

---

# INSTALLATION INSTRUCTIONS

---

## COMMERCIAL ROOM VENTILATORS WITH EXHAUST

MODELS  
WGCRVS-5  
WGCRVP-5



Bard Manufacturing Company  
Bryan, Ohio 43506

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

Manual : 2100-363  
File: Volume III Tab 19  
Date: 06-01-2000

# Contents

---

## WG General Information

General Information .....	1
Unpacking .....	1
Discription .....	1
Features .....	1
Sequence of Operation .....	1

## Installation Instructions

Basic Installation .....	4
Wiring Diagrams .....	12 & 13

## Figures

Figure 1	Sequence of Operation - Call for Blower Operation .....	2
Figure 2	Sequence of Operation - On Loss of Blower Operation .....	3
Figure 3	Removal of Vent Option Panel .....	4
Figure 4	Removal of Front Exhaust Cover Plate .....	5
Figure 5	Installation of CRV Plate .....	5
Figure 6	nstallation of Ventilator .....	6

## Tables

Table 1A	WGCRV-5 Ventilation Air - High Speed .....	8
Table 1B	WGCRV-5 Ventilation Air - Medium Speed .....	9
Table 1C	WGCRV-5 Ventilation Air - Low Speed .....	10
Table 2	WGCRV-5 Ventilation Air - Free Blow Application .....	11

## 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 incline 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 ventilators are designed to be used with Bard 3-1/2 ton through 5 ton wall mount gas electric units. They are electromechanical vent systems designed to provide fresh air to meet indoor air quality standards with built in exhaust provisions.

## COMMERCIAL ROOM VENTILATOR

### FEATURES:

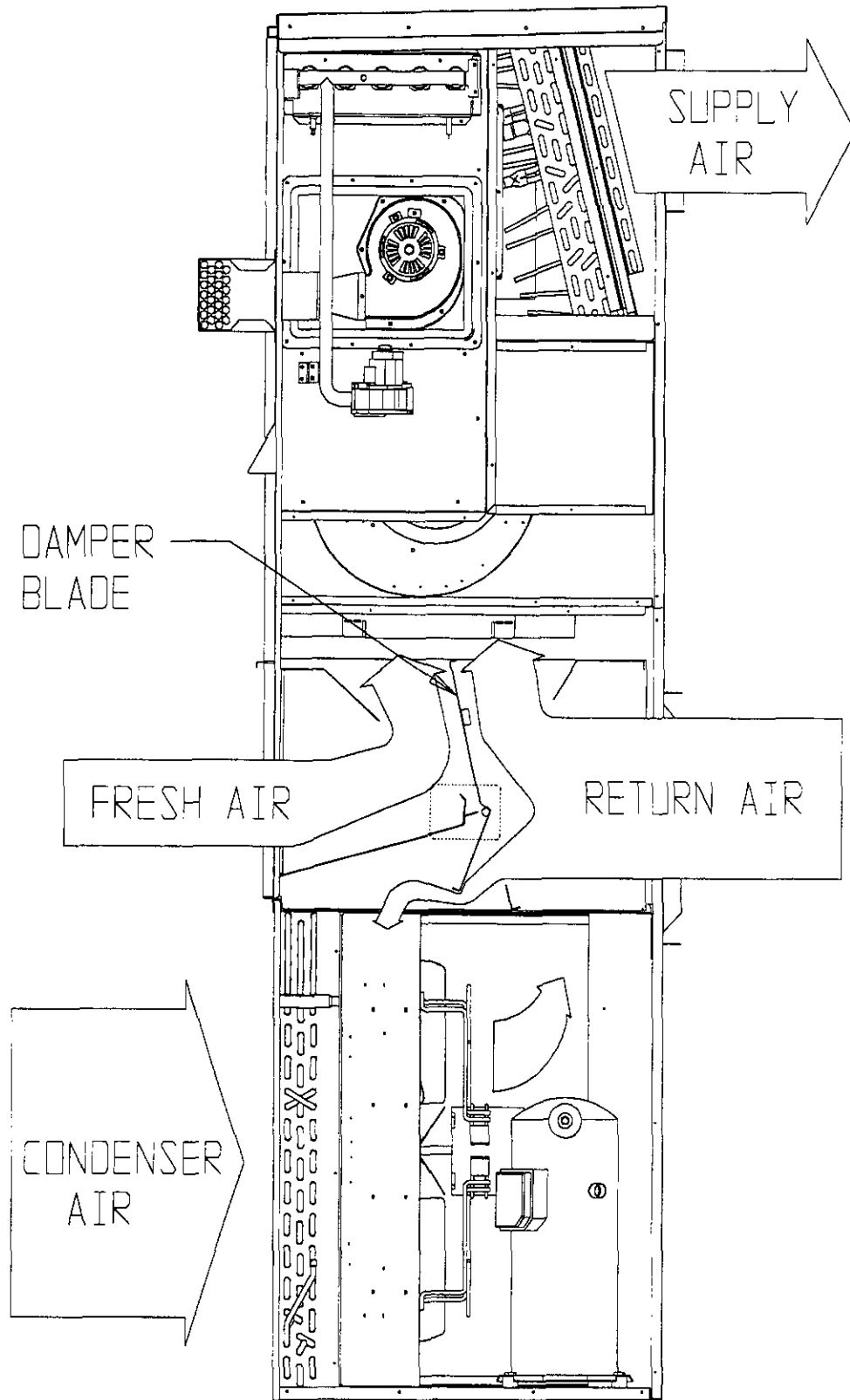
- One piece construction – easy to install with no mechanical linkage adjustment required.
- Exhaust air damper – built in with positive closed position. Provides exhaust air capability to prevent pressurization of tight buildings.
- **CRVS Model** Actuator motor – 24 volt, power open, spring return with built in torque limiting switch.
- **CRVP Model** Actuator motor – 24 volt, power open, power close with built in torque limiting switch.
- Provides up to 75 percent of outside air.

## COMMERCIAL ROOM VENTILATOR SEQUENCE OF OPERATION

On a call for blower operation, CRV opens to full open position as set by minimum position potentiometer. See Figure 1.

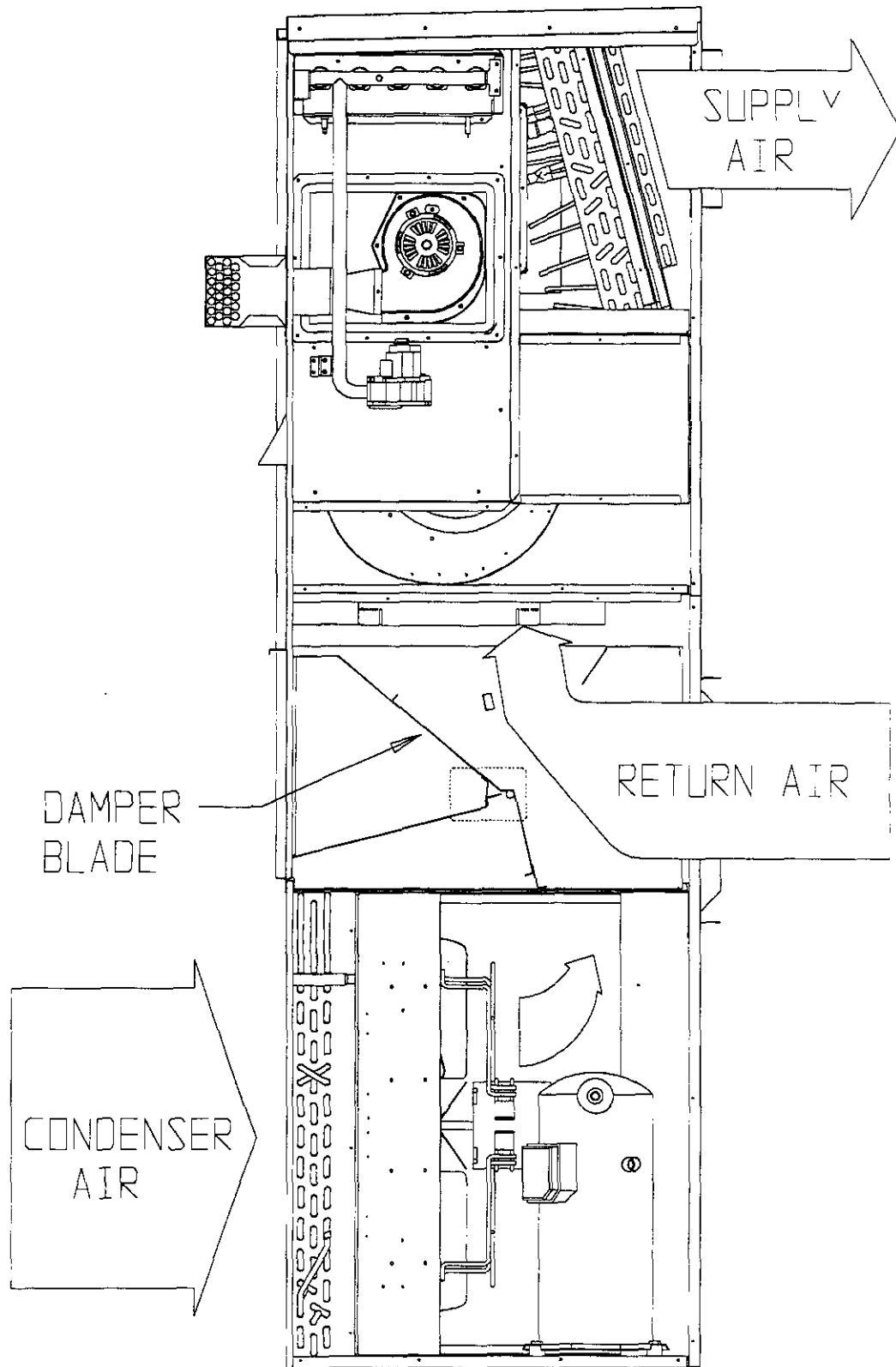
A call for cooling cycles the compressor and dampers remain in the ventilation mode. On loss of blower operation, CRV closes fully. See Figure 2.

**FIGURE 1**  
**SEQUENCE OF OPERATION**  
**CALL FOR BLOWER OPERATION**



MIS-1465

**FIGURE 2**  
**SEQUENCE OF OPERATION**  
**ON LOSS OF BLOWER OPERATION**



MIS-1466

# INSTALLATION INSTRUCTIONS

## BASIC INSTALLATION

1. Unpack the ventilator assembly which includes the integral ventilator with attached electrical harness and miscellaneous hardware.

### **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.

2. Open the front door, and remove and save vent option panel on the Bard Wall mount units. (See Figure 3.)

3. Remove and save existing unit air filter and screw from front center grille. (See Figure 4.)
4. Remove and discard the front exhaust cover plate. (See Figure 4.)

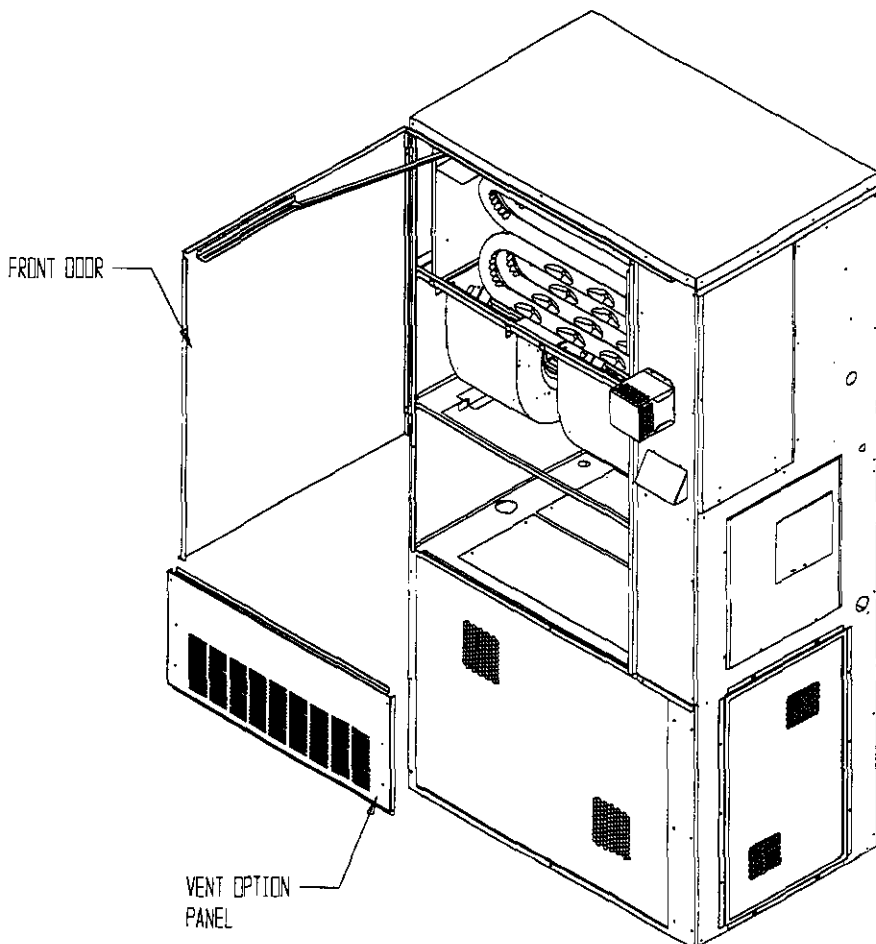
*IMPORTANT: Before front installation install CRV plate with two screws supplied. (See Figure 5.)*

5. Install ventilator by inserting the ventilator into the unit. (See Figure 6.)

*IMPORTANT: Position front lip of ventilator on top of front grille and condenser partition. (See Figure 6 Inset.) This is important to ensure proper drainage of any water entering damper assembly.*

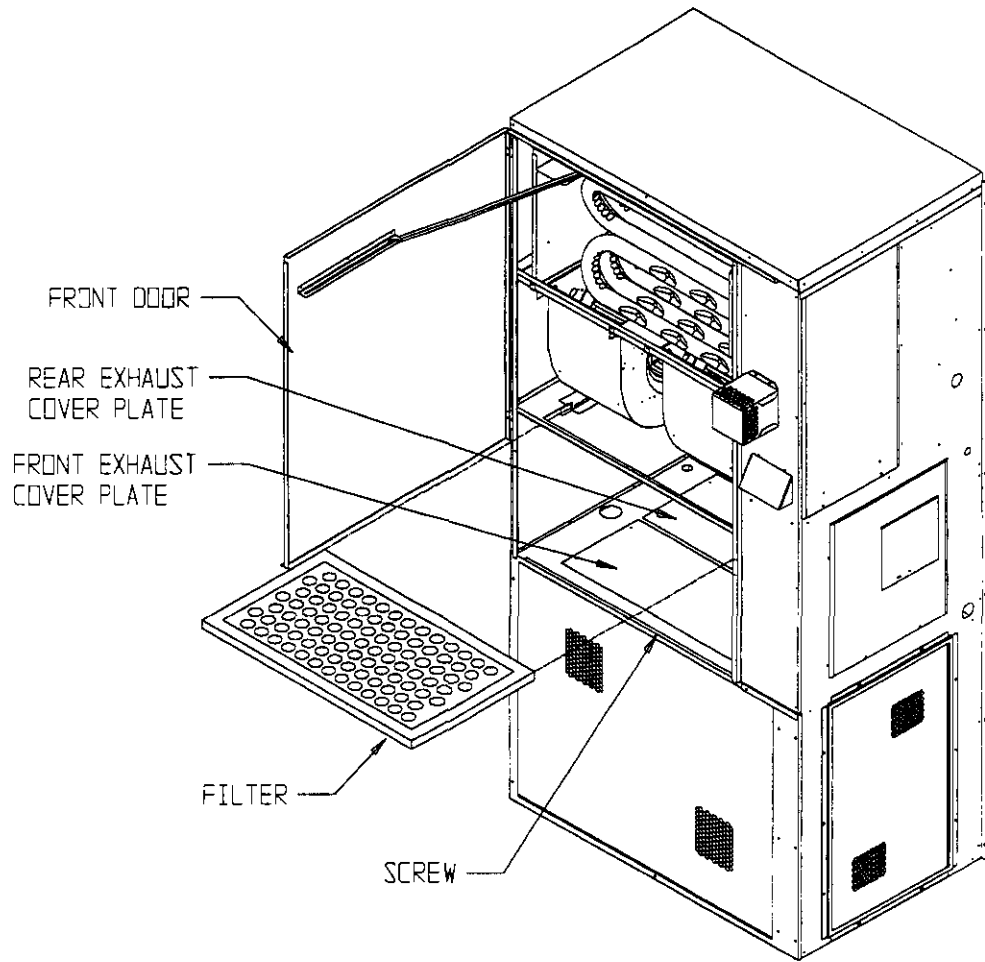
6. Open control panel to gain access to unit low voltage terminal block.

FIGURE 3



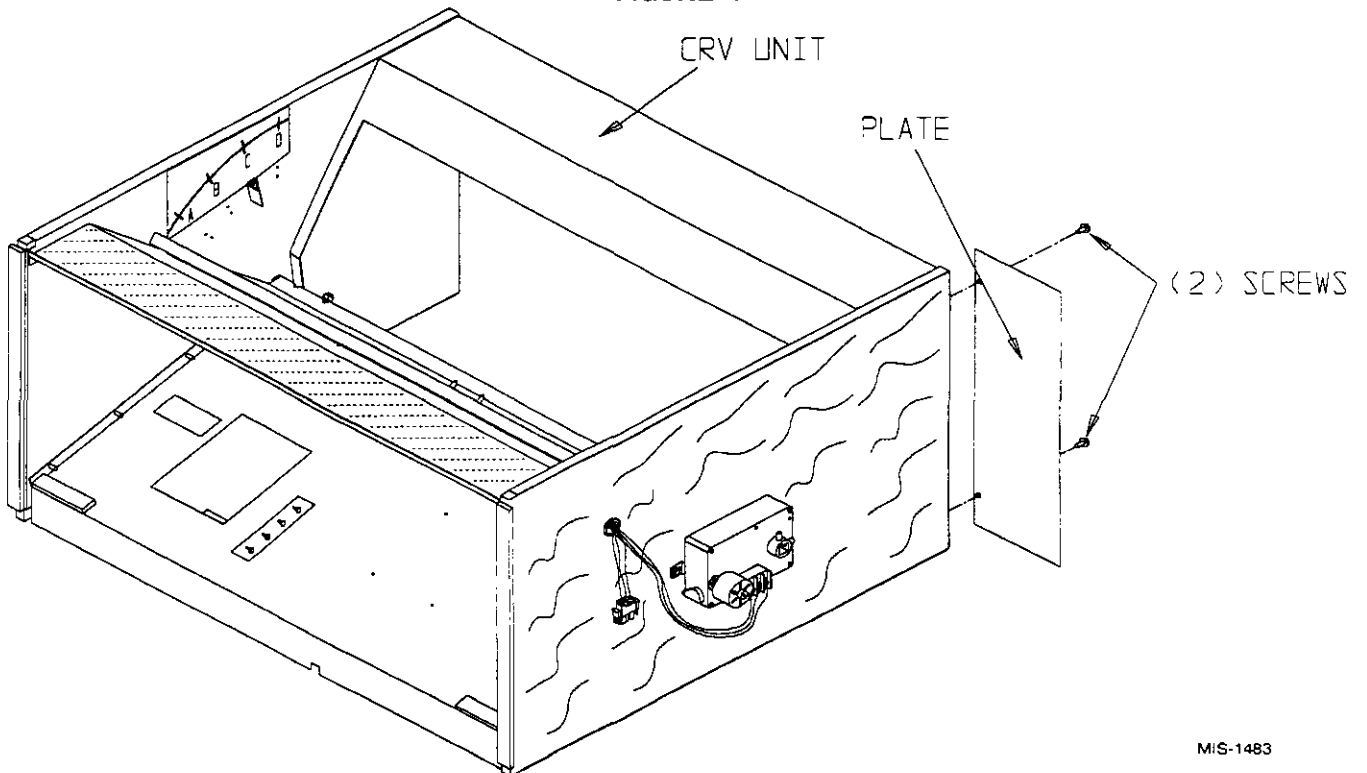
MIS-1448

FIGURE 4



MIS-1448

FIGURE 5



MIS-1483

FIGURE 6

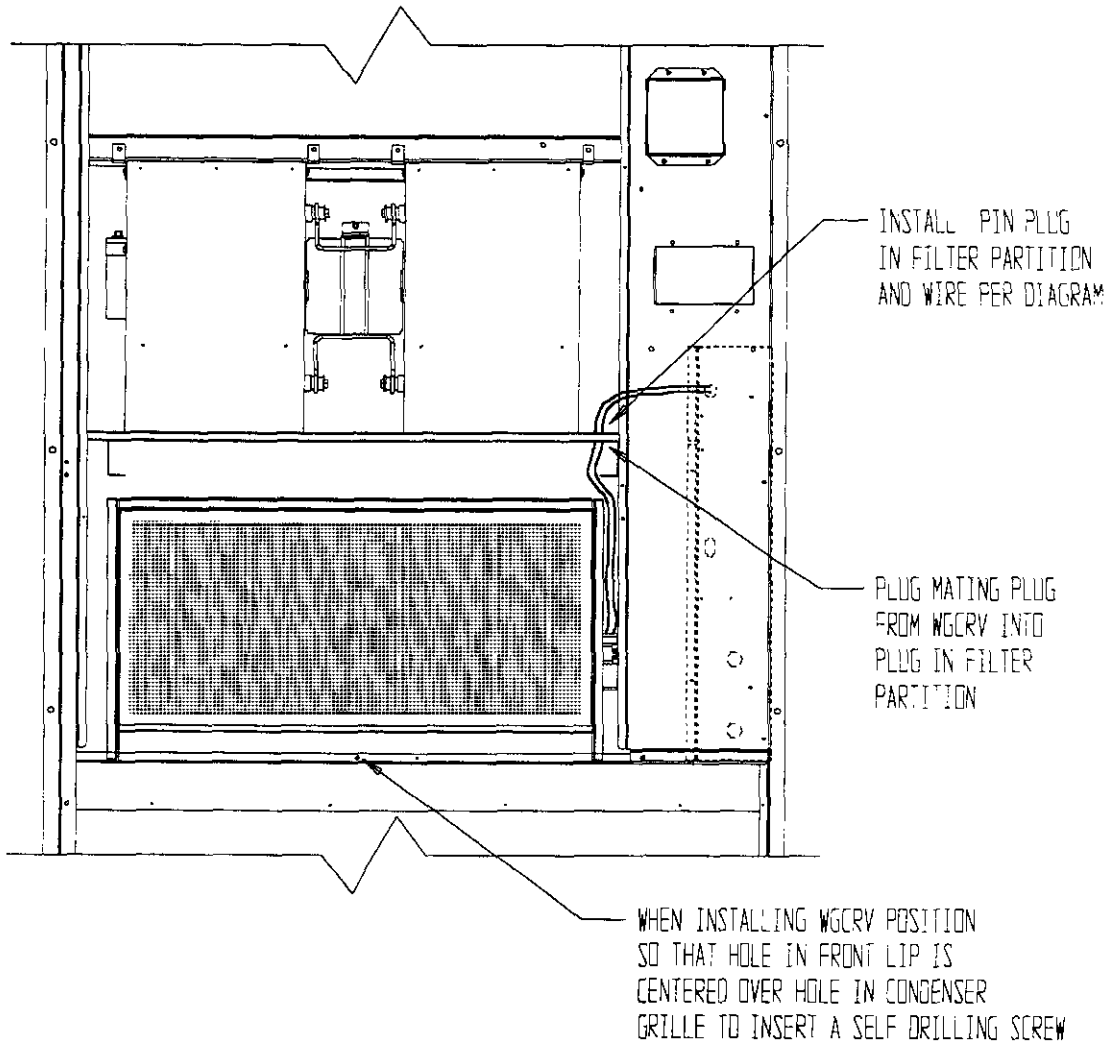
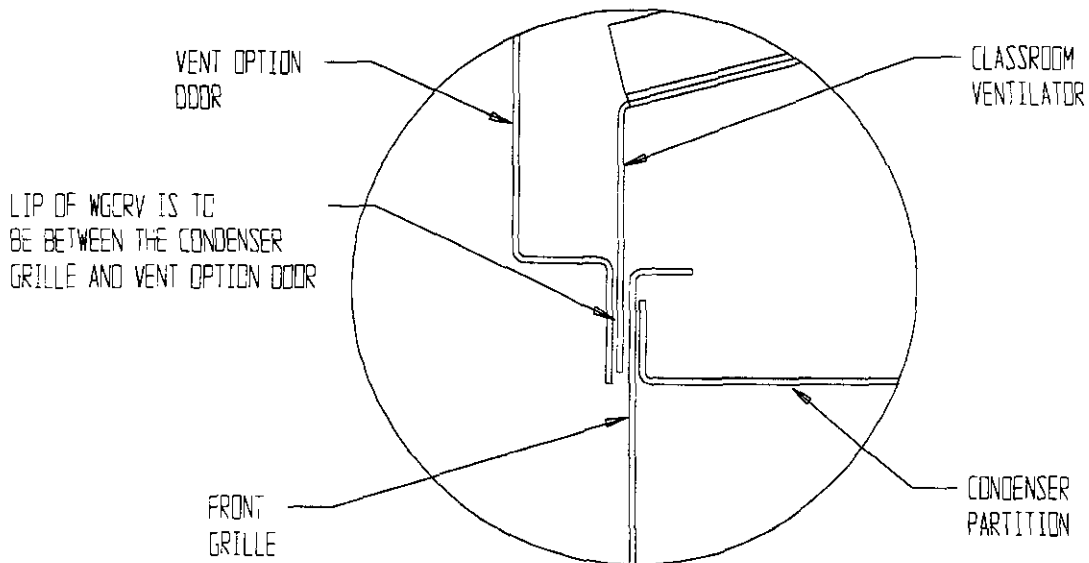


FIGURE 6 INSET



MIS-1464



7. Route electrical harness leads through the 7/8" bushing in control panel (Figure 6) into low voltage box.
8. Connect leads with fork terminal to corresponding points on terminal strip. (See wiring diagrams later in this manual or on ventilator.) Plug connector into corresponding hole in filter rack.
9. Close control panel cover.
10. Plug mating connector from CRV into connector in filter rack.
11. Blade adjustment for desired ventilator air. The amount of ventilation air supplied by the commercial room ventilator is dependent on four (4) factors.
  - a. Return air duct static pressure drop.
  - b. Supply air duct static pressure drop.
  - c. Indoor blower motor speed
  - d. Damper blade open position setting.

To determine the amount of fresh air that will be supplied to the structure first, determine the pressure drops of the supply and return air ducts. For free blow application with return air filter grille and supply grille, assume .05 supply static, .10 return static. See Table 2.

Determine on what speed the evaporator motor is running.

Refer to the tables on the following pages to determine the blade setting necessary to achieve the ventilation air required at the supply and return static duct pressure drops that are applicable.

## 12. Ventilator Checkout

### **CRVS Models (only)**

- a. Remove mist eliminator to allow access to minimum position thumbwheel. (See Figures 6 and 7.)
- b. Resupply power to unit.
- c. Energize the evaporator blower by switching thermostat to the manual fan position with heat/cool in OFF position.
- d. Ventilator should open to the position set by position adjustment thumbwheel. Cycle position adjustment thumbwheel to full open through full close. Observe damper blade operation throughout travel to assure free, unobstructed movement. (See Figure 7.)
- e. Adjust position adjustment thumbwheel until desired blade setting is reached with power applied to unit. See Tables 1A, 1B, 1C or 2 for required blade setting versus ventilator air.
- f. De-energize the evaporator blower. Damper blade should close.
- g. This completes ventilator checkout for CRVS models.

### **CRVP Models (only)**

- a. Locate blade stop and reposition to location that will allow the desired airflow from Table 1A, 1B, 1C or 2.
- b. Resupply power to unit.
- c. Energize the evaporation blower by switching thermostat to the manual fan position with heat/cool in OFF position.
- d. Ventilation blade should open until it contacts the blade stop.
- e. De-energize evaporator blower. Damper blade should close.
- f. This completes the ventilation checkout for CRVP models.

**TABLE 1A  
WGCRV-5 VENTILATION AIR – HIGH SPEED**

<b>HIGH SPEED</b>	<b>0.00 SUPPLY AIR STATIC</b>						
<b>Damper Position</b>	<b>Ventilation Air / Total Air (CFM)</b>						
"A"	240/1895	250/1870	260/1845	280/1820	300/1790	330/1760	360/1740
"B"	435/1870	445/1850	460/1830	480/1815	500/1780	530/1750	560/1735
"C"	560/1815	570/1795	585/1775	605/1760	625/1725	655/1700	675/1685
"D"	680/1730	690/1715	705/1700	725/1690	745/1660	770/1630	785/1615
<b>Return Static</b>	<b>0.00</b>	<b>0.05</b>	<b>0.10</b>	<b>0.15</b>	<b>0.20</b>	<b>0.25</b>	<b>0.30</b>
<b>HIGH SPEED</b>	<b>0.20 SUPPLY AIR STATIC</b>						
<b>Damper Position</b>	<b>Ventilation Air / Total Air (CFM)</b>						
"A"	205/1615	220/1600	235/1575	265/1560	285/1530	320/1500	355/1430
"B"	380/1605	400/1590	410/1565	425/1550	445/1520	500/1480	540/1420
"C"	490/1560	510/1545	520/1510	535/1495	560/1460	610/1430	640/1385
"D"	590/1460	610/1445	635/1415	645/1400	675/1360	710/1340	730/1300
<b>Return Static</b>	<b>0.00</b>	<b>0.05</b>	<b>0.10</b>	<b>0.15</b>	<b>0.20</b>	<b>0.25</b>	<b>0.30</b>
<b>HIGH SPEED</b>	<b>0.40 SUPPLY AIR STATIC</b>						
<b>Damper Position</b>	<b>Ventilation Air / Total Air (CFM)</b>						
"A"	180/1315	195/1300	220/1275	250/1240	270/1170	310/1120	355/1045
"B"	315/1305	330/1280	350/1250	395/1210	415/1140	455/1090	540/1015
"C"	410/1245	425/1220	440/1190	485/1155	505/1090	555/1020	600/985
"D"	495/1165	515/1145	530/1105	555/1090	575/1020	615/990	660/935
<b>Return Static</b>	<b>0.00</b>	<b>0.05</b>	<b>0.10</b>	<b>0.15</b>	<b>0.20</b>	<b>0.25</b>	<b>0.30</b>

**TABLE 1B  
WGCRV-5 VENTILATION AIR – MEDIUM SPEED**

<b>MEDIUM SPEED</b>	<b>0.00 SUPPLY AIR STATIC</b>						
<b>Damper Position</b>	<b>Ventilation Air / Total Air (CFM)</b>						
"A"	165/1540	180/1535	195/1530	220/1525	250/1510	295/1495	340/1475
"B"	360/1525	375/1515	390/1505	420/1500	450/1480	495/1460	540/1440
"C"	470/1490	485/1480	500/1470	530/1465	560/1440	605/1420	625/1400
"D"	590/1455	615/1445	630/1440	650/1430	670/1400	715/1380	735/1365
<b>Return Static</b>	<b>0.00</b>	<b>0.05</b>	<b>0.10</b>	<b>0.15</b>	<b>0.20</b>	<b>0.25</b>	<b>0.30</b>
<b>MEDIUM SPEED</b>	<b>0.20 SUPPLY AIR STATIC</b>						
<b>Damper Position</b>	<b>Ventilation Air / Total Air (CFM)</b>						
"A"	125/1325	150/1310	170/1290	200/1275	230/1250	280/1200	330/1170
"B"	320/1310	345/1295	370/1275	390/1260	420/1230	480/1175	535/1155
"C"	405/1270	430/1255	455/1235	470/1220	500/1180	550/1150	590/1120
"D"	505/1225	530/1200	555/1185	580/1175	610/1150	630/1120	680/1080
<b>Return Static</b>	<b>0.00</b>	<b>0.05</b>	<b>0.10</b>	<b>0.15</b>	<b>0.20</b>	<b>0.25</b>	<b>0.30</b>
<b>MEDIUM SPEED</b>	<b>0.40 SUPPLY AIR STATIC</b>						
<b>Damper Position</b>	<b>Ventilation Air / Total Air (CFM)</b>						
"A"	120/1060	140/1020	185/1000	190/985	220/920	280/860	300/700
"B"	255/1045	275/1005	315/980	370/955	410/880	460/800	520/670
"C"	325/1000	355/960	390/940	435/920	480/850	520/750	580/660
"D"	410/960	440/940	470/900	505/885	535/815	580/710	600/635
<b>Return Static</b>	<b>0.00</b>	<b>0.05</b>	<b>0.10</b>	<b>0.15</b>	<b>0.20</b>	<b>0.25</b>	<b>0.30</b>

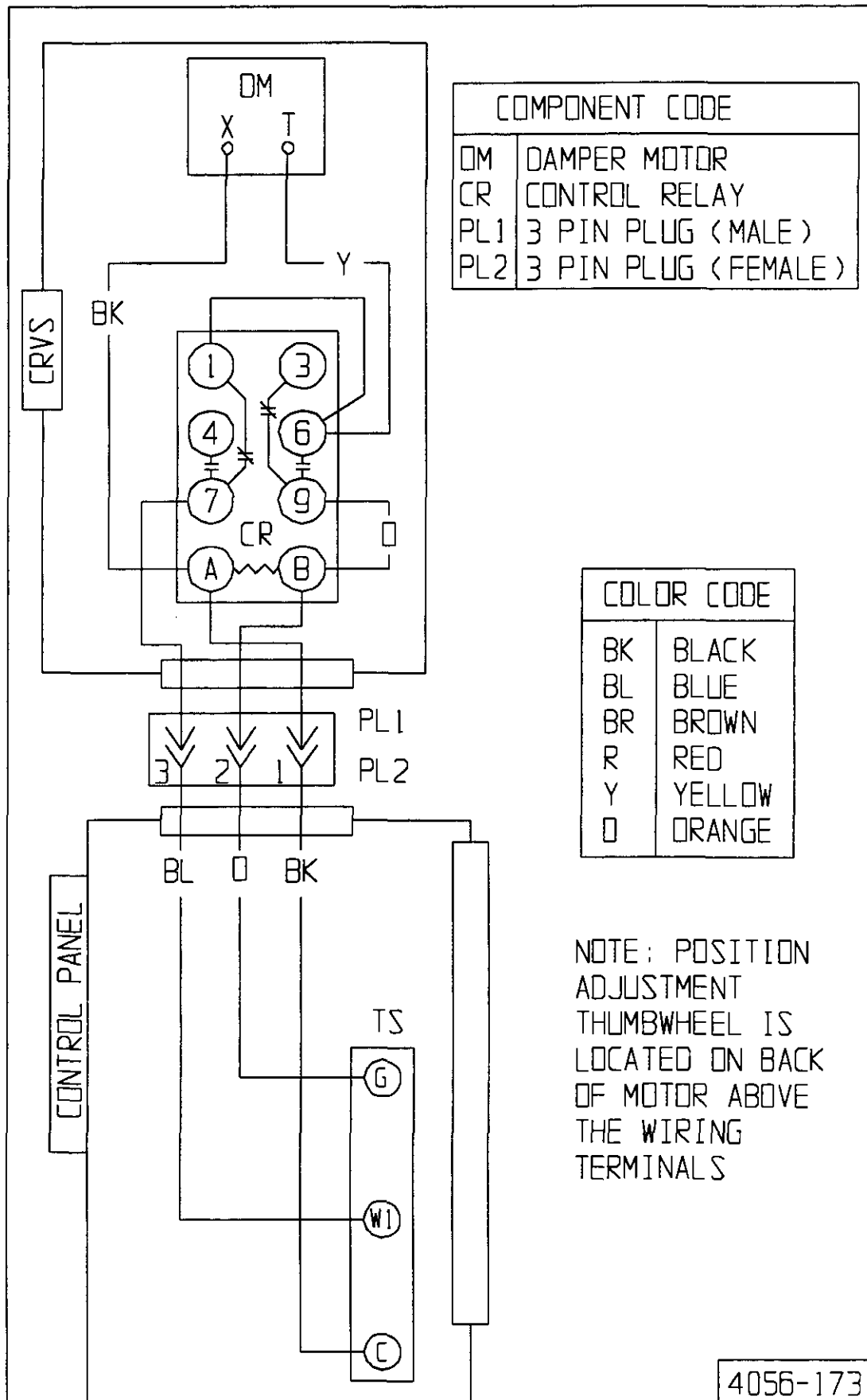
**TABLE 1C  
WGCRV-5 VENTILATION AIR – LOW SPEED**

<b>LOW SPEED</b>	<b>0.00 SUPPLY AIR STATIC</b>						
<b>Damper Position</b>	<b>Ventilation Air / Total Air (CFM)</b>						
"A"	75/1190	110/1180	150/1165	190/1150	235/1130	290/1100	340/1075
"B"	270/1165	305/1150	345/1140	390/1130	435/1100	490/1070	540/1055
"C"	325/1140	360/1130	400/1125	430/1110	475/1090	530/1060	560/1040
"D"	445/1120	480/1110	520/1100	550/1090	595/1070	640/1040	655/1025
<b>Return Static</b>	<b>0.00</b>	<b>0.05</b>	<b>0.10</b>	<b>0.15</b>	<b>0.20</b>	<b>0.25</b>	<b>0.30</b>
<b>LOW SPEED</b>	<b>0.20 SUPPLY AIR STATIC</b>						
<b>Damper Position</b>	<b>Ventilation Air / Total Air (CFM)</b>						
"A"	55/995	90/970	130/950	160/925	205/890	280/870	330/840
"B"	230/980	265/955	305/940	370/910	415/870	480/850	520/820
"C"	285/955	320/925	360/910	390/895	435/850	510/810	550/790
"D"	385/930	420/910	460/900	495/880	540/840	590/790	610/760
<b>Return Static</b>	<b>0.00</b>	<b>0.05</b>	<b>0.10</b>	<b>0.15</b>	<b>0.20</b>	<b>0.25</b>	<b>0.30</b>
<b>LOW SPEED</b>	<b>0.40 SUPPLY AIR STATIC</b>						
<b>Damper Position</b>	<b>Ventilation Air / Total Air (CFM)</b>						
"A"	40/740	75/700	115/650	140/600	NA	NA	NA
"B"	180/730	215/680	255/630	360/585	NA	NA	NA
"C"	210/710	245/660	290/610	380/570	NA	NA	NA
"D"	290/690	325/650	375/590	450/560	NA	NA	NA
<b>Return Static</b>	<b>0.00</b>	<b>0.05</b>	<b>0.10</b>	<b>0.15</b>	<b>0.20</b>	<b>0.25</b>	<b>0.30</b>

**TABLE 2**  
**WGCRV-5 VENTILATION AIR**  
**FREE BLOW APPLICATION WITH RETURN AIR FILTER GRILLE**

<b>High Speed @ 0.05 Supply Air Static</b>	
<b>Damper Position</b>	<b>Ventilation Air / Total Air (CFM)</b>
"A"	240 / 1780
"B"	430 / 1760
"C"	540 / 1710
"D"	650 / 1630
<b>Return Static</b>	<b>0.10</b>
<b>Medium Speed @ 0.05 Supply Air Static</b>	
<b>Damper Position</b>	<b>Ventilation Air / Total Air (CFM)</b>
"A"	180 / 1480
"B"	385 / 1450
"C"	480 / 1410
"D"	600 / 1375
<b>Return Static</b>	<b>0.10</b>
<b>Low Speed @ 0.05 Supply Air Static</b>	
<b>Damper Position</b>	<b>Ventilation Air / Total Air (CFM)</b>
"A"	145 / 1110
"B"	335 / 1100
"C"	390 / 1070
"D"	500 / 1050
<b>Return Static</b>	<b>0.10</b>





4056-173

