

## Supplemental Instructions for Optional Isolation Dampers

### Installation

Damper(s) are factory installed and fully wired in all ERV models with the exception of the HE1XIN ERV's in which the damper(s) are shipped loose with the ERV but are fully wired.

**Outdoor Installations:** For H and F orientations, attach ductwork to the ERV cabinet or to the outer flanges of the damper frame. For R and V orientations, attach ductwork to the curb before installing the ERV to the curb.

Note: In some ERV models the intake hoods must be installed over the damper.

**Indoor Installations:** Attach ductwork directly to the ERV cabinet or to the outer flanges of the damper(s) frame.

**HE1XIN Installations:** Damper(s) are shipped loose with the ERV but are factory wired. Slip the damper(s) on to the existing duct flanges on the ERV and plug the electrical connector on the end of the actuator in to the pre-wired plug on the ERV. The plug on the ERV can be located by the Outside Air (OA) and Room Air (RA) stickers located on the side of the ERV.

### Damper Locations on Outdoor ERVs

Damper(s) are located at the Outside Air (OA) location (underneath the air intake hood) and at the Room Air (RA) location for all units except HE6X and HE8X. The OA and RA locations are marked on the outside of the ERV. The damper actuators are located inside the ERV and are accessible through the ERV core door.

### Damper Locations on Indoor ERVs

Damper(s) are located at the Outside Air (OA) location and at the Room Air (RA) location for all units except HE6X and HE8X. The OA and RA locations are marked on the outside of the ERV. The damper actuators are located inside the ERV and can be accessed through the ERV core door.

### Damper Locations in HE6X & HE8X ERVs

Damper(s) are located at the Outside Air (OA) location and at the Exhaust Air (EA) locations. The OA and EA locations are marked on the outside of the ERV. The damper actuators are located inside the ERV. The OA actuator is accessible through the ERV core door, while the EA actuator is accessible through the right ERV blower door.

### Sequence of Operation

#### At start-up:

When the ERV receives an external call for ventilation, the blowers will not turn on immediately. The damper(s) are opening inside the ERV. It will take approx. 45 seconds to open, at which point a low voltage end switch in the actuator closes. The end switch call on the VFD or the motor starter to turn on the blower.

#### At shut-down:

When the ERV no longer calls for ventilation, the damper(s) will begin closing (spring return). When the damper(s) are approx. 75% closed (15-20 seconds), the end switch will open and the blowers will stop.

**CAUTION:** the blowers will still be spinning, but will stop. Do not try to manually slow the fans down.

**NOTE:** Damper(s) are spring return and are in the shut or closed position when the ERV is not operating.

**NOTE:** Damper(s) return to the closed position if power to the ERV is interrupted.

### Commissioning

Check all dampers and insure they open and close properly and without binding. Apply power to motorized dampers to ensure the actuator opens and closes the damper as designed.

**NOTE:** Check for unobstructed operation.

**NOTE:** For indoor units, the dampers are located inside the ductwork attached to the unit. Therefore, check damper operation after installing the first lengths of ductwork that cover the damper, but before completing the ductwork and making it inaccessible.

To check damper operation without operating blowers:

1. Turn off power to unit by rotating unit disconnect switch to "off" position (Warning! Line side of disconnect switch is still hot!)
2. Temporarily disconnect motor control(s):
  - a. Units with one or two Motor Starters: Disconnect blue low-voltage wire leading to transformer from terminal 96 of all of the motor starters.
  - b. Units with one or two Variable Frequency Drives (VFDs): Disconnect low-voltage wire leading to damper end switches from terminal 9 or 12 of all VFDs. Alternately use VFD keypad to set motor speed to 0 (WARNING: control equipment you install in the next step might over-ride this setting).
3. Consult unit wiring schematic and make temporary or permanent connections of jumpers or controls to call for unit operation.
4. Turn on power to unit.
5. Using the jumper(s) or controls installed in step 3, call for unit operation. Dampers should open.
6. Disconnect power to the unit; dampers should close.
7. Reconnect the motor control(s) by reversing what you did in Step 2, above.

**NOTE:** The above procedure does not confirm proper operation of the actuator end switches.

## Testing and replacement of dampers and actuators

If dampers fail to open at the signal for ventilation, disconnect power to the unit. To determine if the actuator is defective, disconnect the 24v power source. Connect the actuator directly to a known 24v power source with an appropriate cable. If the damper operates correctly, the problem is in the internal wiring connections.

Model HE1X: if only one motor starter is provided, the damper end switches are connected in series and both actuators need to be checked.

## Troubleshooting

### **Damper:**

Low air flow: Unit damper(s) not fully open, check for unobstructed operation. Clear any obstruction; re-tighten the actuator U-clamp; or replace damper actuator.

Dampers open, but blowers don't run: check end switch closure.

## Maintenance

Damper bearing are an impregnated bronze material and do not need lubrication.

Clean out wind-born debris such as leaves from the sealing surfaces of OA dampers in rooftop units at the same time you change filters.