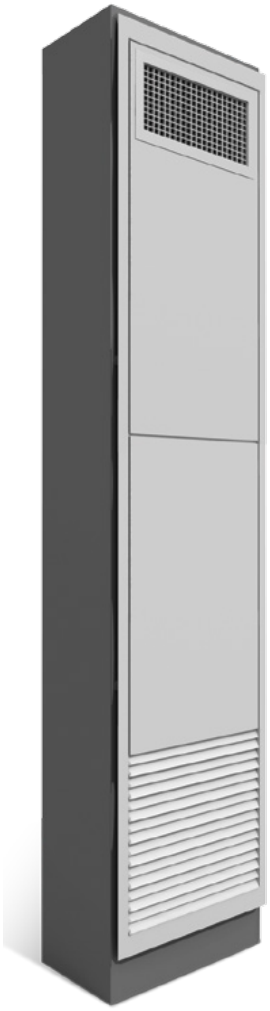
unilux
VFC

OPERATION AND MAINTENANCE MANUAL

Vertical Fan Coil with Integrated ERV/HRV



Main VFC:

The Unilux Main Vertical Fan Coil unit is designed and certified to operate for your specific space.

The main VFC when installed in the residential unit is connected to the building riser pipes to connect to hot and cold water and condensate or drain pipes; building electrical systems; air handling ducts and pipes; etc. The main VFC is installed behind the drywall and only the front access panel opening and ducts may be visible.

Once the main VFC unit has been installed and walls finished the access panels and filters are installed.

Locate the thermostat and thoroughly review the manual to ensure correct wiring and codes if applicable have been completed.

Turn Main Power Switch to “On” Position

Set the Thermostat to Fan “On” position the VFC main fan will run at the selected speed.

With the Fan switch set to “Auto” position, the fan will run if the system calls for heating or cooling.

The Fan running speed will be determined by the difference between the room temperature and the set point temperature.

The fan will automatically run in high speed if room temperature is > 7 ° F higher than the set point temperature.

The fan will automatically step down to medium speed when the difference between room temperature and set point temperature is < 7 ° F and > 3 ° F.

The fan will automatically step down to low speed when the difference between room temperature and set point temperature is < 3 ° F.

With Chilled water in the system and on a call for heating, the motorized valve will remain de-energized and the electric element will be powered.

With Hot Water in the system (> 85 ° F), and on a call for heating, the motorized valve will be energized.

The fan will automatically run in high speed if room temperature is > 7 ° F lower than the set point temperature.

The fan will automatically step down to medium speed when the difference between room temperature and set point temperature is < 7 ° F and > 3 ° F.

The fan will automatically step down to low speed when the difference between room temperature and set point temperature is < 3 ° F.

HRV / ERV:

General: The primary difference between the Heat Recovery Ventilator (HRV) and Energy Recovery Ventilator (ERV) is the HRV transfers or returns heat to the opposing air stream whereas the ERV transfers or returns both heat and humidity to the opposing air stream. The energy exchange is accomplished using different technologies in the proprietary cross flow cores contained in the air streams.

The Unilux VFC HRV / ERV module is designed to be operated inside the main VFC and therefore is an integral part of the overall VFC system.

Fresh air, recirculation air and exhaust air ducts are situated to/from the HRV / ERV modules according to the Shop Drawings prepared and approved for the job/contract. Likewise, electrical wiring from 115Vac and front panel control switches are made at the Unilux factory. External controls and switches (if used) are field connected.

There can be one or two fans Internal to the HRV / ERV. One fan is to bring in Fresh Air (FA) from outside and another fan to Exhaust Air (EA) to the outside. The fan capacities are typically 75 CFM maximum and only transfer a fraction of the air from inside the main VFC. When two fans are used they are internally interlocked to run at the same speed. Fan CFM ratings are selected during the engineering specification of the units prior to order placement.

Manual control mode of the HRV / ERV is possible using pushbutton switches which are mounted on the top/front panel of the HRV / ERV. The pushbutton marked "+" increases fan speed with successive presses. The pushbutton marked "-" decreases the fan speed with successive presses. The green LED stays solid at lowest and highest fan speeds. The LED blinks faster as the motors speeds up and slower as the speed reduces. In manual mode the fans remain at the speeds set by the pushbuttons until input power is turned off or enters Defrost mode (see below).

Once power is applied to the main VFC system the installed optional HRV / ERV is also powered up. You will hear the motorized damper energizing. This takes about 1 minute and closes off the recirculation air duct and at the same time opening the fresh air duct. This duct control is spring return so that if power is lost fresh air will not enter the HRV / ERV. This feature is patented by Unilux VFC.

The highest fan speed equates to maximum air flow of approximately 75 CFM and the lowest speed equates to approximately 7.5 CFM (10% max). There are a total of 10 speed-setting steps from minimum to maximum in manual mode.

Volume Flow Limiters (VFL) are used to physically restrict airflow and thereby limit the maximum air flow into and out of the HRV / ERV. The VFL is air tight press fit into the FA duct and EA duct. The VFL's are set to the desired maximum airflow specified at time of order.

External control of the HRV / ERV can be accomplished using optional wall mount timer switch. A wiring terminal strip is provided on the HRV / ERV top/front panel located near the pushbuttons. Labels indicate

Defrost mode: As a safety precaution a pre-set defrost sequence has been implemented. This mode is activated when the outside air temperature is below 23 ° F. During this initial defrost sequence, the motorized damper shuts down incoming fresh air, and, simultaneously opens an airway to circulate warm generated by the main fan coil. This air path works to regenerate the HRV / ERV core and once again maximize its effectiveness from potential freeze up. The unit then returns to normal operation for 20 minutes and continues the cycle according to the temperature sensor circuit operation. If the outside temperature is below -15 ° F, the HRV / ERV enters a longer defrost cycle of 10 minutes followed by 20 minutes normal operation. The cycle then repeats depending upon the outside air temperature.

Cleaning: approximately every three to six months the core and filters in front of the core should be cleaned. The HRV core can be washed with warm water and mild soap, rinsed with clean water, let stand dry and then re-installed. The ERV core should not be washed but can be cleaned free of any dust and debris with a soft bristle attachment and vacuum (please see below for detailed instruction guides).

Filter Types, Size and Instructions on Replacement

Throw Away Filters

The throwaway or replaceable filter is commonly used on UNILUX fan coil units. It should be replaced on a regular basis. It is mounted behind the inlet Grille. It is accessible by removing the return air grille-access panel.

Filter must be cleaned a minimum of four times a year. Under certain operating conditions, it may be necessary to change or clean the filters more frequently to obtain maximum unit performance.

The time interval between each replacement should be established based on regular inspection of the filter and should be recorded in the log for each unit. Dirty filters are the cause of the most common system performance complaints. It is essential that filters be serviced on a regular basis.

Untrained personnel can perform basic maintenance functions such as cleaning coils and replacing filters. All other operations should be performed by a trained service technician (see below for detailed instruction guides).

Caution

The units should not be operated at anytime without complete enclosure, supply grille, return air grille, and filter in place. Operation in any other condition could result in motor overloading or burnout, clogging of coil surface, fan blade damage, or all of the above.

UNILUX Model	Filter Size
DLE 350	13.5 X 20
DLE 450	13.5 X 20
DLE 600	13.5 X 20
DLE 800	17.5 X 20
DLE 1000	17.5 X 20
DLE 1200	17.5 X 20

Step By Step Guide to Replace a Filter

Step # 1

To remove the filter open the front access panel door and pull the door towards you, as shown here.

Step # 2

Turn off the electrical power source at top right of the unit. Allow the rotating fan wheel to stop.

Step # 3

Once the panel is open reach to the filter mounted behind the bottom return air grille.

Step # 4

Pull the used filter out while holding the door.

Step # 5

Insert the new filter.

Step # 6

Close the panel door back to its original position.

Step By Step Guide to Servicing HRV/ERV Filters

Step #1

Open the front access panel.

- Lift the bottom half of the door slightly and then raise it out until it's perpendicular with the unit, then push up and slide out.

- Lift the top half of the door and pull out slightly, the door will drop onto hooks at the top. Lift the door and pull out to remove.

Step #2

Turn off the power and allow the rotating fan wheel to stop.

Step #3

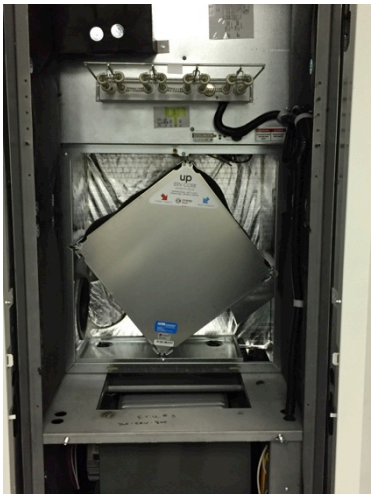
Locate the HRV/ERV panel.

Step #4

Unscrew the black knob at the top of the panel (or the wing nuts at the sides of the panel) and remove the panel.

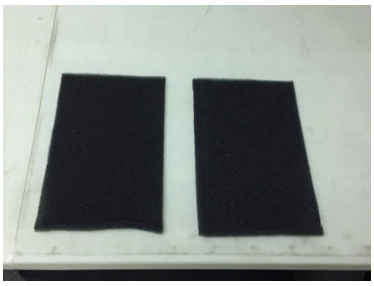
Step #5

Remove the two black filters visible on the top two sides of the core.



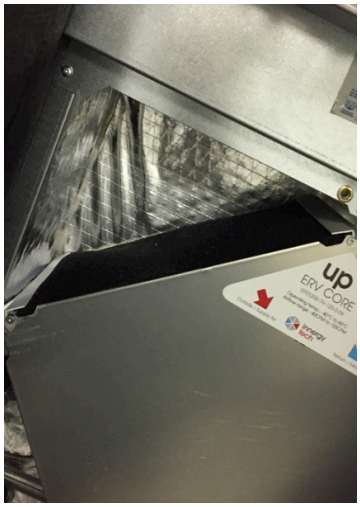
Step #6

Wash thoroughly with soap and water and leave to dry.



Step #7

Once dry, slide the filters snugly back into place on the top two sides of the core.



Step #8

Re-attach the HRV/ERV panel.

Step #9

Turn on the power.

Step #10

Re-attach the front access panel.

Step By Step Guide to Servicing an HRV/ERV Core

Step #1

Open the front access panel.

- Lift the bottom half of the door slightly and then raise it out until it's perpendicular with the unit, then push up and slide out.

- Lift the top half of the door and pull out slightly, the door will drop onto hooks at the top. Lift the door and pull out to remove.

Step #2

Turn off the power and allow the rotating fan wheel to stop.

Step #3

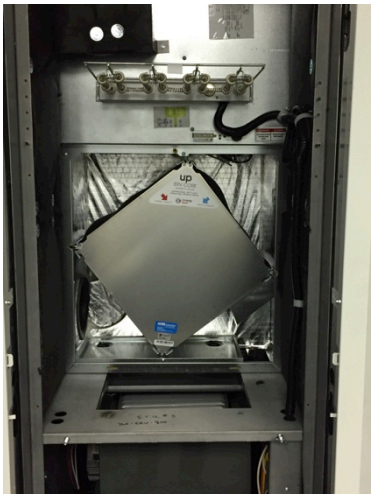
Locate the HRV/ERV panel.

Step #4

Unscrew the black knob at the top of the panel (or the wing nuts at the sides of the panel) and remove the panel.

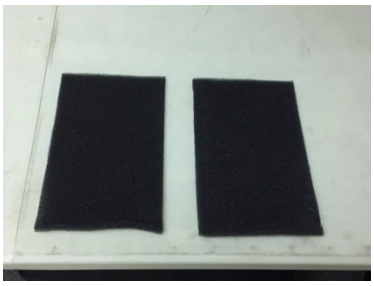
Step #5

Remove the two black filters visible on the top two sides of the core.



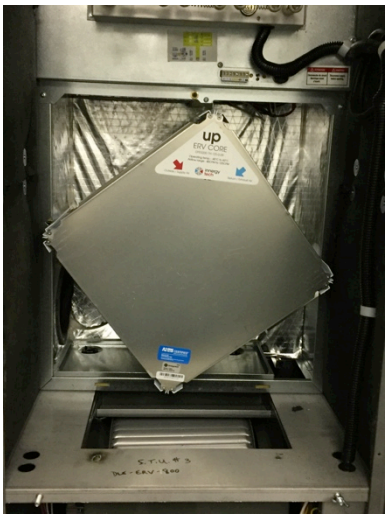
Step #6

Wash thoroughly with soap and water, and leave to dry.



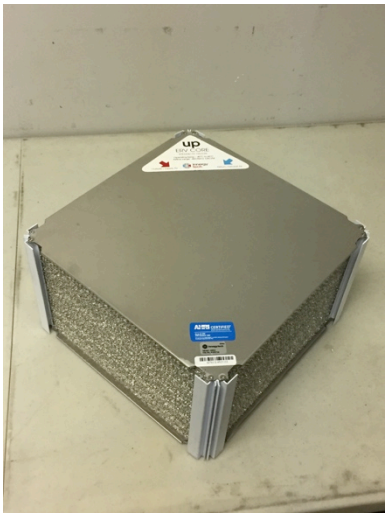
Step #7

Slide the core out of the unit, it should come out easily.



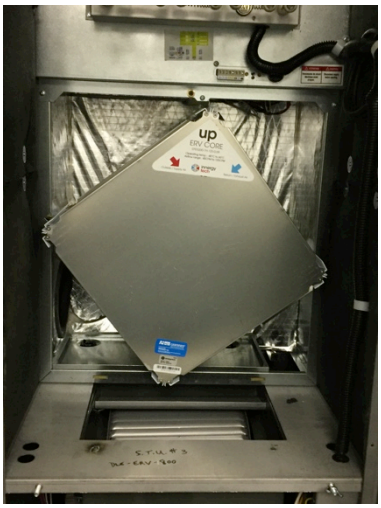
Step #8

Vacuum the core thoroughly on all sides.



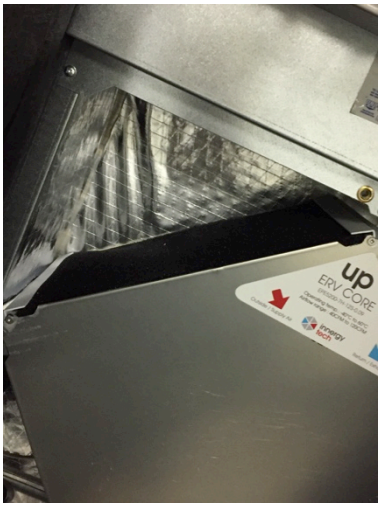
Step #9

Slide the core back into place along the metal guides so that it is firmly in the unit.



Step #10

Once dry, slide the filters snugly back into place on the top two sides of the core.



Step #11

Re-attach the HRV/ERV panel.

Step #12

Turn on the power.

Step #13

Re-attach the front access panel.