



Cartridge Type Thermostat Engineering Specifications

Tube Shell Material: 304 stainless steel

Tube Shell Diameters:

1/4" model diameter = .249" +.000/-.004" actual

1/2" model diameter = .499" +.000/-.004" actual

5/8" model diameter = .625" +.000/-.004" actual

Temperature Ranges:

1/4" dia. models: -100° F to 500° F

1/2" dia. and 5/8" dia. models: -100° F to 600° F standard (up to 700° F available)

Set Point Definition: Temperature at which switch contacts open or close

Standard Factory Set Point:

75° F +/-15° F (24° C +/- 8° C)

(Optional Factory Setting Available)

Contact Switch Ratings:

1/4" dia. models: 1.0 amp @120VAC

1/2" dia. models: 5.0 amps @120 VAC, 3 amps @240 VAC, 1 amp @120 VDC

5/8" dia. models: 10.0 amps @120 VAC, 5 amps @240 VAC, 2 amps @120 VDC

Contact Action: Slow make and break

Sensitivity:

1/4" dia. models: As low as 1° F depending on application

1/2" dia. and 5/8" dia. models: As low 1/2° F depending on application

Maximum Temperature Overshoot: 100° F above set point temperature

Standard Termination:

1/4" dia. models: 8", +/- 0.5" long- #26 AWG silver plated copper w/Teflon insulation

1/2" dia. models: 8", +/- 0.5" long- #20 AWG stranded nickel clad copper w/fiberglass insulation

5/8" dia. models: 8", +/- 0.5" long- #16 AWG stranded nickel clad copper w/fiberglass insulation

Mounting Fitting Material: 300 series stainless steel

UL Recognitions:

1/2" dia. and 5/8" dia. Models only

File E36322

CSA Certifications:

5/8" dia. Models only

File LR23541

Cartridge Type Thermostat Installation Precautions To Avoid Damage To The Thermostat

Please read carefully:

- Do not expose unit to more than 100 degrees Fahrenheit (56 degrees Celsius) above set point temperature.
- On 1/2" and 5/8" diameter units, do not turn adjusting screw more than 7 revolutions in either direction from room temperature.
- On 1/4" dia. units, do not turn screw more than 1/4 revolution in either direction from room temperature without checking temperature set point.
- Removal of adjusting screw may also render thermostat inoperative.
- If it is necessary to reduce the temperature setting in a heated system, do not turn adjusting screw more than one revolution or 100 degrees Fahrenheit temperature drop at any one time.
- Do not exceed the amperage rating shown on unit shell. The maximum amperage rating for the thermostats are listed under the engineering specifications.
- Optimum performance will result when the amperage load is half of the maximum rating. Improved performance will result when a contactor is used to control the load and the thermostat is wired through the holding coil of the contactor.

- System vibration can cause contact bounce. The addition of a capacitor will reduce the bouncing and overshooting. The typical recommended capacitor is 0.1 microfarad, rated at a minimum of 600 VDC for 120 VAC circuits and a minimum of 1000 VDC for 240 VAC circuits. The capacitor should be wired in parallel across the leads of the thermostat.
- Proper hole sizing for the thermostat is extremely important to avoid restricting shell expansion during operation and at the same time maintaining proper fit for the best temperature control. For the best temperature control, the reamed hole sizes required are, (1/4" dia. models= .250" diameter hole), (1/2" dia. models= .500" diameter hole), (5/8" dia. models= .625" diameter hole).
- Do not seal lead end of thermostat with silicone sealant materials such as oils, caulking or grease.
- Do not distort the thermostat shell.

Cartridge Style Thermostat Temperature Setting Instructions

Unless otherwise specified, the standard factory set point is 75° F (24° C). The temperature setting of a Thermostat should be made in the following manner:

For all 1/2" and 5/8" diameter Thermostat Temperature Adjustments:

Counterclockwise rotations of the adjusting screw INCREASES temperature set point.
Clockwise rotations of the adjusting screw DECREASES temperature set point.

For 1/4" diameter Thermostat Temperature Adjustments:

Counterclockwise rotations of the adjusting screw DECREASES temperature set point.
Clockwise rotations of the adjusting screw INCREASES temperature set point.

1. Connect test light or other device suitable for determining on-off continuity of thermostat control.

2. Procedure for setting all 1/2" diameter and 5/8" diameter Thermostats:

2.1 Install thermostat in media to be controlled.

2.2 Allow the temperature of the media to increase 10 to 20° F (5.6 to 11.1° C) above your required temperature set point by turning the adjusting screw counter clockwise. The adjustment rate is approximately 90° F (50° C) per a revolution of the screw for the 5/8" dia. unit. and approx. 120° F (67° C) per revolution for the 1/2" dia. unit. Allow media to stabilize each time the thermostat temperature is set.

2.3 Turn adjusting screw clockwise in small increments until desired control temperature set point is reached.

2.4 Thermostat is now set.

2.5 If an over adjustment is made during step 2.3 or if a readjustment is required, restart at step 2.2 and repeat the procedure. Remember that all readjustments must be made by turning the adjusting screw clockwise to reach the desired set point.

3. Procedure for setting 1/4" diameter Thermostats:

3.1 Install thermostat in media to be controlled.

3.2 Allow the temperature of the media to increase 10 to 20° F (5.6 to 11.1° C) above your required temperature set point by turning the adjusting screw clockwise. Do not turn adjusting screw more than 1/4 revolution in either direction from room temperature without checking set point temperature. Adjusting rate is approx. 700° F per revolution. Allow media to stabilize each time the thermostat temperature is set.

3.3 Turn adjusting screw counterclockwise in small increments until desired control temperature set point is reached.

3.4 Thermostat is now set.

3.5 If an over adjustment is made during step 3.3 or if a readjustment is required, restart at step 3.2 and repeat the procedure. Remember that all readjustments must be made by turning the adjusting screw counterclockwise to reach the desired set point.

4. The thermostats may be subject to a small amount of temperature set point drift after a few cycles depending on the application load, cycling frequency, and vibration. Check the set point and readjust after approximately 100 cycles under load to improve performance.

Maximum Torque on Cartridge Style Thermostat Controls with Threaded Fittings

* The following notes apply to thermostats with Style C - Pipe Thread mounting and Style E - Coupling Thread Mounting Fittings

1. DO NOT apply excessive torque to the threaded mounting fittings as a resulting change in temperature may occur

2. Maximum torque values without Teflon thread:

1/4" Models: 10 ft-lbs (13.5 N-m)

1/2" Models: 20 ft-lbs (27.5 N-m)

5/8" Models: 35 ft-lbs (47.5 N-m)

3. Maximum torque values with Teflon thread:

1/4" Models: 1.1 ft-lbs (1.5 N-m)

1/2" Models: 2.2 ft-lbs (3.1 N-m)

5/8" Models: 4.0 ft-lbs (5.4 N-m)