



INSTALLATION, OPERATION AND MAINTENANCE MANUAL

FOR

Field Installation of

UV Centurion

Germicidal Ultra Violet Lighting System



SYSTEM MODEL NO. _____

SYSTEM SERIAL NO. _____

SERVICED BY: _____

TEL. NO: _____

CANADIAN HEAD OFFICE AND FACTORY

CALGARY, ALBERTA
1401-HASTINGS CRES. S.E.
T2G-4C8

USA HEAD OFFICE AND FACTORY

DESOTO, KANSAS
32050 W. 83rd ST.
66018

EASTERN CANADA FACTORY

NEWMARKET, ONTARIO
1175-TWINNEY DRIVE
L3Y-5V7

SALES OFFICES ACROSS CANADA AND USA

RETAIN INSTRUCTIONS WITH SYSTEM AND MAINTAIN IN A LEGIBLE CONDITION
PLEASE GIVE MODEL NO. & SERIAL NO. WHEN CONTACTING
FACTORY FOR INFORMATION AND/OR PARTS

MAY 03

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

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INTRODUCTION

All Engineered Air UV Centurion Germicidal Ultra Violet Lighting Systems are high quality products designed and manufactured to provide many years of trouble-free service. We recommend that this manual be read thoroughly to ensure ease of installation, efficient operation and proper maintenance of this equipment. The submittal record is considered to be part of the Installation, Operation and Maintenance Manual.

<p>Warning: Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.</p>
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Warning: Before installing or servicing this unit always turn off the power. There may be more than one (1) disconnect switch. Electrical shock can cause personal injury or death.

Caution: It is essential that adequate precautions be taken in any application of germicidal lamps. Prolonged exposures to high intensities of ultraviolet radiation can cause temporary, but painful inflammation of the conjunctiva (inflammation of the outer membrane of the eye), as well as histological effects in the cornea, iris, and lens of the eye. In extreme cases, permanent harmful effects can occur. Reddening or even burning of the skin (erythema), similar to sunburn, will be caused by excessive exposure to ultraviolet energy. The UV lamps should be turned off anytime there is any maintenance or service work being performed on the AHU, this includes the changing of filter(s). There is an UV light service switch that should be turned off before any work to the AHU is performed.

Caution: Never operate the lights outside the unit. Never enter the unit while the lights are operating. Germicidal UV light can cause skin burns or damage to the eyes. Unprotected skin within 2 feet of the light sources can burn within one (1) minute.

Caution: The system is provided with interlocking safety switch(s) to turn of the lamp(s) when the access is opened for service. This switch should not be bypassed under any circumstances.

Caution: The photolysis-emitting lamp can cause the production off ozone. Ozone can be a respiratory irritant in high concentrations. Maximum allowable level is 0.05 PPM for 24-hour continuous exposure. The system has been designed and selected to keep the ozone level considerably below these guidelines.

Warranty

ENGINEERED AIR will furnish without charge, F.O.B. factory, freight collect, replacement parts for, or repairs to products covered herein which prove defective in material or workmanship under normal and proper use within one year from the date of delivery, provided the customer gives *ENGINEERED AIR* written notice of such defects and provided that inspection by *ENGINEERED AIR* establishes the validity of the claim and all pertinent invoices have been paid in full.

The correction of such defects for replacement will be made only when the complete products or part claimed defective are returned to *ENGINEERED AIR*, transportation charges prepaid, if such return is requested by *ENGINEERED AIR*.

Repairs or replacements as provided by the foregoing paragraph shall constitute fulfillment of all *ENGINEERED AIR'S* obligations with respect to this warranty. *ENGINEERED AIR* shall not be liable to any damage to person or property, or loss of revenue, or expense incurred, irrespective of cause. This warranty does not apply to any products or parts thereof that have been subject to accident, misuse or unauthorized alterations, or where *ENGINEERED AIR'S* installation and service requirements have not been met. The foregoing warranty is in lieu of all other warranties, expressed or implied.

ENGINEERED AIR Warranty is void if:

1. The start-up and operation of the system is not in accordance with this manual.
2. The system is operated in a corrosive atmosphere.
3. The system is operated during building construction period.

SERVICE AND IN-WARRANTY PROCEDURE

Receiving the System

Engineered Air systems are field wired. On receipt of the lighting system, check electrical characteristics (see nameplate) to make sure the unit voltage is compatible with that available for the system. All parts are listed on the shipping order form. Carefully check shipping slip for all components and for damage to components before signing the freight bill. The system components were factory inspected and tested prior to shipping and were in good operating condition at that time.

INSTALLATION

Codes

In Canada:

The installation of this system must be made in accordance with The Canadian Electrical Code, Part 1 - C.S.A. Standard C22.1, Provincial and Local Codes.

In U.S.A.:

All power supply and control wiring to this system must be installed in accordance with the latest edition of the National Electrical Code (ANSI/NFPA 70).

Clearances to Components in Air Handling Units

The installed system components should not interfere with service access to the unit or other components in the unit. Filters may need access by service personnel into the unit to clean or replace the dirty filters.

Mounting the System

Do not make any penetration (holes or screws) in the floor of the unit as it should be waterproof.

The UV Centurion lights should be mounted with the spacing shown on the drawings. To ensure maximum effectiveness do not exceed the spacing shown.

The system must be installed with sufficient support and bracing to prevent movement or vibration of the system while the air handling unit is in operation. Do not install any devices in a manner that interfere with access to the unit approval label or door opening.

The ultra violet light may damage some plastic. It is recommended that metal be used for mounting supports, fasteners and metallic conduit be used for wiring. Plastics that are in the direct line of sight of the lights should be protected with appropriate shielding. Shield existing wiring that is in the direct line of sight of the lights with appropriate shielding.

Drain Pans

Use water resistant wiring materials and practices. Install light reflector as shown. Cooling coil drain pans may have one or more intermediate drain pan(s) extending out of the unit casing above the main drain pan connection. Additional lighting units should be installed to protect the intermediate drain pan(s).

Filters

Ensure that the lights and supports do not interfere with the required clearance for changing or cleaning filters.

Coils

The UV Centurion lights should be mounted with the spacing shown on the drawings.

Electrical Installation

Warning: Before installing or servicing this unit always turn off the power. There may be more than 1 disconnect switch. Electrical shock can cause personal injury or death.

Final certification of the assembly may be required. Contact the authority having jurisdiction.

All wiring shall be installed in accordance with the requirements of the authorities having jurisdiction. **Do not cut holes in the bottom of the unit, as the floor of the unit should be waterproof.**

Wire lights as shown on the wiring diagrams. Install the door switch(s) on all doors that give access to the lights or areas of the unit that can directly see the lights. Mount a copy of the wiring diagram provided near the unit-wiring diagram.

Replacement wiring must be equivalent to the original wire.

OPERATION

Once you turn the UV Centurion system on, let it run continuously. The life of the lamps will be reduced if the unit is stopped and started more than once every 8 hours.

Note: 9000 hour estimated lamp life is based on the lamp being turned on and off no more than once every 8 hours.

Continuous operation of the UV Centurion system is important because the unit is designed to kill organisms on coils, filters, drain pans, other unit components and in the air. This process, to be effective, needs to be continuous because the organisms that are being eliminated grow continuously.

MAINTENANCE

Warning: If servicing any areas with live electrical power, turn off the power to avoid electrical shock, which could lead to injury or death.

A regular maintenance schedule must be established. Intervals will depend on the location of the UV Centurion system. The initial inspection and cleaning of the system should take place three months after installation. If there is excessive dirt on the lamp(s), a shorter inspection period should be used.

Cleaning Procedure

- Step 1: Turn off the UV lamps by turning the UV service switch to the OFF position. This will prevent any chance of electrical shock or exposure to the ultraviolet radiation! Allow the unit to cool for 5 minutes before continuing.
- Step 2: Visually inspect the lamps. If the lamps are covered with particulate wipe them with a dry cloth. If necessary, a standard window cleaner or alcohol can be used to assist in cleaning. *NOTE: Do not spray cleaner directly onto lamps, spray cleaner onto cloth, then wipe lamps.* Make sure the lamps are dry before restarting them.

Lamp Replacement

At the end of every 1 year period, or 9000 hours of operation, the lamps will need to be replaced. There is a hourmeter located in the control panel area of the AHU to keep track of the hours the lamps have been in operation. Log the hours and lamp changes on the Maintenance decal provided. Contact Engineered Air for replacement lamps. If it is suspected that a lamp is not operating properly, see trouble shooting section.

To replace a lamp, turn off the UV lamps by turning the UV service switch to the OFF position. This will prevent any chance of electrical shock or exposure to the ultraviolet radiation! Allow the unit to cool for 5 minutes before continuing.

The lamps are supported at each end. One end is supported by a bracket and grommet, the other is supported by the lamp connection box and a grommet. Remove the cover to the lamp connection box located inside the unit at the end of the lamp(s). One lamp should be changed at a time to insure that correct size and type lamp replacement takes place. Unplug the connector from the end of the lamp. Holding the lamp at the ends, gently twist it while moving it toward the connection box. Once the end has cleared the lamp bracket, slightly move that end away from the bracket and slide the lamp the opposite direction to remove it from the connection box. A soapy water solution may assist in the lamps sliding in the grommets. Once the lamp has been removed, remove the grommet.

Install the new grommet and lamp in the reverse order.

TROUBLE SHOOTING

- Warning:** Trouble shooting should only be performed by qualified personnel.
- Warning:** Before servicing this unit, always turn off the power. There may be more than one (1) disconnect switch. Electrical shock can cause personal injury or death.
- Caution:** Do not proceed with the next step unless you are WEARING protective wear for your eyes and skin. Ultraviolet lamps can cause serious retina and skin damage - The face including ears should be covered using a face shield similar to a welders shield. Long sleeves, and gloves must also be worn)

A visual check of lamp operation is required from time to time to confirm lamp operation. Follow the Caution instructions above to protect yourself from the UV rays.

Once it has been determined a lamp or lamps are not operational, proceed as follows:

1. Confirm the correct power supply is connected to the UV lamp circuit.
2. Confirm the lamps are not intentionally cycled off by an *optional* ozone limiting switch. This switch is included with the dual frequency lamp option. Check the UV system wiring diagram to confirm if this feature is included.
3. Confirm all door switch interlock contacts are closed.
4. Confirm correct voltage is available at the lamp ballast's black and white power leads.
5. Once voltage is confirmed at the ballast and the lamp is still not operational, replace the lamp in question with a new lamp of the correct size and type. See instructions in the maintenance section (page 7) of this manual for instructions.
6. With a new lamp installed and the lamp is still not operational, replace the ballast connecting to that lamp. Make certain that all electrical connections have good electrical contact.

Replacement lamps and ballasts are available through you local Engineered air representative. The unit model and serial numbers are required to confirm lamp or ballast part numbers.