

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 [$\pm .005$] 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 requirements for the application of Type VI Insulation Grip Contacts. These requirements apply to hand or automatic machine crimping tools for the contacts. These insulation grip contacts are available in size 16 (1.57 mm [.062 in.]) pin diameter only, with a wire size range of 28-14 (AWG).

When corresponding with TE Connectivity 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.

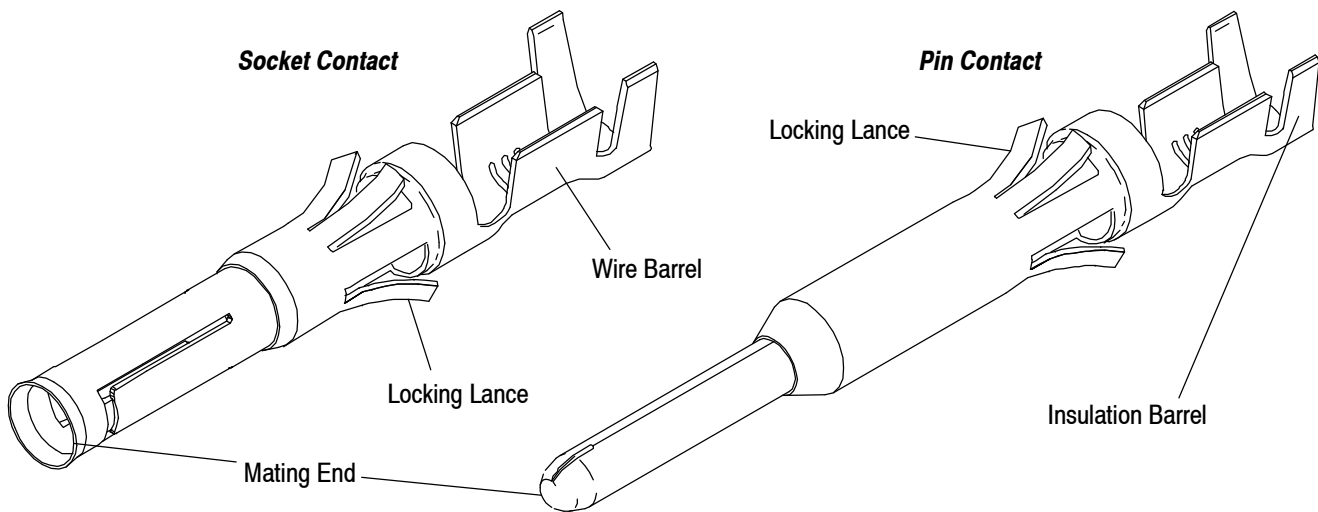


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

- Updated document to corporate requirements.

2.2. Customer Assistance

Reference Base Part Number 66577 and Product Code 5056 are representative numbers of the Type VI Insulation Grip Contacts. 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 TE Representative or, after purchase, by calling the Product Information Center at the number at the bottom of this page.

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 this page.

2.4. Specifications

Product Specification 108-10038 provides performance test information and quality requirements for Type VI Contacts.

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.

Document Number	Document Title
408-1216	Extraction Tools 305183-[] for Type VI Contacts
408-1379	Selection Charts for Multimate Pin and Socket Contacts
408-2498	Crimping Head Cross Reference for Pneumatic Tools
408-3295	Preparing Reel of Contacts for Application Tooling
408-4106	Straight Action Crimp Head Adapter 217201-1
408-4190	C-Head Pneumatic Adapter 318161-1
408-4321	Pneumatic CERTI-CRIMP* Tool Holder 356304-1
408-6610	Hand Crimping Tool 90066-7
408-6613	Hand Crimping Tool 90067-4
408-6614	Hand Crimping Tool 90067-5
408-7347	Insertion Tools 91002-[]
408-7424	Checking Terminal Crimp Height or Gaging Die Closure
408-7680	Hand Crimping Tool 90310-1
408-7716	Hand Crimping Tool 90327-1
408-8040	Heavy Duty Miniature Quick-Change Applicators (Side-Feed Type) with Mechanical
408-8059	General Preventive Maintenance for Applicators
408-8322	Heavy Duty Industrial (HD-I) Side-Feed Type Applicator
408-8547	Certi-Crimp II Straight Action Hand Tools
408-8620	Service Hand Tool 696202-1
408-9640	Crimp Quality Monitor Applicators for Side-Feed and End-Feed Applications
408-9816	Handling of Reeled Products
408-9819	PRO-CRIMPER* III Hand Tool Assembly 58495-1 with Die Assembly 58495-2
409-5128	Basic AMP-O-LECTRIC* Model "K" Terminating Machine 565435-5
409-5842	AMP-O-LECTRIC Model "G" Terminating Machines 354500-[]
409-5852	AMPOMATOR* CLS III-G Lead Making Machine 122500-[]
409-5862	626 Pneumatic Tooling Assemblies 189721-[] and 189722-[]
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 Modules 1490500 and 1490502
409-10029	Stripping Modules 1490501 and 1490503

3. REQUIREMENTS

3.1. Storage

A. Ultraviolet Light

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

B. Reeled Contacts

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

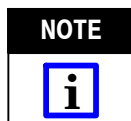
C. Shelf Life

The contacts should remain in the shipping containers until ready for use to prevent deformation to the contacts and/or damage to the housings. The contacts 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	Sulfur	Nitrites	Tartrates




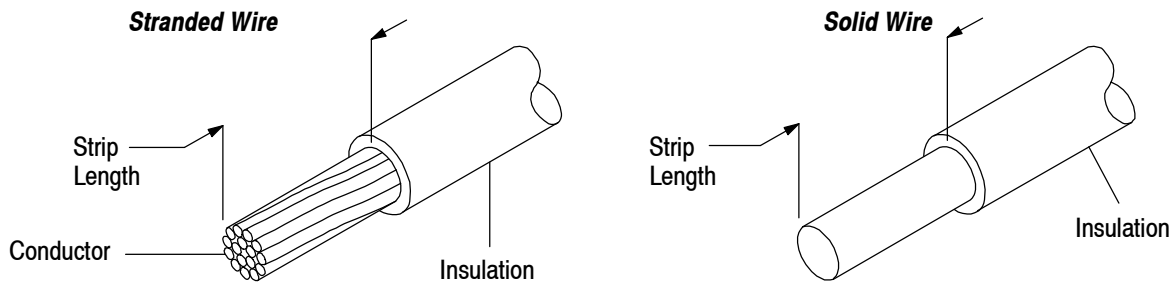
Where the above environmental conditions exist, phosphor-bronze contacts are recommended instead of brass if available.

3.2. Wire Size and Preparation

The contacts will accept a wire size range of 28 to 14 AWG and may be terminated to either stranded or solid wire. See Figure 2.

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, scrape, or cut the wire conductor during the stripping operation.




WIRE SIZE, AWG	INSULATION DIAMETER	STRIP LENGTH	WIRE BARREL			INSUL BARREL CRIMP WIDTH (MAX)
			CRIMP HEIGHT RANGE (MACHINE)	CRIMP HEIGHT RANGE (HAND TOOL)	WIDTH (REF)	
28	0.89-1.4 [.035-.055]	3.18 [.125] and 3.56-4.75‡ [.140-.187]‡	0.84-0.74 [.033-.029]	0.84-0.74 [.033-.029]	1.4 [.055]	1.78 [.070]
26			0.89-0.79 [.035-.031]	0.89-0.79 [.035-.031]		
24			0.96-0.86 [.038-.034]	0.96-0.86 [.038-.034]		
24	1.02-2.03 [.040-.080]	3.56-4.75‡ [.140-.187]‡	1.02-0.02 [.040-.036]	1.02-0.02 [.040-.036]	1.58 [.062]	2.29 [.090]
22			1.12-1.02 [.044-.040]	1.12-1.02 [.044-.040]		
20			1.19-1.09 [.047-.043]	0.99-0.89 [.039-.035]		
22	1.4-2.79 [.055-.110]	4.37 [.172]	1.27-1.17 [.050-.046]	1.17-1.07 [.046-.042]	1.78 [.070]	2.54 [.100]
20			1.40-1.30 [.055-.051]	1.17-1.07 [.046-.042]		
18			1.55-1.25 [.061-.049]	1.55-1.25 [.061-.049]		
18	2.03-2.54 [.080-.100]	3.18 [.125] and 3.56-4.75‡ [.140-.187]‡	1.55-1.25 [.061-.049]	1.55-1.25 [.061-.049]	2.03 [.080]	3.05 [.120]
16			1.55-1.25 [.061-.049]	1.55-1.25 [.061-.049]		
18	2.03-3.43 [.080-.135]	3.96 [.156]	1.55-1.25 [.061-.049]	1.55-1.25 [.061-.049]	2.29 [.090]	3.56 [.140]
16		4.75 [.187]	1.78-1.68 [.070-.066]	1.78-1.68 [.070-.066]		
14			1.78-1.68 [.070-.066]	1.78-1.68 [.070-.066]		

‡Hand Tools Only.

Figure 2

3.3. Crimped Contact Requirements

The contact must be crimped onto the wire according to instructions packaged with applicable tooling. After crimping, the contact should appear as shown in Figure 3. A typical pin contact is shown as it should appear after crimping; these requirements apply equally to the socket contact.

CAUTION  The wire insulation must not be damaged during the crimping process.

A. Wire Barrel Crimp

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 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 and 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. 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. Insulation Barrel Crimp

The insulation barrel shall grip the insulation firmly. A slight cut in the insulation by the insulation barrel is permissible as this causes no problems in actual use. Insulation crimp shall comply to width and height provided in Figure 3.

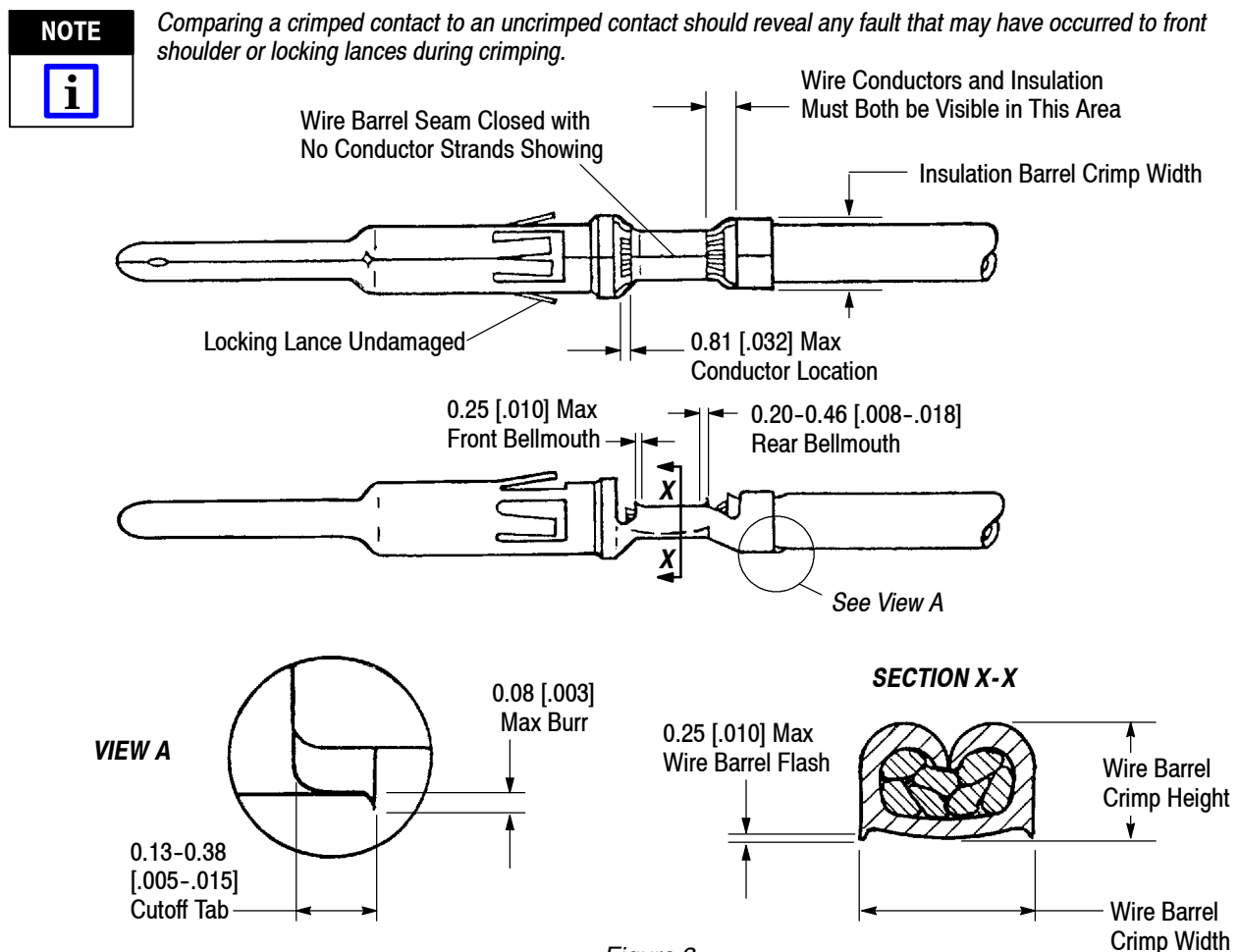


Figure 3

H. Wire Location

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.

J. Wire Barrel Seam

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

3.4. Axial Concentricity

The axial concentricity of a crimped contact must be within an area defined by the diameter of a circle that has the same center as the centerline of the contact. The diameter of the circle will depend on the wire size. 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 4.

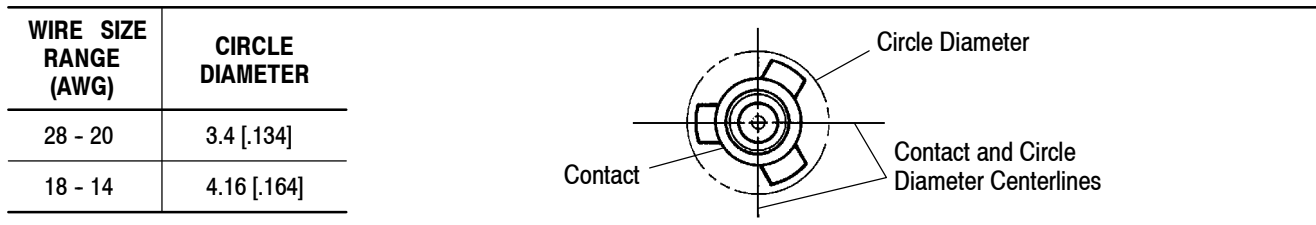


Figure 4

3.5. Repair and Replacement

Contacts are not repairable once a termination has been made. Any defective contact should be removed and replaced with a new one.

4. QUALIFICATIONS

Type VI Insulation Grip Contacts are not required to be agency evaluated.

5. TOOLING

Figure 5 provides tool part numbers and instructional material related to wire size.

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

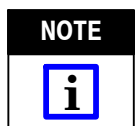
- **Applicator**

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.



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

• **Insertion/Extraction Tooling**

Insertion Tools are designed for contacts crimped to small fragile wire. They are designed to stabilize the contact during insertion. For use of Insertion Tool 91002 which may be used with these contacts, refer to Instruction Sheet 408-7347. Extraction Tools are designed to release the locking lance inside the connector housing without damaging the housing or contacts. For use of Extraction Tool 305183 which may be used with these contacts, refer to Instruction Sheet 408-1216.

WIRE SIZE RANGE (AWG)	INSULATION DIAMETER RANGE	TOOLING (DOCUMENT)					
		APPLICATOR	POWER UNIT	HAND TOOL	HEAD	DIES	TOOL HOLDER
28-24	0.89-1.4 [.035-.055]	---	---	58495-1 (408-9819) 90066-7 (408-6610) 91515-1 (N/A) 696202-1 (408-8620)	---	---	---
		---	---	189721-1 (408-2498) (409-5862)	217201-1 (408-4106)	90066-9 (N/A)	189928-1 (408-2498) (408-4190) 356304-1 (408-4321)
		---	---	189722-1 (408-2498) (409-5862)			
		466321-3 (408-8040)	122500-[] (409-5852) 217500-[] (409-5866) 356500-[] (409-5878)	---	---	---	---
		466321-4● (408-8040)	354500-1 (409-5842) 565435-5 (409-5128)	---	---	---	---
		466321-6 (408-8040)	354500-[] (409-5842) 1338600-[] (409-10016)	---	---	---	---
		466908-2 (408-8040)	1320895-[] (409-10012)	---	---	---	---
		567753-1 (408-8040)	122500-[] (409-5852) 217500-[] (409-5866) 356500-[] (409-5878)	---	---	---	---
		567753-2 (408-8040)	354500-1 (409-5842)	---	---	---	---
		567753-3 (408-8040)	354500-[] (409-5842) 1338600-[] (409-10016)	---	---	---	---

●This applicator will terminate wire size 28-26 only.

Figure 5 (cont'd)

WIRE SIZE RANGE (AWG)	INSULATION DIAMETER RANGE	TOOLING (DOCUMENT)					
		APPLICATOR	POWER UNIT	HAND TOOL	HEAD	DIES	TOOL HOLDER
24-20	1.02-2.03 [.040-.080]	---	---	58495-1 (408-9819) 90066-7 (408-6610) 91515-1 (N/A) 696202-1 (408-8620)	---	---	---
				189721-1 (408-2498) (409-5862)	217201-1 (408-4106)	90066-9 (N/A)	189928-1 (408-2498) (408-4190) 356304-1 (408-4321)
				189722-1 (408-2498) (409-5862)			
		466323-3 (408-8040)	122500-[] (409-5852) 217500-[] (409-5866) 356500-[] (409-5878)				
		466323-4 (408-8040)	354500-1 (409-5842) 565435-5 (409-5128)				
		466323-5 (408-8040)	354500-1 (409-5842) 565435-5 (409-5128)				
		466323-6 (408-8040)	354500-[] (409-5842) 1338600-[] (409-10016)	---	---	---	---
		466907-2 (408-8040)	1320895-[] (409-10012)				
		567634-1 (408-8040)	122500-[] (409-5852) 217500-[] (409-5866) 356500-[] (409-5878)				
		567634-3 (408-8040)	354500-[] (409-5842) 1338600-[] (409-10016)				
567807-1 (N/A)	1320895-[] (409-10012)						

Figure 5 (cont'd)

WIRE SIZE RANGE (AWG)	INSULATION DIAMETER RANGE	TOOLING (DOCUMENT)								
		APPLICATOR	POWER UNIT	HAND TOOL	HEAD	DIES	TOOL HOLDER			
24-20	1.02-2.03 [.040-.080]	1385125-1 (N/A)	122500-[] (409-5852) 217500-[] (409-5866) 356500-[] (409-5878)	---	---	---	---			
		1385125-2 (N/A)	354500-1 (409-5842) 565435-5 (409-5128)							
		1385125-3 (N/A)	354500-[] (409-5842) 1338600-[] (409-10016)							
22-18	1.27-2.79 [.050-.110]	466384-4 (408-8040)	354500-1 (409-5842) 565435-5 (409-5128)	90327-1 (408-7716)	---	---	---			
		466384-5 (408-8040)	354500-[] (409-5842) 1338600-[] (409-10016)							
		466914-1 (N/A)	1320895-[] (409-10012)							
18-16	2.03-2.54 [.080-.100]	---	---	58495-1 (408-9819) 90067-4 (408-6613) 90067-5 (408-6614) 91505-1 (408-8547) 91523-1 (N/A) 696202-1 (408-8620)	---	---	---			
				189721-1 (408-2498) (409-5862)				217201-1 (408-4106)	90067-7 (N/A) 90067-6 (N/A)	189928-1 (408-2498) (408-4190) 356304-1 (408-4321)
				189722-1 (408-2498) (409-5862)						

Figure 5 (cont'd)

WIRE SIZE RANGE (AWG)	INSULATION DIAMETER RANGE	TOOLING (DOCUMENT)					
		APPLICATOR	POWER UNIT	HAND TOOL	HEAD	DIES	TOOL HOLDER
18-16	2.03-2.54 [.080-.100]	466325-1 (408-8040)	122500-[] (409-5852) 217500-[] (409-5866) 356500-[] (409-5878)	---	---	---	---
		466325-2 (408-8040)	354500-1 (409-5842) 565435-5 (409-5128)				
		466325-4▲ (408-8040)	354500-1 (409-5842) 565435-5 (409-5128)				
		466325-5 (408-8040)	354500-[] (409-5842) 1338600-[] (409-10016)				
		466906-1 (408-8040)	1320895-[] (409-10012)				
		466906-2 (408-8040)	1320895-[] (409-10012)				
		567638-1 (408-8040)	122500-[] (409-5852) 217500-[] (409-5866) 356500-[] (409-5878)				
		567638-3 (408-8040)	354500-[] (409-5842) 1338600-[] (409-10016)				
		1426020-1 (408-8322)	122500-[] (409-5852) 217500-[] (409-5866) 356500-[] (409-5878)				
		1426020-2 (408-8322)	354500-[] (409-5842) 1338600-[] (409-10016)				
		1426020-6 (408-8322)	122500-[] (409-5852) 217500-[] (409-5866) 356500-[] (409-5878)				

▲This applicator is specifically made for IBM.

Figure 5 (cont'd)

WIRE SIZE RANGE (AWG)	INSULATION DIAMETER RANGE	TOOLING (DOCUMENT)					
		APPLICATOR	POWER UNIT	HAND TOOL	HEAD	DIES	TOOL HOLDER
18-16	2.03-2.54 [.080-.100]	7-1426020-1 (408-8322)	122500-[] (409-5852) 217500-[] (409-5866) 356500-[] (409-5878)	---	---	---	---
		7-1426020-2 (408-8322)	354500-[] (409-5842) 1338600-[] (409-10016)				
		7-1426020-6 (408-8322)	122500-[] (409-5852) 217500-[] (409-5866) 356500-[] (409-5878)				
18-14	2.03-3.43 [.080-.135]	687997-2 (408-8040)	354500-1 (409-5842) 565435-5 (409-5128)	90310-1 (408-7680)	---	---	---
		687997-3 (408-8040)	122500-[] (409-5852) 217500-[] (409-5866) 356500-[] (409-5878)				
		687997-4 (408-8040)	354500-1 (409-5842) 565435-5 (409-5128)				

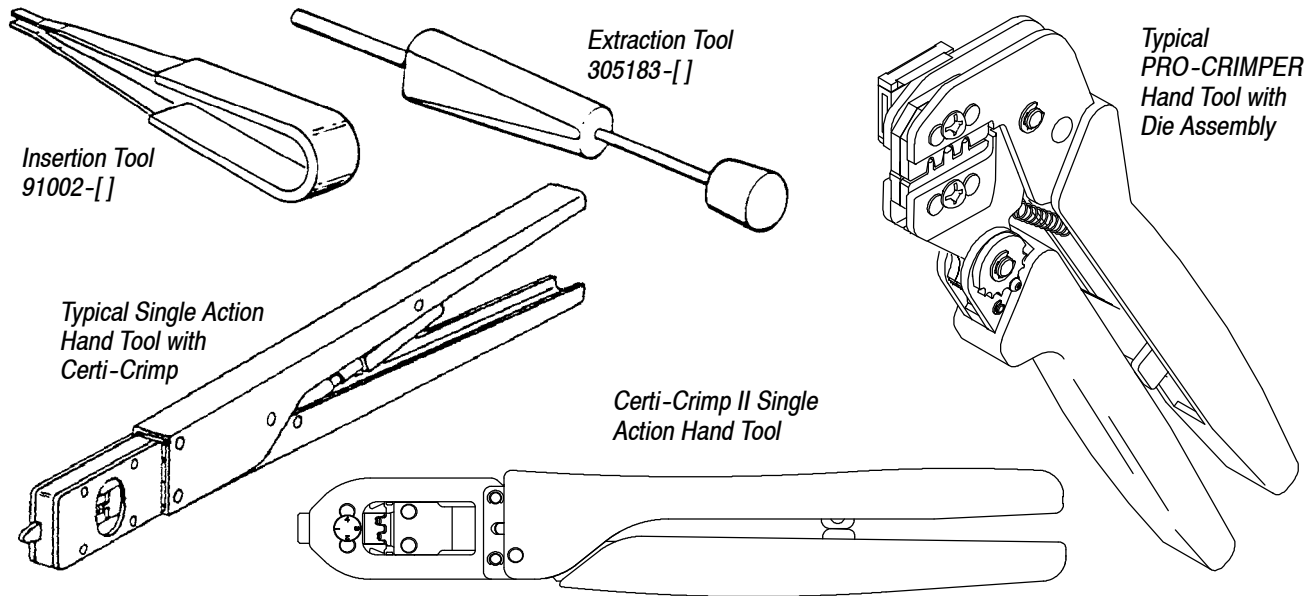
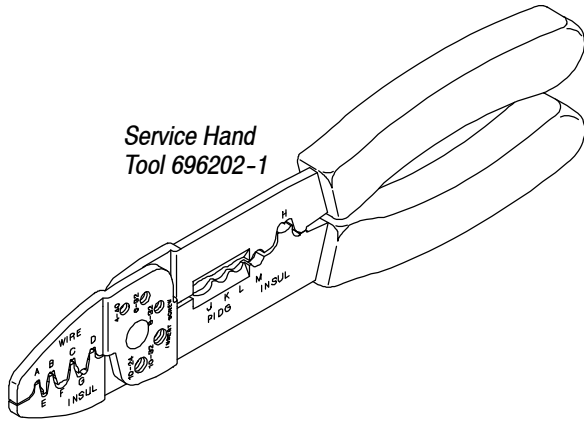
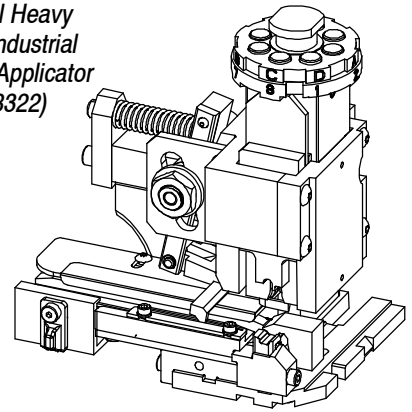


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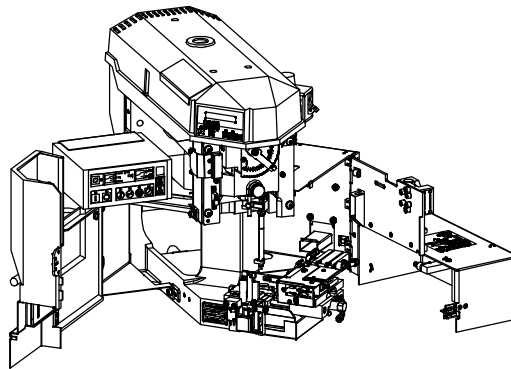


Service Hand
Tool 696202-1

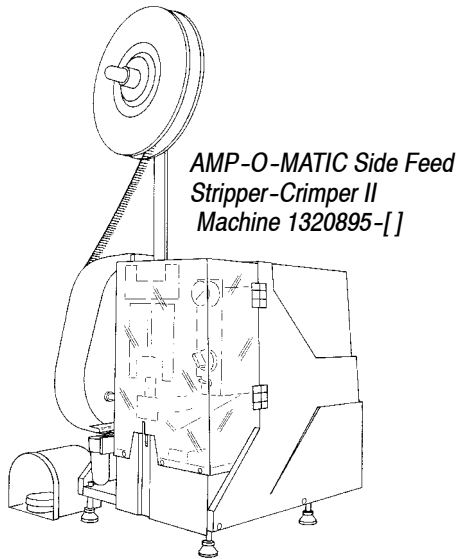
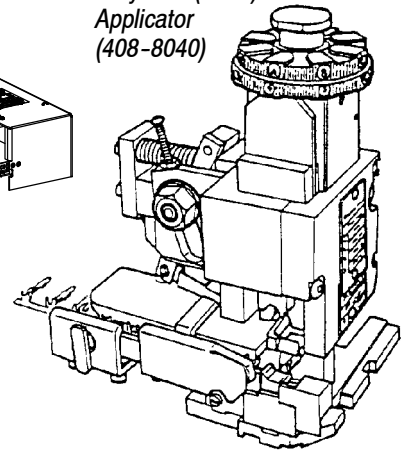
Typical Heavy
Duty Industrial
(HDI) Applicator
(408-8322)



AMP-O-LECTRIC Model "G"
Terminating Machine 354500-[]
with Optional Stripping Module

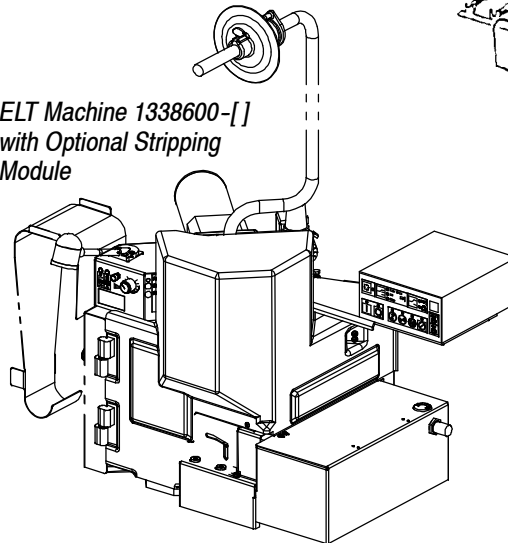


Typical Heavy
Duty Mini (HDM)
Applicator
(408-8040)

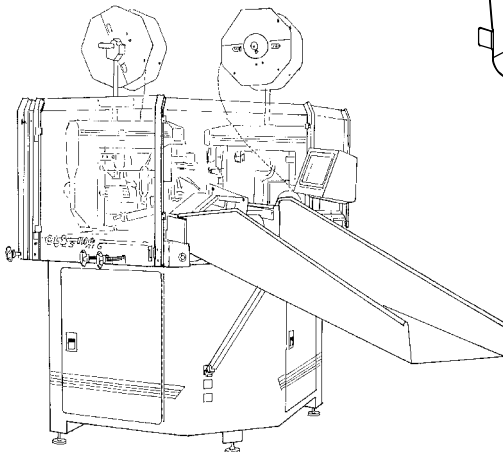


AMP-O-MATIC Side Feed
Stripper-Crimper II
Machine 1320895-[]

ELT Machine 1338600-[]
with Optional Stripping
Module



AMPOMATOR CLS
Lead-Making Machines
122500-[]; 217500-[];
356500-[]



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

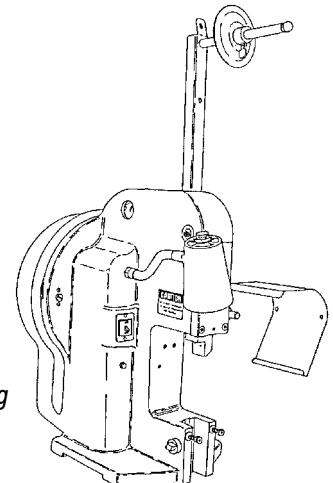


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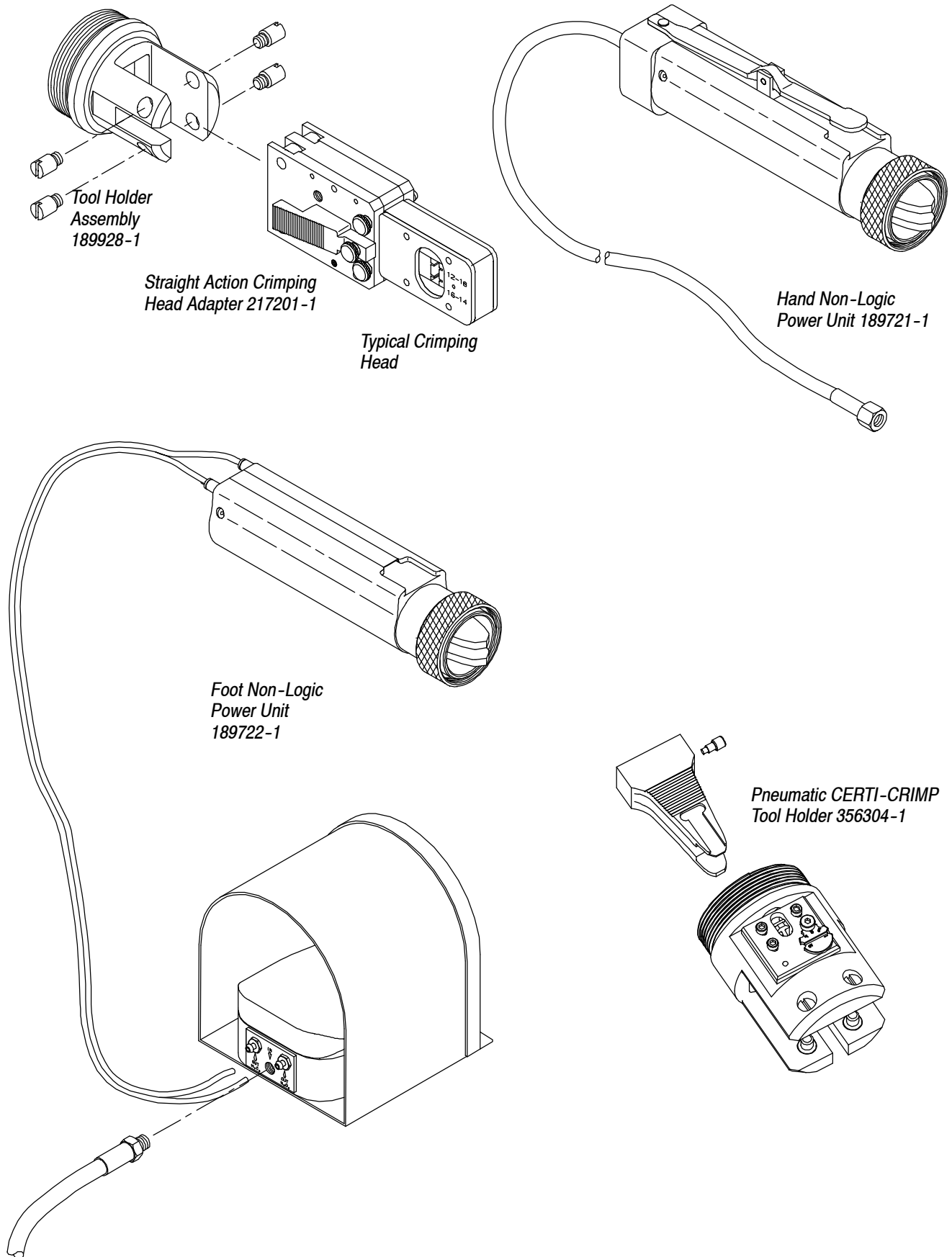


Figure 5 (end)

6. VISUAL AID

Figure 6 shows a typical application of a Type VI Insulation Grip Contact. 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.

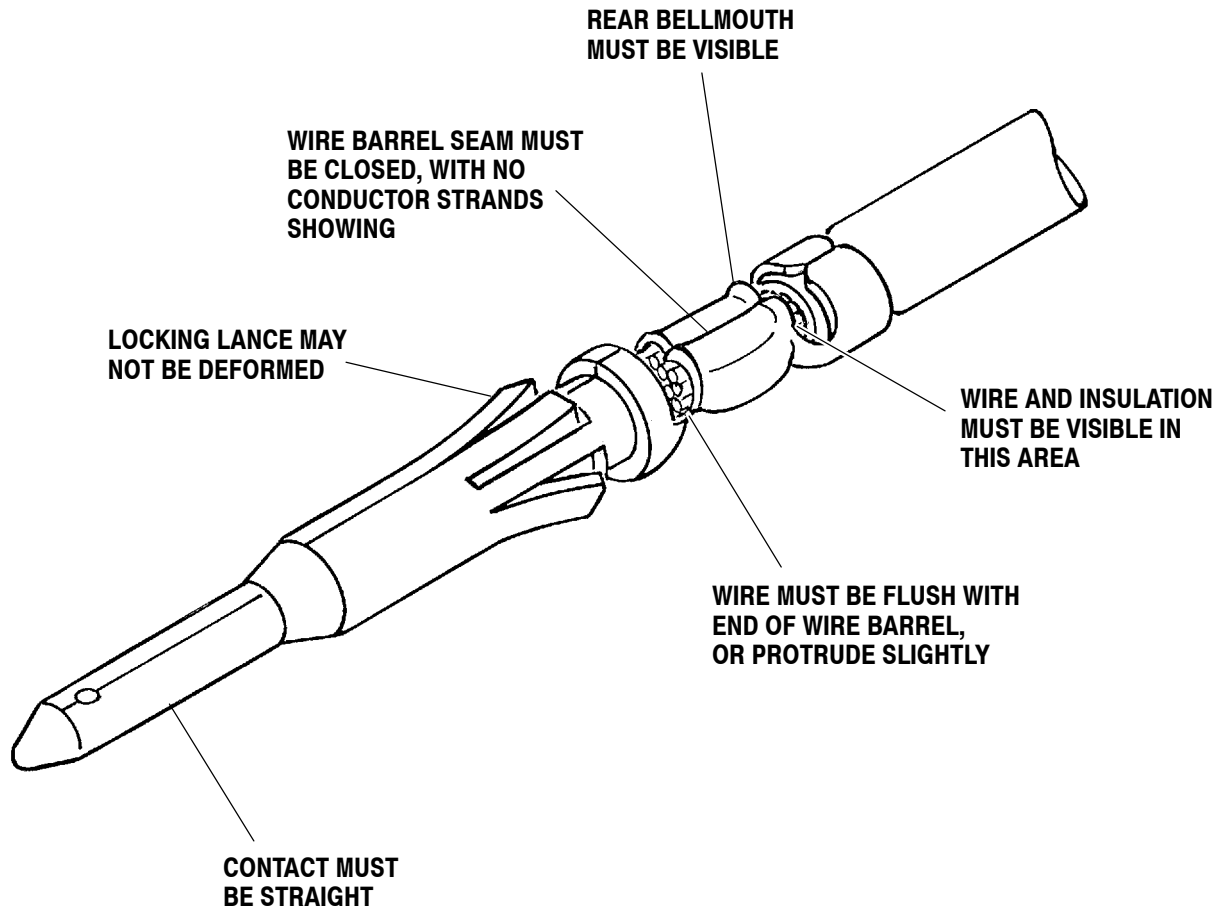


FIGURE 6. VISUAL AID