



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.



BARDHVAC.COM

FORM NO. S3584-0723



Climate Control Solutions

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Wall-Mount Nomenclature

Digit #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	W	6	0	H	C	-	A	O	Z	X	P	X	X	X	X

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 - OKw with Lug Connection
0Z - OKw 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.

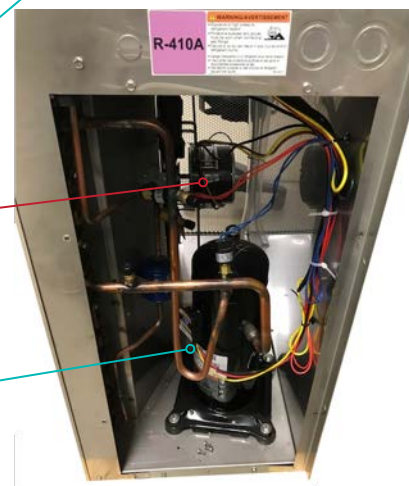
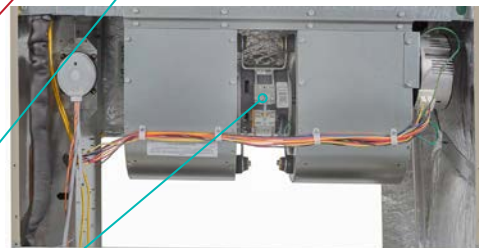
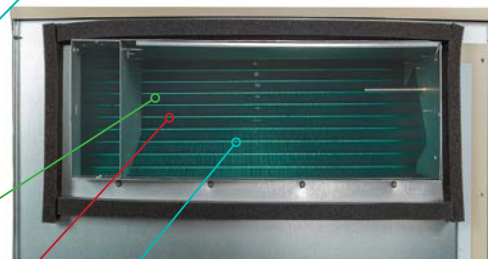
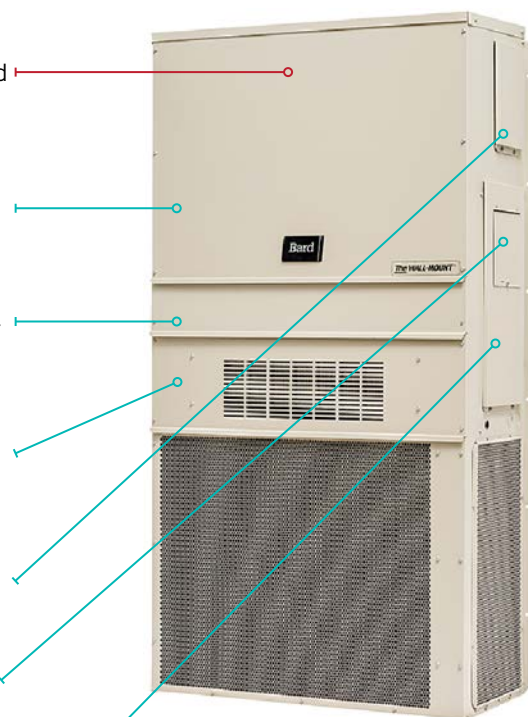
***Balanced Climate™ Technology (patent pending):** High latent capacity humidity & sound reduction removes up to 35% more humidity than any other on the market with the use of a 2 stage thermostat or controlling device. Bard Balanced Climate™ innovation comes standard on all models.

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

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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.

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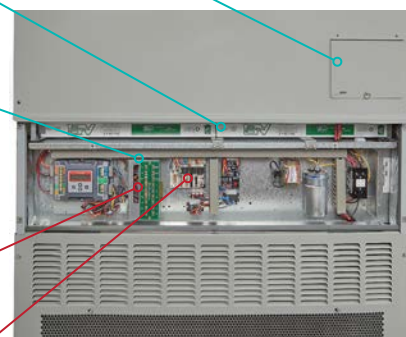
Reliable, Easy-to-Use Controls: Easily accessible through front control panel location. A lockable hinged access cover to circuit protection is provided. Phase rotation monitor is standard on all 3 phase models. Solid state heat pump operation and defrost control board with diagnostic light is standard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

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///// 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
Unit Voltage Rating - Phase - 60Hz	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
Compressor Electrical Circuit										
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
Outdoor Fan Motor & Condenser Fan										
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
Indoor Blower Motor & Indoor Airflow										
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)
Basic Unit Weight without Vent lbs. (kg)	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
Unit Voltage Rating - Phase - 60Hz	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
Compressor Electrical Circuit						
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
Outdoor Fan Motor & Condenser Fan						
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
Indoor Blower Motor & Indoor Airflow						
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)
Basic Unit Weight without Vent lbs (kg)	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
Compressor Electrical Circuit			
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
Outdoor Fan Motor & Condenser Fan			
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
Indoor Blower Motor & Indoor Airflow			
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)
Basic Unit Weight without Vent lbs. (kg)	515 (234)	515 (234)	515 (234)
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
W18HB	4.375 lbs. (1.98 kg)	N/A
W24HB	5.250 lbs. (2.38 kg)	5.375 lbs. (2.43 kg)
W30HB	7.000 lbs. (3.17 kg)	6.875 lbs. (3.11 kg)
W36HB	8.000 lbs. (3.62 kg)	7.500 lbs. (3.40 kg)
W42HC	7.625 lbs. (3.45 kg)	7.625 lbs. (3.45 kg)
W48HC	9.75 lbs. (4.42 kg)	9.500 lbs. (4.30 kg)
W60HC	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.

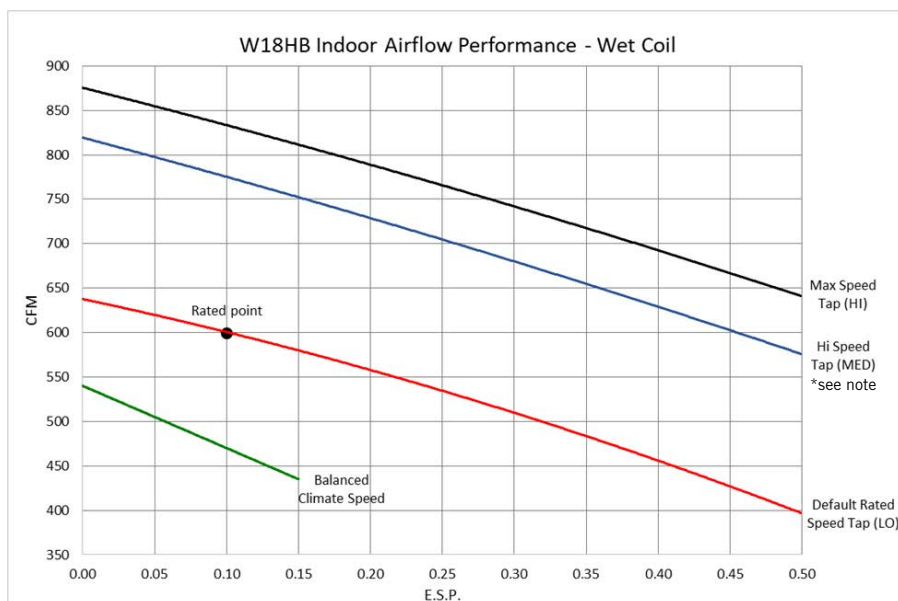
Total External Static Pressure Calculation:

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:

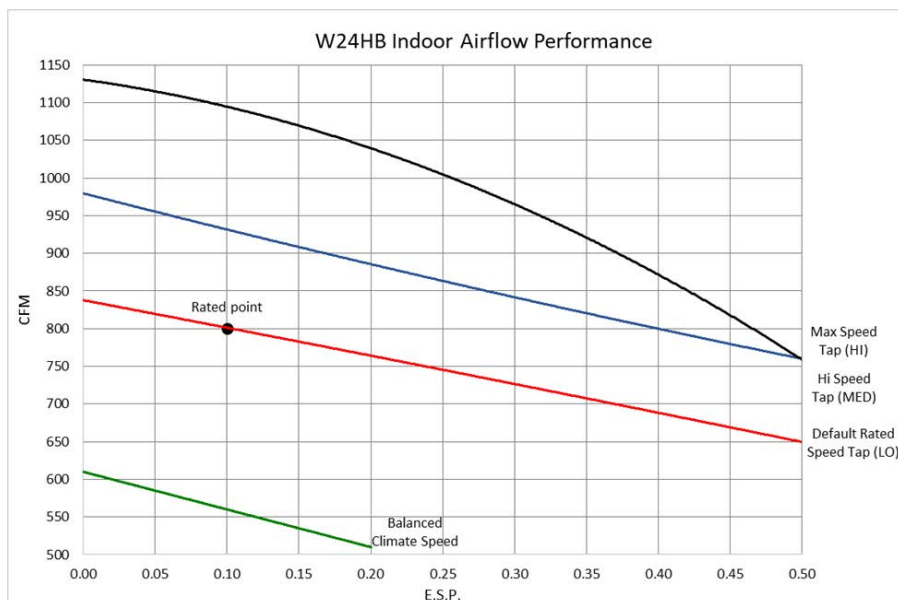
Supply Duct Static + Return Duct Static + Filter Static + Additional External Static = Total External Static Pressure (ESP)

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
	DRY COIL AIRFLOW	-.04" WC
W	MERV 2 (Washable)	-.02" WC
X	MERV 2 (Disposable)	0" WC
P	MERV 8	+.03" WC
M	MERV 11	+.05" WC
N	MERV 13	+.08" WC



Indoor Airflow Speeds:

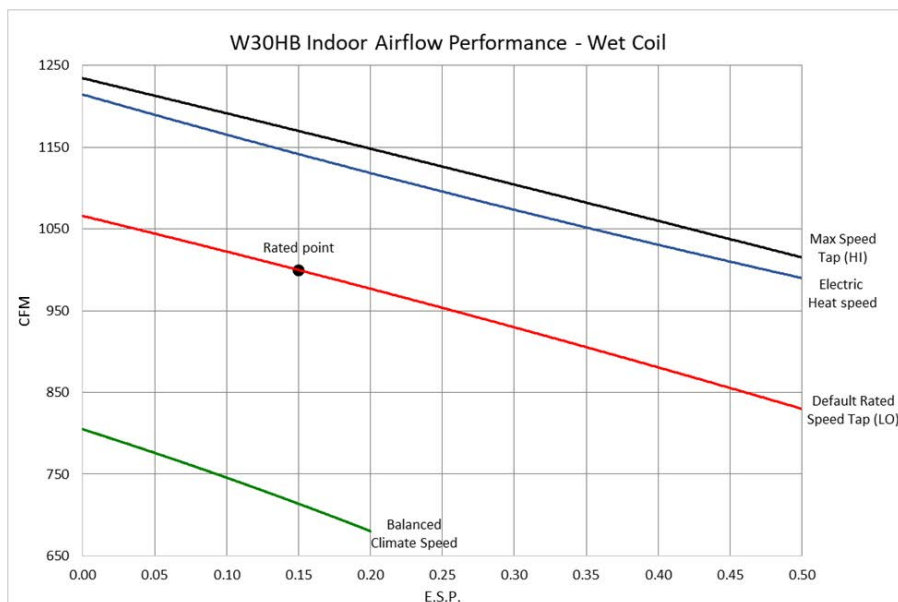
Balanced Climate Speed: The WA series uses this speed when the **Balanced Climate option (Y1)** or **mechanical dehumidification option (D)** is used. Not recommended for static levels higher than Balanced Climate airflow data provided.

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**.

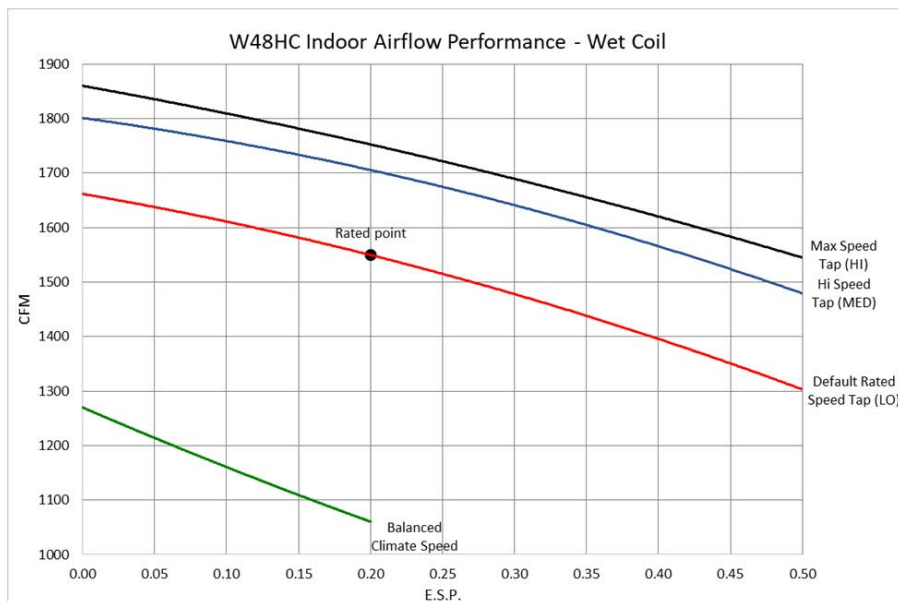
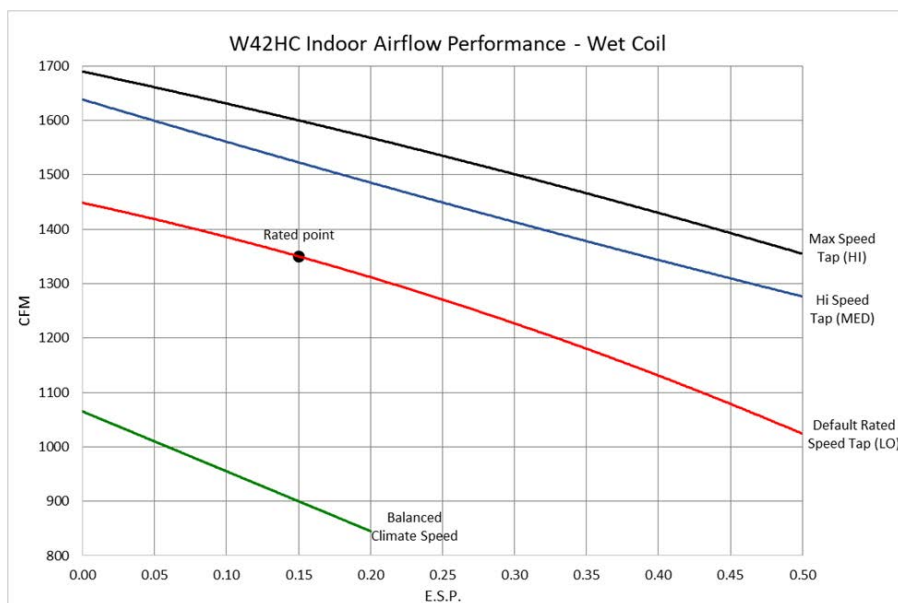
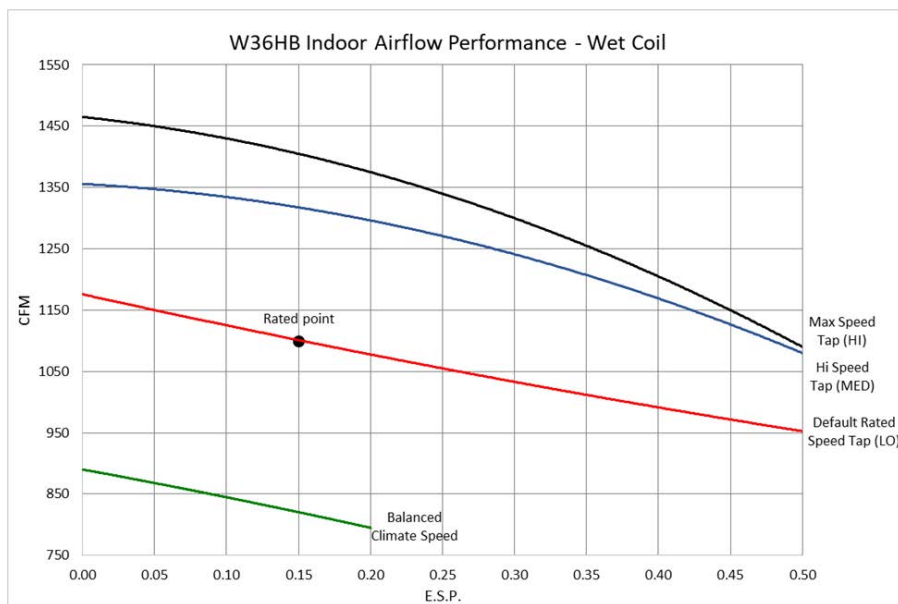
MED Speed (User Selectable): This speed is user selectable when using **standard cooling (Y2)** or **heating operation (B/W1/W2)**. This speed is labeled as MED on the speed selection terminal strip inside the unit control panel. The MED speed tap provides an **increase in unit airflow** per the airflow 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
	DRY COIL AIRFLOW	-.04" WC
W	MERV 2 (Washable)	-.02" WC
X	MERV 2 (Disposable)	0" WC
P	MERV 8	+.03" WC
M	MERV 11	+.05" WC
N	MERV 13	+.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.

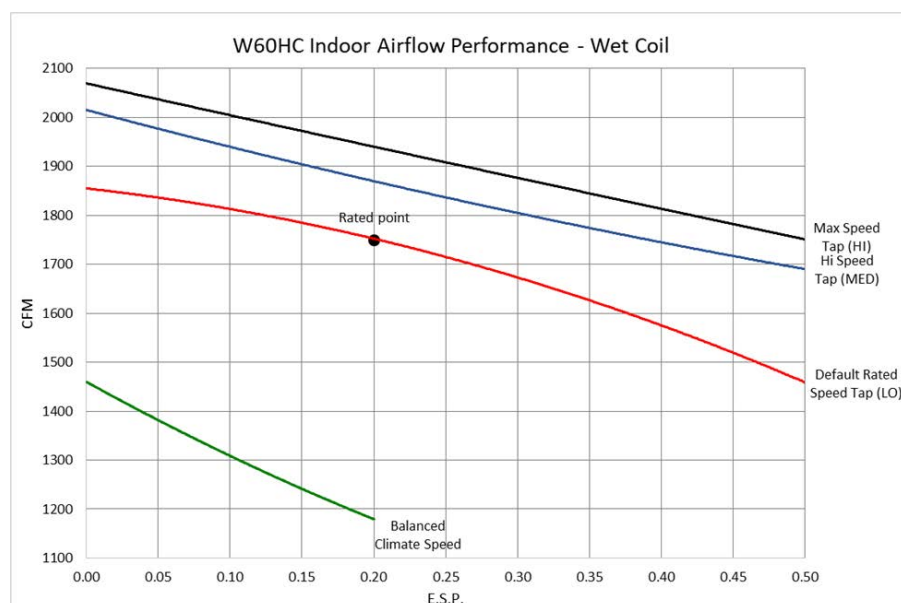
LO Speed (Default): The WA series uses this speed by default when using **standard cooling (Y2)** or **heating operation (W1/W2)**. This speed is labeled as LO on the speed selection terminal strip inside the unit control panel. The WA series also uses this speed when **fan only (G)** or **ventilation 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
	DRY COIL AIRFLOW	-.04" WC
W	MERV 2 (Washable)	-.02" WC
X	MERV 2 (Disposable)	0" WC
P	MERV 8	+.03" WC
M	MERV 11	+.05" WC
N	MERV 13	+.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	FAD-NE2	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.
	FAD-NE3	W30HB, W36HB		
	FAD-NE5	W42HC, W48HC, W60HC		
A	FAD-BE2	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.
	FAD-BE3	W30HB, W36HB		
	FAD-BE5	W42HC, W48HC, W60HC		
B	BOP-2	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.
	BOP-3	W30HB, W36HB		
	BOPLATE-5	W42HC, W48HC, W60HC		
M	CRV-F2-*	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.
	CRV-F3-*	W30HB, W36HB		
	CRV-F5	W42HC, W48HC, W60HC		
V	CRV-V2-*	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.
	CRV-V3-*	W30HB, W36HB		
	CRV-V5	W42HC, W48HC, W60HC		
D	ECON-NC2-*	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.
	ECON-NC3-*	W30HB, W36HB		
	ECON-NC5	W42HC, W48HC, W60HC		
S	ECON-S2-*	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.
	ECON-S3-*	W30HB, W36HB		
Y	ECON-DB2-*	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.
	ECON-DB3-*	W30HB, W36HB		
	ECON-DB5	W42HC, W48HC, W60HC		
Z	ECON-WD2-*	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.
	ECON-WD3-*	W30HB, W36HB		
	ECON-WD5	W42HC, W48HC, W60HC		
R	ERV-FA2-*	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.
	ERV-FA3-*	W30HB, W36HB - 208/230VAC voltage units		
	ERV-FA5	W42HC, W48HC, W60HC 208/230VAC voltage units		
	ERV-FC2-*	W18HB, W24HB - 460VAC voltage units		
	ERV-FC3-*	W30HB, W36HB - 460VAC voltage units		
	ERV-FC5	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

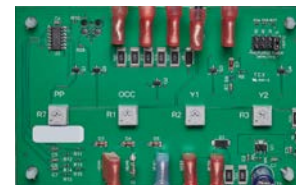
////// Commercial Ventilator Specifications, CRV-V

“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

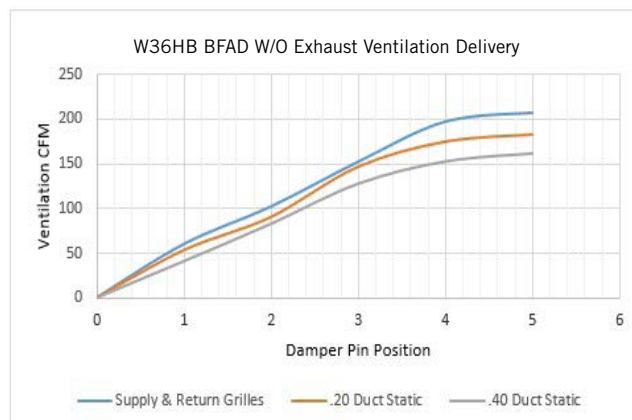
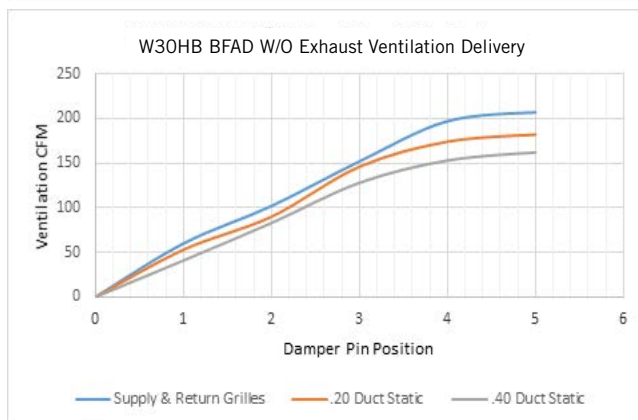
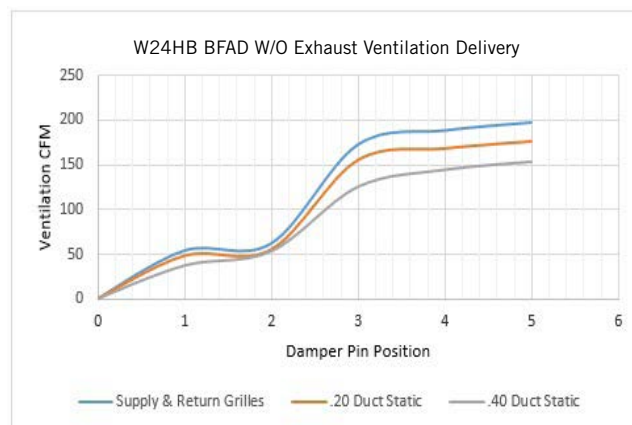
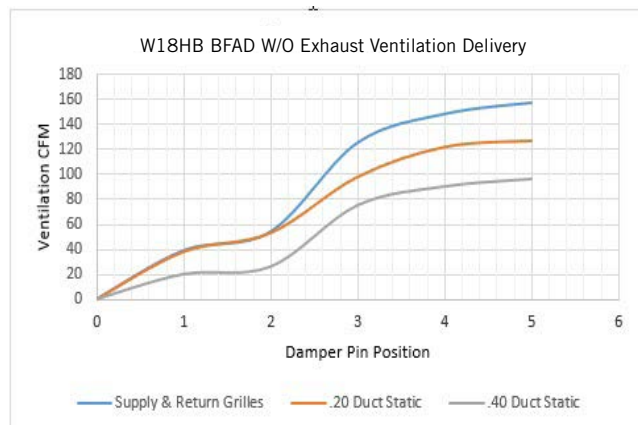
The optional return air sensor kit provides a optional sensor that is field installed in the return airstream. When installed, the JADE economizer will monitor and adjust outdoor air intake based on comparing room temperature and outdoor temperature. This kit is optional, but may be required to meet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

General Ventilation Option Guidelines

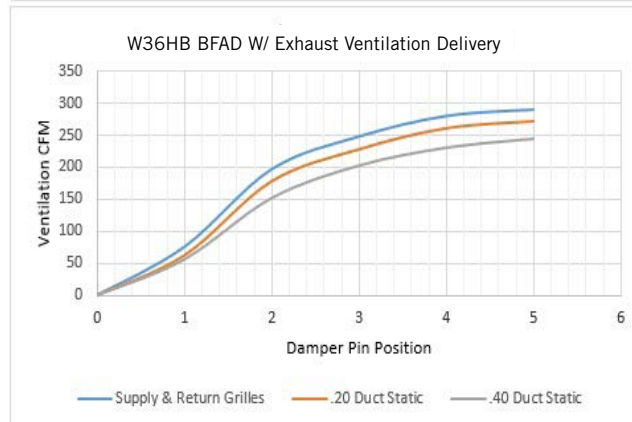
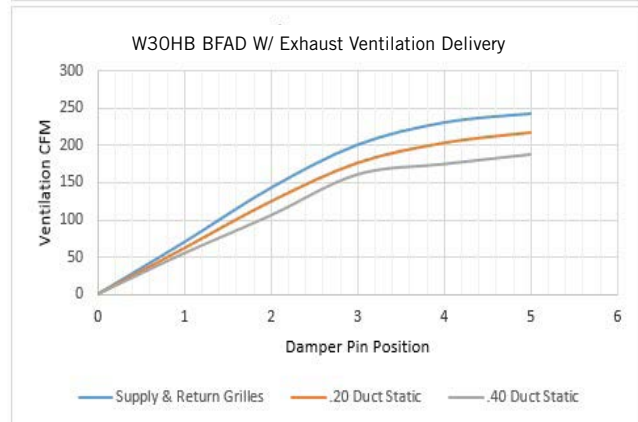
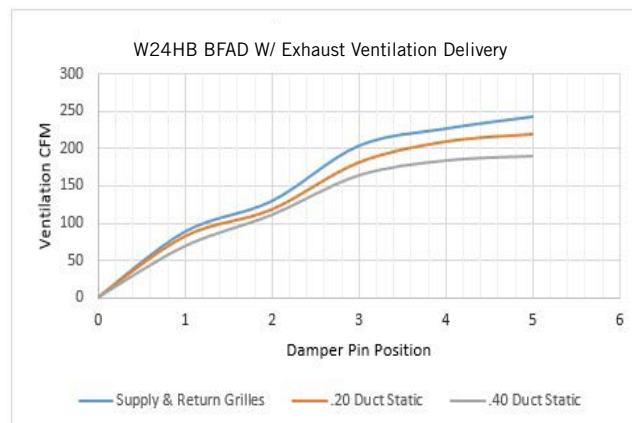
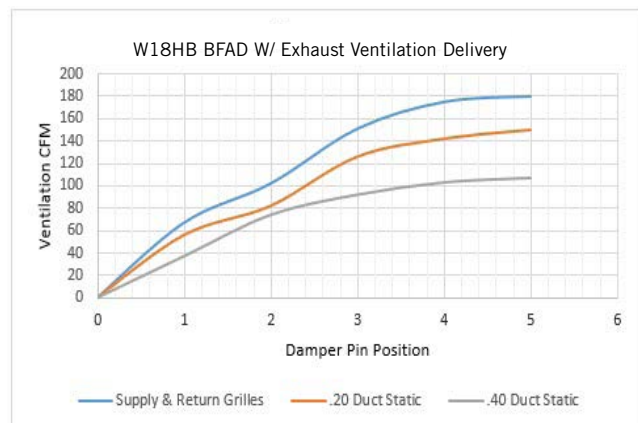
Applying heating and cooling equipment for various applications in the field requires careful planning to ensure the results provide are acceptable for occupants and heat generating equipment inside a room or structure. Products must be reviewed to meet all national, state, and local codes. When providing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

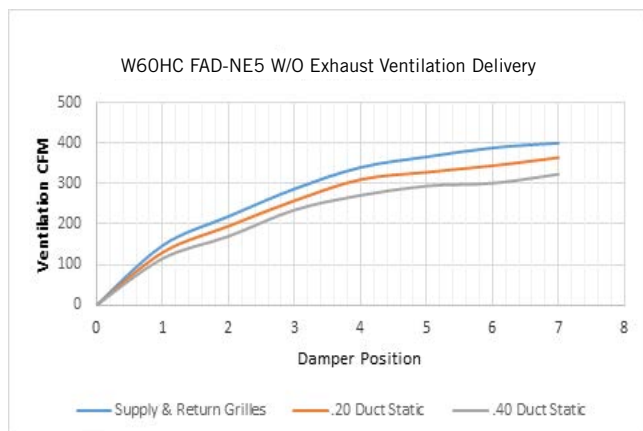
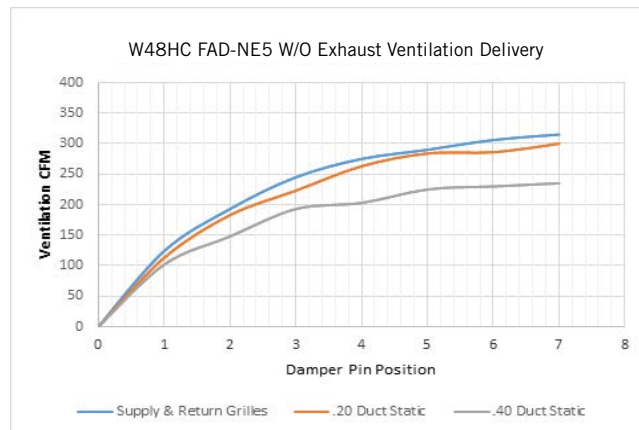
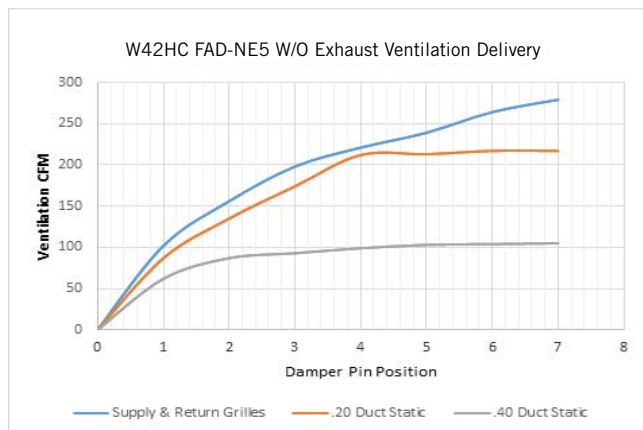


"A" (FAD-BE2 and FAD-BE3) Barometric Damper With Exhaust Vent Code Options



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

