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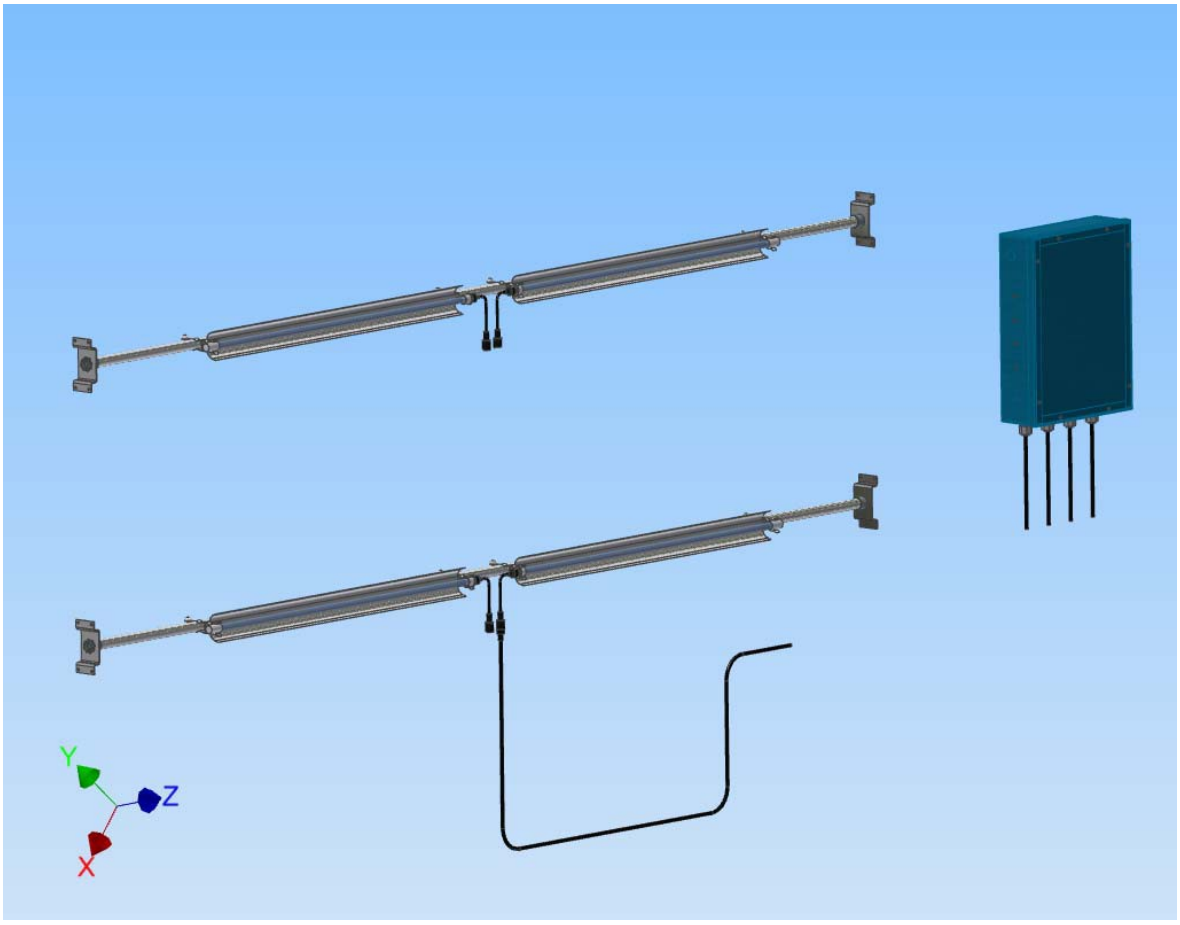
CK Series UVC Coil Kit
INSTALLATION AND MAINTENANCE MANUAL



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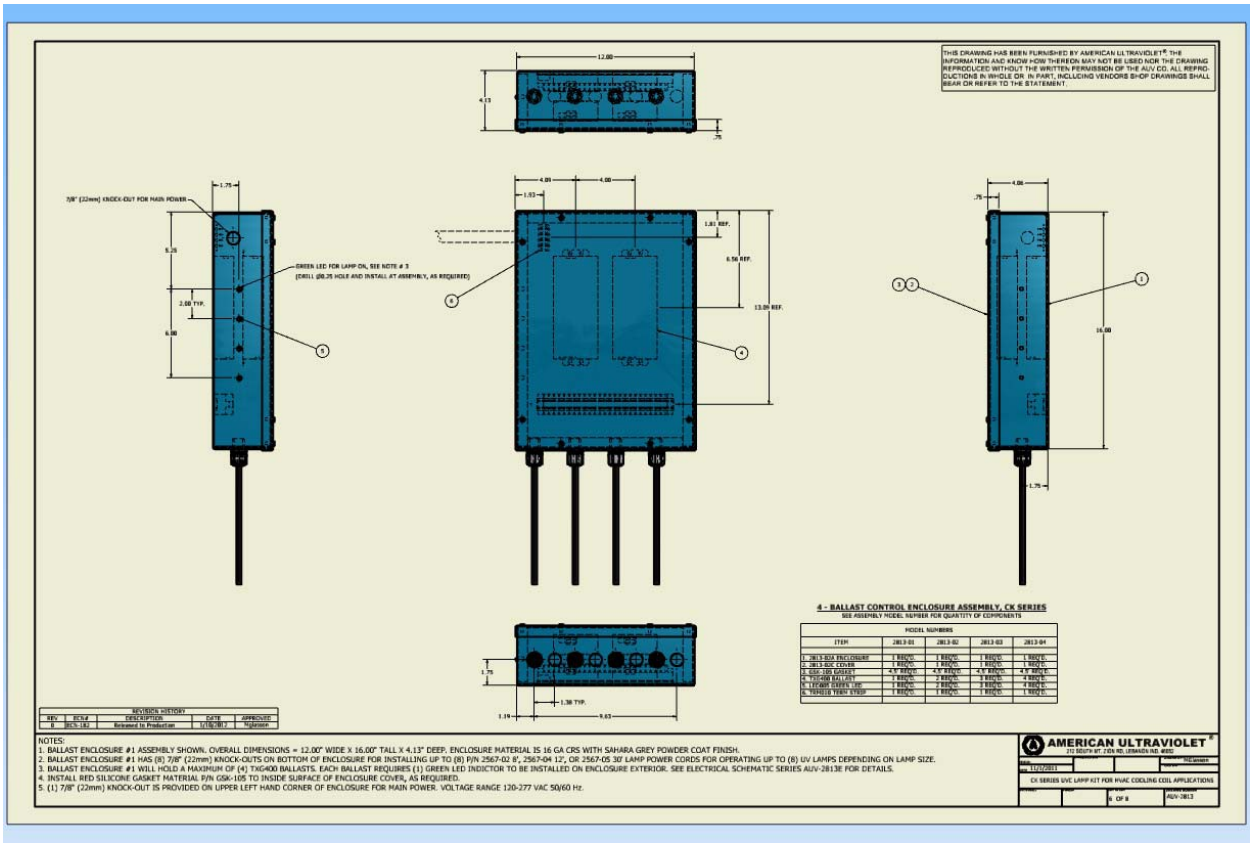
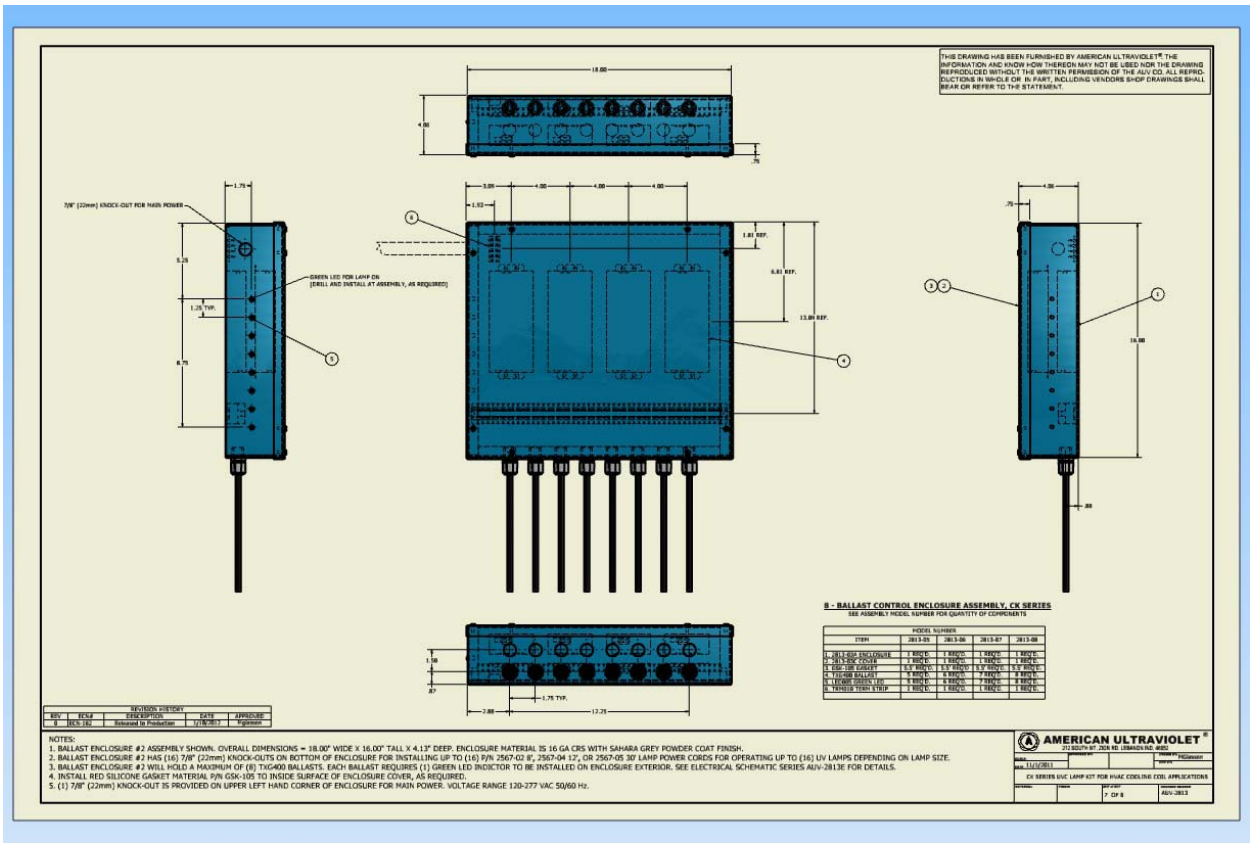
1. INTRODUCTION and GENERAL SAFETY

The CK series UVC Coil Kits are designed to install into HVAC systems positioned at the cooling coil section for coil mold reduction purposes as well as to offer a degree of pass-by air disinfection. Kits consist of GTLK series UVC lamps and multi-ballast control enclosures, as well as optional reflectors and mounting support tubes and bracketry when required. UVC lamps are available in nominal sizes of 18”, 24”, 36”, 48”, & 60” lengths. Ballast control enclosures are provided in two enclosure sizes of 12” wide x 16” tall x 4” deep and 18” wide x 16” tall x 4” deep. The same electronic ballast (part number TXG400) is used for powering the entire lamp size range with lamp sizes 18”, 24” & 36” being powered (2) lamps per ballast and lamp sizes 48” & 60” being powered (1) lamp per ballast. The TXG400 electronic ballast is a 50/60Hz ballast with a voltage range of 120-277VAC, and is used in all kits.

The overall quantity and sizes of UVC lamps required for the particular installation will determine the ballast control enclosure(s) to be used for the application. The following drawings show the (2) sizes of ballast control enclosures and the appropriate part numbers for each with the dash number on the end of each part number, indicating the number of ballasts provided.

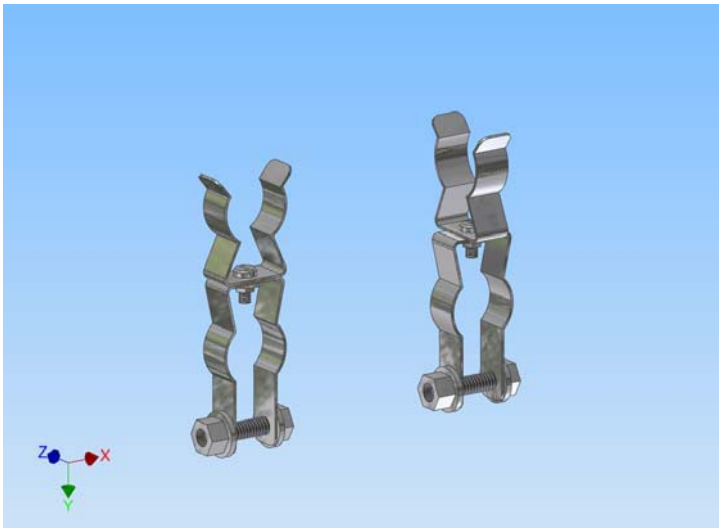




For example, a ballast enclosure part number 2813-01 is a 12” wide x 16” tall x 4” deep enclosure with (1) part number TXG400 electronic ballast provided. This unit will power (1) lamp of any size or (2) lamps up to size 36”.

The ballast control enclosures are of mild steel construction with the standard AUV blue powder coat finish. Enclosures are continuously welded with gasketed covers and will provide a degree of protection against moisture.

UVC lamps can be provided with spring-mount stainless steel lamp clips for securing the lamps into place. Additional clamps can be provided to mount the lamp and spring clip assembly to tubular support members. See the following details showing UVC lamp mounting clips and brackets as well as vertical and horizontal tube mounted arrangements.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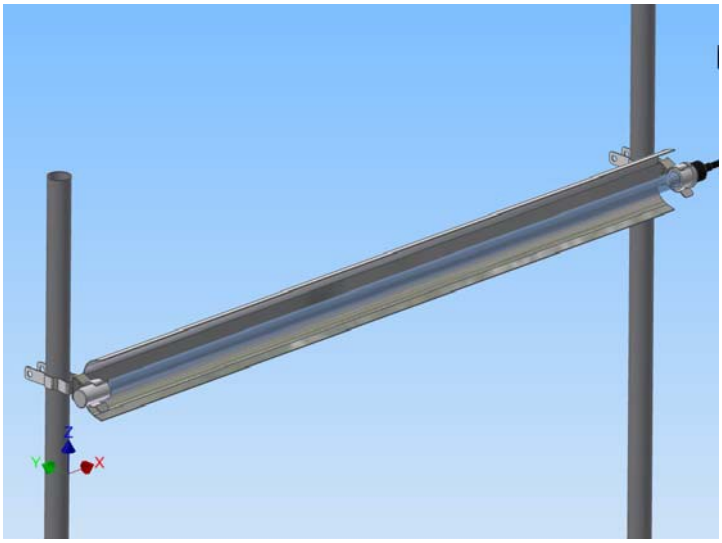
Z
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Y
Z
X

Caution – when system is operating, ultraviolet rays are emitted which are harmful to eyes and skin. Great care should be taken to insure personnel are not exposed to direct or reflected radiation. Suitable eye and skin protection, such as American Ultraviolet models SAF005 or SAF010 safety glasses should be worn when lamp is in operation. Before cleaning or relamping ALWAYS TURN POWER OFF.

GENERAL SAFETY

1. Ultraviolet Light Hazard

   a. Harmful to eyes – may cause permanent eye damage, similar to arc welder "flash"
   b. Harmful to Skin – skin burns can be experienced, similar to severe sunburn.

2. High Voltage Hazards

   a. Grounding for equipment – proper equipment ground must be provided
   b. Ballasts – high voltage exists on both primary and secondary sides of the ballast transformer
   c. UV Lamps – do not operate UV lamps in an area where volatile materials are stored, mixed, poured or sprayed.
   d. High Voltage – high voltage is present in the ballast control enclosure. Shut power OFF before performing any work on the UVC lamps.

3. Volatile Materials/Fire Hazard

   a. Due to high voltages, the UV system must be considered a potential "spark" source. DO NOT operate the UV system in an area where volatile, flammable materials are stored, mixed, poured or sprayed, or exhausted.

4. Safety Equipment

   a. DO NOT remove or modify safety equipment, electrical interlocks, guards, or labels etc.

5. Handling and Cleaning of UV Lamps

   a. Allow lamps to cool prior to handling
   b. Proper Personal Protective Equipment (PPE) should be used when handling UV lamps
   c. Skin oils attack the quartz tube of the lamp, wear clean cotton gloves when handling UV lamps
   d. Clean the lamps with Alcohol and clean, lint free cloth or tissue
   e. UV Lamps are fragile – handle with care
   f. Broken UV Lamps should be disposed of properly. UV Lamps contain mercury and disposal should be conducted following local environmental guidelines.

6. Operation Manual

   a. Read the operating manual in its entirety before servicing or operating the UV system.

The above safety precautions are general and not all inclusive. A common sense approach to safety must apply.

2. SYSTEM INSTALLATION AND SET-UP

CK Series UVC Lamp Kits can be provided with or without support frame members and are shipped in a carton on a shipping skid, containing all of the required components.

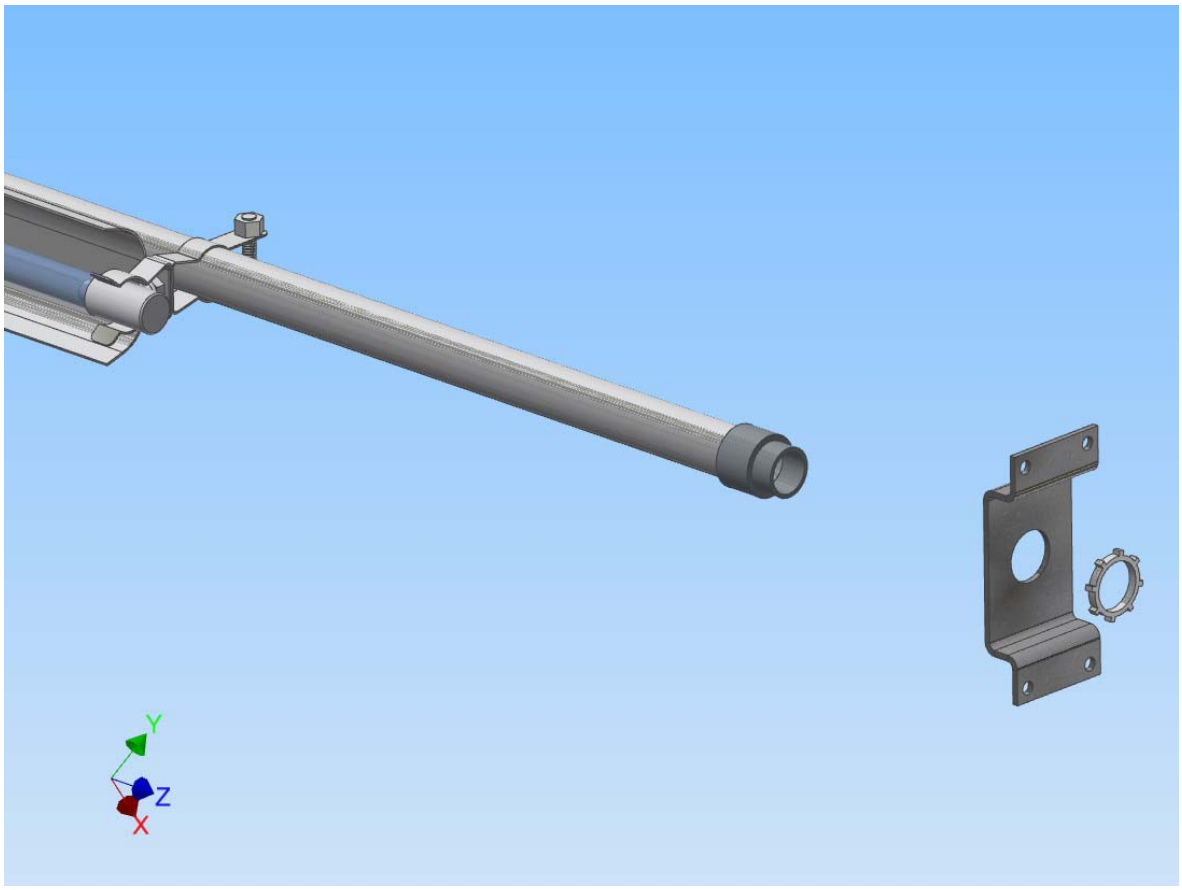
Components:

- UV Lamps packaged separately.
- Ballast Control Enclosure(s).
- Optional Reflectors when required.
- Optional Framing Support Members, when required.
- Operation Manual

All components should be inspected for signs of shipping damage at the time of arrival. Any indications of handling damage should be immediately reported to the carrier. Carefully open the carton and remove the equipment taking care not to lose any separately packaged parts such as the Ultraviolet lamps. Caution should be used when removing and handling the UV lamps to protect them.

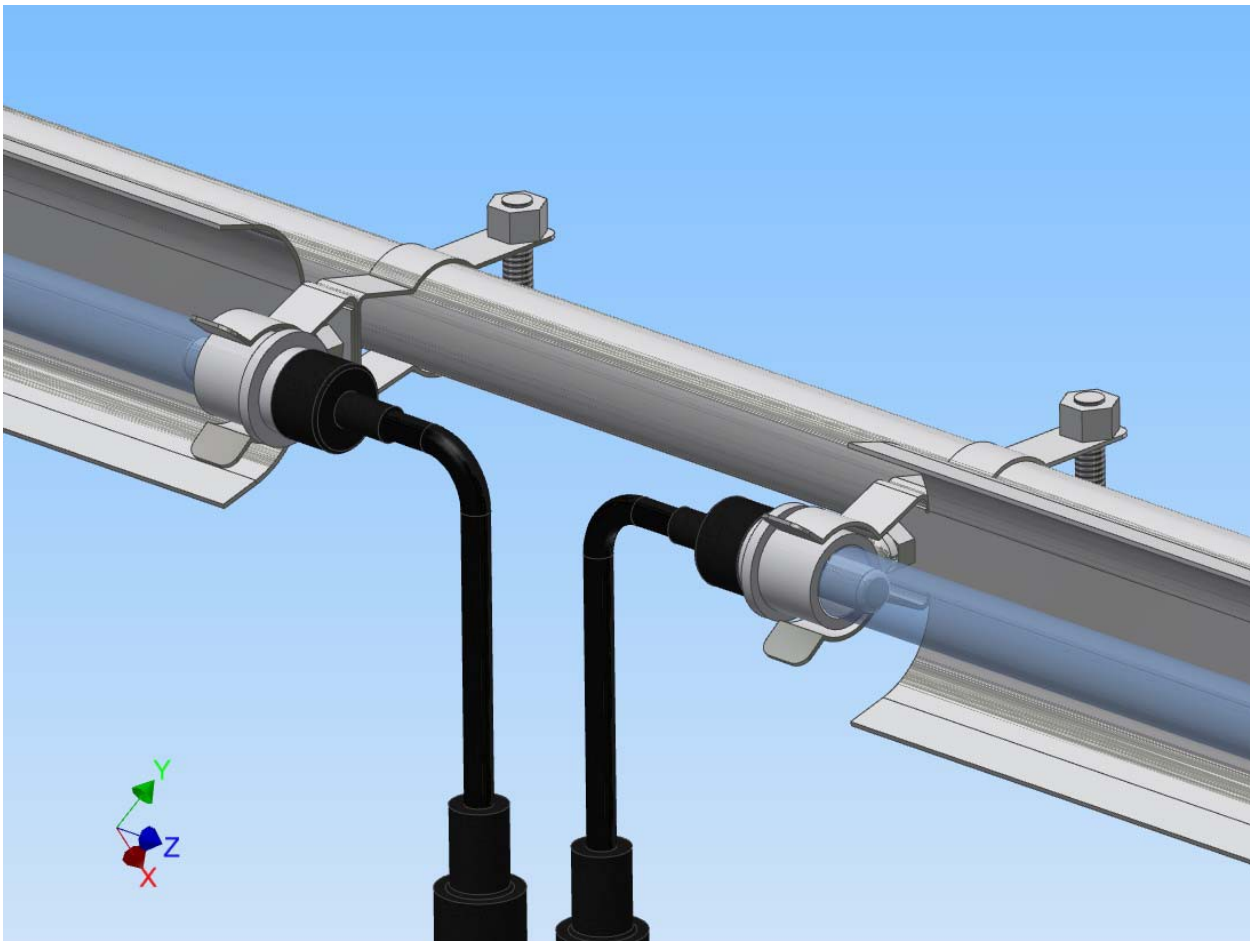
A predetermined UVC lamp arrangement has been decided upon for each HVAC installation where the overall number and size of lamps has been selected as well as the positioning of the UVC lamps, based upon the cooling coil and /or duct or plenum size. UVC lamps are to be placed into the HVAC system perpendicular to the airstream and typically horizontal. Support tubing and brackets can be provided as optional components from the factory. These tube supports are 1” nominal diameter zinc plated tubes that can be order by specific length from the factory and cut down to the required size, if need be, at the time of installation. Rigid conduit connectors with lock nuts can be provided for mounting these tubes into mounting brackets for attaching to plenum walls as required.

Mounting brackets are made from 12 ga galvanized steel and fasten directly to the conduit connector and are provided with (4) mounting holes, as shown in the following figure.



Measure the available plenum height or width as a reference and cut the tubing to size allowing approximately 1.5” on each end if using the AUV provided connectors and brackets. These tube members can be mounted horizontal or vertical, with the UVC lamps typically always mounted in the horizontal position. Refer to above figures shown on page 5, if need be, for tube and bracket mounting arrangements for both vertical and horizontal tube mounting arrangements.

Optional reflectors can be provided for installing behind the UVC lamps if required. Reflectors provide an increase in UV intensity as well as act as an insulator for the lamps, when the lamps are mounted to the supply side of the coil. Reflectors are not recommended for installation when the lamps are to be mounted to the airflow exiting side of the cooling coil. Mounting reflectors on the exit side of the coil will result in debris and particles accumulating onto the reflector with no intensity increase. Reflectors mount directly to the mounting clips as shown in the following figure.



UVC lamps are provided with sure-seal moisture proof connectors on the power end of the lamp. Additionally, Lamp power cords can be provided in 8', 12', or 30' foot lengths for connecting each UVC lamp to the ballast control enclosure. Each lamp power cord has a mating sure seal connector to plug into the UVC lamp. Cord grips are provided with each lamp power cord for securing the power cord into the ballast control enclosure.

Install the proper quantity of tube support members in the desired location in the HVAC system, then install the UVC lamps and optional reflectors, if required.

Find a suitable mounting position for the ballast control enclosure and mount this enclosure to the interior or exterior wall of the HVAC unit. The ballast control enclosure is provided with green and red LED indicators for each electronic ballast to indicated that the circuit is operational (green LED lit) when powered or if the lamp has failed (red LED lit). These LEDs are intended as a visual indication of the UVC lamp status only and provide no means for remote monitoring of the UVC lamp system.

Power is to be brought directly to the UV ballast enclosure panel for powering the lamps. A typical installation would have the power to the enclosure interrupted by a safety switch interlocked to any access panel or door of the HVAC system that would allow access to the UV lamp section. This safety interlock switch and power run would be provided by others and is intended to interrupt power to the ballast control enclosure resulting in the UV lamps going off, should the access panel or door be opened during normal UIV lamp operation. This would provide a degree of protection against unwanted exposure to the UV lamps by maintenance personnel. Refer to the appropriate electrical drawing supplied with the kit for further information.

At this point the UV lamps can be energized and checked for proper operation. Check any UVC lamp showing a fault to make sure that the lamp power cord is properly attached to both the lamp as well as the ballast control enclosure. Tie up lamp power cords neatly to finish the installation.

The CK Series UVC Lamp Kits are intended for continuous lamp on usage to provide around the clock UV exposure to the HVAC system for best results.

3. MAINTENANCE

1. UV lamps will require replacement on a yearly basis to provide the maximum UV intensity to the system, though the UV lamps are actually designed for a two year service lifespan. For applications where only general indoor air quality improvement is desired, lamps can typically be allowed to operate for the full (2) year lifespan. For critical applications such as infectious disease control, a (1) year lifespan of the lamps is recommended for the highest UVC intensity performance.

2. At the time of replacement, the UV lamp should be handled carefully to avoid breakage. Lint free cotton gloves should be worn when handling the UV lamps. Denatured isopropyl alcohol should be used with a clean cotton cloth to wipe down lamps after installation to ensure that all finger prints and skin oils are removed. This will ensure best UV lamp performance.

3. Typically with every other lamp change, the reflector should be changed as well, as they begin to breakdown and lose their reflectivity factor. Wipe down the newly installed reflector as described above for the lamps, to ensure that they are clean and free of debris and fingerprints.