



### **11EER W18H-W60H Series WALL-MOUNT™**

The Bard Wall-Mount Heat Pump 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. 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 ANSI/ASHRAE/IES 90.1-2019.
- Certified to AHRI Standard 390-2021 for SPVU (Single Package Vertical Units).
- Intertek ETL Listed to Standard for Safety Heating and Cooling Equipment ANSI/UL 1995/CSA 22.2 No. 236-05 Fourth Edition.
- Commercial Product - Not intended for residential applications.
- 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).



**BARDHVAC.COM**

FORM NO. S3584-0723



**Climate Control Solutions**

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# UNIT SERIES Wall-Mount

## NOMINAL CAPACITY

**18** - 1.5 Ton  
**24** - 2.0 Ton  
**30** - 2.5 Ton  
**36** - 3.0 Ton  
**42** - 3.5 Ton  
**48** - 4.0 Ton  
**60** - 5.0 Ton

## UNIT TYPE

**H** - Heat Pump

## REVISION

**B** - Revision W18-W36  
**C** - Revision W42-W60

## PLACEHOLDER

**-** - Standard Unit  
**D** - Hot Gas Reheat Dehumidification  
**L** - Low Ampacity with 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** - 0Kw with Lug Connection  
**0Z** - 0Kw with Circuit Breaker  
**05 to 20** - Kw Heat with Circuit Breaker  
*See Electrical Specs for further details*

## Nomenclature Notes:

- W18, W24, W30 and W36 models are available with the unit control panel located on the right unit side. W42, W48, W60 models have the unit control panel located in the front of the unit.
- Hot Gas Reheat Dehumidification is available for W24, W30, W36, W42, W48, and W60 models.
- 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 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.
- \*L - Low ampacity models inhibit concurrent compressor and electric heat operation which results in a lower ampacity requirement. Not recommended for normal use due to lower heating btu capability and no electric heat usage during defrost mode. Feature available with dehumidification models only. Additional order processing time may apply.

## ACCESSORIES AND CONTROLS OPTIONS

**X** - Standard controls (HPS,LPS,CCM)  
**E** - Low Ambient Control (LAC)  
**Q** - Standard controls and Outdoor Thermostat (ODT)  
**R** - Standard controls, LAC, and Outdoor Thermostat (ODT)  
**S** - Standard controls and PTCR Hard Start Kit.  
**T** - Standard controls, LAC, ODT, and PTCR Hard Start Kit.  
**J** - LAC and Alarm Relay (ALR)  
**F** - LAC and Alarm Relay (ALR), Filter Switch (FS) (W42 thru W60 only).

## 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.

## 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, 2-10V No Controls  
**Y** - Full Flow Economizer, Temperature  
**Z** - Full Flow Economizer, Enthalpy  
**R** - Energy Recovery Ventilator  
**S** - Partial flow Economizer, Enthalpy no hood (W18-W36 only)





## ////// Engineered Features W18 Through W36 Unit Models

**NEW! EXCLUSIVE \*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.

**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.

**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.

**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.

**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.

**Reliable, Easy-to-Use Controls:** Easily accessible right side control panel location. A lockable hinged access cover to circuit protection is provided. Phase rotation monitor is standard on all 3 phase models. Solid state heat pump operation and defrost control board with diagnostic light is standard on all models. Electrical entrances provided through the back and side areas.

**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.

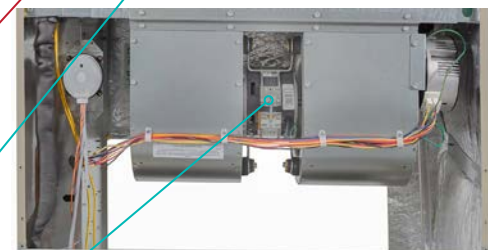
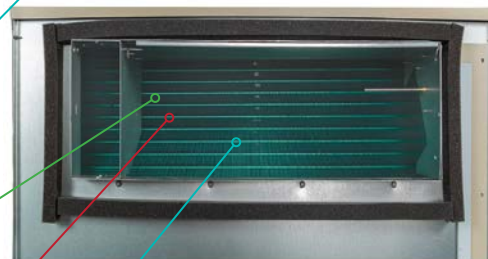
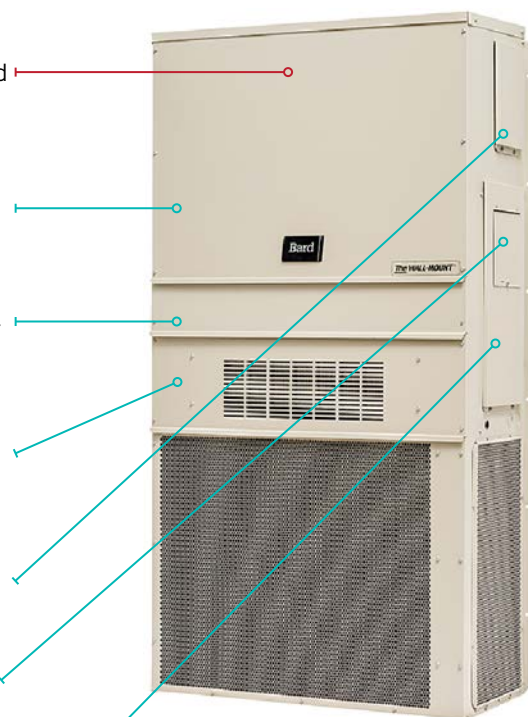
**\*Balanced Climate™ Technology (patent pending):** High latent capacity humidity & sound reduction removes up to 35% more humidity than any other on the market with the use of a 2 stage thermostat or controlling device. Bard Balanced Climate™ innovation comes standard on all models.

**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.

**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.

**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:** 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.



## ////// Engineered Features - W42 Through W60 Unit Models

**NEW! EXCLUSIVE \*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.

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**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.

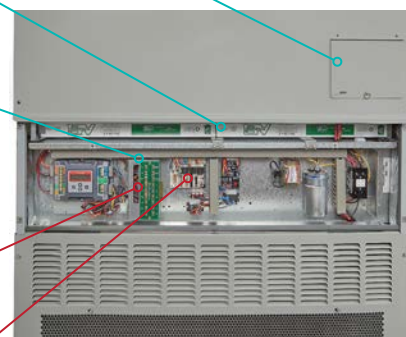
**Reliable, Easy-to-Use Controls:** Easily accessible through front control panel location. A lockable hinged access cover to circuit protection is provided. Phase rotation monitor is standard on all 3 phase models. Solid state heat pump operation and defrost control board with diagnostic light is standard on all models. Electrical entrances provided through the back and side areas.

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**High Efficiency Cooling:** 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 WH 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 WH Series products offer efficient single stage heat pump heating and optional single or two stage heating operation using resistance heaters. Circuit breaker disconnect protection is standard in all units equipped with electric heat.

### **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 W30 through W60 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 WH 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 WH 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	W18HB	W24HB	W30HB	W36HB	W42HC	W48HC	W60HC
Cooling Capacity in BTUH ①	17,500 BTUH	23,400 BTUH	29,000 BTUH	36,000 BTUH	42,000 BTUH	47,500 BTUH	54,500 BTUH
Unit efficiency in EER	11.3 EER	11.3 EER	11.0 EER	11.1 EER	11.0 EER	11.0 EER	11.0 EER
High Temp Heating	16,800	22,400	26,600	33,000	39,000	42,500	52,500
Coefficient of Performance (COP)	3.5	3.3	3.4	3.3	3.3	3.3	3.3

① Capacity is certified in accordance with ANSI/AHRI Standard 390-2021.

② EER = Energy Efficiency Ratio. EER and COP are certified in accordance with ANSI/ARI Standard 390-2021.

All ratings based on fresh air intake being 100% closed (no outside air introduction).

## General Unit Specifications W18 (1-1/2 Ton) Through W48 (4 Ton)

MODELS	W18HB-A	W24HB-A	W24HB-B	W24HB-C	W30HB-A	W30HB-B	W30HB-C	W36HB-A	W36HB-B	W36HB-C
<b>Unit Voltage Rating - Phase - 60Hz</b>	230/208 - 1	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 V	197-253 V	197-253 V	414-506 V	197-253 V	197-253 V	414-506 V	197-253 V	197-253 V	414-506 V
<b>Compressor Electrical Circuit</b>										
Voltage	230/208 V	230/208 V	230/208 V	460 V	230/208 V	230/208 V	460 V	230/208 V	230/208 V	460 V
Rated Load Amps	6.9/8.0	8.0/9.0	5.7/6.4	3.0	9.6/11.3	6.2/7.2	3.4	12.4/14.1	7.8/8.8	4.9
Branch Circuit Selection Current	9.0	10.9	7.7	3.6	14.2	9.0	4.2	16.7	10.5	5.8
Lock Rotor Amps	56.3/56.3	61.6/61.6	55.4/55.4	28	73/73	58/58	28	79/79	73/73	38
Compressor Type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
<b>Outdoor Fan Motor &amp; Condenser Fan</b>										
Outdoor Fan Motor Horsepower - RPM	1/5 - 1090	1/5 - 1090	1/5 - 1090	1/5 - 1075	1/5 - 1075	1/5 - 1075	1/5 - 1075	1/5 - 1075	1/5 - 1075	1/5 - 1075
Outdoor Fan Motor - Amps	1.1 A	1.1 A	1.1 A	0.6 A	1.2 A	1.2 A	0.6 A	1.2 A	1.2 A	0.6 A
Outdoor Fan--Diameter and CFM	18" - 1800	18" - 1800	18" - 1800	18" - 1800	20" - 2400	20" - 2400	20" - 2400	20" - 2200	20" - 2200	20" - 2200
<b>Indoor Blower Motor &amp; Indoor Airflow</b>										
Indoor Blower Motor - HP - Speeds	1/3HP-5 sp	1/3HP-5 sp	1/3HP-5 sp	1/3HP-5 sp	1/2HP-5 sp	1/2HP-5 sp	1/2HP-5 sp	1/2HP-5 sp	1/2HP-5 sp	1/2HP-5 sp
Indoor Blower Motor - Amps	1.0 A	1.7 A	1.7 A	1.2 A	2.3 A	2.3 A	1.1 A	2.5 A	2.5 A	1.2 A
Indoor Motor Type	Constant Torque ECM	Constant Torque ECM	Constant Torque ECM	Constant Torque ECM	Constant Torque ECM	Constant Torque ECM	Constant Torque ECM	Constant Torque ECM	Constant Torque ECM	Constant Torque ECM
Rated indoor CFM and static pressure (ESP) with wet coil and Standard filter	600 - .1	800 - .1	800 - .1	800 - .1	950 - .15	950 - .15	950 - .15	1150 - .15	1150 - .15	1150 - .15
Filter Size inches (cm) standard filter listed, 1 required	16x25x1 (41x64x3)	16x25x1 (41x64x3)	16x25x1 (41x64x3)	16x25x1 (41x64x3)	16x30x1 (41x77x3)	16x30x1 (41x77x3)	16x30x1 (41x77x3)	16x30x1 (41x77x3)	16x30x1 (41x77x3)	16x30x1 (41x77x3)
<b>Basic Unit Weight without Vent lbs. (kg)</b>	325 (148)	335 (152)	335 (152)	335 (152)	350 (159)	350 (159)	350 (159)	380 (173)	380 (173)	380 (173)
X - Barometric Fresh Air Damper	4.0 (1.8)	4.0 (1.8)	4.0 (1.8)	4.0 (1.8)	5.0 (2.3)	5.0 (2.3)	5.0 (2.3)	5.0 (2.3)	5.0 (2.3)	5.0 (2.3)
A - Barometric Damper w/ Exhaust	8.0 (3.6)	8.0 (3.6)	8.0 (3.6)	8.0 (3.6)	9.0 (4.0)	9.0 (4.0)	9.0 (4.0)	9.0 (4.0)	9.0 (4.0)	9.0 (4.0)
B - Blank-Off Plate	1.0 (.5)	1.0 (.5)	1.0 (.5)	1.0 (.5)	1.0 (.5)	1.0 (.5)	1.0 (.5)	1.0 (.5)	1.0 (.5)	1.0 (.5)
M, V - Commercial Room Ventilator	31.0 (14.0)	31.0 (14.0)	31.0 (14.0)	31.0 (14.0)	35.0 (15.9)	35.0 (15.9)	35.0 (15.9)	35.0 (15.9)	35.0 (15.9)	35.0 (15.9)
D, Y, Z - Economizer	37.0 (16.8)	37.0 (16.8)	37.0 (16.8)	37.0 (16.8)	37.0 (16.8)	37.0 (16.8)	37.0 (16.8)	37.0 (16.8)	37.0 (16.8)	37.0 (16.8)
R - Energy Recovery Ventilator	54.0 (24.4)	54.0 (24.4)	54.0 (24.4)	54.0 (24.4)	54.0 (24.4)	54.0 (24.4)	54.0 (24.4)	54.0 (24.4)	54.0 (24.4)	54.0 (24.4)

MODELS	W42HC-A	W42HC-B	W42HC-C	W48HC-A	W48HC-B	W48HC-C
<b>Unit Voltage Rating - Phase - 60Hz</b>	230/208 V - 1 PH	230/208 V - 3 PH	460 V - 3 PH	230/208 V - 1 PH	230/208 V - 3 PH	460 V - 3 PH
Operating Voltage Range	197-253 V	197-253 V	414-506 V	197-253 V	197-253 V	414-506 V
<b>Compressor Electrical Circuit</b>						
Voltage	230/208 V	230/208 V	460 V	230/208 V	230/208 V	460 V
Rated Load Amps	17.2/19.3	11.8/13.2	6.0	16.0/18.6	10.1/11.7	5.3
Branch Circuit Selection Current	19.9	13.6	6.1	21.8	13.8	6.3
Lock Rotor Amps	109/109	83.1/83.1	41	117/117	83.1/83.1	41
Compressor Type	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
<b>Outdoor Fan Motor &amp; Condenser Fan</b>						
Outdoor Fan Motor Horsepower - RPM	1/3 HP - 825RPM	1/3 HP - 825RPM	1/3 HP - 825RPM	1/3 HP - 825RPM	1/3 HP - 825RPM	1/3 HP - 825RPM
Outdoor Fan Motor - Amps	2.4 A	2.4 A	1.0 A	2.4 A	2.4 A	1.0 A
Outdoor Fan--Diameter and CFM	24" - 2900CFM	24" - 2900CFM	24" - 2900CFM	24" - 3000CFM	24" - 3000CFM	24" - 3000CFM
<b>Indoor Blower Motor &amp; Indoor Airflow</b>						
Indoor Blower Motor - HP - Speeds	1/2 HP - 5 Spd	1/2 HP - 5 Spd	1/2 HP - 5 Spd	3/4 HP - 5 Spd	3/4 HP - 5 Spd	3/4 HP - 5 Spd
Indoor Blower Motor - Amps	2.4 A	2.4 A	1.2 A	3.3 A	3.3 A	1.7 A
Indoor Motor Type	Constant Torque ECM	Constant Torque ECM	Constant Torque ECM	Constant Torque ECM	Constant Torque ECM	Constant Torque ECM
Rated indoor CFM and static pressure (ESP) with wet coil and Standard filter	1350CFM-.15ESP	1350CFM-.15ESP	1350CFM-.15ESP	1550CFM-.20ESP	1550CFM-.20ESP	1550CFM-.20ESP
Filter Size inches (cm) standard filter listed, 2 required	20" x 20" x 1" (51 x 51 x 3)	20" x 20" x 1" (51 x 51 x 3)	20" x 20" x 1" (51 x 51 x 3)	20" x 20" x 1" (51 x 51 x 3)	20" x 20" x 1" (51 x 51 x 3)	20" x 20" x 1" (51 x 51 x 3)
<b>Basic Unit Weight without Vent lbs (kg)</b>	500 (227)	500 (227)	500 (227)	505 (229)	505 (229)	505 (229)
X - Barometric Fresh Air Damper	13 (5.9)	13 (5.9)	13 (5.9)	13 (5.9)	13 (5.9)	13 (5.9)
A - Barometric Damper w/ Exhaust	16 (7.3)	16 (7.3)	16 (7.3)	16 (7.3)	16 (7.3)	16 (7.3)
B - Blank-Off Plate	14 (6.4)	14 (6.4)	14 (6.4)	14 (6.4)	14 (6.4)	14 (6.4)
M, V - Commercial Room Ventilator	42 (19.1)	42 (19.1)	42 (19.1)	42 (19.1)	42 (19.1)	42 (19.1)
D, Y, Z - Economizer	44 (20)	44 (20)	44 (20)	44 (20)	44 (20)	44 (20)
R - Energy Recovery Ventilator	87 (39.5)	87 (39.5)	87 (39.5)	87 (39.5)	87 (39.5)	87 (39.5)





## General Unit Specifications W60 (5 Ton)

MODELS	W60HC-A	W60HC-B	W60HC-C
Unit Voltage Rating - Phase - 60Hz	230/208 V - 1 PH	230/208 V - 3 PH	460 V - 3 PH
Operating Voltage Range	197-253 V	197-253 V	414-506 V
<b>Compressor Electrical Circuit</b>			
Voltage	230/208 V	230/208 V	460 V
Rated Load Amps	20.3/23.0	13.4/15.1	7.4
Branch Circuit Selection Current	24.4	16.0	7.8
Lock Rotor Amps	144.2/144.2	110/110	52
Compressor Type	Scroll	Scroll	Scroll
<b>Outdoor Fan Motor &amp; Condenser Fan</b>			
Outdoor Fan Motor Horsepower - RPM	1/3 HP - 825RPM	1/3 HP - 825RPM	1/3 HP - 825RPM
Outdoor Fan Motor - Amps	2.4 A	2.4 A	1.0 A
Outdoor Fan--Diameter and CFM	24" - 3100CFM	24" - 3100CFM	24" - 3100CFM
<b>Indoor Blower Motor &amp; Indoor Airflow</b>			
Indoor Blower Motor - HP - Speeds	3/4 HP - 5 Spds	3/4 HP - 5 Spds	3/4 HP - 5 Spds
Indoor Blower Motor - Amps	3.2 A	3.2 A	1.7 A
Indoor Motor Type	Constant Torque ECM	Constant Torque ECM	Constant Torque ECM
Rated indoor CFM and static pressure (ESP) with wet coil and Standard filter	1750CFM -.20ESP	1750CFM -.20ESP	1750CFM -.20ESP
Filter Size inches (cm) standard filter listed, 2 required	20" x 20" x 1" (51 x 51 x 3)	20" x 20" x 1" (51 x 51 x 3)	20" x 20" x 1" (51 x 51 x 3)
<b>Basic Unit Weight without Vent lbs. (kg)</b>	<b>515 (234)</b>	<b>515 (234)</b>	<b>515 (234)</b>
X - Barometric Fresh Air Damper	13 (5.9)	13 (5.9)	13 (5.9)
A - Barometric Damper w/ Exhaust	16 (7.3)	16 (7.3)	16 (7.3)
B - Blank-Off Plate	14 (6.4)	14 (6.4)	14 (6.4)
M, V - Commercial Room Ventilator	42 (19.1)	42 (19.1)	42 (19.1)
D, Y, Z - Economizer	44 (20)	44 (20)	44 (20)
R - Energy Recovery Ventilator	87 (39.5)	87 (39.5)	87 (39.5)

Note: All units have a Short Circuit Current Protection Rating (SCCR) of 5kA RMS Symmetrical.

## R410A Unit Charge Rates

WALL-MOUNT UNIT MODEL	STANDARD UNIT CHARGE RATE	DEHUMIDIFICATION UNIT CHARGE RATE
<b>W18HB</b>	4.375 lbs. (1.98 kg)	N/A
<b>W24HB</b>	5.250 lbs. (2.38 kg)	5.375 lbs. (2.43 kg)
<b>W30HB</b>	7.000 lbs. (3.17 kg)	6.875 lbs. (3.11 kg)
<b>W36HB</b>	8.000 lbs. (3.62 kg)	7.500 lbs. (3.40 kg)
<b>W42HC</b>	7.625 lbs. (3.45 kg)	7.625 lbs. (3.45 kg)
<b>W48HC</b>	9.75 lbs. (4.42 kg)	9.500 lbs. (4.30 kg)
<b>W60HC</b>	10.75 lbs. (4.87 kg)	10.188 lbs. (4.62 kg)

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.





## ///// Indoor EC Motor Blower Speeds

Indoor airflow is measured in Cubic Feet per Minute (CFM) and will vary based on static pressure created by supply duct work, return duct work, unit filter type, deflection of the air by the supply grille, or any other restriction of air entering or leaving the unit. The indoor fan motor of the WA series product has the capability of running at multiple speeds. Indoor blower speed is selected inside the control panel area using the speed tap terminal block.

**Blower and Vent Only Speed:** The WA series uses this speed when **fan only (G) or ventilation operation (A)** is used. See airflow performance chart for CFM amount. If cooling and heating speed is adjusted from LO to MED or HI, the Blower and Vent Only speed will not change.

**Balanced Climate Speed:** The WA series uses this speed when the **Balanced Climate option (Y1) or mechanical dehumidification option (D)** is used. The Balanced Climate speed reduces unit airflow by approximately 30% which increases moisture removal (latent capacity) during cooling operation. Units with the hot gas reheat dehumidification option also use this speed to increase moisture removal when running in dehumidification mode. Unit capacity performance when using Balanced Climate can be calculated using the -30% capacity multiplier factor provided in the Cooling Application Data. Unit capacity performance for hot gas reheat dehumidification units can be found in the Dehumidification performance supplemental manual #7960-811. See airflow performance chart for CFM amount.

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. A controls kit that includes a low ambient control (LAC) must be used for Balanced Climate Operation if ventilation options are to be used or cooling operation will occur below a 60° outdoor temperature. Balanced Climate can be used for duct free and ducted applications below ESP total static shown in indoor airflow performance charts. 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.

**LO Speed (Default):** The WA series uses this speed by default when using **standard cooling (Y2) or heating operation (B/W1/W2)**. 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**. See airflow performance chart for CFM amount.

**MED Speed (User Selectable):** This speed is user selectable when using **standard cooling (Y2) or heating operation (B/W1/W2)**. This speed is labeled as MED on the speed selection terminal strip inside the unit control panel. The MED speed tap provides an **increase in unit airflow** per the airflow performance chart.

**HI Speed (User Selectable):** This speed is user selectable when using **standard cooling (Y2) or heating operation (B/W1/W2)**. This speed is labeled as HI on the speed selection terminal strip inside the unit control panel. The HI speed tap provides **maximum unit airflow** per the airflow performance chart.

## ///// Indoor Airflow Static and Unit Performance

The airflow amount that passes through the unit is very important when considering cooling capacity and proper unit operation. Restriction of the amount of air passing through the unit is called external static pressure (ESP). As the amount of air passing through the unit is restricted, the ESP value increases. This will have a direct impact on how heating and cooling equipment performs when used in an application. It is important to have a professional HVAC contractor, distributor, or technician complete a duct static calculation if supply or return ducts are used with the WA series unit. Unit filter static must also be calculated into the total ESP value.

**Supply Duct Static:** Supply duct static will include duct work connected to the unit supply opening, supply registers, filtration installed in the supply duct, or any other device in the supply airstream that will restrict airflow. All ducts must be sealed to reduce duct air leakage, and flex duct work must not include restriction due to installation. Duct static must be calculated by a HVAC professional and include all factors of the duct design.

**Return Duct Static:** Return duct static will include duct work connected to the unit return opening, return registers, filtration installed in the return duct, or any other device in the return airstream that will restrict airflow. All ducts must be sealed to reduce duct air leakage, and flex duct work must not include restriction due to installation. Duct static must be calculated by a HVAC professional and include all factors of the duct design.

**Unit Filter Static:** The WA series uses a unit filter installed before the indoor blower assembly that filters both indoor air from the room and outdoor air entering through the ventilation device. When additional filtration is required (higher MERV rating), additional static will need to be added to the total external static pressure (ESP). The following chart is to be used to estimate additional static pressure for a installed clean filter.

FILTER CODE	FILTER MERV RATING	FILTER STATIC INCHES WC.	FILTRATION LEVEL
X	MERV 2	0" WC	Low Filtration, 1" Thickness Disposable Media.
W	MERV 2	-.02" WC	Low Filtration, 1" Thickness Permanent Media.
P	MERV 8	.03" WC	Average Filtration, 2" Thickness Pleated Disposable Media.
M	MERV 11	.05" WC	Above Average Filtration, 2" Thickness Pleated Disposable Media.
N	MERV 13	.08" WC	High Filtration, 2" Thickness Pleated Disposable Media.

**Calculating Total External Static Pressure:** Supply duct static, return duct static, unit filter static, and any other source of additional static pressure are added together. Once this is calculated, the actual unit airflow amount can be reviewed by using the Indoor Airflow CFM charts provided.

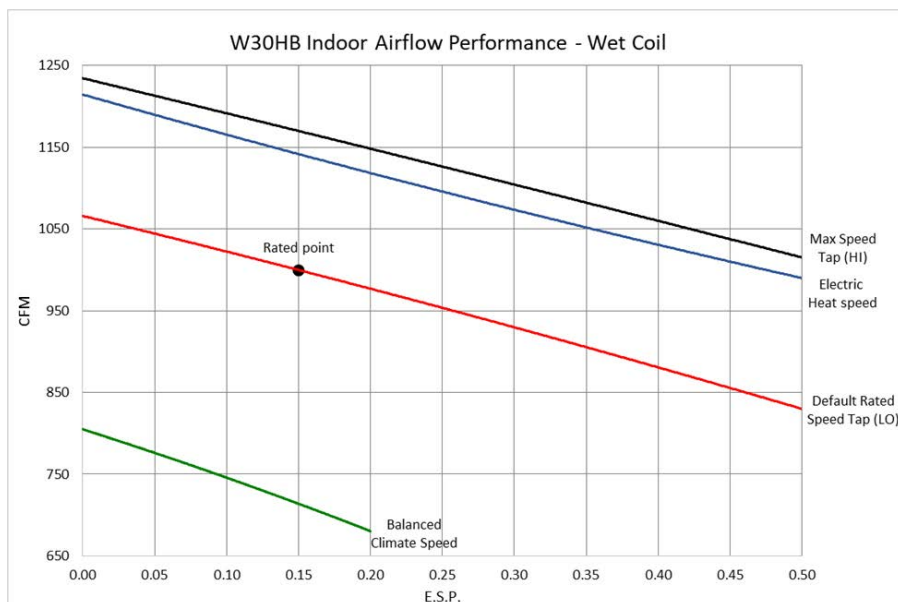
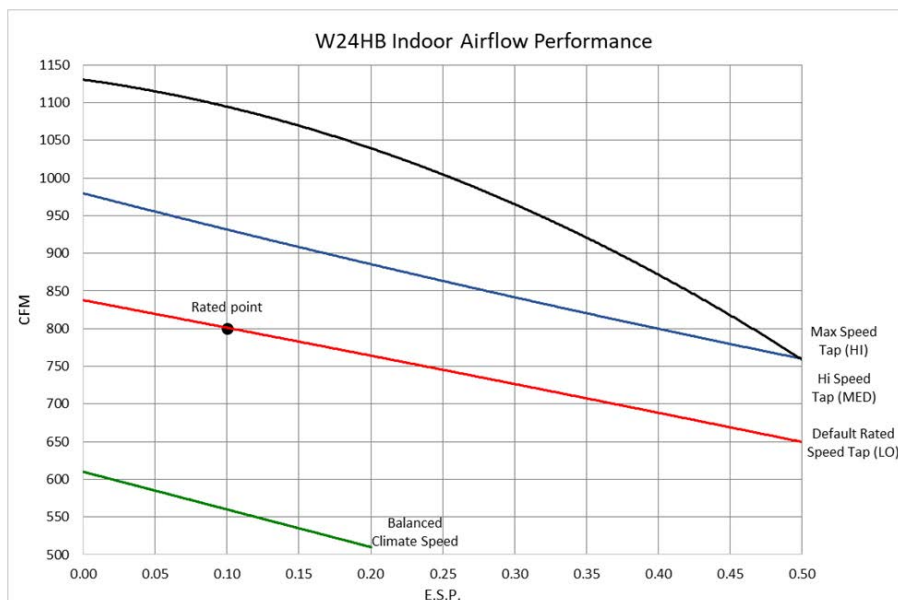
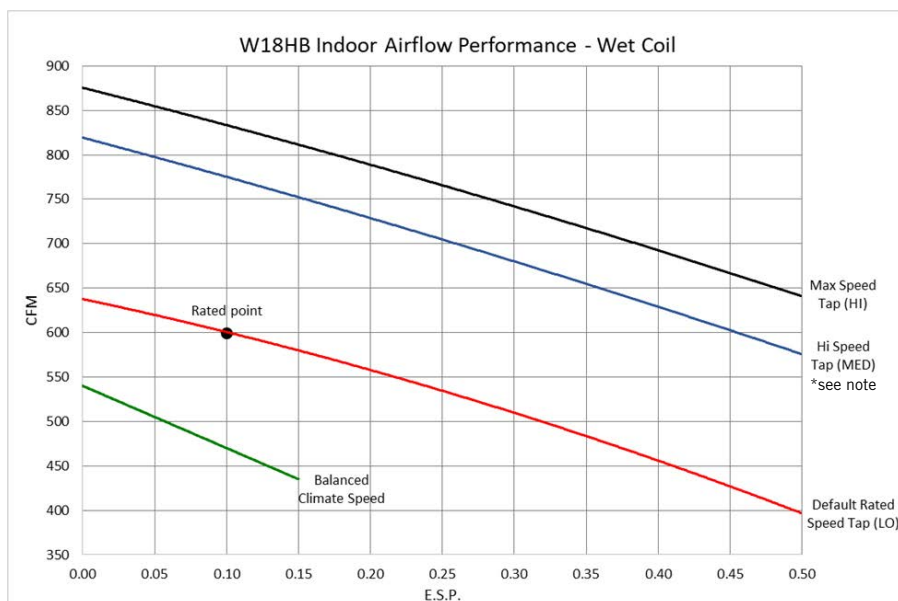
Total External Static Pressure Calculation:

**Supply Duct Static + Return Duct Static + Filter Static + Additional External Static = Total External Static Pressure (ESP)**

**Non-Ducted Applications:** Applications that do not include supply or return ducts inside the structure, use Bard supplied supply and return louvers, and do not have additional sources of external static will typically reflect rated airflow amounts shown in the Indoor Airflow CFM charts. Additional filter static must still be added as necessary to the rated airflow total external static pressure (ESP). Field supplied supply and return louvers must match Bard supplied supply and return louvers to achieve shown in the Indoor Airflow CFM charts. Adjustment of 4-way deflection supply louver may effect unit supply airflow. See louver deflection and throw characteristics provided in this document.



# Indoor Airflow CFM @ Static Pressures and Adjustable Speeds - W18, W24, W30 Units



Total External Static Pressure Calculation:

**Supply Duct Static + Return Duct Static + Filter Static + Additional External Static = Total External Static Pressure (ESP)**

Total External Static Adjustment:

Indoor airflow data shown in the performance charts represent the unit running in cooling with a wet evaporator coil. A dry evaporator coil will provide less static. See adjustment factor in below table.

Indoor airflow data shown in the performance charts represent the unit with a 1" disposable MERV2 filter. For other filter options, external static pressure needs to be adjusted. See adjustment factor in below table.

FILTER CODE	FILTER MERV RATING	ADJUST STATIC
	<b>DRY COIL AIRFLOW</b>	-.04" WC
<b>W</b>	<b>MERV 2 (Washable)</b>	-.02" WC
<b>X</b>	<b>MERV 2 (Disposable)</b>	0" WC
<b>P</b>	<b>MERV 8</b>	+.03" WC
<b>M</b>	<b>MERV 11</b>	+.05" WC
<b>N</b>	<b>MERV 13</b>	+.08" WC

Indoor Airflow Speeds:

**Balanced Climate Speed:** The WA series uses this speed when the **Balanced Climate option (Y1)** or **mechanical dehumidification option (D)** is used. Not recommended for static levels higher than Balanced Climate airflow data provided.

**LO Speed (Default):** The WA series uses this speed by default when using **standard cooling (Y2)** or **heating operation (B/W1/W2)**. This speed is labeled as LO on the speed selection terminal strip inside the unit control panel. The WA series also uses this speed when **fan only (G)** or **ventilation operation (A)** is used. All units ship with cooling and heating operation at LO cooling and heating speed, and provides the **optimal airflow amount for normal use**.

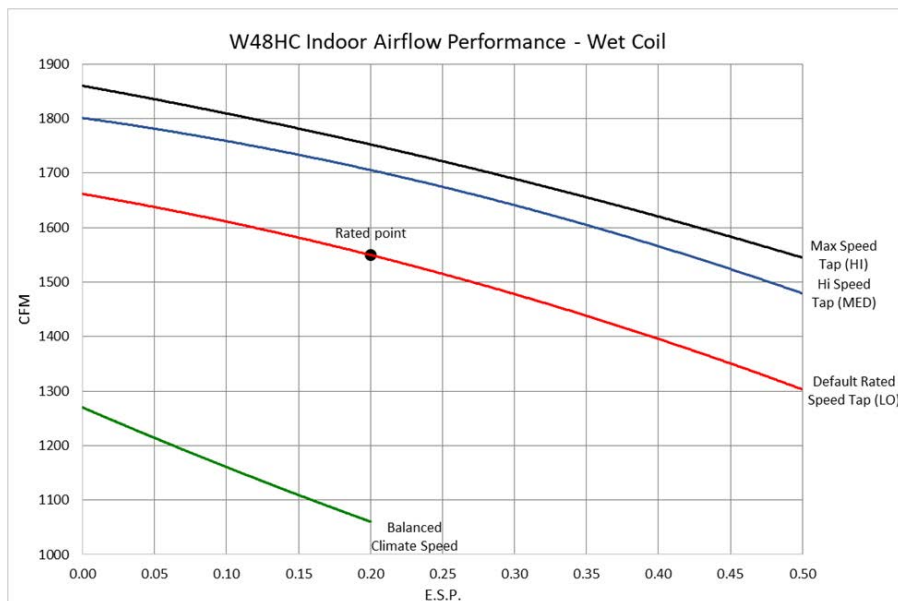
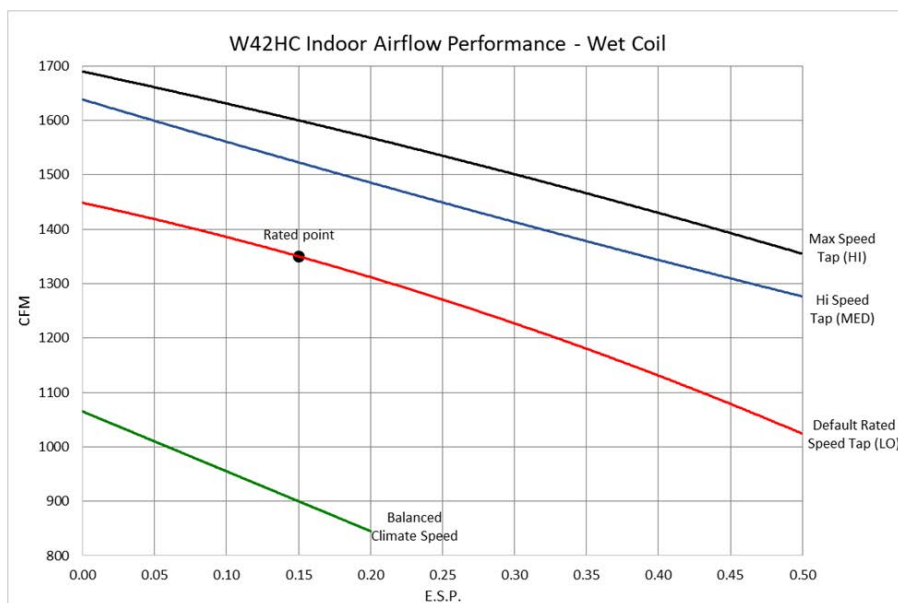
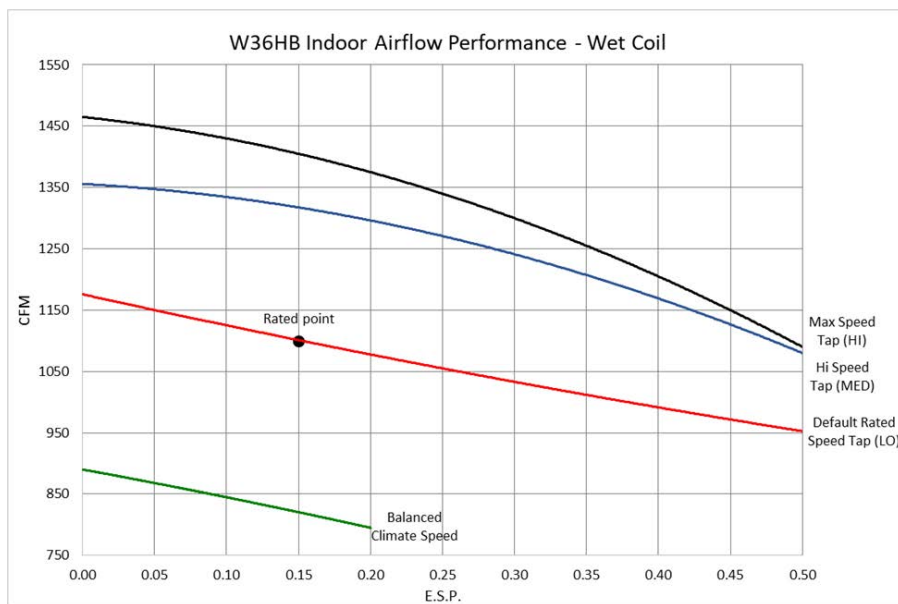
**MED Speed (User Selectable):** This speed is user selectable when using **standard cooling (Y2)** or **heating operation (B/W1/W2)**. This speed is labeled as MED on the speed selection terminal strip inside the unit control panel. The MED speed tap provides an **increase in unit airflow** per the airflow performance chart. Fan only and dehumidification fan operation is not effected by using MED speed.

**HI Speed (User Selectable):** This speed is user selectable when using **standard cooling (Y2)** or **heating operation (B/W1/W2)**. This speed is labeled as HI on the speed selection terminal strip inside the unit control panel. The HI speed tap provides **maximum unit airflow** per the airflow performance chart. Fan only and dehumidification fan operation is not effected by using HI speed.

*\*Note: W18HB unit has a dedicated electric heat speed and does not have a user selectable MED speed for airflow adjustment. See installation manual for additional information.*



# Indoor Airflow CFM @ Static Pressures and Adjustable Speeds - W36, W42, W48 Units



Total External Static Pressure Calculation:

**Supply Duct Static + Return Duct Static + Filter Static + Additional External Static = Total External Static Pressure (ESP)**

Total External Static Adjustment:

Indoor airflow data shown in the performance charts represent the unit running in cooling with a wet evaporator coil. A dry evaporator coil will provide less static. See adjustment factor in below table.

Indoor airflow data shown in the performance charts represent the unit with a 1" disposable MERV2 filter. For other filter options, external static pressure needs to be adjusted. See adjustment factor in below table.

FILTER CODE	FILTER MERV RATING	ADJUST STATIC
	<b>DRY COIL AIRFLOW</b>	-.04" WC
<b>W</b>	<b>MERV 2 (Washable)</b>	-.02" WC
<b>X</b>	<b>MERV 2 (Disposable)</b>	0" WC
<b>P</b>	<b>MERV 8</b>	+.03" WC
<b>M</b>	<b>MERV 11</b>	+.05" WC
<b>N</b>	<b>MERV 13</b>	+.08" WC

Indoor Airflow Speeds:

**Balanced Climate Speed:** The WA series uses this speed when the **Balanced Climate option (Y1)** or **mechanical dehumidification option (D)** is used. Not recommended for static levels higher than Balanced Climate airflow data provided.

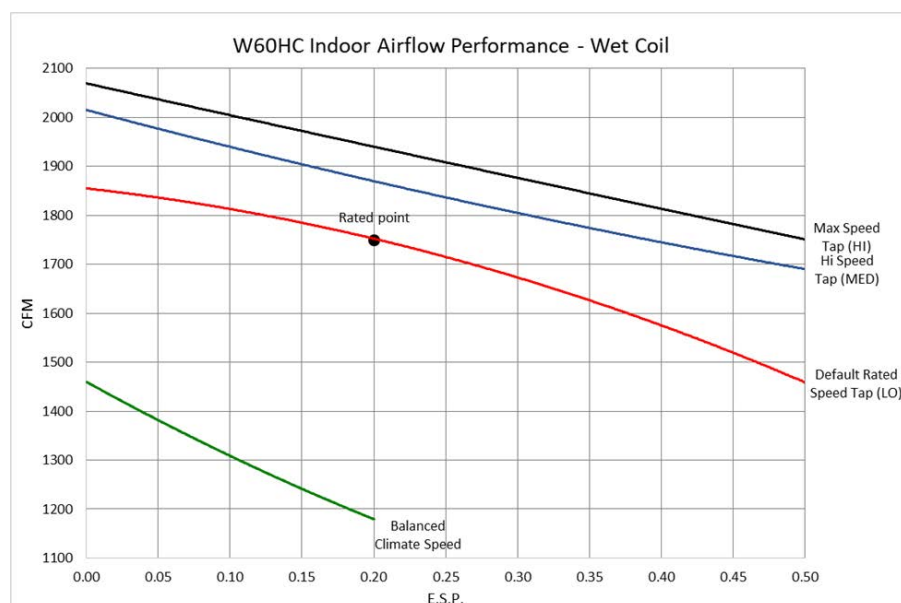
**LO Speed (Default):** The WA series uses this speed by default when using **standard cooling (Y2)** or **heating operation (W1/W2)**. This speed is labeled as LO on the speed selection terminal strip inside the unit control panel. The WA series also uses this speed when **fan only (G)** or **ventilation operation (A)** is used. All units ship with cooling and heating operation at LO cooling and heating speed, and provides the **optimal airflow amount for normal use**.

**MED Speed (User Selectable):** This speed is user selectable when using **standard cooling (Y2)** or **heating operation (B/W1/W2)**. This speed is labeled as MED on the speed selection terminal strip inside the unit control panel. The MED speed tap provides an **increase in unit airflow** per the airflow performance chart. Fan only and dehumidification fan operation is not effected by using MED speed.

**HI Speed (User Selectable):** This speed is user selectable when using **standard cooling (Y2)** or **heating operation (B/W1/W2)**. This speed is labeled as HI on the speed selection terminal strip inside the unit control panel. The HI speed tap provides **maximum unit airflow** per the airflow performance chart. Fan only and dehumidification fan operation is not effected by using HI speed.



# Indoor Airflow CFM @ Static Pressures and Adjustable Speeds - W60 Unit



Total External Static Pressure Calculation:

**Supply Duct Static + Return Duct Static + Filter Static + Additional External Static = Total External Static Pressure (ESP)**

Total External Static Adjustment:

Indoor airflow data shown in the performance charts represent the unit running in cooling with a wet evaporator coil. A dry evaporator coil will provide less static. See adjustment factor in below table.

Indoor airflow data shown in the performance charts represent the unit with a 1" disposable MERV2 filter. For other filter options, external static pressure needs to be adjusted. See adjustment factor in below table.

FILTER CODE	FILTER MERV RATING	ADJUST STATIC
	<b>DRY COIL AIRFLOW</b>	-.04" WC
<b>W</b>	<b>MERV 2 (Washable)</b>	-.02" WC
<b>X</b>	<b>MERV 2 (Disposable)</b>	0" WC
<b>P</b>	<b>MERV 8</b>	+.03" WC
<b>M</b>	<b>MERV 11</b>	+.05" WC
<b>N</b>	<b>MERV 13</b>	+.08" WC

Indoor Airflow Speeds:

**Balanced Climate Speed:** The WA series uses this speed when the **Balanced Climate option (Y1)** or **mechanical dehumidification option (D)** is used. Not recommended for static levels higher than Balanced Climate airflow data provided.

**LO Speed (Default):** The WA series uses this speed by default when using **standard cooling (Y2)** or **heating operation (B/W1/W2)**. This speed is labeled as LO on the speed selection terminal strip inside the unit control panel. The WA series also uses this speed when **fan only (G)** or **ventilation operation (A)** is used. All units ship with cooling and heating operation at LO cooling and heating speed, and provides the **optimal airflow amount for normal use**.

**MED Speed (User Selectable):** This speed is user selectable when using **standard cooling (Y2)** or **heating operation (B/W1/W2)**. This speed is labeled as MED on the speed selection terminal strip inside the unit control panel. The MED speed tap provides an **increase in unit airflow** per the airflow performance chart. Fan only and dehumidification fan operation is not effected by using MED speed.

**HI Speed (User Selectable):** This speed is user selectable when using **standard cooling (Y2)** or **heating operation (B/W1/W2)**. This speed is labeled as HI on the speed selection terminal strip inside the unit control panel. The HI speed tap provides **maximum unit airflow** per the airflow performance chart. Fan only and dehumidification fan operation is not effected by using HI speed.





# Cooling Application Data at Rated Airflow

MODEL	INDOOR RETURN AIR (DB/WB)	COOLING CAPACITY (BTUH)	DRY BULB OUTDOOR AIR TEMPERATURE ENTERING UNIT CONDENSER AREA										
			75°F 23.9°C	80°F 26.6°C	85°F 29.4°C	90°F 32.2°C	95°F 35°C	100°F 37.8°C	105°F 40.5°C	110°F 43.3°C	115°F 46.1°C	120°F 48.8°C	125°F 51.6°C
W18	75/62°F	Total Cooling	19,700	18,500	17,300	16,300	15,300	14,500	13,600	12,900	12,300	11,700	11,100
	23.8/16.6°C	Sensible Cooling	15,200	14,600	14,000	13,500	13,000	12,600	12,200	11,800	11,600	11,400	11,100
	80/67°F	Total Cooling	21,000	20,100	19,200	18,400	17,500	16,800	16,000	15,300	14,700	14,100	13,500
	26.6/19.4°C	Sensible Cooling	14,700	14,300	13,800	13,500	13,100	12,800	12,500	12,200	12,000	11,900	11,700
W24	85/72°F	Total Cooling	25,100	23,500	22,100	20,800	19,500	18,400	17,300	16,300	15,500	14,700	13,900
	29.4/22.2°C	Sensible Cooling	15,100	14,600	13,900	13,400	12,900	12,400	12,000	11,500	11,100	10,800	10,400
	75/62°F	Total Cooling	25,700	24,300	23,000	21,700	20,500	19,400	18,300	17,300	16,300	15,400	14,500
	23.8/16.6°C	Sensible Cooling	20,100	19,500	18,900	18,300	17,800	17,200	16,600	16,100	15,500	15,000	14,500
W30	80/67°F	Total Cooling	27,400	26,400	25,500	24,500	23,400	22,600	21,600	20,600	19,600	18,600	17,600
	26.6/19.4°C	Sensible Cooling	19,500	19,100	18,700	18,300	17,900	17,500	17,000	16,600	16,100	15,700	15,200
	85/72°F	Total Cooling	32,700	30,900	29,300	27,700	26,100	24,800	23,300	21,900	20,600	19,400	18,100
	29.4/22.2°C	Sensible Cooling	20,000	19,400	18,800	18,200	17,600	17,000	16,200	15,600	14,900	14,200	13,500
W36	75/62°F	Total Cooling	31,900	30,100	28,500	26,900	25,400	24,100	22,700	21,500	20,300	19,200	18,200
	23.8/16.6°C	Sensible Cooling	25,700	24,900	24,100	23,300	22,700	22,000	21,500	20,900	20,300	19,200	18,200
	80/67°F	Total Cooling	34,000	32,800	31,600	30,400	29,000	28,000	26,800	25,600	24,400	23,200	22,100
	26.6/19.4°C	Sensible Cooling	24,900	24,400	23,800	23,300	22,900	22,400	22,000	21,600	21,300	21,000	20,700
W42	85/72°F	Total Cooling	40,500	38,400	36,300	34,300	32,400	30,700	28,900	27,300	25,700	24,100	22,800
	29.4/22.2°C	Sensible Cooling	25,500	24,800	23,900	23,200	22,500	21,700	21,000	20,300	19,600	19,000	18,300
	75/62°F	Total Cooling	39,600	37,400	35,200	33,300	31,400	29,700	28,100	26,600	25,200	23,900	22,800
	23.8/16.6°C	Sensible Cooling	30,600	29,500	28,400	27,400	26,600	25,800	25,000	24,300	23,700	23,100	22,600
W48	80/67°F	Total Cooling	42,300	40,700	39,100	37,600	36,000	34,600	33,100	31,700	30,300	29,000	27,700
	26.6/19.4°C	Sensible Cooling	29,700	28,900	28,100	27,400	26,800	26,200	25,600	25,100	24,600	24,200	23,800
	85/72°F	Total Cooling	50,400	47,600	44,900	42,500	40,000	37,900	35,700	33,700	31,900	30,200	28,500
	29.4/22.2°C	Sensible Cooling	30,400	29,400	28,300	27,200	26,300	25,400	24,400	23,600	22,700	21,900	21,100
W60	75/62°F	Total Cooling	44,600	42,500	40,500	38,500	36,600	34,800	33,100	31,300	29,700	28,000	26,400
	23.8/16.6°C	Sensible Cooling	35,300	34,000	32,900	31,800	30,800	30,000	29,100	28,400	27,600	27,100	26,400
	80/67°F	Total Cooling	47,600	46,300	44,900	43,500	42,000	40,500	39,000	37,300	35,700	33,900	32,100
	26.6/19.4°C	Sensible Cooling	34,200	33,300	32,600	31,800	31,100	30,500	29,800	29,300	28,700	28,300	27,800
W60	85/72°F	Total Cooling	56,700	54,100	51,600	49,100	46,700	44,300	42,100	39,700	37,500	35,200	33,000
	29.4/22.2°C	Sensible Cooling	35,000	33,800	32,800	31,600	30,500	29,500	28,400	27,500	26,500	25,600	24,600
	75/62°F	Total Cooling	54,100	50,500	47,200	44,200	41,400	38,800	36,500	34,300	32,300	30,500	28,800
	23.8/16.6°C	Sensible Cooling	41,600	40,000	38,500	37,100	35,800	34,600	33,500	32,600	31,700	30,500	28,800
W60	80/67°F	Total Cooling	57,700	55,000	52,400	49,900	47,500	45,200	43,000	40,900	38,900	36,900	35,100
	26.6/19.4°C	Sensible Cooling	40,300	39,200	38,100	37,100	36,100	35,200	34,400	33,700	33,000	32,400	31,800
	85/72°F	Total Cooling	68,700	64,300	60,200	56,300	52,800	49,500	46,400	43,500	40,900	38,400	36,100
	29.4/22.2°C	Sensible Cooling	41,300	39,800	38,300	36,900	35,400	34,100	32,800	31,600	30,400	29,300	28,200
W60	75/62°F	Total Cooling	58,100	55,300	52,600	50,000	47,500	45,200	42,800	40,600	38,500	36,400	34,400
	23.8/16.6°C	Sensible Cooling	45,700	44,500	43,300	42,100	41,000	40,000	39,000	37,900	37,000	36,100	34,400
	80/67°F	Total Cooling	62,000	60,200	58,400	56,500	54,500	52,600	50,500	48,400	46,300	44,100	41,900
	26.6/19.4°C	Sensible Cooling	44,300	43,600	42,900	42,100	41,400	40,700	40,000	39,200	38,500	37,800	37,000
W60	85/72°F	Total Cooling	73,900	70,400	67,100	63,800	60,500	57,500	54,500	51,500	48,700	45,800	43,100
	29.4/22.2°C	Sensible Cooling	45,400	44,300	43,100	41,800	40,600	39,400	38,100	36,800	35,500	34,200	32,700

- Notes:
- Unit compressor cooling operation below 60°F requires a Low Ambient Control (LAC).
  - 1000 BTUH = .29307 kW
  - Outdoor air temperatures provided are an average of the condenser inlet air temperature.

Capacity Multiplier Factors							
% of Rated Airflow	-30%	-20%	-10%	Rated	+10%	+20%	+30%
Total BTUH	0.93	0.95	0.97	1	1.01	1.02	1.04
Sensible BTUH	0.90	0.93	0.95	1	1.02	1.05	1.09

**Capacity Multiplier Calculation:** Capacity multipliers are used to estimate unit capacity performance when airflow rates are decreased or increased compared to rated airflow. Rated airflow is the standard CFM amount used for capacity and efficiency calculations. Airflow rates may be effected by external static pressure (ESP) from supply ducts, return ducts, advanced filter options, or use of additional blower speeds. See unit airflow charts for additional information on unit airflow at different indoor blower speeds, filter static levels, and indoor airflow using Balanced Climate operation.

Example: Due to additional supply duct static, the actual supply airflow CFM for a installed W60 unit is 10% lower than the rated airflow shown in the blower performance chart. We want to know the actual BTUH amount of the unit at 85/72°F indoor and 100°F outdoor temperature for this application. The following formula will be used to calculate actual unit BTUH at the new supply airflow CFM amount:

Rated unit BTUH capacity x capacity multiplier factor = actual unit BTUH capacity.

Example: 60,700 rated Total BTUH x .97 capacity multiplier = 58,879 actual Total BTUH.

Example: 40,300 rated Sensible BTUH x .95 capacity multiplier = 38,285 actual Sensible BTUH.



# Heating Application Data at Rated Airflow

MODEL	UNITS	DRY BULB OUTDOOR AIR TEMPERATURE ENTERING UNIT CONDENSER AREA													
		0°F -17.7°C	5°F -15°C	10°F -12.2°C	15°F -9.4°C	20°F -6.6°C	25°F -3.8°C	30°F -1.1°C	35°F 1.6°C	40°F 4.4°C	45°F 7.2°C	50°F 10°C	55°F 12.7°C	60°F 15.5°C	65°F 18.3°C
W18	BTUH	6,005	7,062	8,140	9,240	10,362	11,506	12,672	13,859	15,069	16,301	17,554	18,830	20,127	24,447
	Watts	1,271	1,279	1,288	1,298	1,309	1,320	1,332	1,346	1,360	1,375	1,391	1,408	1,425	1,444
	COP	1.38	1.61	1.85	2.08	2.32	2.55	2.78	3.01	3.24	3.47	3.69	3.91	4.13	4.35
W24	BTUH	9,277	10,509	11,779	13,089	14,437	15,823	17,248	18,712	20,215	21,756	23,336	24,954	26,611	28,306
	Watts	1,618	1,646	1,672	1,698	1,724	1,749	1,773	1,797	1,820	1,843	1,865	1,887	1,908	1,928
	COP	1.67	1.87	2.06	2.25	2.45	2.65	2.85	3.05	3.25	3.45	3.66	3.87	4.08	4.30
W30	BTUH	13,230	14,201	15,267	16,426	17,680	19,029	20,471	22,009	23,640	25,366	27,186	29,101	31,110	33,213
	Watts	2,053	2,070	2,089	2,109	2,129	2,151	2,175	2,199	2,224	2,251	2,279	2,308	2,338	2,369
	COP	1.88	2.00	2.14	2.28	2.43	2.59	2.75	2.93	3.11	3.30	3.49	3.69	3.89	4.10
W36	BTUH	17,423	18,331	19,383	20,580	21,922	23,407	25,037	26,812	28,731	30,794	33,001	35,353	37,849	40,490
	Watts	2,627	2,635	2,647	2,663	2,682	2,705	2,732	2,763	2,798	2,837	2,879	2,925	2,975	3,028
	COP	1.94	2.03	2.14	2.26	2.39	2.53	2.68	2.84	3.00	3.18	3.35	3.54	3.72	3.91
W42	BTUH	18,600	20,300	22,000	23,900	25,900	28,000	30,200	32,500	34,900	37,400	40,100	42,800	45,700	48,600
	Watts	3,020	3,040	3,070	3,100	3,130	3,160	3,200	3,250	3,290	3,350	3,400	3,460	3,530	3,600
	COP	1.80	1.95	2.10	2.25	2.42	2.59	2.76	2.93	3.10	3.27	3.45	3.62	3.79	3.95
W48	BTUH	18,600	20,300	22,200	24,300	26,500	28,900	31,400	34,200	37,100	40,100	43,400	46,800	50,400	54,200
	Watts	3,330	3,350	3,380	3,420	3,460	3,500	3,550	3,600	3,660	3,720	3,790	3,860	3,930	4,010
	COP	1.63	1.77	1.92	2.08	2.24	2.42	2.59	2.78	2.97	3.15	3.35	3.55	3.75	3.96
W60	BTUH	25,300	27,500	29,800	32,200	34,800	37,600	40,400	43,400	46,500	49,700	53,100	56,600	60,300	64,000
	Watts	3,920	4,000	4,080	4,160	4,240	4,310	4,380	4,450	4,520	4,580	4,640	4,700	4,760	4,820
	COP	1.89	2.01	2.14	2.26	2.40	2.55	2.70	2.85	3.01	3.18	3.35	3.52	3.71	3.89

- Notes:
- Performance given for 70°F DB indoor return air at rated CFM. Data includes defrost operation below 45° outdoor temperature.
  - Supplemental Electric heaters are recommended for applications requiring heating below a 15°F outdoor temperature.
  - 1000 BTUH = .29307 kW
  - Outdoor air temperatures provided are an average of the condenser inlet air temperature.

Capacity Multiplier Factors							
% of Rated Airflow	-30%	-20%	-10%	Rated	+10%	+20%	+30%
BTUH	0.93	0.95	0.97	1	1.01	1.02	1.04

**Capacity Multiplier Calculation:** Capacity multipliers are used to estimate unit capacity performance when airflow rates are decreased or increased compared to rated airflow. Rated airflow is the standard CFM amount used for capacity and efficiency calculations. Airflow rates may be effected by external static pressure (ESP) from supply ducts, return ducts, advanced filter options, or use of additional blower speeds. See unit airflow charts for additional information on unit airflow at different indoor blower speeds, filter static levels, and indoor airflow using Balanced Climate operation.

Example: Due to additional supply duct static, the actual supply airflow CFM for a installed W60 unit is 10% lower than the rated airflow shown in the blower performance chart. We want to know the actual BTUH amount of the unit at 85/72°F indoor and 100°F outdoor temperature for this application. The following formula will be used to calculate actual unit BTUH at the new supply airflow CFM amount:

Rated unit BTUH capacity x capacity multiplier factor = actual unit BTUH capacity.

Example: 60,700 rated BTUH x .97 capacity multiplier = 58,879 actual Total BTUH.



//////// **Electrical Specifications: W18 to W60 Units Without Dehumidification**

Model. See notes 3 and 4.	Rated Volts & Phase	No. Field Power Circuits	Single Circuit. See Notes 1 and 2.				Dual Circuit. See Notes 1 and 2.							
			Minimum Circuit Ampacity	Maximum External Fuse or Ckt. Brkr.	Field Power Wire Size	Ground Wire	Minimum Circuit Ampacity		Maximum External Fuse or Ckt. Breaker		Field Power Wire Size. See note 5.		Ground Wire Size See note 5.	
							Ckt. A	Ckt. B	Ckt. A	Ckt. B	Ckt. A	Ckt. B	Ckt. A	Ckt. B
W18HB-A00, A0Z A04 A08	230/208-1	1 1 1	16 37 57	20 40 60	12 8 6	12 10 10								
W24HB-A00, A0Z A04 A08	230/208-1	1 1 1 or 2	19 41 62	25 45 70	10 8 6	10 10 8	41	21	45	25	8	10	10	10
W24HB-B00, B0Z B05	230/208-3	1 1	15 30	20 30	12 10	12 10								
W24HB-C00, C0Z C05	460-3	1 1	8 16	15 20	14 12	14 12								
W30HB-A00, A0Z A05 A10	230/208-1	1 1 1 or 2	24 50 76	35 50 80	8 8 4	10 10 8	50	26	50	30	8	10	10	10
W30HB-B00, B0Z B05 B09	230/208-3	1 1 1	18 34 45	25 35 45	10 8 8	10 10 10								
W30HB-C00, C0Z C05 C09	460-3	1 1 1	9 18 23	15 20 25	14 12 10	14 12 10								
W36HB-A00, A0Z A05 A10 A15	230/208-1	1 1 1 or 2 1 or 2	27 53 79 85	40 60 80 90	8 6 4 4	10 10 8 8	53 27	26 58	60 30	30 60	6 10	10 6	10 10	10 10
W36HB-B00, B0Z B05 B09	230/208-3	1 1 1	20 35 47	25 40 50	10 8 8	10 10 10								
W36HB-C00, C0Z C05 C09	460-3	1 1 1	11 19 25	15 20 25	14 12 10	14 12 10								
W42HC-A00, A0Z A04 A05 A10 A15	230/208-1	1 1 1 1 or 2 1 or 2	32 53 58 84 84	45 60 60 90 90	8 6 6 4 4	10 10 10 8 8	32 58	52 26	50 60	60 45	8 6	6 8	10 10	10 10
W42HC-B00, B0Z B05 B09 B15	230/208-3	1 1 1 1	24 39 51 51	35 45 60 60	8 8 6 6	10 10 10 10								
W42HC-C00, C0Z C05 C09 C15	460-3	1 1 1 1	12 21 25 26	15 25 30 30	14 10 10 10	14 10 10 10								
W48HC-A00, A0Z A04 A05 A10 A15 A20	230/208-1	1 1 1 or 2 1 or 2 1 or 2 1 or 2	35 56 61 87 87 110	50 60 70 90 90 125	8 6 6 3 3 2	10 10 8 8 8 6	35 35 35 58	26 52 52 52	40 50 50 60	30 60 60 60	8 8 8 6	10 6 6 6	10 10 10 10	10 10 10 10
W48HC-B00, B0Z B05 B09 B15 B18	230/208-3	1 1 1 1 2	25 40 52 53 N/A	35 50 60 60 N/A	8 8 6 6 N/A	10 10 10 10 N/A	52	28	60	30	6	10	10	10
W48HC-C00, C0Z C05 C09 C15	460-3	1 1 1 1	12 20 25 26	15 25 30 30	14 10 10 10	14 10 10 10								
W60HC-A00, A0Z A05 A10 A15 A20	230/208-1	1 1 or 2 1 or 2 1 or 2 1 or 2	42 67 93 93 112	60 80 100 100 125	8 4 3 3 2	10 8 8 8 6	41 41 41 60	26 52 52 52	50 50 60 60	30 60 60 60	8 8 8 6	10 6 6 6	10 10 10 10	10 10 10 10
W60HC-B00, B0Z B09 B15 B18	230/208-3	1 1 1 2	29 56 56 N/A	40 60 60 N/A	8 6 6 N/A	10 10 10 N/A	55	28	60	30	6	10	10	10
W60HC-C00, C0Z C09 C15	460-3	1 1 1	14 28 28	20 30 30	12 10 10	12 10 10								

SEE NOTES ON NEXT PAGE.



# Electrical Specifications: W24 to W60 Units With Dehumidification

Model. See notes 3 and 4.	Rated Volts & Phase	No. Field Power Circuits	Single Circuit. See Notes 1 and 2.				Dual Circuit. See Notes 1 and 2.							
			Minimum Circuit Ampacity	Maximum External Fuse or Ckt. Brkr.	Field Power Wire Size	Ground Wire	Minimum Circuit Ampacity		Maximum External Fuse or Ckt. Breaker		Field Power Wire Size. See note 5.		Ground Wire Size. See note 5.	
							Ckt. A	Ckt. B	Ckt. A	Ckt. B	Ckt.	Ckt. B	Ckt. A	Ckt. B
W24HBDA00, AOZ A04 A08	230/208-1	1 1 1 or 2	19 40 61	25 45 70	10 8 6	10 10 8	42	19	45	25	8	10	10	10
W24HDBD00, BOZ B05	230/208-3	1 1	15 30	20 30	12 10	12 10								
W24HBDC00, COZ C05	460-3	1 1	8 16	15 20	14 12	14 12								
W30HBDA00, AOZ A05 A10	230/208-1	1 1 1 or 2	24 50 76	35 50 80	8 8 4	10 10 8	50	26	60	30	8	10	10	10
W30HDBD00, BOZ B05 B09	230/208-3	1 1 1	18 33 45	25 35 50	10 8 8	10 10 10								
W30HBDC00, COZ C05 C09	460-3	1 1 1	9 16 22	15 20 25	14 12 10	14 12 10								
W36HBDA00, AOZ A05 A10	230/208-1	1 1 1 or 2	28 54 80	40 60 80	8 6 4	10 10 8	54	26	60	30	6	10	10	10
W36HDBD00, BOZ B05 B09	230/208-3	1 1 1	20 35 47	25 40 50	10 8 8	10 10 10								
W36HBDC00, COZ C05 C09	460-3	1 1 1	11 19 24	15 20 25	14 12 10	14 12 10								
W42HCDA00, AOZ A05 A10 A15	230/208-1	1 1 1 or 2 1 or 2	34 60 86 86	45 60 90 90	8 6 3 3	10 10 8 8	34 34	52 52	40 40	60 60	8 8 6 6	10 10 6 6	10 10 10 10	10 10 10 10
W42HDCD00, BOZ B05 B09 B15	230/208-3	1 1 1 1	25 41 53 53	35 45 60 60	8 8 6 6	10 10 10 10								
W42HCDC00, COZ C05 C09 C15	460-3	1 1 1 1	12 20 26 26	15 20 30 30	14 12 10 10	14 12 10 10								
W48HCDA00, AOZ A05 A10 A15	230/208-1	1 1 or 2 1 or 2 1 or 2	35 61 87 87	50 70 90 90	8 6 3 3	10 8 8 8	35 35 35	26 52 52	45 50 50	30 60 60	8 8 8	10 6 6	10 10 10	10 10 10
W48HDCD00, BOZ B05 B09 B15	230/208-3	1 1 1 1	25 40 52 53	35 50 60 60	8 8 6 6	10 10 10 10								
W48HCDC00, COZ C05 C09 C15	460-3	1 1 1 1	12 21 26 27	15 25 30 30	14 10 10 10	14 10 10 10								
W60HCDA00, AOZ A05 A10 A15	230/208-1	1 1 or 2 1 or 2 1 or 2	41 67 93 93	60 80 100 100	8 4 3 3	10 8 8 8	41 41 41	26 52 52	50 50 50	30 60 60	8 8 8	10 6 6	10 10 10	10 10 10
W60HDCD00, BOZ B09 B15	230/208-3	1 1 1	28 55 55	40 60 60	8 6 6	10 10 10								
W60HCDC00, COZ C09 C15	460-3	1 1 1	14 28 28	20 30 30	12 10 10	12 10 10								

- (1) The "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 (3) conductors are in a raceway.
- (2) Maximum size of the time delay fuse or circuit breaker for protection of field wiring conductors.
- (3) Three Phase Maximum KW that can operate with the heat pump on is 9KW. Full heat available during emergency heat mode.
- (4) Single Phase Maximum KW that can operate with the heat pump on is 10KW. Full heat available during emergency heat mode.
- (5) Based on 75°C copper wire. All wiring must conform to the National Electrical Code and all local codes.
- IMPORTANT: While this electrical data is presented as a guide, it is important to electrically connect properly sized fuses & conductor wires in accordance with the National Electrical Code & 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.





## Field Installed Heater Packages

Field installed heater packages are available to add, increase, or reduce the amount of electric heat to units that are already shipped from the factory. The kit includes the following:

- Resistance heaters that provide heating BTUH amounts shown in the heater kit chart. Heaters ship pre-installed with needed limits and thermal cutoffs.
- Heating contactor(s) that energize when a signal is sent from a thermostat or controller. Contactors are pre-mounted on a base plate for easy installation along with a plug-in connector.
- Wires, screws, wire ties and other accessories needed for installation.
- A wiring diagram, installation instructions, and labels to show electric heat is installed.

It is always important to review all instructions provided with the heater package kit and Wall-Mount unit before installation. Review all electrical specifications for the unit and building including wire and breaker sizes along with clearances to combustible materials before installation and use of the heater package kits.

## Heater Packages - Field Kits for W18 to W60 Standard 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
W18HB	WMCB-02A EHW18H-A04 EHW18H-A08	0Z 04 08	N/A		N/A	
W24HB	WMCB-03A EHW2HB-A04 EHW2HB-A08	0Z 04 08	WMCB-02B EHW2HB-B05	0Z 05	WMPD-01C EHW2HB-C05	0Z 05
W30HB	WMCB-05A EHW30HB-A05 EHW30HB-A10	0Z 05 10	WMCB-03B EHW30HB-B05 EHW3HB-B09	0Z 05 09	WMPD-01C EHW3HB-C05 EHW3HB-C09	0Z 05 09
W36HB	WMCB-06A EHW3HB-A05 EHW3HB-A10 EHW3HB-A15	0Z 05 10 15	WMCB-03B EHW3HB-B05 EHW3HB-B09	0Z 05 09	WMPD-01C EHW3HB-C05 EHW3HB-C09	0Z 05 09
W42HC	WMCBC-07A EHW3HC-A04 EHW3HC-A05 EHW6HCDA10 EHW3HC-A15	0Z 04 05 10 15	WMCBC-05B EHW3HC-B05 EHW3HC-B09 EHW3HC-B15	0Z 05 09 15	WMCBC-06C EHW3HC-C05 EHW3HCDC09 EHW3HC-C15	0Z 05 09 15
W48HC	WMCBC-08A EHW4HC-A04 EHW4HC-A05 EHW6HCDA10 EHW4HC-A15 EHW4HC-A20	0Z 04 05 10 15 20	WMCBC-05B EHW3HC-B05 EHW4HC-B09 EHW4HC-B15 EHW4HC-B18	0Z 05 09 15 18	WMCBC-06C EHW4HC-C05 EHW4HC-C09 EHW4HC-C15	0Z 05 09 15
W60HC	WMCBC-09A EHW6HCDA05 EHW6HCDA10 EHW6HC-A15 EHW6HC-A20	0Z 05 10 15 20	WMCBC-06B EHW6HC-B09 EHW6HC-B15 EHW6HC-B18	0Z 09 15 18	WMCBC-06C EHW6HC-C09 EHW4HC-C15	0Z 09 15



## //////// Heater Packages - Field Kits for W24 to W60 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
W24HBD	EHW2TH-A04 EHW2TH-A08	04 08	EHW2HB-B05	05	EHW2HB-C05	05
W30HBD	EHW2HBDA05 EHW3HBDA10	05 10	EHW3HBDB05 EHW3HBDB09	05 09	EHW3HBDC05 EHW3HBDC09	05 09
W36HBD	EHW3HBDA05 EHW3HBDA10	05 10	EHW3HBDB05 EHW3HBDB09	05 09	EHW3HBDC05 EHW3HBDC09	05 09
W42HCD	EHW3HC-A05 EHW3HCDA10 EHW3HCDA15	05 10 15	EHW3HC-B05 EHW3HCDB09 EHW3HCDB15	05 09 15	EHW3HCDC05 EHW3HCDC09 EHW3HCDC15	05 09 15
W48HCD	EHW4HCDA05 EHW6HCDA10 EHW4HCDA15	05 10 15	EHW4HCDB05 EHW4HC-B09 EHW4HCDB15	05 09 15	EHW3HC-C05 EHW4HC-C09 EHW4HCDC15	05 09 15
W60HCD	EHW6HCDA05 EHW6HCDA10 EHW6HCDA15	05 10 15	EHW6HCDB09 EHW6HC-B15	09 15	EHW6HCDC09 EHW4HCDC15	09 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.

## //////// Field Generator Use

Generator power is often used in the field for critical cooling and heating applications. When using generator power it is important to understand the capability of the generator used. Review and follow all instructions and guidelines provided with the generator. The following must be considered when selecting a generator provide power to HVAC equipment;

- When calculating the kW size of the generator, it is important to use the MCA values of the unit models being used. This value can be found in the electrical specifications section of this document.
- When calculating inrush current that the generator will see during unit startup, use the Locked Rotor Amp values of the unit being used. This value can be found in the general specifications section in the beginning of this document.

It is important to remember to review power usage for all units that will be operating off of the generator. It is also important to consider all equipment that will consume power (not just HVAC equipment) when calculating a generator size. Bard does offer a Secure Start kit Bard part #8551-014 for units up to a 5 ton cooling capacity that is designed to reduce inrush current load during cooling mode.





## Ventilation Option Selection Chart

VENT CODE	FIELD INSTALLED KIT PART NUMBER	UNIT MODEL NUMBER	VENT OPERATION	VENT USE
X	<a href="#">FAD-NE2</a>	W18HB, W24HB	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.
	<a href="#">FAD-NE3</a>	W30HB, W36HB		
	<a href="#">FAD-NE5</a>	W42HC, W48HC, W60HC		
A	<a href="#">FAD-BE2</a>	W18HB, W24HB	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.
	<a href="#">FAD-BE3</a>	W30HB, W36HB		
	<a href="#">FAD-BE5</a>	W42HC, W48HC, W60HC		
B	<a href="#">BOP-2</a>	W18HB, W24HB	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.
	<a href="#">BOP-3</a>	W30HB, W36HB		
	<a href="#">BOPLATE-5</a>	W42HC, W48HC, W60HC		
M	<a href="#">CRV-F2-*</a>	W18HB, W24HB	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.
	<a href="#">CRV-F3-*</a>	W30HB, W36HB		
	<a href="#">CRV-F5</a>	W42HC, W48HC, W60HC		
V	<a href="#">CRV-V2-*</a>	W18HB, W24HB	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.
	<a href="#">CRV-V3-*</a>	W30HB, W36HB		
	<a href="#">CRV-V5</a>	W42HC, W48HC, W60HC		
D	<a href="#">ECON-NC2-*</a>	W18HB, W24HB	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. 7" intake hood (included) required for ECON-NC2 and ECON-NC3 options. No intake hood is required for ECON-NC5 option.
	<a href="#">ECON-NC3-*</a>	W30HB, W36HB		
	<a href="#">ECON-NC5</a>	W42HC, W48HC, W60HC		
S	<a href="#">ECON-S2-*</a>	W18HB, W24HB	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 partial 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.
	<a href="#">ECON-S3-*</a>	W30HB, W36HB		
Y	<a href="#">ECON-DB2-*</a>	W18HB, W24HB	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. 7" intake hood (included) required for ECON-DB2 and ECON-DB3 options. No intake hood is required for ECON-DB5 option.
	<a href="#">ECON-DB3-*</a>	W30HB, W36HB		
	<a href="#">ECON-DB5</a>	W42HC, W48HC, W60HC		
Z	<a href="#">ECON-WD2-*</a>	W18HB, W24HB	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. 7" intake hood (included) required for ECON-DB2 and ECON-DB3 options. No intake hood is required for ECON-DB5 option.
	<a href="#">ECON-WD3-*</a>	W30HB, W36HB		
	<a href="#">ECON-WD5</a>	W42HC, W48HC, W60HC		
R	<a href="#">ERV-FA2-*</a>	W18HB, W24HB - 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. 3" intake hood (included) required for ERV-F2 and ERV-F3 options. No intake hood is required for ERV-F5 option.
	<a href="#">ERV-FA3-*</a>	W30HB, W36HB - 208/230VAC voltage units		
	<a href="#">ERV-FA5</a>	W42HC, W48HC, W60HC 208/230VAC voltage units		
	<a href="#">ERV-FC2-*</a>	W18HB, W24HB - 460VAC voltage units		
	<a href="#">ERV-FC3-*</a>	W30HB, W36HB - 460VAC voltage units		
	<a href="#">ERV-FC5</a>	W42HC, W48HC, W60HC - 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



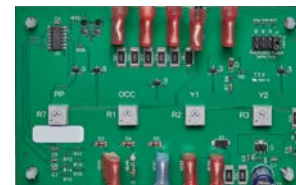
## ////// Commercial Ventilator Specifications, CRV-V

### “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

## ///// Economizer Specifications, ECON-DB, ECON-S, 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

### “S” and “Z” Vent Code Option – Economizer with JADE Controls and Enthalpy Outdoor Sensor (ECON-S and 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 “S” economizer option (ECON-S) is available for the W18 thru W36 models and provides up to 75% outdoor air intake without the need for an intake hood. The “Z” economizer option (ECON-WD) is available for all unit models and provides 100% outdoor air intake. W18 thru W36 models include 7” intake hood. 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

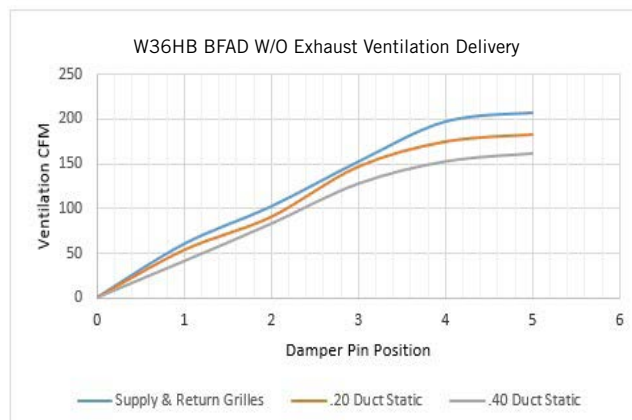
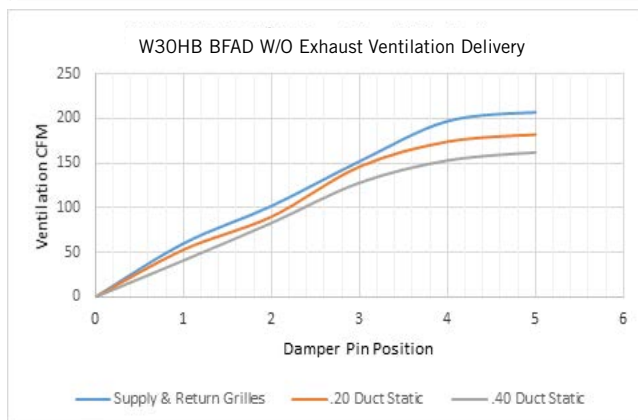
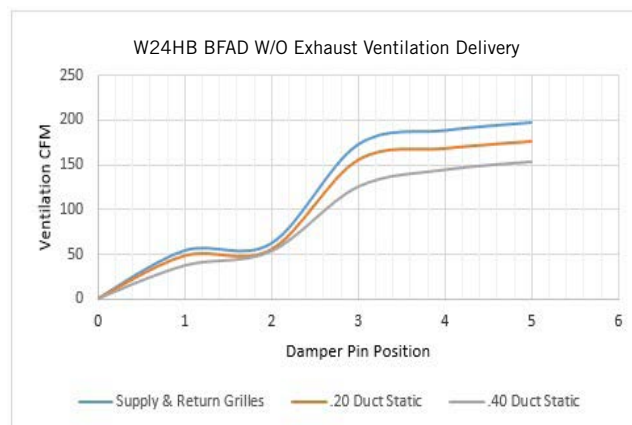
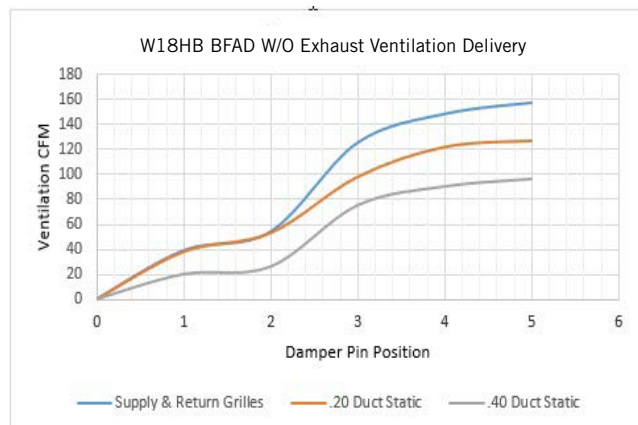
The optional return air sensor kit provides a optional sensor that is field installed in the return airstream. When installed, the JADE economizer will monitor and adjust outdoor air intake based on comparing room temperature and outdoor temperature. This kit is optional, but may be required to meet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

### General Ventilation Option Guidelines

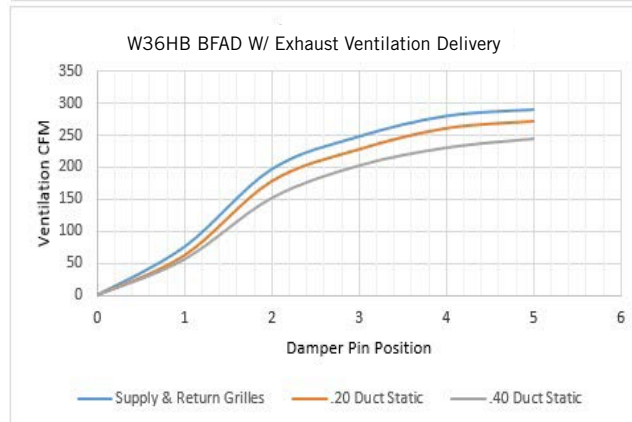
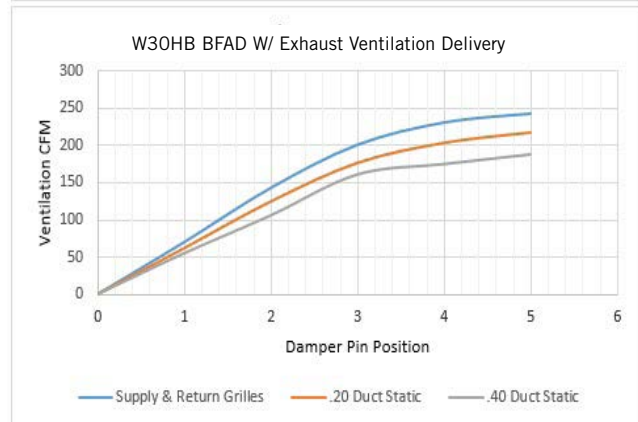
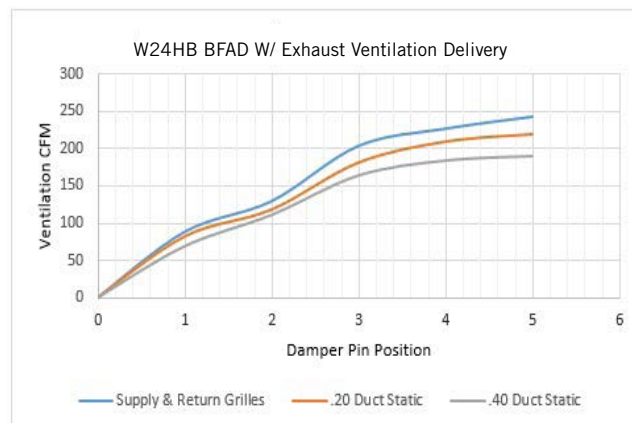
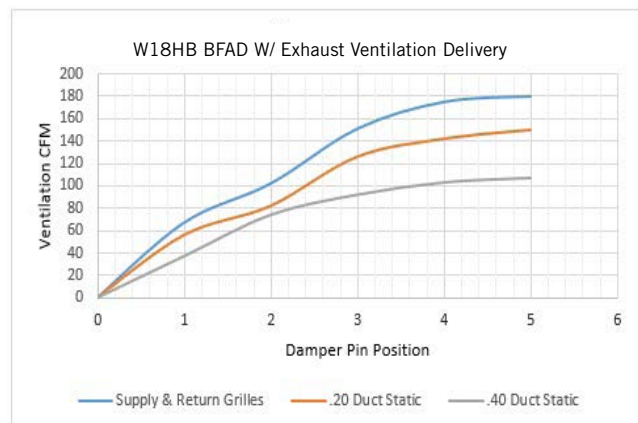
Applying heating and cooling equipment for various applications in the field requires careful planning to ensure the results provide are acceptable for occupants and heat generating equipment inside a room or structure. Products must be reviewed to meet all national, state, and local codes. When providing 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.

# Barometric Damper Airflow Charts for W18 - W36

## "X" (FAD-NE2 and FAD-NE3) Barometric Damper Without Exhaust Vent Code Options



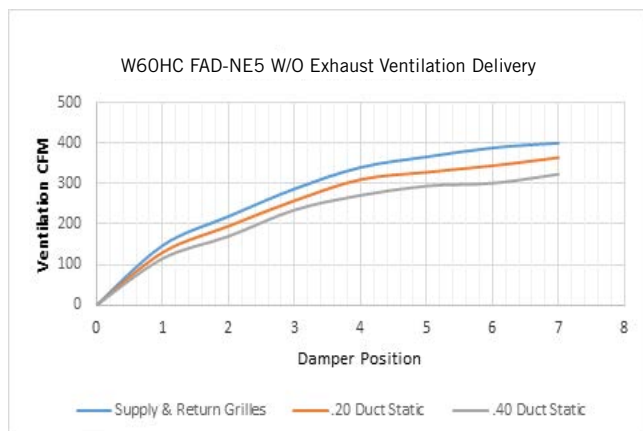
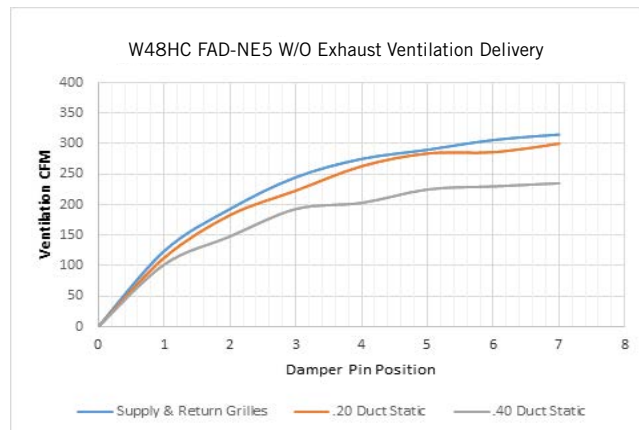
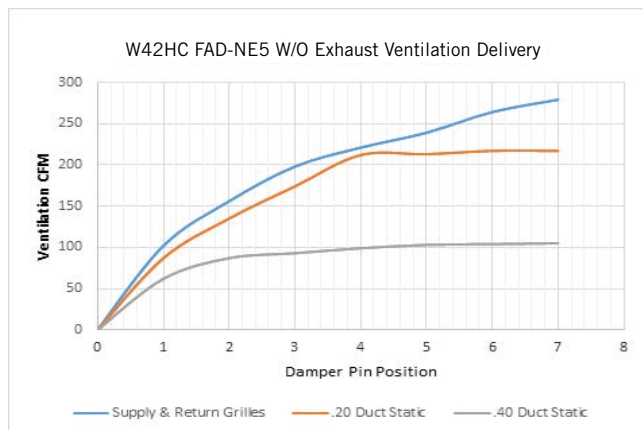
## "A" (FAD-BE2 and FAD-BE3) Barometric Damper With Exhaust Vent Code Options



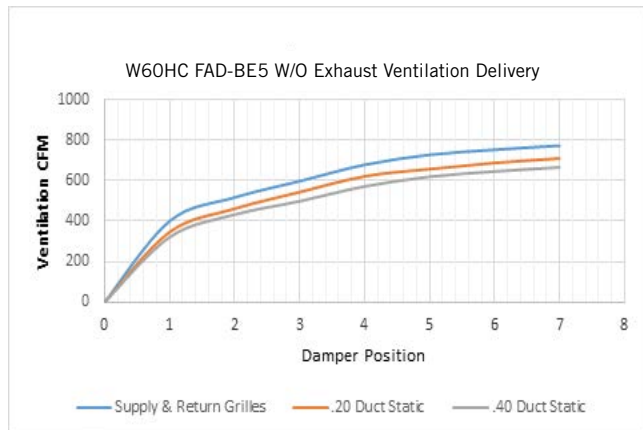
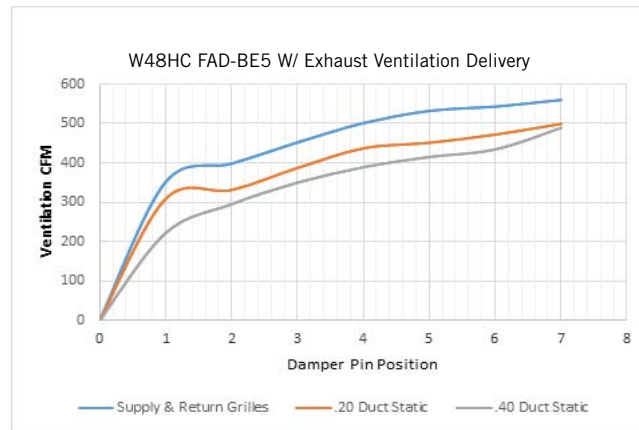
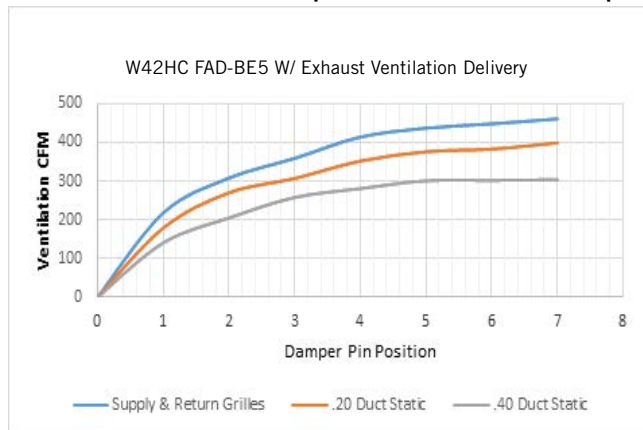


# Barometric Damper Airflow Charts for W42 - W60

## "X" (FAD-NE5) Barometric Damper Without Exhaust Vent Code Options

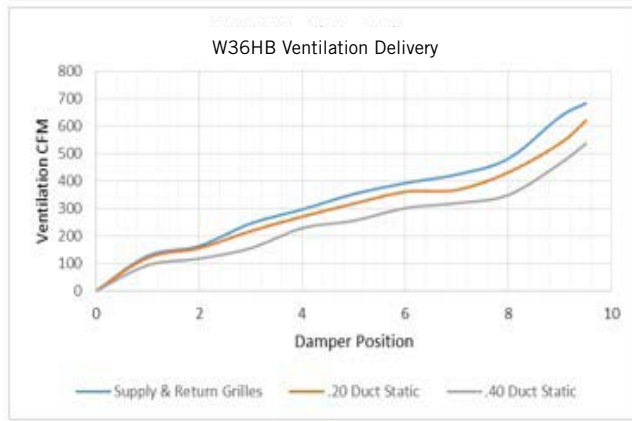
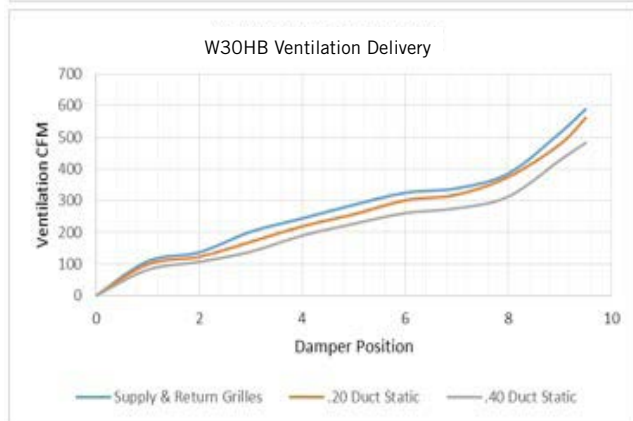
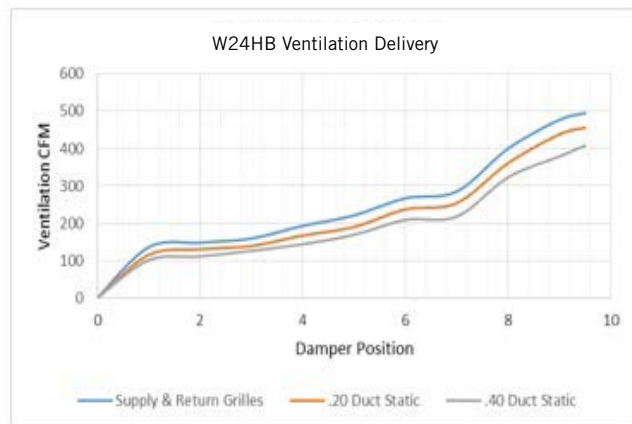
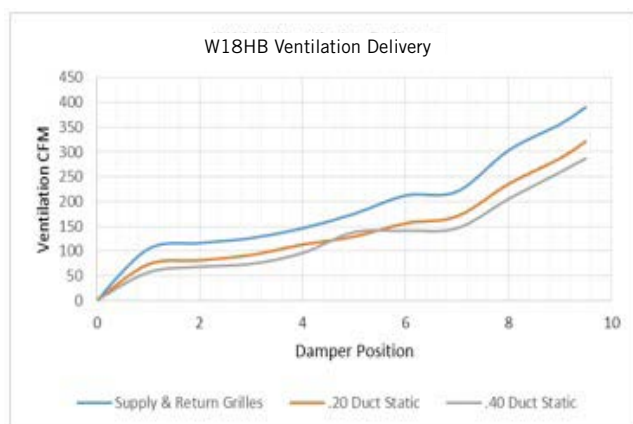


## "A" (FAD-BE5) Barometric Damper With Exhaust Vent Code Options

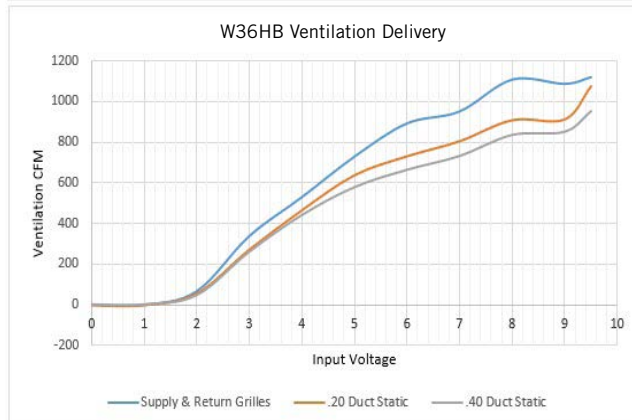
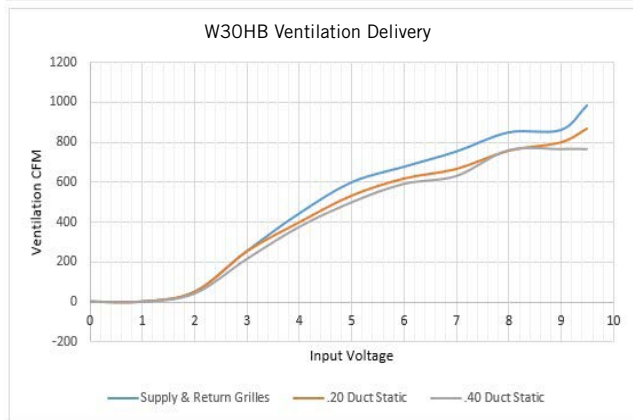
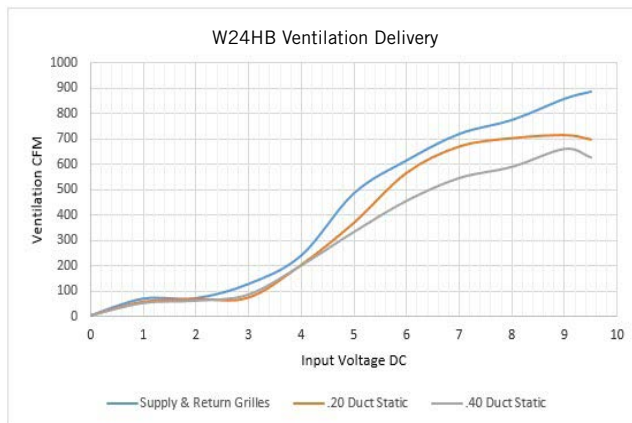


# Commercial Room Ventilator and Economizer Airflow Charts for W18 - W36

## "M" (CRV-F), "V" (CRV-V), "S" (ECON-S) Vent Code Options

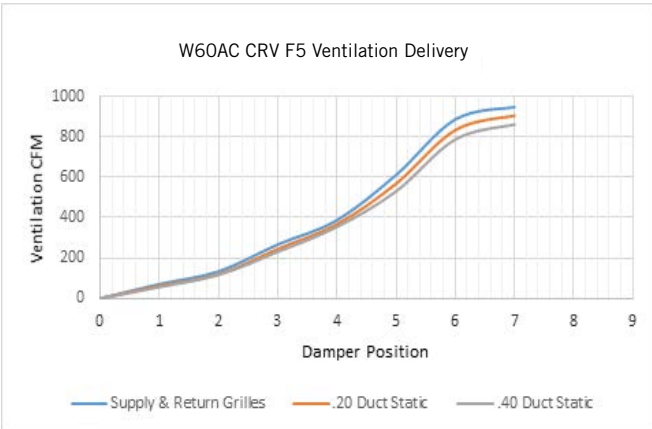
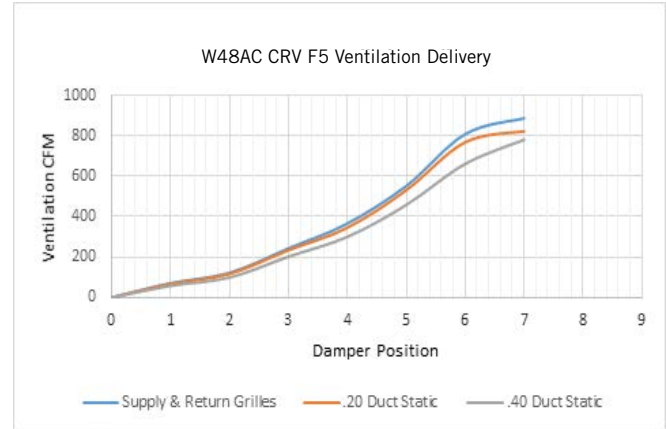
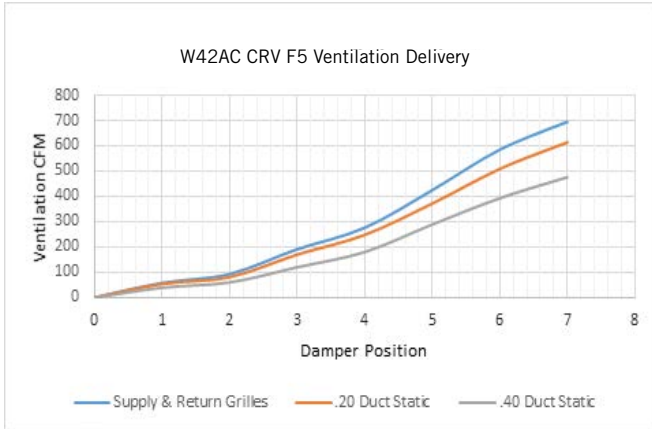


## "D" (ECON-NC), "Y" (ECON-DB) and "Z" (ECON-WD) Vent Code Options

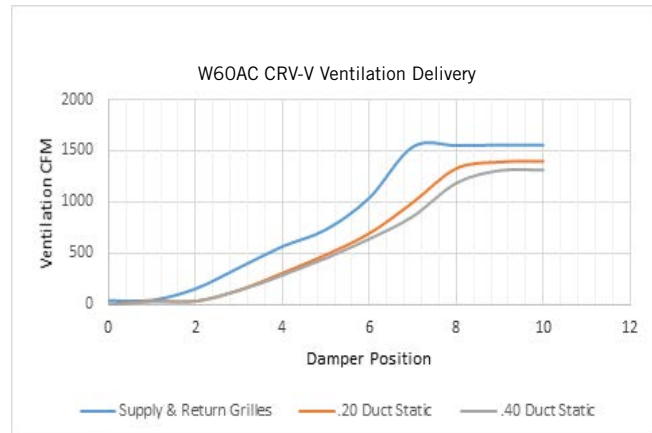
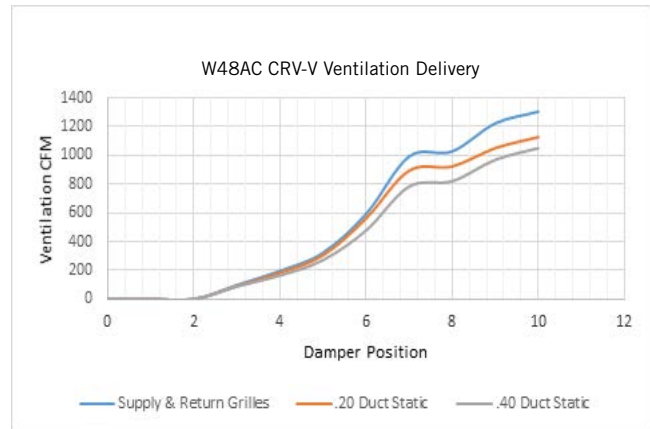
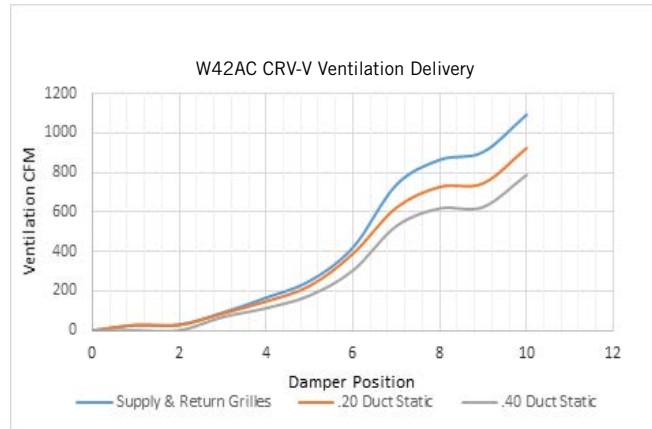


# Commercial Room Ventilator and Economizer Airflow Charts for W42 - W60

## "M" (CRV-F) Vent Code Options

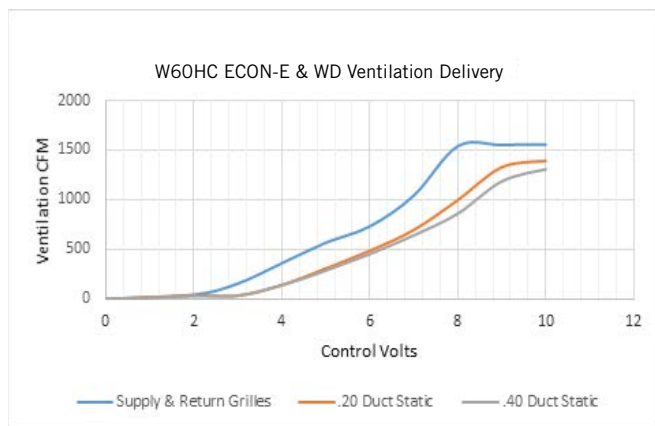
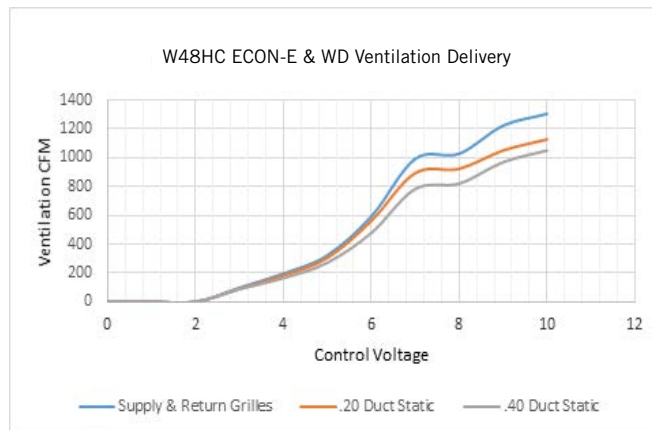
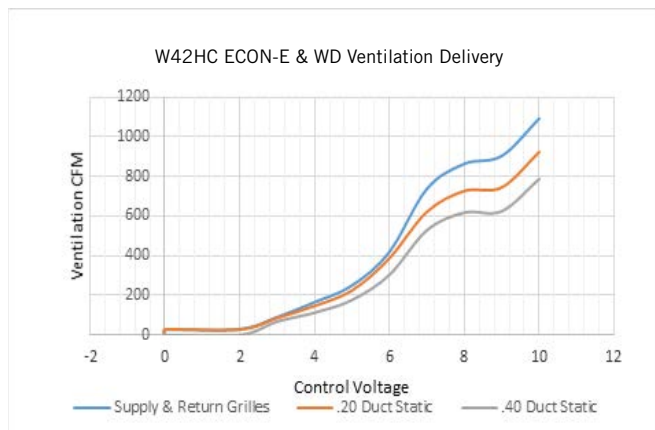


## "V" (CRV-V) Vent Code Options



## //////// Economizer Airflow Charts for W42 - W60 (Continued)

“Y” (ECON-DB), “Z” (ECON-WD), and “D” (ECON-NC) Vent Code Options



# 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 - W18 and W24

"R" (ERV-FA2 and ERV-FC2) Vent Code Options for W18 & W24

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

AMBIENT O.D.		VENTILATION RATE -- 250 CFM 62% EFFICIENCY						VENTILATION RATE -- 225 CFM 63% EFFICIENCY						VENTILATION RATE -- 200 CFM 63% EFFICIENCY					
DB/WB	F	VLT	VLS	VLL	HRT	HRS	HRL	VLT	VLS	VLL	HRT	HRS	HRL	VLT	VLS	VLL	HRT	HRS	HRL
105	75	11925	8100	1325	7394	5022	822	10727	7287	3441	6758	4591	2168	9540	6480	3060	6010	4082	1928
	70	8100	8100	0	5022	5022	0	7287	7287	0	4591	4591	0	6480	6480	0	4082	4082	0
	65	8100	8100	0	5022	5022	0	7287	7287	0	4591	4591	0	6480	6480	0	4082	4082	0
100	80	17550	6750	10800	10881	4185	6696	15788	6072	9716	9946	3826	6121	14040	5400	8640	8845	3402	5443
	75	11925	6750	5175	7394	4185	3209	10727	6072	4655	6758	3826	2933	9540	5400	4140	6010	3402	2608
	70	6863	6750	113	4255	4185	70	6173	6072	101	3889	3826	64	5490	5400	90	3458	3402	56
	65	6750	6750	0	4185	4185	0	6072	6072	0	3826	3826	0	5400	5400	0	3402	3402	0
95	80	17550	5400	12150	10881	3348	7533	15788	4858	10930	9946	3060	6886	14040	4320	9720	8845	2722	6124
	75	11925	5400	6525	7394	3348	4046	10727	4858	5870	6758	3060	3698	9540	4320	5220	6010	2722	3289
	70	6863	5400	1463	4255	3348	907	6173	4858	1315	3889	3060	829	5490	4320	1170	3458	2722	737
	65	5400	5400	0	3348	3348	0	4858	4858	0	3060	3060	0	4320	4320	0	2722	2722	0
90	80	17550	4050	13500	10881	2511	8370	15788	3643	12145	9946	2295	7651	14040	3240	10800	8845	2041	6804
	75	11925	4050	7875	7394	2511	4883	10727	3643	7084	6758	2295	4463	9540	3240	6300	6010	2041	3969
	70	6863	4050	2813	4255	2511	1744	6173	3643	2530	3889	2295	1594	5490	3240	2250	3458	2041	1417
	65	4050	4050	0	2511	2511	0	3643	3643	0	2295	2295	0	3240	3240	0	2041	2041	0
85	80	17550	2700	14850	10881	1674	9207	15788	2429	13359	9946	1530	8416	14040	2160	11880	8845	1361	7484
	75	11925	2700	9225	7394	1674	5720	10727	2429	8298	6758	1530	5228	9540	2160	7380	6010	1361	4649
	70	6863	2700	4163	4255	1674	2581	6173	2429	3744	3889	1530	2359	5490	2160	3300	3458	1361	2098
	65	2700	2700	0	1674	1674	0	2429	2429	0	1530	1530	0	2160	2160	0	1361	1361	0
80	80	17550	1350	10575	7394	837	6557	10727	1214	9513	6758	765	5993	9540	1080	8460	6010	680	5330
	75	6863	1350	5513	4255	837	3418	6173	1214	4959	3889	765	3124	5490	1080	4410	3458	680	2778
	70	2363	1350	1013	1465	837	628	2125	1214	911	1339	765	547	1890	1080	810	1190	680	510
	60	1350	1350	0	837	837	0	1214	1214	0	765	765	0	1080	1080	0	680	680	0
75	70	6863	0	6863	4255	0	4255	6173	0	6173	6889	0	3889	5490	0	5490	3458	0	3458
	65	2363	0	2363	1465	0	1465	2125	0	2125	1339	0	1339	1890	0	1890	1190	0	1190
	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

WERVP-A2 WINTER HEATING PERFORMANCE (INDOOR DESIGN CONDITIONS 70°F DB)

AMBIENT O.D.	VENTILATION RATE					
	250 CFM 74% EFF.		225 CFM 75% EFF.		200 CFM 75% EFF.	
DB/F	WVL	WHR	WVL	WHR	WVL	WHR
65	1350	999	1214	911	1080	810
60	2700	1998	2429	1822	2160	1620
55	4050	2997	3643	2733	3240	2430
50	5400	3996	4858	3643	4320	3240
45	6750	4995	6072	4554	5400	4050
40	8100	5994	7287	5465	6480	4860
35	9450	6993	8501	6376	7560	5670
30	10800	7992	9716	7287	8640	6480
25	12150	8991	10930	8198	9720	7290
20	13500	9990	12145	9108	10800	8100
15	14850	10989	13359	10019	11880	8910

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





# Energy Recovery Ventilator (ERV) Performance - W30 and W36

"R" (ERV-FA3 and ERV-FC3) Vent Code Options for W30 & W36

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

AMBIENT O.D.		VENTILATION RATE -- 400CFM 63% EFFICIENCY						VENTILATION RATE -- 325 CFM 64% EFFICIENCY						VENTILATION RATE -- 250 CFM 65% EFFICIENCY					
DB/ WB	F	VLT	VLS	VLL	HRT	HRS	HRL	VLT	VLS	VLL	HRT	HRS	HRL	VLT	VLS	VLL	HRT	HRS	HRL
105	75	19080	12960	6120	12020	8164	3855	15502	10530	4972	9921	6739	3182	11925	8100	3825	7751	5265	2486
	70	12960	12960	0	8164	8164	0	10530	10530	0	6739	6739	0	8100	8100	0	5265	5265	0
	65	12960	12960	0	8164	8164	0	10530	10530	0	6739	6739	0	8100	8100	0	5265	5265	0
100	80	28080	10800	17280	17690	6804	10886	22815	8775	14040	14601	5616	8985	17550	6750	10800	11407	4387	7019
	75	19080	10800	8280	12020	6804	5216	15502	8775	6727	9921	5616	4305	11925	6750	5175	7751	4387	3363
	70	10980	10800	180	6717	6804	113	8921	8775	146	5709	5616	93	6862	6750	112	4460	4387	73
	65	10800	10800	0	6804	6804	0	8775	8775	0	5616	5616	0	6750	6750	0	4387	4387	0
95	80	28080	8640	19440	17690	5443	12247	22815	7020	15795	14601	4492	10108	17550	5400	12150	11407	3510	7897
	75	19080	8640	10440	12020	5443	6577	15502	7020	8482	9921	4492	5428	11925	5400	6525	7751	3510	4241
	70	10980	8640	2340	6917	5443	1474	8921	7020	1901	5709	4492	1216	6862	5400	1462	4460	3510	950
	65	8640	8640	0	5443	5443	0	7020	7020	0	4492	4492	0	5400	5400	0	3510	3510	0
90	80	28080	6480	21600	17690	4082	13608	22815	5265	17550	14601	3369	11232	17550	4050	13500	11407	2632	8774
	75	19080	6480	12600	12020	4082	7938	15502	5265	10237	9921	3369	6552	11925	4050	7875	7751	2632	5118
	70	10980	6480	4500	6917	4082	2835	8921	5265	3656	5709	3369	2340	6862	4050	2812	4460	2632	1828
	65	6480	6480	0	4082	4082	0	5265	5265	0	3369	3369	0	4050	4050	0	2632	2632	0
85	80	28080	4320	23760	17690	2721	14968	22815	3510	19305	14601	2246	12355	17550	2700	14850	11407	1755	9652
	75	19080	4320	14760	12020	2721	9298	15502	3510	11992	9921	2246	7675	11925	2700	9225	7751	1755	5996
	70	10980	4320	6660	6917	2721	4195	8921	3510	5411	5709	2246	3463	6862	2700	4162	4460	1755	2705
	65	4320	4320	0	2721	2721	0	3510	3510	0	2246	2246	0	2700	2700	0	1755	1755	0
80	80	28080	2160	16920	12020	1360	10659	15502	1755	13747	9921	1123	8798	11925	1350	10575	7751	877	6873
	75	10980	2160	8820	6917	1360	5556	8921	1755	7166	5709	1123	4586	6862	1350	5512	4460	877	3583
	70	3780	2160	1620	2381	1360	1020	3071	1755	1316	1965	1123	842	2362	1350	1012	1535	877	658
	60	2160	2160	0	1360	1360	0	1755	1755	0	1123	1123	0	1350	1350	0	877	877	0
75	70	10980	0	10980	6917	0	6917	8921	0	8921	5709	0	5709	6862	0	6862	4460	0	4460
	65	3780	0	3780	2381	0	2380	3071	0	3071	1965	0	1965	2362	0	2362	1535	0	1535
	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

WERVP-\*3 WINTER HEATING PERFORMANCE (INDOOR DESIGN CONDITIONS 70°F DB)

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

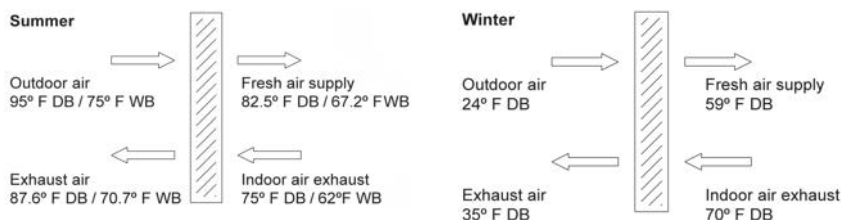
NOTE: Sensible performance only is shown for winter application.

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



Energy Recovery Ventilator Cassette



Typical load reductions for ERV-F3



# Energy Recovery Ventilator (ERV) Performance - W42 to W60

"R" (ERV-FA5 and ERV-FC5) Vent Code Options for W42, W48, and W60  
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	WHR	WVL	WHR	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.

## Filter Replacement Part Number Chart

UNIT MODEL	FILTER CODE	FILTER MERV RATING	NUMBER OF FILTERS USED	BARD PART NUMBER	FILTER SIZE	FILTRATION LEVEL
W18, W24	X	MERV 2	1	7004-011	16 x 25 x 1	Low Filtration, 1” Thickness Disposable Media.
	W	MERV 2	1	7003-032	16 x 25 x 1	Low Filtration, 1” Thickness Permanent Media.
	P	MERV 8	1	7004-025	16 x 25 x 2	Average Filtration, 2” Thickness Pleated Disposable Media.
	M	MERV 11	1	7004-059	16 x 25 x 2	Above Average Filtration, 2” Thickness Pleated Disposable Media.
	N	MERV 13	1	7004-061	16 x 25 x 2	High Filtration, 2” Thickness Pleated Disposable Media.
W30, W36	X	MERV 2	1	7004-019	16 x 30 x 1	Low Filtration, 1” Thickness Disposable Media.
	W	MERV 2	1	7003-031	16 x 30 x 1	Low Filtration, 1” Thickness Permanent Media.
	P	MERV 8	1	7004-026	16 x 30 x 2	Average Filtration, 2” Thickness Pleated Disposable Media.
	M	MERV 11	1	7004-048	16 x 30 x 2	Above Average Filtration, 2” Thickness Pleated Disposable Media.
	N	MERV 13	1	7004-062	16 x 30 x 2	High Filtration, 2” Thickness Pleated Disposable Media.
W42, W48, W60	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 top, structural sides, and front service panels are constructed using 20 guage materials. Base is constructed using 16 guage galvanized steel. 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



X—Beige



1—White



4—Gray



5—Desert

### 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.



8—Bronze



S—Stainless

### Aluminum Finish

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



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. After the evaporator coil is assembled, the entire coil is dipped in the coating process. 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 dipped 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. After the condenser coil is assembled, the entire coil is dipped in the coating process. 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. After the evaporator coil is assembled, the entire coil is dipped in the coating process. 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 dipped hot gas reheat coil. A Technicoat AA protective coating is applied to the entire condenser coil. After the condenser coil is assembled, the entire coil is dipped in the coating process. 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. After the evaporator coil is assembled, the entire coil is dipped in the coating process. 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 dipped hot gas reheat coil. A Technicoat AA protective coating is applied to the entire condenser coil. After the condenser coil is assembled, the entire coil is dipped in the coating process. 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. After the evaporator coil is assembled, the entire coil is dipped in the coating process. 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 dipped hot gas reheat coil. A Technicoat AA protective coating is applied to the entire condenser coil. After the condenser coil is assembled, the entire coil is dipped in the coating process. 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.

**High Pressure Control Switch (HPC):** The high-pressure control is standard in all units, and interrupts compressor operation if high side refrigerant pressures exceed switch settings. The switch is normally closed (NC) and opens during a high-pressure event. Events that can cause the switch to open include poor condenser coil cleaning maintenance, poor filter maintenance, condenser fan failure, or a restriction in the refrigeration system.

**Low Pressure Control Switch (LPC):** The low-pressure control is standard in all units, and interrupts compressor operation if low side refrigerant pressures reach an extremely low level. The switch is normally closed (NC) and opens during a low-pressure event. A typical event that can cause switch use includes loss of refrigerant in the system.

**Heat Pump Control Board (HCB):** The heat pump control board is standard in all heat pump units, and interrupts compressor operation if the high- or low-pressure switch circuits are open. It also controls defrost operation and uses a defrost sensor connected to the condenser coil. See unit manual for further details regarding the operation of the high and low-pressure control and defrost operation. The heat pump control board includes a diagnostic light to indicate modes of operation and status of the high- and low-pressure switches. Board logic includes a make-on-break and delay on make timer.

**Alarm Relay (ALR):** The alarm relay is an optional accessory that can be factory or field installed in the unit control panel. It consists of a relay that is energized based on a signal from the compressor control module. Once energized, the alarm relay will provide both normally open (NO) and normally closed (NC) contacts on the low voltage terminal strip to indicate an event has locked out compressor operation.

**Low Ambient Control (LAC):** The low ambient control is an optional accessory that can be factory or field installed in the unit condenser section. When installed, the LAC monitors high side system pressures and helps maintain a specific pressure range during compressor operation. To maintain high side system pressures, condenser fan operation is either turned on and off in cycles, or the speed of the condenser fan modulates. Low ambient controls are recommended for applications where compressor cooling is required at lower outdoor temperatures below 60°F (15.5°C). Models with the low ambient control option also include a freeze stat attached to the coldest refrigerant circuit of the indoor evaporator coil. If freezing temperatures are sensed by the freeze stat, compressor operation is disabled momentarily to help prevent ice buildup on the indoor evaporator coil.

**Dirty Filter Indicator Switch (DFS):** The dirty filter indicator switch is an optional accessory that can be factory or field installed in the unit filter area. The switch measures pressure before and after the filter. During a restricted filter event, normally closed (NC) contacts will open indicating the filter requires maintenance. Once maintenance is complete, the switch is manually reset to indicate maintenance is complete. Pressure differential is adjustable to match user preference for filter replacement.

**Crankcase Heater (CCH):** The crankcase heater is an optional accessory that can be field installed around the base of the compressor. When installed, the CCH provides heat to the compressor base when the compressor is not operational. Heating the compressor helps prevent refrigerant migration when the unit is not running. Standard compressor functionality does not require the crankcase heater, but it is recommended for compressor operation in extremely cold environments including northern Canada.

**Outdoor Thermostat (ODT):** The outdoor thermostat is an optional accessory that can be field installed in the unit control panel and condenser section. The outdoor thermostat measures outdoor temperatures and includes relay contacts (NC) breaking the compressor signal during cold outdoor conditions. This is useful when using both heat pump and electric heat operation to limit compressor heating use. The thermostat is in the control panel area and the sensor bulb is mounted to the fan shroud in the outdoor condenser section. Adjustment range is 0°F to 50°F. Default setting is 10°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.



## ///// 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 heat pump defrost control board with delay on make and break, and high/low pressure diagnostics is also standard.

CONTROL CODE FOR STANDARD AND DEHUMIDIFICATION MODELS	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, Defrost Board, <b>Low Ambient Control</b>
<b>F (W42 thru W60 only)</b>	Hi Pressure Switch, Low Pressure Switch, Defrost Board, <b>Low Ambient Control, Dirty Filter Press. Switch</b>
<b>J</b>	Hi Pressure Switch, Low Pressure Switch, Defrost Board, <b>Low Ambient Control, Alarm Relay</b>
<b>Q</b>	Hi Pressure Switch, Low Pressure Switch, Defrost Board, <b>Outdoor Thermostat</b>
<b>R</b>	Hi Pressure Switch, Low Pressure Switch, Defrost Board, <b>Low Ambient Control, Outdoor Thermostat</b>
<b>S</b>	Hi Pressure Switch, Low Pressure Switch, Defrost Board, <b>PTCR Start Kit</b>
<b>T</b>	Hi Pressure Switch, Low Pressure Switch, Defrost Board, <b>Low Ambient Control, Outdoor Thermostat, PTCR Start Kit</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>CMH-33</b>	W18H	Low Ambient Control allows compressor cooling between 0°F and 50°F outdoor temp. - modulating
<b>E</b>	<b>CMH-34</b>	W24H, W30H, W36H	Low Ambient Control allows compressor cooling between 0°F and 50°F outdoor temp. - fan cycling
<b>E</b>	<b>CMH-35</b>	W42H, W48H, W60H	Low Ambient Control allows compressor cooling between 0°F and 50°F outdoor temp. - fan cycling
<b>NA</b>	<b>CMC-15</b>	W18H, W24H, W30H, W36H	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>CMC-32</b>	W42H, W48H, W60H	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>SK-111</b>	W18H, W24H, W30H, W36H	Start Capacitor and Potential Relay Start Kit. Increases starting torque by 9x. 230V-60hz-1 phase (A voltage) only. Cannot be used in combination with CMC start kit
<b>NA</b>	<b>CMH-28</b>	W18H, W24H, W30H, W36H	Outdoor Thermostat Kit used to disable compressor cooling below 50°F outdoor temp. Adjustable between 50° and 0°F
<b>NA</b>	<b>CMH-36</b>	W42H, W48H, W60H	Outdoor Thermostat Kit used to disable compressor cooling below 50°F outdoor temp. Adjustable between 50° and 0°F
<b>NA</b>	<b>CMC-34</b>	W18H, W24H, W30H, W36H	Cooling Failure Alarm Relay Kit
<b>NA</b>	<b>CMC-35</b>	W42H, W48H, W60H	Cooling Failure Alarm Relay Kit
<b>NA</b>	<b>CMC-36</b>	W18H, W24H, W30H, W36H	Crank case heater kit. 230V 1-PH units only.
<b>NA</b>	<b>CMC-40</b>	W18H, W24H, W30H, W36H	Crank case heater kit. 230V 3-PH units only.
<b>NA</b>	<b>CMC-37</b>	W18H, W24H, W30H, W36H	Crank case heater kit. 460V 3-PH units only.
<b>NA</b>	<b>CMC-38</b>	W42H, W48H, W60H	Crank case heater kit. 230V 1-PH units only.
<b>NA</b>	<b>CMC-41</b>	W42H, W48H, W60H	Crank case heater kit. 230V 3-PH units only.
<b>NA</b>	<b>CMC-39</b>	W42H, W48H, W60H	Crank case heater kit. 460V 3-PH units only.
<b>NA</b>	<b>CMC-29</b>	W18H, W24H, W30H, W36H, W42H, W48H, W60H	Evaporator coil freezestat kit - Freezestat is a standard option on all units with a Low Ambient Control (LAC) or hot gas reheat dehumidification.



## 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-31	W18H, W24H, W30H, W36H	Dirty Filter Alarm Pressure Sensor Kit. Provides Normally Open Contacts to send an alarm signal to a thermostat or controller.
NA	CMC-33	W42H, W48H, W60H	Dirty Filter Alarm Pressure Sensor Kit. Provides Normally Open Contacts to send an alarm signal to a thermostat or controller.
NA	8620-343	W18H, W24H, W30H, W36H, W42H, W48H, W60H	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	W18H, W24H, W30H, W36H, W42H, W48H, W60H	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.

## 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
NA	8620-340	W18H, W24H, W30H, W36H	Return Air Sensor Kit for use with all economizers with the JADE controller.
NA	8620-334	W42H, W48H, W60H	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	8002-012	W18H, W24H, W30H, W36H	Compressor sound cover. Weatherized vinyl insulated cover that helps reduce compressor sound level.
NA	8002-013	W42H, W48H, W60H	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
8620-263	W18H, W24H	Standard Unit Crate, all vents except economizer.
8620-275	W18H, W24H	Units with Economizer vent (Factory Installed 7" Hood).
8620-262	W30H, W36H	Standard Unit Crate, all vents except economizer
8620-276	W30H, W36H	Units with Economizer vent (Factory Installed 7" Hood).
8620-304	W42H, W48H	Standard Unit Crate, all ventilation options
8620-305	W60H	Standard Unit Crate, all ventilation options



# Cabinet and Clearance Dimensions - W18 to W36 Units

## CLEARANCES REQUIRED FOR SERVICE ACCESS AND ADEQUATE CONDENSER INLET AIRFLOW

MODELS	LEFT SIDE	RIGHT SIDE
W18HB, W24HB, W30HB, W36HB	15"	20"

**NOTE:** For side-by-side installation of two (2) WA models, there must be 20" between units. This can be reduced to 15" by using a WL model (left side compressor and controls) for the left unit and WA (right side compressor and controls) for right unit.

- 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 drain age during heat pump operation.

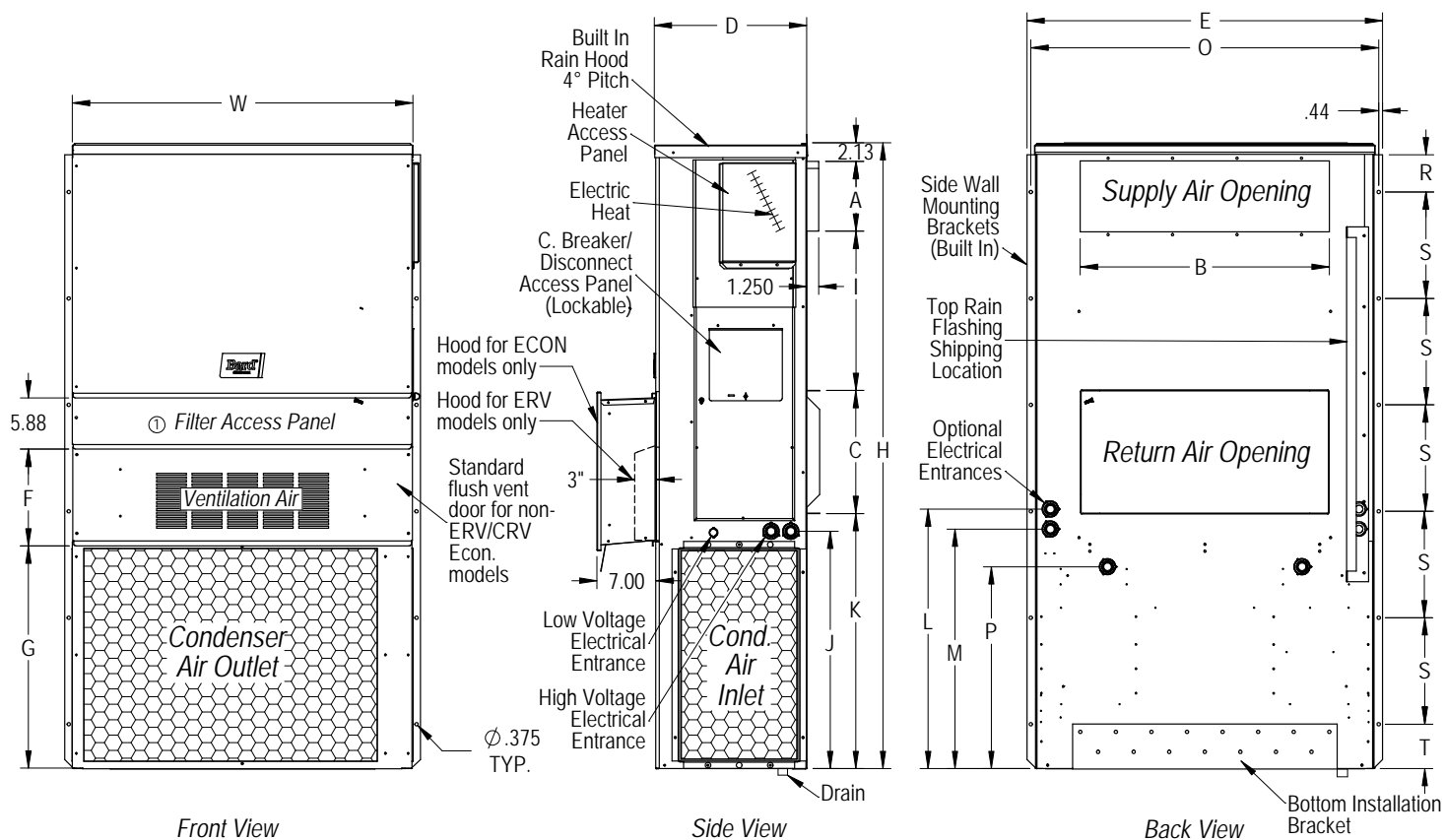
## MINIMUM CLEARANCES REQUIRED TO COMBUSTIBLE MATERIALS

MODELS ①	SUPPLY AIR DUCT FIRST THREE FEET	CABINET
W18HB, W24HB	0"	0"
W30HB, W36HB	1/4"	0"

① Refer to the Installation Manual for more detailed information.

## DIMENSIONS OF W18-36H BASIC UNIT FOR ARCHITECTURAL & INSTALLATION REQUIREMENTS (NOMINAL)

MODEL	WIDTH (W)	DEPTH (D)	HEIGHT (H)	SUPPLY		RETURN																
				A	B	C	D	E	F	G	I	J	K	L	M	N	O	P	Q	R	S	T
W18HB W24HB	33.300	17.125	74.563	7.88	19.88	11.88	19.88	35.00	10.88	29.75	20.56	30.75	32.06	33.25	31.00	2.63	34.13	26.06	10.55	3.94	12.00	9.00
W30HB W36HB	38.200	17.125	74.563	7.88	27.88	13.88	27.88	40.00	10.88	29.75	17.93	30.75	32.75	33.25	31.00	2.75	39.13	26.75	9.14	3.94	12.00	9.00



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## /////// Cabinet and Clearance Dimensions - W42 to W60 Series Units

### CLEARANCES REQUIRED FOR SERVICE ACCESS AND ADEQUATE CONDENSER INLET AIRFLOW

MODELS	LEFT SIDE	RIGHT SIDE
W42HC, W48HC, W60HC	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.

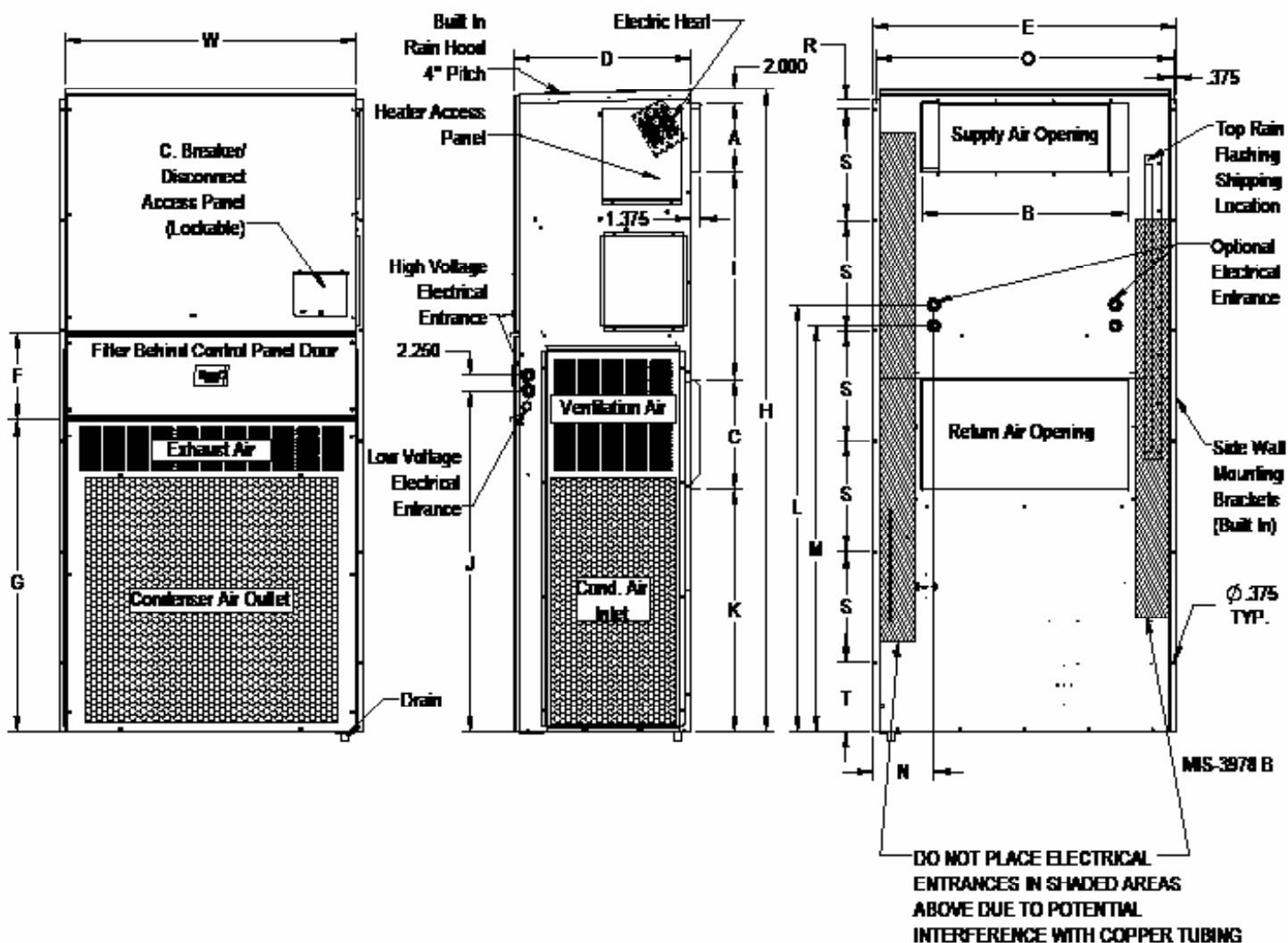
### MINIMUM CLEARANCES REQUIRED TO COMBUSTIBLE MATERIALS

MODELS ①	SUPPLY AIR DUCT FIRST THREE FEET	CABINET
W42HC, W48HC, W60HC	1/4"	0"

### DIMENSIONS OF W42AC-72AC BASIC UNIT FOR ARCHITECTURAL & INSTALLATION REQUIREMENTS (NOMINAL)

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
W42HC W48HC	42	25.52	84.88	9.88	29.88	15.88	29.88	43.88	12.63	39.06	30	53.75	26.94	55.59	52.59	8.82	43	1.438	16	1.88
W60HC	42	25.52	93.00	9.88	29.88	15.88	29.88	43.88	12.63	45	30	59.75	35.06	61.72	58.72	8.82	43	1.438	16	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
<b>WMICF2-*</b>	W18H, W24H	Provides vibration isolation for reduced sound transmission through wall
<b>WMICF3-*</b>	W30H, W36H	Provides vibration isolation for reduced sound transmission through wall
<b>WMICF5-*</b>	W42H, W48H, W60H	Provides vibration isolation for reduced sound transmission through wall
<b>WWC3-*</b>	W30H, W36H	Install to use with existing 2, 3, or 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.
<b>WWC5-*</b>	W42H, W48H, W60H	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
<b>WAPR11-*</b>	W18, W24, W30, W36, W42, W48, W60	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 thru W60 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
<b>SG-2</b>	W18H, W24H	8" x 20" with 1" Flange 4 way deflection supply grille.
<b>SG-3</b>	W30H, W36H	8" x 28" with 1" Flange 4 way deflection supply grille.
<b>SG-5</b>	W42H, W48H, W60H	10" x 30" with 1" Flange 4 way deflection supply grille.
<b>RG-2</b>	W18H, W24H	12" x 20" with 1" Flange return grille.
<b>RG-3</b>	W30H, W36H	12" x 28" with 1" Flange return grille.
<b>RG-5</b>	W42H, W48H, W60H	16" x 30" with 1" Flange return grille.
<b>SG-2W</b>	W18H, W24H	8" x 20" with 2" Flange 4 way deflection supply grille.
<b>SG-3W</b>	W30H, W36H	8" x 28" with 2" Flange 4 way deflection supply grille.
<b>SG-5W</b>	W42H, W48H, W60H	10" x 30" with 2" Flange 4 way deflection supply grille.
<b>RG-2W</b>	W18H, W24H	12" x 20" with 2" Flange return grille.
<b>RG-3W</b>	W30H, W36H	12" x 28" with 2" Flange return grille.
<b>RG-5W</b>	W42H, W48H, W60H	16" x 30" with 2" Flange return grille.
<b>RFG-2W</b>	W18H, W24H	12" x 20" with 2" Flange return grille with filter bracket.*
<b>RFG-3W</b>	W30H, W36H	12" x 28" with 2" Flange return grille with filter bracket.*
<b>RFG-5W</b>	W42H, W48H, W60H	16" x 30" with 2" Flange return grille with filter bracket.*
<b>RGDK-2W</b>	W18H, W24H	12" x 20" with 2" manual shutter style damper that is mounted in the return duct behind the return grille (sold separately). Adjustable to restrict return air from room.
<b>RGDK-3W</b>	W30H, W36H	12" x 28" with 2" manual shutter style damper that is mounted in the return duct behind the return grille (sold separately). Adjustable to restrict return air from room.
<b>RGDK-5W</b>	W42H, W48H, W60H	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
<b>SG-2 SG-2W</b>	800 CFM	0°	1053	.076" WC	37-52 ft.
		22.5°	1143	.1" WC	28-40 ft.
		45°	1428	.162" WC	20-29 ft.
	865 CFM	0°	1138	.054" WC	40-55 ft.
		22.5°	1236	.075" WC	31-42 ft.
		45°	1544	.113" WC	21-30 ft.
<b>SG-3 SG-3W</b>	885 CFM	0°	852	.054" WC	37-54 ft.
		22.5°	1075	.075" WC	35-49 ft.
		45°	1162	.113" WC	21-30 ft.
	1285 CFM	0°	1237	.108" WC	42-66 ft.
		22.5°	1359	.147" WC	35-50 ft.
		45°	1687	.249" WC	25-37 ft.
<b>SG-5 SG-5W</b>	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.
W18HB	49.6	47.3	48.6	46.2	62.8
W24HB	52.4	50.4	51.9	48.9	62.3
W30HB	53.9	52.9	54.5	47.3	67.1
W36HB	53.9	52.9	54.5	47.3	67.1
W42HC	56.1	51.7	56.3	51.1	68.6
W48HC	57	52.7	57.8	52.8	69
W60HC	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
MC4002	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.
MC5300	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.
MC5600	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
8403-060	3 Heat/3 Cool	Programmable or Nonprogrammable, ventilation output, dehumidification operation
8403-089	1 Heat/1 Cool	Temp. Settings per Day 4, 2, 1, 0 Programs per Week 7, 5-2, 5-1-1 or Nonprogrammable
8403-090	2 Heat/2 Cool	Temp. Settings per Day 4, 2, 1, 0 Programs per Week 7, 5-2, 5-1-1 or Nonprogrammable
8403-091	1 Heat/1 Cool	Easy to use, Nonprogrammable. FEMA use
8403-092	2 Heat/2 Cool	Programmable or Nonprogrammable, ventilation output, Wi-Fi
8403-095	2 Heat/1 Cool	Temp. Settings per Day 4, 2, 1, 0 Programs per Week 7, 5-2, 5-1-1 or Nonprogrammable

HUMIDISTAT	OPERATION	DESCRIPTION
8403-038	Humidity %RH	Easy to use w/SPDT switching. Ratings: Pilot duty 50VA @24V, 120VA @ 120/240V
8403-047	Humidity %RH	Electronic with display, EEPROM memory, lockable keypad, humidity sensor calibration

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

THERMOSTAT COVER*	SIZE	DESCRIPTION
8405-003	(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
8405-005	(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.
8405-006	(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

\* 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.



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

