



**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  $\pm 0.13$  [ $\pm .005$ ] and angles have a tolerance of  $\pm 2^\circ$ . Figures and illustrations are for identification only and are not drawn to scale.

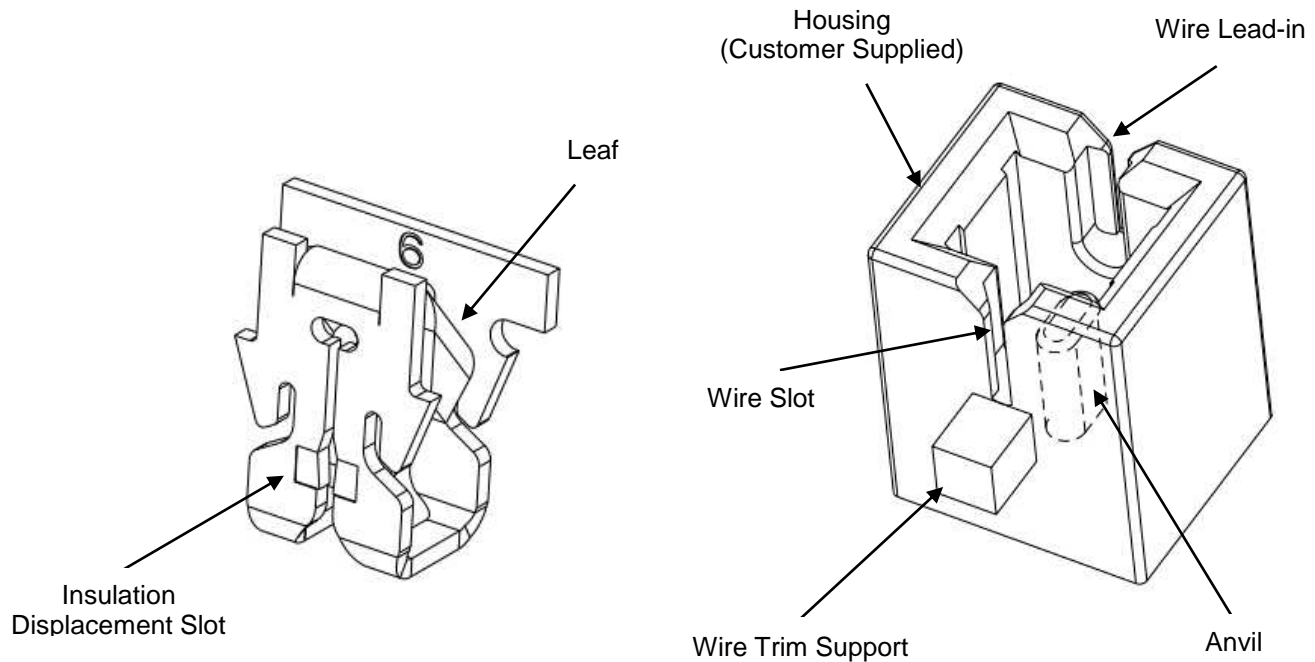
## 1. INTRODUCTION

This specification covers the requirements for application of MAG-MATE\* Series 200 Box Terminals which are designed for a housing with a terminal cavity depth approximating 5.08 mm [.200 inch]. The terminals are insulation displacement type with wire slot beams. They are designed to accept a wire size range of 0.25mm through 0.81mm solid, round copper magnet wire or 0.32mm through 0.91mm solid, round aluminum magnet wire. Terminals are available with wide width (2.54 mm [.100 in]) Maximum spacing between the wire slot beams. Some terminals are designed for one wire, and some are designed for two wires. Those for two wires require wires of the same material and size.

There is a front and back slot for each wire, and four locking barbs on each terminal to ensure retention in your housing. Current terminal interfaces available for Poke-In tab.

A special varnish resistant coating is available for application on terminal interfaces which are exposed to varnishing processes. This coating prevents polyester type varnishes from adhering to contact interface surfaces and causing electrical discontinuities. Compatibility with non-polyester type varnishes should be evaluated by the user.

Basic terms and features of this product are provided in Figure 1.



**Figure 1**

## 2. REFERENCE MATERIAL

### 2.1. Revision Summary

- Initial release

### 2.2. Customer Assistance

Reference Product Base Part Number 2238249 and Product Code 1039 are representative of MAG-MATE Series 200 Terminals. Use of these numbers will identify the product line and help you to obtain product and tooling information when visiting [www.te.com](http://www.te.com) or calling the number at the bottom of page 1.

### 2.3. Drawings

Customer drawings for product part numbers are available from [www.te.com](http://www.te.com). Information contained in the customer drawing takes priority.

### 2.4. Specifications

Product Specification [108-2012](#) provides product performance and test request.

### 2.5. Instructional Material

Instruction sheets (408-series) provide product assembly instructions or tooling setup and operation procedures and customer manuals (409-series) provide machine setup and operating procedures. Instructional material that pertains to this product are:

3-2234445-4 Insertion tips for Arbor press

## 3. REQUIREMENTS

### 3.1. Safety

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

### 3.2. Storage

#### A. Storage Temperature and Humidity

Products should be stored at room temperature and low ambient humidity. The temperature and humidity should be in the range as per DIN IEC68 (15-35°C, 25-75% relative humidity). Products should not be exposed to extreme temperatures, intense humidity or damaging mediums (acid or base atmospheres, aggressive agents, etc.)

#### B. Shelf Life

Overall shelf life of our products are timebound due to the effects of environmental aging, as long as the product is stored, unopened in its original TE packaging as follows:

Non Solderable Products: **3 Years**

Solderable Products intended for use with Copper Magnet Wire: **6 Months**

Solderable Products intended for use with Aluminum Magnet Wire: **100 Days**

#### C. Ultraviolet Light

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

#### D. Chemical Exposure

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

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

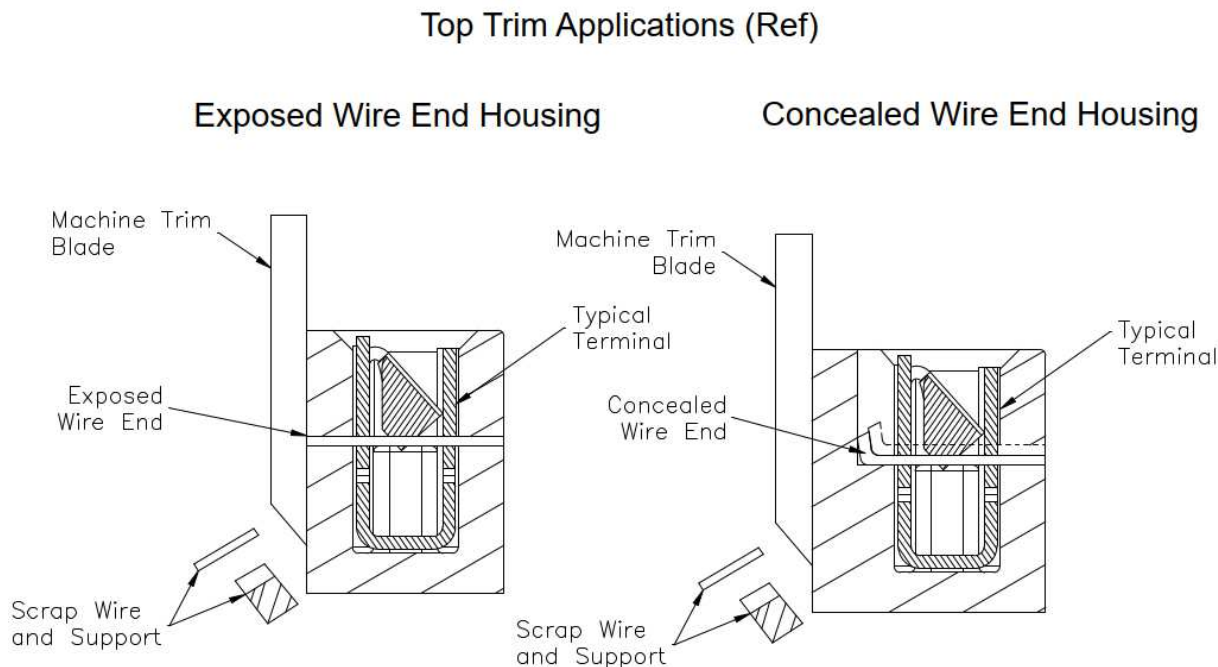

**NOTE**

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

### 3.3. Terminal Housing

Single or multiple terminal cavity housings can be designed with a concealed or exposed 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 with the housing by the terminal insertion machine trim blade. See Figure 2.



**Figure 2**

The external design of the housing will depend on your requirements. Internal cavity designs must conform to the dimensions provided in Figure 3 and Figure . 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.

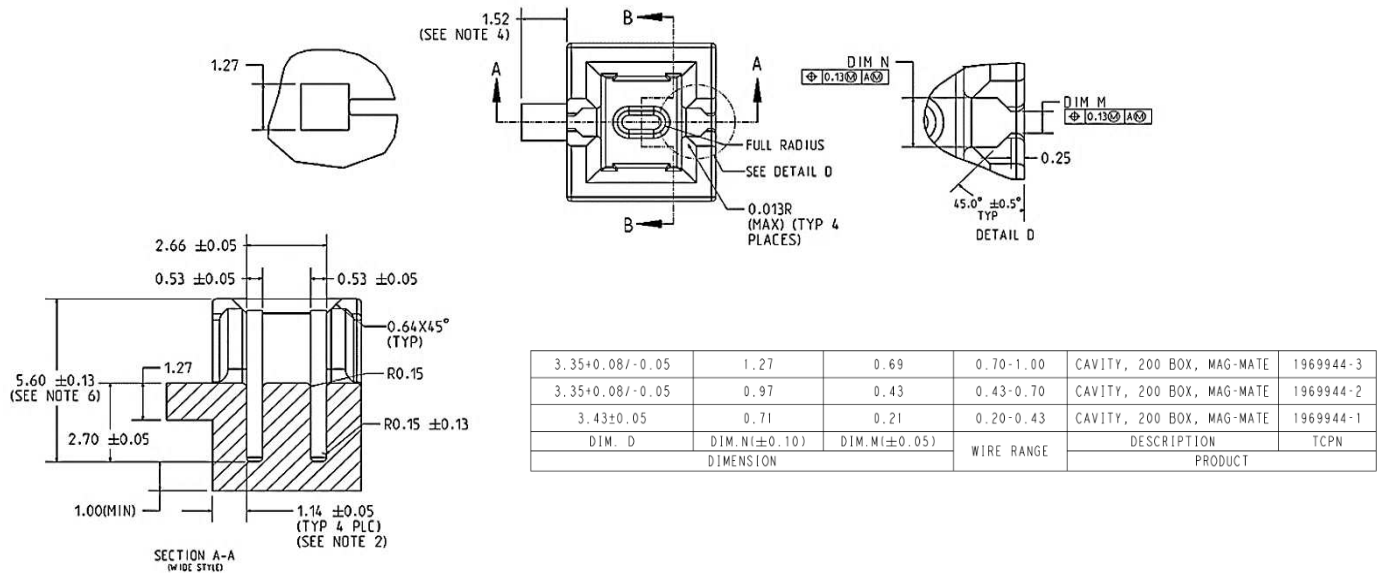
The following Notes apply to the housing shown in Figure 3:


**NOTE**

- (1) Housings must be glass-filled polyester material or approved equivalent.
- (2) The wire trim side of the housing shall have an even thickness to prevent damage to the housing when trimming excess wire.
- (3) Coil windings and other components must not extend above the wire slot or otherwise obstruct seating of the terminal or wire.
- (4) The housing must 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.
- (5) The wire slot may have a controlled flash to provide retention and stability for a broad range of wire sizes.
- (6) For poke-in wire applications: depth of beam slots may be increased to conform with electrical spacing requirements, and strain relief for wire is recommended.
- (7) Features that include draft must maintain the dimension and tolerance over the entire length of that feature.

## A. Housing with Exposed Wire End

This housing design has a wire support that is even with the anvil to permit the wire end to be exposed after the wire is trimmed. Updated drawing picture as 1969944 drawing.



USE 1.14mm [.045in.] (THIN WALL) FOR BOTTOM-TRIM TAB TERMINALS AND ALL TOP-TRIM TERMINALS.  
USE 2.16 [.085in.] (THICK WALL) FOR ALL BOTTOM-TRIM TERMINALS EXCEPT THOSE WITH A TAB.

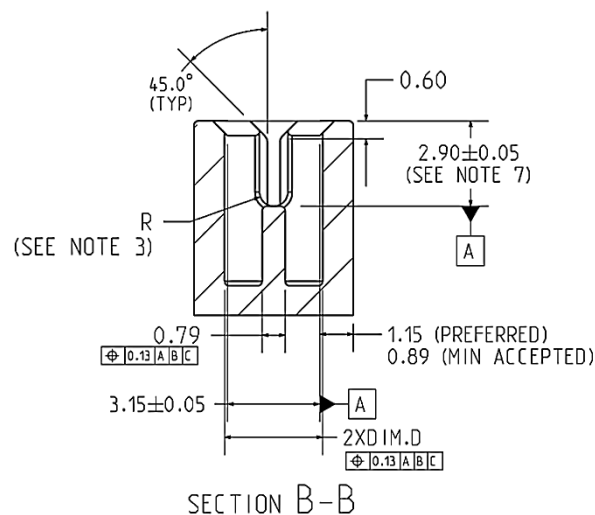


Figure 3

## B. 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 Figure 3. They can also be made to accommodate common terminals by using a shorter wall between cavities. See Figure

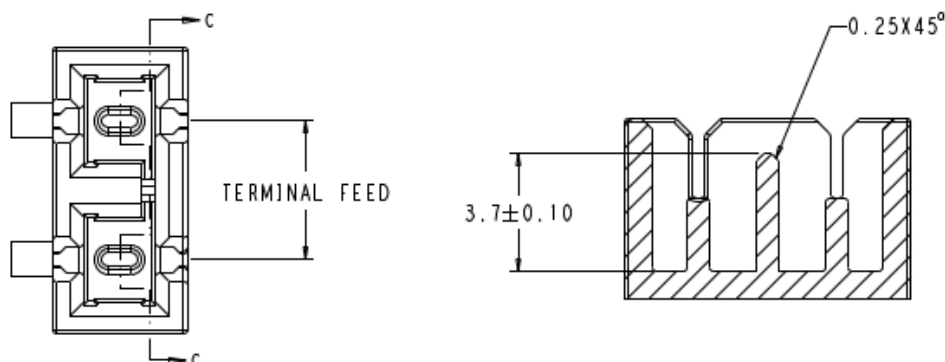


Figure 4

## 3.4. Wire Selection

Only magnet wire may be terminated in the insulation displacement wire slot beam terminals. The magnet wire size for each terminal is provided on the Customer Drawing.

### A. Magnet Wire

MAG-MATE\* terminals are designed with insulation displacement slots for solid, round, film-coated copper or aluminum wire with a wire size range of 30 through 19 AWG. The magnet wire should be straight and free of any sharp bends or twists.

### B. Poke-In Tab

Poke-in mating with  $0.46 \pm 0.05\text{mm}$  or  $0.50 \pm 0.05\text{mm}$  thickness,  $2.92 \pm 0.15\text{mm}$  width poke-in tab.



#### NOTE

Only standard width terminals are designed for poke-in wire applications.



#### CAUTION

Do NOT pick up or carry assembled units by the poke-in lead wires. This can overstress or damage the poke-in interface connection. Strain relief is recommended for poke-in lead wires.

## 3.5. Terminating Magnet Wire

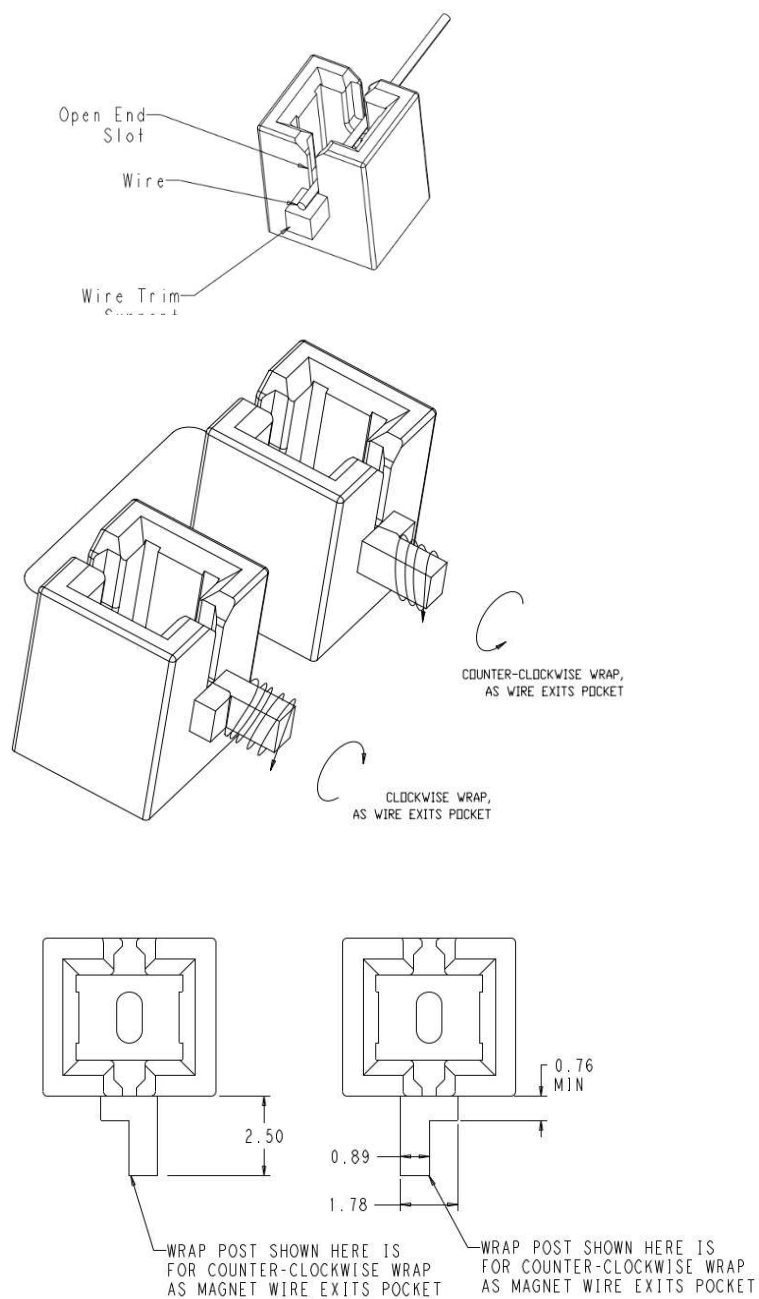
### A. Wire Placement

The magnet wires 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 top of the anvil which protrudes from the middle of the cavity floor. The wire may rebound from the anvil 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. Sufficient slack must exist between the winding and the terminal housing. This is necessary to prevent stretching the magnet wire during terminal insertion. See Figure .



#### NOTE

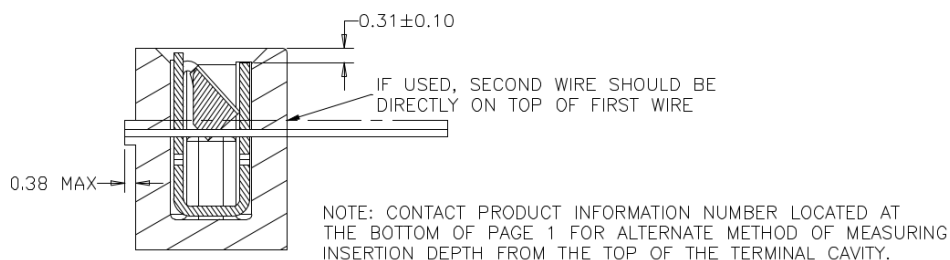
There must be sufficient slack in the wire to allow any necessary movement of the components within your system. The wire must wrap to tie-off post at least 3 cycles if wire diameter smaller than 0.32mm.



**Figure 5**

## B. Terminal Insertion Depth

The terminal shall be inserted into the housing until the top of terminal barrel are within  $0.31 \pm 0.10$  mm specified in **Figure 9**. Alternate methods for measuring insertion depth from the top of the terminal cavity can be obtained by contacting the Product Information number located at the bottom of Page 1.

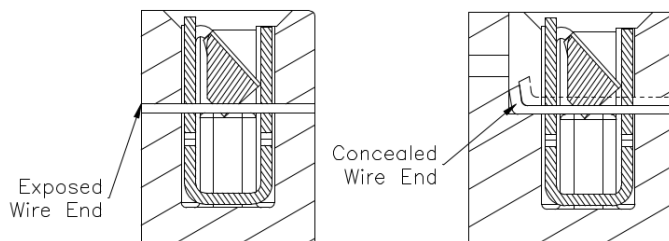


**Figure 6**

## C. Terminated Wire Position

The wire shall be in contact with the anvil in the terminal cavity of the housing as indicated in **Figure 7**.

THIN WALL HOUSING  
(FOR BOTTOM-TRIM TAB TERMINALS  
AND ALL TOP-TRIM TERMINATIONS)



**Figure 7**

## 3.6. Repair/Replacement



### CAUTION

*Damaged product should not be used. If a damaged terminal is evident, it should be cut from the wire and replaced with a new one. Terminals should not be re-terminated.*

## 4. TOOLING

Tooling part numbers and instructional material packaged with the tooling are given in **Figure .**



### NOTE

*TE Tool Engineers have designed machines for a variety of application requirements. For assistance in setting up prototype and production line equipment, contact TE Tool Engineering through your local TE Representative or call the Product Information Center number at the bottom of page 1.*

### 4.1. Crimp-Type Wire Applications

Applicators have been designed to terminate crimp-type terminals in manual and automatic wire feed power sources. Applicators 466569-2 and 567136-1 are recommended for use in the manual wire feed AMP-O-ELECTRIC Machine 354500-1.



### NOTE

*Each applicator is shipped with a metal identification tag attached. DO NOT remove this tag or disregard the information on it. Also, a packet of associated paperwork is included in each applicator shipment. Read this information before using the applicator; then it should be stored in a clean, dry area near the applicator for future reference. Some changes may have to be made to the applicators to run in all related power units. Contact the Tooling Assistance Center at the number on the bottom of page 1 for specific changes.*

### 4.2. Magnet Wire Applications

Loose-piece terminals can be inserted with Arbor press 3-2234445-4. Strip terminals can be inserted with a variety of tools and machines designed for your specific application. Since the exterior design of the housing must meet the requirements of the equipment in which the housing is going to be used, tooling must be designed for each specific application.

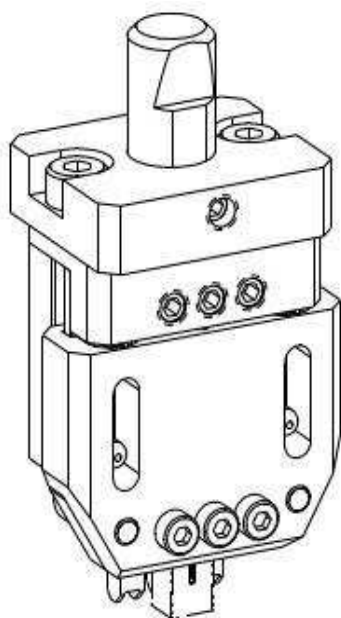


Figure 8



## 5. 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.

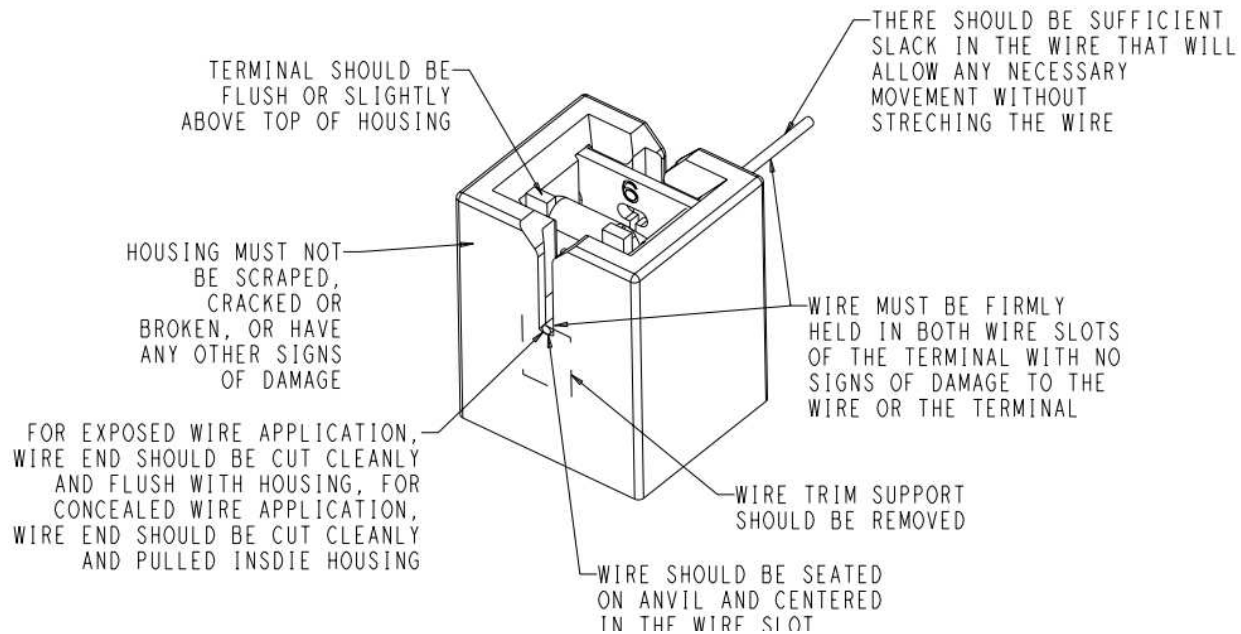


Figure 9: Visual Aid

## 6. CUT OFF TAB

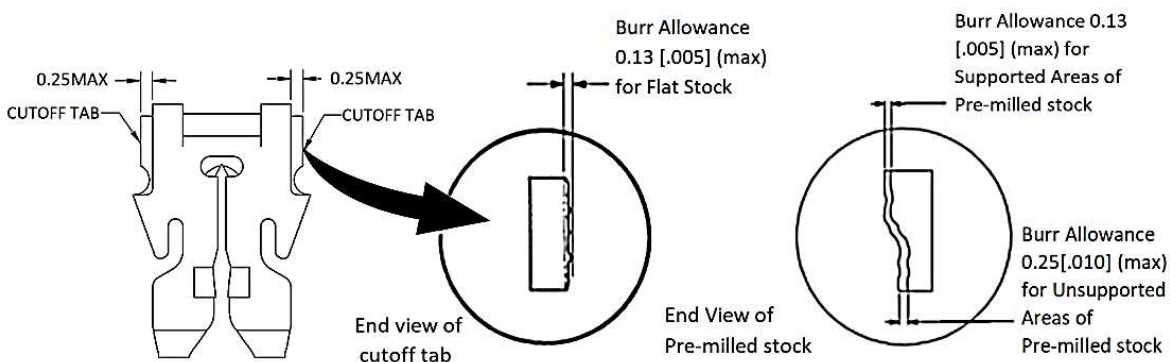


Figure 10