



#### 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, foodstuffs, starch and pharmaceuticals.

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

#### 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](http://www.alfalaval.com)

## Alfa Laval AlfaNova

Gasket-free heat exchangers with extreme strength



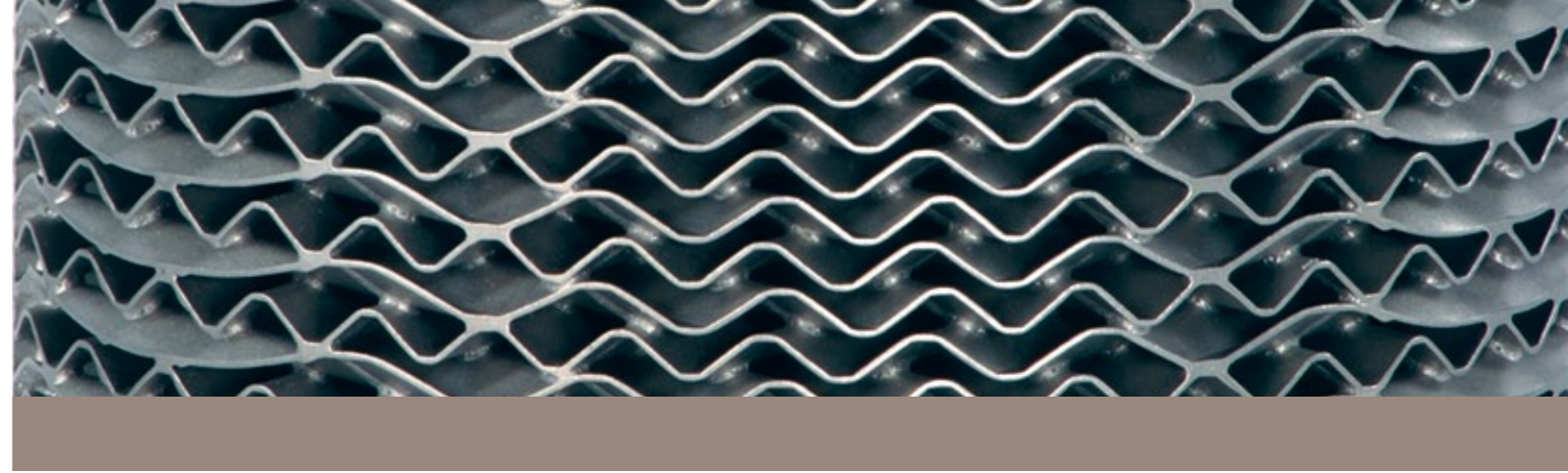
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# AlfaNova

## Tough performance for temperature, corrosion and leakage resistance

Fully fusion bonded in 100% stainless steel, with zero gaskets, zero welding and zero gaps, the groundbreaking technology of Alfa Laval's AlfaNova range sets a new standard in high performance plate heat exchangers.

Constructed using Alfa Laval's state-of-the-art AlfaFusion™ patented bonding technology, AlfaNova delivers an unprecedented level of temperature, corrosion and leakage resistance. It is able to withstand extreme pressures and offers clinical standards of hygiene unmatched by any other brazed plate heat exchanger on the market.



## Outstanding efficiency and reliability

AlfaNova marks a breakthrough in tough, high performance plate heat exchangers. Made from 100% stainless steel using Alfa Laval's unique AlfaFusion™ patented bonding technology, the range provides a clean, hygienic heat transfer channel with unrivalled safety, reliability and durability.

With a mid-sized platform for all types of needs, AlfaNova is aimed at district heating installations with corrosive

water and a wide range of applications where aggressive liquids, such as ammonia chiller systems, are used.

In addition, Alfa Laval's energy saving solutions enable AlfaNova to deliver high efficiency and low life cycle costs - even under high temperature conditions.

### Benefits at a glance

- 100% stainless steel
- Very high corrosion resistance
- Very high temperature resistance
- Able to operate at extremely high pressure
- Ideal for NH<sub>3</sub> refrigerants
- Leakage proof for superior hygiene
- Extremely compact design cuts installation costs

## Tough, versatile and compact

### Toughness guaranteed

As a gasket-free 100% stainless steel heat exchanger, the AlfaNova is highly corrosion resistant. AISI 316 stainless steel plates are fusion joined in a vacuum furnace for maximum strength. The solution is hermetic, hygienic and safe, ensuring that every AlfaNova unit delivers high mechanical strength and a long working life.

Even when NH<sub>3</sub> is used as a refrigerant, the seamless stainless steel ensures a corrosion-free result under high pressure of up to 30 bar (435 PSI) and temperatures from -195 °C to 550 °C. In applications where absolute hygiene is required, the gasket-free design also delivers a completely sealed and contamination-free environment.

### High efficiency

The unique corrugated plate pattern of AlfaNova delivers high heat transfer performance with high turbulent flow and low fouling tendencies.

### Compact and easy to install

AlfaNova fusion-bonded plate heat exchangers are compact, easy to install, require no special construction work and minimal piping systems. Furthermore, nozzles and pass configurations can easily be customized to meet particular requirements.

### Applications

The AlfaNova range offers a gasket-free solution for plate heat exchangers in refrigeration circuits with both flooded flow and dry expansion systems. Typical duties are evaporators, condensers, desuperheaters, oil

coolers and economizers. Low need of charging means that AlfaNova is ideal for both residential and industrial air conditioning and for NH<sub>3</sub> refrigeration plants.

### Plate and connection arrangements

AlfaNova can be designed with a number of plates, in single or multi pass. The wide range of connection interfaces makes it easy to find the right solution for every demand. The connection can be on the S side or on the T side.



# The future of tough, high performance plate heat exchangers is here

Alfa Laval's AlfaNova range of highly effective, gasket-free plate heat exchangers is an off-the-shelf solution, suitable for a wide range of applications, including HVAC heating and cooling, refrigeration, oil cooling, industrial heating and cooling and process heating and cooling. The XP series is particularly suited to CO<sub>2</sub> applications, while the AlfaNova HP76 and HP400 series can be delivered with marine classification certification.

To ensure optimal safety, reliability and durability, AlfaNova has been tested extensively. In tests which focused on pressure and thermal fatigue, heat transfer performance and corrosion resistance, the results conclude that, in addition to the versatility of the range, the unique, compact AlfaNova also offers outstanding levels of hygiene and corrosion resistance, high efficiency, long lifespan and unrivalled performance.



|  | AlfaNova 14      | AlfaNova 27       | AlfaNova HP 27    | AlfaNovaXP 27     | AlfaNova 52      | AlfaNova HP 52   | AlfaNovaXP 52    |
|--|------------------|-------------------|-------------------|-------------------|------------------|------------------|------------------|
| <b>Design pressure, up to (bar/psi)*</b> | 23/334           | 30/435            | 40/580            | 70/1015           | 30/435           | 40/580           | 70/1015          |
| <b>Height (mm)</b>                       | 207              | 310               | 310               | 310               | 526              | 526              | 526              |
| <b>Width (mm)</b>                        | 77               | 111               | 111               | 111               | 111              | 111              | 111              |
| <b>A - measure (mm)</b>                  | 8 + (2.48 · n) ± | 11 + (2.42 · n) ± | 13 + (2.42 · n) ± | 15 + (2.42 · n) ± | 11 + (2.48 · n)  | 13 + (2.48 · n)  | 15 + (2.48 · n)  |
|  |                  |                   |                   |                   |                  |                  |                  |
|  |                  |                   |                   |                   |                  |                  |                  |
| <b>Number of Plates (n)</b>              | 4 - 50           | 6 - 100           | 60 - 100          | 6 - 100           | 6 - 150          | 6 - 150          | 6 - 150          |
| <b>Weight (kg)</b>                       | 0.4 + (0.07 · n) | 1.0 + (0.13 · n)  | 1.5 + (0.13 · n)  | 2 + (0.13 · n)    | 1.9 + (0.22 · n) | 2.3 + (0.22 · n) | 2.3 + (0.22 · n) |
|  |                  |                   |                   |                   |                  |                  |                  |

| AlfaNova 76              | AlfaNova HP 76            | AlfaNova 200       | AlfaNova HP 200    | AlfaNova 400      | AlfaNova HP 400   | AXP27 AlfaNova        | AXP52 AlfaNova        |
|--------------------------|---------------------------|--------------------|--------------------|-------------------|-------------------|-----------------------|-----------------------|
| 30/436                   | 40/580                    | 18/261             | 32/464             | 19/276            | 30/435            | 110/1595              | 110/1595              |
| 816                      | 816                       | 742                | 742                | 990               | 990               | 362                   | 582                   |
| 192                      | 192                       | 324                | 324                | 390               | 390               | 160                   | 160                   |
| L-pl: 13 + (2.85 · n) ±  | L-pl: 17 + (2.85 · n) ±   | 9.3 + (2.85 · n) ± | 9.3 + (2.85 · n) ± | 17 + (2.65 · n) ± | 17 + (2.65 · n) ± | A = 15 + (2.42 · n) ± | A = 15 + (2.48 · n) ± |
| H-pl: 11 + (2.85 · n) ±  | H-pl: 15 + (2.85 · n) ±   |                    |                    |                   |                   |                       |                       |
| A-pl: 11 + (2.56 · n) ±  | A-pl: 15 + (2.56 · n) ±   |                    |                    |                   |                   |                       |                       |
| E-pl: 11 + (2.29 · n) ±  | E-pl: 15 + (2.29 · n) ±   |                    |                    |                   |                   |                       |                       |
| 10 - 150                 | 10 - 150                  | 10 - 230           | 10 - 230           | 10 - 270          | 10 - 270          | 6 - 100               | 6 - 150               |
| L-, H-pl: 8 + (0.42 · n) | L-, H-pl: 10 + (0.42 · n) | 12 + (0.75 · n)    | 13.5 + (0.75 · n)  | 22 + (1.4 · n)    | 27 + (1.4 · n)    | 20.1** + (0.13 · n)   | 38.4*** + (0.22 · n)  |
| A-, E-pl: 8 + (0.49 · n) | A-, E-pl: 10 + (0.49 · n) |                    |                    |                   |                   |                       |                       |

\*) Depending on temperatures

\*\*) If n > 81 plates, 19.3 if n = 40 - 80 pl and 18.5 if n < 40 plates

\*\*\*) If n > 110 plates, 35.4 if n = 81 - 110 pl, 34.0 if n = 40 - 80 pl and 32.7 if n < 40 plates

# AlfaNova CIP

A problem frequently encountered in almost all applications where heat exchangers are used, is the build-up of deposits on heat transfer surfaces. This results in reduced thermal performance and the potential risk of under-deposit corrosion. Another effect is increased pressure drop over the heat exchanger. If it is connected to pumps or compressors in the same loop, it will experience a higher workload, resulting in increased energy consumption as well as increased wear and tear.

Alfa Laval supplies a wide range of cleaning agents suitable for removing most of these troublesome deposits to ensure units remain well maintained for optimal performance.

When cleaning valuable equipment such as the AlfaNova, to prevent loss of performance and valuable downtime, the best solution is the use of an Alfa Laval Cleaning-in-Place (CIP) unit. When cleaning the unit, the heat exchanger must be sealed off from the surrounding and drained, as described in the diagrams below. If there are two

heat exchangers running in parallel, they can be cleaned one unit at a time, thus avoiding downtime.

Alfa Laval CIP units are available in a wide range of standard sizes, with optional extras that include reversible flow and explosion-proof capabilities. Alfa Laval CIP units can be used for all types of heat exchangers, including spiral heat exchangers, shell-and-tube heat exchangers and gasketed, welded and brazed plate heat exchangers.

### Concept

Alfa Laval CIP units offer optimal simplicity:

1. Connect the Alfa Laval CIP unit to the heat exchanger.
2. Add the water in the CIP unit (90% of the total liquid needed.)
3. Circulate the water in order to control all connections before adding the cleaning agent into the tank.

4. Monitor the pH change as the heat exchanger is being cleaned, according to instructions.

5. Drain and rinse thoroughly, then disconnect.

6. The heat exchanger is now thermal cleaned and running at full performance.

Alfa Laval CIP units are a cost-effective way to achieve better performance and the cleaning agents used are, of course, environmentally friendly.

In addition to boosting the performance of all kinds of heat exchangers, Alfa Laval cleaning agents extend the operating time between cleaning cycles and prolong the overall lifetime of the heat exchangers without damaging the plates.

\* By cleaning during regular intervals, circulation in the channels is possible, allowing the cleaning agents to remove deposits.

To ensure continuous high performance, regular cleaning with cleaning agents is also necessary to remove deposits and reduce the risk of clogging.

