

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 [$\pm .005$] 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 AMPMODU MOD IV, IV^{1/2}, and V Receptacle Contacts and Housings. These crimp snap-in receptacle contacts with insulation support will accept a wire size range of 32–20 AWG and mate with 0.64 mm [.025 in.] square or round posts.

The AMPMODU MOD IV contacts represent standard mating pressure, while the AMPMODU MOD IV^{1/2} and V contacts represent intermediate and high pressure respectively.

Housing configurations include single- and double-rows on 2.54 mm [.100 in.] centerlines up to 70 positions. All three types of contacts are used with AMPMODU MOD IV connector housings. Some of the housing options include detent latching, polarization, and bonded strain relief/pull tabs.

When corresponding with Tyco Electronics 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.

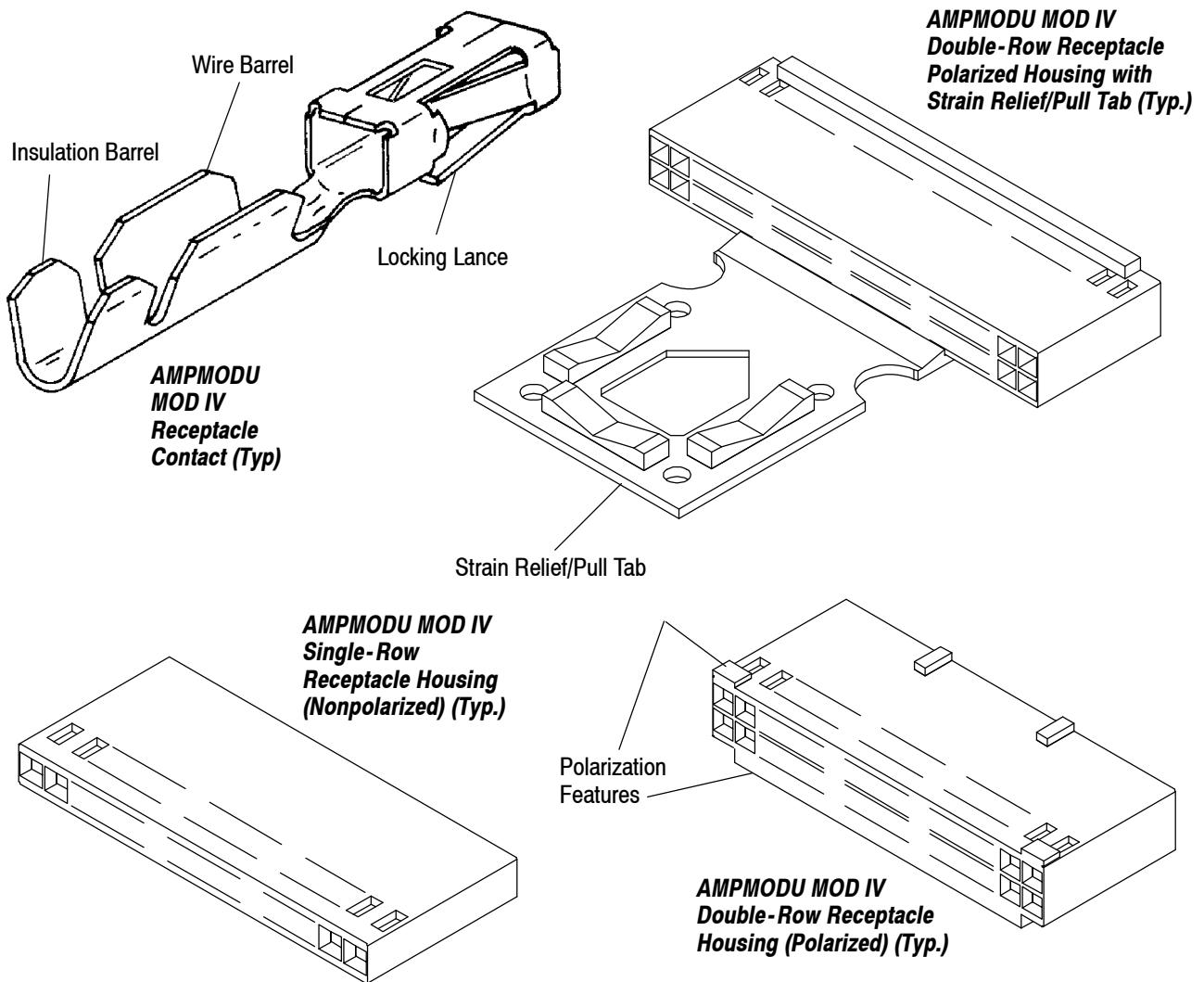


Figure 1

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 incorporate requirements
- Changed crimp height dimension line in Figure 5

2.2. Customer Assistance

Reference Part Number 86015 and Product Code 5208 are representative numbers of AMPMODU MOD IV, IV^{1/2}, and V Receptacles and Housings. 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 number 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 technical documentation supplied by Tyco Electronics.

2.4. Specifications

The following Product Specifications covers test and performance requirements:

<u>Document Number</u>	<u>Document Title</u>
108-25007	Interconnection System, AMPMODU MOD V Wire Applied (High Pressure)
108-25020	Interconnection System, AMPMODU MOD IV (Standard Pressure)
108-25021	Interconnection System, AMPMODU MOD IV ^{1/2} (Intermediate Pressure)

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.

<u>Document Number</u>	<u>Document Title</u>
408-7497	Recommended Procedures for the "Crush" Crimp Technique
408-7865	Application and Maintenance for Hand Crimping Tool 90202-3
408-7935	AMPMODU MOD IV Receptacle Connectors (With Strain Relief Tabs)
408-8040	Heavy Duty Miniature Quick-Change Applicators (Side-Feed Type)
408-8547	CERTI-CRIMP* II Straight Action Hand Tools
408-9451	Extraction Tool 843473-1
408-9452	Extraction Tools 843475-1 and -2
408-9453	Extraction/Lance Reset Tools 843477-[] and 843996-2, -3, -4, and -5
409-5128	AMP-O-LECTRIC* Model "K" Terminating Machine 565435-5
409-5806	AMPOMATOR* CLS III Lead-Making Machine 854400-[]
409-5842	AMP-O-LECTRIC Model "G" Terminating Machine 354500-[]
409-5852	AMPOMATOR CLS III-G Lead-Making Machine 122500-[]
409-5866	AMPOMATOR CLS IV Lead Making Machine 217500-[]
409-5878	AMPOMATOR CLS IV+ Lead Making Machine 356500-[]
409-10012	AMP-O-MATIC* Side Feed Stripper Crimper III Machine 1320895-[]
409-10016	Entry Level Terminator (ELT) Machine 1338600-[]
409-10027	Stripping Module 1490502-[] and 1490500-[]
409-10029	Stripping Module 1490503-[] and 1490501-[]

3. REQUIREMENTS

3.1. Storage

A. Ultraviolet Light

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

B. Shelf Life

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

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



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

3.2. Wire Selection and Preparation

A. Type

The wire size range for AMPMODU MOD IV, IV^{1/2}, and V receptacle contacts is 32 through 20 AWG.

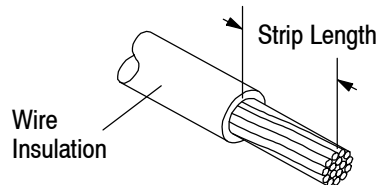
B. Preparation

The wire must be stripped to the dimension provided in Figure 2.



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

The table in Figure 2 also provides insulation strip lengths as determined by the size contact used. Also listed are acceptable wire insulation diameters for the contacts.



WIRE SIZE RANGE, (AWG)	INSUL DIA MAX.	STRIP LENGTH	WIRE BARREL		INSUL BARREL CRIMP WIDTH
			CRIMP HEIGHT	CRIMP WIDTH	
20	●	4.78-3.58 [.188-.141]	0.94-0.72 [.037-.0285]	1.4 [.055]	1.57 [.062]
22	●	4.78-3.58 [.188-.141]	0.84-0.72 [.033-.0285]		
24	●	4.78-3.58 [.188-.141]	0.83-0.64 [.0325-.025]		
22	1.55 [.061]	4.37-2.77 [.172-.109]	0.97-0.81 [.038-.032]	1.07 [.042]	
24	1.55 [.061]	4.37-2.77 [.172-.109]	0.86-0.71 [.034-.028]		
26	1.55 [.061]	4.37-2.77 [.172-.109]	0.81-0.71 [.032-.028]		
26-30	1.22 [.048]	4.37-2.77 [.172-.109]	0.74-0.64 [.029-.025]	1.4 [.055]	
27, 28	1.02 [.040]	4.37-2.77 [.172-.109]	0.61-0.51 [.024-.020]	0.84 [.033]	1.4 [.055]
30, 32	1.02 [.040]	4.37-2.77 [.172-.109]	0.61-0.48 [.024-.019]		
INSULATING PIERCING CRIMP CONTACTS	1.4 [.055]	UNSTRIPPED	1.33-1.21 [.0525-.0475]	N/A	N/A
	1.02 [.040]		1.23-1.1 [.0485-.0435]	N/A	

● Maximum diameter shall be 1.75 mm [.069 in.] when used in 15.24 mm [.600 in.] high housings, and 1.4 mm [.055 in.] when used in 16.38 mm [.645 in.] high housings or 13.84 mm [.545 in.] high housings.

Figure 2

3.3. 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.



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 contact is shown as it should appear after crimping in Figure 3.

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 2.

B. Crimp Length

For optimum crimp effectiveness, the crimp must be within the area shown and must meet the crimp dimensions provided 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 Tab

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 Section X-X.

G. Insulation Barrel Crimp

The insulation barrel shall grip the insulation firmly without cutting into it. Care must be taken to prevent cutting, nicking, or scraping of the insulation. The insulation barrel crimp width must be within the dimensions provided in Figure 2.

H. Wire Location

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

I. Conductor Extension

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

J. Wire Barrel Seam

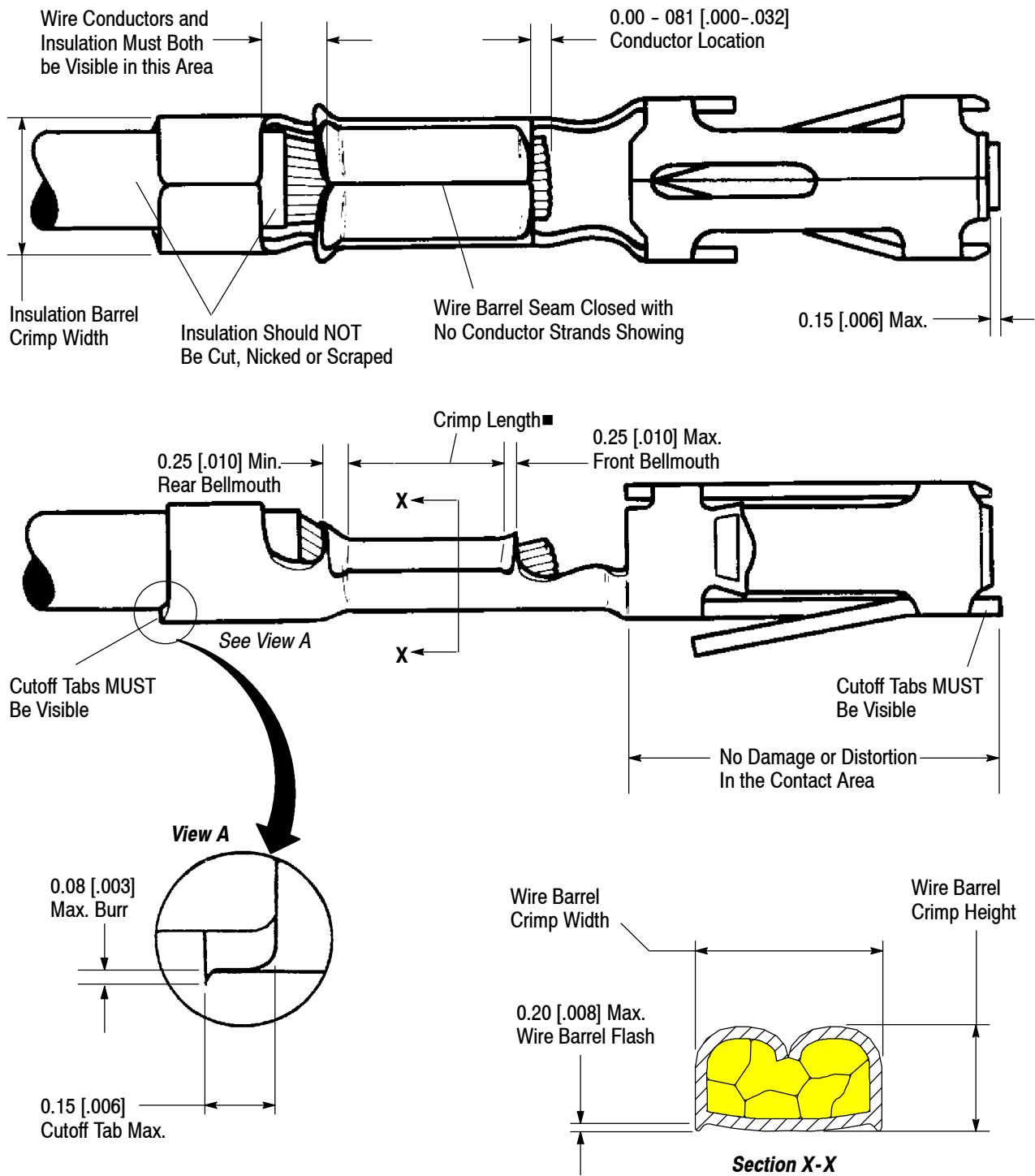
The wire barrel seam must be closed with no evidence of loose wire strands visible in the seam.

K. 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.

L. 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, as shown in Figures 5 and 6.



NOTE: Comparing a crimped contact to an uncrimped contact should reveal any fault that may have occurred to front shoulder or locking lances during crimping.

■ Effective crimp length shall be 2.67 mm [.105 in.] minimum for 20-24 AWG wire, and 2.16 mm [.085 in.] minimum for all other wire sizes; and is defined as that portion of the wire barrel fully formed by the tool, excluding the bellmouths.

Figure 3

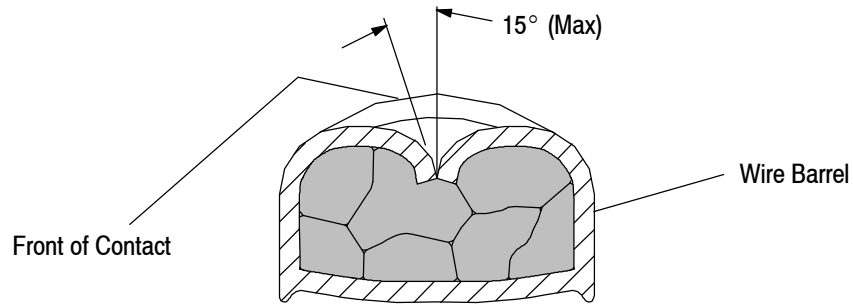


Figure 4

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.

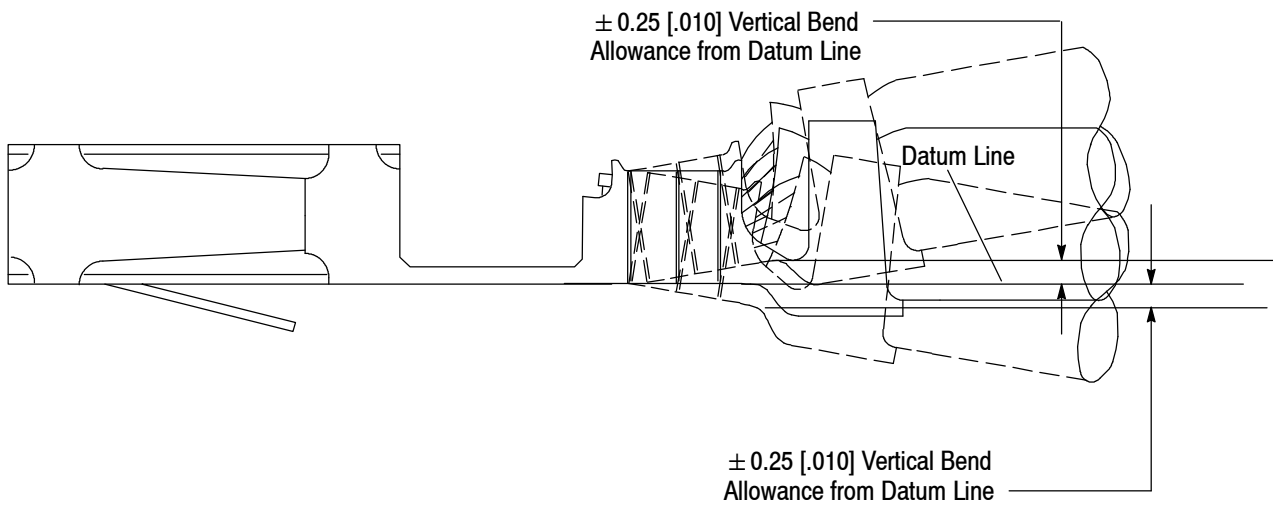


Figure 5

2. Side to Side

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

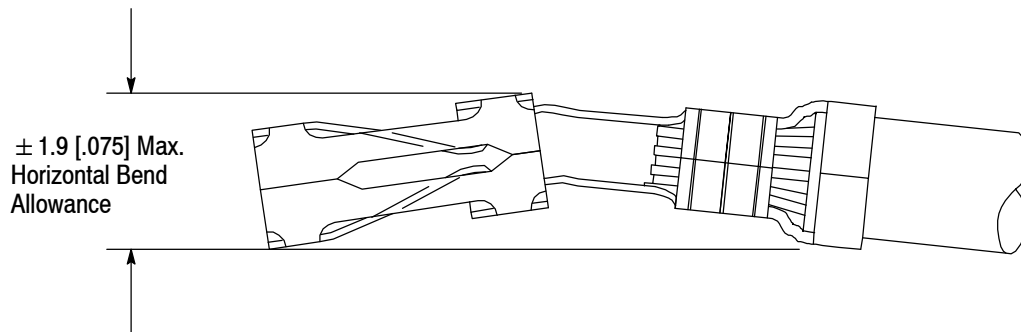


Figure 6

NOTE

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



3.4. Housings

AMPMODU MOD IV housings are available in a variety of configurations. The housing sizes range from 1 to 70 positions. These housings include single- and double-row positioning on 2.54 mm [.100 in.] centerlines. Housing options include detent latching, polarization, and bonded strain relief/pull tabs. See Figure 7.

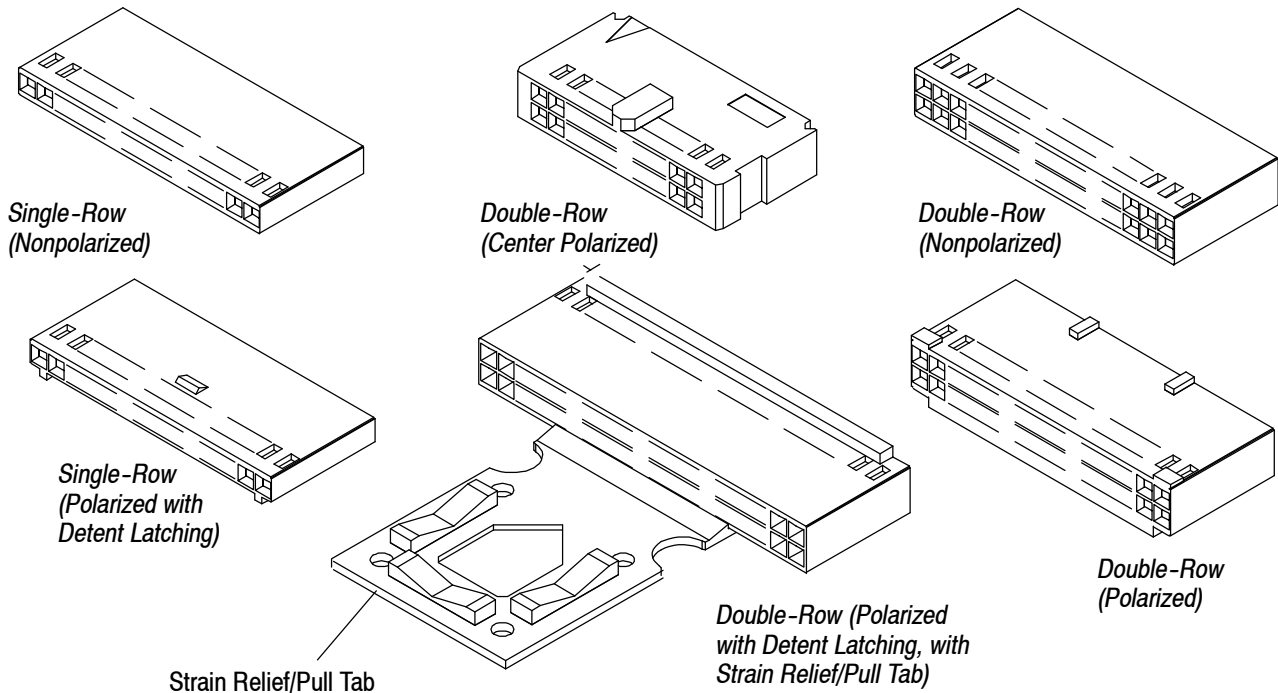


Figure 7

3.5. Keying Plugs

Keying plugs are used to exclude an open receptacle contact or housing position from mating. Keying plugs are available for either the receptacle contact or for plugging directly into the housing. See Figure 8.

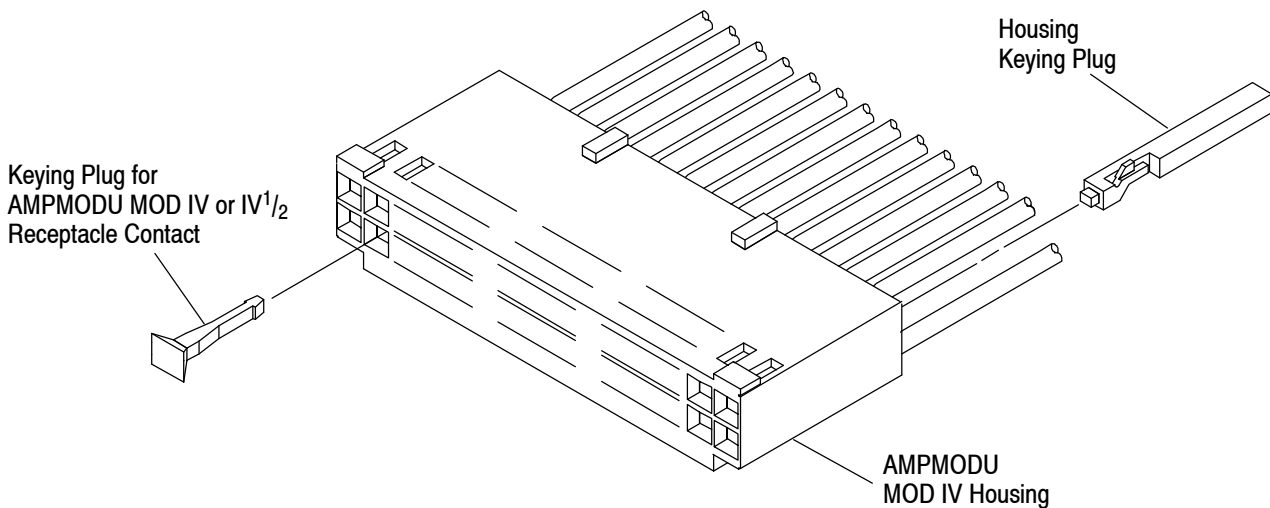


Figure 8

3.6. Repair/Replace

Contacts are not repairable once a termination has been made. Any defective or damaged contact must be replaced with a new one.

If the contact is seated in a housing, use the extraction tool information provided in Section 5, TOOLING.

4. QUALIFICATION

AMPMODU MOD IV, IV^{1/2}, and V contact receptacles are Recognized in the Component Program of Underwriters Laboratories Inc. (UL) in File Number E28476, and are Certified by CSA International in File Number LR7189.

5. TOOLING

Figure 9 provides tool part numbers and instructional material related to wire size.

NOTE *Tyco Electronic 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.

- **Extraction Tools**

Extraction tools are designed to release the locking lance inside the connector housing without damaging the housing or contacts and remove the individual contact for replacement or for relocation to another housing cavity.

Use extraction tools 843473-1, 843475-1, 843475-2, 843477-[], and 843996-2, -3, -4, and -5 for extracting contacts from AMPMODU MOD IV housings. See the instructional material shipped with the extraction tooling for specific housing information.

WIRE SIZE RANGE, (AWG)	INSULATION DIAMETER MAX.	HAND TOOL (DOCUMENT)	APPLICATOR (DOCUMENT)	POWER UNIT (DOCUMENT)
24-20	1.75 [.069]	91516-1	466562-2 (408-8040) 466562-5 (408-8040)	354500-1 (409-5842) 565435-5 (409-5128) 1338600-[] (409-10016)
		90202-3 (408-7865)	466905-1 (409-5855)	1320895-1 (409-10012)
26-22	1.55 [.061]	91517-1	466571-2 (408-8040) 466571-4 (408-8040)	354500-1 (409-5842) 565435-5 (409-5128) 1338600-[] (409-10016)
			466918-1 (409-5855)	1320895-1 (409-10012)
30-26	1.22 [.048]	91516-1	466395-2 (408-8040)⚡	354500-1 (409-5842) 565435-5 (409-5128) 1338600-[] (409-10016)
		90202-3 (408-7865)		

Figure 9 (cont'd)

WIRE SIZE RANGE, (AWG)	INSULATION DIAMETER MAX.	HAND TOOL (DOCUMENT)	APPLICATOR (DOCUMENT)	POWER UNIT (DOCUMENT)
32-27	1.02 (.040)	91541-1 (408-8547)	466655-2 (408-8040)❖❖	354500-1 (409-5842) 565435-5 (409-5128) 1338600-[] (409-10016)
			466921-1 (409-5855)	1320895-1 (409-10012)
INSULATION PIERCING CRIMP CONTACTS	1.4-1.02 [.055-.040]	1901829-1 (408-8547)	567307-1 (408-8040)	122500-[] (409-5852) 217500-[] (409-5866) 356500-[] (409-5878) 854400-[] (409-5806)
			567307-2 (408-8040)❖❖	354500-1 (409-5842) 565435-5 (409-5128) 1338600-[] (409-10016)

❖❖ Applicator will require minor modification.

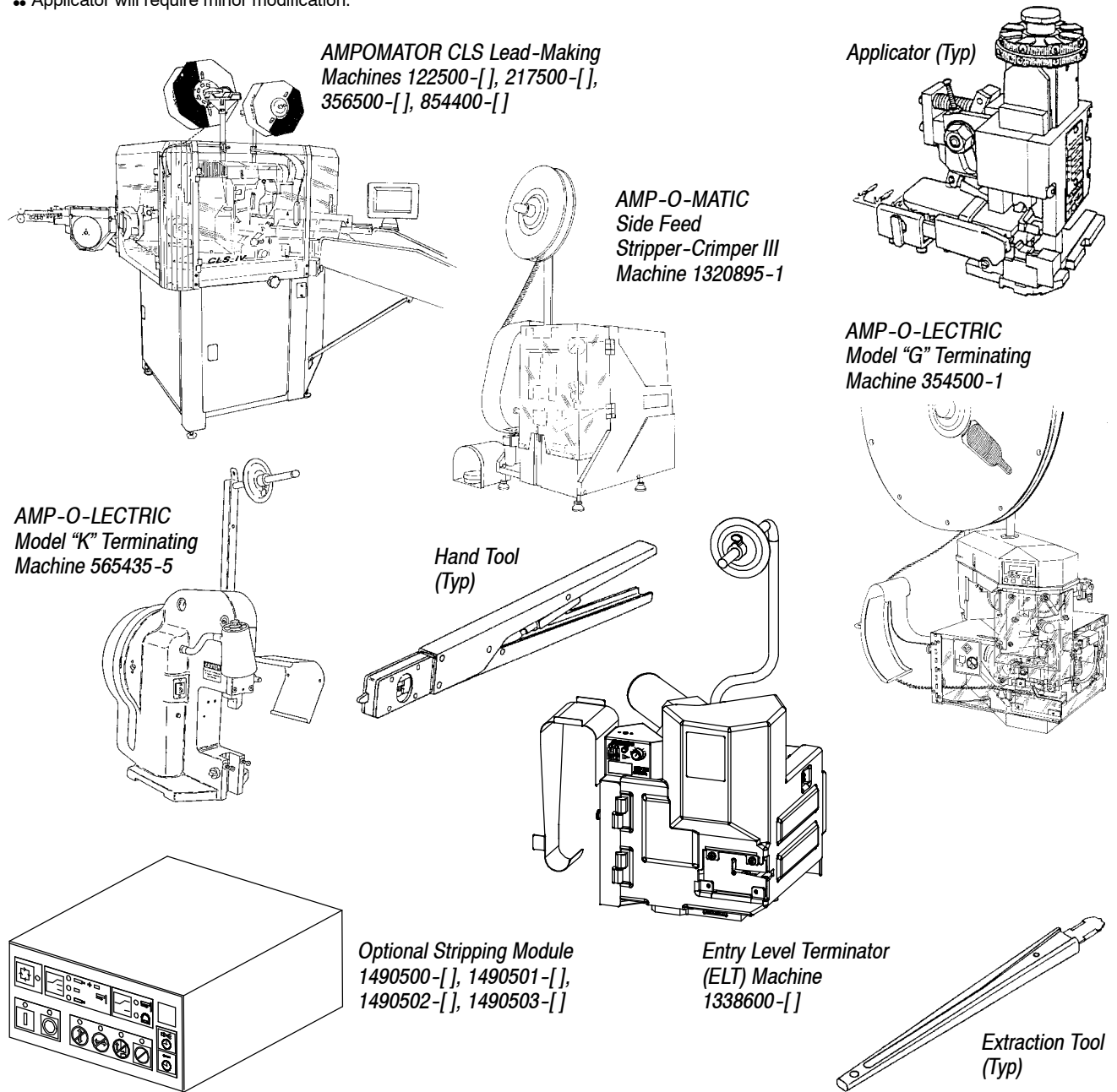


Figure 9 (end)

6. VISUAL AID

Figure 10 shows a typical application of AMPMODU MOD IV, IV^{1/2}, and V Receptacle Contacts and Housings. 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.

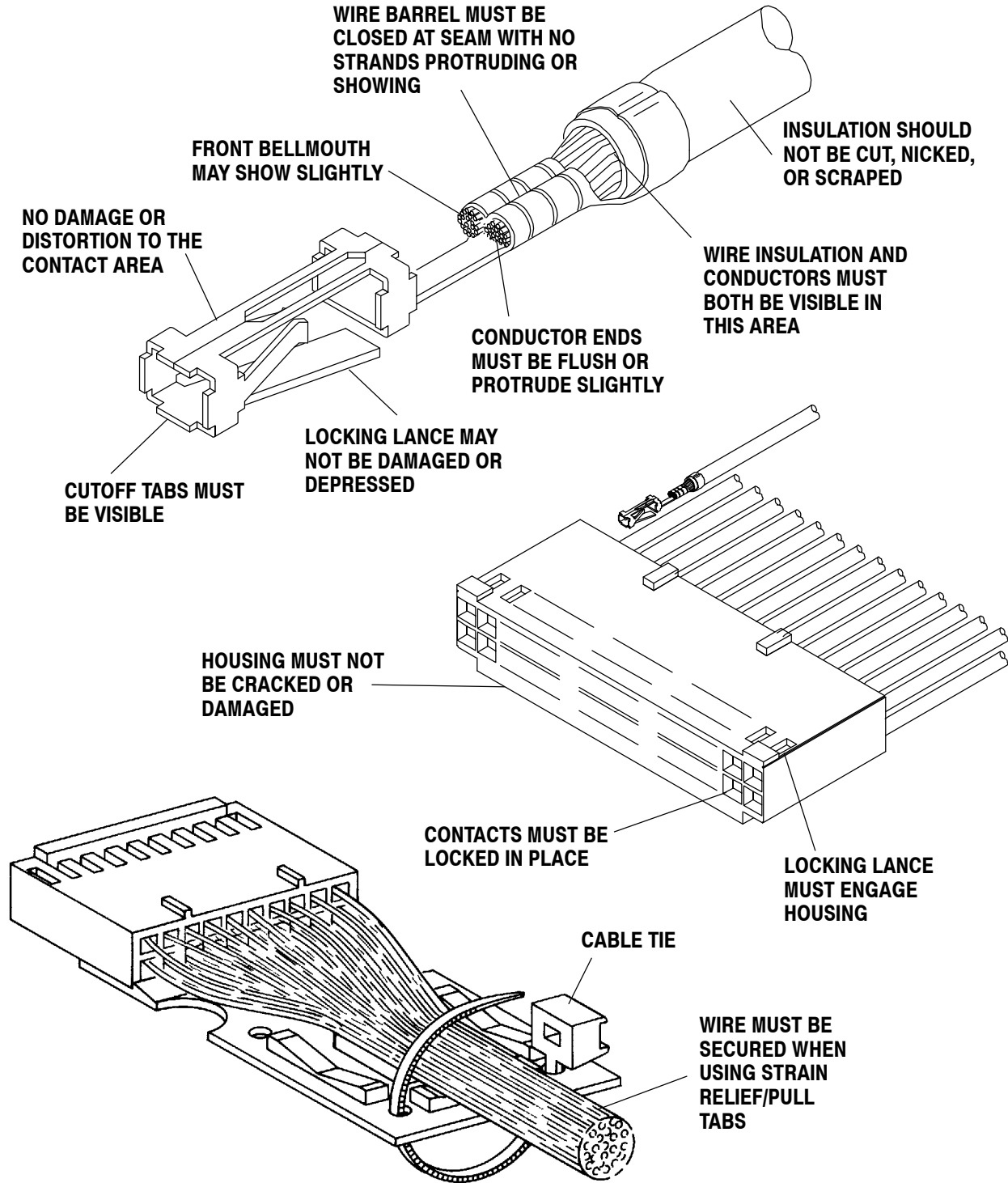


FIGURE 10. VISUAL AID