



All numerical values are in metric units [with U.S. customary units in brackets]. Dimensions are in millimeters [and inches]. Unless otherwise specified, dimensions have a tolerance of ± 0.13 [$\pm .005$] and angles have a tolerance of $\pm 2^\circ$. Figures and illustrations are for identification only and are not drawn to scale.

1. INTRODUCTION

This specification covers the requirements for application of SolKlip Grounding Clip Assembly used with metal-framed photovoltaic (PV) modules (or solar panels) and related products that require grounding for safety reasons. The grounding clip assembly consists of a slider, base, and a 10-32 self-captivating thread-cutting screw or 8-32 screw and hex nut or Keps nut.

The screw is used to mount the grounding clip to the frame (of the solar panel). The slider is used to hold the wire. The slider features a multi-dimensional curved wire slot that provides enhanced wire retention. The base is used to terminate the wire. The base features pointed lances that provide four points of contact to the frame for high reliability and anti-rotation of the grounding clip. The removal slot accepts the tip of a flat-head screwdriver which is used to disengage the slider. When the slider is disengaged, the wire can be removed, and the screw is exposed for removal.

When corresponding with TE Connectivity (TE) Personnel, use the terminology provided in this specification to facilitate your inquiries for information. Basic terms and features of this product are provided in Figure 1.

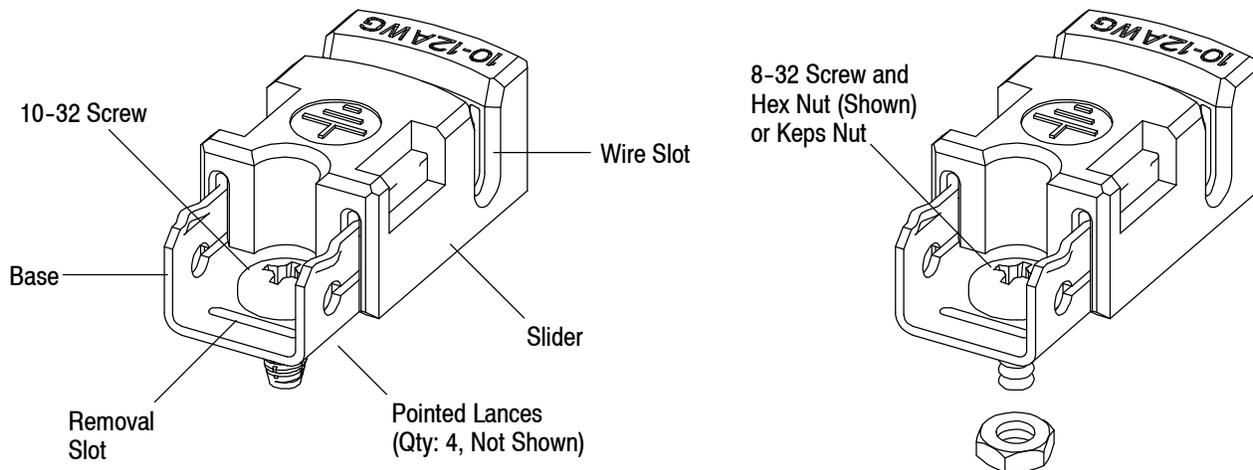


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

- Updated document to corporate requirements
- New logo

2.2. Customer Assistance

Reference Product Base Part Number 1954381 and Product Code G922 are representative of SolKlip Grounding Clip Assembly. Use of these numbers will identify the product line and expedite your inquiries through a service network established to help you obtain product and tooling information. Such information can be obtained through a local TE Representative or, after purchase, by calling PRODUCT INFORMATION at the number at the bottom of this page.

Keps is a trademark.

2.3. Drawings

Customer Drawings for product part numbers are available from the service network. If there is a conflict between the information contained in the Customer Drawings and this specification or with any other technical documentation supplied, call PRODUCT INFORMATION at the number at the bottom of page 1.

2.4. Specifications

Product Specification 108-2312 provides product performance and test information for SolKlip Grounding Clip Assembly.

2.5. Instructional Material

Instruction Sheets (408-series) provide product assembly instructions or tooling setup and operation procedures. Documents available which pertain to this product are:

408-10160 SolKlip Grounding Clip Assemblies 1954381-[]

3. REQUIREMENTS

3.1. Material

The slider is made of polybutylene terephthalate (PBT), UL 94V5. The base is made of copper alloy plated with tin over nickel. Both type of screws and the nut are made of stainless steel.

3.2. Safety

Do not stack product shipping containers so high that the containers buckle or deform.

3.3. Storage

A. Ultraviolet (UV) Light

The slider of the grounding clip is UL rated for UV light and outdoor exposure.

B. Shelf Life

The grounding clips should remain in the shipping containers until ready for use to prevent deformation. The grounding clips should be used on a first in, first out basis to avoid storage contamination that could adversely affect performance.

C. Chemical Exposure

Do not store grounding clips near any chemical listed below as they may cause stress corrosion cracking in the grounding clip.

Alkalies	Ammonia	Citrates	Phosphates	Citrates	Sulfur Compounds
Amines	Carbonates	Nitrites	Sulfur	Nitrites	Tartrates

3.4. Wire Selection and Preparation

The grounding clip accepts solid uninsulated copper wire sizes 10 or 12 AWG. The wire must not be nicked, cut, or scraped. There is no preparation required.

3.5. Spacing

Care must be used to avoid interference between adjacent grounding clips and other components for removal of the grounding clip.

3.6. Installation

A. Mounting Grounding Clip to Frame

The grounding clip must be placed onto the frame so that the screw straddles a pre-drilled hole. Optimized hole size based on frame thickness and recommended screw tightening torque is given in Figure 2.

The head of the screw must be flush with the base and the base must be flush with the frame. For the grounding clip assembly with the 8-32 screw and hex nut or Keps nut, the nut must be tight. Refer to Figure 3 for mounting of the grounding clip.

SCREW SIZE	FRAME		DRILL SIZE	SCREW TIGHTENING TORQUE (Nm [in.-lbs])
	THICKNESS	HOLE SIZE (Diameter)		
10-32	1.3 [.050]	4.09 [.161]	20	2.3+0.5/-0.2 [19+4.4/-1.7]
	2.8 [.109]	4.22 [.166]	19	
	4.7 [.187]	4.37 [.172]	11/64	
	6.4 [.250]	4.50 [.177]	16	
8-32	6.6 [.260] Max	4.09-4.83 [.161-.190]	—	1.7+0.5/-0.2 [15+4.4/-1.7]

Figure 2

Grounding Clip with 10-32 Thread-Cutting Screw

Grounding Clip with 8-32 Screw and Hex Nut or Keps Nut

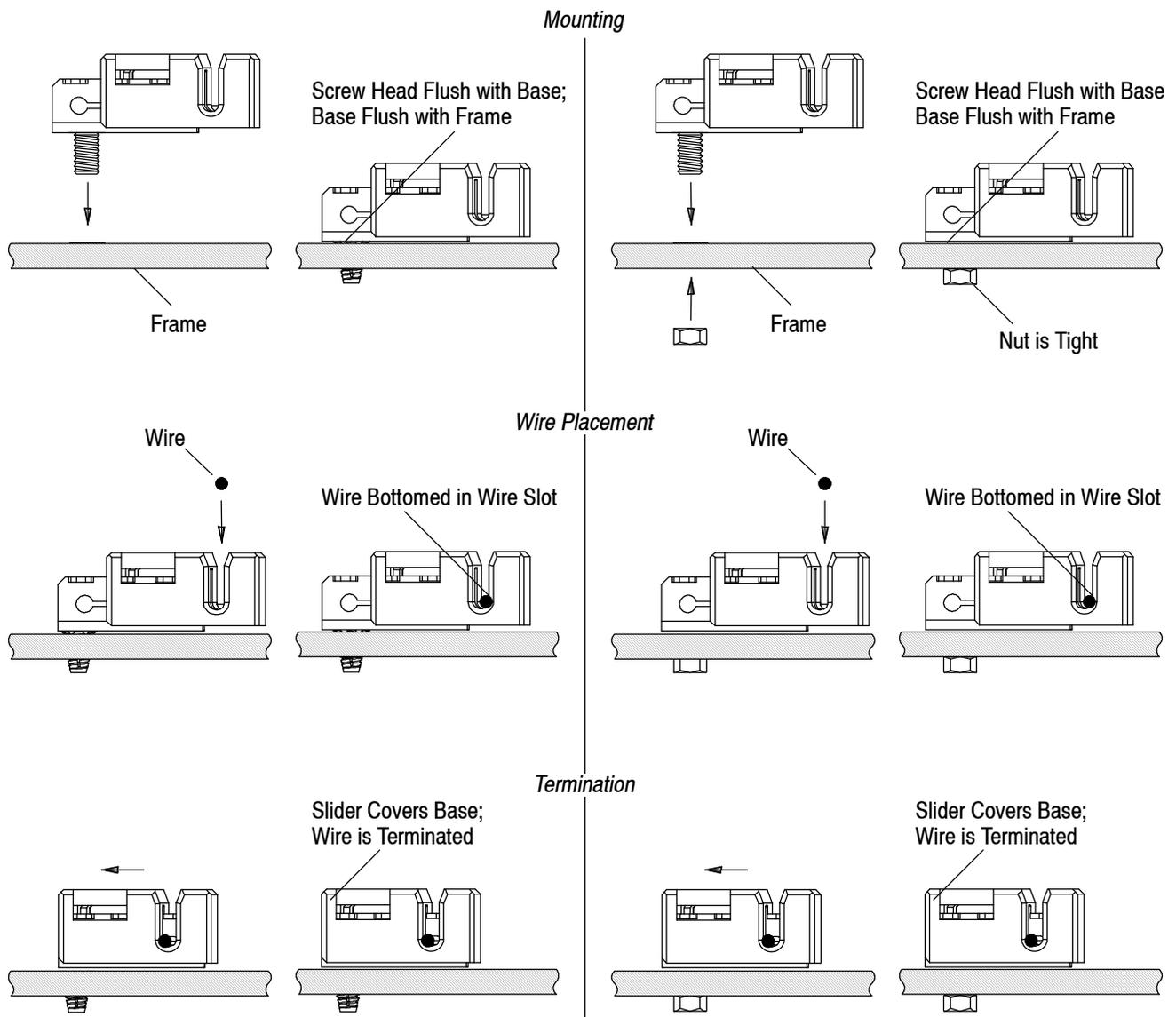


Figure 3

B. Wire Placement

The wire must be bottomed in the wire slot (the wire slot will cause the wire to form a slight curve). Refer to Figure 3.

C. Terminating the Wire

The slider must be engaged (slider covers the base). Refer to Figure 3.

3.7. Removal

The wire can be removed from the grounding clip when the slider is disengaged (slider and screw are exposed). The screw must be loosened before the grounding clip can be removed from the frame.

The grounding clip can be re-used up to 5 times after proper removals (the 8-32 screw and hex nut or Keps nut can be re-used; however, the thread-cutting screw must be replaced). The thread-cutting screw cannot be re-used after removing the grounding clip from the frame.

3.8. Repair

The grounding clip is not repairable. Discard any defective or damaged grounding clips.

4. QUALIFICATION

SolKlip Grounding Clip Assembly is Underwriters Laboratories Inc. (UL) Listed and Listed by UL to Canadian Safety Standards in File E69905.

5. TOOLING

A drill bit is required for drilling the frame holes (specific drill sizes are given in Figure 2).

A No. 2 cross-recessed screwdriver must be used to secure (and remove) the screw of the grounding clip to (and from) the frame. For the grounding clip with the 8-32 screw and hex nut or Keps nut, a $\frac{3}{8}$ -in. wrench must be used to secure (and remove) the nut of the grounding clip to (or from) the frame.

The slider can be engaged manually or channel lock pliers can be used to engage the slider. A flat-head screwdriver must be used to disengage the slider.

6. VISUAL AID

Figure 4 shows a typical application of SolKlip Grounding Clip Assembly. This illustration should be used by production personnel to ensure a correctly applied product. Applications which DO NOT appear correct should be inspected using the information in the preceding pages of this specification and in the instructional material shipped with the product or tooling.

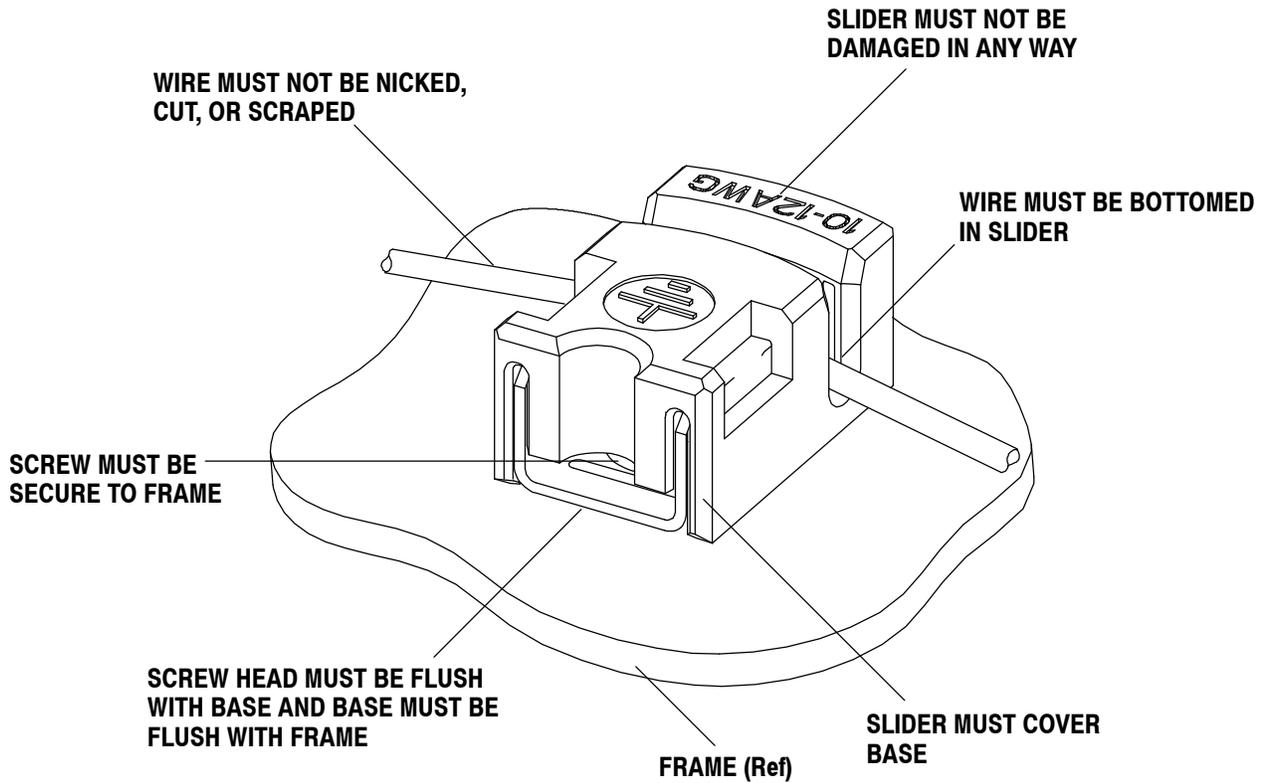


FIGURE 4. VISUAL AID