Audio/Microphone Connectors

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 ±2°. Figures and illustrations are for identification only and are not drawn to scale.

1. INTRODUCTION

This specification covers the requirements for the application of Audio/Microphone Connectors. The connectors are designed to accept a wire size range of 18 through 28 AWG and are available in 4, 5, or 6 position. The receptacle connector is panel mounted. Application may be done by machine for reel-mounted contacts and by hand for replacement loose piece contacts.

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

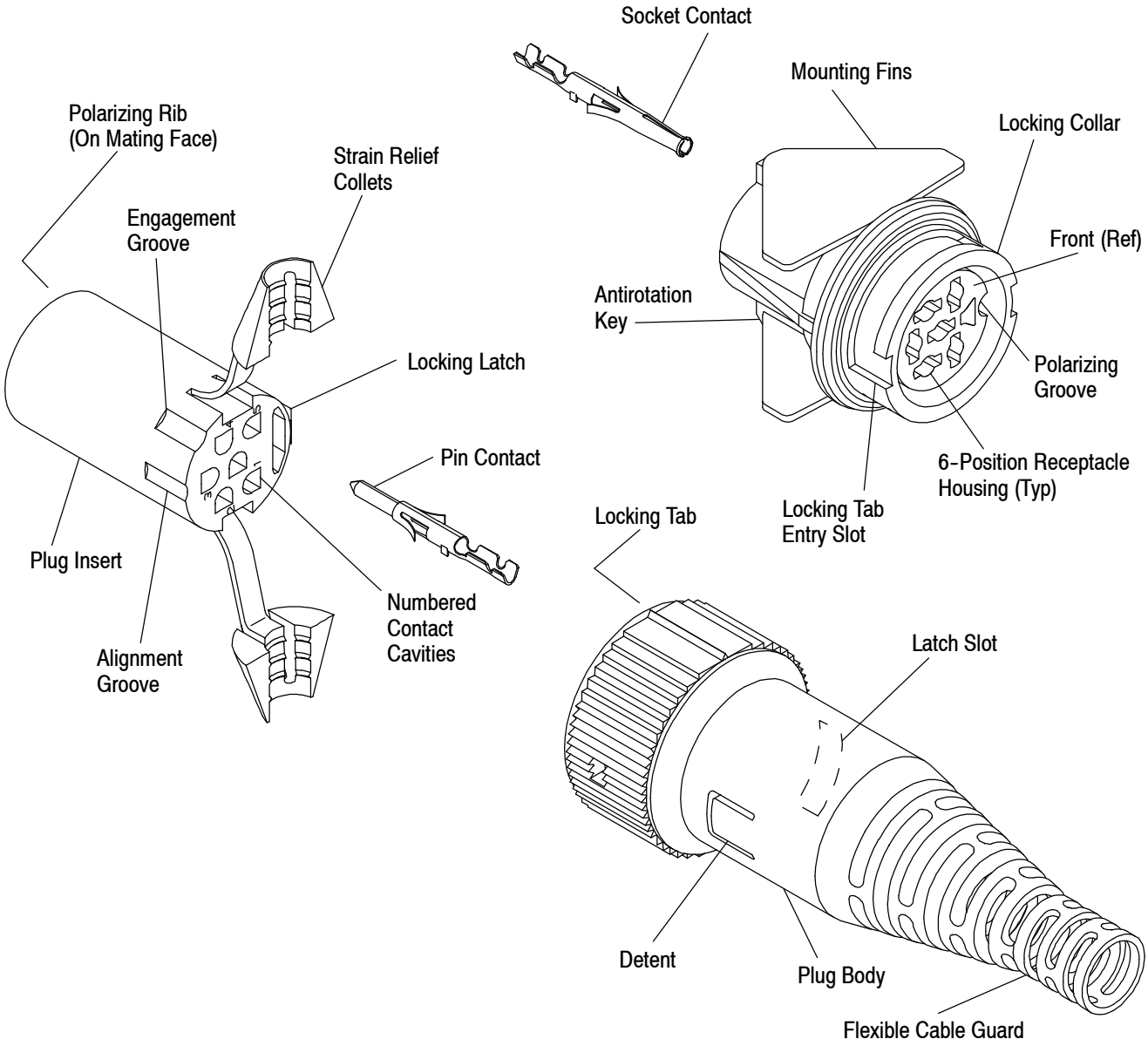


Figure 1

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2. REFERENCE MATERIAL

2.1. Revision Summary

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

- Updated document to corporate requirements.

2.2. Customer Assistance

Reference Part Number 207313 and Product Code 4989 are representative numbers of Audio/Microphone Connectors. 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 numbers at the bottom of page 1.

2.3. Drawings

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 TE.

2.4. Specifications

Product Specification 108-10032 is available to provide test and performance results.

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, as well as setup and operation procedures of applicators; and customer manuals (409-series) that provides setup, operation, and maintenance of machines.

Document Number	Document Title
408-3295	Preparing Reel of Contacts for Application Tooling
408-4392	Hand Crimping Tool 90715-1
408-7347	Insertion Tools 91002-1 and -2
408-7424	Checking Terminal Crimp Height or Gaging Die Closure
408-7819	Audio Instrument Connectors
408-7859	Extraction Tool 91136-1
408-7901	Hand Crimping Tool 90363-1
408-8040	Heavy Duty Miniature Quick-Change Applicators (Side-Feed Type)
408-9816	Handling of Reeled Products
409-5128	Basic AMP-O-LECTRIC* Model “K” Terminating Machines, and Accessories
409-5842	AMP-O-LECTRIC Model “G” Terminating Machine 354500-[ ]
409-5855	AMP-O-MATIC* Side Feed Stripper-Crimper Model II Machine No. 854040-3 and -4
409-5866	AMPOMATOR* CLS IV Lead-Making Machine 217500-[ ]

3. REQUIREMENTS

3.1. Storage

A. Reeled Contacts

When using reeled contacts, store coil wound reels horizontally and traverse wound reels vertically.

B. Shelf Life

The contacts and housings should remain in the shipping containers until ready for use to prevent deformation to the contacts and/or damage to the housings. 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 contacts or housings near any chemicals listed below, as they may cause stress corrosion cracking in the components.

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

D. Ultraviolet Light

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

3.2. Special Characteristics

These Audio/Microphone connectors include a panel mounted receptacle connector and a free-hanging plug connector. The receptacle connector consists of a receptacle housing and the specified number of socket contacts. The housing features a locking collar, two locking tab entry slots, an antirotation key, and four mounting fins.

The plug connector consist of a plug insert, a plug body, and the specified number of pin contacts. The insert features two cable strain relief collets, a locking latch, an alignment groove, and an engagement groove. The body features two locking tabs, a latch slot, a detent, and a flexible cable guard.

Each receptacle has a polarizing groove and each plug insert has a polarizing rib to ensure proper mating. Contact cavities are numbered on the BACK of each connector to provide circuit identification. See Figure 1.

3.3. Panel Mounting Requirements

Audio/Microphone Connectors are designed for a combination of free-hanging and rear panel mount application. For dimensions and layout design, refer to Figure 2.

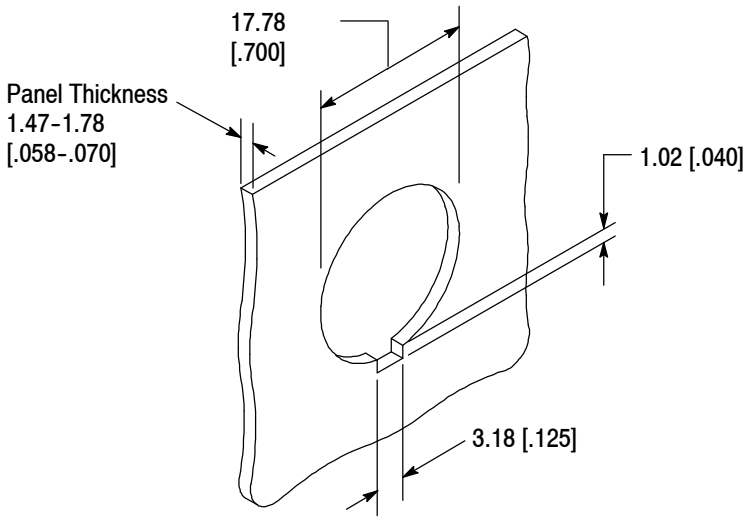


Figure 2

3.4. Wire Selection and Preparation

A. Type

The wire size range for Audio/Microphone Connectors is 18 through 28 AWG and may be solid or stranded.

NOTE

Contacts which accept a wire size range of 18-20 AWG are special large conductor contacts which only fit into customer-supplied audio/microphone connectors.

B. Preparation

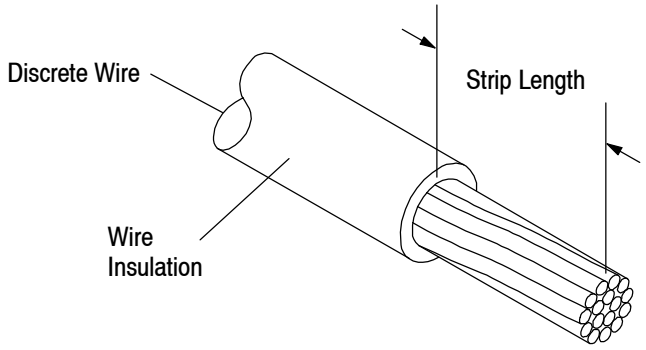
NOTE

Prior to stripping the discrete wires, remove 20.65 mm [.813 in.] of the cable jacket.

The discrete wires must be stripped to the dimension provided in Figure 3.

CAUTION

Do not nick, scrape, or cut the wire conductor during the stripping operation.



INSULATION DIAMETER	WIRE SIZE, AWG	STRIP LENGTH	WIRE BARREL		INSULATION BARREL	
			CRIMP HEIGHT	CRIMP WIDTH	CRIMP HEIGHT	CRIMP WIDTH
2.03-2.54 [.080-.100]	18	3.18-3.94● [.125-.155]	0.97-1.07 [.038-.042]	1.52-1.75 [.060-.069]	ADJUSTABLE (Barrel Should Grip Insulation Without Cutting Into It)	2.74-3 [.108-.118]
		3.56-4.32† [.140-.170]				
	20	3.18-3.94● [.125-.155]	0.81-0.91 [.032-.036]			
		3.56-4.32† [.140-.170]				
0.91-1.37 [.036-.054]	22	3.58-4.34▦ [.141-.171]	0.64-0.74 [.025-.029]	1.27-1.52 [.050-.060]		1.45-1.7 [.057-.067]
	24		0.521-0.660 [.0205-.0260]			
	26-28		0.51-0.61 [.020-.024]			

●Automatic Machine Crimp Dimensions, †Hand Tool Crimp Dimensions, ▦Both Machine and Hand Tool Crimp Dimensions

Figure 3

3.5. Crimped Contact Requirements

Locate the contact to be crimped in the appropriate tooling according to the instructions packaged with that tooling. Detailed instructions covering the placement of contacts in the tooling and the use of such tooling is packaged with each tool.

Terminate the contact according to the directions shipped with the appropriate tooling. See Section 5, TOOLING.

CAUTION

Wire insulation shall NOT be cut or broken during the crimping operation, nor shall the insulation be crimped into the contact wire barrel. Reasonable care should be taken by tooling operators to provide undamaged wire terminations.

A typical receptacle contact as it should appear after crimping is shown in Figure 4. These requirements apply equally to the pin contact.

A. Crimp Height

The crimp applied to the wire portion of the contact is the most compressed area and is most critical in ensuring optimum electrical and mechanical performance of the crimped contact. The crimp height must be within the dimensions provided in Figure 3.

B. Crimp Length

For optimum crimp effectiveness, the crimp must be within the area shown in Figure 4. Effective crimp length shall be defined as that portion of the wire barrel, excluding bellmouth(s), fully formed by the crimping tool. Instructions for adjusting, repairing, and inspecting tools are packaged with the tools. See Figure 10.

C. Bellmouths

Front and rear bellmouths shall be evident and conform to the dimensions given in Figure 4.

D. Cutoff Tab

The cutoff tab shall be cut to the dimensions shown in Figure 4.

E. Burrs

The cutoff burr shall not exceed the dimensions shown in Figure 4.

F. Wire Barrel Flash

The wire barrel flash shall not exceed the dimensions shown in Figure 4 in Section X–X.

G. Wire Location

After crimping, the wire conductor and insulation must be visible in the transition area between the wire and insulation barrels.

H. Conductor Location

The conductor may extend beyond the wire barrel to the maximum shown in Figure 4.

I. Wire Barrel Seam

The wire barrel seam must be closed with no evidence of loose wire strands visible in the seam.

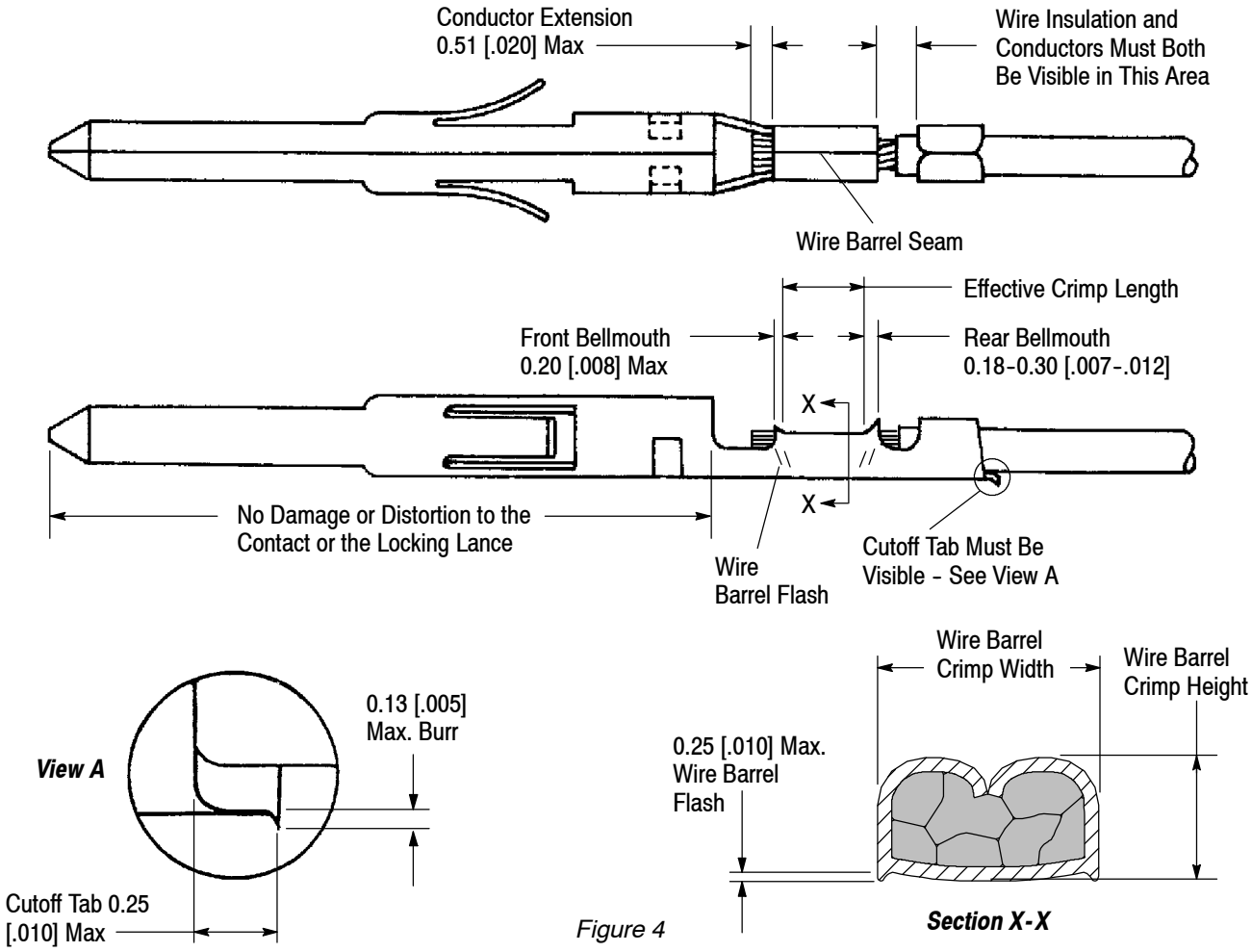


Figure 4

J. Twist and Roll

There shall be no twist, roll, deformation or other damage to the mating portion of the crimped contact that will prevent proper mating. See Figure 5.

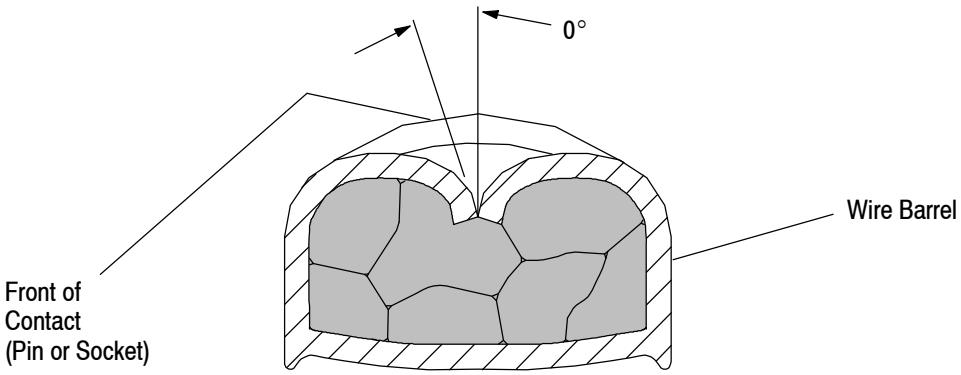


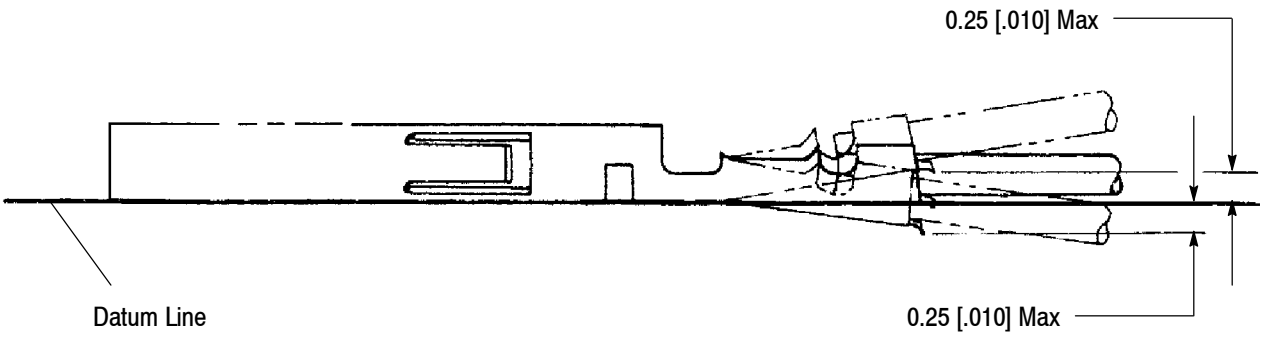
Figure 5

K. Straightness

The force applied during crimping may cause some bending between the crimped wire barrel and the mating portion of the contact. Such deformation is acceptable within the following limits.

1. Up and Down

   The crimped contact, including cutoff tab and burr, shall not be bent above or below the datum line more than the amount shown in Figure 6.



NOTE: Angles are drawn for clarification only and are not to scale.

Figure 6

2. Side to Side

   The side-to-side bending of the contact may not exceed the limits provided in Figure 7.

NOTE

Periodic inspections must be made to ensure crimped contact formation is consistent as shown.

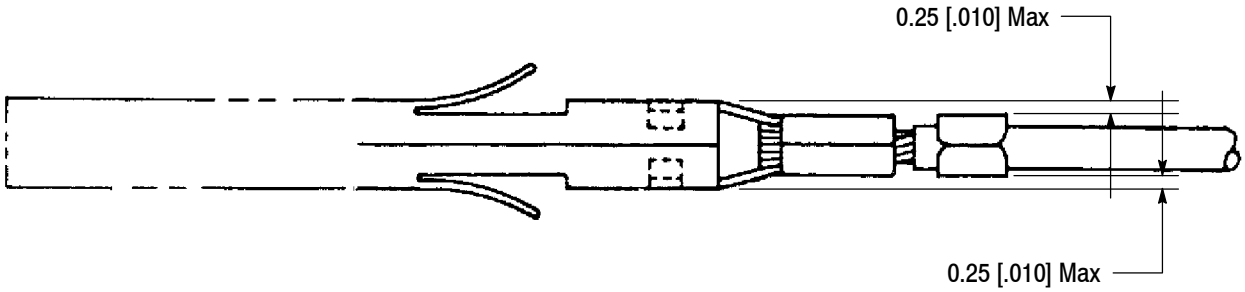


Figure 7

3.6. Housings

Housings are available in 4, 5, or 6 circuit positions for your production requirements. Figure 8 shows the housing configurations. The housings are made from black thermoplastic.

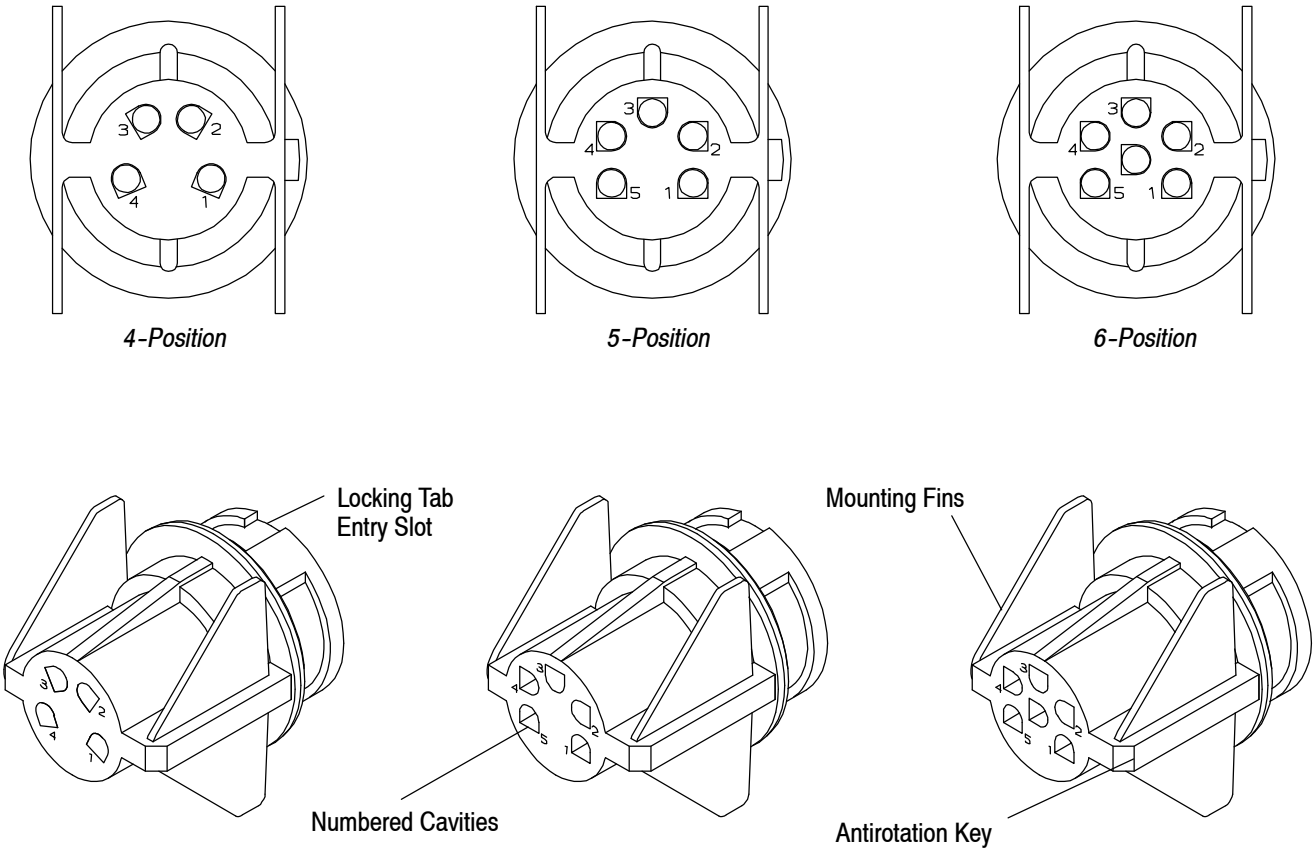


Figure 8

3.7. Assembly Procedures

Instruction Sheet 408-7819 provides specific assembly procedures. Figure 9 shows how the product fits together. Insertion Tool 91002-[ ] may be used to help insert terminated wires and contacts into the housings if needed. Refer to Instruction Sheet 408-7347.

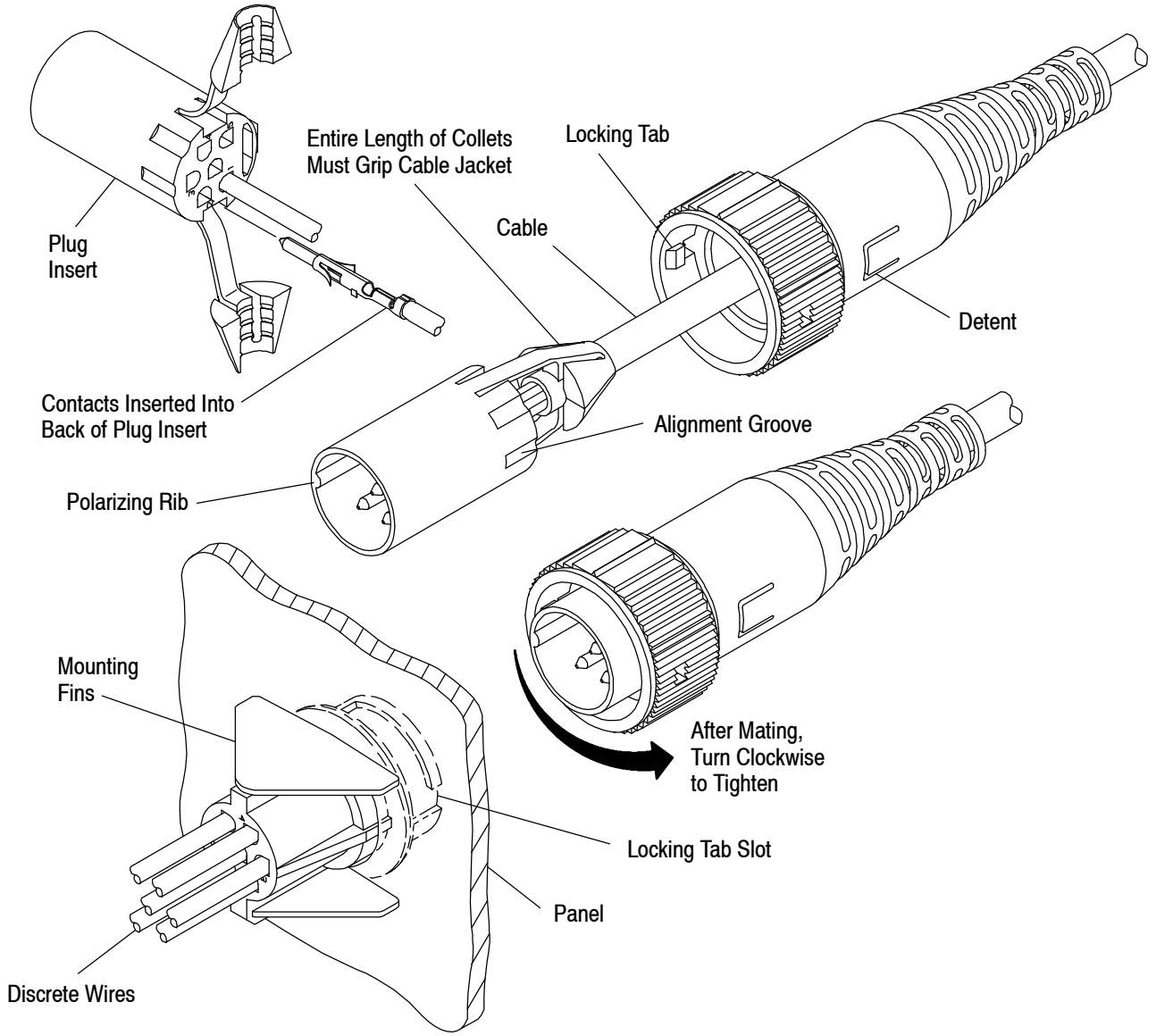


Figure 9

3.8. Repair/Replacement

CAUTION

If a damaged contact is apparent before the contacts are inserted into the housing, cut the wire in back of the contact and reterminate the wire end. If contacts or housing are damaged after insertion, the wire must be cut directly in back of the housing and reterminated with new contacts and housing. See Section 5, TOOLING.

Contacts are not repairable once a termination has been made. Any defective contact should be removed and replaced with a new one. Damaged contacts can be removed from the housing by using Extraction Tool 91136-1. Refer to Instruction Sheet 408-7859 for extraction procedures.

4. QUALIFICATION

Audio/Microphone Connectors are not required to be agency approved.

5. TOOLING

Figure 10 provides tool part numbers and instructional material related to wire size.

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 Tooling Assistance Center number at the bottom of page 1.

- **Hand Crimping Tool**

  Hand crimping tools that accommodate the full wire size range are designed for prototype and low-volume applications such as repair of damaged contacts.

- **Applicator**

  Applicators are designed for the full wire size range of strip-fed, precision formed contacts, and provide for high volume, heavy duty, production requirements. The applicators can be used in bench or floor model power units.

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. This information should be read 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 number located at the bottom of page 1 for specific changes.

- **Power Units**

  A power unit is an automatic or semi-automatic device used to assist in the application of a product. Power unit includes the power source used to supply the force or power to an applicator.

NOTE

The Model "K" AMP-O-LECTRIC Terminating Machine PN 565435-5 has been superseded by the Model "G" Terminating Machine PN 354500-1 (409-5842) for new applications. For existing applications, the Model "K" is still recommended because of the large number of installed machines.

- **Insertion Tools**

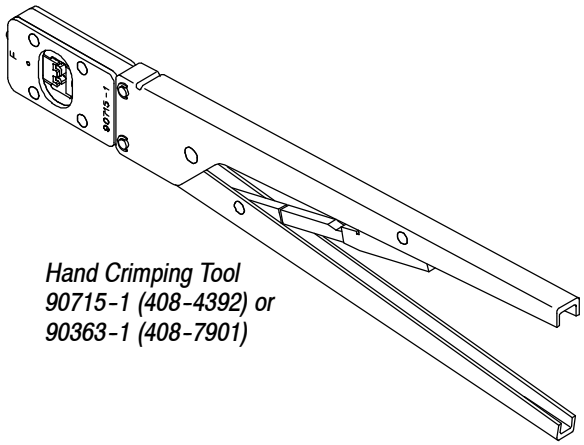
  Insertion Tools are designed for contacts crimped to small fragile wire. They are designed to stabilize the contact during insertion.

- **Extraction Tools**

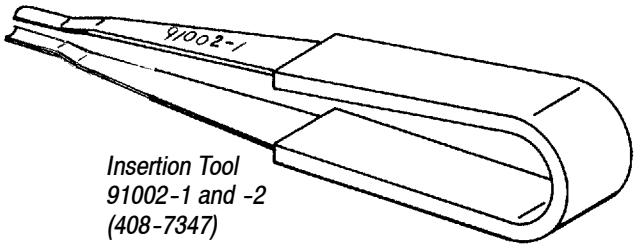
  Extraction Tools are designed to release the locking lance inside the connector housing without damaging the housing or contacts.

INSULATION DIAMETER	WIRE SIZE, AWG	APPLICATOR (DOCUMENT)	POWER UNIT (DOCUMENT)	HAND TOOL (DOCUMENT)
2.03-2.54 [.080-.100]	18-20	680402-1 (408-8040)	217500-[ ] (409-5866)	90715-1 (408-4392)
		680402-2 (408-8040)	565435-5 (409-5128)	
			354500-1 (409-5842)	
		680402-3 (408-8040)	354500-[ ] (409-5842)	
0.91-1.37 [.036-.054]	22-28	466644-3 (408-8040)	565435-5 (409-5128)	90363-1 (408-7901)
			354500-1 (409-5842)	
		466644-4 (408-8040)	354500-[ ] (409-5842)	
		466966-1 (409-5855)	854040-3 (409-5855)	

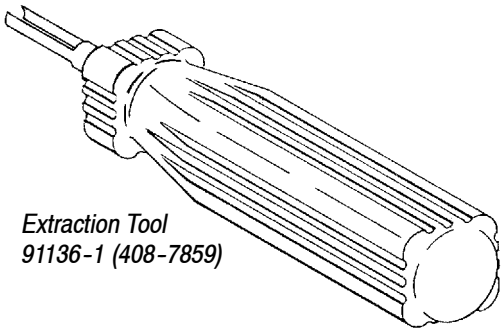
Figure 10 (cont'd)



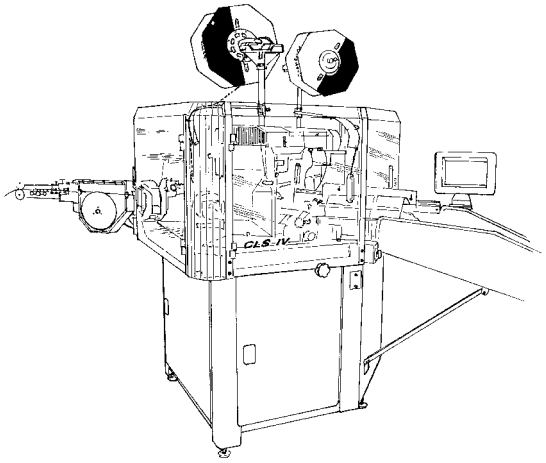
Hand Crimping Tool
90715-1 (408-4392) or
90363-1 (408-7901)



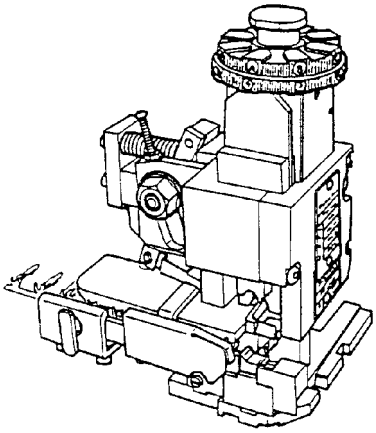
Insertion Tool
91002-1 and -2
(408-7347)



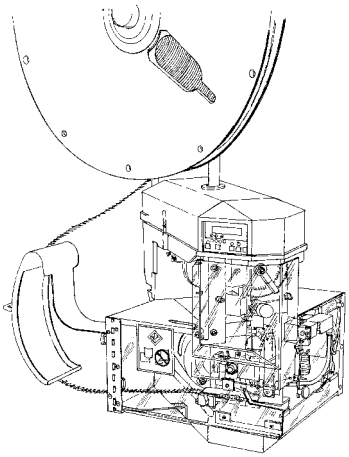
Extraction Tool
91136-1 (408-7859)



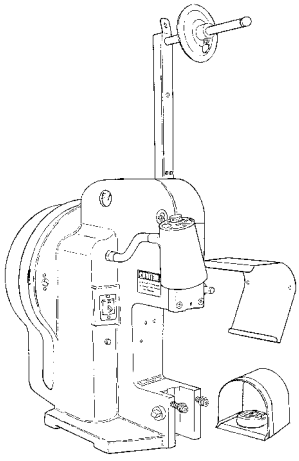
AMPOMATOR CLS IV
Lead-Making Machine
217500-[ ] (409-5866)



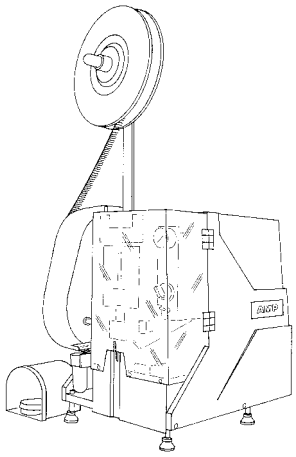
Typical Heavy Duty
Mini-Applicator
(408-8040)



AMP-O-LECTRIC Model "G"
Terminating Machine 354500-1
(409-5842)



AMP-O-LECTRIC Model "K"
Terminating Machine 565435-5
(409-5128)



AMP-O-MATIC
Stripper-Crimper Machine
854040-3 (409-5855)

Figure 10 (end)

6. VISUAL AID

Figure 11 shows a typical application of an Audio/Microphone Connector. 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.

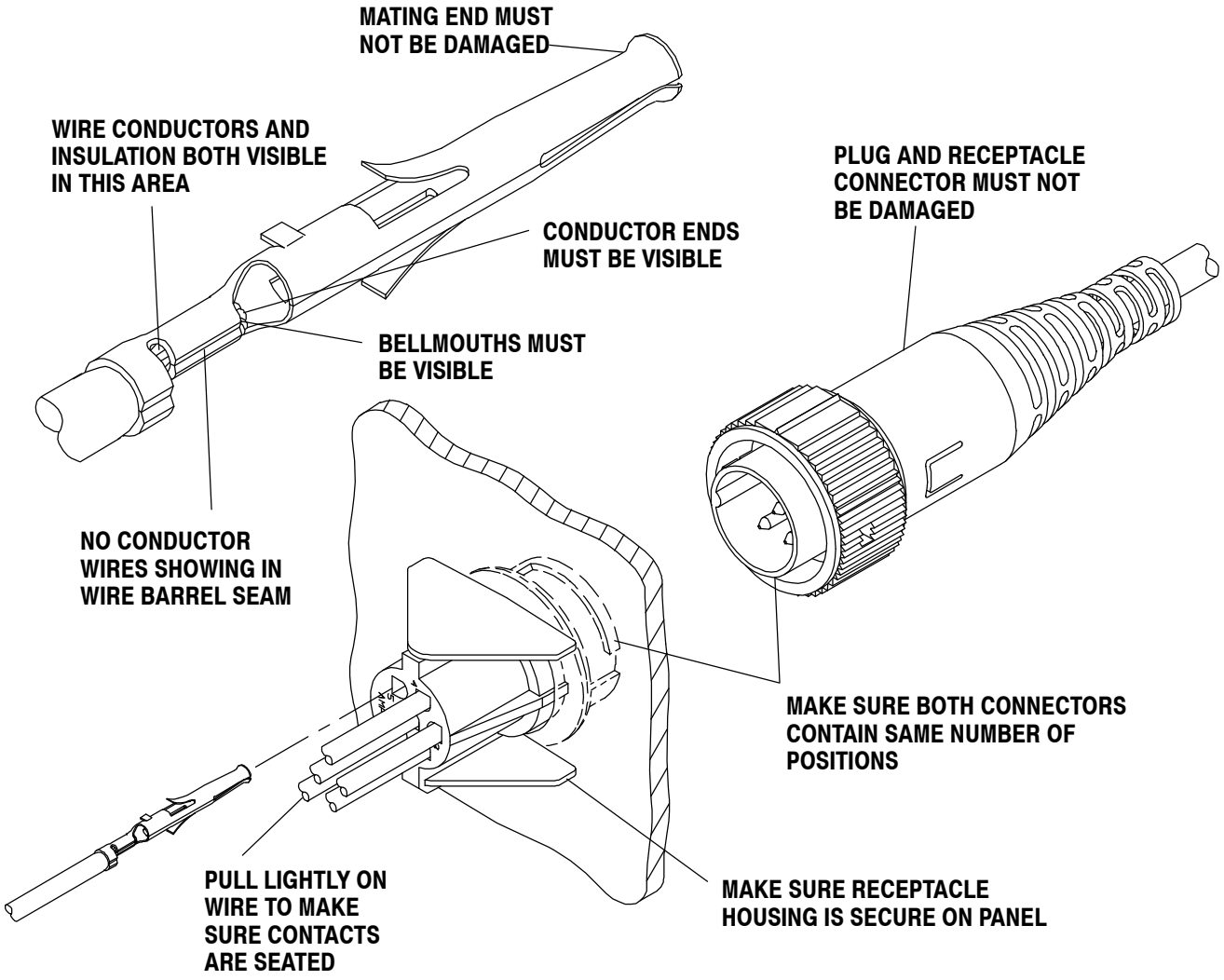


FIGURE 11. VISUAL AID