



# Installation Instructions

Part Numbers 39MX40136001 through 39MX40136018 and 39MX40036125 through 39MX40036138 Used in Cooling Coil Sections

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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 such as changing lamps. All other operations should be performed by trained service personnel. When working on air-conditioning equipment, observe precautions in the literature, on tags and labels attached to the unit or accessory, and other safety precautions that may apply.

Follow all safety codes. Wear safety glasses that are marked to comply with ANSI (American National Standards Institute) Z87.1 standard and gloves.

### ⚠ 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. Select mounting locations that prevent exposure to vulnerable components. If mounting locations are limited, protect components with UV resistant material such as aluminum foil, aluminum duct tape, metallic shields, etc.

### ⚠ 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

If Emitters are broken, ventilate area where breakage occurred. Clean up with mercury vacuum cleaner or other suitable means that avoid dust and mercury vapor generation. Take usual precautions for collection of broken glass. Clean up requires special care due to mercury droplet proliferation. Place materials in closed containers to avoid generating dust.

NOTE: The health aspects associated with the use of this product and its ability to aid in disinfection of environment air have not been investigated by UL (Underwriters Laboratories).

### ⚠ WARNING

This equipment may contain a UV-C LAMP. Look for the UV-C warning on panels or doors before opening. Disconnect UV-C power before opening access doors, removing panels, or installing, maintaining, or servicing UV-C lamps or fixtures. Do not operate UV-C with open access doors or with panels removed. Do not operate UV-C outside of unit cabinet. Exposure to UV-C can cause harm to the eyes and skin. Review the UV-C lamp accessory installation instructions for details on installing, testing, and maintaining UV-C lamps.

## ⚠ CAUTION

Large fluorescent lamp users should manage spent lamps in accordance with federal and state disposal laws. The recycling of spent lamps is encouraged. For a list of recyclers, please visit [Lamprecycle.org](http://Lamprecycle.org).

## GENERAL

Carrier's commercial air handler ultraviolet lamp is designed to be installed inside the AHU cabinet. The high-output, low temperature UV-C lamps are installed in the cooling coil section of the 39M Series central station air-handling unit, and are pointed directly at the cooling coil and condensate pan.

Carrier's UV-C lamps have been specifically designed and optimized for 40 to 45°F, high-humidity operation in a moving air stream, inside an HVAC unit. The minimum intensity irradiance as new lamp is 450 uW/cm<sup>2</sup> across the coil surface above 50-100 uW/cm<sup>2</sup> recommended by ASHRAE, Chapter 62.

UV-C lamp installation requires a separate, dedicated source of power.

The 39M cooling coil section can be shipped with UV-C lamp fixtures factory installed or UV-C lamp kits can be ordered separately for field installation (includes supports, fixtures, wiring, and lamps). Refer to Table 1 for kit usage and contents. If any of the following items are needed, they must be field supplied and can be ordered from Carrier using Table 2.

- 1 — Switch box
- 1 — Junction box
- 2 — Interlock door switches with wiring (one for each door)

Refer to Tables 3 and 4 for replacement lamp ordering information. The type of replacement lamp can be determined by the color of the ring on the installed connectors. See Fig. 1 and 2. Connectors with a orange ring are the EGTS type and Table 3 should be used for ordering replacement bulbs. Connectors with a green ring are the GTS type and Table 4 should be used for ordering replacement bulbs.

## INSTALLATION

### Location

The UV-C lamps are installed downstream of the cooling coil. Vertical supports and horizontal channel supports with clips are provided to support the UV-C lamps. Refer to Fig. 3-13 and Tables 5-12 for proper lamp and mounting location. For proper wiring, refer to the wiring diagram shown in Fig. 14.

### Remove Shipping Assembly (Factory-Installed)

Remove the shipping assembly included in the separately shipped UV-C sections before making any field connections. The shipping assembly includes: protective shipping channel supports, shipping channel support braces, shipping covers, and section brace channel supports in the corners of the sections. The shipping channel support is mounted immediately upstream of the fixtures to block the fixtures from damage during shipping. The braces maintain clearance between the shipping channel supports and the fixtures to prevent the channel support from flexing into the fixtures.

### Before Installing UV-C Lamp Kit

A separate, dedicated, 120-v power source will need to be field-supplied and routed to the junction and switch boxes 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 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 and wiring with aluminum tape or metal conduit.

## ⚠ 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 Fixture and Lamp Kit Usage and Contents**

39M SIZE	KIT PART NUMBER 39MX	CONTENTS
03W	40136001	1 - Lamp
06W	40136002	2 - Vertical supports
08W	40136003	4 - No. 10 fastener sets
10W	40136004	1 - Channel supports
07T	40036132	8 - No. 10 X 1/2 in. self-tapping screws
09T	40036133	1 - UV-C kit
12W	40136005	2 - Lamps
14W	40136006	2 - Vertical supports
17W	40136007	8 - No. 10 fastener sets
21W	40136008	2 - Channel supports
25W	40136009	8 - No. 10 X 1/2 in. self-tapping screws
30W	40136010	2 - UV-C kits
11T	40036134	4 - Lamps
12T	40036135	2 - Vertical supports
36W	40136011	12 - No. 10 fastener sets
16T	40036125	3 - Channel supports
18T	40036126	8 - No. 10 X 1/2 in. self-tapping screws
22T	40036127	3 - UV-C kits
25T	40036128	6 - Lamps
30T	40036129	2 - Vertical supports
35T	40036131	12 - No. 10 fastener sets
37T	40036130	3 - Channel supports
42T	40036136	8 - No. 10 X 1/2 in. self-tapping screws
51T	40036137	4 - UV-C kits
58T	40036138	4 - Lamps
40W	40136012	2 - Vertical supports
50W	40136013	16 - No. 10 fastener sets
61W	40136014	4 - Channel supports
72W	40136015	8 - No. 10 X 1/2 in. self-tapping screws
85W	40136016	12 - UV-C kits
96W	40136017	
110W	40136018	

## 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 (refer to Fig. 3-12):

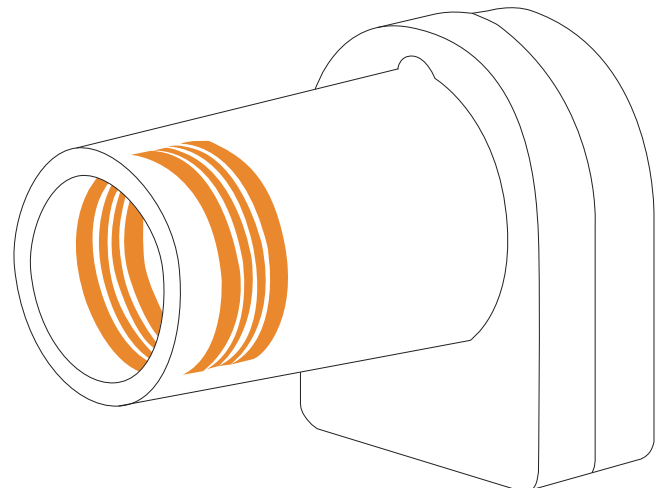
1. Determine which side panel (not the top panel) of the cooling coil section has the junction and switch boxes installed. Remove or open the adjacent panel to access the cooling coil section.
2. Remove a lamp from its packaging and align with a fixture fastened to a channel support. Push the lamp in until seated in the clips. The socket shall be a 4-pin type to facilitate connection to the Emitter for ease of installation and service. Repeat for each fixture until all lamps are installed.
3. Replace or close the access panel.

**Table 2 — Interlock Switch Kit**

KIT PART NUMBER	CONTENTS
<b>39MX40139401</b>	<b>One Door Kit:</b> 1 - Interlock Door Switch Assembly 1 - Switch Box 1 - Junction Box 1 - Schematic UV-C Wiring Label 12 - No. 10 x 3/4 in. Torx Screws 1 - 72 in. #16 GA Wire 1 - 6 ft Conduit 3 - Conduit Connectors 4 - Wire Ties 3 - 12 in. #14 GA Wires (Black, White, Green) 1 - Warning label 1 - Caution label
<b>39MX40139402</b>	<b>Two Door Kit:</b> 2 - Interlock Door Switch Assemblies 1 - Switch Box 1 - Junction Box 1 - Schematic UV-C Wiring Label 16 - No. 10 x 3/4 in. Torx Screws 1 - 72 in. #16 GA Wire 1 - 192 in. #16 GA Wire 1 - 120 in. #16 GA Wire 1 - 16 ft Conduit 4 - Conduit Connectors 8 - Wire Ties 3 - 12 in. #14 GA Wires (Black, White, Green) 1 - Warning label 1 - Caution label

**Table 3 — EGTS (Orange Ring) UV-C Replacement Lamp**

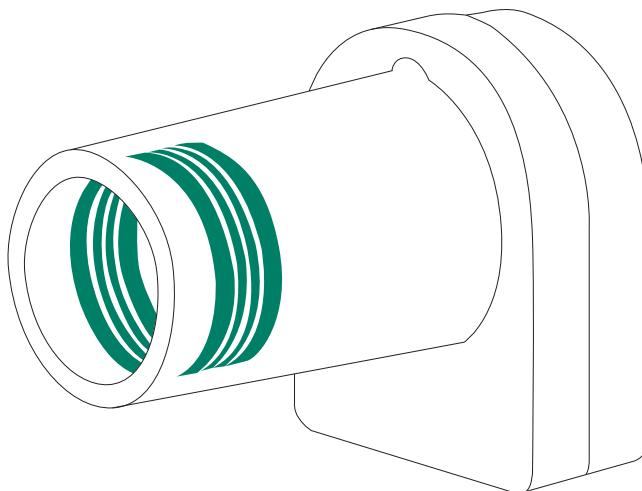
39M SIZE	NO. OF LAMPS	CARRIER PART NUMBER	MFR PART NUMBER
03W	1	39MA50185624	21000310
06W	1	39MA50185636	21000510
07T	2	39MA50185630	21000410
08W	1	39MA50185642	21000610
09T	2	39MA50185630	21000410
10W	1	39MA50185650	21000910
11T	3	39MA50185636	21000510
12T	3	39MA50185636	21000510
12W	2	39MA50185650	21000910
14W	2	39MA50185661	21000810
16T	4	39MA50185642	21000610
17W	2	39MA50185636	21000510
	2	39MA50185630	21000410
18T	4	39MA50185642	21000610
21W	2	39MA50185636	21000510
	2	39MA50185630	21000410
22T	4	39MA50185650	21000910
25T	4	39MA50185650	21000910
25W	4	39MA50185636	21000510
30W	4	39MA50185642	21000610
30T	4	39MA50185661	21000810
35T	4	39MA50185661	21000810
36W	3	39MA50185650	21000910
	3	39MA50185642	21000610
37T	4	39MA50185661	21000810
40W	4	39MA50185650	21000910
	4	39MA50185642	21000610
42T	4	39MA50185661	21000810
50W	8	39MA50185650	21000910
51T	4	39MA50185650	21000910
	4	39MA50185630	21000410
58T	4	39MA50185650	21000910
	4	39MA50185630	21000410
61W	8	39MA50185650	21000910
72W	8	39MA50185650	21000910
85W	12	39MA50185642	21000610
96W	12	39MA50185642	21000610
110W	8	39MA50185650	21000910
	4	39MA50185642	21000610



**Fig. 1 — EGTS Connector**

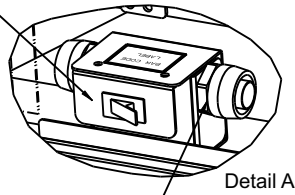
**Table 4 — GTS (Green Ring) UV-C Replacement Lamp**

39M SIZE	NO. OF LAMPS	CARRIER PART NUMBER	MFR PART NUMBER
03W	1	39MA50119124	21000300
06W	1	39MA50119136	21000500
07T	2	39MA50119130	21000400
08W	1	39MA50119142	21000600
09T	2	39MA50119130	21000400
10W	1	39MA50119142	21000600
11T	3	39MA50119136	21000500
12T	3	39MA50119136	21000500
12W	2	39MA50119142	21000600
14W	2	39MA50119161	21000800
16T	4	39MA50119142	21000600
17W	2	39MA50119130	21000400
	2	39MA50119136	21000500
18T	4	39MA50119142	21000600
21W	2	39MA50119130	21000400
	2	39MA50119136	21000500
22T	4	39MA50119142	21000600
25T	4	39MA50119142	21000600
25W	4	39MA50119136	21000500
30W	4	39MA50119142	21000600
30T	4	39MA50119161	21000800
35T	4	39MA50119161	21000800
36W	6	39MA50119142	21000600
37T	4	39MA50119161	21000800
40W	8	39MA50119142	21000600
42T	4	39MA50119161	21000800
50W	8	39MA50119142	21000600
51T	4	39MA50119130	21000400
	4	39MA50119142	21000600
58T	4	39MA50119130	21000400
	4	39MA50119142	21000600
61W	8	39MA50119142	21000600
72W	8	39MA50119142	21000600
85W	12	39MA50119142	21000600
96W	12	39MA50119142	21000600
110W	12	39MA50119142	21000600

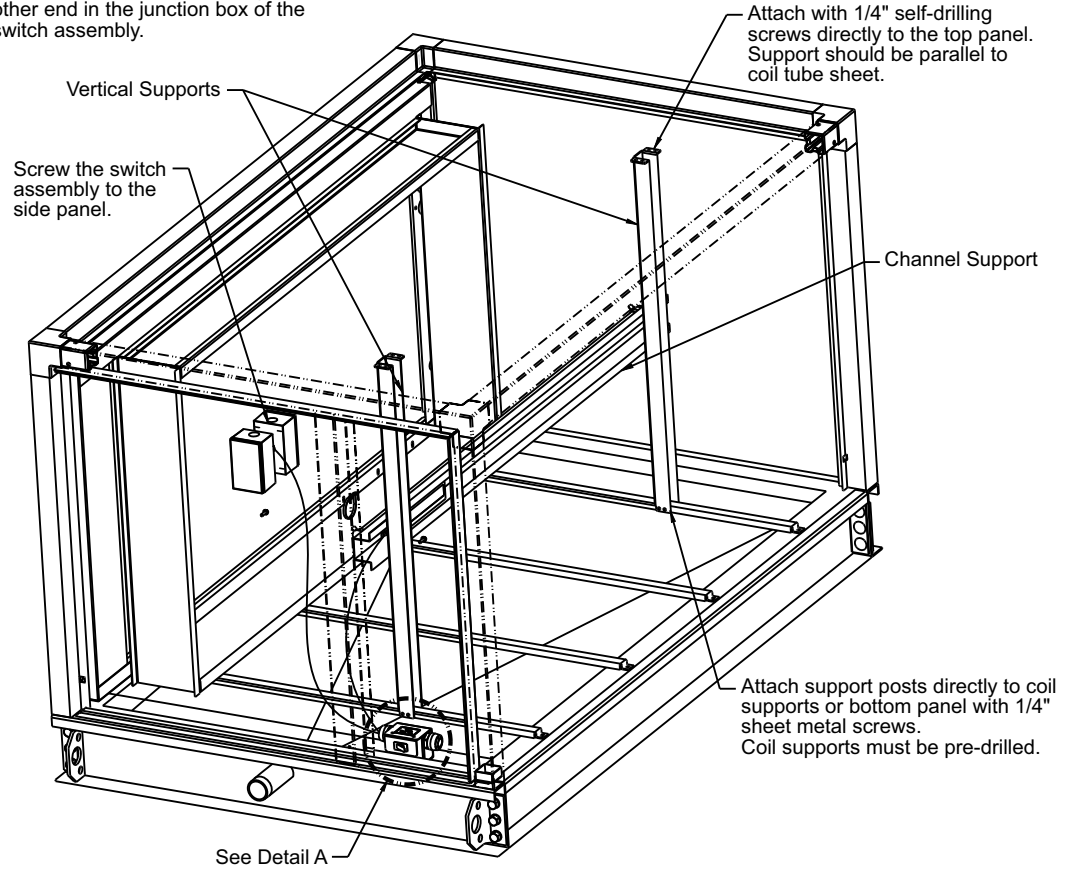


**Fig. 2 — GTS Connector**

Interlock switch disconnect attach with 1/4" self-drilling screws directly to the drip shield or bottom panel. Placed in the corner of the door considering the conduit bend radius.



Assembles the connector and the conduit to the interlock side hole and place the other end in the junction box of the switch assembly.



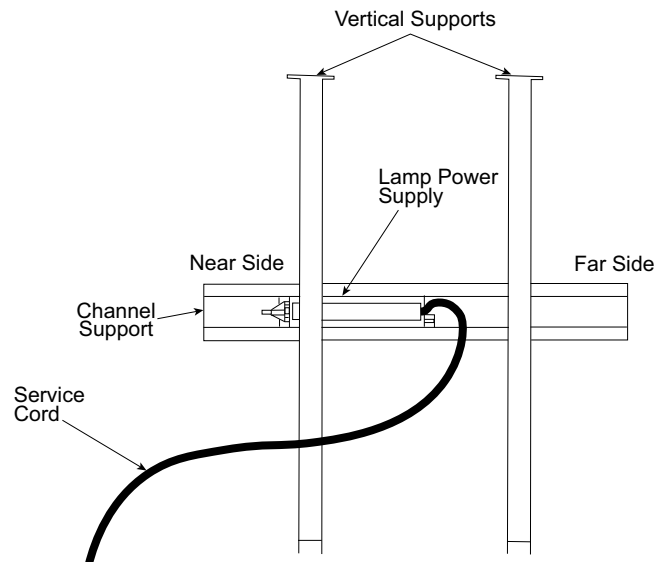
**Fig. 3 — Typical UV-C Lamp and Fixture Kit in a 39M Coil Section**



**Fig. 4 — Panel Removal Warning Sticker — Factory Placed on External Side of Cooling Coil Section Top Panel**

**Table 5 — Layout for 39M03W-10W Units**

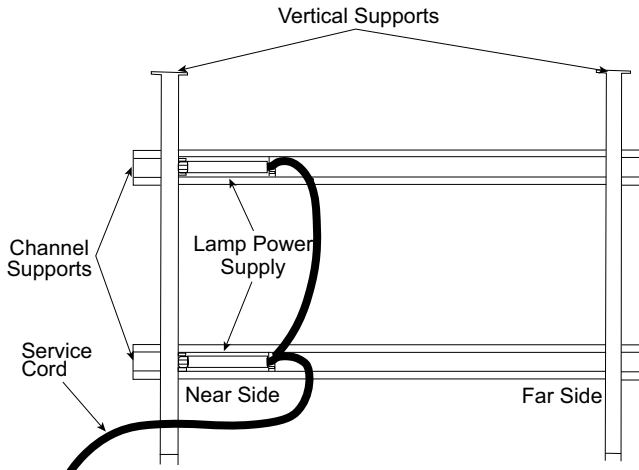
39M UNIT SIZE	VERTICAL SUPPORT HEIGHT (in.)	CHANNEL SUPPORT FIXTURES (LEVELS)	LAMPS
03W	29.2	1	1
06W	29.2	1	1
08W	32.2	1	1
10W	32.2	1	1



**Fig. 5 — Vertical and Channel Support Layout for 39M03W-10W Units**

**Table 6 — Layout for 39M12W-14W, and 07T-09T Units**

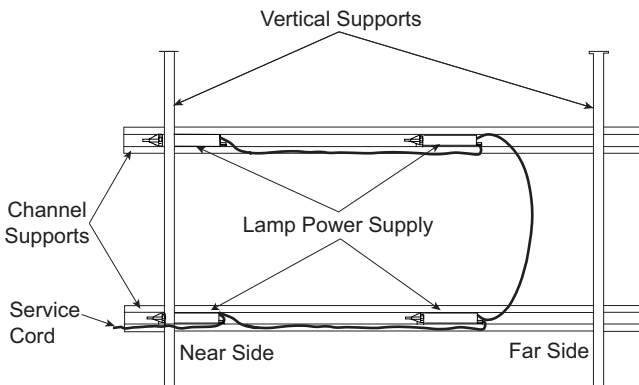
39M UNIT SIZE	VERTICAL SUPPORT HEIGHT (in.)	CHANNEL SUPPORT FIXTURES (LEVELS)	LAMPS
07T	52.1	2	2
09T	49.1	2	2
12W	39.2	2	2
14W	39.2	2	2



**Fig. 6 — Vertical and Channel Support Layout for 39M12W-14W, and 07T-09T Units**

**Table 7 — Vertical and Channel Support Layout for 39M17W-30W Units**

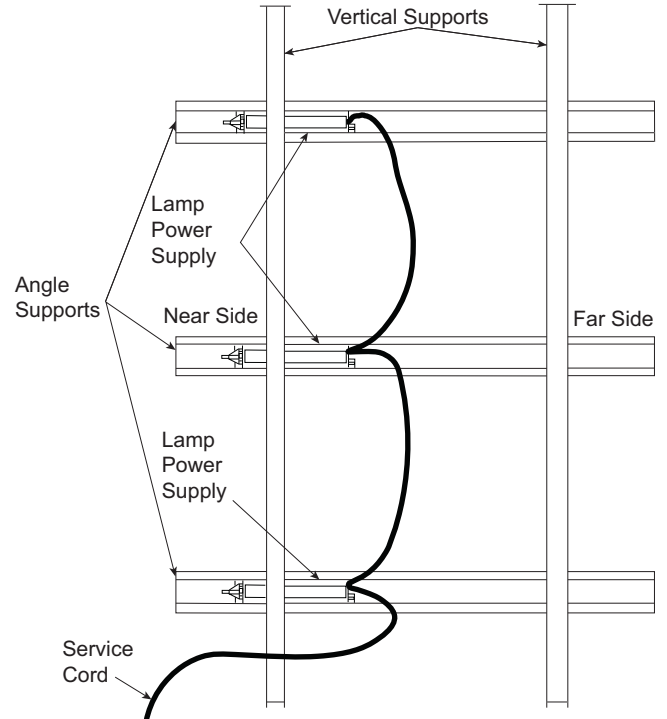
39M UNIT SIZE	VERTICAL SUPPORT HEIGHT (in.)	CHANNEL SUPPORT FIXTURES (LEVELS)	LAMPS
17W	41.5	2	4
21W	51.5	2	4
25W	52.2	2	4
30W	52.2	2	4



**Fig. 7 — Vertical and Channel Support Layout for 39M17W-30W Units**

**Table 8 — Layout for 39M11T-12T Units**

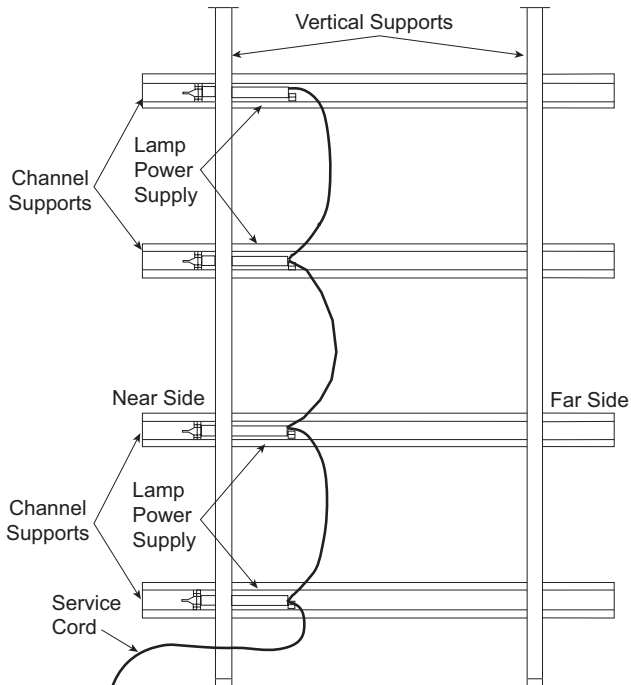
39M UNIT SIZE	VERTICAL SUPPORT HEIGHT (in.)	CHANNEL SUPPORT FIXTURES (LEVELS)	LAMPS
11T	58.1	3	3
12T	58.1	3	3



**Fig. 8 — Vertical and Channel Support Layout for 39M11T-12T Units**

**Table 9 — Layout for 39M16T-42T Units**

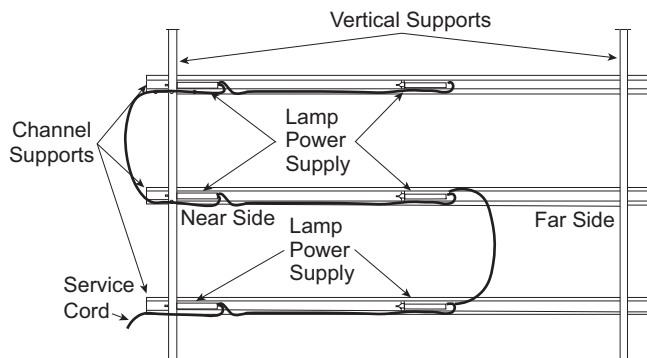
39M UNIT SIZE	VERTICAL SUPPORT HEIGHT (in.)	CHANNEL SUPPORT FIXTURES (LEVELS)	LAMPS
16T	67.1	4	4
18T	70.1	4	4
22T	76.1	4	4
25T	81.1	4	4
30T	81.1	4	4
35T	84.1	4	4
37T	100.1	4	4
42T	99.1	4	4



**Fig. 9 — Vertical and Channel Support Layout for 39M16T-42T Units**

**Table 10 — Support Layout for 39M36W Units**

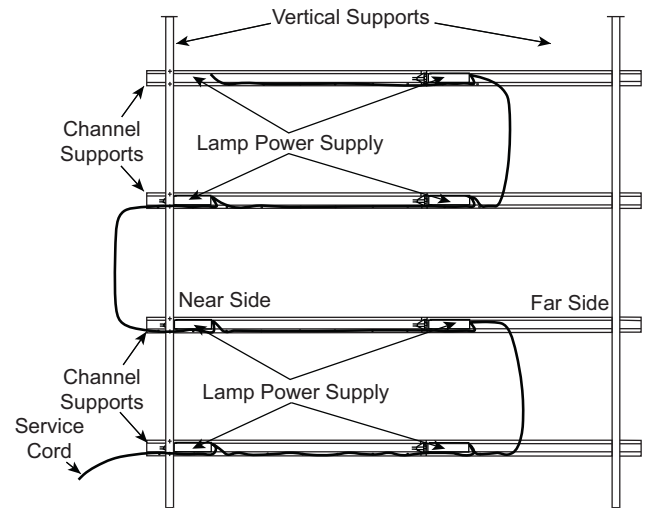
39M UNIT SIZE	VERTICAL SUPPORT HEIGHT (in.)	CHANNEL SUPPORT FIXTURES (LEVELS)	LAMPS
36W	63.2	3	6



**Fig. 10 — Vertical and Channel Support Layout for 39M36W Units**

**Table 11 — Layout for 39M40W-72W Units, and 51T-58T Units**

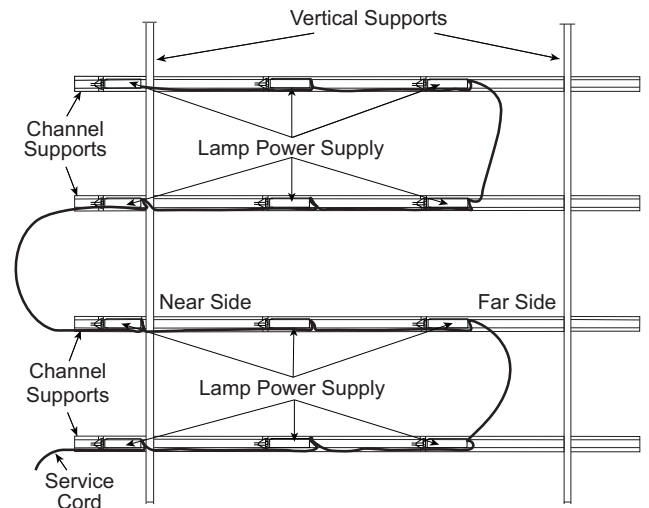
39M UNIT SIZE	VERTICAL SUPPORT HEIGHT (in.)	CHANNEL SUPPORT FIXTURES (LEVELS)	LAMPS
51T	99.1	4	8
58T	112.1	4	8
40W	69.2	4	8
50W	79.2	4	8
61W	94.2	4	8
72W	105.1	4	8



**Fig. 11 — Vertical and Channel Support Layout for 39M40W-72W Units, and 51T-58T Units**

**Table 12 — Layout for 39M85W-110W Units**

39M UNIT SIZE	VERTICAL SUPPORT HEIGHT (in.)	CHANNEL SUPPORT FIXTURES (LEVELS)	LAMPS
85W	105.1	4	12
96W	118.1	4	12
110W	118.1	4	12



**Fig. 12 — Vertical and Channel Support Layout for 39M85W-110W Units**





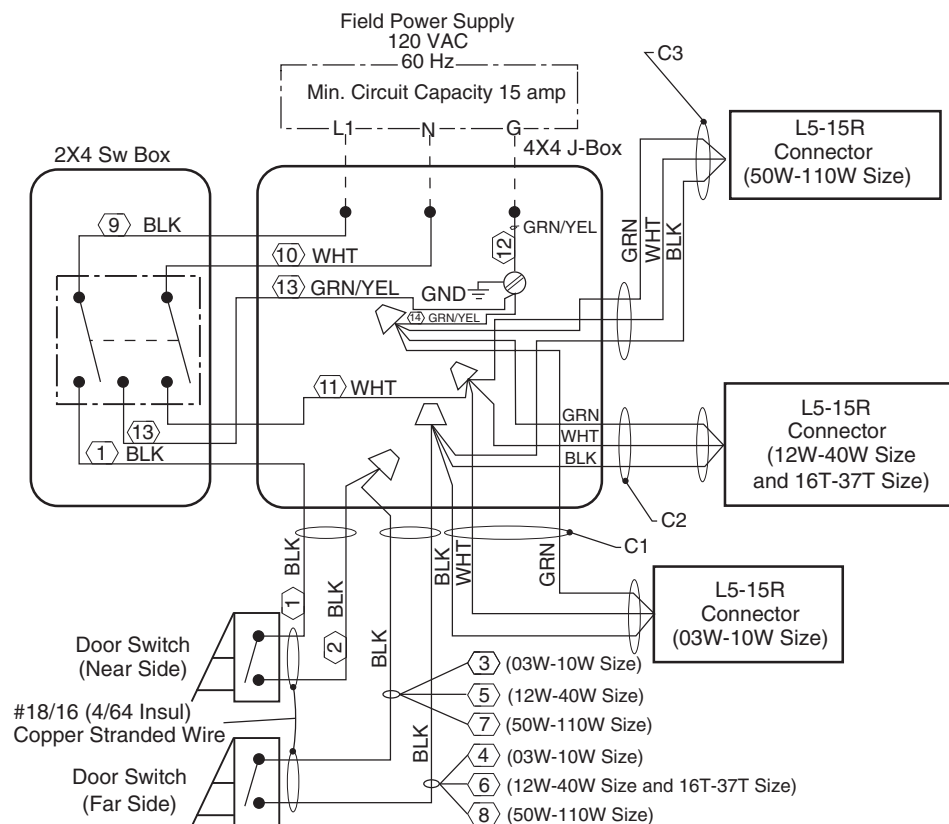
## Testing Lamp Kit

### ⚠ 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 all UV-C lamps glow in a blue hue when the exterior disconnect box is in ON position and both safety panel interlock switches are depressed.
3. Verify lamps deenergize when the exterior disconnect 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(s) did not glow, check switch box wiring, junction box wiring, safety panel interlock switches, and lamp(s).
5. Close unit access panel, turn on the switch box and return all power to the unit.

**Fig. 13 — UV-C Light Warning Labels Factory Placed on External Side of Cooling Coil Section Access Panels**



**Fig. 14 — 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. Lamp output may also be checked with a UV-C radiometer. Replace lamp when output falls below 50% of initial radiometer reading.

### 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 Tables 3 and 4 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, 24 hours a day, 7 days a week, from a separate, dedicated, 120V 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 13 for troubleshooting information.

**Table 13 — Troubleshooting**

FAULT	SOLUTION
<b>Lamp Does Not Light</b>	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.
<b>Low Output (Radiometer Reading) or Visibly Weak Light</b>	Replace lamp with new unit.
	Check line voltage.
	Check wiring to lamp.
<b>Red/Orange Light</b>	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.





