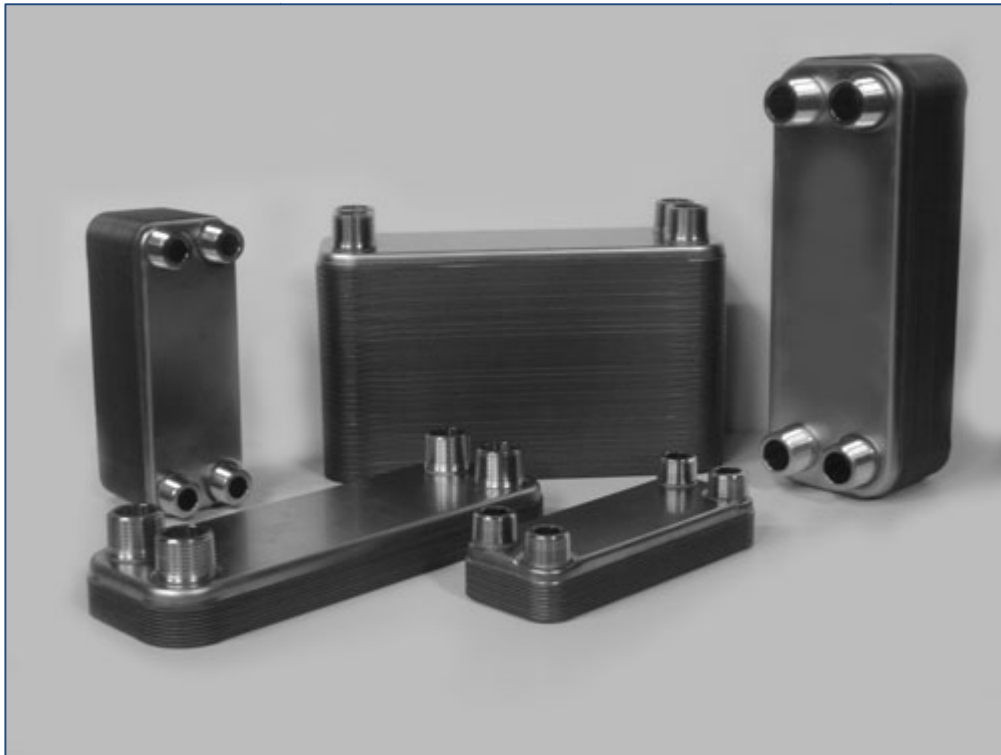


Brazed Plate Heat Exchangers

Installation and Maintenance Manual



General Information

Before proceeding with installation and operation read the entire manual carefully. Failure to do so may result in injury or property damage.

Inspection

Upon receipt of the heat exchanger, inspect shipping crates or cartons, protective covers and equipment for evidence of damage. Notify carrier immediately if damage is evident.

Any claims for damage or shortage in shipment must be filed immediately against the transportation company by the consignee.

Description

Brazetek heat exchangers consist of a pack of corrugated stainless steel plates brazed together by copper or nickel to form a self-contained unit. Adjoining plates are reversed and create two separate flow channels with two mediums in counter-current.

Standard Materials

Plates: 316L Stainless Steel

Brazing Material: Copper 99.9% or Nickel

Standard Construction

Standard Pressure Rating: 435 psi (30 bar; 3 Mpa)

Standard Operating Temperature: -256°F/435°F (-160°C/225°C)

PLEASE REFER TO THE DATA ON THE LABEL OF THE HEAT EXCHANGER.

CAUTION: It is the responsibility of the Purchaser or Purchaser's Agent to ensure the materials of construction of the equipment are suitable for the fluid chemistry and environment where the equipment is to be used.

Installation Instructions

Mounting Position

Mount the unit so there is sufficient room around to perform maintenance. The unit should be piped with counter current flow arrangement for optimal performance. Always mount the unit vertically. Never mount the heat exchanger with the connections pointing downward. (See Fig. 1)

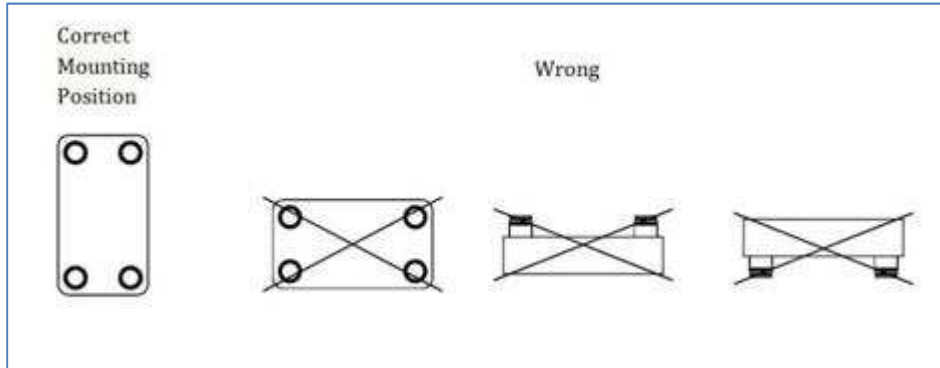


Figure 1 – Correct Mounting Position

Mounting options

Preferably, the heat exchanger should be supported from a bottom, by a metal bracket (insert rubber strip between the bracket and HE), by crossbar and bolts (insert rubber strip between the crossbar and HE). The unit should not be supported solely by the piping.

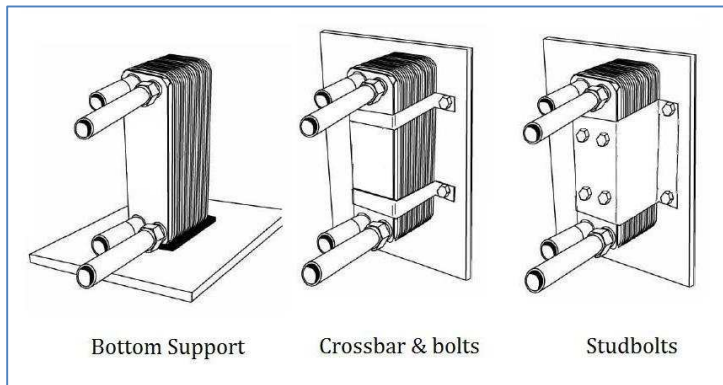


Figure 2 – Mounting Options

CAUTION: Do not weld or braze brackets or attachments directly to the body of HE.

Over-torque of threaded connections

DO NOT OVERTIGHTEN. Tighten pipe connections only enough to prevent leaking. Excessive force may result in damage to the connection braze, causing unit to fail. Use pipe sealant material compatible with the system fluids for threaded connections.

Vibration

Never expose unit to pulsations, excessive cyclic pressure or temperature changers. If the risk of vibration exists, install vibration absorbers. Rubber mounting strip also can be used as a buffer between HE and mounting clamp. Use flexible connectors.

Water Hammer

Install an air chamber or a water hammer arrestor. Another way to control water hammer is to use valves with controlled closing times or controlled closing characteristics.

Connecting HE to the system

Consideration should be given to other equipment that may be required for satisfactory operation, including but not limited to:

- Pressure relief valves;
- Isolation valves;
- Strainers and filters;
- Temperature and pressure indicators and alarms.

Install proper safety valves, an air elimination device, controls and temperature alarms to ensure the intended design conditions of the heat exchanger are not exceeded. Use of expansion tank is recommended.

CAUTION: Do not operate HE under temperature and pressure conditions in excess of the design limits displayed on the label of the unit.

Insulation

Insulation is recommended and can be made using extruded insulation sheets cut into appropriate sizes and glued together.

Fouling

In most cases, fluids flowing through the HE are not free from dirt, oil, grease, chemical and organic deposits. An unwanted build-up may accumulate on the plate surface, therefore decreasing the heat transfer efficiency and increasing the pressure drop.

Be sure the entire system is clean before starting operation to prevent clogging of passages of the HE with debris.

Remove all plugs and shipping covers immediately prior to installing. Inspect all openings of the heat exchanger for foreign material before piping. The unit must be free from any material insoluble in the system fluid.

Strainers

Install strainers on pipelines leading to the heat exchanger; otherwise, particles could block the channels, causing low performance, increased pressure drop, and risk of freezing. If any of the media contain particles over 1 mm, install a strainer with at least 16-20 degree mesh to prevent particles from entering the unit. If smaller mesh is used, it may result in unwanted pressure drop.

Chemical water treatment

Chemical water treatment can be an effective method for prevention of scaling, fouling due to biological growths and corrosion. Consult a water treatment specialist to determine correct treatment for your particular case.

Cleaning

Heat Exchanger should be cleaned at regular intervals depending on the fluid quality.

Use detergents for fatty deposits. For heavier deposits use chemicals compatible with copper like formic, citric, vinegar, or other organic acids.

Back flush the cleaning solution with at least 1.5 times the normal flow rate. When using a commercial cleaning products verify with manufacture that all cleaning compounds are compatible with the materials of HE.

After cleaning rinse HE with clean water. Use a solution of 1-2% hydroxide (NaOH) or sodium bicarbonate (NaHCO₃) before the last rinse to ensure that all acid neutralized.