

XTUBE® B-Type

Description

XTube® B-Type heat exchangers are manufactured from stainless steel and consist of a bundle of corrugated tubes mounted within an outer tube (which forms the outer shell). The fluid to be treated (the product) flows through the interior of the tubes forming the tube bundle and the service fluid outsider the inner tubes, through the shell.

The units can be supplied completely welded or with a removable inner tube bundle, depending on the application and customer preference.

The range of units uses shell and inner tube diameters to satisfy the flow rates of the process fluids and the inner tubes are corrugated to significantly enhance the rate of heat transfer.

When the heat exchanger is to be subjected to frequent starts and stops the XTube® B-Type recommended is the removable the bundle design as this minimises the damaging effects of metal fatigue. The fluid flowing through the inner tubes (the product) and the fluid circulating through the outer shell (the service) are completely isolated from each other, heat being transferred through the inner tube walls.

In the removable tube bundle design leakage of the service fluid to atmosphere is prevented by a pair of elastomeric O ring seals at each end of the tube. One tubeplate is fixed to the outer shell assembly and the other is free to expand and contract with the changes in temperature occurring in service thus avoiding the potentially damaging stresses that occur in other types of fully welded heat exchangers that use expansion bellows to absorb the differential expansion between the shell and the inner tubes. All of our units are designed and manufactured according to the CE marking regulations contained in the European Pressure Directive (97/23/EC) and are CE marked when we are permitted to do so.

Applications

Steam heated water heaters.

Heating and cooling of process liquids and gases, including those containing fibres and particles.

Water/water and gas/water heat recovery applications (for use with dirty gas streams).

- Vapour condensation.
- Heating and cooling of CIP Cleaning solutions.

Exhaust gas cooling on motor and gas turbine applications.

High temperature and pressure applications.





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Materials of construction

All product wetted components (interior tubes, bends etc.) are manufactured from AISI 316L stainless steel but for more aggressive fluids a range of Duplex stainless steels are also available.

The service side components are normally made from AISI 304 stainless steel but AISI 316L and Duplex steels may be used when required.

Areas not in contact with the working fluids are normally constructed from AISI 304 stainless steel.

For the removable tube bundle units silicone rubber is normally used for the O ring seals and connection gaskets or seals but a wide range of alternative elastomers are available when specific applications require them. Alternative materials can be offered for all wetted components on application.

The internal product wetted surfaces have a surface finish roughness of <0.8 µm while the exterior surfaces have a matt finish. Support frames are manufactured from AISI 304 stainless steel, also with a matt surface finish.

Connections

The all welded XTUBE® B-Type heat exchangers use DIN standard flanges on both product and service connections but alternative flanges to any other international standard can be supplied.

The XTUBE® B-Type heat exchangers with removable tube bundles use ISO standard ferrule/clamp connections on the tube side and DIN standard flanges on the shell. If the matching ferrules, clamps gaskets are required by the client for installation purposes these can be supplied on request to allow connection to the clients' pipework system

Design Conditions

These will depend on the specific process and system requirements of the application but when not specified the standard design conditions for the XTube® B-Type heat exchangers are the following:

■ Minimum and maximum allowable working temperatures: -40°C / +180°C

Minimum and maximum allowable working pressures: 10 Bar(g)/Full vacuum

Higher pressures and temperatures are possible on request.



Standard dimensions

XTube® Monotube heat exchangers can be delivered in various lengths, the standard dimensions being approximately 1500 mm, 2000 mm, 3000 mm and 6000 mm.

The exterior tube diameters used are as follows: Ø 88.9 mm, 104.0 mm, 114.3 mm, 129.0 mm, 141.3 mm, 168.3 mm, 219.1 mm, 273.1 mm, 323.0 mm and 406.4 mm. The tube thickness used will depend on the design conditions for each application.

The diameters of the interior tube and its wall thickness will be chosen to meet the requirements of each application.

