

INSTALLATION INSTRUCTIONS

MODELS

WERV-A3A

WERV-C3A

WALL MOUNT ENERGY RECOVERY VENTILATORS WITH EXHAUST

**FOR USE WITH BARD 2-1/2 THRU 3 TON
WALL MOUNT AIR CONDITIONERS
AND HEAT PUMPS**

PATENT PENDING

DATE: 10-01-93

**MANUAL 2100-230 REV.
SUPERSEDES REV.
FILE VOL. III, TAB 19**

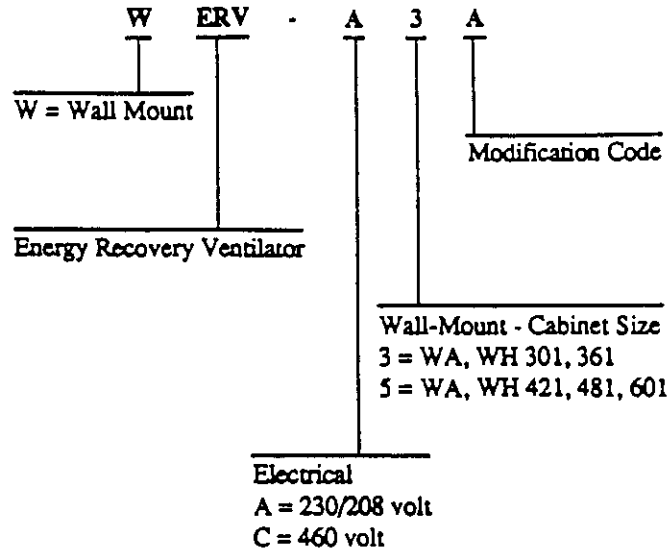
TABLE OF CONTENTS

Model Nomenclature Legend	1
Electrical Specification.	1
General Description	1
Performance Data.	2
General Information	3
Unpacking	3
Basic Installation (Field Installation)	3
Basic Installation (Factory Installed Version).	6
Control Options	10
Ventilation Air Flow.	10
Servicing the WERV System	10
Energy Transfer Wheel	10

FIGURES and TABLES

Figure 1 . . Wall Mount Unit	4
Figure 2 . . Filter and Exhaust Cover Plate	5
Figure 3 . . Wire Routing and Energy Recovery Ventilation Installation	7
Figure 4 . . Control Panel Wiring and Component Location	8
Figure 5 . . Service Access Panel and Air Intake Hood.	9
Figure 6 . . Air Flow Path	9
Table 1 . . WERV Ventilation Air Tables	10

MODEL NOMENCLATURE LEGEND



ELECTRICAL SPECIFICATIONS

Model	Voltage	Amps	Control Voltage
WERV-A3A	230/208	2.2	24V
WERV-C3A	460	1.2	24V
WERV-A5A	230/208	2.2	24V
WERV-C5A	460	1.2	24V

GENERAL DESCRIPTION

The Wall Mount Energy Recovery Ventilator was designed to provide energy efficient, cost effective ventilation to meet I.A.Q. (Indoor Air Quality) requirements while still maintaining good indoor comfort and humidity control for a variety of applications such as schools, classrooms, lounges, conference rooms, beauty salons and others. It provides a constant supply of fresh air for control of airborne pollutants including CO₂, smoke, radon, formaldehyde, excess moisture, virus and bacteria.

The ventilator incorporates patented rotary heat exchange state-of-the-art technology to remove both heat and moisture.

It is designed as a single package which can be easily factory or field installed for new installations or retrofit to the new Bard WA and WH series wall mounted units. The package consists of a unique rotary Energy Recovery Cassette that can be easily removed for cleaning or maintenance. It has two 13 inch diameter heat transfer wheels for efficient heat transfer. The heat transfer wheels use a permanently bonded dry desiccant coating for total heat recovery.

Ventilation is accomplished with (2) blower/motor assemblies each consisting of a drive motor and dual blowers for maximum ventilation at low sound levels. Air is exhausted at the same rate that fresh air is brought into the structure thus not pressuring the building. The rotating energy wheels provides the heat transfer effectively during both summer and winter conditions. Provides required ventilation to meet the requirements of ASHRAE 62-1989 standard.

NOTE: Operation is not recommended below 5 degrees F outdoor temperature because freezing of moisture in the heat transfer wheel can occur.

PERFORMANCE AND APPLICATION DATA

Summer Cooling Performance
(Indoor Design Conditions 75°DB/62°WB)

Ambient O.D.	VENTILATION RATE -- 400 CFM 63% Efficiency						VENTILATION RATE -- 325 CFM 64% Efficiency						VENTILATION RATE -- 250 CFM 65% Efficiency								
	DB/WB°F	VLT	VLS	VLL	HRT	HRS	HRL	VLT	VLS	VLL	HRT	HRS	HRL	VLT	VLS	VLL	HRT	HRS	HRL		
	75	19080			6120	12020		3855	15502			4972	9921		3182	11925			3825	7751	
105	70	12960	12960	0	8164	8164	0	10530	10530	0	6739	6739	0	8100	8100	0	5265	5265	0	0	
65	12960			0	8164		0	10530			0	6739		0	8100			0	5265		0
80	28080			17280	17690		10886	22815			14040	14601		8985	17550			10800	11407		7019
75	19080			8280	12020		5216	15502			6727	9921		4305	11925			5175	7751		3363
100	70	10980	10800	180	6917	6804	113	8921	8775	146	5709	5616	93	6862	6750	112	4460	4387	73	0	
65	10800			0	6804		0	8775			0	5616		0	6750			0	4387		0
60	10800			0	6804		0	8775			0	5616		0	6750			0	4387		0
80	28080			19440	17690		12247	22815			15795	14601		10108	17550			12150	11407		7897
75	19080			10440	12020		6577	15502			8482	9921		5428	11925			6525	7751		4241
95	70	10980	8640	2340	6917	5443	1474	8921	7020	1901	5709	4492	1216	6862	5400	1462	4460	3510	950	0	
65	8640			0	5443		0	7020			0	4492		0	5400			0	3510		0
60	8640			0	5443		0	7020			0	4492		0	5400			0	3510		0
80	28080			21600	17690		13608	22815			17550	14601		11232	17550			13500	11407		8774
75	19080			12600	12020		7938	15502			10237	9921		6552	11925			7875	7751		5118
90	70	10980	6480	4500	6917	4082	2835	8921	5265	3656	5709	3369	2340	6862	4050	2812	4460	2632	1828	0	
65	6480			0	4082		0	5265			0	3369		0	4050			0	2632		0
60	6480			0	4082		0	5265			0	3369		0	4050			0	2632		0
80	28080			23760	17690		14968	22815			19305	14601		12355	17550			14850	11407		9652
75	19080			14760	12020		9298	15502			11992	9921		7675	11925			9225	7751		5996
85	70	10980	4320	6660	6917	2721	4195	8921	3510	5411	5709	2246	3463	6862	2700	4162	4460	1755	2705	0	
65	4320			0	2721		0	3510			0	2246		0	2700			0	1755		0
60	4320			0	2721		0	3510			0	2246		0	2700			0	1755		0
75	19080			16920	12020		10659	15502			13747	9921		8798	11925			10575	7751		6873
80	70	10980	2160	8820	6917	1360	5556	8921	1755	7166	5709	1123	4586	6862	1350	5512	4460	877	3583	0	
65	3780			1620	2381		1020	3071		1316	1965		842	2362		1012	1535		658	0	
60	2160			0	1360		0	1755		0	1123		0	1350		0	877		0	0	
70	10980			10980	6917		6917	8921		8921	5709		5709	6862		6862	4460		4460	0	
75	65	3780	0	3780	2381	0	2381	3071	0	3071	1965	0	1965	2362	0	2362	1535	0	1535	0	
60	0			0	0		0	0		0	0		0	0		0	0		0	0	

Winter Heating Performance
(Indoor Design Conditions 70°F DB)

Ambient O.D.	VENTILATION RATE					
	400 CFM 75% Eff		325 CFM 76% Eff		250 CFM 77% Eff	
DB°F	WVL	WHR	WVL	WHR	WVL	WHR
65	2160	1620	1755	1333	1350	1039
60	4320	3240	3510	2667	2700	2079
55	6480	4860	5265	4001	4050	3118
50	8640	6480	7020	5335	5400	4158
45	10800	8100	8775	6669	6750	5197
40	12960	9720	10530	8002	8100	6237
35	15120	11340	12285	9336	9450	7276
30	17280	12960	14040	10670	10800	8316
25	19440	14580	15795	12004	12150	9355
20	21600	16200	17550	13338	13500	10395
15	23760	17820	19305	14671	14850	11434

LEGEND:

VLT = Ventilation Load - Total
VLS = Ventilation Load - Sensible
VLL = Ventilation Load - Latent
HRT = Heat Recovery - Total
HRS = Heat Recovery - Sensible
HRL = Heat Recovery - Latent
WVL = Winter Ventilation Load
WHR = Winter Heat Recovery

NOTE: Sensible performance only is shown for winter application.

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 following:

1. Energy Recovery Ventilator
2. Service Door
3. Rain Hood and Mist Eliminator
4. 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.

BASIC INSTALLATION (Field Installation)

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

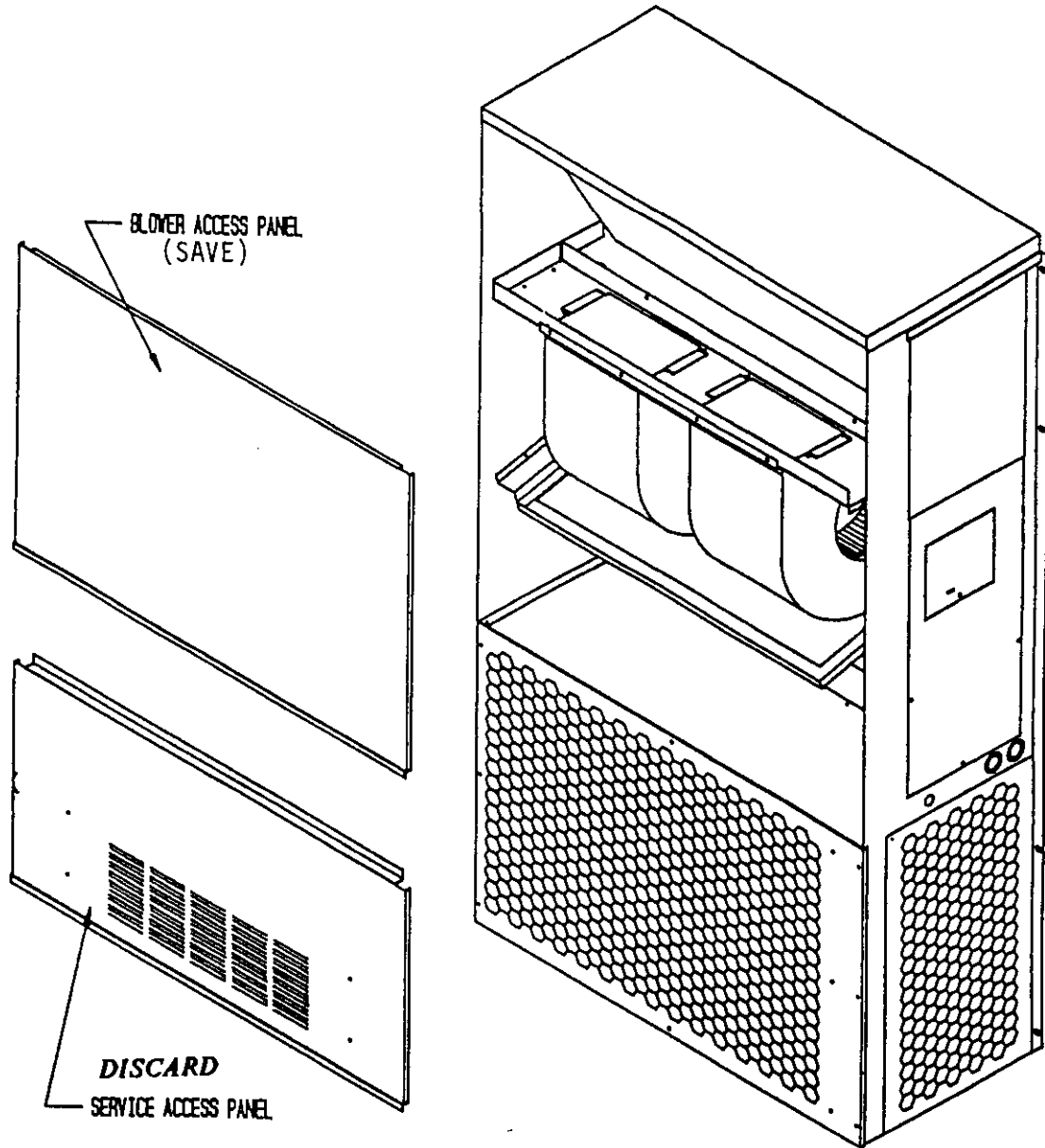
WARNING			
Open and lock unit disconnect switch before installing this accessory to prevent injury or death due to electrical shock or contact with moving parts. Turn thermostat to off.			

<u>MODEL</u>	<u>For Use With Following Units</u>		<u>Electrical</u>
WERV-A3A	WA301-A, -B WA361-A, -B	WB301-A, -B WB361-A, -B	230/208-1 or 3 phase
WERV-C3A	WA301-C WA361-C	WB301-C WB361-C	460-3 phase

CAUTION: Be sure the correct model and voltage Energy Recovery Ventilator is used with the correct air conditioner or heat pump to insure correct voltage compatibility.

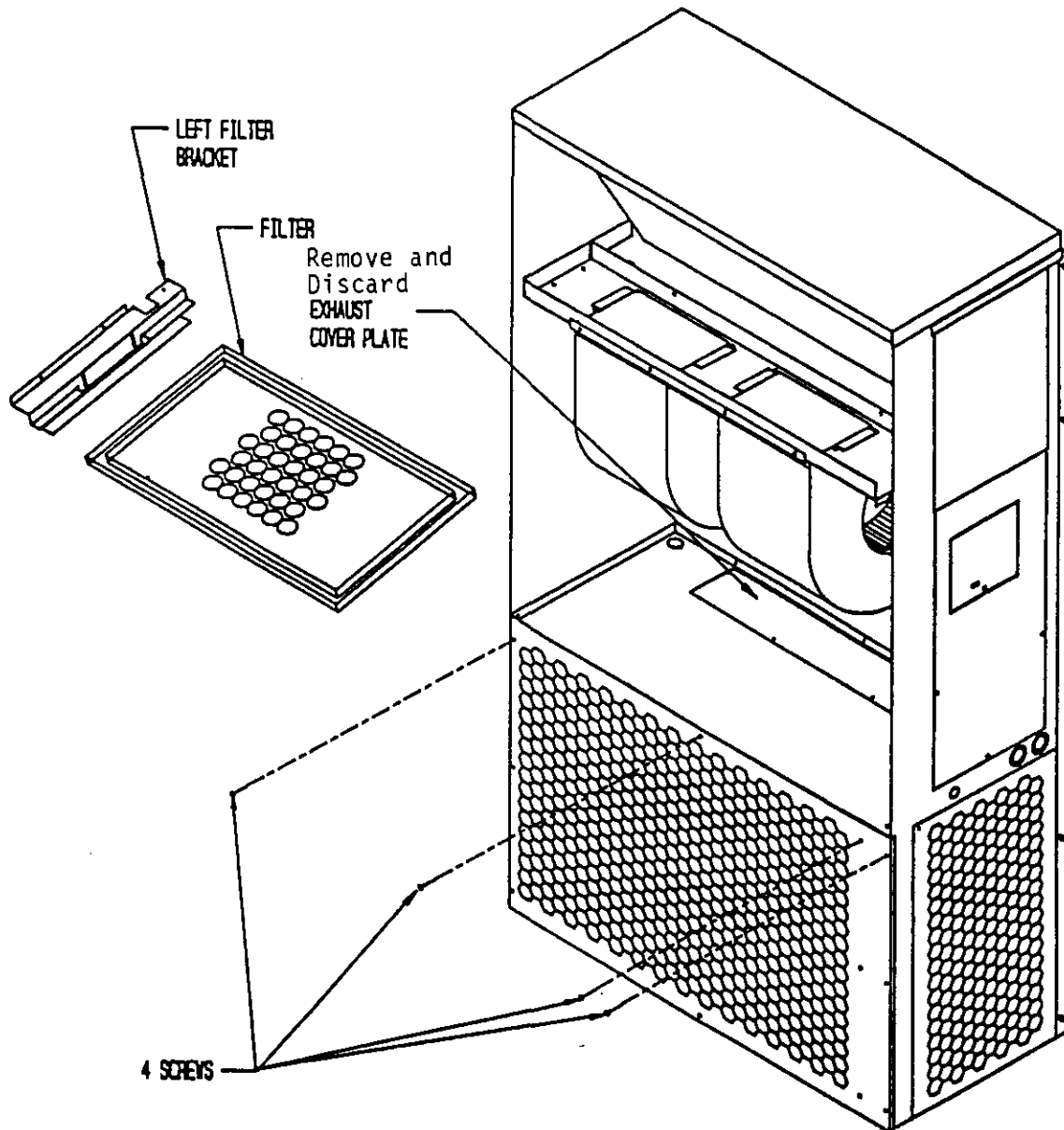
2. Remove the existing exterior blower access and service access panels on the Bard wall mount units. Save the blower access panel and discard service access panel. (See Figure 1)

FIGURE 1



3. Remove and save existing unit return air filter and left side filter support bracket by removing two screws from left side of unit. Remove and save top four (4) screws from front grille. (See Figure 2)
4. REMOVE AND DISCARD THE EXHAUST COVER PLATE. (See Figure 2)

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 until it is tight against the back of the control panel. (Figure 3)

IMPORTANT: Position front lip of ventilator under front grille and on top of condenser partition. (See Figure 3 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. (Insure all power is off prior to opening the control panel.)
7. Route two (2) low voltage electrical leads thru the 7/8" bushing in control panel (Figure 3) into low voltage box.
8. Connect leads with fork terminal to corresponding points on terminal strip to terminals C and G. (See Figure 4 on Page 8 and wiring diagram.)

NOTE: These 24 volt control wires control the starting and stopping of the Energy Recovery Ventilator and can be independently controlled by an energy management control or timer. See separate section on Control Wiring.

9. Remove female plug of high voltage wiring harness from the heat recovery assembly and snap into unit control panel from the inside of the control panel in the hole provided. Wire to terminal block. See Figure 4 and wiring diagram.
10. Plug male plug from WERV assembly into female connector at back of control panel. (See Figures 3 and 4)
11. Replace inner and outer control panel cover.
12. Replace left filter bracket, filter and four (4) screws in condenser grille. (See Figure 2)
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 heat transfer wheels should rotate slowing (49 RPM). Intake and exhaust blowers should run.
 - D. De-energize evaporator blower. Energy recovery heat transfer wheels and fresh air and exhaust air blowers should stop.
 - E. This completes ventilator checkout.

14. Reinstall the blower access panel at top of unit and secure with sheet metal screws.
15. Replace the lower service access panel with the new panel provided. Attach air intake hood with screws provided. (See Figure 5) Be sure to insert the top flange of the air intake hood into and thru the slot in the service door and between the door and insulation to prevent bowing of the door.
16. Ventilator is now ready for operation.

BASIC INSTALLATION (FACTORY INSTALLED MODELS)

1. Remove blower access door and service door. Room filter located above air circulating blowers.
2. Remove and install air intake hood--refer to item 15 above.

FIGURE 3

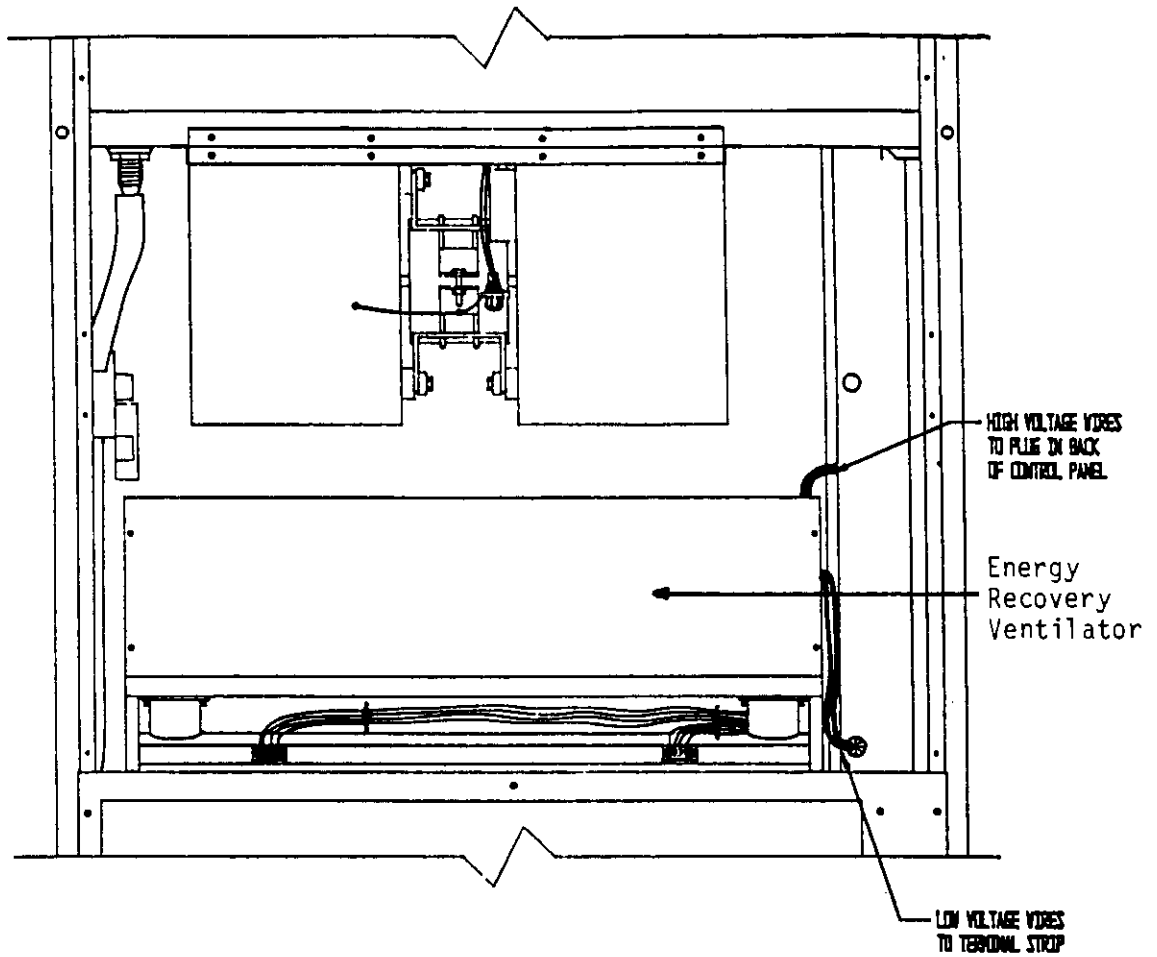


FIGURE 3
INSET

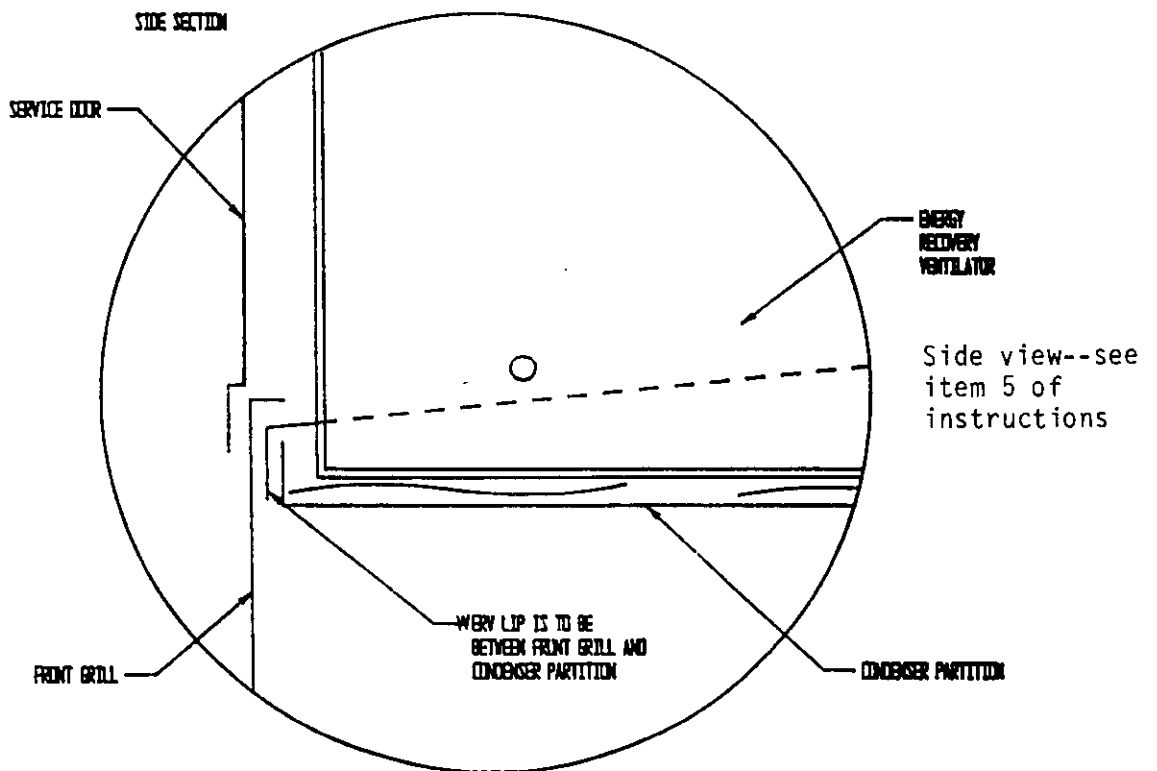


FIGURE 4

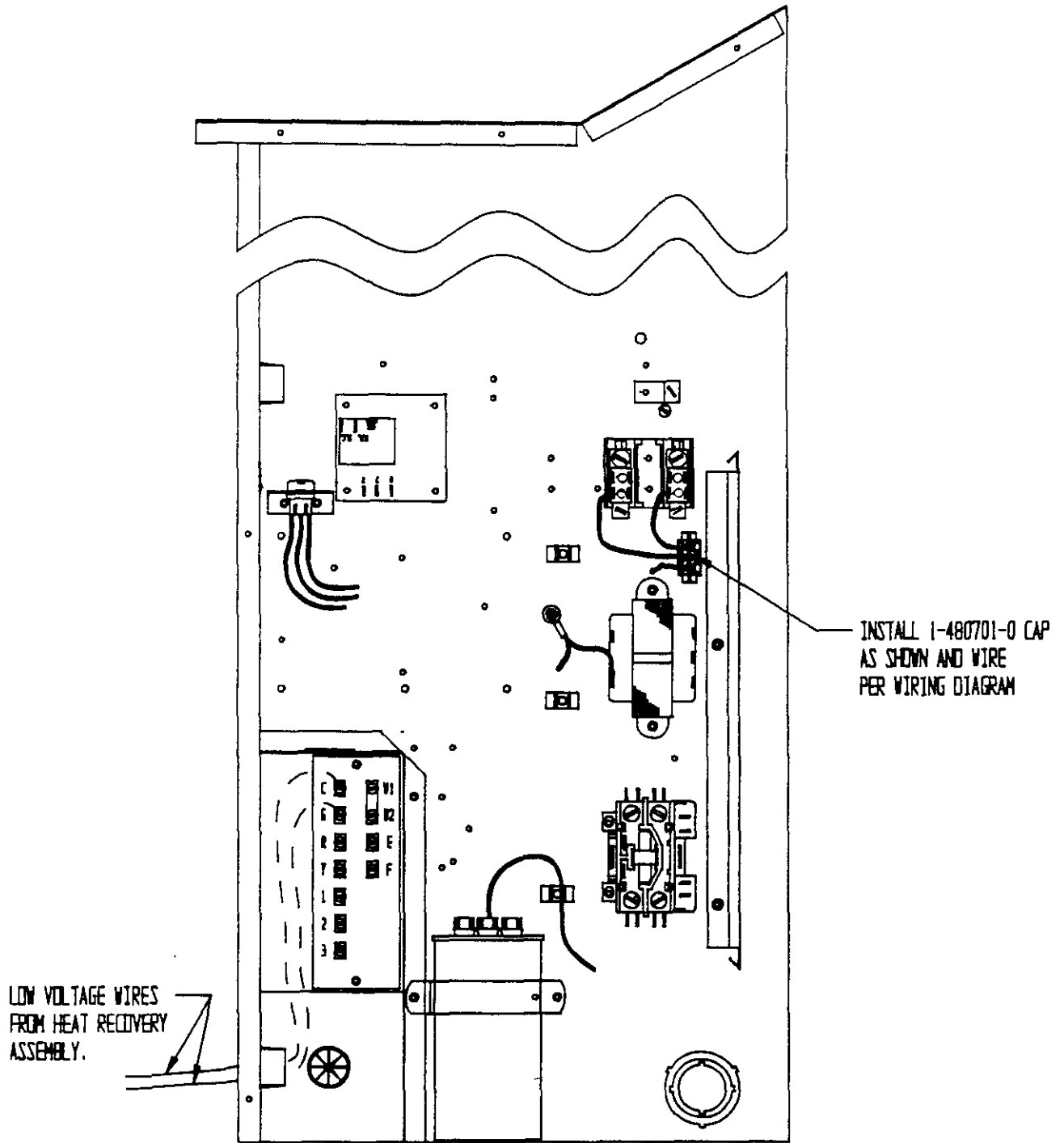


FIGURE 5

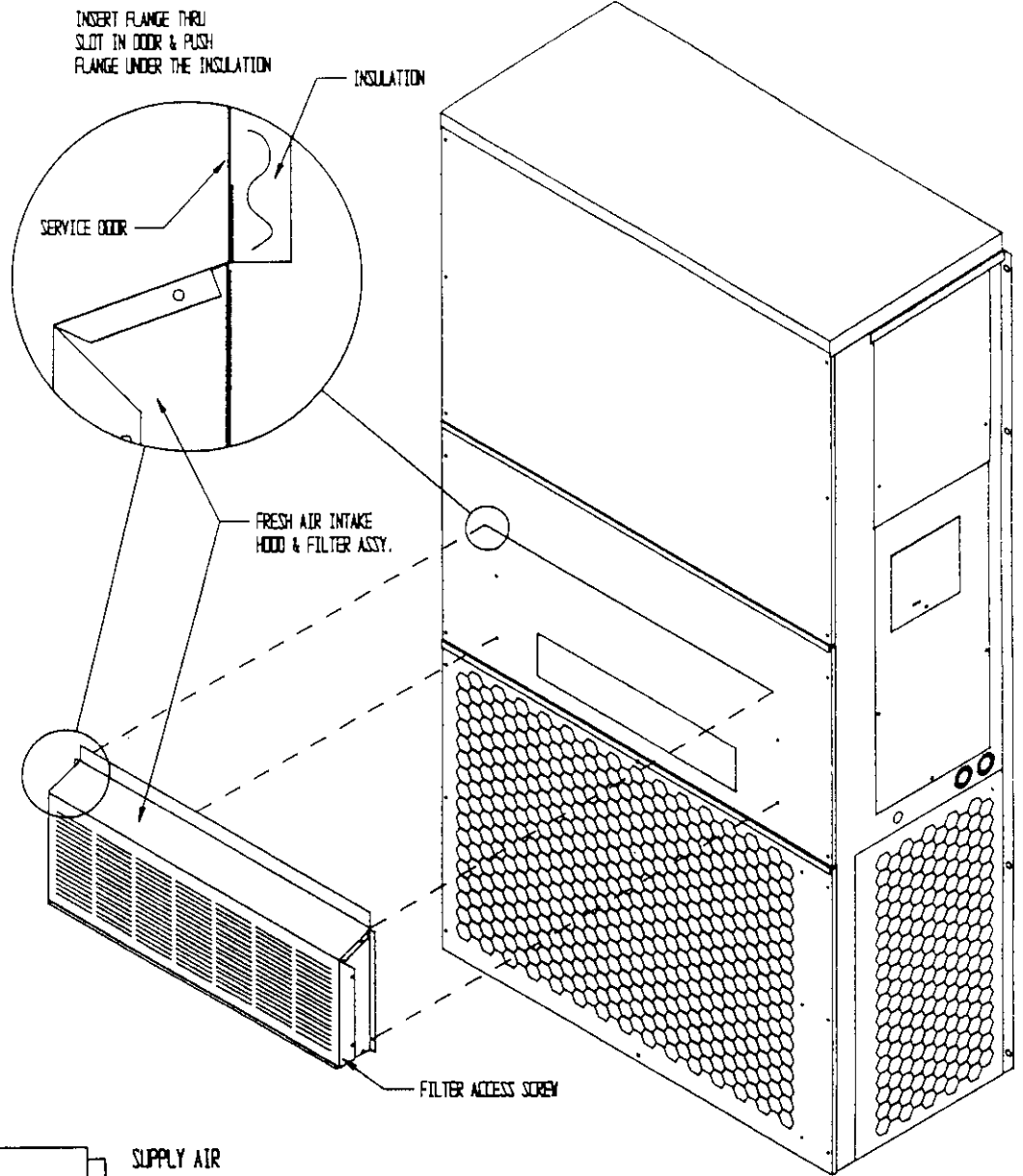
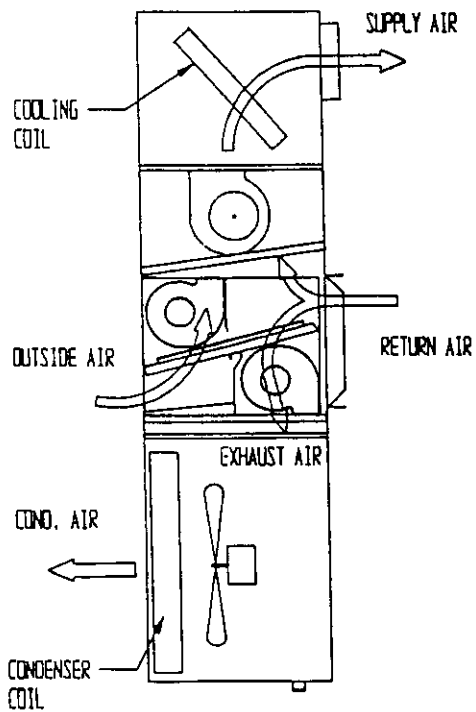


FIGURE 6



REPLACE SERVICE ACCESS PANEL
AND INSTALL FRESH AIR INTAKE
HOOD ASSY. AS SHOWN.

CONTROL OPTIONS

The unit comes from the factory wired to provide ventilation whenever the indoor blower of the air conditioner or heat pump is operating. Continuous ventilation can be obtained by setting the wall thermostat on continuous fan.

For many applications such as schools, it may be more desirable and will reduce the operating cost, to shut the ventilation system off during periods of time when the building or room is not occupied.

This can be accomplished by providing a means to interrupt the orange wire from control relay CRI (see wiring diagram) to "G" on the unit 24 volt terminal block. This can be accomplished with a manual switch, timer, programmable thermostat, Bard CS2000 or separate energy management system.

VENTILATION AIR FLOW

The MERV-A3A and MERV-C3A is equipped with a 3 speed motor to provide the capability of adjusting the ventilation rates to the requirements of the specific application by simply changing motor speeds.

TABLE 1

VENTILATION AIR (CFM)			
	High Speed (Black)	Medium Speed (Blue)	Low Speed (Red)
CFM	400	325	250

The units are wired from the factory on high speed. The speed can be changed by disconnecting the black wire and reconnecting the blue or red wire on the intake or exhaust blower motor. If desired, the fresh air motor can be wired on one speed and the exhaust motor on another if needed for a specific requirement.

WARNING

Open disconnect to shut all power off before doing this. Failure to do so could result in injury or death due to electrical shock.

SERVICING THE WERV SYSTEM

1. Room air filters in the air conditioner should be cleaned or replaced periodically to maintain an adequate amount of total circulated air thru the air conditioning system. The frequency of changing or cleaning is dependent on the application.
2. Fresh air filter. The unit is equipped with a fresh air filter and mist eliminator located in the fresh air hood. (See Figure 5) This can be removed by removing the filter access screw from the side of the fresh air hood and removing the filter from the bottom of the assembly. This filter is constructed of an aluminum frame and mesh and can be cleaned by washing periodically. The frequency is determined by the amount of dust, pollen and other outdoor airborne particles in the area. A periodic visual inspection is recommended to insure it is clean and free of dust, debris, leaves, snow etc.

ENERGY TRANSFER WHEEL

NOTE: Discoloration and staining of the wheel does not affect its performance. Only excessive build-up of foreign material needs to be removed.

If the wheels appear excessively dirty, they should be cleaned to insure maximum efficiency. To clean the wheels, remove the service access panel (see Figure 1). Remove the sheet metal access panel on the front of the Energy Recovery Ventilator. Unplug the (2) wheel drive motors at the plug-in connectors located below the heat transfer wheels. (Squeeze the side tabs on the connector and pull gently--do not pull on the wires.) Remove the heat transfer cassette by grasping the tray and sliding out of the unit. Remove the wheels from the cassette assembly. Grasp the wheel by the rim and thoroughly spray the wheel windings with a household spray cleaner such as Fantastic or the equivalent. Gently rinse with warm water and use a soft brush (such as a paint brush) to remove any heavy accumulation. Shake the excess water from the wheel and reinstall in reverse order. Operate the unit to confirm proper operation.

