



# HVAC Solutions

Products and applications for the HVAC market



# The Alfa Laval Plate Heat Exchanger

Engineering, design, performance...we bring them all together.

## Simple Yet Efficient

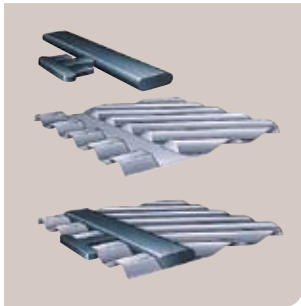
Sometimes the simplest solutions are the best. At Alfa Laval®, we believe that our plate heat exchangers are the simplest to install, easiest to maintain and most cost efficient to operate. Simplicity to us means low cost, fast payback, compact design and lightweight installation. Plainly put: simple is better.

The purpose of a heat exchanger is to create optimum conditions for heat transfer between two fluids. A plate heat exchanger is made up of a series of thin, corrugated alloy plates. These plates are gasketed and compressed together in a sturdy carbon steel frame to create an

arrangement of parallel flow channels. Ports at each corner of the plates act as the headers. Gaskets direct fluid flow and provide the primary seal for the system. One fluid, hot for example, flows in the odd number channels. The second fluid, cold in this example, travels in the even channels. The alloy plates allow for heat exchange without intermixing of fluids.

This simple design gives the Alfa Laval plate heat exchanger a number of advantages over outmoded shell-and-tube exchangers.

A unique system of bearing boxes and locking washers allows the frame to be opened using standard tools and makes the PHE easy to clean. Once opened, 100% of the heat transfer surface area is exposed. There are no tubes to pull and no special cleaning tools required, just water and a clean cloth.

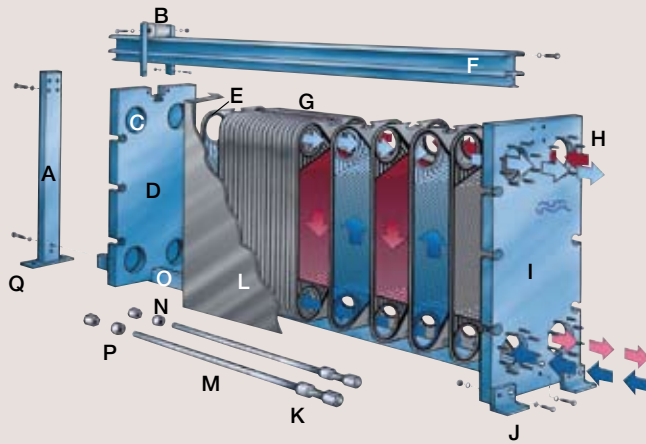


**Glue free gaskets offer fast and easy gasket replacement on site.**



In heat recovery, where every degree of difference means cost savings, the efficiency of the Alfa Laval plate heat exchanger cannot be overestimated. The pressed alloy plate design makes our heat exchangers the most compact and lightest units on the market. Saving floor space, surface area, and hold up volume saves money – whether you're considering new construction or retrofitting an existing structure.

The pressed plate and steel frame structure makes the plate heat exchanger very adaptable. Changing duty requirements is as simple as changing plates. By fitting existing exchangers with additional plates in separate sections, plate exchangers can handle a variety of heating and cooling duties.



- |                    |                   |
|--------------------|-------------------|
| A Support Column   | J Frame Foot      |
| B Roller Assembly  | K Bearing Box     |
| C Inspection Cover | L Shroud          |
| D Movable Cover    | M Tightening Bolt |
| E Gasket           | N Lock Washer     |
| F Carrying Bar     | O Guide Bar       |
| G Plate Pack       | P Tightening Nut  |
| H Stud Bolt        | Q Support Foot    |
| I Fixed Cover      |                   |

## Better by Comparison

With an Alfa Laval plate heat exchanger, expect:

### Higher Heat Transfer Rates

The Plate Heat Exchanger is up to 5 times more efficient than shell-and-tube designs with approach temperatures as close as 1°F.

### Savings in Floor Space Costs

Shell-and-tube systems use 10 times the floor space of a PHE.



### Flexibility

With the PHE, changing duty requirements means changing plates – that's it. Several duties can be handled within the same frame.

### Easier Maintenance.

Our high turbulence design resists fouling. Many of our PHE's have operated efficiently for over 10 years without maintenance. You'll never need special equipment for inspections and cleaning with the PHE. There are no tube bundles to be pulled. Frames can be opened using standard tools and cleaning tools consist of water and a clean cloth.

### Higher Operating Pressures

Thicker steel frames extend gasket life by applying even pressure over the surface of the plate, effectively eliminating flexing or bending of plates. A five point metal to metal alignment system keeps plates securely in one frame and guarantees an optimum seal. It all adds up to improved reliability against gasket blow-out and extended gasket life.

### Lower Capital Costs

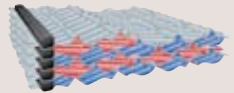
PHE's weigh less than 1/16 the total weight of shell-and-tube exchangers and use 1/10 the floor space. That means immediate savings in shipping, handling, and installation costs. And, our heat exchangers can be assembled and disassembled on-site!

**High Performance. Less Space. Lower Cost.**

## Plate innovations

### Semi-welded Units

Precise laser welding of the process side provides enhanced reliability for difficult fluids.



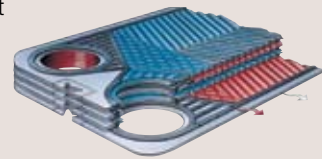
### Brazed Units and Fusion-Bonded Units

Using copper or fusion bonding to eliminate gaskets, these compact heat exchangers are perfect for small or packaged applications. Copper brazed units are UL approved up to 435 PSIG and 435°F, AlfaNova fusion-bonded units up to 650 PSIG and 1020°F.



### Double-Wall Units

Composed of plates pressed simultaneously and laser welded at the port, it is designed for applications where additional reliability against intermixing is necessary to prevent catastrophe.



Failure of one plate results in an external detection without interleakage. The second wall provides a double barrier between fluids, satisfying local health codes.

### Alfa Rex Fully Welded Units

Fully welded gasket-free unit provides reliability for extreme high temperature and/or high pressure duties.



# HVAC Applications

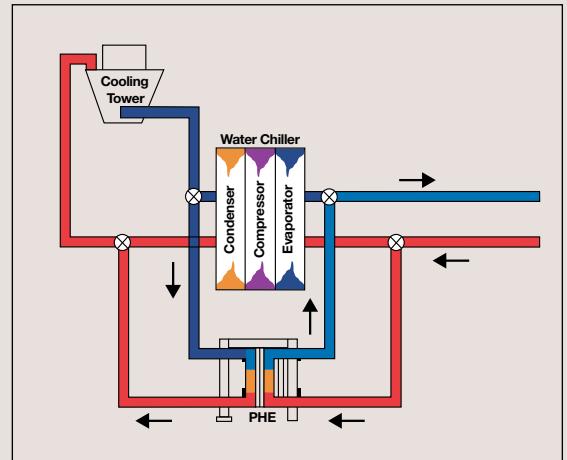
Consistent performance in all conditions.



Free Cooling in the downtown area – Atlanta, GA

## Free Cooling

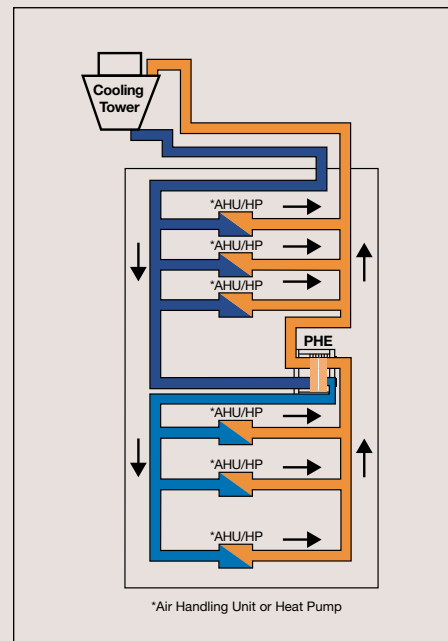
Save energy when the weather outside is below 50°F. With “free-cooling” you can bypass your chiller by cooling your condenser water through the use of a Plate Heat Exchanger. The “free-cooling” source can be a cooling tower or a natural resource such as lake or sea water. The PHE isolates dirty or corrosive fluids from other HVAC equipment.



Pressure Interceptor used in high-rise building – Charlotte, NC

## Pressure Interceptor

Plate Heat Exchanger's are used in high rise buildings to create multiple pressure loops. This enables the HVAC equipment and piping to be designed for “normal” design pressures. This will reduce the total cost of the mechanical system. The PHE is so efficient a 1°F approach temperature is possible. This efficiency produces minimal temperature losses between the pressure zones. Compact design of the PHE is vital in this application. The PHE can be designed for up to 450 psig design pressure (ASME stamped).

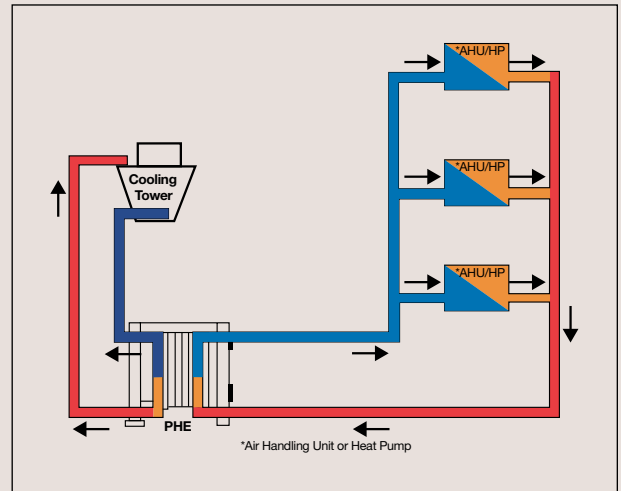




## Cooling Tower Isolation

Cooling towers are a relatively dirty water source. The PHE is designed to permit impure, fouling fluids to pass through without accumulating. The result is that the HVAC equipment stays clean and the dirty cooling tower water remains isolated. The high turbulence of the PHE resists fouling and therefore may only need to be cleaned after 10 or more years of operation.

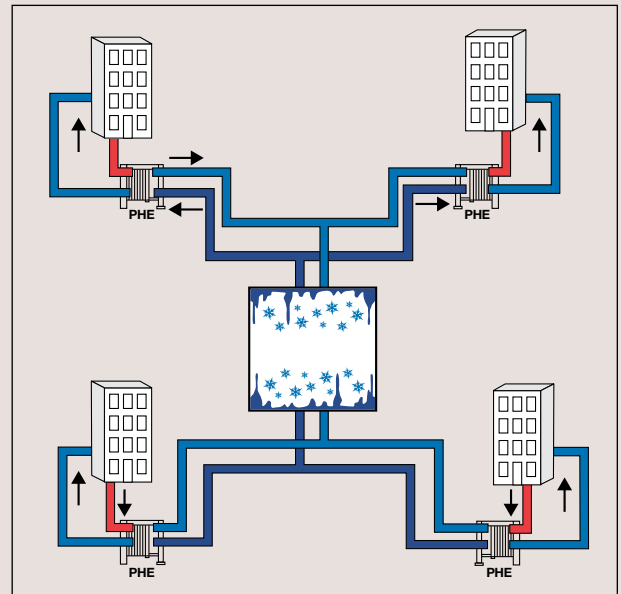
Cooling Tower Isolation in the Financial District – San Francisco, CA



## District Cooling

Highly efficient PHE's have made district cooling a feasible alternative for cooling buildings. Chilled water is networked to many buildings from a centrally located cooling source. A PHE links each building's cooling system to the district cooling network. This eliminates the need for each individual building to have a separate cooling tower and chiller. Due to deregulation of utility companies, several major metropolitan areas have adopted a district cooling system.

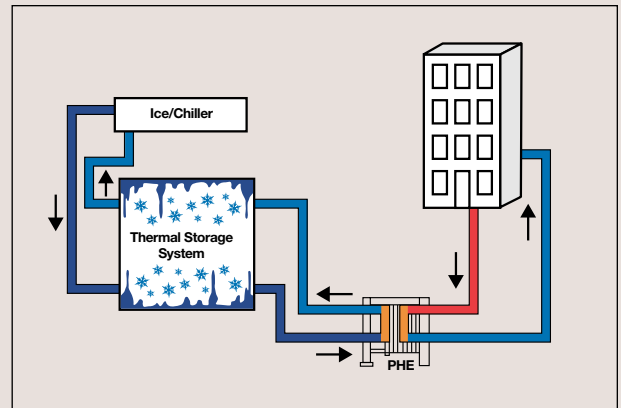
District Cooling controls climate in several buildings – Chicago, IL



## Thermal Storage

Many utility companies offer off-peak energy rates to encourage use of thermal storage systems. Whether ice or water systems are used, the PHE's high efficiency and isolation features work equally well. The PHE is normally incorporated into the thermal changing mode as well as during the discharge of stored energy back to the HVAC system.

Thermal Storage reduces energy costs in Times Square area – New York, NY



# Added Value Options

Increased performance. Enhanced efficiency.

## The Backflush Valve

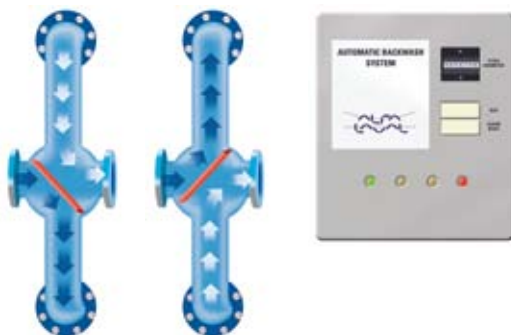
At Alfa Laval we are continually updating our product lines to make them even more cost-effective and efficient. Our heat exchangers have long been associated with energy conservation since they use readily available natural resources. The PHE works well using lake water, river water, sea water or cooling tower water.

While the plate heat exchanger's high turbulence design resists clogging, using a natural water source means dealing with natural debris. Over time, this debris can build up and foul exchanger channels. To keep the PHE running smoothly, Alfa Laval developed the Automatic Backflush Valve.

By reversing the flow of water for a short period of time – three times a day for thirty seconds is typical – the Automatic Backflush Valve flushes away any accumulated matter from the heat exchanger, returning the debris to the water source. The kit includes a control box which can be mounted on the exchanger, or a remote location.



Backflush valve



Normal  
Operation

Backflush  
Mode

# Added Value Options

Increased performance. Enhanced efficiency.

## Cooling Insulation & Drip Tray

Alfa Laval plate heat exchangers are ideal for difficult cooling applications. However, at higher temperatures and high humidity, equipment sweats.

Until now, there has been no simple solution for this very common problem.

Alfa Laval has developed new cooling insulation that keeps the plate pack dry and protects the PHE from a hot environment. Assembly is a snap! The lightweight system of galvanized steel spring locks is delivered in sections, separate from the plate heat exchanger, and is easily fastened together. Plus, the insulation is fully removable and reusable for easy PHE maintenance. Cooling insulation is available for all Alfa Laval standard PHE models.

The drip tray is available with or without an insulation hood. The tray insulates the PHE from the floor and collects condensate and water that can remain in the unit when it is opened and drained, effectively eliminating the threat of frozen equipment. Drip trays are available for all standard PHE units.



Insulated Plate Heat Exchanger

## Alfa Port Filter

Another cost saving option is a wire mesh tube mounted in the inlet port on a pressure plate. The Alfa Port Filter may be used without the Automatic Backflush Valve. It too can be used for sea, lake and river water without affecting the capacity of the PHE. The Alfa Port Filter prevents clogging by filtering out the larger bits of loose debris common to all natural water sources. It is easy to clean and can be withdrawn by removing the inspection cover on the pressure plate. Regular cleaning of the Port Filter is required to keep the PHE operating at an optimum level.



Port Filter



Gasketing

# We are Heat Exchangers

Dedicated to providing reliable performance.

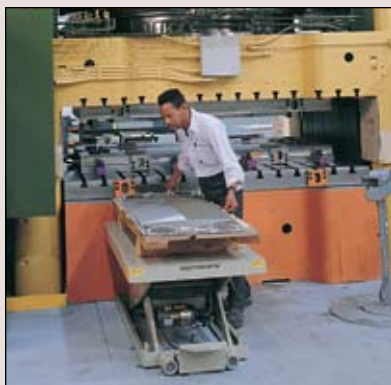


Plate pressing



Assembly



Hydro-testing

## Our Service

Alfa Laval is the only manufacturer of heat exchangers to offer a global network of factory service centers. With Alfa Laval you can rely on genuine spare parts which are quickly available, and knowledgeable service personnel dedicated to serving your heat transfer needs.

No matter where your business takes you, within the United States or abroad, Alfa Laval strives to be the recognized leader of reliable heat transfer solutions.

## Certifications

Alfa Laval products are available with certification for UL, CE, ASME, CRN and others.



- UL
- ASME
- CE
- CRN



# Full Service

Alfa Laval offers you the most comprehensive technical service in the industry. With our extensive manufacturing and service background, we understand the importance of well-maintained equipment. We know the problems and costs of downtime. That is why at Alfa Laval we guarantee that our repairs will be done properly – the first time – every time.

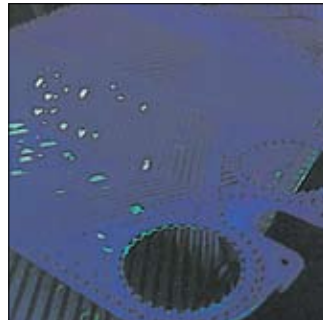
## Plate Heat Exchanger Repair – Wherever you are, whenever you need it

### Unique 4-Step Reconditioning Process

Alfa Laval's unique 4-step reconditioning process, along with the highest quality workmanship, provides savings in shutdown and replacement costs as it reduces the risk of breakdowns and increases the life of the heat exchanger.



Gasket removal using liquid nitrogen. Complete removal of gasket and glue without damaging the plate.



Crack detection under ultraviolet lights ensures that reconditioned plates are defect free.



Special 2-component epoxy gluing, followed by an oven cure for the strongest bond, provides longer gasket service life.



Chemical cleaning of plates in heated, agitated tanks. Ensures a clean, deposit-free metal surface.

## World class customer service

- World wide field service
- Fast turnaround
- Experienced, factory-trained technicians
- Genuine OEM parts and Spare Parts Kits
- All makes and models of plate heat exchangers serviced
- One year warranty on all work performed
- Nationwide technical sales representation
- Fully equipped service centers in the major industrial areas



# Our Complete Line of Gasketed Plate Heat Exchangers.

## Gasketed Plate Heat Exchangers

Unit Type	Connection Size	Maximum Flow Rate (GPM)	Maximum Height	Maximum Width	Maximum Length*	Maximum Design Pressure (PSIG)	Maximum Dry Weight (lbs)*
M3	1.25"	80	1' 7"	0' 8"	2'	230	200
T5M	2"	200	2' 6"	0' 10"	1' 2"	150	350
M6	2"	250	3' 1"	1' 1"	3' 8"	300	1,000
TS6M	3"	300	2' 4"	1' 5"	4' 9"	300	800
M10	4"	800	3' 7"	1' 7"	7' 9"	360	2,000
TL10B	4"	800	6' 6"	1' 8"	10' 8"	400	6,500
M15	6"	1,850	6' 9"	2' 2"	11' 6"	460	10,000
TS20M	8"	3,000	4' 11"	2' 8"	8' 9"	400	3,800
T20	8"	3,900	7' 1"	2' 7"	16' 2"	400	14,000
MX25	10"	6,000	10' 3"	3' 1"	17' 0"	450	27,000
M30	14"	11,500	10' 3"	3' 11"	17' 6"	300	31,000
TL35B	14"	11,500	10' 7"	3' 11"	21'	400	44,000
T50M	20"	15,500	13' 1"	5' 1"	24'	300	50,000

\*Based on standards – Custom designs could increase the maximum length and dry weight.

## Alfa Laval in brief.

Alfa Laval is a leading global provider of specialized products and engineered solutions.

Our equipment, systems and services are dedicated to helping customers to optimize the performance of their processes. Time and time again.

We help our customers to heat, cool, separate and transport products such as oil, water, chemicals, beverages, foodstuff, starch and pharmaceuticals.

Our worldwide organization works closely with customers in almost 100 countries to help them stay ahead.

### How to contact Alfa Laval

Contact details for all countries are continually updated on our website. Please visit [www.alfalaval.com](http://www.alfalaval.com) to access the information directly.

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