

Installer's Guide

Horizontal Economizer & Rain Hood

Model:	Used with:
BAYECON200AA/AB/AC	2/4TC*, WC*, YC*, DC* *018-036
BAYECON201AA/AB/AC	2/4TC*, WC*, YC*, DC* *042-060
BAYRLAY004A	(Required in WC* Units)

⚠ 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 2/4YC*, WC*, TC*, DC* *018-036 BAYFLTR201B for 2/4YC*, WC*, TC*, DC* *042-060.

When the economizer is installed in WC* models, relay accessory kit BAYRLAY004A is required. Refer to drawing on page 6 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.

Install Economizer Kit

1. Remove the unit economizer/filter access panel, the evaporator coil and blower access panel, and the electrical control box access panel, see Figure 1 on page 2.
2. Filter frame must be installed prior to economizer installation.
3. Apply two gaskets to horizontal economizer mounting flanges. See Figure 2 on page 3.
- 4a. **Small Cabinet - BAYECON200AA/AB/AC** (TC*,WC*,YC*,DC* *018A to 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.
- 4b. **Medium Cabinet Only - BAYECON201AA/AB/AC** (TC*,WC*,YC*,DC* *042A to 060)

Apply a gasket to the economizer and slide the top flange 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.

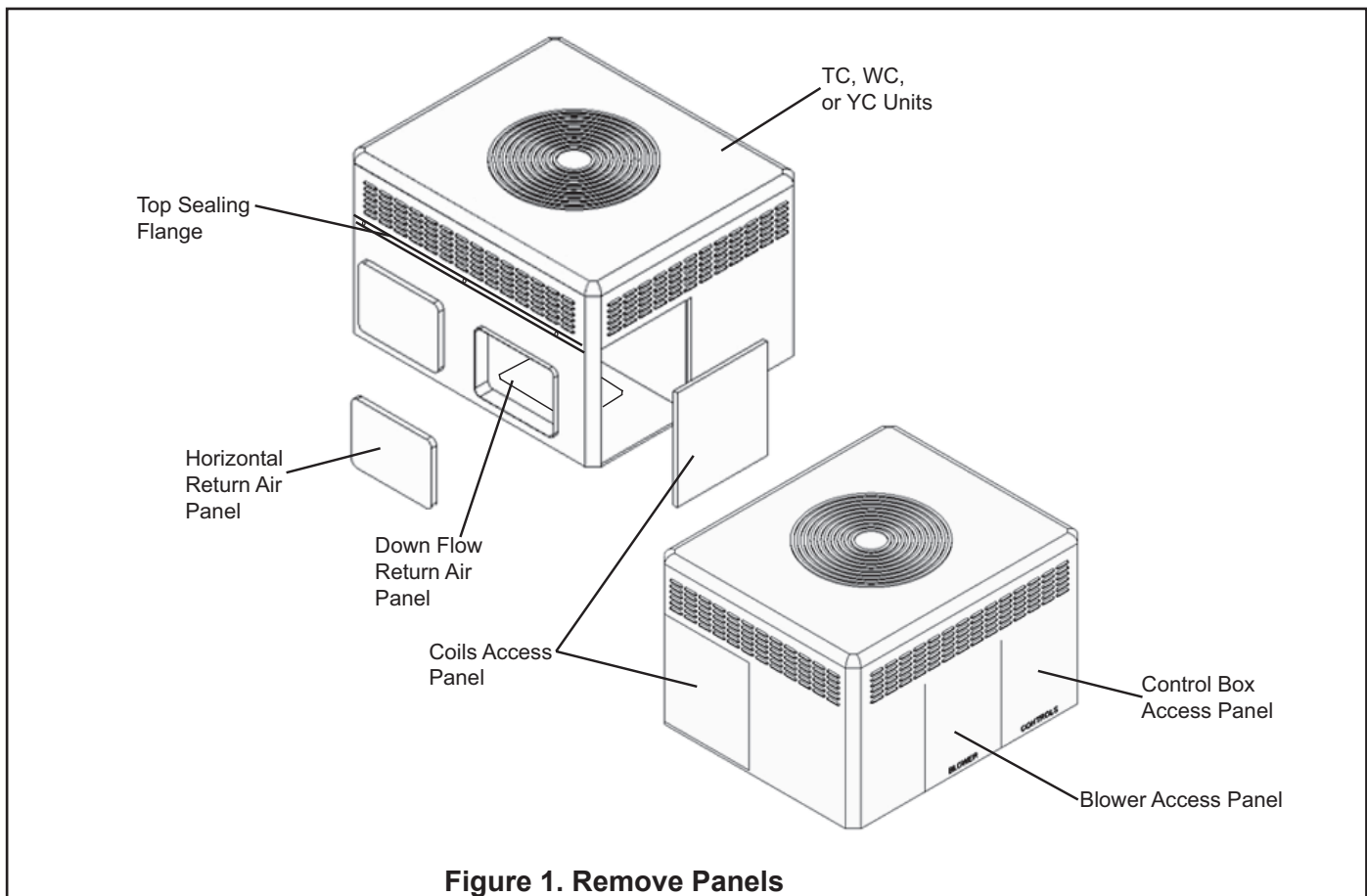
⚠ WARNING
ELECTRIC SHOCK HAZARD
Open and lock out all unit disconnects prior to accessory installation or unit maintenance, to prevent injury or death from electrical shock or contact with moving parts.

⚠ 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.

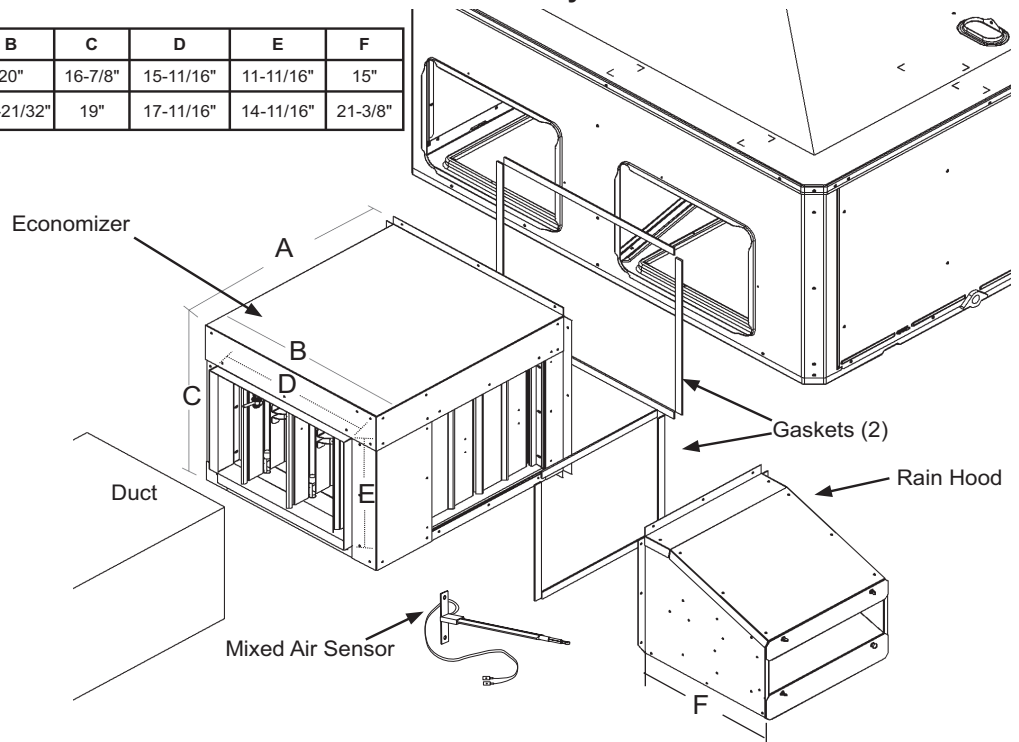
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5. Drill three (3) 9/64" holes through the mating holes in the top flange of economizer and into the unit. Then, drive three (3) #10 sheet metal screws to secure the top.
6. Drill three (3) 9/64" engagement holes on each side of the economizer. Then, drive three (3) #10 sheet metal screws into each side of the economizer to the unit.
7. Mount the Mixed Air sensor to the left Blower partition using two sheetmetal screw. See Figure 4, page 4. The 2 yellow wires will connect to the Economizer wiring harness in a later step. Install any economizer options (enthalpy sensor or CO2 sensor) at this time per instructions provided with the sensor.
8. Apply a gasket to the Rain Hood flanges. See Figure 2.
9. Place the Rain Hood over the horizontal return air opening of the economizer. See Figure 2. Use the #10 sheet metal screws provided to attach the hood to the economizer.
10. 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.
11. Connect the two (2) Mixed Air Sensor wires (pulled from harness) to the mating pigtail wires (with Stake-Ons) from the Mixed Air Sensor.
12. In the Control Box, complete the wiring connections per the wiring diagram on page 5. Secure all wires with wire ties so that there is no interference with any moving parts in the unit.
IMPORTANT - When the economizer is installed in heat pump models (WC*), a relay accessory kit (BAYRLAY004A) is required. Mount relay accessory kit in unit control box as illustrated on page 6.
13. Attach the return duct to the economizer.
14. Power the economizer and run the checkout procedure on page 9. Make desired adjustments to the controller: set the minimum occupied damper position, set the outside air (if enthalpy used), and the IAQ sensor (if used).
15. Replace the unit Coil access panel, the Blower access panel, and the Control Box access panel.



Horizontal Economizer Assembly

Economizer	A	B	C	D	E	F
BAYECON200AA/AB/AC	22"	20"	16-7/8"	15-11/16"	11-11/16"	15"
BAYECON201AA/AB/AC	26"	22-21/32"	19"	17-11/16"	14-11/16"	21-3/8"



NOTE: BAYECON200A economizer only contains two clearance notches in the top flange. BAYECON201 shown.

Figure 2. Apply Two Gaskets to Mounting Flanges

1.) From Economizer Assembly, Pass Wire Harness Through Coil Grommet. See View A.

2.) Continue Routing Behind Compressor Compartment and into Blower Compartment.

3.) Pull the 2 Mixed Air Sensor Wires (with Stake-Ons) from the Harness and Route Down Near the Mixed Air Sensor.

4.) Continue Routing the Remaining Harness Through the Grommet and into the Control Box.

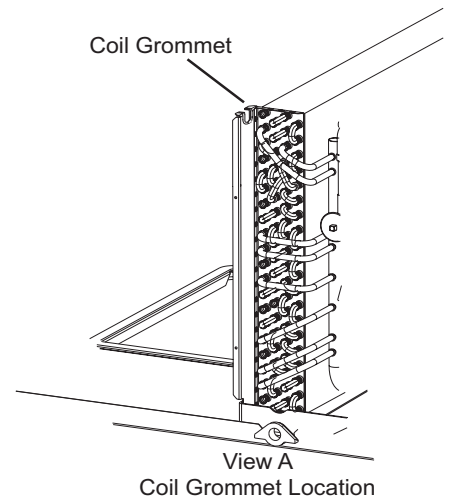
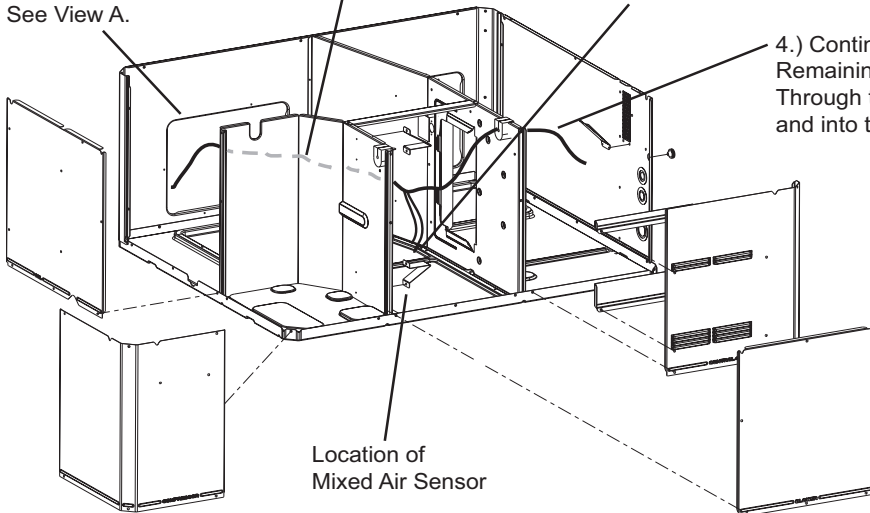
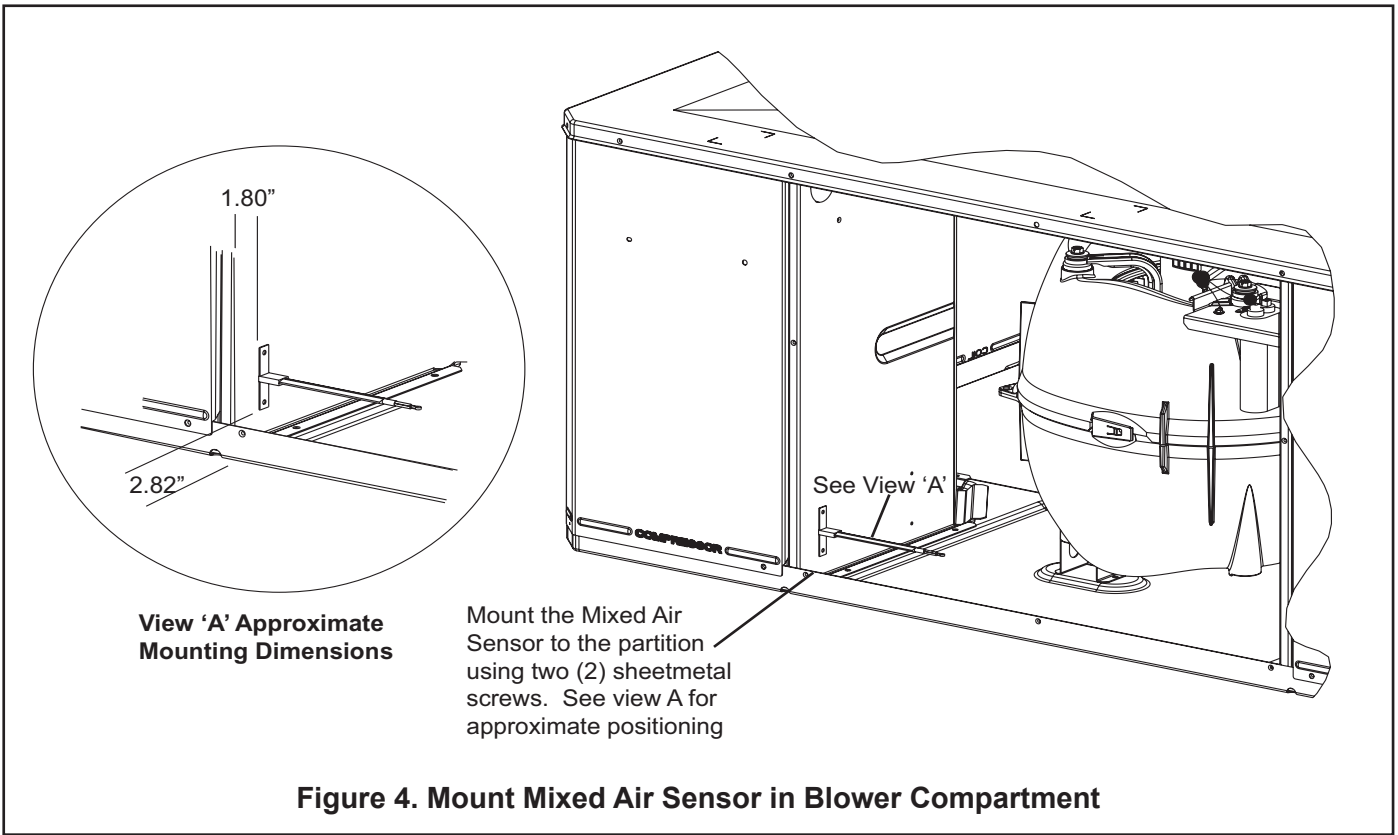


Figure 3. Main Wire Harness Routing



Wiring Diagram for Economizer Using a Honeywell W7459 Logic

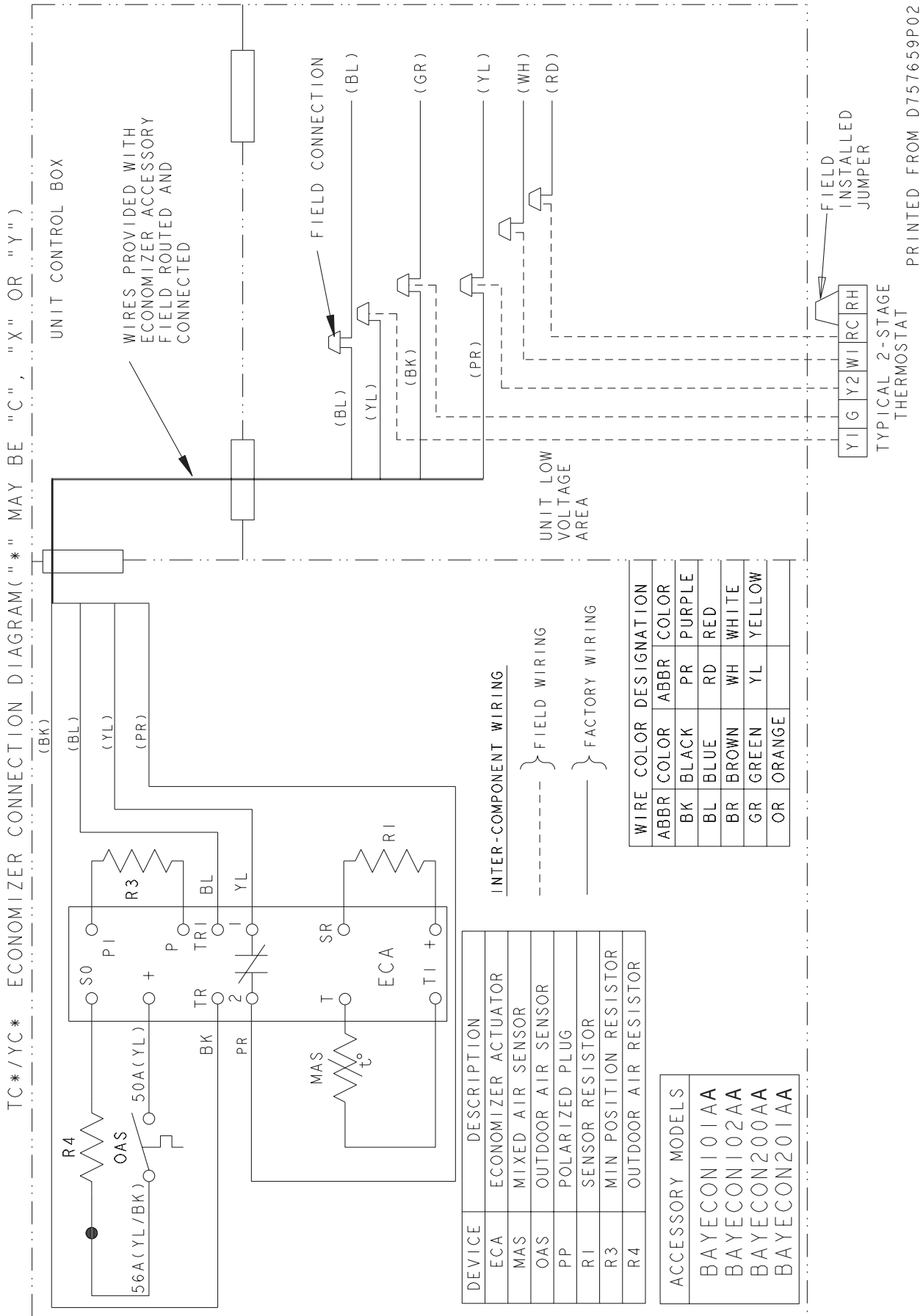
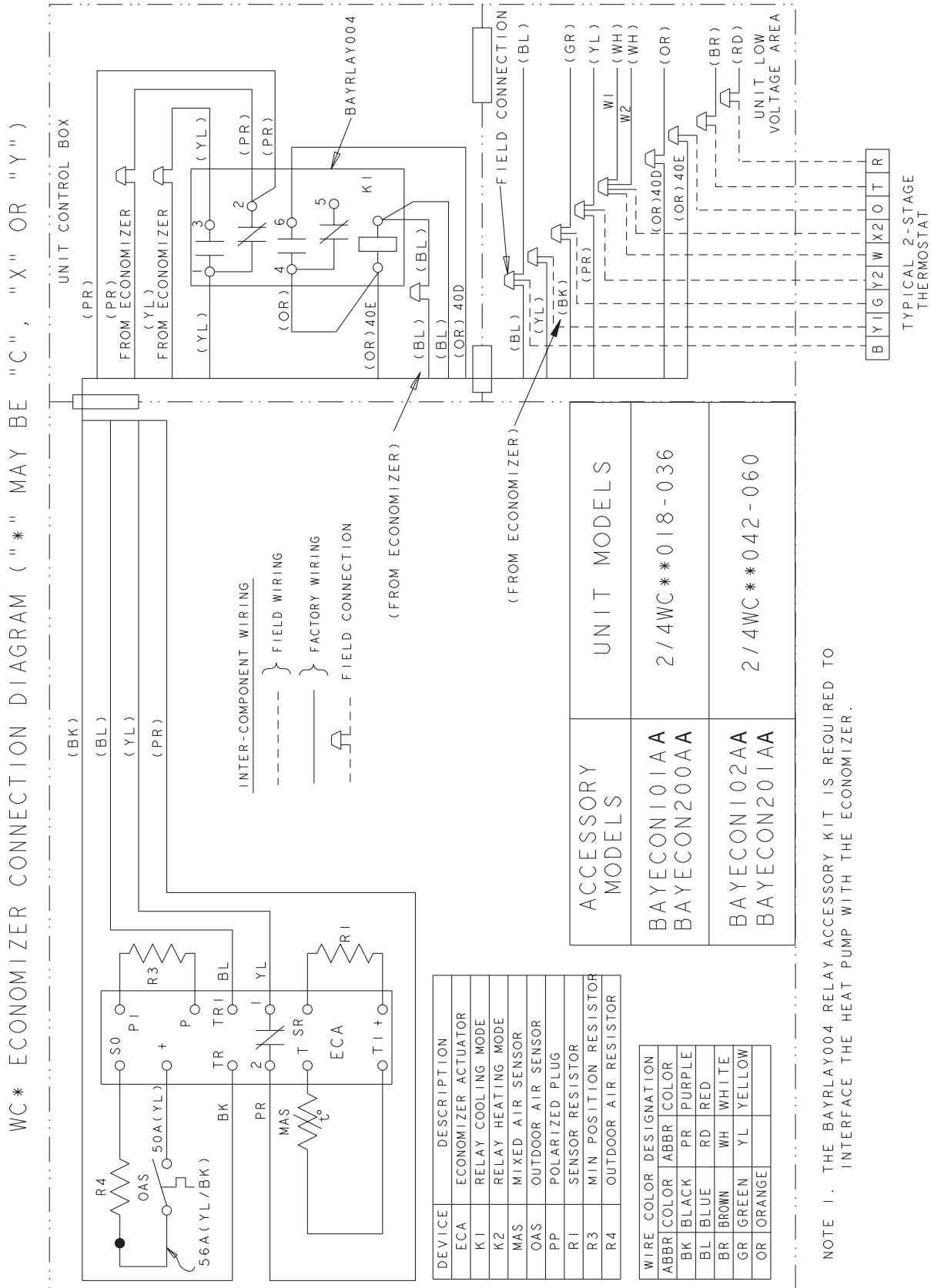


Figure 5. TC*/YC* Economizer Connection Diagram

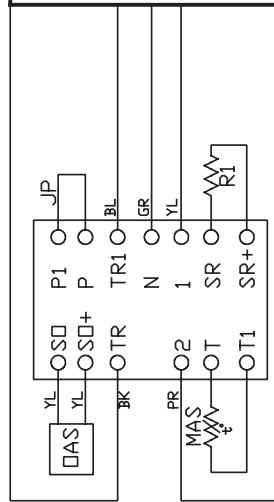
Wiring Diagram for Economizer Using a Honeywell W7459 Logic



NOTE 1. THE BAYRLAY004 RELAY ACCESSORY KIT IS REQUIRED TO INTERFACE THE HEAT PUMP WITH THE ECONOMIZER.

Figure 6. WC* Economizer Connection Diagram

**Wiring Diagram for Economizer Using a Honeywell W7212 Logic Only
TC*/YC* Economizer Connection Diagram ("*" May Be "C", "X", "Y")**



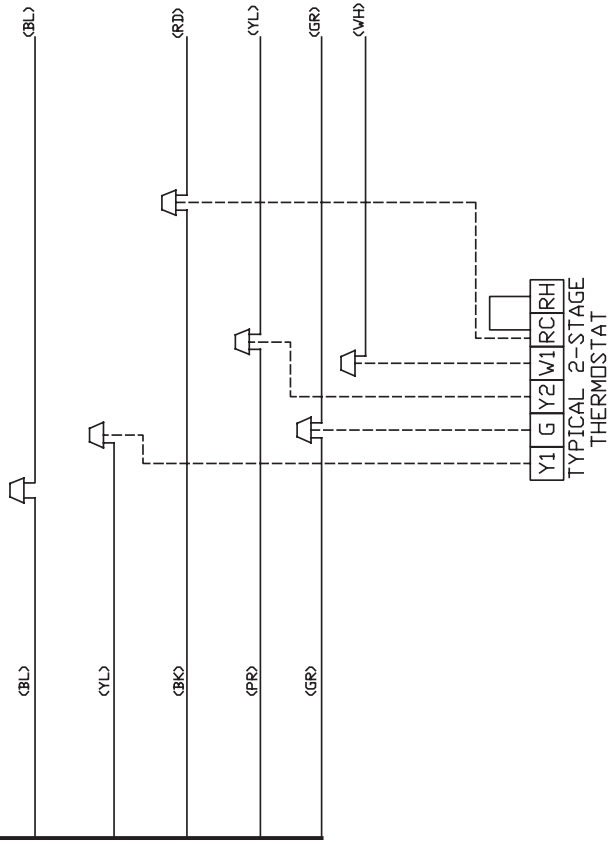
DEVICE	DESCRIPTION
MAS	MIXED AIR SENSOR
DAS	OUTSIDE AIR SENSOR
JP	JUMPER BETWEEN P AND P1
R1	SENSOR RESISTOR

ACCESSORY MODELS
BAYECON101AB/AC
BAYECON102AB/AC
BAYECON200AB/AC
BAYECON201AB/AC

INTER-COMPONENT WIRING

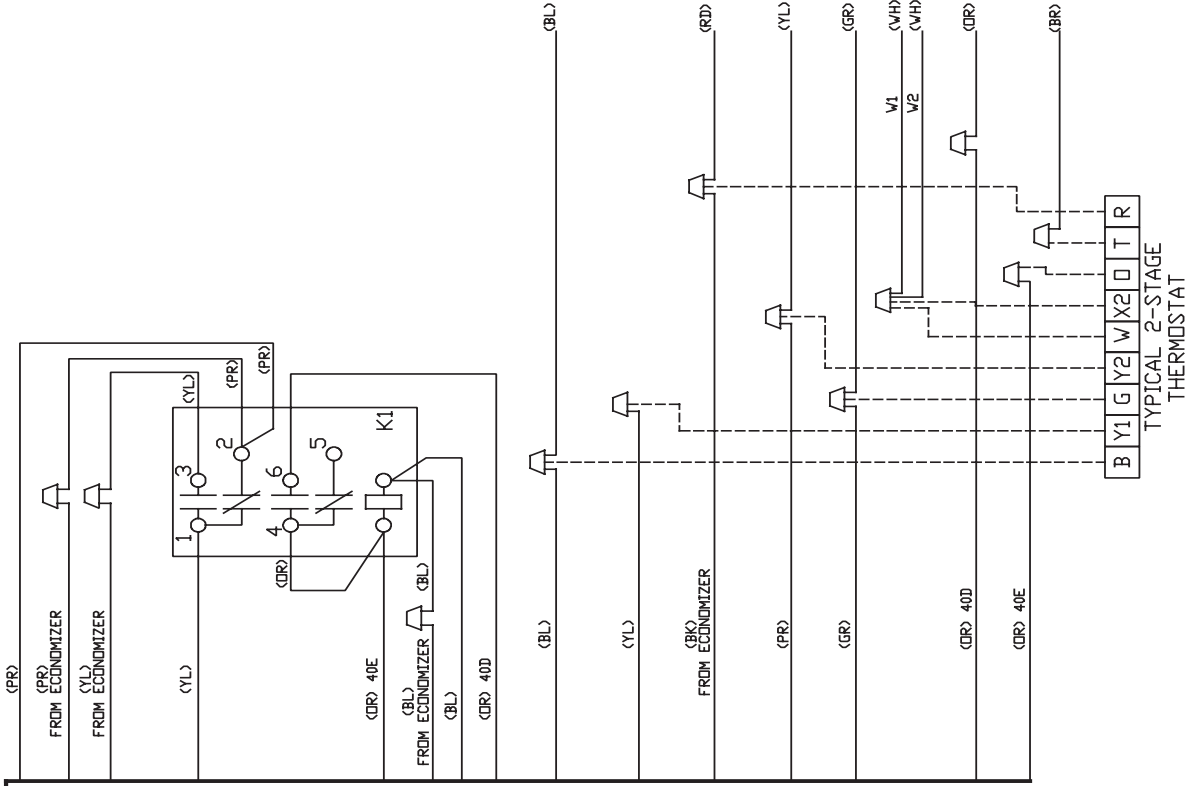
-----] FIELD WIRING

-----] FACTORY WIRING



WIRE ABBR	COLOR	DESIGNATION
BK	BLACK	PR
BL	BLUE	RD
BR	BROWN	WH
GR	GREEN	YL
OR	ORANGE	

**Wiring Diagram for Economizer Using a Honeywell W7212 ONLY
WC* Economizer Connection Diagram ("*" May Be "C", "X", "Y")**



INTER-COMPONENT WIRING

FIELD WIRING

FACTORY WIRING

DEVICE	DESCRIPTION
MAS	MIXED AIR SENSOR
DAS	OUTSIDE AIR SENSOR
JP	JUMPER BETWEEN P AND P1
R1	SENSOR RESISTOR

WIRE ABBR	COLOR	DESIGNATION
BK	BLACK	PR PURPLE
BL	BLUE	RD RED
BR	BROWN	WH WHITE
GR	GREEN	YL YELLOW
OR	ORANGE	

ACCESSORY MODELS	UNIT MODELS
BAYECON101AB/AC	2/4WC**018-036
BAYECON200AB/AC	
BAYECON102AB/AC	2/4WC**042-060
BAYECON201AB/AC	

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.

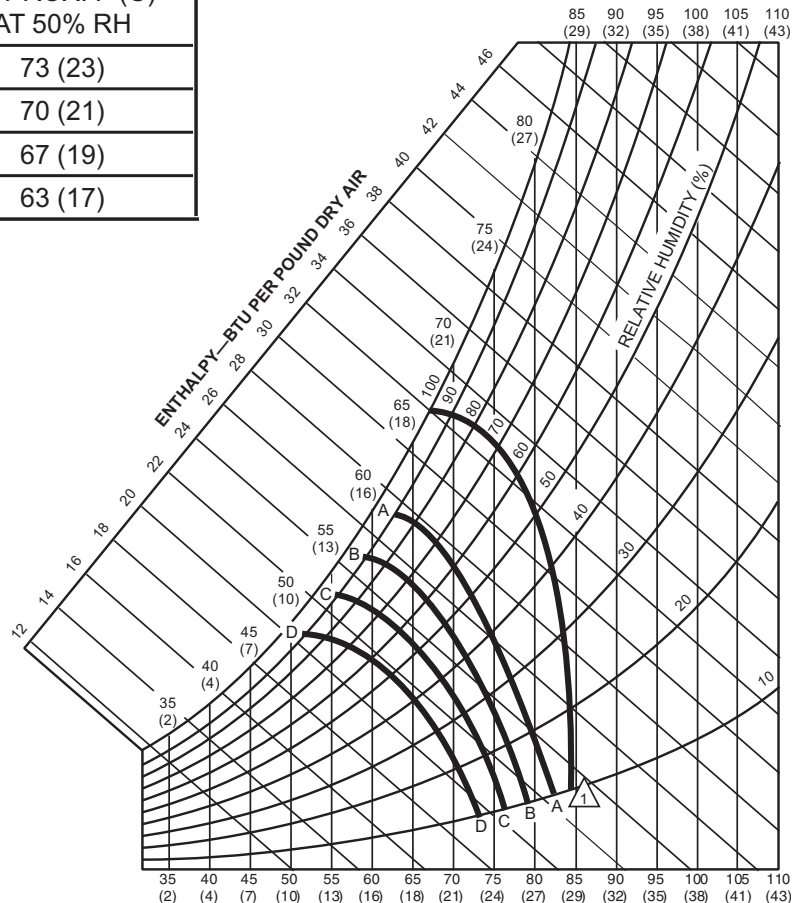
Table 1. Motor Operation Checkout

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

SINGLE ENTHALPY CHANGEOVER SET POINT

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 change-over 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.



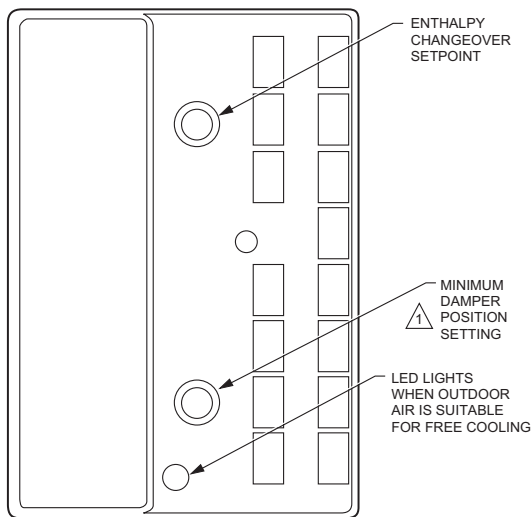
1 HIGH LIMIT CURVE FOR W7459D.

M11681

Table 2. Enthalpy Checkout Procedure - W7459 Control

Checkout Procedure		Response
A	<ol style="list-style-type: none"> 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 	<p>LED is off. Motor is in closed position.</p>
B	<ol style="list-style-type: none"> 1. Disconnect factory-installed 620 ohm resistor from terminals Sr and + 	<p>LED turns on, motor drives toward open.</p>
C	<ol style="list-style-type: none"> 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 +. 	<p>—</p>
	<ol style="list-style-type: none"> 2. Turn enthalpy setpoint potentiometer to "A". 	<p>LED turns on, indicating low enthalpy. Motor drives toward open.</p>
	<ol style="list-style-type: none"> 3. Turn enthalpy setpoint potentiometer to "D". 	<p>LED turns off, indicating high enthalpy. Motor drives toward closed.</p>
	<ol style="list-style-type: none"> 4. Disconnect the 1.2K ohm checkout resistor 	<p>—</p>
D	<ol style="list-style-type: none"> 1. To verify sensor operation, reconnect the + lead of the outdoor enthalpy sensor to the + terminal of W7459. 	<p>—</p>
	<ol style="list-style-type: none"> 2. Connect a DC multimeter between terminal So of the W7459A and terminal S of the enthalpy sensor. See Fig. 7 (positive meter lead to terminal S of the enthalpy sensor). 	<p>Multimeter indication is between 3 and 25 mA if sensor is operating properly. If multimeter indicates zero, the sensor may be wired backward.</p>
	<ol style="list-style-type: none"> 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). 	<p>Multimeter indication is between 3 and 25 mA if sensor is operating properly. If multimeter indicates zero, the sensor may be wired backward.</p>

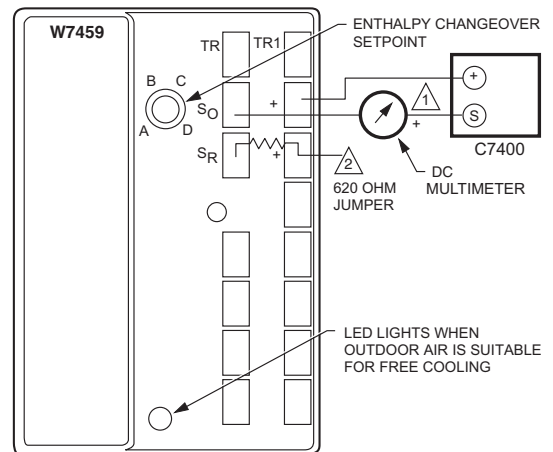
Location of Enthalpy Set Point, Minimum Position and LED



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

M9098B

Meter Location for Checkout and Troubleshooting



⚠ INSERT DC MULTIMETER BETWEEN S₀ AND S FOR CHECKOUT AND TROUBLESHOOTING.

⚠ JUMPER USED FOR SINGLE ENTHALPY CONTROL.

M9097

Figure 7. 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

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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. 8 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.

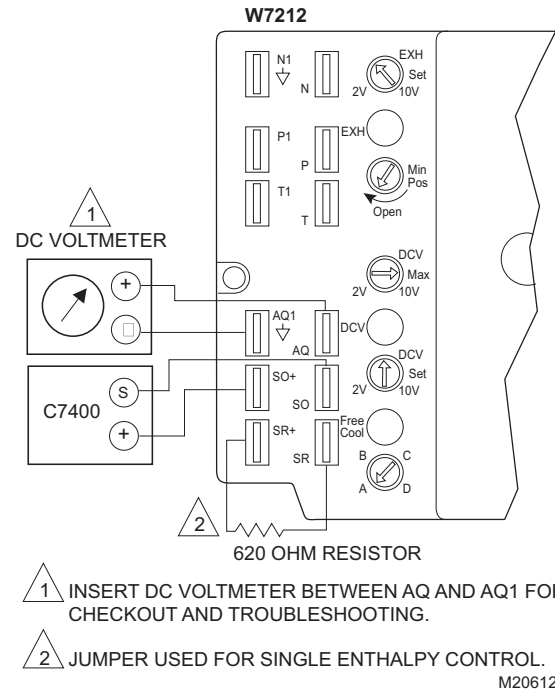


Fig. 8. Meter location for checkout and troubleshooting (W7212 shown).

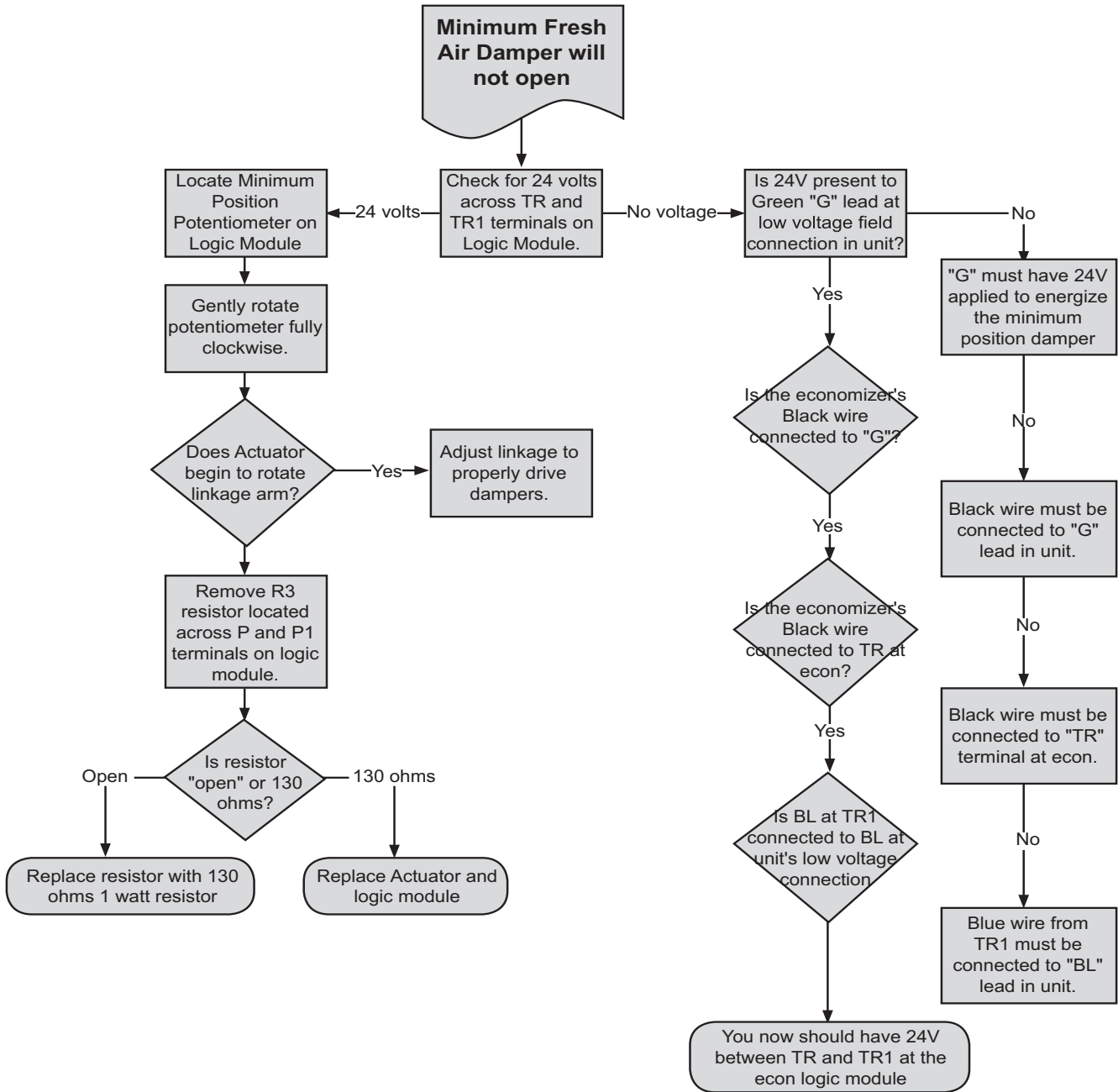
Table 4. Checkout for W7212, W7213, W7214 Economizer Connected to Honeywell Actuator

Step	Checkout Procedure	Proper Response
1.	CHECKOUT PREPARATION FOR ECONOMIZING ONLY	All LED are off; Exhaust Fan contacts are open
	Disconnect power at TR and TR1	
	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		

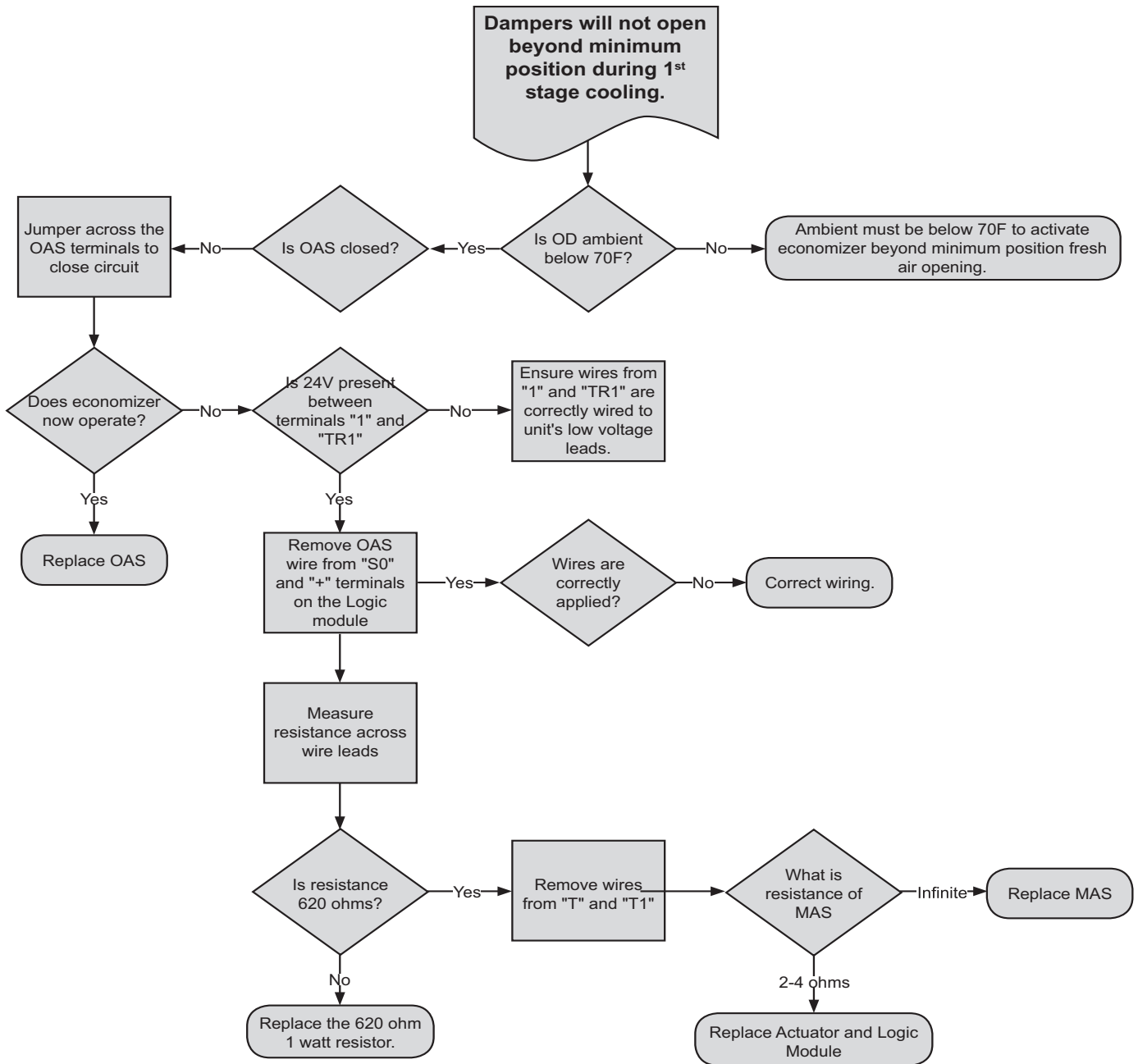
Table 4. Checkout for W7212, W7213, W7214 Economizer Connected to Honeywell Actuator (Cont.)

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.

Honeywell W7459 Only - Troubleshooting - No Minimum Fresh Air

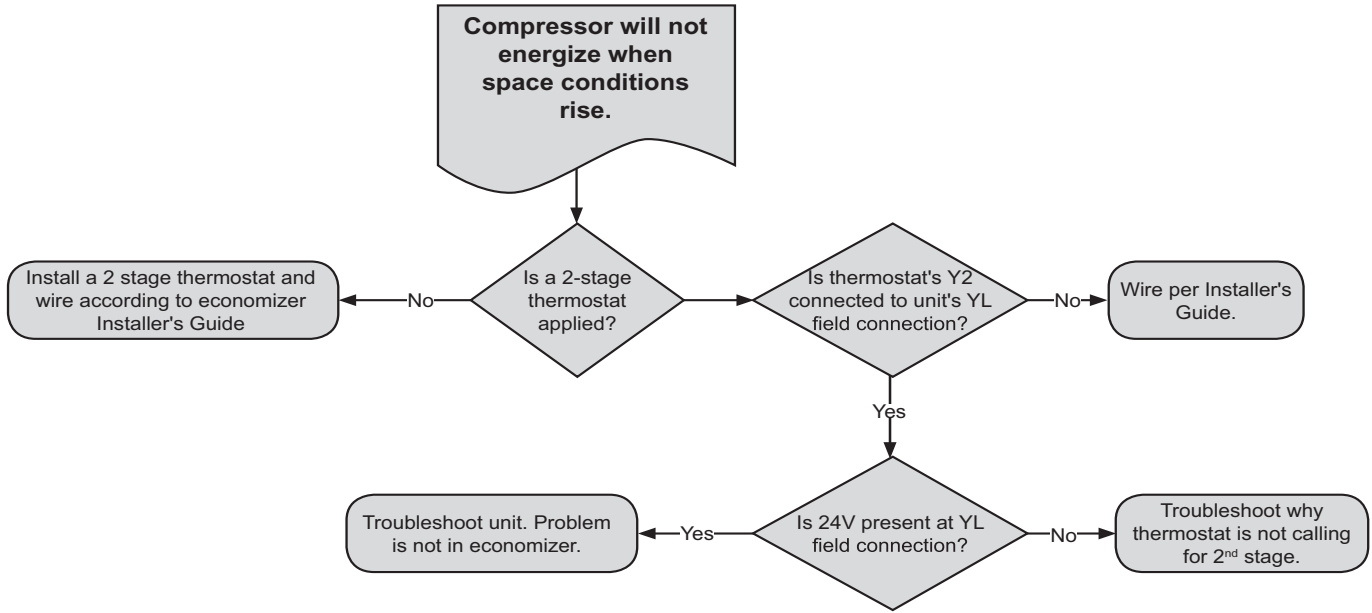


Honeywell W7459 Only - Troubleshooting - Unit Will Not Economize

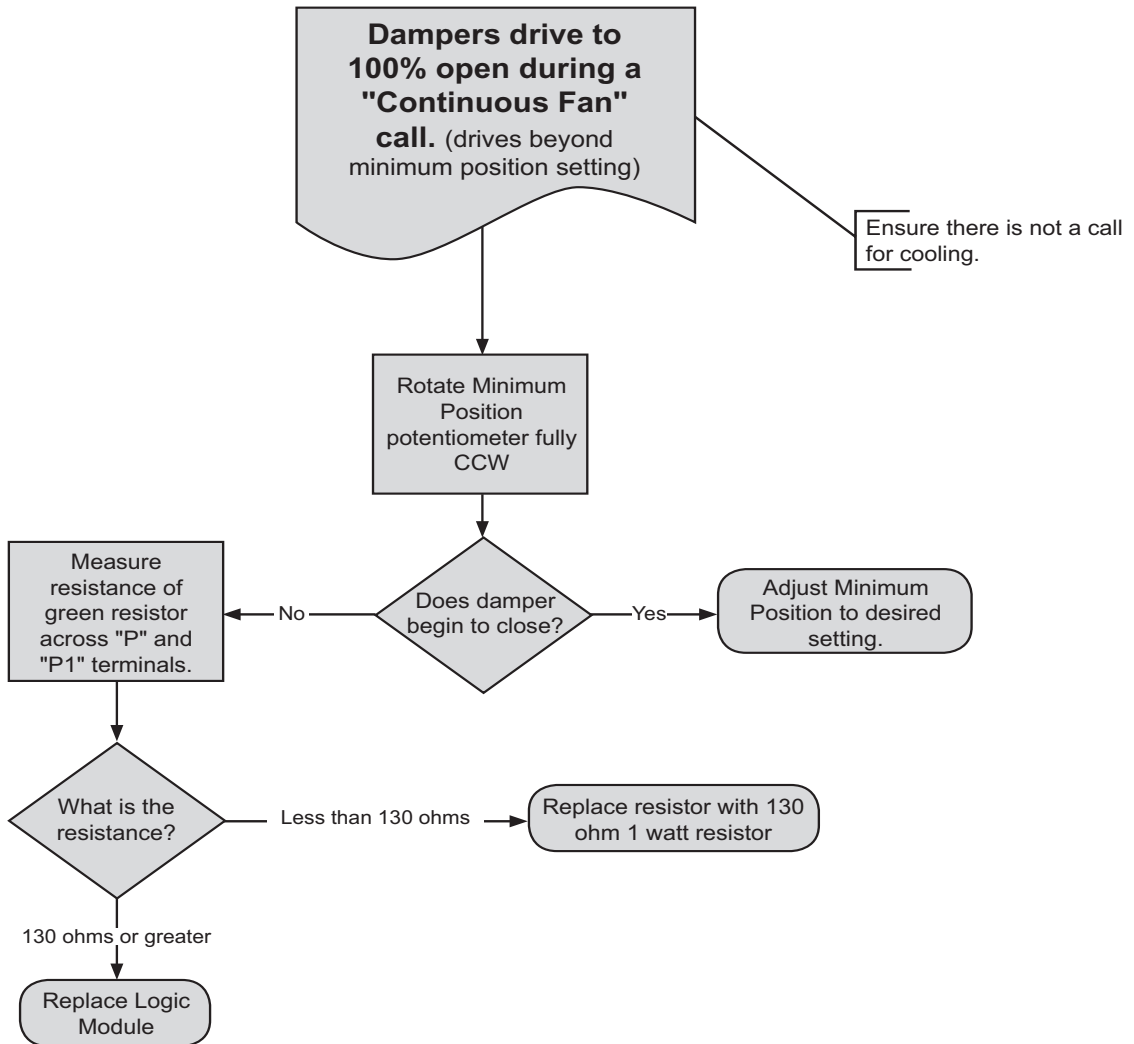


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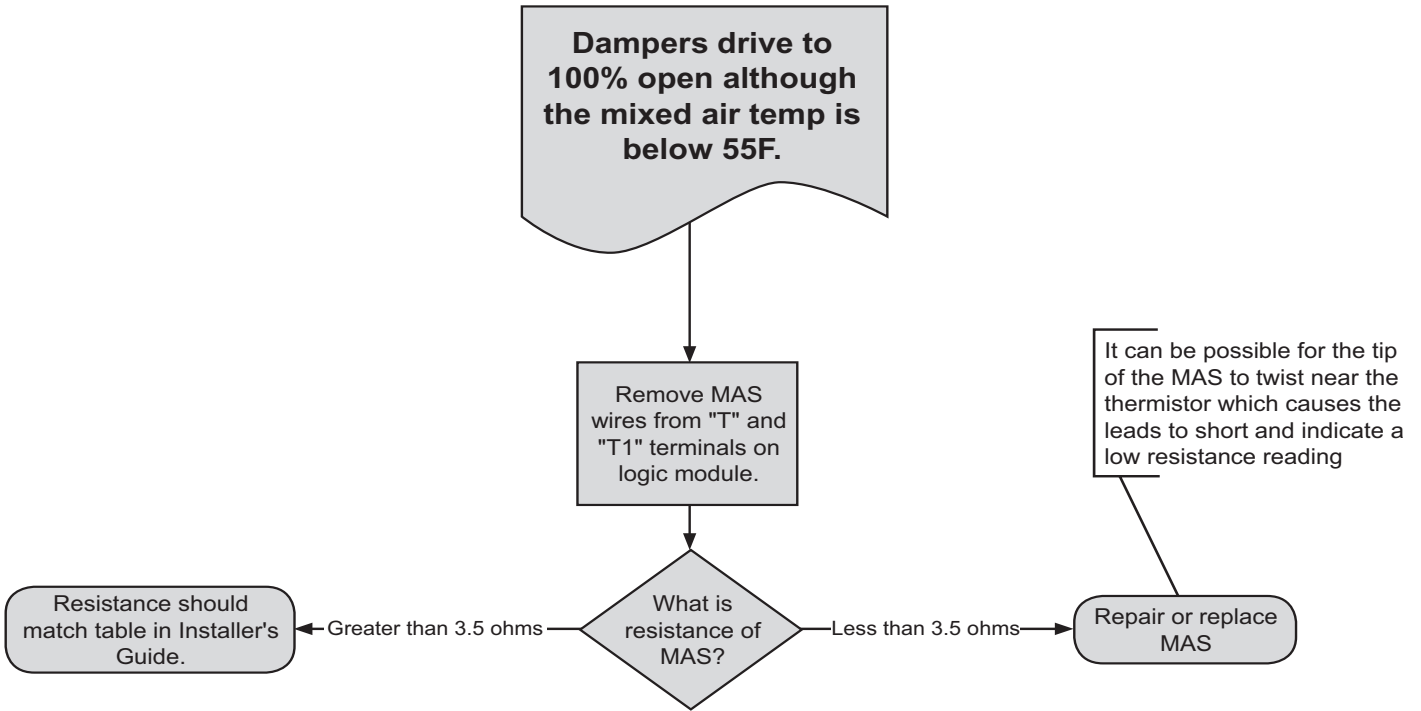
Honeywell W7459 Only - Troubleshooting - 2nd Stage Inoperable



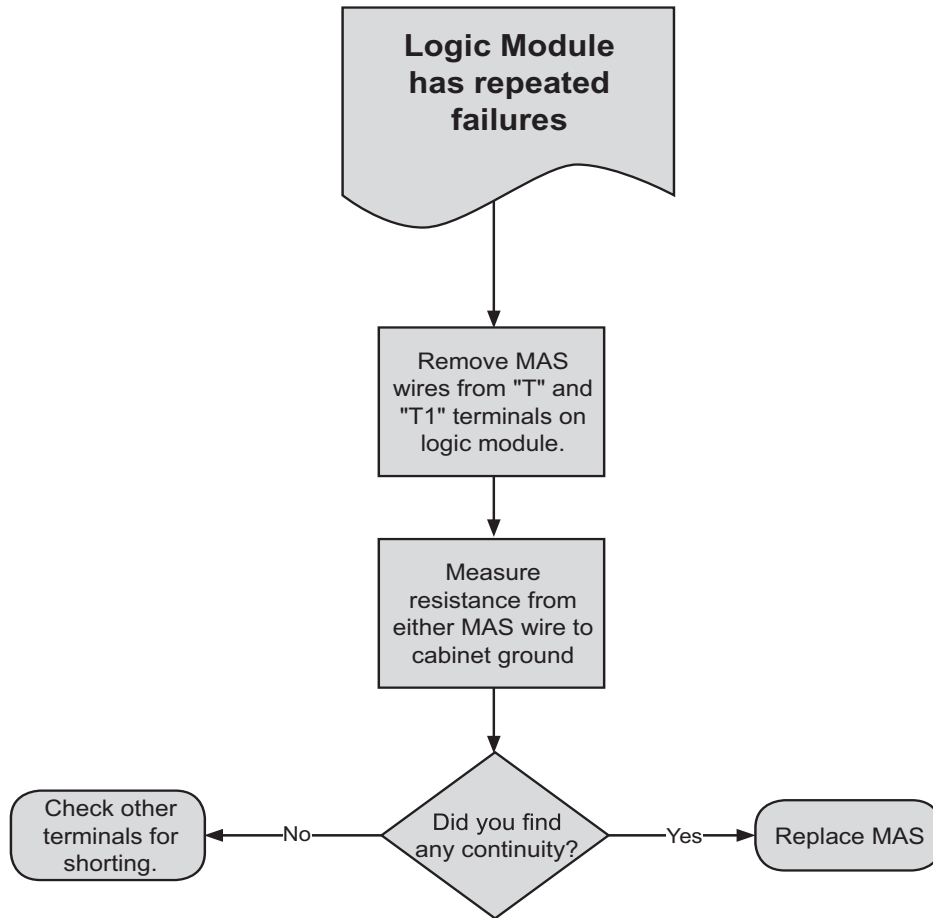
Honeywell W7459 Only - Troubleshooting - Dampers Open With G



Honeywell W7459 Only - Troubleshooting - Mixed Air Sensor



Honeywell W7459 Only - Troubleshooting - Logic Module Failures



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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Supersedes 18-HE39D9-11B-EN (May 2022)

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