

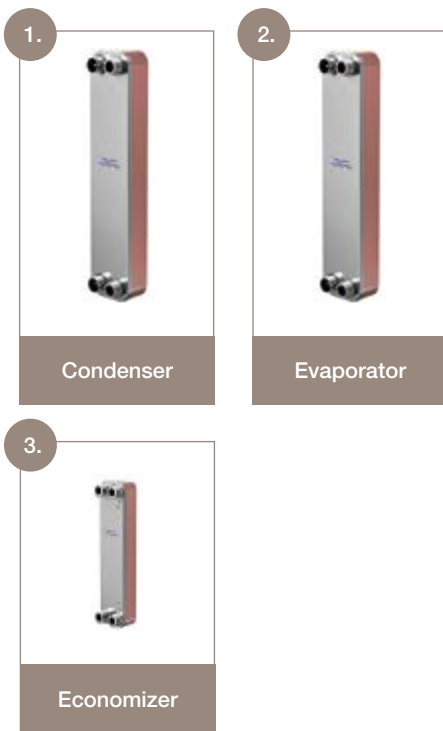


Heat pumps

Customized heat transfer solutions



Heat transfer solutions that will help you break barriers



Heat pumps are classified according to their source of energy:

- *Water-to-water* heat pumps use wells, lakes or rivers as energy source.
- *Brine-to-water* heat pumps use the ground (bedrock).
- *Air-to-water* and *air-to-air* heat pumps use the outside air.

Basics about heat pumps

Heat pumps are highly efficient, electrically driven systems used primarily to heat residential or commercial areas. In reversible operation, they are also used for cooling. Heat is produced during a condensation process in the refrigeration cycle and is transferred to either air or water. (The opposite applies to cooling.)

In the European heat pump design the heat exchanger in contact with the energy source is the evaporator, while the heat exchanger producing the hot water is the condenser.

As with all modern heating and cooling systems, the aim is maximum efficiency. In a heat pump, this is achieved by ensuring the closest possible temperature approach between the evaporator and the condenser. Optimizing the heat exchangers for the customer's specific systems is therefore critical.

The heat generated by a heat pump is used for space heating but also for producing hot tap water. To enhance the production of hot water and increase efficiency of the heat pump, an economizer is often used. It helps the compressor to achieve higher condensing temperatures, thereby raising the water temperature.

In applications where very high temperatures are required, heat pumps can be designed as cascade systems or use CO₂ as refrigerant.

Brazed heat exchangers (BHE) are commonly used in European heat pumps. They act as condensers, as evaporators in water-to-water and water-to-brine systems and, optionally, as economizers.

Three innovations that break barriers

Product scope

EVAPORATORS

In evaporator duties, BHEs can be optimized by varying the channel plate characteristics and also by adding a distribution system. The distribution system ensures a uniform distribution of the refrigerant throughout the heat exchanger. This assures high performance and stable superheating under variable conditions. Though designed to operate with typical heat fluxes, Alfa Laval's distribution systems can be adapted to higher and lower heat-flux conditions as well.

CONDENSERS

Alfa Laval offers a range of BHEs optimized as condensers. They feature specially designed channel plates combining different corrugation angles, pressing depths and asymmetric channels. This makes them suitable for a wide variety of heat-pump duties – from water heaters and micro heat pumps to residential and commercial systems.

ECONOMIZERS

The small footprint and versatile configurations of Alfa Laval's brazed heat exchangers make them easy to optimize for economizer duties.

GASKETED PLATE HEAT EXCHANGER, SHELL & TUBE HEAT EXCHANGER AND AIR HEAT EXCHANGER RANGES

In order to provide our customers with a full range of products, Alfa Laval also develops and delivers gasketed plate heat exchangers, shell & tube heat exchangers and air heat exchangers. The industry's most comprehensive range of gasketed plate heat exchangers is available for both cooling and heating duties to complement the entire system. Tubular heat exchangers for air and process conditioning duties, with patented distribution system and dedicated design for respectively positive or negative temperatures. We cover all dry expansion duties up to 2000 kW. Air Cooled Condensers and Liquid Coolers for water cooled chillers, comprise a part of air heat exchanger range, designed for a variety of refrigerants and a variety of ambient conditions.

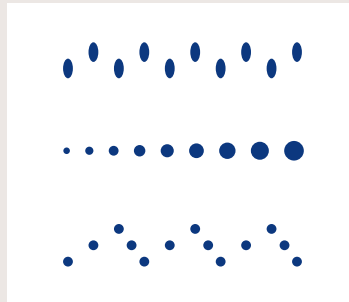
INNOVATIVE SOLUTIONS / CAPACITY

AC1000 is the largest dual circuit brazed heat exchanger on the market boasting design features that let you increase capacity, lower total system cost and boost efficiency.

AC900 is a new large single circuit heat exchanger optimized for low density refrigerants, designed to increase capacity and lower total system cost.



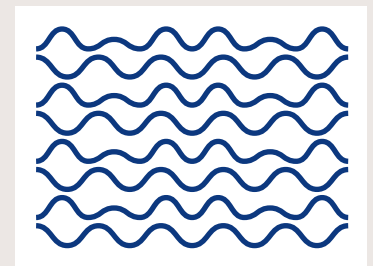
DYNASTATIC DESIGN / FLEXIBILITY



This breakthrough production method gives you complete freedom to design the perfect refrigerant distribution system for your products. Whatever placement, size and number of distributors you want, we can produce it.

FLEXFLOW DESIGN / EFFICIENCY

Our range of asymmetrical flow patterns unlock new levels of efficiency. We don't believe in a one size fits all approach – we develop new asymmetrical patterns tailored by application allowing smaller refrigerant volumes and optimized water pressure drops.



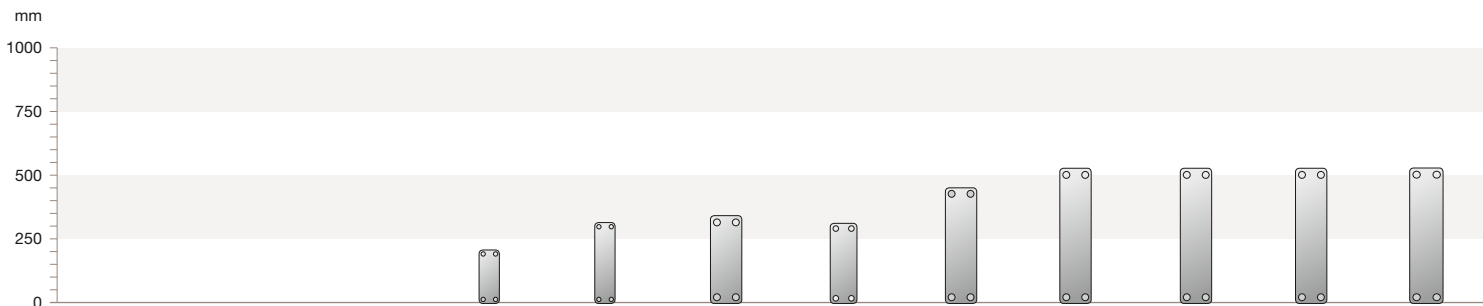
The Alfa Laval adv



Alfa Laval offers a complete range of heat exchangers – brazed heat exchangers (BHE) and shell-and-tube heat exchangers (S&T). BHEs are very compact compared to any other heat exchanger for similar applications. This means less refrigerant is needed.

AlfaNova is a range of fusion-bonded, all stainless-steel heat exchangers. They are ideal in situations where one of the media is corrosive.

Water Kit is a series of rapid connections that minimize the time of assembly. They have integrated temperature sensors and safety valves.



Heat Pump

	AC16	AC18	CB30	AC30	AC70	CB60	CB62	AC75	CB65
Evaporator	x	x	x	x	x	x	x	x	x
Condenser	x	x	x	x	x	x	x		x
Economizer	x	x		x	x				
Dimensions, mm (width/height)	73.5/209.5	73.5/315.5	113/313	95/325	111/526	113/527	113/529	113/529	120/535
Design Pressure (BAR)	32/45	32/45	32/45	32/45	32/45	32/45	32/48	32/45	32/45
Design Pressure (PSI)	464/653	464/653	464/653	464/653	464/653	464/653	464/696	464/653	464/653
Single or Dual Circuit	Single	Single	Single	Single	Single	Single	Single	Single	Single
Distribution System**			(x)	x	x	(x)	(x)	x	(x)
DynaStatic Distribution								x	
Asymmetric plates available	x	x					x	x	x
High Theta plates available	x	x	x	x	x	x	x	x	x
Low Theta plates available			x		x	x			
Combination High & Low			x		x	x			
Water Kit**			(x)	(x)	(x)	(x)	(x)	(x)	(x)
High Efficiency							x	x	x
CO ₂ transcritical									

** (x) = optional

Advantage

All BHE units are pressure-tested and labelled to comply with all major industry approvals (PED, UL, Chinese PV, KHK, KRA, and CRN). They are also leak-tested with helium to ensure that every unit is gas tight. All relevant approvals are also available for shell-and-tube heat exchangers.

For OEM customers, Alfa Laval can optimize the BHE according to specific applications and system requirements. Each optimized heat exchanger is unique to the customer, with a unique article number. Customers can be safe in the knowledge that Alfa Laval uses all its know-how to optimize their products.

Continuous innovation and product development are ensured by Alfa Laval's in-house laboratory. All developments and solutions are validated before being offered to customers.





Partner with Alfa Laval to become best in class

With our unique wealth of experience, our dedication to finding innovative new heat transfer OEM solutions with greater efficiency and lower energy consumption and our global manufacturing and distribution network, Alfa Laval is your ideal partner.

Don't get left behind in a competitive market, affected by a constant flow of new regulations and ever-changing trends. We support your need to drive performance to new levels as well as the need of cost-efficient solutions.

Join forces with Alfa Laval and be the best that you possibly can.

OEM applications

- Air Conditioning (Chillers, Absorption Chillers and VRF's)
- Heat Pumps
- Boilers
- Solar Heating
- Domestic Water Heating
- Domestic Hot Water
- Process Cooling
- Fuel Cells
- (Micro) Combined Heating and Power
- Air Dryers
- Air Compressors
- Oil Cooling
- Transport Refrigeration
- Wind Power
- Vending Machines
- Engine cooling (oil, air, lube)
- Engine oil and fuel filtration
- Transmission Oil Cooling
- Hydraulic oil cooling
- Heat recovery

How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com