

Installation Instructions

Part Numbers CRUVCKIT001A00 through CRUVCKIT006A00

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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 3-27.5 ton light commercial rooftop unit, and are pointed directly at the cooling coil and condensate pan. The minimum intensity irradiance is 200 uW/cm² across the coil surface above 50-100 uW/cm² recommended by ASHRAE, Chapter 62. (See Fig. 1.)

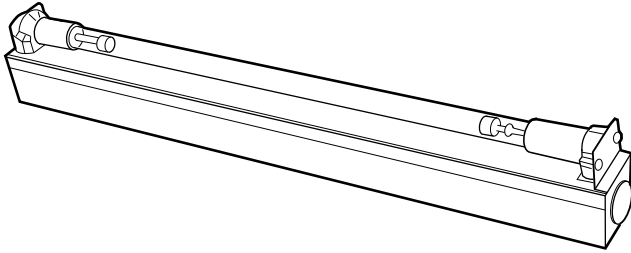


Fig. 1 — UV-C Lamp

The UV-C lamp kits can be ordered separately for field-installation (includes supports, switch, wiring and lamp). The kit will not fit with Humidi-Mizer® coil option. Refer to Table 1 for kit usage and contents. Refer to Table 2 for replacement lamp ordering information.

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

NOTE: A separate, dedicated, 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.

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 exposed plastic foam insulation with aluminum tape (included). 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
48/50FC	04-07	CRUVCKIT001A00	1-30" LAMP 2-BRACKET MOUNT 1-WIRE ASY BLK 24" 1-WIRE ASY WHT 24" 1-BUSHING UV 14-No. 10 SCREWS 4-1/4" SCREWS 1-No. 10 SELF-TAPPING SCREWS 2-WIRE NUT 2-CONDUIT 20" LONG 1-SWITCH ASSY (PRE-WIRED) 1-LABEL DIAGRAM 1-UVC WARNING LABEL 1-UVC ACCESS LABEL 1-BULB RC LABEL 8-WIRE TIES 1-INSTALLATION INSTRUCTIONS
48/50GC	04-06		
48/50JC	04-06		
582K/559K	04-07		
RGV/RAV	036-072		
581K/551K	04-06		
RGW/RAW	036-060		
48/50HC	04-06	CRUVCKIT002A00	1- 30"LAMP 2- BRACKET MOUNT 1- WIRE ASY BLK 24" 1- WIRE ASY WHT 24" 1- BUSHING UV 14-No. 10 SCREWS 4-1/4" SCREWS 2- WIRE NUT 2-CONDUIT 20" LONG 1- SWITCH ASSY (PRE-WIRED) 1- LABEL DIAGRAM 1- UVC WARNING LABEL 1- UVC ACCESS LABEL 1- BULB RC LABEL 8- WIRE TIES 1- INSTALLATION INSTRUCTIONS
48/50KC	04-06		
48/50TC	04-07		
48/50LC	04-06		
50HCQ	04-06		
50KCQ	04-06		
50TCQ	04-07		
580J/558J	04-07		
581J/551J	04-06		
582J/559J	04-06		
547J	04-06		
548J	04-07		
549J	04-06		
RGH/RAH	036-048		
RGS/RAS	036-072		
RGX/RAX	036-060		
RHH	036-060		
RHS	036-072		
RHX	036-060		
48/50HC	07-12	CRUVCKIT003A00	1- 36"LAMP 2- BRACKET MOUNT 1- WIRE ASY BLK 24" 1- WIRE ASY WHT 24" 1- BUSHING UV 14-No. 10 SCREWS 4-1/4" SCREWS 1-No. 10 SELF-TAPPING SCREWS 2- WIRE NUT 2-CONDUIT 20" LONG 1- SWITCH ASSY (PRE-WIRED) 1- LABEL DIAGRAM 1- UVC WARNING LABEL 1- UVC ACCESS LABEL 1- BULB RC LABEL 8- WIRE TIES 1- INSTALLATION INSTRUCTIONS
48/50TC	08-14		
48/50LC	07		
50HCQ	07-09		
50TCQ	08-12		
580J/558J	08-14		
581J/551J	07-12		
548J	08-12		
549J	07-09		
RGH/RAH	089-120		
RGS/RAS	089-150		
RHH	072-102		
RHS	089-120		

Table 1 — UV-C Accessory Kit Usage and Contents (cont)

MODEL	SIZE	ACCESSORY PART NUMBER USAGE	CONTENTS
48/50HC	14	CRUVCKIT006A00	1- 36"LAMP 2- BRACKET MOUNT 1- SWITCH BRACKLET 2- INTERLOCK SWITCH 1- WIRE ASY BLK 24" 1- WIRE ASY WHT 24" 1-BUSHING UV 14-No. 10 SCREWS 4-1/4" SCREWS 1-No. 10 SELF-TAPPING SCREWS 2-WIRE NUT 2-CONDUIT 20"LONG 1-SWITCH ASSY(PRE-WIRED) 1-LABEL DIAGRAM 1-UVC WARNING LABEL 1-UVC ACCESS LABEL 1-BULB RC LABEL 8-WIRE TIES 1-INSTALLATION INSTRUCTIONS
48/50LC	08-12		
48/50TC	16		
50HCQ	12		
50TCQ	14		
580J/558J	16		
581J/551J	14		
548J	14		
549J	12		
RGH/RAH	150		
RGS/RAS	180		
RHH	120		
RHS	150		
48/50HC	17-28	CRUVCKIT004A00 (VERTICAL)	1-42" LAMP 1- BRACKET MOUNT 1-WIRE ASY BLK 24" 1-WIRE ASY WHT 24" 1- BUSHING UV 14- No. 10 SCREWS 4- 1/4' SCREWS 2-WIRE NUTS 6- No. 10 SELF-TAPPING SCREWS 1-SWITCH ASSY(PRE-WIRED) 1-LABEL DIAGRAM 2-UVC WARNING LABEL 1-UVC ACCESS LABEL 1-BULB RC LABEL 8-WIRE TIES 1-ALUMINUM TAPE 1- INSTALLATION INSTRUCTIONS
48/50LC	14-26		
48/50TC	17-30		
50TCQ	17-24		
581J/551J	17-28		
580J/558J	17-30		
RGH/RAH	181-303		
RGS/RAS	210-336		
RHS	181-243		
48/50HC	17-28	CRUVCKIT005A00 (HORIZONTAL)	1-42" LAMP 1- BRACKET MOUNT 1-WIRE ASY BLK 24" 1-WIRE ASY WHT 24" 1- BUSHING UV 14- No. 10 SCREWS 4- 1/4' SCREWS 2-WIRE NUTS 6- No. 10 SELF-TAPPING SCREWS 1-SWITCH ASSY(PRE-WIRED) 1-LABEL DIAGRAM 2-UVC WARNING LABEL 1-UVC ACCESS LABEL 1-BULB RC LABEL 8-WIRE TIES 1-ALUMINUM TAPE 1- INSTALLATION INSTRUCTIONS
48/50LC	14-26		
48/50TC	18-29		
50TCQ	17-24		
581J/551J	17-28		
580J/558J	18-29		
548J	17-24		
RGH/RAH	181-303		
RHS	181-243		

Table 2 — UV-C Lamp

ACCESSORY PART NUMBER	UVC LAMP NUMBER	LAMP MODEL	LENGTH	WATTAGE
CRUVCKIT001A00 CRUVCKIT002A00	20000300	GTD 28 VO	28.4"	84W
CRUVCKIT003A00	20000400	GTD 34 VO	34.4"	98W
CRUVCKIT004A00 CRUVCKIT005A00	20000500	GTD 40 VO	40.4"	109W
CRUVCKIT006A00	20000400	GTD 34 VO	34.4"	98W

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 indoor section panel/door and top cover. Remove or open the panel and top cover to access the cooling coil section.
2. Remove lamp from its packaging and align with a fixture fastened to an angle support. Push the lamp in until seated. Rotate the lamp 90 degrees until one distinct click is heard.
3. Replace or close the access panel and top cover.

UV-C Fixture and Lamp Installation (Sizes 04-16)

1. Locate and remove the Indoor Blower Panel or Hinged door. (See Fig. 2.)
2. Remove Control Box Access Panel. (See Fig. 2.)
3. Remove the top cover with outdoor motors and grilles. (Motor's harness may be disconnected from Control Box for safety) (See Fig. 2.)
4. Locate support brackets and UVC fixture/lamp, attach them using provided $\frac{1}{4}$ in. screws (4). See Fig. 3 for correct use of holes depending on unit size.
5. Locate and install black/white 24 in. wires to UVC leads with provided wire nuts. Use the bushing to protect against sharp edges. (See Fig. 3.)
6. Locate the indoor coil tube sheets and install the UVC fixture with supports with #10 screws provided. See Fig. 4 for correct hole location.

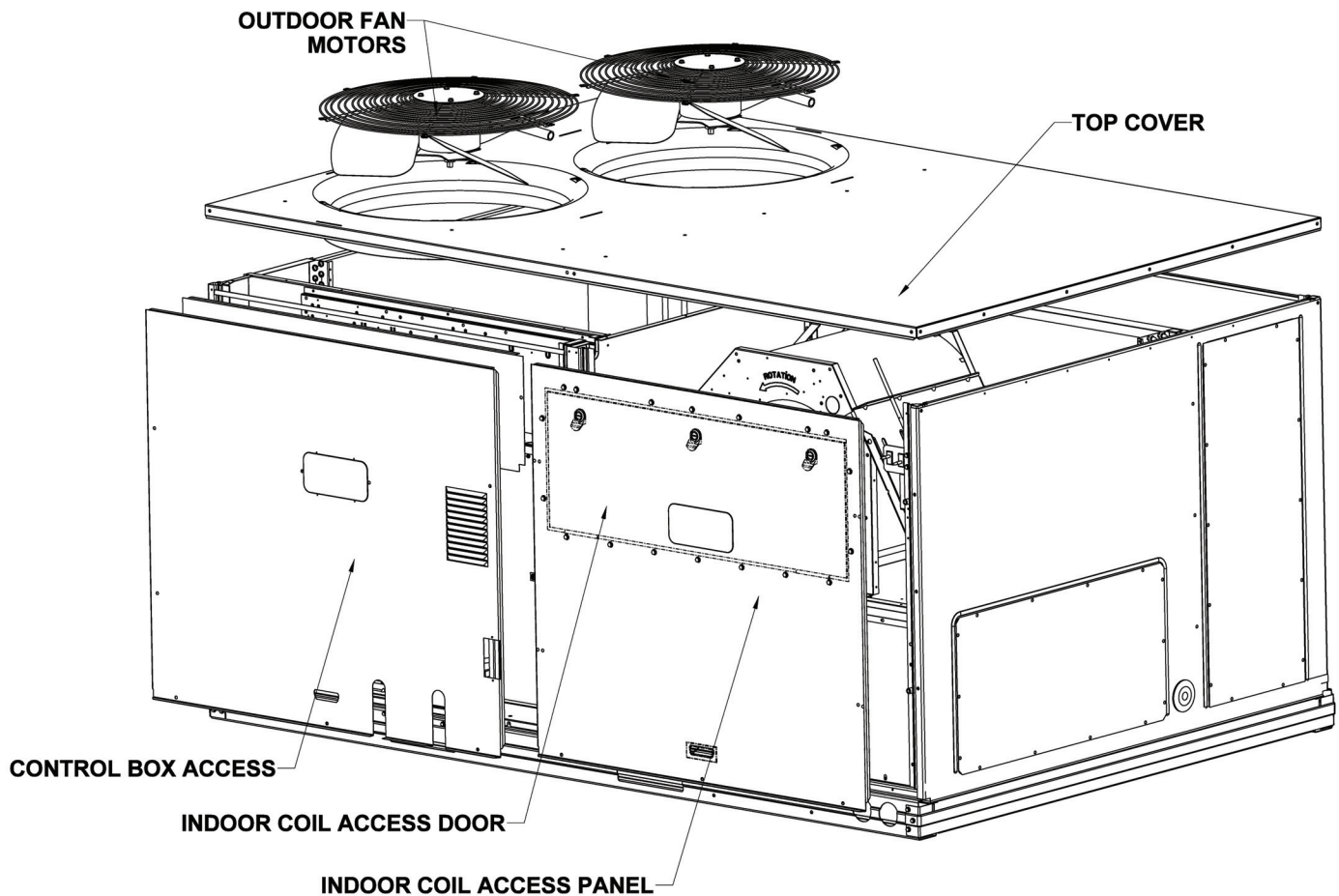


Fig. 2 — Unit Panels and Door Locations

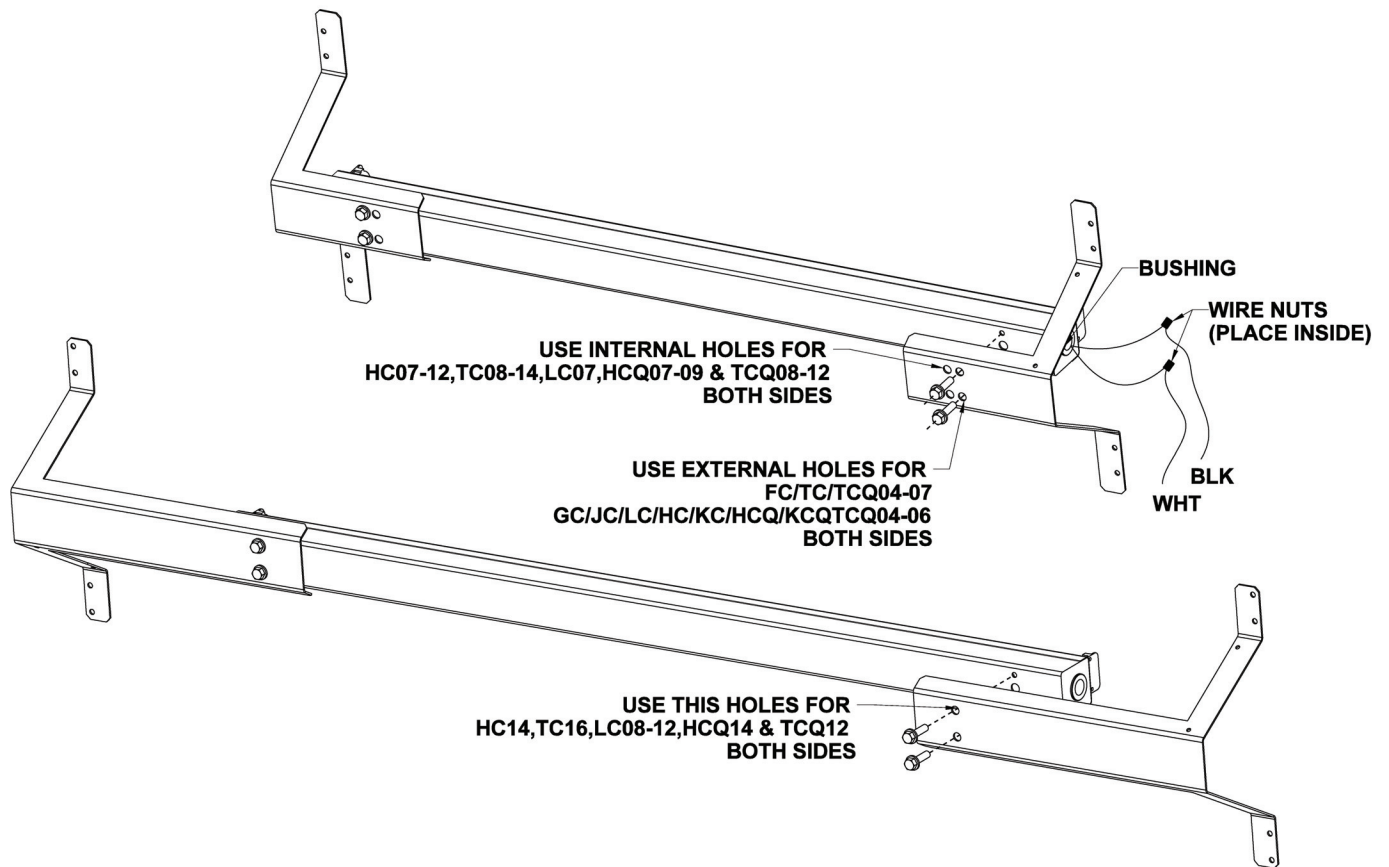


Fig. 3 — Support Brackets

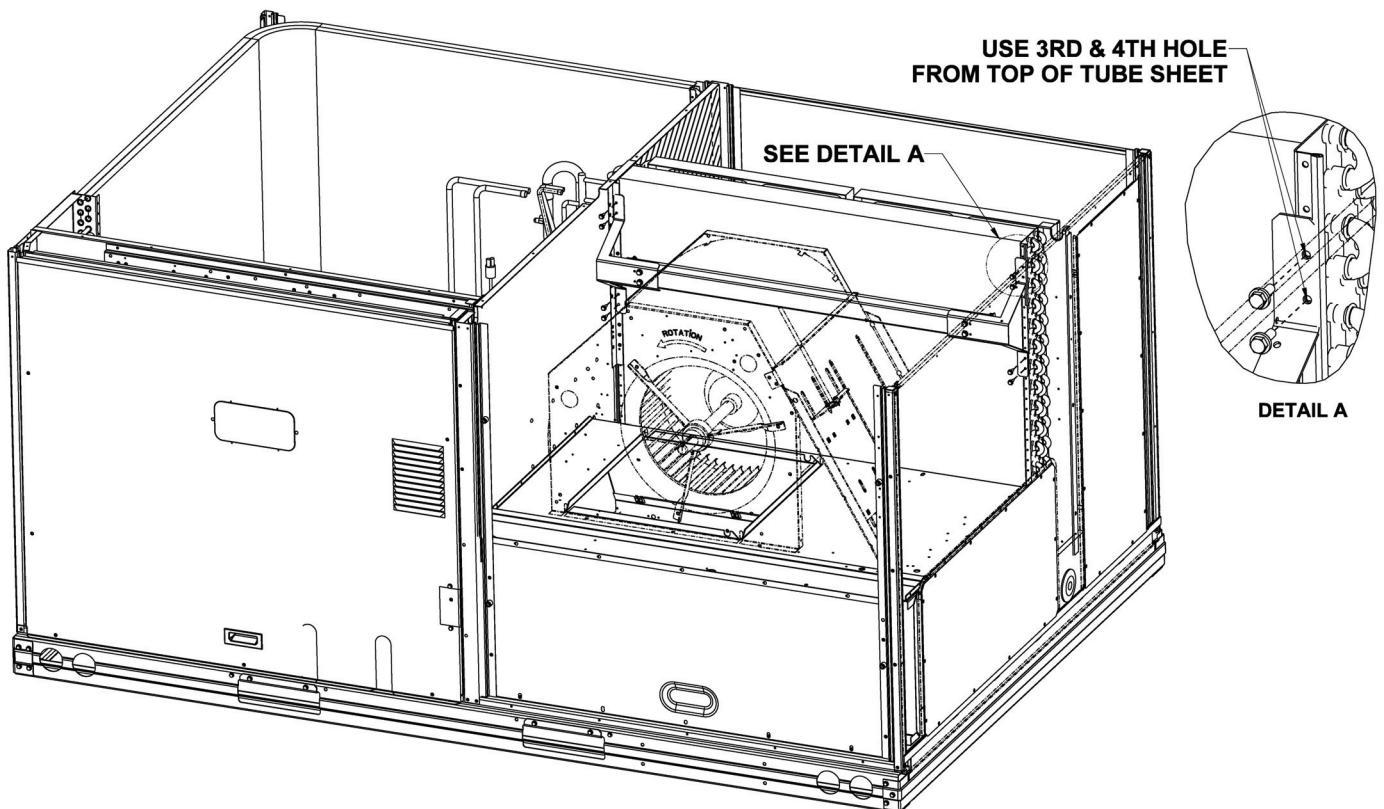
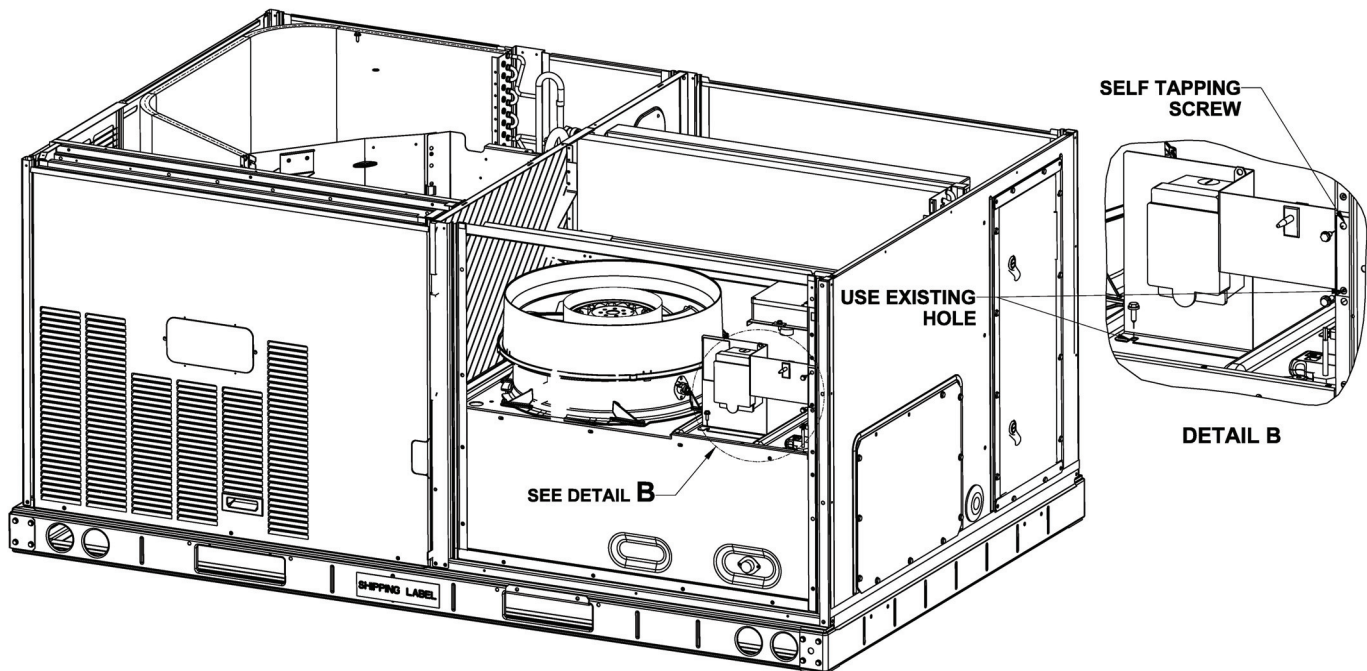


Fig. 4 — Hole Locations

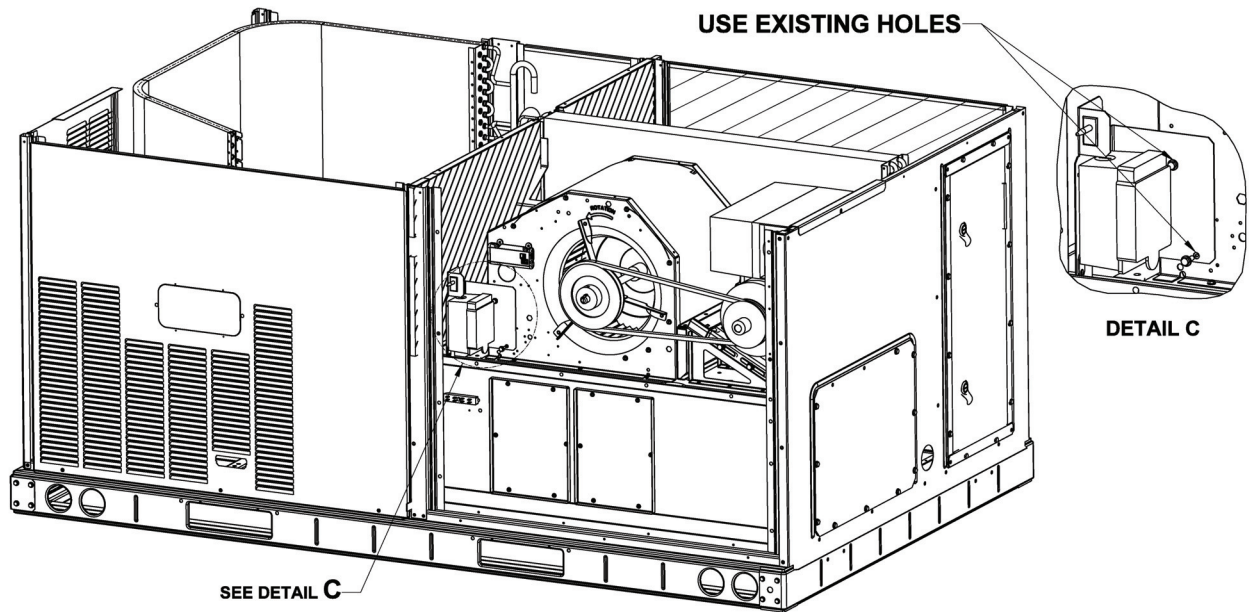
UV-C Interlock Switch Installation (Sizes 04-16)

1. Locate the pre-assembled interlock switch and on/off switch and install it according to Fig. 5-9. Use #10 screws provided.
2. Connect black wire from UVC fixture to the free pin of the interlock switch.
3. For 2 switch units connect the black wire from the UVC fixture to interlock switch 1. Locate the additional black wire and connect it from the interlock switch 1 to the free pin of switch 2. (See Fig. 9.)
4. Route black, white and green wires from the on/off switch and white wires from UVC light through existing wires bundle to the Control Box. Secure the wires with provided wire ties. (See Fig. 10.)
5. Use UV conduit provided to shield wires from direct exposure to UV-C light. (See Fig. 10.)
6. Connect Outdoor Fan Motors per electrical diagram before installing the top cover.
7. Place Warning (on each access panels for two switch units), UVC Access and UVC Bulb Replacement Labels in the hinged door or access panel for indoor coil section. (See Fig. 11.)
8. Place UVC Wiring Diagram label into control box cover. (See Fig. 11.)

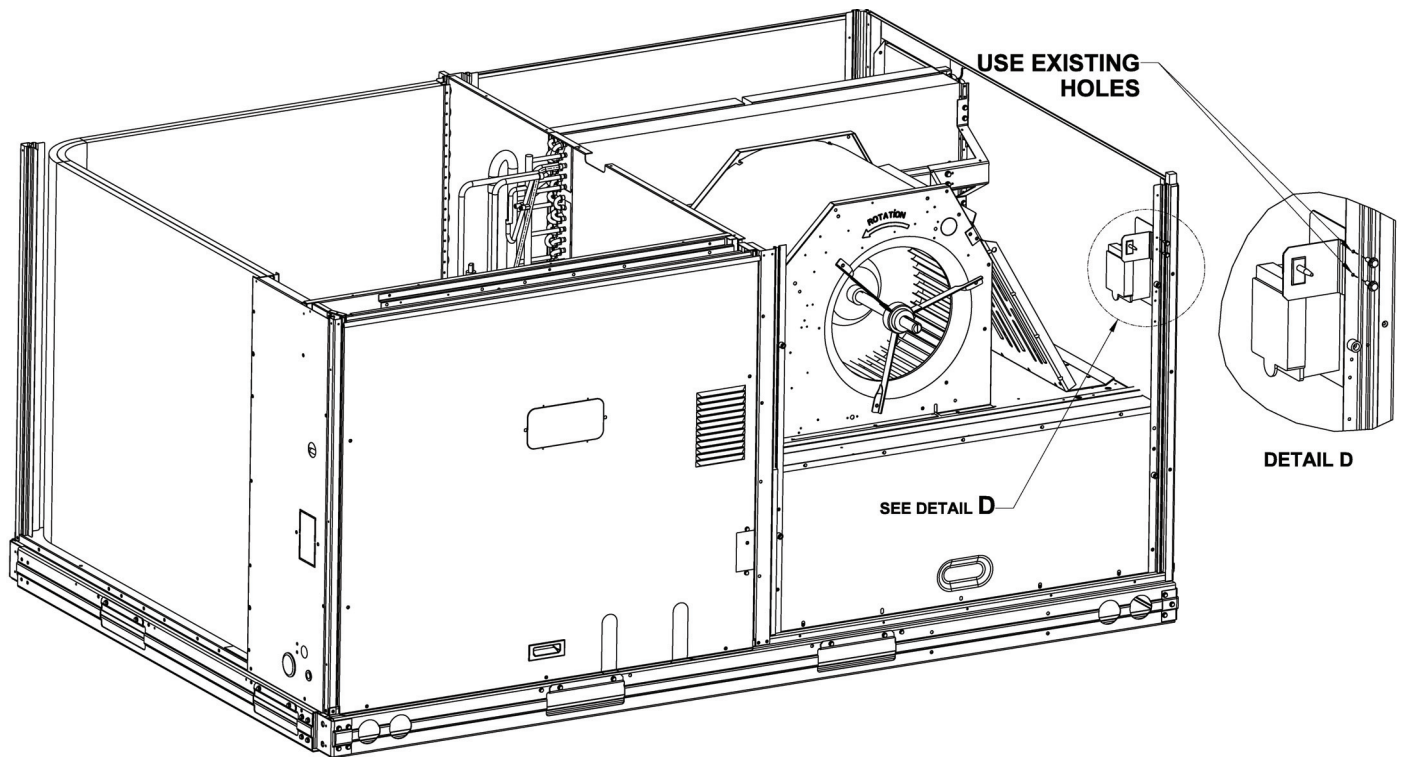
IMPORTANT: Separate high and low voltage. Failure to do so could result in equipment malfunction.



**Fig. 5 — Interlock Switch and On/Off Switch
FC/JC/GC (Size 04-07)**



**Fig. 6 — Interlock Switch and On/Off Switch
LC/HC/TC/KC (Size 04-07)**



**Fig. 7 — Interlock Switch and On/Off Switch
LC/HC/TC/KC (Size 07-14)**

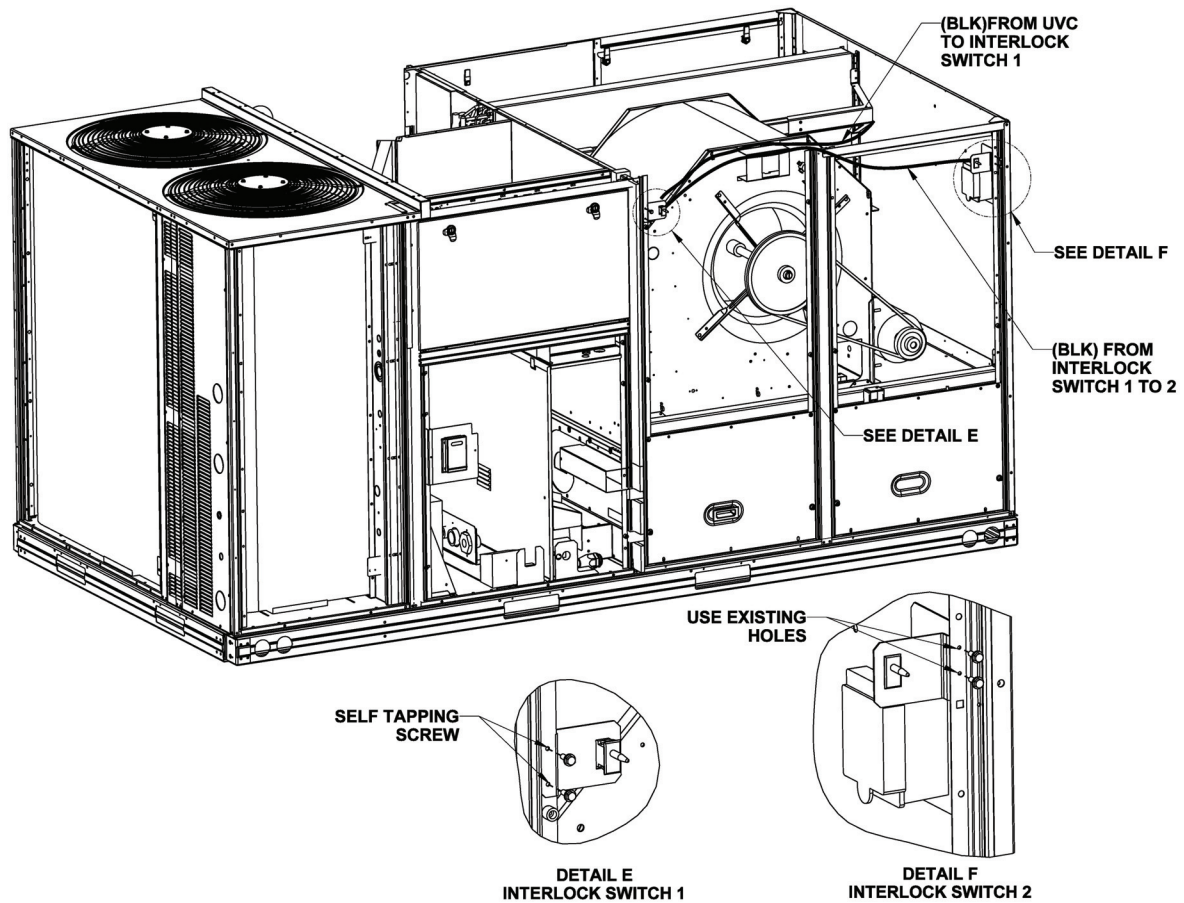


Fig. 8 — Interlock Switch and On/Off Switch (2 Switch Units)

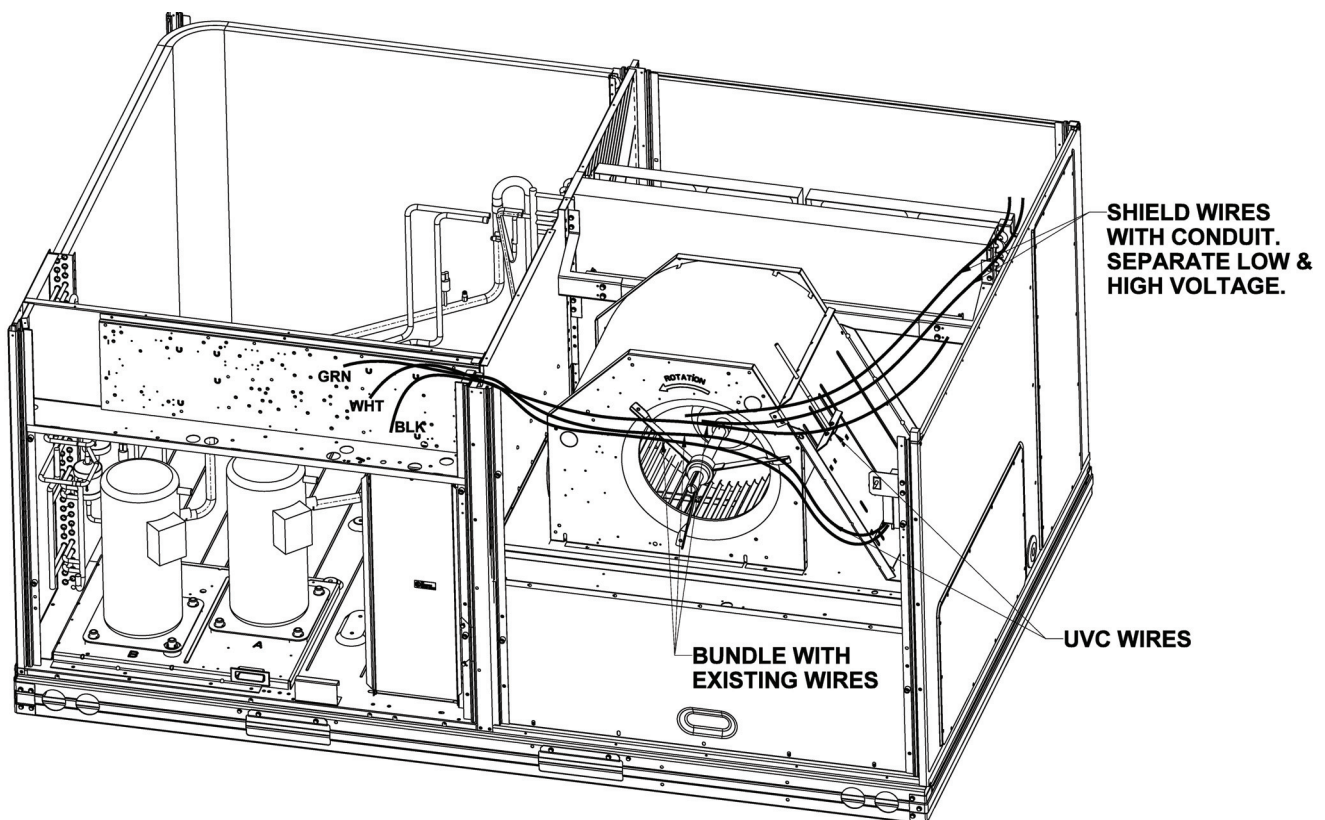


Fig. 9 — Wire Locations

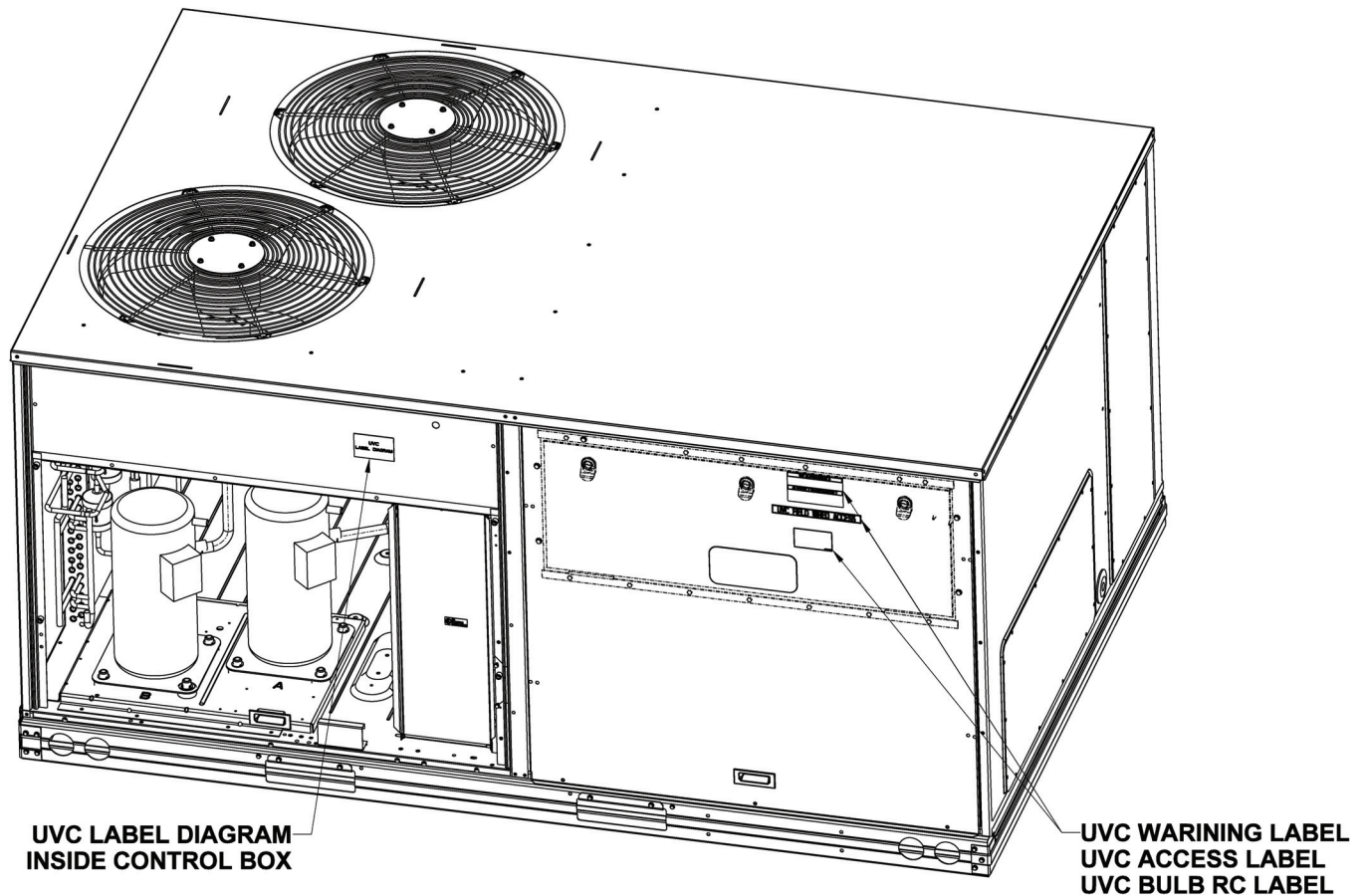


Fig. 10 — Label Locations

UV-C Fixture and Lamp Installation (Size 17-30)

1. Locate the Access Panel/Hinged Door and Rear Access for the Indoor Blower Section and Top Cover to remove/open correspondingly. (See Fig. 11.)
2. Remove the Blower Support near the Evaporator Coil. (See Fig. 12.)
3. Locate UVC Support Bracket and join it with self-tapped screws provided to the Blower Support as shown in Fig. 13 and 14. Alternatively drill the holes using the UVC Support as a template. Do not maintain attached the supports.
4. Install the Blower Support with the new holes (1), attach the UVC light to the UVC support (2), install the sub-assembly of the UVC/Support to the Blower Support (3) with wires facing the Motor Blower. (See Fig. 15.)
5. Locate and install black/white 24 in. wires to UVC leads with provided wire nuts. Use the bushing for protecting sharp edges. (See Fig. 15.)

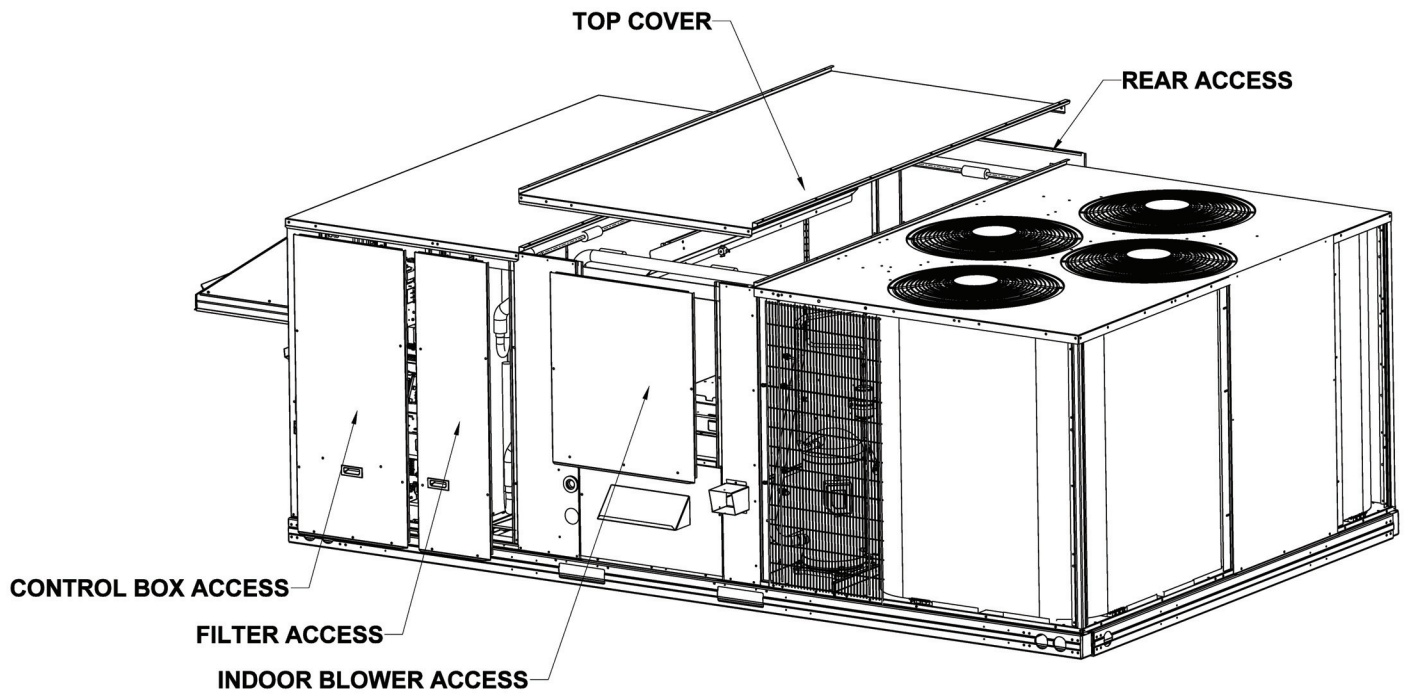


Fig. 11 — Access Locations

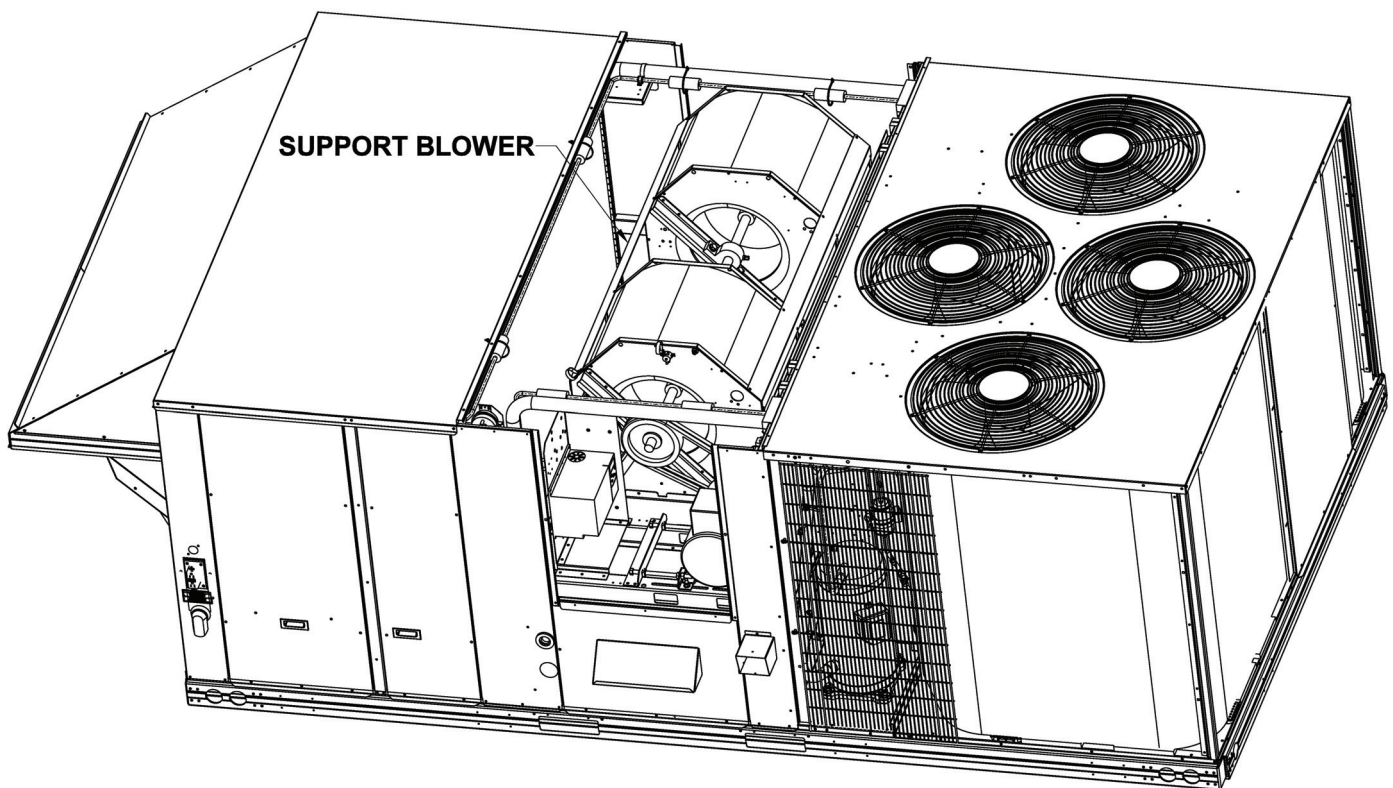


Fig. 12 — Support Blowers

**HOLES TO DRILL OR
USE SELF-TAPPED SCREWS
(VERTICAL SUPPLY UNIT)**

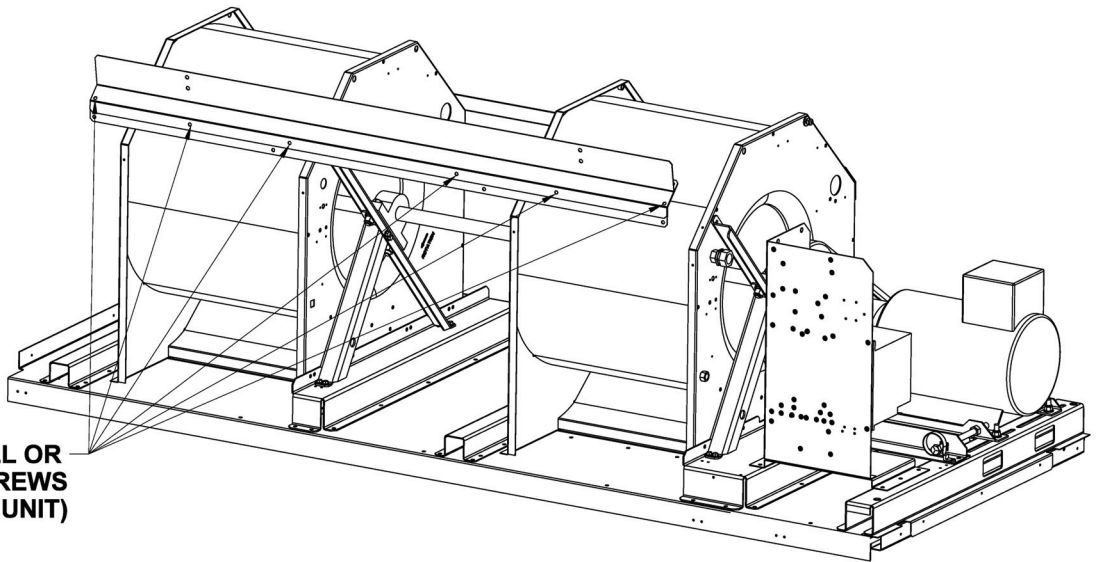


Fig. 13 — Vertical Supply Unit

**HOLES TO DRILL OR
USE SELF-TAPPED SCREWS
(HORIZONTAL SUPPLY UNIT)**

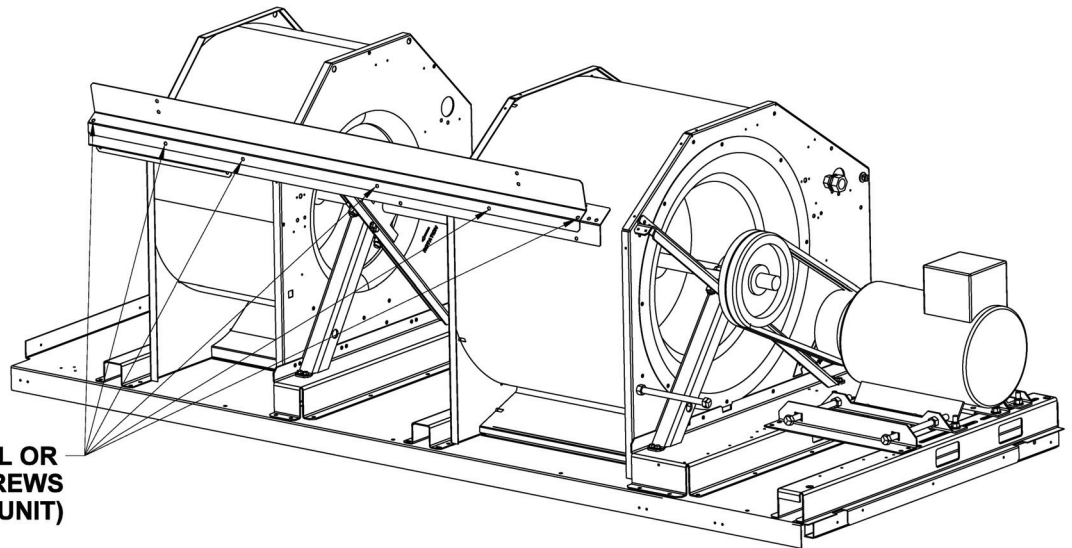


Fig. 14 — Horizontal Supply Unit

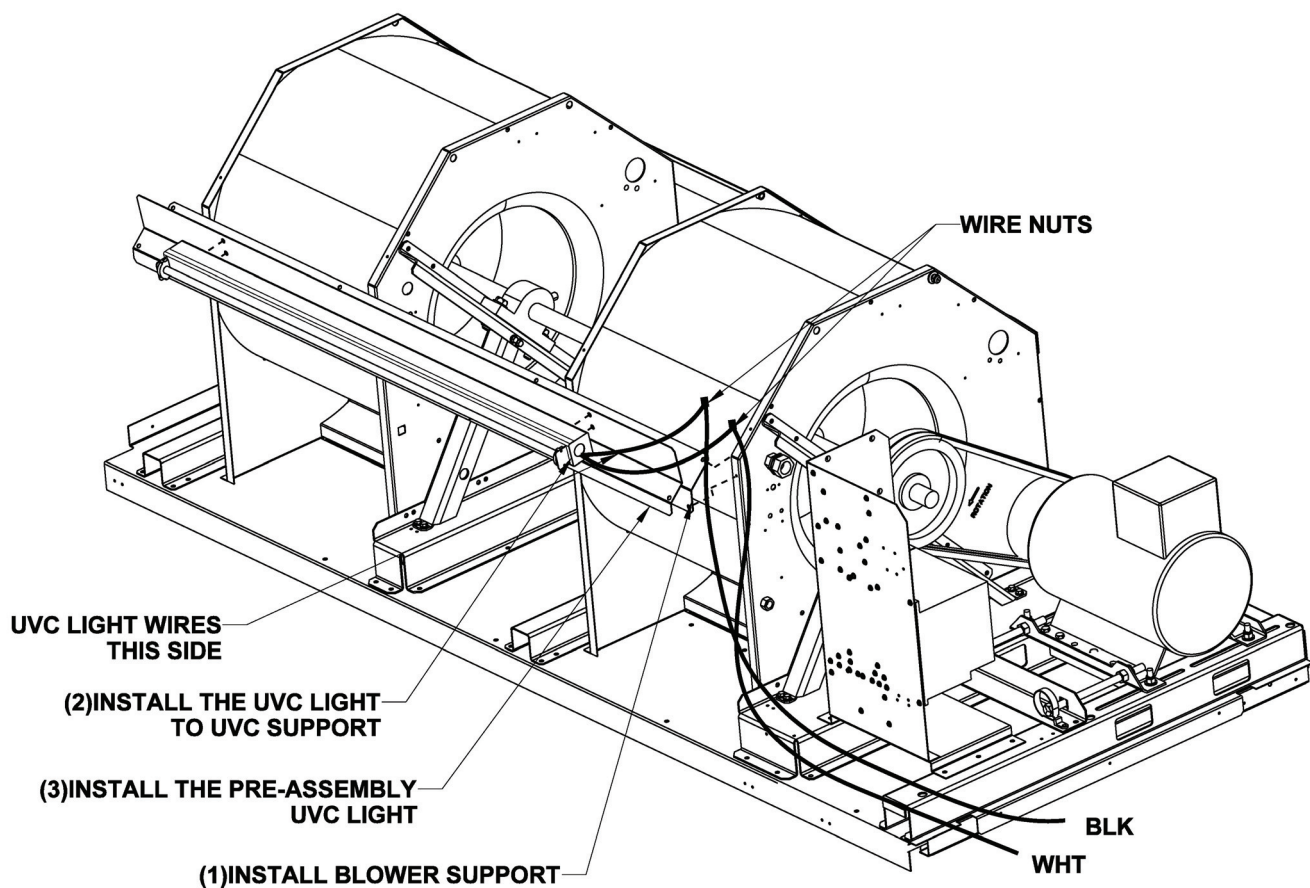


Fig. 15 — Blower Support Installation

UV-C Interlock Switch Installation (Size 17-30)

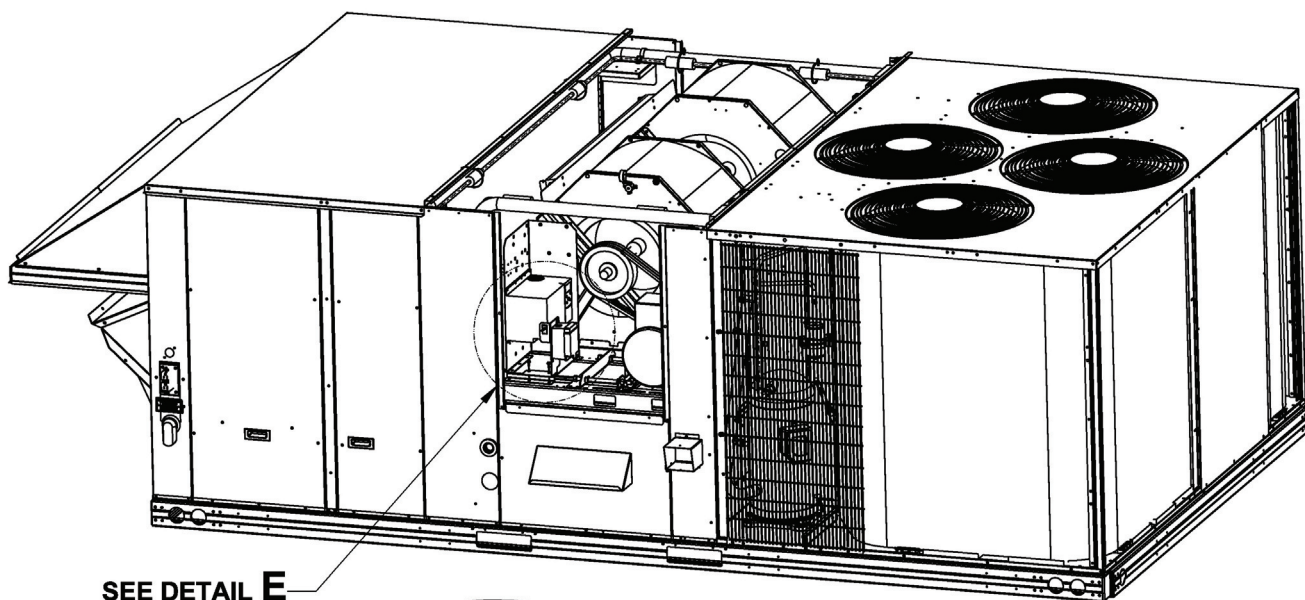
1. Locate the pre-assembled interlock switch and on/off switch and install it according to Fig. 16. Use #10 screws provided.
2. Connect black wire from UVC fixture to the free pin of the interlock switch. (See Table 3.)
3. Route black, white and green wires from the on/off switch and UVC light respectively through existing wires bundle to the Control Box. Secure the wires with provided wire ties. Remove filter access for routing. (See Fig. 17 and Table 3.)
4. Use aluminum tape provided to wrap insulation foam tubing. (See Fig. 17.)

5. Place Warning, UVC Access and UVC Bulb replacement labels in the hinged door or access panel for indoor coil section. (See Fig. 18.)
6. Place UVC Wiring Diagram label into control box cover. (See Fig. 18.)

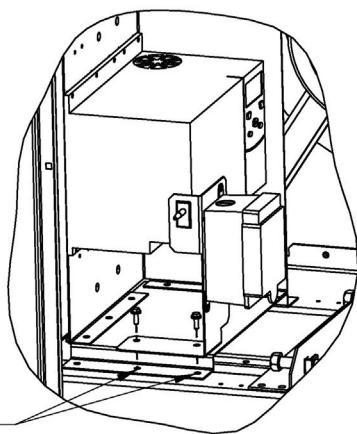
Table 3 — Wiring

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.



SEE DETAIL **E**



EXISTING HOLES

DETAIL E

Fig. 16 — Interlock Switch and On/Off Switch

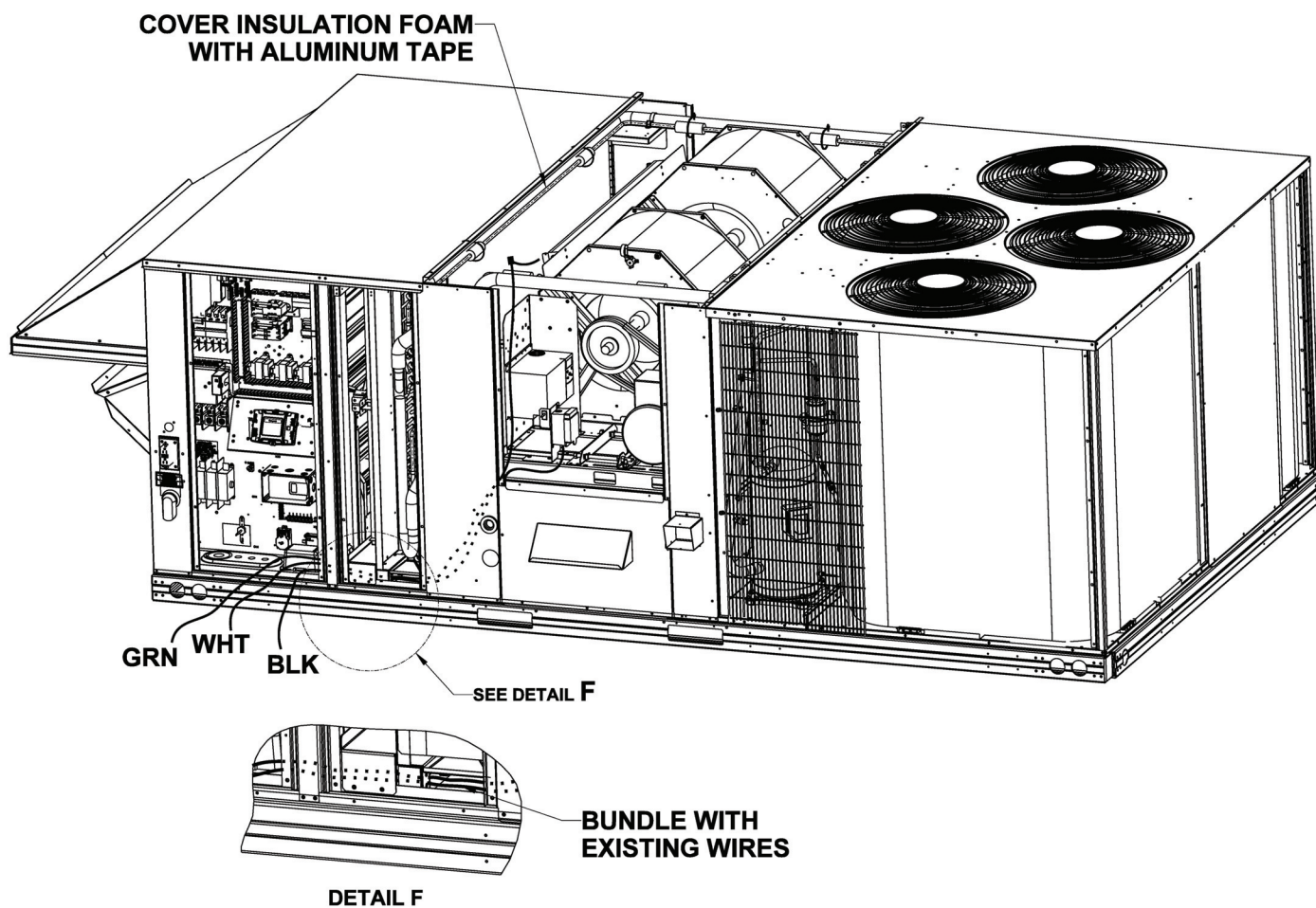


Fig. 17 — Control Box Wiring Location

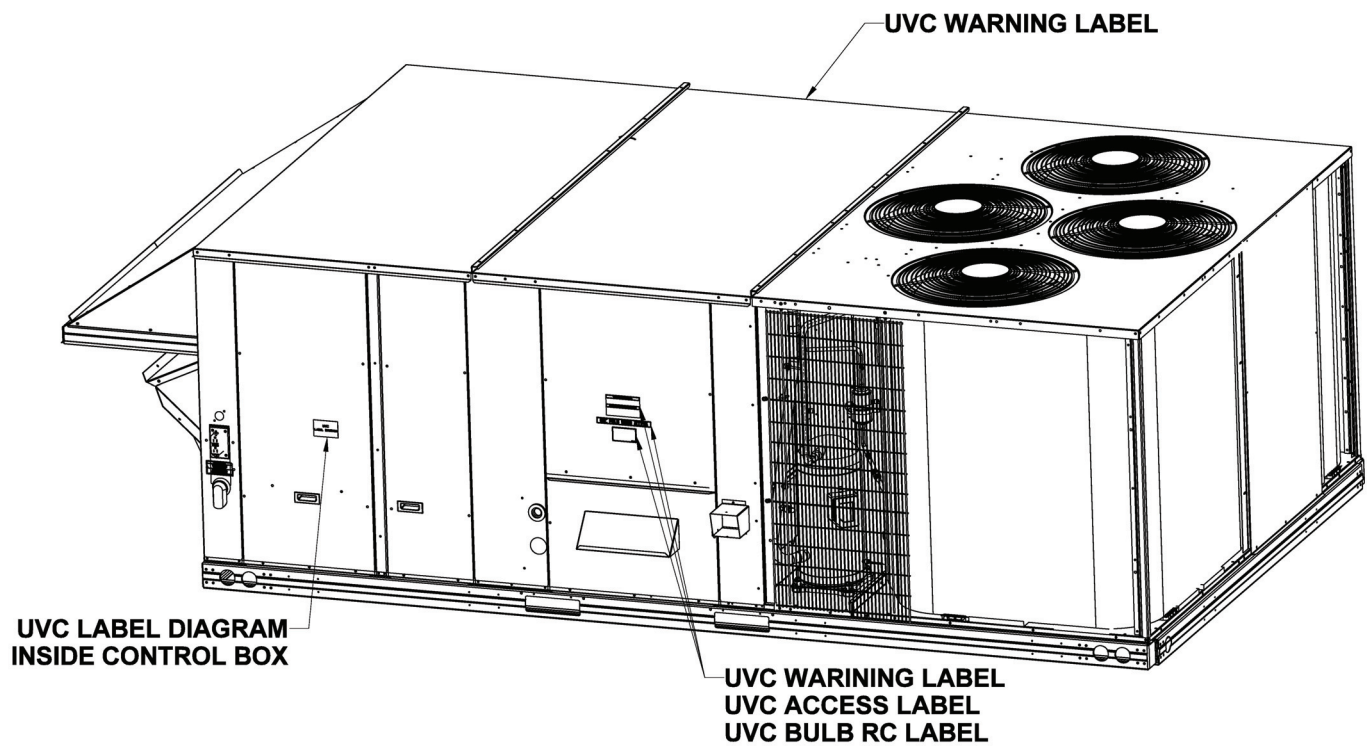


Fig. 18 — Label Locations

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. 19.)
5. Turn on the switch box, close unit access panel and return all power to the unit. (See Fig. 19.)

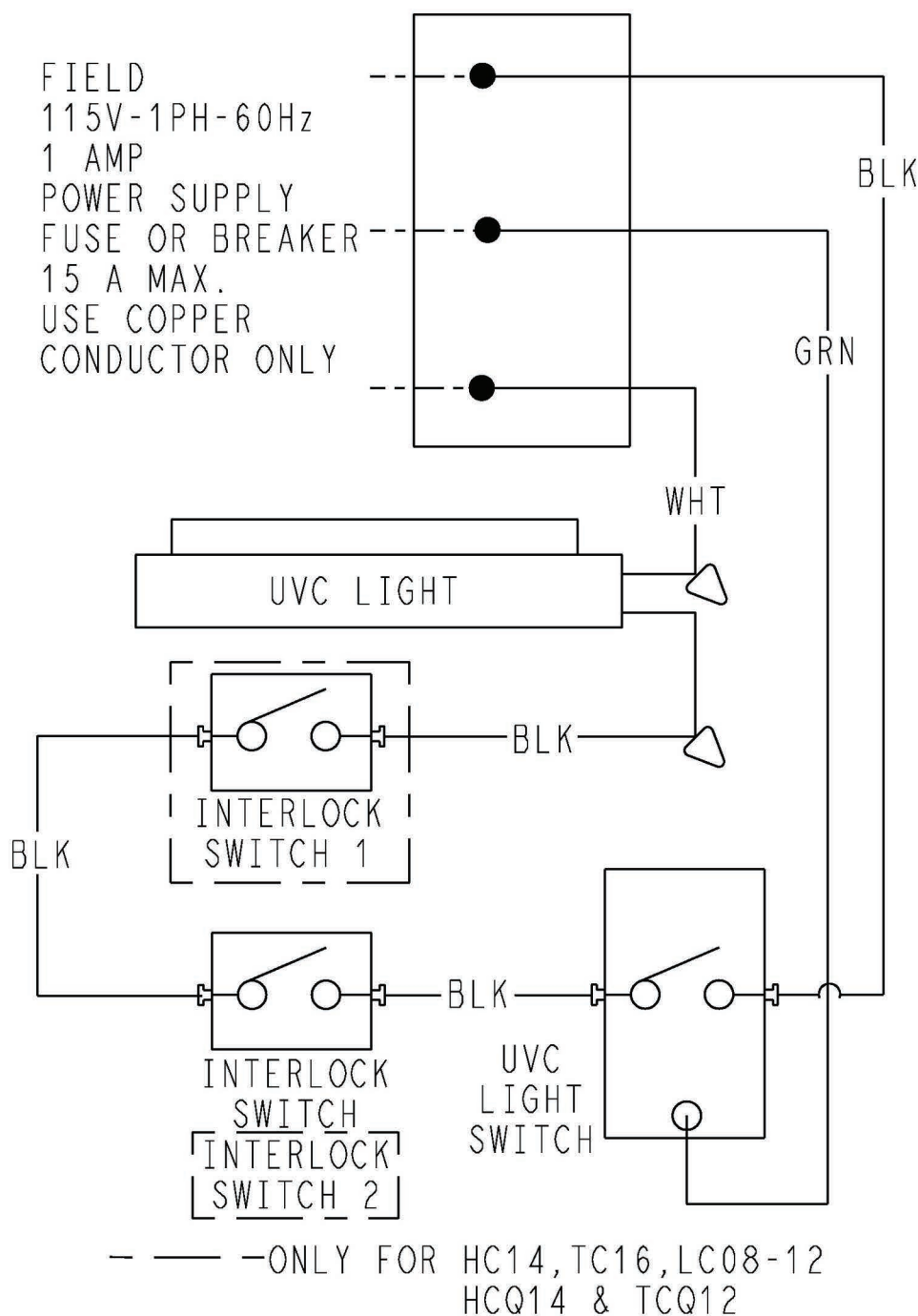


Fig. 19 — UV-C Section Wiring Diagram

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 Carrier replacement lamp ordering information 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 — Troubleshoot

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.

