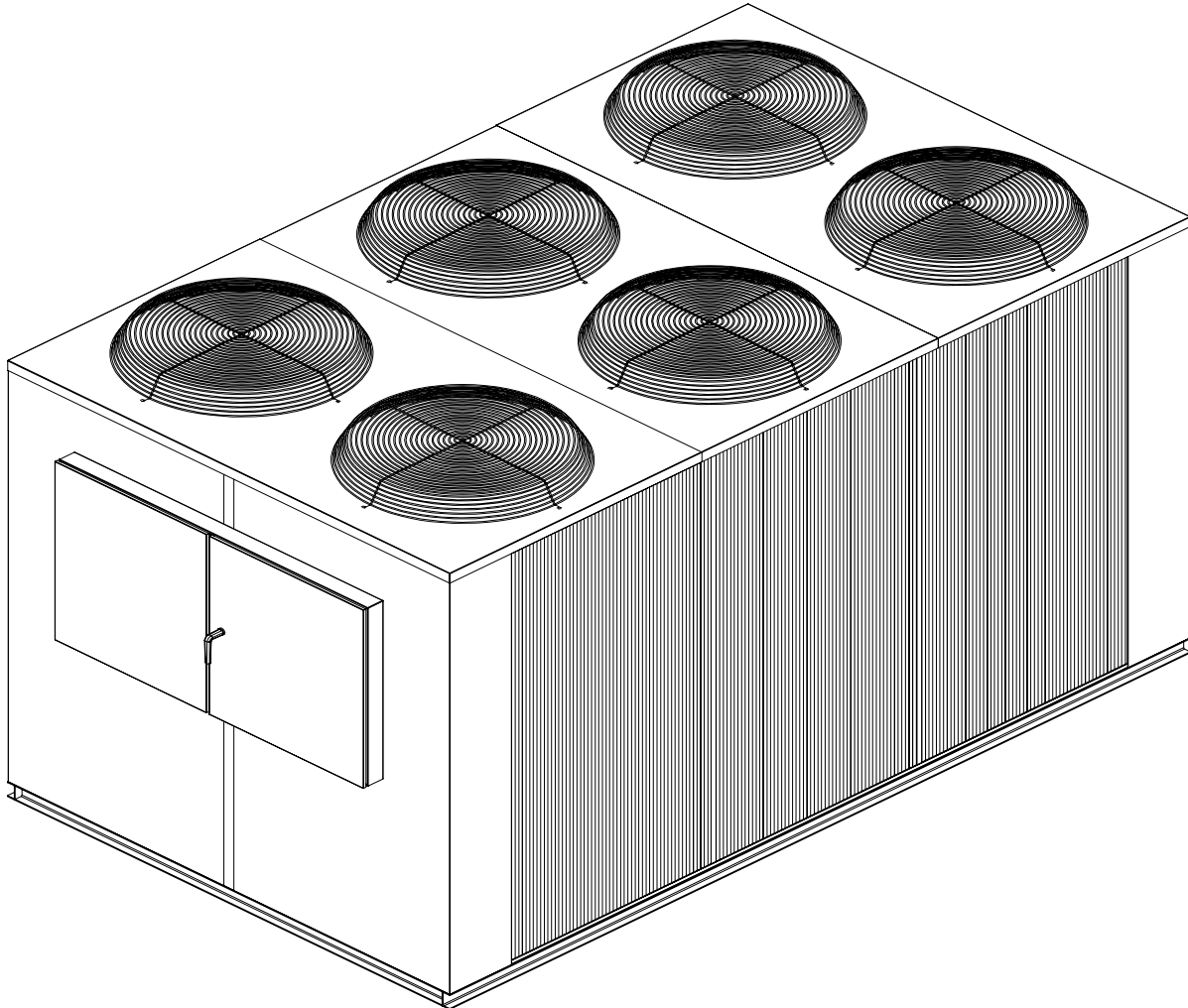




MORTEX PRODUCTS, INC.
501 TERMINAL ROAD
FORT WORTH, TEXAS 76106
Phone 817-624-0820 Fax 817-624-8581

**BICTECH™ AIR-TO-WATER HEAT PUMP CHILLERS
MODEL "HPAW" 30 TO 200 TONS**

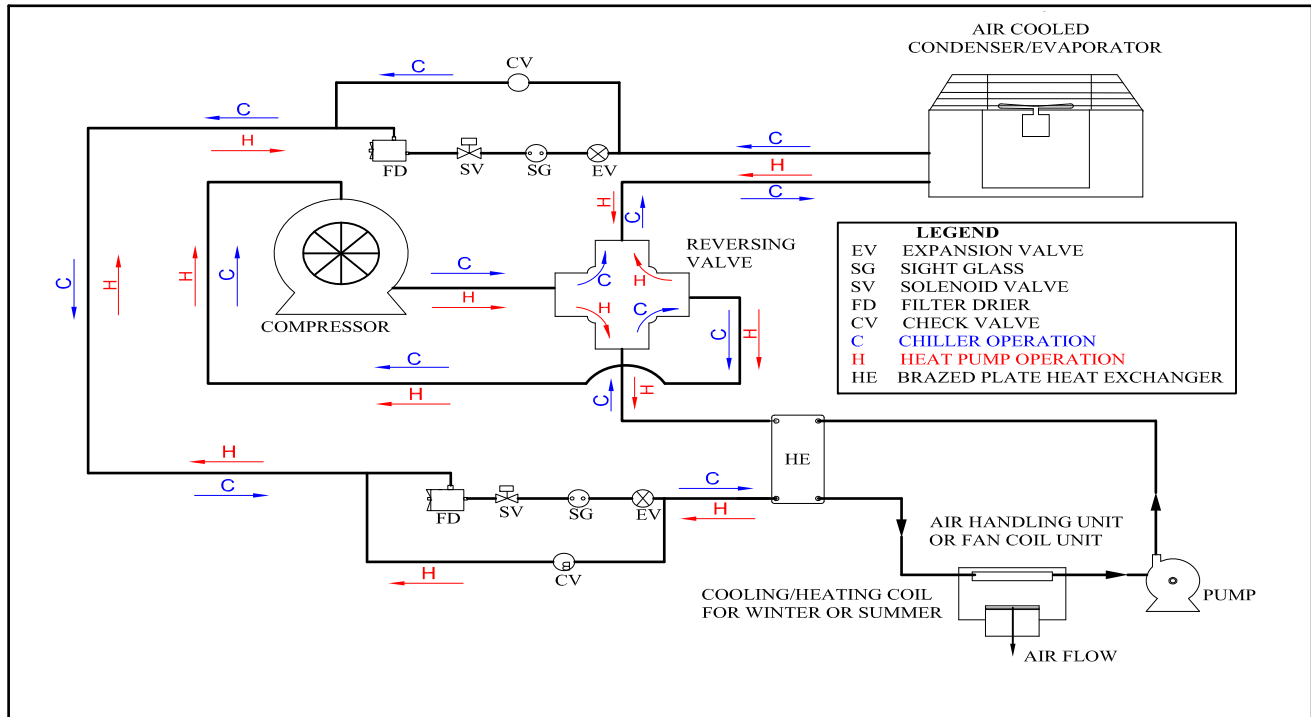


ALL YEAR ROUND OPERATION
CHILLED WATER IN SUMMER/HOT WATER IN WINTER
HIGHEST EFFICIENCY @ FULL & PART LOAD
MANY FACTORY MOUNTED OPTIONS

Form: HPAW-150(709)-1

BICTECH™ AIR-TO-WATER HEAT PUMP CHILLER MODEL “HPAW”

CAP’s BICTECH™ is a “green” and advanced technology air-to-water heat pump chiller Model HPAW that delivers chilled water in cooling mode and hot water in heat pump mode. BICTECH™ significantly reduces the overall energy costs all year round by using high efficiency components and “Best In Class” technology. Model HPAW can eliminate the need for a separate boiler or reduce major costs of heating. Large selection of 18 models cover a wide range from 30 to 200 tons.



HOW DOES IT WORK

Cooling Mode:

Upon demand for cooling the water circulates thru the brazed plate heat exchanger and the indoor air handlers or fan coil units. The compressor(s) discharge hot gas to the outdoor air cooled condenser coil, condensing the refrigerant and feeds the heat exchanger thru filter drier, sight glass, solenoid valve and finally the expansion valve. The refrigerant expands in the heat exchanger and chills the water flowing thru it; thus returning the cooled gas back to the compressor. The cycle repeats itself as long as the demand for cooling continues. The compressor(s) load and unload to match the varying cooling condition. In this condition the system operates as an air cooled water chiller.

Heating Mode:

Upon demand for heating the water circulates thru the same brazed plate heat exchanger and the indoor air handlers or fan coil units. Now the compressor(s) discharges hot gas thru the reversing valve to the heat exchanger and not thru the outdoor air cooled condenser.

This hot gas heats the water circulating thru the refrigerant-to-water heat exchanger, condenses the refrigerant into liquid and is returned to the outdoor air cooled coil, thru an expansion valve. In this case the outdoor coil acts as an evaporator and utilizes the ambient air as the heat source. The compressor(s) load and unload to match the heating requirements.

As an optional extra, an auxiliary hot water heater is available, which is factory mounted and wired in the water line. This can be activated in an emergency or when the outdoor coil is being defrosted.

Optional-Year Round Free Hot Water-Heat Recovery Mode:

An optional feature “CAP” offers an all year round hot water heat recovery system. In this case during cooling or heating mode the heat recovery takes place thru a factory mounted heat exchanger. The pump and pump starter prewired in the panel further reduces the field installation costs and space requirements.



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ENGINEERING SPECIFICATIONS

GENERAL DESCRIPTION:

CAP'S BICTECH™ line are environmentally friendly-CFC Free-Non-Ozone depleting heat pump chillers utilizing state of the art Screw compressors; high efficiency, counter balanced 316 SS brazed plate evaporators use copper tube aluminum fin condensers, independent refrigerant circuits and a single point electrical control center all on a common skid.

TWIN ROTOR SCREW COMPRESSOR:

Industrial quality twin rotor screw compressor has a built in oil management system and is directly driven by a 2-pole 3500 rpm suction gas cooled oversized motor with solid-state overload protection. The rotors are made of precision ductile cast iron housed in reinforced double walled cast iron casing. Capacity control is infinitely variable and is achieved by modulating slide valve control in response to load demand. As an alternate, step capacity control (100/75/50/25) is also available. Compressor crankcase has oil, sight glass, lifetime pleated oil filter, oil heater, built in suction strainer, internal relief valve, suction and discharge service valves, and discharge check valve.

AIR COOLED CONDENSER/EVAPORATOR:

Condenser coil-industrial quality, seamless copper tube.

Fins-All aluminum, die formed with full self-spacing collars which completely cover the copper tube; fins are mechanically bonded to the copper tubes. *Copper fins available as an option.*

Propeller Fans- Large surface, low speed, low sound level propeller fans for vertical air flow; fans are statically and dynamically balanced and operate at low tip speeds for low vibration and low sound levels.

Fan Guards-Made with protective coatings and meet OSHA requirements.

Fan Motors-Special "totally enclosed air over" motor design with built-in overload protection; three phase motors operate vertically at a low speed of 1100 rpm @ 60 Hz.

EVAPORATOR/HOT WATER GENERATOR"

UL Listed, 316 SS plate heat exchanger is copper brazed. It operates as an evaporator as well as a hot water generator.

REFRIGERANT PIPING:

Each refrigerant circuit includes:

- Filter Drier
- Sight Glass
- Solenoid Valve
- Expansion Valve
- Reversing Valve

CONTROL CENTER:

All power, starting, safety and operating controls are mounted in a built in, fully enclosed, weatherproof control panel.

Power Controls Include:

- Single Point Electrical Terminal Block.
- Compressor-Motor Contactors.
- Fan Motor Contactors.
- Control Circuit Fuses.
- Control Transformer.

Safety/Operating Controls Include:

- High Pressure Controls with Manual Reset.
- Low Pressure Controls with Auto Reset.
- Defrost Thermostat/Timer
- Temperature Freezestat.
- Relays.
- Built-In Compressor-Motor Overloads.
- Anti Recycle Timers.
- Compressor Crankcase Heaters.
- Emergency Stop Switch.
- Summer/Winter Mode Control Switch.
- Operating Thermostat.

TESTING, EVACUATION,& REFRIGERANT CHARGING:

Each completed system is pressure tested with dry air, evacuated with a high capacity vacuum pump, charged with R-134A and fully tested for all operating and safety controls. Field adjustment may be required at startup.

ASSEMBLY:

All above components are assembled on a heavy duty industrial structural steel frame, as a single pre-engineered package. The complete unit is cleaned, primed, and painted with exclusive pewter grey finish for years of outdoor life.

FACTORY MOUNTED AVAILABLE OPTIONS:

- Sound Enclosure.
- Fused or Non-Fused Circuit Breaker.
- Choice of Flanged or Grooved Connections.
- Pump Module with Factory Mounted VFD.
- Flow Switch.
- Operating Gauges.
- Indicating Lights.
- Copper Finned Condenser Coil.
- E-Coat or Heresite coated coil.
- Desuperheater.
- Compressor Cycle Counter/Hour Meter.
- All stainless steel hardware.
- Micro Controller



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BICTECH™ Model HPAW

MECHANICAL DESIGN DATA:

MODEL NO.	NO. OF CIRCUITS	COOLING TONS	HEATING MBTU	SUPPLEMENTAL HEATING KW	LENGTH	WIDTH	HEIGHT	WEIGHT LBS.
HPAW-35	1	26.0	256	10,20	162	86	57	4000
HPAW-40	1	32.0	324	10,20	162	86	72	4200
HPAW-50	1	37.0	368	20,30	162	86	72	4400
HPAW-60	1	44.5	432	20,30	186	86	72	4500
HPAW-70	1	49.5	496	20,30	186	86	72	5000
HPAW-80	1	62.7	622	20,30	186	86	88	6000
HPAW-90	1	71.0	648	20,30	232	86	88	7500
HPAW-110	1	83.4	845	30,40	232	86	88	8500
HPAW-120	1	93.6	902	30,40	232	86	102	10000
HPAW-702	2	52.0	512	30,40	186	86	85	5000
HPAW-802	2	64.0	648	30,40	232	86	88	6000
HPAW-1002	2	74.0	736	40,50	232	86	88	8000
HPAW-1202	2	89.0	864	40,50	232	86	102	9000
HPAW-1402	2	99.0	990	40,50	360	86	72	11000
HPAW-1602	2	125.4	1244	40,50	360	86	88	12500
HPAW-1802	2	142.0	1296	40,50	400	86	88	15000
HPAW-2202	2	166.8	1690	60,80	400	86	88	16500
HPAW-2402	2	187.2	1804	60,80	400	86	102	18000

* ARI tons based on 54°F /44 °F water 95°F degree ambient

* Heating based on 35°F ambient 120°F hot water.

ELECTRICAL DESIGN DATA:

MODEL NO.	COMPRESSOR QUANTITY	COMPRESSOR HP	COMPRESSOR RLA (EACH)	CONDENSER FAN QTY	CONDENSER FAN FLA (EACH)	UNIT MCA @ 460V
HPAW-35	1	35	56.1	4	3.4	84
HPAW-40	1	40	75.0	4	3.4	107
HPAW-50	1	50	103.0	4	3.4	142
HPAW-60	1	60	112.0	6	3.4	160
HPAW-70	1	70	120.0	6	3.4	170
HPAW-80	1	80	137.0	6	3.4	192
HPAW-90	1	90	145.0	8	3.4	209
HPAW-110	1	110	166.0	8	3.4	235
HPAW-120	1	120	203.0	8	3.4	281
HPAW-702	2	2 X 35	56.1	6	3.4	147
HPAW-802	2	2 X40	75.0	8	3.4	196
HPAW-1002	2	2 X 50	103.0	8	3.4	256
HPAW-1202	2	2 X 60	112.0	8	3.4	280
HPAW-1402	2	2 X 70	120.0	12	3.4	311
HPAW-1602	2	2 X 80	137.0	12	3.4	350
HPAW-1802	2	2 X 90	145.0	16	3.4	381
HPAW-2202	2	2 X 110	166.0	16	3.4	428
HPAW-2402	2	2 X 120	203.0	16	3.4	512

For 208/230 or 575 or 50 Hz. Contact Factory.