



Protect Your Cooling Towers with Hi-Flow Cartridges

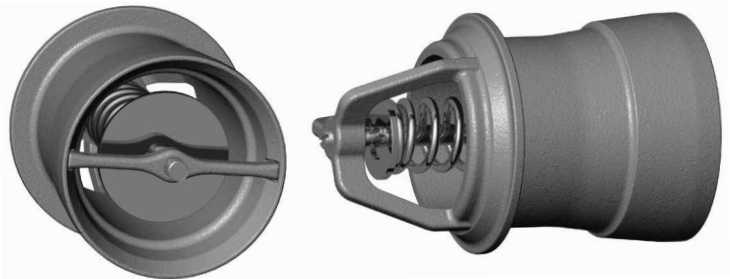
Griswold Controls automatic flow limiting valves

Griswold Controls' Hi-Flow automatic balance cartridge was designed for the unique needs of a cooling tower and has been used for decades in the Wafer and Grooved End valves to control the flow rate of condenser water.

Heated water from the condenser in chillers is piped to a cooling tower, usually on the roof. The heated condenser water is sprayed into a stream of cooler air and flows to the bottom through "fill" designed to expose the water to as much air as possible. The water is cooled while the warm air is blown away from the tower. The cooled water is then returned to the chiller. Controlling the flow rate of water into the cooling tower is critical to ensure there is no underflow or overflow to maximize the heat removal from the water.

If condenser water flowrate exceeds the maximum recommendation, overflow problems can occur including flooding of the hot water basin or hot deck. This results in loss of chemically treated water as well as wastes fan and pump energy. In the winter overflow can also lead to frozen water if capacity is exceeded.

While some cooling towers allow for a 50% turn down based on the ASHRAE Standard 90.1-2010*, many towers have minimum flow requirements because they weren't designed with a turndown less than 80%. In those applications, if condenser water is lower than the minimum design requirement, the tower can experience "dry air disease" where portions of the tower are dry and large amounts of scale build up on the surfaces. This impairs heat transfer and causes the fan speed to increase to compensate for lower evaporative heat losses which then increases scale formation further.



The best remedy for both dry air disease or flooding is to control the flowrate of the incoming condenser water to the tower. Protecting cooling towers with the Griswold Controls automatic flow limiting valves, Wafer and Grooved End fitted with the Hi-Flow Cartridges guarantees design flow. Since cooling tower water is known to be dirty, Griswold Controls designed our Hi-Flow cartridge for that application. The cartridge consists of a hollow body with a disk mounted on the inside. The disk moves against a spring and the fluid flows through the circumferential opening between the disk and the body. The size of the opening is varied precisely (by movement of the disk) in reaction to the fluid pressure, to keep flow constant. Dirt, which may clog the ports of a traditional cartridge, escapes very easily through the continuous circumferential opening. This feature makes the cartridge ideal for use in dirty water applications. These cartridges are available in Wafer and Grooved End valves in three PSID ranges, 3-18, 5-32, and 7.5-32, designed to meet any application's requirements. Let our Valve with Hi-Flow cartridges "do the dirty work" of controlling the flow to your cooling tower!

* A cooling tower that accepts 50% load reduction will still benefit from an automatic valve protecting it from overflow conditions. During reduced load conditions the cartridges will be below the PSID control range and will be fully open, acting as a fixed orifice so flow can be reduced as tower requires. Cartridges won't limit the flow until load increases and there is a threat of overflow condition.