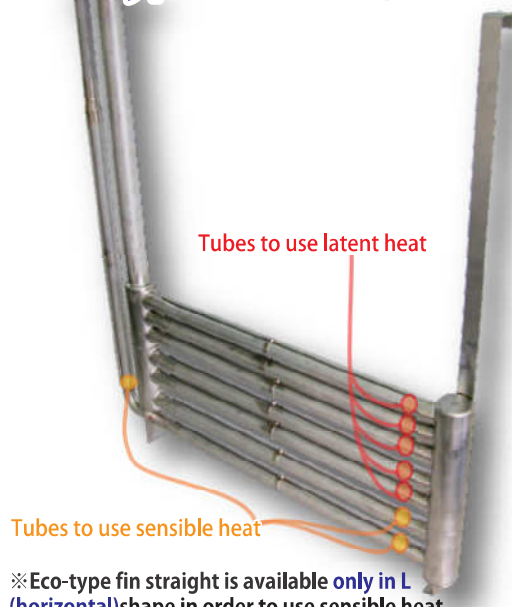


Optional / Variation (Custom-made)

Eco-type fin straight



■ Moving to energy saving

The structure of the standard fin straight is designed to use the heat energy (**Latent heat**) of the steam as a heating medium.

The operating temperature of most pretreatment and plating chemicals (not including electroless nickel plating) is usually around 60 centigrade or lower. Therefore hot water 100 centigrade or lower, liquefied steam, can be used as a heating medium as well. This **Eco-type fin straight** can realize energy saving operation by using heat energy (**Sensible heat**) of hot water and saving total steam amount. When performance is compared to a standard model, **the Eco model can reduce the required amount of steam by 5-10%**, and contribute to reduction of CO2 emission.

Simulation of saving in fuel cost as well as required steam

Operating hours	8	Hr/day
Operating days	250	day/year
Cost of heavy oil A	55	JPY/kg
Solution volume	2000	L
Rising temperature	30→60	°C
HEX operation	2.5	Hr/day

[note]

Heavy oil A amount is calculated with a boiler efficiency of 0.9.
Heat exchanger operation hours are set at 2.5 hours per 8 hours of operation. (At start up: 1 hour + re-heating for heat release: total 1.5 hours) The amount of saving is estimated based on experimental data. This value will vary depending on the actual operating conditions.

Steam required to increase enthalpy 640kcal/kg		Fuel consumption efficiency of heavy oil A 10,500 kcal/kg		
Usage kg/Hr	Energy required for evaporation kg/Hr	Heavy oil A amount kg/Hr	Price JPY/Hr	Annual fuel cost JPY/year
135	86,400	9.1	503	314,286

Estimated annual savings would be...

5% Eco	7% Eco	10% Eco
15,714	23,571	31,429

Saving!
(JPY)

High pressure type

(FW-tube, O-tube)

■ Especially designed for electroless nickel plating bath etc.

SPF offers the following variations.

- 1, High pressure spec. for quick temperature increasing.
- 2, Heat exchanger tubing can be selected from FW-tube (compact) or O-tube (inhibit deposition adhesion).
- 3, Mirror finished surface as prevention of deposition adhesion.

* Please feel free to contact SPF Sales division for any custom designs and SPF will propose a design according to your specifications and operating conditions.



Doing more with less

The Fin Straight Heat Exchanger

High efficiency, Compact, Energy saving, Corrosion resistant heat exchangers

A wide range of corrosion resistant metals are available to accomodate various chemicals.

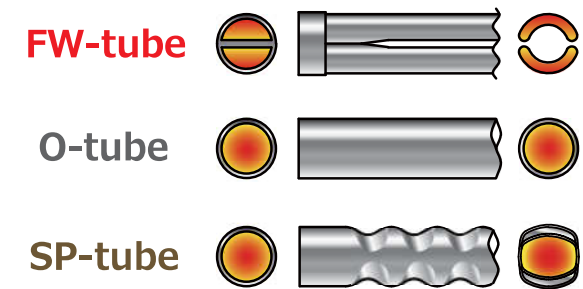
The Gold Standard

The fin straight is an immersion type HEX and has become the industry standard. It does not interfere in the chemical tank due to its compact size.

Combines compact size with high efficiency

The fin straight heat exchanger is specialized for the plating industry. Appearance wise it resembles a normal coil type, but it consists of FW-tube which have double the heat transfer area of a standard tube(O-tube),within the same space. Due to its compact dimensions, installation space will be minimized,while working space in the tank will be maximized. Additionally, the FW-tube provides a high efficiency due to its shape.

※In case of Niobium construction, the tube shape will be according to the SP-tube.



Quick Delivery

Because of standardized designs, quick delivery is possible.

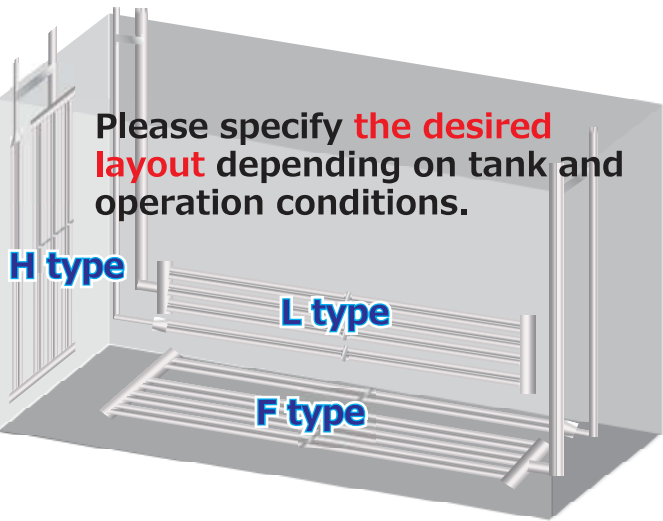
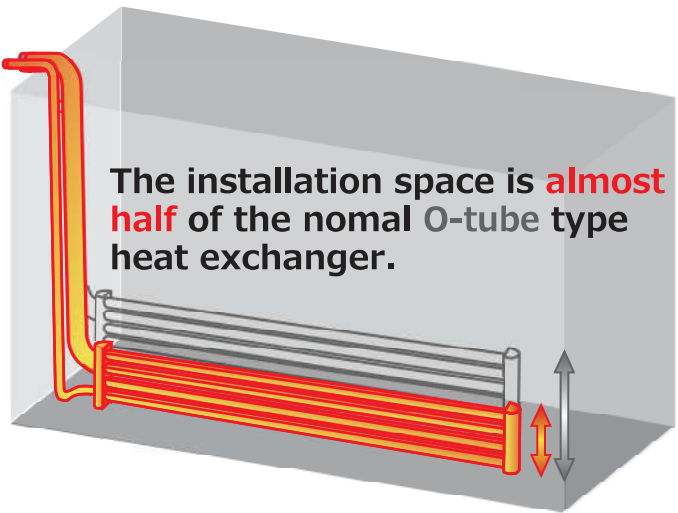
Semi / Full - Custom Order

SPF can propose the most appropriate model according to the bottom and side length of the tank. Please specify the length and shape of the steam pipe and drain pipe when ordering. Also SPF can provide complete custom fabrication.

Wide range of materials.

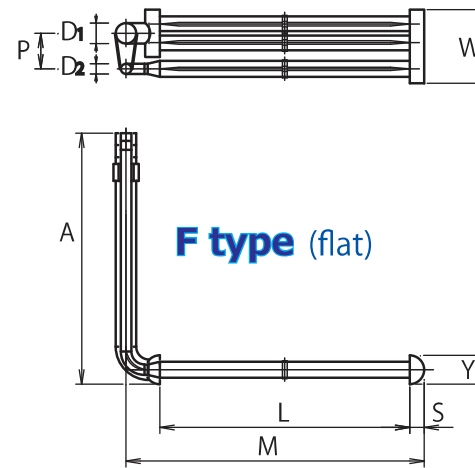
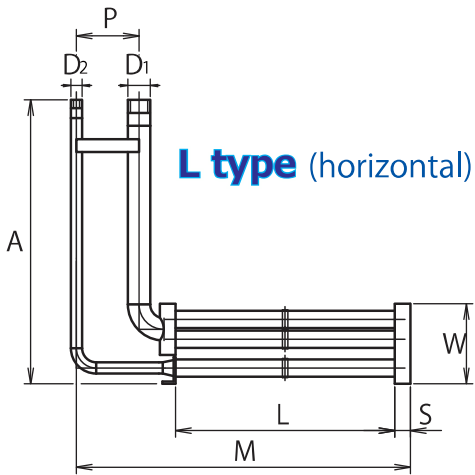
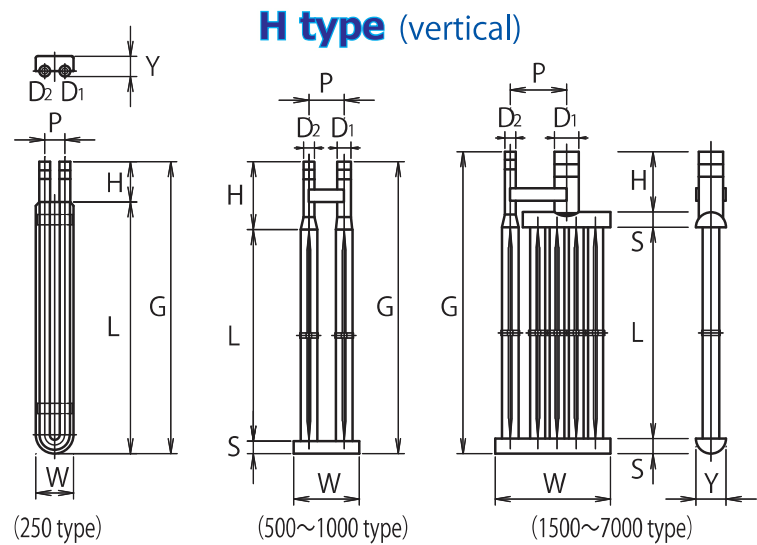
Wide ranging materials meet various type of chemicals.

304 SS	Zincate bath, Zn Cyanide bath, Alkaline degreasing, etc.
Titanium	Cu Pyrophoshate bath, Cu Sulfate bath, Ni watts bath, Cr sergeant bath, Zn acid bath, etc.
Zirconium	Tin acid plating bath, Sulfate anodizing bath, etc.
Niobium	Cr fluoride bath, Cr etching bath, Ni strike bath, etc.



Specifications (standerd dimension)

- FST(Titanium), FSZ(Zirconium)
- FSA7(304 SS), FSA3(316L SS)



型番	L	W	H	Y	S	P		M		D1	D2	A	G	トラップ
						H・F型	L型	F型	L型	入口	出口			
250	500	75	100	40	-	40	70	538	608	15A	15A	指定寸法可能（H寸法の延長）	15mm	
500	420	130	〃	50	21	70	〃	495	565	〃	〃			
750	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃			
1000	〃	〃	〃	〃	〃	〃	〃	〃	〃	20A	〃			
1500	840	〃	〃	〃	〃	〃	〃	915	985	25A	〃			
2000	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃			
2500	〃	153	〃	80	30	74	80	940	1020	32A	〃			
3000	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃			
4000	〃	191	〃	〃	〃	93	〃	〃	〃	〃	〃			
5000	〃	229	〃	〃	〃	112	〃	950	1030	40A	〃			
6000	〃	267	〃	〃	〃	131	〃	〃	〃	〃	〃			
7000	〃	305	〃	〃	〃	150	〃	〃	〃	〃	20A		20mm	

- * SPF can propose the most appropriate model for both heating and cooling, depending on the operating conditions.
- * Also smaller and larger models are available.

FSN (Niobium)

型番	L	W	H	Y	P	D1	D2	G	I	トラップ
						入口	出口			
250	350	75	50	40	40	15A	15A	400	—	15mm
500	600	〃	〃	〃	〃	〃	〃	650	—	
750	850	〃	〃	〃	〃	〃	〃	900	—	
1000	520	100	150	50	55	20A	〃	670	25	
1500	750	〃	〃	〃	〃	25A	〃	900	〃	
2000	970	〃	〃	〃	〃	〃	〃	1120	〃	
3000	980	130	〃	60	68	32A	〃	1130	40	
4000	990	172	〃	〃	90	〃	〃	1140	50	
5000以上別規格										

- * SPF can propose the most appropriate model for both heating and cooling, depending on the operating conditions.
- * Especially suitable for Chromium fluoride plating bath.
- * All layout styles, H(vertical), L(horizontal), F(flat), are available.

