

## SIZING AND SELECTION CSS SIDE STREAM PUMP FLOW RATE (FOR LOW HEAD "LH" PUMP STYLE ONLY)

### GRISWOLD FILTRATION RECOMMENDS 10-15% SIDE STREAM FILTRATION

- **CSS:** Separator with automatic purge to waste with a MBV (Motorized Ball Valve), control panel, and pump/motor. There is loss of water with every cycle. Comes with a standard cycle timer.
- **LH:** Low head pump booster package. Side stream to main cooling tower system pump.  
**NOT INTENDED FOR USE WITH SWEEPER PIPING.**

Listed in the order of preferred calculation method to be used:

1. **When you have the cooling tower GPM only (the tonnage, the model number, or the basin size are not available).**  
Example ~ A GPM of 2800 at 15% side stream equals 420 calculated GPM.

Selection is based on the GPM of the system that is closest to the calculated GPM, or the customer's tolerance for any extra horsepower in yearly consumption. The cost of the system may become a factor when you decide whether or not to purchase the next larger sized package. Example ~ Series 401 (420 GPM)

2. **When you have the tonnage only (the model number, the basin size, or the cooling tower flow rate are not available).**  
Example ~ 200 ton x 3\* = 600 calculated GPM; 600 calculated GPM at 15 % side stream equals 90 GPM.

\* 3 GPM/ton is based upon the nominal open loop tower conditions of 95/85/78 degrees F.

Selection is based on the GPM of the system that is closest to the calculated GPM, or the customer's tolerance for any extra horsepower in yearly consumption. The cost of the system may become a factor when you decide whether or not to purchase the next larger sized package: Example ~ Series 200 (90 GPM)

3. **When you have the model number only (the cooling tower GPM, the tonnage, or the basin size are not available).**  
Refer to the manufacturer's literature to obtain the GPM.

Example ~ Select nominal temperature. Hot water is 95°F; cold water 85°F; and wet bulb is 78°F. A GPM of 1017 for Marley Model # NC8304F 95/85/78 cooling tower at 15% side stream equals 152.5 calculated GPM.

Selection is based on the GPM of the system that is closest to the calculated GPM, or the customer's tolerance for any extra horsepower in yearly consumption. The cost of the system may become a factor when you decide whether or not to purchase the next larger sized package: Example ~ Series 251 (160 GPM)

4. **As a last resort, when only the basin size is available (only for systems without sweeper piping, eductors or nozzles)**

Calculation: Length x Width x Turn Over Factor (See chart to the right).

Example ~ A basin measuring 10' wide x 20' long with average water depth of 9".

1.  $10 \times 20 \times 5.33 = 1066$
2. Filtration flow rate of 15% side stream =  $1066 \times 15\% = 160 \text{ gpm}$

Depth of Water	Turn-Over Factor
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6"-24"	5.33
24"-60"	8.33
60"-120"	10.00
Above 120"	12.50

Select the Separator size by using the Separator Systems Selection Chart to find a flow equal to or greater than the calculated GPM. Example ~ 160 gpm would use a Series 251.

SEPARATOR SYSTEMS SELECTION CHART				
SEPARATOR SIZE	NOMINAL FLOW		HIGHER FLOW	
	SERIES	FLOW (GPM)	SERIES	FLOW (GPM)
1"	100-LH	23	101-LH	28
1-1/4"	120-LH	40	121-LH	50
1-1/2"	150-LH	54	151-LH	68
2"	200-LH	90	201-LH	115
2-1/2"	250-LH	130	251-LH	160
3"	300-LH	200	301-LH	250
4"	400-LH	340	401-LH	420
5"	500-LH	510	501-LH	650
6"	600-LH	810	601-LH	1100
8"	800-LH	1400	801-LH	1700
10"	1000-LH	2000	1001-LH	2700
12"	1200-LH	2900	1201-LH	3700