



54 Series

Temperature Switches

Types:

Enclosed: B54, C54, C54A, E54, F54

Skeleton: B54S, C54S, C54AS, E54S, F54S

Installation and Operation Instructions

Please read all instructional literature carefully and thoroughly before starting.

Refer to the final page for the Warranty.

GENERAL



MISUSE OF THIS PRODUCT MAY CAUSE DAMAGE TO EQUIPMENT OR PERSONAL INJURY. THESE INSTRUCTIONS MUST BE THOROUGHLY READ AND UNDERSTOOD BEFORE DEVICE IS INSTALLED.

Type B54, B54S, C54, C54S, C54A, C54AS (Immersion Stem)

Temperature variations are sensed by a liquid filled sensor which expands or contracts against a bellows which actuates a snap-action switch at a predetermined set point.

Type E54, E54S, F54, F54S (Bulb & Capillary)

Temperature variations of a liquid filled sensing bulb are hydraulically transmitted to a diaphragm which actuates a snap-acting switch at a predetermined set point.



MAX. TEMPERATURE* LIMITS LISTED ON NAMEPLATE MUST NEVER BE EXCEEDED, EVEN BY SURGES IN THE SYSTEM. OCCASIONAL OPERATION OF UNIT UP TO MAX. TEMPERATURE IS ACCEPTABLE, E.G. START-UP AND TESTING. EXCESSIVE CYCLING AT MAXIMUM TEMPERATURE LIMIT COULD REDUCE SENSOR LIFE. CONTINUOUS OPERATION SHOULD NOT EXCEED THE DESIGNATED ADJUSTABLE TEMPERATURE RANGE.

* Maximum Temperature - the highest temperature to which a sensing element may be occasionally operated without adversely affecting set point calibration and repeatability.



THIS PRODUCT DOES NOT HAVE ANY FIELD REPLACEABLE PARTS. ANY SUBSTITUTION OF COMPONENTS SHALL INVALIDATE AGENCY CERTIFICATION(S).



DEVICE MUST NOT BE ALTERED OR MODIFIED AFTER SHIPMENT. CONSULT UE IF MODIFICATION IS NECESSARY.

Please refer to product datasheet at www.ueonline.com for product specifications.

Part I - Installation

Mounting



- Adjustable Wrench
- Screwdriver



INSTALL DEVICE WHERE SHOCK, VIBRATION AND TEMPERATURE FLUCTUATIONS ARE MINIMAL. DO NOT INSTALL DEVICE IN AMBIENT TEMPERATURES THAT EXCEED PUBLISHED LIMITS ON THE NAMEPLATE.



DEVICE SHOULD BE MOUNTED TO PREVENT MOISTURE FROM ENTERING THE ENCLOSURE. VERTICAL MOUNTING IS RECOMMENDED.



ALWAYS USE A WRENCH ON LOCAL MOUNT, IMMERSION STEM HEX (SEE PART III DIMENSIONS). DO NOT TIGHTEN BY TURNING THE DEVICE AS THIS WILL DAMAGE THE SENSOR AND WEAKEN WELDED JOINTS.



AVOID BENDING OR COILING THE CAPILLARY TUBING TIGHTER THAN 1/2" RADIUS. EXERCISE CAUTION WHEN MAKING BENDS NEAR THE CAPILLARY ENDS.

Remove cover (enclosed version only). Cover is held on by one captive screw located on the front of the cover.

54 Series temperature switches can be mounted in any position by using either the mounting screw holes on the bracket or the NPT connection on the immersion stem (local mounted only). Optional union connectors or separable well kits are available for remote bulb types.

A 7/8" diameter hole has been provided in the bracket plate for mounting a standard conduit fitting (See Part III Dimensions).

For remote mounting, fully immerse the bulb and 6" of capillary in the control zone. It is generally desirable to place the bulb close to the heating or cooling source in order to sense temperature fluctuations quickly. Be sure to locate the bulb so that it will not be exposed to temperatures beyond the instrument range limits.

Wiring



DISCONNECT ALL SUPPLY CIRCUITS BEFORE WIRING DEVICE. WIRE DEVICE IN ACCORDANCE WITH LOCAL AND NATIONAL ELECTRICAL CODES. MAXIMUM RECOMMENDED WIRE SIZE IS 14 AWG AND RECOMMENDED TIGHTENING TORQUE FOR FIELD WIRING TERMINALS IS 7 TO 17 IN-LBS.



DO NOT EXCEED ELECTRICAL RATINGS LISTED ON NAMEPLATE. OVERLOAD ON A SWITCH CAN CAUSE FAILURE EVEN ON THE FIRST CYCLE.

For devices with a cover, wire through hole bringing wires up to the terminals from the rear.

Part II - Adjustments



- 1/4" open end wrench
- Flatblade screwdriver



ENSURE ELECTRICAL CONDUIT ENTRIES ARE PROPERLY SEALED TO PREVENT MOISTURE ENTRY.

Single Switch Devices

C54, C54S, F54, F54S - no reference dial

To adjust single switch units, follow "High Set" instructions. For "fine adjustment", follow "Fine Adjustment" instructions.

B54, B54S, E54, E54S - with reference dial

Turn the reference dial to desired set point by aligning setting on dial with dowel pin.

Dual Switch Devices



ON DUAL SWITCH DEVICES, "LOW SET" SWITCH MUST ALWAYS BE SET EQUAL OR BELOW THE "HIGH SET" SWITCH (SEE FIGURE 1).

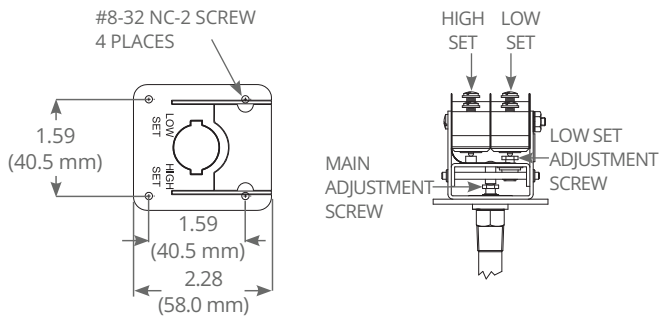


Figure 1

High Set

- 1 Immerse the sensing portion of the unit in a calibrated temperature bath or other calibrated source at the desired "High Set" temperature.
- 2 Allow 5 minutes for the thermal system to stabilize.
- 3 Using a 1/4" open end wrench, slowly turn the main adjustment screw counterclockwise until the "High Set" switch transfers. If switch does not transfer, turn the main adjustment clockwise until the switch transfers, and then counterclockwise until it transfers again. The "High Set" switch should now transfer on "temperature rise" at the bath temperature.
- 4 If it is desired that the switch transfer on "temperature fall" at the bath temperature, turn the main adjustment screw clockwise until the switch transfers again.

Low Set

- 1 Lower the temperature of the calibrated bath (or use another bath) to the desired "Low Set" temperature, and allow 5 minutes for the thermal system to stabilize.
- 2 Using a 1/4" open end wrench, slowly turn the low set adjustment screw clockwise until the switch transfers. If switch does not transfer, turn the low set adjustment screw counterclockwise until the switch transfers, and then clockwise until it transfers again. The "Low Set" switch is now set to actuate at the bath temperature on "temperature fall".
- 3 If it is desired that the "Low Set" switch transfer on "temperature rise" at the bath temperature, turn the low set adjustment screw counterclockwise until the switch transfers.

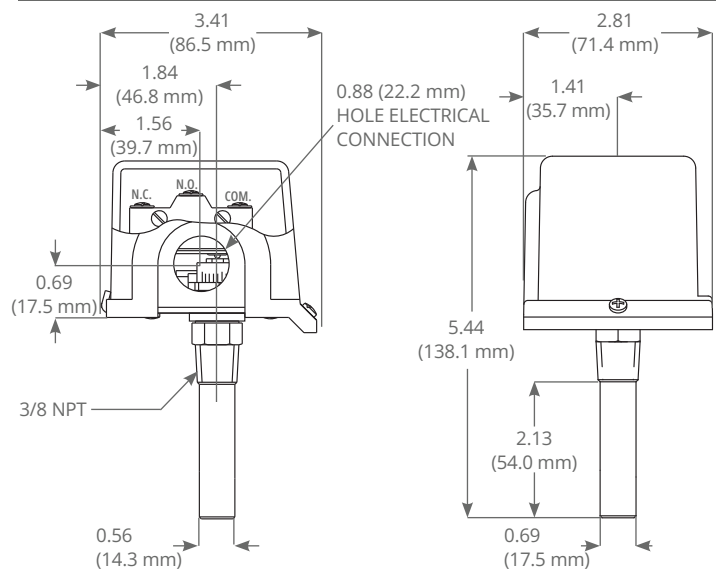
Fine Adjustment

- 1 If it is necessary to "fine adjust" the "High Set" setting, raise the bath temperature to a value slightly higher than the "High Set" temperature.
- 2 Note the temperature at which the switch transfers (on rise).
- 3 Lower the bath temperature and note when switch transfers again (on fall). Turn the main adjustment screw clockwise to raise or counterclockwise to lower the settings.
- 4 If necessary, perform the same "fine adjustment" procedure outlined above for the "Low Set" switch.

Recommended Practices

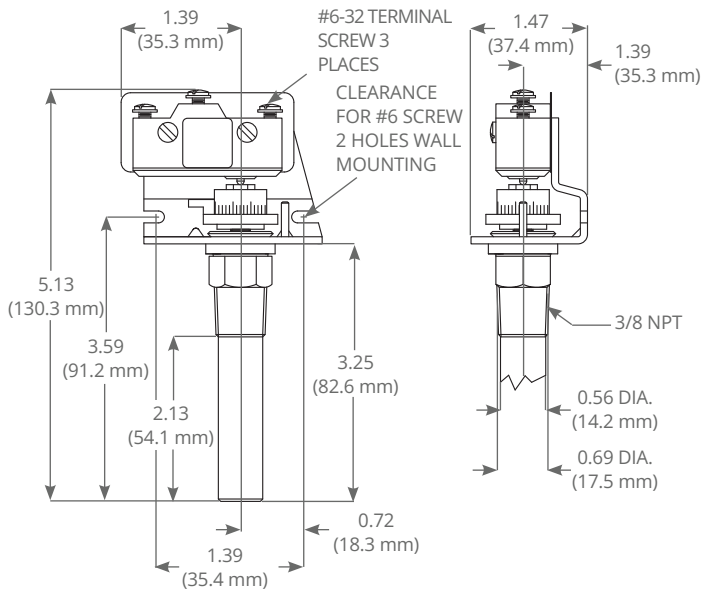
- A redundant device is necessary for applications where damage to the primary device could endanger life, limb or property. A high or low limit switch is necessary for applications where a dangerous runaway condition could result.
- Monitor operation to observe warning signs of possible damage to device, such as drift in set point. Check device immediately.
- Preventative maintenance and periodic testing is necessary for critical applications where damage could endanger property or personnel.

Part III - Dimensions

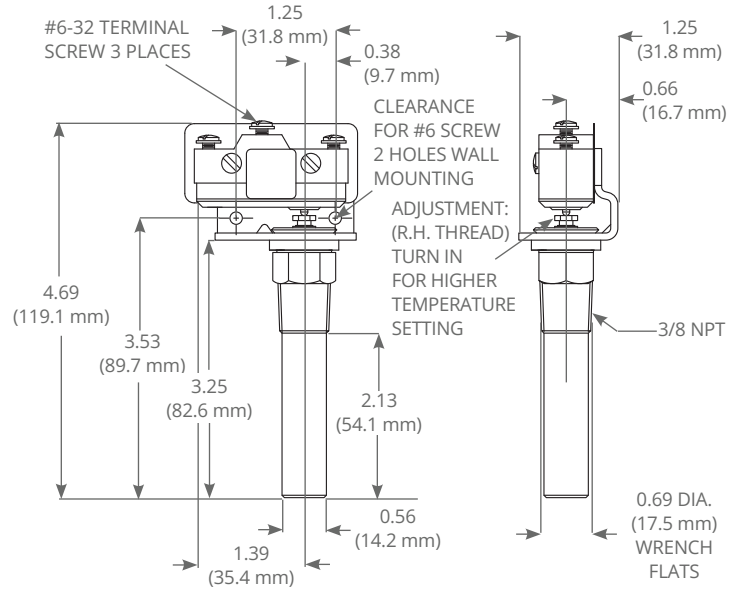


Type B54, C54, C54A

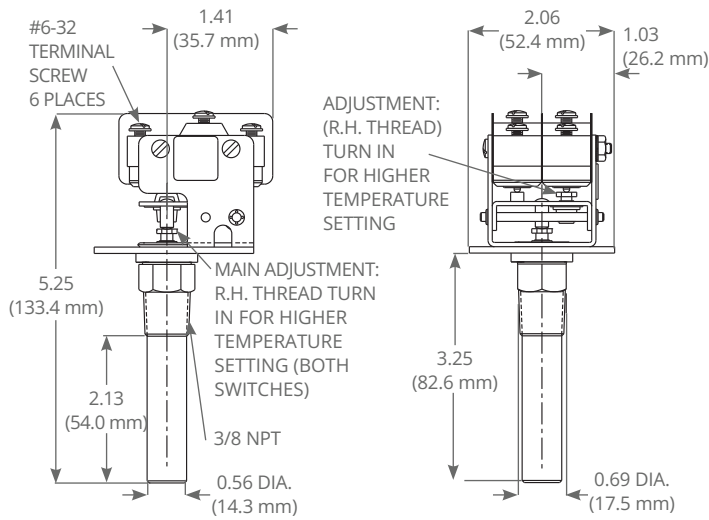
Type B54, C54, C54A



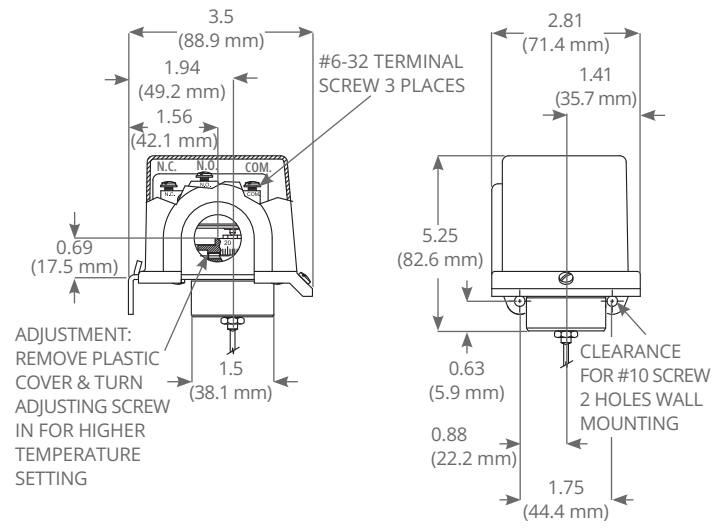
Type B54S



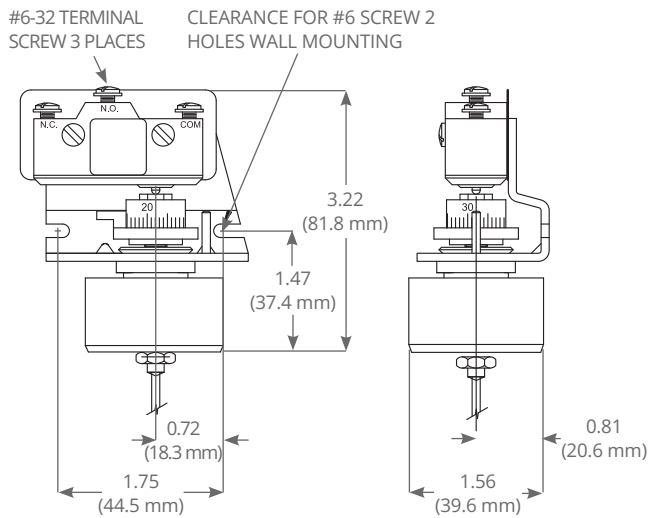
Type C54S



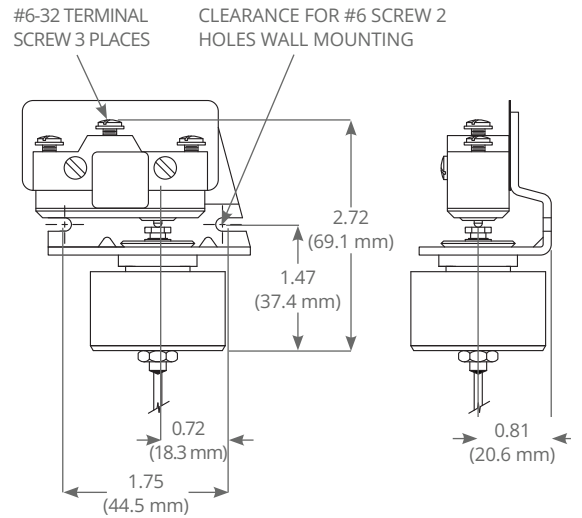
Type C54AS



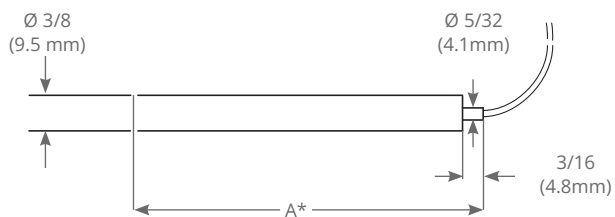
Type E54, F54



Type E54S



F54S



* USE DIMENSION "A" FOR SEPARABLE WELL INSTALLATIONS

Remote Bulb

Bulb Size Dimension A		
Models	Inches	mm
E54 & F54		
D20BC, D20BS, D22BC, D22BS 4.50 114.3	4.5	114.3
D21BC, D21BS 6.86 174.6	6.86	174.6
D23BC, D23BS 3.63 92.1	3.63	92.1
E54S & F54S		
D21BC, D21BS 6.86 174.6	6.86	174.6
D22BC, D22BS 4.50 114.3	4.5	114.3
D23BC, D23BS 3.63 92.1	3.63	92.1

French Warnings Translations

Pg	Warning Text	Texte d'Avertissement
1	MISUSE OF THIS PRODUCT MAY CAUSE DAMAGE TO EQUIPMENT OR PERSONAL INJURY. THESE INSTRUCTIONS MUST BE THOROUGHLY READ AND UNDERSTOOD BEFORE UNIT IS INSTALLED..	Une mauvaise utilisation de cet appareil peut endommager l'équipement et/ou provoquer des blessures. Ces consignes doivent être lues attentivement et bien comprises avant l'installation de l'appareil.
1	THIS PRODUCT DOES NOT HAVE ANY FIELD REPLACEABLE PARTS. ANY SUBSTITUTION OF COMPONENTS SHALL INVALIDATE AGENCY CERTIFICATION(S).	Aucun composant ne peut être remplacé sur le terrain. Tout remplacement de composant peut invalider toutes les approbations et certifications données par un tiers.
1	INSTALL DEVICE WHERE SHOCK, VIBRATION AND TEMPERATURE FLUCTUATIONS ARE MINIMAL. DO NOT INSTALL DEVICE IN AMBIENT TEMPERATURES THAT EXCEED PUBLISHED LIMITS ON THE NAMEPLATE.	Installer l'appareil dans un endroit où les chocs, les vibrations et les variations de température sont minimales. Ne pas installer l'appareil dans un lieu où les températures ambiantes dépassent les limites indiquées sur la plaque signalétique de l'appareil.
2	DISCONNECT ALL SUPPLY CIRCUITS BEFORE WIRING DEVICE. WIRE DEVICE IN ACCORDANCE WITH LOCAL AND NATIONAL ELECTRICAL CODES. USE 75 °C (167 °F) RATED COPPER CONDUCTORS ONLY. MAXIMUM RECOMMENDED WIRE SIZE IS 16 AWG AND NOMINAL TIGHTENING TORQUE FOR FIELD WIRING TERMINALS IS 9 IN-LBS..	Avant le branchement de l'appareil, déconnecter l'installation sur laquelle l'appareil doit être monté. Réaliser le branchement électrique selon les codes électriques nationaux et locaux. N'utiliser que des conducteurs en cuivre approuvés 75 °C (167 °F). Le diamètre maximal recommandé pour les fils est de 16 AWG. Le couple de serrage pour la borne de raccordement est de 9 IN-LBS.
2	DO NOT EXCEED ELECTRICAL RATINGS LISTED ON NAMEPLATE. OVERLOAD ON A SWITCH CAN CAUSE FAILURE EVEN ON THE FIRST CYCLE.	Les seuils électriques indiqués dans la documentation et sur les plaques signalétiques ne doivent jamais être dépassés. La surtension peut causer une panne de l'appareil dès les premier cycle.

LIMITED WARRANTY

Seller warrants that the device hereby purchased is, upon delivery, free from defects in material and workmanship and that any such device which is found to be defective in such workmanship or material will be repaired or replaced by Seller (Ex-works, Factory, Watertown, Massachusetts, INCOTERMS); provided, however, that this warranty applies only to device found to be so defective within a period of 24 months from the date of manufacture by the Seller. Seller shall not be obligated under this warranty for alleged defects which examination discloses are due to tampering, misuse, neglect, improper storage, and in any case where devices are disassembled by anyone other than authorized Seller's representatives. EXCEPT FOR THE LIMITED WARRANTY OF REPAIR AND REPLACEMENT STATED ABOVE, SELLER DISCLAIMS ALL WARRANTIES WHATSOEVER WITH RESPECT TO THE DEVICE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

LIMITATION OF SELLER'S LIABILITY

Seller's liability to Buyer for any loss or claim, including liability incurred in connection with (i) breach of any warranty whatsoever, expressed or implied, (ii) a breach of contract, (iii) a negligent act or acts (or negligent failure to act) committed by Seller, or (iv) an act for which strict liability will be imputed to seller, is limited to the "limited warranty" of repair and/or replacement as so stated in our warranty of device. In no event shall the Seller be liable for any special, indirect, consequential or other damages of a like general nature, including, without limitation, loss of profits or production, or loss or expenses of any nature incurred by the buyer or any third party.

UE specifications subject to change without notice.



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