Alfa Laval DuroShell

The fully welded plate-and-shell heat exchanger

Introduction
Alfa Laval DuroShell is a specially engineered plate-and-shell heat exchanger ideal for demanding duties, such as corrosive, high pressure and high temperature applications.

Incorporating many innovative features to optimize customers’ process performance, it takes the plate-and-shell concept to a new level. Alfa Laval DuroShell, with its laser-welded plates and many multiple pass and asymmetric flow capabilities, allows optimization of thermal efficiency and substantially improved fatigue resistance.

Designed for use with liquids, gases and two-phase mixtures at pressures up to 100 barG (1,450 psiG), in both PED and ASME, and at temperatures up to 450 °C (842 °F), Alfa Laval DuroShell is suitable for a wide range of aggressive media. Its capabilities reach far beyond both gasketed and many other welded heat exchanger technologies.

Applications
Alfa Laval DuroShell is suitable for a wide range of applications such as general cooling and heating duties, condensation, evaporation, and steam heating.

Benefits
• Small footprint and light weight minimize installation, operating and maintenance costs
• Laser welding ensures robust construction and improves process reliability
• Gasket-free construction means high security against leakage
• Superior thermal performance gives maximized heat recovery with minimized heating or cooling media. This reduces fuel consumption, energy costs and environmental impact.
• Unique roller coaster plate pattern increases fatigue resistance and minimizes fouling
• Easy to install and maintain due to multipass design.

Working principle
The heat exchanger operates with one media on the plate side and the other on the shell side, both of which can be rated to the full 100 barG (1,450 psiG). In the single pass configuration the exchanger works in pure cross-flow. In the multi-pass arrangement this approximates to a global counter-current configuration.

The patented plate configuration, combining a longer plate length and roller coaster pattern, ensures a higher thermal efficiency than standard circular plates.

The patented distribution tubes ensure the best distribution of media on the plate surfaces, add significantly to the strength of the plate pack, and make multi-pass configurations easier, and more effective, than traditional plate-and-shell designs.

Since the nozzles on the shell side are completely independent to those on the plate side the heat exchanger is perfect for asymmetric flow duties.

Design

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Learn more at www.alfalaval.com/duroshell
Technical data

Design pressure
CE/PED Vacuum to 100 barG (1,450 psiG)
ASME Vacuum to 100 barG (1,450 psiG)

Design temperature
Carbon steel shell: –45 °C to 450 °C (–49 °F to 842 °F)
316L SST shell: –196 °C to 350 °C (–321 °F to 662 °F)

Maximum heat transfer surface
DuroShell S 15 m² (161 ft²)
DuroShell M 56 m² (603 ft²)
DuroShell L 235 m² (2,530 ft²)

Standard connections
Plate side
Shell side

<table>
<thead>
<tr>
<th>Model</th>
<th>DuroShell S</th>
<th>DuroShell M</th>
<th>DuroShell L</th>
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</thead>
<tbody>
<tr>
<td>D Max</td>
<td>833 mm (33&quot;)</td>
<td>990 mm (39&quot;)</td>
<td>1,380 mm (54&quot;)</td>
</tr>
<tr>
<td>H Max</td>
<td>1,536 mm (60&quot;)</td>
<td>2,706 mm (106&quot;)</td>
<td>3,564 mm (140&quot;)</td>
</tr>
<tr>
<td>Net max weight</td>
<td>650 kg (1,430 lbs)</td>
<td>1,800 kg (3,970 lbs)</td>
<td>7,000 kg (15,430 lbs)</td>
</tr>
<tr>
<td>Flooded max weight</td>
<td>750 kg (1,653 lbs)</td>
<td>2,100 kg (4,630 lbs)</td>
<td>8,200 kg (18,080 lbs)</td>
</tr>
<tr>
<td>Corrosion allowance by default (carbon steel)</td>
<td>1 mm (0,04&quot;)</td>
<td>2 mm (0,08&quot;)</td>
<td>3 mm (0,12&quot;)</td>
</tr>
</tbody>
</table>

Dimensional drawing

Standard materials

<table>
<thead>
<tr>
<th>Plates</th>
<th>316L SST</th>
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<tbody>
<tr>
<td>Shell/covers/nozzles</td>
<td>Carbon steel (painted) or 316L SST (not painted)</td>
</tr>
</tbody>
</table>

Pressure ratings
PN16, PN40 & PN100 (ASME Class 150, 300 & 600)