

# INSTALLATION INSTRUCTION

## INSTALLATION INSTRUCTIONS FOR 555621 ECONOMIZERS USED WITH R4GM 150/180 UNITS

FORM# 654B-0808 (654B-0905)

Economizers are used with 12 ½ - 15 ton units for automatic sensor-controlled introduction of outdoor air into the system through an electro-mechanically controlled damper.

### Step 1:

Check for correct number of parts. See list below.

- 1 - Economizer Assembly  
(Discharge Air Sensor Included)
- 1 - Barometric Relief Hood Kit
- 1 - Fresh Air Hood Kit
- 1 - Hardware Bag

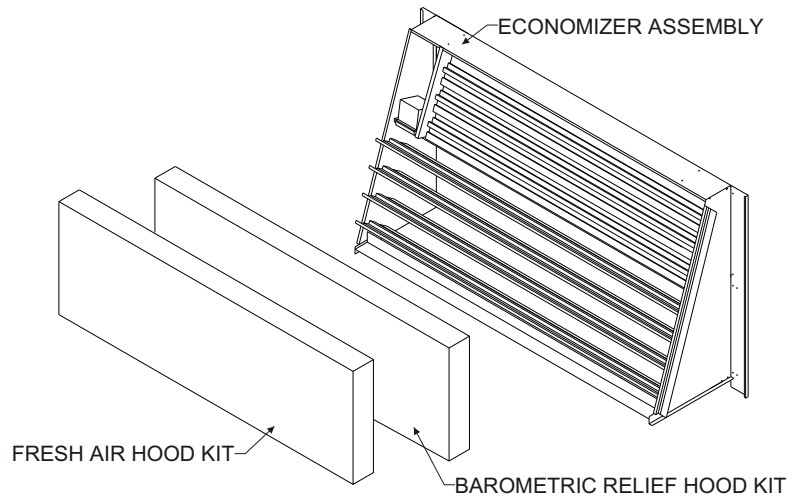


Figure 1

### Step 2:

Disconnect all power to unit.

### Step 3:

Remove the following parts shipped with the air conditioning unit:

- A - Fresh Air Panel  
(discard panel but retain screws)
- B - Return Air Panel  
(discard panel but retain screws)
- C - Economizer Access Panel  
(located behind filter access)
- D - Blower Access

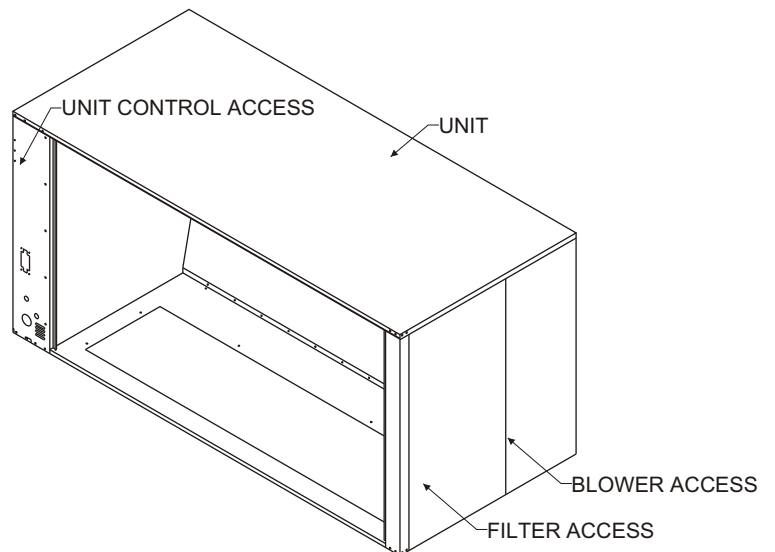


Figure 2

### Step 4:

Set economizer partly in opening in unit.

### Step 5:

Remove factory jumper plug. Route economizer wiring harness up to unit plug and firmly connect it to unit plug. Secure harness up out of the way of damper blades as shown in Figure 3.

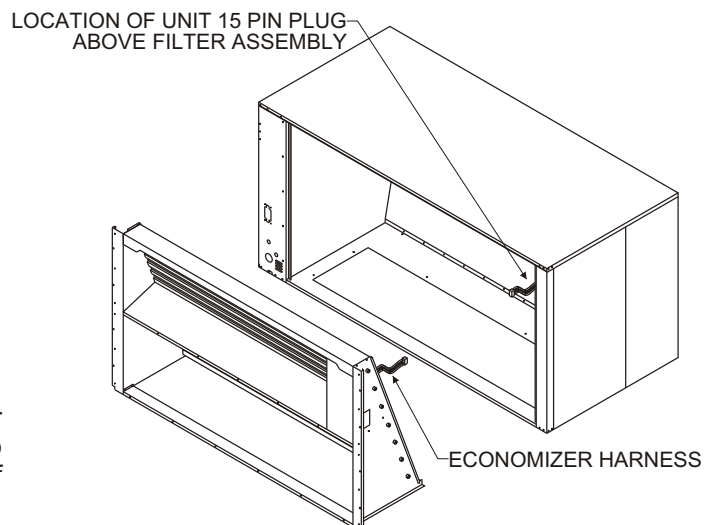


Figure 3

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### Step 6:

Take the economizer damper and slide into the opening. Damper must slide over bottom return duct opening as shown in Figure 4.

### Step 7:

Once damper is set in place. Secure damper to unit with 1 ¼" watertight screws from Step 3.

### Step 8:

Install the discharge air sensor in the blower compartment. Mounting holes are located on blower discharge side panel. Connect two purple wires located below the mounting holes marked "mix air sensor". Replace blower access removed in Step 3.

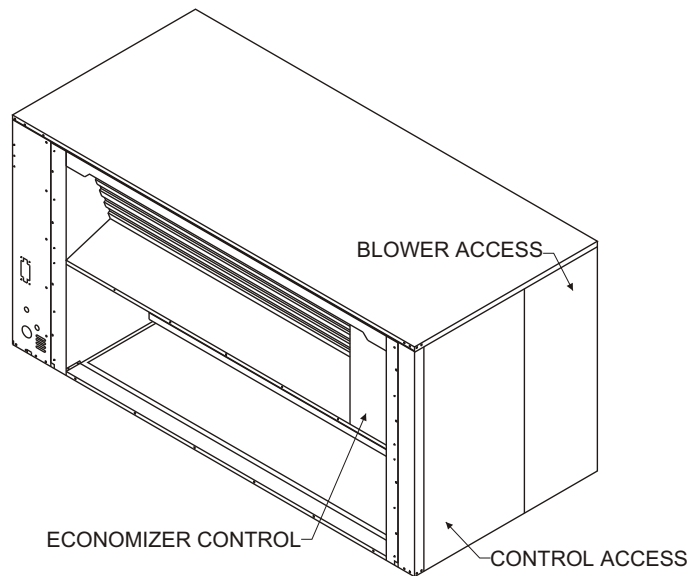


Figure 4

### Step 9:

To assemble the Barometric Relief Hood the following will be needed.

39 ea. - Type A #10 - 16 x ½ Screws  
15 ft. - ⅛ x ½ Gasket

Follow these steps:

- Take (1 and 2) put the flange of (1) to the inside of (2) and screw in place.
- Take (3) and screw in place like step A.
- Take (4) and place flanges over (2 and 3) and secure.
- Take (5) and slide inside of (2 and 3) and secure (blade opening into hood).
- Place gasket on flanges on (1,2, 3 and 4) that attach to the face of the economizer when installed.

### Step 10:

Install barometric relief hood over lower return opening on unit using screws provided as shown in Figure 9.

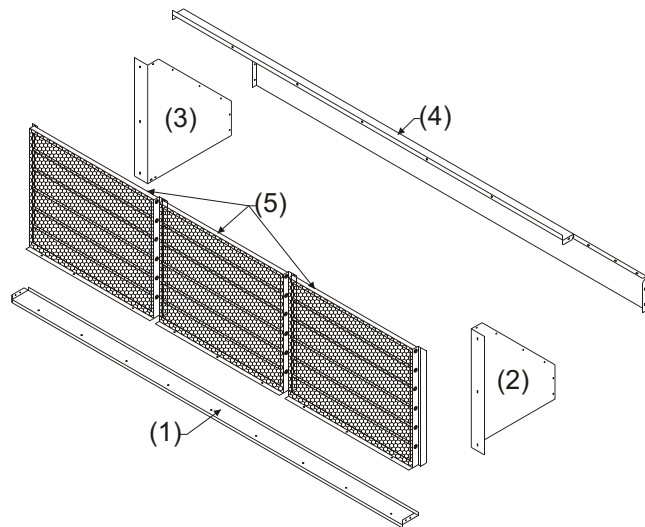


Figure 5

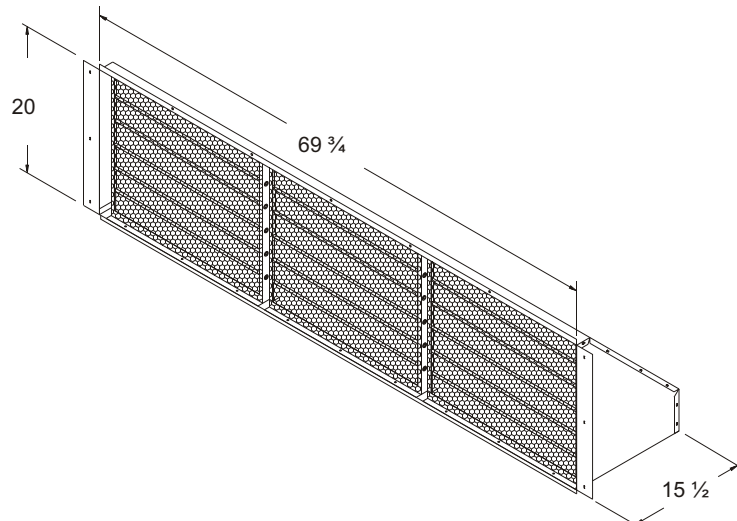


Figure 6

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### Step 11:

To assemble the Fresh Air Hood the following will be needed.

29 ea. - Type A #10 16 - x ½ Screws

15 ft. - ⅛ x ½ Gasket

Follow these steps:

- A. Take (2) and screw through (1) into (2) using the Type A screws.
- B. Take (4) and screw through (3) into (4) using the Type A screws.
- C. Take (5) and put to the inside of (1 & 3) and secure with Type A screws.
- D. Take (6) and place flanges over (1 & 3) and secure with Type A screws.
- E. Slide filter in the hood in (2 & 4).
- F. Take (7) and secure to (1 & 3) with Type A screws.
- G. Place gasket on the back flanges of (1, 3, 5, 6).

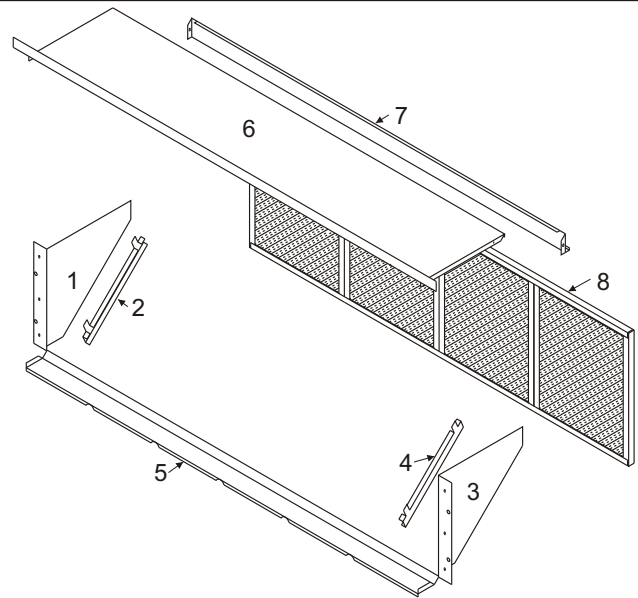


Figure 7

### Step 12:

Install fresh air hood over fresh air intake opening on unit using screws provided as shown in Figure 9.

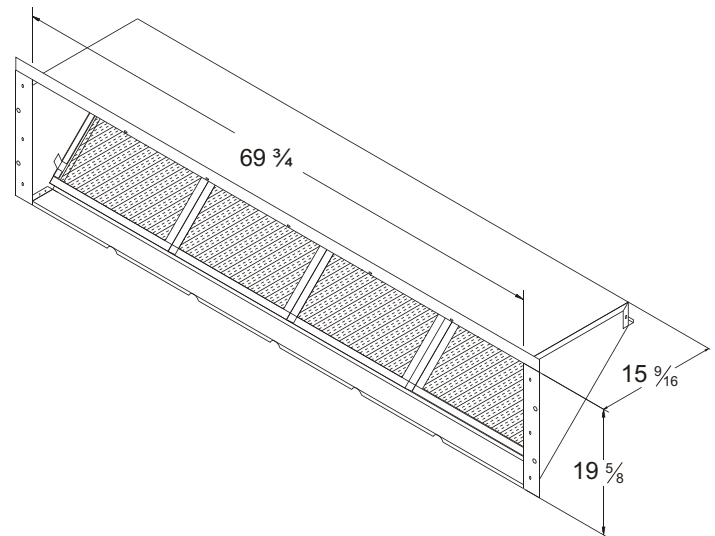
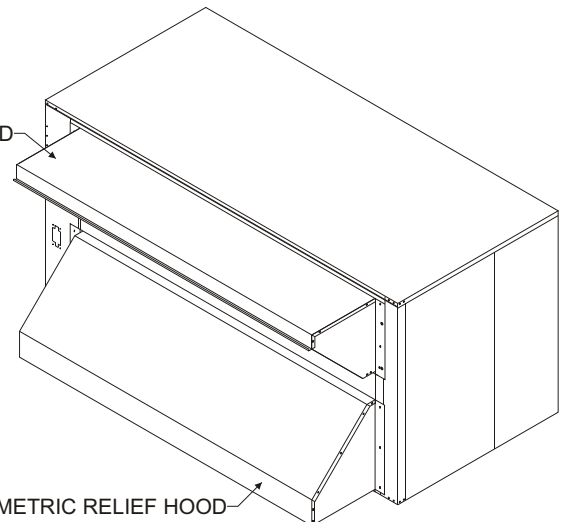


Figure 8

### Step 13:

Replace all access panels and restore power to the unit.

FRESH AIR HOOD



BAROMETRIC RELIEF HOOD

Figure 9

### Step 14:

To ensure watertight operation, small amounts of caulk may be used on clearance holes, seams, etc.

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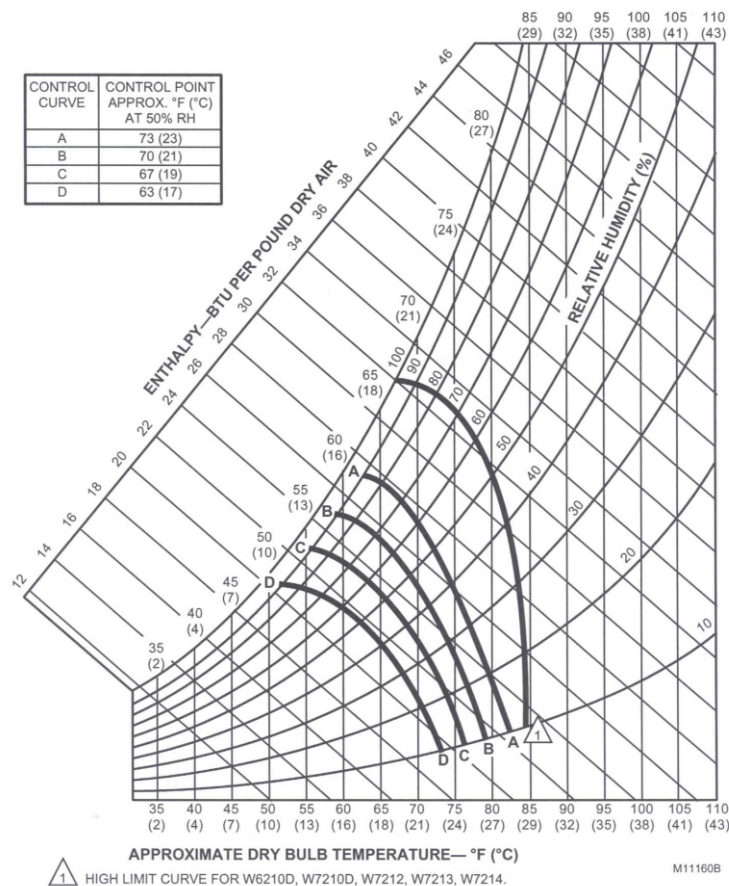


Figure 8

### OPERATION

#### A - Cooling Mode

1. On a call for cooling, with ambient temperature and humidity above enthalpy control setpoint, damper will open to minimum vent position.
2. On a call for cooling, with ambient temperature and humidity suitable for cooling, enthalpy control will shift stage one control to outside air and shift stage two thermostat to first stage compressor. Damper will modulate to control supply air temperature at 55° F (13° C). If additional cooling is required, compressor one may be energized through second stage of thermostat.

#### B - Heating Mode

1. On a call for heat damper will open to the minimum vent position.

#### C - Enthalpy Control

The enthalpy control senses both temperature and humidity or the heat content of the outside air. It controls the amount of outdoor air brought into the system. When the heat content of the outside air is below control setpoint, the control modulates outdoor dampers to meet cooling needs of the building. When the heat content rises above control setpoint, the control closes outdoor dampers to minimum position. The recommended setpoint is "A". If Economizer is allowing air which is too warm or too humid to enter the system, control may be changed to a lower setpoint (B, C, or D). Refer to Figure 8.

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### SYSTEM CHECK

1. Disconnect main power to unit.
2. Install jumper on auxiliary contacts of blower contactor in main unit control box.
3. Turn thermostat control to "OFF" position.
4. Install jumper on damper motor terminals T and T1. See Figure 9.
5. Restore power to unit. Damper should drive to fully opened position (requires 1 ½ minutes for full travel). Observe travel for proper damper operation.
6. Disconnect power to unit. Damper should spring return to closed position.
7. Remove T and T1 jumper on damper motor, then restore power to unit. Adjust minimum vent position on potentiometer on damper motor. See Figure 10.
8. Disconnect power to unit and remove jumper on auxiliary contacts of blower contactor in main unit control box. Restore power to unit.

### MAINTENANCE

1. Damper motor is prelubricated and does not require further lubrication.
2. Make visual inspection of dampers and linkage assemblies during routine maintenance.
3. Filters should be checked periodically and cleaned when necessary.
4. The washable filters supplied with the economizer can be cleaned with water and a mild detergent.
5. Take note of "Air Flow Direction" marking on filter frame when reinstalling.
6. If filter must be replaced, filter of like kind and size must be used. **DO NOT** replace permanent filters with throwaway type filters.

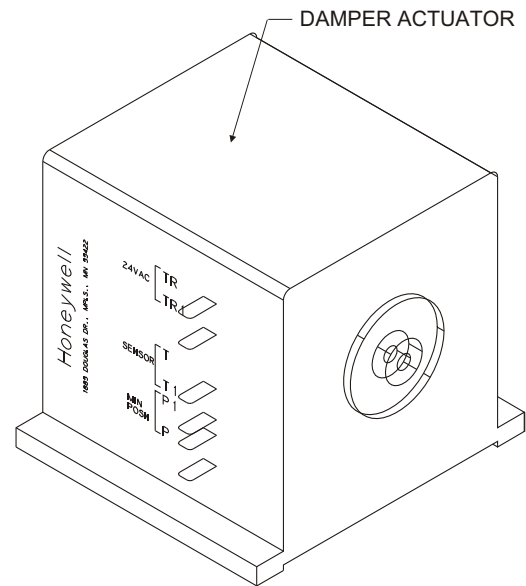


Figure 9

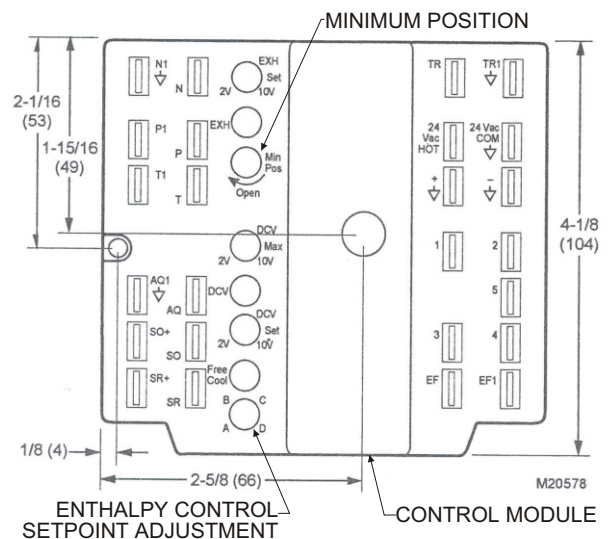
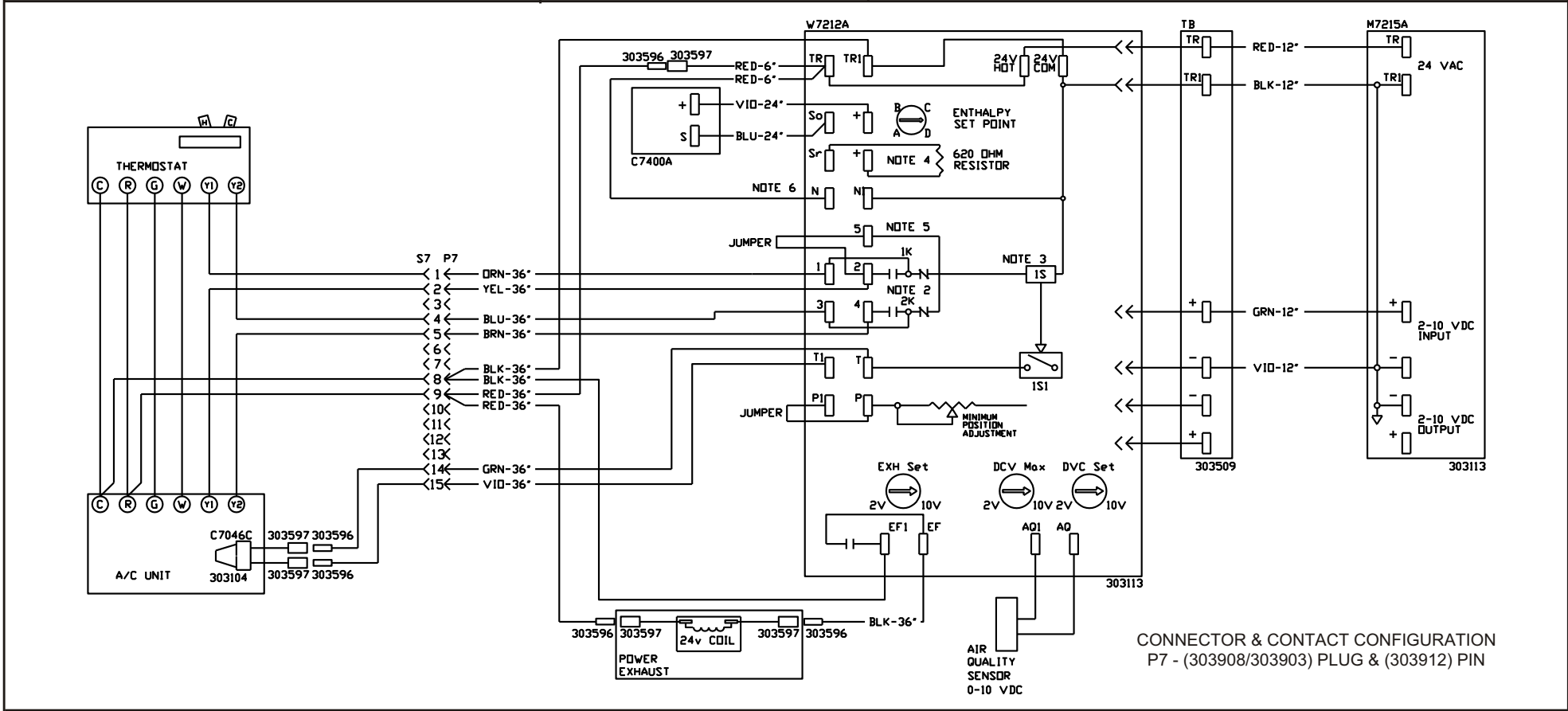


Figure 10

HARNESS DETAIL	COMPONENT CODE	WIRE COLOR CODE	Revision	Change	Date
<b>E# = WIRE END DESIGNATION</b> E2 STUD #6 18 Ga. Wire E3 Female ¼ Quick Disc. E4 Male ¼ Quick Disc. Insul E6 Wire Nut Size 73B  <b>HARNESS ENDS AT (P7) ECONOMIZER</b>	Economizer	BLK Black	A	Changed R & C around	06-30-06
	C7046C Mixed Air Sensor	BRN Brown	B	Changed wiring diagram	12-18-07
	C7400A Fresh Air Sensor	ORN Orange			
	M7215A Damper Actuator 24V	VIO Violet			
	P7/S7 Plug/Cap Economizer	WHT White			
	TB Terminal Board				
	W7212A Logic Module				



<b>Notes:</b> 1. Unit wiring shown as reference only. Check unit wiring for actual unit wiring. 2. Relays 1K and 2K actuate when the Outdoor Air Enthalpy is higher than the enthalpy set point A-D on the W7212A Logic Module. 3. 1S is an electronic switch which closes when powered by a 24 VAC input. 4. Factory installed resistor should be removed only if C7400 Differential Enthalpy Sensor is added. 5. Y2 must be energized for Stage 1 compressor to operate during economizer operation. 6. "N" terminal used for occupied mode. Remove jumper when night setback control utilized. 24v must be applied for occupied mode operation.	<b>Modulating Economizer R4GM 150-180</b>	
	Rooftop Systems, Inc. 2405 McIver Lane Carrollton, Texas 75006 Phone (972) 247-7447 Fax (972) 243-0940	
	Date: December 19, 2007 Supersedes: 06-30-06 Drawn by: Unit # 47-364-10 Diagram# 4736410W	