SEQUENCE OF OPERATIONS
IQ Vertical Fan Coil [VFC] with ERV and Positive Protect™

Principal System Components include:

- ECM Motor on main blower
- ERV with two 190 mm EBM blowers and motorized damper system for defrost/outside air entry
- Motorized water control valve
- Remote-mounted low voltage thermostat with On/Auto and 3 Speed Operation

1. When the front-mounted system switch is “OFF”, the complete system is off.

NORMAL OPERATION MODE

2. By switching the front-mounted switch to the “ON” position, the VFC’s main blower fan will run in a continuous low speed mode.

3. By switching the front-mounted ERV switch to the “ON” position, the ERV’s two blowers will operate continuously in low speed and motorized damper will be activated thus allowing outside fresh air to enter the ERV.

4. When the remote mounted thermostat has its Fan setting on “AUTO”, it will cause the blower to operate at increased speed(s) to meet the heating or cooling demand as called for by the temperature setting on the thermostat. When there is a call for heating or cooling, the motorized water control valve opens in concert with the increased blower speed to allow hot or cool water to flow through the water-to-air coil. After the heat/cool demand is met, the blower will drop back to a continuous low speed and the water control valve will close.

5. In Summer, when there is chilled water in the system, should there be a call for HEAT [as can happen regularly in the “shoulder seasons”], the motorized water control valve will remain closed, the auxiliary electric heater will be activated and the blower speed increased. After the HEAT demand is met, the blower will go back to a continuous low speed and the electric heater de-activated.

6. When the remote-mounted thermostat has its Fan switch in the “Low”, “Medium”, or “High” setting, the blower will maintain those settings indefinitely.

7. The ERV will OPERATE in a continuous low speed mode [both the supply air and exhaust air blowers] until the low-voltage remote switch [bathroom mounted] is activated, then the blowers will move to HIGH speed for 20/40/60 minutes as selected by occupant. Re-activating the remote switch anytime after the 20 minutes will cause the ERV to operate on HIGH speed for 20/40/60 minutes again.

8. The ERV has an automatic DEFROST mode that is activated when a temperature sensor in the fresh air supply stream sees a condition of -5°C or less. In defrost mode, the fresh air supply is blocked by a motorized damper which simultaneously opens the supply air path to ambient [warm] room air to assist in a speedy defrost. Both ERV blowers continue to operate during defrost. This will continue for a period of 5 minutes and then return to normal operation for a period of 20 minutes. When the temperature in the fresh air supply stream is -25°C or lower, the defrost time automatically moves to 10 minutes (from 5 minutes).

9. The POSITIVE PROTECT mode is designed to help protect the VFC’s water-bearing components from freezing should some condition occur that allows the temperature in the blower/water coil area to drop below 38°F. A temperature sensor that is mounted opposite the blower air inlet will signal the control circuit board if a condition below 38°F occurs and that will cause three (3) actions to occur:

   a. The water control valve will open to allow warm/hot water to flow.
   b. The ERV blowers will de-activate.
   c. The ERV air inlet/defrost damper will be de-energized and close via its spring return.

   This operation will continue as long as the sensor sees a condition lower than 38°F.