

MULTISTACK CHILLERS WITH VFD FLOW ON CHILLED WATER

To accomplish VFD chilled water flow the system must include an external bypass in the chilled water loop. The bypass should be open when all compressors are off to maintain flow and keep from “dead heading” the pump. This bypass is not installed nor controlled by Multistack.

Control of the chilled water pump must be based on pressure drop across the chiller. This ensures that water flow through the chiller is not affected by changes in the system to which the chiller cannot quickly respond and avoids nuisance lockouts at the chiller because of low temperature faults.

The master controller starts and stops compressors based on the return water temperature. When a compressor starts its corresponding solenoid valve is opened and pressure drop decreases. The pump should then respond by increasing flow to match the desired pressure drop. Control of the pump is external to the chiller.

Minimum flow through the chiller should be 2 to 3 times that required by a single circuit. This insures that flow is maintained when the chiller is starting from off or from minimum step. Otherwise low temperature faults may occur.

SEQUENCE OF OPERATIONS MULTISTACK CHILLER WITH SOLENOID VALVES ON EACH EVAPORATOR

When enabled the chiller shall operate to provide the required chilled water to the building's systems.

The chiller will respond to the cooling set points. There shall be four set points which dictate the staging of compressors in this mode as follows:

- Upper Set Point (USP)
- Lower Set Point (LSP)
- Variable Set Point (VSP)
- Time Delay (TDiff)

The USP shall indicate the design entering chilled water temperature at the chiller. The LSP shall indicate the design leaving chilled water temperature

from the chiller. The VSP shall indicate a percentage between 0 and 80 which will allow for a leaving temperature reset based on entering chilled water temperature. (That is, as the entering chilled water temperature begins to drop, the chiller's Master Controller may allow the leaving chilled water temperature to rise at a corresponding rate to the VSP.)

The compressors will stage based on entering chilled water temperature. As the return chilled water temperature rises above the control point the controller will start the next available compressor and at the same time will open the corresponding chilled water valve for its evaporator. After the compressor is started the controller will execute its time delay before enabling or disabling the next stage of cooling based on system requirements.

As the entering chilled water temperature drops the chiller will begin unloading compressor stages based on the setting of the USP, LSP and VSP to maintain set point. As a compressor is disabled its corresponding chilled water valve will be closed.

If at any time the entering and leaving water temperatures, refrigerant pressures or temperatures or compressor motor winding temperatures exceed the chiller's Design Envelope the corresponding portion of the chiller will be locked out on a safety.