

Heat Exchanger



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TAMARA TRADING INTERNATIONAL (L.L.C)

Main product

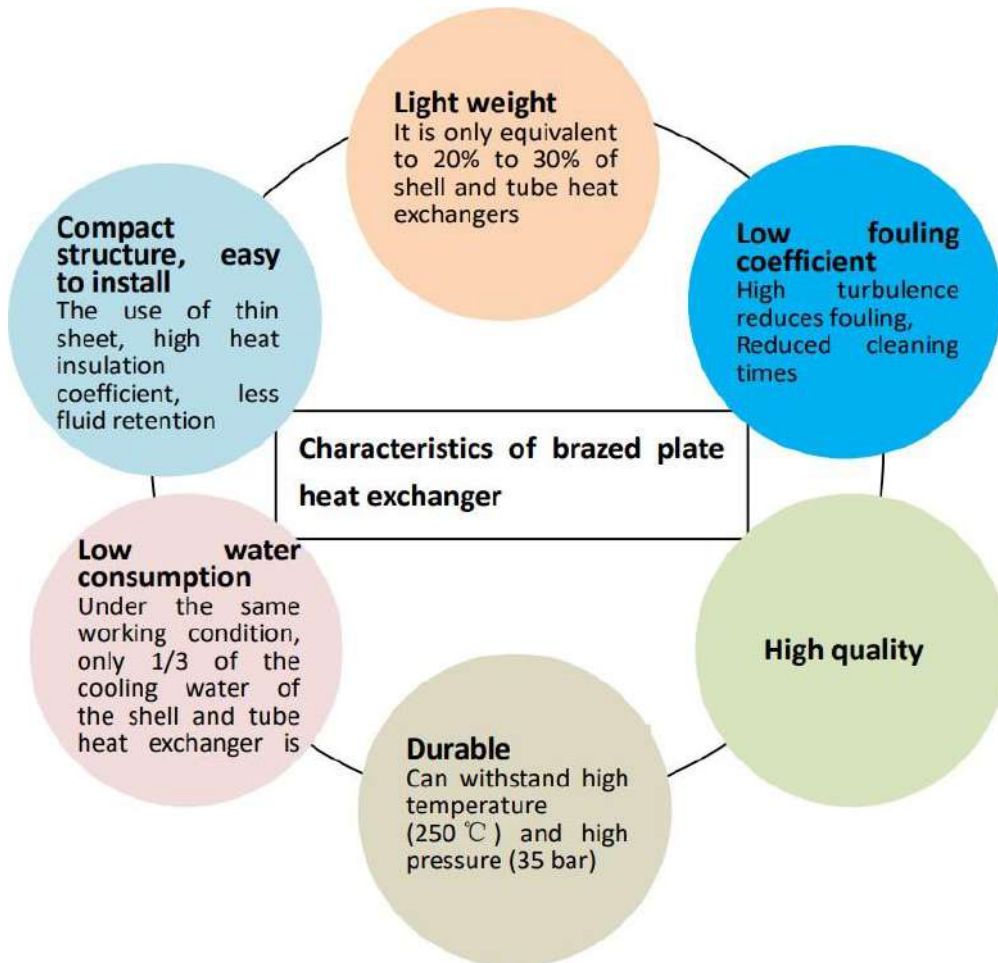
- Brazed plate-heat exchanger



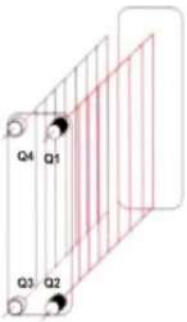
- Detachable plate-heat exchanger



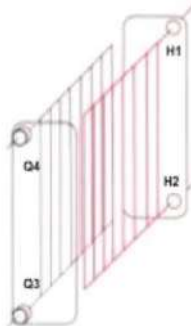
➤ Brazed plate-heat exchanger



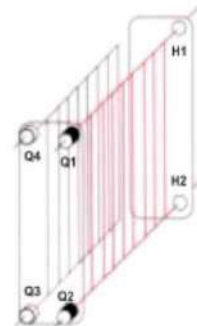
■ Technical Process of brazed plate heat exchanger



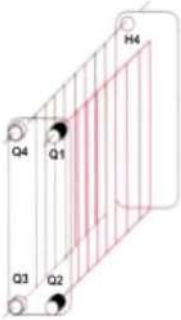
1. Pipe connectors located on the front cover plate (the most common allocation)



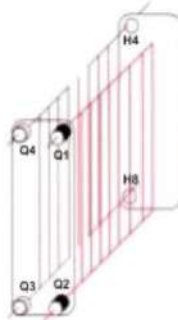
2. Water pipe connector located on the back cover plate (the most flexible allocation)



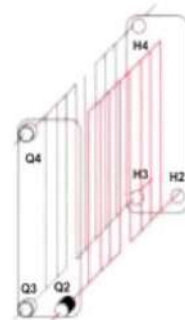
3. Two additional water pipe connectors can be used for temperature control installation



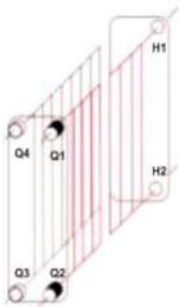
4. Two refrigerant exits can minimize the flow rate in the connections (evaporator outlet or condenser inlet)



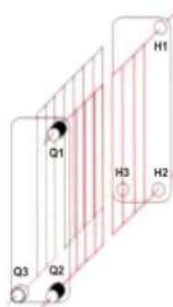
5. Dual circuits in refrigerant side, one flow channel in water side (evaporator or condenser)



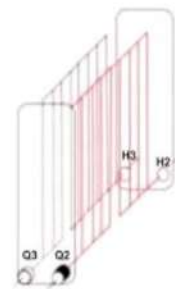
6. Dual circuits in refrigerant side and dual flow channels in water side can achieve relatively higher efficiency circuit,



7. Dual circuits in water side can be used for cooling two different water systems



8. Dual circuits in water side and dual flow channels in refrigerant side is used for various cooling media



9. Dual flow channels in both sides is mainly used for the system with very close temperature (Liquid/Liquid or high pressure vapor)

■ Channel form of brazed plate heat exchanger

Two plates with different corrugated angles can be combined into three channel forms



Large Angle corrugated sheet



Small Angle corrugated sheet



D通道 Passage D
A channel consisting of large Angle corrugated plates



H通道 Passage H
A channel consisting of a mixture of large and small Angle corrugated plates



X通道 Passage X
A channel consisting of small Angle corrugated plates

Characteristics of different channel forms:

D channel: high heat transfer coefficient, high resistance. It is suitable for small flow but strong heat transfer (high specific heat, phase change or large temperature difference), such as: refrigerant phase change heat transfer.

H channel: between D channel and X channel.

X channel: Low heat transfer coefficient, low resistance. It is suitable for large flow and weak heat transfer (low specific heat or small temperature difference), such as air heat transfer under ambient pressure.

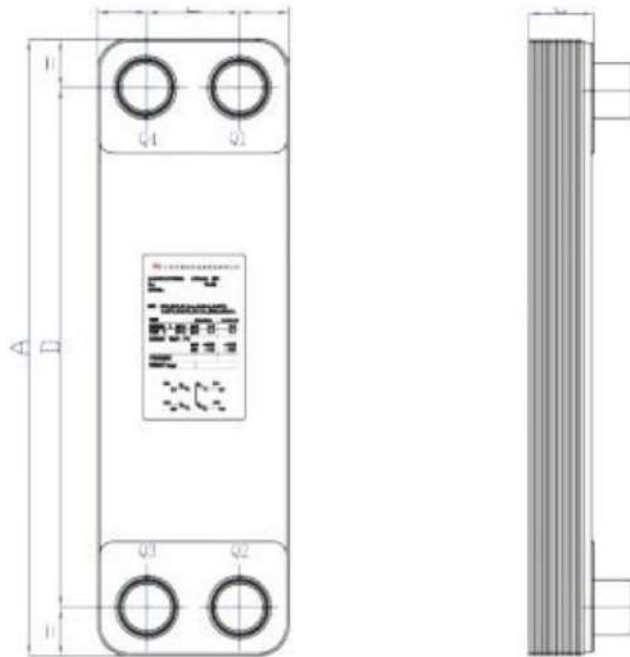
ص.ب : ٢٨٠٧٨ ، دبي ، أ.ع.م. هاتف : ٩٨٨ ٣٢٨٥ ٤ (+٩٧١) فاكس : ٦٩٤ ٣٢٨٥ ٤ (+٩٧١)

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Technical parameters of brazed plate heat exchanger



Suitable medium for brazed plate heat exchanger

- ✧ Refrigerants other than ammonia and chlorine
- ✧ Water, water steam
- ✧ Oils
- ✧ Organic solvent
- ✧ Gas
- ✧ Other non-corrosive media to copper and stainless steel

Special note: The above medium in -160°C - 200°C , the pressure is not higher than 45bar under the case of the brazed plate heat exchanger

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Technical parameters of brazed plate heat exchanger

Model	Channel type	assembled pieces N	Hight A (mm)	Width B (mm)	Thickness C (mm)	Longiti hole pitch l (mm)	Trans verse pitch	Weight (Kg)	Unilateral fluid retention(L)	Max.flow (m ³ /h)	Heat transfer area (m ²)	Pressure grade (bar)	Material
MS 013	D	10-100	192	78	2.30*N+9	152	40	0.04*N+0.4	(N-2)*0.008	8	(N-2)*0.013	20	304
MS 014	D	10-100	208	76	2.30*N+9	168	42	0.05*N+0.5	(N-2)*0.010	8	(N-2)*0.014	20/30/45	304/316L
MS 015	D	10-100	200	90	2.10*N+9	160	46	0.05*N+0.4	(N-2)*0.011	12	(N-2)*0.015	20	304
MS 016	D	10-100	200	90	3.10*N+9	160	46	0.05*N+0.5	(N-2)*0.014	12	(N-2)*0.016	20	304
MS 020	D	10-100	310	76	2.30*N+9	282	42	0.08*N+1.0	(N-2)*0.018	8	(N-2)*0.020	20/30/45	304/316L
MS 026	D/X/H	10-120	310	111	2.40*N+9	250	50	0.11*N+1.0	(N-2)*0.025	18	(N-2)*0.026	30/45	304/316L
MS 030	D/X/H	10-120	325	95	1.55*N+9	269	39	0.09*N+1.0	(N-2)*0.030	8	(N-2)*0.030	30/45	304/316L
MS 050	D/X/H	10-150	525	111	2.40*N+9	466	50	0.20*N+2.4	(N-2)*0.050	18	(N-2)*0.050	30/45	304/316L
MS 060	D/X/H	10-150	527	120	2.30*N+9	479	72	0.19*N+2.4	(N-2)*0.110	22	(N-2)*0.060	30/45	304/316L
MS095A	D/X/H	10-180	616	191	2.45*N+11	519	92	0.36*N+7.8	(N-2)*0.100	42	(N-2)*0.095	30/45	304/316L
MS095B	D/X/H	10-180	616	191	2.80*N+11	519	92	0.44*N+7.8	(N-2)*0.120	42	(N-2)*0.095	30/45	304/316L
MS095C	D/X/H	10-180	616	191	2.80*N+11	519	92	0.44*N+7.8	(N-2)*0.120	42	(N-2)*0.095	30/45	304/316L
MS 100	D/X/H	10-250	490	250	2.30*N+11	391	157	0.35*N+6.5	(N-2)*0.080	42	(N-2)*0.100	30/45	304/316L
MS 110	D/X/H	10-250	528	246	2.40*N+12	456	174	0.52*N+6.5	(N-2)*0.190	42	(N-2)*0.110	30/45	304/316L
MS 190	D/X/H	10-300	696	307	2.65*N+13	567	179	0.51*N+10	(N-2)*0.210	140	(N-2)*0.190	30/45	304/316L
MS 210	D/X/H	10-250	739	322	2.55*N+13	599	211	0.82*N+13	(N-2)*0.200	100	(N-2)*0.210	30/45	304/316L
MS 220	D/X/H	10-280	734	319	2.65*N+13	622	205	0.70*N+13	(N-2)*0.220	100	(N-2)*0.220	30/45	304/316L
MS 300	D	10-280	1006	366	2.80*N+16	872	228	1.26*N+57	(N-2)*0.350	160	(N-2)*0.300	30	304/316L

Braze plate heat exchanger conventional nozzle configuration

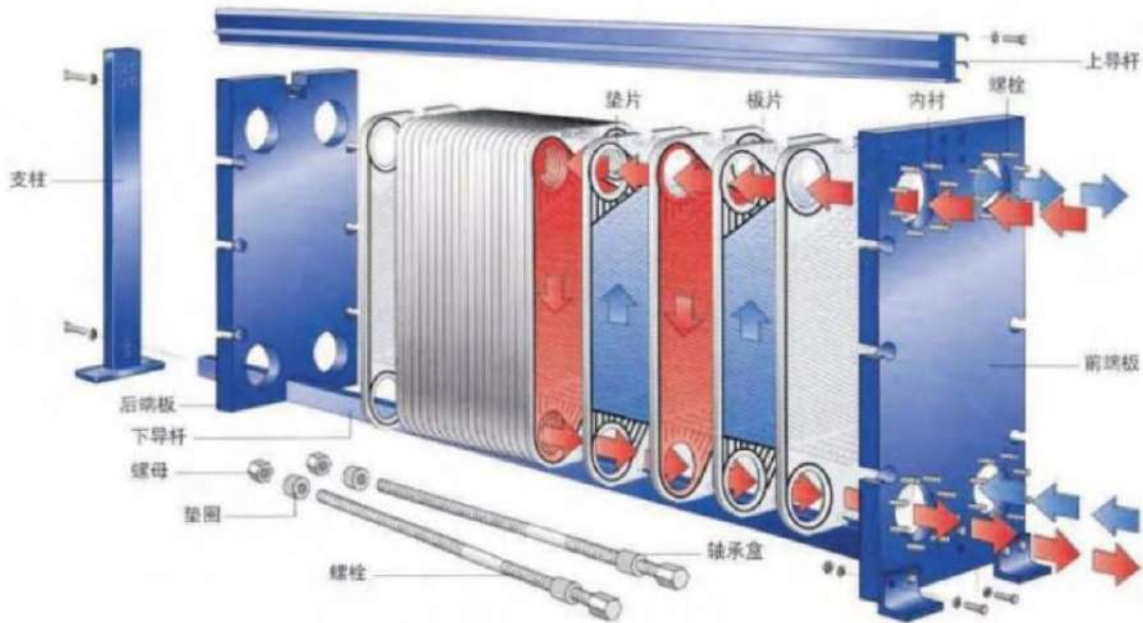
接管类型	接管尺寸		钎焊板式换热器产品型号										
	公制	英制	MS013	MS014 MS020	MS015 MS016	MS026 MS050 MS060	MS030	MS095A MS095B	MS095C MS100 MS110	MS190	MS210	MS220	MS300
光杆焊接管	Φ6	1/4"		√		√	√						
	Φ9	3/8"		√		√	√						
	Φ12	1/2"		√		√	√	√	√				
	Φ16	5/8"		√		√	√	√	√				
	Φ19	3/4"		√		√	√	√	√				
	Φ22	7/8"		√		√	√	√	√	√	√	√	√
	Φ25	1"					√		√	√	√	√	√
	Φ28	1-1/8"					√		√	√	√	√	√
	Φ32	1-1/4"					√		√	√	√	√	√
	Φ35	1-3/8"				√			√	√	√	√	√
	Φ38	1-1/2"							√	√	√	√	√
	Φ42	1-5/8"							√	√	√	√	√
	Φ48	1-7/8"							√	√	√	√	√
	Φ50	2"							√	√	√	√	√
	Φ54	2-1/8"							√	√	√	√	√
	Φ58	2-1/4"								√	√	√	√
	Φ61	2-3/8"								√	√	√	√
	Φ64	2-1/2"								√	√	√	√
	Φ67	2-5/8"								√	√	√	√
	Φ77	3"								√	√	√	√
Φ80	3-1/8"								√	√	√	√	
Φ90	3-1/2"								√	√	√	√	
Φ98	3-7/8"								√	√	√	√	
Φ102	4"											√	
Φ105	4-1/8"											√	
Φ108	4-1/4"											√	
外螺纹接管	DN15	1/2"	√	√	√	√	√						
	DN20	3/4"	√	√	√	√	√						
	DN25	1"			√	√	√	√	√				
	DN32	1-1/4"				√		√	√				
	DN40	1-1/2"				√			√				
	DN50	2"								√	√	√	√
	DN65	2-1/2"								√	√	√	√
	DN75	3"								√	√	√	√
DN100	4"											√	
内螺纹接管	DN15	1/2"	√	√		√	√	√	√	√	√	√	√
	DN20	3/4"	√	√		√	√	√	√	√	√	√	√
	DN25	1"				√	√	√	√	√	√	√	√
	DN32	1-1/4"				√		√	√	√	√	√	√
	DN40	1-1/2"						√	√	√	√	√	√
	DN50	2"						√	√	√	√	√	√
法兰接管	DN25	1"				√							
	DN32	1-1/4"				√		√	√		√		
	DN50	2"							√				
	DN97	4"										√	√
	DN100	4"											√
卡箍接管	DN30	1-1/8"				√							
	DN36	1-1/2"						√	√	√	√	√	√
	DN49	2"						√	√	√	√	√	√
	DN66.9	2-1/2"						√	√	√	√	√	√
	DN78	3"								√	√	√	√

特殊说明：具体接管选择以实际出图为准，特殊接管可加工定制。

Note: the actual connector will be subject to the actual drawing, special connector can be customized.

➤ Detachable plate heat exchanger structure Diagram

A typical plate heat exchanger component

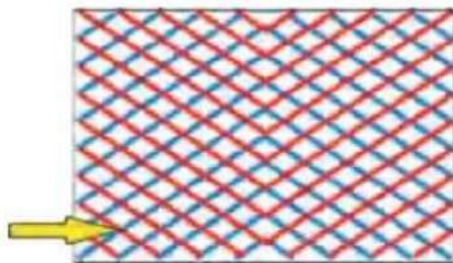


Each sheet contains two components:

Corrugated metal plate: according to different heat transfer conditions pressed into different types of corrugated shape to ensure the best heat transfer effect.

Rubber washer: installed in the washer groove along the edge of the plate to form a seal and medium diversion

Two functions of plate ripple



Mechanical strength

Increase the mechanical strength of the plate and form a support point between the plate and the plate.



Fluid power

Increase fluid turbulence, thereby increasing heat transfer efficiency.



- Plate type and flow path of detachable plate heat exchanger

Two different types of plates



H-type plate:

wide ripple, deep flow channel, suitable for large temperature difference heat exchange, high viscosity of the medium, the medium is easy to block the working requirements.



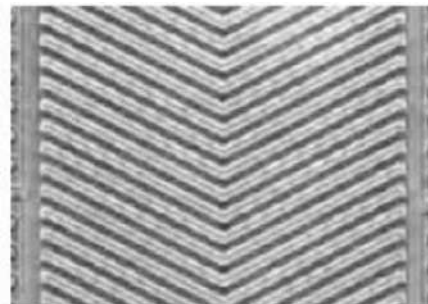
B-type plate:

narrow ripple, shallow flow channel, suitable for small temperature difference heat exchange, low viscosity of the medium, the medium is not easy to block the working requirements

Each plate type has two plate types with different corrugation angles



X plate: Small Angle ripple, low θ value plate



D plate: big Angle ripple, high θ value plate

Two plates with different corrugated angles can be combined into three different forms of heat exchange channels:



X channel: All assembled from small Angle plates



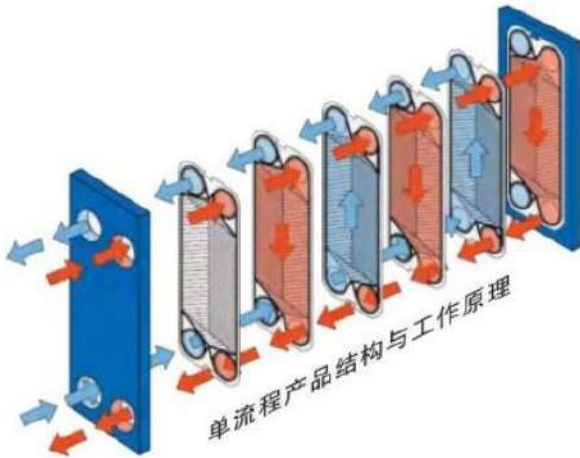
D channel: All assembled by large Angle plates



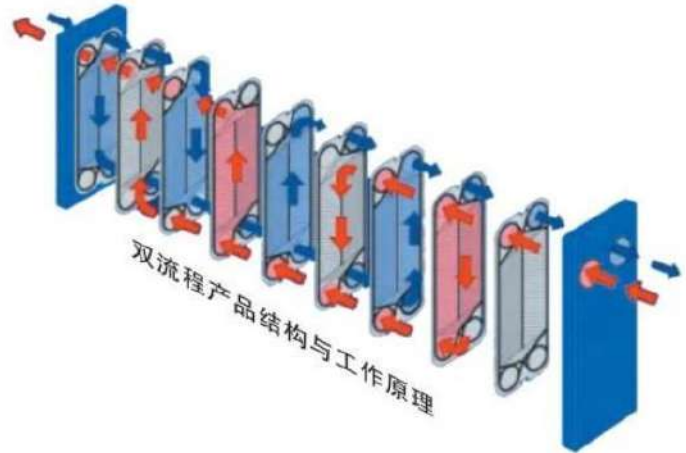
H channel: Assembled by a mixture of large and small Angle plates



Each heat exchange channel form can be assembled into a single flow product structure and a double flow product structure



Single process product structure and working principle



Double process product structure and working principle

Characteristics of detachable plate heat exchanger

➤ The advanced shunt structure design makes the shunt more uniform

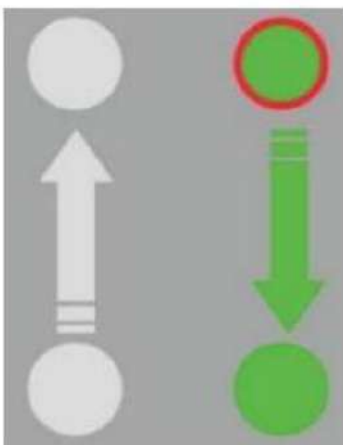


Other board designs
Uneven distribution of media across the plate
Reduced heat transfer efficiency
Increased possibility of dirt accumulation

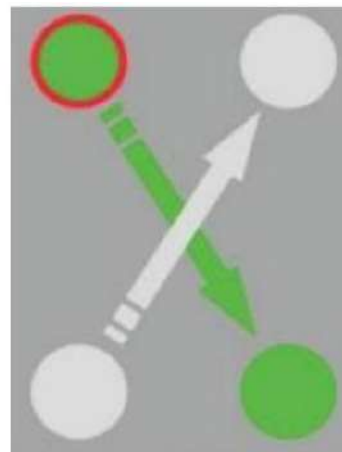


The plate design has a unique shunt structure, so that the medium evenly distributes the flow on the whole plate, improves the heat transfer efficiency, and eliminates the dirt accumulation area.

➤ The parallel flow plate design makes maintenance easier



Parallel flow, better layout of pipeline connections, reduce the total number of spare parts of plates and rubber pads, and make installation and equipment maintenance more convenient.



Diagonal flow, cross configuration of pipelines, the total number of spare parts of plates and rubber pads increases, and installation and equipment maintenance are time-consuming and laborious.



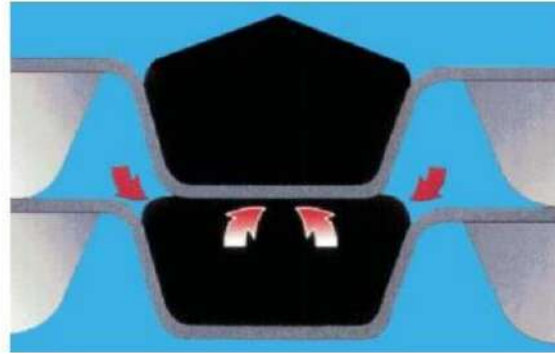
➤ The unique rubber pad structure makes maintenance faster

Gaskets protect the grooves



The special gasket protection groove prevents the gasket from being extruded and protects the gasket for longer life.

Gasket geometry



The roof geometry enhances the ability of the rubber pad to resist stress and tremor force, the sealing compression force lasts longer, the service life is longer, and the maintenance cost is reduced.

Characteristics of detachable plate heat exchanger

Double seal structure and signal hole



If the rubber pad is damaged and the medium leaks from the first seal, the leak problem can be found early through the signal hole and solved even if it does not cause the mixing of the two media.

Snap type non-stick gasket



The clasp type non-stick gasket makes the gasket longer service life, faster and easier to replace, greatly reducing maintenance costs and maintenance downtime, and the seal is separated from the fixed function, even if a part of the fixed function of the buckle fails, the gasket can still play a sealing role in the gasket slot.

Superior clamping bolt system makes maintenance



The unique and superior clamping bolt system consists of three parts: bearing box system, bolt and locking system. The bearing box system allows the bolt to be quickly and accurately positioned and easily tightened, and the locking system prevents the bolt from turning when tightened. All bolts are manufactured by rolling process and coated with anticorrosive material and lubricating oil, plastic jacket, heavy-duty hexagon nut make the entire disassembly process easier, and all clamping bolts can be removed and installed from the side for easier disassembly.



Clamping bolts are designed to facilitate removal



➤ Accurate multi-point positioning system, Make maintenance easier

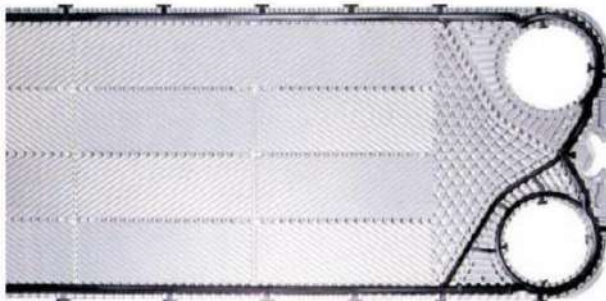


The detachable plate heat exchanger uses a precise multi-point positioning system.

The four corner positioning system of the model below 100mm allows the lower guide rod above the plate to be accurately inserted together as the axis.

The five-point positioning system of the model with a diameter of more than 150mm allows the positioning of the plate to be determined by a number of metal-to-metal contact points, of which the contact point of the upper guide rod can prevent the plate from moving up and down, and the contact point of the lower guide rod can limit the plate from moving left and right. The use of multi-point positioning technology, so that the plate group can not only move forward and back on the guide rod without resistance, easy and simple to complete the maintenance work, but also can be accurately inserted in the reassembly of the plate, so that the gasket seal is accurate, no difference, and the plate group is completely reset, so as to ensure that the life of the heat exchanger after disassembly is more durable. And a plate heat exchanger with a multi-point positioning system requires only one Individuals, even without any experience, can easily disassemble and assemble heat exchangers with simple tools, which is unmatched by other plate heat exchanger products.

➤ Material and applicable medium of detachable plate heat exchanger



plates and gaskets of different materials and various types of plates to choose from for various conditions of use such as fluid, temperature and pressure, so that the most suitable type and material can be selected according to the needs of customers

➤ Material, gasket and applicable medium of detachable plate heat exchanger

Sheet material	Suitable fluid
Stainless steel (SUS304.316 etc.)	Clean water, river water, edible oil, mineral oil
Titanium and titanium cake (ti, TI-PD)	Sea water, salt water, salt chemicals
20Cr,18Ni,SMO	Dilute sulfuric acid, sparse saline aqueous solution, inorganic aqueous solution
Nickel (Ni)	High temperature, high concentration caustic soda
HASTELLOY alloy (C276,D205,B2G)	Concentrated sulfuric acid, hydrochloric acid, phosphate

Gasket material	Operating temperature °C	Suitable fluid
Nitrile butadiene rubber (NBR)	- 15 ~ + 135	Water, sea water, mineral oil, salt water
Ethylene propylene diene (EPDM)	- 25 ~ + 180	Hot water, water vapor, acid, alkali
Fluororubber (F26)	- 55 ~ + 230	Acids, bases, fluids
Tetrapropyl fluoro rubber (FTP)	0 ~ + 160	Concentrated acid, alkali, high-temperature oil, steam



➤ Product specifications of detachable plate heat exchangers

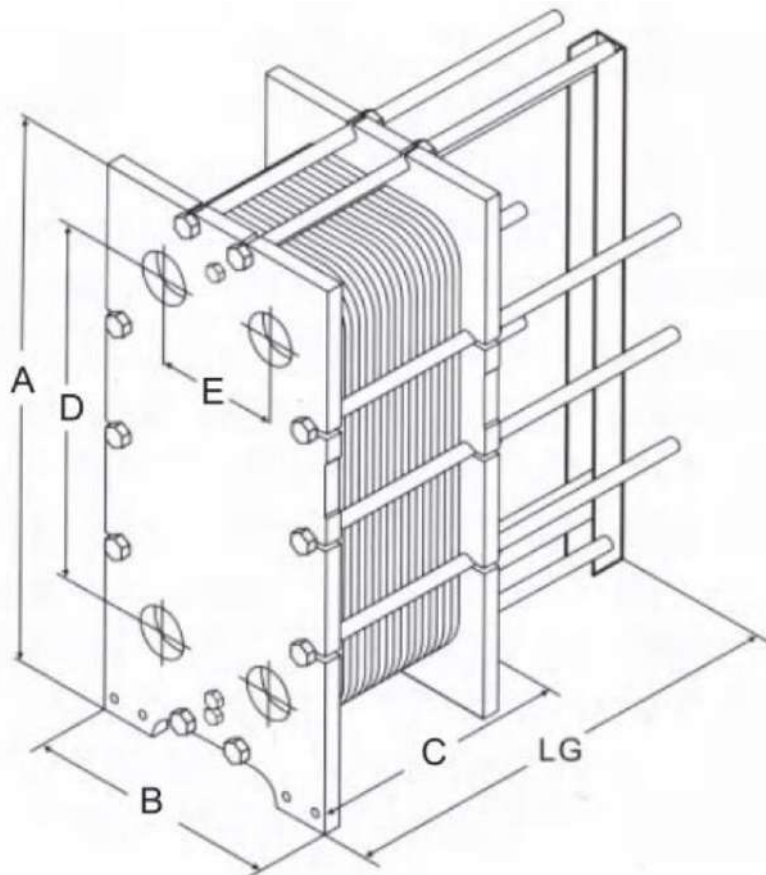


Table of Product Specification of Detachable plate heat exchanger

Model No.	FlowChannel	Tube size (mm)	Plates Qty N	Height A (mm)	Width B (mm)	PlatethicknessC (mm)	Horizontal HolesD (mm)	Axial holes E (mm)	Total retained liquid (L)	Single heat exchanging area(m ²)	Max.Flow (m ³ /h)
MS3	D	32	10-100	480	180	N*(2.50+X)	357	60	(N-2)*0.09	0.035	15
MS5B	D/X/H	50	12-250	930	320	N*(2.00+X)	640	140	(N-2)*0.30	0.18	45
MS5H	D/X/H	50	12-250	930	320	N*(3.00+X)	640	140	(N-2)*0.43	0.18	45
MS6H	D/X/H	65	12-200	652	400	N*(3.95+X)	380	203	(N-2)*0.46	0.18	75
MS10B	D/X/H	100	12-400	1069	470	N*(2.50+X)	719	225	(N-2)*0.66	0.28	170
MS10H	D/X/H	100	12-400	1084	470	N*(3.95+X)	719	225	(N-2)*1.00	0.28	170
MS10L	D/X/H	100	12-400	1084	480	N*(2.00+X)	1338	225	(N-2)*0.90	0.55	170
MS15B	D/X/H	150	12-600	1815	610	N*(2.50+X)	1294	298	(N-2)*1.55	0.68	380
MS15H	D/X/H	150	12-600	1815	610	N*(3.95+X)	1294	298	(N-2)*2.50	0.68	380
MS15E	D/X/H	150	12-600	1420	610	N*(3.95+X)	690	290	(N-2)*2.00	0.5	380
MS20B	D/X/H	200	12-800	2145	780	N*(2.50+X)	1480	353	(N-2)*1.87	0.9	680
MS20H	D/X/H	200	12-800	2145	780	N*(3.95+X)	1480	353	(N-2)*3.67	0.9	680
MS20E	D/X/H	200	12-600	1460	740	N*(3.95+X)	698	363	(N-2)*1.71	0.5	680
MS25B	D/X/H	250	12-800	2721	920	N*(2.50+X)	1939	439	(N-2)*3.62	1.5	900
MS30M	D/X/H	300	12-800	2788	1170	N*(3.25+X)	1842	596	(N-2)*6.30	1.85	1600

Note: The above data is for reference only, the specific data indicators are subject to the actual product drawings.



➤ MS unit for heating system (250°C temperature difference)

Model No.	Heat load KW	2-sides 70/95°C		1-side 0.4PMa Saturated vapor		1-side 120/80°C High-temp Water		Overall dimension L x W x H mm
		Flow 10 ³ kg/h	Tube size mm	Flow 10 ³ kg/h	Tube size mm	Flow 10 ³ kg/h	Tube size mm	
MS - 450 - N -	450	15.4	DN65	684.9	DN65/DN25	9.7	DN50	2100 x 1600 x 1240
MS - 600 - N -	600	20.6	DN80	914.9	DN65/DN32	12.9	DN65	2200 x 1750 x 1280
MS - 800 - N -	800	27.5	DN80	1217	DN80/DN32	17.2	D165	2200x 1750x 1280
MS - 1000 - N -	1000	34.4	DN100	1522	DN80/DN32	21.5	DN80	2350 x 1950 x 1280
MS - 1200 - N -	1200	41.3	DN100	1826	DN100/DN40	25.8	D80	2350 x 1950 x 1450
MS - 1500 - N -	1500	51.6	DN125	2283	DN100/DN40	32.2	DN100	2450 x 1950 x 1450
MS - 2000 - N -	2000	68.8	DN125	3044	DN125/DN40	43.0	DN100	2650 x 2100 x 1660
MS - 3000 - N -	3000	103	DN150	4566	DN150/DN50	64.5	DN125	2850 x 2350 x 1660
MS - 4500 - N -	4500	154	DN200	6850	DN200/DN50	96.7	DN150	3200 x 2350 x 1850
MS - 6000 - N -	6000	206	DN200	9134	DN300/DN65	129	DN150	3200 x 2350 x 1850

➤ MS units are used for domestic hot water systems

Model No.	Heat Load KW	2-Sides 10/60°C		1-Side 0.4MPa Saturated vapor		1-Side 95/70°C high-temp Water		Overall dimension L x W x H mm
		Flow 10 ³ kg/h	Tube size mm	Flow 10 ³ kg/h	Tube size mm	Flow 10 ³ kg/h	Tube size mm	
MS - 150 - W -	150	2.6	DN32	228.3	DN40/DN25	5.2	DN40	1700 x 800 x 850
MS - 200 - W -	200	3.4	DN40	304.4	DN50/DN25	6.9	DN50	1700 x 1000 x 850
MS - 300 - W -	300	5.2	DN40	456.6	DN50/DN25	10.3	DN50	1850 x 1000 x 920
MS - 450 - W -	450	7.7	DN50	684.9	DN65/DN25	15.4	DN65	1900 x 1200 x 980
MS - 600 - W -	600	10.3	DN50	914.9	DN65/DN32	20.6	DN80	1900 x 1200 x 980
MS - 800 - W -	800	13.8	DN65	1217	DN80/DN32	27.5	DN80	2050 x 1400 x 1280
MS - 1000 - W -	1000	17.2	DN65	1522	DN80/DN32	34.4	DN100	2050 x 1400 x 1280
MS - 1200 - W -	1200	20.6	DN80	1826	DN100/DN40	41.3	DN100	2100 x 1500 x 1280
MS - 1500 - W -	1500	25.8	DN80	2283	DN100/DN40	51.6	DN125	2100 x 1500 x 1280
MS - 2000 - W -	2000	34.4	DN100	3044	DN125/DN40	68.8	DN125	2100 x 1600 x 1450

Note:

1. the outline size in the table refers to the approximate size of the unit in the conventional configuration, the actual size is subject to the drawing.
2. When the heat medium is steam, the former size of the pipe is the steam inlet size, and the latter size is the condensate outlet size.
3. there are size and nozzle orientation restrictions, can be designed and manufactured according to user requirements.

➤ Detachable plate heat exchanger gasket products



In order to solve the problems of imported plate heat exchanger late maintenance costs and high accessory prices, long delivery time, our company has developed more than 500 sets of imported plate heat exchanger sealing gasket mold, brand Alfa Laval, APV, GEA, Tranter, Funke, API, SONDEX and so on.

The mold production adopts laser scanning technology, which has high accuracy and can be perfectly interchanged with the original product.



Plate heat exchanger commonly used sealing gasket performance table

Types of rubber	Hardness scale (Shaw type A)	Operating temperature (°C)	Hygienic standard	Applicable medium
Nitrile (NBR)	75±3	-20~110	Odorless, passed SGS heavy metal test	Alkanes, olefins and other non-polar media, light and heavy fuel oil and other mineral oil products; Lubricating oil; Animal and vegetable oils; Hot water, salt water, etc.
Ethylene propylene diene (EPDM)	80±5	-35~150	Odorless, in line with FDA food grade, passed the SGS heavy metal test	All kinds of low concentration of inorganic acids, less than 30% of sulfuric acid, hydrochloric acid, carbonic acid, etc. Superhot water, steam, atmospheric ozone, alcohol, aldehydes, ketones and other chemical solvents also have good resistance; Inorganic alkali (caustic soda, soda ash), various concentrations of inorganic chlorides and aqueous solutions (brine). Ammonia, ammonia water, organic amine compounds. Bleach solution, peroxide for disinfection, food and beverage, etc.
Hydrogenated nitrile (HNBR)	75±3	-35~160	Odorless, in line with FDA food grade, passed the SGS heavy metal test	Edible oil, mineral oil, crude oil, sulfur-containing oil and organic sulfur-containing compounds at high temperature; Some heat conduction oil and ozone environment.
Fluoro rubber (FKM)	80±5	-20~180	Odorless, passed SGS heavy metal test	Various concentrations of sulfuric acid, hydrochloric acid and nitric acid below 65 °C, all kinds of oxidants, such as bleaching powder, various kinds of acid plating solution, benzene and light aromatic hydrocarbons; Various concentrations of caustic soda and soda ash; Organic amines (preservatives), liquid chlorine, chloric acid and perchloric acid; Non-polar mineral oil at high temperature, such as pump oil, lubricating oil, cooking oil, etc.

The company has strong technical force and advanced processing equipment, complete production and testing equipment, products adopt national standards production, our products sell well throughout the country, and have long been well received by domestic and foreign merchants.

We sincerely welcome Chinese and foreign merchants to visit and seek common development, we will provide you with the best quality products and services. Let us contribute sincerely, keep credibility, always take "Quality first, Customer first" as the purpose, go hand in hand! Cooperate once, you will become our eternal friend!

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