MAG-MATE* Slim Line Terminals

NOTE

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 [±.005] and angles have a tolerance of ±2°. Figures and illustrations are for identification only and are not drawn to scale.

1. INTRODUCTION

This specification covers the requirements for application of MAG-MATE Slim Line Terminals which are designed for a housing with a terminal cavity depth approximating 10.8 mm [.425 in.]. The terminals are available with two insulation displacement wire slots: one to accommodate various sizes of copper or solid round aluminum magnet wire, the other to accept various sizes of solid or concentric stranded lead wires.

Some terminals are designed for one wire and some are designed for two. Those for two wires require wires of the same material and size. However, in some instances two wires varying by only one wire size can be terminated in the same slot.

There are two locking barbs on each terminal to ensure retention in your housing. The Lead Wire Insulation Displacement Contact (IDC) Slots will accept a wire size range of 33 through 17 AWG magnet wire and 24 through 18 AWG lead wire.

When corresponding with TE Connectivity 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.

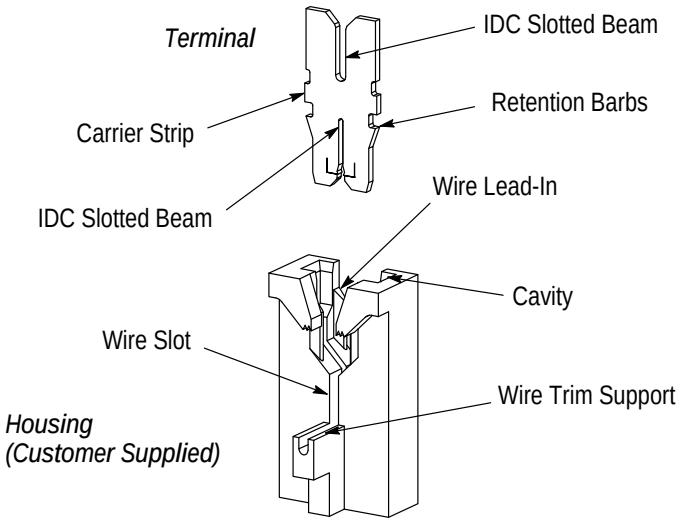


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

Revisions to this application specification include:

- Updated document to corporate requirements
- New logo

2.2. Customer Assistance

Reference Product Base Part Number 63680 and Product Code 1039 are representative numbers of MAG-MATE Slim Line Terminals. Use of these numbers will identify the product line and help you to obtain product and tooling information. Such information can be obtained through a local Representative, by visiting our website at www.te.com, or by calling PRODUCT INFORMATION or the TOOLING ASSISTANCE CENTER at the numbers at the bottom of page 1.

2.3. Drawings

Customer Drawings for specific products are available from the service network. The information contained in Customer Drawings takes priority if there is a conflict with this specification or with any technical documentation supplied by TE.

2.4. Specifications

Product Specification 108-1484 covers test and performance requirements.

2.5. Instructional Material

The following list includes available instruction sheets (408-series), customer manuals (409-series), and hand books (410-series), that provide assembly procedures for product, operation, maintenance and repair of tooling.

Document Number	Document Title
408-3295	Preparing Reel of Contacts For Application Tooling
408-6654	Insertion Tool 274278-1
408-9816	Handling of Reeled Products
409-5844	MAG-MATE Product Terminator
410-5483	MAG-MATE Interconnect System

3. REQUIREMENTS

3.1. Storage

A. Ultraviolet Light

Prolonged exposure to ultraviolet light may deteriorate the chemical composition used in the housings.

B. Shelf Life

The housings and contacts should remain in the shipping containers until ready for use to prevent deformation to the housings or contacts. The housings or contacts should be used on a first in, first out basis to avoid storage contamination that could adversely affect signal transmissions. These products have a shelf life of 1 1/2 years from date of manufacture.

C. Chemical Exposure

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

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

NOTE

Where the above environmental conditions exist, phosphor-bronze contacts are recommended instead of brass if available.

3.2. Special Characteristics

The magnet wire size for the insulation displacement slots of each terminal is provided on the customer drawing. These terminals are designed with insulation displacement slots which will accept solid, round, film-coated copper or aluminum wire with a size range of 33 through 17 AWG. The wire should be straight and free of any sharp bends or twists.

3.3. Terminal Housing

Single or multiple terminal cavity housings can be designed with an exposed or concealed wire end feature and a controlled flash wire slot to help retain the wire in the housing prior to insertion of the terminal. The multiple terminal housings can be designed with or without common cavities.

All housings must have an open end slot on the trim side to allow protrusion of the wire. The protruding wire end and wire support should be trimmed flush to 0.25 mm [.010 in.] on the exposed cavity feature and flush to 0.25 mm [.010 in.] from the support of the concealed wire feature by the terminal insertion machine trim blade. See Figure 2.

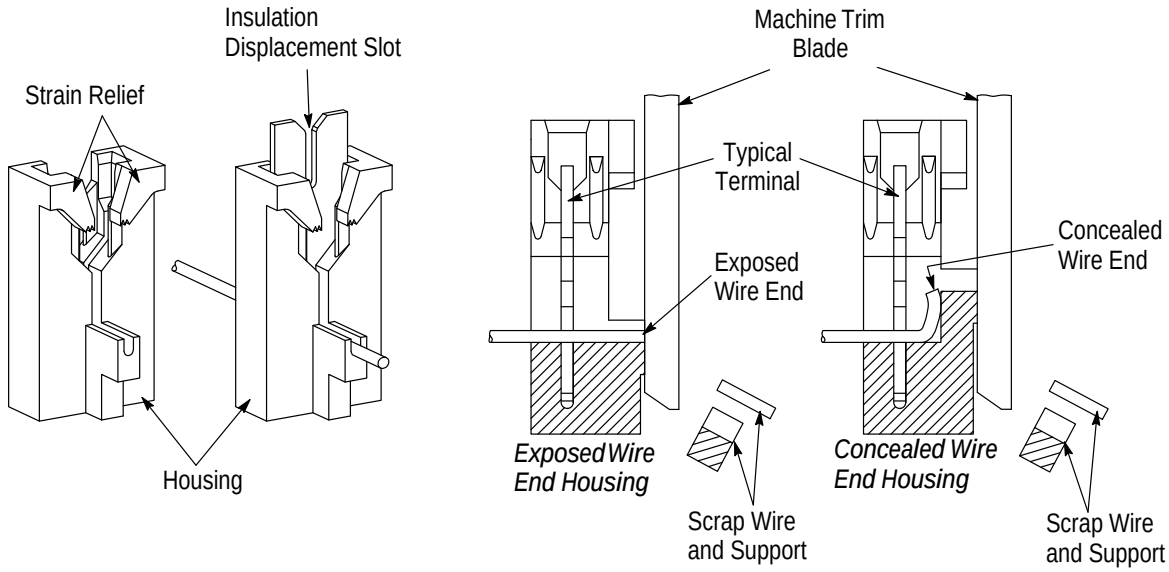


Figure 2

The external design of the housing will depend upon your requirements. Housing cavities that accept MAG-MATE Slim Line terminals manufactured by TE must be in accordance with the requirements specified in Paragraphs 3.2.A, B, C, and D and Figures 3, 4, and 5. Pre-design consultation with TE Engineering is necessary to be sure the cavity configuration will be functional and that it will be compatible with automatic insertion machines.

NOTE

The following general guidelines and notes should apply to MAG-MATE housings:

- Housings must be glass-filled polyester material or approved equivalent.
- The wire trim side of the housing shall have an even thickness to prevent damage to the housing when trimming excess wire.
- In most cases, the housing should have a wire trim support if automatic machine insertion is used. It is not necessary for the housing to have a wire trim support if inserting the wire with a hand insertion tool.
- The wire slot may have a controlled flash to provide retention and stability for a broad range of wire sizes.
- The given dimension is for single wire application. The dimension may change for double wire application; in which case, see the customer drawing of the terminal.
- Controlled flash may be used at wire end.

Notes 1, 5, or 8 are not applicable in Figures 3, 4, or 6.

2 Wall thickness on trim side shall be equal on multi-cavity housings to provide excess magnet wire trim by applicator.

3 Wire trim support shall be on wire trim side only. Applicator will trim off both wire and wire trim support.

4 Coil windings and other assembly components shall not extend above base of wire slot or obstruct proper seating of magnet wire in slot.

6 Slot width to be 0.05-0.10 mm [.002-.004 in.] smaller than diameter of largest wire.

7 Concealed wire end designed for 33-20 AWG magnet wire only.

9 The given strain relief dimensions are for single lead wire applications. The dimension may change for double wire applications.

A. Housing with Exposed Wire End

This housing design has a wire support that is even with the base of the wire slot to permit the wire end to be exposed after the wire is trimned. See Figure 3.

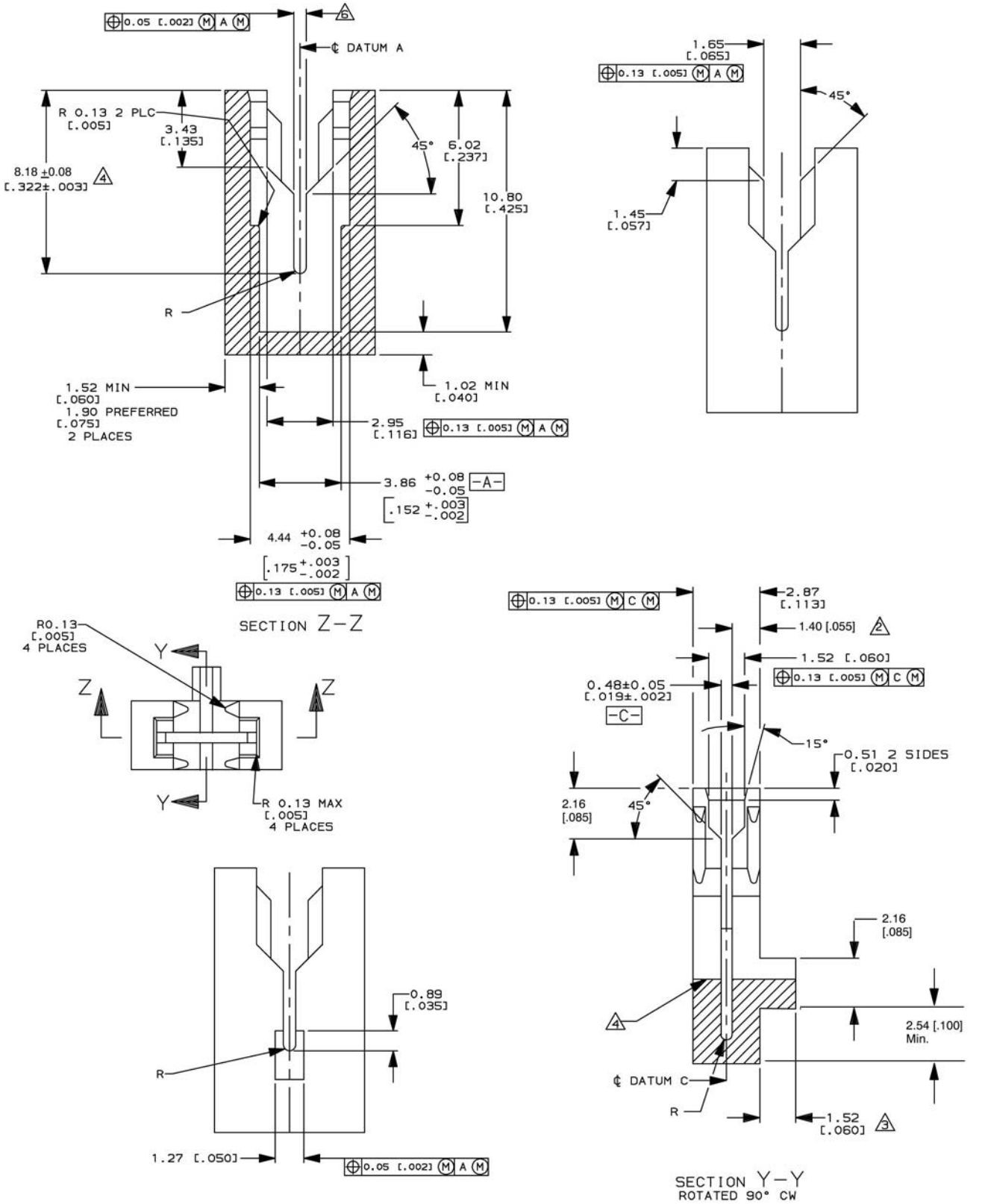


Figure 3

B. Housing with Concealed Wire End

This housing design has a wire support above the base of the wire slot that allows the wire to be cut before the terminal is fully seated. As the terminal is seated, it pulls the wire end down and conceals it in the pocket behind the wire support. All the dimensions given for the exposed cavity end apply in Figure 3, except for those that appear in Figure 4.

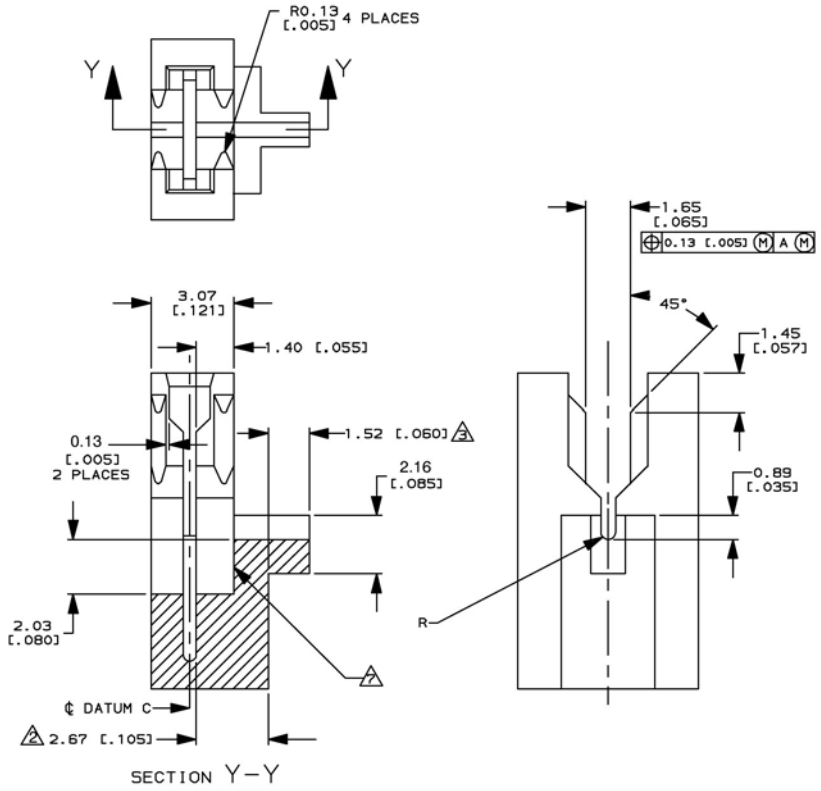


Figure 4

C. Common Multiple Cavity Housings

Multiple cavity housings can be made with exposed or concealed wire ends, and wire slots with or without controlled flash as defined by the dimensions in Figures 3 and 4. They can also be made to accommodate common terminals by using a shorter wall between cavities. See Figure 5.

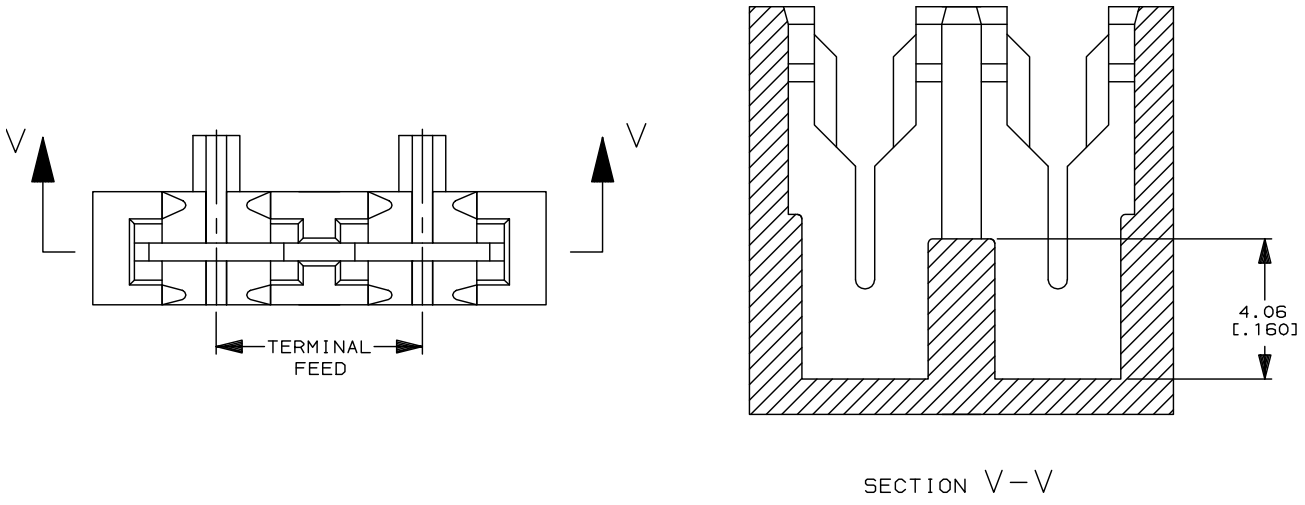


Figure 5

D. Housing with Strain Relief

This housing is designed with a lead wire strain relief to provide retention of the lead wire after insertion into the terminal. If retention requirements dictate 88.96N [20 lbs] retention, use basic cavity design with the addition of a cover to meet those requirements. See Figure 6.

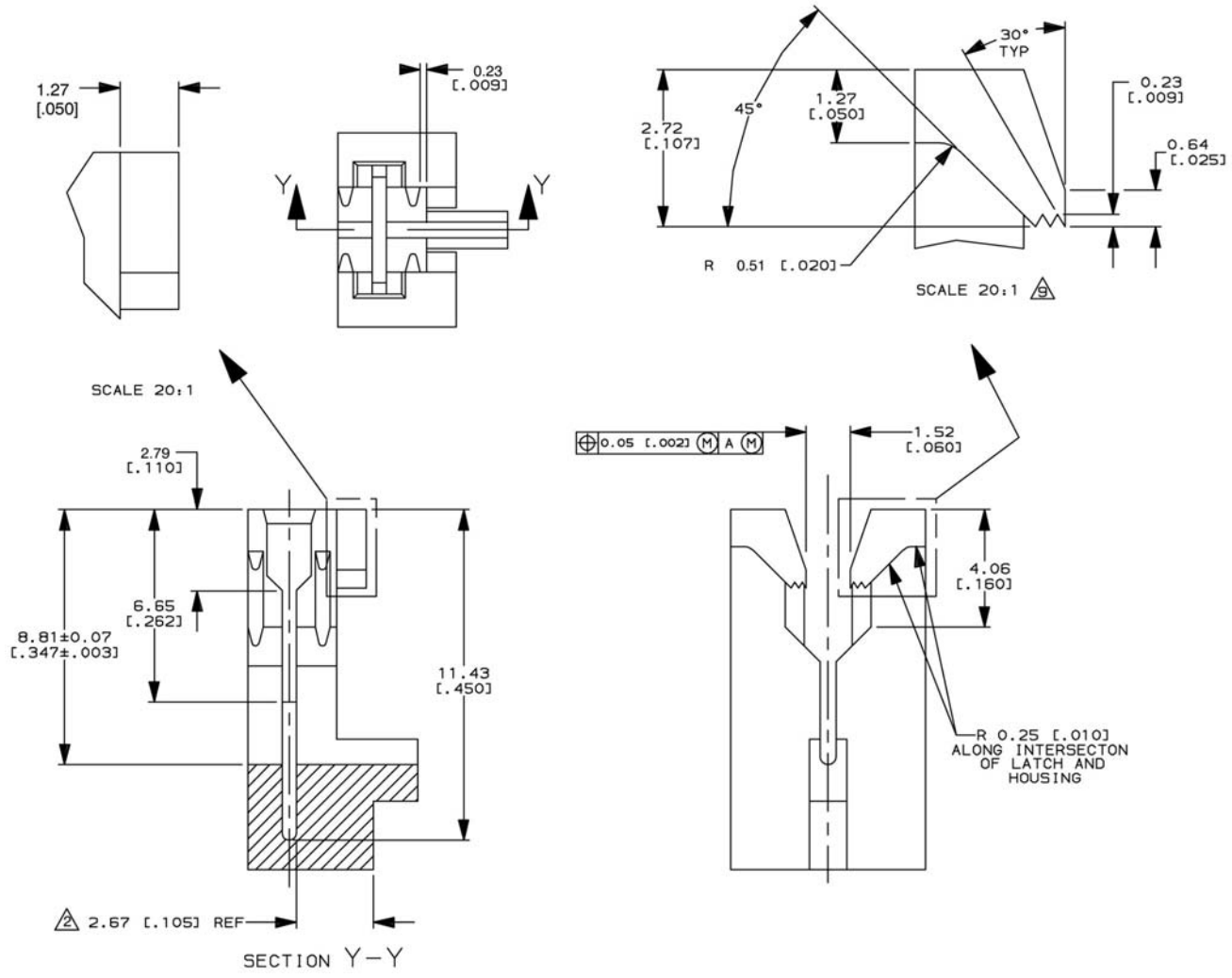


Figure 6

3.4. Terminating Magnet Wire

A. Wire Placement

The magnet wire from the field assembly, coil, or bobbin must be pre-laced in the plastic cavity prior to terminal insertion. The wire must be pre-laced into the slots of the cavity so that it contacts the bottom of the slots on the end walls of the cavity pockets. The wire may rebound from the bottom of the pockets but must remain within the narrow slots of the cavity; it must not rest in the lead-in area of the slots, or outside the cavity opening. A small loop of wire must exist between the winding and the terminal housing. This is necessary to prevent stretching the magnet wire during insertion. See Figure 7.

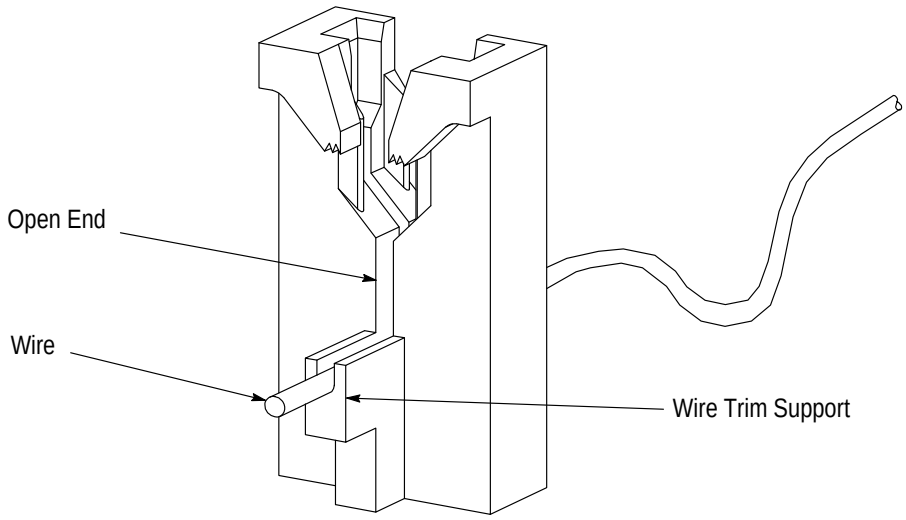


Figure 7

NOTE

There must be sufficient slack in the wire to allow any necessary movement of the components within your system.

B. Cutoff Tab and Burr Allowances

Cutoff tabs are the portions of the carrier strip that remain after the terminal is cut from the carrier strip. They should not exceed 0.13 mm [.005 in.] total on the terminal. The burr which remains at the bottom of the cut edge on the tabs should not exceed 0.13 mm [.005 in.]. See Figure 8.

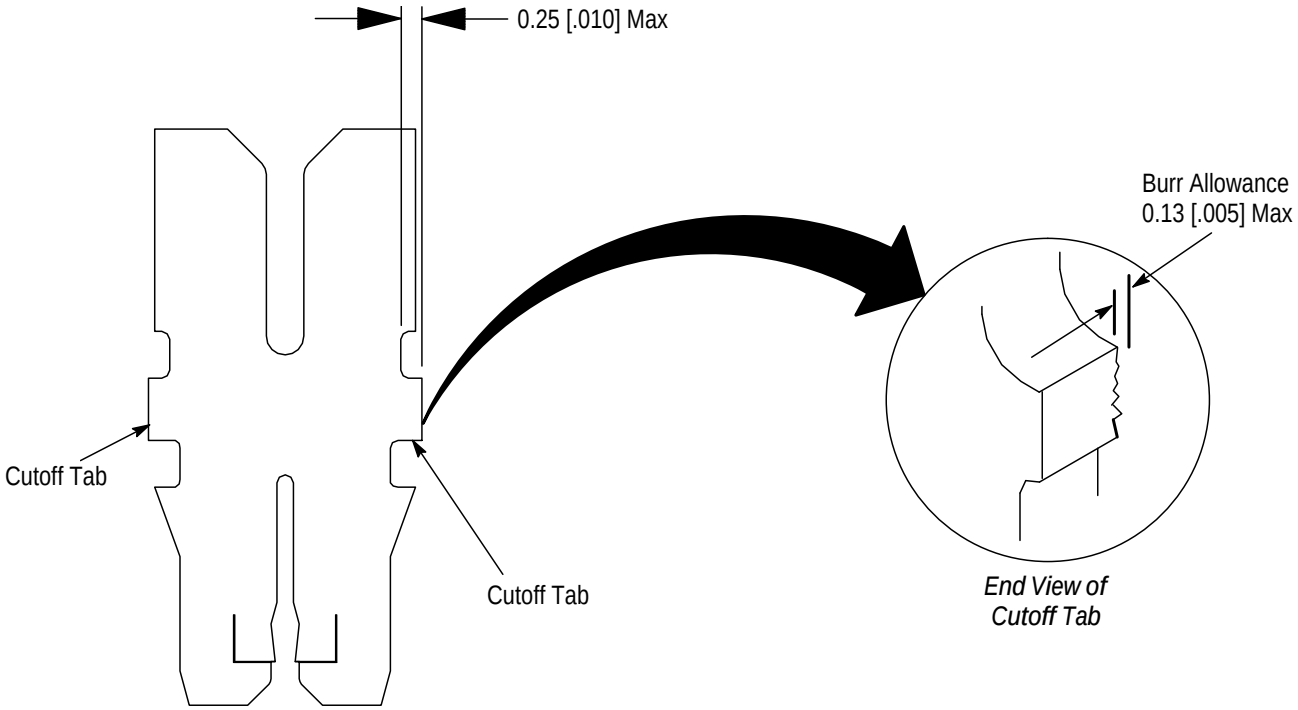
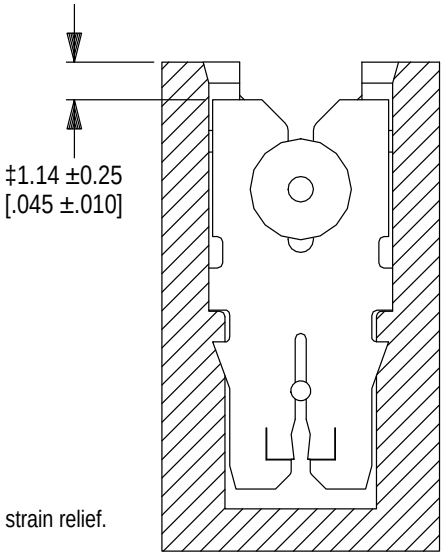


Figure 8

C. Terminal Insertion Depth

The terminal shall be inserted into the housing until the top of the terminal is within the dimensions specified in Figure 9.



‡ *NOTE:* Add 0.64 [.025] for housings using lead wire strain relief.

Figure 9

D. Terminated Wire Housing

The wire shall be in contact with the bottom of the slots of the housing walls as indicated in Figure 10.

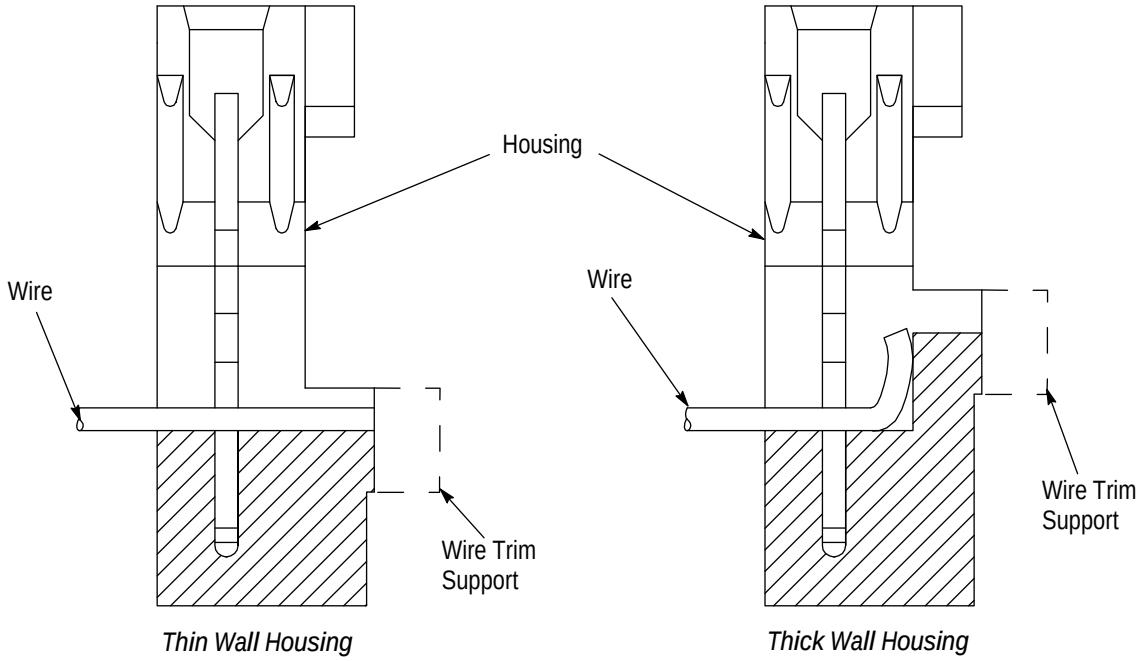


Figure 10

3.5. Lead Wire

The lead wire shall meet the following requirements when inserted into the top of a terminal by hand tool, semi-automatic hand tool, or automatic machine. Terminate the wire according to the instructions provided with the applicable tooling.

1. Hand tool insertion requires hand trimming by customer, thus no cutoff length can be specified.

2. Semi-automatic hand tool may have an integral shear blade which would have a negative shear clearance with respect to outer cavity wall.

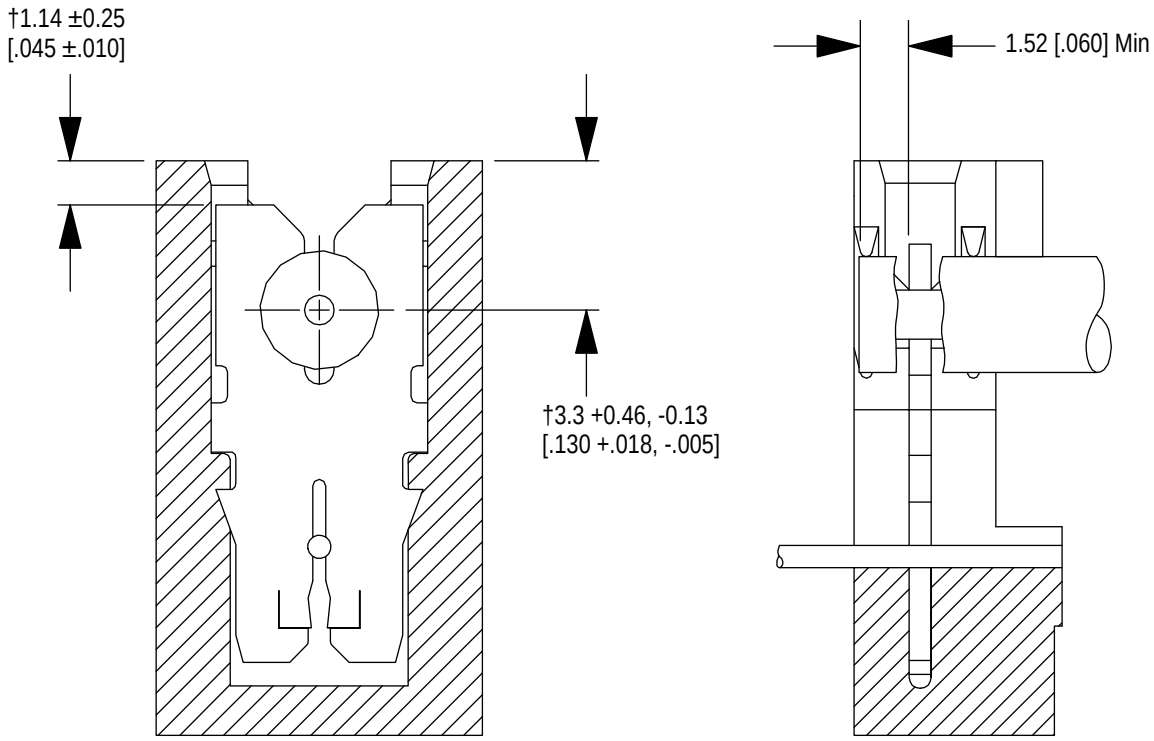
3. Automatic machine applications shall have a negative shear clearance against the outer wall, unless the housing is set within a recess. In such applications, the cutoff shall be mutually agreed upon by both TE and the customer.

Specific wire and insulation ranges relative to the products covered in this specification are 24 through 18 AWG tin-plated solid, concentric fused stranded, and concentric stranded wire with standard PVC thermoplastic insulation having a maximum insulation outside diameter of 2.54 mm [.100 in.] and a minimum 0.76 mm [.030 in.] insulation wall thickness. Contact the Product Information number listed at the bottom of page 1 for other wire sizes, styles, and insulation materials.

3.6. Inspection of Insulation Displacement Contact Terminations

A. Lead Wire Termination

After termination, the lead wire shall meet the requirements specified in Figure 11.



† *NOTE:* Add 0.64 [.025] for housings using lead wire strain relief.

Figure 11

B. Contact Condition

There shall be no evidence of physical damage or distortion to any portion of the contact after wire termination.

C. Housing Condition

Scraping of plastic on the inside wall of the housing cavity is permissible provided that there are no cracks, breaks, or other visible damage to the housing due to wire terminations.

D. Wire Strands

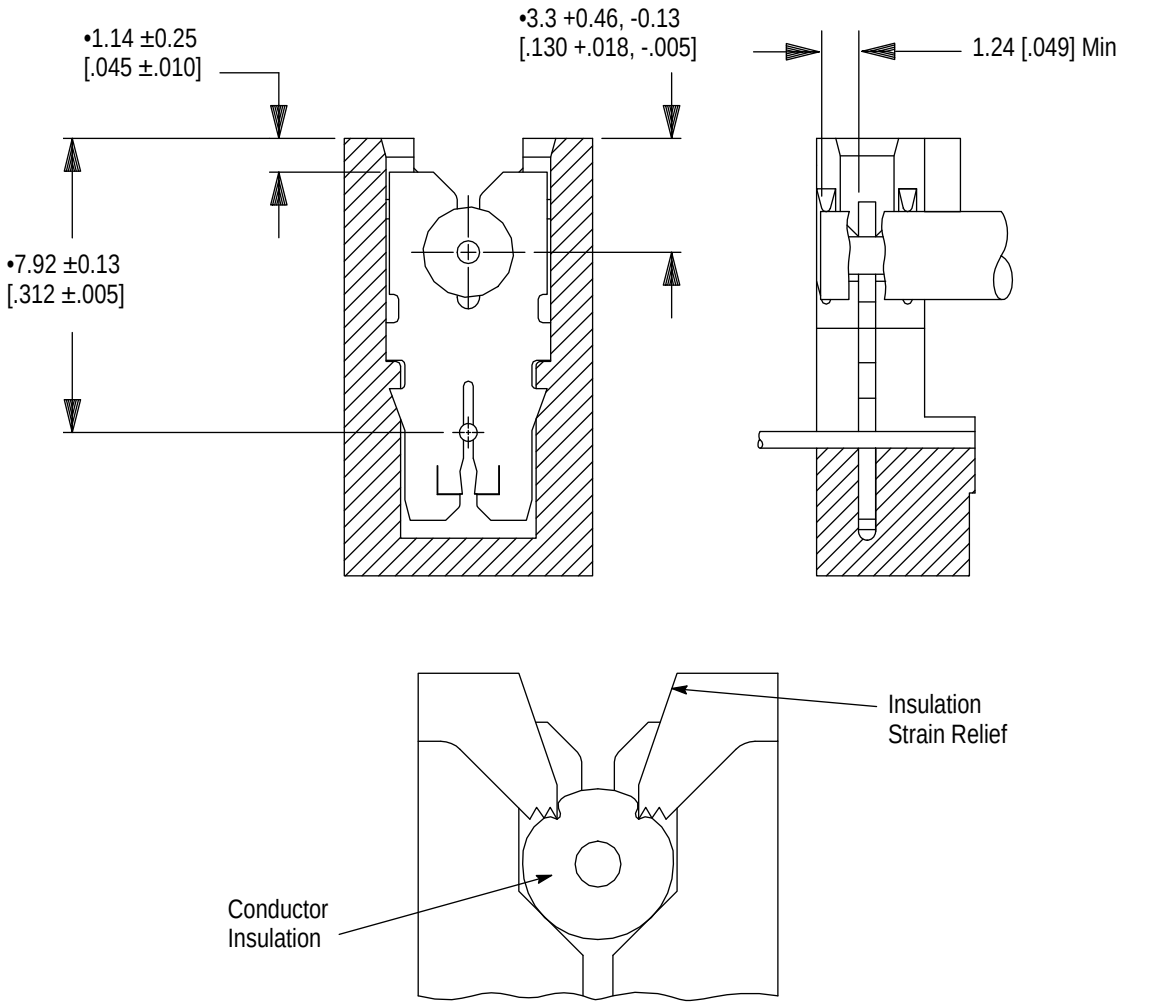
There shall be no broken strands in the conductor after termination.

E. Conductor Exposure

Exposed conductors shall not exceed the dimensions specified in Figure 12 after termination.

F. Conductor Insulation

The conductor insulation shall be contained within the confines of the insulation strain relief as indicated in Figure 12.



• *NOTE:* Add 0.64 [.025] for housings using lead wire strain relief.

Figure 12

4. QUALIFICATIONS

MAG-MATE Slim Line Terminals have not been submitted to Underwriters Laboratories Inc. (UL), or CSA International for evaluation and testing.

5. TOOLING

Various tools are available for your production needs. Typical tools are pictured in Figure 13.

Instructions for the use of Insertion Tool 274278-1, designed to insert contacts crimped to fragile wires, is covered in Instruction Sheet 408-6654.

Customer Manual 409-5844 provides information on MAG-MATE Product Terminator Machines. Since each machine is unique for customer requirements, contact the Tooling Assistance Center number located at the bottom of page 1 for specific machine information.

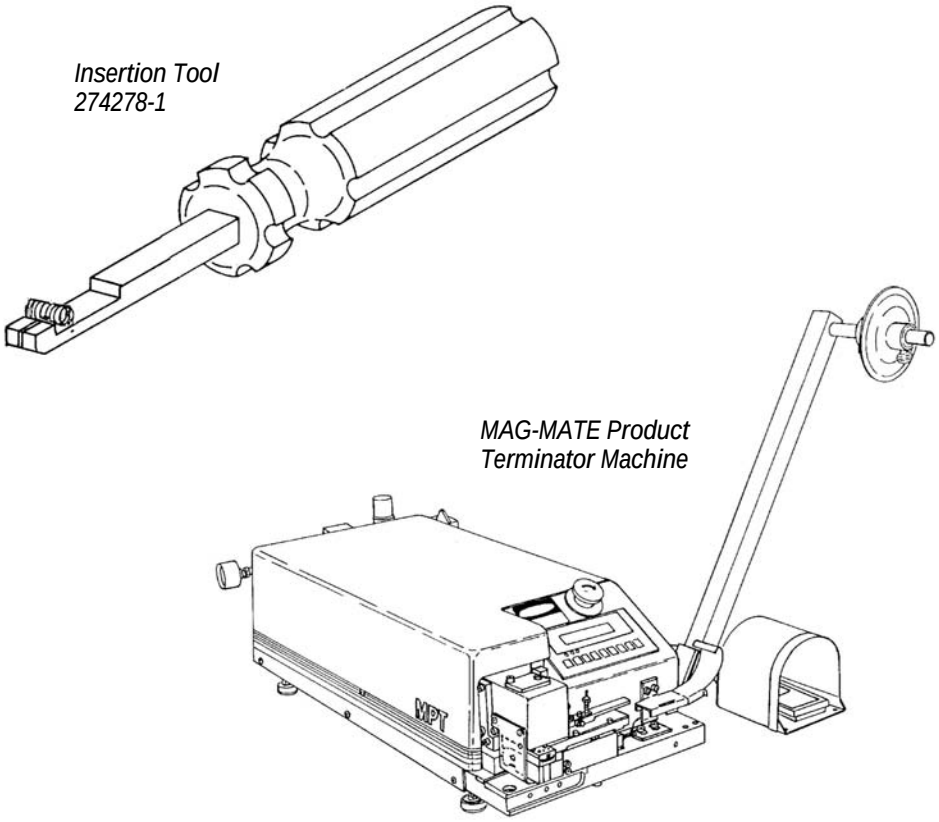


Figure 13

6. VISUAL AID

The illustration below shows a typical application of this product. 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.

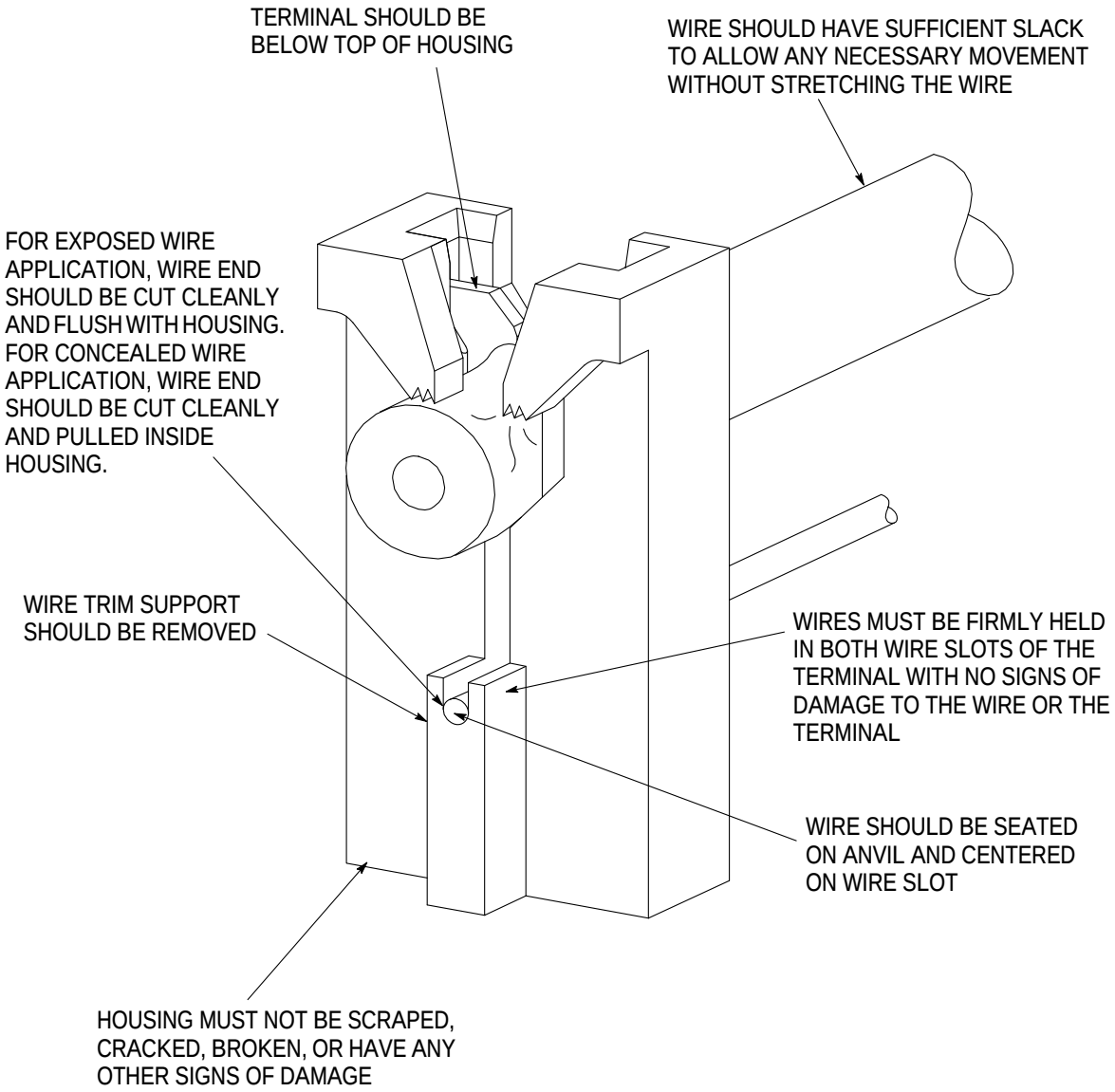


FIGURE 14. VISUAL AID