Plate Heat Exchanger Installation Instructions

NANJING OUDUN INTERNATIONAL TRADE CO., LTD.

http://oudun-international.com/

Contents

Ⅰ Overview of plate heat exchangers

Plate heat exchangers' production of our factory is according to NB / 47004-2009《Plate Heat Exchanger》for the design, manufacture and testing.

Our Product series of OD to OD-M series, BR, BHBR, BQ series plate heat exchanger, according to veneer heat transfer area from 0.03m^2 to 2.0m^2 hundreds of varieties, according to the depth of ripple from 0.2mm to 11.3mm various depth plates.

Plate heat exchanger is a metal corrugated plate for the heat transfer element of the new high-efficiency heat exchanger, juxtaposed by the plate to form a special fluid channel, plate material selection of high quality imported stainless steel plate, titanium plate and other materials, high heat transfer coefficient, phase Adjacent plate corrugated wave peak support each other to form a uniform mesh contacts to improve the rigidity of the plate can withstand greater pressure to ensure the use of reliability.

OUDUN Plate heat exchanger used in the plate is a combination of advanced technology in China and abroad designed high-efficiency heat exchanger plates, with excellent heat transfer performance, flow properties and pressure resistance, fluid distribution, easy scaling, with a smaller pressure drop to get the maximum heat transfer effect.

Plate gasket unique structure, reasonable design, stable and reliable performance, pressure capability, easy maintenance.

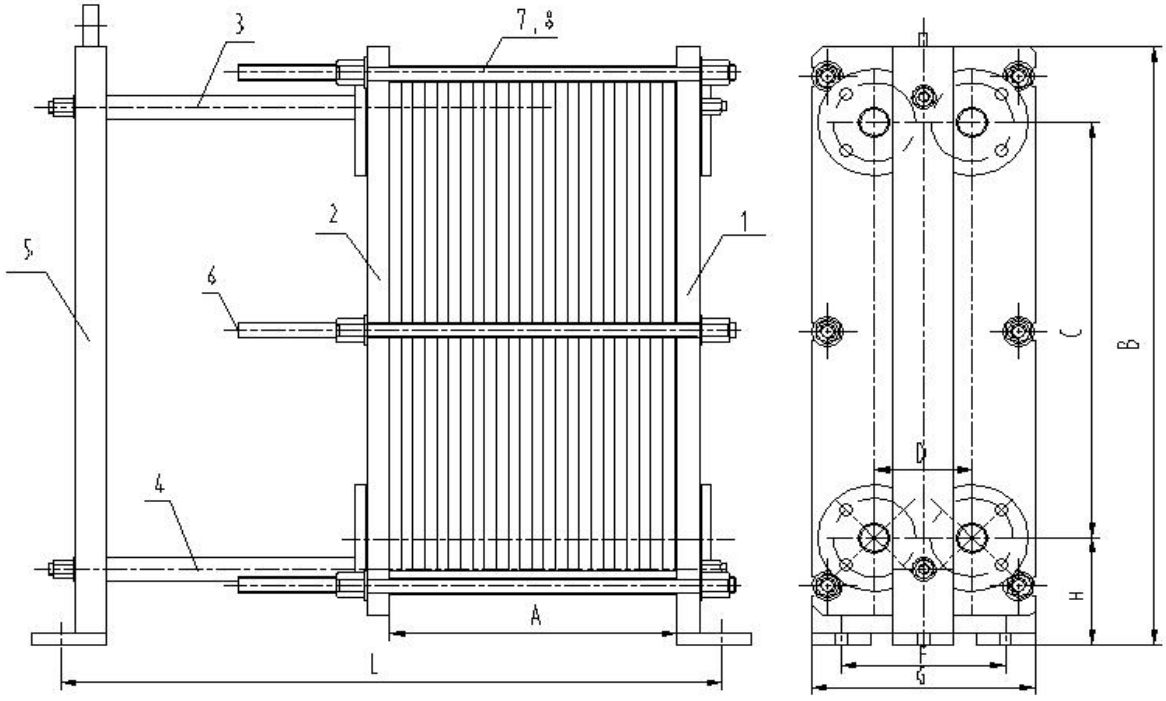
Application of computer design selection, OUDUN plate heat exchanger to achieve the best results.

Plate heat exchanger working pressure is generally 1.0MPa, 1.6MPa, up to 2.5MPa. Operating temperature is generally lower than 180℃ (according to gasket material). Plate material is generally stainless steel (SUS304, SUS304L, SUS316, SUS316L), titanium plate, titanium palladium alloy, Hastelloy, etc., the sealing gasket using nitrile rubber, EPDM rubber, fluorine rubber, silicone rubber, food grade rubber And so on, plates and sealing gaskets can also be based on the specific requirements of users to choose other materials.

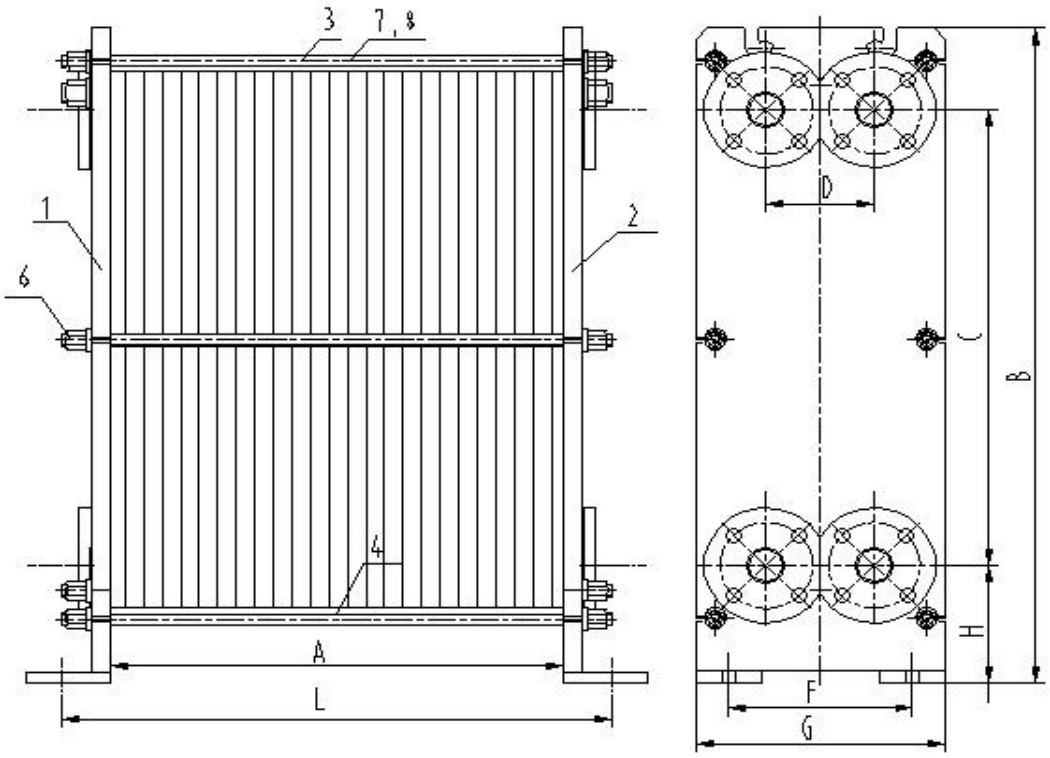
II Plate heat exchanger structure

Plate heat exchanger is composed of a plurality of groups of metal corrugated board, rubber gasket, a fixed pressure plate, a movable pressure plate, the upper and lower guide rod and the compaction screw rod, the plate has four angular holes which is for heat transferred by the two flow medium. The metal plate is mounted in a frame with a fixed pressure plate and a movable pressure plate, and which is pressed by clamping bolts. Plates are fitted with gaskets that seal the two fluid passages to one another, directing the fluid to alternately flow into the respective passages for heat exchange, one inlet and one outlet for each medium.

According to the assembly form divided into double support frame type (used to say hanging, see drawing 1), the activities of compression plate floor (accustomed to the common type, see drawing 2)



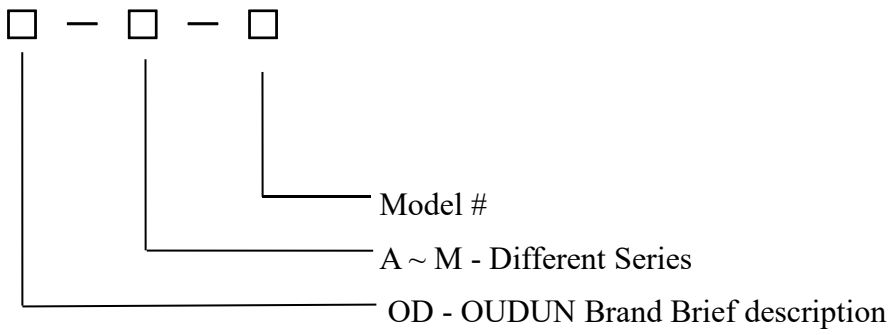
Drawing 1 (Double support frame type)



Drawing 2 (activity compression plate floor type)

1-fixed pressure plate, 2-movable pressure plate, 3-upper guide rod, 4- under guide rod, 5-front post, 6 compression bolt, 7-plate, 8-rubber gasket.

III Plate heat exchanger model show way



Ⅳ Plate heat exchanger process combinations

According to the plates flow rate, temperature conditions and process conditions, the plate heat exchanger can be installed as a single or multi-flow process.

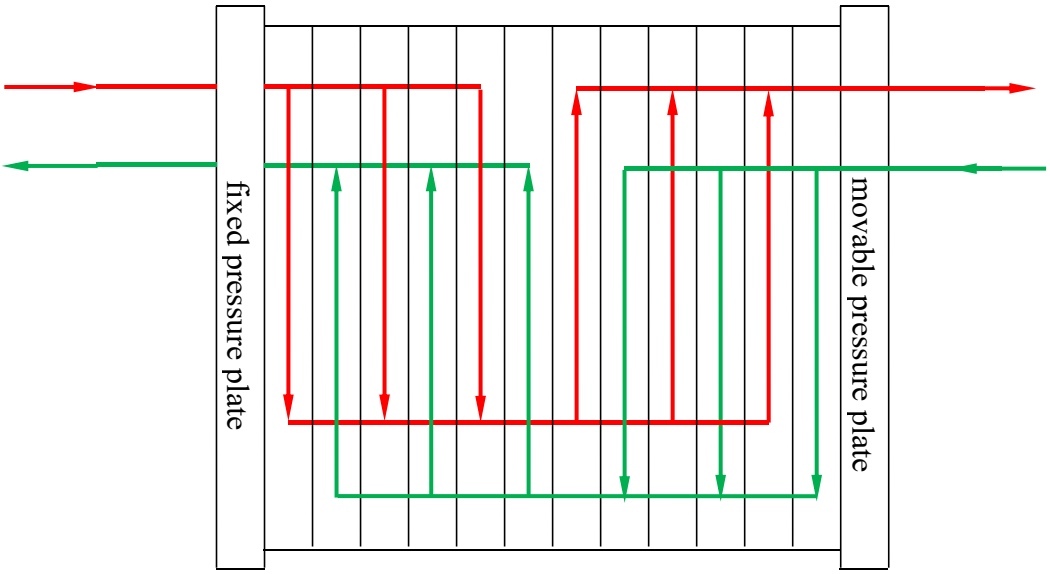
The appropriate value of flow rate between plates 0.3 ~ 0.5m / s, the flow rate is too low should be used two or more processes. When assembled, the plates are alternately arranged in an inverted manner, and mesh channels are formed between two adjacent plates. Due to the effect of the gaskets, the cooling medium flows into the respective channels to form an interval flow, reversible flow or downstream flow so that the cooling medium passes through Wall heat exchange。

To meet different technical requirements, it can be achieved through a combination of different processes. Process portfolio can be divided into: odd process / even process and mixed process. Odd single-process applications are more extensive, because this form is easy to use and maintain. Odd flow and even flow are the form of full countercurrent heat exchange, while the mixed flow (such as single hot double cooling, hot single cold double cooling and hot triple cooling double cooling) inevitably has a part of the flow as the co-current heat exchange mode, which has poor heat exchange effect Mixing process (hot double cold single, hot single cold double) can also choose unequal cross-section of the plate heat exchanger.

Plate heat exchanger process portfolio that: the number step of process × parallel flow path number in the step of process

Example： $\frac{2\times3}{2\times3}$ Multi-process combination : heat medium is 2 processes,3 channels
cold medium is 2 processes, 3 channels

Note: The above formula for the combination of processes that do not represent the actual product (actual product reference to each flow chart), the flow diagram shown in drawing 3。



drawing 3 shows a 2 x 3/2 x 3 flow chart

Ⅴ Plate heat exchanger installation requirements

1.After customer received the equipment, packing list should be listed one by one to check, if it is not incompatible you should immediately notify our company, in order to promptly resolve it.

2.Plate heat exchanger on the two pressure plate lugs for lifting purposes, sling hanging on the connecting pipe, positioning beams or plates.

3.When heat exchanger connected with the pipe for installation, it will be connected to the pipeline of all impurities rinse, so as to avoid gravel, oil, welding slag and other debris into the plate heat exchanger, causing flow blockage or damage plate.

4.When Installation, it requires a certain amount of space around the equipment for access and maintenance equipment in the future.

5.Comparison installation dimensions drawing, check the device on the cold, heat medium inlet and outlet signs and equipment on the connecting pipe whether they are the same, if found inconsistent, please contact our company to solve it.

6.When Pipelines should be installed on the pipeline with valves, pressure gauges, thermometers, flow control valves should be installed at the inlet of the heat exchanger, the outlet

should be installed in the exhaust valve. It is recommended to use the short section to facilitate the overhaul with the connection of the nozzle on the movable pressing plate.

7.When using media with larger particles and long fibers, the inlet should be fitted with a filter.

8.Check all clamping bolts before using it whether looseness , if loose, tighten it.

9.When heat exchanger connection pipe installation is welding, welding ground wire should be installed at the welding, it is prohibited to take the ground wire in the distance, so that the current from a circuit causing the heat exchanger damage.

Ⅵ Plate heat exchanger operation

1.Run operation and precautions

(1) When using the new heat exchanger, it needs to pay attention to the media, pressure, temperature and design parameters which are consistent, because of different media, the temperature of the plate and gasket material is not the same.

(2) Check the pipeline connection is correct, to avoid two media mixed, causing adverse consequences.

(3) Before start operation,Strict check the cold, hot medium inlet valve whether it is closed, the outlet valve is open.

(4) After the completion of the above work,it can start operation.First it needs to start cold and heat medium pump, slowly open the inlet valve of the cold medium, and then open the inlet valve of the heat medium, so that the medium flows slowly into the heat exchanger, if the vapor - liquid heat exchanger, you should first open the liquid side of the valve , Then open the steam side valve. Open the valve should be opened slowly, not fierce, so as not to overheat.

(5) Check all sealing surface and all welds at the leaks and other irregularities, while measuring and calculating whether to meet the technical requirements, if it met, you can enter the normal operation.

2.Normal operation and inspection

(1) It needs to check all the sealing surface of the heat exchanger and the weld, observe whether the leakage and other abnormalities. If leakage is found, it should promptly mark the place of leakage and wait for the shutdown.

(2) Regularly check the pressure gauge, thermometer, observe whether there is any abnormal phenomenon.

(3) When stopped operation,slowly turn off the hot and cold refrigerant inlet valve first and then close the two medium outlet valves. On the other hand, the first open the outlet valve, and then slowly open the inlet valve.

(4) It needs to regularly test the low-pressure side of the medium, in order to avoid high-pressure medium mixed. If mixed, it indicate the occurrence of internal leakage ,it should be shut down to deal with the low-pressure medium on a regular basis to test, in order to avoid high-pressure medium mixed. If mixed, it indicate the occurrence of internal leakage, it should be shut down.

3.Shutdown operation and precautions

(1) Firstly Stop the pump before stopping.

(2) After stopping the pump, slowly close the heat medium inlet valve, and then close the cold medium inlet valve, and finally close the two medium outlet valve.

(3) If the pipeline is equipped with a bleed valve, it should be opened.

(4) For the temperature the media and corrosive media, equipment should be made to vent, so as not to open the device scalding people or corrosive equipment.

4.Common operating fault handling

(1) Heat exchanger leakage occurred

Due to the plate heat exchanger long seal, the plate is thin, leakage may occur during use. Leakage occurs mainly due to aging gasket, rupture or sheet perforation, cracks, corrosion. Leakage occurs, we must promptly check out the waste plate or gasket, and promptly replaced.

(2) Plate heat exchanger plate misplaced.

For medium flow and pressure changes larger, but also a multi-way combination of long-term use of the heat exchanger, it prone to plate displacement phenomenon.

The main causes of dislocation are: deformation of the plate, the gasket slides off the gasket groove. Plate misplaced, it is prone to leakage phenomenon. To deal with this dislocation phenomenon, it should be deformed plate and slip off the shim gasket gasket timely replacement.

(3) New products put into use, such as the occurrence of leakage phenomenon it may be due to multiple transport and handling, resulting in loose clamping bolts. Clamp the clamping screw again to eliminate this phenomenon.

Ⅶ Plate heat exchanger cleaning and maintenance

1、Heat exchanger inspection and cleaning

(1) Maintaining plate cleaning is one of the key conditions for maintaining high heat transfer coefficients. Between plates, the media travels along a narrow, zigzag flow path that will cause changes in the flow path, even if not too thick, , Significantly affecting the fluid movement, the pressure drop increases, the heat transfer coefficient decreased. Therefore, according to the actual situation of water quality and media to develop operating cycles, regular inspection and cleaning. Equipment within the media if it is flammable, explosive or corrosive media, at least once a year should be repaired.

(2) Chemical cleaning method is a chemical solution circulating through the heat exchanger, so that the surface of the sheet dissolved in the dirt, discharge. This method without needing to open the heat exchanger, simplifying the cleaning process, but also it will reduce the labor intensity of cleaning. As the plate corrugation can promote the intense turbulent cleaning fluid is conducive to dissolved layer, so the chemical cleaning method is the ideal method. Different dirt should be used for different chemical cleaning solution. But do not use chemical cleaning agents that corrode the plates.

(3) Mechanical (physical) cleaning method is to open the plate with a brush after the manual scrub, so as to achieve the purpose of removing dirt on the surface of the plate. Although this method is more direct, but hard, thick layer of dirt, easy to clean, it is best to combine mechanical and chemical cleaning methods, that is, first mechanical cleaning and then chemical cleaning, or chemical cleaning and then mechanical cleaning . Cleaning does not allow carbon steel brush scrub

stainless steel plate, so as to avoid damage to the plate, to accelerate the corrosion of the plate. At the same time it can not make the surface scratches, deformation and so on.

2.Plate heat exchanger disassembly methods

(1) Suspension heat exchanger: After loosening the bolts, it remove the movable pressing plate from one end of the bracket, and then remove each plate and wash it separately,the compress size is no less than table 1 which listed size A , Then press the water pressure test as required.

(2) Ordinary heat exchanger: Loosen the compression bolts, disassemble and clean according to the order, in strict accordance with the process combination diagram arranged in order, and then the process of bolts (that is equal to 1.5 times the compression bolts bolts, grow part of the thread, Diameter and the same bolt, by the user self-processing.) Compression assembly, and then replaced by pressing the bolt evenly pressed to not leak, the size of the compaction shall not be less than the size of Table 1 column A, and then passed pressure test by water.

3.Gasket replacement

Plate heat exchanger gasket in using is in the event of fracture, aging and other phenomena,it should be promptly replaced. Replacement should be carried out in the following order：

(1) Remove the waste gasket. Caution When removing, do not scratch the gasket groove.

(2) Use acetone, butanone or other ketone solvents to remove residual glue in the gasket groove.

(3) Wipe the gasket groove and gasket with a clean cloth or cotton yarn.

(4) Apply adhesive evenly to the gasket groove.

(5) Stick a clean new gasket in the gasket groove.

(6) Stick the gasket sheet should be placed in a flat, cool, well-ventilated place of natural dry solid 4h before installation.

(7) For non-stick hanging gasket, it can be hung directly on the wipe clean sheet which can be required.

Note: Each rubber gasket two groove sealing joints both are open a small gap, the opposite side of the notch is facing the plate.

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