

# Therm-Omega-Tech, Inc.

## *Pump Relief*



The Most Advanced, Reliable and Compact Self Contained Valves Available for Temperature Control, Freeze Protection, Steam Tracing and Conservation of Energy

[www.ThermOmegaTech.com](http://www.ThermOmegaTech.com)



# THERMAL RELIEF FOR PUMPS

The ¼" **ECONO/HAT-RA** valves are commonly used to provide thermal relief for booster pumps. Pumps must be sized for maximum expected flow rates so much of the time, pumps are idling against a dead head or much lower than design flow. In such cases, the pump energy is transferred into heating the water in the pump casing. When pumps run under such reduced flow conditions, the water temperature inside the pump casing can easily reach dangerous temperatures. The result can be damaged seals or even more serious pump damage. Another serious concern may be exposure of humans to the elevated water temperature from the pump when operating water spigots, showers, and other such water supplies. Human exposure to 140°F water can cause serious 3<sup>rd</sup> degree burns to skin and tissue in just 5 seconds!

The **ECONO/HAT-RA** valves are self-operating so no power or signal connections are required. Simply screw the valve into the pump housing so it senses water temperature in the pump and run the outlet from the valve to drain or low pressure return. If the water temperature exceeds the valve setpoint, the valve automatically opens to allow cooler supply water to refill the pump as the hot water is discharged.

The **ECONO/HAT-RA** will automatically close when water temperature falls below the setpoint to conserve water and reduce waste. These valves are very easy to install and offer an economical solution to this common problem.

Therm-Omega-Tech also offers other similar valves for higher flow rates and pressures. A common application for one of Therm-Omega-Tech's special high pressure pump relief valves is on fire water pumps, either stationary or mounted on fire trucks.

## **SAMPLE TEMPERATURE CONTROL**

The **US/S-XR** and **TV/US-XR** valves are self-operating temperature actuated valves often used to control cooling water or other cooling medium flow to sample coolers. In some cases, the samples must be cooled to specific temperatures; in other cases, the samples must be cooled to levels that will not damage expensive analyzers and other instruments. These valves typically sense the sample temperature at the outlet of the sample cooler and will regulate cooling medium flow to maintain the sample within the setpoint range of the valve. Accurate sample temperatures and minimum cooling water consumption are two major benefits.

## **HST – HIGH SAMPLE TEMPERATURE SHUTOFF**

The **HST** (High Sample Temperature safety shutoff) valve is used to sense the sample temperature after the sample cooler. The sample passes through this normally open valve whenever the sample temperature is below the valve setpoint. If the sample temperature exceeds the valve setpoint, the **HST** valve closes to protect expensive and delicate analyzers and other instruments from overtemperature damage. When the **HST** cools about 10°F below the setpoint, it will reset open again. Low flow or total loss of sample cooling water or unusually high inlet sample temperatures into the sample cooler are typical reasons why this self-operating protective device should be considered.

The standard **HST** valve body is rated for 3000 psig @ 600°F. The **HST**'s internal valve mechanism (valve engine) is rated up to 3000 psig and 150°F above the specified shutoff temperature.

# Therm-Omega-Tech recommends these valves for your pump relief applications

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**ECONO/HAT-RA** This valve continually senses liquid temperature and provides a low cost, effective means of accurate temperature control. The unique plug and seat design offers the most reliable, tight shutoff available.

The model **ECONO/HAT-RA** reverse acting valve can be used to regulate the flow of cooling water, glycol or other cooling media in applications requiring economical removal of heat from equipment or a process. Since the **ECONO/HAT-RA** valves open on rising temperatures, they can be used in many thermal relief valve applications.

As the fluid temperature increases to within the operating range of the **ECONO/HAT-RA**, the thermal actuator modulates the valve open. If the fluid temperature is above the acceptable range, the valve will continue to modulate open allowing additional fluid discharge. As the outlet temperature falls slightly, the valve then modulates toward the closed position, reducing flow. This modulating action maintains a relatively constant fluid temperature even as operating conditions vary.



**TV/US-XR:** These compact self contained control valves can maintain very tight temperature control of any number of control loops using steam, liquid phase heat transfer media such as *Dowtherm*®, hot water, hot oil, glycol, compressed air, etc. In general they can be used whenever accurate but low cost control is required. The reverse acting model, **TV/US-XR** can be used to control cooling media to economically remove heat from equipment or a process. Controlling air flow to a vortex cooling device is a common application. Another common application is use of the **TV/US-XR** to control cooling media flow to a sample cooler in response to sample temperature. Sample heating applications are commonly controlled by the **TV/US-X**.

**US/S-XR:** These valves provide a low cost, effective means of accurate temperature control regardless of available steam pressure or available heating/cooling media temperature. The **US/S-X** and **US/S-XR** valves need no user adjustment and can be installed in minutes, saving time and money in an unlimited number of control applications.



**HST:** Excessively hot samples can cause damage to expensive and sensitive hardware and electronics. For process analyzers and similar instrumentation, it is important to assure that the process samples fluids are always below the maximum allowable temperature for such instruments. Sample coolers are commonly used to reduce sample temperatures to the acceptable limits. In the event of a loss of cooling fluid to the sample cooler, or if the desired sample temperature is exceeded for any reason, the **HST** valve will close to prevent equipment damage.

Therm-Omega-Tech, Inc. is an Industry Expert and Leading Manufacturer of Custom Thermostatic Valves, Actuators and Controls serving domestic and international markets for over 25 years.



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