

# Heat Pump Circulation System

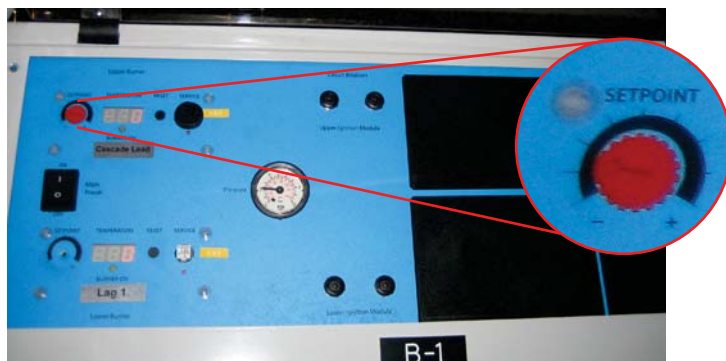
## Diagram of Equipment



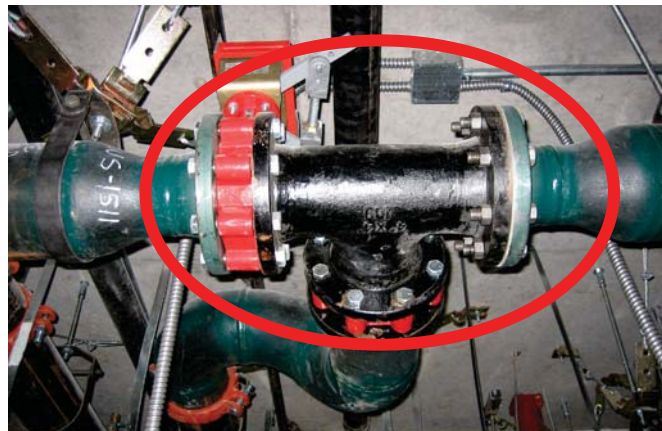
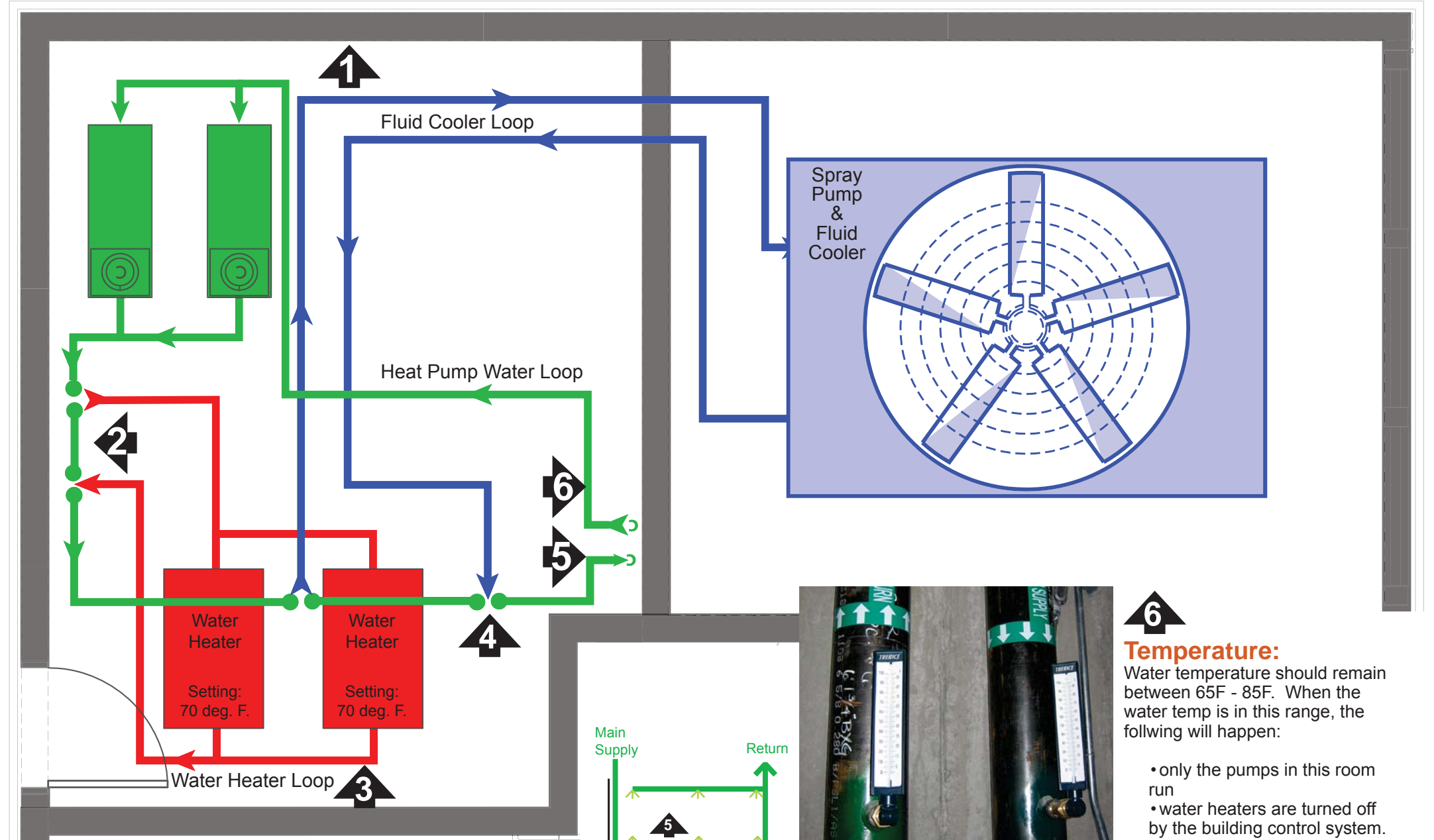
**1 Circulation Pumps:**  
The image above shows two pump controls. Only one pump operates at a time and will run 7 days, for 24 hours. The operating pumps will then switch until the next 7 day cycle is complete. Additionally, when the water pressure in the loop is below 15 psi, the speed increases.



**2 Hot water connection to heaters:**  
Two water heater pipes (labeled red in the diagram) connect into heat pump water loop (labeled green).



**3 Water too cold:**  
The heaters run, coming on one at a time. Heater temperature = 70F for efficient operation. The zoomed image highlights the dial that is adjusted to set the temperature. When the water is 65-85F, then heaters read "0" and are turned off.



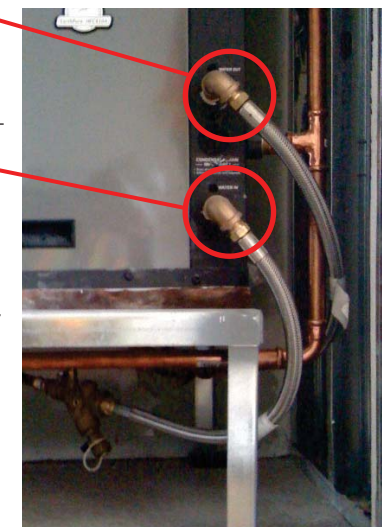
**4 Water too hot:**  
The fluid cooler (outside this room) will turn on when the water is too hot and the system will do the following:

- Diverting Valve opens (see left photo)
- Spray pump runs
- Fan starts
- Fan ramps up



**6 Temperature:**  
Water temperature should remain between 65F - 85F. When the water temp is in this range, the following will happen:

- only the pumps in this room run
- water heaters are turned off by the building control system. Screens read "0".



**5 Heat Pump:**  
Water is circulated to West Tower apartments and Level 1 retail. See diagram to the left: Heat pump connections are the small flexible pipes shown in the picture to the left (shown light green in the diagram) and are connected to the main water supply (shown in picture above and labeled dark green in the diagram) heat pump loop supplies water to the retail floor (floor 1) and individual units (floors 5-15).