

### 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  $\pm 0.13$  [ $\pm .005$ ] 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 requirements for application of Metrimate Drawer Connectors. These connectors are available in 4, 12, 19, or 25 circuit positions in the standard version connector and in 8 and 15 positions in the power version. They are designed for use with various contacts and wire sizes 30–8 AWG. The wires can be crimped with hand tools or by automatic machines. The plug housings accept socket contacts and the receptacle housings accept pin contacts.

Figure 1 shows typical products and their features. The terms identifying the features are used throughout this specification.

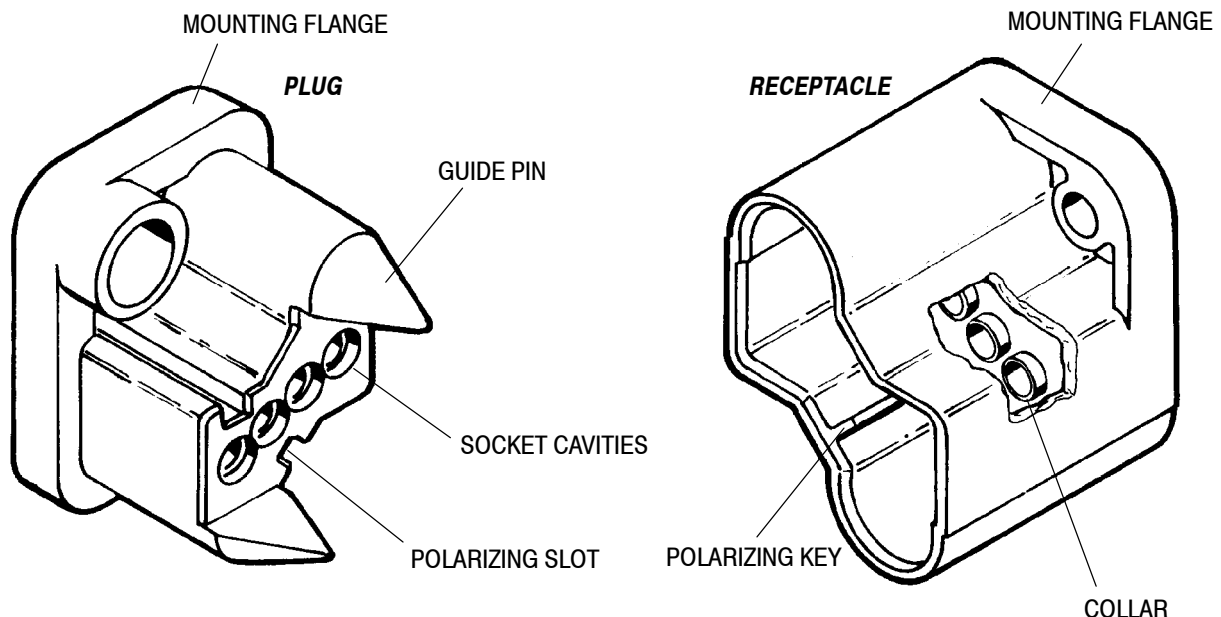


Figure 1

115-168

## 2. REFERENCE MATERIAL

### 2.1. Revision Summary

This paragraph is reserved for a revision summary covering the most recent additions and changes made to this specification which include the following:

- Updated document to corporate requirements.

## 2.2. Customer Assistance

Reference Part Number 212609 and Product Code 5018 are representative numbers of Metrimate Drawer Connectors. Use of these numbers will identify the product line and expedite your inquiries through a TE service network established to help you obtain product and tooling information. Such information can be obtained through a local TE Representative (Field Sales Engineer, Field Applications Engineer, etc) or, after purchase, by calling the Technical Assistance Center or the Product Information number at the bottom of page 1.

## 2.3. Drawings

Customer Drawings for each product part number 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 TE.

## 2.4. Specifications

Product Specifications provide performance test information. Application Specifications provide application requirements and reference materials.

Product Specifications:

- 108-10033 Metrimate Connectors
- 108-10042 Type III+ Contacts
- 108-10045 Pin and Socket, Size 8 Contacts (Power Application)

Application Specifications:

- 114-10004 Type III+ Contacts
- 114-10014 Pin and Socket, Size 8 Contacts (Power Application)

## 2.5. Instructional Material

The following list includes 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 TE machines.

Document Number	Document Title
408-1216	Extraction Tools 305183, 305183-2 Thru -8, and 1-305183-8
408-1379	Selection Charts for Multimate Pin And Socket Contacts
408-1817	Insertion Tool 200893-2
408-3295	Preparing Reel Of Contacts For Application Tooling
408-6610	Application and Maintenance For Hand Crimping Tool 90066-7
408-6613	Application and Maintenance For Hand Crimping Tool 90067-4
408-6614	Application and Maintenance For Hand Crimping Tool 90067-5
408-6827	Extraction Tool 58095-1
408-7347	Insertion Tools 91002-1 and -2
408-7414	Application and Maintenance For Hand Crimping Tool 90225-2
408-7424	Checking Terminal Crimp Height Or Gaging Die Closure
408-7516	Screw Machine Contacts and Application Tooling
408-7773	Application and Maintenance For Hand Crimping Tool 90331-1
408-7942	Application and Maintenance For Hand Crimping Tool 90310-2
408-8040	HDM Quick-Change Applicators (Side-Feed Type) With Mechanical Feed System
408-9387	Application and Maintenance For Hand Crimping Tool 90310-3
408-9816	Handling Of Reeled Products
408-9819	PRO-CRIMPER* II Hand Tool Assembly 58495-1 With Die Assembly 58495-2
408-9866	Terminal Reef Flange Removal Tool 354030-1
409-5842	AMP-O-LECTRIC* Model "G" Terminating Machine 354500-[ ]
409-5855	AMP-O-MATIC* Side Feed Stripper-Crimper Model II Machine No. 854040-3 and -4

## 2.6. Soldering Information

Corporate Bulletin No. 52 is available upon request and can be used as a guide in soldering. This bulletin provides information on various flux types and characteristics along with commercial designation and flux removal procedures. A checklist is attached to the bulletin as a guide for information on soldering problems.

### 3. REQUIREMENTS

#### 3.1. Storage

##### A. Ultraviolet Light

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

##### B. Reeled Contacts

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

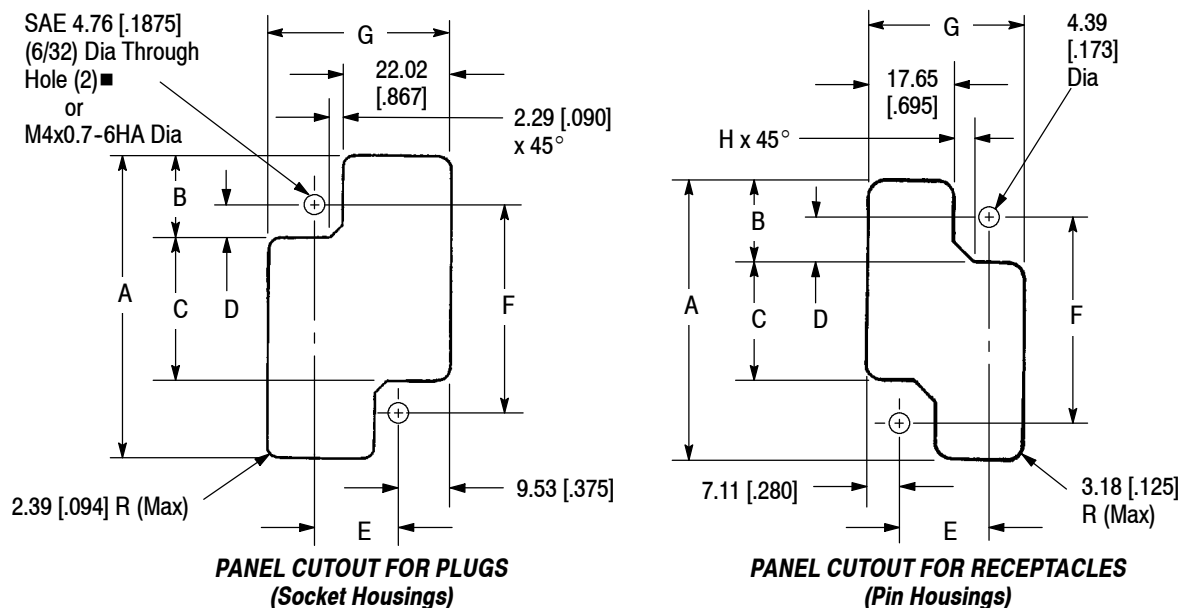
##### C. Shelf Life

The contacts should remain in the shipping containers until ready for use to prevent deformation to the contact. The contacts should be used on a first in, first out basis to avoid storage contamination that could adversely affect signal transmissions.

#### 3.2. Mounting Holes and Panel Cutouts

##### A. Panel Mounting

The connector halves can be installed or removed from either the back or the front of the panel. Usually, the plug is mounted in the cabinet panel, while the receptacle is mounted in the drawer panel. Dimensions and layout for mounting holes and panel cutouts are shown in Figure 2.



NUMBER OF POSITIONS		DIMENSIONS							
		A	B	C	D	E	F	G	H
4	Plug	45.29 [1.783]	14.02 [.552]	17.27 [.680]	4.47 [.176]	17.27 [.680]	26.21 [1.032]	36.32 [1.430]	—
	Receptacle	40.51 [1.595]	13.89 [.547]	12.75 [.502]	6.73 [.265]	17.27 [.680]	26.21 [1.032]	31.50 [1.240]	3.56 [.140]
12	Plug	55.49 [2.183]	14.02 [.552]	27.43 [1.080]	4.47 [.176]	17.27 [.680]	36.37 [1.432]	36.32 [1.430]	—
	Receptacle	50.77 [1.995]	13.89 [.547]	22.91 [.902]	6.73 [.265]	17.27 [.680]	36.37 [1.432]	31.50 [1.240]	3.56 [.140]
19, Power Connectors-8 & 15	Plug	61.04 [2.403]	15.90 [.626]	29.21 [1.150]	6.38 [.251]	17.83 [.702]	41.96 [1.652]	36.88 [1.452]	—
	Receptacle	56.26 [2.215]	15.93 [.627]	24.38 [.960]	8.79 [.346]	17.83 [.702]	41.96 [1.652]	32.05 [1.262]	4.57 [.180]
25	Plug	68.66 [2.703]	15.90 [.626]	36.83 [1.450]	6.38 [.251]	17.83 [.702]	49.58 [1.952]	36.88 [1.452]	—
	Receptacle	63.88 [2.515]	15.93 [.627]	32.00 [1.260]	8.79 [.346]	17.83 [.702]	49.58 [1.952]	32.05 [1.262]	4.57 [.180]

■ Mounting holes may be threaded as noted for use with screws, or clearance-drilled for use with nuts.

200-147E

Figure 2

## B. Panel Mating Dimensions

The panel mating dimensions when the drawer connectors are mounted shall be as shown in Figure 3.

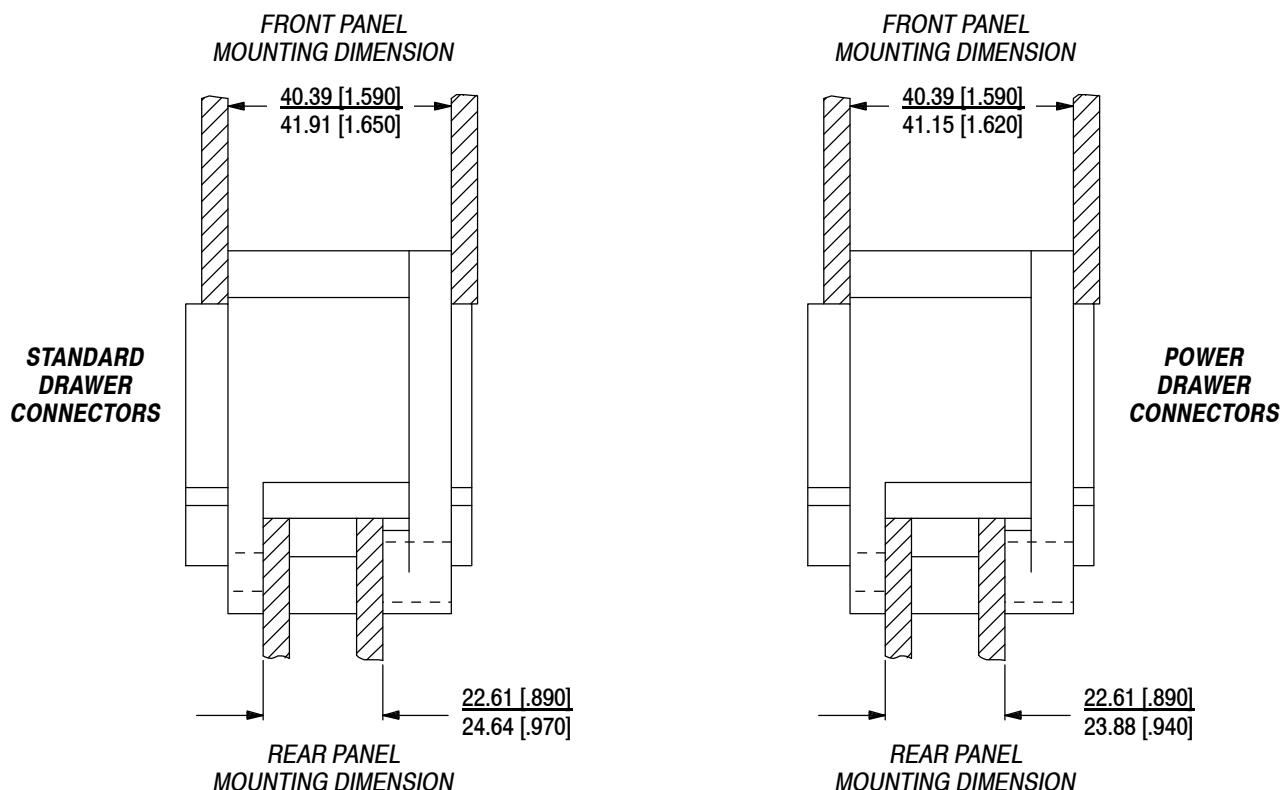


Figure 3

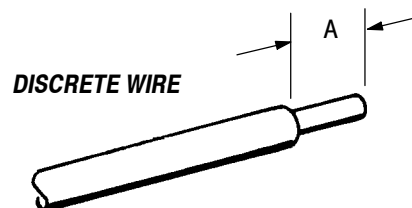
## 3.3. Mounting Hardware

Connector plug housings are float-mounted with a shoulder screw to allow some movement of the housings for easier mating. The screws are not included, but may be ordered (Part No. 208211-1 or 208211-4).

## 3.4. Wire Size and Preparation

Contacts are available for the wire sizes specified. Prepare wire for crimping by stripping insulation according to dimensions in Figure 4. DO NOT nick, scrape, or cut the stranded or solid wire conductor during stripping operation.

WIRE SIZE RANGE (AWG)	CONTACT TYPE		WIRE STRIP LENGTH
30-14	Crimp Type	III+	3.96 [.156] (A)
	Solder Type		
26-16	Solder Type (with Preformed wire barrel insulation support)		
18-8	Size 8		



**NOTE: NOT TO SCALE**

Figure 4

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## 3.5. Loading Contacts Into Housing

Normally an insertion tool is not required to insert contacts into housing, but, if the wire bundle is large or the individual wires are fragile, the use of an insertion tool is recommended. Refer to Section 5, TOOLING.

### NOTE

After loading contact, pull back lightly on the wire to make sure contact is locked into position.

### 3.6. Wire Dress

A minimum of 51 mm [2 in.] is required between the connector and a cable tie, also between the connector and any bend of the wires.

### 3.7. Mating

This connector is specially designed with solid molded guide pins on the plug and extra long collars on the pin housings of receptacle. These features help to ensure positive mating of the connector halves. The radial float feature of the plug allows blind mating with misalignment of up to 2.29 [.090]. Connector halves should bottom, but may be separated by up to 2.03 [.080] for size 16 contacts and 1.27 [.050] for size 8 contacts.

### 3.8. Polarizing and Keying

The connector features polarizing slots on the plug and polarizing keys on the receptacle. To prevent mismating same-size connector halves, keying plugs may be placed in socket cavities of the connector plug. Keying plugs are available under Part No. 207654-1.

### 3.9. Contact Crimp Criteria

Contacts must be crimped to designated height. Refer to Application Specification (See Paragraph 2.4) for particular type of contacts.

### 3.10. Connector Application

The Drawer Connector can be used free-hanging or mounted in a panel. Refer to Paragraph 2.5 for applicable instruction sheets on assembling connectors.

### 3.11. Soldering and Cleaning (Solder Type Contacts Only)

#### A. Flux Selection

Solder type contacts must be fluxed prior to soldering. Selection of flux must be compatible with the solder method used, and with safety requirements.

#### B. Cleaning

Removal of fluxes, residues, and activators is mandatory. Cleaning procedures will depend on the type of flux used. The following cleaning compounds and chemicals may be used to clean the contacts without any adverse effects to them or the housings. See Figure 5.

CLEANER		TIME (Minutes)	TEMPERATURES (Maximum)	
NAME	TYPE		CELSIUS	FAHRENHEIT
Alpha 2110■	Aqueous	1	132	270
Bioact 3C-7◆	Solvent	5	100	212
Carbitol●	Solvent	1	Room Ambience	
Isopropyl Alcohol	Solvent	5	100	212
Kester 5778⚡	Aqueous	5	100	212
Kester 5779⚡	Aqueous	5	100	212
Lonco 520●	Aqueous	5	100	212
Lonco 530●	Aqueous	5	100	212
Terpene Solvent	Solvent	5	100	212

■ Product of Fry's Metals, Inc.

◆ Product of Petroform, Inc.

● Product of Union Carbide Corp.

⚡ Product of Litton Systems, Inc.

Figure 5

#### DANGER

Consideration must be given to toxicity and other safety and health requirements as recommended in the Material Safety Data Sheet (MSDS) supplied by the solvent manufacturer.

#### NOTE

If you have a particular solvent that is not listed, consult a TE Representative before using it with these connectors.

**C. Drying**

When drying cleaned assemblies, make certain the recommended temperature limitations of  $-55^{\circ}\text{C}$  to  $+130^{\circ}\text{C}$  [ $-67^{\circ}\text{F}$  to  $+266^{\circ}\text{F}$ ] are not exceeded. Excessive temperatures may cause housing degradation.

**D. Soldering Guidelines**

Refer to Paragraph 2.6 for instruction material available for establishing soldering guidelines.

**3.12. Repair**

Damaged contacts can be removed and replaced. See the instructions packaged with the connector for removal and replacement procedures.

**4. QUALIFICATIONS**

The Metrimate Drawer Connector is recognized under the Component Program of Underwriters' Laboratories, Inc. (UL), File No. E28476.

The Standard Version is certified by the Canadian Standard Association (CSA) International in File No. LR16455. The Power Connector Version is also certified by CSA International in File No. LR7189-105.

The Standard Drawer Connector is tested to VDE (Verband Deutscher Elektrotechniker) requirements outlined in VDE Test Report No. 4751-1550-4003/AIC; it is designed to meet International Electrotechnical Commission (IEC) (440V) requirements. The Power Connector certification is pending.

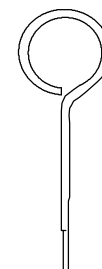
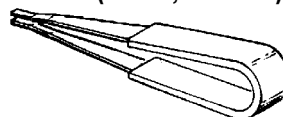
**5. TOOLING**

Hand Crimping Tools and Applicators are available for applying crimp type contacts. Insertion and Extraction Tools assist in assembly and repair. Instruction Sheets and Applicator Instruction Sheets describing tool operation, are packaged with the tool. See Figure 6.

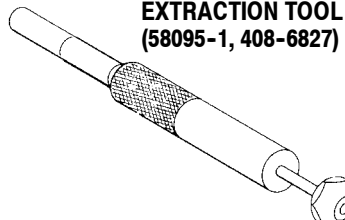
TYPE III+ CONTACTS			
WIRE SIZE (AWG)	APPLICATOR NUMBER (AI 8040)	MACHINE NUMBER	MACHINE DOCUMENT NUMBER
30-20	466598-2	354500-1	409-5842
	466585-3		
26-24	466321-4	854040-3	409-5855
	466908-2		
24-20	466323-4	354500-1	409-5842
	466907-2	854040-3	409-5855
	466324-2	354500-1	409-5842
		722460-1	—
	466942-1	854040-3	409-5855
	466383-2	354500-1	409-5842
18-16	466325-2		
18-14	466752-2	354500-1	409-5842
		722460-1	—
	466958-1	854040-3	409-5855
	466326-4	354500-1	409-5842
		722460-1	—
	466923-2	854040-3	409-5855

TYPE III+ CONTACTS		
WIRE SIZE (AWG)	HAND TOOL NUMBER	HAND TOOL DOCUMENT NUMBER
30-20	90066-7	408-6610
	90225-2	408-7414
28-24	58495-1	408-9819
24-20	58495-1	408-9819
	90331-1	408-7773
24-16	90067-4	408-6613
	90067-5	408-6614
18-16	58495-1	408-9819
18-14	90310-2	408-7942
	90310-3	408-9387

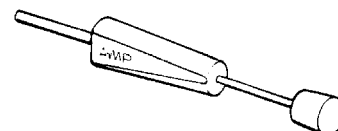
**TYPE III+ EXTRACTION TOOL (305183, 408-1216)**



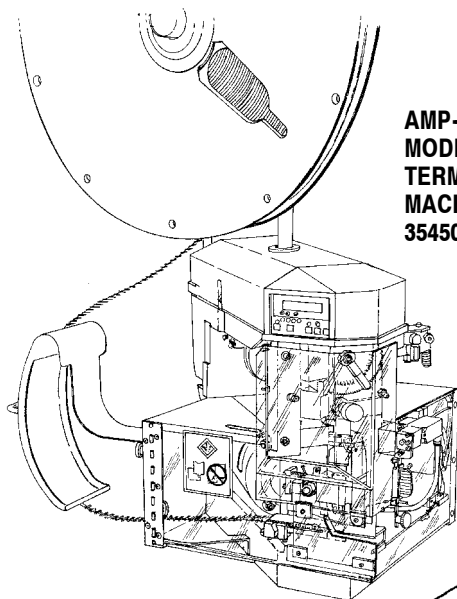
**SIZE 8 EXTRACTION TOOL (58095-1, 408-6827)**



**INSERTION TOOL (200893-2, 408-1817)**

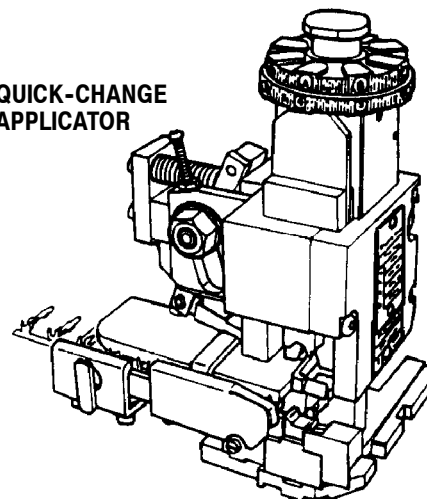


**TYPE III+ CONTACTS INSERTION TOOL (91002-1 AND -2, 408-7347)**

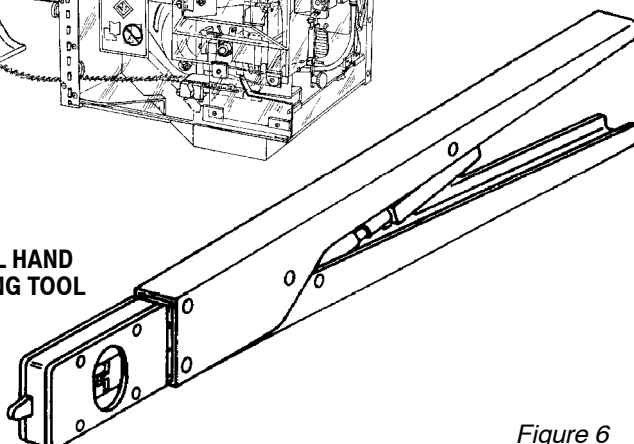


**AMP-O-LECTRIC MODEL "G" TERMINATING MACHINE 354500-1**

**QUICK-CHANGE APPLICATOR**



**TYPICAL HAND CRIMPING TOOL**

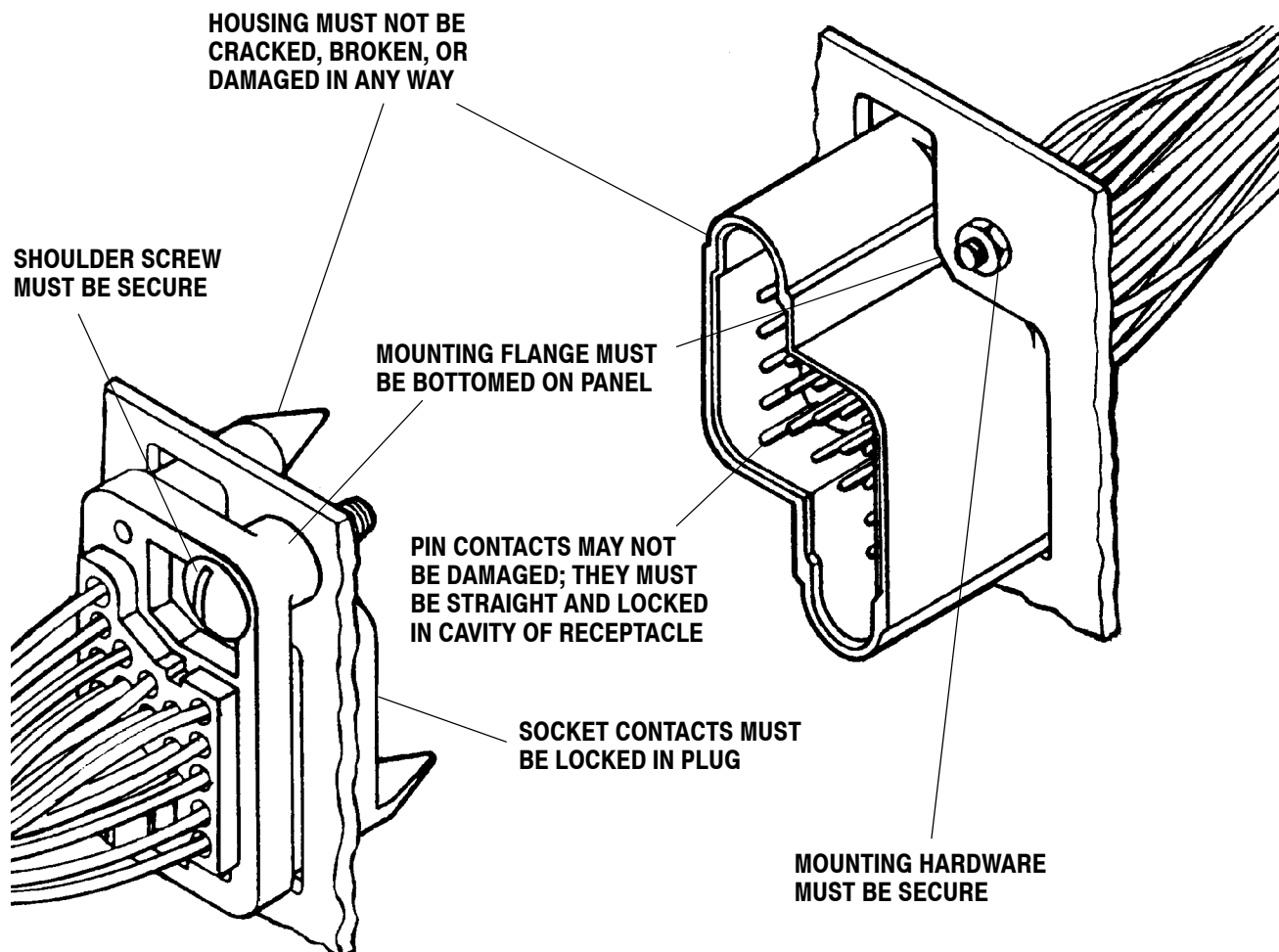


*Figure 6*

37-16, 115-66, 115-129, 115-154, 93-279

## 6. VISUAL AID

Figure 7 shows a typical application of a Metrimate Drawer 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 main body of this specification and in the instructional material shipped with product or tooling.



**FIGURE 7. VISUAL AID**

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