



## How to maintain a spiral heat exchanger

Simple service maximizes uptime



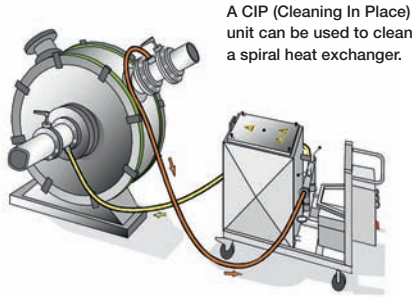
A spiral heat exchanger has two concentric, counter-current spiral channels, one for each fluid. The curving channels provide extremely efficient heat transfer and good flow conditions for a wide variety of fluids. The design is particularly suitable for use with fouling, fibrous, viscous and coarse fluids.

The continuously curving single channel creates a turbulent flow. This results in a self-cleaning effect



that prevents fouling deposits from forming – which helps minimize downtime for maintenance purposes.

Should the spiral heat exchanger ever require manual cleaning, this can be done quickly and conveniently using a hydroblaster or Alfa Laval's CIP (Cleaning In Place) unit. The entire heat-transfer area is easily accessible behind the wide-opening, easily removed front cover.



### How to back-flush the spiral heat exchanger

- Arrange hose connections and valves so that the unit can be operated in reverse for fixed periods of time.
- Flush the unit with cleaning agent in reverse flow to the normal operation of the circuit.
- The flow pressure should be higher than normal while flushing.
- Flush for 15-30 minutes.
- If necessary, flush the other circuit in the same way.

### How to open the spiral heat exchanger

- Make sure both circuits are de-pressurized before opening.

- Remove the bolts or hook bolts from the front cover.
- Swing the cover open using the handle or the lifting lugs.

### How to perform mechanical cleaning

- Place the unit in horizontal position.
- Clean the channels, one by one, with high-pressure water – up to 800-1000 barg. Use a nozzle with rotating head or concentrated jet (hydroblast gun or cleaning bar).
- Use hot water (50-60°C) for enhanced efficiency.
- Verify the result, either visually or by inserting a bar in the channel.

### How to replace the gasket and close the spiral heat exchanger

- When mounting, make sure the positioning marks on the cover and the gasket holder match.
- Clean and lubricate the hook bolts for better tightening.
- Fit the gasket to the two gasket holders on the cover and close the cover, still strapped.
- Distribute the hook bolts around the edge of the cover at equal intervals and tighten them manually. Check the correct number of hook bolts with the unit's name plate.
- Tighten opposing hook bolts diagonally.
- Loosen the straps from the cover.

## Trouble-shooting

Symptom	Possible reason	Solution
Inadequate thermal performance at start-up	- Air pockets - Insufficient service fluid (e.g. cooling water)	- Vent the unit - Check flow rates and temperatures
Decreasing thermal performance (possibly in conjunction with an increased pressure drop or a reduced flow rate)	- Fouling on heat-transfer surface	- Clean the unit and adjust flow rates to specified levels
Decreasing thermal performance with unchanged or reduced pressure drop	- Bypass from one turn to the other caused by damaged cover gasket - Excessive operating pressure	- Replace the cover gasket - Adjust pressure to specified level
Excessive pressure drop with maintained thermal performance	- Inlet or outlet is blocked	- Backflush or clean the spiral
External leakage	- Damaged cover gasket - Insufficient pipe support - Relaxation of cover gasket during shut-down or shipment - Thermal expansion during start-up	- Replace the cover gasket - Adjust pipe support system - Tighten hook bolts - Tighten hook bolts. If leakage persists, check cover gasket
Internal leakage	- Heat-transfer surface is damaged by erosion, corrosion or mechanical impact	- Contact Alfa Laval for advice. Field repair may be possible

(For detailed information on how to open, close and maintain a spiral heat exchanger, please refer to the Instruction Manual.)

### 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)