
INSTALLATION INSTRUCTIONS

Commercial Room Ventilator with Exhaust

Model: CHCRV-3

For Use with
Bard C**H Series 2 & 2½ Ton
2-Stage Wall Mount Heat Pumps

***NOTE: CHCRV-3 models must be installed
with TCURB – No Exceptions!***



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BARD MANUFACTURING COMPANY, INC.
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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.

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 CHCRV-3 ventilator is designed to be used with Bard C24H1-* and C30H1-* Series Wall Mount heat pumps.

C24H1-* & C30H1-* MODELS:

When installed in the above-listed models, the CRV 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.

COMMERCIAL ROOM VENTILATOR – C**H SERIES

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.


INSTALLATION

BASIC INSTALLATION

1. Unpack the ventilator assembly which includes the integral ventilator with attached electrical harness and miscellaneous hardware.
2. Remove and save the existing exterior blower access, filter access and service access panels on the Bard wall mount unit. (See Figure 1.)
3. Remove and save existing unit air filter and screws from front center grille. (See Figure 1.)

MODEL	FOR USE WITH FOLLOWING UNITS
CHCRV-3	C24H1
	C30H1

4. Remove the filter brackets and save. Install return fill on CRV with two (2) screws provided (See Figure 2.)
5. Install ventilator by inserting the ventilator into the unit to the far left side clearing the right filter bracket. Once the ventilator is fully inserted, slide the ventilator to the right or until right hole in CRV lines up with hole in condenser partition. (See Figure 3.)

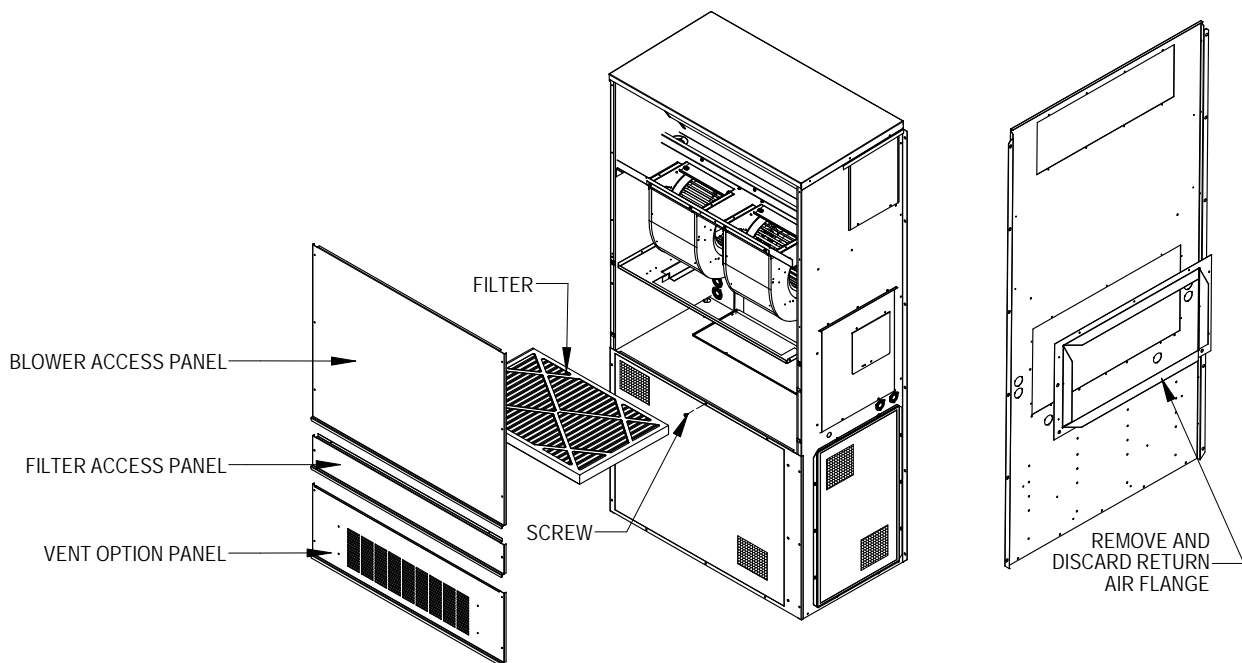


WARNING

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.

IMPORTANT: *Position front lip of ventilator on top of front grille & condenser partition. (See Figure 3 inset.) This is important to ensure proper drainage of any water entering damper assembly.*

**FIGURE 1
REMOVAL OF EXTERIOR PANELS AND AIR FILTER**

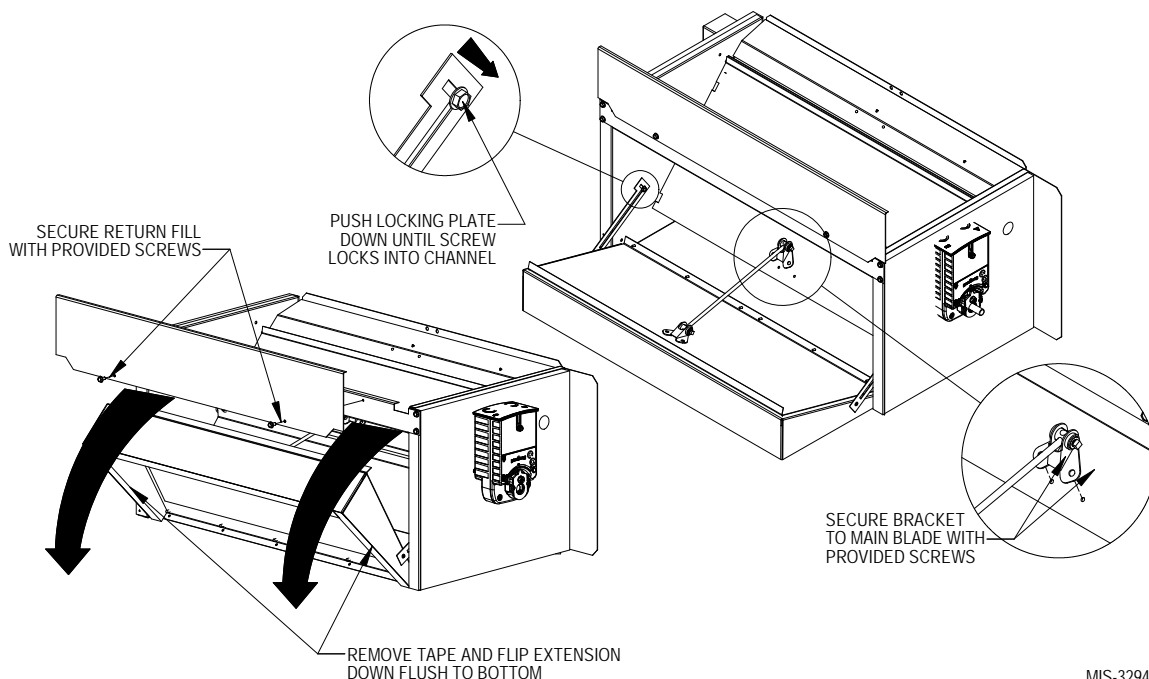


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Once secure, remove the tape holding the rear extension and flip down. Push the locking plates down until screw locks into channel. Secure the rear blade bracket to the front blade with the screws provided (See Figure 2).

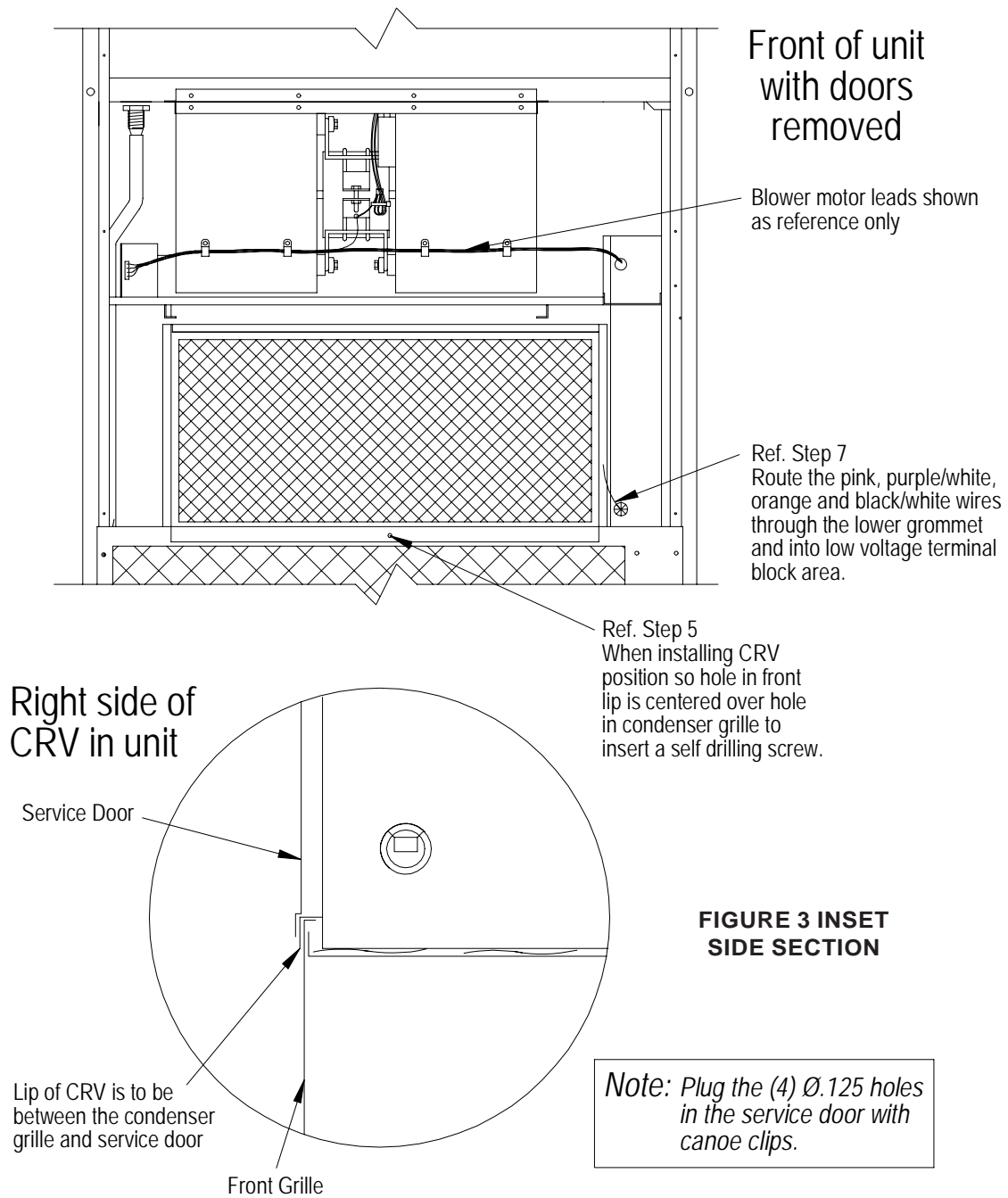
6. Open control panel to gain access to unit low voltage terminal block.
7. Route four (4) wires (pink, purple/white, black/white and orange) from CRV assembly down to and through 7/8" bushing on bottom left side of control panel and into low voltage terminal block section (See Figure 3).
8. Install the vent control board assembly in the upper left corner in unit control panel (See Figure 3A for reference on vent control location). Insert 7/8" bushing into hole on lower right side of low voltage terminal block enclosure. Route the red, yellow, purple and blue/white wires {pre-attached} to the vent control board into the low voltage terminal block section through this opening. Reference Wiring Diagram 4056-221B (enclosed). Connect wires as follows to 24V terminal block:
 - Yellow to Y
 - Purple to Y1
 - Blue/White to DH
 - Red to R
9. On the 24V terminal block, connect the forked terminal of the orange wire to O1, and the forked terminal of black/white wire to C. Route the remaining portion of orange and black/white wires with 1/4" quick connects along with the pink and purple/white wires out of the low voltage terminal section and up to the vent control board. Connect these wires as follows to the vent control board:
 - Purple/White to P1
 - Pink to P
 - Black/White to C with short jumper to the minus (-) terminal
 - Orange: If optional CO₂ sensor is used, connect to OCC. If no CO₂ sensor is used, make no connection and tape off.
10. Close control panel cover
11. Replace the filter brackets, filter and four (4) screws in condenser grille.
12. Reinstall the blower access panel at top of unit and secure with sheet metal screws.
13. Ventilator Checkout
 - A. Resupply power to unit.
 - B. Energize the evaporator blower by switching thermostat to the manual fan position with heat/cool in OFF position.
 - C. Ventilator should open to the position set by R#1 Potentiometer on vent control. Observe damper blade operation throughout travel to assure free, unobstructed movement.
 - D. De-energize evaporator blower. Damper blade should close.
 - E. This completes ventilator checkout.
14. Replace mist eliminator. Be sure it is installed with the drain holes to the bottom.
15. Remove blank off plate or barometric fresh air damper installed on service access door. Plug four (4) mounting holes with the plastic plugs provided with the ventilator.
16. Replace service access panel.
17. Ventilator is now ready for operation.

**FIGURE 2
CONDENSER EXHAUST PLATE WITH SCREEN**



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**FIGURE 3
INSTALL VENTILATOR**



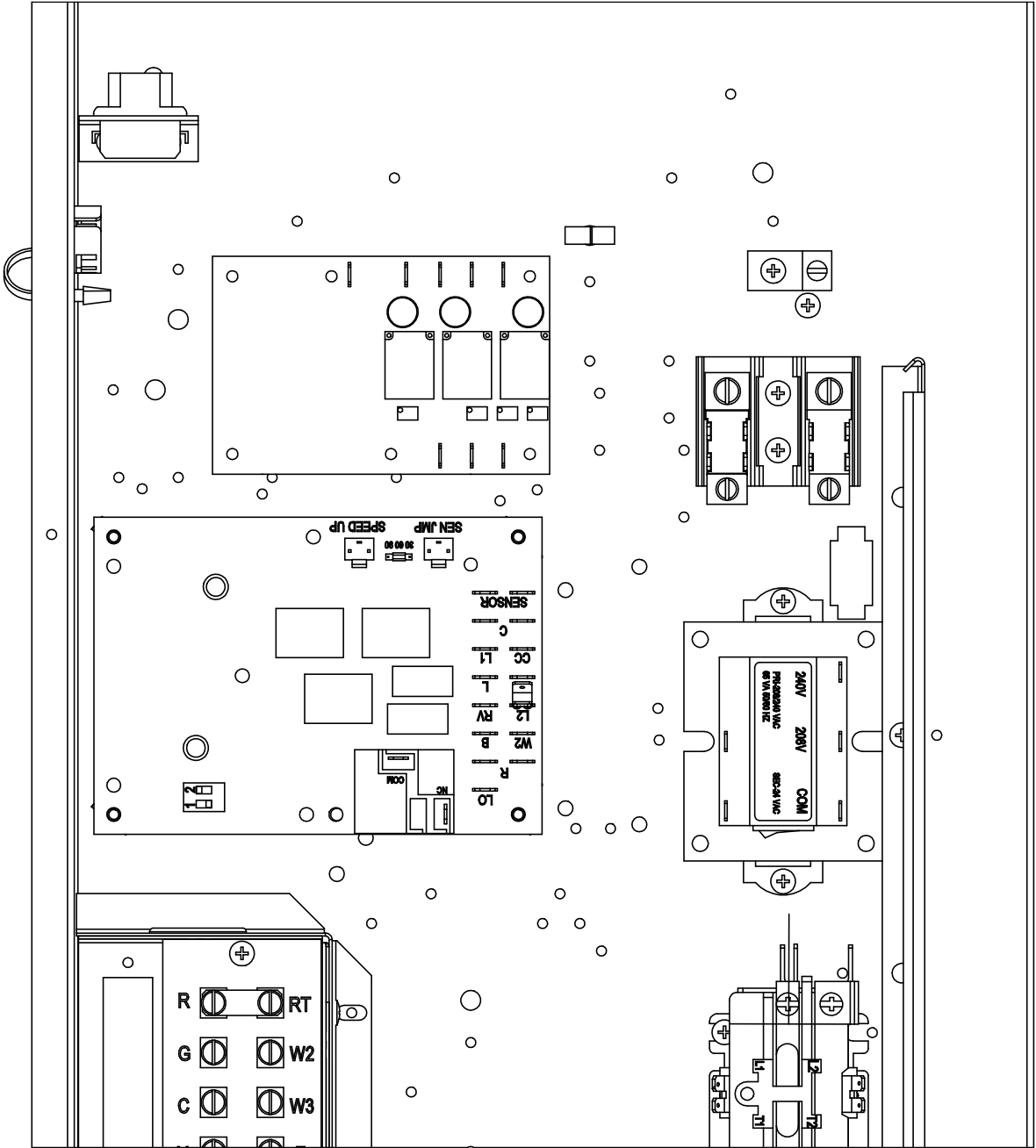
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CO₂ CONTROL

For CO₂-based control, add a CO₂ sensor/controller (Bard Part #8403-096) to the wall and run additional optional wires.

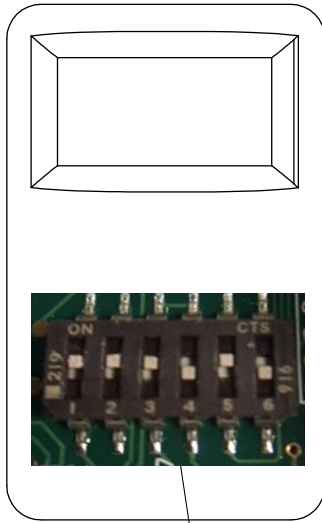
The CO₂ controller also must be re-configured from the standard default settings as it comes out of the box. See next two pages for complete details.

**FIGURE 3A
VENT CONTROL LOCATION**

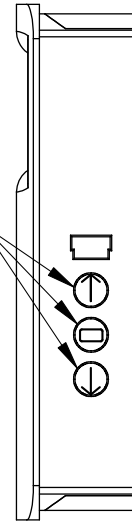


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FIGURE 4
CO₂ SENSOR DEFAULT & FINAL SETTINGS
8403-096 CO2 CONTROLLER

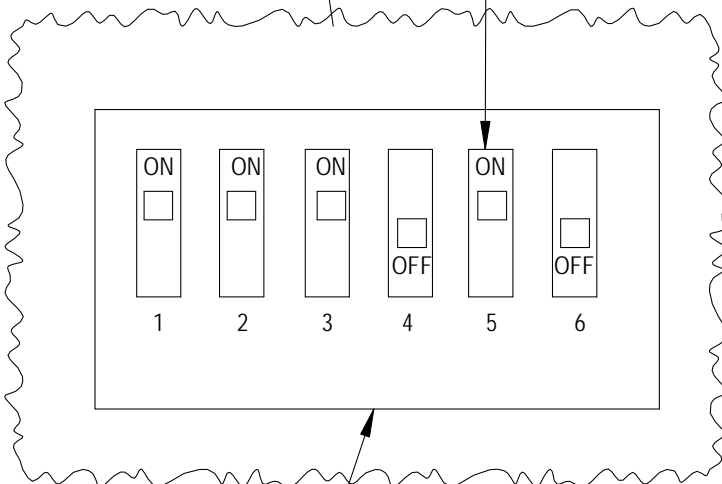


PRESS UP AND DOWN ARROWS TO ENTER CONFIGURATION MODE
 USE ARROWS TO SELECT SETTING. PUSH MIDDLE BUTTON TO CHANGE. CONTROLLER WILL SHOW SET.



NOTE: MENU DIP SWITCH MUST BE IN "ON" POSITION #5 TO CHANGE ANY SETTINGS WITH THE SIDE BUTTONS. TO LOCK THE CO2 CONTROLLER MOVE DIP SWITCH 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	



DIP SWITCHES MUST BE POSITIONED AS SHOWN FOR PROPER OPERATION

2-10V	AN (ppm)	Damper (1)	Approx. Blade Position (2)
2	700	FULLY CLOSED	0
2.5	750		1
3	800		2
3.5	850		3
4	900		4
4.5	950		5
5	1000		6
5.5	1050		7
6	1100		8
6.5	1150		9
7	1200		10
7.5	1250		11
8	1300		12
8.5	1350		14
9	1400		15
9.5	1450		16
10	1500	FULLY OPEN	17

(1) Damper should be fully closed at 700 ppm, if not Potentiometer R7 can be adjusted clockwise (CW) to close it. If it is fully closed at 700 ppm or lower no adjustments required.
 (2) Blade as referenced to the Blade Position Label.

BLADE ADJUSTMENT FOR DESIRED VENTILATOR AIR

The amount of ventilation air supplied by the commercial room ventilator is dependant on four (4) 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 graph below to determine the blade setting necessary to achieve the ventilation air required for each operating mode.

FACTORY DEFAULT SETTINGS ARE:

	<u>C**H</u>
Potentiometer R1.	17
Potentiometer R2.	14
Potentiometer R3.	12

For more accurate adjustment, use a flowhood over the intake opening to measure and adjust the airflow operation.

Potentiometer R1. Adjusts the airflow during blower operation only.

Potentiometer R2. Adjusts the airflow during 1st stage cooling or heating operation.

Potentiometer R3. Adjusts the airflow during 2nd stage cooling or heating operation.

Energize blower only mode and adjust #1 Potentiometer to desired airflow.

Energize 1st stage cooling mode and adjust #2 Potentiometer to desired airflow.

Energize 2nd stage cooling mode and adjust #3 Potentiometer to desired airflow.

Minimum damper position when using CO₂ control damper should be fully closed at 700 ppm or lower, if not Potentiometer R7 can be adjusted clockwise (CW) to close it. If it is fully closed at 700 ppm or lower, no adjustments required.

GRAPH 1
C24H VENT AIRFLOW

Data Pending

GRAPH 2
C30H VENT AIRFLOW

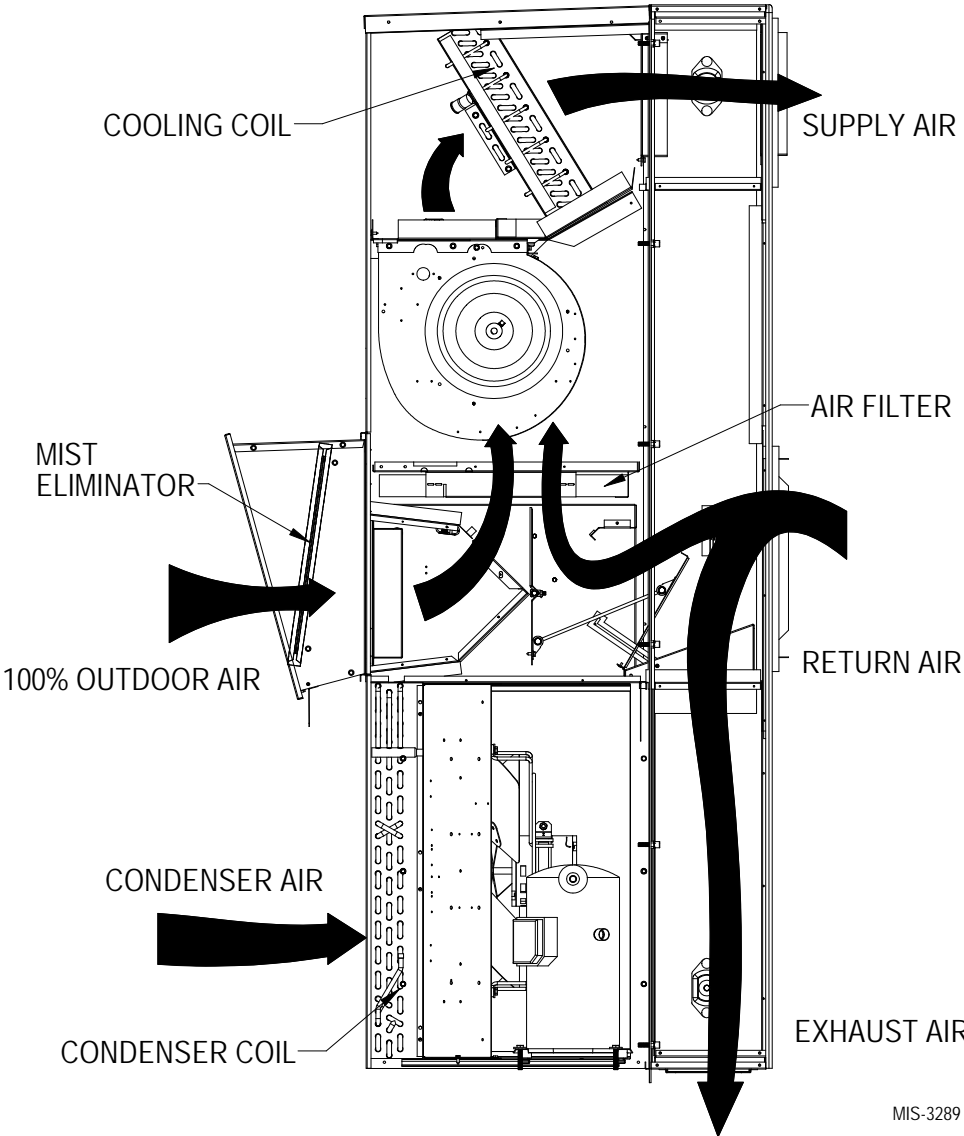
Data Pending

COMMERCIAL ROOM VENTILATOR SEQUENCE OF OPERATION

On a call for blower operation, CRV opens to a position as set by #1 Potentiometer. See Figure 5.

NOTE: These sequence descriptions do not apply if CO₂ controller is used. The CRV will control according to observed CO₂ levels in the conditioned space. Refer to information on Page 6.

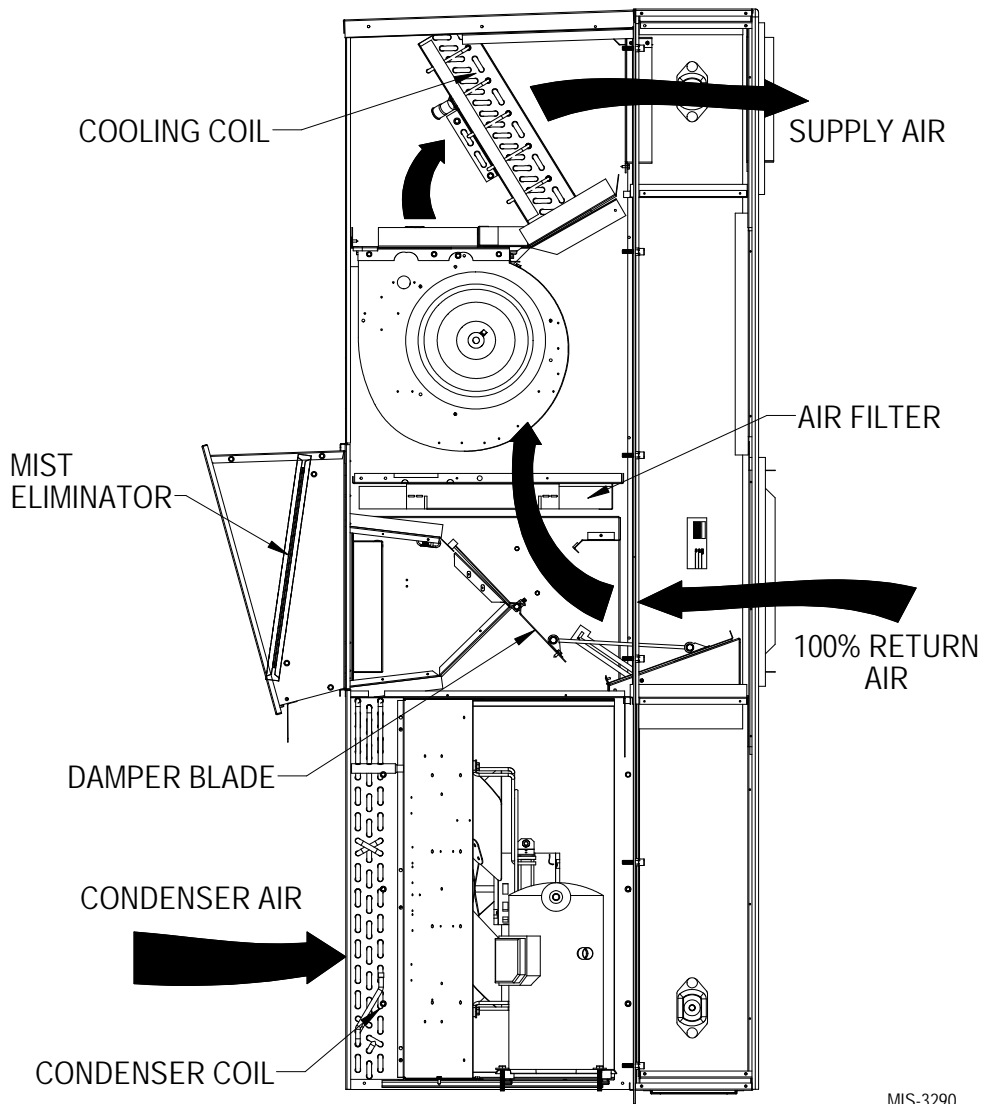
**FIGURE 5
CALL FOR VENTILATION
WITH OR WITHOUT COMPRESSOR OPERATION**



A call for 1st stage cooling or heating cycles the compressor, and the dampers reposition to the Potentiometer #2 setpoint. A call for 2nd stage cooling or heating energizes compressor solenoid

and repositions the damper blade to the Potentiometer #3 position. On loss of blower operation, CRV closes fully. See Figure 6.

**FIGURE 6
CALL FOR COMPRESSOR OR FAN ONLY
WITH VENTILATION OFF**



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