



BARD MANUFACTURING COMPANY, INC. W3SAC-W5SAC Series Front Access Step Capacity Air Conditioner Engineering Specification Guide

1.0 QUALIFICATIONS

Manufacturer: Company specializing in manufacture of products specified in this section, with minimum of 5 years documented experience. Manufacturer shall have available, complete catalogue data with expanded ratings, installation and maintenance instructions.

2.0 GENERAL

Furnish and install self-contained, wall mounted air conditioner, suitable for outdoor use. Unit to be manufactured by Bard Manufacturing Company, Inc in accordance with plans. The unit shall be approved and listed by Intertek ETL Listed (ETL US/C). Unit shall be factory assembled, pre-charged, pre-wired, tested and ready to operate. The manufacturer of equipment shall be ISO 9001: 2015 Certified. Unit performance shall be certified by an independent third party testing agency, in accordance with the Air Conditioning Heating and Refrigeration Institute (AHRI) Standard 390-2003 for Single Package Vertical Units. Unit cooling efficiency shall be specified by EER.

Manufacturers: Capacities shall as indicated on drawings and units shall be manufactured by Bard Manufacturing Company, Inc. or prior approved equal.

2.0 CONSTRUCTION FEATURES

2.1 CABINET

Construction shall be a single, enclosed, weatherproof casing constructed of 20-gauge galvanized steel, stainless steel, or aluminum (choose one). Unit base is constructed of 16-gauge galvanized steel for painted and aluminum cabinets, stainless steel for stainless cabinets. Each exterior casing panel to be bonderized and finished with baked-on exterior polyester enamel paint prior to assembly. The baked-on cured paint finish shall pass the industry rub test with a minimum of 72 rubs MEK (Methyl Ethyl Ketone) or standard rub test of a minimum of 100 rubs using Toluene. Cooling section shall be fully insulated with a non –fiberglass material with heavy duty foil facing for durability and ease of cleaning. Fiberglass insulation is not acceptable. Openings shall be provided for power

connections. Access openings appropriate for outside structure to all fan motors and compressor for making repairs and for removing internal components without removing unit from its permanent installation. Fresh air intake and outdoor coil shall be protected from intrusions by a sturdy metal grating with less than 1/4 inch openings.

Colors (Select One)

X- Beige (standard)

1- White

4- Buckeye Gray

5- Desert Brown

8- Dark Bronze

A- Aluminum

S- Stainless Steel

Painted cabinet construction shall be a minimum of 20 gauge Zinc coated steel, painted units shall have baked on paint, designed and tested to withstand 1000 hours of salt spray test per ASTM B117-03.

Stainless steel construction shall be 316 grade, with stainless steel screws and fasteners for all exposed areas. The condenser fan blade shall be treated with corrosion resistant material, and condenser fan motor mounts shall be stainless steel.

Aluminum exterior cabinet shall be ASTM B 2019 grade aluminum with stucco appearance.

2.2 DRAIN PAN

Drain pan shall be constructed of 20-gauge galvanized steel, bonderized and finished with baked-on exterior polyester enamel paint. Stainless steel cabinet unit drain pans shall be constructed of 20-gauge 316 stainless steel.

2.3 INSULATION

Insulation shall be non-fiberglass material with foil faced for ease of cleaning. Insulation materials used shall not contain fiberglass or formaldehyde. Insulation materials shall meet UL723 standards.

2.3.1 Filters

Filters shall be Minimum Efficiency Reporting Value of MERV 8 per ASHRAE standard 52.2. Filters shall be readily available commercial sizes

2.4 MOUNTING BRACKETS

Full-length side mounting brackets shall be an integral part of the cabinet. Bottom mounting bracket shall be provided.

2.5 REFRIGERATION SYSTEM

All models shall use a high efficiency hermetic scroll compressor with step capacity providing 2 stages of control. The compressor shall be covered by a 5-year parts warranty. The refrigeration circuit shall be equipped with factory installed high and low pressure controls, suction and liquid access valves, compressor control module and liquid line filter dryer. A refrigerate metering device is included. Compressor shall be mounted on rubber grommets. Unit shall be provided with R-410A (HFC) non-ozone depleting refrigerant.

2.6 OUTDOOR SECTION

The condenser coil shall be constructed of aluminum plate fins mechanically bonded to seamless copper tubes. The condenser fan, motor and shroud shall be of slide out configuration for easy access. Condenser fan motor shall be enclosed casing with ball bearings. Open winding motors are not accepted.

2.7 INDOOR SECTION

The evaporator coil shall constructed of aluminum fins mechanically bonded to seamless copper tubes. Aluminum fins shall have a hydrophilic coatings, to aid in condensate drainage, inhibit mold growth and protect aluminum fins from oxidation. A fin coating shall be provided to offer excellent resistance to corrosive agents, Ammonia Sodium Hydroxide, Sodium Chloride, Acidic solutions and solvents. The following shall have no effect on the coil fin surface after 30 minutes: Ammonia 26 Baume, Gasoline, Kerosene, 1 N Sodium Hydroxide, Glacial Acetic Acid, 70% IPA, Spray Nine, Windex, Copper Sulfate, 409 Cleanser, Clorox Bleach. 5 speed indoor blower motor shall be twin wheels with forward curve blades. Motor shall be high efficiency ECM with overload protection.

2.8 ELECTRICAL COMPONENTS

Electrical components are easily accessible for routine inspection and maintenance through front service panels. Circuit breaker is standard on all 208/230-volt models and toggle disconnect standard on all 460volt models. Circuit breaker/toggle disconnect access is through lockable access panel.

2.9 CONTROL CIRCUIT

The internal control circuit shall consist of a current limiting 24VAC type transformer with resettable circuit. Auto reset high pressure

switch and auto reset low pressure switch shall standard, compressor control module with adjustable voltage protection and adjustable delay on make and break shall be standard. To prevent rapid compressor short cycling, a five minute time delay circuit shall be factory installed. A low-pressure bypass shall be factory installed to prevent nuisance tripping during low temperature start-up.

Phase rotation protection and phase failure protection shall be standard factory on all equipment with three-phase power. If unit is wired incorrectly phase monitor will lock out compressor operation and red warning light shall energize. Once power wiring is corrected at field power wiring location, a green light will energize on phase monitor. If a phase of power is lost, the phase monitor will also lock out.

3.0 COOLING OPTIONS

3.1 STANDARD COOLING

The air conditioner shall function with standard cooling sensible and latent capacities.

3.2 BALANCED CLIMATE™

The air conditioner shall function with enhanced latent capacity when BALANCED CLIMATE™ cooling mode is enabled. Unit shall include Y1 and Y2 low voltage terminal connections. A 2 stage thermostat shall be capable of operating balanced Climate. Stage 1 cooling will operation with a preprogramed and fully tested reduced fan speed. The reduction in fan speed increases latent capacity and reduces sensible capacity for increased runtime and increased latent capacity. If the 2 stage thermostat calls for second stage cooling, the unit shall shift to high speed blower and standard operation. Balanced Climate is achieved with a single stage compressor. Expanded rating in balanced climate mode shall be provide at time of submittal, and full factory performance data shall be available upon request. .

4.0 HEATING OPTIONS (Select One)

4.1 None

4.2 Electric Heat

The air conditioner shall have a factory or field installed electric resistance heater available, designed specifically for application in the W**AC/WL Series air conditioner. Heater shall include automatic limit safety controls and breaker.

5.0 VENTILATION OPTIONS (Select One)

WAC models are designed to provide optional ventilation packages to meet all of your ventilation and indoor air quality requirements. All ventilation packages are factory or field installed, and easily removable for service.**

Units shall include an independent ventilation low voltage terminal connection, allowing for an independent 24v signal provided by controls to operate the ventilation package. No additional field installed relays shall be required to provide independent ventilation. Ventilation shall be de-energized during unoccupied hours unless otherwise specified. Only one ventilation package shall be provide and must be specified

5.1 Barometric Fresh Air Damper (X) STANDARD

Damper provided with multiple pin positions, each pin position shall allow damper to open to that pin, whenever the supply blower is energized. The will fall shut when supply fan is de-energized. Damper shall be shipped in closed position. No exhaust path is provided in the unit. If no ventilation package is specified, this option shall be provided.

5.2 Barometric Fresh Air Damper with Exhaust (A) OPTIONAL

Barometric damper provided with multiple pin positions, each pin position shall allow damper to open to that pin, whenever the supply blower is energized. The will fall shut when supply fan is de-energized. Damper shall be shipped in closed position. An exhaust air path is provided, allowing for up to 25% of outside air, on standard fan operation.

5.3 Blank Off Plate (B) OPTIONAL

A blank off plate covers the air inlet openings that restrict any outside air from entering the unit. The blank off plate should be utilized in applications where outside air is not required to be mixed with the conditioned air.

5.3 Commercial Room Ventilator – (M) OPTIONAL ON/OFF

The built-in commercial room ventilator is internally mounted and allows outside ventilation air, up to 50% of the total air flow rating of the unit, to be introduced through the air inlet openings. It includes a built-in exhaust air damper. The damper can be easily adjusted to control the amount of fresh air supplied into the building.

Commercial Room Ventilator – (V)

OPTIONAL

Modulating Damper Control

The built-in commercial room ventilator is internally mounted and allows outside ventilation air, up to 50% of the total air flow rating of the unit, to be introduced through the air inlet openings. It includes a built-in exhaust air damper. The damper shall accept a 24v on/off signal, 0-10v signal for modulation based on control input. Unit complies with ANSI/ASHRAE Standard 62.1 Ventilation for Acceptable Air Quality.

5.4 ENERGY RECOVERY VENTILATOR (R)

OPTIONAL

The Energy Recovery Ventilator (ERV) shall consist of 1 or 2 rotary wheels in an insulated cassette frame with seals, drive motor and belt. The ERV assembly shall also include intake and exhaust blowers. The entire assembly shall easily slide in or out of the ventilation section, allowing for maintenance or replacement. The total energy wheel shall be coated with silica gel desiccant, permanently bonded without the use of binders or adhesives. The coated segments shall be washable with detergent or alkaline coil cleaner and water. Desiccant shall not dissolve or deliquesce in the presence of water or high humidity. All diameter and perimeter seals shall be provided as part of the cassette assembly and shall be factory set. Drive belts shall not require external tensioners or adjustment. Cassette wheels shall include rims to prevent belts from slipping off wheels. Intake and exhaust blowers shall have selections of high, medium or low speed and selected independently, to allow for positive pressurization if desired. The ERV cassette including parts and media shall include 5-year warranty subject to terms and conditions of Bard's warranty. Unit complies with ANSI/ASHRAE Standard 62.1 Ventilation for Acceptable Air Quality.

5.5 ECONOMIZER

OPTIONAL

The Economizer is internally mounted and allows outside air to be used for free-cooling when temperature and/or humidity conditions are favorable. The amount of exhaust air varies in response to the system controls and settings defined by the user. It includes a built in exhaust air damper. The economizer is designed to provide free cooling when outside conditions are cool and dry enough to satisfy cooling requirements without operating the compressor, providing lower operating costs while extending the life of the compressor.

Standard Features:

- Fully modulating
- Honeywell hi-torque 44 lb.-in. actuator

- Simple single blade design
- Positive shut-off with non-stick gaskets
- Electronic DB and Enthalpy sensors
- Honeywell JADE electronic economizer module with precision settings and diagnostics

6.0 FILTER OPTIONS - (Select One)

- 6.1 1" Fiberglass**
- 6.2 2" Pleated – MERV 8**
- 6.3 2" Pleated – MERV 11**
- 6.4 2" Pleated – MERV 13**
- 6.5 1" Washable**

7.0 UNIT CONTROL OPTIONS

- 7.1 Low ambient control**
- 7.2 Outdoor air thermostat (used as compressor cut-off)**
- 7.3 Compressor start kits (1-ph only)**
- 7.4 Filter pressure switch**

8.0 OPERATING CONTROLS (Field Installed)

- 8.1 None**
- 8.2 Electronic non-programmable, manual/auto changeover**
- 8.3 Electronic programmable, auto changeover**

9.0 INSTALLATION

- 9.1 Installation shall be done in strict adherence to Bard's Installation Instructions.**

10.0 HOT GAS REHEAT DEHUMIDIFICATION (OPTIONAL- factory installed (not available all models, consult specification sheets))

10.1 The dehumidification circuit incorporates an independent heat exchanger coil in the supply air stream in addition to the standard evaporator coil. This coil reheats the supply air after it passes over the cooling coil, and is sized to nominally match the sensible cooling capacity of the evaporator coil. Extended

run times in dehumidification mode can be achieved using waste heat from the refrigeration cycle to achieve the reheat process, while at the same time large amounts of moisture can be extracted from the passing air stream. Models that also have electric heaters installed have the electric heat inhibited during dehumidification mode, although it remains available for additional reheat during certain conditions. The dehumidification cycle shall be energized by a rise in relative humidity above set point. The unit shall energize in the cooling mode and also a two position valve will energize, allowing hot refrigerant gas to pass thru the reheat coil, reheating the cold air leaving the evaporator coil. An electronic expansion valve (EEV) will be utilized to help maintain a very low sensible capacity and consistent latent capacity. The dehumidification cycle shall have on/off capability. If the thermostat calls for cooling or heating during the dehumidification cycle, the unit shall drop out of dehumidification to satisfy the call from the thermostat.

11.0 WARRANTY

11.1 The Bard product specified shall be free from defects in materials and workmanship for a period of 5 years for compressor, and for a period of 5 years for all parts. Warranty period shall start from date of installation as stated on warranty card; or from date of shipment if no warranty card is returned to Bard Manufacturing. Equipment must be used under normal conditions and warranty is subject to Bard Manufacturing's standard limited warranty statement.