

NOTE



All numerical values are in metric units [with U.S. customary units in brackets]. Dimensions are in millimeters. Unless otherwise specified, dimensions have a tolerance of ± 0.13 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 Economy Power II Contacts and Connectors. These connectors are available in 2 through 12 positions and the contacts will accept stranded or solid wire in a 22-16 AWG wire size range. Contact Product Information at the bottom of this page for information on housing sizes 13 thru 24. The Economy Power II Connectors will mate with the same headers as standard Economy Power Connectors. The contacts may be ordered with or without internal tongues. The contacts with internal tongues have a higher mating force and current rating and are typically used with smaller housing sizes. Those without tongues have a lower mating force and current rating and are typically used with larger housing sizes.

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.

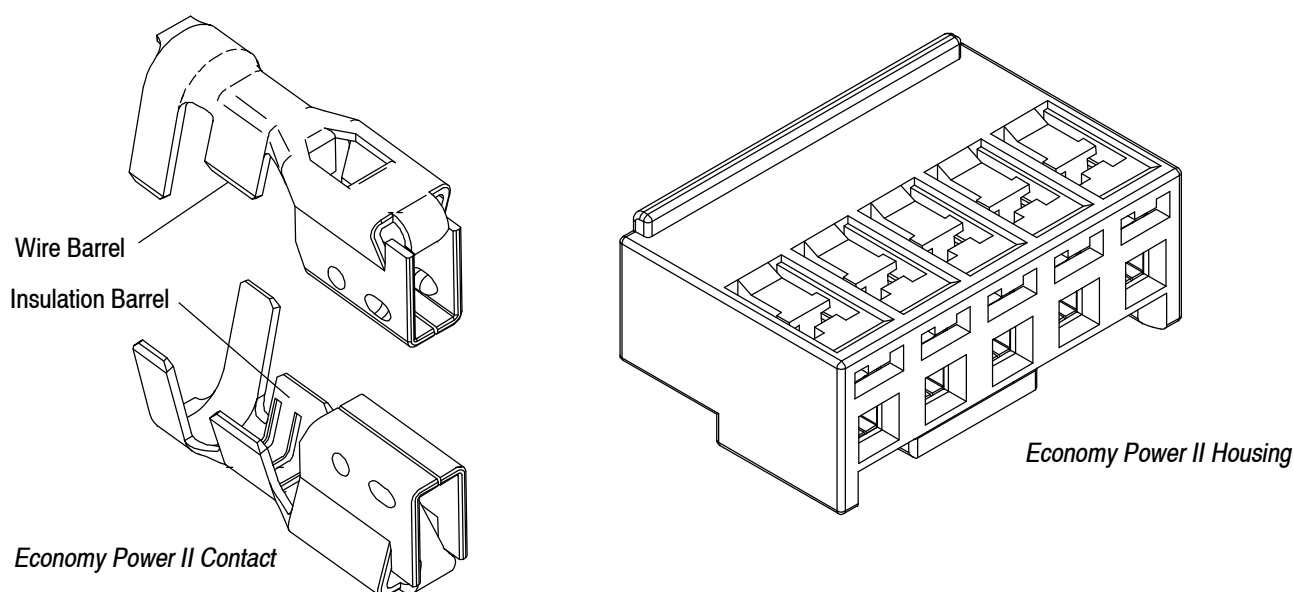


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

- Initial release of application specification

2.2. Customer Assistance

Reference Part Numbers 1744125-[], 1744144-[], and Product Code K885 are representative numbers of Economy Power II Contacts and 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 number at the bottom of this page.

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 Tyco Electronics.

2.4. Specifications

Design Objective 108-2297 provides expected product performance and test information.

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>
408-3295	Preparing Reel of Contacts for Application Tooling
408-7424	Checking Terminal Crimp Height or Gaging Die Closure
408-8040	Heavy Duty Miniature Quick-Change Applicators (Side-Feed Type)
408-8053	Conversion Guide for Miniature Quick-Change Applicators
408-9816	Handling of Reeled Products
408-10116	Extracting EP-II Contacts from Housing 1744125-[]
409-5128	Basic AMP-O-LECTRIC* Model "K" Terminating Machines
409-5842	AMP-O-LECTRIC Model "G" Terminating Machine 354500-[]
409-5852	AMPOMATOR* CLS Model III-G Lead-Making Machine 122500-[]
409-5878	AMPOMATOR CLS IV Lead-Making Machine
409-10027	Stripping Module 1490502-[], 1490500-[], and 1725910-[]
409-10029	Stripping Module 1490503-[] and 1490501-[]
409-10047	3K Terminating Machines 1725950-[] and 5K Terminating Machines 1725900-[]
409-10078	DT-3000 and DT-5000 Machines with SLE Crimp Quality Monitors

3. REQUIREMENTS

3.1. Storage

A. Ultraviolet Light

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

B. Reel Storage

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

C. Shelf Life

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

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

3.2. Material

The contacts are made from phosphor bronze, pre-tinned over copper; and the housings are made from white UL 94V-0 Rated Nylon.

3.3. Wire Selection and Preparation

Economy Power II Contacts will accept stranded copper wire sizes and insulation diameters as listed in Figure 2. The crimp heights and insulation barrel crimp widths are also provided.

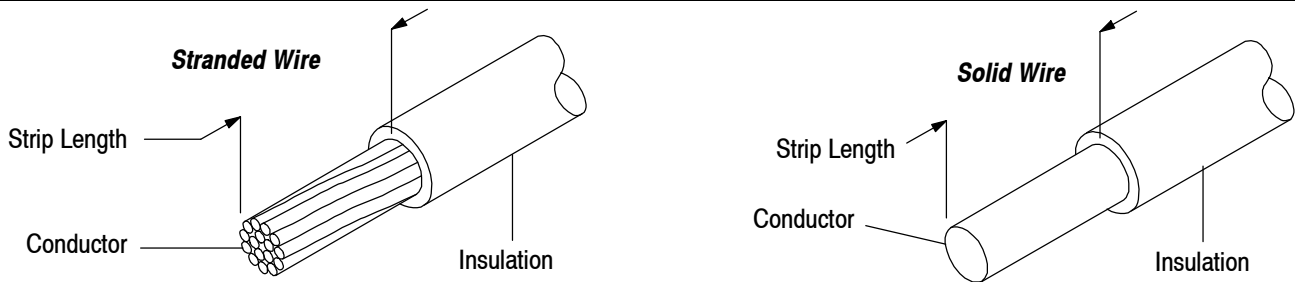
NOTE



The applied crimp dimension (within the functional range of the product) is dependent on the 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.

CAUTION

DO NOT nick, cut, or scrape the wire conductor during the stripping operation.



CONTACT TYPE	WIRE SIZE RANGE	WIRE SIZE (AWG)	INSULATION DIAMETER RANGE	STRIP LENGTH	WIRE BARREL CRIMP		INSULATION BARREL CRIMP WIDTH
					HEIGHT ± 0.05	WIDTH	
Economy Power II Receptacle Contact	22-18	22	1.7-2.9	2.69-3.30	1.00	1.78	2.60
		20	1.7-2.9	2.69-3.30	1.10	1.78	2.60
		18	1.7-2.9	2.69-3.30	1.15	1.78	2.60
	20-16	20	1.7-2.9	2.46-2.84	1.12	1.78	2.60
		18	1.7-2.9	2.46-2.84	1.27	1.78	2.60
		16	1.7-2.9	2.46-2.84	1.47	1.78	2.60

Figure 2

3.4. 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.

**NOTE**

Periodic inspections must be made to ensure crimped contact formation is consistent as shown 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 meet the crimp dimensions provided in Figure 2. 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.

NOTE

The effective crimp length is given for tooling design only, and should not be used for inspection criteria.



C. Bellmouths

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 in View A.

E. Burrs

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

F. Wire Barrel Flash

The wire barrel flash shall not exceed the dimensions shown in Figure 3 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.

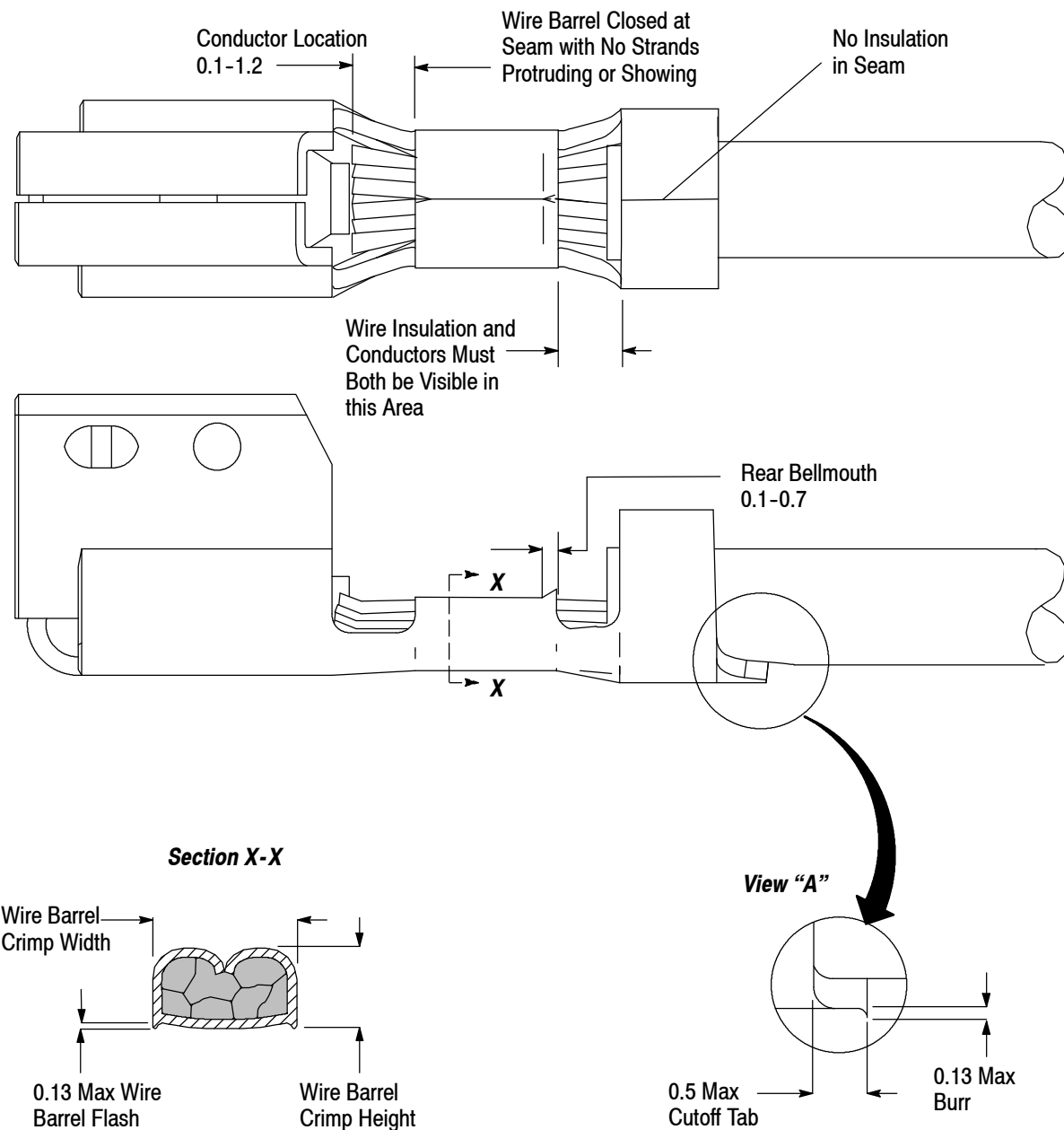


Figure 3

H. Conductor Location

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

I. Wire Barrel Seam

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

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.

K. Straightness

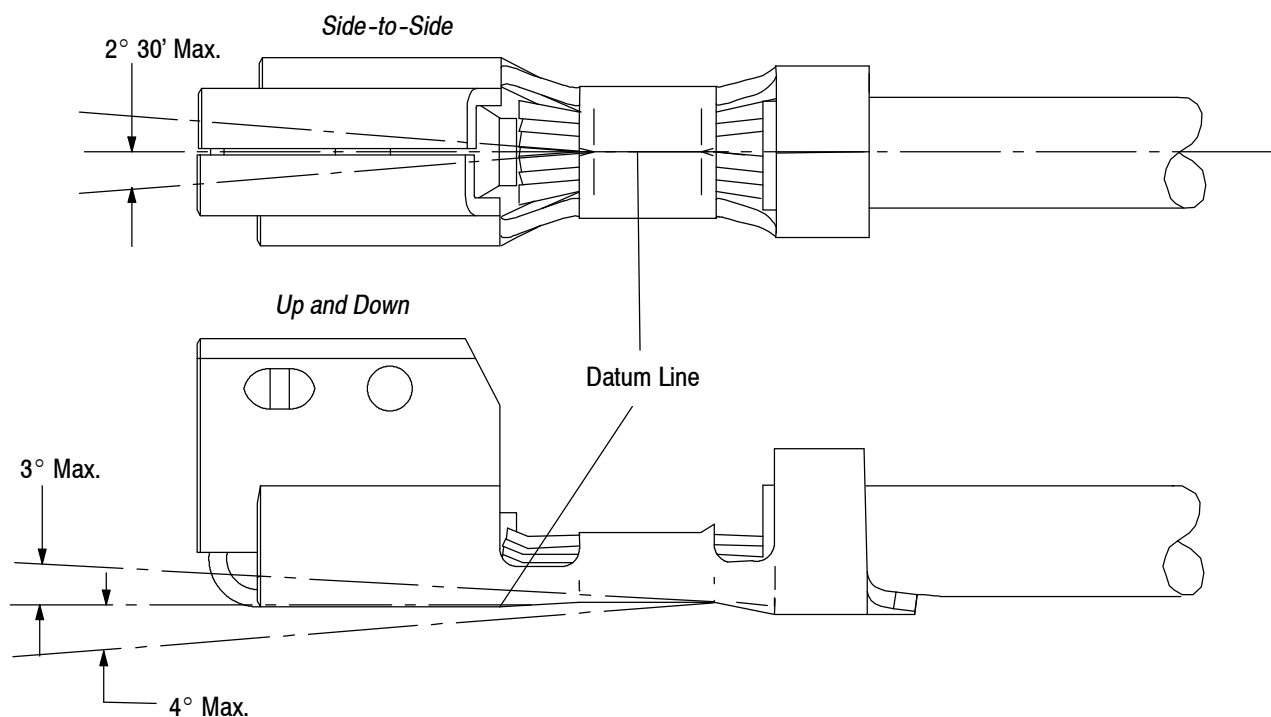
The force applied during crimping may cause some bending between the crimped wire barrel and the mating portion of the contact. Such deformation is acceptable within the following limits.

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 4.

2. Side-to-Side

The side-to-side bending of the contact may not exceed the limits provided in Figure 4.



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

Figure 4

3.5. Housings

Economy Power II Connector Housings are available in 2 through 24 positions. They are available in a white color nylon and consist of a 94V-0 flame retardant material.

3.6. Contact Insertion

Orient the crimped contact as shown in Figure 5. Insert contact into housing until it bottoms, and audible click is heard or felt. Pull back lightly on the wire to ensure retention of crimped contact in housing.

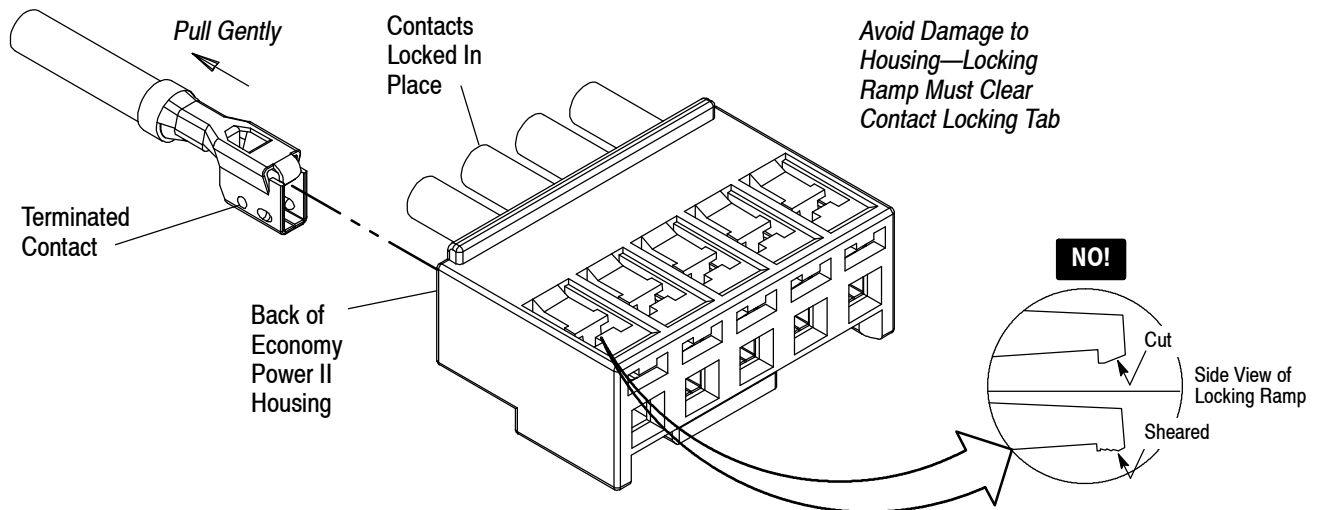


Figure 5

3.7. Repair/Contact Replacement

Refer to Instruction Sheet 408-10116 for information on Economy Power II extraction techniques.

4. QUALIFICATION

Economy Power II Connectors have not yet been sent for agency evaluation.

5. TOOLING

This section provides a selection of tools for various application requirements. They include semi-automatic and automatic machines for power assisted application of strip form contacts. Modified designs and additional tooling concepts may be available to meet other application requirements. For additional information, contact one of the service groups at the bottom of page 1. A listing of tooling recommendations covering the full wire size range is provided in Figure 6.

- **Applicators**

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 at the bottom of page 1 for specific changes.

- **Power Units**

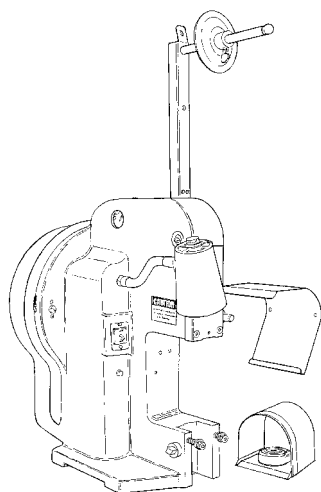
A power unit is an automatic or semi-automatic device used to assist in the application of a product. Power unit includes the power source used to supply the force or power to an applicator.

NOTE

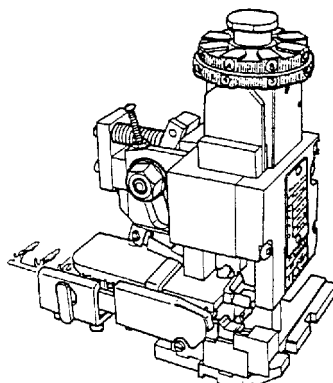


The Model "K" AMP-O-LECTRIC Terminating Machine PN 565435-5 (409-5128) has been superseded by the Model "G" Terminating Machine PN 354500-1 (409-5842) for new applications. For existing applications, the Model "K" is still recommended because of the large number of installed machines.

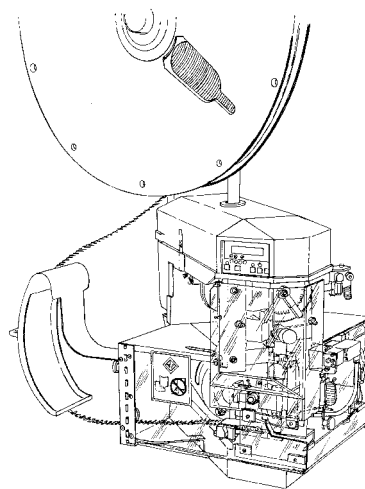
WIRE SIZE RANGE	TOOLING			
	APPLICATOR	DOCUMENT	POWER UNIT	DOCUMENT
22-18	1385286-1	408-8040	122500-2, -3	409-5852
			356500-1, -2	409-5878
	1385286-2	408-8040	354500-1	409-5842
			565435-5	409-5128
	1385286-3	408-8040	354500-1	409-5842
			1490501-1	409-10029
			1725900-[]	409-10047
			1725910-[]	409-10027
			1725950-[]	409-10047
			1901700-[]	409-10078
20-16	1852347-1, -6	408-8040	122500-2, -3	409-5852
			356500-1, -2	409-5878
	1852347-2	408-8040	354500-1	409-5842
			565435-5	409-5128
	1852347-3	408-8040	354500-1	409-5842
			1490501-1	409-10029
			1725900-[]	409-10047
			1725910-[]	409-10027
			1725950-[]	409-10047
			1901700-[]	409-10078



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



HD Quick Change Applicators
(408-8040)



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

Figure 6 (cont'd)

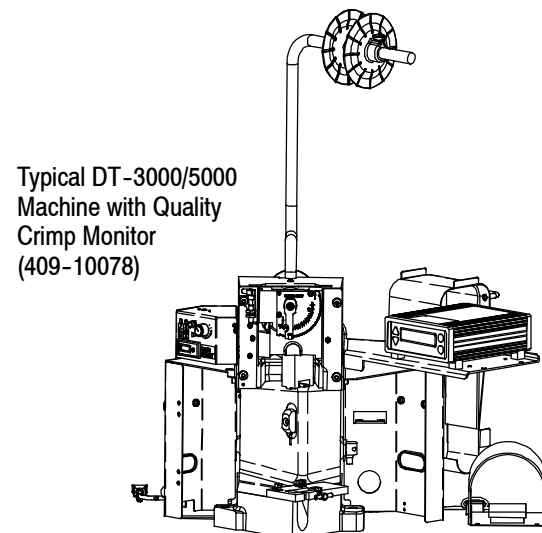
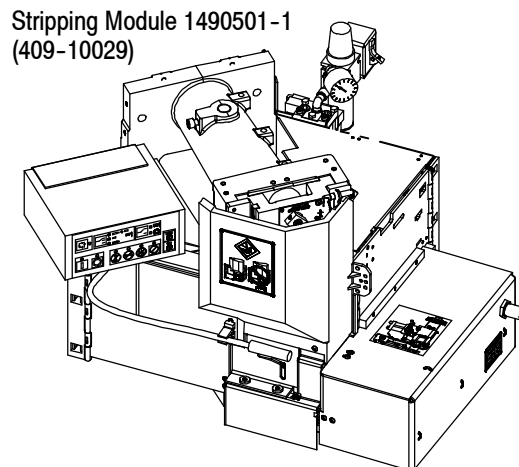
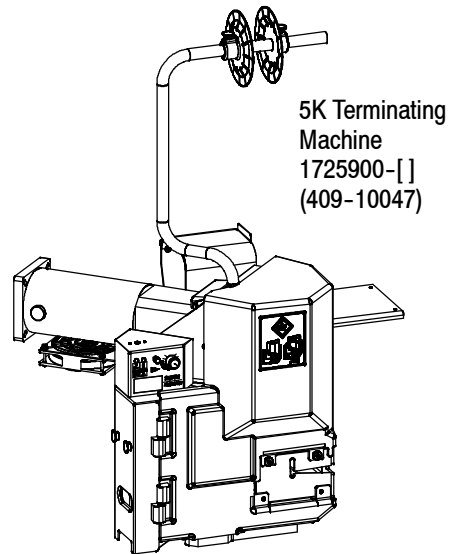
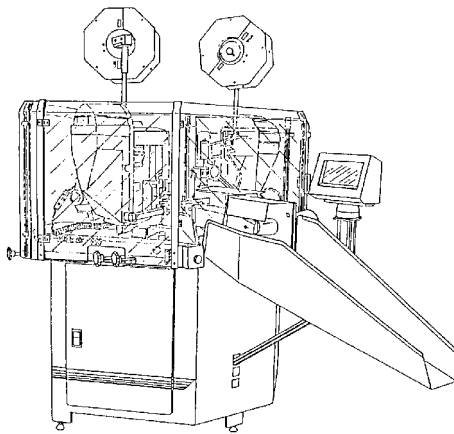
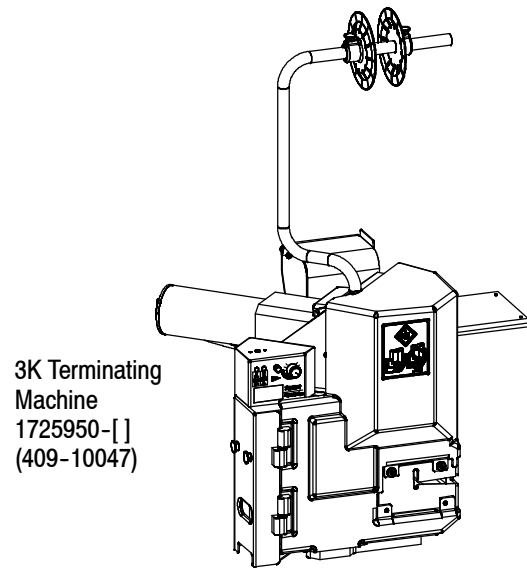
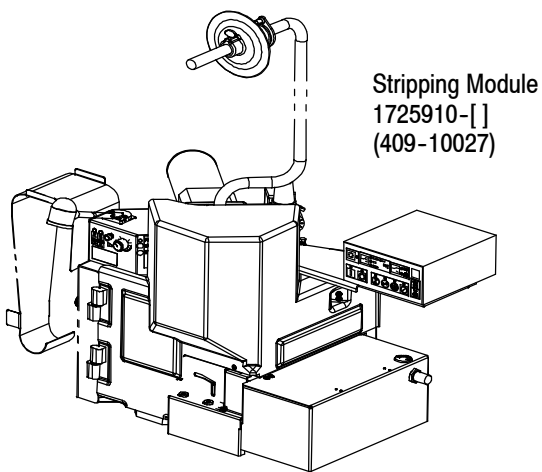


Figure 6 (end)

6. VISUAL AID

Figure 7 shows a typical application of Economy Power II 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.

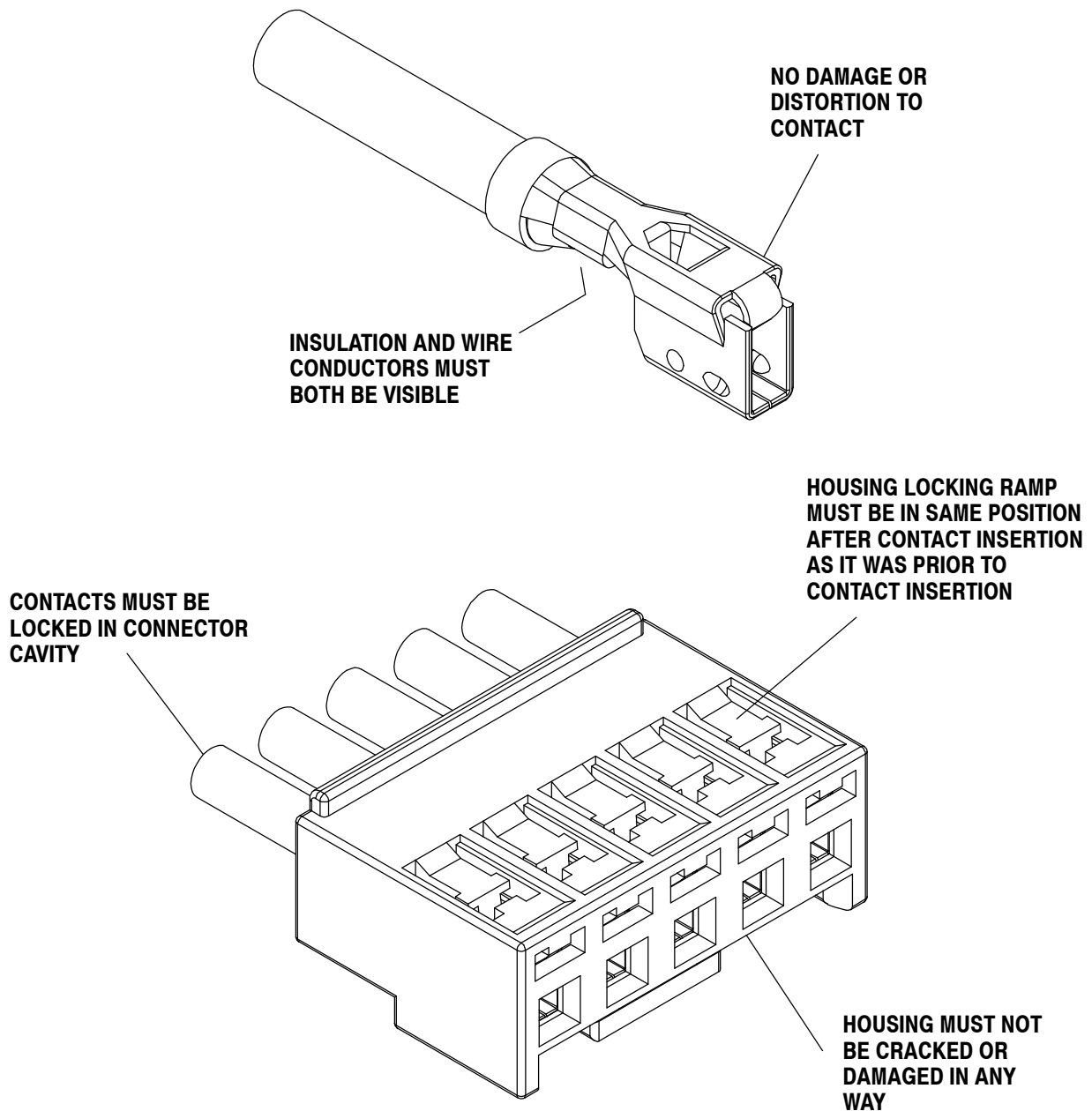


FIGURE 7. VISUAL AID