



### **11EER W3SAC, W4SAC, and W5SAC Series WALL-MOUNT™**

The Bard Wall-Mount Air Conditioner is an energy efficient self contained system, which is designed to offer maximum indoor comfort at a minimal cost without using valuable indoor floor space or outside ground space. The WSAC series includes a 2 stage compressor to improve unit performance when used in applications with a varying indoor heat load. This unit is the ideal product for versatile applications such as: new construction, modular offices, school modernization, telecommunication structures, portable structures, correctional facilities and many more. Factory or field installed accessories are available to meet specific job requirements for your unique application.

- Complies with efficiency requirements of ASHRAE/IESNA 90.1-2019
- Certified to ANSI/AHRI Standard 390-2021 for SPVU (Single Package Vertical Units)
- Intertek ETL Listed to Standard for Safety Heating and Cooling Equipment ANSI/UL 1995, Fifth Edition/CSA 22.2 No. 236-05 Fourth Edition
- Commercial Product - Not intended for residential application
- Bard is an ISO 9001:2015 Certified Manufacturer
- The AHRI Certified® mark indicates Bard Manufacturing Company participation in the AHRI Certification program. For verification of individual certified products, go to [www.ahridirectory.org](http://www.ahridirectory.org).




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FORM NO. S3598-1123



**Climate Control Solutions**

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# Wall-Mount Nomenclature

Digit #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	W	5	S	A	C	-	A	O	Z	X	P	X	X	X	X

## UNIT SERIES Wall-Mount

### NOMINAL CAPACITY

- 3 - 3.0 Ton
- 4 - 4.0 Ton
- 5 - 5.0 Ton

### STAGES

- S - Step Capacity

## TYPE AND CONTROL LOCATION

- A - Air conditioner

## REVISION

- C - Revision

## PLACEHOLDER

- Standard Unit
- D - Hot Gas Reheat Dehumidification

## VOLTAGE

- A - 230 Volt 1 Phase 60 Hz
- B - 230 Volt 3 Phase 60 Hz
- C - 460 Volt 3 Phase 60 Hz

## ELECTRIC HEAT

- 00 - OKw with Lug Connection
  - 0Z - OKw with Circuit Breaker
  - 05 to 20 - Kw Heat with Circuit Breaker
- See Electrical Specs for further details

## ACCESSORIES AND CONTROLS OPTIONS

- X - Standard controls (HPS,LPS,CCM)
- E - Low Ambient Control (LAC)
- F - LAC, Alarm Relay (ALR), Filter Press. Switch (FPS)
- J - LAC and Alarm Relay (ALR)
- K - LAC and PTCR Start Kit
- M - LAC, ALR, and PTCR Start Kit
- V - DDC Control Sensor kit with 10K Discharge air sensor, indoor blower airflow sensor, compressor current sensor, filter press. switch, LAC, ALR.

## COIL & UNIT COATING OPTIONS

- X - Standard Copper/Aluminum coils.
- 1 - Coated Evaporator coil.
- 2 - Coated Condenser coil.
- 3 - Coated Evaporator and Condenser coils.
- 4 - Coated coils and unit condenser section coating.
- 5 - Coated coils and inside/outside of unit coating.

## SUPPLY OUTLET

- X - Standard

## COLOR AND CABINET FINISH

- X - Standard Beige baked enamel finish
- 1 - White baked enamel finish
- 4 - Buckeye Gray baked enamel finish
- 5 - Desert Brown baked enamel finish
- 8 - Dark Bronze baked enamel finish
- S - Stainless Steel
- A - Aluminum

## FILTER

- X - Standard 1" MERV2 Disposable Filter
- W - 1" MERV2 Washable Filter
- P - 2" MERV8 Disposable Filter
- M - 2" MERV11 Disposable Filter
- N - 2" MERV13 Disposable Filter
- A - 2" MERV13 Filter with UVC-LED Light.
- B - 2" MERV13 Filter with NPBI

## VENT PACKAGE

- X - Standard Fresh Air Damper (Intake only)
- A - Fresh Air Damper w/Exhaust
- B - Block Off Plate
- M - Commercial Room Ventilator, ON/OFF
- V - Comm. Room Ventilator, Modulating
- D - Economizer, 0-10V No Controls
- Y - Full Flow Economizer, Temperature
- Z - Full Flow Economizer, Enthalpy
- R - Energy Recovery Ventilator

## Nomenclature Notes:

- Accessories and control options may not be available for all models. See factory installed controls options section for further details.
- All units have an external data tag with the model and serial number on the left or right side of the unit. A secondary data tag with the model and serial number is located inside the control panel area on or near the low voltage terminal box.



## ////// Engineered Features

**Non-Fiberglass Foil Faced Insulation:** Environmentally friendly high “R” value non-fiberglass insulation that is made with recycled denim and cotton materials used with a FSK foil face that is both durable and cleanable.

**Durable Cabinet Construction:** Multiple cabinet construction options are available for different outdoor conditions. Optional cabinet coatings may be ordered for extreme outdoor environments. See cabinet finish and coatings section for further details.

**ECM Indoor Motor Technology:** 5 speed dual shaft motor provides quiet airflow operation when used with a twin blower assembly. Motor overload protection standard on all models.

**Electric Strip Heat:** Reliable, comfortable heater packages feature an automatic limit and thermal cut-off safety control. Heater packages may be factory or field installed. See optional electric heat section for further details.

**Field or Factory Installed Vents:** Multiple ventilation options are available to provide outdoor air for ventilation and/or energy savings. Ventilation options may be factory or field installed. See vent section for further details.

**Green Fin Hydrophilic Evaporator Coil:** Green fin stock enhances coil wettability to help prevent mold growth, aids with condensate drainage, and provides a limited amount of protection to corrosive particulates in the airstream.

**Built-in Circuit Breakers:** Standard on all electric heat versions of single (208/230 volt) and three phase (208/230 volt) equipment. Toggle disconnects are standard on all electric heat versions of three phase (460 volt) equipment.

**Easy Filter Access:** A separate filter door is provided for ease of filter access during routine unit maintenance. 1” and 2” filters are available with a rating of up to MERV13. See filter section for further details.

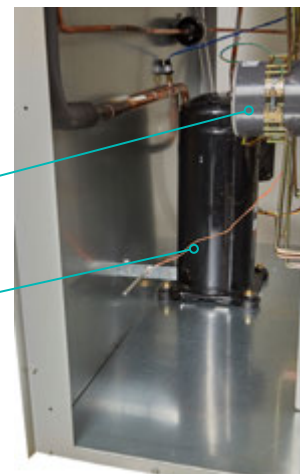
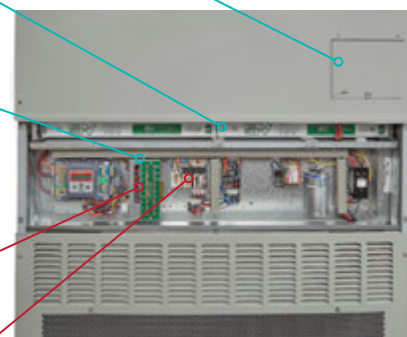
**Reliable, Easy-to-Use Controls:** Easily accessible through left or right control panel locations. A lockable hinged access cover to circuit protection is provided. Phase rotation monitor is standard on all 3 phase models. Adjustable compressor on/off delay timer (CCM) with diagnostic lights is standard on all models. Control panel is located in the front of the unit with electrical entrances on both sides and back.

**Balanced Climate Technology:** High latent capacity humidity & sound reduction removes up to 35% more humidity than any other on the market with the use of a 2 stage thermostat or controlling device. Bard Balanced Climate™ innovation comes standard on all models.

**Optional Mechanical Dehumidification:** Models are available with hot gas reheat dehumidification for energy efficient humidity removal. Electronic Expansion Valves are standard for all dehumidification models.

**Enclosed Condenser Motor:** An enclosed casing condenser motor with ball bearings is used for reliable operation and extended motor life. Enclosed condenser motors are standard on all units.

**High Efficiency Cooling:** 2- stage scroll compressors for quiet, efficient cooling. Designed with R-410A (HFC) non-ozone depleting refrigerant in compliance with the Montreal protocol and 2010 EPA requirements. A liquid line filter-drier is used to protect the system from moisture, and is standard on all units.



## ///// Unit Modes of Operation

### **Cooling Operation:**

The Bard WA Series products offer single stage compressor cooling operation using R410A refrigerant. Copper tube/Aluminum hydrophilic green fin coils are used to provide high efficiency and easy serviceability. Scroll compressor technology delivers years of quiet, reliable operation. Economizer vent options are available for increased energy efficiency during cooling operation when outdoor conditions are favorable.

### **Heating Operation:**

The Bard WA Series products offer optional single or two stage heating operation using resistance heaters. Circuit breaker disconnect protection is standard in all units equipped with electric heat.

### **Optional Mechanical Dehumidification (Hot Gas Reheat) Operation:**

Mechanical Dehumidification provides an energy efficient way to remove humidity from the indoor air stream without over cooling or overheating the indoor space. The Bard hot gas reheat Series products offer optional dehumidification operation that removes moisture from air entering the unit. A three-way valve, reheat coil, and electronic expansion valve (EEV) are standard with all models. The dehumidification circuit incorporates an independent heat exchanger coil in the supply air stream. This coil reheats the supply air after it passes over the cooling coil without requiring the electric resistance heater to be used for reheat purposes. This results in very high mechanical dehumidification capability from the air conditioner on demand without using electric resistance reheat (electric heat is available for heating purposes). Airflow during dehumidification is reduced resulting in quiet and comfortable operation.

### **Ventilation:**

The Wall-Mount product provides the perfect platform to not only cool and heat an indoor area, but also provide a means of bringing outdoor air into the building. By including ventilation in the Wall-Mount, expensive costs associated with additional outdoor air systems can be avoided. The Bard WA Series products offer optional ventilation operation that brings outdoor air into the structure, and vents can be factory or field installed. Ventilation can be used to bring in outdoor air for occupants, save energy by using outdoor air for free cooling, or positively pressurize a structure. Exhaust air options allow room air to be vented outdoors when fresh air is being brought into the structure. Energy recovery options are also available for occupied structures to save energy when ventilation is necessary regardless of outdoor temperature.

### **Filtration and Indoor Air Quality:**

Providing the best air filtration solution is important to occupants and equipment inside a room or structure. Bard provides several filter options based on MERV filtration, and also other solutions to improve indoor air quality.

### **Balanced Climate Operation:**

Balanced Climate is a great feature to remove additional room humidity during cooling operation. All units include this feature as an optional method of having a separate cooling stage that uses a lower indoor blower speed. Remove the Y1/Y2 jumper, and install a two stage cooling thermostat. Once enabled, a first stage of increased humidity removal and lowered cooling capacity will extend unit runtime and increase latent (humidity removal) capacity. Second stage operation will use the standard blower speed. This is a great option where additional humidity reduction is a benefit during normal cooling operation.

**Note:** Balanced Climate is not recommended for applications where room temperatures will typically be lower than 72°F or duct static will cause airflow to be below rated CFM amounts provided in the Airflow CFM chart in this document. Low Ambient Control use is required for Balanced Climate operation. Hot Gas Reheat is recommended for high humidity environments that require moisture removal without cooling or applications that require a large amount of ventilation air for occupied areas.

### **Low Outdoor Temperature Cooling Operation:**

Equipment cooling often requires indoor areas to remain cool regardless of outdoor temperature. If your application requires operation of the compressor to provide cooling below 65° outdoor conditions, then just like any other HVAC system, a low ambient control (LAC) kit must be installed. The LAC will help maintain higher refrigerant pressure during compressor operation at lower outdoor temperatures. This is achieved by limiting outdoor fan operation based on low side system pressure. As temperatures decrease outdoors, outdoor fan use will continue to decrease. Applications that require cooling functionality from 0°F to -40°F outdoor temperatures must use economizer cooling operation.

**Note:** The LAC kit also includes a freeze stat installed on the unit indoor evaporator coil. The freeze stat helps monitor the indoor evaporator coil temperature and will cycle compressor operation when temperatures below freezing are indicated. Use of Balanced Climate or applications where indoor airflow will be reduced require the use of the LAC kit to help maintain adequate evaporator coil temperatures.

### **High Outdoor Temperature Cooling Operation:**

The Bard WA Series products are designed and tested to function when used in higher outdoor temperature areas. Wall-Mount products utilize large, efficient condenser coils with high airflow condenser fan systems to save energy and lower high side refrigerant pressures. It is always important to follow all clearance guidelines supplied in the unit dimension section of this specification, and additional information provided in the user manual. Properly cleaning the condenser coil using a regular maintenance schedule along with filter changes will help maintain unit operation during high outdoor ambient temperature use. Always follow maintenance procedures provided in the user manual and installation instructions provided with your Bard product.





## Capacity and Efficiency Ratings

MODELS	W3SAC	W4SAC	W5SAC
Cooling Capacity in BTUH, 2nd Stage Operation EER 2nd Stage Operation ①② Rated CFM (Wet Coil)	35,000 BTUH 11.6 EER 1150	46,500 BTUH 11.0 EER 1550	57,000 BTUH 11.0 EER 1700
Cooling Capacity BTUH, 1st Stage Operation EER 1st Stage Operation ② Rated CFM (Wet Coil)	24,800 BTUH 11.5 EER 825	32,000 BTUH 11.4 EER 1100	42,500 BTUH 11.4 EER 1300
IPLV ③	15.1	15.7	15.1

① Certified in accordance with ANSI/ARI Standard 390-2003 for single package vertical units.

② EER = Energy Efficiency Ratio - BTU/WATT efficiency.

③ Integrated Part Load Value - BTU/WATT efficiency and certified in accordance with ANSI/ARI Standard 390-2003.

All capacity, efficiency and cost of operation information is based on operation with fresh air cover plate.

Cover plate is recommended for use to obtain maximum energy efficiency where ventilation air is not required.

## General Unit Specifications 5 Ton

MODELS	W3SAC-A	W3SAC-B	W3SAC-C	W4SAC-A	W4SAC-B	W4SAC-C	W5SAC-A	W5SAC-B	W5SAC-C
<b>Unit Voltage Rating - Phase - 60Hz</b>	230/208 - 1	230/208 - 3	460 - 3	230/208 - 1	230/208 - 3	460 - 3	230/208 - 1	230/208 - 3	460 - 3
Operating Voltage Range	197-253	197-253	414-506	197-253	197-253	414-506	197-253	197-253	414-506
<b>Compressor Electrical Circuit</b>									
Voltage	230/208	230/208	460	230/208	230/208	460	230/208	230/208	460
Rated Load Amps	10.8/12.3	7.4/8.4	4.5	16.2/19	11.2/13.1	6.0	21.3/24.3	15.5/17.6	7.7
Branch Circuit Selection Current	14.2	9.7	5.2	20.4	14.1	6.5	24.3	17.6	7.7
Lock Rotor Amps	84.2	73.8	37	122.1	83.1	41	147.4/147.4	110/110	52
Compressor Type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
<b>Outdoor Fan Motor &amp; Condenser Fan</b>									
Outdoor Fan Motor Horsepower - RPM	1/3 - 825	1/3 - 825	1/3 - 825	1/3 - 825	1/3 - 825	1/3 - 825	1/3 - 825	1/3 - 825	1/3 - 825
Outdoor Fan Motor - Amps	2.4	2.4	1.0	2.4	2.4	1.0	2.4	2.4	1.0
Outdoor Fan--Diameter and CFM	24" - 2900	24" - 2900	24" - 2900	24" - 2900	24" - 2900	24" - 2900	24" - 2900	24" - 2900	24" - 2900
<b>Indoor Blower Motor &amp; Indoor Airflow</b>									
Indoor Blower Motor - HP - Speeds	1/2 - 5 SPD	1/2 - 5 SPD	1/2 - 5 SPD	3/4 - 5 SPD	3/4 - 5 SPD	3/4 - 5 SPD	3/4 - 5 SPD	3/4 - 5 SPD	3/4 - 5 SPD
Indoor Blower Motor - Amps	1.3	1.3	1.0	2.4	2.4	1.7	2.9	2.9	1.7
Indoor Motor Type	Constant Torque	Constant Torque	Constant Torque	Constant Torque	Constant Torque	Constant Torque	Constant Torque ECM	Constant Torque ECM	Constant Torque ECM
Rated indoor CFM and static pressure (ESP) with wet coil and Standard filter	1150-.15	1150-.15	1150-.15	1550-.2	1550-.2	1550-.2	1750-.2	1750-.2	1750-.2
Filter Size inches (cm) standard filter listed, 2 required	20x20x2	20x20x2	20x20x2	20x20x2	20x20x2	20x20x2	20x20x2	20x20x2	20x20x2
<b>Basic Unit Weight without Vent lbs. (kg)</b>	490	490	490	530	530	530	566	566	566
X - Barometric Fresh Air Damper	13	13	13	13	13	13	13	13	13
A - Barometric Damper w/ Exhaust	16	16	16	16	16	16	16	16	16
B - Blank-Off Plate	14	14	14	14	14	14	14	14	14
M, V - Commercial Room Ventilator	42	42	42	42	45	42	42	42	42
D, Y, Z - Economizer	44	44	44	44	44	44	44	44	44
R - Energy Recovery Ventilator	85	85	85	85	85	85	85	85	85

## Optional Shipping Crates

Optional crates are available to help protect your valuable WALL MOUNT investment during shipping. Constructed from OSB sheathing with steel corner posts, and sized for standard truck transportation. Treated for pests in accordance with the International Plant Protection Convention, Publication 15, Annex 1. Packaging is acceptable for international shipments.

CRATE NO.	UNITS USING CRATE	CRATE SIZE	DESCRIPTION
8620-304	W3SAC	90"H x 46"W x 29.5"D	Standard crate, OSB construction
8620-305	W4SAC, W5SAC	99"H x 46"W x 29.5"D	Standard crate, OSB construction

Note: Always inspect unit for shipping damage when product is received by disassembling crate. This will help identify possible damage before signing documentation provided by shipper.

Treated for pests in accordance with the International Plant Protection Convention, Publication 15, Annex 1. Packaging is acceptable for international shipments.



## 2nd Stage Cooling Application Data - Outdoor Temperature ①

MODEL	DB / WB ②	COOLING CAPACITY BTU/HR	75°F	80°F	85°F	90°F	95°F	100°F	105°F	110°F	115°F	120°F	125°F	131°F
W3SAC	75/62	Total Cooling	38100	36100	34200	32500	30800	29400	27900	26500	25300	24000	22800	21500
		Sensible Cooling	29800	28800	27900	27000	26300	25500	24800	24100	23600	23000	22500	21500
	80/67	Total Cooling	40600	39300	38000	36700	35000	34200	32900	31600	30400	29100	27800	26300
		Sensible Cooling	28900	28200	27600	27000	26500	25900	25400	24900	24500	24100	23700	23300
	85/72	Total Cooling	48400	46000	43700	41500	39300	37400	35500	33600	32000	30300	28600	26800
		Sensible Cooling	29600	28600	27800	26800	26000	25100	24200	23400	22600	21800	21000	20100
W4SAC	75/62	Total Cooling	50900	48000	45300	42800	40500	38400	36400	34500	32800	31100	29600	28000
		Sensible Cooling	40500	38900	37400	36000	34800	33700	32800	32000	31300	30800	29600	28000
	80/67	Total Cooling	54300	52300	50300	48400	46500	44700	42900	41100	39400	37700	36100	34200
		Sensible Cooling	39300	38100	37000	36000	35100	34300	33600	33100	32600	32200	32000	31800
	85/72	Total Cooling	64700	61200	57800	54700	51700	48900	46300	43700	41400	39200	37100	34800
		Sensible Cooling	40300	38700	37200	35800	34400	33200	32000	31100	30000	29100	28300	27400
W5SAC	75/62	Total Cooling	60100	57400	54700	52100	49600	47300	45000	42800	40600	38500	36500	34100
		Sensible Cooling	45900	44900	43800	42800	41800	40900	39900	38900	37900	37000	36000	34100
	80/67	Total Cooling	64200	62500	60700	58900	57000	55100	53100	51000	48900	46700	44500	41700
		Sensible Cooling	44500	44000	43400	42800	42200	41600	40900	40200	39400	38700	37900	36900
	85/72	Total Cooling	76500	73100	69700	66500	63300	60300	57300	54300	51400	48500	45800	42400
		Sensible Cooling	45600	44700	43600	42500	41400	40300	39000	37700	36300	35000	33500	31800

- ① Low ambient control allows for compressor operation down to 0°F.  
 ② Outdoor temperatures shown are measured at the condenser section air inlet.  
 ③ Return air temperature °F.

CAPACITY MULTIPLIER FACTORS			
% of Rated Airflow	-10	Rated	+10
Total BTUH	0.975	1.0	1.02
Sensible BTUH	0.950	1.0	1.05

## 1st Stage Cooling Application Data - Outdoor Temperature ① ②

MODEL	DB / WB ②	COOLING CAPACITY BTU/HR	75°F	80°F	85°F	90°F	95°F	100°F	105°F	110°F	115°F	120°F	125°F	131°F
W3SAC	75/62	Total Cooling	27200	25500	24100	22600	21300	20100	19000	18000	17000	16100	15300	14400
		Sensible Cooling	21100	20300	19700	19100	18600	18000	17400	16900	16300	15700	15200	14400
	80/67	Total Cooling	29000	27800	26700	25500	24800	23400	22400	21400	20400	19500	18600	17600
		Sensible Cooling	20400	19900	19500	19100	18700	18300	17800	17400	16900	16400	16000	15400
	85/72	Total Cooling	34600	32500	30700	28800	27100	25600	24200	22800	21500	20300	19200	17900
		Sensible Cooling	20900	20200	19600	19000	18400	17700	17000	16300	15600	14800	14200	13300
W4SAC	75/62	Total Cooling	37100	34500	32100	29800	27700	25800	24000	22300	20700	19300	17900	16400
		Sensible Cooling	28800	27700	26700	25700	24800	24000	23100	22300	20700	19300	17900	16400
	80/67	Total Cooling	39600	37600	35600	33700	32000	30000	28300	26600	24900	23300	21800	20000
		Sensible Cooling	27900	27100	26400	25700	25000	24400	23700	23000	22300	21600	21000	20000
	85/72	Total Cooling	47200	44000	40900	38100	35300	32800	30500	28300	26200	24200	22500	20400
		Sensible Cooling	28600	27500	26500	25600	24500	23600	22600	21600	20600	19500	18600	17400
W5SAC	75/62	Total Cooling	44600	42300	40300	38600	37000	35800	34800	34000	33400	33000	32800	33000
		Sensible Cooling	34200	33300	32500	31800	31200	30700	30200	29900	29600	29300	29200	33000
	80/67	Total Cooling	47600	46100	44700	43600	42500	41700	41000	40500	40200	40000	40000	40300
		Sensible Cooling	33100	32600	32200	31800	31500	31200	31000	30900	30800	30700	30700	30800
	85/72	Total Cooling	56700	53900	51400	49200	47200	45600	44200	43100	42300	41600	41200	41000
		Sensible Cooling	33900	33100	32400	31600	30900	30200	29600	29000	28400	27800	27200	26500

- ① Low ambient control allows for compressor operation down to 0°F.  
 ② Outdoor temperatures shown are measured at the condenser section air inlet.  
 ③ Return air temperature °F.

CAPACITY MULTIPLIER FACTORS			
% of Rated Airflow	-10	Rated	+10
Total BTUH	0.975	1.0	1.02
Sensible BTUH	0.950	1.0	1.05

## R410A Unit Charge Rates

WALL-MOUNT UNIT MODEL	STANDARD UNIT CHARGE RATE	DEHUMIDIFICATION UNIT CHARGE RATE
W3SAC	7.188	7.125
W4SAC	7.313	7.250
W5SAC	9.250	9.375

Note: Charge rates provided on unit serial plate. Unit hi/low pressure chart for unit charging provided in unit installation manual and on inner control panel door.



/////// **Balanced Climate Application Data (Optional, Requires 2 Stage Cooling Thermostat)**

MODEL	RETURN AIR (DB/WB)	COOLING CAPACITY	75°F	80°F	85°F	90°F	95°F	100°F	105°F	110°F	115°F	120°F	125°F
<b>W3SAC</b>	75/62	Total Cooling	36200	34200	32400	30700	29100	27700	26400	25200	24000	23000	22100
		Sensible Cooling	25800	24900	24100	23300	22500	21800	21200	20400	19800	19200	18600
		Latent Cooling	10400	9300	8300	7400	6600	5900	5200	4800	4200	3800	3500
		% Latent Increase	20%	22%	24%	26%	32%	34%	40%	50%	60%	74%	91%
	80/67	Lbs. H2O per Hr.	9.8	8.8	7.8	7.0	6.2	5.6	4.9	4.5	4.0	3.6	3.3
		Total Cooling	38600	37200	35900	34700	33400	32300	31100	30000	28900	27900	26900
		Sensible Cooling	25000	24400	23800	23300	22700	22200	21700	21100	20600	20100	19600
		Latent Cooling	13600	12800	12100	11400	10700	10100	9400	8900	8300	7800	7300
		% Latent Increase	14%	13%	14%	15%	17%	18%	20%	25%	29%	36%	44%
<b>W4SAC</b>	75/62	Lbs. H2O per Hr.	12.8	12.1	11.4	10.8	10.1	9.5	8.9	8.4	7.8	7.4	6.9
		Total Cooling	46000	43500	41300	39200	37100	35400	33600	31900	30400	29000	27700
		Sensible Cooling	25600	24800	23900	23200	22300	21500	20700	19800	19000	18200	17400
		Latent Cooling	20400	18700	17400	16000	14800	13900	12900	12100	11400	10800	10300
	80/67	% Latent Increase	8%	7%	9%	8%	10%	12%	12%	16%	18%	21%	26%
		Lbs. H2O per Hr.	19.2	17.64	16.4	15.1	14.0	13.1	12.2	11.4	10.8	10.2	9.7
		Total Cooling	47300	44900	42700	40500	38600	36800	35000	33500	31900	30500	29200
		Sensible Cooling	33700	32600	31400	30400	29500	28500	27700	26900	26200	25500	24900
		Latent Cooling	13600	12300	11300	10100	9100	8300	7300	6600	5700	5000	4300
<b>W5SAC</b>	75/62	% Latent Increase	24%	26%	30%	33%	37%	43%	51%	62%	74%	94%	100%
		Lbs. H2O per Hr.	12.8	11.6	10.7	9.5	8.6	7.8	6.9	6.2	5.4	4.7	4.1
	80/67	Total Cooling	50500	48900	47400	45800	44300	42800	41300	39900	38400	37000	35600
		Sensible Cooling	32700	31900	31100	30400	29700	29000	28400	27800	27200	26700	26200
		Latent Cooling	17800	17000	16300	15400	14600	13800	12900	12100	11200	10300	9400
		% Latent Increase	16%	16%	18%	19%	22%	25%	28%	34%	39%	47%	56%
	85/72	Lbs. H2O per Hr.	16.7	16.04	15.4	14.5	13.8	13.0	12.2	11.4	10.6	9.7	8.9
		Total Cooling	60200	57200	54500	51700	49200	46800	44500	42500	40400	38500	36600
		Sensible Cooling	33500	32400	31300	30200	29200	28100	27100	26100	25100	24100	23300
<b>W5SAC</b>	75/62	Latent Cooling	26700	24800	23200	21500	20000	18700	17400	16400	15300	14400	13400
		% Latent Increase	9%	9%	11%	12%	14%	16%	18%	23%	25%	30%	34%
		Lbs. H2O per Hr.	25.2	23.4	21.9	20.3	18.9	17.6	16.4	15.5	14.4	13.6	12.6
	80/67	Total Cooling	58100	55200	52400	49900	47500	45300	43300	41400	39600	38000	36500
		Sensible Cooling	40700	39300	38000	36800	35700	34700	33700	32900	32100	31300	30800
		Latent Cooling	17400	15900	14400	13100	11800	10600	9600	8500	7500	6700	5700
		% Latent Increase	17%	20%	22%	27%	31%	37%	43%	52%	61%	75%	93%
	85/72	Lbs. H2O per Hr.	16.4	15.0	13.6	12.4	11.1	10.0	9.1	8.0	7.1	6.3	5.4
		Total Cooling	62000	60100	58200	56400	54500	52800	51100	49400	47700	46100	44500
		Sensible Cooling	39500	38500	37600	36800	36000	35300	346	34000	33400	32800	32400
<b>W5SAC</b>	75/62	Latent Cooling	22500	21600	20600	19600	18500	17500	16500	15400	14300	13300	12100
		% Latent Increase	12%	13%	14%	16%	18%	21%	24%	28%	32%	38%	45%
		Lbs. H2O per Hr.	21.2	20.4	19.4	18.5	17.5	16.5	15.6	14.5	13.5	12.6	11.4
	80/67	Total Cooling	73900	70300	66800	63700	60500	57800	55100	52600	50100	47900	45800
		Sensible Cooling	40500	39100	37800	36600	35300	34200	33000	31900	30800	29600	28700
		Latent Cooling	33400	31200	29000	27100	25200	23600	22100	20700	19300	18300	17100
		% Latent Increase	6%	7%	8%	10%	11%	14%	15%	18%	21%	25%	28%
	85/72	Lbs. H2O per Hr.	31.5	29.4	27.4	25.57	23.8	22.3	20.9	19.53	18.2	17.3	16.1
		Total Cooling	63700	60500	57800	55100	52600	50100	47900	45800	43700	41600	39500
		Sensible Cooling	39500	38500	37600	36800	36000	35300	346	34000	33400	32800	32400

- ① Low ambient operation disables Balanced Climate Operation.  
 ② Outdoor temperatures shown are measured at the condenser section air inlet.  
 ③ Return air temperature °F.  
 ④ % Latent increase is a comparison to non-Balanced Climate unit operation.

CAPACITY MULTIPLIER FACTORS			
% of Rated Airflow	-10	Rated	+10
Total BTUH	0.98	1.00	1.02
Sensible BTUH	0.95	1.00	1.05





# //////// Indoor Airflow CFM @ Static Pressures - EC Blower Constant Torque Motor With Adjustment Speeds

ESP	W3SAC BLOWER TAPS - DRY/WET COIL CFM				
	SPEED TAP 1	SPEED TAP 2	SPEED TAP 3	SPEED TAP 4	SPEED TAP 5
In H2O	Blower and Vent Only	Part Load Cooling Balanced Climate Cooling	Default LO Full Load Cooling and Heating	Optional MED Cooling and Heating	Optional HI Cooling and Heating
0"	1375/1300	1035/935	1375/1300	1590/1535	1665/1600
.1"	1255/1185	840/770	1255/1185	1530/1475	1625/1570
.15"	1195/1130	750/700	1195/1130	1490/1440	1595/1545
.2"	1135/1070	665/630	1135/1070	1450/1400	1560/1510
.3"	1015/960	Not Used	1015/960	1350/1300	1470/1420
.4"	895/850	Not Used	895/850	1235/1185	1350/1305
.5"	775/745	Not Used	775/745	1100/1050	1210/1165

ESP	W4SAC BLOWER TAPS - DRY/WET COIL CFM				
	SPEED TAP 1	SPEED TAP 2	SPEED TAP 3	SPEED TAP 4	SPEED TAP 5
In H2O	Blower and Vent Only	Part Load Cooling Balanced Climate Cooling	Default LO Full Load Cooling and Heating	Optional MED Cooling and Heating	Optional HI Cooling and Heating
0"	1795/1685	1275/1195	1795/1685	1895/1850	2000/1920
.1"	1730/1625	1140/1070	1730/1625	1845/1765	1940/1850
.15"	1690/1590	1075/1015	1690/1590	1815/1725	1905/1815
.2"	1655/1555	1015/960	1655/1555	1785/1685	1870/1780
.3"	1575/1485	Not Used	1575/1485	1715/1610	1800/1710
.4"	1485/1405	Not Used	1485/1405	1635/1540	1730/1635
.5"	1390/1325	Not Used	1390/1325	1550/1475	1655/1560

ESP	W5SAC BLOWER TAPS - DRY/WET COIL CFM				
	SPEED TAP 1	SPEED TAP 2	SPEED TAP 3	SPEED TAP 4	SPEED TAP 5
In H2O	Blower and Vent Only	Part Load Cooling Balanced Climate Cooling	Default LO Full Load Cooling and Heating	Optional MED Cooling and Heating	Optional HI Cooling and Heating
0"	1960/1870	1540/1480	1960/1870	2085/1985	2160/2065
.1"	1880/1815	1365/1320	1880/1815	2005/1925	2070/1985
.15"	1840/1785	1285/1245	1840/1785	1970/1895	2025/1950
.2"	1805/1760	1215/1180	1805/1760	1935/1865	1990/1915
.3"	1735/1700	Not Used	1735/1700	1870/1810	1920/1855
.4"	1675/1635	Not Used	1675/1635	1815/1750	1865/1800
.5"	1625/1570	Not Used	1625/1570	1770/1700	1820/1755

Five factory programmed speed taps (torque settings) are available for the indoor blower motor, and are selected through different unit modes of operation. These modes are energized by 24VAC signals from the low voltage terminal block located inside the control panel by a thermostat or other controlling device.

**1.** Blower and Ventilation Only Speed is the CFM amount for continuous fan and ventilation without a call for cooling.

**2.** Balanced Climate Speed is the indoor CFM amount for part load cooling, user selectable Balanced Climate operation, and optional Mechanical Dehumidification. To use Balanced Climate, remove the jumper between Y1 and Y2 on the low voltage terminal strip. A 2 stage cooling thermostat is then used to control blower airflow stages. Be sure to follow all guidelines provided in the installation manual, and a controls kit that includes a low ambient control (LAC) must be used for Balanced Climate Operation. Balanced Climate can be used for duct free and ducted applications below 0.20"WC ESP total static. Balanced Climate provides increased moisture removal during the cooling cycle, but is not a replacement for optional mechanical dehumidification. Optional mechanical dehumidification provides moisture removal without significantly cooling the space being conditioned. Mechanical dehumidification is highly recommended for applications requiring indoor humidity control for schools, public areas, agricultural, pharmaceutical, and areas with high outdoor humidity and varying indoor heat load.

**3.** Default LO Cooling and Heating Speed is the indoor CFM amount for full load cooling operation using the default blower speed tap selection. This speed is labeled as LO on the speed selection terminal strip inside the unit control panel. All units ship with cooling and heating operation at LO cooling and heating speed, and provides the optimal airflow amount for normal use.

**4.** Optional MED Cooling and Heating Speed is selected manually during unit setup and provides a higher full load cooling CFM for hi static duct applications and increased airflow. This speed is labeled as MED on the speed selection terminal strip inside the unit control panel.

**5.** Optional HI Cooling and Heating Speed is selected manually during unit setup and provides the highest allowable indoor CFM amount during full load cooling. Not recommended for standard unit operation. This speed is labeled as HI on the speed selection terminal strip inside the unit control panel.



# Electrical Specifications - W\*\*AC Series

MODEL	Rated Volts & Phase	No. Field Power Circuits	Single Circuit				Dual Circuit											
			③ Minimum Circuit Ampacity	① Maximum Operating Circuit Protection	② Field Power Wire Size Per UL1995	② Ground Wire Size Per UL1995	③ Minimum Circuit Ampacity			① Maximum Operating Circuit Protection			② Field Power Wire Size Per UL1995			② Ground Wire Size Per UL1995		
							Ckt. A	Ckt. B	Ckt. C	Ckt. A	Ckt. B	Ckt. C	Ckt. A	Ckt. B	Ckt. C	Ckt. A	Ckt. B	Ckt. C
W3SAC-A00, A0Z A05 A10 A15 A20	208/230V-1	1	24	35	8	10												
		1	31	35	8	10												
		1	57	60	6	10												
		1 or 2	83	90	4	8	57	26		60	30		6	10		10	10	
		1 or 2	109	125	2	6	57	52		60	60		6	6		10	10	
W3SAC-B00, B0Z B06 B09 B15	208/230V-3	1	18	25	10	10												
		1	23	25	10	10												
		1	32	35	8	10												
		1	50	60	8	10												
W3SAC-C00, C0Z C06 C09 C15	460V-3	1	10	15	14	14												
		1	12	15	14	14												
		1	17	20	12	12												
		1	26	30	10	10												
W4SAC-A00, A0Z A05 A10 A15 A20	208/230V-1	1	33	50	8	10												
		1	33	50	8	10												
		1	58	60	6	10												
		1 or 2	84	90	4	8	59	26		60	30		6	10		10	10	
		1 or 2	110	125	2	6	59	52		60	60		6	6		10	10	
W4SAC-B00, B0Z B06 B09 B15 B18	208/230V-3	1	24	35	8	10												
		1	24	35	8	10												
		1	33	35	8	10												
		1	51	60	6	10												
		2	N/A	N/A	N/A	N/A	34	28		40	30		8	10		10	10	
W4SAC-C00, C0Z C09 C15	460V-3	1	12	15	14	14												
		1	18	20	12	12												
		1	27	30	10	10												
W5SAC-A00, A0Z A05 A10 A15 A20	230/208V-1	1	38	50	8	10												
		1	38	50	8	10												
		1	59	60	6	10												
		1 or 2	85	90	4	8	59	26		60	30		6	10		10	10	
		1 or 2	111	125	2	6	59	52		60	60		6	6		10	10	
W5SAC-B00, B0Z B06 B09 B15 B18	230/208V-3	1	28	40	8	10												
		1	28	40	8	10												
		1	34	40	8	10												
		1	52	60	6	10												
		2	NA	N/A	N/A	N/A	34	28		40	30		8	10		10	10	
W5SAC-C00, C0Z C09 C15	460V-3	1	14	20	12	12												
		1	18	20	12	12												
		1	26	30	10	10												

① Maximum size of the time delay fuse or circuit breaker for protection of field wiring conductors.

② Based on 75°C copper wire. All wiring must conform to the National Electrical Code and all local codes.

③ These "Minimum Circuit Ampacity" values are to be used for sizing the field power conductors. Refer to the National Electrical code (latest version), Article 310 for power conductor sizing.

**CAUTION:** When more than one field power circuit is run through one conduit, the conductors must be derated. Pay special attention to Note 8 of Table 310 regarding Ampacity Adjustment Factors when more than three current carrying conductors are in a raceway.

**IMPORTANT:** While this electrical data is presented as a guide, it is important to electrically connect properly sized fuses and conductor wires in accordance with the National Electrical Code and all local codes.

Note: MOCP (Maximum Overcurrent Protection) value listed is the maximum value as per UL 1995 calculations for MOCP (branch-circuit conductor sizes in this chart are based on this MOCP). The actual factory installed Overcurrent Protective Device (Circuit Breaker) in this model may be lower than the maximum UL 1995 allowable MOCP value, but still above the UL 1995 minimum calculated value or Minimum Circuit Ampacity (MCA) listed.



# Electrical Specifications - W\*\*ACD Series

Model	Rated Volts & Phase	No. Field Power Circuits	Single Circuit				Dual Circuit							
			①	②	③	④	①		②		③		④	
			Minimum Circuit Ampacity	Maximum External Fuse or Ckt. Brkr.	Field Power Wire Size	Ground Wire	Minimum Circuit Ampacity	Minimum Circuit Ampacity	Maximum External Fuse or Ckt. Breaker	Maximum External Fuse or Ckt. Breaker	Field Power Wire Size	Field Power Wire Size	Ground Wire Size	Ground Wire Size
							Ckt. A	Ckt. B	Ckt. A	Ckt. B	Ckt. A	Ckt. B	Ckt. A	Ckt. B
W3SACDA00, A0Z A05 A10 A15 A20	230/208-1	1 1 1 1 or 2 1 or 2	24 31 57 83 109	35 35 60 90 125	8 8 6 4 2	10 10 10 8 6	57 57	26 52	60 60	30 60	6 6	10 6	10 10	10 10
W3SACD00, B0Z B06 B09 B15	230/208-3	1 1 1 1	18 23 32 50	25 25 35 60	10 10 8 8	10 10 10 10								
W3SACD00, C0Z C06 C09 C15	460-3	1 1 1 1	10 12 17 26	15 15 20 30	14 14 12 10	14 14 12 10								
W4SACD00, A0Z A05 A10 A15	230/208-1	1 1 1 1 or 2	34 34 59 85	50 50 60 90	8 8 6 4	10 10 10 8	59	26	60	30	6	10	10	10
W4SACD00, B0Z B05 B09 B18	230/208-3	1 1 1 1	25 25 34 60	35 35 40 60	8 8 8 6	10 10 10 10								
W4SACD00, C0Z C05 C09	460-3	1 1 1	12 12 18	15 15 20	14 14 12	14 14 12								
W5SACD00, A0Z A05 A10	230/208-1	1 1 1	39 39 60	50 50 60	8 8 6	10 10 10								
W5SACD00, B0Z B09 B15	230/208-3	1 1 1	28 35 53	40 40 60	8 8 6	10 10 10								
W5SACD00, C0Z C09 C15	460-3	1 1 1	15 18 27	20 20 30	12 12 10	12 12 10								

① Maximum size of the time delay fuse or circuit breaker for protection of field wiring conductors.

② Based on 75°C copper wire. All wiring must conform to the National Electrical Code and all local codes.

③ These "Minimum Circuit Ampacity" values are to be used for sizing the field power conductors. Refer to the National Electrical code (latest version), Article 310 for power conductor sizing.

**CAUTION:** When more than one field power circuit is run through one conduit, the conductors must be derated. Pay special attention to Note 8 of Table 310 regarding Ampacity Adjustment Factors when more than three current carrying conductors are in a raceway.

**IMPORTANT:** While this electrical data is presented as a guide, it is important to electrically connect properly sized fuses and conductor wires in accordance with the National Electrical Code and all local codes.

Note: MOCP (Maximum Overcurrent Protection) value listed is the maximum value as per UL 1995 calculations for MOCP (branch-circuit conductor sizes in this chart are based on this MOCP). The actual factory installed Overcurrent Protective Device (Circuit Breaker) in this model may be lower than the maximum UL 1995 allowable MOCP value, but still above the UL 1995 minimum calculated value or Minimum Circuit Ampacity (MCA) listed.



//////// Sound Data - DBA @ 5 ft. and 10 ft.\*

Unit Model	Non-Ducted Standard Grilles DBA @ 5ft. (1.5m)	Ducted Supply Standard Return Grille DBA @ 5 ft. (1.5m)	Non-Ducted Standard Grilles DBA @ 10 ft. (3m)	Ducted Supply Standard Return Grille DBA @ 10 ft. (3m)	Outdoor Sound DBA @ 5 ft. (1.5m)	Outdoor Sound DBA @ 10 ft. (3m)
W3SAC	56.1	56.3	51.7	51.1	73.7	68.6
W4SAC	57	57.8	52.7	52.8	73.6	69
W5SAC	56.5	56	53.3	52.7	71.4	66.8

//////// Heater Packages - Field Installed “C” Series Units

• Designed for adding Electric Heat to 0 KW Units			• ETL US & Canada Listed			
• Circuit Breaker Standard on 230/208V Models			• Toggle Disconnect Standard on 460V Models			
Air Conditioner Models	-A00 Models 230/208-1		-B00 Models 230/208-3		-C00 Models 460-3	
	Heater Model #	KW	Heater Model #	KW	Heater Model #	KW
W3SAC	WMCBC-05A	0Z	WMCBC-03B	0Z	WMCBC-06C	0Z
	EHW3SC-A05	05	EHW3SC-B06	6	EHW3SC-C06	6
	EHW3SC-A10	10	EHW3SC-B09	9	EHW3SC-C09	9
	EHW3SC-A15	15	EHW3SC-B15	15	EHW3SC-C15	15
	EHW3SC-A20	20				
W4SAC	WMCBC-08A	0Z	WMCBC-05B	0Z	WMCBC-06C	0Z
	EHWA48C-A05	05	EHWA42C-B06	6	EHWA48C-C09	9
	EHWA42C-A10	10	EHWA42CD-B09	9	EHWA42C-C15	15
	EHWA42C-A15	15	EHWA48C-B15	15		
	EHWA42C-A20	20	EHWA48C-B18	18		
W5SAC	WMCBC-08A	0Z	WMCBC-06B	0Z	WMCBC-06C	0Z
	EHWA42C-A05	05	EHWA60C-B06	6	EHWA60C-C09	9
	EHWA60C-A10	10	EHWA60C-B09	9	EHWA60C-C15	15
	EHWA60C-A15	15	EHWA60C-B15	15		
	EHWA60C-A20	20	EHWA60C-B18	18		

//////// Heater Packages - Field Installed “CD” Series Dehumidification Units

• Designed for adding Electric Heat to 0 KW Units			• ETL US & Canada Listed			
• Circuit Breaker Standard on 230/208V Models			• Toggle Disconnect Standard on 460V Models			
Air Conditioner Models	-A00 Models 230/208-1		-B00 Models 230/208-3		-C00 Models 460-3	
	Heater Model #	KW	Heater Model #	KW	Heater Model #	KW
W3SACD	WMCBC-05A	0Z	WMCBC-03B	0Z	WMCBC-06C	0Z
	EHW3SC-A05	05	EHW3SC-B06	06	EHW3SC-C06	06
	EHW3SC-A10	10	EHW3SC-B09	09	EHW3SC-C09	09
	EHW3SC-A15	15	EHW3SC-B15	15	EHW3SC-C15	15
	EHW3SC-A20	20				
W4SACD	WMCBC-08A	0Z	WMCBC-05B	0Z	WMCBC-06C	0Z
	EHWA48CD-A05	05	EHWA42C-B05	05	EHWA42C-C05	05
	EHWA48CD-A10	10	EHWA48CD-B09	09	EHWA48C-C09	09
	EHWA42C-A15	15	EHWA48CD-B18	18		
W5SACD	WMCBC-09A	0Z	WMCBC-06B	0Z	WMCBC-06C	0Z
	EHWA60CD-A05	05	EHWA60CD-B09	09	EHWA60C-C09	09
	EHWA60CD-A10	10	EHWA60CD-B15	15	EHWA72C-C15	15



//////// **Electric Heat Table - Refer To Electrical Specifications For Availability By Unit Model**

NOMINAL KW	AT 240V (1)				AT 208V (1)				AT 480V (2)			AT 460V (2)		
	KW	1-PH AMPS	3-PH AMPS	BTUH	KW	1-PH AMPS	3-PH AMPS	BTUH	KW	3-PH AMPS	BTUH	KW	3-PH AMPS	BTUH
4.0	4.0	16.7		13,652	3.00	14.4		10,239						
5.0	5.0	20.8	12.5	17,065	3.75	18.0	10.4	12,799						
6.0	6.0		14.4	20,478	4.50		12.5	15,359	6.0	7.2	20,478	5.52	6.9	18,840
8.0	8.0	33.3		27,304	6.00	28.8		20,478						
9.0	9.0		21.7	30,717	6.75		18.7	23,038	9.0	10.8	30,717	8.28	10.4	28,260
10.0	10.0	41.7		34,130	7.50	36.1		25,598						
15.0	15.0	62.5	36.1	51,195	11.25	54.1	31.2	38,396	15.0	18.0	51,195	13.80	17.3	47,099
18.0	18.0		43.3	61,434	13.50		37.5	46,076	18.0	21.7	61,434	16.56	20.8	56,519
20.0	20.0	83.3		68,260	15.00	72.1		51,195						

(1) Listed electric heaters are available for 230/208V units only.

(2) Listed electric heaters are available for 480V units only.





# ////// Ventilation Option Selection Chart

VENT CODE	FIELD INSTALLED KIT PART NUMBER	UNIT MODEL NUMBER	VENT OPERATION	VENT USE
<b>X</b>	<a href="#">FAD-NE5</a>	All Units	Barometric Intake Damper, No Room Exhaust	Outdoor air intake damper that may be used to provide slight building positive pressurization or bring an adjustable amount of outdoor air into a structure. The damper opens during indoor blower operation and provides intake air only.
<b>A</b>	<a href="#">FAD-BE5</a>	All Units	Barometric Intake Damper with Room Exhaust	Outdoor air intake damper that may be used to bring an adjustable amount of outdoor air into a structure. The damper opens during indoor blower operation and an exhaust damper provides barometric room pressure relief.
<b>B</b>	<a href="#">BOPLATE-5</a>	All Units	No ventilation, provides best protection against water, dirt, and debris infiltration.	Insulated plates are installed over the vent intake and exhaust openings. When used, the plates provide a degree of protection from splashing water and dirt/debris entry into the unit.
<b>M</b>	<a href="#">CRV-F5</a>	All Units	Motorized Intake Damper with Room Exhaust. Vent opens to user adjustable open position when energized. Vent is energized when 24VAC is applied to the "A" terminal located on the unit low voltage terminal strip.	The CRV-F provides a simple means of bringing in outdoor air when a motorized spring closed damper is required. Vent option provides up to 50% outdoor air intake. It also provides room pressure relief. Motor uses linkage to operate damper blades and springs closed when power to the damper motor is removed. No intake hood is required for all models.
<b>V</b>	<a href="#">CRV-V5</a>	All Units	Motorized Intake Damper with Room Exhaust. Vent opens to user adjustable minimum position when "A" terminal located on the unit low voltage terminal strip is energized with 24VAC. 0-10VDC modulating operation option. Room pre-purge option.	The CRV-V provides a control board with advanced options for bringing in outdoor air when a motorized spring closed damper is required. Vent option provides up to 50% outdoor air intake. It also provides room pressure relief. Motor uses linkage to operate damper blades and springs closed when power to the damper motor is removed. Includes solid state control board for multiple ventilation settings. No intake hood is required for all models.
<b>D</b>	<a href="#">ECON-NC5</a>	All Units	Motorized Intake Damper with Room Exhaust. Vent opens to user setting based on 0-10VDC input. 10k outdoor sensor is included with vent option. This vent does not include solid state board or JADE controller to operate economizer functionality.	The no controls economizer option is used where the controls contractor will provide a field installed logic board and indoor/outdoor sensors or other means to decide when conditions are favorable for free cooling. Vent option provides up to 100% outdoor air intake. It also provides room pressure relief. Motor uses linkage to operate damper blades and springs closed when power to the damper motor is removed. No intake hood is required.
<b>Y</b>	<a href="#">ECON-DB5</a>	All Units	Motorized Intake Damper with Room Exhaust. JADE economizer control uses outdoor temperature to provide free cooling operation based on user settings. Optional 0-10VDC input for modulating ventilation control. Optional user selected minimum position when "A" terminal located on the unit low voltage terminal strip is energized with 24VAC.	The dry bulb economizer option is often used in areas with low outdoor humidity levels or applications where indoor humidity levels can be relatively high. Vent option provides up to 100% outdoor air intake based on outdoor temperature. It also provides room pressure relief. Motor uses linkage to operate damper blades and springs closed when power to the damper motor is removed. No intake hood is required.
<b>Z</b>	<a href="#">ECON-WD5</a>	All Units	Motorized Intake Damper with Room Exhaust. JADE economizer control uses outdoor temperature and humidity to provide free cooling operation based on enthalpy curve setting. Optional 0-10VDC input for modulating ventilation control. Optional user selected minimum position when "A" terminal located on the unit low voltage terminal strip is energized with 24VAC.	The economizer with enthalpy control is often used to provide free cooling for applications where humidity levels outdoors are relatively high, or indoor humidity levels need to be kept at a low amount. Vent option provides up to 100% outdoor air intake based on outdoor temperature and humidity. It also provides room pressure relief. Motor uses linkage to operate damper blades and springs closed when power to the damper motor is removed. No intake hood is required.
<b>R</b>	<a href="#">ERV-FA5</a>	208/230VAC voltage units	The Energy Recovery Ventilator Provides a solution to condition intake air entering the room while exhausting room air to minimize room pressurization. Heat is transferred from the entering air into the exhaust air during cooling seasons. Heat is transferred from the air being exhausted from the room into the air intake are during heating seasons. This is accomplished using energy recovery wheels, an intake blower assembly, and an exhaust blower assembly. Operation is controlled when the "A" terminal located on the unit low voltage terminal strip is energized with 24VAC.	The Energy Recovery Ventilator is often used to provide ventilation for an occupied area that requires outdoor air intake regardless of outdoor conditions. Vent option provides outdoor air intake and room pressure relief with optimal energy efficiency during warm or cool outdoor conditions. Intake and exhaust blower assemblies have 3 independent adjustable speed selections. No intake hood is required.
	<a href="#">ERV-FC5</a>	460VAC voltage units		



## ///// Fresh Air Damper and Commercial Ventilator Specifications

### “X” Vent Code Option – Standard Barometric Fresh Air Damper without Exhaust (FAD-NE)

The barometric fresh air damper without exhaust is a standard feature on all models, and can be ordered pre-installed from Bard or may be field installed with the FAD-NE vent kit. Fresh air dampers are typically used when a small amount of outdoor air is required in a room or structure when the indoor blower is on. The intake damper opens when the indoor blower is operational and negative pressure in the vent area of the unit pulls the blade open. When the blade is open, the damper allows outdoor air to be brought into the structure. Pins are provided that allow for airflow adjustment. See FAD-NE airflow charts provided in this specification for airflow amounts. Room air exhaust is not provided with the FAD-NE vent.

The barometric fresh air damper without exhaust includes the following options:

- The damper opens when the indoor blower is operational.
- The vent provides up to 25% of the total airflow rating of the unit.
- Adjustable blade pins allow different amounts of outside air to be introduced into the building and can be easily locked closed if required.
- The ventilation exhaust air path is sealed with an insulated block-off plate.
- Slight room pressurization is achieved during indoor blower operation.



Fresh Air Damper Intake (FAD-NE and FAD-BE)

### “A” Vent Code Option – Standard Barometric Fresh Air Damper with Barometric Exhaust (FAD-BE)

The barometric fresh air damper with exhaust is an optional feature on all models, and can be ordered pre-installed from Bard or may be field installed with the FAD-BE vent kit. Fresh air dampers are typically used when a small amount of outdoor air is required in a room or structure when the indoor blower is on. The intake damper opens when the indoor blower is operational and negative pressure in the vent area of the unit pulls the blade open. When the blade is open, the damper allows outdoor air to be brought into the structure. Blade stops are provided that allow for intake airflow adjustment. See FAD-BE airflow charts provided in this specification for airflow amounts. Room air exhaust using room air pressure is provided with a separate assembly. This allows room air to pass through the vent area and out of the unit. Blade stops allow for adjustment of exhaust air amounts. Operation of the damper is dependent on room pressurization to open the exhaust blade and allow room air to leave the structure.

The barometric fresh air damper without exhaust includes the following options:

- The damper opens when the indoor blower is operational.
- The vent provides up to 25% of the total airflow rating of the unit.
- Adjustable blade pins allow different amounts of outside air to be introduced into the building and can be easily locked closed if required.
- Adjustable room exhaust is provided through secondary exhaust damper assembly.
- Room pressurization is adjustable during indoor blower operation.



Fresh Air Damper Exhaust (FAD-BE only)

### “B” Vent Code Option – Block off Plate (BOP)

The block off plate is an optional feature on all models, and can be ordered pre-installed from Bard or may be field installed with the BOP vent kit. The block off plate option provides a way to seal the intake and exhaust air openings. This will provide the best protection from splashing water, dust and dirt entering the unit, and air infiltration reduction.

The barometric fresh air damper without exhaust includes the following options:

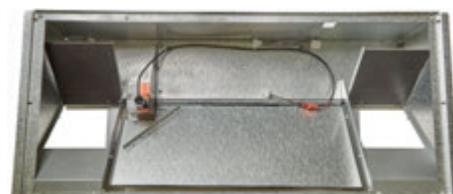
- Insulated plates are installed to cover vent intake and exhaust openings.
- Plate installation provides a degree of protection from air, water, dirt, and dust infiltration.

### “M” Vent Code Option – Basic Commercial Room Ventilator (CRV-F)

The basic commercial room ventilator is an optional feature on all models, and can be ordered pre-installed from Bard or may be field installed with the CRV-F vent kit. Commercial Room Ventilators are designed to provide an adjustable amount of outdoor air inside a room or structure, exhaust room air, and close when outdoor air is not needed. The intake damper opens when 24VAC power is applied to the ventilation terminal inside the unit control panel (A). The damper blade is operated by a 24VAC actuator motor and blade linkage. When the blade is open, the damper allows outdoor air to be brought into the structure. A blade stop is provided that allows for airflow adjustment. See CRV-F airflow charts provided in this specification for airflow amounts. Air exhaust is provided using room air pressure that allows room air to pass through the vent area and out of the unit. Exhaust damper linkage controls the exhaust air amount and air intake amount simultaneously.

The basic commercial room ventilator includes the following options:

- The intake and exhaust damper opens when the unit ventilation terminal (A) is energized with 24VAC.
- Spring closed motorized damper closes within 30 seconds when unit power is removed.
- The vent provides a maximum of over 50% of the total airflow rating of the unit.
- Adjustable blade stop allows adjustable amounts of outside air to be introduced into the building.
- Room exhaust is provided through the ventilation assembly reducing room pressure.



Commercial Room Ventilator-Fixed and Modulating



## ////// Commercial Ventilator Specifications, CRV-V

### “V” Vent Code Option – Advanced Commercial Room Ventilator (CRV-V)

The advanced commercial room ventilator is an optional feature on all models, and can be ordered pre-installed from Bard or may be field installed with the CRV-V vent kit. Commercial Room Ventilators are designed to provide an adjustable amount of outdoor air inside a room or structure, exhaust room air, and close when outdoor air is not needed. The intake damper opens when 24VAC power is applied to the ventilation terminal inside the unit control panel (A), or modulating control is possible when a 2-10VDC signal is supplied by a CO2 sensor or control device. The damper blade is operated by a 24VAC actuator motor and blade linkage. When the blade is open, the damper allows outdoor air to be brought into the structure. A solid-state board has adjustable potentiometers for blade position when ventilation is active, or 2-10VDC can be used to modulate damper position. See CRV-V airflow charts provided in this specification for airflow amounts. Air exhaust is provided that allows room air to pass through the vent area and out of the unit. Exhaust damper linkage controls the exhaust air amount and air intake amount simultaneously.

The basic commercial room ventilator includes the following options:

- The intake and exhaust damper opens when the unit ventilation terminal (A) is energized with 24VAC.
- Blade position potentiometer allows adjustment of the outside air amount entering into the building intended for occupant air quality improvement or light industrial room pressurization purposes.
- Optional 0-10VDC modulating damper control for operation with DDC system or external modulating CO2 control. When used, damper allows varying amounts of outside air to be brought into the building.
- Room pre-purge feature with 30/60/90 minute timer allows outdoor air to be brought in to room before occupants enter if ventilation is controlled by a schedule using a thermostat or room controller.
- Spring closed motorized damper closes within 30 seconds when unit power is removed.
- The vent provides a maximum of over 50% of the total airflow rating of the unit.
- Room exhaust is provided through the ventilation assembly reducing room pressure.
- Design based on requirements of ANSI/ASHRAE Standard 62.1 and other state and local ventilation codes.
- Improved damper blade seals for reduced air leakage.



“V” Vent Control Board

## ////// Economizer Specifications, ECON-NC

### “D” Vent Code Option – Economizer without Bard Supplied Controls (ECON-NC)

The Economizer without Bard supplied controls is an optional feature on all models, and can be ordered pre-installed from Bard or may be field installed with the ECON-NC vent kit. Economizers are designed to provide free cooling when outdoor conditions are acceptable, and provide a small amount of outdoor air intake if needed for a room or structure if required. The ECON-NC ventilation option is designed for customers who are using their own ventilation controls package and only need the economizer damper assembly and economizer damper motor. The intake damper opens and closes based on a 2-10VDC signal is supplied by a field supplied control device. Bard does not supply a logic board that will decide when conditions are favorable for free cooling. An outdoor temperature sensor (10k) is supplied with the economizer assembly. The damper blade is operated by a 24VAC actuator motor and blade linkage. When the blade is open, the damper allows outdoor air to be brought into the structure. See ECON-NC airflow charts provided in this specification for airflow amounts. Air exhaust is provided that allows room air to pass through the vent area and out of the unit. Room pressure forces air out the exhaust. Exhaust damper linkage controls the exhaust air amount and air intake amount simultaneously.

The economizer without Bard supplied controls includes the following options:

- The intake and exhaust damper opens when a 2-10VDC signal is received from field-supplied controls.
- A 10k dry bulb outdoor sensor is supplied with the vent option assembly.
- Spring closed motorized damper closes within 30 seconds when unit power is removed.
- When completely open, the vent provides outdoor air intake of the full airflow rating of the unit.
- Room exhaust is provided through the ventilation assembly reducing room pressure.
- Economizer assembly including damper seals and linkage meets 4cfm per ft2 leakage requirements.



Economizer Assembly



## ////// Economizer Specifications, ECON-DB and ECON-WD

### **"Y" Vent Code Option – Economizer with JADE Controls and Dry Bulb Outdoor Sensor (ECON-DB)**

The Economizer with JADE controls and dry bulb outdoor sensor is an optional feature on all models, and can be ordered pre-installed from Bard or may be field installed with the ECON-DB vent kit. Economizers are designed to provide free cooling when outdoor conditions are acceptable, and provide a small amount of outdoor air intake if required during non-economizer use. This saves energy and reduces compressor run time extending the life of the cooling equipment components. The ECON-DB ventilation option uses the JADE economizer controller and a 10k outdoor temperature sensor to decide when outdoor temperature is acceptable for free cooling operation. During free cooling economizer operation, the indoor blower will draw air through the economizer assembly mixing room air and outdoor air to provide a standard supply temperature. The damper blade is operated by a 24VAC actuator motor and blade linkage. See ECON-DB airflow charts provided in this specification for airflow amounts. Air exhaust is provided that allows room air to pass through the vent area and out of the unit. Room pressure forces air through the exhaust opening. Exhaust damper linkage controls the exhaust air amount and air intake amount simultaneously. Minimum vent position feature allows ventilation air to be brought into a room or structure when the unit ventilation terminal (A) is energized with 24VAC.

The economizer with JADE and dry bulb outdoor sensor includes the following options:

- Saves energy and reduces compressor-cooling runtime.
- The intake and exhaust damper opens to provide free cooling based on outdoor temperature. Outdoor temperature for economizer operation is user adjustable between 48°F and 80°F (8.8°C to 26.6°C). Default is 60°F (15.5°C).
- An economizer supply mixed air sensor provides a mixed air temperature of 53°F (11.6°C) by default.
- A 10k outdoor sensor is supplied with the vent option assembly to measure outdoor temperature.
- Spring closed motorized damper closes within 30 seconds when unit power is removed.
- When completely open, the vent provides outdoor air intake of the full airflow rating of the unit.
- Room exhaust is provided through the ventilation assembly reducing room pressure.
- Minimum vent position feature for outdoor air intake during non-economizer operation. Minimum position is used for meeting ANSI/ASHRAE Standard 62.1 air quality requirements or slight positive room pressurization for light industrial applications.
- 2-10VDC input for modulating ventilation when used with a CO2 sensor or other control device.
- Economizer may be used to provide cooling down to -40°F (-40°C) outdoor temperatures without compressor use.
- The JADE controller provides an easy to use LCD interface with user settings and diagnostics.
- Economizer assembly including damper seals and linkage meets 4cfm per ft2 leakage requirements.



Economizer Assembly

### **"Z" Vent Code Option – Economizer with JADE Controls and Enthalpy Outdoor Sensor (ECON-WD)**

The Economizer with JADE controls and enthalpy outdoor sensor is an optional feature on all models, and can be ordered pre-installed from Bard or may be field installed with a vent kit. The "Z" economizer option (ECON-WD) is available for all unit models and provides 100% outdoor air intake. Economizers are designed to provide free cooling when outdoor conditions are acceptable, and provide a small amount of ventilation air if needed during non-economizer operation. This saves energy and reduces compressor run time extending the life of the cooling equipment components. The ventilation options use the JADE economizer controller and an outdoor enthalpy (temperature and humidity) sensor to decide when outdoor conditions are acceptable for free cooling operation. During free cooling economizer operation, the indoor blower will draw air through the economizer assembly mixing room air and outdoor air to provide a standard leaving supply temperature. The damper blade is operated by a 24VAC actuator motor and blade linkage. See ECON-WD airflow charts provided in this specification for airflow amounts. Air exhaust is provided that allows room air to pass through the vent area and out of the unit. Room air pressure forces air through the exhaust opening. Exhaust damper linkage controls the exhaust air amount and air intake amount simultaneously. Minimum vent position feature allows ventilation air to be brought into a room or structure if required during non-economizer use when the unit ventilation terminal (A) is energized with 24VAC.

The economizer with JADE and enthalpy outdoor sensor includes the following options:

- Saves energy and reduces compressor-cooling runtime.
- The intake and exhaust damper opens to provide free cooling based on outdoor temperature and humidity. Enthalpy curves are pre-set and user selectable to maximize free cooling runtime or minimize indoor humidity levels during free cooling.
- An economizer supply mixed air sensor provides a mixed air temperature of 53°F (11.6°C) by default.
- An enthalpy sensor is supplied with the vent option assembly to measure outdoor temperature.
- Spring closed motorized damper closes within 30 seconds when unit power is removed.
- When completely open, the vent provides outdoor air intake of the full airflow rating of the unit.
- Room exhaust is provided through the ventilation assembly reducing room pressure.
- Minimum vent position feature for outdoor air intake during non-economizer operation. Minimum position is used for meeting ANSI/ASHRAE Standard 62.1 air quality requirements or slight positive room pressurization for light industrial applications.
- 2-10VDC input for modulating ventilation when used with a CO2 sensor or other control device.
- Economizer may be used to provide cooling down to -40°F (-40°C) outdoor temperatures without compressor use.
- The JADE controller provides an easy to use LCD interface with user settings and diagnostics.
- Economizer assembly including damper seals and linkage meets 4cfm per ft2 leakage requirements.



## //////// Economizer Control Specifications, JADE Controller

### JADE Economizer Control Features and Benefits

The JADE control is an important component of the ECON-DB and ECON-WD economizer ventilation options. It provides the logic to control the economizer operation based on outdoor conditions and includes an easy to use interface with an LCD display screen. Bard has pre-programmed the JADE from the factory to provide standard settings that apply for common installations.

The following basic setup menu items are available through the JADE menu settings:

- **Mixed Air Temperature:** This set point is used to control the air temperature that is provided by the economizer assembly. The mixed air temperature is set from the factory to provide optimal cooling performance during economizer use. Default setting is 53°F and can be adjusted between 38°F and 65°F.
- **Low T Lock:** This set point is used to lock out compressor operation when outdoor temperature is extremely low. Default setting is 0°F and can be adjusted between -45°F and 80°F.
- **Dry bulb Set point (ECON-DB only):** Provides the maximum outdoor temperature for economizer use. Default setting is 60°F and can be adjusted between 48°F and 80°F.
- **Enthalpy Curve Set point (ECON-WD only):** Provides the enthalpy (temperature and humidity) boundary curves for economizer use. Default setting is ES3 and can be set between ES1 and ES5.
- **Minimum Position:** Used to set the outdoor ventilation amount to be brought into the room or structure when the unit (A) terminal is energized. Default setting is 2VDC and can be set between 2VDC and 10VDC.
- **Demand Control Vent set point (DCV):** DCV is available when 2-10VDC signal is received from a CO2 sensor or other device. This is set to the maximum allowable CO2 level for the space when used with a CO2 sensor. Default setting is 1100ppm and can be adjusted between 500 to 2000ppm. Default setting is recommended, and CO2 level is normally adjustable at the CO2 sensor.
- **Auxiliary output:** An auxiliary output is available that will send 24VAC to terminal 6 on the unit control panel low voltage terminal strip. This feature can be easily set using the JADE interface to function as needed for certain applications. When set to EXH2, the auxiliary output can be used to control a secondary exhaust fan system during economizer operation. When set to SYS, the auxiliary output can be used to signal an issue with the economizer when the JADE has an active alarm. The alarm signal can be connected to a thermostat or controls system with the ability to signal a service alarm.

### JADE Technical Specifications

- Voltage 20 to 30 VAC RMS
- Operating Temperature Range (F) -40 F to +150 F
- Operating Temperature Range (C) -40 C to +65 C
- Approvals, Federal Communications Commission Compliant
- Approvals, CE Compliant
- Complies with California Title 24
- Mixed air and Outdoor Enthalpy Sensor using Sylk Bus.
- Output 2-10 VDC to actuator, Sylk Bus.



Jade Control Module

### Optional Return Air Sensor Kit Bard Part #8620-340 and #8620-334

The optional return air sensor kit provides a optional sensor that is field installed in the return airstream. When installed, the JADE economizer will monitor and adjust outdoor air intake based on comparing room temperature and outdoor temperature. This kit is optional, but may be required to meet state and local building codes in certain installation areas.

### General Ventilation Option Guidelines

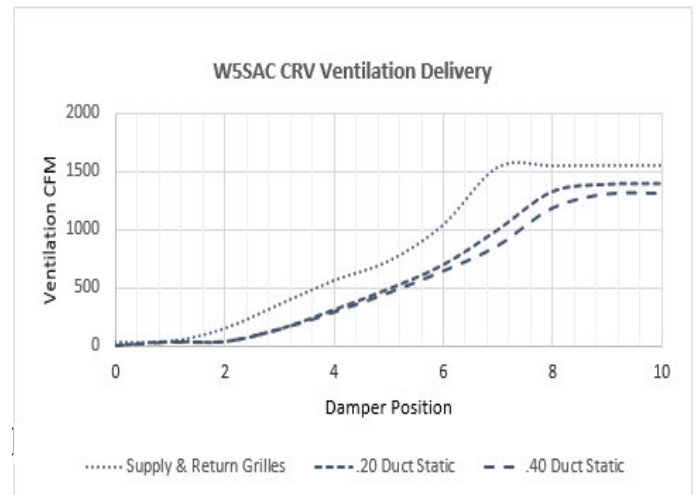
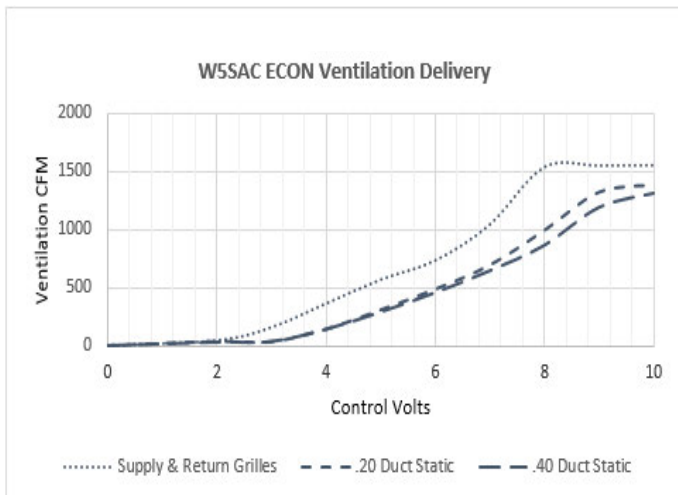
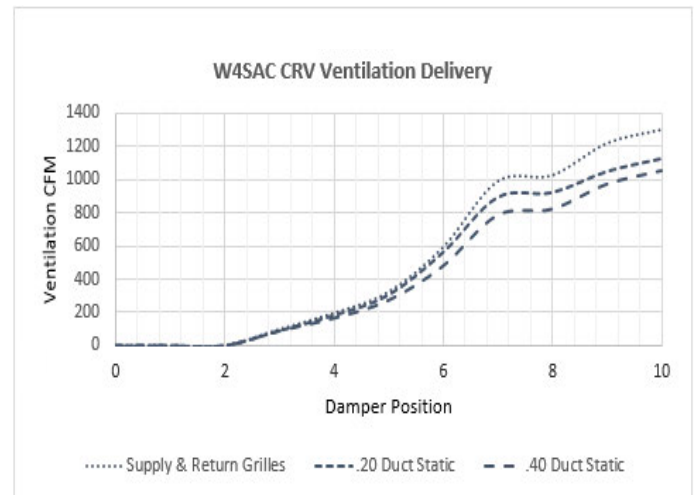
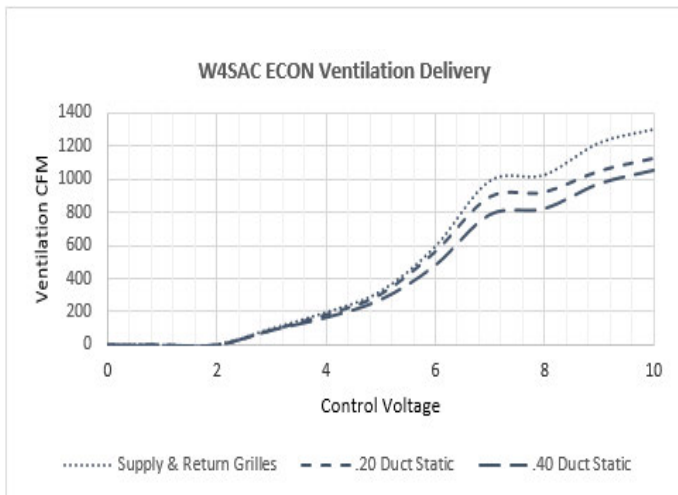
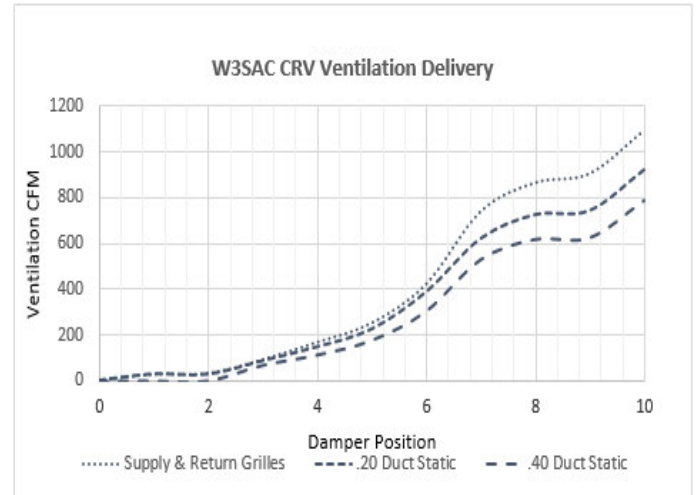
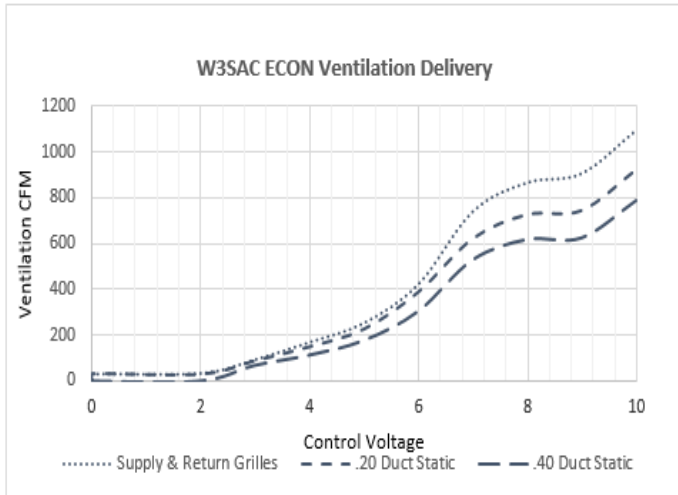
Applying heating and cooling equipment for various applications in the field requires careful planning to ensure the results provide are acceptable for occupants and heat generating equipment inside a room or structure. Products must be reviewed to meet all national, state, and local codes. When providing ventilation air to an indoor area, it is important that the equipment heating and cooling capacity be sized properly for the amount outdoor air being brought into the room or structure. Building pressurization requirements for specified pressurization amounts may require additional exhaust dampers, intake dampers, or fan pressurization systems. Avoid bringing in excessive ventilation amounts when it is not required per the application. Building codes may require special consideration regarding fire suppression systems, building pressurization, and other ventilation needs. Thermostats, CO2 sensors, and multiple unit lead/lag controllers that are used to control the equipment including ventilation must be reviewed per the application requirements. Follow all codes and standards that apply to the location where the equipment will be used, and review ASHRAE recommendations and guidelines for the application.





ECON Ventilation

CRV Ventilation



## ///// **Energy Recovery Ventilator (ERV) Specifications**

### **“R” Vent Code Option – Energy Recovery Ventilator (ERV-F)**

The Energy Recovery Ventilator is an optional feature on all models, and can be ordered pre-installed from Bard or may be field installed with the ERV-F vent kit. Energy Recovery Ventilators are designed to improve efficiency and comfort levels in a room when it is necessary to bring in outdoor air regardless of outdoor weather conditions. This saves energy and reduces compressor run time extending the life of the cooling equipment components. The ERV-F ventilation option has an intake and an exhaust air path that uses a separate intake and exhaust fan system. Both the intake and exhaust fans draw air through a rotary energy recovery cassette. The cassette transfers heat from one air path into the other.

- ERV-F use during warmer outdoor weather months: Heat is transferred from the intake airstream to the exhaust airstream. This operation allows heat to be removed from the outdoor air before entering the room.
- ERV-F use during cooler outdoor weather months: Heat is transferred from the exhaust airstream to the intake airstream. This operation allows heat to be added to the outdoor air before entering the room.
- The indoor and outdoor fan systems used in the ERV-F each have three user selectable speeds of operation. The rotary energy recovery cassette is easily removed and disconnected from power for service and cleaning. The cassette wheel media is cleanable with a mild soap/cleaning agent and water.
- ERV-F intake and exhaust airflow and energy efficiency charts are provided for ERV-F models based on Wall-Mount unit size.
- Up to 25% heating or cooling load reduction during ventilation operation by pre-conditioning the outdoor air being brought into the room.



# Energy Recovery Ventilator (ERV) Performance

"R" (ERV-FA5 and ERV-FC5) Vent Code Options

SUMMER COOLING PERFORMANCE (INDOOR DESIGN CONDITIONS 75°DB/62°WB)

AMBIENT O.D.		VENTILATION RATE -- 450 CFM 63% EFFICIENCY						VENTILATION RATE -- 375 CFM 64% EFFICIENCY						VENTILATION RATE -- 300 CFM 65% EFFICIENCY					
DB/WB	F	VLT	VLS	VLL	HRT	HRS	HRL	VLT	VLS	VLL	HRT	HRS	HRL	VLT	VLS	VLL	HRT	HRS	HRL
105	75	21465	14580	6884	13952	9477	4475	17887	12150	5737	11805	8018	3786	14310	9720	4590	9587	6512	3075
	70	14580	14580	0	9477	9477	0	12150	12150	0	8018	8018	0	9720	9720	0	6512	6512	0
	65	14580	14580	0	9477	9477	0	12150	12150	0	8018	8018	0	9720	9720	0	6512	6512	0
100	80	31590	12150	19440	20533	7897	12635	26325	10125	16200	17374	6682	10692	21060	8100	12960	14110	5427	8683
	75	21465	12150	9314	13952	7897	6054	17997	10125	7762	11805	6682	5123	14310	8100	6210	9587	5427	4160
	70	12352	12150	202	8029	7897	131	10293	10125	168	6793	6682	111	8235	8100	135	5517	5427	90
	65	12150	12150	0	7897	7897	0	10125	10125	0	6682	6682	0	8100	8100	0	5427	5427	0
	60	12150	12150	0	7897	7897	0	10125	10125	0	6682	6682	0	8100	8100	0	5427	5427	0
95	80	31590	9720	21870	20533	6318	14215	26325	8100	18225	17374	5345	12028	21060	6480	14580	14110	4341	9768
	75	21465	9720	11744	13952	6318	7634	17887	8100	9787	11805	5345	6459	14310	6480	7830	9587	4341	5246
	70	12352	9720	2632	8029	6318	1711	10293	8100	2193	6793	5345	1447	8235	6480	1755	5517	4341	1175
	65	9720	9720	0	6318	6318	0	8100	8100	0	5345	5345	0	6480	6480	0	4341	4341	0
	60	9720	9720	0	6318	6318	0	8100	8100	0	5345	5345	0	6480	6480	0	4341	4341	0
90	80	31590	7290	24300	20533	4738	15794	26325	6075	20250	17374	4009	13365	21060	4860	16200	14110	3256	10854
	75	21465	7290	14175	13952	4738	9213	17887	6075	11812	11805	4009	7796	14310	4860	9450	9587	3256	6331
	70	12352	7290	5062	8029	4738	3290	10293	6075	4218	6793	4009	2784	8235	4860	3375	5517	3256	2261
	65	7290	7290	0	4738	4738	0	4050	6075	0	4009	4009	0	4860	4860	0	3256	3256	0
	60	7290	7290	0	4738	4738	0	4050	6075	0	4009	4009	0	4860	4860	0	3256	3256	0
85	80	31590	4860	26730	20533	3159	17374	26325	4050	22275	17374	2672	14701	21060	3240	17820	14110	2170	11939
	75	21465	4860	16605	13952	3159	10793	17887	4050	13837	11805	2672	9132	14310	3240	11070	9587	2170	7416
	70	12352	4860	7492	8029	3159	4870	10293	4050	6243	6793	2672	4120	8235	3240	4995	5517	2170	3346
	65	4860	4860	0	3159	3159	0	4050	4050	0	2672	2672	0	3240	3240	0	2170	2170	0
	60	4860	4860	0	3159	3159	0	4050	4050	0	2672	2672	0	3240	3240	0	2170	2170	0
80	75	21465	2430	19035	13952	1580	12372	17887	2025	15862	11805	1336	10469	14310	1620	12690	9587	1085	8502
	70	12352	2430	9922	8029	1580	6449	10293	2025	8268	6793	1336	5457	8235	1620	6615	5517	1085	4432
	65	4252	2430	1822	2764	1580	1184	3543	2025	1518	2338	1336	1002	2835	1620	1215	1899	1085	814
	60	2430	2430	0	1579	1580	0	2025	2025	0	1336	1336	0	1620	1620	0	1085	1085	0
75	70	12352	0	12352	8029	0	8029	10293	0	10293	6793	0	6793	8235	0	8235	5517	0	5517
	65	4252	0	4252	2764	0	2764	3543	0	3543	2338	0	2338	2835	0	2835	1899	0	1899
	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ERV-FA5 WINTER HEATING PERFORMANCE (INDOOR DESIGN CONDITIONS 70°F DB)

AMBIENT O.D.	VENTILATION RATE					
	450 CFM 80% EFF.		375 CFM 81% EFF.		300 CFM 82% EFF.	
DB/°F	WVL	WVL	WVL	WVL	WVL	WHR
65	2430	1944	2025	1640	1620	1328
60	4860	3888	4050	3280	3240	2656
55	7290	5832	6075	4920	4860	3985
50	9720	7776	8100	6561	6480	5313
45	12150	9720	10125	8201	8100	6642
40	14580	11664	12150	9841	9720	7970
35	17010	13608	14175	11481	11340	9298
30	19440	15552	16200	13122	12960	10627
25	21870	17496	18225	14762	14580	11955
20	24300	19440	20250	16402	16200	13284
15	26730	21384	22275	18042	17820	14612

NOTE: Sensible performance only is shown for winter application.

## 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



## ///// Unit Filter Options

Unit filter options for the Bard Wall-Mount provide multiple solutions for air filtration and indoor air quality improvement. Filter options allow for both room air passing through the unit and outdoor air provided by ventilation options to be cleaned before entering the indoor environment. Various filter types are available between MERV2 and MERV13 ratings. It is important to review application requirements, state and local codes, and ASHRAE recommendations to provide a clean, safe indoor area for occupants or heat generating equipment. Filter cleaning or replacement is an important part of ensuring that your Bard equipment is operating at optimal performance and indoor sound levels. A routine filter maintenance program based on room conditions is important, and higher MERV rated filters will normally require frequent filter changes. Filter trays are built into the unit with low filter bypass. Filter switch options are available that will help indicate when filter replacement or cleaning is necessary when used with a thermostat option to indicate filter change maintenance is needed.

### “X” Filter Code Option – 1” Disposable MERV2 Filter

The 1” disposable non-pleated MERV2 filter is a standard feature on all models, and is normally used for low dust level areas where minimal filtration is required. Media material is typically polyester/fiberglass with a chipboard or cardboard frame. When maintenance is required, the filter is replaced. This option offers minimal filtration, low air resistance, and low maintenance costs.

### “W” Filter Code Option – 1” Permanent MERV2 Filter

The 1” permanent non-pleated MERV2 filter is an optional feature on all models, and is normally used for low dust level areas where minimal filtration is required. Media material is typically foam with a plastic frame. When maintenance is required, the filter is cleaned and reused. If the filter media becomes damaged, the filter needs to be replaced. This option offers minimal filtration, low air resistance, and low maintenance costs.

### “P” Filter Code Option – 2” Disposable MERV8 Filter

The 2” disposable pleated MERV8 filter is an optional feature on all models, and is normally used for moderate dust level areas where standard filtration is required. Media material is fiber based, provides high performance with an extended surface area that offers low-pressure drop. When maintenance is required, the filter is replaced. This option offers standard filtration, minimal air resistance, and average maintenance costs.

### “M” Filter Code Option – 2” Disposable MERV11 Filter

The 2” disposable pleated MERV11 filter is an optional feature on all models, and is normally used for moderate to high filtration requirements. Media material is fiber based, provides high performance with an extended surface area that offers low-pressure drop. When maintenance is required, the filter is replaced. This option offers higher filtration, minimal air resistance, and average maintenance costs.

### “N” Filter Code Option – 2” Disposable MERV13 Filter

The 2” disposable pleated MERV13 filter is an optional feature on all models, and is normally used for high filtration requirements. MERV13 filters are typically used where filtration of small particulates is required to offer a high level of indoor air quality. Often these filters are used in occupied areas including classrooms, gymnasiums, cafeterias, and other areas where filtration is at a high importance level. Media material is fiber based, provides high performance with an extended surface area that offers low-pressure drop. Filter replacement in 3-month or less intervals is recommended for the best filter and unit performance.

### “A” Filter Code Option – 2” Disposable MERV13 Filter with UVC-LED Light

The 2” disposable pleated MERV13 filter is included with this option, and also a UVC-LED light used for disinfection. UVC-LED Light is a type of ultraviolet germicidal irradiation (UVGI) that disinfects the air through shortwavelength ultraviolet light. See UVC-LED Light specifications for further details.

### “B” Filter Code Option – 2” Disposable MERV13 Filter with NPBI Device

The 2” disposable pleated MERV13 filter is included with this option and a GPS-FC-3-BAS system ionization device is also provided. The NPBI device is located in the indoor air stream and uses carbon fiber brush emitters. A status light and optional normally open dry contacts are also provided to indicate device operation to a building management system.

## ///// Filter Replacement Part Number Chart

UNIT MODEL	FILTER CODE	FILTER MERV RATING	NUMBER OF FILTERS USED	BARD PART NUMBER	FILTER SIZE	FILTRATION LEVEL
All Models	X	MERV 2	2	7004-012	20 x 20 x 1	Low Filtration, 1” Thickness Disposable Media.
	W	MERV 2	2	7003-085	20 x 20 x 1	Low Filtration, 1” Thickness Permanent Media.
	P	MERV 8	2	7004-052	20 x 20 x 2	Average Filtration, 2” Thickness Pleated Disposable Media.
	M	MERV 11	2	7004-060	20 x 20 x 2	Above Average Filtration, 2” Thickness Pleated Disposable Media.
	N	MERV 13	2	7004-063	20 x 20 x 2	High Filtration, 2” Thickness Pleated Disposable Media.



## /////// Cabinet Finishes and Construction

Unit cabinet finish options provide a way to have the Bard Wall-Mount blend in with existing building colors, provide additional corrosion protection, or reduce unit product weight. Unit construction is comprised of a 20 gauge cabinet with 16 gauge structural components. Cabinet components are insulated with a non-fiberglass formaldehyde free insulation that has a high “R” value, is easy to clean with a FSK foil backing, and resists delamination.

### Painted Steel Finish

This cabinet option uses zinc coated steel panels that are cleaned, rinsed, sealed and dried before a polyurethane primer is applied. The cabinet paint coating is comprised of a baked on textured enamel. The resulting finish is designed to withstand over 1000 hours of salt spray tests per ASTM B117-03.

The following painted steel colors are available:

- “X” Cabinet Finish Option – Beige
- “1” Cabinet Finish Option – White
- “4” Cabinet Finish Option – Gray
- “5” Cabinet Finish Option – Desert Brown
- “8” Cabinet Finish Option – Dark Bronze

### Stainless Steel Finish

Exterior Stainless Steel finish cabinets are often selected for corrosion and chemical resistance. Higher grades of stainless steel are often specified to meet the requirements of harsh or corrosive environments. The Bard stainless steel unit offers a high quality stainless steel grade enclosure and fasteners for years of operation in these conditions.

#### Features of stainless steel “S” cabinet finish option:

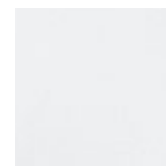
- Sides, doors, grilles, back panels, and top are 316 grade stainless steel.
- Base, condenser partition, and fan shroud are 304 grade stainless steel.
- Stainless steel exterior cabinet screws, washers, nuts, and bolts, are used.
- Stainless steel outdoor motor mount and motor mount hardware.
- Compressor mounting hardware is stainless steel and hex no-spin rivet nuts are used in the unit base.
- Corrosion resistant coating is applied to fan blade.

### Aluminum Finish

Aluminum external cabinet finish option “A” units are constructed of ASTM B 209 grade .06” thickness panels with a stucco appearance.



X—Beige



1—White



4—Gray



5—Desert



8—Bronze



S—Stainless



A—Aluminum

## /////// Evaporator Coil, Condenser Coil, and Cabinet Coatings

Unit condenser and evaporator coils are designed, manufactured, and tested by Bard. A rifled copper hairpin design provides enhanced unit performance when used with a stamped aluminum fin for excellent heat transfer. End plate design includes extruded collars for hairpin tube protection. All coils are pressure tested before use and leak tested after unit construction. A copper tube and aluminum fin design coil is easy to clean and maintain through the life of the unit.

### “X” Code Option – Standard Evaporator and Condenser Coils

Standard products include a green protective coating applied to the aluminum fin stock used for the evaporator coil. The evaporator coil coating is hydrophilic (attracts water) and allows for proper condensate drainage along with mild corrosion protection. Resistance to corrosive agents include ammonia, sodium hydroxide, sodium chloride, acidic solutions and solvents. Condenser coil construction is a copper hairpin with aluminum fin design that is easy to clean and maintain. Unit coating options are also available that offer additional corrosion protection to the unit cabinet. Applications where external or internal cabinet components will be exposed to extremely harsh environments require additional protection to copper, steel, and other materials.

### “1” Code Option – Corrosion Resistance Coated Evaporator and Standard Condenser Coil

Option includes a Technicoat AA protective coating applied to the entire evaporator coil. This provides the best resistance to corrosive agents, and the coating process ensures the core of the aluminum fin pack is covered. Dehumidification units also include a coated hot gas reheat coil. Standard condenser coil construction is a copper hairpin with aluminum fin design that is easy to clean and maintain. This option provides the best indoor coil protection when harmful chemicals or agents may be present in the indoor airstream. The exterior and interior unit cabinet is not coated with this option.





## ///// **Evaporator Coil, Condenser Coil, and Cabinet Coatings (Continued)**

### **"2" Code Option – Standard Evaporator and Corrosion Resistance Coated Condenser Coil**

Option includes a green protective coating applied to the aluminum fin stock used for the evaporator coil. The evaporator coil coating is hydrophilic (attracts water) and allows for proper condensate drainage along with mild corrosion protection. Resistance to corrosive agents include ammonia, sodium hydroxide, sodium chloride, acidic solutions and solvents. A Technicoat AA protective coating is applied to the entire condenser coil. This provides the best resistance to corrosive agents, and the coating process ensures the core of the aluminum fin pack is covered. This option provides the best outdoor coil protection when harmful chemicals or agents may be present in the outdoor airstream. Also provides a level of protection when units are installed in applications near salt water. The exterior and interior unit cabinet is not coated with this option.

### **"3" Code Option – Corrosion Resistance Coated Evaporator and Corrosion Resistance Coated Condenser Coil**

Option includes a Technicoat AA protective coating applied to the entire evaporator coil. This provides the best resistance to corrosive agents, and the coating process ensures the core of the aluminum fin pack is covered. Dehumidification units also include a coated hot gas reheat coil. A Technicoat AA protective coating is applied to the entire condenser coil. This provides the best coil resistance to corrosive agents, and the coating process ensures the core of the aluminum fin pack is covered. The exterior and interior unit cabinet is not coated with this option.

### **"4" Code Option – Corrosion Resistance Coated Evaporator and Condenser Coil, Condenser Section Only Coating**

Option includes a Technicoat AA protective coating applied to the entire evaporator coil. This provides the best resistance to corrosive agents, and the coating process ensures the core of the aluminum fin pack is covered. Dehumidification units also include a coated hot gas reheat coil. A Technicoat AA protective coating is applied to the entire condenser coil. This provides the best coil resistance to corrosive agents, and the coating process ensures the core of the aluminum fin pack is covered. The interior of the lower unit condenser section is corrosion coated for additional protection including the unit base, compressor, and condenser area copper tubing, filter/drier, and condenser fan.

### **"5" Code Option – Corrosion Resistance Coated Evaporator and Condenser Coil, Interior/Exterior Unit Coating**

Option includes a Technicoat AA protective coating applied to the entire evaporator coil. This provides the best resistance to corrosive agents, and the coating process ensures the core of the aluminum fin pack is covered. Dehumidification units also include a coated hot gas reheat coil. A Technicoat AA protective coating is applied to the entire condenser coil. This provides the best coil resistance to corrosive agents, and the coating process ensures the core of the aluminum fin pack is covered. The entire exterior of the unit including the lower condenser section is coated along with all copper tubing, refrigeration, and air moving components. The interior components of the unit are also coated for the best cabinet component corrosion protection available.

## ///// **Evaporator Coil and Condenser Coil Coatings Resistance List**

The Technicoat AA coil coating provides a robust, dipped corrosion protection solution designed for indoor evaporator and outdoor condenser coils. Both field and lab testing results show no deterioration in harsh environments including refineries, mining operations, paper/pulp processing plants, and wastewater treatment facilities. ASTM B-117 testing includes over 10,000 hours with over 3,000 hours of SWAAT test time.

Chemical resistance includes the following:

- Alkalines including Ammoniac solution, Potassium Hydroxide, Calcium Hydroxide, and Magnesium Hydroxide.
- Alcohols including Isopropanol, Butanol, Amyl Alcohol, Benzyl Alcohol, Diacetone Alcohol, Glycerine, Propanol, and Pentanol
- Aliphatic Hydrocarbons including White Spirit, Shellsol, Bitumen, Isopar G, and Paraffin.
- Amines including Triethanolamine, Aniline Sulphate, Hexamethylenetetraamine, Phenylamine, Triethylamine, and Methylamine.
- Inorganic Compounds including Hydrogen Carbonate, Hydrogen Sulfide, Nitrous Acid, Sulphuric Acid, and Selenic Acid.
- Aromatic Hydrocarbons including Xylene, Toluene, Asphalt, Anthracene, Benzapherene, Gumlac, Benzene, and Naphtha.
- Fuels and Oils including Diesel, Fuel Oil, Petrol, Super Petrol, Lubricating Oils, Kerosene, Spheric Oils, LPG, and Mineral Oil.
- Ethers including Ethric Oils, Vegetable Oils, Butane, Acetylene, and Methane.
- Halogenated Hydrocarbons including Amyl Acetate, Propyl Acetate, Ethyl Oxalate, Butyl Acetate, and Butyl Propionate.
- Softeners including Palatinol C, Chloroparaffine 5XX, Dioctylphosphate, Desavin, Mesamol, and Dibutylphosphate.
- Organic Compounds including Benzoic Acid, Lactic Acid, Phenols, Fatty Acids, Malic Acid, and Picric Acid.
- Salts and water solutions including Sodium, Potassium, Calcium, Aluminum, Ammonium, Barium, Copper, Lead, and Lithium.
- Many other agents including Phosphor, Zinc, Glucose Syrup, Sulfur, Urea, Menthol, Antimony, Hydrogen, Rubber, and Shellac.

Special Properties:

- Anti-Odor
- Hydrophilic / Hydrophobic
- Anti-Corrosive

EXPOSURE CONDITIONS INCLUDE: Food Processing & Storage, Airports, Office Buildings, Hotels, Schools, Warehouses, Water Treatment, Breweries, Paper Mills, Refineries, Power Plants, Meat Processing Industries, Automotive Industries and other locations near shorelines and salt water.

Contact your local Bard distributor or representative for a list of all chemicals and additional chemical resistance information.



## ///// Cabinet Coatings Process and Resistance

Unit cabinet coatings involve a multi-step process that provides superior protection for conditions seen in harsh environments. Two different coating components are used to produce a chemically cured urethane based epoxy semi-gloss coating for industrial or architectural applications. Corrosion coating is also available for stainless steel construction units. Stainless steel components are scuffed and then coated with a gray tinted corrosion resistance coating.

Advantages include the following:

- Excellent corrosion protection.
- Suitable for salt and fresh water immersion.
- Excellent chemical and solvent resistance. Resists both splash and spillage of solvents, alkalis, salts, moisture, oils, greases, foodstuffs, and detergents.
- Low VOC, Self-priming and abrasion resistant.
- Excellent resistance to graffiti materials such as spray paint, magic markers, and lipstick.

Contact your local Bard distributor or representative for a list of all chemicals and additional chemical resistance information.

## ///// Controls Options Definitions Including Switches, Sensors, Relays, and Start Kits

Unit controls include safety devices and accessories that can be used to customize the Bard Wall-Mount for uses in multiple applications. Controls can be supplied from the factory or field installed. The below listing provides a description of the controls options available for the Bard WA Series unit.

**Hi Pressure Control (HPC)** - Factory installed in all units. The high pressure control provides a means of protecting the refrigeration circuit when high system pressures occur. It is a auto-reset device that is connected to the Compressor Control Module. When activated, the compressor is disabled until pressures reach an acceptable level. If activated twice in the same cooling call, compressor operation is locked out until the cooling call is interrupted.

**Low Pressure Control (LPC)** - Factory installed in all units. The low pressure control provides a means of protecting the refrigeration circuit when extremely low system pressures occur. It is a auto-reset device that is connected to the Compressor Control Module. When activated, the compressor is disabled until pressures reach an acceptable level.

**Compressor Control Module (CCM)** - Factory installed in all units. The compressor control module locks out compressor operation to protect the refrigeration system based on signals from the hi and low pressure switches. It provides diagnostics to indicate when a refrigerant pressure event occurs, and also sends a signal to the alarm relay. Low incoming unit power protection suspends compressor operation when incoming voltage is too low. Suspending compressor operation avoids reverse scroll operation. The low voltage feature is adjustable or can be disabled. An adjustable delay on break timer is provided. Delay on make is 2 mins. plus 10% of delay on break setting.

**Alarm Relay (ALR)** - Factory or field installed option. The alarm relay provides a set of NO and NC pilot duty contacts that operate when the compressor control module locks out compressor operation because of a high or low system refrigerant pressure event.

**Low Ambient Control (LAC)** - Factory or field installed option. The low ambient control pressure sensor is attached to the suction line of the system, and monitors low side system pressure. Operation of the LAC occurs as outdoor temperatures drop below the 60°F. On/Off or modulating controls are used. On/Off LAC operation cycles the condenser fan operation based on outdoor temperature. Modulating LAC operation is factory adjusted and slows the condenser fan speed RPM based on outdoor temperature.

**Crankcase Heater (CCH)** - Field installed option only. The heater is a belly band that is installed around the base of the compressor that applies heat when the refrigeration system is not operational. This heat is meant to prevent refrigerant oil migration when the unit is not running. Normal scroll compressor use does not require the use of the CCH, and this option is only recommended for northern areas of the US and Canada with extreme cold operation. Field Install Option Only.

**Outdoor Thermostat (ODT)** - Field installed option only. The outdoor thermostat measures outdoor temperatures and includes relay contacts (NO). The relay is located on the outer control panel and the sensor bulb is mounted to the fan shroud in the outdoor condenser section. When wired into the cooling signal inside the control panel, compressor operation can be disabled when temperatures are below the adjustable setting. Adjustment range is 0°F to 50°F.

**PTCR Start Kit** - Field installed option only. PTCR (Precision Temperature Coefficient Resistor) start kit includes the start device and wires needed for installation. The device is located inside the unit control panel near the compressor capacitor and provides an increase in starting torque. The PTCR Start Kit is not normally required when a clean, stable power source is available for the unit. The kit can only be used in 230 Volt single phase units.

**Start Capacitor and Potential Relay Start Kit** - Field installed option only. The kit includes a start capacitor and relay that is energized during startup of the compressor. The capacitor, relay, and needed wires are provided in a metal enclosure that is field installed in the outdoor section attached to the back. The Start Capacitor Kit is not normally required when a clean, stable power source is available for the unit. The kit can only be used in 230 Volt single phase units. Start capacitor kit cannot be used with the PTCR start kit installed.



## ////// **Controls Options Definitions Including Switches, Sensors, Relays, and Start Kits**

**DDC Controls Kit** - Factory or field installed option. Unit monitoring sensor kit for field supplied DDC controls. Includes the following components; Airflow switch, filter switch with dirty filter indicator light, compressor current sensor, discharge air sensor, additional secondary low voltage terminal board, and all wires and labels to install kit. Alarm relay kit sold separately, but can be used along with DDC controls kit.

**Dirty Filter Switch Indicator (DFS)** - Factory or field installed option. The switch is adjustable and measures pressure drop across the unit filter surface. When pressure drop is higher than the switch setting NO and NC contacts are provided to indicate the filter needs to be serviced.

**Discharge Air Sensor** - Factory or field installed as part of the DDC controls kit. The discharge air sensor provides a temperature reading of the supply air leaving the unit. The sensor is a 10K OHM @ 77°F measuring device. It is installed in the supply airstream in the heater bracket.

**Airflow Switch** - Factory or field installed as part of the DDC controls kit. The airflow switch measures the pressure differential between the blower inlet and outlet. It is located directly above the blower partition. Relay contacts (NO) are provided for V controls option that indicates the indoor blower assembly needs to be serviced. The F controls option has indicator light only.

**Compressor Current Sensor** - Factory or field installed as part of the DDC controls kit. The compressor current sensor indicates when the compressor is operational by measuring Amp draw. It is located inside the unit control panel. Relay contacts (NO) are provided to indicate the compressor is not operating.



## ///// **Factory Controls Options Chart Including Switches, Sensors, Relays, and Start Kits**

Factory installed controls are provided by Bard to enhance a Wall-Mount product before it is shipped. All Wall-Mount products are shipped with a auto-reset high pressure switch and an auto-reset low pressure switch to help protect refrigeration components. A compressor control module with adjustable voltage protection, delay on make and break, and high/low pressure diagnostics is also standard

CONTROL CODE	DESCRIPTION OF FACTORY INSTALLED COMPONENTS
<b>X</b>	Hi Pressure Switch, Low Pressure Switch, Compressor Control Module.
<b>E</b>	Hi Pressure Switch, Low Pressure Switch, Compressor Control Module, <b>Low Ambient Control</b>
<b>F</b>	Hi Pressure Switch, Low Pressure Switch, Compressor Control Module, <b>Low Ambient Control, Dirty Filter Press. Switch</b>
<b>J</b>	Hi Pressure Switch, Low Pressure Switch, Compressor Control Module, <b>Low Ambient Control, Alarm Relay</b>
<b>K</b>	Hi Pressure Switch, Low Pressure Switch, Compressor Control Module, <b>Low Ambient Control, PTCR Start Kit</b>
<b>M</b>	Hi Pressure Switch, Low Pressure Switch, Compressor Control Module, <b>Low Ambient Control, Alarm Relay, PTCR Start Kit</b>
<b>V</b>	Hi Pressure Switch, Low Pressure Switch, Compressor Control Module, <b>Low Ambient Control, Alarm Relay, Discharge temperature sensor, Indoor Blower Airflow Press. Switch, Compressor Current Sensor, Dirty Filter Pressure Switch</b>

## ///// **Field Kit Controls Options Chart Including Switches, Sensors, Relays, and Start Kits**

Field installed kits provide accessories that can be installed in the field. Required components, wires, enclosures, screws, and instructions that are needed are provided within the kit.

CONTROL CODE	KIT PART NO.	UNITS USING KIT	DESCRIPTION OF FIELD INSTALLED KIT
<b>E</b>	<b>CMA-39</b>	All units	Low Ambient Control allows compressor cooling between 0°F and 50°F outdoor temp. - fan cycling
<b>NA</b>	<b>CMC-32</b>	All units	PTCR Start Kit. Increases starting torque by 2 to 3x. 230V-60hz-1 phase (A voltage) only. Cannot be used in combination with SK start kit
<b>NA</b>	<b>CMA-43</b>	All units	Outdoor Thermostat Kit used to disable compressor cooling below 50°F outdoor temp. Adjustable between 50° and 0°F
<b>NA</b>	<b>CMC-35</b>	All units	Cooling Failure Alarm Relay Kit
<b>NA</b>	<b>CMC-38</b>	All units	Crank case heater kit. 230V 1-PH units only
<b>NA</b>	<b>CMC-41</b>	All units	Crank case heater kit. 230V 3-PH units only
<b>NA</b>	<b>CMC-39</b>	All units	Crank case heater kit. 460V 3-PH units only
<b>NA</b>	<b>CMC-29</b>	All units	Evaporator coil freezestat kit - Freezestat is a standard option on all units with a Low Ambient Control (LAC) or hot gas reheat dehumidification.

\* CMA-40 and CMA-44 Kit does not include low ambient control. Low ambient control can be ordered separately either as field kit/factory installed.



## ////// 24VAC Low Voltage Terminal Designations

Bard WALL MOUNT products provide 24VAC power to controllers and thermostats. They also are able to receive 24VAC signals from a controlling device. The V controls option provides additional sensors for use with a field supplied DDC controls systems. The information below provides terminal designations and how they are used in the WALL MOUNT unit. More information on low voltage connections and operational sequences is provided in the unit installation manual.

Terminal	Unit	Description
<b>R</b>	All Units	24VAC low voltage output (HOT Terminal)
<b>RT</b>	All Units	RT terminal has jumper to R terminal. When jumper is removed, R and RT can be used with normally closed contacts for fire/smoke detector for unit shutdown.
<b>C</b>	All Units	Ground Terminal
<b>G</b>	All Units	Indoor fan input
<b>Y1</b>	All Units	1st Stage cooling input. Economizer stage when used. Part load compressor cooling stage.
<b>Y2</b>	All Units	2nd Stage cooling input. Balanced Climate mode if jumper is removed between Y2 and Y3.
<b>Y3</b>	All Units	3rd Stage Cooling input. Compressor full load cooling stage.
<b>B/W1</b>	All Units	1st Stage electric heat
<b>W2</b>	All Units	2nd State electric heat. Jumper between W1 and W2 must be removed for staged heat
<b>A</b>	Vent option units only	Ventilation option input. Calls for occupied vent air intake for CRV, ERV, ECON
<b>D</b>	Dehum. units only	Dehumidification input on units equipped with mechanical reheat dehumidification
<b>L</b>	All Units	24VAC Alarm active output
<b>1</b>	C, J, M, V Control Opt.	Alarm relay Normally Closed Contract
<b>2</b>	C, J, M, V Control Opt.	Alarm relay Normally Open Contact
<b>3</b>	C, J, M, V Control Opt.	Alarm Relay Common Contact
<b>9</b>	V Controls Option Only	Discharge Air Sensor, 10K ohm
<b>10</b>	V Controls Option Only	Discharge Air Sensor, 10K ohm
<b>11</b>	G, V Control Options	Filter Switch, Normally Open Contacts
<b>12</b>	G, V Control Options	Filter Switch, Normally Open Contacts
<b>13</b>	V Controls Option Only	Blower Airflow Switch, Normally Open Contacts
<b>14</b>	V Controls Option Only	Blower Airflow Switch, Normally Open Contacts
<b>15</b>	V Controls Option Only	Compressor Current Sensor, Normally Open Contacts
<b>16</b>	V Controls Option Only	Compressor Current Sensor, Normally Open Contacts





## Field Installed Air Quality Kits

Field installed kits provide accessories that can be installed in the field. Required components, wirees, enclosures, screws, and instructions that are needed are provided within the kit.

CONTROL CODE	KIT PART NO.	UNITS USING KIT	DESCRIPTION OF FIELD INSTALLED KIT
NA	CMC-33	All units	Dirty Filter Alarm Pressure Sensor Kit. Provides Normally Open Contacts to send an alarm signal to a thermostat or controller.
NA	8620-343	All 460V units	LED UV-C Long Life Light Kit. 460V units only. Installed in evaporator coil entering airstream along with door safety switch. Indicator light provided to monitor LED use.
NA	8620-344	All 230V units	LED UV-C Long Life Light Kit. 230V units only. Installed in evaporator coil entering airstream along with door safety switch. Indicator light provided to monitor LED use.
NA	8620-341	All units	Needle Point Bipolar Ionization (NPBI) kit. Installed in indoor airstream. FC-3 type.

## Advanced Sensor Options and Kits

Field installed kits provide accessories that can be installed in the field. Required components, wirees, enclosures, screws, and instructions that are needed are provided within the kit.

CONTROL CODE	KIT PART NO.	UNITS USING KIT	DESCRIPTION OF FIELD INSTALLED KIT
V	CMA-44	All units	Kit Includes Discharge temperature sensor, Indoor Blower Airflow Press. Switch, Compressor Current Sensor, Dirty Filter Alarm Pressure Sensor.
NA	8620-334	All units	Return Air Sensor Kit for use with all economizers with the JADE controller.

## Sound Reduction Accessories

Field installed kits provide accessories that can be installed in the field. Required components, wirees, enclosures, screws, and instructions that are needed are provided within the kit.

CONTROL CODE	KIT PART NO.	UNITS USING KIT	DESCRIPTION OF FIELD INSTALLED KIT
NA	8002-013	All units	Compressor sound cover. Weatherized vinyl insulated cover that helps reduce compressor sound level.

## Optional Shipping Crates

Optional crates are available to help protect your valuable Wall-Mount investment during shipping. Constructed from OSB sheathing with steel corner posts, and sized for standard truck transportation. Treated for pests in accordance with the International Plant Protection Convention, Publication 15, Annex 1. Packaging is acceptable for international shipments.

CRATE NO.	UNIT MODELS	DESCRIPTION
8620-304	W3SAC, W4SAC	Standard Unit Crate, all ventilation options
8620-305	W5SAC	Standard Unit Crate, all ventilation options



MODELS	LEFT SIDE	RIGHT SIDE
W3SAC, W4SAC, W5SAC	20"	20"

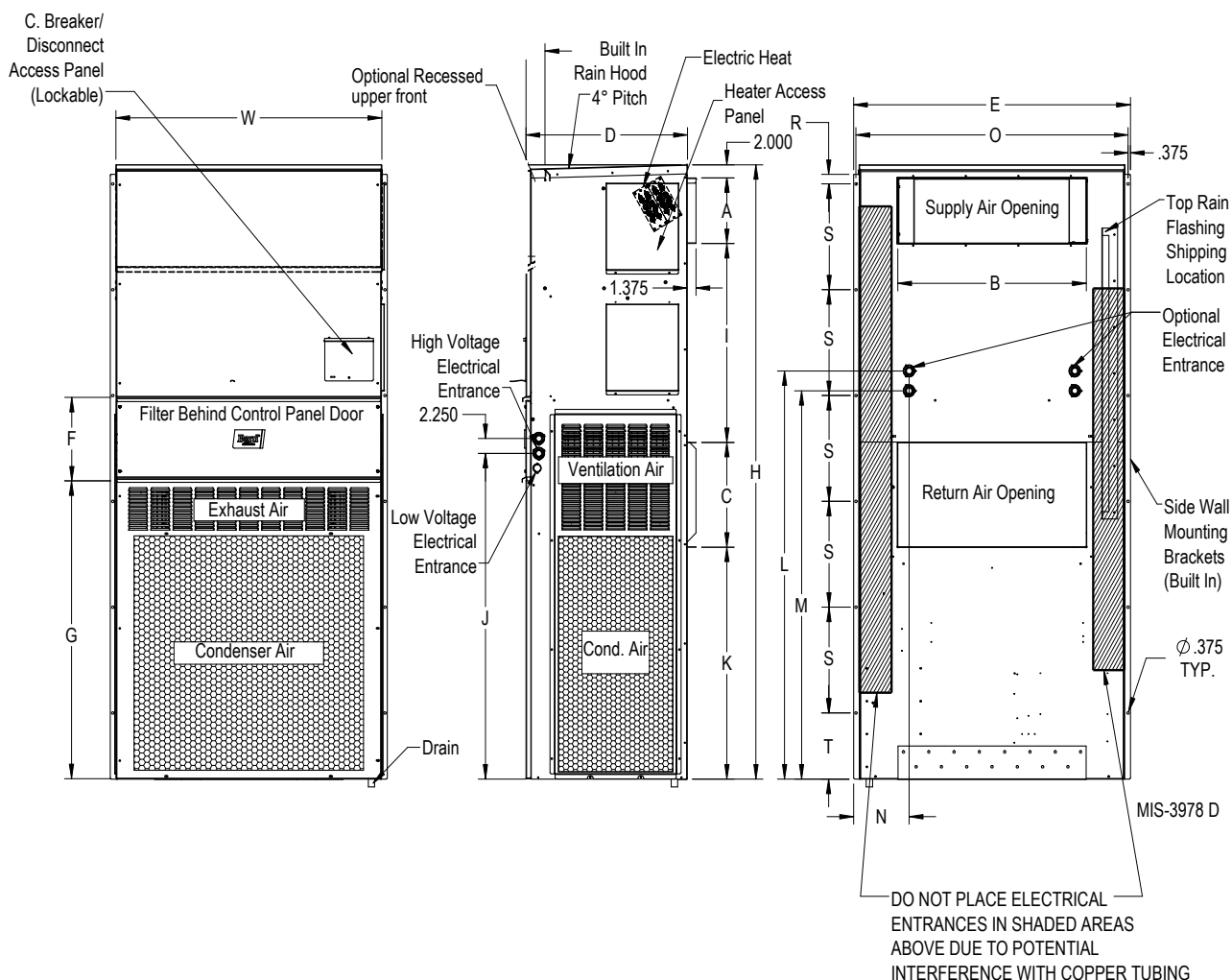
- 1.) Follow all national, state, and local codes and regulations regarding the installation of heating and cooling equipment regarding Single Packaged Vertical Units (SPVU) including electrical access clearances.
- 2.) Field ventilation installation with the unit installed requires 40" on the left or right side of the unit.
- 3.) Bard recommends a minimum of 10 ft. between the unit front condenser air outlet and solid objects including fences, walls, bushes, and other airflow obstructions.
- 4.) Bard recommends a minimum of 15 ft. between the condenser air outlets of 2 units that are facing each other.
- 5.) Bard recommends a minimum clearance of 4" under the unit cabinet for condenser defrost drainage during heat pump operation.

MODELS ①	SUPPLY AIR DUCT FIRST THREE FEET	CABINET
W3SAC, W4SAC, W5SAC	1/4"	0"

① Refer to the Installation Manual for more detailed information.

MODEL	WIDTH (W)	DEPTH (D)	HEIGHT (H)	SUPPLY		RETURN														
				A	B	C	B	E	F	G	I	J	K	L	M	N	O	R	S	T
W3SAC W4SAC	42	25.52	84.75	9.88	29.88	15.88	29.88	43.88	12.63	39.06	30.06	43.25	26.94	55.59	52.59	8.82	43.00	1.44	16.00	1.88
W5SAC	42	25.52	92.88	9.88	29.88	15.88	29.88	43.88	12.63	45.00	30.06	49.25	35.06	61.72	58.72	8.82	43.00	1.44	16.00	10.00

① Wall mounting holes in side flanges are 0.375.





## Wall Curb Accessories

Optional wall curb accessories are available to help reduce vibration through the outer wall surface or to use existing wall openings when replacing equipment. Follow all static pressure airflow requirements, safety and installation guidelines in the instructions provided with the curb and Wall-Mount products.

CURB	UNITS USING CURB	DESCRIPTION
WMICF5-*	All units	Provides vibration isolation for reduced sound transmission through wall
WWC5-*	All units	Install to use with existing 3 and 5 ton wall openings. Wall openings must provide sufficient airflow. Follow all instructions in curb and unit manual including clearances to combustibles and maximum duct static pressure.

\* Color Option



## Indoor Sound Reduction Accessories

Optional sound accessories are available to help reduce sound transmission from the supply and return openings inside the indoor area. Follow all static pressure airflow requirements, safety and installation guidelines in the instructions provided with the accessories and Wall-Mount products.

ACCESSORY	UNITS USING ACCESSORY	DESCRIPTION
WAPR11-*	All units	Indoor acoustical return air plenum that offsets the return air path. Air intake near floor level

\* Color Option



## Non-Ducted Supply and Return Grilles

Supply and return louver grilles are of a brushed aluminum finish. 2" flange versions are recommended for standard installations to allow grille attachment when large wall openings are present. Return filter grilles are available for filter access from an indoor area. Filter grilles do not include a filter, and are not recommended for unit with ventilation due to filter location. A manual damper return grille is available for W42 and W72 models. The manual damper is adjustable, and is only recommended for installations where increased return duct static pressure is required.

GRILLE NO.	UNITS USING GRILLE	DESCRIPTION OF LOUVER GRILLE
SG-5W	All models	10" x 30" with 2" Flange 4 way deflection supply grille. <b>Use for standard installations</b>
RG-5W	All models	16" x 30" with 2" Flange return grille. <b>Use for standard installations.</b>
RFG-5W	All models	16" x 30" with 2" Flange return grille with filter bracket.*
RGDK-5W	All models	16" x 30" manual shutter style damper that is mounted in the return duct behind the return grille (sold separately). Adjustable to restrict return air from room.

\* Not recommended to provide primary filtration with units that will bring in outdoor air.



## ////// **Non-Ducted Supply Grilles - Spread and Throw Characteristics**

One of the most important setup procedures for non-ducted supply applications is to adjust the 4 way supply grille blade positions. Placement of equipment, occupants, the thermostat, and room size can all play an important role in deciding how the conditioned supply air must be directed in an indoor area. The chart below may be used as a reference tool to help with this process.

SUPPLY GRILLE	AIRFLOW CFM	DEFLECTION	VELOCITY	TOTAL PRESSURE	THROW
SG-5W	1450 CFM	0°	968	.073" WC	51-73 ft.
		22.5°	1071	.103" WC	39-56 ft.
		45°	1331	.169" WC	28-40 ft.
	2000 CFM	0°	1336	.130" WC	61-86 ft.
		22.5°	1477	.188" WC	54-65 ft.
		45°	1835	.335" WC	33-46 ft.

## ////// **Sound Data - dBA @ 5 ft. and 10 ft.\***

UNIT	DUCT FREE IN-DOOR COOLING OPERATION @ 5 FT.	DUCT FREE INDOOR COOLING OPERATION @ 10 FT.	DUCTED INDOOR COOLING OPERATION @ 5 FT.	DUCTED INDOOR COOLING OPERATION @ 10 FT.	OUTDOOR @ 10 FT.
W3SAC	56.1	51.7	56.3	51.1	68.6
W4SAC	57	52.7	57.8	52.8	69
W5SAC	56.5	53.3	56	52.7	66.8

Integrated values calculated per ANSI/ASA S12.60-2009/Part 2, Section 5.2.2.1.



## Controller, Thermostat, Humidistat and CO2 Ventilation Control Options

Bard provides a wide variety of controllers for equipment cooling, thermostats, for equipment and comfort cooling, humidistats for dehumidification units, and CO2 sensors for ventilation control. Lockable thermostat covers are available for applications where security or supervisory control is desired.

CONTROLLER	OPERATION	DESCRIPTION
<b>MC4002</b>	1 to 2 Unit Lead/Lag Controller	Standard unit Lead/Lag Controller with remote alarming capability. Optional alarm board and SNMP or web page communication board. On board temperature sensor that can be remote mounted. Can use up to (2) remote temperature sensors.
<b>MC5300</b>	1 to 3 Unit Lead/Lag Controller	Advanced multi-unit Lead/Lag Controller with remote alarming capability. All models have Modbus communication and web pages. Optional alarm board with NO/NC contacts. On board temperature and humidity sensor that can be remote mounted. Can use up to (2) remote temperature sensors.
<b>MC5600</b>	1 to 6 Unit Lead Lag Controller	Advanced multi-unit Lead/Lag Controller with remote alarming capability. All models have Modbus communication and web pages. Optional alarm board with NO/NC contacts. On board temperature and humidity sensor that can be remote mounted. Can use up to (2) remote temperature sensors.

THERMOSTAT	OPERATION	DESCRIPTION
<b>8403-060</b>	3 Heat/3 Cool	Programmable or Nonprogrammable, ventilation output, dehumidification operation
<b>8403-090</b>	2 Heat/2 Cool	Temp. Settings per Day 4, 2, 1, 0 Programs per Week 7, 5-2, 5-1-1 or Nonprogrammable
<b>8403-092</b>	2 Heat/2 Cool	Programmable or Nonprogrammable, ventilation output, Wi-Fi

HUMIDISTAT	OPERATION	DESCRIPTION
<b>8403-047</b>	Humidity %RH	Electronic with display, EEPROM memory, lockable keypad, humidity sensor calibration
<b>8403-100</b>	Humidity %RH	Electronic with display

CO2 CONTROL	OPERATION	DESCRIPTION
<b>S8403-096</b>	CO2 PPM	CO2 ventilation control with digital display. On/Off or modulating ventilation operation

THERMOSTAT COVER*	SIZE	DESCRIPTION
<b>8405-003</b>	(Inside) 5-1/16" H x 6-1/16" W (Outside) 6-1/2" H x 7-1/2" W x 2-15/16" D	Clear acrylic with ventilation. Fits all thermostats except 8403-060
<b>8405-005</b>	(Inside) 5-7/8" H x 8-3/8" W (Outside) 7-1/4" H x 9-3/4" W x 3-3/8" D	Clear acrylic with ventilation. Fits all thermostats.
<b>8405-006</b>	(Inside) 5-1/16" H x 6-1/16" W (Outside) 6-3/8" H x 7-3/8" W x 2-7/8" D	Clear acrylic with ventilation. Fits all thermostats except 8403-060
<b>8405-007</b>	(Inside) 5-7/8" H x 8-3/8" W (Outside) 7-1/8" H x 9-5/8" W x 3-1/4" D	Beige painted steel cover with ventilation. Fits all thermostats.

\* Thermostat covers include ventilation, but may effect temperature control reaction time. If security control lockout is needed, the 8403-060 thermostat provides input control lockout features.



Bard Manufacturing Company, Inc.  
1914 Randolph Dr., Bryan, OH 43506  
419-636-1194

[www.bardhvac.com](http://www.bardhvac.com)

Due to our continuous product improvement policy,  
all specifications subject to change without notice.

