change UV lamp after 7 days. 	 <p>Hold left button more than 3 seconds to silence the sound alarm</p>
 <ul style="list-style-type: none"> - Blinking number 0 on the display. - An intermittent sound signal 	<ul style="list-style-type: none"> - UV lamp reached its end of life time. 	 <p>Hold left button more than 3 seconds to silence the sound alarm (max 2 times)</p>
 <ul style="list-style-type: none"> - Blinking number 0 on the display. - Blinking 3 LED's over display - Continuous sound signal 	<ul style="list-style-type: none"> - UV lamp is damaged or reached its end of life time. 	<p>Change UV lamp</p>
 <ul style="list-style-type: none"> - The display shows weird characters. - Two or three LEDs appear on the display at the same time 	<ul style="list-style-type: none"> - Possible damage to the display or the microprocessor. 	<p>Please Contact your dealer</p>
 <ul style="list-style-type: none"> - No indication on the display - No indication on LED above display - No audible alarm 	<ul style="list-style-type: none"> - No power at the input of the control cabinet. 	<ul style="list-style-type: none"> - Check power supply. - Check the fuse in the alarm system

7. RESSETTING COUNTER IN ALARM SYSTEM / ONLY MODEL AP-POOL-N0, AP-POOL-N1/

COUNTER IN THE ALARM SYSTEM SHOULD BE RESSETED EACH TIME THE UV LAMP IS REPLACED

- a) Disconnect from power supply /neutral and life/.
- b) Replace UV Lamp – see p. **9. INSTRUCTION FOR REPLACEMENT OF UV LAMP**
- c) Connect device to Power supply (power switch should be turned off)
- d) Hold the right button under display.



- e) Turn on the power switch while still holding the right button for more than 10 seconds.
- f) Short sound signal will confirm resetting the work time counter.

8. LEGEND FOR INDICATOR LIGHT ON ENCLOSURE

Lighted color indicator lights inform the operator of the status of the sterilizer. Certain conditions can be identified from the configuration of lights. For these corrective actions are listed below:

Alarm <i>Red Light</i>	Power Supply <i>Green Light</i>	Power <i>Green Light</i>	Problem	Action
OFF	ON	ON	No fault	-
OFF	BLINKING	ON	No fault – heating the UV lamps	-
OFF	OFF	OFF	No Power	Check power source
ON	OFF	ON	1.Burned out or faulty UV lamp 2.Faulty starter	1.Replace UV lamp 2.Replace starter
OFF	OFF	ON	Alarm System Fault	Contact Dealer. Replace alarm system.

9. MAINTENANCE

- a) **UV radiation is harmful to eyes and skin. It is forbidden to directly observe UV lamp (radiator) during operation.**
- b) It is recommended to check cleanness of the quartz sleeve whenever the UV lamp is replaced.
- c) If any sediment is noticed on the surface of the quartz sleeve, it is recommended to immediately clean the sleeve. Negligence of this recommendation can cause drop in efficiency of sterilization.
- d) Any time the sleeve is cleaned or replaced it is required to **unconditionally replace the O-ring creating the seal around the sleeve.**
- e) Inlet and outlet valves shall be opened slowly to prevent the rush of fluid hitting and damaging the quartz sleeve.
- f) There is no need for minimal flow through the device as it is designed in such a way that there may be no flow through the chamber with no damage to the sterilizer. **When there is no flow of water through the chamber can heat up to approx. 85°C that is when turning off radiators occurs. Sterilizer is resumed to work after reaching temperature of approx. 65°C.**
- g) UV sterilizer should work constantly - his long-term exclusion may cause secondary infection in the installation, which is very difficult to remove.
- h) It is recommended that before the UV sterilizer a filter is installed.
- i) Water not fit for consumption may require treatment i.e. deironing, softening or filtering. If any doubt, please contact your dealer.
- j) In case of high turbidity and waste water, the choice of equipment and efficiency should be made by the dealer.
- k) Sterilizers must be sized for the maximum momentary flow of water (matching them to the daily flows may result in incomplete disinfection)
- l) Avoid frequent turning on and off the equipment. One on-off cycle lowers the UV lamp life by about 10-20 hours.
- m) Sterilizers should not be installed in such a way that their work was dependent on other devices, e.g. pumps, pressure-water.
- n) Flow rate through the device can be increased; however, this lowers the delivered dosage and lowers the efficiency of disinfection.
- o) The lamp needs about 2 minutes to reach full capacity at temperature of water about 12-16 °C. If the water is at temperature 5-12°C, the time might be about 3-5 minutes.
- p) If the sterilizer is left idle for longer period of time or it can freeze, we recommend that the water be drained from the chamber. The chamber is provided with drain valve.
- q) **Bioassay samples shall be collected into sterile opaque containers as not to expose the sample to the light to avoid photo reactivation of microorganisms, which can rebuild their damaged DNA in presence of light.**
- r) In case the red indicator light is on, replacement of the UV lamp is necessary. The part number can be found on transparent plastic lamp hood placed over the muff.
- s) Even short lived surge, to above 254V, can damage the electronic ballast driving the UV lamps.

- t) Using faulty or post end of life UV lamps / operating time above their durability period / can lead to damage to electronic ballast located in the electrical enclosure. When replacing the UV lamp, protective gloves should be worn.
- u) Excessive humidity and water inside the quartz sleeve can cause damage to the power supply of the UV lamp.
- v) The leakage current going into grounding is 1,5 mA for each UV lamp.
- w) Fans in control cabinets should be replaced every 50 000h.
- x) In control cabinets there are mounted protection devices as below:

Sterilizer type	Protection device
AP-POOL-N0	Fuse 2A
AP-POOL-N1	Fuse 2A
AP-POOL-N2	Circuit breaker C6
AP-POOL-N3	Circuit breaker C6
AP-POOL-N4	Circuit breaker C10
AP-POOL-N5	Circuit breaker C10
AP-POOL-N6	Circuit breaker C13
AP-POOL-N8	Circuit breaker C16
AP-POOL-N10	Circuit breaker C20
AP-POOL-N12	Circuit breaker C16
AP-POOL-N16	Circuit breaker C16

10. INSTRUCTION FOR REPLACEMENT OF UV LAMP

(GRAPHICAL INSTRUCTIONS AT PAGE 28-29)

ATTENTION!

1. Always wear protective gloves (preferably cotton) when replacing / installing the UV lamp. Do not touch the UV lamp with your bare hand.
2. When installing the UV lamp, hold the lamp by the glass.
3. Holding or inserting the UV lamp by the lampholder may damage it.

In order to replace the UV lamp one shall:

- a) Disconnect from power supply /neutral and life/,

Replacing the radiator does not require shutting off the water flow through the chamber.

- b) Put on protective gloves, preferably made of cotton,
- c) Take off plastic hood,
- d) Slide out the UV lamp from the quartz sleeve,

DO NOT UNSREW THE STEEL MUFF!

- e) Remove sockets from connectors of the UV Lamp,
- f) Remove old UV lamp from the quartz sleeve,
- g) Carefully place the new UV lamp in the sleeve,
- h) Reverse the remaining steps.

ATTENTION!

In model AP-POOL-N sterilizers UV lamps must have special centering ring at both ends. When the UV lamps are shipped from the manufacturer, the centering rings are provided with every lamp.

11. REPLACEMENT AND CLEARING OF THE QUARTZ SLEEVE (WARNING: VERY BRITTLE)

(GRAPHICAL INSTRUCTIONS AT PAGE 28)

In order to replace quartz sleeve one shall:

- a) Disconnect the power supply,
- b) Cut off the liquid flow through the chamber,
- c) Allow for lamp to cool down from operating temperature,
- d) Remove UV lamp according to p. 10. /Instruction for replacement of UV lamp/,
- e) Unscrew the steel muff using special spanner,
- f) Take off the washer and O-ring from the quartz sleeve,
- g) Slide the sleeve out of guides and nipple of the sterilizer,
- h) Every time the UV lamp is replaced, when it is necessary to clean the quartz sleeve use common glass cleaners and then inside of the sleeve should be thoroughly dried so that no liquid is left there,

ATTENTION!

SLEEVE IS MADE OF PURE QUARTZ – VERY BRITTLE

ATTENTION!

AT THE TIME OF REPLACEMENT OR CLEARING OF THE QUARTZ SLEEVE, THE O-RING MUST BE REPLACED

- i) Slide carefully the new or cleaned quartz sleeve into the chamber of the sterilizer,
- j) Place **new O-ring** over the sleeve, then place the washer,
- k) Tighten the muff over the O-ring and washer with the provided tool. Check the proper placement of the O-ring, it should be lodged into the **conical groove in the nipple of the sterilizer**,
- l) Open gradually the cut-off valves, flood the chamber, and check the seal around the sleeve. If it springs a leak, tighten the muff till tight seal is obtained,
- m) Place the UV lamp according with p. 10 of this Manual.

12. TROUBLESHOOTING

Lp.	Problem	Cause	Action
1	Burned out UV Lamp Water inside the quartz sleeve - . short circuit – open circuit on circuit breaker	Muff not tightened sufficiently. Worn out O-ring.	Take quartz sleeve out, dry interior, change O-ring, and assemble back. Tighten muff. If device does not work – electronic ballast damaged – replace – contact dealer
2	Burned out UV lamp	End of lamp life caused by number of working hours and number of on-off cycles.	Replace UV lamp.
3	Operation of the device causes the circuit breakers or differential switches to be disconnected	- There was a short circuit in the electrical system - the water got into the quartz sleeve/UV radiator - badly tightened muff	Disconnect the unit from the power supply; check the condition of the UV radiators and the quartz tubes. In case of getting water into the quartz tubes proceed as in item 1.
4	UV lamp glows with orange light	Depressurized UV radiator.	Replace UV lamp.

12.1. PROCEDURES IN THE EVENT OF FAILURE IN MULTI-RADIATOR DEVICES

Description:

The alarm indication LED /RED/ on one of the UV radiators lights up in the control cabinet and there is constant audible alarm.

Cause:







- There is a malfunction or burnout of the UV radiator.
- The alarm system or ballasts are damaged.

Procedure:







- a. Disconnect the device from the power supply
- b. If the device is warmed up wait for it to cool down.
- c. Disconnect all UV radiator that work properly (remove the plastic socket from the UV radiator).
- d. Put the lamp hoods on all muffs.

LAMP HOODS MUST BE IMPOSED ON ALL MUFFES TO PROTECT THE USER FROM UV RADIATION

- e. Reboot the unit and check the UV radiator and alarm system (in this case, the alarm system should indicate failure of all sections that are not connected to the UV radiators). Wait 2-3 minutes for UV radiator to warm up.

UV lamp is NOT working		Alarm system signals failure – red LED		Burned out UV lamp
		Alarm system signals proper work – green LED		Burned out UV lamp and/or damaged alarm system
UV lamp is working		Alarm system signals failure – red LED		Damaged alarm system
		Alarm system signals proper work – green LED		Everything works properly

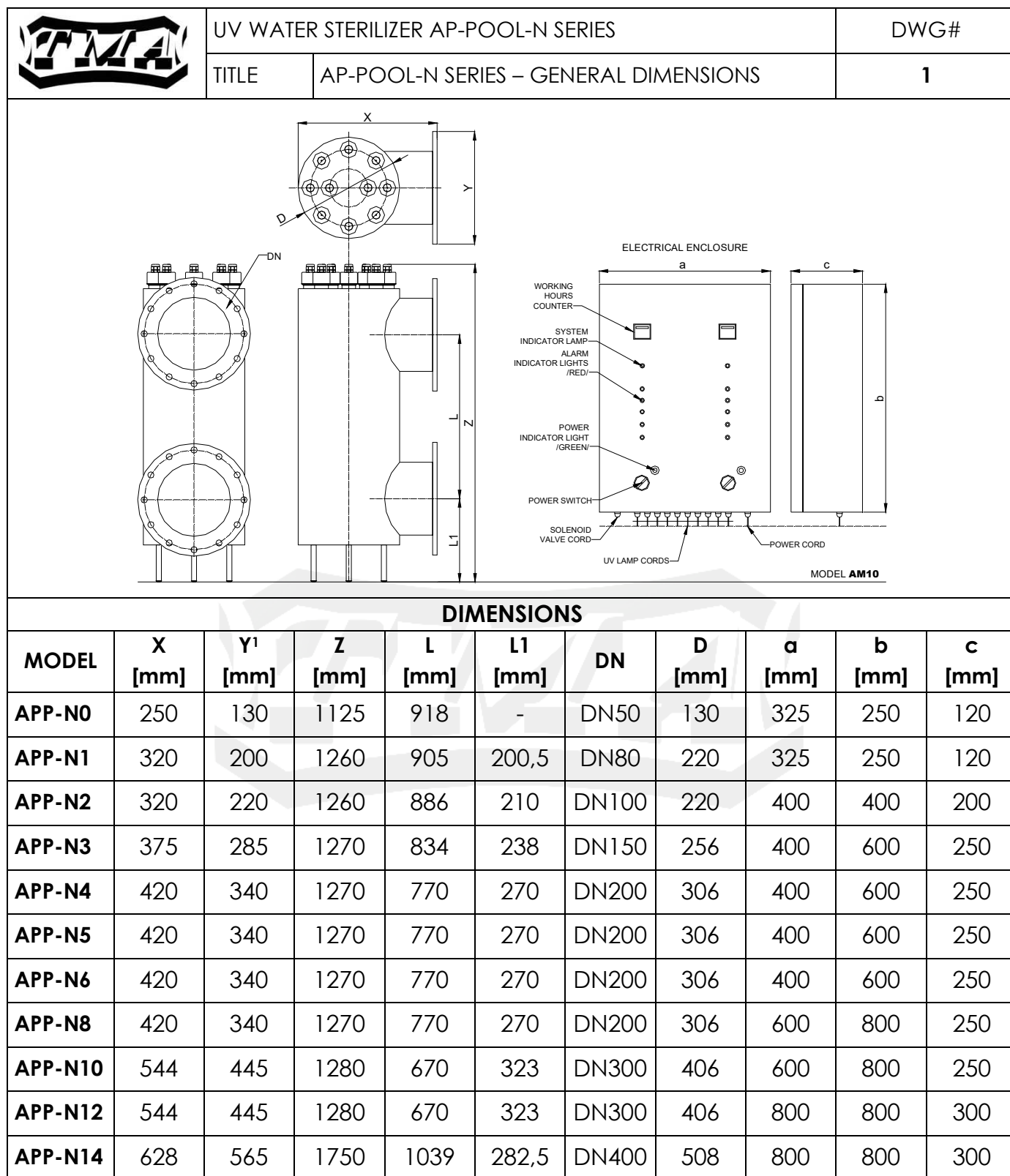
- f. Repeat steps a - b.
g. Disconnect the previously checked UV radiator and plug in another radiator that is known to be working properly.
h. Put the lamp hoods on all muffs. Reboot the unit and check the UV radiator. Wait 2-3 minutes for UV radiator to warm up.

UV lamp is NOT working		Alarm system signals failure – red LED		Damaged electrical ballasts
		Alarm system signals proper work – green LED		Damaged electrical ballasts and/or damaged alarm system
UV lamp is working		Alarm system signals failure – red LED		Damaged alarm system
		Alarm system signals proper work – green LED		Everything works properly

13. TRANSPORT

The UV sterilizer should be shipped only in horizontal position. It should be disassembled for shipping. The quartz sleeve and lamp should be packed separately as they are brittle. They should be sufficiently well packed to withstand rough handling.

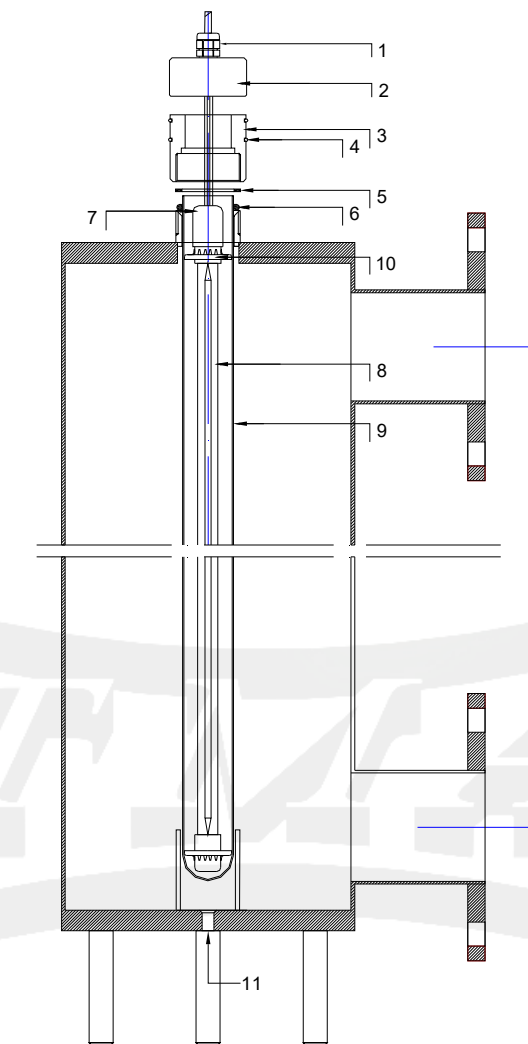
14. DIAGRAM – DIMENSIONS



¹ Dimensions indicated are for the standard version to operate at a pressure of 10 bar [PN10]. In another embodiment, the size may vary slightly.

15. DIAGRAM – SPARE PARTS LIST

	UV WATER STERILIZER AP-POOL-N SERIES		DWG#
	TITLE	AP-POOL-N SERIES – SPARE PARTS LIST	6



No	PART	SYMBOL	AP-POOL-N									
			0,1	2	3	4	5	6	8	10	12	14
1	STRAIN RELIEF	02.01	1 pcs.	2 pcs.	3 pcs.	4 pcs.	5 pcs.	6 pcs.	8 pcs.	10 pcs.	12 pcs.	14 pcs.
2	LAMP HOOD	01.02.02	1 pcs.	2 pcs.	3 pcs.	4 pcs.	5 pcs.	6 pcs.	8 pcs.	10 pcs.	12 pcs.	14 pcs.
3	MUFF	01.04.02	1 pcs.	2 pcs.	3 pcs.	4 pcs.	5 pcs.	6 pcs.	8 pcs.	10 pcs.	12 pcs.	14 pcs.
4	O-RING MUFF	01.03.01	2 pcs.	4 pcs.	6 pcs.	8 pcs.	10 pcs.	12 pcs.	16 pcs.	20 pcs.	24 pcs.	28 pcs.
5	WASHER	01.05	1 pcs.	2 pcs.	3 pcs.	4 pcs.	5 pcs.	6 pcs.	8 pcs.	10 pcs.	12 pcs.	14 pcs.
6	O-RING	01.06	1 pcs.	2 pcs.	3 pcs.	4 pcs.	5 pcs.	6 pcs.	8 pcs.	10 pcs.	12 pcs.	14 pcs.
7	UV LAMP CABLE		23.10	24.10.03	24.10.03	24.10.03	24.10.03	24.10.03	24.10.04	24.10.04	24.10.05	24.10.05
8	UV LAMP	22.07	1 pcs.	2 pcs.	3 pcs.	4 pcs.	5 pcs.	6 pcs.	8 pcs.	10 pcs.	12 pcs.	14 pcs.
9	QUARTZ SLEEVE	14.09.01	1 pcs.	2 pcs.	3 pcs.	4 pcs.	5 pcs.	6 pcs.	8 pcs.	10 pcs.	12 pcs.	14 pcs.
10	CENTERING RING	01.15	2 pcs.	4 pcs.	6 pcs.	8 pcs.	10 pcs.	12 pcs.	16 pcs.	20 pcs.	24 pcs.	28 pcs.
11	DRAIN VALVE	01.11.01	1 pcs.	1 pcs.	1 pcs.	1 pcs.	1 pcs.	1 pcs.	1 pcs.	1 pcs.	1 pcs.	1 pcs.

16. HYGIENIC CERTIFICATE



NARODOWY INSTYTUT ZDROWIA PUBLICZNEGO PZH
– Państwowy Instytut Badawczy
NATIONAL INSTITUTE OF PUBLIC HEALTH NIH – National Research Institute
Zakład Bezpieczeństwa Zdrowotnego Środowiska
Department of Environmental Health and Safety

ATEST HIGIENICZNY

B.BK.60110.0630.2022

HYGIENIC CERTIFICATE

ORYGINAL

NATIONAL INSTITUTE OF PUBLIC HEALTH NIH – NATIONAL RESEARCH INSTITUTE

Wyrób / product: Sterylizatory UV Seria AP-Pool-N

Zawierający / containing: komorę ze stali nierdzewnej AISI 316/316L, układ sterowniczy, promienniki UV-C w osłonie kwarcowej, uszczelnienie z EPDM

Przeznaczony do / destined: dezynfekcji wody basenowej

Wymieniony wyżej produkt odpowiada wymaganiom higienicznym przy spełnieniu następujących warunków
/ the above-named product is acceptable according to hygienic criteria with the following conditions:

Urządzenia można stosować do wód klarownych i bezbarwnych. Typ urządzenia należy dobierać w zależności od jakości wody w danym wodociągu i wymogów użytkownika. Do urządzenia należy dołączyć instrukcję użytkowania zawierającą informacje o zalecanej szybkości przepływu wody. Na stosowanie lamp UV do dezynfekcji wody w pływalniach publicznych, należy każdorazowo uzyskać zgodę terenowo właściwego Inspektora Sanitarnego. W pływalniach publicznych niezbędne jest równoległe stosowanie środka dezynfekcyjnego zapewniającego utrzymanie wymaganego stężenia czynnego dezynfektanta w wodzie w niece basenowej.

Atest higieniczny nie dotyczy parametrów technicznych i walorów użytkowych wyrobów/ Hygienic certificate does not apply to technical parameters and utility value.

Wytwórca / producer:

TMA Tomasz Adamowicz
15-592 Białystok
Białostoczek 26, gm. Zabłudów

Niniejszy dokument wydano na wniosek / this certificate issued for:

TMA Tomasz Adamowicz
15-592 Białystok
Białostoczek 26, gm. Zabłudów



Atest może być zmieniony lub unieważniony po przedstawieniu stosownych dowodów przez którąkolwiek stronę. Niniejszy atest traci ważność po 2025.04.22 lub w przypadku zmian w recepturze albo w technologii wytwarzania wyrobu.

The certificate may be corrected or cancelled after appropriate motivation. The certificate loses its validity after 2025.04.22 or in the case of changes in composition or in technology of production.

Data wydania atestu higienicznego: 22 kwietnia 2022

The date of issue of the certificate: 22nd April 2022

Kierownik
Zakładu Bezpieczeństwa Zdrowotnego
Środowiska

2 up. Jolanta Solecka
dr hab. Jolanta Solecka, prof. NIZP PZH-PIB

Kontakt w sprawie niniejszego atestu higienicznego / To contact regarding this hygienic certificate
Zakład Bezpieczeństwa Zdrowotnego Środowiska NIZP PZH - PIB / Department of Environmental Health and Safety NIPH NIH - NRI
00-791 Warszawa, ul. Chocimska 24 / 00-791 Warsaw, Chocimska 24, Poland
e-mail: sekretariat-bk@pzh.gov.pl tel. +48 22 54-21-354, +48 22 54-21-349

17. DECLARATION OF CONFORMITY

Białostoczek, 2022-04-01

Deklaracja zgodności TMA/01/04/2022

Declaration of conformity

1. Producent wyrobu /

The manufactured of the product: TMA
 Białostoczek 26, gm. Zabłudów
 15-592 Białystok
 Polska / Poland

Zakład produkcyjny:

TMA
 Białostoczek 26, gm. Zabłudów
 15-592 Białystok
 Polska / Poland

Deklaruje, że produkty / Hereby declares that the sterilisers:

2. Nazwa wyrobu / Models: Sterylizator / Steriliser
SERIA/SERIES V/ SERIA D
SERIA/SERIES AM / TM / AP-POOL
SERIA/SERIES AMX / AP-POOL X / AP-POOL-N
CZUJNIK UV UVC-02/UV METER UVC-02

3. Klasyfikacja wyrobu / Product classification:

SWW 0719-149, PKWiU28.29.12.0 (29.24.12-30.20)

4. Przeznaczenie i zakres stosowania wyrobu / The scope of use:

Dezynfekcja promieniami UV wody pitnej, grzewczej, basenowej,
 wód technologicznych, emulsji chłodzących, ścieków
 oczyszczonych
 / UV disinfection of notable, heating, pool and technological
 waters, cooling emulsions, treated waste water

5. Dokumenty odniesienia / Reference documents:

2014/35/UE / w miejsce / it replaces 2006/95/WE/
 Dyrektywa niskonapięciowa / Low Voltage Directive
2014/30/UE /w miejsce 2004/108/WE/
 Kompatybilność elektromagnetyczna /
 Electromagnetic Compatibility Directive
2014/68/UE /w miejsce / it replaces 97/23/WE/
 Urządzenia ciśnieniowe / Pressure Equipment Directive
EN 60529 Stopnie ochrony zapewniane przez obudowy /
 Degrees of casings' protection.

zostały zaprojektowane zgodnie z zasadami dobrej praktyki inżynierskiej.

/ are designed in accordance with good engineering practice./

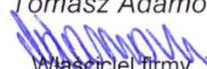
Deklaruję z pełną odpowiedzialnością, że wyroby z partii określonej w pkt.2 są zgodne z dokumentami odniesienia wymienionymi w pkt 5.

/I hereby declare with full responsibility that the products from the lot determined in the declaration comply with the reference documents defined in p. 5./

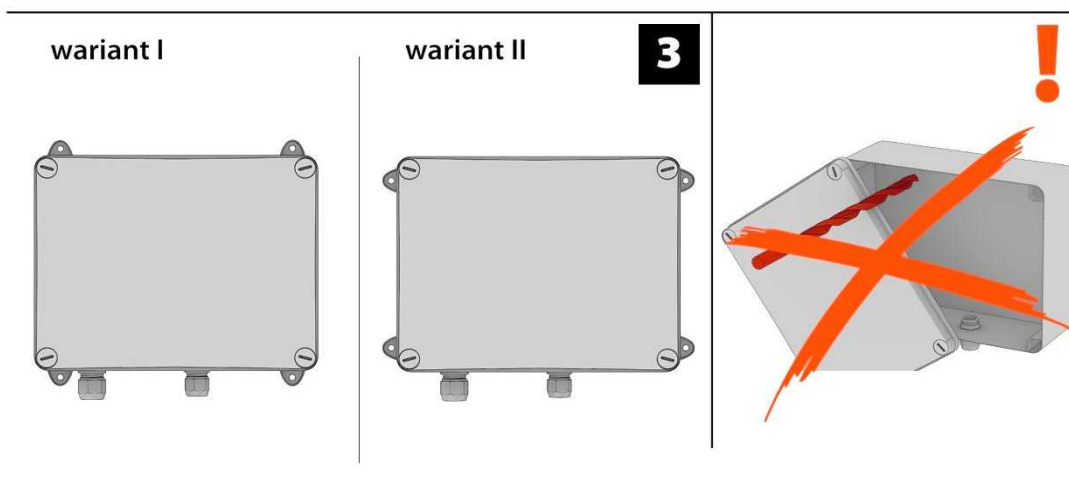
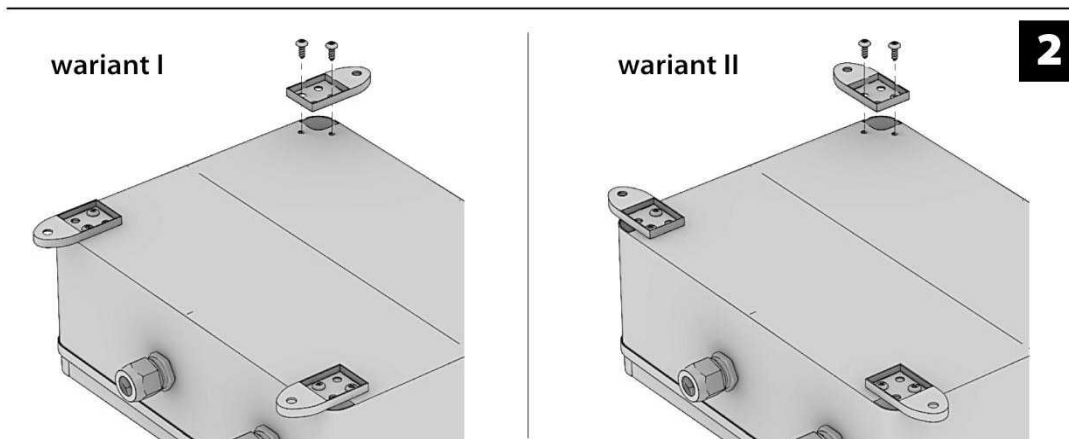
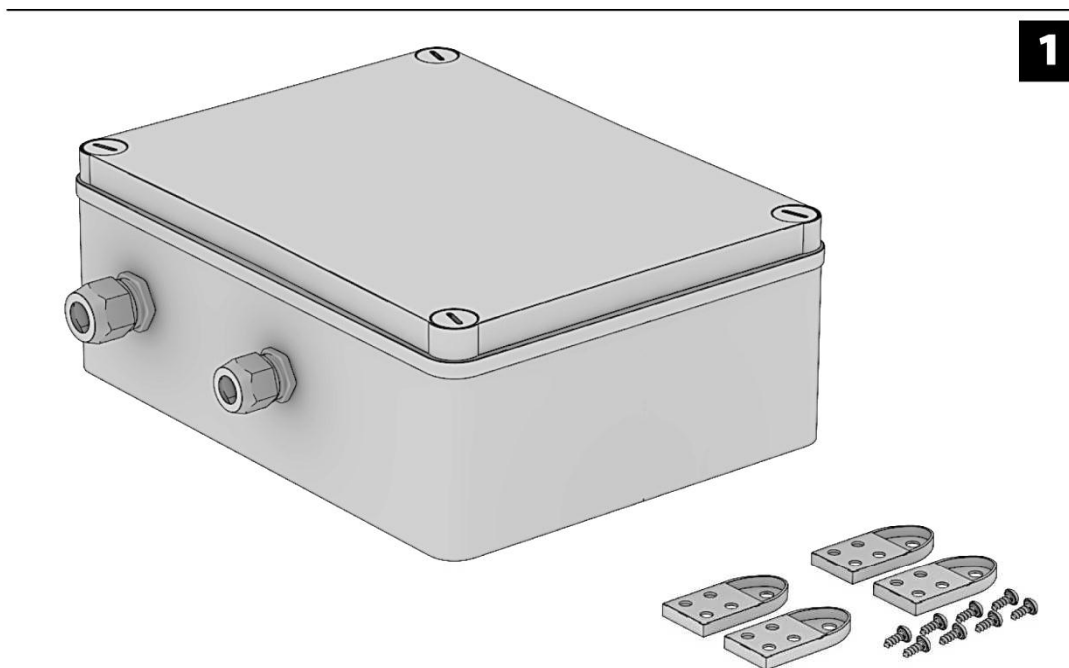
Partia wyrobów objęta deklaracją./The lot determinated in the declaration.: 24000 - 28000

 15-592 Białystok
 Białostoczek 26
 gm. Zabłudów
 NIP 542-000-84-13, Regon 002333645
 tel. +48 85 7431246, e-mail: biuro@tma.pl

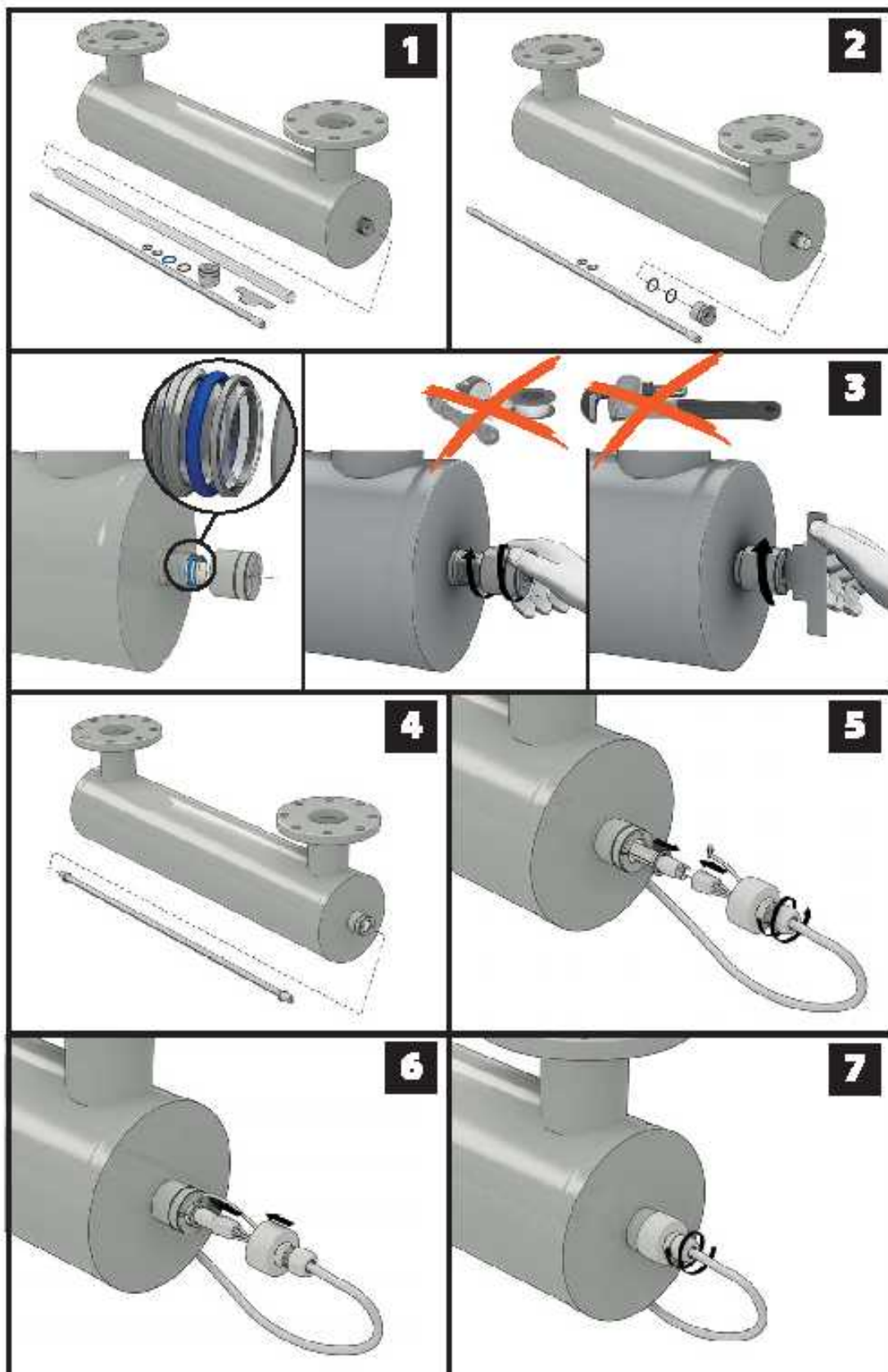
Mgr inż. Tomasz Adamowicz imowicz


 właściciel firmy „TMA”
 /The owner of the company/

18. GRAFICAL MOUNTING INSTRUCTION



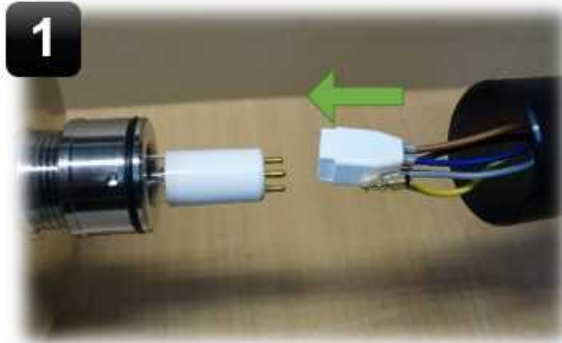
Assemble of AP-POOL-N sterilizer



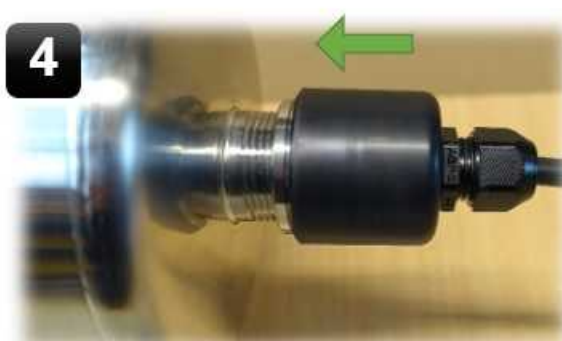
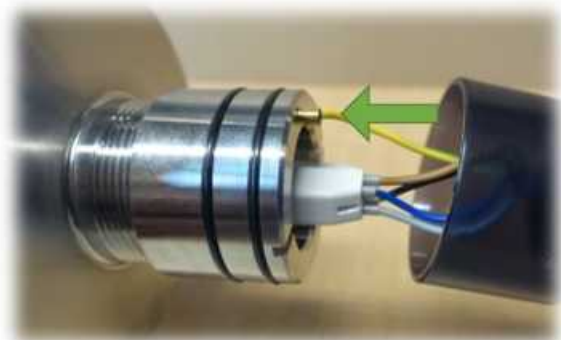
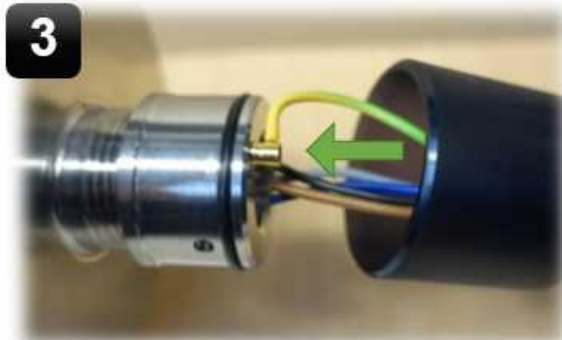
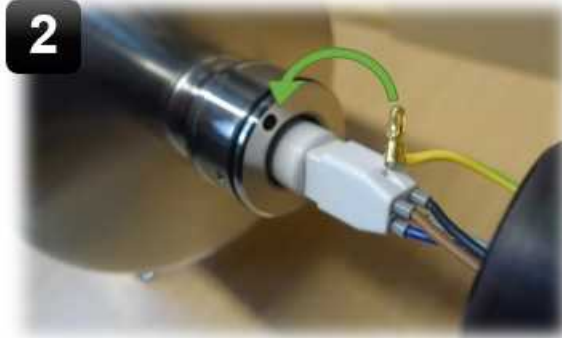
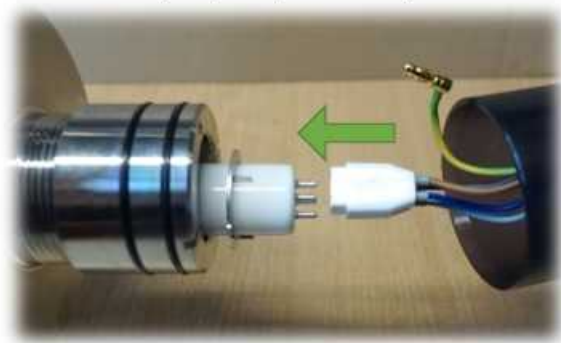
19. GRAPHIC INSTRUCTIONS FOR INSTALLING THE RADIATOR AND GROUNDING

INSTRUKCJA MONTAŻU/WYMIANY PROMIENNIKÓW UV / INSTALLATION/REPLACEMENT INSTRUCTIONS FOR UV RADIATORS

Model: D2-D14



Model: D16, TM, AMX, AP-POOL-N, AP-POOL-X



20. WARRANTY

1. UV sterilizers are exclusively for treatment of water/liquids which content is known.
2. The manufacturer of the UV sterilizers - the TMA company guarantees efficient operation of the equipment covered by this warranty card.
3. In order to obtain warranty service during the warranty period it is essential to:
 - Possess a document confirming the purchase of the equipment (purchase invoice, receipt)
 - Perform installation and operation of the device in accordance with the instructions found in the manual (included with the device).
4. All defects of the product determined at any time during this Warranty shall be repaired at no additional charge within 14 days from the date of delivery of the defective product to the manufacturer, based on this filled Warranty. In exceptional situations, this period can be extended to 21 days.
5. Defective equipment/product shall be delivered **COMPLETE** and appropriately packaged and secured for transport. We reserve the right to refuse to recognize a claim for damage and components resulting from poor security of goods in transport.
6. For shipments, it is recommended to use the original factory packaging during transportation. If the original packaging is missing, the complained goods must be delivered for repair by the Buyer in a way that ensures safe transport. The costs of ensuring safe packaging, insurance and other transportation risks are borne by the Buyer. If the Buyer requests packaging, the equipment manufacturer may deliver it to the indicated address for a fee (packaging and transport costs).
7. During the warranty period, the supplier repairs or replaces parts of the equipment, in that order, as appropriate, in accordance with the law, without any additional cost to the buyer. Products and parts replaced during warranty become the property of the manufacturer.
8. In the case of unfounded warranty claims, the claimant will be charged with any costs relating to the services performed, e.g. transport.
9. Installation and commissioning of the equipment can be made by the buyer following the instructions in the manual that came with this product
10. Manufacturer warrants that the product shall meet all specifications of performance as stated in the Manual for the period of:
 - 36 months from the date of purchase covering the stainless steel chamber
 - 24 months from the date of purchase covering all electrical parts of the sterilizer
11. The chamber is covered by Warranty for 36 months, as long as it is used for substance disinfection, in accordance with the steel corrosion resistance list, according to EN 10088-1 norm.
12. The use of the product not in accordance with the EN 10088-1 norm shall result in the loss of Warranty for the chamber and cannot be grounds for any claims in case of chamber damage.
13. The water flowing through the device cannot contain Sulphur, solid substances that can be filtered or iron over 0.3 mg/dm³.
14. No warranty is given for the chambers made from AISI 304 stainless steel in the case of:
 - Chlorinated water with chlorine content greater than 0.3 mg/dm³, e.g. in swimming pools
 - The contents of chlorides greater than 200 mg/dm³
 - pH outside the range 6.5-9.5
 - application for brine water above 250 mg/dm³ NaCl
 - application to demineralized and distilled water
15. No warranty is given for the chambers made from AISI 316 stainless steel in the case of:
 - Chlorinated water with chlorine content greater than 1,0 mg/dm³
 - The contents of chlorides greater than 450 mg/dm³

- pH outside the range 6.5-9.5
 - Application for brine water above 800 mg/dm³ NaCl
16. The purchaser shall have the right to have the product replaced if:
 - It is determined that there is a manufacturing defect which is irreparable; or
 - During the Warranty period there is a need of 4 repairs and even after these the exploitation of the product according to the instructions is impossible.
 17. The term 'repair' does not cover all the actions stipulated in the Manual (i.e. routine maintenance) which are to be performed by the user.
 18. The Warranty does not include:
 - Damage caused by inadequate storage of the products by the purchaser
 - Damage caused by faulty assembly or exploitation of the sterilizer
 - Damage caused as a result of nonreliance on the instructions for assembly, use, transport or handling entered in the user manual
 - Damage resulting from the use of non-original spare parts
 - Damage caused by unforeseen natural phenomena, i.e. floods, frost, storms, hurricanes or earthquakes
 - Burning UV radiator
 - Quartz casing
 - Parts subject to aging/ wear, e.g. rings, gaskets, electrical cables, etc.
 19. The manufacturer is released from liability under the guarantee in the following cases:
 - If during the warranty period the device is changed / repaired by persons not authorized by the manufacturer of the equipment - the TMA company
 - If the unit is powered by voltage of character and value other than defined in the manual.
 - Use of non-original spare parts.
 - Using substitutes and radiators without the TMA hologram.
 - If the appliance is used for purposes and in a manner inconsistent with the recommendations applicable in the manual, data sheet, warranty card.
 - Damage caused by unforeseen natural phenomena, i.e. floods, frost, storms, hurricanes or earthquakes
 - If the purchaser does not possess any documents proving the purchase of the equipment or a valid warranty card signed by the manufacturer / reseller
 - The unit has no markings left by the manufacturer
 20. This Warranty is limited to the obligations stated above and does not cover the effects of damage caused by break-downs of the appliance or disinfection efficiency.
 21. The manufacturer shall not be liable for any financial loss or other civil law consequences resulting from any defects of the device. It specifically relates to: loss of turnover, profit, possible benefits, damage of products and media.
 22. Warranty claims may relate only to the replacement or repair of defective parts of UV sterilizers

THE WARRANTY SHALL NOT COVER DEVICES NOT BEARING THE TMA LOGO.

Warranty and post warranty repairs		
Receive date	Type of failure and repair procedure	End date of repair