

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 SIAMEZE Standard and Fine Range Terminals. These terminals have an Insulation Displacement Contact (IDC) moving beam or compliant beam at one end for terminating solid round copper magnet wire in sizes ranging from 0.16 mm diameter [34 AWG] through 1.02 mm [18 AWG]; and from 0.13 mm diameter [36 AWG] through 0.36 mm [27 AWG]. Numerous interface types are available for your production requirements: lead wire, receptacle, pc board posts, 1.5 mm posts and FASTON\* Tabs with 2.8, 4.75, 6.35 mm [.110, .187, .250 in.] widths.

A varnish resistant coating is available on tab and post terminals that will be exposed to varnishing processes prior to mating with receptacles. This coating prevents polyester type varnishes from adhering and causing electrical discontinuities. Compatibility with non-polyester varnishes should be evaluated by the user.

TE Engineering can provide assistance in selecting the most compatible wire, terminal, and terminating machines. Requests for assistance should be made as early as possible in the production planning stage.

When corresponding with TE Personnel, use the terminology provided on this specification to help facilitate your inquiry for information. Basic terms and features of this IDC system are provided in Figure 1.

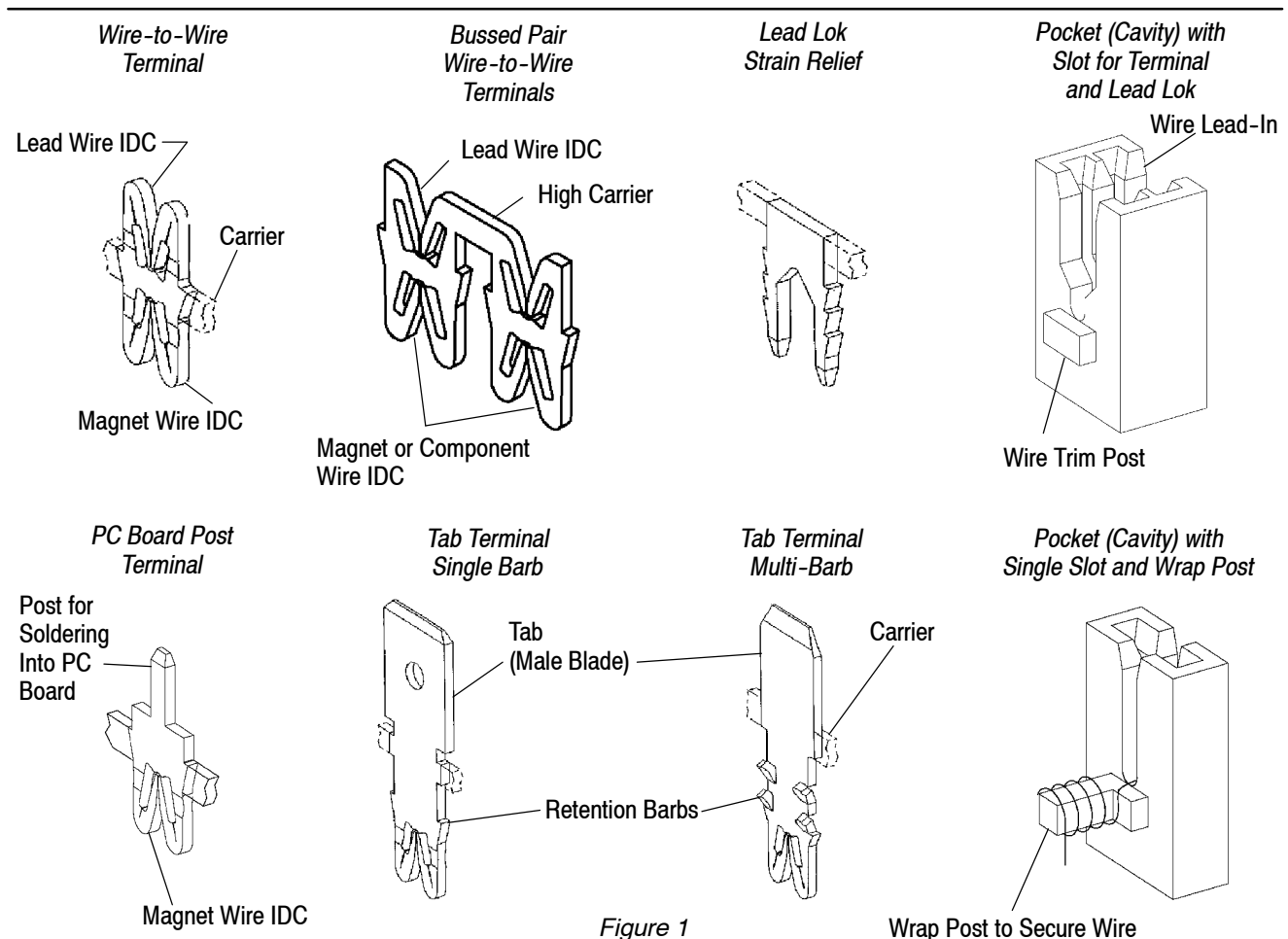


Figure 1

## 2. REFERENCE MATERIAL

### 2.1. Revision Summary

- Updated document to corporate requirements

### 2.2. Customer Assistance

Reference Base Product Part Number 1601000 and Product Code H360 are representative numbers of the SIAMEZE Standard and Fine Range Terminals. 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 the Tooling Assistance Center or Product Information Center number 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 other technical documentation supplied by TE.

### 2.4. Specifications

Design Objectives 108-2085 and 108-2244 are available to provide expected product performance and test information for the SIAMEZE Standard and Fine Range Terminals.

### 2.5. Instructional Material

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

<u>Document Number</u>	<u>Document Title</u>
408-3295	Preparing Reel of Contacts For Application Tooling
408-7162	Adjustment and Repair of CERTI-LOK* Taper Pin Insertion Tools
408-8629	SIAMEZE Standard and Fine Range Terminals Part Number/Insertion Figure Guide
408-8947	Entry-Level Magnet-Wire Terminator (EMT) Assembly
408-9816	Handling of Reeled Products
409-5886	Modular Insertion System (MIS) Post/Tab Insertion Head
409-10035	MPT-5 Terminator Machine Assembly for MAG-MATE*, SIAMEZE, and Lead Lok Terminals

## 3. REQUIREMENTS

### 3.1. Storage

#### A. Ultraviolet Light

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

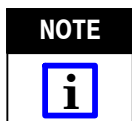
#### B. Shelf Life

The terminals should remain in the shipping containers until ready for use to prevent damage. The products should be used on a first in, first out basis to avoid storage contamination that could adversely affect signal transmissions.

#### C. Chemical Exposure

Do not store terminals near any chemicals listed below, as they may cause stress corrosion cracking in the terminals.

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



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

### 3.2. Wire Selection

The IDC connects to one of three copper magnet wire ranges:

Standard Range – a single wire 0.16 mm [34 AWG] through 1.02 mm [18 AWG]

Fine Range – a single wire 0.13 mm [36 AWG] through 0.36 mm [27 AWG]

Bifilar Range – one or two wires of the same diameter (size as specified on the customer drawing)

The magnet wire size for each terminal and the lead wire size (where applicable) is listed on the customer drawing.

### 3.3. Cavity Design

Performance of the SIAMEZE terminal is dependent on insertion into a housing pocket (cavity) that is designed to TE guidelines. The customer drawing for each terminal indicated the drawing number for the applicable cavity guideline. When connecting to magnet wire 0.25 mm [30 AWG] and smaller, a wrap post designed in accordance with drawing No. 1601447 must be used to secure the wire during insertion of the terminal.

Drawings of the final design must be supplied to TE Engineering for review and approval and for compatibility of insertion equipment. The following items pertain to all applicable cavity designs.

- Recommended material is 30% glass filled nylon or TE Engineering approved equivalent.
- Wall thickness on trim side must be equal on multi-cavity housings to provide wire trim by automatic insertion machine.
- Wire trim support must be on the wire trim side only. The MPT will trim off both wire and wire trim support. Wire trim support is not necessary if the magnet wire is hand trimmed. Consult TE Engineering if trimmed wire end must be concealed within the cavity.
- Coil windings and other assembly components must not extend above the base of the wire slot or obstruct proper seating of the magnet wire in the slot.
- Draft angles must be held within the feature tolerances.
- Slot width may be  $0.08 \pm 0.03$  mm [ $.003 \pm .001$  in.] smaller than the largest magnet wire outside diameter dimension being terminated provided it does not obstruct seating of the wire.

### 3.4. Bussed (Commoned) Terminals (Figure 2)

Two or three High Carry SIAMEZE Terminals (e.g. 1601046, 1601125, etc.) may be commoned together using the upper carrier between them to connect multiple magnet wire together, or a magnet wire to a component wire (e.g. a thermal protector or a diode). This requires the center-to-center distance of the cavities to be the same as the center-to-center distance of the terminals. In addition, the depth of the wire slot in each pocket must be optimized for the specific wire diameter. For components with insulated or stranded wire, consult TE Engineering.

TE supplies the terminals in loose bussed pairs or triples (refer to the specific customer drawing for the terminal dimensions), or the application system can be designed to separate the continuous reeled terminals into the required configuration.

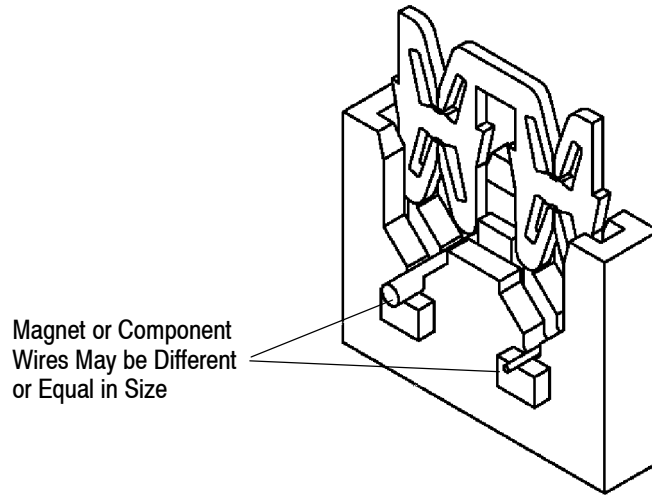


Figure 2

**3.5. Wire Placement (Pre-Termination)**

The magnet wire must be laced into the bottom of the cavity slot prior to terminal insertion. Wire larger than 0.25 mm [30 AWG] may rebound at the base of the slot, but must remain within the slot. The magnet wire must not rest in the lead-in area of the slot or outside the cavity opening. Wire that is 0.25 mm [30 AWG] and smaller, must be secured around a wrap post and rest on the bottom of the slot without any slack.

**3.6. Terminal Insertion Depth** (Figures 3 through 15)

Refer to Instruction Sheet 408-8629 for the application reference figure for each terminal. For terminals not shown in that document, contact the PRODUCT INFORMATION number at the bottom of page 1.

**SIAMEZE Wire-to-Wire with Lead Lok Application**

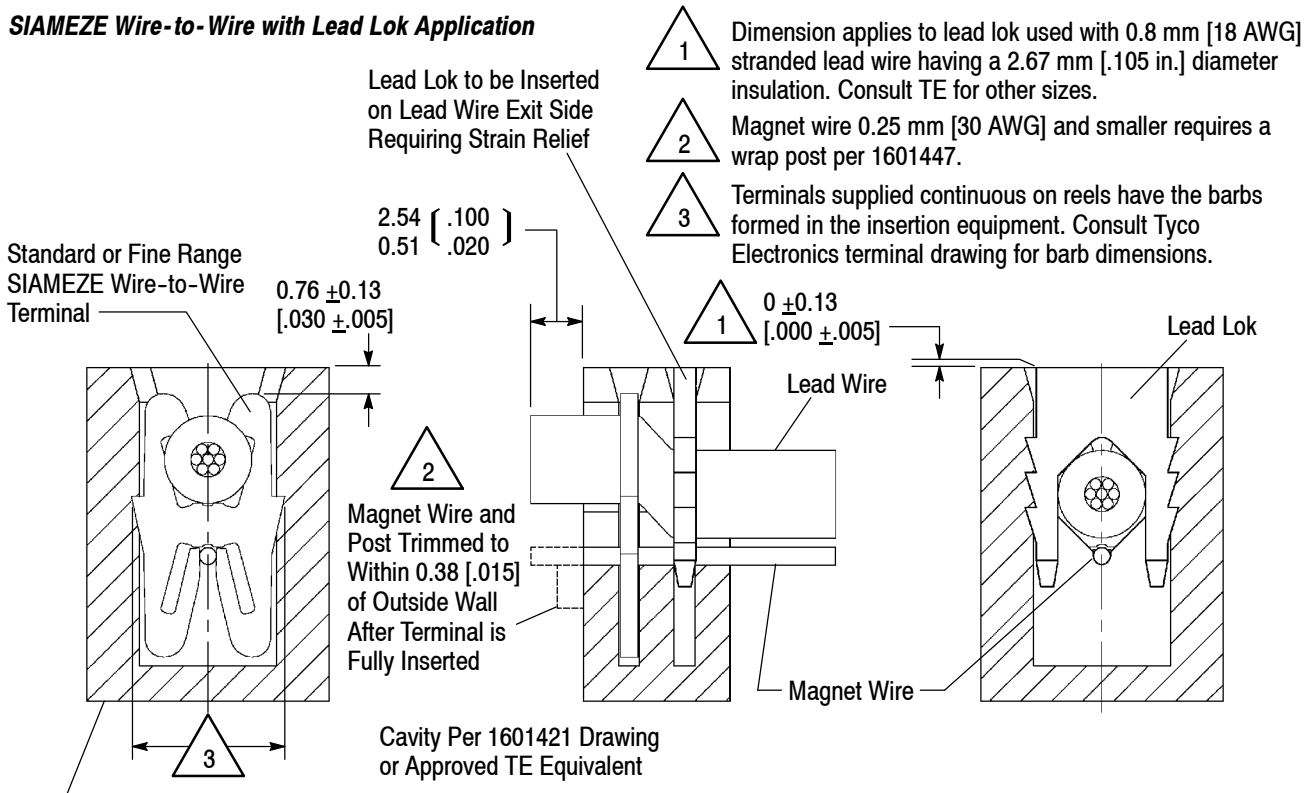
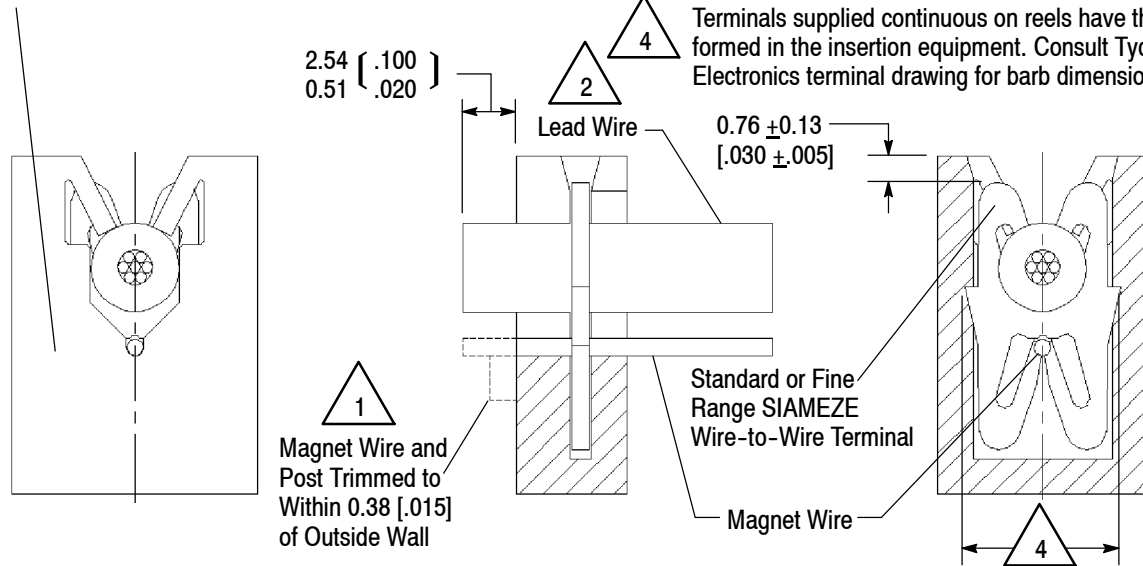


Figure 3

**SIAMEZE Wire-to-Wire Built-In Strain Relief Application**

 Cavity Per 1601462 Drawing  
or Approved TE Equivalent


- 1 Magnet wire 0.25 mm [30 AWG] and smaller requires a wrap post per 1601447.
- 2 Lead wire shown is 0.8 mm [18 AWG] with 2.67 mm [.105 in.] diameter insulation.
3. Expected retention is 20 N [5 lbs] vertical direction only to resist in-process handling. For applications requiring higher retention, lead lok 1601140 should be considered.
4. Terminals supplied continuous on reels have the barbs formed in the insertion equipment. Consult Tyco Electronics terminal drawing for barb dimensions.

Figure 4

**SIAMEZE PC Board Terminal Application**

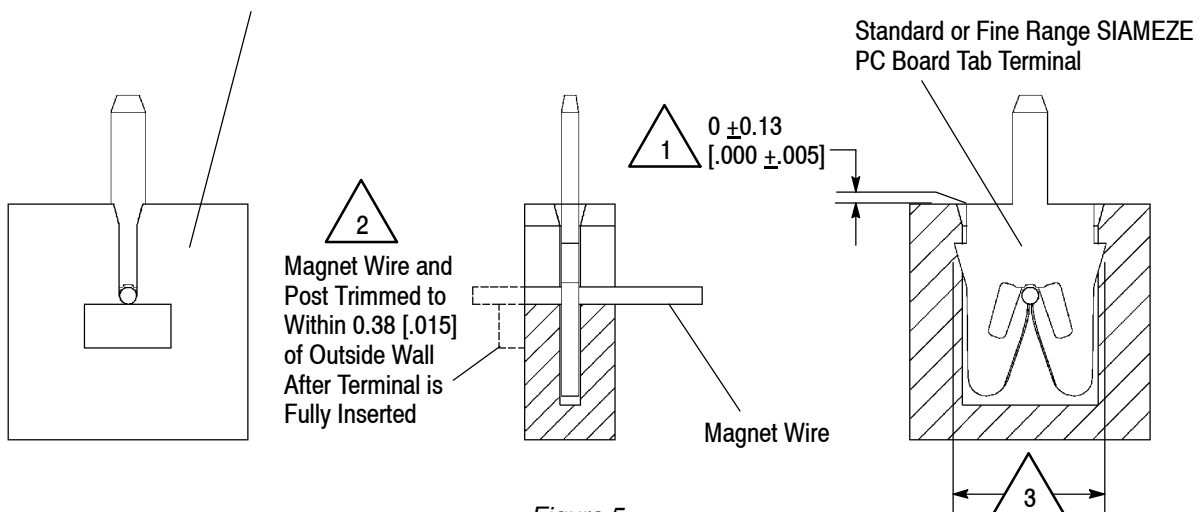
 Cavity Per 1601424 Drawing  
or Approved TE Equivalent


Figure 5

- 1 Top of shoulder on terminal to coincide with top of pocket to within  $\pm 0.13$  mm [.005 in.].
- 2 Magnet wire 0.25 mm [30 AWG] and smaller requires a wrap post per 1601447.
- 3 Terminals supplied continuous on reels have the barbs formed in the insertion equipment. Consult Tyco Electronics terminal drawing for barb dimensions.

**SIAMEZE Tab Terminal Application**

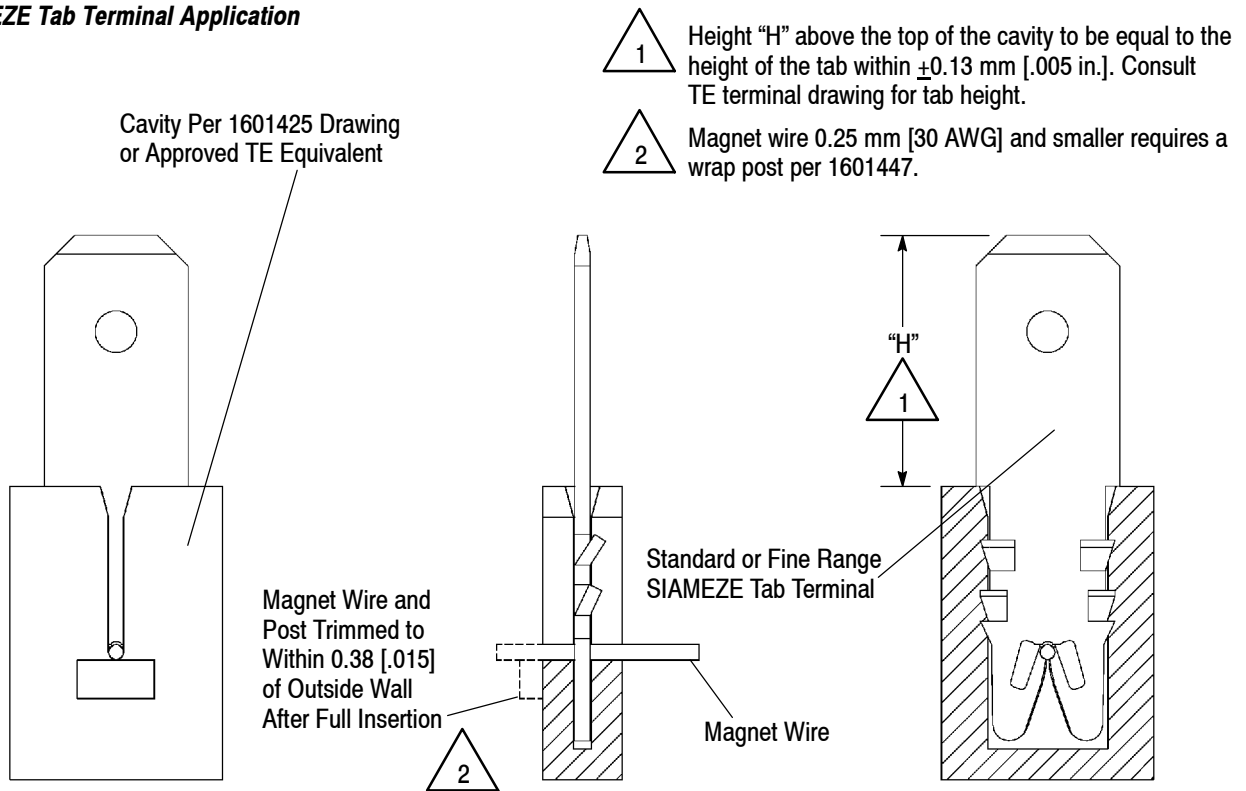


Figure 6

**SIAMEZE Tab Terminal Application**

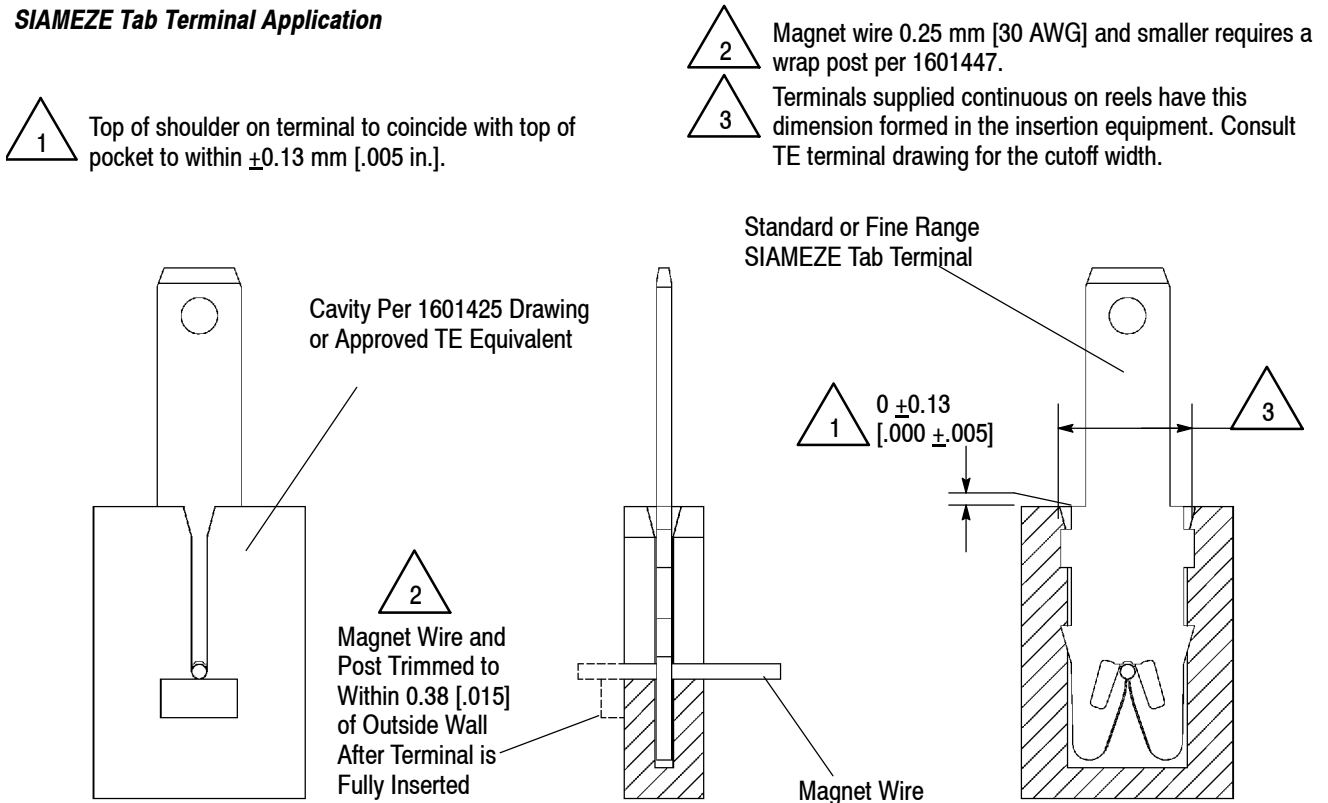


Figure 7

**SIAMEZE Tab Terminal Application**

Cavity Per 1601425 Drawing or Approved TE Equivalent

- △ 1 Magnet wire 0.25 mm [30 AWG] and smaller requires a wrap post per 1601447.
- △ 2 Terminals supplied continuous on reels have this dimension formed in the insertion equipment. Consult TE terminal drawing for the cutoff width.

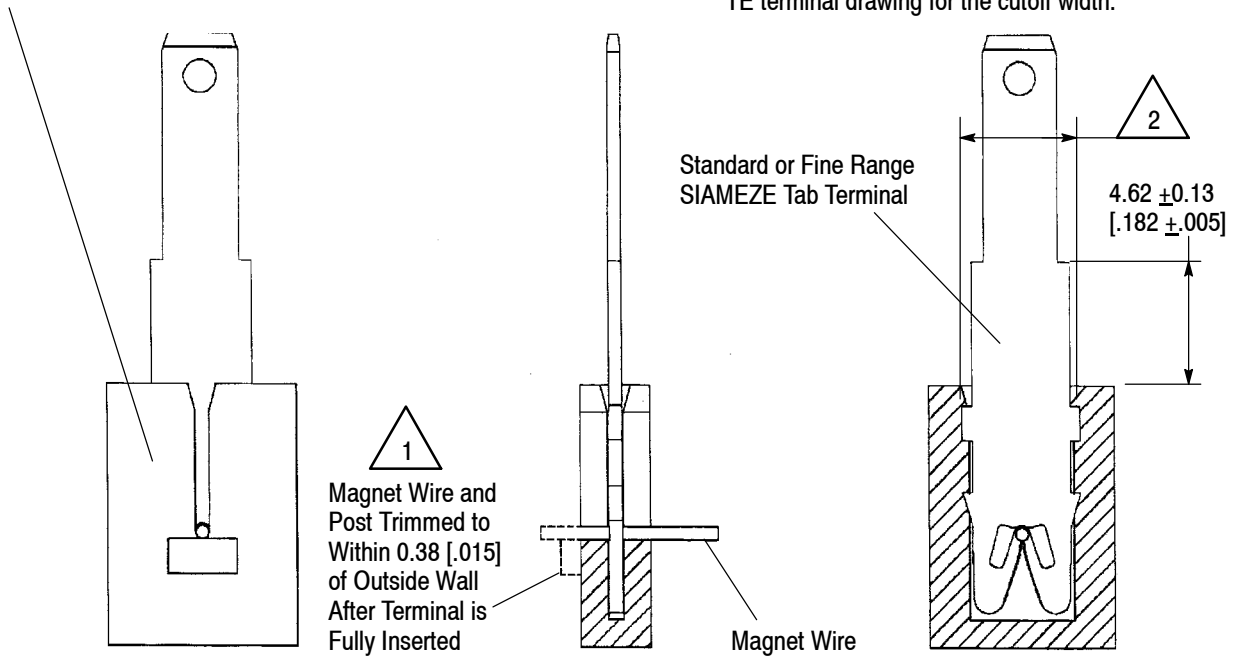


Figure 8

**SIAMEZE Tab Terminal Application**

Cavity Per 1601425 Drawing or Approved TE Equivalent

- △ 1 Magnet wire 0.25 mm [30 AWG] and smaller requires a wrap post per 1601447.
- △ 2 Terminals supplied continuous on reels have this dimension formed in the insertion equipment. Consult TE terminal drawing for the cutoff width.

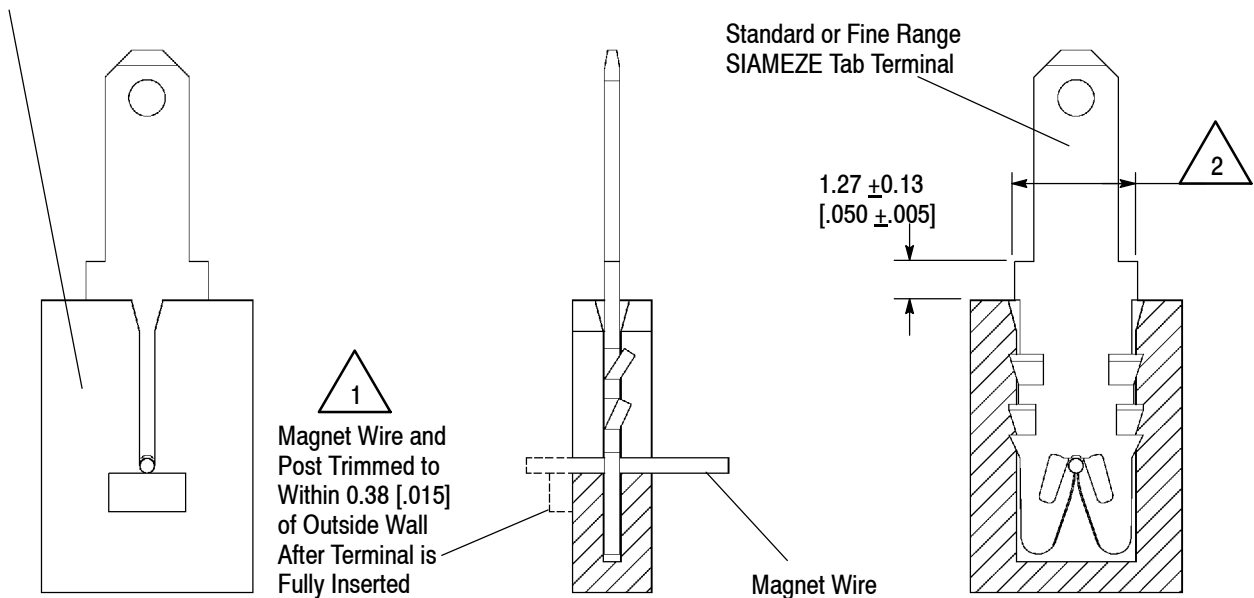


Figure 9

**SIAMEZE Narrow Blade Terminal Application**

Cavity Per 1601431 Drawing or Approved TE Equivalent

- 1 Magnet wire 0.25 mm [30 AWG] and smaller requires a wrap post per 1601447.
- 2 Terminals supplied continuous on reels have this dimension formed in the insertion equipment. Consult TE terminal drawing for the cutoff width.

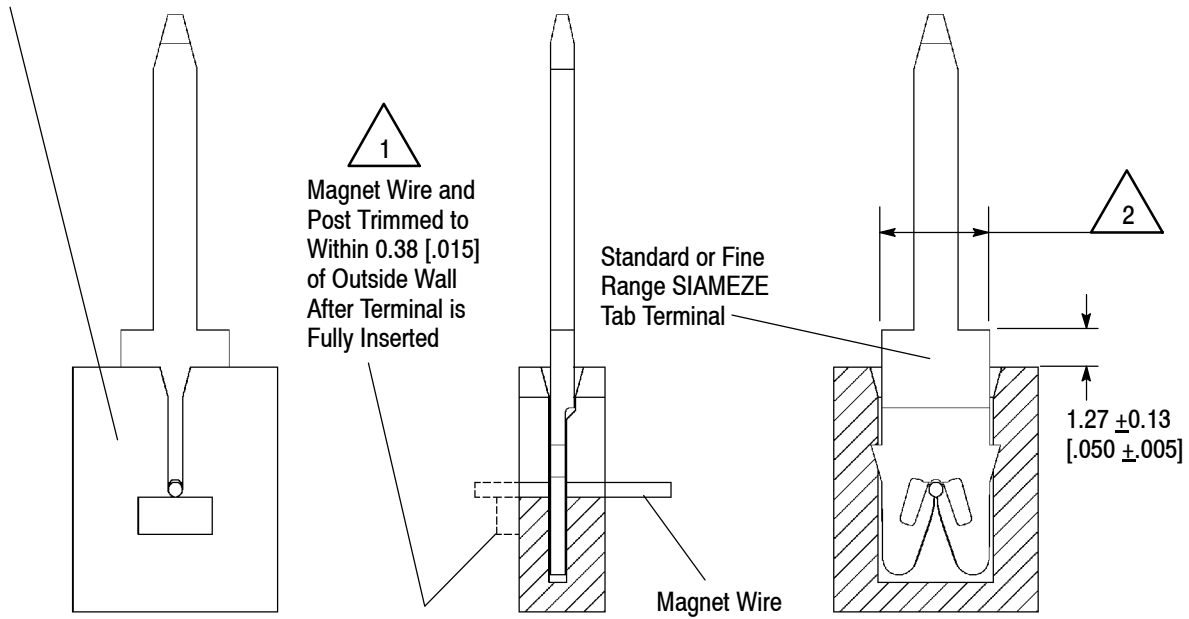


Figure 10

**SIAMEZE Edge Contact Terminal Application**

Cavity Per 1601425 Drawing or Approved TE Equivalent

- 1 Magnet wire 0.25 mm [30 AWG] and smaller requires a wrap post per 1601447.
- 2 Recommended depth of male blade.
- 3 TE terminal 1217076-1 or equivalent approved 0.51 mm [.020 in.] thick male blade. True position of blade prior to insertion is to be within 0.30 mm [.012 in.] of SIAMEZE terminal center.
- 4 Terminals supplied continuous on reels have this dimension formed in the insertion equipment. Consult TE terminal drawing for the cutoff width.

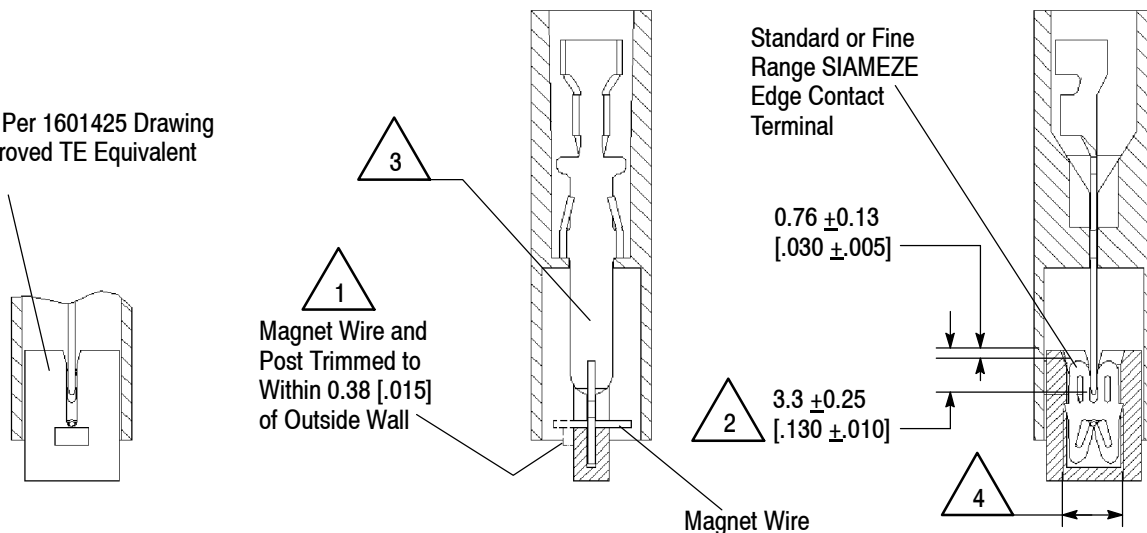


Figure 11

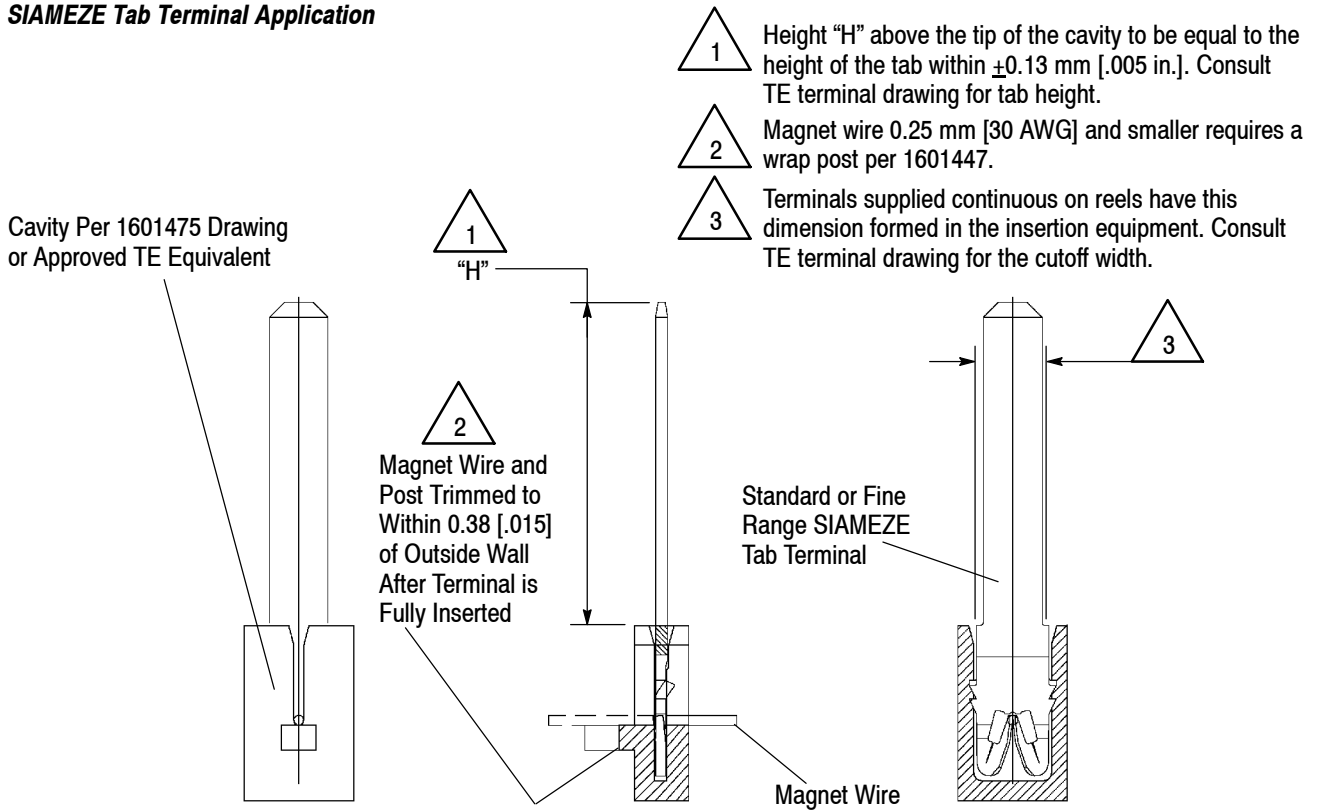
**SIAMEZE Tab Terminal Application**


Figure 12

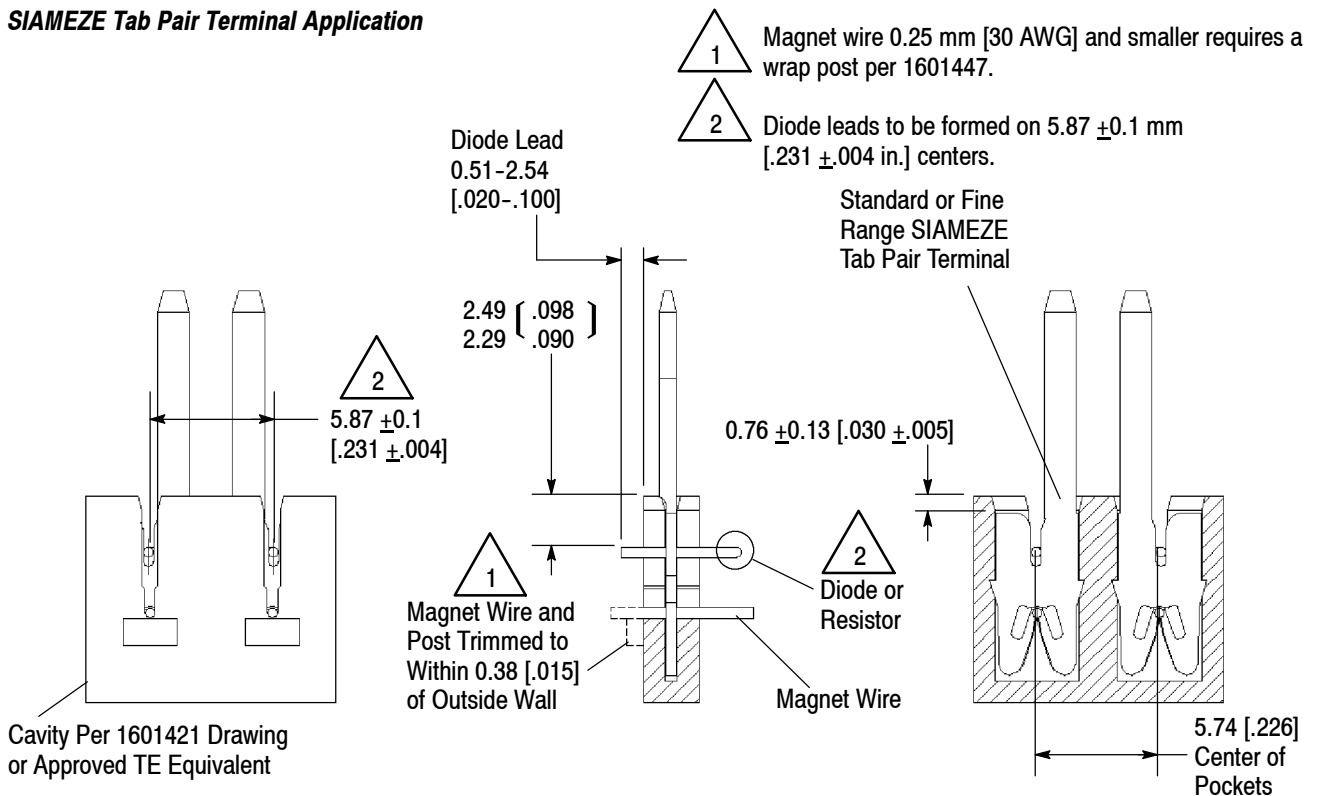
**SIAMEZE Tab Pair Terminal Application**


Figure 13

**SIAMEZE Tab Terminal Application**

- 1 Height "H" above the tip of the cavity to be equal to the height of the tab within  $\pm 0.13$  mm [.005 in.]. Consult TE terminal drawing for tab height.
- 2 Magnet wire 0.25 mm [30 AWG] and smaller requires a wrap post per 1601447.

Cavity Per 1601434 Drawing or Approved TE Equivalent

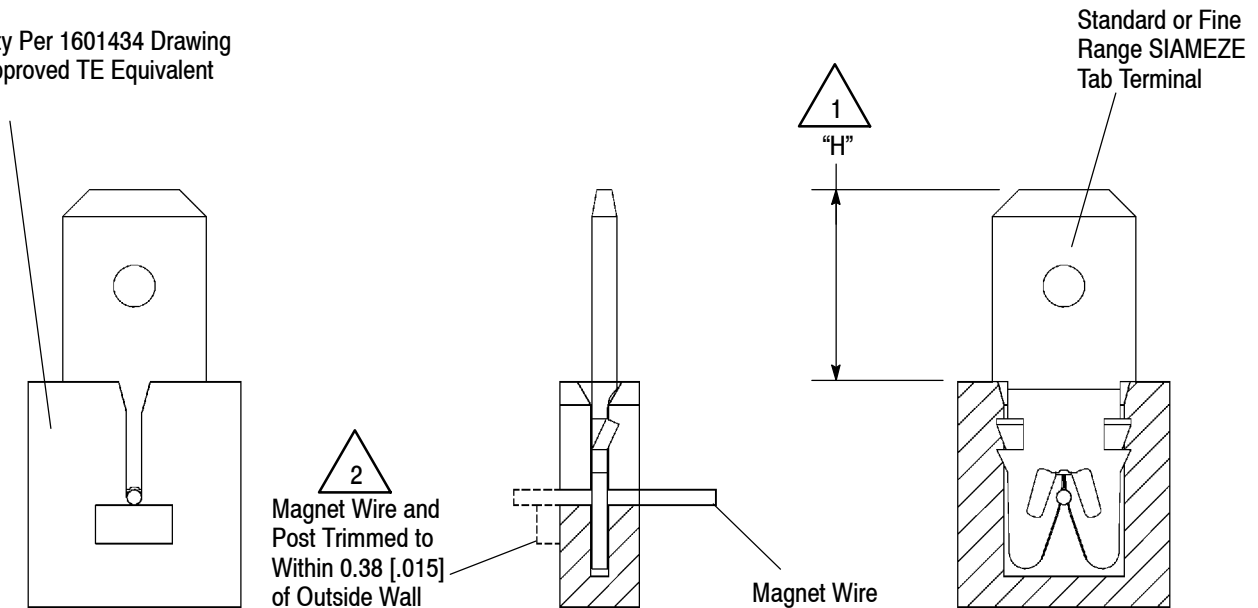


Figure 14

**SIAMEZE Tab Terminal Application**

- 1 Height "H" above the tip of the cavity to be equal to the height of the tab within  $\pm 0.13$  mm [.005 in.]. Consult TE terminal drawing for tab height.
- 2 Magnet wire 0.25 mm [30 AWG] and smaller requires a wrap post per 1601447.

Cavity Per 1601427 Drawing or Approved TE Equivalent

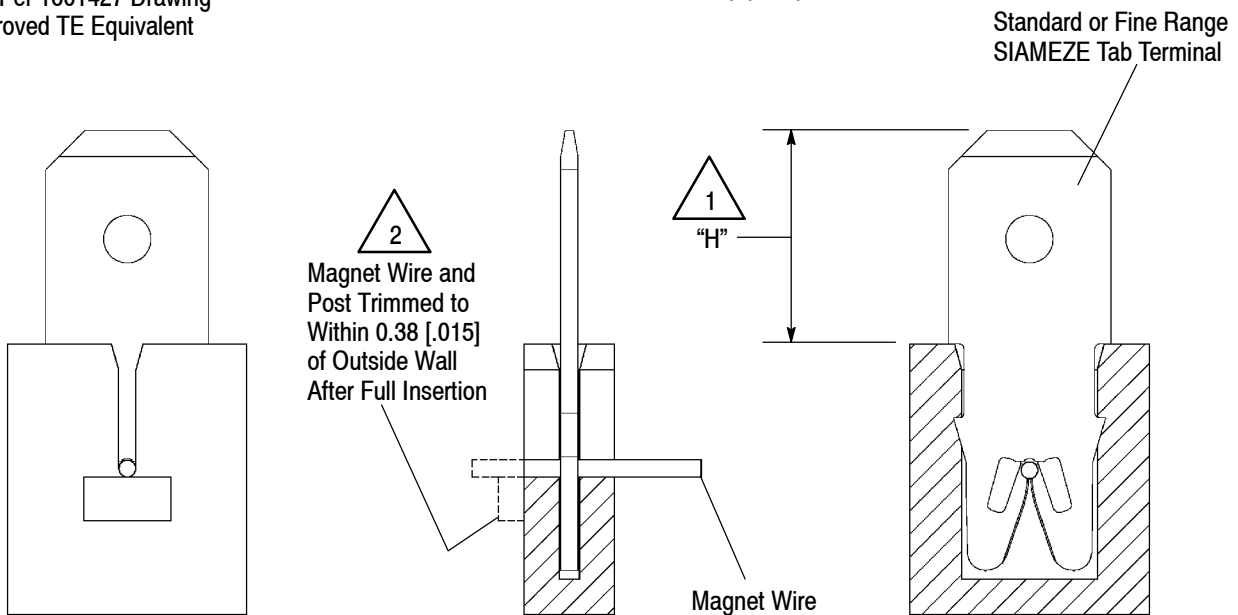


Figure 15

### 3.7. Wire Position (Terminated)

Removal of the wrap post or trim post and any excess wire must not take place until the terminal is fully inserted to the position recommended in this specification. See Figure 16.

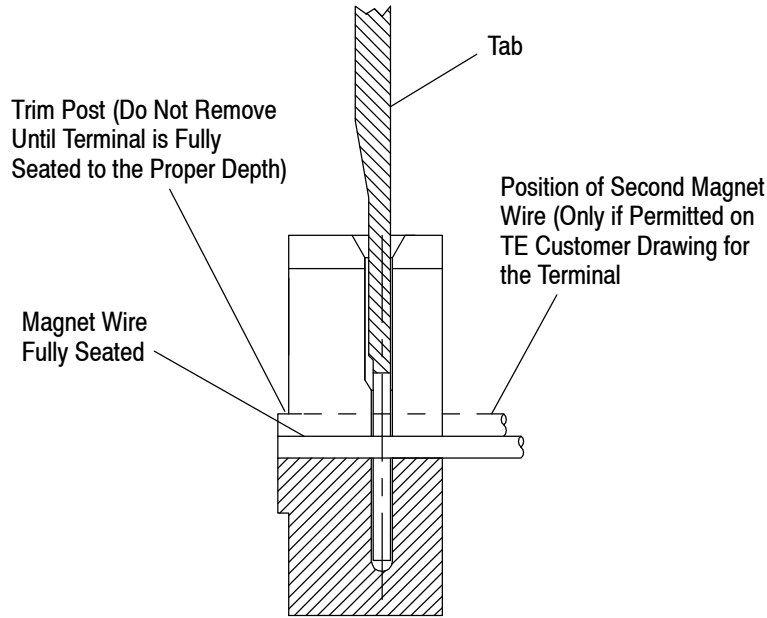


Figure 16

### 3.8. Carrier Cutoff and Burr Allowances

Continuous terminals (i.e. terminals supplied on a reel) need to be cut from the carrier strip prior to insertion. For some terminals, the carrier is cut at 90° while for others it is cut at a 10° - 15° angle forming a retention barb that holds the terminal in the pocket. Unless otherwise approved by TE Product Engineering, the cutoff is to be formed as indicated on the specific customer drawing. This information can be found in the loose piece insert box on the drawing. The burr which remains at the bottom of the cut edge should not exceed the indicated limit. Refer to Figure 17.

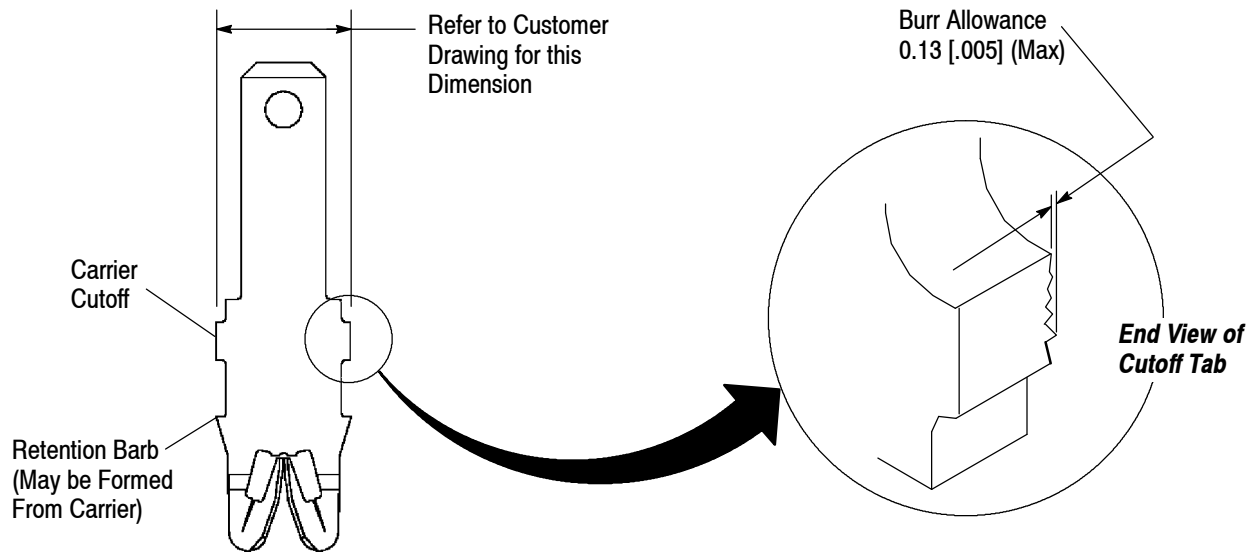


Figure 17

### 3.9. Bending Tab and Posted Terminals

Many tab and posted SIAMEZE terminals can be bent at an angle  $90^\circ$  or less provided the bend is accomplished in a controlled manner using a support tool to control the radius. Refer to Figure 18. The minimum radius is a function of the temper of the terminal at the bend point. consequently, TE Product Engineering should be consulted during the design phase.

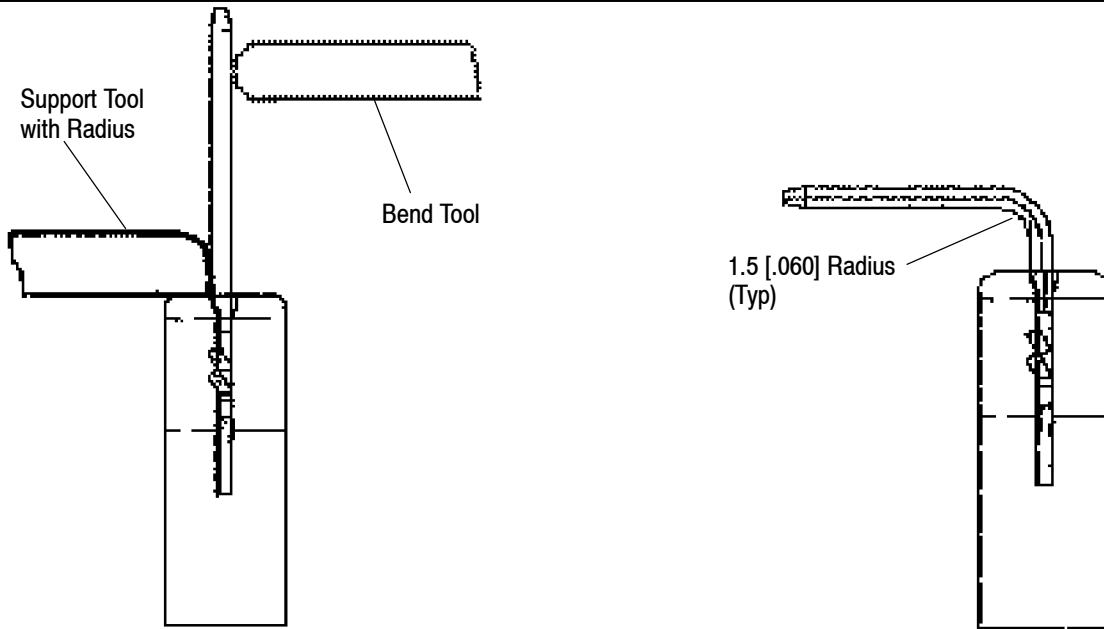


Figure 18

### 3.10. Lead Wire Retention

When connecting a lead wire or other component in the top contact of a SIAMEZE wire-to-wire terminal (e.g. 1601000-1, 2-1601125-1, etc.) consideration should always be given to the force that will be exerted on the wire during the life of the product. If the wire can potentially be subjected to a force that will disrupt the connection, a strain relief is needed to secure the wire and provide mechanical isolation. TE Lead Lok 1601140-1 is the most common and recommended method for securing the wire against external forces. Refer to Figure 19.

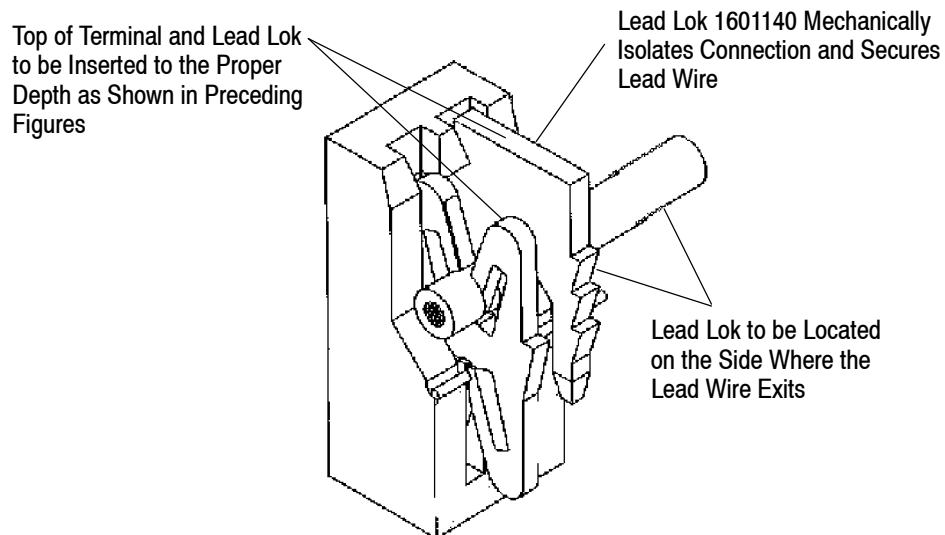


Figure 19

### 3.11. Repair/Replacement



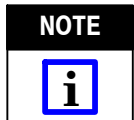
*Damaged product should not be used. If a damaged terminal or housing is evident, it must be replaced with a new one. Insulation Displacement Contacts are single use only. Terminals are NOT to be re-terminated.*

### 4. QUALIFICATIONS

Magnet wire terminations using SIAMEZE Standard and Fine Range Terminals, cavities, and assembly requirements outlined in this specification will conform to the design objectives provided in 108-2085 and 108-2244.

### 5. TOOLING

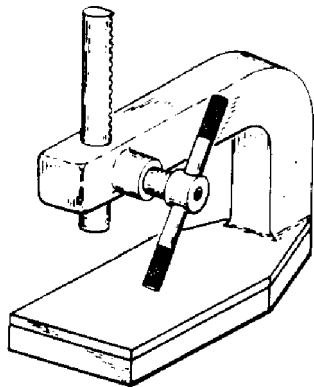
Loose piece terminals can be inserted with Hand Insertion Tools, Manual Arbor Press, or Entry-Level Magnet Wire Terminator (EMT) equipment. Strip terminals can be inserted with a variety of tools and machines designed for specific applications. Since the exterior design of the housing must meet the requirements of the equipment in which the housing is going to be used, tooling must be designed for each specific application. Customer manuals are available for any machine produced by TE. Typical tooling and reference documentation for each are provided in Figure 20.



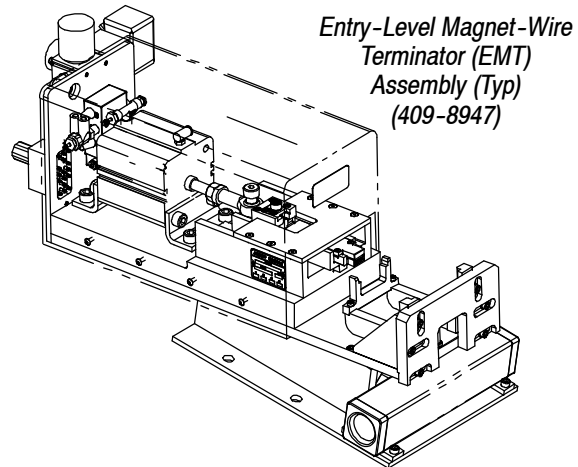
*Experienced TE Tooling Engineers have modified machines of this type and developed others to meet specific design requirements. Contact the Tooling Assistance Center at the number at the bottom of page 1.*



*Hand Insertion Tool  
1725385-1, -2  
(408-7162)*

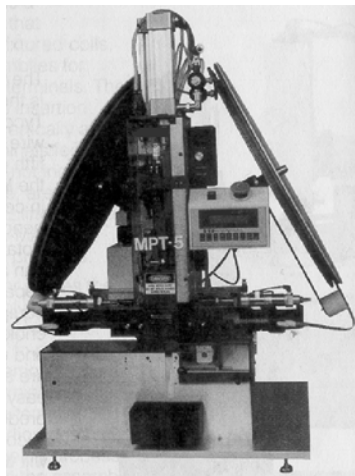


*Manual Arbor Frame  
Assembly (Typ)  
Commercially Available*

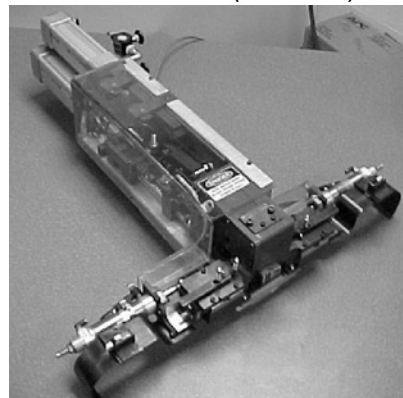


*Entry-Level Magnet-Wire  
Terminator (EMT)  
Assembly (Typ)  
(409-8947)*

*MPT-5S/L MAG-MATE  
Product Terminator Machine*



*MPT-5 Product Terminator  
Machine Module (409-10035)*



*MIS Post/Tab Insertion  
Head (Typ) (409-5886)*

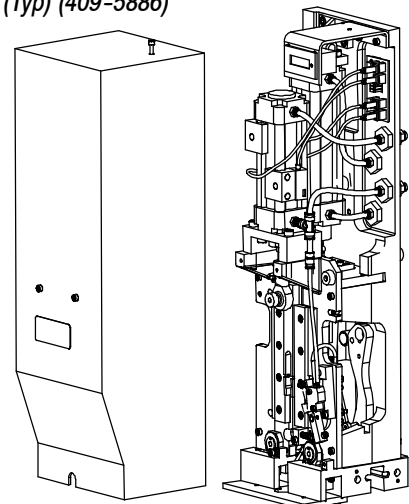


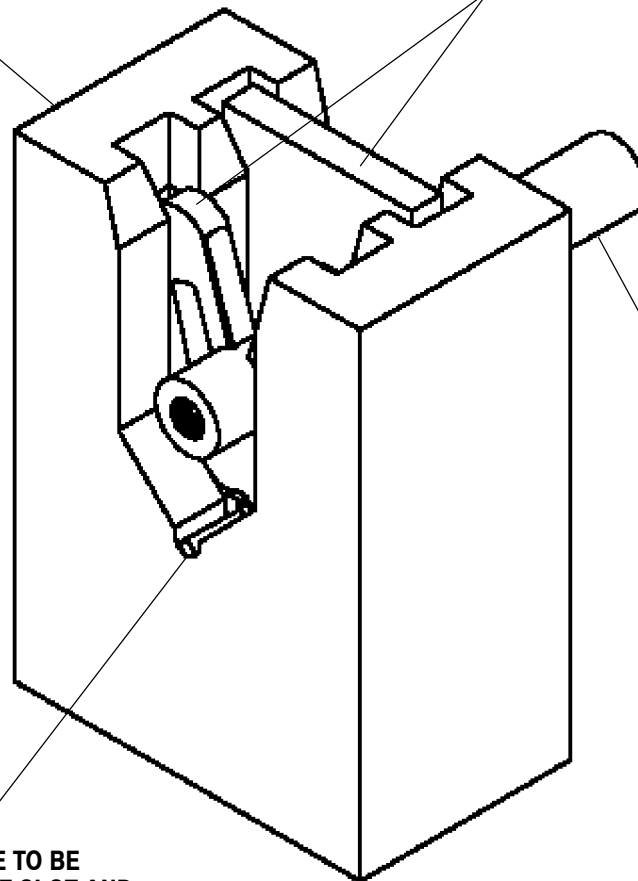
Figure 20

## 6. VISUAL AID

Figure 21 shows a typical application of SIAMEZE Standard and Fine Range Terminals. 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.

**HOUSING MUST NOT BE  
CRACKED, SCRAPED, OR  
HAVE OTHER SIGNS OF  
DAMAGE**

**TOP OF TERMINAL AND LEAK  
LOK TO BE INSERTED TO THE  
PROPER DEPTH AS SHOWN  
IN PRECEDING FIGURES**



**LEAD LOK TO BE  
ON THE SIDE  
WHERE THE LEAD  
WIRE EXITS**

**MAGNET WIRE TO BE  
SEATED IN THE SLOT AND  
THE END CLEANLY CUT**

**FIGURE 21. VISUAL AID**