

## 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  $\pm 0.13$  [.005] and angles have a tolerance of  $\pm 2^\circ$ . Figures and illustrations are for identification only and are not drawn to scale.

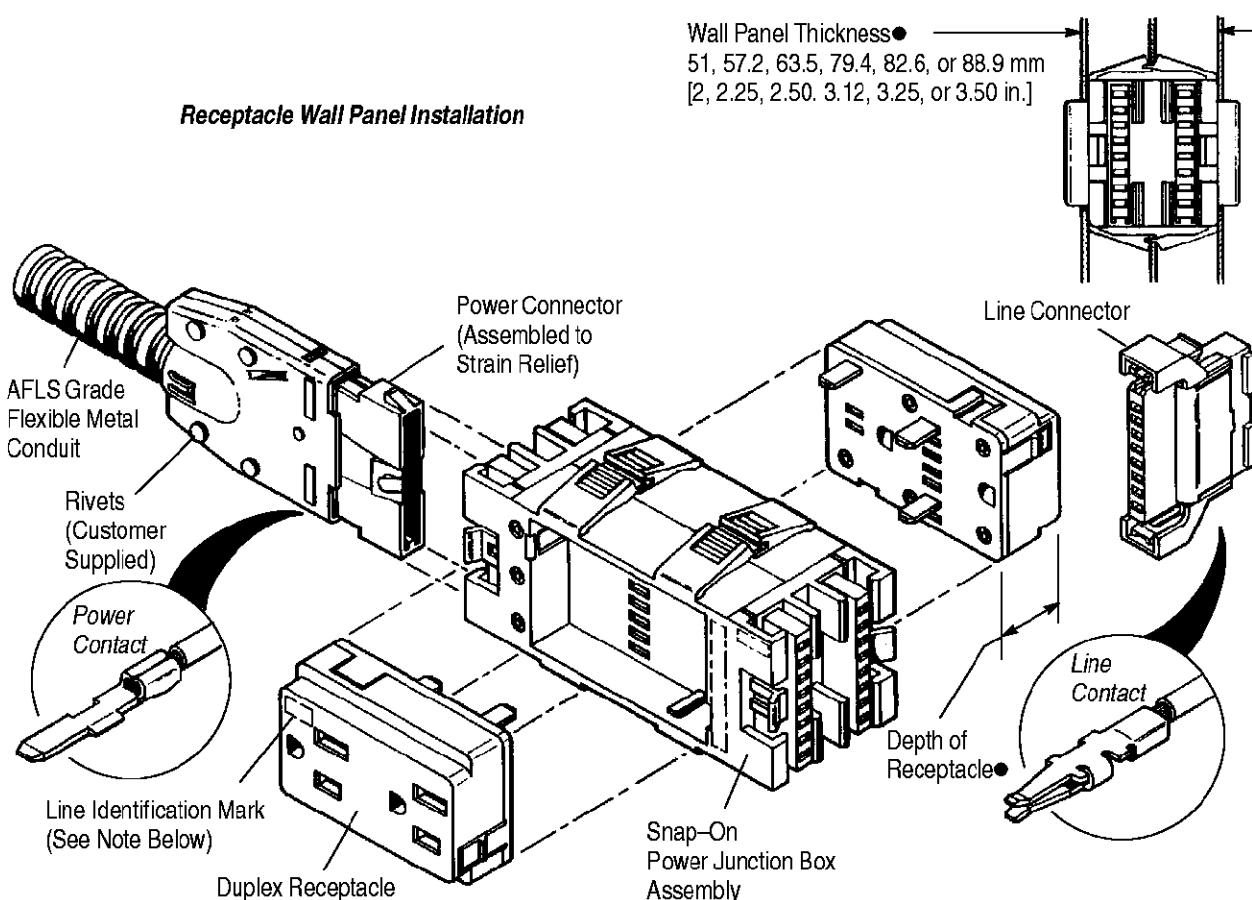
## 1. INTRODUCTION

This specification covers the requirements for application of the AMP AMPINNERY System connectors and assemblies. The system has the capability of providing electrical service outlets to both sides of a workstation wall panel by installing pluggable duplex receptacles into a mounted junction box assembly.

When corresponding with Tyco Electronics Personnel, use the terminology provided on this specification to help facilitate assistance. Basic terms and features of components are provided in Figure 1.

**Power Junction Box Assembly** – has two main functions at each workstation: it provides electrical service, and it supplies feed-thru capabilities to and from other workstations. The assembly uses power junction box connector contacts, and it provides four circuit options.

**Duplex Receptacles** – are pluggable modules that snap into a power junction box assembly and function as Line 1, 2, 3, or 4 receptacles, or as a Line 1G, 2G, 3G, 4G, or 5G receptacle with isolated ground circuit. The receptacles are available in styles for six wall panel thicknesses.



• Depth of receptacle selected on basis of desired wall panel thickness.

**NOTE:** Lines 1, 2, 3, and 4 duplex receptacles are marked by either 1, 2, 3, or 4. Duplex receptacles with the isolated ground are marked 1G, 2G, 3G, 4G, or 5G with an orange colored triangle (▲) under the designated line marking indicator number.

Figure 1

**Power Contact** – is designed to be crimped to No. 12 or 10 AWG wire with stranded conductors.

**Power Housing** – (two-piece, unassembled) accepts power connector contacts crimped to wires and functions as a power connector. It mates with a line connector or power junction box assembly.

**Line Contact** – is designed to be crimped to No. 12 or 10 AWG wire with stranded conductors.

**Line Housing** – (two-piece, unassembled) accepts line contacts crimped to wires and functions as a line connector, it is compatible with the power connector only.

**Strain Relief** – (unassembled) metal component that is used with both the power and line connectors to provide strain relief when using flexible conduit.

## 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:

Per EC 0990-0648-01:

- Update document to corporate requirements
- Added wire size 12 to Figure 2 and changed hose sizes in paragraph 3.3.B

### 2.2. Customer Assistance

Reference Part Number 556124 and Product Code 2421 identify the AMPINNERY System. 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 (Field Sales Engineer, Field Applications Engineer, etc) or, after purchase, by calling the Tooling Assistance Center or AMP FAX/Product Information number at the bottom of page 1.

### 2.3. Drawings

Customer Drawings for each product 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 other technical documentation supplied by Tyco Electronics.

### 2.4. Specifications

Product Specification 108-1234 provides product performance requirements and test information.

### 2.5. Instructional Material

Instruction sheet 408-3210 provides assembly procedures for the connectors and assemblies. For crimp contact inspection, refer to 408-3198. For tooling information, refer to 408-8040 and 409-5842.

## 3. REQUIREMENTS

### 3.1. Wire

#### A. Wire Selection

The crimping barrels of each contact are designed to receive **stranded** AWG copper wire. Refer to Figure 2 for wire specifications and strip lengths.

#### B. Wire Preparation

The wires must be stripped to the dimension shown in Figure 2. Care must be exercised to prevent cutting or nicking of the wire strands. Care must also be used when handling wire during crimping to prevent cracking or breaking of the wire strands and wire insulation.

WIRE SIZE (AWG)	CONTACT CRIMP HEIGHT
10	$3.28 \pm 0.05$ $[.129 \pm .002]$
12	$2.92 \pm 0.05$ $[.115 \pm .002]$

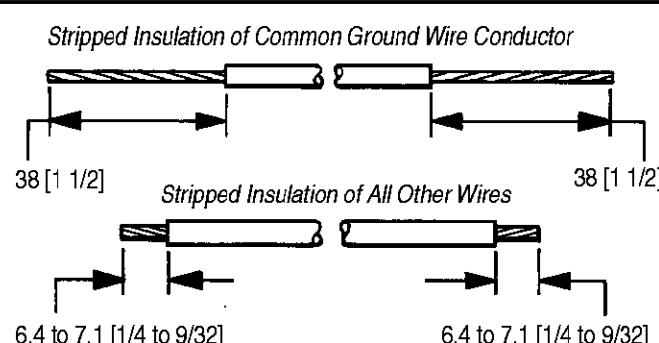


Figure 2

### 3.2. Crimped Contacts

#### A. Contact Crimping

Crimping procedures are outlined in the material packaged with the applicator (refer to Section 5) and in instruction sheet 408-3198.

#### B. Inspection

Inspect crimped contacts for conditions shown in Figure 3 (ref 408-3198).

Adjust Applicator to Obtain Bellmouth Height:

12 AWG -  $3.43 \pm 0.25$  [.135  $\pm$  .010]

10 AWG -  $3.78 \pm 0.25$  [.149  $\pm$  .010]

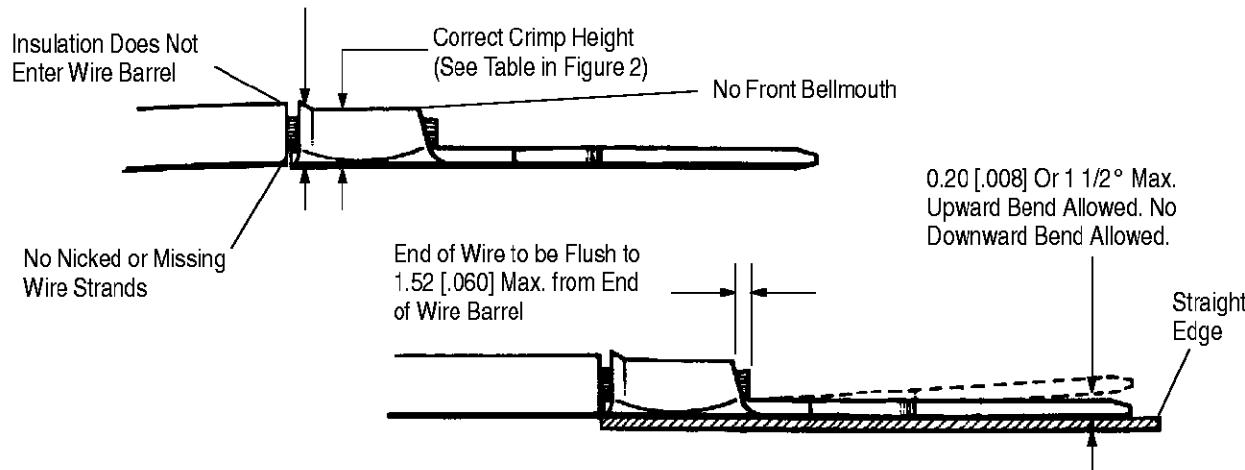


Figure 3

#### C. Crimp Height

Crimp height dimensions depend upon use of the proper selector setting on the applicator. (See Section 5, TOOLING, for applicator number).

#### D. Insertion

Terminated power connector contacts are loaded into the power housing and line connector contacts are loaded into the line housing. The contacts will click into place and be held there by a built-in retention feature.

### 3.3. Harness Assemblies

A power harness assembly consists of two power connectors with strain relief halves fitted around the connectors and conduit ends. We recommend 305 mm [12 in.] as the *minimum* overall length for a double-ended finished harness assembly.

#### A. Dimensions

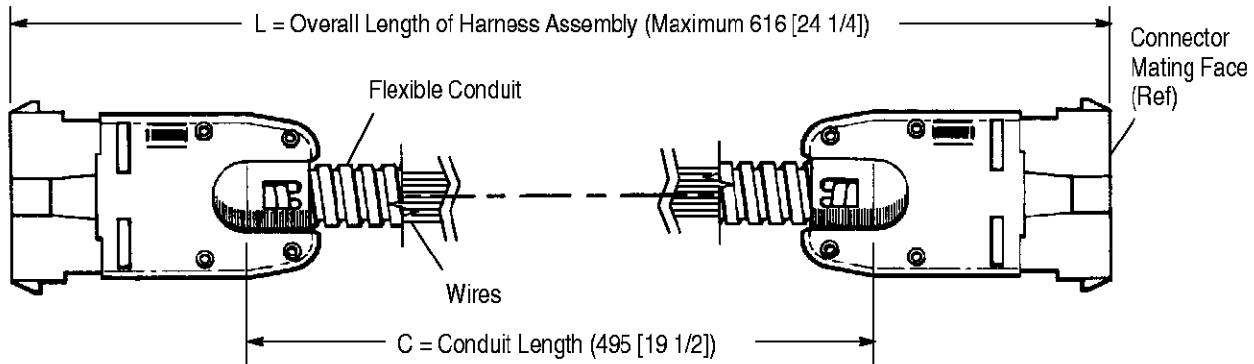
There are three important dimensional considerations when making a harness assembly: (1) the desired overall length of the harness assembly, which becomes the distance between the mating faces of attached connectors; (2) the length of the flexible metal conduit and; (3) the length of wire for each individual contact cavity.

**NOTE**

*After crimping contacts to the wires, the contact with the appropriate wire length must be inserted into the predetermined cavity of the connector.*

Figure 4 provides an example for calculating wire and conduit lengths for a 616 mm [24 1/4 in.] long power-to-power cable harness assembly. The wire lengths are for a typical application, however, your application may require more wire. Adequate wire MUST BE ENSURED to prevent stress on the wires and contacts during handling.

Notice that specific elements have a minus factor. This factor is subtracted from the overall harness assembly dimension to obtain the length of the item (conduit or wire). The minus factor remains the same for all harness assemblies.



ITEM	ELEMENT	DIMENSIONS		
		OVERALL LENGTH OF HARNESS ASSEMBLY	MINUS FACTOR PER END	ITEM LENGTH
CONDUIT	TWO CONNECTORS	616 [24 1/4]	60.3 [2 3/8]	495.3 [19 1/2]
WIRE	CONNECTOR		25.4 [1]	565.2 [22 1/4]
	CONTACT CAVITY		22.2 [7/8]	571.5 [22 1/2]
	IDENTITY■		20.6 [13/16]	574.7 [22 5/8]
	4 and IG		19.8 [25/32]	576.3 [22 11/16]
	1 and N4			

■ Refer to Figure 5 for the connector contact cavity identity. These markings do NOT appear on the housing.

Figure 4

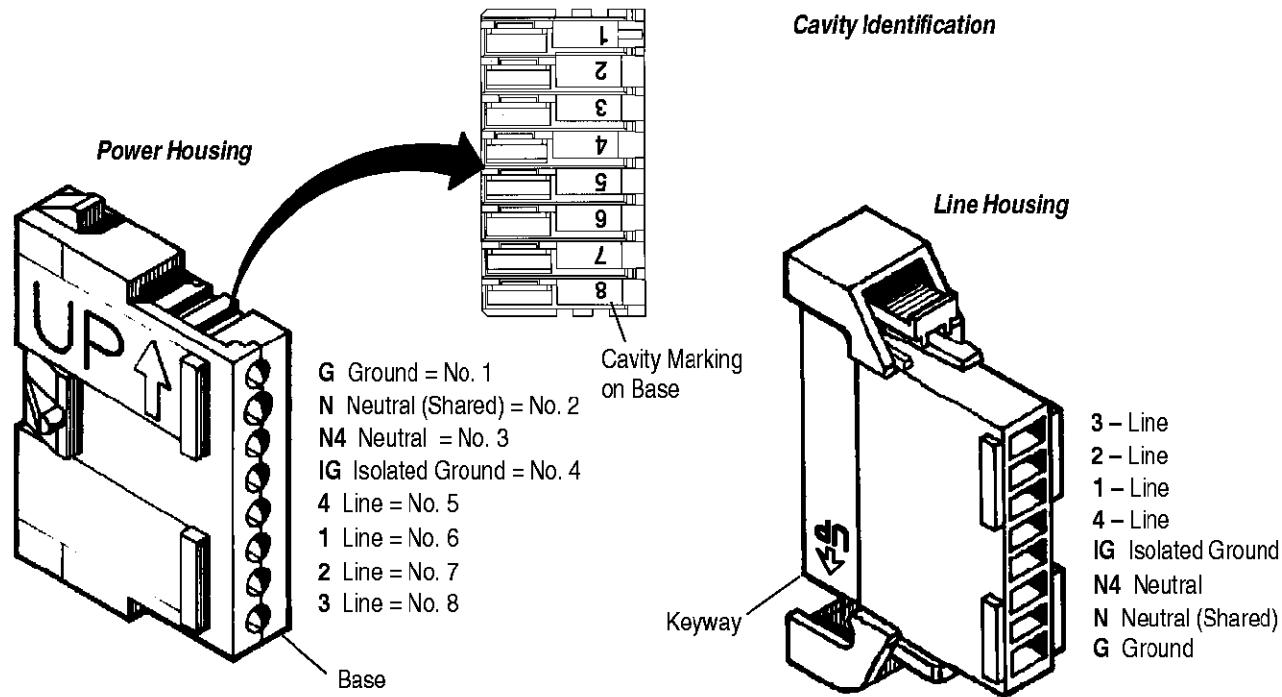


Figure 5

#### B. Materials Needed

In addition to the harness connectors (consisting of housings, contacts, and wires), the following materials are needed to assemble a power-to-power harness assembly:

(1) two right strain relief halves; (2) two left strain relief halves; (3) eight rivets; (4) suitable rivet staking equipment; (5) the required length of flexible conduit: 12.7mm [1/2-in.] Trade Size (for 5 wire) and having a nominal 16.5mm [.65-in.] outer diameter (OD); or 14.3mm [9/16-in.] Trade Size (for 8 wire) and having a nominal 18.29mm [.720-in.] OD; (6) two insulating bushings, one for each cable end; and (7) No.12 and No. 10 AWG stranded wire. The rivets, wire, rivet staking equipment, flexible conduit, and insulating bushings are customer supplied.

It is recommended that 3.18 mm [.125 in.] diameter by 12.70 mm [.500 in.] long semi-tubular steel rivets be used to assemble the strain relief halves to the power harness.

It is recommended that the flexible conduit be purchased from:

INTERNATIONAL METAL HOSE CO.  
520 Goodrich Road  
Bellevue, OH 44811  
(Part No. AFLS-1/2" for 12.7 mm [1/2 in.];  
AFLS-9/16" for 14.3 mm [9/16 in.])

It is recommended that a flexible conduit cutting tool be purchased from:

Seatek Company, Inc.  
392-T Pacific Street  
Stamford, CT 06902  
(Roto Split Tool)

### C. Assembly

Generally, the steps required to complete a finished assembly are somewhat detailed and should be followed in sequence. They include wire cutting and stripping, crimping the contacts, sliding the flexible conduit over the crimped contacts, matching each crimped contact with the correct housing cavity, and assembling the strain reliefs to the power harness. The length of the finished harness assembly should be determined by using the information contained in Figure 4.

**NOTE**

*Number 10 AWG wire is used in the Neutral position (2nd slot from the top). There is a difference in slot width for the strain relief in the second position to compensate for this.*

### 3.4. Connector Installation

There are various ways the AMPINNERY modular wiring system can be used. Figure 6 illustrates some of these ways. The AMPINNERY power junction box assembly can also be used as a pass-thru assembly in applications where outlet service is not needed or is prohibited.

#### A. Flexible Conduit

A power connector using flexible metal conduit is shown in Figure 6, A.

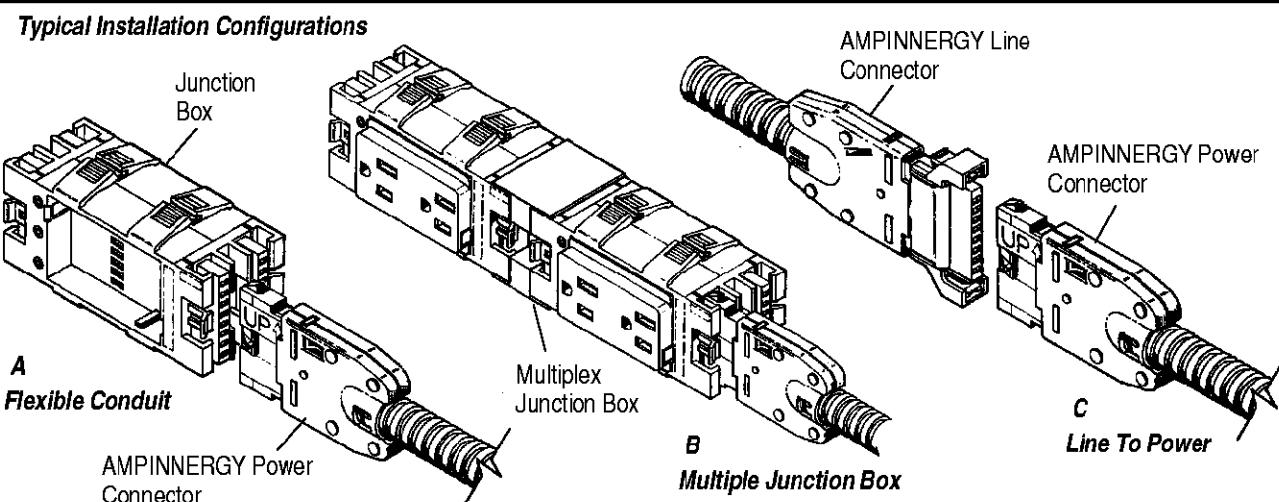


Figure 6

#### B. Multiple Junction Box

The multiple junction box is designed to provide power in modular furniture walls. See Figure 6, B.

### C. Raceway Configuration

The raceway provides a means of mechanical support, electrical grounding, and locating for the modular wiring system. The raceway should be mounted to the structure or panel with the power connector installed. See Figure 6, C.

It is recommended that the raceway configuration be grounded to the wiring by using a self-mounting wire insulation displacement clip. The clips are commercially available from spring-clip manufacturers.

### D. Line to Power Using Flexible Conduit

This arrangement (Figure 6, C) consists of a line connector assembly mating with a power connector assembly using flexible metal conduit. It is designed to serve as a quick-disconnect, power feed-thru connector assembly. These arrangements are normally used where the power junction box assembly is not needed.

### 3.5. Duplex Receptacles

Any of the duplex receptacles are compatible with the power junction box assembly. No tooling is needed for insertion. Two flat-bladed screwdrivers should be used to extract a duplex receptacle from a power junction box assembly.

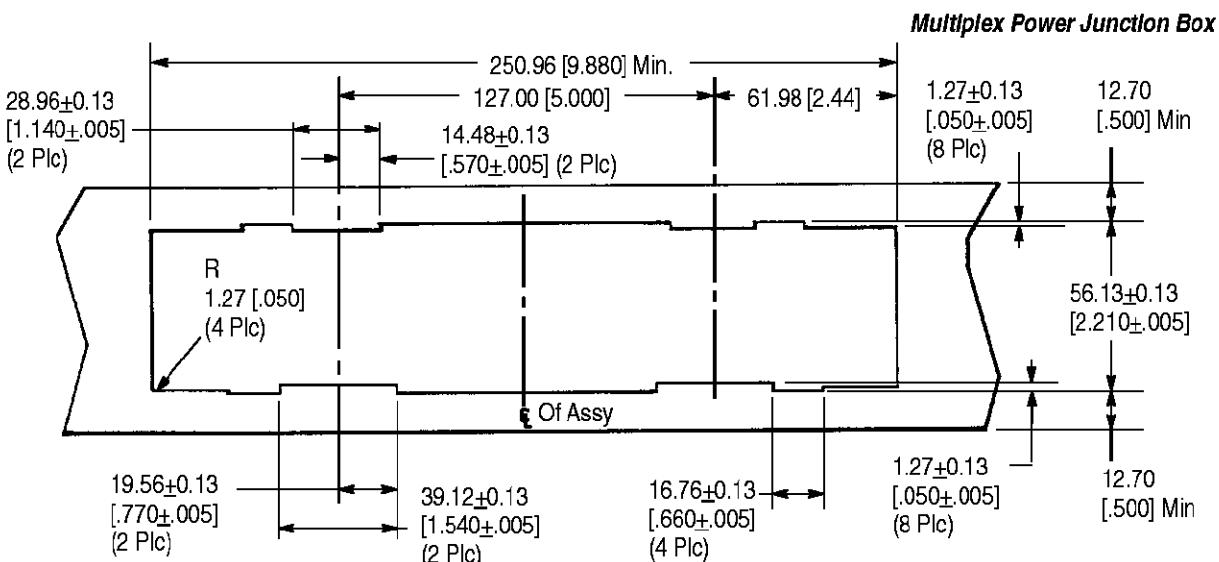
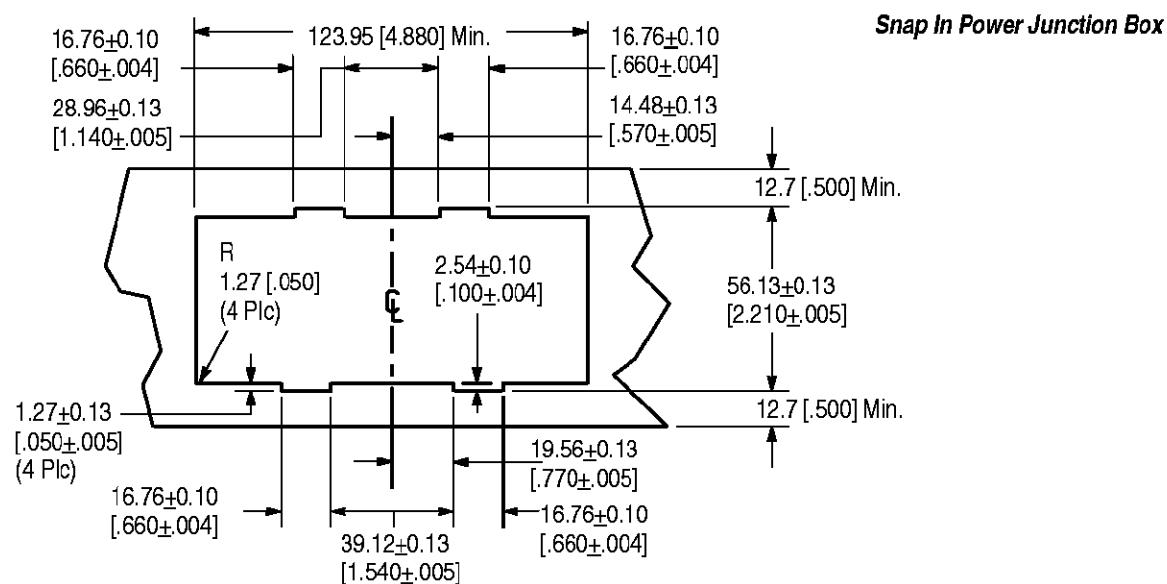


Figure 7

### 3.6. Panel Cutouts

#### A. Panel Thickness

The power junction box requires a panel ranging in thickness from 1.27 through 2.03mm [.050 through .080 in.].

#### B. Mounting Cutouts

Mounting cutouts shall be as shown in Figure 7. No mounting hardware is required for mounting the power junction box.

## 4. QUALIFICATIONS

AMPINNERY System connectors are Listed by Underwriters Laboratories Inc. (UL) under UL File Numbers E132626 and UL 183, and Certified by Canadian Standards (CSA), under CSA LR7189.

## 5. TOOLING

For high volume production, use the AMP-O-LECTRIC\* Model "G" Machine 354500-1 (Reference 409-5842) with Applicator 567256-3 (Reference 408-8040). See Figure 8.

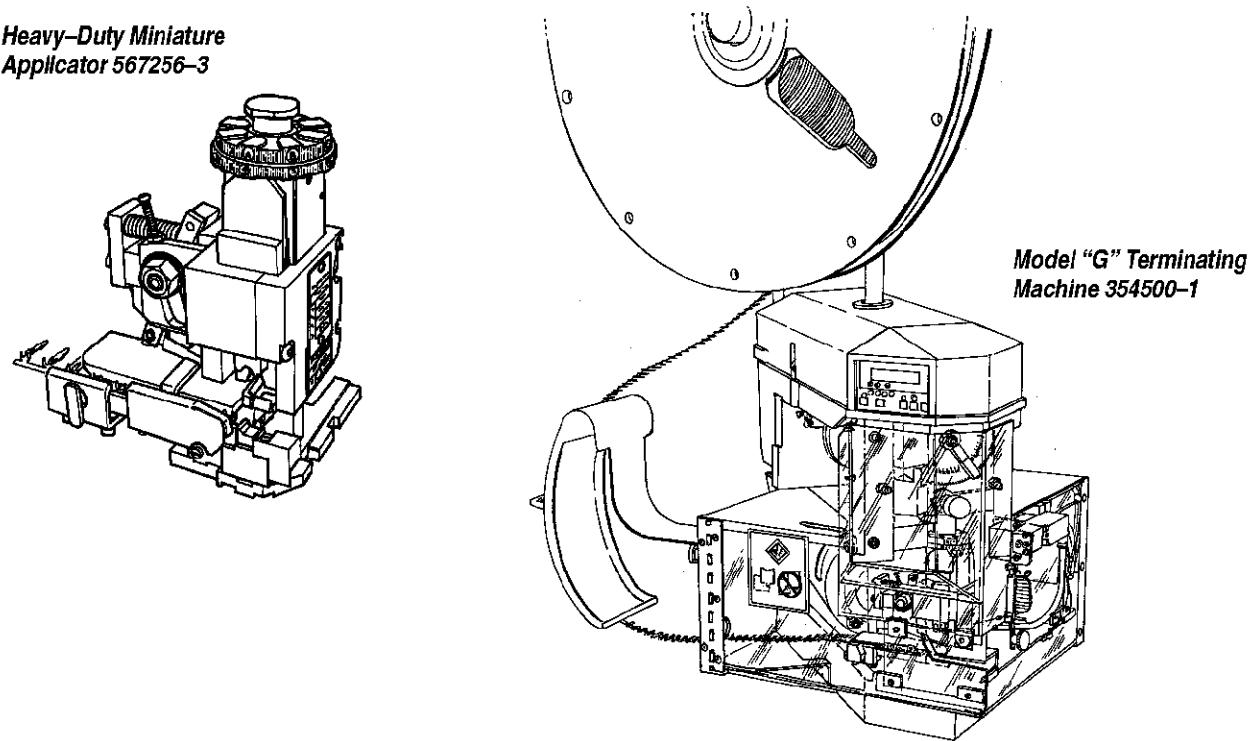
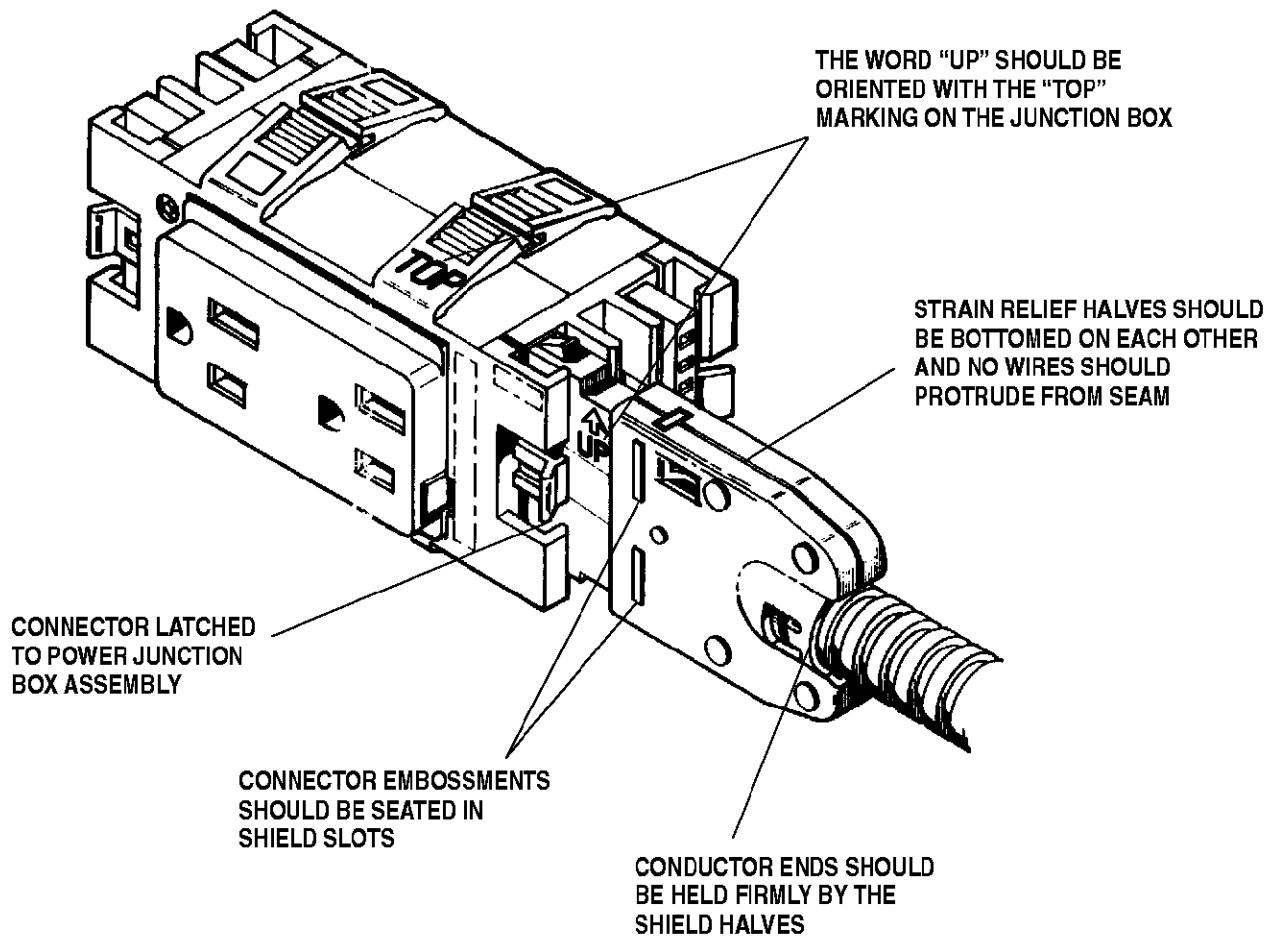


Figure 8

**6. VISUAL AID**

Figure 9 shows typical examples of a properly assembled connector. The illustration describes in general terms the conditions that production personnel should check for to ensure a suitable application. For dimensional inspection of the assembly, refer to the preceding pages of this application specification.

**FIGURE 9. VISUAL AID**