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# INSTALLATION INSTRUCTIONS

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## Economizer with Exhaust

Model:  
JIFM-1B

For Use with Bard 1 Ton  
Wall Mount Air Conditioner



Bard Manufacturing Company, Inc.  
Bryan, Ohio 43506  
[www.bardhvac.com](http://www.bardhvac.com)

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## Economizer Features

- One piece construction; easy to install. Direct-drive actuator eliminates linkage.
- Exhaust air damper built in with positive closed position. Provides exhaust air capability to prevent pressurization of tight buildings.
- JADE™ controller provides nearly limitless customization on a solid, intuitive electronic platform.
- Actuator motor – 24 volt, power-open, spring-return, direct-coupled with stall protection. Self-centering shaft clamp and access cover facilitate ease of replacement/maintenance.
- Proportioning-type control for maximum “free” cooling economy and comfort with up to 75% outside air.
- Enthalpy sensor to monitor outdoor air temperature.
- Minimum ventilation position available for required ventilation of occupants or dilution of pollutants.
- Mixed air sensor to monitor outdoor and return air to automatically modulate damper position.

**General Information**

The economizer should only be installed by a trained heating and air conditioning technician. These instructions serve as a guide to the technician installing the economizer package. They are not intended as a step-by-step procedure with which a mechanically inclined owner can install the package.

The economizer housing is shipped in one carton which contains the electrical harness, miscellaneous hardware and installation instructions.

The economizer installation requires an additional two stage cooling thermostat in place of the normal single stage cooling thermostat. Also, additional low voltage wire will be required to transmit the second call (Y2) for cool (i.e., 6 conductor thermostat wire for an air conditioning unit). See Figures 5 and 6 on pages 8 and 9 for thermostat options.

If using a Bard MC4000 Master Controller, it is designed specifically to control two (2) redundant Bard wall mount units equipped with economizers.

Any wall mount unit equipped with an economizer must also have a factory/field installed low ambient control. Please refer to appropriate model/year Specification Sheet for requisite field installed low ambient control kit part numbers.

**Unpacking**

Upon receipt of the equipment be sure to compare the model number found on the shipping label with the accessory identification information on the ordering and shipping document to verify that the correct accessory has been shipped.

Inspect the carton housing of each economizer as it is received, and before signing the freight bill, verify that all items have been received and that there is no visible damage. Note any shortages or damage on all copies of the freight bill. The receiving party must contact the last carrier immediately, preferably in writing, requesting inspection by the carrier’s agent. Concealed damage not discovered until after loading must be reported to the carrier within 15 days of its receipt.

**Description**

The JIFM-1B Series economizer is designed to be used with a wall mount series air conditioner (shown in Table 1) equipped with a low ambient control. They are electromechanical economizer systems designed to provide “free” cooling where the outdoor air temperature/enthalpy is cool enough to provide the needed cooling without running the compressor, or in addition to the compressor. When cooling is required, the system automatically takes advantage of cold outdoor air when available and uses it for first stage cooling. This then reduces the need to run the air conditioning compressor providing lower operating costs and increasing the service life of the equipment. If the outdoor air temperature/outdoor enthalpy is too warm to be sufficient for cooling, the sensor detects the condition and automatically closes the outdoor air intake/exhaust damper, opens the return air damper and switches to compressor-only operation.

Without attention from the end user, the economizer assembly is designed to automatically achieve maximum savings while ensuring appropriately cool space temperatures. The economizer utilizes a fully modulating damper actuator, which will control intake/exhaust in order to obtain and maintain a factory-set minimum supply air temperature. As a secondary feature, the economizer assembly can be programmed for a minimum ventilation based on an “occupied” (or otherwise dedicated) 24V signal to satisfy fresh air ventilation on populated structures or dilution of internal pollutants.

**TABLE 1**

<b>Model ①</b>	<b>Wall-Mount Unit</b>
JIFM-1B	W12AB

① Low ambient is required with Economizer for low pressure compressor operation.

# INSTALLATION

## Basic Intallation



## WARNING

Open and lock unit disconnect switch before installing this accessory to prevent injury or death due to electrical shock or contact with moving parts. Turn thermostat to OFF.

### Preparing Unit for Economizer Installation

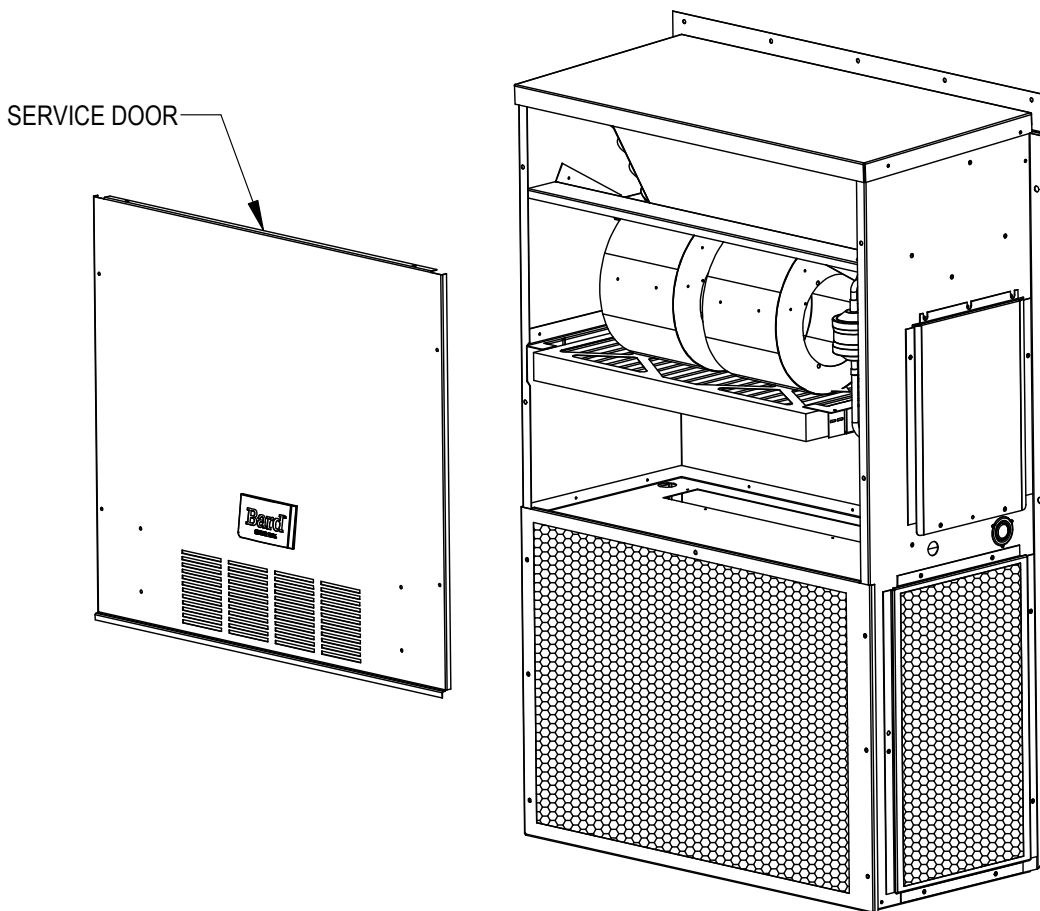
1. Disconnect power to unit.
2. Unpack the economizer assembly which includes the integral economizer with attached electrical harness, mixed air thermistor, miscellaneous hardware and installation instructions.

3. Remove and save the existing exterior service access panel on the Bard wall mount unit (see Figure 1).

**NOTE:** Removal of barometric fresh air damper (BFAD) may be required.

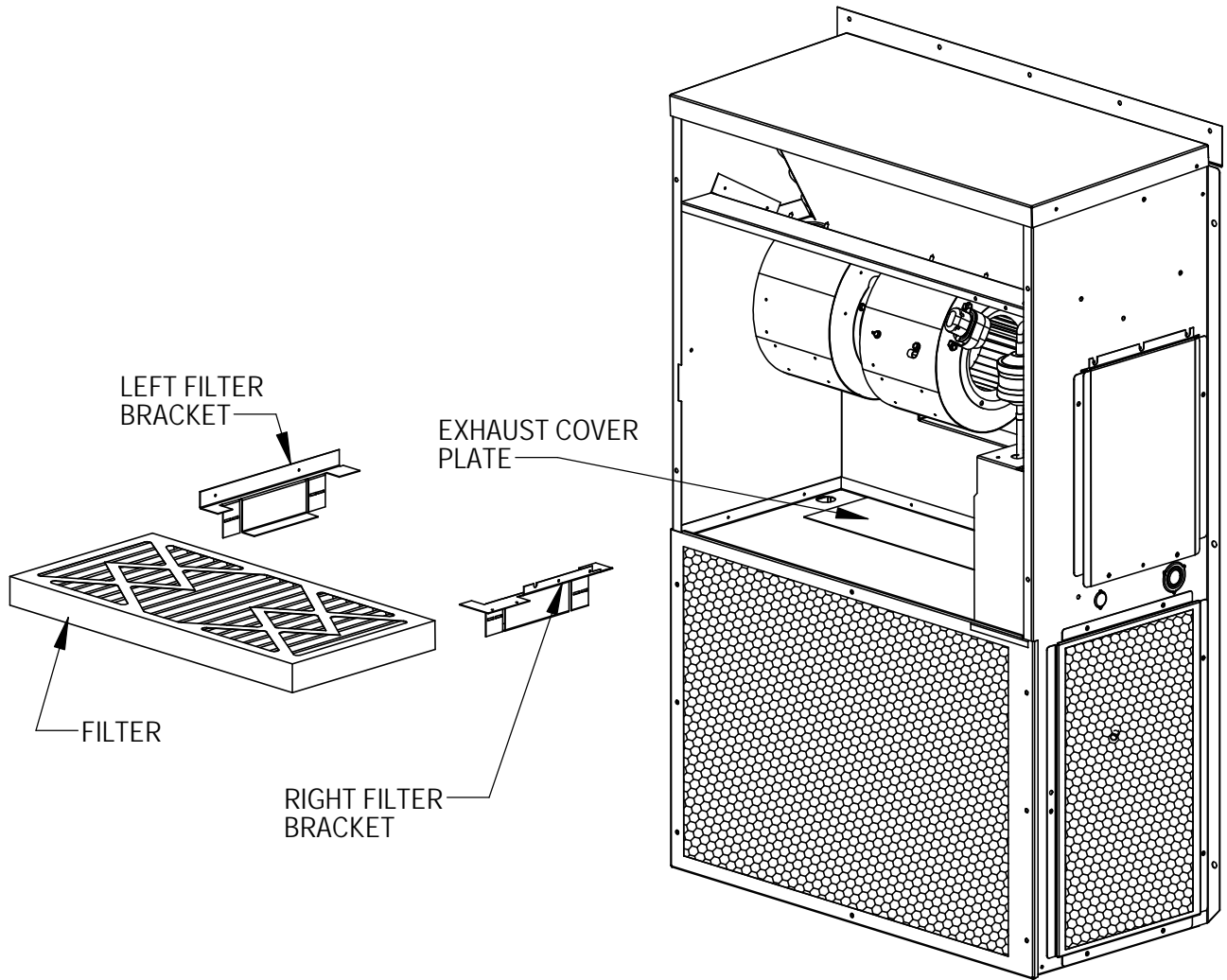
4. Remove and save filter. Remove and save existing right and left side filter brackets.
5. Remove and discard the exhaust cover plate (see Figure 2).

**FIGURE 1**  
Remove Service Access Panel



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**FIGURE 2**  
**Remove Filter Support Brackets, Filter and Exhaust Cover Plate**

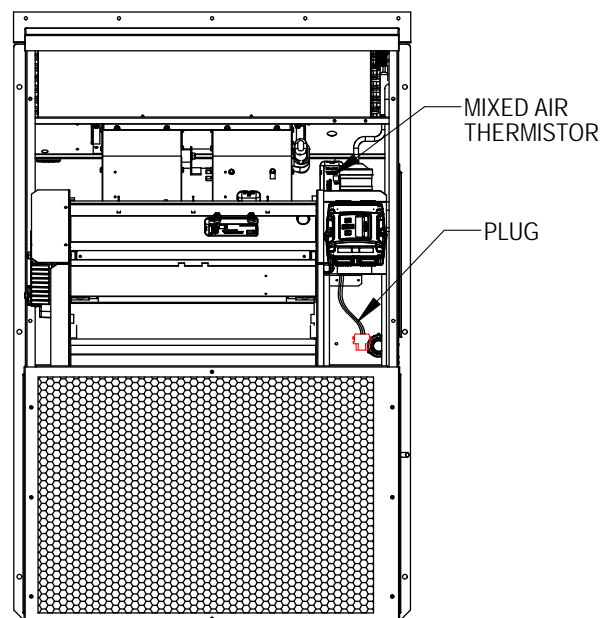
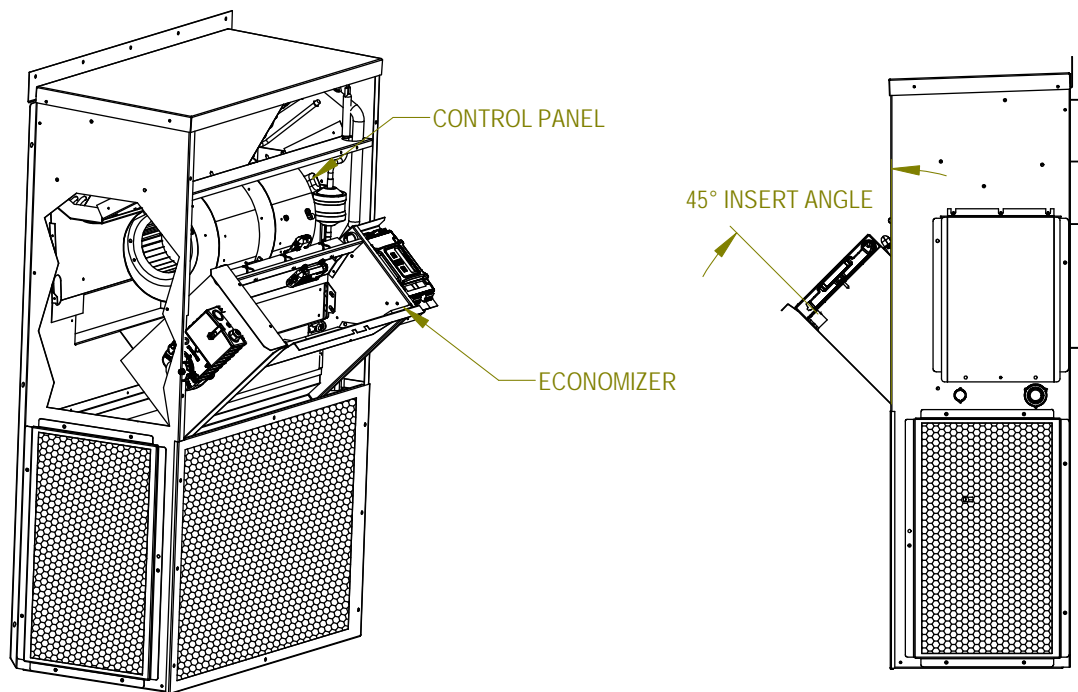


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### Economizer Installation

1. Install the economizer by inserting into the unit to the far left side. Tilt the economizer back 45° to position the rear seal under the blower (see Figure 3). Slide the economizer in far enough that the back bottom of the economizer is inside the unit. Leave the economizer in this position for now.
2. Plug economizer wire harness into the molex connector on the side of the control panel.
3. Rotate the economizer into the unit until the economizer is level and is clear of the blower. Once the economizer is fully inserted, slide the economizer to the right until tight against the control panel.

**FIGURE 3**  
**Installing Economizer in Unit**

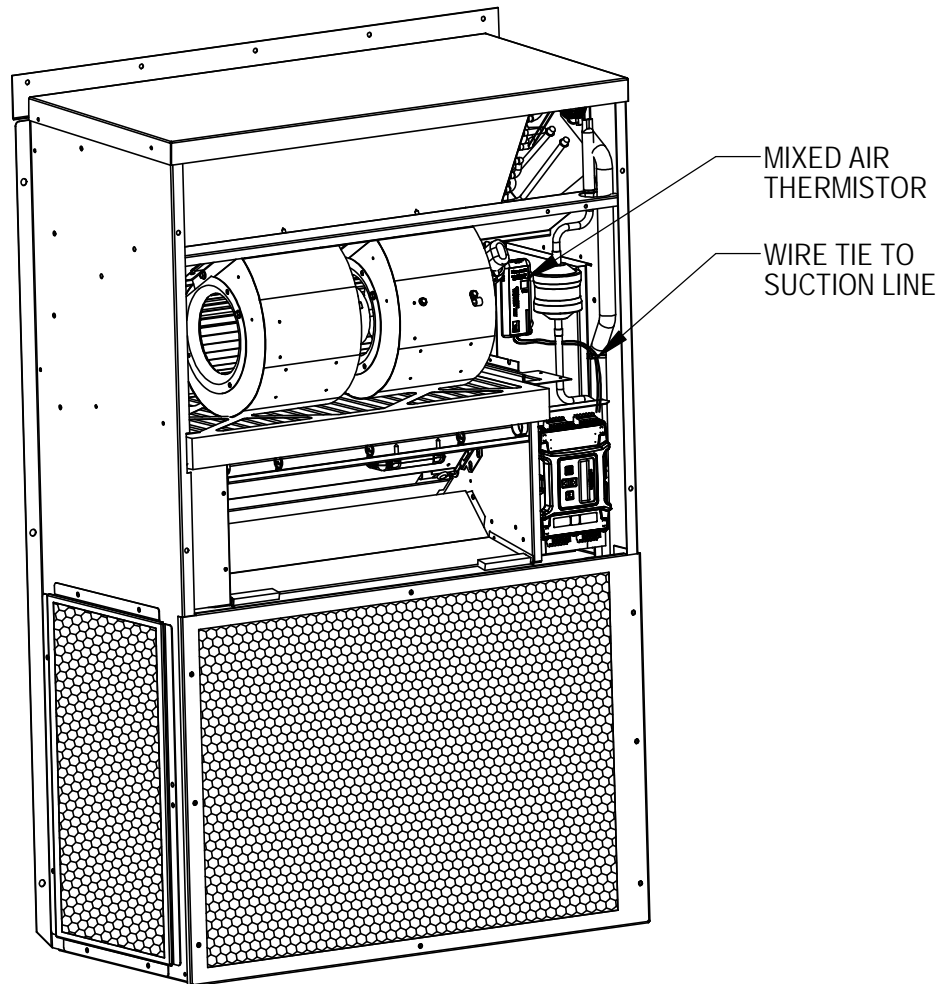


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- IMPORTANT:** Position front lip of economizer over the front grille. This is important to ensure proper drainage of any water entering damper assembly.
4. Mount mixed air thermistor to control panel with screws provided as shown in Figure 4. Route wires as shown and secure with wire tie. Connect orange wires to thermistor.

5. Re-install filter brackets and filter.
6. Close control panel cover.

**FIGURE 4**  
**Attaching Seal Plate**



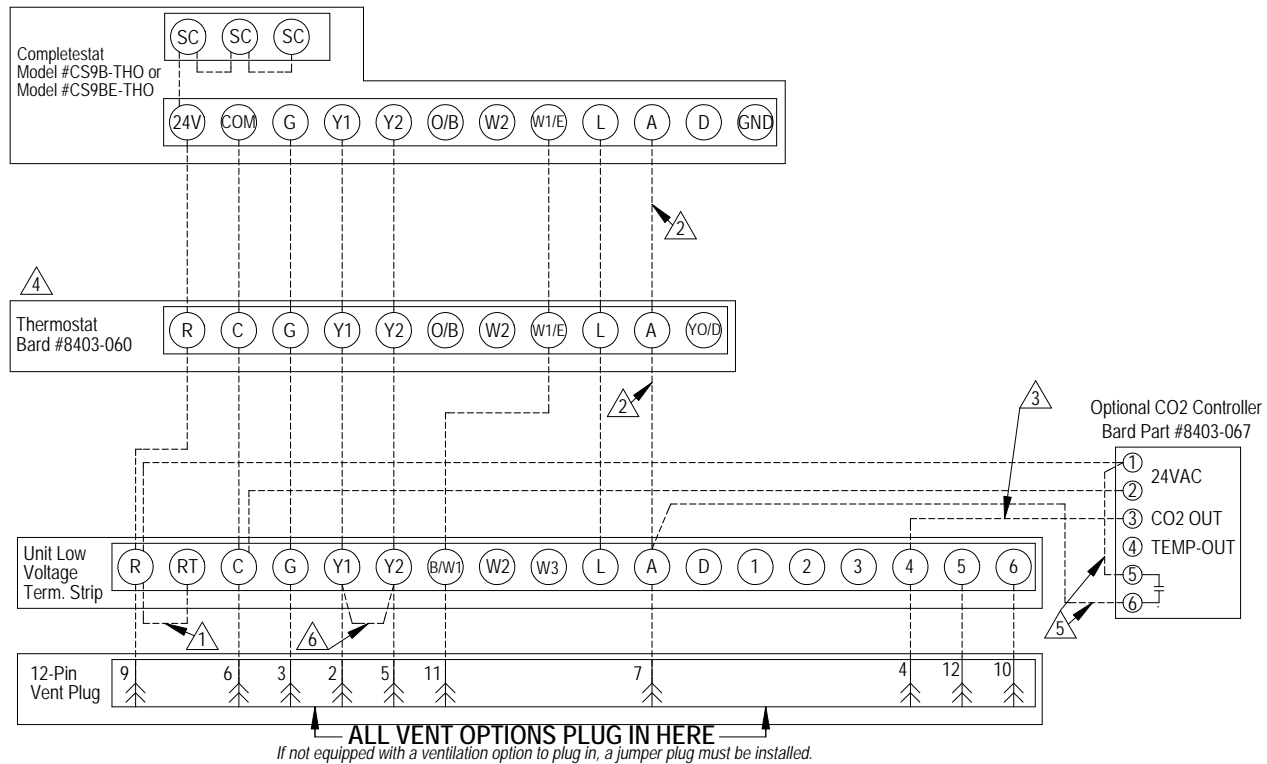
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## Control Wiring Connection Diagrams

The control wiring diagrams represent typical control wiring for single units controlled by individual thermostats. If thermostats other than those referenced are used, the installer must verify output functions accordingly.

For dual unit installation utilizing lead/lag controller systems, complete details are contained in MC4000 Series Lead/Lag Controller Manual 2100-563.

**FIGURE 5**  
**Low Voltage Wiring**  
**Programmable Thermostat Connections**

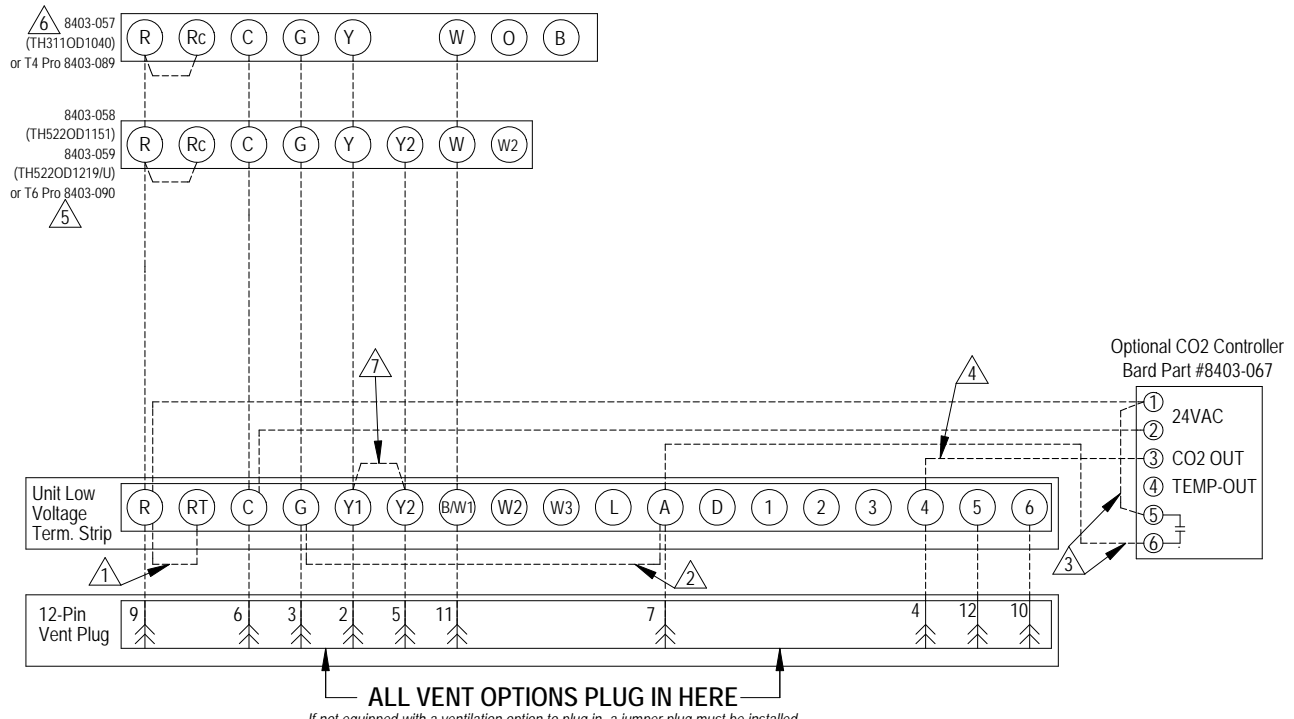


- 1 Factory installed jumper. Remove jumper and connect to N.C fire alarm circuit if emergency shutdown required.
- 2 Do not connect "A" from thermostat if optional CO2 controller is used.
- 3 0-10 VDC modulating CO2 control signal for modulating ventilation control (optional for ECON only - see vent instruction manuals).
- 4 Change model configuration from heat pump to heat/cool. Must be configured to programmable and fan set to be programmed fan for the "A" output to function during scheduled occupied periods. Must be configured for multi-stage for Y1 output to be active 1st stage cooling.
- 5 Do not add these wires if setting up for modulating control. See note 7.
- 6 Factory installed jumper. Remove jumper to activate Balanced Climate™ mode. A 2-stage thermostat is recommended for Balanced Climate mode. (Jumper is removed in factory for units with economizers.)

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**FIGURE 6**  
**Low Voltage Wiring**  
**Nonprogrammable Thermostat Connections**



**ALL VENT OPTIONS PLUG IN HERE**

*If not equipped with a ventilation option to plug in, a jumper plug must be installed.*

- ⚠ Factory installed jumper. Remove jumper and connect to N.C fire alarm circuit if emergency shutdown required.
- ⚠ For vent operation, add jumper if optional CO2 controller is not used. Vent will run while blower is energized.
- ⚠ Do not add these wires if setting up for modulating control. See note 7.
- ⚠ 0-10 VDC Modulating CO2 control signal for modulating ventilation control (Optional for ECON Only) - See vent installation manual.
- ⚠ For 8403-058, change "system type", set up Function 1, From 5 (2 Heat/ 1 Cool heat Pump) to 6 (2 Heat / 2 Cool Conventional). For 8403-059, No change required.
- ⚠ Thermostat will not work with units equipped with economizers.
- ⚠ Factory installed jumper. Remove jumper to activate Balanced Climate™ Mode. A 2-stage thermostat is recommended for Balanced Climate mode. (Jumper is removed in factory for units with economizers.)

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**IMPORTANT NOTE**

An additional wire change is required if jumper **2** is used which connects "A" to "G" (shown on Figure 6). The red/white wire on the blower interlock relay (located on the vent control plate) needs to be moved from the "common" terminal to the "normally closed" terminal. **If this change is not made, the relay will latch on once the "A" signal is received and the blower will not turn off.** Refer to page 23 to see the vent wiring diagram with this change called out.

# START-UP/CHECKOUT PROCEDURES

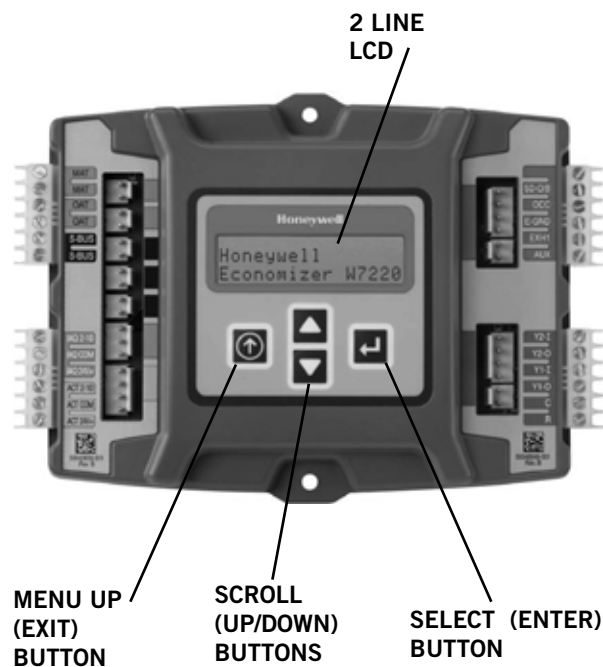
## JADE™ Economizer Controller

W7220 controller offers unparalleled flexibility and expansion in a dependable and solid electronic platform.

- Multiple economizer applications from one controller.
- Nearly limitless customization of setpoints.
- Internal checkout menu provides fast performance assessment.
- Alarms menu provides assistance in troubleshooting.

**Memory:** User-defined setpoints remain in non-volatile flash memory regardless of electrical outage duration. Control voltage below 18V may cause erratic performance.

**FIGURE 7**  
**JADE™ Economizer Controller**



From the factory, the JADE™ economizer controller has been preset with “default” values that were pre-determined as optimum for equipment buildings, and these are shown in Tables 2 – 4. However, it is important to review and/or customize these operational values per owner specifications in order to guarantee satisfactory performance.

The installing contractor can easily access the JADE™ programming by the integral keypad and LCD display.

There are six (6) basic MENU categories to navigate:

1. **STATUS** – provides real-time access to sensor input, damper and equipment operation.
2. **SETPOINTS** – customizable operational parameters.
3. **SYSTEM SETUP** – customizable application programming (see **Review/Customize System Setup**).
4. **ADVANCED SETUP** – further application and operational options.
5. **CHECKOUT** – instantly activate and verify economizer functions.
6. **ALARMS** – displays alarms and pinpoints problem areas.

### Review/Customize System Setup

Before being placed in service, the JADE™ economizer controller programming should be reviewed/customized through the following steps:

1. **SYSTEM SETUP:** from the main screen, press the **SCROLL (UP/DOWN) BUTTONS** to navigate through the six (6) basic menu items to the **SYSTEM SETUP** menu.
  - Push the **SELECT (ENTER) BUTTON** to choose the **SYSTEM SETUP** menu.
  - Navigate through the multiple levels of **SYSTEM SETUP** by pushing the **SCROLL (UP/DOWN) BUTTONS**.
  - To change a specific parameter in the **SYSTEM SETUP** menu, press the **SELECT (ENTER) BUTTON** to display its current value. Press the **SCROLL (UP/DOWN) BUTTONS** to change or increase/decrease value. Press the **SELECT (ENTER) BUTTON** to save the new customized value—“CHANGE STORED” will be displayed. Press the **SELECT (ENTER) BUTTON** again to return to current menu parameter.
  - For specific **SYSTEM SETUP** level information, refer to **Table 2**.

**NOTE:** During an extended level of inactivity, the display of the JADE™ economizer controller will begin to automatically scroll through the various levels of the **STATUS** menu as a screensaver. Each level will stay for approximately 5 seconds before changing to the next level.

**TABLE 2**  
**System Setup Menu Levels**

Menu Level	Default Value	Range	Notes
INSTALL	01/01/10		Display Order = MM/DD/YY Setting Order = DD/MM/YY
UNITS DEG	°F	°F / °C	Sets controller to read in either measurements
EQUIPMENT	HP(B)	HP	Heat Pump HP * CONV = A/C
AUX IN	HP(B)	HP(O) HP(B)	Energize on Cool * Energize on Heat
FAN SPEED	1 Speed	1 Speed 2 Speed	
FAN CFM	5000	100 to 15000	Not applicable
AUX OUT	EXH2	NONE ERV EXH2 SYS	Product can be used to signal other devices
OCC	INPUT	INPUT or ALWAYS	INPUT is for dedicated OCC signal, ALWAYS is for all other situations
FACTORY DEFAULT	NO	YES or NO	Resets to factory defaults if changed to YES

\* In SYS SETUP, the correct Equipment setting is HP and for the AUX2 IN is HP (B) in all applications. This is correct for both air conditioner and heat pump equipment in order to have correct operating sequences for the economizers. DO NOT change to CONV = A/C setting just because the equipment is an air conditioner and not a heat pump.

2. **ADVANCED SETUP:** from the main screen, press the **SCROLL (UP/DOWN) BUTTONS** to navigate through the six (6) basic menu items to the **ADVANCED SETUP** menu.

- Push the **SELECT (ENTER) BUTTON** to choose the **ADVANCED SETUP** menu.
- Navigate through the multiple levels of **ADVANCED SETUP** by pushing the **SCROLL (UP/DOWN) BUTTONS**.
- To change a specific parameter in the **ADVANCED SETUP** menu, press the **SELECT (ENTER) BUTTON** to display its current value. Press the **SCROLL (UP/DOWN) BUTTONS** to change or increase/decrease value. Press the **SELECT (ENTER) BUTTON** to save the new customized value—“CHANGE STORED” will be displayed. Press the **SELECT (ENTER) BUTTON** again to return to current menu parameter.
- For specific **ADVANCED SETUP** level information, refer to **Table 3**.

**TABLE 3**  
**Advanced Setup Menu Levels**

Menu Level	Default Value	Range	Notes
MA LOW SET	45°F	35-55°	Temp to activate freeze protection — Close Damper
FREEZE POS	CLO	CLO or MIN	Damper position upon freeze protection
STG3 DLY	15 MIN	0 to 4.0h or OFF	Delay for 3rd Stage Cooling – allows for 3 stages of cooling, one stage for econ & two stages for compressor
DMPR POS	CLO	CLO or OPN	Where damper goes upon shutdown signal
MA T CAL	0.0°F	+/-2.5°F from actual reading	Mixed Air Sensor temperature calibration
OA T CAL	0.0°F	+/-2.5°F from actual reading	Outdoor Air Sensor temperature calibration
OAS H CAL	0%	+/-10% from actual reading	Outdoor Air Humidity Sensor calibration for economizers using temp/humidity sensor

3. **SETPOINTS:** from the main screen, press the **SCROLL (UP/DOWN) BUTTONS** to navigate through the six (6) basic menu items to the **SETPOINTS** menu.

- Push the **SELECT (ENTER) BUTTON** to choose the **SETPOINTS** menu.
- Navigate through the multiple levels of **SETPOINTS** by pushing the **SCROLL (UP/DOWN) BUTTONS**.
- To change a specific parameter in the **SETPOINTS** menu, press the **SELECT (ENTER) BUTTON** to display its current value. Press the **SCROLL (UP/DOWN) BUTTONS** to change or increase/decrease value. Press the **SELECT (ENTER) BUTTON** to save the new customized value—“CHANGE STORED” will be displayed. Press the **SELECT (ENTER) BUTTON** again to return to current menu parameter.
- For specific **SETPOINTS** level information, refer to **Table 4** on page 12.

**TABLE 4**  
**Setpoints Menu Levels**

Menu Level	Default Value	Range	Notes
MAT SET	53°F	38°F to 65°F	Mixed Air Temperature setpoint at which the economizer damper will begin to modulate to maintain setting
LOW T LOCK	0°F	-45°F to 80°F	Low outdoor ambient temperature for compressor lockout
DRYBLB SET	60°F	48°F to 80°F	Maximum outdoor temperature setting for “free” economizer cooling
ENTH CURVE	ES3	ES1, ES2, ES3, ES4 or ES5	Enthalpy boundary “curves” for economizers using temp/humidity sensor, see “Enthalpy Settings” explanation
MIN POS	2V	2 to 10 VDC	Actuator voltage for Minimum Position – see <b>Minimum Position Note</b>
EXH1	50%	0 to 100%	Setpoint for damper if exhaust fan is powered by economizer
EXH2	6%	0 to 100%	Setpoint for AUX output signal

**NOTE:** At this point in time, the economizer assembly should be fully functional and ready for preliminary testing.

4. **CHECKOUT:** from the main screen, press the **SCROLL (UP/DOWN) BUTTONS** to navigate through the six (6) basic menu items to the **CHECKOUT** menu.

- Push the **SELECT (ENTER) BUTTON** to choose the **CHECKOUT** menu.
- Navigate through the multiple levels of **CHECKOUT** by pushing the **SCROLL (UP/DOWN) BUTTONS**.
- To perform a specific test in the **CHECKOUT** menu, press the **SELECT (ENTER) BUTTON** to choose a particular exercise, “**RUN?**” will appear. Press the **SELECT (ENTER) BUTTON** again to activate this exercise. After a short pause, “**IN PROGRESS**” will appear as the test activates. “**DONE**” will display after the test is complete. Press the **MENU UP (EXIT) BUTTON** to end the test and/or turn off the activated relay.
- For specific **CHECKOUT** level information, refer to **Table 5**.

**NOTE:** **CHECKOUT** functions bypass the normal 5-minute delay for compressor protection. Be sure to allow for enough time to pass between tests so the compressor is not damaged from extreme short-cycling.

**TABLE 5**  
**Checkout Menu Levels**

Menu Level	Notes
DAMPER VMIN-HS	Positions damper to the minimum amount of opening allowed by actuator
DAMPER VMAX-HS	Opens damper to the MIN POS level indicated in the <b>SETPOINTS</b> menu. See <b>Minimum Position Note</b> above.
DAMPER OPEN	Forces damper to full open position, energizes exhaust contacts
DAMPER CLOSE	Positions damper to completely closed position
CONNECT Y1-O	Forces Y1-OUTPUT to compressor
CONNECT Y2-O	Forces Y2-OUTPUT to compressor
CONNECT AUX	Depending upon AUX OUT setting from <b>SETUP</b> menu: NONE – no action ERV – 24VAC out for ERV & NOT Economizer SYS – 24VAC out for alarm

**NOTE:** Economizer assembly should be ready to put into service. At any point during operation, in economizer mode or idle, real-time information from sensors and integral components can be accessed from the **STATUS** menu.

5. **STATUS:** from the main screen, press the **SCROLL (UP/DOWN) BUTTONS** to navigate through the six (6) basic menu items to the **STATUS** menu.

- Push the **SELECT (ENTER) BUTTON** to choose the **STATUS** menu.
- Navigate through the multiple levels of **STATUS** by pushing the **SCROLL (UP/DOWN) BUTTONS**.
- As the **STATUS** menu simply gives input/output information in real-time, there is no way to change or otherwise alter the displayed criteria. It is simply a window into the operation of the economizer controller.
- For specific **STATUS** level information, refer to **Table 6**.

**NOTE:** Upon power-up (or after power failure or low voltage condition), the controller will begin a 5-minute time delay before enabling mechanical cooling.

**TABLE 6**  
**Status Menu Levels**

Menu Level	Default Value	Notes
ECON AVAIL	YES/NO	Indicates if conditions are favorable for economizing
ECONOMIZING	YES/NO	Indicates if economizer is actively economizing
OCCUPIED	YES/NO	Indicates if dedicated 24V occupied signal is being received on terminal OCC
HEAT PUMP	COOL/HEAT	Displays actual compressor use if in HEAT PUMP mode
COOL Y1-IN	ON/OFF	Indicates if 24V signal is being received on terminal Y1-I
COOL Y1-OUT	ON/OFF	Displays if controller is actively calling for mechanical compressor cooling (24V on Y1-O)
COOL Y2-IN	ON/OFF	Indicates if 24V signal is being received on terminal Y2-I
COOL Y2-OUT	ON/OFF	Displays if controller is actively calling for Stg. 2 cooling (24V on Y2-O)
MA TEMP	0° to 140°F	Current mixed air temp
OA TEMP	-40° to 140°F	Current outdoor air temp
OA HUM	0% to 100%	Current outdoor air humidity for economizers using temp/humidity sensor
DAMPER OUT	2.0 to 10.0	Displays voltage to actuator
ACT POS	0 to 100%	Current % of opening
ACT COUNT	N/A	Current count of actuator cycles from installation
ACTUATOR OK	YES/NO	Indicates potential fault
EXH1 OUT	ON/OFF	Output of EXH1 Terminal
MECH COOL ON	0, 1, or 2	Stages of mechanical cooling currently active

**NOTE:** If there are any potential problems recognized by the economizer controller, it may be registered in the form of an alarm in the ALARM(S) menu. If there is a period of inactivity AND there is an alarm registering, the controller will randomly scroll through the ALARM(S) menu items as a screensaver.

**ALARM(S):** from the main screen, press the **SCROLL (UP/DOWN) BUTTONS** to navigate through the six (6) basic menu items to the **ALARM(S)** menu.

- Push the **SELECT (ENTER) BUTTON** to choose the **ALARM(S)** menu.
- Navigate through the current alarms in **ALARM(S)** by pushing the **SCROLL (UP/DOWN) BUTTONS**.
- Once the alarm has been identified, and the cause has been removed (e.g., replaced faulty sensor), the alarm may erase itself. If a manual alarm-erasing is required, it can be cleared from the display by

navigating to the desired alarm and pressing the **SELECT (ENTER) BUTTON** to choose that specific alarm. “ERASE?” will display. Press the **SELECT (ENTER) BUTTON** again. “ALARM ERASED” will appear. Press the **MENU UP (EXIT) BUTTON** to complete the action and return to the previous menu.

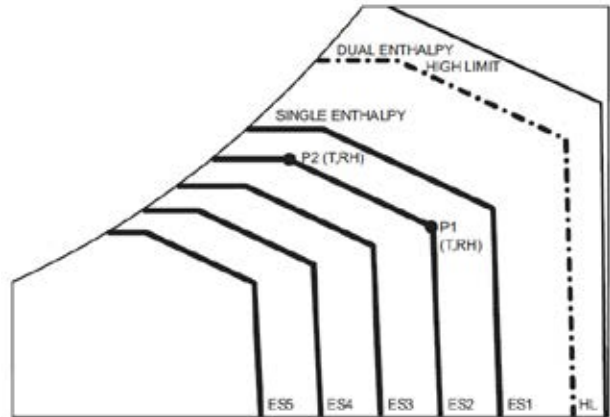
- For specific **ALARM(S)** information, refer to **Table 7**.

**TABLE 7**  
**Alarm Examples**

Alarm(s)	Notes
MA T SENS ERR	Malfunctioning mixed air sensor
OA T SENS ERR	Malfunctioning outdoor air sensor
ACT STALLED	Actuator cannot reach desired percentage of opening
SYS ALARM	If AUX is set to SYS in SETPOINTS menu, SYS will display upon any registered alarm
<b>NOTE:</b> This is not a complete list of alarms. Additional alarms will display depending upon the parameter settings and configuration and attached equipment.	

## Enthalpy Settings

If economizer is enthalpy-based, and was shipped with the temp/humidity sensor, the economizer must be programmed for the specific enthalpy curve boundary desired for “free” outdoor cooling. The available enthalpy boundaries are all subject to specific OA temperature, OA humidity, and OA dew points. If all of the OA conditions are below the specific points outlined in each boundary, the conditions are good to economize and economizer mode is set to “YES”. If some or all the OA conditions are above the specific points outlined in each boundary, the conditions are not good to economize and the economizer mode is set to “NO”.



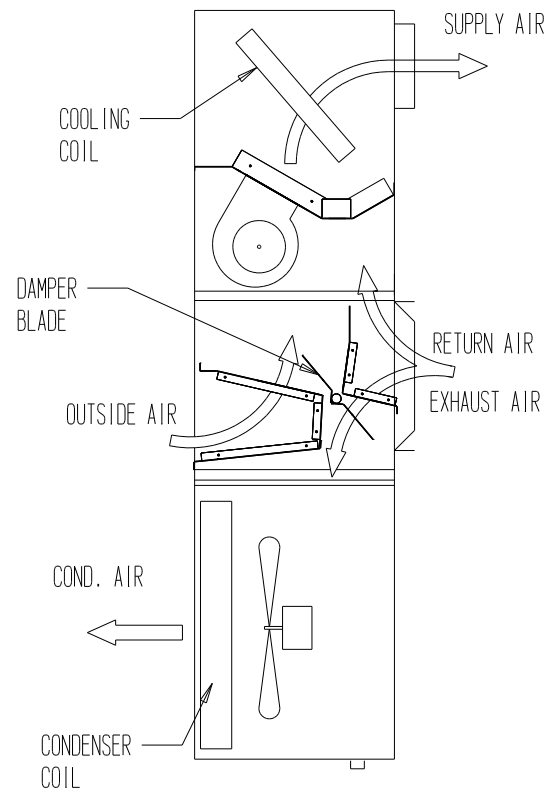
Enthalpy Curve	Temp. Dry Bulb (°F)	Temp. Dewpoint (°F)	Enthalpy (btu/lb/da)	Point P1		Point P1	
				Temp. °F	Humidity % RH	Temp. °F	Humidity % RH
ES1	80.0	60.0	28.0	80.0	36.8	66.3	80.1
ES2	75.0	57.0	26.0	75.0	39.6	63.3	80.0
ES3	70.0	54.0	24.0	70.0	42.3	59.7	81.4
ES4	65.0	51.0	22.0	65.0	44.8	55.7	84.2
ES5	60.0	48.0	20.0	60.0	46.9	51.3	88.5
HL	86.0	66.0	32.4	86.0	38.9	72.4	80.3

## Economizer Sequence of Operation

### Condition — Cool/Dry OA Conditions

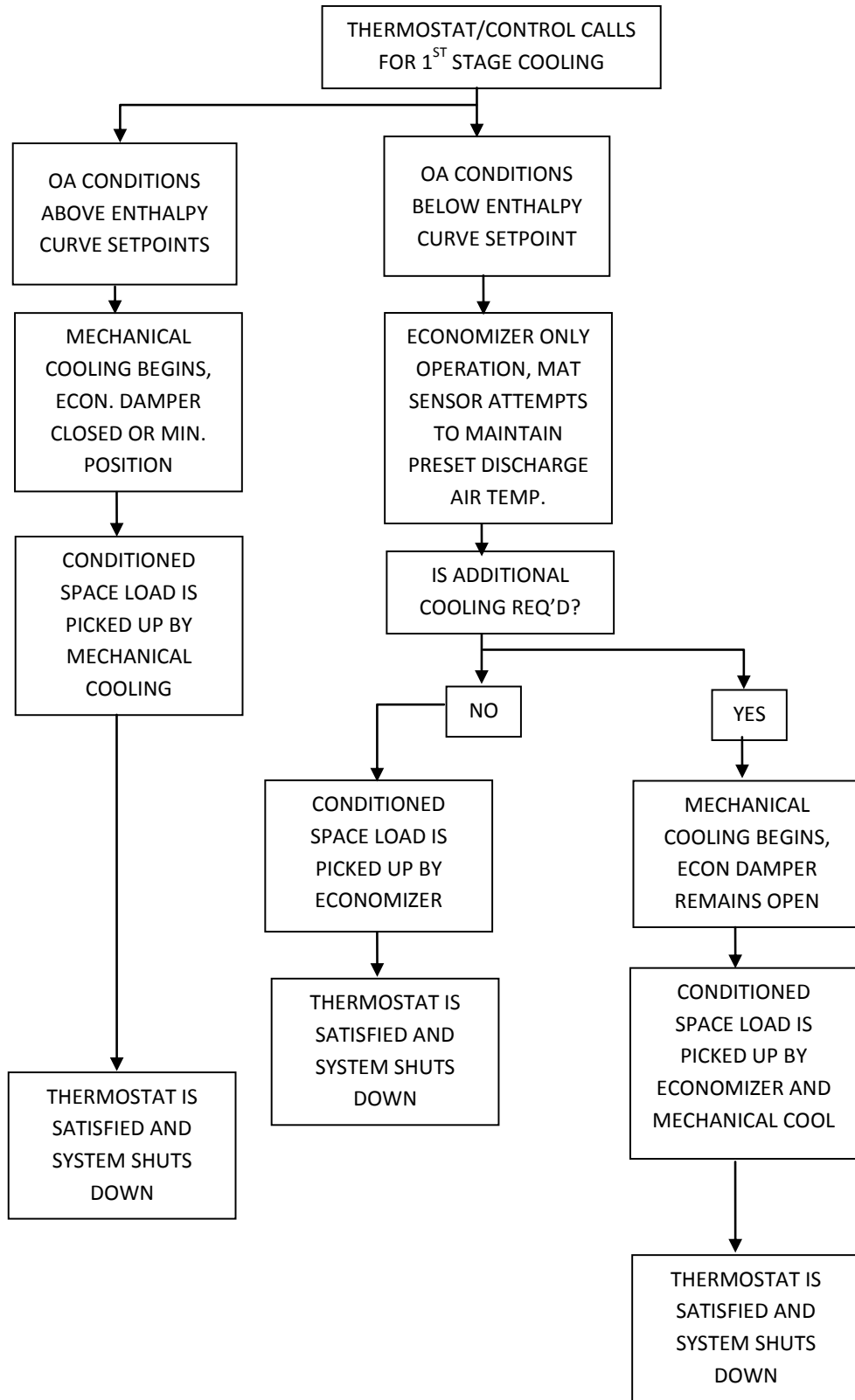
- 1<sup>st</sup> Stage Cooling closes and sends signal to **JADE™** control. Since the air temperature outside is cooler than the preset **DRYBULB SET** setting, or is below the **ENTH CURVE** boundary in the **SETPOINTS** menu, the actuator will power the economizer damper to “economizer” mode as the indoor blower motor starts. The mixed air sensor senses a mixture of return air and cool outdoor air and modulates opening to achieve preset **MAT SET** setting in **SETPOINTS** menu. Compressor operation is inhibited. (See Figure 8.)
- 2<sup>nd</sup> Stage Cooling closes and sends a signal to **JADE™** control, which closes the Y1-O relay to begin mechanical cooling. **The economizer damper REMAINS OPEN in tandem operation with the compressor** as long as the OA conditions do not drop below the preset **DRYBULB SET/ENTH CURVE** settings in the **SETPOINTS** menu.
- 3<sup>rd</sup> Stage Cooling (if available) closes and sends a signal to **JADE™** control, which closes the Y2-O relay to begin 2<sup>nd</sup> stage mechanical cooling. **The economizer damper REMAINS OPEN in tandem operation with the compressor** as long as the temperature outside does not drop below the preset **DRYBULB SET** setting in the **SETPOINTS** menu.

**FIGURE 8**  
Mixed Airflow Path



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## Economizer Operation for Single Stage:



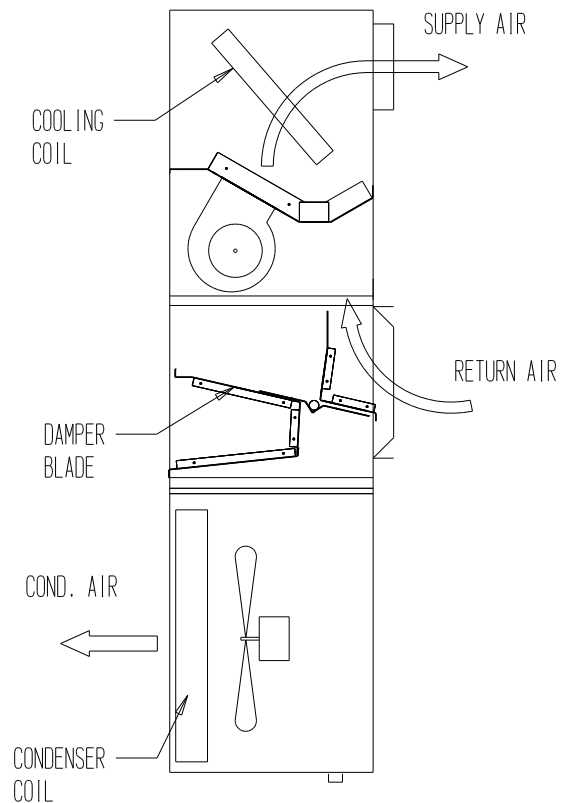


## Economizer Sequence of Operation

### Condition — Warm/Humid OA Conditions

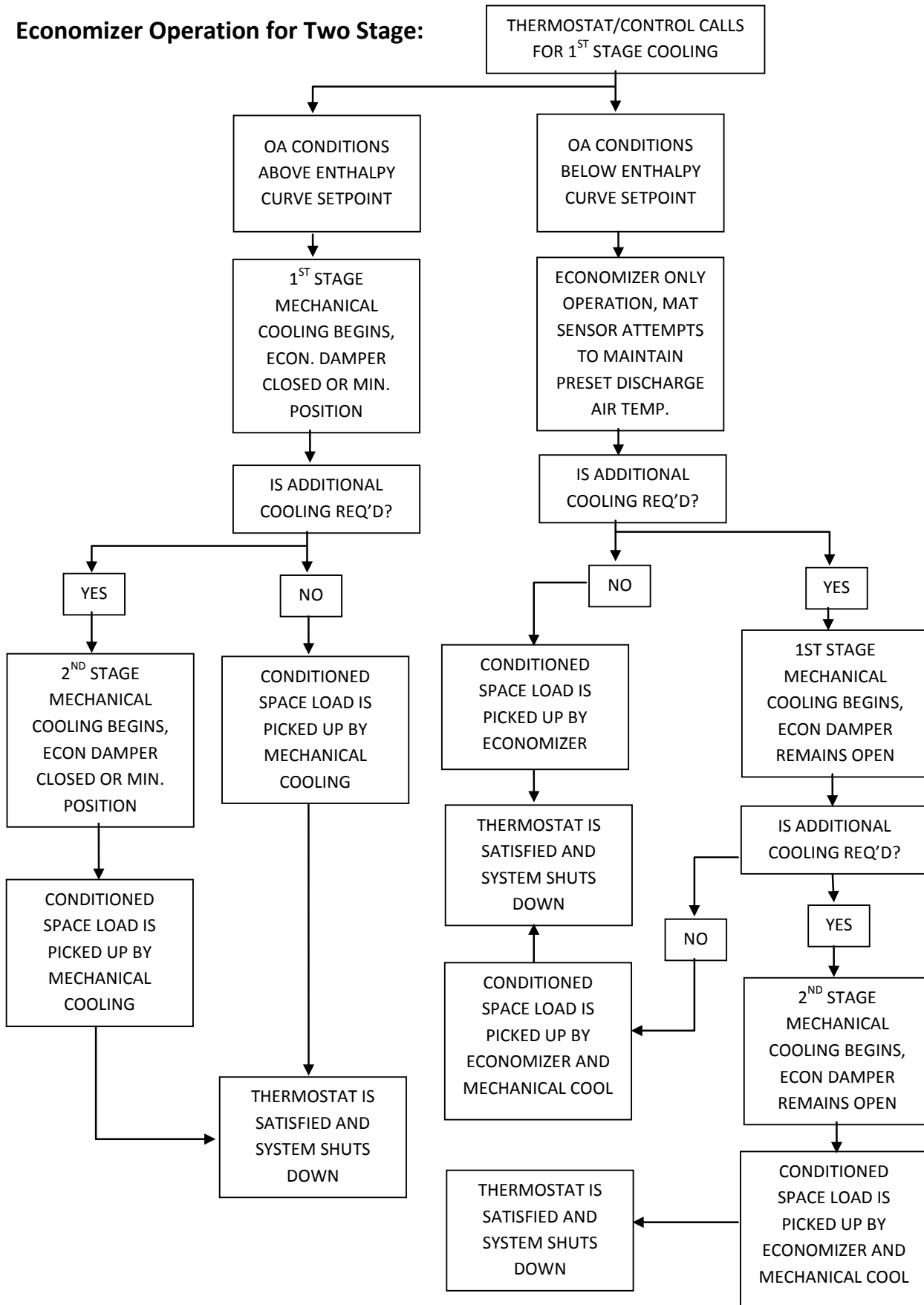
- 1<sup>st</sup> Stage Cooling closes and sends signal to **JADE™** control. Since the OA conditions are above the preset **DRYBULB SET/ENTH CURVE** setting in the **SETPOINTS** menu, the control will simply close the Y1-O relay to initiate mechanical cooling. **The economizer damper will remain closed or in a minimum ventilation setting depending upon occupied status.** (See Figure 9.)
- 2<sup>nd</sup> Stage Cooling (if available) closes and sends a signal to **JADE™** control. Since the OA conditions are still above than the preset **DRYBULB SET/ENTH CURVE** setting in the **SETPOINTS** menu, the control will simply close the Y2-O relay to initiate 2<sup>nd</sup> stage mechanical cooling. **The economizer damper will remain closed or in a minimum ventilation setting depending upon occupied status.** (See Figure 9.)

**FIGURE 9**  
**100% Closed Airflow Path**



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## Economizer Operation for Two Stage:



## Economizer Sequence of Operation

### Balanced Climate Mode – E Option

**Call for cooling and ECONOMIZER IS NOT AVAILABLE (due to outdoor conditions):**

Y1 energizes mechanical cooling and the Balance Climate fan speed simultaneously. If the outdoor conditions are not acceptable, the Y2 terminal will energize full load compressor and increase the fan speed to the rated airflow. When the temperature drops below the Y2 setpoint, the unit will return to part load and Balanced Climate fan speed. When the cooling call is satisfied, the compressor will shut down and the economizer will move to minimum position (ventilation setting) and the fan will continue to run at RATED airflow if A is energized on the low voltage terminal strip.

**Call for cooling and ECONOMIZER IS AVAILABLE (due to outdoor conditions):**

To activate Balanced Climate mode, disconnect jumper in JADE™ controller (see Figure 11 on page 23).

Unit has a call for ventilation: Damper to Min position and fan will run at RATED airflow. Y1 energizes economizer and the Balance Climate fan speed simultaneously. If the temperature continues to rise, the Y2 terminal will energize part load compressor and increase the fan speed to the RATED airflow. When the temperature drops below the Y2 setpoint, the unit will return to part load and Balanced Climate fan speed. When the cooling call is satisfied, the compressor will shut down and the economizer will move to minimum position (ventilation setting) and the fan will increase to run at RATED airflow if A is energized on the low voltage terminal strip.

**TABLE 8  
Unit Operation with E Economizer Option**

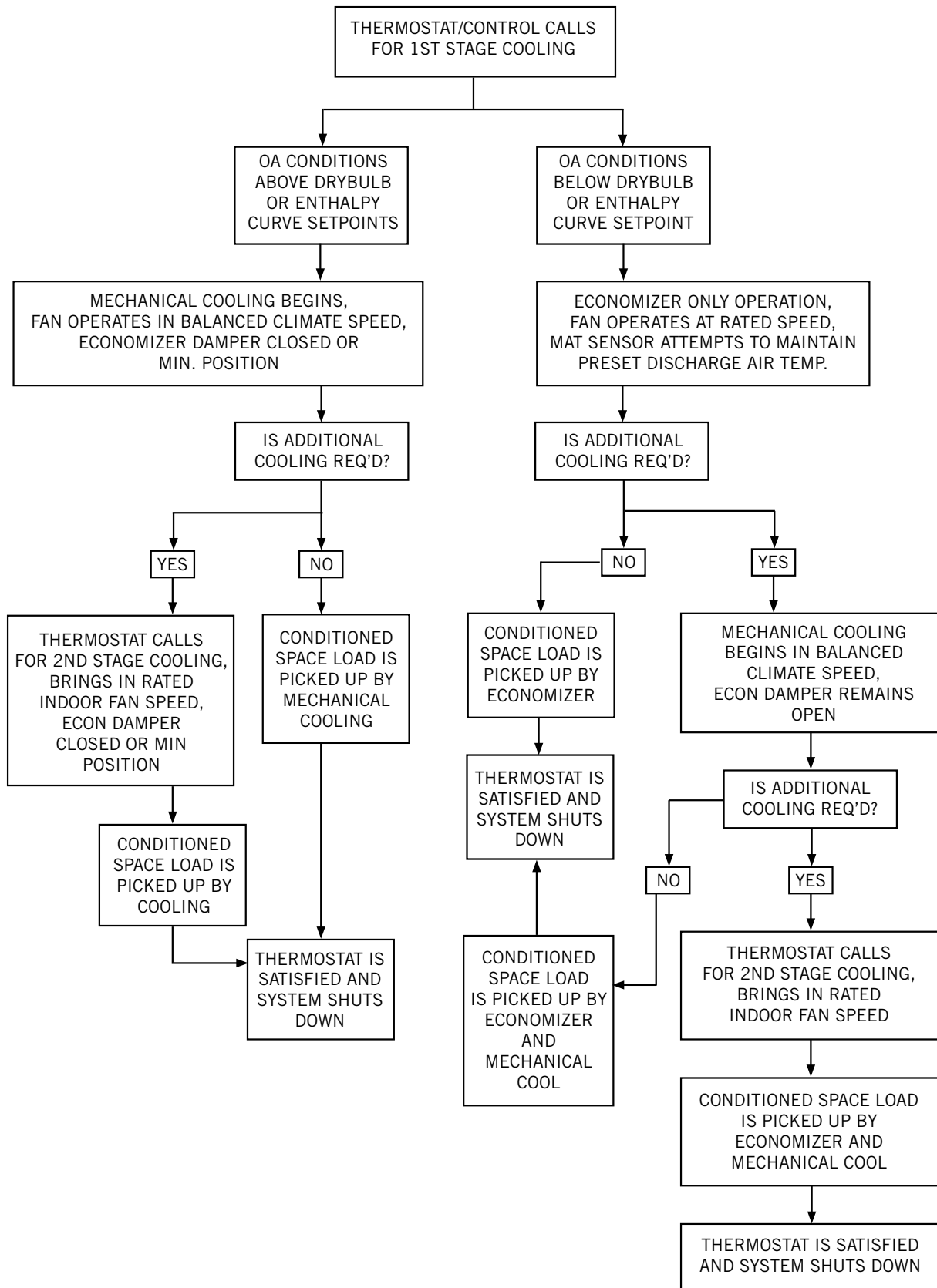
Unit Operation	Occ. Signal	Low Voltage 24VAC							Fan Speed	Compressor Operation	Damper
		G	Y1	Y2	W1	A	1	2-3 <sup>1</sup>			
Fan Only	Yes	X				X		X	Vent	Off	Min Pos
Fan Only	No	X						X	Vent	Off	Closed
BC Cooling	Yes		X			X	X		B Climate	Econ	Min Pos
BC Cooling	No		X				X		B Climate	Econ	Closed
Full Load Cool	Yes		X	X		X	X	X	Lo/Hi	On	Min Pos
Full Load Cool	No		X	X			X	X	Lo/Hi	On	Closed
1st Stage Heat	Yes				X	X		X	Lo/Hi	Off	Min Pos
1st Stage Heat	No				X			X	Lo/Hi	Off	Closed

BC and B Climate – Balanced Climate

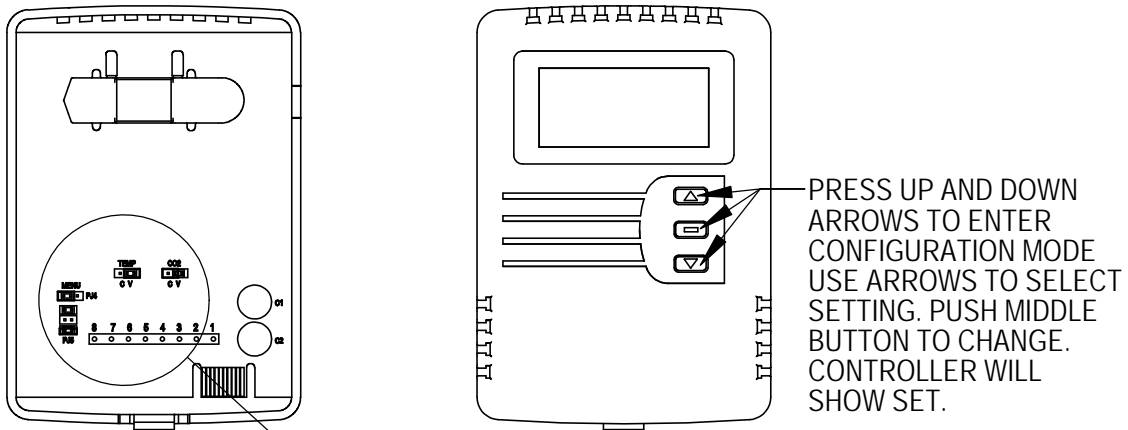
<sup>1</sup> Fan speed is selectable through the blower speed relay. LO (default) or HI speeds can be used.

# Economizer Operation – Balanced Climate Mode

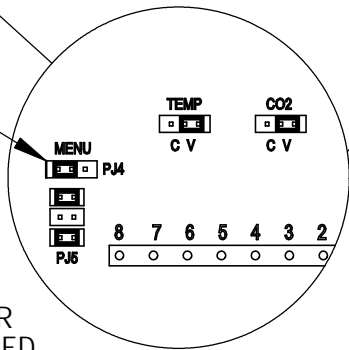
Connector disconnected from JADE™ controller



**FIGURE 10**  
**CO<sub>2</sub> Sensor Default and Final Settings**  
**Bard Part #8403-067 CO<sub>2</sub> Controller**



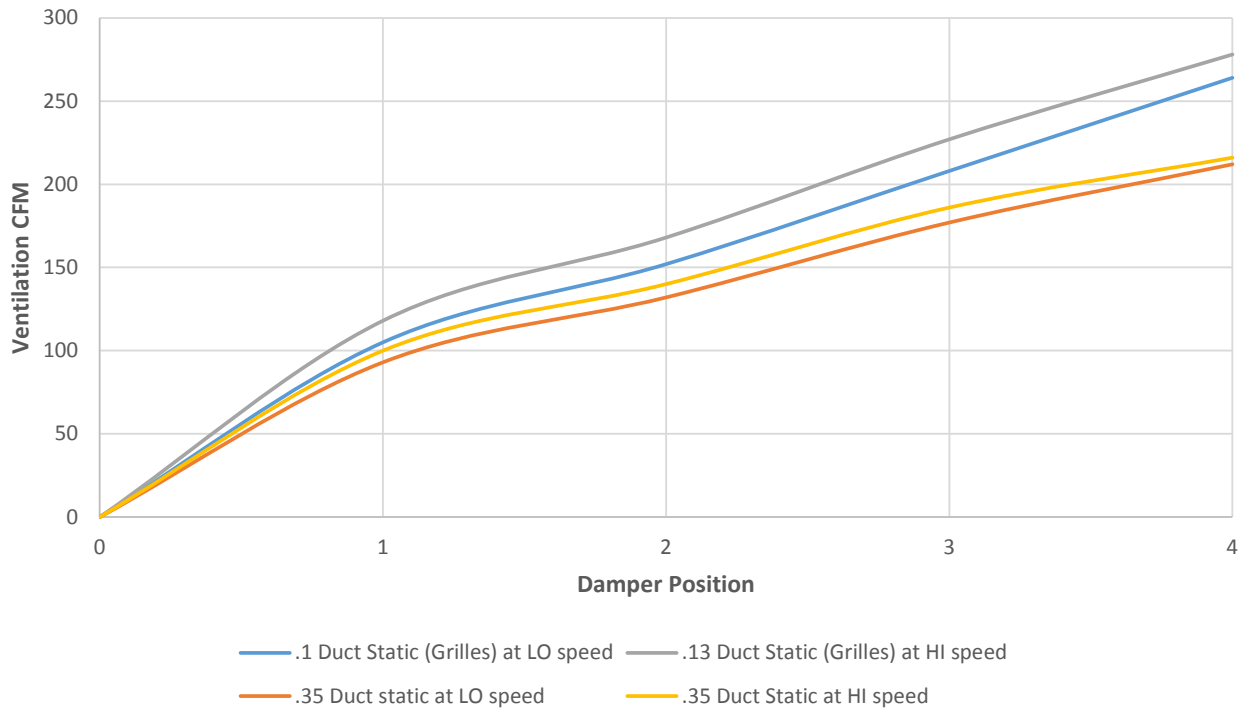
NOTE: MENU JUMPER MUST BE SET TO "ON" TO CHANGE ANY SETTINGS WITH THE FRONT BUTTONS. TO LOCK THE CO<sub>2</sub> CONTROLLER MOVE JUMPER TO "OFF" AFTER IT HAS BEEN CONFIGURED



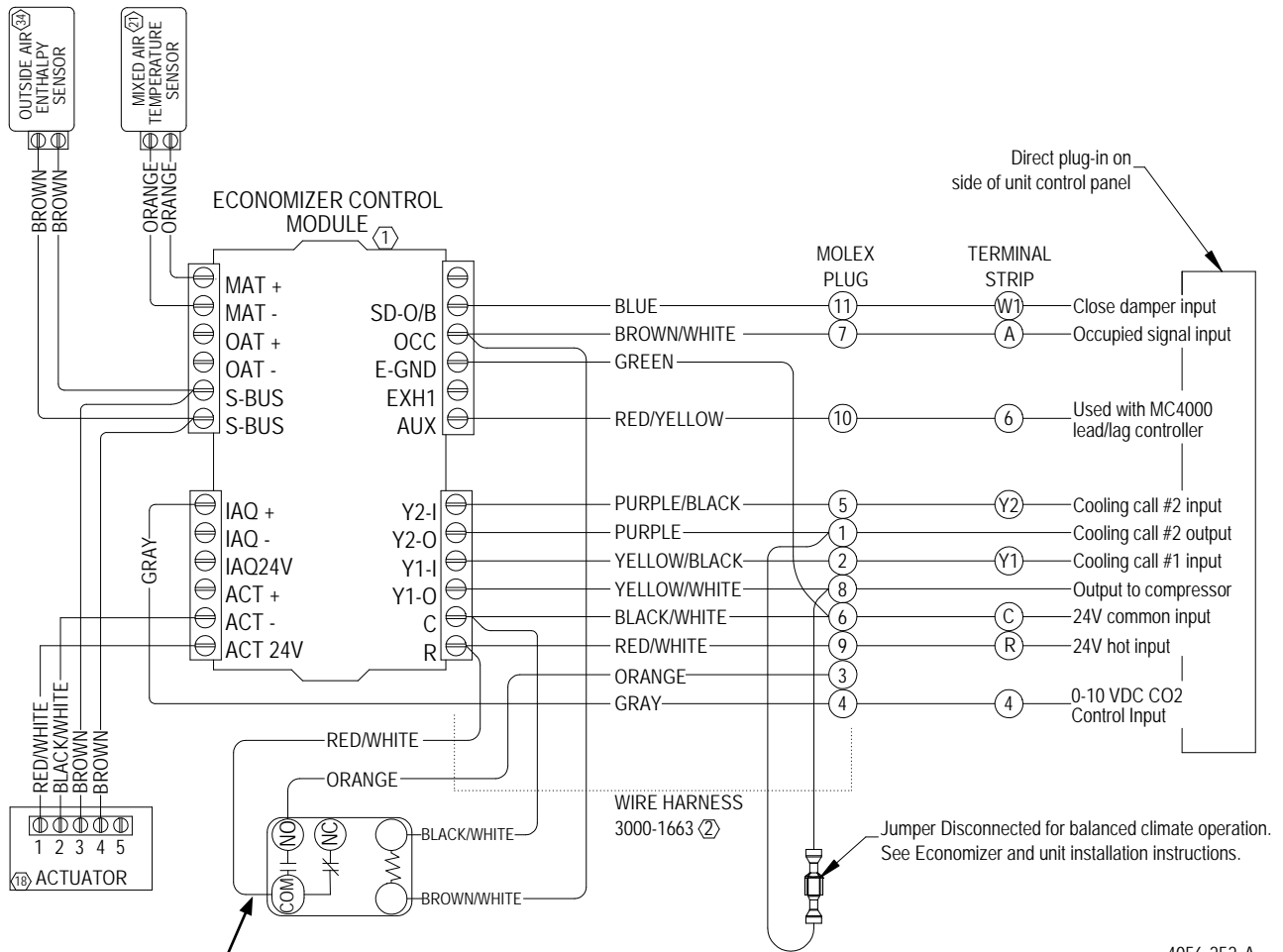
Settings	Recommended	Default
RON	Not Used	
ROF	Not Used	
DSP	C	CT
UNI	US	US
COL	700	0
COH	1500	2000
TOL	Not Used	
TOH	Not Used	
BAR	See Instrution with Controller For High Altitude Installations	
CAL	Used for Field Calibration	

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**GRAPH 1**  
**W12AB JIFM-1B Ventilation Delivery**



**FIGURE 11**  
**Wiring Diagram – Enthalpy Sensor**



Move this RED/WHITE wire from COM to NC if jumper is used between A and G. See page 9 for additional information.

4056-252 A