

ChlorKing® Sentry UV

SENTRY AQUA GUARD LOW PRESSURE UV LIGHT SYSTEM Maintenance Manual

FOR ALL SAG MODELS



TABLE OF CONTENTS

MODELS COVERED	3
Model Numbers and Description	3
Lamp Life	3
Safety Considerations	3
Routine Maintenance	5
Daily Checks	5
Cleaning the Quartz Sleeve	5
Cleaning the UV Monitor	12
Restart the UV System and Check the System Output	13
Lamp Replacement	15
UV Monitor Calibration	15
Calibrating Monitors with Teflon Shades	17
Replacing a Broken Quartz Sleeve	19

Note: This manual is subject to change at any time based on system improvements, design changes, authorized modifications or new information. Please consult ChlorKing for the latest revision.

Manufacturer:
ChlorKing-Sentry UV Inc
6767 Peachtree Industrial Blvd.
Norcross, GA 30092
1-800-536-8180

MODELS COVERED

MODEL NUMBERS AND DESCRIPTION:

SAG120A120 – Sentry Aqua Guard 120A 120
SAG120A230 – Sentry Aqua Guard 120A 230
SAG120A120PVC – Sentry Aqua Guard 120A 120 PVC
SAG240A120 – Sentry Aqua Guard 240A 120
SAG240A230 – Sentry Aqua Guard 240A 230
SAG240A120PVC – Sentry Aqua Guard 120A 120 PVC
SAG480A120 – Sentry Aqua Guard 480A 120
SAG480A230 – Sentry Aqua Guard 480A 230
SAG720A120 – Sentry Aqua Guard 720A 120
SAG720A230 – Sentry Aqua Guard 720A 230
SAG960A120 – Sentry Aqua Guard 960A 120
SAG960A230 – Sentry Aqua Guard 960A 230
SAG1200A120 – Sentry Aqua Guard 1200A 120
SAG1200A230 – Sentry Aqua Guard 1200A 230

LAMP LIFE

13,000 hours of operation

SAFETY CONSIDERATIONS

IMPORTANT SAFETY INSTRUCTIONS

READ AND FOLLOW ALL INSTRUCTIONS

SAVE THESE INSTRUCTIONS

WHEN INSTALLING, OPERATING, AND MAINTAINING THIS EQUIPMENT, KEEP SAFETY CONSIDERATIONS FOREMOST. USE PROPER TOOLS, PROTECTIVE CLOTHING, AND EYE PROTECTION WHEN WORKING ON OR INSTALLING THE EQUIPMENT. FOLLOW THE INSTRUCTIONS IN THIS MANUAL AND TAKE ANY

ADDITIONAL SAFETY MEASURES APPROPRIATE. BE EXTREMELY CAREFUL IN THE PRESENCE OF HAZARDOUS SUBSTANCES.

THE PERSONNEL RESPONSIBLE FOR INSTALLATION, OPERATION, AND MAINTENANCE OF THIS EQUIPMENT MUST BE FULLY FAMILIAR WITH THE CONTENTS OF THIS MANUAL.

ANY SERVICING OF THIS EQUIPMENT MUST BE DONE WITH THE UNIT FULLY OFF AND DISCONNECTED FROM THE POWER SOURCE AND ALL PRESSURE BLED FROM THE LIQUID LINES.

WARNING

- **CONNECT THE EQUIPMENT ASSEMBLY TO A CIRCUIT PROTECTED BY A GROUND-FAULT CIRCUIT BREAKER.**
- **ONLY A CERTIFIED TECHNICIAN MAY INSTALL AND SERVICE THE **CHLORKING®** SENTRY AQUA GUARD SYSTEM.**
- **MODIFYING THE **CHLORKING®** SENTRY AQUA GUARD SYSTEM IN ANY WAY MAY CAUSE BODILY INJURY AND WILL VOID THE WARRANTY.**
- **DO NOT ALLOW CHILDREN TO OPERATE THE **CHLORKING®** SENTRY AQUA GUARD SYSTEM.**
- **ONLY REPLACE COMPONENTS WITH THOSE SPECIFIED BY THE MANUFACTURER.**
- **WHEN INSTALLING THE SYSTEM, ENSURE THAT POWER IS LINKED TO THE MAIN PUMP POWER SOURCE FOR THE POOL TO ENSURE THAT THE **CHLORKING®** SENTRY AQUA GUARD SYSTEM NEVER OPERATES WHEN THE PUMPS ARE OFF.**
- **ALL BOXES ON THE **CHLORKING®** SENTRY AQUA GUARD SYSTEM CONTAIN HIGH VOLTAGE COMPONENTS. NEVER OPEN ANY BOX WHILE THE POWER IS ON.**
- **NEVER OPEN THE **CHLORKING®** SENTRY AQUA GUARD SYSTEM OR LOOK DIRECTLY AT THE UV LAMP WHEN IT IS OPERATING. DIRECT OR INDIRECT EXPOSURE TO THE LIGHT EMITTED BY THE LAMP WILL CAUSE SERIOUS EYE DAMAGE AND SEVERELY BURN UNPROTECTED SKIN.**
- **REPLACE DAMAGED CORDS IMMEDIATELY.**

ROUTINE MAINTENANCE

Daily Checks



Check the UV meter and LED lights on the power supply daily. Under normal operating conditions, the UV% meter will indicate a value over 70%, or the mJ/cm² meter will indicate a value over 45, and the green LED will be illuminated. If the UV meter falls below 70%, or the mJ/cm² meter falls below 45, the green LED will go out and the yellow LED will illuminate. A meter display of less than 70% or 45 mJ/cm² with a yellow LED is an indication that maintenance or repairs are needed.

The first step is to clean the quartz sleeve and monitor window.

Cleaning the Quartz Sleeve

CAUTION

LAMPS AND QUARTZ SLEEVES ARE MADE OF GLASS AND ARE EXTREMELY DELICATE. CARE SHOULD BE TAKEN WHEN HANDLING OR REPLACING THESE COMPONENTS. WEAR COTTON GLOVES WHEN HANDLING LAMPS HOLD LAMPS BY THE ENDS ONLY. NEVER TOUCH THE GLASS WITH BARE HANDS. WIPE ANY FINGERPRINTS FROM LAMPS WITH ALCOHOL.

QUARTZ SLEEVES ARE SHIPPED WITH A SMALL SILICONE LAMP SHOCK ABSORBER AT THE BOTTOM OF THE SLEEVE. THIS COMPONENT MUST REMAIN IN PLACE TO PREVENT DAMAGE FROM LAMP INSTALLATION.

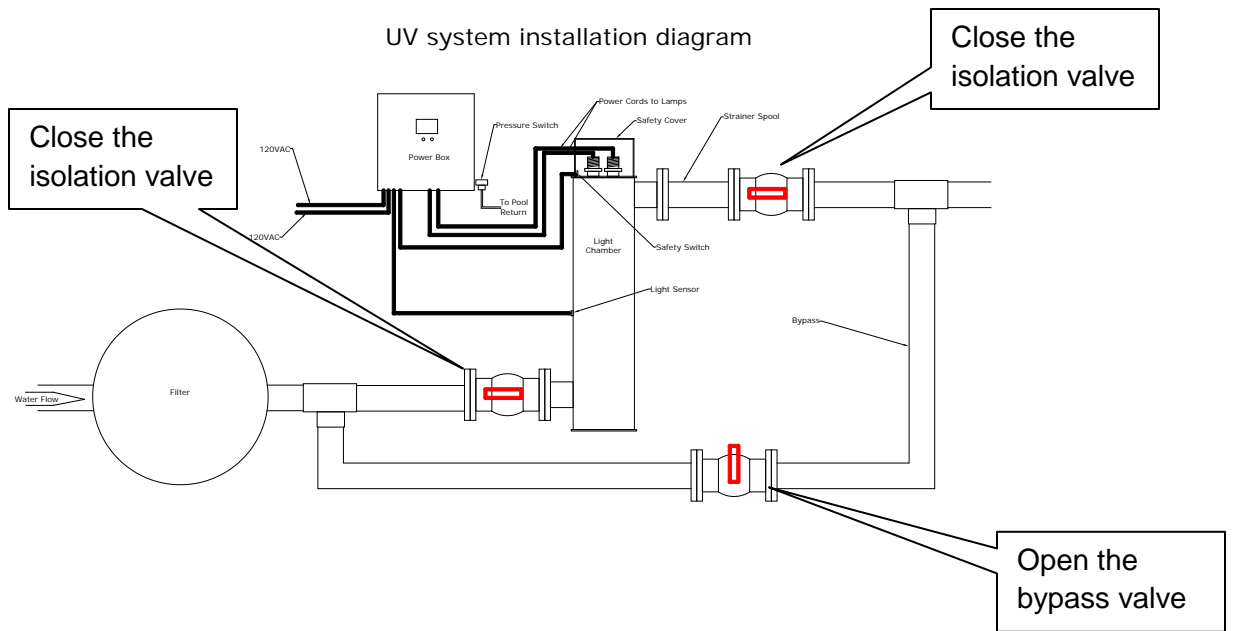
Step 1: Turn the system off.



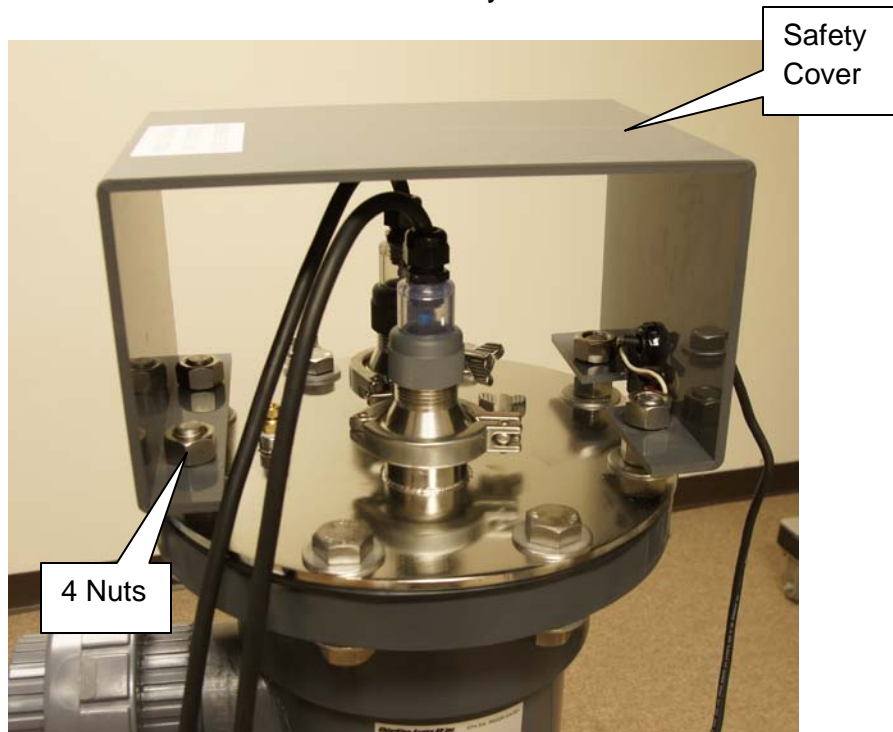
Step 2: Unplug both power sources.



Step 3: Open the bypass valve and close the isolation valves.



Step 4: remove the 4 nuts and remove the safety cover.



Step 5: Bleed any pressure from the system.

Step 6: Loosen the liquid tight gland.



Step 7: Remove the viewing cap.



Step 8: Remove the UV lamp.

CAUTION

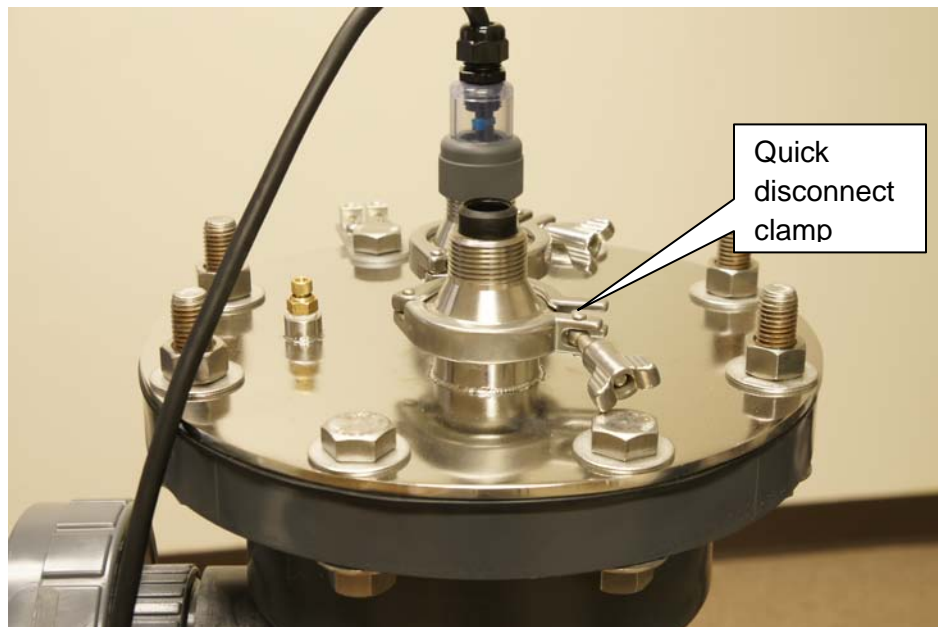
DO NOT DISCONNECT THE ELECTRICAL CONNECTION TO THE LAMP BEFORE THE LAMP IS COMPLETELY OUT OF THE QUARTZ SLEEVE.

DO NOT HANDLE LAMPS WITH BARE HANDS. ALWAYS USE COTTON GLOVES.





Step 9: Remove the quick disconnect clamp.



Step 10: Remove the quick disconnect quartz sleeve assembly.

NOTE

Be careful not to lose the gasket for the quick disconnect quartz sleeve assembly or the silicone lamp shock absorber in the bottom of the quartz sleeve.



CAUTION

WEAR APPROPRIATE SAFETY EQUIPMENT WHEN WORKING WITH MURIATIC ACID.

Step 11: Clean the quartz sleeve.

Clean the quartz sleeve by wiping with a clean cotton cloth and a standard glass cleaner. Sleeves with calcium accumulation will require cleaning with a 5:1 water and muriatic acid solution.

If needed the inside of the sleeve can be cleaned with a shotgun barrel cleaning rod. Be sure not to lose the small silicone lamp shock absorber in the bottom of the quartz sleeve.



Shotgun
barrel
cleaning rod

Step 12: Reassemble.

Check the gasket on the quartz sleeve quick disconnect flange. Silicone o-ring lubricant will extend the life of the gasket. Carefully lower the quartz sleeve assembly into the chamber. On chambers for SAG480 through SAG1200 the quartz sleeves sit on top of spring support assemblies. Quartz sleeves must be carefully lined up with the spring and set into the spring socket or damage to the sleeve will occur. When the quartz sleeve is properly located in the spring assembly socket the quick disconnect quartz sleeve assembly will rest $\frac{1}{4}$ inch above the gasket. Gently press the quartz sleeve assembly into place and install the quick disconnect clamp to secure the sleeve in place.

CAUTION

THE WIRING CONNECTOR FOR THE LAMP MUST BE INSTALLED ON THE LAMP BEFORE IT IS LOWERED INTO THE QUARTZ SLEEVE OR DAMAGE TO THE LAMP OR QUARTZ SLEEVE MAY OCCUR.

Place the four pin connector onto the lamp and lower the lamp all the way to the bottom of the quartz sleeve. Screw the viewing cap onto the quick disconnect quartz sleeve assembly and tighten the liquid tight gland.

Reinstall the safety cover.

Cleaning the UV Monitor

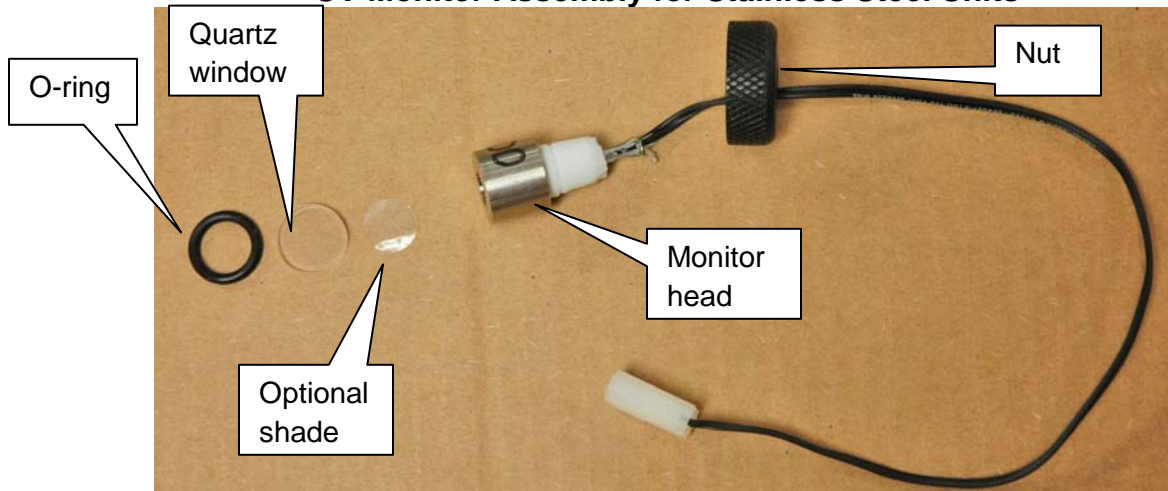
Step 1: Drain the water from the UV chamber.

Step 2: Carefully unplug and remove the UV monitor from the UV chamber.

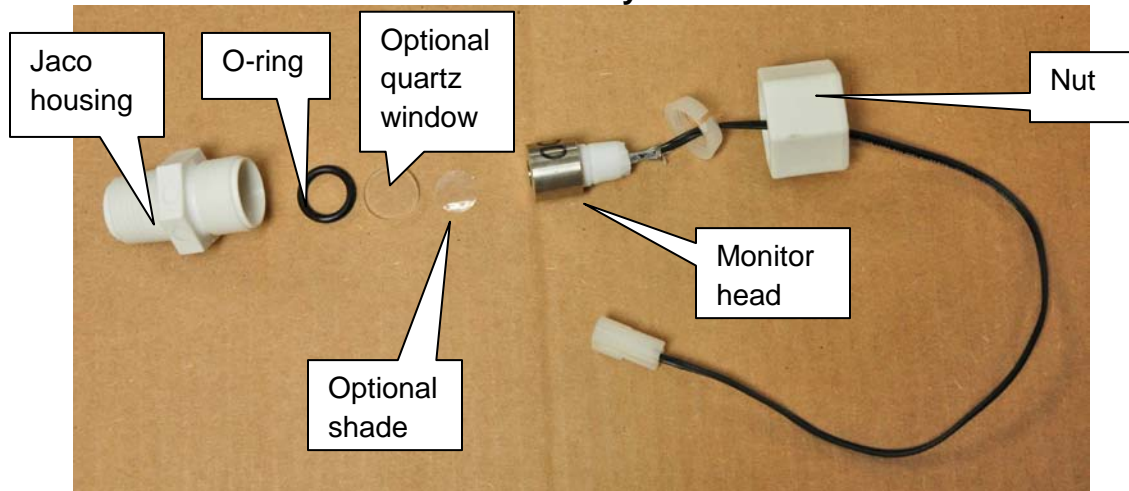
CAUTION

TAKE CARE ON STAINLESS CHAMBER MODELS WHILE REMOVING MONITOR NOT TO LOSE THE OPTIONAL SMALL THIN TEFLON SHADE THAT MAY BE BETWEEN THE MONITOR AND QUARTZ WINDOW

UV Monitor Assembly for Stainless Steel Units



UV Monitor Assembly for PVC Units



Step 3: Clean the quartz window or monitor head as needed with a cotton cloth and glass cleaner. Quartz windows or monitor heads with calcium accumulation will require cleaning with a 5:1 water and muriatic acid solution.

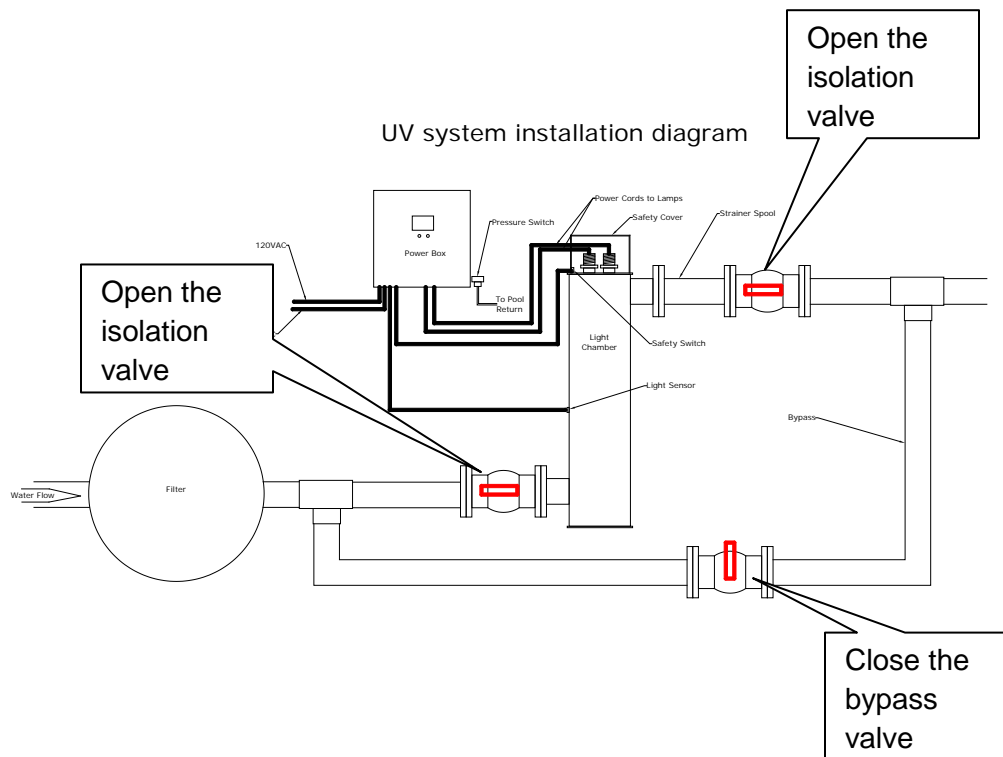
CAUTION

WEAR APPROPRIATE SAFETY EQUIPMENT WHEN WORKING WITH MURIATIC ACID.

Step 4: Reinstall the UV monitor in the order shown on page 12.

Restart the UV System and Check the System Output

Step 1: Open the isolation valves and close the bypass valve.



Step 2: Bleed the air from the system.

Air bleed



Step 3: Plug the unit back into the power source.

Step 4: Turn the system power switch on.

Step 5: Allow the system to operate for 15 minutes.

Step 6: Note the meter reading and LED status.



Check the UV meter and LED lights on the power supply. Under normal operating conditions, the UV% meter will indicate a value over 70%, or the mJ/cm² meter will indicate a value over 45, and the green LED will be illuminated. If the UV meter falls below 70% or 45 mJ/cm², the green LED will go out and the yellow LED will illuminate. A meter display of less than 70% or 45 mJ/cm² with a yellow LED is an indication that maintenance or repairs are needed.

Do not recalibrate the monitor unless new lamps have been installed.

The next step is to replace the UV bulbs.

Lamp Replacement

Lamps are designed to provide a useful service life of 13,000 hours. After that time, the lamps will need to be replaced.

CAUTION

LAMPS AND QUARTZ SLEEVES ARE MADE OF GLASS AND ARE EXTREMELY DELICATE. CARE SHOULD BE TAKEN WHEN HANDLING OR REPLACING THESE COMPONENTS. WEAR COTTON GLOVES WHEN HANDLING LAMPS. HOLD LAMPS BY THE ENDS ONLY. NEVER TOUCH THE GLASS WITH BARE HANDS. WIPE ANY FINGERPRINTS FROM LAMPS WITH ALCOHOL.

(See steps 1-8 starting on page 6). Turn the system off. Unplug the unit from both power sources. Open the bypass valve and close the isolation valves. Remove the safety cover. Bleed any pressure from the system. Loosen the liquid tight gland and remove the viewing cap. Lift the lamp out of the quartz sleeve without disconnecting it from the wiring harness. Once the bulb is completely free of the quartz sleeve it can be safely disconnected from the wiring harness.

CAUTION

THE WIRING CONNECTOR FOR THE LAMP MUST BE INSTALLED ON THE LAMP BEFORE IT IS LOWERED INTO THE QUARTZ SLEEVE OR DAMAGE TO THE LAMP OR QUARTZ SLEEVE MAY OCCUR.

Place the four pin connector onto the lamp and lower the lamp all the way to the bottom of the quartz sleeve. Screw the viewing cap onto the quick disconnect quartz sleeve assembly and tighten the liquid tight gland.

UV MONITOR CALIBRATION

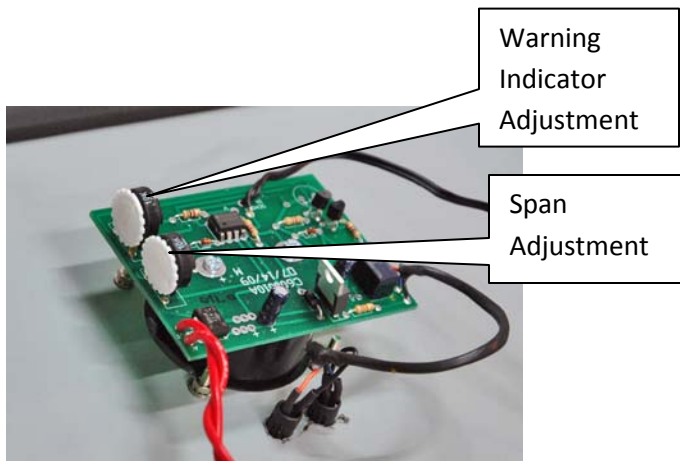
Operation

The UV monitor has been factory calibrated, however due to variations in water conditions the monitor may require field calibration at initial startup or when lamps have been replaced. Under normal operating conditions, the UV% monitor will display 1, which represents 100% operation. Systems with the mJ/cm² meter will display 60. Any monitor display greater than 70% or 45 mJ/cm² coincides with illumination of the green LED located under the meter. When the UV% meter display falls below 70% or the mJ/cm² meter falls below 45, the green LED will go out and the yellow LED will

illuminate indicating the need for quartz sleeve and monitor window service, or bulb replacement.

Calibration

In order to calibrate the UV monitor, the lamps must be fully warmed up by allowing them to operate for at least 15 minutes. After the warm-up period, the display should indicate 1 on the UV% meter which represents 100% or 60 on the mJ/cm² meter. If the display does not indicate 100% on the UV% meter or 60 on the mJ/cm² meter, adjust the span of the monitor with the lower white potentiometer knob on the back of the monitor assembly until the display indicates 100% on the UV% meter or 60 on the mJ/cm² meter. If span cannot be set, see Section Calibrating Sensors with Teflon Shades.



Calibrating the Warning Indicator

In order to calibrate the UV monitor warning indicator, the lamps must be fully warmed up by allowing them to operate for at least 15 minutes. After the warm-up period, the display should indicate 1 which represents 100% on the UV% meter, or 60 on the mJ/cm² meter. Using the span adjustment, adjust the meter so that the indicator is just below 70% on the UV % meter, or 45 on the mJ/cm² meter. The green LED under the meter should turn off and the yellow indicator should turn on. Adjust the span so that the meter indicates just over 70% on the UV% meter, or 45 on the mJ/cm² meter. The yellow LED should turn off and the green LED should turn on. If the warning indicator needs adjustment, set the span adjustment to 70% on the UV % meter, or 45 on the mJ/cm² meter and adjust the warning indicator with the upper potentiometer on the back of the UV monitor until the yellow and green LED can be toggled back and forth at the 70%, or 45 mJ/cm² setting. The span adjustment can now be re-set to 100% on the UV% meter, or 60 on the mJ/cm² meter. If the 70%, or 45 mJ/cm² warning level cannot be set, see section Calibrating Monitor with Teflon Shades.

CALIBRATING MONITOR WITH TEFLON SHADES

Cannot Reach 100% or 60 mJ/cm² on the Meter

This calibration step assumes that all lamps are illuminated and have been operating for at least 15 minutes. **Figure 3.1 and 3.2** show the unassembled parts of the UV monitor. The monitor includes an o-ring, a quartz window, Teflon shade, and the monitor. The monitor may be shipped with no Teflon shade in the assembly or up to 2 pieces of Teflon shade in the monitor assembly. If the monitor cannot be adjusted to 100% on the UV% meter, or 60 on the mJ/cm² meter, remove one or more pieces of the Teflon shade.

Cannot adjust the Meter Down to 70% or 45 mJ/cm²

This calibration step assumes that all lamps are illuminated and have been operating for at least 15 minutes. **Figure 3.1 and 3.2** show the unassembled parts of the UV monitor. The monitor includes an o-ring, quartz window, Teflon shade, and the monitor. The monitor may be shipped with no Teflon shade in the assembly or up to 2 pieces of Teflon shade in the assembly. If the monitor cannot be adjusted down to 70% on the UV% meter or 45 on the mJ/cm² meter, add one or more pieces of the Teflon shade.

Figure 3.1
UV Monitor Assembly for Stainless Steel Units

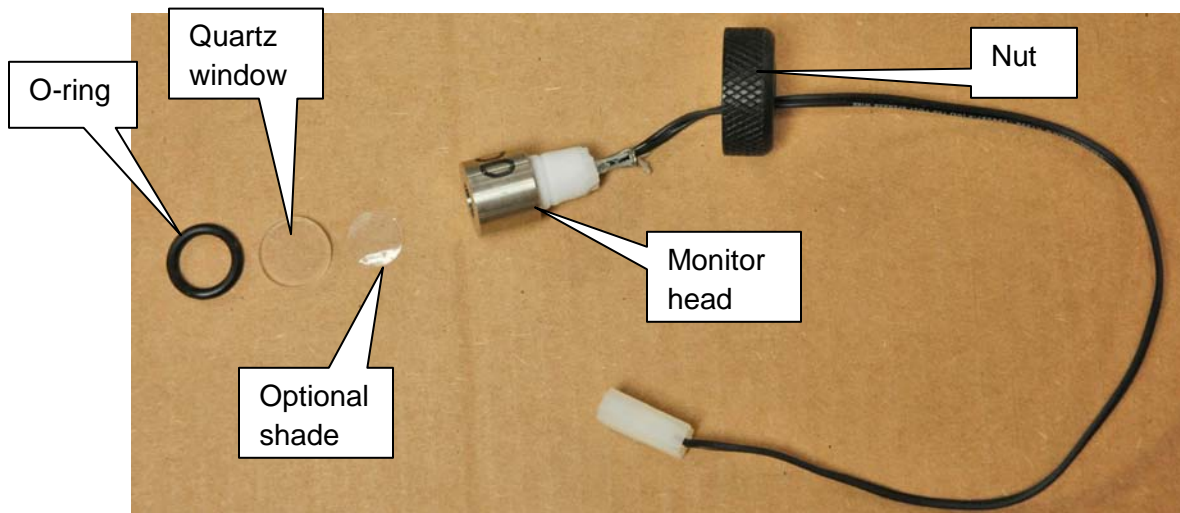
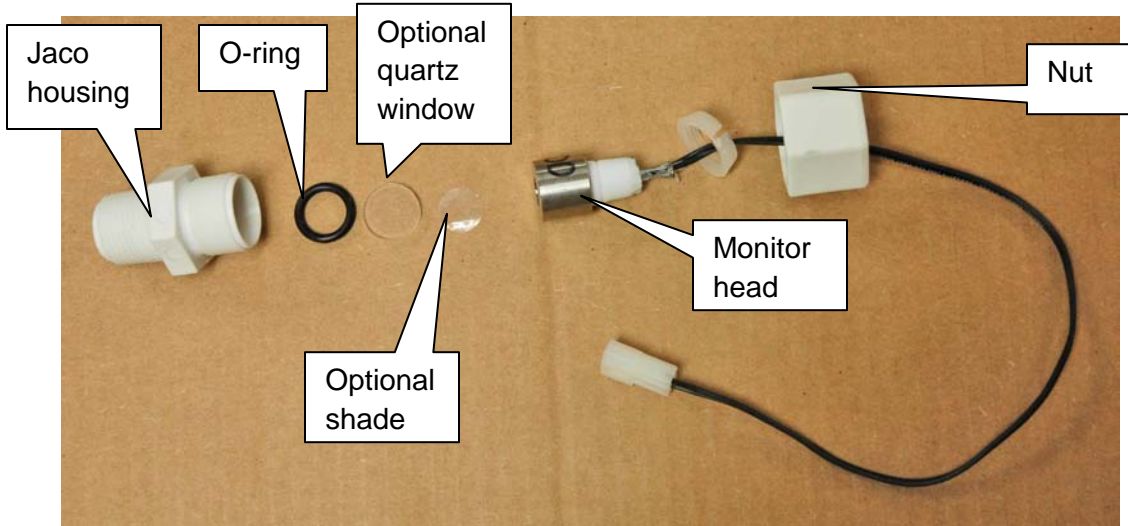


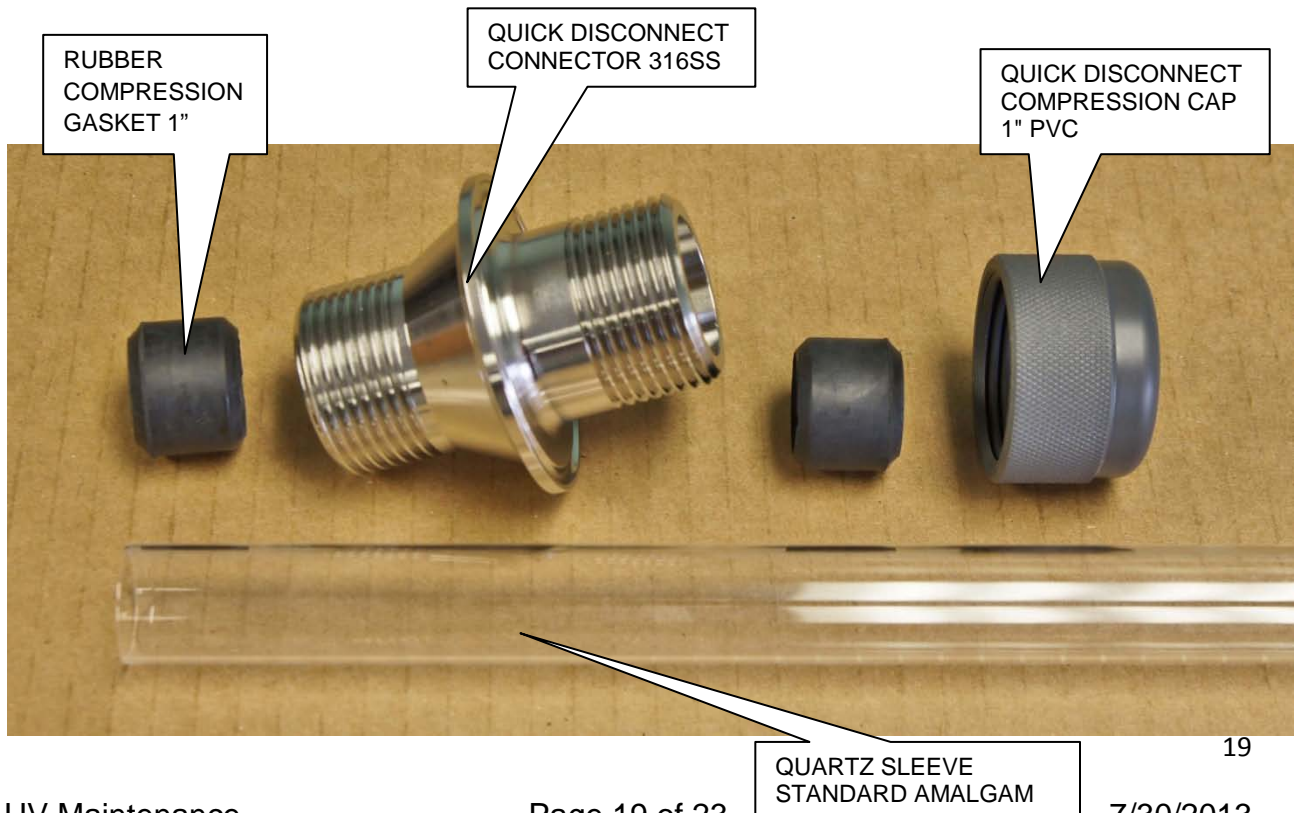
Figure 3.2
UV Monitor Assembly for PVC Units



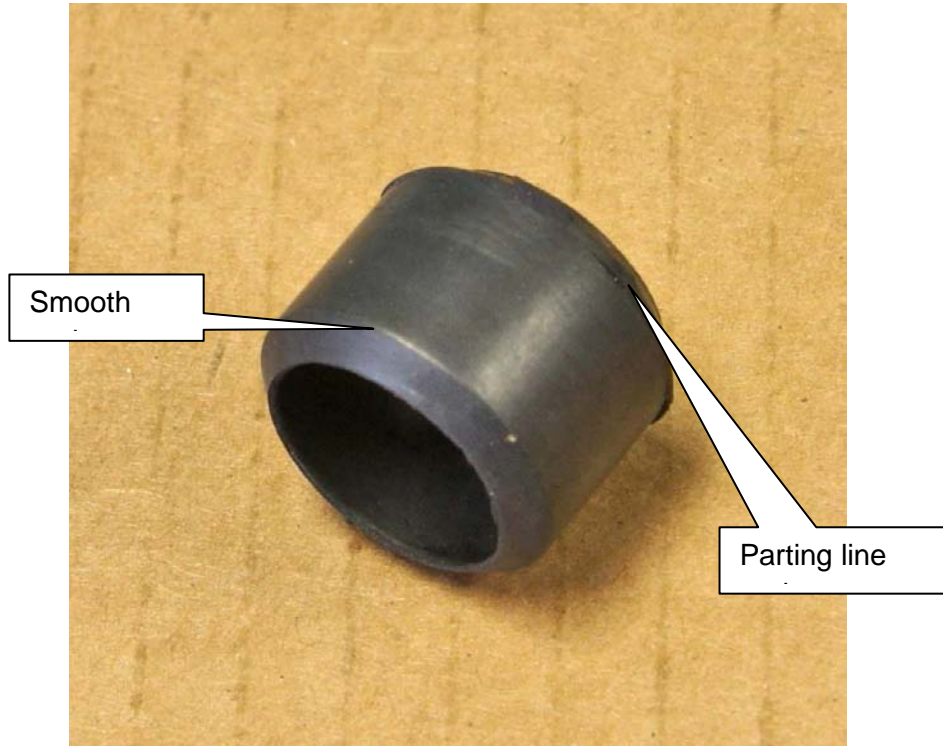
REPLACING A BROKEN QUARTZ SLEEVE

Quick Disconnect Quartz Sleeve Assembly (QDCQSSTDA)

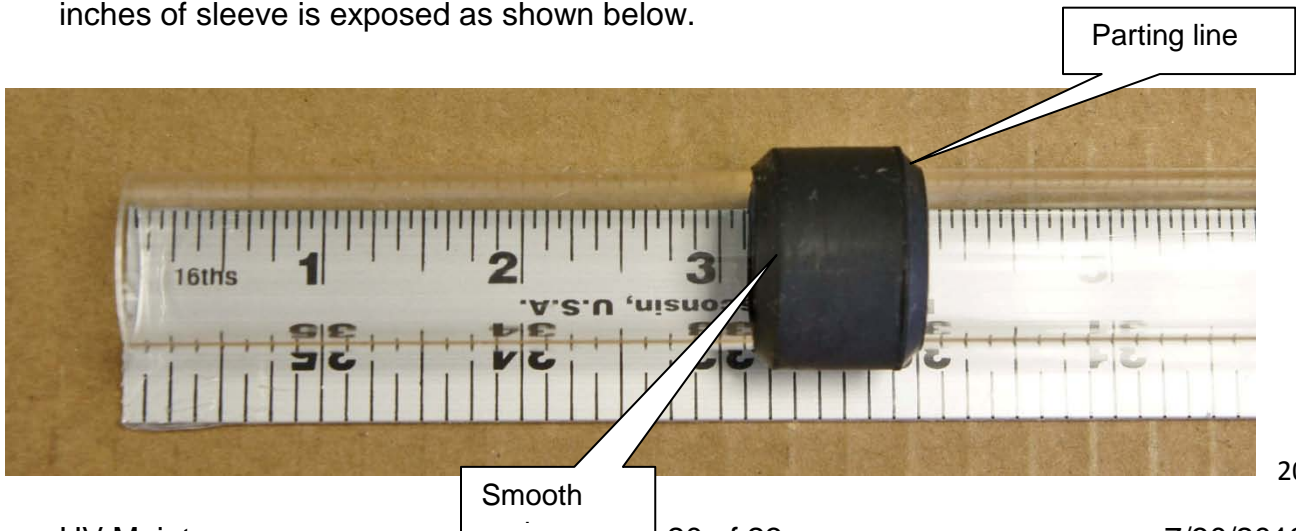
- 1 – QDCAP1PVC QUICK DISCONNECT COMPRESSION CAP 1" PVC
- 1 - QDC316 QUICK DISCONNECT CONNECTOR 316SS
- 1 - QSSTD QUARTZ SLEEVE STANDARD AMALGAM
- 3 - RCG1 RUBBER COMPRESSION GASKET 1"



Note: Rubber compression gasket is smooth on one end and has a raised parting line on the other end. The smooth end is to be assembled on the quartz sleeve to fit inside the Stainless Steel Quick Disconnect.



Apply silicone spray to the outside of open end of the quartz sleeve holding open end down to avoid getting silicone inside the sleeve. Spray the inside and outside of the gasket. Slide the compression gasket (parting line end first) over the sleeve until 3 1/8 inches of sleeve is exposed as shown below.



Slide the Stainless Steel Quick Disconnect over the sleeve and gasket. Use the compression cap upside down to seat the gasket into the Quick Disconnect.



Slide the compression cap off. Slide it back over the sleeve in the proper orientation and screw it onto the Quick Disconnect.



Apply silicone spray to the inside and outside of the second gasket. Slide the gasket (smooth end first) over the sleeve and gently work the gasket into the quick disconnect.





Gasket will extend over the sleeve about 1/16" in the finished

Add this third gasket if there is a spring support for the quartz sleeve to rest in. Slide third gasket over the closed/domed end of the sleeve.



