INSTALLATION INSTRUCTIONS

Partial Flow Modulating Commercial Room Ventilator with Pre-Purge and Exhaust

Models:

CRV-V2 CRV-V3

For Use with Bard Single Stage Wall Mount Air Conditioner and Heat Pump Models:

CRV-V2: W18A/LB, W24A/LB, W18HB, W24HB
CRV-V3: W30A/LB, W36A/LB, W30HB, W36HB

Bard® SINCE 1914
Climate Control Solutions

Bard Manufacturing Company, Inc.
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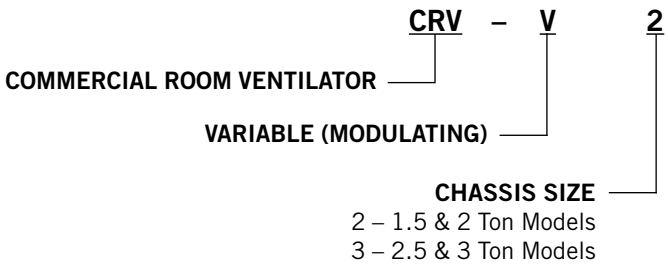
CONTENTS

Commercial Room Ventilator Features

- One piece construction – easy to install with no mechanical linkage adjustment required.
- Exhaust air damper – built in with positive closed position. Provides exhaust air capability to prevent pressurization of tight buildings.
- Actuator motor – 24 volt, power open, spring return with built in torque limiting switch.

Commercial Room Ventilator Model Nomenclature



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.

General

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.

Description

The CRV-V ventilator is designed to be used with the specific models with "letter" revision codes as designated on the front page of this installation instructions manual.

The ventilator is an electromechanical vent system designed to provide fresh air to meet indoor air quality standards.

Models

When installed in the models listed on the front page, the CRV-V provides 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 when it is operating with compressor in cooling or heat pump mode.

INSTALLATION OF FIELD-INSTALLED CRV-V*

Basic Installation

⚠ WARNING

Electrical shock hazard.

Disconnect remote electrical power supply or supplies before servicing.

Failure to do so could result in electric shock or death.

Preparing Unit for CRV-V Installation

1. Disconnect power to unit.
2. Unpack the CRV-V assembly, which includes the integral controls and electrical harness, body panels, miscellaneous hardware and installation instructions.
3. From existing wall mount unit, remove and save (or discard) as directed (see Figure 1):
   - Blower access panel (save)
   - Vent option panel (save)
   - Filter access panel (save)
   - Filter (save)
   - Outer and inner control panel doors (save)
   - Filter tray (discard, if applicable)
   - Exhaust cover plate (discard)
4. Install new condenser exhaust plate with screen over opening into condensor section (see Figure 2).
5. Remove filter brackets, if necessary. Two types of filter brackets have been used with these wall mount units. If the filter brackets are mounted flat, they can be used with the commercial room ventilator (CRV). If the brackets are set at a 30° angle, they must be removed and discarded. The circuit breaker offset plate must be loosened and moved slightly to gain access to several of the screws holding the filter brackets in place. Tighten the screws holding control panel after the filter brackets have been removed.

FIGURE 1
Wall Mount Unit Access Panels

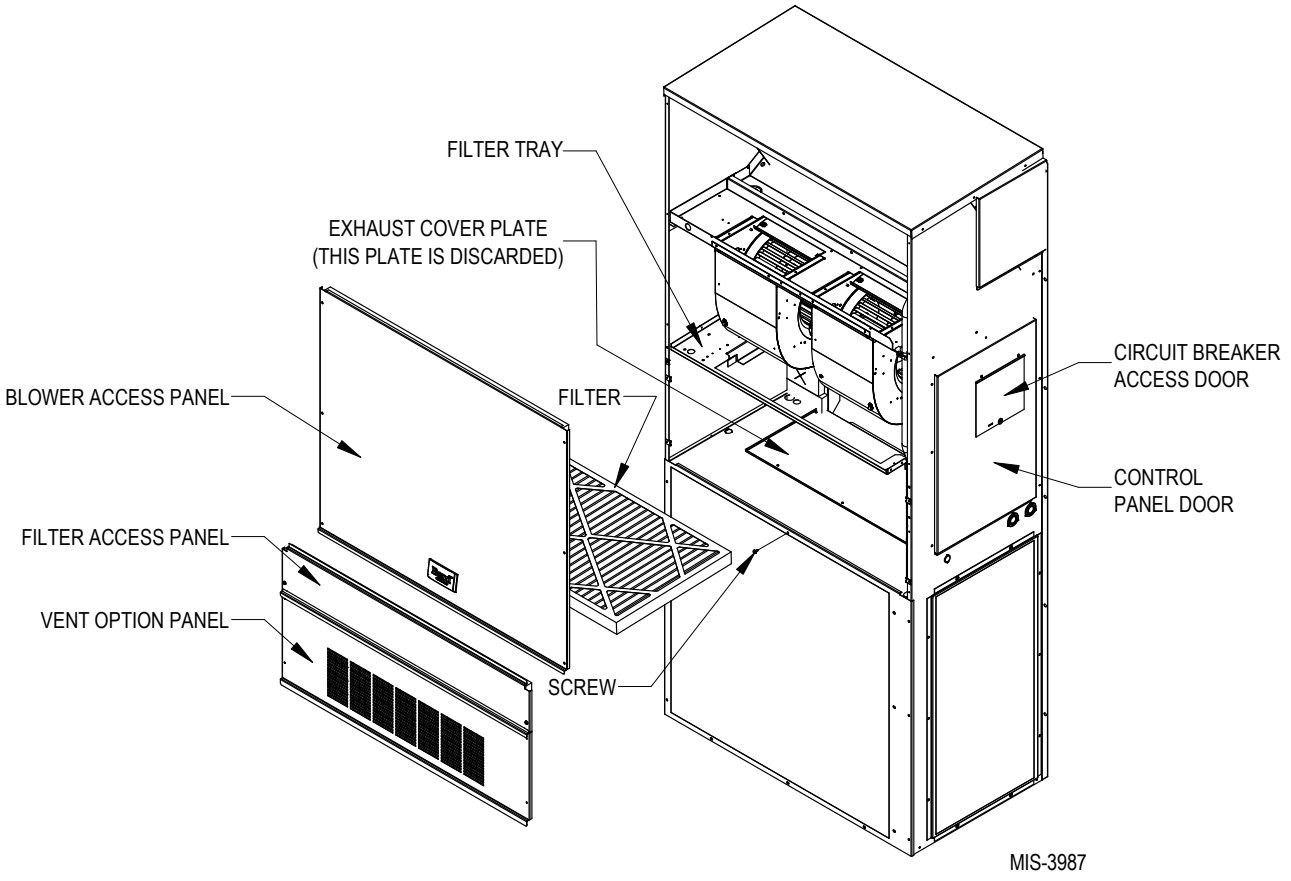
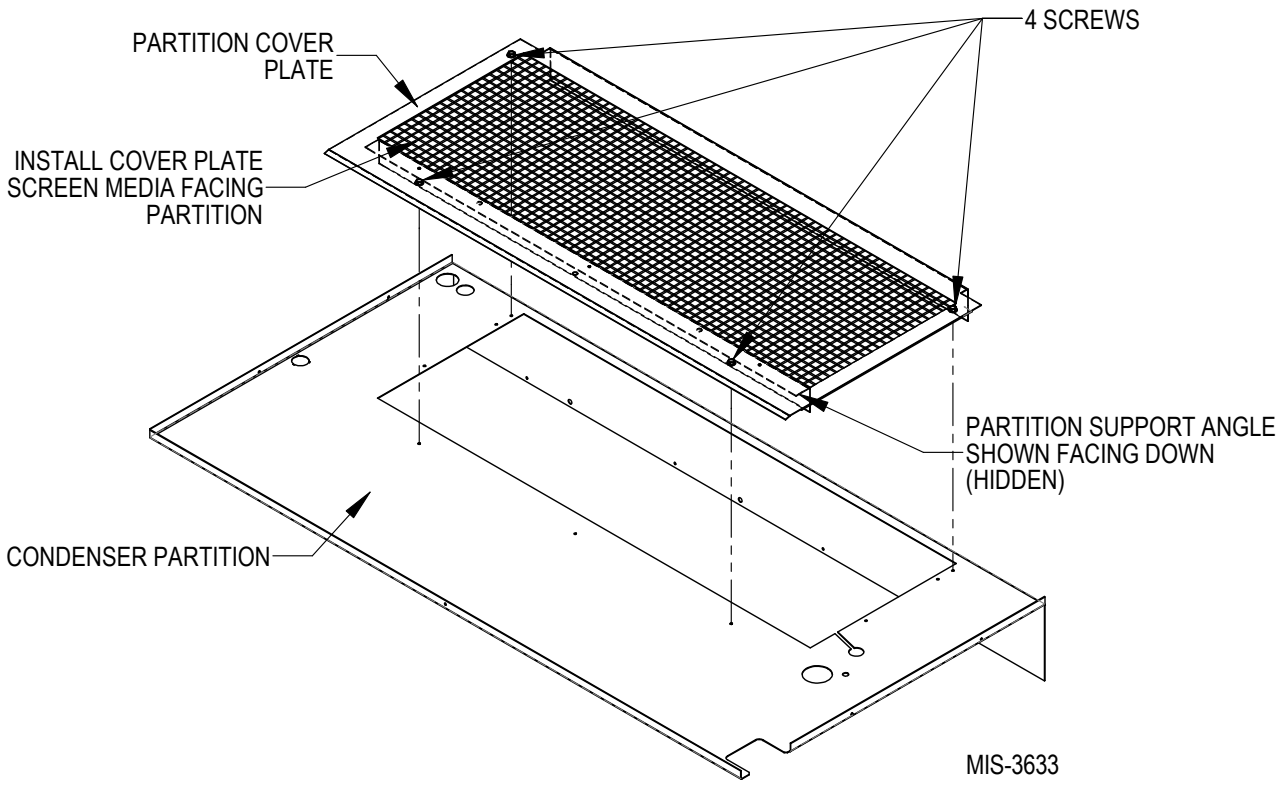


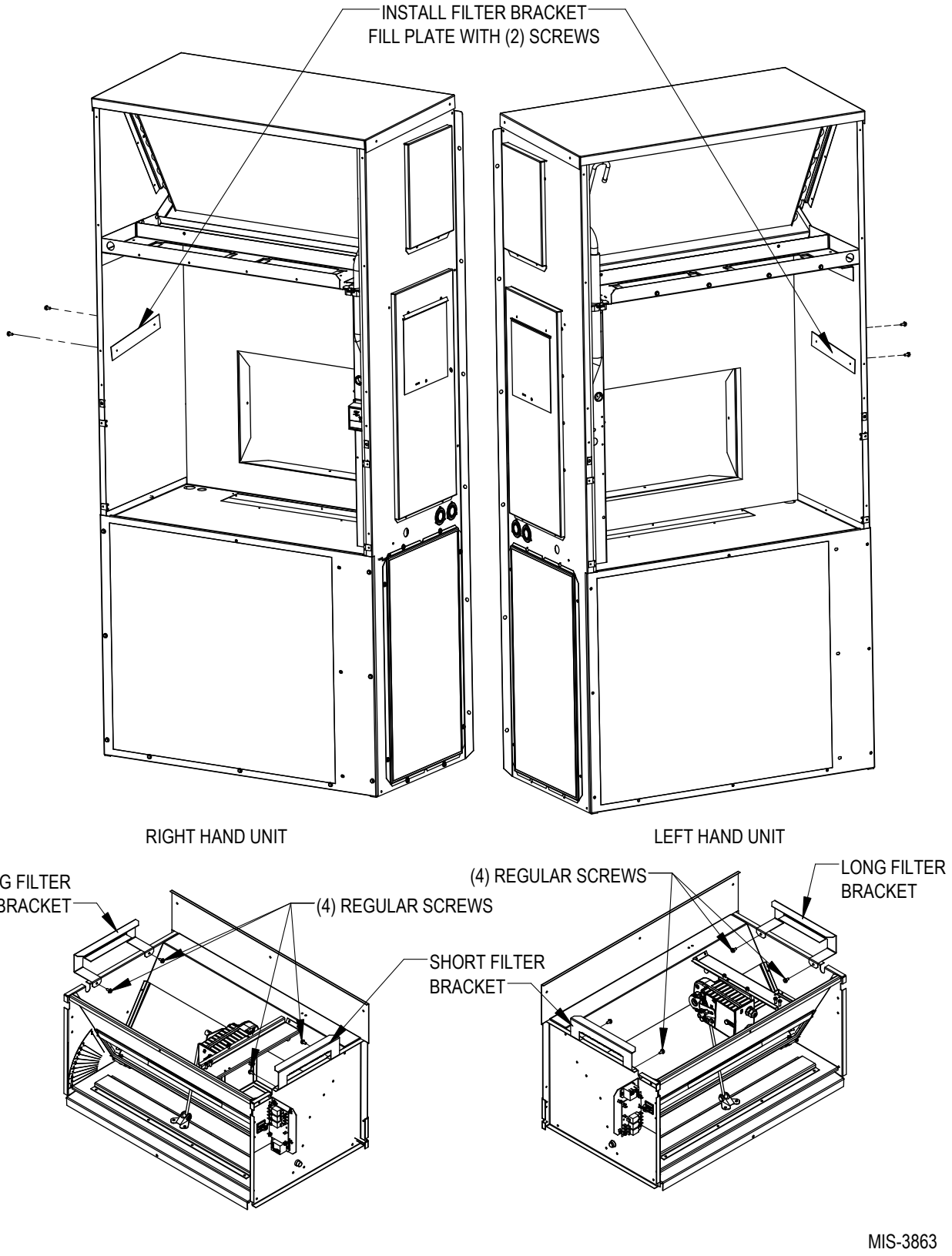
FIGURE 2
Condenser Exhaust Plate with Screen



If filter brackets were removed in Step 5, proceed to Step 6. If the brackets were not removed, proceed to **Commercial Room Ventilator (CRV) No Hood Installation** on page 7.

6. Install filter bracket fill plate (if applicable) as shown in Figure 3 on page 6.
7. Install provided filter brackets on CRV-v assembly (see Figure 3).

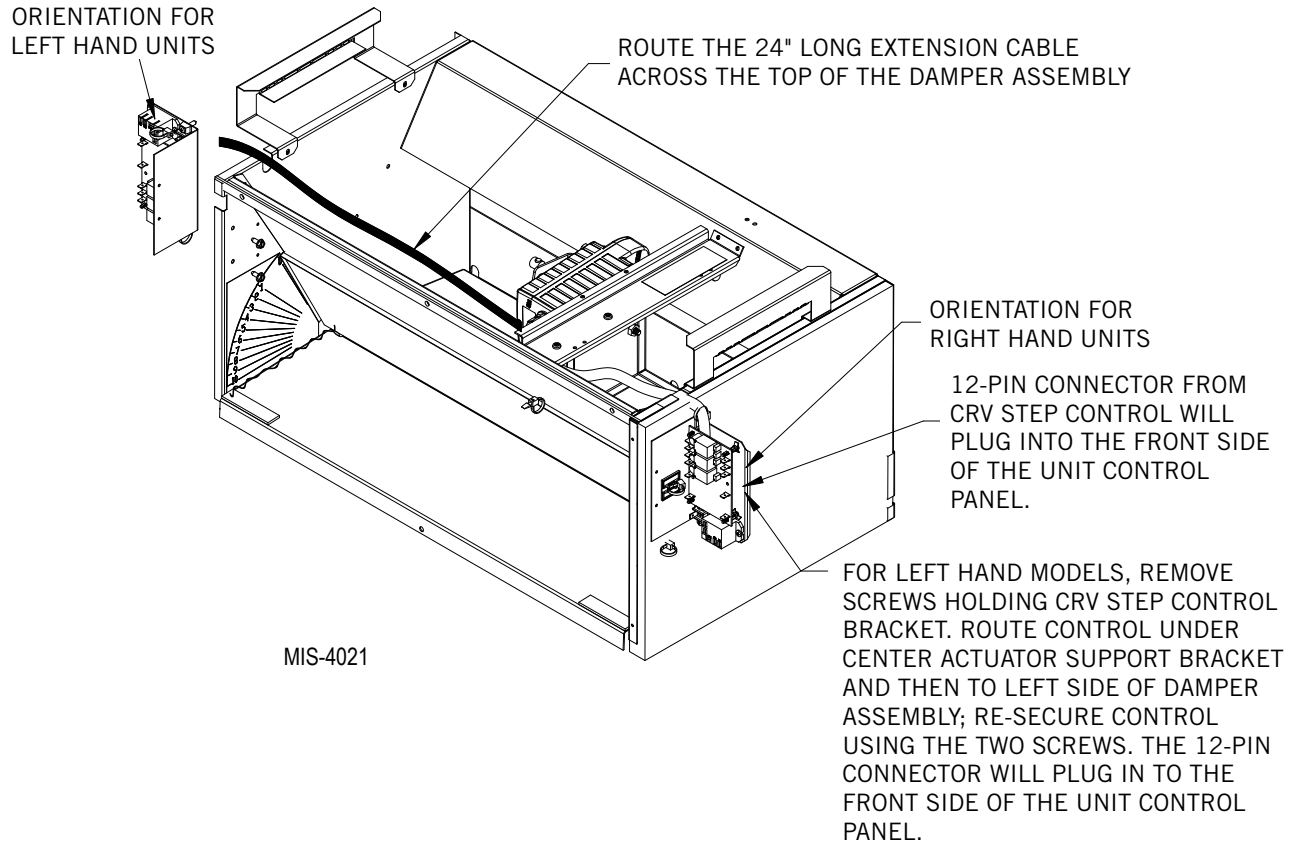
FIGURE 3
Filter Bracket and Filter Bracket Fill Plate Installation



Commercial Room Ventilator (CRV) No Hood Installation

1. Insert CRV into opening in the wall mount unit between the filter rack and the condenser section, being careful not to tear the unit insulation. Fully seat CRV assembly to rear of the cavity. Slide the CRV toward the control panel so that it lines up with the return air opening in the rear of the wall mount unit (see Figure 5 on page 8).
2. Insert and lock in the 12-pin plug end of the wire assembly into the front side of the unit's control panel (see Figure 5).
3. Replace the air filters if they were removed (airflow direction is up).
4. The next step involves installing the unit's filter door and putting the mist eliminator filter into place (see Figure 6 on page 8).
5. With the lower vent option door removed, locate the control board. Then, make all the required thermostat connections per the applicable connection diagram found on pages 13 or 14, and restore power to the unit.
6. Make any necessary changes required to the potentiometers to achieve the minimum continuous airflow and demand airflow desired (see Figure 7 on page 10). Refer to **Blade Adjustment for Desired Ventilation Air** on page 16 for more information on adjusting the potentiometers.
7. Then, replace the lower vent option door with the four (4) screws provided as shown in Figure 6.

FIGURE 4
Extension Cable Installation



NOTE: *Incorporated with the CRV-V is one piece of split tubing. The tubing will cover the wire assembly routed to the actuator. The tubing and wires will be routed under the actuator assembly.*

FIGURE 5
Damper Assembly Installation

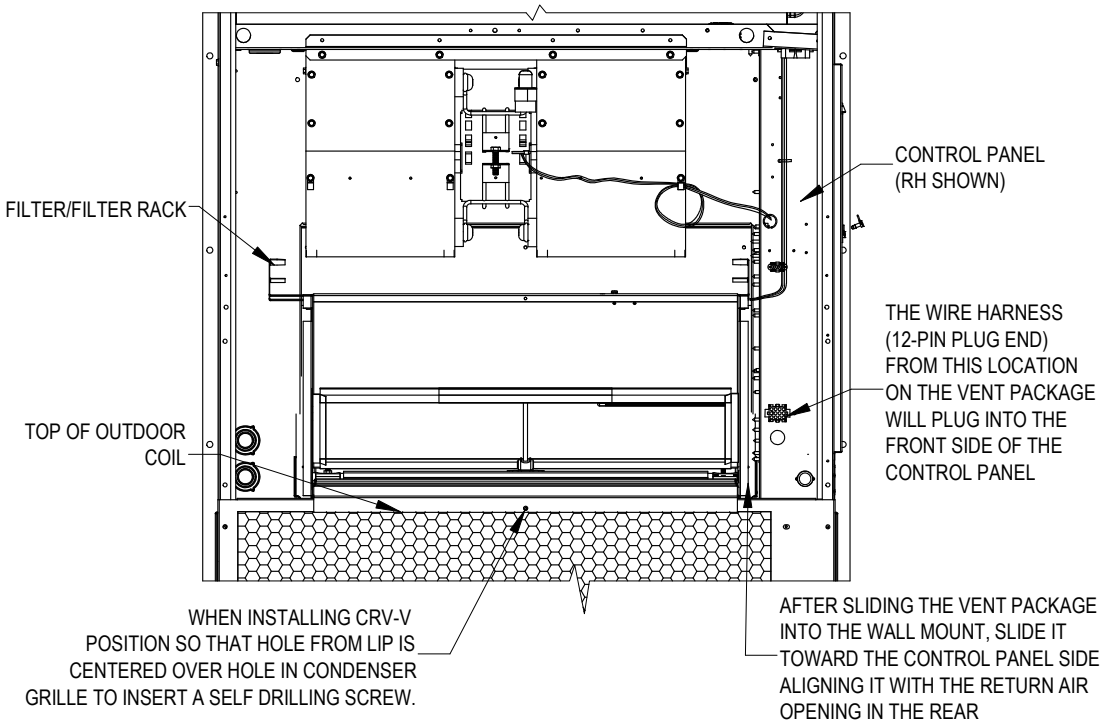


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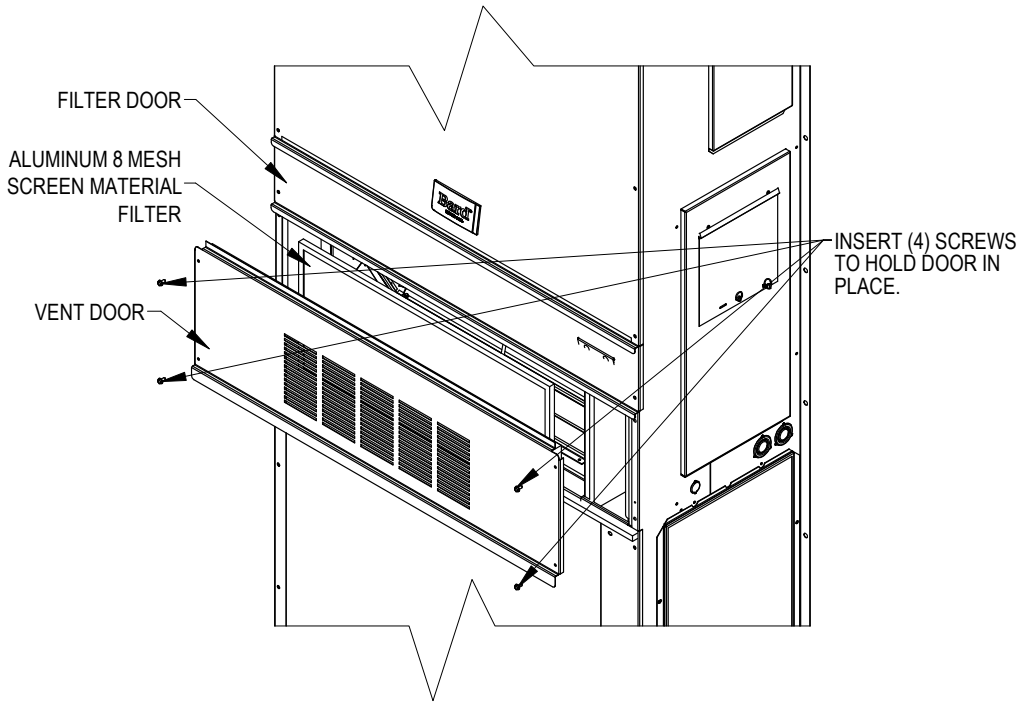
FIGURE 6
Vent Door Assembly



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CO_2 Control

For CO_2-based control, add CO_2 sensor/controller (Bard part #8403-067) to the wall and run additional optional wires as shown in the wiring diagrams on pages 13 and 14.

The CO_2 controller must also be reconfigured from the standard default settings as shipped from the factory. See page 15 for complete details.

Control System Notes

This ventilation package is capable of being set to meet the current ASHRAE specifications for minimum occupied airflow rates, with extended capability to meet demand ventilation requirements.

Two Switch Application

Energizing the A terminal in the low voltage connection box during occupied conditions will allow the prepurge and minimum occupied airflow rates to be set to meet ASHRAE requirements. This can be accomplished by adjusting the PP and OCC potentiometers on the CRV control board (see Figure 7 on page 10) by aligning the damper position per the charts included on pages 17 and 18.

FIGURE 7
CRV Control Board Settings

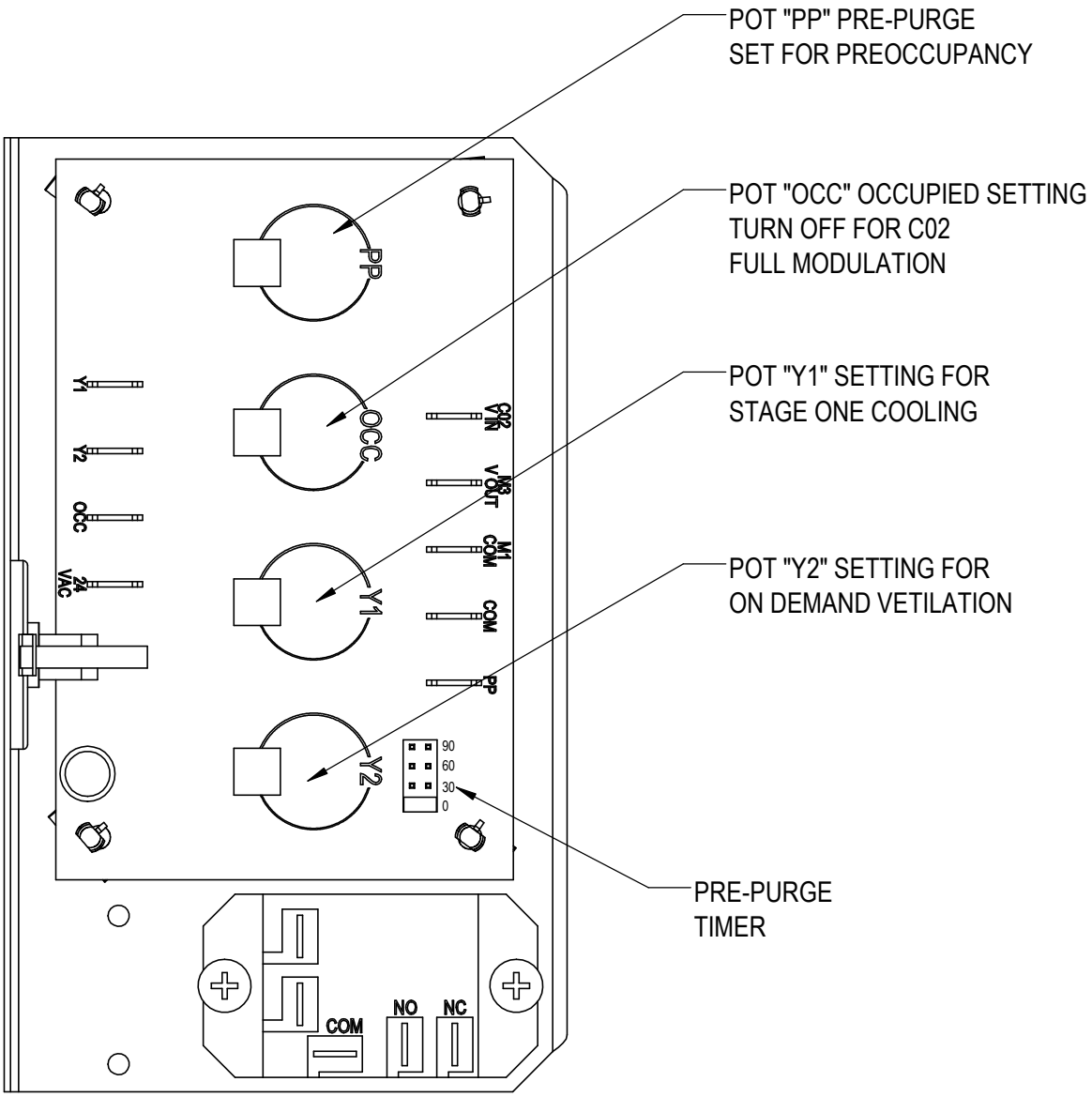

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FIGURE 8
CRV Control Board Wiring

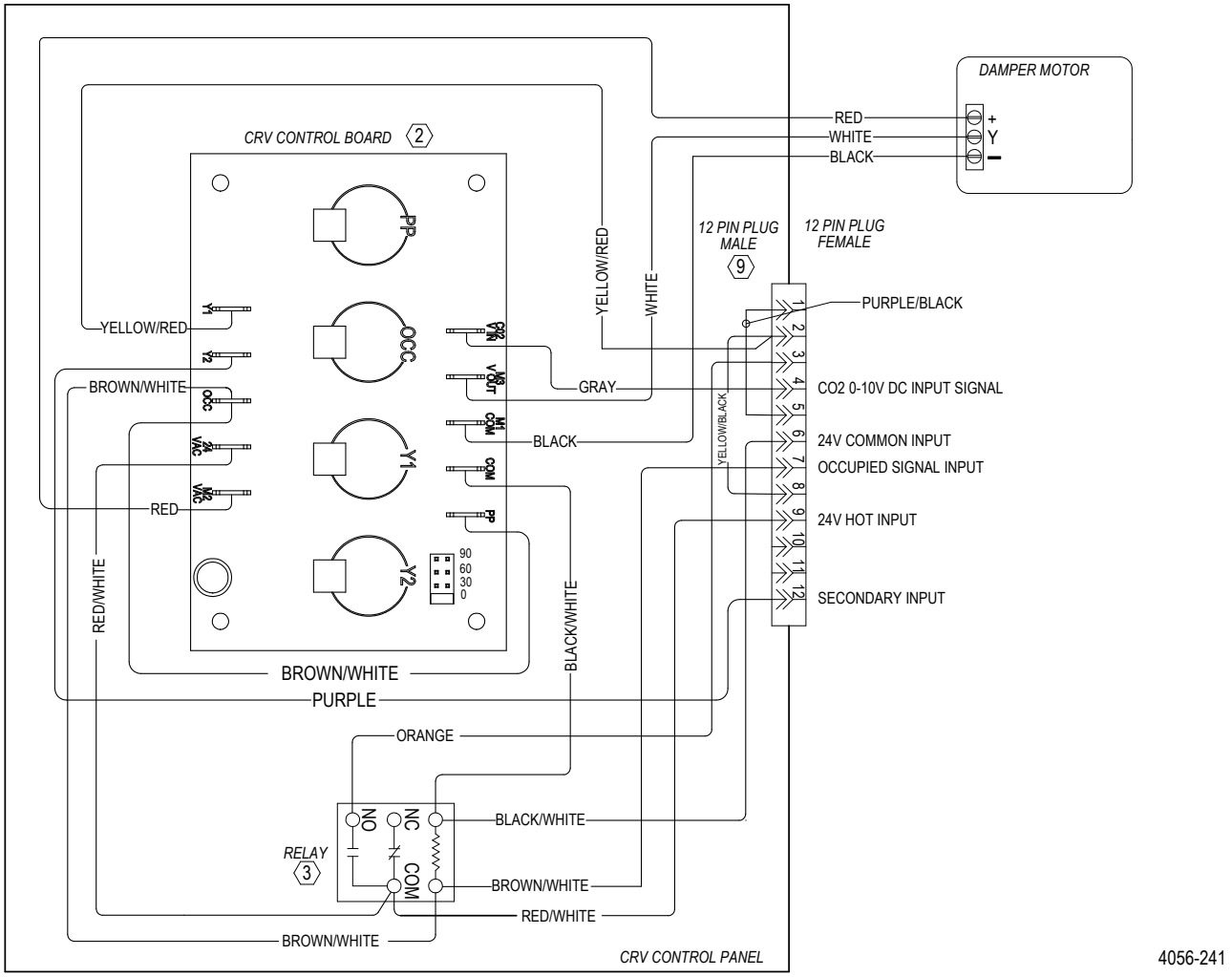

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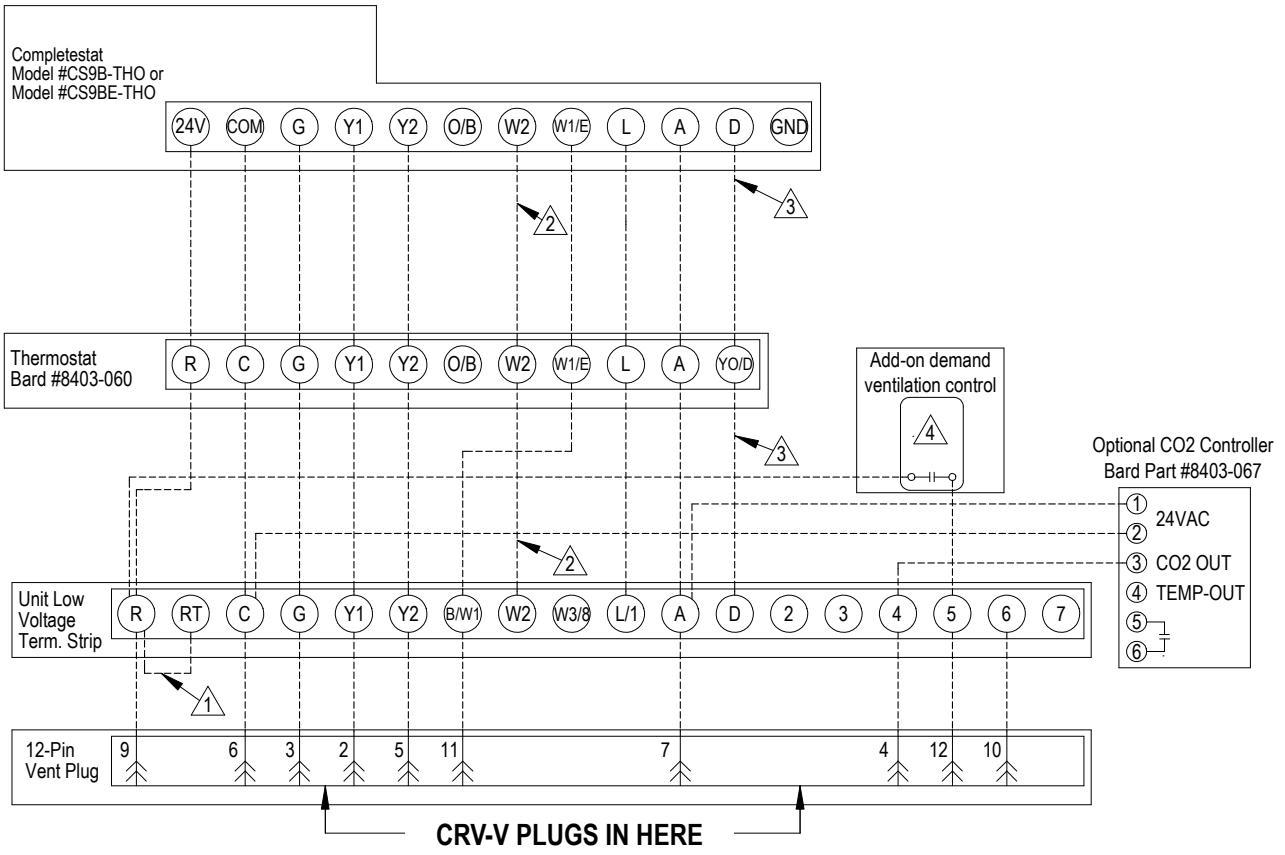
FIGURE 9
Actuator Setting

NOTE: *For proper operation, dial must be set to CCW as shown.*

FIGURE 10
Required Control Connections for CRV with Air Conditioners



1 Factory installed jumper. Remove jumper and connect to N.C fire alarm circuit if emergency shutdown required.

2 Not needed below 15KW.

3 Additional wire required for dehumidification models.

4 Demand ventilation control, which could include switched CO2 control, or secondary motion activated switch. Would be negated with option 7 (CO2 with 0-10VDC modulating output)

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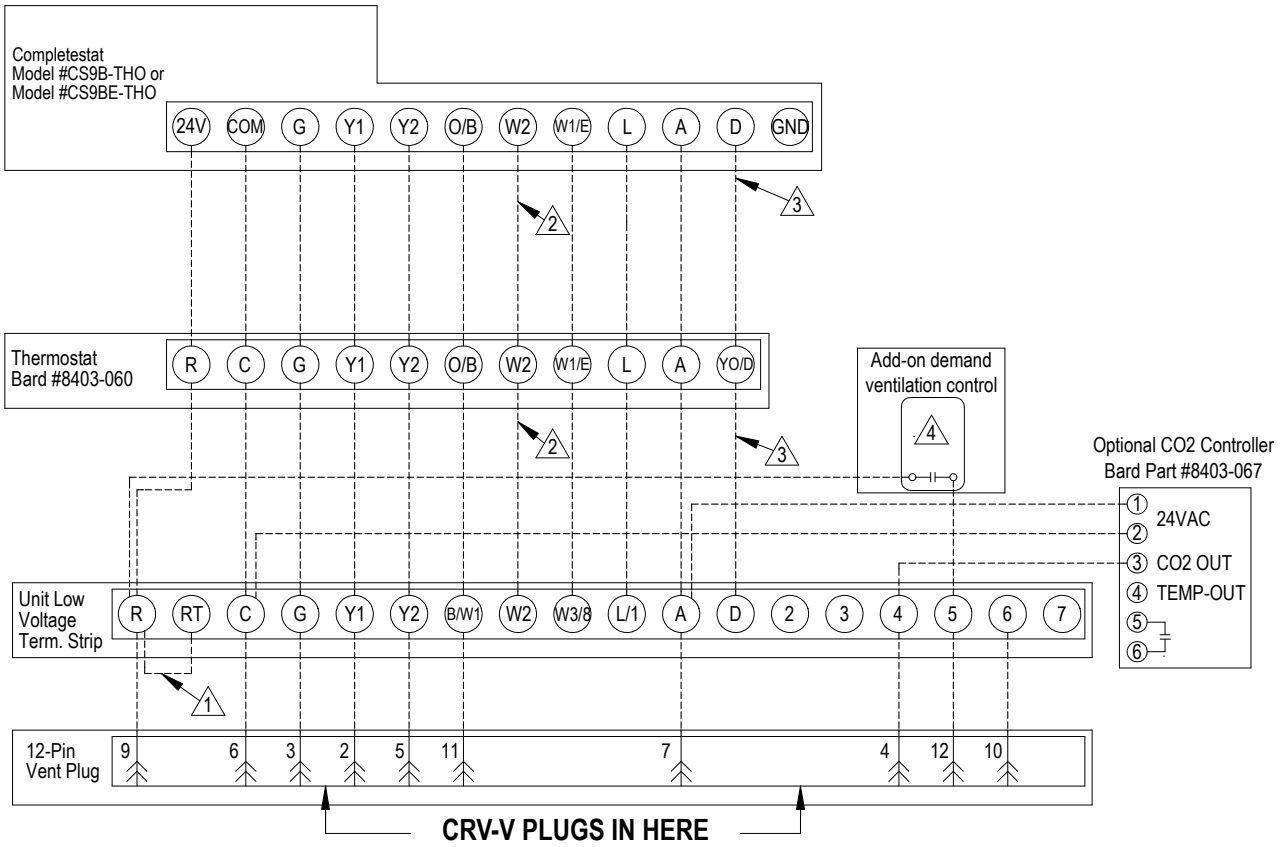
FIGURE 11
Required Control Connections for CRV with Heat Pumps



1 Factory installed jumper. Remove jumper and connect to N.C fire alarm circuit if emergency shutdown required.

2 Not needed below 15KW.

3 Additional wire required for dehumidification models.

4 Demand ventilation control, which could include switched CO2 control, or secondary motion activated switch. Would be negated with option 7 (CO2 with 0-10VDC modulating output)

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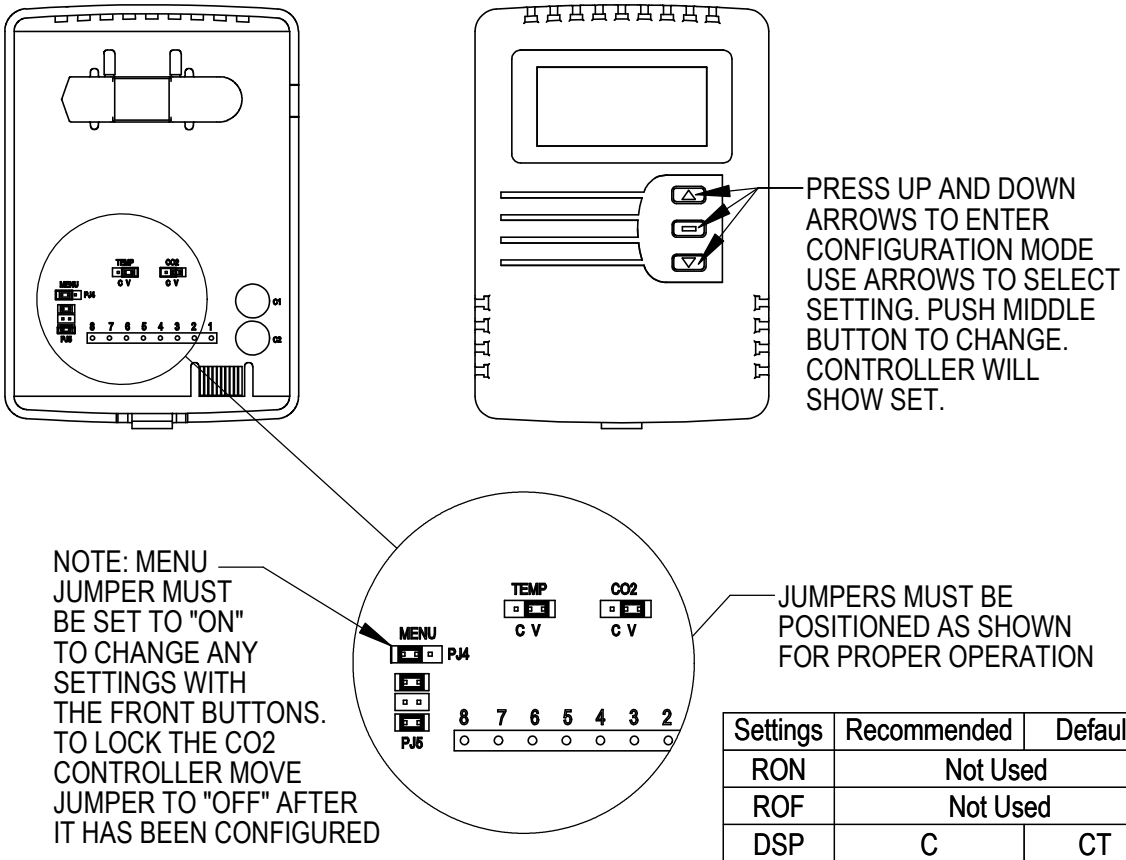
FIGURE 12
CO_2 Sensor Default and Final Settings
Bard Part #8403-067 CO_2 Controller



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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Blade Adjustment for Desired Ventilator Air

The amount of ventilation air supplied by the commercial room ventilator is dependant on four factors.

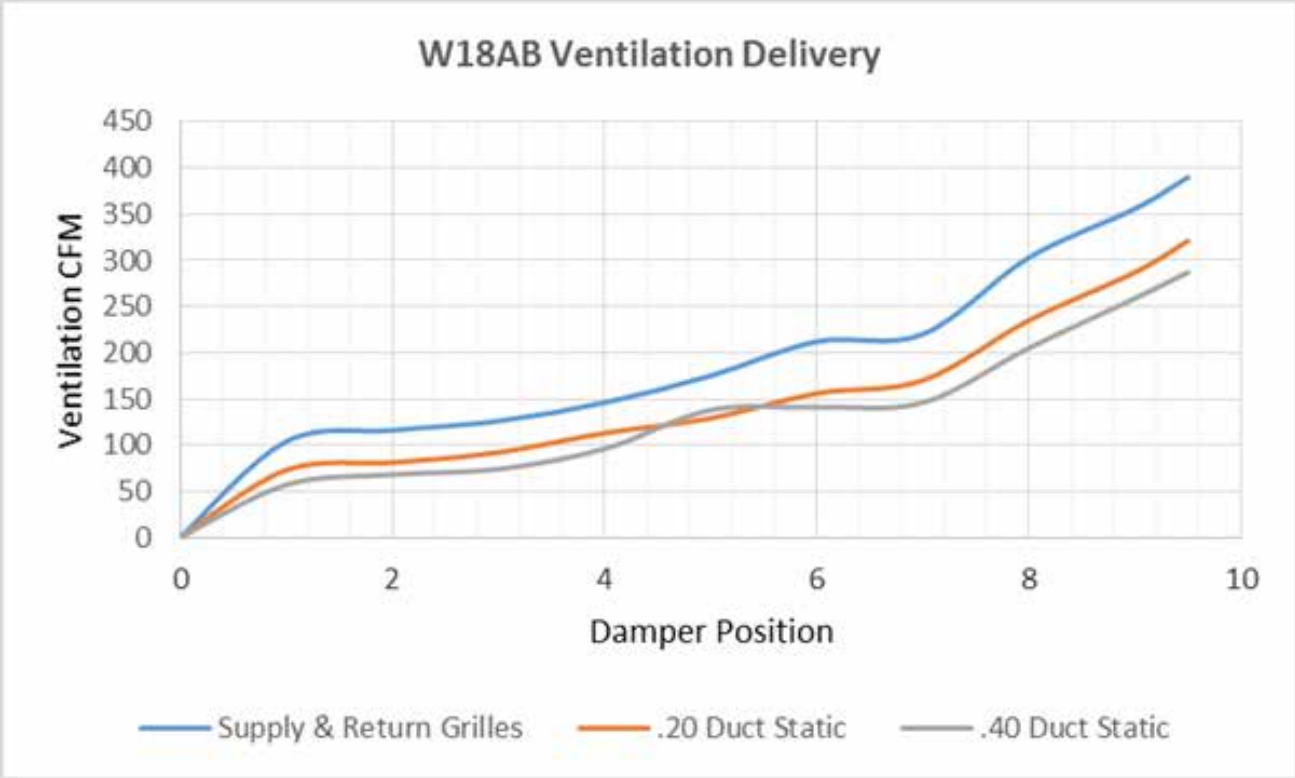
1. Return air duct static pressure drop.
2. Supply air duct static pressure drop.
3. Indoor blower motor speed.
4. Damper blade open position setting.

Refer to the appropriate graph on pages 17 and 18 to determine the blade setting necessary to achieve the ventilation air required for each operating mode.

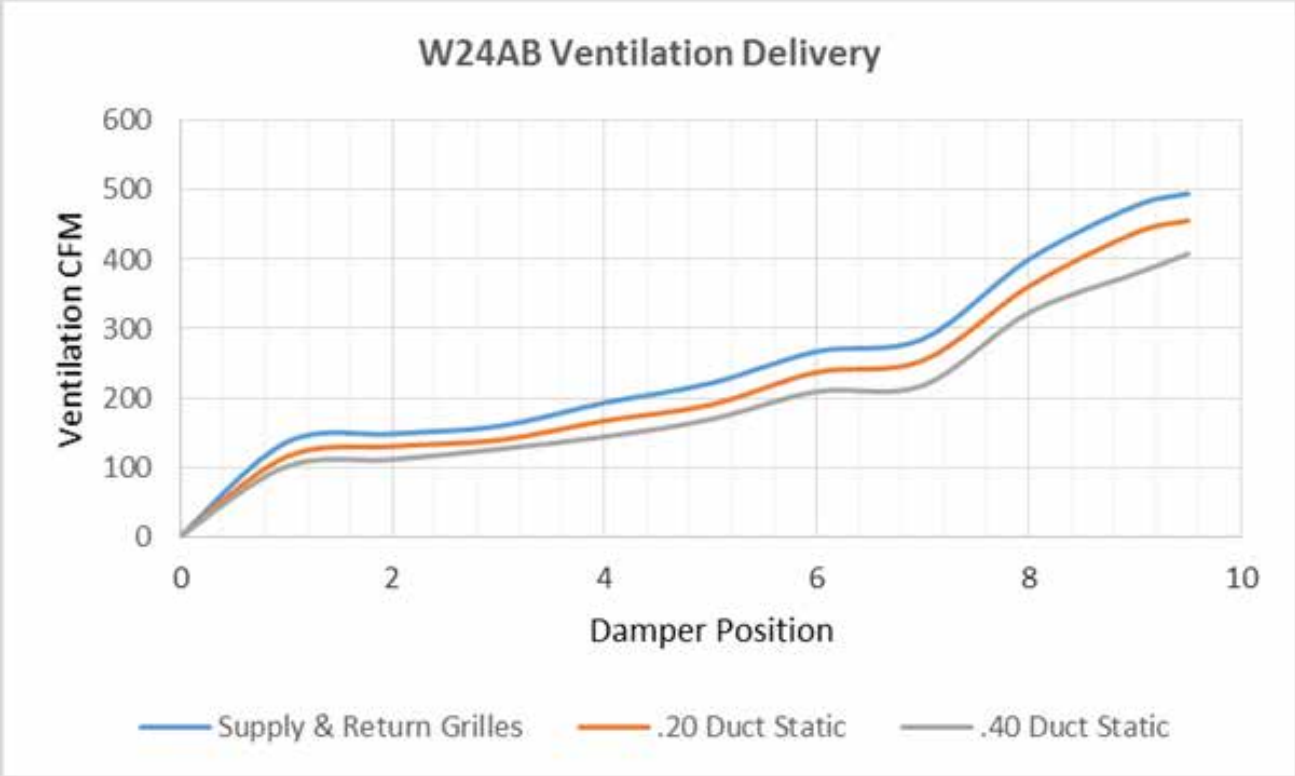
All potentiometers are set in the closed position from the factory.

Turning potentiometers counter clockwise will close the blade; clockwise will open the blade.

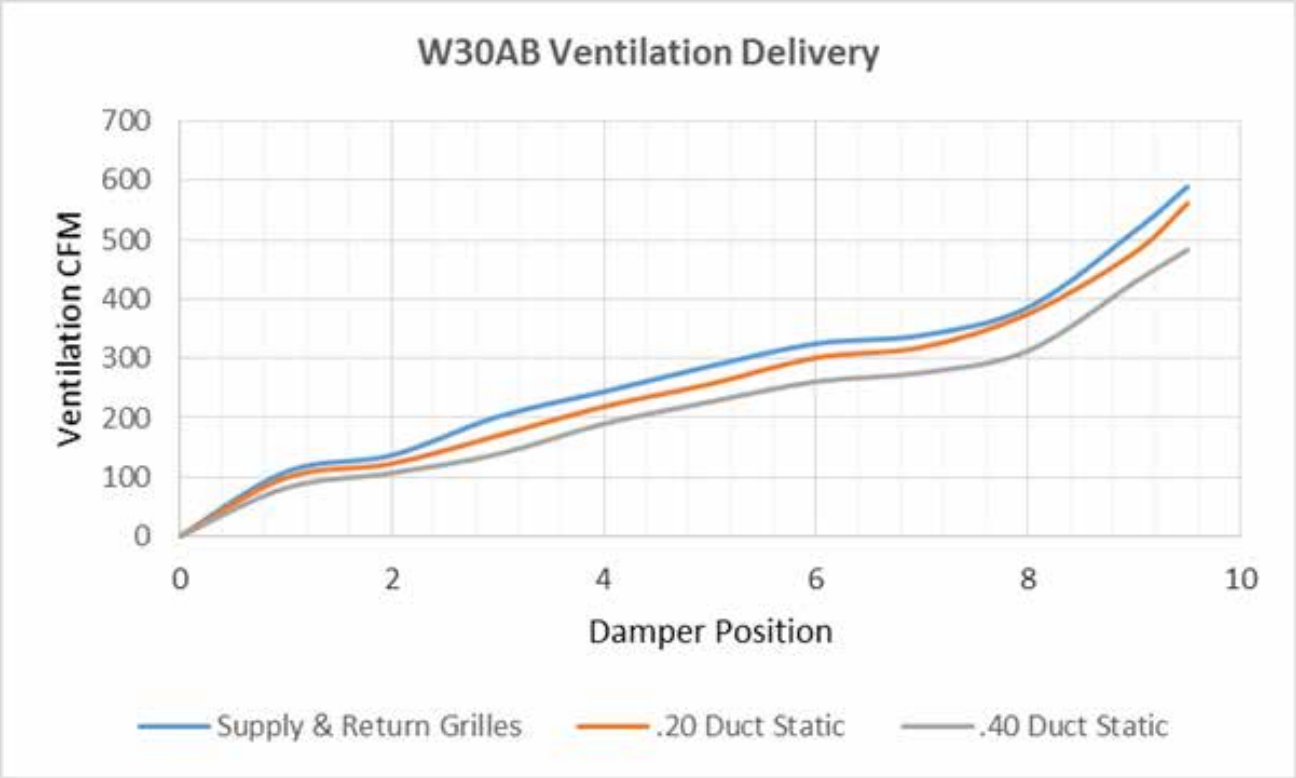
GRAPH 1



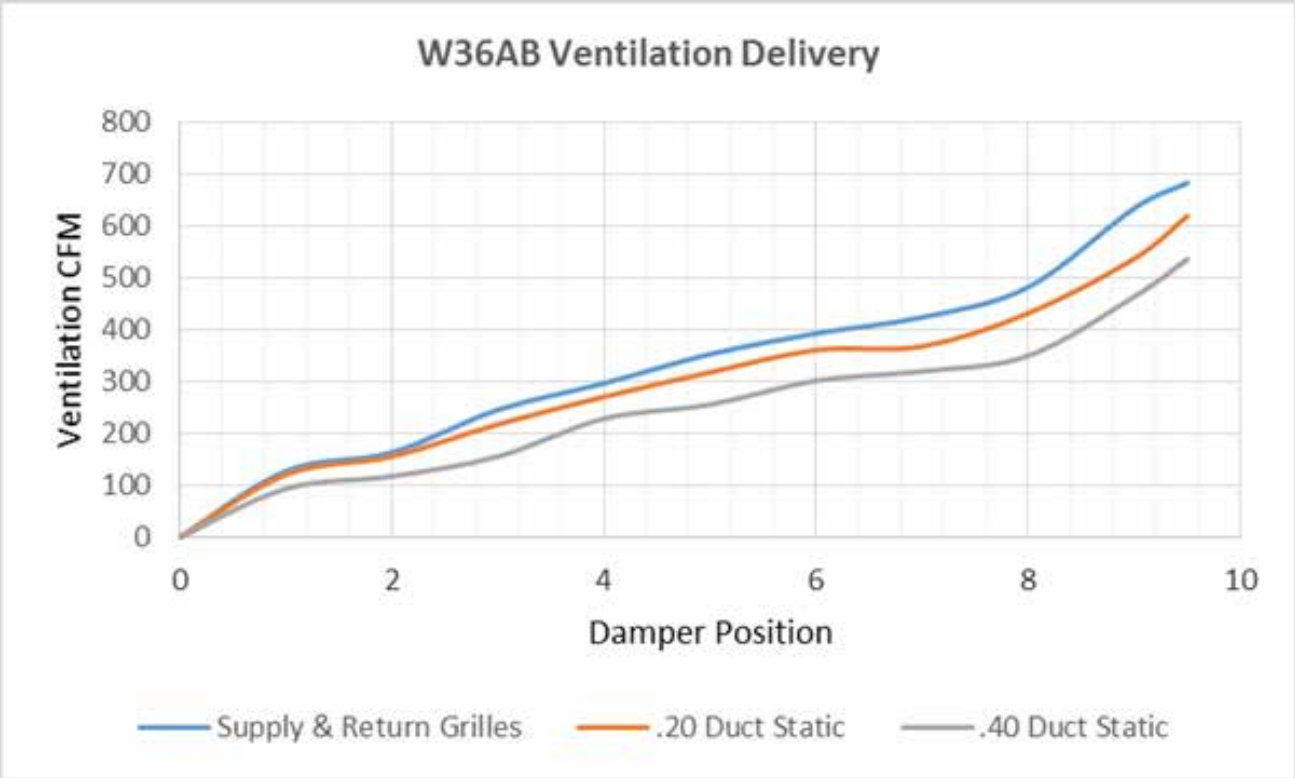
GRAPH 2



GRAPH 3



GRAPH 4



Sequence of Operation

The control board has a built-in pre-purge timer that can be set to 30, 60, and 90 minute intervals by moving the jumper noted in Figure 7 on page 10. This timer will start when the jumper is on one of the timed set of pins and the A terminal is energized on the low voltage strip. Blade adjustment can be made on the PP potentiometer.

Once the timer has timed out the board will default to the occupied setting and this blade position can be adjusted on the OCC potentiometer. If the timer is set to O (off), the occupied setting is instantaneous and the pre-purge setting (PP) is no longer in the sequence.

If there is a call for cooling, the Y1 setting can be used for another blade position if needed by adjusting the Y1 potentiometer. The Y2 potentiometer is only used for demand control at the same time A is energized. This will maintain a minimum position (A energized) and also can increase fresh airflow to satisfy on/off CO_2 controllers. When a modulating CO_2 controller is used, it must be set for 2-10 volt output.

Minimum damper position can be maintained by adjusting the OCC potentiometer to desired blade position when modulating CO_2 readings are at 700ppm or lower, or also can be adjusted to be in the closed position.

On a call for occupied conditions, CRV opens to a position as set by OCC potentiometer (see Figure 13).

NOTE: *These sequence descriptions do not apply if CO_2 controller is used. The CRV will control according to observed CO_2 levels in the conditioned space. Refer to information on page 15.*

FIGURE 13
Call for Ventilation With or Without Compressor Operation

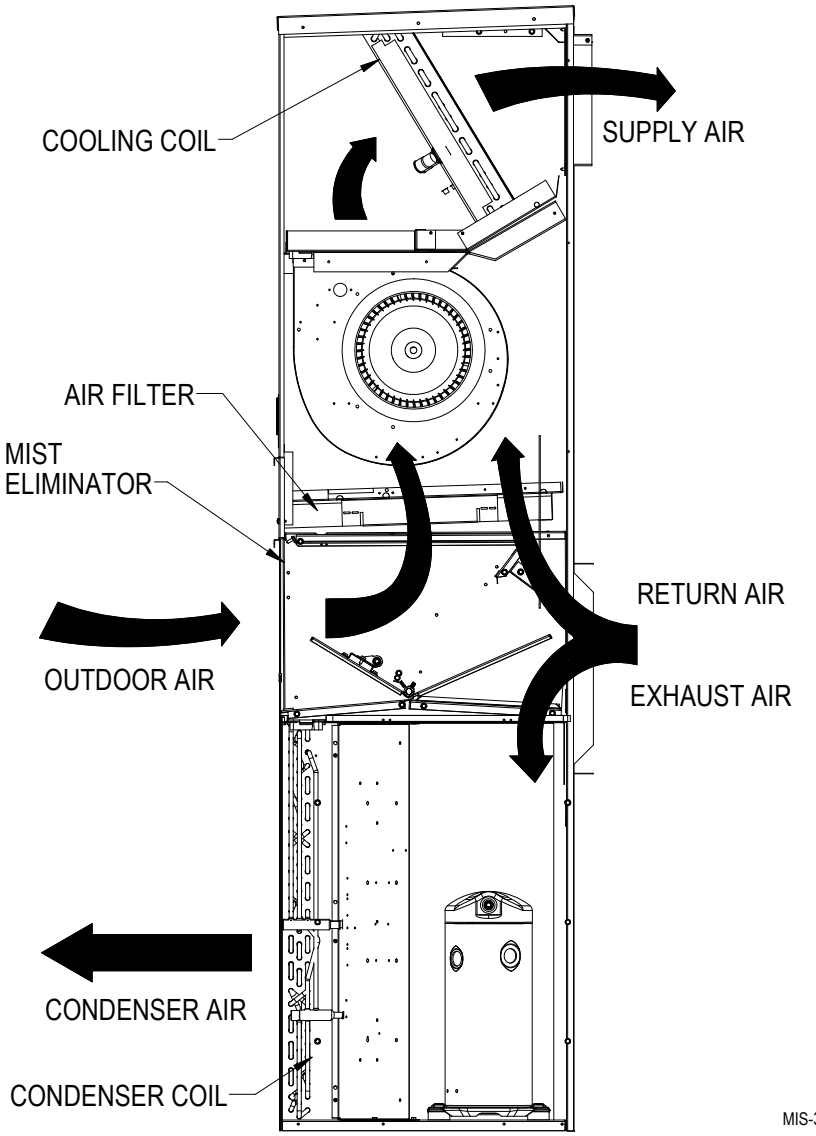


FIGURE 14
Call for Compressor or Fan Only with Ventilation Off