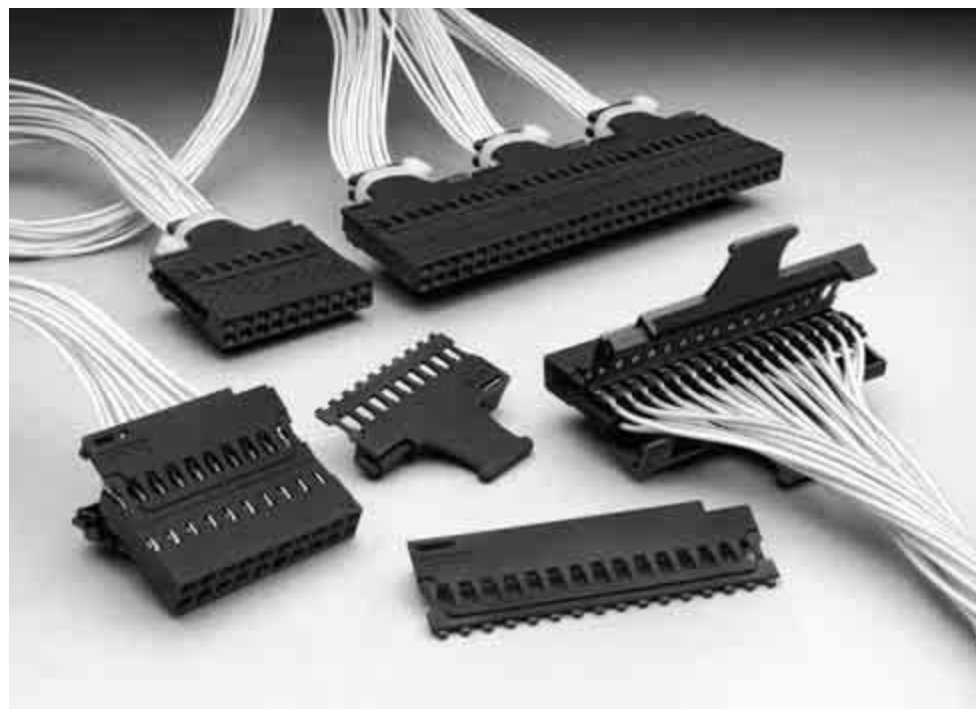


## Level V IDC Connectors, .125 x .125 [3.18 x 3.18] Centerline

### Product Facts

- Termination of discrete wire sizes 26-22 AWG [0.12-0.3 mm<sup>2</sup>] as well as jacketed cable and bonded ribbon cable (conductors separated)
- Connectors stackable end-to-end and side-to-side on .125 [3.18] centers
- Connectors preloaded with insulation displacement receptacle contacts
- Contact design employs dual cantilever beams, redundant insulation displacement slots, built-in post stop and wire support crimp
- Copper alloy contacts are duplex plated
- Snap-on covers with or without cable tie paddles
- Full line of mass termination tooling offers lowest installed costs for most production needs
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. LR 7189 



AMPMODU Level V IDC connectors provide cost effective discrete wire connections that are compatible with today's telecommunications packaging techniques. These connectors are designed to mate with .025 [0.64] sq. posts on .125 x .125 [3.18 x 3.18] centers and are comprised of double-row housings preloaded with insulation displacement receptacle contacts, snap-on hermaphroditic covers, and a full line of mass termination tooling to meet virtually every production need. For modular flexibility, connectors can be stacked end-to-end or side-to-side, maintaining a .125 x .125 [3.18 x 3.18] centerline spacing.

Covers can be furnished with and without a cable tie paddle. The covers are simply snapped onto a housing after the connector has been terminated.

The receptacle contacts feature the Tyco Electronics insulation displacement crimp technique for achieving top quality, low cost terminations. These contacts employ dual cantilever beams for redundant interface with a mating post, an integral post stop to limit post mating depth and protect the crimp termination, and a wire support (strain relief) crimp to prevent accidental wire pull-out. The contacts are made of high conductivity copper alloy and are duplex plated.

### Performance Characteristics

**Contact Current Rating** — 3 amperes

**Termination Resistance** — 12 milliohms (max.)

**Durability** — Ref. Product Specification 108-25028 (Interconnection System, Insulation Displacement Connector, IDC Level)

**Application Specification** 114-25020 (Interconnection System, IDC Level V, Application of)

.125 [3.18] x .125 [3.18]  
Centerline

6

## Receptacle Assemblies, Double-Row, .125 x .125 [3.18 x 3.18] Centerline

### Housings Preloaded with Insulation Displacement Crimp Receptacle Contacts



#### Material and Finish

**Housing** — Black thermoplastic, flame retardant

**Contacts** — Copper alloy, duplex plated .000050 [0.00127] gold on contact area, .000100 [0.00254] min. tin in crimp area, with entire contact underplated .000050 [0.00127] nickel

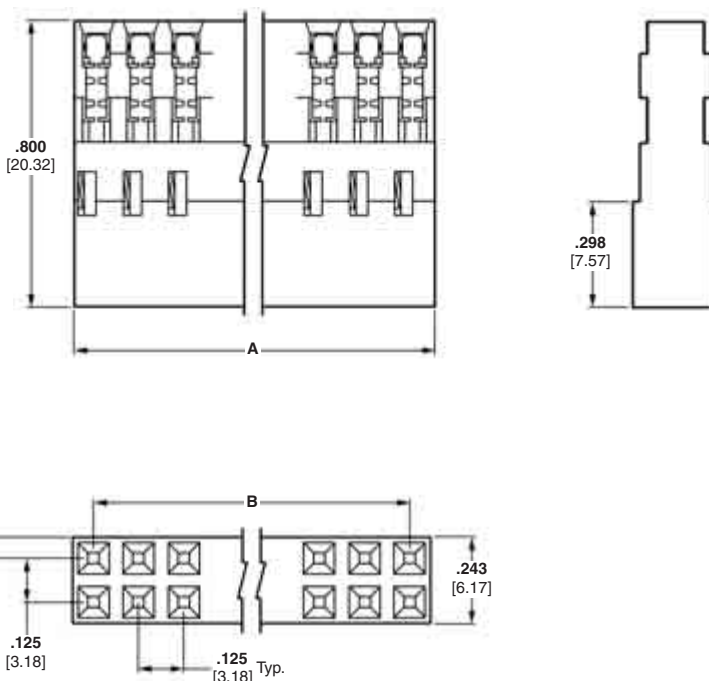
**Note:** Preloaded contacts accept max. insulation dia. of .050 [1.27]. The minimum point of contact, as measured from front edge of housing, is .095 [2.41].

**Technical Documents** —  
pages 277, 278

**Product Specification**  
108-25028

**Application Specification**  
114-25020

Receptacle assemblies can be stacked end-to-end and side-to-side on .125 x .125 [3.18 x 3.18] centers.



| No. of Pos. | Dimensions    |               | Receptacle Assembly (Stamped <sup>1</sup> ) for 26-22 AWG [0.12-0.3 mm <sup>2</sup> ] Wire |
|-------------|---------------|---------------|--------------------------------------------------------------------------------------------|
|             | A             | B             |                                                                                            |
| 8           | .493 [12.52]  | .375 [9.52]   | 102935-4                                                                                   |
| 10          | .618 [15.70]  | .500 [12.70]  | 102935-6                                                                                   |
| 12          | .743 [18.87]  | .625 [15.88]  | 102935-8                                                                                   |
| 16          | .993 [25.22]  | .875 [22.23]  | 1-102935-2                                                                                 |
| 20          | 1.243 [31.57] | 1.125 [28.58] | 1-102935-6                                                                                 |
| 24          | 1.493 [37.92] | 1.375 [34.93] | 1-102935-9                                                                                 |
| 30          | 1.868 [47.45] | 1.750 [44.45] | 1-102935-3                                                                                 |
| 32          | 1.993 [50.62] | 1.875 [47.63] | 2-102935-8                                                                                 |
| 40          | 2.493 [63.32] | 2.375 [60.33] | 3-102935-6                                                                                 |

<sup>1</sup>White ink stamped, one side—8- thru 12-position with AMP and arrow; 14- and 16-position with AMP, part no., and arrow; 18- thru 40-position with AMP, part no., date code and arrow.

- Notes:** 1. Covers for these housings are shown on pages 281 & 282.  
2. Termination tooling for these connectors are shown on page 273-275.  
3. 14- and 18-position receptacle assemblies, as well as other sizes, can be made available upon request. Consult Tyco Electronics.

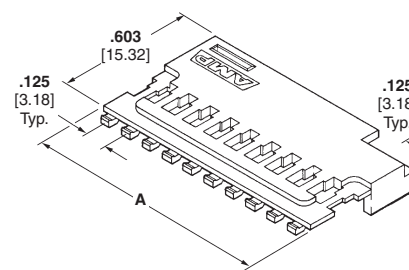
**Note:** All part numbers are RoHS compliant.

## Hermaphroditic Covers for Level V IDC Receptacle Assemblies, Double-Row, .125 x .125 [3.18 x 3.18] Centerline

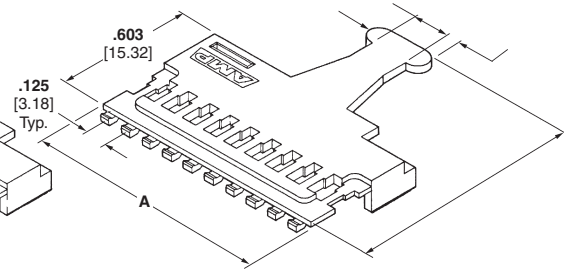
All covers illustrated here and on the following page can be used on the double-row Level V IDC connectors shown on page 280.

### Material

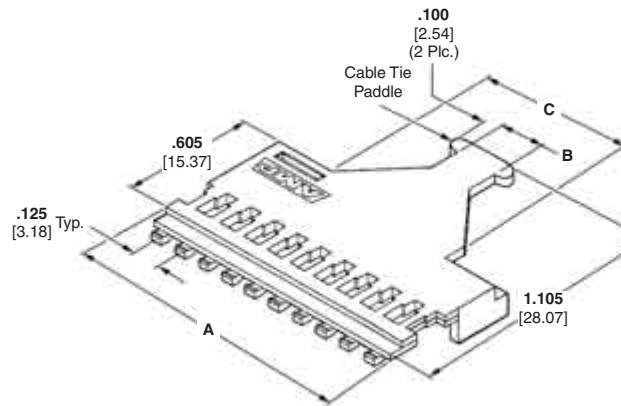
Black thermoplastic, flame retardant,  
94V-0 rated



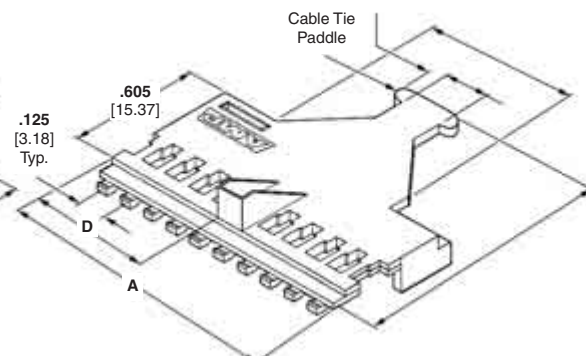
**Cover 103056 Series  
without Cable Tie Paddle**



**Cover 103058 Series  
with Cable Tie Paddle**



**Cover 103349 Series  
with Wide Cable Tie Paddle**



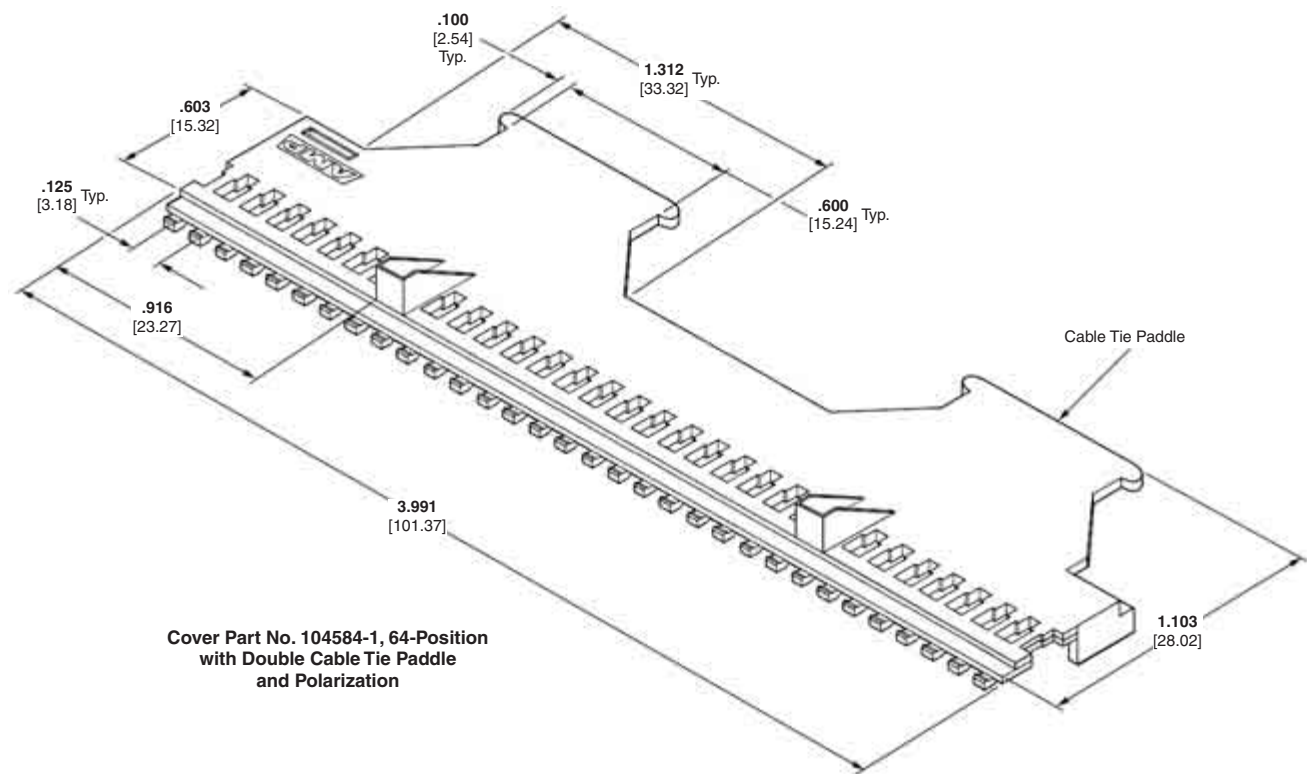
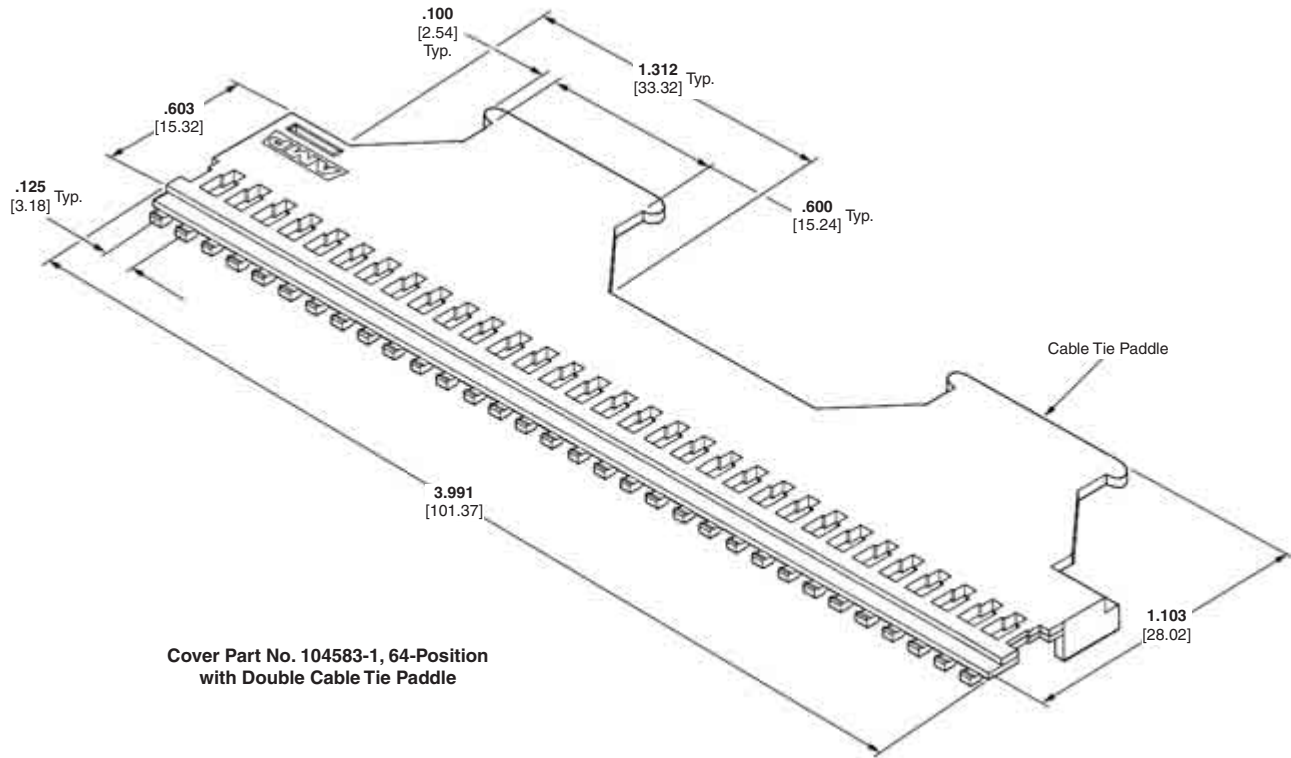
**Cover 103350 Series  
with Wide Cable Tie Paddle  
and Polarization**

| No. of<br>Pos.<br>(Housing<br>Size) | Dimensions                                         |              |               |               |              | Cover Part Nos.                |                             |                                  |                                                      |
|-------------------------------------|----------------------------------------------------|--------------|---------------|---------------|--------------|--------------------------------|-----------------------------|----------------------------------|------------------------------------------------------|
|                                     | A                                                  | B            | C             | D             | E            | Without<br>Cable Tie<br>Paddle | With<br>Cable Tie<br>Paddle | With Wide<br>Cable Tie<br>Paddle | With Wide<br>Cable Tie<br>Paddle and<br>Polarization |
| 8                                   | .491 [12.47]                                       | .150 [3.81]  | .285 [7.24]   | .166 [4.22]   | .125 [3.18]  | —                              | —                           | 103349-4                         | 103350-4                                             |
| 10                                  | .616 [15.65]                                       | —            | —             | —             | .125 [3.18]  | —                              | 103058-3                    | —                                | —                                                    |
| 12                                  | .741 [18.82]                                       | —            | —             | —             | .200 [5.08]  | —                              | 103058-4                    | —                                | —                                                    |
| 16                                  | .991 [25.17]                                       | .300 [7.62]  | .592 [15.04]  | .416 [10.57]  | —            | —                              | —                           | 103349-1                         | 103350-1                                             |
| 20                                  | 1.241 [31.52]                                      | .300 [7.62]  | .592 [15.04]  | .541 [13.74]  | —            | —                              | —                           | 103349-5                         | 103350-5                                             |
| 24                                  | 1.491 [37.87]                                      | —            | —             | —             | .400 [10.16] | 1-103056-0                     | 1-103058-0                  | —                                | —                                                    |
| 32                                  | 1.991 [50.57]                                      | .600 [15.24] | 1.312 [33.32] | .916 [23.27]  | —            | —                              | —                           | 103349-2                         | 103350-2                                             |
| 40                                  | 2.491 [63.27]                                      | .750 [19.05] | 1.820 [46.23] | 1.166 [29.61] | —            | —                              | —                           | 103349-3                         | 103350-3                                             |
| 64                                  | See page 282 for Double Cable Tie Paddle versions. |              |               |               |              |                                |                             |                                  |                                                      |

**Notes:** 1. Two hermaphroditic covers of any style can be installed on a double-row connector housing.  
2. Other sizes can be made available upon request.

**Note:** All part numbers are RoHS compliant.

## Hermaphroditic Covers for Level V IDC Receptacle Assemblies, Double-Row, .125 x .125 [3.18 x 3.18] Centerline (Continued)



**Note:** All part numbers are RoHS compliant.

## AMPMODU .031 x .062 [0.79 x 1.57] Interconnection System

### Product Facts

- Rugged connector system featuring .031 x .062 [0.79 x 1.57] posts with mating receptacles
- Current rating 5 amps max per contact. Varies due to ambient temperature, wire size and duty cycles.
- Available for board-to-board and wire-to-board applications
- Posts available on strip for machine application directly to pc board or in housings for board mounting
- Receptacles available for board mounting or wire crimping
- Contacts available in both tin and gold plating
- Flame retardant thermoplastic housings 94V-0 rated
- Locking Clip contacts available to mate with .031 x .062 [0.79 x 1.57] posts
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 16455



The .031 x .062 [0.79 x 1.57] interconnection system has served as an industry standard for modular packaging for over three decades. It is a rugged, large scale system designed for board-to-board and board-to-wire or cable applications that has offered millions of reliable interconnections and countless mating cycles. This versatile interconnection system successfully meets the requirements for most modular power supply packaging.

Board mounted receptacles and receptacle assemblies are available in various geometries, offering packaging interconnections that include perpendicular, parallel and stacking

capabilities. Machine applied terminations, through matched application equipment, are geared to virtually any production requirement, assuring the lowest possible applied cost.

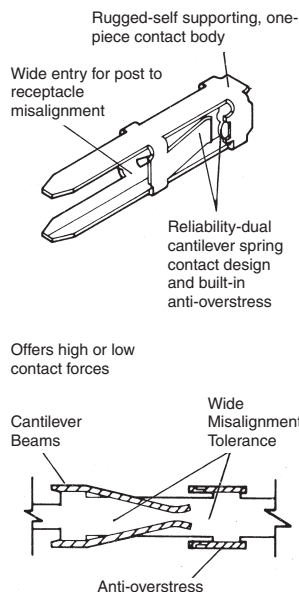
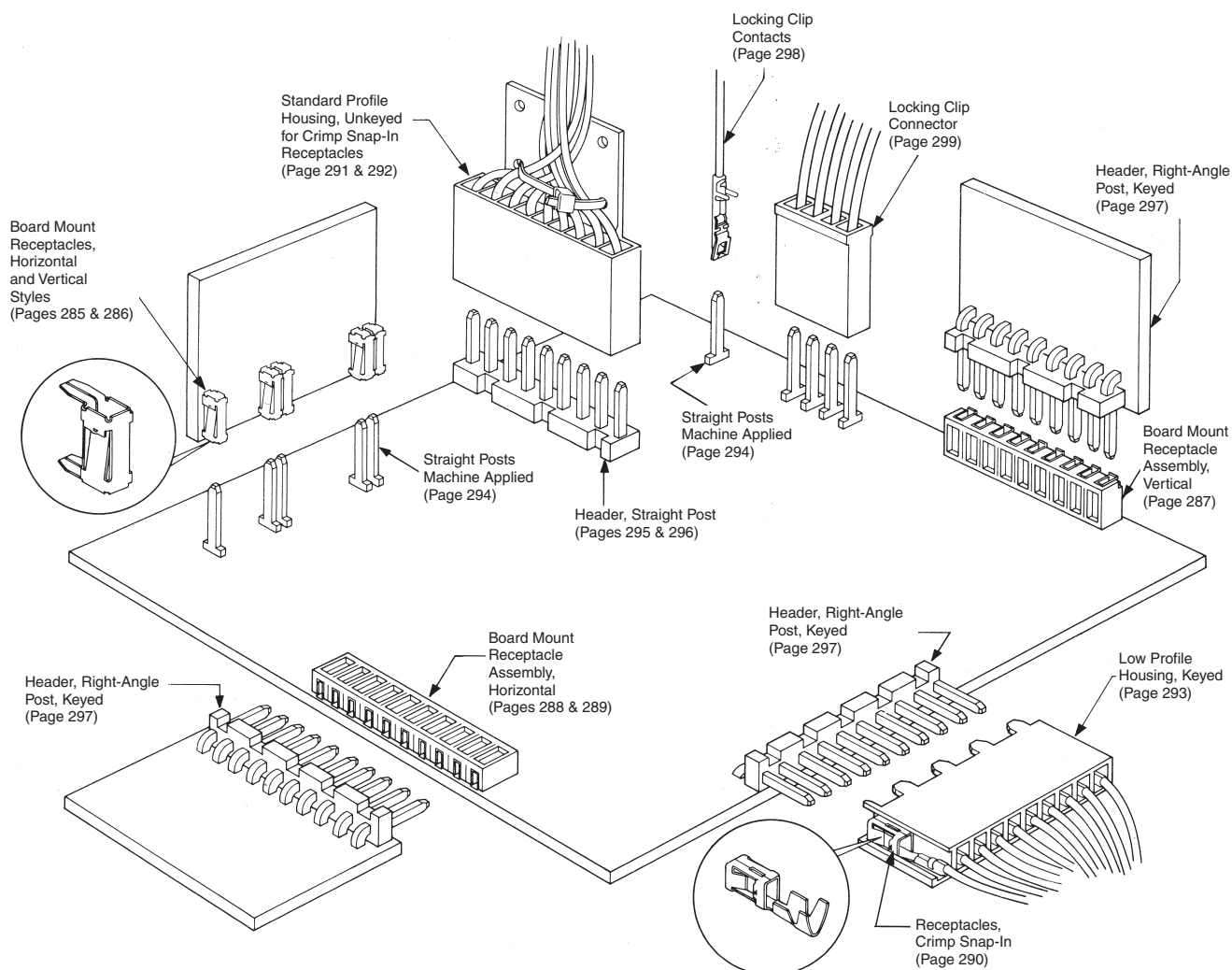
Crimp snap-in receptacles for 26-18 AWG [0.12 – 0.9mm<sup>2</sup>] wire provide excellent discrete wire terminations. Housings for these contacts provide for ease of handling terminations in high density applications.

AMPMODU mating posts are supplied typically as header assemblies. They are available in various sizes to meet the interconnection and packaging requirements of your system. However, in instances where packaging

configurations do not lend themselves to the economies of assemblies, Tyco Electronics can provide for the discrete location of individual posts and receptacles.

If your interconnections require Top Entry, Bottom Entry and/or Side Entry for perpendicular, parallel and stacked configurations, the .031 x .062 [0.79 x 1.57] interconnection system can fulfill your needs with the lowest applied cost through efficient interconnections and supporting application equipment.

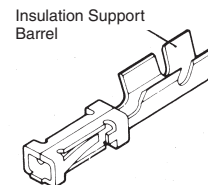
**AMPMODU .031 x .062 [0.79 x 1.57] Interconnection System (Continued)**



The AMPMODU receptacle cross-section is primarily rectangular, with rounded corners. Two integral cantilever beams contact the mating square or rectangular posts. Deflection of these spring members is limited by anti-overstress and excessive permanent deformation is prevented. This feature allows a wide range of tolerances for misalignment of mating contacts. The configuration of the receptacle completely encloses the spring members preventing damage during handling and assembly and makes the system compatible with automatic application techniques.

This design also permits the use of the receptacles without housings or encapsulation.

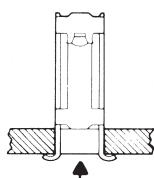
**Note:** Application of a contact lubricant is part of the manufacturing process of all AMPMODU tin-plated crimp products. However, it is not part of the manufacturing process of products that customers will solder, then clean. For these products, Tyco Electronics recommends that customers purchase a contact lubricant. (See application specification 114-25004 for further information.)



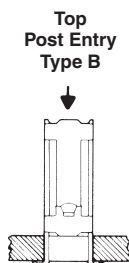
**Wire Crimp Receptacle**

## Mod I Receptacles, Board Mount, .031 x .062 [0.79 x 1.57] Centerline

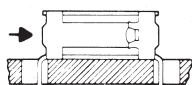
### Vertical and Horizontal Board Mount



Bottom  
Post Entry  
Type A

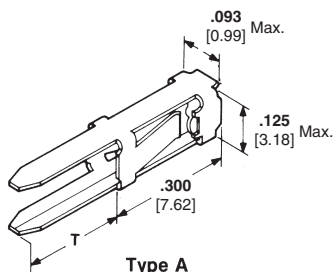


Top  
Post Entry  
Type B

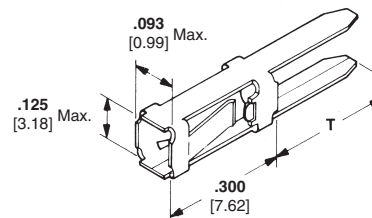


Horizontal  
Post Entry  
Type C

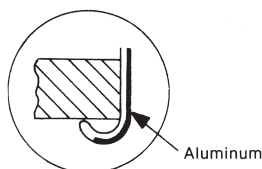
### Receptacle Styles



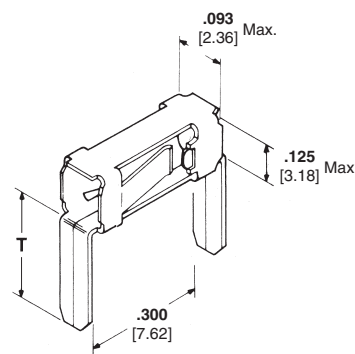
Type A



Type B



Typical  
Solder Resist Tab  
(Type A or B)



Type C

### Related Product Data

Recommended Board Layout for  
Type C — page 288

Mates with —

Machine Applied Posts — page 294

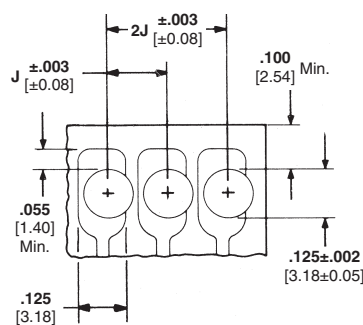
Headers — pages 295-297

Application Tooling —  
pages 300-304

Performance Specifications —  
page 305

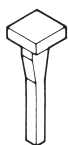
Technical Documents —  
page 305

### Recommended Board Layout for Receptacle Assemblies and Individual Receptacles (Type A and B)



Round Hole  
(Post Entry Type A or B)

### Keying Plug



Part No. 86181-2  
Use in Board Mount Receptacles

J-Receptacle centers may vary depending on requirements. For individual receptacles, minimum nominal centerline spacing between adjacent receptacles is .150 [3.81]; for receptacle assemblies, centerline spacing between adjacent receptacles is .156 [3.96]. The .003 [0.08] tolerances are not to accumulate over length of board. For solder mask, see Tyco Electronics Instruction Sheet 408-7411.

**Note:** Drawings depict normal use of the contact in a one or two-sided circuit board. When using plated thru-holes, refer to Tyco Electronics Engineering Report ER-001 and Tyco Electronics Instruction Sheet 408-7411. For solder mask, see Tyco Electronics Instruction Sheet 408-7411.

**Note:** All part numbers are RoHS compliant.

## Mod I Receptacles, Board Mount, .031 x .062 [0.79 x 1.57] Centerline (Continued)

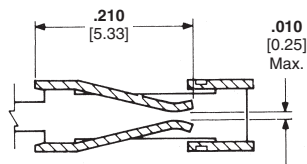
### Material and Finish

Copper alloy, plated as follows:

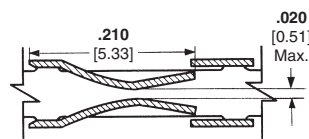
**Plating A** — Selectively plated .000030 [0.00076] gold on contact area, with gold flash over .000050 [0.00127] nickel on entire contact

**Plating B** — .000079 [0.00201] min. tin on entire contact

**Plating C** — (Solder Resist) — .000030 [0.00076] gold over .000050 [0.00127] nickel on contact area, .000500 [0.01270] aluminum on inside area of solder tines; remainder of contact unfinished



Standard Pressure  
Receptacle



High Pressure  
Receptacle

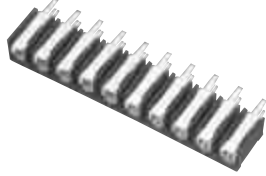
| Type | Board Thickness Range | Dimension T (Ref. Pg. 285) | Finish                    | Standard Pressure Part Nos. |             | High Pressure Part Nos. |             | Insertion Applicator No. for "U" Frame Machine |
|------|-----------------------|----------------------------|---------------------------|-----------------------------|-------------|-------------------------|-------------|------------------------------------------------|
|      |                       |                            |                           | Strip Form                  | Loose Piece | Strip Form              | Loose Piece |                                                |
| A    | .070-.055 [1.78-1.40] | .112 [2.84]                | Plating A                 | 86477-2                     | 86480-2     | —                       | —           | 466376-1                                       |
|      |                       |                            | Plating B                 | 86477-3                     | —           | 87316-3                 | —           | 466376-1                                       |
|      |                       |                            | Plating C (Solder Resist) | 87772-2                     | —           | —                       | —           | 466376-1                                       |
| B    | .070-.055 [1.78-1.40] | .112 [2.84]                | Plating A                 | 87003-1                     | 87105-1     | —                       | —           | 466376-1                                       |
|      |                       |                            | Plating B                 | 87003-2                     | —           | —                       | —           | 466376-1                                       |
|      |                       |                            | Plating C (Solder Resist) | 87774-2                     | —           | —                       | —           | 466376-1                                       |
| C    | .103-.055 [2.62-1.40] | .145 [3.68]                | Plating A                 | 85487-4                     | 85493-4     | 86432-8                 | 86434-6     | 565967-3                                       |
|      |                       |                            | Plating B                 | 85487-3                     | —           | 86432-1                 | 86434-1     |                                                |

**Notes:** 1. All strip form parts in packaged quantities of 5,000 each.  
2. All loose piece parts in packaged quantities of 500 each.

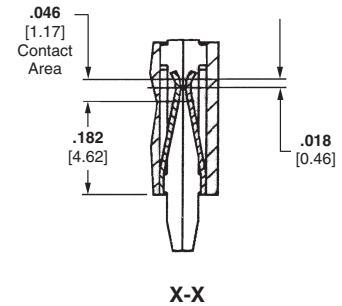
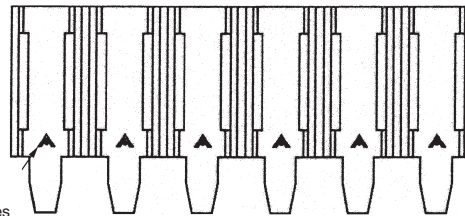
**Note:** All part numbers are RoHS compliant.

## Mod I Receptacle Assemblies, Vertical Board Mount, .031 x .062 [0.79 x 1.57] Centerline

### Single Row .156 [3.96] Centerline



The letter A stamped on contact indicates mating end of receptacle.



### Material and Finish

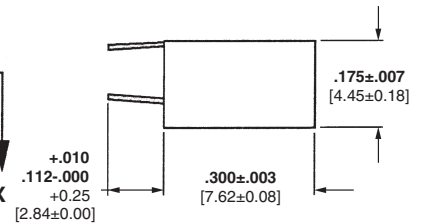
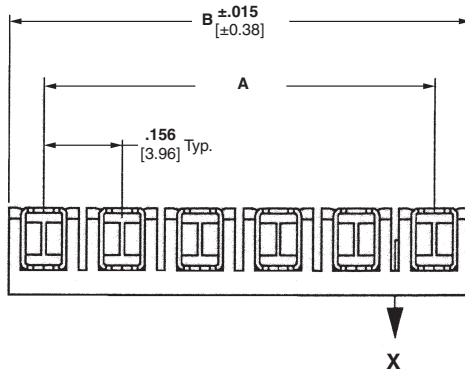
**Housing** — Black thermoplastic, 94V-0 rated

**Contacts** — Copper alloy, plated as follows:

**Plating A** — Selectively plated .000030 [0.00076] gold on contact area, with gold flash over .000050 [0.00127] nickel on entire contact

**Plating B** — .000079 [0.00201] min. tin on entire contact

**Plating C** — (Solder Resist) — .000030 [0.00076] gold over .000050 [0.00127] nickel on contact area, .000500 [0.01270] aluminum on inside area of solder tines; remainder of contact unfinished



### Related Product Data

**Recommended Board Layout** — page 288

**Mates with** —

**Machine Applied Posts** — page 294

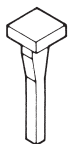
**Headers** — pages 295-297

**Performance Specifications** — page 305

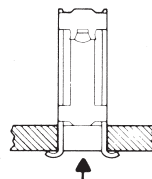
**Technical Documents** — page 305

| No. of Pos. | Dimensions    |               | Type A            |           |           |               | Type B            |           |           |
|-------------|---------------|---------------|-------------------|-----------|-----------|---------------|-------------------|-----------|-----------|
|             | A             | B             | Standard Pressure |           |           | High Pressure | Standard Pressure |           |           |
|             |               |               | Plating A         | Plating B | Plating C | Plating B     | Plating A         | Plating B | Plating C |
| 2           | .156 [3.96]   | .312 [7.92]   | 87984-2           | 87983-2   | 87989-2   | 87993-2       | 87986-2           | 87985-2   | 87990-2   |
| 3           | .312 [7.92]   | .468 [11.89]  | 87984-3           | 87983-3   | 87989-3   | 87993-3       | 87986-3           | 87985-3   | 87990-3   |
| 4           | .468 [11.89]  | .624 [15.85]  | 87984-4           | 87983-4   | 87989-4   | 87993-4       | 87986-4           | 87985-4   | 87990-4   |
| 5           | .624 [15.85]  | .780 [19.81]  | 87984-5           | 87983-5   | 87989-5   | 87993-5       | 87986-5           | 87985-5   | 87990-5   |
| 6           | .780 [19.81]  | .936 [23.77]  | 87984-6           | 87983-6   | 87989-6   | 87993-6       | 87986-6           | 87985-6   | 87990-6   |
| 7           | .936 [23.77]  | 1.092 [27.74] | 87984-7           | 87983-7   | 87989-7   | 87993-7       | 87986-7           | 87985-7   | 87990-7   |
| 8           | 1.092 [27.74] | 1.248 [31.70] | 87984-8           | 87983-8   | 87989-8   | 87993-8       | 87986-8           | 87985-8   | 87990-8   |
| 9           | 1.248 [31.70] | 1.404 [35.66] | 87984-9           | 87983-9   | 87989-9   | 87993-9       | 87986-9           | 87985-9   | 87990-9   |
| 10          | 1.404 [35.66] | 1.560 [39.62] | 1-87984-0         | 1-87983-0 | 1-87989-0 | 1-87993-0     | 1-87986-0         | 1-87985-0 | 1-87990-0 |
| 11          | 1.560 [39.62] | 1.716 [43.59] | 1-87984-1         | 1-87983-1 | 1-87989-1 | 1-87993-1     | 1-87986-1         | 1-87985-1 | 1-87990-1 |
| 12          | 1.716 [43.59] | 1.872 [47.55] | 1-87984-2         | 1-87983-2 | 1-87989-2 | 1-87993-2     | 1-87986-2         | 1-87985-2 | 1-87990-2 |
| 13          | 1.872 [47.55] | 2.028 [51.51] | 1-87984-3         | 1-87983-3 | 1-87989-3 | 1-87993-3     | 1-87986-3         | 1-87985-3 | 1-87990-3 |
| 14          | 2.028 [51.51] | 2.184 [55.47] | 1-87984-4         | 1-87983-4 | 1-87989-4 | 1-87993-4     | 1-87986-4         | 1-87985-4 | 1-87990-4 |
| 15          | 2.184 [55.47] | 2.340 [59.44] | 1-87984-5         | 1-87983-5 | 1-87989-5 | 1-87993-5     | 1-87986-5         | 1-87985-5 | 1-87990-5 |
| 16          | 2.340 [59.44] | 2.496 [63.40] | 1-87984-6         | 1-87983-6 | 1-87989-6 | 1-87993-6     | 1-87986-6         | 1-87985-6 | 1-87990-6 |
| 17          | 2.496 [63.40] | 2.652 [67.36] | 1-87984-7         | 1-87983-7 | 1-87989-7 | 1-87993-7     | 1-87986-7         | 1-87985-7 | 1-87990-7 |
| 18          | 2.652 [67.36] | 2.808 [71.32] | 1-87984-8         | 1-87983-8 | 1-87989-8 | 1-87993-8     | 1-87986-8         | 1-87985-8 | 1-87990-8 |
| 19          | 2.808 [71.32] | 2.964 [75.29] | 1-87984-9         | 1-87983-9 | 1-87989-9 | 1-87993-9     | 1-87986-9         | 1-87985-9 | 1-87990-9 |
| 20          | 2.964 [75.29] | 3.120 [79.25] | 2-87984-0         | 2-87983-0 | 2-87989-0 | 2-87993-0     | 2-87986-0         | 2-87985-0 | 2-87990-0 |

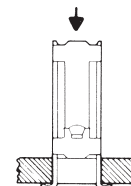
### Keying Plug



**Part No. 86181-2**  
(Use in Board Mount Receptacles)



**Post Entry Type A**



**Post Entry Type B**

**Note:** All part numbers are RoHS compliant.

## Mod I Receptacle Assemblies, Horizontal Board Mount, .031 x .062 [0.79 x 1.57] Centerline

### Single Row .156 [3.96] Centers

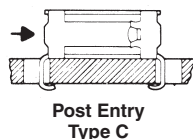
#### Material and Finish

**Housing** — Black thermoplastic, 94V-0 rated

**Contacts** — Copper alloy, plated as follows:

**Plating A** — Selectively plated .000030 [0.00076] gold contact area, with gold flash over .000050 [0.00127] nickel on entire contact

**Plating B** — .000079 [0.00201] min. tin on entire contact



#### Related Product Data

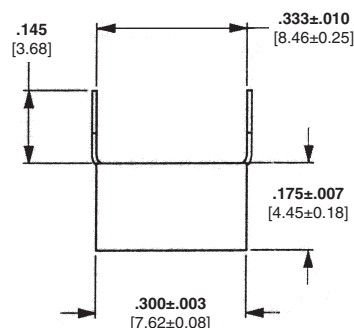
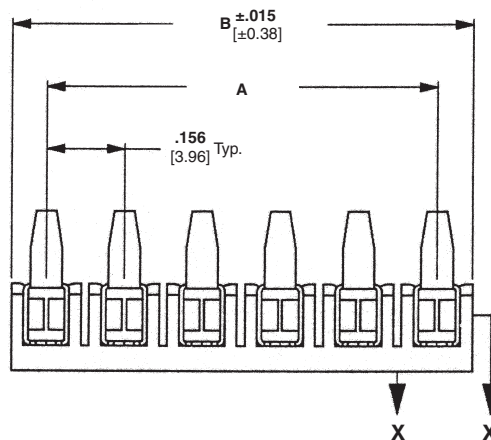
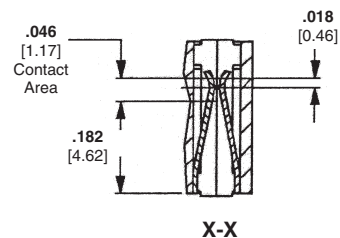
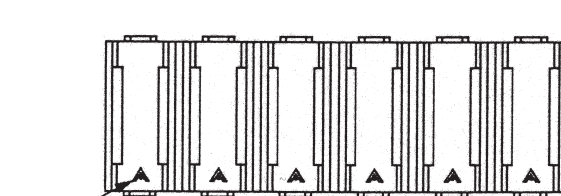
**Mates with** —

**Machine Applied Posts** — page 294

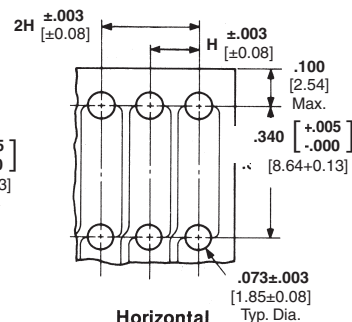
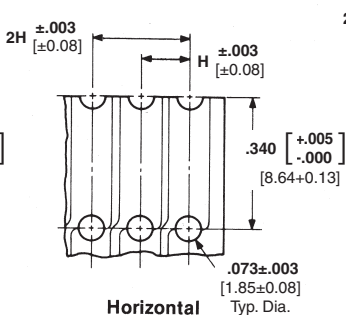
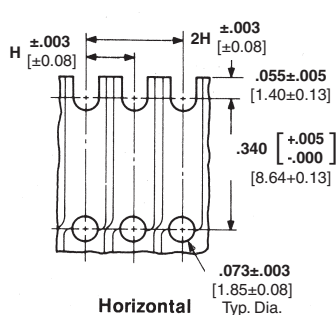
**Headers** — pages 295-297

**Performance Specifications** —  
page 305

**Technical Documents** —  
page 305



### Recommended Board Layouts for Receptacle Assemblies and Individual Receptacles (Type C)



This configuration recommended for use with machine applied posts or headers with a .405 [10.29] minimum mating end post length.\*

This configuration recommended for use with machine applied posts or headers with a .345 [8.76] minimum mating end post length.\*

This configuration recommended for use with machine applied posts or headers with a .500 [12.70] minimum mating end post length.\*

### Keying Plug



**Part No. 86181-2**  
(Use in Board Mount  
Receptacles)

The mating post length is depicted by the A dimension on page 294 (machine applied posts) and the C dimension on pages 295-297 (headers).

H-Receptacle centers may vary depending on requirements. For individual receptacles, minimum nominal centerline spacing between adjacent receptacles is .125 [3.18] for receptacle assemblies, centerline spacing between adjacent receptacles is .156 [3.96]. The .003 [0.08] tolerances are not to accumulate over length of board.

**Note:** All part numbers are RoHS compliant.

## Mod I Receptacle Assemblies, Horizontal Board Mount, .031 x .062 [0.79 x 1.57] Centerline (Continued)

| No. of<br>Pos. | Dimensions    |               | Standard Pressure |           | High Pressure<br>Plating B |
|----------------|---------------|---------------|-------------------|-----------|----------------------------|
|                | A             | B             | Plating A         | Plating B |                            |
| 2              | .156 [3.96]   | .312 [7.92]   | 87988-2           | 87987-2   | 87995-2                    |
| 3              | .312 [7.92]   | .468 [11.89]  | 87988-3           | 87987-3   | 87995-3                    |
| 4              | .468 [11.89]  | .624 [15.85]  | 87988-4           | 87987-4   | 87995-4                    |
| 5              | .624 [15.85]  | .780 [19.81]  | 87988-5           | 87987-5   | 87995-5                    |
| 6              | .780 [19.81]  | .936 [23.77]  | 87988-6           | 87987-6   | 87995-6                    |
| 7              | .936 [23.77]  | 1.092 [27.74] | 87988-7           | 87987-7   | 87995-7                    |
| 8              | 1.092 [27.74] | 1.248 [31.70] | 87988-8           | 87987-8   | 87995-8                    |
| 9              | 1.248 [31.70] | 1.404 [35.66] | 87988-9           | 87987-9   | 87995-9                    |
| 10             | 1.404 [35.66] | 1.560 [39.62] | 1-87988-0         | 1-87987-0 | 1-87995-0                  |
| 11             | 1.560 [39.62] | 1.716 [43.59] | 1-87988-1         | 1-87987-1 | 1-87995-1                  |
| 12             | 1.716 [43.59] | 1.872 [47.55] | 1-87988-2         | 1-87987-2 | 1-87995-2                  |
| 13             | 1.872 [47.54] | 2.028 [51.51] | 1-87988-3         | 1-87987-3 | 1-87995-3                  |
| 14             | 2.028 [51.51] | 2.184 [55.47] | 1-87988-4         | 1-87987-4 | 1-87995-4                  |
| 15             | 2.184 [55.47] | 2.340 [59.44] | 1-87988-5         | 1-87987-5 | 1-87995-5                  |
| 16             | 2.340 [59.44] | 2.496 [63.40] | 1-87988-6         | 1-87987-6 | 1-87995-6                  |
| 17             | 2.496 [63.40] | 2.652 [67.36] | 1-87988-7         | 1-87987-7 | 1-87995-7                  |
| 18             | 2.652 [67.36] | 2.808 [71.32] | 1-87988-8         | 1-87987-8 | 1-87995-8                  |
| 19             | 2.808 [71.32] | 2.964 [75.29] | 1-87988-9         | 1-87987-9 | 1-87995-9                  |
| 20             | 2.964 [75.29] | 3.120 [79.25] | 2-87988-0         | 2-87987-0 | 2-87995-0                  |

**Note:** All part numbers are RoHS compliant.

## Mod I Receptacles, Crimp Snap-In (Wire Applied), .031 x .062 [0.79 x 1.57] Centerline

### Material and Finish

Copper alloy, plated as follows:

**Plating A** — Selectively plated  
.000030 [0.00076] gold on contact area,  
with gold flash over .000050 [0.00127]  
nickel on entire contact

**Plating B** — .000016 [0.00041] min.  
tin on entire contact

### Related Product Data

**Housings used in** — pages 291-293

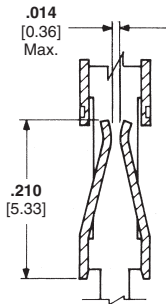
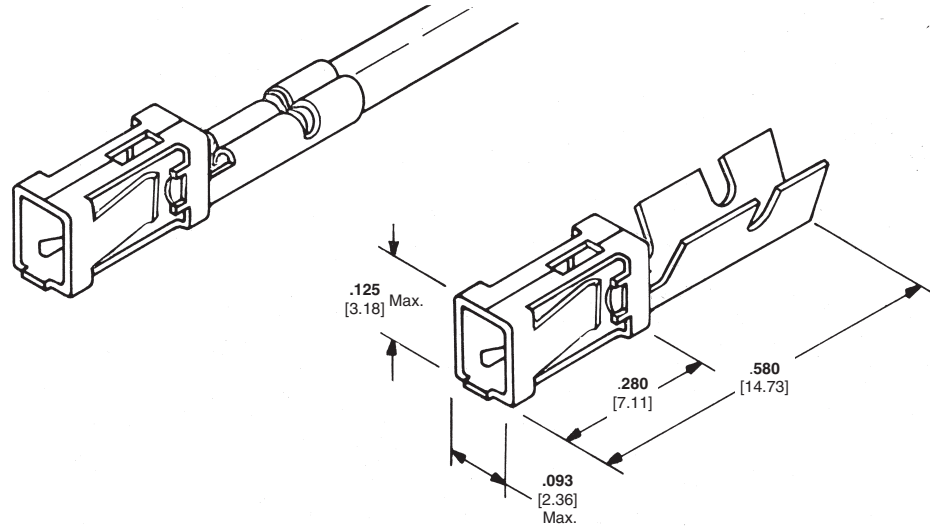
**Mate with Machine Applied  
Posts** — page 294

**Headers** — pages 295-297

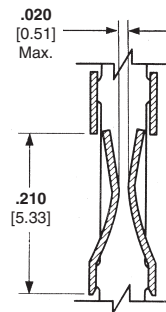
**Application Tooling** — page 300-304

**Performance Specification** —  
page 305

**Technical Documents** —  
page 305



**Standard Pressure  
Receptacle**



**High Pressure Receptacle**



Extraction Tool Part No. 843473-1  
Part Instruction Sheet 408-9451

| Wire Size Range<br>AWG [mm²] | Ins. Dia.<br>Range    | Finish    | Standard Pressure      |              |                        |              |
|------------------------------|-----------------------|-----------|------------------------|--------------|------------------------|--------------|
|                              |                       |           | Strip Form             |              | Loose Piece            |              |
|                              |                       |           | Packaged<br>Quantities | Part<br>Nos. | Packaged<br>Quantities | Part<br>Nos. |
| 22-18 [0.3-0.9]              | .051-.090 [1.30-2.29] | Plating A | 5,000                  | 102099-2     | 500                    | 102103-2     |
|                              |                       | Plating B | 5,000                  | 102099-5     | 500                    | 102103-3     |

| Wire Size Range<br>AWG [mm²] | Applicator (Standard Pressure) |      |                                | Premium<br>CERTI-CRIMP<br>Hand Tool<br>Part Number |
|------------------------------|--------------------------------|------|--------------------------------|----------------------------------------------------|
|                              | Part<br>Number                 | Type | Used With<br>Machine           |                                                    |
| 22-18<br>[0.3-0.9]           | 466764-3                       | HDM  | Model "G" (AMP-O-LECTRIC)      | 90274-2                                            |
|                              | 466764-2                       | HDM  | Model "K" (AMP-O-LECTRIC)      |                                                    |
|                              | 466764-1                       | HDM  | CLS IV+ (AMPOMATOR)            |                                                    |
|                              | 466937-1                       | SCA  | Stripper-Crimper (AMP-O-MATIC) |                                                    |

AMP-O-LECTRIC KII Machine. Applicators also available for AMPOMATOR Lead Making Machines and Stripper/Crimper Machines. Consult Tyco Electronics.

| Wire Size Range<br>AWG [mm²] | Ins. Dia.<br>Range    | Finish    | High Pressure          |              |                        |              |
|------------------------------|-----------------------|-----------|------------------------|--------------|------------------------|--------------|
|                              |                       |           | Strip Form             |              | Loose Piece            |              |
|                              |                       |           | Packaged<br>Quantities | Part<br>Nos. | Packaged<br>Quantities | Part<br>Nos. |
| 22-18 [0.3-0.9]              | .051-.090 [1.30-2.29] | Plating A | 5,000                  | 102100-2     | 500                    | 102104-2     |
|                              |                       | Plating B | 5,000                  | 102100-5     | 500                    | 102104-3     |
| 26-22 [0.12-0.4]             | 0.42-.073 [1.07-1.85] | Plating A | 5,000                  | 102102-2     | 500                    | 102106-2     |
|                              |                       | Plating B | 5,000                  | 102102-5     | 500                    | 102106-3     |

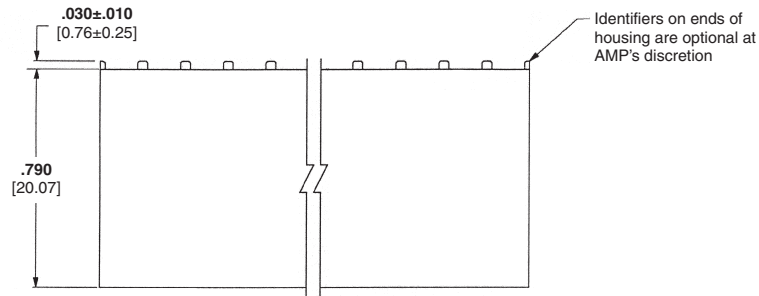
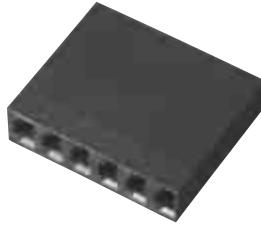
| Wire Size Range<br>AWG [mm²] | Applicator (High Pressure) |      |                                | Premium<br>CERTI-CRIMP<br>Hand Tool<br>Part Number |
|------------------------------|----------------------------|------|--------------------------------|----------------------------------------------------|
|                              | Part<br>Number             | Type | Used With<br>Machine           |                                                    |
| 22-18 [0.3-0.9]              | 466764-3                   | HDM  | Model "G" (AMP-O-LECTRIC)      | 90274-2                                            |
|                              | 466764-2                   | HDM  | Model "K" (AMP-O-LECTRIC)      |                                                    |
|                              | 466764-1                   | HDM  | CLS IV+ (AMPOMATOR)            |                                                    |
| 26-22 [0.12-0.4]             | 466937-1                   | SCA  | Stripper-Crimper (AMP-O-MATIC) | 90328-1                                            |
|                              | 466763-2                   | HDM  | Model "K" (AMP-O-LECTRIC)      |                                                    |
|                              | 466763-1                   | HDM  | CLS IV+ (AMPOMATOR)            |                                                    |

AMP-O-LECTRIC KII Machine. Applicators also available for AMPOMATOR Lead Making Machines and Stripper/Crimper Machines. Consult Tyco Electronics.

**Note:** All part numbers are RoHS compliant.

## Mod I Receptacle Housings, Standard Profile, Unkeyed, .031 x .062 [0.79 x 1.57] Centerline

**Single Row, .156 [3.96]  
Centers, Without Strain  
Relief**



### Material

Black thermoplastic, flame retardant,  
94V-0 rated

### Related Product Data

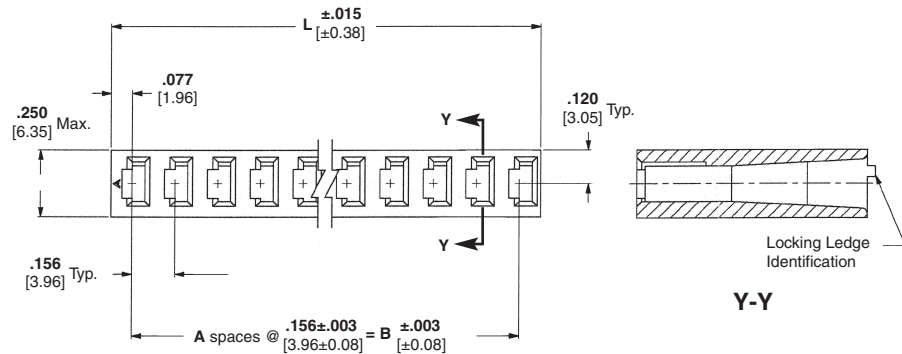
**Contacts used with** — page 290

**Mate with** —

**Machine Applied Posts** — page 294

**Headers** — pages 295-297

**Performance Specifications** —  
page 305



**Technical Documents** —  
page 305

| No. of<br>Pos. | Dimensions |               |               | Housing Part Nos.    |                        |
|----------------|------------|---------------|---------------|----------------------|------------------------|
|                | A          | B             | L             | Stamped <sup>1</sup> | Unstamped <sup>2</sup> |
| 2              | 1          | .156 [3.96]   | .312 [7.92]   | —                    | 2-87025-5              |
| 3              | 2          | .312 [7.92]   | .468 [11.89]  | —                    | 2-87025-1              |
| 4              | 3          | .468 [11.89]  | .624 [15.85]  | —                    | 1-87025-3              |
| 5              | 4          | .624 [15.85]  | .780 [19.81]  | —                    | 2-87025-3              |
| 6              | 5          | .780 [19.81]  | .936 [23.77]  | 87025-1              | 87025-2                |
| 7              | 6          | .936 [23.77]  | 1.092 [27.74] | —                    | 3-87025-4              |
| 8              | 7          | 1.092 [27.74] | 1.248 [31.70] | —                    | 1-87025-6              |
| 9              | 8          | 1.248 [31.70] | 1.404 [35.66] | 87025-9              | 1-87025-0              |
| 10             | 9          | 1.404 [35.66] | 1.560 [39.62] | 1-87025-7            | 1-87025-8              |
| 11             | 10         | 1.560 [39.62] | 1.716 [43.59] | —                    | 3-87025-6              |
| 12             | 11         | 1.716 [43.59] | 1.872 [47.55] | 1-87025-1            | 1-87025-2              |
| 13             | 12         | 1.872 [47.55] | 2.028 [51.51] | —                    | 3-87025-0              |
| 14             | 13         | 2.028 [51.51] | 2.184 [55.47] | —                    | 3-87025-8              |
| 15             | 14         | 2.184 [55.47] | 2.340 [59.44] | —                    | 3-87025-2              |
| 16             | 15         | 2.340 [59.44] | 2.496 [63.40] | —                    | 2-87025-0              |
| 17             | 16         | 2.496 [63.40] | 2.652 [67.36] | —                    | 4-87025-0              |
| 18             | 17         | 2.652 [67.36] | 2.808 [71.32] | —                    | 87025-4                |
| 19             | 18         | 2.808 [71.32] | 2.964 [75.29] | —                    | 87025-6                |
| 20             | 19         | 2.964 [75.29] | 3.120 [79.25] | —                    | 87025-8                |
| 25             | 24         | 3.744 [95.10] | 3.900 [99.06] | —                    | 5-87025-0              |

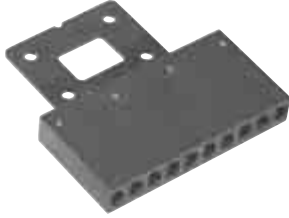
**Notes:** <sup>1</sup>Markings on housing.

<sup>2</sup>No markings on housing.

**Note:** All part numbers are RoHS compliant.

**Mod I Receptacle Housings, Standard Profile, Unkeyed,  
.031 x .062 [0.79 x 1.57] Centerline** (Continued)

**Single Row, .156 [3.96]  
Centers, With Strain Relief**



**Material**

Black thermoplastic, flame retardant,  
94V-0 rated

**Related Product Data**

**Contacts used with** — page 290

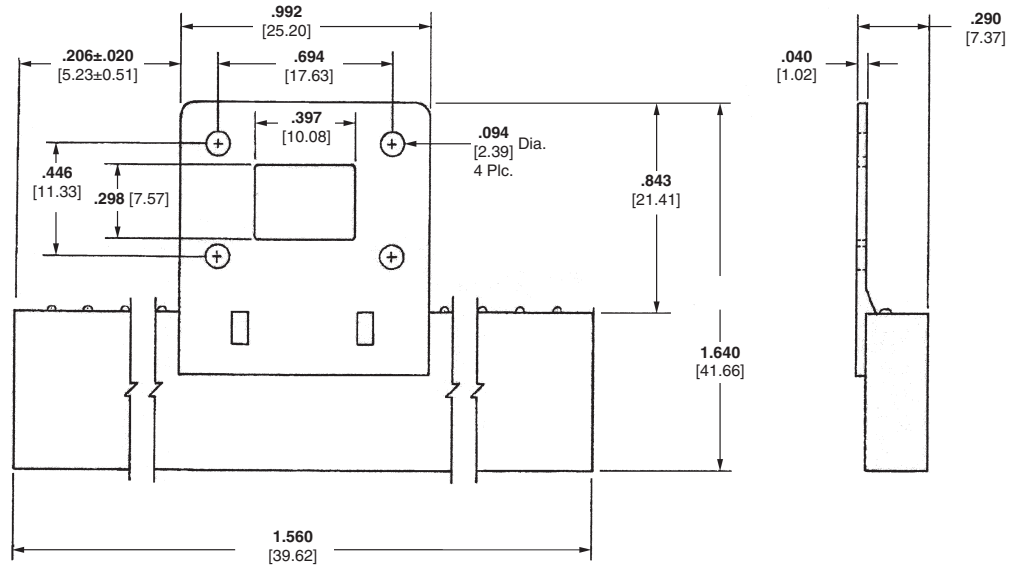
**Mate with** —

**Machine Applied Posts** — page 294

**Headers** — pages 295-297

**Performance Specifications** —  
page 305

**Technical Documents** —  
page 305

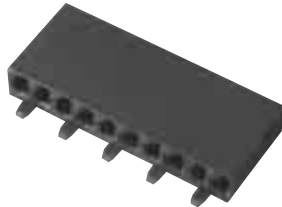


**10 Position Receptacle Housing, Part No. 1-102090-0**

**Note:** All part numbers are RoHS compliant.

## Mod I Receptacle Housings, Low Profile, Keyed, .031 x .062 [0.79 x 1.57] Centerline

### Single Row, .156 [3.96] Centers



#### Material

Black thermoplastic, flame retardant, 94V-0 rated

#### Related Product Data

Contacts used with — page 290

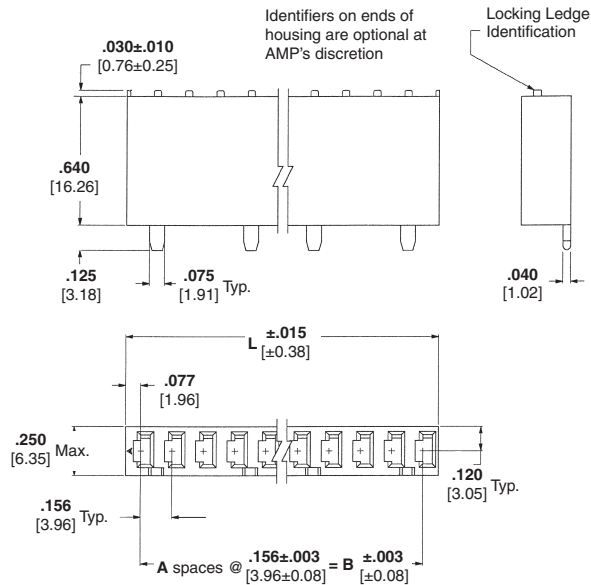
Mate with —

Headers — pages 295-297

Performance Specifications — page 305

#### Technical Documents —

page 305

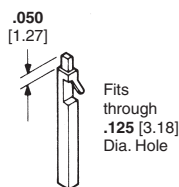


| No. of Pos. | Dimensions |               |               | No. of Keys | Housing Part Nos. (Unstamped) <sup>1</sup> | Key Locations         |
|-------------|------------|---------------|---------------|-------------|--------------------------------------------|-----------------------|
|             | A          | B             | L             |             |                                            |                       |
| 2           | 1          | .156 [3.96]   | .312 [7.92]   | 1           | 87159-3                                    | A                     |
| 3           | 2          | .312 [7.92]   | .468 [11.89]  | 1           | 87159-4                                    | A                     |
| 4           | 3          | .468 [11.89]  | .624 [15.85]  | 2           | 87159-5                                    | A,C                   |
| 5           | 4          | .624 [15.85]  | .780 [19.81]  | 2           | 87159-1                                    | A,D                   |
| 6           | 5          | .780 [19.81]  | .936 [23.77]  | 3           | 87159-6                                    | A,C,E                 |
| 7           | 6          | .936 [23.77]  | 1.092 [27.74] | 3           | 87159-7                                    | A,C,E                 |
| 8           | 7          | 1.092 [27.74] | 1.248 [31.70] | 4           | 87159-8                                    | A,C,E,G               |
| 9           | 8          | 1.248 [31.70] | 1.404 [35.66] | 3           | 87159-9                                    | A,D,G                 |
| 10          | 9          | 1.404 [35.66] | 1.560 [39.62] | 5           | 1-87159-0                                  | A,C,E,G,J             |
| 11          | 10         | 1.560 [39.62] | 1.716 [43.59] | 4           | 1-87159-1                                  | A,D,G,K               |
| 12          | 11         | 1.716 [43.59] | 1.872 [47.55] | 6           | 1-87159-2                                  | A,C,E,G,J,L           |
| 13          | 12         | 1.872 [47.55] | 2.028 [51.51] | 4           | 87159-2                                    | A,D,J,M               |
| 14          | 13         | 2.028 [51.51] | 2.184 [55.47] | 7           | 1-87159-3                                  | A,C,E,G,J,L,N         |
| 15          | 14         | 2.184 [55.47] | 2.340 [59.44] | 5           | 1-87159-4                                  | A,D,G,K,N             |
| 16          | 15         | 2.340 [59.44] | 2.496 [63.40] | 8           | 1-87159-5                                  | A,C,E,G,J,L,N,Q       |
| 17          | 16         | 2.496 [63.40] | 2.652 [67.36] | 6           | 1-87159-6                                  | A,D,G,K,N,R           |
| 18          | 17         | 2.652 [67.36] | 2.808 [71.32] | 6           | 1-87159-7                                  | A,D,F,J,P,S           |
| 19          | 18         | 2.808 [71.32] | 2.964 [75.29] | 8           | 1-87159-8                                  | B,D,F,J,L,N,Q,S       |
| 20          | 19         | 2.964 [75.29] | 3.120 [79.25] | 10          | 1-87159-9                                  | A,C,E,G,J,L,N,Q,S,U   |
| 25          | 24         | 3.744 [95.10] | 3.900 [99.06] | 11          | 2-87159-4                                  | A,C,E,H,K,M,Q,S,U,W,Y |

<sup>1</sup>No marking on housing.

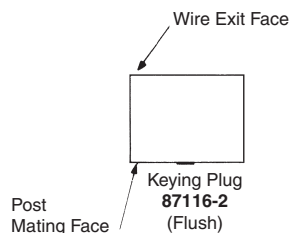
### Keying Plug

Material — Natural Color Nylon

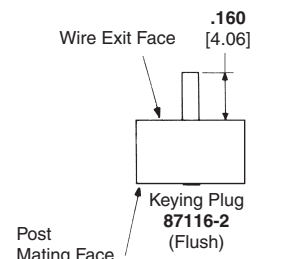


Part No. 87116-2

### Keying Plug References



For Standard Housings

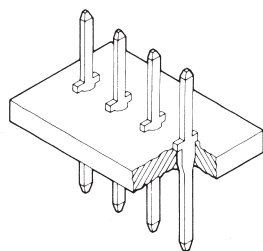


For Low Profile Housings

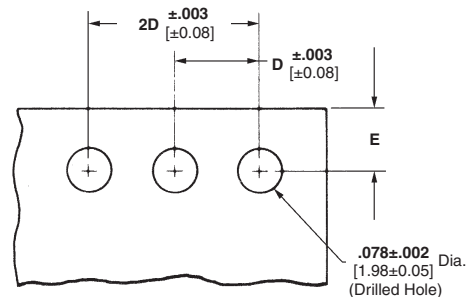
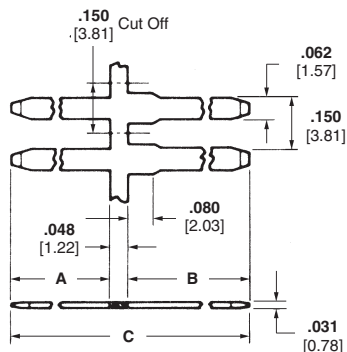
**Note:** All part numbers are RoHS compliant.

## Mod I Posts, Machine Applied, .031 x .062 [0.79 x 1.57] Centerline

### Straight Posts



Typical Assembly



Recommended Mounting Holes

### Material and Finish

Brass, plated .000030 [0.00076] gold  
over .000050 [0.00127] nickel on entire  
post

### Related Product Data

#### Mate with —

**Board Mount Receptacles —**  
pages 285, 286

**Board Mount Receptacle  
Assemblies —** pages 287-289

**Crimp Snap-In Receptacles and  
Housings —** pages 290-292

**Locking Clip Contacts &  
Housings —** pages 298, 299 (see page  
298 for recommended post length).

**Application Tooling —**  
pages 300-304

**Performance Specifications —**  
page 305

**Technical Documents —**  
page 305

D—Post centers may vary depending on requirements. Minimum nominal  
centerline spacing between adjacent contacts is .125 [3.18]; .003 [0.08]  
tolerances not to accumulate over length of board.

E—Post center location from edge of board may vary to satisfy application.

| A            | Dimensions  |              | Finish    | Part Nos.               |                          |
|--------------|-------------|--------------|-----------|-------------------------|--------------------------|
|              | B           | C            |           | Strip Form <sup>1</sup> | Loose Piece <sup>2</sup> |
| .360 [9.14]  | .187 [4.75] | .595 [15.11] | Plating A | 86147-7                 | 86182-7                  |
|              |             |              | Plating B | 5086147-2               | 5086182-2                |
| .380 [9.65]  | .320 [8.13] | .748 [19.00] | Plating A | 1-86147-5               | 1-86182-5                |
|              |             |              | Plating B | 5086147-9               | 5086182-9                |
| .400 [10.16] | .125 [3.18] | .573 [14.55] | Plating A | 4-86147-2               | 2-86182-9                |
|              |             |              | Plating B | 3-5086147-7             | 2-5086182-5              |
| .480 [12.19] | .187 [4.75] | .715 [18.16] | Plating A | 1-86147-8               | 1-86182-8                |
|              |             |              | Plating B | 2-5086147-2             | 2-5086182-2              |
| .565 [14.35] | .187 [4.75] | .800 [20.32] | Plating A | 86147-8                 | 86182-8                  |
|              |             |              | Plating B | 5086147-1               | 5086182-1                |
| .800 [20.32] | .150 [3.81] | .998 [25.35] | Plating A | 1-86147-2               | 1-86182-2                |
|              |             |              | Plating B | 1-5086147-0             | 1-5086182-0              |

<sup>1</sup> Packaging quantity of 20,000 per reel.

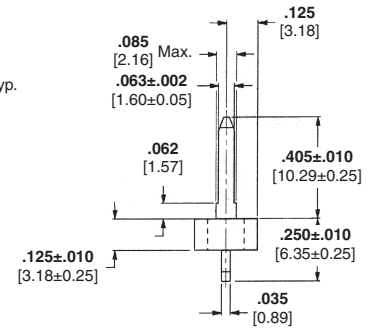
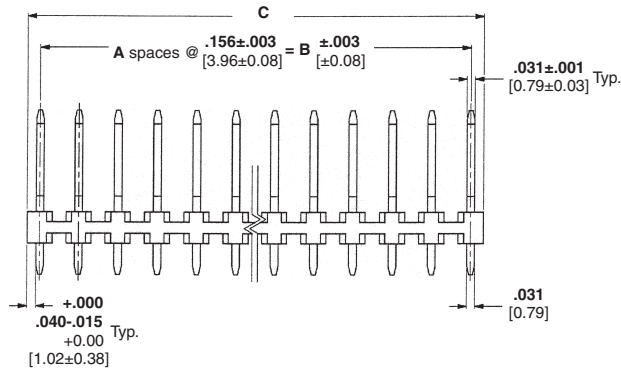
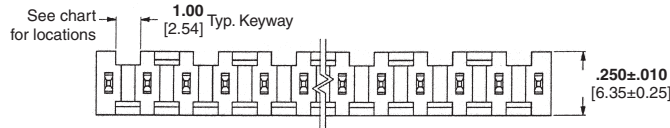
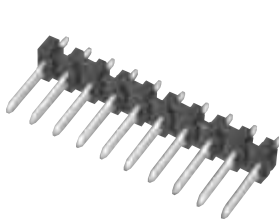
<sup>2</sup> Packaging quantity of 1,000 per bag.

**Note:** Strip form posts applied with Insertion Machine No. 3-457382-1, includes power unit and applicator.

**Note:** All part numbers are RoHS compliant.

## Mod I Headers, Straight Post, Keyed, .031 x .062 [0.79 x 1.57] Centerline

### Single Row, .156 [3.96] Centers



#### Material and Finish

**Housing** — Black thermoplastic, 94V-0 rated

**Posts** — Brass, plated as follows:

**Plating A** — Selectively plated .000030 [0.00076] gold on contact area, with gold flash over .000050 [0.00127] min. nickel on entire post

**Plating B** — .000100-.000200 [0.00254-0.00508] tin over .000030 [0.00076] nickel on entire post

#### Related Product Data

**Mate with** —  
**Board Mount Receptacles** —  
pages 285, 286

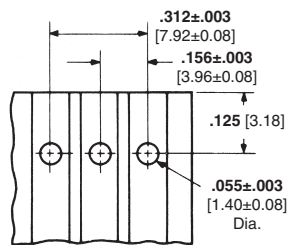
**Board Mount Receptacle Assemblies** — pages 287-289

**Crimp Snap-In Receptacles and Housings** — pages 290-292

**Locking Clip Contacts & Housings** — pages 298 & 299 (see page 298 for recommended post length).

**Performance Specifications** —  
page 305

#### Technical Documents — page 305



Recommended Board Layout



Keyway Locations  
(Ref only)

| No. of Pos. |    | Dimensions    |               |   | No. of Keying Slots | Post Height D=.405 [10.29] |           | Post Height D=.587 [14.91] |           | Keyway Locations        |
|-------------|----|---------------|---------------|---|---------------------|----------------------------|-----------|----------------------------|-----------|-------------------------|
|             |    | A             | B             | C |                     | Plating A                  | Plating B | Plating A                  | Plating B |                         |
| 2           | 1  | .156 [3.96]   | .267 [6.78]   |   | 1                   | 85829-2                    | 5-87160-4 | 87247-2                    | 5-87262-2 | A                       |
| 3           | 2  | .312 [7.92]   | .423 [10.74]  |   | 1                   | 85829-3                    | 5-87160-5 | 87247-3                    | 5-87262-3 | A                       |
| 4           | 3  | .468 [11.89]  | .579 [14.71]  |   | 2                   | 85829-4                    | 5-87160-6 | 87247-4                    | 5-87262-4 | A,C                     |
| 5           | 4  | .624 [15.85]  | .735 [18.67]  |   | 2                   | 85829-5                    | 5-87160-1 | 87247-5                    | 5-87262-5 | A,D                     |
| 6           | 5  | .780 [19.81]  | .891 [22.63]  |   | 3                   | 85829-6                    | 5-87160-7 | 87247-6                    | 5-87262-6 | A,C,E                   |
| 7           | 6  | .936 [23.77]  | 1.047 [26.59] |   | 3                   | 85829-7                    | 5-87160-8 | 87247-7                    | 5-87262-7 | A,C,E                   |
| 8           | 7  | 1.092 [27.74] | 1.203 [30.56] |   | 4                   | 85829-8                    | 5-87160-9 | 87247-8                    | 5-87262-8 | A,C,E,G                 |
| 9           | 8  | 1.248 [31.70] | 1.359 [34.52] |   | 3                   | 85829-9                    | 6-87160-0 | 87247-9                    | 5-87262-9 | A,D,G                   |
| 10          | 9  | 1.404 [35.66] | 1.515 [38.48] |   | 5                   | 1-85829-0                  | 6-87160-1 | 1-87247-0                  | 6-87262-0 | A,C,E,G,J               |
| 11          | 10 | 1.560 [39.62] | 1.671 [42.44] |   | 4                   | 1-85829-1                  | 6-87160-2 | 1-87247-1                  | 6-87262-1 | A,D,G,K                 |
| 12          | 11 | 1.716 [43.59] | 1.827 [46.41] |   | 6                   | 1-85829-2                  | 6-87160-3 | 1-87247-2                  | 6-87262-2 | A,C,E,G,J,L             |
| 13          | 12 | 1.872 [47.55] | 1.983 [50.37] |   | 4                   | 1-85829-3                  | 5-87160-2 | 1-87247-3                  | 6-87262-3 | A,D,J,M                 |
| 14          | 13 | 2.028 [51.51] | 2.139 [54.33] |   | 7                   | 1-85829-4                  | 6-87160-4 | 1-87247-4                  | 6-87262-4 | A,C,E,G,J,L,N           |
| 15          | 14 | 2.184 [55.47] | 2.295 [58.29] |   | 5                   | 1-85829-5                  | 6-87160-5 | 1-87247-5                  | 6-87262-5 | A,D,G,K,N               |
| 16          | 15 | 2.340 [59.44] | 2.451 [62.26] |   | 8                   | 1-85829-6                  | 6-87160-6 | 1-87247-6                  | 6-87262-6 | A,C,E,G,J,L,N,Q         |
| 17          | 16 | 2.496 [63.40] | 2.607 [66.22] |   | 6                   | 1-85829-7                  | 6-87160-7 | 1-87247-7                  | 6-87262-7 | A,D,G,K,N,R             |
| 18          | 17 | 2.652 [67.36] | 2.763 [70.18] |   | 7                   | 1-85829-8                  | 6-87160-8 | 1-87247-8                  | 6-87262-8 | A,D,F,J,M,PS            |
| 19          | 18 | 2.808 [71.32] | 2.919 [74.14] |   | 8                   | 1-85829-9                  | 6-87160-9 | 1-87247-9                  | 6-87262-9 | B,D,F,J,L,N,Q,S         |
| 20          | 19 | 2.964 [75.29] | 3.075 [78.11] |   | 10                  | 2-85829-0                  | 7-87160-0 | 2-87247-0                  | 7-87262-0 | A,C,E,G,J,L,N,Q,S,U     |
| 21          | 20 | 3.120 [79.25] | 3.231 [82.07] |   | 7                   | 2-85829-1                  | 7-87160-1 | 2-87247-1                  | 7-87262-1 | A,D,G,K,N,R,U           |
| 22          | 21 | 3.276 [83.21] | 3.387 [86.03] |   | 11                  | 2-85829-2                  | 7-87160-2 | 2-87247-2                  | 7-87262-2 | A,C,E,G,J,L,N,Q,S,U,W   |
| 23          | 22 | 3.432 [87.17] | 3.543 [89.99] |   | 8                   | 2-85829-3                  | 7-87160-3 | 2-87247-3                  | 7-87262-3 | A,D,G,K,N,R,U,X         |
| 24          | 23 | 3.588 [91.14] | 3.699 [93.95] |   | 12                  | 2-85829-4                  | 7-87160-4 | 2-87247-4                  | 7-87262-4 | A,C,E,G,J,L,N,Q,S,U,W,Y |
| 25          | 24 | 3.744 [95.10] | 3.855 [97.92] |   | 11                  | 2-85829-5                  | 7-87160-5 | 2-87247-5                  | 7-87262-5 | A,C,E,H,K,M,Q,S,U,W,Y   |

**Note:** All part numbers are RoHS compliant.

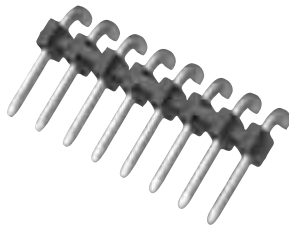
## Mod I Headers, Straight Post, Keyed, .031 x .062 [0.79 x 1.57] Centerline (Continued)

| No. of<br>Pos. | Dimensions |               |               | No. of<br>Keying<br>Slots | Post Height<br>D=.750 [19.05] |           | Post Height<br>D=1.187 [30.15] |           | Post Height<br>D=1.310 [33.27] |           | Keyway<br>Locations     |
|----------------|------------|---------------|---------------|---------------------------|-------------------------------|-----------|--------------------------------|-----------|--------------------------------|-----------|-------------------------|
|                | A          | B             | C             |                           | Plating A                     | Plating B | Plating A                      | Plating B | Plating A                      | Plating B |                         |
| 2              | 1          | .156 [3.96]   | .267 [6.78]   | 1                         | 85923-2                       | 5-85875-7 | 87283-2                        | —         | 85839-2                        | 5-85840-2 | A                       |
| 3              | 2          | .312 [7.92]   | .423 [10.74]  | 1                         | 85923-3                       | 5-85875-8 | 87283-3                        | 5-86207-2 | 85839-3                        | 5-85840-3 | A                       |
| 4              | 3          | .468 [11.89]  | .579 [14.71]  | 2                         | 85923-4                       | 5-85875-1 | 87283-4                        | 5-86207-9 | 85839-4                        | 5-85840-4 | A,C                     |
| 5              | 4          | .624 [15.85]  | .735 [18.67]  | 2                         | 85923-5                       | 5-85875-2 | 87283-5                        | 5-86207-3 | 85839-5                        | 5-85840-5 | A,D                     |
| 6              | 5          | .780 [19.81]  | .891 [22.63]  | 3                         | 85923-6                       | 5-85875-9 | 87283-6                        | —         | 85839-6                        | 5-85840-6 | A,C,E                   |
| 7              | 6          | .936 [23.77]  | 1.047 [26.59] | 3                         | 85923-7                       | 6-85875-0 | 87283-7                        | —         | 85839-7                        | 5-85840-7 | A,C,E                   |
| 8              | 7          | 1.092 [27.74] | 1.203 [30.56] | 4                         | 85923-8                       | 6-85875-1 | 87283-8                        | —         | 85839-8                        | 5-85840-8 | A,C,E,G                 |
| 9              | 8          | 1.248 [31.70] | 1.359 [34.52] | 3                         | 85923-9                       | 5-85875-3 | 87283-9                        | —         | 85839-9                        | 5-85840-9 | A,D,G                   |
| 10             | 9          | 1.404 [35.66] | 1.515 [38.48] | 5                         | 1-85923-0                     | 6-85875-2 | 1-87283-0                      | —         | 1-85839-0                      | 6-85840-0 | A,C,E,G,J               |
| 11             | 10         | 1.560 [39.62] | 1.671 [42.44] | 4                         | 1-85923-1                     | 6-85875-3 | 1-87283-1                      | —         | 1-85839-1                      | 6-85840-1 | A,D,G,K                 |
| 12             | 11         | 1.716 [43.59] | 1.827 [46.41] | 6                         | 1-85923-2                     | 5-85875-4 | 1-87283-2                      | —         | 1-85839-2                      | 6-85840-2 | A,C,E,G,J,L             |
| 13             | 12         | 1.872 [47.55] | 1.983 [50.37] | 4                         | 1-85923-3                     | 6-85875-4 | 1-87283-3                      | —         | 1-85839-3                      | 6-85840-3 | A,D,J,M                 |
| 14             | 13         | 2.028 [51.51] | 2.139 [54.33] | 7                         | 1-85923-4                     | 6-85875-5 | 1-87283-4                      | —         | 1-85839-4                      | 6-85840-4 | A,C,E,G,J,L,N           |
| 15             | 14         | 2.184 [55.47] | 2.295 [58.29] | 5                         | 1-85923-5                     | 6-85875-6 | 1-87283-5                      | —         | 1-85839-5                      | 6-85840-5 | A,D,G,K,N               |
| 16             | 15         | 2.340 [59.44] | 2.451 [62.26] | 8                         | 1-85923-6                     | 6-85875-7 | 1-87283-6                      | —         | 1-85839-6                      | 6-85840-6 | A,C,E,G,J,L,N,Q         |
| 17             | 16         | 2.496 [63.40] | 2.607 [66.22] | 6                         | 1-85923-7                     | 6-85875-8 | 1-87283-7                      | —         | 1-85839-7                      | 6-85840-7 | A,D,G,K,N,R             |
| 18             | 17         | 2.652 [67.36] | 2.763 [70.18] | 7                         | 1-85923-8                     | 6-85875-9 | 1-87283-8                      | —         | 1-85839-8                      | 6-85840-8 | A,D,F,J,M,P,S           |
| 19             | 18         | 2.808 [71.32] | 2.919 [74.14] | 8                         | 1-85923-9                     | 7-85875-0 | 1-87283-9                      | —         | 1-85839-9                      | 6-85840-9 | B,D,F,J,L,N,Q,S         |
| 20             | 19         | 2.964 [75.29] | 3.075 [78.11] | 10                        | 2-85923-0                     | 7-85875-1 | 2-87283-0                      | —         | 2-85839-0                      | 7-85840-0 | A,C,E,G,J,L,N,Q,S,U     |
| 21             | 20         | 3.120 [79.25] | 3.231 [82.07] | 7                         | 2-85923-1                     | 7-85875-2 | 2-87283-1                      | —         | 2-85839-1                      | 7-85840-1 | A,D,G,K,N,R,U           |
| 22             | 21         | 3.276 [83.21] | 3.387 [86.03] | 11                        | 2-85923-2                     | 7-85875-3 | 2-87283-2                      | —         | 2-85839-2                      | 7-85840-2 | A,C,E,G,J,L,N,Q,S,U,W   |
| 23             | 22         | 3.432 [87.17] | 3.543 [89.99] | 8                         | 2-85923-3                     | 5-85875-5 | 2-87283-3                      | —         | 2-85839-3                      | 7-85840-3 | A,D,G,K,N,R,U,X         |
| 24             | 23         | 3.588 [91.14] | 3.699 [93.95] | 12                        | 2-85923-4                     | 7-85875-4 | 2-87283-4                      | —         | 2-85839-4                      | 7-85840-4 | A,C,E,G,J,L,N,Q,S,U,W,Y |
| 25             | 24         | 3.744 [95.10] | 3.855 [97.92] | 11                        | 2-85923-5                     | 7-85875-5 | 2-87283-5                      | —         | 2-85839-5                      | 7-85840-5 | A,C,E,H,K,M,Q,S,U,W,Y   |

**Note:** All part numbers are RoHS compliant.

## Mod I Headers, Right-Angle Post, Keyed, .031 x .062 [0.79 x 1.57] Centerline

### Single Row, .156 [3.96] Centers



#### Material and Finish

**Housing** — Black thermoplastic, 94V-0 rated

**Posts** — Brass, plated as follows:

**Plating A** — Selectively plated .000030 [0.00076] gold on contact area, with gold flash over .000050 [0.00127] nickel on entire post

**Plating B** — .000015 [0.00038] gold over .000050 [0.00127] nickel on entire post

**Plating C** — .000100-.000200 [0.00254-0.00508] tin over .000050 [0.00127] nickel on entire post

#### Related Product Data

**Mate with —**  
**Board Mount Receptacles** — pages 285, 286

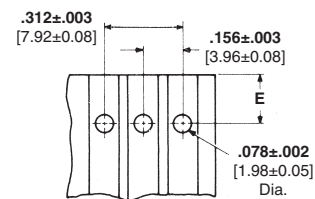
**Board Mount Receptacle Assemblies** — pages 287-289

**Crimp Snap-In Receptacles and Housings** — pages 290-292

**Locking Clip Contacts and Housings** — pages 298 & 299 (see page 298 for recommended post length).

**Performance Specifications** — page 305

**Technical Documents** — page 305

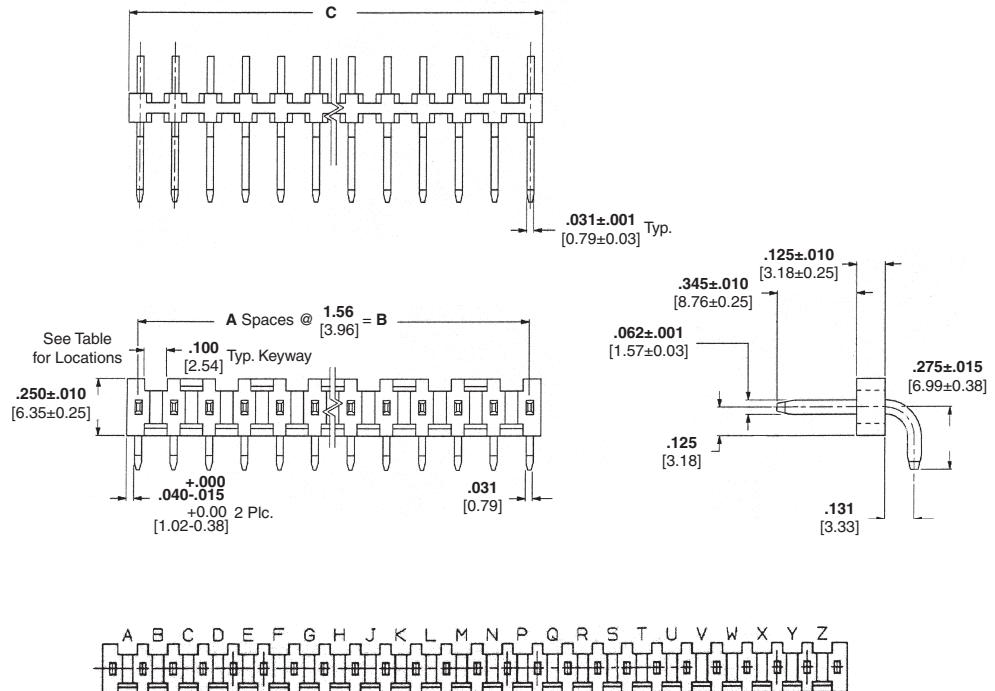


Recommended Board Layout

#### E Dimension

**.345 [8.76] Post Height** — .250 [6.35] for mounting header flush with board edge; .595 [15.11] for supporting mating connector on board.

**.500 [12.70] Post Height** — .250 [6.35] for mounting header flush with board edge; .750 [19.05] for supporting mating connector on board.



Keyway Locations (Ref Only)

| No. of Pos. |    | Dimensions    |               |   | No. of Keying Slots | Post Height D=.345 [8.76] |           | Post Height D=.500 [12.70] |           | Keyway Locations        |
|-------------|----|---------------|---------------|---|---------------------|---------------------------|-----------|----------------------------|-----------|-------------------------|
|             |    | A             | B             | C |                     | Plating A                 | Plating C | Plating B                  | Plating C |                         |
| 2           | 1  | .156 [3.96]   | .267 [6.78]   |   | 1                   | 87654-2                   | 5-87655-2 | 87258-2                    | 5-87194-1 | A                       |
| 3           | 2  | .312 [7.92]   | .423 [10.74]  |   | 1                   | 87654-3                   | 5-87655-3 | 87258-3                    | 5-87194-2 | A                       |
| 4           | 3  | .468 [11.89]  | .579 [14.71]  |   | 2                   | 87654-4                   | 5-87655-4 | 87258-4                    | 5-87194-3 | A,C                     |
| 5           | 4  | .624 [15.85]  | .735 [18.67]  |   | 2                   | 87654-5                   | 5-87655-5 | 87258-5                    | 5-87194-4 | A,D                     |
| 6           | 5  | .780 [19.81]  | .891 [22.63]  |   | 3                   | 87654-6                   | 5-87655-6 | 87258-6                    | 5-87194-5 | A,C,E                   |
| 7           | 6  | .936 [23.77]  | 1.047 [26.59] |   | 3                   | 87654-7                   | 5-87655-7 | 87258-7                    | 5-87194-6 | A,C,E                   |
| 8           | 7  | 1.092 [27.74] | 1.203 [30.56] |   | 4                   | 87654-8                   | 5-87655-8 | 87258-8                    | 5-87194-7 | A,C,E,G                 |
| 9           | 8  | 1.248 [31.70] | 1.359 [34.52] |   | 3                   | 87654-9                   | 5-87655-9 | 87258-9                    | 5-87194-8 | A,D,G                   |
| 10          | 9  | 1.404 [35.66] | 1.515 [38.48] |   | 5                   | 1-87654-0                 | 6-87655-0 | 1-87258-0                  | 5-87194-9 | A,C,E,G,J               |
| 11          | 10 | 1.560 [39.62] | 1.671 [42.44] |   | 4                   | 1-87654-1                 | 6-87655-1 | 1-87258-1                  | 6-87194-0 | A,D,G,K                 |
| 12          | 11 | 1.716 [43.59] | 1.827 [46.41] |   | 6                   | 1-87654-2                 | 6-87655-2 | 1-87258-2                  | 6-87194-1 | A,C,E,G,J,L             |
| 13          | 12 | 1.872 [47.55] | 1.983 [50.37] |   | 4                   | 1-87654-3                 | 6-87655-3 | 1-87258-3                  | 6-87194-2 | A,D,J,M                 |
| 14          | 13 | 2.028 [51.51] | 2.139 [54.33] |   | 7                   | 1-87654-4                 | 6-87655-4 | 1-87258-4                  | 6-87194-3 | A,C,E,G,J,L,N           |
| 15          | 14 | 2.184 [55.47] | 2.295 [58.29] |   | 5                   | 1-87654-5                 | 6-87655-5 | 1-87258-5                  | 6-87194-4 | A,D,G,K,N               |
| 16          | 15 | 2.340 [59.44] | 2.451 [62.26] |   | 8                   | 1-87654-6                 | 6-87655-6 | 1-87258-6                  | 6-87194-5 | A,C,E,G,J,L,N,Q         |
| 17          | 16 | 2.496 [63.40] | 2.607 [66.22] |   | 6                   | 1-87654-7                 | 6-87655-7 | 1-87258-7                  | 6-87194-6 | A,D,G,K,N,R             |
| 18          | 17 | 2.652 [67.36] | 2.763 [70.18] |   | 7                   | 1-87654-8                 | 6-87655-8 | 1-87258-8                  | 6-87194-7 | A,D,F,J,M,P,S           |
| 19          | 18 | 2.808 [71.32] | 2.919 [74.14] |   | 8                   | 1-87654-9                 | 6-87655-9 | 1-87258-9                  | 6-87194-8 | B,D,F,J,L,N,Q,S         |
| 20          | 19 | 2.964 [75.29] | 3.075 [78.11] |   | 10                  | 2-87654-0                 | 7-87655-0 | 2-87258-0                  | 6-87194-9 | A,C,E,G,J,L,N,Q,S,U     |
| 21          | 20 | 3.120 [79.25] | 3.231 [82.07] |   | 7                   | 2-87654-1                 | 7-87655-1 | 2-87258-1                  | 7-87194-0 | A,D,G,K,N,R,U           |
| 22          | 21 | 3.276 [83.21] | 3.387 [86.03] |   | 11                  | 2-87654-2                 | 7-87655-2 | 2-87258-2                  | 7-87194-1 | A,C,E,G,J,L,N,Q,S,U,W   |
| 23          | 22 | 3.432 [87.17] | 3.543 [89.99] |   | 8                   | 2-87654-3                 | 7-87655-3 | 2-87258-3                  | 7-87194-2 | A,D,G,K,N,R,U,X         |
| 24          | 23 | 3.588 [91.14] | 3.699 [93.95] |   | 12                  | 2-87654-4                 | 7-87655-4 | 2-87258-4                  | 7-87194-3 | A,C,E,G,J,L,N,Q,S,U,W,Y |
| 25          | 24 | 3.744 [95.10] | 3.855 [97.92] |   | 11                  | 2-87654-5                 | 7-87655-5 | 2-87258-5                  | 7-87194-4 | A,C,E,H,K,M,Q,S,U,W,Y   |

**Note:** All part numbers are RoHS compliant.

## Locking Clip Contacts for .031 x .062 [0.79 x 1.57] Posts, .031 x .062 [0.79 x 1.57] Centerline

### Wire Crimp Contacts with Insulation Support

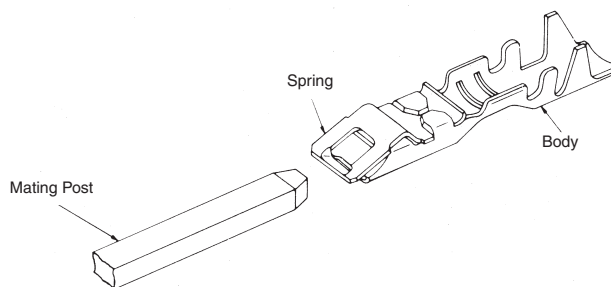
#### Material and Finish

**Contact Body** — Phosphor bronze,  
plated as follows:

**Plating A** — Selectively plated  
.000015 [0.00038] gold on contact area,  
with gold flash over .000050 [0.00127]  
nickel on entire post

**Plating B** — .000100 [0.00254] min.  
tin over .000050 [0.00127] nickel on  
entire contact

**Contact Spring** — Stainless steel



### Related Product Data

**Mate with** —  
**Machine Applied Posts** — page 294  
**Headers (.500 Post Height Only)** —  
pages 295-297 (see recommended post  
length below)\*

**Housings used in** — page 299

**Application Tooling** —  
pages 300-304

**Performance Specification** — page  
305

**Technical Documents** —  
page 305

| Wire Size<br>Range<br>AWG [mm <sup>2</sup> ] | Ins. Dia.<br>Range     | Finish    | Contact Part Nos. |             |
|----------------------------------------------|------------------------|-----------|-------------------|-------------|
|                                              |                        |           | Strip Form        | Loose Piece |
| 22-18 [0.3-0.9]                              | .050-.0100 [1.27-2.54] | Plating A | 87269-2           | 87278-2     |
|                                              |                        | Plating B | 5-87269-1         | 5-87278-1   |

| Wire Size<br>Range<br>AWG [mm <sup>2</sup> ] | Applicator     |      |                                        | Premium<br>CERTI-CRIMP<br>Hand Tool<br>Part Number |
|----------------------------------------------|----------------|------|----------------------------------------|----------------------------------------------------|
|                                              | Part<br>Number | Type | Used With<br>Machine                   |                                                    |
| 22-18 [0.3-0.9]                              | 466007-2       | HDM  | Model "K" (AMP-O-LECTRIC) <sup>1</sup> | 90308-1                                            |
|                                              | 466950-2       | SCA  | Stripper/Crimper (AMP-O-MATIC)         |                                                    |

<sup>1</sup>AMP-O-LECTRIC KII Machine. Applicators also available for AMPOMATOR Lead Making Machines. Consult Tyco Electronics.

**Note:** These contacts must be crimped in accordance with Tyco Electronics Specification No. 114-25008 in order to function properly in a connector housing.

Extraction Tool **Part No. 91104-1** is used for removing individual contacts from connector housings and for detaching contacts from mating posts.

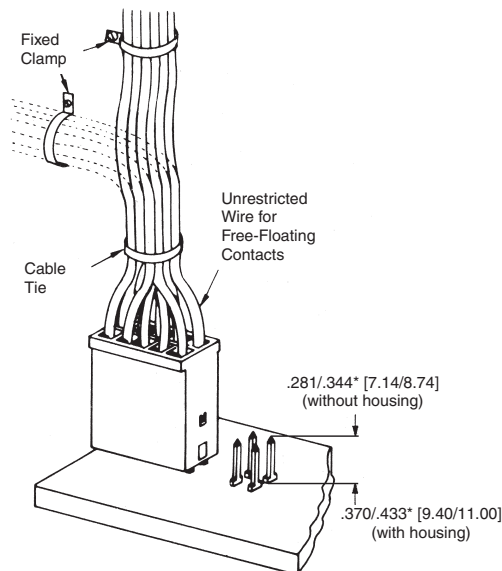


Extraction Tool  
Part No. 91104-1

Instruction Sheet  
408-7678

### Wire Harnessing

If necessary, wires can be grouped with cable ties and secured to a panel with fixed clamps. However, locking clip contacts must be free to float within the connector housings to allow proper extraction. Therefore, harnessing hardware or the use of multiple terminations per contact must not restrict the free-floating action of contacts in the housing. For more information, request Insulating and Bundling Products Catalog 124132.

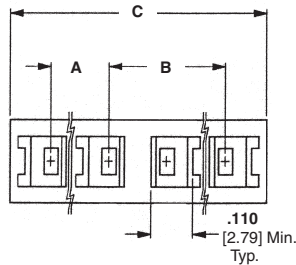


\*Dimension defines .031 x .062 [0.79 x 1.57] portion of post.  
If post is longer than maximum specified, post tip may butt against wire ends.

**Note:** All part numbers are RoHS compliant.

## Locking Clip Connector Housings, .031 x .062 [0.79 x 1.57] Centerline

### Single Row, .156 [3.96] Centers



### Material and Finish

Black thermoplastic, 94V-0 rated

### Related Product Data

**Contacts used with** — page 298

**Mate with** —

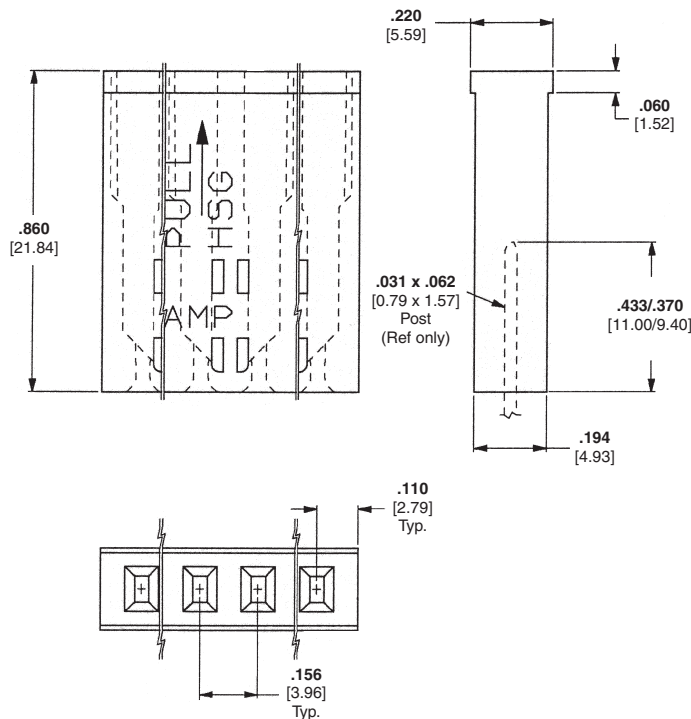
**Machine Applied Posts** — page 294

**Headers** — pages 295-297 (see page 298 for recommended post length)

**Performance Specifications** — page 305

### Technical Documents

page 305



| No. of Pos. | Dimensions   |              |               | Housing Part Nos. |           | Keyed Positions on Mating Face |
|-------------|--------------|--------------|---------------|-------------------|-----------|--------------------------------|
|             | A            | B            | C             | UnKeyed           | Keyed     |                                |
| 1           | —            | —            | .200 [5.08]   | 87270-1           | —         | —                              |
| 2           | —            | —            | .376 [9.55]   | 87270-2           | —         | —                              |
| 3           | .156 [3.96]  | .156 [3.96]  | .532 [13.51]  | 1-87270-3         | —         | —                              |
| 3 of 4      | .156 [3.96]  | .312 [7.92]  | .688 [17.48]  | —                 | 87270-3   | □□■□                           |
| 4           |              |              |               | 87270-4           | —         | —                              |
| 4 of 5      | .312 [7.92]  | .312 [7.92]  | .844 [21.44]  | —                 | 1-87270-0 | □□□■□                          |
| 5           |              |              |               | 1-87270-4         | —         | —                              |
| 5 of 6      | .312 [7.92]  | .468 [11.89] | 1.000 [25.40] | —                 | 1-87270-2 | □□□□■□                         |
| 6           |              |              |               | 87270-5           | —         | —                              |
| 6 of 7      | .468 [11.89] | .468 [11.89] | 1.156 [29.36] | —                 | 1-87270-1 | □□□□■□□                        |
| 7           |              |              |               | 1-87270-5         | —         | —                              |
| 8           | .468 [11.89] | .624 [15.85] | 1.312 [33.32] | 87270-6           | —         | —                              |
| 9           | .624 [15.85] | .624 [15.85] | 1.468 [37.29] | 1-87270-6         | —         | —                              |
| 10          | .624 [15.85] | .780 [19.81] | 1.624 [41.25] | 87270-7           | —         | —                              |
| 11          | .780 [19.81] | .780 [19.81] | 1.780 [45.21] | 1-87270-7         | —         | —                              |
| 12          | .780 [19.81] | .936 [23.77] | 1.936 [49.17] | 87270-8           | —         | —                              |

■ Indicates "closed cavity". No post entry hole in this position.

**Note:** All part numbers are RoHS compliant.

**Notes:** 1. All housings listed above will accept Locking Clip Contacts No. 87269 and 87278, refer to page 298  
2. Refer to Tyco Electronics Instruction Sheet 408-7676 for proper contact orientation within the housings.

## Application Tooling

### For Crimp Snap-In Receptacles and Locking Clip Contacts

### Side-Feed Heavy-Duty Miniature Applicators (Coded HDM)



Interchangeable applicators for crimping products reeled side-by-side on single or dual carrier strips (primarily closed-barrel terminals and open-barrel contacts). Similar design as the end-feed version. All side-feed applicators include a wire stop to help correctly position the wire end in the crimping target area.

For more information, request Instruction Sheet **408-8040**.

### AMP-O-LECTRIC Model "G" Terminating Machines, 354500-1, -9, -11



Semiautomatic bench machines for crimping reeled terminals and contacts, featuring a quiet and reliable direct motor drive, microprocessor controls for ease of setup and operation, and guarding and lighting designed for operator convenience and safety. All models are equipped with either manual or automatic precision adjustment of crimp height. Machine-mounted sensors are available for crimp quality monitoring using conventional miniature-style applicators.

#### Specifications

**Width** — 18.7-25.3 [475-643] depending on applicator type  
**Depth** — 21.5-28.1 [546-713] depending on applicator type  
**Height** — 20 [508]  
**Weight** — 240 lb [110 kg]  
**Electrical** — 120 or 220 VAC, 50 or 60 Hz; 310 VA  
**Air** — 90-110 psi [6.21-7.59 bar], 6 scfm [0.00282 m³/s] when required with air-feed applicators  
**Wire Range** — 26-10 AWG [0.12-6 mm²] solid or stranded, depending on product applied  
 For more information, request Catalog **65828**, Video **198116**, Catalog **82275 [Crimp Quality Monitor (CQM)]**, Video **198094**.

### AMPOMATOR CLS IV+ Lead-Making Machines, 356500-1, -2, 1213400-1, -2



Fully-automatic machines that measure, cut, strip and terminate single leads. Microprocessor-controlled, and programmed and operated using an easy-to-follow, menu-driven touchscreen. Features include direct-drive terminating units with precision crimp height adjustment, fully programmable setups, wire runout and splice detection, and motorized pre-feed with wire straightener. Crimp quality monitoring is also available.

#### Specifications

**Width** — 159 [4 040]  
**Depth** — 68 [1 730]  
**Height** — 86 [2 185] with 24 [610] dia. reel  
**Weight** — 2 000 lb [907 kg]  
**Electrical** — 220 VAC, 50 or 60 Hz, single phase, 25 A, with neutral and ground  
**Air** — 90 psi [6.21 bar], 15 scfm [0.0071 m³/s] sustained  
**Wire Range** — 26-10 AWG [0.12-6 mm²] stranded, 26-16 AWG [0.12-1.4 mm²] solid  
**Lead Lengths** — 3-90 [76.2-2 285], 90-1 000 [2 285-25 400] with long lead conveyors  
 For more information, request Catalog **124324**, Video **198142 (NTSC)**, **199609 (PAL)**.

**Note:** All part numbers are RoHS compliant.

**Note:** For additional tooling options, contact Tyco Electronics or reference the Tyco Electronics web site.

## Application Tooling (Continued)

### For Crimp Snap-In Receptacles and Locking Clip Contacts (Continued)

#### AMP-O-MATIC Stripper- Crimper Machines, 854040-3, -4



Semiautomatic bench crimping machines that also strip the wire, and are therefore used for terminating jacketed cable. Feature manual precision adjustment of crimp height, keyed strip blades for faster, more accurate setups, and an efficient scrap removal system. All adjustments can be made from the front of the machines without special tools. Available with crimp quality monitoring.

#### Specifications

**Width**—14 [355]  
**Depth**—18 [457]  
**Height**—33 [838] without reel  
**Weight**—150 lb [68 kg]  
**Electrical**—120 VAC, 50 or 60 Hz, .5 A  
**Air**—80-100 psi [5.52-6.90 bar], 3.5 scfm [0.00165 m³/s]  
**Wire Range**—32-14 AWG [0.03-2 mm²]

For more information, request Catalog **65004**, Video **198075**, Catalog **82275** [Crimp Quality Monitor (CQM)], Video **198094**.

#### Stripper-Crimper Applicators (coded SCA)



Interchangeable applicators for crimping products in AMP-O-MATIC Stripper-Crimper Machines. Consist of separate ram and lower tooling assemblies. Similar dial-in settings for different wire sizes and insulation diameters as HDM applicators. Available with sensors for use with the Crimp Quality Monitor.

For more information, request Catalog **65004** (AMP-O-MATIC Stripper-Crimper Machines), Catalog **82275** [Crimp Quality Monitor (CQM)].

#### Kappa 235, Automatic Cut and Strip, 3-547178-1



The Kappa 235 has the capability of processing wires with a cross section of up to 4 AWG and an outside diameter of 0.59 inch. Options include an inner conductor processing kit for multiconductor cables and a flat ribbon cable kit.

#### Specifications

**Width**—25 [630]  
**Depth**—16 [490]  
**Height**—13.4 [370]  
**Weight**—95 lb [44 kg]  
**Wire Cross-Sections**—24-4 AWG [0.22-25 mm²]  
**Flat Ribbon Cables**—width up to 40mm  
**Length Range**—0.04"-328ft [1mm - 99.99m] (+/- 0.2%)  
**Electrical**—110/230 V - 50/60Hz, switches automatically

#### Cosmic 927R Micro-Cable Stripper



The Cosmic 927R Micro-Cable Stripper was developed to reliably strip various insulation materials and micro-cable. From conductor diameter 36 AWG to 10 AWG, the stripping diameter display can be set to within 0.1mm increments.

Thus optimal stripping quality is guaranteed and damage to the conductor is eliminated.

**Note:** All part numbers are RoHS compliant.

**Note:** For additional tooling options, contact Tyco Electronics or reference the Tyco Electronics web site.

## Application Tooling (Continued)

### For Crimp Snap-In Receptacles and Locking Clip Contacts (Continued)

#### CERTI-CRIMP Straight Action Hand Tools (SAHT)



Premium grade hand tools. Feature ratchet control to provide complete crimp cycle. Die sets close in a straight line. Include a contact locator and wire stop, plus an insulation crimp adjustment lever, when applicable. Approximate weight 1.3 lb [0.59 kg]

All CERTI-CRIMP head assemblies / dies, have multiple power options available. The accompanying diagram outlines those power options. See catalogs 1654714 (SDE Electric Terminator), 124208 (626 Pneumatic Tool System) and 1773381 (Battery-Powered Crimp Tool Kits) for more information.

For more information, request Catalog **65780**.



#### PRO-CRIMPER III Hand Tool



Commercial grade hand tool for crimping various products. Features ratchet control to provide complete crimp cycle. Accepts both pinned- and shouldered-style die sets. Locators are provided with pinned-style die sets for proper contact and wire positioning, and to help minimize contact rotation and bending during crimping. Approximate weight 1.3 lb [0.60 kg].

All PRO-CRIMPER head assemblies / dies, have multiple power options available. The accompanying diagram outlines those power options. See catalogs 1654714 (SDE Electric Terminator), 124208 (626 Pneumatic Tool System) and 1773381 (Battery-Powered Crimp Tool Kits) for more information.

**Instruction Sheet**  
408-9930



**Note:** For additional tooling options, contact Tyco Electronics or reference the Tyco Electronics web site.

## Application Tooling (Continued)

### For Board Mount Receptacles and Machine Applied Posts

#### Modular Insertion System (MIS) Bench Machines, 217600 Series, 662820 Series (shown)



For Board Mount Receptacles

Bench machines for inserting a variety of products into pc boards. Uses the same interchangeable insertion heads as the Comp-U-Sertor II Machines. Series 217600 machines feature a manually-operated X-Y positioning fixture, plus a locator spotlight. The machine cycles when the board hole is placed on the anvil and both triggers on the dual handles attached to the X-Y fixture are depressed. Series 662820 machines, without board fixturing, cycle automatically when the hole is properly located. A stabilizing disk over the anvil helps keep the board level.

This benchtop insertion machine installs contacts into PC boards at rates to 2000 per hour. A spotlight highlights the insertion area, and lower tooling assures precise board location. The machine is activated by a foot pedal.

#### Specifications

**Width** — 18 [457]

**Depth** — 24 [610]

**Height** — 18 [457]

**Weight** — 250 lb [113 kg]

**Electrical** — 120 to 220 VAC, 50 or 60 Hz (217600); 120 or 240 VAC, 60 Hz, single phase, 120 VA (662820)

**Air** — 80 psi [5.52 bar] min., 15 scfm [0.00708 m<sup>3</sup>/s] min.

**Insertable Area** — 18 x 22 [457 x 559] max.

For more information, request Catalog **296059**.

#### P300 Automatic Insertion Machine



Automatic machine for inserting a variety of contacts into pc boards (PCBs). Equipped with an insertion tool (comprised of a product-specific insertion head, an anvil, and a product feed mechanism). Stepper-motor driven X-Y table positions PCBs under insertion head. Surface Mount Equipment Manufacturers Association (SMEMA) compatible inline PCB Insertion Station for posts, tabs, receptacles or sockets. Stand-alone unit is field upgradeable to Pass Through. Mounts up to four Tyco Electronics pneumatic insertion heads. Modem diagnostics standard, vision system optional. Control panel used to program and monitor entire insertion process.

#### Specifications

**Width** — 57.5 [1 460]

**Depth** — 64.5 [1 640]

**Height** — 60 [1 520]

**Weight** — Depending on configuration

**Electrical** — 110 V, 60 Hz

**Air** — 87 psi [6 bar]

**Insertable Area** — 24 x 16 [600 x 400]

For more information, contact Tyco Electronics.

**Note:** All part numbers are RoHS compliant.

**Note:** For additional tooling options, contact Tyco Electronics or reference the Tyco Electronics web site.

## Application Tooling (Continued)

### For Board Mount Receptacles and Machine Applied Posts (Continued)

#### P350 Pin Insertion Machine



The P350 is a fully automatic inline pin insertion machine capable of applying reeled pins, tabs, receptacles and similar products into PCBs. With inline operation, an automatic tool changer and insertion rates up to 5 per second, it is focused at fully automatic high speed operation to maximize throughput while minimizing costly scrap.

A servo powered XY table positions the PCB under a central drive station at high speed. The tool changer can hold up to 3 insertion heads each capable of applying a different product. A unique rotary insertion finger allows the application of products at up to 7 different angles without rotating the PCB. This allows the P350 to apply product at different angles without a reduction in insertion rate or the potential positioning error associated with PCB rotation. Icon driven software with touch screen provides a simple to use, intuitive operator interface.

The P350 provides a wide range of solutions for pin insertion applications. Quick change tooling packs, and a wide range of options make it a flexible high speed platform.

#### Specifications

**Width** — 102 [2600]

**Depth** — 118 [3000]

**Height** — 87 [2200]

**Weight** — approx 3500 lb [1600 kg]

**Electrical** — 230 V, 50-60 Hz, 10 A

**Air** — 600 kPa dried air

**Max. Board Size** — 17.5 x 17.5 [450 x 450]

The electrical, mechanical and environmental characteristics of the AMPMODU .031 x .062 [0.79 x 1.57] Interconnection System are listed below:

## Performance Specifications

### Mechanical Characteristics

#### Contact Durability

| Plating                    | Receptacles       |               | Locking Clip Contacts |
|----------------------------|-------------------|---------------|-----------------------|
|                            | Standard Pressure | High Pressure |                       |
| .000016 [0.00041] Min. Tin | 75 Cycles         | 25 Cycles     | N/A                   |
| .000079 [0.00201] Min. Tin | 75 Cycles         | 25 Cycles     | N/A                   |
| .000100 [0.00254] Min. Tin | N/A               | N/A           | 25 Cycles             |
| .000015 [0.00038] Gold     | 75 Cycles         | 50 Cycles     | 25 Cycles             |
| .000030 [0.00076] Gold     | 200 Cycles        | 100 Cycles    | N/A                   |

### Electrical Characteristics

#### Contact Current Rating —

5 amperes max. for single contact in free air, could vary due to ambient temperature, wire size and duty cycles.

#### Contact Resistance —

12 milliohms at 100 ma and 50 mv open circuit.

#### Dielectric Rating —

At Sea Level — 1200 VAC between contacts on .156 [3.96] centers for 1 minute.

**Insulation Resistance** — 5 x 10<sup>3</sup> megohms (initial)

### Connector Durability

#### Receptacles

Mating — 16 oz. [4.45N] max. per contact after 3 mating cycles (standard pressure)

— 30 oz. [8.34N] max. per contact after 3 mating cycles (high pressure, gold)

— 60 oz. [16.68N] max. per contact after 3 mating cycles (high pressure, tin)

Unmating — 1 oz. [0.28N] min. per contact after 3 mating cycles (standard pressure)

3 oz. [0.83N] min. per contact after 3 mating cycles (high pressure)

#### Locking Clip Contacts

Mating — 4 lb. [17.79N] max. per contact after 3 mating cycles

Unmating — 2 lb. [8.90N] min. per contact after 3 mating cycles

### Environmental Characteristics

**Operating Temperature** — -65°C to 105°C [-85°F to 221°F] (Gold Plated)

-65°C to 60°C [-85°F to 140°F] (Tin Plated)

## Technical Documents

Various technical documents are available for your use:

### Product Specifications

describe technical performance characteristics and verification tests. They are intended for the Design, Component and Quality Engineer.

**108-25016** Interconnection System, Standard Pressure

**108-25025** Interconnection System, High Pressure, Gold

**108-25025-1** Interconnection System, High Pressure, Tin

**108-36029** Locking Clip Connectors

### Application Specifications

describe requirements for using the product in its intended application and/or crimping information. They are intended for the Packaging and Design Engineer and the Machine Setup Person.

**114-25000** Crimp Snap-In Receptacle Contacts

**114-25004** Board Mount Receptacle Contacts

**114-25008** Locking Clip Contacts

**114-25011** Machine Applied Straight Posts

**Instruction Sheets** provide instructions for assembling or applying the product. They are intended for the Manufacturing Assembler or Operator.

**408-7308** Clinching Procedures for Header Assemblies

**408-7411** Suggestions for Wave Soldering AMPMODU Receptacles

**408-7594** Tyco Electronics Hand Tool 90274-2 for Crimping Crimp Snap-In 18-22 AWG Contacts

**408-7750** Tyco Electronics Hand Tool 90328-1 for Crimping Crimp Snap-In Contacts (22-26 AWG)

**408-7676** AMPMODU Locking Clip Connectors and Contacts

**408-7671** Tyco Electronics Hand Tool 90308-1 for Crimping Locking Clip Contacts

**408-7678** Tyco Electronics Extraction Tool 91104-1 for Locking Clip Contacts

**408-7981** Clinching Procedures for Receptacle Assemblies

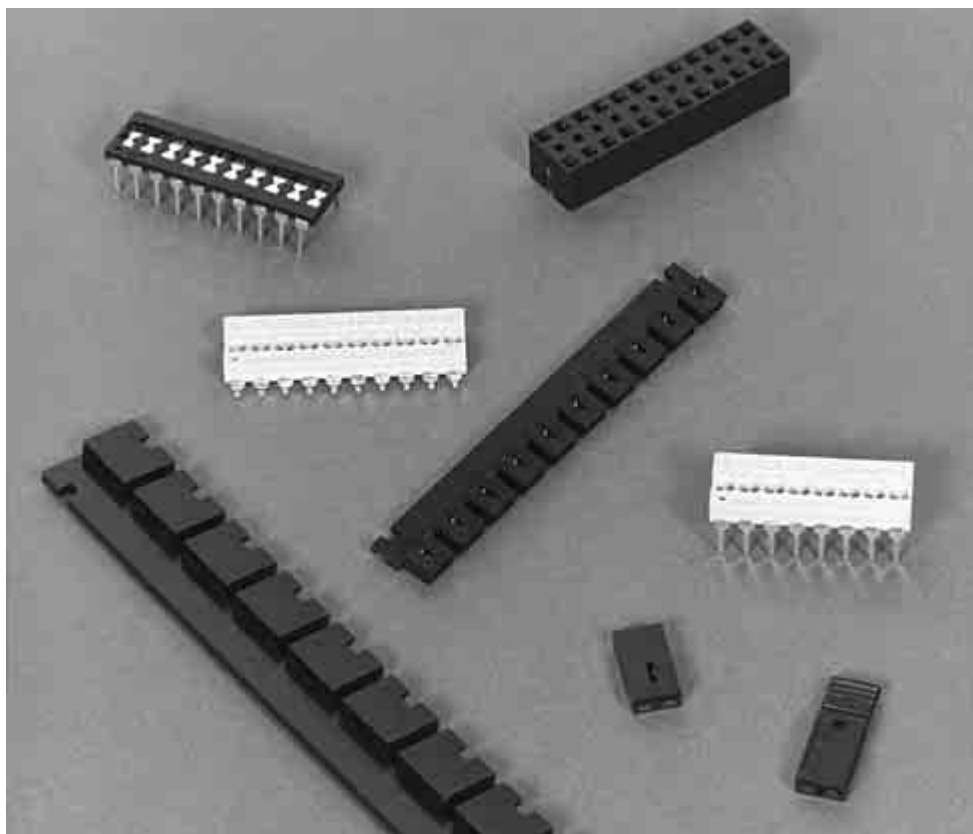
**408-9451** Tyco Electronics Extraction Tool 843473-1 for Crimp Snap-In Receptacles

**Note:** All part numbers are RoHS compliant.

## Shunts

### Product Facts

- **7600 Series Programmable Shunts** use conventional .100 x .300 [2.54x7.62] DIP leg spacing
- **Post Shunts** are used to common pairs of .025 [0.64] square posts, .025 [0.64] diameter round posts and .022 x .026 [0.56 x 0.66] formed posts



Tyco Electronics offers a variety of high quality shunts for low cost manual programming. Tyco Electronics 7600 Series Programmable Shunts are designed on the standard .100 x .300 [2.54 x 7.62] DIP spacing.

Tyco Electronics DIP Shunts are a highly reliable, low cost means of manually programming various types of electrical/electronic equipment. The shunt consists of a series of conductive straps packaged in a DIP configuration. The straps can be retained intact for a closed circuit or broken with a hand tool to produce an open circuit.

Tyco Electronics Post Shunts mate with any common pairs of square, rectangular and round posts. Post shunts come in two-position low profile, 2 mm miniature, tandem spring, dual beam, and multiposition versions.

Among the options available are choices of gold or tin plating, beryllium copper or phosphor bronze contact material and shunts with 94V-0 rated housing spaces on .079 [2.00], .100 [2.54] and .200 [5.08] centers with the low profile series requiring only .250 [6.35] clearance from the pc board.

All Tyco Electronics shunts feature one-piece construction for high reliability. All have high normal forces for excellent electrical continuity. For added reliability, Tandem Spring and Dual Beam Shunts have two points of contact in each receptacle.

## Dual In-Line Package (DIP) Shunts — 7600 Series

### Standard Shunt Standard Pressure

#### Material and Finish

**Housing** — Glass-filled polyester, UL 94V-0 rated

**Contacts** — Brass

**Finish** — Selectively plated .000100 min. tin on solder area over .000050 min. nickel on entire contact

**Contact Lead Spacing** — .100 x .300 [2.54x7.62]

**Lead Length** — .140 [3.56] below mounting surface

**Housing Color** — Black

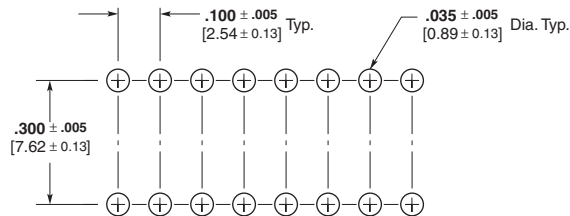
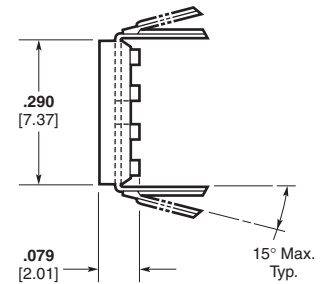
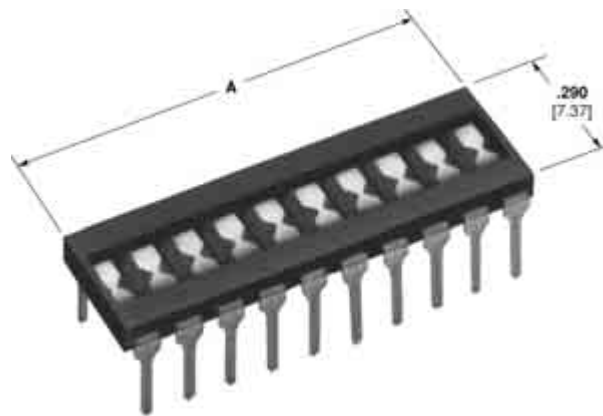
**Programming Tool** — See below

#### Programming Hand Tool

Part No. 435862-1



This tool provides a reliable means of programming DIP shunts. It is rugged, light-weight and dependable. No special skills are required to use this tool.



| No. of Pos. | Dimension A |       | Standard Shunt<br>Standard Pressure |
|-------------|-------------|-------|-------------------------------------|
|             | inch        | mm    |                                     |
| 4           | .400        | 10.16 | 1825190-4                           |
| 6           | .600        | 15.24 | 1825190-6                           |
| 7           | .700        | 17.78 | 1825190-7                           |
| 8           | .800        | 20.32 | 1825190-8                           |
| 9           | .900        | 22.86 | 1825190-9                           |
| 10          | 1.000       | 25.40 | 1-1825190-0                         |
| 12          | 1.200       | 30.48 | 1-1825190-2                         |

**Note:** All part numbers are RoHS compliant.

## Post Shunts

### Product Facts

- One-piece contact construction
- High normal forces
- 94V-0 rated housings
- Gold inlay, gold plate or tin plate over nickel
- Stackable
- Those post shunts indicated are recognized under the component program of Underwriters Laboratories Inc., File No. E28476 and certified by the Canadian Standards Association File No. LR 7189



### Tandem Spring Shunts

- Two points of contact provide extra reliability
- Shunts accept posts as short as .175 [4.45]; posts bottom at .330 [8.38]

### 2mm Mini Shunts

- Stackable on 2mm contact centerline
- Low profile
- Available in strips of 10

### Material and Finish — Low Profile and 2mm Shunts

**Housing** — Glass-filled thermoplastic, black, UL 94V-0 rated

**Contacts** — Beryllium copper or phosphor bronze, plated .000050 [0.00127] nickel underplate with gold plate in contact area or tin overall

### Material and Finish — Tandem Spring Shunts

**Housing** — Nylon, UL 94V-0 rated

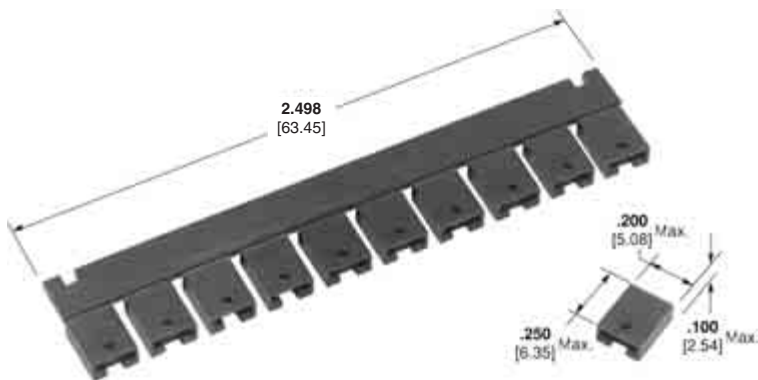
**Contacts** — Phosphor Bronze

**Finish** — .000030 [0.00076] nickel underplate with gold inlay in the contact area or tin overall

### 2-Position, Low Profile Shunts

#### Economy Shunt

.100 [2.54] Centerline

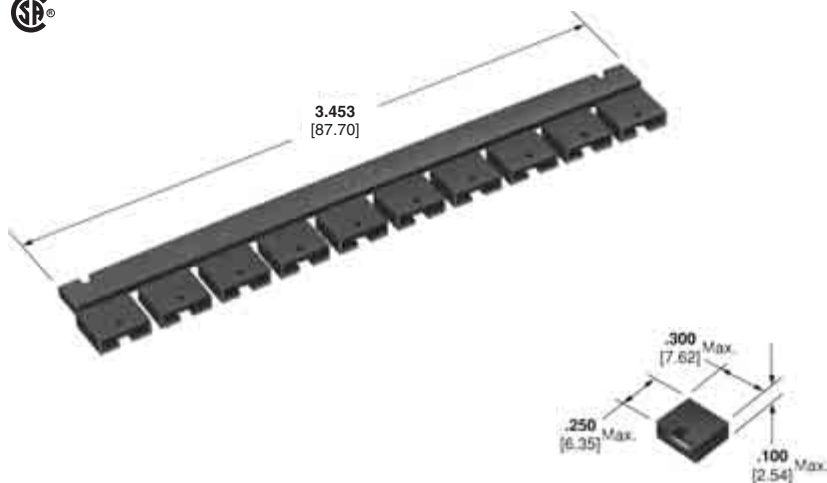


| Configuration | Housing Color | Part Numbers                                    |                                                 |                                   |                                    |
|---------------|---------------|-------------------------------------------------|-------------------------------------------------|-----------------------------------|------------------------------------|
|               |               | Gold Plate <sup>1</sup><br>.000015<br>[0.00038] | Gold Flash <sup>1</sup><br>.000005<br>[0.00013] | Tin Plate<br>.000100<br>[0.00254] | Gold Plate<br>.000030<br>[0.00076] |
| Strip of 10   | Blue          | 382811-2                                        | —                                               | —                                 | —                                  |
| Strip of 10   | Black         | 382811-6                                        | 382811-8                                        | 382811-5                          | 2-382811-0                         |
| Strip of 10   | Red           | 382811-9                                        | —                                               | —                                 | —                                  |
| Loose Piece   | Black         | 1-382811-6                                      | 1-382811-8                                      | —                                 | —                                  |

<sup>1</sup>In contact area

### Standard Housing Shunt

.200 [5.08] Centerline



| Configuration | Housing Color | Part Numbers                                    |                                                 |                                   |
|---------------|---------------|-------------------------------------------------|-------------------------------------------------|-----------------------------------|
|               |               | Gold Plate <sup>1</sup><br>.000015<br>[0.00038] | Gold Plate <sup>1</sup><br>.000030<br>[0.00076] | Tin Plate<br>.000100<br>[0.00254] |
| Strip of 10   | Black         | 531230-2                                        | 531230-3                                        | 531230-1                          |

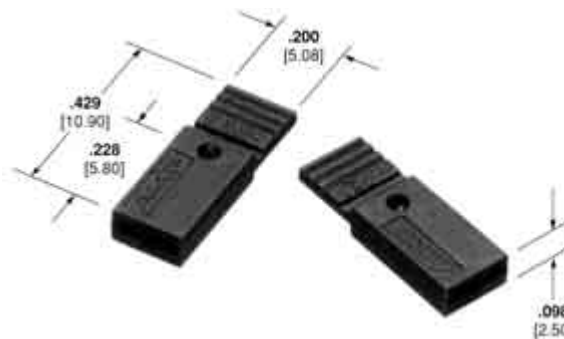
<sup>1</sup>In contact area

**Note:** All part numbers are RoHS compliant.

## Post Shunts (Continued)

### 2-Position, Low Profile Shunts (Novo) (Continued)

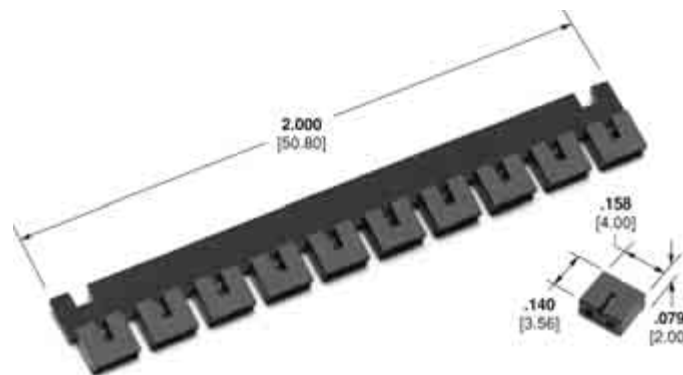
Handle Shunt  
.100 [2.54] Centerline



| Housing Color | Loose Piece Part Numbers                        |                                                 |                                                 |                                   | Type       |
|---------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-----------------------------------|------------|
|               | Gold Plate <sup>1</sup><br>.000015<br>[0.00038] | Gold Plate <sup>1</sup><br>.000030<br>[0.00076] | Gold Plate <sup>1</sup><br>.000050<br>[0.00127] | Tin Plate<br>.000100<br>[0.00254] |            |
| Black         | 881545-1                                        | 881545-2                                        | 881545-3                                        | 4-881545-2                        | Open Top   |
| Black         | 880584-1                                        | 880584-2                                        | 880584-3                                        | 880584-4                          | Closed Top |

<sup>1</sup>In contact area

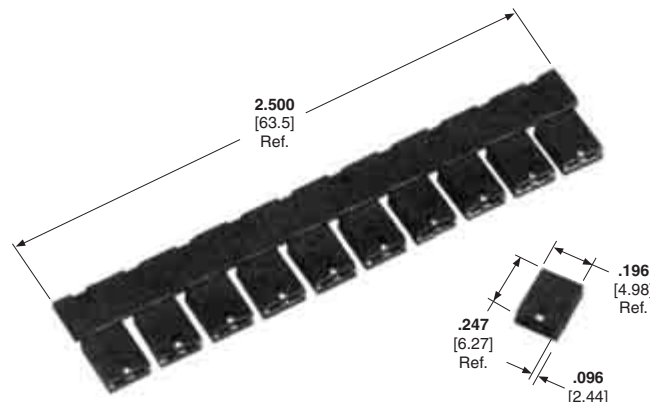
2 mm Mini-Shunt  
.079 [2.00] Centerline



| Configuration | Housing Color | Part Numbers                                    |                                                 |
|---------------|---------------|-------------------------------------------------|-------------------------------------------------|
|               |               | Gold Plate <sup>1</sup><br>.000015<br>[0.00038] | Gold Plate <sup>1</sup><br>.000030<br>[0.00076] |
| Strip of 10   | Black         | 382575-2                                        | 382575-3                                        |

<sup>1</sup>In contact area

### Dual Beam Shunt



| Configuration | Housing Color | Part Numbers                                    |                                                 | Type     |
|---------------|---------------|-------------------------------------------------|-------------------------------------------------|----------|
|               |               | Gold Plate <sup>1</sup><br>.000015<br>[0.00038] | Gold Plate <sup>1</sup><br>.000030<br>[0.00076] |          |
| Strip of 10   | Black         | 390088-2                                        | 390088-1                                        | Open Top |
| Strip of 10   | Blue          | 390088-4                                        | 390088-3                                        | Open Top |
| Strip of 10   | Yellow        | —                                               | 390088-5                                        | Open Top |

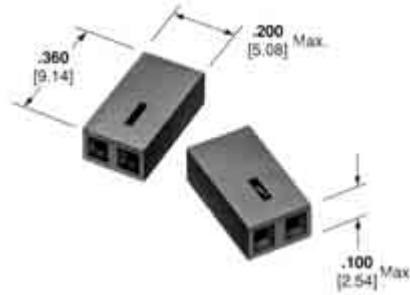
<sup>1</sup>In contact area

**Note:** All part numbers are RoHS compliant.

## Post Shunts (Continued)

### Tandem Spring Shunt

.100 [2.54] Centerline



| Housing Color | Part Numbers            |                      |
|---------------|-------------------------|----------------------|
|               | Gold Inlay <sup>1</sup> | TinPlate             |
|               | .000030<br>[0.00076]    | .000100<br>[0.00254] |
| Black         | 530153-2                | 4-530153-1           |

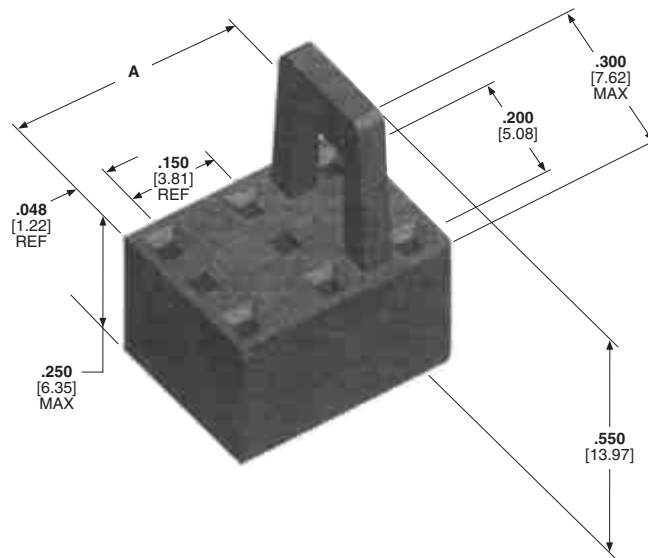
<sup>1</sup>In contact area

### Multiposition Shunts for .025 [0.64] Square Posts

.200 [5.08] Centerline



**Housing** — Glass-filled polyester  
**Contacts** — Beryllium Copper  
**Finish** — .000030 [0.00076] gold in contact area over .000050 [0.00127] nickel on entire contact  
**Current Rating** — 2.5 amps



| Size | Dimension A |       | Housing Color | Part Number |
|------|-------------|-------|---------------|-------------|
|      | inch        | mm    |               |             |
| 2x2  | .246        | 6.25  | Black         | 390102-1    |
| 2x2  | .246        | 6.25  | Red           | 390102-3    |
| 2x3  | .396        | 10.01 | Black         | 390102-2    |

**Note:** All part numbers are RoHS compliant.

## Performance Specifications

### Dual In-Line Package (DIP) Shunts — 7600 Series

#### Current Rating —

Standard pressure — 2 amperes for +20°C rise above ambient (one conductor per shunt)

Machine insertable — 1 ampere for +20°C rise above ambient (one conductor per shunt)

**Insulation Resistance** —  $1 \times 10^{10}$  ohms min. at 100 VDC

**Dielectric Withstanding Voltage** — 500 VDC min.

**Capacitance** — 2 picofarads max. between adjacent straps

**Temperature Rating** — -55°C to +105°C

**Terminal Strength (Bend Test)** — Two 45° bend cycles per MIL-STD-202, Method 211, Condition B

#### Solder Bridging —

Cut straps can be reconnected by solder bridging. Solder bridging recommendations are:

- Use low temperature solder (60/40 tin/lead)
- Use solder tip approximately 1/32 [0.79] in diameter
- Do not let solder tip come in contact with plastic material

### Post Shunts

#### Current Rating —

3 amperes max. unless otherwise noted

**Temperature Rating** — -65°C to +105°C (gold) -40°C to +85°C (tin)

## Technical Documents

Various technical documents are available for your use:

**Product Specifications** describe technical performance characteristics and verification tests. They are intended for the Design, Component and Quality Engineer.

|           |                                    |
|-----------|------------------------------------|
| 108-7533  | Dual In-Line Package (DIP) Shunts  |
| 108-1445  | 2mm Mini Shunt                     |
| 108-1476  | Economy Shunt, Multiposition Shunt |
| 108-1674  | Dual Beam Shunt                    |
| 108-9057  | Low Profile Shunt                  |
| 108-9062  | Tandem Spring Shunt                |
| 108-37006 | Novo Shunt with Handle             |

**Application Specifications** describe requirements for using the product in its intended application and/or crimping information. They are intended for the Packaging and Design Engineer and the Machine Setup Person.

|          |                                                                        |
|----------|------------------------------------------------------------------------|
| 114-1045 | Tandem Spring Shunt                                                    |
| 114-1054 | Dual In-Line Package (DIP) Shunts                                      |
| 114-1059 | Economy Shunt, Dual Beam Shunt, Low Profile Shunt, Multiposition Shunt |
| 114-1074 | 2mm Mini Shunt                                                         |

**Instruction Sheets** provide instructions for assembling or applying the product. They are intended for the Manufacturing Assembler or Operator.

|          |                                                   |
|----------|---------------------------------------------------|
| 408-7768 | Dual In-Line Package (DIP) Shunts                 |
| 408-3208 | Tandem Spring Shunt                               |
| 408-3230 | Economy Shunt, Dual Beam Shunt, Low Profile Shunt |
| 408-3251 | Multiposition Shunt                               |
| 408-3276 | 2mm Mini Shunt                                    |

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**Engineering Notes**

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**Note:** This index lists all cataloged parts by base no. only. Complete part nos. (with prefixes and/or suffixes) are shown on the page(s) indicated.

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