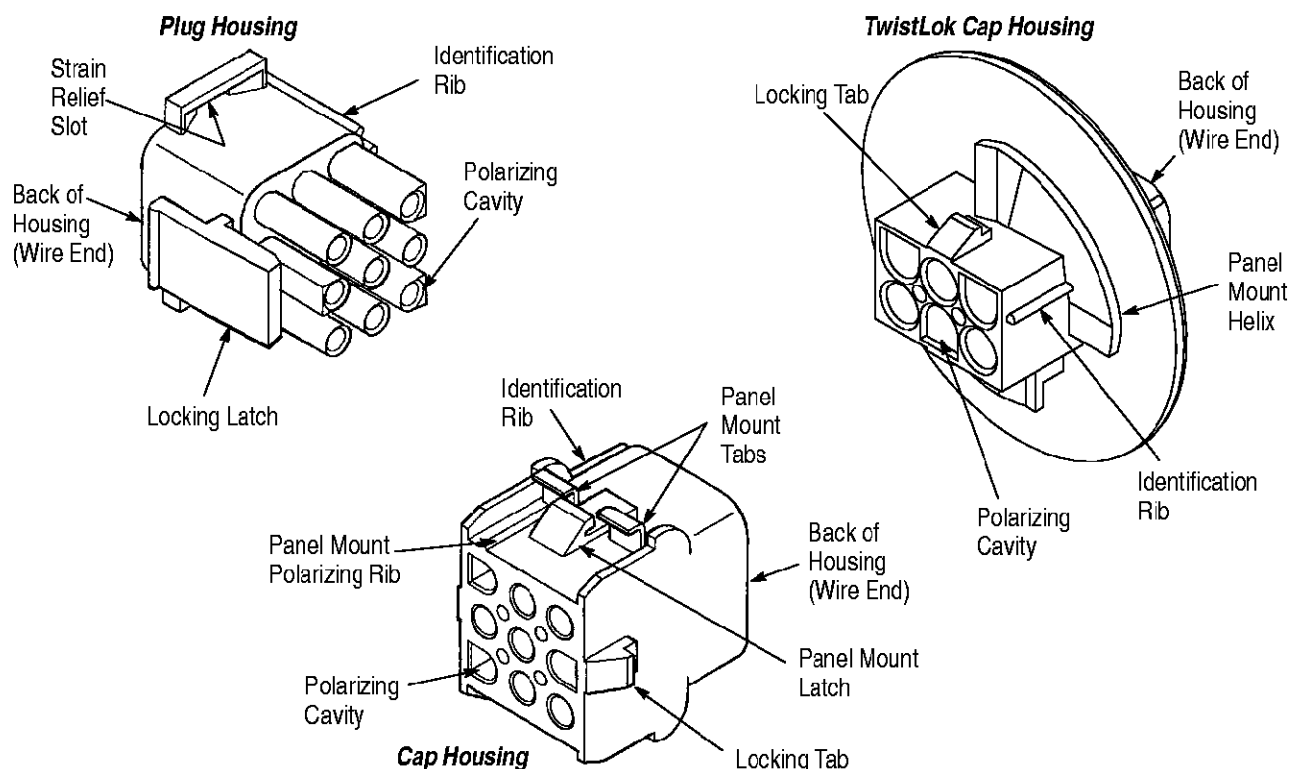




HOUSINGS

| NUMBER OF<br>CIRCUITS | PLUG PART NUMBER     |                    | CAP PART NUMBER      |                    | TWISTLOK CAP PART NUMBER |                    |
|-----------------------|----------------------|--------------------|----------------------|--------------------|--------------------------|--------------------|
|                       | NATURAL <sup>1</sup> | WHITE <sup>2</sup> | NATURAL <sup>1</sup> | WHITE <sup>2</sup> | NATURAL <sup>1</sup>     | WHITE <sup>2</sup> |
| 1                     | 350867               | 350865             | 770421               | 350866             | —                        | —                  |
| 2●                    | 480698               | 350777             | 480699               | 350778             | —                        | —                  |
| 3●                    | 480700               | 350766             | 480701               | 350767             | —                        | —                  |
| 4●                    | 480702               | 350779             | 480703               | 350780             | —                        | —                  |
| 5●                    | 480763               | 350809             | 480764               | 350810             | —                        | —                  |
| 6●                    | 640585               | 640581             | 926307               | 926307             | —                        | —                  |
| 6                     | 480704               | 350715             | 480705               | 350781             | 794714                   | 794760             |
| 8●                    | 640586               | 640582             | 926308               | 926308             | —                        | —                  |
| 9                     | 480706               | 350720             | 480707               | 350782             | 794715                   | 794761             |
| 10●                   | 926302               | 926302             | 926309               | 926309             | —                        | —                  |
| 12                    | 480708               | 350735             | 480709               | 350783             | 794716                   | 794762             |
| 15                    | 480710               | 350736             | 480711               | 350784             | —                        | —                  |

1 Natural colored housings are 94V-2 nylon material.

2 White colored housings are flame-retardant 94V-0 nylon material.

● In-line version

Figure 1

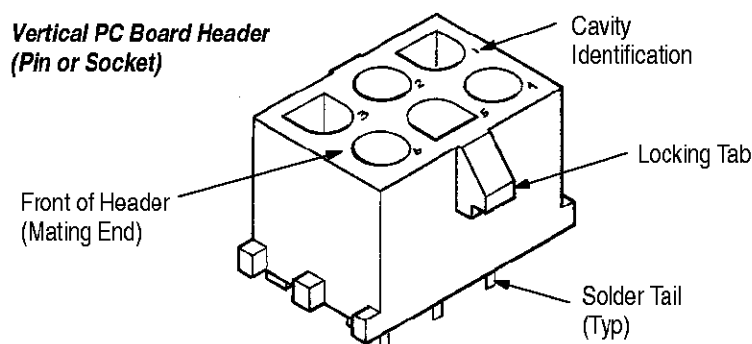
## 1. INTRODUCTION

This instruction sheet provides assembly procedures for the AMP® Universal MATE-N-LOK housings and printed circuit (pc) board headers listed in Figures 1, 2, and 3.

### NOTE

Dimensions on this sheet are in metric units [with U.S. customary units in brackets].

Reasons for reissue are provided in Section 8, REVISION SUMMARY.



VERTICAL PC BOARD HEADERS

| NUMBER OF CIRCUITS | HEADER COLOR <sup>1</sup> | PIN HEADER PART NUMBER <sup>2</sup> |                            |                        | SOCKET HEADER PART NUMBER <sup>2</sup> |                            |                        |
|--------------------|---------------------------|-------------------------------------|----------------------------|------------------------|----------------------------------------|----------------------------|------------------------|
|                    |                           | STD TAIL <sup>3</sup>               | STD TAIL PLZD <sup>3</sup> | LONG TAIL <sup>4</sup> | STD TAIL <sup>3</sup>                  | STD TAIL PLZD <sup>3</sup> | LONG TAIL <sup>4</sup> |
| 2●                 | NATURAL                   | 350428                              | 641963                     | 350582                 | 350759                                 | 643411                     | 350986                 |
| 2●                 | WHITE                     | 350786                              | 641964                     | 350787                 | 350824                                 | 643412                     | 350831                 |
| 3●                 | NATURAL                   | 350429                              | 641965                     | 350583                 | 350760                                 | 643413                     | 350987                 |
| 3●                 | WHITE                     | 350789                              | 641966                     | 350790                 | 350825                                 | 643414                     | 350832                 |
| 4●                 | NATURAL                   | 350430                              | 641967                     | 350584                 | 350761                                 | 643415                     | 350988                 |
| 4●                 | WHITE                     | 350792                              | 641968                     | 350793                 | 350826                                 | 643416                     | 350833                 |
| 5●                 | NATURAL                   | 640466                              | 643405                     | —                      | 640467                                 | —                          | —                      |
| 5●                 | WHITE                     | 640900                              | 643406                     | —                      | 640901                                 | —                          | —                      |
| 6●                 | NATURAL                   | 641832                              | 643407                     | —                      | —                                      | —                          | —                      |
| 6●                 | WHITE                     | 641831                              | 643408                     | —                      | 770262                                 | —                          | —                      |
| 6                  | NATURAL                   | 350431                              | —                          | 350585                 | 350762                                 | 643423                     | 350989                 |
| 6                  | WHITE                     | 350711                              | 641970                     | 350732                 | 350827                                 | 643424                     | 350834                 |
| 8●                 | NATURAL                   | 641825                              | —                          | 770143                 | —                                      | —                          | —                      |
| 8●                 | WHITE                     | 641828                              | 643410                     | —                      | —                                      | —                          | —                      |
| 9                  | NATURAL                   | 350432                              | 641971                     | 350586                 | 350763                                 | 643425                     | 350990                 |
| 9                  | WHITE                     | 350712                              | 641972                     | 350742                 | 350828                                 | 643426                     | 350835                 |
| 12                 | NATURAL                   | 350433                              | 641973                     | 350587                 | 350764                                 | —                          | 350991                 |
| 12                 | WHITE                     | 350713                              | 641974                     | 350737                 | 350829                                 | 643428                     | 350836                 |
| 15                 | NATURAL                   | 350434                              | 641975                     | 350588                 | 350765                                 | 643429                     | 350992                 |
| 15                 | WHITE                     | 350714                              | 641976                     | 350738                 | 350830                                 | 643430                     | 350837                 |

1 Natural colored housings are 94V-2 nylon material. White colored housings are flame-retardant 94V-0 nylon material.

2 Base numbers shown. Dash numbers indicate contacts with a pre-tin finish or a duplex finish.

3 Use standard tail (and standard tail polarized) for 1.57 [.062] thick pc board.

4 Use long tail for 3.18 [.125] thick pc board.

● In-line version.

Figure 2

## 2. DESCRIPTION

A connector consists of either (1) a housing (plug or cap) with a specified number of crimp contacts (pin or socket); or (2) a pc board header preloaded with solder tail contacts (pin or socket).

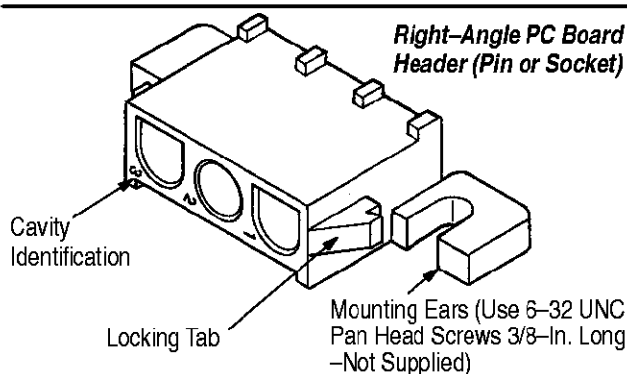
Mating connectors may be a plug and a cap, or a plug and a pc board header, so long as both connectors have an identical number of circuits with a pin contact mating with a socket contact. Mating connectors are

fully polarized for proper engagement and employ a positive locking feature to prevent accidental disengagement.

The plug and cap housings are available with 1 through 15 circuits and accept pin and socket crimp contacts and programmable socket contacts (see Figure 5). Both the plug and the cap housings have individually numbered cavity identification on the BACK (wire end), plus an identification rib on the SIDE indicating the Number 1 cavity.

The housings feature polarizing cavities on the mating end. The plug housing has two locking latches and the cap housing has two locking tabs. The housings are designed for free hanging or panel mounting applications (refer to Section 5, PANEL CUTOUT).

The pc board headers are supplied preloaded with solder tail pin contacts or solder tail socket contacts. Vertical pin and socket headers are available in 2 through 15 circuits. Vertical headers are designed for either 1.57 mm [.062 in.] thick pc boards (standard solder tail length), or 3.18 mm [.125 in.] thick pc boards (long solder tail length). Right-angle pin and socket headers are available in 2 through 8 circuits. All headers feature individually numbered cavity identification on the FRONT (mating end), polarizing cavities, and locking tabs. Refer to Section 6, PRINTED CIRCUIT BOARD LAYOUT.



**RIGHT-ANGLE PC BOARD HEADERS<sup>1</sup>**

| NUMBER OF CIRCUITS | PIN HEADER PART NUMBER <sup>2</sup> | SOCKET HEADER PART NUMBER <sup>2</sup> |
|--------------------|-------------------------------------|----------------------------------------|
| 2                  | 350942                              | 643226                                 |
| 3                  | 350943                              | 643228                                 |
| 4                  | 350944                              | 643230                                 |
| 5                  | 350945                              | 643232                                 |
| 6                  | 640583                              | 643234                                 |
| 8                  | 640584                              | 643236                                 |

<sup>1</sup> All housings are white colored, flame-retardant, 94V-0, nylon material.

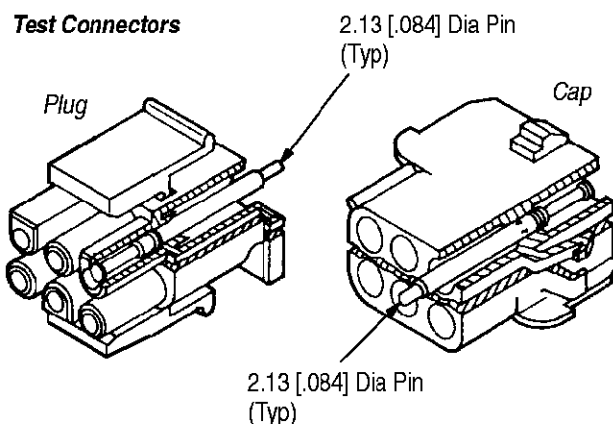
<sup>2</sup> Base numbers shown. Dash numbers indicate contacts with a pre-tin finish or a duplex finish.

*Figure 3*

### 3. TEST CONNECTORS (Figure 4)

Plug and cap test connectors are designed to mate with respective assembled plug and cap connectors and headers to test the electrical circuit. The test connectors are preloaded with spring-loaded contacts that will mate with pin or socket contacts in the connector. The 2.13 mm [.084 in.] diameter pin that extends out the BACK of the test connector will accept Universal MATE-N-LOK socket contacts.

### Test Connectors



**TEST CONNECTORS<sup>•</sup>**

| NUMBER OF CIRCUITS | PLUG PART NUMBER | CAP PART NUMBER |
|--------------------|------------------|-----------------|
| 2                  | 350848-2         | 350849-2        |
| 3                  | 350848-3         | 350849-3        |
| 4                  | 350848-4         | 350849-4        |
| 5                  | 350848-5         | 350849-5        |
| 6                  | 350848-6         | 350849-6        |
| 9                  | 350848-9         | 350849-9        |
| 12                 | 1-350848-2       | 1-350849-2      |
| 15                 | 1-350848-5       | 1-350849-5      |

<sup>•</sup> All housings are white colored, flame-retardant, 94V-0, nylon material. The test connectors have a 5 amp maximum current rating per circuit.

*Figure 4*

## 4. ACCESSORIES

**Keying Plugs** – Keying plugs provide additional polarization for the connectors. Refer to Instruction Sheet 408-3320 for insertion procedures.

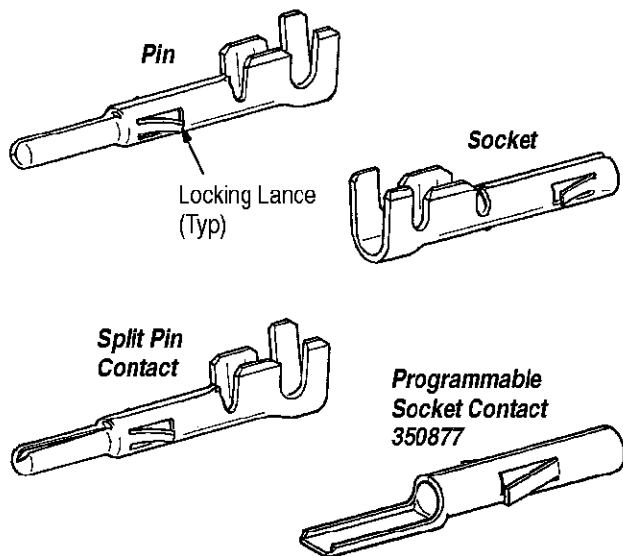
**Strain Relief Assembly** – The strain relief assembly is designed to relieve the stress of the wires on the contacts. There are two strain relief versions (open and enclosed). Refer to Instruction Sheet 408-3320 for assembly procedures.

## 5. PANEL CUTOUT

The cap housing features flexible mounting latches and is designed for panel mounting. The TwistLok cap housing has a panel mount helix and is designed to insert into a panel by twisting clockwise until seated. Refer to the customer drawing or Application Specification 114-1010 for cutout dimensions.

## 6. PRINTED CIRCUIT BOARD LAYOUT

Headers are designed to be mounted and soldered onto pc boards. Refer to the customer drawing or Application Specification 114-1010 for layout dimensions.



## 7. CONTACTS (Figure 5)

### 7.1. Selection

Refer to Figure 5 for wire size and pin and socket compatibility.

Pin and socket crimp contacts are available in strip form for machine crimping, and in loose piece form for hand tool crimping. Split pin contacts are recommended for use in housings having 6, 9, 12, and 15 circuits to reduce mating force. Grounding pin contacts (2.54 mm [.100 in.] longer than standard pin contacts) are designed for a mate first, break last grounding application. Programmable socket contacts are designed to accept 110 Series FASTON\* receptacle terminals.

### 7.2. Crimping

Follow termination procedures shown in Application Specification 114-1010.

Strip form contacts are designed to be crimped with a heavy duty miniature applicator in an AMP semi-automatic or automatic machine. Consult your local AMP representative for assistance in selecting the machine that will best suit your needs.

Loose piece contacts are designed to be crimped with an AMP hand crimping tool. Read the instruction sheet packaged with the tool for the proper crimping procedure.

### 7.3. Insertion

An insertion tool is generally NOT required for inserting contacts into the housings. Pin and socket contacts may be inserted in either the plug or the cap housing, or they may be intermixed in each housing to provide additional keying combinations.

AMP Insertion Tool 455830-1 is available for inserting contacts crimped to small wire sizes. Refer to Instruction Sheet 408-7984 for insertion procedures.

### 7.4. Extraction

AMP Extraction Tool 318851-1 is designed for removing pin and socket contacts from plug and cap housings. Refer to Instruction Sheet 408-4371 for extraction procedures.

## 8. REVISION SUMMARY

Since the previous release of this instruction sheet, the following changes have been made:

Per EC 0990-1143-00

- Updated document to corporate requirements
- Added TwistLok Cap drawing and part numbers to table in Figure 1

| WIRE SIZE (AWG) | CONTACT |                         |                   |
|-----------------|---------|-------------------------|-------------------|
|                 | TYPE    | LOOSE PIECE PART NUMBER | STRIP PART NUMBER |
| 30 to 26        | Pin     | 770672                  | 350924            |
|                 | Skt     | 770673                  | 350925            |
| 24 to 18        | Pin     | 350690                  | 350561            |
|                 | Skt     | 640347                  | 350851            |
|                 | Skt     | 350689                  | 350570            |
|                 | Pin●    | 350706                  | 350699            |
|                 | Pin●●   | —                       | 770210            |
|                 | Pin     | 350547                  | 350218            |
| 20 to 14        | Skt     | 350550                  | 350536            |
|                 | Pin●    | 350705                  | 350687            |
|                 | Pin●●   | 350669                  | 350654            |
|                 | Pin     | 350552                  | 350538            |
|                 | Skt     | 350551                  | 350537            |
|                 | Pin●    | 350707                  | 350700            |
|                 | Pin     | 350918                  | 350873            |
| 18 to 14        | Skt     | 350919                  | 350874            |
| 12 to 10        | Pin     | 640309                  | 350922            |
|                 | Skt     | 640310                  | 350923            |
|                 | Pin●●   | —                       | 770234            |

● Split pin    ●● Grounding pin – 2.54 [.100] longer than standard pin.

Figure 5