CALFA PROJECT
ENERGY WATER SAVING

CALFA SEP

SEPARATOR SYSTEMS FOR COOLING TOWERS AND CALFA BAS

A NEW SIDE FILTER INSTEAD OF TRADITIONAL SAND FILTERS

The RINGS high-speed separation method using "SPECIAL SHAPED RINGs" overturns the common sense of conventional separation technique of solids in water !!

Separates the solids of **7 microns** or over, leading to scale-forming components in water, such as Calcium, Magnesium and Iron. (SS: Suspended Solid)

You can get "MENTENANCE FREE" with the control Unit System ! Challenge for the ultimate water saving with the NEW Rings high-speed Separation method.

Separates and efficiently removes the **"Sands"** that were mixed into the cooling tower from the air and that will scratch the surface of the galvanized pipings!

CALFA CHEMICAL CO.,LTD.

SEPARATOR SYSTEMS FOR COOLING TOWERS AND CALFA BAS

"RINGS High-Speed Separation" makes "Maintenance FREE Filters"

Special Shaped Rings

Inside cooling tower without CALFA"SEP"

Inside cooling tower with CALFA"SEP"

The special shape rings spread inside the CALFA"SEP" makes peculiar "fluid" and "cavitation" (physical development by the differential-pressure) occur. At this moment, We found the phenomenon that water molecule put impurities out from itself naturally, circulating through cooling water successively separates only impurities (SS) from water, and SS concentrate stored in the bottom of "SEP".

Unlike a Sand Filter, "BACK WASH" which needs to be conducted frequently is not required. Selected solids collection options ensure minimum water waste and easy discharging of solids collected. Therefore, a remarkable"Water Saving" can be achieved.

Using it together with our "Environmentally Friendly Mineral water treatment conditioner, CALFA"BAS"FREE coagulates and concentrates the impurities (SS) in water efficiently.

CALFA BAS's cleaning reaction, dissoving "Silica Scale" from from Solid to Liquid safety and and removing other any Scales. also, Scale Prevention and superior Anti-Corrosion effect within Steel Equipments (Heat Exchangers, Pipes, Pumps etc.) helps always kept in good condition and to achieve optimal heat exchange rate. Consequently, outstanding remarkable "Energy Saving" can be obtained.

Our NEW "Mineral Water Treatment Technique" that is able to achieve "Drain out free", "Energy saving", "Human health" and "Environmental conservation" at the same time. In future, this superior technique will be implemented in the world, and then will become the"GLOBAL STANDARD".

Water Analysis (Left Pictures) : SS / Tubidity

	Suspended Substance (SS)	Turbidity ※1
Installation day	58 mg/L	16
2 days later	5 mg/L	15
4 days later	<2 mg/L ※2	13
8 days later	3 mg/L	7

※1.JIS H0100-9 Transmitted light turbidity(Japanese Industrial Standard)
※2.Measurement Limit

Only 8 Days Later ! "SS : -95%" & "Turbidity : -56%"
Conductivity : 1790 Micro S/cm >>> 1060 Micro S/cm (35days later)

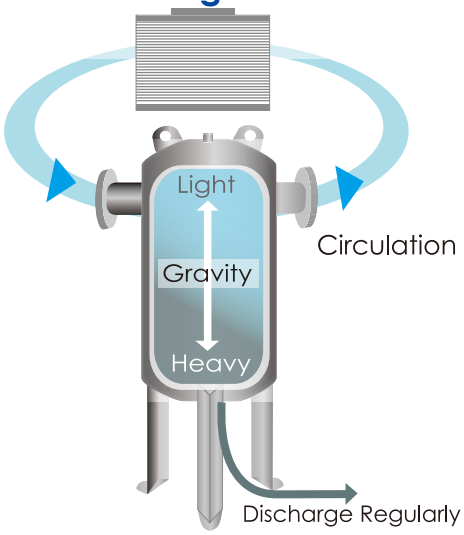
- No Replacement of Sand Media or filtering materials is required
- NO BACKWASH or Maintenance is required
- Automatic drain vlave can be installed
- Able to remove solids in water up to 7 microns in particle size
- Low pressure loss: 0.012MPa (0.12Kgf/cm2 or lower) ※ Model JP-50A
- with a small pump is enough
- with "PVC pipes & Flanges" are enough
- Material : SUS304 Stainless (TOUGHNESS)

Recommend to use our Mineral Water Conditioner "CALFA BAS FREE" for the inside of the cooling tower. "CALFA BAS FREE (Non Chemical inorganic)" removing and preventing Silica Scale, superior Anti-Corrosion for Steel parts, and able to drain out free to rivers, Sea, Ofcourse sewer systems. Even if rust generates from equipments in water , or mixed any SS from the outside,"separate" easier while water flows through the CALFA SEP.

SEPARATOR SYSTEMS FOR COOLING TOWERS AND CALFA BAS

ALL SOLIDS "a specific gravity of 1.0 or over" can be REMOVED !!

Cooling tower



"A large shopping Center"

"A major iron manufacturing company"
(Large sand filter X 2)

Without frequent "backwash" , it may experience many problems including easily clogging.

Replaced with CALFA"SEP" X 2

Achieves the extensive "Water Saving" !

CALFA"SEP" can separate any solids in water heavier than "water" (specific gravity :> 1.0). The following table shows the "Specific Gravity" of some common metals in cooling water.

Water	1.0		
Limewater (CaCO3)	2.8	Aluminum	2.7
Sand, Silica (SiO2)	2.6 - 2.8	Zinc	7.1
Soil, Silt	1.2 - 2.0	Iron	7.8
Carbon	1.8 - 2.5	Steel	7.8
Anthracite	1.3 - 1.9	Nickel	8.9

※ The actual specific gravity will be higher due to the chemical coagulation of CALFA BAS.

(Left Pic) The cooling tower pipeline of "A large shopping Center" .

The cooling tower is placed on the rooftop, a large amount of sand is mixed in the cooling tower in some season or due to wind direction and then circulated. Thus, the inside of the piping system had a problem of being worn out due to the scratches caused by sand. Then, CALFA "SEP" is installed as a side filter and the treatment chemicals are replaced with CALFA BAS. Now, the mixed water "sand" is separated, and corrosion problems and scale problems of the equipment are solved.

(Left Pic) "A major Iron Manufacturing Company"
(operating 24 hours a day)

Before change
The large Sand filtering system X 2 units
OPCs Chemicals, Sodium Hypochlorite, Flocculant (PAC)

After change
CALFA SEP X 2 units
CALFA BAS (Phosphase FREE) & CALFA SAT (Anti-Bacteria)

Only 20 days Later, the result shows
"Total Hardness:-60% !! and "Turbidity:-86% !!

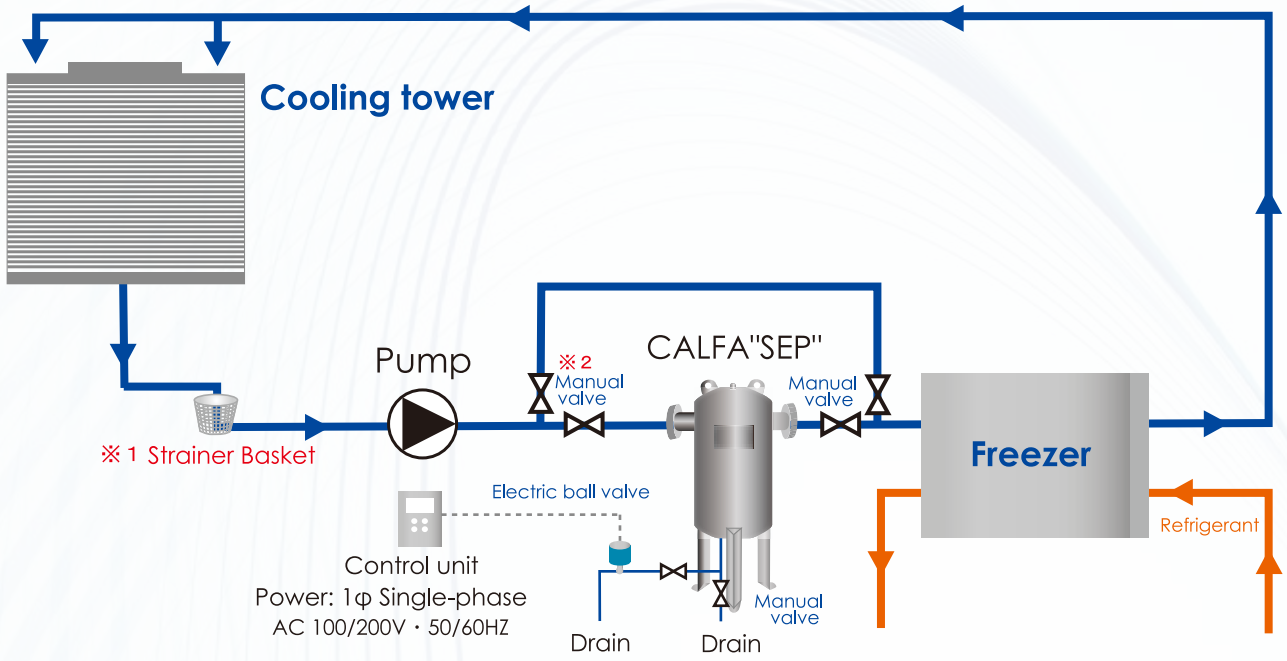
	Total Hardness	Turbidity ※1
Instllation Day	892mg/L	135 (NTU)
3 Days Later	607mg/L	76.1 (NTU)
4 Days Later	510mg/L	61.8 (NTU)
5 Days Later	419mg/L	51.8 (NTU)
6 Days Later	410mg/L	48.1 (NTU)
7 Days Later	409mg/L	41.8 (NTU)
18 Days Later	398mg/L	22.1 (NTU)
19 Days Later	369mg/L	19.2 (NTU)
20 Days Later	359mg/L	18.3 (NTU)

※1 : NTU: Nephelometric Trubidity Units
It means "density of undissolved particles" in the liquid to be measured.
"Standard specification "in the U.S.A.

CALFA"SEP" Illustration of piping installation

SEPARATOR SYSTEMS FOR COOLING TOWERS AND CALFA BAS

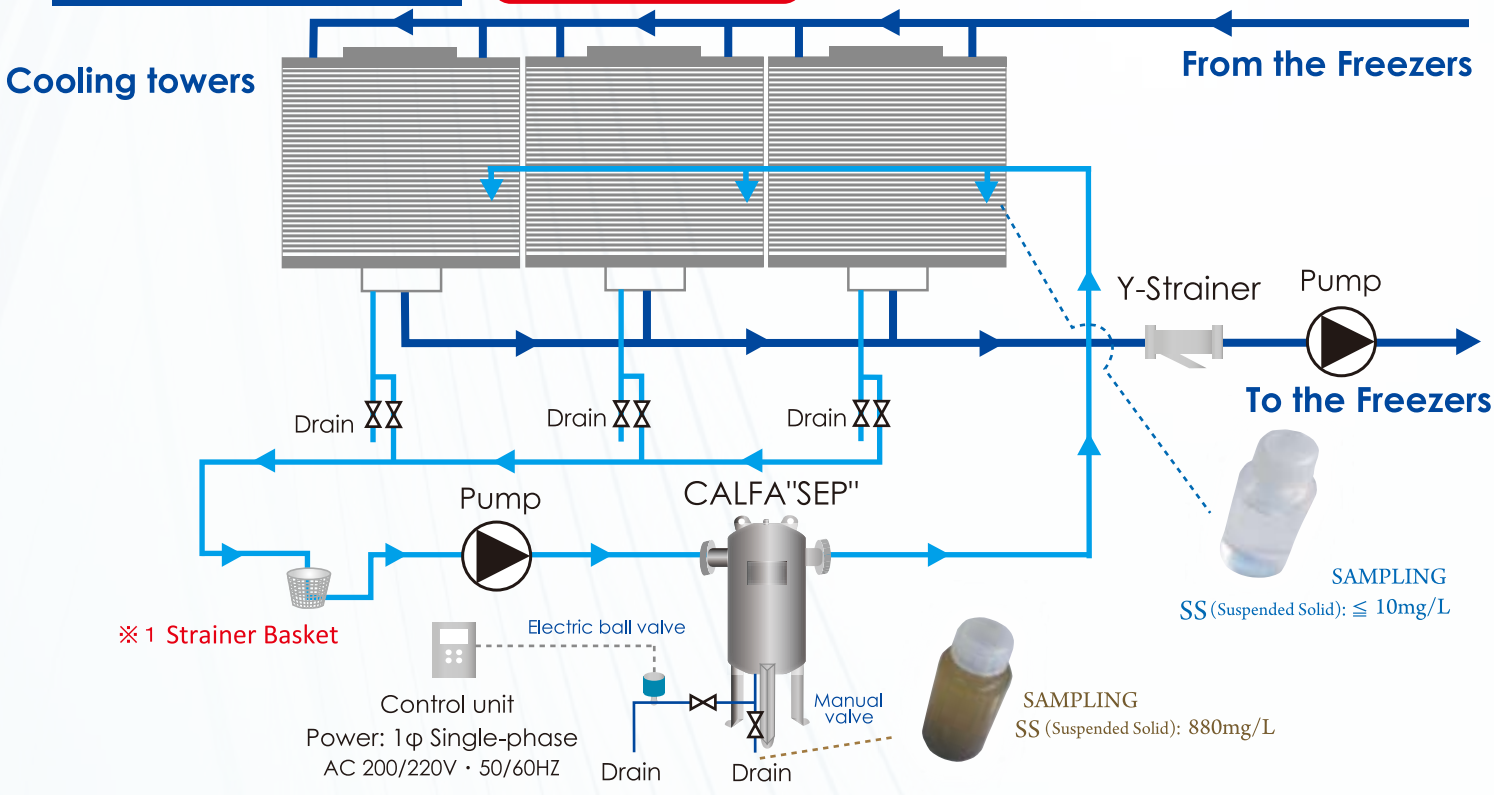
Full Stream Type



FEATURES: The plumbing for a small cooling tower system (100 RT or less).
Since It's install SEP into the existing water circulation plumbing, no need to add a pump, but "installation place", "space", "drainage place" will be restricted.

※1 : Be sure to install the Strainer Basket (filter) so that substances such as "Fiber particles" from outside do not enter the CALFA "SEP" .
※2 : Adjust its flow ratio in the manual valves. (ex. 30% Flow Through CALFA "SEP" and 70% Flow By-pass)

Side Stream Type Ⅰ RECOMMENDED



FEATURES: It is the most common and recommended plumbings.

Making an independent plumbing for purification of water. Bleed water out from the bottom of the cooling tower and circulate it into SEP and return to cooling towers continuously. Please select the model (3% -5%) that is fit for "water circulation volume (100%)".

※1 : Be sure to install the Strainer Basket (filter) so that substances such as "Fiber particles" or "Thread-like particles" from outside do not enter the CALFA "SEP" .

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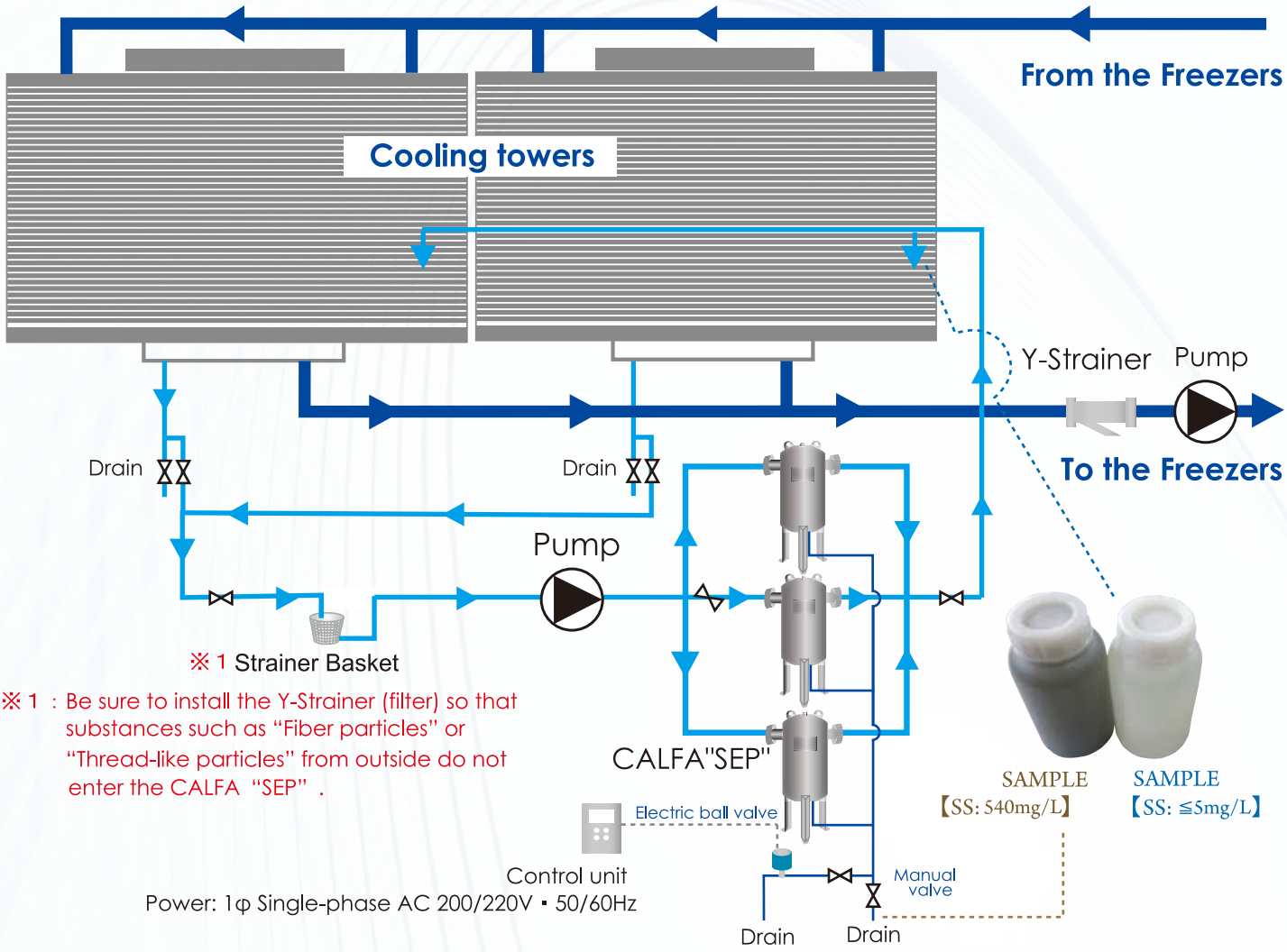
SEPARATOR SYSTEMS FOR COOLING TOWERS AND CALFA BAS

CALFA"SEP" Illustration of piping installation

Side Stream Type Ⅱ **RECOMMENDED**



The plumblings are replaced the sand filter with CALFA "SEP" for "Side Stream (water quality purification line)" of the ultra-large RC equipment. please branch off the pipes before flowing through several CALFA SEPs, Slow down the flow rates sufficiently and flow each CALFA SEP's equally.

Also there is another methods of constructing in independent form with several small pumps and the same numbers of CALFA SEP .In this case, can be adjust how many SEPs operate by "season" ·"operating rates".

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A major automobile manufacture case

They used to be installed 2 fine mesh of Line Filters, but Pressure loss occurred & all the cooling system had stopped frequently.

Changed 2 units of CALFA"SEP".

SEPARATOR SYSTEMS FOR COOLING TOWERS AND CALFA BAS

"SIZE" comparison

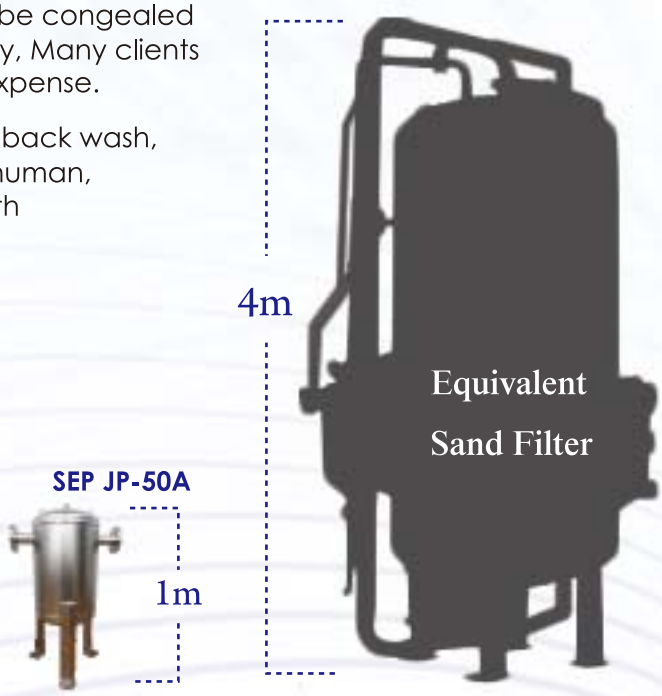
CALFA "SEP" can be installed in tight space such as Roof of high tower buildings! !

Conventional water filtration systems, "Sand Filter" was popular & general systems. However, It has some problem that difficult to install for tower buildings, because of "space is not enough" "too large" and "too heavy" etc. of course NO space to install water tank for back wash.

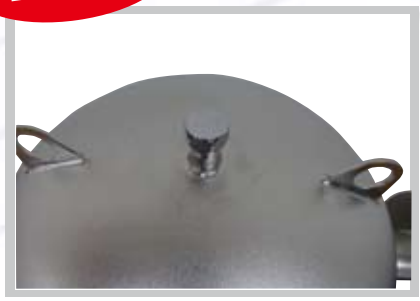
Also, needs to do "tough maintainance" frequently, Back Wash, replacing filtration media. if not,sand media would be congealed and occur lowering of filtration performed. Eventually, Many clients not often use it in spite of spent a large amount of expense.

CALFA SEP no needs wide space, big expense for back wash, media replacement. It's able to carry by hands of human, easy to install, You can start to water purification with CALFA "SEP" soon!



NEW


Standard


With PT 1/2 Valve (Air IN/OUT)

(IN/OUT)

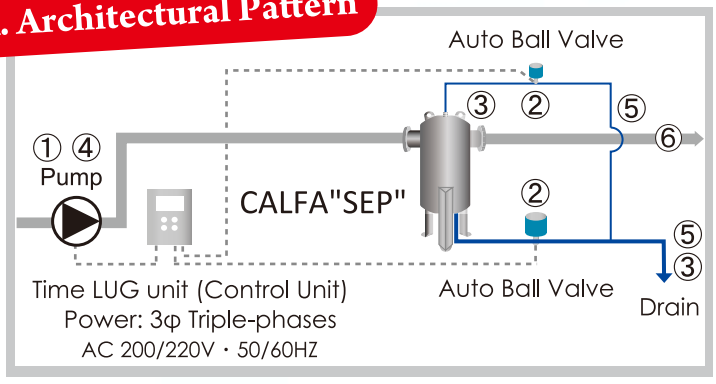
「AIR VALVE」

"Air Valve" was equipped at the top of "SEP" as Standard Model.

If install "PT" 1/2 Valve, You can open and put air into the SEP inside, then drain dirty water from bottom smoothly while stopping pump.

Auto Ball Valve also can be installed.

EX. Architectural Pattern



For example, if assemble like left picture , and set a timer as a "drainage every 48 hours" with the control unit. First, 48 hours later,

① Stop the pump ② Open both 2 auto ball valves.

③ Put AIR into CALFA"SEP" inside from TOP valve, drained dirty WATER from BOTTOM valve.

④ The pump will Re-operating before close 2 auto ball valves, and washing, cleaning inside of CALFA"SEP".

⑤ Washing and cleaning impurities (SS) from CALFA"SEP" , ball valves and pipes around for 10 or 15 seconds.

⑥ Finally, CALFA"SEP" will operating again after close 2 auto ball valves.

※ You can decide to set the timer for drain interval , open time, washing time, depend on pipes length, water conditions.

SEPARATOR SYSTEMS FOR COOLING TOWERS AND CALFA BAS

CALFA"SEP" PRODUCTS LINE UP

CALFA"SEP"/ Cooling tower / Pump Combination Table

	MODEL	(IN / OUT) ϕA	(mm) B	(mm) L	SPEC. recommendation			
					SEP Flow. (m3/hr)	Recommend Pump kW (HP)	Cooling Tower (RT)	Cooling Tower Flow Rate (m3/hr)
	TK-40A	40A	620	380	6	Flow Speed : ≦1.0m / sec.	Small cooling water systems for Oil cooler, Chiller, Mold, Compressor, Dryer , Closed water (Full Stream).	
	TK-50A	50A	710	460	12	0.4kW	250RT	～ 240
	JP-50A	50A	840	490	18	0.75kW	500RT	240 ～ 400
※	JP-100A	100A	1340	980	50	3.7kW	2,000RT	1,200 ～ 1,600
※	JP-150A	150A	1670	1200	100	5.5kW	4,000RT	1,600 ～ 3,200
※	JP-200A	200A	1685	1400	150	11.0kW	6,000RT	3,200 ～ 5,000
					【3% ～ 5%】			【100%】

※ Order Production (Large Models : JP-100A / JP-150A / JP-200A)

For "Side Stream Type" users (generally, select this type)

- Recommended this "Side Stream Type" when installing to the cooling towers you already use.
- A suitable model (Total units) of CALFA "SEP" should be installed with calculation as among "3%-5% " of the circulationwater quantity in the cooling water line.
- CALFA SEP is absolutely different from general filter/strainer products, slowing down the flow Rates (speed) helps increasing removal Rates.
- "Flange connection" allows for easy installation into PVC pipe.

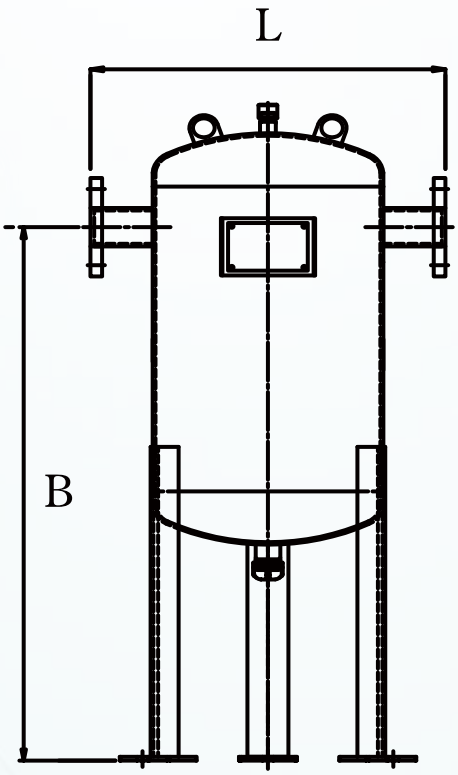
※ CALFA "SEP" can be customized up to your requirements. Please consult us for more details.

FOR SMALL SYSTEMS

"TK-40A"

"TK-50A"

"JP-50A"



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