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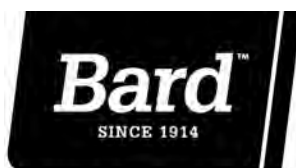
# INSTALLATION INSTRUCTIONS

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## ECONOMIZER WITH EXHAUST

MODEL  
WGJIFM-3  
WGJIFM-5  
WGSJIFM-5

For Use with Bard 3 - 5 Ton Step Capacity  
and  
2 - 5 Ton Single Stage  
Wall Mount Air Conditioners with Gas Heat



*Climate Control Solutions*

Bard Manufacturing Company, Inc.  
Bryan, Ohio 43506

*Since 1914...Moving ahead just as planned.*

Manual : 2100-589A  
Supersedes: 2100-589  
File: Tab 19  
Date: 05-28-14

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**BARD MANUFACTURING COMPANY, INC.**  
**BRYAN, OHIO USA 43506**

# GENERAL

## GENERAL INFORMATION

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

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

The economizer installation will function normally with the 2-stage thermostats already specified for usage with this 2-stage cooling unit.

If the “free cooling” of the economizer cannot keep up with the cooling demand, the compressor will then operate on 2nd stage mechanical cooling call. **Because of this, all units equipped with an economizer need to be equipped with the low ambient control.** For field installed applications, install Bard Low Ambient Control Kit:

|                 |        |
|-----------------|--------|
| W24G - W60G     | CMA-6  |
| WG3S - WG5S     | CMA-28 |
| W24G*D - W60G*D | CMA-28 |

If using a Bard Master Controller, the Bard MC4000 controller is designed to control two (2) redundant Bard Wall Mount units equipped with economizers. Refer to the MC4000 Installation Manual (or consult Bard Technical Service) for the required connections and sequence of operation.

## 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 ventilator 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 WGJIFM-3 economizer is designed to be used with Bard W24G to W36G 1-stage cooling, 1-stage heating gas electric model wall mounts that are equipped with fan cycling controls; the WGJIFM-5 economizer is designed to be used with Bard W48G to W60G 1-stage cooling, 1-stage heating gas electric model wall mounts that are equipped with fan cycling controls and the WGSJIFM-5 economizer is designed to be used with Bard WG\*S 2-stage cooling wall mounts that are equipped with fan cycling controls.

These are electromechanical economizer systems designed to provide “free” cooling where the outdoor air temperature is cool enough to provide the needed cooling without running the compressor. When cooling is needed, the system automatically takes advantage of the cold outdoor air when available, and uses it for first stage cooling. This operation 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 gets too warm or humid to be helpful, the enthalpy control detects the condition and automatically operates the internal damper and switches on the mechanical cooling. This is all accomplished automatically without attention from the user to achieve maximum savings.

Reference pages 13 and 14 for block diagrams of the economizer operation logic flow. These units are equipped with full modulating type damper motors, which control the damper position to a factory set minimum supply air temperature.

## MODELS

When installed in model series (see Table 1), all JIFM models provide built in exhaust provisions. When the damper blade opens to bring fresh air in, the damper also opens an exhaust relief. The exhaust air will flow into the condenser section of the unit. The condenser fan will help draw exhaust air out.

TABLE 1

|           |                      |
|-----------|----------------------|
| WGSJIFM-5 | WG3S<br>WG4S<br>WG5S |
| WGJIFM-3  | W24G<br>W30G<br>W36G |
| WGJIFM-5  | W42G<br>W48G<br>W60G |

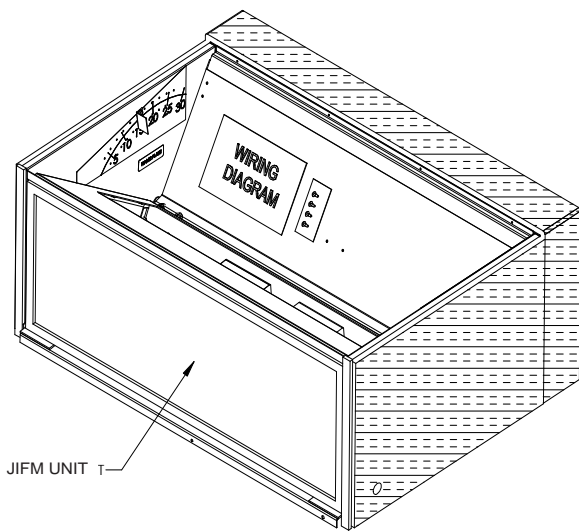
# INSTALLATION

## WARNING

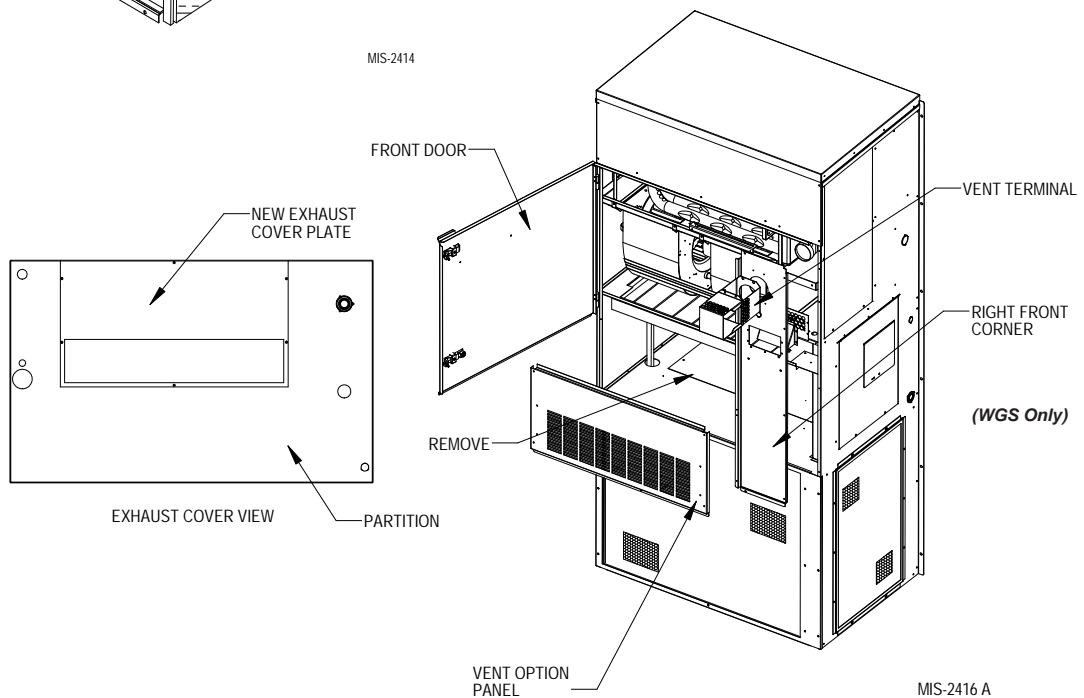
*Open and lock unit disconnect switch before installing this accessory to prevent injury or death due to electrical shock or contact with moving parts. Turn the thermostat to off.*

### BASIC INSTALLATION

1. Unpack the ventilator assembly which includes the integral ventilator with attached electrical harness, exhaust opening adapter plate and miscellaneous hardware.
2. Remove and save the existing exterior blower access and service access panels (see Figure 1). For the WGSJIFM model only, remove the right front cover.
3. Remove and discard exhaust cover plate.
4. In rear of opening towards duct connection, install exhaust opening adaptor plate (included).



**FIGURE 1**  
Removal of Exterior Panels

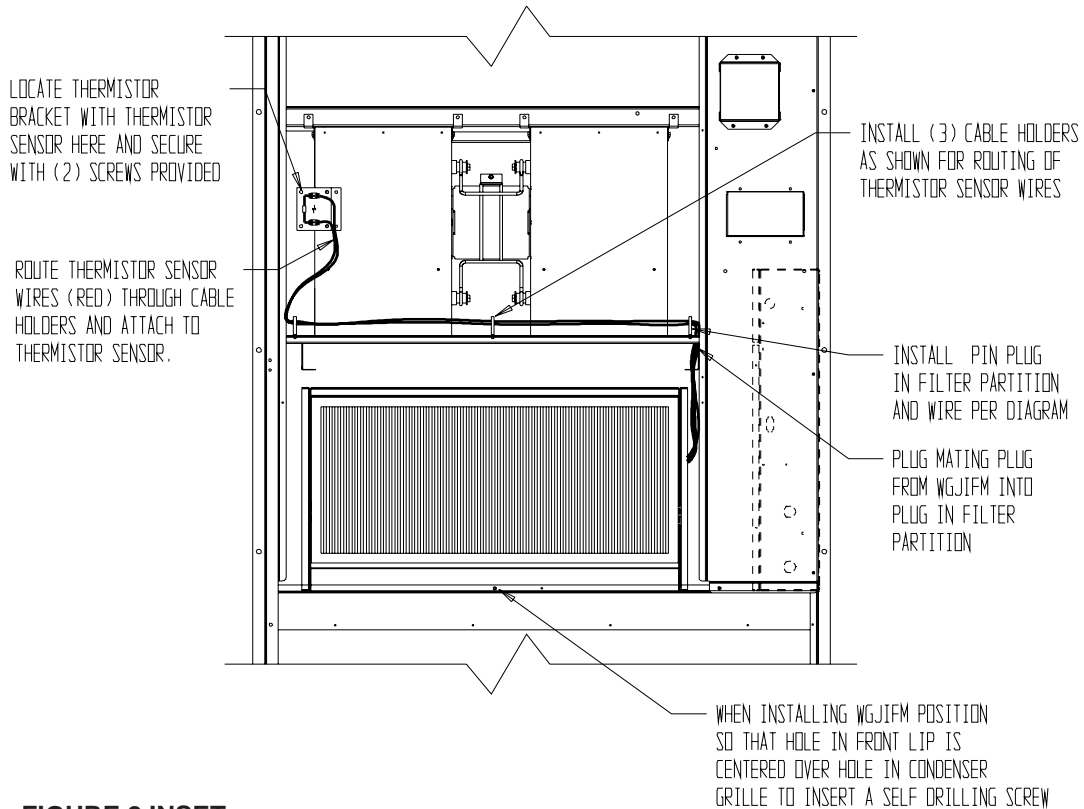


5. Install ventilator sheet metal assembly by inserting the ventilator into the unit, centering between the tubing on the left and the control panel on the right. Once the ventilator is fully inserted, slide the ventilator to align screw hole through the front of the condenser grille. (See Figure 2.)

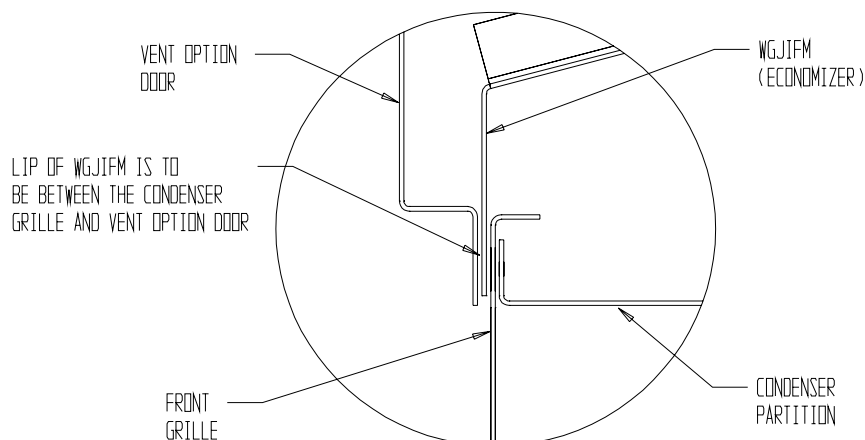
**IMPORTANT:** Position front lip of ventilator on top of front grille and condenser partition. (See Figure 2 inset.) This is important to ensure proper drainage of any water entering damper assembly.

6. Open control panel to gain access to unit low voltage terminal block.
7. Install loose piece wire harness plug into filter tray and route wires into low volt box. (See Figure 3 on page 6.) Save back two (2) long red wires with push-on terminals.)
8. Plug wire plug from vent package installed in Steps #1 through #6 into plug installed in Step #7.

**FIGURE 2**  
Installation of Economizer

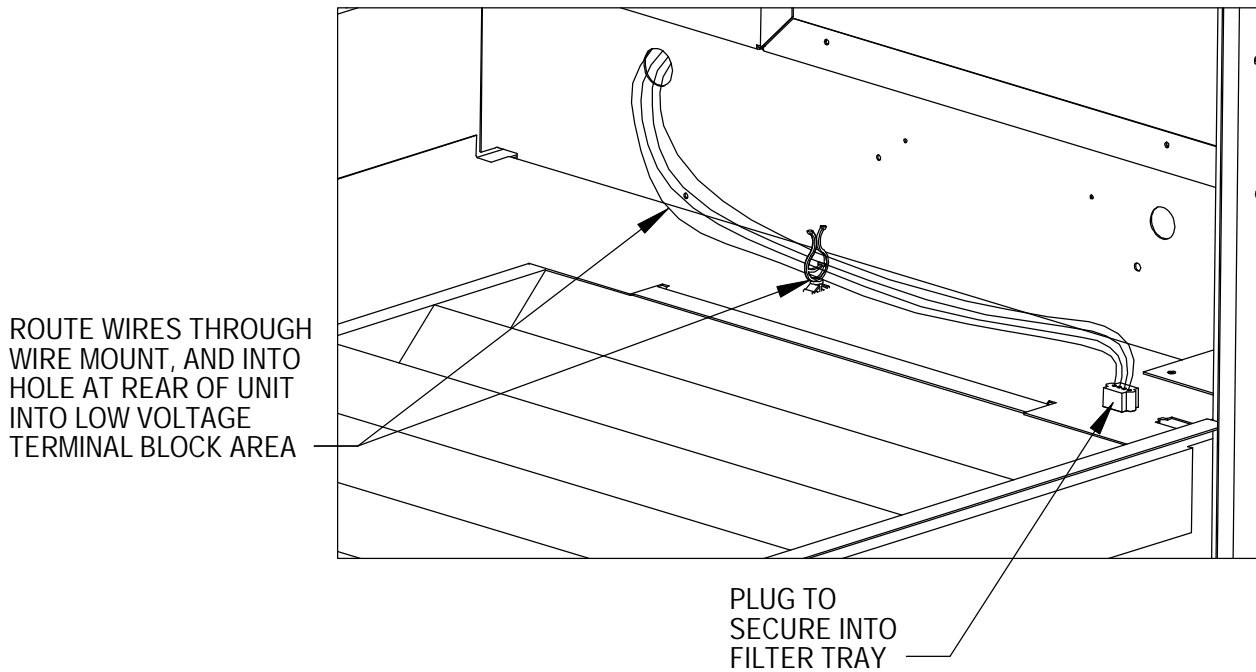


**FIGURE 2 INSET**  
SIDE SECTION



MIS-1625 B

**FIGURE 3**  
**Install Loose Piece Wire Harness Plug**



MIS-2415

9. Mount mixed air thermistor sensor to blower as shown with screws provided as shown in Figure 2 on page 4. Route two (2) red wires from wire harness installed in Step #7 through cable holders and connect to thermistor sensor.
10. Connect the wires (with fork connectors) routed into the low voltage box in Step #7 to the low voltage terminal strip per the appropriate wiring diagram (refer to pages 23-25).
11. Replace right front unit corner and vent terminal.
12. Close upper unit door to seal blower discharge air.
13. See Start-Up/Checkout Procedures on next page to activate and verify economizer functions.

## 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.

### START-UP/CHECKOUT PROCEDURES

The JADE™ economizer controller is preset with “default” values that were pre-determined as optimum for school buildings, and these are shown in Tables 2-4 on the following pages. 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.

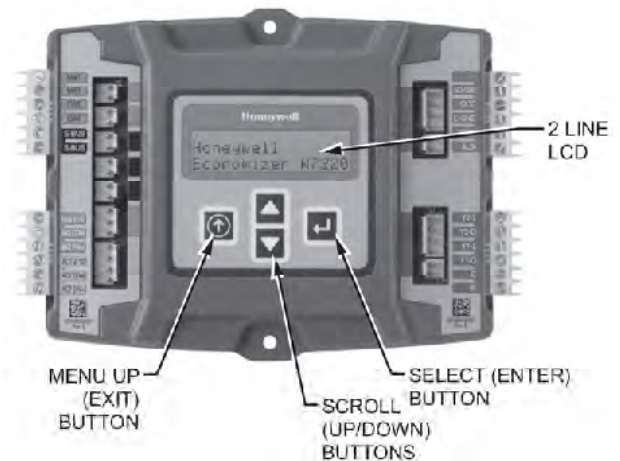
There are six (6) basic MENU categories to navigate:

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

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

**FIGURE 4**  
**JADE™ Economizer Controller**



**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

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)**

**TABLE 2**  
**System Setup (Menu Levels)**

| Menu Level      | Default Value | Range                      | Notes   |
|-----------------|---------------|----------------------------|---|
| INSTALL         | 01/01/10      |                            | Display Order = MM/DD/YY<br>Setting Order = DD/MM/YY                  |
| UNITS DEG       | °F            | °F / °C                    | Sets controller to read in either measurements                        |
| EQUIPMENT       | HP(B)         | HP                         | Heat Pump HP *<br>CONV = A/C  |
| AUX IN          | HP(B)         | HP (O)<br>HP (B)           | Energize on Cool *<br>Energize on Heat                                |
| FAN SPEED       | 1 Speed       | 1 Speed<br>2 Speed         |   |
| FAN CFM         | 5000          | 100 to<br>15,000           | Not applicable  |
| AUX OUT         | EXH2          | NONE<br>ERV<br>EXH2<br>SYS | Product can be used to signal other devices                           |
| OCC             | INPUT         | INPUT or<br>ALWAYS         | INPUT is for dedicated OCC signal, ALWAYS is for all other situations |
| FACTORY DEFAULT | NO            | YES or<br>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.

**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**.
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.

**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 3 <sup>rd</sup> 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                                       |

Press the **SELECT (ENTER) BUTTON** again to return to current menu parameter.

- For specific **SETPOINTS** level information, refer to **Table 4**.

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

**TABLE 4**  
**Setpoints (Menu Levels)**

| Menu Level | Default Value | Range                     | Notes  |
|------------|---------------|---------------------------|--|
| MA T 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    | 2.0V          | 2 to 10 VDC               | Actuator voltage for Minimum Position  |
| 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   |



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

**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.

**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 Minimum Position Ventilation Setup Procedure (Pg. 16)                 |
| 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:<br>NONE – no action<br>ERV – 24VAC out for ERV & NOT Economizer<br>SYS – 24VAC out for alarm |

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** on page 10.

**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.

6. **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** on page 10.

**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.

**TABLE 6**  
**Status (Menu Levels)**

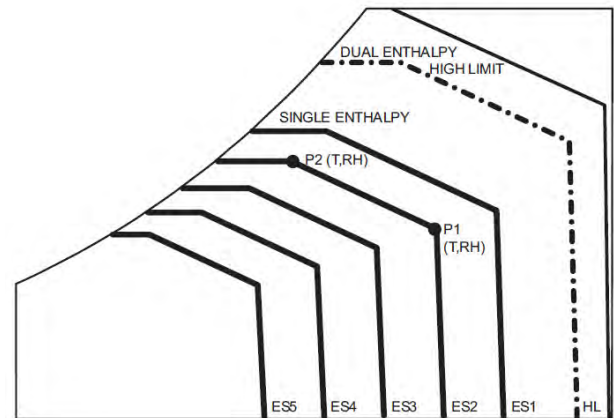
| Menu Level   | Range         | Notes  |
|--------------|---------------|--|
| ECON AVAIL   | YES/NO        | Indicates if conditions are favorable for economizing                                      |
| ECONOMIZING  | YES/NO        | Indicates if economizer is actively economizing  |
| OCCUPIED     | 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  |

**TABLE 7**  
**Alarms (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 |
| NOTE: 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 outdoor ambient (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 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% outdoor 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.

## ECONOMIZER SEQUENCE OF OPERATION

### Condition – Cool/Dry Outdoor Ambient Conditions

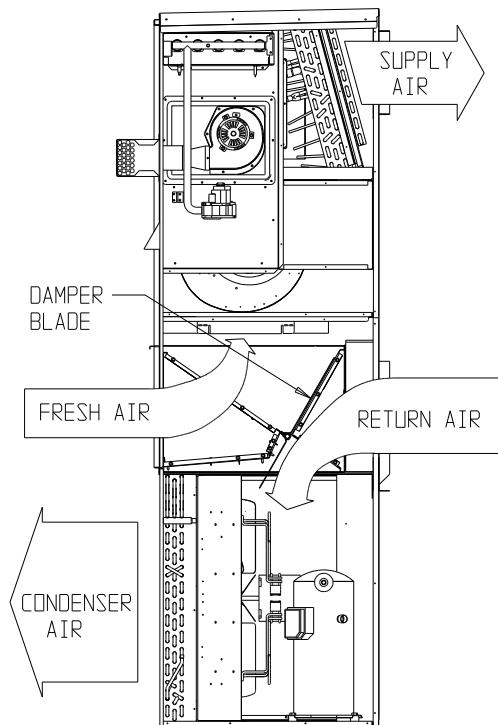
1. 1<sup>st</sup> Stage Cooling closes and sends signal to **JADE™** control. Since the air temperature outside is cooler than the preset **DRYBULB SET** setting, or is below the **ENTH CURVE** boundary in the **SETPOINTS** menu, the actuator will power the economizer damper to “economizer” mode as the 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 5.)
2. 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. 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.

### Condition – Warm/Humid Outdoor Ambient Conditions

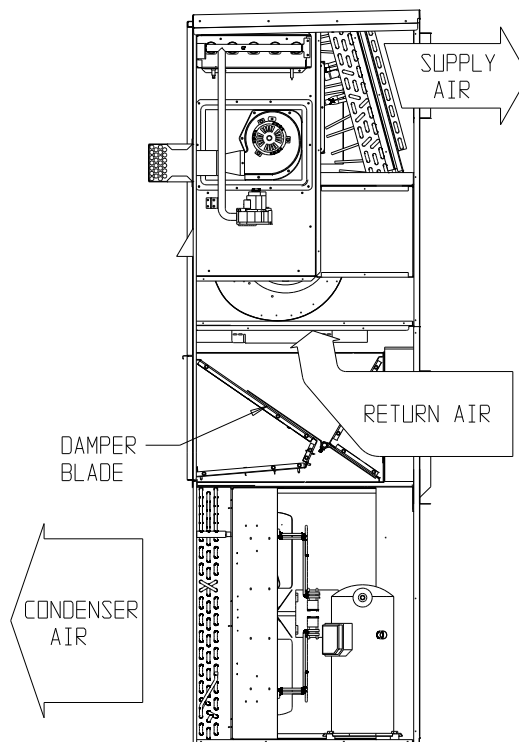
1. 1<sup>st</sup> Stage Cooling closes and sends signal to **JADE™** control. Since the outdoor air conditions are above the preset **DRYBULB SET/ENTH CURVE** setting in the **SETPOINTS** menu, the control will simply close the Y1-O relay to initiate mechanical cooling. **The economizer damper will remain closed or in a minimum ventilation setting depending upon occupied status.** (See Figure 6.)
2. 2<sup>nd</sup> Stage Cooling (if available) closes and sends a signal to **JADE™** control. Since the outdoor air 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.**

**FIGURE 5**  
100% Outside Airflow Path



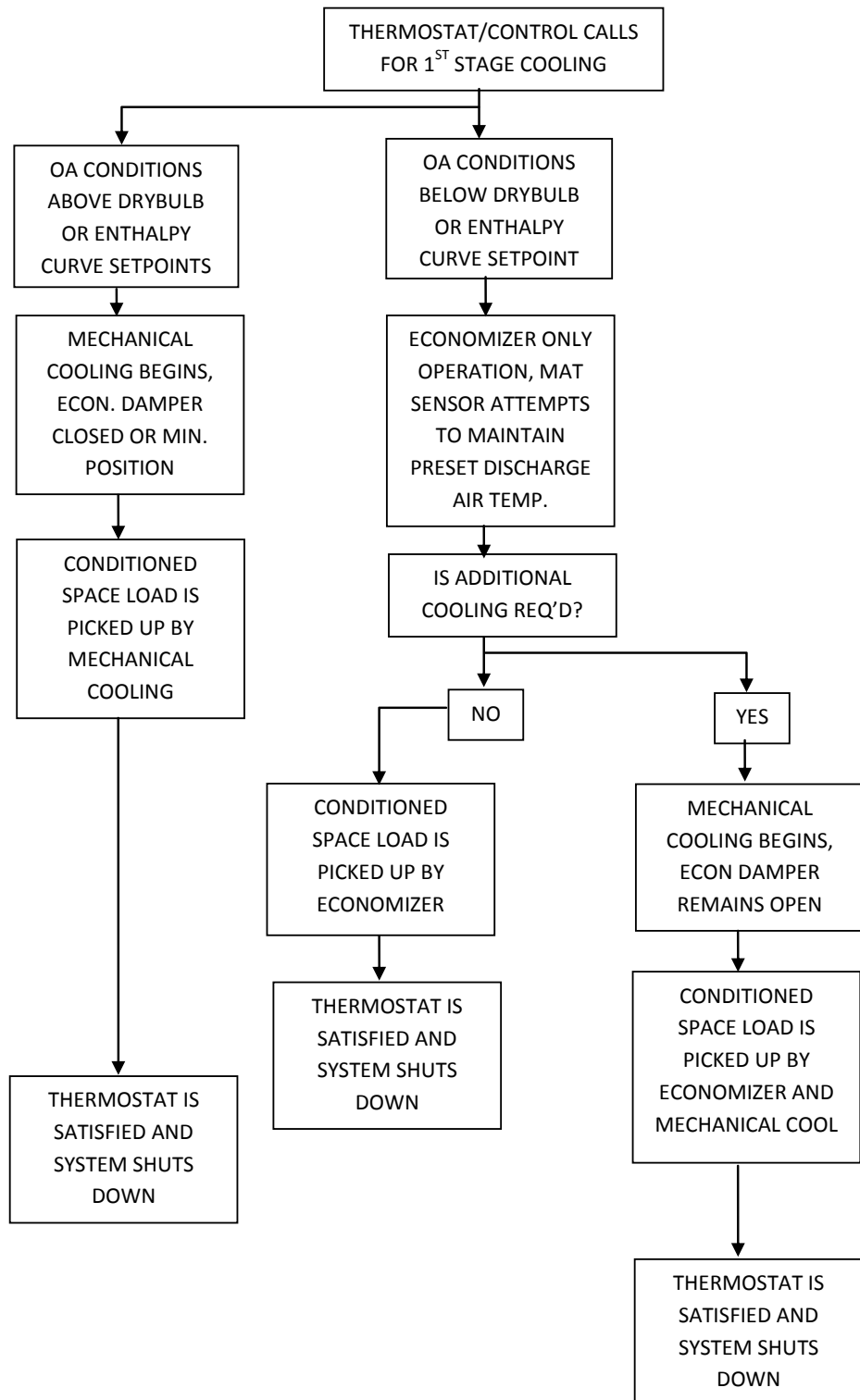
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**FIGURE 6**  
100% Closed Loop Airflow Path

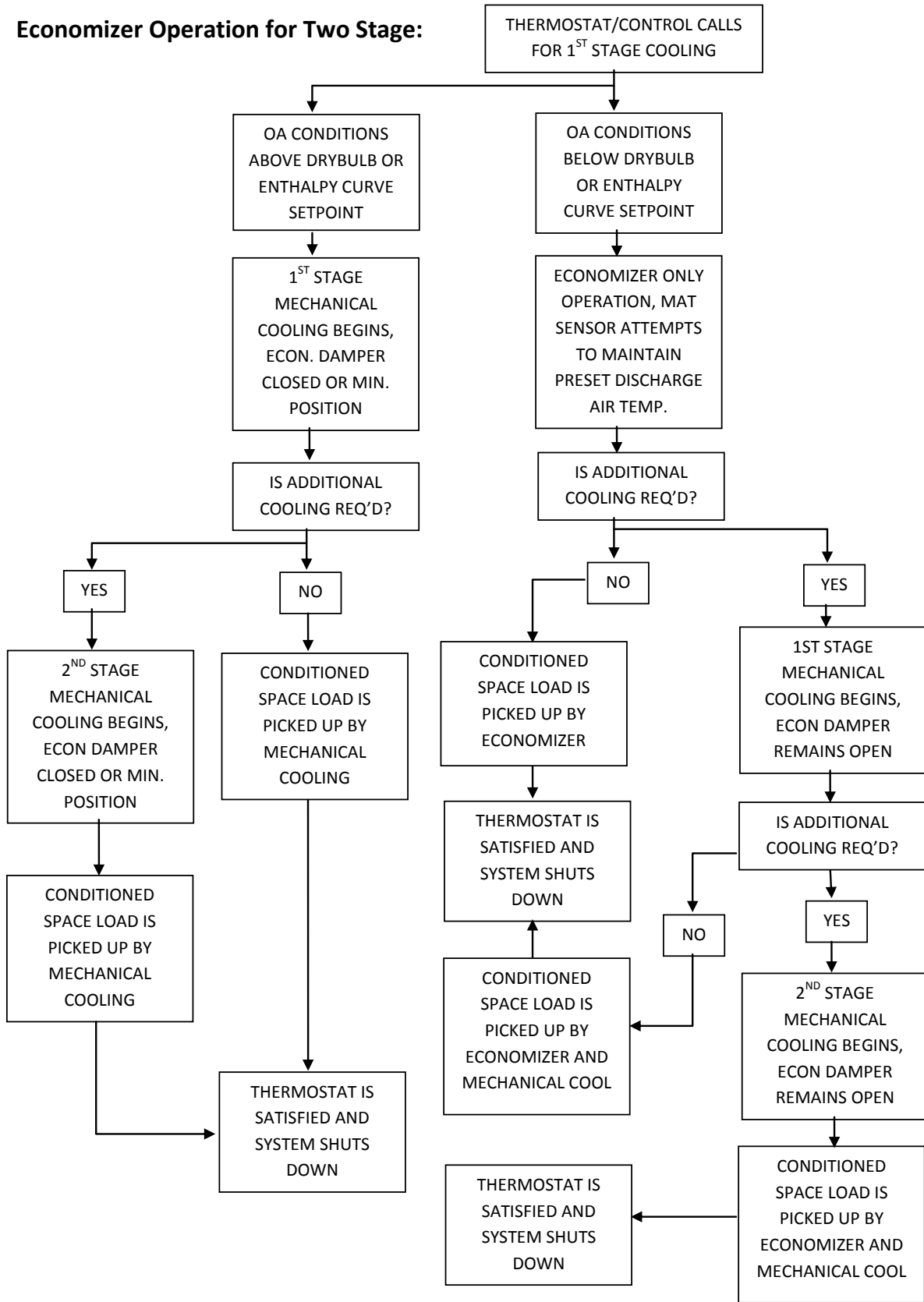


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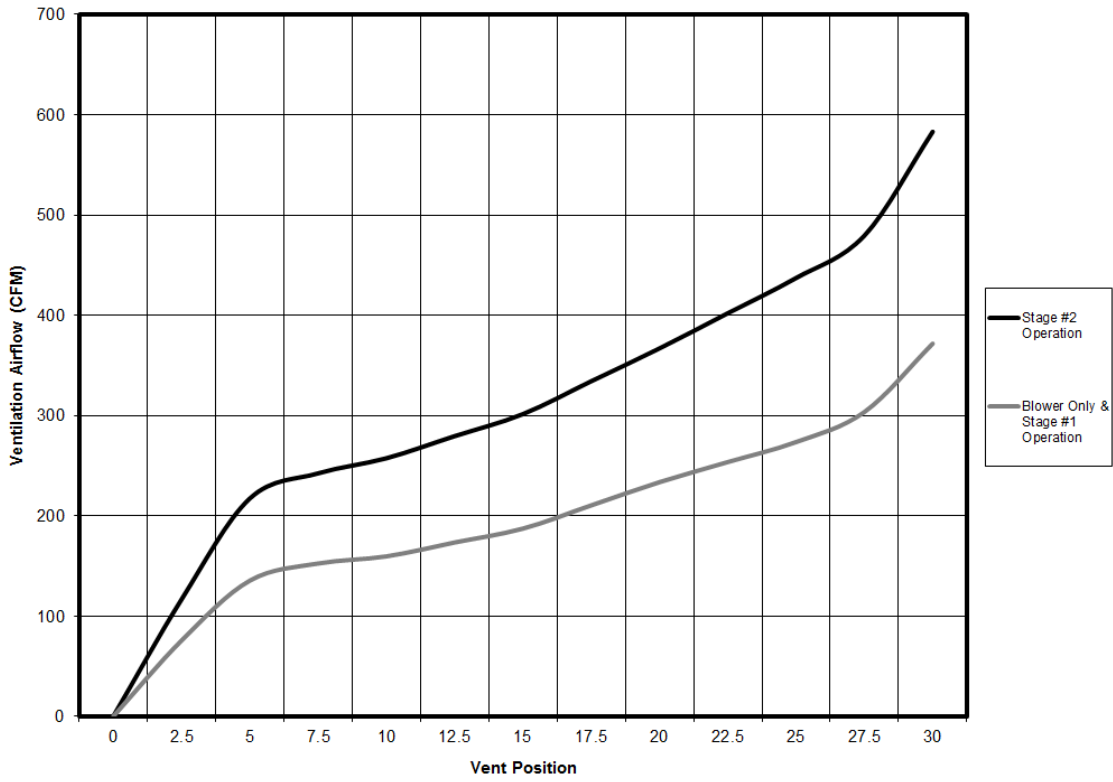
## Economizer Operation for Single Stage:



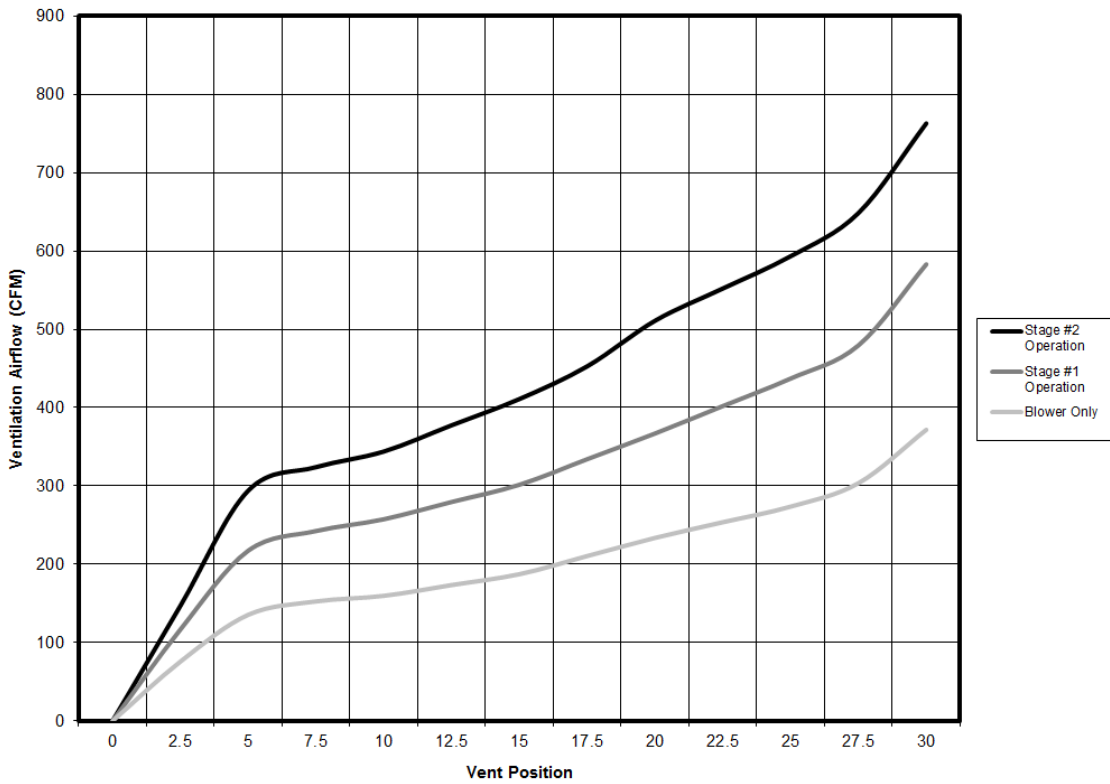
# Economizer Operation for Two Stage:



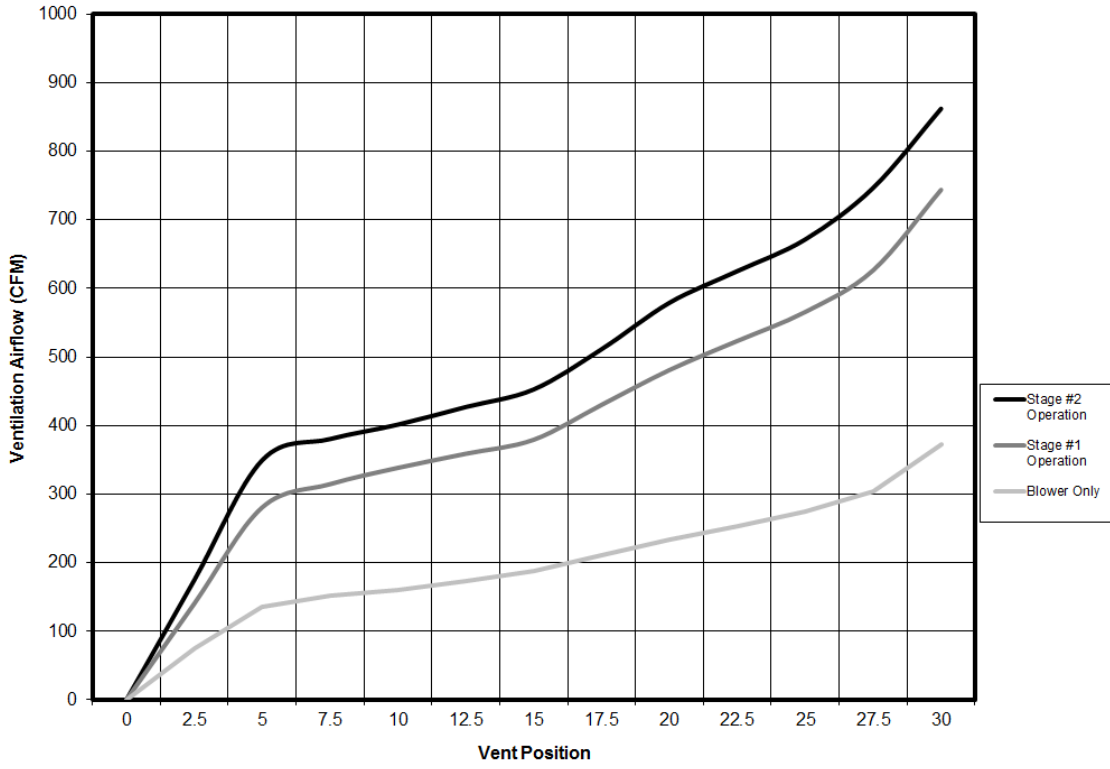
**GRAPH 1  
WG3S VENTILATION AIRFLOW**



**GRAPH 2  
WG4S VENTILATION AIRFLOW**

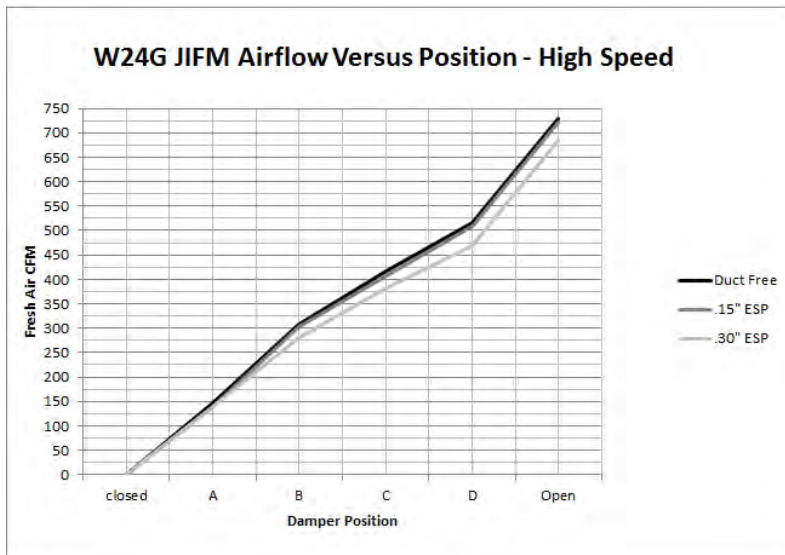
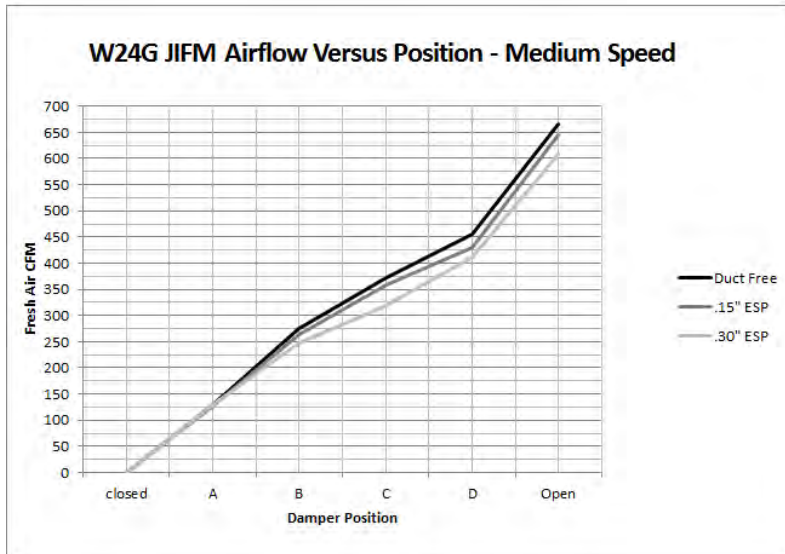
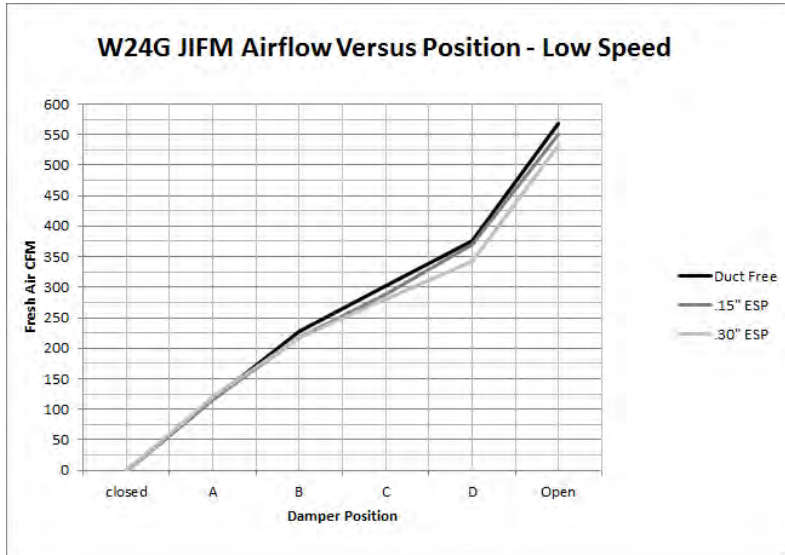


**GRAPH 3**  
**WG5S VENTILATION AIRFLOW**

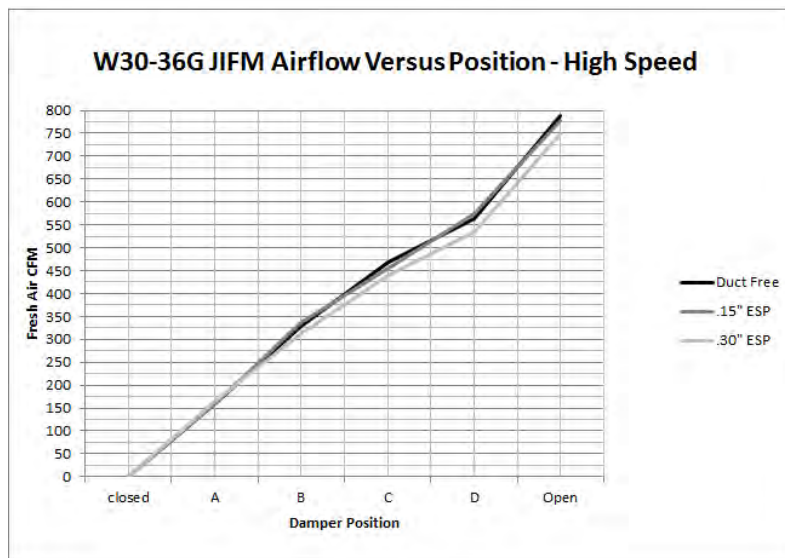
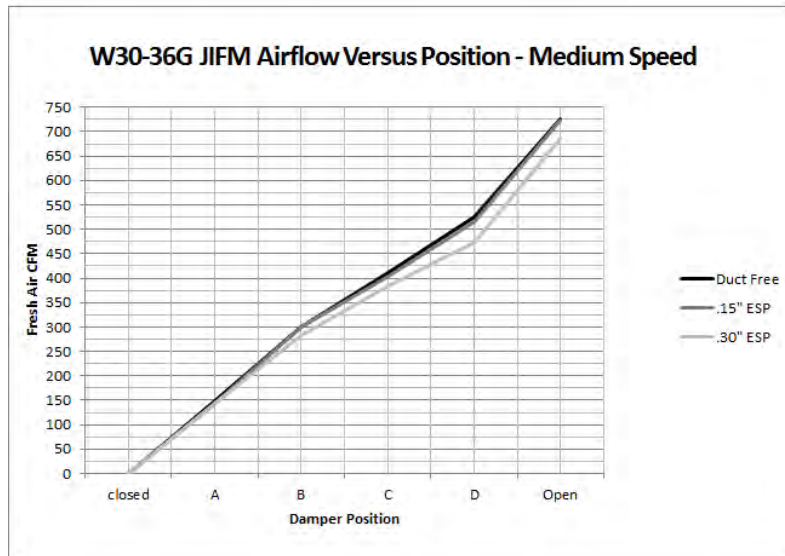
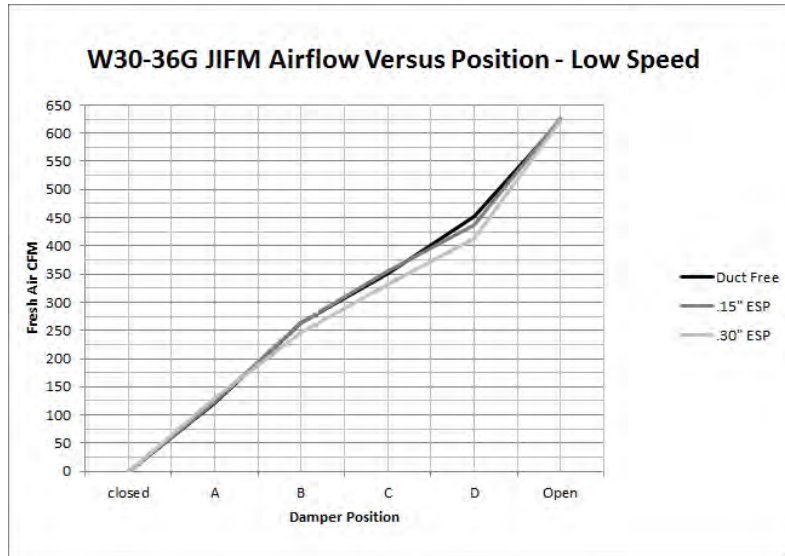




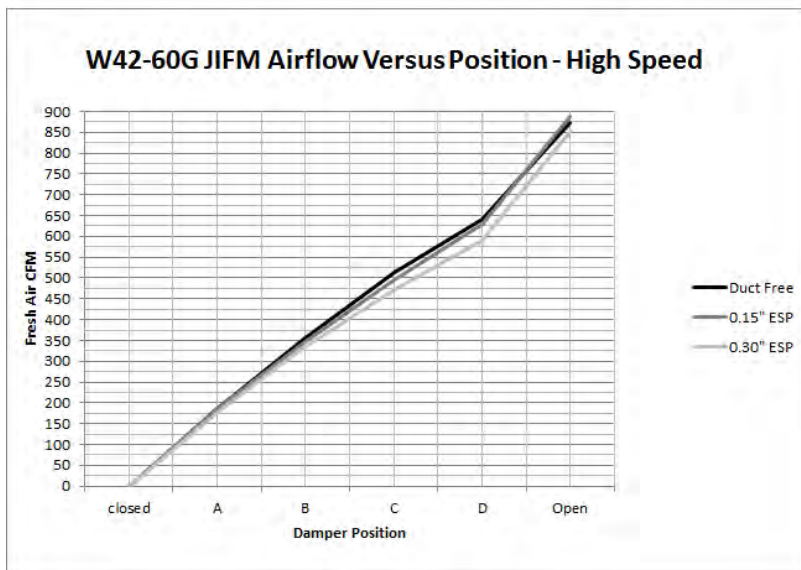
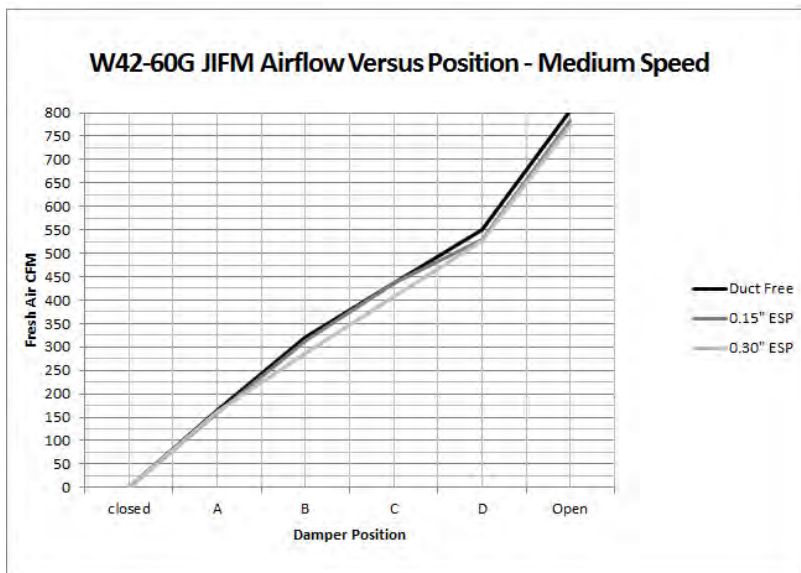
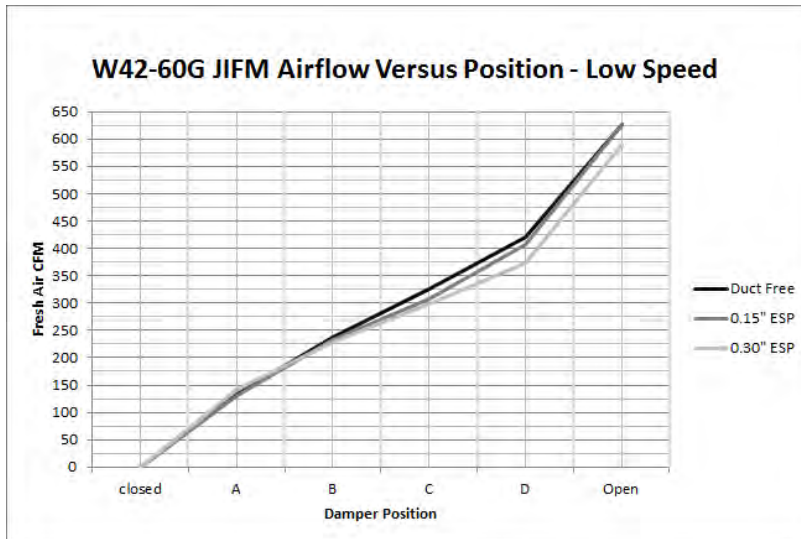
**GRAPH 4**  
**W24G JIFM Ventilation Airflow**



**GRAPH 5**  
**W30G-W36G JIFM Ventilation Airflow**



**GRAPH 6**  
**W42G-W60G JIFM Ventilation Airflow**



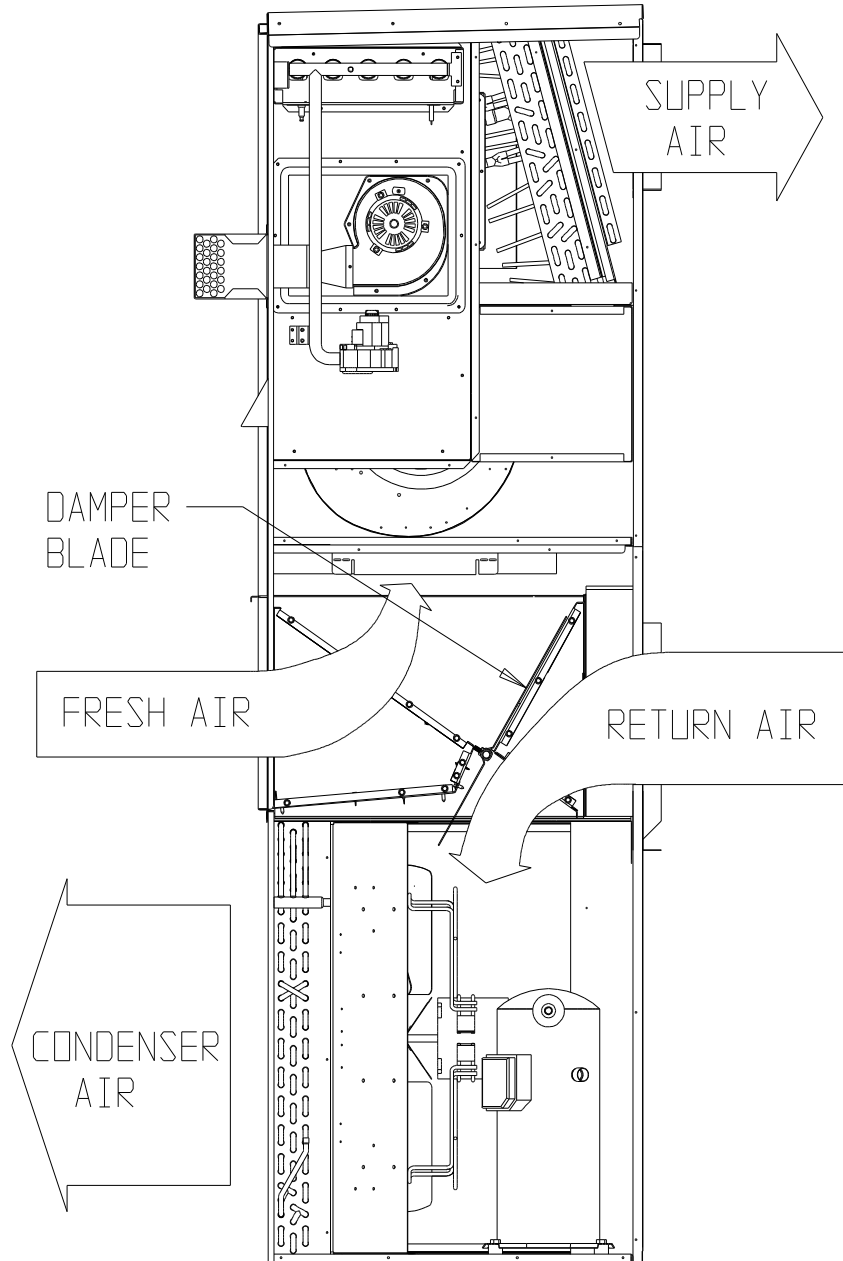
## ECONOMIZER SEQUENCE OF OPERATION

### CONDITION A – COOL OUTDOORS

First stage cooling closes and powers the economizer dampers to economizer mode and the indoor blower starts. Mixed air sensor senses a mixture of return air and outdoor air and modulates the dampers accordingly. Compressor operation is inhibited. (See Figure 7.)

If second stage closes on the thermostat, the compressor starts for mechanical cooling.

**FIGURE 7**  
**Call for Blower Operation**

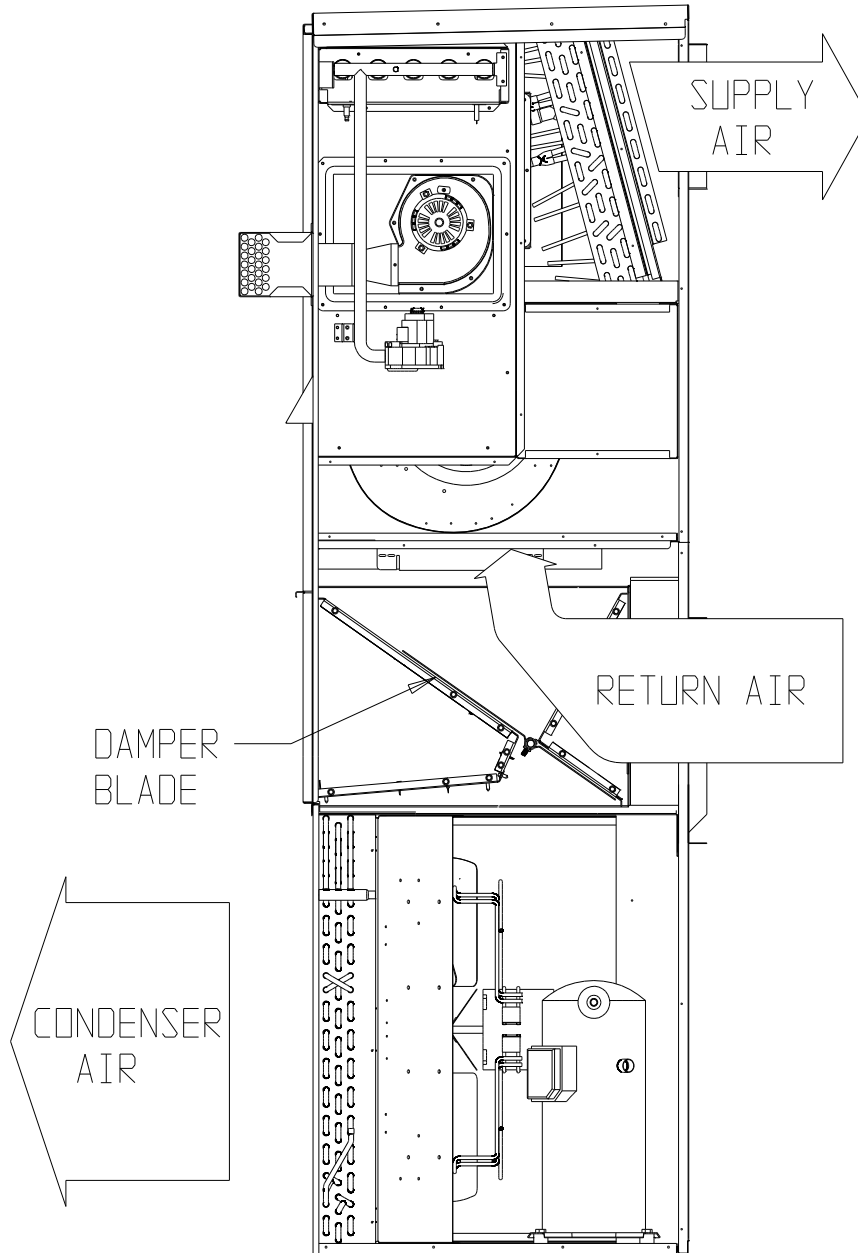


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**CONDITION B – WARM OUTDOORS**

First stage cooling cycles the compressor and dampers remain in minimum position.

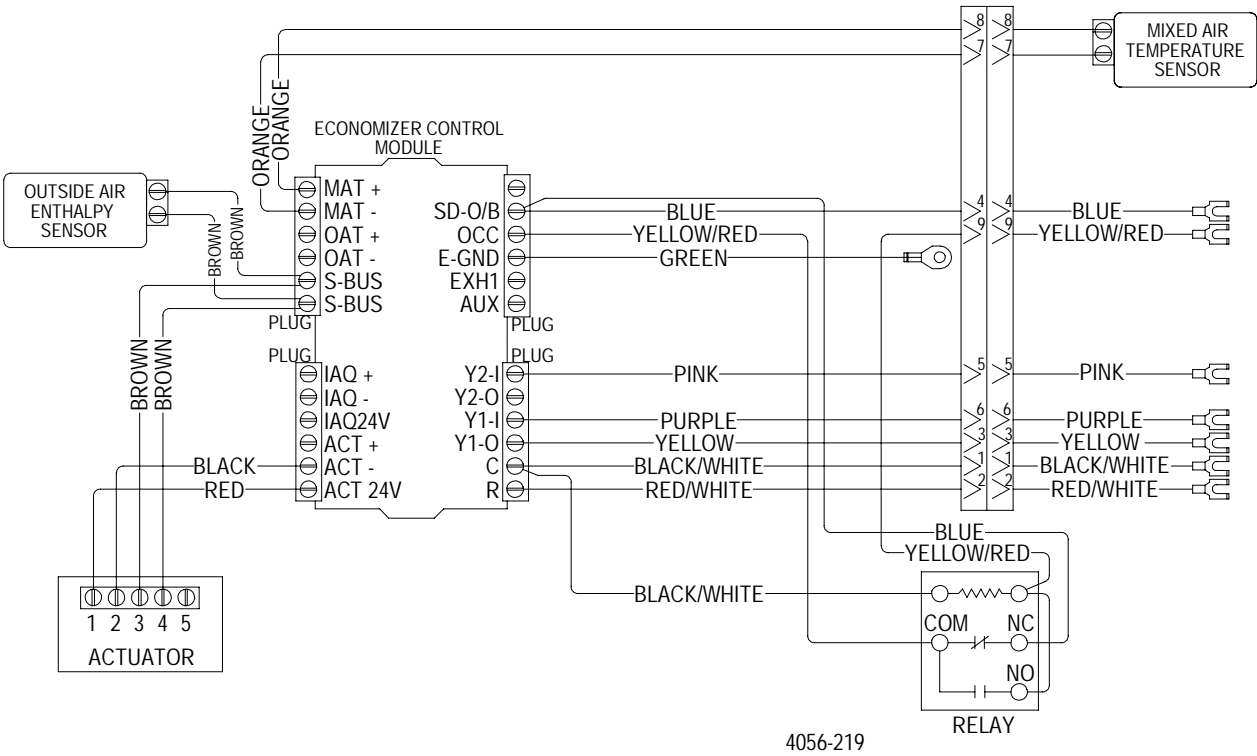
**FIGURE 8**  
**Call for Cooling Operation**



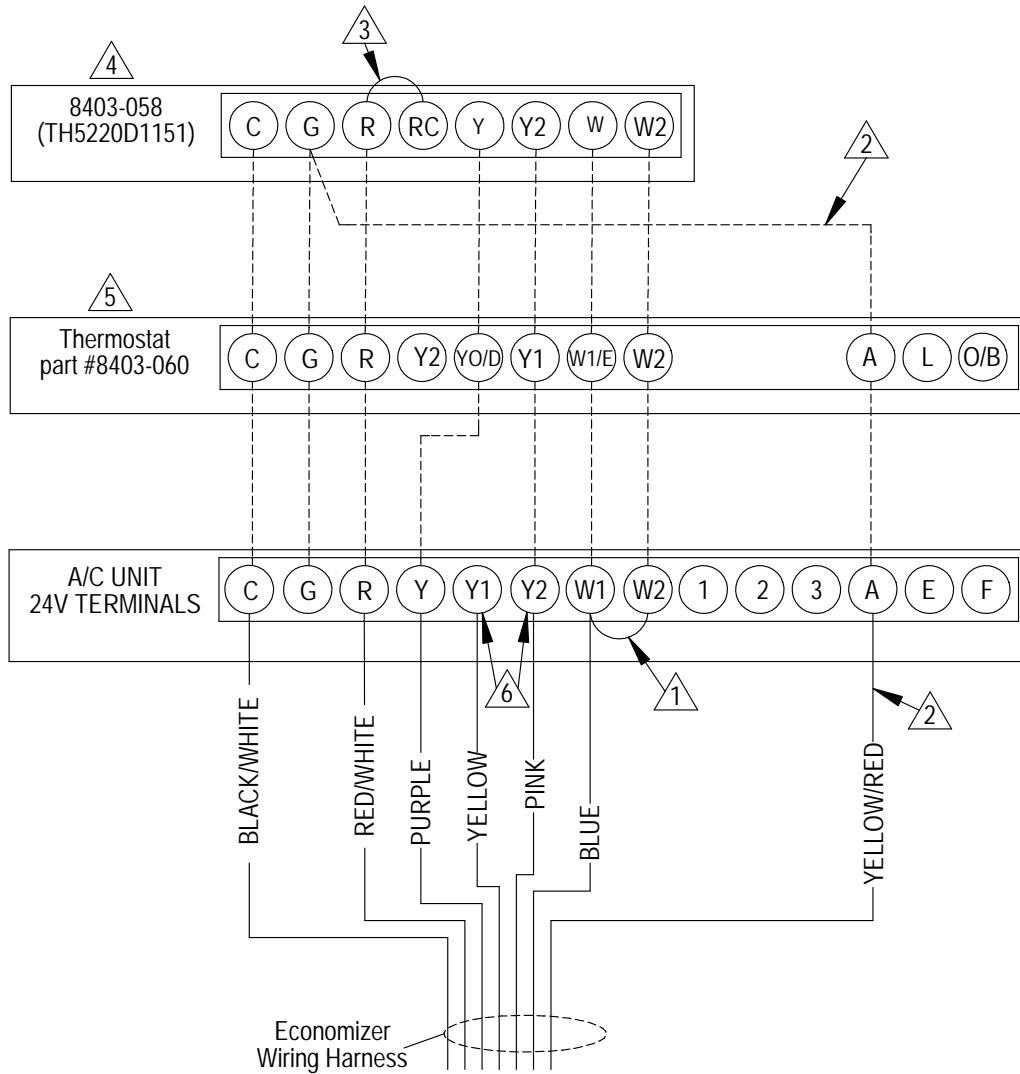
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**FIGURE 9**  
**Wiring Diagram (All Models)**

*Economizer Wiring Diagram*



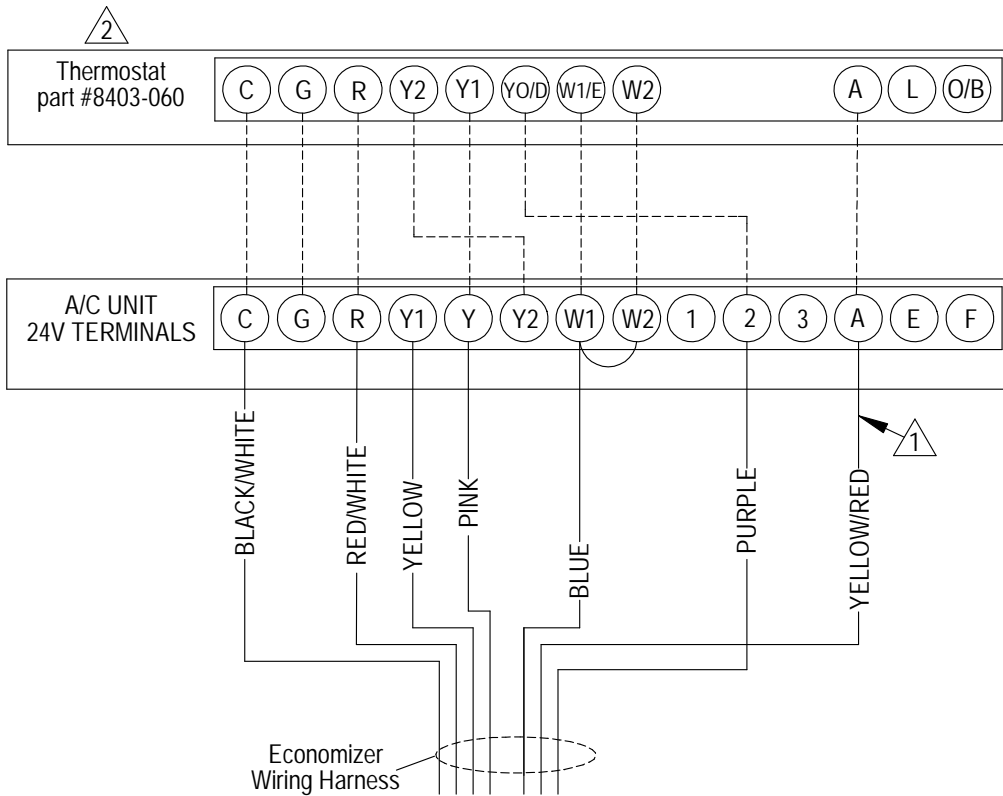
**FIGURE 10**  
**Low Voltage Wiring Diagram**  
**1-Stage A/C with Gas Heat with WGJIFM-\* Style Economizer**



- ⚠️ **1** Factory installed jumper. Remove for 2-stage operation on units with 15 or more kw.
- ⚠️ **2** Must be energized to enable minimum position. NOTE: Economizer Control Default Setting is 10V (100%). Depending upon application may require setting to lower value.
- ⚠️ **3** Factory Jumper Installed.
- ⚠️ **4** Change "system type", set up function 1, from 5 (2 heat/ 1 cool heat pump) to 6 (2 heat/ 2 cool conventional).
- ⚠️ **5** Change model configuration from heat pump to heat/cool, and must be configured for economizer for YO/D output to be active as first stage cooling.
- ⚠️ **6** Older units may not have Y1 and Y2 connections on 24v terminal block. If not present wire nuts must be used.

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**FIGURE 11**  
**Low Voltage Wiring Diagram**  
**2-Stage A/C with Gas Heat with WGSJIFM\*5 Style Economizer**

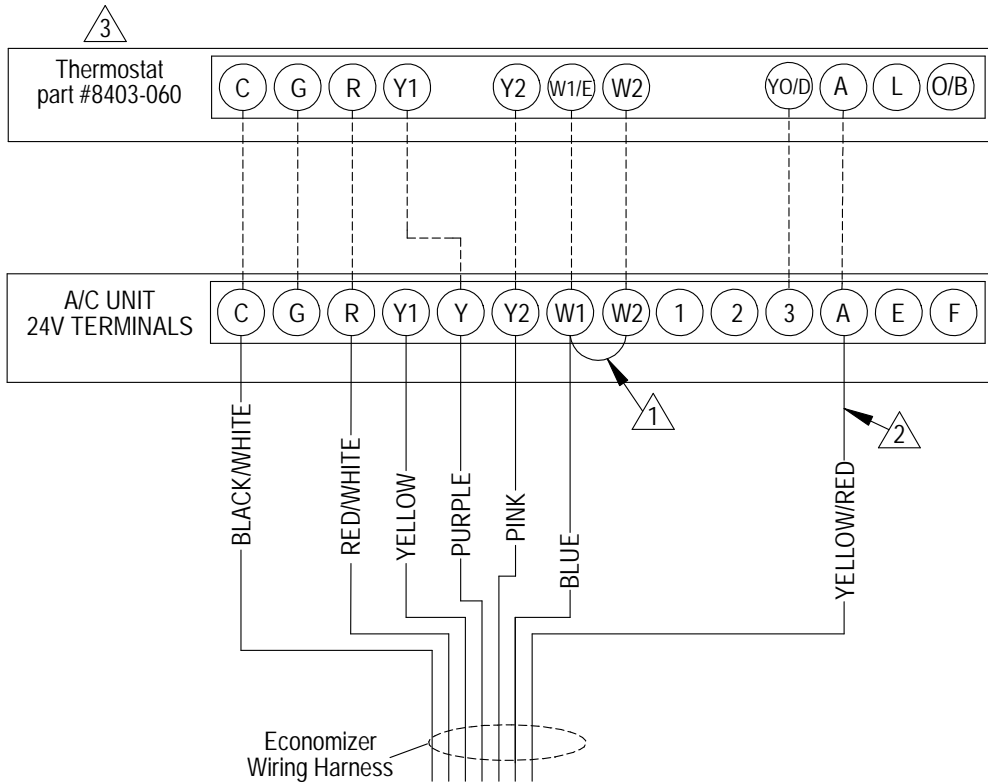


- △ 1 *Must be energized to enable minimum position. NOTE: Economizer Control Default Setting is 10V (100%). Depending upon application may require setting to lower value.*
- △ 2 *Change model configuration from heat pump to heat/cool, and must be configured for economizer for YO/D output to be active as first stage cooling.*

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**FIGURE 12**  
**Low Voltage Wiring Diagram**  
**1-Stage A/C with Dehumidification Gas Heat with WGJIFM-\* Style Economizer**



1 Factory installed jumper. Remove for 2-stage operation on units with 15 or more kw.

2 Must be energized to enable minimum position. NOTE: Economizer Control Default Setting is 10V (100%). Depending upon application may require setting to lower value.

3 Change model configuration from heat pump to heat/cool. Do not configure for economizer.

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