

Installation Instructions

0-100% Downflow Dry Bulb Economizer

Voyager™ Light Commercial

12.5 to 25 Tons – Standard Economizer Only

Model:

BAYECON089*

BAYECON090*

Used With:

T/YSD150

T/YSD155-250

T/YSD180-301

T/YHD150-300

T/YZD150, 180, 210

WSD150, 155, 180, 200, 240

SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

Introduction

Read this manual thoroughly before operating or servicing this unit.

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:

⚠ WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.

NOTICE Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants-including industry replacements for CFCs and HCFCs such as saturated or unsaturated HFCs and HCFCs.

Important Responsible Refrigerant Practices

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified according to local rules. For the USA, the Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

⚠ WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury. All field wiring **MUST** be performed by qualified personnel. Improperly installed and grounded field wiring poses **FIRE** and **ELECTROCUTION** hazards. To avoid these hazards, you **MUST** follow requirements for field wiring installation and grounding as described in **NEC** and your local/state electrical codes.

⚠ WARNING

Personal Protective Equipment (PPE) Required!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury. Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, **MUST** follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- Before installing/servicing this unit, technicians **MUST** put on all PPE required for the work being undertaken (Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing). **ALWAYS** refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.
- When working with or around hazardous chemicals, **ALWAYS** refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labeling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.
- If there is a risk of energized electrical contact, arc, or flash, technicians **MUST** put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, **PRIOR** to servicing the unit. **NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.**

⚠ WARNING

Follow EHS Policies!

Failure to follow instructions below could result in death or serious injury.

- All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.
- Non-Trane personnel should always follow local regulations.

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Revision History

General Information - added field supplied part data.

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General Information

Important: These instructions apply to the "Standard Economizer" only. When installing Low Leak Economizers, refer to the installation instructions provided with the economizer.

Inspection

To protect against loss due to damage incurred in transit, perform inspection immediately upon receipt of the economizer.

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

Exterior Inspection

Visually inspect the complete exterior for signs of shipping damages to components or packing material.

If the job site inspection reveals damage or material shortages, file a claim with the carrier immediately. Specify the type and extent of the damage on the bill of lading before signing. Notify the appropriate sales representative.

Inspection for Concealed Damage

Visually inspect the components for shipping damage as soon as possible after delivery, and before it is stored.

If concealed damage is discovered:

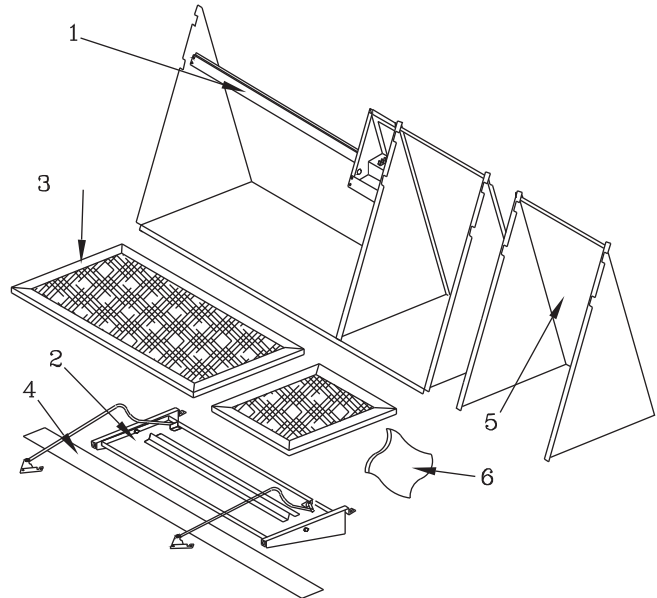
- Notify the carrier's terminal of the damage immediately by phone and by mail.
- Concealed damage must be reported within 15 days.
- Request an immediate joint inspection of the damage by the carrier and the consignee.
- Stop unpacking the unit.
- Do not remove damaged material from the receiving location.
- Take photos of the damage, if possible.
- The owner must provide reasonable evidence that the damage did not occur after delivery.

Field Installed Economizer

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

Parts List

Figure 1. Major components



As the economizer is un-crated, locate the following parts:

1. Outside air damper assembly (with wire harness)
2. Return air damper assembly
3. 2 Mist eliminators
4. 1 Block-off
5. Barometric relief hood
6. Plastic bag of miscellaneous parts:
 - Screws
 - Supply air temperature sensor
 - 1 Edge protector
 - Installation and operation manual
 - Rubber grommet

Verify that all of the parts are available for installation.

Field Supplied Part

NOTICE

Corrosion Damage!

Use of non-recommended caulking/sealant could cause corrosion related failures to refrigeration components.

1 Tube Sealant - Trane recommends Sikaflex 221 (SEL00439)

Installation

⚠ WARNING

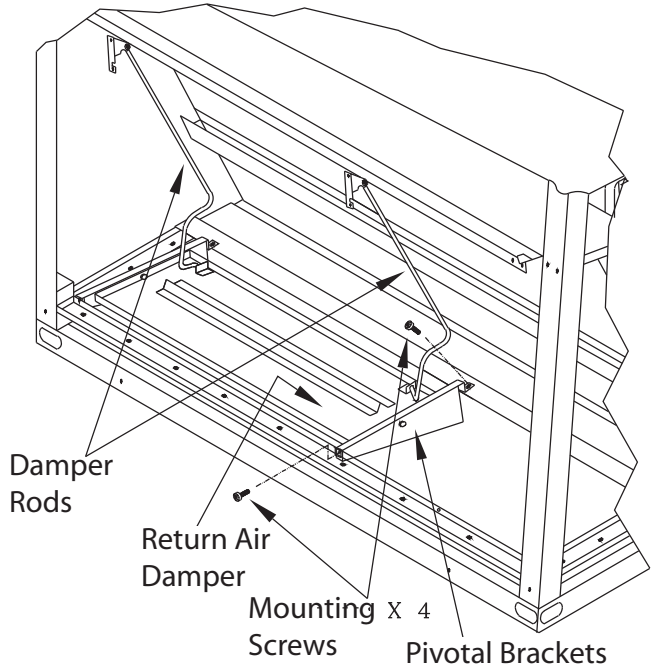
Hazardous Service Procedures!

Failure to follow all of the recommended safety warnings provided could result in death or serious injury. The procedures described in this section of the manual could result in exposure to electrical, mechanical or other potential safety hazards. Always refer to the safety warnings provided throughout this manual concerning these procedures. When possible, disconnect all electrical power including remote disconnect and discharge all energy storing devices such as capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. When necessary to work with live electrical components, have a qualified licensed electrician or other individual who has been trained in handling live electrical components perform these tasks.

Field Installed Economizer

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. Ensure the damper is positioned with the sheet metal lip in the upward position.

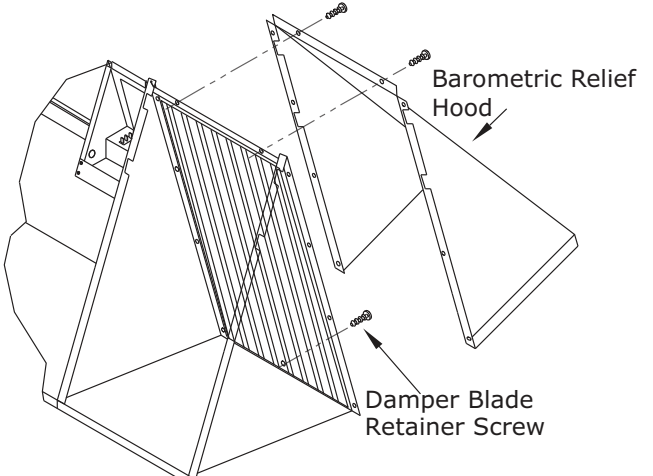
Figure 2. Damper, rod assembly and positions



4. Attach the pivotal brackets to the unit using two screws per bracket.

5. Raise the damper and rods into the vertical position. Tie the damper rods to the filter rack to prevent them from interfering with the positioning of the economizer.
6. Ensure damper is positioned with sheet metal lip in the upward position.
7. Attach the barometric relief hood to the back of the economizer assembly, using two screws at the top.

Figure 3. Relief hood/economizer assembly



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.

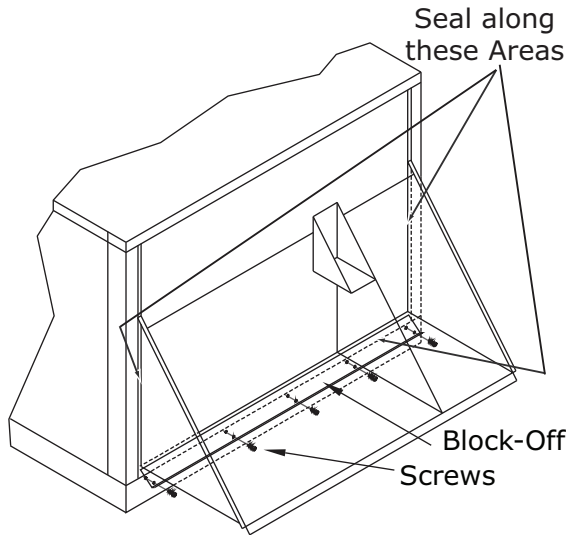
8. Install the block-off. The block-off is designed to close the opening created, between the economizer and the base, when the economizer assembly is in it's operating position.

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-inch of gasket material from the bottom of each corner post to expose the holes used to attach the economizer assembly to the unit.

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 4. Block-off installation



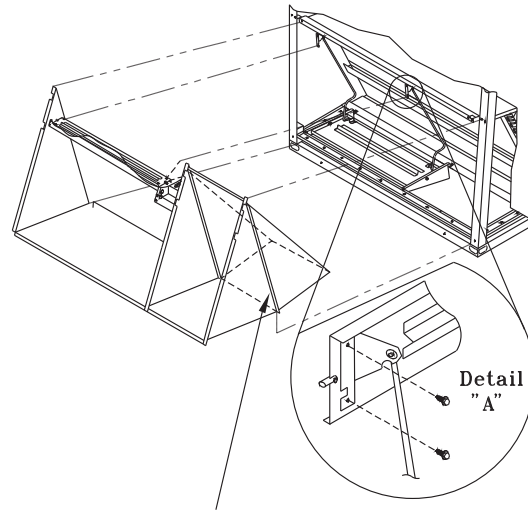
Economizer is shown with the end panel removed for illustration purposes. It is not necessary to remove this panel in the field.

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. 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.

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.

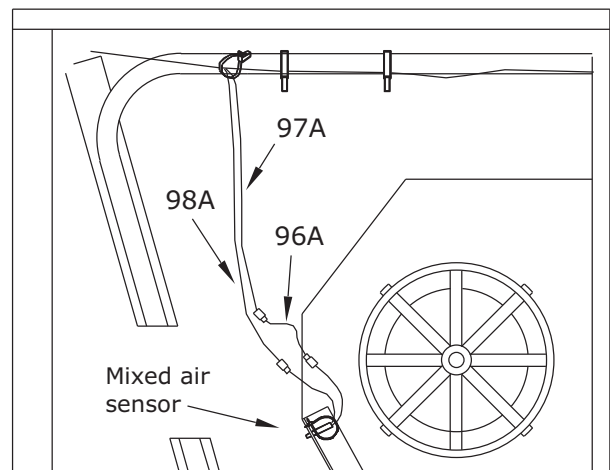
Figure 5. Assembly placement



Insert the back flange of the barometric damper behind the right cornerpost.

11. Before the right hand return air linkage bracket can be installed, two outside air damper screws must be removed. Align the return air linkage bracket with these holes and reinstall the two screws. Install the left hand return air linkage bracket using the engagement holes in the outside air damper.
12. Manually hand operate the dampers, slowly; to ensure no binding exists.

Figure 6. Rubber grommet placement



13. Install the rubber grommet, provided with the sensor, into the hole on the fan assembly channel.
14. Insert the supply air temperature sensor through the grommet, approximately one half (1/2) inch, with the end pointing toward the coil.
15. Locate wires 97A and 98A. Wire 96A will be wire tied to them. Connect Mixed Air Sensor to wiring. See figure 6.

Installation

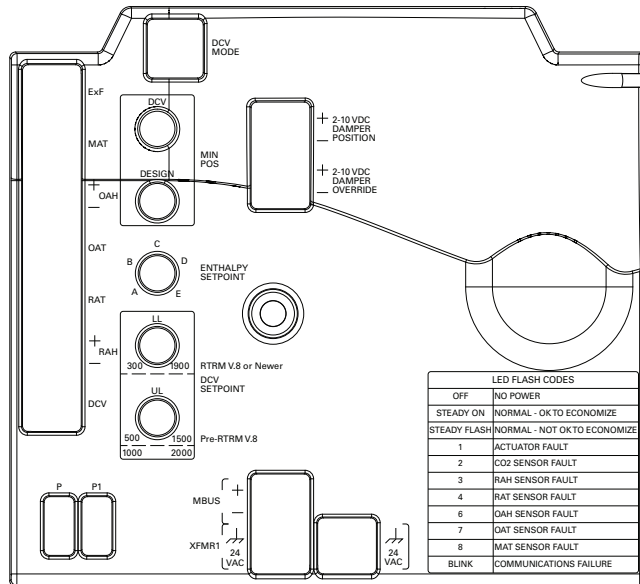
Important: When unit is equipped with a TCI (Communication Interface), the supply air sensor must be located downstream of the heat source for a true reading, and to utilize the "supply air tempering" feature. This requirement also applies when the unit is used with any Integrated Comfort™ System (ICS)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

16. 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.

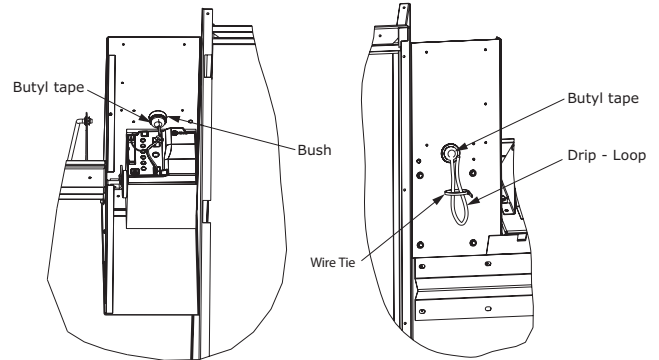
Wiring Connections

Figure 7. RTEM terminal identifications



Locate unit wiring harness plug P8 (wires 55, 54, 56, 57) located at the end of the wiring raceway in the return air section. Pass harness through bushing. Plug P8 into J7 on the economizer actuator motor. Pull harness slack through harness, harness slack should be outside the RTEM compartment (wires hanging down for drip loop). Apply butyl tape to harness / bushing connections - apply butyl tape outside RTEM compartment. See figure 8.

Figure 8. Routing RTEM harness



Locate unit wiring harness plug P13 (wires 97A and 98A) located at the end of the wiring raceway in the return air section. Plug P13 into J13 (MAT) on the economizer actuator motor.

Note: If Options Module (RTOM) is not installed then connect plug PPF5 to J4 on the Refrigeration Module (RTRM) in the control box.

Replace the control box cover and the compressor access panel.

1. Install the end panel, removed in Step 2, onto the economizer as follows:
 - a. Bend the top of the end panel, at the crease line, outward to approximately 45 degrees.
 - b. Place the end panel over the economizer and slide the top of the panel under the roof panel. Replace the screws along the top.
 - c. While pushing in at the crease in the end panel, reinstall the two screws along each side above the crease in their original location.
 - d. Align the upper row of three screw holes with the holes in the bottom of the economizer frame.

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

2. Using the field provided sealant, seal along each side, bottom, and any other areas that could be a potential air and water leak. See figure 9.

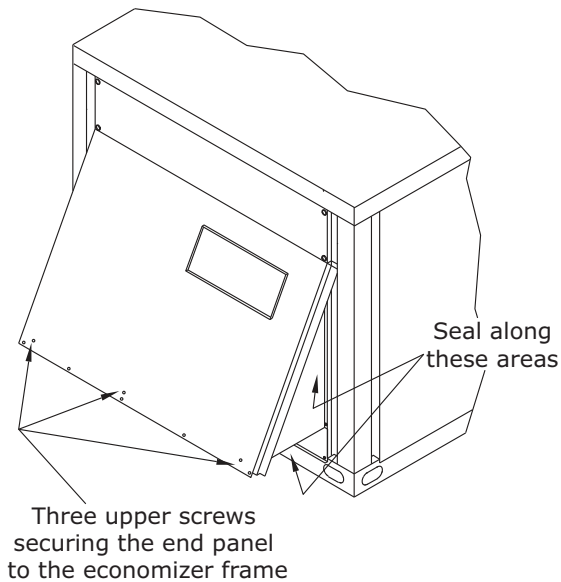
NOTICE

Corrosion Damage!

Use of non-recommended caulking/sealant could cause corrosion related failures to refrigeration components.

3. Replace the filter/fan access panel.
4. Complete the setup and checkout procedures in the "Minimum Position Settings" section.

Figure 9. End panel placement



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

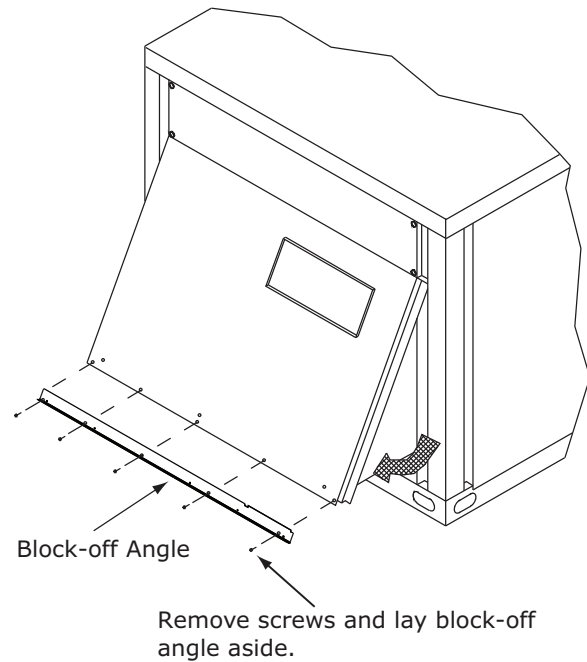
Hazardous Voltage w/Capacitors!

Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury. Disconnect all electric power, including remote disconnects and discharge all motor start/run capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized. Verify with a CAT III or IV voltmeter rated per NFPA 70E that all capacitors have discharged.

For additional information regarding the safe discharge of capacitors, see PROD-SVB06-EN.*

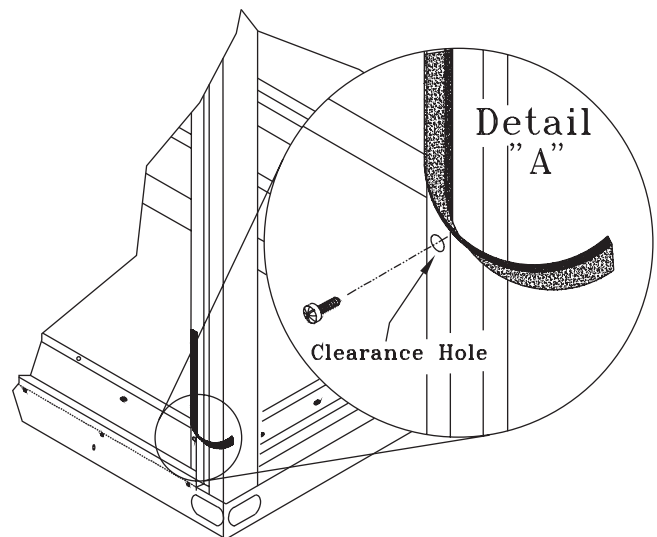
1. Remove the filter/fan compartment access panel.
 2. Remove the five or nine lower screws in the end panel. Lay block-off angle aside for later installation in Step 8.
- Note:** Do not remove the three or five screws in the upper row of the end panel.
3. Grasp the bottom of the end panel and pull the economizer assembly outward into the operating position.

Figure 10. Screw removal and end panel positioning



4. Remove approximately 3-inch of gasket material from the bottom of each corner post to expose the holes used to attach the economizer assembly to the unit.
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.

Figure 11. Gasket removal and clearance holes



6. From inside the evaporator fan compartment, remove the following parts;
 - a. plastic bag containing screws
 - b. barometric relief hood

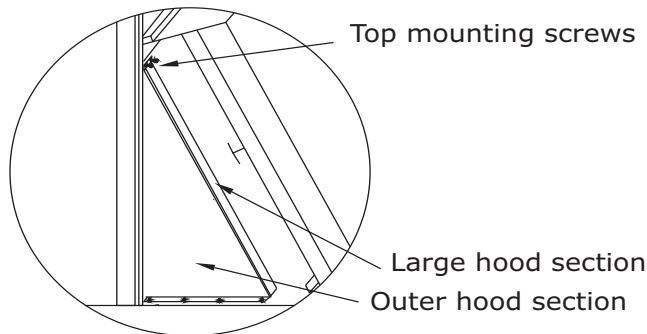
Installation

- The barometric relief hood ships in three sections and is secured during shipping. Remove shipping screw securing 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.

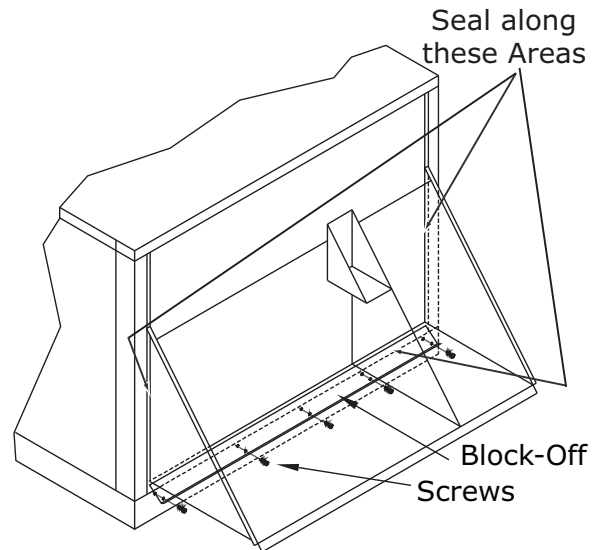
- Attach the larger section of the barometric relief hood to the back of the economizer assembly, using two screws at the top and to the drain pan support using two screws at the bottom.
- Attach the outer section of the hood to the larger section, previously installed.
- With both sections assembled together, secure the completed hood at the top with two screws provided.

Figure 12. Hood attachment



- Install the block-off angle underneath the economizer. The block-off angle is designed to close the opening created between the economizer and the base, when the economizer assembly is in its operating position.
 - Holding the block-off angle 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.
 - Press the bottom of the block-off angle against the unit and line up the holes. Using the provided screws, secure it into place.

Figure 13. Block-off installation



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

- Using the field provided sealant, seal along each side, bottom, and any other areas that could be a potential air and water leak.

NOTICE

Corrosion Damage!

Use of non-recommended caulking/sealant could cause corrosion related failures to refrigeration components.

- Replace the filter/fan access panel.

Minimum Position Setting

- To adjust the minimum position setting and check out the economizer, the power must be connected.
- Close the unit disconnect and place the zone sensor fan selector in the fan "ON" position and the heat/cool selector in the "OFF" position. This will place the damper in the minimum ventilation position.
- To adjust the minimum position setting for the required ventilation air, turn the potentiometer (on the ECA) clockwise to "open" (to increase the amount of ventilation) or counter-clockwise to "close" (to decrease the amount of ventilation). The damper will open to this setting each time the blower circuit is energized.
- When adjusting the minimum position, the damper may move to the new setting in several small steps. Once the damper has remained in position for 10 - 15 seconds without movement, it can be assumed it is at the new position.
- Replace the filter access panel.

- The damper will close when the blower circuit is de-energized.

Dry Bulb Settings

Standard economizer dry bulb changeover is field selectable to four outdoor temperatures. See the following table for potentiometer settings. The selection is made on the ECA.

Reference Enthalpy Settings

Economizer enthalpy changeover is field selectable to four points. See the following table for potentiometer settings. The selection is made on the ECA.

Table 1. Potentiometer settings

Potentiometer Setting	Dry Bulb	Enthalpy
A	73°F (22.8°C)	27 Btu/lb (63 kJ/kg)
B	70°F (21.1°C)	25 Btu/lb (58 kJ/kg)
C ^(a)	67°F (19.4°C)	23 Btu/lb (53 kJ/kg)
D	63°F (17.2°C)	22 Btu/lb (51 kJ/kg)
E	55°F (12.8°C)	19 Btu/lb (44 KJ/Kg)

(a) Factory Setting

Table 2. Economizer control options

Control Option	Enable Conditions ^(a)	Optional Sensors Required ^(b)
Dry Bulb (standard)	See Table 1	None
Reference Enthalpy (ReliaTel Only)	See Table 1	Outdoor Humidity (BAYENTH007*)
Comparative Enthalpy (ReliaTel Only)	Outdoor Air Enthalpy 3.0 BTU/lb. less than Return Air Enthalpy	Outdoor Humidity Return Humidity Return Temperature (BAYENTH008*)

(a) Economizing is enabled when these conditions are met.

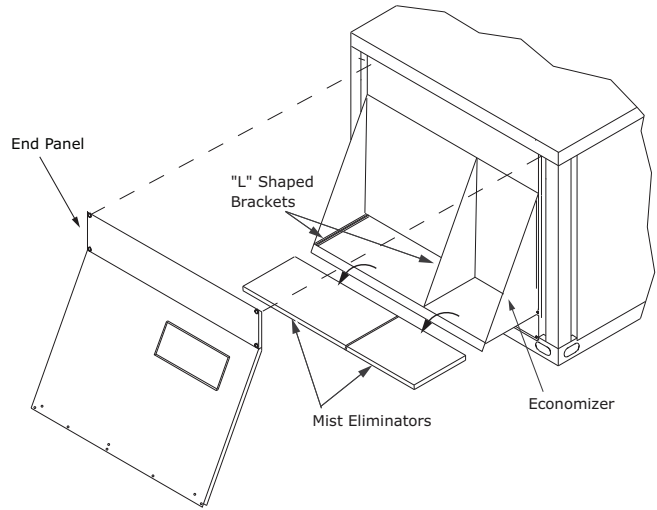
(b) Conditions level will be self configured when optional sensors are connected.

Mist Eliminator Servicing

It is recommended that the mist eliminators be cleaned or replaced annually. Refer to the figure 14 during the following maintenance procedure:

- Remove screws from end panel that secure it to the unit and economizer.
- Set end panel aside.
- Loosen "L" shaped brackets that secure mist eliminator in place if necessary.
- Remove mist eliminators and clean.
- Replace mist eliminators and adjust "L" shaped brackets to secure and hold mist eliminator in place.
- Replace end panel and secure to unit and economizer.

Figure 14. Mist eliminator servicing



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