ASHCROFT®
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Ashcroft® Switches

PIP #: SW-PI-59

Applicable to:

ASHCROFT TEMPERATURE SWITCHES QUESTIONS AND ANSWERS

This Product Information Page has been developed to answer the most commonly asked questions about Ashcroft Thermal Systems.

1. **Q. How do Ashcroft Temperature Switches Operate?**
   A. Ashcroft temperature switches utilize a filled thermal system to sense temperature changes in a process. As the temperature changes, the fill reacts by vaporizing on increasing temperatures, while condensing on decreasing. This process creates pressure against a piston assembly. Which moves and transfers the action to a microswitch. Reference drawing on page 4.
2. **Q. What kind of fill does Ashcroft use? Why?**
   A. Our Thermal Systems are vapor filled meeting SAMA Class II requirements. Vapor fill has good sensitivity with little or no ambient temperature affect.
3. **Q. What style of Thermal Systems are there?**
   A. There are two (2) kinds:
   Remote Thermal Systems: composed of a 3″ long bulb with various lengths of armored capillary.
   Direct Thermal Systems: composed of a rigid stem available in various lengths with a ½″ male NPT connection.

STANDARD RANGES WITH CORRESPONDING FILLS DIRECT AND REMOTE THERMAL SYSTEMS

RANGE		FILL
–40/60F	(–40/16C)	Propane
0/100F	(–20/40C)	Dimethyl Ether
75/205F	(20/95C)	Butane
150/260F	(60/125C)	Methyl Alcohol
235/375F	(110/190C)	N-Propyl Alcohol
350/525F	(175/275C)	M-Xylene
500/750F	(260/400C)	Dodecane (C_6H_{12}) (Straight Hydrocarbon)

4. **Q. Are non-standard Thermal Systems available, such as: non-standard bulb sizes, line and stem lengths?**
   A. YES! Ashcroft has more standard Thermal Systems than our competitors. In addition, many special requirements can be met on request from the factory.
5. **Q. How can temperature switch Thermal Systems be mounted?**
   A. These units can be mounted within 60° of vertical.
6. **Q. How are the capillary and bulb of a remote mount switch mounted into the process?**
   A. By utilizing a 1⁄2 NPT male bushing. Called out as a 69°C bushing when being installed in the field, it is also referred to as option XBX when ordered attached to the switch at the factory. Reference page 4.
7. **Q. What material are Thermal Systems made of?**
   A. Both remote and direct mount Thermal Systems are 316 St. St. as a standard.
8. **Q. When must a thermowell be used?**
   A. A Thermowell is used to protect the temperature switch from being exposed to a harmful process, particularly pressure, high velocity, or corrosive fluids. Additionally, their use permits the removal of the switch without disturbing the process.
9. **Q. How are temperature switches set in the field?**
   A. Before setting any temperature switch, it is recommended that two (2) temperature baths be utilized. One bath set at the desired setpoint, and the other for verifying the deadband of the switch. The bulb should be placed in the setpoint bath and be fully immersed for best results. Allow it to stabilize for at least three (3) minutes.
   Setting a switch is accomplished by using the setpoint adjuster. Switches with single setpoints and have one adjuster. L, G or P series switches that have a single setpoint with adjustable deadband or dual setpoints, have two adjusters. The left, labeled “A,” is always set at a lower value than the right, which is labeled “B.”
   To set the switch on increase of temperature, turn the adjuster so that the normally open contact closes.

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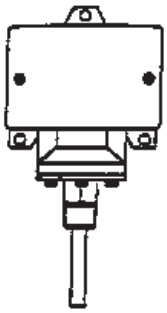
Next, immerse the bulb into the reset bath, which should be set just below the expected reset point of the switch. The normally open contact should open again within four minutes. Verify the original setpoint by returning the bulb to the setpoint bath. The switch should operate at the setpoint within four minutes. For switches with two setpoints, you must complete this procedure twice – once for each setpoint.

For switches that are to be set on decreasing temperature, the setpoint bath is at the lower temperature and the bulb is immersed in this bath first.

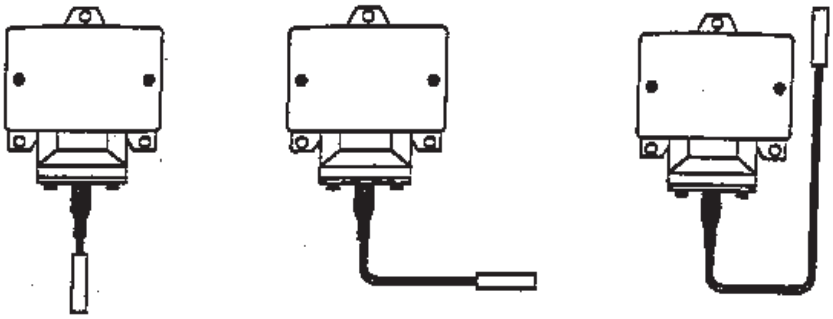
Note: Setting a temperature switch in the field may be difficult for some to accomplish. If this does pose a problem, it is recommended that the switch be set at the factory.

EXAMPLES OF MOUNTING TEMPERATURE SWITCHES
(CAN BE MOUNTED IN ANY POSITION)

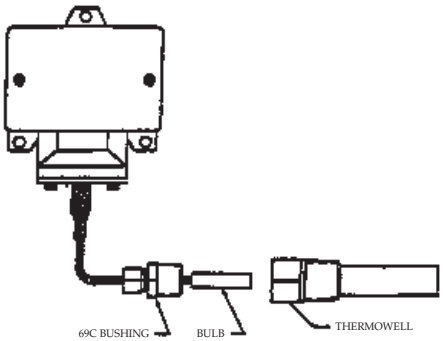
DIRECT MOUNT



REMOTE MOUNT



REMOTE TEMPERATURE SWITCH WITH 69C UNION BUSHING

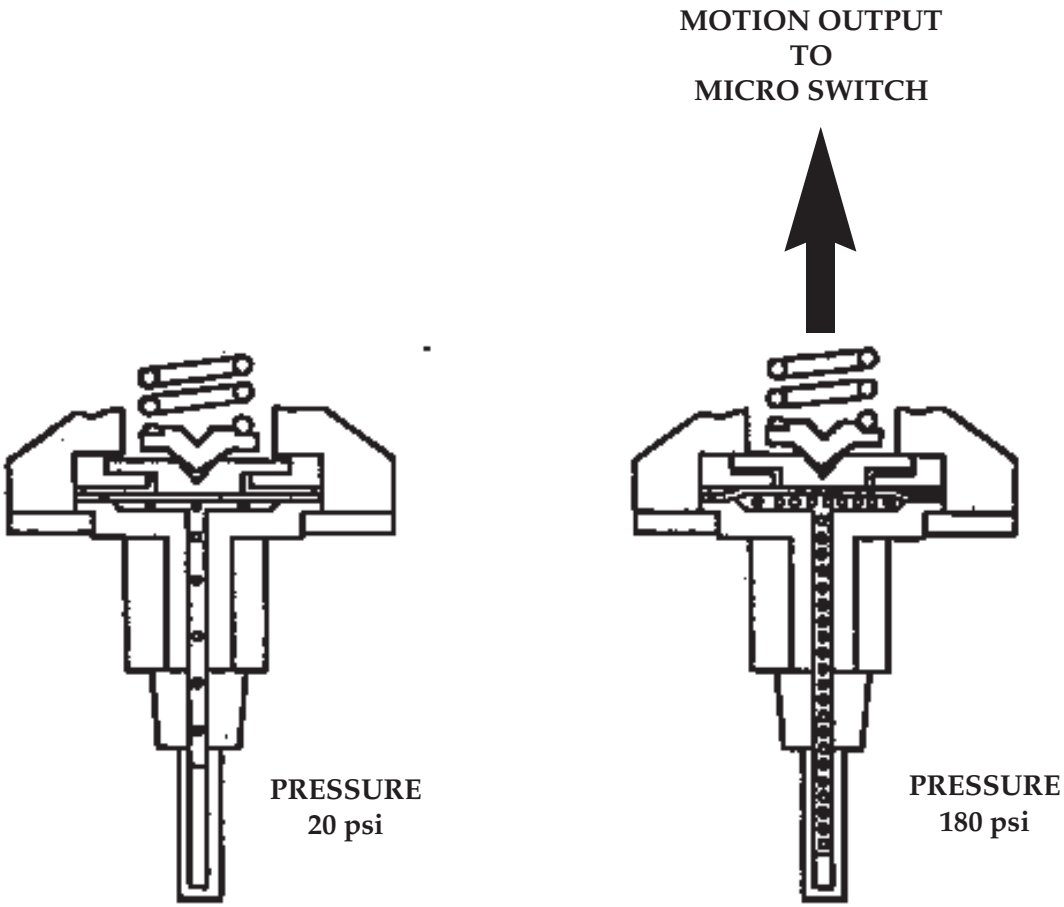


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VAPOR PRESSURE OPERATION



NOTE: FOR EXPLANATION PLEASE SEE QUESTION #1

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