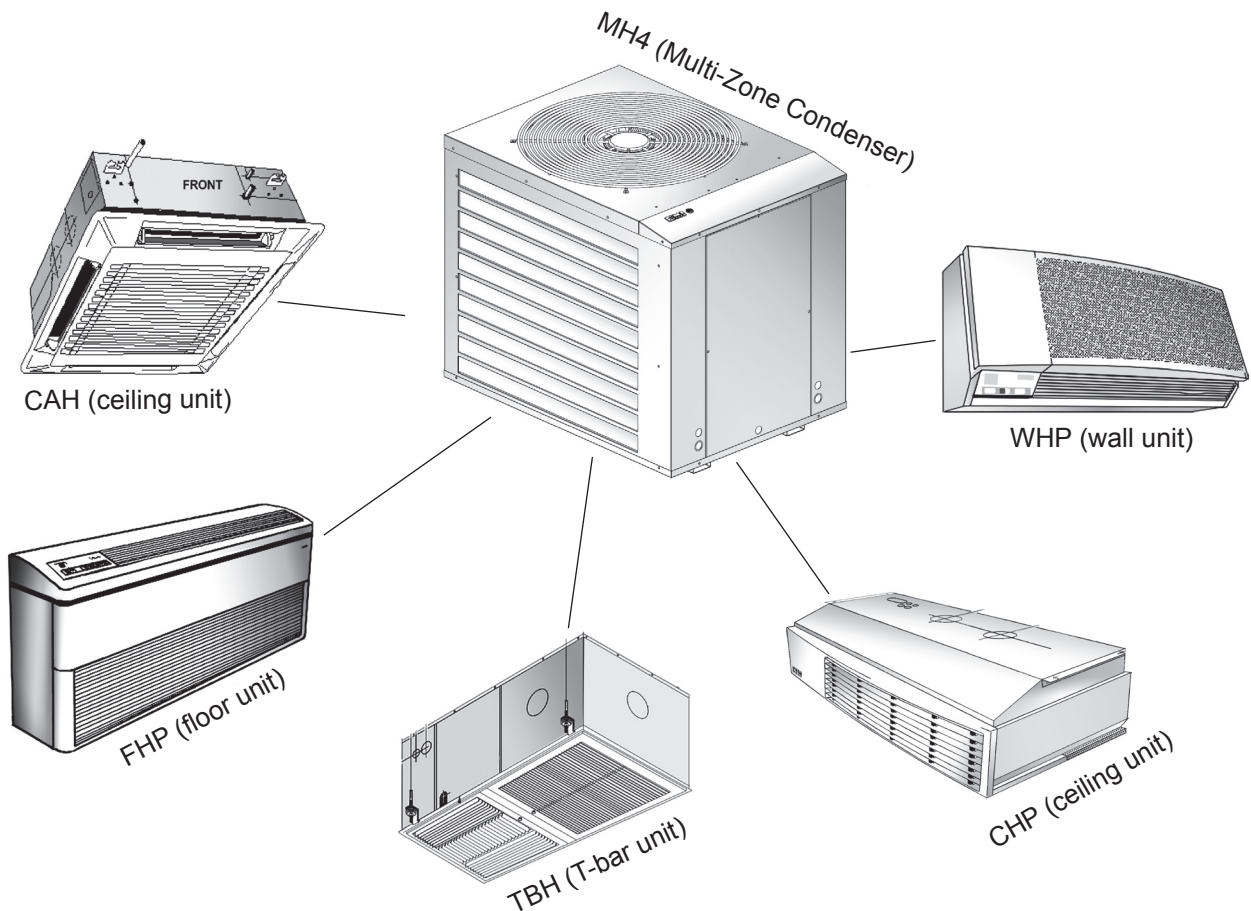


(MH4)
**MULTI-ZONE HEAT PUMP
AIR CONDITIONING SYSTEM**

Rev. 1.4 [3/05]

JOB NAME: _____ LOCATION: _____
PURCHASER: _____
ENGINEER: _____
SUBMITTED TO: _____ FOR: REFERENCE [] APPROVAL [] CONSTRUCTION []
SUBMITTED BY: _____ DATE: _____
UNIT DESIGNATION: SCHEDULE #: _____ MODEL #: _____

Submittal Data: **MULTI-ZONE**



STANDARD FEATURES

- ▲ 5 Year Compressor/One Year Parts Warranty
- ▲ Anti-Short cycle Protection (*Except TBH*)
- ▲ Top Discharge Condenser
- ▲ Fan Purge (*Except TBH*)
- ▲ "Duratec" Performance Package
For Compressor Protection (9K-15K)
 - Suction Accumulator
 - Filter Drier
 - Hard Start Assist
 - Loss Of Charge Switch
 - Crankcase Heater
 - Manual Reset High Pressure Switch

(MH4) EMI ENGINEERING SUBMITTAL

▲ PART ONE "GENERAL"

The heat pump air conditioning system shall be an EMI AmericaSeries Multi-Zone split system per the equipment schedule. The system shall consist of two, three or four indoor air handler models per the air handler equipment schedule and matching AmericaSeries Multi-Zone condenser per the condenser equipment schedule. The units shall be made within North America. The systems shall be listed by Intertek Testing Service (ITS) and bear the ETL label (except TBH). All wiring shall be in accordance with the National Electrical Code (N.E.C.). The units shall be rated in accordance with ARI Standard 210/240 and bear the ARI label (except TBH). The units shall be manufactured in a facility certified to ISO 9001, which is an international standard used to provide guidance in the development and implementation of an effective Quality Management System. The condensing unit shall contain an R-22 refrigerant charge for the evaporator sections and condenser circuits. System circuits shall meet or exceed 1992 Federal Standards.

▲ PART TWO "WARRANTY"

The units shall have a manufacturer's warranty for a period of one (1) year from date of installation. The compressor shall have a warranty of five (5) years from date of installation. If, during this period, any part should fail to function properly due to defects in workmanship or material, it shall be replaced or repaired at the discretion of Enviromaster International LLC. **This warranty does not include labor.** Manufacturer shall have fifteen years experience in the U.S. market.

▲ PART THREE "PERFORMANCE"

COOLING

Each indoor unit, specified by the air handler equipment schedule, shall provide a total minimum capacity, SEER and EER at ARI standard conditions per the chart below. The system net minimum total cooling capacity and circulating air rate at 80° F (DB)/67° F (WB) entering the indoor coil and 95° F (DB) air entering the outdoor coil for the circuit combination on equipment schedule shall be rated per the chart below. The total power consumption of the combined system listed on the equipment schedule shall not exceed the wattage listed on the chart below.

Cooling Performance (MH4)						Legend: 9 = 9,000; 2 = 12,000; 5 = 15,000; 08 = 18,000; 04 = 24,000; 03 = 30,000					
Indoor Unit Combinations	Cooling Capacities (Btuh)					Outdoor Unit Power Consumption (W)	SEER	EER (1)	Compressor Amps	Fan Amps (2)	Total Current Amps (3)
	Zone 1	Zone 2	Zone 3	Zone 4	Total						
	Unit A	Unit B	Unit C	Unit D	Total						230V
9 + 9 + 9	9,400	9,400	9,400		28,200	2,820	10	10	11.4	1.0 or 1.8	12.4
9 + 9 + 9 + 9	9,400	9,400	9,400	9,400	37,600	3,760	10	10	15.2		16.2
2 + 2 + 2	11,200	11,200	11,200		33,600	3,360	10	10	14.4		15.4
2 + 2 + 2 + 2	11,200	11,200	11,200	11,200	44,800	4,480	10	10	19.2		20.2
5 + 5 + 5	14,200	14,200	14,200		42,600	4,260	10	10	19.2		21.9
5 + 5 + 5 + 5	14,200	14,200	14,200	14,200	56,800	5,680	10	10	25.6		28.6
08 + 08	17,100	17,100			34,200	3,420	10	10	14.8		15.8
04 + 04	22,400	22,400			44,800	4,480	10	10	19.2		20.2
03 + 03	28,600	28,600			57,200	5,720	10	10	23.4		25.4
MC2 = 2 Zone up to 15K Btu						MC4 = 2 Zone over 18K Btu					
(1) To obtain EER:											
When mixing/matching various capacities, add individual circuit capacities to get total system capacity. Example: MC4D9908; 9,400 + 9,400 + 17,100 = 39,900 Btuh											
Then obtain total wattage by adding individual circuit wattage to get total system wattage. Example: MC4D9908; 940 + 940 + 1710 = 3,590 Watts											
To obtain EER rating divide total system capacity by total system wattage. Example: MC4D9908; 39,900 / 3,590 = 10 EER											
(2) Fan Amps: Use 1.0 for all 9K, 12K, 18K and 24K models. Use 1.8 for any unit containing a 15K or 30K circuit.						(3) To obtain Total Amps (current) for specific model NOT on above chart: Example: MH49908; Compressor Amps + Fan Amps = Total Amps 7.6 + 7.5 + 1.0 = 16.1 Amps					

(MH4) EMI ENGINEERING SUBMITTAL

HEATING

The system shall provide a heating capacity and COP per chart below at ARI conditions, which is 70°F (DB) entering the indoor coil, and 47°F (DB)/43°F (WB) air entering the outdoor coil. The MH4 unit is limited range heat pump that will operate in heating mode down to 35°F +/- and turn off the compressor. At that time the electric heater in the EMI indoor unit (if option supplied) will operate to meet the heating need.

Heating Performance (MH4)						Legend: 9 = 9,000; 2 = 12,000; 5 = 15,000; 08 = 18,000; 04 = 24,000; 03 = 30,000				
Indoor Unit Combinations	Heating Capacities (Btuh)					Outdoor Unit Power Consumption (W)	COP (1)	Compressor Amps	Fan Amps (2)	Total Current Amps (3)
	Unit A	Unit B	Unit C	Unit D	Total					230V
9 + 9 + 9	8,000	8,000	8,000		24,000	2,268	3.1	11.4	1.0 OR 1.8	12.4
9 + 9 + 9 + 9	8,000	8,000	8,000	8,000	32,000	3,024	3.1	15.2		16.2
2 + 2 + 2	10,000	10,000	10,000		30,000	2,835	3.1	14.4		15.4
2 + 2 + 2 + 2	10,000	10,000	10,000	10,000	40,000	3,780	3.1	19.2		20.2
5 + 5 + 5	13,600	13,600	13,600		40,800	3,984	3.0	19.2		21.9
5 + 5 + 5 + 5	13,600	13,600	13,600	13,600	54,400	5,311	3.0	25.6		28.6
08 + 08	16,000	16,000			32,000	2,929	3.2	15.0		15.8
04 + 04	20,800	20,800			41,600	4,062	3.0	18.4		20.2
03 + 03	26,500	26,500			53,000	5,175	3.0	23.0		25.4
<div>(1) To obtain COP if you have a specific model NOT on this chart: Example: MH4D9908; (Total Btu ÷ Total W) ÷ 3.414 = COP (8,000 + 8,000 + 16,000) ÷ (756 + 756 + 1465) = COP 32,000 ÷ 2,977 = 10.75 ÷ 3.414 = 3.1 COP</div>										
<div>(2) Fan Amps: Use 1.0 for all 9K, 12K, 18K and 24K models. Use 1.8 for any unit containing a 15K or 30K circuit.</div>										
<div>(3) To obtain Total Amps (current) for specific model NOT on above chart: Example: MH49908; Compressor Amps + Fan Amps = Total Amps 7.6 + 7.5 + 1.0 = 16.1 Amps</div>										

▲ PART FOUR "INDOOR UNIT"

Each Multi-Zone condenser shall be matched with any of the following Indoor Units. See equipment schedule for corresponding air handler selection:

- FHP (Floor Series)** — The indoor unit shall be factory assembled, wired and contain a low voltage transformer. The cabinet shall be fabricated of G60 galvanized steel, finished in "off-white" with corrosion inhibiting polyester powder-coated paint. The evaporator fans shall be a forward curve centrifugal type, dynamically balanced and directly mounted to the motor(s) shafts. The motor(s) shall be PSC type with internal thermal overload protection. Return air shall be filtered by means of an easily removable electrostatic washable filter. The indoor unit shall have fresh air capability through the back of the unit. The evaporator coil shall be of nonferrous construction with louvered fins bonded to rifled copper tubing. The tubing shall have inner grooves for high efficiency heat exchange. All tube joints shall be brazed with phosphor copper or silver alloy. The coil shall be pressure tested at the factory. A condensate pan and drain shall be provided under the coil. System refrigerant flow shall be controlled by means of an orifice piston in the indoor unit. The unit electrical power shall be 208/230 Volts, 1 phase, 60 Hertz. The system shall be capable of satisfactory operation within voltage limits of 208/230 +/- 10% Volts.
- WHP (Wall Series)** — The indoor unit shall be factory assembled, wired and contain a low voltage transformer. The cabinet shall have a white paint finish. The evaporator fan shall be an assembly with line flow tangential fan direct driven by a single motor. The fan shall be statically and dynamically balanced and run on permanently lubricated bearings. An adjustable vane shall be provided with ability to change the airflow vertically. Return air shall be filtered by means of an easily removable electrostatic washable filter. The evaporator coil shall be of nonferrous construction

with louvered fins bonded to rifled copper tubing. The tubing shall have inner grooves for high efficiency heat exchange. All tube joints shall be brazed with phoscopper or silver alloy. The coil shall be pressure tested at the factory. A condensate pan and drain shall be provided under the coil. System refrigerant flow shall be controlled by means of an orifice piston in the indoor unit. The unit electrical power shall be 208/230 Volts, 1 phase, 60 Hertz. The system shall be capable of satisfactory operation within voltage limits of 208/230 +/- 10% Volts.

- **CHP (Ceiling Series)** — The indoor unit shall be factory assembled, wired and contain a low voltage transformer. The cabinet shall be fabricated of G60 galvanized steel, finished in "off-white" with corrosion inhibiting polyester powder-coated paint. The evaporator fans shall be a forward curve centrifugal type, dynamically balanced and directly mounted to the motor(s) shafts. The motor(s) shall be PSC type with internal thermal overload protection. The supply louvers shall be dual adjustable for airflow direction. Return air shall be filtered by means of an easily removable electrostatic washable filter. The indoor unit shall have fresh air capability through the top and back of the unit. The evaporator coil shall be of nonferrous construction with louvered fins bonded to rifled copper tubing. The tubing shall have inner grooves for high efficiency heat exchange. All tube joints shall be brazed with phoscopper or silver alloy. The coil shall be pressure tested at the factory. A condensate pan and drain shall be provided under the coil. System refrigerant flow shall be controlled by means of an orifice piston in the indoor unit. The unit electrical power shall be 208/230 Volts, 1 phase, 60 Hertz. The system shall be capable of satisfactory operation within voltage limits of 208/230 +/- 10% Volts.
- **CAH (Recessed Ceiling Series)** — The indoor unit shall be factory assembled, wired and contain a low voltage transformer. The indoor unit shall consist of galvanized steel chassis with fire-resistant thermal and acoustic foam insulation and pearl grey high-impact polystyrene fascia. This unit shall fit in the ceiling and have the capability of attaching a branch supply duct as well as a fresh air duct. The evaporator fan(s) shall be backward curved impeller centrifugal design, dynamically and statically balanced, and mounted on integral mounting rails. The evaporator motor(s) shall be multispeed, enclosed type with thermal protection and sealed lifetime bearings. The indoor unit shall have factory installed 1.5KW electric heat on the 9,000 and 12,000 Btuh models, 3KW electric heat on the 15,000, 18,000 and 24,000 Btuh models and 5KW electric heat on the 36,000, 42,000 and 48,000 Btuh models. The indoor unit shall be equipped with an orifice piston in the evaporator and shall have 4-way adjustable air supply louvers, on the 9,000 and 12,000 Btuh models, and motorized 4-way adjustable air supply louvers on the 15,000, 18,000, 24,000, 30,000, 36,000, 42,000 and 48,000 Btuh models. Return air shall be filtered by means of an easily removable filter(s). The evaporator coil shall be of nonferrous construction with louvered fins bonded to rifled copper tubing. The tubing shall have inner grooves for high efficiency heat exchange. All tube joints shall be brazed with phoscopper or silver alloy. The coil shall be pressure tested at the factory. A condensate pan and drain shall be provided under the coil. An integral condensate pump capable of lifting 18 inches shall be provided. The unit electrical power shall be 208/230 Volts, 1 phase, 60 Hertz. The system shall be capable of satisfactory operation within voltage limits of 208/230 +/- 10% Volts.
- **TBH (T-Bar Ceiling Series)** — The indoor unit shall be factory assembled, wired and contain a low voltage transformer. The cabinet shall be fabricated of heavy gauge galvanized steel. The ceiling insert grill shall be a designer white, aluminum, architectural panel with fixed position intake louvers and fixed, three way discharge louvers to minimize recirculation. Return grill shall be hinged for quick access to filter. The evaporator fan shall be an assembly with direct drive, double width, double inlet, and forward curved centrifugal fan in draw through configuration. The motor shall be a PSC type, with overload protection and mounted on vibration isolators. Return air shall be filtered by means of an easily removable disposable standard 20" x 20" x 1" filter. The evaporator coil shall be of nonferrous construction with louvered fins bonded to rifled copper tubing. The tubing shall have inner grooves for high efficiency heat exchange. All tube joints shall be brazed with phoscopper or silver alloy. The coil shall be pressure tested at the factory. A condensate pan and drain shall be provided under the coil. System refrigerant flow shall be controlled by means of an orifice piston in the indoor unit. The unit electrical power shall be 208/230 Volts, 1 phase, 60 Hertz. The system shall be capable of satisfactory operation within voltage limits of 208/230 +/- 10% Volts.

Sound Data (Indoor Models)								
Model	Size	dBa	Size	dBa	Size	dBa	Size	dBa
FHP	09,12	48.6	15	56	18	57.2	24,30	60.6
WHP	09,12	48	15,18	51	24,30	54	N/A	N/A
CHP	09,12,15	46.3	18	50.8	24,30	56	N/A	N/A
CAH	09,12	35	15,18,24	41	30	45	N/A	N/A
TBH	09,12	52.1	18,24	54.1	N/A	N/A	N/A	N/A

Model Weight Specifications (Indoor Models)						
Model	Size	Weight (Lbs)	Size	Weight (Lbs)	Size	Weight (Lbs)
FHP	9,12,15	110	18,24,30	120	N/A	N/A
WHP	09,12	85	15,18,24,30	115	N/A	N/A
CHP	09,12,15	115	18,24,30	135	N/A	N/A
CAH	09,12	50	15,18,24	86	30	128
TBH	09,12	160	18,24	165	N/A	N/A

▲ PART FIVE "CONTROL SYSTEM"

- **The FHP (floor) and WHP (wall) indoor unit control section** – shall consist of unit-mounted infrared compatible controls. Interconnect low-voltage wiring shall run from indoor unit to outdoor unit direct. **NO SPLICES**. When running low voltage wiring a double insulated, 5-wire 18 gage cable is mandatory or use shielded 5-wire cable. The microprocessor shall be factory wired and located within the indoor unit. It shall have the capability of sensing return air temperature and indoor coil temperature; large $\frac{3}{4}$ " LCD backlit display; operational range adjustable between 55° F and 95° F in one-degree increments; anti-short cycle compressor protection; minimum compressor run time; fan purge, fan remains on for 60 seconds after heat/cool call is dropped for improved efficiency; freeze protection to prevent evaporator freeze ups; annunciation provides an audio feedback when the control settings are changed; universal control board allows the unit to operate with either a straight cool or heat pump condenser; two stage heating when optional electric heat and heat pump condenser are selected; fan operation of auto (cycling), high and low (constant), auto fan operation automatically selects fan speed according to heating or cooling demand ; dry mode operates cooling and electric heat simultaneously to remove humidity, optional electric heat must be selected; test operation allows ease of testing after installation (all timers are eliminated); non-volatile back-up memory, control settings are maintained for an indefinite period during a power outage, when power is restored the equipment will resume operation after a three-minute compressor time delay; optional hand held infra-red controller. The control voltage between the indoor unit and the outdoor unit shall be 24 Volts A.C. The 24 Volts shall be generated from the indoor unit's 24 Volt 40VA transformer.
- **The CHP (ceiling), CAH (recessed ceiling) and TBH T-bar indoor unit control system** – shall consist of 24V Wall Thermostat Control – anti-short cycle compressor protection (*except TBH*); fan purge, fan remains on for 60 seconds after heat/cool call is dropped for improved efficiency (*except TBH*); integral heating relay ensures that the fan operates whenever electric heat is energized; two stage heating capable when matched up with an EMI heat pump and an appropriate two stage thermostat. Wiring shall run from indoor unit to the 24V wall thermostat and to outdoor unit. **NO SPLICES**. When running low voltage wiring a double insulated 18 awg wire should be used. The control voltage between the indoor unit and the indoor units shall be 24 Volts A.C. The 24 Volts shall be generated from the indoor unit's 24 Volt 40VA transformer.

MH4 Piping Specifications		
Model Size	Liquid (OD)	Suction (OD)
09,12	1/4"	1/2"
15	1/4"	5/8"
18	3/8"	5/8"
24,30	3/8"	3/4"

▲ PART SIX "OUTDOOR UNIT"

The outdoor unit shall be completely factory assembled, piped and wired. Unit shall be of a "multi-zone" configuration and contain multiple compressors sized per the equipment schedule. Each circuit is independent of the others. The cabinet shall be fabricated of G60 galvanized steel, finished in off white with corrosion inhibiting polyester powder-coated paint. The unit shall be furnished with one (1) direct drive, propeller type fan arranged for vertical discharge when configured in the MH4 cabinet. The motor shall have inherent protection, be of the permanently lubricated type, and resiliently mounted for quiet operation. The fan shall be provided with a guard to prevent contact with moving parts. When equipment schedule calls for 9,000, 12,000 or 15,000 Btuh compressor circuits, the compressors shall be of the high-performance rotary type with Duratec package, which consists of an oversized accumulator, factory installed solid core filter drier, loss of charge switch and thermal overloads. When equipment schedule calls for 18,000, 24,000 or 30,000 Btuh compressor circuits, the compressors shall be of the high-performance reciprocating type with thermal overloads. The compressors shall be mounted as to avoid the transmission of vibration. The refrigeration system shall have the capability to operate with a maximum height difference of 35 feet and overall refrigerant tubing length of 100 feet between indoor and outdoor sections without the need for line size changes or additional oil. The condenser coils shall be of nonferrous construction with louvered fins bonded to rifled copper tubing. On FHP, WHP and CNR units with unit mounted controls, the system shall be controlled by the microprocessor in the indoor matching unit. The TBH, CAH and CHP are controlled by a 24V wall thermostat. Heating expansion is controlled by a TXV in the outdoor unit. The electrical power shall be 208/230 Volts, 1 phase, 60 Hertz. The system shall be capable of satisfactory operation within voltage limits of 208/230 Volts +/- 10%.

▲ PART SEVEN "OPTIONAL EQUIPMENT"

- **Hand Held Infrared Remote Controller** – Option used to command the FHP and WHP unit-mounted controls.
- **24V Wall Thermostat Control** – Optional on the FHP (floor) and WHP (wall) indoor units – anti short cycle protection.
- **Infrared Control System (N/A on TBH)** – Optional on the CHP (ceiling) indoor unit. – Infrared Control Package shall have the capability of sensing return air temperature and indoor coil temperature; large 3/4" LCD backlit display; operational range adjustable between 55° F and 95° F in one-degree increments; anti-short cycle compressor protection; minimum compressor run time; fan purge, fan remains on for 60 seconds after heat/cool call is dropped for improved efficiency; freeze protection to prevent evaporator freeze ups; annunciation provides an audio feedback when the control settings are changed; universal control board allows the unit to operate with either a straight cool or heat pump condenser; two stage heating when optional electric heat and heat pump condenser are selected; fan operation of auto (cycling), high and low (constant), auto fan operation automatically selects fan speed according to heating or cooling demand; dry mode operates cooling and electric heat simultaneously to remove humidity, optional electric heat must be selected; test operation allows ease of testing after installation (all timers are eliminated); non-volatile back-up memory, control settings are maintained for an indefinite period during a power outage, when power is restored the equipment will resume operation after a three-minute compressor time delay; optional hand held infra-red controller.

(MH4) EMI ENGINEERING SUBMITTAL

- **Electric Heat** – Optional on the following air handlers and shall be factory installed, only; automatic reset high temperature cutout and redundant high temperature fuse link:
 - ☐ **FHP Floor Indoor Unit:**
 - 9,000, 12,000 and 15,000 Btuh = 3 KW
 - 18,000, 24,000 and 30,000 Btuh = 5 KW
 - ☐ **WHP Wall Indoor Unit:**
 - 9,000, 12,000, 15,000 and 18,000 Btuh = 3 KW
 - 24,000 and 30,000 Btuh = 5 KW
 - ☐ **CHP Ceiling Indoor Unit:**
 - 9,000, 12,000 and 15,000 Btuh = 3 KW
 - 18,000, 24,000 and 30,000 Btuh = 5 KW
 - ☐ **TBH T-Bar Indoor Unit:**
 - 9,000 and 12,000 Btuh = 3 KW
 - 18,000 and 24,000 Btuh = 4.8 KW
- **Wet Heat**
- **Chilled Water**
- **Internal Condensate Pump** – Shall be field installed or factory installed and shall have the following head lift:
 - ☐ **FHP Floor Indoor Unit** (all sizes) – 12 feet
 - ☐ **WHP Wall Indoor Unit** (all sizes) – 4 feet
 - ☐ **CHP Ceiling Indoor Unit** (all sizes) – 4 feet
 - ☐ **CAH Recessed Ceiling Indoor Unit** (all sizes) – 18 inches
 - ☐ **TBH T-Bar Ceiling Indoor Unit** (all sizes) – 12 feet
- **Low Ambient Control** – Optional on all models, heat pump is factory installed:
 - ☐ **Heat Pump Models:**
 - Factory Installed
 - Shall consist of a hot gas bypass valve per circuit which maintains constant suction pressure
- **Hard Start** – Shall be field installed
- **Sea Coast Coated Coils** – shall be factory installed; coating shall protect against corrosion due to acids, solvents and salt.



Comfort Where It Counts.

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