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Baltimore Aircoil Company

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Sales Information

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1462	Weir Dams

Introduction

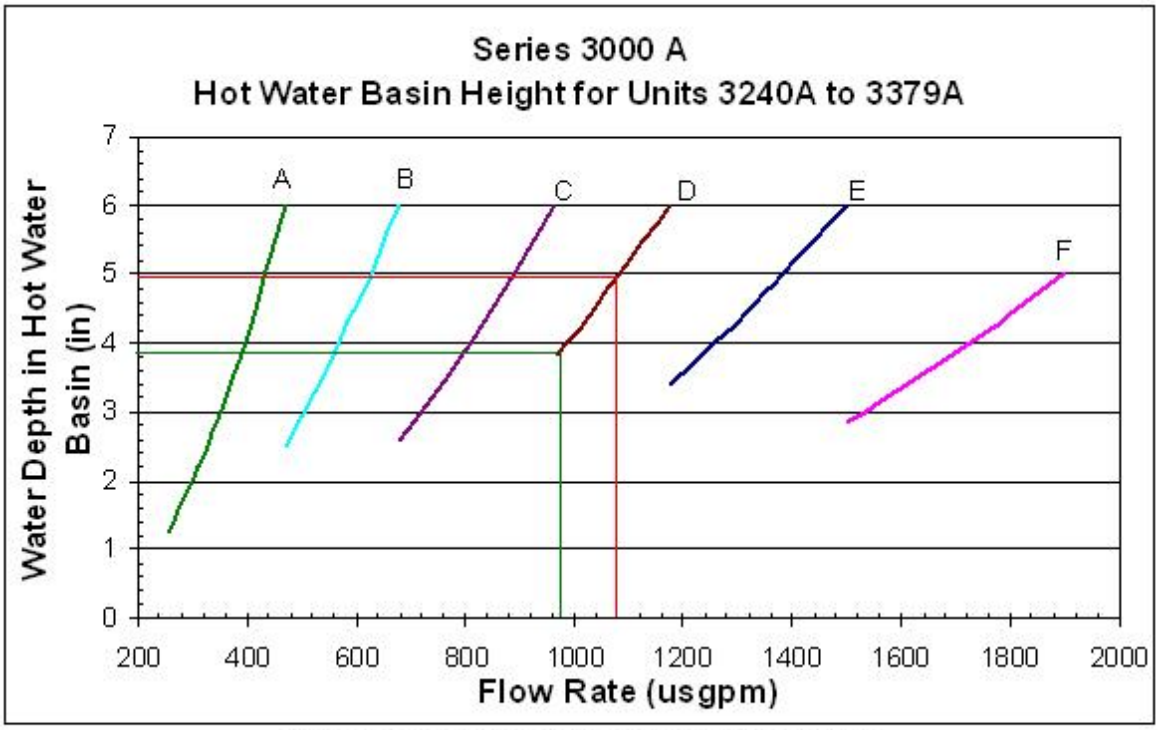
The capacity of a cooling tower needs to be controllable to accommodate the changes in thermal load. Modulating the airflow is the most common way of controlling the capacity. Variable speed drives, fan cycling, two speed motors and pony motors are means of regulating the airflow. Aside from air **flow** modulation, water **flow** modulation is another way of controlling the capacity of a cooling tower. However, reduction of **flow** below the recommended level may potentially create an uneven water distribution through the fill, causing scale build up, splash out/drift and icing. To successfully modulate the water **flow** while avoiding potential complications, weir dams may be installed in the hot water basin. Weir dams are available on Series 1500 and Series 3000 cooling towers.

Guidelines for Variable Flow for a S3000 Cooling Tower

Let's assume that a customer has a S3358 cooling tower. The design water **flow** for this unit is approximately 1074 GPM at 95/85/78 design conditions. To determine the minimum **flow**, first consult the RLD #1065 which contains the **flow** curves and the recommended hot water basin water depths.

1. At 1074 GPM, the recommended water depth in the hot water basin is approximately 5" (red lines and curve D).
2. To determine the minimum **flow**, follow the curve D down. The minimum recommended **flow** becomes 980 GPM with the water depth in the hot water basin of approximately 4" (green lines).
3. Without weir dams, 980 GPM is the minimum safe water **flow** rate which the tower can sustain. However, with the weir dams, this **flow** can be reduced by 50% and become 490 GPM.

Follow the same procedure to determine minimum **flow** rates for other Series 3000 cooling tower models and Series 1500 cooling towers.



Curve A is for flows between 253 gpm & 470 gpm
Curve B is for flows between 471gpm & 678 gpm
Curve C is for flows between 679 gpm & 965 gpm
Curve D is for flows between 966 gpm & 1175gpm
Curve E is for flows between 1176 gpm & 1499 gpm
Curve F is for flows between 1500 gpm & 1900 gpm

Flow **rate curves for Series 3000, Units 3240-3379. RLD #1065.**

Weir dam on Series 3000 hot water basin

The weir dam keeps half of the nozzles operational during reduced **flow** rates, optimizing the performance of the tower during off peak periods. The water level is maintained at 2" inside the dam assuring even wetting of the fill. Adding a weir dam to the hot water basin of a Series 3000 or Series 1500 Cooling Tower is an inexpensive method of optimizing the cooling tower for low **flow** applications. With a weir dam, the hot water basin can accommodate a **flow** range of 50%

to 100% of the design **flow**, optimizing the system pumping and piping.

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Comments: