

**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  $\pm 0.13$  [ $\pm 0.005$ ] 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 the installation of AMP\* AMP-BARREL Terminals on printed circuit (pc) boards and for wire termination. These requirements are applicable to hand or automatic machine application tools.

Basic terms and features of components are provided in Figure 1.

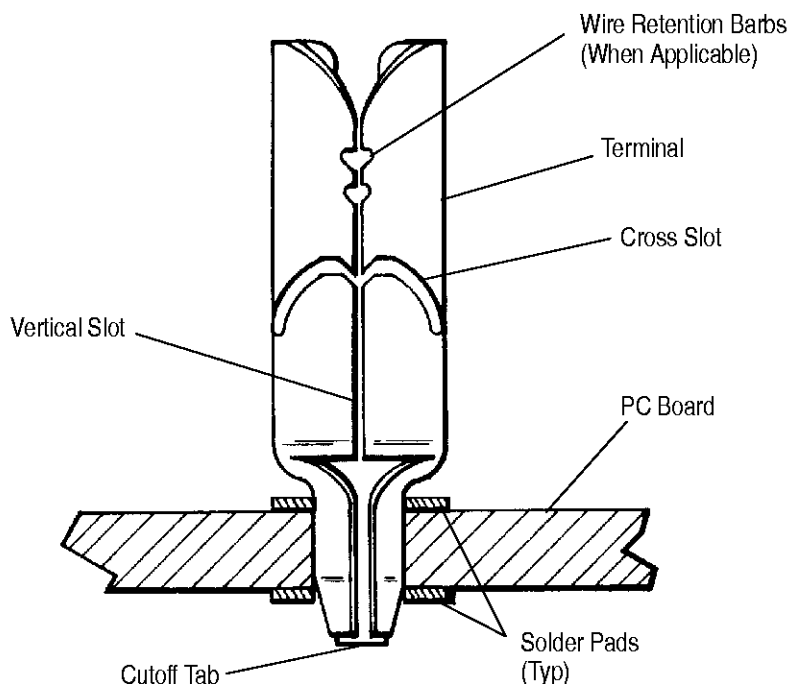


Figure 1

**2. REFERENCE MATERIAL****2.1. Revision Summary**

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

Per EC 0990-0329-97:

- Added solder pad to top of pc board in Figure 1
- Changed "D" dimension for largest-diameter terminal in Figure 2
- Changed seating limits in Figure 4
- Added NOTE to Paragraph 3.4 concerning allowable orientation of  $15^\circ$
- Updated specification to latest format and application requirements

**2.2. Customer Assistance**

Reference Part Number 552699 and Product Code 1222 are representative numbers of AMP-BARREL Terminals. 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 or by calling the Tooling Assistance Center number at the bottom of this page.

## 2.3. Drawings

AMP Customer Drawings for product part numbers 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 108-6025 provides performance and test information for these terminals.

## 2.5. Instructional Material

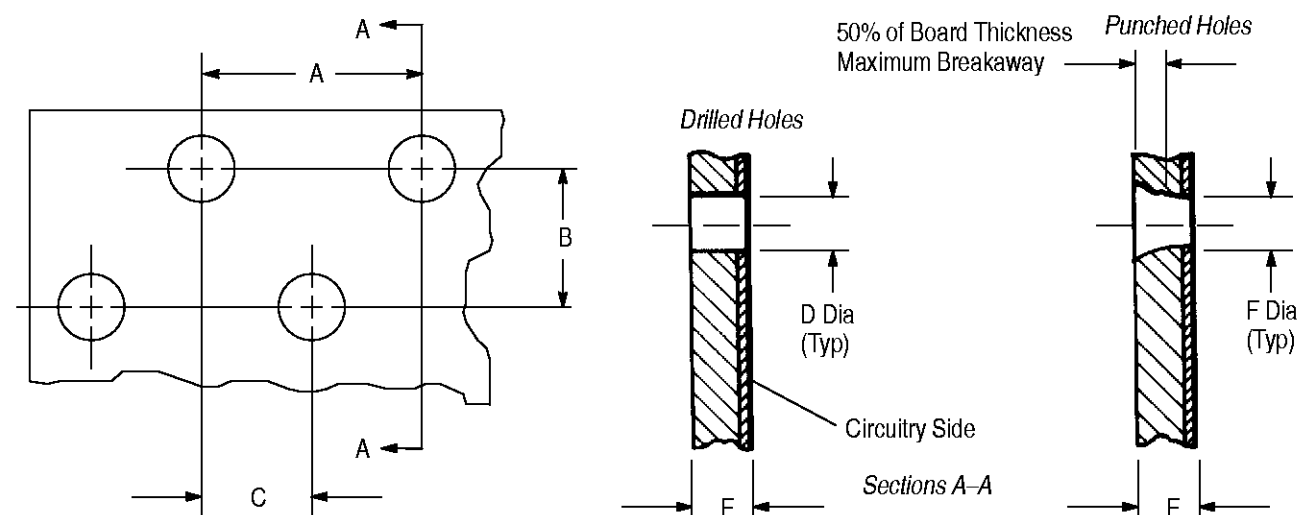
AMP Instruction Sheets 408-3187 and 408-6553 provide information relating to hand termination tooling. Instruction Sheet 408-6505 provides information on the terminal insertion into the pc board.

AMP Corporate Bulletin No. 401-52 is available upon request and can be used as a guide in soldering. This bulletin provides information on various flux types and characteristics along with commercial designation and flux removal procedures. A checklist is attached to the bulletin as a guide for information on soldering problems.

## 3. REQUIREMENTS

### 3.1. Printed Circuit Boards

Recommended pattern and dimensions, as well as tolerances, are shown in Figure 2.



| TERMINAL DIAMETER | A MIN       | B MIN       | C MIN       | D $\pm 0.05$ [.002] | E (PC BOARD THICKNESS)                                   | F $\pm 0.05$ [.002] ■ | LOOSE PIECE INSERTION TOOL |
|-------------------|-------------|-------------|-------------|---------------------|----------------------------------------------------------|-----------------------|----------------------------|
| 1.78 [.070]       | 2.54 [.100] | 2.67 [.105] | 1.27 [.050] | 0.96 [.038]         | 1.19 [.047]<br>1.58 [.062]                               | 0.91 [.036]           | 230549-3                   |
| 2.29 [.090]       | 3.81 [.150] | 3.43 [.135] | 1.90 [.075] | 1.32 [.052]         | 1.19 [.047]<br>1.58 [.062]<br>2.39 [.094]                | 1.27 [.050]           | 230549-4                   |
| 3.18 [.125]       | 5.08 [.200] | 4.44 [.175] | 2.54 [.100] | 1.60 [.063]         | 1.19 [.047]<br>1.58 [.062]<br>2.39 [.094]<br>3.18 [.125] | 1.55 [.061]           | 230549-1                   |
| 3.96 [.156]       | 5.59 [.220] | 4.83 [.190] | 2.79 [.110] | 2.08 [.082]         | 1.58 [.062]<br>2.39 [.094]                               | 1.98 [.078]           | 230549-2                   |

■ The "F" hole diameters serve only as guidelines for the customer. Due to variations in quality of punched holes, thickness and composition of pc boards, and customer's assembly operations, the customer should determine the dimensions that will be compatible with their application.

Figure 2

### 3.2. Terminal Insertion

The inserted terminal shall be perpendicular to the pc board within 5° maximum.

### 3.3. Terminal Retention

The degree of terminal retention depend on pc board type, thickness, and hole diameter. Using dimensions recommended in Figure 2, each customer should specify the pc board that will provide adequate retention for their specific application.

### 3.4. Terminal Orientation

The terminal shall be oriented so that the vertical slot faces the operator when using a pin inserter. After insertion, rotation of the terminal shall be within the limits specified in Figure 3.

**NOTE**

*There is an allowable orientation of 15° for the slot of the largest-diameter terminal.*

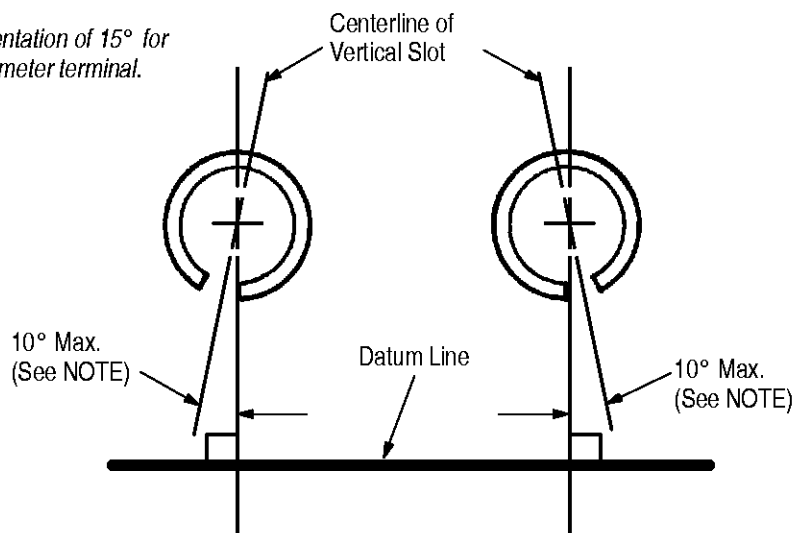


Figure 3

### 3.5. Terminal Seating Limits

The pc board shall be supported around hole while terminal is being inserted. After insertion, terminal shall be seated on the pc board within the limits specified in Figure 4.

**CAUTION**

*Vertical slot and cross slot shall not be distorted due to insertion force.*

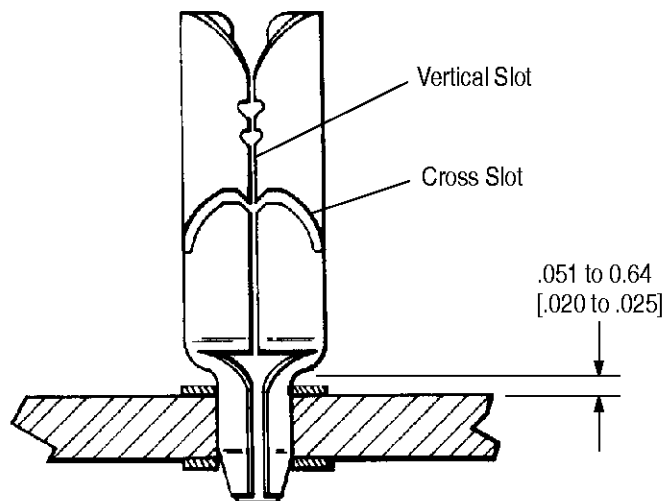


Figure 4

### 3.6. Wire (Figure 5)

Each terminal is designed to receive unstripped stranded or solid copper wire(s).

| TERMINAL<br>DIAMETER | WIRE SIZE (AWG) |       | WIRE INSULATION<br>DIA (MAX.) |
|----------------------|-----------------|-------|-------------------------------|
|                      | STRANDED        | SOLID |                               |
| 1.78 [.070]          | 26-28           | 26-28 | 0.91 [.036]                   |
| 2.29 [.090]          | 22-26           | 22-26 | 1.35 [.053]                   |
| 3.18 [.125]          | 18-28           | 18-28 | 2.18 [.086]                   |
| 3.96 [.156]          | 18-24           | 19-24 | 2.92 [.115]                   |

Figure 5

### 3.7. Wire Termination

Single wire shall be positioned as indicated by the "A" dimension in Figure 6. Wire shall be below retention barbs (if present).

Top wire of applications consisting of two wires shall be positioned above cross slot and below retention barbs (if present), and lower wire shall be positioned below cross slot.

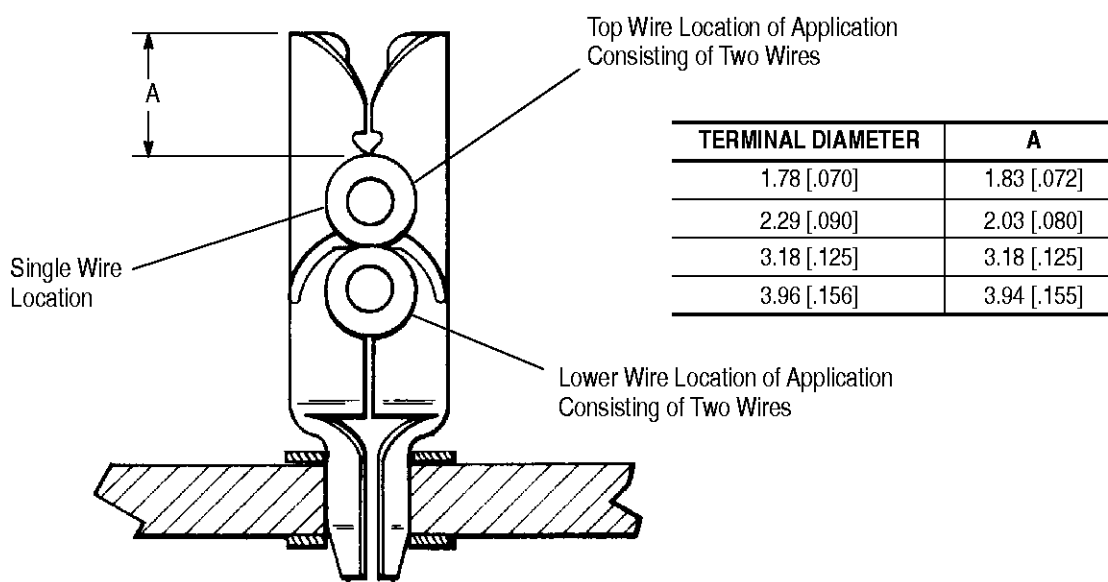


Figure 6

### 3.8. Soldering

#### A. Flux Selection

AMP-BARREL terminals and pc board pads must be fluxed prior to soldering. Selection of the flux will depend on the type of pc board used and other components that may be mounted on the board. Also, the choice will have to be compatible with the wave solder line, manufacturing, and safety requirements.

#### B. Cleaning

Fluxes, residues, and activators must be removed. Cleaning procedures depend on the type of flux used on the solder line. The following cleaning compounds and chemicals may be used to clean the terminals without adverse affect.

#### DANGER

Consideration must be given to toxicity and safety requirements recommended on the Material Safety Data Sheet furnished by the solvent manufacturer.

#### NOTE

If you have a particular solvent that is not listed, consult an AMP representative before using it on these connectors.

| CLEANER           |         | TIME<br>(Minutes) | TEMPERATURES<br>(Maximum) |            |
|-------------------|---------|-------------------|---------------------------|------------|
| NAME              | TYPE    |                   | CELSIUS                   | FAHRENHEIT |
| Alpha 2110■       | Aqueous | 1                 | 132                       | 270        |
| Bioact EC-7◆      | Solvent | 5                 | 100                       | 212        |
| Butyl Carbitol●   | Solvent | 1                 | Room Ambience             |            |
| Isopropyl Alcohol | Solvent | 5                 | 100                       | 212        |
| Kester 5778⚡      | Aqueous | 5                 | 100                       | 212        |
| Kester 5779⚡      | Aqueous | 5                 | 100                       | 212        |
| Loncoterger 520●  | Aqueous | 5                 | 100                       | 212        |
| Loncoterger 530●  | Aqueous | 5                 | 100                       | 212        |
| Terpene Solvent   | Solvent | 5                 | 100                       | 212        |

■ Product of Fry's Metals, Inc.    ◆ Product of Petroferm, Inc.    ● Product of Union Carbide Corp.    ⚡ Product of Litton Systems, Inc.

Figure 7

### C. Drying

When drying cleaned components and pc boards, make certain the temperature limitations of  $-55^{\circ}$  to  $125^{\circ}\text{C}$  [ $-70^{\circ}$  to  $260^{\circ}\text{F}$ ] are not exceeded.

### D. Soldering Guidelines

Refer to Paragraph 2.5 of this specification for instructional material that is available for establishing soldering guidelines.

## 4. QUALIFICATIONS

AMP-BARREL Terminals are listed by Underwriters Laboratories Inc. (UL) under UL File Number E28476.

## 5. TOOLING (Figure 8)

### 5.1. PC Board Support

AMP Terminal Insertion Kit 230549 (reference Instruction Sheet 408-6505) includes a ram assembly and pedestal assembly designed for use in a standard drill press. The ram assembly is designed to hold a terminal in alignment and provide a firm seat during the insertion process. Each ram assembly consists of a ram rod with a tip corresponding to the terminal diameter. The pedestal assembly is designed to support a pc board during terminal insertion. It consists of a support base and a pc board support with a center hole that accepts all terminal diameters.

A customer designed pc board support (in place of the insertion kit listed above) may be used to prevent bowing of the pc board during terminal insertion.

### 5.2. Hand Wire Insertion

Use AMP Insertion Tool 552714 (408-6553) or Insertion Tool 231890 (408-3187) to insert wire(s) into the terminals.

### 5.3. Automatic Wire Insertion

Custom application machines can be designed or recommended by AMP Tooling and Product Engineers. For assistance, consult your local AMP Representative or call the Tooling Assistance Center number at the bottom of page 1.

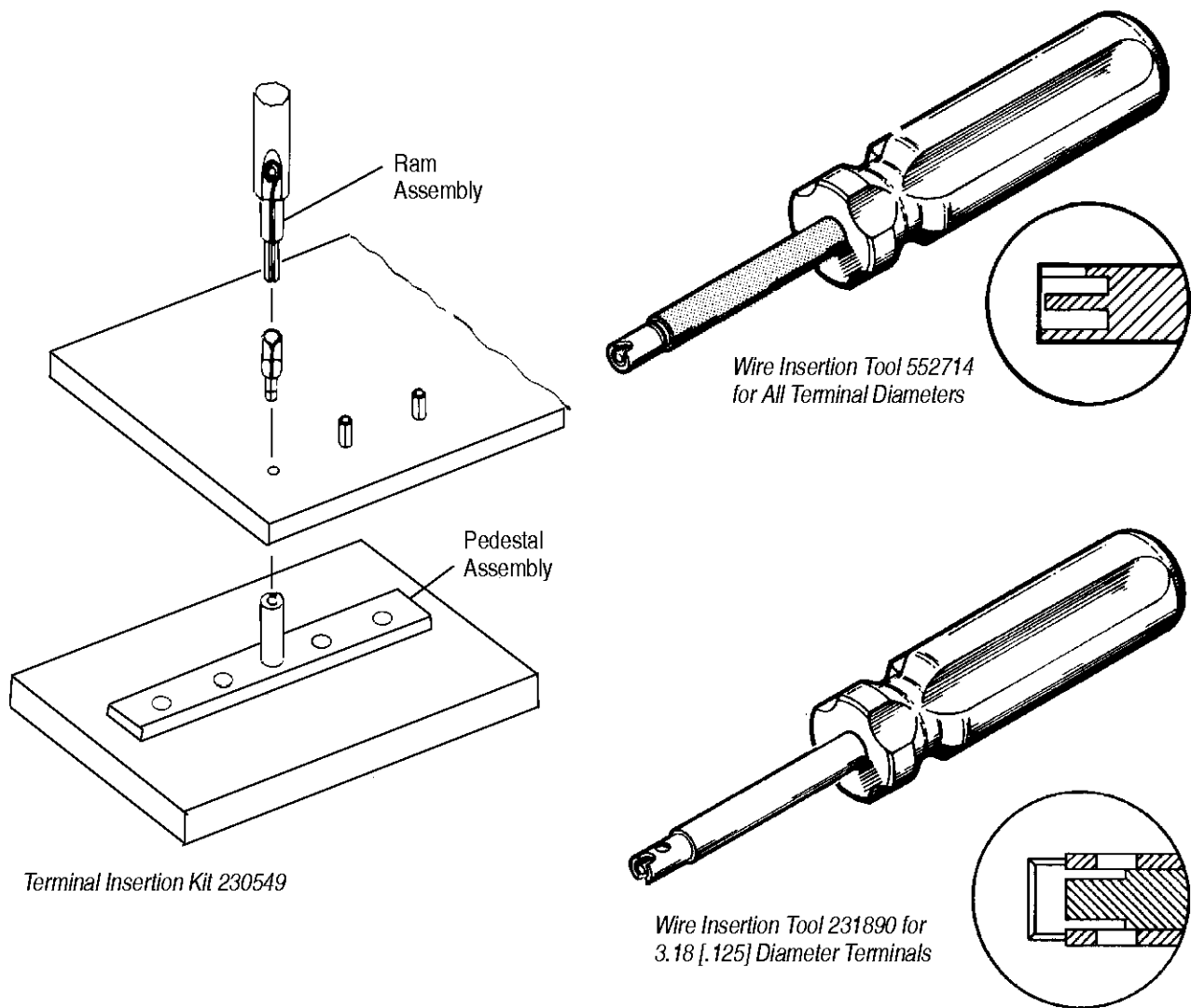
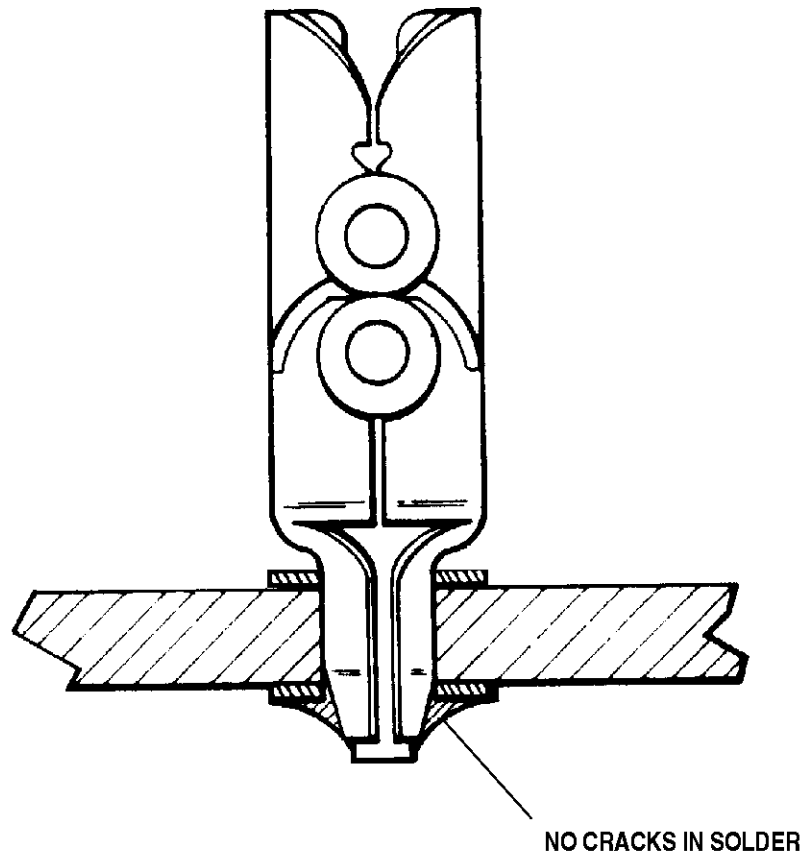


Figure 8

**6. VISUAL AID**

The following illustration shows a typically terminated AMP-BARREL terminal. The illustration depicts, in general, the conditions that production personnel should check to ensure a properly soldered product. Applications which are not visually correct should be dimensionally inspected using the information given in the main body of this specification.



**FIGURE 9. VISUAL AID**