

## AIR FLOW BALANCING

\* Fantech's superior design and use of EBM motors results in a steep fan curve that usually does not require balancing. Commissioning the system after installation is recommended which include confirming the proper operation of the system and how it interacts with other components within the home.

### AIRFLOW STATION (GRID) METHOD



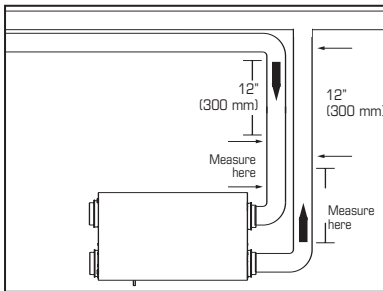
**1** For this flow measuring station, cut the duct and place the flow measuring station between each section of duct. Make sure that the flow measuring station's air direction arrow points in the direction of the airflow. Secure the flow measuring station with duct tape.



**2** Before taking the reading, make sure that the magnehelic gauge is level and at 0. Refer to the flow measuring station's chart to determine your unit's airflow velocity.



**3** Adjust the "Supply Air Out" damper until you reach the desired velocity. Follow the previous steps to adjust the "Exhaust Air Out" damper, if needed.



- To avoid airflow turbulence and incorrect readings, the airflow velocity should be measured on steel ducting a minimum of 12" (300 mm) from the unit or elbow and before any transition.

## MAINTENANCE

### CAUTION MAKE SURE UNIT IS UNPLUGGED BEFORE ATTEMPTING ANY MAINTENANCE WORK

The following components should also be inspected regularly and well maintained.

### PRACTICAL TIPS

- To prevent electrical shock, check that the unit is unplugged before doing any repairs or maintenance.
- A yearly inspection is recommended to ensure the efficiency and trouble-free use of your system. Run through the system and verify the different operating modes.

**The motor** - The motors are factory balanced and lubricated for life. They require no maintenance.

**The unit** - The inside of the unit should be vacuumed yearly. Be careful not to damage any of the mechanical components and electrical connections.

**Outside hoods** - The outside hoods need to be checked every season to make sure there are no leaves or insects blocking the airflow. Check regularly that there are no pollutants near the intake hood. Make sure they are clear of any snow accumulation during the winter months.

### FILTERS

The filters (2) need to be checked and cleaned every three months or when they appear dirty. Wash in warm sudsy water (mild detergent) or use a soft brush vacuum. The filters should be replaced when they can no longer be cleaned properly.

### HEAT RECOVERY CORE

The heat recovery core needs to be checked and cleaned every six months. The core can be cleaned using a mild soap and water. Rinse thoroughly. Handle with care. Hot water and a strong detergent will damage the heat recovery core.

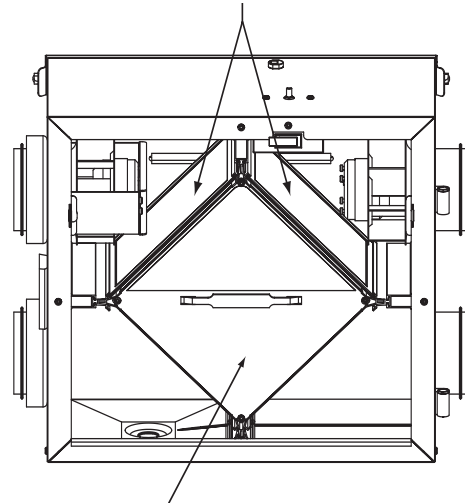
**The drain pan and drain line** - Units with drain lines should have their line and connection checked regularly.

#### Clean Core and Filters Every 3-6 Months.

Unplug unit before doing any repairs or maintenance

- Open access door.
- Carefully grip handle of core and pull out. Core will slide out of the channel.
- Once removed from the cabinet remove filters.
- Wash core in warm soapy water (do not use dishwasher).
- Install clean core by:
  - First mounting the bottom flange of the core guide into the bottom channel approximately 1/4" (6mm).
  - Mount the left or right side flange of the core guide approximately 1/4" (6mm) followed by the other side.
  - Mount the top flange of the core guide into the top channel approximately 1/4" (6mm).
  - With all four corners in place and the core straight and even, push hard in the center of the core until the core stops on the back of the cabinet.
- Install the clean filters.

Filters need to be checked regularly



# OPERATION

A Heat Recovery Ventilator (HRV) is designed to bring fresh air into a building while exhausting an equal amount of stale air. During the winter months, the incoming cold fresh air is warmed by utilizing the heat recovered from the stale air before it is exhausted to the outdoors. During summer months when the indoor space is air conditioned, the HRV will help in cooling the incoming fresh air with the stale air that is being exhausted.

Powrmatic HRV's are designed to run continuous or on intermittent, giving the homeowner complete control over their air quality. Continuous low speed ventilation is recommended, which will help eliminate carbon dioxide, voc's and other gases as well as freshen up the home. Intermittent high speed ventilation can be obtained through a variety of optional remote controls found in this manual. Below are some examples of seasonal operation of an HRV.



## Winter:

Humidity control is very important during the winter months. This is when problems will be most apparent since condensation on the windows will often occur. The colder the outside temperature, the greater the risk of condensation in the home. The average relative humidity should be maintained between (30-60) to avoid condensation. Low speed continuous ventilation with high speed override is recommended.



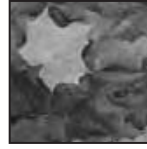
## Spring:

Temperatures are more moderate and become warmer each day. To keep the humidity and temperature uniform, set the dehumidistat higher (if installed). You may also switch the HRV to standby mode if desired.



## Summer:

The air is sometimes hot and humid. To stop the warm humid air from entering, set the dehumidistat at its highest level. If the Intellitek series controller is installed, the air exchanger can be set to cycle the unit on and off as desired from that wall control. However, continuous ventilation is recommended.



## Fall:

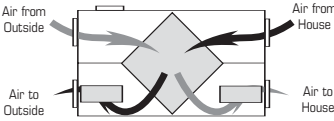
Rain and rapid temperature changes make it difficult to control the internal humidity level and may result in condensation on the windows. A remote dehumidistat may help give greater control over the inside environment.

# MODES OF OPERATION

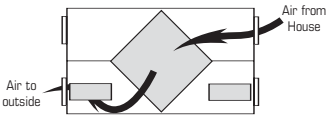
The entire line of SHR/VHR series Heat Recovery Ventilators comes equipped with Fantech's new electronic uni-control board which offers a wide variety of features making it the ultimate ventilation control system. Fantech engineers have used the latest technology to provide solid, trouble free operation under any conditions.

The Fantech uni-control board offers stand alone operating capabilities as well as an exclusive 2 wire communication to most external controls. The trouble-free optional controls include: two different rotary dial dehumidistats, an air quality sensor (3 wire communication required), a 15 minute remote push-button timer, as well as the most sophisticated line of remote wall mounted controls, the Intellitek 5MR.

An on-board diagnostic LED helps find problems quickly and efficiently. For example the LED can be used to signal a broken or shorted electronic wall control wire. Electronic air temperature probe gives this board accurate readings in order to minimize unnecessary defrost operation, and the on-board jumpers provide the user with the option of adjusting defrost time and sequence to optimize performance under abnormal conditions. The defrost operation is automatic and is usually never adjusted.



**1. Continuous / Ventilation Mode**  
In this mode of operation both fans are operating and exchanging air with the outside. The heat recovery ventilator (HRV) constantly exchanges the air at the rate you select, either at low or medium speed, and switches to high speed when activated by an optional remote control. The "Low" and "Med" fan speed selection will cause the unit to operate in continuous exchange mode at an exchange rate of 35% and 50% maximum airflow rating respectively. Continuous mode is recommended, since pollutants are slowly but constantly being generated in your house.



**2. Defrost (SHR/VHR Models)**  
The automatic defrost cycle SHR/VHR models of HRVs consists of a fan shutdown. When the supply air stream temperature goes below -5°C (23°F), the supply motor shuts down and the exhaust motor goes into high speed. Ambient air is passed through the unit for a period of 5 minutes. The supply motor will then re-start and run at the preset speed. The exhaust motor will also slow down to the preset speed, and the unit will operate in the run cycle for 25 minutes. This fan shutdown defrost cycle continues until the supply air stream rises above 0°C (32°F).

# OPERATION (CONT'D)

## PRACTICAL TIPS

To avoid window condensation:

- It is not necessary to change the humidity control every day. Monitor the average weekly temperature or experiment with various settings until you find a level that is comfortable for you. Adjust the control when needed.

NOTE:

A dehumidistat is ideal for use in energy efficient houses where indoor humidity (during the heating season) is higher than outdoor levels. High humidity is a major cause of structure damage and IAQ problems such as mold and mildew.

## PRACTICAL TIPS

NOTE:

When an Intellitek control is installed, the rocker switch located on the right hand side of the HRV will be automatically deactivated giving the user complete control from wherever he/she wishes to mount the control pad.

NOTE:

The override speed cannot be set at a fan speed lower or equal to the normal operating fan speed. For example, if the unit is normally operating at a medium fan speed, the override fan speed will be automatically set to high.

NOTE:

5MR model, changing the override speed will change default override speed for other external controls.

EXAMPLES:

If on the 5MR control, you have set the override control at medium, and you start an external remote control (15 min. timer), the unit will run at medium speed for 15 min.

## OPTIONAL REMOTE CONTROLS

\* All controls are low voltage. 18 to 24 gauge wire is recommended.



2 wire installation

**Dehumidistat I** - The wall mount dehumidistat monitors the humidity level in the area it is installed. When the humidity level rises above the desired set-point, the HRV will activate to high speed/override mode. Once the humidity level returns to desired condition, the unit will return to the normal mode.



4 wire installation

**Dehumidistat II** - The wall mount dehumidistat II offers the same features of the dehumidistat I plus additional off/on control for the HRV. Dial illuminates when in override mode.



3 wire installation

**RTS 3** - The RTS 3 is designed to provide an intermittent boost to the Heat/Energy recovery ventilator. Depressing the fan control button will energize the HRV/ERV system into high speed from a low or standby mode. The ventilator can be set to continue on high for 20, 40, or 60 minutes by pressing the control button one, two or three times. Pressing the button a fourth time will cancel the timing function.



2 wire installation

**EDF 1** - The EDF 1 is designed to provide 3 modes of operation to the Heat/Energy recovery ventilator. Pressing the "Push" button once initiates the unit to run at a continuous low speed of operation (green). Depressing the button twice allows the ventilator to run for 20 minutes and then turns off for 40 minutes (yellow). Touch the button a third time and the system will run continuous on high (red). The ventilation system will stay on the last function selected until it is changed.



2 wire installation

**15-min Timer** - The 15-minute remote timer is typically installed in areas where contaminated such as moisture and odors, are produced. Simply push the button and the HRV will activate to high speed for 15 minutes. Up to 5 electronic timers can be installed throughout the building at a distance of up to 500 feet (152 meters) from the HRV.

## OPTIONAL INTELLITEK CONTROL

### DIGITAL DISPLAY

Shows Indoor Humidity Level  
This control will not read below 29% RH

### DEHUMIDISTAT CONTROL

(see description on top of this page)

### OVERRIDE TIMER

When pressed, unit will provide high speed ventilation for one 15, 30 or 60 minute period.

### MAINTENANCE LIGHT

Light comes on when it's time to clean unit.

### POWER

On/Off and Reset

### MODES

Select Intermittent, Recirculation or Continuous Ventilation Modes

### MODE SPEED

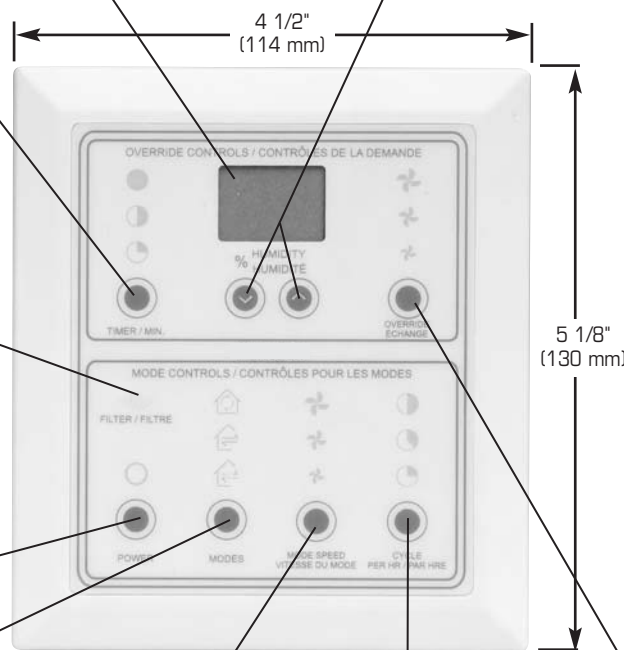
Set Unit to Low, Medium or High Speed

### CYCLE CONTROL

Set unit to cycle on 15, 20, or 30 minutes every hour

### OVERRIDE SPEED CONTROL

Push to select override speed of unit.



## 5MR INTELLITEK MULTI-FUNCTION WALL CONTROL

Control multiple functions of your Powrmatic HRV with one slimline wall control. Two wire connection simplifies installation. Use one EDF5 per PHRVR installed.

# TROUBLESHOOTING

Problem	Causes	Solutions
Air is too dry	Dehumidistat control is set too low HRV out of balance	Increase the desired level of humidity. Change ventilation mode from continuous mode to standby. Balance HRV
Air is too humid	Dehumidistat control is set too high Sudden change in temperature Storing too much wood for heating Dryer vent exhaust is inside home Poor air circulating near windows HRV out of balance Well sealed basement door is closed	Reduce the desired level of humidity. Combine this step with use of continuous exchange mode. Wait until outside temperature stabilizes (winter). Heating will also improve situation. Store a majority of your wood outside. Even dried, a cord of wood contains more than 20 gallons of water. Arrange outside vent for dryer. Open curtains or blinds. Bay or bow windows may require mechanical method. Balance HRV Open the door or install a grill on the door.
Persistent condensation on window	Improper adjustment of dehumidistat control HRV out of balance	Reduce the desired level of humidity. Combine this with the use of continuous exchange mode. Balance HRV
Poor Air Flows	-1/4" (6mm) mesh on the outside hoods is plugged -Filters plugged -Core obstructed -House grilles closed or blocked -Dampers are closed if installed -Poor power supply at site -Ductwork is restricting HRV -Improper speed control setting -HRV airflow improperly balanced	-Clean exterior hoods or vents -Remove and clean filter -Remove and clean core -Check and open grilles -Have electrician check supply voltage at house -Check duct installation -Increase the speed of the HRV -Have contractor balance HRV
Supply air feels cold	-Poor location of supply grilles, the airflow may irritate the occupant -Outdoor temperature extremely cold	-Locate the grilles high on the walls or under the baseboards, install ceiling mounted diffuser or grilles so as not to directly spill the supply air on the occupant (eg. Over a sofa) -Turn down the HRV supply speed. A small duct heater (1kw) could be used to temper the supply air -Placement of furniture or closed doors is restricting the movement of air in the home -If supply air is ducted into furnace return, the furnace fan may need to run continuously to distribute ventilation air comfortably -Balanced HRV
HRV and / or Ducts Frosting up	-HRV air flows are improperly balanced -Malfunction of the HRV defrost system	-Note: minimal frost build-up is expected on cores before unit initiates defrost cycle functions -Have HVAC contractor balance the HRV
Condensation or Ice Build Up in Insulated Duct to the Outside	-Incomplete vapor barrier around insulated duct -A hole or tear in outer duct covering	-Tape and seal all joints -Tape any holes or tears made in the outer duct covering -Ensure that the vapor barrier is completely sealed.



# ELECTRICAL CONNECTIONS (CONT'D)

## ELECTRICAL CONNECTION TO A FURNACE

### PRACTICAL TIPS

**Caution:**

- Never connect a 120 volt AC circuit to the terminals of the Accessory Control Contacts. Only use the low voltage class 2 circuit of the furnace blower control.

**For a Furnace Connected to a Cooling System:**

- On some older thermostats, energizing the R and G terminals at the furnace has the effect of energizing Y at the thermostat and thereby turning on the cooling system. If you identify this type of thermostat, you must use the "Alternate Furnace Interlock Wiring".

