

ECON-IN-30C 18-HE60D83-3

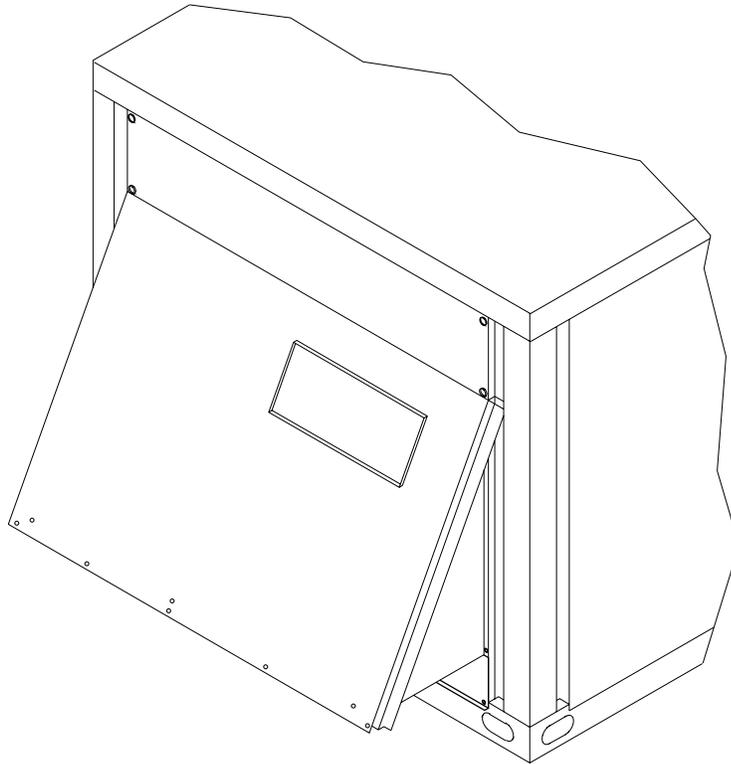
INSTALLER'S GUIDE

Customer Property — Contains wiring, service, and operation information. Please retain.

| | |
|-----------------|-----------------------------|
| Library | Service Literature |
| Product Section | Unitary |
| Product | Unitary Accessories |
| Model | Econ., Dmprs., Motors, Etc. |
| Literature Type | Installation |
| Sequence | 30C |
| Date | July 2002 |
| File No. | SV-UN-ACC-ECON-IN-30C 7/02 |
| Supersedes | ECON-IN-30B |

| | |
|----------------|---------------------------------------------------|
| Models: | Used With: |
| BAYECON061B | YC,TCD103C,120B,150C & WCD120B, |
| BAYECON062B | YC,TCD121C,150D,151C,180B,210C & WCD150B,180B |
| BAYECON063B | YC,TCD181C,211C,240B,241C, 300B,301C & WCD240B |
| BAYECON075A | YC,TCD102C,120C |

Accessory Economizer Downflow



Shipping Inspection

Visually inspect the components for shipping damage as soon as possible after delivery, before it is stored. Concealed damage must be reported within 15 days. If concealed damage is discovered, stop unpacking the shipment.

Do not remove damaged material from the receiving location. Take photos of the damage, if possible. The owner must provide reasonable evidence that the damage did not occur after delivery.

Notify the carrier's terminal of damage immediately by phone and by mail. Request an immediate joint inspection of the damage by the carrier and the consignee.

Note: Do not attempt to repair any damaged parts until the parts are inspected by the carrier's representative.

Field Installed Economizer

Each economizer ships partially assembled. The following steps for installation are illustrated throughout this section. Refer to the illustrations as the steps are performed.

Figure 1 illustrates the major components of the economizer when shipped for field installation. As the economizer is un-crated, locate the following parts:

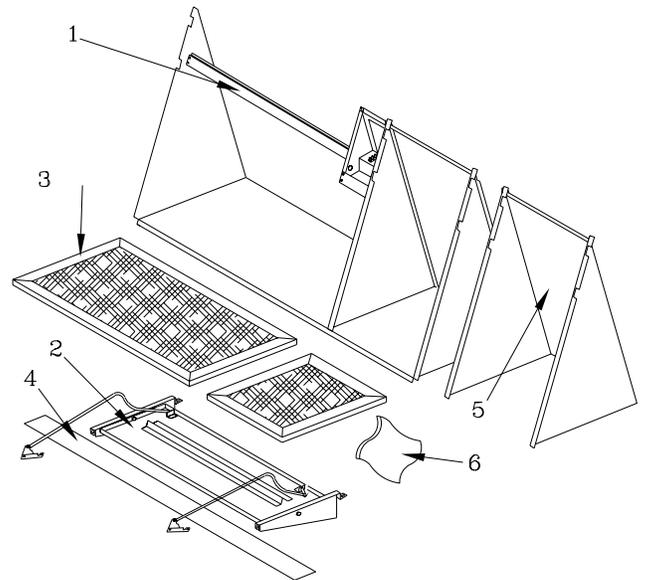
1. Outside air damper assembly (with wire harness)
2. Return air damper assembly (Preassembled on 102C,120C units)
3. 2 Mist eliminators
4. 1 Block-off,
2 Block-offs for 102,120C units only.
5. Barometric relief hood
6. Plastic bag of miscellaneous parts:
 - a) Screws
 - b) Supply air temperature sensor
 - c) 1 Tube of sealant
 - d) 1 Edge protector
 - e) Installation and operation manual
 - f) rubber grommet

Verify that all of the parts are available for installation

WARNING: *Open and lock the unit disconnect switch before installing this accessory. Failure to do so could result in severe injury or death due to electrical shock or contact with moving parts.*

1. Remove the filter/fan compartment access panel.
2. Remove the unit end panel (evaporator end).
3. Place the return air damper assembly into the return air opening as illustrated in Figure 2. Damper Assembly re-assembled on BAYECON075A. Insure the damper is positioned with the sheet metal lip in the upward position.

Figure 1



4. Attach the pivotal brackets to the unit using 2 screws per bracket, as illustrated in Figure 2. Not required on 102,120C
5. Raise the damper and rods into the vertical position. Not required for BAYECON075A. Tie the damper rods to the filter rack to prevent them from interfering with the positioning of the economizer as illustrated in Figure 2..
6. Insure damper is positioned with sheet metal lip in the upward position, as illustrated in Figure 2.

On 102C, 120C Units, secure RA blockoff to bottom filter rack blockoff with screws.
7. Attach the barometric relief hood to the back of the economizer assembly, using 2 screws at the top, as illustrated in Figure 3.

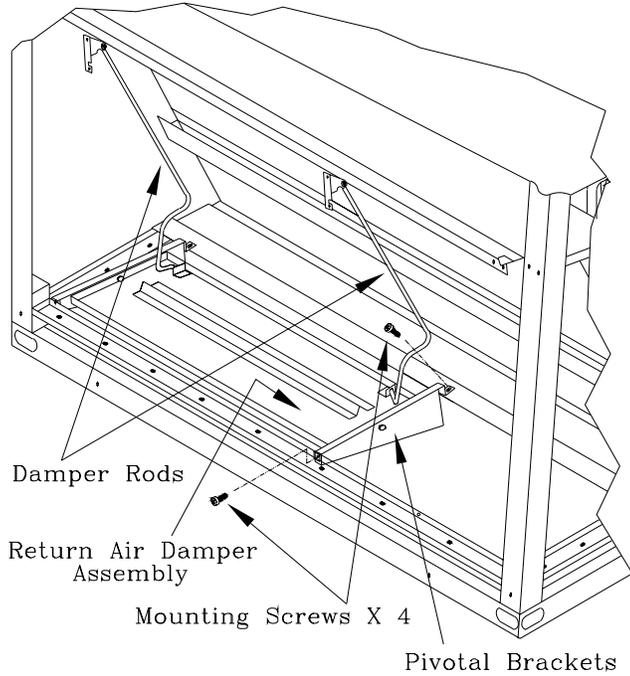
Note: If barometric relief is desired, remove the shipping screw that holds the barometric relief damper blade and ensure that the damper swings freely, before attaching the barometric hood.

8. Install the block-off as illustrated in Figure 4. The block-off is designed to close the opening created, between the economizer and the base, when the economizer assembly is in it's operating position.

Holding the block-off with the holes at the bottom and the bottom angle outward press the bottom of the block-off against the unit and line up the holes. Using the provided screws, secure it into place.
9. Remove approximately 3" of gasket material from the bottom of each corner post to expose the holes used to attach the economizer assembly to the unit, as illustrated in Figure 4, Detail "A".

Note: There are two holes, a (large) clearance hole and a (small) engagement hole. The usage of each hole will be discussed as the process continues.

Figure 2



10. With the barometric relief hood attached to the economizer assembly, place the assembly into the opening with the back right flange, on the economizer, behind the corner post flange, as illustrated in Figure 5. Position the left side flange, on the economizer, in front of the corner post flange.

With the screws provided, secure the bottom right hand side of the economizer assembly by inserting the screws, through the clearance holes in the corner post, into the engagement holes in the economizer assembly, as illustrated in Figure 4, Detail "A".

Secure the bottom left hand side of the economizer assembly by inserting the screws, through the clearance holes in the economizer assembly, into the engagement holes of the corner post. Refer to Figure 4, Detail "A".

Figure 3

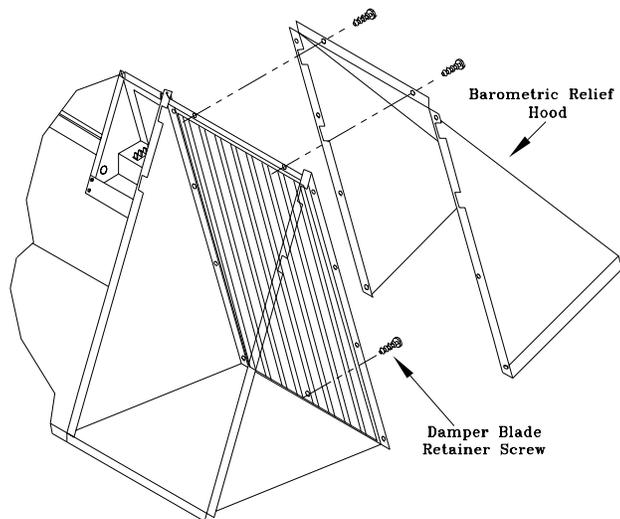
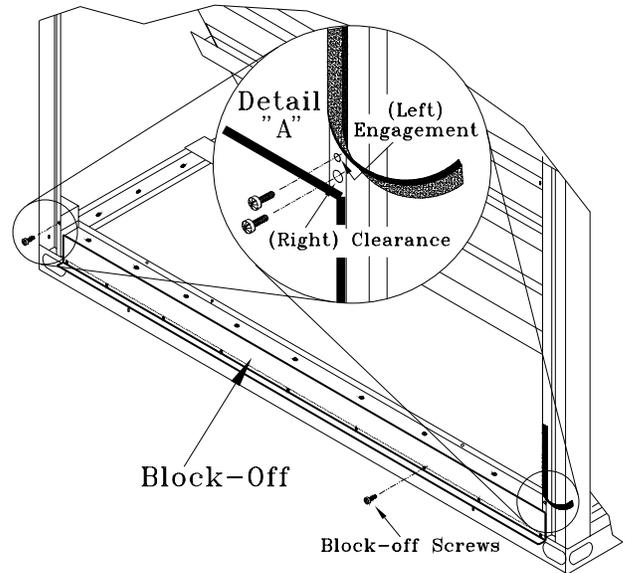


Figure 4

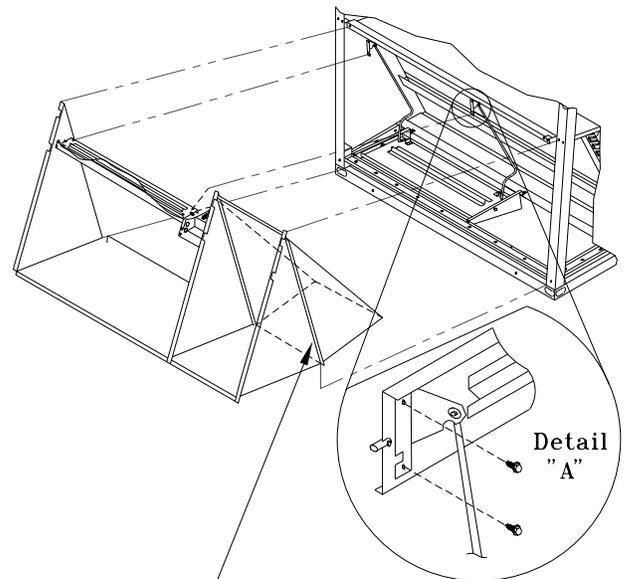


10. Before the right hand return air linkage bracket can be installed, two (2) outside air damper screws must be removed as illustrated in Figure 5, Detail "A". Align the return air linkage bracket with these holes and reinstall the two (2) screws. Install the left hand return air linkage bracket using the engagement holes in the outside air damper. Assembly not required on BAYECON075A

11. Manually operate the dampers, slowly; to ensure no binding exists.

12. The economizer comes pre-wired from the factory.

Figure 5



Insert the back flange of the barometric damper behind the right corner post.

Route the wire harness on the economizer assembly from the economizer module (UEM) panel to the polarized plug connector and control wires located in the unit. Refer to Figure 6 for plug and control wire location depending on unit size.

Detail A : Unit size YCD/TCD103C,120B,150C,
WCD120B

Detail B : Unit size YCD/TCD102C,120C,121C,
150D,151C,
180B,210C,
WCD150B,180B

Detail C : Unit size YCD/TCD181C,211C,240B,241C,
300B,301C,
WCD240

(Install the plastic edge protector to protect wiring anywhere it passes over a sharp sheet metal edge).

13. Connect the the polarized from the economizer wiring harness to the polarized plug in the unit. Connect the two control wires with 1/4" connectors from the economizer wiring harness to the 1/4" connectors in the unit.
- 13.1 On Heat Pump Units (WCD), in addition to the unit harness, there will be a 3-wire harness complete with a 3-pin connector from the defrost module in the control box. This harness will be located next to the polarized plug of the unit wiring harness. It will be coiled up and held in place with a wire tie.
- 13.2 Cut the wire tie holding the 3-wire harness in this location, and route over the coil and down to the economizer. Connect to the **J4** pins marked **DEF** of the unitary economizer module (**UEM**). The J4 pins are located on the left hand side of the module. See Figure 15.

Note: There are two extra wires in the unit wiring harness with 1/4 inch quick connects terminals. These wires are for use when additional accessory items, pressure sensing devices, are being installed.

14. Route the sensor wires with its 2-pin female connector, to the economizer module (UEM) panel and connect it to the J2 terminal connector marked, SA (supply air).
15. Install the rubber grommet, provided with the sensor, into the hole on the fan assembly channel, as illustrated in Figure 7.
16. Insert the supply air temperature sensor through the grommet, approximately one half (1/2) inch, with the end pointing toward the coil, as illustrated in Figure 7.

Important Note: when unit is equipped with a TCI (Communication Interface), the supply air sensor must be located downstream of the heat source for a true reading, and to utilize the "supply air tempering" feature. This requirement also applies when the unit is used with any Intergrated Comfort™ System (ICS) device such as Tracker®, Tracer®, or ComforTrac™

17. Install the mist eliminators with the directional arrow pointing up. Loosen the screws holding the mist eliminator angles and adjust them to hold the mist eliminators in position. Tighten the screws.

Note: Ensure the directional arrow on the mist eliminator is pointing in the same direction as the airflow.

Figure 6

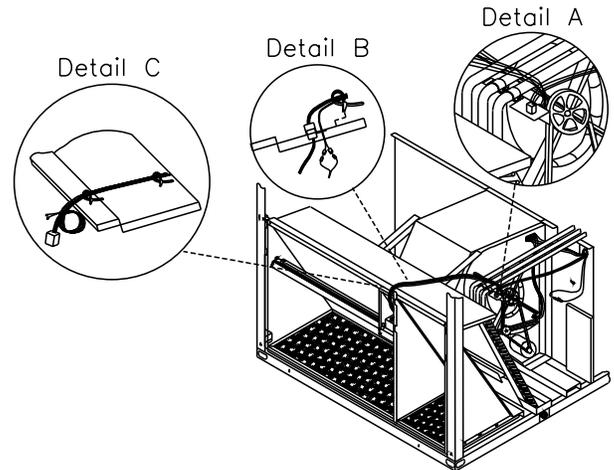
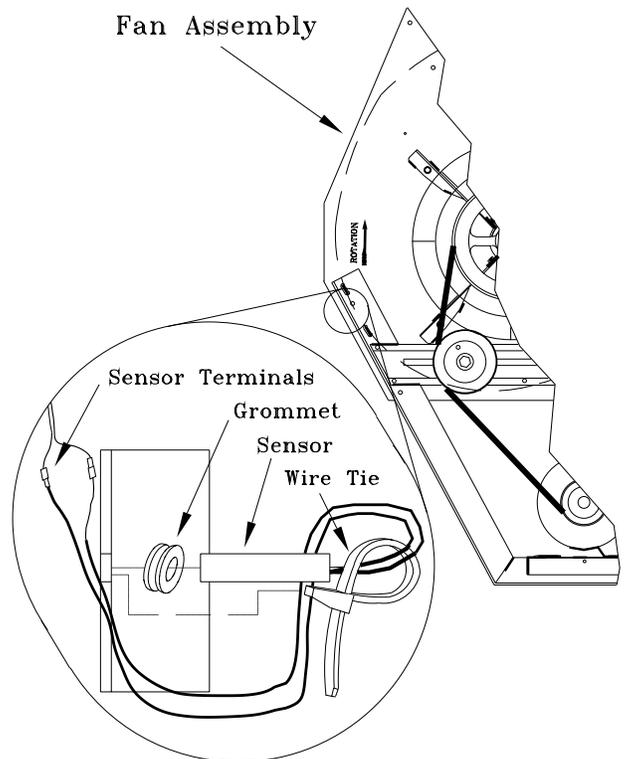


Figure 7



Important Note: On Heat Pump Model Only (WCD), remove the compressor access panel and the control box cover. The unitary economizer module (**UEM**), must be connected in-line between the defrost module (**DFM**) and the unitary control processor (**UCP**). This is accomplished by locating the polarized plug (PPF8) from the **UCP** and the polarized plug (PPM8) from the **DFM** in the control box. They are connected to each other, and located between the **UCP** and the **DFM**.

Important Note: On Heat Pump Model Only (WCD)

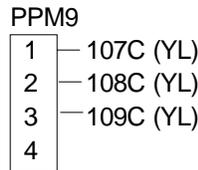
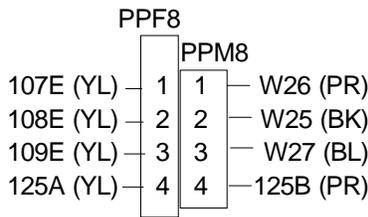
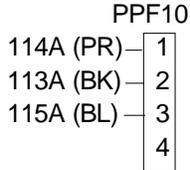
These polarized plugs are not marked as PPF8, PPM8 etc., but their wires are numbered as shown in the **Existing Plug View**. Refer to **Existing Plug View** to assist in identifying.

Next locate the PPF10 and the PPM9 polarized plugs. These plugs are not connected but will be located in the same area. Refer to **Reconnected Plug View** to assist in identifying.

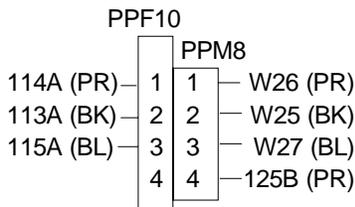
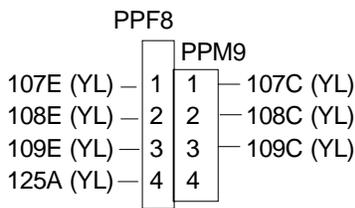
Next separate the polarized plugs (PPF8 and PPM8).

Connect the PPF8 plug to the PPM9 plug and the PPM8 plug to the PPF10 plug. Refer to **Reconnected Plug View**.

Existing Plug View



Reconnected Plug View



Replace the control box cover and the compressor access panel.

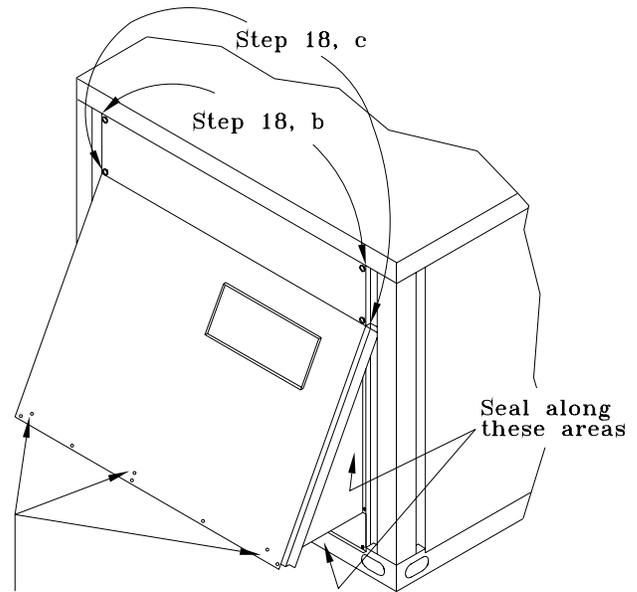
18. Install the end panel, removed in step 2, onto the economizer as follows:

- bend the top of the end panel, at the crease line, outward to approximately 45 degrees.
- place the end panel over the economizer and slide the top of the panel under the roof panel. Replace the screws along the top, as illustrated in Figure 8.
- while pushing in at the crease in the end panel, reinstall the two (2) screws along each side above the crease in their original location, as illustrated in Figure 8.
- align the upper row of three (3) screw holes with the holes in the bottom of the economizer frame, as illustrated in Figure 8.

Note: Do not use the original 5 lower screw holes in the end panel.

- Using the sealant that shipped with the economizer, seal along each side, bottom, and any other areas that could be a potential air leak, as illustrated in Figure 8.
- Replace the filter/fan access panel.
- Complete the setup and checkout procedures in the "Final Economizer Setup" section.

Figure 8



3 upper screws securing the end panel to the economizer frame per step 18, d.

Factory Installed Economizer

Each economizer ships inside the unit and requires partial assembling and setup. The following steps are illustrated throughout this section. Refer to the illustrations as the steps are performed.

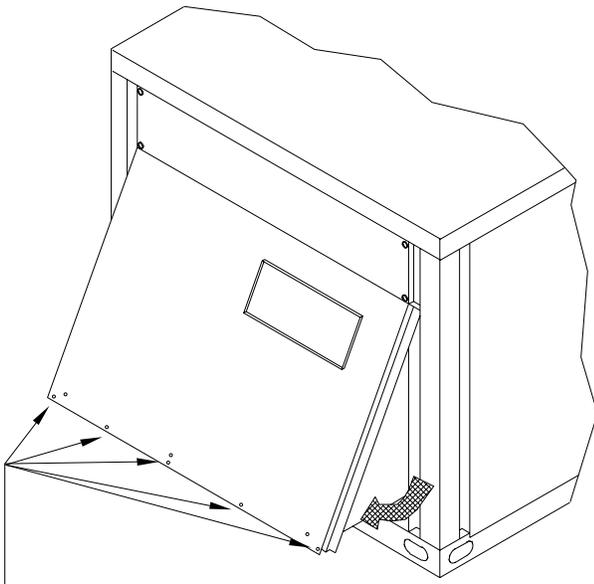
▲ WARNING: *Open and lock the unit disconnect switch before performing the following procedures. Failure to do so could result in severe injury or death due to electrical shock or contact with moving parts.*

1. Remove the filter/fan compartment access panel.
2. Remove the five (5) or nine (9) lower screws in the end panel, as illustrated in Figure 9.

Note: *Do not remove the three (3) or five (5) screws in the upper row of the end panel.*

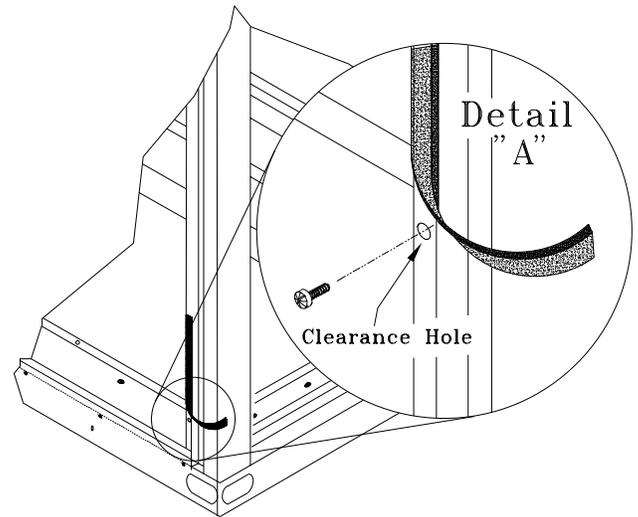
3. Grasp the bottom of the end panel and pull the economizer assembly outward into the operating position, as illustrated with the arrow in Figure 9.
4. Remove approximately 3" of gasket material from the bottom of each corner post to expose the holes used to attach the economizer assembly to the unit, as illustrated in Figure 10.
5. With the screws provided, secure each side of the economizer assembly by inserting a screw, through the clearance hole in the bottom of the corner post, into the engagement hole in the economizer assembly. Refer to Figure 10.

Figure 9



5 or 9 Lower Screws securing the end panel to the unit base

Figure 10



6. From inside the evaporator fan compartment, remove the following parts;

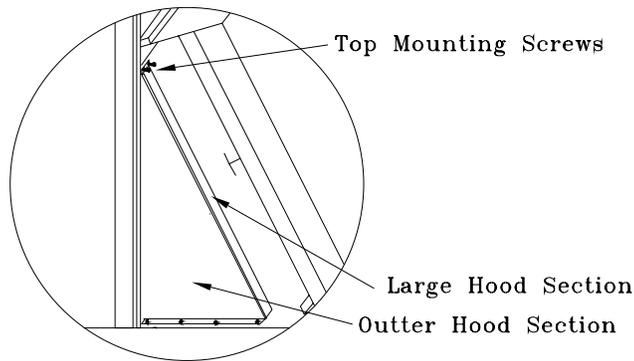
- a. block-off angle (located in drain pan)
- b. plastic bag containing;
 1. one tube of sealant
 2. screws
- c. barometric relief hood

7. The barometric relief hood ships in two (2) sections and is secured during shipping with brackets. Discard the brackets after removing the hood and install it, as follows;

Note: *If barometric relief is desired, remove the shipping screw from the barometric relief damper blade and ensure that it swings freely, before attaching the barometric hood.*

- a. Attach the larger section of the barometric relief hood to the back of the economizer assembly, using 2 screws at the top and to the drain pan support using 2 screws at the bottom, as illustrated in Figure 11.
- b. Attach the outer section of the hood to the larger section, previously installed.
- c. With both sections assembled together, secure the completed hood at the top with two (2) screws provided, as illustrated in Figure 11.

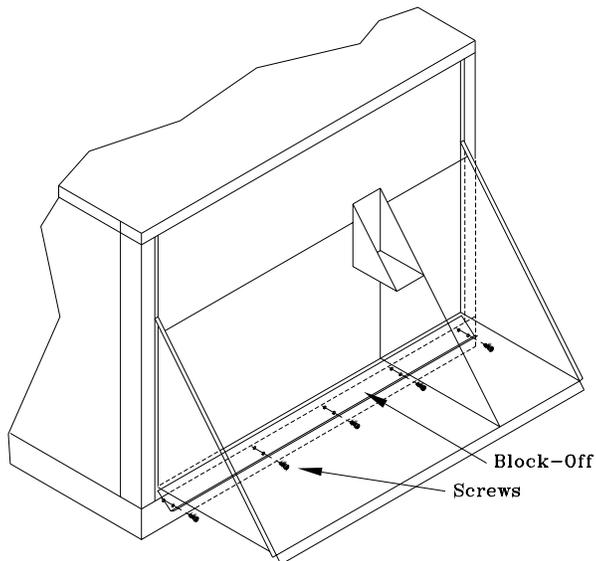
Figure 11



8. Install the block-off underneath the economizer, as illustrated in Figure 12. The block-off is designed to close the opening created, between the economizer and the base, when the economizer assembly is in its operating position.

- a. Holding the block-off with the holes at the bottom and the bottom angle outward, tilt the top forward and insert it into the opening between the economizer and the unit base.
- b. Press the bottom of the block-off against the unit and line up the holes. Using the provided screws, secure it into place.

Figure 12



Economizer is shown with the end panel removed for illustration purposes. It is not necessary to remove this panel in the field.

9. Using the sealant that shipped with the economizer, seal along each side, bottom, and any other areas that could be a potential air leak, as illustrated in Figure 12.

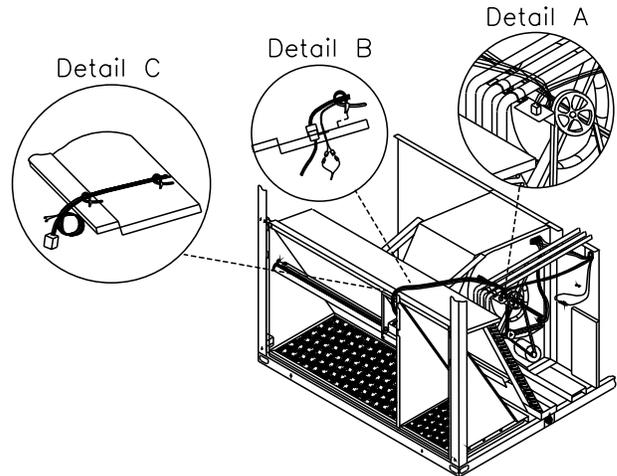
10. To prevent possible economizer operation before field setup, the economizer wiring harness was not connected at the factory. Connect the wire harness on the economizer assembly from the economizer module (UEM) panel to the polarized plug connector located in the unit. Refer to Figure 13 for plug location depending on unit size.

Detail A : Unit size YCD/TCD103C,120B,150C, WCD120B

Detail B : Unit size YCD/TCD102C,120C,121C,150D 151C, 180B,210C, WCD150B,180B

Detail C : Unit size YCD/TCD181C,211C,240B,241C, 300B,301C, WCD240

Figure 13



11. Ensure that the two wires with the 1/4" quick connectors are connected and the sensor wires with the 2-pin female connector terminates at the J2 terminal connector marked, SA (supply air), inside the economizer module panel.

12. Replace the filter/fan access panel.

13. Complete the setup and checkout procedures in the "Final Economizer Setup" section.

Final Economizer Setup

To adjust the outside air "minimum position" potentiometer and to check out the economizer, the power must be turned "On".

Should the system communications fail between the TCI and a Building Management System, or; if a Building Management System designates "minimum position control" to be local verses remote - the economizer will default to the potentiometer setting on the Unit Economizer Module (UEM).

Adjust the potentiometer as follows:

1. Close the unit disconnect switch.

⚠ WARNING: *To prevent injury or death from electrocution or contact with moving parts, it is the responsibility of the technician to recognize these inherent hazards and use extreme caution when performing service procedures with the electrical power energized.*

2. Initiate a unit test mode utilizing the test terminals. Refer to the unit Installation, Operation, & Maintenance Manual for information.

3. Select "Fan Only" test mode. This will allow the economizer actuator to open the outside air damper to the "minimum ventilation position" setpoint.

4. To access the Unit Economizer Module (UEM),

- a. remove the fresh air adjustment panel located on the unit end panel, as illustrated in Figure 14.
- b. remove the sheetmetal cover from the economizer control panel to expose the Economizer module.

5. Turn the potentiometer located on the UEM, clockwise to "increase the amount of ventilation" or counterclockwise to "decrease the amount of ventilation". Refer to the UEM illustration in Figure 15 for the potentiometer location.

For checkout purposes, there is a drive indicator light located at the lower left corner of the unit economizer module. This light will be energized anytime the motor is driving the damper, either open or closed. Refer to the illustration in Figure 15.

When adjusting minimum position, the damper may move to the new setting in several small steps. Allow at least 10 to 15 seconds for the actuator to drive the damper to the new position.

When the arrow on the potentiometer's adjustment screw is pointing toward 8 o'clock, the minimum position should be approximately zero (0) percent. When pointing toward 12 o'clock it should be approximately twenty five (25) percent. When pointing toward 4 o'clock it should be approximately fifty (50) percent, as illustrated in Figure 16. The damper will open to this setting each time the supply fan circuit is energized.

Calculating "Ventilation Air"

Actual percentage of outside air is dependent on the system design and can be determined by airflow measurements or by using proper temperature measurements.

Example: Temperature Method, where:

$$1) \% \text{ Outside Air} = \frac{\text{Mix Air Temp} - \text{Return Air Temp}}{\text{Ambient Temp} - \text{Return Air Temp}} \times 100$$

or;

$$2) \text{ Mixed Air Temp} = \frac{\% \text{ Outside Air} \times (\text{Ambient Temp} - \text{Return Air Temp}) + \text{Return Air Temp}}{100}$$

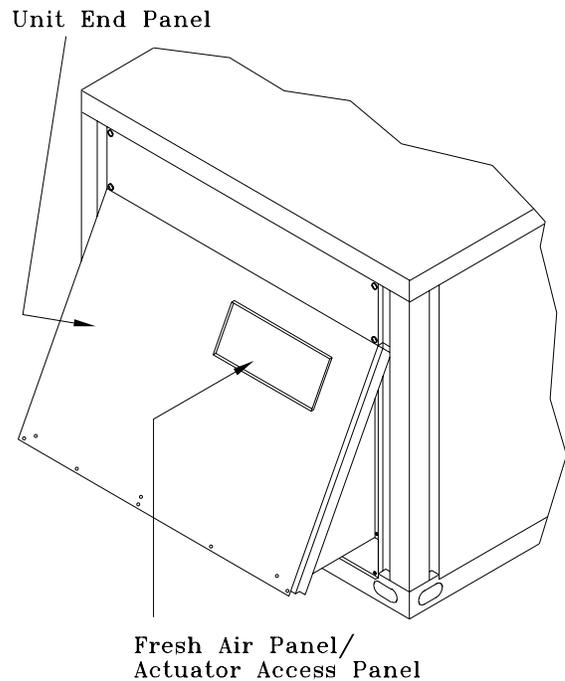
Step 1, Measure the;
 Ambient Temperature = 85° F
 Return Air Temperature = 75° F
 (in the return air duct)
 Mixed air temperature = 78° F
 (entering the filters)

Step 2, Input the temperature measurements into formula 1, and complete the calculations, to determine the amount of outside air that is actually entering the system.

Input the "desired amount" of outside air and the temperature measurements requested in formula 2, and complete the calculations, to determine the appropriate mixed air temperature.

Figure 14

Taking several temperature readings for each input



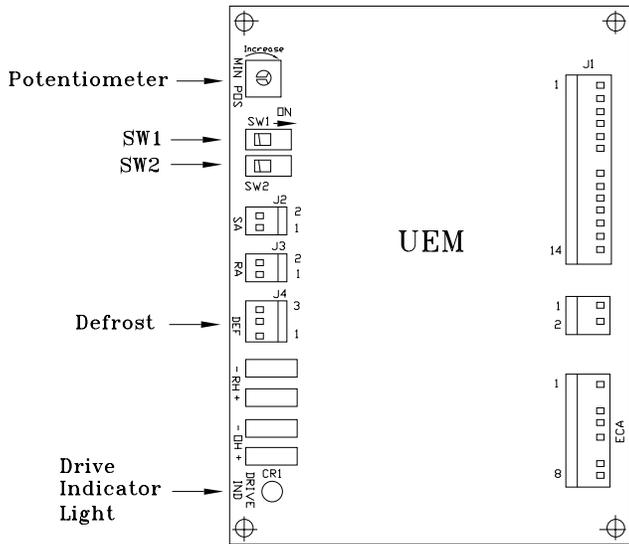
and averaging them, will enhance the accuracy of obtaining the proper amount of ventilation air.

When the supply fan circuit is de-energized, the damper closes.

6. Open and lock the unit disconnect switch before continuing to the following procedures.

▲ WARNING: *Open and lock the unit disconnect switch before performing the following procedures. Failure to do so could result in severe injury or death due to electrical shock or contact with moving parts.*

Figure 15

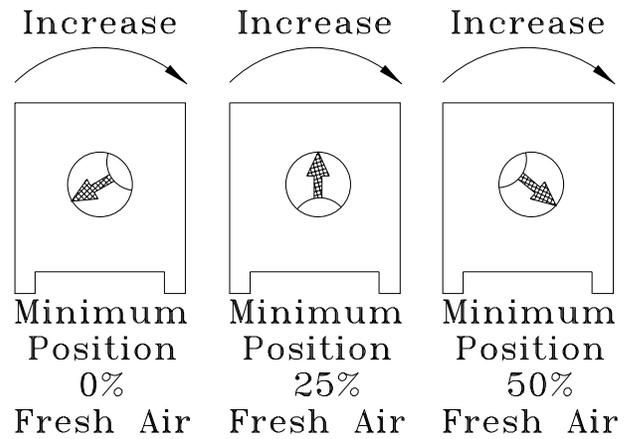


Economizer "Dry Bulb" Switch Settings

Under stand-alone control, the dry bulb change over temperature is field selectable at the UEM. Remote control may be selected by the Building Management System, in which case the decision to enable "economizer cooling" is made by the building management system. In this mode the dry bulb setting at the UEM will be ignored.

Three dry bulb change over temperatures (55, 60, or 65 degrees F) may be selected by setting SW1 and SW2 on the UEM. See the Table below for the switch settings and Figure 15 for the switch location. "OFF" position is towards the edge of board and "ON" is towards the center of board.

Figure 16



Switch Setting Table

| Switch 1 | Switch 2 | Temperature Setting |
|----------|----------|---------------------|
| OFF | OFF | 60 (Factory Set)* |
| OFF | ON | 55 |
| ON | OFF | 65 |
| ON | ON | Not Used |

Economizer Control Options

| Control Option | Enable Conditions* | Optional Sensors Required** |
|----------------------|-------------------------------------------------------------|----------------------------------------------------------------------------|
| Dry Bulb (standard) | Outdoor Air temp below 60 F | None |
| Reference Enthalpy | Outdoor Air Enthalpy below Reference Enthalpy set on UEM | Outdoor Humidity (BAYENTH003A) |
| Comparative Enthalpy | Outdoor Air Enthalpy below Return Air Enthalpy | Outdoor Humidity Return Humidity Return Temperature (BAYENTH004A) |

* - Economizing is enabled when these conditions are met

** - Conditions level will be configured when optional sensors are connected.

Close unit disconnect and set zone sensor to desired setting for normal operation.

