

as a low resistance but after being exposed to several temperature cycles can change to a much higher resistance.  
The temperature capabilities of the splice and/or

termination should be considered. For example, we suggest brass splices or terminations used at temperatures exceeding 150° C (302° F) should also be soldered or welded.

#### D. BENDING LEADS

When configuring the leads, special care is to be exercised in supporting the lead near the body of the

thermal cutoff per recommendation so that the epoxy will not be broken.

#### E. POSITIONING OF THERMAL CUTOFFS

The time required for a thermal cutoff to open depends upon its distance from or contact with the source of heat. To insure that the MICROTEMP® will perform as intended, care must be taken that each

MICROTEMP® is positioned properly. (Refer to the bulletin # MD-127 for application using a thermocoupled "dummy" as a suggested application method.)

#### F. THERMAL CUTOFF ISOLATED LEAD

When a thermal cutoff is connected in certain applications, a certain amount of heat is transmitted to the body of the thermal cutoff through the connecting lead. It is sometimes advantageous to minimize the temperature increase of the thermal cutoff body from

this heat flow by attaching the isolated lead (epoxy end) rather than the case lead to the heat source. Caution is advised to be sure that the temperature is not so high that it will burn the epoxy. (Temperatures in excess of 267° C.)

#### G. TEMPERATURE LIMITS

Because of the temperature limits normal to epoxy, *no* tco shall be subjected to continuous normal temperature exceeding 205° C. Higher continuous temperatures will cause the epoxy seal to weaken and ultimately fail. Underwriters Laboratories recognition of our product limits its continuous use to 205° C as well.

**NOTE:** The following conditions may cause the thermal cutoff to fail to open.

1. Distortion of the case.
2. Breaking or cracking the epoxy seal.
3. Compression on the leads which could force the isolated lead into the case.



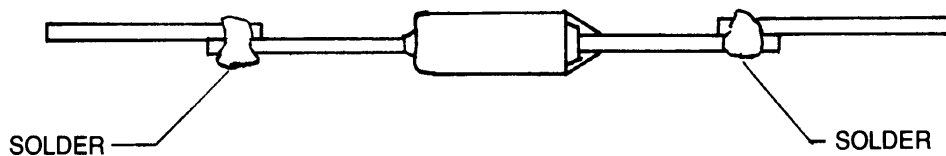
**MICRO DEVICES PRODUCT GROUP**  
 THERM-O-DISC, INCORPORATED  
 A SUBSIDIARY OF EMERSON ELECTRIC CO.  
 P.O. Box 3538 • Mansfield, Ohio 44907-0538  
 419/756-5911 • Telex 987455  
 EMERSON

# INSTALLATION OF THERMAL CUTOFFS

The performance of a thermal cutoff can be affected by installation. Methods of installation such as soldering, welding, splicing and lead bending all require that certain precautions be taken to insure that the MICROTEMP® thermal cutoff is not damaged,

which may cause it to not operate in its intended manner. The following guidelines should be used to minimize undesirable conditions that can result from improper installation practices.

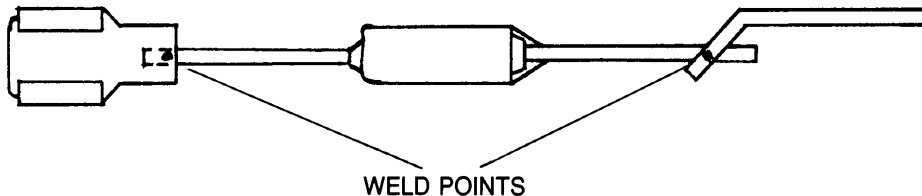
## A. SOLDERING LEADS



1. Thermal cutoff leads should be heat sunk during the soldering operation. The lower the thermal cutoff temperature rating, the more heat sinking is required. To insure proper heat sinking, test samples should be x-rayed before and after the soldering operation. Reduction of the sensing element thermal pellet

dimensions is an indication that more heat sinking is required. Excessive heat conducted by the leads could foreshorten the life of the tco (premature opening) or burn the epoxy (temperatures of 267° C or more) which could result in the tco failing to open. (F.T.O.)

## B. WELDING LEADS



1. As in "soldering" mentioned previously, and for the same reason, excessive heat from resistance welding should not be conducted to the body of the thermal cutoff.  
2. To avoid welding internal parts, care should be taken that none of the welding current is conducted

through the tco. Welding current of hundreds of amperes can weld the internal parts together resulting in an "F.T.O."

3. Leads require support to prevent breaking the thermal cutoff epoxy during a weld operation.

## C. SPLICES & TERMINATIONS

Insecure splices and terminations may produce high resistance junctions which can cause heat ( $I^2R$ ), resulting from the power dissipated across these junctions during product operation. Heat from these hot spots flows down the thermal cutoff leads

increasing the temperature of the thermal cutoff. Nuisance openings of thermal cutoffs and with certain mounting conditions epoxy burn can occur as a result of the heat generated by high resistance junctions. The splice or termination junction can initially measure