

*Concentrate plating solution  
Reduce industrial waste*

Doing more with less

★ *Reuse chemicals*

★ *Reduce volume of industrial waste*

# Return Liner

*Vacuum Evaporation system*

*Corrosion resistant materials (Titanium, Zirconium, Niobium, Stainless steel 304 / 316L)*

*With a built-in a heat exchanger.*

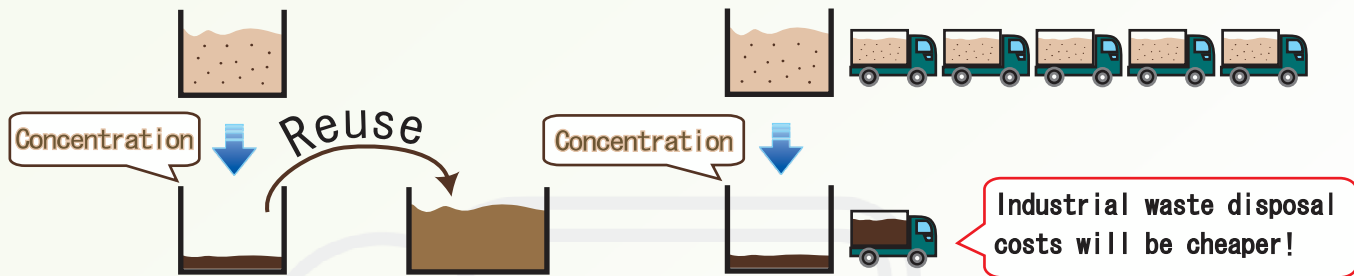
## *A practical solution to aid in reducing costs and environmental effects.*

### ■ Advantage 1 : Reuse chemicals

Useable chemical is obtained by distillation of the concentrated plating solution by using the Return-Liner. The evaporation temperature is set at 55 to 60 to ensure the solution does not dissolve or transelement.

### ■ Advantage 2: Reduce industrial waste

Reduction of industrial waste disposal costs and environmental burdens can be achieved by reducing the volume of waste. For this purpose, SPF provides the Return Liner made out of corrosion resistant metals.



## *Easy operation and maintenance with a simple structure.*

### ■ Easy operation

With an amount of concentration cycles set using the one-touch counter, concentration of the solution is automatically repeated until the correct value is obtained.

Maintenance is very easy due to the simple structure.

### ■ Structure blocks mist entering the drain

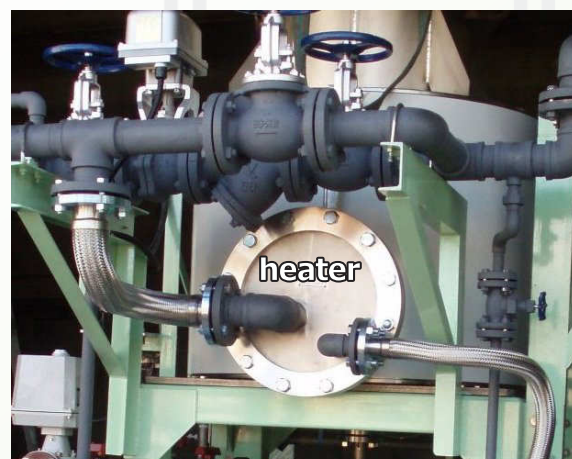
The Return Liner has an integrated structure which breaks up bubbles caused by droplets or bumping and removes the adhered mist bubbles. Depending on the type of solution, either a defoaming drum or a cyclone are optional and can be used in combination to make a perfect three step barrier.

### ■ Corrosion resistant materials

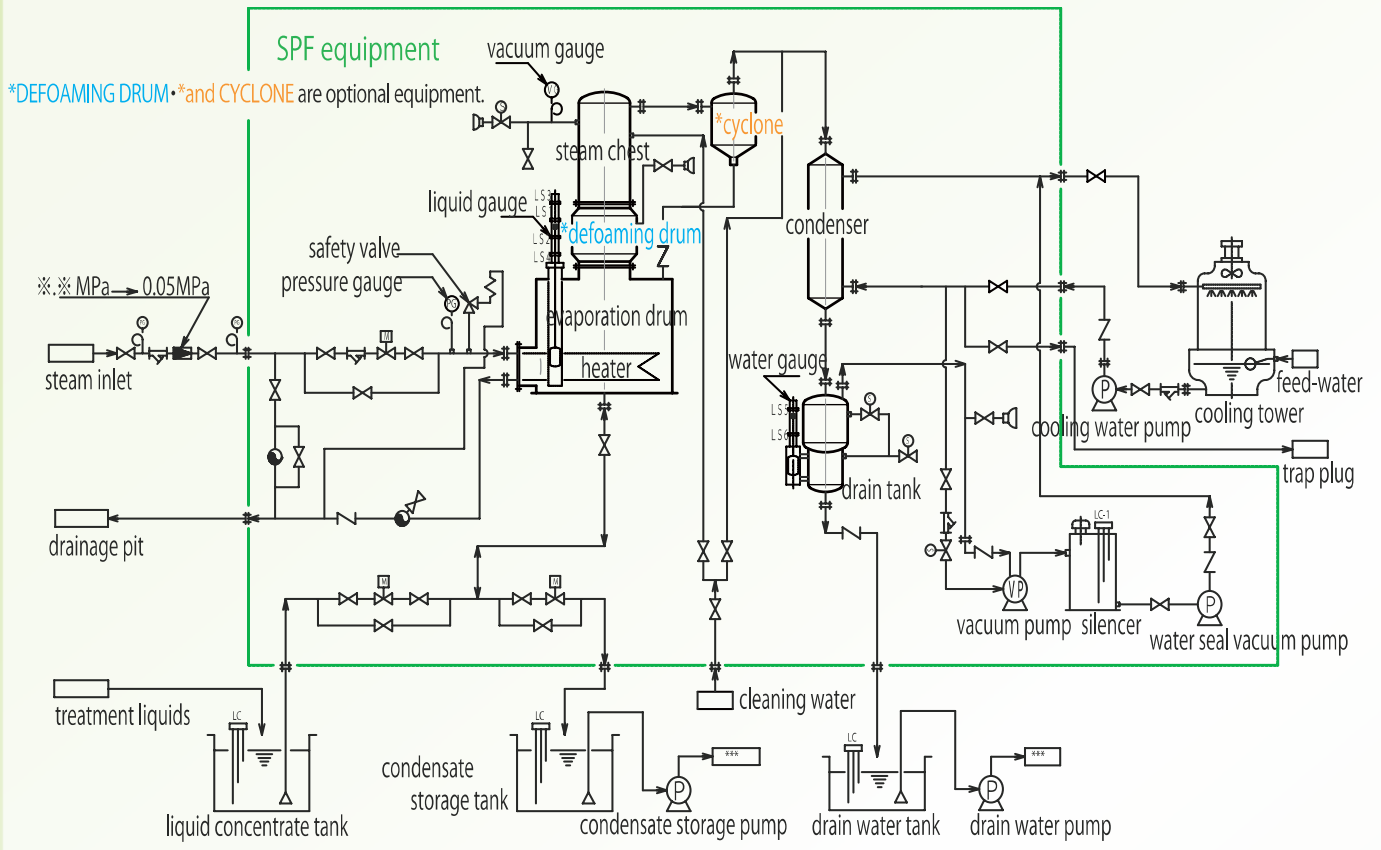
Corrosion resistant materials such as titanium, niobium, tantalum, zirconium, stainless steel (type 304, 316 and 316L) can be selected for the evaporation drum and the heater according to the type of plating solution. Compared with glass lined or resin coated, those corrosion resistant materials are superior in mechanical impact resistance, and aged deterioration.

### ■ Wide variety of sizes

The volume of evaporation is standardized from 50l/Hr to 2,000l/Hr.

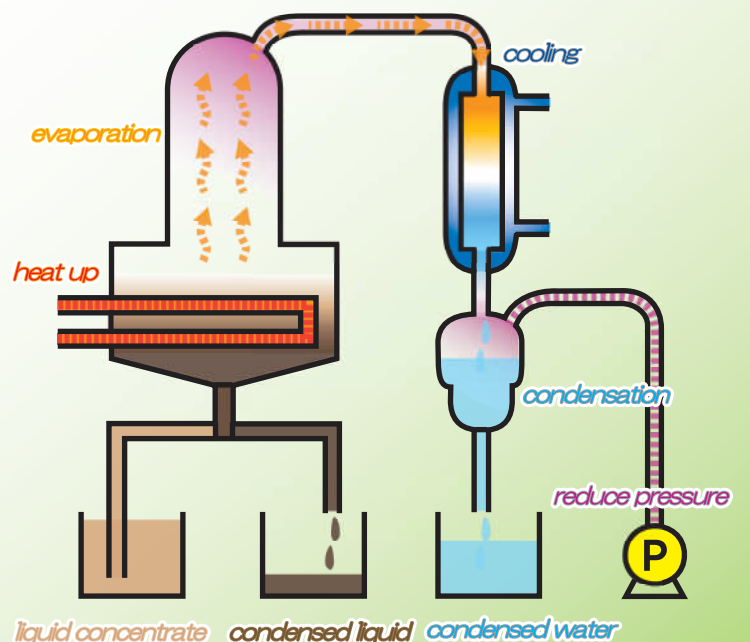


# Flow sheet of the Return Liner



## movement simulation

\* Standard type (excluding defoaming drum and cyclone)



# Specification (Standard dimension)

Evaporation (L/Hr)		50	100	150	250	350	500	750	1000	1500	2000
Dimension	Width (mm)	2350	2350	2650	2700	2810	3300	3850	4350	4700	5840
	Depth (mm)	1110	1120	1250	1300	1380	1560	1750	2160	2900	3260
	Height (mm) ():standard	4300 (3800)	4330 (3630)	4730 (3980)	4770 (4020)	4880 (4130)	5000 (4400)	5130 (4730)	6930 (5930)	6800 (6000)	7430 (6500)
Pipe diameter	Solution inlet	25A	25A	40A	40A	40A	40A	50A	65A	65A	65A
	Solution outlet	25A	25A	40A	40A	40A	40A	50A	65A	65A	65A
	Steam inlet	25A	40A	40A	50A	50A	65A	65A	80A	80A	80A
	Steam drain outlet	20A	20A	25A	32A	32A	40A	50A	50A	50A	65A
	Cooling water inlet	40A	50A	65A	80A	100A	125A	150A	150A	200A	200A
	Cooling water outlet	40A	50A	65A	80A	100A	125A	150A	150A	200A	200A
	Condensed water outlet	25A	25A	40A	40A	40A	40A	40A	50A	50A	65A
Utilities	Steam amount (Kg/Hr) at 0.05MPa	65	128	193	316	440	650	970	1290	1900	2500
	Cooling water amount at 32°C (ℓ /min)	130	260	390	650	1040	1300	1950	2600	3900	5200
	Vacuum pump (kW)	2.2	2.2	3.7	3.7	5.5	7.5	15	15	15	30
	Water seal vacuum pump (kW)	0.4	0.4	0.75	0.75	0.75	0.75	0.75	1.5	1.5	1.5

※Specifications are subject to change without notice. For more information, please feel free to contact us.

## Track record of solution type

- Chromium etching drainage
  - Chromium plating drainage
  - Nickel plating drainage
  - Solder plating drainage
  - Zinc plating drainage
  - Tin plating drainage
  - Gold plating drainage
  - Silver plating drainage
  - Copper plating drainage
  - Cyanide wastewater
  - Cadmium wastewater
  - Chemical polishing wastewater
- And many more



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