



AccuSpec V4.12.1

SUBMITTAL SCHEDULE & DATA

Technical Specifications - Classmate Units

Job Name: Portables

Location: Ontario

Engineer:

Architect:

Contractor:

			Unit Tag	
Model Number		CMP36CAMEAANN10		
Quantity of Units				
PERFORMANCE-REFRIGERANT		HFC-R410A (2 Stage)		
FULL LOAD (1)				
Cooling Capacity Total	Mbh	33.5		
Cooling Capacity Sensible	Mbh	24.0		
Heat Pump Capacity (COP)	Mbh	32.8 (3.7)		
EER		10.50		
IPLV		14.3		
SUPPLY VOLTAGE		230/60/1		
FLA, MCA, MOP		60.6, 75.8, 80.0		
SUPPLY FAN				
Fan - (Quantity) Type			(1) Direct Drive Centrifugal	
Nominal Airflow	CFM	1100		
Motor Size	Hp	3/4		
Max External Static Pressure	" WC	0.50		
POWERED EXHAUST				
Fan - (Quantity) Type			(1) Backward Curved Motorized Impeller	Not required.
Nominal Airflow	CFM	2300		
Motor Size	Hp	2.5		
Max External Static Pressure	" WC	0.5		
ENERGY RECOVERY WHEEL (2)				
Outdoor Air (Cooling/Heating)	CFM	350 / 350		
Cooling Air On (Room,Outdoor) DB/WB	°F	75 / 63 , 95 / 78		
Heating Air On (Room,Outdoor) DB	°F	70 , 35		
Total Recovered Cooling	Btu h	12,838		
Total Recovered Heating	Btu h	11,653		
Air Off Wheel Temp (Cooling,Heating)	°F	80.6 , 59.6		
OPTIONAL HEATING - AIR ON		Outside/Return Air		
Outdoor Air Flow	CFM	350		
Outdoor Air Temperature	°F	35.0		
Return Air Flow	CFM	750		
Return Air Temperature	°F	70.0		
Mixed Air Temp (3)	°F	66.7		
OPTIONAL HEATING		Electric (Unit)		
Heat Size		10 kW (2 stage)		
Heating Capacity	Btu h	17,061		
Heating + Energy Wheel Cap (2)	Btu h	28,714		
Fluid Flow Rate / Pressure		NA		

Temp/Press Drop or Condensate (4)		NA		
Fluid Type		NA		
OPERATING WEIGHT	lbs	735		

- (1) Cooling (Heat Pump) capacity based on Air at 80/67°F (70/60°F) Dry/Wet Bulb & 95°F (47/43°F) Ambient.
(2) Detailed Performance of Energy Wheel is given later in submittal. Heating + Energy Wheel Capacity is "NA" if no wheel is selected.
(3) When unit is selected with Energy Wheel, Mixed Air Temp is the mix of Air Off Wheel Temp and Return Air Temp.
(4) Pressure drop is for coil only.



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Model	Description	Qty	Tag
CMP36CAMEAANN10	Single Packaged Vertical Unit		
	CMP36CAMEAANN10		
#76966	WIRING DIA 8H007186		
#76967	PIPE DIA 8H007196		
#71605	Disconnect Switch Assembly		
#67747	Elect Branch Protection - 35A x 2		
#67805	Outdoor Coil Filter		
#67839	Compressor Acoustic Wrap		
#22222	Beige (Hammertone Finish)		
50907	custom corel program		



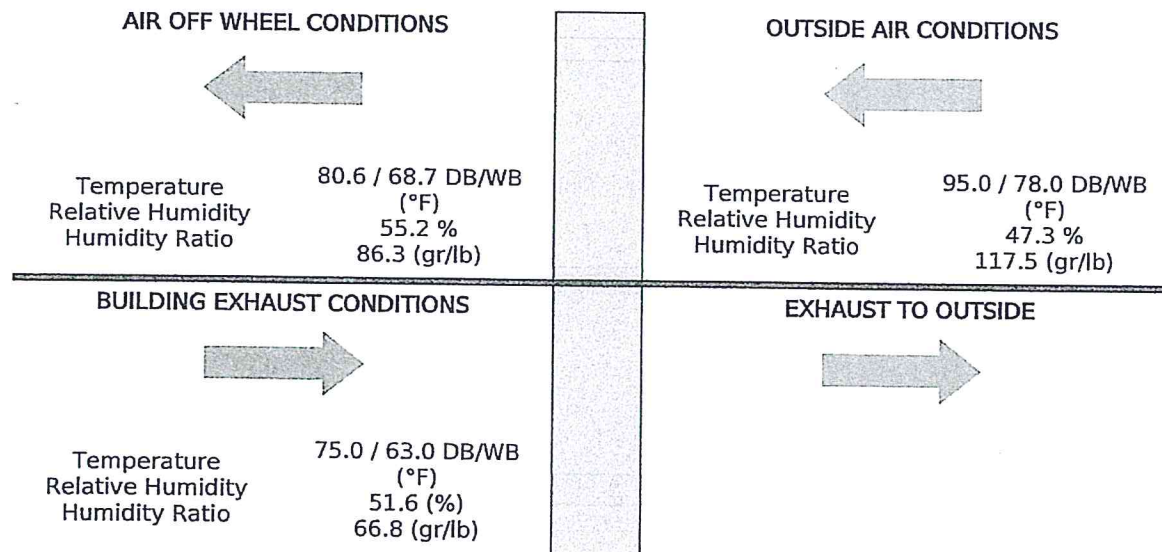
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SUBMITTAL SCHEDULE & DATA**Energy Wheel Performance Data – Cooling Mode**

Job Name: 21706686 PVNCCDSB - Holy Trinity
Portables
Location: Ontario
Submitted by: Shawn Simmons

Engineer:
Architect:
Contractor:

Unit Tag		
	SUPPLY AIR FLOW	EXHAUST AIR FLOW
Airflow Across Wheel (CFM)	350	350



ENERGY RECOVERY	
Total (Btu/hr)	12,838
Sensible (Btu/hr)	5,279
Latent (Btu/hr)	7,559
Total Equivalent Tons	1.1
EFFECTIVENESS	
Latent (%)	60.86
Sensible (%)	71.89



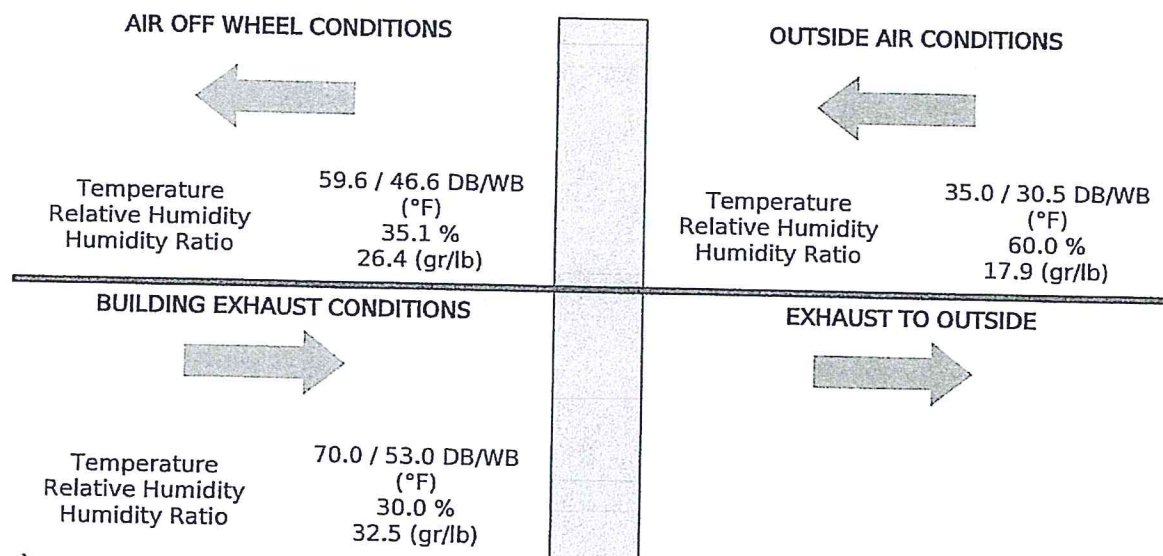
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SUBMITTAL SCHEDULE & DATA**Energy Wheel Performance Data – Heating Mode**

Job Name: 21706686 PVNCCDSB - Holy Trinity
Portables
Location: Ontario
Submitted by: Shawn Simmons

Engineer:
Architect:
Contractor:

Unit Tag		
	SUPPLY AIR FLOW	EXHAUST AIR FLOW
Nominal Airflow (CFM)	350	350



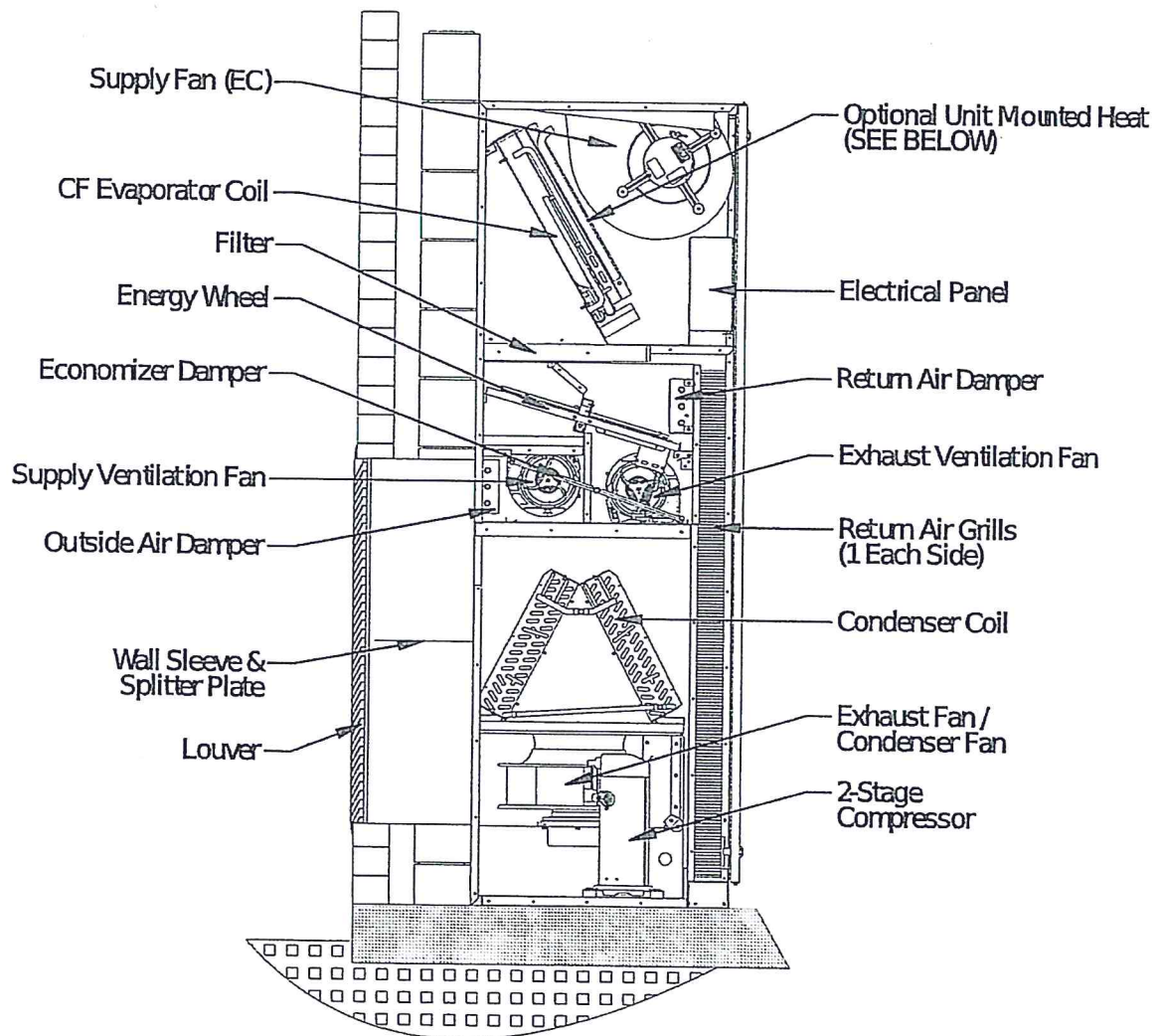
ENERGY RECOVERY	
Total (Btu/hr)	11,653
Sensible (Btu/hr)	9,423
Latent (Btu/hr)	2,229
EFFECTIVENESS	
Latent (%)	60.26
Sensible (%)	71.55



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GENERAL ARRANGEMENT

Model CMP36CAMEAANN10 - General Arrangement
Tag:



Optional Unit Mounted Heating: Position 1: Electric Element

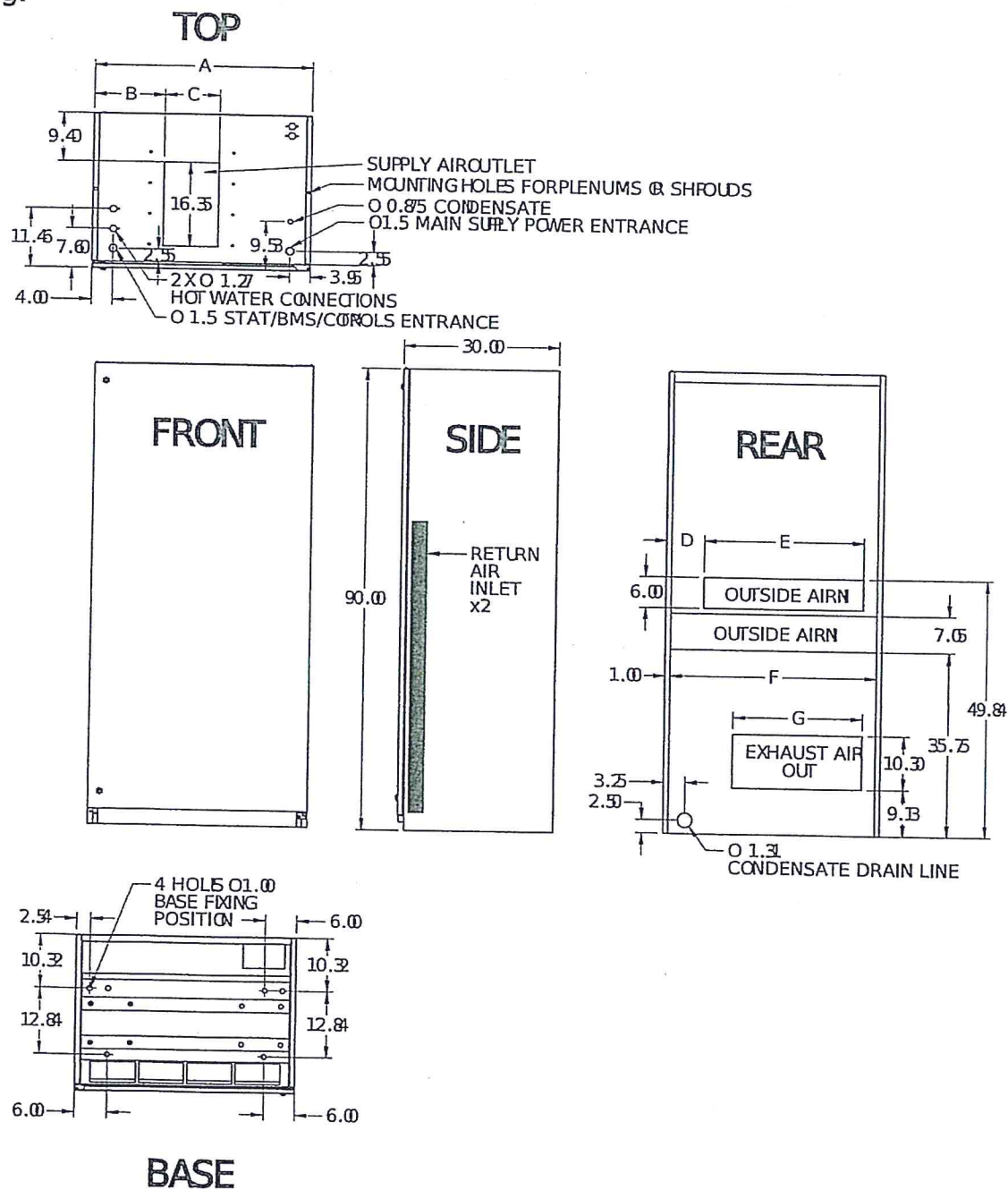


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DIMENSIONS – UNIT

Model CMP36CAMEAANN10 Dimensions

Tag:



Unit Dimensions (inches)

MODEL SIZE	A	B	C	D	E	F	G	Approximate Weight	Filters - (Qty) Dimensions
36	42.00	13.70	10.52	7.30	31.00	40.00	25.12	735	(2) 16 x 25

SECTION 23 81 00 DECENTRALIZED UNITARY HVAC EQUIPMENT

SPECIFICATIONS

Tag:

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes self-contained heat pump unit ventilators and accessories as indicated on drawings and schedules, and by requirements of this section.

1.2 QUALITY ASSURANCE

- A. AHRI Compliance: Test and rate Self Contained Heat Pump unit ventilator in accordance with AHRI Standard 390 "Single Packaged Vertical Air Conditioners and Heat Pumps".
- B. NFPA 70 – National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- C. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1-2010, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."
- D. ANSI/ASHRAE/IES 90.1-2013 Compliance: Applicable requirements in ANSI/ASHRAE/IES 90.1-2013, Section 6 - "Heating, Ventilating, and Air-Conditioning."
- E. Listed on <https://www.regulations.doe.gov/certification-data/>. Complies with Energy Policy and Conservation Act (42 USC 6311-6317).
- F. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years documented experience.
- G. The unit shall be constructed in accordance with ANSI standards, and a label shall be affixed to the unit listing the product code under which it is registered.

1.3 WARRANTY

- A. Standard Unit Warranty:
 - 1. For units equipped with Modine Controls System - All Components Warranty: Two years from date of first beneficial use by buyer or any other user, within two years from date of resale by buyer in any unchanged condition, or within 30 months from date of shipment from seller, whichever occurs first.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Furnish and install a self-contained vertical floor standing heat pump unit ventilator. Constructed in accordance with UL and CSA standards with a label affixed to the unit listing the product code under which it is registered. Unit performance shall be certified in accordance with AHRI 390. Unit shall be constructed following ISO: 9001 quality control program procedures and be fully assembled, charged, wired, and tested prior to shipment.

2.2 MANUFACTURERS

- A. Basis-of-Design Product: The design for Single Packaged Vertical Air-Conditioners and Heat Pumps is based on Modine ClassMate Model.

2.3 CABINET

- A. Insulation: 1-inch thick, acoustic Hushcloth Polyester/Polyurethane foam with density of 2-pounds per cubic foot containing no fibrous materials.
 - 1. Fire-Hazard Classification: Insulation shall have a fire rating of UL94HF-1.
 - 2. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-2010.
- B. Cabinet Construction: Constructed from aluminized steel with 20 gauge panels, degreased and coated with electrostatically applied baked-on polyester powder paint.
- C. Cabinet Interior: Interior right and left hand sides shall employ 20 gauge galvanized steel full double wall construction.
- D. Cabinet Finish: The unit color shall be Beige (Hammertone Finish)
 - 1. Paint finish shall be easily cleanable and hard wearing to give maximum protection.
- E. Service and Maintenance Access: All service and maintenance access shall be possible through the front of the unit only.
- F. Return air openings shall be integrated into the cabinet sides.
- G. Access door is factory installed on the front of the unit. Face of door shall be absent of return air openings to allow for easy cleaning. Door shall be fully insulated to provide for superior noise deadening at front of unit. Door shall employ heavy duty ¼" zinc plated steel plunger hinges with a spring-loaded ¼" zinc plated steel pin to allow for easy removal, if required. Door is secured with two (2) key locks. Door swing designed to turn into itself allowing side of the unit to be installed directly against a wall in the corner of a room.
- H. Condensate Connection: Factory installed condensate connection stub provided for connection to the field installed building condensate drain.

2.4 REFRIGERATION SYSTEM

- A. Compressor: Two stage hermetic scroll compressor mounted on four (4) 125# all neoprene rubber 35-45 durometer vibration isolators for quiet operation. Compressor contains an internal unloading mechanism to provide capacity control and enable part load efficiencies to be increased.
 - 1. An internal overload protector included to protect compressor against excessive motor temperatures and currents.
 - 2. Compressor is equipped with a crankcase heater to guard against liquid flood-back conditions and the elimination of oil foaming upon start up.
 - 3. Factory set high and low-pressure switches, automatic reset high pressure cutout, and automatic reset low-pressure cutout.
- B. Compressor Acoustic Wrap with Base: For improved sound attenuation, compressor casing consists of 18oz PVC barrier laminated to 1/2 inch non-woven polyester. Casing includes integral 4 inch foil backed fiberglass heat shield for use with crankcase heater. Compressor base consists of 2 pound EVA barrier with embedded 3/4 inch layered closed cell foam. Cover is easily removable for service.
- C. Refrigeration Circuit (Heat Pump): Heat pump systems shall utilize HFC-R410A and shall be fitted with dual thermal expansion devices and a reversing valve to enable the unit to operate in either cooling or heat pump mode. A factory set defrost control fitted allows defrosting of the outside coil when in heat pump mode. Fitted with factory set automatic reset high-pressure and low-pressure cut-out switches and a sight glass for system observation.
- D. Indoor Coil: Patented micro-channel CFT[™] evaporator coil designed for maximum heat transfer with minimum footprint and pressure drop. Quick draining evaporator coil designed, tested and fabricated by unit ventilator manufacturer for optimal airflow and heat transfer specific to the unit. Coil is fitted to non-corrosive stainless steel drain trays.
- E. Outdoor Coil: Enhanced, high efficiency, cross rifled coil designed, tested and fabricated by unit ventilator manufacturer for optimal airflow and heat transfer specific to the unit. Coil is fitted to non-corrosive stainless steel drain trays.

2.5 FANS AND MOTORS

- A. The indoor fan assembly consists of one blower inside teardrop housing assembly engineered specifically for optimal airflow with low noise and minimal power consumption. Blower is powered by electronically commutated motor (ECM). The DC motor features brushless, permanently lubricated ball bearing construction for maintenance free operation. A wide range of programmable speeds and torque characteristics is possible for ultra-high efficiency and low audible noise. The ECM provides constant airflow by automatically adjusting the speed if the external static pressure changes. Electrical and control wiring to fan assembly includes quick disconnect plug local to assembly.
- B. Outdoor (Condenser) Fan Assembly: The outdoor fan assembly consists of one backward curved plug fan with centrifugal blower wheel powered by an electronically commutated motor (ECM). The DC motor features brushless, permanently lubricated ball bearing construction for maintenance free operation. A wide range of programmable speeds and torque characteristics are possible for

ultra-high efficiency and low audible noise. Fan design capable of overcoming external static pressures brought on by rear extensions backs and duct work connected to the fan discharge opening. Fan is sized such that powered exhaust shall be integral to the unit to prevent over pressurization of the space when the unit is introducing outside air. Capable of exhausting 100% equivalent of the fresh air intake of the unit. Electrical and control wiring to fan assembly includes quick disconnect plug local to assembly.

2.6 FILTER

- A. Filter: 2" thick radial pleated disposable cotton and synthetic blend filters. Minimum Efficiency Reporting Value of MERV 8 per ASHRAE standard 52.2.

2.7 CONTROL PANEL

- A. Control Panel: Located at top of the unit behind the front door for direct, centrally located access to controller, controller transformer (24V), and all necessary contactors, relays, and circuit breakers.
- B. Wiring: Individually numbered terminal blocks and wires are to match job-specific wiring diagrams. All electrical wires in the control panel will run in an enclosed trough. Wiring outside the control panel to be contained in a protective sleeve. All controls and wiring is factory installed in a clean, organized arrangement.
- C. Plug and Socket Wiring: Supply and Exhaust Fan decks, compressor, damper assembly, and energy wheel assembly (if applicable) wiring includes plugs local to the assembly allowing for quick wiring disconnect when the component requires removal for service.

2.8 ENERGY RECOVERY VENTILATOR WITH ECONOMIZER DAMPER

- A. Energy recovery ventilation (ERV) provided within the unit through an enthalpy transfer wheel mounted in an insulated cassette frame complete with seals, drive motor, and belt. The rotary wheel is coated with silica gel desiccant and is sized to handle a maximum of 500 cfm of outside air. The entire assembly shall be a UL tested component. Performance shall be certified in accordance with the ASHRAE Standard 84 method of test and AHRI Rating Standard of 1060.
- B. ERV Fans: ERV section employs dual electronically commutated ventilation fans to ensure precise control of airflow through energy wheel and provide optimal wheel frost protection as required.
- C. Outside Air Damper: Separate outside air damper and actuator provided for protection from outdoor elements when unit is not in use.
- D. Complete energy recovery ventilator installed on rails to allow the entire assembly to be slid out of the unit for service. Electrical and control wiring to damper assembly includes quick disconnect plug local to assembly.
- E. Full Economizer Mode: Includes the addition of an economizer damper with actuator and return air damper with actuator. This option enables full economizer

functionality by closing off return air allowing up to 100% volume of outside air during free cooling applications.

2.9 CONTROLS

- A. Modine Control System: The unit is fitted with a programmable microprocessor controller provided by the unit manufacturer mounted outside the air stream in the control panel. The controller is designed specifically for operating the unit in its most energy efficient manner using pre-engineered control strategies. The microprocessor determines mode of operation based on the factory installed return air and supply air temperature sensors.
- B. Factory installed controls shall enable the unit to operate in the following modes:
 - 1. Free Cooling – using outside air in favorable conditions
 - 2. Stage One Mechanical Cooling: 67% capacity compressor, low speed supply fan, reversing valve closed
 - 3. Stage Two Mechanical Cooling: Controller adjusts compressor capacity and supply fan speed based on load conditions through a sequence that is proprietary to Modine Controls, reversing valve closed
 - 4. Stage Three Mechanical Cooling: 100% capacity compressor, high speed supply fan, reversing valve closed
- C. Factory installed controls will allow the following additional modes of operation during heat pump mode:
 - 1. Stage One Heating: 67% capacity compressor, low speed supply fan
 - 2. Stage Two Heating: 67% capacity compressor, high speed supply fan
 - 3. Stage Three Heating: 100% capacity compressor, high speed supply fan
 - 4. Stage Four Heating: First Stage of Electric Heat, high speed supply fan
 - a. Emergency Heat: A second stage of electric heat is utilized for emergency backup only
- D. The microprocessor controller shall also modify the minimum damper position to compensate for mode of operation and fan speed.
- E. Free Cooling Sequence: If the return air temperature is higher than the occupied set point and if the ambient air temperature is low enough to satisfy the cooling load in the occupied space, the microprocessor controller will de-energize the energy recovery ventilator. Outdoor air ventilation fan is 100% energized and economizer damper and return air damper will automatically modulate between 0-100% allowing up to 100% free cooling to maintain conditioned space temperature. The free cooling mode of operation leads to much reduced running time for the compressor leading to cost and equipment savings.
- F. Heat Pump Heating Sequence: If the return air temperature is below the set point and the ambient air temperature is high enough (the heat pump will be locked out at 28°F ambient), the microprocessor controller will de-energize the reversing valve allowing the unit to operate in the reverse cycle DX heating mode. The microprocessor controller will also determine which stage of DX heating is most efficient to handle the heating load based on pre-engineered control strategies and the return air, supply air, and ambient air temperatures. The microprocessor controller will then place the unit in one of two DX heating stages of operation.

- G. Time Clock Card: The Modine Control System microprocessor includes a time clock card for units where time functions, night and weekend setback, etc. are not transmitted from a building management system or remote central time clock. The time clock shall have a full 7-day schedule and calendar function incorporated. The 7-day schedule shall have two adjustable occupied/unoccupied periods per day. The calendar function shall allow 20 calendar periods (start date / stop date = 1 period).

2.10 ELECTRIC HEATING

- A. Unit is equipped with 10 kW of electric resistance heating elements controlled in two stages. Electric heat is factory mounted downstream of the evaporator coil. A manual thermal protection and automatic thermal protection switch is included.

2.11 ADDITIONAL FACTORY INSTALLED OPTIONS

- A. Outdoor Coil Filter: A set of two 20-30 PPI polyester foam washable filters attached to a corrosion resistant metal wire frame fitted across the air inlet of the outdoor coil. Average synthetic dust weight arrestance of 60-80%. The filter is reusable and can be vacuum cleaned.
- B. Disconnect Switch: Located on the control panel, a amp power disconnect switch sized for the full load amperage of the unit. Allows the unit to be disconnected from the power supply prior to any maintenance. In the off position the switch can be locked out.

2.12 FIELD INSTALLED ACCESSORIES

PART 3 - EXECUTION

3.1 EXAMINATION

- A. General: Examine areas and conditions under which self-contained heat pumps are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to installer.

3.2 INSTALLATION

- A. General: Install self-contained heat pumps in accordance with manufacturer's installation instructions. Install units plumb and level, firmly anchored in locations indicated, and maintain manufacturer's recommended clearances.
- B. Electrical Wiring: Install electrical devices furnished by manufacturer but not specified to be factory-mounted. Furnish copy of manufacturer's wiring diagram submittal to Electrical Installer.
 - 1. Verify that electrical wiring installation is in accordance with manufacturer's submittal and installation requirements of Division-16

sections. Do not proceed with equipment start-up until wiring installation is acceptable to equipment installer. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

- C. Ductwork: Refer to Division-15 section "Ductwork". Connect supply and return ducts to units with flexible duct connections. Provide transitions to exactly match unit duct connection size.
- D. Drain Piping: Connect self-contained heat pump's condensate drain to nearest indirect waste connection, or as indicated.

3.3 FIELD QUALITY CONTROL

- A. See section 01-4000 – Quality Requirements, for additional requirements.

3.4 SYSTEM STARTUP

- A. Start-up units in accordance with manufacturer's start-up instructions. Test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment.

In the interest of product development Airedale reserves the right to amend this specification without prior notice.