Sludge Spiral Heat Exchanger

Compact and efficient

For decades, spiral heat exchangers have been one of the most cost effective ways to keep a digester warm, to preheat sludge before dewatering, to pasteurize sludge and to perform a wide range of other sludge heating applications.

With more than 50 years of experience, Alfa Laval has 1500 sludge spiral heat exchanger installations in the US and more than 5,000 installations worldwide.

The fundamental advantage

Compared to conventional heat exchangers, the Alfa Laval Sludge Spiral Heat Exchangers only need one sixth of the space, yet give you higher heat transfer coefficients, less fouling and up to 75% lower pumping power consumption. With a completely clear passage and no sharp bends, the sludge flow channel keeps clear and you can count on efficient and continuous operation – time and time again.

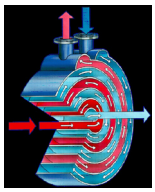
The sludge spiral heat exchanger requires only a very limited amount of space for service work, due to easy access with a hinged cover that exposes the entire sludge channel for CIP. And due to its size, it requires up to 50% less heating medium. This means major savings in operating costs – and also means lower costs for buildings, pumps, valves and piping.

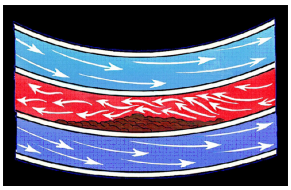
The sludge spiral heat exchanger design provides improved heat exchange area, additional “easy clean” features that make it easier to inspect the inlet without opening the unit, faster opening/closing of the unit, and all pump and valve connections are at the same level and spacing, irrespective of heat exchanger size. The sludge spiral heat exchanger reduces maintenance downtime by up to 25%.

The smaller footprint of sludge spiral heat exchangers means that capital costs for both the heat exchanger unit and the ancillary equipment, as well as for buildings and structures where they are installed, are also significantly lower.

Working principle and design

The sludge spiral heat exchanger is constructed of a hot channel and a cold channel. The sludge channel (hot or cold) is manufactured with no obstructions and easily accessible for cleaning. In the case of heat recovery applications or sludge to sludge applications, both channels are accessible for cleaning and unobstructed.





The hot and cold channels are in a completely counter-current configuration to maximize the amount of heat transferred. The spiral geometry and channel design will induce a 'self cleaning' effect should any deposits collect on the walls. There is an increase in velocity locally, which scrubs any deposits away. Design velocity is maintained throughout the unit, maximizing the heat exchanged at all points between the sludge and utility fluid.

The sludge inlet is placed tangentially for even distribution of the sludge across the entire sludge channel. The cover(s) on the unit are hinged for ease of opening. Hook bolts and a gasket seal(s) are used to seal the unit shut after opening.

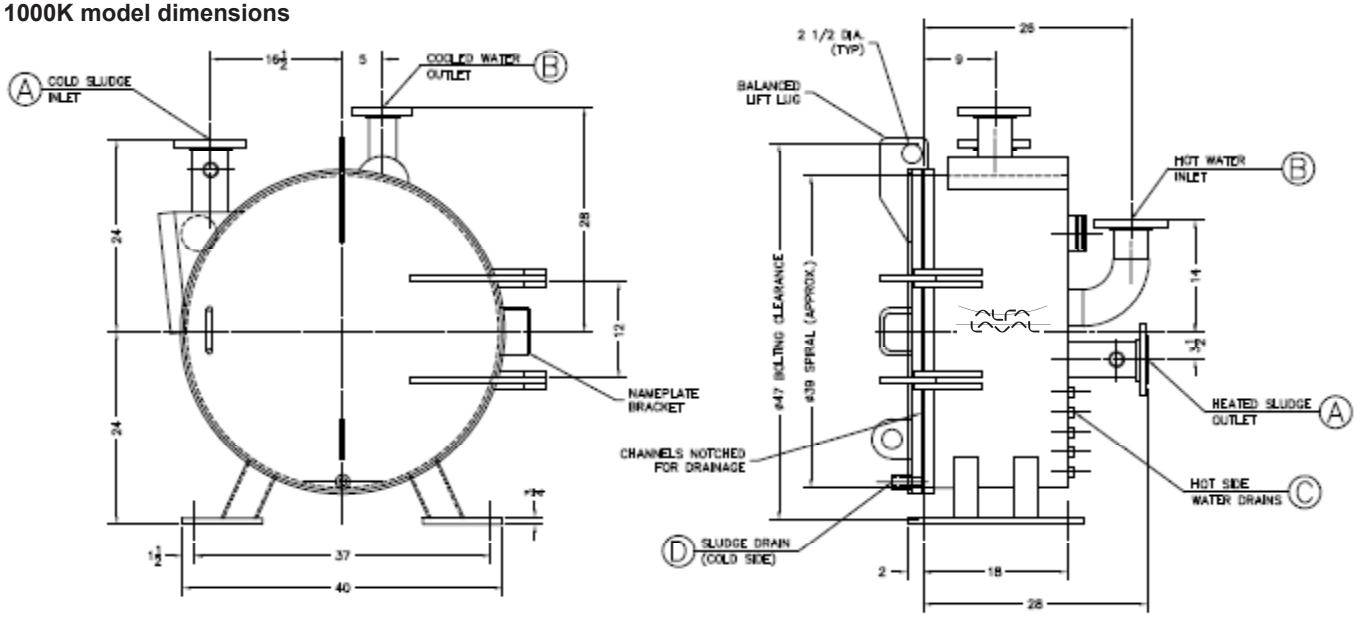
The sludge spiral heat exchanger is also equipped with a 2" back flush connections on both the sludge inlet and outlet in addition to a 4" hand hole cleanout. A series of 3/8" couplings are provided to drain each hot water channel, and a 1" coupling is provided for draining the sludge channels and is located at the lowest point on the cover.

Dimensions and technical data

Model and design may vary based on process. Please contact Alfa Laval for additional information.

Sludge spiral model	Sludge		A Height (inches)	B Width (inches)	C Depth (inches)	Weight (lbs)
	GPM	ΔP psi				
15L	120	2.1	35	29	18	700
25L	120	2.6	39	33	18	1080
35L	120	3.3	44	38	18	1370
500K	120	4.0	50	44	15	2380
750K	200	5.4	50	44	22	2670
1000K	300	4.7	50	44	28	3060
1500K	300	5.7	58	51	28	3840
2000K	430	5.2	54	48	34	3750
2500K	530	5.1	54	48	41	4170
3000K	660	5.8	55	49	47	4780

1000K model dimensions



How to contact Alfa Laval

Contact details for all countries are continually updated on our website. Please visit www.alfalaval.com to access the information directly.