

9. CIP Cleaning

In some working situations the fouling risk is high, e.g. by hard water and high temperatures. It is always possible to clean a heat exchanger by circulating a cleaning liquid with a weak acid CIP (Cleaning In Place). Use a detergent with a weak acid, 5% phosphorus, or 5% oxalic acid if the heat exchanger is cleaned regularly. Circulate the detergent through the heat exchanger.

In order to obtain an optimal cleaning effect the detergent must be circulated by minimum 1.5 times the normal flow. The best result will be obtained by opposite flow direction. Rinse thoroughly with water so that the acid is removed from the system. Clean the heat exchanger regularly.

10. Filter

We always recommend mounting a strainer for the primary as well as the secondary side. Filth accumulated in the heat exchanger may cause a low output resulting in a big pressure loss and/or freezing of the heat exchanger.

11. Insulating Jackets

For cooling tasks the insulating jacket of 20 mm EPDM or insulating jacket made of mineral wool is suitable.



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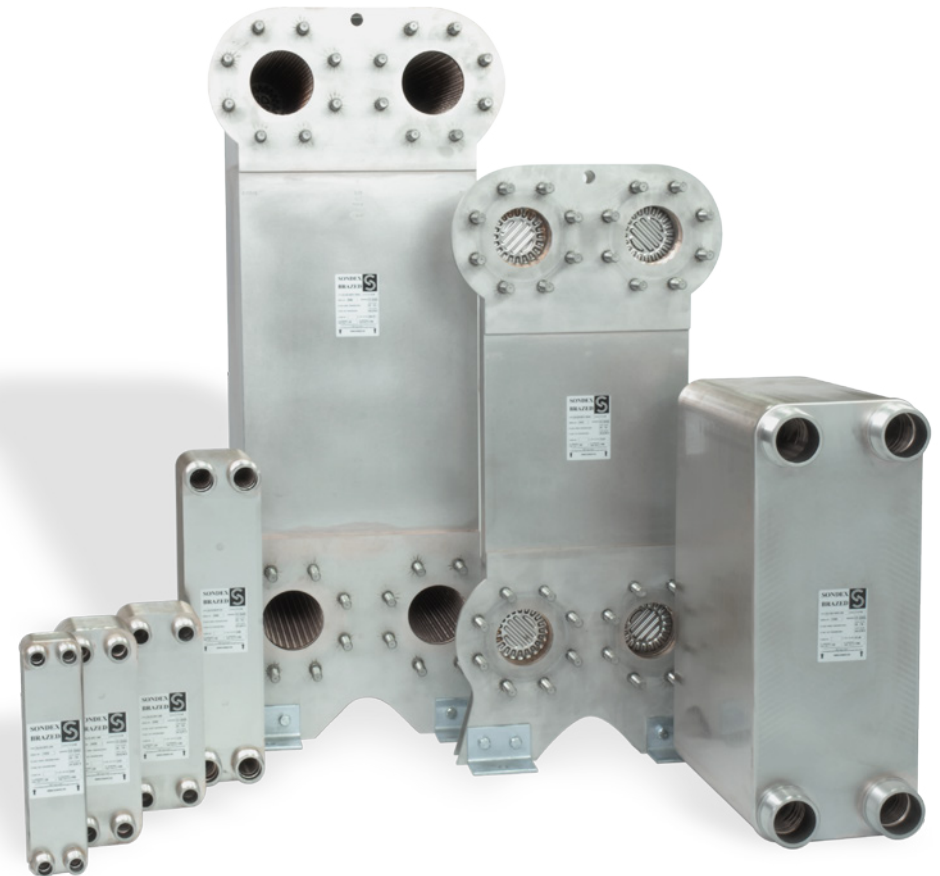
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► Installation and Maintenance Manual

Brazed Heat Exchangers



Sondex Brazed Heat Exchangers

Thank you for choosing a Sondex product. Before you start using your new heat exchanger we recommend that you read this installation and maintenance instruction thoroughly and adhere to the recommendations contained therein.

Sondex cannot be held responsible for damages arising from incorrect installation or operation. Failure to comply with the warnings and instructions contained herein may void any warranty.

1. Installation

When the pipe system is connected with the heat exchanger make sure that no piping loads (including torque effects) are transferred from the piping system to the heat exchanger. The pipe system must be isolated against pressure pulsations, vibrations and any thermal shock when connected to the heat exchanger.

Sondex brazed heat exchangers must be mounted in a vertical position. See your local Sondex representative if you wish to vary from this position. In order to support the heat exchanger it is advisable to use a mounting bracket fitted at the bottom of the heat exchanger, however other methods that protect against vibration & thermal shock are acceptable.

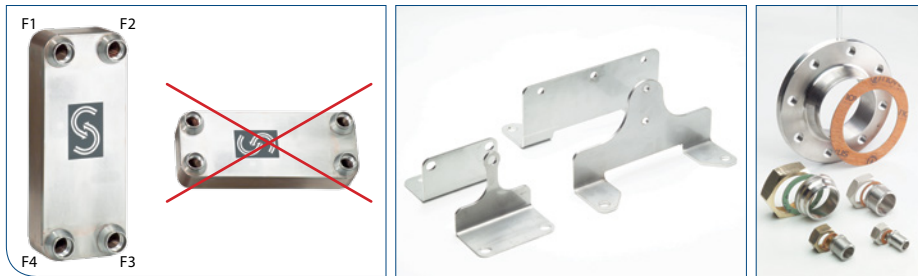


Fig 1. Installation. Sondex brazed heat exchangers must be mounted in a vertical position.

Fig 2. In order to support the heat exchanger it is suitable to use a foot unit at the bottom of the heat exchanger

Fig 3. Screw Connection

2. Screw Connections/Pipe Installation

Make sure that the unit is not over tightened on the threaded connections as this may damage the internal soldering of the connections. The threads provided are parallel. The unit can be tightened by using an O-ring or a circular gasket which is placed at the end of the connections, alternatively, the use of thread tape is equally acceptable, however be extremely careful "Not" to over tighten the fitting.

IMPORTANT: To prevent leak on the heat exchanger it is extremely important that NO welding is carried out on the appliance. To secure a correct installation we highly recommend purchasing connection fittings from Sondex (see figure 3).

3. Brazed Connections

The soldering temperature of a copper brazed heat exchanger must never exceed 800°C, as the structure of the copper brazing will change and result in an internal or external leakage on the connection. Therefore we recommend that all solderings take place with a silver plumb with a silver content of at least 45%.

This secures:

- A relative low soldering temperature and a high flowability.
- All characteristics are preserved
- A high thermal stress.
- Limited, thermal stress.
- A high corrosion resistance.
- A short soldering time.
- Minimum use of soldering material.
- A tight and strong connection. Good finish.

4. Installation for liquid/liquid operation

Connection must always be connected in counterflow. F1 at F4 and F3 at F2 or according to the thermal calculation made for the task in question (see fig. 1).

5. Installation of refrigerants/steam

It is important that the cooling channels in the heat exchanger are encircled by water/brine pipes on both sides. This means that on each heat exchanger the first and last pipe must be in water/brine channel.

Refrigerant is normally connected in the left side and the water/brine medium in the right side of the heat exchanger. Left and right are defined by installing the heat exchanger vertically with the connections turned towards you. Furthermore, F2 and F3 are containing an additional cooling channel securing that the cold medium is kept departed from the heads/followers. (See fig. 1)

6. Start-up

1. Close all valves connected to the heat exchanger.
2. Fill up and ventilate the coldest side first.
3. Open the valves gradually and start the circulating pump. Keep opening the valves gradually until they are quite open.
4. Repeat point 3 on the hot side.
5. Start the automatic control.

7. Steam

Drain the steam side before the steam valve is opened. This precaution reduces the probability of water hammer. (Water hammer and thermal shock can damage the heat exchanger and void any warranty).

8. Shutdown procedure

1. Close the hot side by means of slow adjustment of the control valve.
Full flow on the cold side must be kept.
2. When the control valve is totally shut down, the pump must be closed.
3. Slowly close down the cold side, close the pump.
4. Close all insulating valves.
5. When the device is cold it must be totally drained.