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 Hermaphroditic Cable-to-Cable Connectors. These connectors will mate with themselves and can be mounted if required.

The contacts will accept stranded or solid wire with a wire size range of 22 or 26-24 AWG. The contacts feature a locking lance to engage the housing and require no insertion tooling. Once terminated, the contacts are inserted into the BACK of the housings.

The housings are made of flame retardant black thermoplastic. They have single row contact cavities with a centerline spacing of 3.81 mm [.150 in.], and are available in 5-position configuration.

When corresponding with Tyco Electronics Personnel, use the terminology provided in this specification to facilitate your inquiries for information. Basic terms and features of these components are provided in Figure 1.

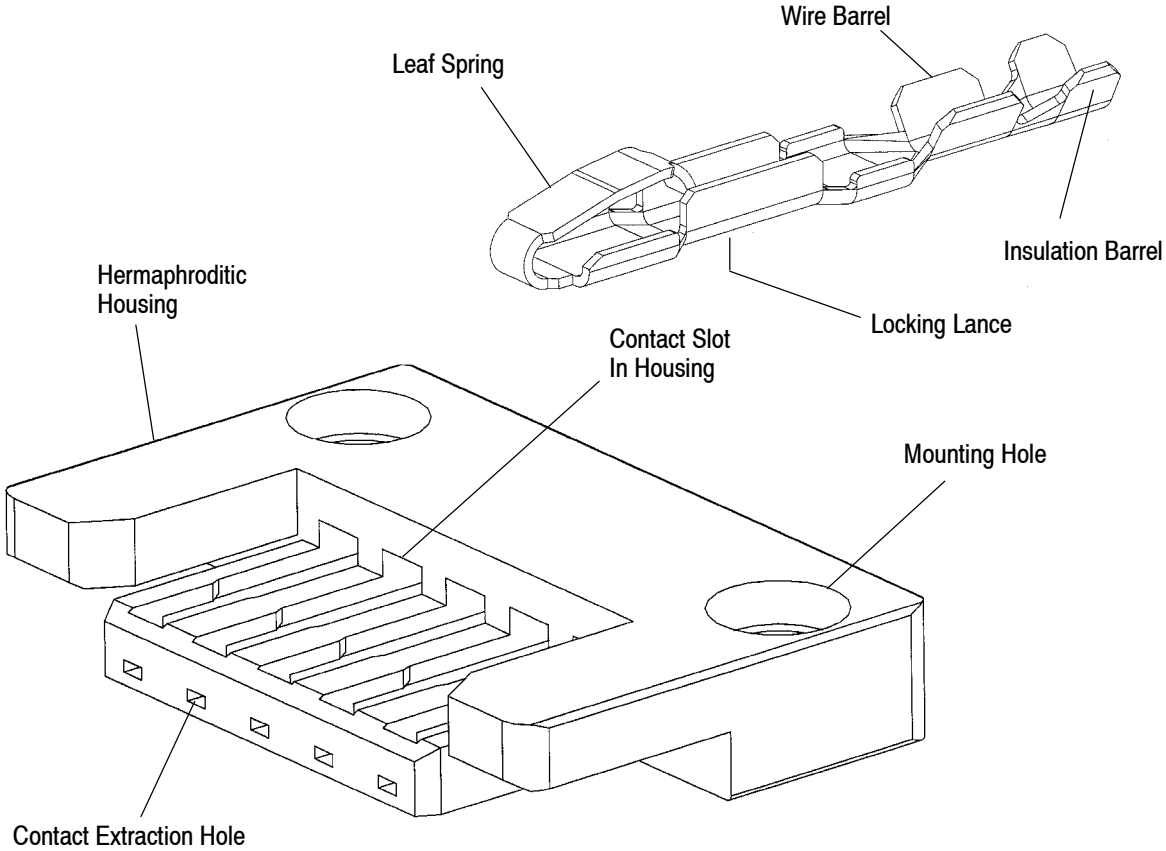


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

- Updated document to corporate requirements
- New logo and format

2.2. Customer Assistance

Reference Part Number 787262 and Product Code 2266 are representative numbers of Hermaphroditic Cable-to-Cable 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 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 Tyco Electronics.

2.4. Specifications

Product Specification 108-1541 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
408-4117	Hermaphroditic Contact Extraction Tool 217369-1
408-4194	Hand Crimping Tool 58566-2
408-7424	Checking Terminal Crimp Height Gaging Die Closure
408-8040	HD Quick-Change Applicators (Side-Feed Type) with Mechanical Feed System
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-[ ]
409-5866	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 connectors are designed for wire-to-wire applications requiring quick and easy engagement and disengagement of circuits. The mating ends of the contacts are designed for self-mating by a leaf-spring action so that two identical contacts can be mated with each other.

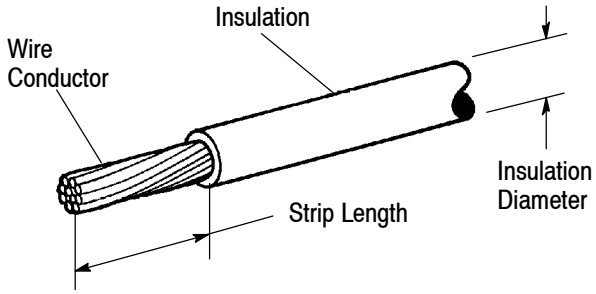
3.3. Wire

A. Size

The contacts will accept a wire size range of 22 and 26-24 AWG and may be terminated to either stranded or solid wire. Figure 2 lists insulation diameter range and strip length as determined by the contact wire size range used.

B. Preparation

When stripping the wire, care must be taken to avoid scraping, nicking, or cutting the conductor. Care must also be used when handling the wire during stripping and crimping to prevent cracking or breaking of the conductor and insulation.



Note: Not to Scale

WIRE SIZE, AWG	INSULATION DIA RANGE	STRIP LENGTH
22	1.09-1.35 [.043-.053]	4.83-3.68 [.190-.145]
26-24	0.76-1.27 [.030-.050]	4.09-3.84 [.161-.151]

Figure 2

3.4. Crimped Contact

Contact shall be located in desired tooling and crimped according to the instructions packaged with that tooling. See Section 5, TOOLING, of this document for details on tooling options and instructional materials.

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. Contact Crimp Features

Figure 3 shows a typical contact as it should appear after crimping.

1. *Crimp Location*

For optimum crimp effectiveness, the crimp must be within the area shown and must meet the crimp requirements provided in Figure 3.

2. *Crimp Height*

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

3. *Effective Crimp Length*

Effective crimp length shall be 2.13–2.03 mm [.084–.080 in.], and is defined as that portion of the wire barrel, excluding bellmouth(s), fully formed by the crimping tool. See Figure 3.

4. *Conductor Extension*

The conductor may extend beyond the wire barrel to the maximum shown in Figure 3.

5. *Wire Barrel Seam*

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

6. *Conductor/Insulation*

The conductor and insulation must both be visible in the area between the insulation barrel and the wire barrel.

7. *Bellmouth*

The front and rear bellmouths are caused by the extrusion of metal during crimping and must be within the range specified in Figure 4.

8. *Cutoff Tab and Burr*

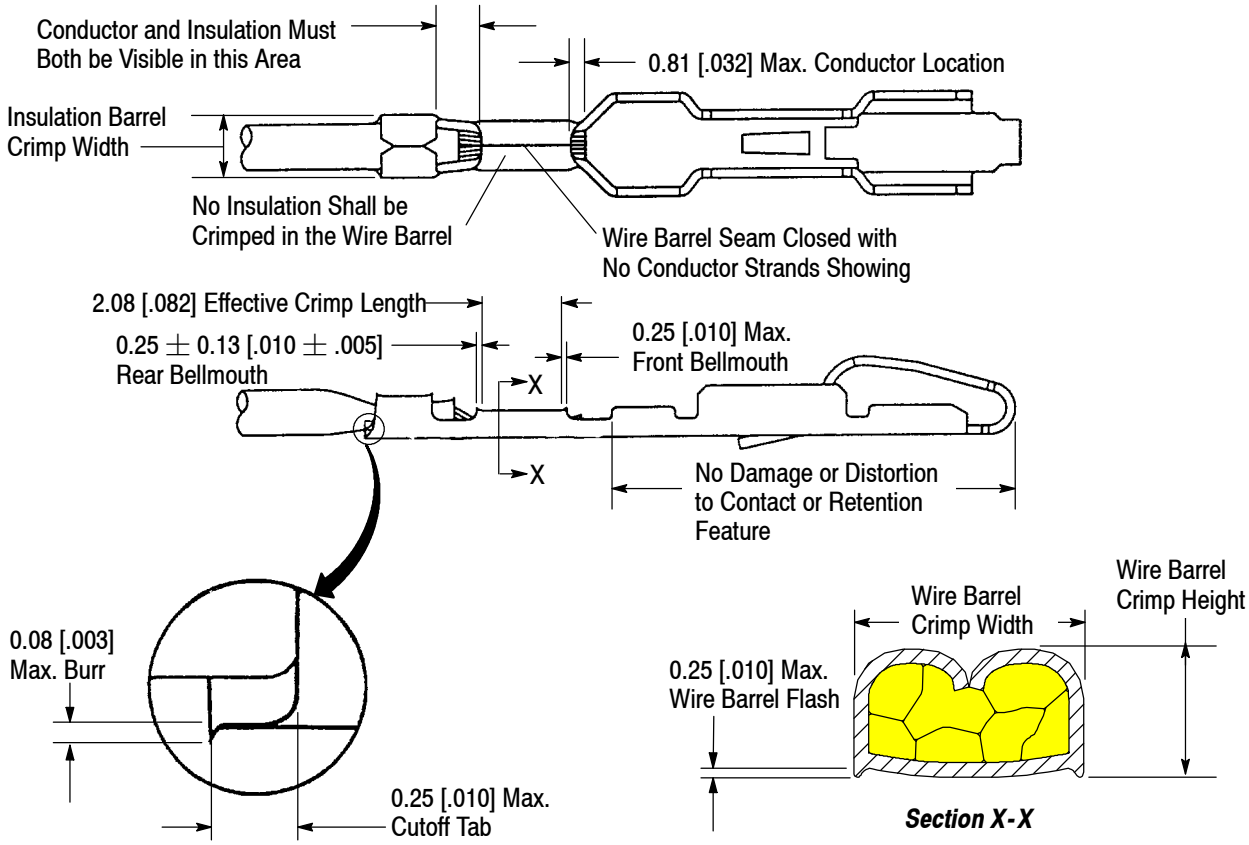
The cutoff tab and burr resulting from the contact being cut from the carrier strip must be within limits to allow the contact to be fully inserted and seated in the housing. See Figure 4.

9. *Flash*

The wire barrel flash at the bottom of the wire barrel results from applied crimp pressure and must be within the dimension provided in Section X–X of Figure 3.

10. *Leaf Spring*

The leaf spring must not be deformed or damaged.



WIRE SIZE, AWG	INSULATION DIA. RANGE	WIRE BARREL CRIMP		INSULATION BARREL CRIMP WIDTH
		HEIGHT	WIDTH	
22	109-1.35 [.043-.053]	0.81-0.71 [.032-.028]	1.55-1.35 [.061-.053]	2.03-1.52 [.080-.060]
26-24	0.76-1.27 [.030-.050]	0.71-0.61 [.028-.024]		

Figure 3

B. 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 4.

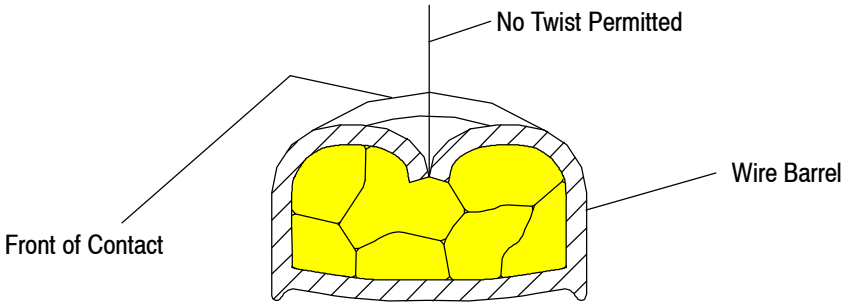


Figure 4

C. 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 5.

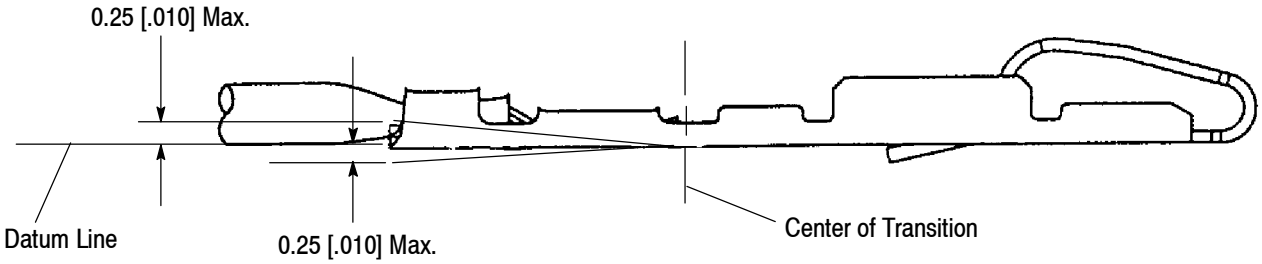


Figure 5

2. Side to Side

The side-to-side bending of the contact may not exceed the limits provided in Figure 6.

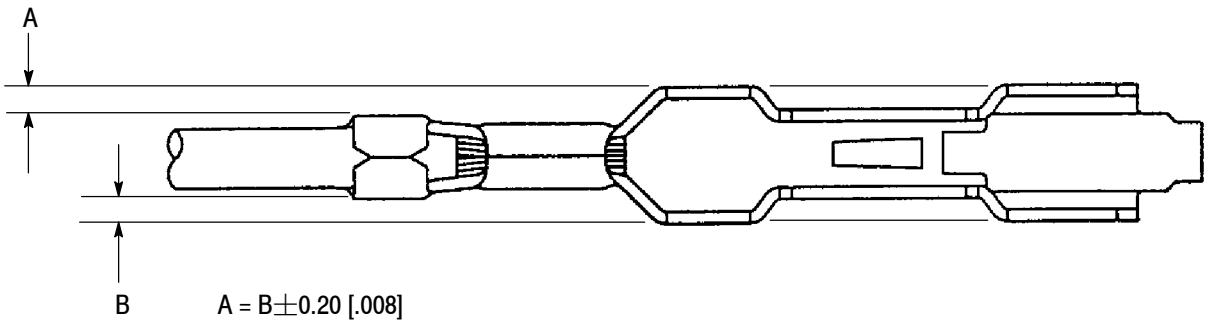


Figure 6

NOTE

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

3.5. Tensile Inspection

Crimped contacts should hold the wire firmly and have a crimp pull-out test value meeting that specified in the table in Figure 7.

NOTE

Adjust tensile testing machine for head travel of 25.4 mm [1 inch] per minute. Directly and gradually apply force for 1 minute.

CRIMP PULL-OUT TEST	
Wire Size AWG	**Minimum Force, Newtons [Pounds]**
22	44.5 [10]
24	35.6 [8]
26	22.2 [5]

Figure 7

3.6. Housings

The hermaphroditic housings are designed and polarized to interlock with themselves to prevent improper mating. They are available only in 5-position configurations. See Figure 8 for specific features.

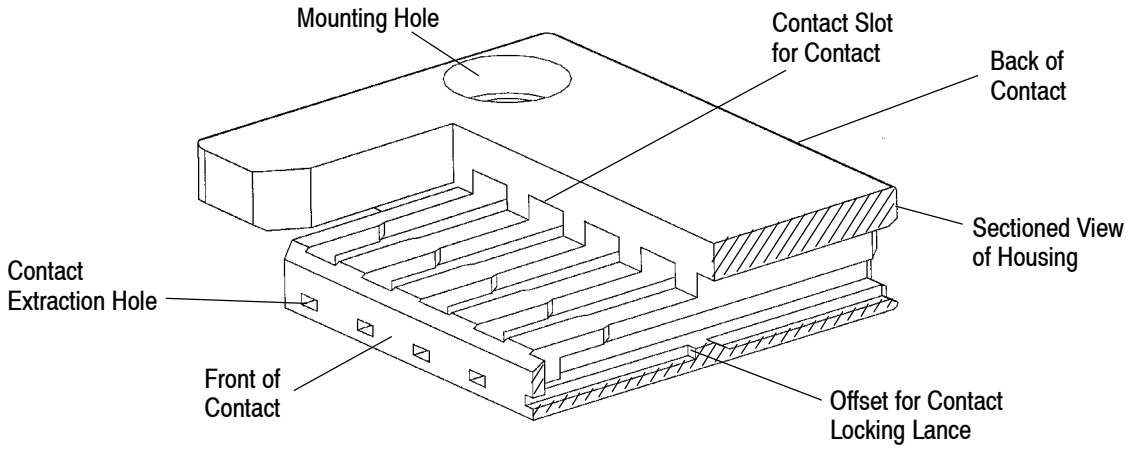


Figure 8

3.7. Placement of Crimped Contact in Housing

The contact must be inserted in the back of the connector and snapped into place. When fully inserted, the locking lance will engage the housing and prevent backing out during mating of the connector. After inserting contact into housing, pull back lightly on the wire to ensure contact is fully seated. See Figure 9.

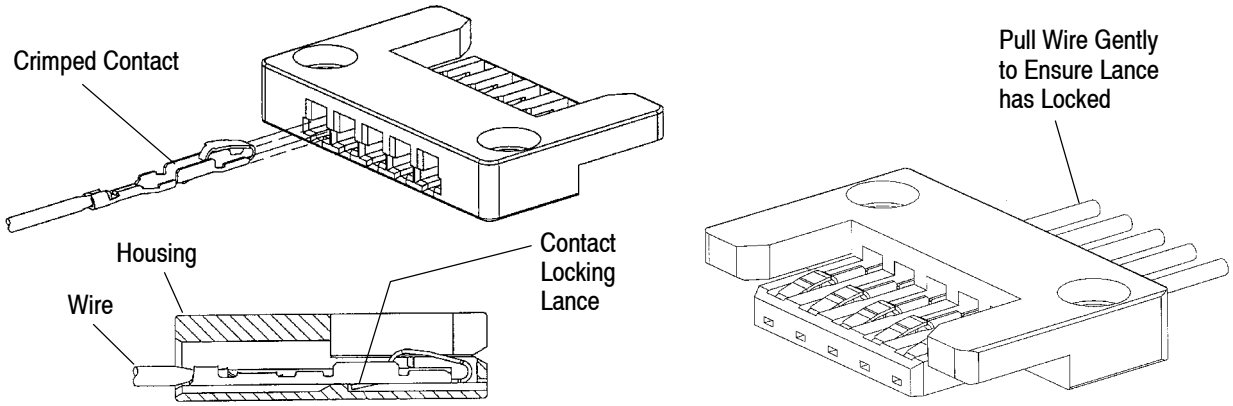


Figure 9

3.8. Mating of Connectors

To ensure proper mating, the connectors must be mated to at least the dimension shown in Figure 10.

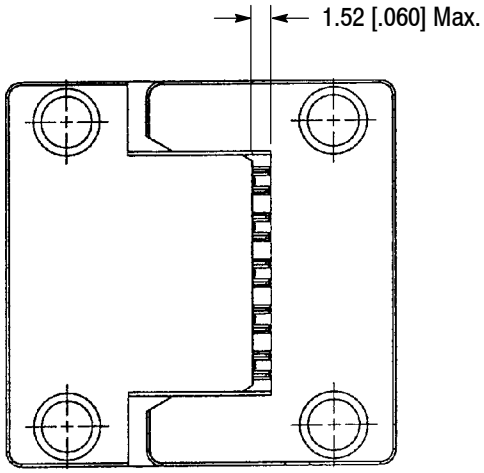


Figure 10

3.9. Hardware

The connectors may be mounted if required. All mounting hardware is customer supplied. For more information on this or other hardware, call the Product Information number at the bottom of page 1.

3.10. Repair/Replacement

Use Extraction Tool 217369-1 to remove individual contacts from housings for replacement or for relocation to another housing cavity. Damaged or worn contacts may be replaced provided there is sufficient slack, after restripping the wire, to insert the new contact. See Figure 11.

CAUTION

DO NOT re-use damaged or worn contacts. Instead, replace them with new contacts and discard the old ones.

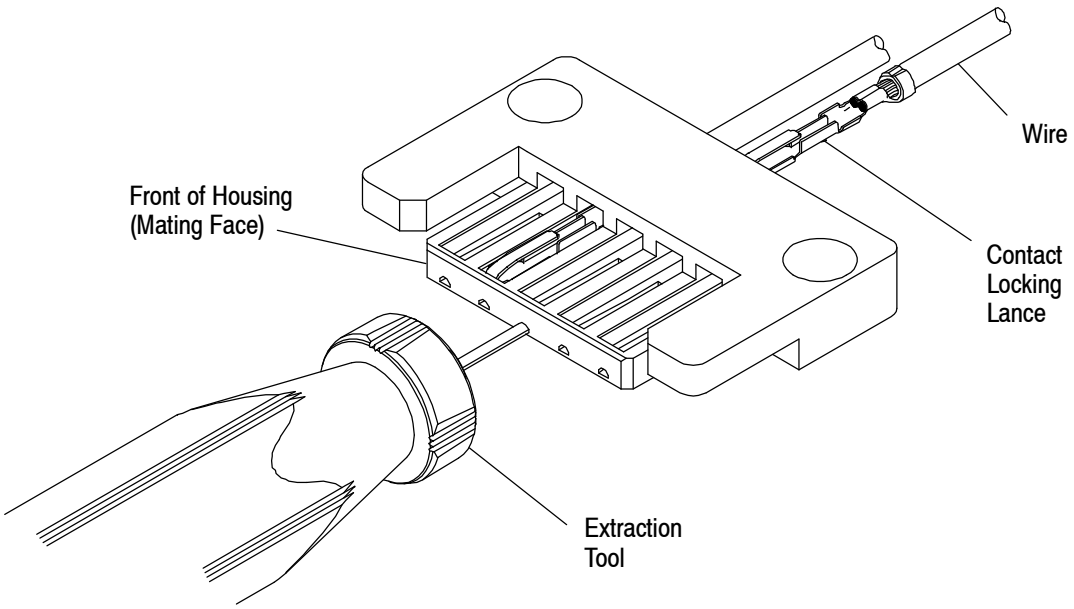


Figure 11

4. QUALIFICATIONS

At the time of publication of this specifications, Hermaphroditic Cable–to–Cable Connectors have not been sent for agency evaluation.

5. TOOLING

Figure 12 provides tool part numbers and instructional material related to wire size.

NOTE

Tyco Electronics Tool Engineers have designed machines for a variety of application requirements. For assistance in setting up prototype and production line equipment, contact Tyco Electronics Tool Engineering through your local Tyco Electronics 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**

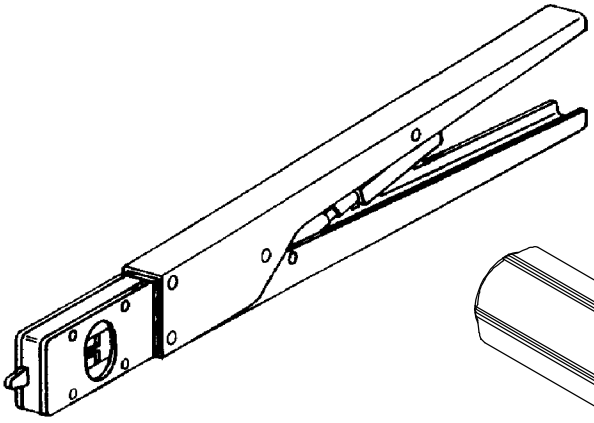
  A power unit is an automatic or semi–automatic device used to assist in the application of a product. Power unit includes the power source used to supply the force or power to an applicator.

NOTE

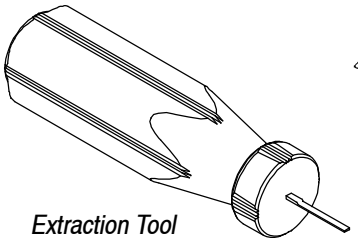
The Model “K” AMP-O-LECTRIC Terminating Machine PN 565435-5 and has been superseded by the Model “G” Terminating Machine PN 354500-1 for new applications. For existing applications, the Model “K” is still recommended because of the large number of installed machines.

- **Extraction Tools**

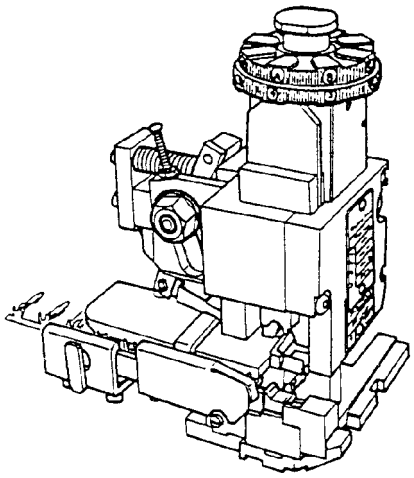
  Extraction Tools are designed to release the locking lance inside the connector housing without damaging the housing or contacts.



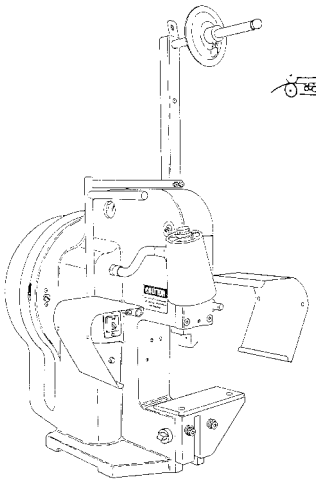
Typical Hand Crimping Tool
58566-2 (408-4194)



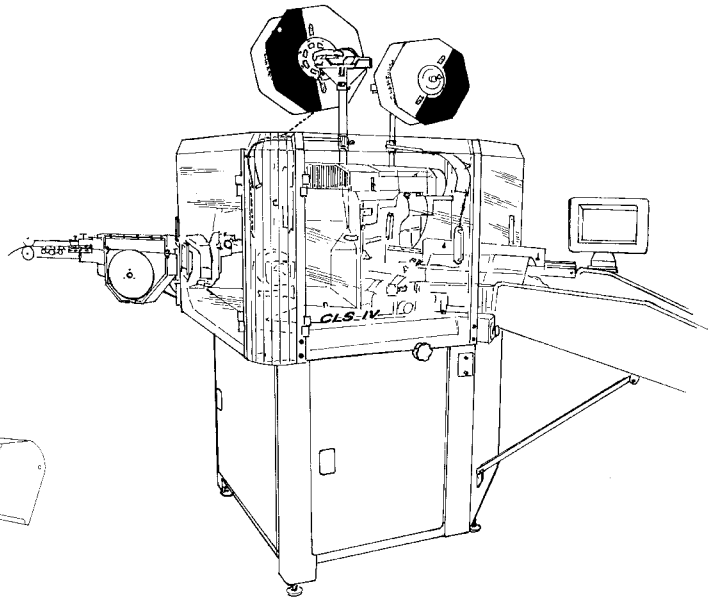
Extraction Tool
217369-1
(408-4117)



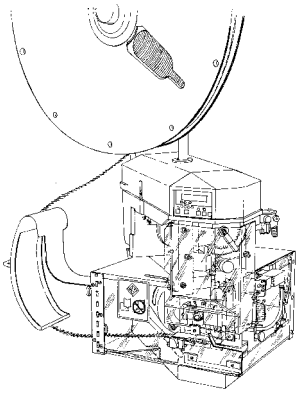
Typical Miniature
Quick Change Applicator
(408-8040)



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



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



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

WIRE SIZE, AWG	HAND CRIMPING TOOL	APPLICATOR	MACHINE
22, 26-24	58566-2	680123-1	217500-1, -2
		680123-2	565435-5 354500-1
		680123-3	354500-[ ]

Figure 12

6. VISUAL AID

The following illustrations are to be used by production personnel to ensure properly applied product. The views suggest requirements for good terminations. Applications that appear visually incorrect should be inspected using the information on the preceding pages of this specification. See Figure 13.

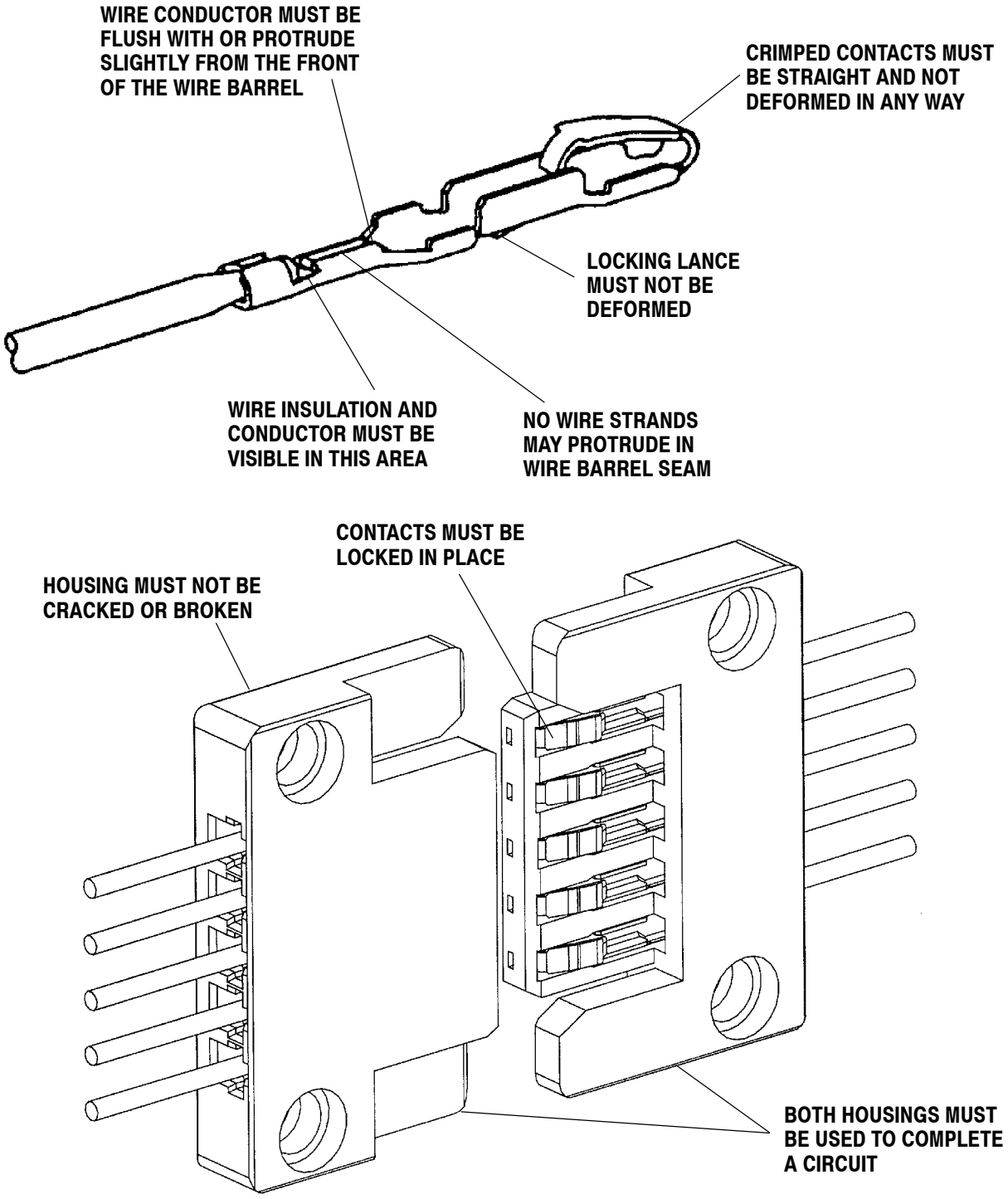


FIGURE 13. VISUAL AID