COMSTAT

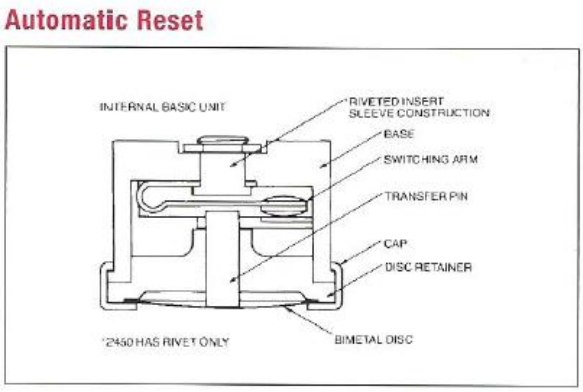
Innovative Thermal Components

Snap Disk Thermostat Primer

Snap disk thermostats can used in several ways. Typically, snap disk thermostats are used as a backup to prevent a component or process from overheating, but in some cases, they can be used as the primary temperature control device. These thermostats can also be used in refrigeration applications to prevent the temperature from falling too low.

Comstat Inc offers two types of snap disk thermostats: automatic reset snap disk thermostats and manual reset snap disk thermostats.

Automatic Reset Snap Disk Thermostats



These thermostats are constructed with a temperature sensitive, bi-metal disk which is electrically and thermally isolated from a single pole, single throw switch. This bi-metal disk is slightly convex, but when the temperature reaches its set point, it snaps into a concave shape. Bi-metal snap disks are calibrated to change state and reset at standard temperatures but can be customized to fit specific application temperature requirements.

The snap disk is usually located on the bottom of the thermostat and is mounted on the device being protected. The other side of the snap disk is connected to an actuator that changes the state of the contact switch. This switch is housed in a dust free or hermetically sealed chamber depending on the application requirements.

If your application is to control a heater, a normally closed switch is used. As the temperature rises, the snap action disk will cause the internal switch to open. This breaks the circuit, turning off the heater. When the temperature falls to the reset temperature of the snap action thermostat, the disk snaps back to its convex shape and the internal contact closes, turning on the heater.

If your application is to control a cooling fan, a normally open switch is used. As the temperature rises, the snap action disk will cause the internal switch to close. This connects the circuit, turning on the cooling fan. When the temperature falls to the reset temperature of the snap action thermostat, the disk snaps back to its convex shape and the internal contact opens, turning off the fan.

Due to the small size and low mass of bi-metal snap disk thermostats, the response of these thermostats to temperature changes is extremely rapid compared to other commercially available thermostatic devices.

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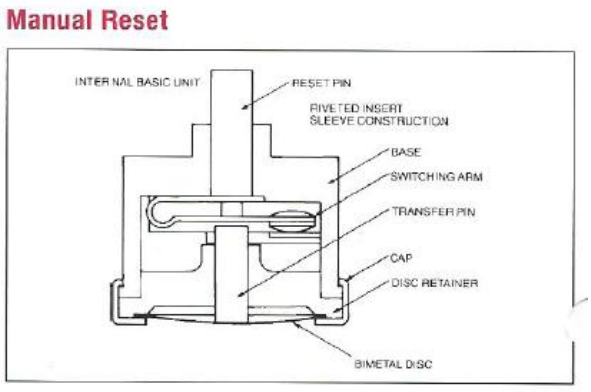
Manual Reset Snap Disk Thermostats



Manual reset snap disk thermostats operate the same way as automatic reset thermostats with one exception. When the snap disk actuates the contact switch, the switch disengages from the disk and does not reset when the snap disk changes back to its original position. The thermostat has a button that is mechanically coupled with the contact switch. Pressing the button physically pushes the switch back to its original position and resets the thermostat.

Proper choice of operating temperatures for a snap disc thermostat depends on many application specific parameters such the mounted location, rate of temperature rise, heat sink mass and the heat sink medium. To insure the safe application of a thermostat, the purchaser must determine the suitability of the selected device in their individual application through operational design testing. Temperature testing is completed on 100% of the devices at the factory to insure their functioning temperature tolerance in various medium. To allow for variations in temperature testing, a 1 degree C allowance from published values is industry standard.

Definitions:

Close on Rise (COR): When the temperature rises to it's set point the contacts close and complete the electrical circuit.

Open on Rise (OOR): When the temperature rises to it's set point the contacts close and complete the electrical circuit. These are often called cooling or fan thermostats.

Set Point: The nominal temperature at which the thermostat operates, either opening or closing the contacts.

Tolerance: The range above or below the nominal set point.

Max. Differential: The maximum allowable difference, considering the tolerance, between the opening and closing temperatures.

Mean Differential: The difference between open and close nominal set points.

Min. Differential: The minimal allowable difference between the actual opening temperature and closing temperature (deadband).

Full Load Amps (FLA): the line current by a motor when it is yielding the rated hp at the rated voltage and frequency.