

## Filter Alarms

### Installation & Operation Manual

#### WARNINGS

1. Wiring must be done by qualified personnel in accordance with requirements of the authority having jurisdiction.
2. Wiring penetrations into the unit must be sealed to be air-tight and maintain the thermal integrity of the unit insulation.
3. Unit must be installed so that the diaphragm of the pressure switch is in the vertical plane.
4. If unit has only one filter alarm, it will be installed by RenewAire in the airstream specified at time of order. Do not “swap” the airstreams (as can normally be done with indoor RenewAire units).
5. Differential pressure switch is suitable for use with Class 2 low-voltage power.
6. Differential pressure switch is rated for use a 300 VA pilot duty at 115 to 277VAC.
7. Size wires according to loads switched by the differential pressure switch.
8. Differential pressure switch is pre-set at RenewAire but we recommend adjustment to suit each installation (see below).
9. A 7/8” diameter opening is provided in the differential pressure switch case for installation of conduit connector or wire clamp (by others).
10. Cover for wiring connections must be re-installed after adjustment of pressure differential.
11. When adjusting pressure differential take care not to contact electrical terminals.

#### INTRODUCTION

RenewAire can provide as an option a filter alarm in one or more of the airstreams in its commercial Energy Recovery Ventilator (ERV) units. The purpose is to provide a remote indication that a filter in the ERV has become fully-loaded with dust and needs replacement. The filter alarm is an adjustable differential pressure switch that measures static pressure upstream and downstream of the filter. The differential pressure switch is in most cases located inside the ERV unit. Electrical connections from the switch to an alarm or indicator system is made by a qualified controls contractor. Installer must make provision for routing wire into the unit case in accordance with local codes.

Differential pressure switch in unit.  
(location varies by model)



## CONNECTING TO ALARM SYSTEM

The switch in the filter alarm is single-pole double-throw. When no pressure differential exists, the switch contacts will be in the normally closed (NC) position, making a circuit between the common (“C”) terminal and the “NC” terminal. When the pressure differential becomes greater than the setting of the switch (adjustable) the switch throws and makes contact between the “C” and the normally open (“NO”) contacts.

For most alarm applications, connect to the “C” and “NO” terminals.

## ADJUSTMENT RANGE OF PRESSURE DIFFERENTIAL SWITCH

Adjustment range of the differential pressure switch is 0.05” to 2.0”. The adjusting knob can be turned approximately 9¾ revolutions. To increase differential setting, turn knob clockwise. From a starting position (knob fully backed out counter-clockwise), the first four turns only engage the tensioning spring, and do not change the differential setting. After the first four turns, each complete revolution of the adjustment knob changes the pressure setting by 0.2”.

## ADJUSTMENT OF PRESSURE SETTING

Filter Alarm is set at RenewAire to 0.5” differential pressure. This is appropriate for installations at relatively high airflows, in which the clean filters have a pressure drop of 0.25” and the recommended filter loading imposes another 0.25” of pressure drop.

Because each system operates at different airflows, we recommend that the pressure differential be adjusted for each filter alarm after the ERV unit has been balanced for airflow, using the following procedure:

1. Adjust the pressure differential switch to throw at a pressure differential just higher than that of the clean filter.
  - a. With clean filters and all other components in place, operate the ERV.
    - i. If alarm sounds, pressure differential setting will need to be increased.
    - ii. If alarm does not sound, pressure differential setting will need to be decreased.
  - b. Turn off ERV and adjust differential setting.
  - c. Operate the ERV again, repeating adjustment procedure until you have determined the highest pressure setting that does not sound the alarm.
2. Adjust the pressure differential switch for an additional pressure drop equal to the desired loading of the filter.
  - a. Typical recommended loading for pleated filters is an additional 0.25”.
  - b. Turn adjustment knob clockwise to increase pressure setting. Each complete revolution of the adjustment knob changes the pressure setting by 0.2”, so for a 0.25” setting turn the knob 1¼ times revolutions.



Switch with cover plate removed.  
Always reinstall cover plate.