

KINETICO ULTRAVIOLET WATER PURIFICATION SYSTEMS

MODEL: KUV 1200x



Certified to
IEC **PUBLICATION** 60335.1
EDITION 4th ††



OWNERS MANUAL

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Crossfire Technology® is a registered trademark of UV Pure Technologies Inc.

Publication Number: 13741

Third Edition, November 2009

- † 115V versions of the product conforms to UL60335-1E:04& certified to CAN/CSA-E60335-1/4E:03 (by Intertek)
- †† 100-240V versions of the product meet IEC 60335.1 Edition 4 and CE

Notice

THANK YOU for purchasing a Kinetico UV water purification system Model KUV 1200x.

This UV system is engineered to provide effective UV dosage rates for the inactivation of pathogens, including:

- viruses
- bacteria
- cryptosporidium
- giardia
- legionella
- E. coli
- Total coliforms

To be effective, the system must be installed in applications that meet minimum pre-treatment specifications as set out below.

The Kinetico KUV 1200x UV system is NSF/ANSI Standard 55 Class A certified.

Please read the complete manual before installing or operating. Retain this manual and the purchase receipt for the unit.

1. About the Kinetico KUV 1200x UV System

Kinetico KUV 1200x UV water purification systems incorporate patented Crossfire Technology.

Patented in US 6,707,048, Australia 2,002,333,084, Mexico 248805
Patent Pending in Canada, Japan, UK, Europe & Eurasia
Patents are owned by UV Pure Technologies Inc. and used under license by Kinetico Incorporated.

Revolutionary **Crossfire Technology** is self-monitoring and engineered to be failsafe. Crossfire Technology incorporates twin lamps mounted in air, dual smart sensors, elliptical reflectors and an optional failsafe solenoid valve.

Crossfire Technology incorporates two proprietary high-output UV lamps, within elliptical reflectors, that target pathogens with radiation from 360°, to reduce UV shadowing and provide microbiologically safe drinking water.

The **Kinetico KUV 1200x** has dual smart UV sensors, that will not foul like conventional UV systems. The lamps are fan-cooled and maintain consistent levels of UV output for effective pathogen deactivation in a broad range of air and water temperatures. Alarms and an optional automatic shut-off solenoid valve are engineered to ensure failsafe operation.

Changing lamps in the **Kinetico KUV 1200x** is as simple as opening the front of the system. There is no draining required, no disassembly and no risk of quartz breakage. The UV lamps require replacement after 12 months of operation; the system will provide a warning when it is time to change lamps.

Each system is shipped with a Transient Voltage Surge Suppressor (TVSS)/Surge Protective Device (SPD) that has been certified to the UL 1449 standard by an NRTL/C and includes integral Over/Under Voltage shutoff protection. This will protect the system from most power surges, spikes and brown outs.

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2. Installation Instructions

Before Beginning Installation

Water Conditions - Pre-treatment Parameters

Note: it is very important that the Kinetico KUV 1200x is installed in conditions that meet the minimum specifications for pre-treatment. Please review the following pre-treatment parameters prior to installation.

Some of the specifications are technical in nature; If any specifications are of concern or unclear, please contact your Kinetico dealer.

IMPORTANT: IF THE KINETICO KUV 1200x SYSTEM IS INSTALLED IN CONDITIONS THAT DO NOT MEET THE SPECIFICATIONS, IT MAY VOID THE MANUFACTURER'S WARRANTY.

Water Parameters for Treating Drinking Water:

The minimum water requirements for operating the Kinetico KUV 1200x are:

- **UV Transmittance (UVT)** – greater than 75 percent transmission of ultraviolet light. (If there is color in the water, the UV transmittance may fall below 75 and the system will not provide the necessary UV dose for safe drinking water.) It is recommended the water be tested for UV transmittance in any applications using cisterns, surface water or ground water under the influence of surface water.
- **Level of turbidity** - or cloudiness - of less than or equal to 1 NTU (nephelometric turbidity unit). A 5 micron sediment filter is recommended before the unit to reduce turbidity. (The presence of a filter will also simplify disinfection of plumbing – see Disinfecting the Plumbing. For surface waters, 5 micron prefiltration is recommended.)
- **Hardness** – Hardness must be less than 7 grains (120 mg/L)
- **Total Iron** – Total iron must be less than 0.3 ppm (0.3 mg/L)

Water Treatment Capacity:

The water treatment range for the Kinetico KUV 1200x is 0 to 12 U.S. gallons per minute (or 0–45 liters per minute) max, with a working pressure of 10 to 100 psig (or 69 to 690 kPa).

The Kinetico KUV 1200x includes a flow regulating device that will limit the flow rate. **Warning:** Removal of this device may allow the water flow to exceed the validated performance of the system which therefore may not provide the necessary UV dose to inactivate all pathogens. **Removal of the Flow Restrictor installed by the Manufacturer will void the Manufacturer's Warranty.**

Temperature Requirements:

When the unit is installed, the ambient temperature should be between 34° to 104°F (1°C to 40°C). If the temperature drops below freezing, drain the unit completely to prevent damage (see Draining Instructions). The acceptable water temperature range is 34°F to 104°F (1°C to 40°C).

Energy Requirements:

There are two standard operating voltages for the UV unit. The unit may be 115 VAC, 60 Hz or 100 – 240 VAC, 50 Hz. Please refer to the power input label located near the power cord entry of the unit. See Figure 1B.

The KUV 1200x must be connected to the supplied Transient Voltage Suppressor (TVSS)/Surge Protective Device (SPD) that is plugged into a grounded power outlet. **Failure to plug the Kinetico KUV 1200x into the supplied power conditioner may void the Manufacturer's Warranty.**

Safety Information



WARNING: Potential Shock Hazard

Use only a grounded electrical outlet when connecting the supplied power conditioner to a power source. If you do not know whether the outlet is grounded, check with a qualified electrician. Do not plug in the Kinetico KUV 1200x if water has been spilled on the exterior surface of the system.

WARNING: Ultraviolet Light Hazard

The lamps in the UV system emit ultraviolet (UV) light that can cause permanent damage to the skin & eyes. **Never look at the lamp when it is operating.** Do not plug the KUV 1200x in unless it is properly secured to a wall (see Installation Instructions) and the front panel and ballast enclosure are secure. Do not open the front panel or perform any service unless the KUV 1200x has been unplugged. Never look into the unit or place any exposed skin into the illuminated areas when it is operating. Do not operate a KUV 1200x that has been damaged or missing any components or safety devices.



Note that service to the unit does not require the removal of the side aluminum panels or aluminum endplates, and they must remain assembled. The UV unit is not intended for use by young children or infirm persons without supervision. Young children should be supervised to ensure that they do not play with the UV unit.

Parts Included

- Kinetico KUV 1200x UV water purification system, complete with integral wall brackets
- Instruction manual
- Power cord (located within packaging)
- Ultraviolet lamps (two) – installed in the KUV 1200x
- Transient Voltage Surge Suppressor (TVSS)/Surge Protective Device (SPD)

Other Materials Needed

The UV requires four # 12 to 1/4" diameter fasteners (not provided) to mount to a wall. It also requires two female NPT fittings for the manifold connections, and two 1" male NPT connections if the optional automatic shut-off solenoid valve is installed with the KUV 1200x. These fittings, pipe insulation, and any piping

compatible with the plumbing should be on hand before you begin installation. See Figure 1B and make a list of all necessary components including solder, paste and thread sealant. By-pass piping and valves that isolate the unit are optional, (but recommended) as is a drain valve for draining the unit. Using a union or a flexible stainless hose at the top and bottom port of the unit is recommended to allow easier maintenance of the unit.

Pipe insulation should be wrapped around any overhead piping to prevent condensation from dripping back onto the unit.

Tools Needed

- Pipe cutter, torch, wrench and other typical plumbing tools for modifying piping
- Slotted screwdriver

Do not operate a Kinetico KUV 1200x that has been damaged or that is missing any component. If a part is missing, contact your Kinetico dealer.

The installation (see Figures 1A through 1F) should be done in compliance with all applicable federal, state/provincial, and local regulations. Failure to install the KUV 1200x properly may result in property damage (leaks/flooding) or personal injury (electrical shock) and will void the Manufacturer's Warranty.

The KUV 1200x is intended only for indoor use in a dry location. Should these minimum installation recommendations not be met, the system will not operate effectively.

Location (on a wall)

The KUV 1200x must be positioned vertically on a wall (**The performance of the system will be adversely affected if mounted horizontally.**) See Figure 1A for clearances.

The KUV 1200x should be installed **downstream of (after) any pre-treatment devices** such as filters, water softeners and any pressure tanks. However, it must be installed **upstream of (before) any branches** in the piping so that **all** the water is disinfected before splitting and distributing throughout the home or building. If the plumbing system has a grounding lug or strap, this should also be upstream from the KUV 1200x, and any shut-off valve or filters. If grounding or plumbing of the Kinetico KUV 1200x system is in question, please consult your local electrical inspector.

Time Required

Please note that full installation of the UV requires shutting off the main water supply for up to several hours. If disinfection is necessary, all pipes must be treated and flushed. Once the KUV 1200x is plugged in and turned on, the new UV lamps may take from a few moments to several hours to reach full power.

Summary of Installation:

Unpack and attach the KUV 1200x to a wall
Connect inlet and outlet manifolds to plumbing
Install optional Shutoff solenoid valve, if included
Install optional by-pass plumbing
Connect system power cord to supplied Transient Voltage Surge Suppressor
Connect Transient Voltage Surge Suppressor to grounded power outlet

Assembling the Unit

Step 1: Unpack the unit, being careful to remove all packaging material. Inspect the unit for damage, particularly the quartz sleeve – See Figure 4A for disassembly. Check to ensure that the rear reflector is sitting as low as it will go – push down so that it rests on the bottom plate of the system. (Sometimes movement in shipping can cause the rear reflector to ride upward during transit.)

Step 2: The KUV 1200x has four keyhole slots for convenient mounting – all four should be used. To mount the system, use the template, included, to position the two top holes. **The unit should be secured vertically to a solid wall large enough to cover the complete backside of the unit – See Figure 1D. Do not** install the system horizontally. Remove the top and bottom covers of the unit to make the mounting holes accessible.

Connecting the Pipes

We recommend that a qualified Kinetico dealer or licensed plumber perform the water connections for your UV system. **Water must flow into the inlet at the bottom of the KUV 1200x. The outlet is located at the top of the unit.** Install the optional shutoff solenoid valve just upstream (before) from the KUV 1200x, if included.

Step 1: Shut off the water supply. **Caution:** Always turn off the water supply before modifying or disconnecting any piping. Always open a faucet after shutting off the water supply to relieve water pressure and ensure that the water has been completely shut off.

Step 2: If you have decided to install an optional by-pass line and drain valve, you may begin to install these fittings at this point. See Figure 1B for more information on how to connect optional by-pass piping and drain valve.

Step 3: Connect the optional shut-off solenoid valve (if included) to the plumbing just upstream from (before) the KUV 1200x. Note: the solenoid valve ensures that should the system fail, due to power loss, color in the water or low UV lamp output, the KUV 1200x has a failsafe mode and will shut down the flow of water to your taps.

The direction of flow through the shut-off valve is important – **verify the flow direction with the label on the valve. Caution: over tightening a metal fitting into the valve may cause it to crack. Do not over tighten.** Keep the coil of the valve pointing upward (to prevent water from dripping on it). Water will not flow backward through the valve. See Figure 1C.

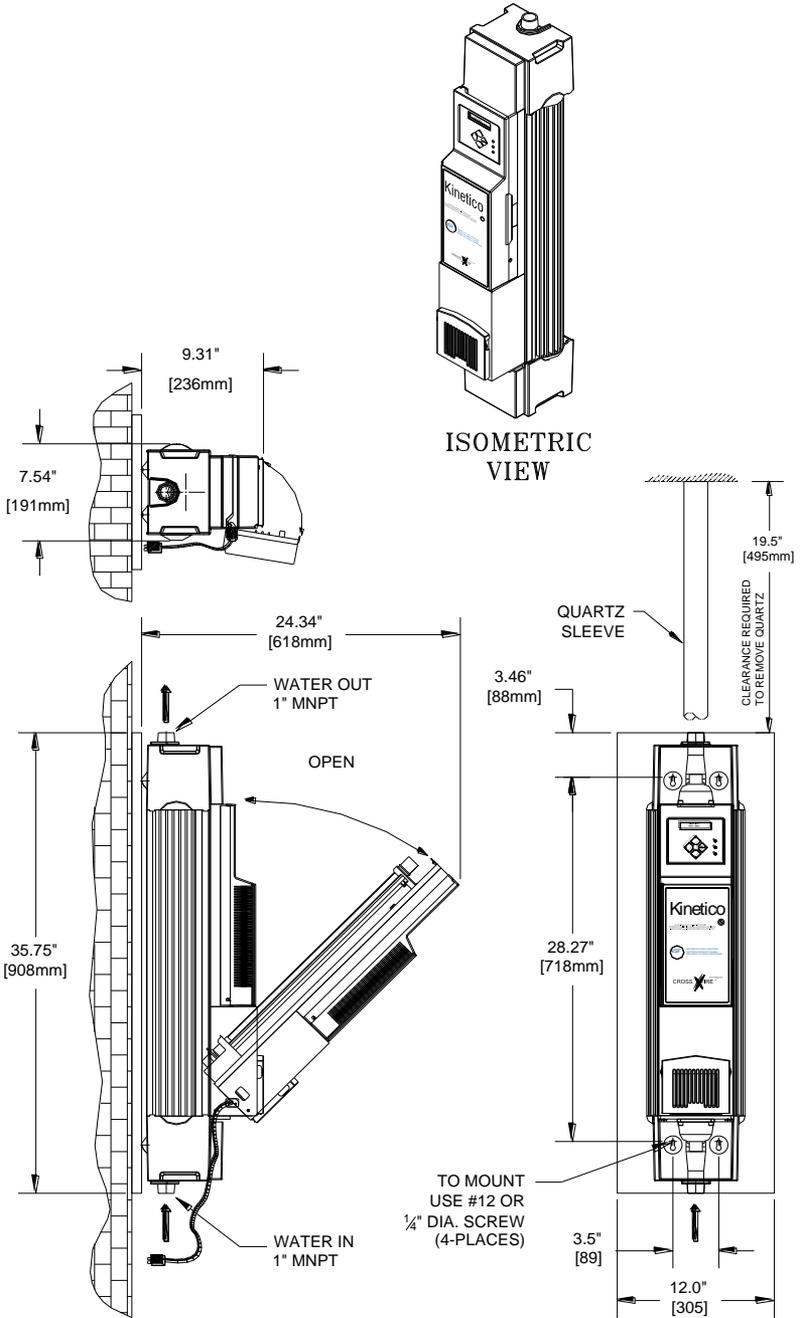
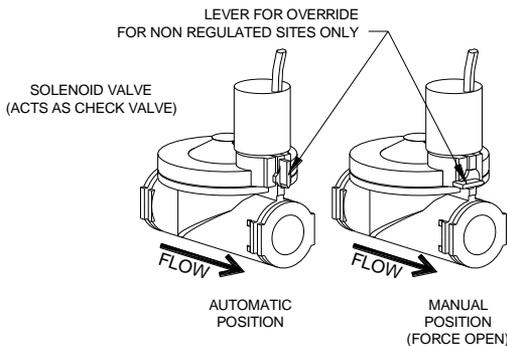
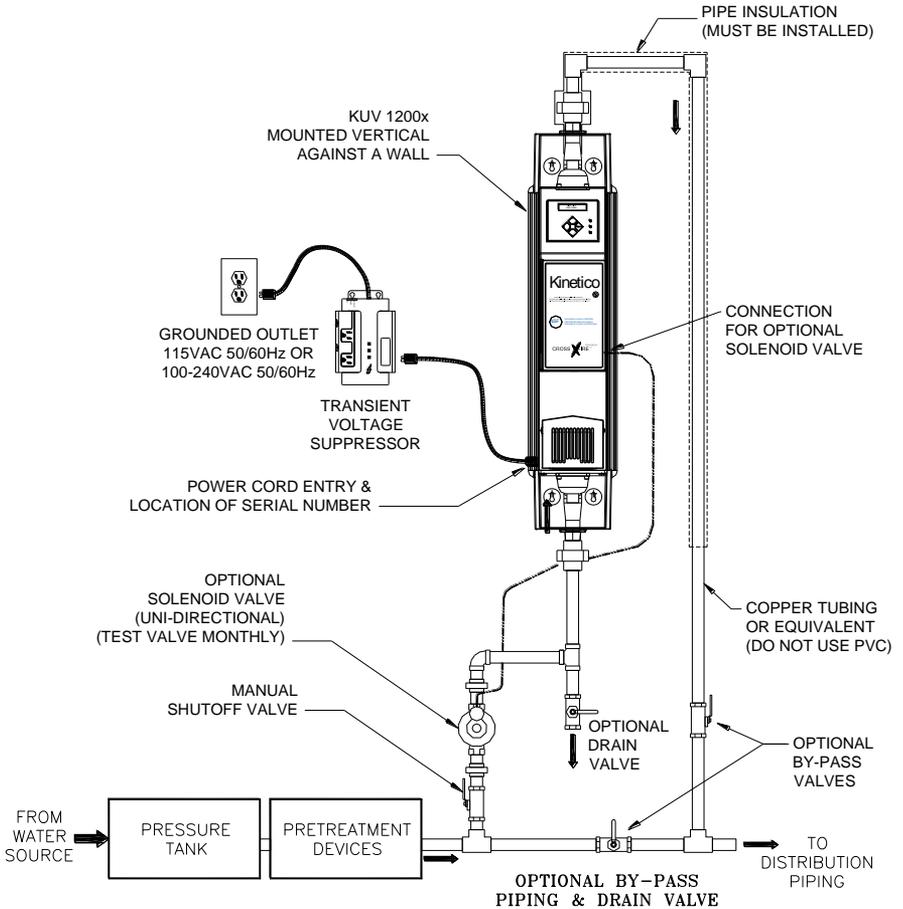


Figure 1A

TYPICAL INSTALLATION



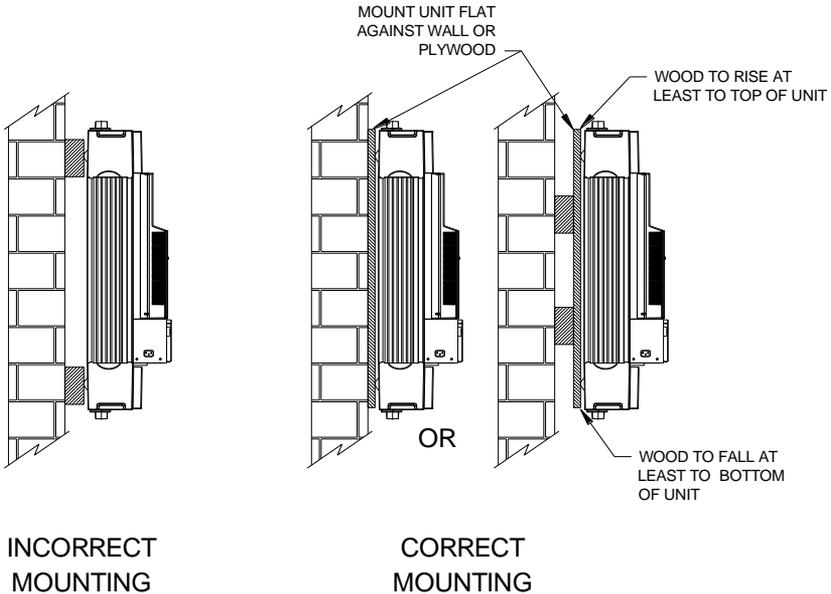


Figure 1D

Step 4: Connect the optional shut-off solenoid valve to the inlet piping attached to the bottom of the KUV system. The solenoid valve activation cord plugs into the right hand side of the KUV 1200x where a port is provided. **The optional shut-off solenoid valve is a non-serviceable component and nothing else should be plugged into this port.** Secure the cable from the valve to the wall. The solenoid valve is normally closed and must be powered to open. The valve has a manual override (a white lever located on the valve itself) that can be used to manually open the valve should you require water for service/emergency purposes. (Note: in the event of alarm and shut down, it is recommended you boil your water). **In regulated sites such as municipal applications, the manual override may not conform to regulations. If so, it should not be used.** For normal operation, always leave the valve in the automatic position.

Caution: Do not allow solder or solder flux to fall in or on the KUV 1200x.

Step 5: Connect the outflow piping to the outlet port located at the top of the unit. **Do not use PVC pipe or braided hose at the outlet.** During extended periods of no flow, water temperatures may exceed the softening point of PVC.

Step 6: Caution: do not allow the inside of the unit to get wet. Before turning on the water supply, double check all connections and cover the top of the system with a rag or some plastic to prevent water entry. Ensure front panel is closed. Close any faucets you opened in Step 1, and then slowly turn on the water supply to check for leaks. If leaks exist, investigate the cause and repair. **Caution: Do not connect the system to electrical power until the piping and unit**

are free of water leaks. The optional solenoid valve may be placed into manual mode to allow water to enter the system. Switch back to automatic mode when done.

Step 7: Once the system is checked for leaks, install pipe insulation on all overhead outlet piping to prevent condensation from falling onto or into the unit.

Parallel Installation

When more than one system is installed in parallel to increase treatment capacity (the flow is divided among systems), the systems must be installed with manual shutoff valves before and after each system. This allows one KUV 1200x to be serviced without interrupting the flow to the other(s). Another requirement is the installation of a check valve downstream (after) from the systems. This will prevent the backflow of water to a unit. See Figure 1E.

TYPICAL INSTALLATION OF PARALLEL UNITS

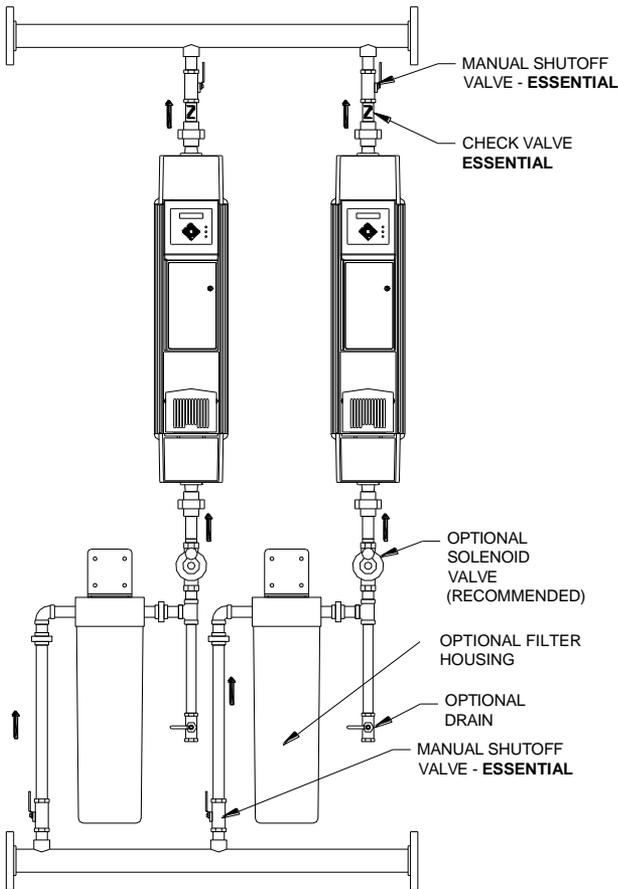


Figure 1E

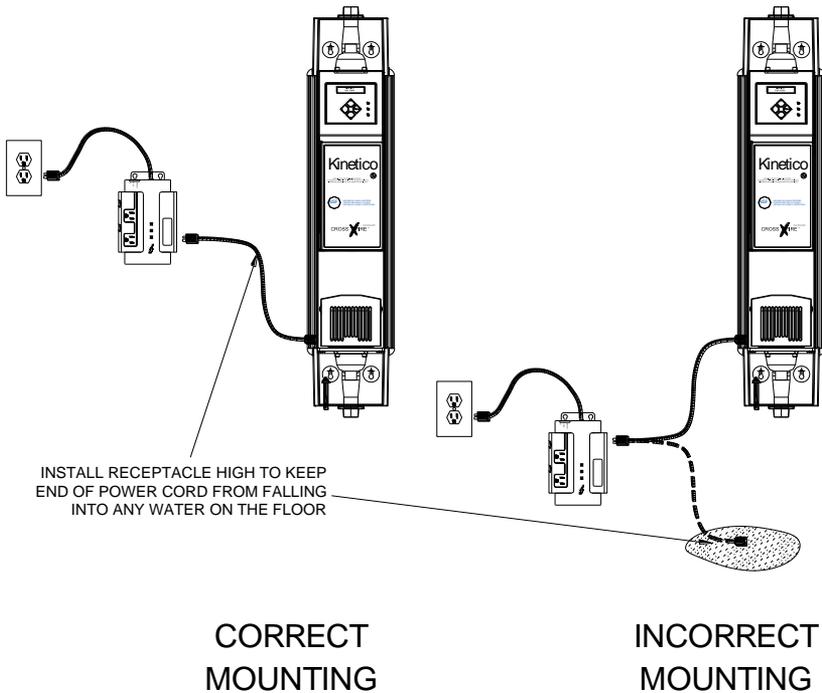


Figure 1F

Locating the receptacle and TVSS

Install the receptacle and TVSS in a sufficiently high location so that if the power cord is removed from the unit and drops, the end of it will not fall to the floor potentially in any water spills – See Figure 1F. If this is not possible, the power cord should be secured to the wall to prevent it from falling.

Plugging in the UV

Step 1: Ensure that the front panel of the system is closed and that it is securely fastened to the wall. (**Note:** You should not open the front panel unless the system has been unplugged.)

Caution: It is not recommended to operate the KUV 1200x dry. Water should be in the treatment chamber when the unit is in operation.

Step 2: Plug the female end of the power cord into the power entry module located on the left side of the front panel. The power cord must be removed before the front panel can be opened, in order to prevent risk of electrical shock and exposure to UV light. See Figure 1B. Plug the male end of the power cord into the Transient Voltage Surge Suppressor supplied. Plug the Transient Voltage Surge Suppressor into a grounded electrical outlet. Flip the switch on the Transient Voltage Surge Suppressor to ON position.

Caution: Use only a grounded electrical outlet when connecting the KUV 1200x to a power source. If you do not know whether the outlet is grounded, check with a qualified electrician. If an extension cord is necessary, the cord should contain a ground and have an electrical rating no less than the rating of the unit or combined units. The piping connected to the UV unit must also be properly grounded.

The installation is now complete.

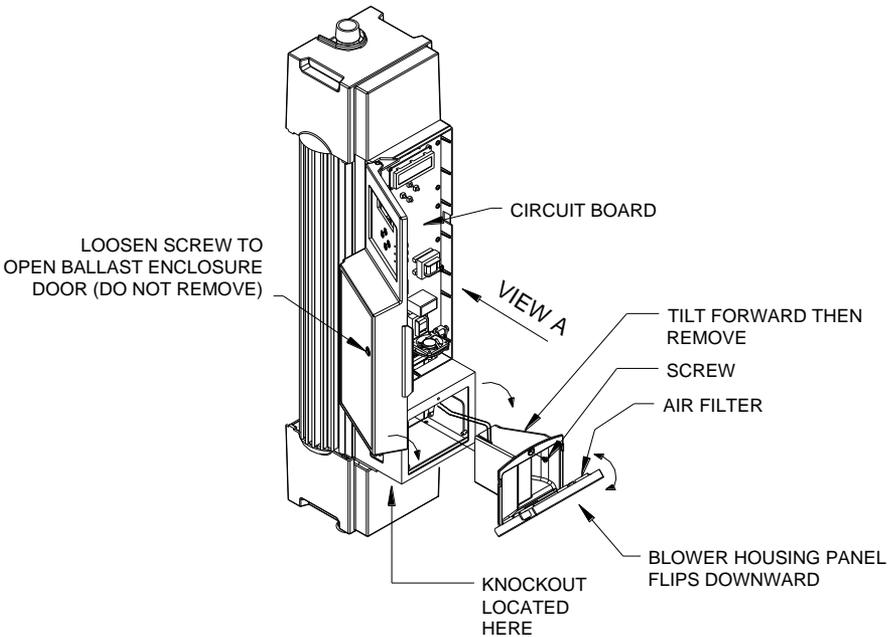
Important: After the unit has been operating for a few hours, shutdown (See Menu Section) and unplug the system. Then check all connections for leaks. Repeat this procedure periodically.

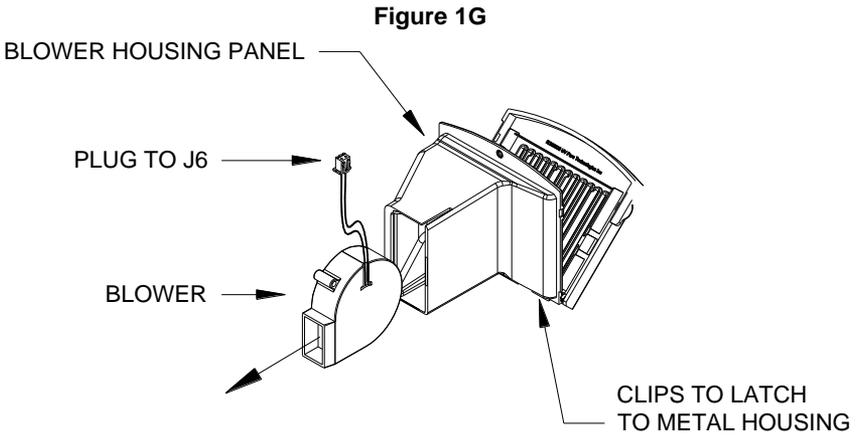
Proceed to “System Operation” for further instructions and to ensure optimal performance.

Flushing Instructions

Flushing the system is required after installation or after any disassembly and cleaning. Flushing may also be required to remove colored water from the system. Most filters (if installed) also require flushing prior to use – follow the manufacturer’s recommendations if filters are installed before the system(s).

The system may be flushed in two ways. It can be done manually by disassembling the unit and filling and draining the unit by hand (see Cleaning the Unit). Flushing may also be done while the system is operating. Plug in the system, open a faucet closest to it, and run the water for a minimum of 15 minutes.





EXPLODED VIEW OF BLOWER
AND BLOWER HOUSING PANEL

Figure 1H

3. Operating Instructions

The KUV 1200x incorporates advanced Crossfire Technology®, yet is simple to operate. Inspection of the quartz chamber is a simple visual inspection. The only required maintenance is the replacement of the two UV lamps every 12 months (Note: If you shut your system down for seasonal use, the lamp life will be extended.) Periodic inspections of the quartz sleeve is recommended to ensure optimal unit performance (see Determining Need for Cleaning Section).

KUV 1200x System Functions

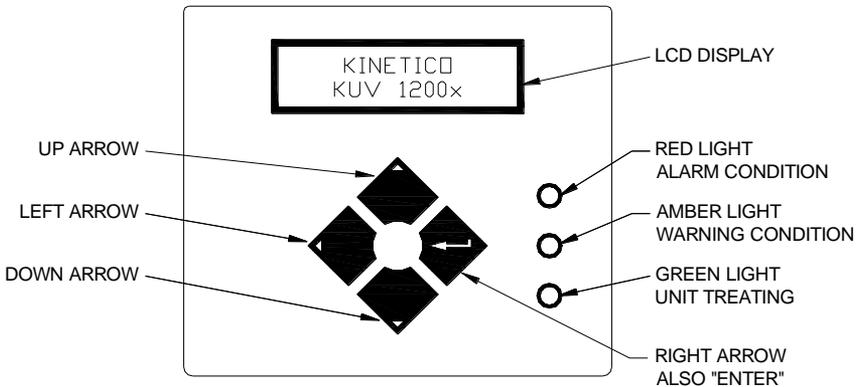


Figure 2

There is an LCD display, four push buttons and three indicating lights on the front

panel. (See Figure 2.) The push buttons allow you to navigate the menu screens on the LCD display. (See the Menu section.)

LCD Display

The 2 line backlit display provides status information including lifetime remaining on lamps, message history and setup options. (See the Menu Section.)

Push Buttons

Left Arrow – press to move back to a previous menu and/or to escape from a menu choice.

Up Arrow – press to move up a menu in a section and also select data whether it is menu choices or numerical values.

Down Arrow – press to move down a menu in a section and also select data whether it is menu choices or numerical values.

Right Arrow – press to “Enter” selection or save value.

Indicating Lights – Positioned on the front Control Panel

Green Light – located in the bottom position, an illuminated green light indicates the UV is treating normally. A flashing green light means that the UV lamps have not yet reached full power or that the system is in standby mode awaiting a remote start.

Amber Light – located in the middle position, an amber light may indicate that the initial set-up process has begun or is an indication of a warning of some condition that should be addressed. Warnings are accompanied by a single “beep” with a message and troubleshooting diagnostics displayed in the LCD.

Red Light – located in the top position, a red light is an alarm for a condition that has significantly impacted the UV’s performance. It must be addressed immediately. Alarms are accompanied with continuous beeping, with a message and troubleshooting diagnostics displayed in the LCD.

Audio Alarm

The KUV 1200x is equipped with an audible beeper to provide an alert to any condition that is not normal.

Single Beep – will sound if a warning occurs. This will be accompanied by an amber light and a message with troubleshooting diagnostics displayed in the LCD.

Continuous Beeping – will sound in an alarm condition. This will be accompanied by a red light and a message with troubleshooting diagnostics displayed in the LCD.

Note: The audio alarm may be disabled temporarily or permanently from the Service Menu.

Starting the KUV 1200x

Caution: Do not operate the system with the front carriage door or ballast enclosure door open. Do not try to open the front carriage door or ballast enclosure door when the system is operating – Shut down (see Menu Section) and unplug the system before opening either the front carriage door or ballast enclosure. The KUV 1200x has a safety switch that will disable the lamp power supply if the ballast enclosure door is not completely closed.

Caution: It is not recommended to operate the KUV 1200x dry. Water should be in the treatment chamber when the unit is in operation. In the event of a lack of water or if the water supply is turned off, unplug the system until the water supply is restored. In the event of a power failure, the unit will shut down automatically and the optional solenoid shut-off valve, if installed, will close, preventing water from flowing. When the power returns, the unit will automatically restart and perform a self-test. If no faults are detected, the unit will return to normal operation and the optional solenoid shut-off valve will open automatically. Note that during a brownout, the supply voltage may drop low enough to cause the unit to shut down. If the unit does not automatically restart as described above, shut down (see Menu Section) and unplug the unit, and plug it in again. This will “re-boot” the system, and it will re-start automatically.

Step 1: Make sure the UV unit is plugged into the Transient Voltage Surge Suppressor (TVSS) that is supplied with the system, and plug TVSS into a grounded outlet to start the system. **Caution:** Never look into and never expose skin to the UV lamps when the unit is operating.

Step 2: When the KUV 1200x is plugged in, all three Indicating Lights will illuminate, an Audible Alarm will beep and the LCD display will become active. This verifies that the Indicating Lights, the Audible Alarms and the LCD are functioning.

The system will then perform a self-test. When the UV lamps are new, or when the UV lamps have been replaced and the lifetime lamp hour counter is reset, the system will enter an Initial Set-up program. During this process, the lamps will be energized and will warm up to reach full power. While this is occurring, the Green Indicator Light will flash, and the Amber Light will be illuminated. The LCD will display: “INITIAL SET-UP, MAY TAKE 24 HRS.” The process may, indeed, last for 24 hours. When the initial set up is complete, a solid Green indicator light will appear, and the LCD will display “Unit Treating.” This is the normal operating mode of the KUV 1200x.

If the optional solenoid shut-off valve is installed, it will be kept open during Initial Set Up, and returned to automatic mode once the system is in normal operating conditions.

During normal operation, if a power outage occurs, the system will re-start automatically within a few minutes after power is restored; an alarm will occur if

the system is not treating normally within 10 minutes of power being restored.

If the UV lamps fail to energize during start-up procedures, the system will automatically retry to start the lamps 5 times before issuing an alarm. If that occurs, re-boot the system by unplugging and plugging it back in, which will cause the system to enter the re-starting procedure again.

Supplied Surge Protector

Installation of the supplied Transient Voltage Surge Suppressor (TVSS)/Surge Protective Device (SPD), certified to the UL 1449 standard by an NRTL/C that includes integral Over/Under Voltage shutoff protection, is required.

Kinetico's KUV water purification systems are designed to operate within normal power grid specifications (voltages and frequencies), worldwide. However, power spikes, surges and brownouts are a common occurrence in all countries. When that happens, line voltages may fluctuate outside the systems' operating specifications.

Installation of the supplied TVSS/SPD between the UV system and the power source will increase the likelihood of the system surviving transient events on the AC power grid. This will help to ensure uninterrupted water treatment and reduce the risk of repairs due to damage from power spikes, surges and brownouts that are not covered by the Manufacturer's Limited Warranty.

Shutting Down the KUV 1200x and Seasonal Use

To power down the system, press "Enter" when the LCD is displaying "Unit Treating." Then, select "Shutdown Unit" from the main menu and when the message "You may safely unplug your unit" appears, simply unplug the KUV 1200x.

If an alarm condition exists and it can not be resolved, simply unplug the system to power it down.

The KUV 1200x may be left on for extended periods of time without use of water **as long as the system has water in it and has not been drained.** Extended periods of no water usage however, may increase chances of quartz fouling. Periodic inspections of the quartz sleeve is recommended to ensure optimal unit performance. The system may also be shut down in the case of a seasonal residence or during a vacation. If the possibility of freezing exists, the system and any filters must be drained. (See Draining the Unit.) When the system is first restarted, in spring for example, reconnect all fittings, close all valves and turn on the water supply. Plug in the UV and when operational, flush water through the system for at least 15 minutes.

Caution: When the system is not operating, the optional solenoid shut-off valve, if installed, remains closed. If the solenoid valve is manually opened, or if the optional by-pass piping is used, untreated water may enter the plumbing system. Emergency use of untreated water is the only time that by-pass piping should be used. In that case, any water used for drinking should be boiled. Unplug the system if the by-pass is used.

Disinfecting the Plumbing

Disinfection of the household or building plumbing should be performed after the UV system has been installed and is operating. This procedure should also be done if the system is not functioning normally, if a by-pass has been used, or if there has been a high background bacteria count in a water sample. Disinfecting the plumbing will ensure that any potential bacteria or contaminants in the distribution system are treated prior to system use.

Please note that this procedure is ineffective against protozoa that can be found in surface water or shallow wells under the influence of surface water. Under these circumstances, it is important to perform the disinfecting procedure and then operate the UV unit. This procedure does not work with sediments or heavy biofilm and encrustations, which must be removed mechanically.

Sanitizing the household or facility plumbing is accomplished by adding 50 ppm chlorine from bleach for 12 hours and then flushing. This can be achieved by doing the following:

Step 1: Shut down (see Menu Section) and unplug the KUV 1200x.

Step 2: Shut off the water supply, and relieve the water pressure by opening a faucet.

Step 3: Remove a filter (if installed) from its housing and fill the housing with bleach.

Step 4: Re-mount the housing (but not the filter) and plug in the UV system to turn it on.

Step 5: When the KUV 1200x is operating, turn on the water supply and run water to all faucets (hot and cold), toilets, the washing machine and other water-using appliances – the bleach must fill every inch of plumbing. A Treatment Alarm, due to low UVT, may arise after the introduction of bleach. If this occurs, use the manual override on the optional solenoid valve, if installed, to keep valve open during procedure. **Return override to auto position after the disinfection process is complete.**

Step 6: When you detect the odor of chlorine at each spot, stop running the water and let the bleach remain in the lines for at least 12 hours. Turn off the UV system during this procedure.

Step 7: After the waiting period is over, plug in the UV system. Once stable, flush every line for at least five minutes or until the odor of chlorine is gone. See local regulations for proper disposal of chlorine residual, especially in the case of discharge into a septic system.

Step 8: Now that the disinfection procedure is complete, you will need to return the filter (if installed) to its housing. Shut off the water supply, relieve water pressure by opening a faucet, and return the filter to the housing. Allow a few days after a disinfection procedure before getting a sample since residual chlorine may affect the results.

Have the water tested by a local recognized testing agency prior to any water consumption. For your local water testing labs, contact your Kinetico dealer. The testing should be performed on a regular basis as required by local regulations.

Caution: Do not allow chlorine to remain in the KUV 1200x for more than 12 hours. Do not operate the system during this time because heating the water in the system will increase the corrosive nature of chlorine.

4. Menu and Troubleshooting

The KUV 1200x will run unattended unless an alarm occurs. If that happens, the optional solenoid shut-off valve will close, preventing water from flowing. The Green Indicator Light will go out, the Red Indicator Light will illuminate, the Audible Alarm will beep and an alarm message will be displayed on the LCD.

The problem must be corrected to return the unit to normal operation. When an alarm situation occurs, navigate to the “Alarm Condition Exists” screen by pressing the LEFT or RIGHT arrow on the control panel several times. The audio alarm will silence as soon as any arrow is pressed. Next, press RIGHT arrow to review the LCD message to determine what alarm condition occurred. The menu will automatically bring you to Alarms and Troubleshooting section for assistance with the current condition. The Message History can also be reviewed to examine other recent events.

In addition to “Alarms” that indicate potentially serious concerns, there are “warnings” that are status alerts. Warnings will not close the optional solenoid shut-off valve, if installed. If a warning is left unaddressed, a system fault could subsequently occur. In a warning condition, the audio alarm will beep once, the Amber Indicator Light will illuminate and a warning message will be displayed in the LCD.

Disinfection of water will occur as long as the unit is properly maintained in accordance with the instructions set out in this manual. Operating a malfunctioning unit or defeating any system sensors may jeopardize the operation of the KUV 1200x and the safety of the water. If any system failure occurs and water enters the plumbing system without being disinfected, and if the optional solenoid shutoff valve has been placed into manual mode, or if an optional by-pass is used, any water used for drinking should be boiled. Under these circumstances, the water supply should be disinfected after returning the unit to normal operation.

In the event of an alarm, a physical inspection of the unit with the power off should be done to try to identify a cause. If water should drip or leak onto the UV system, unplug the system and repair the leak (or add pipe insulation to prevent condensation runoff). Dry all remaining water and inspect the lamps and reflectors for water spots and clean them if necessary (See section on Replacing and Cleaning UV Lamps.) The reflectors are the shiny curved panels in front of and behind the lamps. The reflectors may be wiped with a clean soft cloth. If the reflectors do not come clean or are damaged, they must be replaced. A troubleshooting guide is provided with each alarm or warning message and

presented in the Menu Section of the Instruction Manual.

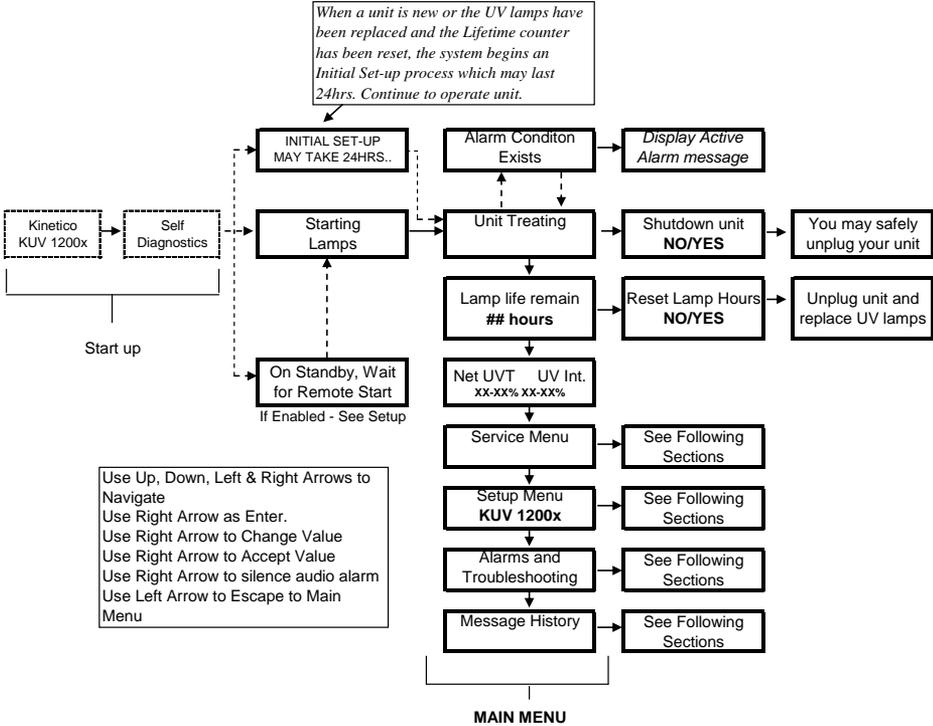
Treatment Alarm

A Treatment Alarm occurs when the UV dose (energy) may be too low for effective treatment of pathogens in the water at the maximum flow rate specified for the system. This could be a result of low UV Intensity (lamps output too low) or low UV Transmittance (water quality below minimum specification) or both. By reviewing both the UVI and UVT output values in the Main Menu, the cause can be identified and corrective action taken as noted in the Troubleshooting section of the Manual.

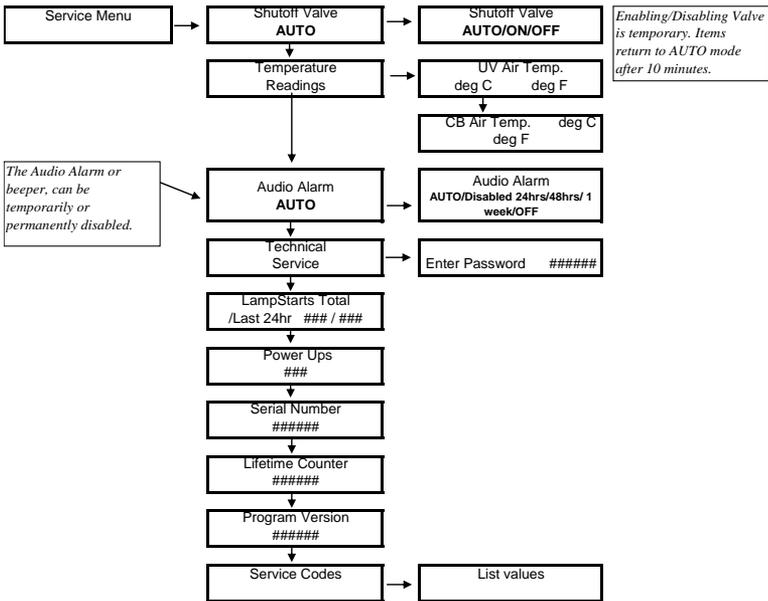
Navigating the Menu

See the following pages to review system information including status, Treatment performance and Troubleshooting.

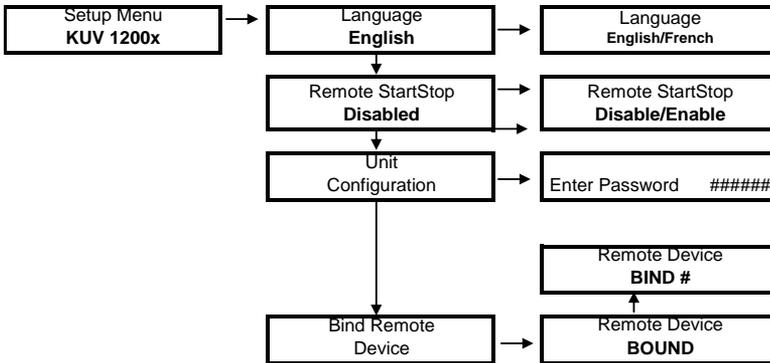
MAIN MENU



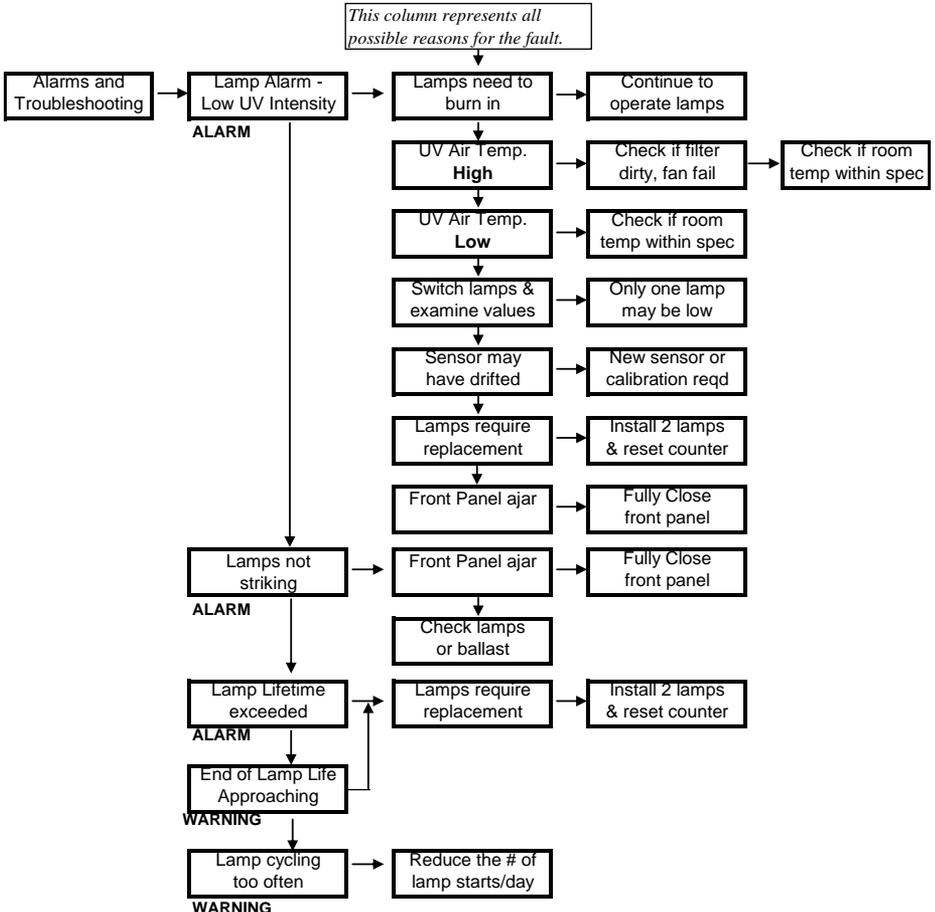
SERVICE MENU



SETUP MENU

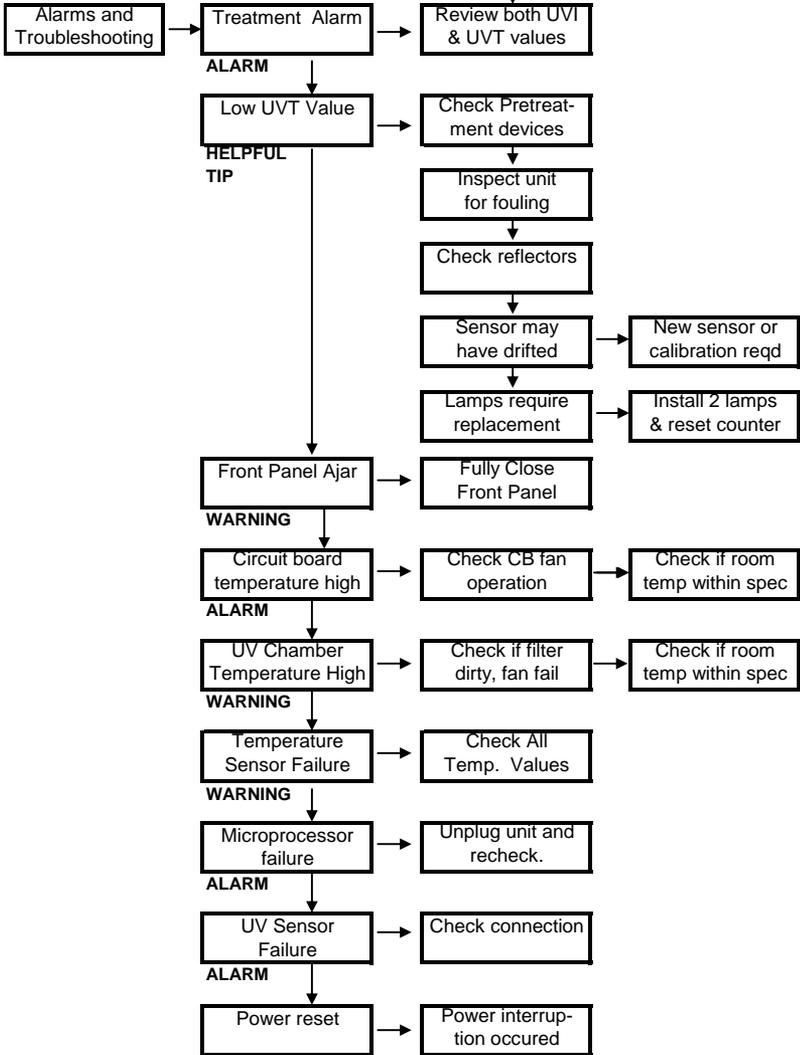


ALARMS & TROUBLESHOOTING MENU

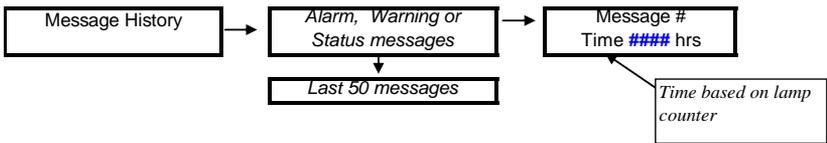


ALARMS & TROUBLESHOOTING MENU (CONT'D)

This column represents all possible reasons for the fault.



MESSAGE HISTORY MENU



5. Maintenance

Test the Optional Solenoid Shutoff Valve Monthly.

The optional Solenoid Shutoff Valve, if installed, should be tested monthly to confirm proper operation, ie: that it opens and closes properly. To test it, unplug the valve from the system to confirm that the water stops flowing. Plug the valve back into the system to confirm that water starts flowing again. In that case, the valve is functioning properly.

Clean the Air Filter Every 90 Days

The KUV 1200x has a washable air filter in the blower housing panel (see Figure 1G). Wash by hand with water. Check that the blower operation is not impeded after filter cleaning.

Replacing and Cleaning UV Lamps

The system contains two ultraviolet (UV) lamps that emit high-intensity UV light in the germicidal frequency range, providing effective disinfection of the water flowing through the unit. The lamps will lose power over time and should be replaced every 12 months. Avoid starting and stopping the system more than two times within a 24 hr. period, as this will accelerate the aging of the UV lamps. (Note: Shutting down the system for seasonal use will extend lamp life.)

The KUV 1200x has an internal lamp hour counter to keep track of the lifetime of the lamps. It will issue a warning when the end of their lifetime approaches (see Troubleshooting Guide). The amount of life remaining on the lamps is measured in hours and is displayed in the main section of the menu.

The lamps can be easily replaced in minutes. Draining the system or removing it from the wall is not required. See Figure 3.

Caution: The lamps in the unit emit ultraviolet (UV) light that can cause permanent damage to the skin and eyes. **Never look at a lamp when it is operating. Always unplug the unit before replacing lamps.**

Caution: Never touch the bulb (transparent quartz portion) of a lamp with your fingers. Handle the lamp by its ceramic ends only. If the surface of the lamp becomes dusty or dirty, use a clean lint-free cloth and some rubbing alcohol to remove the dirt. For more difficult stains such as water spots, use a scale remover to remove the stain and then rubbing alcohol afterwards. The lamps are fragile and must be handled with care.

Tools Needed

- Slotted screwdriver
- 3/16" Hex wrench (Allen wrench)

NOTE: Resetting the Lamp Lifetime counter will clear the Message History, Lamp Starts counter and Power Ups counter. If this information is required, review it first before proceeding to Step 1.

Step 1: From the Main Menu, scroll down (push bottom arrow) to “Lamp Life Remaining” display screen. Press “Enter” to move to next screen that will allow you to reset the lamp hour counter. Press “Enter” again, and then push the Up or Down Key to select “Yes” and press “Enter.” The lamp hours will reset to “9000 Hours” and the system will turn off the lamps automatically. This will close the optional Solenoid Shut Off-Valve, if installed, and temporarily shut off the water supply. Unplug the power cord from the left side of the system.

Step 2: Remove the top cover by pulling each side of the plastic top cover outward from the system. When the top cover is removed, you will see two thumb screws that secure the front carriage door. Loosen the thumb screws so that the front carriage can be tilted forward to reveal the lamps. (You may need the 3/16” Allen Wrench if the thumb screws are very tight.) Lower the front carriage until it comes to a stop at 45° position.

Step 3. CAUTION: The lamps are very hot after continuous use and can burn your skin on contact. Allow lamps to cool for five minutes before removing them. Slowly lift the old lamps out of the system. **Do not twist the lamps as they are being removed.** To help remove the lamps, insert a flat bladed screwdriver between the lamp base and its socket and lightly pry the lamps upward (see Figure 3). Dispose of the old lamps in the same way you would dispose of ordinary fluorescent lamps. Note that old lamps should be disposed of at a household waste management depot or transfer station; contact your local recycling and waste management authority for proper disposal procedures.

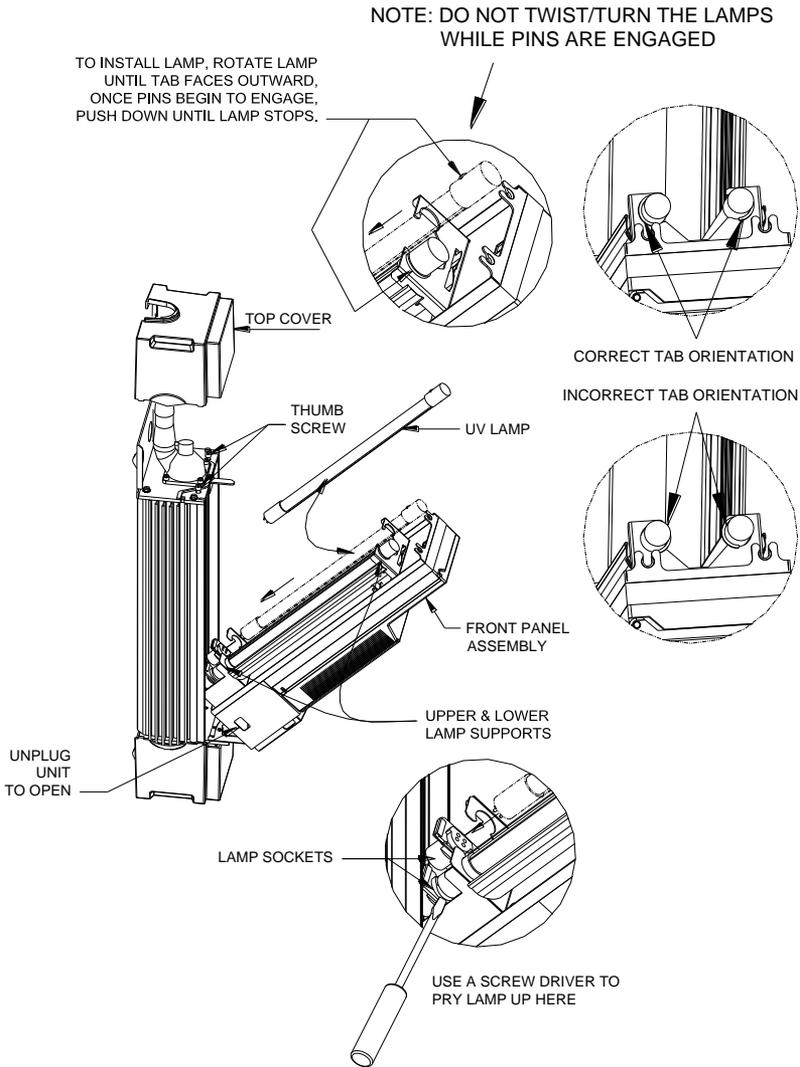
Step 4: Install the new lamps into the KUV 1200x, being careful not to touch the bulb. **Ensure that the lamps are aligned with the tab facing the outside of the system (left or right side of the system), or, if the lamps have a stop sign printed on the top ceramic, that the stop sign is facing inward. If you can see the stop sign, the lamps are backward (See Figure 3).**

Once the pins of the lamp begin to engage into the lamp socket, push firmly down on the top of the lamp. **Do not twist the lamps when they are inserted.** The lamp will come to rest when the pins are fully seated into the socket. When pressing down, be sure to position the lamp ceramic end in the center of the hole in the lamp holders. Repeat this for the other side.

Step 5: Return the front panel to the upright position and secure it by tightening the thumbscrews. Replace the plastic top cover.

Step 6: Record the date of the lamp replacement in your Service Record Sheet.

Step 7: Plug in the KUV 1200x. The system will begin an Initial Set Up process while the lamps are reaching full power. The Green Indicator Lamp will flash and the Amber Indicator Lamp will be on. This process may take up to 24 hours. When the Initial Set-up process is complete, the Green Indicator lamp will be on and the message “Unit Treating” will be displayed in the LCD.



Draining the Unit

The UV system does not require draining for routine operation or lamp replacement. Draining is necessary to disassemble the system, to protect against freezing or to remove poor-quality water.

Step 1: Shut off the water supply.

Step 2: Unplug the unit from the electrical outlet.

Step 3: Place a bucket under the unit to collect the water.

Step 4: Open a faucet downstream of the unit.

Step 5: If you have installed an optional drain valve, open the drain valve. If you do not have an optional drain valve, disconnect the water pipe below the unit and allow the system to drain for a few minutes.

Step 6: When draining is complete, close the drain valve or reconnect the pipe.

Step 7: Close any faucets that were previously opened.

Cleaning the Unit (Quarterly Inspection Recommended)

If the quartz water column becomes fouled due to water outside normal specified ranges, the Treatment alarm will display and alert you. Follow the steps below to inspect the quartz and disassemble the unit for quartz cleaning.

Caution: Always unplug the system before performing any maintenance. Never operate a system unless the front panel is completely secured.

Tools Needed

- Slotted screwdriver
- 3/16" Hex wrench (Allen wrench)

Determining the Need for Cleaning

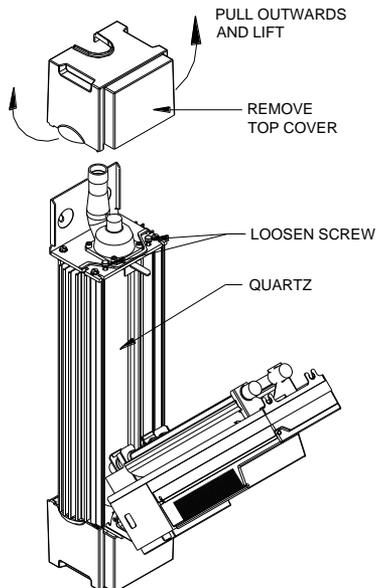


Figure 4A

Step 1: Shut down (see Menu Section) and unplug the system.

Step 2: Remove the plastic top cover by pulling each side of the cover outward from the sides of the system and removing it. Then loosen the thumb screws holding the front carriage (You may need the 3/16" Allen Wrench if the thumb screws are very tight.)

Step 3: Tilt the front carriage open until it comes to rest at a 45° position.

Step 4: Examine the quartz sleeve visually. If it is clean, no disassembly is required. Return the front panel to the upright position and tighten thumb screws. Plug in the unit and operate as normal.

If the quartz sleeve is dirty on the outside, proceed to wipe it down with a clean lint-free cloth and rubbing alcohol to remove the dirt. If the quartz sleeve is dirty on the inside, proceed with in-place cleaning or disassembly.

Caution: The quartz sleeve can break or chip if mishandled. Always handle it with care and keep it in a safe place if it is removed from the unit. Do not strike the quartz sleeve with any tool, since even the smallest chip can cause it to break under pressure.

In-Place Cleaning

There are rare instances where water chemistry requires manual quartz cleaning. This procedure will clean the quartz without its removal from the unit. This is a quick and easy procedure that works well in most cases.

Step 1: Fill a bucket or container with water before shutting off the water supply since you will need the water later to clean the quartz sleeve. A squeeze bottle is useful for applying water or cleaning solution to the inside of the quartz sleeve.

Step 2: Unplug the system and open the front panel so that it is tilted forward to reveal the lamps. Lower the front panel until it comes to rest at a 45° position.

Step 3: Place another bucket under the unit and drain the unit until there is about 1" (3cm) of water left in the quartz sleeve (see Draining the Unit).

Step 4: Disconnect the **top** pipe.

Step 5: Add about 2 oz. (60cc) of cleaning solution through the top opening. The cleaning solution can be a citric acid, vinegar or other non-hazardous slightly acidic solution. **Any solution used should be thoroughly rinsed out afterwards.** Fill the rest of the quartz with water.

Step 6: Let the cleaning solution remain in the quartz for at least 10-20 minutes.

Step 7: It may be helpful to manually clean the inside of the quartz tube with a bottle brush.

Step 8: Drain the system and inspect the quartz sleeve. If clean, flush the unit with clean water. If fouling remains, repeat the cleaning procedure.

Step 9: Once the unit is clean, reassemble the system.

Step 10: Slowly open the water supply and check for leaks.

Step 11: Replace all covers and plug in the KUV 1200x.

Disassembling the Unit

NOTE: This procedure is not recommended for individual household users. Please contact your certified water specialist for assistance if disassembly is required.

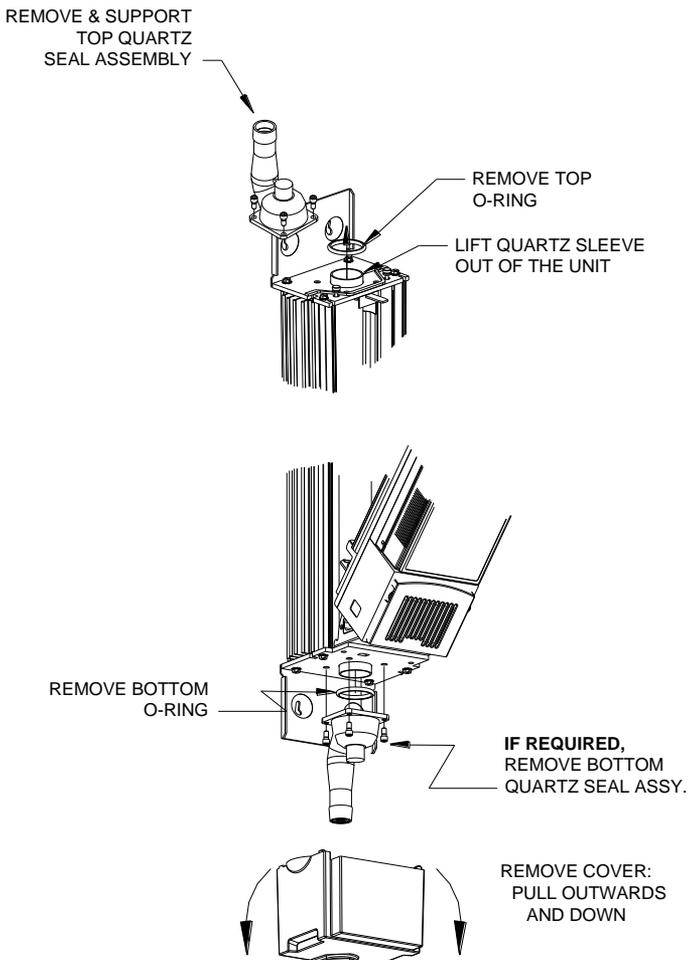


Figure 4B

See Figures 4B & 4C

Step 1: Fill a bucket or container with water before shutting off the water supply since you will need the water later to clean the quartz sleeve (8). A squeeze bottle is useful for applying water or cleaning solution to the inside of the quartz sleeve.

Step 2: Place another bucket under the unit and drain the unit (see Draining the Unit).

Step 3: Open the front panel. The lamps may be removed to prevent them from getting dirty or damaged.

Step 4: Disconnect the pipe from the top of the system and remove the top quartz seal assembly (Outlet Manifold).

Caution: Do not damage the sealing surfaces of the Inlet/Outlet Manifolds (4). Handle these parts with care to prevent water leaks.

Use a 3/16" Hex wrench to remove the four fasteners in an alternating pattern (top left, bottom right, bottom left, then top right). The bottom quartz seal assembly does not require removal to clean the quartz, so leave it in place. This will support the quartz sleeve during cleaning and simplify the overall process.

Step 5: Remove the top quartz seal assembly (Figure 4B) by lifting it straight up.

Removing and Cleaning the Quartz Sleeve

Step 1: Use a bottle cleaning brush with a long handle to scrub the inside of the quartz sleeve. Scrub and flush it with water repeatedly to clean the quartz. Use a squeeze bottle to apply water or cleaning solution to the quartz sleeve to keep the area tidy. **Note: Keep the rest of the system free from moisture.** When cleaning is finished, re-examine the quartz sleeve.

Step 2: If the quartz sleeve is still dirty, use a scale remover such as CLR or Lime Away and apply it to the inside of the quartz sleeve. Citric Acid, available at most drug stores, may also be effective. **Always flush with clean water after cleaning.**

Step 3: Once the quartz is clean, reassemble the system (see Figure 4B). During reassembly, replace any seals that appear to have been damaged.

Step 4: If the quartz is still not clean, it should be replaced. This is done by removing the bottom quartz seal assembly (see Figure 4B).

Step 5: Remove the bottom cover and then the bottom quartz seal assembly. To remove the plastic bottom cover, pull the sides of the plastic outward and down, then remove the four fasteners holding the bottom manifold on, in an alternating pattern (top left, bottom right, bottom left, then top right). Support the quartz sleeve as you remove this manifold.

Step 6: Remove the quartz sleeve by removing the top and bottom O rings (13). Lift the quartz sleeve out of the system.

Step 7: Install the new quartz sleeve into the system and center it vertically. **Be careful not to chip the ends of the quartz sleeve.** You may open the front of the system to help align the quartz sleeve if necessary. Support the quartz for the next two steps.

Step 8: Replace the top and bottom O-rings, keeping the quartz centered vertically in the unit.

Step 9: Replace the bottom quartz seal assembly (see Figure 4B) by installing the four fasteners in an alternating pattern (top left, bottom right, bottom left, then top right). Ensure that the inlet connection port is at the backside of the unit.

Reassembling the Unit

Step 1: Ensure the quartz O-ring seal is in place around the quartz sleeve and then replace the top quartz seal assembly.

Step 2: Tighten the fasteners in an alternating pattern.

Step 3: Reconnect the pipes, both top and bottom. Close and fasten the front panel.

Step 4: Close any faucets and open the water supply. Inspect for leaks. The optional solenoid shut-off valve (if installed) can be placed into manual mode to allow water to enter the unit. Switch back to automatic mode when done. Repair any leaks if necessary. **Caution:** Do not operate the system if there are any leaks at the piping connections or within the UV system.

Step 5: Replace the lamps.

Step 6: Reinstall the top and bottom covers.

Step 7: Plug in the KUV 1200x.

Replacement Parts

Use only genuine replacement parts when servicing your UV.

UV Spare Parts

Replacement parts and service are available from your Kinetico dealer. A complete list of Kinetico dealers is available on Kinetico's website: kinetico.com.

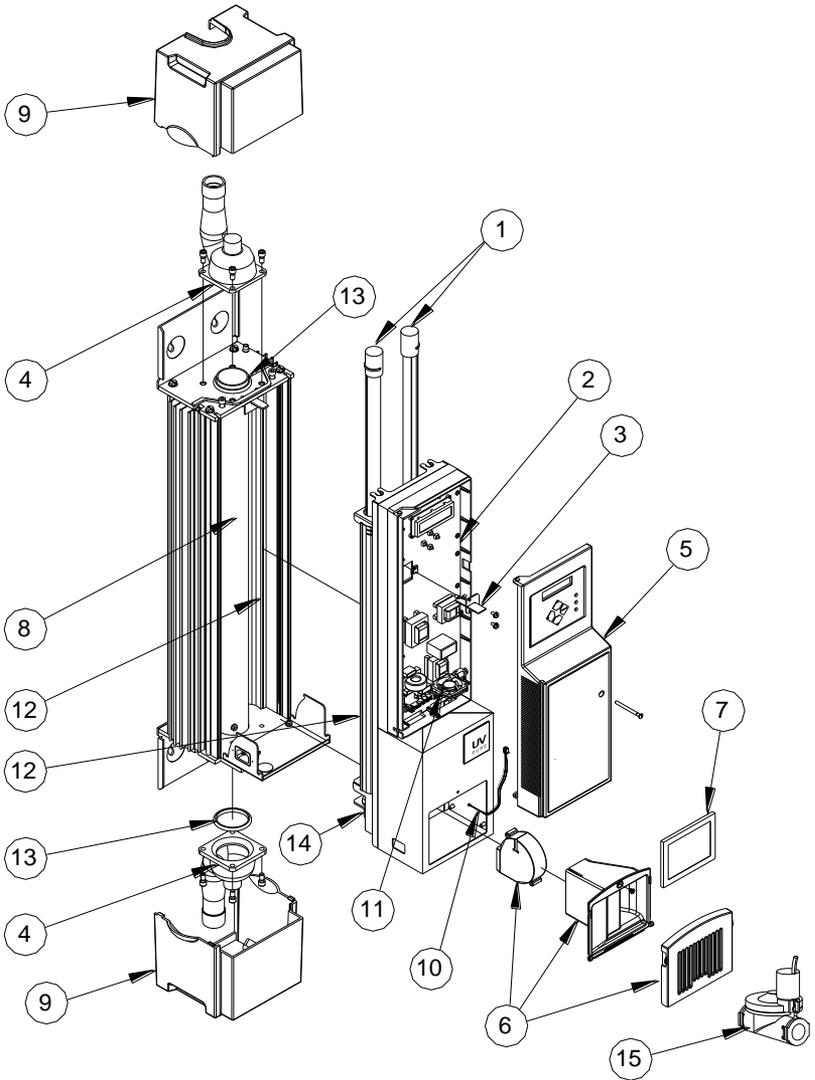


Figure 4C – KUV 1200x

KUV 1200x Parts List			
Item No.	Kinetico Part No.	Qty.	Description
1	13740	1	LAMPS (SHIPPED IN PAIRS-SINGLE LAMP P/N E300209)
2	13747	1	115V CIRCUIT BOARD
3	13749	1	UV SENSOR ARRAY REPLACEMENT KIT
4	13975	2	TOP/BOTTOM INLET/OUTLET MANIFOLD, 1"
5	13976	1	CABINET DOOR FOR KUV 1200x
6	13977	1	REACTOR COOLING BLOWER KIT (INCLUDES FILTER)
7	13978	1	FAN FILTER
8	13744	1	QUARTZ SLEEVE REPLACEMENT KIT (INCLUDES 2 O RINGS)
9	-	1	TOP OR BOTTOM CAP
10	13979	1	AIR THERMISTOR REPLACEMENT KIT
11	13980	1	CIRCUIT BOARD COOLING FAN REPLACEMENT KIT
12	13981	1	REFLECTOR KIT (SHIPPED AND SOLD IN PAIRS)
13	13982	1	SEAL KIT (COMPLETE)
14	13983	1	LAMP SOCKET WIRE HARNESS
15	13984	1	1" SOLENOID SHUTOFF VALVE (FOR 115V SYSTEMS)
16	13985	1	TRANSIENT VOLTAGE SURGE SUPPRESSOR FOR 115V SYSTEMS

Figure 4C – Parts List

7. Limited Warranty

Limited Warranty for Kinetico UV water purification systems and peripheral parts purchased in Canada, the United States, Australia and New Zealand.

What This Warranty Covers:

Defects in materials and workmanship in Products and Parts manufactured, sold or certified by Kinetico Incorporated including systems and parts such as replacement UV lamps, solenoid valves and other components sold or certified by Kinetico Incorporated.

What the Period Of Coverage Is:

Five-year Limited Warranty for structural, hardware and mechanical components. Specifically, this includes the following Parts: system casing (powder coated steel parts, machined and extruded aluminum parts, stainless steel parts and ABS components), stainless steel manifolds and mechanical fasteners.

Three-year Limited Warranty for electrical components and quartz sleeve.

Specifically, this includes the following Parts: muffin fan, blower, ballast and micro-processor with digital display, optional solenoid valve, wiring harnesses, lamp sockets and reflectors.

One-year Limited Warranty, on a pro-rated basis, for lamps and sensor probes.

Specifically this includes the following Parts: UV lamps, UV sensors and the circuit board they are mounted in and temperature probes.

- If the Part fails within 90 days, it will be replaced or repaired at no charge.
- If the Part fails after 90 days and before 181 days, it will be replaced or repaired at one-quarter of the then current Manufacturer's Suggested Retail Price (MSRP).
- If the Part fails after 180 days and before 271 days, it will be replaced or repaired at one-half of the then current MSRP.
- If the Part fails after 270 days and before 365 days, it will be replaced or repaired at three-quarters of the then current MSRP.

Ninety-day Limited Warranty or Balance of Original Warranty for replacement

Parts or Products. Specifically this includes any Parts or Products replaced or repaired under this Limited Warranty, and any Parts purchased for routine service or maintenance including UV lamps. This warranty period is for the balance of the original warranty or for 90 days from the date the Product or Part is repaired and/or returned to the first end-user, whichever is longer.

Who Is Covered:

This Limited Warranty begins from the date of original system installation and extends to you only if you are the FIRST END-USER PURCHASER with respect to the ORIGINAL INSTALLATION.

What We Will Do To Correct Problems Covered By This Limited Warranty:

During the warranty period, as set out above, Kinetico will repair or replace Products or Parts at its sole discretion and cost, with the exception of shipping

and handling charges. Replacement parts or systems may be functionally equivalent reconditioned/refurbished/pre-owned or new products or parts at Kinetico's sole discretion. Kinetico may provide software updates, at its discretion, but is under no obligation to do so. Based on an agreement between Kinetico and its service providers, Kinetico dealers, this warranty will be honored by either Kinetico or a Kinetico dealer.

How To Get Help:

Call your local Kinetico dealer. A complete list of Kinetico dealers is available on Kinetico's website: kinetico.com. Make sure you have available the model number, serial number and date of installation.

What This Limited Warranty Does NOT Cover:

Maintain your original PROOF OF PURCHASE. Kinetico or its Kinetico dealers reserve the right to deny warranty coverage if you cannot provide proof of original purchase including date of installation, who you purchased the Product or Part from and serial number.

Kinetico is not responsible for Parts or Products that are improperly installed, used or not maintained as set out in the Product Manual or as expressly advised by Kinetico. This Limited Warranty does not cover damage caused by accidents, acts of God, minor scratches or imperfections and normal wear and tear including faded paint or minor corrosion due to atmosphere conditions. This Limited Warranty is void if the Product is improperly installed, used in conditions that exceed Kinetico's specifications as set out in the Manual or Product Specifications, or if there is water damage due to improper installation or poorly or improperly tightened plumbing connections. This Limited Warranty is void if the Product or Parts have been altered or modified in any way by anyone other than a Kinetico technician or a Kinetico dealer. Warranty coverage may be void if the Product is operated in combination with ancillary or peripheral equipment not approved by Kinetico for use with the Product.

Installation of the supplied Transient Voltage Surge Suppressor (TVSS)/Surge Protective Device (SPD) that has been certified to the UL 1449 standard or equivalent by an NRTL/C that includes integral Over/Under Voltage shutoff protection between the system and a grounded power outlet, is required.

This Limited Warranty excludes the cost of labor in removing and/or reinstalling any defective Product or Part. In the event that a Product is returned to Kinetico for repair or replacement under the terms of this Limited Warranty, the Product must be returned in its original shipping container and packaging. Kinetico will not be liable for damage to the Product during shipping otherwise.

Kinetico does not assume any liability for personal injury or property damage caused by the use or misuse of any Product or Part. Kinetico is not liable for special, incidental, indirect or consequential damages. Kinetico's liability is limited to repair or replacement of the defective Part or Product and this liability shall terminate upon expiration of the applicable warranty period as set out above.

THERE IS NO OTHER EXPRESS WARRANTY. IMPLIED WARRANTIES, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY AND ARE EXCLUDED TO THE EXTENT PERMITTED BY LAW. THERE ARE NO WARRANTIES OTHER THAN THOSE CONTAINED HEREIN. IN NO EVENT SHALL KINETICO BE LIABLE FOR INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH THE USE OR THE LOSS OF USE OF THIS SYSTEM.

This Limited Warranty may be amended or changed at any time, at Kinetico's sole discretion, without notice.

Registration and Service

To place your system under warranty, your authorized Kinetico dealer must register your equipment with Kinetico Incorporated within 30 days of the installation date. For service under this warranty, contact your authorized Kinetico dealer. Retain your receipt along with this warranty for reference if service is necessary.



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10845 Kinsman Road
Newbury, Ohio 44065
Product No. 13741