

### 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  $\pm 0.13$  [.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 AMP\* MAG-MATE Slim Line Terminals designed for housing configurations that have a cavity depth approximately 8.50 [.335]. They have an Insulation Displacement Crimp (IDC) slotted beam at one end for terminating solid round copper magnet wire in sizes from 0.18 mm dia [33 AWG] through 1.15 mm dia [17 AWG], and a tab on the opposite end to receive various types of AMP receptacles crimped onto insulated lead wire. These requirements are applicable to hand and automatic machine application tooling.

AMP 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 AMP 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.

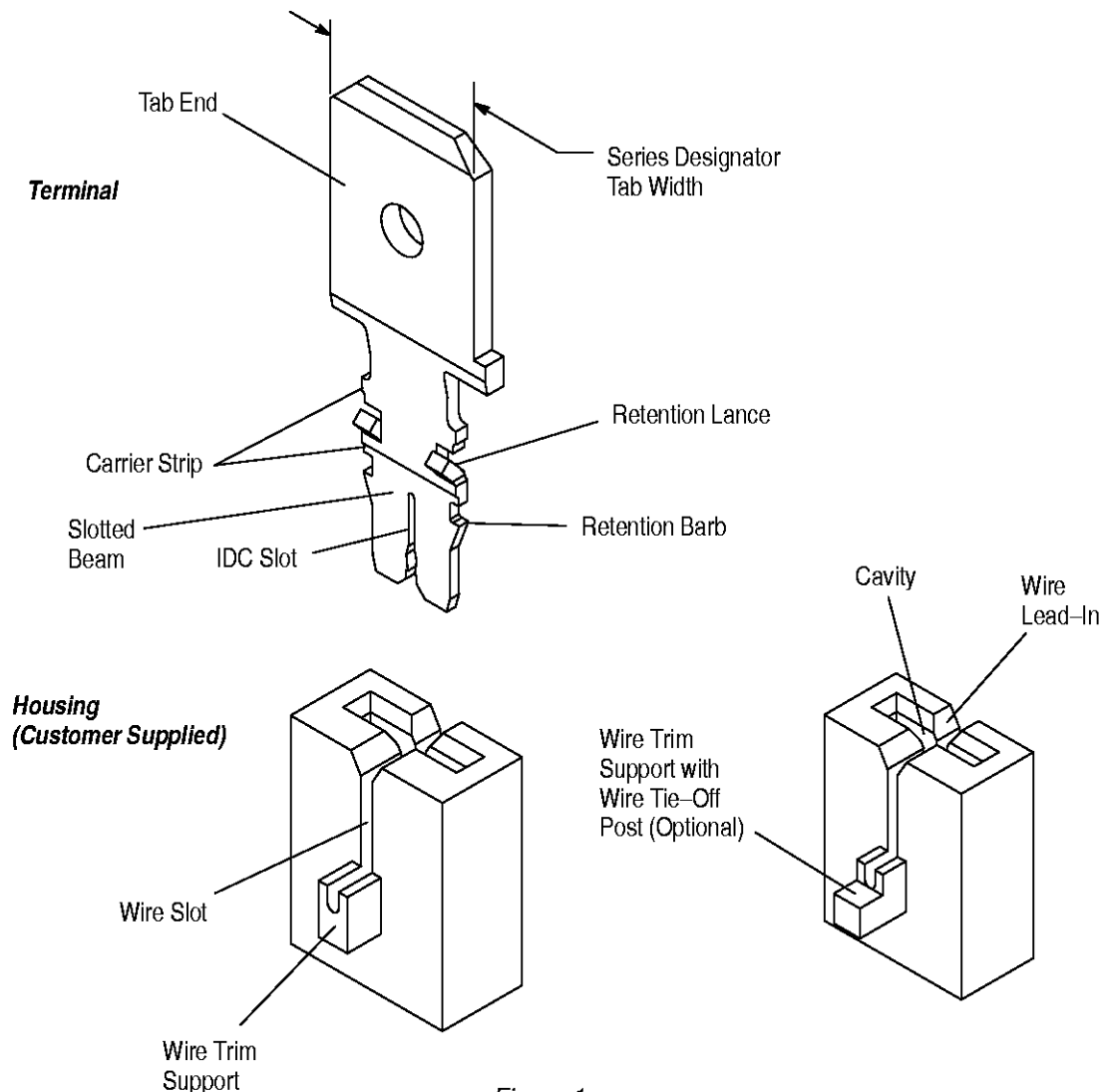


Figure 1

## 2. REFERENCE MATERIAL

### 2.1. Revision Summary

This paragraph is reserved for a revision summary covering the most recent additions and changes made to this specification which include the following:

Per EC: 0990-1034-97

- Updated application specification to corporate requirements
- Updated Section 1
- Deleted housing with lance cavities in Figure 2
- Revised artwork in all Figures
- Updated Paragraphs 2.1, 2.2, 2.5, 3.1, 3.2, and 3.2C
- Updated Section 4, QUALIFICATIONS and Section 5, TOOLING

### 2.2. Customer Assistance

Reference Part Number 63710 and Product Code 1039 are representative numbers of AMP MAG-MATE Slim Line Terminals with Tab. Use of these numbers will identify the product line and expedite your inquiries through an AMP service network established to help you obtain product and tooling information. Such information can be obtained through a local AMP Representative (Field Service Engineer, Field Applications Engineer, etc.) or, after purchase, by calling the Tooling Assistance Center or AMP FAX/Product Information Center number at the bottom of page 1.

### 2.3. Drawings

AMP 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 AMP Incorporated.

### 2.4. Specifications

AMP Product Specification 108-1484 is available for test and performance requirements.

### 2.5. Instructional Material

The following list includes available AMP 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 AMP machines. AMP Handbook 410-5483 provides an overview of the MAG-MATE product line.

<u>Document Number</u>	<u>Document Title</u>
408-3295	Preparing Reel of Contacts For Application Tooling
408-6628	Hand Insertion Tool 274260-2 for 187 Tabs
408-6635	Hand Insertion Tool 274282-1 for 250 Tabs
408-9816	Handling of Reeled AMP Products
408-9866	AMP Terminal Reel Flange Removal Tool 354030-1
409-5859	Vertical MAG-MATE Product Terminator (MPT)
410-5483	AMP MAG-MATE Interconnect System

## 3. REQUIREMENTS

### 3.1. Wire Selection

The insulation displacement slots will accommodate copper magnet wire 0.18 mm dia [33 AWG] through 1.15 mm dia [17 AWG]. The wire size for each terminal is listed on the Customer Drawing. Contact AMP Engineering for more information. Under closely controlled conditions, aluminum magnet wire, specialized magnet wire, or two wire terminations are applicable.

### 3.2. Cavity Design

Housing cavities that accept MAG-MATE Slim Line terminals manufactured by AMP Incorporated must be in accordance with the requirements specified in Paragraphs 3.2.A, B, C, and D.

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

- 1 Recommended material is glass-filled polyester or AMP Engineering approved equivalent.
- 2 Wall thickness on trim side must be equal on multicavity housings to provide wire trim by automatic insertion machine.
- 3 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 AMP Engineering if trimmed wire end must be concealed within the cavity.
- 4 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.
- 5 Draft angles must be held within the feature tolerances.
- 6 Slot width should be  $0.08 \pm 0.03$  [.003  $\pm$  .001] smaller than the largest magnet wire outside diameter dimension being terminated.
- 7 Terminal insertion depth flush to  $0.35$  [.014] below cavity surface when  $7.75 \pm 0.08$  [.305  $\pm$  .003] is total terminal length.
- 8 Controlled flash option can be utilized when retention of both small and large diameter wires must be accommodated in the same cavity.
- 9 Commoned cavity option can be utilized when two MAG-MATE Slim Line Terminals are inserted without removal of the carrier strip to provide an electrical bus between IDC terminations.

#### A. Cavity Option 1

Cavity Option 1 is a straight through slot which leaves the trimmed end of the magnet wire exposed and may be used in applications where isolation of the conductor end is not required. Refer to Figure 2.

##### Cavity Option 1

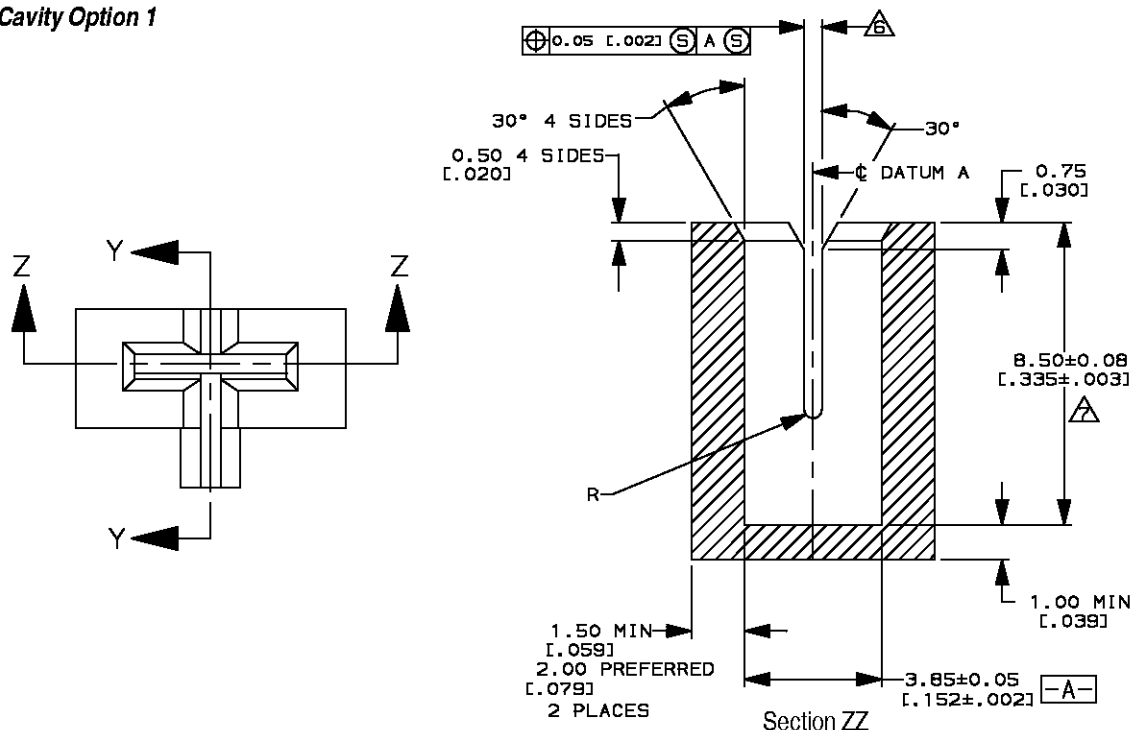


Figure 2 (cont'd)

**Cavity Option 1**

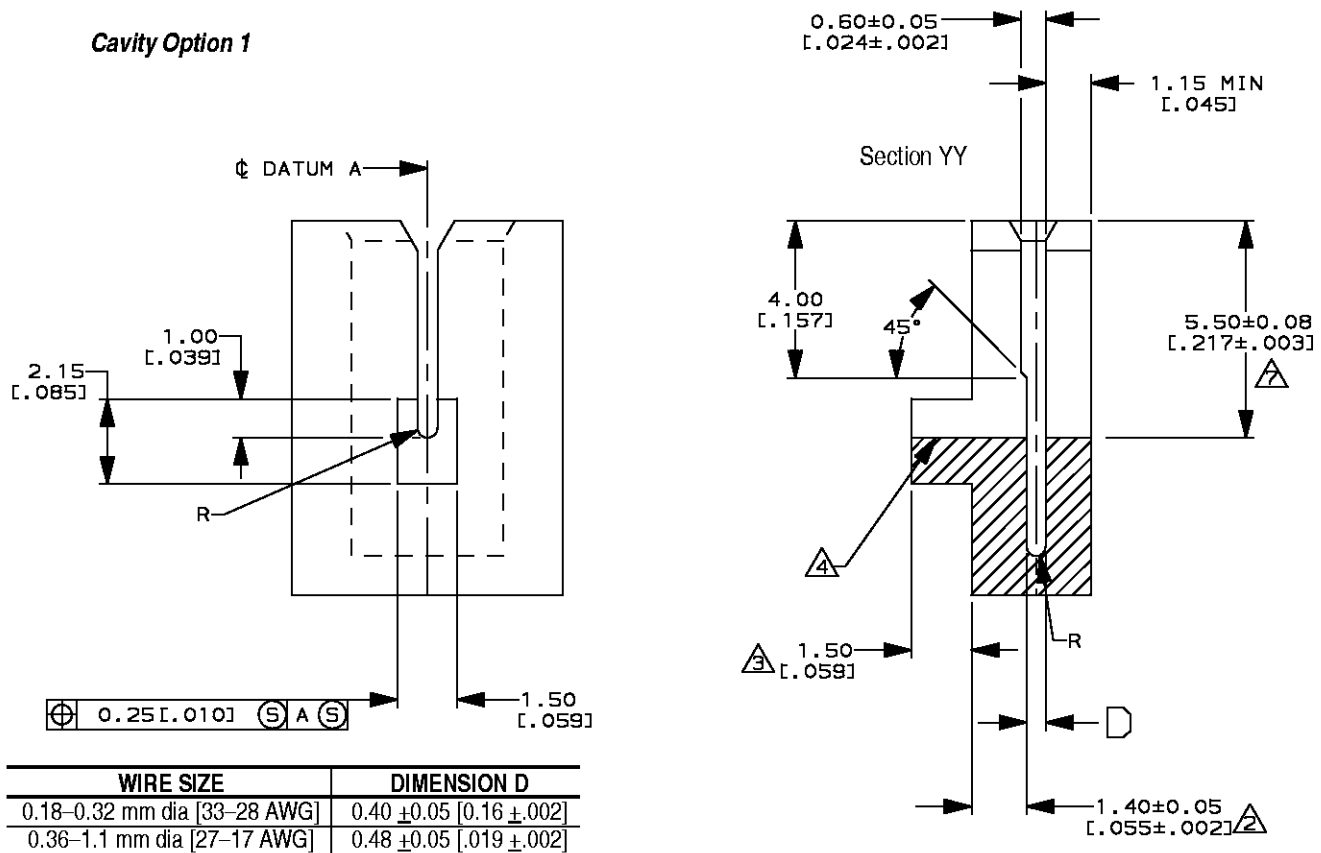


Figure 2 (end)

**B. Cavity Option 2**

Cavity Option 2 contains a controlled flash to retain a broad range of magnet wire sizes in the cavity prior to terminal insertion. Refer to Figure 3.

**Cavity Option 2**

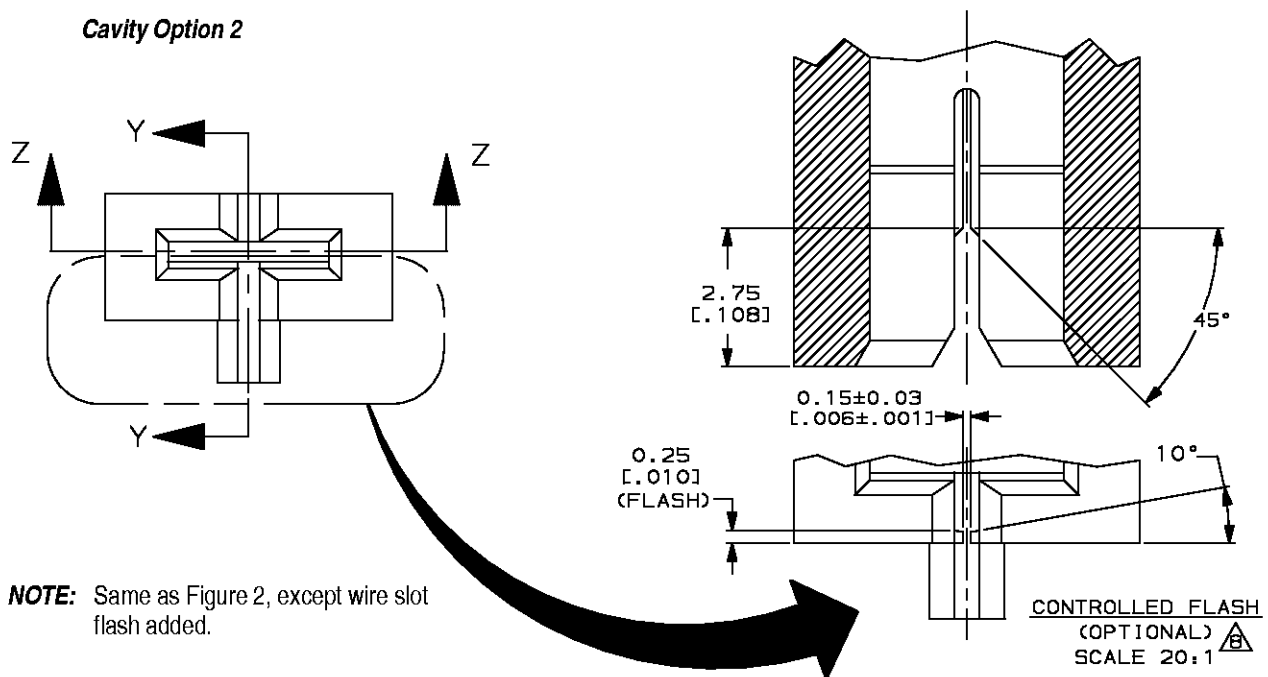


Figure 3

### C. Commoned Cavities

Cavity Options 1 or 2 may be commoned. The housing accepts a pair of terminals with the carrier strip left intact for electrical commoning as shown in Figure 4.

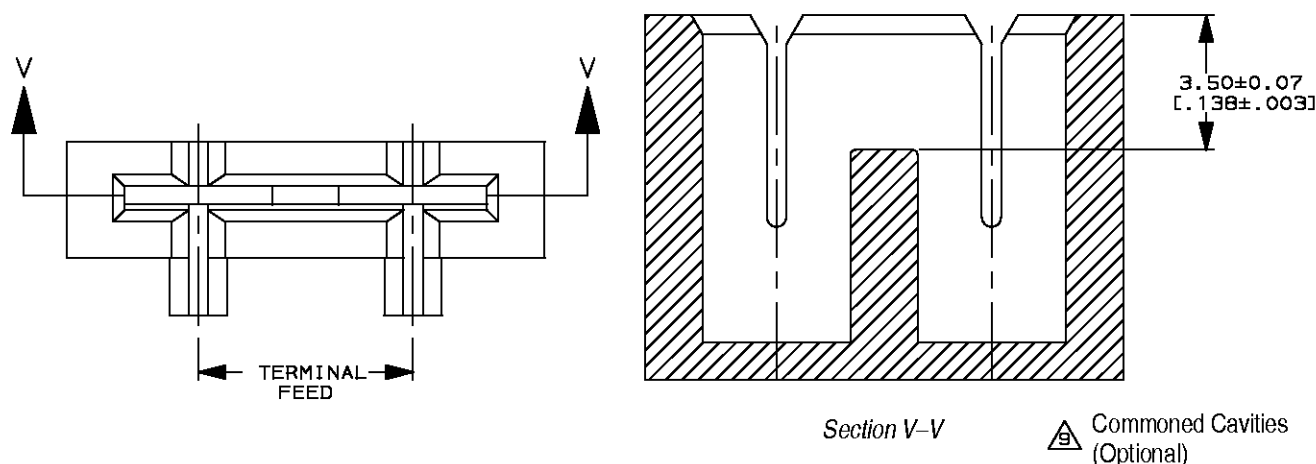


Figure 4

### D. Tie-Off Post Option

For smaller wire sizes, a wire tie-off post option should be used. The magnet wire should be laced across the cavity slot and then the free end should be wrapped for a minimum of three times around the tie-off post as shown in Figure 5.

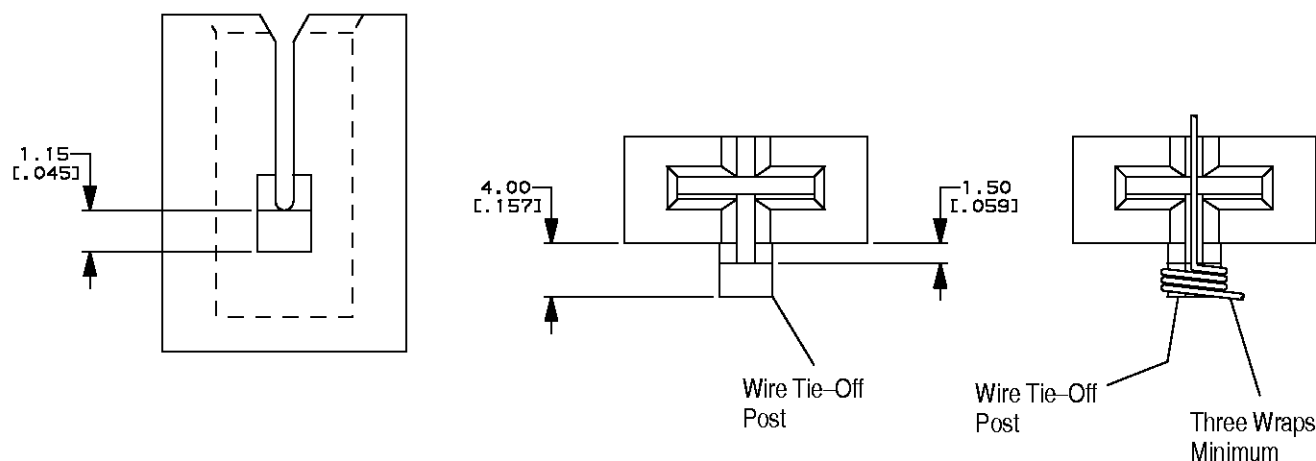


Figure 5

### 3.3. Wire Placement (Pre-Termination)

The magnet wire must be laced into the bottom of the cavity slot prior to terminal insertion. The magnet wire 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. There must be a small amount of slack between the coil winding and the housing to prevent stretching of the magnet wire during insertion.

#### NOTE

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

### 3.4. Terminal Insertion Depth

The terminal should be inserted into the housing cavity within the limits specified in Figure 6.

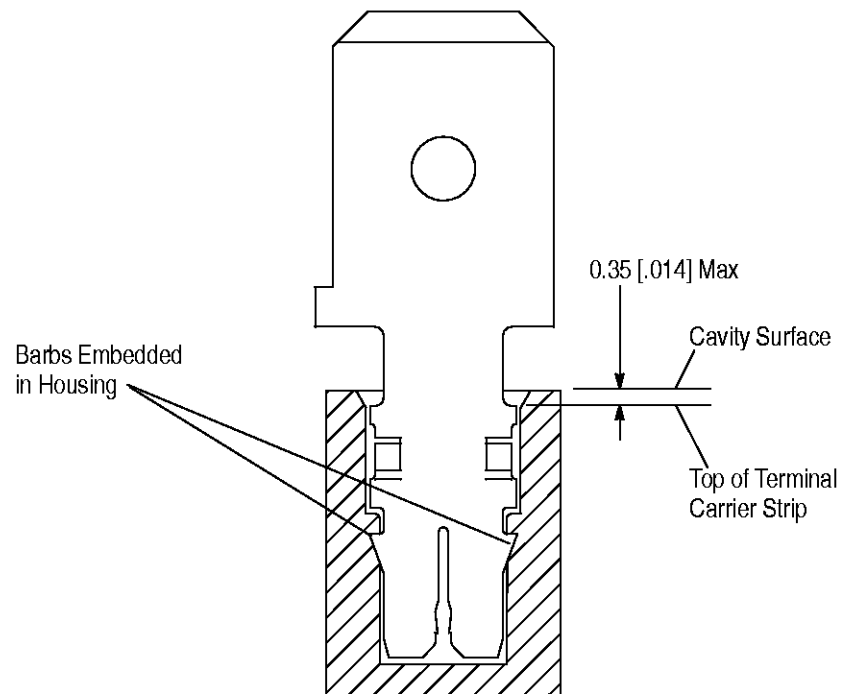


Figure 6

### 3.5. Wire Position (Terminated)

The magnet wire must be fully seated in the bottom of the cavity slots as shown in Figure 7.

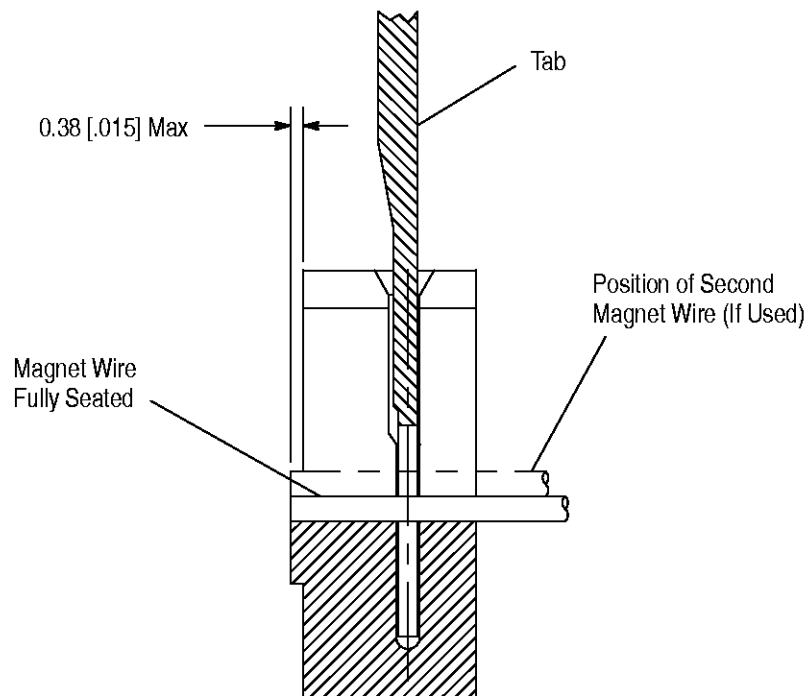


Figure 7

### 3.6. 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 the specified limits on either side of the terminal. The burr which remains at the bottom of the cutting edge on the tabs should not exceed the indicated limit. See Figure 8.

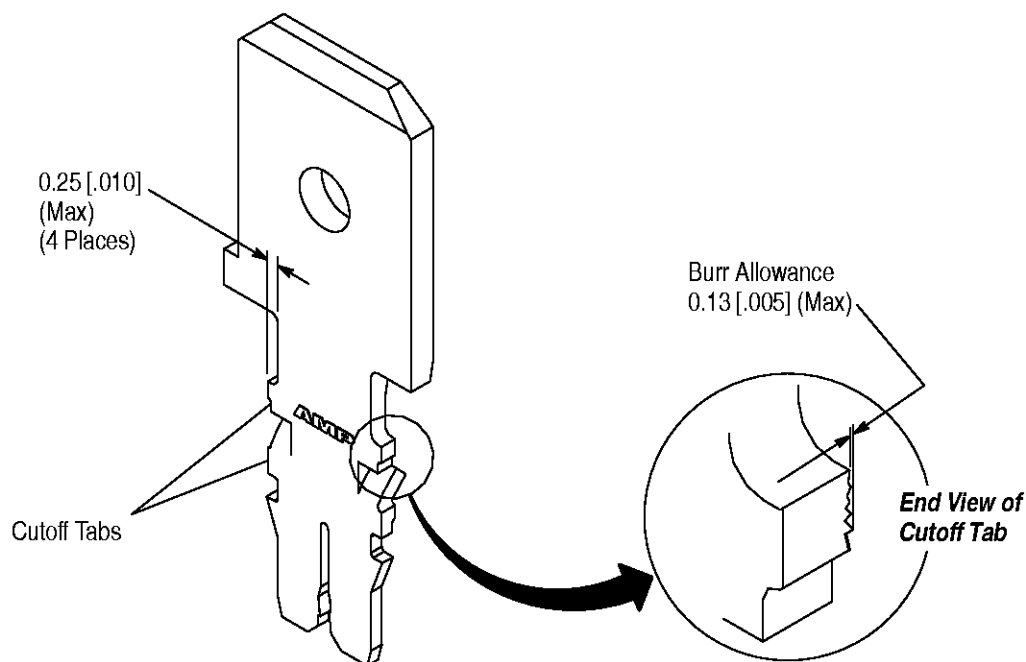


Figure 8

### 3.7. Tab Terminal Termination

After inserting a tab terminal, bend the tab as indicated in Figure 9 to avoid push/pull force during insertion and extraction of a receptacle terminal. AMP has a wide variety of receptacle terminals that will mate with the available tab sizes. AMP suggests consulting with your local AMP Representative who can assist in making the best selection.

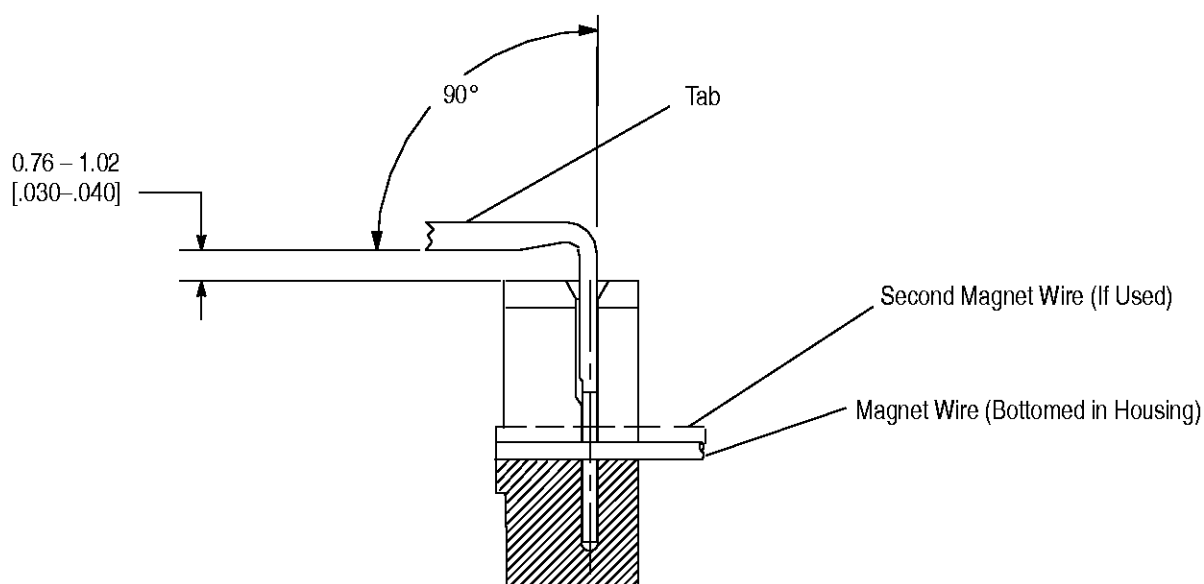


Figure 9

#### 4. QUALIFICATIONS

Magnet wire terminations using MAG-MATE Slim Line Terminals, cavities, and assembly requirements outlined in this specification will conform to the design objectives provided in AMP Specification 108-1484.

#### 5. TOOLING

Loose piece terminals can be inserted with AMP Hand Insertion Tools. Strip terminals can be inserted with a variety of AMP 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. Some basic tooling designs that could be modified for specific application requirements are the horizontal and vertical MAG-MATE Product Terminators (MPT) or a three station Rotary Index Table (RIT). There is also the AMP Modular Interface Unit which can be part of an AMP machine or it can be designed into other production equipment. Customer manuals are available for any machine produced by AMP Incorporated. Typical tooling and reference documentation for each are provided in Figure 10.

#### NOTE

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

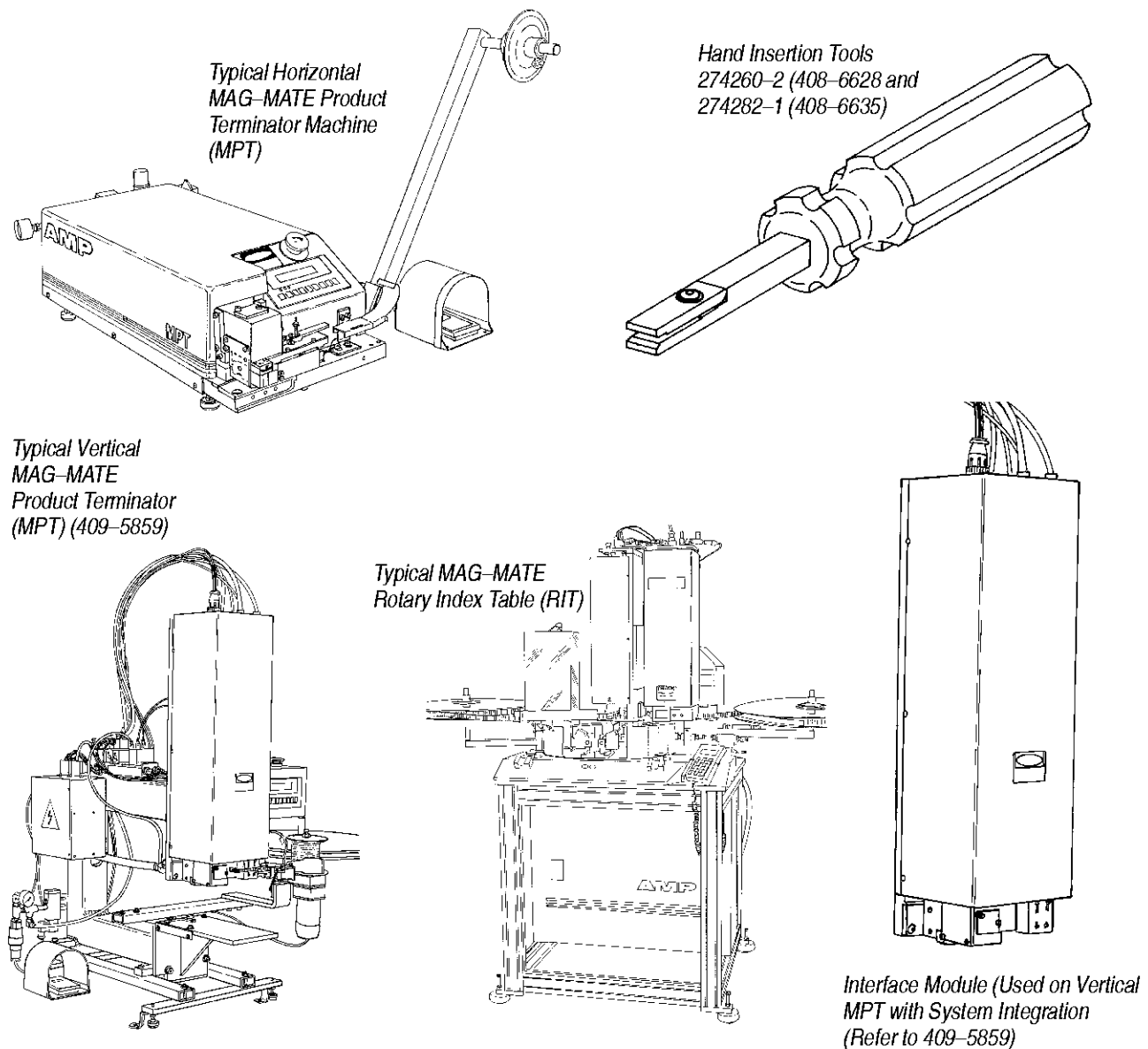
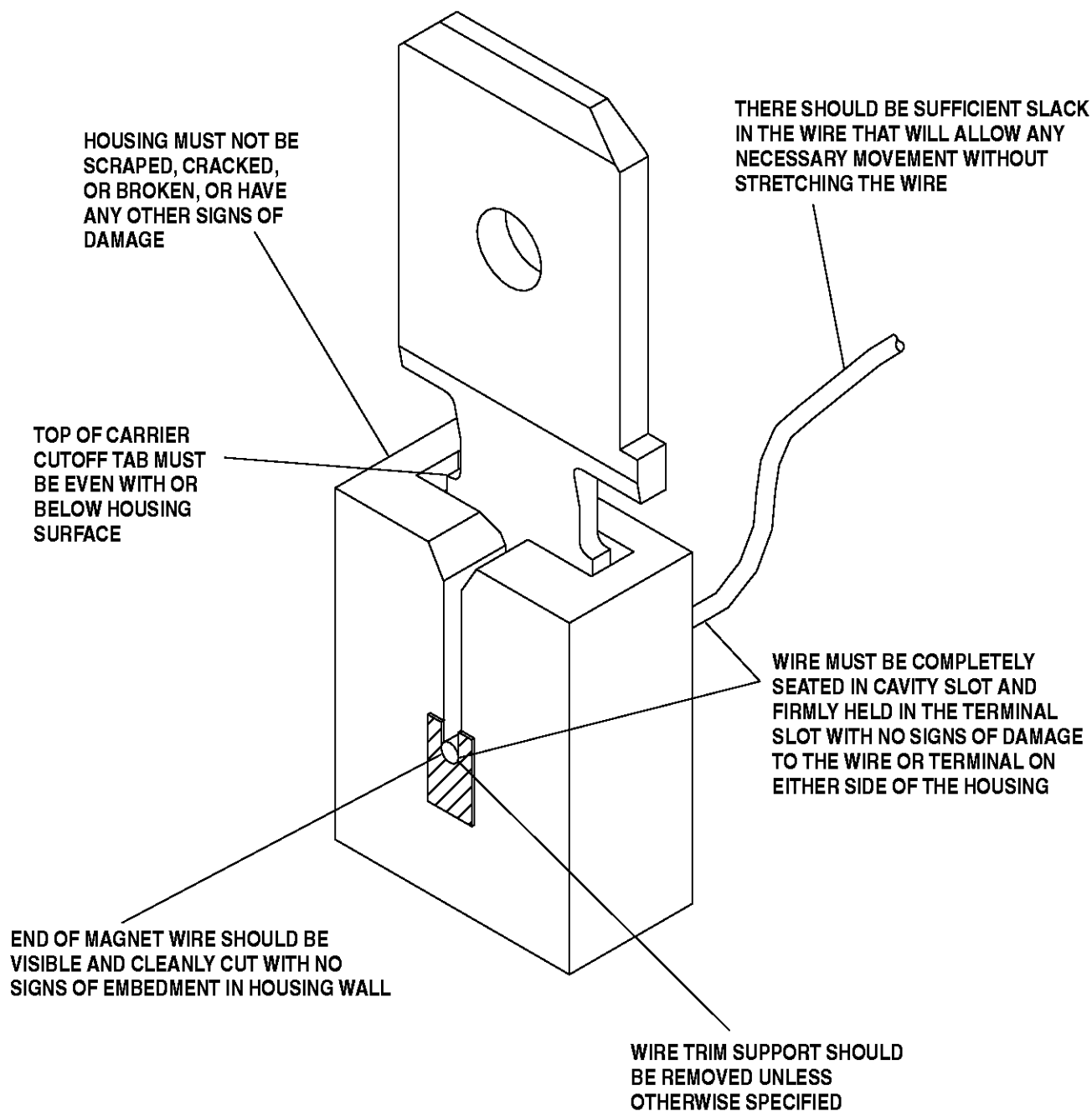


Figure 10



**6. VISUAL AID**

Figure 11 provides features that will help an assembler know what is necessary to ensure a good termination. For dimensional and cross-sectional inspection, refer to the details in the preceding pages of this specification.



**FIGURE 11. VISUAL AID**