

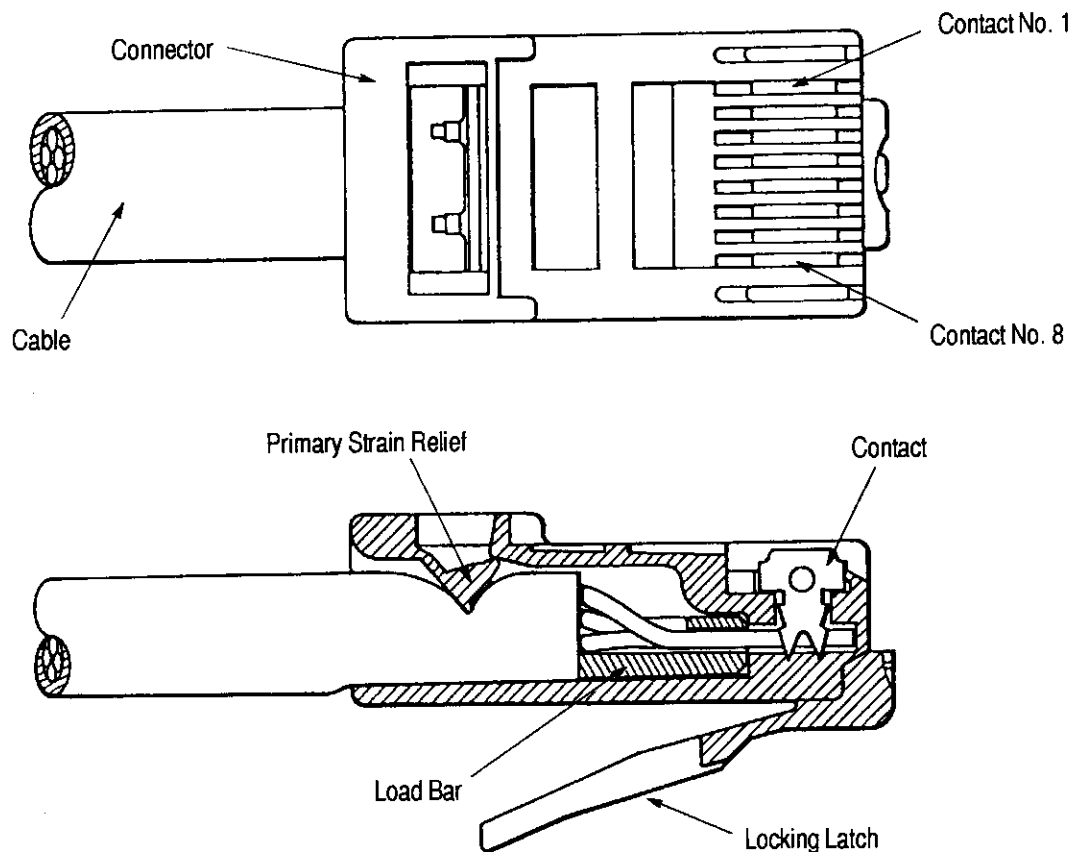
NOTE

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 $\pm 1^\circ$.

1. INTRODUCTION

This specification covers the application requirements for AMP* High Performance Modular Plug Connectors. These requirements are applicable to hand or automatic machine terminating tools. Specific wire approved for use with these connectors is Category 5, 100 Ω unshielded twisted pair (UTP) and 150 Ω shielded twisted pair (STP), 24 AWG 7-strand stranded (provided insulated conductor outside diameter is less than or equal to 0.99 [.039] and jacket outside diameter between 4.83 [.190] and 5.59 [.220]). See Section 3.1. for cable details.

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

*Figure 1*

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

This paragraph is reserved for a revision summary of changes and additions made to this specification. No summary is required on this initial release, Revision O (Rev O).

2.2. Customer Assistance

Part Number 558530 and Product Code 2241 are representative numbers of AMP High Performance Modular Plug Connectors. 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 Sales Engineer, Field Service Engineer, etc.) or, after purchase, by calling the Technical Assistance Center or the AMP FAX/Product Information number at the bottom of this page.

2.3. Drawings

AMP Customer Drawings for specific 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 108-1163 covers test and performance requirements.

2.5. Instruction Material

Instruction material for automatic and hand termination tooling is shipped with the appropriate tooling. Refer to Figure 10 for referenced documents.

3. REQUIREMENTS

3.1. Cable (8-Conductor)

1. Conductor Size: 24 AWG
2. Conductor Type: 7-strand, stranded
3. Conductor Insulation Outside Diameter: 0.89 – 0.99 [.035 – .039]. *Do NOT exceed maximum insulation diameter (0.99 [.039]).*
4. Cable Jacket Insulation:
 - (a) Unshielded: Pliable, Loose Jacketed = 5.59 [.220] Max., 4.83 [.190] Min
Rigid, Hard Jacketed = 5.08 [.200] Max., 4.83 [.190] Min
 - (b) Shielded: Pliable, Loose Jacketed = 5.21 [.205] Max., 4.83 [.190] Min
Rigid, Hard Jacketed = 5.08 [.200] Max., 4.83 [.190] Min
5. Shield Type: metalized polyester only; no braided shield compositions

3.2. Cable Preparation

A. Unshielded Round Cable

Unshielded cable jacket insulation shall be stripped as indicated in Figure 2. Reasonable care shall be taken not to cut the conductor insulation during the jacket stripping operation.

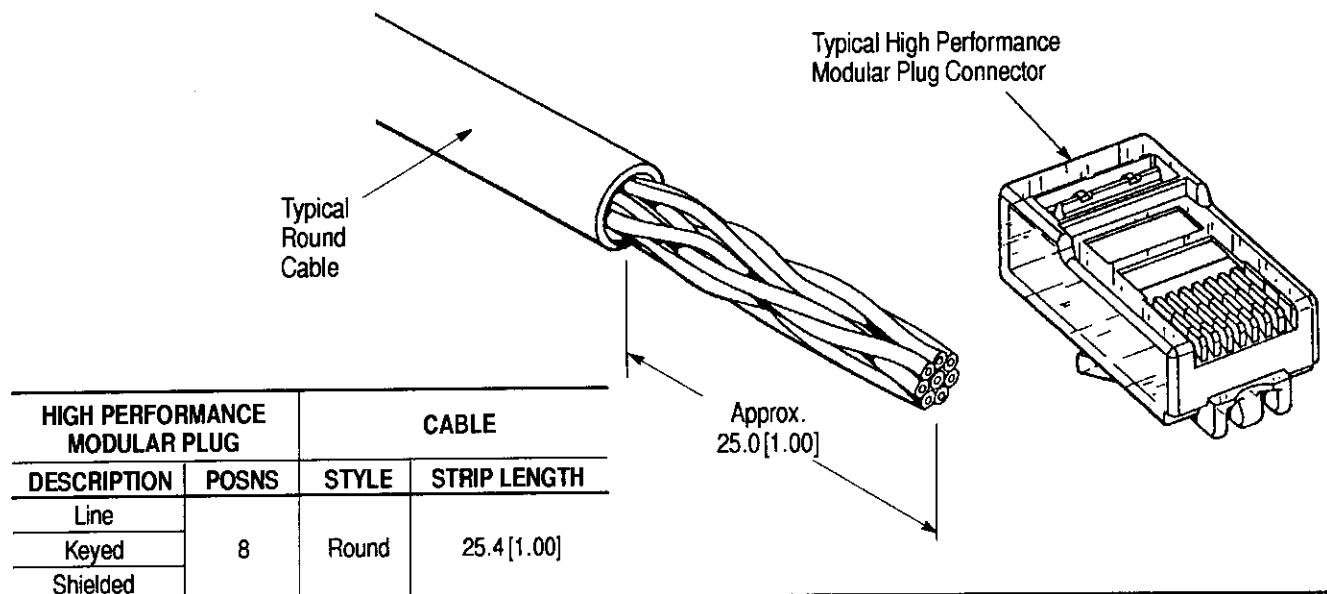


Figure 2

B. Shielded Round Cable (Figure 3)

1. Insert blade tip between shield and cable jacket. Slit cable jacket 25.4 [1.00] back from end. Avoid nicking the conductor insulation below.
2. Pull cable jacket away from shield and cut off slit portion of cable jacket. Care shall be taken not to cut shield. The conductors enclosed by the shield should extend 25.4 [1.00].
3. Find overlap seam in shield and pull shield away from conductors while being careful not to damage shield.
4. Fold shield back over cable jacket and trim to 9.52 [.38] in length. Form shield smoothly around outside of cable jacket. Make sure that conductive surface of the shield is exposed; if not, perform another fold.
5. Bend drain wire back tightly across center of cable shield on side of cable that will be away from the primary jacket strain relief, alongside the large tab of the shield within the modular plug housing. Trim drain wire to same length as the cable shield.

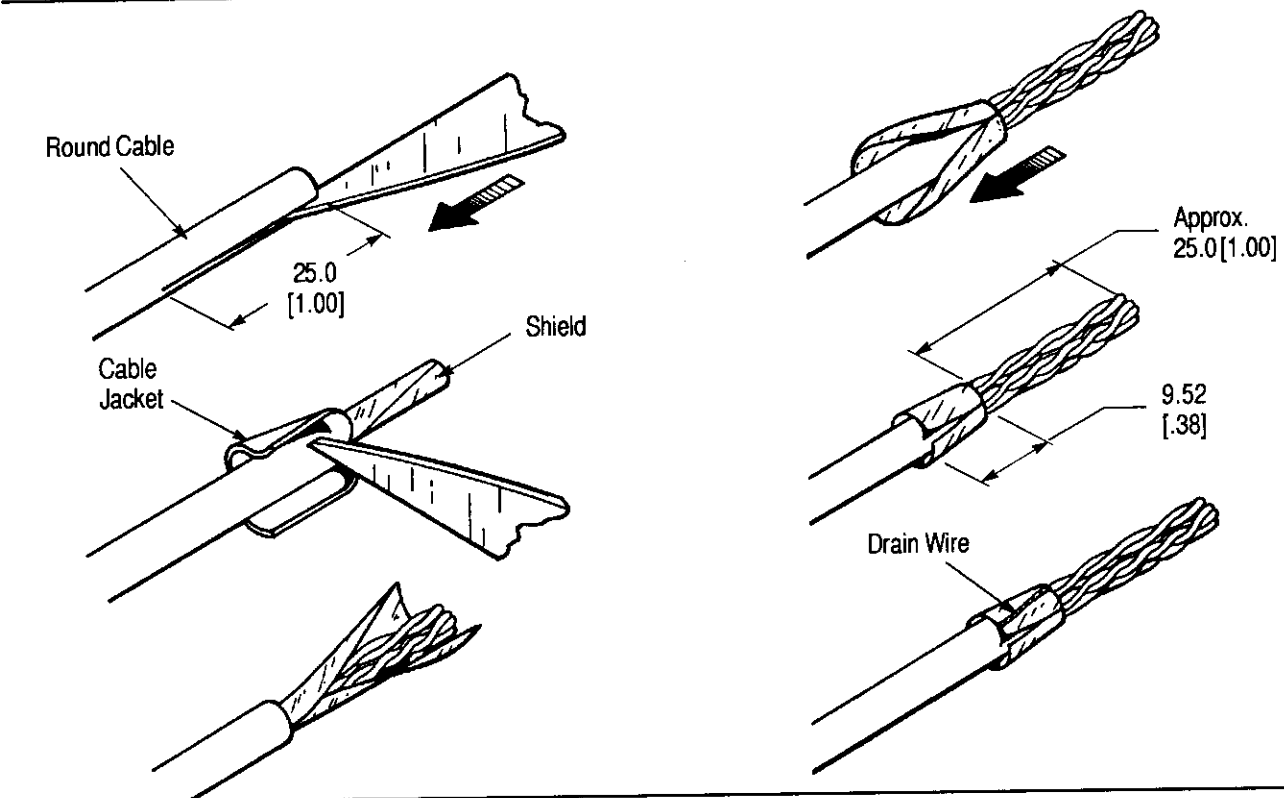
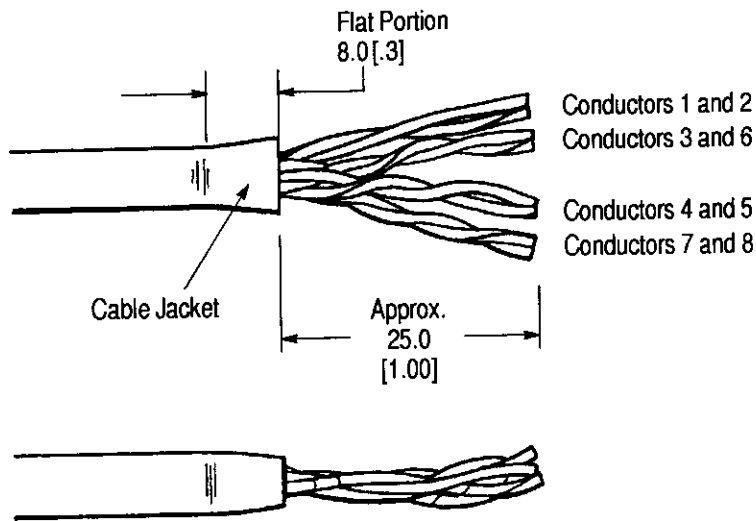


Figure 3

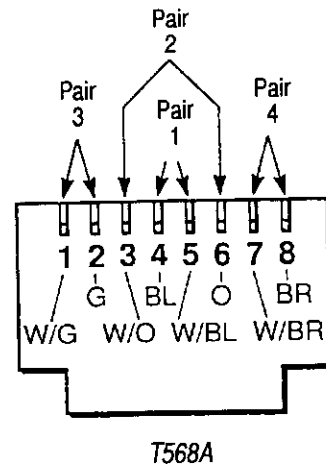
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3.3. Termination Procedures

1. Position the conductor pairs in this sequence: 1 and 2, 3 and 6, 4 and 5, and 7 and 8 (as shown in Figure 4). Hold jacket between thumb and forefinger, squeeze jacket edge so it flattens and conductor pairs are oriented side-by-side. The properly sequenced pairs should extend into the jacket approximately 8.0 [.3], creating an oblong shape.
2. While still holding the jacket, untwist the pairs and orient them according to the desired EIA/TIA 568 A or B configuration (see Figure 4). **CRITICAL** – Do not untwist pairs inside the jacket. It is preferred to leave twists on any pair visible beyond the jacket, if it can be achieved while obtaining the required wiring configuration. Cross conductor 6 **OVER** conductors 4 and 5.
3. Slip thumb and forefinger from jacket edge onto conductors to maintain the proper orientation of the conductors. **Trim the conductor tips even**; leaving approximately 19.0 [.75] from jacket edge to wire tips. This makes insertion into the conductor management load bar easier. See Figure 5.

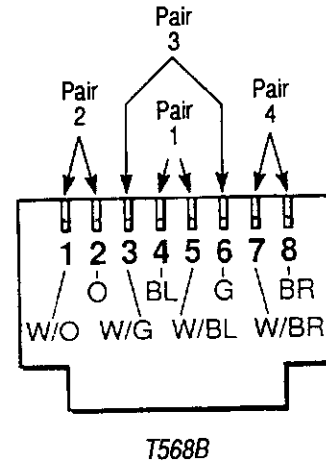


Plug Positions



COLOR CODES FOR STRANDED, 100Ω, UNSHIELDED TWISTED PAIR PATCH CORD AND CONDUCTOR CROSS REFERENCE

PAIR NO.	CONDUCTOR CROSS REF (Note 1)		COLOR CODE OPTION (Abbr)	COLOR CODE OPTION (Abbr)
	T568A	T568B		
1	5	5	WHITE-BLUE (W-BL)	GREEN (G)
	4	4	BLUE (BL) (Note 2)	RED (R)
2	3	1	WHITE-ORANGE (W-O)	BLACK (BK)
	6	2	ORANGE (O) (Note 2)	YELLOW (Y)
3	1	3	WHITE-GREEN (W-G)	BLUE (BL)
	2	6	GREEN (G) (Note 2)	ORANGE (O)
4	7	7	WHITE-BROWN (W-BR)	BROWN (BR)
	8	8	BROWN (BR) (Note 2)	SLATE (S)



Note 1: Because of their identical pair groupings, cables wired per either T568A or T568B pair assignments may be used interchangeably provided both ends are wired with the same pin/pair scheme.

Note 2: A white marking is optional.

The official EIA/TIA 568 Category 5 conductor orientation configurations are as shown. The T568A configuration is more commonly used, but either configuration is approved.

Figure 4

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CAUTION

CRITICAL - It is extremely important to maintain conductor 6 twist as it crosses over the top of conductors 4 and 5 as shown in Figure 5.

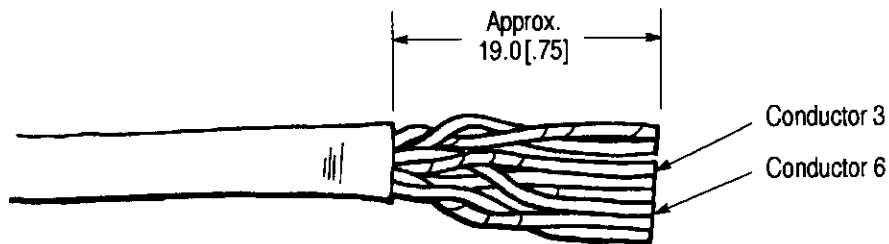


Figure 5

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4. **Insert the conductors** (in the required orientation) **into the conductor management load bar**, included with the plug assembly (see Figure 6). (*Hint: The 'floor' of the load bar, between the cable notch and the conductor constraining area, may be utilized to bring the 8-conductor tips into the same plane; this can be an aid for inserting the conductors into the load bar.*) The load bar should be fully slid down onto the twisted conductors until the **cable jacket resides within the notch** in the bottom of the load bar. **Trim the conductors even and square to the front edge** of the load bar, so approximately 5.0 [.2] of each conductor is protruding from the load bar.

5. **Slide the load bar toward the tips of the conductors**, so that approximately 1.00 [.039] of conductor is exposed. **Insert load bar/cable subassembly into the Modular Plug housing**; making sure that the cable jacket resides within the notch in the load bar after insertion. The load bar will slide back into position as it is inserted into the housing. See Figure 6 (side view). **Conductors should not be visible between notch and jacket.**

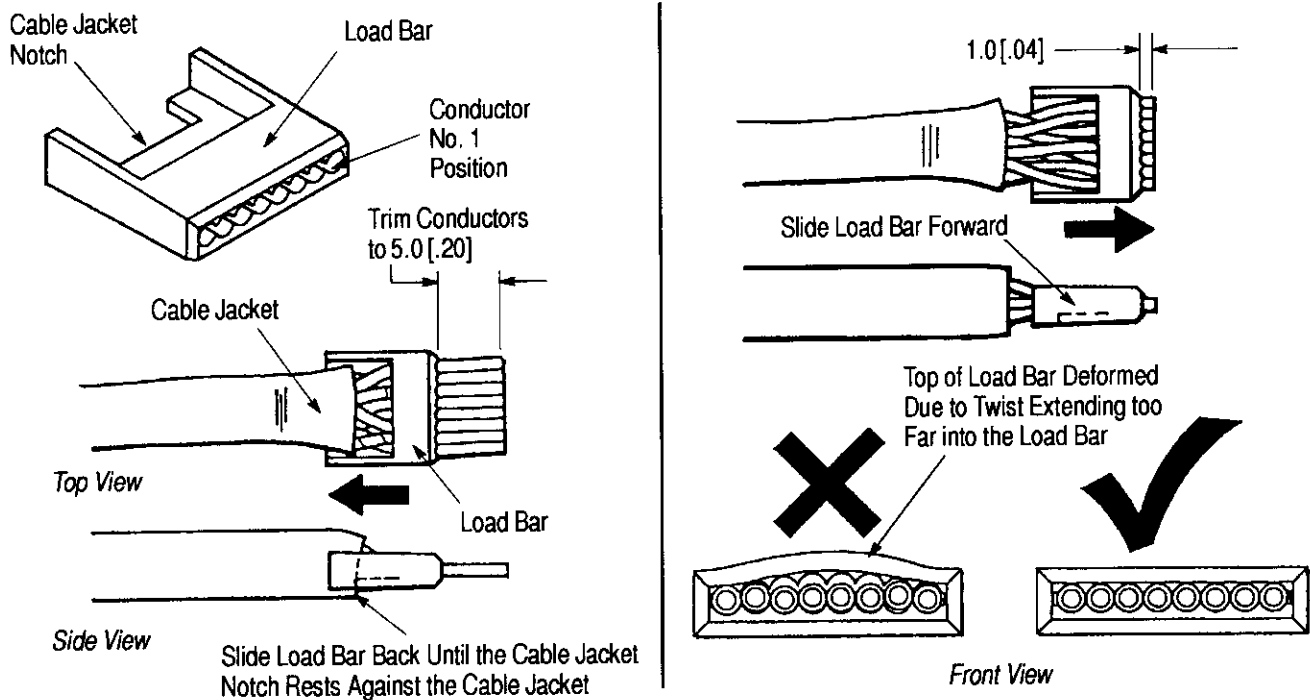


Figure 6

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6. **Make sure the load bar is fully inserted into the mating feature** within the Modular Plug housing (see Figure 7). The **conductors must be completely inserted and "bottomed"** in the wire circuits and clearly visible through the front of the Modular Plug.

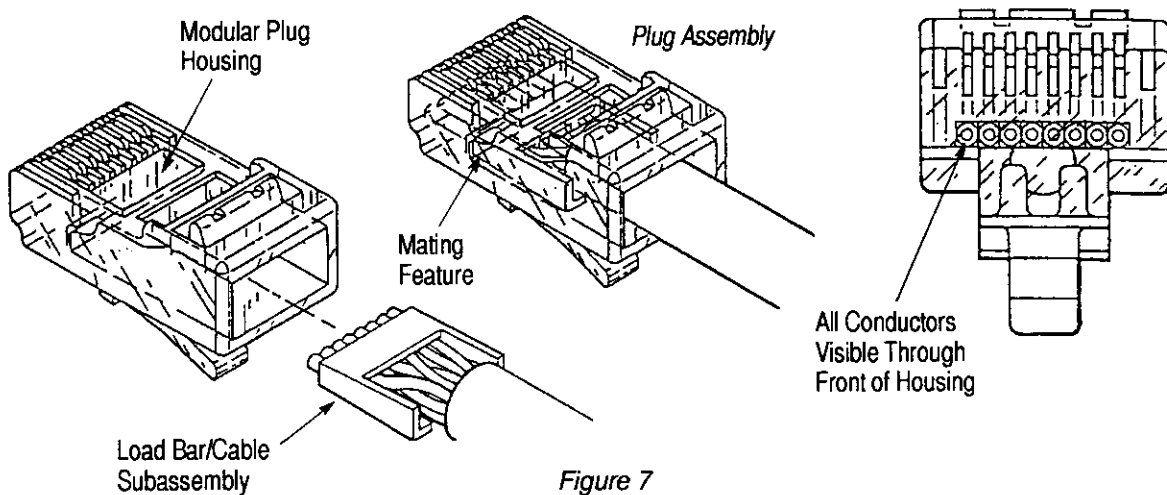


Figure 7

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NOTE

If this "bottomed" conductor condition is not achieved, remove the load bar/cable subassembly from the Modular Plug housing, re-trim the conductors, and re-try Step 5. Repeat as necessary to achieve the required condition. If the conductors are trimmed too short, it will be necessary to re-start the procedure at Step 1. With experience, it will be easy to judge the proper length to trim the conductors, and avoid this repeat process.

7. Insert the plug assembly into the appropriate tooling (see Section 5, TOOLING) and crimp per instruction sheet that came with the tooling.

3.4. Connector Termination Requirements

A. It is preferred that all conductors be visually bottomed against the end of the wire entry circuits. If individual conductors are not completely inserted when visually inspected after termination, they shall be at least inserted past the contact and into the 0.25 [.010] reference zone as shown in Figure 8, to ensure a proper electrical interface with the contact and conductor.

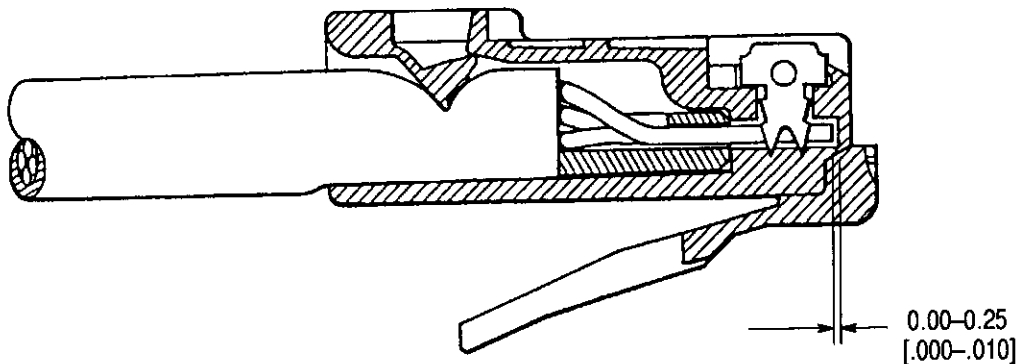


Figure 8

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B. The crimp height shall be 6.02 ± 0.13 [.237 \pm .005] per FCC regulations, Part 68, Subpart F; and measured at the location indicated in Figure 9.

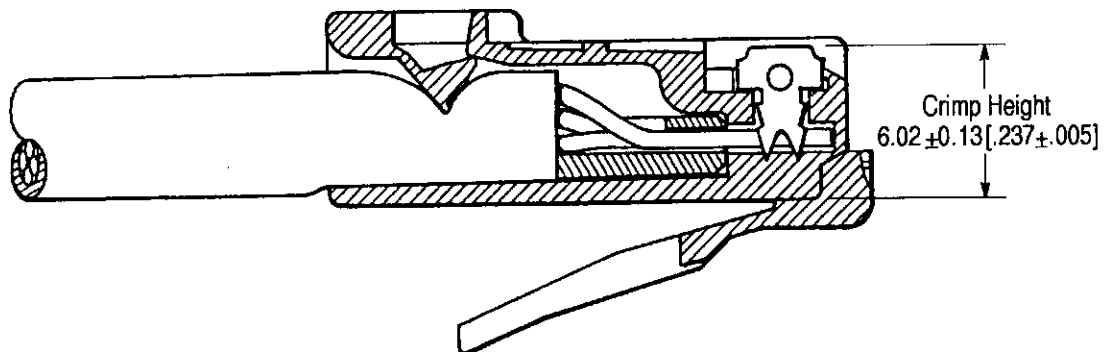


Figure 9

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4. QUALIFICATION SUPPORT

High Performance Modular Plug connectors exceed the minimum Category 5 standards of -40 dB Near End Crosstalk (NEXT) @ 100 Mhz on the worst-case pairs, pinout 4 and 5; when properly terminated in accordance with procedures detailed in Section 3.3. The procedures in this document are in compliance with EIA/TIA requirements.

The High Performance Modular Plug connectors are recognized by Underwriters' Laboratories, Inc. (UL), under UL File Number E81956, and certified by Canadian Standards Association (CSA), under File Number LR7189A.

5. TOOLING

AMP High Performance Modular Plug connectors are terminated by automatic machines or hand terminating tools with interchangeable die sets. See Figure 10 for the various termination tooling and instruction material.

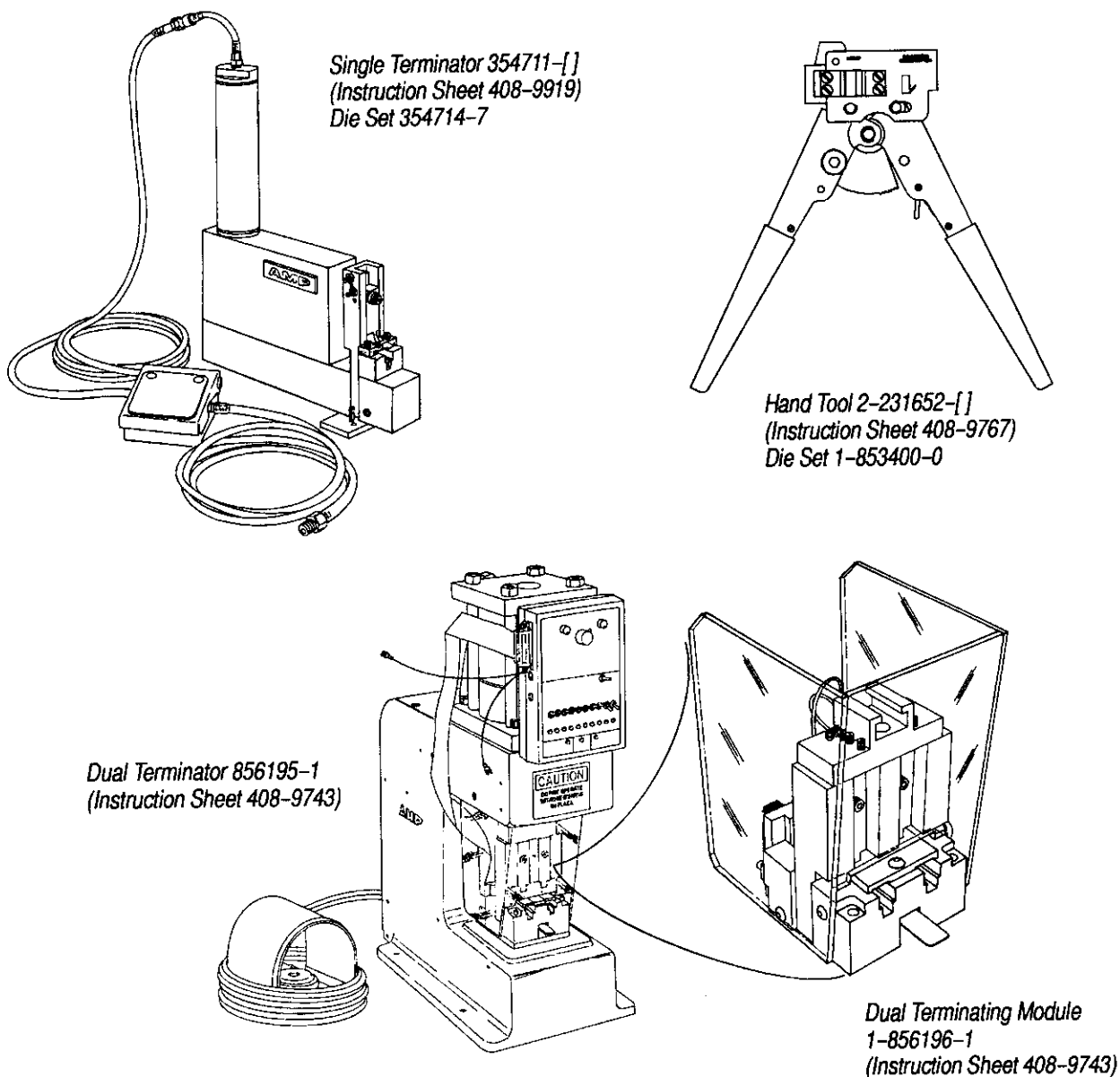
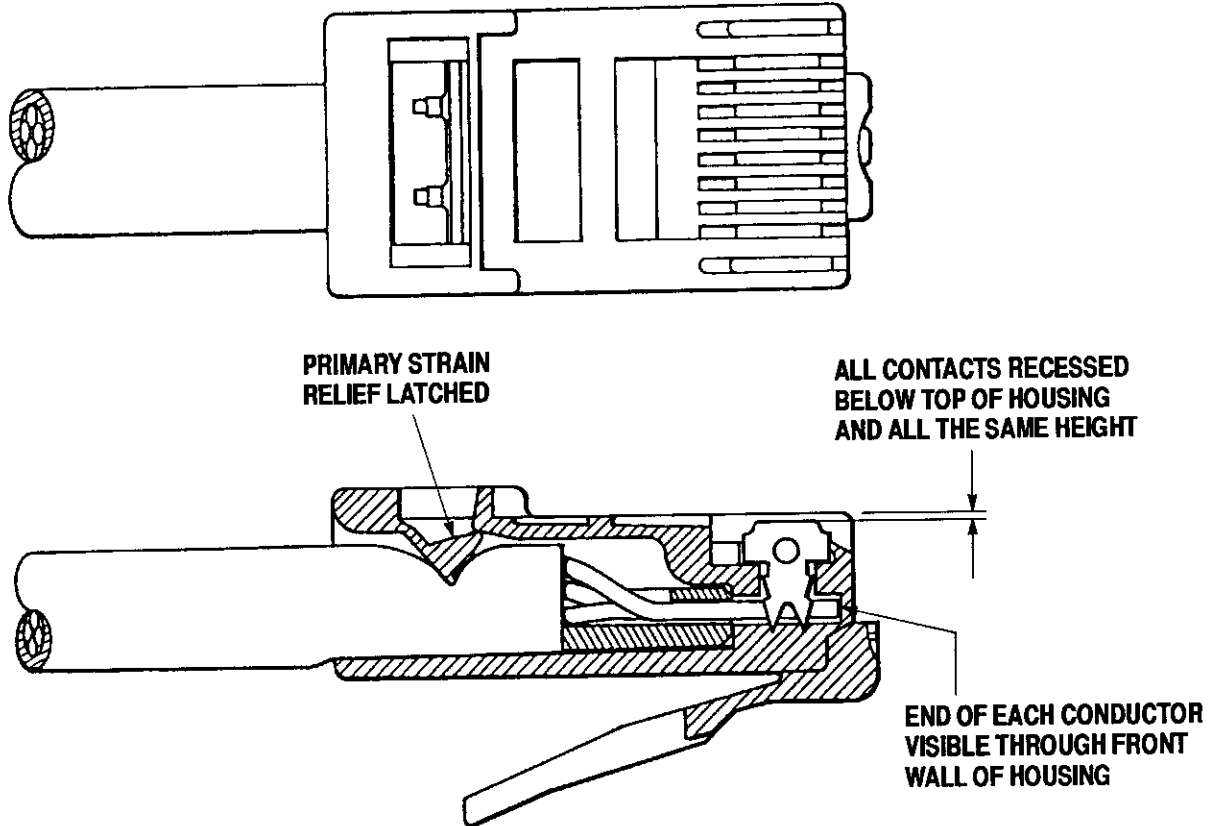


Figure 10

93-149, 93-151B, 91-534

6. VISUAL AID

The illustrations depict, in general, the conditions that production personnel should check to visually ensure proper termination. For dimensional inspection, refer to the details in the preceding pages of this specification.

**FIGURE 11. VISUAL AID**

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