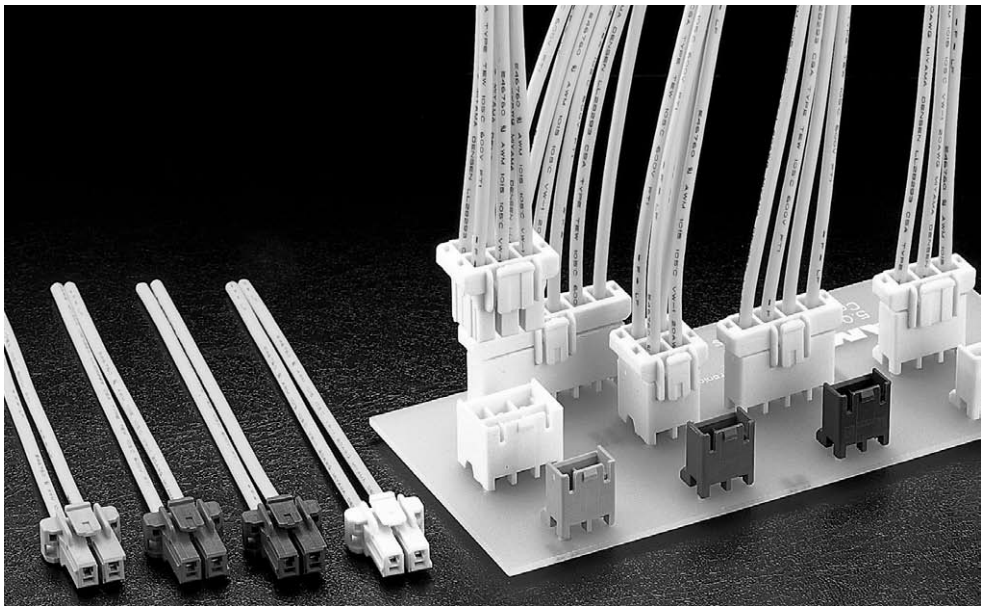
# 5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board)

## Product Facts

- **Compact design with 19.4 mm mated height**
- **Power circuit connector with 5.0 mm contact centerline**
- **Wire-to-board connectors consisting of plug housings for wires and PCB header assemblies**
- **With a clear clicking sound, contact insertions can be made easier. The double lock plate provides for complete loading of contacts**
- **Locking levers are surrounded by walls, which protect levers and prevent tangling with wires**
- **Connector is designed to release bubbles created by the process of potting (PC board coating)**
- **Housing lances also help prevent tangling of wired contacts**
- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**
- **Certified by Canadian Standards Association, File No. LR7189**



5.0 mm Power Key Connectors are for power circuits of home appliances, especially targeting gas appliances. The connector features four kinds of keying per housing.

Only color-coding of housings limited the efficiency of blind mating where you could not see connectors. However, the new keying mechanism not only improves assembly efficiency but also helps prevent mismating.

Part numbers involved can be reduced so that purchasing and stock level control can be made simpler.

## Performance Characteristics

**Voltage Rating**—300 VAC[1]

**Current Rating**—10A max.[2]

**Operating Temperature**—-30°C ~ +105˚C

**Applicable Wire**—24-16 AWG

**Applicable PC Board Thickness**—1.6 mm

1 Excludes header tyne round space. Usable for 150 VAC applications when the round dimensions are 3 mm or less.

2 Specified values vary according to the number of contacts and the wire used. The 10 A maximum value applies to 16 AWG wire used with 2 contacts.

## Technical Documents

**Product Specification**
108-5699

**Application Specification**
114-5292





Catalog 82181
Revised 4-08

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Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
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South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-8706-080-208

## 5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)

### Quick Reference Chart for Mating Part Numbers

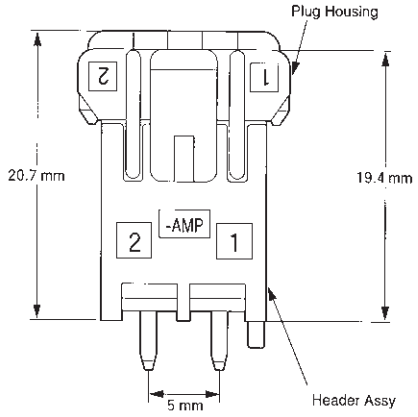
| No. of Pos. | Plug Housing | | Applicable Double Lock Plate Part Number | Mating Header Assy. Part Number |
|---|---|---|---|---|
| | Type of Keying/Color | Part Number | | |
| 2 | Type A/Natural | 1376388-1 | 1376394-1 | 1376382-1 |
| | Type B/Red | 1-1376388-2 | 1376394-1 | 1-1376382-2 |
| | Type C/Blue | 2-1376388-3 | 1376294-1 | 2-1376382-3 |
| | Type D/Yellow | 3-1376388-4 | 1376394-1 | 3-1376382-4 |
| 3 | Type A/Natural | 1376389-1 | 1376395-1 | 1376383-1 1376421-1 |
| | Type B/Red | 1-1376389-2 | 1376395-1 | 1-1376383-2 1-1376421-2 |
| | Type C/Blue | 2-1376389-3 | 1376395-1 | 2-1376383-3 2-1376421-3 |
| | Type D/Yellow | 3-1376389-4 | 1376395-1 | 3-1376383-4 3-1376421-4 |
| 4 | Type A/Natural | 1376390-1 | 1376396-1 | 1376384-1 |
| | Type B/Red | 1-1376390-2 | 1376396-1 | 1-1376384-2 |
| | Type C/Blue | 2-1376390-3 | 1376396-1 | 2-1376384-3 |
| | Type D/Yellow | 3-1376390-4 | 1376396-1 | 3-1376384-4 |
| 6 | Type A/Natural | 1376391-1 | 1376397-1 | 1376385-1 |
| | Type B/Red | 1-1376391-2 | 1376397-1 | 1-1376385-2 |
| | Type C/Blue | 2-1376391-3 | 1376397-1 | 2-1376385-3 |
| | Type D/Yellow | 3-1376391-4 | 1376397-1 | 3-1376385-4 |
| **2 Row** | | | | |
| 4 | Type A/Natural | 1376392-1 | 1376394-1 | 1376386-1 |
| | Type B/Red | 1-1376392-2 | 1376394-1 | 1-1376386-2 |
| | Type C/Blue | 2-1376392-3 | 1376394-1 | 2-1376386-3 |
| | Type D/Yellow | 3-1376392-4 | 1376394-1 | 3-1376386-4 |
| 6 | Type A/Natural | 1376393-1 | 1376395-1 | 1376387-1 |
| | Type B/Red | 1-1376393-2 | 1376395-1 | 1-1376387-2 |
| | Type C/Blue | 2-1376393-3 | 1376395-1 | 2-1376387-3 |
| | Type D/Yellow | 3-1376393-4 | 1376395-1 | 3-1376387-4 |

*Included in Header Assy. line are Tube Stick version. Refer to the appropriate description in the catalog.

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



### Mating Configurations

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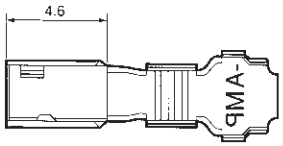
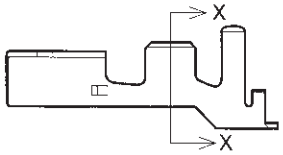
## 5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)

### Receptacle Contacts

**Material and Finish**
Pre-tinned Copper Alloy



Section X-X

| Wire Range | | Wire Ins. Dia. | Receptacle Contact Part No. | Applicator Part No. |
|---|---|---|---|---|
| AWG | mm² | | | |
| 24~20 | 0.22~0.53 | 1.89~2.7 | 1376348-1 (Strip Form) | * |
| 20~16 | 0.5~1.25 | 2.0~3.1 | 1376347-1 (Strip Form) | * |

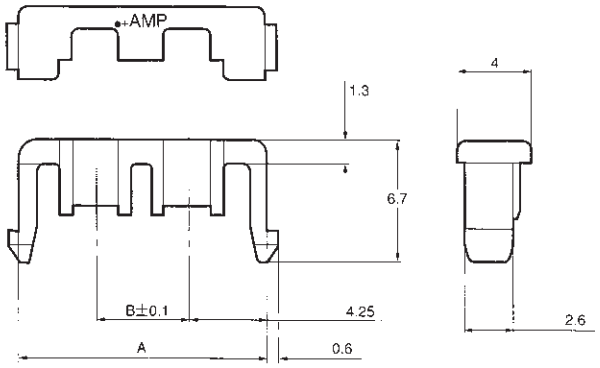
* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Number.

**Note:** Dimensions shown are metric.

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

### Double Lock Plates

**Material and Finish**
UL94V-0, 6/6 Nylon, glass filled, Black




| No. of Pos. | Dimensions (Double Lock Plate) | | Double Lock Plate Part No. | Applicable Plug Part No. |
|---|---|---|---|---|
| | A | B | | |
| 2 | 13.5 | 5 | 1376394-1 | □-1376388-□ □-1376392-□ |
| 3 | 18.5 | 10 | 1376395-1 | □-1376389-□ □-1376393-□ |
| 4 | 23.5 | 15 | 1376396-1 | □-1376390-□ |
| 6 | 33.5 | 25 | 1376397-1 | □-1376391-□ |

* Contact the Tooling Assistance Center (TAC) for Applicator Part Number.

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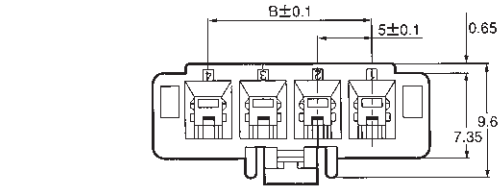
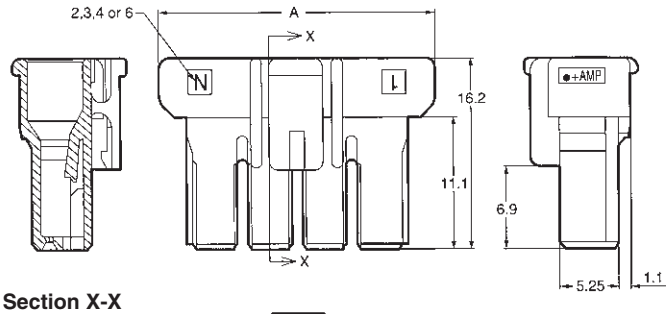
## 5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)

### Plug Housings (For Receptacle Contacts)

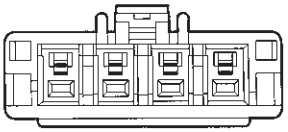
**Material and Finish**
**Housing**—6/6 Nylon, glass filled

**Related Product Data**
**Receptacle Contacts**—page 137
**Double Lock Plates**—page 137
**Mating Headers**—page 140

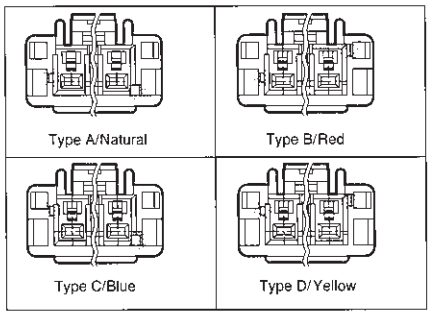



**Section X-X**



**Type of Keying/Color**




| No. of Pos. | Dimensions | | Plug Housing Part No. Type of Keying/Color | | | | Applicable Double Lock Plate Part Number | Mating Header Assy. Part Number |
|---|---|---|---|---|---|---|---|---|
| | A | B | Type A Natural | Type B Red | Type C Blue | Type D Yellow | | |
| 2 | 15 | — | 1376388-1 | 1-1376388-2 | 2-1376388-3 | 3-1376388-4 | 1376394-1 | □-1376382-□ |
| 3 | 20 | 10 | 1376389-1 | 1-1376389-2 | 2-1376389-3 | 3-1376389-4 | 1376395-1 | □-1376383-□<br>□-1376421-□ |
| 4 | 25 | 15 | 1376390-1 | 1-1376390-2 | 2-1376390-3 | 3-1376390-4 | 1376396-1 | □-1376384-□ |
| 6 | 35 | 25 | 1376391-1 | 1-1376391-2 | 2-1376391-3 | 3-1376391-4 | 1376397-1 | □-1376385-□ |

**Note:** Dimensions shown are metric.

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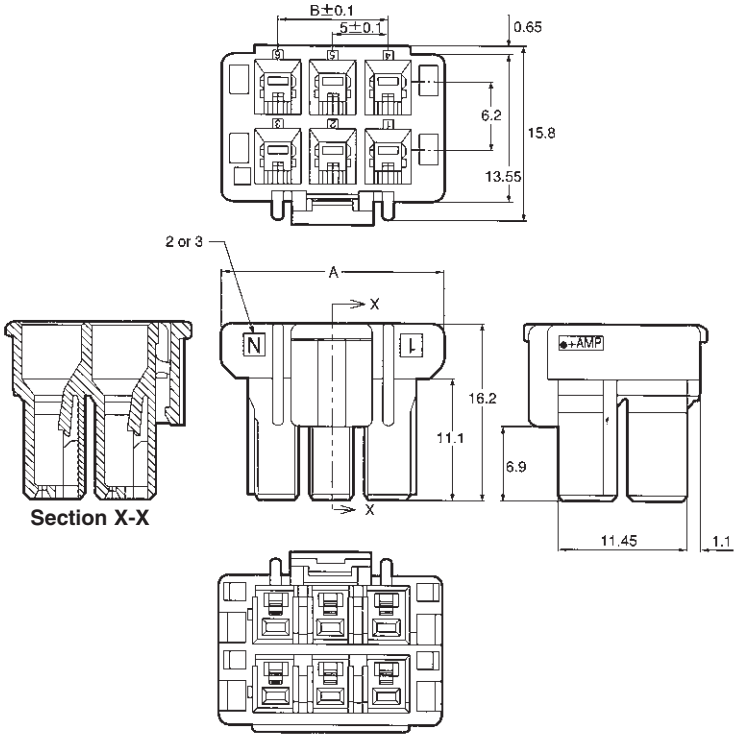
## 5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)

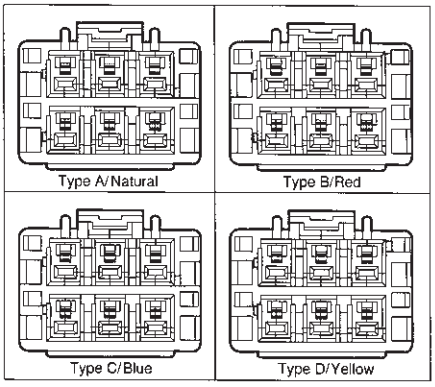
### Plug Housing (2 Rows) (For Receptacle Contacts)

**Material and Finish**
**Housing**—6/6 Nylon, glass filled

**Related Product Data**
**Receptacle Contacts**—page 137
**Double Lock Plates**—page 137
**Mating Headers**—page 141




**Type of Keying/Color**




| No. of Pos. | Dimensions | | Plug Housing Part No. Type of Keying/Color | | | | Applicable Double Lock Plate Part Number | Mating Header Assy. Part Number |
|---|---|---|---|---|---|---|---|---|
| | A | B | Type A Natural | Type B Red | Type C Blue | Type D Yellow | | |
| 4 | 15 | — | 1376392-1 | 1-1376392-2 | 2-1376392-3 | 3-1376392-4 | 1376394-1 | □-1376386-□ |
| 6 | 20 | 10 | 1376393-1 | 1-1376393-2 | 2-1376393-3 | 3-1376393-4 | 1376395-1 | □-1376387-□ |

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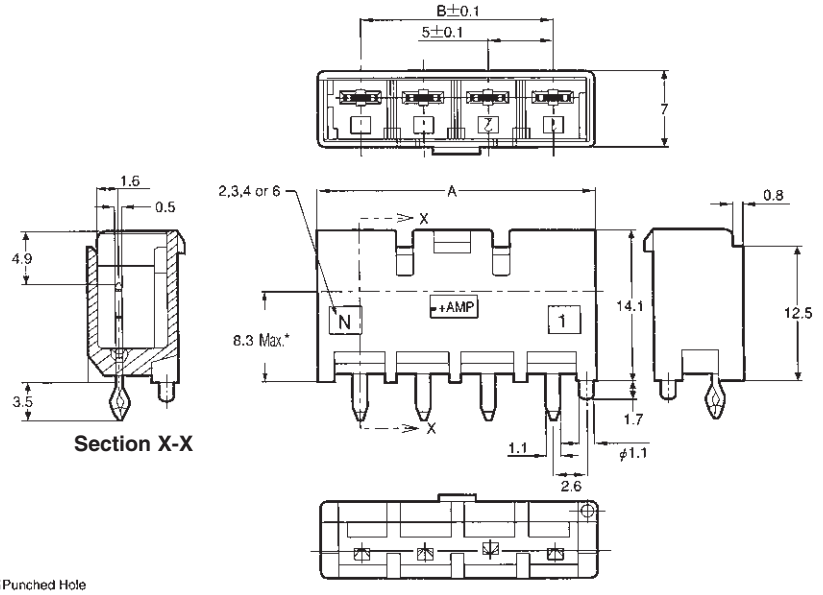
## 5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)

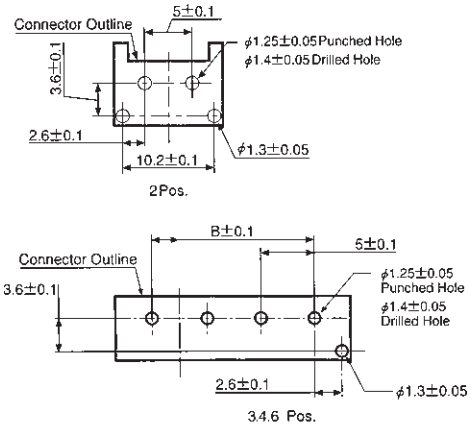
### Vertical Header Assembly

**Material and Finish**
**Housing**—6/6 Nylon, glass filled
**Tab Contacts** -Copper Alloy, Tin plated

**Related Product Data**
**Mating Plug Housings**—page 138

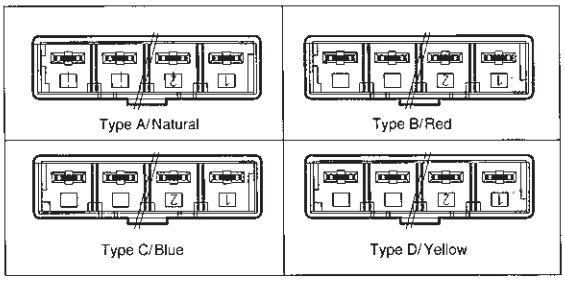



Section X-X




PC Board Layout

Type of Keying/Color




| No. of Pos. | Dimensions A | Dimensions B | Loose Piece Tube (Qty.) | Vertical Header Assy. Part No. Type of Keying/Color: Type A Natural | Type B Red | Type C Blue | Type D Yellow | Mating Plug Housing Part Number |
|---|---|---|---|---|---|---|---|---|
| 2 | 11.6 | — | L.P | 1376382-1 | 1-1376382-2 | 2-1376382-3 | 3-1376382-4 | □-1376388-□ |
| | | | Tube | 1376437-1 (40) | 1-1376437-2 (40) | 2-1376437-3 (40) | 3-1376437-4 (40) | |
| 3 | 16.6 | 10 | L.P | 1376383-1 | 1-1376383-2 | 2-1376383-3 | 3-1376383-4 | □-1376389-□ |
| | | | Tube | 1376439-1 (25) | 1-1376439-2 (25) | 2-1376439-3 (25) | 3-1376439-4 (25) | |
| 4 | 21.6 | 15 | L.P | 1376384-1 | 1-1376384-2 | 2-1376384-3 | 3-1376384-4 | □-1376390-□ |
| | | | Tube | 1376440-1 (20) | 1-1376440-2 (20) | 2-1376440-3 (20) | 3-1376440-4 (20) | |
| 6 | 31.6 | 25 | L.P | 1376385-1 | 1-1376385-2 | 2-1376385-3 | 3-1376385-4 | □-1376391-□ |
| | | | Tube | 1376441-1 (15) | 1-1376441-2 (15) | 2-1376441-3 (15) | 3-1376441-4 (15) | |
| 2* | 16.6 | 10 | L.P | 1376421-1 | 1-1376421-2 | 2-1376421-3 | 3-1376421-4 | □-1376389-□ |
| | | | Tube | 1376444-1 (25) | 1-1376444-2 (25) | 2-1376444-3 (25) | 3-1376444-4 (25) | |

*10 mm centerline

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## 5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)

### Vertical Header Assembly (2 Rows)

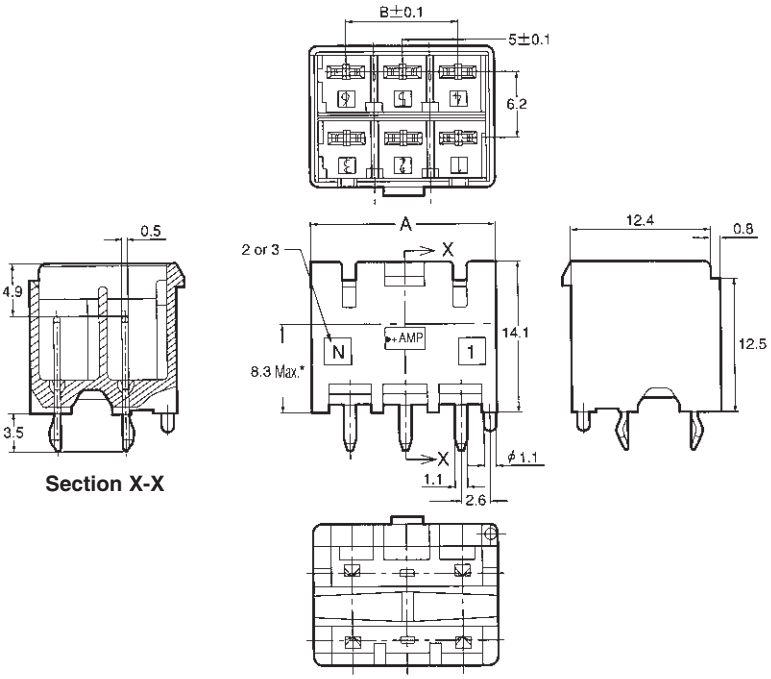
**Material and Finish**

**Housing**—6/6 Nylon, glass filled

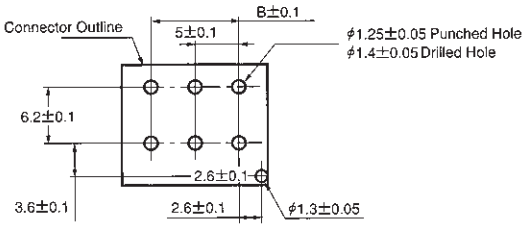
**Tab Contacts**—Copper Alloy, Tin plated

**Related Product Data**

**Mating Plug Housings**—page 139

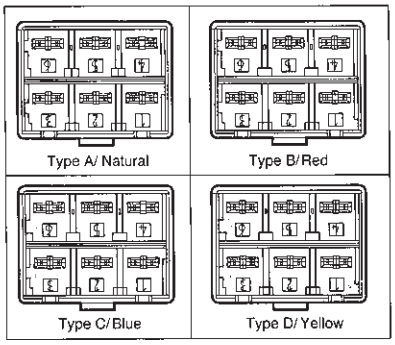



Section X-X




PC Board Layout

Type of Keying/Color




| No. of Pos. | Dimensions A | Dimensions B | Loose Piece Tube (Qty.) | Vertical Header Assy. Part No. Type of Keying/Color Type A Natural | Type B Red | Type C Blue | Type D Yellow | Mating Plug Housing Part Number |
|---|---|---|---|---|---|---|---|---|
| 4 | 11.6 | — | L.P | 1376386-1 | 1-1376386-2 | 2-1376386-3 | 3-1376386-4 | □-1376392-□ |
| | | | Tube | 1376442-1 (40) | 1-1376442-2 (40) | 2-1376442-3 (40) | 3-1376442-4 (40) | |
| 6 | 16.6 | 10 | L.P | 1376387-1 | 1-1376387-2 | 2-1376387-3 | 3-1376387-4 | □-1376393-□ |
| | | | Tube | 1376443-1 (25) | 1-1376443-2 (25) | 2-1376443-3 (25) | 3-1376443-4 (25) | |

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





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## Engineering Notes



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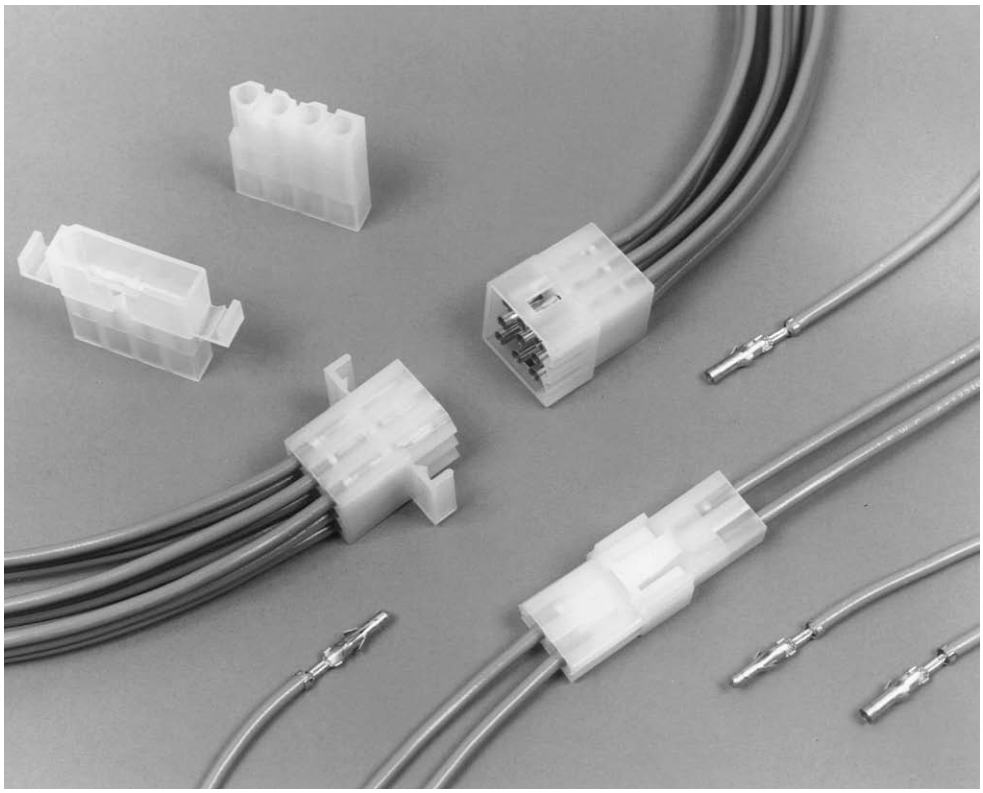
# .093 [2.36] Commercial Pin and Socket Connectors

## Product Facts

- Polarized
- Cavity identification
- Low contact-mating force
- Dual locking lances
- Detent and positive locking
- Contacts available in brass and phosphor bronze with tin and gold plating
- Panel mounting and free-hanging styles
- "F" crimp contacts
- Applicator and hand tool available
- Economical commercial-grade connectors
- Compatible with high-speed application machinery and competitive soft shells
- Wire range 24 to 14 AWG [0.2 to 2 mm²]
- Accepts wires with insulation diameters as large as .180 [4.57]
- Housings available in 1 to 15 positions
- .093 plug and receptacle housings accept pin or socket contacts. The preferred convention is to use socket contacts with receptacle housings
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189



## Performance Characteristics

The .093 Commercial Pin and Socket Connectors performance characteristics found on pages 143-144 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Thermal Shock**— -55°C to +105°C

**Temperature-Humidity Cycling**—+25°C to +65°C at 90–95% RH

**Corrosion**—48 hr. at 5% salt concentration

**Vibration**—10-55-10 cycles per minute at .06 [1.52] total excursion

**Physical Shock**—18 shocks, 50 Gs sawtooth in 11 milliseconds

**Durability**—50 mating cycles

**Dielectric Withstanding Voltage**—1.0 kVAC

**Insulation Resistance**—1000 megohms min. initial

**Voltage Rating**—250 V AC or DC

**Connector Mating**—2.5 lb. [11.1 N] max. per contact

**Connector Unmating**—1.5 lb. [6.7 N] min. per contact

**Contact Retention**—10 lb. [44.5 N] min.

## Technical Documents

**Application Specification**
114-49000 .093 Commercial Pin and Socket Connectors

**Product Specification**
108-1038 .093 Commercial Pin and Socket Connectors





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# .093 [2.36] Commercial Pin and Socket Connectors (Continued)

## Performance Characteristics (continued)

**Maximum Current**—Maximum current rating of .093 Commercial Pin and Socket Connectors is limited by the maximum operating temperature of the housings which is 105°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

## Related Product Data

**Product Specification**—108-1038

## Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

### Wire-to-Wire

### .093 Commercial Pin and Socket Connectors — Calculated Current Table

| Number of Circuits | Wire AWG | | | | | |
|---|---|---|---|---|---|---|
| | 14 | 16 | 18 | 20 | 22 | 24 |
| 2 | 13.00 | 12.00 | 11.00 | 8.00 | 6.00 | 6.00 |
| 3 | 13.00 | 11.00 | 10.00 | 8.00 | 6.00 | 5.00 |
| 4 In-Line | 11.00 | 10.00 | 9.00 | 7.00 | 5.00 | 4.00 |
| 4 Matrix | 11.00 | 10.00 | 9.00 | 7.00 | 5.00 | 4.00 |
| 5 | 10.00 | 9.00 | 8.00 | 6.00 | 5.00 | 4.00 |
| 6 | 10.00 | 9.00 | 8.00 | 6.00 | 4.00 | 4.00 |
| 9 | 9.00 | 7.00 | 6.00 | 5.00 | 4.00 | 3.00 |
| 12 | 8.00 | 7.00 | 6.00 | 4.00 | 3.00 | 3.00 |
| 15 | 7.00 | 6.00 | 5.00 | 4.00 | 3.00 | 3.00 |

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested and this chart contains interpolated and extrapolated values.

### Minimum Wire Lengths for T-Rise vs. Current Testing

| AWG | Min. Length (in.) | AWG | Min. Length (in.) |
|---|---|---|---|
| 30 | 2.6 | 18 | 9.4 |
| 28 | 3.2 | 16 | 11.3 |
| 26 | 4.1 | 14 | 13.7 |
| 24 | 5.1 | 12 | 16.4 |
| 20 | 7.8 | 10 | 19.3 |

**Note:** If wire lengths used are less than those listed above, the current-carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

### Termination Resistance/Contact Crimp Tensile Force

| Wire Size | | Termination Resistance | | Contact Crimp Tensile Force | |
|---|---|---|---|---|---|
| AWG | $mm^2$ | Test Current (Amps) | Resistance Milliohms (Max. Init.) | Force (Min.) lbs. | Force (Min.) N |
| 24 | 0.2 | 2.0 | 4.0 | 8 | 35.6 |
| 22 | 0.3–0.4 | 3.0 | 4.0 | 10 | 44.5 |
| 20 | 0.5–0.6 | 4.5 | 4.0 | 15 | 66.7 |
| 18 | 0.8–0.9 | 6.0 | 3.5 | 25 | 111.2 |
| 16 | 1.25–1.4 | 8.0 | 3.5 | 25 | 111.2 |
| 14 | 2 | 10.0 | 3.0 | 30 | 133.4 |

**Note:** This is the total resistance between wire crimps of a mated pin and socket.





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## .093 [2.36] Commercial Pin and Socket Connectors (Continued)

### Contacts

Pin Diameter .093 [2.36]

### Material

.010 [0.25] Stock Thickness

Pin and socket contacts can be used in either plug or receptacle housings.

### Related Product Data

**Product Specification**—108-1038

**Application Specification**
114-49000

**Performance Characteristics**—pages 143-144

**Housings**

.198 [5.03] Centerline—pages 146-147

.250 [6.35] Centerline—pages 148-149

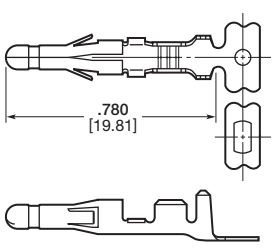
**Panel Cutouts**

.198 [5.03] Centerline Housings—page 147

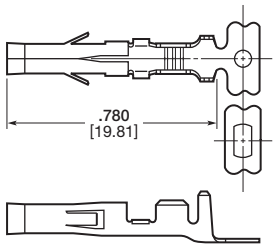
.250 [6.35] Centerline Housings—page 148

**Technical Documents**—pages 143 and 205-206

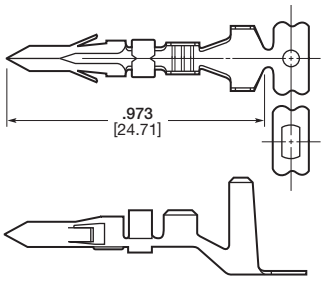
**Application Tooling**—pages 207-210



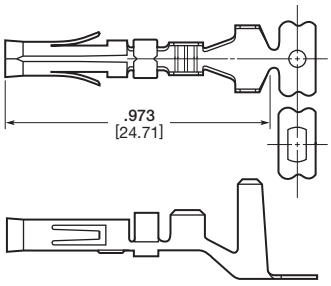

**Pin**




**Socket**




**Pin**
**Part No. 770385-1**




**Socket**
**Part No. 770383-1**

| Wire Size AWG | Wire Size mm² | Ins. Dia. | Material & Finish | Contact Part Numbers Pin Strip Form | Pin Loose Piece | Socket Strip Form | Socket Loose Piece | HDM Applicator Part No. | Hand Tool Part No. |
|---|---|---|---|---|---|---|---|---|---|
| 24–18 | 0.2–0.9 | **.110** 2.79 | Brass, Pre-tin | 350418-1 | 770147-1 | 350417-1 | 770146-1 | 466656-1[5] 466656-2[5] 466656-3[5] | 90872-1 |
| | | | Brass, Gold[2] | — | — | 350417-3[2] | 770146-3[2] | | |
| | | | Brass Select Gold[1] | 350418-5[1] | 770147-5[1] | 350417-5[1] | 770146-5[1] | | |
| 20–14 | 0.6–2 | **.140** 3.56 | Brass, Pre-tin | 350416-1 | 770145-1 | 350415-1 | 770144-1 | 466878-1[5] 466878-2[5] 466878-3[5] | 90871-1 |
| | | | Brass, Select Gold[1] | 350416-5[1] | 770145-5[1] | 350415-5[1] | 770144-5[1] | | |
| | | | Phos. Brz., Pre-tin | — | — | 350415-6 | 770144-6 | | |
| | | **.180** 4.57 | Brass, Pre-tin | 770530-1[4] | — | 770529-1[4] | — | 567337-3[6] 567337-4[6] 567337-6[6] | — |
| 18–14 or 2 (18) | 0.8–2 or 2 (0.8–0.9) | **.180** 4.57 (per wire) | Brass, Pre-tin | 770385-1[3] | — | — | — | 567273-2[7] 567273-3[7] 567273-4[7] | — |
| | | | Phos. Brz., Pre-tin | — | — | 770383-1[3] | — | | |

**Contact Insertion Tool**
**(For Pins and Sockets)**
**Part No. 91002-1**
**IS 408-7347**

**Contact Extraction Tool**
**Part No. 318837-1**
**IS 408-4375**

[1]Select Gold—.000030 [.000762] min gold in mating area over .000050 [.00127] min nickel.
[2]Gold—.000030 [.000762] min gold in mating area, overall gold flash over .000050 [.00127] min nickel.
[3]These contacts have a .0125 [.318] stock thickness and accept two wires, each with maximum .180 [4.57] insulation diameters. They can be used only with the following housing part numbers: 770364-1, 770365-1, 770450-1, 770451-1, 770452-1, and 770453-1 (see page 143).
[4]Contact length is .875 [22. 23]
[5]HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.
[6]HDM Applicator part number ending in -3 is used on AMPOMATOR CLS Machine with T or G Terminators, -4 is used on AMP-O-LECTRIC Model K Machine, -6 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.
[7]HDM Applicator part number ending in -3 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

**Note:** Phosphor bronze contacts should be used in high-temperature/humidity cycling applications.

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





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## .093 [2.36] Commercial Pin and Socket Connectors (Continued)

### Housings

**Free-Hanging or Panel Mount**

.198 [5.03] Centerline spacing

**Material**

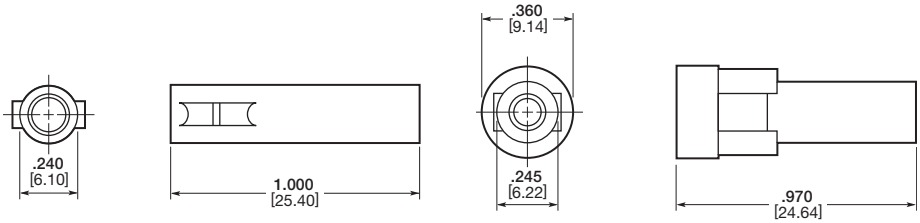
**Housing**—Nylon, natural color
**Flammability Rating**—UL94-V-2

**Related Product Data**

**Contacts**—page 145

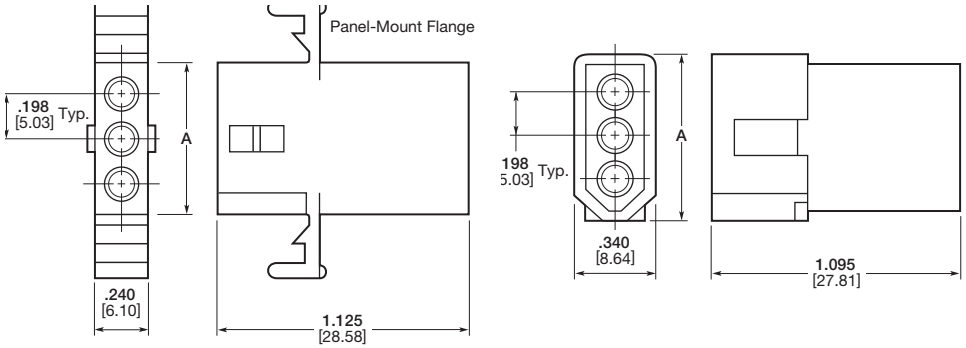
**Product Specification**—108-1038

### 1 Circuit




Receptacle Plug

### 2, 3, and 4 Circuit, In-Line




Receptacle Plug

| No. of Circuits | A Dimension | | Receptacle Part Numbers | | | | Plug Part Numbers | |
|---|---|---|---|---|---|---|---|---|
| | | | Panel Mount | | Free-Hanging | | | |
| | Receptacle | Plug | Without Detents | With Detents | Without Detents | With Detents | Panel Mount | Free-Hanging |
| 1 | — | — | — | — | — | 770063-1 | — | 770064-1 |
| 2 | **.540** 13.72 | **.640** 16.26 | — | 770066-1[1,5] | — | 770065-1[1,5] 770266[1,3,5] | 770068-1[1] | 770069-1[1] |
| 3 | **.670** 17.02 | **.770** 19.56 | — | 770071-1 | — | 770070-1 770264-1[3] | 770073-1 | 770074-1 |
| 4 (In-Line) | **.870** 22.10 | **.970** 24.64 | — | 770076-1 | — | 770075-1 | 770077-1 | 770078-1 |
| 4 (Matrix) | **.443** 11.25 | **.540** 13.71 | — | — | — | 770843-1 | — | 770842-1 |
| 5 | **1.070** 27.18 | **1.170** 29.72 | — | — | — | 770083-1 794015-1[3] | — | 770084-1 |
| 6 (In-Line) | **1.268** 32.21 | **1.378** 35.00 | — | — | — | 770782-1[4] | — | 770892-1[4] |
| 6 (Matrix) | **.435** 11.05 | **.535** 13.59 | 770085-1 | 770087-1 | 770088-1 | 770086-1 | 770089-1 | 770090-1 |
| 9 | **.670** 17.02 | **.770** 19.56 | 770091-1 | 770093-1 | 770094-1 | 770092-1 | 770095-1[2] 770108-1 | 770096-1 |
| 12 | **.870** 22.10 | **.970** 24.64 | 770097-1 | 770099-1 | 770100-1 | 770098-1 | 770101-1 | 770102-1 |
| 15 | **1.070** 27.18 | **1.170** 29.72 | 770103-1 | — | 770105-1 | — | 770106-1 | 770107-1 |

[1].248 [6.30] centerline.
[2]Mounting ears at wire end.
[3]Tool removable.
[4]Positive lock.
[5]600 V AC or DC

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





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## .093 [2.36] Commercial Pin and Socket Connectors (Continued)

### Housings

**Free-Hanging or Panel Mount**

.198 [5.03] Centerline spacing

**Material**

**Housing**—Nylon, natural color

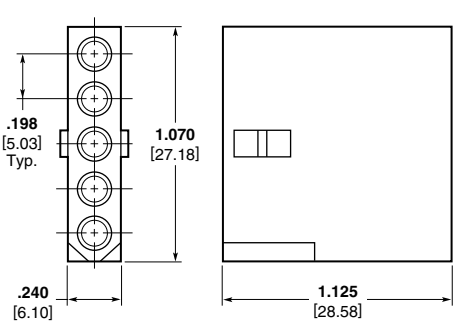
**Flammability Rating**—UL94V-2

### Related Product Data

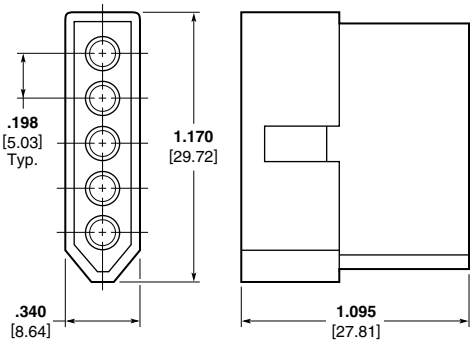
**Contacts**—page 145

**Product Specification**—108-1038

### 5 Circuit, In-Line

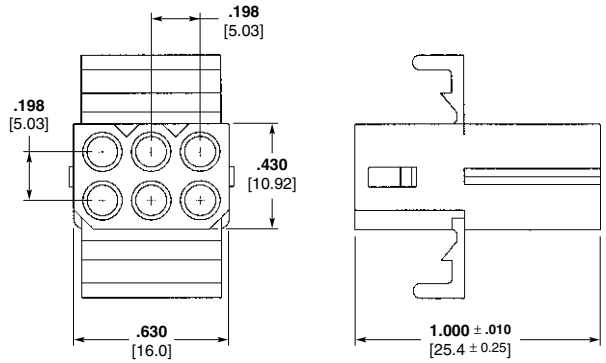



Receptacle (Free-Hanging)

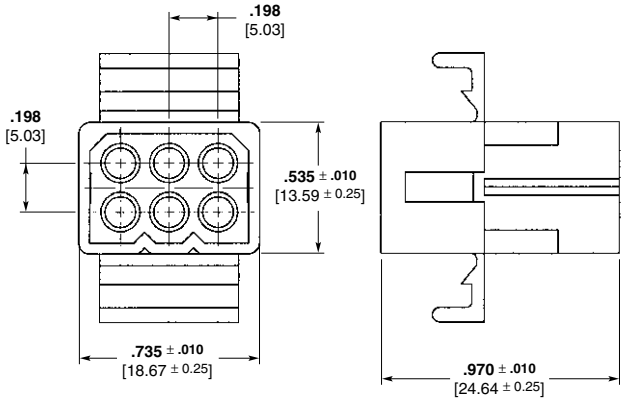



Plug (Free-Hanging)

### 4, 6, 9, 12, and 15 Circuit, Matrix



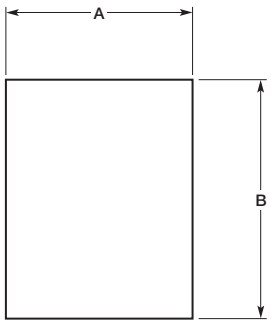

Receptacle




Plug

### Recommended Panel Cutouts

Maximum panel thickness is .090 [2.29].




| No. of Circuits | Panel Cutout Dimensions | | | |
|---|---|---|---|---|
| | Receptacle | | Plug | |
| | A | B | A | B |
| 2 | **.312** 7.92 | **.725** 18.42 | **.375** 9.53 | **.800** 20.32 |
| 3 | **.312** 7.92 | **.840** 21.34 | **.375** 9.53 | **.933** 23.70 |
| 4 (In-Line) | **.312** 7.92 | **1.038** 26.37 | **.375** 9.53 | **1.131** 28.73 |
| 6 | **.600** 15.24 | **.718** 18.24 | **.695** 17.65 | **.750** 19.05 |
| 9 | **.725** 18.42 | **.828** 21.03 | **.660** 16.76 | **.937** 23.80 |
| 12 | **.725** 18.42 | **1.050** 26.67 | **.760** 19.30 | **1.155** 29.34 |
| 15 | **.655** 16.64 | **1.240** 31.50 | **.760** 19.30 | **1.343** 34.11 |

**Note:** The panel should be punched so that the housing enters in the same direction as the punch.





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## .093 [2.36] Commercial Pin and Socket Connectors (Continued)

### Housings

**Free-Hanging or Panel Mount**

.250 [6.35] Centerline spacing

**Material**

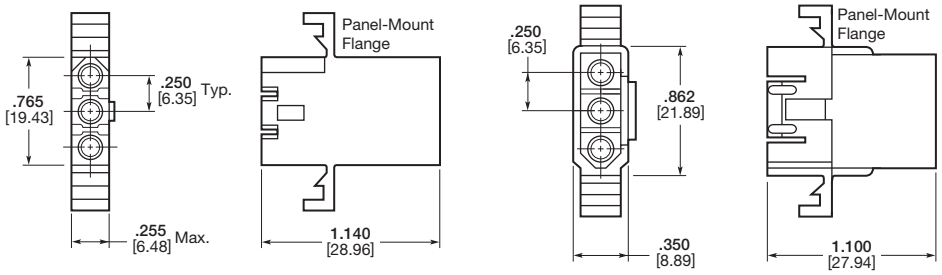
**Housing**—Nylon, natural color
**Flammability Rating**—UL94V-2
**Voltage Rating**—600 V AC or DC

**Related Product Data**

**Contacts**—page 145

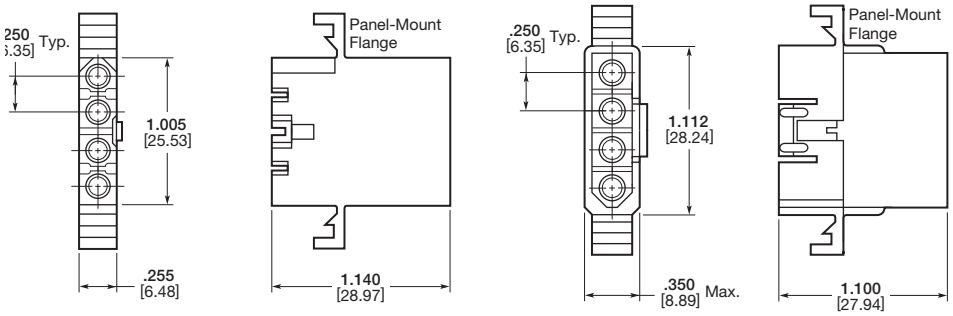
**Product Specification**—108-1038

### 3 Circuit, In-Line



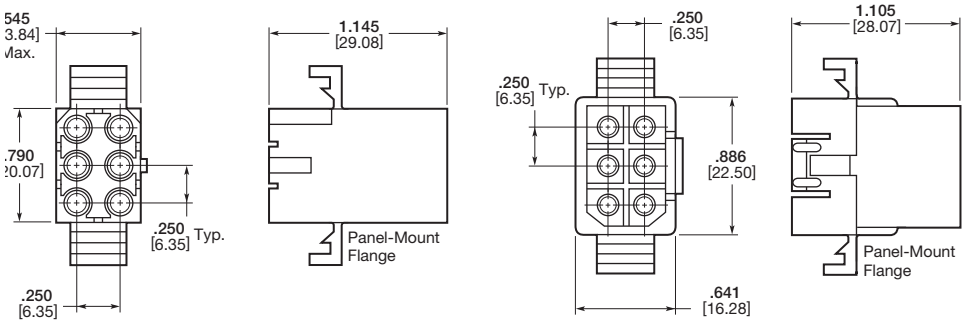

**Receptacle** **Plug**

### 4 Circuit, In-Line




**Receptacle** **Plug**

### 6 Circuit, Matrix

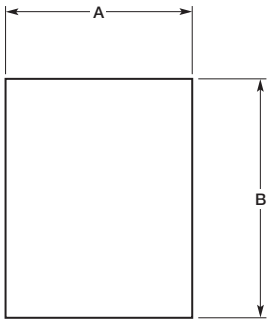



**Receptacle** **Plug**

### Recommended Panel Cutouts

Maximum panel thickness is .062 [1.57].

**Note:** The panel should be punched so that the housing enters in the same direction as the punch.




| No. of Circuits | Receptacle Part Numbers | | Plug Part Numbers | |
|---|---|---|---|---|
| | Panel Mount | Free-Hanging | Panel Mount | Free-Hanging |
| 3 | 770269-1<br>770771-1[1] | 770339-1 | 770338-1 | 770276-1 |
| 4 | 770329-1 | 770337-1 | 770330-1 | 770336-1 |
| 6 | 770372-1 | 770360-1 | 770373-1 | 770361-1 |

[1]Pre-bent mounting ears.

| No. of Circuits | Panel Cutout Dimensions | | | |
|---|---|---|---|---|
| | Receptacle | | Plug | |
| | A | B | A | B |
| 3 | **.310**<br>7.87 | **.920**<br>23.37 | **.365**<br>9.27 | **1.022**<br>25.96 |
| 4 | **.310**<br>7.87 | **1.168**<br>29.67 | **.365**<br>9.27 | **1.270**<br>32.26 |
| 6 | **.608**<br>15.44 | **.946**<br>24.03 | **.658**<br>16.71 | **1.048**<br>26.62 |

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





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## .093 [2.36] Commercial Pin and Socket Connectors (Continued)

### Housings

#### Free-Hanging or Panel Mount

.250 [6.35] Centerline spacing

#### Material

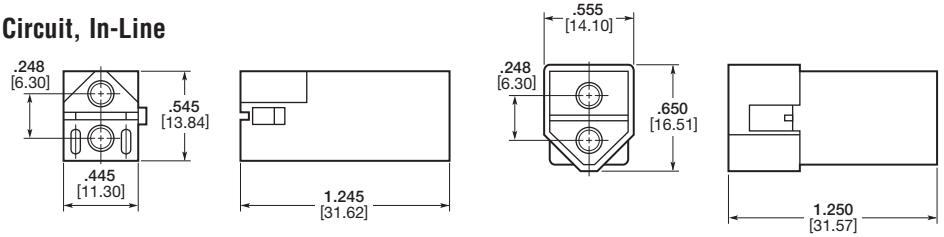
**Housing**—Nylon, natural color
**Flammability Rating**—UL94V-2
**Voltage Rating**—600 V AC or DC

### Related Product Data

**Contacts**—page 145
**Product Specification**—108-1038

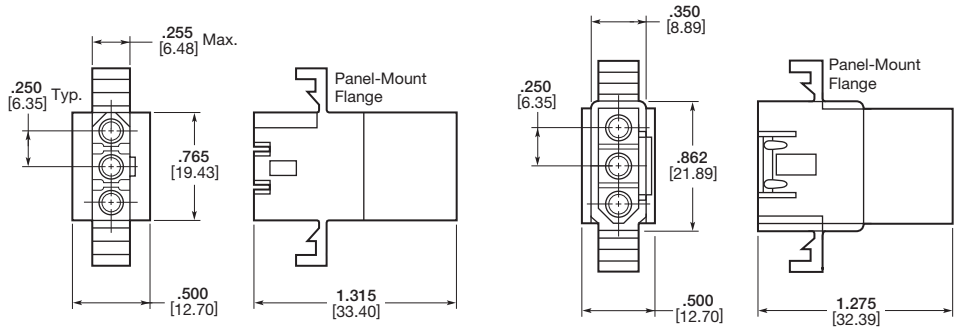
### Dual Wire

#### 2 Circuit, In-Line




**Receptacle** **Plug**

#### 3 Circuit, In-Line



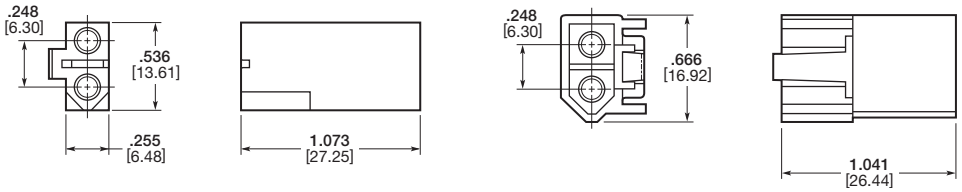

**Receptacle** **Plug**

| No. of Circuits | Receptacle Part Numbers | | Plug Part Numbers | |
|---|---|---|---|---|
| | Panel Mount | Free-Hanging | Panel Mount | Free-Hanging |
| 2 | — | 770364-1[1] | — | 770365-1[1] |
| 3 | 770453-1[2] | 770451-1 | 770452-1[2] | 770450-1 |

[1].248 [6.30] centerline.
[2]See panel cutout dimensions on page 58.

### Positive Lock

#### 2, 3 and 4 Circuit, In-Line




**Receptacle** **Plug**

| No. of Circuits | Receptacle Part Numbers | Plug Part Numbers |
|---|---|---|
| | Free-Hanging | Free-Hanging |
| 2 | 770424-1[1] | 770425-1[1] |
| 3 | 770785-1 | 770783-1 |
| 4 | 770784-1 | 770810-1 |

[1].248 [6.30] centerline.

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





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Mexico: 01-800-733-8926
C. America: 52-55-1106-0803
South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-8706-080-208

## Engineering Notes



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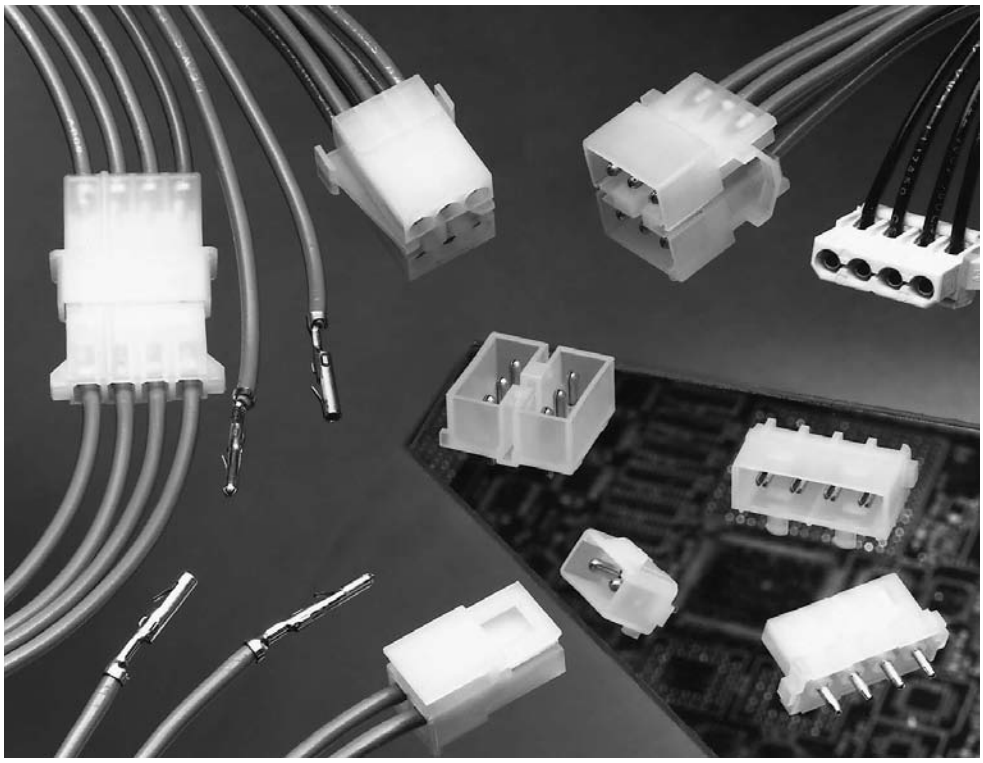
# Commercial MATE-N-LOK Connectors

## Product Facts

- **Fully polarized nylon housings**
- **Easy cavity identification**
- **Locking devices are integral part of design. Connector halves will hold together under severe conditions of vibration and shock**
- **Built-in contact stabilization and self-aligning features**
- **Hot side egg-crate design for safety**
- **Precision molded to exacting tolerances**
- **Contacts accept a wire size range of 30-14 AWG [.05-2.0 mm²]**
- **Keying plug available**
- **"Clean" design contact—no sharp projections to impede insertion or damage housings**
- **Low insertion/extraction forces**
- **Contacts available in pre-tin or gold over nickel plated to fit the application requirements**
- **Wire-to-PC Board capability using pin or socket headers**
- **Solderability—Headers meet MIL-STD 202 method 208**
- **Four circuit PC Board-to-PC Board capability available by mating vertical socket header with either vertical, right-angle or surface mount pin header**
- **Four circuit insulation displacement connector (IDC) available**
- **Ultraviolet (UV) stable housings available in 1, 2 and 3 circuit**
- **Not for interrupting current**
- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**
- **Certified by Canadian Standards Association, File No. LR 7189A**



## Performance Characteristics

The Commercial MATE-N-LOK Connector performance characteristics found on pages 151-152 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Dielectric Withstanding Voltage**—1.5 KVAC between adjacent circuits

**Insulation Resistance**—500 megohms minimum initial between adjacent circuits

**Voltage Rating**—250 V AC or DC

**Connector Mating**—4 lb. max. per circuit

**Connector Unmating**—0.7 lb. min. per circuit

**Contact Retention**—15 lb. min. per contact

**Durability**—50 cycles, mating and unmating

## Technical Documents

**Product Specifications**

108-1000 Commercial MATE-N-LOK Connectors

108-1077 Commercial MATE-N-LOK PC Board Headers

108-49000 IDC Connectors

**Application Specifications**

114-1012 Commercial MATE-N-LOK Contacts

114-49001 IDC Connectors

**Instruction Sheets**

408-7209, 408-7166, 408-7200, 408-7201, 408-7215, 408-3186, 408-7300





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# Commercial MATE-N-LOK Connectors (Continued)

## Performance Characteristics (Continued)

**Maximum Current**—Maximum current rating of Commercial MATE-N-LOK connectors is limited by the maximum operating temperature of the housings which is 105°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

**Printed Wiring Board Conductor Size**—The finished trace conductor width and thickness should be maximized to allow for the greatest current-carrying capacity and heat dissipation.

Commercial MATE-N-LOK connectors also will withstand the following tests:

**Vibration**—10-55-10 cycles per minute at .06 inch total excursion

**Physical Shock**—18 drops, 50 G sawtooth at 11 milliseconds

**Housing Panel Mount Retention**—40 lb. min. 3 and 4 circuit
65 lb. min. 6, 9, 12, and 15 circuit

**Housing Lock Strength with Positive Locking Devices Engaged**—25 lb. min.

**Thermal Shock**— -55°C to +85°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

**Corrosion**—48 hr. at 5% salt concentration

## Related Product Data

**Product Specifications**

108-1000 Commercial MATE-N-LOK Connectors

108-1077 Commercial MATE-N-LOK PC Board Headers

## Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

### Wire-to-Wire

### Motor Mount Calculated Current Table

| Number of Circuits | Wire Gauge | | | | | | |
|---|---|---|---|---|---|---|---|
| | 14 | 16 | 18 | 20 | 22 | 24 | 30 |
| 6 | 13.00 | 10.50 | 9.50 | 7.50 | 6.00 | 5.00 | 2.50 |
| 8 | 12.00 | 9.50 | 8.50 | 7.00 | 5.50 | 4.50 | 2.50 |
| 10 | 11.00 | 9.00 | 8.00 | 6.50 | 5.00 | 4.50 | 2.00 |
| 12 | 10.50 | 8.50 | 7.50 | 6.00 | 5.00 | 4.00 | 2.00 |
| 16 | 9.50 | 8.00 | 7.00 | 5.50 | 4.50 | 3.50 | 2.00 |

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

### Calculated Current Table

| Number of Circuits | Wire Gauge | | | | | | |
|---|---|---|---|---|---|---|---|
| | 14 | 16 | 18 | 20 | 22 | 24 | 30 |
| 1 | 19.00 | 15.50 | 14.00 | 11.00 | 9.00 | 7.50 | 4.00 |
| 2 | 18.00 | 14.50 | 13.00 | 10.50 | 8.50 | 7.00 | 4.00 |
| 3 | 16.00 | 13.00 | 12.00 | 9.50 | 7.50 | 6.50 | 3.50 |
| 4 | 15.00 | 12.50 | 11.00 | 9.00 | 7.00 | 6.00 | 3.00 |
| 6 Matrix | 13.00 | 10.50 | 9.50 | 7.50 | 6.00 | 5.00 | 3.00 |
| 8 | 12.50 | 10.50 | 9.00 | 7.50 | 6.00 | 5.00 | 2.50 |
| 9 | 11.00 | 9.00 | 8.00 | 6.50 | 5.50 | 4.50 | 2.50 |
| 10 | 12.00 | 9.50 | 8.50 | 7.00 | 5.50 | 4.50 | 2.50 |
| 12 | 10.50 | 8.50 | 7.50 | 6.00 | 5.00 | 4.00 | 2.00 |
| 15 | 9.50 | 8.00 | 7.00 | 5.50 | 4.50 | 4.00 | 2.00 |

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

### Wire-to-Board

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The chart values are only a tool for connector selection and will require the customer to fully test their application.

### Minimum Wire Lengths for T-Rise vs. Current Testing

| AWG | Min. Length (in.) | AWG | Min. Length (in.) |
|---|---|---|---|
| 30 | 2.6 | 18 | 9.4 |
| 28 | 3.2 | 16 | 11.3 |
| 26 | 4.1 | 14 | 13.7 |
| 24 | 5.1 | 12 | 16.4 |
| 20 | 7.8 | 10 | 19.3 |

**Note:** If wire lengths used are less than those listed above, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

### Termination Resistance/Contact Crimp Tensile Force

| Wire Size | | Termination Resistance | | Contact Crimp Tensile Force | |
|---|---|---|---|---|---|
| AWG | mm² | Test Current (Amps) | Resistance Milliohms (Max. Init.) | Force (Min.) lbs. | Force (Min.) N |
| 30 | .05 | .50 | 4.00 | 2 | 9 |
| 28 | .08 | .75 | 3.50 | 3 | 13 |
| 26 | .12 | 1.00 | 3.50 | 7 | 31 |
| 24 | .2 | 1.5 | 3.50 | 10 | 44 |
| 22 | .3 | 3 | 3.50 | 15 | 67 |
| 20 | .5 | 4.5 | 3.00 | 20 | 89 |
| 18 | .8 | 6 | 3.00 | 30 | 133 |
| 16 | 1.2 | 8 | 2.75 | 30 | 133 |
| 14 | 2.0 | 10 | 2.75 | 35 | 156 |

**Note:** This is the total resistance between wire crimps of a mated pin and socket.





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## Commercial MATE-N-LOK Connectors (Continued)

### Commercial MATE-N-LOK Connector Mating Combinations

| Connector Part Number | | | | | Mating Connector Part Number | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | PC Board Headers | | | | | |
| | | | | | | | | Vertical Pin | | | Vertical Socket | |
| Number of Circuits | Flammability Rating | Style | Housing Type | Connector Part No. | Housing Part No. | Housing Type | Plating | Standard Tail | Long Tail | Right-Angle Pin | Standard Tail | Long Tail |
| 1 | UL94V-2 | In-Line | Socket: FH | 1-480349-0 | 1-480350-0 | Pin: FH | — | — | — | — | — | — |
| | | | | | 1-480351-0 | Pin: FH Positive Lock | — | — | — | — | — | — |
| | | | Socket: FH UV Stable | 1-480400-0 | 1-480401-1 | Pin: FH UV Stable | — | — | — | — | — | — |
| 2 | UL94V-2 | In-Line | Socket: FH | 1-480318-0 | 1-480319-0 | Pin: FH | Pre-tin | 350209-1 | 350422-1 | 794120-1 | — | — |
| | | | | | | | Duplex[1] | 1586512-2 | — | — | — | — |
| | | | Socket: FH UV Stable | 1-480393-1 | 1-480498-1 | Pin: FH UV Stable | — | — | — | — | — | — |
| | | | Socket: FH Positive Lock | 1-480720-0 | 794012-1 | Pin: FH Positive Lock | Pre-tin | 350539-1 | 350540-1 | — | — | — |
| | | | | | | | Duplex[1] | 1586530-2 | — | — | — | — |
| 3 | UL94V-2 | In-Line | Socket: FH | 1-480303-0 | 1-480305-0 | Pin: FH | Pre-tin | 350210-1 | 350423-1 | 643488-1 | — | — |
| | | | | | | | Duplex[1] | 1586514-2 | — | — | — | — |
| | | | Socket: PM | 1-480304-0 | | | — | — | — | — | — | — |
| | | | Socket: FH Positive Lock | 1-480721-0 | — | — | Pre-tin | 350541-1 | 350542-1 | — | — | — |
| | | | | | | | Duplex[1] | 1586532-2 | — | — | — | — |
| | | | Socket: FH UV Stable | 1-480388-0 | 1-480387-0 | Pin: FH UV Stable | — | — | — | — | — | — |
| 4 | **See next page for 4 position mating combinations** | | | | | | | | | | | |
| 6 | UL94V-2 | Matrix | Socket: FH Positive Lock | 1-480270-0 | 1-480340-0 | Pin: FH Positive Lock | Pre-tin | 1-380999-0 | 350425-1 | — | — | — |
| | | | | | 1-480271-0 | Pin: MM Positive Lock | Duplex[1] | 2-1586546-0 | 1586526-2 | — | — | — |
| | | | Socket: PM Positive Lock | 1-480273-0 | 1-480276-0 | Pin: PM Positive Lock | Pre-tin | — | — | — | — | — |
| | | | | | | | Duplex[1] | — | — | — | — | — |
| | | | Pin: PM Positive Lock | 1-480276-0 | 1-480273-0 | Socket: PM Positive Lock | Pre-tin | — | — | — | 350641-1 | 350576-1 |
| | | | | | | | Duplex[1] | — | — | — | — | — |
| 8 | UL94V-2 | Dual Row | Socket: FH Positive Lock | 1-480283-0 | 1-480345-0 | Pin: FH Positive Lock | Pre-tin | 350212-1 | 350426-1 | — | — | — |
| | | | | | 1-480284-0 | Pin: MM Positive Lock | Duplex[1] | 1586518-2 | 1586528-2 | — | — | — |
| 9 | UL94V-2 | Matrix | Pin: PM Positive Lock | 1-480277-0 | 1-480274-0 | Socket: PM Positive Lock | Pre-tin | — | — | — | 350642-1 | 350577-1 |
| | | | | | | | Duplex[1] | — | — | — | — | — |
| 10 | UL94V-2 | Dual Row | Socket: FH Positive Lock | 1-480285-0 | 1-480339-0 | Pin: FH Positive Lock | Pre-tin | 1-380991-0 | 350219-1 | — | — | — |
| | | | | | 1-480286-0 | Pin: MM Positive Lock | Duplex[1] | 2-1586544-0 | — | — | — | — |
| 12 | UL94V-2 | Dual Row | Socket: MM Positive Lock | 1-480287-0 | 1-480288-0 | Pin: MM Positive Lock | Pre-tin | 350213-1 | 350220-1 | — | — | — |
| | | | | | | | Duplex[1] | 1586520-2 | 1586524-2 | — | — | — |
| | | Matrix | Pin: PM Positive Lock | 1-480278-0 | 1-480275-0 | Socket: PM Positive Lock | Pre-tin | — | — | — | 350643-1 | 350578-1 |
| | | | | | | | Duplex[1] | — | — | — | — | — |
| 15 | UL94V-2 | Matrix | Pin: PM Positive Lock | 1-480324-0 | 1-480323-0 | Socket: PM Positive Lock | Pre-tin | — | — | — | 350644-1 | 350579-1 |
| | | | | | | | Duplex[1] | — | — | — | — | — |
| 16 | UL94V-2 | Dual Row | Socket: MM Positive Lock | 1-480438-0 | 1-480439-0 | Pin: MM Positive Lock | Pre-tin | 350214-1 | 350427-1 | — | — | — |
| | | | | | | | Duplex[1] | 1586522-2 | 1586529-2 | — | — | — |

**FH: Free-Hanging** **PM: Panel Mount** **MM: Motor Mount**

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

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





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## Commercial MATE-N-LOK 4 Position In-Line Mating Combinations (**Note:** These connectors are used by the disk drive industry.)

| Connector Part Number | | | Mating Connector Part Number | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Socket Connectors | | | | PC Board Pin Headers | | | | | |
| | | | | | | | | | Vertical | | | Right-Angle | | |
| Flammability Rating | Connector Type | Connector Part No. | Housing Part No. | Housing Type | Plating | Insulation Displacement Connector | AWG | PC Board Vertical Socket Header | Standard Tail | Long Tail | Surface Mount | Standard | W/Fixed Belt | W/Fixed Belt Reverse Pol. |
| UL94V-2 | Socket Housing Positive Lock | 1-480772-0 | — | — | Pre-tin | — | — | — | 350543-1 | 350544-1 | — | — | — | — |
| | | | | | Duplex[1] | — | — | — | 1586534-2 | 1586536-2 | — | — | — | — |
| | Socket Housing Detent Lock | 1-480424-0 | 1-480426-0 | Pin | Pre-tin | — | — | — | 350211-1<br>770328-1[3] | 350424-1 | 770829-1 | 641737-1<br>770846-1 | 174804-1 | 174552-1 |
| | | | | | Duplex[1] | — | — | — | 1586515-2 | 1586525-2 | — | — | — | — |
| | Pin Housing Detent Lock | 1-480426-0 | 1-480424-0 | Socket | Pre-tin | 770156-2 | 22 | 770997-1<br>794287-1[2] | — | — | — | — | — | — |
| | | | | | | 770156-3 | 18 | | | | | | | |
| | | | | | | 770156-4 | 20 | | | | | | | |
| | | | 1-480425-0 | Socket PM | | 770156-5 | 16 | | | | | | | |
| | | | | | Duplex[1] | 770526-1 | 18 | — | — | — | — | — | — | — |
| | Pin Housing Detent Lock High Temp | 3-480426-0 | 3-480425-0 | Socket High Temp | — | — | — | — | — | — | — | — | — | — |
| | Socket Header | 770997-1<br>794287-1[2] | 1-480426-0 | Pin | Pre-tin | — | — | — | 350211-1 | 350424-1 | 770829-1 | 641737-1<br>770846-1 | 174804-1 | 174552-1 |
| | Insulation Displacement Connector (IDC) | 770156-2<br>770156-3<br>770156-4<br>770156-5 | 1-480426-0 | Pin | Pre-tin | — | — | — | 350211-1 | 350424-1 | 770829-1 | 641737-1<br>770846-1 | 174804-1 | 174552-1 |
| | | 770526-1 | | | Duplex[1] | — | — | — | 1586515-2 | 1586525-2 | — | — | — | — |
| UL94V-0 | Socket Housing | 770827-1 | 794132-1 | Pin | Pre-tin | — | — | — | — | — | — | 1-641737-1 | — | — |
| | Insulation Displacement Connector (IDC) | 794036-1<br>794036-2<br>794036-3<br>794036-4 | 794132-1 | — | Pre-tin | — | — | — | — | — | — | 1-641737-1 | — | — |
| | Right-Angle Pin Header | 1-641737-1 | 770827-1 | Socket | Pre-tin | 794036-1 | 18 | — | 794236-1 | — | — | — | — | — |
| | | | | | | 794036-2 | 20 | | | | | | | |
| | | | | | | 794036-3 | 22 | | | | | | | |
| | | | | | | 794036-4 | 16 | | | | | | | |

**PM: Panel Mount**

[1]Duplex Finish—Plated with .000030 [.000762] min. gold in matting area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

[2]Surface Mount Compatible.

[3]With Drainholes

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



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UK: 44-8706-080-208

## Commercial MATE-N-LOK Connectors (Continued)

### Contacts

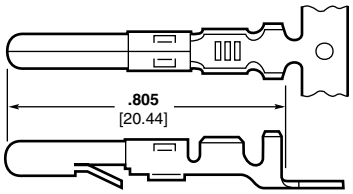
Pin diameter .084 [2.13]
Stock thickness .012 [.305]
These contacts are to be used in Commercial MATE-N-LOK housings **only**.

### Related Product Data

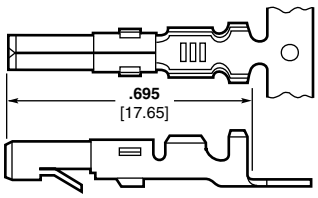
**Product Specification**
108-1000 Commercial MATE-N-LOK Connectors

**Application Specification**
114-1012 Commercial MATE-N-LOK Contacts

**Performance Characteristics**—pages 151-152
**Housings**—pages 157-159
**Technical Documents**—pages 151 and 205-206
**Application Tooling**—pages 207-210



Pin



Socket

| Wire Size Range AWG [mm²] | Ins. Dia. Range | Material & Finish | Contact Part Numbers | | | | HDM Applicator Part No. | Hand Tool Part No. |
|---|---|---|---|---|---|---|---|---|
| | | | Pin | | Socket | | | |
| | | | Strip Form | Loose Piece | Strip Form | Loose Piece | | |
| 30-22 [.05-.3] | **.040-.075** 1.02-1.91 | Brass, Pre-tin | 350079-1 | 61174-1 | 350078-1 | 61173-1 | 466426-1[3] 466426-2[3] 466426-3[3] | 91515-1 |
| | | Phos. Brz., Pre-tin | 350079-4 | — | 350078-4 | 61173-4 | | |
| | | Brass, Gold[1] | 350079-5 | 61174-5 | 350078-5 | 61173-5 | | |
| 24-18 [.2-.8] | **.060-.100** 1.52-2.54 | Brass, Pre-tin | 61116-1 | 60618-1 | 61314-1 | 60617-1 | 466320-1[3] 466320-2[3] 466320-4[3] | 91512-1 91528-1[4] |
| | | Phos. Brz., Pre-tin | 61116-4 | 60618-4 | 61314-4 | 60617-4 | | |
| | | Brass, Gold[1] | 61116-5 | 60618-5 | 61314-5 | 60617-5 | | |
| | | Phos. Brz., Select Gold[2] | 61116-6 | 60618-6 | 61314-6 | 60617-6 | | |
| | | Brass, Select Gold[2] | 61116-7 | — | 61314-7 | — | | |
| 20-14 [.5-2.0] | **.100-.130** 2.54-3.30 | Brass, Pre-tin | 61118-1 | 60620-1 | 61117-1 | 60619-1 | 687763-1[3] 687763-2[3] 687763-6[3] | 91504-1 |
| | | Phos. Brz., Pre-tin | 61118-4 | 60620-4 | 61117-4 | 60619-4 | | |
| | | Brass, Gold[1] | 61118-5 | 60620-5 | 61117-5 | 60619-5 | | |
| | | Phos. Brz., Gold[1] | 61118-6 | — | 61117-6 | 60619-7 | | |
| | | Brass, Select Gold[2] | 61118-7 | — | 61117-7 | — | | |
| (2) 18 [.8] or (1) 18 [.8] and (1) 16 [1.2] | (2) **.115 Max.** 2.92 (stacked) | Brass, Pre-tin | 350558-1 | 350639-1 | 350557-1 | — | 687898-1[3] 687898-2[3] 687898-4[3] | 91504-1 |
| | | Phos. Brz., Pre-tin | 350558-4 | — | 350557-4 | 350638-4 | | |

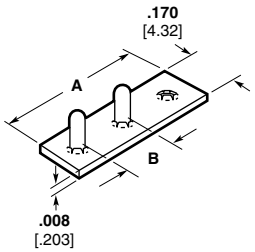
[1]Gold Finish — Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.
[2]Select Gold Finish — Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.
[3]HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine; -3, -4, or -6 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.
[4]Use Hand Tool No. 91528-1 for .043-.075 [1.09-1.90] insulation diameter.

**Notes:**
1. Extraction Tools: Pins — No. **1-305183-1** (IS 408-7158); Sockets — No. **1-305183-2** (IS 408-7158); Pins and Sockets — No. **465644-1** (IS 408-7211)
2. Insertion Tools: No. **455830-1** (IS 408-7984)

### Commoning Tabs

### Material and Finish

Brass, tin plated
Stock thickness .008 [.203]




| Number of Holes | Dimensions | | Part Number |
|---|---|---|---|
| | A | B | |
| 2 | **.377** 9.58 | **.203** 5.16 | 60843-1 |
| 2 | **.355** 9.02 | **.195** 4.95 | 350444-1 |
| 3 | **.579** 14.71 | **.203** 5.16 | 60842-1 |
| 3 | **.550** 13.97 | **.195** 4.95 | 350444-2 |

**Note:** Commoning tabs are designed to be used with pin housings.

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





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## Commercial MATE-N-LOK Connectors (Continued)

### Contacts

Pin diameter .084 [2.13]
Stock thickness .012 [.305]
These contacts are to be used in Commercial MATE-N-LOK housings **only**.

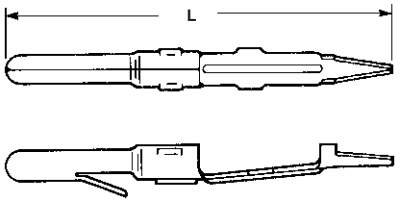
### Related Product Data

**Product Specification**
108-1000 Commercial MATE-N-LOK Connectors

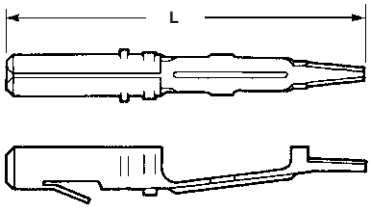
**Application Specification**
114-1012 Commercial MATE-N-LOK Contacts

**Performance Characteristics**—pages 151-152
**Housings**—pages 157-159
**Technical Documents**—pages 151 and 205-206
**Application Tooling**—pages 207-210

### PC Board Contacts




Pin




Socket

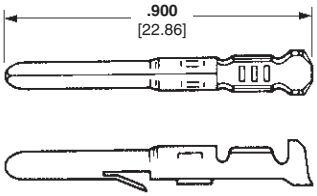
| Type of Contact | L Dim. | | Material & Finish | Part Numbers | |
|---|---|---|---|---|---|
| | Pin | Socket | | Pin | Socket |
| | | | | Loose Piece | Loose Piece |
| PC Board | **1.110** [28.19] | **1.010** [25.65] | Phos. Brz., Pre-tin | 61518-1[1] | 61320-1[1] |
| | **1.210** [30.73] | **1.110** [28.19] | Phos. Brz., Pre-tin | 350074-1[2] | 350073-1[2] |

[1]For .062 [1.57] max. board thickness — Board hole size .057 [1.45]
[2]For .125 [3.14] max. board thickness — Board hole size .057 [1.45]

### Grounding Pin

(.095 [2.41] longer than standard pin)

(Mate first, break last, not for interrupting current)




| Wire Size Range AWG [mm²] | Ins. Dia. Range | Material & Finish | Contact Part Numbers | | HDM Applicator Part No. | Hand Tool Part No. |
|---|---|---|---|---|---|---|
| | | | Strip Form | Loose Piece | | |
| 24-18 [.2-.8] | **.060-.100** 1.52-2.54 | Brass, Pre-tin | 61527-2 | — | 466320-1[1] 466320-2[1] 466320-4[1] | 91512-1 |

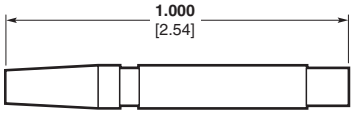
[1]HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine; -3, -4, or -6 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

### Keying Plug

IS 408-7582

### Material

**Housing** — Nylon, natural color
**Flammability Rating** — UL94V-2




**Part Number**
**200821-1**
**Note:** Keying plug snaps into socket housing

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





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## Commercial MATE-N-LOK Connectors (Continued)

### Housings

#### Free-Hanging

.200 [5.08] Centerline spacing

### Material

**Housing**—Nylon, natural color

**Flammability Rating**—UL94V-2

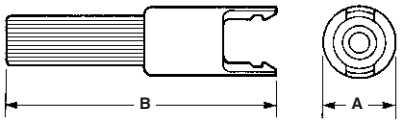
### Related Product Data

**Product Specification**

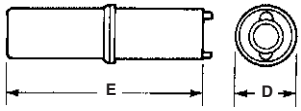
108-1000 Commercial MATE-N-LOK Connectors

**Performance Characteristics**—pages 151-152
**Contacts**—pages 155-156
**Commoning Tabs**—page 155
**Keying Plug**—page 156
**Technical Documents**—pages 151 and 205-206
**Mating Pin Headers**—pages 161-164
**Mating Socket Headers**—page 162
**Mating IDC**—page 163

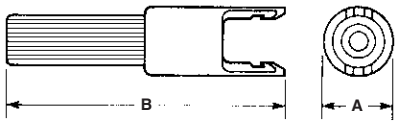
### 1 Circuit




Pin Housing (Cap) Detent Lock

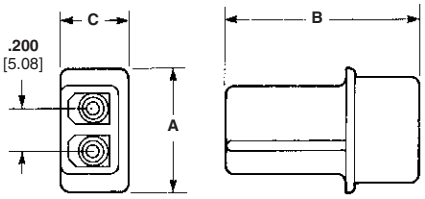



Socket Housing (Plug)

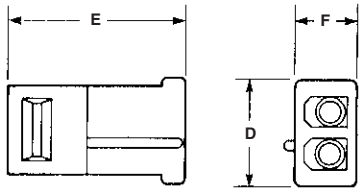



Pin Housing (Cap) Positive Lock

### 2, 3 and 4 Circuit, In-Line




Pin Housing (Cap)




Socket Housing (Plug)

| Number of Circuits | Dimensions | | | | | | Part Numbers | |
|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | Pin Housing (Cap) | Socket Housing (Plug) |
| 1 | **.300** 7.62 | **1.200** 30.48 | — | **.260** 6.60 | **.870** 22.10 | — | 1-480350-0[1] | 1-480349-0 |
| | **.300** 7.62 | **1.240** 31.49 | — | **.260** 6.60 | **.870** 22.10 | — | 1-480351-0[2] | 1-480349-0 |
| | **.300** 7.62 | **1.325** 33.65 | — | **.260** 6.60 | **.995** 25.27 | — | 1-480401-0[1,3] | 1-480400-0[3] |
| 2 | **.610** 15.49 | **.930** 23.62 | **.330** 8.38 | **.530** 13.46 | **.860** 21.84 | **.295** 7.49 | 1-480319-0[1,5] | 1-480318-0[5] |
| | **.610** 15.49 | **.930** 23.62 | **.330** 8.38 | **.530** 13.46 | **.860** 21.84 | **.295** 7.49 | 1-480498-1[1,3,5] | 1-480393-1[3,5] |
| 3 | **.810** 20.57 | **.930** 23.62 | **.325** 8.25 | **.825** 20.95 | **.850** 21.60 | **.290** 7.37 | 1-480305-0[1,5] | 1-480303-0[5] |
| | **.810** 20.57 | **.930** 23.62 | **.325** 8.25 | **.825** 20.95 | **.850** 21.60 | **.290** 7.37 | 1-480387-0[1,3,5] | 1-480388-0[3,5] |
| 4 | **1.010** 25.65 | **.930** 23.62 | **.330** 8.38 | **1.030** 26.16 | **.850** 21.60 | **.310** 7.88 | 1-480426-0[1,5,6] | 1-480424-0[5,6] |
| | — | — | — | **1.030** 26.16 | **.850** 21.60 | **.310** 7.88 | 794132-1[4,5,6] | 770827-1[4,5,6] |

[1]Detent lock
[2]Positive lock
[3]UV Stable black color
[4]Housing Material UL94V-0 rated
[5]Housing accepts double wire applications where individual insulation diameters do not exceed .115 [2.92].
[6]Used by the disk drive industry.

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





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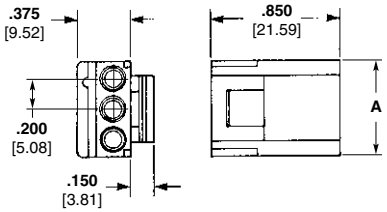
## Commercial MATE-N-LOK Connectors (Continued)

### Housings
**Free-Hanging, Positive Lock**

### Material
**Housing**—Nylon, natural color
**Flammability Rating**—UL94V-2

### 2, 3, and 4 Circuit, In-Line
.200 [5.08] Centerline spacing

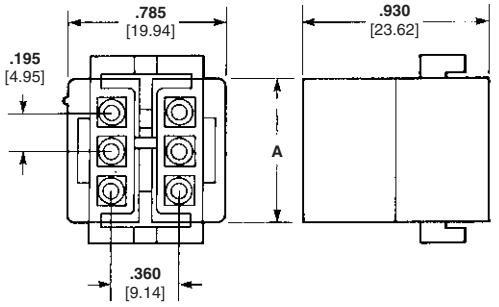


Socket Housing (Plug)

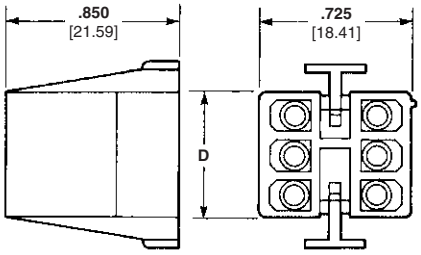
| Number of Circuits | A Dim. | Part Numbers | | |
|---|---|---|---|---|
| | | Socket Housing (Plug) | Mates with Pin Headers | Mates with Cap Housing |
| 2 | **.435** 11.04 | 1-480720-0 | 350539, 350540 | 794012-1 |
| 3 | **.630** 16.00 | 1-480721-0 | 350541 | — |
| 4 | **.830** 21.09 | 1-480722-0[1] | 350543[1], 350544[1] | — |

[1]Used by the disk drive industry.

### 6 Circuit, Dual Row

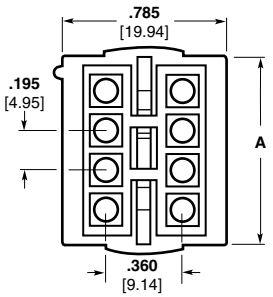


Pin Housing (Cap)

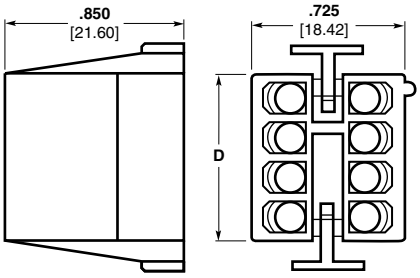


Socket Housing (Plug)

### 8 and 10 Circuit, Dual Row



Pin Housing (Cap)



Socket Housing (Plug)

| Number of Circuits | Dimensions | | Part Numbers | |
|---|---|---|---|---|
| | A | D | Pin Housing (Cap) | Socket Housing (Plug) |
| 6 | **.705** 17.91 | **.610** 15.49 | 1-480340-0 | 1-480270-0[1] |
| 8 | **.900** 22.86 | **.805** 20.44 | 1-480345-0 | 1-480283-0[1] |
| 10 | **1.095** 27.81 | **1.000** 25.40 | 1-480339-0 | 1-480285-0[1] |

[1]Housing accepts double wire applications where individual insulation diameters do not exceed .115 [2.92].

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

### Related Product Data
**Product Specification**
108-1000 Commercial MATE-N-LOK Connectors
**Performance Characteristics**—pages 151-152
**Contacts**—pages 155-156
**Commoning Tabs**—page 155
**Keying Plug**—page 156
**Technical Documents**—pages 151 and 205-206
**Mating Headers**—pages 161-164





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# Commercial MATE-N-LOK Connectors (Continued)

## Housings

**Panel Mount, Positive Lock**

### Material

**Housing**—Nylon, natural color

**Flammability Rating**—UL94V-2

### Related Product Data

**Product Specification**

108-1000 Commercial MATE-N-LOK Connectors

**Performance Characteristics**—pages 151-152
**Contacts**—pages 155-156
**Commoning Tabs**—page 155
**Keying Plug**—page 156
**Technical Documents**—pages 151 and 205-206
**Mating Socket Headers**—page 162
**Mating IDC**—page 163

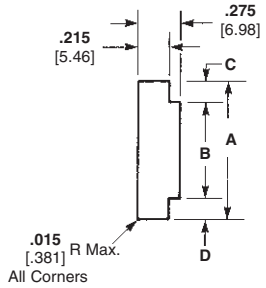
## Recommended Panel Cutout for Panel Mount Socket Housing

View is from socket housing entry side

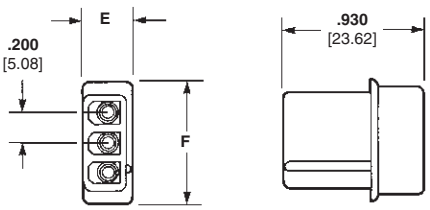
**Mounting Information**

1. Recommended panel thickness—.025-.065 [.635-1.65].
2. Both locking legs are to be squeezed together and the housing is to be inserted "straight-in", as opposed to a rocking manner.
3. The panel should be punched so that the housing enters the panel in the same direction as the punch.
4. The panel must not have any material (paint, porcelain, etc.) applied in the mounting hole area that would decrease the retention of the housing in the panel.
5. If the two items above are not complied with, the "A" dimension should be reduced .020 [5.08] for proper retention.

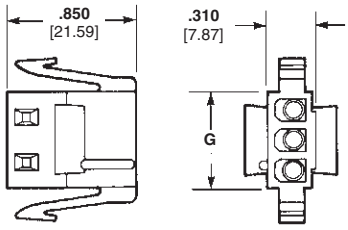
## 3 and 4 Circuit, In-Line




## 3 and 4 Circuit, In-Line

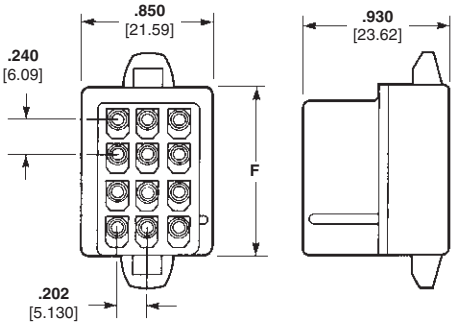



Pin Housing (Cap)

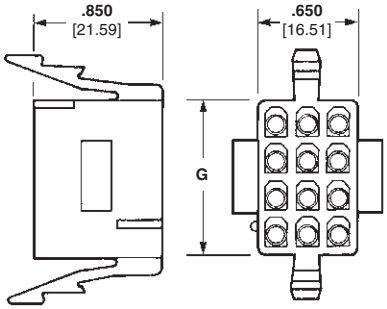



Socket Housing (Plug)

## 6, 9, 12 and 15 Circuit, Matrix




Pin Housing (Cap)



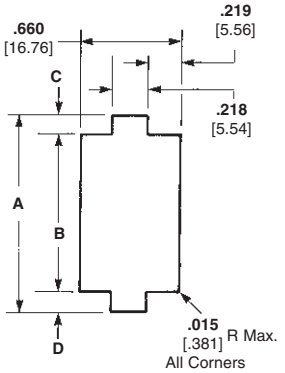

Socket Housing (Plug)

| Number of Circuits | Dimensions | | | Part Numbers | |
|---|---|---|---|---|---|
| | E | F | G | Pin Housing (Cap) | Socket Housing (Plug) |
| 3 | **.325** 8.26 | **.810** 20.57 | **.630** 16.00 | 1-480305-0[2] | 1-480304-0 |
| 4 | **.330** 8.38 | **1.010** 25.65 | **.825** 20.96 | 1-480426-0[2,4] 3-480426-0[1,2,4] | 1-480425-0[4] 3-480425-0[1,4] |
| 6 | — | **.665** 16.89 | **.555** 14.10 | 1-480276-0[3] | 1-480273-0 |
| 9 | — | **.905** 22.99 | **.795** 20.19 | 1-480277-0[3] | 1-480274-0 |
| 12 | — | **1.145** 29.08 | **1.045** 26.54 | 1-480278-0[3] | 1-480275-0 |
| 15 | — | **1.382** 35.10 | **1.280** 32.51 | 1-480324-0[3] | 1-480323-0 |

[1]Housing material has 125°C temperature rating
[2]Detent lock
[3]Positive lock
[4]Used by disk drive industry

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

## 6, 9, 12 and 15 Circuit, Matrix




| Number Circuits | Dimensions | |
|---|---|---|
| | A | B |
| 3 | **.890** 22.61 | **.645–.635** 16.38–16.13 |
| 4 | **1.100** 27.94 | **.845–.835** 21.46–21.21 |
| 6 | **.840** 21.34 | **.575–.570** 14.61–14.48 |
| 9 | **1.075** 27.31 | **.815–.810** 20.70–20.57 |
| 12 | **1.320** 33.53 | **1.055–1.050** 26.80–26.67 |
| 15 | **1.550** 39.37 | **1.290–1.285** 32.77–32.64 |

**Note:** Dimensions "C" and "D" are to be equal.





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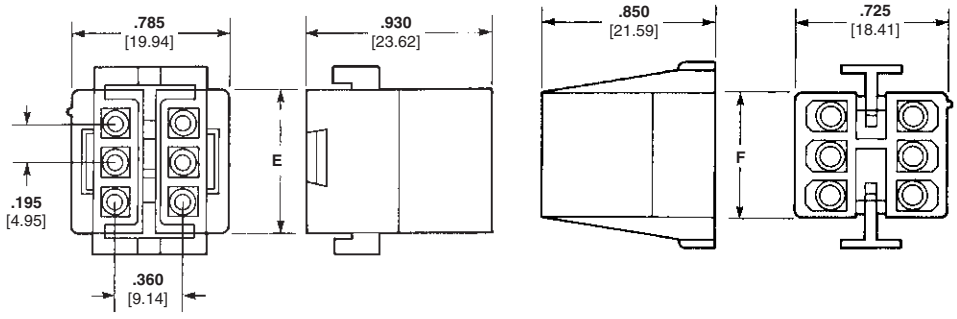
## Commercial MATE-N-LOK Connectors (Continued)

### Motor Mount, Positive Lock

### 6, 8, 10, 12 and 16 Circuit, Dual Row




Pin Housing (Cap) Socket Housing (Plug)

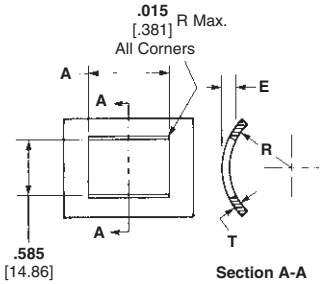
| Number of Circuits | Dimensions | | Part Numbers | |
|---|---|---|---|---|
| | E | F | Pin Housing (Cap) | Socket Housing (Plug) |
| | | | UL94V-2 Nylon, Natural Color | |
| 6 | **.705** 17.90 | **.610** 15.49 | 1-480271-0 | 1-480270-0[1] |
| 8 | **.900** 22.86 | **.805** 20.45 | 1-480284-0 | 1-480283-0[1] |
| 10 | **1.095** 27.81 | **1.000** 25.4 | 1-480286-0 | 1-480285-0[1] |
| 12 | **1.290** 32.77 | **1.195** 30.35 | 1-480288-0 | 1-480287-0 |
| 16 | **1.680** 42.67 | **1.585** 40.26 | 1-480439-0 | 1-480438-0 |

[1]Housing accepts double wire applications where individual insulation diameters do not exceed .115 [2.92].

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

### Recommended Panel Cutout for Motor Mount Pin Housing

View is from pin housing entry side.




Section A-A

**Note:** Motor mount housings may be used in flat panels

| Number of Circuits | A Dim. |
|---|---|
| 6 | **.715** 18.16 |
| 8 | **.910** 23.11 |
| 10 | **1.105** 28.07 |
| 12 | **1.300** 33.02 |
| 16 | **1.690** 42.93 |

**Mounting Information**

1. Recommended panel thickness "E" is .040-.100 [1.02-2.54] and is dependent on "T" and "R".
2. The pin housing must be inserted in a rocking manner.
3. The panel must be punched so that the housing enters the panel in the same direction as the punch.





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# Commercial MATE-N-LOK Connectors (Continued)

## PC Board Vertical Pin Headers

### Material

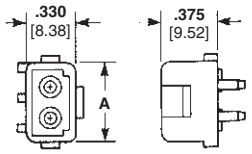
**Housing** — Nylon, natural color
**Flammability Rating** — UL94V-2
**Contacts** — Phosphor bronze
Solder tail diameter .062 [1.57]

### Related Product Data

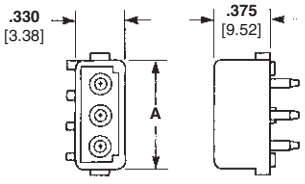
**Product Specifications**
108-1077 Commercial MATE-N-LOK PC Board Headers

**Performance Characteristics**—pages 151-152
**Technical Documents**—pages 151 and 205-206
**Mating Socket Housings**—pages 157-160
**Mating Socket Headers**—page 162
**Mating IDC**—page 163

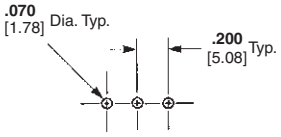
### 2, 3, and 4 Circuit, In-Line



Positive Lock

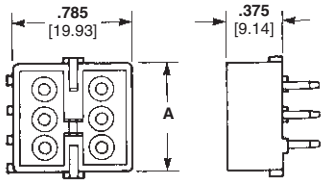


Detent Lock

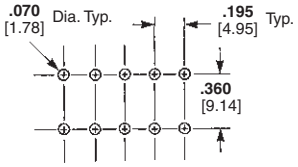


Recommended PC Board Hole Layout Mounting Dimensions

### 6, 8, 10, 12 and 16 Circuit, Dual Row



Positive Lock



Recommended PC Board Hole Layout Mounting Dimensions

| Number of Circuits | A Dim. | Type Lock | Finish | Part Numbers: Standard[2] Tail | Part Numbers: Long[3] Tail | Mates with Socket Housing Part Number |
|---|---|---|---|---|---|---|
| 2 | .515 13.09 | Positive | Pre-tin | 350539-1 | 350540-1 | 1-480720-0 |
| | | | Duplex[1] | 1586530-2 | — | |
| | | Detent | Pre-tin | 350209-1 | 350422-1 | 1-480318-0 |
| | | | Duplex[1] | 1586512-2 | — | |
| 3 | .715 18.17 | Positive | Pre-tin | 350541-1 | 350542-1 | 1-480721-0 |
| | | | Duplex[1] | 1586532-2 | — | |
| | | Detent | Pre-tin | 350210-1 | 350423-1 | 1-480303-0 |
| | | | Duplex[1] | 1586514-2 | — | |
| 4 | .915 23.24 | Positive | Pre-tin | 350543-1[5] | 350544-1[5] | 1-480722-0[5] |
| | | | Duplex[1] | 1586534-2[5] | 1586536-2[5] | |
| | | Detent | Pre-tin | 350211-1[5] / 794236-1[5,8] | 350424-1[5] | 1-480424-0[4,5] |
| | | | Post-tin | 1586627-1[5,6] / 1-1586627-1[5,6,7] | | |
| | | | Duplex[1] | 1586515-2[5] | 1586525-2[5] | |
| 6 | .705 17.91 | Positive | Pre-tin | 1-380999-0 | 350425-1 | 1-480270-0 |
| | | | Duplex[1] | 2-1586546-0 | 1586526-2 | |
| 8 | .900 22.86 | Positive | Pre-tin | 350212-1 | 350426-1 | 1-480283-0 |
| | | | Duplex[1] | 1586518-2 | 1586528-2 | |
| 10 | 1.095 27.81 | Positive | Pre-tin | 1-380991-0 | 350219-1 | 1-480285-0 |
| | | | Duplex[1] | 2-1586544-0 | — | |
| 12 | 1.290 32.77 | Positive | Pre-tin | 350213-1 | 350220-1 | 1-480287-0 |
| | | | Duplex[1] | 1586520-2 | 1586524-2 | |
| 16 | 1.680 42.68 | Positive | Pre-tin | 350214-1 | 350427-1 | 1-480438-0 |
| | | | Duplex[1] | 1586522-2 | 1586529-2 | |

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Use standard tail for .062 [1.57] thick PC Board.
[3]Use long tail for .125 [3.18] thick PC Board.
[4]Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC).
[5]Used by the disk drive industry.
[6]With drain holes.
[7]Tube loaded.
[8]Housing material UL94V-0 rated.

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





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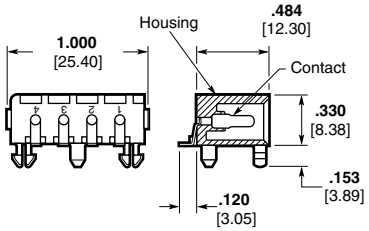
# Commercial MATE-N-LOK Connectors (Continued)

## PC Board Surface Mount Right-Angle Pin Header

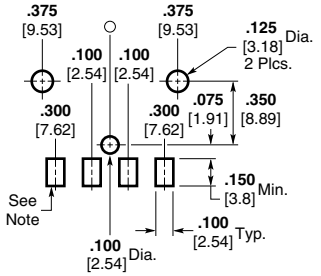
### Material and Finish

**Housing** — Nylon, black color
**Flammability Rating** — UL94V-2
**Contact** — Phosphor bronze, pre-tin
Solder tail width .052 [1.32]

### 4 Circuit, In-Line




**Part Number**
**770829-1**




**Note:** .010 [.25] min. thick solder paste, 63/27 tin

**Recommended PC Board Layout**
.062 [1.57] thick PC Board

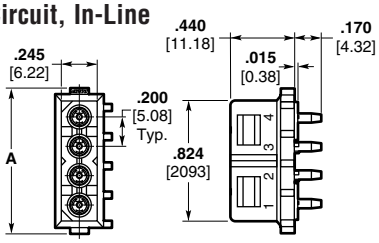
**Notes:**
1. Mating parts include socket housings, a vertical PC Board socket header below and the insulation displacement connectors (IDC).
2. Used by the disk drive industry.

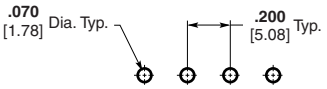
## PC Board Vertical Socket Headers

### Material

**Housing** — Nylon, natural color
**Flammability Rating** — UL94V-2
**Contacts**—Phosphor bronze
Solder tail diameter .062 [1.57]

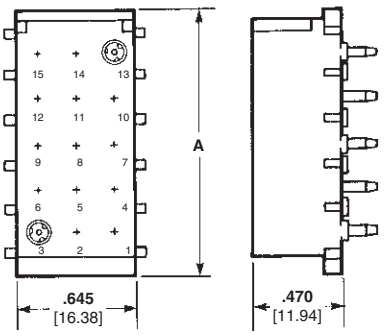
### 4 Circuit, In-Line

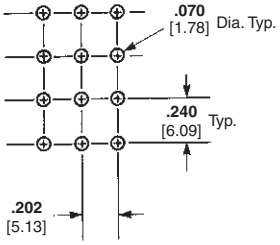



**Recommended PC Board Hole Layout**
.062 [1.57] thick PC Board

### 6, 9, 12 and 15 Circuit, Matrix




**Recommended PC Board Hole Layout**
.062 [1.57] thick PC Board

| Number of Circuits | A Dim. | Finish | Part Numbers | | Mates with Pin Housing Part Number |
|---|---|---|---|---|---|
| | | | Standard Tail[5] | Long Tail[6] | |
| 4 | **1.000** 25.40 | Pre-tin | 770997-1[3] | — | 1-480426-0[2,3] |
| | | | 794285-1[3,7] | — | |
| | | | 794287-1[3,4,8] | — | |
| 6 | **.720** 18.29 | Pre-tin | 350641-1 | 350576-1 | 1-480276-0 |
| | | Duplex[1] | 1586539-2 | — | |
| 9 | **.960** 24.39 | Pre-tin | 350642-1 | 350577-1 | 1-480277-0 |
| 12 | **1.200** 30.49 | Pre-tin | 350643-1 | 350578-1 | 1-480278-0 |
| 15 | **1.440** 36.58 | Pre-tin | 350644-1 | 350579-1 | 1-480324-0 |

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Other mating connectors include vertical, right-angle and surface mount PC Board pin headers.
[3]Used by the disk drive industry.
[4]Surface mount compatible.
[5]Use standard tail for .062 [1.57] thick PC Board.
[6]Use long tail for .125 [3.18] thick PC Board.
[7]Low Mating Force
[8]High Temperature
**Note: All part numbers are RoHS Compliant.**

### Related Product Data

**Product Specifications**
108-1077 Commercial MATE-N-LOK PC Board Headers

**Performance Characteristics**—pages 151-152
**Technical Documents**—pages 151 and 205-206
**Mating Pin Housings**—pages 157-160
**Mating Pin Headers**—pages 161-164
**Mating Socket Housings**—pages 157-160
**Mating Socket Headers**—page 162
**Mating IDC**—page 163





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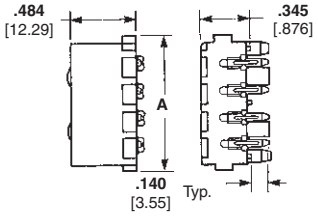
# Commercial MATE-N-LOK Connectors (Continued)

## PC Board Right-Angle Pin Headers

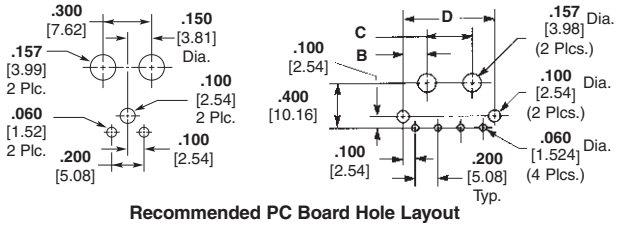
### Material and Finish

**Contact** — Phosphor bronze, pre-tin
Solder tail width .052 [1.32]

### 2, 3, and 4 Circuit, In-Line




### 2, 3, and 4 Circuit




**Recommended PC Board Hole Layout**
.062 [1.57] thick PC Board

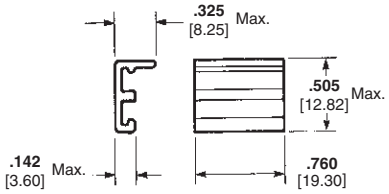
| Number of Circuits | Dimensions A | B | C | D | Housing Material | Part Numbers | Mates with Socket Housing Part Number |
|---|---|---|---|---|---|---|---|
| 2 | **.600** 15.24 | — | **.300** 7.62 | — | UL94V-2 Nylon Natural Color | 794120-1 | 1-480318-0 |
| 3 | **.800** 20.32 | **.150** 3.81 | **.300** 7.62 | **.600** 15.24 | UL94V-0 Nylon | 643488-1 | 1-480303-0 |
| 4 | **1.000** 25.40 | **.200** 5.08 | **.400** 10.16 | **.800** 20.32 | UL94V-2 Nylon, Natural Color | 641737-1[3] 770846-1[1,3] | 1-480424-0[2,3] |
| | | | | | UL94V-0 Nylon | 1-641737-1[3] | 770827-1[2,3] |

[1]Surface Mount Compatible. [2]Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC). [3]Used by the disk drive industry.

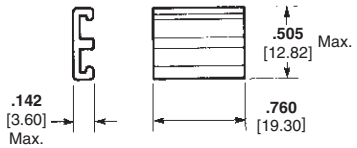
## Dust Covers

### Material

**Housing** — Polyester, white color
**Flammability Rating** — UL94V-2




**For Feed-To Wiring**
**Part Number 770232-1**




**For Feed-Through Wiring**
**Part Number 770233-1**

**Note:** These parts are used with the insulation displacement connectors below.

## Insulation Displacement Connectors (IDC)

### Material

**Housing** — Nylon
**Contact** — Phosphor bronze

### Related Product Data

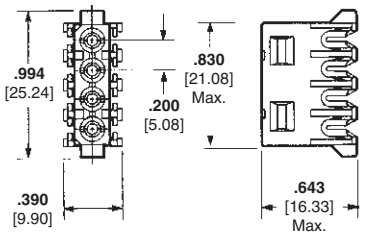
Used by the disk drive industry.

**Product Specifications**
108-1077 Commercial MATE-N-LOK PC Board Headers
108-49000 IDC Connectors

**Application Specification**
114-49001 IDC Connectors

**Performance Characteristics**— pages 151-152
**Technical Documents**— pages 151 and 205-206
**Mating Socket Housings**— pages 157-160
**Mating Pin Housings**— pages 157-160
**Mating Pin Headers**— pages 161-164

### 4 Circuit, In-Line




**Socket Assembly (Plug)**

| Wire Size Range AWG [mm²] | Color Code | Finish | Part Number UL94V-2 | Part Number UL94V-0 | Mates with Part Numbers |
|---|---|---|---|---|---|
| 22 [.3] | Red | Pre-tin | 770156-2 | 794036-3 | 1-480426-0** 350211-1 350211-2 350424-1 350424-2 641737-1 1-641737-1 770827-1 770829-1 770846-1 |
| 20 [.5] | Yellow | Pre-tin | 770156-4 | 794036-2 | |
| 18 [.8] | Orange | Pre-tin | 770156-3 | 794036-1 | |
| 16 [1.2] | Blue | Pre-tin | 770156-5* | 794036-4 | |

*Application Tooling: Arbor Tool 91085-2 uses head 231920-2. **Pin Housing

**Notes:**
1. Insulation diameter .095 [2.41] max.
2. Application Tooling
Power Unit No. **91112-2** (IS 408-7763) uses Head No. **231920-2** (IS 408-9330) and Hand Tool Handle No. **58074-1** (IS 408-6790) uses Terminating Head No. **231894-1**(IS 408-3186)

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





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## Commercial MATE-N-LOK Connectors (Continued)

### PC Board Right-Angle Pin Header with Fix Belt

#### Material

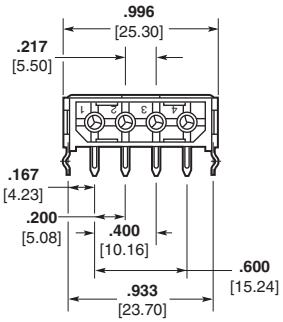
**Housing** — Thermoplastic
**Flammability Rating** — UL94V-2
**Contacts** — Copper Alloy

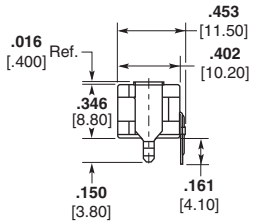
#### Related Product Data

Used by the disk drive industry

**Product Specification**
108-5155

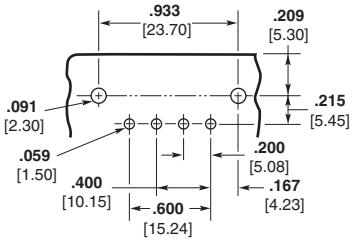
### 4 Circuit, In-Line




**Part No. 174552-1**

**Notes:** Mates with socket housing Part No. 1-480424-0. Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC).




**Recommended PC Board Hole Layout**
.062 [1.57] thick PC Board

### PC Board Right-Angle Pin Headers with Fix Belt

**Reverse Polarization**

#### Material and Finish

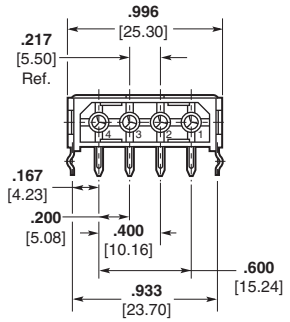
**Housing** — Nylon
**Flammability Rating** — UL94V-2
**Contacts** — Tin plated, Copper alloy

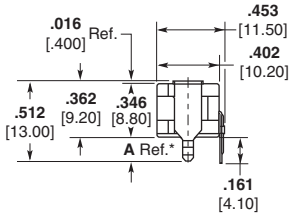
#### Related Product Data

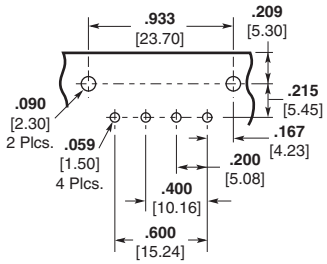
Used by the disk drive industry

**Product Specification**
108-5155

### 4 Circuit, In-Line




| Part No. | A Dim.* | Description |
|---|---|---|
| 174804-1 | .150<br>3.80 | Long Clamp with Kink |

**Part No. 174804***

**Recommended PC Board Hole Layout**
.062 [1.57] thick PC Board

**Notes:** Mates with socket housing Part No. 1-480424-0. Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC).

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





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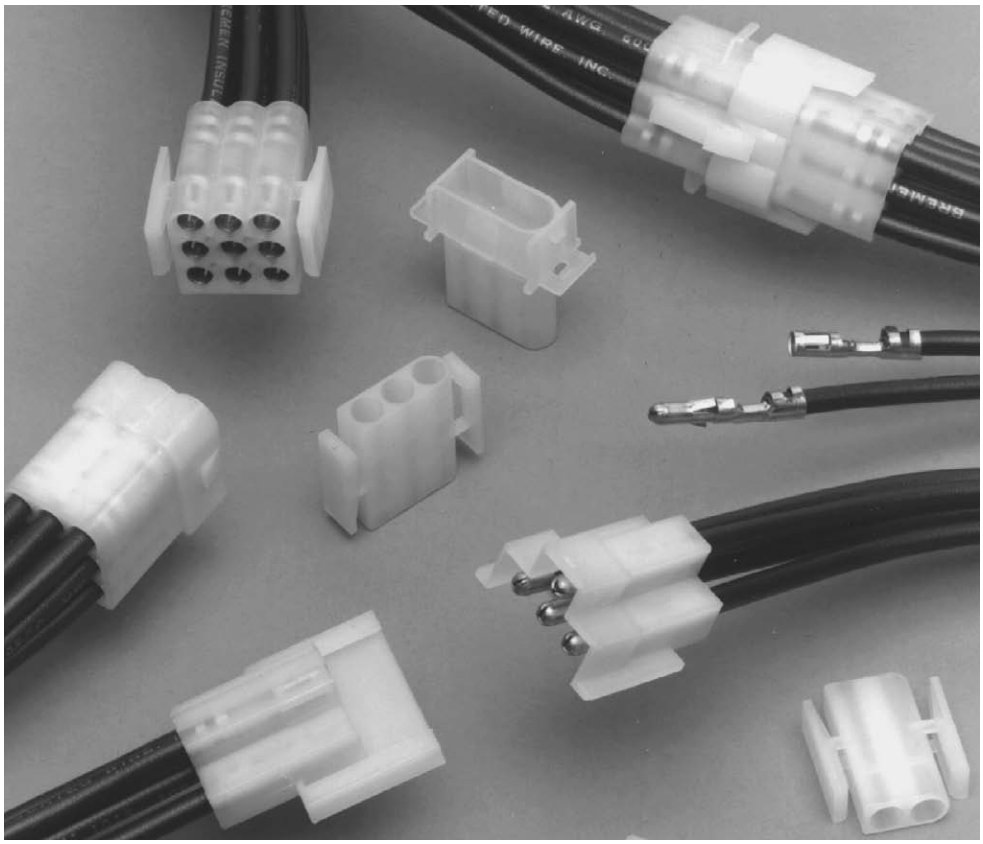
UK: 44-8706-080-208

# .140 MATE-N-LOK Connectors (Large Insulation), .240 Centerline

## Product Facts

- **Available in 2, 3 and 9 circuit configurations for panel mounting; 4 and 9 circuit configurations for free-hanging applications**
- **Standard natural nylon housings**
- **Housings fully polarized**
- **Contacts fully protected in housings**
- **Contacts accept wire size range 20-10 AWG [.5-5.0 mm² ] with insulation diameters from .100 [2.54] to .180 [4.57]**
- **Low insertion/extraction forces**
- **Dual locking lances provide optimum contact stability**
- **Extraction tool removes both pins and sockets**
- **Contacts are on .240 [6.09] centerline spacing**
- **Not for interrupting current**
- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**
- **Certified by Canadian Standards Association, File No. LR 7189A**



## Performance Characteristics

The .140 MATE-N-LOK Connector performance characteristics found on this page are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Dielectric Withstand Voltage**—3.0 KVAC between adjacent circuits

**Insulation Resistance**—1000 megohms minimum initial between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Connector Mating**—4.5 lb. max. per circuit

**Connector Unmating**—.8 lb. min. per circuit

**Contact Retention**—30 lb. min.

**Durability**—25 cycles, mating and unmating

**Thermal Shock**— -55°C to +85°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

**Maximum Current**—Maximum current rating of .140 MATE-N-LOK Connectors is limited by the maximum operating temperature of the housings which is 105°C and the temperature rise of the contacts which is 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

## Technical Documents

**Product Specification**

108-1032 .140 Diameter MATE-N-LOK Connectors

**Application Specification**

114-1007 .140 Diameter MATE-N-LOK Contacts

| Wire Size | | Termination Resistance | | Contact Crimp Tensile Force | |
|---|---|---|---|---|---|
| AWG | mm² | Test Current (Amps) | Resistance Milliohms (Max. Init.) | Force (Min.) lbs. | Force (Min.) N |
| 20 | .5 | 4.5 | 3.0 | 20 | 89 |
| 18 | .8 | 6 | 2.5 | 30 | 133 |
| 16 | 1.2 | 8 | 2.5 | 45 | 200 |
| 14 | 2.0 | 10 | 2.0 | 50 | 222 |
| 12 | 3.0 | 12 | 1.5 | 60 | 267 |
| 10 | 5.0 | 14 | 1.5 | 65 | 289 |

**Note:** This is the total resistance between wire crimps of a mated pin and socket.

### Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

### Wire-to-Wire

### .140 MATE-N-LOK Connector Calculated Current Table

| Number of Circuits | Wire AWG 10 | 12 | 14 | 16 | 18 | 20 |
|---|---|---|---|---|---|---|
| 2 | 28.00 | 23.00 | 18.50 | 15.00 | 13.50 | 10.50 |
| 3 | 25.00 | 21.00 | 17.00 | 13.50 | 12.00 | 9.50 |
| 9 | 18.50 | 15.00 | 12.00 | 10.00 | 9.00 | 7.00 |

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

### Minimum Wire Lengths for T-Rise vs. Current Testing

**Note:** If wire lengths used are less than those listed, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.





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Japan: 81-44-844-8013
UK: 44-8706-080-208

# .140 MATE-N-LOK Connectors (Large Insulation), .240 Centerline (Continued)

## Contacts

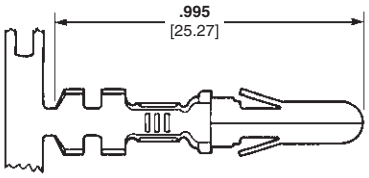
Pin diameter .140 [3.57]
Stock thickness .014 [.357]

## Related Product Data

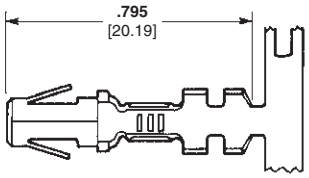
**Product Specification**
108-1032 .140 Diameter MATE-N-LOK Connectors

**Application Specification**
114-1007 .140 Diameter MATE-N-LOK Contacts

**Performance Characteristics**—page 159
**Keying Plug**—none
**Housings**—pages 166-167
**Technical Documents**—pages 165 and 205-206
**Application Tooling**—pages 207-210



Pin



Socket

| Wire Size Range AWG [mm²] | Ins. Dia. Range | Material & Finish | Contact Part Numbers | | | | HDM Applicator Part No. | Hand Tool Part No. |
|---|---|---|---|---|---|---|---|---|
| | | | Pin | | Socket | | | |
| | | | Strip Form | Loose Piece | Strip Form | Loose Piece | | |
| 20-14 [.5-2.0] | .100-.180 2.54-4.5 | Brass. pre-tin | 61627-1 | 350389-1 | 61626-1 | 350388-1 | 567306-1<br>567306-2<br>567306-3 | 90247-1 |
| | | Phos. Brz., pre-tin | 61627-2 | — | 61626-2 | — | | |
| 14-10 [2.0-5.0] | .100-.180 2.54-4.5 | Brass. pre-tin | 350201-1 | 350391-1 | 350200-1 | 350390-1 | 567309-1<br>567309-2<br>567309-3 | 69710-1[2] |
| | | Phos. Brz., pre-tin | 350201-2 | 350391-2 | 350200-2 | 350390-2 | | |

[1]HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.
[2]Hand Tool No. **69710-1** uses die set No. **58374-1** for 14-12 AWG and No. **58373-1** for 10 AWG.

**Contact Extraction Tool**
**Part No. 318845-1**
**IS 408-4378**

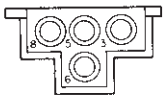
## Housings

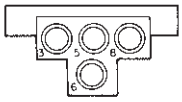
### Free-Hanging
.240 [6.09] Centerline spacing

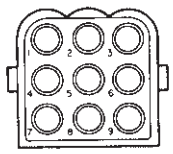
### Material
Nylon, natural color

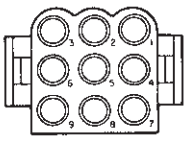
**Flammability Rating**—UL94V-2

**Cavity Identification**
(Rear View)

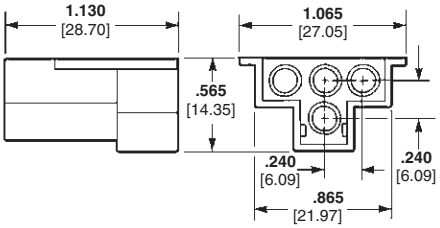

Cap


Plug

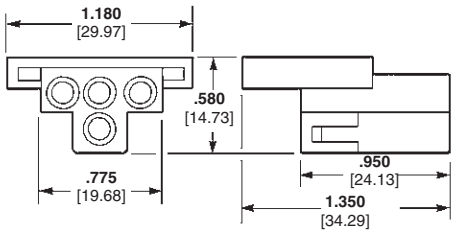

Cap


Plug

### 4 Circuit

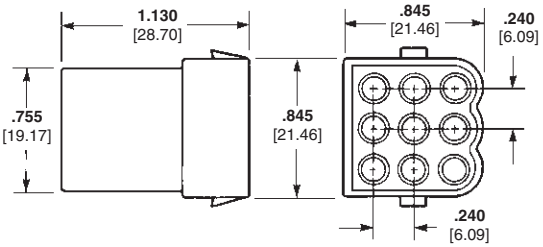


**Pin Housing (Cap)**
**Part No. 1-480512-0**
**Part No. 794700-1 (Black Color High Temp.)**

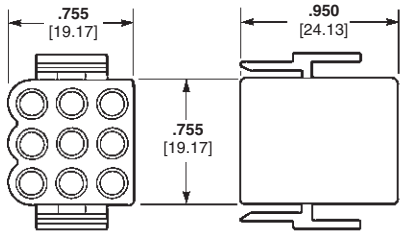


**Socket Housing (Plug)**
**Part No. 1-480510-0**

### 9 Circuit, Matrix



**Pin Housing (Cap)**
**Part No. 1-480586-0**



**Socket Housing (Plug)**
**Part No. 1-480585-0**

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





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# .140 MATE-N-LOK Connectors (Large Insulation), .240 Centerline (Continued)

## Housings

### Panel Mount

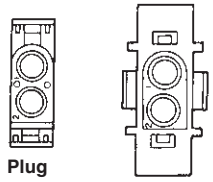
.240 [6.09] Centerline spacing

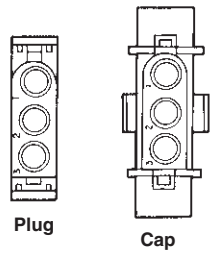
### Material

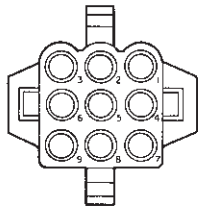
**Housing** — Nylon, natural color

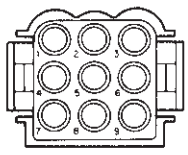
**Flammability Rating** — UL94V-2

**Cavity Identification**
(Rear View)




## Related Product Data

**Product Specification**

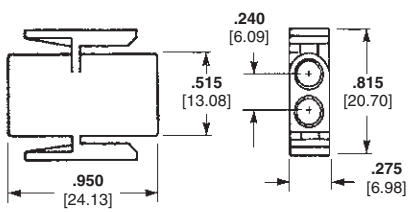
108-1032 .140 Diameter MATE-N-LOK Connectors

**Application Specification**

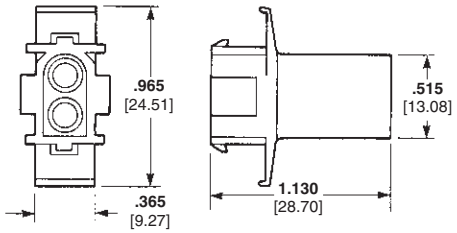
114-1007 .140 Diameter MATE-N-LOK Contacts

**Performance Characteristics**— page 165
**Keying Plug**— none
**Contacts**— page 166
**Technical Documents**— pages 165 and 205-206

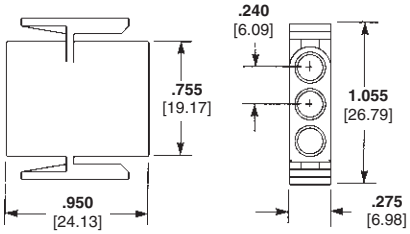
## 2 and 3 Circuit, In-Line



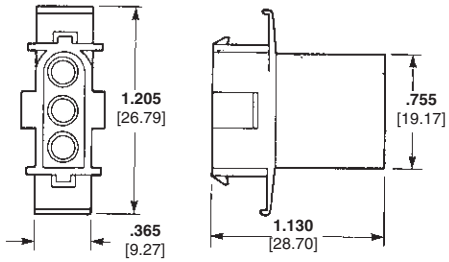

**Socket Housing (Plug)**
**Part No. 1-350344-0**
**Part No. 794699-1 (Black Color High Temp.)**




**Pin Housing (Cap)**
**Part No. 1-350345-0**
**Part No. 1586305-1 (Black Color High Temp.)**

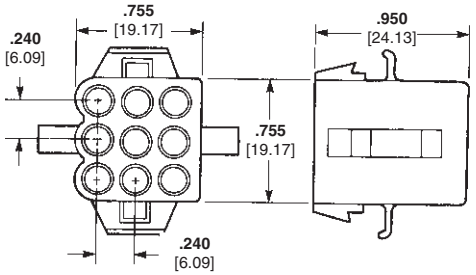



**Socket Housing (Plug)**
**Part No. 1-350346-0**

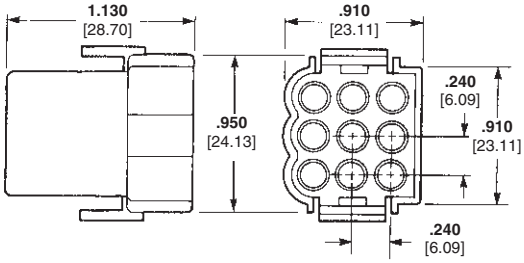



**Pin Housing (Cap)**
**Part No. 1-350347-0**
**Part No. 794061-1 (Black Color High Temp.)**

## 9 Circuit, Matrix




**Socket Housing (Plug)**
**Part No. 1-480672-0**
**Part No. 1586305-1 (Black Color High Temp.)**

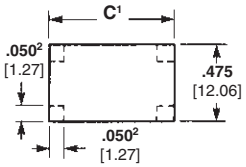



**Pin Housing (Cap)**
**Part No. 1-480673-0**
**Part No. 794683-1 (Black Color High Temp.)**

## Recommended Panel Cutouts

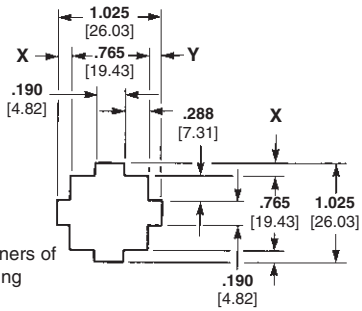
View is from housing entry side

### 2 and 3 Circuit




¹2 Circuit-.725 [18.42]
3 Circuit- .965 [24.51]
².050 x .050 [1.27-1.27] tabs in corners of outlet are optional to reduce housing float in panel.

### 9 Circuit




**Notes:**
1. Panel thickness .040-.070 [1.02-1.78].
2. "X" and "Y" dimensions must be within .005 [.127] of each other.
3. Panel should be punched so that the housing enters the panel in the same direction as the punch for ease of assembly.

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





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## Engineering Notes





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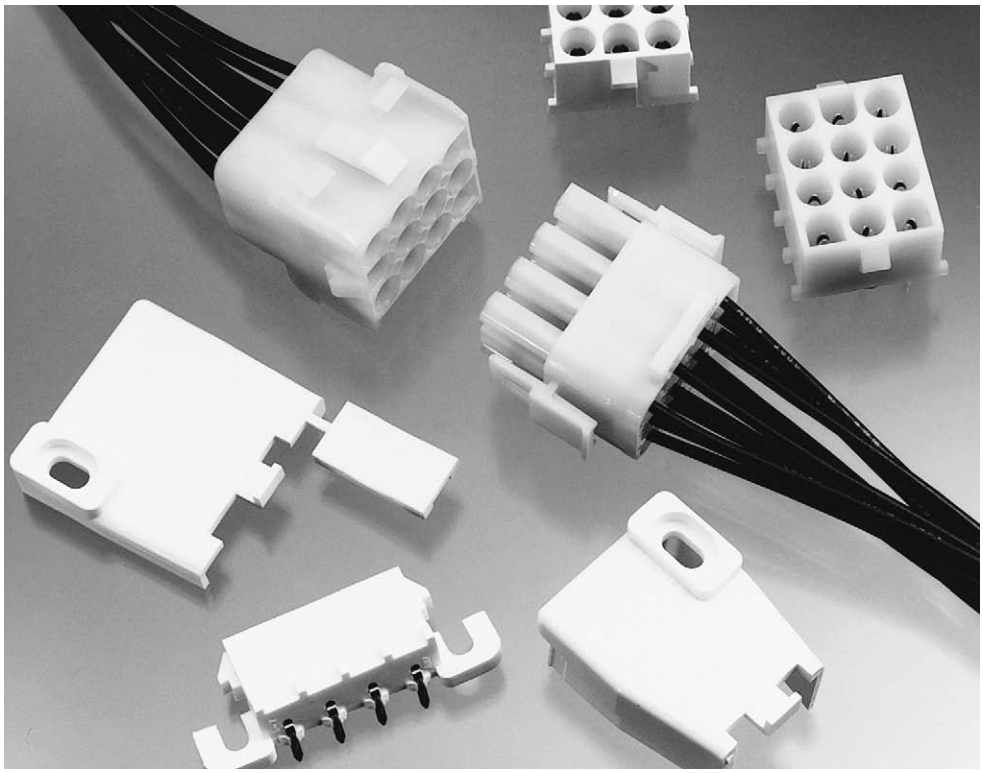
UK: 44-8706-080-208

# Universal MATE-N-LOK Connectors

## Product Facts

- Pins and sockets can be intermixed in the same housing
- Positive polarization
- Rear cavity identification
- Contacts completely enclosed in housings
- Positive locking housings
- Insulation capability to .200 [5.08] diameter
- Removable, crimp snap-in contacts
- Low contact mating force
- Contacts accept 30-10 AWG [.05-5.0 mm$^2$] wire sizes
- Contacts available with pre-tin or gold plating
- Dual locking lances provide optimum contact stability
- Panel mount or free-hanging
- Mate with Universal MATE-N-LOK II Housings
- Available in UL 94V-O flame retardant material. Meets the material requirements of table 25.1 of U.L. Standard 1410 (television receivers and video products)
- Not for interrupting current
- Harness to PC Board capability using pin or socket headers
- Pin and socket headers are available in both vertical and right-angle style
- Solderability—headers meet MIL-STD 202 Method 208
- Contacts are on .250 [6.35] centerline spacing
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189
- Passed test by VDE under their Registration Number 3980/Continuous Surveillance



## Performance Characteristics

The Universal MATE-N-LOK Connector performance characteristics found on pages 169-170 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Dielectric Withstanding Voltage**—5.0 KVAC or 5.0 KVDC between adjacent circuits

**Insulation Resistance**—1000 megohms minimum initial between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Contact Insertion Force**—5.0 lb. max. per contact

**Contact Retention**—15 lb. min. per contact

**Durability**—50 cycles, mating and unmating

## Technical Documents

**Product Specifications**

108-1031 Universal MATE-N-LOK Connectors

108-1053 Universal MATE-N-LOK PC Board Headers

**Application Specification**

114-1010 Universal MATE-N-LOK Contacts

**Instruction Sheet**

408-7714 Plug, Cap, Headers, Pin, Socket and Accessories





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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-8706-080-208

# Universal MATE-N-LOK Connectors (Continued)

## Performance Characteristics (Continued)

**Maximum Current**—Maximum current rating of Universal MATE-N-LOK connectors is limited by the maximum operating temperature of the housings which is 125°C for 94V-2 housings and 120°C for 94V-0 housings including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

**Printed Wiring Board Conductor Size**—The finished trace conductor width and thickness should be maximized to allow for the greatest current carrying capacity and heat dissipation.

Universal MATE-N-LOK connectors also will withstand the following tests:

**Vibration**—10-55-10 cycles per minute at .06 inch total excursion

**Physical Shock**—18 drops, 50 G sawtooth at 10 milliseconds

**Housing Panel Retention**—75 lb. min.

**Housing Lock Strength**—30 lb. min.

**Thermal Shock**— -55°C to +85°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

**Corrosion**—48 hr. at 5% salt concentration

## Related Product Data

**Product Specifications**

108-1031 Universal MATE-N-LOK Connectors

108-1053 Universal MATE-N-LOK Headers

## Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

### Wire-to-Wire

### Calculated Current Table

| Number of Circuits | Wire Gauge | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 30 |
| 2 | 19.00 | 18.00 | 17.00 | 14.50 | 13.00 | 10.00 | 8.00 | 6.50 | 5.50 | 3.50 |
| 3 | 17.50 | 16.50 | 15.50 | 13.00 | 12.00 | 9.00 | 7.50 | 6.00 | 5.00 | 3.00 |
| 4 | 16.50 | 15.50 | 15.00 | 12.50 | 11.00 | 8.50 | 7.00 | 5.50 | 4.50 | 3.00 |
| 5 | 16.00 | 15.00 | 14.00 | 12.00 | 10.50 | 8.00 | 6.50 | 5.50 | 4.50 | 3.00 |
| 6 In-Line | 15.50 | 14.50 | 13.50 | 11.50 | 10.00 | 8.00 | 6.50 | 5.00 | 4.00 | 2.50 |
| 6 Matrix | 15.00 | 14.00 | 13.00 | 11.00 | 9.50 | 7.50 | 6.00 | 5.00 | 4.00 | 2.50 |
| 8 | 14.50 | 14.00 | 13.00 | 10.50 | 9.50 | 7.50 | 6.00 | 5.00 | 4.00 | 2.50 |
| 9 | 13.50 | 12.50 | 11.50 | 9.50 | 8.50 | 6.50 | 5.50 | 4.50 | 3.50 | 2.00 |
| 10 | 14.00 | 13.00 | 12.50 | 10.00 | 9.00 | 7.00 | 5.50 | 4.50 | 3.50 | 2.50 |
| 12 | 12.50 | 12.00 | 11.00 | 9.00 | 8.00 | 6.00 | 5.00 | 4.00 | 3.00 | 2.00 |
| 15 | 12.00 | 11.50 | 10.00 | 8.50 | 7.50 | 6.00 | 4.50 | 4.00 | 3.00 | 2.00 |

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

### Minimum Wire Lengths for T-Rise vs. Current Testing

| AWG | Min. Length (in.) | AWG | Min. Length (in.) |
|---|---|---|---|
| 30 | 2.6 | 18 | 9.4 |
| 28 | 3.2 | 16 | 11.3 |
| 26 | 4.1 | 14 | 13.7 |
| 24 | 5.1 | 12 | 16.4 |
| 20 | 7.8 | 10 | 19.3 |

**Note:** If wire lengths used are less than those listed above, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

### Wire-to-Board

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The chart values are only a tool for connector selection and will require the customer to fully test their application.

### Termination Resistance/Contact Crimp Tensile Force

| Wire Size | | Termination Resistance | | Contact Crimp Tensile Force | |
|---|---|---|---|---|---|
| AWG | mm² | Test Current (Amps) | Resistance Milliohms (Max. Init.) | Force (Min.) lbs. | Force (Min.) N |
| 30 | .05 | — | — | 2 | 9 |
| 28 | .08 | — | — | 3 | 13 |
| 26 | .12 | — | — | 6 | 27 |
| 24 | .2 | 1.5 | 3.50 | 8 | 36 |
| 22 | .3 | 3 | 3.50 | 14 | 62 |
| 20 | .5 | 4.5 | 3.00 | 14 | 62 |
| 18 | .8 | 6 | 3.00 | 30 | 133 |
| 16 | 1.2 | 8 | 2.75 | 45 | 200 |
| 14 | 2.0 | 10 | 2.75 | 50 | 222 |
| 12 | 3.0 | — | — | 60 | 267 |
| 10 | 5.0 | — | — | 70 | 311 |

**Note:** This is the total resistance between wire crimps of a mated pin and socket.





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South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-8706-080-208

# Universal MATE-N-LOK Connectors (Continued)

## Universal MATE-N-LOK Connector Mating Combinations

| Connector Part Number[7] | | | | | Mating Connector Part Number | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PC Board Headers[7] | | | | | | | | |
| | | | | | | Vertical Pin[2] | | | Vertical Socket[2] | | | Right-Angle[2] | |
| Number of Circuits | Flammability Rating | Style | Plug Part Number[2] | Cap Part Number[2] | Plating | Standard Tail | Standard Tail Polarized | Long Tail | Standard Tail | Standard Tail Polarized | Long Tail | Pin | Socket |
| 1 | UL94V-2 | — | 1-350867-0 | 770421-1 | — | — | — | — | — | — | — | — | — |
| | UL94V-0 | — | 350865-1 | 350866-1 | — | — | — | — | — | — | — | — | — |
| 2 | UL94V-2 | In-Line | 1-480698-0<br>794814-1[3] | 1-480699-0<br>794815-1[3] | Pre-tin | 350428-1 | 641963-1 | 350582-1 | 350759-4 | 643411-1 | 350986-4 | — | — |
| | | | | | Duplex[1] | 350428-4 | 641963-3 | 350582-4 | 350759-5 | — | — | — | — |
| | UL94V-0 | In-Line | 350777-1 | 350778-1 | Pre-tin | 350786-1 | 641964-1<br>1-641964-1[5] | 350787-1 | 350824-1 | 643412-1 | 350831-1 | 1-350942-0 | 643226-1 |
| | | | | | Duplex[1] | 350786-3 | 641964-3 | 350787-3 | 350824-4 | 643412-3 | — | 3-350942-0 | — |
| 3 | UL94V-2 | In-Line[6] | 1-480700-0<br>794901-1[3] | 1-480701-0<br>794900-1[3] | Pre-tin | 350429-1 | 641965-1 | 350583-1 | 350760-4 | 643413-1 | 350987-4 | — | — |
| | | | | | Duplex[1] | 350429-4 | — | 350583-4 | 350760-5 | — | — | — | — |
| | UL94V-0 | In-Line | 350766-1 | 350767-1 | Pre-tin | 350789-1 | 641966-1<br>1-641966-1[4] | 350790-1 | 350825-1 | 643414-1 | 350832-1 | 1-350943-0 | 643228-1 |
| | | | | | Duplex[1] | 350789-3 | — | 350790-3 | 350825-4 | 643414-3 | 350832-4 | 3-350943-0 | 3-643228-0 |
| 4 | UL94V-2 | In-Line | 1-480702-0<br>794899-1[3] | 1-480703-0<br>794707-1[3] | Pre-tin | 350430-1 | 641967-1 | 350584-1 | 350761-4 | 643415-1 | 350988-4 | 1-350948-0 | — |
| | | | | | Duplex[1] | 350430-4 | — | 350584-4 | 350761-5 | — | 350988-5 | — | — |
| | UL94V-0 | In-Line | 350779-1 | 350780-1 | Pre-tin | 350792-1 | 641968-1 | 350793-1 | 350826-1 | 643416-1 | 350833-1 | 1-350944-0 | 643230-1 |
| | | | | | Duplex[1] | 350792-3 | — | 350793-3 | 350826-4 | — | 350833-4 | 3-350944-0 | 3-643230-0 |
| 5 | UL94V-2 | In-Line | 1-480763-0 | 1-480764-0[3]<br>794863-1[3] | Pre-tin | 640466-1 | 643405-1 | — | 640467-1 | — | — | 1-350949-0 | — |
| | | | | | Duplex[1] | 640466-3 | — | — | 640467-3 | — | — | — | — |
| | UL94V-0 | In-Line | 350809-1 | 350810-1 | Pre-tin | 640900-1 | 643406-1 | — | 640901-1 | — | — | 1-350945-0 | 643232-1 |
| | | | | | Duplex[1] | 640900-3 | — | — | 640901-3 | — | — | 3-350945-0 | 3-643232-0 |
| 6 | UL94V-2 | In-Line | 640585-1 | 926307-1 | Pre-tin | 641832-1 | 643407-1 | — | — | — | — | 640587-1 | — |
| | | | | | Duplex[1] | 641832-3 | — | — | — | — | — | — | — |
| | UL94V-0 | In-Line | 640581-1 | 926307-3 | Pre-tin | 641831-1 | 643408-1 | — | 770262-1 | — | — | 640583-1 | 643234-1 |
| | | | | | Duplex[1] | 641831-3 | — | — | 770262-3 | — | — | 640583-3 | 3-643234-0 |
| | UL94V-2 | Matrix[6] | 1-480704-0<br>794535-1[3]<br>794096-1[5] | 1-480705-0<br>794536-1[3] | Pre-tin | 350431-1 | 641969-1 | 350585-1 | 350762-4 | 643423-1 | 350989-4 | — | — |
| | | | | | Duplex[1] | 350431-4 | — | 350585-4 | 350762-5 | — | 350989-5 | — | — |
| | UL94V-0 | Matrix | 350715-1 | 350781-1 | Pre-tin | 350711-1 | 641970-1 | 350732-1 | 350827-1 | 643424-1 | 350834-1 | — | — |
| | | | | | Duplex[1] | 350711-4 | 641970-3 | 350732-4 | 350827-4 | 643424-3 | 350834-4 | — | — |
| 8 | UL94V-2 | In-Line | 640586-1 | 926308-1 | Pre-tin | 641825-1 | — | 770143-1 | — | — | — | — | — |
| | | | | | Duplex[1] | — | — | — | — | — | — | — | — |
| | UL94V-0 | In-Line | 640582-1 | 926308-3 | Pre-tin | 641828-1 | 643410-1 | — | — | — | — | 640584-1 | 643236-1 |
| | | | | | Duplex[1] | — | 643410-3 | — | — | — | — | 640584-3 | 3-643236-0 |
| 9 | UL94V-2 | Matrix | 1-480706-0<br>794537-1[3] | 1-480707-0<br>794538-1[3] | Pre-tin | 350432-1 | 641971-1 | 350586-1 | 350763-4 | 643425-1 | 350990-4 | — | — |
| | | | | | Duplex[1] | 350432-4 | 641971-3 | 350586-4 | 350763-5 | — | 350990-5 | — | — |
| | UL94V-0 | Matrix | 350720-1 | 350782-1 | Pre-tin | 350712-1 | 641972-1<br>1-641972-1[4] | 350742-1 | 350828-1 | 643426-1 | 350835-1 | — | — |
| | | | | | Duplex[1] | 350712-4 | 641972-3 | 350742-4 | 350828-4 | 643426-3 | 350835-4 | — | — |
| 10 | UL94V-2 | In-Line | 926302-1 | 926309-1 | Pre-tin | — | — | — | — | — | — | — | — |
| | | | | | Duplex[1] | — | — | — | — | — | — | — | — |
| | UL94V-0 | In-Line | 926302-3 | 926309-3 | Pre-tin | — | — | — | — | — | — | — | — |
| | | | | | Duplex[1] | — | — | — | — | — | — | — | — |
| 12 | UL94V-2 | Matrix | 1-480708-0<br>794851-1[3] | 1-480709-0<br>794727-1[3] | Pre-tin | 350433-1 | 641973-1 | 350587-1 | 350764-4 | — | 350991-4 | — | — |
| | | | | | Duplex[1] | 350433-4 | — | 350587-4 | 350764-5 | — | 350991-5 | — | — |
| | UL94V-0 | Matrix | 350735-1 | 350783-1 | Pre-tin | 350713-1 | 641974-1<br>1-641974-1[4] | 350737-1 | 350829-1 | 643428-1 | 350836-1 | — | — |
| | | | | | Duplex[1] | 350713-4 | 641974-3 | 350737-4 | 350829-4 | — | 350836-4 | — | — |
| 15 | UL94V-2[6] | Matrix | 1-480710-0<br>794546-1[3] | 1-480711-0<br>794545-1[3] | Pre-tin | 350434-1 | 641975-1 | 350588-1 | 350765-4 | 643429-1 | 350992-4 | — | — |
| | | | | | Duplex[1] | 350434-4 | — | 350588-4 | 350765-5 | — | — | — | — |
| | UL94V-0 | Matrix | 350736-1 | 350784-1 | Pre-tin | 350714-1 | 641976-1 | 350738-1 | 350830-1 | 643430-1 | 350837-1 | — | — |
| | | | | | Duplex[1] | 350714-4 | 641976-4 | 350738-4 | 350830-4 | — | 350837-4 | — | — |

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Universal MATE-N-LOK Plug and Cap housings accept pin or socket contacts. Use the appropriate contacts in the Plug housing as required by the mating component.
[3]Housing material has 125°C temperature rating.
[4]Black in color.
[5]Tool Removable
[6]UV Resistant housing material available.
[7]European glow wire housing material available.

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





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South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-8706-080-208

## Universal MATE-N-LOK Connectors (Continued)

### Contacts

Solid pin diameter .084 [2.13]

Stock thickness .012 [.305] unless otherwise noted.

These contacts can be used in either Universal MATE-N-LOK Plug or Cap housings **only**.

### Related Product Data

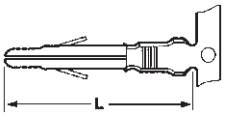
**Product Specification**

108-1031 Universal MATE-N-LOK Connectors

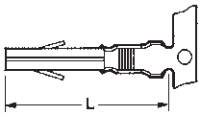
**Application Specification**

114-1010 Universal MATE-N-LOK Contacts

**Performance Characteristics**—pages 169-170
**Technical Documents**—pages 169 and 205-206
**Application Tooling**—pages 207-210
**Housings**—page 174




**Solid Pin**




**Socket**

| Wire Size Range AWG [mm²] | Ins. Dia. Range | L Dim. Pin | L Dim. Socket | Material & Finish | Contact Part Numbers Pin Strip Form | Pin Loose Piece | Socket Strip Form | Socket Loose Piece | HDM Applicator Part No. | Hand Tool Part No. |
|---|---|---|---|---|---|---|---|---|---|---|
| 30-26 [.05-.12] | **.032-.057** .813-1.45 | **.790** 20.06 | **.760** 19.30 | Brass, Pre-tin | 350924-1 | 770672-1 | 350925-1 | 770673-1 | 466616-2[6] 466616-3[6] | 58439-1 |
| | | | | Phos. Brz., Gold[2] | 350924-6 | 770672-6 | 350925-6 | — | | |
| 24-18 [.2-.8] | **.040-.100** 1.02-2.54 | **.790** 20.06 | **.760** 19.30 | Brass, Pre-tin | 350561-1 | 350690-1 | 350851-1<br>350570-1[1] | 350689-1[1] | 466320-1[6] 466320-2[6] 466320-4[6] | 91510-1 |
| | | | | Brass, Gold[2] | 350561-2 | 350690-2 | 350851-2<br>350570-2[1] | 640347-2<br>350689-2[1] | | |
| | | | | Brass, Select Gold[3] | 350561-7 | 350690-7 | 350851-7<br>350570-7[1] | 350689-7[1] | | |
| | | | | Phos. Brz., Pre-tin | 350561-3 | 350690-3 | 350570-3[1] | 350689-3[1] | | |
| | | | | Phos. Brz., Select Gold[3] | — | — | 350570-6[1] | — | | |
| 20-14 [.5-2.0] | **.060-.130** 1.52-3.30 | **.790** 20.06 | **.760** 19.30 | Brass, Pre-tin | 350218-1 | 350547-1 | 350536-1 | 350550-1 | 687763-1[6] 687763-2[6] 687763-6[6] | 91500-1 |
| | | | | Brass, Gold[2] | 350218-2 | 350547-2 | 350536-2 | 350550-2 | | |
| | | | | Brass, Select Gold[3] | 350218-7 | 350547-7 | 350536-7 | 350550-7 | | |
| | | | | Phos. Brz., Pre-tin | 350218-3 | 350547-3 | 350536-3 | 350550-3 | | |
| | | | | Phos. Brz., Select Gold[3] | 350218-6 | 350547-6 | 350536-6 | 350550-6 | | |
| 20-14 [.5-2.0] or 2@18 [.8] | **.130-.200** 3.30-5.08 | **.810** 20.57 | **.780** 19.81 | Brass, Pre-tin | 350538-1 | 350552-1 | 350537-1 | 350551-1 | 687926-1[6] 687926-2[6] 687926-6[6] | 91508-1[7] 91506-1[7] |
| | | | | Brass, Gold[2] | 350538-2 | 350552-2 | 350537-2 | 350551-2 | | |
| | | | | Brass, Select Gold[3] | 350538-7 | 350552-7 | 350537-7 | 350551-7 | | |
| | | | | Phos. Brz., Pre-tin | 350538-3 | 350552-3 | 350537-3 | 350551-3 | | |
| | | | | Phos. Brz., Select Gold[3] | 350538-6 | 350552-6 | 350537-6 | 350551-6 | | |
| 18-14[4] [.8-2.0] | **.130-.200** 3.30-5.08 | **.810** 20.57 | **.780** 19.81 | Brass, Pre-tin | 350873-1 | — | 350874-1 | — | 466588-1[6] 466588-2[6] 466588-3[6] | 91508-1[7] 91506-1[7] |
| | | | | Phos. Brz., Pre-tin | 350873-3 | 350918-3 | 350874-3 | 350919-3 | | |
| 12-10 [3.0-5.0] | **.200 max.**[5] 5.08 | **.810** 20.57 | **.780** 19.81 | Phos. Brz., Pre-tin | 350922-3 | 640309-3 | 350923-3 | 640310-3 | 466597-1[6] 466597-2[6] 466597-3[6] | 69710-1[7] |
| | | | | Phos. Brz., Select Gold[3] | 350922-6 | 640309-6 | 350923-6 | 640310-6 | | |

[1]Socket Contact — .010 [.254] stock thickness
[2]Gold Finish — Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.
[3]Select Gold Finish — Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.
[4]Recommended for predominant use of 14 AWG wire.
[5]There is no insulation barrel on this contact. Insulation maximum diameter is limited by the housing.
[6]HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3, -4 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.
[7]Hand Tool No. **91508-1** is for wire size 20-18 AWG. Hand Tool No. **91506-1** is for wire size 16-14 AWG. Hand Tool No. **69710-1** use die set No. **58380-1** for 12 AWG and No. **58380-2** for 10 AWG.

**Note:** Phosphor bronze material contacts should be used in high temperature/humidity cycling applications.
**Note: All part numbers are RoHS Compliant.**

**Contact Retention Test Tool**
**Part No. 1586701-1**
**IS 408-10003**

**Contact Extraction Tool**
**Part No. 318851-1**
**IS 408-4371**

**Contact Insertion Tool**
**(For inserting contacts applied to small diameter wire)**
**Part No. 91002-1**
**IS 408-7347**





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South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-8706-080-208

# Universal MATE-N-LOK Connectors (Continued)

## Contacts

Split pin diameter .086 [2.18]

Stock thickness .012 [.305]

These contacts can be used in either Universal MATE-N-LOK Plug or Cap housings **only**.

## Related Product Data

**Product Specification**

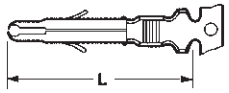
108-1031 Universal MATE-N-LOK Connectors

**Application Specification**

114-1010 Universal MATE-N-LOK Contacts

**Performance Characteristics**—pages 169-170
**Technical Documents**—pages 169 and 205-206
**Application Tooling**—pages 207-210
**Housings**—page 174

## Split Pins




| Wire Size Range AWG [mm²] | Ins. Dia. Range | L Dim. | Material & Finish | Contact Part Number | | HDM Applicator Part No. | Hand Tool Part No. |
|---|---|---|---|---|---|---|---|
| | | | | Strip Form | Loose Piece | | |
| 24-18 [.2-.8] | **.040-.100** 1.02-2.54 | **.790** 20.06 | Brass, Pre-tin | 350699-1 | 350706-1 | 466320-1[3] 466320-2[3] 466320-4[3] | 91510-1 |
| | | | Brass, Gold[1] | 350699-2 | 350706-2 | | |
| | | | Brass, Select Gold[2] | 350699-7 | 350706-7 | | |
| 20-14 [.5-2.0] | **.060-.130** 1.52-3.30 | **.790** 20.06 | Brass, Pre-tin | 350687-1 | 350705-1 | 687763-1[3] 687763-2[3] 687763-6[3] | 91500-1 |
| | | | Brass, Gold[1] | 350687-2 | 350705-2 | | |
| | | | Brass, Select Gold[2] | 350687-7 | 350705-7 | | |
| 20-14 [.5-2.0] or 2@18 [.8] | **.130-.200** 3.30-5.08 | **.810** 20.57 | Brass, Pre-tin | 350700-1 | 350707-1 | 687926-1[3] 687926-2[3] 687926-6[3] | 91508-1[4] 91506-1[4] |
| | | | Brass, Gold[1] | 350700-2 | 350707-2 | | |
| | | | Brass, Select Gold[2] | 350700-7 | 350707-7 | | |

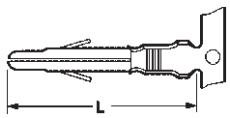
[1]Gold Finish — Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.
[2]Select Gold Finish — Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.
[3]HDM Applicator part number ending in -1, is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.
[4]Hand Tool No. **91508-1** for wire size 20-18 AWG. Hand Tool No. **91506-1** for wire size 16-14 AWG.

**Notes:**
1. Split pins recommended for use in housings having 6, 9, 12 and 15 circuits to reduce mating force.
2. Phosphor bronze material contacts are available for use in high temperature/humidity cycling applications, consult Tyco Electronics.

## Grounding Pins

(.100 [2.54] longer than standard pin)

(Mate first, break last, not for interrupting current)




| Wire Size Range AWG [mm²] | Ins. Dia. Range | L Dim. | Material & Finish | Contact Part Number | | HDM Applicator Part No. | Hand Tool Part No. |
|---|---|---|---|---|---|---|---|
| | | | | Strip Form | Loose Piece | | |
| 24-18 [.2-.8] | **.060-.130** 1.52-3.30 | **.890** 22.60 | Brass, Pre-tin | 770210-1 | — | 567216-2[2] 567216-3[2] | — |
| 20-14 [.5-2.0] | **.060-.130** 1.52-3.30 | **.890** 22.60 | Brass, Pre-tin | 350654-1 | 350669-1 | 687763-1[2] 687763-2[2] 687763-6[2] | 91500-1 |
| 12-10 [3.0-5.0] | **.200 max.**[1] 5.08 | **.910** 23.11 | Phos. Brz., Pre-tin | 770234-3 | — | 466597-1[2] 466597-2[2] 466597-3[2] | — |

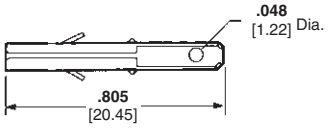
[1]There is no insulation barrel on this contact. Insulation maximum diameter is limited by the housing.
[2]HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

## Programmable Connector Contact

(Socket with 110 Series Special FASTON Tab)

**Material and Finish**

Brass, pre-tin




**Part Number**
**350877-1**

**Note:** This contact will accept a 110 Series FASTON Receptacle — Part No. **350871-1** (strip form) allowing simple field wiring or wiring changes.

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





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UK: 44-8706-080-208

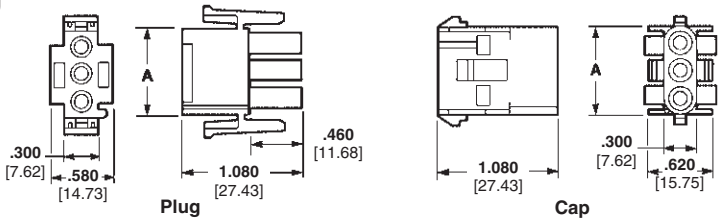
# Universal MATE-N-LOK Connectors (Continued)

## Housings

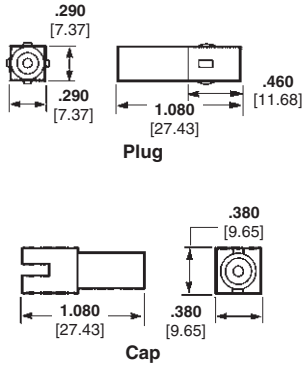
### Free-Hanging or Panel Mount

.250 [6.35] Centerline spacing

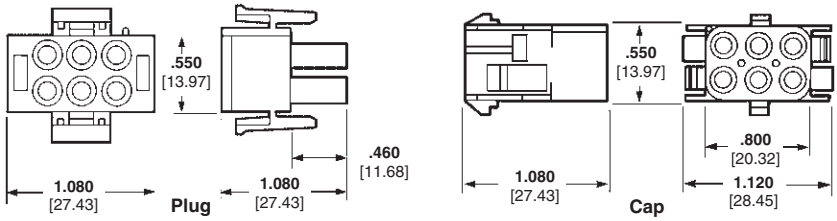
### 2, 3, 4, 5, 6, 8 and 10 Circuit, In-Line



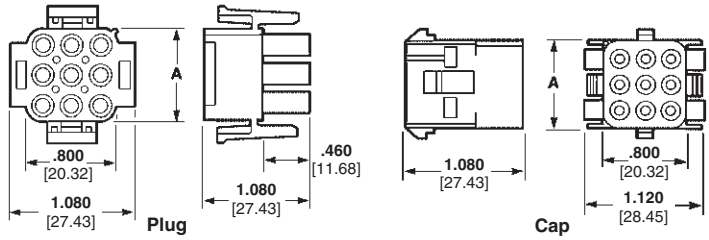

### 1 Circuit, Free-Hanging




### 6 Circuit, Matrix




### 9, 12 and 15 Circuit, Matrix




## Related Product Data

**Product Specification**

108-1031 Universal MATE-N-LOK Connectors

**Performance Characteristics**—pages 169-170
**Contacts**—pages 172-173
**Panel Cutout Recommendations**—page 175
**Keying Plug**—page 175
**Strain Reliefs**—pages 175-176
**Technical Documents**—pages 169 and 205-206
**Mating Headers**—pages 182-183 and 185
**Other Mating Connectors**
Universal MATE-N-LOK II Housings—pages 193-194

**Note:** See charts on page 182 to order Plug and Cap Housings in **colors**.

| Number of Circuits | A Dim. | Housing Part Numbers | | | |
|---|---|---|---|---|---|
| | | UL94V-2 Nylon, Natural Color[2] | | UL94V-0 Nylon[3] | |
| | | Plug | Cap | Plug | Cap |
| 1 | — | 1-350867-0 | 770421-1 | 350865-1 | 350866-1 |
| 2 | **.550** 13.97 | 1-480698-0[1] | 1-480699-0[1] | 350777-1[1] | 350778-1[1] |
| 3 | **.800** 20.32 | 1-480700-0[1] | 1-480701-0[1] | 350766-1[1] | 350767-1[1] |
| 4 | **1.050** 26.67 | 1-480702-0[1] | 1-480703-0[1] | 350779-1[1] | 350780-1[1] |
| 5 | **1.300** 33.02 | 1-480763-0[1] | 1-480764-0[1] | 350809-1[1] | 350810-1[1] |
| 6 | **1.550** 39.37 | 640585-1[1] | 926307-1[1] | 640581-1[1] | 926307-3[1] |
| | — | 1-480704-0<br>794096-1[4] | 1-480705-0 | 350715-1 | 350781-1 |
| 8 | **2.050** 52.07 | 640586-1[1] | 926308-1[1] | 640582-1[1] | 926308-3[1] |
| 9 | **.800** 20.32 | 1-480706-0 | 1-480707-0 | 350720-1 | 350782-1 |
| 10 | **2.550** 64.77 | 926302-1[1] | 926309-1[1] | 926302-3[1] | 926309-3[1] |
| 12 | **1.050** 26.67 | 1-480708-0 | 1-480709-0 | 350735-1 | 350783-1 |
| 15 | **1.300** 33.02 | 1-480710-0 | 1-480711-0 | 350736-1 | 350784-1 |

[1]In-Line style.
[2]Housing material has 125°C temperature rating.
[3]Housing material has 120°C temperature rating.
[4]Tool Removable.

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





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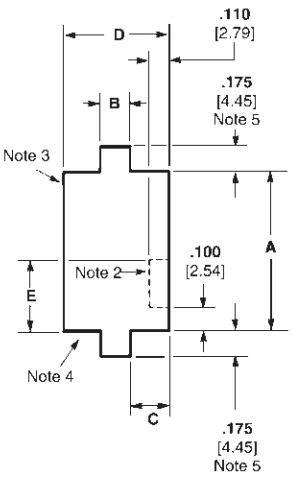
## Universal MATE-N-LOK Connectors (Continued)

### Recommended Cap Housing Panel Cutouts

View is from cap entry side

Refer to Application Specification 114-1010

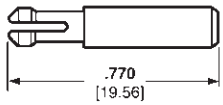



| Style | Number of Circuits | Dimensions | | | | |
|---|---|---|---|---|---|---|
| | | A | B | C | D | E |
| In-Line | 2 | **.565** 14.35 | **.340** 8.64 | **.095** 2.41 | **.530** 13.46 | **.250** 6.35 |
| | 3 | **.815** 20.70 | **.340** 8.64 | **.095** 2.41 | **.530** 13.46 | **.250** 6.35 |
| | 4 | **1.065** 27.05 | **.340** 8.64 | **.095** 2.41 | **.530** 13.46 | **.250** 6.35 |
| | 5 | **1.315** 33.40 | **.340** 8.64 | **.095** 2.41 | **.530** 13.46 | **.250** 6.35 |
| | 6 | **1.567** 39.80 | **.154** 3.91 | **.189** 4.80 | **.531** 13.49 | **.394** 10.0 |
| | 8 | **2.067** 52.50 | **.154** 3.91 | **.189** 4.80 | **.531** 13.49 | **.394** 10.0 |
| | 10 | **2.567** 65.20 | **.154** 3.91 | **.189** 4.80 | **.530** 13.46 | **.394** 10.0 |
| Matrix | 6 | **.565** 14.35 | **.480** 12.19 | **.275** 6.99 | **1.030** 26.16 | **.250** 6.35 |
| | 9 | **.815** 20.70 | **.480** 12.19 | **.275** 6.99 | **1.030** 26.16 | **.250** 6.35 |
| | 12 | **1.065** 27.05 | **.480** 12.19 | **.275** 6.99 | **1.030** 26.16 | **.350** 8.89 |
| | 15 | **1.315** 33.40 | **.480** 12.19 | **.275** 6.99 | **1.030** 26.16 | **.350** 8.89 |

**Notes:**
1. Recommended panel thickness — .030-.090 [.762-2.286]. Panel must be punched so that housing enters panel in same direction as the punch.
2. Optional — Do not remove this material when keying cap housing to panel.
3. Circuit #1 location when using panel keying with 6, 9, 12 and 15 circuit Matrix housings.
4. Circuit #1 location when using panel keying with 2, 3, 4, 5, 6, 8 and 10 circuit In-Line housings.
5. .175 [4.45] dimension is .125 [3.18] for 6, 8 and 10 circuit In-Line housings.

### Keying Plugs

IS 408-3320

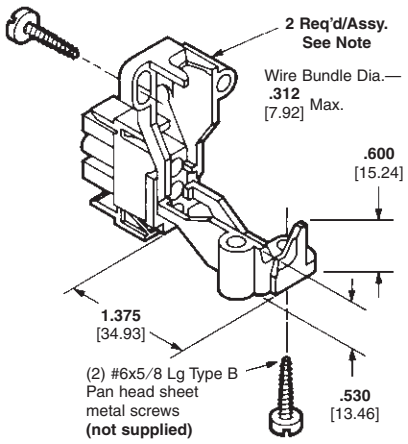



**Part Numbers**
UL94V-2 Nylon material, natural color — **1-640415-1**
UL94V-0 Nylon material — **1-640415-0**
**Note:** Keying plug snaps into plug or cap housing

### Plug Housing Strain Reliefs

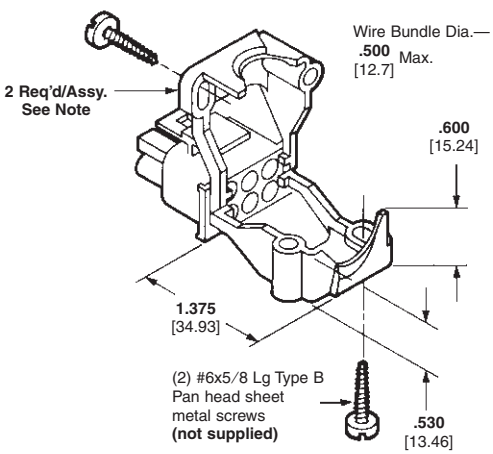
IS 408-3320

**2, 3, 4, 5, 6 and 8 Circuit, In-Line**




**Part Numbers**
UL94V-2 Nylon material, natural color — **1-350589-0**
UL94V-0 Nylon material — **350811-1**

**6, 9, 12 and 15 Circuit, Matrix**




**Part Numbers**
UL94V-2 Nylon material, natural color — **1-350590-0**
UL94V-0 Nylon material — **350812-1**

**Note: Strain relief part number represents one half of a strain relief. Two strain reliefs required per housing.**

### Related Product Data

**Plug Housings**— page 174
**Technical Documents**— pages 169 and 205-206

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





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## Universal MATE-N-LOK Connectors (Continued)

### Plug or Cap Housing Strain Reliefs

IS 408-3320

**Related Product Data**

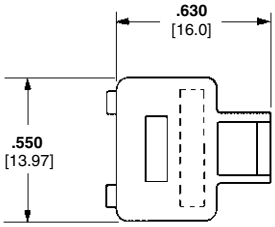
**Housings**— page 174
**Technical Documents**— pages 169 and 205-206

### Cap Housing Adapters

These adapters are designed to anchor the cap housing strain reliefs to the housings and prevent the strain relief halves from "drawing in" when the screws are being torqued down to clamp the cable.

IS 408-3320

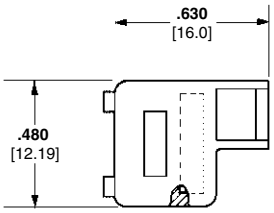
**For All Positions Except 2, 6 and 8 Circuit Cap Housings**




UL94V-2 Nylon material, natural color— **641777-1**

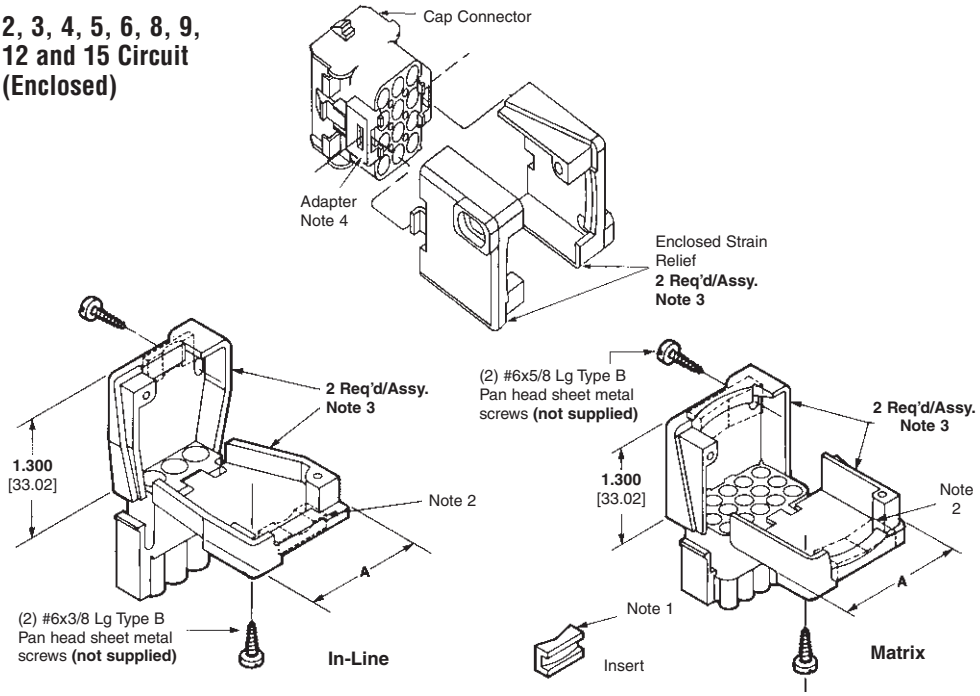
UL94V-0 Nylon material— **641778-1**

**For 2 In-Line and 6 Matrix Circuit Cap Housings Only**




UL94V-2 Nylon material, natural color— **643182-1**
UL94V-0 Nylon material— **643182-2**

### 2, 3, 4, 5, 6, 8, 9, 12 and 15 Circuit (Enclosed)




| Style | Number of Circuits | A Dim. | Insert Supplied | Single Wire Dia. Range | Wire Bundle Dia. Range | Part Numbers | |
|---|---|---|---|---|---|---|---|
| | | | | | | UL94V-2 Nylon, Natural Color | UL94V-0 Nylon |
| In-Line | 2 | **.960** 24.38 | Yes | **.040-.190** 1.02-4.83 | — | 1-640719-0 | 640713-1 |
| | | | No | — | **.200-.350** 5.08-8.89 | 1-640719-1 | 640713-2 |
| | 3 | **1.140** 28.96 | Yes | **.040-.190** 1.02-4.83 | — | 1-640720-0 | 640714-1 |
| | | | No | — | **.200-.350** 5.08-8.89 | 641763-1 | 641945-1 |
| | 4 | **1.325** 33.65 | Yes | **.040-.190** 1.02-4.83 | — | 641775-1 | 641776-1 |
| | | | No | — | **.200-.350** 5.08-8.89 | 641775-2 | 641776-2 |
| | 5 | **1.530** 38.86 | Yes | **.040-.190** 1.02-4.83 | — | 643030-3 | 643030-1 |
| | | | No | — | **.200-.350** 5.08-8.89 | 643030-2 | 643030-4 |
| | 6 Note 5 | **1.780** 45.21 | Yes | **.040-.190** 1.02-4.83 | — | 643585-1 | 643313-1 |
| | | | No | — | **.200-.350** 5.08-8.89 | 643585-2 | 643313-2 |
| | 8 Note 5 | **2.280** 56.08 | Yes | **.040-.190** 1.02-4.83 | — | — | 643314-1 |
| | | | No | — | **.200-.350** 5.08-8.89 | — | 643314-2 |
| Matrix | 6 | **1.030** 26.16 | Yes | — | **.120-.650** 3.05-16.51 | 1-640721-0 | 640715-1 |
| | 9 | **1.030** 26.16 | Yes | — | **.120-.650** 3.05-16.51 | 1-640722-0 | 640716-1 |
| | 12 | **1.280** 32.51 | Yes | — | **.150-.750** 3.81-19.05 | 1-640723-0 | 640717-1 |
| | 15 | **1.530** 38.86 | Yes | — | **.200-.850** 5.08-21.59 | 1-640724-0 | 640718-1 |

**Notes:**
1. Cable clamping insert comes attached to strain relief. It can be used to provide additional adjustment for small wire bundles or discarded.
2. Insert to be positioned as shown by dotted lines.
3. **Strain relief part number represents one-half of a strain relief. Two strain reliefs required per housing.**
4. Must use cap housing adapters when attaching strain reliefs to a cap housing. **Two adapters required per housing.**
5. Strain reliefs for 6 and 8 circuit In-Line fits plug housings only.

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





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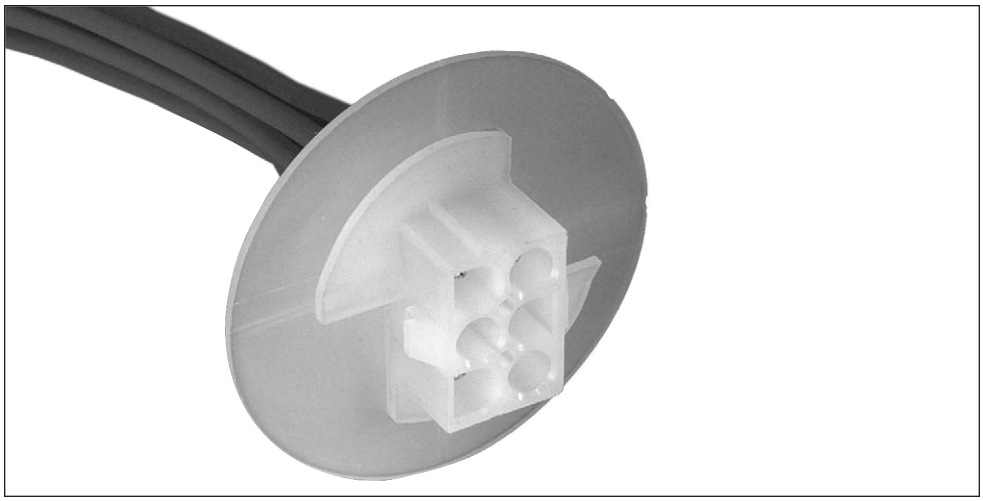
UK: 44-8706-080-208

# Universal MATE-N-LOK Flanged Cap Housings with Twist and Lock Feature

## Product Facts

- **Available in a 6, 9, and 12 circuit design**
- **Designed for household appliances where a bulkhead connector system is needed in conjunction with foam-in insulation**
- **Mates with standard Universal MATE-N-LOK plug housings (page 174)**
- **Accepts Universal MATE-N-LOK pin and socket contacts (page 167)**
- **Designed to utilize the Splash Proof/Sealed Universal MATE-N-LOK seals for additional sealing protection (pages 174-175)**

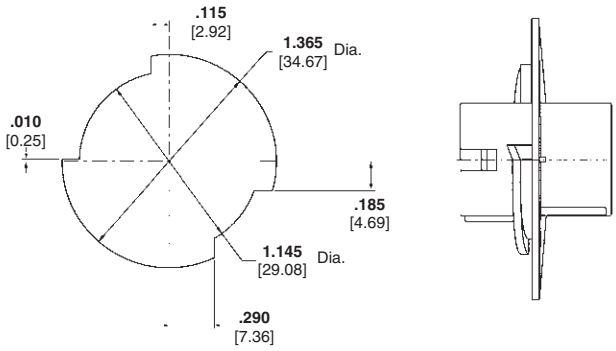


## Material and Finish

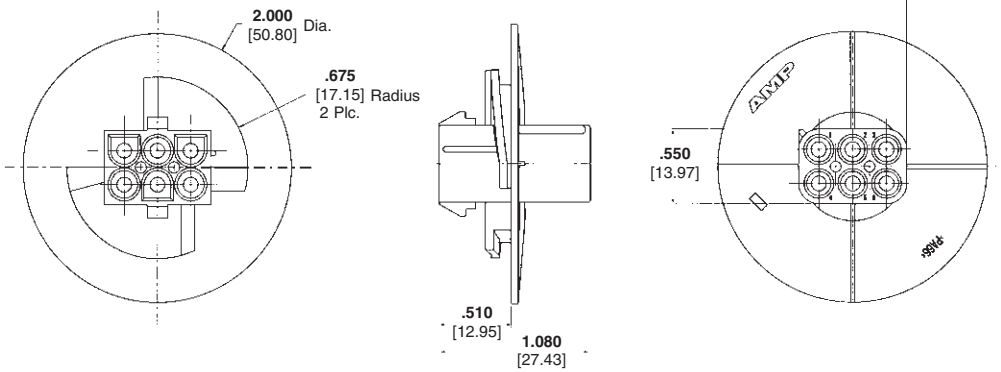
**Housing**—Nylon, UL 94V-0 or UL 94V-2 rated
**Contacts**—Phosphor Bronze or Brass
**Plating**—Pre-tin or Gold

## Related Product Data

**Contacts**—pages 172-173
**Plug Housings**—page 174
**Seals**—page 180




**Recommended Panel Cutout (for 6 and 9 Pos. Housings)**




**Notes:**
1. Recommended Panel Thickness: 0.76-2.29 [.030-.090]
2. Panel must be punched so that the housing enters the panel in the same direction as the punch.
3. Asymmetrical panel cutout provides polarization for Pin 1 location.

| Number of Circuits | Cap Housing Part Numbers | |
|---|---|---|
| | UL 94V-0 | UL 94V-2 |
| 6 | 794760-1 | 794714-1 |
| 9 | 794761-1 | 794715-1 |
| 12 | 794762-1 | 794716-1 |

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





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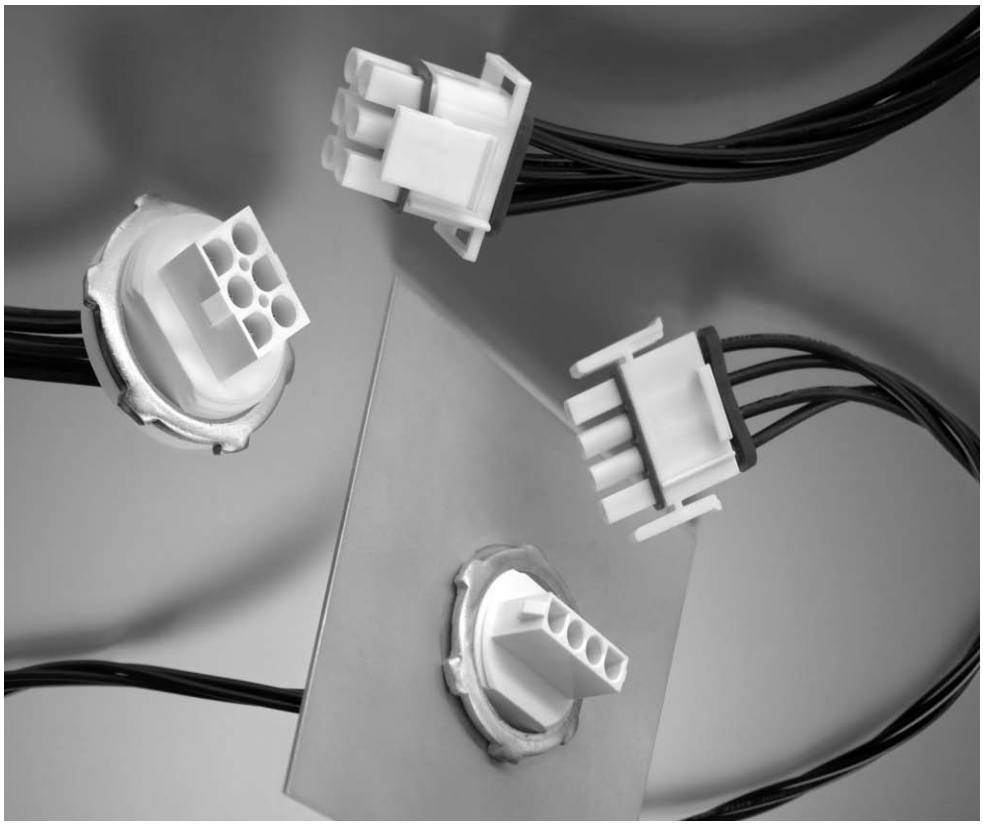
# Universal MATE-N-LOK Sealed Bulkhead Connectors



## Product Facts

- **Bulkhead mount Universal MATE-N-LOK connector that facilitates sealed panel mounting and works with existing Universal MATE-N-LOK seals to provide a fully-sealed interconnection system**
- **Available in 4, 6, 9 and 12 positions**
- **Sealed, flange mount design**
- **Mates to standard Universal MATE-N-LOK plug housings**
- **Accepts standard Universal MATE-N-LOK contacts**
- **Works with standard Universal MATE-N-LOK connector interface and wire seals**
- **Anti-rotation feature aids installation**
- **Rear mount flange design enables use in wire harnesses**
- **Pins and sockets can be intermixed in the same housing**
- **UL Recognized, File No. E28476**
- **CSA Certified, File No. 1030930**

## Applications

- **Vending Machines**
- **Industrial Machinery**
- **Lighting**
- **HVAC Equipment**

## Performance Characteristics

**Dielectric Withstanding Voltage**—5.0 KVAC or 5.0 KVDC between adjacent circuits

**Insulation Resistance**—1000 megohms minimum initial between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Durability**—50 cycles, mating and unmating

## Technical Documents

**Product Specification**
108-1031 Universal MATE-N-LOK Connectors

**Application Specification**
114-1010 Universal MATE-N-LOK Contacts

**Instruction Sheet**
408-10017 Universal MATE-N-LOK Bulkhead Connectors





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Japan: 81-44-844-8013
UK: 44-8706-080-208

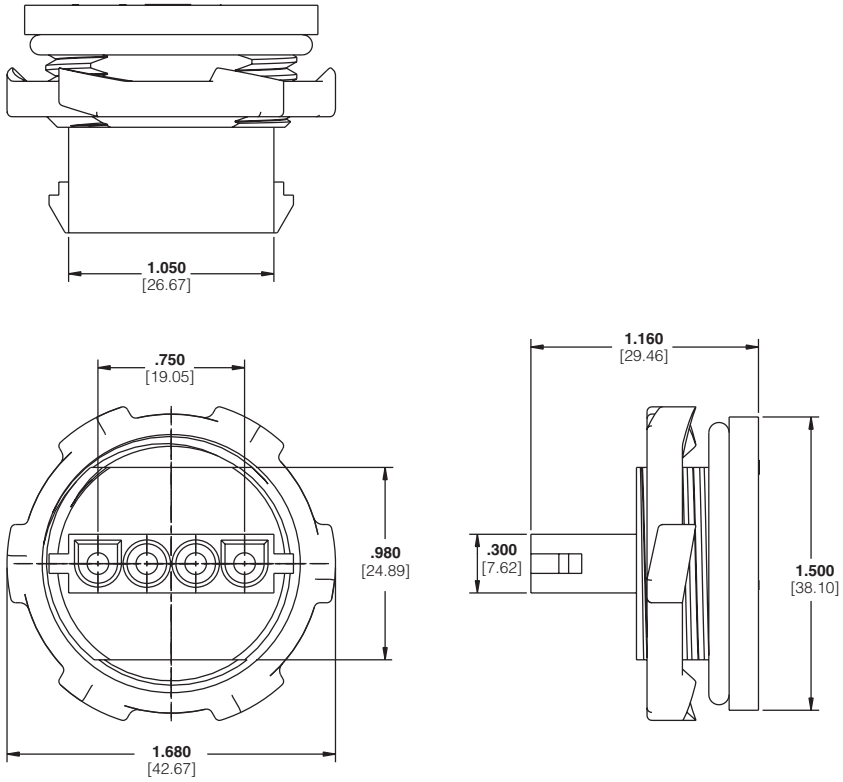
## Universal MATE-N-LOK Sealed Bulkhead Connectors (Continued)

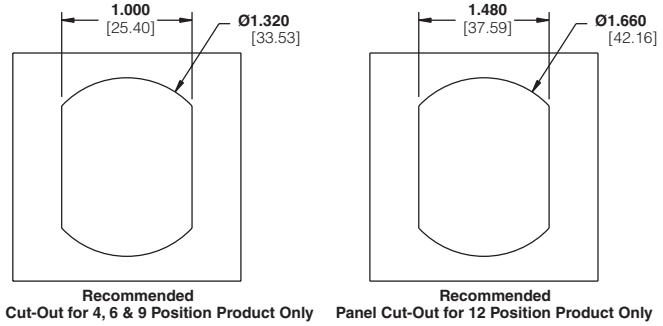
### Connector Housings

**4 Position Connector Housing (shown)**

### Material and Finish

**Housing**—Nylon, UL 94V-0 rated
**Contacts**—Brass with pre-tin or gold plating
**O-ring Seal**—Neoprene
**Locking Nut**—Steel, zinc plated




**Recommended Panel Cut-Out for 4, 6 & 9 Position Product Only**

**Recommended Panel Cut-Out for 12 Position Product Only**

| No. of Pos. | Style | Housing Part Number |
|---|---|---|
| 4 | In Line | 1604256-1 |
| 6 | Matrix | 1604210-1 |
| 9 | Matrix | 1604254-1 |
| 12 | Matrix | 1604941-1 |

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





Catalog 82181
Revised 4-08

www.tycoelectronics.com

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-1106-0803

South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-8706-080-208

# Universal MATE-N-LOK Sealed Connectors

## Splash Proof Seals

### Product Facts

- **Economical splash proof/ immersible sealed connector system**
- **No design changes to existing Universal MATE-N-LOK product**
- **Existing applications utilizing Universal MATE-N-LOK connectors can be upgraded to a splash proof system**
- **Utilizes two wire seals and one interface seal**
- **Wire range is 20-14 AWG [.5-2.0] with insulation diameter range .060-.130 [1.52-3.30]**
- **.110-.130 [2.79-3.30] insulation diameter passed European IP sealing level 5/6 + 7 (swirling dust/ immersion to 1 meter for 30 minutes)**
- **.060-.110 [1.52-2.79] insulation diameter passed European IP sealing level 5/5 + 7 (swirling dust/ heavy seas)**
- **Universal MATE-N-LOK II keying plug can be used to seal unused circuits**
- **Primary application is for wire-to-wire; wire-to-board application must use a closed bottom header**

### Material

Silicone rubber, blue color

### Technical Documents

**Product Specification**

108-1031-1 Splash Proof Seal, Universal MATE-N-LOK Connectors

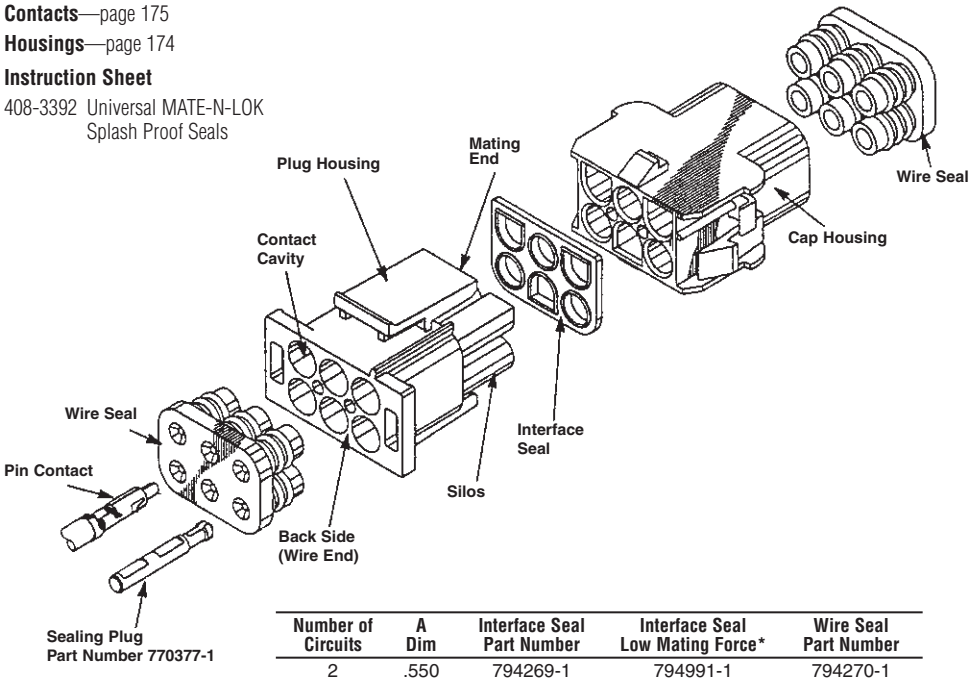
**Contacts**—page 175

**Housings**—page 174

**Instruction Sheet**

408-3392 Universal MATE-N-LOK Splash Proof Seals

**Note:** For proper use of this product, customer should make sure that Instruction Sheet 408-3392 is available for review.

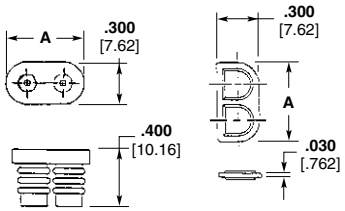



| Number of Circuits | A Dim | Interface Seal Part Number | Interface Seal Low Mating Force* | Wire Seal Part Number |
|---|---|---|---|---|
| 2 | .550 | 794269-1 | 794991-1 | 794270-1 |
| 3 | .800 | 794271-1 | 794992-1 | 794272-1 |
| 4 | 1.050 | 794273-1 | — | 794274-1 |
| 6 | — | 794275-1 | 794993-1 | 794276-1 |
| 9 | .800 | 794277-1 | 794994-1 | 794278-1 |
| 12 | 1.050 | 794279-1 | — | 794280-1 |
| 15 | 1.300 | 794281-1 | — | 794282-1 |

**Note:** One interface seal and two wire seals required per mated assembly.
*Low mating force interface seals do not meet IP 5/6 IP 5/7 requirements.

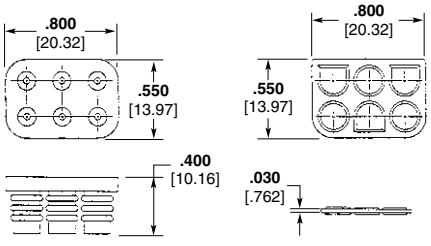
**Note: All part numbers are RoHS Compliant.**

**2, 3, 4 Circuit, In-Line**



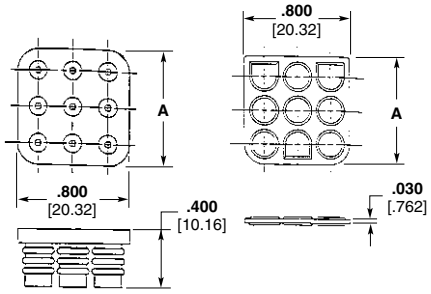

Wire interface

**6 Circuit, Matrix**




Wire interface

**9, 12, and 15 Circuit, Matrix**




Wire interface

Standard Density

Universal MATE-N-LOK Sealed Connectors .250 [6.35] Centerline



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## Universal MATE-N-LOK Sealed Connectors (Continued)

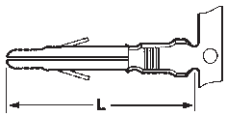
### Contacts (used with Splash Proof Seals)

Solid pin diameter .084 [2.13]

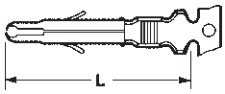
Split pin diameter .086 [2.18]

Stock thickness .012 [.305] unless otherwise noted.

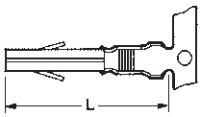
These contacts can be used in either Universal MATE-N-LOK Plug or Cap housings **only**.



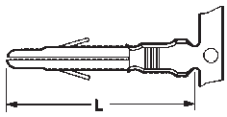

**Solid Pin**




**Split Pin**




**Socket**




**Grounding Pin**
(.100 [2.54] longer than standard pin)
(Mate first, break last, not for interrupting current)

### Related Product Data

**Product Specification**

108-1031 Universal MATE-N-LOK Connectors

**Application Specification**

114-1010 Universal MATE-N-LOK Contacts

**Performance Characteristics**— pages 169-170
**Technical Documents**— pages 169 and 205-206
**Application Tooling**— pages 207-210
**Housings**—page 174

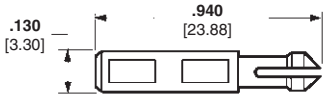
| Wire Size Range AWG [mm²] | Ins. Dia. Range | L Dim. Pin | L Dim. Socket | Material & Finish | Style | Contact Part Numbers Pin Strip Form | Contact Part Numbers Pin Loose Piece | Contact Part Numbers Socket Strip Form | Contact Part Numbers Socket Loose Piece | HDM Applicator Part No. | Hand Tool Part No. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 20-14 [.5-2.0] | .060-.130 1.52-3.30 | .790 20.06 | .760 19.30 | Brass, Pre-tin | Solid | 350218-1 | 350547-1 | 350536-1 | 350550-1 | 687763-1[3] 687763-2[3] 687763-6[3] | 91500-1 |
| | | | | Brass, Gold[1] | Solid | 350218-2 | 350547-2 | 350536-2 | 350550-2 | | |
| | | | | Brass, Select Gold[2] | Solid | 350218-7 | 350547-7 | 350536-7 | 350550-7 | | |
| | | | | Phos. Brz., Pre-tin | Solid | 350218-3 | 350547-3 | 350536-3 | 350550-3 | | |
| | | | | Phos. Brz., Select Gold[2] | Solid | 350218-6 | 350547-6 | 350536-6 | 350550-6 | | |
| | | | | Brass, Pre-tin | Split | 350687-1 | 350705-1 | — | — | | |
| | | | | Brass, Gold[1] | Split | 350687-2 | 350705-2 | — | — | | |
| | | | | Brass, Select Gold[2] | Split | 350687-7 | 350705-7 | — | — | | |
| | | .890 22.60 | — | Brass, Pre-Tin | Grounding | 350654-1 | 350669-1 | | | | |

[1]Gold Finish — Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.
[2]Select Gold Finish — Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.
[3]HDM Applicator part number ending in -1, is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

**Notes:**
1. Split pins recommended for use in housings having 6, 9, 12 and 15 circuits to reduce mating force.
2. Phosphor bronze material contacts are available for use in high temperature/humidity cycling applications, consult Tyco Electronics.
3. 18-24 AWG contacts (page 166) can be used with splash proof seals if insulation diameter range is .060-.100 [1.52-2.54].

### Universal MATE-N-LOK II Keying Plug/Splash Proof Sealing Plug

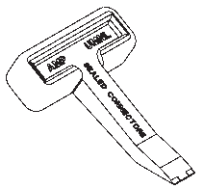
IS 408-3392




**Part Number**
UL94V-0 Nylon material — **770377-1**

### Related Product Data

**Housings**— page 174
**Technical Documents**— pages 169 and 205-206



**Seal Latch Tool**
**Part No. 794381-1**
**IS 408-3392**

**Contact Extraction Tool**
**Part No. 318851-1**
**IS 408-4371**

**Contact Insertion Tool (For inserting contacts applied to small diameter wire)**
**Part No. 91002-1**
**IS 408-7347**

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





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South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-8706-080-208

# Universal MATE-N-LOK Connectors

## PC Board Vertical Pin Headers

.250 [6.35] Centerline spacing

### Material

**Housing** —
UL94V-2 Nylon, natural color
UL94V-0 Nylon

**Contacts** — Phosphor bronze

Solder tail diameter .062 [1.57]

### Related Product Data

**Product Specification**

108-1053 Universal MATE-N-LOK PC Board Headers

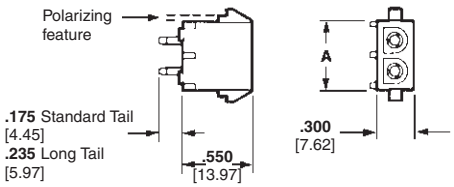
**Performance Characteristics**— pages 169-170
**Recommended PC Board Hole Layout**— page 184
**Technical Documents**— pages 169 and 205-206

### Mating Connectors

**Universal MATE-N-LOK**
Plug Housings — page 174

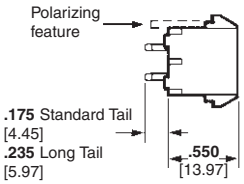
**Universal MATE-N-LOK II**
Plug Housings — pages 193-194

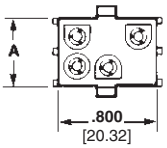
## 2, 3, 4, 5, 6 and 8 Circuit, In-Line




| Number of Circuits | A Dim. | Flammability Rating | Pin Finish | Pin Header Part Numbers: Standard Tail[2] | Standard Tail Polarized[2] | Long Tail[3] | Mates with Plug Housing Part Number (Using Socket Contacts): Universal MATE-N-LOK | Universal MATE-N-LOK II |
|---|---|---|---|---|---|---|---|---|
| 2 | .550 13.97 | UL94V-2 | Pre-tin | 350428-1 | 641963-1 | 350582-1 | 1-480698-0 | — |
| | | | Duplex[1] | 350428-4 | 641963-3 | 350582-4 | | |
| | | UL94V-0 | Pre-tin | 350786-1 | 641964-1 / 1-641964-1[4] | 350787-1 | 350777-1 | 770017-1 |
| | | | Duplex[1] | 350786-3 | 641964-3 | 350787-3 | | |
| 3 | .800 20.32 | UL94V-2 | Pre-tin | 350429-1 | 641965-1 | 350583-1 | 1-480700-0 | — |
| | | | Duplex[1] | 350429-4 | — | 350583-4 | | |
| | | UL94V-0 | Pre-tin | 350789-1 | 641966-1 / 1-641966-1[4] | 350790-1 | 350766-1 | 770018-1 |
| | | | Duplex[1] | 350789-3 | — | 350790-3 | | |
| 4 | 1.050 26.67 | UL94V-2 | Pre-tin | 350430-1 | 641967-1 | 350584-1 | 1-480702-0 | — |
| | | | Pre-tin | 770351-1[5] | — | — | | |
| | | | Duplex[1] | 350430-4 | — | 350584-4 | | |
| | | UL94V-0 | Pre-tin | 350792-1 | 641968-1 | 350793-1 | 350779-1 | 770019-1 |
| | | | Duplex[1] | 350792-3 | — | 350793-3 | | |
| 5 | 1.300 33.02 | UL94V-2 | Pre-tin | 640466-1 | 643405-1 | — | 1-480763-0 | — |
| | | | Duplex[1] | 640466-3 | — | — | | |
| | | UL94V-0 | Pre-tin | 640900-1 | 643406-1 | — | 350809-1 | 770016-1 |
| | | | Duplex[1] | 640900-3 | — | — | | |
| 6 | 1.550 39.37 | UL94V-2 | Pre-tin | 641832-1 | 643407-1 | — | 640585-1 | — |
| | | UL94V-0 | Pre-tin | 641831-1 | 643408-1 | — | 640581-1 | — |
| 8 | 2.050 52.07 | UL94V-2 | Pre-tin | 641825-1 | — | 770143-1 | 640586-1 | — |
| | | UL94V-0 | Pre-tin | 641828-1 | 643410-1 | 770272-1 | 640582-1 | — |
| | | UL94V-0 | Duplex[1] | — | 643410-3 | 770272-3 | — | — |

## 6, 9, 12 and 15 Circuit, Matrix




| Number of Circuits | A Dim. | Flammability Rating | Pin Finish | Pin Header Part Numbers: Standard Tail[2] | Standard Tail Polarized[2] | Long Tail[3] | Mates with Plug Housing Part Number (Using Socket Contacts): Universal MATE-N-LOK | Universal MATE-N-LOK II |
|---|---|---|---|---|---|---|---|---|
| 6 | .550 13.97 | UL94V-2 | Pre-tin | 350431-1 | 641969-1 | 350585-1 | 1-480704-0 | — |
| | | | | | — | 643749-1[5] | | |
| | | | Duplex[1] | 350431-4 | — | 350585-4 | | |
| | | UL94V-0 | Pre-tin | 350711-1 | 641970-1 / 1-641970-1[4] | 350732-1 | 350715-1 | 770020-1 |
| | | | Duplex[1] | 350711-4 | 641970-3 | 350732-4 | | |
| 9 | .800 20.32 | UL94V-2 | Pre-tin | 350432-1 | 641971-1 | 350586-1 | 1-480706-0 | — |
| | | | Duplex[1] | 350432-4 | 641971-3 | 350586-4 | | |
| | | UL94V-0 | Pre-tin | 350712-1 | 641972-1 / 1-641972-1[4] | 350742-1 | 350720-1 | 770021-1 |
| | | | Duplex[1] | 350712-4 | 641972-3 | 350742-4 | | |
| 12 | 1.050 26.67 | UL94V-2 | Pre-tin | 350433-1 | 641973-1 | 350587-1 | 1-480708-0 | — |
| | | | Duplex[1] | 350433-4 | — | 350587-4 | | |
| | | UL94V-0 | Pre-tin | 350713-1 | 641974-1 / 1-641974-1[4] | 350737-1 | 350735-1 | 770022-1 |
| | | | Duplex[1] | 350713-4 | 641974-3 | 350737-4 | | |
| 15 | 1.300 33.02 | UL94V-2 | Pre-tin | 350434-1 | 641975-1 | 350588-1 | 1-480710-0 | — |
| | | | Duplex[1] | 350434-4 | — | 350588-4 | | |
| | | UL94V-0 | Pre-tin | 350714-1 | 641976-1 | 350738-1 | 350736-1 | 770023-1 |
| | | | Duplex[1] | 350714-4 | 641976-4 | 350738-4 | | |

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Use Standard Tail for .062 [1.57] thick PC Board. [3]Use Long Tail for .125 [3.18] thick PC Board.
[4]Black in color. [5]No drain holes, used w/ seals, page 180. **Note: All part numbers are RoHS Compliant.**

**Note:** Header Housings on pages 182-185 are available in **colors** listed on page 188. Call Technical Support for exact Part Numbers.





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Japan: 81-44-844-8013
UK: 44-8706-080-208

# Universal MATE-N-LOK Connectors (Continued)

## PC Board Vertical Socket Headers

.250 [6.35] Centerline spacing

### Material

**Housing** —
UL94V-2 Nylon, natural color
UL94V-0 Nylon

**Contacts** — Phosphor bronze

Solder tail diameter .062 [1.57]

### Related Product Data

**Product Specification**

108-1053 Universal MATE-N-LOK PC Board Headers

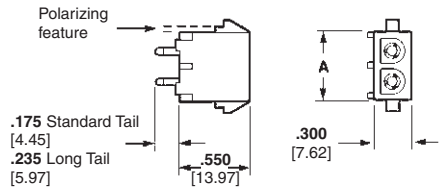
**Performance Characteristics**— pages 169-170
**Recommended PC Board Hole Layout**— page 184
**Technical Documents**— pages 169 and 205-206

### Mating Connectors

**Universal MATE-N-LOK**
Plug Housings — page 174

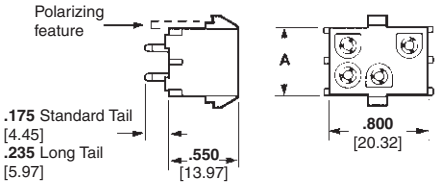
**Universal MATE-N-LOK II**
Plug Housings — pages 193-194

## 2, 3, 4, 5, and 6 Circuit, In-Line




| Number of Circuits | A Dim. | Flammability Rating | Socket Finish | Socket Header Part Numbers | | | Mates with Plug Housing Part Number (Using Pin Contacts) | |
|---|---|---|---|---|---|---|---|---|
| | | | | Standard Tail[2] | Standard Tail Polarized[2] | Long Tail[3] | Universal MATE-N-LOK | Universal MATE-N-LOK II |
| 2 | .550 13.97 | UL94V-2 | Pre-tin | 350759-4 | 643411-1 | 350986-4 | 1-480698-0 | — |
| | | | Duplex[1] | 350759-5 | — | — | | |
| | | UL94V-0 | Pre-tin | 350824-1 | 643412-1 | 350831-1 | 350777-1 | 770017-1 |
| | | | Duplex[1] | 350824-4 | 643412-3 | — | | |
| 3 | .800 20.32 | UL94V-2 | Pre-tin | 350760-4 | 643413-1 | 350987-4 | 1-480700-0 | — |
| | | | Duplex[1] | 350760-5 | — | — | | |
| | | UL94V-0 | Pre-tin | 350825-1 | 643414-1 | 350832-1 | 350766-1 | 770018-1 |
| | | | Duplex[1] | 350825-4 | 643414-3 | 350832-4 | | |
| 4 | 1.050 26.67 | UL94V-2 | Pre-tin | 350761-4 | 643415-1 | 350988-4 | 1-480702-0 | — |
| | | | Duplex[1] | 350761-5 | — | 350988-5 | | |
| | | UL94V-0 | Pre-tin | 350826-1 | 643416-1 | 350833-1 | 350779-1 | 770019-1 |
| | | | Duplex[1] | 350826-4 | — | 350833-4 | | |
| 5 | 1.300 33.02 | UL94V-2 | Pre-tin | 640467-1 | — | — | 1-480763-0 | — |
| | | | Pre-tin | 640467-3 | — | — | | |
| | | UL94V-0 | Pre-tin | 640901-1 | — | — | 350809-1 | 770016-1 |
| | | | Duplex[1] | 640901-3 | — | — | | |
| 6 | 1.550 39. 37 | UL94V-0 | Duplex[1] | 770262-3 | — | — | 640581-1 | — |

## 6, 9, 12 and 15 Circuit, Matrix




| Number of Circuits | A Dim. | Flammability Rating | Socket Finish | Socket Header Part Numbers | | | Mates with Plug Housing Part Number (Using Pin Contacts) | |
|---|---|---|---|---|---|---|---|---|
| | | | | Standard Tail[2] | Standard Tail Polarized[2] | Long Tail[3] | Universal MATE-N-LOK | Universal MATE-N-LOK II |
| 6 | .550 13.97 | UL94V-2 | Pre-tin | 350762-4 | 643423-1 | 350989-4 | 1-480704-0 | — |
| | | | Duplex[1] | 350762-5 | — | 350989-5 | | |
| | | UL94V-0 | Pre-tin | 350827-1 | 643424-1 | 350834-1 | 350715-1 | 770020-1 |
| | | | Duplex[1] | 350827-4 | 643424-3 | 350834-4 | | |
| 9 | .800 20.32 | UL94V-2 | Pre-tin | 350763-4 | 643425-1 | 350990-4 | 1-480706-0 | — |
| | | | Duplex[1] | 350763-5 | — | 350990-5 | | |
| | | UL94V-0 | Pre-tin | 350828-1 | 643426-1 | 350835-1 | 350720-1 | 770021-1 |
| | | | Duplex[1] | 350828-4 | 643426-3 | 350835-4 | | |
| 12 | 1.050 26.67 | UL94V-2 | Pre-tin | 350764-4 | — | 350991-4 | 1-480708-0 | — |
| | | | Duplex[1] | 350764-5 | — | 350991-5 | | |
| | | UL94V-0 | Pre-tin | 350829-1 | 643428-1 | 350836-1 | 350735-1 | 770022-1 |
| | | | Duplex[1] | 350829-4 | — | 350836-4 | | |
| 15 | 1.300 33.02 | UL94V-2 | Pre-tin | 350765-4 | 643429-1 | 350992-4 | 1-480710-0 | — |
| | | | Duplex[1] | 350765-5 | — | — | | |
| | | UL94V-0 | Pre-tin | 350830-1 | 643430-1 | 350837-1 | 350736-1 | 770023-1 |
| | | | Duplex[1] | 350830-4 | — | 350837-4 | | |

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Use Standard Tail for .062 [1.57] thick PC Board.
[3]Use Long Tail for .125 [3.18] thick PC Board.

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

**Note:** Header Housings on pages 182-185 are available in **colors** listed on page 188. Call Technical Support for exact Part Numbers.





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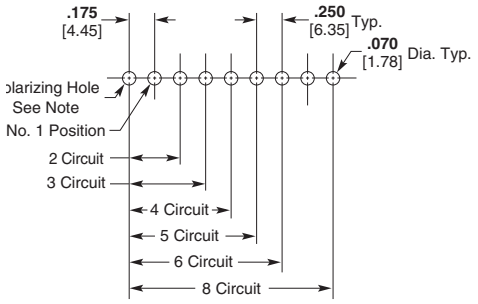
## Universal MATE-N-LOK Connectors (Continued)

### Recommended PC Board Hole Layouts for Pin and Socket Vertical Headers

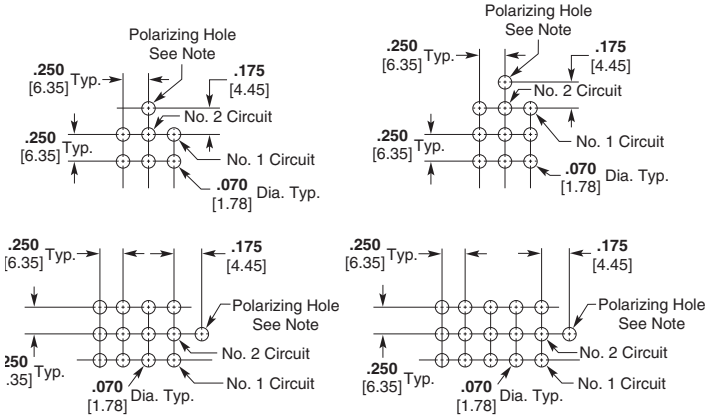
**Related Product Data**

**Vertical Headers**—pages 182-183

### 2, 3, 4, 5, 6 and 8 Circuit, In-Line




### 6, 9, 12 and 15 Circuit, Matrix




**Note:** Polarizing hole **.070** [1.78] Dia. required for polarized headers only.

### PC Board Vertical Pin Headers with ACTION PIN Contacts

**Material and Finish**

**Housing** — PBT, black

**Flammability Rating** — UL94V-0

**Contacts** — Copper alloy, plated with tin over nickel on entire contact

**Related Product Data**

**Performance Characteristics**—pages 169-170

**Technical Documents** — pages 169 and 205-206

**Product Specification**

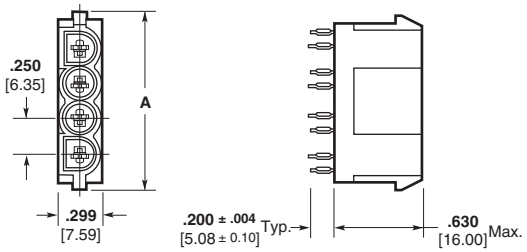
108-5222 ACTION PIN Universal MATE-N-LOK Header Assembly

**Mating Connectors**

**Universal MATE-N-LOK**
Plug Housings — page 174

**Universal MATE-N-LOK II**
Plug Housings — pages 193-194

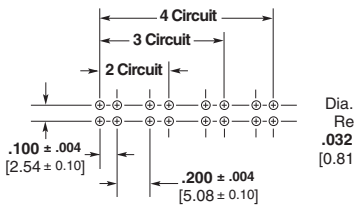
**Note:** Header Housings on pages 182-185 are available in **colors** listed on page 188. Call Technical Support for exact Part Numbers.



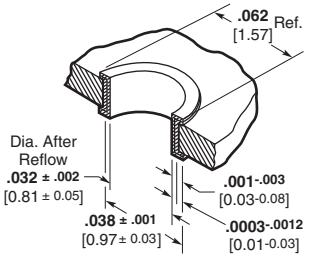

| Number of Circuits | A Dim. | Part Number | Mates with Plug Housing Part Number (Using Socket Contacts) | |
|---|---|---|---|---|
| | | | Universal MATE-N-LOK | Universal MATE-N-LOK II |
| 2 | **.750** 19.05 | 173924-1 | 1-480698-0 350777-1 | 770017-1 |
| 3 | **1.000** 25.40 | 173925-1 | 1-480700-0 350766-1 | 770018-1 |
| 4 | **1.250** 31.75 | 173926-1 | 1-480702-0 350779-1 | 770019-1 |

**Note:** Install in PC Board with arbor tool.

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




**Recommended PC Board Hole Layout**




**PC Board Hole Dimensions**





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UK: 44-8706-080-208

# Universal MATE-N-LOK Connectors (Continued)

## PC Board Right-Angle Pin and Socket Headers

.250 [6.35] Centerline spacing

### Material

**Housing** — Nylon

**Contacts** — Phosphor bronze

Solder tail width .052 [1.32]

### Related Product Data

**Product Specification**

108-1053 Universal MATE-N-LOK PC Board Headers

**Performance Characteristics**— pages 169-170

**Technical Documents**— pages 169 and 205-206

### Mating Connectors

**Universal MATE-N-LOK**

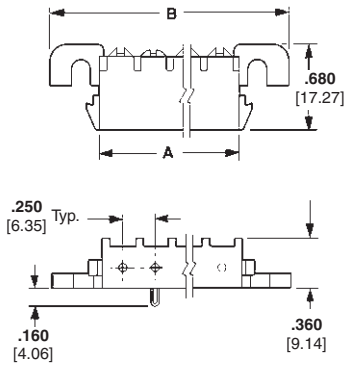
Plug Housings — page 174

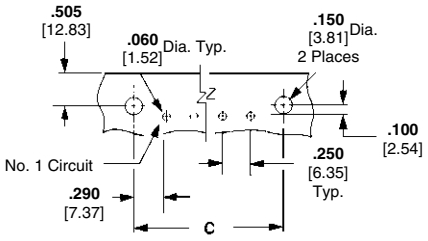
**Universal MATE-N-LOK II**

Plug Housings — pages 193-194

**Note:** Header Housings on pages 182-185 are available in **colors** listed on page 188. Call Technical Support for exact Part Numbers.

## 2, 3, 4, 5, 6 and 8 Circuit, In-line




Use 6-32 UNC Pan Head Screw
3/8 [9.53] long for mounting
**(Not Supplied)**

**Recommended PC Board Hole Layout**
**.062 [1.57] Board Thickness**

| No. of Circuits | Dimensions A | B | C | Contact Finish | Right-Angle Header Part Numbers UL94V-2 Pin | Socket | Mates with | UL94V-0 Pin | Socket | Mates with: Universal MATE-N-LOK | Mates with: Universal MATE-N-LOK II |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | .550 13.97 | 1.245 31.62 | .830 21.08 | Pre-tin | — | — | — | 1-350942-0 | 643226-1 | 350777-1 | 770017-1 |
| | | | | | | | | 770994-1[2] | — | | |
| | | | | Duplex[1] | — | — | — | 3-350942-0 | — | | |
| 3 | .800 20.32 | 1.495 37.97 | 1.080 27.43 | Pre-tin | — | — | — | 1-350943-0 | 643228-1 | 350766-1 | 770018-1 |
| | | | | Duplex[1] | — | — | | 3-350943-0 | 3-643228-0 | | |
| 4 | 1.050 26.67 | 1.745 44.32 | 1.330 33.78 | Pre-tin | 1-350948-0 | — | 1-480702-0 | 1-350944-0 | 643230-1 | 350779-1 | 770019-1 |
| | | | | Duplex[1] | — | — | | 3-350944-0 | 3-643230-0 | | |
| 5 | 1.300 33.02 | 1.995 50.67 | 1.580 40.13 | Pre-tin | 1-350949-0 | — | 1-480763-0 | 1-350945-0 | 643232-1 | 350809-1 | 770016-1 |
| | | | | Duplex[1] | — | — | | 3-350945-0 | 3-643232-0 | | |
| 6 | 1.550 39.37 | 2.245 57.02 | 1.830 46.48 | Pre-tin | 640587-1 | 643235-1 | 640585-1 | 640583-1 | 643234-1 | 640581-1 | — |
| | | | | Duplex[1] | — | | | 640583-3 | 3-643234-0 | | |
| 8 | 2.050 52.07 | 2.745 69.72 | 2.330 59.18 | Pre-tin | — | 643237-1 | 640586-1 | 640584-1 | 643236-1 | 640582-1 | — |
| | | | | Duplex[1] | — | | | 640584-3 | 3-643236-0 | | |

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact. [2]Black in color.

## Test Connectors (with spring loaded contacts)

### Material

**Housing** — Nylon

**Flammability Rating** — UL94V-0

### Related Product Data

**Mating Connectors** — Housings and headers having the same number of circuits. The housings can have pin or socket contacts, or a combination of both.

**Mating Housings** — page 174

**Mating Headers** — pages 182-185

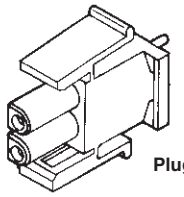
**Other Mating Connectors**

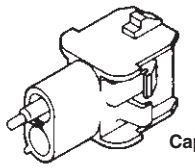
Universal MATE-N-LOK II Housings— pages 193-194

**Notes:**

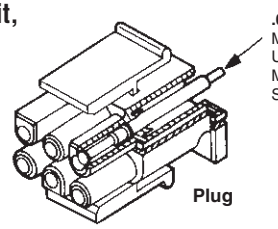
1. Test probes have 5 amp maximum current rating. 1,000,000 cycles.
2. Test Connector housings are of the same configuration as standard housings. Refer to page 23 for dimensional specifications.

## 2, 3, 4 and 5 Circuit, In-Line

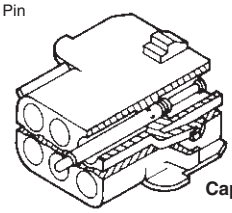

Plug


Cap

## 6, 9, 12 and 15 Circuit, Matrix



Plug


Cap

| Number of Circuits | Part Numbers Plug | Cap |
|---|---|---|
| 2 | 350848-2 | 350849-2 |
| 3 | 350848-3 | 350849-3 |
| 4 | 350848-4 | 350849-4 |
| 5 | 350848-5 | 350849-5 |
| 6 | 350848-6 | 350849-6 |
| 9 | 350848-9 | 350849-9 |
| 12 | 1-350848-2 | 1-350849-2 |
| 15 | 1-350848-5 | 1-350849-5 |

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





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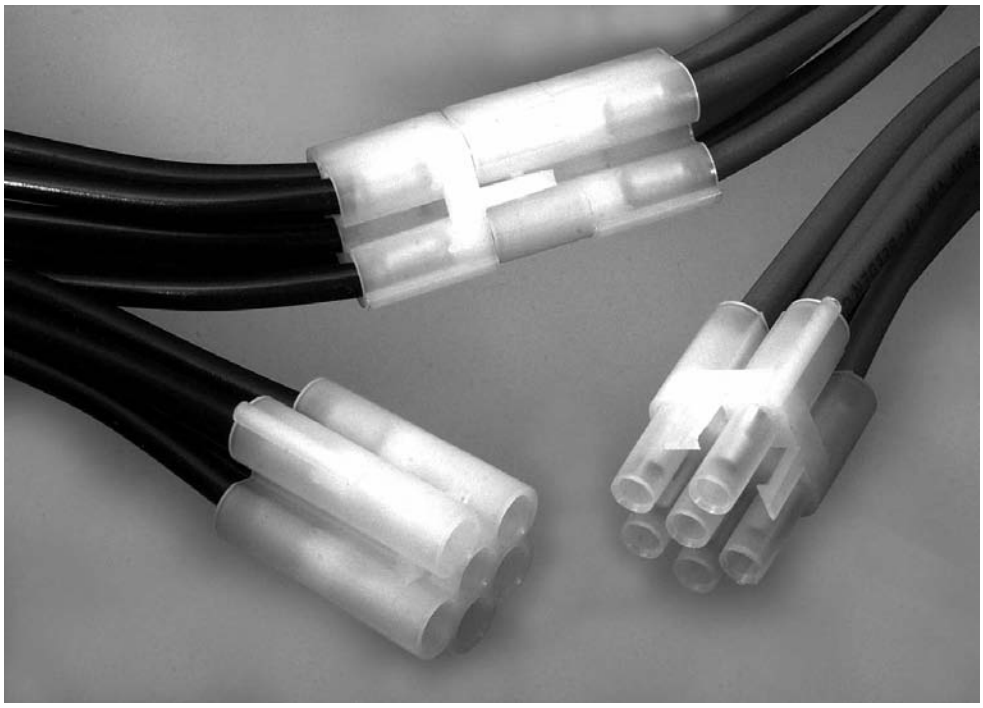
# Universal MATE-N-LOK Circular Connectors



## Product Facts

- Unique product designed to accommodate the specific needs of the lighting industry
- Circular design allows the connector to pass through 7/8 inch knock-out holes in electrical fixtures and boxes
- 6-position accommodates most major electrical industry requirements
- Universal MATE-N-LOK connector centerline spacing maintains UL and CSA approvals
- Uses standard Universal MATE-N-LOK contacts and application tooling
- Positive polarized housing helps prevent incorrect mating
- UL Recognized, File No. E28476
- CSA Certified, File No. LR7189

## Applications

- Primary applications are in the Lighting, Vending, and Appliance industries
- Applications where use of a completed harness that will pass through a 7/8 inch knock-out is required
- Provides the capability to quickly disconnect individual fixtures from sensitive environmental areas and perform maintenance at other sites
- Not for interrupting current

## Performance Characteristics

**Voltage**—600 V AC or DC

**Current**—20 amps maximum per UL-1977 (6 position, fully energized)

**Dielectric Withstanding Voltage**—5 KVAC or KVDC

**Insulation Resistance**—1000 MΩ max. between adjacent circuits

**Durability**—50 cycles mating and unmating

**Contact Retention**—15 lb. minimum per contact

## Technical Documents

**Product Specification**
108-2069 Universal MATE-N-LOK Circular Connector

**Application Specification**
114-1010 Universal MATE-N-LOK Connectors





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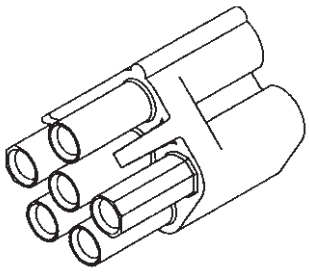
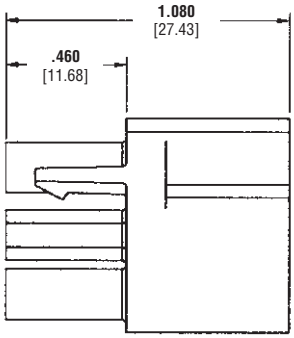
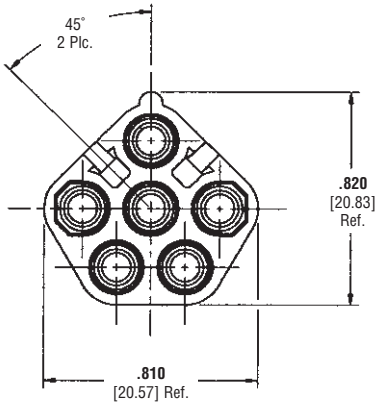
## Universal MATE-N-LOK Circular Connectors (Continued)

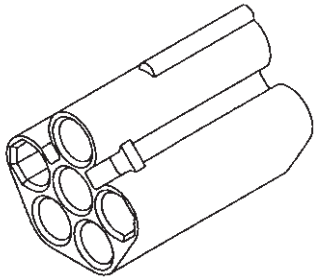
### Plug
Part No. 794911-1

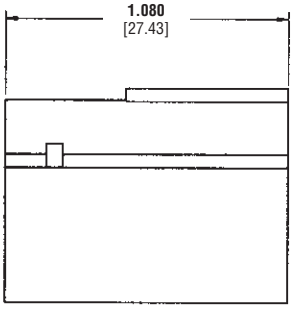


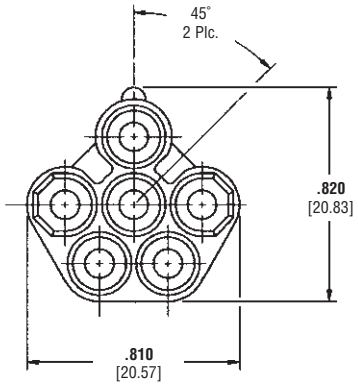



### Cap
Part No. 794912-1






### Material and Finish
**Housings**—Nylon, UL 94V-2 rated

### Related Product Data
**Contacts**—pages 172-173

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





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## Universal MATE-N-LOK Connectors — Available in Colors

**Note:** See corresponding Universal MATE-N-LOK Plug and Cap Housing Base Part Numbers on page 175.

Header Housings on pages 182-185 are also available in **colors**. Call Technical Support for exact Part Numbers.

| Base Part Number | No. of Circuits | Housing | Material |
|---|---|---|---|
| 480698 | 2 | Plug | V-2 |
| 480699 | 2 | Cap | V-2 |
| 480700 | 3 | Plug | V-2 |
| 480701 | 3 | Cap | V-2 |
| 480702 | 4 | Plug | V-2 |
| 480703 | 4 | Cap | V-2 |
| 480763* | 5 | Plug* | V-2 |
| 480764* | 5 | Cap* | V-2 |
| 480704 | 6 | Plug | V-2 |
| 480705 | 6 | Cap | V-2 |
| 480706 | 9 | Plug | V-2 |
| 480707 | 9 | Cap | V-2 |
| 480708 | 12 | Plug | V-2 |
| 480709 | 12 | Cap | V-2 |
| 480710 | 15 | Plug | V-2 |
| 480711 | 15 | Cap | V-2 |
| 350777 | 2 | Plug | V-0 |
| 350778 | 2 | Cap | V-0 |
| 350766 | 3 | Plug | V-0 |
| 350767 | 3 | Cap | V-0 |
| 350799 | 4 | Plug | V-0 |
| 350780 | 4 | Cap | V-0 |
| 350809 | 5 | Plug | V-0 |
| 350810 | 5 | Cap | V-0 |
| 350715 | 6 | Plug | V-0 |
| 350781 | 6 | Cap | V-0 |
| 350720 | 9 | Plug | V-0 |
| 350782 | 9 | Cap | V-0 |
| 350735 | 12 | Plug | V-0 |
| 350783 | 12 | Cap | V-0 |
| 350736 | 15 | Plug | V-0 |
| 350784 | 15 | Cap | V-0 |

| Dash Number | Color |
|---|---|
| 1-xxxxxx-0 | Natural |
| 1-xxxxxx-1 | Brown |
| 1-xxxxxx-2 | Red |
| 1-xxxxxx-3 | Orange |
| 1-xxxxxx-4 | Yellow |
| 1-xxxxxx-5 | Green |
| 1-xxxxxx-6 | Blue |
| 1-xxxxxx-8 | Gray |
| 1-xxxxxx-9 | Black |

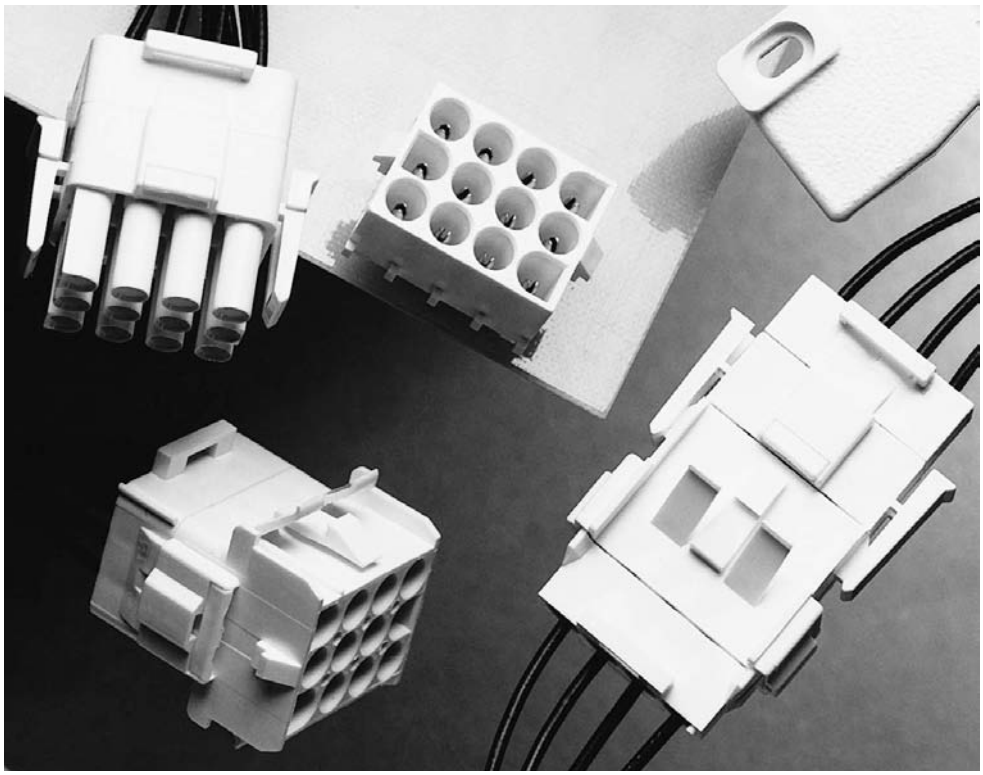
*** Special for Base Part Numbers 480763 and 480764**

| Dash Number | Color |
|---|---|
| xxxxxx-1 | Natural |
| 1-xxxxxx-1 | Brown |
| 1-xxxxxx-2 | Red |
| 1-xxxxxx-3 | Orange |
| 1-xxxxxx-4 | Yellow |
| 1-xxxxxx-5 | Green |
| 1-xxxxxx-6 | Blue |
| 1-xxxxxx-8 | Gray |
| 1-xxxxxx-9 | Black |

# Universal MATE-N-LOK II Connectors

## Product Facts

- **High reliability**
- **For use where repair or replacement would be difficult**
- **Pins and sockets can be intermixed in the same housing**
- **Available in 2 through 15 circuit sizes for free-hanging or panel mount wire-to-wire connection**
- **Mate with standard Universal MATE-N-LOK Housings and PC Board Headers**
- **Uses standard Universal MATE-N-LOK panel cutouts and strain reliefs**
- **Polarized housings available in UL94V-0 flammability rated material**
- **Enclosed contacts for shock protection**
- **F-Crimp terminals accept 30-10 AWG [.05 -5.0 mm²] wire sizes**
- **Contacts available in strip and loose form**
- **Lanceless contacts for tangle-free handling**
- **Insulation capability to .200 [5.08] diameter**
- **Connector design provides for complete contact insertion**
- **Three-point stabilization precisely controls contact alignment, minimizing stubbing**
- **Tin or duplex gold plated contacts**
- **Contacts are on .250 [6.35] centerline spacing**
- **Not for interrupting current**
- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**
- **Certified by Canadian Standards Association, File No. LR 7189**
- **Passed test by VDE under their Registration Number 3980/Continuous Surveillance**



## Performance Characteristics

The Universal MATE-N-LOK II Connector performance characteristics found on pages 189-190 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Dielectric Withstanding Voltage**—5.0 KV AC or DC between adjacent circuits initially

**Insulation Resistance**—1000 megohms minimum between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Connector Mating**—Split Pin—1.5 lb. max. per circuit

**Connector Unmating**—Split Pin—.5 lb. min. per circuit

**Contact Insertion Force**—3.0 lb. max. per contact unassembled

**Contact Retention**—35 lb. min. per contact

**Durability**—50 cycles, mating and unmating

## Technical Documents

**Product Specification**

108-1090 Universal MATE-N-LOK II Connectors

**Application Specification**

114-1043 Universal MATE-N-LOK II Connectors

**Instruction Sheet**

408-3200 Housing, Contacts and Accessories





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# Universal MATE-N-LOK II Connectors (Continued)

## Performance Characteristics (Continued)

**Maximum Current**—Maximum current rating of Universal MATE-N-LOK II connectors is limited by the maximum operating temperature of the housings which is 120°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

Universal MATE-N-LOK II connectors also will withstand the following tests:

**Vibration**—10-55-10 cycles per minute at .06 inch total excursion

**Physical Shock**—18 drops, 50 g sawtooth at 10 milliseconds

**Housing Panel Retention**—75 lb. min.

**Housing Lock Strength**—35 lb. min.

**Thermal Shock**— -55°C to +85°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

**Corrosion**—48 hr. at 5% salt concentration

## Related Product Data

**Product Specification**

108-1090 Universal MATE-N-LOK II Connectors

## Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

### Wire-to-Wire

**Calculated Current Table**

| Number of Circuits | Wire Gauge | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 30 |
| 2 | 19.00 | 18.00 | 17.00 | 14.50 | 13.00 | 10.00 | 8.00 | 6.50 | 5.50 | 3.50 |
| 3 | 17.50 | 16.50 | 15.50 | 13.00 | 12.00 | 9.00 | 7.50 | 6.00 | 5.00 | 3.00 |
| 4 | 16.50 | 15.50 | 15.00 | 12.50 | 11.00 | 8.50 | 7.00 | 5.50 | 4.50 | 3.00 |
| 5 | 16.00 | 15.00 | 14.00 | 12.00 | 10.50 | 8.00 | 6.50 | 5.50 | 4.50 | 3.00 |
| 6 Matrix | 15.00 | 14.00 | 13.00 | 11.00 | 9.50 | 7.50 | 6.00 | 5.00 | 4.00 | 2.50 |
| 8 | 14.50 | 14.00 | 13.00 | 10.50 | 9.50 | 7.50 | 6.00 | 5.00 | 4.00 | 2.50 |
| 9 | 13.50 | 12.50 | 11.50 | 9.50 | 8.50 | 6.50 | 5.50 | 4.50 | 3.50 | 2.00 |
| 10 | 14.00 | 13.00 | 12.50 | 10.00 | 9.00 | 7.00 | 5.50 | 4.50 | 3.50 | 2.50 |
| 12 | 12.50 | 12.00 | 11.00 | 9.00 | 8.00 | 6.00 | 5.00 | 4.00 | 3.00 | 2.00 |
| 15 | 12.00 | 11.50 | 10.00 | 8.50 | 7.50 | 6.00 | 4.50 | 4.00 | 3.00 | 2.00 |

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

**Minimum Wire Lengths for T-Rise vs. Current Testing**

| AWG | Min. Length (in.) | AWG | Min. Length (in.) |
|---|---|---|---|
| 30 | 2.6 | 18 | 9.4 |
| 28 | 3.2 | 16 | 11.3 |
| 26 | 4.1 | 14 | 13.7 |
| 24 | 5.1 | 12 | 16.4 |
| 20 | 7.8 | 10 | 19.3 |

**Note:** If wire lengths used are less than those listed above, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

### Wire-to-Board

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The chart values are only a tool for connector selection and will require the customer to fully test their application.

**Termination Resistance/Contact Crimp Tensile Force**

| Wire Size | | Termination Resistance | | Contact Crimp Tensile Force | |
|---|---|---|---|---|---|
| AWG | mm² | Test Current (Amps) | Resistance Milliohms (Max. Init.) | Force (Min.) lbs. | Force (Min.) N |
| 30 | .05 | — | — | 1.5 | 7 |
| 28 | .08 | — | — | 3 | 13 |
| 26 | .12 | — | — | 5 | 22 |
| 24 | .2 | 1.5 | 3.50 | 7 | 31 |
| 22 | .3 | 3 | 3.50 | 12 | 53 |
| 20 | .5 | 4.5 | 3.00 | 17 | 66 |
| 18 | .8 | 6 | 3.00 | 30 | 133 |
| 16 | 1.2 | 8 | 2.75 | 45 | 200 |
| 14 | 2.0 | 10 | 2.75 | 50 | 222 |
| 12 | 3.0 | — | — | 60 | 267 |
| 10 | 5.0 | — | — | 70 | 311 |

**Note:** This is the total resistance between wire crimps of a mated pin and socket.





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UK: 44-8706-080-208

## Universal MATE-N-LOK II Connectors (Continued)

### Universal MATE-N-LOK II Connector Mating Combinations

| Connector Part Number | | | | Mating Connector Part Number | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | PC Board Headers | | | | | | | |
| | | | | | | Vertical Pin[2] | | | Vertical Socket[2] | | | Right-Angle[2] | |
| Number of Circuits | Flammability Rating | Style | Plug Kit Part Number[2] | Cap Kit Part Number[2] | Plating | Standard Tail | Standard Tail Polarized | Long Tail | Standard Tail | Standard Tail Polarized | Long Tail | Pin | Socket |
| 2 | UL94V-0 | In-Line | 770017-1 | 770024-1 | Pre-tin | 350786-1 | 641964-1 | 350787-1 | 350824-1 | 643412-1 | 350831-1 | 1-350942-0 | 643226-1 |
| | | | | | Duplex[1] | 350786-3 | 641964-3 | 350787-3 | 350824-4 | 643412-3 | — | 3-350942-0 | — |
| 3 | UL94V-0 | In-Line | 770018-1 | 770025-1 | Pre-tin | 350789-1 | 641966-1 | 350790-1 | 350825-1 | 643414-1 | 350832-1 | 1-350943-0 | 643228-1 |
| | | | | | Duplex[1] | 350789-3 | — | 350790-3 | 350825-4 | 643414-3 | 350832-4 | 3-350943-0 | 3-643228-0 |
| 4 | UL94V-0 | In-Line | 770019-1 | 770026-1 | Pre-tin | 350792-1 | 641968-1 | 350793-1 | 350826-1 | 643416-1 | 350833-1 | 1-350944-0 | 643230-1 |
| | | | | | Duplex[1] | 350792-3 | — | 350793-3 | 350826-4 | — | 350833-4 | 3-350944-0 | 3-643230-0 |
| 5 | UL94V-0 | In-Line | 770016-1 | — | Pre-tin | 640900-1 | 643406-1 | — | 640901-1 | — | — | 1-350945-0 | 643232-1 |
| | | | | | Duplex[1] | 640900-3 | — | — | 640901-3 | — | — | 3-350945-0 | 3-643232-0 |
| 6 | UL94V-0 | Matrix | 770020-1 | 770027-1 | Pre-tin | 350711-1 | 641970-1 | 350732-1 | 350827-1 | 643424-1 | 350834-1 | — | — |
| | | | | | Duplex[1] | 350711-4 | 641970-3 | 350732-4 | 350827-4 | 643424-3 | 350834-4 | — | — |
| 9 | UL94V-0 | Matrix | 770021-1 | 770028-1 | Pre-tin | 350712-1 | 641972-1 | 350742-1 | 350828-1 | 643426-1 | 350835-1 | — | — |
| | | | | | Duplex[1] | 350712-4 | 641972-3 | 350742-4 | 350828-4 | 643426-3 | 350835-4 | — | — |
| 12 | UL94V-0 | Matrix | 770022-1 | 770029-1 | Pre-tin | 350713-1 | 641974-1 | 350737-1 | 350829-1 | 643428-1 | 350836-1 | — | — |
| | | | | | Duplex[1] | 350713-4 | 641974-3 | 350737-4 | 350829-4 | — | 350836-4 | — | — |
| 15 | UL94V-0 | Matrix | 770023-1 | 770030-1 | Pre-tin | 350714-1 | 641976-1 | 350738-1 | 350830-1 | 643430-1 | 350837-1 | — | — |
| | | | | | Duplex[1] | 350714-4 | 641976-4 | 350738-4 | 350830-4 | — | 350837-4 | — | — |

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Universal MATE-N-LOK II Plug and Cap housings accept pin or socket contacts. Use the appropriate contacts in the Plug housing as required by the mating component.

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





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Japan: 81-44-844-8013
UK: 44-8706-080-208

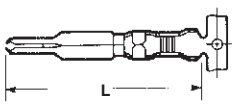
## Universal MATE-N-LOK II Connectors (Continued)

### Contacts

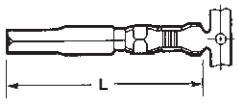
Split pin diameter .086 [2.18]
Stock thickness .012 [.305]
These contacts can be used in either Universal MATE-N-LOK II Plug or Cap housings.

### Related Product Data

**Product Specification**
108-1090 Universal MATE-N-LOK II Connectors
**Application Specification**
114-1043 Universal MATE-N-LOK II Contacts
**Performance Characteristics**— pages 189-190
**Housings**— pages 193-194
**Technical Documents**— pages 189 and 205-206
**Application Tooling**— pages 207-210



Pin



Socket

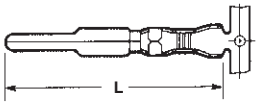
| Wire Size Range AWG [mm²] | Ins. Dia. Range | L Dim. Pin | L Dim. Socket | Material & Finish | Contact Part Numbers Pin Strip Form | Contact Part Numbers Pin Loose Piece | Contact Part Numbers Socket Strip Form | Contact Part Numbers Socket Loose Piece | HDM Applicator Part No. | Hand Tool Part No. |
|---|---|---|---|---|---|---|---|---|---|---|
| 30-26 [.05-.12] | **.032-.057** .813-1.45 | **1.005** 25.53 | **.980** 24.90 | Phos. Brz. Gold[1] | 770011-6 | 770512-6 | 770012-6 | 770416-6 | 567252-1[6] 567252-4[6] | 58439-1 |
| 24-18 [.2-.8] | **.040-100** 1.02-2.54 | **1.005** 25.53 | **.980** 24.90 | Brass. Pre-tin | 770009-1 | 770252-1 | — | — | 567214-1[6] 567214-2[6] 567214-4[6] | 91510-1 |
| | | | | Brass. Duplex[2] | 1-770009-0 | 1-770252-0 | — | — | | |
| | | | | Phos. Brz. Pre-tin | — | — | 770010-3 | 770253-3 | | |
| | | | | Phos. Brz. Duplex[2] | — | — | 1-770010-0 | 1-770253-0 | | |
| 20-14 [.5-2.0] | **.060-.130** 1.52-3.30 | **1.005** 25.53 | **.980** 24.90 | Brass. Pre-tin | 770007-1 | 770250-1 | — | — | 567213-1[6] 567213-2[6] 567213-4[6] | 91500-1 |
| | | | | Brass. Duplex[2] | 1-770007-0 | 1-770250-0 | — | — | | |
| | | | | Phos. Brz. Pre-tin | — | — | 770008-3 | 770251-3 | | |
| | | | | Phos. Brz. Duplex[2] | — | — | 1-770008-0 | 1-770251-0 | | |
| | **.130-.200** 3.30-5.08 | **.995** 25.27 | **.970** 24.63 | Brass. Pre-tin | 770005-1 | 770248-1 | — | — | 567212-1[6] 567212-2[6] 567212-4[6] | 91508-1[4] 91506-1[4] |
| | | | | Brass. Duplex[2] | 1-770005-0 | 1-770248-0 | — | — | | |
| | | | | Phos. Brz. Pre-tin | 770005-3 | — | 770006-3 | 770249-3 | | |
| | | | | Phos. Brz. Duplex[2] | 1-770005-1 | — | 1-770006-0 | 1-770249-0 | | |
| 12-10 [3.0-5.0] | **.200 max.[3]** 5.08 | **1.005** 25.53 | **.980** 24.90 | Phos. Brz. Pre-tin | 770003-3 | 770246-3 | 770004-3 | 770247-3 | 567211-1[6] 567211-2[6] 567211-4[6] | 69710-1[5] |
| | | | | Phos. Brz. Duplex[2] | 1-770003-0 | 1-770246-0 | 1-770004-0 | 1-770247-0 | | |

[1]Gold Finish — Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.
[2]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and .000050 [.00127] min. tin in crimp area over .000050 [.00127] min. nickel underplate on entire contact.
[3]There is no insulation barrel on this contact. Insulation maximum diameter is limited by the housing. Use of strain relief is recommended with these contacts.
[4]Use Hand Tool No. **91508-1** for 20–18 AWG and No. **91506-1** for 16–14 AWG.
[5]Hand Tool No. 69710-1 uses die set No. **58380-1** for 12 AWG and No. **58380-2** for 10 AWG.
[6]HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

### Grounding Pin

(Mate first, break last, not for interrupting current)

Solid pin diameter .084 [2.13]
.100 [2.54] longer than standard pin
Stock thickness .012 [.304]
These contacts can be used in either Universal MATE-N-LOK II Plug or Cap housings only.




| Wire Size Range AWG [mm²] | Ins. Dia. Range | L Dim. | Material & Finish | Contact Part Numbers Strip Form | Contact Part Numbers Loose Piece | HDM Applicator Part No. | Hand Tool Part No. |
|---|---|---|---|---|---|---|---|
| 20-14 [.5-2.0] | **.060-.130** 1.52-3.30 | **1.105** 25.53 | Brass. Pre-tin | 770193-1 | 770254-1 | 567213-1[3] 567213-2[3] 567213-4[3] | 91500-1 |
| | | | Brass. Duplex[1] | 1-770193-0 | 1-770254-0 | | |
| | **.130-.200** 3.30-5.08 | **1.085** 27.56 | Brass. Pre-tin | 770194-1 | 770255-1 | 567212-1[3] 567212-2[3] 567212-4[3] | 91508-1[2] 91506-1[2] |
| | | | Brass. Duplex[1] | 1-770194-0 | 1-770255-0 | | |

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and .000050 [.00127] min. tin in crimp area over .000050 [.00127] min. nickel underplate on entire contact.
[2]Use Hand Tool No. **91508-1** for 20–18 AWG and No. **91506-1** for 16–14 AWG.
[3]HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

**Latch Disengaging Tool**
**Part No. 58382-1**
**IS 408-9436**

**Contact Extraction Tool**
**(For extracting contacts crimped on 24 AWG or smaller wire)**
**Part No. 318851-1**
**IS 408-4371**

**Contact Insertion Tool**
**(For inserting contacts applied to small diameter wire)**
**Part No. 91002-1**
**IS 408-7347**

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





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## Universal MATE-N-LOK II Connectors (Continued)

### Housing Kits
**Free-Hanging or Panel Mount**

.250 [6.35] Centerline spacing

**Material** — Nylon
**Flammability Rating** — UL 94V-0

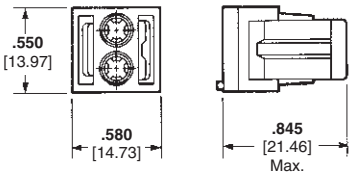
### Related Product Data
**Product Specification**

108-1090 Universal MATE-N-LOK II Connectors

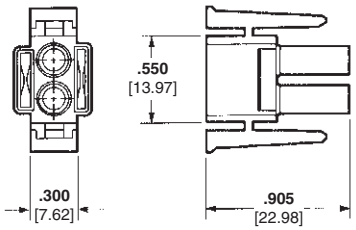
**Performance Characteristics**— pages 189-190
**Contacts**— page 192
**Panel Cutout Recommendations**— page 195
**Keying Plug**— page 196
**Strain Reliefs**— page 196
**Kit Components**— page 195
**Technical Documents**— pages 189 and 205-206

**Other Mating Connectors**
Universal MATE-N-LOK Housings — page 175
Universal MATE-N-LOK Headers — pages 182-183 and 185
Universal MATE-N-LOK Test Connectors — page 185

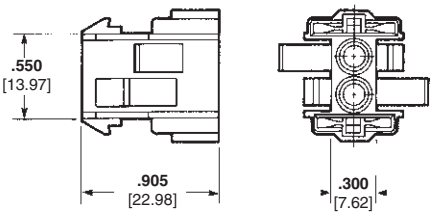
### 2 Circuit, In-line



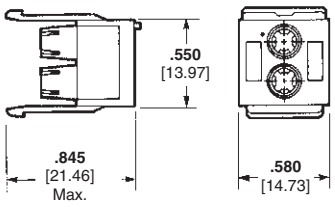

Plug Rear




Plug Front

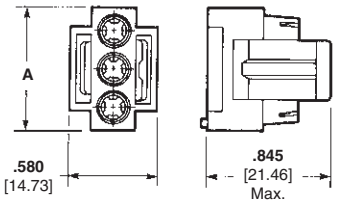



Cap Front

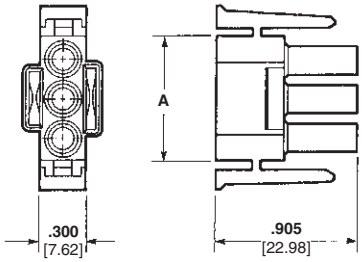



Cap Rear

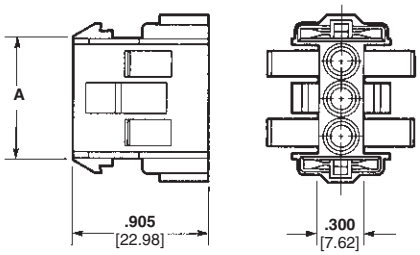
### 3, 4 and 5 Circuit, In-Line



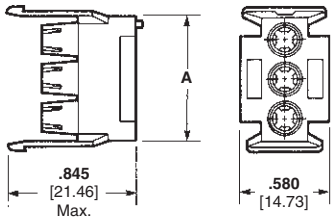

Plug Rear




Plug Front




Cap Front




Cap Rear

| Number of Circuits | A Dim. | Kit Part Numbers (Includes Front and Rear) | |
|---|---|---|---|
| | | Plug | Cap |
| 2 | — | 770017-1 | 770024-1 |
| 3 | **.800** 20.32 | 770018-1 | 770025-1 |
| 4 | **1.050** 26.67 | 770019-1 | 770026-1 |
| 5 | **1.300** 33.02 | 770016-1[4] | — |

**Notes:**
1. Kits consist of a front and rear component.
2. Kit components can be purchased separately. Page 195.
3. Packaging: Bulk — 250 each component per poly bag/box.
4. Mates with standard Universal MATE-N-LOK cap housing P/N 350810-1 and 640900-X or 640901-X Vertical headers.

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





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UK: 44-8706-080-208

## Universal MATE-N-LOK II Connectors (Continued)

### Housing Kits

**Free-Hanging or Panel Mount**

.250 [6.35] Centerline spacing

**Material** — Nylon
**Flammability Rating** — UL 94V-0

### Related Product Data

**Product Specification**

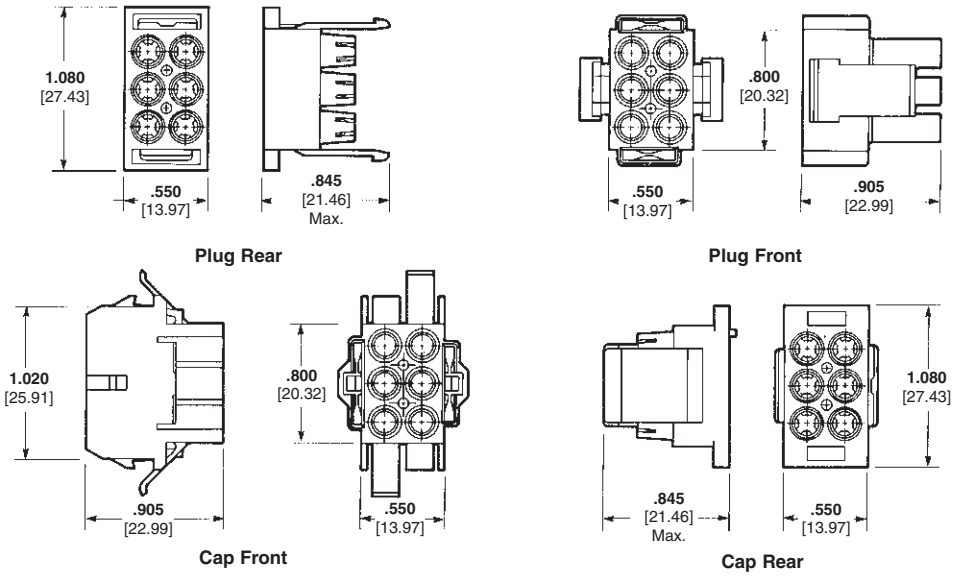
108-1090 Universal MATE-N-LOK II Connectors

**Performance Characteristics**— pages 189-190
**Contacts**— page 192
**Panel Cutout Recommendations**— page 195
**Keying Plug**— page 196
**Strain Reliefs**— page 196
**Kit Components**— page 195
**Technical Documents**— pages 189 and 205-206

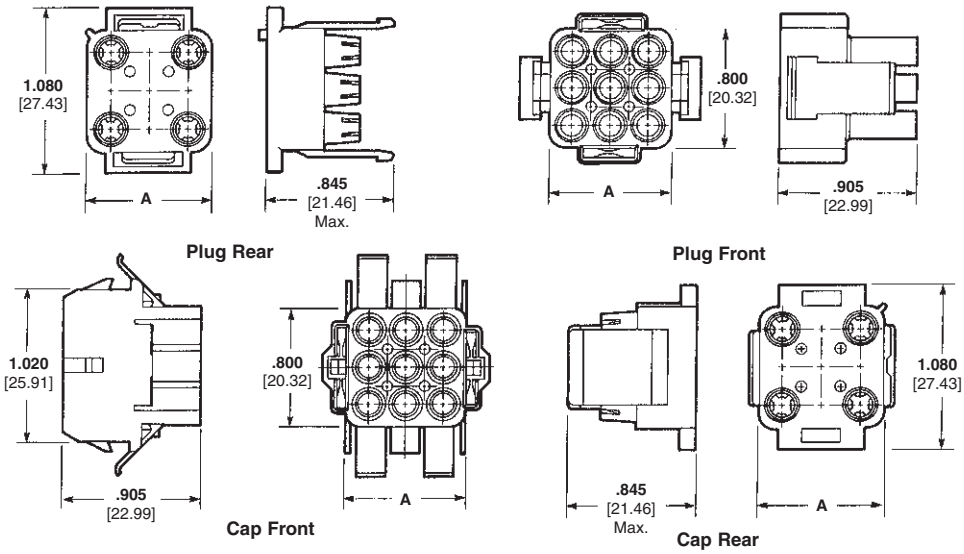
**Other Mating Connectors**

Universal MATE-N-LOK Housings — page 176
Universal MATE-N-LOK Headers — pages 182-183 and 185
Universal MATE-N-LOK Test Connectors — page 185

### 6 Circuit, Matrix




### 9, 12 and 15 Circuit, Matrix




| Number of Circuits | A Dim. | Kit Part Numbers (Includes Front and Rear) | |
|---|---|---|---|
| | | Plug | Cap |
| 6 | — | 770020-1 | 770027-1 |
| 9 | **.800** 20.32 | 770021-1 | 770028-1 |
| 12 | **1.050** 26.67 | 770022-1 | 770029-1 |
| 15 | **1.300** 33.02 | 770023-1 | 770030-1 |

**Notes:**
1. Kits consist of a front and rear component.
2. Kit components can be purchased separately. Page 195.
3. Packaging: Bulk — 250 each component per poly bag/box.

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





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UK: 44-8706-080-208

## Universal MATE-N-LOK II Connectors (Continued)

### Housing Components

**Free-Hanging or Panel Mount**

.250 [6.35] Centerline spacing

**Material** — Nylon
**Flammability Rating** — UL 94V-0

### Related Product Data

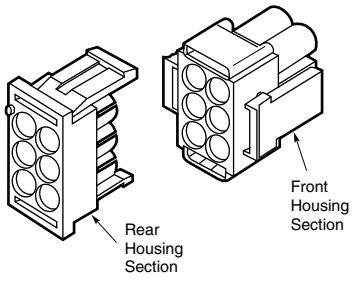
**Product Specification**

108-1090 Universal MATE-N-LOK II Connectors

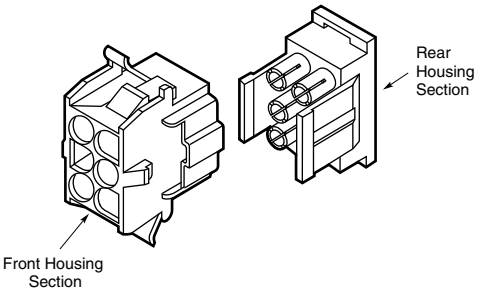
**Performance Characteristics**— pages 189-190
**Contacts**— page 192
**Illustrations and Dimensions**— pages 193-194
**Panel Cutout Recommendations**— page 195
**Keying Plug**— page 196
**Strain Reliefs**— page 196
**Technical Documents**— pages 189 and 205-206

**Other Mating Connectors**

Universal MATE-N-LOK Connectors — page 176
Universal MATE-N-LOK Headers — pages 182-183 and 185
Universal MATE-N-LOK Test Connectors — page 185




**Plug Housing**




**Cap Housing**

| Number of Circuits | Kit Component Part Numbers | | | | | |
|---|---|---|---|---|---|---|
| | Plug | | | Cap | | |
| | Kit | Front | Rear | Kit | Front | Rear |
| 2 | 770017-1 | 770031-1 | 770032-1 | 770024-1 | 770045-1 | 770046-1 |
| 3 | 770018-1 | 770033-1 | 770034-1 | 770025-1 | 770047-1 | 770048-1 |
| 4 | 770019-1 | 770035-1 | 770036-1 | 770026-1 | 770049-1 | 770050-1 |
| 5 | 770016-1 | 770319-1 | 770320-1 | — | — | — |
| 6 | 770020-1 | 770037-1 | 770038-1 | 770027-1 | 770051-1 | 770052-1 |
| 9 | 770021-1 | 770039-1 | 770040-1 | 770028-1 | 770053-1 | 770054-1 |
| 12 | 770022-1 | 770041-1 | 770042-1 | 770029-1 | 770055-1 | 770056-1 |
| 15 | 770023-1 | 770043-1 | 770044-1 | 770030-1 | 770057-1 | 770058-1 |

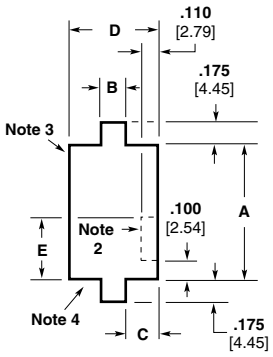
**Notes:**
1. Kits consist of a front and rear component.
2. Kit components can be purchased separately.

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

### Recommended Cap Housing Panel Cutouts

View is from cap entry side

Refer to Application Specification 114-1043




| Number of Circuits | Dimensions | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | E |
| 2 | **.565** 14.35 | **.340** 8.63 | **.095** 2.41 | **.530** 13.46 | **.250** 6.35 |
| 3 | **.815** 20.70 | **.340** 8.63 | **.095** 2.41 | **.530** 13.46 | **.250** 6.35 |
| 4 | **1.065** 27.05 | **.340** 8.63 | **.095** 2.41 | **.530** 13.46 | **.250** 6.35 |
| 6 | **.565** 14.35 | **.480** 12.19 | **.275** 6.99 | **1.030** 26.16 | **.250** 6.35 |
| 9 | **.815** 20.70 | **.480** 12.19 | **.275** 6.99 | **1.030** 26.16 | **.250** 6.35 |
| 12 | **1.065** 27.05 | **.480** 12.19 | **.275** 6.99 | **1.030** 26.16 | **.350** 8.89 |
| 15 | **1.315** 33.40 | **.480** 12.19 | **.275** 6.99 | **1.030** 26.16 | **.350** 8.89 |

**Notes:**
1. Recommended panel thickness — .030-.090 [.762-2.286]. Panel must be punched so that housing enters panel in same direction as the punch.
2. Optional — Do not remove this material when keying cap housing to panel.
3. Circuit #1 location when using panel keying with 6, 9, 12 and 15 circuit housings.
4. Circuit #1 location when using panel keying with 2, 3, and 4 circuit housings.





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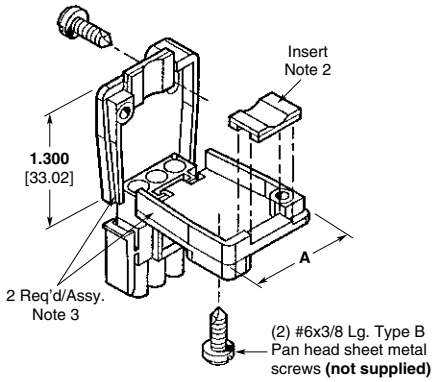
## Universal MATE-N-LOK II Connectors (Continued)

### Plug or Cap Housing Strain Reliefs

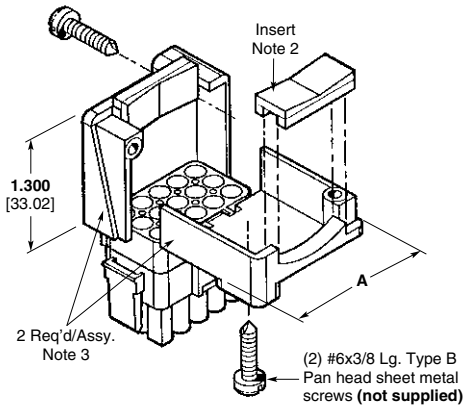
IS 408-3320

**Material** — Nylon
**Flammability Rating** — UL 94V-0

### 2, 3, 4, 5, 6, 9, 12 and 15 Circuit (Enclosed)




**In-Line**



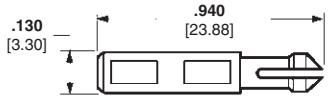

**Matrix**

| Style | Number of Circuits | A Dim. | Insert Supplied | Single Wire Dia. Range | Wire Bundle Dia. Range | Strain Relief Part Numbers |
|---|---|---|---|---|---|---|
| In-Line | 2 | **.960** 24.38 | Yes | **.040 – .190** 1.02 – 4.83 | — | 640713-1 |
| | | | No | — | **.200 – .350** 5.08 – 8.89 | 640713-2 |
| | 3 | **1.140** 28.96 | Yes | **.040 – .190** 1.02 – 4.83 | — | 640714-1 |
| | | | No | — | **.200 – .350** 5.08 – 8.89 | 641945-1 |
| | 4 | **1.340** 34.04 | Yes | **.040 – .190** 1.02 – 4.83 | — | 641776-1 |
| | | | No | — | **.200 – .350** 5.08 – 8.89 | 641776-2 |
| | 5 | **1.530** 38.86 | Yes | **.040 – .190** 1.02 – 4.83 | — | 643030-1 |
| | | | No | — | **.200 – .350** 5.08 – 8.89 | 643030-4 |
| Matrix | 6 | **1.030** 26.16 | Yes | — | **.120 – .650** 3.05 – 16.51 | 640715-1 |
| | 9 | **1.030** 26.16 | Yes | — | **.120 – .650** 3.05 – 16.51 | 640716-1 |
| | 12 | **1.280** 32.51 | Yes | — | **.150 – .750** 3.81 – 19.05 | 640717-1 |
| | 15 | **1.530** 38.86 | Yes | — | **.200 – .850** 5.08 – 21.59 | 640718-1 |

**Notes:**
1. Insert comes attached to strain relief. It can be used to provide additional adjustment for small wire bundles or discarded.
2. Insert to be positioned as shown by dotted lines.
3. Strain relief part number represents one-half of a strain relief. Two of a part number are required for one connector.

### Keying Plug

IS 408-3200




**Part Number**
UL94V-0 Nylon material — **770377-1**

### Related Product Data

**Housings** — pages 193-194
**Technical Documents** — pages 189 and 205-206

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





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# Universal MATE-N-LOK Headers for UMNL II Connectors

## PC Board Vertical Pin Headers

.250 [6.35] Centerline spacing

### Material

**Housing** — Nylon

**Flammability Rating** — UL94V-0

**Contacts** — Phosphor bronze

Solder tail diameter .062 [1.57]

### Related Product Data

**Product Specification**

108-1053 Universal MATE-N-LOK PC Board Headers

**Performance Characteristics**— pages 189-190

**Recommended PC Board Hole Layout**— page 199

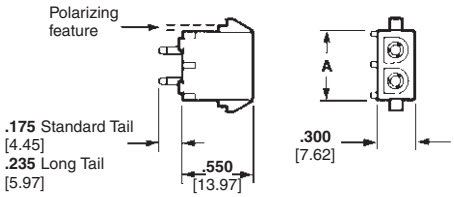
**Technical Documents**— pages 189 and 205-206

### Mating Connectors

**Universal MATE-N-LOK II**
Plug Housings — pages 193-194

**Universal MATE-N-LOK**
Plug Housings — page 175

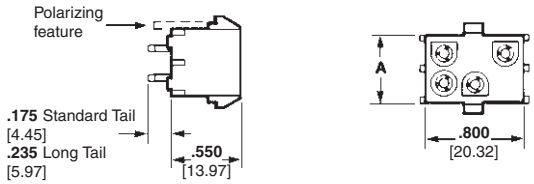
## 2, 3, 4 and 5 Circuit, In-Line




| Number of Circuits | A Dim. | Pin Finish | Pin Header Part Numbers: Standard Tail[2] | Pin Header Part Numbers: Standard Tail Polarized[2] | Pin Header Part Numbers: Long Tail[3] | Mates with Plug Housing Part Number (Using Socket Contacts): Universal MATE-N-LOK II | Mates with Plug Housing Part Number (Using Socket Contacts): Universal MATE-N-LOK |
|---|---|---|---|---|---|---|---|
| 2 | .550 13.97 | Pre-tin | 350786-1 | 641964-1 / 1-641964-1[4] | 350787-1 | 770017-1 | 350777-1 |
| | | Duplex[1] | 350786-3 | 641964-3 | 350787-3 | | |
| 3 | .800 20.32 | Pre-tin | 350789-1 | 641966-1 / 1-641966-1[4] | 350790-1 | 770018-1 | 350766-1 |
| | | Duplex[1] | 350789-3 | — | 350790-3 | | |
| 4 | 1.050 26.67 | Pre-tin | 350792-1 | 641968-1 | 350793-1 | 770019-1 | 350779-1 |
| | | Duplex[1] | 350792-3 | — | 350793-3 | | |
| 5 | 1.300 33.02 | Pre-tin | 640900-1 | 643406-1 | — | 770016-1 | 350809-1 |
| | | Duplex[1] | 640900-3 | — | — | | |

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Use Standard Tail for .062 [1.57] thick PC Board.
[3]Use Long Tail for .125 [3.18] thick PC Board.
[4]Black in color.

## 6, 9, 12 and 15 Circuit, Matrix




| Number of Circuits | A Dim. | Pin Finish | Pin Header Part Numbers: Standard Tail[2] | Pin Header Part Numbers: Standard Tail Polarized[2] | Pin Header Part Numbers: Long Tail[3] | Mates with Plug Housing Part Number (Using Socket Contacts): Universal MATE-N-LOK II | Mates with Plug Housing Part Number (Using Socket Contacts): Universal MATE-N-LOK |
|---|---|---|---|---|---|---|---|
| 6 | .550 13.97 | Pre-tin | 350711-1 | 641970-1 | 350732-1 | 770020-1 | 350715-1 |
| | | Duplex[1] | 350711-4 | 641970-3 | 350732-4 | | |
| 9 | .800 20.32 | Pre-tin | 350712-1 | 641972-1 / 1-641972-1[4] | 350742-1 | 770021-1 | 350720-1 |
| | | Duplex[1] | 350712-4 | 641972-3 | 350742-4 | | |
| 12 | 1.050 26.67 | Pre-tin | 350713-1 | 641974-1 / 1-641974-1[4] | 350737-1 | 770022-1 | 350735-1 |
| | | Duplex[1] | 350713-4 | 641974-3 | 350737-4 | | |
| 15 | 1.300 33.02 | Pre-tin | 350714-1 | 641976-1 | 350738-1 | 770023-1 | 350736-1 |
| | | Duplex[1] | 350714-4 | 641976-4 | 350738-4 | | |

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Use Standard Tail for .062 [1.57] thick PC Board.
[3]Use Long Tail for .125 [3.18] thick PC Board.
[4]Black in color.

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





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# Universal MATE-N-LOK Headers for UMNL II Connectors (Continued)

## PC Board Vertical Socket Headers

.250 [6.35] Centerline spacing

### Material

**Housing** — Nylon

**Flammability Rating** — UL94V-0

**Contacts** — Phosphor bronze

Solder tail diameter .062 [1.57]

### Related Product Data

**Product Specification**
108-1053 Universal MATE-N-LOK PC Board Headers

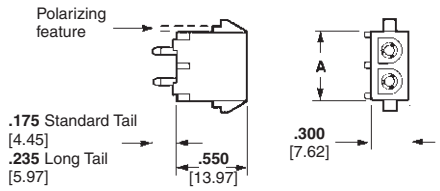
**Performance Characteristics**— pages 189-190
**Recommended PC Board Hole Layout**— page 199
**Technical Documents**— pages 189 and 205-206

### Mating Connectors

**Universal MATE-N-LOK II**
Plug Housings — pages 193-194

**Universal MATE-N-LOK**
Plug Housings — page 175

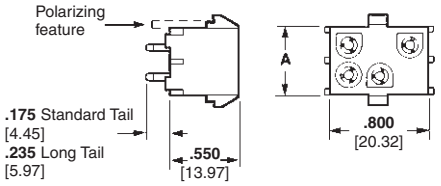
## 2, 3, 4 and 5 Circuit, In-Line




| Number of Circuits | A Dim. | Socket Finish | Socket Header Part Numbers | | | Mates with Plug Housing Part Number (Using Pin Contacts) | |
|---|---|---|---|---|---|---|---|
| | | | Standard Tail[2] | Standard Tail Polarized[2] | Long Tail[3] | Universal MATE-N-LOK II | Universal MATE-N-LOK |
| 2 | .550 13.97 | Pre-tin | 350824-1 | 643412-1 | 350831-1 | 770017-1 | 350777-1 |
| | | Duplex[1] | 350824-4 | 643412-3 | — | | |
| 3 | .800 20.32 | Pre-tin | 350825-1 | 643414-1 | 350832-1 | 770018-1 | 350766-1 |
| | | Duplex[1] | 350825-4 | 643414-3 | 350832-4 | | |
| 4 | 1.050 26.67 | Pre-tin | 350826-1 | 643416-1 | 350833-1 | 770019-1 | 350779-1 |
| | | Duplex[1] | 350826-4 | — | 350833-4 | | |
| 5 | 1.300 33.02 | Pre-tin | 640901-1 | — | — | 770016-1 | 350809-1 |
| | | Duplex[1] | 640901-3 | — | — | | |

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Use Standard Tail for .062 [1.57] thick PC Board.
[3]Use Long Tail for .125 [3.18] thick PC Board.

## 6, 9, 12 and 15 Circuit, Matrix




| Number of Circuits | A Dim. | Socket Finish | Socket Header Part Numbers | | | Mates with Plug Housing Part Number (Using Pin Contacts) | |
|---|---|---|---|---|---|---|---|
| | | | Standard Tail[2] | Standard Tail Polarized[2] | Long Tail[3] | Universal MATE-N-LOK II | Universal MATE-N-LOK |
| 6 | .550 13.97 | Pre-tin | 350827-1 | 643424-1 | 350834-1 | 770020-1 | 350715-1 |
| | | Duplex[1] | 350827-4 | 643424-3 | 350834-4 | | |
| 9 | .800 20.32 | Pre-tin | 350828-1 | 643426-1 | 350835-1 | 770021-1 | 350720-1 |
| | | Duplex[1] | 350828-4 | 643426-3 | 350835-4 | | |
| 12 | 1.050 26.67 | Pre-tin | 350829-1 | 643428-1 | 350836-1 | 770022-1 | 350735-1 |
| | | Duplex[1] | 350829-4 | — | 350836-4 | | |
| 15 | 1.300 33.02 | Pre-tin | 350830-1 | 643430-1 | 350837-1 | 770023-1 | 350736-1 |
| | | Duplex[1] | 350830-4 | — | 350837-4 | | |

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Use Standard Tail for .062 [1.57] thick PC Board.
[3]Use Long Tail for .125 [3.18] thick PC Board.

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





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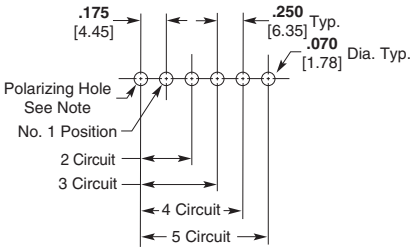
## Universal MATE-N-LOK Headers for UMNL II Connectors (Continued)

### Recommended PC Board Hole Layouts for Pin and Socket Vertical Headers

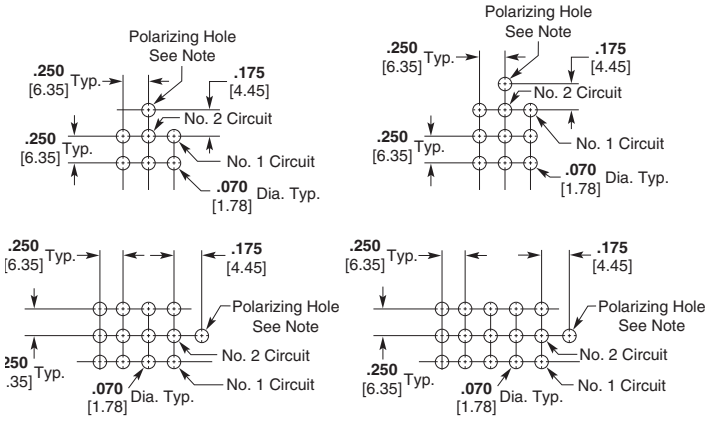
#### Related Product Data

**Vertical Headers** — pages 197-198

### 2, 3, 4 and 5 Circuit, In-Line




### 6, 9, 12 and 15 Circuit, Matrix




**Note:** Polarizing hole **.070** [1.78] Dia. required for polarized headers only.

### PC Board Vertical Pin Headers with ACTION PIN Contacts

#### Material and Finish

**Housing** — PBT, black

**Flammability Rating** — UL94V-0

**Contacts** — Copper alloy, plated with tin over nickel on entire contact

#### Related Product Data

**Performance Characteristics**— pages 189-190
**Technical Documents**— pages 189 and 205-206

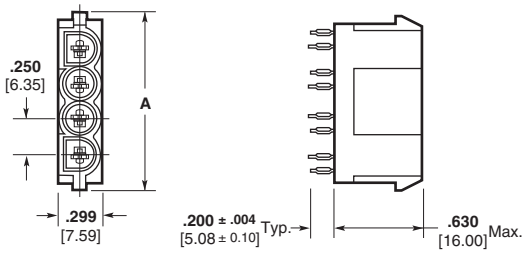
**Product Specification**

108-5222 ACTION PIN Universal MATE-N-LOK Header Assembly

#### Mating Connectors

**Universal MATE-N-LOK II**
Plug Housings — pages 193-194

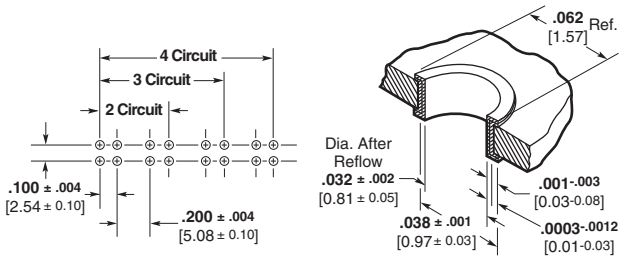
**Universal MATE-N-LOK**
Plug Housings — page 175




| Number of Circuits | A Dim. | Part Number | Mates with Plug Housing Part Number (Using Socket Contacts) | |
|---|---|---|---|---|
| | | | Universal MATE-N-LOK II | Universal MATE-N-LOK |
| 2 | **.750** 19.05 | 173924-1* | 770017-1 | 350777-1 |
| 3 | **1.000** 25.40 | 173925-1* | 770018-1 | 350766-1 |
| 4 | **1.250** 31.75 | 173926-1* | 770019-1 | 350779-1 |

*Install in PC Board with arbor tool.

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




**Recommended PC Board Hole Layout** **PC Board Hole Dimensions**





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# Universal MATE-N-LOK Headers for UMNL II Connectors (Continued)

## PC Board Right-Angle Pin and Socket Headers

.250 [6.35] Centerline spacing

### Material

**Housing** — Nylon

**Flammability Rating** — UL 94V-0

**Contacts** — Phosphor bronze
Solder tail width .052 [1.32]

### Related Product Data

**Product Specification**
108-1053 Universal MATE-N-LOK PC Board Headers

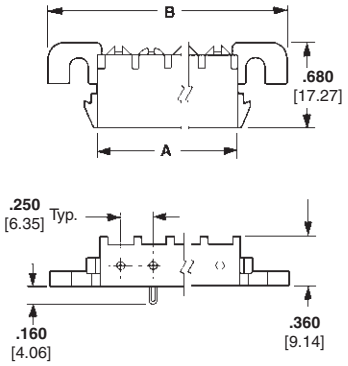
**Performance Characteristics**— pages 189-190
**Technical Documents**— pages 189 and 205-206

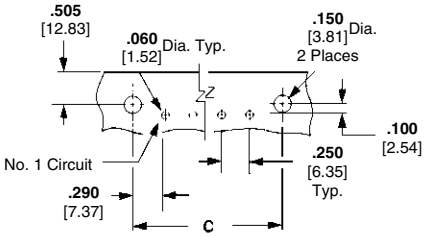
### Mating Connectors

**Universal MATE-N-LOK II**
Plug Housings — pages 193-194

**Universal MATE-N-LOK**
Plug Housings — page 175

## 2, 3, 4 and 5 Circuit, In-line




Use 6-32 UNC Pan Head Screw
3/8 [9.53] long for mounting
**(Not Supplied)**

**Recommended PC Board Hole Layout**
**.062 [1.57] Board Thickness**

| Number of Circuits | Dimensions A | Dimensions B | Dimensions C | Contact Finish | Part Numbers: Right-Angle Header Pin | Part Numbers: Right-Angle Header Socket | Part Numbers: Mates with Plug Housing — Universal MATE-N-LOK II | Part Numbers: Mates with Plug Housing — Universal MATE-N-LOK |
|---|---|---|---|---|---|---|---|---|
| 2 | **.550** 13.97 | **1.245** 31.62 | **.830** 21.08 | Pre-tin | 1-350942-0 | 643226-1 | 770017-1 | 350777-1 |
| | | | | Duplex[1] | 3-350942-0 | — | | |
| 3 | **.800** 20.32 | **1.495** 37.97 | **1.080** 27.43 | Pre-tin | 1-350943-0 | 643228-1 | 770018-1 | 350766-1 |
| | | | | Duplex[1] | 3-350943-0 | 3-643228-0 | | |
| 4 | **1.050** 26.67 | **1.745** 44.32 | **1.330** 33.78 | Pre-tin | 1-350944-0 | 643230-1 | 770019-1 | 350779-1 |
| | | | | Duplex[1] | 3-350944-0 | 3-643230-0 | | |
| 5 | **1.300** 33.02 | **1.995** 50.67 | **1.580** 40.13 | Pre-tin | 1-350945-0 | 643232-1 | 770016-1 | 350809-1 |
| | | | | Duplex[1] | 3-350945-0 | 3-643232-0 | | |

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

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





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UK: 44-8706-080-208

## Universal MATE-N-LOK Headers for UMNL II Connectors (Continued)

### High Current Contacts

The Louvertac bands have the versatility of being designed into contact dimensions used in existing AMP connectors.

Universal MATE-N-LOK II High Current contacts have been designed to fit into an existing Universal MATE-N-LOK II housing. An initial T-Rise test of a fully energized 4 circuit connector with 10 gage wires has shown a 31 amp capability per line with a 30° T-rise.

### Cable-to-Cable

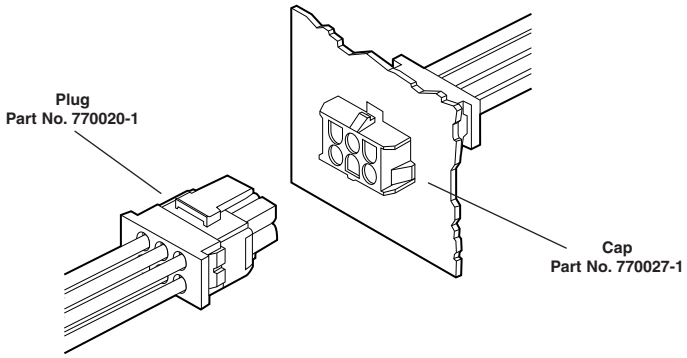
#### Material

**Body** — Copper Alloy
**Louvertac Band** — Beryllium Copper
**Finish** — Silver
Contact Extraction Tool No. 318851-1
Latch Disengaging Tool No. 58382-1

- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**
- **Certified by Canadian Standards Association, File No. LR7189**
- **Passed test by VDE under their Registration Number 3980/Continuous Surveillance**

**Design Objective**—108-1583

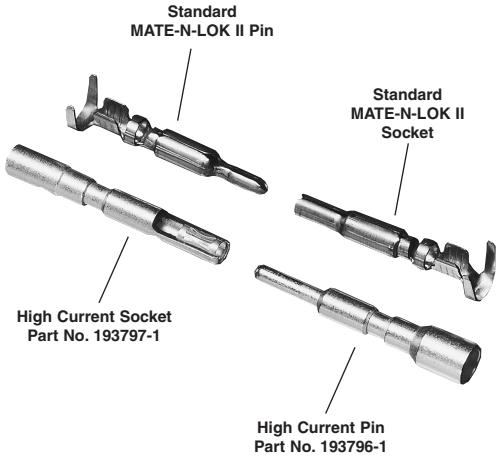
**Application Specification**—114-16021




#### Contacts

| Wire Size AWG | Contact Part Numbers | | Crimp Tools |
|---|---|---|---|
| | Pin | Socket | |
| 10 | 193796-1 | 193797-1 | Daniels<br>Hand Tool #M310 or AMP P/N 356114-1<br>Positioner #TP1013 or AMP P/N 356337-1 |
| 12-14 | 193841-1 | 193842-1 | |

**Note:** High Current contacts are **not** intermateable with any other Universal MATE-N-LOK contact.




#### Connector Housings

| No. of Circuits | Kit Part Numbers | |
|---|---|---|
| | Plug | Cap |
| 2 | 770017-1 | 770024-1 |
| 3 | 770018-1 | 770025-1 |
| 4 | 770019-1 | 770026-1 |
| 5 | 770016-1 | — |
| 6 | 770020-1 | 770027-1 |
| 9 | 770021-1 | 770028-1 |
| 12 | 770022-1 | 770029-1 |
| 15 | 770023-1 | 770030-1 |

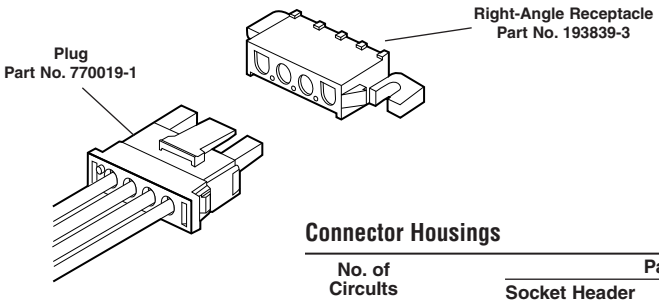
### Cable-to-Right-Angle Board

#### Material

**Housing** — UL 94V-0 Nylon
**Contact Body** — Copper Alloy
**Louvertac Band** — Beryllium Copper
**Finish** — Silver

- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**
- **Certified by Canadian Standards Association, File No. LR7189**
- **Passed test by VDE under their Registration Number 3980/Continuous Surveillance**

**Design Objective**—108-1594




#### Connector Housings

| No. of Circuits | Part Numbers | |
|---|---|---|
| | Socket Header | Mates with Plug Housing |
| 2 | 193839-1 | 770017-1 |
| 3 | 193839-2 | 770018-1 |
| 4 | 193839-3 | 770019-1 |
| 5 | 193839-4 | 770016-1 |

**Notes:** 1. High Current contacts with Louvertac bands are **not** intermateable with any other contact.
2. Additional information on connectors is available in AMP High Current Products Catalog 65141.
3. Additional information on contacts is available in AMP Precision Pin and Socket Contacts Catalog 65910.

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





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## Universal MATE-N-LOK Headers for UMNL II Connectors (Continued)

### High Current Vertical Pin Headers

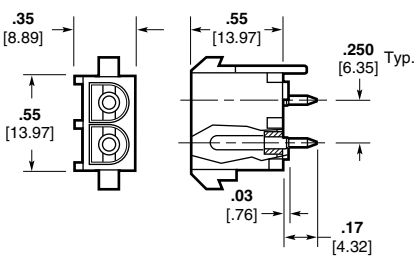
High Current Universal MATE-N-LOK II Vertical Pin Headers are designed to accept Universal MATE-N-LOK II Plugs with High Current Socket contacts. All housings are polarized in order to allow proper circuit board placement. Eight versions are available from 2 circuit to 15 circuits.

### Material

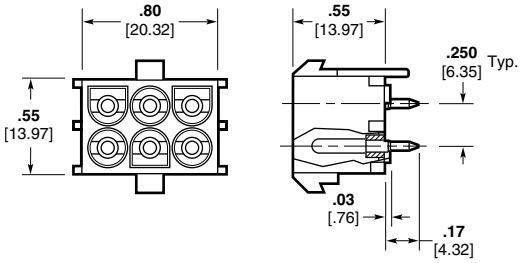
**Housing** — UL 94V-0 Nylon
**Contacts** — Copper Alloy
**Finish** — Silver

- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**
- **Certified by Canadian Standards Association, File No. LR7189**
- **Passed test by VDE under their Registration Number 3980/Continuous Surveillance**

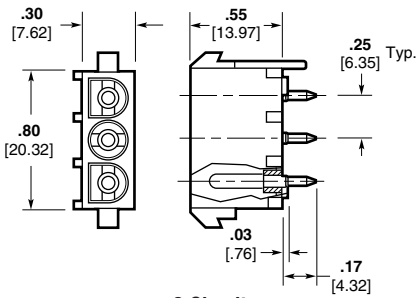
**Design Objective** —108-1594



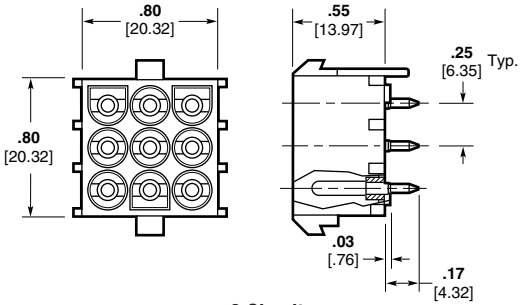

**2 Circuit**
**Part No. 194009-1**



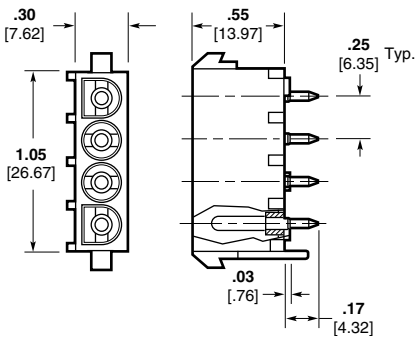

**6 Circuit**
**Part No. 194002-1**



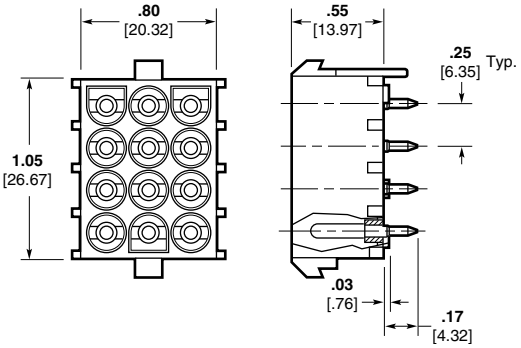

**3 Circuit**
**Part No. 194017-1**



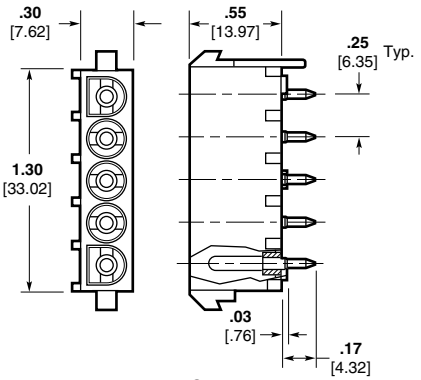

**9 Circuit**
**Part No. 194012-1**



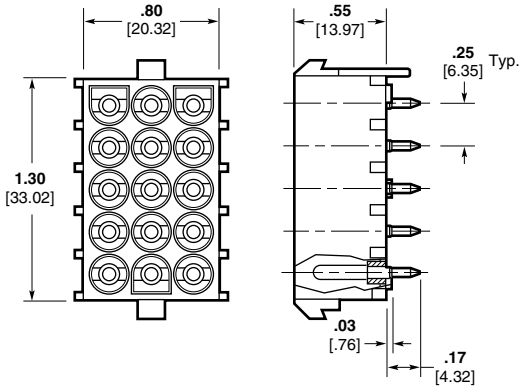

**4 Circuit**
**Part No. 194010-1**




**12 Circuit**
**Part No. 194014-1**




**5 Circuit**
**Part No. 194018-1**




**15 Circuit**
**Part No. 194013-1**

**Notes:** 1. High Current contacts with Louvertac bands are **not** intermateable with any other contact.
2. Additional information on connectors is available in AMP High Current Products Catalog 65141.





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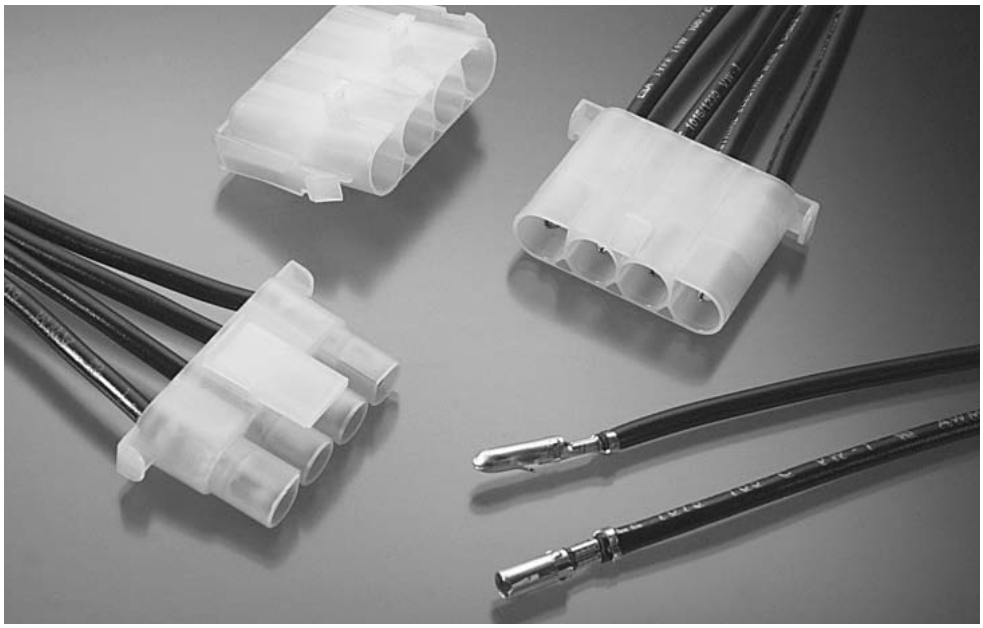
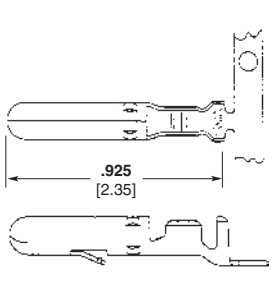
# .156 MATE-N-LOK Connectors

## Product Facts

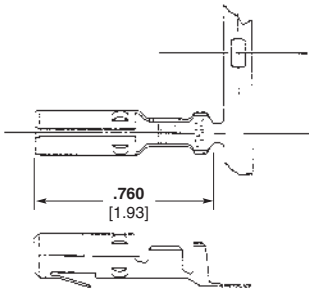
- Positive polarized nylon housings
- Panel mount or free-hanging
- Numbered cavities for easy circuit identification
- Removable, crimp snap-in contacts
- Contacts accept 20-10 AWG wire sizes
- Pin contacts are used in cap housings, socket contacts are used in plug housings
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association File No. LR7189






Pin

Used in Caps




Socket

Used in Plugs

## Contacts

Pin diameter .156 [3.96]

## Material and Finish

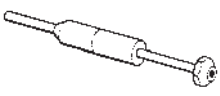
**Contacts**—
Brass, Pre-tin plated
Stock thickness .018 [.457]

| Wire Size Range AWG [mm²] | Ins. Dia. Range | Contact Part Number | | | | HDM[1] Applicator Part No. | Hand Tool Part No. |
|---|---|---|---|---|---|---|---|
| | | Pin | | Socket | | | |
| | | Strip Form | Loose Piece | Strip Form | Loose Piece | | |
| 20-14 [.5-2.0] | .125 max. | 61086-1 | 61251-1 | 61085-1 | 61250-1 | 466462-1<br>466462-2<br>466462-3 | 58631-1 |
| 12-10 [3.0-6.0] | .185 max. | 61234-1 | 61253-1 | 61233-1 | 61252-1 | 687765-2<br>687765-3 | 58632-1 |

[1]To be used with appropriate application machine. See pages 201-204 for further information.

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

**Insertion Tool**
**Part No. 91002-1**
**(IS 408-7347)**



**Extraction Tool**
**Part No. 691458-1 (Pins)**
**Part No. 691458-2 (Sockets)**
**(IS 408-4322)**





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## .156 MATE-N-LOK Connectors (Continued)

### Housings
**Free-Hanging or Panel Mount**

### Related Product Data

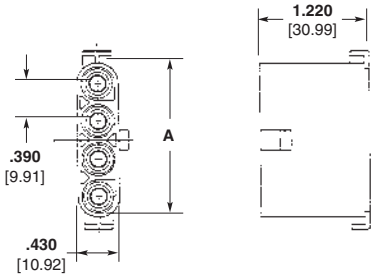
**Contacts**—page 203

**Product Specification**
108-8002

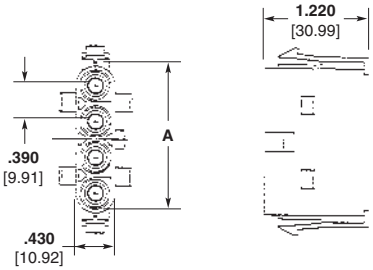
**Application Specification**
114-1109

### Material

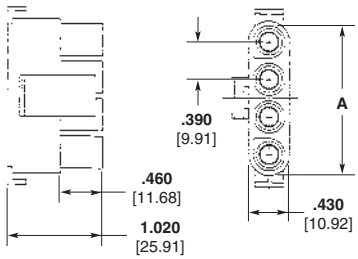
**Housings**—
Nylon, Natural Color
Flammability Rating—UL94V-2



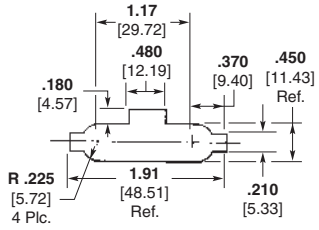

**Pin Housing (Cap)
Free-Hanging
Part Number 794117-1**




**Pin Housing (Cap)
Panel Mount
Part Number 794118-1**




**Socket Housing (Plug)
Part Number 794116-1**




**Panel Mount Cutout**

**Note:** Panel must be punched in the same direction as the housing will be inserted.

| Number of Circuits | A Dim. | Plug | Cap | |
|---|---|---|---|---|
| | | | Free-Hanging | Panel Mount |
| 3 | **.048** 1.210 | 794412-1 | 794413-1 | — |
| 4 | **.063** 1.590 | 794116-1 | 794117-1 | 794118-1 |

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





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## Technical Documents

**Related Product Data**

**Connectors**

**2.5 mm Signal Double Lock (SDL)**—pages 9-16

**Micro MATE-N-LOK 3 mm**—pages 17-47

**Grace Inertia Connectors (GIC) 3.5**—pages 49-52

**.062 Commercial Pin and Socket**—pages 53-57

**Power Double Lock (PDL)**—pages 59-81

**Mini Universal MATE-N-LOK**—pages 83-94

**Mini Universal MATE-N-LOK 2**—pages 99-107

**(MR) Miniature Rectangular**—pages 109-118

**VAL-U-LOK Connector System**—pages 119-124

**AMP-DUAC**—pages 125-133

**5.0 mm Power Key Connectors (PKC)**—pages 135-141

**.093 Commercial Pin and Socket**—pages 143-149

**Commercial MATE-N-LOK**—pages 151-162

**.140 MATE-N-LOK**—pages 165-167

**Universal MATE-N-LOK**—pages 169-188

**Universal MATE-N-LOK II**—pages 189-195

**.156 MATE-N-LOK**—pages 203-204

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.

| | |
|---|---|
| 108-1000 | Commercial MATE-N-LOK Connectors |
| 108-1022 | (MR) Miniature Rectangular Connectors |
| 108-1031 | Universal MATE-N-LOK Connectors |
| 108-1031-1 | Splash Proof Seal, Universal MATE-N-LOK Connectors |
| 108-1032 | .140 Diameter MATE-N-LOK Pin and Socket Connectors |
| 108-1037 | .062 Commercial Pin and Socket Connectors |
| 108-1037-1 | .062 Commercial Pin and Socket Contacts |
| 108-1038 | .093 Commercial Pin and Socket Connector |
| 108-1053 | Universal MATE-N-LOK Printed Circuit Board Headers |
| 108-1077 | Commercial MATE-N-LOK Printed Circuit Board Headers |
| 108-1078 | (MR) Miniature Rectangular Printed Circuit Board Headers |
| 108-1090 | Universal MATE-N-LOK II Connectors |
| 108-1542 | Mini-Universal MATE-N-LOK Connectors |
| 108-1542-2 | Splash Proof Seals for Mini-Universal MATE-N-LOK Connectors |
| 108-1543 | Mini-Universal MATE-N-LOK Headers |
| 108-1594 | Universal MATE-N-LOK Headers with High Current Contacts |
| 108-1693 | Mini-Universal MATE-N-LOK II Connectors |
| 108-1694 | Mini-Universal MATE-N-LOK II Headers |
| 108-1699 | AMP-DUAC Headers |
| 108-1836 | Micro MATE-N-LOK 3 mm Connectors |
| 108-2069 | Universal MATE-N-LOK Circular Connector |
| 108-5138 | Mini-Universal MATE-N-LOK Connectors (UL 94V-0) |
| 108-5151 | Mini-Universal MATE-N-LOK Connectors (UL 94V-2) |
| 108-5155 | Commercial MATE-N-LOK Pin Header Assembly |
| 108-5222 | Universal MATE-N-LOK Headers with ACTION PIN Contacts |
| 108-5410 | Power Double Lock (PDL) Connectors |
| 108-5439 | Power Double Lock (PDL) Connectors (SMT) |
| 108-5459 | 2.5 mm Signal Double Lock (SDL) Connectors |
| 108-5699 | 5.0 mm Power Key Connectors (PKC) |
| 108-5810 | Grace Inertia Connectors (GIC) 3.5 |
| 108-8002 | .156 Diameter MATE-N-LOK Connectors |
| 108-19099 | AMP-DUAC Receptacles |
| 108-49000 | Commercial MATE-N-LOK IDC Insulation Displacement 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.

| | |
|---|---|
| 114-1007 | .140 Diameter MATE-N-LOK Contacts |
| 114-1010 | Universal MATE-N-LOK Connectors |
| 114-1012 | Commercial MATE-N-LOK Contacts |
| 114-1013 | .062 Commercial Pin and Socket Connectors |
| 114-1014 | (MR) Miniature Rectangular Contacts |
| 114-1043 | Universal MATE-N-LOK II Connectors (housings, contacts and strain reliefs) |
| 114-1109 | .156 Diameter MATE-N-LOK Connectors |
| 114-1111 | Mini-Universal MATE-N-LOK 2 Connectors |
| 114-5175 | Power Double Lock (PDL) Connectors |
| 114-5203 | 2.5 mm Signal Double Lock (SDL) Connectors |
| 114-5292 | 5.0 mm Power Key Connectors (PKC) |
| 114-5306 | Grace Inertia Connectors (GIC) 3.5 |
| 114-6067 | AMP-DUAC Crimping Contacts |
| 114-13000 | Micro MATE-N-LOK 3 mm Connectors |





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## Technical Documents (Continued)

**Application Specifications** (Continued)

| | |
|---|---|
| 114-13089 | Mini-Universal MATE-N-LOK Sealed Connectors |
| 114-16017 | Mini-Universal MATE-N-LOK Connectors |
| 114-19048 | AMP-DUAC Receptacles (Use of) |
| 114-49000 | .093 Commercial Pin and Socket Connectors |
| 114-49001 | Commercial MATE-N-LOK IDC Insulation Displacement Connectors |

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

| | |
|---|---|
| 408-3186 | Terminating Head (PN 231894-1) (Commercial MATE-N-LOK IDC Connector) |
| 408-3200 | Universal MATE-N-LOK II Connectors (Housings, Contacts and Accessories) |
| 408-3231 | (MR) Miniature Rectangular Connectors (Pin Housing, Socket Housing, Contacts, and Accessories) |
| 408-3234 | Mini-Universal MATE-N-LOK Connectors |
| 408-3320 | Universal MATE-N-LOK Strain Relief Assembly and Keying Plug |
| 408-3392 | Universal MATE-N-LOK Splash Proof Seals |
| 408-3393 | Mini-Universal MATE-N-LOK 2 Connectors |
| 408-4118 | Contact Extraction Tool (PN 189727-1) |
| 408-4322 | Contact Extraction Tools [PN 691458-1 (Pins) and 691458-2 (Sockets)] |
| 408-4370 | Contact Extraction Tool (PN 318831-1) |
| 408-4371 | Contact Extraction Tool (PN 318851-1) |
| 408-4375 | Contact Extraction Tool (PN 318837-1) |
| 408-4378 | Extraction Tool (PN 318845-1) |
| 408-6790 | Hand Tool Handle (PN 58074-1) |
| 408-7158 | Contact Extraction Tools [PN 1-305183-1 (Pins) and 1-305183-2 (Sockets)] |
| 408-7166 | Commercial MATE-N-LOK Panel Mount Connector |
| 408-7200 | Commercial MATE-N-LOK Free-Hanging Connector |
| 408-7201 | Commercial MATE-N-LOK Detent Engagement Connectors, 2 and 3 circuit |
| 408-7209 | Commercial MATE-N-LOK Commoning Tabs |
| 408-7211 | Pin and Socket Extraction Tool (PN 465644-1) |
| 408-7215 | Commercial MATE-N-LOK Single Circuit Connector |
| 408-7300 | MATE-N-LOK Contact and Housing Selection Charts |
| 408-7347 | Contact Insertion Tool (PN 91002-1) |
| 408-7582 | Commercial MATE-N-LOK Keying Plug |
| 408-7714 | Universal MATE-N-LOK Connectors |
| 408-7763 | Power Unit (PN 91112-2) |
| 408-7984 | Contact Insertion Tool (PN 455830-1) |
| 408-9330 | Head (PN 231920-2) (Used with Arbor Tool PN 91085-2) |
| 408-9436 | Latch Disengaging Tool (PN 58382-1) |
| 408-9570 | Contact Extraction Tool (PN 455822-2) |
| 408-10003 | Contact Retention Test Tool (PN 1586700-1) |
| 408-10017 | Universal MATE-N-LOK Sealed Bulkhead Connectors |
| 411-5105 | Mini-Universal MATE-N-LOK Connectors |
| 411-5638 | Power Double Lock (PDL) Connectors |



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## Application Tooling

### Semiautomatic Machines

**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
**Air**—90-110 psi [6.21-7.59 bar], 6 scfm [0.00282 $m^3/s$] when required with air-feed applicators
**Wire Range**—26-10 AWG [0.12-6 $mm^2$] solid or stranded, depending on product applied
For more information, request Catalog **65828**, Catalog **82275 [Crimp Quality Monitor (CQM)].**

**AMP-O-MATIC Stripper-Crimper Machine, 854040-3, -4**

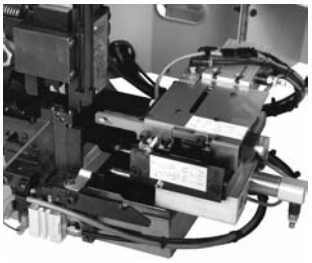
Semiautomatic bench crimping machines that also strip the wire, and are therefore used for terminating jacketed cable. Feature manual precision adjustment of crimp height, keyed strip blades for faster, more accurate setups, and an efficient scrap removal system. All adjustments can be made from the 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 $m^3/s$]
**Wire Range**—32-14 AWG [0.03-2 $mm^2$]
For more information, request Catalog **65004.**

**AMP 3K/40 and AMP 5K/40 Terminators**

As value oriented terminators, the AMP 3K/40 and AMP 5K/40 are designed for customers that require the increased output and quality of a semi-automatic machine at a competitive price. By incorporating the most commonly requested features as standard and offering a long list of optional equipment, these terminators offer flexibility to meet the specific needs of various applications at the lowest possible cost.

**Optional Stripping Module for the AMP 3K/40, AMP 5K/40 and AMP-O-LECTRIC Model G Terminators**



The combination of the Stripping Module with the AMP-O-LECTRIC Model G Terminator or the AMP 3K/40, 5K/40 provides an economical, proficient method of stripping wire and crimping terminals on the same machine. Wires are stripped moments before crimping, meaning there is virtually no chance of damaging wire conductors during handling or storage. Once the wire is fed into the start sensor the Stripping Module does the rest, improving placement accuracy.

For more information, request Catalog **1309085.**

**Crimp Quality Monitor**

This system measures the crimp height of each termination as it is made. It also evaluates the quality of each crimp. If a crimp is questionable, the monitor alerts the operator with both visual and audible alarms. It also features ports for printing and networking. For use with AMP-O-LECTRIC Model "G" and AMP-O-MATIC Stripper-Crimper Machines, the monitor is mounted to the machine. For use with AMPOMATOR CLS IV+ Machines, it is integrated into the machine's operating system, with the displays appearing on the machine's touch screen.

For more information, request Catalog **82275.**

**Note:** This listing is for reference purposes only. To obtain part numbers for specific applications call Technical Support.





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## Application Tooling (Continued)

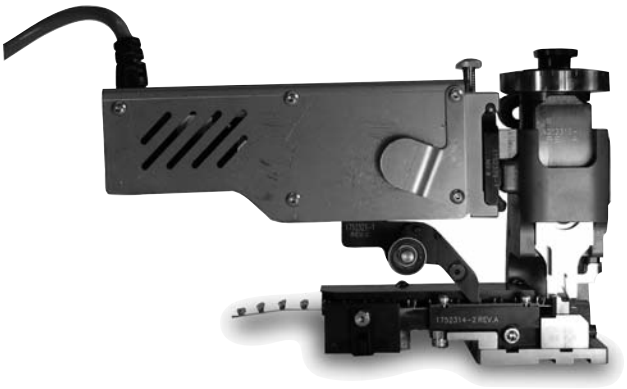


### Automatic Machines

#### AMPOMATOR System III Leadmaker

The AMPOMATOR System III Leadmaker is designed for the demands of low-volume/ high-mix manufacturing and precision quality. This lead-maker combines the best wire processing capabilities with new technologies in terminal feeding and machine set-up found in the System III Applicator to offer significant advantages for higher through-put and efficiencies. *Request Catalog 1654956-5.*

#### System III Applicator



The System III Applicator introduces several new technologies into the applicator including a precision servo-electric motorized feeding system, a built-in data module for storing terminal crimp and set-up information, a precision fit round ram, and a newly designed terminal depressor. It still utilizes the proven quality of the HD-M crimper and anvil tooling.

#### AMPOMATOR CLS IV+ Lead-Making Machines, 356500-1, -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 [4 039]
**Depth**—68 [1 730]
**Height**—90 [2 285] min., with 24 [610] dia. reel
**Weight**—2 000 lb [907 kg]
**Electrical**—220 VAC, 50 or 60 Hz, 1 ∅, 20 A with neutral and ground
**Air**—90 psi [6.21 bar], 15 scfm [0.00708 $m^3/s$] sustained
**Wire Range**—26-10 AWG [0.12-6 $mm^2$] stranded, 26-16 AWG [0.12-1.4 $mm^2$] solid
**Lead Lengths**—3-90 [76.2-2 286], 90-1 000 [2 286-25 400] with long lead conveyors

For more information, request Catalog **124324.**

#### EDGE Electronic Applicator Counter

The new, versatile EDGE applicator counter tracks wearable tool usage for the most effective maintenance planning. The completely electronic counter, with clear LCD display, indicates cycles since installation. By performing maintenance at measured intervals with pre-set limits, operators avoid breakdowns and rejects caused by tool wear or mis-adjustment.

For more information, request Catalog **1773385**.



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## Application Tooling (Continued)



### Applicator Styles

**End- and Side-Feed Heavy-Duty Miniature (HDM) Applicators**

- Handle a wide variety of products
- Used with both semi- and fully-automatic machines
- Quickly interchangeable to run different products
- Easily repaired
- Simple dial-in settings to handle similar products and various wire sizes

**Stripper-Crimper (SCA) Applicators**

- For use with AMP-O-MATIC Stripper-Crimper Machines
- Terminate a wide variety of open-barrel products
- Quickly interchangeable to run different products
- Easily repaired
- Simple dial-in settings to handle similar products and various wire sizes
- CQM applicators are available

**Crimp Quality Monitor (CQM) Applicators**

- Same basic features as regular HDM and SCA applicators
- Recommended for use with machines featuring manual or automatic precision-adjust
- Use two built-in sensors to provide the Crimp Quality Monitor with data to measure crimp height, and evaluate the quality of each crimp

### Applicator and Hand Tool Selection Guide

| Density | Product Line | Applicators | | | Hand Tools | |
|---|---|---|---|---|---|---|
| | | A | B | C | D | E |
| High | 2.5 mm Signal Double Lock (SDL) | * | * | * | X | - |
| | Micro MATE-N-LOK 3 mm | X | X | X | X | - |
| | Grace Inertia Connectors (GIC) 3.5 | * | * | * | X | - |
| | .062 Commercial Pin and Socket | X | X | X | - | X |
| | Power Double Lock (PDL) | * | * | * | X | - |
| | Mini-Universal MATE-N-LOK | X | X | X | X | X |
| | Sealed Mini-Universal MATE-N-LOK | X | X | X | X | - |
| | Mini-Universal MATE-N-LOK 2 | X | X | X | X | X |
| | (MR) Miniature Rectangular | X | X | X | X | - |
| | VAL-U-LOK Connector System | X | - | - | - | X |
| | AMP-DUAC | X | X | - | X | - |
| Standard | 5.0 mm Power Key Connectors (PKC) | * | * | * | X | - |
| | .093 Commercial Pin and Socket | X | X | X | - | X |
| | Commercial MATE-N-LOK | X | X | X | X | X |
| | .140 MATE-N-LOK | X | X | X | X | - |
| | Universal MATE-N-LOK | X | X | X | X | X |
| | Universal MATE-N-LOK II | X | X | X | X | X |
| | .156 MATE-N-LOK | X | - | - | X | - |

A—Heavy Duty Miniature (HDM) Applicators
B—Stripper-Crimper Applicators (SCA)
C—Crimp Quality Monitor (CQM) Applicators
D—CERTI-CRIMP Hand Tool
E—PRO-CRIMPER III Commercial Hand Tool
* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Numbers.

### Related Product Data

**Contacts**

**2.5 mm Signal Double Lock (SDL)**—page 12
**Micro MATE-N-LOK 3 mm**—page 22
**Grace Inertia Connectors (GIC) 3.5**—page 50
**.062 Commercial Pin and Socket**—page 55
**Power Double Lock (PDL)**—page 61
**Mini Universal MATE-N-LOK**—page 84
**Mini Universal MATE-N-LOK 2**—pages 100-101
**(MR) Miniature Rectangular**—page 112
**VAL-U-LOK Connector System**—page 120
**AMP-DUAC**—pages 126-127
**5.0 mm Power Key Connectors (PKC)**—page 137
**.093 Commercial Pin and Socket**—page 145
**Commercial MATE-N-LOK**—pages 155-156
**.140 MATE-N-LOK**—page 166
**Universal MATE-N-LOK**—pages 172-173
**Universal MATE-N-LOK II**—page 192
**.156 MATE-N-LOK**—page 203

### Mechanical Hand Tools

**CERTI-CRIMP II Straight Action Hand Tools (SAHT) 91501-1, 91502-1**

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]

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

**Note:** This listing is for reference purposes only. To obtain part numbers for specific applications call Technical Support.



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## Application Tooling (Continued)

### Hand Tools

### Related Product Data

**Contacts**

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**Mini Universal MATE-N-LOK**—page 86
**Mini Universal MATE-N-LOK 2**—pages 100-101
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**Commercial MATE-N-LOK**—pages 155-156
**.140 MATE-N-LOK**—page 166
**Universal MATE-N-LOK**—pages 172-173
**Universal MATE-N-LOK II**—page 192
**.156 MATE-N-LOK**—page 203



### CERTI-CRIMP II Hand Tool

Catalog 65780

### PRO-CRIMPER III Hand Tool

Catalog 82276

| Features | CERTI-CRIMP Hand Tool | PRO-CRIMPER III Hand Tool |
|---|---|---|
| Field Repair/Prototyping | X | X |
| OEM Applications/Low Volume Production | X | — |
| Ratchet Control | X | X |
| Brush/Bellmouth Control | X | X |
| Precision Crimp Height Control | X | X |
| Little/No Operator Training | X | — |
| Insulation Adjustment | X | — |
| Repairable | X | — |

| Density | Product Line | CERTI-CRIMP Hand Tool | | PRO-CRIMPER III Hand Tool | |
|---|---|---|---|---|---|
| | | Part Number | Instruction Sheet | Part Number | Instruction Sheet |
| High | 2.5 mm Signal Double Lock (SDL) | 234603-1 | 411-5735 | — | — |
| | | 234604-1 | 411-5736 | — | — |
| | Micro MATE-N-LOK 3 mm | 91501-1 | 408-8547 | — | — |
| | | 91502-1 | 408-8547 | — | — |
| | Grace Inertia Connectors (GIC) 3.5 | 1596277-1 | 411-78101 | — | — |
| | .062 Commercial Pin & Socket | — | — | 90870-1 | 408-9965 |
| | | — | — | 90869-1 | 408-9964 |
| | Power Double Lock (PDL) | 91567-1 | 408-8547 | — | — |
| | | 91569-1 | 408-8547 | — | — |
| | Mini-Universal MATE-N-LOK and Sealed Mini-Universal MATE-N-LOK | 91529-1 | 408-8547 | 90758-1 | 408-9938 |
| | | 91522-1 | 408-8547 | 90759-1 | 408-9962 |
| | | 91594-1 | 408-8547 | 90760-1 | 408-9963 |
| | | 90717-2 | 408-4443 | — | — |
| | Mini-Universal MATE-N-LOK 2 | 91529-1 | 408-8547 | — | — |
| | | 91522-1 | 408-8547 | — | — |
| | | 91594-1 | 408-8547 | — | — |
| | | 90717-2 | 408-4443 | — | — |
| | (MR) Miniature Rectangular | 91534-1 | 408-8547 | 58514-1 | 408-9973 |
| | | 91526-1 | 408-8547 | 58514-1 | 408-9973 |
| | VAL-U-LOK Connector System | — | — | 91387-1 | 408-8917 |
| | | — | — | 91388-1 | 408-8918 |
| | AMP-DUAC | 90714-1 | 408-4385 | — | — |
| | | 734202-2 | — | — | — |
| Standard | 5.0 mm Power Key Connectors (PKC) | — | — | — | — |
| | .093 Commercial Pin & Socket | — | — | 90872-1 | 408-9967 |
| | | — | — | 90871-1 | 408-9966 |
| | Commercial MATE-N-LOK | 91515-1 | 408-8547 | — | — |
| | | 91512-1 | 408-8547 | 90574-1 | 408-9886 |
| | | 91504-1 | 408-8547 | 90575-1 | 408-9887 |
| | .140 MATE-N-LOK | 91552-1 | 408-8547 | — | — |
| | | 69710-1[1] | 408-2095 | — | — |
| | | 58373-1[2] | 408-9442 | — | — |
| | | 58374-1[2] | 408-9442 | — | — |
| | Universal MATE-N-LOK and Universal MATE-N-LOK II | 58439-1 | 408-9591 | — | — |
| | | 91510-1 | 408-8547 | 90548-1 | 408-9885 |
| | | 91500-1 | 408-8547 | 90546-1 | 408-9883 |
| | | 91508-1 | 408-8547 | 90547-1 | 408-9884 |
| | | 91506-1 | 408-8547 | 90547-1 | 408-9884 |
| | | 69710-1[1] | 408-2095 | — | — |
| | | 58380-1[2] | 408-9433 | — | — |
| | | 58380-2[2] | 408-9433 | — | — |
| | .156 MATE-N-LOK | 58631-1 | 408-4341 | — | — |
| | | 58632-1 | 408-4340 | — | — |

[1]Hand tool requires die set. [2]Die set.
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## Applicator Options

| | Strip Form Contact Part Number | | Heavy-Duty Miniature Applicator Part Numbers | | | |
|---|---|---|---|---|---|---|
| | | | Used on Bench Top Terminators | | Used on Automatic Leadmaking Equipment (*AMPOMATOR* CLS Machine with T or G Terminators) | Used on *AMP-O-MATIC* Stripper-Crimper Machine |
| | Pin | Socket | *AMP-O-LECTRIC* Model K Machine | *AMP-O-LECTRIC* Model G Machine | | |
| **2.5 mm Signal Double Lock (SDL) Contacts** | 917764-1 | 917683-1 | * | * | * | * |
| | 917765-1 | 917684-1 | * | * | * | * |
| **Micro MATE-N-LOK 3 mm Connector System** | 1-794608-0 | — | 1385194-2 | 1385194-3 | 1385194-1 | — |
| | 1-794608-1 | — | | | | |
| | 1-794608-2 | — | | | | |
| | 1-794609-0 | — | 1385377-2 | 1385377-3 | 1385377-1 | — |
| | 1-794609-1 | — | | | | |
| | 1-794609-2 | — | | | | |
| | — | 794606-1 | 680893-2 | 680893-3 | 680893-1 | — |
| | — | 1-794606-1 | | | | |
| | — | 1-794606-2 | | | | |
| | — | 794607-1 | 680894-2 | 680894-3 | 680894-1 | — |
| | — | 1-794607-1 | | | | |
| | — | 1-794607-2 | | | | |
| **Grace Inertia Connectors (GIC) 3.5** | 1565080-1 | 1565079-1 | * | * | * | * |
| | 1612335-1 | 1612334-1 | * | * | * | * |
| **.062 Commercial Pin and Socket Contacts** | 640391-1 | 640392-1 | 466686-2 | 466686-3 | 466686-1 | 466955-1 |
| | 640391-5 | 640392-5 | | | | |
| | — | 640392-2 | | | | |
| | — | 794046-1 | | | | |
| | 350629-1 | 350628-1 | 687996-2 | 687996-3 | 687996-1 | — |
| | — | 350628-2 | | | | |
| | 350629-5 | 350628-5 | | | | |
| | — | 350628-6 | | | | |
| | — | 794103-1 | | | | |
| **Power Double Lock (PDL)** | 177916-1 | 177914-1 | * | * | * | * |
| | | 177914-2† | * | * | * | * |
| | 177917-1 | 177915-1 | * | * | * | * |
| | | 177915-2† | * | * | * | * |
| | † High contact pressure type. | | | | | |
| **Mini-Universal MATE-N-LOK Contacts** | 770835-1 | 770834-1 | 567418-2 | 567418-3 | 567418-1 | — |
| | 1-770835-0 | 1-770834-0 | | | | |
| | 770901-1 | 770902-1 | 567066-4 | 567066-5 | 567066-3 | 466990-2 |
| | 1-770901-0 | 1-770902-0 | | | | |
| | 770903-1 | 770904-1 | 567067-2 | 567067-3 | 567067-1 | 466986-1 |
| | 1-770903-0 | 1-770904-0 | | | | |
| | 171636-1 | 171637-1 | 680582 | 567251-1 | 680582 | 567902-1 |
| | — | 171637-3 | | | | |
| **Mini-Universal MATE-N-LOK 2 Contacts** | 794216-1 | 794217-1 | 567418-2 | 567418-3 | 567418-1 | — |
| | 1-794216-0 | 1-794217-0 | | | | |
| | 794218-1 | 794219-1 | 567066-4 | 567066-5 | 567066-3 | 466990-2 |
| | 1-794218-0 | 1-794219-0 | | | | |
| | 794220-1 | 794221-1 | 680854-2 | 680854-3 | 680854-1 | 466986-1 |
| | 1-794220-0 | 1-794221-0 | | | | |
| | 794222-1 | 794223-1 | 680582-2 | 680582-3 | — | 567902-1 |
| | 1-794222-0 | 1-794223-0 | | | | |
| **(MR) Miniature Rectangular Contacts** | 350968-1 | 794000-1 | 466352-2 | 466352-3 | 466352-1 | — |
| | 350968-2 | 794000-2 | | | | |
| | 350967-1 | 641294-1 | 466351-2 | 466351-4 | 466351-1 | 466913-1 |
| | 350967-2 | 641294-2 | | | | |
| | 350969-1 | — | 466351-2 | 466351-4 | 466351-1 | 466913-1 |
| | 350969-2 | — | | | | |

**Note:** Stripper Crimper (SCA) and Crimp Quality Monitor Applicators may be available. Call Technical Support for Part Numbers.
* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Numbers.
**Note: All part numbers are RoHS Compliant.**





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C. America: 52-55-1106-0803

South America: 55-11-2103-6000
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Japan: 81-44-844-8013
UK: 44-8706-080-208

## Applicator Options (Continued)

| | Strip Form Contact Part Number | | Heavy-Duty Miniature Applicator Part Numbers | | | |
|---|---|---|---|---|---|---|
| | | | Used on Bench Top Terminators | | Used on Automatic Leadmaking Equipment (*AMPOMATOR* CLS Machine with T or G Terminators) | Used on *AMP-O-MATIC* Stripper-Crimper Machine |
| | Pin | Socket | *AMP-O-LECTRIC* Model K Machine | *AMP-O-LECTRIC* Model G Machine | | |
| **VAL-U-LOK Connector System** | 794955-1 | 794956-1 | 1385817-2 | 1385817-3 | 1385817-1 | — |
| | 794955-2 | 794956-2 | | | | |
| | 794955-3 | 794956-3 | | | | |
| | 794955-4 | 794956-4 | | | | |
| | 794957-1 | 794958-1 | 1385448-2 | 1385448-3 | 1385448-1 | — |
| | 794957-2 | 794958-2 | | | | |
| | 794957-3 | 794958-3 | | | | |
| | 794957-4 | 794958-4 | | | | |
| **AMP-DUAC** | 794576-1 | 106529-2 | 680308-2 | 680308-3 | — | 567959-1 |
| | | 1-794138-3 | | | | |
| | 794578-1 | 106528-2 | 680307-2 | 680307-3 | — | 567960-1 |
| | | 1-794139-3 | | | | |
| | — | 1-794140-3 | 680350-2 | 680350-3 | — | — |
| | | 794418-1 | | | | |
| **5.0 mm Power Key Connectors (PKC)** | — | 1376347-1 | * | * | * | * |
| | — | 1376348-1 | * | * | * | * |
| **.093 Commercial Pin and Socket Contacts** | 350418-1 | 350417-1 | 466656-2 | 466656-3 | 466656-1 | 466922-1 |
| | — | 350417-3 | | | | |
| | 350418-5 | 350417-5 | | | | |
| | 350416-1 | 350415-1 | 466878-2 | 466878-3 | 466878-1 | 466959-1 |
| | 350416-5 | 350415-5 | | | | |
| | 770530-1 | 770529-1 | 567337-4 | 567337-6 | 567337-3 | — |
| | 770385-1 | 770383-1 | 567273-2 | 567273-4 | 567273-3 | — |
| | — | — | | | | |
| **Commercial MATE-N-LOK Contacts** | 350079-1 | 350078-1 | 466426-2 | 466426-3 | 466426-1 | — |
| | 350079-4 | 350078-4 | | | | |
| | 350079-5 | 350078-5 | | | | |
| | 61116-1 | 61314-1 | 466320-2 | 466320-4 | 466320-1 | 466917-1 |
| | 61116-4 | 61314-4 | | | | |
| | 61116-5 | 61314-5 | | | | |
| | 61116-6 | 61314-6 | | | | |
| | 61116-7 | 61314-7 | | | | |
| | 61118-1 | 61117-1 | 687763-2 | 687763-6 | 687763-1 | 466920-1 |
| | 61118-4 | 61117-4 | | | | |
| | 61118-5 | 61117-5 | | | | |
| | 61118-6 | 61117-6 | | | | |
| | 61118-7 | 61117-7 | | | | |
| | 350558-1 | 350557-1 | 687898-2 | 687898-4 | 687898-1 | — |
| | 350558-4 | 350557-4 | | | | |
| | 61527-2 | — | 466320-2 | 466320-4 | 466320-1 | 466917-1 |
| **.140 MATE-N-LOK Contacts** | 61627-1 | 61626-1 | 567306-2 | 567306-3 | 567306-1 | — |
| | 61627-2 | 61626-2 | | | | |
| | 350201-1 | 350200-1 | 567309-2 | 567309-3 | 587309-1 | — |
| | 350201-2 | 350200-2 | | | | |
| **Universal MATE-N-LOK Contacts** | 350924-1 | 350925-1 | 466616-2 | 466616-3 | — | — |
| | 350924-6 | 350925-6 | | | | |
| | 350561-1 | 350851-1 | 466320-2 | 466320-4 | 466320-1 | 466917-1 |
| | — | 350570-1 | | | | |
| | 350561-2 | 350851-2 | | | | |
| | — | 350570-2 | | | | |
| | 350561-7 | 350851-7 | | | | |
| | — | 350570-7 | | | | |
| | 350561-3 | 350570-3 | | | | |
| | — | 350570-6 | | | | |

**Note:** Stripper Crimper (SCA) and Crimp Quality Monitor Applicators may be available. Call Technical Support for Part Numbers.
* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Numbers.
**Note: All part numbers are RoHS Compliant.**





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Japan: 81-44-844-8013
UK: 44-8706-080-208

## Applicator Options (Continued)

| | Strip Form Contact Part Number | | Heavy-Duty Miniature Applicator Part Numbers | | | |
|---|---|---|---|---|---|---|
| | | | Used on Bench Top Terminators | | Used on Automatic Leadmaking Equipment (*AMPOMATOR* CLS Machine with T or G Terminators) | Used on *AMP-O-MATIC* Stripper-Crimper Machine |
| | Pin | Socket | *AMP-O-LECTRIC* Model K Machine | *AMP-O-LECTRIC* Model G Machine | | |
| **Universal MATE-N-LOK Contacts** (Continued) | 350218-1 | 350536-1 | 687763-2 | 687763-6 | 687763-1 | 466920-1 |
| | 350218-2 | 350536-2 | | | | |
| | 350218-7 | 350536-7 | | | | |
| | 350218-3 | 350536-3 | | | | |
| | 350218-6 | 350536-6 | | | | |
| | 350538-1 | 350537-1 | 687926-2 | 687926-6 | 687926-1 | 466989-1 |
| | 350538-2 | 350537-2 | | | | |
| | 350538-7 | 350537-7 | | | | |
| | 350538-3 | 350537-3 | | | | |
| | 350538-6 | 350537-6 | | | | |
| | 350873-1 | 350874-1 | 466588-2 | 466588-3 | 466588-1 | — |
| | 350873-3 | 350874-3 | | | | |
| | 350922-3 | 350923-3 | 466597-2 | 466597-3 | 466597-1 | — |
| | 350922-6 | 350923-6 | | | | |
| | 350922-4 | 350923-4 | | | | |
| | 350699-1 | — | 466320-2 | 466320-4 | 466320-1 | 466917-1 |
| | 350699-2 | — | | | | |
| | 350699-7 | — | | | | |
| | 350687-1 | — | 687763-2 | 687763-6 | 687763-1 | 466920-1 |
| | 350687-2 | — | | | | |
| | 350687-7 | — | | | | |
| | 350700-1 | — | 687926-2 | 687926-6 | 687926-1 | 466989-1 |
| | 350700-2 | — | | | | |
| | 350700-7 | — | | | | |
| | 770210-1 | — | 567216-2 | 567216-3 | 567216-1 | 466920-1 |
| | 350654-1 | — | 687763-2 | 687763-6 | 687763-1 | |
| | 770234-3 | — | 466597-2 | 466597-3 | 466597-1 | |
| **Universal MATE-N-LOK II Contacts** | 770011-6 | 770012-6 | — | 567252-4 | 567252-1 | — |
| | 770009-1 | — | — | 567214-4 | 567214-1 | 567914-1 |
| | 1-770009-0 | — | | | | |
| | — | 770010-3 | | | | |
| | — | 1-770010-0 | | | | |
| | 770007-1 | — | — | 567213-4 | 567213-1 | 567913-1 |
| | 1-770007-0 | — | | | | |
| | — | 770008-3 | | | | |
| | — | 1-770008-0 | | | | |
| | 770005-1 | — | — | 567212-4 | 567212-1 | — |
| | 1-770005-0 | — | | | | |
| | — | 770006-3 | | | | |
| | 1-770005-1 | 1-770006-0 | | | | |
| | 770003-3 | 770004-3 | — | 567211-4 | 567211-1 | — |
| | 1-770003-0 | 1-770004-0 | | | | |
| | 770193-1 | — | — | 567213-4 | 567213-1 | 567913-1 |
| | 1-770193-0 | — | | | | |
| | 770194-1 | — | — | 567212-4 | 567212-1 | — |
| | 1-770194-0 | — | | | | |
| **.156 MATE-N-LOK Contacts** | 61086-1 | 61085-1 | 466462-1 | 466462-3 | 466462-1 | — |
| | 61234-1 | 61233-1 | 687765-2 | 687765-2 | — | — |

**Note:** Stripper Crimper (SCA) and Crimp Quality Monitor Applicators may be available. Call Technical Support for Part Numbers.
* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Numbers.
**Note: All part numbers are RoHS Compliant.**





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## Product Feature Comparisons

| High Density | 2.5 mm Signal Double Lock (SDL) | Micro MATE-N-LOK 3 mm | Grace Inertia Connectors (GIC) 3.5 | .062 Commercial Pin & Socket | Power Double Lock (PDL) | Mini-Universal MATE-N-LOK | Sealed Mini-Universal MATE-N-LOK | Mini-Universal MATE-N-LOK 2 | (MR) Miniature Rectangular | VAL-U-LOK Connector System | AMP-DUAC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Wire AWG —** | | | | | | | | | | | |
| Maximum | 20 | 20 | 18 | 18 | 16 | 16 | 18 | 16 | 18 | 18 | 18 |
| Minimum | 26 | 30 | 26 | 30 | 26 | 30 | 26 | 30 | 26 | 26 | 26 |
| **Current Rating —** | | | | | | | | | | | |
| 10 AWG Wire | — | | — | | — | | | | | — | — |
| 14 AWG Wire | — | — | — | — | — | — | — | — | — | — | — |
| 16 AWG Wire | — | | — | | 14 | | | | | — | — |
| 18 AWG Wire | — | ** | 7 | 17 | — | 9 | 9 | 10.5 | 6 | 9 | 9 |
| 20 AWG Wire | 3 | | — | | — | | | | | — | — |
| Max. Operating Voltage (AC or DC) | 50 | 250 | 300 | 250 | 300 | 600 | 600 | 600 | 250 | 600 | 600 |
| **Flammability Rating —** | | | | | | | | | | | |
| UL 94V-0 | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| UL 94V-2 | No | No | No | Yes | No | Yes* | No | Yes | No | Yes | Yes |
| **Approvals —** | | | | | | | | | | | |
| UL | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Submitted | Yes | Yes | Yes |
| CSA | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Submitted | Yes | Yes | Yes |
| VDE | Yes | Yes | — | No | Yes | Yes | Yes | Submitted | No | — | No |
| **Contact Material —** | | | | | | | | | | | |
| Brass | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No | Yes | — |
| Phos. Bronze | Yes | Yes | No | Yes | No | Yes | Yes | No | Yes | Yes | Yes |
| **Plating Finish —** | | | | | | | | | | | |
| Tin Plating | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Gold Plating | No | Yes | No | Yes | No | Yes | Yes | Yes | Yes | Yes | Yes |
| **Centerline Spacing —** | .098 [2.50] | .118 [3.00] | .137 [3.50] | .145 [3.68] | .156 [3.96] 256 [6.50] .312 [7.92] .512 [13.00] | .163 [4.14] | .163 [4.14] | .163 [4.14] | .165 [4.20] | .165 [4.20] | .165 [4.20] |
| **Housings —** | | | | | | | | | | | |
| Panel Mount | No | Yes | No | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes |
| Free-Hanging | Yes | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes |
| Secondary Locking Latches | Yes | No | Yes | No | Yes | No | No | Yes | No | Yes | Yes |
| Contact Position Control | Yes | No | No | No | No | No | No | Yes | No | No | Yes |
| In-Line Config. | Yes | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes |
| Dual Row Config. | No | Yes | Yes | No | Yes | Yes | Yes | Yes | No | Yes | Yes |
| Matrix Config. | No | No | No | Yes | Yes | Yes | No | Yes | Yes | No | No |
| **Accessories —** | | | | | | | | | | | |
| Strain Relief | No | No | Yes | No | Yes | Yes | No | No | Yes | No | Yes |
| Keying Plug | No | No | No | No | No | Yes | Yes | Yes | Yes | No | No |
| Seals | No | No | No | No | No | Yes | Yes | No | No | No | No |
| **Headers —** | | | | | | | | | | | |
| Vertical | Yes | Yes | No | No | Yes | Yes | Yes | Mini-Universal MATE-N-LOK | Yes | Yes | Yes |
| Blindmate | No | No | No | No | No | Yes | Yes | Mini-Universal MATE-N-LOK | No | Yes | No |
| Right-Angle | Planned | Yes | No | No | No | Yes | Yes | Mini-Universal MATE-N-LOK | No | Yes | Yes |
| **Positions —** | | | | | | | | | | | |
| Minimum | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 |
| Maximum | 13 | 24 | 6 | 9 | 12 | 24 | 10 | 24 | 36 | 24 | 24 |

* Wire-to-Wire Only.
** 5 A on 20 AWG*





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Japan: 81-44-844-8013
UK: 44-8706-080-208

## Product Feature Comparisons (Continued)

| Standard Density | 5.0 mm Power Key Connectors (PKC) | .093 Commercial Pin & Socket | Commercial MATE-N-LOK | .140 MATE-N-LOK | Universal MATE-N-LOK | Universal MATE-N-LOK II | .156 MATE-N-LOK |
|---|---|---|---|---|---|---|---|
| **Wire AWG—** | | | | | | | |
| Maximum | 16 | 14 | 14 | 10 | 10 | 10 | 10 |
| Minimum | 24 | 24 | 30 | 20 | 30 | 30 | 20 |
| **Current Rating —** | | | | | | | |
| 10 AWG Wire | — | | | 28 | | | 32.5 |
| 14 AWG Wire | — | 19 | 13 | — | 15 | 19 | — |
| 16 AWG Wire | 10 | | | — | | | — |
| 18 AWG Wire | — | — | — | — | — | — | — |
| 20 AWG Wire | — | | | — | | | — |
| Max. Operating Voltage (AC or DC) | 300 | 250 | 250 | 600 | 600 | 600 | 600 |
| **Flammability Rating —** | | | | | | | |
| UL 94V-0 | Yes | No | Yes | No | Yes | Yes | No |
| UL 94V-2 | No | Yes | Yes | Yes | Yes | No | Yes |
| **Approvals —** | | | | | | | |
| UL | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| CSA | Yes | Yes | Yes | Yes | Yes | Yes | No |
| VDE | No | No | No | No | Yes | Yes | No |
| **Contact Material —** | | | | | | | |
| Brass | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Phos. Bronze | No | Yes | Yes | Yes | Yes | Yes | No |
| **Plating Finish —** | | | | | | | |
| Tin Plating | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Gold Plating | No | Yes | Yes | No | Yes | Yes | No |
| **Centerline Spacing —** | .197 [5.00] | .198 [5.03]<br>.250 [6.35]<br>.248 [6.30] | .200 [5.08]<br>.240 [6.10] x .202 [5.13]<br>.195 [4.95] x .360 [9.14] | .240 [6.10] | .250 [6.35] | .250 [6.35] | .390 [9.91] |
| **Housings —** | | | | | | | |
| Panel Mount | No | Yes | Yes | Yes | Yes | Yes | Yes |
| Free-Hanging | No | Yes | Yes | Yes | Yes | Yes | Yes |
| Secondary Locking Latches | Yes | No | No | Yes | No | Yes | Yes |
| Contact Position Control | No | No | No | No | No | Yes | No |
| In-Line Config. | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Dual Row Config. | Yes | No | Yes | No | No | No | No |
| Matrix Config. | No | Yes | Yes | Yes | Yes | Yes | No |
| **Accessories —** | | | | | | | |
| Strain Relief | Yes | No | No | No | Yes | Universal MATE-N-LOK | No |
| Keying Plug | No | No | Yes | No | Yes | Yes | No |
| Seals | No | No | No | No | Yes | No | No |
| **Headers —** | | | | | | | |
| Vertical | Yes | No | Yes | No | Yes | Universal MATE-N-LOK | No |
| Blindmate | No | No | No | No | No | No | No |
| Right-Angle | No | No | Yes | No | Yes | Universal MATE-N-LOK | No |
| **Positions —** | | | | | | | |
| Minimum | 2 | 1 | 1 | 2 | 1 | 2 | 3 |
| Maximum | 6 | 15 | 16 | 9 | 15 | 15 | 4 |

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Japan: 81-44-844-8013
UK: 44-8706-080-208

## Non-Compliant to RoHS Compliant Part Number Cross Reference

| Non-Compliant Part Number | RoHS Compliant Part Number |
|---|---|
| 350209-2 | 1586512-2 |
| 350210-2 | 1586514-2 |
| 350211-2 | 1586515-2 |
| 350211-3 | 1586515-3 |
| 350212-2 | 1586518-2 |
| 350213-2 | 1586520-2 |
| 350214-2 | 1586522-2 |
| 350220-2 | 1586524-2 |
| 1-350375-0 | 2-350375-0 |
| 1-350376-0 | 2-350376-0 |
| 1-350377-0 | 2-350377-0 |
| 1-350378-1 | 2-350378-1 |
| 1-350379-1 | 2-350379-1 |
| 1-350380-1 | 2-350380-1 |
| 350424-2 | 1586525-2 |
| 350425-2 | 1586526-2 |
| 350426-2 | 1586528-2 |
| 350428-2 | 350428-4 |
| 350429-2 | 350429-4 |
| 350430-2 | 350430-4 |
| 350431-2 | 350431-4 |
| 350432-2 | 350432-4 |
| 350433-2 | 350433-4 |
| 350434-2 | 350434-4 |
| 350539-2 | 1586530-2 |
| 350541-2 | 1586532-2 |
| 350543-2 | 1586534-2 |
| 350544-2 | 1586536-2 |
| 350582-2 | 350582-4 |
| 350583-2 | 350583-4 |
| 350584-2 | 350584-4 |
| 350585-2 | 350585-4 |
| 350586-2 | 350586-4 |
| 350587-2 | 350587-4 |
| 350588-2 | 350588-4 |
| 350641-2 | 1586539-2 |
| 350711-2 | 350711-4 |
| 350712-2 | 350712-4 |
| 350713-2 | 350713-4 |
| 350714-2 | 350714-4 |
| 350714-3 | 350714-5 |
| 350732-2 | 350732-4 |
| 350737-2 | 350737-4 |
| 350738-2 | 350738-4 |
| 350742-2 | 350742-4 |
| 350759-3 | 350759-5 |
| 350760-3 | 350760-5 |
| 350761-3 | 350761-5 |
| 350762-3 | 350762-5 |
| 350763-3 | 350763-5 |
| 350764-3 | 350764-5 |
| 350765-3 | 350765-5 |
| 350786-2 | 350786-3 |
| 350787-2 | 350787-3 |
| 350789-2 | 350789-3 |
| 350790-2 | 350790-3 |
| 350792-2 | 350792-3 |
| 350793-2 | 350793-3 |
| 350824-2 | 350824-4 |
| 350825-2 | 350825-4 |
| 350826-2 | 350826-4 |
| 350827-2 | 350827-4 |
| 350828-2 | 350828-4 |
| 350829-2 | 350829-4 |
| 350830-2 | 350830-4 |
| 350832-2 | 350832-4 |
| 350833-2 | 350833-4 |
| 350834-2 | 350834-4 |
| 350835-2 | 350835-4 |
| 350836-2 | 350836-4 |
| 350837-2 | 350837-4 |
| 2-350942-0 | 3-350942-0 |
| 2-350943-0 | 3-350943-0 |
| 2-350944-0 | 3-350944-0 |
| 2-350945-0 | 3-350945-0 |
| 350988-3 | 350988-5 |
| 350989-3 | 350989-5 |
| 350990-3 | 350990-5 |
| 350991-3 | 350991-5 |
| 1-380935-0 | 2-380935-0 |
| 1-380936-0 | 2-380936-0 |
| 1-380937-0 | 2-380937-0 |
| 2-380991-0 | 2-1586544-0 |
| 2-380999-0 | 2-1586546-0 |
| 640466-2 | 640466-3 |
| 640467-2 | 640467-3 |
| 640497-2 | 2-640497-2 |
| 640497-4 | 2-640497-4 |
| 640498-2 | 2-640498-2 |
| 640498-4 | 2-640498-4 |
| 640499-2 | 2-640499-2 |
| 640499-4 | 2-640499-4 |
| 640500-2 | 2-640500-2 |
| 640500-4 | 2-640500-4 |
| 640501-2 | 2-640501-2 |
| 640501-4 | 2-640501-4 |
| 640502-2 | 2-640502-2 |
| 640502-4 | 2-640502-4 |
| 640503-2 | 2-640503-2 |
| 640503-4 | 2-640503-4 |
| 640504-2 | 2-640504-2 |
| 640504-4 | 2-640504-4 |
| 640505-2 | 2-640505-2 |
| 640505-4 | 2-640505-4 |
| 640506-2 | 2-640506-2 |
| 640506-4 | 2-640506-4 |
| 640583-2 | 640583-3 |
| 640584-2 | 640584-3 |
| 640900-2 | 640900-3 |
| 640901-2 | 640901-3 |
| 641831-2 | 641831-3 |
| 641832-2 | 641832-3 |
| 641963-2 | 641963-3 |
| 641964-2 | 641964-3 |
| 641970-2 | 641970-3 |
| 641971-2 | 641971-3 |
| 641972-2 | 641972-3 |
| 641974-2 | 641974-3 |
| 641976-2 | 641976-4 |
| 643228-2 | 3-643228-0 |
| 643230-2 | 3-643230-0 |
| 643232-2 | 3-643232-0 |
| 643234-2 | 3-643234-0 |
| 643236-2 | 3-643236-0 |
| 643410-2 | 643410-3 |
| 643412-2 | 643412-3 |
| 643414-2 | 643414-3 |
| 643424-2 | 643424-3 |
| 643426-2 | 643426-3 |
| 770003-4 | 1-770003-0 |
| 770004-4 | 1-770004-0 |
| 770005-2 | 1-770005-0 |
| 770005-4 | 1-770005-1 |
| 770006-4 | 1-770006-0 |
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| 794076-1 | 1-794076-0 |
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| 794078-1 | 1-794078-0 |





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Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-1106-0803

South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-8706-080-208

## Non-Compliant to RoHS Compliant Part Number Cross Reference (Continued)

| Non-Compliant Part Number | RoHS Compliant Part Number |
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| 794622-4 | 3-794622-4 |
| 794622-6 | 3-794622-6 |





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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-8706-080-208

## Non-Compliant to RoHS Compliant Part Number Cross Reference (Continued)

| Non-Compliant Part Number | RoHS Compliant Part Number |
|---|---|
| 794622-8 | 3-794622-8 |
| 1-794622-0 | 4-794622-0 |
| 1-794622-2 | 4-794622-2 |
| 1-794622-4 | 4-794622-4 |
| 1-794622-6 | 4-794622-6 |
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| 2-794662-4 | 2-1586489-4 |
| 794663-2 | 1586490-2 |
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| 1-794665-2 | 1-1586492-2 |
| 1-794665-4 | 1-1586492-4 |





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Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-1106-0803

South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-8706-080-208

## Non-Compliant to RoHS Compliant Part Number Cross Reference (Continued)

| Non-Compliant Part Number | RoHS Compliant Part Number |
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| 1-794665-8 | 1-1586492-8 |
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| 2-794665-2 | 2-1586492-2 |
| 2-794665-4 | 2-1586492-4 |
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| 794666-4 | 1586493-4 |
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| 794666-8 | 1586493-8 |
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| 1-794666-2 | 1-1586493-2 |
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| 1-794666-8 | 1-1586493-8 |
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| 1-1445085-0 | 3-1445085-0 |





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## Non-Compliant to RoHS Compliant Part Number Cross Reference (Continued)

| Non-Compliant Part Number | RoHS Compliant Part Number |
|---|---|
| 1-1445085-1 | 3-1445085-1 |
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| 1445086-7 | 2-1445086-7 |
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| 1445086-9 | 2-1445086-9 |
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| 1-1445087-2 | 3-1445087-2 |
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