

## INSTALLATION INSTRUCTIONS FOR CONVERTIBLE ECONOMIZERS

**21U15** (ECC-QGA12SA-DWDH) Standard Leak Economizer

**21U17** (ECC-QGA12CA-D2DH) Compliant Economizer

### GENERAL

**IMPORTANT:** Read these instructions completely before attempting to install this economizer accessory.

These instructions are intended as a general guide and do not supersede local codes in any way.

All phases of the installation must comply with all NATIONAL, STATE and LOCAL CODES.

**IMPORTANT:** This document is the property of the end user and is to remain with the equipment.

When ordered with controls, this economizer utilizes the latest technology available for integrating the use of free cooling with mechanical cooling for packaged rooftop units. The solid-state control system optimizes energy consumption, zone comfort and equipment cycling by operating the compressor with outdoor air when free cooling is available, locking out the compressor when outdoor-air temperature is too cold and Demand Control Ventilation (DCV) is supported.

This economizer utilizes gear-driven technology with a direct mount spring return actuator that will close upon loss of power. The economizer comes standard with a Mixed Air Sensor (Supply Air Sensor) and the option of outdoor Dry Bulb or outdoor Enthalpy.

Barometric relief dampers are provided in the relief hood for natural building pressurization control.

### SAFETY CONSIDERATIONS

#### **WARNING**

Turn off main power to the roof top unit (RTU) or air handling unit (AHU). Lockout and tag disconnect switch before starting installation, performing service, or maintenance operations.

Electrical shock and/or moving parts could cause personal injury, or death.

#### **CAUTION**

##### **HEAVY OBJECT**

To prevent personal injury use lifting aides and proper lifting techniques when installing, removing or replacing.

#### **CAUTION**

When working on air conditioning equipment, observe precautions in literature, tags and labels attached to the unit and other safety precautions that may apply.

Installation and servicing of air conditioning equipment can be hazardous due to high pressures of hazardous gases, moving parts, electrical components, and sharp sheet metal parts. Wear safety glasses and gloves.

Only trained and qualified service personnel should install, service, or repair air conditioning equipment. Untrained personnel can perform basic maintenance functions of cleaning coils, and cleaning and replacing filters, but all other operations should be performed by trained service personnel.

## PRE-INSTALLATION

1. **Inspect Shipment for Damage** - File claim with shipping company if accessory is damaged or incomplete. Contact your supplier for any missing parts.

**Important:** To eliminate any delays in shipping and to insure part(s) replacement accuracy, provide the Economizer Model Number and Production Number when ordering parts.

2. **Check Unit Clearance** - In addition to the clearances required for the RTU, provide sufficient space for airflow clearance, wiring, and servicing this accessory after it is mounted on unit - See Submittal Data for unit dimensions and weight(s).

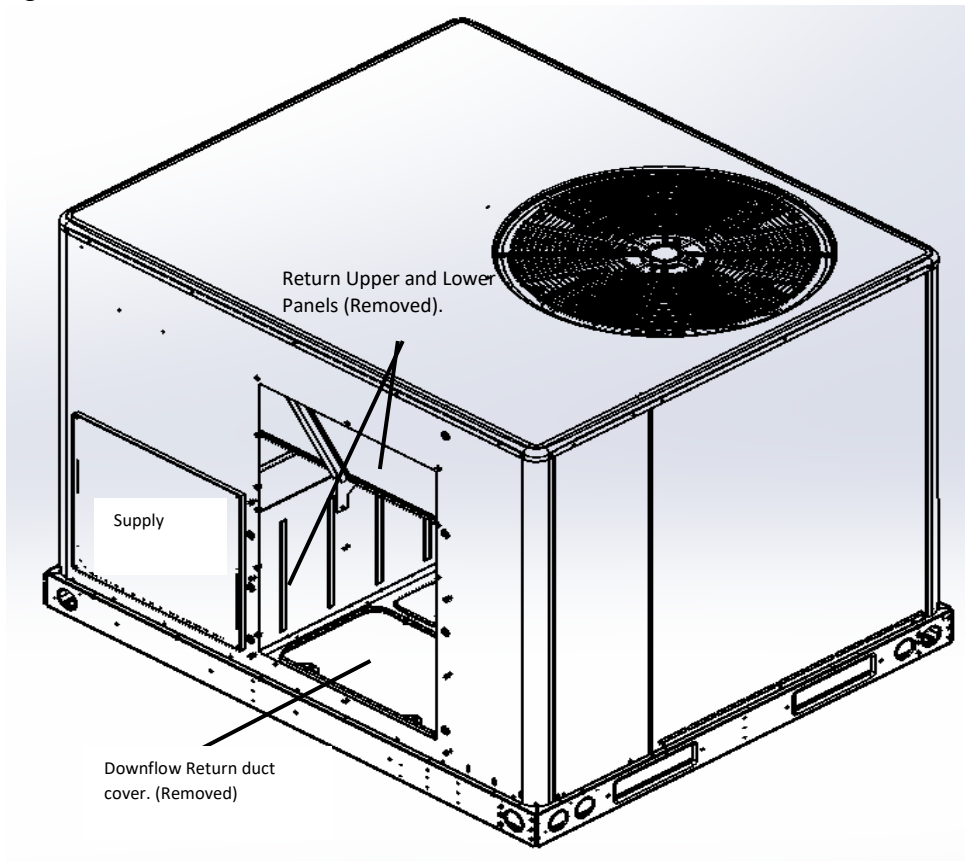
## INSTALLATION

**Economizer parts list:** \* Economizer, OA hood with aluminum filter, Relief hood with barometric damper and hardware bag.

### Vertical Applications:

1. Remove the supply and return duct covers and set aside.
2. Remove the upper and lower return closeout panels, see Figure 1.

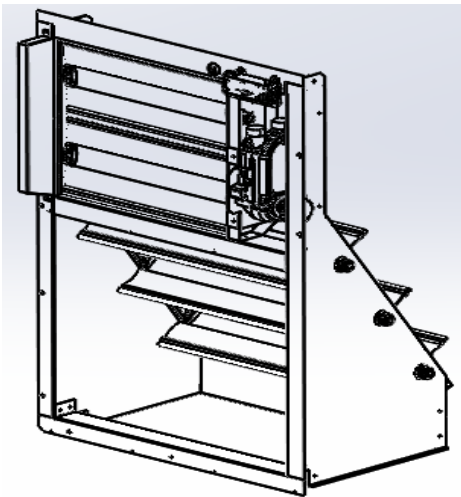
**Figure 1**



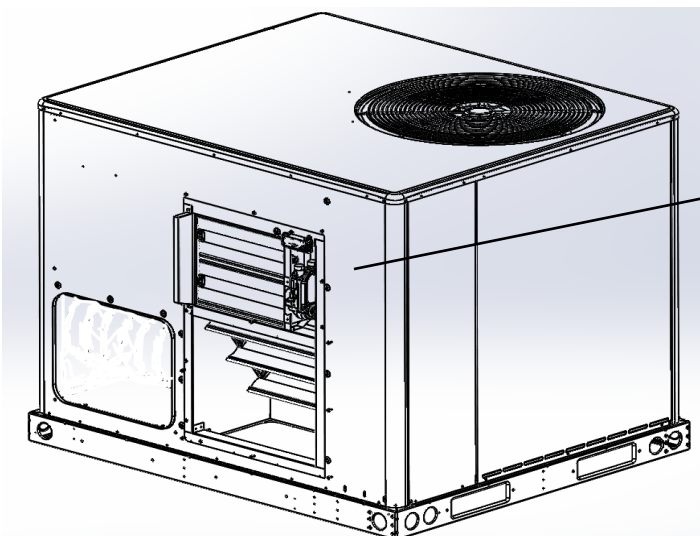
3. Remove the downflow Return duct cover if it is installed over base opening. Apply gasket (3/4" x 1/8") around Return Air base opening. This will provide a seal for the economizer over the opening.
4. Remove the supply downflow duct cover.

5. Locate the economizer wire harness in the return air section of the unit cabinet. It will be located up and to the right of the economizer opening. Remove the harness from the wire tie and extend the harness out of the economizer opening. Plug the unit harness into the mating connection on the economizer.
6. Ensure that the dial on the front face of the actuator is set to 1. If it is not, use a flathead screwdriver to adjust this dial to the correct position.
7. Carefully slide the economizer into RTU opening, this will require walking the economizer from side to side to clear the blade brackets on the right side of the economizer return. The economizer flanges should be flush with the cabinet exterior and the economizer sits on the RTU Return Air base. See Figure 2 and Figure 3. Secure the economizer to the RTU with (3) #14 sheet metal screws.

**Figure 2**



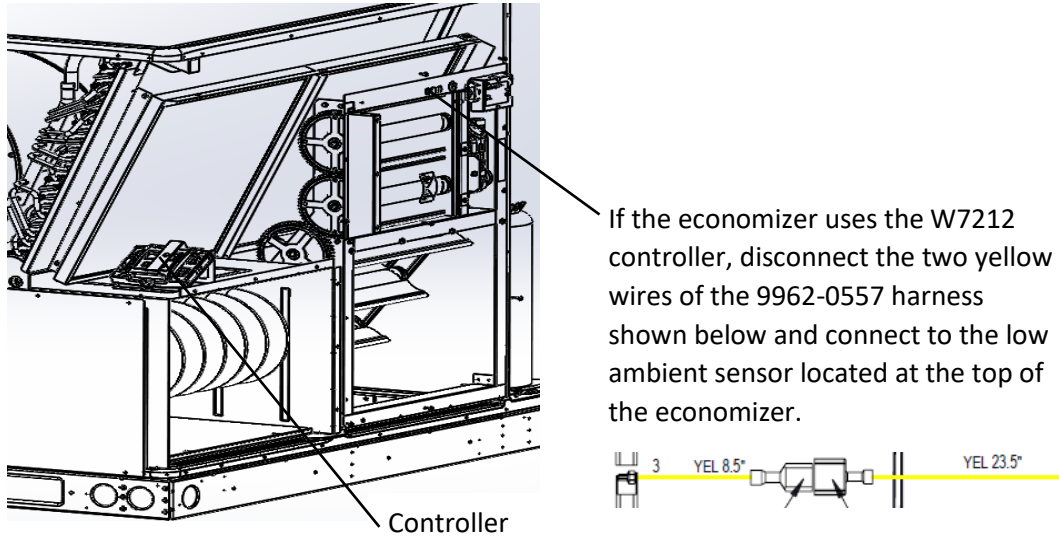
**Figure 3**



The accessory wire harness will be in the unit with the Molex plug at this location.

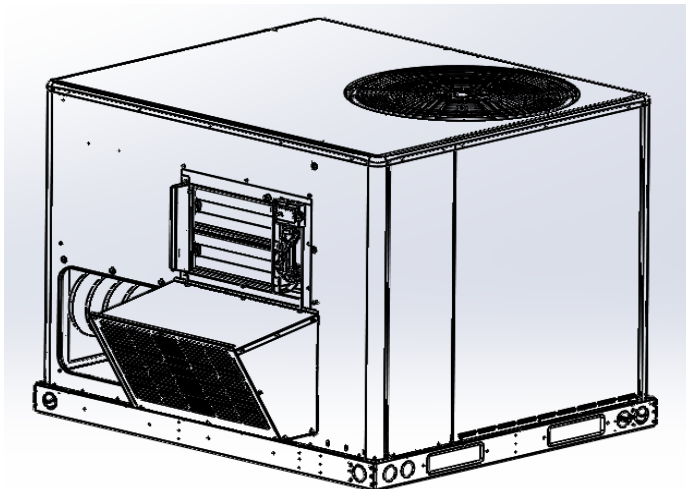
- Route Pink/Purple wires (9962-0556 harness) or Black/Red wires (9962-0557 harness) through RTU chamber to economizer grommet located at the top of the economizer and plug into the OA sensor. Plug 9-pin economizer plug into 9-pin RTU plug. Access to economizer controller will be through the blower access panel used for filter access. Secure controller bracket to deck panel in front of filters, see Figure 4. Also, secure green ground wire to controller bracket, if included. Install the provided supply air sensor in the blower compartment. See provided Control Documents for setup information to complete the installation.

Figure 4



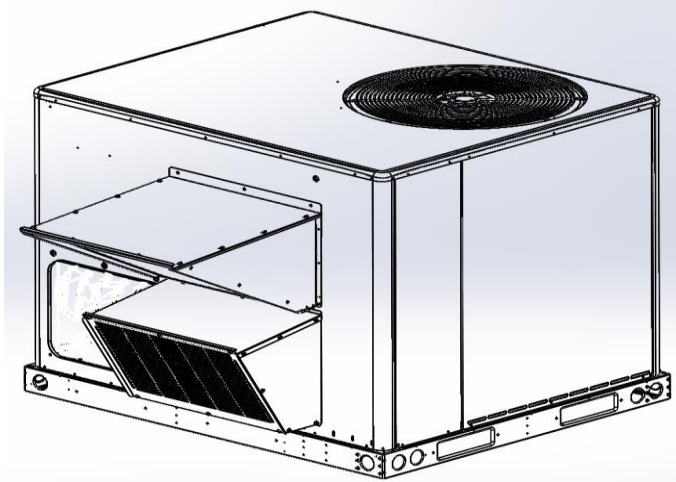
- Apply gasket (3/4" x 1/8") to Relief hood flanges and install hood over lower section of economizer. Secure hood to RTU with (4) #10 sheet metal screws provided for the hood top and (4) #10 self-tapping screws provided for the hood bottom. See Figure 5.

Figure 5



10. Apply gasket (3/4" x 1/8") to Outside Air hood flanges and install hood over upper section of economizer with (3) #14 sheet metal screws provided for the hood top and (6) #10 self-tapping screws provided for the hood side flanges. Be sure Outside Air hood is installed squarely. Install provided aluminum filter into hood. See Figure 6.

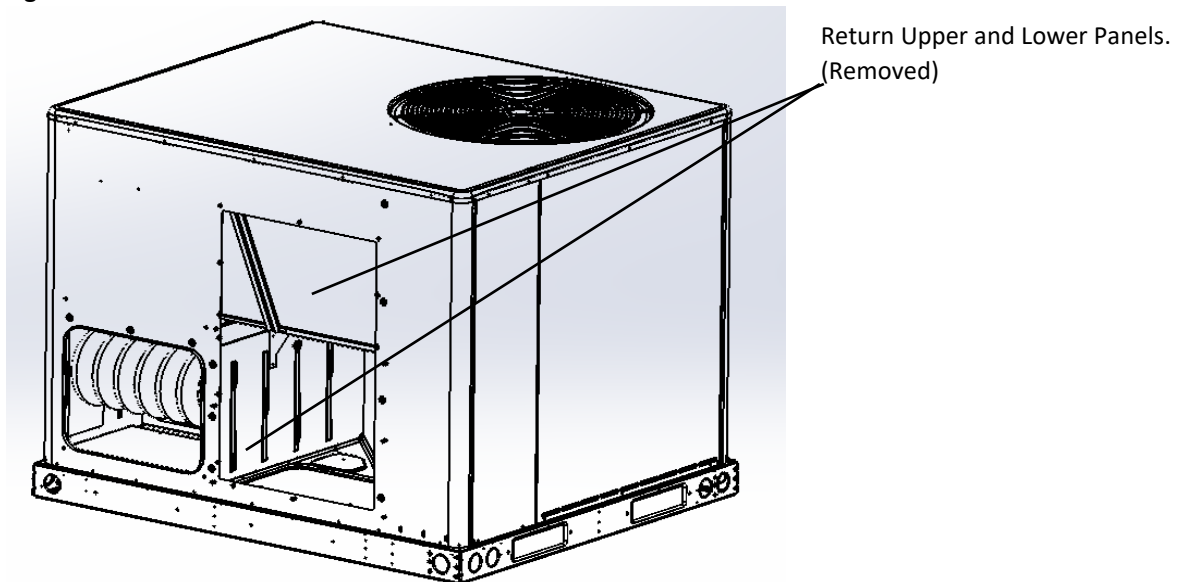
**Figure 6**



**Horizontal Applications:**

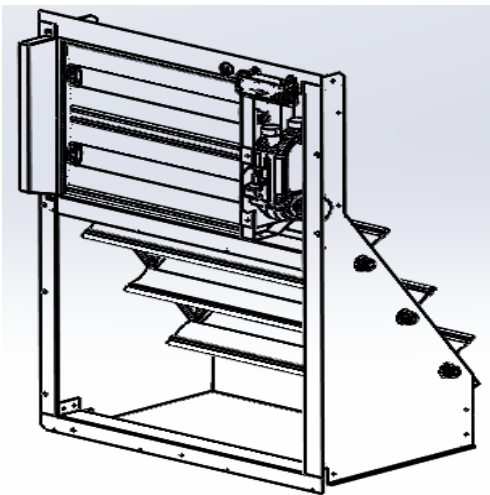
1. Remove and set aside the Return Air and Supply Air cover panels.
2. Remove the upper and lower return closeout panels, see Figure 1.

**Figure 1**

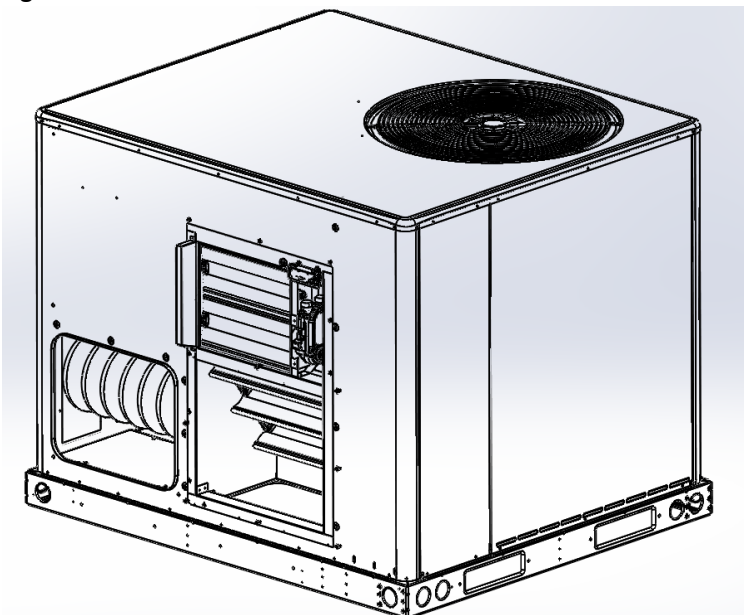


3. Be sure Return Air base cover is installed over base opening.
4. Locate the economizer wire harness in the return air section of the unit cabinet. It will be located up and to the right of the economizer opening. Remove the harness from the wire tie and extend the harness out of the economizer opening. Plug the unit harness into the mating connection on the economizer.
5. Ensure that the dial on the front face of the actuator is set to 1. If it is not, use a flathead screwdriver to adjust this dial to the correct position.
6. Carefully slide the economizer into RTU opening, this will require walking the economizer from side to side to clear the blade brackets on the right side of the economizer return. The economizer flanges should be flush with the cabinet exterior and the economizer sits on the RTU Return Air base. See Figure 2 and Figure 3. Secure the economizer to the RTU with (3) #14 sheet metal screws.

**Figure 2**



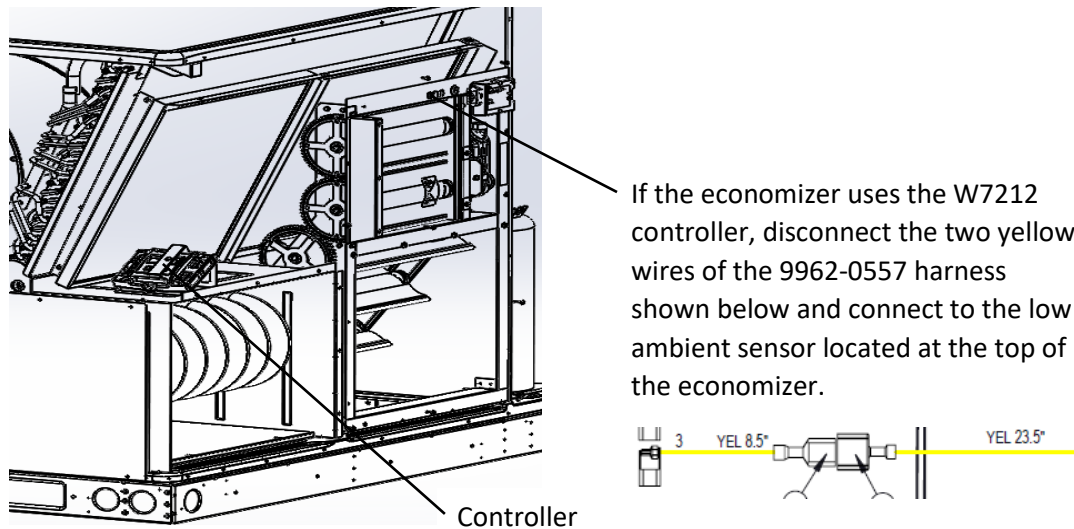
**Figure 3**





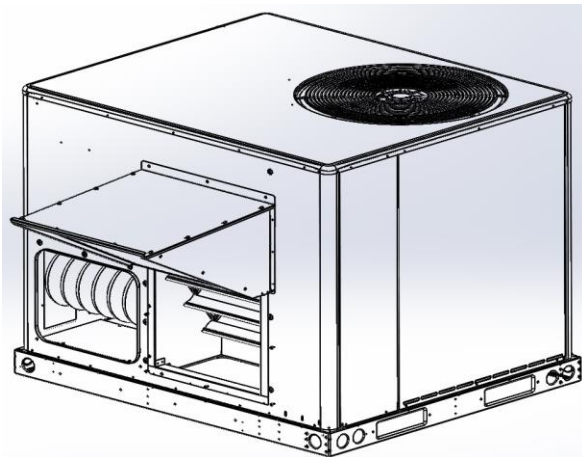
7. Route Pink/Purple wires (9962-0556 harness) or Black/Red wires (9962-0557 harness) through RTU chamber to economizer grommet located at the top of the economizer and plug into the OA sensor. Plug 9-pin economizer plug into 9-pin RTU plug. Access to economizer controller will be through the blower access panel used for filter access. Secure controller bracket to deck panel in front of filters, see Figure 4. Also, secure green ground wire to controller bracket, if included. Install the provided supply air sensor in the blower compartment. See provided Control Documents for setup information to complete the installation.

Figure 4



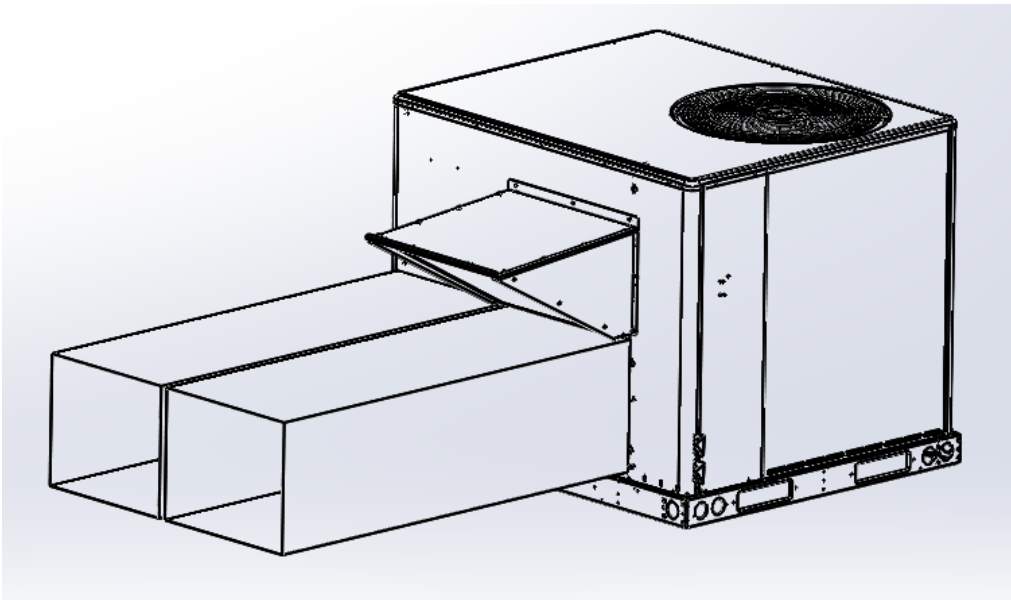
8. Apply gasket (3/4" x 1/8") to Outside Air hood flanges and install hood over upper section of economizer with (3) #14 sheet metal screws provided for the hood top and (6) #10 self-tapping screws provided for the hood side flanges. Be sure Outside Air hood is installed squarely. Install provided aluminum filter into hood. See Figure 5.

Figure 5



9. Install field supplied horizontal duct for the Supply and Return openings. See Figure 6.

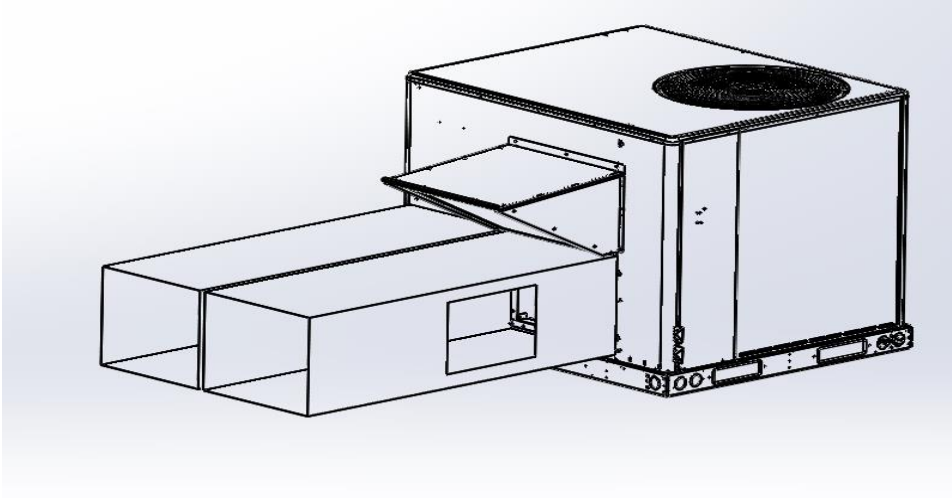
**Figure 6**



10. Cut opening on Return duct for relief hood and damper, 20"W x 14"H. See Figure 7.

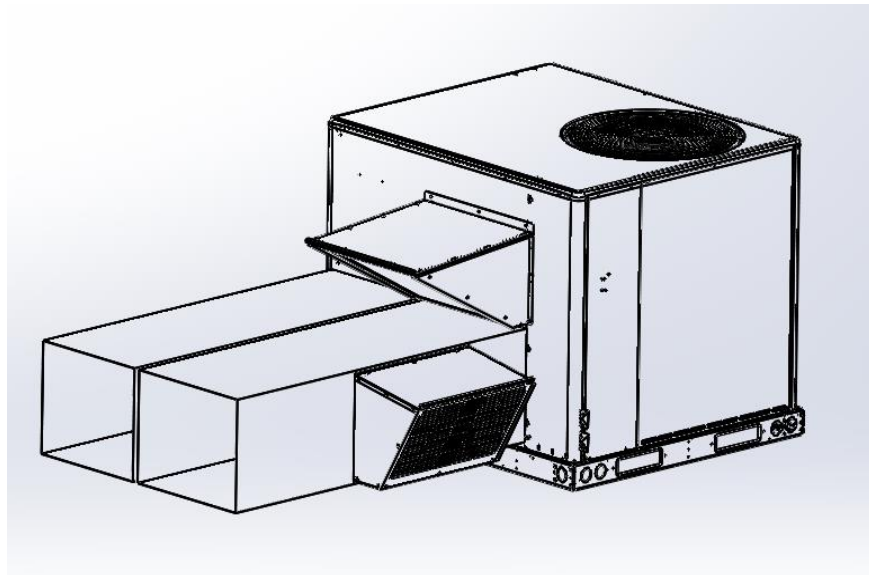
**Figure 7**





11. Apply gasket (3/4" x 1/8") to Relief hood flanges and install hood over opening of return air duct section. Secure hood with (8) #10 self-tapping screws provided. See Figure 8.

**Figure 8**



### **Wiring**

Units are factory-equipped with an economizer wire harness inside the cabinet. Connections at the unit control panel are made in the field.

1. Remove the control access panel on the front of the unit.

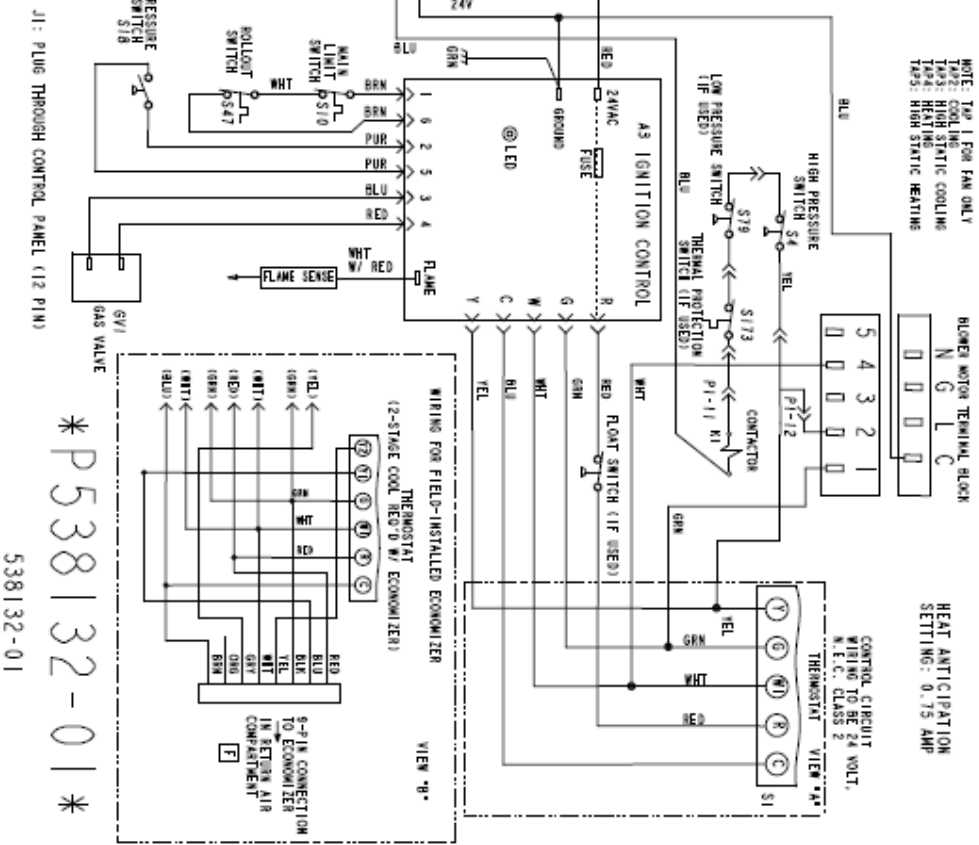
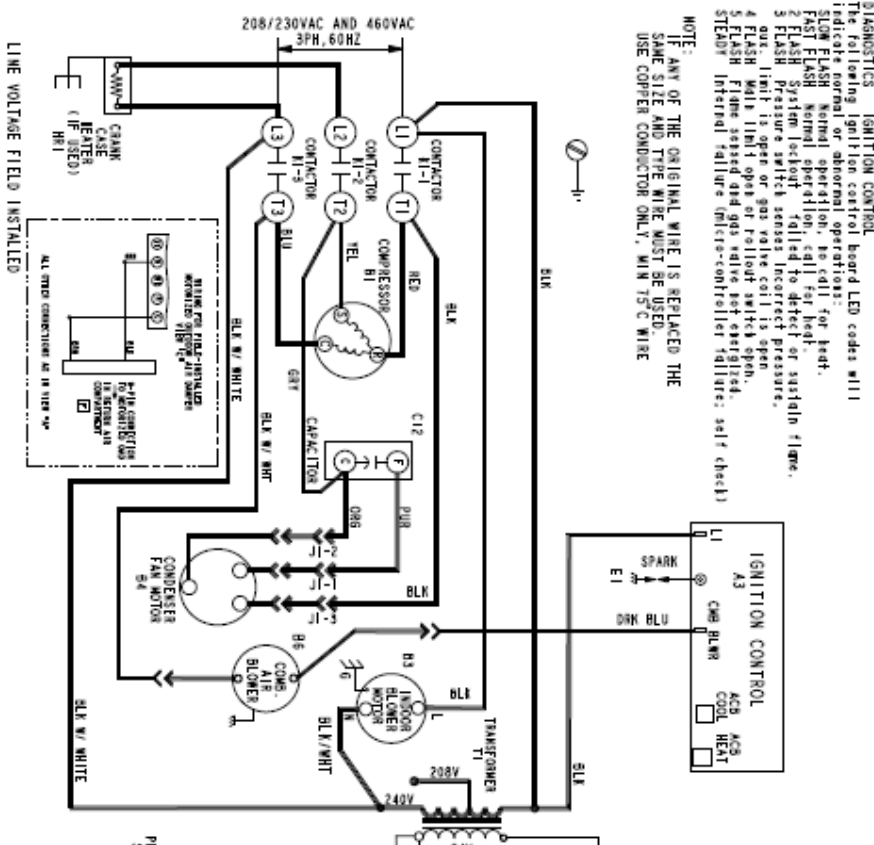
2. The economizer wire harness is located inside the control panel. The wire ends are pulled outside and below the panel. Depending on the unit, some wires may need to be pulled back inside the control panel and connections made there.
3. Make connections as shown on the appropriate wiring diagrams. See “View B” for economizer connections at the control panel.
4. When connections are complete, replace the control access panel.

WARNING -  
ELECTRIC SHOCK HAZARD. UNIT  
MUST BE GROUNDED IN ACCORDANCE  
WITH NATIONAL AND LOCAL CODES.

### CONNECTION DIAGRAM GAS/ELECTRIC (CONSTANT TORQUE BLOWER) 3 PHASE

DIAGNOSTICS - IGNITION CONTROL  
The following ignition control board LED codes will  
indicate normal or abnormal operations:  
SLOW FLASH Normal operation, no call for heat.  
FAST FLASH Normal operation, call for heat.  
5 FLASH System testout - called to detect or sustain flame.  
5 FLASH Pressure switch sensor incorrect pressure.  
5 FLASH Pressure switch sensor incorrect pressure.  
4 FLASH Main limit open or rollout switch open.  
5 FLASH Flame sensed and gas valve not energized.  
STEADY Internal failure (micro-controller failure: self check)

NOTE:  
IF ANY OF THE ORIGINAL WIRE IS REPLACED THE  
SAME SIZE AND TYPE WIRE MUST BE USED.  
USE COPPER CONDUCTOR ONLY, MIN 75°C WIRE



\* P538132-01 \*

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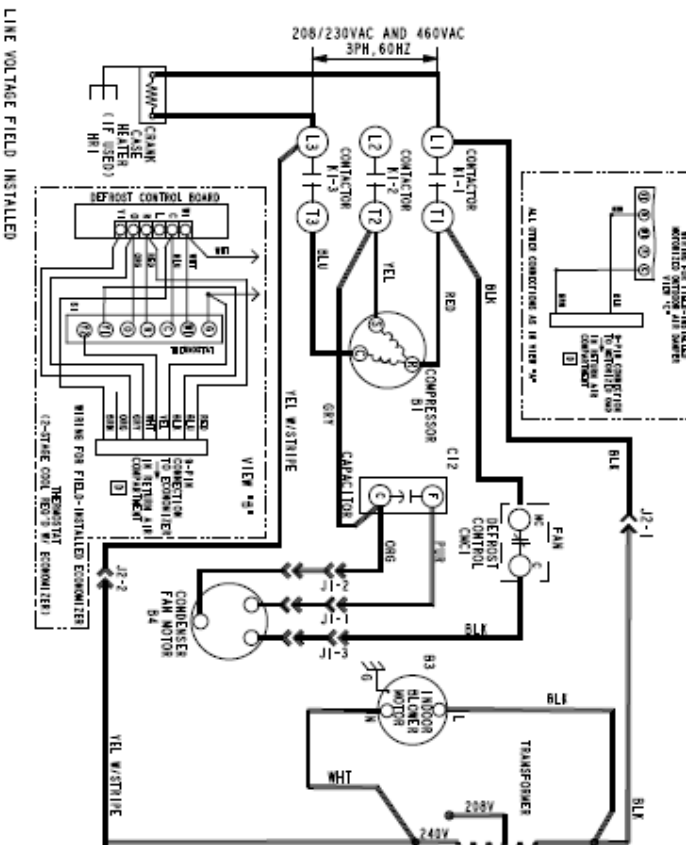
**DIAGNOSTIC CODES FOR DEFROST CONTROL LEADS**

(See instructions or markings on System Diagnostic Module for codes or System Diagnostic Module)

Diagnosis	DM GREEN	DM RED
No Power to Control	OFF	OFF
Normal Operation / Power to Control	Small/Interim Slow Flash	Small/Interim Slow Flash
Anti-Short Cycle Lockout	Alternate Slow Flash	Slow Flash
Low Pressure Switch Fault	OFF	ON
Low Pressure Switch Lockout	Slow Flash	OFF
High Pressure Switch Fault	Slow Flash	OFF
High Pressure Switch Lockout	ON	OFF

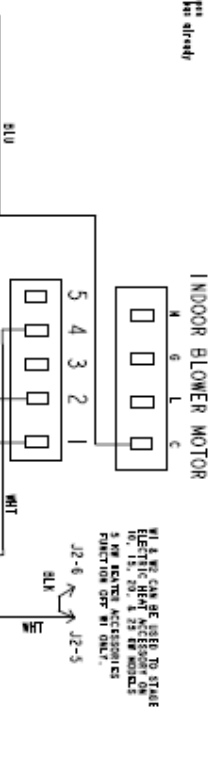
Note: Because the Pressure Switches are not used until after the "1" (limit) is active, the code "No Pressure Switch Open" will not be seen when "1" is off. Instead, the "Normal Operation" or "Anti-Short Cycle" code will be seen.  
 Also, when a pressure switch opens and sends a short cycle lockout, the pressure switch-type code will be seen until it closes. For the short cycle lockout code will flash when it has already applied.

J1: PLUG THROUGH CONTROL PANEL (12 PIN)  
 J2: PLUG FOR ACCESSORY HEAT (6 PIN)

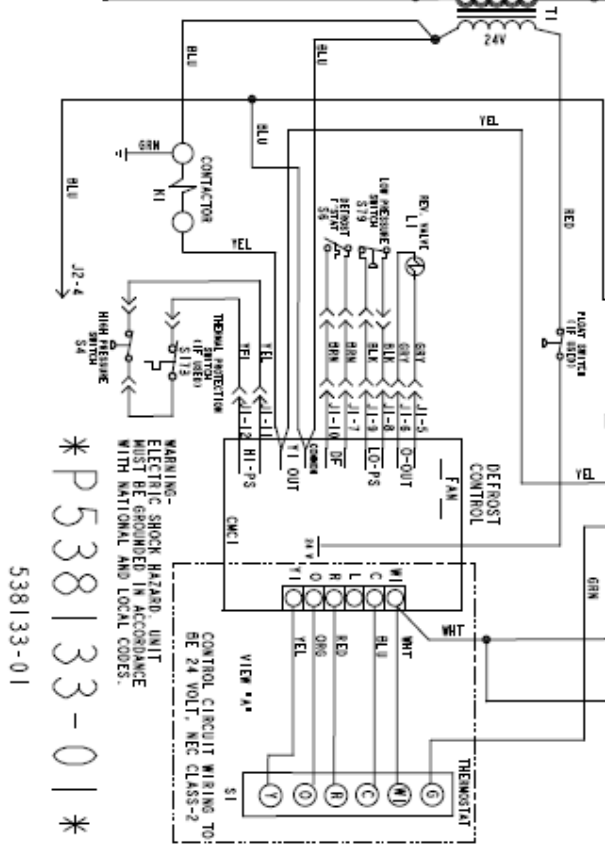


**CONNECTION DIAGRAM, HEAT PUMP CONSTANT TORQUE BLOWER, 3 PHASE**

NOTE: TAP 1 FOR FAN ONLY  
 TAP 2 FOR COILS  
 TAP 3 FOR HIGH STATIC COILS  
 TAP 4 AND TAP 5 FOR ELECTRIC HEAT- REFER TO HEATING LABEL



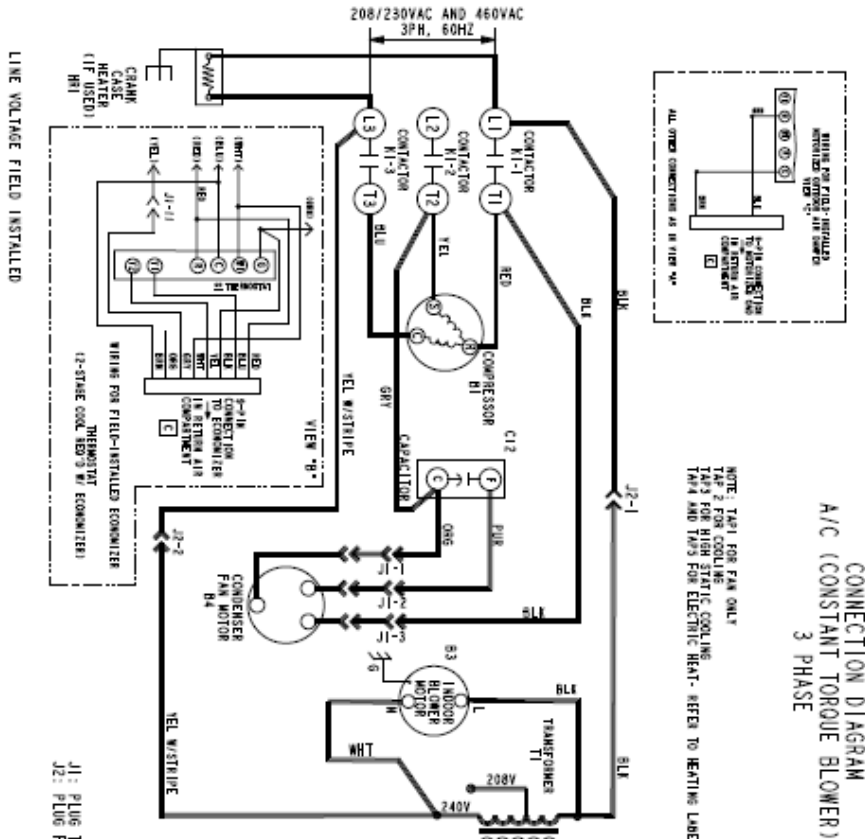
NOTE: IF ANY OF THE ORIGINAL WIRE IS REPLACED THE WIRE SIZE AND TYPE MUST BE IDENTIFIED THE WIRE MUST BE IDENTIFIED USE COPPER CONDUCTOR ONLY, MIN 15°C MIN C



WARNING- ELECTRIC SHOCK HAZARD. UNIT MUST BE GROUNDING IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

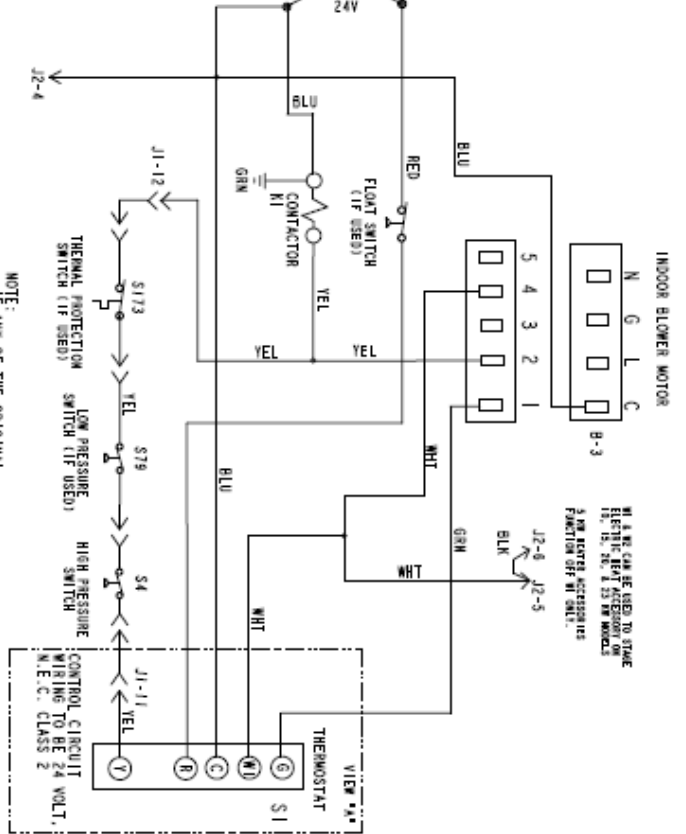
**\*P538133-01\***

LINE VOLTAGE FIELD INSTALLED



CONNECTION DIAGRAM  
A/C (CONSTANT TORQUE BLOWER)  
3 PHASE

J1: PLUG THROUGH CONTROL PANEL (12 PIN)  
J2: PLUG FOR ACCESSORY HEAT (6 PIN)



NOTE: IF ANY OF THE ORIGINAL WIRE IS REPLACED THE SAME SIZE AND TYPE WIRE MUST BE USED. USE COPPER CONDUCTOR ONLY, MIN 15°C WIRE

WARNING - ELECTRIC SHOCK HAZARD. UNIT MUST BE GROUNDING IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

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