



HPHWW Series Installation Guide

INITIAL INSPECTION-

Be certain to inspect all cartons or crates on each unit as received at the job site before signing the freight bill. Verify that all items have been received and that there is no visible damage; note any shortages or damage on all copies of the freight bill. In the event of damage or shortage, remember that the purchaser is responsible for filing the necessary claims with the carrier. Concealed damage not discovered until after removing the units from the packaging must be reported to the carrier within 24 hours of receipt.

GENERAL DESCRIPTION-

The Water-to-Water series unit is a heat pump that provides the best combination of performance and efficiency available. Safety devices are built into each unit to provide the maximum system protection possible when the unit is properly installed and maintained.

NOTE: For well water applications, the minimum source EWT is 50° F, with sufficient water flow to prevent freezing. Antifreeze solution is required for all closed loop applications. Cooling Tower/Boiler and Earth Coupled (Geo Thermal) applications should have sufficient antifreeze solution to protect against extreme conditions and equipment failure. Frozen water coils are not covered under warranty.

MOVING AND STORAGE-

If the equipment is not needed for immediate installation upon its arrival at the job site, it should be left in its shipping carton and stored in a clean, dry area. Units must only be stored or moved in the normal upright position as indicated by the "UP" arrows on each carton at all times.

SAFETY CONSIDERATIONS-

WARNING: Before performing service or maintenance operations on the system, turn off main power to the unit. Electrical shock could cause personal injury or death.

Installation and servicing of this equipment can be hazardous due to system pressure and electrical components. Only trained and qualified personnel should install, repair, or service the equipment. When working on equipment, always observe precautions described in the literature, tags, and labels attached to the unit. Follow all safety codes. Wear safety glasses and work gloves. Use a quenching cloth for brazing, and place a fire extinguisher close to the work area.

LOCATION-

The unit should be centrally located with respect to the distribution system. The unit should be installed in an indoor area that allows easy removal of the access panels, and has enough room for service personnel to perform maintenance or repair. Provide sufficient room to make fluid, and electrical connections. These units are not approved for outdoor installation; therefore, they must be installed inside the conditioned structure. Do not locate in areas that are subject to freezing.

INSTALLATION-

The Water-to-Water series unit should be mounted level on a vibration absorbing pad slightly larger than the base to minimize vibration transmission to the building structure. It is not necessary to anchor the unit to the floor. If



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the unit is installed on a floor over a crawl space, it should not rest on long, unsupported floor joists. Vibrations may be created in the joists with the crawl space acting as an amplifier box resulting in undesirable noise. A drain pan is recommended where water released during start-up or maintenance could cause damage below the unit.

MINIMAL SYSTEM VOLUME-

Recommends that the total fluid volume in the system be not less than 6 gallons per nominal ton of cooling capacity on both the load and source sides.

ELECTRICAL-

WARNING: Always disconnect power to the unit before servicing to prevent injury or death due to electrical shock.

All field wiring must comply with local and national fire, safety and electrical codes. Power to the unit must be within the operating voltage range indicated on the unit's nameplate. On three phase units, phases must be balanced within 2%.

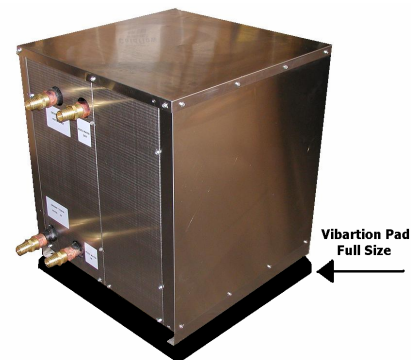
Properly sized fuse or HACR circuit breakers must be installed for branch circuit protection. See equipment rating plate for maximum size. The unit is supplied with an opening for attaching conduit. Be certain to connect the ground lead to the ground lug in the control box. Connect the power leads as indicated on the unit wiring diagram.

PIPING -

Supply and return piping must be as large as the unit connections on the heat pump (larger on long runs). Never use flexible hoses of a smaller inside diameter than that of the water connections on the unit. The Water-to-Water series units are supplied with either a copper or optional cupro-nickel condenser. Should your well driller express concern regarding the quality of the well water available or should any known hazards exist in your area, we recommend proper testing to assure the well water quality is suitable for use with water source equipment. In conditions anticipating moderate scale formation or in brackish water a cupro-nickel heat exchanger is recommended.

CAUTION: Galvanized pipe or fittings are not recommended for use with these units due to the possible galvanic corrosion.

Both the supply and discharge water lines will sweat if subject to low water temperature. These lines should be insulated to prevent damage from condensation. All manual flow valves used in the system must be ball valves. Globe and gate valves must not be used due to high pressure drop and poor throttling characteristics. Never exceed the recommended water flow rates. Serious damage or erosion of the water to refrigerant heat exchanger could occur.





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CAUTION: Improper heat exchanger fluid flow due to piping, valving or improper pump operation is hazardous to the unit and constitutes abuse which will void the heat exchanger and compressor warranty.

Always check carefully for water leaks and repair appropriately. Units are equipped with female pipe thread fittings. Consult the specification sheets for sizes. Thread sealant should be used when connecting water piping connections to the units to insure against leaks and possible heat exchanger fouling. Do not over tighten the connections. Flexible hoses should be used between the unit and the rigid system to avoid possible vibration. Ball valves should be installed in the supply and return lines for unit isolation and unit flow balancing.

COOLING TOWER / BOILER APPLICATION: (Figure #1)

To assure adequate cooling and heating performance, the cooling tower and boiler fluid loop temperature should be maintained between 50° F to 100° F. In the cooling mode, heat is rejected from the unit into the condenser water loop. A cooling tower provides evaporative cooling to the loop water; thus, maintaining a constant supply temperature to the unit. When utilizing an open cooling tower, chemical water treatment is mandatory to ensure the water is free of corrosive materials. A secondary heat exchanger (plate frame between the unit and the open cooling tower) may also be used. It is imperative that all air is eliminated from the closed loop side of the heat exchanger to prevent condenser fouling.

In the heating mode, heat is absorbed from the condenser water loop to the unit. A boiler can be utilized to maintain the loop within the proper temperature range. In milder climates a “flooded tower” concept is often used. This concept involves adding make-up water to the cooling tower sump to maintain the desired loop temperature. No unit should be connected to the supply or return piping until the water system has been completely cleaned and flushed to remove any dirt, piping chips or other foreign material. Supply and return hoses should be connected together during this process to ensure the entire system is properly flushed. After the cleaning and flushing has taken place, the unit may be connected to the water loop and should have all valves wide open. Pressure/temperature ports are recommended in both the supply and return lines for system flow balancing. Water flow can be accurately set by measuring the refrigerant-to-water heat exchangers water side pressure drop. See specification sheets for water flow and pressure drop information.

WELL WATER SYSTEMS: (Figure #2)

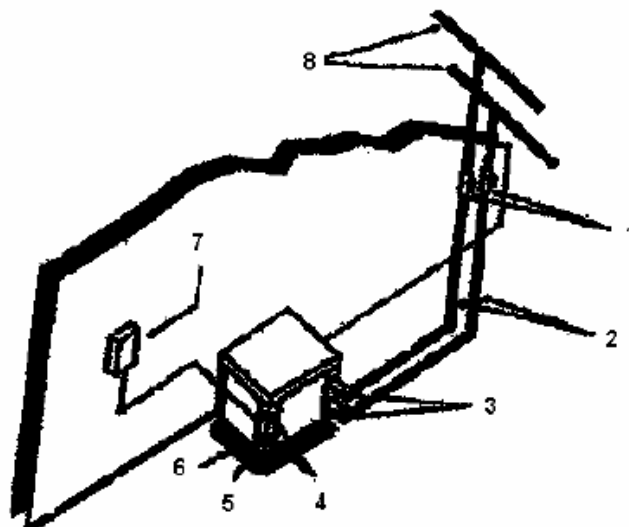
Water quantity should be plentiful, between 1.5 and 3.0 gpm per ton of cooling, and of good quality. To avoid the possibility of freezing in the heating mode, the well water should be above 50°F. Water pressure must always be maintained in the heat exchanger by placing a water control valve on the outlet of the water-to-water unit. A bladder type expansion tank may be used to maintain pressure on the system. All solenoid valves should be slow closing to avoid water hammer. The discharge water from the water-to-water unit is not contaminated in any manner and can be disposed of in various ways depending on the local codes (i.e. discharge well, dry well, storm sewer, drain field, stream, pond, etc.) Pilot operated or slow closing valves are recommended to reduce water hammering.

(FIGURE #1)

NOTE: Water and electrical connection locations vary depending on model. Connect as required per unit labels.

**COOLING TOWER/BOILER APPLICATION
(SOURCE SIDE)**

1. BALL VALVES
2. HOSE KITS
3. P/T PLUGS
4. LOAD SIDE CONNECTIONS*
5. LOW VOLTAGE CONTROL CONNECTION
6. VIBRATION PAD
7. LINE VOLTAGE DISCONNECT
8. SUPPLY AND RETURN LINES OF CENTRAL SYSTEM



(FIGURE #2)

NOTE: Water and electrical connection locations vary depending on model. Connect as required per unit labels.

**WELL WATER APPLICATION
(SOURCE SIDE)**

1. PRESSURE TANK
2. BALL VALVES
3. SOLENOID VALVE (SLOW CLOSING)
4. HOSE KIT
5. P/T KIT
6. LOAD SIDE CONNECTIONS*
7. LOW VOLTAGE CONTROL CONNECTION*
8. VIBRATION PAD
9. LINE VOLTAGE DISCONNECT

