

motivair[®]
COOLING SOLUTIONS



MHP Air Source Heat Pump **2-Pipe & 4-Pipe Technology**

15 - 240 Tons / 15-120 Tons

OUR BUSINESS IS COOLING YOURS™

motivaircorp.com




Advancing HVAC design

The evolution of HVAC building design guidelines demand more effective and efficient means for heating and cooling commercial spaces. Motivair has taken on the social responsibility to drive market leading efficiencies with its development of air source heat pumps. The MHP delivers heating or cooling with a robust industrial design.

The chiller's large capacity range (15-240 tons) allows for optimum efficiency, scalability and load management in a compact footprint. Business and critical environments require chiller systems to provide a reliable source of hot or cold water, which can improve overall system uptime and reduce the total cost of ownership.

Every heating and cooling application is unique, which is why Motivair's Heat Pumps have been designed to accommodate a wide range of operating points and customization based specifically on the needs of the customer. No other chiller offers such a broad range of features and benefits that can be used in combination to create a chiller best suited for your business's needs.

As an industry leader, we aim to deliver innovative products, reliable solutions and an unwavering commitment to excellence.



DYNAMIC HEAT PUMP TECHNOLOGY

The Motivair MHP Air to Water Heat Pump chillers have been designed for clients looking for a simple and reliable product to both heat and cool their building. Ideal for 2-pipe systems, the MHP range spans from 15-240 tons and can be offered with a wide range of options.

The capacity of the MHP 4-Pipe series ranges from 15-120 tons. These units can control to hot and cold water setpoints independently or simultaneously depending on the system demand. Implement this unique multifunction technology into your specific application to increase system efficiency and reliability while decreasing the projects carbon footprint.

Today's state of the art controls allows for optimized heat pump efficiencies while giving the owner full local or remote control and monitoring of the system. Use of electronic expansion valves and EC fans increase efficiency and optimize capacity control.

With the ability to stage compressors on and off to meet any heating or cooling load, the MHP range can adapt to any building load profile. A complete list of standard and custom options allows a design engineer or owner to tailor each chiller to the building's specific needs.

Motivair Heat Pumps are often applied to commercial office spaces, institutional facilities, multi-purpose buildings and multi-unit residential buildings that have both heating and cooling requirements. The MHP range is best applied in geographical areas with more temperate climates such as the Pacific Northwest and Southern US.

FEATURES

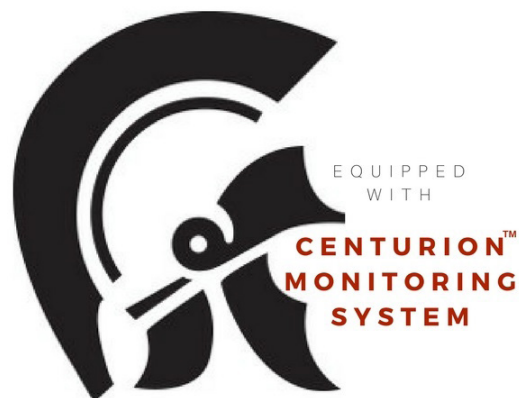
- Complete charge of R-410A environmentally friendly refrigerant.
- High efficiency Scroll compressors.
- Brazed plate or shell & Tube evaporators
- Low noise EC Condenser fan speed control
- Fan assemblies with TEAO motors, sickle cut composite fan blades and high strength safety guards.
- Powerful, easy to use, non-proprietary PLC
- Electronic expansion valve
- Integrated flow switch
- Easily adjustable control set points
- Intelligent defrost cycle
- Reliable heating down to 14°F
- Baked powder epoxy coat paint finish for long lasting attractive look.
- Standard weather-proof enclosure
- Simple service can be performed by any qualified refrigeration technician
- Removable access panels for easy service and maintenance

OPTIONS

- Integrated single or redundant circulation pumps
- Low Noise Package
- Condenser coil coatings for corrosive environments
- Condenser coil hail/filter protection
- Remote control panel
- Communication cards for connection to customer building management system
- Cloud based cellular remote monitoring



Advanced PLC controls



INTELLIGENT CHILLER RESPONSE

The Latest generation of Motivair® software allows the chillers to respond to system changes in real time and to adjust performance accordingly. The proprietary control logic in Motivair chillers provides:

- Automatic restart after a power outage
- Defrost cycle activated via temperature & pressure monitoring
- Heated copper tubes reduce buildup of frost
- Rapid restart of refrigeration compressors after a power outage, while affording maximum compressor protection
- Selective decision on which compressor(s) to start first based on run-time and fastest possible response to system load
- Liquid injection to the compressors under high ambient operation

CENTURION MONITORING SYSTEM

This optional feature empowers the owner by providing a wide range of safeties and access to critical data from a remote location via cellular service, outside of the customer's firewall.

If the chiller is operating in an unsafe condition or in the unlikely event of an alarm, designated contacts are immediately notified by the chiller of its condition. The pending alarm can then be avoided or quickly corrected.

FEATURES:

- Data trending
- Password protected multi-level access
- Adjustable warning thresholds

Application Defined Features & Options



COMPRESSORS

The MHP chillers feature Scroll compressors with R410A and are available from 15-250 tons. Options for 1, 2 or 4 independent refrigerant circuits come with up to 8 compressors, providing unloading for virtually unlimited capacity control. Redundant circuited chillers allow for one circuit to be serviced while the second circuit remains fully operational. Motor over-temperature and current protection provide extended compressor life.



CONDENSER FANS

The EC TEAO motors feature a reversed stator and rotor, eliminating the traditional motor shaft. The fans are suitable for outdoor use and provide variable speed operation. The industrial design includes composite blades, which do not flex or lose efficiency at the top of their performance curve and allow for reliable low ambient head pressure control.



EVAPORATORS

The MHP chillers feature either an ASME U and CRN stamped, dual circuited shell & tube evaporator or a brazed plate evaporator. The shell & tube vessel uses a direct expansion design complete with a carbon steel shell and heavy gauge copper tubes while the brazed plate option uses stainless steel plates with copper braze. Both options insure long life cycles and highly efficient heat transfer under varying loads.



ADDITIONAL OPTIONS

Standard EC fan speed control permits reliable chilled water operation in -20°F (glycol required). Integrated single or double pump options with single point power provide loop circulation within the chiller footprint. Low noise options provide year-round quiet operation. Hail guards and condenser filters prevent coil damage and clogging.

MHP Specifications

TECHNICAL SPECIFICATIONS:

| MHP Air-Cooled Heat Pumps with SCROLL compressors (15-50 tons) | MHP | 1200 | 1500 | 2200 | 3000 | 3500 | 4000 | 5000 | 6000 | 7200 |
|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| NOMINAL COOLING CAPACITY EWT 54°F LWT 44°F AMB 95° | BTU/h | 173,436 | 194,000 | 221,000 | 245,000 | 296,000 | 344,000 | 385,000 | 453,000 | 522,000 |
| Nominal Power Cooling Mode | kW | 19 | 24 | 25 | 30 | 34 | 40 | 46 | 57 | 65 |
| NOMINAL HEATING CAPACITY EWT 104°F LWT 114°F AMB 45°F | BTU/H | 187,000 | 211,000 | 245,000 | 271,000 | 330,000 | 375,000 | 429,000 | 513,000 | 595,000 |
| Nominal Power Heating Mode | kW | 20 | 24 | 26 | 30 | 33.25 | 40 | 75 | 55 | 63 |
| REFRIGERATING CIRCUIT | Qty. | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| SCROLL COMPRESSOR | Qty. | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 |
| CAPACITY STEPS | Qty. | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 |
| FANS / CONDENSER | | | | | | | | | | |
| FANS / CONDENSER | CFM | 11,000 | 11,000 | 11,000 | 11,000 | 11,000 | 15,000 | 15,000 | 20,000 | 20,000 |
| MHP FANS | Qty. | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 |
| OPTIONAL PUMP & TANK | | | | | | | | | | |
| NOMINAL FLOW | GPM | 34 | 39 | 45 | 50 | 60 | 69 | 77 | 91 | 104 |
| NOMINAL EVAPORATOR PRESSURE DROP | PSI | 5 | 6 | 5 | 7 | 5 | 6 | 9 | 8 | 7 |
| NOMINAL PUMP PRESSURE | PSI | 15 | 13 | 13 | 11 | 16 | 13 | 12 | 12 | 15 |
| NOMINAL PUMP ABSORBED POWER | HP | 1 | 1 | 1 | 1 | 1.5 | 1.5 | 1.5 | 2 | 2 |
| OPTIONAL PUMP ABSORBED CURRENT | A | 3 | 3 | 3 | 3 | 3.5 | 3.5 | 3.5 | 5 | 7 |
| VICTAULIC CHILLED WATER CONNECTIONS | IN | 1.5" | 1.5" | 1.5" | 1.5" | 1.5" | 2.5" | 2.5" | 2.5" | 2.5" |
| OPTIONAL TANK VOLUME | gallons | 50 | 50 | 50 | 50 | 50 | 75 | 75 | 125 | 125 |
| MHP SOUND PRESSURE LEVEL** | dbA | 69 | 69 | 70 | 70 | 70 | 73 | 74 | 74 | 74 |
| MHP LOW NOISE SOUND PRESSURE LEVEL** | dbA | 66 | 66 | 67 | 67 | 67 | 71 | 71 | 71 | 73 |
| DIMENSIONS AND WEIGHTS | | | | | | | | | | |
| MHP Length | IN | 100.5 | 100.5 | 100.5 | 100.5 | 100.5 | 100.5 | 100.5 | 140 | 140 |
| MHP Width | IN | 47.3 | 47.3 | 47.3 | 47.3 | 47.3 | 47.3 | 47.3 | 47.3 | 47.3 |
| MHP Height | IN | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| MHP Weight - Installed* | LBS | 1,387 | 1,474 | 1,518 | 1,760 | 1,958 | 2,068 | 2,310 | 2,530 | 3,058 |

| MHP Air-Cooled Heat Pumps with SCROLL compressors (60-240 tons) | MHP | 200 | 240 | 270 | 390 | 430 | 470 | 510 | 600 | 660 | 700 | 820 | 930 |
|---|-------|---------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| NOMINAL COOLING CAPACITY EWT 54°F LWT 44°F AMB 95°F | BTU/h | 696,000 | 825,000 | 911,000 | 1,328,124 | 1,395,000 | 1,560,000 | 1,729,000 | 2,000,000 | 2,258,000 | 2,415,000 | 2,627,000 | 2,869,000 |
| Nominal Power Cooling Mode | kW | 78 | 98 | 104.5 | 145 | 160 | 175 | 215 | 230 | 272 | 277 | 320 | 367 |
| NOMINAL HEATING CAPACITY EWT 104°F LWT 114°F AMB 45°F | BTU/h | 750,000 | 931,000 | 1,023,000 | 1,355,000 | 1,560,000 | 1,770,000 | 1,980,000 | 2,240,000 | 2,531,000 | 2,808,000 | 3,104,000 | 3,412,000 |
| Nominal Power Heating Mode | kW | 88 | 107 | 114 | 153 | 198 | 216 | 231 | 269 | 348 | 273 | 312 | 350 |
| REFRIGERATING CIRCUIT | Qty. | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 4 |
| SCROLL COMPRESSOR | Qty. | 4 | 4 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 8 | 8 | 8 |
| CAPACITY STEPS | Qty. | 4 | 4 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 8 | 8 | 8 |
| FANS / CONDENSER | | | | | | | | | | | | | |
| MHP TOTAL CONDENSER AIR FLOW | CFM | 45,961 | 61,000 | 61,000 | 61,000 | 82,000 | 82,000 | 82,000 | 120,000 | 120,000 | 130,000 | 130,000 | 140,000 |
| MHP FANS | Qty. | 4 | 6 | 6 | 6 | 8 | 8 | 8 | 10 | 10 | 12 | 12 | 14 |
| OPTIONAL PUMP SYSTEM | | | | | | | | | | | | | |
| NOMINAL FLOW | GPM | 137 | 168 | 185 | 238 | 280 | 310 | 335 | 396 | 4579 | 483 | 524 | 572 |
| NOMINAL EVAPORATOR PRESSURE DROP | PSI | 7 | 6 | 6 | 8 | 8 | 9 | 10 | 9 | 10 | 11 | 13 | 15 |
| NOMINAL PUMP PRESSURE | PSI | 19 | 15 | 14 | 18 | 17 | 15 | 20 | 17 | 17 | 18 | 16 | 14 |
| NOMINAL PUMP ABSORBED POWER | HP | 4 | 4 | 4 | 7.5 | 7.5 | 7.5 | 10 | 10 | 10 | 15 | 15 | 15 |
| OPTIONAL PUMP ABSORBED CURRENT | A | 6.5 | 6.5 | 6.5 | 13 | 13 | 13 | 18 | 18 | 18 | 25 | 25 | 25 |
| VICTAULIC CHILLED WATER CONNECTIONS*** | IN | 3" | 3" | 3" | 3" | 3" | 3" | 3" | 3" | 6" | 6 | 6 | 6 |
| MHP FULL LOAD AMPS (FLA)* | A | 133 | 171 | 174 | 220 | 279 | 336 | 354 | 457 | 525 | 576 | 645 | 722 |
| NOISE DATA | | | | | | | | | | | | | |
| MHP SOUND PRESSURE LEVEL** | dbA | 76 | 76 | 79 | 79 | 81 | 83 | 80 | 82 | 84 | 86 | 89 | 91 |
| MHP LOW NOISE SOUND PRESSURE LEVEL** | dbA | 74 | 74 | 77 | 77 | 78 | 79 | 78 | 79 | 84 | 83 | 86 | 88 |
| DIMENSIONS AND WEIGHTS | | | | | | | | | | | | | |
| MHP Length | IN | 110 | 158 | 158 | 158 | 197 | 197 | 240 | 284 | 284 | 376 | 376 | 376 |

Does not include optional pump(s) ** Optional Pumps & Tank may effect dimensions *** Does not include Optional pump(s) or tank (1) Series heat recovery configuration. Pumps and tank not available on MHR-W
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MHP 4-Pipe Specifications

TECHNICAL SPECIFICATIONS:

| Unit Model (scroll compressors - R410A) | Mod. | 62 | 92 | 132 | 152 | 192 | 222 | 312 | 442 | 482 |
|---|---------|----------|---------|---------|---------|---------|---------|-----------|-----------|-----------|
| | | | | | | | | | | |
| Cooling Only mode (1) | | | | | | | | | | |
| Cooling capacity | Btu/hr | 186,983 | 268,532 | 324,150 | 433,337 | 538,429 | 631,239 | 859,849 | 1,040,691 | 1,364,840 |
| Cooling Capacity | Tons | 15.6 | 22.4 | 27.0 | 36.1 | 44.9 | 52.6 | 71.7 | 86.7 | 113.7 |
| Power (compressors+ fans) | kW | 21.7 | 31.4 | 33.3 | 47.9 | 58.2 | 71.4 | 74.8 | 120.4 | 150.4 |
| | | | | | | | | | | |
| Heating Only mode (2) | | | | | | | | | | |
| Heating capacity | Btu/hr | 211550 | 301971 | 371919 | 470870 | 590293 | 696068 | 921267 | 1156702 | 1480851 |
| Power (compressors+ fans) | kW | 21.9 | 30.0 | 18.2 | 46.6 | 57.2 | 67.8 | 88.6 | 113.6 | 140.8 |
| | | | | | | | | | | |
| Simultaneous Cooling & Heating mode | | | | | | | | | | |
| Cooling capacity | Btu/hr | 185,618 | 276,380 | 328,926 | 436,749 | 539,112 | 658,535 | 853,025 | 1,081,636 | 1,419,434 |
| Cooling Capacity | Tons | 15.5 | 23.0 | 27.4 | 36.4 | 44.9 | 54.9 | 71.1 | 90.1 | 118.3 |
| Heating capacity | Btu/hr | 244,306 | 365,095 | 429,925 | 566,409 | 706,305 | 866,673 | 1,119,169 | 1,412,609 | 1,852,770 |
| Power (compressors) | kW | 16.8 | 25.2 | 28.7 | 37.2 | 47.8 | 58.8 | 75.4 | 94.8 | 123.2 |
| Refrigerating Circuit | Qty | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Scroll Compressor | Qty | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 4 | 4 |
| Capacity Steps | Qty | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 4 | 4 |
| EC Axial fans | Qty | 2 | 2 | 4 | 4 | 4 | 4 | 6 | 8 | 8 |
| Electrical supply | V/Ph/Hz | 460-3-60 | | | | | | | | |
| Dimensions | | | | | | | | | | |
| Length | in | 74 | 74 | 112 | 112 | 112 | 112 | 150 | 205 | 205 |
| Width | in | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 |
| Height | in | 85 | 85 | 84 | 84 | 84 | 84 | 85 | 85 | 85 |

(1) Cooling mode: EG20% water temperatures 54/44°F; Ambient temp. 95°F
(2) Heating mode: EG20% water temperatures 105/115°F; Ambient temp. 45°F
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motivair[®]

COOLING SOLUTIONS



MPC & MPC-FC

1/2-50 ton packaged air-cooled or water-cooled chillers for Industrial cooling, Medical cooling or custom HVAC applications. Includes integrated microprocessor, pump station, and storage reservoir.



MLC-SC Air-Cooled Scroll Chillers

100 – 285 tons air-cooled with scroll compressors to accommodate a wide range of operating points and customization for today's advanced industrial manufacturing and mission critical environments. Available Integrated Free-Cooling.



PTS

Pump/Tank Stations for chillers and cooling systems. Standard and custom designs available.



MFC

Closed loop dry-coolers for process cooling and remote "Free-Cooling" applications.



Chilled Door[®] Rack Cooling System

Advanced server rack cooling system fits in standard or OEM computer rack. Removes up to 75 kW of server heat per door. Learn more at www.chilleddoor.com



CDU

The Coolant Distribution Unit (CDU) provides 100% sensible cooling up to 1.25MW, depending on the model. For use with the ChilledDoor[®] or other IT cooling systems.

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