

## 39T Series

### *Moisture Resistant Temperature Controls*



#### ***Moisture Resistant Temperature Control***

The 39T series of 1/2" (13mm) bimetal disc temperature controls from Therm-O-Disc offers proven reliability in a moisture resistant sealed design. The snap-action of the bimetal disc provides high-speed contact separation resulting in excellent life cycle characteristics. The sealed design provides moisture resistance for moisture prone environments. A variety of lead wire configurations are available to provide maximum design flexibility. The 39T has been specifically designed to permit easy mounting onto copper or aluminum tubing with excellent retention and thermal response. The stainless steel mounting bracket has been designed to accommodate a wide range of tubing sizes without the need to modify the control platform. The most popular applications include refrigeration defrost termination and ice cube maker control. It is also applied in a range of heat pump and air conditioning applications.

#### ***Features and Benefits***

The 39T features include:

- Sealed construction provides moisture resistance for moisture prone environments.
- High-speed contact separation ensures long contact life.
- A variety of lead wire options provide excellent design flexibility.
- All materials have been selected to pass the refrigeration industry's odor and taste tests.
- Controls are 100% operation tested.

#### ***Switch Actions and Typical Applications***

The 39T is an automatic reset (SPST) switch. The switch can be built to either open or close its electrical contacts on temperature rise or fall. Once the temperature in the application has returned to the specified reset temperature, the contacts automatically return to their original state. Open on rise contact design is typically used for refrigeration defrost termination and ice cube maker control. The type 39TR includes an internal resistor wired in parallel with the contacts which serves as an aid to factory circuit testing where the contacts are open at room temperature.

## Mounting Configurations

The 39T (see figure 1) has been specifically designed to permit easy mounting onto copper or aluminum tubing with excellent retention and thermal response. The stainless steel mounting bracket has been designed to accommodate a wide range of tubing sizes without the need to modify the control platform or worry about thermal response. To assure compatibility with other materials, the 39T can be provided with either an aluminum or tin-plated copper sensing surface. The rugged design of the sensing surface permits carefree handling regardless of the sensing material chosen.

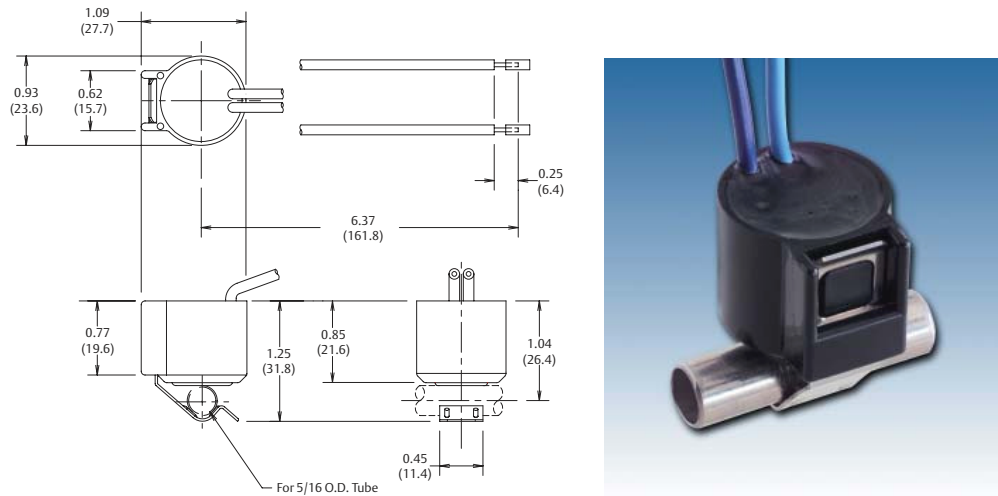


Figure 1

*Dimensions are shown in inches and (millimeters).*

## Thermal Response

The temperature sensitive bimetal disc is located at the bottom of the disc cup adjacent to the surface to be monitored. Aluminum and tin-plated copper cups are available for calibrations not exceeding 221°F (105°C) and temperature overrides not exceeding 250°F (121°C).

## Lead Wire and Terminal Configurations

**Standard Lead Wire** – The standard leads for the 39T controls are 12” (305mm) #18 AWG, 16/30 stranded copper wire with 1/32” (0.8mm) thick 105°C PVC odorless insulation stripped 1/2” (13mm).

**Non-Standard Lead Wire** – Leads longer than 12” (305mm) are available for all 39T controls at added cost. The standard lead wire can also be supplied with tracer or with 1/16” (1.6mm) insulation. In addition, #16 AWG wire can be supplied with either 1/32” (0.8mm) or 1/16” (1.6mm) thick insulation. The maximum wire size available is #14 AWG with 1/32” (0.8mm) insulation.

Lead wire insulation, along with other materials in the 39T, all meet the refrigeration industry’s taste and odor tests.

## Calibration Temperatures, Differentials and Tolerances

To use the calibration chart, locate the range in the left hand column, in which the highest calibration set point (open or close) falls. Then locate, across the top, the range in which the nominal differential falls. The standard open and close set point tolerances are shown where the two columns converge. The chart also indicates what differentials are available in each of the calibration set point ranges. Closer tolerances and special differentials are available at extra cost. Please consult a sales engineer for further information.

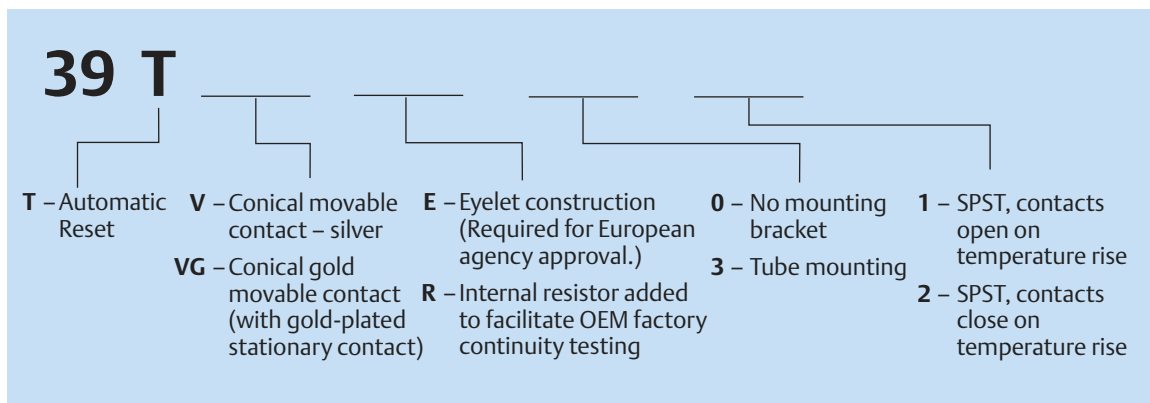
## Calibration Temperatures, Differentials and Standard Tolerance of the 39T Series

Highest Calibration Set Point Range (Open or Close)	Nominal Differentials (temperature difference between nominal open and close set point)									
	15-19°F 8.5-10.5°C		20-29°F 11-16°C		30-39°F 16.5-21.5°C		40-50°F 22-27.5°C		51-80°F 28-44.5°C	
	Open	Close	Open	Close	Open	Close	Open	Close	Open	Close
15°-80°F -9°-27°C	±5 ±3	±6 ±3.5	±5 ±3	±6 ±3.5	±5 ±3	±7 ±4	±5 ±3	±7 ±4	-	-
81°-200°F 28°-93°C	±5 ±3	±5 ±3	±5 ±3	±5 ±3	±5 ±3	±7 ±4	±5 ±3	±7 ±4	-	-
201°-221°F 94°-105°C	±5 ±3	±6 ±3.5	±5 ±3	±7 ±4	±6 ±3.5	±8 ±4.5	±7 ±4	±9 ±5	-	-

NOTE: Minimum differential is 15°F (8°C).  
The minimum bottom temperature is 0°F (-18°C).

## Product Numbering System

The following table summarizes the part numbering system for the 39T. These “type” designations represent the part numbers that are agency recognized.





## General Electrical Ratings

The 39T series of controls has been rated by major agencies throughout the world. The agency ratings can be used as a guide when evaluating specific applications. However, the mechanical, electrical, thermal and environmental conditions to which a control may be exposed in an application may differ significantly from agency test conditions. Therefore, the user must not rely solely on agency ratings, but must perform adequate testing of the product to confirm that the control selected will operate as intended in the user's application.

Thermostat Type	Max Temp.	Contact Arrangement	Cycles	Inductive Amperes		Pilot duty VA	Resistive Amperes	DC Amperes	Volts AC	Agency Recognition
				FLA	LRA					
39TV	221°F 105°C	SPST	30,000	—	—	—	10.0	—	120	CUL File E29653
			100,000	—	—	—	5.0	—	120	
			100,000	—	—	—	2.5	—	240	
39T	221°F 105°C	SPST	30,000	3.6	21.6	125	—	—	277	CUL File E29653
			100,000	—	—	—	—	1	24	
			100,000	2.9	17.4	125	—	—	240	
			100,000	—	—	—	1	—	277	
39TVE	221°F 105°C	SPST	30,000	—	—	—	5.0	—	250	CB Cert # US/4937/UL
			100,000	—	—	—	2.5	—	250	

For complete and current ratings information, please contact our Sales Engineering Department. At thermostat end-of-life, the contacts may remain permanently closed or open.

### Important Notice

Users must determine the suitability of the control for their application, including the level of reliability required, and are solely responsible for the function of the end-use product.

These controls contain exposed electrical components and are not intended to withstand exposure to water or other environmental contaminants which can compromise insulating components. Such exposure may result in insulation breakdown and accompanying localized electrical heating.

A control may remain permanently closed or open as a result of exposure to excessive mechanical, electrical, thermal or environmental conditions or at normal end-of-life. If failure of the control to operate could result in personal injury or property damage, the user should incorporate supplemental system control features to achieve the desired level of reliability and safety. For example, backup controls have been incorporated in a number of applications for this reason.