BARD MANUFACTURING COMPANY, INC.
T30S-T60S Series Air-to-Air Heat Pump
Engineering Specification Guide

1.0 GENERAL

Furnish and install a self-contained, vertical, exterior wall mount, through-the-wall 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 certified in accordance with the Air Conditioning Heating and Refrigeration Institute (AHRI) Standard 390-2003 for Single Package Vertical Units. Unit efficiency shall be specified by EER, IPLV 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

Construction shall be a single, enclosed, weatherproof casing constructed of 20-gauge galvanized steel. Unit base is constructed of 16-gauge galvanized steel. 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 Tolulene. Cooling section shall be fully insulated with 1-inch fiberglass to prevent sweating and to muffle sounds. 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. A separate service door provides access for changing filters. 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)
Beige (standard)
White
Buckeye Gray
Desert Brown
Dark Bronze
Stainless Steel

2.2 DRAIN PAN

Drain pan shall be constructed of 20-gauge galvanized steel, bonderized and finished with baked-on exterior polyester enamel paint.

2.3 INSULATION

Portions of the unit that come in contact with the indoor air steam shall be insulated with high density 1 inch fiberglass, foil faced insulation.

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 2 stage scroll compressor with step capacity providing 2 stages of control in cooling and heating. Single stage heating capacity via the compressor is not acceptable. Compressor shall be designed with R-410A non-ozone depleting refrigerant in compliance with Montreal Protocol 2010 EPA requirements. 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, and liquid line filter dryer. The refrigeration control shall be factory installed. Compressor shall be attached to a double isolated floating mounting system and include a sound blanket and discharge muffler.

2.6 CONDENSER FAN MOTOR

The condenser fan, motor and shroud shall be of slide out configuration for easy access.

2.7 INDOOR BLOWER MOTOR

The indoor blower motor shall be high efficiency ECM motor. It shall include soft start and shall be self-adjusting to provide proper airflow at varying static pressure. Blower wheels shall be curve blades.

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 rotary disconnect standard on all 460-volt models. Circuit breaker/rotary disconnect access is through lockable access panel. Phase rotation monitors shall be installed on all 3-phase units to prevent reverse rotation.

2.9 CONTROL CIRCUIT

The internal control circuit shall consist of a current limiting 24VAC type 50VA transformer (75VA on hot-gas reheat dehumidification models----See 6.0). The defrost circuit shall consist of a solid-state electronic heat pump control. A 30-minute timer shall inflate a defrost cycle if the outdoor coil temperature indicates the possibility of an iced condition. The thermistor sensor, speed-up terminal for service, and a ten-minute defrost override shall be standard on the electronic heat pump control. 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 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

3.0 HEAT OPTIONS (Select One)

3.1 None

3.2 Electric Heat

The heat pump shall have a factory installed electric resistance heater available that is designed specifically for application in the T Series heat pump. Heater shall include automatic limit safety controls.

4.0 VENTILATION OPTIONS (Select One)

T 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.

4.1 BLANK OFF PLATE 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.

4.2 COMMERCIAL ROOM VENTILATOR OPTIONAL

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 CRV can be controlled by indoor blower operation or field controlled based on room occupancy using CO2 controller. Unit complies with ANSI/ASHRAE Standard 62.1 Ventilation for Acceptable Air Quality.

4.3 ENERGY RECOVERY VENTILATOR OPTIONAL

The Energy Recovery Ventilator (ERV) shall consist of 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 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.

5.0 FILTER OPTIONS - (Select One)

5.1 1" Fiberglass (standard) – MERV 2
5.2 2" Fiberglass – Pleated – MERV 8
5.3 2" Fiberglass – Pleated – MERV 11

6.0 HOT GAS REHEAT (OPTIONAL-Factory Installed)

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. 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. 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. A solid state circuit board shall control the dehumidification function. The dehumidification option shall be factory installed.

7.0 UNIT CONTROL OPTIONS

7.1 Low ambient control for cooling operation to 0 degrees
7.2 Outdoor thermostat except on dehum equipped models

8.0 OPERATING CONTROLS (Field Installed)

8.1 None
8.2 Electronic non-programmable, manual changeover
8.3 Electronic programmable, auto changeover, with humidity monitoring and optional:
1. Humidity control on dehum models only
2. Remote temperature sensor
3. Remote outdoor thermostat

8.4 CO2 Control for CRV or ERV ventilation operation

9.0 INSTALLATION

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

10.0 WARRANTY

10.1 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.