BARD MANUFACTURING COMPANY, INC.
Q-TEC QW2S-QW5S Water-to-Air H/P
Engineering Specification Guide

1.0 GENERAL

Furnish and install a self-contained, vertical, floor standing, heat pump to be manufactured by Bard Manufacturing Company, Inc. 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. Unit performance shall be AHRI Certified in accordance with ISO Standard 13256-1:1998 "Water to Air and Brine to Air Heat Pumps", which includes watt allowance for water pumping. Unit shall include 5 year parts warranty covering compressor, parts, and heat exchange coils, subject to terms and conditions of Bard Limited Warranty Agreement.
Unit efficiency shall be specified in terms of EER and COP.

Manufacturers: Capacities shall be 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

Constructed of 20 gauge pre-painted or vinyl laminated galvanized steel. Choices available are either two-tone (vinyl) finish with "slate" front panels and "platinum" cabinet for designer appearance, (gray) or (beige) painted steel (select one). Vinyl finish is very resistant to scratching and marring and is easy to clean. Tamper resistant fasteners are provided for access panels. Unit includes built-in rollers for each installation into wall sleeve and removal for service, if necessary. Front panel is hinged and lockable for filter service and access to primary functional electrical controls.

2.2 INSULATION

Cabinet is fully insulated with foil covered, high-density fiberglass insulation with sealed edge treatment and special sound deadening insulation material in the compressor section. All insulation is designed to resist mold and mildew growth and facilitate ease of cleaning.

2.3 COMPRESSOR

All models shall use a high efficiency 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. The refrigeration control shall be a factory installed TXV. Compressor shall be mounted on isolation rails with double grommets. Unit shall be provided with R-410A (HFC) non-ozone depleting refrigerant. Unit shall be provided with liquid line filter/drier.

2.4 COAXIAL WATER COIL

All models shall have either cupronickel or copper (SELECT ONE); water coil, fully insulated, with double o-ring connections. Copper coils should not be used on open wells.

2.6 INDOOR BLOWER MOTOR

The indoor blower motor shall be a variable speed (ECM) type to produce the same rated airflow from 0 to .5 inch WC of external static pressure at low sound levels. The motor is to be self-adjusting to provide proper rated airflow at high static pressures without user adjustment or wiring changes by the user. The motor shall be programmed for 30-second ramp up and 30-second ramp down rate for quiet, smooth starting and stopping. ECM motor shall include preprogrammed speeds for ventilation mode, first stage operation, second stage operation, ducted operation, and non-ducted operation.

2.7 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 rotary disconnect standard on all 460-volt models. Circuit breaker/rotary disconnect access is through lockable access panel. Lock and key are provided as standard equipment. Unit shall have single point entry for line voltage.

2.8 CONTROL CIRCUIT

The internal control circuit shall consist of a current limiting 24VAC type 65VA transformer with circuit breaker. To prevent rapid compressor short cycling, a five-minute time delay circuit shall be factory installed. Two low-pressure controls shall be included as standard. One shall be used for fresh water applications, the other for protected (antifreeze) closed systems. The factory wired switch is for fresh water.

Phase rotation protection and phase failure protection shall be standard factory installed features 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.

2.9 SERVICE FEATURES

The unit shall include a diagnostic light to indicate when service is required. *System Service* shall detect high or low-pressure control operation.

3.0 LOOP MODULE PUMPING SYSTEM

All models shall be designed with mounting and wiring provisions for field installed pump module option, when unit is applied with ground loop system.

4.0 VENTILATION OPTIONS (Select One)

Q-TEC models are designed to provide optional ventilation packages to meet all of your ventilation and indoor air quality requirements. All ventilation packages are factory installed.

4.1 BAROMETRIC FRESH AIR DAMPER STANDARD

The barometric fresh air damper is a standard feature on all models. It allows outside ventilation air, up to 25% of the total airflow rating of the unit, to be introduced through the air inlet openings and to be mixed with the conditioned air. The damper opens during blower operation and closes when the blower is off. Adjustable blade stops allow different amounts of outside air to be introduced into the building and can be easily locked closed if required.

4.2 BLANK OFF PLATE OPTIONAL

A blank off plate covers the air inlet openings, which 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.

4.3 COMMERCIAL ROOM VENTILATOR OPTIONAL

The built-in commercial room ventilator (CRV) 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. The CRV shall be modular and easily added or removed from the unit cabinet. 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. The CRV can be controlled by indoor blower operation or field controlled based on room occupancy. Unit complies with ANSI/ASHRAE Standard 62.1 Ventilation for Acceptable Air Quality.

Model Available: **Spring Return on Power Loss or Deactivation - Vent Option V**

4.4 ENERGY RECOVERY VENTILATOR 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 unit cabinet, 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 5year warranty subject to terms and conditions of Bard's warranty.

The ERV thermal performance shall be certified by the manufacturer in accordance with ASHRAE Standard 84, Method of Testing Air-to Air Heat Exchangers and ARI Standard 1060, Rating for Air-to-Air Energy Recovery Ventilation Equipment Cassettes, and shall be listed in the ARI Certified Products. Unit complies with ANSI/ASHRAE Standard 62.1 Ventilation for Acceptable Air Quality.

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5.0 FILTER OPTIONS - (Select One)

5.1 2" **Fiberglass – Pleated – MERV 8**

6.0 HOT GAS REHEAT- (Factory installed option)

6.1 **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.**

7.0 CABINET COLOR – (Select One)

7.1 **Washable Vinyl- Two-Tone Finish with Slate front and platinum sides**
7.2 **Slate Gray**
7.3 **Beige**

9.0 CLIMATE CONTROLS – (Select one of the following factory mounted control options)

9.1 **X = 24v Terminal Block Only ①**
9.2 **D = 8403-060 Electronic/Programmable Thermostat w/Humidity Control**
9.3 **H = 8403-060 Prog. Thermostat w/Humidity Control + 8403-067 CO2 Controller**
9.4 **K = 24V Terminal Block + 8403-067 CO2 Controller Only**
9.5 **1 = CompleteStat CS9B=-THO (Temp. Humidity & Occupancy)②**
9.6 **2 = CompleteStat CS9B-THOC (THO + CO2) ②**
9.7 **3 = CompleteStat CS9BE-THO (THO w/Ethernet) ③**
9.8 **4 = CompleteStat CS9BE-THOC (THO + CO2 w/Ethernet) ③**
9.9 **5 = 8403-069 Viconics VT7652H5000B w/BACnet ④**
9.10 **6 = 8403-069 Viconics + 8403-067 CO2 Controller ④**
9.11 **7 = 8403-071 Viconics VT7600H5500B w/BACnet & PIR cover**

NOTE:

① **If "X" control option is selected, then thermostat and humidistat if applicable, or DDC control system must be field supplied**
② **CS(B-THO and –THOC are BACnet w/shielded twisted pair wiring**
③ **CS9BE-THO and –THOC are BACnet w/shielded twisted pair wiring and Ethernet port**
④ **Not available for Dehumidification Models.**

10.0 ACCESSORIES

10.1 WALL SLEEVE

Wall sleeve shall be factory supplied and must be constructed of 16 gauge-galvanized steel, coated with an epoxy primer and baked-on polyester enamel paint. It shall be designed to withstand a minimum of 1000 hours of salt spray protection when tested per ASTM B117-03 standard. One sleeve size fits all models. Sleeve only required when a ventilation option is selected.

10.2 Exterior Louver

Furnish factory louver designed for condenser air and outside air intake and exhaust. Louver shall have a powder coat finish. See our color chart for color selections. Louver required with sleeve with the use of any ventilation option.

10.4 AIR DISTRIBUTION – (Select 1)

10.3.1 **The Q-TEC shall have a discharge air plenum with double deflection register mounted on front.**

10.3.2 **The Q-TEC shall have a discharge air plenum with double deflection supply register on the front and both sides.**

10.3.3 **The Q-TEC shall be ducted with a cabinet extension to cover ductwork**

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.**

12.0 INSTALLATION

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