INSTALLATION INSTRUCTIONS

MODELS
WERV-A5A
WERV-C5A

WALL MOUNT ENERGY RECOVERY VENTILATORS WITH EXHAUST

FOR USE WITH BARD 3-1/2 THRU 5 TON WALL MOUNT AIR CONDITIONERS AND HEAT PUMPS

PATENT PENDING
DATE: 10-01-93
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BRYAN, OHIO USA 43506
**MODEL NOMENCLATURE LEGEND**

![Diagram](image)

**ELECTRICAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>Amps</th>
<th>Control Voltage</th>
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<tbody>
<tr>
<td>WERV-A3A</td>
<td>230/208</td>
<td>2.2</td>
<td>24V</td>
</tr>
<tr>
<td>WERV-C3A</td>
<td>460</td>
<td>1.2</td>
<td>24V</td>
</tr>
<tr>
<td>WERV-A5A</td>
<td>230/208</td>
<td>2.2</td>
<td>24V</td>
</tr>
<tr>
<td>WERV-C5A</td>
<td>460</td>
<td>1.2</td>
<td>24V</td>
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</tbody>
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**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 provide the heat transfer effectively during both summer and winter conditions. Provides required ventilation to meet the requirements of ASTM A 86 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 & APPLICATION DATA

**Summer Cooling Performance**

(Indoor Design Conditions 75°F DB/62°F WB)

<table>
<thead>
<tr>
<th>Ambient O.D.</th>
<th>VENTILATION RATE -- 450 CPM 65% Efficiency</th>
<th>VENTILATION RATE -- 375 CPM 65% Efficiency</th>
<th>VENTILATION RATE -- 300 CPM 65% Efficiency</th>
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<tbody>
<tr>
<td></td>
<td>VLT</td>
<td>VLS</td>
<td>VLT</td>
</tr>
<tr>
<td>75</td>
<td>21465</td>
<td>6884</td>
<td>13952</td>
</tr>
<tr>
<td>105</td>
<td>14580</td>
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<tr>
<td>135</td>
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<tr>
<td>195</td>
<td>92150</td>
<td>1952150</td>
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<tr>
<td>225</td>
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<td>285</td>
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### Winter Heating Performance

(Indoor Design Conditions 70°F DB)

<table>
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<th>Ambient O.D.</th>
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<tr>
<td></td>
<td>450 CPM 80% Effi</td>
</tr>
<tr>
<td></td>
<td>WVL</td>
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<tr>
<td>65</td>
<td>2430</td>
</tr>
<tr>
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<td>4860</td>
</tr>
<tr>
<td>55</td>
<td>7290</td>
</tr>
<tr>
<td>50</td>
<td>9720</td>
</tr>
<tr>
<td>45</td>
<td>12150</td>
</tr>
<tr>
<td>40</td>
<td>14580</td>
</tr>
<tr>
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</tr>
<tr>
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<tr>
<td>25</td>
<td>21870</td>
</tr>
<tr>
<td>20</td>
<td>24300</td>
</tr>
<tr>
<td>15</td>
<td>26730</td>
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### 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. Ventilator and exhaust blower assembly
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.

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>For Use With Following Units</th>
<th>Electrical</th>
</tr>
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<tbody>
<tr>
<td>WERY-ASA</td>
<td>MA421-A,-B, MA481-A,-B, MA601-A,-B</td>
<td>230/208-1 or 3 phase</td>
</tr>
<tr>
<td>WERY-CSA</td>
<td>MA421-C, MA481-C, MA601-C</td>
<td>460-3 phase</td>
</tr>
</tbody>
</table>

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 exhaust blower assembly from back of ventilator and discard shipping plate. See Figure 1.

FIGURE 1
3. 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 2)
4. Remove and save existing unit air filter. Remove and discard the exhaust cover plate and remove center screw from condenser grill. (See Figure 3)
5. Install exhaust blower assembly in exhaust opening and secure with four (4) screws. Position 4 pin connector so it is accessible. See Figure 4, page 8.

6. Install ventilator into the unit to the left side. Once the ventilator is fully inserted, slide the ventilator to the right until it is tight against the back of the control panel. (Figure 5, page 9)

**IMPORTANT:** Position front lip of ventilator over front grille and on top of condenser partition. (See Figure 5 inset) This is important to ensure proper drainage of any water entering damper assembly.

7. Open control panel to gain access to unit low voltage terminal block. (Insure all power is off prior to opening the control panel.)

8. Route electrical harness leads thru the 7/8" bushing in control panel (Figure 5) into low voltage box.

9. Connect leads with fork terminal to corresponding points on terminal strip to terminals C and G. (See Figure 6, page 10 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.

10. Remove female plug section of high voltage wiring harness and snap into unit control panel. Wire to terminal block. See Figure 6 and wiring diagram.

11. Plug male plug into female at side of control panel. (See Figure 5)

12. Close control panel cover

13. Replace filter and one (1) screw in condenser grille. (See Figure 3)

14. 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 slowly (49 RPM). Intake and exhaust blowers should run. (See Figure 8)

   D. De-energize evaporator blower. Energy Recovery wheels and fresh air and exhaust air blowers should stop.

   E. This completes ventilator checkout.

15. Reinstall the blower access panel at top of unit and secure with sheet metal screws. (See Figure 2)

16. Replace the lower service access panel with the new panel provided. Attach air intake hood with screws provided. (See Figure 7) 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 boxing of the door.

**BASIC INSTALLATION (FACTORY INSTALLED VERSIONS)**

1. Remove blower access door and service door. Room filter located above air circulating blowers. Install filter.

2. Remove and install air intake hood—refer to item 15 above.

3. Replace all panels.
FASTEN LOWER BLOWER ASSY. TO COND. PARTITION WITH (4) SCREWS.

CONDENSER PARTITION CUT AWAY SO TO SHOW AIR FLOW LOWER BLOWER ASSY. RELATIONSHIP TO UNIT.

(IMPORTANT) MITRED EDGE TOWARDS COND. COIL.

RIGHT SIDE REMOVED FOR CLARITY.
Energy Recovery Ventilator

High voltage wires to plug in side of control panel.

Route the HRV wires through hole and into control panel.

Remove access panel and plug in exhaust blower. Replace access panel.

When installing HRV position so that hole in front lip is centered over hole in condenser grille to insert a self-drilling screw.

Caution: hole in HRV must be used to ensure clearance from condenser coil tubing.

Service door

Lip of HRV is to be between the condenser grille and service door

Front grill

Condenser partition

Side section

Heat recovery ventilator
INSTALL 1-480701-0 CAP AS SHOWN AND WIRE PER WIRING DIAGRAM
FIGURE 7

INSERT FLANGE THRU SLOT IN DOOR & PUSH FLANGE UNDER THE INSULATION

INSULATION

SERVICE DOOR

FRESH AIR INTAKE HOOD & FILTER ASSY.

FILTER ACCESS SCREW

FIGURE 8

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

SUPPLY AIR

COOLING COIL

OUTSIDE AIR

RETURN AIR

EXHAUST AIR

COND. AIR

CONDENSER COIL
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 CR1 (see wiring diagram) to "O" on the unit 24 volt terminal block. This can be accomplished with a manual switch, timer, programmable thermostat, hard CS2000 or separate energy management system.

VENTILATION AIR FLOW
The WERV-ASA and WERV-CSA 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) |
| CEM              | 450              | 375              | 300              |

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.

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open disconnect to shut all power off before doing this. Failure to do so could result in injury or death due to electrical shock.</td>
</tr>
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</table>

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 7) 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 2). 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 Fantastik 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.