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 application of Automotive Miniature UHF Coaxial Connectors. The plug and jack connectors are crimped to shielded cable. These requirements are applicable to hand or automatic machine crimping tools.

When corresponding with TE Connectivity Personnel, use the terminology provided in this specification to facilitate your inquiries for information. Basic terms and features of this product are provided in Figure 1.

NOTE: Individual Components
Not Proportionally Drawn to Scale.

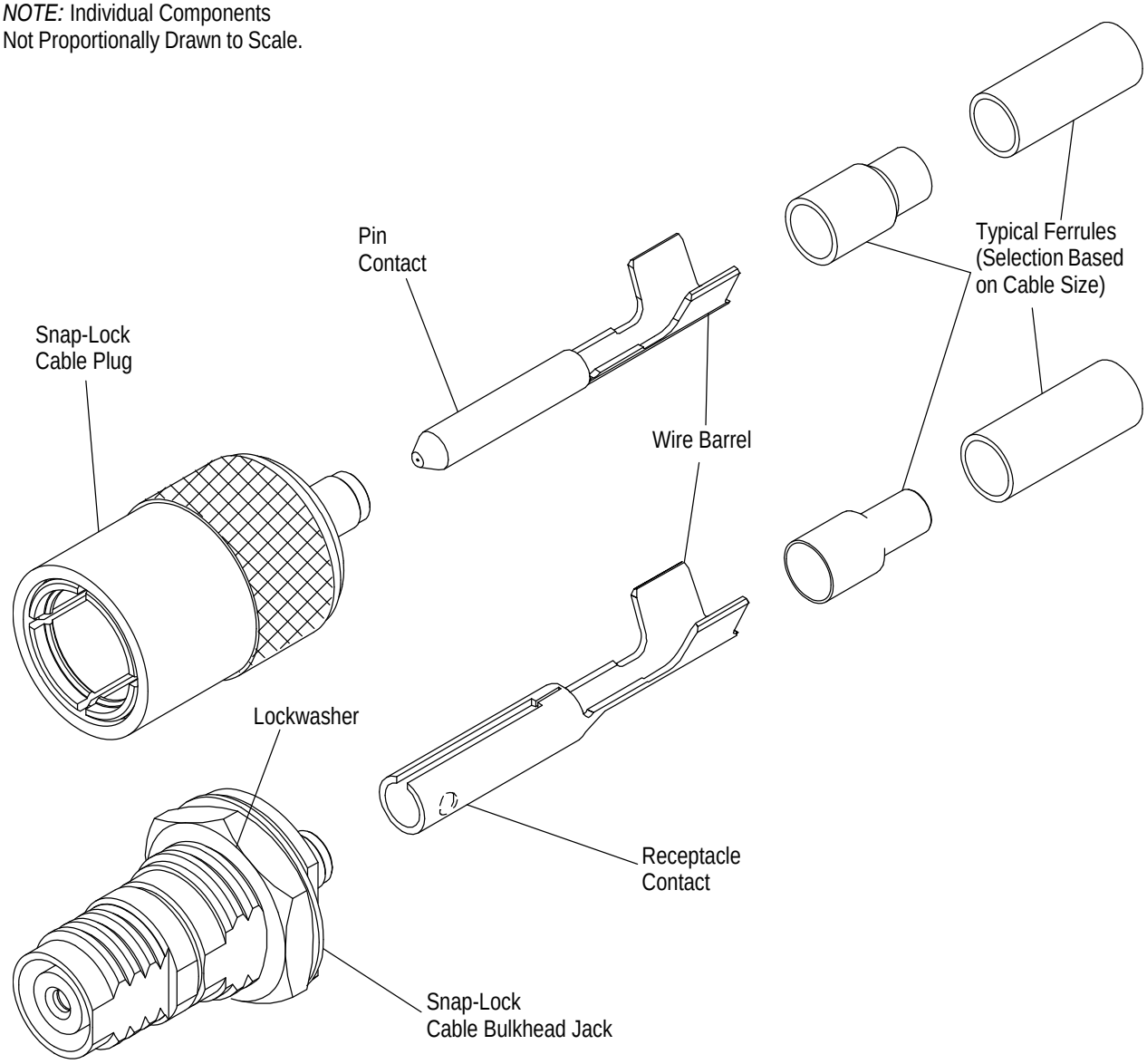


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

Revisions to this application specification include:

- Updated document to corporate requirements and new logo
- Changed PRO-CRIMPER* II hand tool to PRO-CRIMPER III in Paragraph 2.5 and Figure 8

2.2. Customer Assistance

Reference Product Base Part Numbers 415011 and 415012 and Product Code D956 are representative numbers of Automotive Miniature UHF Coaxial Connectors. Use of these numbers will identify the product line and help you to obtain product and tooling information. Such information can be obtained through a local TE Representative, by visiting our website at www.te.com, or by calling PRODUCT INFORMATION or the TOOLING ASSISTANCE CENTER at the numbers 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

Product Specification 108-1584 provides test and performance requirements.

2.5. Instructional Material

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

Document Number	Document Title
408-2498	Crimping Head Cross Reference for Pneumatic Tools (189767-1)
408-2766	Coaxial Cable Stripper 603995-[ ]408-2786Crimping Die Assembly 220189-1
408-3295	Preparing Reel of Contacts for Application Tooling
408-4070	Pneumatic PRO-CRIMPER Adapter 679304-1
408-4218	Crimping Die Assembly 318450-2
408-4303	Pneumatic CERTI-CRIMP* Tool Holder Assembly 356302-1
408-4516	Crimping Die Assembly 58651-2
408-7424	Checking Terminal Crimp Height or Gaging Die Closure
408-8040	Heavy Duty Miniature Quick-Change Applicators
408-8059	General Preventative Maintenance for Applicators
408-9640	Crimp Quality Monitor Applications for Side-Feed and End-Feed Application
408-9816	Handling of Reeled Products
408-9930	PRO-CRIMPER III Hand Crimping Tool Frame Assembly 354940-1
409-5128	Basic AMP-O-LECTRIC* Model “K” Terminating Machine 565435-5
409-5842	AMP-O-LECTRIC Model “G” Terminating Machine 354500
409-5852	AMPOMATOR* CLS III-G Lead-Making Machine
409-5862	Pneumatic Tooling Assemblies 189721-1 and 189722-1
409-5866	AMPOMATOR CLS IV Lead-Making Machine 217500-[ ]
409-5878	AMPOMATOR CLS IV+ Lead-Making Machine
409-10016	Entry Level Terminator (ELT) Machine 1338600-[ ]

3. REQUIREMENTS

3.1. Storage

A. Ultraviolet Light

Prolonged exposure to ultraviolet light will attack and break down the nylon used in the contacts and connectors.

B. Reel Storage

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

C. Shelf Life

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

D. Chemical Exposure

Do not store contacts or connectors near any chemicals listed below, as stress corrosion cracking may occur.

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

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

3.2. Wire Size and Preparation

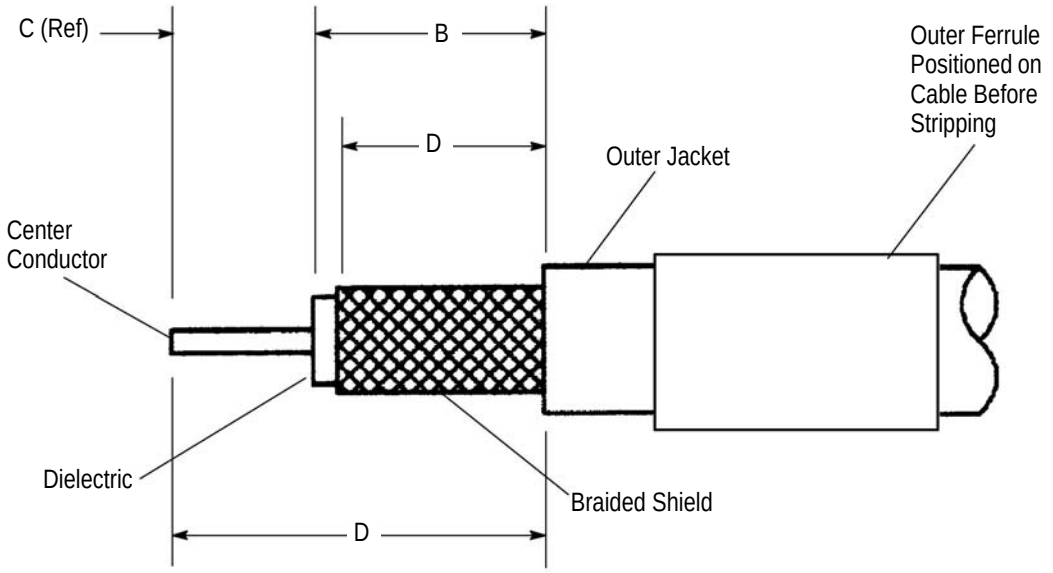
Special considerations must be adhered to in the cable stripping operation. Refer to Figure 2 for cable sizes.

NOTE
Position the outer ferrule onto the cable before the cable stripping operation. When using heat shrink tubing as a strain relief, the tubing must be placed over the cable before the stripping operation is performed.

CAUTION
Do NOT nick, cut, or scrape the center conductor or the braided cable shield during the stripping operation. Refer to Instruction Sheet 408-2766 for use of the Coaxial Cable Stripper 603995-[ ].

NOTE
The applied crimp dimension (within the functional range of the product) is dependent on the appropriate termination tooling being used. Refer to the documentation (applicator logs and instruction sheets) supplied with the termination tooling for the applied crimp height. See Section 5, TOOLING.

Strip the cable as shown in Figure 2.



NOTE: Not to Scale

Figure 2 (Cont'd)

CONNECTOR	CONTACT	CABLE SIZE	CABLE STRIP LENGTH DIMENSIONS				CENTER CONTACT WIRE BARREL CRIMP HEIGHT RANGE
			A	B	C	D	
Plug	Pin	RG 58/U	12.52 [.493]	7.77 [.306]	4.75 [.187]	6.96 [.274]	1.07-0.97 [.042-.038]
		21 AWG Solid					0.94-0.84 [.037-.033]
		22 AWG Stranded					0.97-0.87 [.038-.034]
		RG 174/U	11.28 [.444]	6.53 [.257]	4.75 [.187]	5.72 [.225]	0.76-.066 [.030-.026]
Jack	Receptacle	RG 58/U	13.11 [.516]	8.74 [.344]	4.37 [.172]	6.35 [.250]	1.07-0.97 [.042-.038]
		21 AWG Solid					0.94-0.84 [.037-.033]
		22 AWG Stranded					0.98-0.88 [.038-.034]
		RG 174/U					0.76-0.66 [.030-.026]

Figure 2 (End)

3.3. Crimped Contact Requirements

Crimp center contact onto center conductor of cable (see Figure 3). Refer to instructions packaged with crimp tooling for appropriate procedures.

A. Wire Barrel Crimp

The crimp applied to the wire barrel is the most compressed area and is most critical in ensuring optimum electrical and mechanical performance of the crimped contact. The contact wire barrel crimp height must be within the dimension provided in Figure 2.

B. Effective Crimp Length

For optimum crimp effectiveness, the crimp must be within the area shown in Figure 3. 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 Section 5, TOOLING.

C. Bellmouths

Front and rear bellmouths shall be evident and conform to the dimensions given in Figure 3.

D. Cutoff Tabs

The cutoff tab shall be cut to the dimensions shown in Figure 3.

E. Burrs

The cutoff burr shall not exceed the dimensions shown in Figure 3.

F. Wire Barrel Flash

The wire barrel flash shall not exceed the dimensions shown in Figure 3, Section X-X.

G. Conductor Extension

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

H. Wire Barrel Seam

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

I. Twist and Roll

There shall be no twist, roll, deformation or other damage to the mating portion of the crimped contact that will impair usage of the contact. See Figure 3.

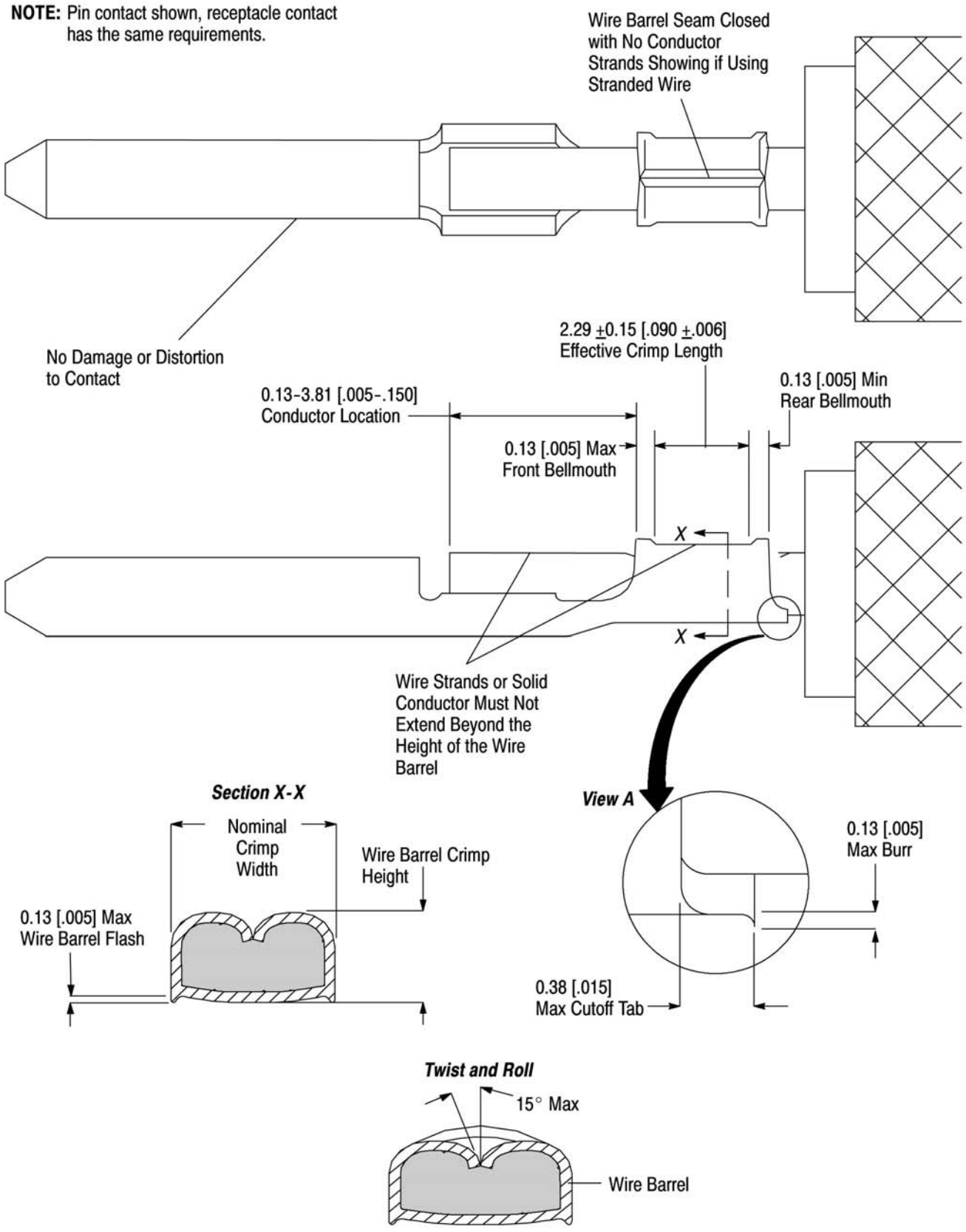

NOTE: Pin contact shown, receptacle contact has the same requirements.
Wire Barrel Seam Closed with No Conductor Strands Showing if Using Stranded Wire
No Damage or Distortion to Contact
2.29 ±0.15 [.090 ±.006] Effective Crimp Length
0.13-3.81 [.005-.150] Conductor Location
0.13 [.005] Min Rear Bellmouth
0.13 [.005] Max Front Bellmouth
X
X
Wire Strands or Solid Conductor Must Not Extend Beyond the Height of the Wire Barrel
Section X-X
Nominal Crimp Width
Wire Barrel Crimp Height
0.13 [.005] Max Wire Barrel Flash
View A
0.13 [.005] Max Burr
0.38 [.015] Max Cutoff Tab
Twist and Roll
15° Max
Wire Barrel

Figure 3

J. 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 limits provided in Figure 4.

1. The up and down bend of the crimped contact, including cutoff tab and burr, shall not be bent above or below the datum line more than the amount shown.

2. The side-to-side bend of the contact may not exceed the limits provided.

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

NOTE: Pin contact shown, receptacle contact has the same requirements.

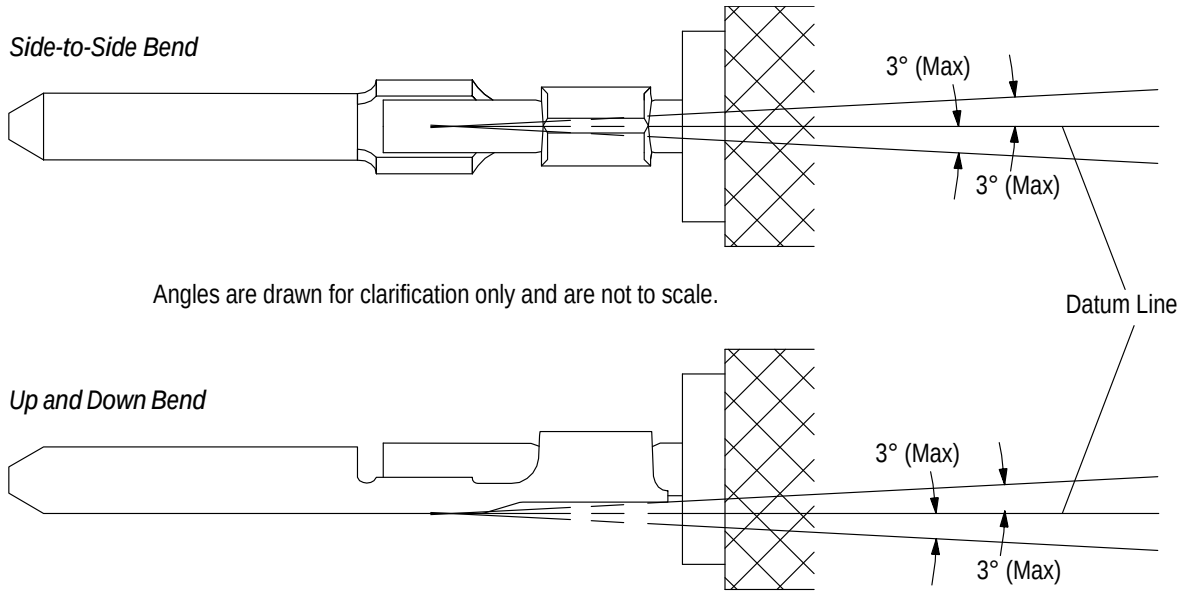


Figure 4

3.4. Crimping the Ferrule

1. Flare the braided shield away from the cable dielectric. Insert the crimped center contact into the connector body until the cable dielectric butts against the dielectric inside the connector body. The flared braided shield must fit around the inner ferrule of the connector body (see Figure 5).

NOTE
The braided shield should not butt against the shoulder on the connector body. If it does, trim excess braid.

2. Slide the outer ferrule forward over the braided shield until the outer ferrule butts against the shoulder on the connector body (see Figure 5).

NOTE
A maximum gap of 0.64 mm [.025 in.] is permitted between the outer ferrule and the connector body.

3. Crimp the outer ferrule onto the connector body according to the instructions packaged with the crimp tooling. Measure the crimp height according to the directions given in the specific crimp tooling instruction sheet. See Section 5, TOOLING.

NOTE
When crimping the ferrule, make sure that there is nothing on the tool or die assembly that could interfere with the front of the plug body. This will cause bending or breaking of the crimped portion of the connector.

NOTE
A maximum angle of 5° between the outer ferrule and the connector body is permitted.

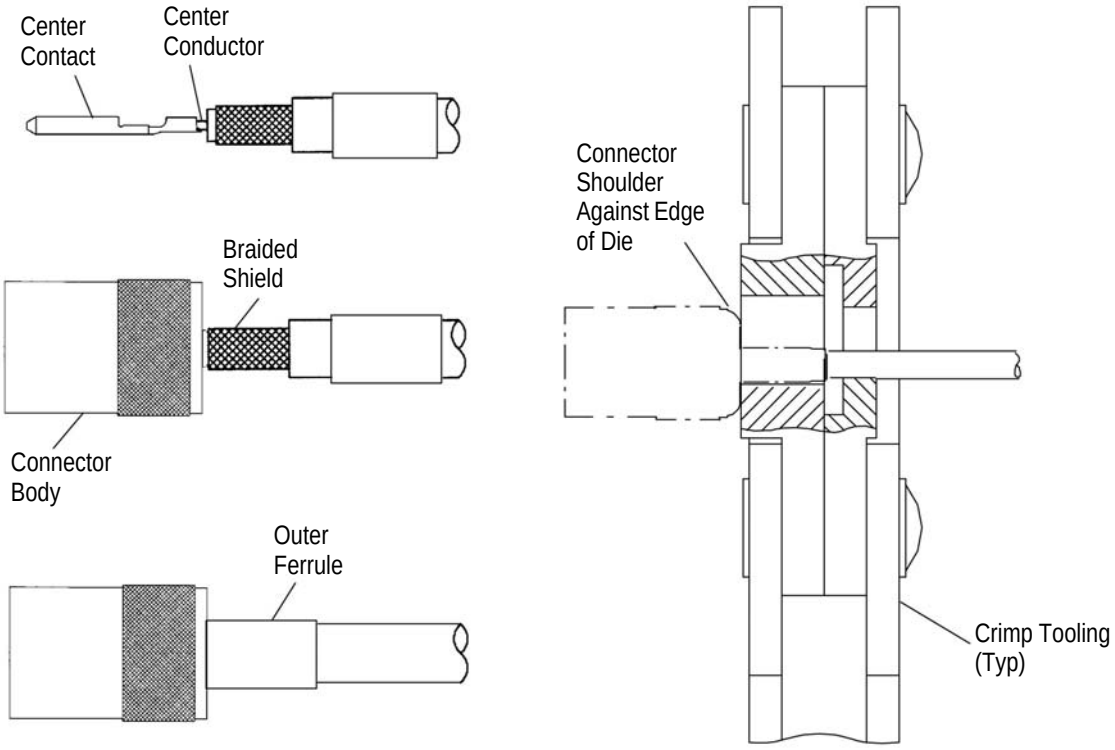


Figure 5

3.5. Wire Bend Radius

It is important not to restrict contacts in any way that may adversely affect the wire dress of the cable. It is recommended that individual cables be dressed to a bend radius of at least ten times the cable outside diameter. Likewise, cable bundles should be dressed to a bend radius of at least ten times the diameter of the bundle.

3.6. Heat Shrink Tubing/Strain Relief

In applications where the strain relief is necessary due to high torque or severe or repeated flexing of the cable, use heat shrink tubing. Call the Product Information number at the bottom of page 1 for information regarding heat shrink tubing available from TE. The tubing is precut to the proper length, but longer lengths of tubing are also available if you wish to cut it yourself.

NOTE
When using heat shrink tubing as a strain relief, the tubing must be placed over the cable before the stripping operation is performed.

Exposed-flame heat sources may be used in applications where flammable materials are not present. However, the flame-less heat gun remains the recommended heat source. Call the Tooling Assistance Center number or the Product Information number, on page 1, for information on heat guns which are available for applying heat shrink tubing.

3.7. Panel Mounting Requirements

Automotive Miniature UHF Coaxial Jack Connectors are designed to be panel mounted. Refer to Figure 6 for panel-mounting dimensions and layout design.

Panel Cutout for Automotive Miniature UHF Coaxial Jack Connectors

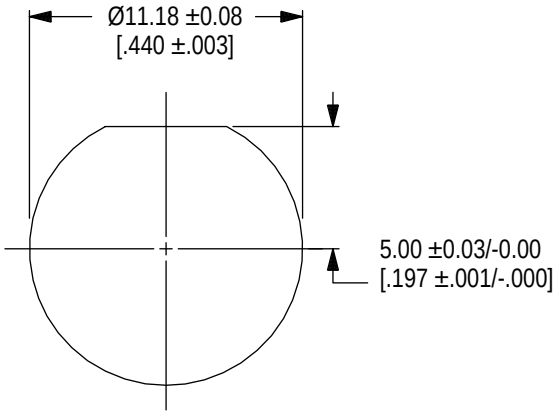


Figure 6

3.8. Connector Assembly Procedures

Insert mating portion of jack connector through back of panel and tighten with lockwasher. Screw plug connector onto jack connector. Do not over-tighten lockwasher or plug connector. Refer to Figure 7.

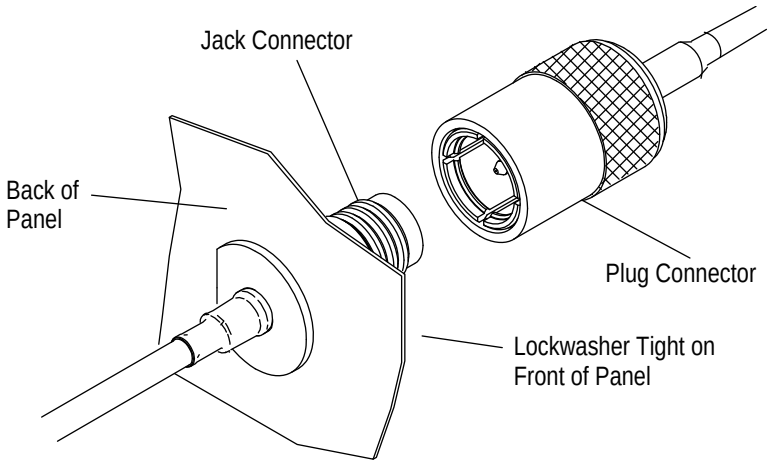


Figure 7

3.9. Repair and Replacement

CAUTION

If a damaged contact is apparent before the contact is inserted into the housing, the contact and stripped cable must be removed, the cable must be re-striped, and a new contact reterminated. 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.

4. QUALIFICATIONS

The Miniature UHF Coaxial Connectors are not required to be agency approved.

5. TOOLING

This section provides a selection of tools for various application requirements. Equivalent tooling from another manufacturer may be used. However, the center contact crimp measurement must conform to the dimensions in Figure 2. Also, the termination tooling must be wide enough to crimp the entire length of the outer ferrule. Figure 8 provides crimp tooling and related instructional material for crimping Automobile Miniature UHF Coaxial Connector Ferrules and Center Crimp Contacts.

- **Crimping Die Assemblies**

Crimping die assemblies for crimping the contacts are available for the full wire size range. They are designed for easy installation and removal in hand crimping tool frame assemblies or applicators.

- **Hand Crimping Tool Frame**

Hand crimping tool frames make it possible to terminate the full wire range of the loose-piece, precision formed contacts using one tool with exchangeable dies sets. They are designed for prototype and low-volume applications.

- **Applicators**

Applicators are designed for high volume, heavy duty, production requirements. The applicators can be used in bench or floor model power units.

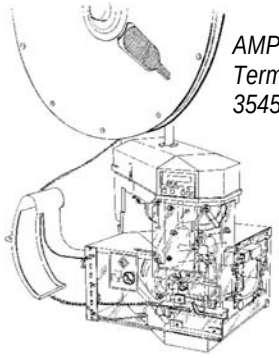
NOTE
Each applicator is shipped with a metal identification tag attached. DO NOT remove this tag or disregard the information on it. Also, a packet of associated paperwork is included in each applicator shipment. This information should be read before using the applicator; then it should be stored in 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 Unit**

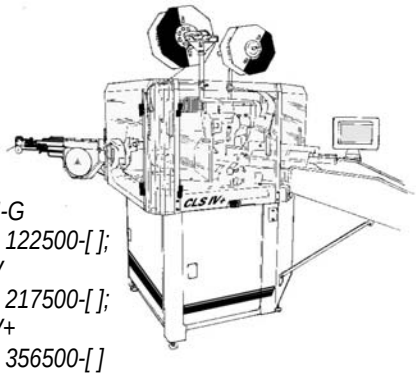
The semi-automatic power units are designed for the source of power to terminate the contacts. These power sources accommodate the applicators to crimp the contacts.

NOTE
AMP-O-LECTRIC Model "K" Terminating Machine 565435-5 has been superseded by Model "G" Terminating Machine 354500-1 for new applications. For existing applications, the Model "K" can still be used because of the large number of installed machines.

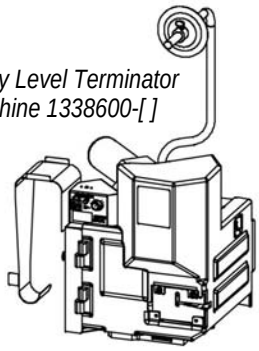
Center Contact Termination Tooling



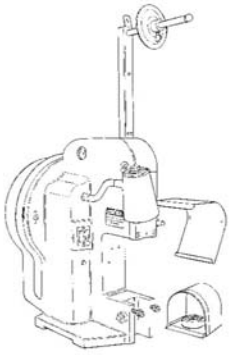
AMP-O-LECTRIC Model "G"
Terminating Machine
354500-[ ] (409-5842)



AMPOMATOR CLS III-G
Lead-Making Machine 122500-[ ];
AMPOMATOR CLS IV
Lead-Making Machine 217500-[ ];
AMPOMATOR CLS IV+
Lead-Making Machine 356500-[ ]



Entry Level Terminator
Machine 1338600-[ ]



AMP-O-LECTRIC Model "K"
Terminating Machine 565435-5

Typical Heavy Duty
Miniature Quick Change
Applicator (408-8040)

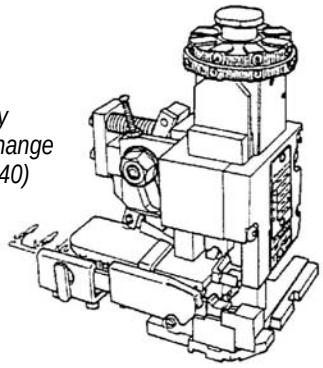
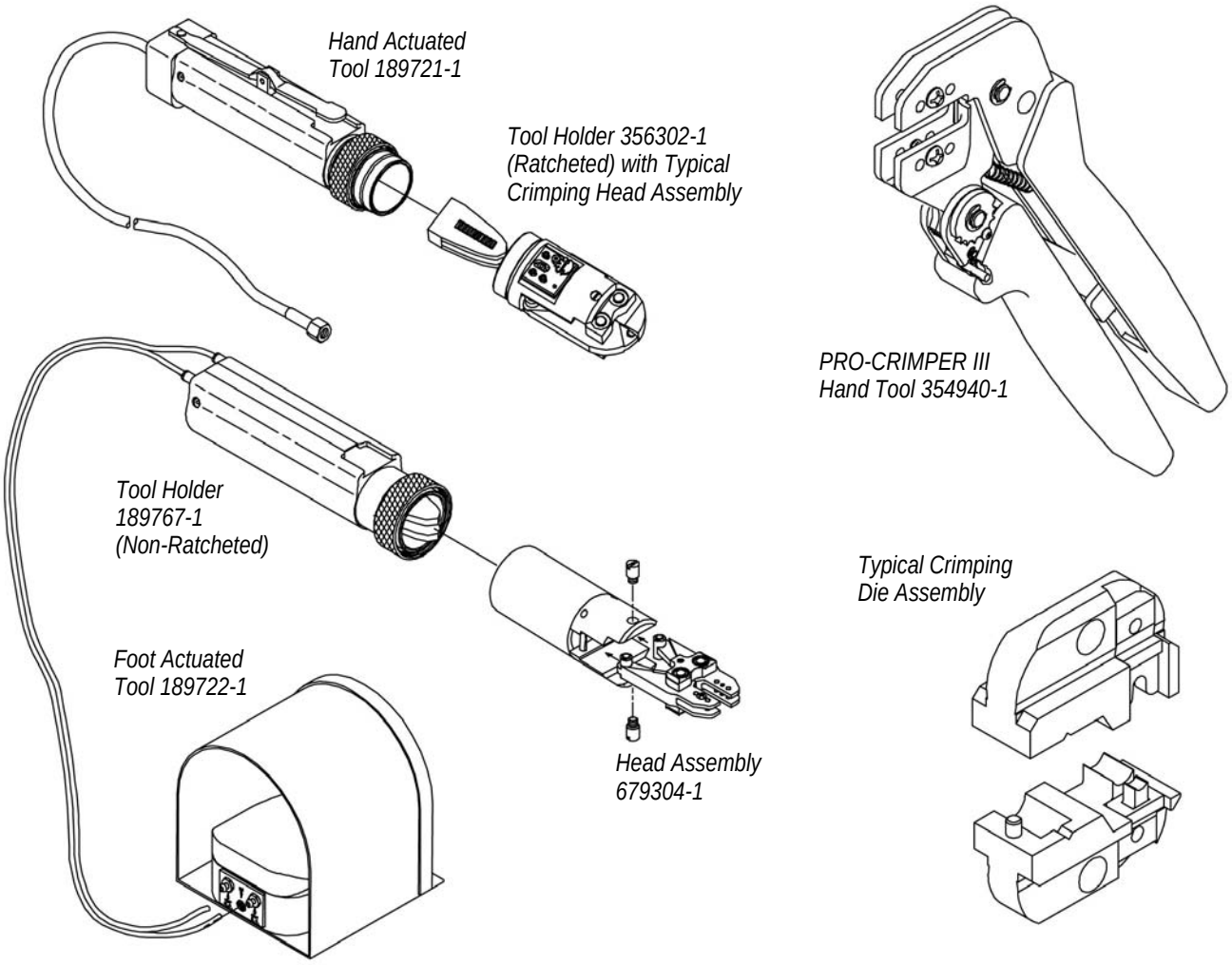


Figure 8 (Cont'd)

CENTER CONTACT TERMINATION TOOLING				
PRODUCT SELECTION		CABLE SIZE	APPLICATOR (408-8040)	POWER UNIT (DOCUMENT)
CONNECTOR	CONTACT			
Plug	Pin	RG 58/U	466689-2	354500-1 (409-5842)
			466689-3	354500-[ ] (409-5842) 1338600-[ ] (409-10016)
			567782-1	122500-2, -3 (409-5852) 356500-2 (409-5878) 217500-[ ] (409-5866)
			567782-2	354500-1 (409-5842)
			567782-3	354500-[ ] (409-5842) 1338600-[ ] (409-10016)
		21 AWG Solid	466689-2	354500-1 (409-5842)
			466689-3	354500-[ ] (409-5842) 1338600-[ ] (409-10016)
		22 AWG Stranded	466689-2	354500-1 (409-5842)
		RG 174/U	567386-2	354500-1 (409-5842)
Jack	Receptacle	RG 58/U	466689-2	354500-1 (409-5842)
			466689-3	354500-[ ] (409-5842) 1338600-[ ] (409-10016)
			567782-1	122500-2, -3 (409-5852) 356500-2 (409-5878) 217500-[ ] (409-5866)
			567782-2	354500-1 (409-5842)
			567782-3	354500-[ ] (409-5842) 1338600-[ ] (409-10016)
		21 AWG Solid	466689-2	354500-1 (409-5842)
			466689-3	354500-[ ] (409-5842) 1338600-[ ] (409-10016)
		22 AWG Stranded	466689-2	354500-1 (409-5842)
		RG 174/U	567386-2	354500-1 (409-5842)

Figure 8 (Cont'd)

Ferrule Termination Tooling



FERRULE TERMINATION TOOLING											
PRODUCT SELECTION			PENUMATIC TOOLING (DOCUMENT)					HAND TOOL (DOCUMENT)			
CONN	FERRULE	CABLE	HAND ASSY	FOOT ASSY	TOOL HOLDER		ADAPTER	TOOL FRAME	DIE ASSY	HAND TOOL WITH DIE ASSY
					RATCHET	NON-RATCHET				
Plug	221132-3	RG 58/U	189721-1 (409-5862)	189722-1 (409-5862)	356302-1 (408-4303)	189767-1 (408-2498)	679304-1 (408-4070)	354940-1 (408-9930)	220189-1 (408-2786)	---
	2-328666-5	RG 174/U							318450-2 (408-4218)	318450-1 (408-4218)
	887079-3	21/22 AWG							58651-2 (408-4516)	58651-1 (408-4516)
Jack	221132-3	RG 58/U	189721-1 (409-5862)	189722-1 (409-5862)	356302-1 (408-4303)	189767-1 (408-2498)	679304-1 (408-4070)	354940-1 (408-9930)	220189-1 (408-2786)	---
	2-328666-5	RG 174/U							318450-2 (408-4218)	318450-1 (408-4218)
	887079-3	21/22 AWG							58651-2 (408-4516)	58651-1 (408-4516)

Figure 8 (End)

6. VISUAL AID

The illustration below shows a typical application of this product. 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.

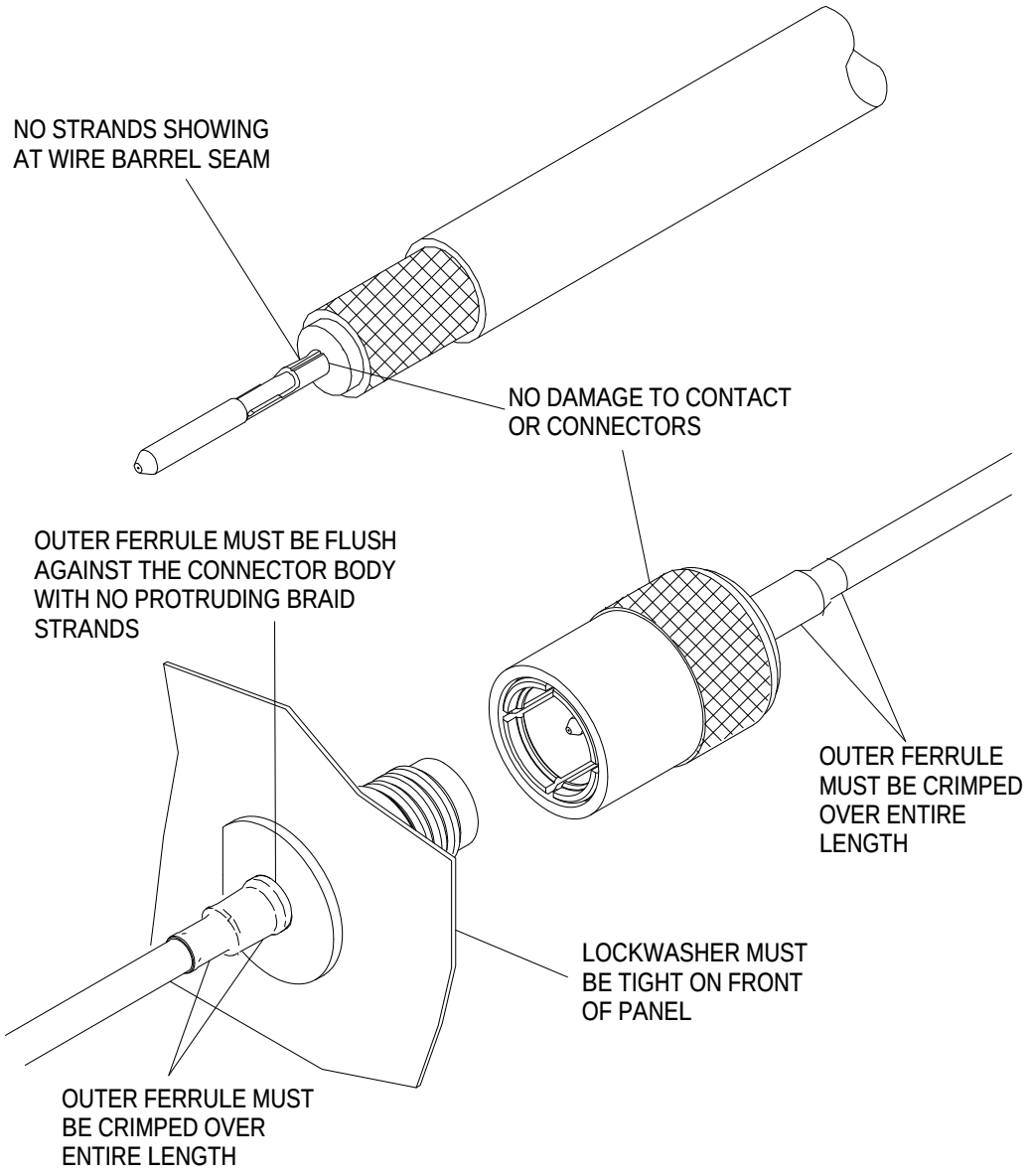


FIGURE 9. VISUAL AID