

Installer's Guide

Horizontal Economizer & Rain Hood

Model:	Used with:
BAYECON203AA/AB/AC	*WCZ, YCZ, DCZ - 024, 036
BAYECON204AA/AB/AC	*WCZ, YCZ, DCZ - 048, 060
BAYRLAY006A	(Required with *WCZ & *DCZ models)

⚠ WARNING: HAZARDOUS VOLTAGE - DISCONNECT POWER BEFORE SERVICING

ALL phases of this installation must comply with NATIONAL, STATE AND LOCAL CODES

IMPORTANT — This Document is **customer property** and is to remain with this unit. Please return to service information pack upon completion of work.

General

The economizer is a multi-damper design. It inserts into the return air stream and is connected to the unit low voltage supply through wire leads. The economizer is fully accessible through an access panel.

IMPORTANT: After the Economizer installation you must install an air filter rack ordered separately. Use:

BAYFLTR101B for *WCZ, YCZ, DCZ - 024, 036

BAYFLTR201B for *WCZ, YCZ, DCZ - 048, 060

When the economizer is installed in *WCZ & *DCZ models, relay accessory kit BAYRLAY006A is required. Refer to Figure 7 on page 7 to make your relay wiring connections in the Control Box.

Identify Economizer Kit Contents

Refer to Figure 2 on page 3 to identify the kit contents.

Inspect Contents

You must report damage and make claims to the transportation company immediately. Report missing parts to your supplier immediately and replace with authorized parts only.

⚠ WARNING

ELECTRIC SHOCK HAZARD

Open and lock out all unit disconnects prior to accessory installation or unit maintenance, to prevent injury or death from electrical shock or contact with moving parts.

⚠ WARNING

SAFETY HAZARD

Do not remove end covers from Economizer actuator; the spring-return assembly may release and cause personal injury.

⚠ CAUTION

Use care when inserting the economizer in the return air compartment, to prevent damaging the foil faced insulation.

Install Economizer Kit

1. Remove Power

Disconnect and verify that power is off.

2. Remove Access Panels

Remove these three (3) access panels

(see Figure 1, page 3):

- Control/Heat access panel
- Blower access panel
- Coil access panel

3. BAYRLAY006A Installation (Required for *WCZ & *DCZ units only, for *YCZ units skip to step 4)

1. Remove wire harness that came attached to the BAYECON Logic Module being installed.

IMPORTANT: Do NOT remove the resistors from the Logic Module. Also, Do NOT remove the YL & YL/BK wires connected to SO and + on the Logic Module

2. Locate the ICMC Board in the upper left hand corner of the unit control box and the DFC board in the upper center of the unit control box. See Figure 5, page 5.
3. Using the existing holes in the back of the unit control box, mount the relay bracket assembly using the 2 screws supplied with the BAYRLAY006A Kit. See Figure 5, page 5.
4. Route the BAYRLAY006A wire harness attached to the relays to the logic module as shown in Figure 3 on page 4.
5. Connect the BAYRLAY006A to the economizer Logic Module and make the field connections as shown in Figure 7 on page 7.

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4. Install Economizer Assembly

1. Apply two gaskets to horizontal economizer mounting flanges. See Figure 2 on page 3.
- 2a. **Small Cabinet - BAYECON203AA/AB/AC**
(*WCZ, YCZ, DCZ - 024, 036)

Set the horizontal economizer over the horizontal return air opening on the unit. The notches in the bottom flange of the economizer clear the two existing screws below the return air opening of the unit.
- 2b. **Medium Cabinet - BAYECON204AA/AB/AC**
(*WCZ, YCZ, DCZ - 048, 060)

Apply a gasket to the economizer and slide the topflange of the economizer under the lip between the top and bottom sections of the unit. Mate the notches on the top flange of the economizer with the existing screws between the top and bottom sections of the unit. The notches on the bottom flange of the economizer clear the two existing screws below the return air opening of the unit.
3. Drill three (3) 9/64" holes through the mating holes in the top flange of economizer and into the unit. Then, drive three (3) #10 sheet metal screws to secure the top.
4. Drill three (3) 9/64" engagement holes on each side of the economizer. Then, drive three (3) #10 sheet metal screws into each side of the economizer to the unit.
5. Mount the Mixed Air sensor to the left Blower partition using two sheet metal screws. See Figure 4, page 4. The Yellow and Yellow/Black wires will connect to the Economizer wiring harness in a later step. Install any economizer options at this time per instructions provided with the sensor.
6. Apply a gasket to the Rain Hood flanges. See Figure 2, page 3.
7. Place the Rain Hood over the horizontal return air opening of the economizer. See Figure 2, page 3. Use the #10 sheet metal screws provided to attach the hood to the economizer.
8. Route the main wiring harness. From the Economizer assembly, route the main wiring harness to the Mixed Air sensor and to the Control Box. See Figure 3, page 4.
9. Connect the two (2) Mixed Air Sensor wires (pulled from harness) to the mating pigtail wires (with female quick connects) from the Mixed Air Sensor.
10. In the Control Box, locate the ICMC Board in the upper left hand corner of the Control Box. Find the YL/RD and YL wires in the 12 pin connector. Leaving enough length of these wires so that the ends going to the ICMC Board can be stripped, cut these wires in two. Strip the cut end of the wires going to the ICMC Board and connect to economizer wires as per hookup diagrams on pages 6 and 7. Cap the ends of the Yellow and Yellow/Red wires not being hooked up. Secure all wires with wire ties so that there is no interference with any moving parts in the unit.
11. In the Control Box, complete the wiring connections per the appropriate wiring diagram on pages 6 and 7. Secure all wires so that there is no interference with any moving parts in the unit.

CAUTION

Be certain to cap the ends of the cut YL/RD and YL wires that are not being connected to an accessory or the unit to reduce the risk of a short.

12. Attach the return duct to the economizer.
13. Power the economizer and run the checkout procedure on page 8. Make desired adjustments to the controller: set the minimum occupied damper position, set the outside air (if enthalpy used).
14. Replace the unit Coil access panel, the Blower access panel, and the Control Box access panel.

Sequence Of Operation - Units Equipped With Honeywell W7459 Logic

NOTE: A (G) signal is required for the economizer to operate. As shipped, the economizer will not operate when there is a signal for Heating Modes utilizing gas heat.

Fan Only (G): When the thermostat sends a signal for fan only (G), the economizer will open to the minimum position setting regardless of the outdoor air conditions and the indoor blower will operate at approximately 50% airflow.

Heating (W1), (W2), (Y1, Y2 on Heat Pump or Dual Fuel Models): When the thermostat sends a signal for auxiliary heat (G) +(W1) or first stage heat (G) + (Y1,Y2), the economizer will open to the minimum position setting. When the ambient temperature may be below 70F, the economizer will not fully open to the economizing position, when there is a signal for heat. In order to receive fresh air and open the dampers to the minimum position setting, you must provide a G signal to the unit from the thermostat or comfort control being used.

FREE COOLING NOT AVAILABLE: When the outdoor air conditions are not sufficient for "Free Cooling" the Economizer will open to the minimum position setting only and the unit will function.

FREE COOLING AVAILABLE:

1st Stage Cooling (Y1) + (O for Heat Pumps and Dual Fuel models): When outdoor air conditions are sufficient for "Free Cooling" and the thermostat sends a signal for 1st stage cooling (G) + (Y1) + (O for Heat Pumps and Dual Fuel models), the economizer will modulate accordingly and the indoor blower will run at approximately 70% airflow.

2nd Stage Cooling (Y1) + (Y2) + (O for Heat Pumps and Dual Fuel models): When outdoor air conditions are sufficient for "Free Cooling" and the thermostat sends a signal for 2nd stage cooling (G) + (Y1) + (Y2) + (O for Heat Pumps and Dual Fuel models), the economizer will modulate accordingly, the compressor will operate on low speed, and the indoor blower will operate at 100% airflow.

Unit "OFF" Mode

When the economizer is not receiving a 24V signal to the TR terminal, or if power is disconnected to the unit, the dampers will be fully closed to the outside air and fully open to the return air.

NOTE: Free Cooling refers to the process of circulating unconditioned outside air, without operating the compressor, to cool the structure.

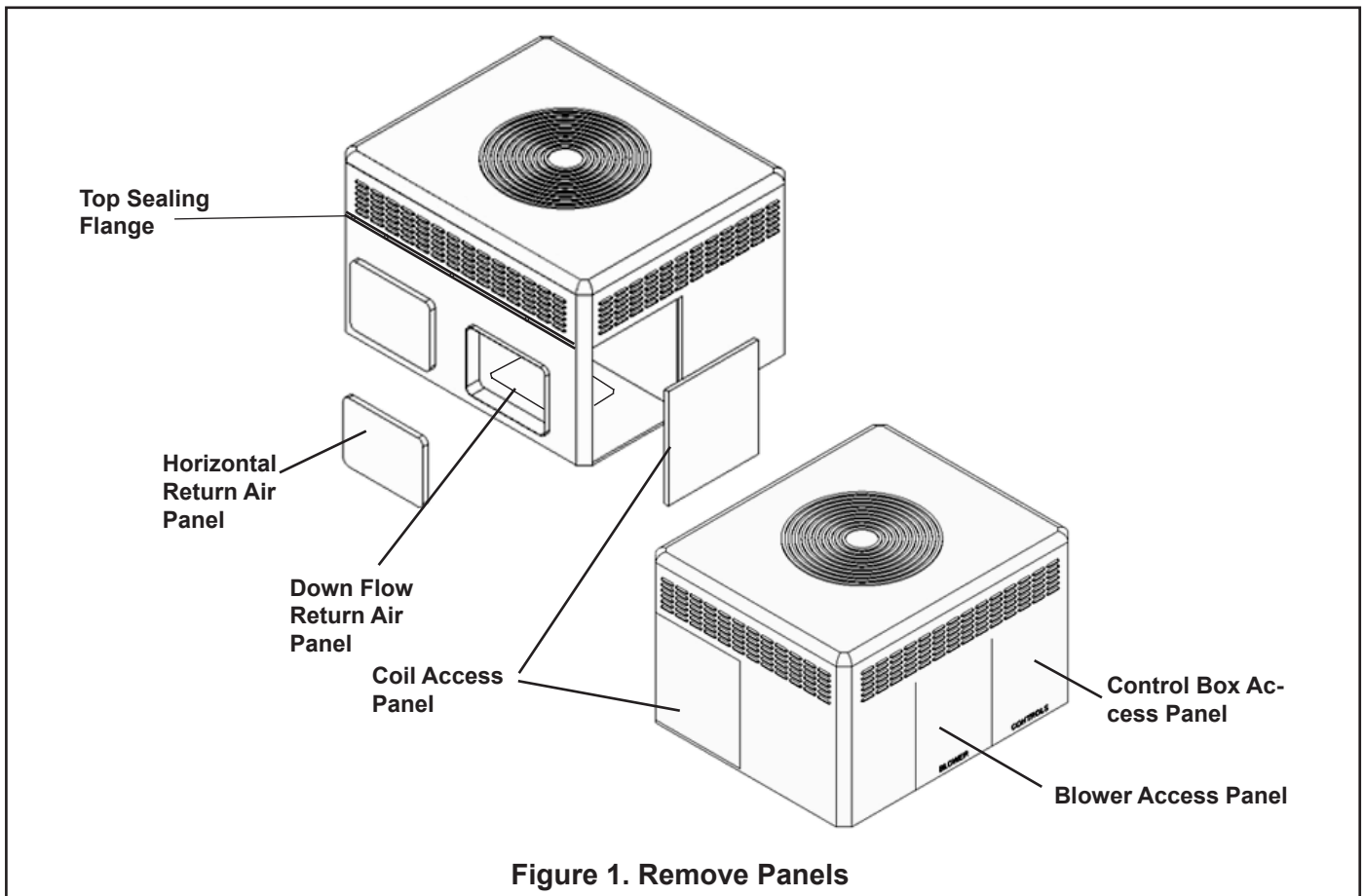
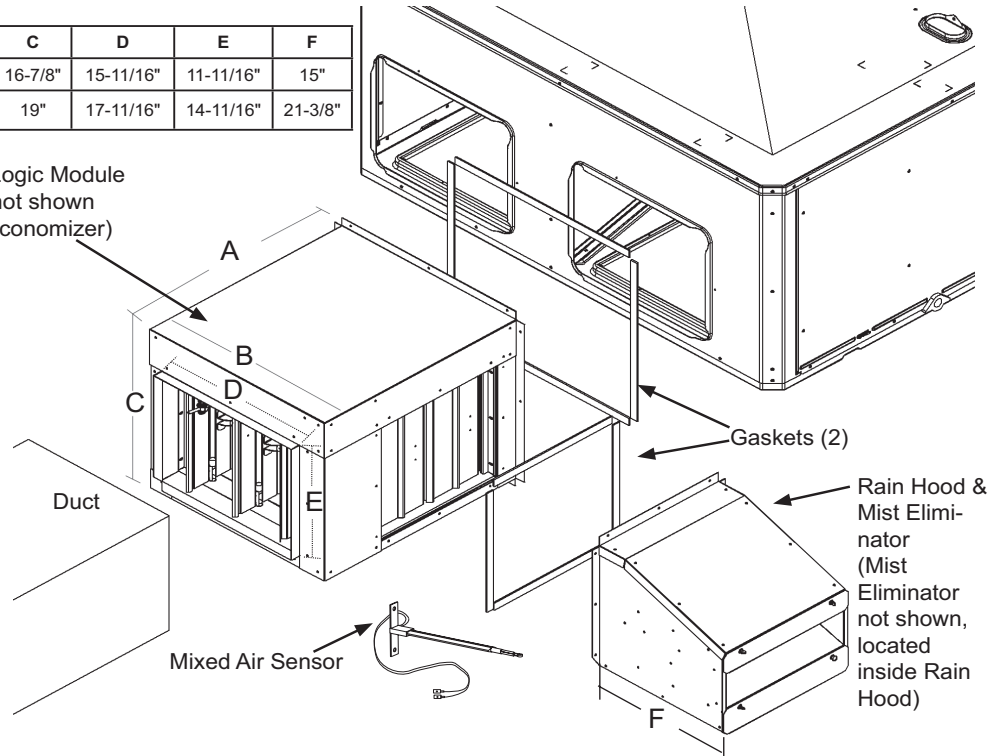


Figure 1. Remove Panels

Economizer	A	B	C	D	E	F
BAYECON203AA/AB/AC	22"	20"	16-7/8"	15-11/16"	11-11/16"	15"
BAYECON204AA/AB/AC	26"	22-21/32"	19"	17-11/16"	14-11/16"	21-3/8"

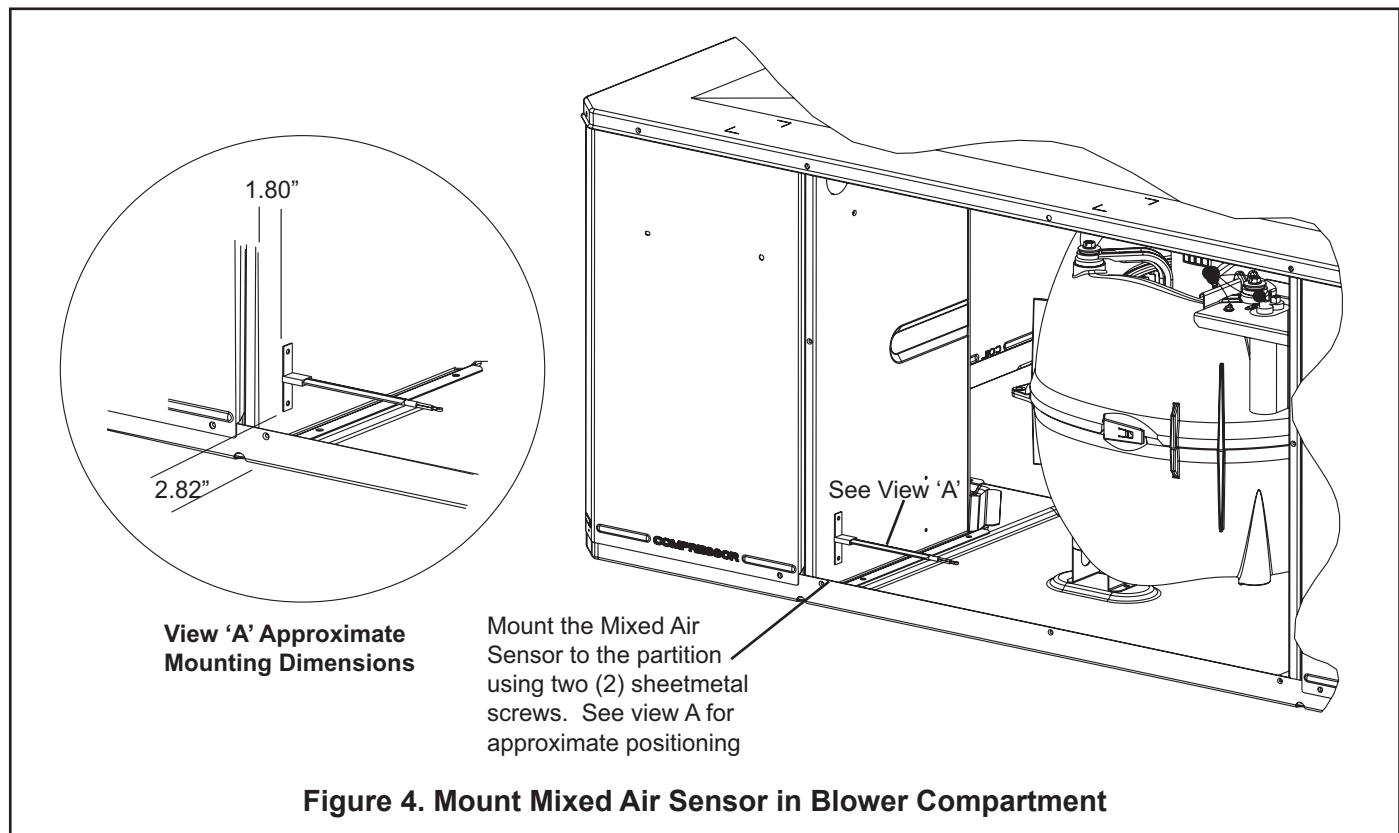
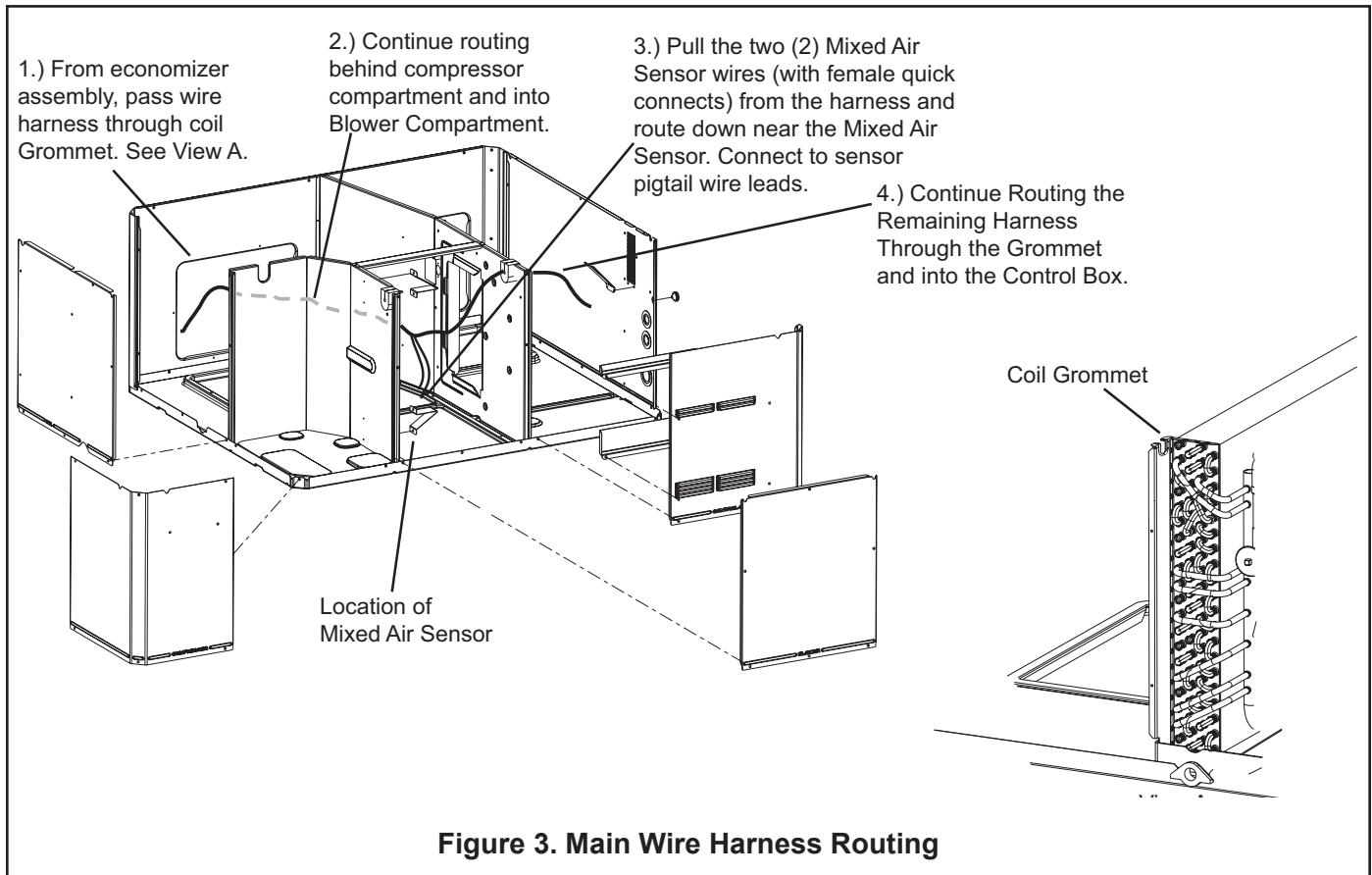
Economizer & Logic Module
(Logic Module not shown
located inside economizer)



NOTE: BAYECON204A economizer only contains two clearance notches in the top flange, BAYECON203A shown.

Figure 2. Horizontal Economizer Assembly & Kit Contents

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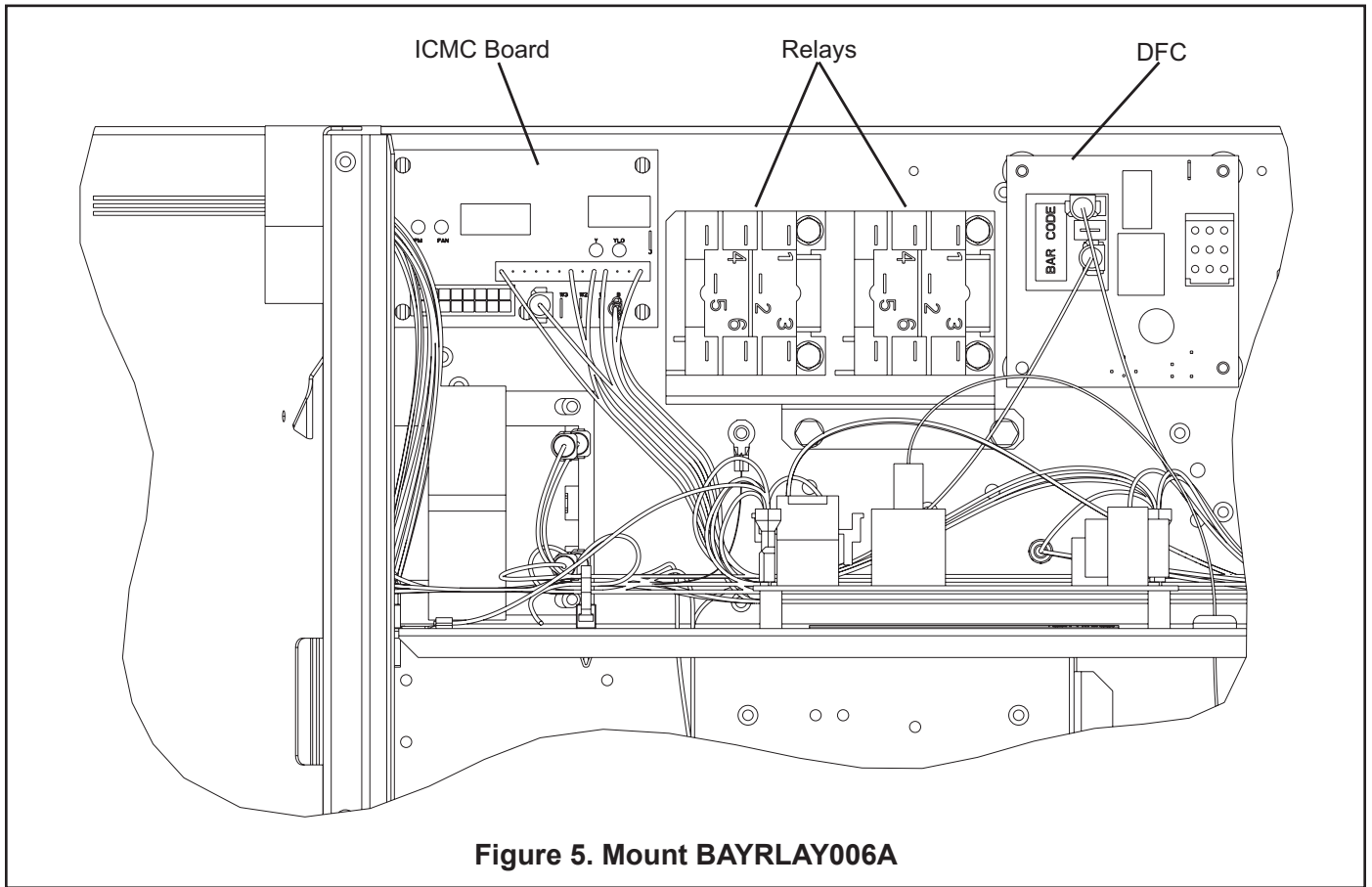


Figure 5. Mount BAYRLAY006A

Wiring Diagram for Economizer Using a Honeywell W7459 Logic

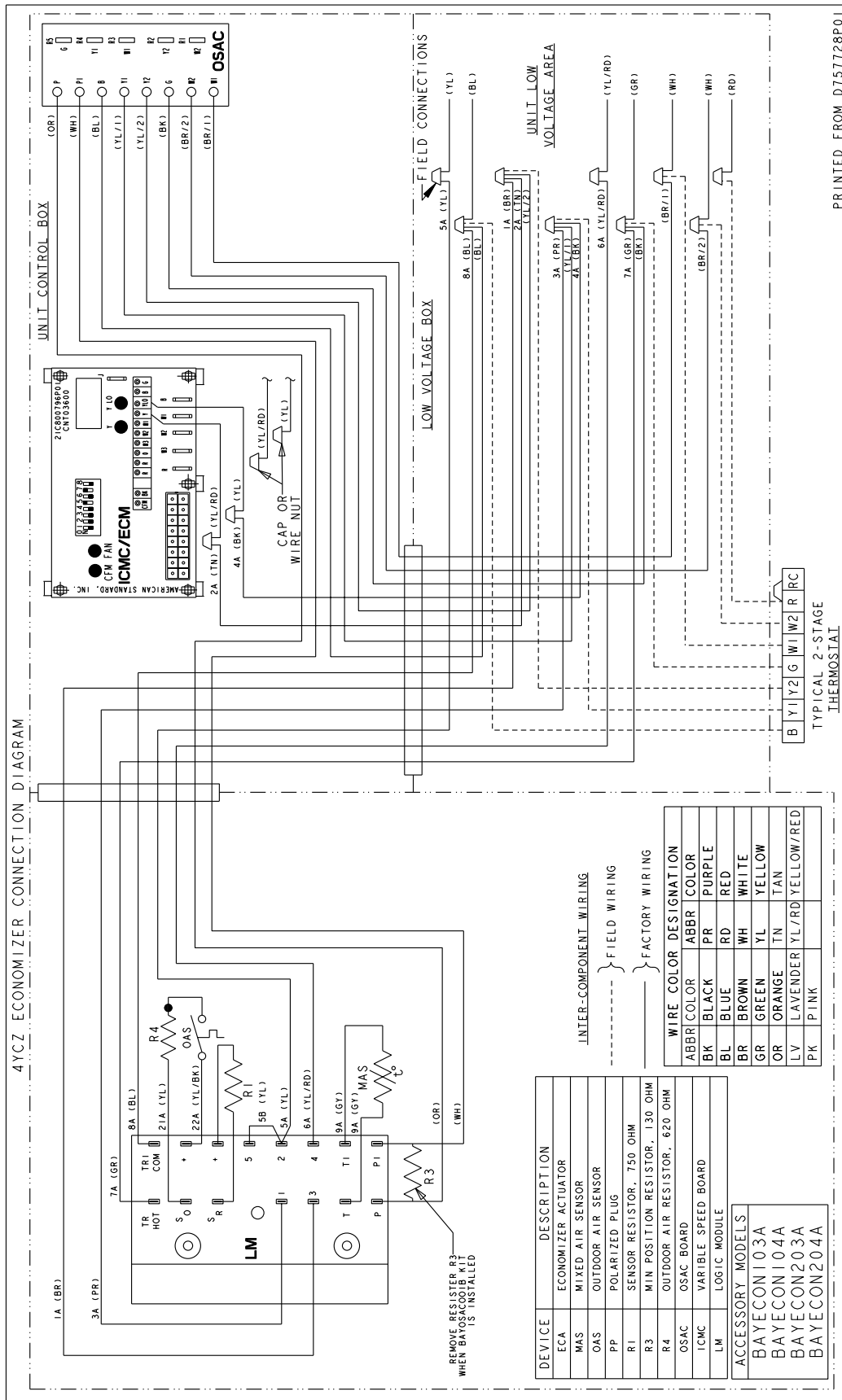


Figure 6. *YZ Economizer Connection Diagram

IMPORTANT—Retain this wiring diagram; please return this document to service information pack upon completion of work.

Wiring Diagram for Economizer Using a Honeywell W7459 Logic

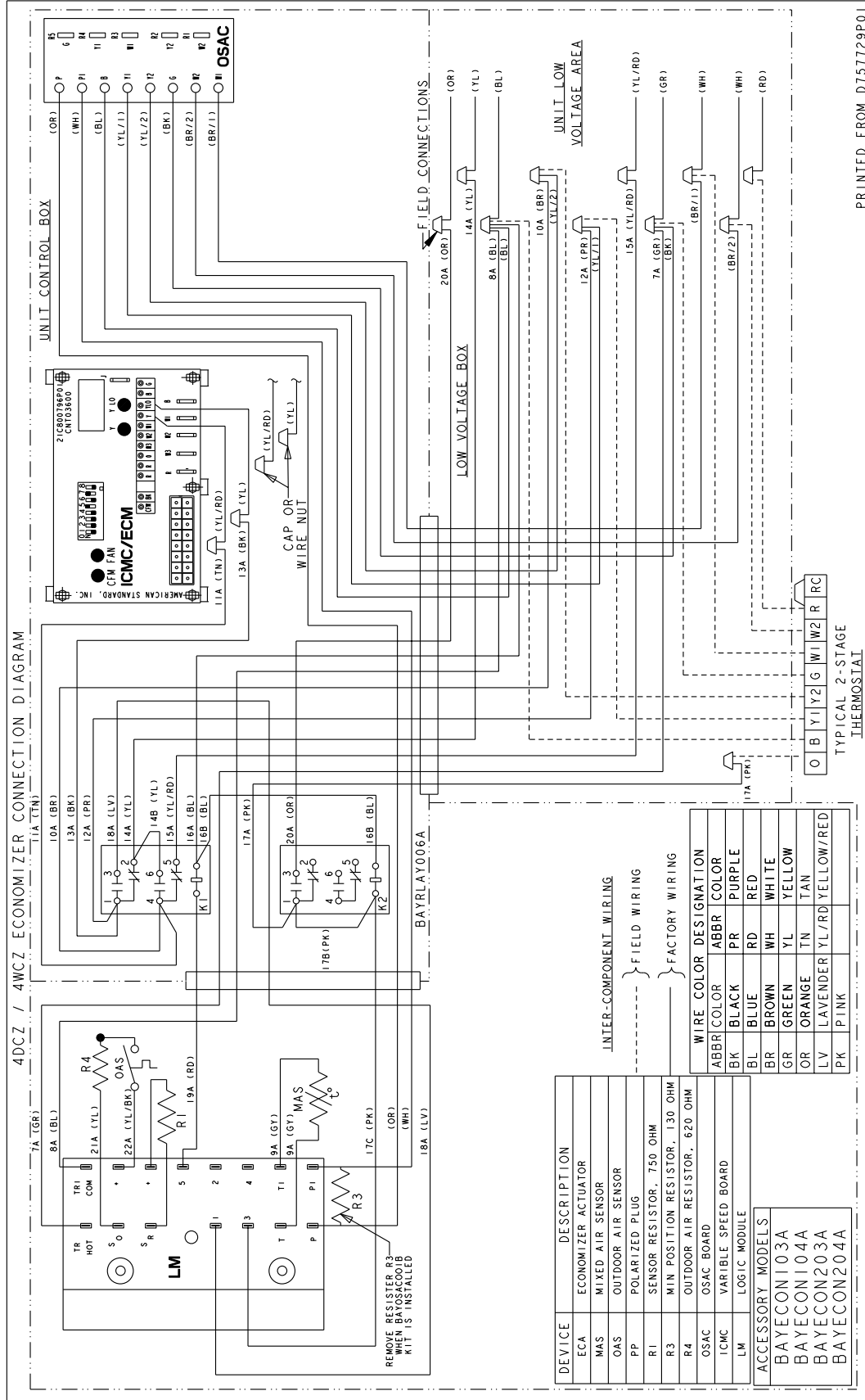


Figure 7. *WCZ & *DCZ Economizer Connection Diagram

IMPORTANT — Retain this wiring diagram; please return this document to service information pack upon completion of work.

Wiring Diagram for Economizer Using a Honeywell W7212 Logic

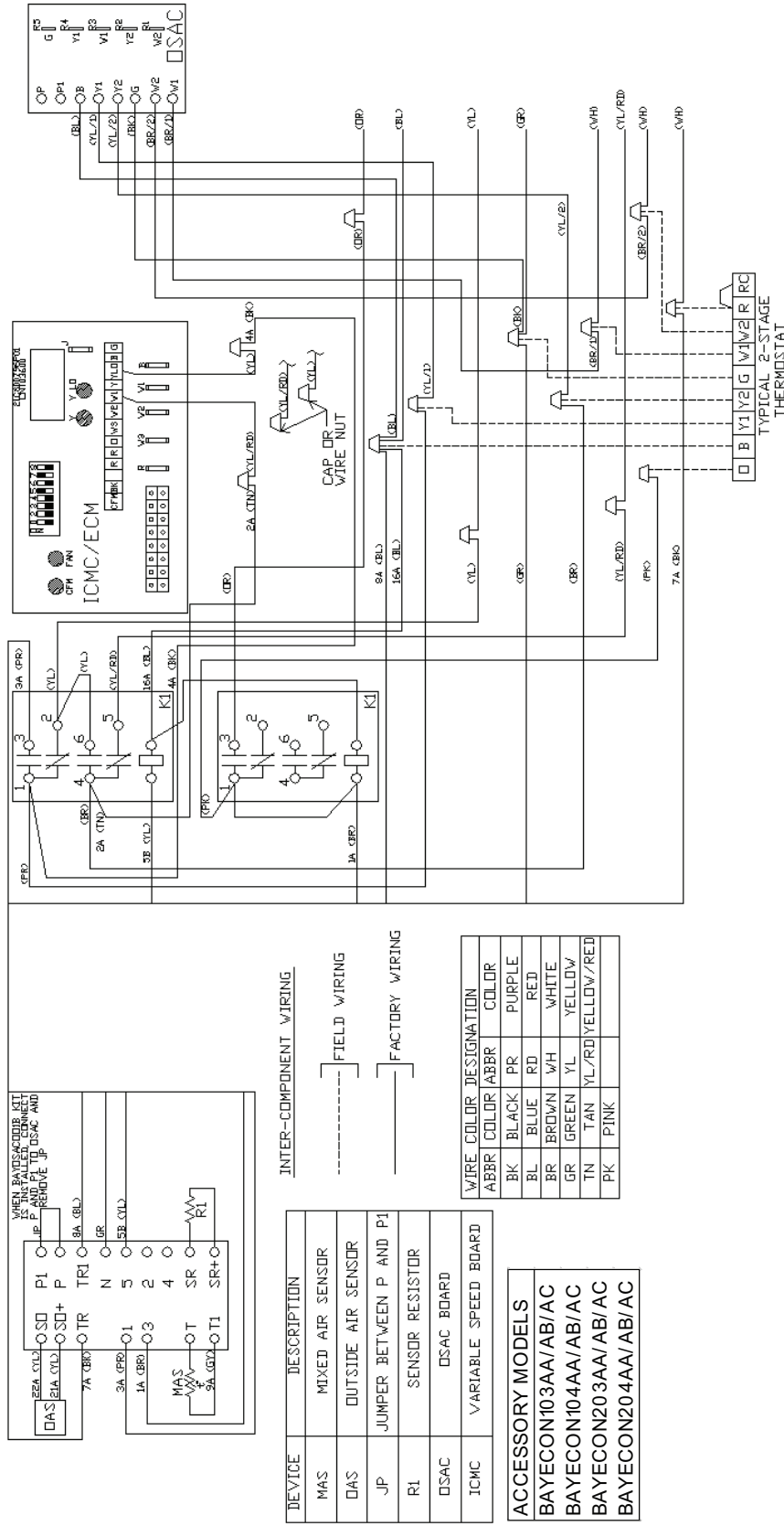


Figure 8. *WCZ & *DCZ Economizer Connection Diagram

IMPORTANT-Retain this wiring diagram; please return this document to service information pack upon completion of work.

Wiring Diagram for Economizer Using a Honeywell W7212 Logic

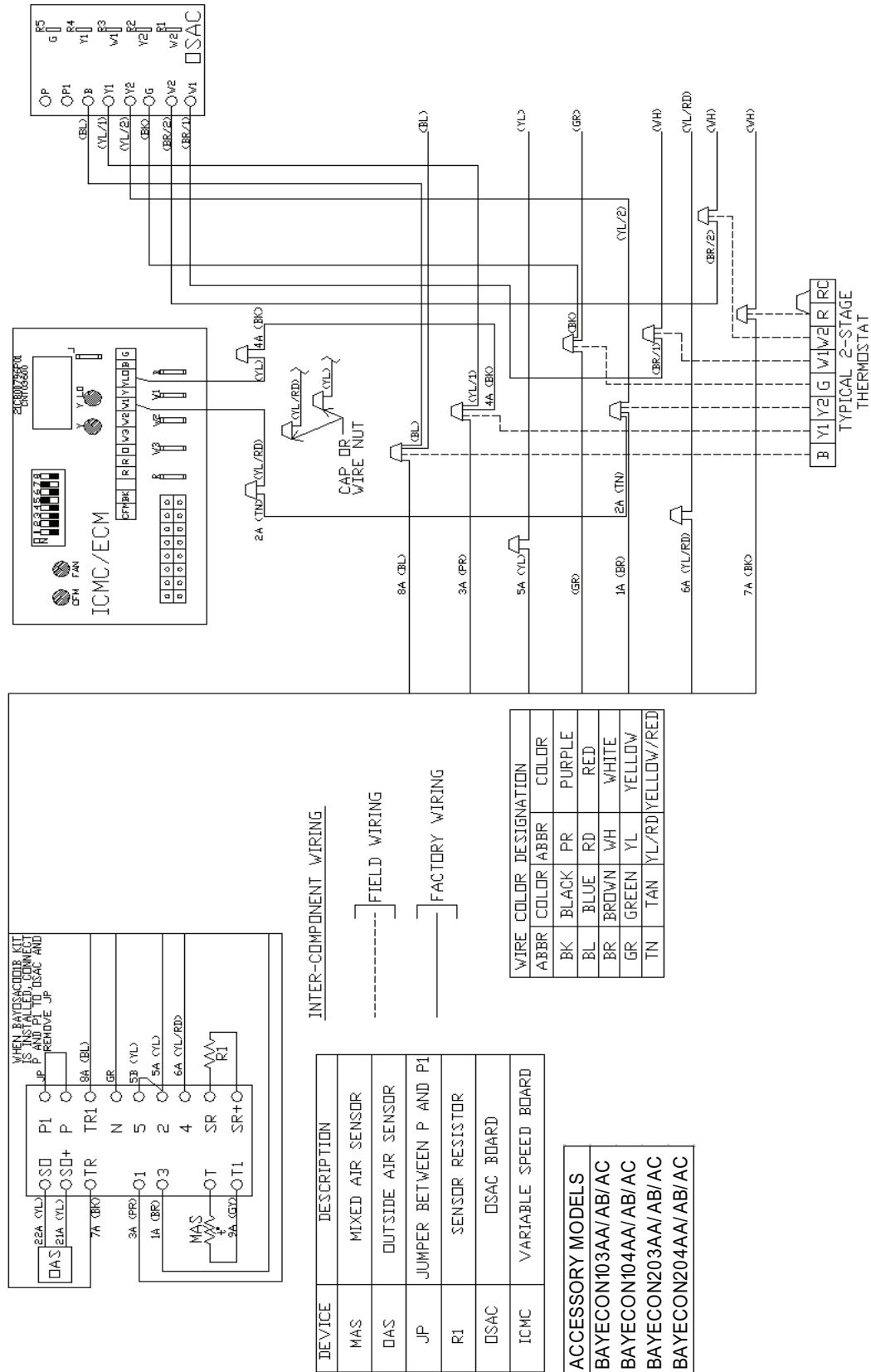


Figure 9. *Y CZ Economizer Connection Diagram

IMPORTANT-Retain this wiring diagram; please return this document to service information pack upon completion of work.

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5A. Checkout - For Units with a Honeywell W7459 Control, Only. See 5B for W7212

Operate the motor through its complete open-close stroke. If necessary, release one of the previously tightened linkage connections to prevent damage. Check for proper operation, making sure that the linkage does not bind and that the motor travels smoothly throughout its fully open and closed position. Table 1 describes how to drive the motor to the full open and full closed positions (power connected). If there is excess length of linkage rod, cut it to size. Make necessary minor adjustments until desired operation is obtained, and tighten all nuts and set screws.

This motor checkout ensures that:

1. The motor operates the load.
2. The motor responds properly to the controller.
3. There is no binding of the linkage or motor stalling at any point of travel.

If motor does not operate properly, check for proper voltage or mechanical binding in linkage or damper.

If questions arise regarding this product, contact your distributor or representative.

Table 1. Motor Operation Checkout - W7459 Control Only

MODEL	DRIVE MOTOR OPEN	DRIVE MOTOR CLOSED	SPRING RETURN
M7415	Power to TR and TR1, jumper T and T1	Disconnect jumper at T or T1 and disconnect P or P1, if connected	Disconnect power at TR and TR1

CONTROL CURVE	CONTROL POINT APPROX. F (C) AT 50% RH
A	73 (23)
B	70 (21)
C	67 (19)
D	63 (17)

Single enthalpy: The enthalpy changeover set point is set to return the outdoor air damper to minimum position when the enthalpy rises above its set point. The enthalpy set point scale markings, located on W7459, are A,B,C,D; see table for the corresponding control point. The factory-installed R4 WHITE 620-ohm jumper must be in place across terminals + and SR.

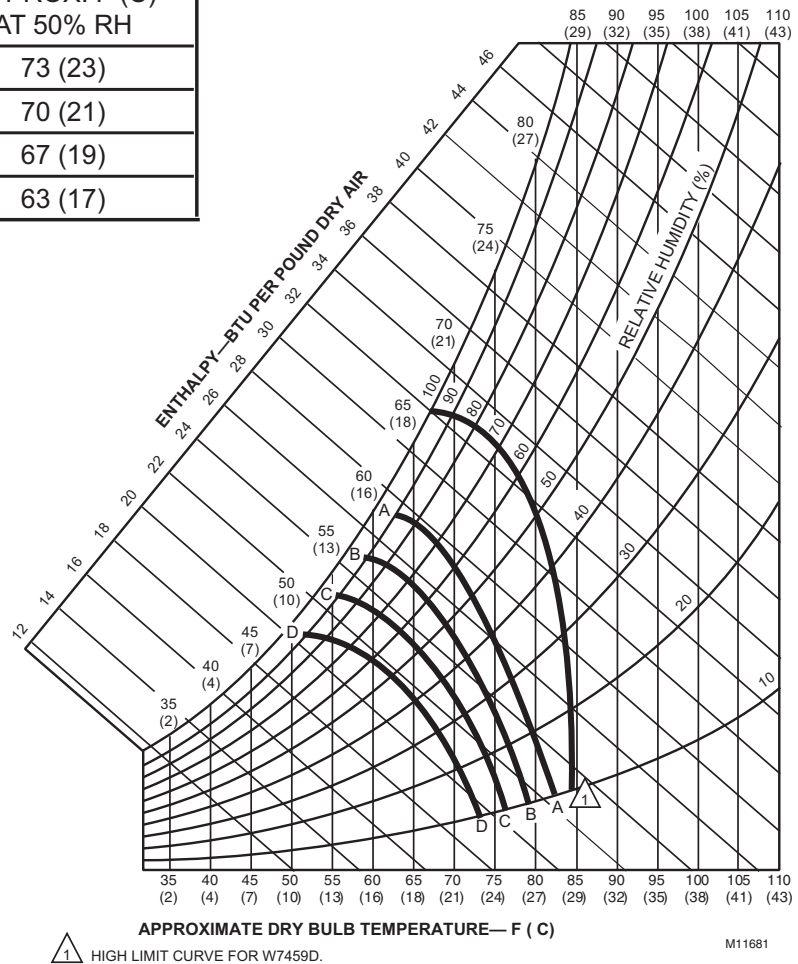
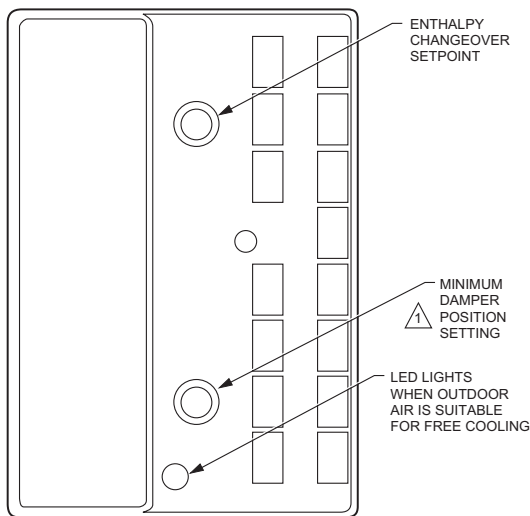


Figure 10. Single Enthalpy Changeover Set Point

Table 2. Enthalpy Checkout Procedure - W7459 Control

	Checkout Procedure	Response
A	1. Disconnect power at TR and TR1. 2. Disconnect jumper P to P1. 3. Jumper TR to 1. 4. Jumper T1 to T. 5. If connected, remove C7400 Solid State Enthalpy Sensor from terminals S0 and +. Ensure factory-installed 620 ohm resistor is connected to terminals Sr and +. 6. Apply power (24Vac) to terminals TR and TR1	LED is off. Motor is in closed position.
B	1. Disconnect factory-installed 620 ohm resistor from terminals Sr and +	LED turns on, motor drives toward open.
C	1. To simulate high and low enthalpy (single enthalpy sensor) reconnect factory-installed 620 ohm resistor from terminals Sr and +. Connect 1.2K ohm 4074EJM Checkout Resistor across terminals So and +.	—
	2. Turn enthalpy setpoint potentiometer to "A".	LED turns on, indicating low enthalpy. Motor drives toward open.
	3. Turn enthalpy setpoint potentiometer to "D".	LED turns off, indicating high enthalpy. Motor drives toward closed.
	4. Disconnect the 1.2K ohm checkout resistor	—
D	1. To verify sensor operation, reconnect the + lead of the outdoor enthalpy sensor to the + terminal of W7459.	—
	2. Connect a DC multimeter between terminal So of the W7459A and terminal S of the enthalpy sensor. See Fig. 11 (positive meter lead to terminal S of the enthalpy sensor).	Multimeter indication is between 3 and 25 mA if sensor is operating properly. If multimeter indicates zero, the sensor may be wired backward.
	3. When using differential enthalpy, check the return air enthalpy sensor by connecting a DC multimeter between terminal Sr of the W7459A and terminal S of the return air enthalpy sensor. (positive meter lead to terminal S of the enthalpy sensor).	Multimeter indication is between 3 and 25 mA if sensor is operating properly. If multimeter indicates zero, the sensor may be wired backward.

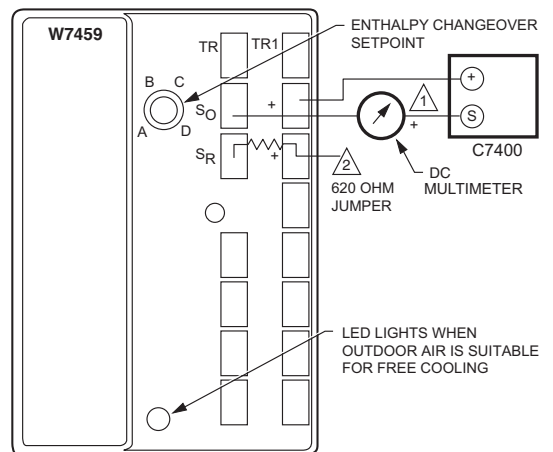
Location of Enthalpy Set Point, Minimum Position and LED



MINIMUM DAMPER POSITION ADJUSTMENT IS PRESENT ONLY ON W7459A,D MODELS.

M9098B

Meter Location for Checkout and Troubleshooting



INSERT DC MULTIMETER BETWEEN S_O AND S FOR CHECKOUT AND TROUBLESHOOTING.

JUMPER USED FOR SINGLE ENTHALPY CONTROL.

M9097

Figure 11. Enthalpy LEDs and Checkout

Table 3. Temp vs. OHM Values for MAS (Mixed Air Sensor)

Temp vs. OHM for MAS (Mixed Air Sensor)			
Temp F	Temp C	R(K OHMS)	DC Volts
33.8	1	9.576	3.910
35.6	2	9.092	3.882
37.4	3	8.636	3.894
39.2	4	8.204	3.863
41.0	5	7.796	3.829
42.8	6	7.412	3.790
44.6	7	7.048	3.749
46.4	8	6.705	3.713
48.2	9	6.380	3.674
50.0	10	6.073	3.634
51.8	11	5.782	3.590
53.6	12	5.507	3.550
55.4	13	5.247	3.507
57.2	14	5.000	3.420
59.0	15	4.767	3.373
60.8	16	4.545	3.328
62.6	17	4.335	3.283
64.4	18	4.136	3.239
66.2	19	3.948	3.180
68.0	20	3.769	3.157
69.8	21	3.599	3.118
71.6	22	3.437	3.080
73.4	23	3.284	3.034
75.2	24	3.138	3.007
77.0	25	3.000	2.971
78.8	26	2.869	2.932
80.6	27	2.744	2.896
82.4	28	2.625	2.860
84.2	29	2.512	2.824
86.0	30	2.404	2.787
87.8	31	2.301	2.750
89.6	32	2.204	2.714
91.4	33	2.111	2.676
93.2	34	2.023	2.639
95.0	35	1.938	2.600
96.8	36	1.858	2.561
98.6	37	1.781	2.526
100.4	38	1.708	2.484

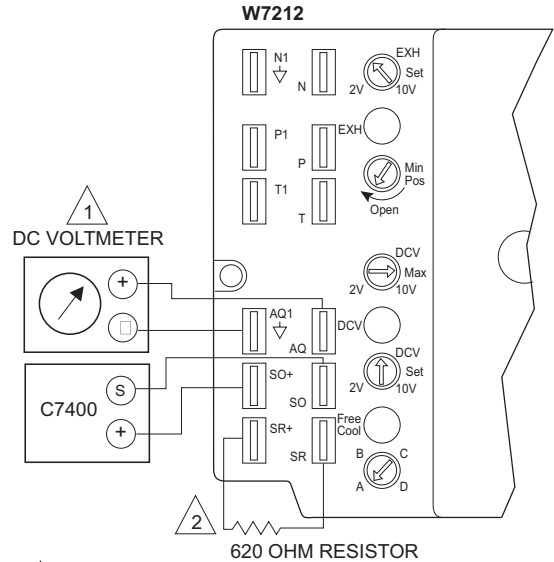
5B. CHECKOUT - For Units with a Honeywell W7212 Control, Only. See 5A for W7459

CHECKOUT AND TROUBLESHOOTING

Checkout requires a 9V battery, 620 ohm, 1.2K ohm, 5.6K ohm, and 6.8K ohm resistors. Use Table 4 and Fig. 12 for checkout.

⚠ CAUTION

Equipment Damage Hazard.
Excessive force can damage potentiometer controls.
Use a small screwdriver when adjusting enthalpy changeover and minimum damper position controls.



- 1 INSERT DC VOLT METER BETWEEN AQ AND AQ1 FOR CHECKOUT AND TROUBLESHOOTING.
 - 2 JUMPER USED FOR SINGLE ENTHALPY CONTROL.
- M20612

Fig. 12. Meter location for checkout and troubleshooting (W7212 shown).

Table 4. Checkout for W7212, W7213, W7214 Economizer Connected to Honeywell Actuator

Step	Checkout Procedure	Proper Response
1.	CHECKOUT PREPARATION FOR ECONOMIZING ONLY	
	Disconnect power at TR and TR1	All LED are off; Exhaust Fan contacts are open
	Disconnect devices at P and P1	
	Jumper P to P1 (defaults to on board MIN POS potentiometer).	
	Place 5.6K ohm resistor across T and T1 (Blue sleeve-provides input to economizer that the MAT is between 50-55F).	
	Jumper TR to 1 (call for cooling from the thermostat).	
	W7212 only jumper TR to N (places economizer in occupied mode).	
	If connected, remove C7400 Enthalpy Sensor from terminals S _o and +.	
	Connect 1.2K ohm, from 4074EJM Checkout Resistor kit, (purple sleeve) across terminals S _o and + (makes OA enthalpy high).	
	Place 620 ohm resistor (white sleeve) across S _R and + (makes return enthalpy lower than OA).	
	Set MIN POS and DCV MAX potentiometers fully CCW.	
	Turn DCV setpoint potentiometer mid position (this sets the DCV ventilation at approximately 1000 ppm).	
	Turn exhaust potentiometer to mid position (motor will be approximately 50% open when the exhaust fan contacts make).	
	Set enthalpy potentiometer to D.	
W7214 only Jumper TR to O.		
Apply power (24 Vac) to terminals TR and TR1		

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Table 4. Checkout for W7212, W7213, W7214 Economizer Connected to Honeywell Actuator (Cont.)

Step	Checkout Procedure	Proper Response
2.	DIFFERENTIAL ENTHALPY	
	Execute stop one, Checkout Preparation.	—
	Turn DCV MAX to mid position.	
	Place 620 ohm resistor across S _O and + (white sleeve resistor makes OA enthalpy low).	
	Place 1.2K ohm resistor across S _R and + (purple sleeve resistor makes RA enthalpy high).	Free cool LED turn on; motor drives to approximately 45 degrees (half) open.
	Remove 620 ohm resistor from S _O and +.	Free cool LED turn off; motor drives closed
3.	SINGLE ENTHALPY	
	Execute stop one, Checkout Preparation.	—
	Turn DCV MAX to mid position.	
	Set enthalpy potentiometer to A (fully CCW).	Free cool LED turns on; motor drives to approximately 45 degrees (half) open.
	Set enthalpy potentiometer to D or E for W7212C (fully CW).	Free cool LED turns off; motor drives closed.
4.	DCV AND EXHAUST	
	Execute step one, Checkout Preparation.	—
	LED for both DCV and Exhaust should be off.	
	Turn DCV MAX to mid position.	Motor drives to mid position, 45 degrees open.
	Turn MIN POS fully CW.	Motor drives fully open.
	Turn MIN POS and DCV MAX to fully CCW.	Motor drives closed.
	Turn DCV MAX to mid position. Connect 9V battery positive to AQ and negative to AQ1.	LED for both DCV and Exhaust turn on. Actuator drives to 45 degrees open.
	Remove jumper from N terminal (economizer goes into not occupied mode).	Motor remains at 45 degrees open.
	Adjust DCV MAX towards CW.	Motor will move to position set by DCV MAX pot.
	Adjust DCV MAX to fully CCW.	Motor will drive closed.
	Reconnect jumper to N terminal.	
	Adjust DCV MAX and MIN POS pots.	Motor will drive to the most open position of the pots.
	Adjust DCV MAX and MIN POS pots to fully CCW.	
Remove power from N terminal adjust MIN POS towards CW.	Motor should not move.	
Adjust DCV MAX towards CW.	Motor will move to position set by DCV MAX pot.	
5.	MINIMUM AND MAXIMUM POSITION	
	Execute stop one, Checkout Preparation.	—
	Connect 9V battery positive to AQ and negative to AQ1. Adjust DCV MAX potentiometer to mid position.	DCV LED turns on. Actuator drives to 45 degrees open.
	Turn DCV maximum position potentiometer to fully CCW.	Actuator drives fully closed.
	Turn minimum position potentiometer to midpoint.	Actuator drives to 45 degrees open.
	Turn minimum position potentiometer fully CW.	Actuator drives fully open.
	Turn MIN POS to fully CCW.	Actuator drives fully closed.
	W7212: Remove jumper from TR and N. W7214: Jumper TR to O.	Actuator drives fully closed.
6.	MIXED AIR INPUT	
	Execute stop one, Checkout Preparation.	—
	Turn DCV MAX to mid position; set enthalpy potentiometer to A.	Free cool LED turns on. Actuator drives to 45 degrees open.
	Remove 5.6K ohm resistor (green sleeve) and place jumper from T and T1.	Actuator drives to 45 degrees open.
	Remove jumper from T and T1 and leave open.	Actuator drives fully closed.

About Trane and American Standard Heating and Air Conditioning

Trane and American Standard create comfortable, energy efficient indoor environments for residential applications. For more information, please visit www.trane.com or www.americanstandardair.com

The manufacturer has a policy of continuous data improvement and it reserves the right to change design and specifications without notice. We are committed to using environmentally conscious print practices.

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