

ChlorKing® Sentry UV

# **SENTRY AQUA GUARD LOW PRESSURE UV LIGHT SYSTEM**

## **Installation, Operation, and Maintenance Manual**

**FOR ALL SAG MODELS**



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

Manufacturer:

ChlorKing-Sentry UV  
2935 Northeast Parkway  
Atlanta, GA 30360  
1-800-536-8180

## SECTION 1

### DESCRIPTION

#### 1.1 GENERAL INFORMATION

The Sentry Aqua Guard system is a low pressure, high output amalgam, ultraviolet light sterilizer designed for commercial swimming pool applications. The Sentry Aqua Guard is capable of sterilizing and oxidizing up to 1141 gallons per minute of water. The system operates at light wavelengths of 254nm for sterilizing and 185nm for oxidizing. The Sentry Aqua Guard is designed for commercial service and can be run 24 hours a day. The Sentry Aqua Guard components are outlined in **Figure 1**:

**Figure 1**



## **1.2 PRINCIPALS OF OPERATION**

### **UV Light Chamber (See Figure 1)**

The UV Light Chamber is made from highly polished 316L stainless steel or 316L stainless steel lined PVC. Quartz sleeves separate the low pressure, high output amalgam germicidal lamps from the water. The water to be treated flows into the bottom of the chamber. Once in the chamber, the germicidal bulbs produce a minimum 3-log reduction in pathogens. The water is then returned to the source.

### **Power Supply (See Figure 1)**

The power supply provides the current to start and maintain the germicidal lamps. A visual indication of bulb output is displayed on the face of the power supply and a counter is located in the power supply to display hours of operation.

## **1.3 GENERAL SPECIFICATIONS AND SIZING GUIDELINES**

This unit has demonstrated an ability to provide three log inactivation of *Enterococcus faecium* and *Pseudomonas aeruginosa*. This unit has not demonstrated an ability to provide three log kill or inactivation of *Cryptosporidium parvum*. This product is designed for supplementary disinfection and is intended for use with appropriate residual levels of EPA registered disinfecting chemicals. Specific residual levels of EPA registered disinfecting chemicals may be required by the regulatory agency having authority.

### **MODEL NUMBERS AND DESCRIPTION:**

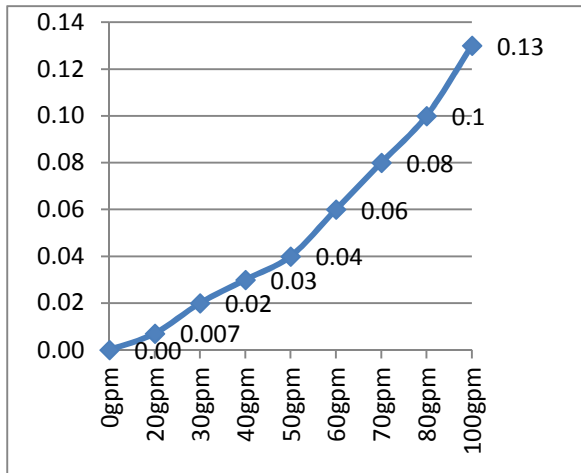
SAG120A120 – Sentry Aqua Guard 120A 120  
SAG120A230 – Sentry Aqua Guard 120A 230  
SAG120A120PVC – Sentry Aqua Guard 120A 120 PVC  
SAG240A120 – Sentry Aqua Guard 240A 120  
SAG240A230 – Sentry Aqua Guard 240A 230  
SAG240A120PVC – Sentry Aqua Guard 240A 120 PVC  
SAG480A120 – Sentry Aqua Guard 480A 120  
SAG480A230 – Sentry Aqua Guard 480A 230  
SAG480A120PVC – Sentry Aqua Guard 480A 120 PVC  
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

**FLOW, PRESSURE, AND CHAMBER SPECIFICATIONS:**

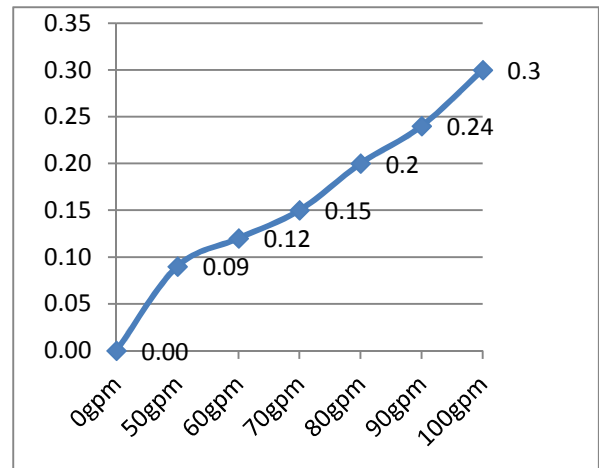
Model #	Rated Pressure (psi)	Max Rated Flow (gpm)	Rated Power (KW)	Number of Bulbs	Volume of Chamber (Gallons)	Length and Diameter of Chamber
SAG120A120	50	up to 46	120	1	2.16	45"L x 4.5"D
SAG120A230	50	up to 46	120	1	2.16	45"L x 4.5"D
SAG120A120PVC	50	up to 61	120	1	4.85	45.625"L x 6"D
SAG240A120	50	up to 119	240	2	4.85	45"L x 6.625"D
SAG240A230	50	up to 119	240	2	4.85	45"L x 6.625"D
SAG240A120PVC	50	up to 150	240	2	8.6	47.375"L x 8"D
SAG480A120	50	up to 350	480	4	13.48	49.5"L x 10.75"D
SAG480A230	50	up to 350	480	4	13.48	49.5"L x 10.75"D
SAG480A120PVC	50	up to 350	480	4	12.9	47.4"L x 10.75"D
SAG720A120	50	up to 620	720	6	23.55	53.5"L x 12.75"D
SAG720A230	50	up to 620	720	6	23.55	53.5"L x 12.75"D
SAG960A120	50	up to 770	960	8	23.55	53.5"L x 12.75"D
SAG960A230	50	up to 770	960	8	23.55	53.5"L x 12.75"D
SAG1200A120	50	up to 1141	1200	10	42	53.5"L x 16"D
SAG1200A230	50	up to 1141	1200	10	42	53.5"L x 16"D

## HEAD LOSS DATA in ft of H<sub>2</sub>O:

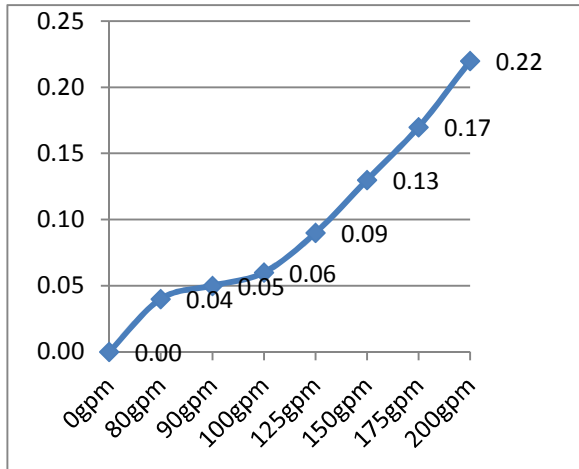
SAG120A120 and SAG120A230



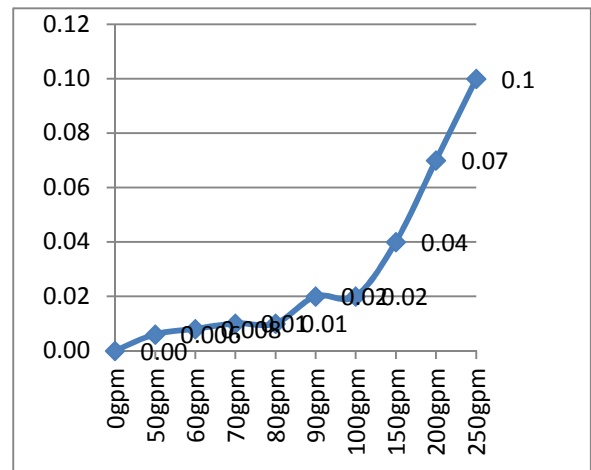
SAG120A120PVC



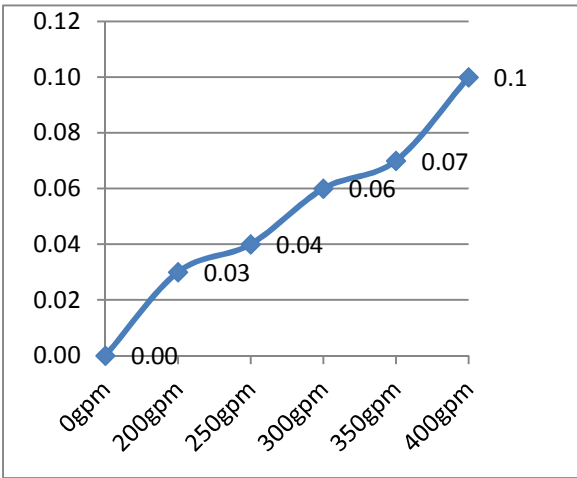
SAG240A120 and SAG240A230



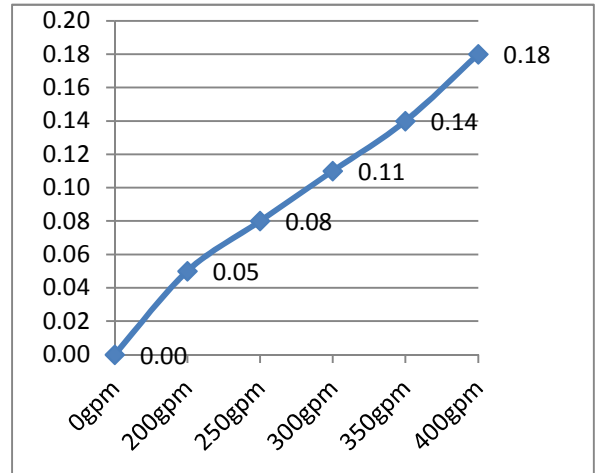
SAG240A120PVC



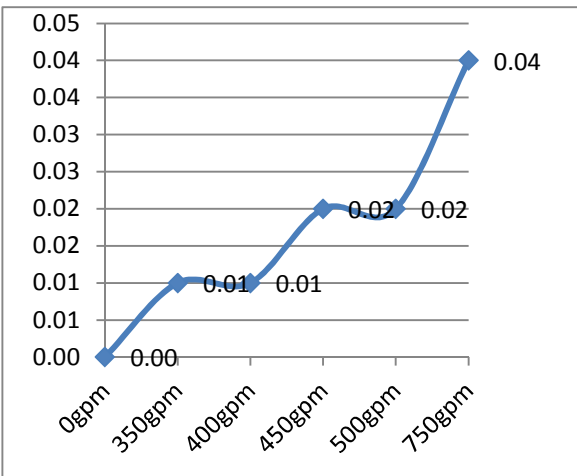
SAG480A120 and SAG480A230



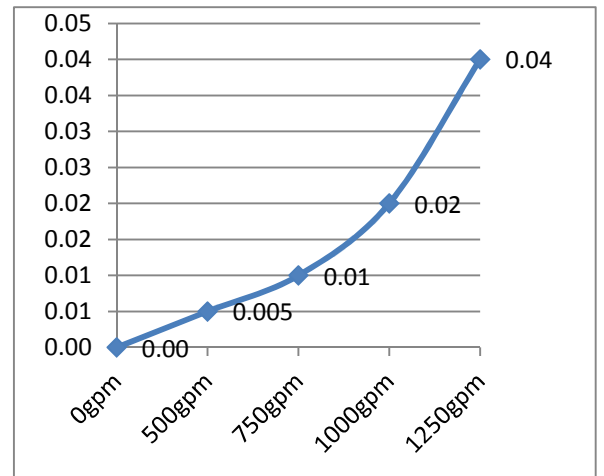
SAG480A120PVC



SAG720A120, SAG720A230,  
SAG960A120, SAG920A230



SAG1200A120 and SAG1200A230



## **LAMP LIFE:**

13,000 hours of operation

**ELECTRICAL SPECIFICATIONS:**

Model #	Rated Voltage (AC)	Rated Amps
SAG120A120	120	1.5
SAG120A230	230	.75
SAG120A120PVC	120	1.5
SAG240A120	120	3
SAG240A230	230	1.5
SAG240A120PVC	120	3
SAG480A120	120	6
SAG480A230	230	3
SAG480A120PVC	120	6
SAG720A120	120	9
SAG720A230	230	4.5
SAG960A120	120	10.5
SAG960A230	230	5.25
SAG1200A120	120	12.5
SAG1200A230	230	6.25

**SIZING GUIDELINES**

Sentry Aqua Guard UV Sterilizers will effectively treat water up to the maximum rated flow for each size unit (END of lamp life). See flow calculator on the next page.

UV sizing must comply with local codes. Please contact your local health department for specific requirements or contact your local ChlorKing representative for assistance.



The chart and temperature compensation formula below are used to determine the maximum system flow rate for satisfactory system performance.

Select the chart for your UV model and a flow rate from the chart based on the % Transmittance (%T) of the pool. If you are unsure of the %T, use 95%. The flow rate must then be compensated for temperatures less than 88°F. Determine the average pool temperature and use the formula below to determine the maximum flow rate.

avT = average pool temperature

$$((100 - ) 88^\circ - \text{avT}) / 100) \times \text{GPM}$$

Example for model SAG120A120PVC, 95%T, and average pool temperature of 84°:

$$((100 - ) 88^\circ - 84^\circ) / 100) \times 61 \text{ GPM}$$

$$((100 - ) 4) / 100) \times 61$$

$$(96 / 100) \times 61$$

$$.96 \times 61$$

58.56 GPM

SAG120A120PVC	
%T	GPM
100	75
99	73
97	67
96	64
95	61
94	60
93	58
92	56
91	54
90	53
85	44
80	37
75	31

SAG120A120	
%T	GPM
100	52
99	51
97	48
96	47
95	46
94	45
93	44
92	43
91	42
90	41
85	35
80	31
75	27

SAG240A120PVC	
%T	GPM
100	154
99	150
97	141
96	137
95	133
94	129
93	125
92	121
91	117
90	109
85	92
80	79
75	67

SAG240A120	
%T	GPM
100	138
99	135
97	127
96	123
95	119
94	115
93	111
92	107
91	103
90	99
85	80
80	67
75	56

SAG480 ALL	
%T	GPM
100	426
99	411
97	381
96	367
95	352
94	337
93	322
92	307
91	293
90	278
85	204
80	164
75	131

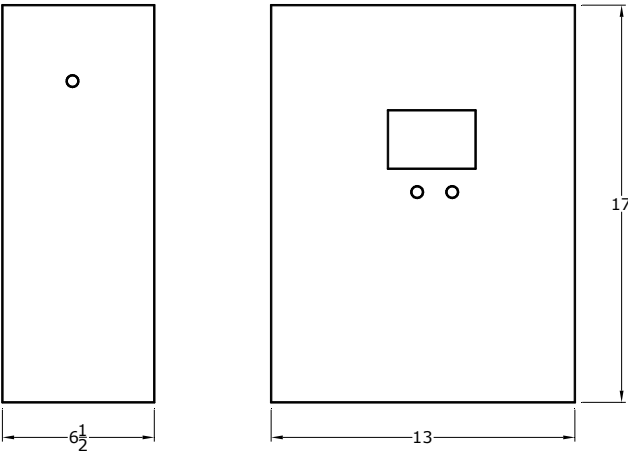
SAG720A120	
%T	GPM
100	762
99	734
97	677
96	649
95	620
94	592
93	564
92	535
91	507
90	479
85	337
80	264
75	208

SAG960A120	
%T	GPM
100	945
99	910
97	840
96	805
95	770
94	735
93	700
92	665
91	630
90	595
85	420
80	330
75	262

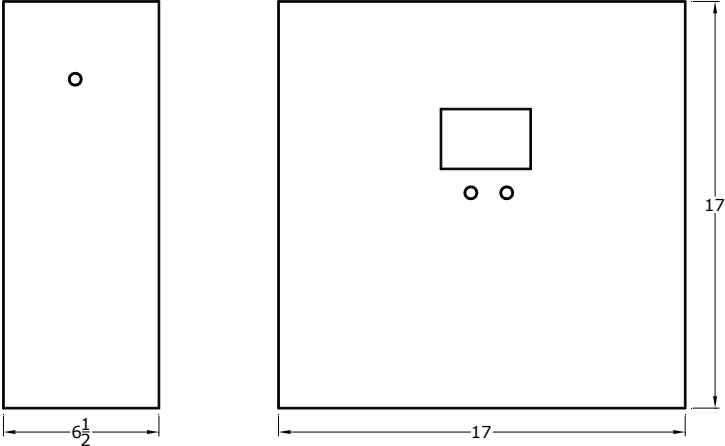
SAG1200A120	
%T	GPM
100	1423
99	1367
97	1254
96	1197
95	1141
94	1084
93	1028
92	971
91	915
90	858
85	576
80	442
75	346

**DIMENSIONS:**

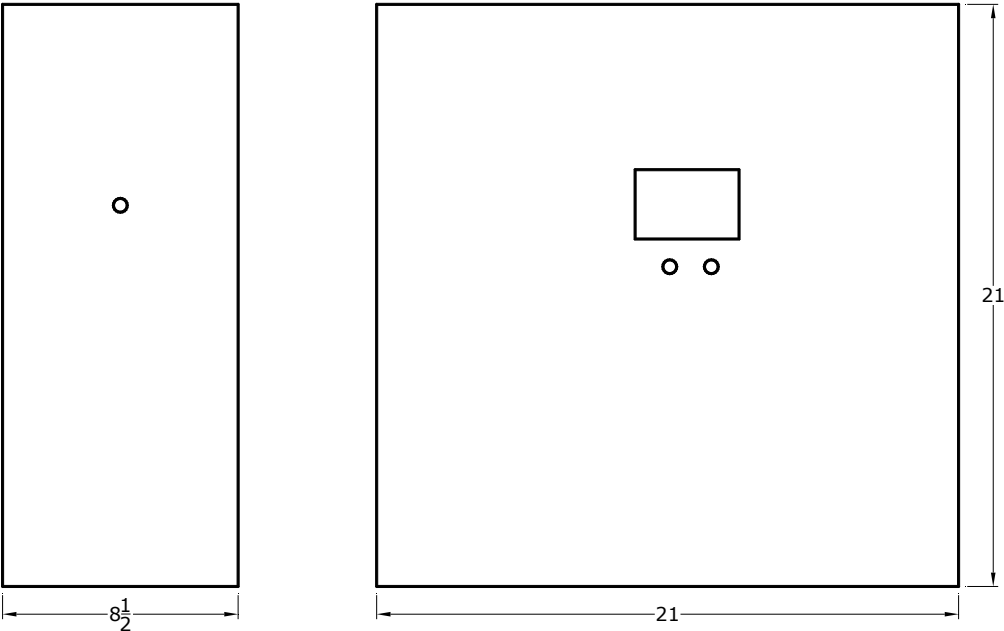
120W and 240W Power Supply



480W and 720W Power Supply

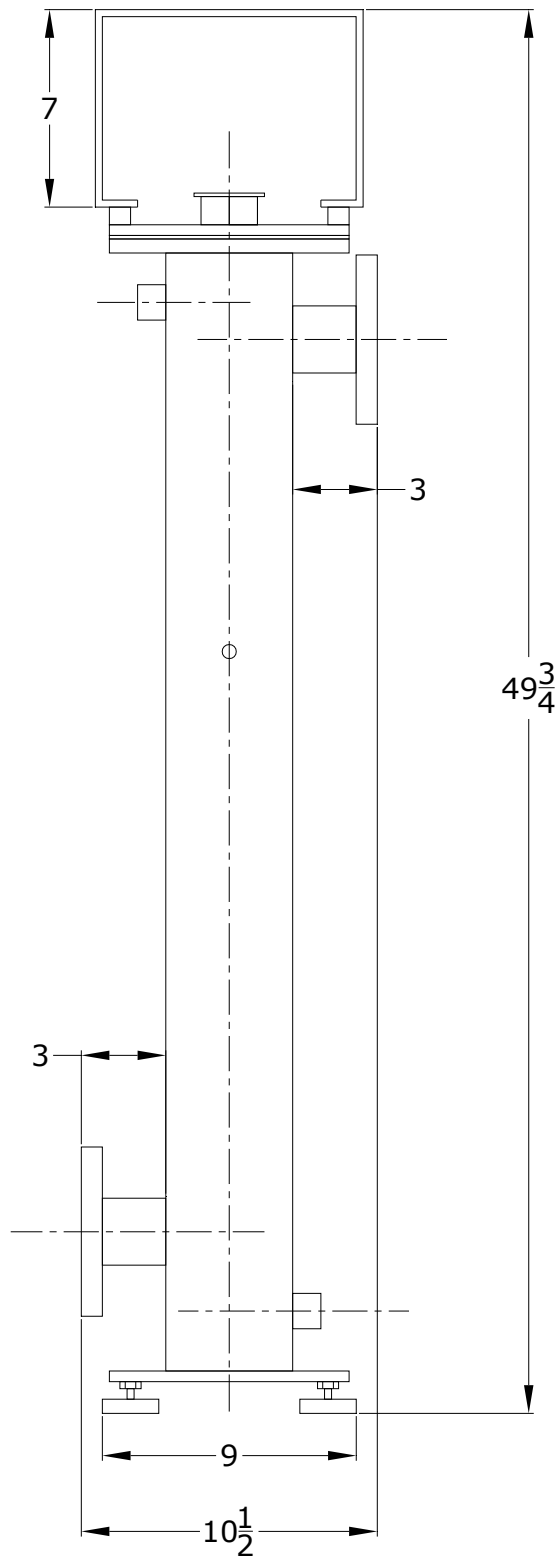


960W and 1200W Power Supply

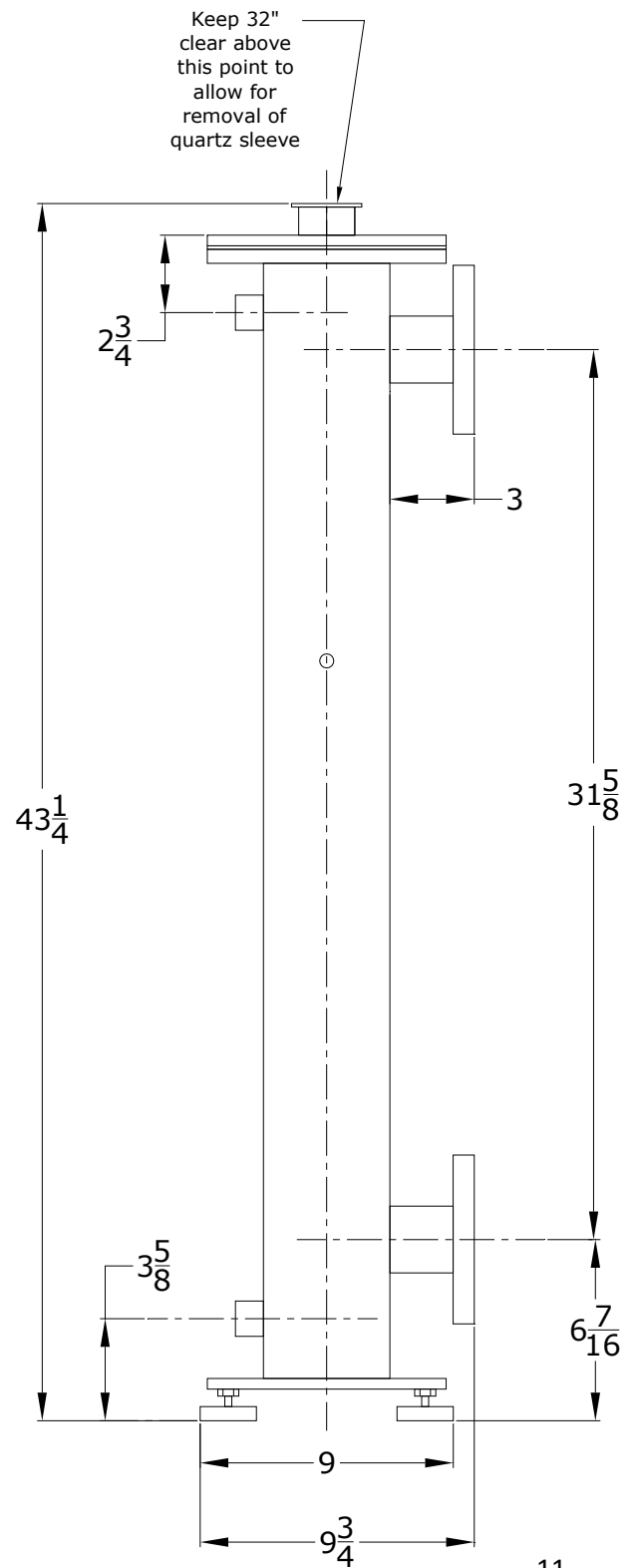


# 120 Watt Chamber Installation Dimensions 2" Flanges

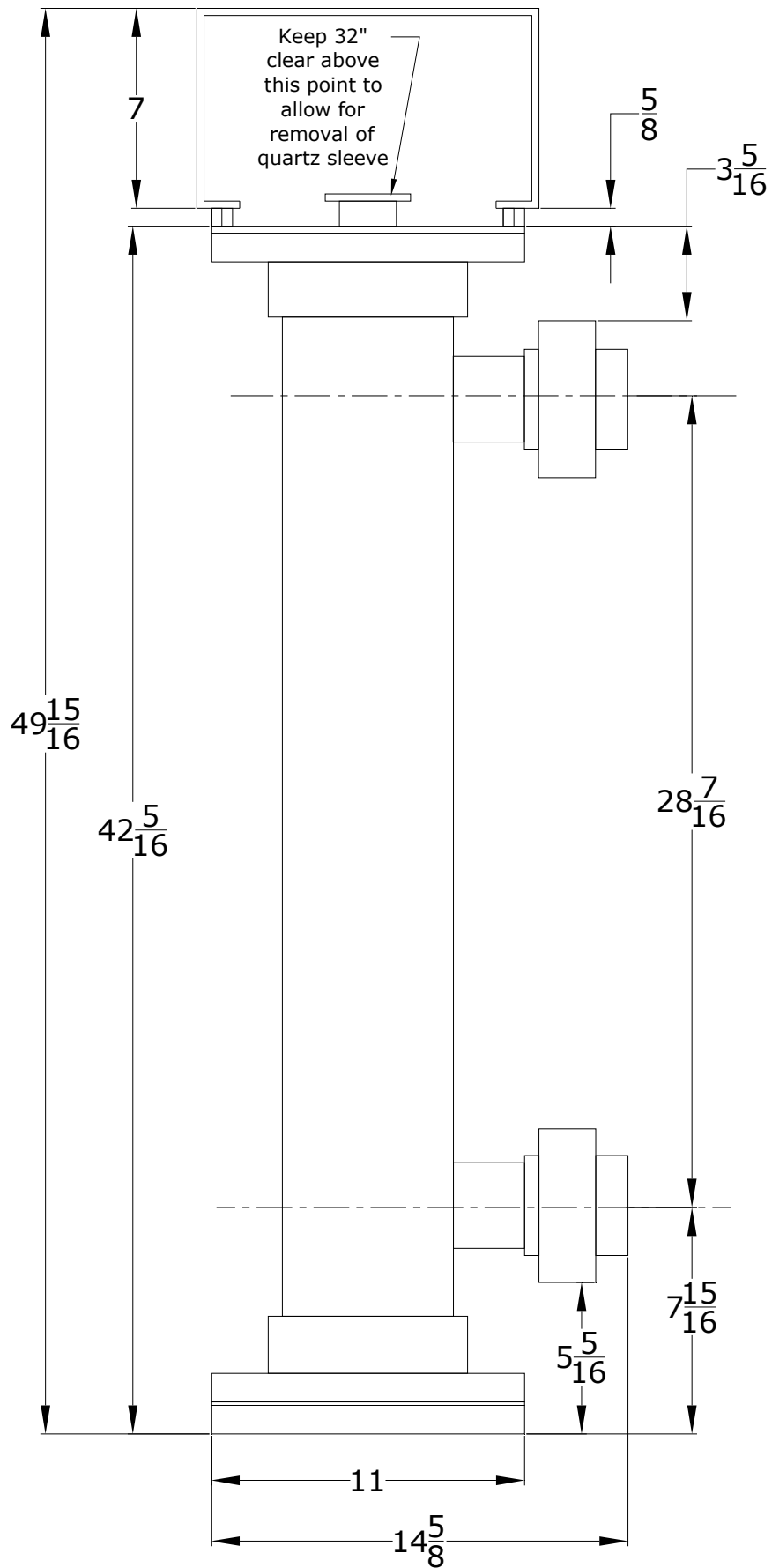
## Flanges Opposed



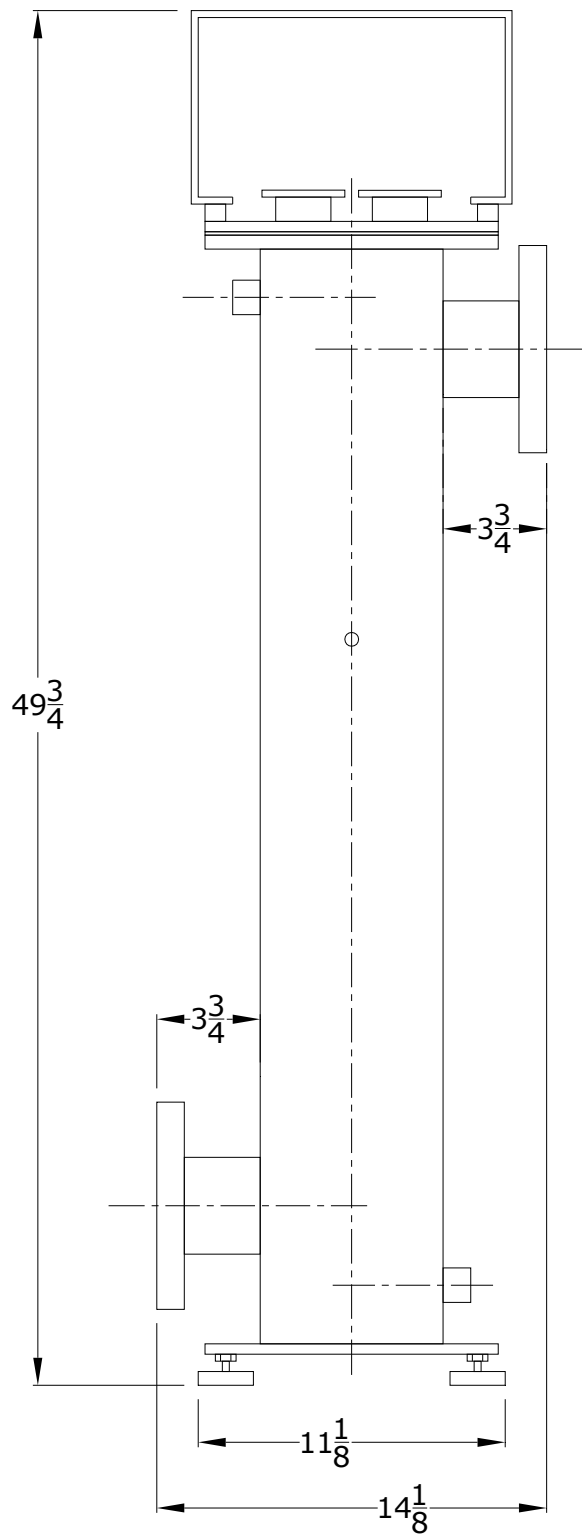
## Flanges Same Side



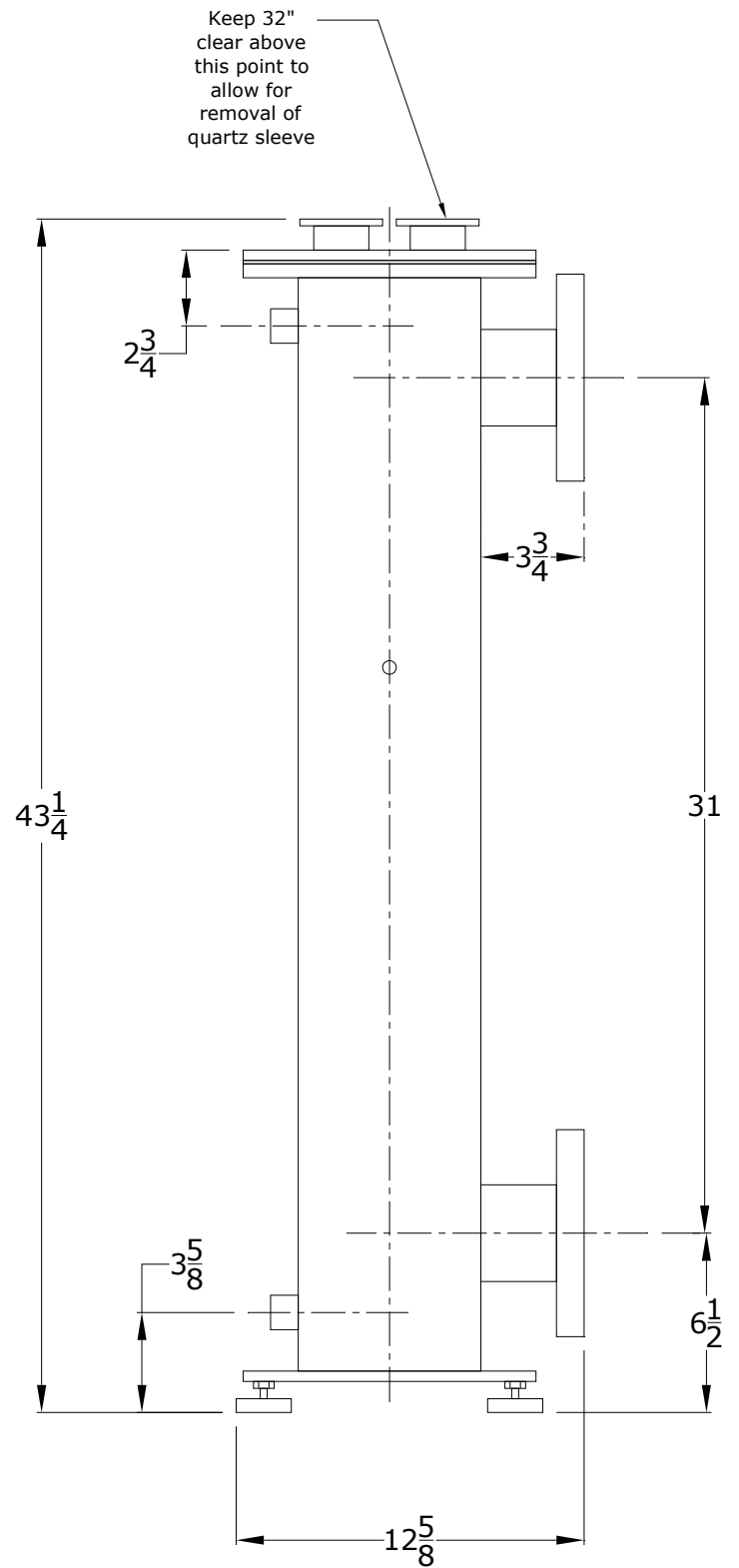
# 120 Watt PVC Chamber



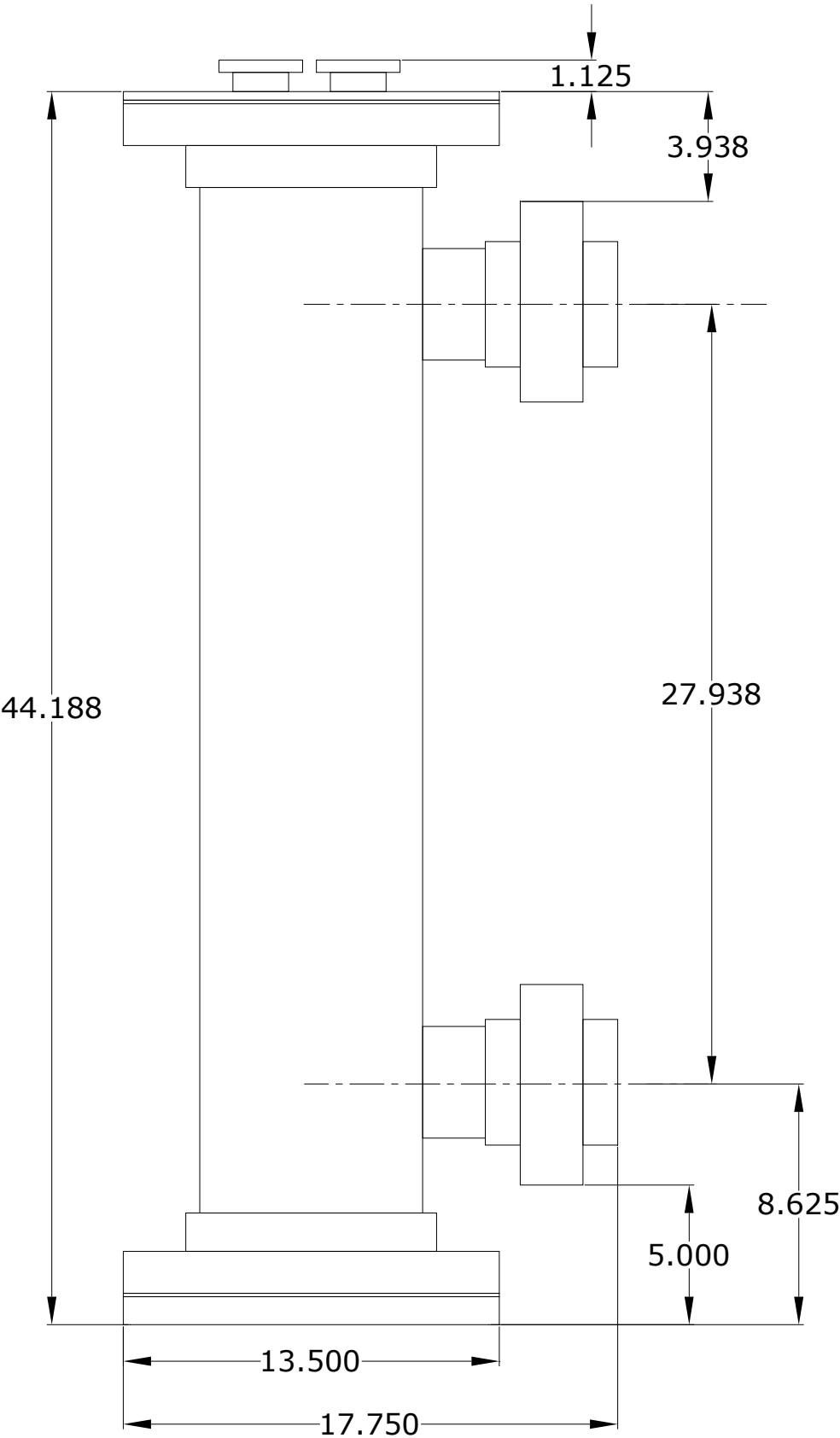
## Flanges Opposed



## Flanges Same Side

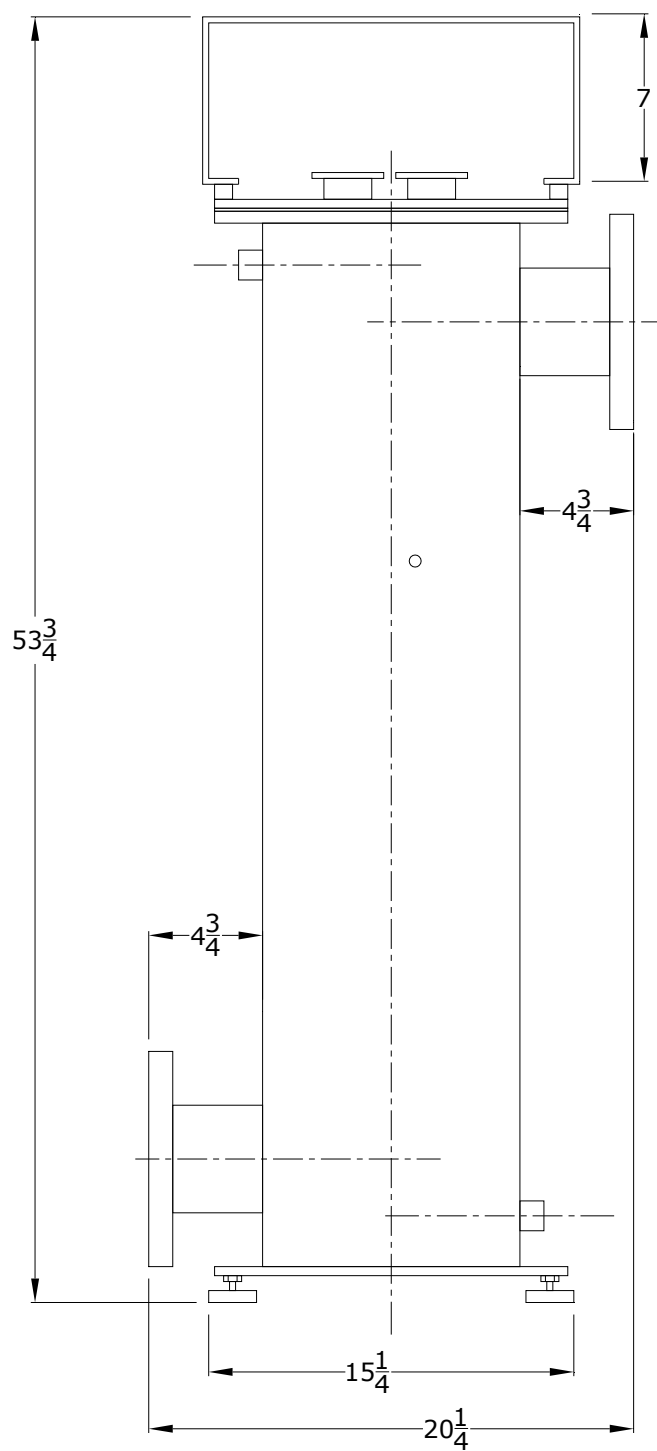


# 240 Watt PVC Chamber

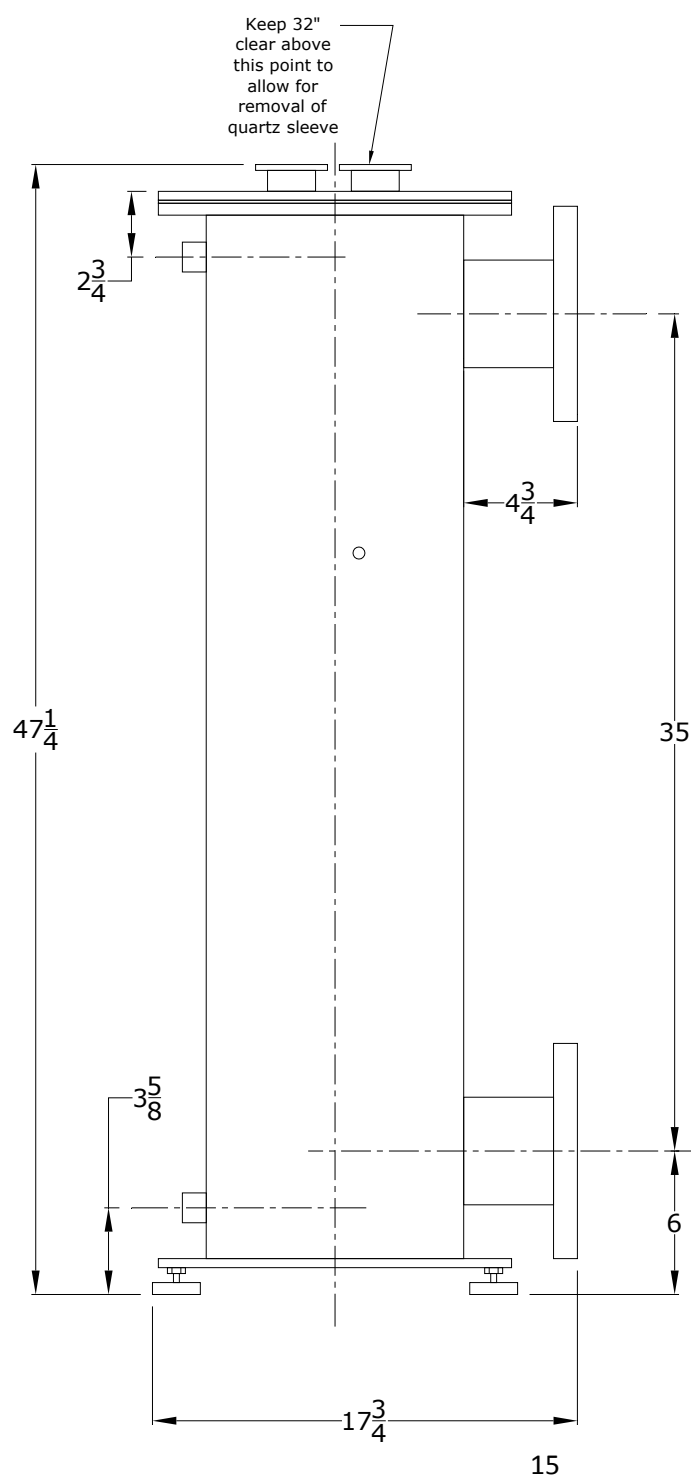


## 480 Watt Chamber Installation Dimensions 4" Flanges

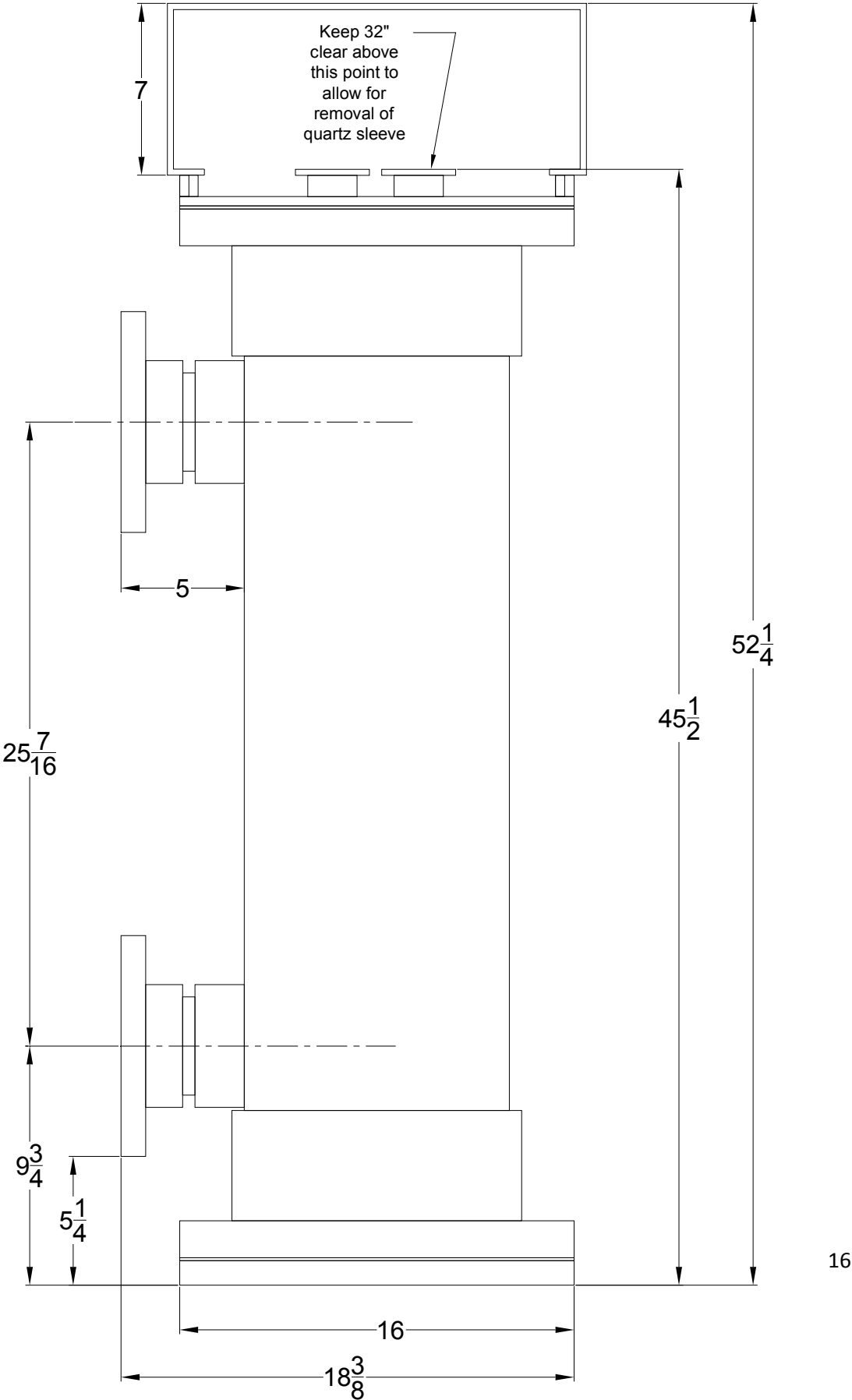
## Flanges Opposed



### Flanges Same Side

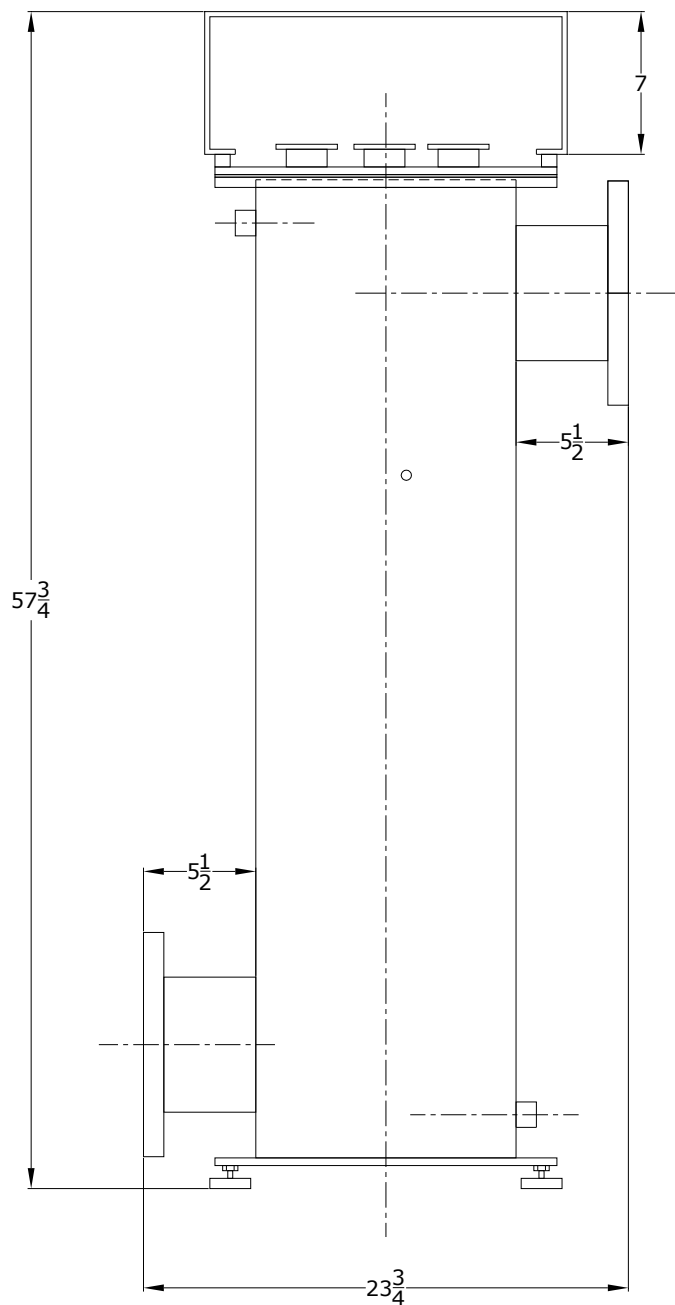


# 480 Watt PVC Chamber

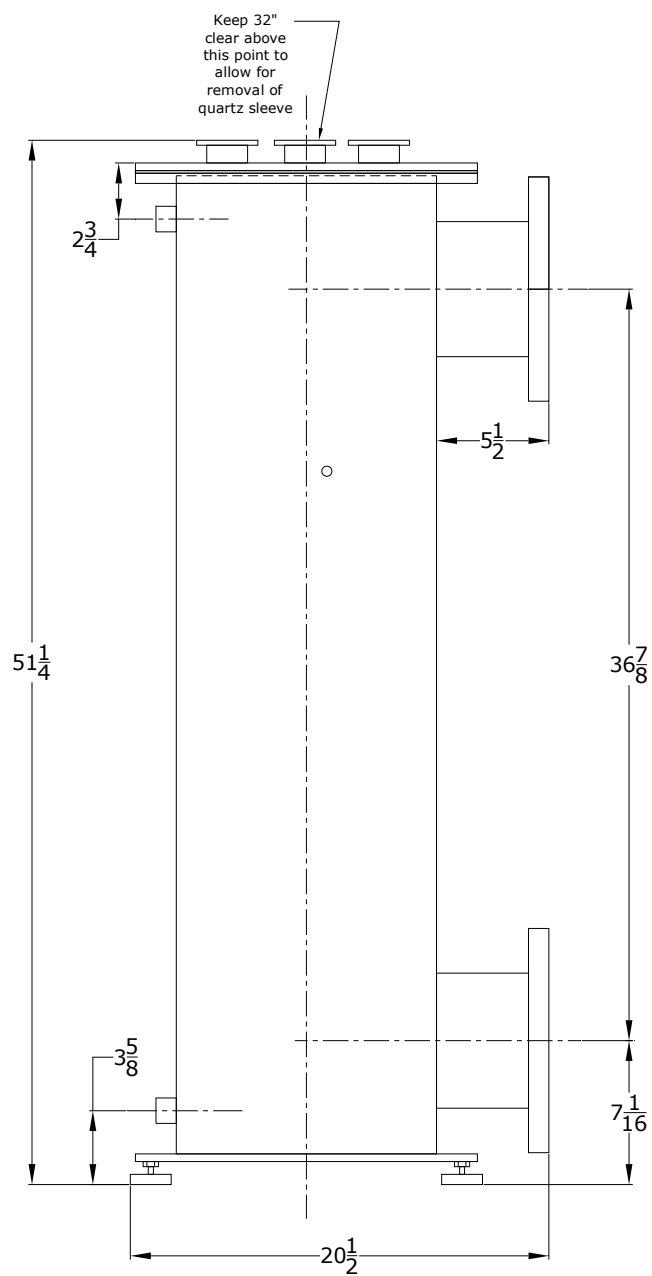




### Flanges Opposed

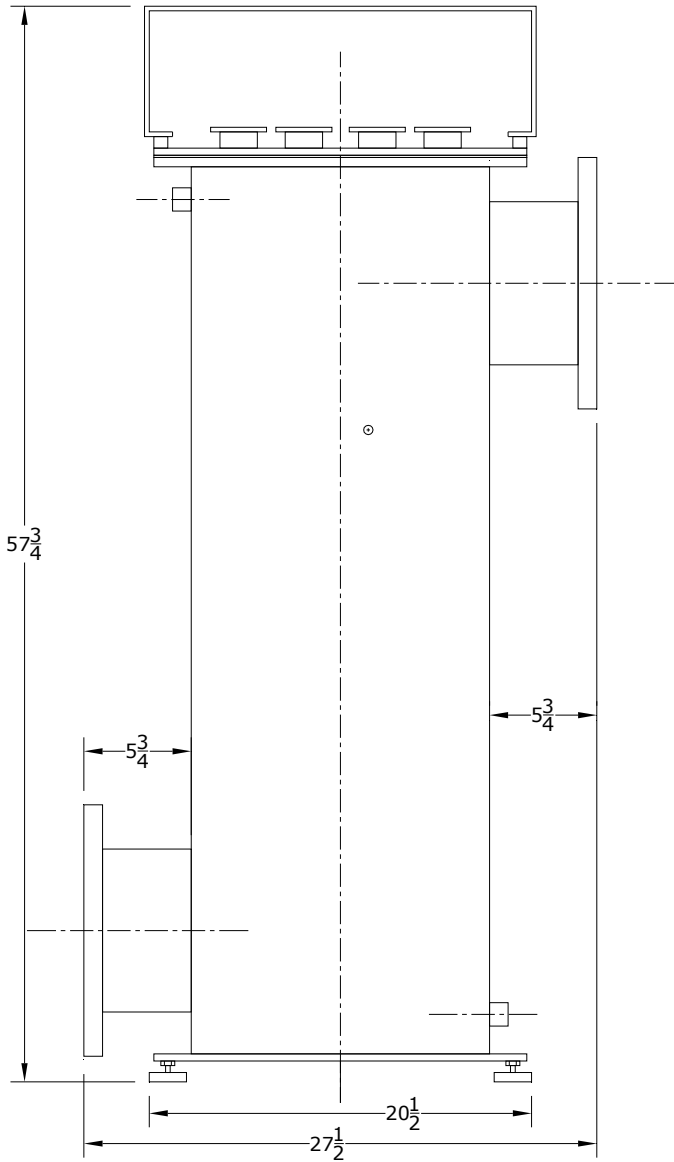


### Flanges Same Side

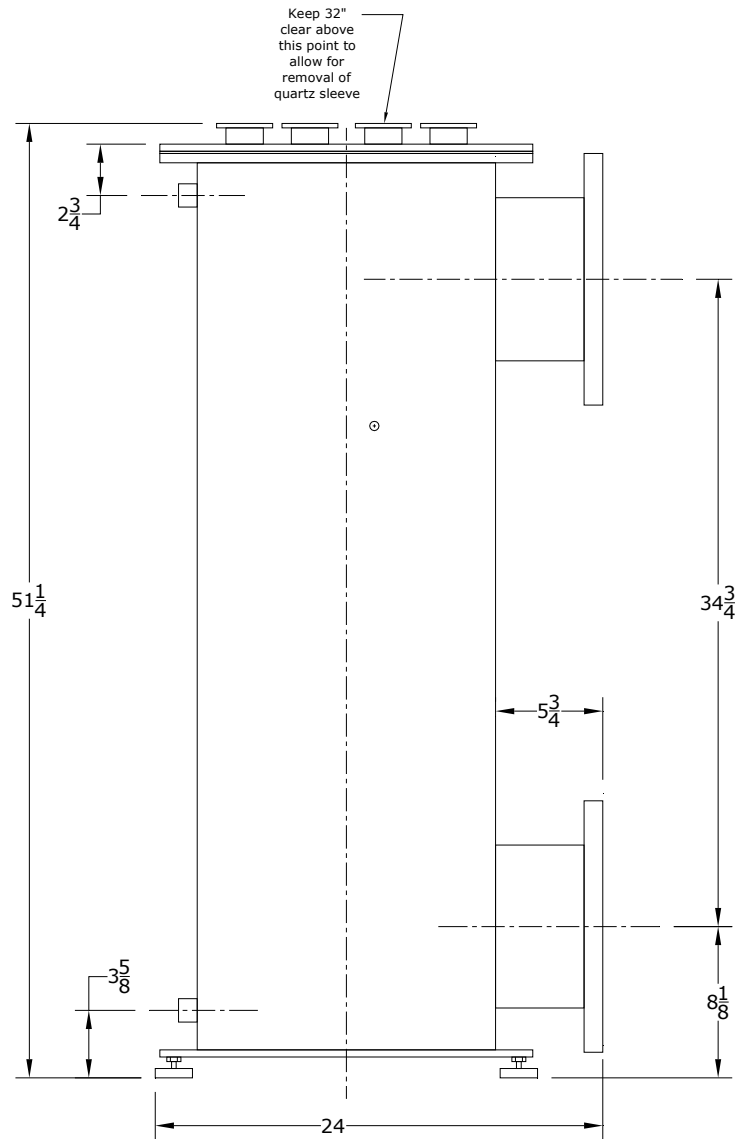


# 1200 Watt Chamber Installation Dimensions 8" Flanges

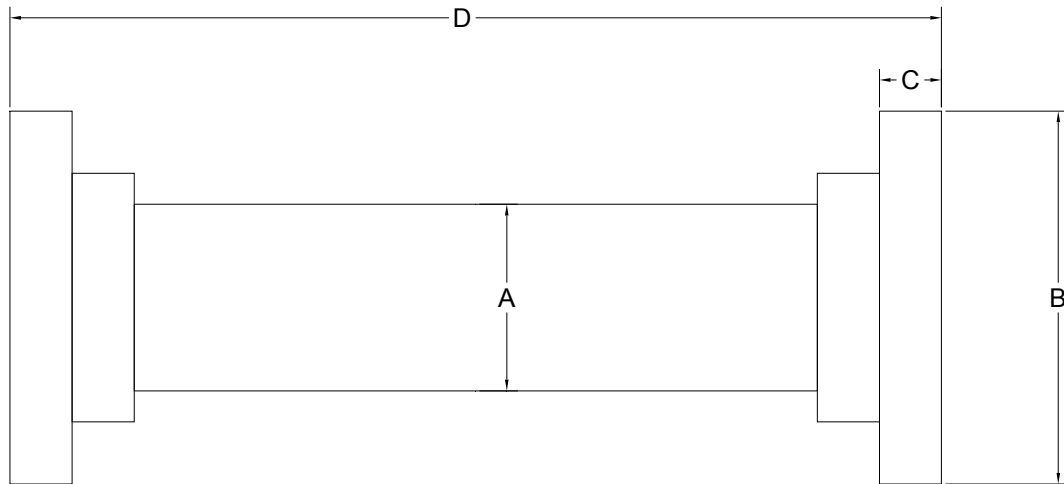
Flanges Opposed



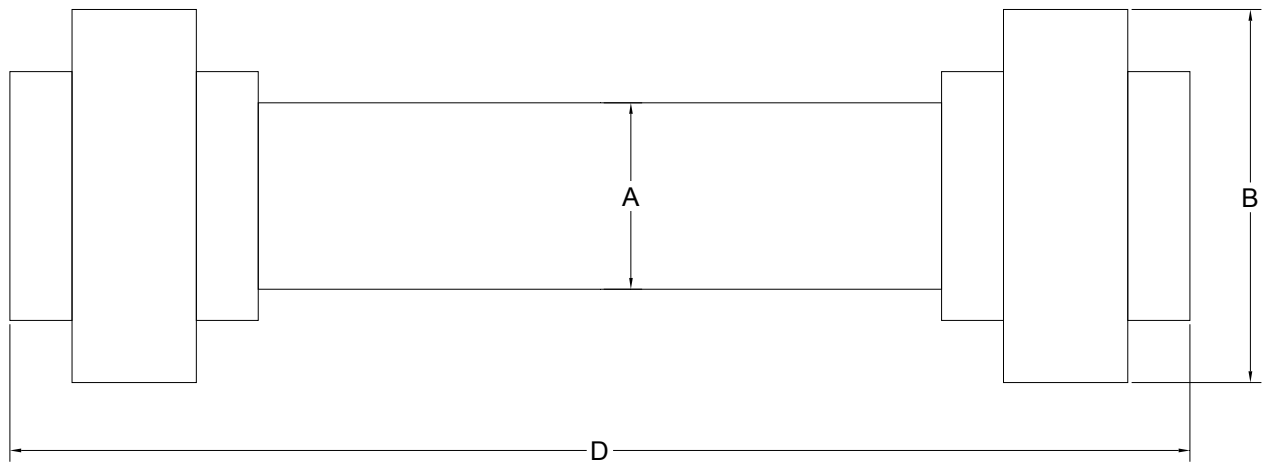
Flanges Same Side



Strainer Spool Dimensions (Flanged)				
Nominal Pipe Size	Pipe OD (A)	Flange OD (B)	Flange Thickness (C)	Overall length (D)
2	2 1/2	6	3/4	15 1/2
3	3 1/2	7 1/2	1	16 1/4
4	4 1/2	9	1	17 1/4
6	6 1/2	11	1 1/4	17 1/4
8	8 1/2	13 1/2	1 3/8	18 1/2
10	10 3/4	15 3/4	1 3/4	18 3/4



Strainer Spool Dimensions (Union)				
Nominal Pipe Size	Pipe OD (A)	Union OD (B)		Overall length (D)
2	2 1/2	5 1/4		20 1/2
3	3 1/2	7 1/8		21 3/4



## **SECTION 2**

### **INSTALLATION**

#### **2.1 UNPACKING**

Units are shipped from the factory. In the event of damages during shipping, it is the responsibility of the customer to notify the carrier immediately and to file a damage claim. Open the crate carefully and examine all material inside.

#### **2.2 STORAGE**

When storing units, use the original packaging and store under a shelter to protect the contents from weather.

#### **2.3 SAFETY CONSIDERATIONS**

## **IMPORTANT SAFETY INSTRUCTIONS**

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## **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-INTERRUPTER.
- 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.
- THE **CHLORKING®** SENTRY AQUA GUARD SYSTEM IS DESIGNED FOR SUPPLEMENTAL DISENFECTION AND SHOULD BE USED WITH EPA REGISTERED OR APPROVED DISINFECTION CHEMICALS TO IMPART RESIDUAL CONCENTRATIONS.
- REPLACE DAMAGED CORDS IMMEDIATELY.

## **CONSIGNES DE SÉCURITÉ IMPORTANTES**

### **LISEZ ET SUIVEZ TOUTES LES INSTRUCTIONS CONSERVEZ CES INSTRUCTIONS**

LORS DE L'INSTALLATION, DE FONCTIONNEMENT ET L'ENTRETIEN DE CET ÉQUIPEMENT, GARDEZ LES CONSIDÉRATIONS SUR LA SÉCURITÉ AVANT TOUT. UTILISER DES OUTILS APPROPRIÉS, DES VÊTEMENTS DE PROTECTION ET LUNETTES DE PROTECTION LORSQU'ILS TRAVAILLENT SUR OU À L'INSTALLATION. SUIVEZ LES INSTRUCTIONS DE CE MANUEL ET PREND LES MESURES DE SÉCURITÉ SUPPLÉMENTAIRES APPROPRIÉES. SOYEZ

VIGILANTS EN PRÉSENCE DE SUBSTANCES DANGEREUSES. LE PERSONNEL CHARGÉ DE L'INSTALLATION, DE FONCTIONNEMENT ET D'ENTRETIEN DE CE MATÉRIEL DOIT ÊTRE PARFAITEMENT FAMILIARISÉ AVEC LE CONTENU DE CE MANUEL. AUCUNE OPÉRATION DE MAINTENANCE DE CET ÉQUIPEMENT DOIT ÊTRE FAITE AVEC L'UNITÉ ENTIÈREMENT ÉTEINT ET DÉBRANCHÉE DE L'ÉLECTRICITÉ ET TOUTE LA PRESSION SAIGNÉE À PARTIR DES LIGNES DE LIQUIDES.

## MISE EN GARDE

CONNECTER LE MONTAGE DE L'ÉQUIPEMENT SUR UN CIRCUIT PROTÉGÉ PAR UN DISJONCTEUR DE FUITE À LA TERRE.

- SEUL un TECHNICIEN CERTIFIÉ PEUT INSTALLER ET ENTRETENIR LE SYSTÈME de GARDE AQUA SENTRY **CHLORKING®**.
- MODIFIER LE SYSTÈME de GARDE AQUA SENTRY **CHLORKING®** EN QUELQUE SORTE PEUT CAUSER DES LÉSIONS CORPORELLES ET LA GARANTIE ANNULATION.
- NE LAISSEZ PAS les ENFANTS à EXPLOITER LE SYSTÈME de GARDE AQUA SENTRY **CHLORKING®**.
- REMPLACEZ UNIQUEMENT LES COMPOSANTS AVEC CELLES SPÉCIFIÉES PAR LE FABRICANT.
- LORSQUE VOUS INSTALLEZ LE SYSTÈME, s'ASSURER QUE la PUISSANCE EST LIÉE à LA SOURCE D'ALIMENTATION de POMPE à MAIN POUR LA PISCINE POUR VOUS ASSURER QUE LE SYSTÈME de GARDE AQUA **CHLORKING®** DÉTECTEUR FONCTIONNE JAMAIS QUAND LES POMPES SONT hors SERVICE.
- Toutes LES CASES SUR LE SYSTÈME de GARDE AQUA SENTRY **CHLORKING®** CONTIENNENT DES COMPOSANTS HAUTE TENSION. NE JAMAIS OUVRIR N'IMPORTE QUELLE BOÎTE TANDIS QUE L'APPAREIL EST ALLUMÉ.
- N'OUVREZ JAMAIS LE **CHLORKING®** SENTINELLE GARDE AQUA SYSTEM OU REGARDER DIRECTEMENT LA LAMPE UV LORSQU'IL FONCTIONNE. UNE EXPOSITION DIRECTE OU INDIRECTE À LA LUMIÈRE ÉMISE PAR LA LAMPE VA PROVOQUER DES LÉSIONS OCULAIRES GRAVES ET BRÛLER GRAVEMENT LA PEAU NON PROTÉGÉE.
- LE SYSTÈME de GARDE AQUA SENTRY **CHLORKING®** EST CONÇU POUR DISENFECTION SUPPLÉMENTAIRE ET DOIT ÊTRE UTILISÉ AVEC EPA ENREGISTRÉS OU AGRÉÉS de produits CHIMIQUES de DÉSINFECTION POUR RÉPANDRE des CONCENTRATIONS RÉSIDUELLES.
- REMPLACER LES CORDONS ENDOMMAGÉS IMMÉDIATEMENT.

## 2.4 PLAN AHEAD

Almost every pump room encountered is different. It is imperative to have prior knowledge of the facility in which the unit is to be installed and to evaluate what type of tools, wall anchors, etc. will be needed to make the installation as problem free as possible.

## 2.5 POWER SUPPLY INSTALLATION (See Figure 2)

### **WARNING**

**NEVER TRY TO SUPPORT THE WEIGHT OF THE POWER SUPPLY USING ONLY DRYWALL ANCHORS. THE POWER SUPPLY MUST HAVE A STUD FOR SUPPORT!**

### **CAUTION**

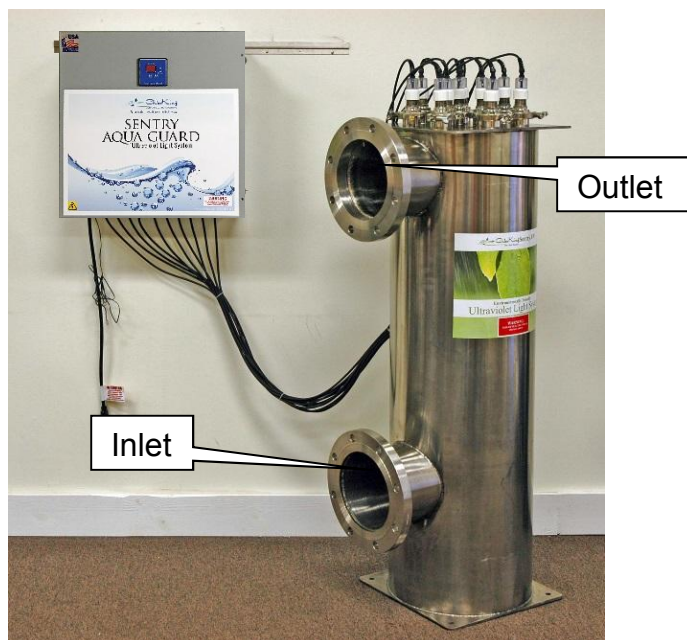
**THE POWER SUPPLY MAY CAUSE INTERFERENCE WITH SENSITIVE ELECTRONICS. AVOID INSTALLING THE POWER SUPPLY AND LAMP LEAD WIRE NEAR SENSITIVE ELECTRONICS.**

Locate a space on the wall, in the pump room, that will accommodate the dimensions of the power supply. The power supply must mount within 5 feet of the UV chamber to ensure that the cables can easily reach the chamber and within 3 feet of a 120 volt, 15-amp wall outlet protected by a ground fault circuit interrupter. On a drywall installation, locate studs to hold the weight of the power supply. Use concrete anchors for installations into concrete walls. Install in an easy to access location. Some installations may require a mounting stand be fabricated based on chamber access.

## 2.6 UV CHAMBER INSTALLATION (See Figure 2)

Place the UV Chamber on a level surface within 5 feet of the power supply. The chamber may be installed in a vertical or horizontal position. Ensure that the unit is accessible. U shaped horizontal installations require that the water is plumbed going down into the inlet of the chamber and coming out in the up direction from the outlet of the chamber. Z shaped horizontal installations should be plumbed so the water is flowing up in to the chamber and up out of the chamber. Vertical installations require that the water is plumbed going into the inlet of the chamber (bottom) and out of the outlet of the chamber (top). Secure the chamber with suitable hardware.

**Figure 2**



## **2.7 QUARTZ SLEEVE INSTALLATION**

### **CAUTION**

**LAMPS AND QUARTZ SLEEVES ARE MADE OF GLASS AND ARE EXTREMELY DELICATE. TAKE CARE 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 SMALL RUBBER STOPS INSIDE THE BOTTOM OF THE SLEEVE. THIS RUBBER STOP MUST REMAIN IN PLACE TO PREVENT DAMAGE FROM LAMP INSTALLATION.**

Place a gasket on the quartz sleeve quick disconnect flange. Carefully lower the quartz sleeve assembly into the chamber. On stainless chambers for SAG480 through SAG1200, the quartz sleeves sit on top of spring assemblies. Quartz sleeves must be carefully lined up with the spring or damage to the sleeve may occur. When the quartz sleeve is properly located in the spring assembly the quick disconnect quartz sleeve assembly will rest about  $\frac{1}{4}$ " to  $\frac{1}{2}$ " above the 2" gasket. Gently press the quick disconnect quartz sleeve assembly into place and install the quick disconnect clamp to secure the sleeve in place.



## 2.8 LAMP INSTALLATION

### CAUTION

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

Place the 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. Push the lamp lead wire through the viewing cap until the lamp is against the rubber cushion at the bottom of the quartz sleeve and tighten the liquid tight gland.

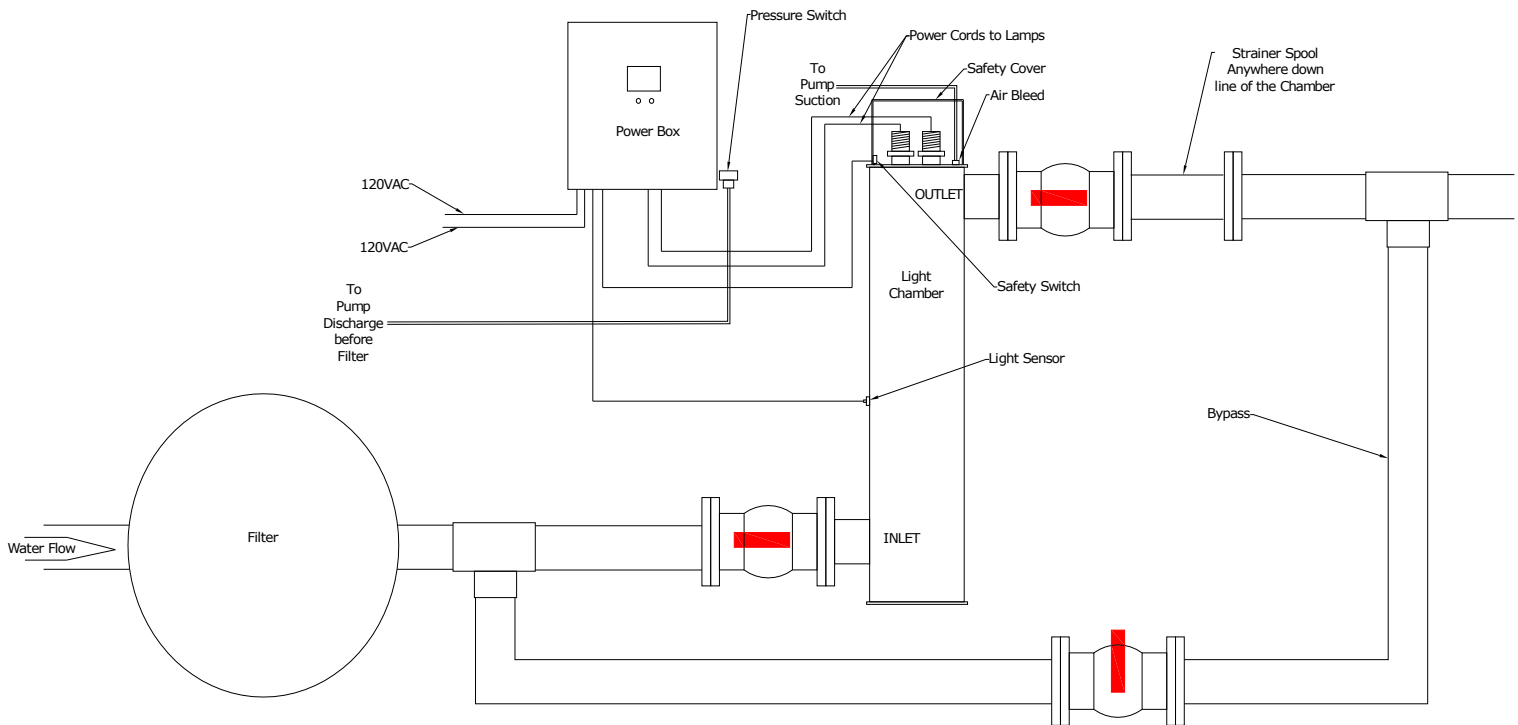


## 2.9 PLUMBING THE UV CHAMBER

### WARNING

**FOR PROPER OPERATION, DO NOT INSTALL IN A BYPASS. THE ENTIRE WATER VOLUME OF THE CIRCULATION SYSTEM SHOULD PASS THROUGH THE CHAMBER. NOTE: SPRAY PADS NEED TO BE INSTALLED WITH THE PLUMBING BACK TO THE RESEVIOR FOR LOW SPEED PUMPS TO CONTINUE CIRCULATION THROUGH THE CHAMBER, ALLOWING CONTINUOUS OPERATION OF THE UV SYSTEM.**

## UV system installation diagram



The entire water volume of the circulation system should pass through the UV chamber. Plumb the inlet of the UV chamber as close to the outlet of the pool filter as possible. Plumb a bypass around the UV chamber to facilitate service. Use valves to isolate the chamber from the circulation system.

### 2.10 PLUMBING THE STRAINER (OPTIONAL)

The strainer is installed on outlet side of the UV chamber plumbing. The strainer can be installed anywhere in the return line plumbing that is downstream of the UV chamber outlet.

### 2.11 PLUMBING THE PRESSURE SWITCH

Plumb the pressure switch to pump discharge with the supplied ¼ inch valve.

1. Tap the 1/4" NPT Valve (shown in figure 1) into the pump discharge plumbing, **BEFORE THE FILTER**. **WARNING:** Tapping the valve in after the filter can cause system damage from pressure drops during backwashing. The contactor will engage and disengage rapidly, causing the ballast and lamps to fail. Improper installation will void the warranty.

2. Connect the pressure switch to the valve with 1/4" tubing.

3. Turn the pump on and bleed the air from the tubing by briefly disconnecting the tubing from the pressure switch.

4. To test the pressure switch: Ensure the safety cover is installed and the pool pump is on. Plug in the front 120V power cord, the one with no labels shown in figure 2. The contactor will engage, shown in figure 3. Turn the pool pump off and the contactor should disengage.

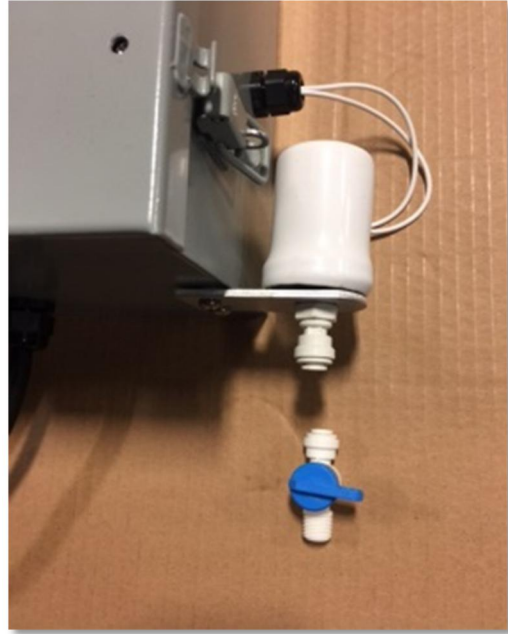


Figure 1



Figure 2



Figure 3

## 2.12 PLUMBING THE AIR BLEED ON VERTICAL MOUNT CHAMBERS



1. Insert 3/8" elbow into the 3/8" female adapter (shown in figure 1) on top of the UV chamber.
2. Tap 3/8" NPT valve (shown in figure 2) into the pump suction plumbing.
3. Connect the two points with 3/8" tubing.
4. Turn on the pool pump then open the 3/8" valve.



Figure 1



Figure 2

## 2.13 SYSTEM WIRING

### WARNING

**THE EARTH TERMINALS AND THE EQUIPMENT BONDING WIRE MUST BE CONNECTED. THE ELECTRICAL SUPPLY MUST MATCH THE SYSTEM RATED VOLTAGE AND CURRENT. ENSURE THAT POWER IS LINKED TO THE MAIN PUMP POWER SOURCE FOR THE POOL TO ENSURE THAT THE SYSTEM NEVER OPERATES WHEN THE POOL PUMPS ARE OFF.**

All systems must be wired so that when the pool circulation pump is off the power to the ChlorKing® Sentry UV System is off with the exception of spray pads that may have bypass flow through the chamber when the main pumps are off.

**120-VOLT SYSTEMS:** These units are cord connected at the factory with two standard plugs for a 15-amp wall outlet. Connect both power cords to a 120V electrical outlet protected by a ground fault circuit interrupter.

**230-VOLT SYSTEMS:** These units are permanently wired to the electrical service in the pump room through a disconnect box. A Certified Electrician must do the permanent wiring. Connect the red and black wires to the appropriate wire nuts at the top of the contactor. (Labeled lines with wire nuts are provided.) Connect the ground wire at the wire nut provided. All units are equipped with a black control cord that plugs into a standard wall outlet protected by a ground fault circuit interrupter.

## 2.14 SAFETY COVER WIRING

Place the safety cover on top of the UV chamber and attach with the supplied nuts. Be sure the micro-switch is depressed when the cover is installed. Route the safety cover wire through the open liquid tight gland at the bottom of the power supply. Attach to the two wires from the safety cover to the two black wires in the power supply with the orange wire nuts supplied.

## 2.15 UV SENSOR INSTALLATION

Install the UV sensor o-ring, quartz window, and UV sensor into the sensor boss. Hand tighten the UV sensor nut.

## 2.16 BONDING THE SYSTEM

All ChlorKing® Sentry UV System systems require bonding. Bonding is accomplished by connecting a minimum 8 AWG bonding wire from the bonding grid in the equipment room to the UV system power supply and the UV system chamber. The bonding lugs on the power supply and chamber are clearly marked with a decal that reads “Bonding Lugs”.

## **SECTION 3 OPERATION**

### **3.1 START-UP PROCEDURES**

Open the chamber isolation valves and close any bypass valves. Allow the chamber to fill with water. Turn the system on with the switch located on the power supply. Operate the system for 10 minutes to allow the lamps to warm up to full power. After 10 minutes the UV monitor will read 60mj/cm<sup>2</sup> and the green led will be illuminated.

### **3.2 UV METER OPERATION**

The UV meter displays the UV dose in mj/cm<sup>2</sup>. An adequate dose is 40mj/cm<sup>2</sup> to 60mj/cm<sup>2</sup>. When the display is initially powered on, a mj dose will appear with both the green and yellow LED off. After 10 minutes of operation the display will show 60mj/cm<sup>2</sup> and the green LED will be illuminated. The display will automatically calibrate with no input required. When the UV dose falls to 39mj/cm<sup>2</sup> the green LED will go out and the yellow LED will illuminate. This indicates the need for quartz sleeve and sensor window service or lamp replacement. If the yellow LED is ignored and dose drops to 30mj/cm<sup>2</sup>, the yellow LED will begin to flash. This indicates that service is critical.

## **SECTION 4 MAINTENANCE**

### **4.1 ROUTINE MAINTENANCE**

#### **Daily Check**

Check the UV meter and LED lights on the power supply daily. Under normal operating conditions, the UV meter will indicate a value over 40mJ/cm<sup>2</sup> and the green LED will be illuminated. If the UV meter falls below 40mJ/cm<sup>2</sup>, the green LED will go out and the yellow LED will illuminate. A meter display of less than 40mJ/cm<sup>2</sup> with a yellow LED is an indication that maintenance or repairs are needed. The most common cause is dirty quartz sleeves and sensor window.

#### **Cleaning the Quartz Sleeve and UV Sensor Window Manually (Non-NSF Models)**

### **CAUTION**

**LAMPS AND QUARTZ SLEEVES ARE MADE OF GLASS AND ARE EXTREMELY DELICATE. TAKE CARE 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 SMALL RUBBER STOPS AT THE BOTTOM OF THE SLEEVE. THIS RUBBER STOP MUST REMAIN IN PLACE TO PREVENT DAMAGE FROM LAMP INSTALLATION.**

Unplug the unit from the power source to prevent the risk of electric shock or system damage. Isolate the chamber from the pool circulation system by closing the inlet and outlet valves and opening the bypass valve. Drain the chamber. 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 lamp is completely free of the quartz sleeve it can be safely disconnected from the wiring harness. Remove the quick disconnect clamp and remove the sleeve from the chamber.

NOTE: If the power supply is within 5 feet of the UV chamber, the quartz sleeve may be removed without disconnecting or removing the lamp.

## **WARNING**

Read all cautions and directions provided with the muriatic acid used. Always add acid to water. Use only with adequate ventilation. If strong odor is noticed, STOP, ventilation is inadequate. Leave area immediately. If the work area is not well ventilated you MUST use a properly fitted and maintained NIOSH approved respirator for acid fumes.

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.

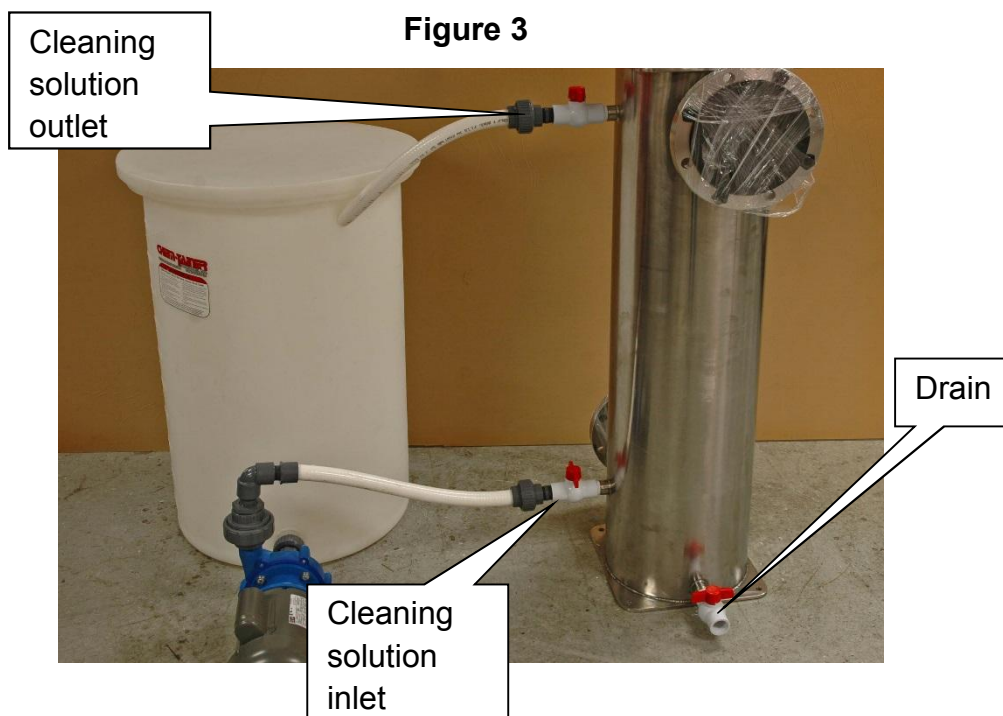
Check the gasket on the quartz sleeve quick disconnect flange. Carefully lower the quartz sleeve assembly into the chamber. On stainless chambers for SAG480 through SAG1200 the quartz sleeves sit on top of spring assemblies. Quartz sleeves must be carefully lined up with the spring or damage to the sleeve may occur. (see page 24 for details) Gently press the quartz sleeve into place and install the quick disconnect clamp to secure the sleeve in place.

Remove the UV sensor from the chamber and carefully remove the quartz window. Clean the quartz window by wiping with a clean cotton cloth and standard glass cleaner. Windows with calcium accumulation will require cleaning with a 5:1 water and muriatic acid solution. Reinstall the window and sensor. On models without the quartz window, clean the quartz on the face of the monitor.

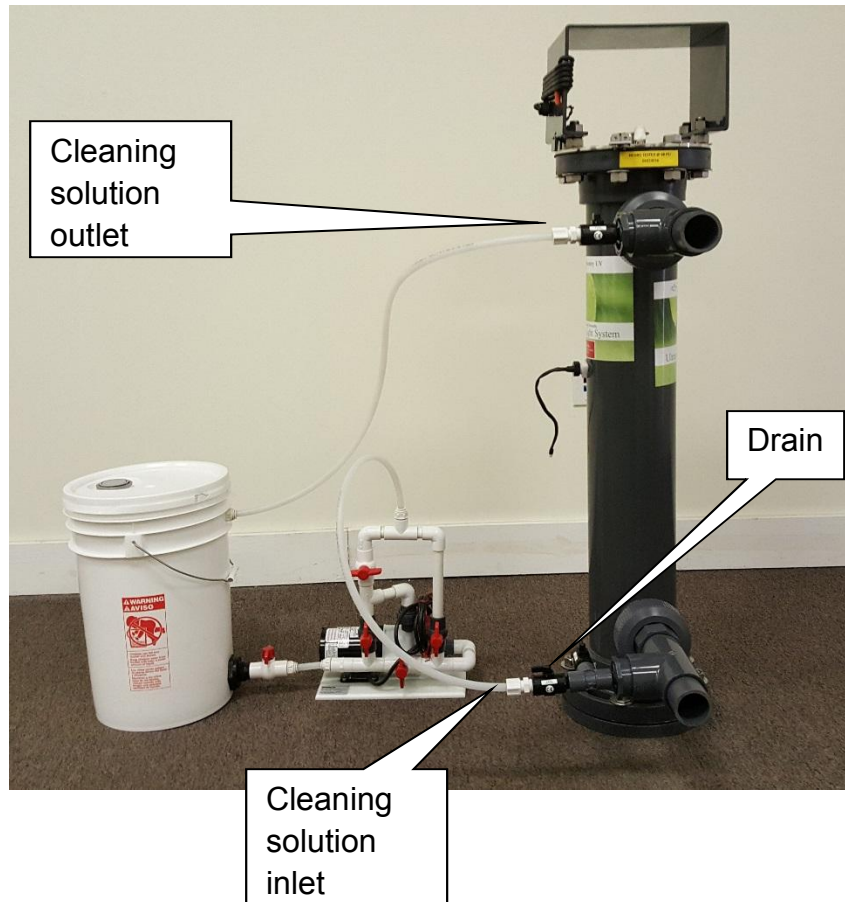


## Cleaning Quartz Sleeve and UV Monitor Window Chemically (NSF Models)

Unplug the unit from the power source to prevent the risk of electric shock or system damage. Isolate the chamber from the pool circulation system by opening the bypass valve and closing the inlet and outlet valves. Drain the chamber. Connect a ChlorKing Acid Washer or other suitable cleaning setup to the chamber. See examples in **Figure 3**. Water and muriatic acid are mixed in the cleaning solution tank at a ratio of 5:1. Five parts water to one part muriatic acid. Flush the chamber for 2 to 5 minutes with cleaning solution. Drain the cleaning solution from the chamber. When using the ChlorKing Acid Wash System the solution is pumped back into the cleaning solution tank for reuse. Remove the cleaning solution hoses from the chamber and close the cleaning solution valves. Open the inlet and out valves to restore pool circulation to the chamber.







## Lamp Replacement

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

### 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.**

Unplug the unit from the power source to prevent the risk of electric shock or system damage. 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 lamp 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 THE LAMP IS LOWERED INTO THE QUARTZ SLEEVE OR DAMAGE TO THE LAMP AND SLEEVE MAY OCCUR.**

Place the 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 (see page 25) and tighten the liquid tight gland.

### **4.2 RECOMMENDED BROKEN LAMP HANDLING PRACTICES**

Guidance on proper methods of handling broken fluorescent lamps is available from the US EPA and from many state agencies and local health and environmental authorities. The EPA guidelines can be found at <http://www.epa.gov/mercury/spills/index.htm>.

## **SECTION 5 WARRANTY INFORMATION**

### **5.1 HOW TO OBTAIN HELP**

To get help under this warranty, visit your local dealer or contact ChlorKing® - Sentry UV at 1-800-536-8180 or by email at [www.sentryuv.com](http://www.sentryuv.com) or [www.chlorking.com](http://www.chlorking.com). Please have available the model number, the system serial number, the date of purchase, the name of the dealer from whom you purchased your ChlorKing® - Sentry UV product, as well as a description of the problem that you are experiencing. A ChlorKing® - Sentry UV technician will help you troubleshoot the problem and locate the defective part.

### **5.2 RETURNING A CHLORKING® - SENTRY UV PRODUCT**

To return a ChlorKing® - Sentry UV product, you must first call a ChlorKing® - Sentry UV technician at the number above and discuss the problem you are experiencing. The technician will then determine your warranty status, and will let you know whether you need to send the unit back for further observation and testing.

If so, ChlorKing® - Sentry UV will issue you a Return Authorization (RA) number that must be prominently displayed on all sides of the packaging. The unit must be properly packed in bubble wrap, placed in a cardboard box, then placed in another larger cardboard box filled with packing (Styrofoam) "peanuts" or bolted onto a secured pallet with side walls and shipped to the following address: (Insurance on the package is also required.)

**Sentry UV, Inc.**  
**Return Service Department**  
**2935 Northeast Parkway**  
**Atlanta, GA 30360**

Warranty will be based on the ChlorKing® - Sentry UV technician's opinion as to whether or not the defect was originated at the time of manufacture. Removing the unit from its current installed position, as well as, the return shipping charges to ChlorKing® - Sentry UV shall be at customer's expense. This warranty does not include shipping and handling charges, which must be paid before package is shipped. Once the unit is received, evaluated, and the problem determined to be due to an error in manufacturing, the repairs/adjustments will be made and the unit will be shipped back to customer at ChlorKing® - Sentry UV's expense. However, should ChlorKing® - Sentry UV determine that problem is NOT caused as a result of manufacturer error, ChlorKing® - Sentry UV will call customer to discuss findings and options. If the item in question is no longer under warranty, ChlorKing® - Sentry UV will provide an estimate of cost to repair. Your authorization and a valid credit card will be required prior to making any repairs.

### **5.3 ACTIVATING/VALIDATING WARRANTY AND MAKING A WARRANTY CLAIM**

To validate this warranty, establish proof of purchase, and make a warranty claim, you must complete and return the Owner Registration for Warranty Form, and submit a copy of the original receipt clearly showing the date and place of purchase.

### **5.4 WARRANTIES FOR CHAMBER, PARTS, LAMPS, AND BALLASTS**

ChlorKing® - Sentry UV will, to the original purchaser, warranty the Stainless Steel UV Light Product from defects in material and workmanship for 12 months or one (1) year from the original date of purchase as validated by the proof of purchase or receipt. During this time, ChlorKing® - Sentry UV will repair or replace, at its option, any defective parts covered by the warranty:

**Chamber.** The stainless chamber carries a **three-year** warranty. You may be required to return item for inspection. The PVC chamber carries a **one-year** warranty.

**PVC Parts.** All PVC parts carry a **one-year** warranty. You may be required to return item(s) for inspection.

**Lamps.** All lamps carry a **90-day** only warranty, and only for its intended electrical use. If there is a manufacturer's defect found with the lamp within the 90 days, ChlorKing® - Sentry UV will replace it.

## 5.5 WARRANTIES FOR QUARTZ SLEEVE

ChlorKing® - Sentry UV does not guarantee the quartz sleeve, because it is made entirely of glass and is easily broken.

## 5.6 GENERAL CONDITIONS AND LIMITATIONS

None of the above warranties cover damage caused by improper use or maintenance, accidents, acts of God, or minor scratches or imperfections that do not materially impair the operation of the product. Nor do the warranties cover products not installed as outlined in this document.

The warranty on lamps, ballasts, housings, or the unit in its entirety does not include shipping and handling charges, which will be collected at the time of shipment. Parts replaced under the warranties above are covered to the end of the ORIGINAL warranty period.

**Warranty is void if unit is not connected to a GFCI 120V/240V breaker.**

The following also void warranty:

If product labels are defaced or removed.

If housing has been painted.

If product has been improperly installed or maintained by user. Product must be serviced by ChlorKing® - Sentry UV or authorized personnel only.

If product has been abused, misused or damaged by the user.

If product has been damaged by electrical surges, electrical spikes, electrical brownouts, or improper voltage.

We have set forth recommendations and certain installation requirements in this document. Provided they are followed, and the unit is operated in the environment and manner intended, we will repair or replace a defective part within the 12-month period from the time of purchase.

Any damage to the unit as a result of installation, shipping, packing, and/or handling is not covered by this warranty. Any implied warranty other than written herein is not part of this warranty. This warranty gives you specific rights. You may have other rights, which will vary from state to state. This warranty cannot be transferred. Any attempt to make repairs through any source other than ChlorKing® - Sentry UV or authorized person will void the warranty.

ChlorKing® - Sentry UV does not assume any liability for personal injury or property damage caused by the use or misuse of any of the above products. ChlorKing® - Sentry UV shall not in any event be liable for special, incidental, indirect, or consequential damages. ChlorKing® - Sentry UV's liability shall, in all instances, be limited to repair or replacement of the defective product or part and this liability will terminate upon expiration of the application warranty period.

