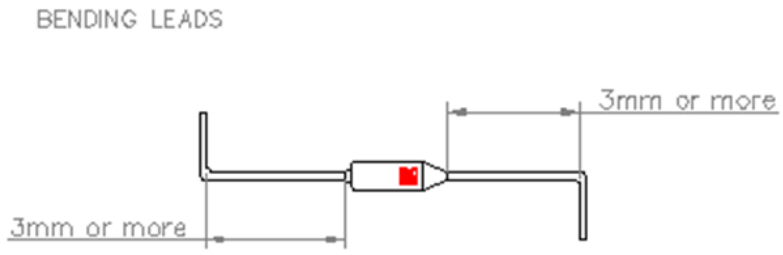
TCO INSTALLATION INSTRUCTIONS FOR SECONDARY PROCESSING

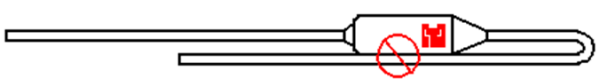
The performance of the Elmwood Thermal Cut Offs requires proper handling during installation for it to operate in its intended manner. These installations are intended to be used to reduce the risk of malfunction of the thermal cut off which may result from improper installation during forming of leads, splicing, welding and soldering.

1. BENDING LEADS

Care should be taken when forming the Thermal Cut Offs (TCO) leads. The TCO leads must be supported at least 3mm (0.125inch) from bend and case; and 3mm (0.125inch) from bend and epoxy. This will prevent the epoxy seal from cracking which may result in premature degradation of the pellet. A close visual inspection should be performed to make sure that the TCO leads have not been cut, nicked, folded sharply, fractured or burned.



When bending the lead wire on the epoxy side, do not let it come into contact with the case body. The TCO cannot cut off the circuit because the current flows from the lead wire on the epoxy side to the lead wire on the opposite side through the case body.



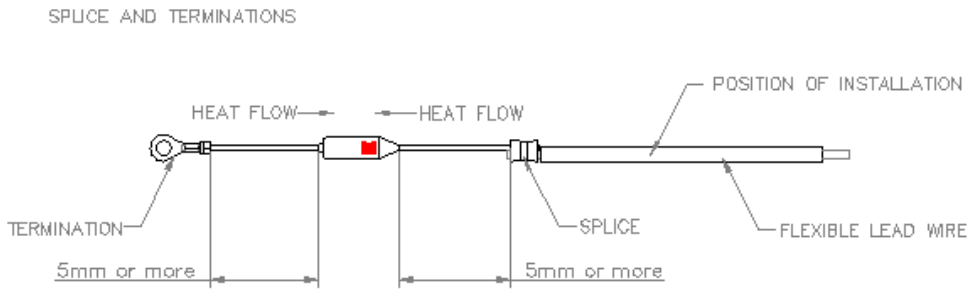
The metal case of the TCO body is a conduction path. Therefore, please consider about the insulation when installing.

2. MECHANICAL FORCES DURING APPLIANCE CONNECTION

a. When installing the TCO, avoid unnecessary bending, twisting, pulling or pushing on the TCO leads. Care should be taken to avoid cracking or chipping of the epoxy which may result from sharp twisting or bending of the lead.
b. The TCO body must maintain its cylindrical shape to function properly. Excessive clamping could cause denting or crushing of the TCO body, which may lead to failure. X-ray and visual inspection of the TCO will determine if the fuse body has been damaged.
c. Note that the TCO body is electrically live and must be insulated before applying a metal clamp over the TCO body.
d. Care should be used when pushing the epoxy end lead, to avoid the lead being forced into the TCO body. This could result in failure.

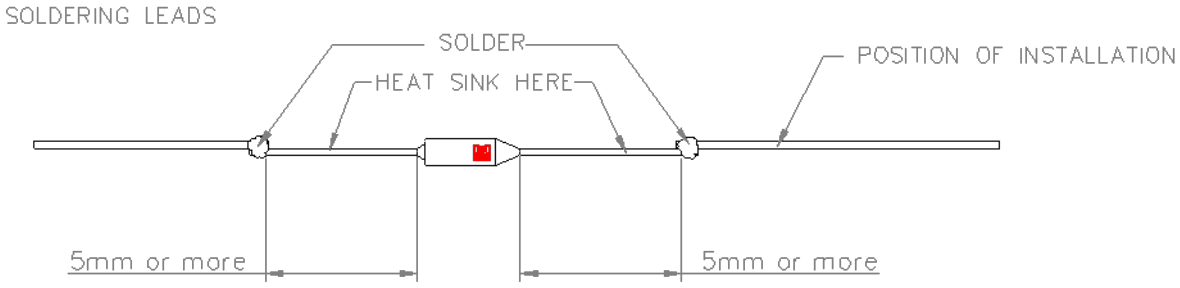
3. SPLICE AND TERMINATIONS

By attaching free wire to the TCO leads, connections can be made by bending the free wire and keeping the TCO leads from being subjected to undue stresses. Splices should be sized according to the size of the wire plus the TCO lead wire. The connections must be electrically sound to prevent high resistance and secure enough to withstand the rated cutoff temperature. Improper connections may cause damage to the seal or other parts and may result in nuisance tripping of the devices due to the generation of excessive heat at a faulty high resistance junction. High resistance junctions may form after normal operation of end use equipment and if the TCO has been subjected to several high temperature cycles. Lead connections used at 150℃ (302°F) or higher should be soldered or welded.
When connecting the lead wire with terminal, the connecting position should be secured at least 5 mm away from the case body to avoid any damage to epoxy and the body case.



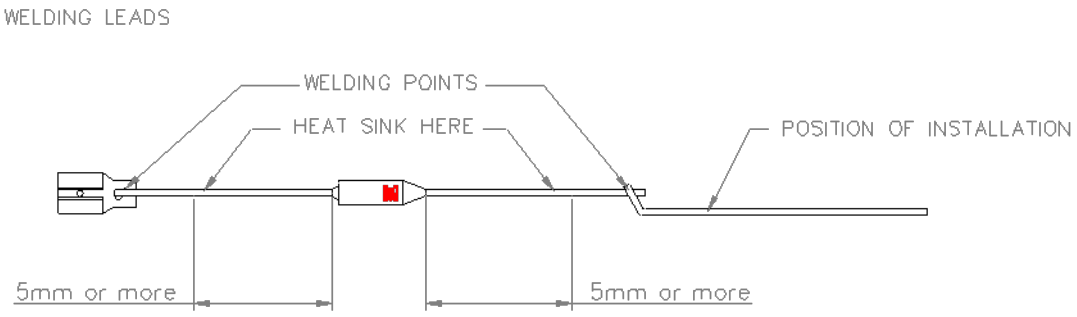
4. SOLDERING LEAD

The TCO leads require heat sinking during soldering operations. Lower temperature rated fuses may require more heat sinking than do higher rated fuses. Samples should be X-rayed before and after soldering to insure a consistent pellet height. Reduction of dimension of the thermal pellet indicates that more heat sinking is required. Also, excessive heat conducted by the leads could shorten the life of the TCO as well as burn the epoxy. Assure that the leads are supported during soldering to avoid breaking or cracking of the epoxy.
So, the soldering position should be secured at least 5 mm away from the case body.



5. WELDING LEADS

Excessive heat from resistance welding should not be conducted to the body of the TCO. To avoid welding, internal parts, care should be taken that none of the welding current is conducted through the TCO. A welding current of hundreds of amperes could weld the internal parts together resulting in a failure. The leads must also be supported during welding to avoid breaking or cracking of the epoxy.
The welding position should be secured at least 5 mm away from the case body.



6. PROTECTION AGAINST OVERHEATING

A certain amount of heat is transmitted to the body of the TCO through the connecting lead on some applications. By attaching the epoxy lead to the heat source, you thereby minimize the temperature increase of the TCO body from this heat flow. When locating the TCO near a heat source, the device should be protected from overheating during operation. Normal operation overheating may cause premature opening of the device and excess overshoot may cause damage to the thermal cutoff.
Under general application environment.
To maximize product life of the TCO, use a 30℃ [86℉] min differential between the operating ambient temperature at the fuse location and the specified functioning temperature of the fuse being used. Maintain a 40℃ [104℉] min differential between devices with functioning temperature above 200℃ [392℉].

7. EXAMINATION FOR DAMAGE

An examination for damage of the thermal cut off should be done after the device-to-appliance connections are made. X-raying before and after the assembly operation and close visual inspection, with special attention made at the epoxy, should be performed on early production samples.

We recommend the following inspections at the time of the TCO received and after secondary processing

- Visual inspection: Check for damage to the TCO such as epoxy cracks before and after secondary processing
- Contact resistance inspection: Finding of secondary processing abnormalities
- X-Ray inspection: Finding the quality effects of excess heat

REPLACEMENT

It should be made clear for reasons of safety, that a TCO is a non-repairable item and that in case of replacement an equivalent TCO with the same catalogue number shall be used and mounted in exactly the same way.