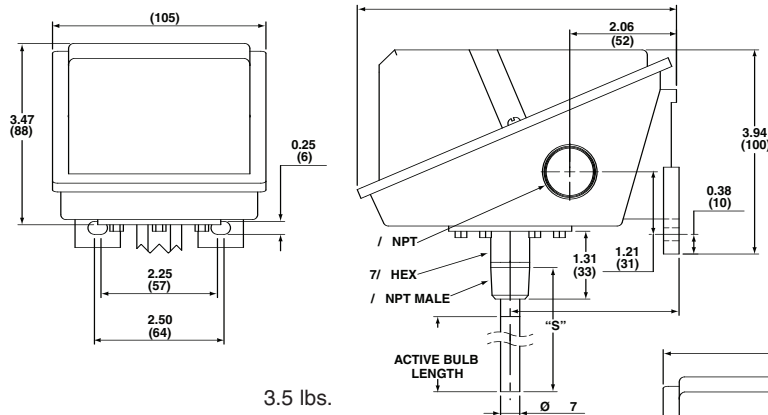


# Installation and Maintenance Instructions for ASHCROFT® L-Series Snap Action Switches for Temperature Control



## Direct Mount



3.5 lbs.

STEM LENGTH (S)		2 3/4	4	6	9	12
IN.		2 3/4	4	6	9	12
MM		(70)	(102)	(152)	(229)	(305)

## OPERATION

The ASHCROFT® temperature control is a precision device which features a snap action switch. Fixed deadband is available with single or dual SPDT independently adjustable switches with various electrical ratings. Adjustable deadband is available with a SPDT switch with various electrical ratings. Bulb material is stainless steel.

Series LT-S switches have a fixed deadband which will be within the limits noted on the nameplate.

Series LT-D switches may be set to operate simultaneously or up to 85 percent of the range apart. The deadband of each switch will be within the limits noted on the nameplate.

Series LT-A switches may be set to operate with any deadband within the limits shown on the nameplate.

## MOUNTING

The "L" Series ASHCROFT® snap action temperature switch has a NEMA-4 enclosure which is an epoxy coated aluminum casting.

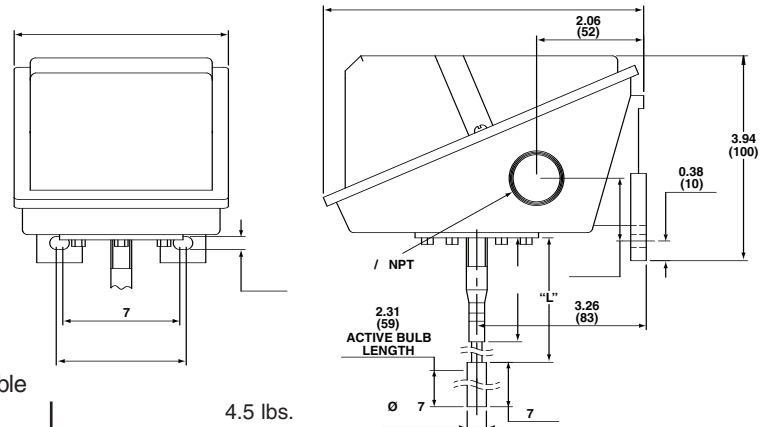
Two holes in the integral bracket are used to surface mount the control. Location of these holes is shown on the general dimension drawings. An optional pipe mounting bracket is also available. Mount on a vibration free surface or pipe in any orientation.

Good piping practice requires the use of a well for installation, where pressure may be applied to the thermal system, for protection against physical damage as well as corrosive effects of media flow. Use of a well also facilitates removal of the bulb from the process line without disturbing the process. Standard well materials include brass, and stainless steel; other materials are available on application. Selection should be based on corrosion resistance requirements and process pressure.

## A. STEM MOUNTED CONTROLS

These controls have a 1/2 NPT threaded adapter and may be attached directly (or indirectly by means of a thermowell) to equipment to be controlled. **WHEN INSTALLING OR REMOVING CONTROL ALWAYS USE THE WRENCH FLATS OR HEX ABOVE THE THREADS. DO NOT TWIST THE HOUSING.**

## Remote Mount



4.5 lbs.

LINE LENGTH		5	10	15	20	25
FT.		5	10	15	20	25

## B. REMOTE MOUNTED CONTROLS

Two types of union bushings are available to install a remote-mounted control bulb into a thermowell or other 1/2 NPT threaded hole. A non-pressure-tight type consists of a bushing, split grommet and compression nut. To use this, the bulb is inserted through the nut and the split grommet is slipped into the capillary between the compression nut and the bushings. After positioning the bulb as desired, tighten the compression nut to the bushing. This will lock the capillary at the desired location. The pressure-tight type is clamped to the bulb after insertion by tightening a compression nut. To use this, the union bushing is screwed into the 1/2 NPT threaded hole. The compression nut and sleeve are slipped onto the bulb which is then inserted into the union bushing. Bulb is then positioned and compression nut is hand tightened plus 2 1/2 turns. This will lock the bulb at the desired location.

## CONDUIT CONNECTIONS

One 3/4 NPT hole fitted with a shipping plug, and two additional knock outs are provided. The knockouts may be removed by placing a screwdriver in the slot and rapping sharply with a hammer. It is recommended that Teflon tape or other sealant be used on conduit bushing or plug threads to ensure integrity of the enclosure.

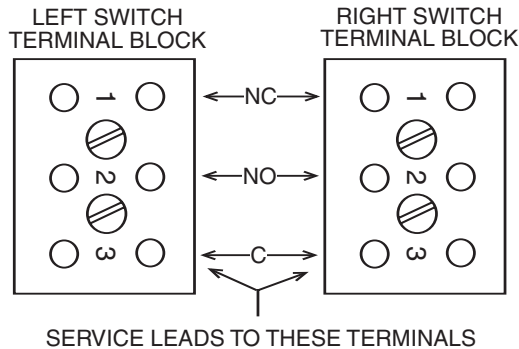
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## ELECTRICAL CONNECTION

Remove cover, held in place by two screws.

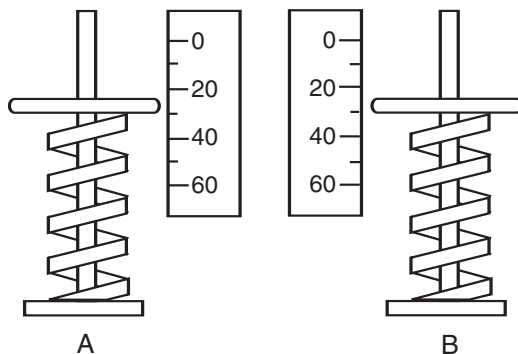
On all units except one with terminal blocks – wire directly to the switch according to circuit requirements. Units with terminal blocks – wire directly to terminal blocks as required. Terminals are marked common (C), normally open (NO) and normally closed (NC).



## SETPOINT ADJUSTMENTS

Setpoints are changed by means of the setpoint adjusters. The LT-S single switch has one adjuster and the LT-A adjustable deadband and LT-D dual switch each have two adjusters. On switches with two adjusters, the one on the left is referred to as “A” and the right one is referred to as “B”; see illustration. setpoints can be adjusted from 20 to 100 percent of full range on increasing temperature.

When adjusting temperature controls optimum performance will be obtained if the bulb is fully immersed. After initially inserting a bulb into a controlled bath, allow five minutes for stabilization. Whenever setpoint adjustment requires a bath temperature to be varied (such as to observe setpoint and re-setpoint values) the rate of change in temperature should not exceed 1°F per minute. Switch operation should be monitored with a suitable light or meter.



## SERIES LT-S SINGLE SWITCH

Remove cover. For setpoint adjustment on either increasing or decreasing temperature, the bulb of the control should be immersed in a bath at the desired setpoint temperature. Optimum performance will be obtained if bulb is fully immersed. Allow five minutes for initial stabilization. Monitor switch with a light or meter.

If setpoint is on increasing temperature, turn adjuster so that switch operates (if common-normally closed circuit is being monitored light goes off). If setpoint is on decreasing temperature, turn adjuster so that switch resets (if common-normally closed circuit is being monitored light comes on). When the setpoint has been achieved, raise and lower the temperature to ensure that the setpoint is correct.

The deadband (difference between the operate and reset temperatures) may be verified at this time to be between the values noted on the nameplate label.

## SERIES LT-D DUAL SWITCH

Remove cover. Immerse the bulb and monitor the switch as described under Series LT-S Single Switch. Also see discussion of increasing or decreasing setpoints and deadband verification. The initial bath temperature should be the higher setpoint. Turn adjuster “B” until the switch operates or resets as required.

When the setpoint has been achieved, raise and lower the bath temperature to ensure that the setpoint is correct. Then reduce the bath temperature to the lower setpoint and turn adjuster “A” until the switch operates or resets as required. Verify this setpoint by raising and lowering bath temperature. Now increase the temperature to the higher setpoint and make final adjustment on “B.”

## SERIES LT-A ADJUSTABLE DEADBAND SWITCH

Remove cover. Adjuster “B” controls the operating point of the switch on increasing temperature. Adjuster “A” controls the re-setpoint of the switch on decreasing temperature.

Immerse the bulb and monitor the switch as described under single switch setpoint adjustment. With the bath at the required setpoint temperature, turn adjuster “B” until switch operates. Then lower the bath temperature to the re-setpoint and turn adjuster “A” until the switch resets. Now increase the temperature to the operating point and make final adjustment on “B.” Raise and lower temperature to ensure that the setpoint and re-setpoint are correct.

## SOME PRECAUTIONS TO OBSERVE

Do not loosen the screws holding the precision switch element(s) or mounting bracket in place.

Nameplate PROOF temperature should not be exceeded. Intermittent operation up to proof temperature is permissible, however, some change of setpoint may be noted.

Operation and correct setpoint actuation should be routinely tested.