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Certificate No. A 0858  
**ISO 14001**  
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**OHSAS 18001**  
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▶▶ Engineering technology for the future

# Heat Exchanger Solution Partner Plate Heat Exchangers

Our company endeavor ceaselessly  
to develop new products  
and quality improvement

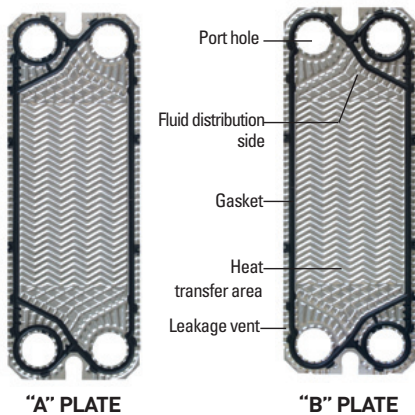
DongHwa Plate Heat Exchangers are used in the industrial, marine, food and dairy sectors. DongHwa works at high quality level, based on an experienced staff, with regards to both production and calculation of Plate Heat Exchangers. DongHwa can, with the help of specially developed computer programs, quickly calculate an optimal solution to any plate heat exchanger application, based on the customer's demands. The calculated Plate Heat Exchanger is documented for the customer on a well-arranged and easily read data list.



**DongHwa Entec**

# Plate Heat Exchangers

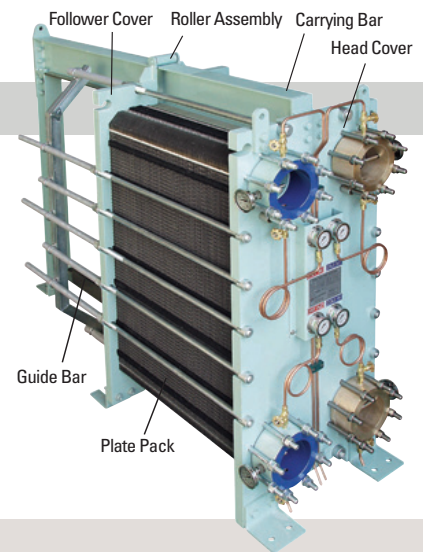
## Working Principle



Gasket is attached to the heat plate which forms flow channel and acts seal up the fluid not to leak to the outside. The number of the heat plate is determined according to the amount of fluid, physical properties of fluid, the pressure drop and thermal condition. The covers prevent the plates bended from the difference of pressure. In the assembly of plate, the surface with gasket is directed to the fixed cover and each plate is hanged in opposite direction alternately. And two fluids cannot be mixed and separated by a thin plate. One fluid always flows in "A" channel and the other fluid always flow in "B" channel.

## The Design and Function of DongHwa Plate Heat Exchanger

The plate heat exchanger consists of a frame, which in turn consists of a Head cover, a Follower cover, a support pillar, a carrying bar, a guiding bar and a number of tightening bolts. In between the head and the follower cover a varying number of pressed plates are clamped together. Each plate is supplied with a gasket, so that the plates form a closed system of parallel flow channels. through which the medias flow alternately at every second interval.



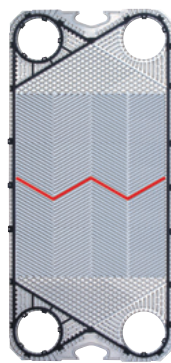
## Type of Heat Plate

### HIGH -THETA PLATE

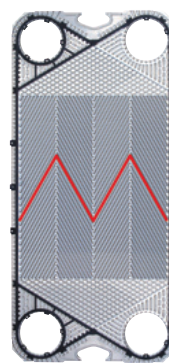
- High turbulent flow
- High heat transfer coefficient
- Perfect temperature approach
- High pressure drop

### LOW -THETA PLATE

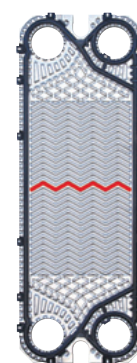
- Low turbulent flow
- Low heat transfer coefficient
- High temperature approach
- Low pressure drop



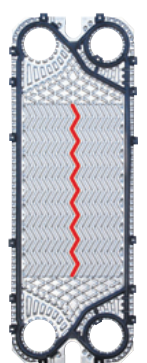
High-theta Plate



Low-theta Plate



High-theta Plate



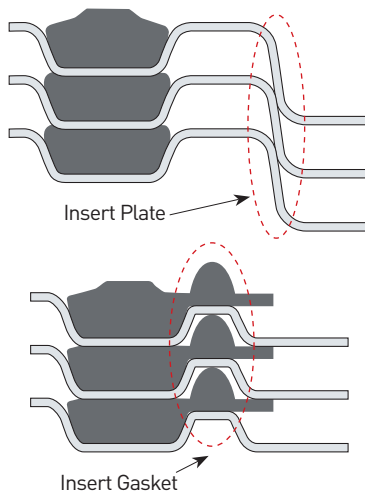
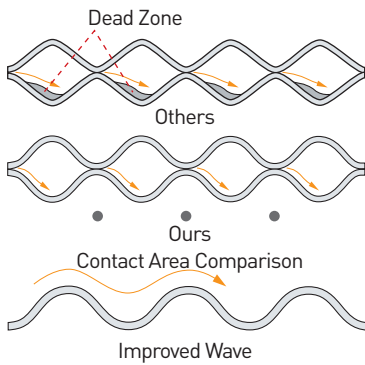
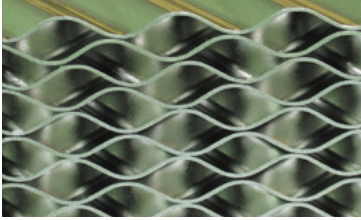
Low-theta Plate

## Plate Design

The construction of the inlet part makes a perfect distribution of the liquids across the heating surface. The inlet part is increased and supplied with grooves preventing "dead spots" which may cause the growth of bacteria or seaweeds in the plate heat exchanger. The inlet with grooves secures a strong inlet part with a minimum of contact points. The inlet parts are constructed with a leakage drained zone fulfilling the 3A specifications. The plate pattern is constructed to obtain a high thermal efficiency. The pattern is available in two designs with different angle sizes giving high respectively low turbulent flow. Combining these in a plate pack and optimal plate composition can be calculated. The angle and fishbone pattern has appeared to male the best heat transmission by a given pressure drop.



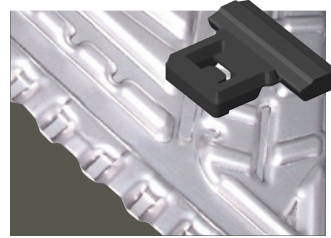
## Characteristics



### Wide contact area

The strength of the plate is excellent, compared with other companies' products with the point contact type, as the metal contact point has the surface contact feature when the plates are assembled. And the durability and corrosion resistance are greatly improved by minimizing deformation and stress concentration.

Besides, the section of the gasket is designed and manufactured to have a pressure-resistant structure that enables the minimum contact area with the fluid, and thus to withstand a high pressure.



### Clip Gasket

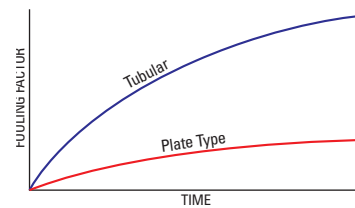
The gasket can be fixed tightly and quickly on the heat plate in the optimum condition with the dual fixing device (snap on type), and is designed and manufactured to have the glue type and non-glue type so that it can be selected according to the usage.

### Anti Vibration Design

Designed to prevent loosening the tightening bolts and nuts during continuing operation which secure to prolong the equipment's operation lifetime and prevent leakages.

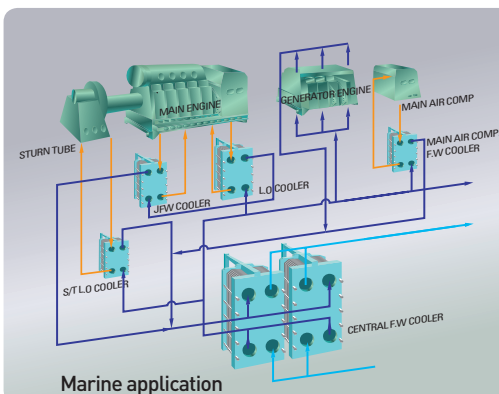
### Easy disassembly and assembly

Even the biggest model also can be assembled or disassembled by 1 or 2 persons. As it is designed to have a dual fixing method of the insert-typed plate and insert-typed gasket, there is no sliding on the plates. It prevents sliding and an assembling failure even when a non-skilled novice disassemble or assemble the device. (Excellent maintenance against materials with high viscosity such as oils for LO cooler or oil heater)



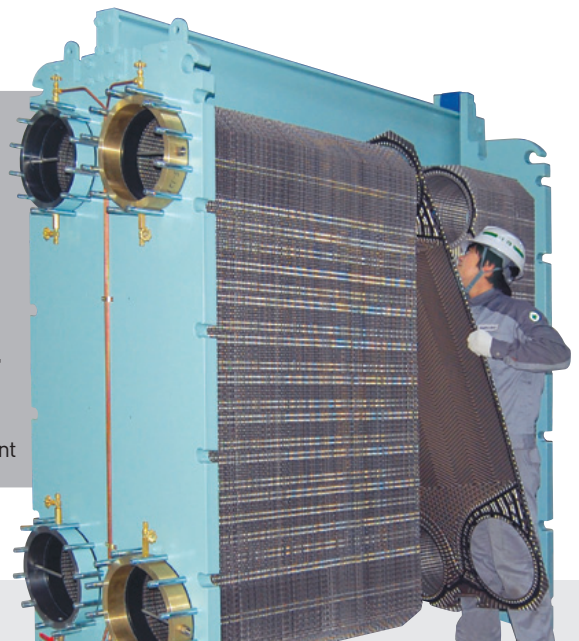
### Temperature Approach

The turbulent flow, promoted by the wave pattern of the heat plates, enables a very high heat transfer coefficient. Proximity Limit: 1°C



### Application

Marine Application and Engines, Architecture Industry, Automobiles Industry, Textile Industry, Pulp and Paper Industry, Chemical Industry, Steel Industry, Mechanical Industry, Food Industry, HVAC, Power Stations, Surface Treatment



## ● Plate Heat Exchanger Technical Data

Model		HT03	HT061	HT062	HT064	HT081	HT082	HT083	HT101	HT102	HT103	HT104
Max. Flow	m <sup>3</sup> /hr	17	80	80	80	140	140	140	200	200	200	200
Area of Plate	m <sup>2</sup>	0.03	0.08	0.12	0.23	0.25	0.35	0.5	0.16	0.26	0.36	0.46
Plate Hole Dia.	mm	18.4	65	65	65	85	85	85	105	105	105	105
Max.Conn.Dia.	mm	40	65	65	65	100	100	100	100	100	100	100
Dimension - A	mm	180	328	328	328	456	456	456	464	464	464	464
Dimension - B	mm	490	668	823	1223	1158	1485	1899	880	1120	1409	1649
Dimension - C(±1.5%)	mm	(2.5+t) x n	(3.05+t) x n	(3.05+t) x n	(3.05+t) x n	(2.7+0.5) x n	(2.7+0.5) x n	(2.7+0.5) x n	(3.3+t) x n	(3.3+t) x n	(3.3+t) x n	(3.3+t) x n

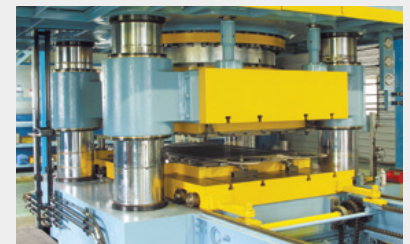
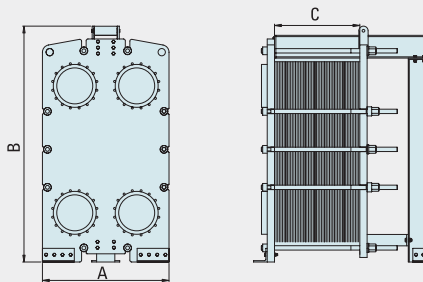
Model		HT121	HT122	HT123	HT150	HT151	HT152	HT153	HT154	HT200	HT201	HT202
Max. Flow	m <sup>3</sup> /hr	250	250	250	420	420	420	420	420	730	730	730
Area of Plate	m <sup>2</sup>	0.34	0.55	0.71	0.25	0.55	0.85	1.15	1.45	0.2	0.5	0.8
Plate Hole Dia.	mm	115	115	115	150	150	150	150	150	200	200	200
Max.Conn.Dia.	mm	125	125	125	150	150	150	150	150	200	200	200
Dimension - A	mm	614	614	614	720	720	720	720	720	720	720	720
Dimension - B	mm	1399	1805	2119	1189	1663	2137	2611	3085	1189	1663	2137
Dimension - C(±1.5%)	mm	(3.9+t) x n	(3.9+t) x n	(3.9+t) x n	(2.95+t) x n	(2.95+t) x n	(2.95+t) x n	(2.95+t) x n	(2.95+t) x n	(2.95+t) x n	(2.95+t) x n	(2.95+t) x n

Model		HT203	HT204	HT231	HT232	HT233	HT234	HT235	HT301	HT302	HT303	HT304
Max. Flow	m <sup>3</sup> /hr	730	730	950	950	950	950	950	1700	1700	1700	1700
Area of Plate	m <sup>2</sup>	1.1	1.4	0.55	0.86	1.02	1.35	1.85	0.63	1.1	1.34	1.58
Plate Hole Dia.	mm	200	200	224	224	224	224	224	300	300	300	300
Max.Conn.Dia.	mm	200	200	250	250	250	250	250	300	300	300	300
Dimension - A	mm	720	720	886	886	886	886	886	998	998	998	998
Dimension - B	mm	2611	3085	1605	1980	2168	2543	3105	1925	2405	2645	2885
Dimension - C(±1.5%)	mm	(2.95+t) x n	(2.95+t) x n	(3.05+t) x n	(3.05+t) x n	(3.05+t) x n	(3.05+t) x n	(3.05+t) x n	(3.05+t) x n	(3.05+t) x n	(3.05+t) x n	(3.05+t) x n

Model		HT305	HT351	HT352	HT353	HT354	HT451	HT452	HT453	HT454	HT501	HT502
Max. Flow	m <sup>3</sup> /hr	1700	2400	2400	2400	2400	3400	3400	3400	3400	4000	4000
Area of Plate	m <sup>2</sup>	2.05	1.09	1.75	2.45	3.15	1.23	2.0	2.15	2.8	2.38	3.36
Plate Hole Dia.	mm	300	355	355	355	355	430	430	430	430	485	485
Max.Conn.Dia.	mm	300	400	400	400	400	500	500	500	500	550	550
Dimension - A	mm	998	1115	1115	1115	1115	1390	1390	1390	1390	1540	1540
Dimension - B	mm	3347	2292	2912	3532	4152	2698	3264	3373	3830	3230	3950
Dimension - C(±1.5%)	mm	(3.05+t) x n	(3.35+t) x n	(3.35+t) x n	(3.35+t) x n	(3.35+t) x n	(3.7+t) x n	(3.7+t) x n	(3.7+t) x n	(3.7+t) x n	(3.6+t) x n	(3.6+t) x n

Model		HT503
Max. Flow	m <sup>3</sup> /hr	4000
Area of Plate	m <sup>2</sup>	4.02
Plate Hole Dia.	mm	485
Max.Conn.Dia.	mm	550
Dimension - A	mm	1540
Dimension - B	mm	4310
Dimension - C(±1.5%)	mm	(3.6+t) x n

t : Heat Plate Thickness



• 10,000ton hydraulic press

Max. operation temp. 180°C  
 Heat transfer area 0.1 ~ 2,400m<sup>2</sup>/set  
 Max. operation press. 25 kg/cm<sup>2</sup>g  
 Max. flow rate 4000m<sup>3</sup>/hr.set

The following materials can be applied to plates:  
 SS304 and 316, Avesta 254SMO, Titanium, Ti-Pd, Nickel, Hastelloy-B & C276, Zirconium etc.  
 The following materials can be applied to gaskets :  
 NBR, EPDM, FPM, Neoprene, IIR, Butyle, Silicone, Viton, Teflon Envelope [Special]

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