

### 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 AMP\* .093 Diameter Pin and Socket Contacts and Housings. These requirements are applicable automatic machine crimping tools.

When corresponding with AMP 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.

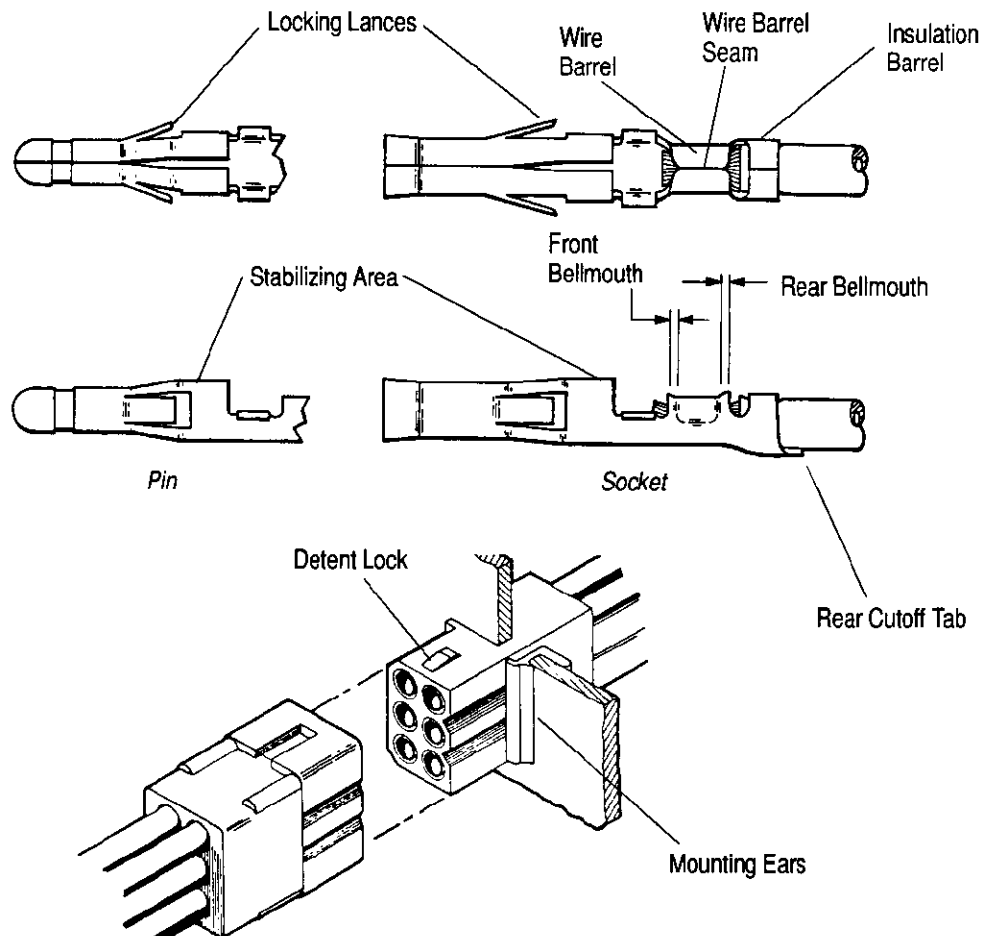


Figure 1

## 2. REFERENCE MATERIAL

### 2.1. Revision Summary

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

Per EC 0990-1200-96:

- Revised dimension in Figure 2 from .130 to .140
- Removed dimension 2.79 [.110] and the line above it, from the table in Figure 2.

## 2.2. Customer Assistance

Reference Part Number 350415 and Product Code 2090 are representative numbers of the AMP .093 Diameter product line. Use of these numbers will identify the product line and expedite your inquiries through an AMP service network established to help you obtain product and tooling information. Such information can be obtained through a local AMP Representative (Sales Engineer, Field Service Engineer, etc.) or, after purchase, by calling the Tooling Assistance Center or the AMP FAX/Product Information numbers at the bottom of page 1.

## 2.3. Drawings

Customer Drawings for specific products are available from the responsible AMP Engineering department via the service network. The information contained in the Customer Drawings takes priority if there is a conflict with this specification or with any other technical documentation supplied by AMP Incorporated.

## 2.4. Specifications

AMP Product Specification 108-1038 provides applicable performance requirements for the contacts.

## 2.5. Instruction Material

Instruction material for automatic and hand application tooling is shipped with the appropriate tooling. Refer to Figure 2 for referenced documents.

## 3. REQUIREMENTS

### 3.1. Wire Preparation

#### A. Wire Selection

The contacts will accept stranded wire ranging in size from 14 to 24 AWG. Wire insulation diameter shall have minimum and maximum dimensions according to the wire sizes indicated in Figure 2.

#### B. Wire Preparation

The wire strip length shall be as indicated in Figure 2. Reasonable care shall be taken during the stripping operation to ensure the conductor is not nicked, scraped, or cut.

### 3.2. Crimped Contacts

Contacts shall be crimped in accordance with the material packaged with the tooling; refer to Figure 2.

#### A. Carrier Cutoff Tab

Cutoff tab shall not exceed .38 [.015].

| HAND TOOL WIRE CRIMP DIMENSIONS |                               |                              |                              |                |                       |                                     |
|---------------------------------|-------------------------------|------------------------------|------------------------------|----------------|-----------------------|-------------------------------------|
| WIRE                            |                               |                              | WIRE BARREL                  |                | INSULATION            | HAND TOOL                           |
| SIZE<br>(AWG)                   | INSULATION<br>DIAMETER (Max.) | STRIP LENGTH<br>±0.38 [.015] | CRIMP HEIGHT<br>±0.05 [.002] | CRIMP<br>WIDTH | BARREL CRIMP<br>WIDTH | PART NUMBER●<br>(Instruction Sheet) |
| 20                              | 3.56 [.140]                   | 4.34<br>[.171]               | 1.07 [.042]                  | 2.29<br>[.090] | 3.30<br>[.130]        | 90871-1<br>(408-9966)               |
| 18                              |                               |                              | 1.07 [.042]                  |                |                       |                                     |
| 16                              |                               |                              | 1.45 [.057]                  |                |                       |                                     |
| 14                              |                               |                              | 1.45 [.057]                  |                |                       |                                     |
| 24                              | 2.79 [.110]                   | 4.34<br>[.171]               | 0.81 [.032]                  | 1.78<br>[.070] | 3.05<br>[.120]        | 90872-1<br>(408-9967)               |
| 22                              |                               |                              | 0.81 [.032]                  |                |                       |                                     |
| 20                              |                               |                              | 1.02 [.040]                  |                |                       |                                     |
| 18                              |                               |                              | 1.02 [.040]                  |                |                       |                                     |

● Use dash 1 (-1) and dash 3 (-3) for a "T" type machine and dash 2 (-2) and dash 4 (-4) for a "K" type machine.

Figure 2 (cont'd)

## AUTOMATIC MACHINE WIRE CRIMP DIMENSIONS

| WIRE          |                               |                              | WIRE BARREL                  |                | INSULATION<br>BARREL CRIMP<br>WIDTH | APPLICATOR<br>PART NUMBER●<br>(Instruction Sheet) |
|---------------|-------------------------------|------------------------------|------------------------------|----------------|-------------------------------------|---|
| SIZE<br>(AWG) | INSULATION<br>DIAMETER (Max.) | STRIP LENGTH<br>±0.38 [.015] | CRIMP HEIGHT<br>±0.05 [.002] | CRIMP<br>WIDTH |                                     |   |
| 20            | 3.56 [.140]                   | 4.34<br>[.171]               | 1.09 [.043]                  | 2.29<br>[.090] | 3.30<br>[.130]                      | 466878-1, -2<br>(408-8040)                        |
| 18            |                               |                              | 1.22 [.048]                  |                |                                     |   |
| 16            |                               |                              | 1.40 [.055]                  |                |                                     |   |
| 14            |                               |                              | 1.68 [.066]                  |                |                                     |   |
| 24            | 2.79 [.110]                   | 4.34<br>[.171]               | 0.89 [.035]                  | 1.78<br>[.070] | 3.05<br>[.120]                      | 466656-1, -2<br>(408-8040)                        |
| 22            |                               |                              | 0.94 [.037]                  |                |                                     |   |
| 20            |                               |                              | 0.99 [.039]                  |                |                                     |   |
| 18            |                               |                              | 1.14 [.045]                  |                |                                     |   |
| 18            | 4.57 [.180]                   | 6.35<br>[.250]               | 1.40 [.055]                  | 2.29<br>[.090] | 4.57<br>[.180]                      | 567273-2<br>(408-8040)                            |
| 18 (2)        | 4.57 [.180] Each              |                              | 1.68 [.066]                  |                |                                     |   |
| 16            | 4.57 [.180]                   |                              | 1.57 [.062]                  |                |                                     |   |
| 14            |                               |                              | 1.85 [.073]                  |                |                                     |   |
| 20            | 4.57 [.180]                   | 4.34<br>[.171]               | 1.09 [.043]                  | 2.29<br>[.090] | 3.94<br>[.155]                      | 567337-3, -4<br>(408-8040)                        |
| 18            |                               |                              | 1.22 [.048]                  |                |                                     |   |
| 16            |                               |                              | 1.40 [.055]                  |                |                                     |   |
| 14            |                               |                              | 1.68 [.066]                  |                |                                     |   |

Figure 2 (end)

**B. Wire Barrel Crimp Inspection**

1. Crimp height and width shall be as shown in Figure 2.
2. The wire barrel seam shall be closed adequately to confine all strands of the wire. There shall be no loose wire strands. Wire strands should not be embedded in the seam of the wire barrel.
3. The rear bellmouth shall be .13-.76 [.005-.030]. The front bellmouth shall be 0.38 [.015] maximum.
4. The end of the wire shall be flush with the front end of the wire barrel, or extend 1.02 [.040] maximum. Both insulation and conductor shall be visible between the insulation barrel and wire barrel. Care shall be taken not to allow insulation to be crimped in the wire barrel.
5. Wire barrel flash shall not exceed 0.25 [.010].

**C. Insulation Barrel Crimp Inspection**

1. Crimp width shall be as shown in Figure 2.
2. Care shall be taken not to cut or break the insulation during the crimping operation.

**D. Locking Lances**

The locking lances shall not be deformed.

**E. Alignment**

The crimped insulation barrel shall fall into an area defined by a 4.06 [.160] diameter circle. Crimped contacts with two wires shall fall into a 5.21 x 9.78 [.205 x .385] area. Crimped contacts using 4.57 [.180] insulation diameter should fall into a 4.44 [.175] diameter circle. See Figure 3.

There shall be no twist or roll in the crimped portion that will impair usage of the contact.

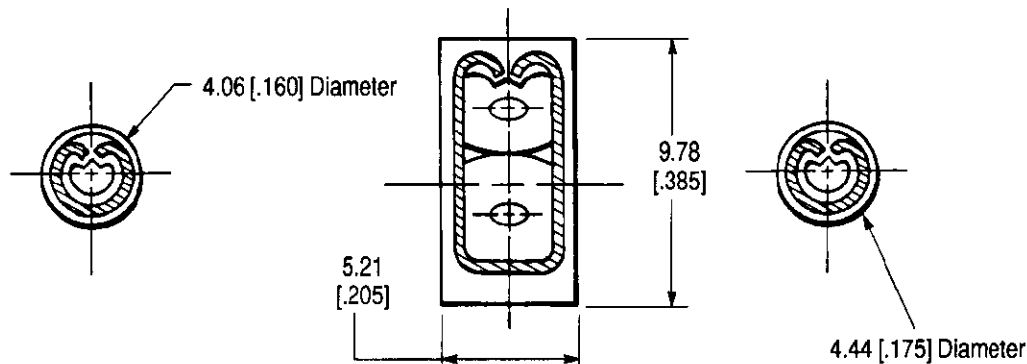


Figure 3

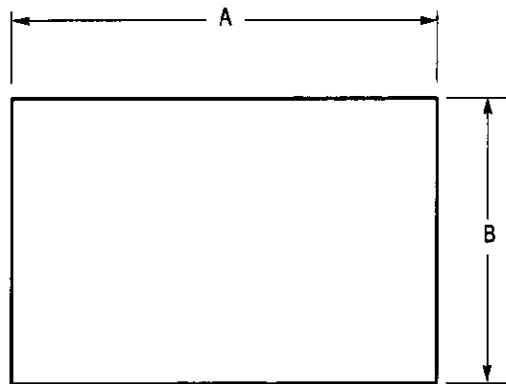
### 3.3. Housings

Housings are available in receptacle and plug versions. Receptacles are available with mounting ears and detents or with detent only. Plugs are available with or without mounting ears. Housings are available in 1 through 15 positions and have a standard 5.03 [.198] centerline. They are also available with a 6.35 [.250] centerline.

### 3.4. Panel-Mounting Cutouts

Panel-mounting cutouts shall be as indicated in Figure 4.

| NUMBER OF<br>CIRCUIT<br>POSITIONS | DIMENSIONS†   |                |               |              |
|-----------------------------------|---------------|----------------|---------------|--------------|
|                                   | RECEPTACLE    |                | PLUG          |              |
|                                   | A             | B              | A             | B            |
| 2                                 | 18.42 [.725]  | 7.92 [.312]    | 20.32 [.800]  | 9.52 [.375]  |
| 3                                 | 21.34 [.840]  | 7.92 [.312]    | 23.70 [.933]  | 9.52 [.375]  |
| 3 (6.35<br>[.250] CTR)            | 23.37 [.920]  | 7.87 [.310]    | 25.96 [1.022] | 9.27 [.365]  |
| 4 (6.35<br>[.250] CTR)            | 29.67 [1.168] | 7.87 [.310]    | 32.26 [1.270] | 9.27 [.365]  |
| 4 IN-LINE                         | 26.37 [1.038] | 7.92 [.312]    | 28.73 [1.131] | 9.52 [.375]  |
| 6                                 | 18.24 [.718]  | 15.24 [.600]   | 19.05 [.750]  | 17.65 [.695] |
| 6 (6.35<br>[.250] CTR)            | 24.03 [.946]  | 15.44 [.608]   | 26.62 [1.048] | 16.71 [.658] |
| 9                                 | 21.03 [.828]  | 18.42 [.725]   | 23.80 [.937]  | 16.76 [.660] |
| 12                                | 26.67 [1.050] | 18.42 [.725] • | 29.34 [1.155] | 19.30 [.760] |
| 15                                | 31.50 [1.240] | 16.64 [.655]   | 34.11 [1.343] | 19.30 [.760] |



Recommended Panel Cutout

† Tolerance of 0.25 [.010].

• Use 16.64 [.655] if using housing without detents.

Figure 4

### 3.5. Repair

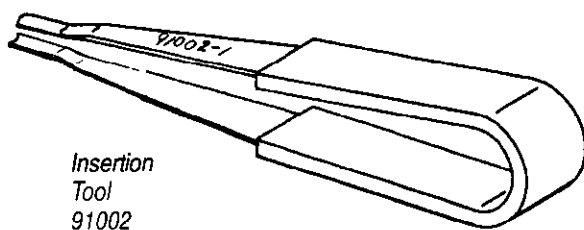
Connectors can be repaired by removing the contact from the housing and making the repair. When extracting a contact, the lances should be reset to their original position. Consult the AMP customer print for the correct setting. See Section 5 for tooling.

## 4. QUALIFICATION

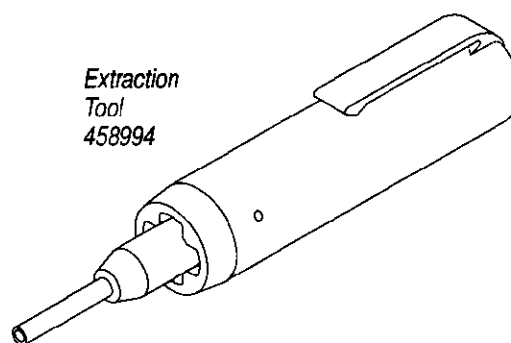
AMP .093 Diameter Housings are recognized by Underwriters' Laboratories, Inc. under UL File number E28476 and Canadian Standards Association certified under CSA File number LR7189.

**5. TOOLING**

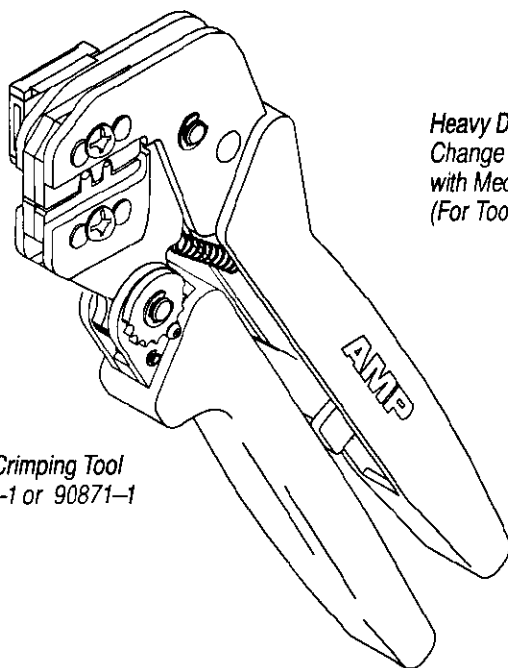
AMP .093 Diameter Contacts are terminated by automatic machine or hand crimping tools. Figure 2 lists tooling used for crimping these contacts. Use Insertion Tool 91002 (408-7347) to insert crimped pin and socket contacts in housing. Use Extraction Tool 458994-3 (408-9923) to remove pin and socket contacts from the housing.



Insertion  
Tool  
91002



Extraction  
Tool  
458994



Hand Crimping Tool  
90872-1 or 90871-1

Heavy Duty Miniature Quick  
Change Applicator (Side-Feed Type)  
with Mechanical Feed System  
(For Tooling Part Numbers, See Figure 2)

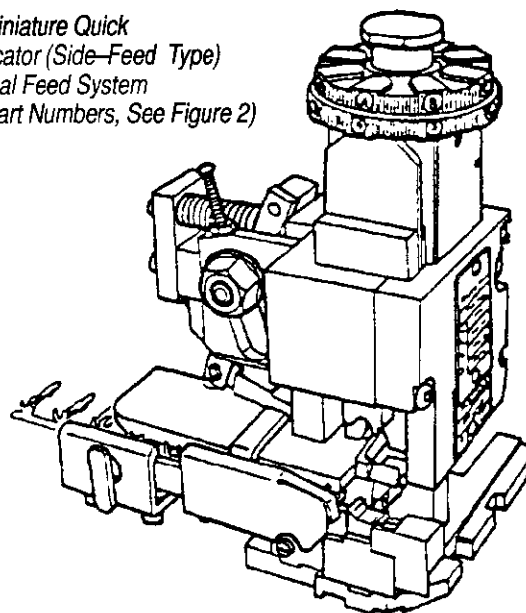


Figure 5

## 6. VISUAL AID

The following illustrations are to be used by production personnel to ensure properly applied product. The views suggest requirements for good applications. Applications considered visually incorrect should be inspected using the information in the main body of this document.

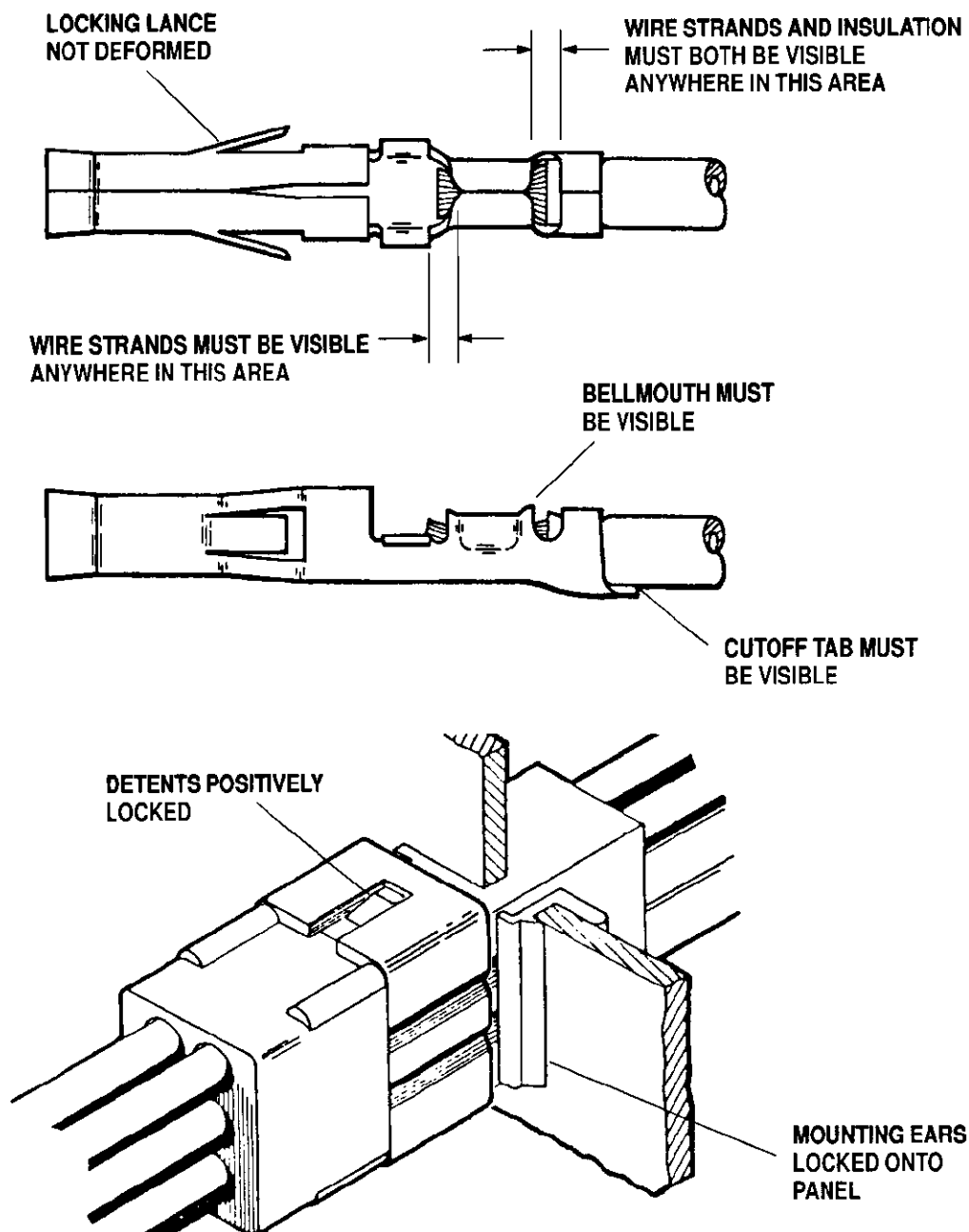


FIGURE 6. VISUAL AID