

Installation Instructions

Part No. CRUVCKIT014A00 and CRUVCKIT015A00

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SAFETY CONSIDERATIONS

Installation and servicing of air-conditioning equipment can be hazardous due to system pressure and electrical components. Only trained and qualified service personnel should install, repair, or service air-conditioning equipment.

Untrained personnel can perform basic maintenance functions of cleaning coils and filters and replacing filters. All other operations should be performed by trained service personnel. When working on air-conditioning equipment, observe precautions in the literature, tags and labels attached to the unit, and other safety precautions that may apply.

Follow all safety codes. Wear safety glasses and work gloves. Use quenching cloth for unbrazing operations. Have fire extinguisher available for all brazing operations.

It is important to recognize safety information. This is the safety-alert symbol . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, CAUTION, and NOTE. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices, which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

WARNING

Before installing an accessory or performing maintenance or service on an accessory, turn off main power switch to unit. Electrical shock can cause injury or death. There may be more than one disconnect switch.

CAUTION

Never expose eyes or skin to ultraviolet light from any source. The lamp must be off before entering the unit to perform maintenance or service. Personal injury may result. Field-supplied interlock switches are required in the cooling coil's access panels to prevent this hazard. Their installation is outlined in the instructions.

CAUTION

Ultraviolet band C (UV-C) energy may cause damage to non-metallic components except for UV-rated and HVAC-style drain pans. Protect components with UV resistant material such as aluminum tape and UV conduit.

CAUTION

Do not touch emitter glass without gloves. Damage to lamp may result. Oil from fingerprints will permanently etch the glass of the lamp and weaken the structure. Clean the lamp after handling with 99% isopropyl alcohol and a lint free cloth.

CAUTION

Use only specified high-output, low temperature lamps with this accessory. Use of a lower wattage or incorrect lamp can result in damage to the accessory or lamp. Correct lamps have a blue end cap.

CAUTION

The lamp contains a small quantity of mercury. If a lamp breaks, clean and dispose of with care.

GENERAL

The high-output, low temperature lamps are installed in the cooling coil section of 6-30 ton Package Air-Handling unit, and are pointed directly at the cooling coil and condensate pan. The minimum intensity irradiance is 350 uW/cm² across the coil surface above 50-100 uW/cm² recommended by ASHRAE, Chapter 62. (See Fig. 1.)

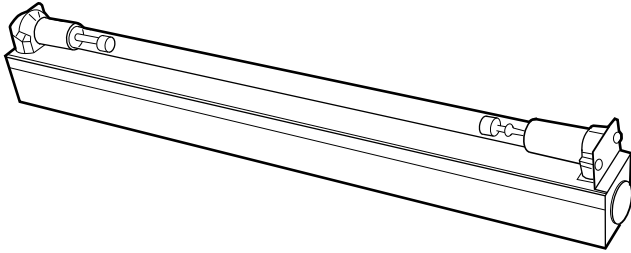


Fig. 1 — UV-C Lamp

The UV-C lamp kits can be ordered separately for field-installation (includes supports, switch, wiring and lamp). Refer to Table 1 for kit usage and contents. Refer to Table 2 for replacement lamp ordering information.

IMPORTANT: Two service personnel are required for installation procedure.

INSTALLATION

Location

The UV-C lamps are installed downstream of the cooling coil. Supports are provided to mount the UV-C lamps.

Before Installing UV-C Lamp Kit

IMPORTANT: A separate, dedicated, 120/115v power source will need to be field-supplied and routed to the control box per applicable codes. Power source must be suitably fused, grounded, and protected with the correct voltage. Use of a ground-fault circuit interruptor (GFCI) is highly recommended. Any power source and lamp voltage conflict (misalignment) will permanently damage the UV-C lamp. Ensure to provide 115v to interlock and toggle switch.

1. Turn off and lock out all existing power to unit.

IMPORTANT: Ensure that lamp is installed before power is applied. Installing lamp after power has been applied will trigger the “end-of-lamp-life circuit” and the lamp will fail to light. If this happens, shut off power for 10 seconds and then turn power back on. Lamp will then light.

2. Ultraviolet light may damage certain plastics. Wrap wires with conduit tubing (included)

⚠ CAUTION

Do NOT use any polyester or cotton filters in the cooling coil section when using ultraviolet light. Just as any other plastic exposed to UV light, they can be damaged. Replace any polyester or cotton filters with fiberglass-based filters.

Table 1 — UV-C Accessory Kit Usage and Contents

MODEL	SIZE	ACCESSORY PART NUMBER USAGE	CONTENTS
40RU	07-12	CRUVCKIT014A00	1- 36" Lamp 2- Bracket Mount 1- Wire Assy Blk 24" 1- Wire Assy Wht 24" 1- Bushing UV 14- No.10 Screws 4- 1/4" Screws 3- Wire Nut 2- Conduit 20" Long 1- Switch Assy (Pre-Wired) 1- Label Diagram 2- UVC Warning Label 1- UVC Access Label 1- Bulb RC Label 8- Wire Ties 1- Installation Instructions 1- Interlock Switch Kit
524J	07-12		
FAS/FHS	072-120		
40RU	14-30	CRUVCKIT015A00	1- 36" Lamp 1- 42" Lamp 2- Bracket Mount 1- Wire Assy Blk 24" 1- Wire Assy Wht 24" 1- Bushing UV 14- No.10 Screws 4- 1/4" Screws 3- Wire Nut 2- Conduit 20" Long 1- Switch Assy (Pre-Wired) 1- Label Diagram 2- UVC Warning Label 1- UVC Access Label 1- Bulb RC Label 8- Wire Ties 1- Installation Instructions 1- Interlock Switch Kit
524J	14-30		
FAS/FHS	150-336		

Table 2 — UV-C Lamp

ACCESSORY PART NUMBER	UVC LAMP NUMBER	LAMP MODEL	LENGTH (IN.)	WATTAGE
CRUVCKIT014A00	20000400	GTD 34 VO	34.4	98W
CRUVCKIT015A00	20000400	GTD 34 VO	34.4	98W
	20000500	GTD 40 VO	40.4	109W

UV-C Lamp Installation

⚠ CAUTION

Do not touch emitter glass without gloves. Damage to lamp may result. Oil from fingerprints will permanently etch the glass of the lamp and weaken the structure. Clean the lamp after handling with 99% isopropyl alcohol and a lint free cloth.

Perform the following procedure to install replacement UV-C lamps.

1. Locate and remove motor access panel.
2. Disconnect black, white and green wires from UVC fixture. Slide out the track UVC fixture and remove lamp.
3. Remove lamp from its packaging and align with fixture. Push the lamp in until seated. Rotate the lamp 90 degrees until one distinct click is heard.
4. Slide UVC fixture in the track and connect wires. Replace the access panel.

⚠ WARNING

UVC EXPOSURE HAZARD

For units in horizontal and vertical installation with open side return, use a barrier for UV-C light exposure in occupied spaces. (Not provided in kit.)

Failure to install barrier may cause serious eye and skin injury.

UV-C Fixture and Lamp Installation

1. Locate the motor access panel and alternative filter access, remove them for the UV-C installation. (See Fig. 2.)
2. Locate support brackets, attach them using provided self tapping 1/4 in. screws (4). See Fig. 3 for correct position on units without holes. See Table 1 and 2 for correct kit.
3. Locate track and install it using #10 screws (4). (See Fig. 4.)
4. For unit size 07-12 (072-120) locate UVC Light and install black, white and green 24 in. wires to the UVC leads with provided wire nuts. Use the bushing to protect against sharp edges. Slide the UVC Light into the track. (See Fig. 5 and Table 3).
5. For unit size 14-30 (150-336) locate the two UVC Light and connect them using the provided wires (black, white and green) and snap bushing. Connect the 24 in. wires to UVC leads. Slide the two UVC lights into the track. (See Fig. 6 and Table 3).

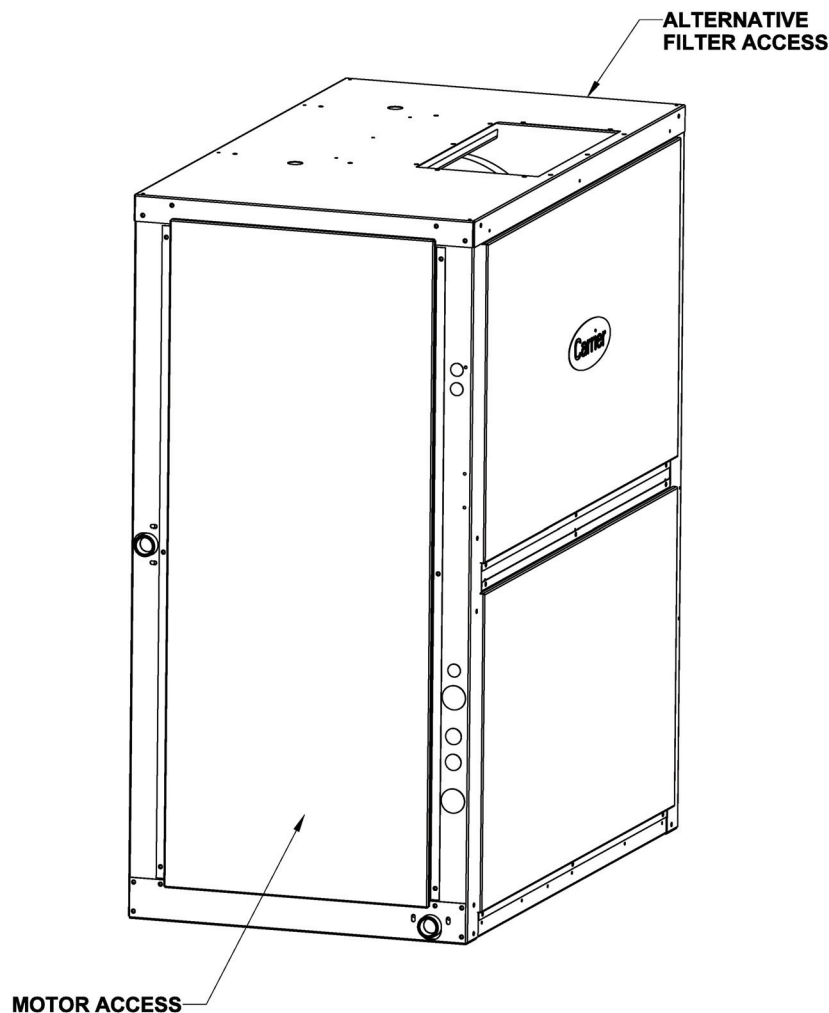


Fig. 2 — Unit Panel Locations

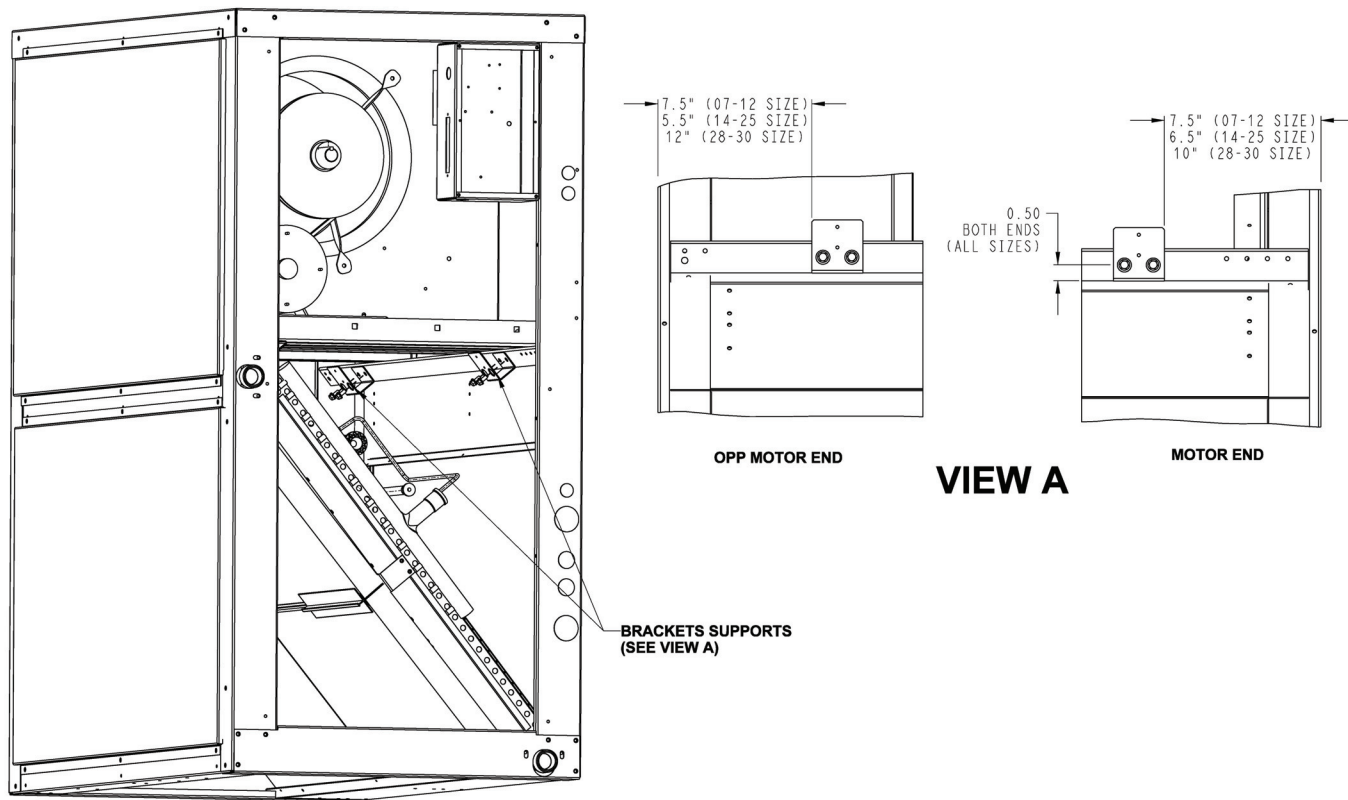


Fig. 3 — Support Brackets

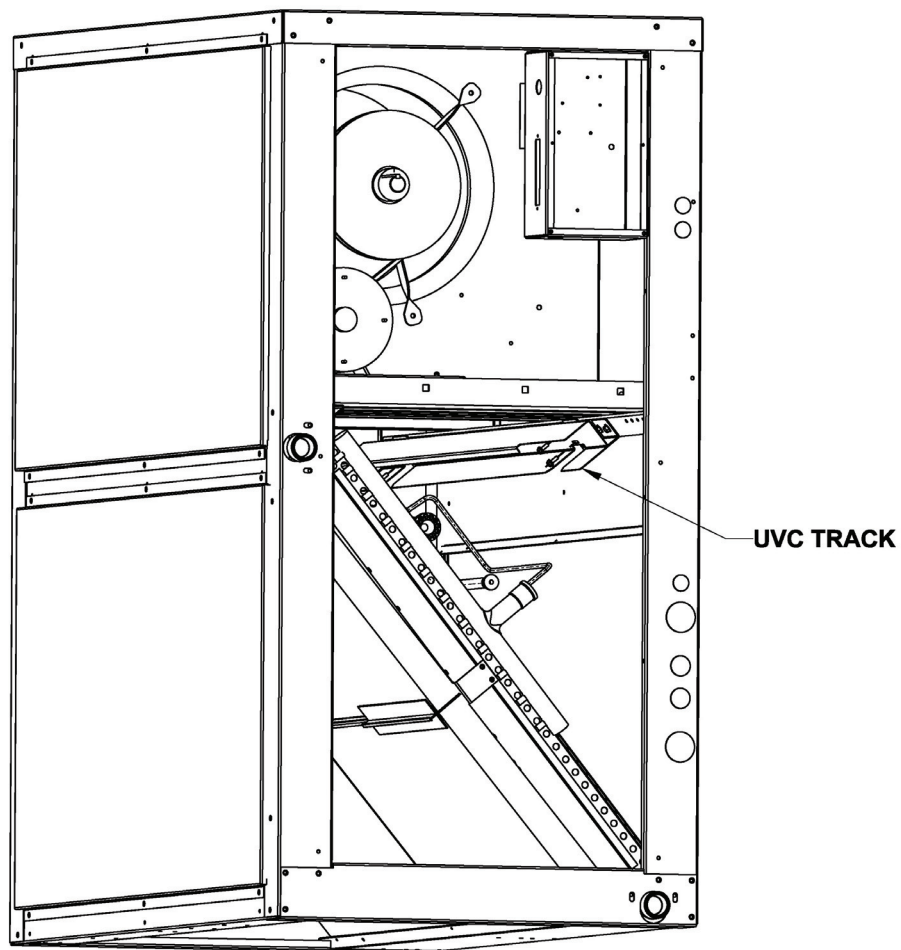


Fig. 4 — Track Location

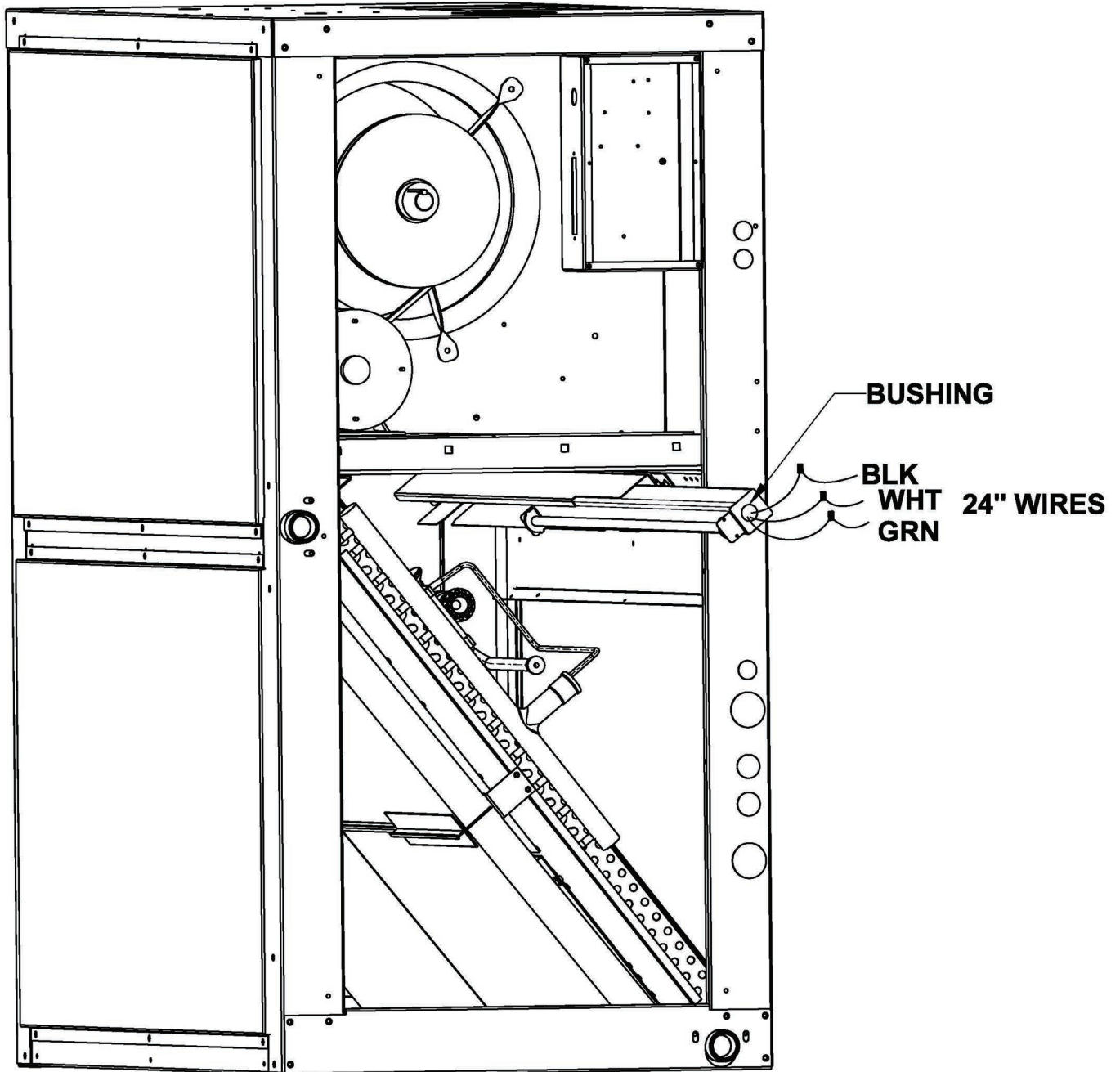


Fig. 5 — Wire Locations

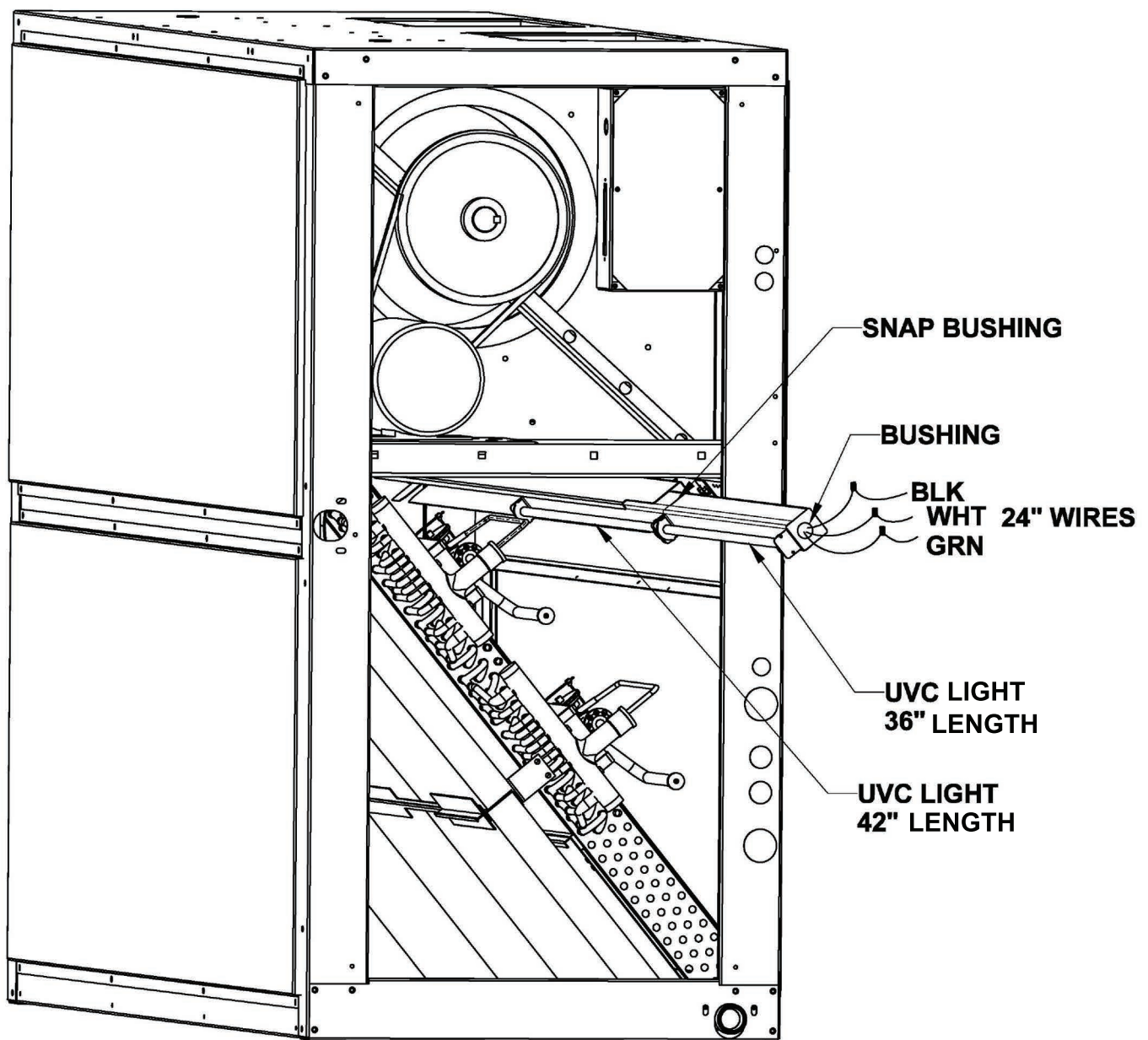


Fig. 6 — Wire Locations

UV-C Interlock Switch Installation

1. Locate the cover plate for Drainpan. Remove the two screws and install the cover plate. (See Fig. 7.)
2. Locate the two interlock switches and bracket, attach them to unit post using existing hole with 1/4 in. screw and self tapping screw. (See Fig. 8.)
3. Locate the pre-assembled on/off switch and install it using existing hole with 1/4 in. screw and two self tapping screws. (See Fig. 8.)
4. From pre-assembled on/off switch route black wire to interlock switch #2 and black wire to control box. Locate single black wire and connect to switch #2 to switch #. Add black wire from switch #1 to UVC Lamp. (See Fig. 9 and Table 3.)
5. From pre-assembled on/off switch route green/yellow wires to UVC Lamp and control box. (See Fig. 9.)
6. Locate single white wire and connect from UVC Lamp to control box. (See Fig 9.)
7. Use UV conduit provided to shield wires from direct exposure to UV-C light. Secure conduit with wire ties.
8. Place Warning, UVC Access and UVC Bulb Replacement and wiring diagram labels on access panel. (See Fig. 10.)
9. Place second warning label on opposite side access panel. (See Fig. 10.)

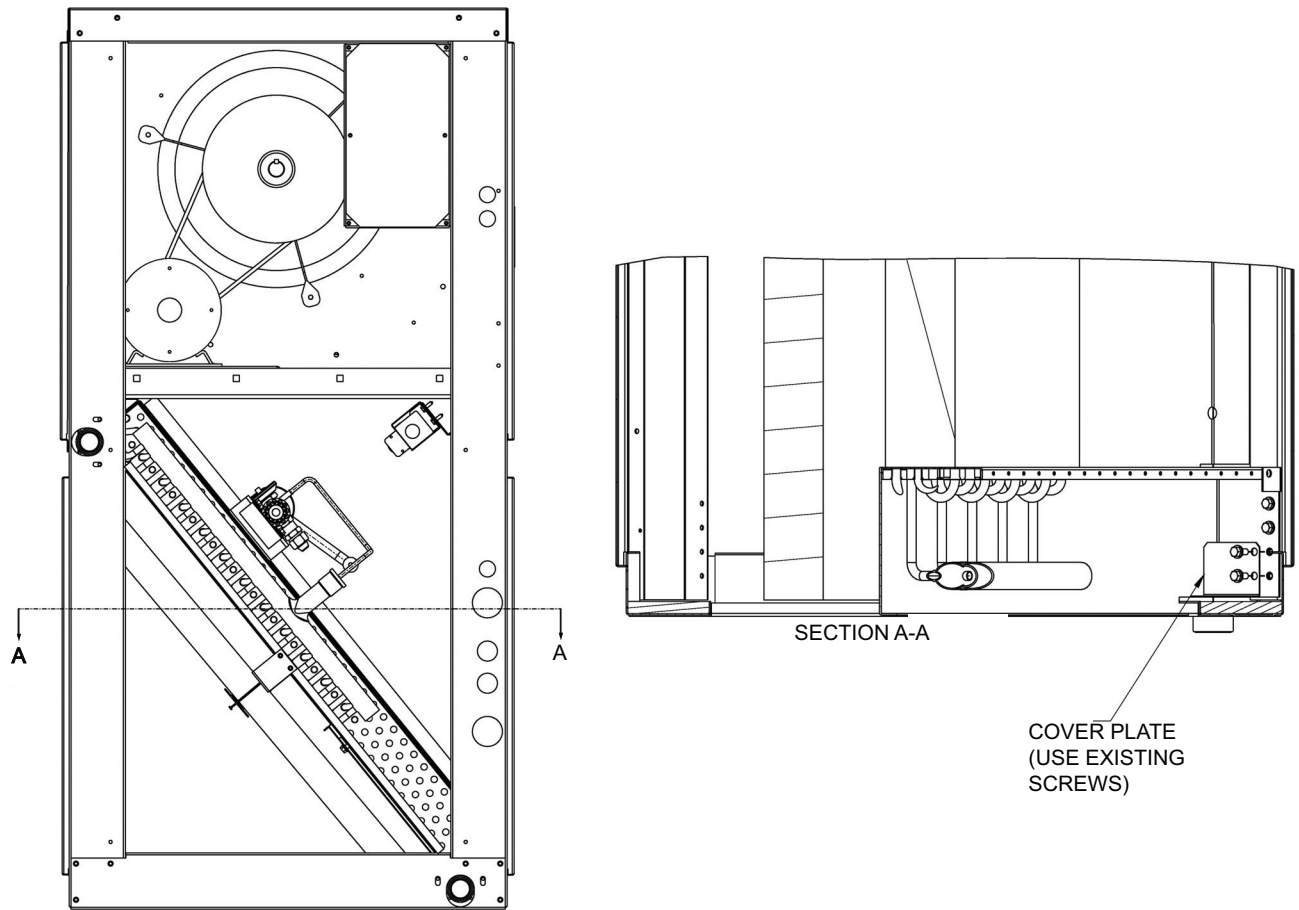


Fig. 7 — Cover Plate for DrainPan Location

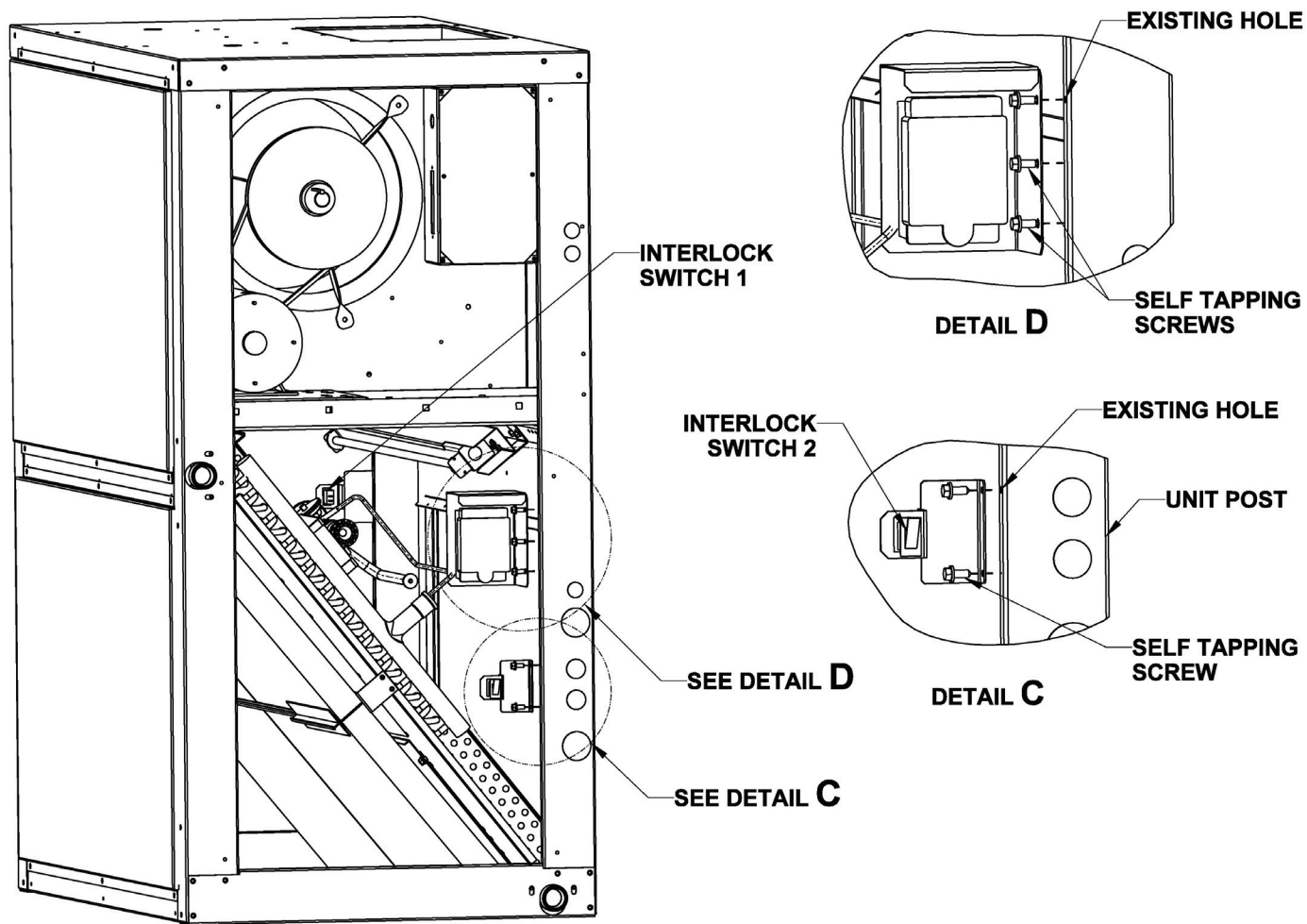


Fig. 8 — Interlock Switch and On/Off Switch

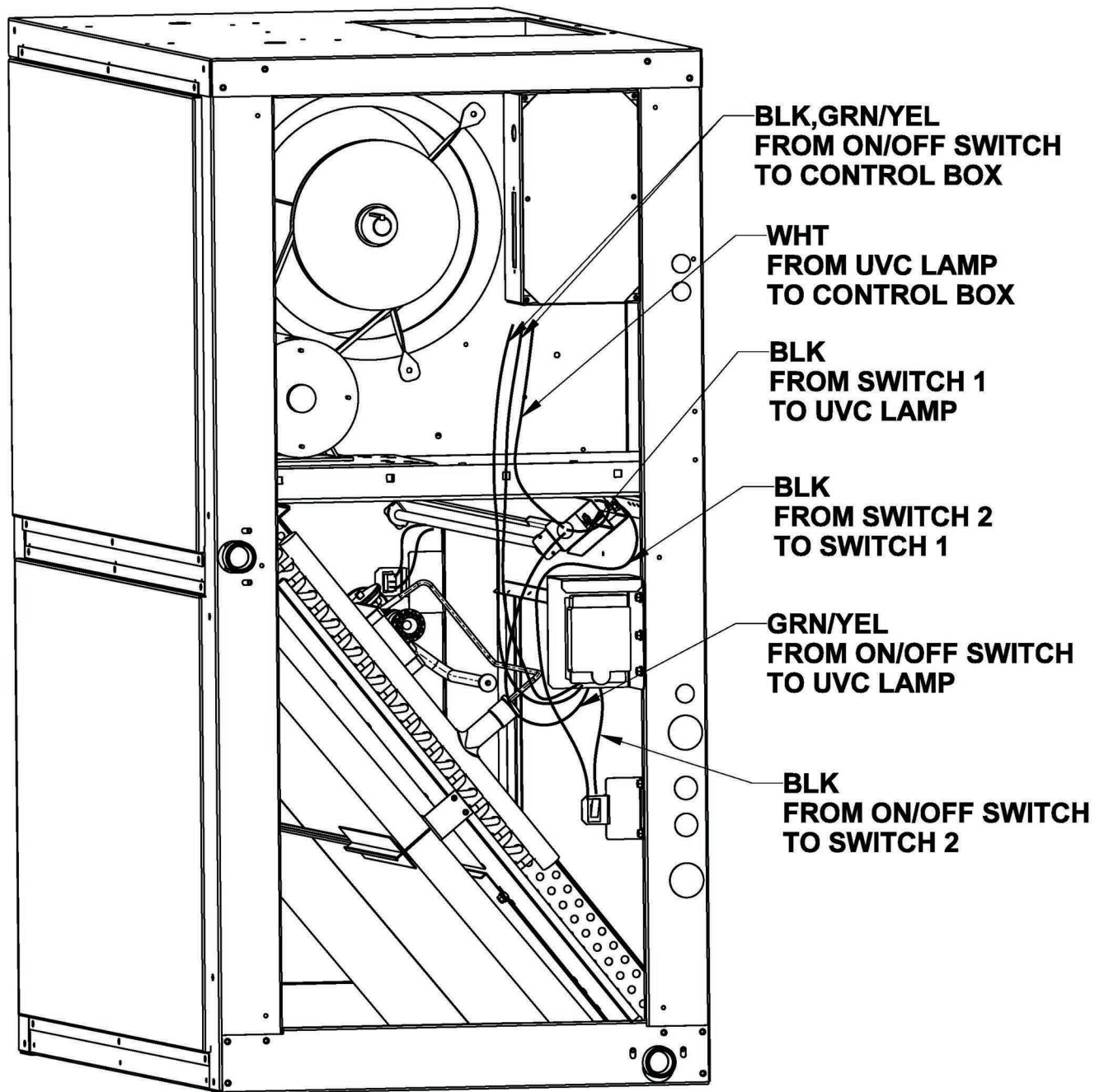
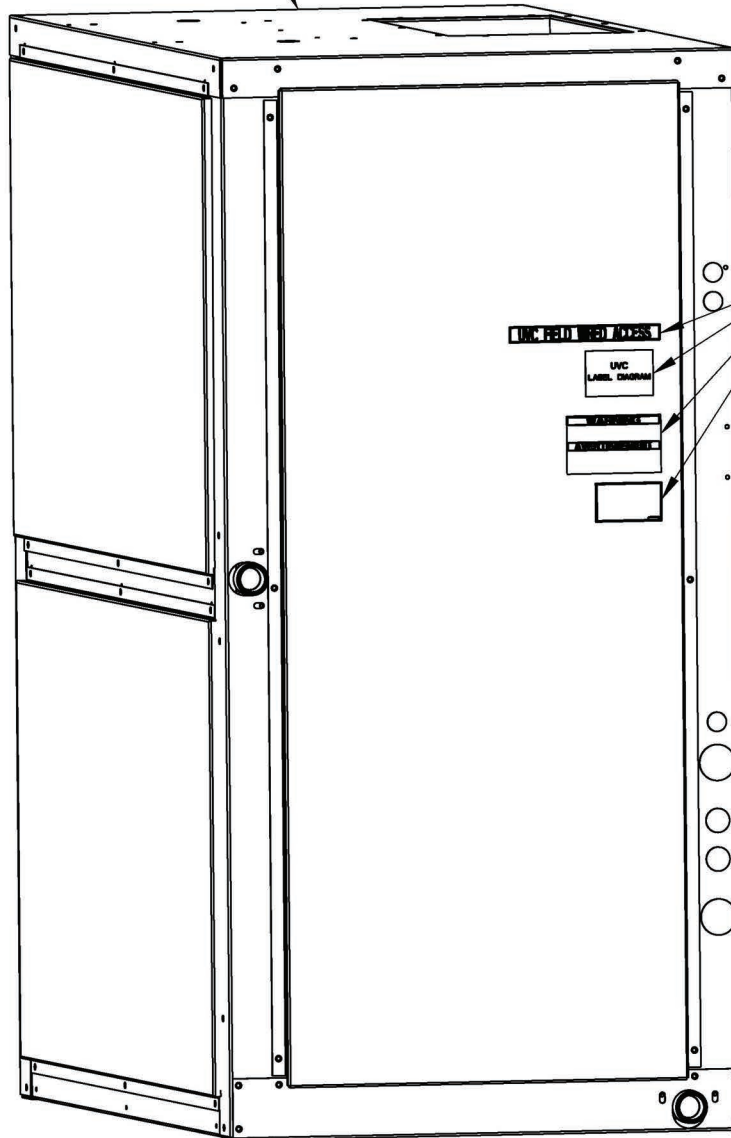


Fig. 9 — Wire Routing

**UVC WARNING LABEL
(OPPOSITE SIDE ACCESS)**



**UVC ACCESS LABEL
UVC LABEL DIAGRAM
UVC WARNING LABEL
UVC BULB RC LABEL**

Fig. 10 — Label Locations

Testing Lamp Kit

⚠ WARNING

Ensure safety equipment is being worn for UV-C lamp operational testing. **WEAR A FULL FACE MASK AND COMPLETE COVERAGE CLOTHING.** Exposure to UV-C lamps **WITHOUT** safety glasses and protective clothing is limited to 15 seconds in any 24-hour period.

1. Return power to UV-C section **ONLY** for lamp operation verification.
2. Verify the UV-C lamp glows in a blue hue when the switch box is in ON position and safety interlock switch is pressed.

3. Verify lamp de-energizes when the switch box is in OFF position or either safety panel interlock switch is in the extended, “panel open” position.
4. Turn off power when proper operation is verified. If lamp did not glow, check switch box wiring, safety panel interlock switches and lamp. (See Fig. 11.)
5. Turn on the switch box, close unit access panel and return all power to the unit. (See Fig. 11.)

Table 3 — Wiring

WIRING	COLOR
Power	Black
Neutral	White
Ground	Green

NOTE: Recommended type: No. 18 AWG (American Wire Gage), 105°C, TFFN (thermoplastic flexible fixture wire nylon jacketed), 3 conductor.



MAINTENANCE

Turn off and lock out ALL unit power before performing any maintenance or service.

Lamps need periodic replacement to maintain design specifications. Replace lamps after 1 year. For optimum performance, replace lamps at the beginning of each cooling season.

CAUTION

Use only specified high-output, low temperature lamps with this accessory. Use of a lower wattage or incorrect lamp can result in damage to the accessory or lamp. Correct lamps have a blue end cap.

Refer to Table 2 for ordering information on Carrier replacement lamps that can be safely used. Other lamps should not be substituted. Use of non-approved lamps will cause overheating of the lamp and power source.

OPERATION

Ultraviolet lamps should be operated continuously from a separate, dedicated, 115v power source. Lamps should not be connected to the indoor fan power source or any power source where the lamps would be cycled more than twice a day.

While lit, lamp color should be light blue. If lamp color changes to red or flickers, replace the lamp. Lamps that are not light blue or lamps exceeding 9000 hours of operation will not emit ultraviolet radiation.

Fiberglass filter media are recommended for operation of HVAC when filters are directly exposed to ultraviolet lamps. Polyester or cotton filters are subject to ultraviolet degradation and are not recommended.

TROUBLESHOOTING

Refer to Table 4 for troubleshooting information.

Table 4 — Troubleshooting

FAULT	SOLUTION
LAMP DOES NOT LIGHT	Turn off power for 10 seconds, and then turn power back on.
	Replace lamp with new unit. normal replacements recommended once per year.
	Check line voltage.
	Check wiring to lamp.
	Replace power supply.
LOW OUTPUT (RADIOMETER READING) OR VISIBLY WEAK LIGHT	Replace lamp with new unit.
	Check line voltage.
	Check wiring to lamp.
RED/ORANGE LIGHT	Check ambient temperature. if the temperature is at or below 35°F, lamp is too cold to operate properly.
	If ambient temperature is in excess of 35°F, follow actions for the low output fault.