

Installation Manual



HEP Series

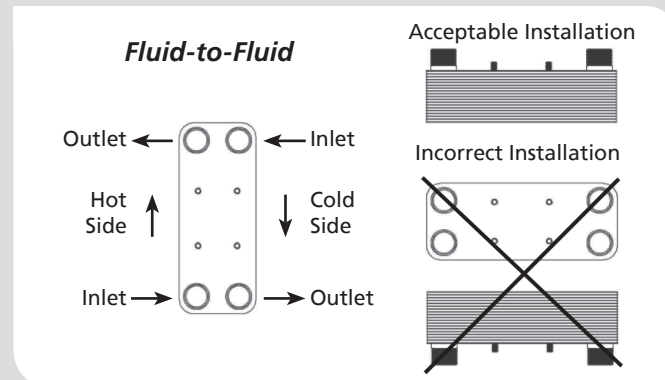
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General Installation Notes

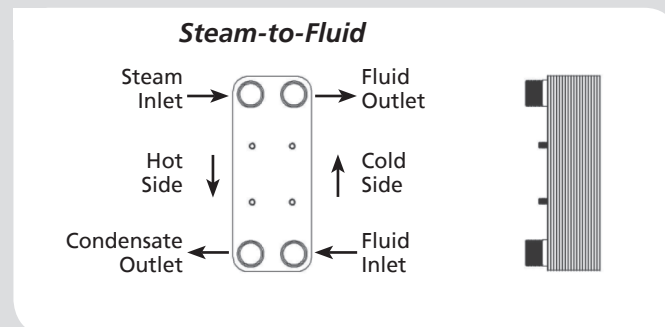
With extensive experience in hydronic and refrigeration heat exchanger design, GRUNDFOS Systems recommends a few key application tips when applying "Brazed Plate Heat Exchangers" to your systems.

■ **Installation:**

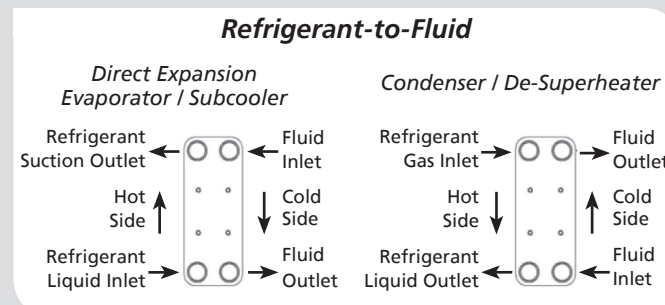
Fluid applications – Heat exchanger may be installed in either a vertical or horizontal position. If the application requires the heat exchanger to be mounted on its back, it is possible in this orientation for the heat exchanger to collect sediment and to be rendered useless in the system. Warranty claims due to sediment deposits will not be covered under warranty.



Steam applications - unit should be installed in a vertical position to ensure the condensate drains from the heat exchanger.



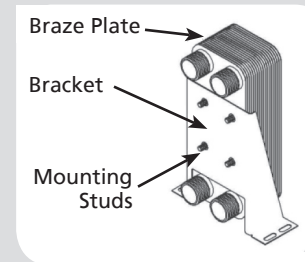
Refrigeration applications – Heat exchanger must be installed in a VERTICAL position.



General Installation Notes

■ **Mounting:**

Small units may be mounted by the base of the unit or steel clamps. Larger units should use a mounting bracket (See illustration); if there is a risk of vibration, use an anti-vibration device. Do not over tighten mounting nuts. Do not braze or weld mounting bracket to heat exchanger.

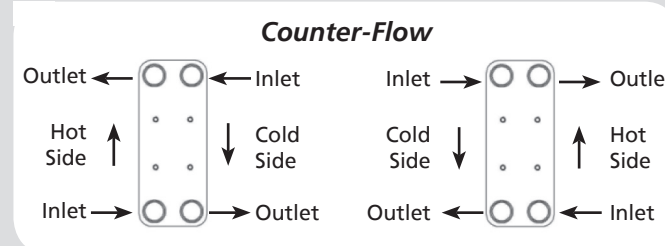


■ **Safety:**

Each side of the heat exchanger should be properly protected from over pressurization through the use of an appropriate safety relief device.

■ **Piping Installation:**

– Heat exchanger should be piped in counter-flow.



Thread Connections - Use Teflon tape or other sealant on male threaded part of connection to prevent leakage. Always use two wrenches when installing piping to heat exchanger connections to prevent over-torque stress and damage when tightening.

Solder / Sweat Connections – Use 45% silver solder (minimum), AWS grade BAg-24 or equivalent. Brazing flux should be AWS specification FB3C, AMS no. 3411 or equivalent. Use wet rag around base of connector, DO NOT OVERHEAT, purge unit with nitrogen. Do not braze unit in the horizontal, sitting flat, position; braze material may fall into the heat exchanger.

Welding – Should only be done to a supplied butt weld or socket weld connector. Prepare the edge of the piping with an appropriate bevel. DO NOT OVERHEAT, purge unit with nitrogen.

Water Strainer – A water strainer should be installed in the water inlet circuit to protect the heat exchanger from partial or complete blockage with a 16 – 20 mesh minimum, 20 – 40 mesh is a better choice.

General Installation Notes

■ **Water Quality:**

The water media pH value should be maintained at 7.4 (not less than 7.0 and no higher than 8.0) for proper heat exchanger life expectancy.

The standard series of heat exchangers, copper braze, will experience gradual copper erosion and premature failure of the heat exchanger.

■ **Glycols:**

Ethylene or Propylene based glycols - may be used with brazed plate heat exchangers. The glycol should be tested annually, or more often if required, to be sure the fluid still retains the desired properties and protection. No permanent connection should be made between a system containing ethylene glycol and a drinking water supply.

Automotive Glycols – Not recommended; usage may result in reduced thermal performance of the heat exchanger.

■ **Freeze Protection:**

It is not recommended to cool water below 33°F (0.6°C) due to the tolerances of the measuring equipment. For freeze protection it is recommended to use thermostats and / or temperature controls in the piping.

Low Pressure Cut-Out - In water chiller applications, in addition to the flow switch, the low pressure cut-out on the refrigerant side is the most important freeze protection control. To prevent freeze damage and to protect the heat exchanger and compressor, the low pressure cut-out should be set no lower than 28°F (-2°C), based on evaporator refrigerant pressure at this temperature. If part-load or transient loads cause the chiller to cycle off, use a resetting low pressure control with anti-cycling timer or install a hot gas bypass control to maintain the appropriate suction pressure at low loads.

NOTE: Use of a leaving chilled water sensor will not provide adequate freeze protection.

General Installation Notes

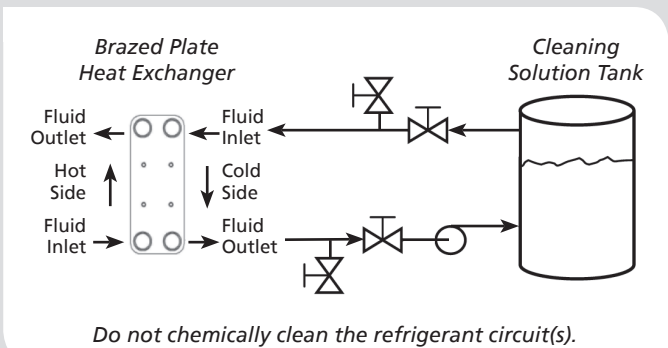
■ **Cleaning:**

In some applications the heat exchanger may be subjected to severe fluid conditions, including high temperature and / or hard water, causing accelerated scaling and corrosion rates and reducing the performance of the heat exchanger.

Because of these factors, it is important to establish regular cleaning schedules. Chemical cleaning is a very simple and effective process for removal of fatty and calcium deposits and other forms of scaling from brazed plate heat exchangers. Proper maintenance schedules will result in continued excellent performance and extended life.

Cleaning solutions, such as a commercially available de-scaler can be obtained from your local wholesaler. Make sure the cleaning solution is applicable for stainless steel and copper brazed, depending on the model, and that the manufacturer's directions are followed. A 5% solution of Phosphoric Acid or Oxalic Acid may be considered.

Do not heat the cleaning solution when back flushing through the heat exchanger. Flush the heat exchanger with fresh water after cleaning.



Do not chemically clean the refrigerant circuit(s).

Refrigeration Installation

With extensive experience in halocarbon refrigeration heat exchanger systems, GRUNDFOS recommends a few key application tips when applying “Braze Plate Heat Exchangers” to your systems.

■ Direct Expansion Evaporators / Subcoolers:

GEA PHE Systems Braze Plate Heat Exchangers are applicable for all types of halocarbon refrigerants.

Internal Distribution – The Advanced Evaporator plate is designed to distribute the gas evenly to provide optimum performance and operating stability. The thermal expansion valve may need a slight adjustment to obtain proper operation, with 5°F (-15°C) to 10°F (-12°C) Superheat. For optimum performance, do not oversize the expansion valve and, where practical, do not install elbows between the expansion valve and the refrigerant inlet.

Performance Hints – Direct Expansion at various temperature ranges:

- -10°F (-23°C) to 50°F (10°C) suction – No oil return problems.
- < -10°F (-23°C) suction – Possible oil return problems depending upon gas velocities; install oil separator or other method of oil return.
- Piping – Refrigerant inlet piping should be sized to 100 fpm (0.50 m/s) or greater velocity, liquid refrigerant.

■ Condensers:

Grundfos Braze Plate Heat Exchangers are applicable for all types of halocarbon refrigerants.

■ Ammonia:

Grundfos Braze Plate Heat Exchangers are applicable for Ammonia applications with Nickel-Chrome Braze Alloy. Please consult the factory, Applications Engineering, for correct model.

■ Insulation:

Recommend ½” to ¾” insulation for all evaporators and subcoolers to prevent sweating. For temperatures below -20°F (-29°C) consult the factory.

Warranty

GRUNDFOS USA - WARRANTY

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