

Coaxial Snap-Lock 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 [± 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 application of Coaxial Snap-Lock Jack and Plug Connectors used to mate the electrical interface of a radio to the antenna in free-hanging applications. The connectors consist of a jack or plug body, spacer (when required), and straight ferrule. Also available with the plug connector is a ferrule for right-angle applications. The spacer is used to prevent the contact from moving into the cable dielectric. The ferrules are terminated using manual hand-held tools and semi-automatic machines. These plugs and jacks mate, and the plug is designed to also mate with the coaxial Snap-Lock pc (printed circuit) board jack.

The connectors accept jack (male) and plug (female) stamped and formed contacts. These contacts must be ordered separately. The serrations inside the contact wire barrel provide maximum contact and tensile strength after crimping. The contacts are available in reeled form for terminating with semi-automatic electrically-powered machines.

When corresponding with Tyco Electronics Personnel about this product, 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.

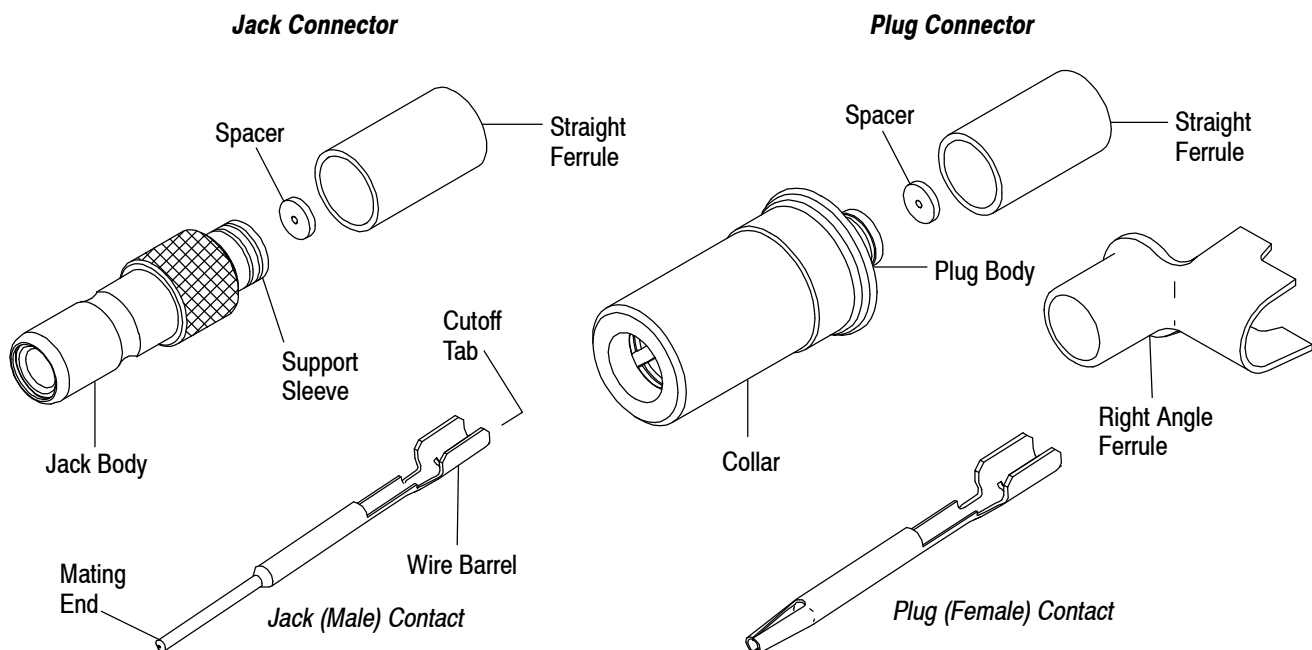


Figure 1

2. REFERENCE MATERIAL
2.1. Revision Summary

- Updated document to corporate requirements
- New logo and format

2.2. Customer Assistance

Reference Base Product Part Number 1326571 and Product Code D958 are representative numbers of Snap-Lock 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 Tyco Electronics Representative or, after purchase, by calling the Product Information Center at the number at the bottom of page 1.

2.3. Drawings

Customer Drawings for product part numbers are available from the service network. If there is a conflict between the information contained in the Customer Drawings and this specification or with any other technical documentation supplied, call the Product Information Center at the number at the bottom of page 1.

2.4. Specifications

Application Specification 114-13138 provides product description and application requirements for pc board jack connectors.

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 provide setup, operation, and maintenance of machines. Documents available which pertain to this product are:

<u>Document Number</u>	<u>Document Title</u>
408-2498	Crimping Head Cross Reference for Pneumatic Tools
408-3295	Preparing Reel of Contacts for Applicator Tooling
408-4070	Pneumatic Head Assembly 679304-1
408-4303	Pneumatic CERTI-CRIMP* Tool Holder Assemblies 356302-1 and 356303-1
408-4550	Coaxial Snap-Lock Cable Jack Connectors
408-7424	Checking Terminal Crimp Height
408-8040	Heavy Duty Miniature Quick-Change Applicators (Side-Feed Type)
408-8053	Miniature (Mini) Quick-Change Applicators
408-8059	General Preventative Maintenance for Applicators
408-8547	CERTI-CRIMP II Straight Action Hand Tools
408-8589	Crimping Die Assembly 1338120-1
408-8590	Crimping Die Assembly 1338650-1
408-8892	Coaxial Snap-Lock Cable Plug Connectors
408-9816	Handling of Reeled Products
408-9830	PRO-CRIMPER* III Hand Tool Assembly 58499-1 with Die Assembly 58483-1
408-9930	PRO-CRIMPER III Hand Crimping Tool Frame 354940-1
409-5842	AMP-O-LECTRIC* Model "G" Terminating Machine 354500-[]
409-5862	626 Pneumatic Tooling Assemblies 189721-[] and 189722-[]
1673771	Instruction Manual SDE 1600

3. REQUIREMENTS

3.1. Safety

Do not stack component packages so high that the shipping containers buckle or deform.

3.2. Limitations

Connector assemblies are designed to operate in a temperature range of -40° to 85°C [-40° to 186°F].

3.3. Material

The plug body is made of phosphor bronze plated with bright tin, and the collar is made of PBT; the plug contact is made of phosphor bronze plated with tin. The jack body is made of brass plated with bright tin; the jack contact is made of brass plated with tin. The ferrule is made of copper or brass with tin plating. The spacer is made of nylon. The plug and jack dielectric is made of TPX (Polymethylpentene).

3.4. Storage

A. Ultraviolet Light

Prolonged exposure to ultraviolet light may alter the properties of the materials used in the connector.

B. Shelf Life

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

C. Reeled Contacts

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

3.5. Chemical Exposure

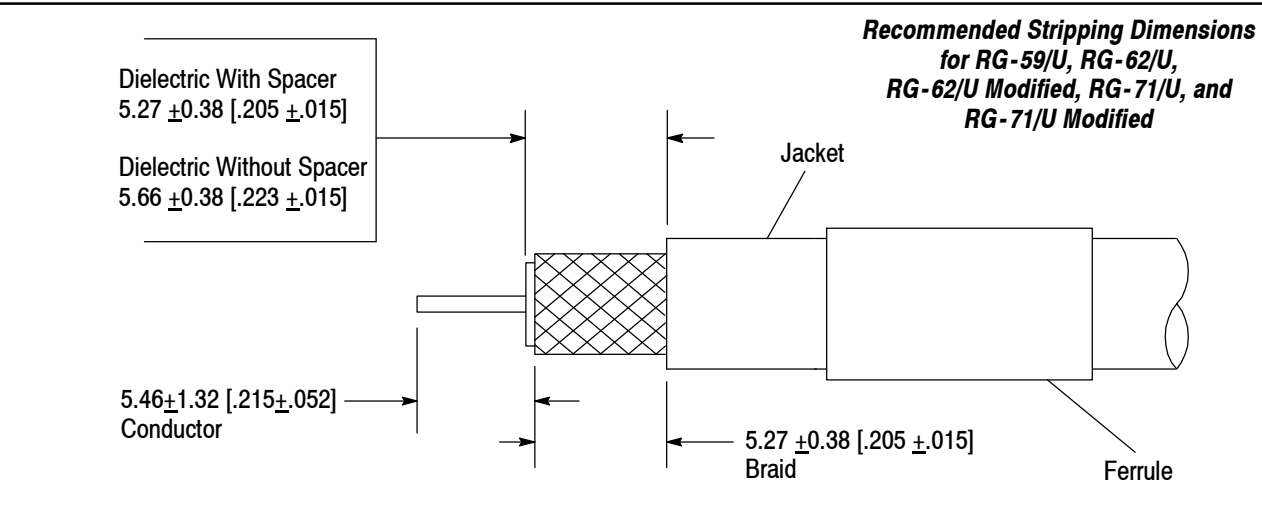
Do not store connectors or contacts near any chemical listed below as they may cause stress corrosion cracking in the connectors or contacts.

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

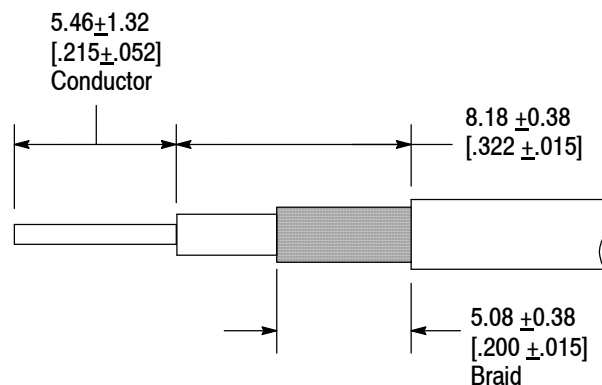
3.6. Cable Selection and Preparation

The connectors will accept the contacts crimped onto solid strand coaxial cable sizes RG-59/U, RG-62/U, RG-62/U Modified, RG-71/U, RG-71/U Modified, or stranded 1.5CS-QEHV(TA). The conductor must be straight and free of burrs. The cable must meet the following preparation requirements:

1. The ferrule must be assembled onto the unstripped cable.
2. Proper strip length is necessary to properly insert the center conductor into the contact. Reasonable care must be taken not to nick, scrape, or cut the center conductor or any strands of the braid during the stripping operation. The strip length of the cable is shown in Figure 2.
3. The spacer, if required, must be assembled onto the cable center conductor and bottomed on the cable dielectric. The spacer is not required on RG-59/U cable.



**Recommended Stripping Dimensions
for 1.5CS-QEHV(TA)**



Note: Not to Scale

Figure 2

3.7. Crimped Contact Requirements

The contact must be crimped to the cable according to instructions packaged with applicable tooling. These requirements apply equally to the plug and jack.



Cable jacket shall NOT be cut or broken during the crimping operation. Reasonable care should be taken to provide undamaged cable terminations.

A. Spacer Location (If Required)

The spacer must be against the cable dielectric, and the end of the contact wire barrel must be no more than 0.38 [0.15] from the spacer as shown in Figure 3.

B. Cable Braid

The end of the cable braid must be folded back over the cable jacket in order to access the applicator tooling.

C. Cutoff Tab and Burr

Cutoff tabs are the remaining portion of the carrier strip after the contact is cut from the strip. The following dimensional requirements will ensure proper application for these contacts:

1. The cutoff tab must not exceed the dimension shown in Figure 3.
2. The burr resulting from the cutoff tab shearing must not exceed the dimension shown in Figure 3.

D. Crimp Height

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

E. Effective Crimp Length

Effective crimp length is defined as that portion of the wire barrel, excluding bellmouths, fully formed by the crimping tool. For optimum crimp effectiveness, the crimp must be within the area shown and must meet the dimensions provided in Figure 3.

F. Wire Barrel Seam

The seam between the two sides of the wire barrel must be completely closed, and there must be no evidence of the conductor protruding from the seam.

G. Bellmouths

The rear bellmouth and the front bellmouth must not exceed the dimensions show in Figure 3.

H. Flash

The flash on the wire barrel crimp must not exceed the dimension show in Figure 3.

I. Conductor Location

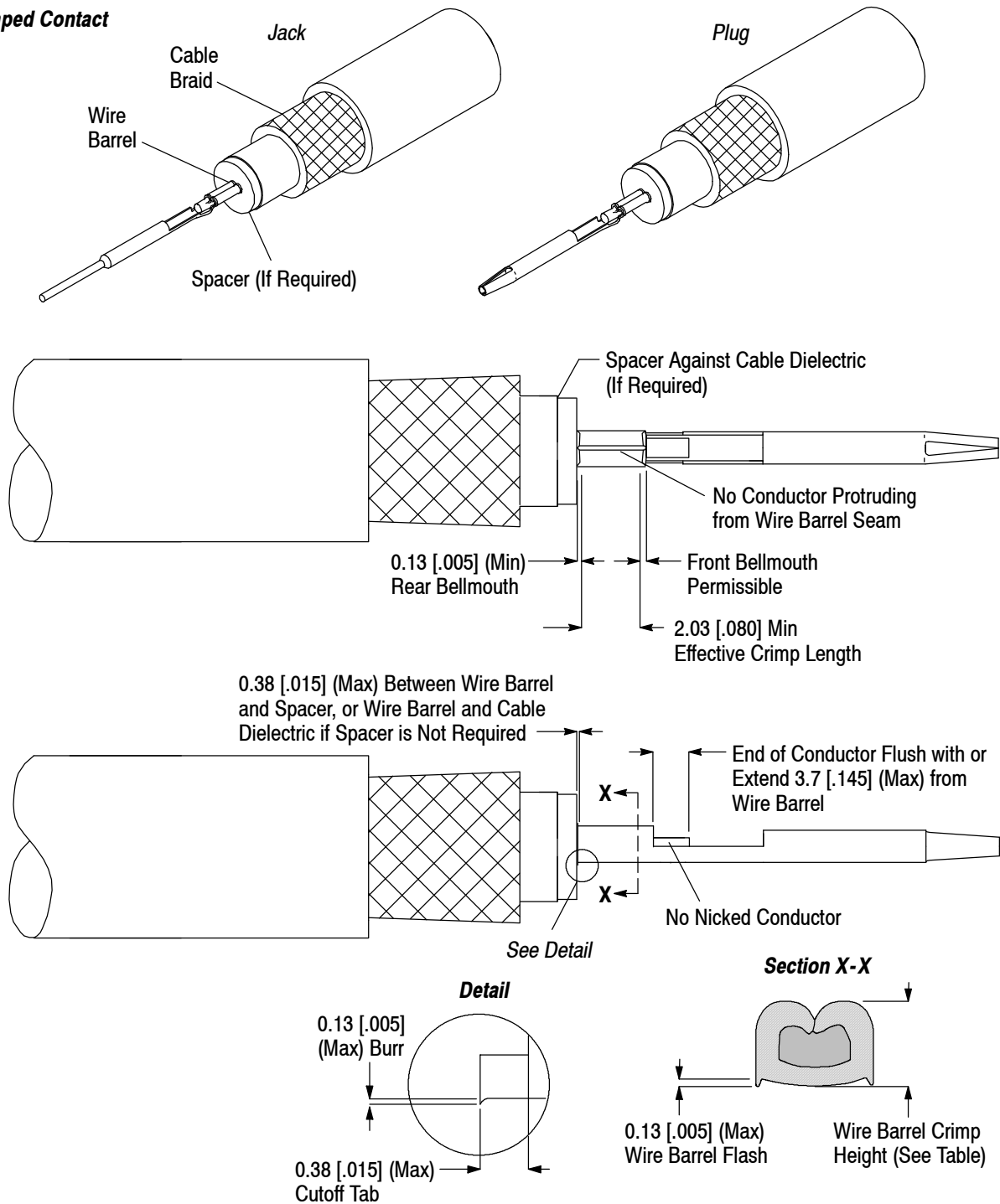
The conductor must be flush with or extend beyond the wire barrel to the maximum dimension shown in Figure 3.

J. Bend Allowance

The force applied during crimping may cause some bending between the wire barrel and cable. Such deformation is acceptable within the following limits:

1. Up and Down
The crimped portion must not be bent beyond the limits shown in Figure 4.
2. Side-to-Side
The crimped portion must not be bent from one side to the other beyond the limits shown in Figure 4.

Crimped Contact



WIRE SIZE	CRIMP HEIGHT
RG-59/U	0.826-0.902 [.0325-.0355]
RG-62/U, RG-71/U	0.91-1.02 [.036-.040]
RG-62U Modified, RG-71/U Modified	0.43-0.508 [.017-.020]
1.5CS-QEHV(TA)	0.508-0.584 [.0200-.0230]

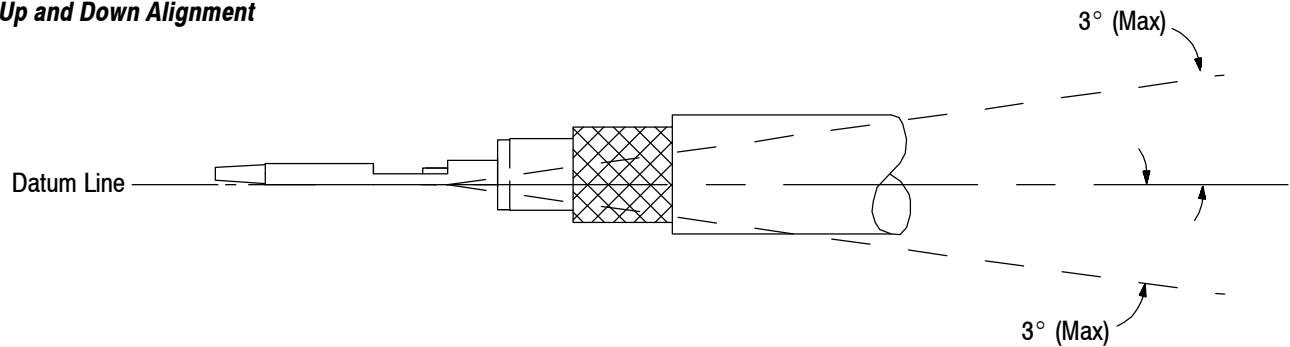
Figure 3

NOTE

The developed crimp configurations result from using the specific tooling described in Section 5, TOOLING.



Up and Down Alignment



Side-to-Side Alignment

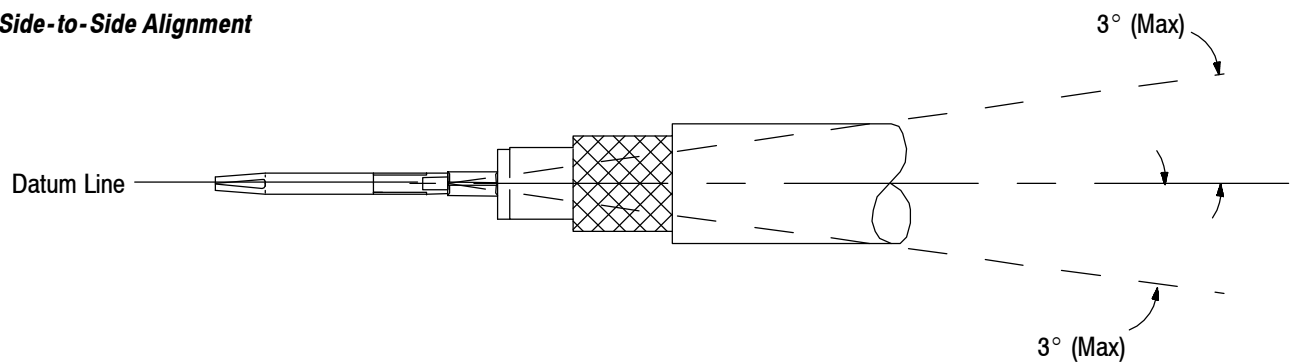


Figure 4

K. Twist and Roll

There should be no twist or roll of the wire barrel or mating portion of the crimped contact beyond the limits shown in Figure 5.

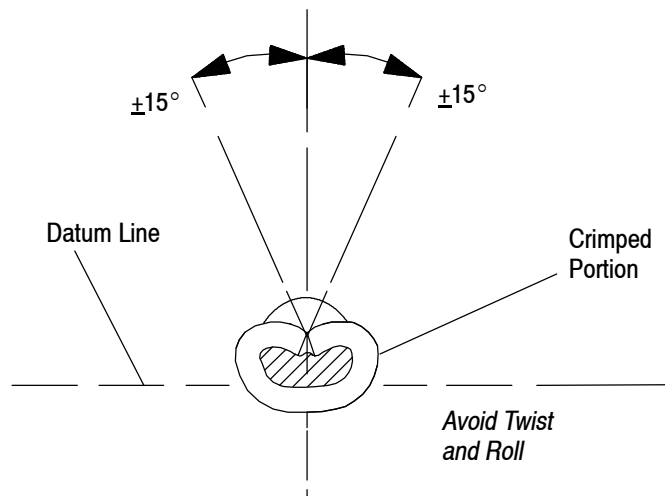


Figure 5

3.8. Placement of Crimped Contact in Connector

The crimped contact must be inserted into the connector body with the following requirements which apply to the plug and jack:

1. The crimped coax cable must be fully seated against the connector dielectric. The crimped contact must be located within the dimensions given in Figure 6.

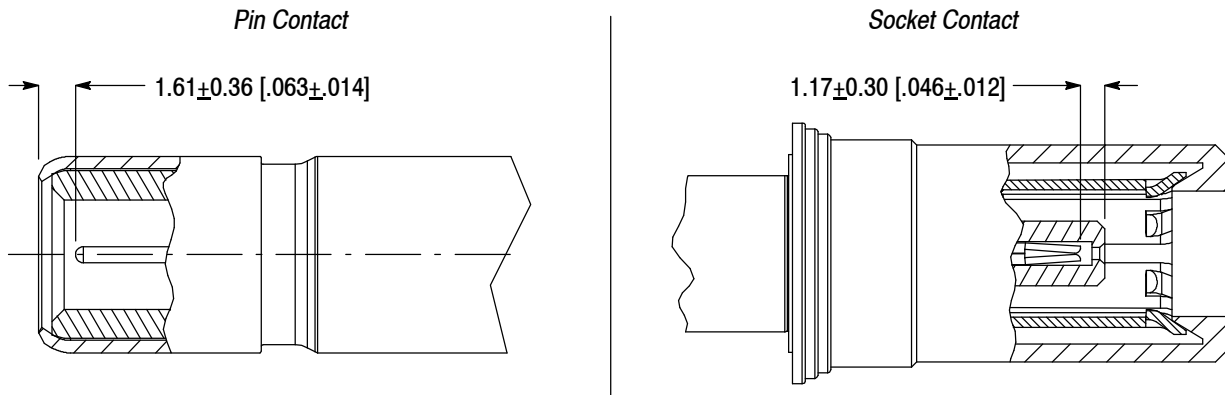


Figure 6

2. The cable braid must be positioned over the support sleeve of the connector. See Figure 7.

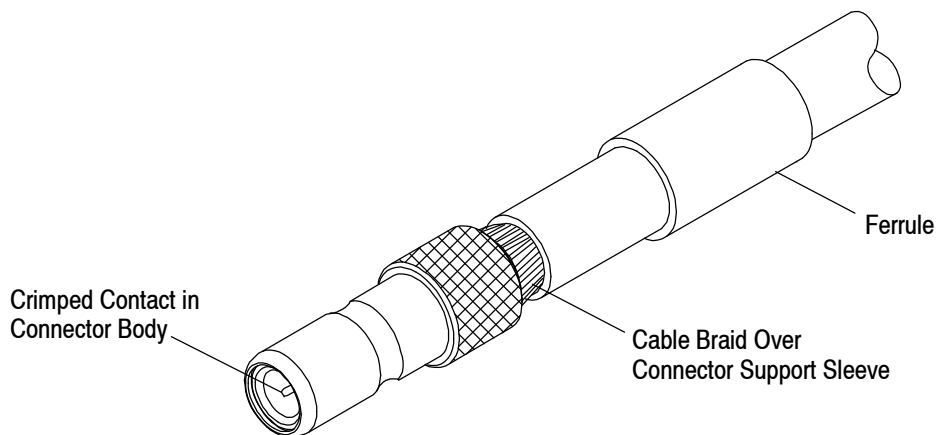


Figure 7

3.9. Crimped Ferrule Requirements

The ferrule is required for terminating the cable. The ferrule must be crimped onto the jacket of the cable according to instructions packaged with applicable tooling. The following requirements apply equally to the plug (with straight or right angle ferrule) and jack.

A. Ferrule Location

The ferrule must be over the cable braid with no braid strands showing, and the end of the ferrule must be over the support sleeve towards the connector body. The plug ferrule should be located 0.38–0.89 [.015–.035] from the connector collar. The jack ferrule should be located against the shoulder of the connector body. The overall dimension, measured from the front of the connector body to the end of the ferrule, must not exceed the dimension shown in Figure 8.

B. Crimp Height

The crimp applied to the ferrule is critical in ensuring optimum electrical and mechanical performance of the crimped ferrule. The crimp height must be within the dimensions provided in Figure 8.

C. Crimp Claw Crimp (Right Angle Ferrule Only)

The crimp claw on the right angle ferrule must be wrapped around the cable. See Figure 8.

D. Crimp Width

The crimp width must not exceed the dimension shown in Figure 8.

E. Bellmouths

There shall be no front bellmouth. The rear bellmouth shall be evident and conform to the dimensions given in Figure 8.

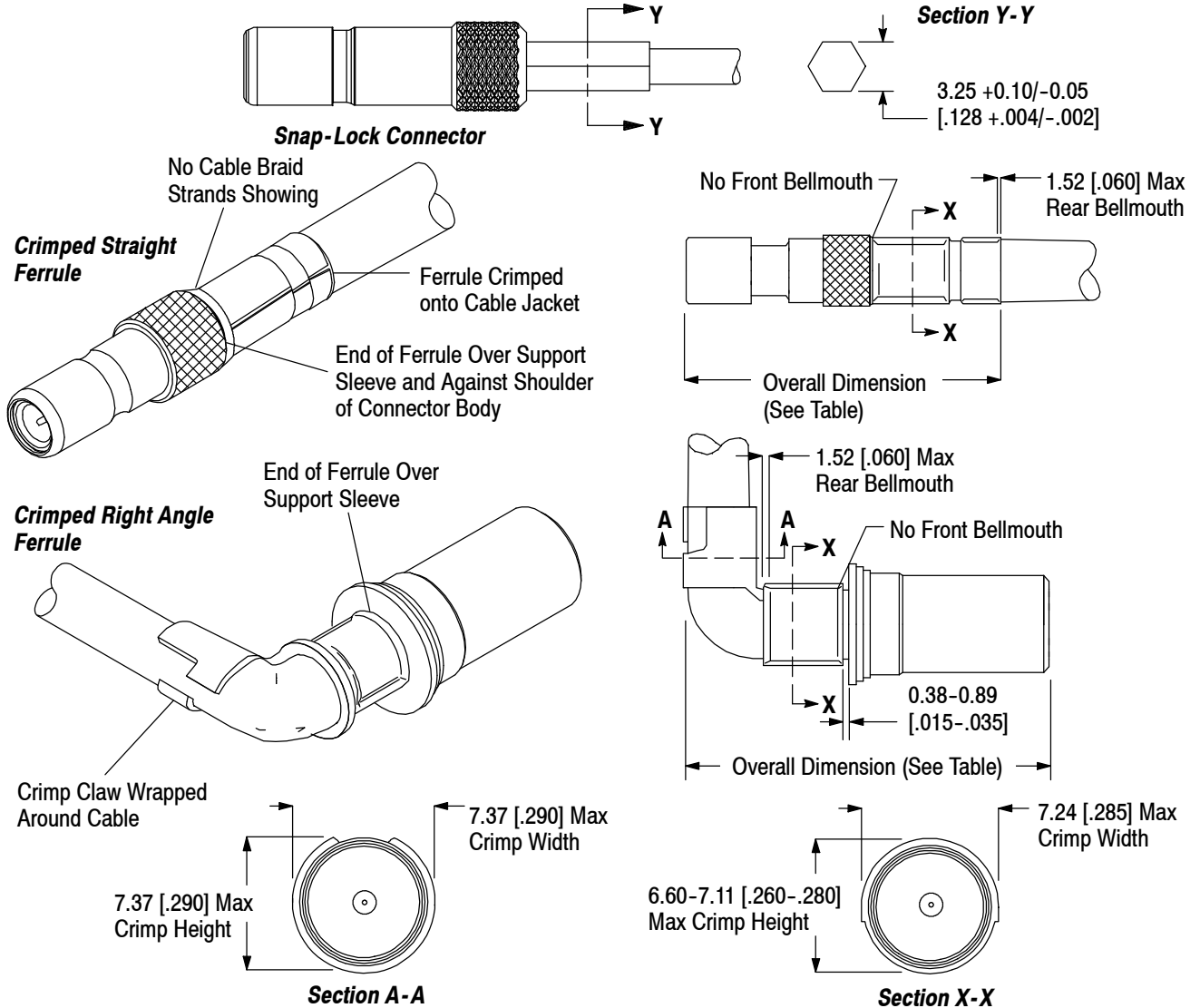


Figure 8

WIRE TYPE	FERRULE TYPE	OVERALL DIMENSION (Max)	
		PLUG	JACK
RG-59/U, RG-62/U, RG-62/U Modified, RG-71/U, RG-71/U Modified	Straight	36.7 [1.44]	35.0 [1.38]
	Right Angle	39.2 [1.54]	35.8 [1.41]
1.5CS-QEHV(TA)	Straight	---	32.51 [1.280]

NOTE

The developed crimp configurations result from using the specific tooling described in Section 5, TOOLING.



F. Plug Connector

The inside diameter of the ground clips inside the plug connector must be maintained after completion of the crimping process as shown in Figure 9.

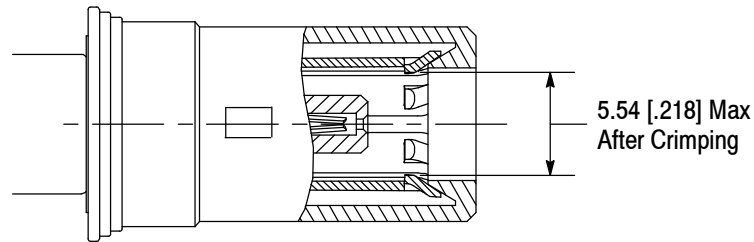


Figure 9

3.10. Mating and Unmating Connectors

The plug has internal locking latches that should be fully seated and latched to the jack after mating. When unmating connectors, the latches must be released by slightly pulling the collar of the plug away from the jack. See Figure 10.

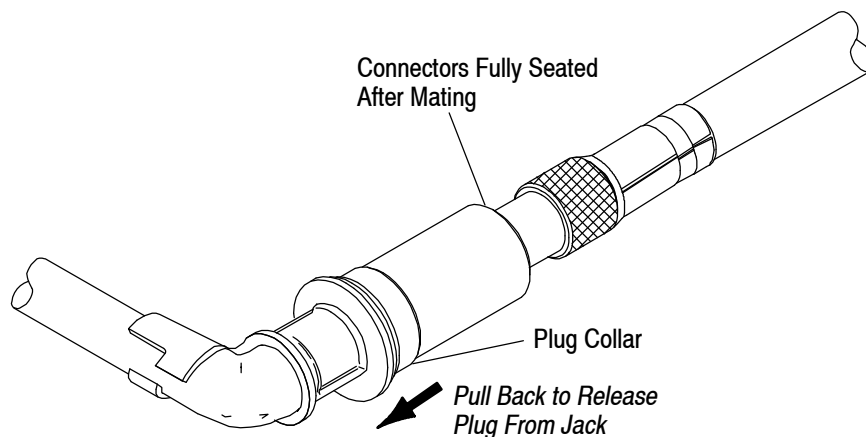


Figure 10

3.11. Repair

Damaged connectors must be removed, discarded, and replaced. Damaged or worn contacts must be replaced.

4. QUALIFICATION

Coaxial Snap-Lock Connectors are not required to be agency evaluated.

5. TOOLING

Tooling for manual application of the ferrules and contacts and semi-automatic machines for power assisted application of reeled contacts are available to cover the full cable size range. Tooling part numbers and instructional material packaged with the tooling are shown (in parenthesis) in Figure 11.

NOTE



Modified designs and additional tooling concepts may be available to meet other application requirements. For assistance in setting up prototype and production line equipment, contact the Tooling Assistance Center at the number at the bottom of page 1.

5.1. Hand Crimping Tools

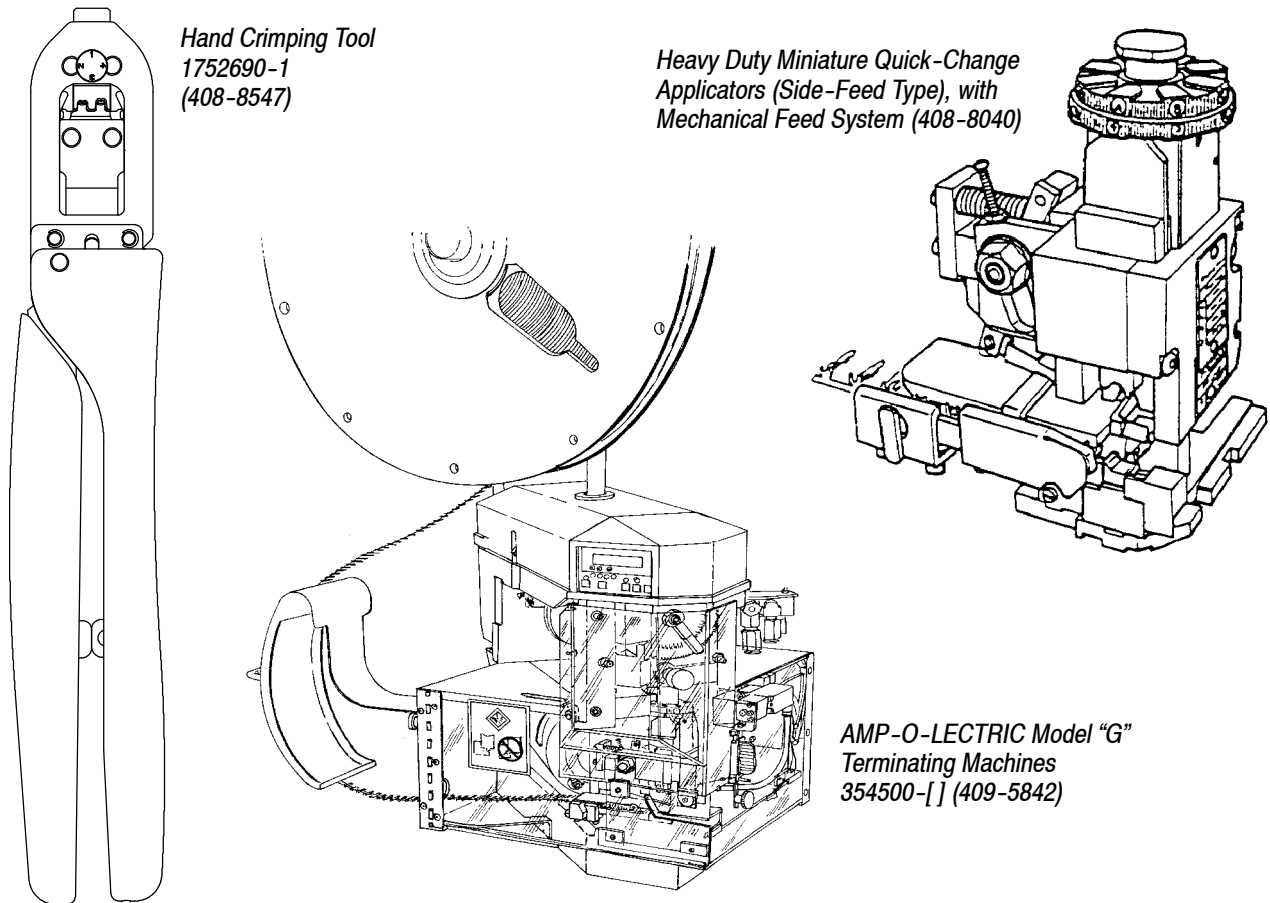
The hand crimping tools for the center conductor contacts consist of a handle assembly and head which contains integral dies to crimp the contact onto pre-stripped cable. The hand crimping tools for the ferrules are hand crimping frames with interchangeable die assemblies. These tools have a ratchet to ensure full crimping pressure is applied to the crimp.

5.2. Power Units

The AMP-O-LECTRIC machine is a semi-automatic, electrical power unit designed for terminating pre-stripped cable to reel-fed contacts. It is designed to be bench mounted and used for high volume applications.

5.3. Applicators

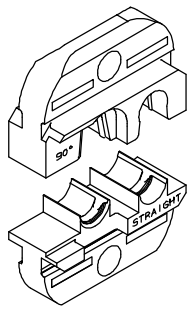
The applicator is designed to crimp reeled contacts onto pre-stripped cable, and provides for high volume, heavy duty production requirements. The applicator must be installed onto a power unit. The applicator used to crimp the contacts includes the crimping dies.



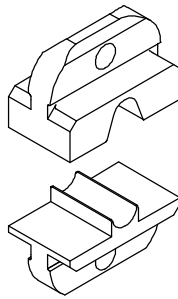
TOOLING FOR CONTACT

CABLE SIZE (RG/U)	APPLICATOR FOR AMP-O-LECTRIC MODEL "G" TERMINATING MACHINE 354500-[]	HAND TOOL
59, 62, 71	680900-1, 1385623-3	1752690-1
62 Modified, 71 Modified	680901-1, 1385624-3	
1.5CS-QEHV(TA)	1385674-3	---

Figure 11 (cont'd)

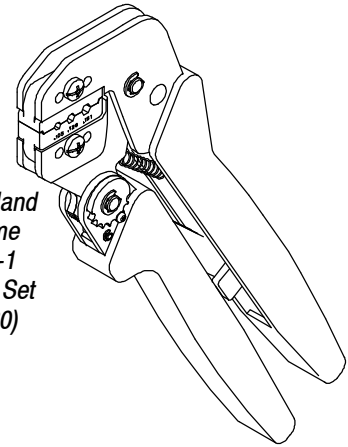


Die Set 1338120-1 for Straight and Right-Angle Ferrules (Straight Portion Only) (408-8589)

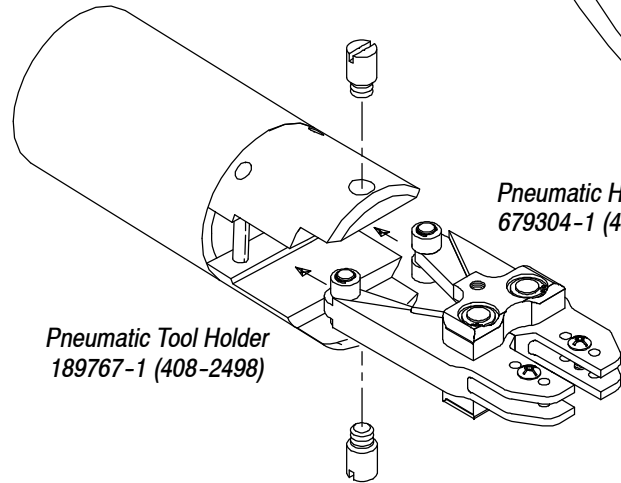
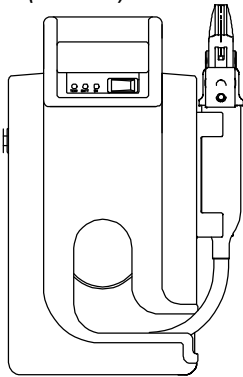


Die Set 1338650-1 for Right-Angle Ferrules (Crimp Claw Only) (408-8590)

PRO-CRIMPER II Hand Crimping Tool Frame Assembly 354940-1 (408-9930) with Die Set 58483-1 (408-9830)



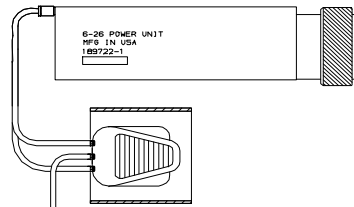
Battery Operated Pneumatic Tooling SDE PH1600 1583034-1, -2 (1673771)



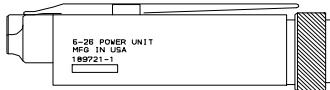
Pneumatic Tool Holder 189767-1 (408-2498)

Pneumatic Head Assy 679304-1 (408-4070)

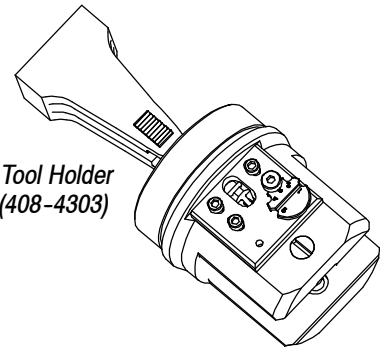
Foot Actuated System (Without Logic) 189722-1 (408-2498 and 409-5862)



Hand Actuated System (Without Logic) 189721-1 (408-2498 and 409-5862)



Pneumatic Tool Holder 356302-1 (408-4303)



TOOLING FOR FERRULE

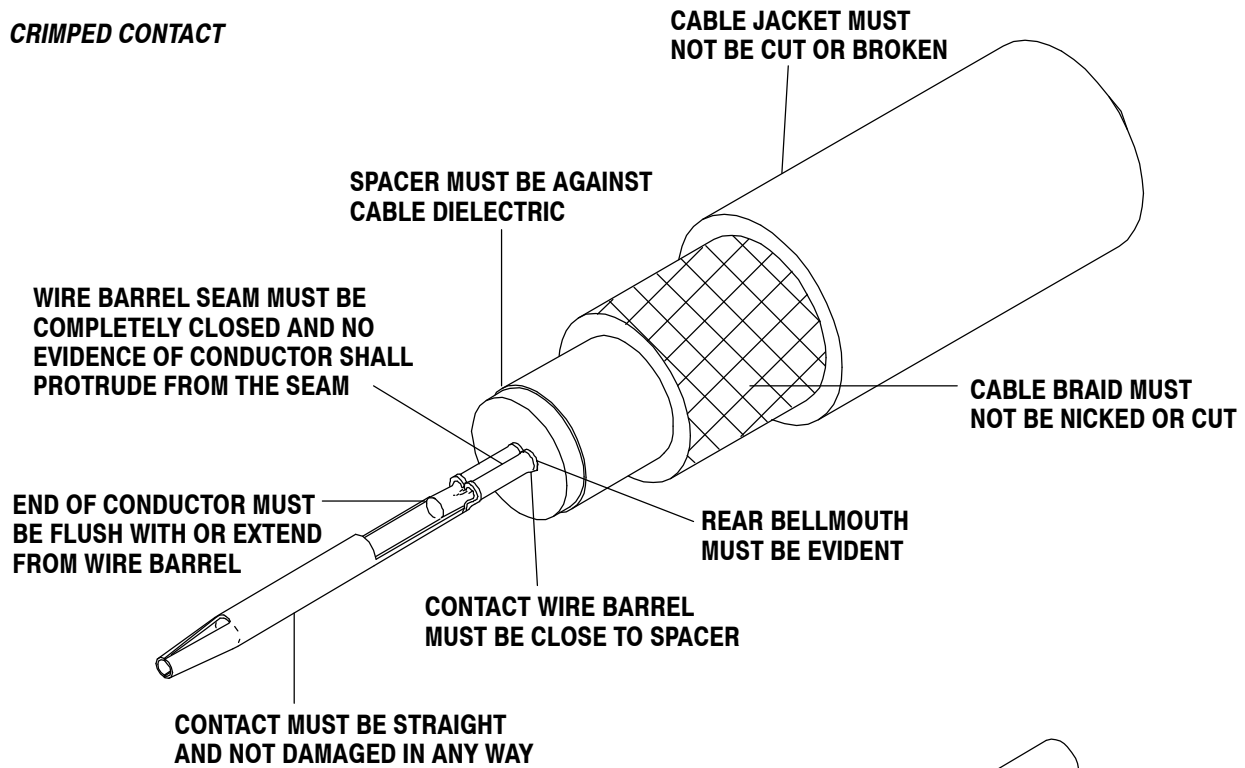
CABLE SIZE (RG/U)	CONN	TYPE	DIE SET	PNEUMATIC TOOLING				BATTERY OPERATED PNEUMATIC TOOLING		HAND TOOL	
				HEAD ASSY	TOOL HOLDER	ACTUATION TYPE ASSY		SDE PH1600			
59, 62, 62 Mod, 71, 71 Mod	Plug	Straight	1338120-1	679304-1	Ratchet	189767-1	Hand	189721-1	1.1mm Hose	1583034-1	354940-1
	Jack										
1.5CS-QEHV(TA)	Jack	R/A	1338120-1 (Straight Portion) 1338650-1 (Crimp Claw Portion)	679304-1	Non-Ratchet	356302-1	Foot	189722-1	2.2mm Hose	1583034-2	354940-1
		Straight Hex Crimp 3.25 [.128]	58483-1								

Figure 11 (end)

6. VISUAL AID

Figure 12 shows a typical application of Snap-Lock connectors. 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.

CRIMPED CONTACT



CRIMPED FERRULE

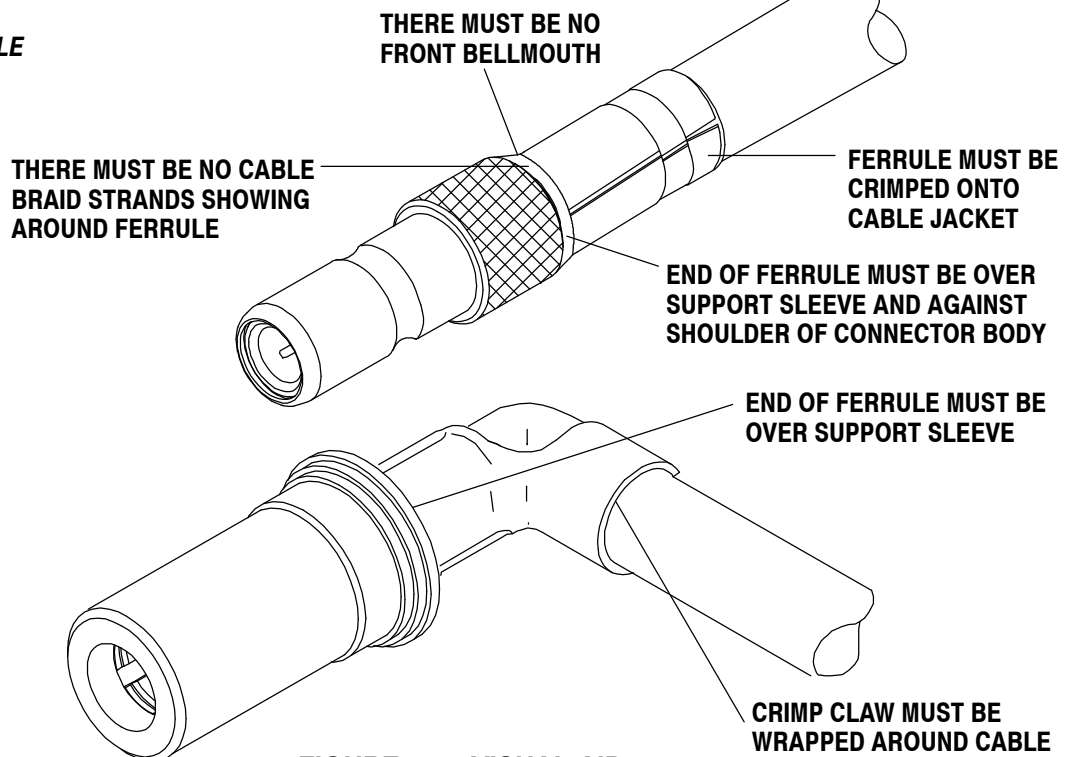


FIGURE 12. VISUAL AID