
Sizing and Installation Guidelines for Eliminator-1 Series UVC Lamp Systems

The Eliminator-1 series UVC lamp fixtures are designed to be installed into air ducts for pass-by air sterilization as well as for mounting near cooling coils for irradiation purposes. The unique design of the lamp and ballast configuration allow for easy mounting and a great deal of flexibility offered as far as mounting locations. All that is required is an available power source for the external mounted models. Many factors go into determining the required amount of UVC energy and lamps to adequately provide the required UVC energy for pass-by air irradiation. These factors include airflow velocity and temperature. The Excel calculator, **for Eliminator Series**, takes into account these factors as well as duct area available for lamp mounting purposes. With this info provided, an exposure time can be determined which will determine the overall quantity of lamps required for a dose rate. The dose rate is a general term applied to the total amount of UVC micro-watt seconds that a particle sees or is subjected to, as it passes through the UVC lamp section mounted in the duct. For residential installations the recirculating effect of the airflow through the air system has a positive effect on the kill rate of micro-organisms, as the air is continually recirculated through the UVC lamp section, resulting in continuous exposure to the UVC system.

Application objective and description:

The idea of placing UVC lamp fixtures in forced air ducts is intended as a means of controlling micro-organism spread through-out the air duct system and into the adjoining rooms or other living quarters. This inline duct installation along with subjecting any cooling coils to shortwave UVC energy offers the best means for in-activation allergens in the airstream. UVC energy will degrade and inhibit the growth patterns of these micro-organisms which will prevent the spread of them through-out the air system as well as clean the coil. Eliminator UVC lamp fixtures can be placed in either the supply or return air ducts, as well as near the cooling coil area to provide the best protection. The Eliminator UVC lamp fixtures produce the highest UVC intensities available anywhere in the market.

Steps and required information:

1. Record the overall height and width of the air duct that the UVC lamps are to be placed in. (These can be supply or return air ducts.) This information is entered into the Excel calculator, **for Eliminator Series**. Enter these values as inches for the unit of measure.

2. Record the available duct length for installing lamps into. Enter this into Excel as feet for the unit of measure.
3. Record the airflow and temperature into Excel. List the temperature as degrees Fahrenheit and the flow rate as cubic feet per minute. **(Important note: do not enter any temperature value greater than 60 degrees or less than 35 degrees, as the lamp intensity correction will be too high. For example, if the actual flow temperature is 80 degrees, enter it as 60 degrees.)**
4. Specify the lamp length to be used. Typically the lamp length should be sized to span as much of the duct width as possible.
5. Determine the lamp output of the selected lamp from sheet (2) of the Excel calculator and enter it into the proper space. The intensity to be entered will be the ‘UVC Intensity @ 12” with the proper velocity correction added. Excel will then correct the lamp output based upon temperature listed.
6. Excel will calculate the number of selected lamps required to provide a dose of 1,500 microwatt seconds. This value will be displayed in the (J) column. Round this value up to the next even number and select the lamp fixtures accordingly. Lamp fixtures should be selected as (2) or (4) lamp fixtures.
7. The lamp quantity is calculated based on a dose of 1,500 micro-watt seconds. For other dose requirements, increase or decrease the 1500 value shown in the formula for column N.
8. Each series of calculations should be saved off as an individual Excel file with the customer or job description used for future reference.

For cooling coil installations, the available length of plenum space around the coil will determine the lamp length. Place the maximum length of lamp into this coil section so that all surface of the airflow exit side of the coil are bathed. For A-coil arrangements, (2) Eleimnator-1 series lamps can be installed for best results.