

Installation Instructions

Part Numbers: CRECOMZR--004A01, CRECOMZR--005A01
CRECOMZR--006A01, CRECOMZR--007A01

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Barometric relief dampers provide natural building pressurization control. An optional power exhaust system is available for jobs requiring greater relief.

The microprocessor CO₂ input terminals allow the addition of an accessory CO₂ sensor in the space or in return air ductwork. When the EconoMi\$er recognizes the presence of the CO₂ sensor, a ventilation control strategy automatically begins to operate. The outdoor air damper modulates open past minimum position as the CO₂ level in the space increases over the adjustable set point.

See Fig. 1 and 2 for EconoMi\$er component locations. See Table 1 for Package Usage and Contents.

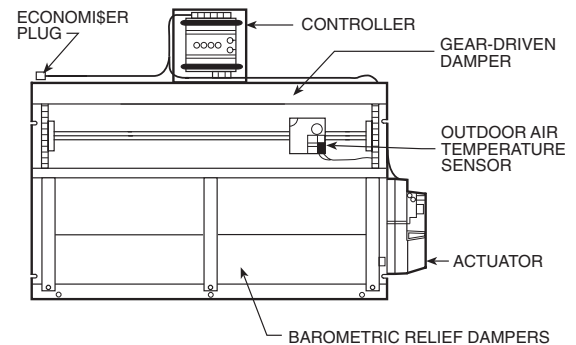


Fig. 1 — 3 to 6 Ton EconoMi\$er Component Locations

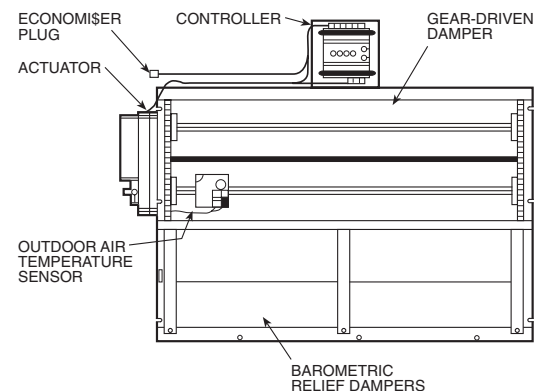


Fig. 2 — 7¹/₂ to 12¹/₂ Ton EconoMi\$er Component Locations

GENERAL

The accessory EconoMi\$er package uses microprocessor-based controls to sequence mechanical cooling with cool outdoor air (free cooling) to satisfy the cooling load and minimize energy consumption. Free cooling can be used alone or in conjunction with mechanical cooling.

The standard economizer uses a dry bulb sensor to sense Outdoor Air Temperature (OAT). This sensor provides two functions for the EconoMi\$er controller: it determines the availability of free cooling (EconoMi\$er changeover); and it disables compressors at low ambient temperatures (mechanical cooling lockout).

When free cooling is available, the EconoMi\$er sequences free cooling with up to two stages of mechanical cooling to maintain comfort in the space. When free cooling is not available, the EconoMi\$er modulates to an adjustable minimum position set point to maintain a supply of fresh air entering the building.

Table 1 — Package Usage and Contents

UNIT	PACKAGE NO.	QTY	CONTENTS	
3 to 6 Ton Vertical	CRECOMZR 004A01	1	Outdoor Air Opening Panel	
		1	Outdoor Air Hood Top	
		2	Outdoor Air Hood Sides	
		1	Exhaust Air Hood Top	
		2	Exhaust Air Hood Sides	
		1	Exhaust Air Bottom Bracket	
		2	Screen Retainers	
		2	Outdoor Air Inlet Screens	
		1	Exhaust Air Screen	
		60	3/4 in. No. 10 screws	
		1	Seal Strip — 1/8 x 3/4 in.	
		1	Seal Strip — 1/2 x 3/4 in.	
		1	Outdoor Air Block-Off Plate	
		1	EconoMi\$er Assembly	
1	Supply Air Sensor			
7 1/2 to 12 1/2 Ton Vertical	CRECOMZR 005A01	1	Outdoor Air Opening Panel	
		1	Outdoor Air Hood Top	
		2	Outdoor Air Hood Sides	
		1	Exhaust Air Hood Top	
		2	Exhaust Air Hood Sides	
		1	Exhaust Air Bottom Bracket	
		2	Screen Retainers	
		2	Outdoor Air Inlet Screens	
		1	Exhaust Air Screen	
		60	3/4 in. No. 10 screws	
		1	Seal Strip — 1/8 x 3/4 in.	
		1	Seal Strip — 1/2 x 3/4 in.	
		1	Outdoor Air Block-Off Plate	
		1	Return Air Block-Off Plate	
1	EconoMi\$er Assembly			
1	Supply Air Sensor			
3 to 6 Ton Horizontal	CRECOMZR 006A01 (3 to 6 Ton only)	1	Outdoor Air Opening Panel	
		1	Outdoor Air Hood Top	
	OR	CRECOMZR 007A01	2	Outdoor Air Hood Sides
			1	Exhaust Air Hood Top
	7 1/2 to 12 1/2 Ton Horizontal	CRECOMZR 007A01	2	Exhaust Air Hood Sides
			1	Exhaust Air Bottom Bracket
	Included with the CRECOMZR 007A01 only		2	Screen Retainers
			2	Outdoor Air Inlet Screens
			1	Exhaust Air Screen
			60	5/8 in. No. 10 Screws
			1	Seal Strip - 1/8 x 7/8 in.
			1	Seal Strip - 3/4 x 3/4 in.
			1	Outdoor Air Block-off Plate
			1	EconoMi\$er Assembly
1			Supply Air Sensor	
1			Return Air Block-off Plate	
1	Return Air Top Filler Plate			
1	Side Seal Bracket			
4	Fastener Clips			

ACCESSORIES

The EconoMi\$er has several field-installed accessories available to optimize performance. The accessory options include:

- 2-Stage Power Exhaust
- Return Air Temperature Sensor/Wiring Harness
- Outdoor Air Enthalpy Sensor
- Return Air Enthalpy Sensor/Wiring Harness
- CO₂ Sensor (wall mount) or duct mount with accessory aspirator box
- Aspirator Box

SAFETY CONSIDERATIONS

Installation and servicing of air-conditioning equipment can be hazardous due to system pressures and electrical components. Only trained and qualified service personnel should install, repair, or service air-conditioning equipment.

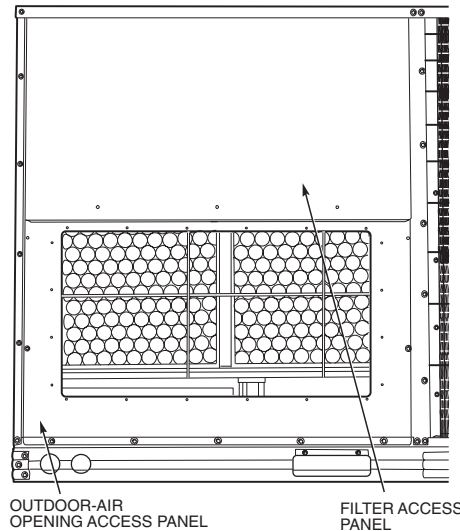
When working on air-conditioning equipment, observe precautions in the literature, tags, and labels attached to the unit, and other safety precautions that may apply. Be sure installation conforms to all applicable local and national codes.

⚠ WARNING

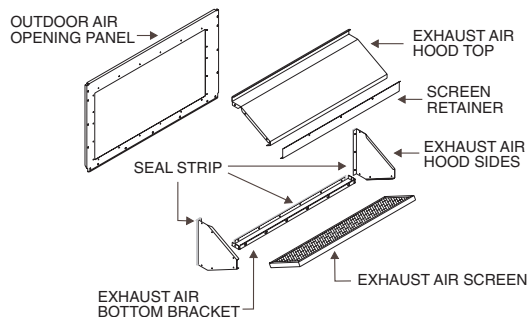
Before performing service or maintenance operations on unit, turn off main power switch to unit. If gas unit, shut off gas supply *before* shutting off main power. Electrical shock can cause personal injury or death. TAG DISCONNECT SWITCH WITH A SUITABLE WARNING LABEL.

**VERTICAL ECONOMIZER INSTALLATION
(CRECOMZR004A01, 005A01)**

1. To remove the existing unit filter access panel, raise the panel and swing the bottom outward. The panel is now disengaged from the track and can be removed. Remove the indoor coil access panel and discard. See Fig. 3.
- Controller should be mounted in vertical position as shown in Fig. 1 and Fig. 2.
2. Assemble the hood assembly as follows:
Remove the EconoMi\$er hood from its packaging. Locate the outdoor air opening panel. See Fig. 4.
 3. Install the 1/8 x 3/4 in. and 1/2 x 3/4 in. seal strip on the exhaust air hood side panels and the bottom bracket. Assemble the exhaust air hood to the outdoor air opening panel as shown in Fig. 4, using the screws provided. *Do not attach hood assembly to unit at this time.*
 4. Install the 1/8 x 3/4 in. seal strip on the outdoor air hood top and side panels. Assemble the outdoor air hood to the outdoor air opening panel as shown in Fig. 5, using the screws provided. *Do not attach hood assembly to the unit at this time.*
 5. Slide the outdoor air inlet screens into the screen track on the hood side panels. While holding the screens in place, fasten the screen retainer to the hood using the screws provided. Repeat the process for the barometric exhaust air screen. *Do not attach completed (Fig. 6) hood assembly to unit at this time.*



**Fig. 3 — Typical Access Panel Locations
(Vertical Economizer)**



**Fig. 4 — Exhaust Air Hood Assembly
(Vertical EconoMi\$er)**

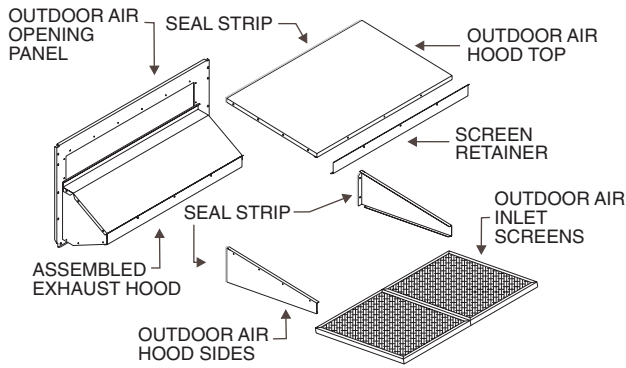


Fig. 5 — Outdoor Air Hood Assembly (Vertical EconoMiSer)

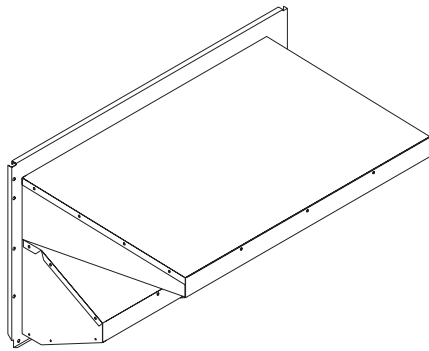


Fig. 6 — Completed Hood Assembly (Vertical EconoMiSer)

6. For 3 to 6 ton units, proceed to Step 7. For 7½ to 12½ ton units, install the return air block-off plate over the return air duct opening. See Fig. 7.
7. Slide the EconoMiSer assembly into the rooftop unit. See Fig. 8-10.

NOTE: Be sure to engage rear EconoMiSer flange under tabs in return air opening of the unit base. See Fig. 8.

8. Install the outdoor air block-off plate, then secure the EconoMiSer with the screws provided. See Fig. 9 and 10.
9. Remove and save the 12-pin jumper plug from the unit wiring harness located in the upper left corner and insert the EconoMiSer plug into the unit wiring harness. Refer to wiring diagram Fig. 11 and 12. Also refer to Fig. 13 if installing an accessory power exhaust.
10. Install the complete hood assembly on the unit and secure using the screws provided.
11. Remove the indoor fan motor access panel. See Fig. 14.
12. Mount the supply air temperature sensor to the lower left portion of the indoor blower housing with the two (2) screws provided (see Fig. 15). Connect the violet and pink wires to the corresponding connections on the supply air temperature sensor. Replace the indoor fan motor access panel.

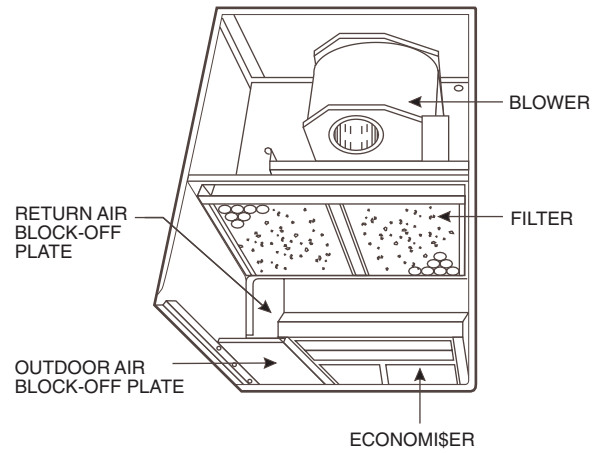


Fig. 7 — Return Air Block-Off Plate Installation (7½ to 12½ Ton Units Only)

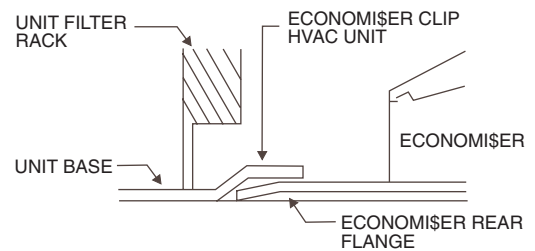


Fig. 8 — Rear Vertical EconoMiSer Flange Installation

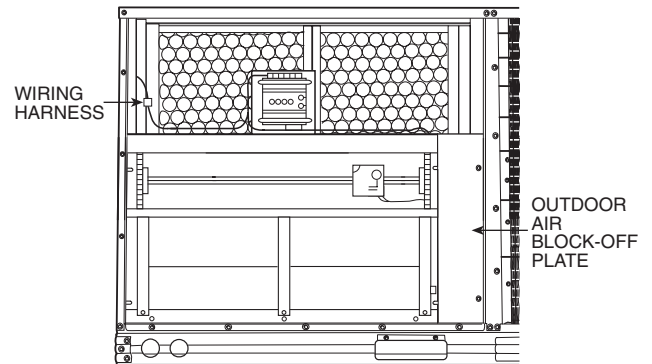


Fig. 9 — Vertical EconoMiSer Installed in 3 to 6 Ton Unit

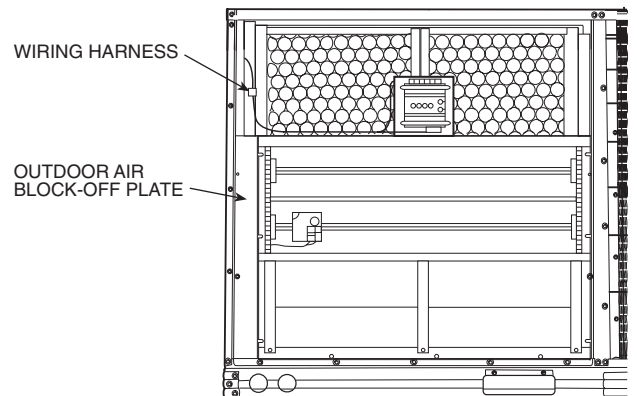
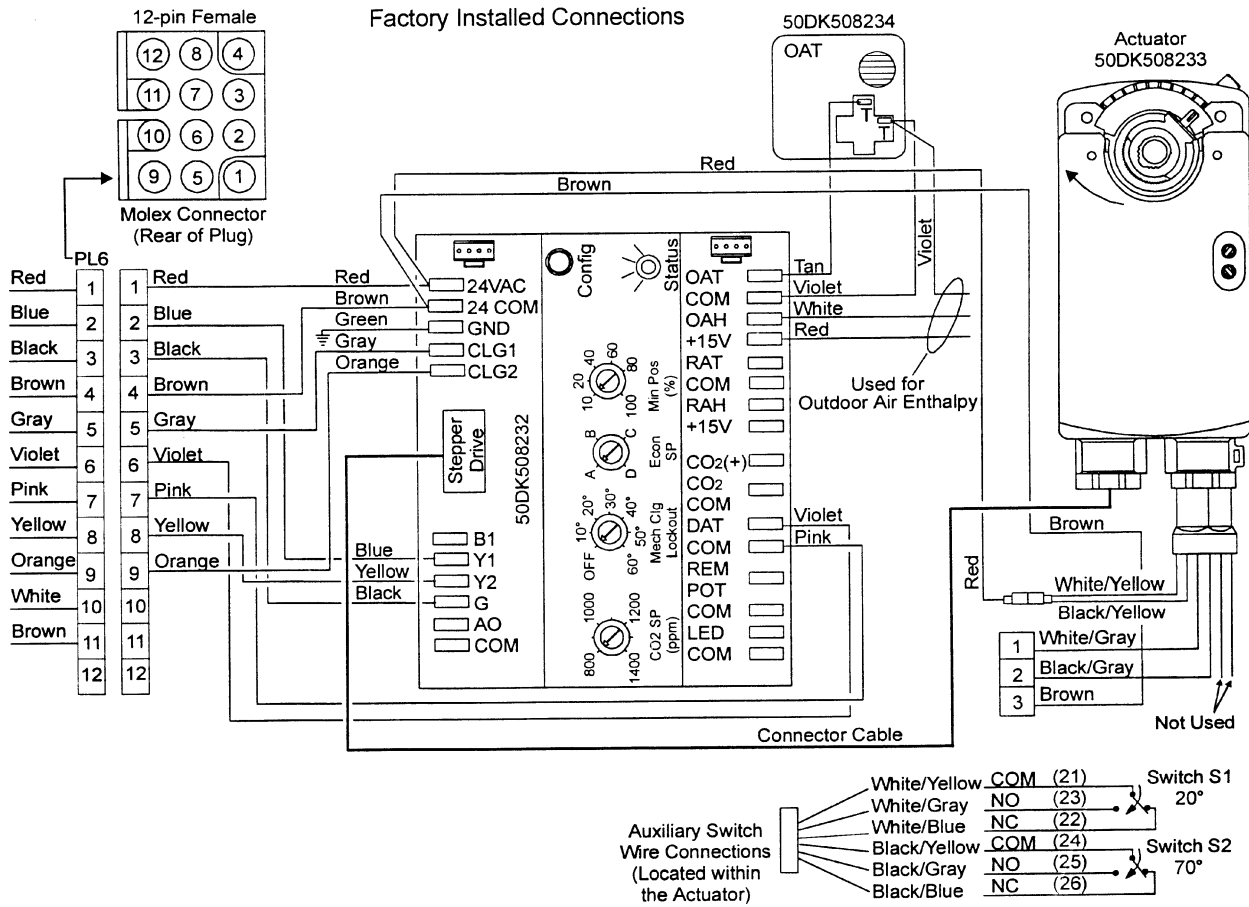


Fig. 10 — Vertical EconoMiSer Installed in 7½ to 12½ Ton Unit



LEGEND

OAT — Outdoor-Air Thermostat

Fig. 11 — EconoMi\$er Wiring

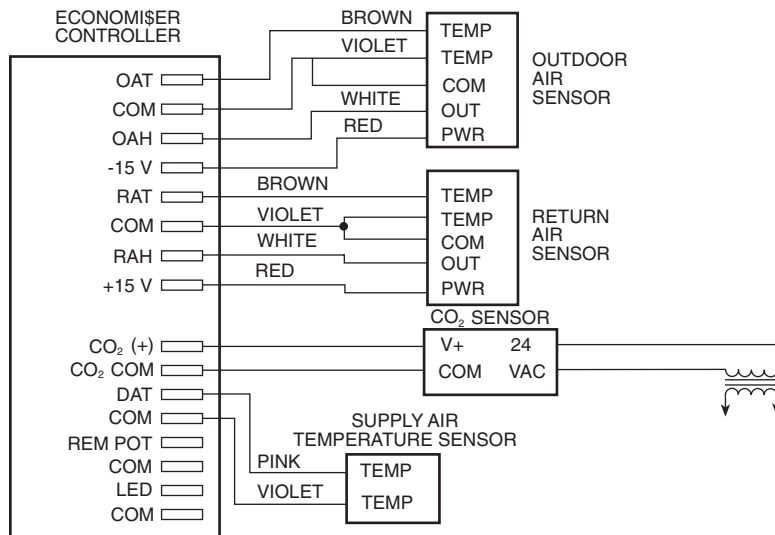


Fig. 12 — EconoMi\$er Sensor Wiring

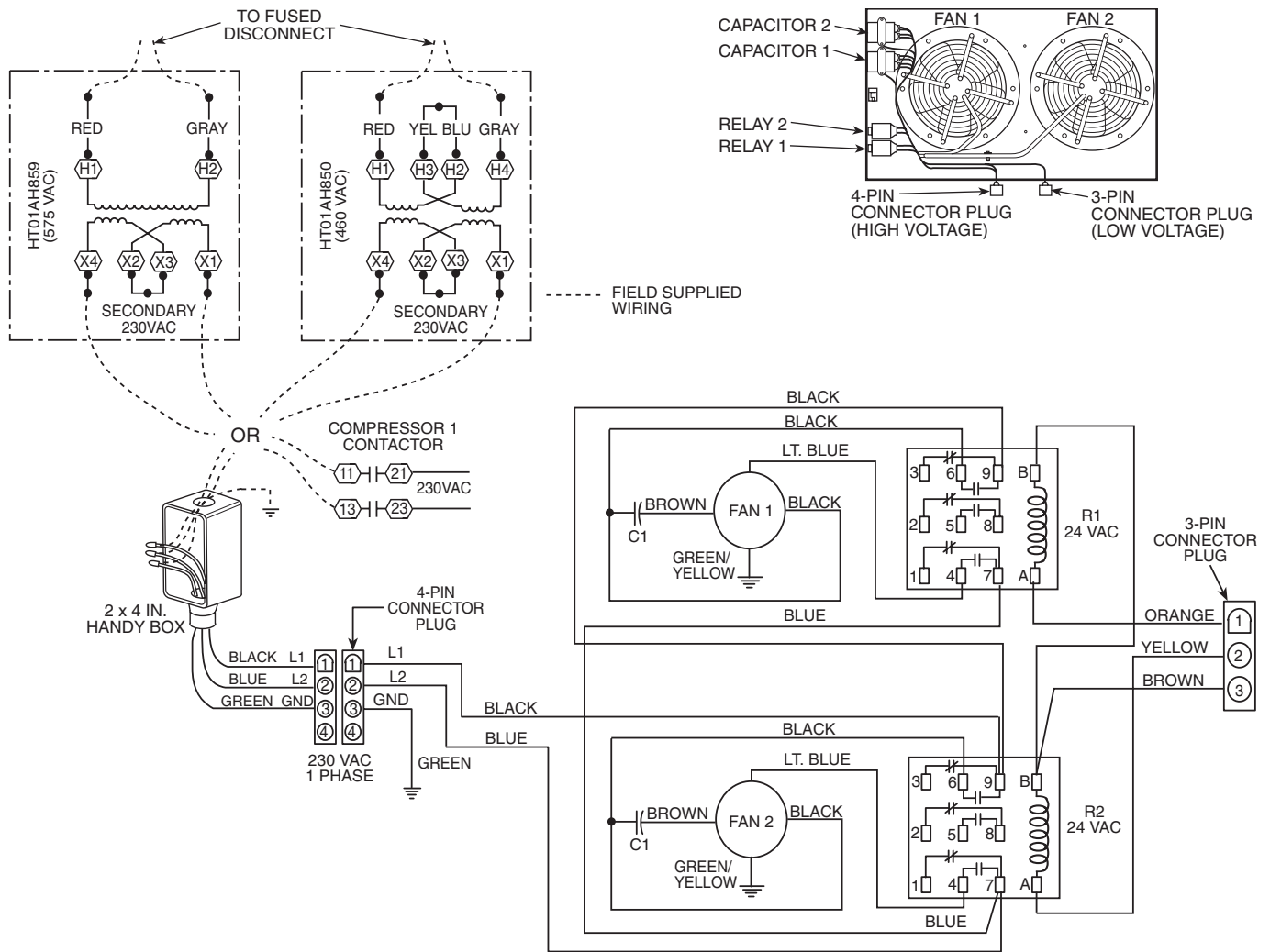


Fig. 13 — Wiring Diagram for Power Exhaust System

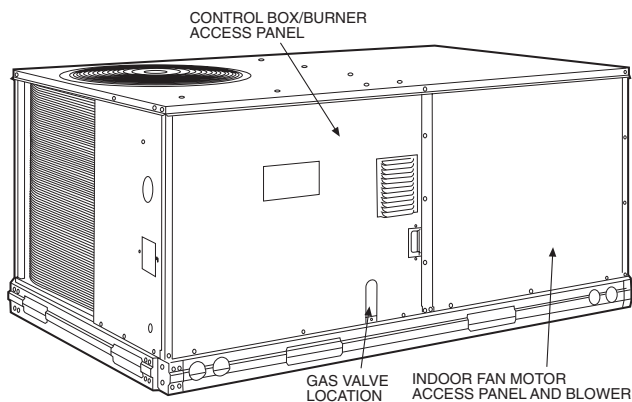


Fig. 14 — Indoor Fan Motor Access Panel Location

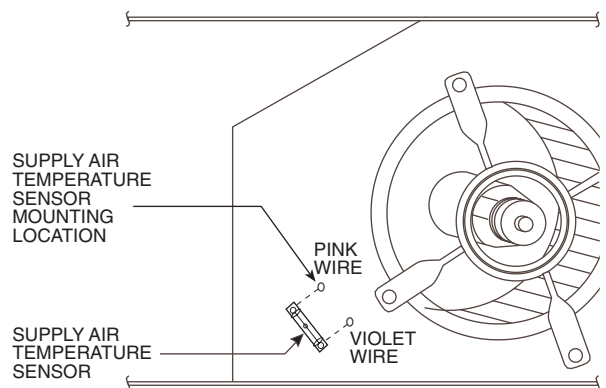


Fig. 15 — Supply Air Sensor Placement

HORIZONTAL ECONOMISER INSTALLATION (CRECOMZR006A01, 007A01)

To remove the filter access panel, raise the panel and swing the bottom outward. The panel is now disengaged from the track and can be removed.

1. Remove the outdoor air opening access panel and discard. See Fig. 16.
2. Remove the factory-installed horizontal return air (RA) duct cover, and place it foil side up over the vertical RA duct opening in the base pan of the unit. See Fig. 17.
3. Clip off both wire ties on the rooftop wiring harness, and slide the EconoMi\$er assembly into the rooftop. See Fig. 18.
4. Proceed to Step 6 for a 3 to 6 ton unit.
5. For a 7 $\frac{1}{2}$ to 12 $\frac{1}{2}$ ton unit, install the RA block-off plate and side seal bracket. Secure the bracket with the fastener clips. See Fig. 19.

For a 10 $\frac{1}{2}$ to 12 $\frac{1}{2}$ ton unit, install the RA top filler plate. (Discard the top filler plate for any other size unit.)

6. Install the outdoor air (OA) block-off plate. See Fig. 18.
7. Secure the EconoMi\$er to the unit with the screws provided. See Fig. 18 and 19.
8. Remove and save the jumper plug (blue/yellow wire) from the unit wiring harness located in the upper left corner, and insert the EconoMi\$er plug into the unit wiring harness.
9. Remove the shipping tape from the barometric relief dampers and ensure the dampers move freely. See Fig. 18.
10. Remove the indoor fan motor access panel (see Fig. 14).
11. Mount the Supply Air (SA) temperature sensor to the lower left portion of the indoor blower housing with the screws provided. See Fig. 15.
12. Connect the violet and pink wires to the corresponding connections on the Supply Air (SA) temperature sensor. Replace the indoor fan motor access panel.
13. Proceed to the Standard Hood section to install a standard hood, or to the Power Exhaust Hood section for a power exhaust hood.

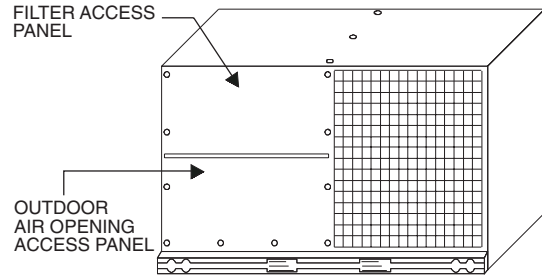


Fig. 16 — Outdoor Air Opening Access Panel Location

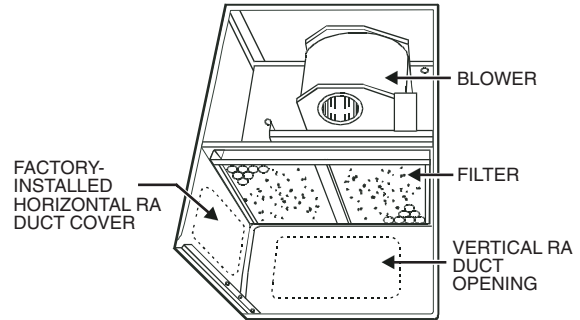
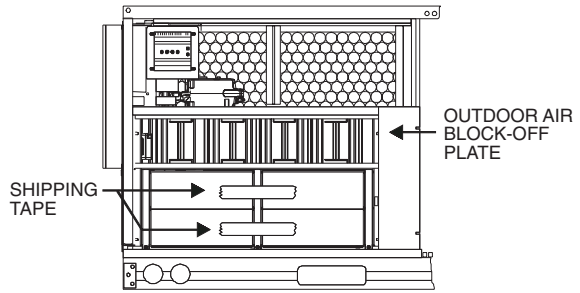


Fig. 17 — Return Air Duct Cover Installation



NOTE: The OA block-off plate is located on the left side of a 7 $\frac{1}{2}$ to 12 $\frac{1}{2}$ ton unit.

Fig. 18 — Horizontal EconoMi\$er Installed in a 3 to 6 Ton Unit

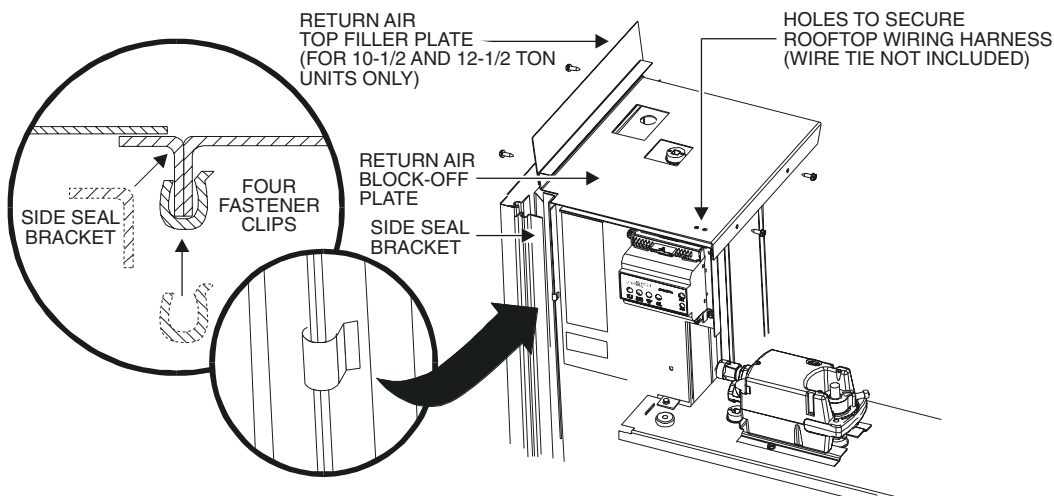


Fig. 19 — Horizontal EconoMi\$er Installed in a 7 $\frac{1}{2}$ to 12 $\frac{1}{2}$ Ton Unit

ACCESSORY INSTALLATION

Accessory Hinged Panels — The following parts are needed to field install an EconoMi\$er on a unit with hinged access panels:

3-6 Ton Unit Chassis

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	50DK508295	Label, JCI Economizer
2	5	AL48AM217	Screw
3	1	50CK504722	Label
4	1	HY76TB035	Wire Tie
5	1	AL56AU126	Screw
6	1	50HJ402257	Upper Filter Panel Assembly (or reuse existing panel)
7	1	50HJ440057	Lower Filter Panel Assembly

7-10 Ton Unit Chassis

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	50DK508295	Label, JCI Economizer
2	5	AL48AM217	Screw
3	1	50CK504722	Label
4	1	HY76TB035	Wire Tie
5	1	AL56AU126	Screw
6	1	50HJ402260	Upper Filter Panel Assembly (or reuse existing panel)
7	1	50HJ440056	Lower Filter Panel Assembly

12½ Ton Unit Chassis

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	50DK508295	Label, JCI Economizer
2	5	AL48AM217	Screw
3	1	50CK504722	Label
4	1	HY76TB035	Wire Tie
5	1	AL56AU126	Screw
6	1	50HJ402261	Upper Filter Panel Assembly (or reuse existing panel)
7	1	50HJ440056	Lower Filter Panel Assembly

The hinged access panel parts should be installed in place of corresponding existing parts only on units equipped with hinged access panels.

Standard Hood — To assemble the standard hood assembly to either the vertical or horizontal EconoMi\$er:

1. Remove the EconoMi\$er hood from its packaging, and locate the outdoor air (OA) panel. See Fig. 16.
2. Install the ¾ x ¾ in. (horizontal) or ½ x ¾ in. (vertical) seal strip on the Exhaust Air (EA) hood top panel. Install the ⅛ x ⅞ in. (horizontal) or ⅛ x ¾ in. (vertical) seal strip on the EA hood side panels and bottom brackets. Assemble the EA hood to the OA panel as shown in Fig. 20, using the screws provided. Do not attach hood assembly to unit at this time.
3. Install the ⅛ x ⅞ in. (horizontal) or ⅛ x ¾ in. (vertical) seal strip on the OA hood top and side panels. Assemble the OA hood to the OA panel as shown in Fig. 21, using the screws provided. Do not attach hood assembly to the unit at this time.
4. Slide the OA inlet screens into the screen track on the hood side panels. While holding the screens in place, fasten the screen retainer to the hood using the screws provided. Repeat the process for the EA screen.
5. Install the complete hood assembly on the unit, and secure using the screws provided. See Fig. 22.

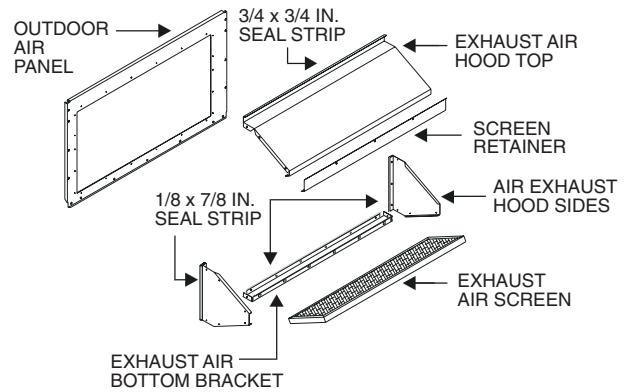


Fig. 20 — Exhaust Air Hood Assembly (Horizontal EconoMi\$er)

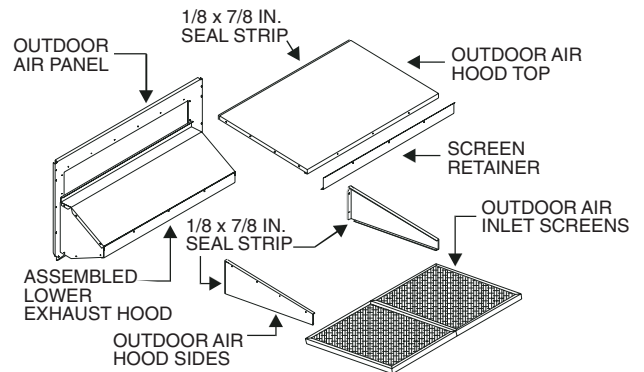


Fig. 21 — Outdoor Air Hood Assembly (Horizontal EconoMi\$er)

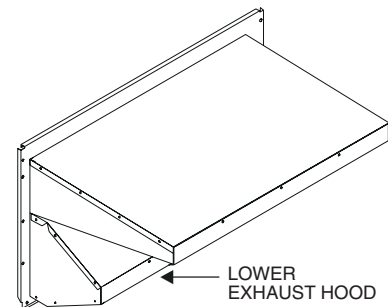


Fig. 22 — Completed Hood Assembly

Power Exhaust Hood — Power exhaust hood kit Part Numbers are as follows: CRPWREXH014A00 (3 to 6 Ton Unit), CRPWREXH015A00 (for a 7½ to 12½ Ton Unit), CRPWREXH016A01, and CRPWREXH017A01 (both include a vertical EconoMiSer Assembly). Refer to Fig. 23-30 for power exhaust assembly and installation.

Power Exhaust Assembly Kit Contents:

- 1 — Power Exhaust Hood Top
- 1 — Power Exhaust Hood Bottom
- 2 — Power Exhaust Hood Sides
- 1 — Power Exhaust Fan Divider Plate
- 1 — Damper Block-Off Plate with 2 x 4 in. Junction Box
- 2 — Power Exhaust Hood Braces
- 1 — Power Exhaust Hood Screen
- 1 — Power Exhaust Fan Assembly
- 4 — U-Clips
- 40 — 5/8 in. No. 10 Sheet Metal Screws
- 1 — Seal Strip — 1/8 x 7/8 in.
- 1 — Seal Strip — 3/4 x 3/4 in.

NOTE: The Power Exhaust Hood installation is the same procedure for both a vertical and horizontal EconoMiSer. (See Table 2 for Power Exhaust Power Requirements.)

Table 2 — Power Requirements

POWER EXHAUST SIZE	TOTAL AMPS	MOCP		
		230 V	460 V	575 V
3 to 6 Ton	1.40 @ 60 Hz	15.0	15.0	15.0
7½ to 12½ Ton	3.04 @ 60 Hz			

MOCP — Maximum Overcurrent Protection

If installing the Power Exhaust Assembly as a retrofit to an existing vertical or horizontal EconoMiSer or as a new installation, proceed as follows:

1. Remove the OA panel and hood assembly from the rooftop. Discard panel if the EconoMiSer was not factory installed.
2. Remove the lower exhaust hood from the hood assembly by removing the top, sides, and bottom panels. (See Fig. 14 and 16.) Discard the lower exhaust hood panels.
3. Remove the OA block-off plate located adjacent to the EconoMiSer damper, and discard it. (See Fig. 18.)

IMPORTANT: Motors are rated for 230 VAC, 1 Phase, and 50/60 Hz. For 460 VAC applications, use an HT01AH850 transformer. For 575 VAC applications, use a HT01AH859 transformer.

To assemble the power exhaust hood:

1. Install the 3/4 x 3/4 in. seal strip on the top panel of the power exhaust hood. Install the 1/8 x 7/8 in. seal strip on the power exhaust hood side panels and bottom panel. Assemble the power exhaust side panels, then bottom panel as shown in Fig. 23.
2. Attach the hood top panel to the side panels.
3. Skip Step 4 if this is a retrofit installation.

4. Assemble the OA side panels, then top panel, to the OA panel. (See Fig. 24.)
5. Slide the OA inlet screens into the screen track on the hood side panels. While holding the screens in place, fasten the screen retainer to the hood. (See Fig. 24.)
6. Attach the exhaust hood side braces to the power exhaust side panels and OA hood top. (See Fig. 25.)

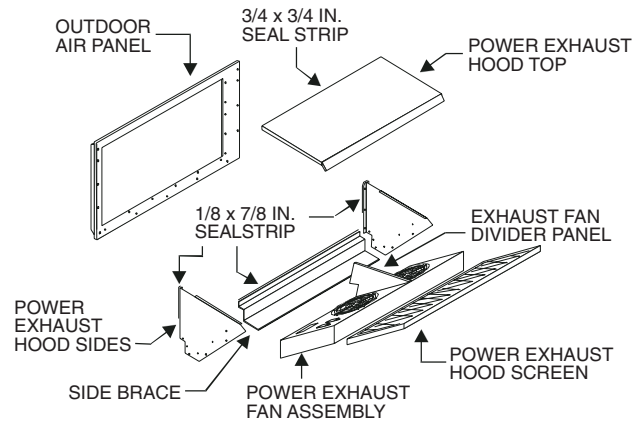


Fig. 23 — Power Exhaust Hood Assembly

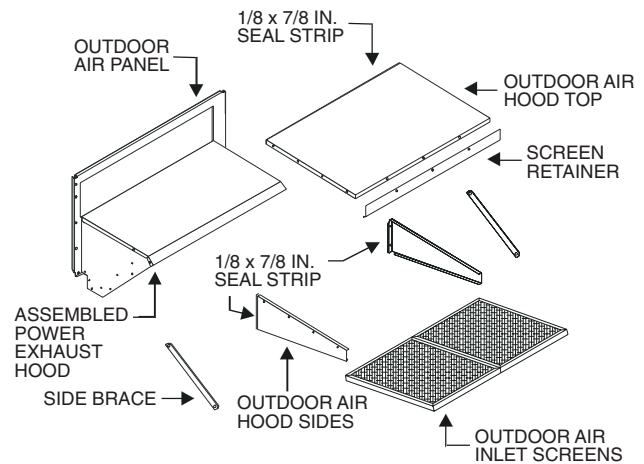


Fig. 24 — Outdoor Air Hood Assembly with Power Exhaust Assembly

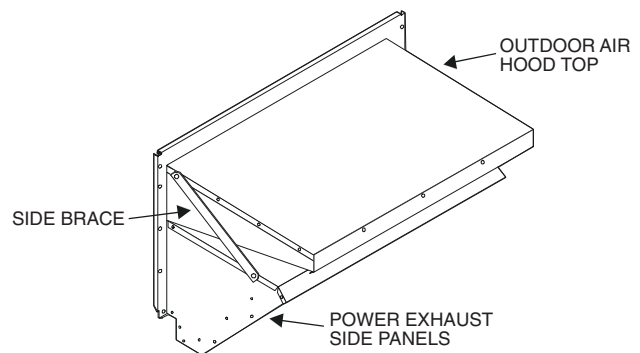


Fig. 25 — Completed Hood Assembly with Power Exhaust

7. Slide the fan assembly into the power exhaust assembly, and secure to the side panel. (See Fig. 26 and 30.)
8. Attach the U-Clips provided to the hood screen, and then to the fan assembly. (See Fig. 26 and 27.)
9. Attach the exhaust fan divider plate to the exhaust fan assembly between the two fans. (See Fig. 26.)
10. Locate the OA block-off plate with the 2 x 4 in. junction box attached. (See Fig. 28.)
11. Terminate the field-supplied power wiring in the 2 x 4 in. junction box, and reinstall the cover.
12. Install the 4-pin connector from the junction box through the hole in the OA block-off plate. (See Fig. 28 and 29.)
13. Assemble the block-off plate to the damper. (See Fig. 29.)
14. To install the hood assembly, tilt the hood assembly up to the rooftop. Connect the 3-pin and 4-pin connectors as shown in Fig. 29.
15. Secure the complete hood assembly to the rooftop using the screws provided.

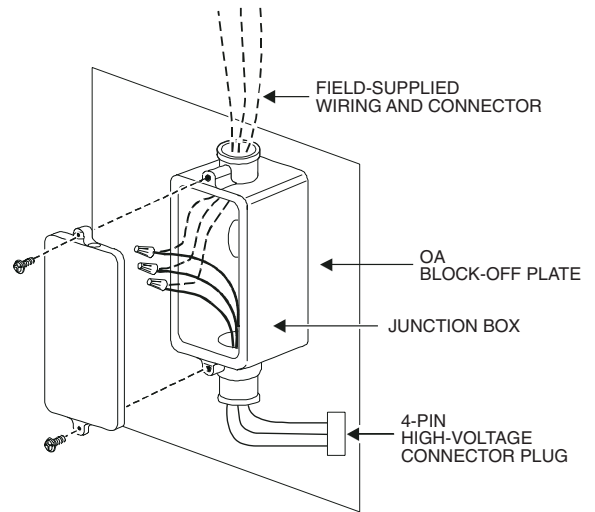


Fig. 28 — Junction Box Termination

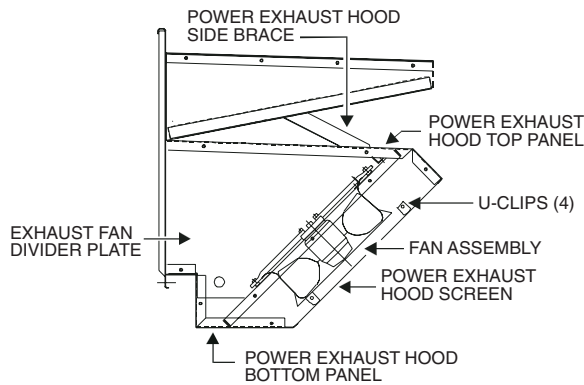


Fig. 26 — Power Exhaust Hood Cross Section

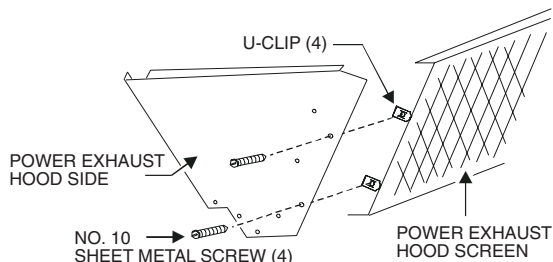
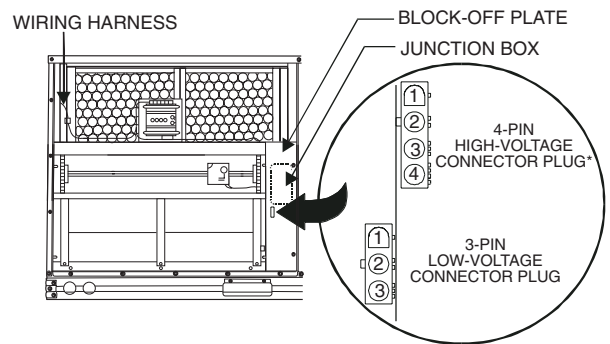


Fig. 27 — U-Clip Installation



*On 7¹/₂ to 12¹/₂ ton rooftop units, the connector plugs are located on the left side of the damper.

Fig. 29 — Connector Plug Location in a 3 to 6 Ton EconoMiSer Rooftop Assembly

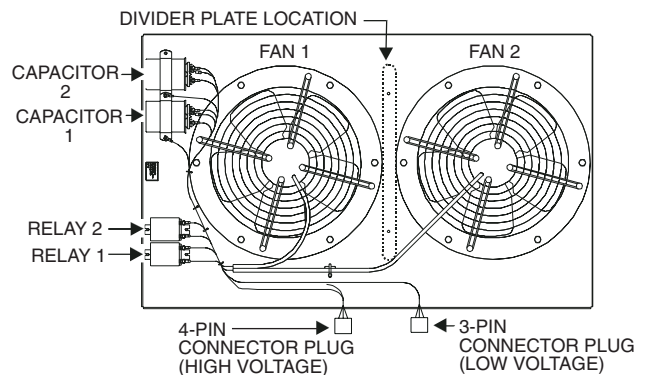


Fig. 30 — Fan Assembly Components

Auxiliary Sensors — Outdoor Air Enthalpy Sensor Kit Contents:

- Return Air Temperature Sensor or Return Air Enthalpy Sensor
- Wiring harness and mounting bracket
- Three tie wraps
- Two No. 6-20 self-tapping screws (requires 1/4 in. nut driver)
- Two No. 10-16 self-drilling screws (requires 5/16 in. nut driver)
- 1/2 in. bushing

REPLACING THE OUTDOOR AIR TEMPERATURE SENSOR WITH AN OUTDOOR AIR ENTHALPY SENSOR — The OA temperature sensor is factory-installed in the EconoMi\$er system. See Fig. 19 to replace the OA temperature sensor in a horizontal EconoMi\$er and Fig. 31 for a vertical EconoMi\$er.

To replace the OA temperature sensor:

1. Disconnect the two wires from the installed sensor.
2. Use a 1/4 in. nut driver to remove the two screws securing the sensor to the sheet metal.
3. Reuse the screws to mount the new sensor.
4. Reuse the original wiring harness, using all five wires to wire the sensor. (See Fig. 32 and 33 for connections.)

REPLACING THE RETURN AIR TEMPERATURE SENSOR OR THE RETURN AIR ENTHALPY SENSOR — To install the mounting bracket:

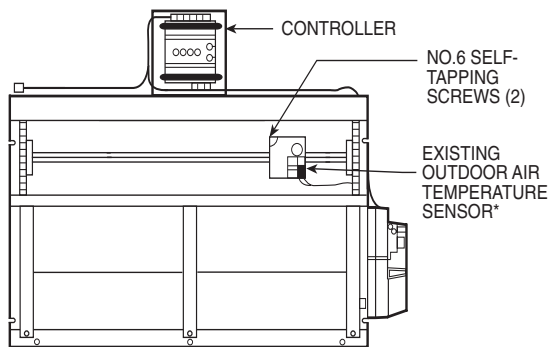
1. Attach the sensor to the mounting bracket using the two No. 6 self-tapping screws provided. (The sensor must be mounted in the upright position. See Fig. 34.)

NOTE: The mounting bracket orientation varies, depending on the EconoMi\$er assembly. (See Fig. 34 and 35 to determine the proper bracket orientation for a vertical EconoMi\$er and Fig. 36 for a horizontal EconoMi\$er.)

2. Open the barometric relief dampers.
3. Mount the bracket to the inside of the EconoMi\$er, using a 5/16 in. nut driver and the two No. 10 self-drilling screws provided.

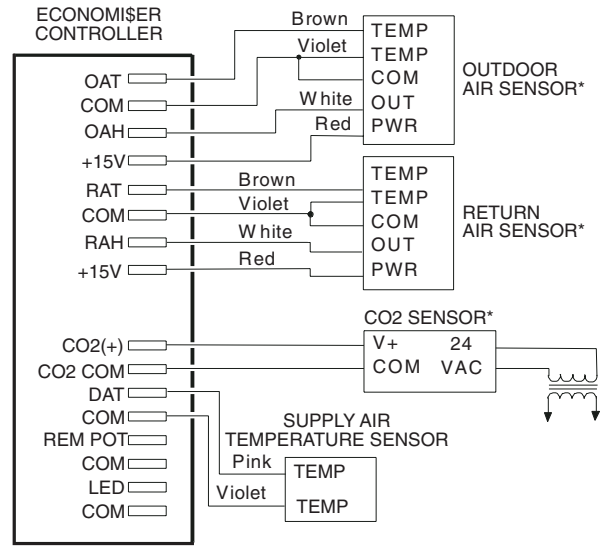
TO WIRE THE RETURN AIR TEMPERATURE SENSOR OR THE RETURN AIR ENTHALPY SENSOR

1. Remove the knockout plug. (See Fig. 36 or 37.)
2. Feed the wires through the knockout opening and insert the bushing to secure the wires.
3. Route and attach the wiring harness to the original harness using tie wraps.
4. Refer to Fig. 32 and 33 to wire the sensor.
5. Check to ensure the barometric relief dampers move freely.



*The sensor is located on the left side of the damper in a 7 1/2 to 12 1/2 ton rooftop unit.

Fig. 31 — Vertical EconoMi\$er Assembly



*Field installed accessory.

Fig. 32 — Sensor Wiring Diagram

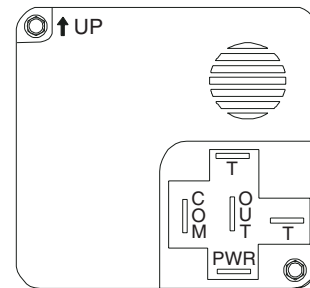


Fig. 33 — Terminal Locations for Outdoor Air or Return Air Enthalpy Sensors

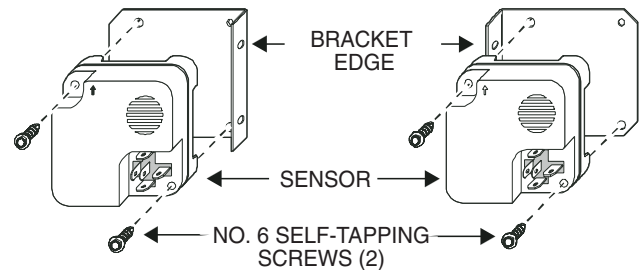


Fig. 34 — Mounting the Sensor to the Bracket in a Vertical EconoMi\$er Assembly

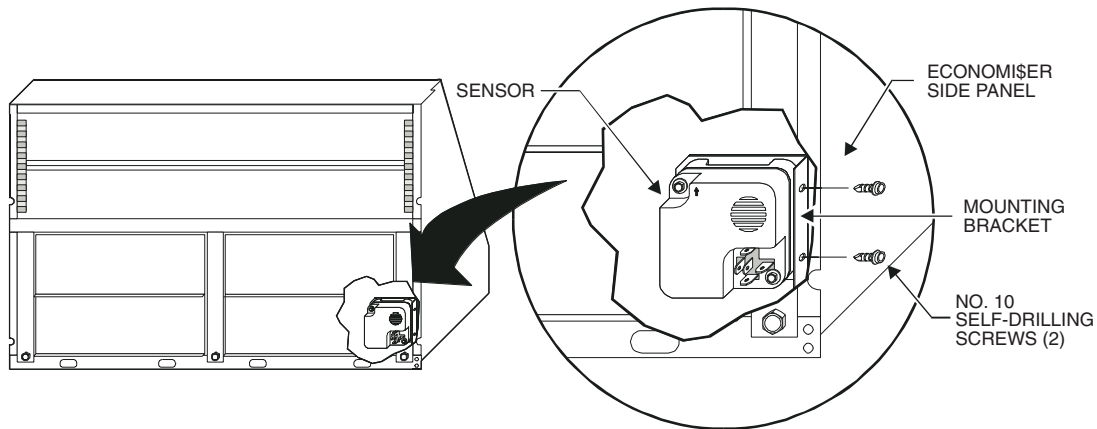


Fig. 35 — Mounting the Sensor and Bracket in a 3 to 6 Ton Vertical EconoMiSer Assembly

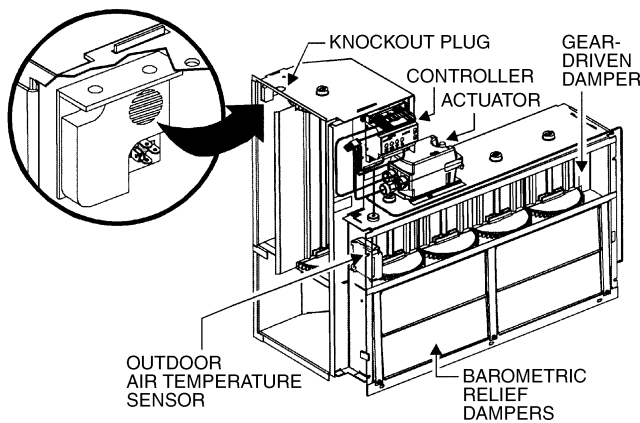


Fig. 36 — Mounting the Sensor and Bracket in a Horizontal EconoMiSer Assembly

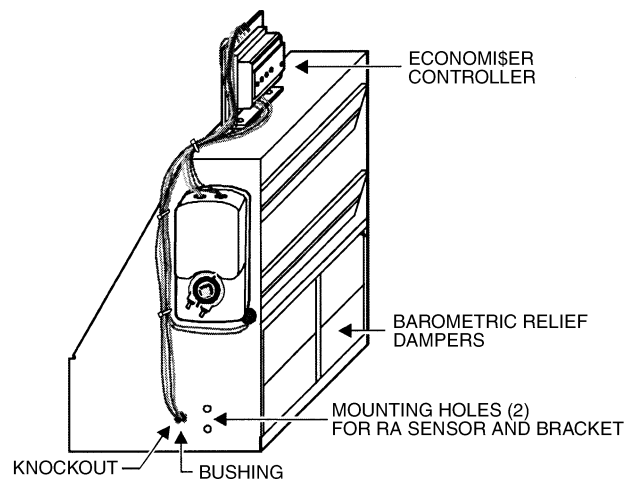


Fig. 37 — Location of the Return Air Sensor and Bracket

Actuator Auxiliary Switch Adjustment — The EconoMiSer actuator has two built-in power exhaust position switch adjusters accessible on either face of the actuator. Switch 1 (SW no. 1) is factory set to energize the first stage fan (SW no. 1) at 27 degrees open, 30% Outdoor Air (OA) and the second stage fan (SW no. 2) at 63 degrees open, 70% OA. Switch points are independent and adjustable from 0 to 70 degrees for SW no. 1 and 20 to 90 degrees for SW no. 2.

IMPORTANT: Do not force the switch adjuster out of the allowable range, or damage to the switch may occur.

These procedures serve as examples. To position the auxiliary switches, refer to Fig. 38 and 39 and use the following method:

Adjusting Switch 1 — SW no. 1 has an adjustable trip point from 0 to 70 degrees. The adjuster for SW no. 1 is factory set at 27 degrees. To change the factory setting:

1. Remove the filter access panel to gain access to the actuator.
2. With power applied set the Minimum Position Set Point (located on the controller) to the desired first stage power exhaust start point. Wait for the OA damper to reach the desired position.

3. Use a flat-blade screwdriver to rotate SW no. 1 adjuster downward toward zero, until resistance is encountered. Turn the adjuster in the opposite direction, until the first stage is energized. (See Fig. 38 or 39.)

Adjusting Switch 2 — SW no. 2 has an adjustable trip point from 20 to 90 degrees. The adjuster for SW no. 2 is factory set at 63 degrees. To change the factory setting:

1. Reset the Minimum Position Set Point located on the controller to the desired second stage power exhaust start point. Wait for the OA damper to reach the desired position.
2. Use a flat-blade screwdriver to rotate SW no. 2 adjuster downward toward 20 degrees, until resistance is encountered. Turn the adjuster in the opposite direction, until the second stage is energized. (See Fig. 38 or 39.)
3. Return the Minimum Position Set Point to the desired setting.
4. Replace the filter access panel.

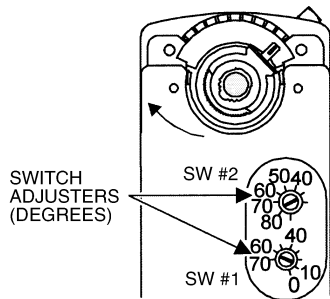


Fig. 38 — Location of the Switches for a 3 to 6 Ton EconoMiSer

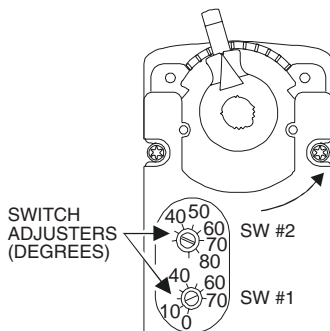


Fig. 39 — Location of the Switches for a 7 1/2 to 12 1/2 Ton EconoMiSer

COMMISSIONING

The EconoMiSer saves energy when it uses OA to provide free cooling instead of mechanical air conditioning. The EconoMiSer controller switchover strategy determines if the OA is suitable for free cooling. The controller chooses the switchover strategy with the most energy savings, provided the required sensors are connected and functioning normally.

IMPORTANT: If a sensor stops functioning normally, the EconoMiSer controller switches to a strategy with reliable sensors.

CO₂ Control Set Up — If a CO₂ sensor is not being used, proceed to the next section. If a CO₂ sensor is being used, perform the following:

1. Determine the value at which you want the minimum position of the dampers to begin opening to allow a greater amount of outdoor air to enter. The range is 800 to 1,400 ppm.
2. Locate the CO₂ SP (PPM) potentiometer and adjust to the desired set point. See Fig. 40.

Mechanical Cooling Lockout — Determine the outdoor-air temperature at which you want the mechanical cooling (compressors) to be disabled. Locate the mechanical cooling lockout (MECH CLG LOCKOUT) potentiometer. To disable this feature, turn the potentiometer counterclockwise (CCW) to the OFF position. Otherwise, set the value between 10 and 60 F. Mechanical cooling will not operate when the outdoor air temperature is below this value. See Fig. 40.

Dry Bulb Changeover Set Up — Determine the dry bulb changeover set point from Table 3. The settings are A, B, C and D. Locate the ECON SP potentiometer and set the dry bulb changeover set point. See Fig. 40. When the OAT is above this set point, the damper is limited to minimum position setting.

Table 3 — Changeover Set Points

SETTINGS	A	B	C	D
Dry Bulb (°F)	73	69	66	63
Single Enthalpy* (Btu/lb)	27	25	24	22
Differential Temperature* (°F, Not Adjustable)	2	2	2	2
Differential Enthalpy* (Btu/lb, Not Adjustable)	1	1	1	1

*Field-installed accessory.

If a potentiometer fails, its setting will default to the values in Table 4.

Table 4 — Default Potentiometer Settings

POTENTIOMETER	DEFAULT SETTING
CO ₂ SP (PPM)	1,000
MECH CLG LOCKOUT	47°
ECON SP	D
MIN POS (%)	20

Ventilation Air (Minimum Position Set Up) — If ventilation air is not required, proceed to Step 5. If ventilation air is required, perform the following:

1. The indoor fan must be on to set the ventilation air. Either put the thermostat in the continuous fan mode or jumper the R and G terminals at the rooftop unit connection board.
2. Locate the minimum position (MIN POS) potentiometer. Turn the potentiometer full CCW to fully close the outdoor air dampers. Turn the potentiometer gradually clockwise (CW) to the desired position. See Fig. 40.
3. Replace the filter access panel. See Fig. 3. Ensure the filter access panel slides along the tracks and is securely engaged.
4. Calculate the minimum airflow across the EconoMiSer.
 - a. Calculate % of outside air using the following formula.

$$\% \text{ Outdoor air through EconoMiSer} = \frac{\text{Mixture Temp} - \text{Return Air Temp}}{\text{Outdoor Temp} - \text{Return Air Temp}}$$
 - b. Multiply total CFM by percentage outdoor air, this gives outdoor air volume in CFM.
5. Turn on base unit power.

NOTE: The EconoMiSer begins operation three minutes after power up.

⚠ WARNING

Personal Injury Hazard. Avoid possible injury by keeping fingers away from damper blades.

6. See Figs. 41-45 for barometric relief damper characteristics.

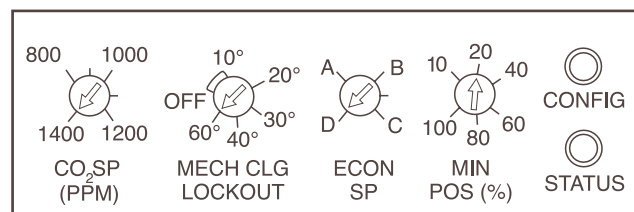


Fig. 40 — EconoMiSer Control Adjustment Potentiometers (Factory Settings)

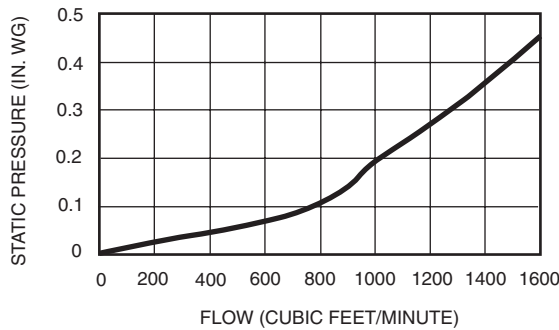


Fig. 41 — 3 to 6 Ton Barometric Relief Capacity (Vertical EconoMi\$er)

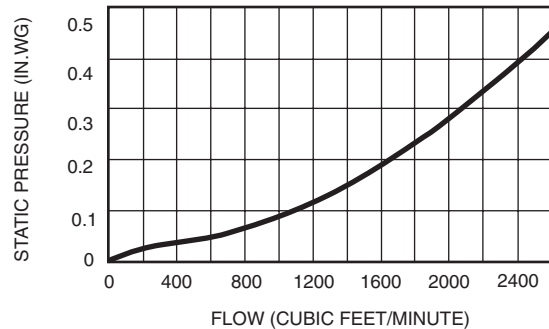


Fig. 42 — 7 1/2 to 12 1/2 Ton Barometric Relief Capacity (Vertical EconoMi\$er)

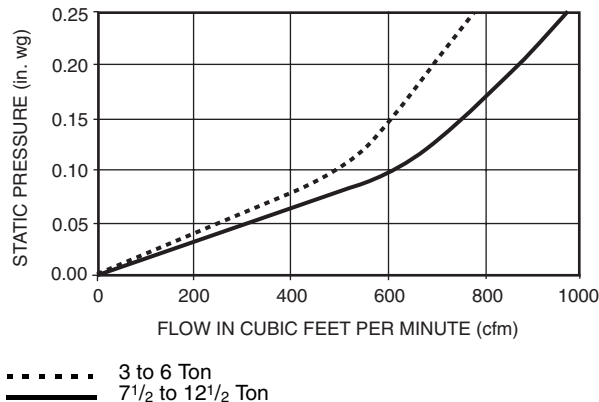


Fig. 43 — Barometric Flow Capacity

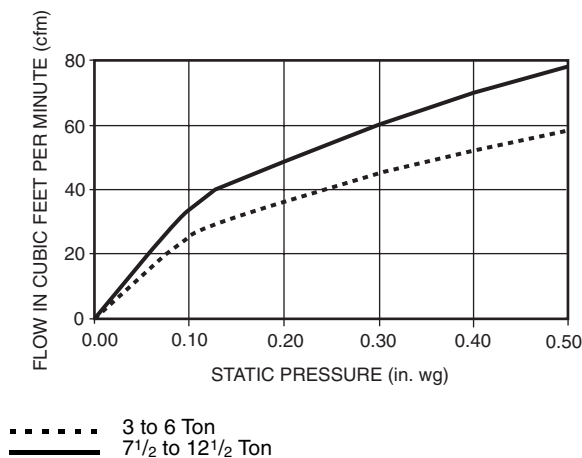


Fig. 44 — Outdoor Air Leakage

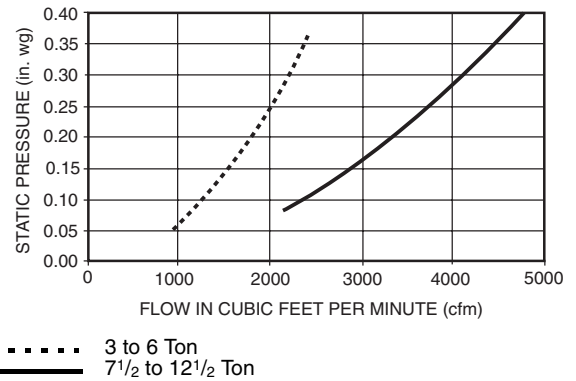


Fig. 45 — Return Air Pressure Drop

START-UP

Differential Enthalpy Switchover Strategy — On certain EconoMi\$er controller models, the differential enthalpy switchover strategy must be enabled manually.

To determine the controller model, refer to the label on the front of the controller. Models AD-DME1701-0 require **no** commissioning for differential enthalpy switchover strategy. Models AD-DME1701-1 or AD-DME1711-1 require manual configuration.

To enable differential enthalpy: Press and hold the CONFIG button for more than 30 seconds, then release. The light-emitting diode (LED) flashes twice and the controller resumes normal operation. To return to single enthalpy mode, press and hold the CONFIG button for more than 30 seconds, then release. The LED flashes once and the controller resumes normal operation.

Operating Sequence

COOLING — When the Outdoor Air Temperature (OAT) is above the ECON SP set point and the room thermostat calls for Stage 1 cooling (R to G + Y1), the indoor-fan motor (IFM) is energized and the EconoMi\$er damper modulates to minimum position. The compressor contactor is energized starting the compressor and outdoor-fan motor (OFM). After the thermostat is satisfied, the damper modulates to the fully closed position when the IFM is deenergized.

When the OAT is below the ECON SP setting and the room thermostat calls for Stage 1 cooling (R to G + Y1), the EconoMi\$er modulates to the minimum position when the IFM is energized. The EconoMi\$er provides Stage 1 of cooling by modulating the return and outdoor air dampers to maintain a 55 F supply air set point. If the supply-air temperature (SAT) is greater than 57 F, the EconoMi\$er modulates open, allowing a greater amount of outdoor air to enter the unit. If the SAT drops below 53 F, the outdoor-air damper modulates closed to reduce the amount of outdoor air. When the SAT is between 53 and 57 F, the EconoMi\$er maintains its position.

If outdoor air alone cannot satisfy the cooling requirements of the conditioned space, and the OAT is above the MECH CLG LOCKOUT set point, the EconoMi\$er integrates free cooling with mechanical cooling. This is accomplished by the strategies below.

NOTE: Compressors have a two-minute Minimum On, Minimum Off, and Interstage delay timer.

1. If Y1 is energized, and the room thermostat calls for Y2 (2-stage thermostat), the compressor number 1 and OFM are energized. The position of the EconoMi\$er damper is maintained at its current value.
2. If Y1 is energized for more than 20 minutes, and Y2 is not energized (whether or not a 2-stage thermostat is used), compressor no. 1 and OFM are energized. The position of the EconoMi\$er damper is maintained at its current value.

- If Y1 is energized, and compressor no. 1 is already energized and the room thermostat calls for Y2, compressor no. 1 continues to operate. If Y2 remains energized for more than 20 minutes, compressor no. 2 is energized.

NOTE: Compressor no. 2 cannot be energized unless there is a signal for Y2 from the space thermostat.

- If compressor no. 2 is energized, and the Y2 signal from the thermostat is satisfied, compressor no. 1 and 2 are deenergized. If the thermostat reenergizes Y2 will start compressor no. 1 and (after the 2-minute interstage delay) compressor no. 2.
- If compressor no. 1 is energized and the thermostat is satisfied, compressor no. 1, the OFM, and IFM are deenergized and the EconoMi\$er modulates closed.

When the OAT is below the MECH CLG LOCKOUT set point, the compressors remain off.

HEATING — When the room thermostat calls for heat, the heating controls are energized as described in the rooftop unit Installation, Start-Up and Service Instructions. The IFM is energized and the EconoMi\$er damper modulates to the minimum position. When the thermostat is satisfied, the damper modulates closed.

VENTILATION (CONTINUOUS FAN) — When the room thermostat is set for continuous fan, the EconoMi\$er damper remains at minimum position as long as the IFM is energized. When the IFM cycles off, the damper modulates closed.

VENTILATION CONTROL — If a CO₂ sensor is connected to the EconoMi\$er controller and the IFM is energized, the EconoMi\$er minimum position increases if the CO₂ level is greater than the CO₂ set point. The set point is adjustable between 800 and 1,400 ppm through the CO₂ SP potentiometer located on the EconoMi\$er control. The greater the difference between the actual CO₂ level and the set point, the greater amount the damper modulates open.

SUPPLY AIR LOW LIMIT — The Supply Air Low Limit (SALL) control strategy is used to protect the mechanical equipment. The SALL will override the minimum position set point and the damper command from the ventilation control strategy if SAT drops below 45 F. The outdoor-air damper is completely closed when the SAT reaches 35 F. If mechanical cooling is energized, it will stay energized.

TROUBLESHOOTING

NOTE: Refer to Tables 5-7 for troubleshooting information.

LED Indication — The EconoMi\$er controller features an onboard diagnostic LED (light-emitting diode) that flashes to indicate its status. See Table 6 for flash codes. The controller also has terminal connections (REM LED) for remotely mounting an LED, if desired. The flash code priorities are as follows:

- On/Off or continuous flash
- Critical fault
- Non critical fault

If any sensors are opened, shorted, or removed, the EconoMi\$er determines whether the failure is critical or non-critical and flashes the appropriate code. See Table 7 for procedures. If a non-critical sensor fault occurs (i.e., outdoor air humidity), the EconoMi\$er automatically reconfigures its control strategy to a more appropriate mode. If a critical sensor fault occurs (i.e., supply air sensor), the EconoMi\$er reverts to a safe mode of operation until the sensor problem is resolved. See Table 6.

Manual Configuration Pushbutton — The EconoMi\$er controller also features an onboard pushbutton (CONFIG) to help troubleshoot the system. Pressing this button for more than three seconds, but less than ten seconds and

then releasing will start the automatic test procedure. The damper will modulate fully open, wait, and modulate closed. This process takes three minutes to complete. Use this feature to determine if the actuator can be commanded.

If the CONFIG button is pressed and held for ten seconds or more then released, the EconoMi\$er controller reconfigures its mode of operation based on the sensors that are connected and functioning normally, and cancels the automatic test procedure.

If the EconoMi\$er controller recognized a non-critical sensor fault, and flashed a code (i.e., FLASH 6, outdoor air humidity sensor fault) the FLASH CODE will be cleared, and normal operation begins. Ensure faulty sensor is removed before clearing faults.

If the EconoMi\$er controller recognizes a critical sensor fault, and flashes a code (i.e., FLASH 4, supply air sensor fault) the FLASH code will not be cleared, and the EconoMi\$er will remain in the safe operation mode. The sensor fault must be corrected to enable EconoMi\$er to revert to normal operation.

Sensor Characteristics — The discharge air, outdoor air, and return air temperature sensors are Negative Temperature Coefficient (NTC) type. Their respective temperature versus resistance values are shown in Table 5.

The OA and RA humidity sensors have an output signal of 0 to 5 VDC based upon a relative humidity value of 0 to 100%. See Fig. 46.

The CO₂ input of 2 to 10 VDC is based upon a 0 to 2000 ppm and shown in Fig. 47.

Table 5 — Temperature vs Resistance

DEGREES F	DEGREE C	RESISTANCE
0	-18	19,208
10	-12	14,062
20	-7	10,408
30	-1	7,784
40	4	5,880
50	10	4,484
60	16	3,450
70	21	2,678
80	27	2,095
90	32	1,652
100	38	1,313

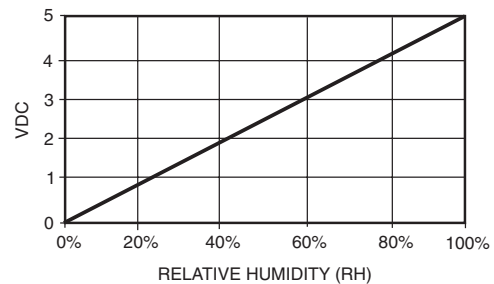


Fig. 46 — Output Signal vs Relative Humidity

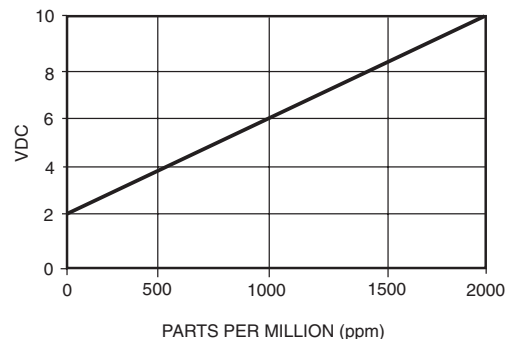


Fig. 47 — Output Signal vs CO₂ (ppm)

Table 6 — Flash Code Identification

	FLASH CODE	CAUSE	ACTION TAKEN BY ECONOMICER
Critical Fault	Constant On	Normal operation	Normal operation.
	Constant Off	No power	No operation.
	Continuous Flash	CONFIG button pushed and held between 3 and 9 seconds	Outdoor air damper is stroked fully open, then closed (automatic test procedure takes 3 minutes to complete).
	Flash One	Control board fault	System shutdown.
	Flash Two	Thermostat fault (i.e., Y2 without Y1)	System shutdown until corrected.
	Flash Three	Actuator fault	Revert to mechanical cooling only.
	Flash Four	Supply air temperature sensor fault	Continue operation with damper at minimum position. Revert to mechanical cooling only.
Non-Critical Fault	Flash Five	Outdoor air temperature sensor fault	Continue operation with damper at minimum position. Disable mechanical cooling lockout.
	Flash Six	Outdoor air humidity sensor fault	Continue operation with dry bulb or dry bulb differential switchover.
	Flash Seven	Return air temperature sensor fault	Continue operation with single enthalpy EconoMiSer switchover or dry bulb EconoMiSer switchover (without humidity sensor).
	Flash Eight	Return air humidity sensor fault	Continue operation with single enthalpy, differential dry bulb, or dry bulb EconoMiSer switchover.
	Flash Nine	Carbon Dioxide (CO ₂) sensor fault	Continue operation without ventilation control.
	Flash Ten	Onboard adjustment potentiometer fault	Continue operation with default potentiometer settings.

Refer to Table 7 for troubleshooting the EconoMiSer system.

Table 7 — Troubleshooting

PROBLEM	CAUSE	REMEDY
Damper Does Not Open	Indoor (Evaporator) Fan Off	Check to ensure that 24 VAC is present at Terminal C1 (Common Power) on the Indoor Evaporator Fan Contactor (IFC) or that 24 VAC is present at the Indoor Evaporator Fan On (IFO) terminal. Check whether 24 VAC is present at Plug PL6-1 (red wire) and/or PL6-3 (black wire). If 24 VAC is not present, check wiring. (See unit label diagram.) Check proper thermostat connection to G on the connection board.
	No Power to EconoMiSer Controller	Check to ensure that 24 VAC is present across Terminals 24 VAC and 24 VAC COM on the EconoMiSer control. If 24 VAC is not present, check wiring. (See rooftop unit label diagram). If 24 VAC is present, STATUS light should be on constantly.
	No Power to G Terminal	If IFM is on, check to ensure 24 VAC is present on G Terminal of the EconoMiSer controller. If 24 VAC is not present, check wiring. (See unit label diagram.)
	Controller Fault	If STATUS light is flashing one flash, the EconoMiSer controller is experiencing a fault condition. Cycle power to the controller. If condition continues, replace the EconoMiSer controller.
	Thermostat Fault	If STATUS light is flashing two flashes, the EconoMiSer controller senses the thermostat is wired incorrectly. Check wiring between the thermostat and the connection board in the electrical panel. The fault condition is caused by Y2 being energized before Y1.
	Actuator Fault	Check the wiring between the EconoMiSer controller and the actuator. Hold CONFIG button between 3 and 10 seconds to verify actuator operation. (This process takes 3 minutes to complete.) STATUS light should flash continuously during test. Actuator will stroke open, then close. Check output signal at AO and COM on EconoMiSer controller. If 0 VDC is present, the actuator should be closed. If something between 0 to 10 VDC is present, the actuator should be open proportional to signal. At 10 VDC, the actuator should be full open. If actuator does not respond to the signal, check the wiring. (See unit label diagram.) If wiring is correct, replace the actuator.

(continued on next page)

Table 7 — Troubleshooting (cont)

PROBLEM	CAUSE	REMEDY
Damper Position Limited to Minimum Position	Minimum Position Set Incorrectly	Verify MIN POS (%) is set greater than zero. Adjust the MIN POS (%) to 100% to verify operation, and then set to correct setting.
	EconoMi\$er Changeover Set Point Set Too High or Too Low	Set at correct value. See Table 3.
	Supply Air Temperature Sensor Faulty	If STATUS light is flashing 4 flashes, the supply air temperature sensor is faulty. Check the wiring from the sensor to the controller. Using Table 5 verify the temperature versus resistance of the sensor if accurate at ambient conditions. Set the multimeter in the resistance mode to 10k ohms. Disconnect the wires from the sensor, and measure across the 2 terminals. If accurate, reconnect the wires. Disconnect the wires from DAT (violet) and COM (pink) at the controller. Using the same technique, measure the resistance between the wires. The values should be the same as the original test. If the temperature versus resistance does not coincide with the appropriate value, replace the sensor. Make sure the violet and pink wires are connected on both ends, at the sensor and the controller.
	Outdoor Air Temperature Sensor Faulty	If STATUS light is flashing 5 flashes, the outdoor air temperature sensor is faulty. Check wiring from the sensor to the controller. Using Table 5, verify the temperature versus resistance of the sensor is accurate at ambient conditions. Set the multimeter in the resistance mode to 10k ohms. Disconnect the wires from the sensor, and measure across the 2 terminals. If accurate, reconnect the wires. Disconnect the wires from OAT (tan) and COM (violet) at the controller. Using the same technique, measure the resistance between the wires. The values should be the same as the original test. If the temperature versus resistance does not coincide with the appropriate value, replace the sensor. Make sure the tan and violet wires are connected on both ends, at the sensor and the controller.
Damper Position Less than Minimum Position Set Point	Supply Air Low Limit Strategy Controlling	The supply-air temperature is less than 45 F, causing the minimum position to decrease. Refer to the Start-Up section. Verify correct setting of the MIN POS (%). If correct, EconoMi\$er is operating correctly.
Damper Does Not Return to Minimum Position	CO ₂ Ventilation Strategy Controlling	If a CO ₂ sensor is being used, and the damper position is greater than minimum position, the ventilation control strategy is controlling. Refer to The Start-Up instructions. EconoMi\$er is operating correctly.
Damper Does Not Close on Power Loss	Damper Travel Restricted	Check to ensure the damper is not blocked.
Compressor(s) Do Not Start	No Input Signal from Thermostat	Check for 24 VAC on G, Y1 and Y2 (if applicable) at TB1. If not present, check the set point at the T-Stat, and the connections between the T-Stat and the rooftop. If present, check for 24 VAC at G, Y1 and Y2 on the EconoMi\$er controller.
	Mechanical Cooling Lockout in Effect	The outdoor air temperature is below Mechanical Cooling Lockout set point. Disable Mechanical Cooling Lockout by turning the set point to full counterclockwise position (off). Compressor(s) should start. Adjust to the desired set point.
	Minimum Off or Interstage Delay in Effect	Minimum off time of 2 minutes of interstage time of 2 minutes may be keeping compressor off. Wait for completion of the time delay before taking further action.
Status Light is Flashing	Fault Condition	Refer to Table 6 for a list of Flash Codes and the appropriate action.
Power Exhaust Does Not Start	No Primary Power Supply	Reset the MIN POS (%) to 100%. The OA Damper should open, and both fans should energize. Reset MIN POS (%) to the correct setting. Make sure line voltage was correctly installed, and proper voltage is present. Verify the 2 auxiliary settings within the actuator are correct. Make sure 3-pin and 4-pin Molex connections are tight and properly installed.