# HATCH

## AIR SOURCE HEAT PUMP

TRANSOM

**POTABLE WATER HEATER 140°F**

**AIR SOURCED LOW AMBIENT -30°F**

**CAPACITIES UP TO 700 MBH**

**MODULAR DESIGN FOR HIGHER CAPACITY**

## MAIN FEATURES

- DOUBLE WALLED CONDENSER
- VARIABLE SPEED SCROLL COMPRESSOR
- AIR SOURCE TUBE AND FIN COIL
- VARIABLE SPEED EC FANS
- DUAL STAGE/CIRCUIT
- ECONOMIZER VAPOUR INJECTED
- ELECTRONIC TX VALVE
- ELECTRIC DEFROST
- SMALL FOOTPRINT
- SERVICE ACCESS

MESTEK,INC.
A Mestek company

TRANSOM

The **Hatch air sourced heat pump** is available for potable hot water duty or as a boiler. It is dedicated air source heat pump specifically designed for high temperature (140°F) potable water. It can operate from -30°F to over 95°F.

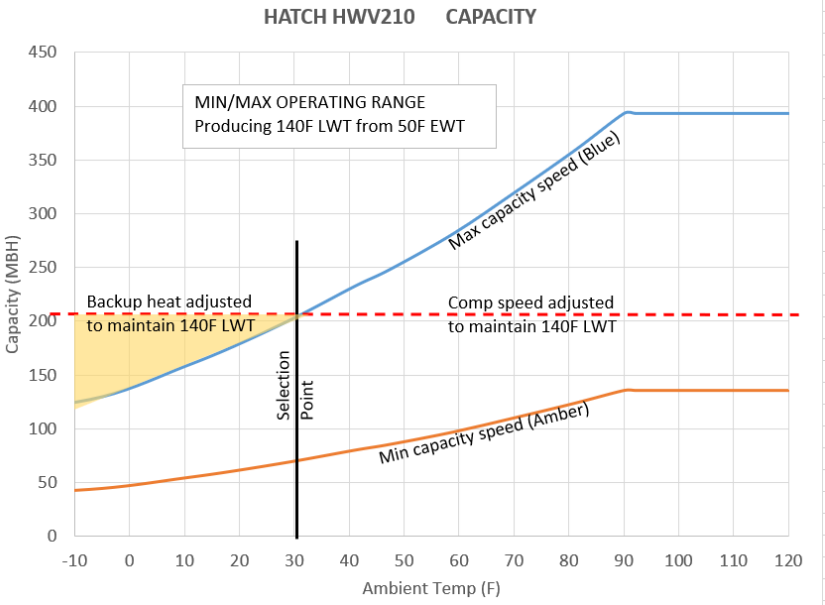
The variable capacity and operating capability of a wide ambient range makes this a drop-in replacement for conventional boilers.

Multiple units can be used to increase capacity and add redundancy. (N+1)

## OPERATING RANGE

The vapour injected scroll compressor will give a large ambient temperature operating range with supply water temperature set point adjustable from 70°F to 140°F.

The air sourced heat pump can operate from -30°F to over 95°F ambient temperature.




## CAPACITY CONTROL

The Hatch unit has a variety of methods to control leaving water temperature (LWT).

The compressor is DC inverter driven with a wide operating range. This allows the same machine to be applied to a single pass (high ΔT) or multiple pass (low ΔT) without additional adjustment.

The unit comes equipped with a variable capacity inverter driven compressor. The compressor is equipped with a vapour injection port allowing the use of an economizer circuit to increase the capacity at low ambient conditions as well as good COP. The unit is also equipped with variable speed fans that will modulate in accordance with the ambient conditions.

## DEFROST

Defrosting is done by electrical heating rods embedded into the tube and fin coils. This way, the unit does not need to switch to reverse mode during the defrost mode on the outside coil in low ambient conditions. This means there is no cooling affect on the portable water, unnecessarily reducing the capacity of the unit. In addition, using the heating rods, higher temperature can be reached quicker, resulting in a shorter defrost cycle.

The defrost cycle is temperature based with min/max override cycle times.

The electrical defrost is interlocked with the compressor so there is no additional electrical load.

## BACK UP HEATER

To make the Hatch heat pump a true drop-in replacement that will generate 140°F for the full ambient range then utilize the built-in electrical back up heater option.

Air source heat pump are tied to the ambient temperature. Maintaining constant capacity and leaving water temperature set point is a moving target. The Hatch heat pump has features that allows it to modulate both at high ambient and low ambient temp.

The heater is integral to the Hatch unit. It is located down stream of the condenser so if the LWT has not reached the set point the electric heater will top up (yellow section in the graph) the heat to reach the set point. This occurs automatically.

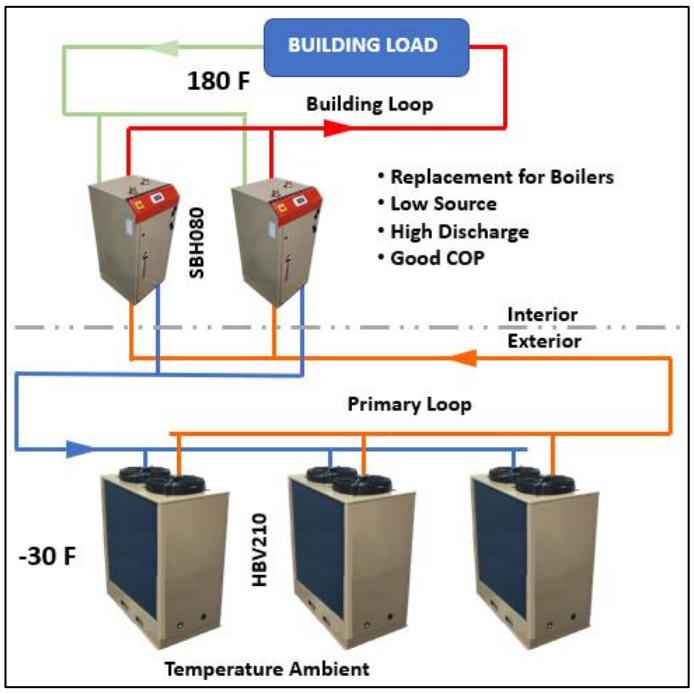
Secondly, if the heat pump is at extremely low ambient, or off for service, then the back up heater will add the full load required.

| Model | H_V105 | | | | H_V210 | | | | H_V420 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Single Pass | LWT / EWT = 140 / 50 F | | | | LWT / EWT = 140 / 50 F | | | | LWT / EWT = 140 / 50 F | | | |
| Ambient (F) | 15 | 32 | 47 | 77 | 15 | 32 | 47 | 77 | 15 | 32 | 47 | 77 |
| Heat (MBH) | 95.4 | 115 | 135 | 180 | 190 | 230 | 270 | 361 | 381 | 463 | 543 | 723 |
| Min Capacity | 16.7 | 20.1 | 23.6 | 31 | 33.4 | 40.3 | 47.3 | 63 | 67 | 81 | 95 | 127 |
| Work (W) | 12.0 | 12.5 | 12.7 | 12.6 | 24.0 | 24.9 | 25.4 | 25.0 | 48.3 | 48.5 | 50.0 | 50.1 |
| COP | 2.3 | 2.7 | 3.1 | 4.2 | 2.3 | 2.7 | 3.1 | 4.2 | 2.32 | 2.8 | 3.2 | 4.2 |
| Flow | 2.1 | 2.6 | 3.0 | 4.0 | 4.2 | 5.1 | 6.0 | 8.0 | 8.47 | 10.3 | 12.1 | 16.0 |
| Multiple Pass | LWT / EWT = 140 / 120F | | | 140-115F | LWT / EWT = 140 / 120F | | | 140-115F | LWT / EWT = 140 / 120F | | | 140-115F |
| Ambient (F) | 15 | 32 | 47 | 77 | 15 | 32 | 47 | 77 | 15 | 32 | 47 | 77 |
| Heat (MBH) | 95.8 | 110 | 132 | 178 | 191 | 221 | 265 | 356 | 378 | 463 | 542 | 713 |
| Min Capacity | 16.8 | 19.4 | 23.2 | 31 | 33.5 | 38.8 | 46.4 | 62 | 66 | 81 | 95 | 125 |
| Work (W) | 15.3 | 16.2 | 16.4 | 16.3 | 30.6 | 32.3 | 32.8 | 32.7 | 62.7 | 64.2 | 65.3 | 65.4 |
| COP | 1.8 | 2.0 | 2.4 | 3.2 | 1.8 | 2.0 | 2.4 | 3.2 | 1.8 | 2.1 | 2.4 | 3.2 |
| Flow | 9.6 | 11.1 | 13.3 | 14.3 | 19.2 | 22.2 | 26.5 | 28.5 | 37.7 | 46.3 | 54.2 | 57 |

## MAIN COMPONENTS

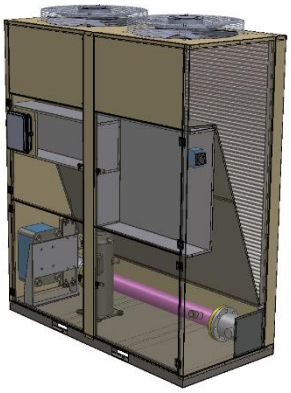
1. Scroll compressor, variable capacity, vapour injection controlled
2. Two double walled, brazed plate load coil, stainless steel
3. Fluid piping is stainless steel
4. Fluid line includes flow switch
5. Economizer circuit
6. Tube and fin outdoor coil, rifled tubes for greater heat transfer capability
7. Refrigerant line includes filter drier, solenoid, and sight glass
8. Electronic TX valve and controller for better control over large operating range
9. Variable speed EC fans. Two per circuit
10. Microprocessor controller c/w temperature and pressure sensors.

The unit is factory charged and tested before shipping. This way the installation only has the final functions remaining to be




## POWER AVAILABLE

208-230/3/60
460/3/60
575/3/60



Location of backup heater

For high temp boiler application, the Hatch HP and the Severn HP can be used in a Cascade system. This would allow 180°F water to be generated from -30°F ambient conditions.

The Severn water to water heat pumps can be placed indoors allowing for the circulation loop through the building to be 100% water.

The Hatch air sourced units would generate 90-100°F intermediate water loop temperature.

The Severn water to water heat pump would then bring it up to 180°F

The Master controller would stage all the units and set points as the ambient varies.

| DIMENSIONS | H_V105 | H_V210 | H_V420 |
|---|---|---|---|
| Length (in) | 58 | 90 | 90 |
| width (in) | 32 | 32 | 64 |
| height (in) | 58 | 85 | 85 |
| weight (lb) | 950 | 1350 | 2550 |

## OPTIONS

1. Back up heater
2. Pump, low or high volume
3. Blower for high static
4. Master controller and sensors
5. Remote controller/display
6. BACnet or Modbus communication
7. Built-in central centrifugal pump
8. Standard single wall indoor coil

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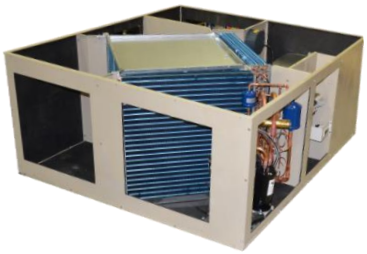
# Other Products

TRANSOM

## TRENT CHILLER

- Capacities available from 2 to 7 ton
- Year-round operation
- Floating head pressure control
- 2 Stage scroll compressors
- Energy savings features
- Low temperature kit included
- Brazed Plate HX
- Built-in centrifugal pump
- Flow switch
- Swept fan blade design
- Variable speed fan
- Hydrophobic coated coil



## LAMBERT CHILLER

- Capacities available in **20 to 80 ton**
- Up to 12 modules
- Redundancy N+1, N+2
- Capacity control
- High turn down
- Brazed plate heat exch.
- Water cooled
- Pre-made modular header
- Scroll compressors, dual circuit
- Smallest footprint

## RAWSON CHILLER

- Capacities available from 10 to 80 ton
- Year-round operation
- 2 Stage control
- Energy saving features
- Low temperature kit included
- Brazed Plate HX
- Built-in centrifugal pump
- Flow switch
- Swept fan blade design

## TOPAZ MHP

- Heat Recovery and Heat Pump unit
- 500- 3200 CFM
- Flat Plate HX recovers most of the heat
- Heat Pump generates higher heat
- EC backwards curved blowers
- Tube and fin heat pump coils
- Defrost accessories
- Indoor and Outdoor model

## SEVERN WSHP

High Temp Water Sourced Heat Pump

- Capacities up to 1100 MBH
- 180F Leaving Water Temp
- Source range 30 to 110 F
- Cascade system
- Staged capacity
- Potable water or boiler
- Modular configuration
- Reversing
- Front serviceable

## SIMCOE ASHP

CO2 High Temp Air Sourced Heat Pump

- Capacities up to 600 MBH
- 190F Leaving Water Temp
- Source range -20 to 120 F
- Variable capacity
- Potable water to boiler
- Modular configuration
- Back up elec heater
- Integral Pump
- Reversing
- High static blower option

## HATCH ASHP

High Temp Air Sourced Heat Pump

- Capacities up to 560 MBH
- 140F Leaving Water Temp
- Source range -20 to 110 F
- Variable capacity
- Potable water to boiler
- Modular configuration
- Back up elec heater
- Integral Pump
- Reversing
- High static blower option