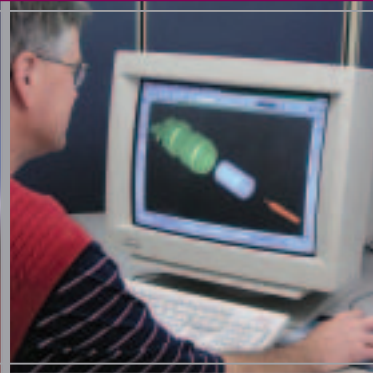


**JOHNSON®**

***RF/Microwave Connectors  
& Cable Assemblies***



***Emerson Network Power  
Connectivity Solutions***



  
**EMERSON™**  
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## Connectivity Solutions

To our valued customers:

For over 80 years, Johnson Components and Cambridge Products have been providing our electronics distributor and OEM customers with cost-effective, high-quality solutions for connectivity. This catalog combines the product lines of Johnson Components and Cambridge Products under the Johnson product line of *Emerson Network Power Connectivity Solutions*. In addition to combining these product lines, we have also combined several of our interconnect businesses under the name *Emerson Network Power Connectivity Solutions*. We believe this name not only reflects our traditional industry focus, but also better communicates the additional resources that we can supply as part of Emerson Network Power.

Although our name is changing, our commitment to product quality and to excellent service to our customers will not. Our combined connectivity product line will continue to focus on the wireless, test/measurement, instrumentation, OEM and installer markets for data networks, telecommunications, satellite, security, telemetry and CATV.

This catalog offers our customers new products such as the SMK (2.92mm) range of 40 GHz connectors and non-magnetic connectors for the medical industry as well as extensive enhancements to our existing product portfolio. It continues to provide comprehensive data on our range of coaxial connectors, cable assemblies, hardware, tools and test products to support your design and application needs and those of your customers.

*Emerson Network Power Connectivity Solutions* is a global player with manufacturing, sales and engineering presence in China, the United Kingdom and the United States to meet our customers' requirements around the world. Our goal is to continue to expand our product offerings and capabilities to continue meeting your changing needs.

Thank you for allowing us the opportunity to serve you.

Best Regards,

A handwritten signature in black ink, appearing to read "Brian G. Mason".

Brian G. Mason  
President  
Emerson Network Power  
Connectivity Solutions

**MMCX Connectors - 50 Ohm**

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# MMCX - 50 Ohm Connectors

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## Specifications

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### ELECTRICAL RATINGS

**Impedance:** 50 ohms

**Frequency Range:** Connectors ..... 0-6 GHz  
Dummy loads ..... 0-1 GHz

**VSWR:** (f = GHz)

|                                   | Straight<br>Cabled Connectors | Right Angle<br>Cabled Connectors |
|-----------------------------------|-------------------------------|----------------------------------|
| .047 dia flexible                 | 1.20                          | 1.14 + .07f                      |
| RG-178, RG-316, RG-316 DS         | 1.20                          | 1.25                             |
| .086 Semi-Rigid                   | 1.15                          | 1.15                             |
| Uncabled receptacles, dummy loads | N/A                           |                                  |

### Working Voltage:

Connectors ..... 170 VRMS at sea level†  
Dummy loads ..... N/A

### Dielectric Withstanding Voltage:

Connectors ..... 500 VRMS at sea level†  
Dummy loads ..... N/A

**Insulation Resistance:** 1000 megohms min

**Contact Resistance:** (milliohms maximum)

|  | Initial | After<br>Environmental |
|--|---------|------------------------|
|--|---------|------------------------|

Center contact (straight cabled connectors  
and uncabled receptacles) ..... 5.0      8.0

Center contact (right angle cabled  
connectors) ..... 5.0      15.0

Outer contact (all connectors) ..... 1.0      1.5

Braid to body ..... 1.5      N/A

**Corona Level:** Connectors ..... 190 volts min at 70,000 feet†  
Dummy loads ..... N/A

### Insertion Loss: (dB max tested at 1 GHz)

Straight cabled connectors ..... 0.1

Right angle cabled connectors ..... 0.2

Uncabled receptacles, dummy loads ..... N/A

### RF Leakage: (dB minimum, tested at 2.5 GHz)

Flexible cable connectors ..... -60 dB

.086 Semi-Rigid ..... -70 dB

Dummy loads ..... N/A

### RF High Potential Withstanding Voltage:

(400 VRMS at 4 and 7 MHz)†

**Power Rating (Dummy Load):** 0.5 watt @ +25°C, derated to 0.25 watt  
@ +125°C

†Avoid user injury due to misapplication.

See safety advisory definitions inside front cover.

### MECHANICAL RATINGS

**Engagement Design:** Series MMCX

**Engagement/Disengagement Force:**

8 lbs. max axial engagement

1.4 lbs. min axial disengagement

**Contact Retention:** 2.0 lbs. minimum axial force

**Cable Retention:**

|                                | Axial Force* (lbs.) | Torque (in-oz) |
|--------------------------------|---------------------|----------------|
| Connectors for .047 flexible   | 3.5                 | N/A            |
| Connectors for RG-178          | 7.0                 | N/A            |
| Connectors for RG-316          | 20.0                | N/A            |
| Connectors for RG-316 DS       | 25.0                | N/A            |
| Connectors for .086 Semi-Rigid | 30.0                | 16             |

\*Or cable breaking strength whichever is less.

**Durability:** ..... 500 cycles minimum

### ENVIRONMENTAL RATINGS

(Meets or exceeds the applicable paragraph of MIL-C-39012)

**Operating Temperature:** Connectors ..... - 65°C to + 165°C

Dummy loads ..... - 65°C to + 125°C

**Thermal Shock:** Connectors: MIL-STD-202, Method 107,

Condition C, except -55°C to + 155°C (N/A dummy loads)

**Corrosion:** MIL-STD-202, Method 101, Condition B (N/A dummy loads)

**Shock:** MIL-STD-202, Method 213, Condition B (N/A dummy loads)

**Vibration:** MIL-STD-202, Method 204, Condition D (N/A dummy loads)

**Moisture Resistance:** MIL-STD-202, Method 106 (N/A dummy loads)

### MATERIAL SPECIFICATIONS

**Bodies:** Brass per QQ-B-626, gold plated\* per MIL-G-45204 .00001" min.

**Contacts:** Beryllium copper per QQ-C-530, gold plated\* per MIL-G-45204 .00003" min.

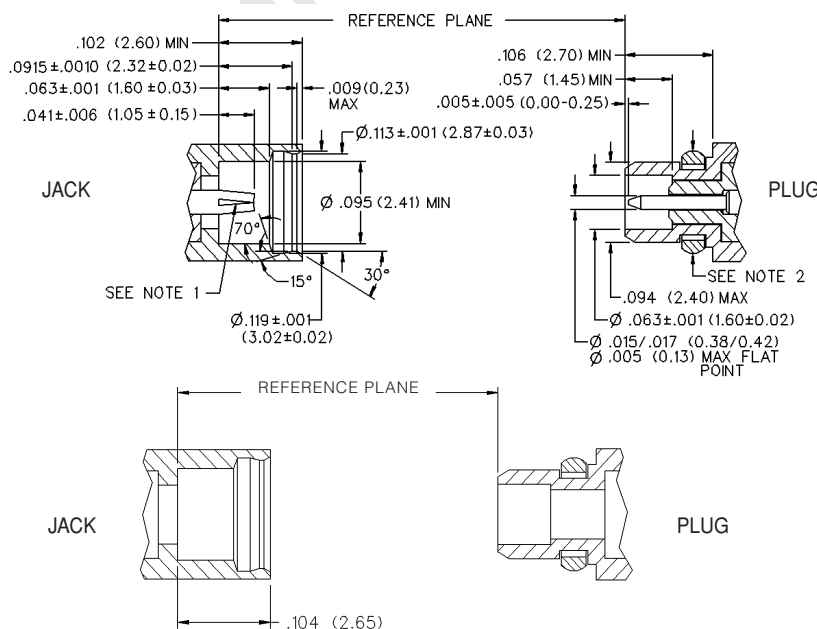
**Interface Spring:** Beryllium copper per QQ-C-530, gold plated\* per MIL-G-45204 .00003" min.

**Insulators:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457

**Crimp Sleeves:** Copper per WW-T-799 or brass per QQ-B-626, gold plated per MIL-G-45204 .00001" min.

**Mounting Hardware:** Brass per QQ-B-626 or QQ-B-613, gold plated per MIL-G-45204 .00001" min.

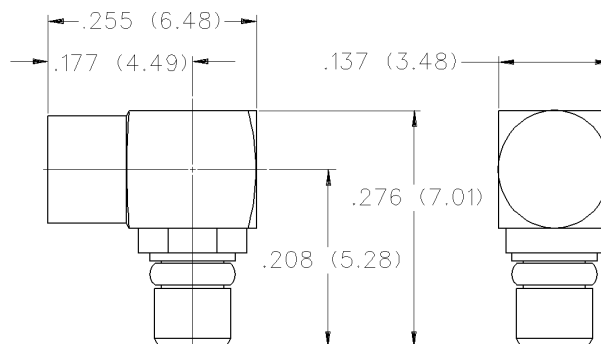
\*All gold plated parts include a .00005" min nickel barrier layer.



### Mating Engagement for MMCX Series

1. ID of contact to meet VSWR mating characteristics and connector durability when mated with a dia .016 +/- .001 male contact.
2. Must meet the force to engage and disengage when mated with mating part.

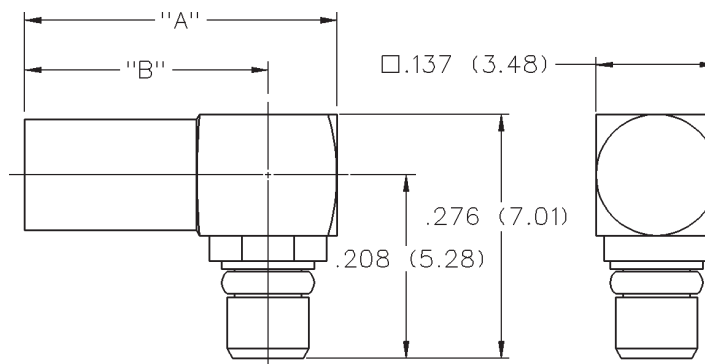
## Right Angle Solder Type Plug - Captivated Contact



| CABLE TYPE      | PART NO.     |
|-----------------|--------------|
| .086 Semi-Rigid | 135-3693-101 |

Assembly instructions page 207.

## Right Angle Crimp Type Plug - Captivated Contact



| CABLE TYPE                                                                       | PART NO.     | "A"          | "B"         | TERMINATION  |
|----------------------------------------------------------------------------------|--------------|--------------|-------------|--------------|
| .047" Diameter Flexible<br>Huber K01152-07<br>Axon P512479A<br>Astrolab 32018 DS | 135-3436-101 | .354 (8.99)  | .276 (6.98) | Crimp Insert |
| RG-178/U, 196                                                                    | 135-3402-101 | .354 (8.99)  | .276 (6.98) | Crimp Insert |
| RG-178/U, 196                                                                    | 135-3402-111 | .412 (10.46) | .334 (8.48) | Crimp Sleeve |
| RG-316/U, 188, 187<br>179, 161, 174                                              | 135-3403-101 | .412 (10.46) | .334 (8.48) | Crimp Sleeve |
| RG-316 DS, RG-188 DS                                                             | 135-3404-101 | .412 (10.46) | .334 (8.48) | Crimp Sleeve |

Assembly instructions pages 208 and 209.

# MMCX - 50 Ohm Connectors

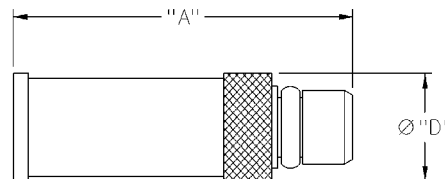
For Flexible Cable

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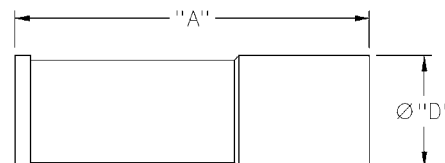
## Straight Crimp Type Plug - Solder or Crimp Captivated Contact



Assembly instructions pages 210 and 211.

| CABLE TYPE                                                                       | PART NO.     | "A"          | "D"         | TERMINATION  |
|----------------------------------------------------------------------------------|--------------|--------------|-------------|--------------|
| .047" Diameter Flexible<br>Huber K01152-07<br>Axon P512479A<br>Astrolab 32018 DS | 135-3436-001 | .462 (11.73) | .137 (3.48) | Crimp Insert |
| RG-178/U, 196                                                                    | 135-3402-001 | .462 (11.73) | .137 (3.48) | Crimp Insert |
| RG-316/U, 188, 161, 174                                                          | 135-3403-001 | .509 (12.93) | .173 (4.39) | Crimp Sleeve |
| RG-316 DS, 188 DS, 187 DS                                                        | 135-3404-001 | .509 (12.93) | .173 (4.39) | Crimp Sleeve |
| RG-179/U, 187                                                                    | 135-3433-001 | .509 (12.93) | .173 (4.39) | Crimp Sleeve |

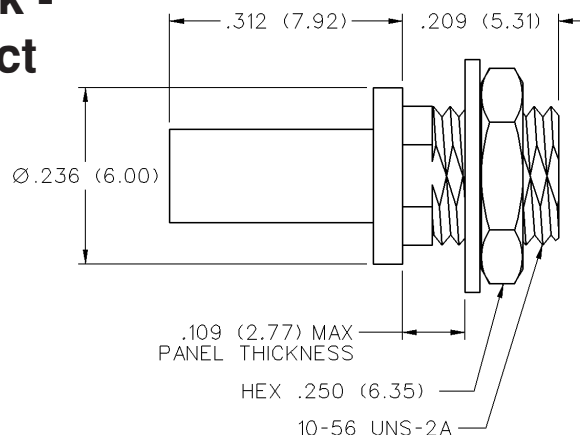
## Straight Crimp Type Jack - Solder or Crimp Captivated Contact



Assembly instructions pages 212 and 213.

| CABLE TYPE                                                                       | PART NO.     | "A"          | "D"         | TERMINATION  |
|----------------------------------------------------------------------------------|--------------|--------------|-------------|--------------|
| .047" Diameter Flexible<br>Huber K01152-07<br>Axon P512479A<br>Astrolab 32018 DS | 135-3336-001 | .462 (11.73) | .137 (3.48) | Crimp Insert |
| RG-178/U, 196                                                                    | 135-3302-001 | .462 (11.73) | .137 (3.48) | Crimp Insert |
| RG-316/U, 188, 161, 174                                                          | 135-3303-001 | .545 (13.84) | .173 (4.39) | Crimp Sleeve |
| RG-316 DS, 188 DS, 187 DS                                                        | 135-3304-001 | .545 (13.84) | .173 (4.39) | Crimp Sleeve |
| RG-179/U, 187                                                                    | 135-3333-001 | .545 (13.84) | .173 (4.39) | Crimp Sleeve |

## Straight Crimp Type Bulkhead Jack - Solder or Crimp Captivated Contact



| CABLE TYPE                                                                       | PART NO.     | TERMINATION  |
|----------------------------------------------------------------------------------|--------------|--------------|
| .047" Diameter Flexible<br>Huber K01152-07<br>Axon P512479A<br>Astrolab 32018 DS | 135-3336-401 | Crimp Insert |
| RG-178/U, 196                                                                    | 135-3302-401 | Crimp Insert |

Assembly instructions page 213.

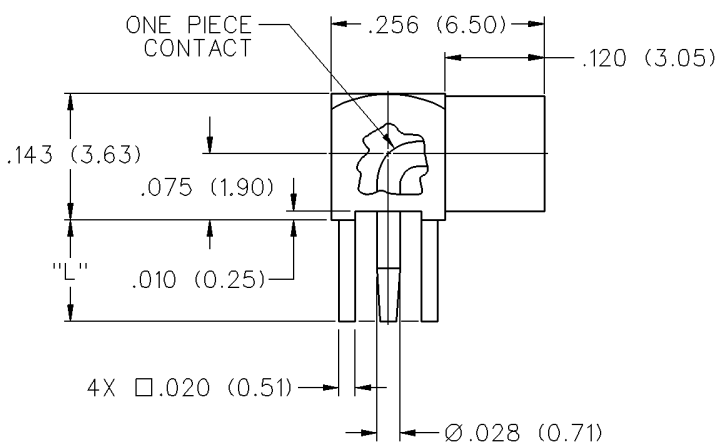
Mounting Hole layout fig. 5 page 201.

## Right Angle Jack Receptacle



| "L"         | PART NO.     |
|-------------|--------------|
| .115 (2.92) | 135-3701-301 |
| .068 (1.73) | 135-3701-311 |

Mounting Hole layout figure 14 page 202.

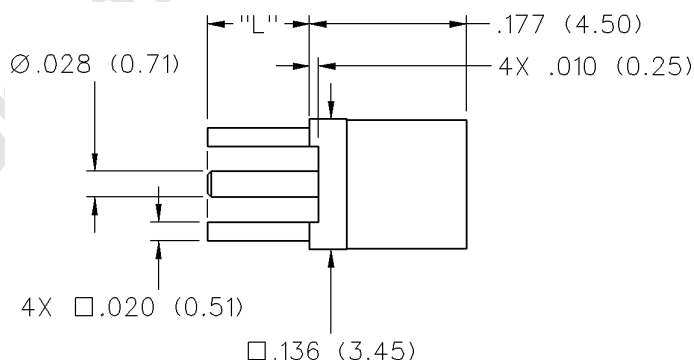


## Straight Mount Jack Receptacle



| "L"         | PART NO.     |
|-------------|--------------|
| .115 (2.92) | 135-3701-201 |
| .068 (1.73) | 135-3701-211 |

Mounting Hole layout figure 14 page 202.

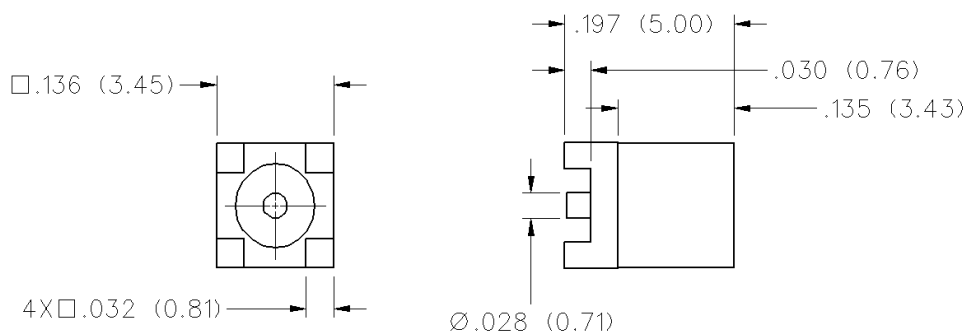


## Straight Jack Receptacle - Surface Mount



| PART NO.     | PACKAGING                      |
|--------------|--------------------------------|
| 135-3711-201 | Stock                          |
| 135-3711-202 | Tape and Reel<br>1500 pcs/reel |

Recommended Land Pattern figure 17 page 202.



# MMCX - 50 Ohm Connectors

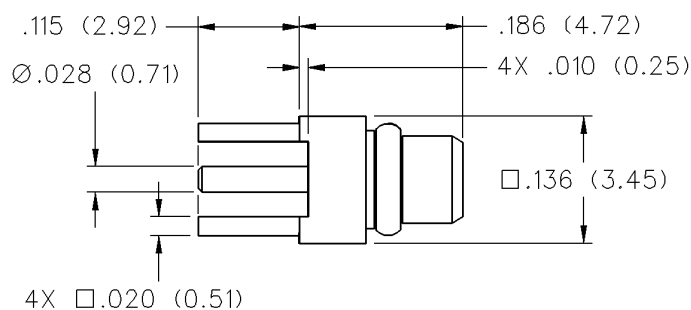
PC Mount and Termination

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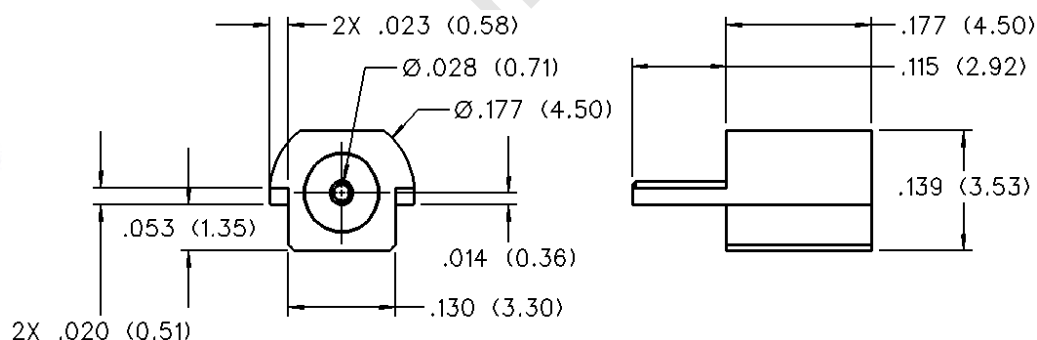
## Straight Plug Receptacle



| PART NO.     |
|--------------|
| 135-3801-201 |

Mounting Hole layout figure 14 page 202.

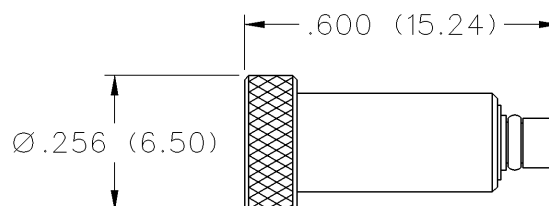
## End Launch Jack Receptacle - Surface Mount



| PART NO.     | PACKAGING                     |
|--------------|-------------------------------|
| 135-3711-801 | Stock                         |
| 135-3711-802 | Tape and Reel<br>1000pcs/reel |

Recommended Land Pattern and Board Notch figure 16 page 202.

## Plug Dummy Load



| FREQ. RANGE | PART NO.     | PLATING | RESISTANCE |
|-------------|--------------|---------|------------|
| 0-1 GHZ     | 135-3801-811 | Gold    | 50 Ohms    |

**MCX Connectors - 50 Ohm**

|                                           |    |
|-------------------------------------------|----|
| Bulkhead and Panel Mount .....            | 18 |
| Flexible Cable .....                      | 12 |
| In-Series Adapters and Terminations ..... | 19 |
| PC Mount .....                            | 14 |
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**MCX Non-Magnetic Connectors - 50 Ohm**

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| PC Mount .....       | 31 |
| Specifications ..... | 30 |

**MCX Reverse Polarity - 50 Ohm**

|                      |    |
|----------------------|----|
| Flexible Cable ..... | 21 |
| PC Mount .....       | 22 |
| Specifications ..... | 20 |

**MCX Connectors - 75 Ohm**

|                                                   |    |
|---------------------------------------------------|----|
| Between-Series Adapters .....                     | 28 |
| Flexible Cable .....                              | 24 |
| In-Series Matched Adapters and Terminations ..... | 27 |
| PC Mount .....                                    | 25 |
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# MCX - 50 Ohm Connectors

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## Specifications

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### ELECTRICAL RATINGS

**Impedance:** 50 Ohms

**Frequency Range:** Connectors ..... 0-6 GHz  
Dummy loads ..... 0-1 GHz

**VSWR:** (f = GHz)      Straight Cabled      Right Angle  
                                 Connectors      Cabled Connectors

RG-178 cable ..... 1.17 + .04f      1.07 + .06f

RG-316 and .086 Semi-Rigid cable . 1.13 + .04f      1.07 + .04f

Adapters ..... 1.13 + .04f

Uncabled receptacles, Dummy loads ..... N/A

**Working Voltage:** (VRMS maximum)<sup>†</sup>

Connectors for Cable Type      Sea Level      70K Feet

RG-178 ..... 250      65

RG-316, .086 Semi-Rigid uncabled

uncabled receptacles, adapters ..... 335      85

Dummy loads ..... N/A

**Dielectric Withstanding Voltage:** (VRMS minimum at sea level)<sup>†</sup>

Connectors for RG-178 ..... 750

Connectors for RG-316, .086 Semi-Rigid,

uncabled receptacles, adapters ..... 1000

Dummy loads ..... N/A

**Corona Level:** (Volts minimum at 70,000 feet)<sup>†</sup>

Connectors for RG-178 ..... 190

Connectors for RG-316, .086 Semi-Rigid

uncabled receptacles, adapters ..... 250

Dummy loads ..... N/A

**Insertion Loss:** (dB maximum, tested at 1 GHz)

Straight cable connectors and adapters ..... 0.1 dB

Right angle cable connectors ..... 0.2 dB

Uncabled receptacles, dummy loads ..... N/A

**Insulation Resistance:** 10,000 megohms minimum

**Contact Resistance:** (milliohms maximum)      After  
                                                                                                 Initial      Environmental

Center contact (straight cabled connectors,  
uncabled receptacles and adapters) ..... 5.0      8.0

Center contact (right angle cabled connectors) .... 5.0      15.0

Outer contact ..... 1.0      1.5

Braid to body (gold plated connectors) ..... 1.0      N/A

Braid to body (nickel plated connectors) ..... 2.5      N/A

**RF Leakage:** (dB typical tested at 2.5 GHz)

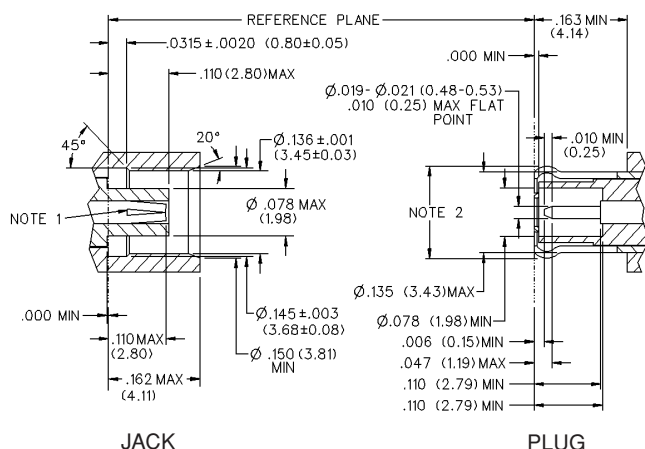
Cable connectors ..... -55 dB

Uncabled receptacles and adapters, dummy loads ..... N/A

<sup>†</sup>Avoid user injury due to misapplication. See safety advisory definitions on page 2.

\*\* All gold plated parts include a .00005" min. nickel underplate barrier layer.

### Mating Engagement for MCX Series Compatible with CECC 22220



**RF High Potential Withstanding Voltage:** (VRMS minimum, tested at 4 and 7 MHz)<sup>†</sup>

Connectors for RG178 ..... 500

Connectors for RG316 and adapters ..... 700

.086 Semi-Rigid ..... 670

Uncabled receptacles ..... 600

Dummy loads ..... N/A

**Power Rating (Dummy Load):** 0.5 watt @ +25°C, derated to 0.25 watt @ +125°C

### MECHANICAL RATINGS

**Engagement Design:** Compatible with CECC 22220, Series MCX

**Engagement Force:** 5.6 pounds maximum axial force

**Disengagement Force:** 8 pounds maximum axial force, 1 pound min.

**Contact Retention:** 2.3 pounds min. axial force (captivated contacts)  
1 inch-ounce min. torque (uncabled receptacles)

**Cable Retention:**      Axial Force\* (lbs)      Torque (in-oz)

Connectors for RG178 ..... 10      N/A

Connectors for RG316 ..... 20      N/A

Connectors for RG316DS ..... 25      N/A

Connectors for .086 Semi-Rigid ..... 30      16

\* or cable breaking strength whichever is less.

**Durability:** ..... 500 cycles minimum

### ENVIRONMENTAL RATINGS

(Meets or exceeds the applicable paragraph of MIL-C-39012)

**Operating Temperature:** Connectors ..... - 65°C to + 165°C

Dummy loads ..... - 65°C to + 125°C

**Thermal Shock:** MIL-STD-202, Method 107, Condition F

(N/A dummy loads)

**Corrosion:** MIL-STD-202, Method 101, Condition B (N/A dummy loads)

**Shock:** MIL-STD-202, Method 213, Condition B (N/A dummy loads)

**Vibration:** MIL-STD-202, Method 204, Condition B (N/A dummy loads)

**Moisture Resistance:** MIL-STD-202, Method 106 (N/A dummy loads)

### MATERIAL SPECIFICATIONS

**Bodies:** Brass per QQ-B-626 or zinc per ASTM B86-71, gold plated\*\*  
per MIL-G-45204 .00001" min or nickel plated per QQ-N-290 or  
bright tin plated

**Contacts:** Male - brass per QQ-B-626, gold plated per MIL-G-45204  
.00003" min.

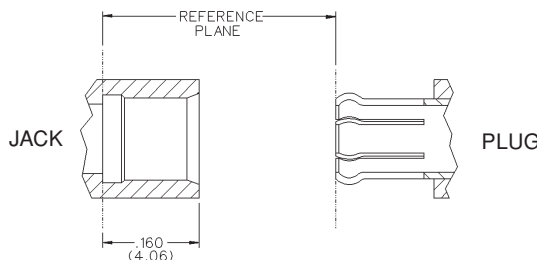
Female - beryllium copper per QQ-C-530, gold plated per MIL-G-  
45204 .00003" min.

**Insulators:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457

**Expansion Caps:** Brass per QQ-B-613, gold plated per MIL-G-45204  
.00001" min. or nickel plated per QQ-N-290

**Crimp Sleeves:** Copper per WW-T-799, gold plated per MIL-G-45204  
.00001" min. or nickel plated per QQ-N-290

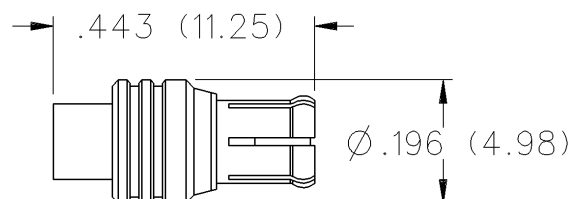
**Mounting Hardware:** Brass (nuts) per QQ-B-626 or phosphor bronze  
(lockwashers) QQ-B-750, gold plated per MIL-G-45204 .00001" min.  
or nickel plated per QQ-N-290



#### NOTES

1. ID of contact to meet VSWR mating characteristics and connector durability when mated with a dia. .019-.021 (0.48-0.53) male contact.
2. Must meet the force to engage and disengage when mated with mating part.

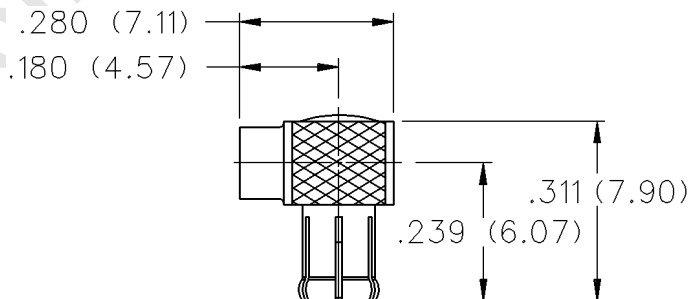
## Straight Solder Type Plug



| CABLE TYPE      | GOLD PLATED  | NICKEL PLATED |
|-----------------|--------------|---------------|
| .086 Semi-Rigid | 133-3693-001 | 133-3693-006  |

Assembly instructions page 214.

## Right Angle Solder Type Plug - Captivated Contact



| CABLE TYPE      | GOLD PLATED  | NICKEL PLATED |
|-----------------|--------------|---------------|
| .086 Semi-Rigid | 133-3693-101 | 133-3693-106  |

Assembly instructions page 215.

# MCX - 50 Ohm Connectors

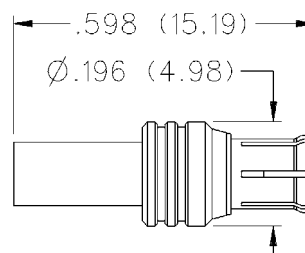
For Flexible Cable

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## Straight Crimp Type Plug - Solder or Crimp Contact



| CABLE TYPE              | GOLD PLATED  | NICKEL PLATED | CAPTIVATED CONTACT |
|-------------------------|--------------|---------------|--------------------|
| RG-178/U, 196           | 133-3402-001 | 133-3402-006  | NO                 |
| RG-188/U, 316, 161, 174 | 133-3403-001 | 133-3403-006  | YES                |
| RG-188 DS, RG-316 DS    | 133-3404-001 | 133-3404-006  | YES                |
| RG-179/U, 187           | 133-3433-001 | 133-3433-006  | YES                |

Assembly instructions page 216.  
See page 190 for Cable Assembly tools.  
Four and six connector ganged plugs  
available, see page 198.

## Right Angle Crimp Type Plug - Captivated Contact

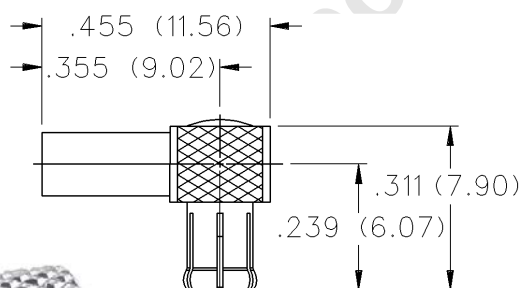


FIG. 1

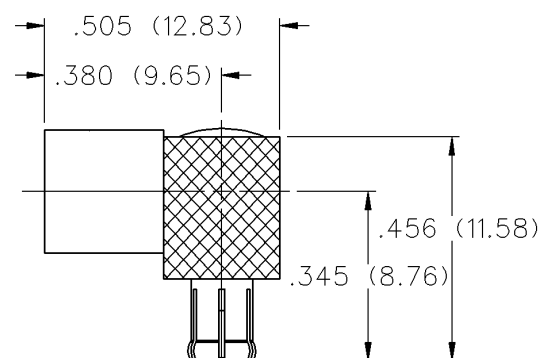
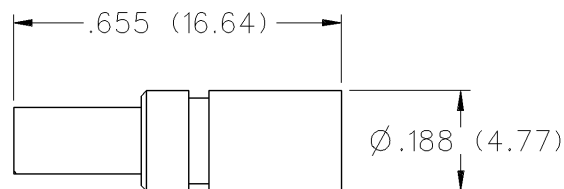


FIG. 2

| CABLE TYPE              | GOLD PLATED  | NICKEL PLATED | FIG. |
|-------------------------|--------------|---------------|------|
| RG-178/U, 196           | 133-3402-101 | 133-3402-106  | 1    |
| RG-188/U, 316, 161, 174 | 133-3403-101 | 133-3403-106  | 1    |
| RG-188 DS, RG-316 DS    | 133-3404-101 | 133-3404-106  | 1    |
| RG-58/U, 303, 141       | 133-3407-101 | 133-3407-106  | 2    |
| RG-179/U, 187           | 133-3433-101 | 133-3433-106  | 1    |

Assembly instructions page 218.  
See page 190 for Cable Assembly tools.

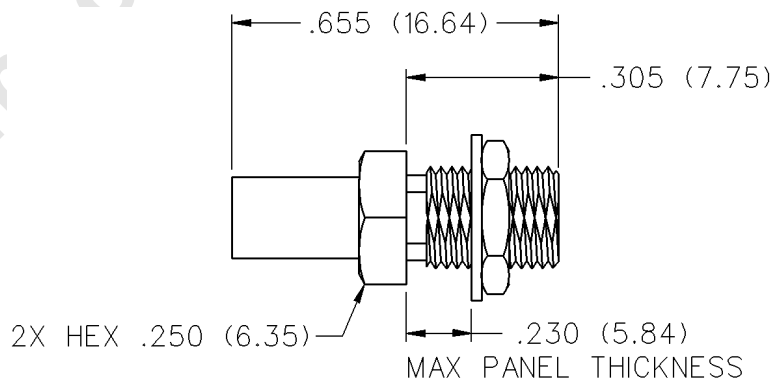
## Straight Crimp Type Jack - Solder or Crimp Contact



| CABLE TYPE                        | GOLD PLATED  | NICKEL PLATED | CAPTIVATED CONTACT |
|-----------------------------------|--------------|---------------|--------------------|
| RG-178/U, 196                     | 133-3302-001 | 133-3302-006  | NO                 |
| RG-188/U, 316, 161, 174, 179, 187 | 133-3303-001 | 133-3303-006  | YES                |
| RG-188 DS, RG-316 DS              | 133-3304-001 | 133-3304-006  | YES                |

Assembly instructions page 216.  
See page 190 for Cable Assembly tools.

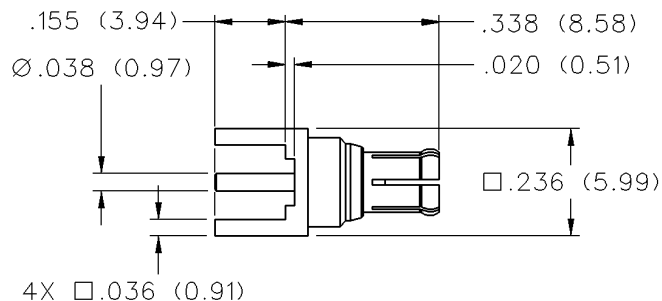
## Straight Crimp Type Bulkhead Jack - Solder or Crimp Contact



| CABLE TYPE                        | GOLD PLATED  | NICKEL PLATED | CAPTIVATED CONTACT |
|-----------------------------------|--------------|---------------|--------------------|
| RG-178/U, 196                     | 133-3302-401 | 133-3302-406  | NO                 |
| RG-188/U, 316, 161, 174, 179, 187 | 133-3303-401 | 133-3303-406  | YES                |
| RG-188 DS, RG-316 DS              | 133-3304-401 | 133-3304-406  | YES                |

Assembly instructions page 216.  
Mounting hole layout figure 5 page 201  
See page 190 for Cable Assembly tools.

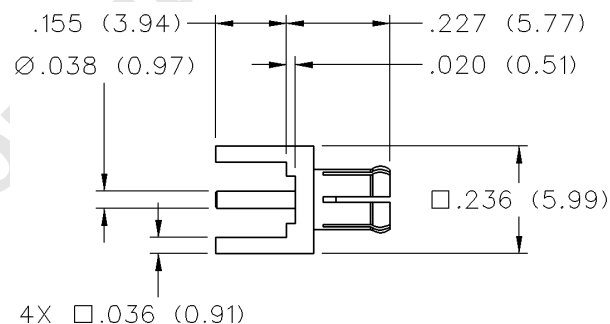
## Straight Plug Receptacle



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 133-3801-201 | 133-3801-206  |

Mounting hole layout figure 4 page 201.

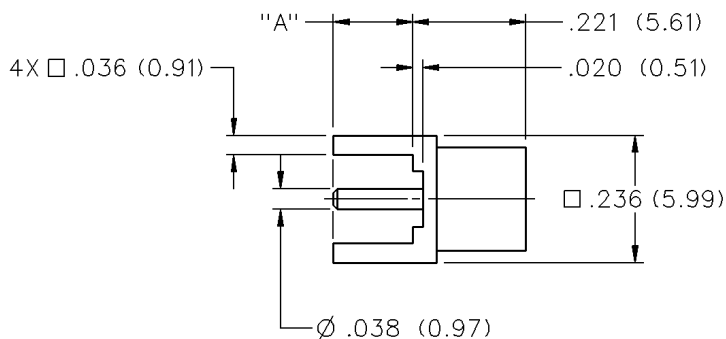
## Straight Plug Receptacle - Low Profile



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 133-3801-211 | 133-3801-216  |

Mounting hole layout figure 4 page 201.

## Straight Jack Receptacle

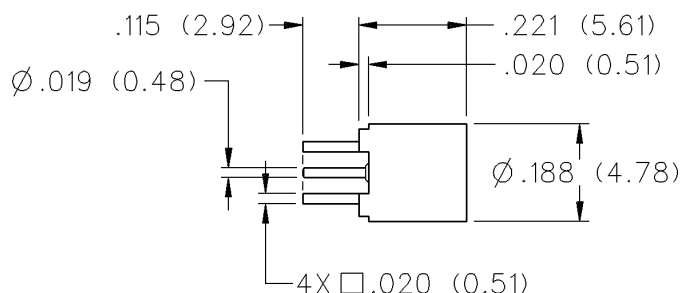


| GOLD PLATED  | NICKEL PLATED | DIMENSION "A" |
|--------------|---------------|---------------|
| 133-3701-201 | 133-3701-206  | .155 (3.94)   |
| 133-3701-211 | 133-3701-216  | .110 (2.79)   |
| 133-3701-221 | 133-3701-226  | .068 (1.73)   |

Mounting hole layout figure 4 page 201.

Four and six connector ganged receptacles available. See page 198.

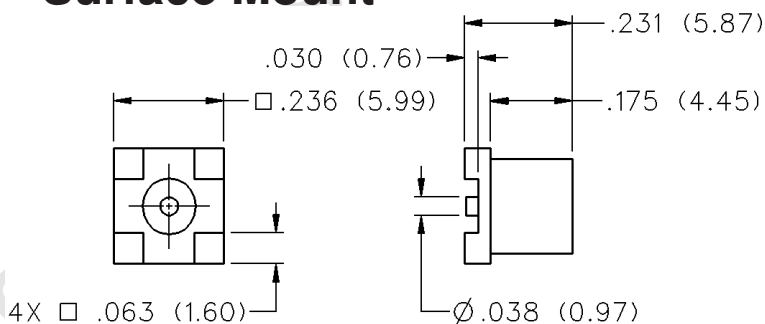
## Straight Jack Receptacle - .100" Layout



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 133-3701-231 | 133-3701-236  |

Mounting hole layout figure 14 page 202.

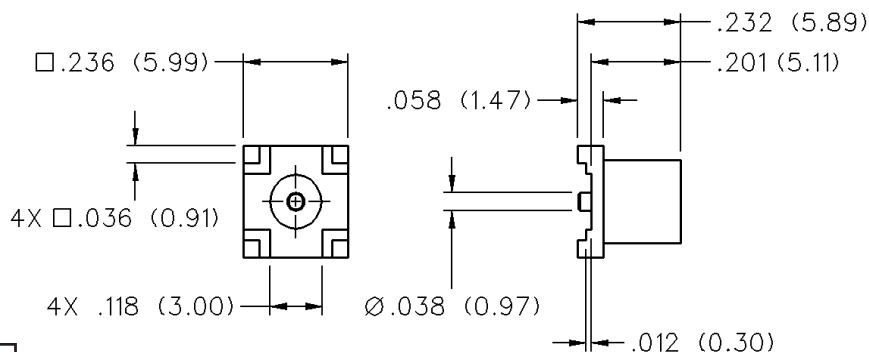
## Straight Jack Receptacle - Surface Mount



| GOLD PLATED  | PACKAGING                     |
|--------------|-------------------------------|
| 133-3711-201 | Stock                         |
| 133-3711-202 | Tape and Reel<br>750 pcs/reel |

Recommended Land Pattern figure 15 page 202.  
Tape and Reel .472 (12.0) component pitch X .630 (16.0) wide.

## Straight Jack Receptacle - Surface Mount



| GOLD PLATED  | PACKAGING                     |
|--------------|-------------------------------|
| 133-3711-211 | Stock                         |
| 133-3711-212 | Tape and Reel<br>750 pcs/reel |

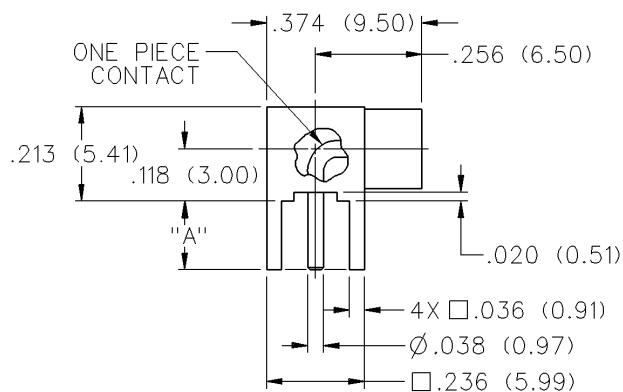
Recommended Land Pattern figure 15 page 202.  
Tape and Reel .472 (12.0) component pitch X .630 (16.0) wide.

## Right Angle Jack Receptacle



| GOLD PLATED  | NICKEL PLATED | "A"         |
|--------------|---------------|-------------|
| 133-3701-301 | 133-3701-306  | .155 (3.94) |
| 133-3701-311 | 133-3701-316  | .110 (2.79) |
| 133-3701-321 | 133-3701-326  | .068 (1.73) |

Mounting hole layout figure 4 page 201.



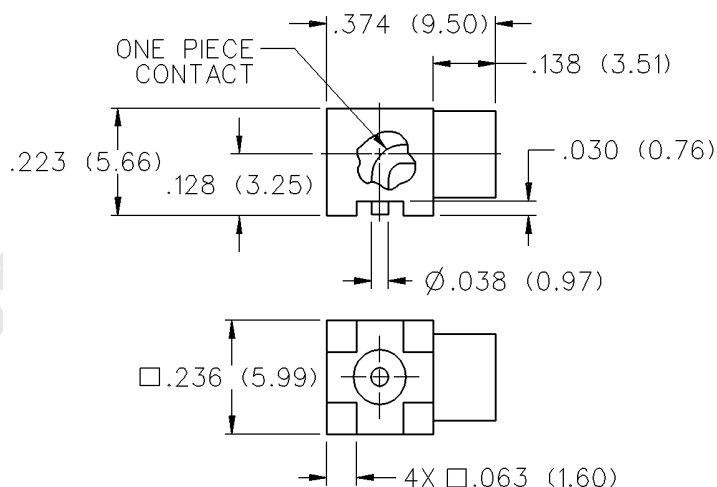
## Right Angle Jack Receptacle - Surface Mount



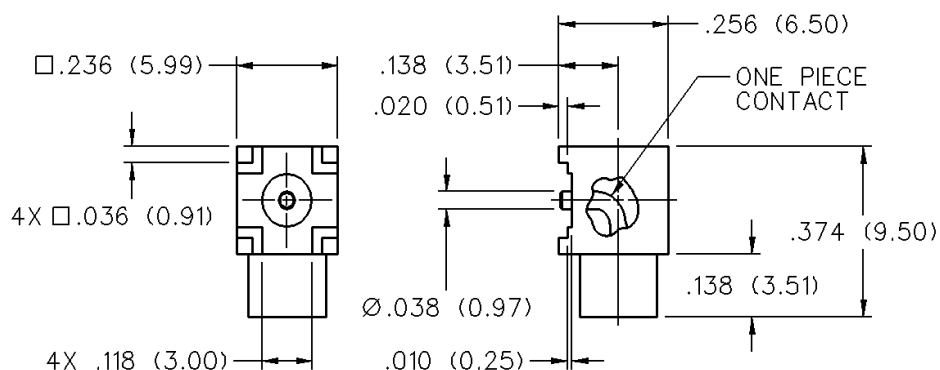
| GOLD PLATED  | PACKAGING                     |
|--------------|-------------------------------|
| 133-3711-301 | Stock                         |
| 133-3711-302 | Tape and Reel<br>750 pcs/reel |

Recommended Land Pattern figure 15 page 202.

Tape and Reel .472 (12.0) component pitch X .945 (24.0) wide.



## Right Angle Jack Receptacle - Surface Mount

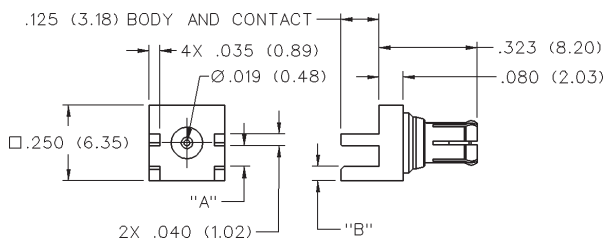
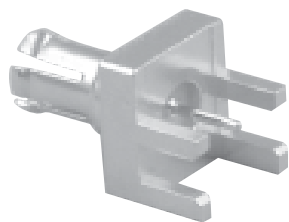


| GOLD PLATED  | PACKAGING                     |
|--------------|-------------------------------|
| 133-3711-311 | Stock                         |
| 133-3711-312 | Tape and Reel<br>750 pcs/reel |

Recommended Land Pattern figure 15 page 202.

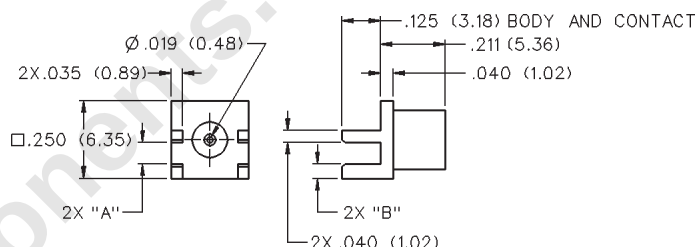
Tape and Reel .472 (12.0) component pitch X .945 (24.0) wide.

## End Launch Plug Receptacle



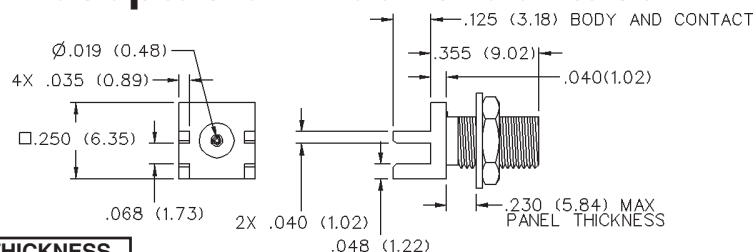
| GOLD PLATED  | NICKEL PLATED | BOARD THICKNESS | "A"         | "B"         |
|--------------|---------------|-----------------|-------------|-------------|
| 133-3801-841 | 133-3801-846  | .062 (1.57)     | .068 (1.73) | .048 (1.22) |
| 133-3801-851 | 133-3801-856  | .042 (1.07)     | .048 (1.22) | .068 (1.73) |

## End Launch Jack Receptacle - Round Contact



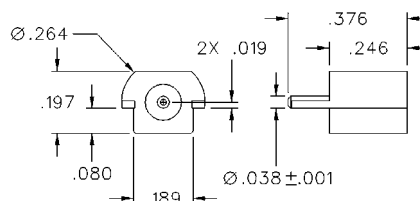
| GOLD PLATED  | NICKEL PLATED | BOARD THICKNESS | "A"         | "B"         |
|--------------|---------------|-----------------|-------------|-------------|
| 133-3701-801 | 133-3701-806  | .062 (1.57)     | .068 (1.73) | .048 (1.22) |
| 133-3701-811 | 133-3701-816  | .042 (1.07)     | .048 (1.22) | .068 (1.73) |

## End Launch Bulkhead Jack Receptacle - Round Contact



| GOLD PLATED  | NICKEL PLATED | BOARD THICKNESS |
|--------------|---------------|-----------------|
| 133-3701-821 | 133-3701-826  | .062 (1.57)     |

## Surface Mount End Launch Jack Receptacle



| GOLD PLATED  | PACKAGING OPTIONS           |
|--------------|-----------------------------|
| 133-3711-801 | Stock                       |
| 133-3711-802 | Tape and Reel 1000 pcs/reel |

Recommended Land Pattern figure 23 page 203.

# MCX - 50 Ohm Connectors

Bulkhead and Panel Mount

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## Front Mount Bulkhead Jack Receptacle

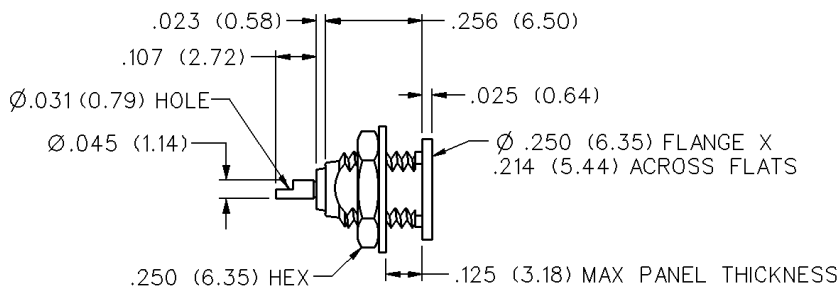


FIG. 1

| GOLD PLATED  | NICKEL PLATED | MOUNTING STYLE  | FIG. |
|--------------|---------------|-----------------|------|
| 133-3701-401 | 133-3701-406  | D Flat Threaded | 1    |
| 133-3701-411 | 133-3701-416  | Press Fit Knurl | 2    |

D Flat Threaded mounting hole layout figure 5 page 201.

Press Fit Knurl mounting hole layout figure 12 page 201.

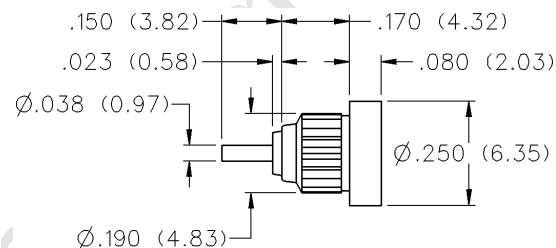
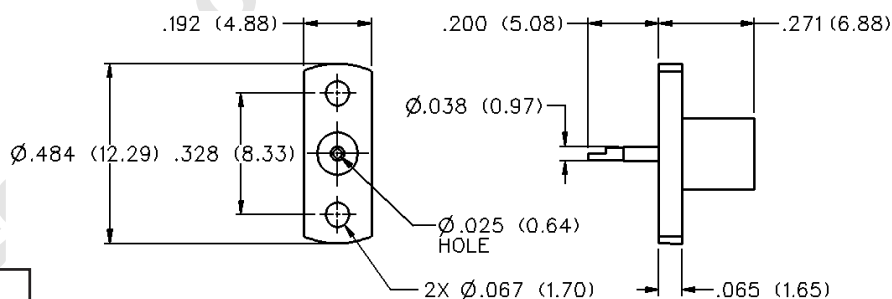


FIG. 2

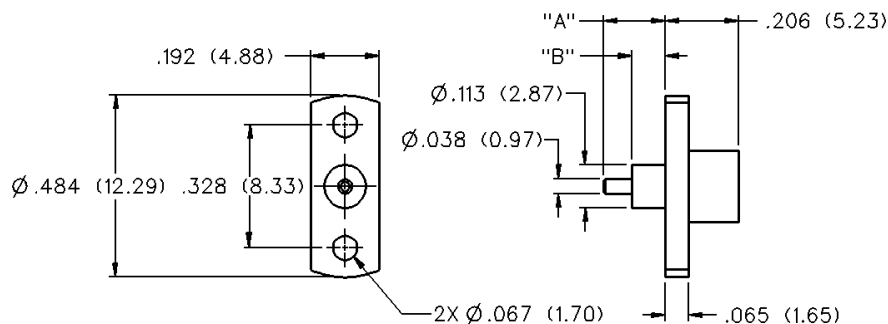
## 2-Hole Flange Mount Jack Receptacle - Flush Dielectric



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 133-3701-601 | 133-3701-606  |

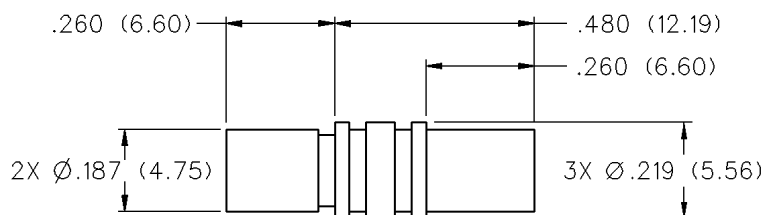


## 2-Hole Flange Mount Jack Receptacle - Extended Dielectric



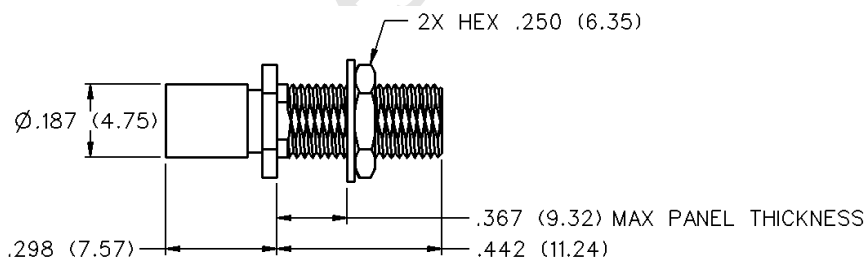
| GOLD PLATED  | NICKEL PLATED | "A"         | "B"         |
|--------------|---------------|-------------|-------------|
| 133-3701-611 | 133-3701-616  | .170 (4.32) | .092 (2.34) |
| 133-3701-621 | 133-3701-626  | .300 (7.62) | .200 (5.08) |

## Jack to Jack Adapter



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 133-3901-801 | 133-3901-806  |

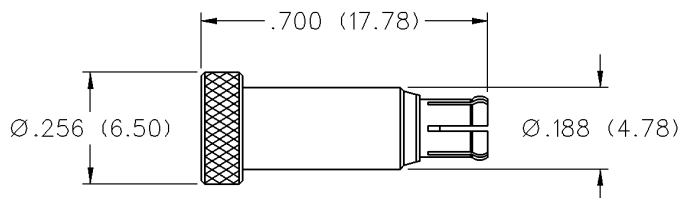
## Jack to Bulkhead Jack Adapter



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 133-3901-401 | 133-3901-406  |

Mounting hole layout figure 5 page 201.

## Plug Dummy Load



| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED | RESISTANCE |
|-------------|--------------|---------------|------------|
| 0-1 GHz     | 133-3801-801 | 133-3801-806  | 50 Ohm     |
| 0-1 GHz     | 133-3801-821 | 133-3801-826  | 75 Ohm     |

# MCX Reverse Polarity - 50 Ohm

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## Specifications

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### ELECTRICAL RATINGS

**Impedance:** 50 Ohms

**Frequency Range:** 0-6 GHz

**VSWR:** (f = GHz)

|                            | Straight Cabled Connectors | Right Angle Cabled Connectors |
|----------------------------|----------------------------|-------------------------------|
| RG-178 cable .....         | 1.17 + .04f                | 1.07 + .06f                   |
| RG-316 cable .....         | 1.13 + .04f                | 1.07 + .04f                   |
| Uncabled receptacles ..... | N/A                        |                               |

**Working Voltage:** (VRMS maximum)<sup>†</sup>

| Connectors for Cable Type         | Sea Level | 70K Feet |
|-----------------------------------|-----------|----------|
| RG-178 .....                      | 250       | 65       |
| RG-316 uncabled receptacles ..... | 335       | 85       |

**Dielectric Withstanding Voltage:** (VRMS minimum at sea level)<sup>†</sup>

|                                                  |      |
|--------------------------------------------------|------|
| Connectors for RG-178 .....                      | 750  |
| Connectors for RG-316 uncabled receptacles ..... | 1000 |

**Corona Level:** (Volts minimum at 70,000 feet)<sup>†</sup>

|                                                  |     |
|--------------------------------------------------|-----|
| Connectors for RG-178 .....                      | 190 |
| Connectors for RG-316 uncabled receptacles ..... | 250 |

**Insertion Loss:** (dB maximum, tested at 1 GHz)

|                                    |        |
|------------------------------------|--------|
| Straight cable connectors .....    | 0.1 dB |
| Right angle cable connectors ..... | 0.2 dB |
| Uncabled receptacles .....         | N/A    |

**Insulation Resistance:** 10000 megohms minimum

**Contact Resistance:** (milliohms maximum)

|                                                                         | Initial | After Environmental |
|-------------------------------------------------------------------------|---------|---------------------|
| Center contact (straight cabled connectors, uncabled receptacles) ..... | 5.0     | 8.0                 |
| Center contact (right angle cabled connectors) ....                     | 5.0     | 15.0                |
| Outer contact .....                                                     | 1.0     | 1.5                 |
| Braid to body (gold plated connectors) .....                            | 1.0     | N/A                 |
| Braid to body (nickel plated connectors) .....                          | 2.5     | N/A                 |

**RF Leakage:** (dB typical tested at 2.5 GHz)

|                            |        |
|----------------------------|--------|
| Cable connectors .....     | -55 dB |
| Uncabled receptacles ..... | N/A    |

**RF High Potential Withstanding Voltage:** (VRMS minimum, tested at 4 and 7 MHz)<sup>†</sup>

|                             |     |
|-----------------------------|-----|
| Connectors for RG-178 ..... | 500 |
| Connectors for RG-316 ..... | 700 |
| Uncabled receptacles .....  | 600 |

### MECHANICAL RATINGS

**Engagement Force:** 5.6 pounds maximum axial force

**Disengagement Force:** 8 pounds maximum axial force, 1.0 pound min.

**Contact Retention:** 2.3 lbs. min. axial force (captivated contacts)  
1 inch-ounce min. torque (uncabled receptacles)

| Cable Retention:              | Axial Force* (lbs) | Torque (in-oz) |
|-------------------------------|--------------------|----------------|
| Connectors for RG-178 .....   | 10                 | N/A            |
| Connectors for RG-316 .....   | 20                 | N/A            |
| Connectors for RG-316DS ..... | 25                 | N/A            |

\* or cable breaking strength whichever is less.

**Durability:** ..... 500 cycles minimum

### ENVIRONMENTAL RATINGS

(Meets or exceeds the applicable paragraph of MIL-C-39012)

**Temperature Range:** - 65°C to + 165°C

**Thermal Shock:** MIL-STD-202, Method 107, Condition F

**Corrosion:** MIL-STD-202, Method 101, Condition B

**Shock:** MIL-STD-202, Method 213, Condition B

**Vibration:** MIL-STD-202, Method 204, Condition B

**Moisture Resistance:** MIL-STD-202, Method 106

### MATERIAL SPECIFICATIONS

**Bodies:** Brass per QQ-B-626 or zinc per ASTM B86-71, gold plated\*\* per MIL-G-45204 .00001" min or nickel plated per QQ-N-290

**Contacts:** Male - brass per QQ-B-626, gold plated per MIL-G-45204 .00003" min.

Female - beryllium copper per QQ-C-530, gold plated per MIL-G-45204 .00003" min.

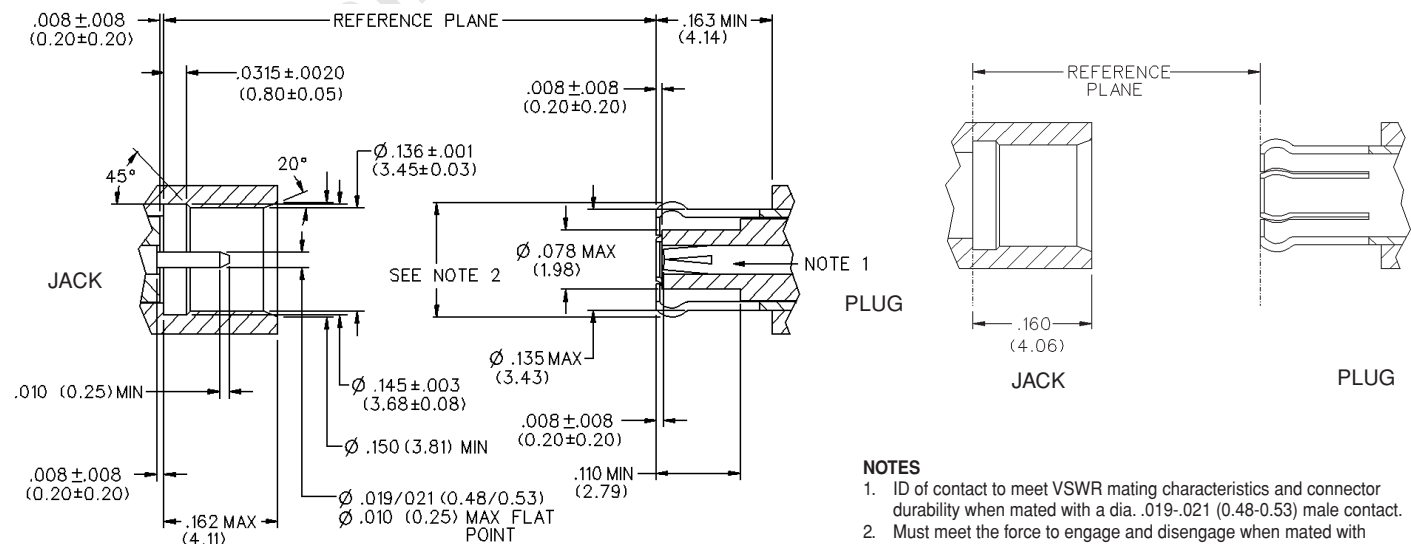
**Insulators:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457

**Expansion Caps:** Brass per QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Crimp Sleeves:** Copper per WW-T-799, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Mounting Hardware:** Brass (nuts) per QQ-B-626 or phosphor bronze (lockwashers) QQ-B-750, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

### Mating Engagement for MCX Reverse Polarity Series

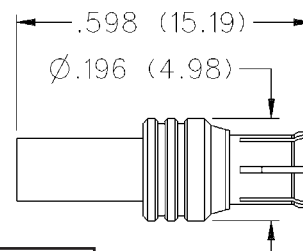


<sup>†</sup>Avoid user injury due to misapplication.

See safety advisory definitions inside front cover.

\*\* All gold plated parts include a .00005" min. nickel underplate barrier layer.

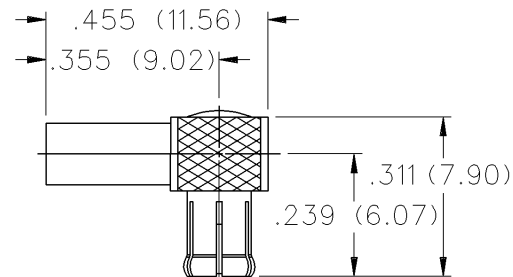
## Straight Crimp Type Plug - Solder or Crimp Contact



| CABLE TYPE              | GOLD PLATED  | NICKEL PLATED | CAPTIVATED CONTACT |
|-------------------------|--------------|---------------|--------------------|
| RG-178/U, 196           | 133-5402-001 | 133-5402-006  | No                 |
| RG-316/U, 188, 161, 174 | 133-5403-001 | 133-5403-006  | Yes                |
| RG-316 DS, 188 DS       | 133-5404-001 | 133-5404-006  | Yes                |

Assembly instructions page 216.

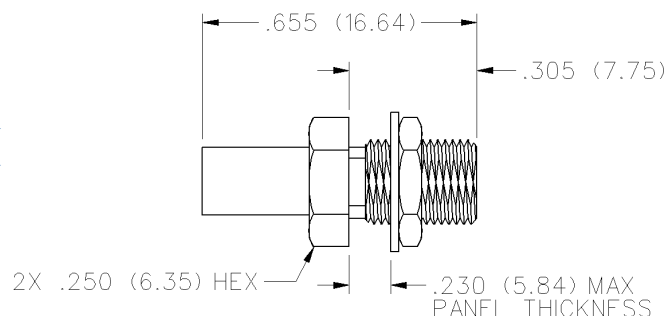
## Right Angle Crimp Type Plug - Captivated Contact



| CABLE TYPE              | GOLD PLATED  | NICKEL PLATED |
|-------------------------|--------------|---------------|
| RG-178/U, 196           | 133-5402-101 | 133-5402-106  |
| RG-316/U, 188, 161, 174 | 133-5403-101 | 133-5403-106  |
| RG-316 DS, 188 DS       | 133-5404-101 | 133-5404-106  |

Assembly instructions page 218.

## Bulkhead Jack Receptacle - Solder or Crimp Contact



| CABLE TYPE              | GOLD PLATED  | NICKEL PLATED | CAPTIVATED CONTACT |
|-------------------------|--------------|---------------|--------------------|
| RG-178/U, 196           | 133-5302-401 | 133-5302-406  | No                 |
| RG-316/U, 188, 161, 174 | 133-5303-401 | 133-5303-406  | Yes                |
| RG-316 DS, 188 DS       | 133-5304-401 | 133-5304-406  | Yes                |

Mounting Hole layout figure 5 page 201. Assembly instructions page 216.

# MCX Reverse Polarity - 50 Ohm

PC Mount

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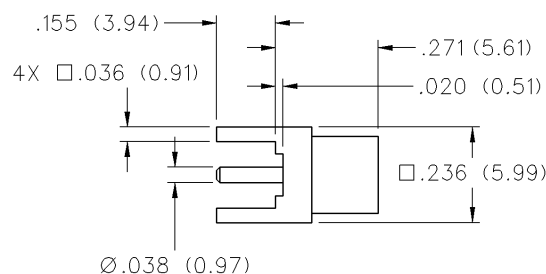
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## Straight Jack Receptacle



Reverse  
Polarity



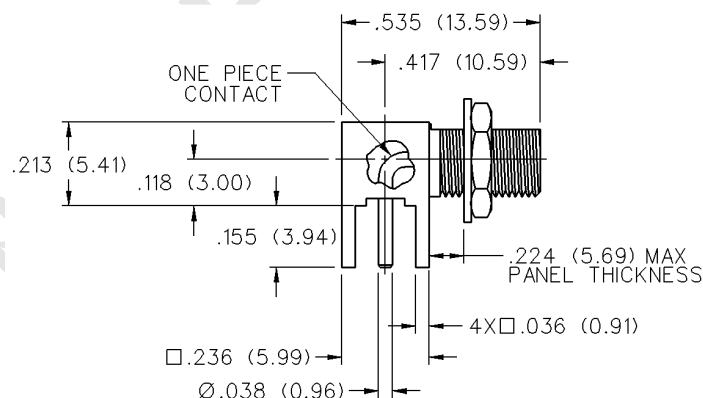
| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 133-5701-201 | 133-5701-206  |

Mounting Hole layout figure 4 page 201.

## Right Angle Bulkhead Jack Receptacle



Reverse  
Polarity



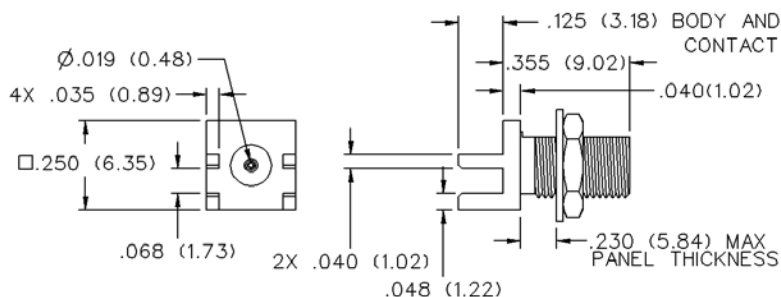
| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 133-5701-501 | 133-5701-506  |

Mounting Hole layout figures 4 and 5 page 201.

## End Launch Bulkhead Jack Receptacle - Round Contact



Reverse  
Polarity



| GOLD PLATED  | NICKEL PLATED | BOARD THICKNESS |
|--------------|---------------|-----------------|
| 133-5701-801 | 133-5701-806  | .062 (1.57)     |

**ELECTRICAL RATINGS****Impedance:** 75 Ohms**Frequency Range:** 0-6 GHz**VSWR:** (f = GHz)

|                                    | Straight Cabled Connectors | Right Angle Cabled Connectors |
|------------------------------------|----------------------------|-------------------------------|
| RG-179 cable .....                 | 1.13 + .04f                | 1.07 + .04f                   |
| In-series adapters .....           | 1.07 + .03f                |                               |
| Between-series adapters, loads ... | 1.05 + .01f                |                               |
| Matching pad .....                 | 1.05 + .05f                |                               |
| Uncabled receptacles .....         |                            | N/A                           |

**Working Voltage:** (VRMS maximum)†

| Connectors for Cable Type            | Sea Level | 70K Feet |
|--------------------------------------|-----------|----------|
| RG-179 .....                         | 335       | 85       |
| Uncabled receptacles, adapters ..... | 335       | 85       |
| Loads, matching pad .....            | N/A       |          |

**Dielectric Withstanding Voltage:** (VRMS minimum at sea level)†

|                                      |      |
|--------------------------------------|------|
| Connectors for RG-179 .....          | 1000 |
| Uncabled receptacles, adapters ..... | 1000 |
| Loads, matching pad .....            | N/A  |

**Corona Level:** (Volts minimum at 70,000 feet)†

|                                      |     |
|--------------------------------------|-----|
| Connectors for RG-179 .....          | 250 |
| Uncabled receptacles, adapters ..... | 250 |
| Loads, matching pad .....            | N/A |

**Insertion Loss:** (dB maximum, tested at 1 GHz)

|                                                    |        |
|----------------------------------------------------|--------|
| Straight cable connectors .....                    | 0.1 dB |
| Right angle cable connectors .....                 | 0.2 dB |
| Uncabled receptacles, adapters, matching pad ..... | N/A    |

**Insulation Resistance:** 10,000 megohms minimum**Contact Resistance:** (milliohms maximum)

|                                                                         | Initial | After Environmental |
|-------------------------------------------------------------------------|---------|---------------------|
| Center contact (straight cabled connectors, uncabled receptacles) ..... | 5.0     | 8.0                 |
| Center contact (right angle cabled connectors, adapters) .....          | 10.0    | 15.0                |
| Center contact (loads, matching pads) .....                             | N/A     |                     |
| Outer contact .....                                                     | 1.0     | 1.5                 |
| Braid to body (gold plated connectors) .....                            | 1.0     | N/A                 |

**RF Leakage:** (dB typical tested at 2.5 GHz)

|                                                            |                |
|------------------------------------------------------------|----------------|
| Cable connectors .....                                     | -55 dB typical |
| Uncabled receptacles, adapters, loads, matching pads ..... | N/A            |

**RF High Potential Withstanding Voltage:**

(VRMS minimum, tested at 4 and 7 MHz)†

|                                      |     |
|--------------------------------------|-----|
| Connectors for RG-179 .....          | 700 |
| Uncabled receptacles, adapters ..... | 600 |
| Loads, matching pad .....            | N/A |

**Power Rating:** (Loads and matching pad only) 1.0 watt at +25°C derated linearly to 0.5 watt at +125°C**MECHANICAL RATINGS****Engagement Design:** Compatible with CECC 22220, Series MCX 50 Ohm**Engagement Force:** 5.6 pounds maximum axial force**Disengagement Force:** 8 pounds maximum axial force, 1 pound min.**Contact Retention:** 2.3 pounds min. axial force (captivated contacts)  
1 inch-ounce min. torque (uncabled receptacles)

| Cable Retention:              | Axial Force* (lbs) | Torque (in-oz) |
|-------------------------------|--------------------|----------------|
| Connectors for RG-179 .....   | 20                 | N/A            |
| Connectors for RG179 DS ..... | 25                 | N/A            |

\*or cable breaking strength whichever is less

**Durability:** 500 cycles minimum**ENVIRONMENTAL RATINGS**

(Meets or exceeds the applicable paragraph of MIL-C-39012)

**Temperature Range:** All connectors: - 65°C to + 165°C

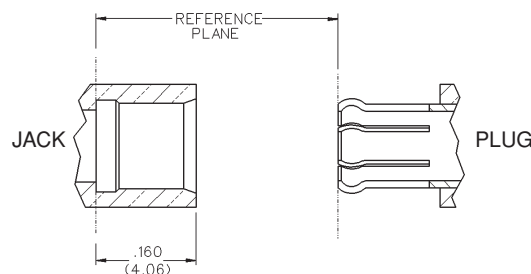
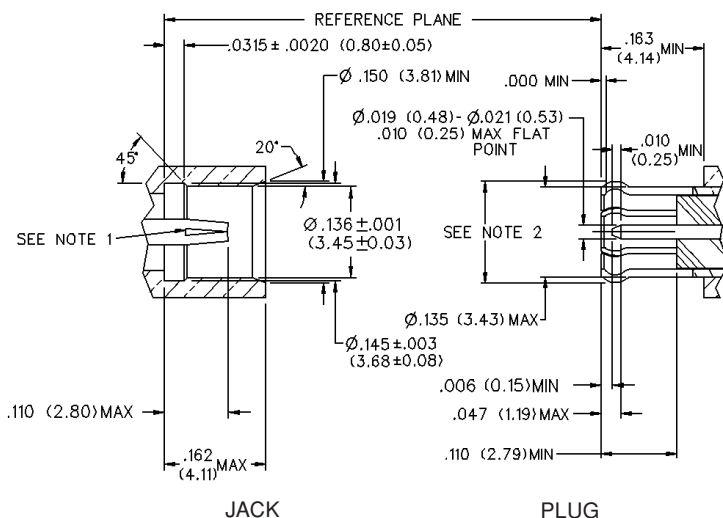
Loads and matching pads: - 65°C to + 125°C

**Thermal Shock:** MIL-STD-202, Method 107, Condition F**Temperature Coefficient:** Loads and matching pad: +/- 300ppm/°C**Corrosion:** MIL-STD-202, Method 101, Condition B**Shock:** MIL-STD-202, Method 213, Condition B**Vibration:** MIL-STD-202, Method 204, Condition B**Moisture Resistance:** MIL-STD-202, Method 106**MATERIAL SPECIFICATIONS****Bodies:** Brass per QQ-B-626, gold plated\*\* per MIL-G-45204 .00001" min. Interface spring - beryllium copper per QQ-C-530, gold plated per MIL-G-45204 .00003" min.**Contacts:** Male - brass per QQ-B-626 or beryllium copper per QQ-C-530, gold plated per MIL-G-45204 .00003" min.  
Female - beryllium copper per QQ-C-530, gold plated per MIL-G-45204 .00003" min.**Insulators:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457**Expansion Caps:** Brass per QQ-B-613, gold plated per MIL-G-45204 .00001" min.**Crimp Sleeves:** Copper per WW-T-799, gold plated per MIL-G-45204 .00001" min.**Mounting Hardware:** Brass (nuts) per QQ-B-626 or phosphor bronze (lockwashers) QQ-B-750, gold plated per MIL-G-45204 .00001" min.

†Avoid user injury due to misapplication.

See safety advisory definitions inside front cover.

\*\* All gold plated parts include a .00005" min. nickel underplate barrier layer.

**Mating Engagement for 75 Ohm MCX Series (Intermutable with CECC 22220 50 Ohm MCX)****NOTES**

- ID of contact to meet VSWR mating characteristics and connector durability when mated with a dia. .019-.021 (0.48-0.53) male contact.
- Must meet the force to engage and disengage when mated with mating part.
- Interface shall intermate with MCX 50 Ohm interface per CECC 22220.

# MCX - 75 Ohm Connectors

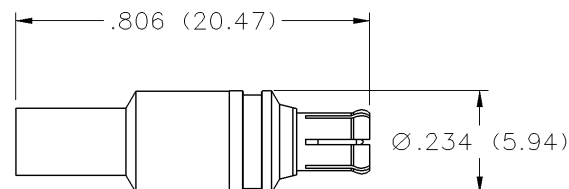
For Flexible Cable

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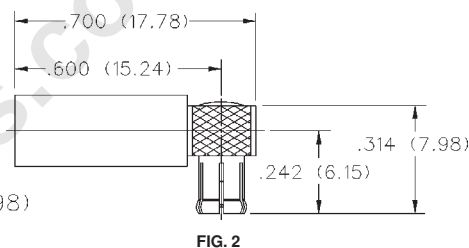
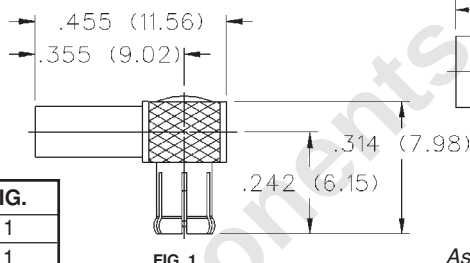
## Straight Crimp Type Plug - Solder or Crimp Captivated Contact



| CABLE TYPE  | GOLD PLATED  |
|-------------|--------------|
| RG-179      | 133-8433-001 |
| RG-179 DS   | 133-8434-001 |
| Belden 735A | 133-8445-001 |

Assembly instructions page 217.  
See page 190 for Cable Assembly Tools.

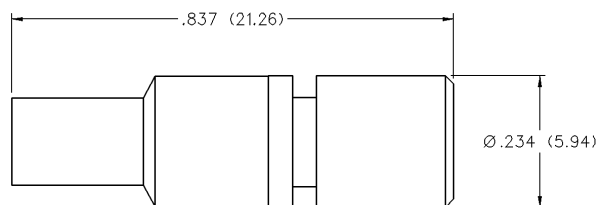
## Right Angle Crimp Type Plug - Captivated Contact



| CABLE TYPE  | GOLD PLATED  | FIG. |
|-------------|--------------|------|
| RG-179      | 133-8433-101 | 1    |
| RG-179 DS   | 133-8434-101 | 1    |
| Belden 735A | 133-8445-101 | 2    |

Assembly instructions page 219.  
See page 190 for Cable Assembly Tools.

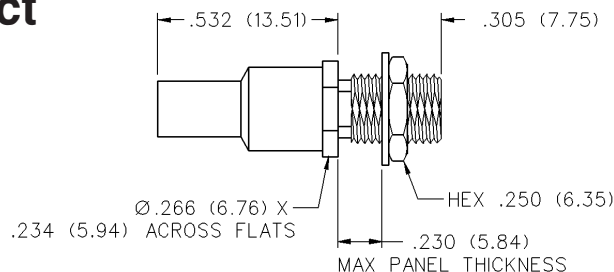
## Straight Crimp Type Jack - Solder or Crimp Captivated Contact



| CABLE TYPE | GOLD PLATED  |
|------------|--------------|
| RG-179     | 133-8333-001 |
| RG-179DS   | 133-8334-001 |

Assembly instructions page 217.  
See page 190 for Cable Assembly Tools.

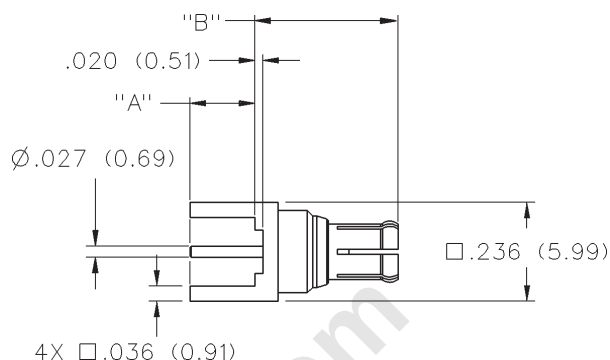
## Straight Crimp Type Bulkhead Jack - Solder or Crimp Captivated Contact



| CABLE TYPE | GOLD PLATED  |
|------------|--------------|
| RG-179     | 133-8333-401 |
| RG-179 DS  | 133-8334-401 |

Assembly instructions page 217.  
See page 190 for Cable Assembly Tools.  
Mounting hole layout figure 5 page 201.

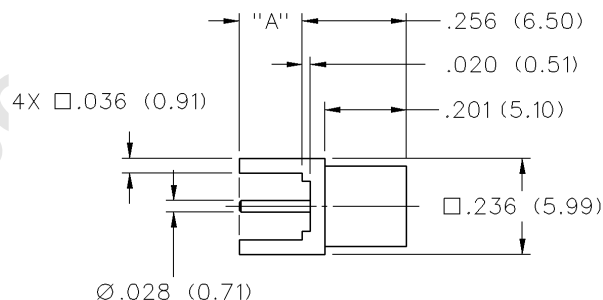
## Straight Plug Receptacle



| GOLD PLATED  | "A"         | "B"          |
|--------------|-------------|--------------|
| 133-8801-201 | .155 (3.80) | .343 (8.71)  |
| 133-8801-211 | .110 (2.70) | .343 (8.71)  |
| 133-8801-221 | .155 (3.80) | .510 (12.95) |

Mounting hole layout figure 22 page 203.

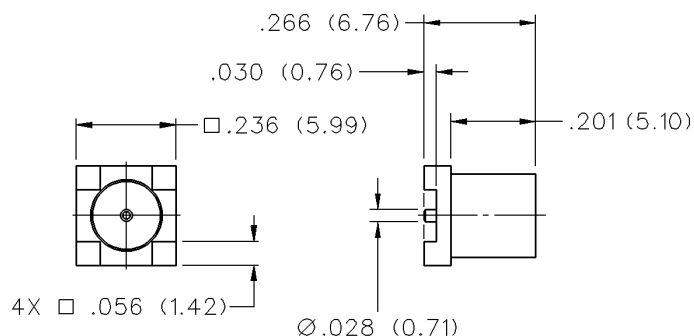
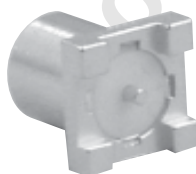
## Straight Jack Receptacle



| GOLD PLATED  | "A"         |
|--------------|-------------|
| 133-8701-201 | .155 (3.80) |
| 133-8701-211 | .100 (2.54) |

Mounting hole layout figure 22 page 203.

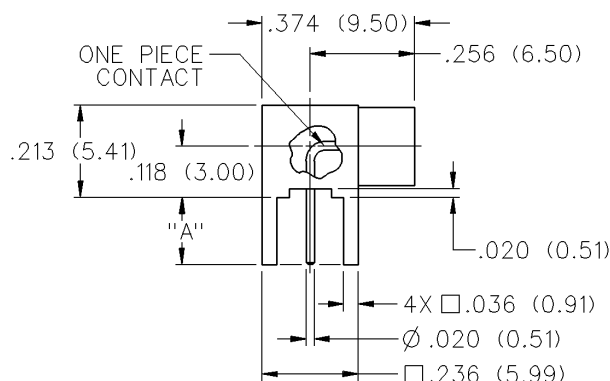
## Surface Mount Jack Receptacle



| GOLD PLATED  | PACKAGING                     |
|--------------|-------------------------------|
| 133-8711-201 | Bulk Packs                    |
| 133-8711-202 | Tape and Reel<br>750 pcs/reel |

Recommended Land Pattern figure 13 page 202.

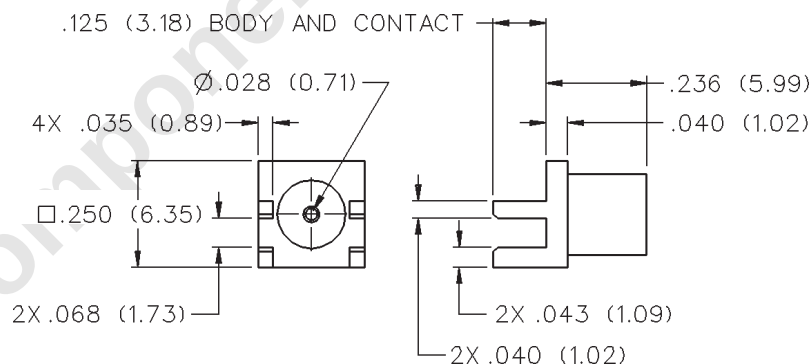
## Right Angle Jack Receptacle



| GOLD PLATED  | "A"         |
|--------------|-------------|
| 133-8701-301 | .155 (3.80) |
| 133-8701-311 | .110 (2.70) |

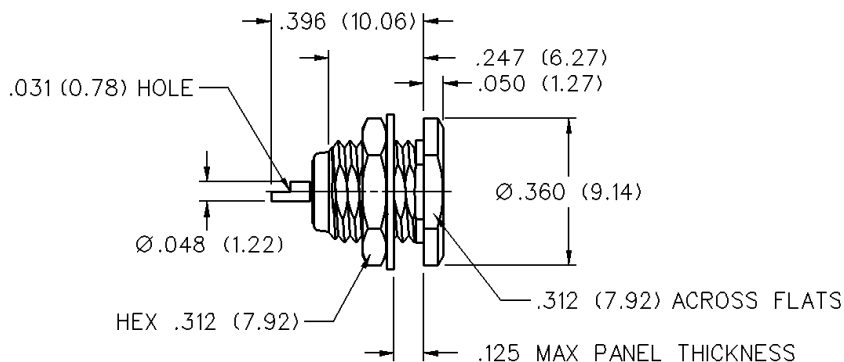
Mounting hole layout figure 3 page 201.

## End Launch Jack Receptacle



| GOLD PLATED  |
|--------------|
| 133-8701-801 |

## Bulkhead Jack Receptacle



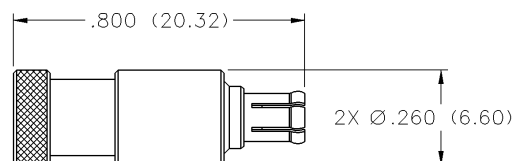
| GOLD PLATED  |
|--------------|
| 133-8701-401 |

Mounting hole layout figure 1 page 201.

## Plug Precision Load



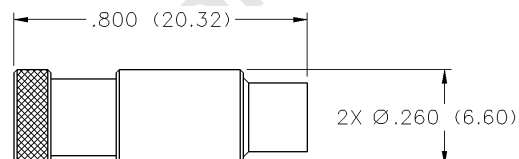
| VSWR & FREQ. RANGE        | GOLD PLATED  |
|---------------------------|--------------|
| 1.05 + .01f (GHz) 0-6 GHz | 133-8801-831 |



## Jack Precision Load



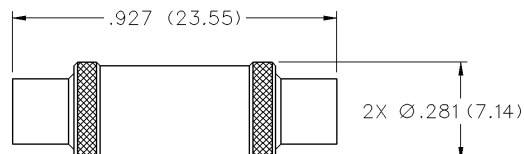
| VSWR & FREQ. RANGE        | GOLD PLATED  |
|---------------------------|--------------|
| 1.05 + .01f (GHz) 0-6 GHz | 133-8701-831 |



## Jack to Jack Adapter



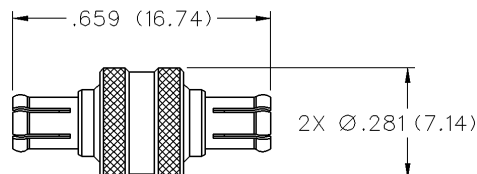
| GOLD PLATED  |
|--------------|
| 133-8901-801 |



## Plug to Plug Adapter



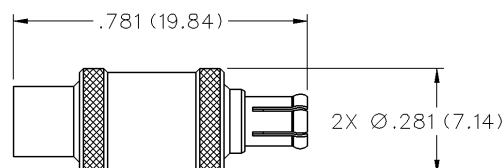
| GOLD PLATED  |
|--------------|
| 133-8901-811 |



## Jack to Plug Adapter



| GOLD PLATED  |
|--------------|
| 133-8901-821 |



# MCX - 75 Ohm Connectors

Between-Series Adapters

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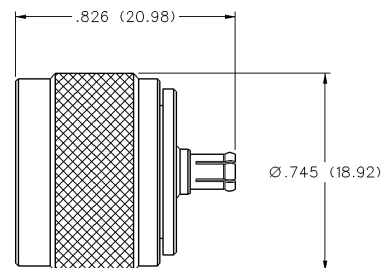
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## 75 Ohm Type N Plug to 75 Ohm MCX Plug Adapter



**STAINLESS STEEL PASSIVATED**  
134-1068-001

*Mating Engagement for  
75 Ohm N Series see page 113.*

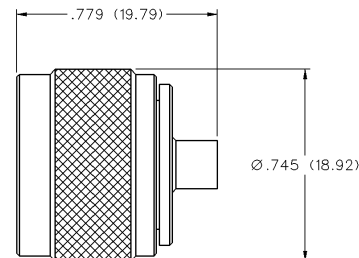


## 75 Ohm Type N Plug to 75 Ohm MCX Jack Adapter



**STAINLESS STEEL PASSIVATED**  
134-1068-011

*Mating Engagement for  
75 Ohm N Series see page 113.*

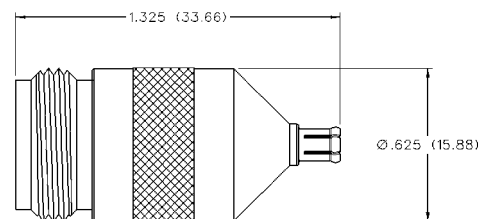


## 75 Ohm Type N Jack to 75 Ohm MCX Plug Adapter



**STAINLESS STEEL PASSIVATED**  
134-1068-021

*Mating Engagement for  
75 Ohm N Series see page 113.*

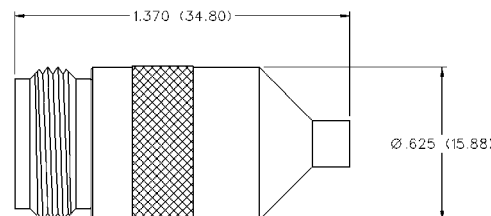


## 75 Ohm Type N Jack to 75 Ohm MCX Jack Adapter



**STAINLESS STEEL PASSIVATED**  
134-1068-031

*Mating Engagement for  
75 Ohm N Series see page 113.*





## Non-Magnetic Connectors

The Johnson line of coaxial connectors utilizes innovative materials and is designed to provide Mil-Spec performance at a commercial price. Now we offer our non-magnetic connectors as a catalog and distributor item.

We have provided custom non-magnetic connectors to the Magnetic Resonance (MR) industry for years. Connector design is derived from many years of working with the MR companies.

The materials and finishes of our connectors meet the stringent limits of image and magnetic field distortion in an MR environment. The connector electrical performance exceeds the frequency requirements of the Receive/Transmit RF Coils in MR equipment.

Copper alloys of the body and contact parts are designed to provide unity, permeability and control magnetic susceptibility. Gold finishes are altered to eliminate magnetic barrier layers and provide excellent corrosion resistance and wear characteristics.

We continue to work with our customers to develop new solutions as the MR industry transitions to high field solutions and improved image resolution at greater physical depths.

# MCX Non-Magnetic RF Connectors

For Flexible Cable

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## ELECTRICAL RATINGS

**Impedance:** 50 Ohms

**Frequency Range:** 0-6 GHz

**VSWR:** (f = GHz)

|                      | Straight Cabled Connectors | Right Angle Cabled Connectors |
|----------------------|----------------------------|-------------------------------|
| RG-316 cable         | 1.13 + .04f                | 1.07 + .04f                   |
| Uncabled receptacles |                            | N/A                           |

**Working Voltage:** (VRMS maximum)\*

| Connectors for Cable Type | Sea Level | 70K Feet |
|---------------------------|-----------|----------|
| RG-316                    | 335       | 85       |

**Dielectric Withstanding Voltage:** (VRMS minimum at sea level)

|                                             |      |
|---------------------------------------------|------|
| Connectors for RG-316, uncabled receptacles | 1000 |
|---------------------------------------------|------|

**Corona Level:** (Volts minimum at 70,000 feet)

|                                             |     |
|---------------------------------------------|-----|
| Connectors for RG-316, uncabled receptacles | 250 |
|---------------------------------------------|-----|

**Insertion Loss:** (dB maximum, tested at 1 GHz)

|                              |        |
|------------------------------|--------|
| Straight cable connectors    | 0.1 dB |
| Right angle cable connectors | 0.2 dB |
| Uncabled receptacles         | N/A    |

**Insulation Resistance:** 10,000 megohms minimum

**Contact Resistance:** (milliohms maximum)

|                                                                   | Initial | After Environmental |
|-------------------------------------------------------------------|---------|---------------------|
| Center contact (straight cabled connectors, uncabled receptacles) | 5.0     | 8.0                 |
| Center contact (right angle cabled connectors)                    | 5.0     | 15.0                |
| Outer contact                                                     | 1.0     | 1.5                 |
| Braid to body                                                     | 1.0     | N/A                 |

\*Avoid user injury due to misapplication.

See safety advisory definitions inside front cover.

**RF Leakage:** (dB typical tested at 2.5 GHz)

|                      |     |
|----------------------|-----|
| Cable connectors     | -55 |
| Uncabled receptacles | N/A |

**RF High Potential Withstanding Voltage:**

(VRMS minimum, tested at 4 and 7 MHz)

|                      |     |
|----------------------|-----|
| Cabled connectors    | 700 |
| Uncabled receptacles | 600 |

## MECHANICAL RATINGS

**Engagement Design:** Compatible with CECC 22220, Series MCX

**Engagement Force:** 5.6 pounds maximum axial force

**Disengagement Force:** 8 pounds maximum axial force, 1 pound min.

**Contact Retention:** 2.3 pounds min. axial force (captivated contacts)

1 inch-ounce min. torque (uncabled receptacles)

| Cable Retention:        | Axial Force* (lbs) | Torque (in-oz) |
|-------------------------|--------------------|----------------|
| Connectors for RG316    | 20                 | N/A            |
| Connectors for RG316 DS | 25                 | N/A            |

\* or cable breaking strength whichever is less.

**Durability:** 500 cycles minimum

## ENVIRONMENTAL RATINGS

(Meets or exceeds the applicable paragraph of MIL-PRF-39012)

**Temperature Range:** -65°C to +165°C

**Thermal Shock:** MIL-STD-202, Method 107, Condition F

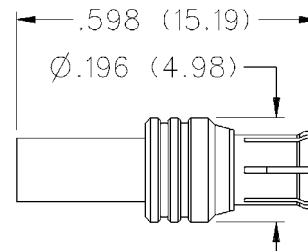
**Corrosion:** MIL-STD-202, Method 101, Condition B

**Shock:** MIL-STD-202, Method 213, Condition B

**Vibration:** MIL-STD-202, Method 204, Condition B

**Moisture Resistance:** MIL-STD-202, Method 106

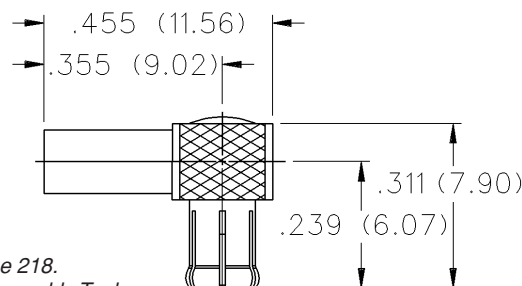
## Straight Crimp Type Plug - Solder or Crimp Contact - Captivated Contact



| CABLE TYPE         | GOLD PLATED  |
|--------------------|--------------|
| RG-316/U, 188, 174 | 133-9403-001 |
| RG-316 DS, 188 DS  | 133-9404-001 |

Assembly Instructions page 216.  
See page 190 for Cable Assembly Tools.

## Right Angle Crimp Type Plug - Captivated Contact



| CABLE TYPE         | GOLD PLATED  |
|--------------------|--------------|
| RG-316/U, 188, 174 | 133-9403-101 |
| RG-316 DS, 188 DS  | 133-9404-101 |

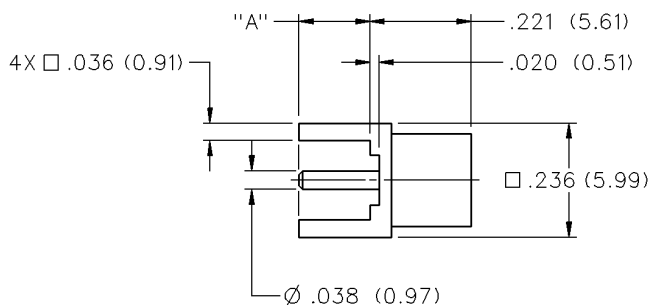
Assembly Instructions page 218.  
See page 190 for Cable Assembly Tools.

## Straight Jack Receptacle



| GOLD PLATED  | "A"         |
|--------------|-------------|
| 133-9701-201 | .155 (3.94) |
| 133-9701-211 | .110 (2.79) |

Mounting hole layout figure 4 page 201.

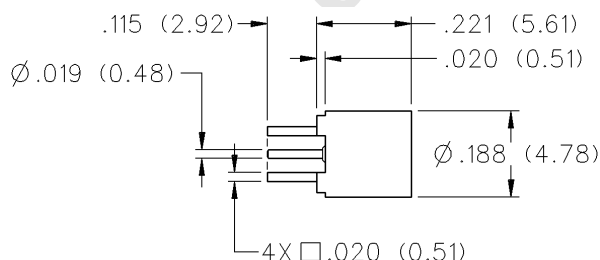


## Straight Jack Receptacle - .100" Layout



| GOLD PLATED  |
|--------------|
| 133-9701-231 |

Mounting hole layout figure 14 page 202.

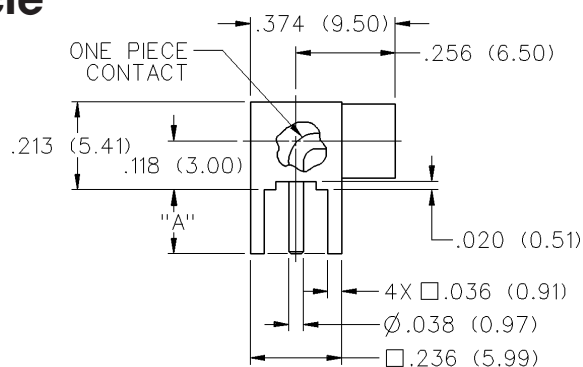


## Right Angle Jack Receptacle

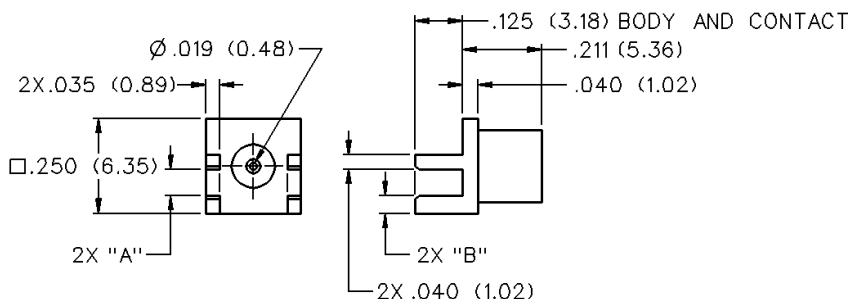


| GOLD PLATED  | "A"         |
|--------------|-------------|
| 133-9701-301 | .155 (3.94) |
| 133-9701-311 | .110 (2.79) |

Mounting hole layout figure 4 page 201.



## End Launch Jack Receptacle - Round Contact



| GOLD PLATED  | BOARD THICKNESS | "A"         | "B"         |
|--------------|-----------------|-------------|-------------|
| 133-9701-801 | .062 (1.57)     | .068 (1.73) | .048 (1.22) |

# SMK and SMA 50 Ohm Connectors

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## SMA Connectors - 50 Ohm

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## Johnson SMK (2.92mm) Connectors

The Johnson SMK Connector provides an excellent solution for demanding applications requiring high frequency transmission. Although similar to the SMA interface, a smaller internal body diameter (2.92mm) and air dielectric provide a higher cutoff frequency and other key advantages:

- Precision manufacturing allows superior electrical performance to 40 GHz.
- Female contacts have a unique three-slot construction, which enhances connectivity by creating a more rugged connector while reducing the chance of intermittent connections.
- Precise assembly tooling assures excellent, repeatable contact and support bead location on cabled connectors.
- Connector mating interface per MIL-STD-348
- Mating interface control provides consistent electrical performance.
- The plug connector VSWR is 1.20 Max to 40 GHz and a 12 inch SMK plug to plug cable assembly performs better than 1.35 VSWR to 40 GHz.
- The Field Replaceable Jacks are teamed with a high quality hermetic seal feed thru for use in sealed circuit modules.
- The SMK plug interface employs more precise dimensions than an SMA and uses a shorter snub nose male pin such that the connector bodies align before the contacts engage.



## MATERIAL SPECIFICATIONS

**Bodies:** Stainless steel per QQ-B-626, gold plated\* per MIL-G-45204 .00005" min. or passivated per MIL-F-14072 B (EL) 300

**Contacts:**

Female - beryllium copper per QQ-C-530, gold plated per MIL-G-45204 .00005" min.

**Contact Support Beads:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457 or modified PPE resin

**Seal Rings:** Silicone rubber per ZZ-R-765

\* All gold plated parts include a .00005" min. nickel underplate barrier layer.

## MECHANICAL RATINGS

**Engagement Design:** MIL-STD-348, Series SMK (2.92mm)

**Engagement/Disengagement Force:** 2 inch-pounds maximum

**Mating Torque:** 7 to 10 inch-pounds

**Coupling Proof Torque:** 15 inch-pounds minimum

**Coupling Nut Retention:** 60 pounds minimum

**Contact Retention:** 6 lbs. minimum axial force (captivated contacts)

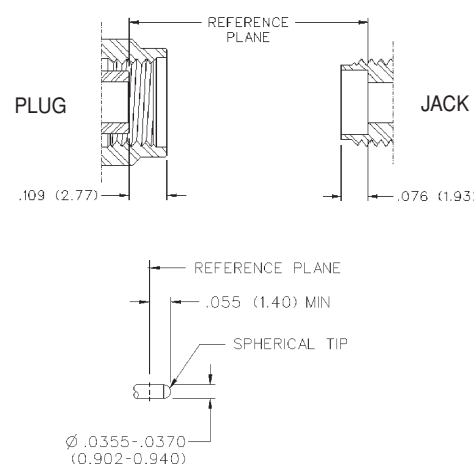
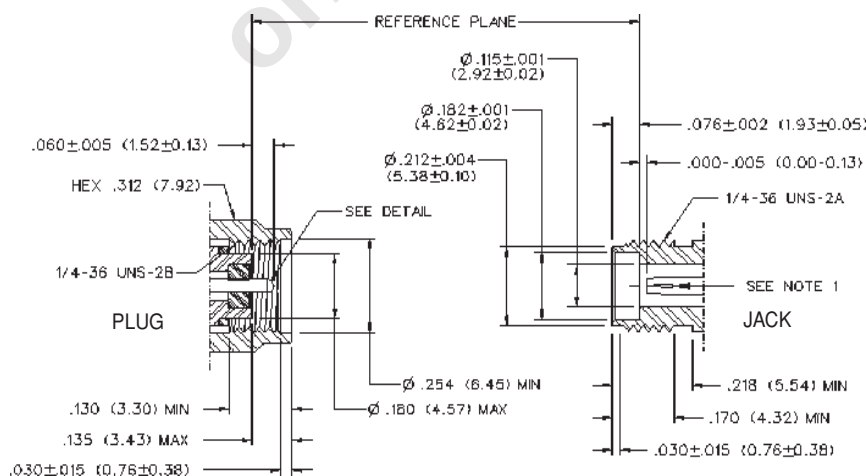
**Cable Retention:** Axial Force\* (lbs) Torque (in-oz)

|                       | Axial Force (lb) | Torque (in-lb) |
|-----------------------|------------------|----------------|
| .086 Semi-Rigid ..... | 30               | 16             |
| .141 Semi-Rigid ..... | 60               | 55             |

\*Or cable breaking strength whichever is less.

**Durability:** 500 cycles minimum

### Mating Engagement for SMK (2.92mm) Series



Notes:

1. ID of contact shall meet VSWR and connectivity requirements when mated with dia. .0355-.0365 male pin.

# SMK - 50 Ohm Connectors

(2.92mm)

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## ELECTRICAL RATINGS

**Impedance:** 50 ohms

**Frequency Range:** 0-40 GHz

**VSWR:** (f = GHz)

Semi-Rigid straight cabled connectors and adapters ..... 1.20 Max

Field replaceable (see typical return loss graph) ..... N/A

**Working Voltage:** (VRMS maximum)

**Connectors for Cable Type**

Sea Level 70K Feet

.086 Semi-Rigid and field replaceable ..... 335 85

.141 Semi-Rigid and adapters ..... 500 125

**Dielectric Withstanding Voltage:** (VRMS minimum at sea level)

.086 Semi-Rigid and field replaceable ..... 1000

.141 Semi-Rigid and adapters ..... 1500

**Corona Level:** (Volts minimum at 70,000 feet)

.086 Semi-Rigid and field replaceable ..... 250

.141 Semi-Rigid and adapters ..... 375

**Insertion Loss:** (dB maximum)

Adapters .....  $0.06\sqrt{f}$  (GHz), tested at 6 GHz

Straight Semi-Rigid cable connectors .....  $0.03\sqrt{f}$  (GHz), tested at 10 GHz

**Insulation Resistance:** 5000 megohms minimum

**Contact Resistance:** (milliohms maximum) Initial After Environmental

Center contact straight cabled connectors ... 3.0\* 4.0

Center contact adapters ..... 4.0 6.0

Field replaceable connectors ..... 6.0 8.0

Outer contact (all connectors) ..... 2.0 N/A

Body to cable (gold plated connectors) ..... 0.5 N/A

Body to cable (passivated connectors) ..... 5.0 N/A

**RF Leakage:** (dB minimum, tested at 2.5 GHz) ..... -90dB

**RF High Potential Withstanding Voltage:**

(VRMS minimum, tested at 4 and 7 MHz)=

.086 Semi-Rigid and field replaceable ..... 670

.141 Semi-Rigid and adapters ..... 1000

## ENVIRONMENTAL RATINGS

(Meets or exceeds the applicable paragraph of MIL-C-39012)

**Temperature Range:** - 65°C to + 165°C

**Thermal Shock:** MIL-STD-202, Method 107, Condition B

**Corrosion:** MIL-STD-202, Method 101, Condition B

**Shock:** MIL-STD-202, Method 213, Condition I

**Vibration:** MIL-STD-202, Method 204, Condition D

**Moisture Resistance:** MIL-STD-202, Method 106

## FIELD REPLACEABLE APPLICATION NOTES

These field replaceable connectors are easy to install and replace. The hermetic seal is mounted into the circuit module wall and the connector can be removed and replaced without destroying the hermeticity of the circuit housing.

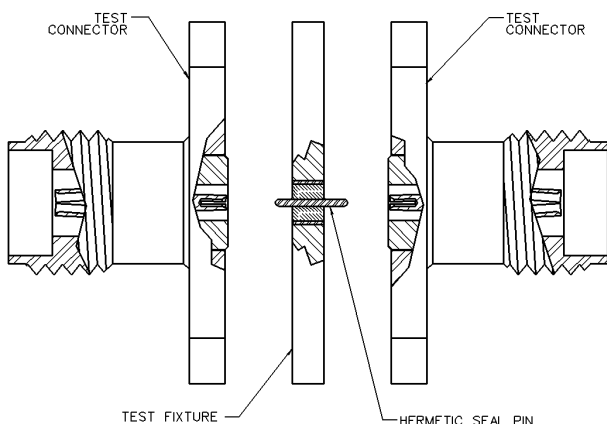
The field replaceable connector creates a transition from microstrip circuitry to a coaxial transmission line. The SMK (2.92mm) seal pin diameter is .012 (.030) to minimize the capacitive effects on the circuit trace. For optimum electrical performance, the transition from the hermetic seal to the microstrip trace must be properly compensated which involves adjusting the microstrip trace width to minimize any impedance discontinuities found in the transition area.

The plot shown below is representative of the typical return loss of a Johnson field replaceable SMK connector. To produce the data shown below, a test fixture is created using the Johnson SMK hermetic seal. The fixture consists of a suitably thick spacer plate with the hermetic seal mounted flush to both surfaces. Two connectors are mounted back to back around the fixture and the VSWR of this test assembly is measured. The calculated return loss trace shown is equivalent to the square root of the measured VSWR of the test assembly. Since the connectors tested are of identical design, it can be stated with fair accuracy that the calculated data shown represents the response of a single field replaceable connector and its transition to the hermetic seal.

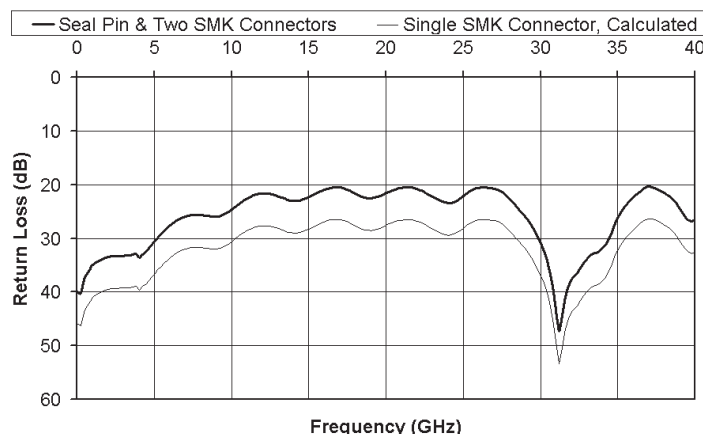
Although we do not publish a VSWR specification for field replaceable connectors, typical connector return loss can be expected to be better than 20 dB through 40 GHz. A VSWR specification is not stated because an industry standard method for testing field replaceable connectors does not exist. The actual performance of the connector is dependent upon the following:

1. For optimum electrical performance, we recommend the use of our standard 142-1000-033 hermetic seal with a pin diameter of .0120 (0.305) +/- .0005 (0.013).
2. It is recommended that the hermetic seal be mounted flush with the circuit housing. Tolerance variations between the hermetic seal and machined housing do not always guarantee an optimum transition to the connector. Some manufacturers recommend an additional counterbore in the circuit housing to accommodate a solder washer during installation of the seal. We do not recommend this type of installation because, if the counterbore is not completely filled with solder, electrical discontinuities may be created.
3. The transition between the hermetic seal pin and the microstrip trace will effect electrical performance, as stated above. Several different methods of hermetic seal mounting and seal pin to microstrip trace attachment are used in the industry.

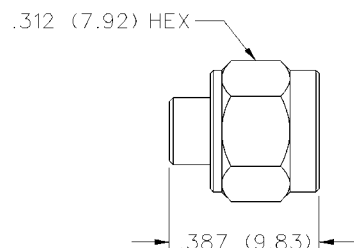
## FIELD REPLACEABLE TEST ASSEMBLY



## TYPICAL RETURN LOSS



## Straight Solder Type Plug - with Contact, Slide-On Nut



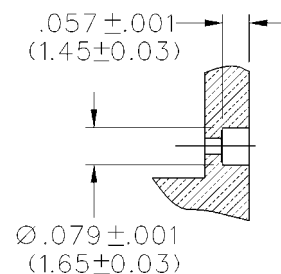
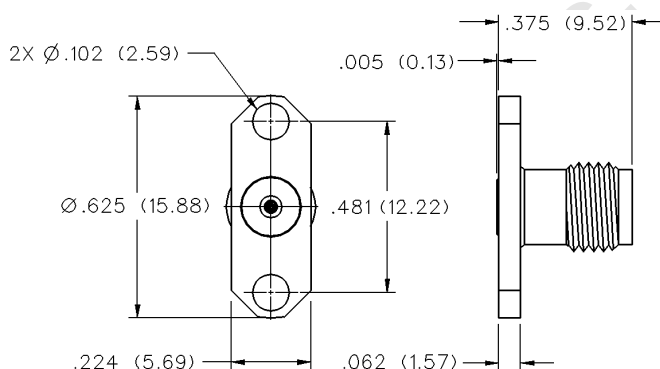
| CABLE TYPE      | GOLD PLATED  | PASSIVATED*  |
|-----------------|--------------|--------------|
| .086 Semi-Rigid | 145-0693-001 | 145-0693-002 |
| .141 Semi-Rigid | 145-0694-001 | 145-0694-002 |

Assembly instructions see page 220.

See page 193 for Cable Assembly Tools.

\* Passivated coupling nut, gold plated body.

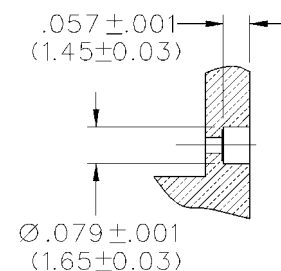
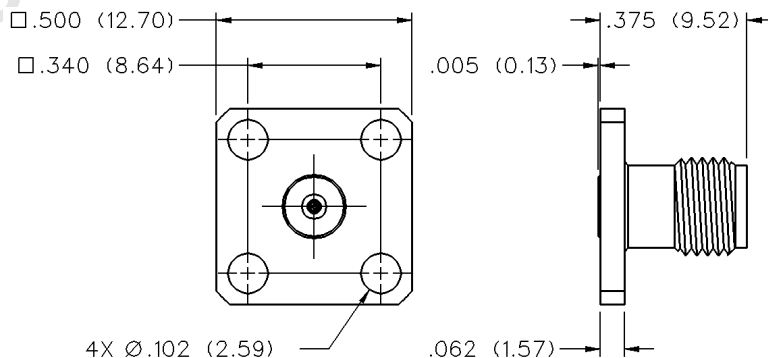
## 2-Hole Flange Mount Jack Receptacle



Mounting Hole Layout

| GOLD PLATED  | PASSIVATED   | ACCEPTS PIN SIZE                 |
|--------------|--------------|----------------------------------|
| 145-0701-601 | 145-0701-602 | .0120 +/- .0005 (0.305 +/- .013) |

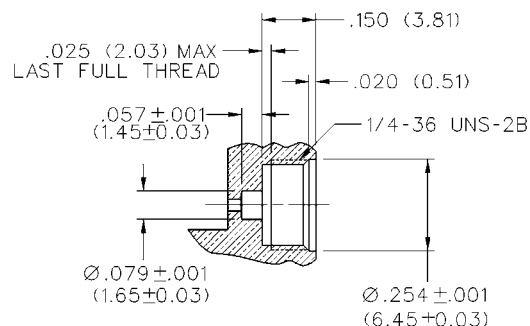
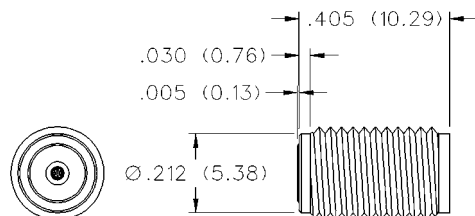
## 4-Hole Flange Mount Jack Receptacle



Mounting Hole Layout

| GOLD PLATED  | PASSIVATED   | ACCEPTS PIN SIZE                 |
|--------------|--------------|----------------------------------|
| 145-0701-611 | 145-0701-612 | .0120 +/- .0005 (0.305 +/- .013) |

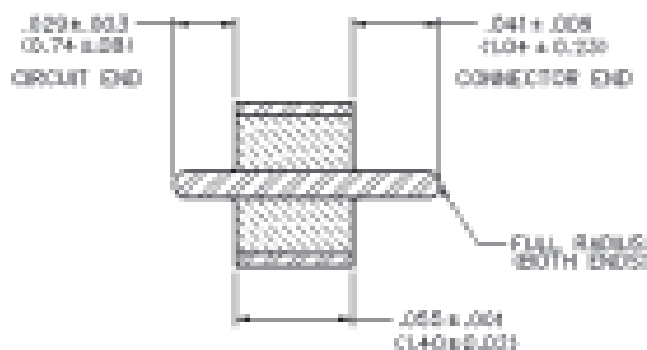
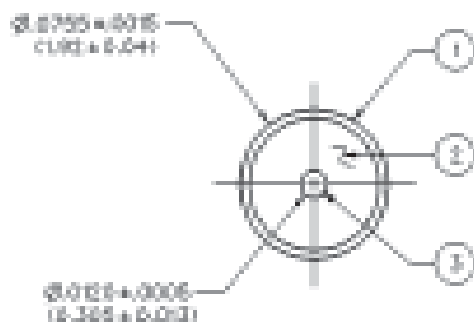
## Jack Receptacle - Thread Mount Field Replaceable



| GOLD PLATED  | PASSIVATED   | ACCEPTS PIN SIZE                  |
|--------------|--------------|-----------------------------------|
| 145-0701-001 | 145-0701-002 | .0120 +/- .0005 (0.305 +/- 0.013) |

Mounting Hole Layout

## Hermetic Seal Feedthru



| PART NO.     | ITEM 1<br>OUTER RING                                       | ITEM 2<br>INSULATOR                    | ITEM 3<br>PIN                                              |
|--------------|------------------------------------------------------------|----------------------------------------|------------------------------------------------------------|
| 142-1000-033 | Kovar<br>Gold pl .00005 min. over<br>Nickel pl .00005 min. | Glass<br>Corning 7070<br>or equivalent | Kovar<br>Gold pl .00005 min. over<br>Nickel pl .00005 min. |

### Electrical:

Impedance: 50 Ohms  
 Frequency Range: DC to 40 GHz  
 VSWR: Dependent upon application  
 Working Voltage: 250 VRMS max at sea level  
 Dielectric Withstanding Voltage: 500 VRMS min. at sea level  
 Insulation Resistance: 5000 Megohm min.  
 Insertion Loss: 0.2 dB max at 40 GHz

### Environmental:

Hermeticity:  $1 \times 10^{-8}$  cc/sec at one atmosphere  
 Solderability: MIL-STD-202, Method 209  
 Operating Temperature: -55°C to +165°C

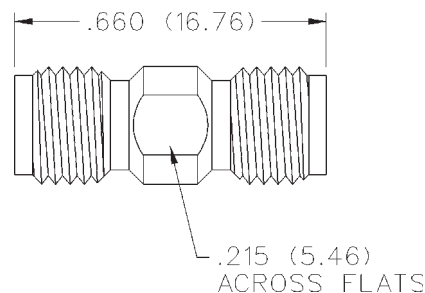
### Notes:

- The hermetic seal should be mounted as flush as possible with the housing. Excessive recession will create a high impedance air gap between connection and housing which degrades electrical performance.
- The use of an additional counterbore to accommodate a solder ring for seal mounting is not recommended. A slight chamfer may be used if care is taken to completely fill the area with solder - **avoid air gaps.**

## Jack to Jack In-Series Adapter



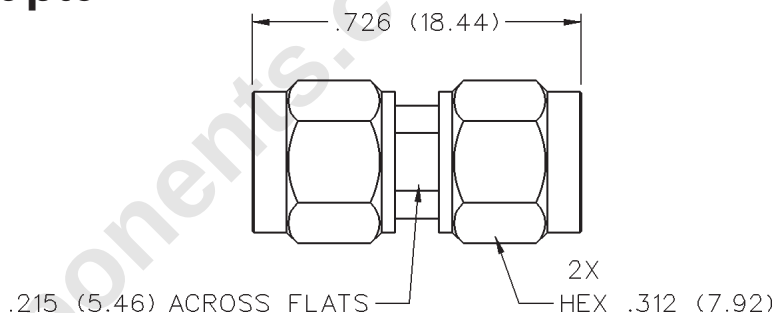
|                    |
|--------------------|
| <b>GOLD PLATED</b> |
| 145-0901-801       |



## Plug to Plug In-Series Adapter



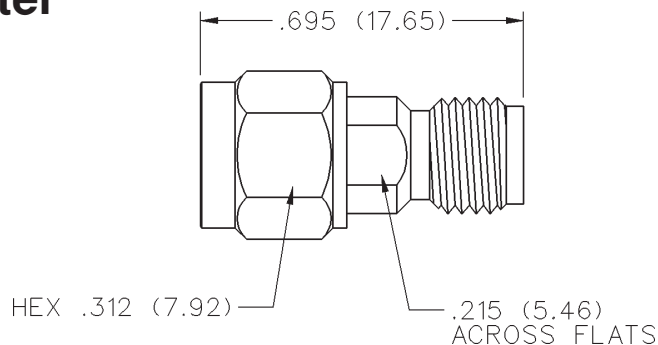
|                    |
|--------------------|
| <b>GOLD PLATED</b> |
| 145-0901-811       |



## Plug to Jack In-Series Adapter



|                    |
|--------------------|
| <b>GOLD PLATED</b> |
| 145-0901-821       |



# SMA - 50 Ohm Connectors

onlinecomponents.com  
THE ONLINE DISTRIBUTOR OF ELECTRONIC COMPONENTS

## Specifications

INCHES (MILLIMETERS) • CUSTOMER DRAWINGS AVAILABLE ON REQUEST



## ELECTRICAL RATINGS

**Impedance:** 50 Ohms

### Frequency Range:

|                                                                             |            |
|-----------------------------------------------------------------------------|------------|
| Dummy loads .....                                                           | 0-2 GHz    |
| Flexible cable connectors .....                                             | 0-12.4 GHz |
| Uncabled receptacles, RA Semi-Rigid and adapters .....                      | 0-18.0 GHz |
| Straight Semi-Rigid cable connectors and field replaceable connectors ..... | 0-26.5 GHz |

**VSWR:** (f = GHz)

|                                                        | Straight<br>Cabled Connectors | Right Angle<br>Cabled Connectors |
|--------------------------------------------------------|-------------------------------|----------------------------------|
| RG-178 cable .....                                     | 1.20 + .025f                  | 1.20 + .03f                      |
| RG-316, LMR-100 cable .....                            | 1.15 + .02f                   | 1.15 + .03f                      |
| RG-58, LMR-195 cable .....                             | 1.15 + .01f                   | 1.15 + .02f                      |
| RG-142 cable .....                                     | 1.15 + .01f                   | 1.15 + .02f                      |
| LMR-200, LMR-240 cable .....                           | 1.10 + .03f                   | 1.10 + .06f                      |
| .086 Semi-Rigid .....                                  | 1.07 + .008f                  | 1.18 + .015f                     |
| .141 Semi-Rigid (w/contact) .....                      | 1.05 + .008f                  | 1.15 + .015f                     |
| .141 Semi-Rigid (w/o contact) ....                     | 1.035 + .005f                 |                                  |
| Jack-bulkhead jack adapter and plug-plug adapter ..... | 1.05 + .01f                   |                                  |
| Jack-jack adapter and plug-jack adapter .....          | 1.05 + .005f                  |                                  |
| Uncabled receptacles, dummy loads .....                | N/A                           |                                  |
| Field replaceable (see page xx) .....                  | N/A                           |                                  |

**Working Voltage:** (VRMS maximum)\*

| Connectors for Cable Type                                                                    | Sea Level | 70K Feet |
|----------------------------------------------------------------------------------------------|-----------|----------|
| RG-178 .....                                                                                 | 170       | 45       |
| RG-316; LMR-100, 195, 200 .....                                                              | 250       | 65       |
| RG-58, RG-142, LMR-240, .086 Semi-Rigid, uncabled receptacles, .141 Semi-Rigid w/o contact . | 335       | 85       |
| .141 Semi-Rigid with contact and adapters .....                                              | 500       | 125      |
| Dummy loads .....                                                                            | N/A       |          |

**Dielectric Withstanding Voltage:** (VRMS minimum at sea level)\*

|                                                                                                       |      |
|-------------------------------------------------------------------------------------------------------|------|
| Connectors for RG-178 .....                                                                           | 500  |
| Connectors for RG-316; LMR-100, 195, 200 .....                                                        | 750  |
| Connectors for RG-58, RG-142, LMR-240, .086 Semi-Rigid, field replaceable, uncabled receptacles ..... | 1000 |
| Connectors for .141 Semi-Rigid with contact and adapters .....                                        | 1500 |
| Connectors for .141 Semi-Rigid w/o contact, dummy loads .....                                         | N/A  |

**Corona Level:** (Volts minimum at 70,000 feet)\*

|                                                                                                                 |     |
|-----------------------------------------------------------------------------------------------------------------|-----|
| Connectors for RG-178 .....                                                                                     | 125 |
| Connectors for RG-316; LMR-100, 195, 200 .....                                                                  | 190 |
| Connectors for RG-58, RG-142, LMR-240, .086 Semi-Rigid, uncabled receptacles, .141 Semi-Rigid w/o contact ..... | 250 |
| Connectors for .141 Semi-Rigid with contact and adapters .....                                                  | 375 |
| Dummy loads .....                                                                                               | N/A |

**Insertion Loss:** (dB maximum)

|                                                            |                                        |
|------------------------------------------------------------|----------------------------------------|
| Straight flexible cable connectors and adapters .....      | $0.06\sqrt{f}$ (GHz), tested at 6 GHz  |
| Right angle flexible cable connectors .....                | $0.15\sqrt{f}$ (GHz), tested at 6 GHz  |
| Straight Semi-Rigid cable connectors with contact .....    | $0.03\sqrt{f}$ (GHz), tested at 10 GHz |
| Right angle Semi-Rigid cable connectors .....              | $0.05\sqrt{f}$ (GHz), tested at 10 GHz |
| Straight Semi-Rigid cable connectors w/o contact .....     | $0.03\sqrt{f}$ (GHz), tested at 16 GHz |
| Straight low loss flexible cable connectors .....          | $0.06\sqrt{f}$ (GHz), tested at 1 GHz  |
| Right Angle low loss flexible cable connectors .....       | $0.15\sqrt{f}$ (GHz), tested at 1 GHz  |
| Uncabled receptacles, field replaceable, dummy loads ..... | N/A                                    |

**Insulation Resistance:** 5000 megohms minimum

**Contact Resistance:** (milliohms maximum) Initial After Environmental

|                                                                            |      |      |
|----------------------------------------------------------------------------|------|------|
| Center contact (straight cabled connectors and uncabled receptacles) ..... | 3.0* | 4.0* |
| Center contact (right angle cabled connectors and adapters) .....          | 4.0  | 6.0  |
| Field replaceable connectors .....                                         | 6.0  | 8.0  |
| Outer contact (all connectors) .....                                       | 2.0  | N/A  |
| Braid to body (gold plated connectors) .....                               | 0.5  | N/A  |
| Braid to body (nickel plated connectors) .....                             | 5.0  | N/A  |

\*N/A where the cable center conductor is used as a contact

**RF Leakage:** (dB minimum, tested at 2.5 GHz)

|                                                                                                                     |        |
|---------------------------------------------------------------------------------------------------------------------|--------|
| Flexible cable connectors, adapters and .141 Semi-Rigid connectors w/o contact .....                                | -60 dB |
| Field replaceable w/o EMI gasket .....                                                                              | -70 dB |
| .086 Semi-Rigid connectors and .141 Semi-Rigid connectors with contact, and field replaceable with EMI Gasket ..... | -90 dB |
| Two-way adapters .....                                                                                              | -90 dB |
| Uncabled receptacles, dummy loads .....                                                                             | N/A    |

**RF High Potential Withstanding Voltage:**

(VRMS minimum, tested at 4 and 7 MHz)\*

|                                                                                                                       |      |
|-----------------------------------------------------------------------------------------------------------------------|------|
| Connectors for RG-178 .....                                                                                           | 335  |
| Connectors for RG-316; LMR-100, 195, 200 .....                                                                        | 500  |
| Connectors for RG-58, RG-142, LMR-240, .086 Semi-Rigid, .141 Semi-Rigid cable w/o contact, uncabled receptacles ..... | 670  |
| Connectors for .141 Semi-Rigid with contact and adapters ....                                                         | 1000 |

**Power Rating (Dummy Load):** 0.5 watt @ + 25°C, derated to 0.25 watt @ +125°C

## MECHANICAL RATINGS

**Engagement Design:** MIL-C-39012, Series SMA

**Engagement/Disengagement Force:** 2 inch-pounds maximum

**Mating Torque:** 7 to 10 inch-pounds

**Bulkhead Mounting Nut Torque:** 15 inch-pounds

**Coupling Proof Torque:** 15 inch-pounds minimum

**Coupling Nut Retention:** 60 pounds minimum

**Contact Retention:**

6 lbs. minimum axial force (captivated contacts)

4 inch-ounce minimum torque (uncabled receptacles)

**Cable Retention:**

|                                      | Axial Force* (lbs) | Torque (in-oz) |
|--------------------------------------|--------------------|----------------|
| Connectors for RG-178 .....          | 10                 | N/A            |
| Connectors for RG-316, LMR-100 ..... | 20                 | N/A            |
| Connectors for LMR-195, 200 .....    | 30                 | N/A            |
| Connectors for RG-58, LMR-240 .....  | 40                 | N/A            |
| Connectors for RG-142 .....          | 45                 | N/A            |
| Connectors for .086 Semi-Rigid ..... | 30                 | 16             |
| Connectors for .141 Semi-Rigid ..... | 60                 | 55             |

\*Or cable breaking strength whichever is less.

**Durability:** 500 cycles minimum

100 cycles minimum for .141 Semi-Rigid connectors w/o contact

## ENVIRONMENTAL RATINGS (Meets or exceeds the applicable paragraph of MIL-C-39012)

**Temperature Range:** - 65°C to + 165°C

**Thermal Shock:** MIL-STD-202, Method 107, Condition B

**Corrosion:** MIL-STD-202, Method 101, Condition B

**Shock:** MIL-STD-202, Method 213, Condition I

**Vibration:** MIL-STD-202, Method 204, Condition D

**Moisture Resistance:** MIL-STD-202, Method 106

\*Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## MATERIAL SPECIFICATIONS

**Bodies:** Brass per QQ-B-626, gold plated\* per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Contacts:** Male - brass per QQ-B-626, gold plated per MIL-G-45204 .00003" min.

Female - beryllium copper per QQ-C-530, gold plated per MIL-G-45204 .00003" min.

**Nut Retention Spring:** Beryllium copper per QQ-C-533. Unplated

**Insulators:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457 or Tefzel per ASTM D 3159 or PFA 340 per ASTM D 3307

**Expansion Caps:** Brass per QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Crimp Sleeves:** Copper per WW-T-799 or brass per QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Mounting Hardware:** Brass per QQ-B-626 or QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

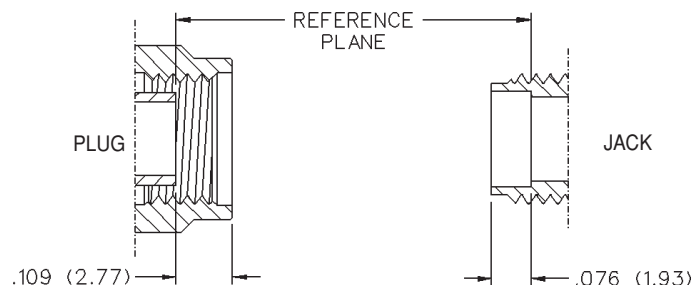
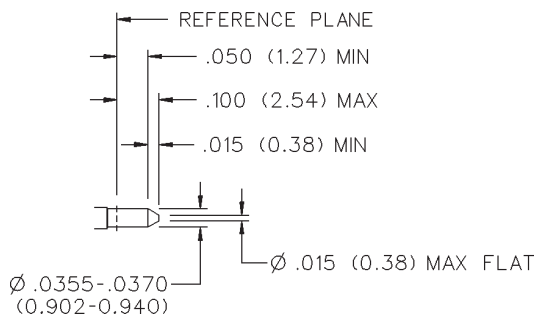
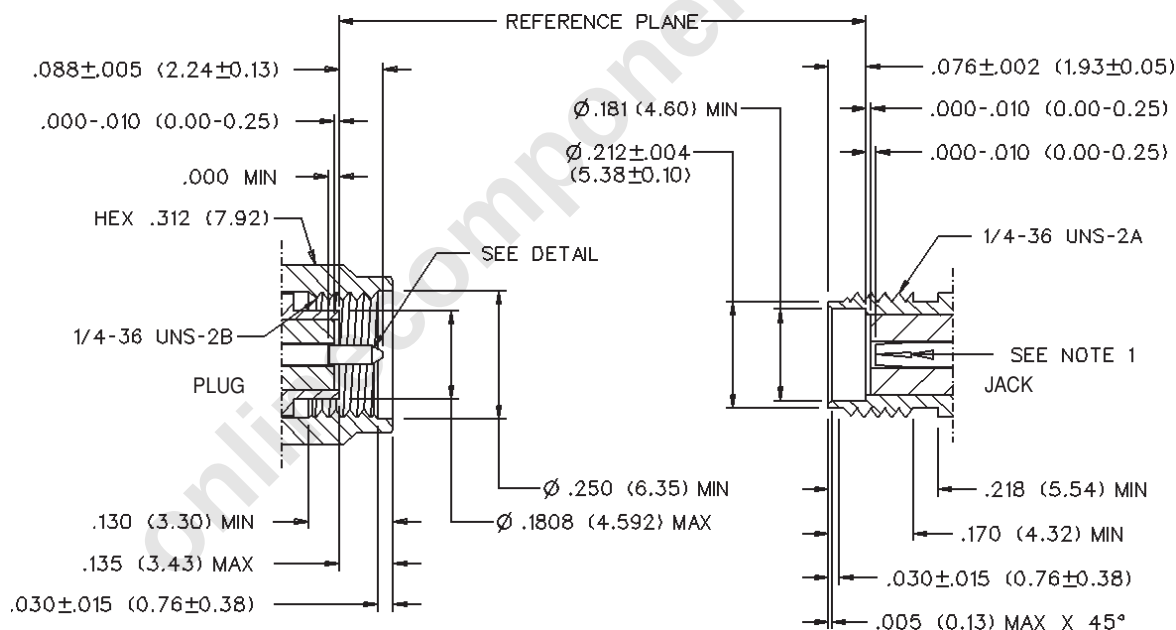
**Seal Rings:** Silicone rubber per ZZ-R-765

**EMI Gaskets:** Conductive silicone rubber per MIL-G-83528, Type M

\* All gold plated parts include a .00005" min. nickel underplate barrier layer.

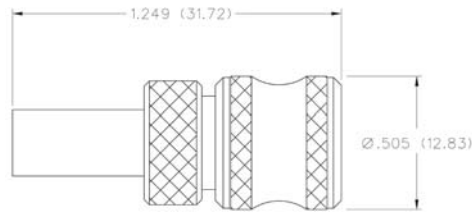
## Mating Engagement for SMA Series

1. ID TO MEET VSWR, CONTACT RESISTANCE AND INSERTION WITHDRAWAL FORCES WHEN MATED WITH A DIA .0355-.0370 PIN.



## NOTES

1. ID of contact to meet VSWR, contact resistance and insertion withdrawal forces when mated with dia .0355-.0370 male pin.

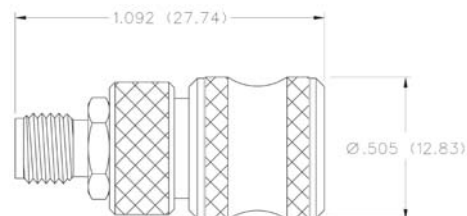
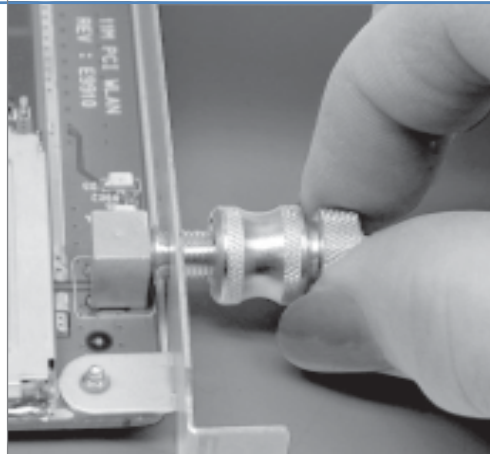


The Johnson SMA **Quick-Connect** Plug quickly mates to a standard, threaded SMA Jack receptacle allowing rapid test connections to devices utilizing SMA threaded jacks.

SMA electrical performance is not compromised because the connector retains all the benefits of a threaded coaxial coupling. The final connection is a solid metal to metal coupling not relying on spring forces to maintain the coupling. This results in a more reliable connection with less signal leakage and a lower VSWR than most push-on connectors.

Full Mil-C-39012 electrical compatibility is obtained with a push and twist motion. The knurled thumbnut requires only one half to one full turn to create a solid electromechanical connection. Rapid disconnect is accomplished with a twist and pull motion.

The SMA **Quick-Connect** Plug Adapter converts a standard SMA Plug test cable into a **Quick-Connect** cable. This makes the testing process more efficient by reducing the time and effort required to connect and disconnect the test cable.



## SMA Quick-Connect Product Family

| P L U G S               |                             |              |
|-------------------------|-----------------------------|--------------|
| CABLE TYPE              | VSWR & FREQ. RANGE          | GOLD PLATED* |
| RG-161/U, 174, 188, 316 | 1.15 +.02f (GHz) 0-12.4 GHz | 142-1403-001 |
| RG-188 DS, RG-316 DS    | 1.15 +.02f (GHz) 0-12.4 GHz | 142-1404-001 |
| RG-58/U, 141, 303       | 1.15 +.01f (GHz) 0-12.4 GHz | 142-1407-001 |
| RG-55/U, 142, 223, 400  | 1.15 +.01f (GHz) 0-12.4 GHz | 142-1408-001 |

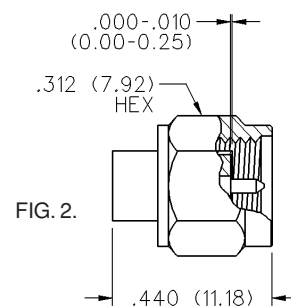
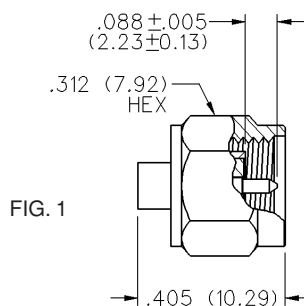
| A D A P T E R              |              |
|----------------------------|--------------|
| VSWR & FREQ. RANGE         | GOLD PLATED* |
| 1.05 +.005f (GHz) 0-18 GHz | 142-1901-821 |

\*Nickel plated coupling hardware, gold plated body

Assembly instructions page 229.

See page 190 for Cable Assembly Tools.

## Straight Solder Type Plug - with Contact, Captive Nut Thin Wall Connector Interface for .141 Cable



| CABLE TYPE      | VSWR & FREQ. RANGE                             | GOLD PLATED   | NICKEL PLATED | FIG. |
|-----------------|------------------------------------------------|---------------|---------------|------|
| .086 Semi-Rigid | 1.07 + .008f (0-18 GHz) 1.35 Max (18-26.5 GHz) | 142-0693-001  | 142-0693-006  | 1    |
| .141 Semi-Rigid | 1.05 + .008f (0-26.5 GHz)                      | 142-0694-001* | 142-0694-006* | 2    |

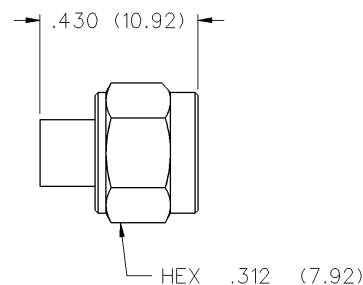
Assembly instructions page 222. \*Mating torque 8 inch-pounds maximum, coupling proof torque 8 in-lb max.

## Straight Solder Type Plug - without Contact, Thread-on Nut

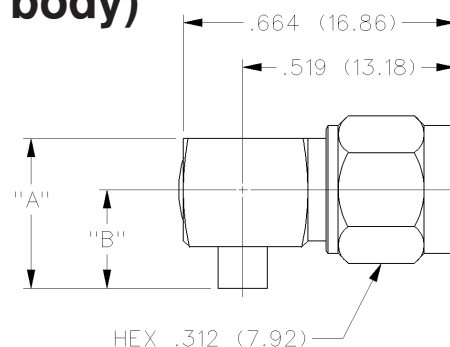


| CABLE TYPE      | VSWR & FREQ. RANGE         | GOLD PLATED  | NICKEL PLATED |
|-----------------|----------------------------|--------------|---------------|
| .141 Semi-Rigid | 1.035 + .005f (0-26.5 GHz) | 142-0694-011 | 142-0694-016  |

Assembly instructions page 223. Center conductor of cable serves as contact.



## Right Angle Solder Type Plug (1-piece body)



| CABLE TYPE      | VSWR & FREQ. RANGE                                     | GOLD PLATED  | NICKEL PLATED | "A"          | "B"         |
|-----------------|--------------------------------------------------------|--------------|---------------|--------------|-------------|
| .086 Semi-Rigid | 1.18 + .015f (0-12.4 GHz)<br>1.15 + .04f (12.4-18 GHz) | 142-0693-101 | 142-0693-106  | .336 (8.53)  | .253 (6.43) |
| .141 Semi-Rigid | 1.15 + .015f (0-12.4 GHz)<br>1.15 + .04f (12.4-18 GHz) | 142-0694-101 | 142-0694-106  | .462 (11.73) | .306 (7.77) |

Assembly instructions page 221.

# SMA - 50 Ohm Connectors

For Semi-Rigid Cable

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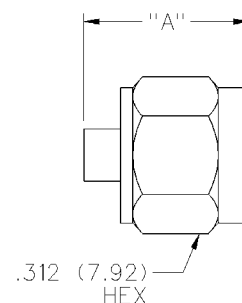
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## Straight Solder Type Plug - with Contact, Thread-on Nut



Assembly instructions page 226.

| CABLE TYPE         | VSWR & FREQ. RANGE                                | GOLD PLATED  | NICKEL PLATED | "A"          |
|--------------------|---------------------------------------------------|--------------|---------------|--------------|
| .086<br>Semi-Rigid | 1.07 + .008f (0-18 GHz)<br>1.35 Max (18-26.5 GHz) | 142-0693-051 | 142-0693-056  | .405 (10.29) |
| .141<br>Semi-Rigid | 1.05 + .008f (GHz)<br>0-26.5 GHz                  | 142-0694-051 | 142-0694-056  | .438 (11.13) |



## Straight Solder Type Plug - Short Profile - without Contact, Captive Nut

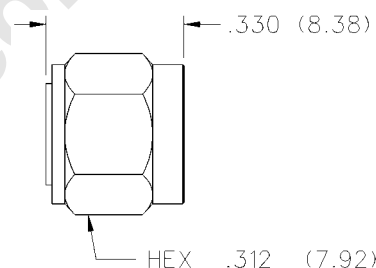


| CABLE TYPE         | VSWR & FREQ. RANGE                | GOLD PLATED  | NICKEL PLATED |
|--------------------|-----------------------------------|--------------|---------------|
| .141<br>Semi-Rigid | 1.035 + .005f (GHz)<br>0-26.5 GHz | 142-0694-031 | 142-0694-036  |

Assembly instructions page 225.

Center conductor of cable serves as contact.

See page 192 for coupling nut assembly tool.



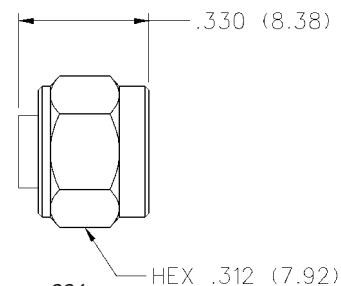
## Straight Solder Type Plug - without Contact, Slide-on Nut



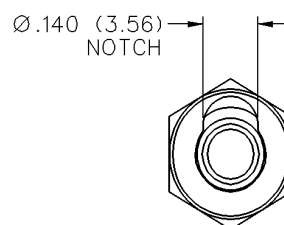
| CABLE TYPE         | VSWR & FREQ. RANGE                | GOLD PLATED  | NICKEL PLATED |
|--------------------|-----------------------------------|--------------|---------------|
| .141<br>Semi-Rigid | 1.035 + .005f (GHz)<br>0-26.5 GHz | 142-0694-021 | 142-0694-026  |

Assembly instructions page 224.

Center conductor of cable serves as contact.



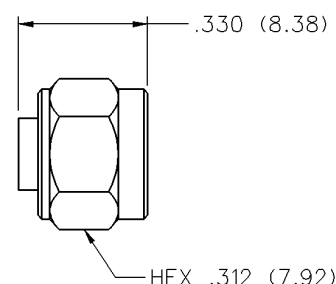
## Straight Solder Type Plug - without Contact, Slide-on Notched Nut



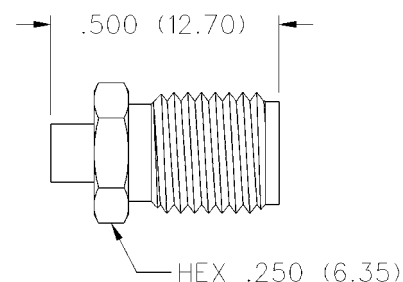
| CABLE TYPE         | VSWR & FREQ. RANGE                | GOLD PLATED  | NICKEL PLATED |
|--------------------|-----------------------------------|--------------|---------------|
| .141<br>Semi-Rigid | 1.035 + .005f (GHz)<br>0-26.5 GHz | 142-0694-041 | 142-0694-046  |

Assembly instructions page 224.

Center conductor of cable serves as contact.



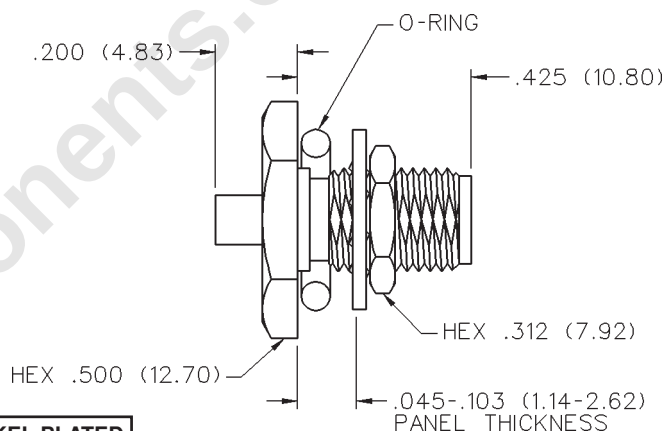
## Straight Solder Type Jack



| CABLE TYPE         | VSWR & FREQ. RANGE                                 | GOLD PLATED  | NICKEL PLATED |
|--------------------|----------------------------------------------------|--------------|---------------|
| .086<br>Semi-Rigid | 0-18 GHz: 1.07 + .008f (GHz)<br>26.5 GHz: 1.35 Max | 142-0593-001 | 142-0593-006  |
| .141<br>Semi-Rigid | 0-26.5 GHz: 1.05+.008f (GHz)                       | 142-0594-001 | 142-0594-006  |

Assembly instructions page 222.

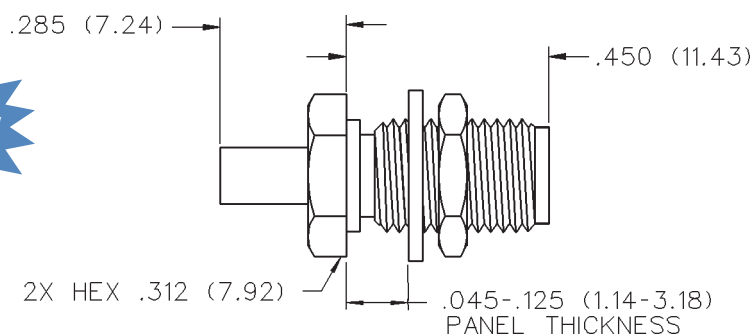
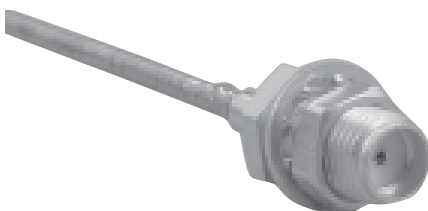
## Straight Solder Type Bulkhead Jack with O-Ring



| CABLE TYPE         | VSWR & FREQ. RANGE                                    | GOLD PLATED  | NICKEL PLATED |
|--------------------|-------------------------------------------------------|--------------|---------------|
| .086<br>Semi-Rigid | 0-18 GHz:<br>1.07 + .008f (GHz)<br>26.5 GHz: 1.35 Max | 142-0593-401 | 142-0593-406  |
| .141<br>Semi-Rigid | 0-26.5 GHz:<br>1.05+.008f (GHz)                       | 142-0594-401 | 142-0594-406  |

Assembly Instructions page 222.  
Mounting hole layout figure 1 page 201.

## Straight Solder Type Bulkhead Jack



| CABLE TYPE         | VSWR & FREQ. RANGE              | GOLD PLATED  |
|--------------------|---------------------------------|--------------|
| .086<br>Semi-Rigid | 0-18 GHz:<br>1.20 + .025f (GHz) | 142-0593-411 |

Assembly Instructions page 222.  
Mounting hole layout figure 1 page 201.

# SMA - 50 Ohm Connectors

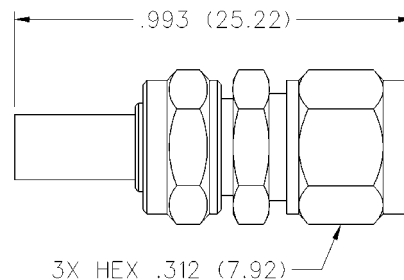
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## Straight Crimp Type Plug - Captivated Contact

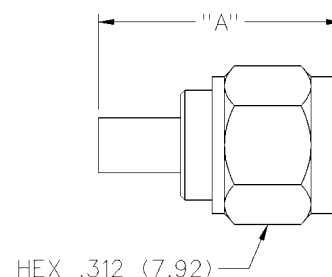


| CABLE TYPE             | VSWR & FREQ. RANGE           | GOLD PLATED  | NICKEL PLATED |
|------------------------|------------------------------|--------------|---------------|
| RG-161/U, 174,188, 316 | 1.15 + .02f (GHz) 0-12.4 GHz | 142-0403-001 | 142-0403-006  |

Assembly instructions page 231.

See page 190 for Cable Assembly Tools.

## Straight Crimp Type Plug (3-piece) - Solder or Crimp Captivated Contact



| CABLE TYPE                                       | VSWR & FREQ. RANGE            | GOLD PLATED  | NICKEL PLATED | "A"          |
|--------------------------------------------------|-------------------------------|--------------|---------------|--------------|
| RG-178/U, 196                                    | 1.20 + .025f (GHz) 0-12.4 GHz | 142-0402-011 | 142-0402-016  | .591 (15.01) |
| RG-161/U, 174,188, 316, LMR-100, HPF-100, RF-100 | 1.15 + .02f (GHz) 0-12.4 GHz  | 142-0403-011 | 142-0403-016  | .706 (17.93) |
| RG-188 DS, RG-316 DS                             | 1.15 + .02f (GHz) 0-12.4 GHz  | 142-0404-011 | 142-0404-016  | .706 (17.93) |
| RG-58/U, 141, 303, LMR-195, HPF-195, RF-195      | 1.15 + .01f (GHz) 0-12.4 GHz  | 142-0407-011 | 142-0407-016  | .706 (17.93) |
| RG-55/U, 142, 223, 400                           | 1.15 + .01f (GHz) 0-12.4 GHz  | 142-0408-011 | 142-0408-016  | .706 (17.93) |
| RG-179/U, 187                                    | N/A                           | 142-0433-011 | 142-0433-016  | .706 (17.93) |
| LMR-200, HPF-200, RF-200                         | 1.10 + .03f (GHz) 0-12.4 GHz  | 142-0439-001 | 142-0439-006  | .844 (21.44) |
| LMR-240, HPF-240, RF-240                         | 1.10 + .03f (GHz) 0-12.4 GHz  | 142-0435-001 | 142-0435-006  | .844 (21.44) |

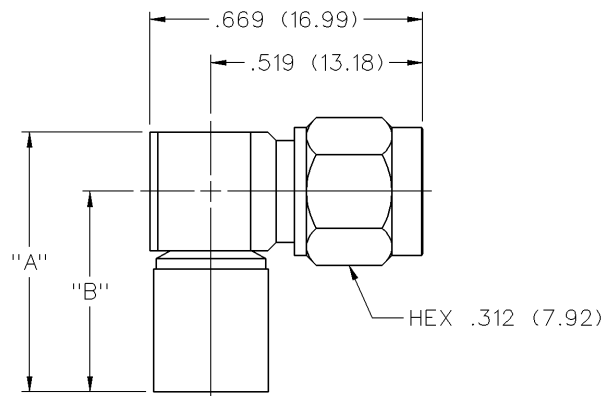
Assembly instructions: RG-178 page 228.

LMR 195, 200 and 240, see page 230.

Other cable groups, see page 229.

See page 190 for Cable Assembly Tools.

## Right Angle Crimp Type Plug - Captivated Contact



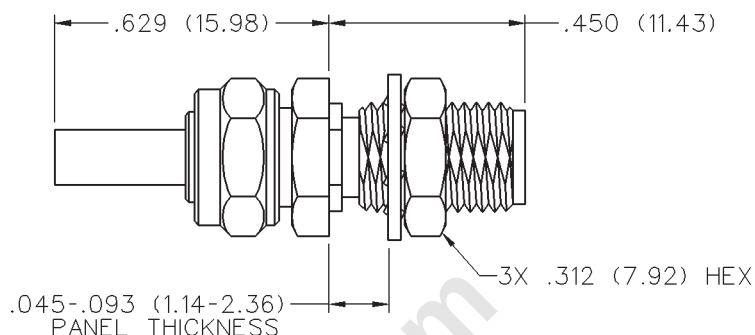
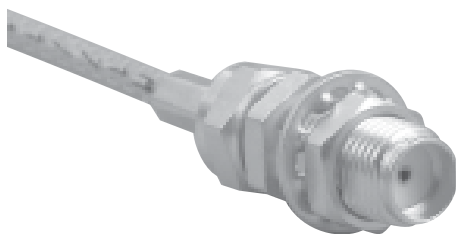
| CABLE TYPE               | VSWR & FREQ. RANGE           | GOLD PLATED  | NICKEL PLATED | "A"          | "B"          |
|--------------------------|------------------------------|--------------|---------------|--------------|--------------|
| RG-178/U, 196            | 1.20 + .03f (GHz) 0-12.4 GHz | 142-0402-101 | 142-0402-106  | .611 (15.52) | .470 (11.94) |
| R-161/U, 174, 188, 316   | 1.15 + .03f (GHz) 0-12.4 GHz | 142-0403-101 | 142-0403-106  | .611 (15.52) | .470 (11.94) |
| RG-188 DS, RG-316 DS     | 1.15 + .03f (GHz) 0-12.4 GHz | 142-0404-101 | 142-0404-106  | .611 (15.52) | .470 (11.94) |
| RG-58/U, 141, 303        | 1.15 + .02f (GHz) 0-12.4 GHz | 142-0407-101 | 142-0407-106  | .611 (15.52) | .470 (11.94) |
| RG-55/U, 142, 223, 400   | 1.15 + .02f (GHz) 0-12.4 GHz | 142-0408-101 | 142-0408-106  | .611 (15.52) | .470 (11.94) |
| RG-179/U, 187            | N/A                          | 142-0433-101 | 142-0433-106  | .611 (15.52) | .470 (11.94) |
| LMR-100, HPF-100, RF-100 | 1.15 + .03f (GHz) 0-12.4 GHz | 142-0403-101 | 142-0403-106  | .611 (15.52) | .470 (11.94) |
| LMR-195, HPF-195, RF-195 | 1.15 + .02f (GHz) 0-12.4 GHz | 142-0407-101 | 142-0407-106  | .611 (15.52) | .470 (11.94) |
| LMR-200, HPF-200, RF-200 | 1.10 + .06f (GHz) 0-12.4 GHz | 142-0439-101 | 142-0439-106  | .611 (15.52) | .470 (11.94) |
| LMR-240, HPF-240, RF-240 | 1.10 + .06f (GHz) 0-12.4 GHz | 142-0435-101 | 142-0435-106  | .635 (16.13) | .490 (12.45) |

Assembly instructions: LMR 195, 200 and 240 page 233.

Other cable groups, see page 232.

See page 190 for Cable Assembly Tools.

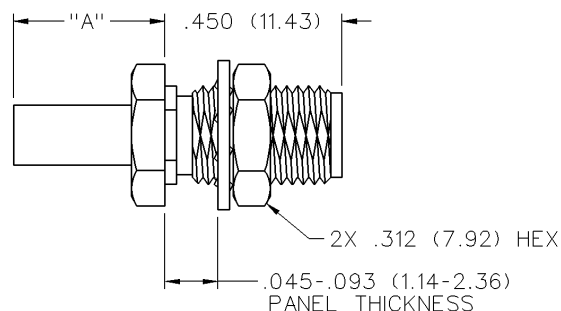
## Straight Crimp Type Bulkhead Jack - Captivated Contact



| CABLE TYPE             | VSWR & FREQ. RANGE            | GOLD PLATED  | NICKEL PLATED |
|------------------------|-------------------------------|--------------|---------------|
| RG-178/U, 196          | 1.20 + .025f (GHz) 0-12.4 GHz | 142-0302-401 | 142-0302-406  |
| RG-161/U, 174,188, 316 | 1.15 + .02f (GHz) 0-12.4 GHz  | 142-0303-401 | 142-0303-406  |
| RG-188 DS, RG-316 DS   | 1.15 + .02f (GHz) 0-12.4 GHz  | 142-0304-401 | 142-0304-406  |
| RG-58/U, 141, 303      | 1.15 + .01f (GHz) 0-12.4 GHz  | 142-0307-401 | 142-0307-406  |
| RG-55/U, 142, 223, 400 | 1.15 + .01f (GHz) 0-12.4 GHz  | 142-0308-401 | 142-0308-406  |

Assembly instructions page 231.  
Mounting Hole layout figure 1 page 201.  
See page 190 for Cable Assembly Tools.

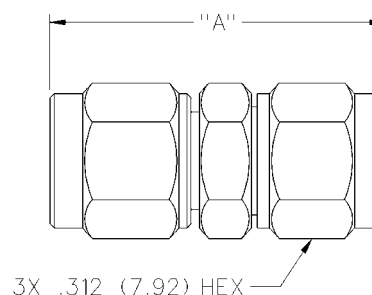
## Straight Crimp Type Bulkhead Jack (3-piece) - Solder or Crimp Captivated Contact



| CABLE TYPE                                        | VSWR & FREQ. RANGE            | GOLD PLATED  | NICKEL PLATED | "A"          |
|---------------------------------------------------|-------------------------------|--------------|---------------|--------------|
| RG-178/U, 196                                     | 1.20 + .025f (GHz) 0-12.4 GHz | 142-0302-431 | 142-0302-436  | .285 (7.24)  |
| RG-161/U, 174, 188, 316, LMR-100, HPF-100, RF-100 | 1.15 + .02f (GHz) 0-12.4 GHz  | 142-0303-411 | 142-0303-416  | .385 (9.78)  |
| RG-188 DS, RG-316 DS                              | 1.15 + .02f (GHz) 0-12.4 GHz  | 142-0304-411 | 142-0304-416  | .385 (9.78)  |
| RG-58/U, 141, 303, LMR-195, HPF-195, RF-195       | 1.15 + .01f (GHz) 0-12.4 GHz  | 142-0307-411 | 142-0307-416  | .385 (9.78)  |
| RG-55/U, 142, 223, 400                            | 1.15 + .01f (GHz) 0-12.4 GHz  | 142-0308-411 | 142-0308-416  | .385 (9.78)  |
| RG-179/U, 187                                     | N/A                           | 142-0333-411 | 142-0333-416  | .385 (9.78)  |
| LMR-200, HPF-200, RF-200                          | 1.10 + .03f (GHz) 0-12.4 GHz  | 142-0339-401 | 142-0339-406  | .545 (13.84) |
| LMR-240, HPF-240, RF-240                          | 1.10 + .03f (GHz) 0-12.4 GHz  | 142-0335-401 | 142-0335-406  | .545 (13.84) |

RG-178 cable group assembly instructions page 228. LMR cables, see page 230. Other cable sizes page 229.  
Mounting hole layout figure 1 page 201. See page 190 for Cable Assembly Tools.

## Straight Clamp Type Plug - Captivated Contact



| CABLE TYPE                           | VSWR & FREQ. RANGE            | GOLD PLATED  | NICKEL PLATED | "A"          |
|--------------------------------------|-------------------------------|--------------|---------------|--------------|
| RG-178/U, 196                        | 1.20 + .025f (GHz) 0-12.4 GHz | 142-0202-011 | 142-0202-016  | .816 (20.73) |
| RG-161/U, 174, 188, 316              | 1.15 + .02f (GHz) 0-12.4 GHz  | 142-0203-011 | 142-0203-016  | .816 (20.73) |
| RG-58/U, 141, 303, 55, 142, 223, 400 | 1.15 + .01f (GHz) 0-12.4 GHz  | 142-0207-011 | 142-0207-016  | .895 (22.73) |

Assembly instructions page 234.

# SMA - 50 Ohm Connectors

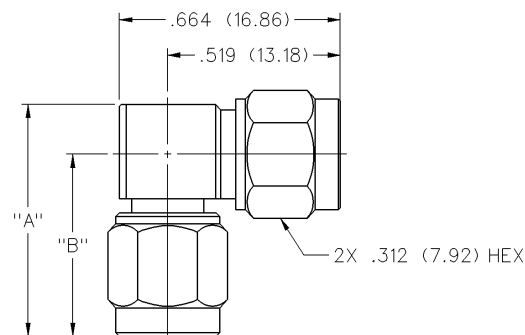
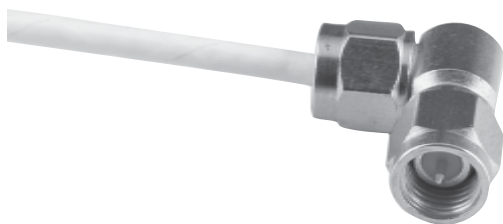
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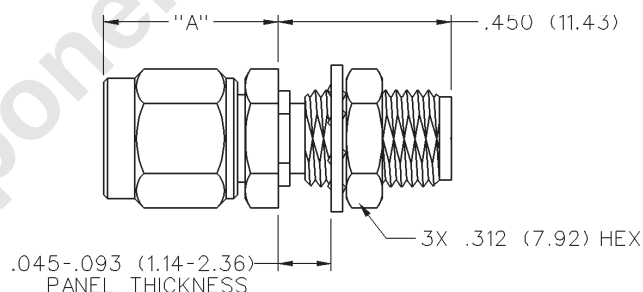
## Right Angle Clamp Type Plug - Captivated Contact



| CABLE TYPE                           | VSWR & FREQ. RANGE           | GOLD PLATED  | NICKEL PLATED | "A"          | "B"          |
|--------------------------------------|------------------------------|--------------|---------------|--------------|--------------|
| RG-178/U, 196                        | 1.20 + .03f (GHz) 0-12.4 GHz | 142-0202-101 | 142-0202-106  | .569 (14.45) | .428 (10.81) |
| RG-161/U, 174, 188, 316              | 1.15 + .03f (GHz) 0-12.4 GHz | 142-0203-101 | 142-0203-106  | .574 (14.58) | .433 (11.00) |
| RG-58/U, 141, 303, 55, 142, 223, 400 | 1.15 + .02f (GHz) 0-12.4 GHz | 142-0207-101 | 142-0207-106  | .686 (17.42) | .545 (13.84) |

Assembly instructions page 235.

## Straight Clamp Type Bulkhead Jack - Captivated Contact

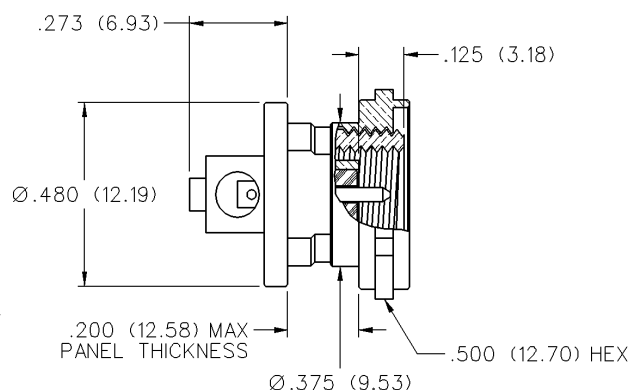


| CABLE TYPE                           | VSWR & FREQ. RANGE            | GOLD PLATED  | NICKEL PLATED | "A"          |
|--------------------------------------|-------------------------------|--------------|---------------|--------------|
| RG-178/U, 196                        | 1.20 + .025f (GHz) 0-12.4 GHz | 142-0102-401 | 142-0102-406  | .452 (11.48) |
| RG-161/U, 174, 188, 316              | 1.15 + .02f (GHz) 0-12.4 GHz  | 142-0103-401 | 142-0103-406  | .487 (12.37) |
| RG-58/U, 141, 303, 55, 142, 223, 400 | 1.15 + .01f (GHz) 0-12.4 GHz  | 142-0107-401 | 142-0107-406  | .531 (13.49) |

Assembly instructions page 234.

Mounting hole layout figure 1 page 201.

## Rear Mount Bulkhead Plug - Antenna Connector

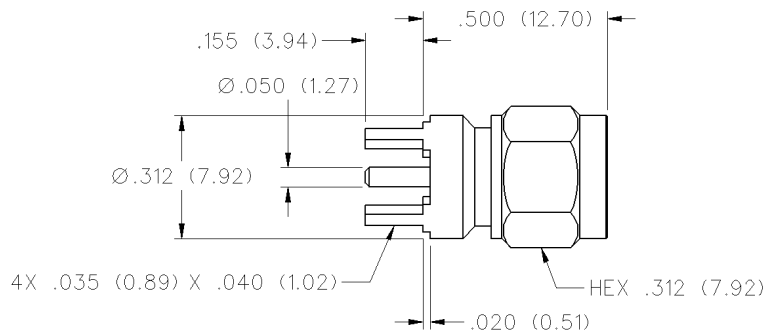


| CABLE TYPE                | VSWR & FREQ. RANGE | GOLD PLATED*  |
|---------------------------|--------------------|---------------|
| RG-178/U, .047 Semi-Rigid | VSWR: N/A 0-4 GHz  | 142-0801-421* |

\* With Nickel mounting nut. Assembly instructions page 227.

Mounting hole layout figure 8 page 201. Mates with SMA Jack Antenna Interface.

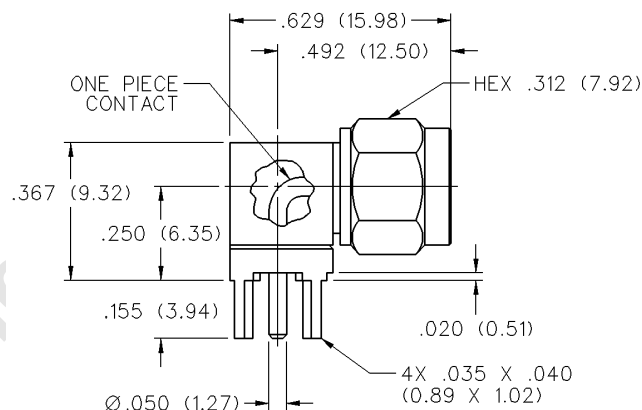
## Straight Plug Receptacle



| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED |
|-------------|--------------|---------------|
| 0-18 GHz    | 142-0801-201 | 142-0801-206  |

Mounting hole layout figure 2 page 201.

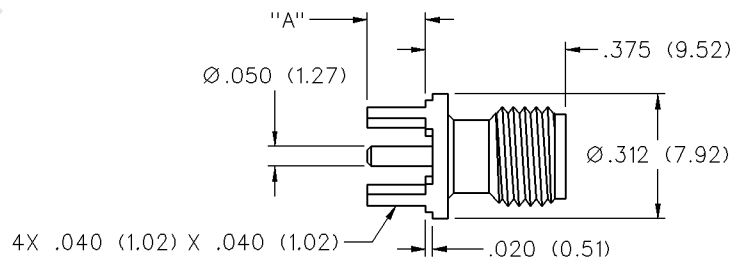
## Right Angle Plug Receptacle



| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED |
|-------------|--------------|---------------|
| 0-18 GHz    | 142-0801-301 | 142-0801-306  |

Mounting hole layout figure 2 page 201.

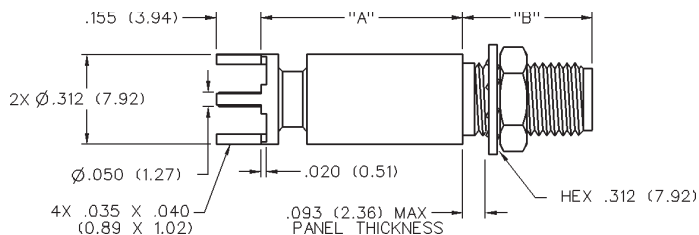
## Straight Jack Receptacle



| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED | IR COMPATIBLE | "A"         |
|-------------|--------------|---------------|---------------|-------------|
| 0-18 GHz    | 142-0701-201 | 142-0701-206  |               | .155 (3.94) |
|             | 142-0701-231 | 142-0701-236  | 142-0701-235* | .110 (2.79) |

\* Tin/Lead solder dipped legs for IR Reflow Compatibility.  
Mounting hole layout figure 2 page 201.

## Straight Bulkhead Jack Receptacle



| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED | "A"          | "B"          |
|-------------|--------------|---------------|--------------|--------------|
| 0-18 GHz    | 142-0701-421 | 142-0701-426  | .700 (17.78) | .450 (11.43) |
| 0-18 GHz    | 142-0701-491 | 142-0701-496  | .065 (1.65)  | .755 (19.18) |



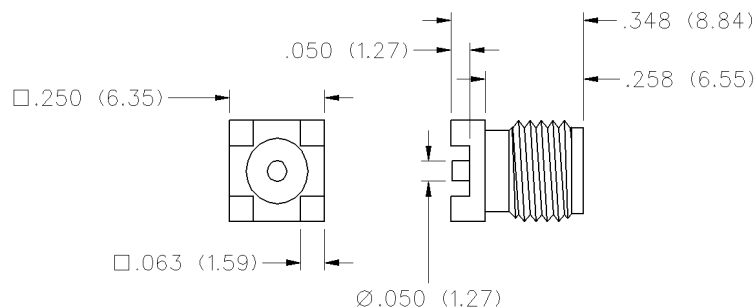
Mounting hole layout figure 2 page 201.

## Straight Jack Receptacle - Surface Mount



| FREQ. RANGE | GOLD PLATED  | PACKAGING                     |
|-------------|--------------|-------------------------------|
| 0-18 GHz    | 142-0711-201 | Stock                         |
|             | 142-0711-202 | Tape and Reel<br>500 pcs/reel |

Recommended Land Pattern figure 9 page 201.

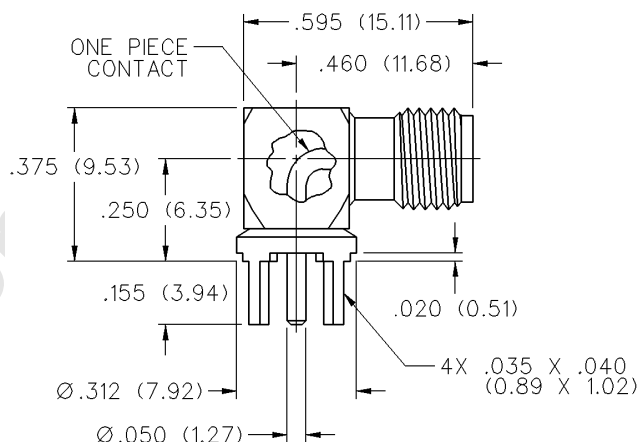


## Right Angle Jack Receptacle



| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED |
|-------------|--------------|---------------|
| 0-18 GHz    | 142-0701-301 | 142-0701-306  |

Mounting hole layout figure 2 page 201.

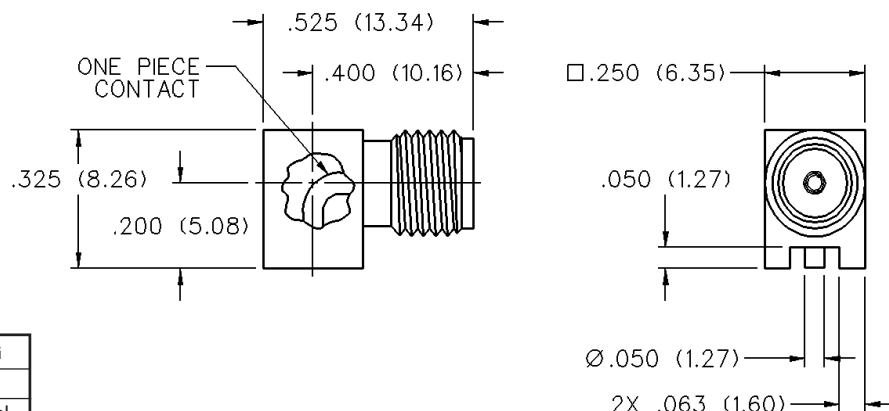


## Right Angle Jack Receptacle - Surface Mount



| FREQ. RANGE | GOLD PLATED  | PACKAGING                     |
|-------------|--------------|-------------------------------|
| 0-18 GHz    | 142-0711-301 | Stock                         |
|             | 142-0711-302 | Tape and Reel<br>425 pcs/reel |

Recommended Land Pattern figure 9 page 201.

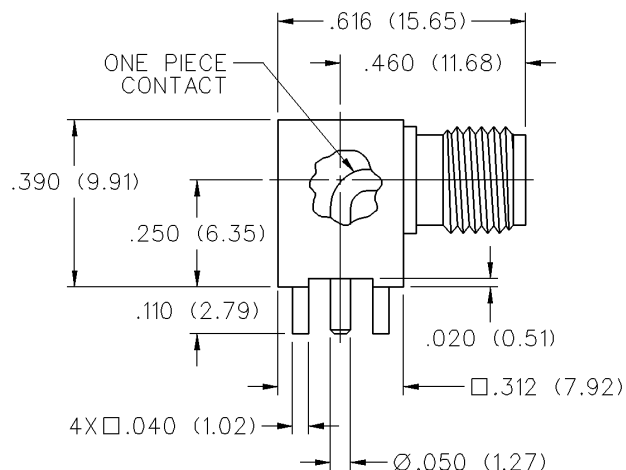


## Right Angle Jack Receptacle - Moisture Seal\*

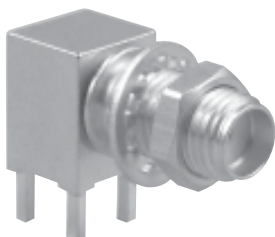


| FREQ. RANGE | NICKEL BODY, GOLD INTERFACE<br>IR COMPATIBLE* |
|-------------|-----------------------------------------------|
| 0-18 GHz    | 142-0701-335*                                 |

\* Tin/Lead solder dipped legs and Moisture Sealed for IR Reflow Compatibility.  
Mounting hole layout figure 2 page 201.

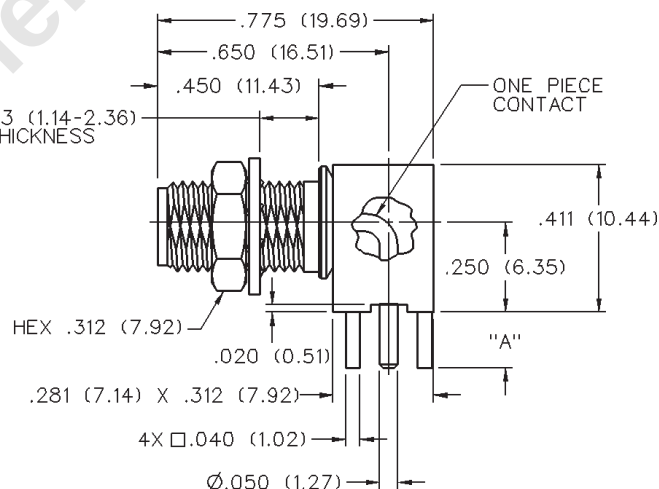


## Right Angle Bulkhead Jack Receptacle



| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED | "A"         |
|-------------|--------------|---------------|-------------|
| 0-18 GHz    | 142-0701-501 | 142-0701-506  | .155 (3.94) |
|             | 142-0701-551 | 142-0701-556  | .110 (2.79) |

Mounting hole layout figures 1 and 2 page 201.



# SMA - 50 Ohm Connectors

End Launch Connectors - A Johnson Original

INCHES (MILLIMETERS) • CUSTOMER DRAWINGS AVAILABLE ON REQUEST

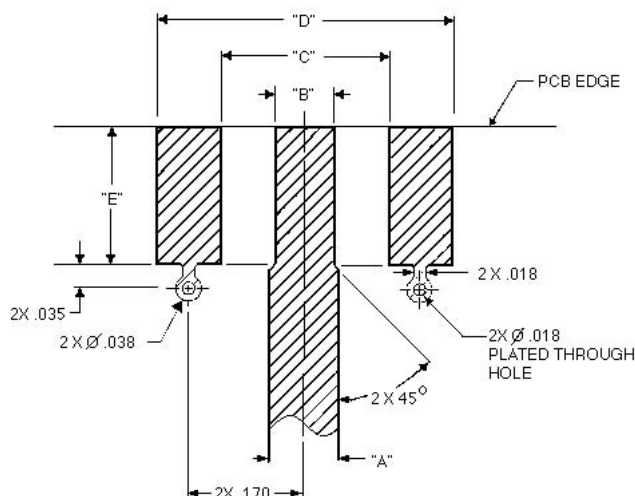
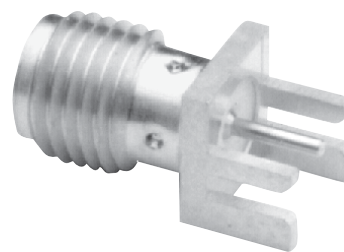
onlinecomponents.com

**EMERSON**  
Network Power

The **End Launch** connector is attached to the circuit board by inserting the board edge between the legs and soldering the legs and center conductor to pads on the board. For optimum high frequency performance, the connector to circuit board transition must be adjusted for low VSWR. To compensate for the transition from coax to microstrip, trace widths "A" and "B" must be adjusted based on circuit board thickness. When properly adjusted, this technique yields a low VSWR over a wide bandwidth.

The tabulated dimensions "A", "B", "C", "D", and "E" were determined experimentally to achieve low VSWR (typically less than 1.5 up to 18 GHz). The circuit board used for these tests was double-sided FR 4 with 1 oz. copper on

both sides. The copper was left on the bottom of the board to create a ground plane for the 50 Ohm microstrip structure. While not all inclusive, these dimensions are given as reference information for selected **SMA End Launch** connectors. Further adjustments may be necessary depending upon the application. All dimensions are in inches.



| PART NO.         | BASE WIDTH | BOARD THICK | "A"  | "B"  | "C"  | "D"  | "E"  |
|------------------|------------|-------------|------|------|------|------|------|
| 142-0701-801/806 | .375       | .062        | .103 | .090 | .250 | .440 | .200 |
| 142-0701-851/861 | .375       | .062        | .103 | .090 | .250 | .440 | .200 |
| 142-0701-871/876 | .375       | .062        | .103 | .090 | .250 | .440 | .200 |
| 142-0711-821/826 | .250       | .062        | .103 | .070 | .170 | .380 | .165 |
| 142-0711-871/876 | .375       | .047        | .083 | .075 | .250 | .440 | .200 |
| 142-0711-881/886 | .375       | .047        | .083 | .075 | .250 | .440 | .200 |
| 142-0701-881/886 | .375       | .031        | .050 | .045 | .250 | .440 | .200 |

Tabulated Dimensions "A", "B", "C" and "D" are symmetrical about the center line

## Surface Mount Versions Available!

### SMA End Launch Specifications

#### ELECTRICAL RATINGS

**Impedance:** 50 Ohms

**Frequency Range:** 0-18 GHz

**VSWR:** Dependent upon application

**Working Voltage** (VRMS max.): 335 @ Sea Level, 85 @ 70K Feet

**Dielectric Withstanding Voltage** (VRMS min. at sea level): 1000

**Corona Level** (Volts min. at 70,000 feet): 250

**Insulation Resistance:** 5000 megohms min

**Contact Resistance** (milliohms max.): 3.0 Initial, 4.0 after environmental

**RF High Potential Withstanding Voltage** (VRMS min. tested at 4 and 7 MHz): 670

#### MECHANICAL RATINGS

**Engagement Design:** MIL-C-39012, Series SMA

**Engagement/Disengagement Force:** 2 inch-pounds max.

**Mating Torque:** 7 to 10 inch-pounds

**Coupling Proof Torque:** 15 inch-pounds min.

**Coupling Nut Retention:** 60 pounds min.

**Contact Retention Force:** 6 lbs min. axial force, 4 inch-ounce min. torque

**Durability:** 500 cycles min.

#### ENVIRONMENTAL RATINGS

(Meets or exceeds the applicable paragraph of MIL-C-39012)

**Temperature Range:** -65° to + 165° C

**Thermal Shock:** MIL-STD-202, Method 107, Condition B

**Corrosion:** MIL-STD-202, Method 101, Condition B

**Shock:** MIL-STD-303, Method 213, Condition I

**Vibration:** MIL-STD-202, Method 204, Condition D

**Moisture Resistance:** MIL-STD-202, Method 106

#### MATERIAL SPECIFICATIONS

**Bodies:** Brass per QQ-B-626, gold plated\* per

MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Contacts:**

Male - brass per QQ-B-626, gold plated per MIL-G-45204 .00003" min.

Female - beryllium copper per QQ-C-530, gold plated

per MIL-G-45204 .00003" min.

**Nut Retention Spring:** Beryllium copper per QQ-C-533. Unplated

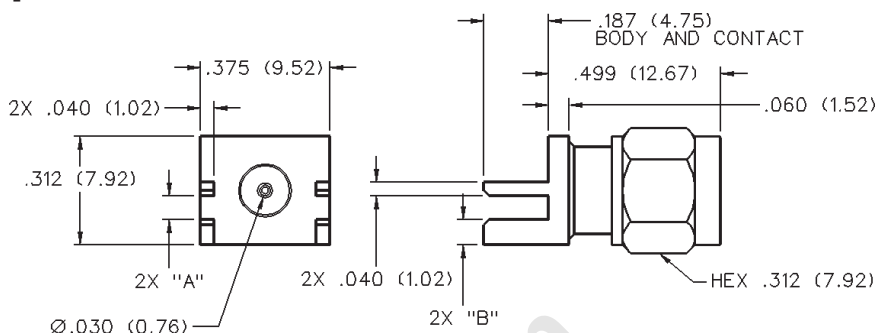
**Insulators:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457

**Mounting Hardware:** Brass per QQ-B-626 or QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

\*All gold plated parts include a

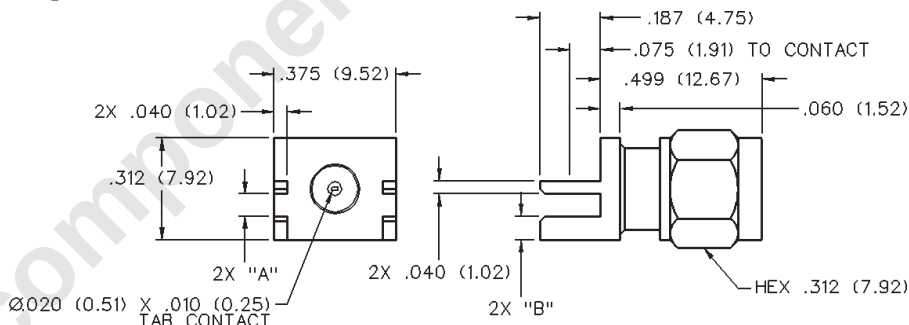
.00005" min. nickel underplate barrier layer.

## End Launch Plug Receptacle - Round Contact



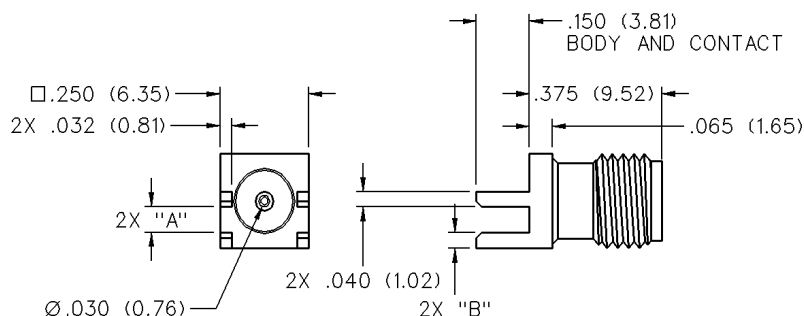
| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED | BOARD THICKNESS | "A"         | "B"         |
|-------------|--------------|---------------|-----------------|-------------|-------------|
| 0-18 GHz    | 142-0801-801 | 142-0801-806  | .062 (1.57)     | .068 (1.73) | .073 (1.85) |
|             | 142-0801-821 | 142-0801-826  | .042 (1.07)     | .048 (1.22) | .093 (2.36) |

## End Launch Plug Receptacle - Tab Contact



| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED | BOARD THICKNESS | "A"         | "B"         |
|-------------|--------------|---------------|-----------------|-------------|-------------|
| 0-18 GHz    | 142-0801-811 | 142-0801-816  | .062 (1.57)     | .068 (1.73) | .083 (2.11) |
|             | 142-0801-831 | 142-0801-836  | .042 (1.07)     | .048 (1.22) | .103 (2.62) |

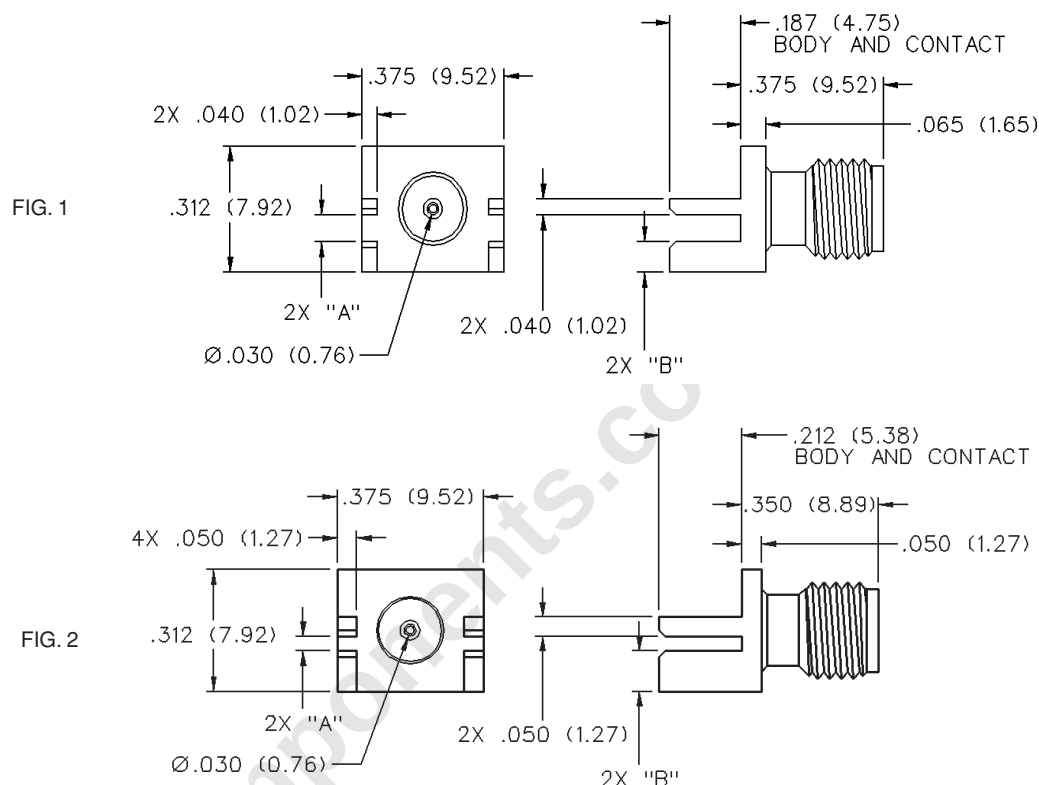
## End Launch Jack Receptacle - Round Contact



| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED | BOARD THICKNESS | "A"         | "B"         |
|-------------|--------------|---------------|-----------------|-------------|-------------|
| 0-18 GHz    | 142-0711-821 | 142-0711-826  | .062 (1.57)     | .068 (1.73) | .042 (1.07) |
|             | 142-0711-841 | 142-0711-846  | .042 (1.07)     | .048 (1.22) | .062 (1.57) |
|             | 142-0721-861 | 142-0721-866  | .031 (0.79)     | .037 (0.94) | .083 (2.11) |

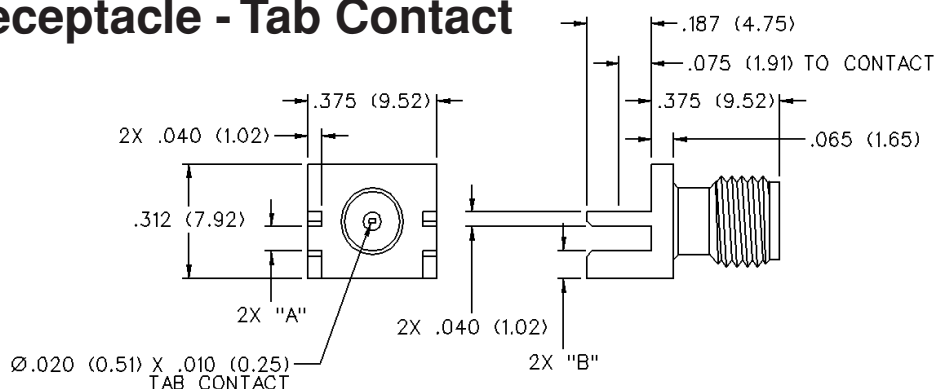
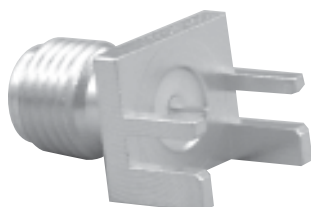
*Coupling proof torque  
8 inch-pounds  
maximum without  
support wrench.*

## End Launch Jack Receptacle - Round Contact



| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED | BOARD THICKNESS | "A"         | "B"         | FIGURE |
|-------------|--------------|---------------|-----------------|-------------|-------------|--------|
| 0-18 GHz    | 142-0701-801 | 142-0701-806  | .062 (1.57)     | .068 (1.73) | .073 (1.85) | 1      |
|             | 142-0701-831 | 142-0701-836  | .042 (1.07)     | .048 (1.22) | .093 (2.36) | 1      |
|             | 142-0701-881 | 142-0701-886  | .031 (0.79)     | .037 (0.94) | .104 (2.64) | 2      |
|             | 142-0711-871 | 142-0711-876  | .047 (1.19)     | .053 (1.35) | .088 (2.24) | 1      |

## End Launch Jack Receptacle - Tab Contact



| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED | BOARD THICKNESS | "A"         | "B"         |
|-------------|--------------|---------------|-----------------|-------------|-------------|
| 0-18 GHz    | 142-0701-851 | 142-0701-856  | .062 (1.57)     | .068 (1.73) | .083 (2.11) |
|             | 142-0701-841 | 142-0701-846  | .042 (1.07)     | .048 (1.22) | .103 (2.62) |
|             | 142-0711-881 | 142-0711-886  | .047 (1.19)     | .053 (1.35) | .098 (2.24) |

## End Launch Bulkhead Jack Receptacle - Round Contact

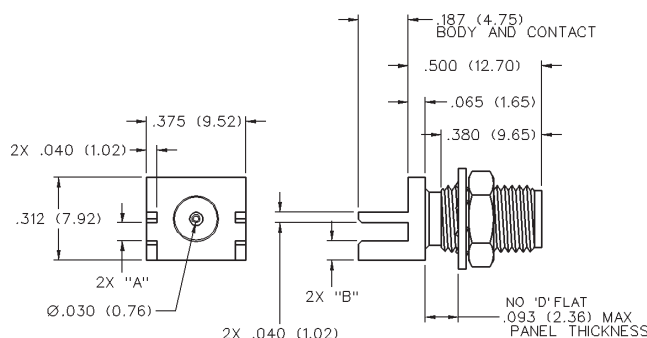
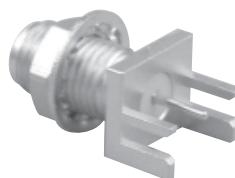


FIG. 1

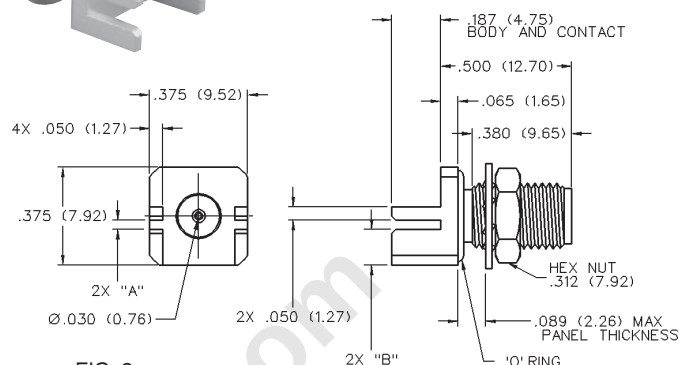
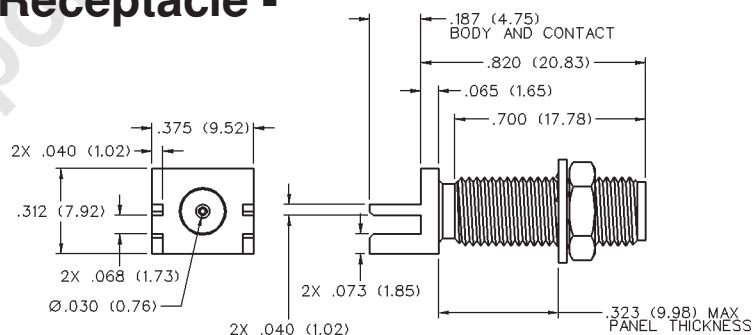
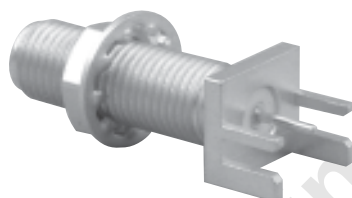


FIG. 2

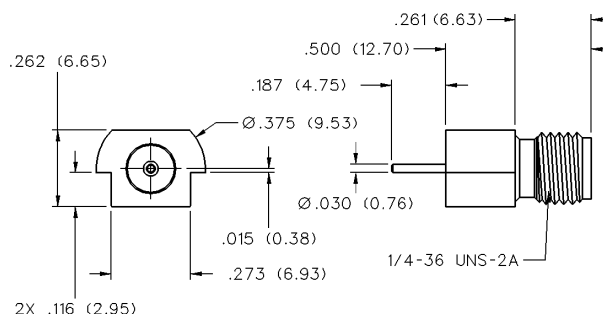
| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED | BOARD THICKNESS | "A"         | "B"         | "O" RING | FIG. |
|-------------|--------------|---------------|-----------------|-------------|-------------|----------|------|
| 0-18 GHz    | 142-0701-871 | 142-0701-876  | .062 (1.57)     | .068 (1.73) | .073 (1.85) | No       | 1    |
|             | 142-0721-871 | 142-0721-876  | .062 (1.57)     | .068 (1.73) | .073 (1.85) | No       | 1    |
|             | 142-0721-841 | 142-0721-846  | .069 (1.75)     | .075 (1.91) | .066 (1.68) | No       | 1    |
|             | 142-0731-861 | 142-0731-866  | .031 (0.79)     | .037 (0.94) | .135 (3.43) | Yes      | 2    |

## End Launch Bulkhead Jack Receptacle - Round Contact



| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED | BOARD THICKNESS |
|-------------|--------------|---------------|-----------------|
| 0-18 GHz    | 142-0711-811 | 142-0711-816  | .062 (1.57)     |

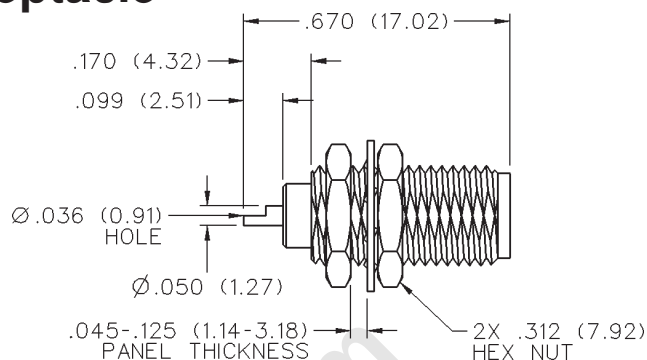
## End Launch Jack Receptacle - Surface Mount



| FREQ. RANGE | GOLD PLATED  | PACKAGING                     |
|-------------|--------------|-------------------------------|
| 0-18 GHz    | 142-0721-881 | Stock                         |
|             | 142-0721-882 | Tape and Reel<br>475 pcs/reel |

*Recommended land pattern figure 35 page 204.*

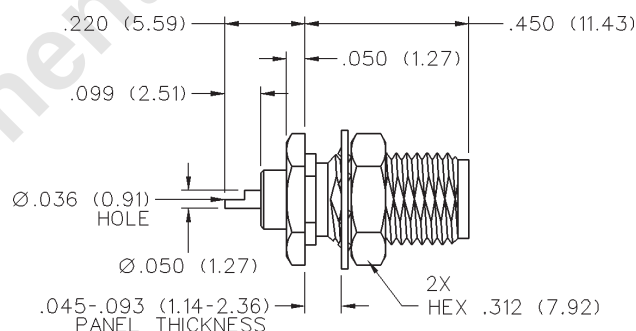
## Front Mount Bulkhead Jack Receptacle



| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED |
|-------------|--------------|---------------|
| 0-18 GHz    | 142-0701-411 | 142-0701-416  |

Mounting hole layout figure 1 page 201.

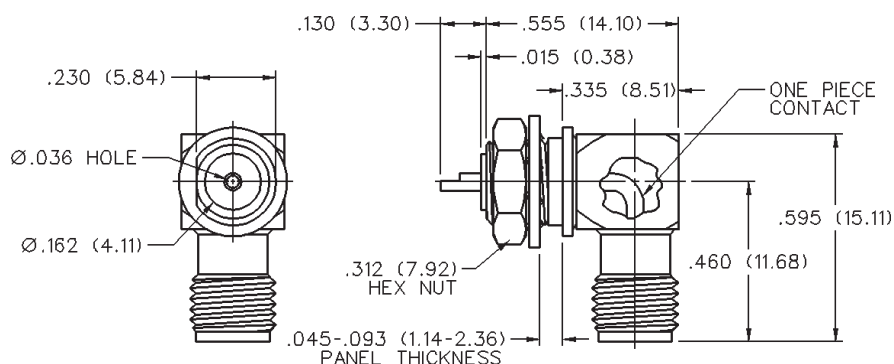
## Rear Mount Bulkhead Jack Receptacle



| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED |
|-------------|--------------|---------------|
| 0-18 GHz    | 142-0701-401 | 142-0701-406  |

Mounting hole layout figure 1 page 201.

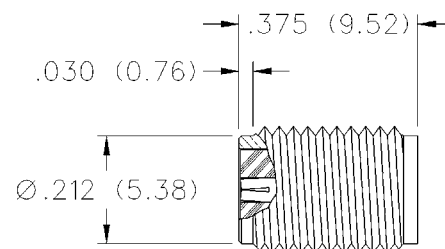
## Right Angle Bulkhead Mount Jack Receptacle



| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED |
|-------------|--------------|---------------|
| 0-18 GHz    | 142-0701-531 | 142-0701-536  |

Mounting hole layout figure 1 page 201.

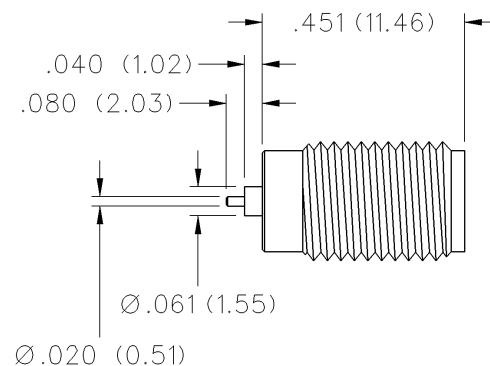
## Jack Receptacle - Thread Mount Field Replaceable



| GOLD PLATED  | NICKEL PLATED | ACCEPTS PIN SIZE |
|--------------|---------------|------------------|
| 142-1731-001 | 142-1731-006  | .020 (0.51)      |
| 142-1731-011 | 142-1731-016  | .036 (0.91)      |

Mounting hole layout figure 21 page 203.

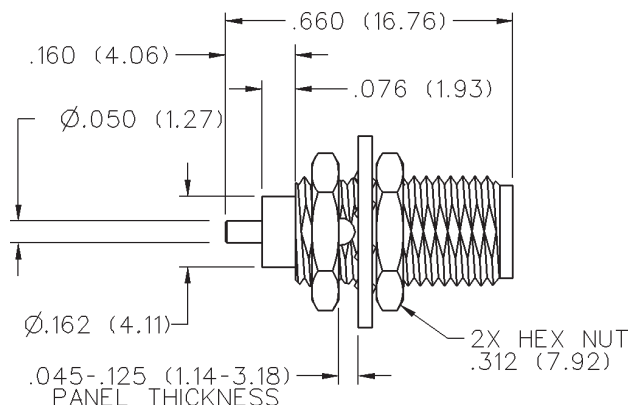
## Jack Receptacle - Thread Mount Extended Dielectric (Non-hermetic)



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 142-1731-021 | 142-1731-026  |

Mounting hole layout figure 20 page 202.

## Jack Receptacle - Thread Mount with Hardware Extended Dielectric Bulkhead



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 142-1731-031 | 142-1731-036  |

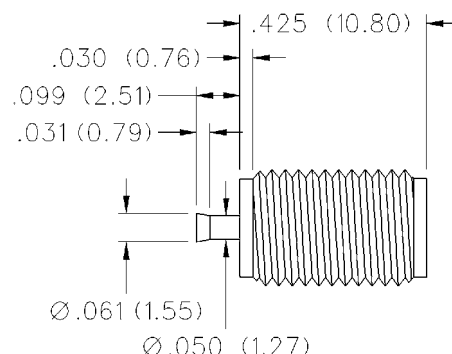
Mounting hole layout figure 1 page 201.

## Jack Receptacle - Thread Mount Nail Head Contact



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 142-1731-041 | 142-1731-046  |

Mounting hole layout figure 21 page 203.

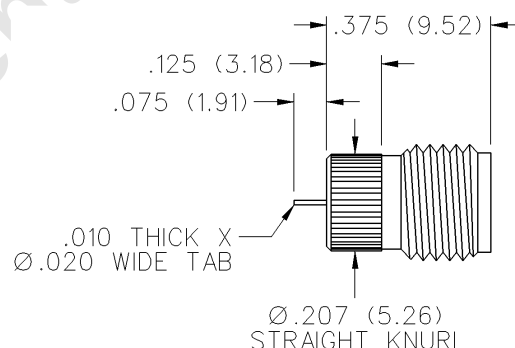


## Jack Receptacle - Knurl Mount\* Tab Contact



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 142-1721-001 | 142-1721-006  |

\* Not intended for use in materials harder than Rockwell B82  
 Assembly tool 140-0000-954 page 192.  
 Mounting hole layout figure 19 page 202.

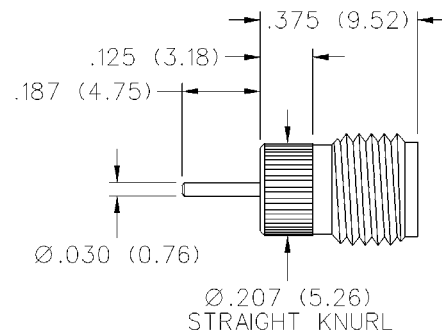


## Jack Receptacle - Knurl Mount\* Round Contact

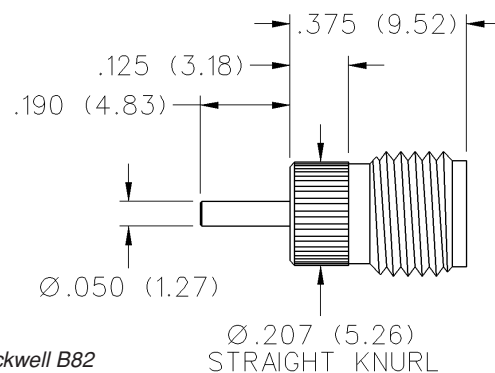


| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 142-1721-011 | 142-1721-016  |

\* Not intended for use in materials harder than Rockwell B82  
 Assembly tool 140-0000-954 page 192.  
 Mounting hole layout figure 19 page 202.



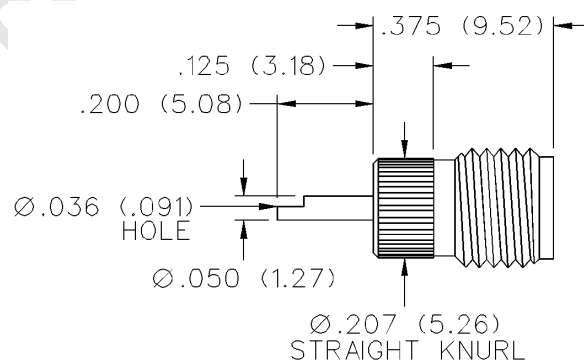
## Jack Receptacle - Knurl Mount\* Round Contact



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 142-1721-021 | 142-1721-026  |

\* Not intended for use in materials harder than Rockwell B82  
Assembly tool 140-0000-954 page 192.  
Mounting hole layout figure 19 page 202.

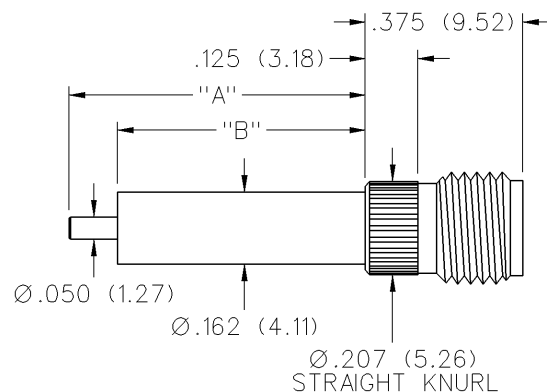
## Jack Receptacle - Knurl Mount\* Solder Cup Contact



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 142-0701-481 | 142-0701-486  |

\* Not intended for use in materials harder than Rockwell B82  
Assembly tool 140-0000-954 page 192.  
Mounting hole layout figure 19 page 202.

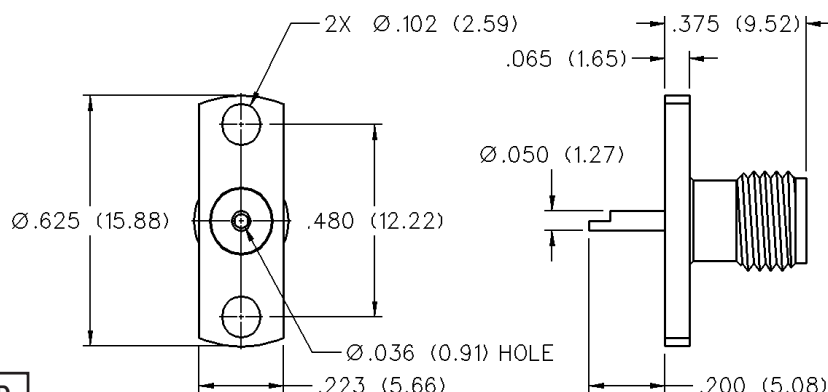
## Jack Receptacle - Knurl Mount\* Extended Dielectric



| GOLD PLATED  | NICKEL PLATED | "A"          | "B"          |
|--------------|---------------|--------------|--------------|
| 142-1721-031 | 142-1721-036  | .190 (4.83)  | .095 (2.41)  |
| 142-1721-041 | 142-1721-046  | .240 (6.10)  | .180 (4.57)  |
| 142-1721-051 | 142-1721-056  | .705 (17.91) | .590 (14.99) |

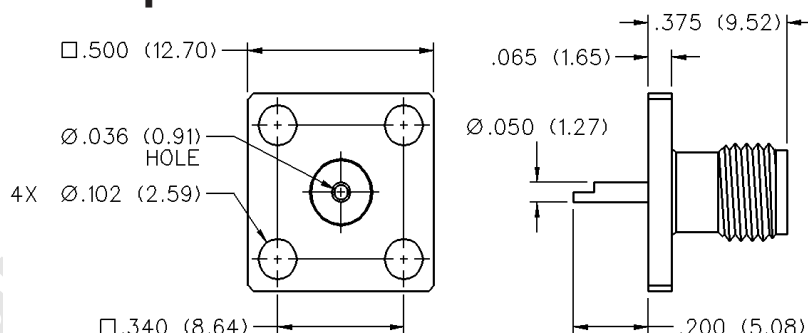
\* Not intended for use in materials harder than Rockwell B82  
Assembly tool 140-0000-954 page 192.  
Mounting hole layout figure 19 page 202.

## 2-Hole Flange Mount Jack Receptacle - Flush Dielectric



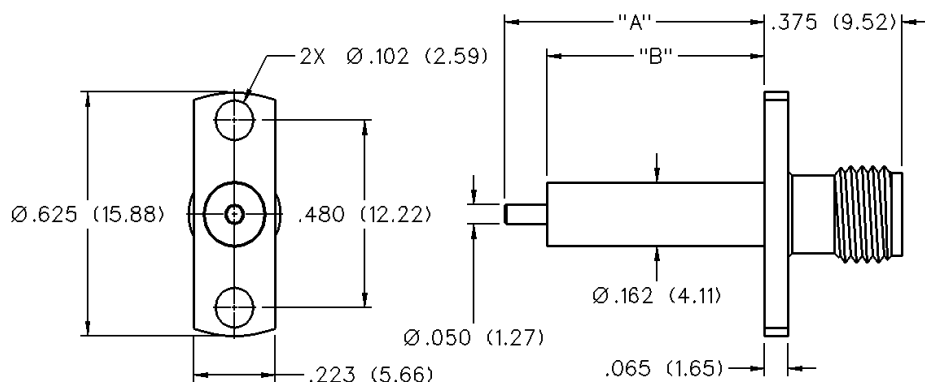
| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED |
|-------------|--------------|---------------|
| 0-18 GHz    | 142-0701-621 | 142-0701-626  |

## 4-Hole Flange Mount Jack Receptacle - Flush Dielectric



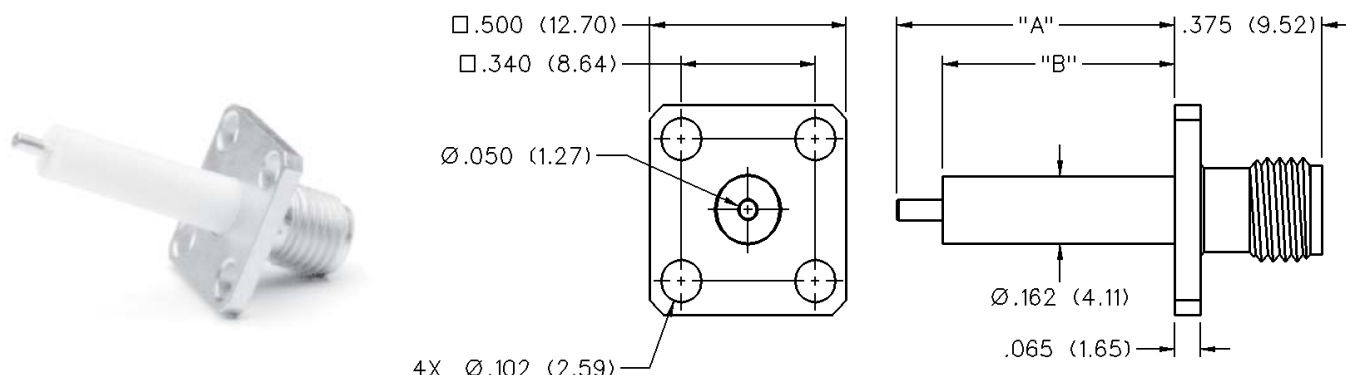
| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED |
|-------------|--------------|---------------|
| 0-18 GHz    | 142-0701-631 | 142-0701-636  |

## 2-Hole Flange Mount Jack Receptacle - Extended Dielectric



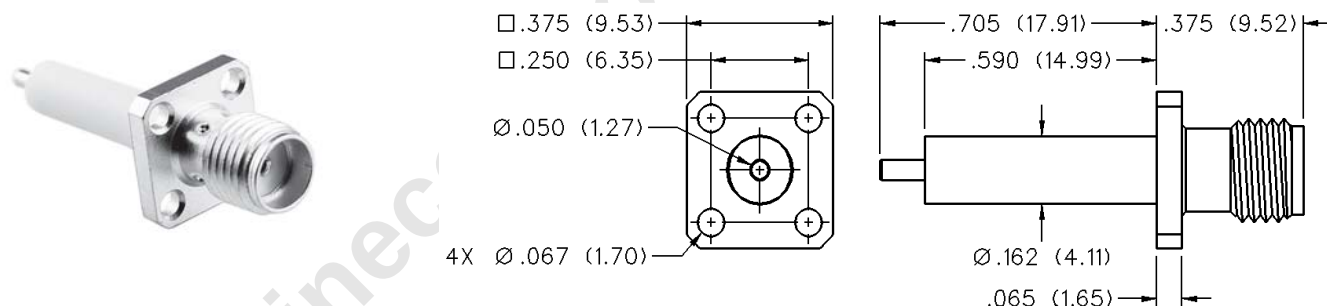
| VSWR & FREQ. RANGE                   | GOLD PLATED  | NICKEL PLATED | "A"          | "B"          |
|--------------------------------------|--------------|---------------|--------------|--------------|
| VSWR: 1.15 + .02 f (GHz)<br>0-18 GHz | 142-1701-131 | 142-1701-136  | .705 (17.91) | .590 (14.99) |
|                                      | 142-1701-031 | 142-1701-036  | .240 (6.10)  | .180 (4.57)  |

## 4-Hole Flange Mount Jack Receptacle - Extended Dielectric



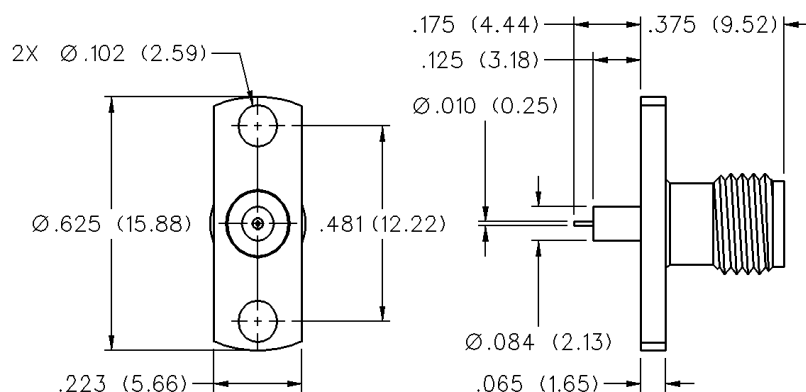
| VSWR & FREQ. RANGE                   | GOLD PLATED  | NICKEL PLATED | "A"          | "B"          |
|--------------------------------------|--------------|---------------|--------------|--------------|
| VSWR: 1.15 + .02 f (GHz)<br>0-18 GHz | 142-1701-121 | 142-1701-126  | .705 (17.91) | .590 (14.99) |
|                                      | 142-1701-041 | 142-1701-046  | .190 (4.83)  | .095 (2.41)  |

## 4-Hole Flange Mount Jack Receptacle - Extended Dielectric



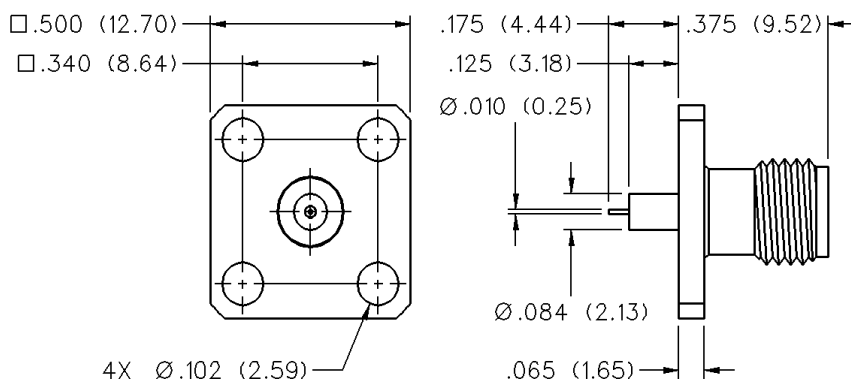
| VSWR & FREQ. RANGE                | GOLD PLATED  | NICKEL PLATED |
|-----------------------------------|--------------|---------------|
| VSWR: 1.15 + .02 f (GHz) 0-18 GHz | 142-1701-011 | 142-1701-016  |

## 2-Hole Flange Mount Jack Receptacle - Extended Dielectric



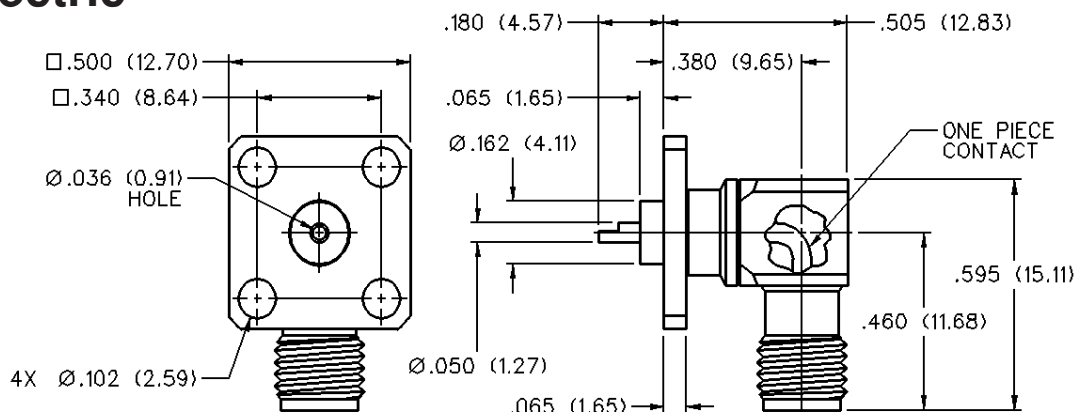
| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 142-1701-201 | 142-1701-206  |

## 4-Hole Flange Mount Jack Receptacle - Extended Dielectric



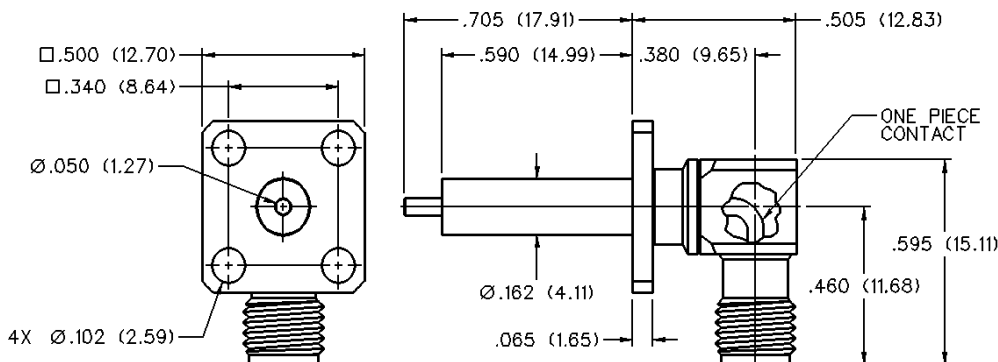
| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 142-1701-191 | 142-1701-196  |

## 4-Hole Right Angle Flange Mount Jack Receptacle - Extended Dielectric



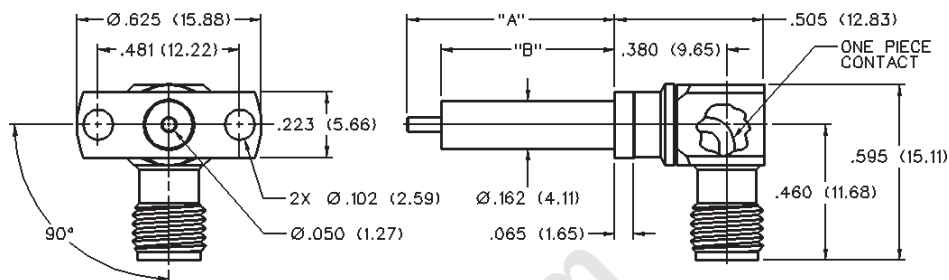
| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 142-0701-701 | 142-0701-706  |

## 4-Hole Right Angle Flange Mount Jack Receptacle - Extended Dielectric



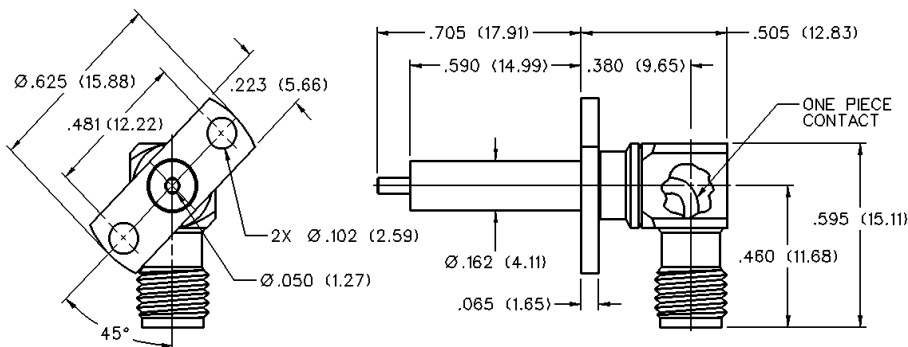
| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 142-1711-001 | 142-1711-006  |

## 2-Hole Right Angle Flange Mount Jack Receptacle - Extended Dielectric 90° Orientation



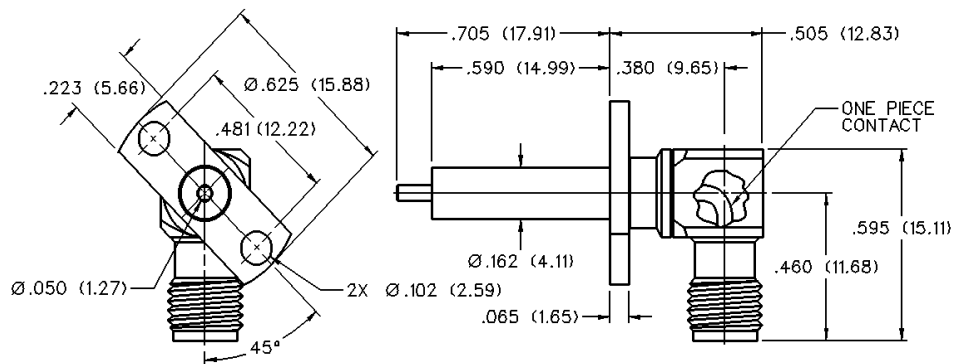
| GOLD PLATED  | NICKEL PLATED | "A"  | "B"  |
|--------------|---------------|------|------|
| 142-1711-011 | 142-1711-016  | .705 | .590 |
| 142-1711-061 | 142-1711-066  | .195 | .130 |

## 2-Hole Right Angle Flange Mount Jack Receptacle - Extended Dielectric +45° Orientation



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 142-1711-021 | 142-1711-026  |

## 2-Hole Right Angle Flange Mount Jack Receptacle - Extended Dielectric -45° Orientation



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 142-1711-031 | 142-1711-036  |

# SMA - 50 Ohm Connectors

Field Replaceable - Application Notes

INCHES (MILLIMETERS) • CUSTOMER DRAWINGS AVAILABLE ON REQUEST

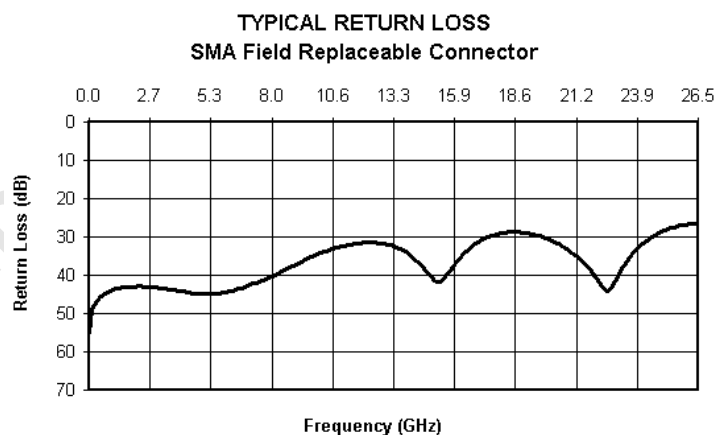
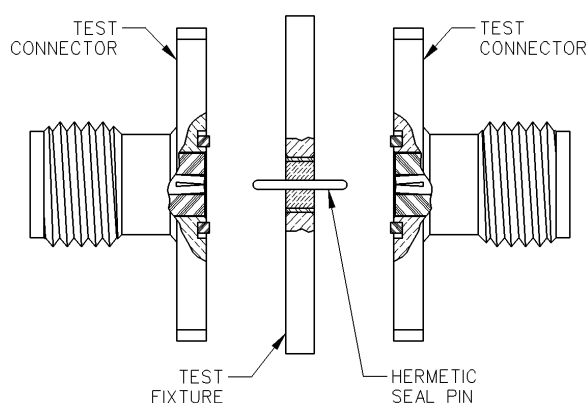
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The field replaceable style of connector is known by many names in the industry, such as MIC launcher, hermetic seal launcher, spark plug launcher, etc. Some types, such as those known as “spark plugs,” have the hermetic seal incorporated into the connector. These types require special welding to install and can not be replaced without destroying the hermeticity of the circuit housing. True field replaceable connectors, such as the Johnson line, are easy to install and replace. Because the hermetic seal is not incorporated into the connector design, the connector can be removed and replaced without destroying the hermetic seal or the hermeticity of the circuit housing.

All of the above-mentioned connector types perform the same basic function—creating a transition from microstrip circuitry to a coaxial transmission line. Whenever possible, the hermetic seal pin diameter should be chosen as close as possible to the microstrip trace width. For optimum electrical performance, the transition from the hermetic seal to the microstrip trace must be properly compensated which involves adjusting the microstrip trace width to minimize any impedance discontinuities found in the transition area.

The plot shown below is representative of the typical return loss of a Johnson SMA field replaceable connector. To produce the data shown below, a test fixture is created using the appropriate Johnson hermetic seal. The fixture consists of a suitably thick spacer plate with the hermetic seal mounted flush to both surfaces. Two connectors are mounted back to back around the fixture and the VSWR of this test assembly is measured. The return loss data shown is equivalent to the square root of the measured VSWR of the test assembly. Since the connectors tested are of identical design, it can be stated with fair accuracy that the data shown represents the response of a single field replaceable connector and its transition to the hermetic seal.

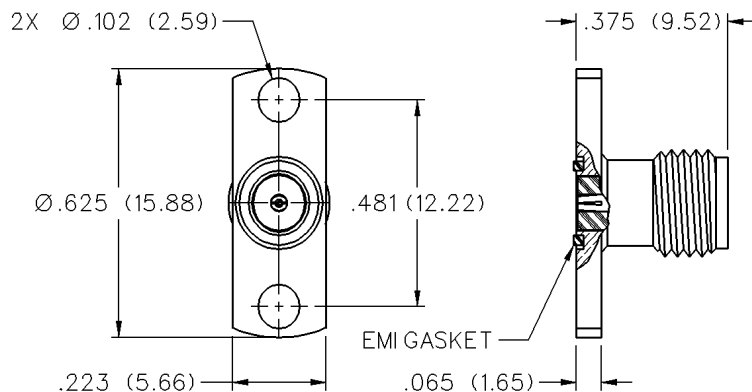


Although we do not publish a VSWR specification for field replaceable connectors, typical connector VSWR can be expected to be better than  $1.1 + .01f$  ( $f$  in GHz). A VSWR specification is not stated because an industry standard method for testing field replaceable connectors does not exist. The actual performance of the connector is dependent upon the application for the following reasons:

1. The choice of hermetic seal to be used by the customer is not specified by the connector manufacturer. Hermetic seals produced by different manufacturers will not have the same electrical characteristics. For optimum electrical performance, we recommend the use of our standard 142-1000-001, 002, 003 and 004 hermetic seals for pin diameters of .012 (0.30), .015 (0.38), .018 (0.46) and .020 (0.51). Custom hermetic seal configurations can be quoted.
2. It is recommended that the hermetic seal be mounted flush with the circuit housing. Tolerance variations between the hermetic seal and machined housing do not always guarantee an optimum transition to the connector. Some manufacturers recommend an additional counterbore in the circuit housing to accommodate a solder washer during installation of the seal. We do not recommend this type of installation because, if the counterbore is not completely filled with solder, electrical discontinuities may be created.
3. As stated above, the transition between the hermetic seal pin and the microstrip trace will affect electrical performance. Several different methods of hermetic seal mounting and seal pin to microstrip trace attachment are used in the industry. We cannot recommend one method over the other as this is dependent upon the customer's application.

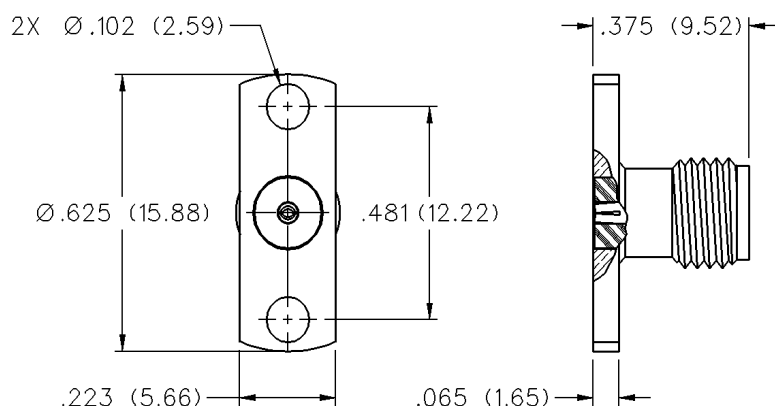
As always, quotes for non-standard field replaceable connectors and/or hermetic seals are welcome.

## 2-Hole Flange Mount Jack Receptacle - with EMI Gasket



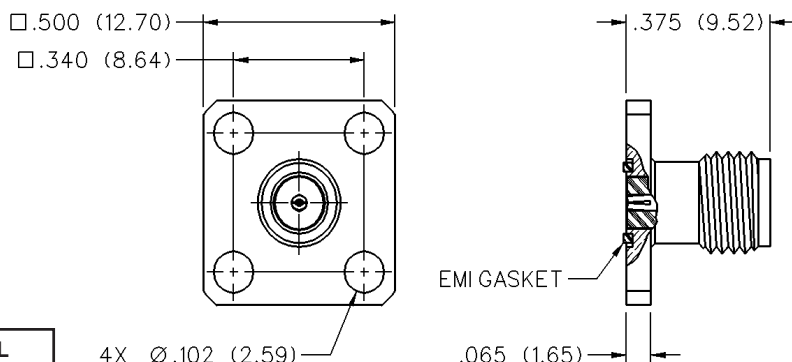
| ACCEPTS PIN SIZE | FREQUENCY RANGE | GOLD PLATED  | NICKEL PLATED |
|------------------|-----------------|--------------|---------------|
| .012 (0.30)      | 0-26.5 GHz      | 142-1701-601 | 142-1701-606  |
| .015 (0.38)      | 0-26.5 GHz      | 142-1701-611 | 142-1701-616  |
| .018 (0.46)      | 0-26.5 GHz      | 142-1701-621 | 142-1701-626  |

## 2-Hole Flange Mount Jack Receptacle - without EMI Gasket



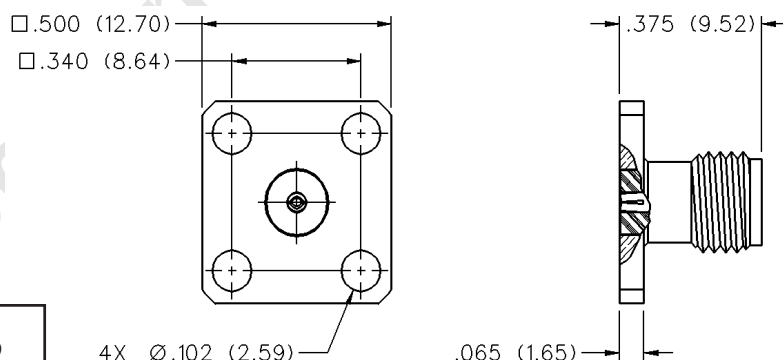
| ACCEPTS PIN SIZE | FREQUENCY RANGE | GOLD PLATED  | NICKEL PLATED |
|------------------|-----------------|--------------|---------------|
| .020 (0.51)      | 0-26.5 GHz      | 142-1701-631 | 142-1701-636  |
| .036 (0.91)      | 0-26.5 GHz      | 142-1701-641 | 142-1701-646  |

## 4-Hole Flange Mount Jack Receptacle - with EMI Gasket



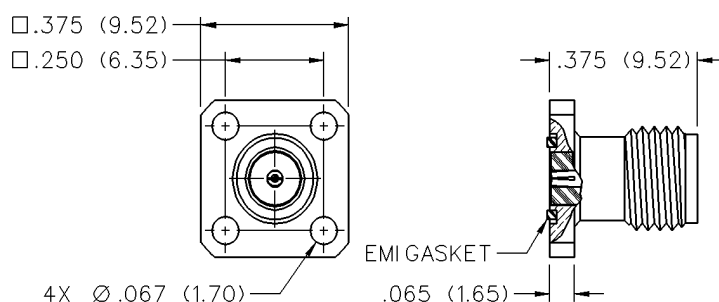
| ACCEPTS PIN SIZE | FREQUENCY RANGE | GOLD PLATED  | NICKEL PLATED |
|------------------|-----------------|--------------|---------------|
| .012 (0.30)      | 0-26.5 GHz      | 142-1701-501 | 142-1701-506  |
| .015 (0.38)      | 0-26.5 GHz      | 142-1701-511 | 142-1701-516  |
| .018 (0.46)      | 0-26.5 GHz      | 142-1701-521 | 142-1701-526  |

## 4-Hole Flange Mount Jack Receptacle - without EMI Gasket



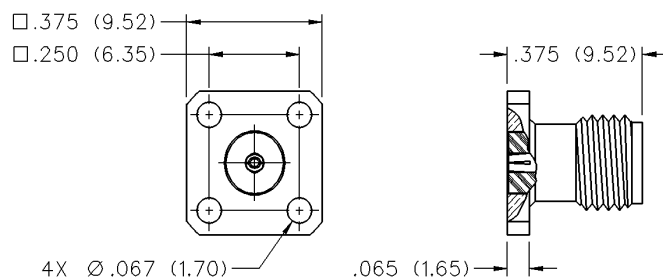
| ACCEPTS PIN SIZE | FREQUENCY RANGE | GOLD PLATED  | NICKEL PLATED |
|------------------|-----------------|--------------|---------------|
| .020 (0.51)      | 0-26.5 GHz      | 142-1701-531 | 142-1701-536  |
| .036 (0.91)      | 0-26.5 GHz      | 142-1701-541 | 142-1701-546  |

## 4-Hole Flange Mount Jack Receptacle - with EMI Gasket



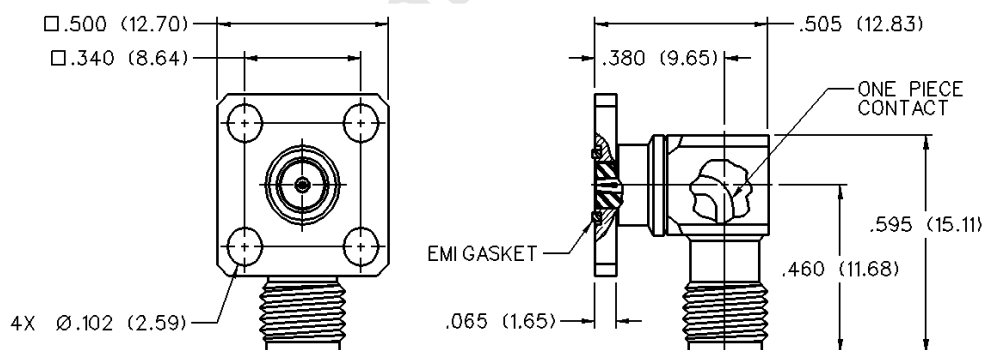
| ACCEPTS PIN SIZE | FREQUENCY RANGE | GOLD PLATED  | NICKEL PLATED |
|------------------|-----------------|--------------|---------------|
| .012 (0.30)      | 0-26.5 GHz      | 142-1701-551 | 142-1701-556  |
| .015 (0.38)      | 0-26.5 GHz      | 142-1701-561 | 142-1701-566  |
| .018 (0.46)      | 0-26.5 GHz      | 142-1701-571 | 142-1701-576  |

## 4-Hole Flange Mount Jack Receptacle - without EMI Gasket



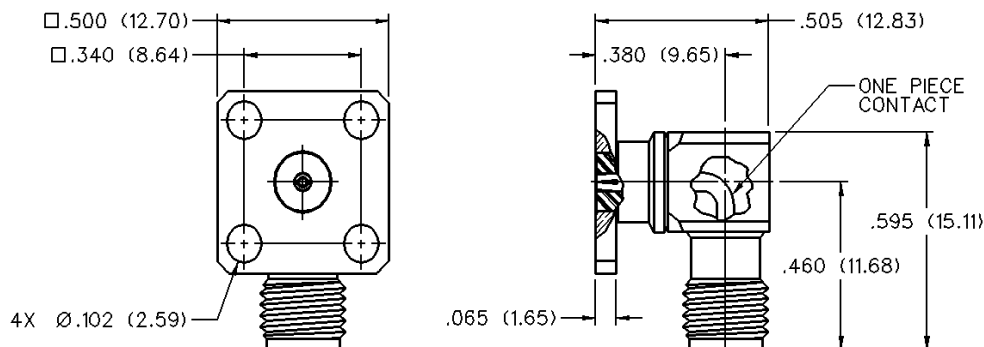
| ACCEPTS PIN SIZE | FREQUENCY RANGE | GOLD PLATED  | NICKEL PLATED |
|------------------|-----------------|--------------|---------------|
| .020 (0.51)      | 0-26.5 GHz      | 142-1701-581 | 142-1701-586  |
| .036 (0.91)      | 0-26.5 GHz      | 142-1701-591 | 142-1701-596  |

## 4-Hole Right Angle Flange Mount Jack Receptacle - with EMI Gasket



| ACCEPTS PIN SIZE | FREQUENCY RANGE | GOLD PLATED  | NICKEL PLATED |
|------------------|-----------------|--------------|---------------|
| .015 (0.38)      | 0-26.5 GHz      | 142-1711-511 | 142-1711-516  |
| .018 (0.46)      | 0-26.5 GHz      | 142-1711-521 | 142-1711-526  |

## 4-Hole Right Angle Flange Mount Jack Receptacle without EMI Gasket



| ACCEPTS PIN SIZE | FREQUENCY RANGE | GOLD PLATED  | NICKEL PLATED |
|------------------|-----------------|--------------|---------------|
| .020 (0.51)      | 0-26.5 GHz      | 142-1711-531 | 142-1711-536  |

# SMA - 50 Ohm Connectors

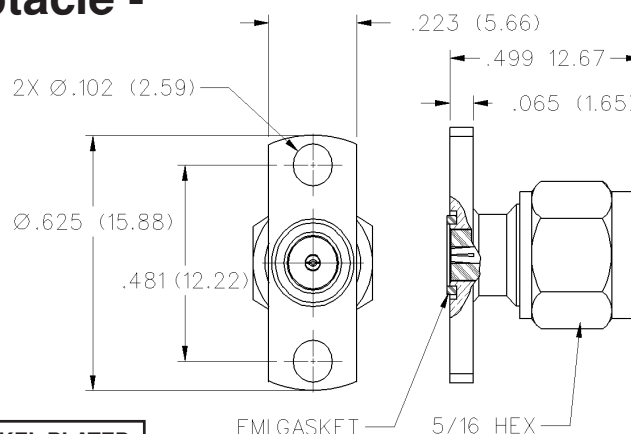
Field Replaceable

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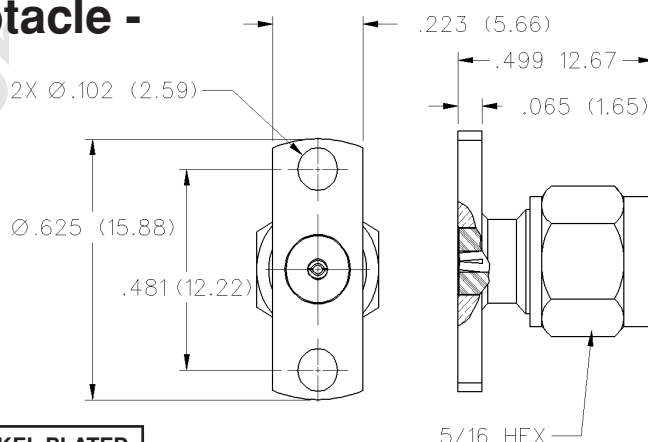


## 2-Hole Flange Mount Plug Receptacle - with EMI Gasket



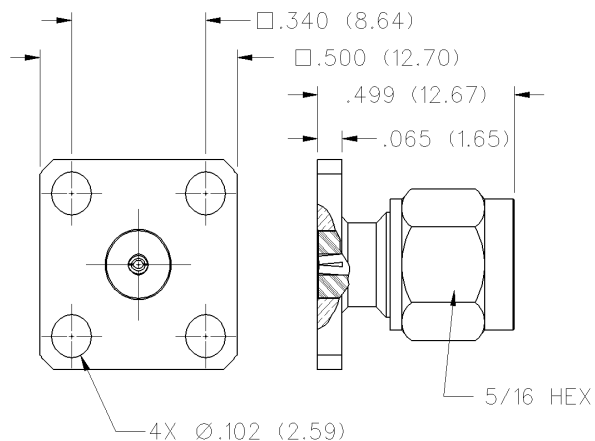
| ACCEPTS PIN SIZE | FREQUENCY RANGE | GOLD PLATED  | NICKEL PLATED |
|------------------|-----------------|--------------|---------------|
| .012 (0.30)      | 0-26.5 GHz      | 142-1801-601 | 142-1801-606  |
| .015 (0.38)      | 0-26.5 GHz      | 142-1801-611 | 142-1801-616  |
| .018 (0.46)      | 0-26.5 GHz      | 142-1801-621 | 142-1801-626  |

## 2-Hole Flange Mount Plug Receptacle - without EMI Gasket



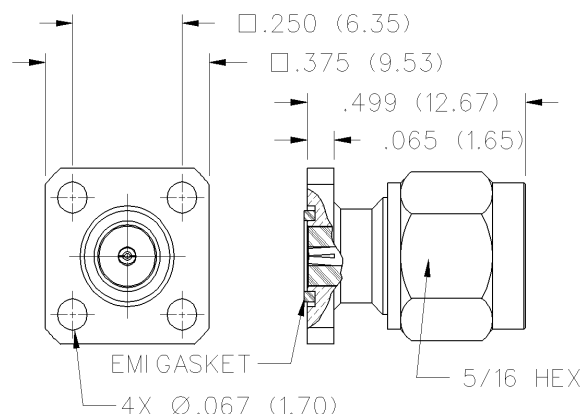
| ACCEPTS PIN SIZE | FREQUENCY RANGE | GOLD PLATED  | NICKEL PLATED |
|------------------|-----------------|--------------|---------------|
| .020 (0.51)      | 0-26.5 GHz      | 142-1801-631 | 142-1801-636  |
| .036 (0.91)      | 0-26.5 GHz      | 142-1801-641 | 142-1801-646  |

## 4-Hole Flange Mount Plug Receptacle - without EMI Gasket



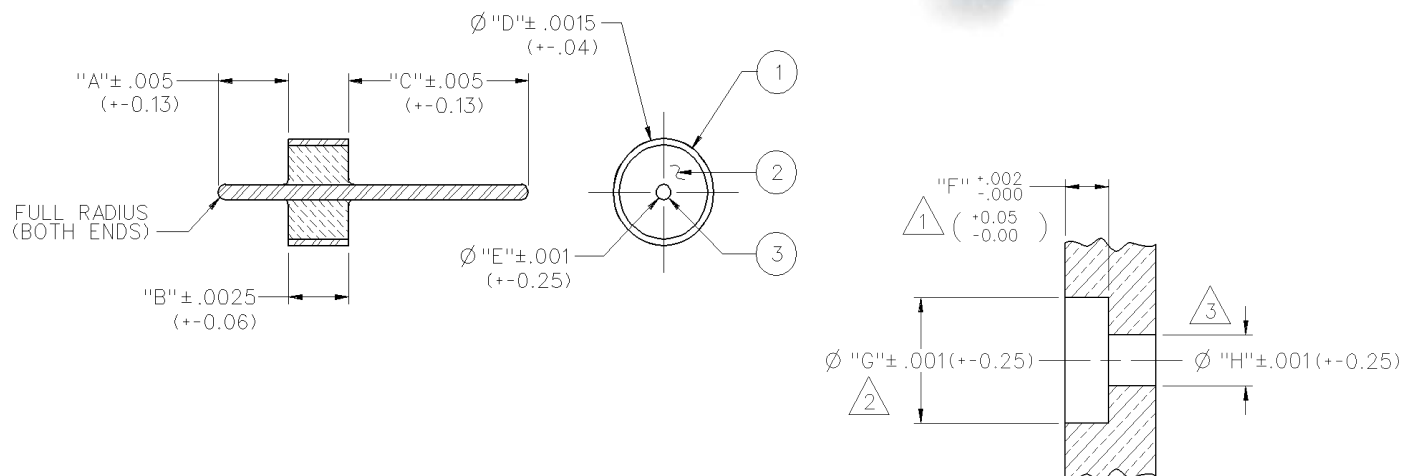
| ACCEPTS PIN SIZE | FREQUENCY RANGE | GOLD PLATED  | NICKEL PLATED |
|------------------|-----------------|--------------|---------------|
| .020 (0.51)      | 0-26.5 GHz      | 142-1801-531 | 142-1801-536  |
| .036 (0.91)      | 0-26.5 GHz      | 142-1801-541 | 142-1801-546  |

## 4-Hole Flange Mount Plug Receptacle - with EMI Gasket



| ACCEPTS PIN SIZE | FREQUENCY RANGE | GOLD PLATED  | NICKEL PLATED |
|------------------|-----------------|--------------|---------------|
| .012 (0.30)      | 0-26.5 GHz      | 142-1801-551 | 142-1801-556  |
| .015 (0.38)      | 0-26.5 GHz      | 142-1801-561 | 142-1801-566  |
| .018 (0.46)      | 0-26.5 GHz      | 142-1801-571 | 142-1801-576  |

## Hermetic Seal Feedthrough



Recommended Mounting Hole Detail

| PART NO.     | ITEM 1<br>OUTER RING                                       | ITEM 2<br>INSULATOR                    | ITEM 3<br>PIN                                             | "A"         | "B"          | "C"         | "D"          | "E"        |
|--------------|------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------|-------------|--------------|-------------|--------------|------------|
| 142-1000-001 | Kovar<br>Gold pl .00005 min over<br>Nickel pl .000005 min. | Glass<br>Corning 7052<br>or equivalent | Kovar<br>Gold pl .00005 min over<br>Nickel pl .000005 min | .070 (1.78) | .0625 (1.59) | .180 (4.57) | .0985 (2.50) | .012 (.30) |
| 142-1000-002 | Kovar<br>Gold pl .00005 min over<br>Nickel pl .000005 min. | Glass<br>Corning 7070<br>or equivalent | Kovar<br>Gold pl .00005 min over<br>Nickel pl .000005 min | .072 (1.83) | .0625 (1.59) | .180 (4.57) | .0985 (2.50) | .015 (.38) |
| 142-1000-003 | Kovar<br>Gold pl .00005 min over<br>Nickel pl .000005 min. | Glass<br>Corning 7070<br>or equivalent | Kovar<br>Gold pl .00005 min over<br>Nickel pl .000005 min | .072 (1.83) | .0600 (1.52) | .180 (4.57) | .1100 (2.79) | .018 (.46) |
| 142-1000-004 | Kovar<br>Gold pl .00005 min over<br>Nickel pl .000005 min. | Glass<br>Corning 7052<br>or equivalent | Kovar<br>Gold pl .00005 min over<br>Nickel pl .000005 min | .070 (1.78) | .0600 (1.52) | .203 (5.16) | .1580 (4.01) | .020 (.51) |

### Mounting Hole Dimensions

| PART NO.     | PIN DIAMETER | "F"         | "G"         | AIR<br>"H"  | TEFLON<br>"H" |
|--------------|--------------|-------------|-------------|-------------|---------------|
| 142-1000-001 | .012 (0.30)  | .063 (1.60) | .102 (2.59) | .028 (0.71) | .039 (0.99)   |
| 142-1000-002 | .015 (0.38)  | .063 (1.60) | .102 (2.59) | .035 (0.89) | .049 (1.24)   |
| 142-1000-003 | .018 (0.46)  | .060 (1.52) | .114 (2.90) | .042 (1.07) | .059 (1.50)   |
| 142-1000-004 | .020 (0.51)  | .060 (1.52) | .162 (4.11) | .046 (1.17) | .065 (1.65)   |

#### Notes:

1. The hermetic seal should be mounted as flush as possible with the housing. Excessive recession will create a high impedance air gap which degrades electrical performance.
2. The use of an additional counterbore to accommodate a solder ring for seal mounting is not recommended. A slight chamfer may be used if care is taken to completely fill the area with solder—**avoid air gaps**.
3. Dimensions shown are given to achieve 50 Ohms with either air or a teflon insulator. A teflon insulator may be helpful in supporting small pin diameters.

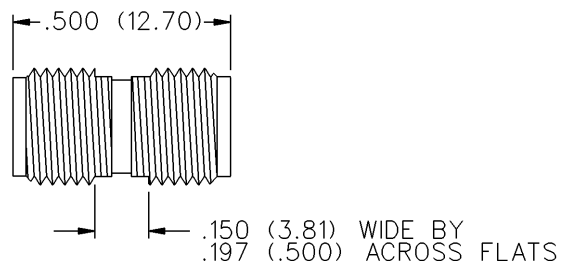
#### Electrical:

Impedance: 50 Ohms  
Frequency Range: DC to 26.5 GHz  
VSWR: Dependent upon application  
Working Voltage: 250 VRMS max at sea level  
Dielectric Withstanding Voltage: 500 VRMS min at sea level  
Insulation Resistance: 5000 Megohm min  
Insertion Loss: .015F dB max (F in GHz)

#### Environmental:

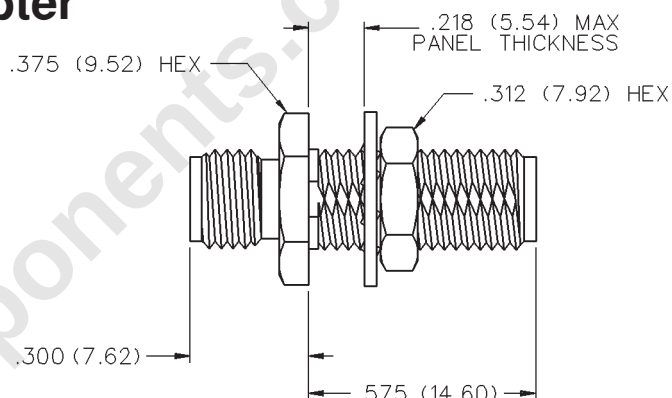
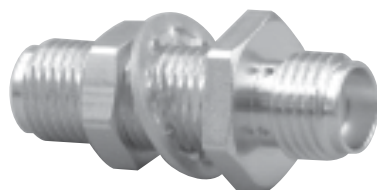
Hermeticity: 1x10<sup>-8</sup> cc/sec at one atmosphere  
Solderability: MIL-STD-202, Method 209  
Operating Temperature: -55° C to +165° C

## Jack to Jack Adapter



| VSWR & FREQ. RANGE          | GOLD PLATED  | NICKEL PLATED |
|-----------------------------|--------------|---------------|
| 1.05 + .005f (GHz) 0-18 GHz | 142-0901-801 | 142-0901-806  |

## Jack to Bulkhead Jack Adapter



| VSWR & FREQ. RANGE         | GOLD PLATED  | NICKEL PLATED |
|----------------------------|--------------|---------------|
| 1.05 + .01f (GHz) 0-18 GHz | 142-0901-401 | 142-0901-406  |

Mounting Hole layout figure 1 page 201.

# SMA - 50 Ohm Connectors

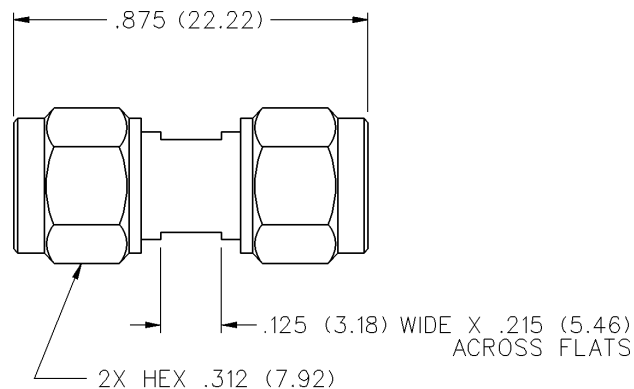
In-Series Adapters

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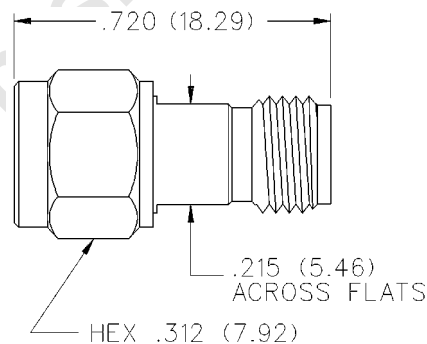


## Plug to Plug Adapter



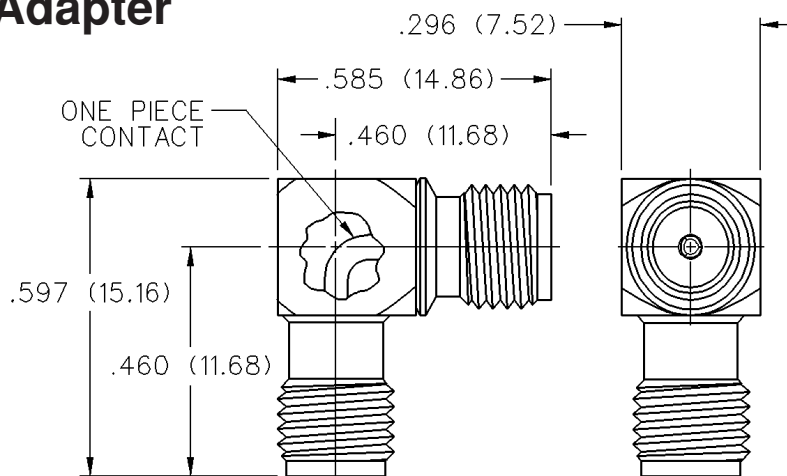
| VSWR & FREQ. RANGE         | GOLD PLATED  | NICKEL PLATED |
|----------------------------|--------------|---------------|
| 1.05 + .01f (GHz) 0-18 GHz | 142-0901-811 | 142-0901-816  |

## Plug to Jack Adapter



| VSWR & FREQ. RANGE          | GOLD PLATED  | NICKEL PLATED |
|-----------------------------|--------------|---------------|
| 1.05 + .005f (GHz) 0-18 GHz | 142-0901-821 | 142-0901-826  |

## Right Angle Jack to Jack Adapter

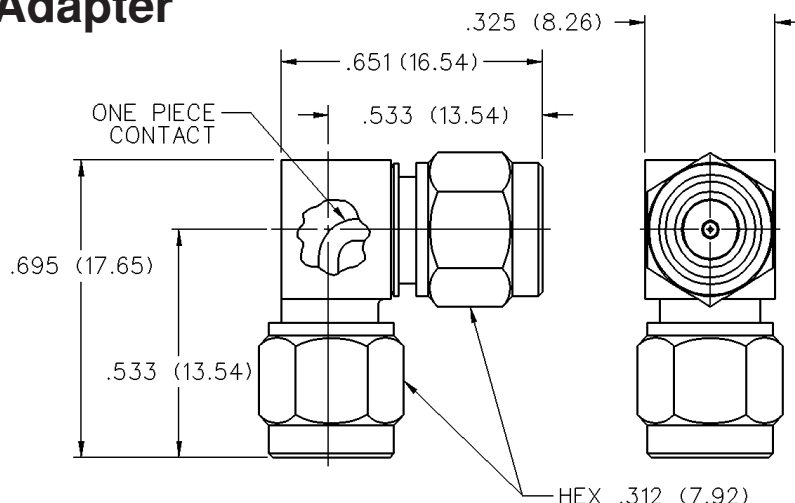


| VSWR & FREQ. RANGE         | GOLD PLATED  |
|----------------------------|--------------|
| 1.035 +.02f (GHz) 0-18 GHz | 142-0901-921 |

## Right Angle Plug to Plug Adapter



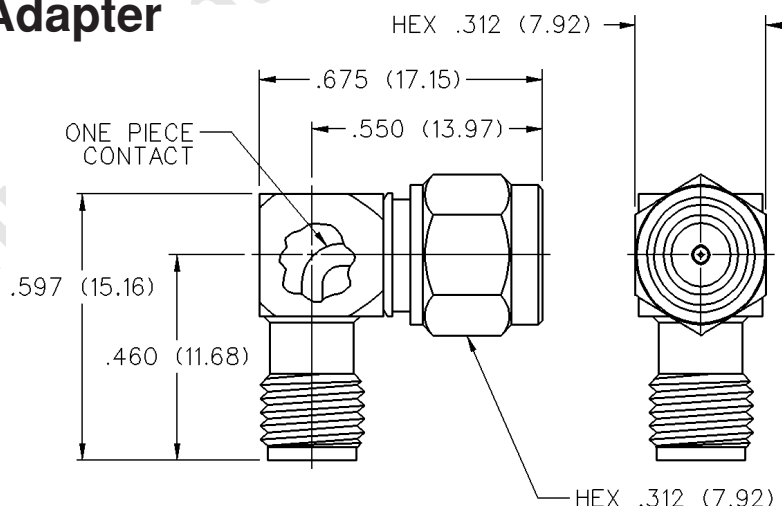
| VSWR & FREQ. RANGE         | GOLD PLATED  |
|----------------------------|--------------|
| 1.035 +.02f (GHz) 0-14 GHz | 142-0901-931 |



## Right Angle Jack to Plug Adapter



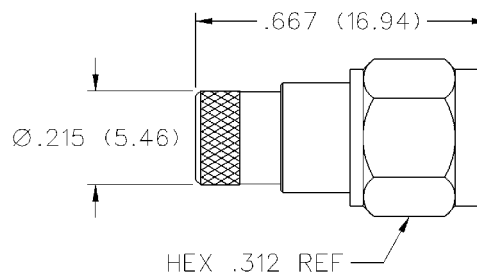
| VSWR & FREQ. RANGE         | GOLD PLATED  |
|----------------------------|--------------|
| 1.035 +.02f (GHz) 0-18 GHz | 142-0901-941 |



## Dummy Load Plug



| FREQ. RANGE | GOLD PLATED  | NICKEL PLATED | RESISTANCE |
|-------------|--------------|---------------|------------|
| 0-2 GHz     | 142-0801-861 | 142-0801-866  | 50 Ohm     |



# SMA Reverse Polarity - 50 Ohm

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## Specifications

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### ELECTRICAL RATINGS

**Impedance:** 50 ohms

#### Frequency Range:

|                           |            |
|---------------------------|------------|
| Flexible cable connectors | 0-12.4 GHz |
| Uncabled receptacles      | 0-18.0 GHz |

#### VSWR: (f = GHz)

|                        | Straight<br>Cabled Connectors | Right Angle<br>Cabled Connectors |
|------------------------|-------------------------------|----------------------------------|
| RG-316, LMR-100 cable  | 1.15 + .02f                   | 1.15 + .03f                      |
| RG-58, LMR-195 cable   | 1.17 + .025f                  | 1.17 + .06f                      |
| RG-142 cable           | 1.17 + .02f                   | 1.15 + .03f                      |
| LMR-200, LMR-240 cable | 1.10 + .03f                   | 1.10 + .06f                      |
| Uncabled receptacles   | N/A                           |                                  |

#### Working Voltage: (VRMS maximum)<sup>†</sup>

| Connectors for Cable Type                    | Sea Level | 70K Feet |
|----------------------------------------------|-----------|----------|
| RG-316; LMR-100, 195, 200                    | 250       | 65       |
| RG-58, RG-142, LMR-240, uncabled receptacles | 335       | 85       |

#### Dielectric Withstanding Voltage: (VRMS minimum at sea level)<sup>†</sup>

|                                                             |      |
|-------------------------------------------------------------|------|
| Connectors for RG-316; LMR-100, 195, 200                    | 750  |
| Connectors for RG-58, RG-142, LMR-240, uncabled receptacles | 1000 |

#### Corona Level: (Volts minimum at 70,000 feet)<sup>†</sup>

|                                                             |     |
|-------------------------------------------------------------|-----|
| Connectors for RG-316, LMR-100, 195, 200                    | 190 |
| Connectors for RG-58, RG-142, LMR-240, uncabled receptacles | 250 |

#### Insertion Loss: (dB maximum)

|                                                |                                       |
|------------------------------------------------|---------------------------------------|
| Straight flexible cable connectors             | $.06\sqrt{f}$ (GHz), tested at 6 GHz  |
| Right angle flexible cable connectors          | $.015\sqrt{f}$ (GHz), tested at 6 GHz |
| Low loss flexible straight cable connectors    | $.06\sqrt{f}$ (GHz), tested at 1 GHz  |
| Low loss flexible right angle cable connectors | $.015\sqrt{f}$ (GHz), tested at 1 GHz |
| Uncabled receptacles, field replaceable        | N/A                                   |

#### Insulation Resistance: 5000 megohms minimum

#### Contact Resistance: (milliohms maximum)

|                                                                      | Initial | After<br>Environmental |
|----------------------------------------------------------------------|---------|------------------------|
| Center contact (straight cabled connectors and uncabled receptacles) | 3.0*    | 4.0*                   |
| Center contact (right angle cabled connectors)                       | 4.0     | 6.0                    |
| Outer contact (all connectors)                                       | 2.0     | N/A                    |
| Braid to body (gold plated connectors)                               | 0.5     | N/A                    |
| Braid to body (nickel plated connectors)                             | 5.0     | N/A                    |

#### RF Leakage: (dB minimum, tested at 2.5 GHz)

|                                   |        |
|-----------------------------------|--------|
| Flexible cable connectors         | -60 dB |
| Uncabled receptacles and adapters | N/A    |

\*All gold-plated parts include a .00005" min. nickel barrier layer.

### RF High Potential Withstanding Voltage:

(VRMS minimum, tested at 4 and 7 MHz)<sup>†</sup>

|                                                             |     |
|-------------------------------------------------------------|-----|
| Connectors for RG-316; LMR-100, 195, 200                    | 500 |
| Connectors for RG-58, RG-142, LMR-240, uncabled receptacles | 670 |

### MECHANICAL RATINGS

**Engagement Design:** MIL-C-39012, Series SMA

**Engagement/Disengagement Force:** 2 inch-pounds maximum

**Mating Torque:** 7 to 10 inch-pounds

**Bulkhead Mounting Nut Torque:** 15 inch-pounds

**Coupling Proof Torque:** 15 inch-pounds minimum

**Coupling Nut Retention:** 60 pounds minimum

#### Contact Retention:

- 6 lbs. minimum axial force (captivated contacts)
- 4 inch-ounce minimum torque (uncabled receptacles)

#### Cable Retention:

|                                | Axial Force* (lbs) | Torque (in-oz) |
|--------------------------------|--------------------|----------------|
| Connectors for RG-316, LMR-100 | 20                 | N/A            |
| Connectors for LMR195, 200     | 30                 | N/A            |
| Connectors for RG-58, LMR-240  | 40                 | N/A            |
| Connectors for RG-142          | 45                 | N/A            |

\*Or cable breaking strength whichever is less.

**Durability:** 500 cycles minimum

### ENVIRONMENTAL RATINGS (Meets or exceeds the applicable paragraph of MIL-C-39012)

**Temperature Range:** - 65°C to + 165°C

**Thermal Shock:** MIL-STD-202, Method 107, Condition B

**Corrosion:** MIL-STD-202, Method 101, Condition B

**Shock:** MIL-STD-202, Method 213, Condition I

**Vibration:** MIL-STD-202, Method 204, Condition D

**Moisture Resistance:** MIL-STD-202, Method 106

### MATERIAL SPECIFICATIONS

**Bodies:** Brass per QQ-B-626, gold plated\* per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Contacts:** Male - brass per QQ-B-626, gold plated per MIL-G-45204 .00003" min.

Female - beryllium copper per QQ-C-530, gold plated per MIL-G-45204 .00003" min.

**Nut Retention Spring:** Beryllium copper per QQ-C-533. Unplated

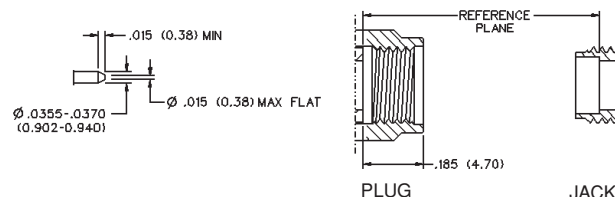
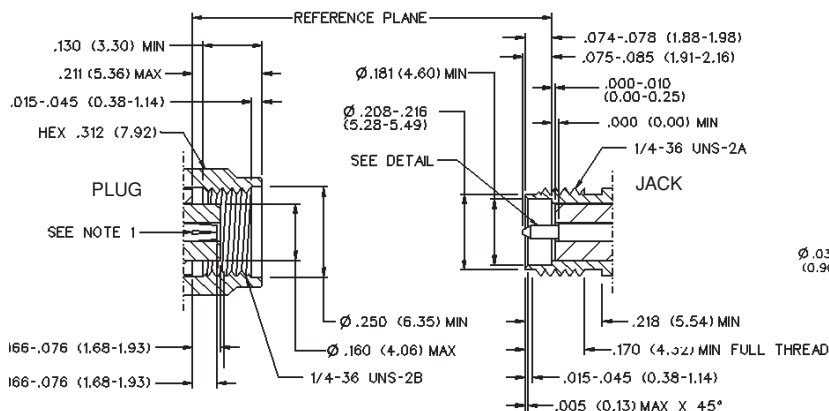
**Insulators:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457 or Tefzel per ASTM D 3159

**Expansion Caps:** Brass per QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Crimp Sleeves:** Copper per WW-T-799 or brass per QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Mounting Hardware:** Brass per QQ-B-626 or QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

### Mating Engagement for SMA Reverse Polarity Series



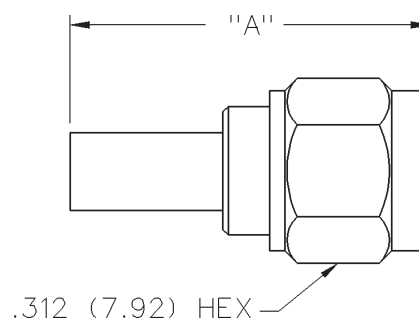
### NOTES

1. ID of contact to meet VSWR, contact resistance and insertion withdrawal forces when mated with dia .0355-.0370 male pin.

<sup>†</sup>Avoid user injury due to misapplication.

See safety advisory definitions inside front cover.

## Straight Crimp Type Plug - Solder or Crimp Captivated Contact

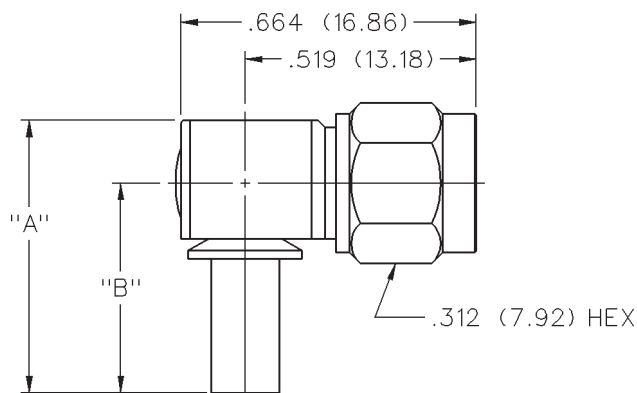
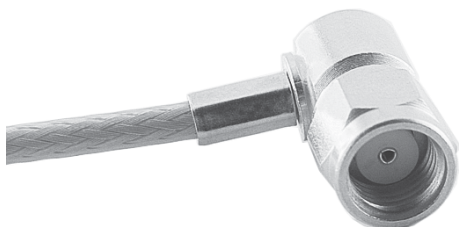


| CABLE TYPE                                          | VSWR & FREQ. RANGE            | GOLD PLATED  | NICKEL PLATED | "A"          |
|-----------------------------------------------------|-------------------------------|--------------|---------------|--------------|
| RG-316/U, 188, 174, 161<br>LMR-100, HPF-100, RF-100 | 1.15 + .02f (GHz) 0-12.4 GHz  | 142-4403-001 | 142-4403-006  | .706 (17.93) |
| RG-316 DS, 188 DS,                                  | 1.15 + .02f (GHz) 0-12.4 GHz  | 142-4404-001 | 142-4404-006  | .706 (17.93) |
| RG-58/U, 141, 303,<br>LMR-195, HPF-195, RF-195      | 1.17 + .025f (GHz) 0-12.4 GHz | 142-4407-001 | 142-4407-006  | .706 (17.93) |
| RG-142/U, 55, 223, 400                              | 1.17 + .02f (GHz) 0-12.4 GHz  | 142-4408-001 | 142-4408-006  | .706 (17.93) |
| LMR-200, HPF-200, RF-200                            | 1.10 + .03f (GHz) 0-12.4 GHz  | 142-4439-001 | 142-4439-006  | .844 (21.44) |
| LMR-240, HPF-240, RF-240                            | 1.10 + .03f (GHz) 0-12.4 GHz  | 142-4435-001 | 142-4435-006  | .844 (21.44) |

Assembly instructions: LMR 195, 200 and 240 page 230.

All other cables page 229. See page 190 for Cable Assembly Tools.

## Right Angle Crimp Type Plug - Captivated Contact



| CABLE TYPE                                           | VSWR & FREQ. RANGE           | GOLD PLATED  | NICKEL PLATED | "A"          | "B"          |
|------------------------------------------------------|------------------------------|--------------|---------------|--------------|--------------|
| RG-316/U, 188, 174, 161,<br>LMR-100, HPF-100, RF-100 | 1.15 + .03f (GHz) 0-12.4 GHz | 142-4403-101 | 142-4403-106  | .611 (15.52) | .470 (11.94) |
| RG-316 DS, 188 DS                                    | 1.15 + .03f (GHz) 0-12.4 GHz | 142-4404-101 | 142-4404-106  | .611 (15.52) | .470 (11.94) |
| RG-58/U, 141, 303,<br>LMR-195, HPF-195, RF-195       | 1.17 + .06f (GHz) 0-12.4 GHz | 142-4407-101 | 142-4407-106  | .611 (15.52) | .470 (11.94) |
| RG-142/U, 55, 223, 400                               | 1.15 + .03f (GHz) 0-12.4 GHz | 142-4408-101 | 142-4408-106  | .611 (15.52) | .470 (11.94) |
| LMR-200, HPF-200, RF-200                             | 1.10 + .06f (GHz) 0-12.4 GHz | 142-4439-101 | 142-4439-106  | .611 (15.52) | .470 (11.94) |
| LMR-240, HPF-240, RF-240                             | 1.10 + .06f (GHz) 0-12.4 GHz | 142-4435-101 | 142-4435-106  | .635 (16.13) | .490 (12.45) |

Assembly instructions: LMR 195, 200 and 240 page 233.

All other cables page 232. See page 190 for Cable Assembly Tools.

# SMA Reverse Polarity - 50 Ohm

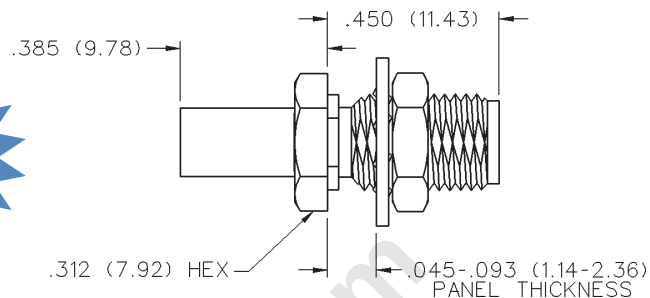
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## Straight Crimp Type Bulkhead Jack - Captivated Contact



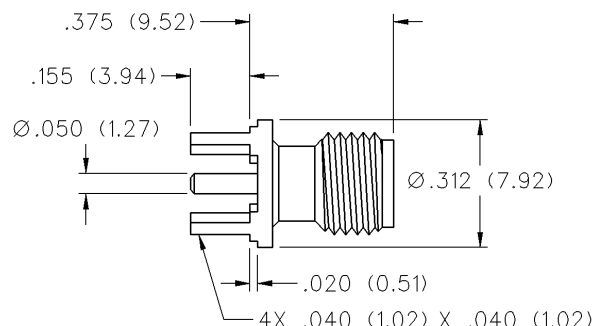
| CABLE TYPE              | GOLD PLATED  | NICKEL PLATED |
|-------------------------|--------------|---------------|
| RG-316/U, 188, 174, 161 | 142-4303-401 | 142-4303-406  |
| RG-316 DS, 188 DS       | 142-4304-401 | 142-4304-406  |
| RG-58/U, 141, 303       | 142-4307-401 | 142-4307-406  |
| RG-142/U, 55, 223, 400  | 142-4308-401 | 142-4308-406  |

Assembly instructions page 229.  
See page 190 for Cable Assembly Tools.  
Mounting hole layout figure 1 page 201.

## Straight Jack Receptacle



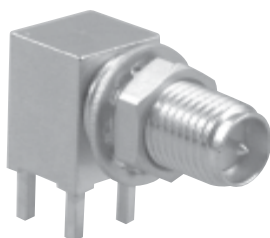
Reverse  
Polarity



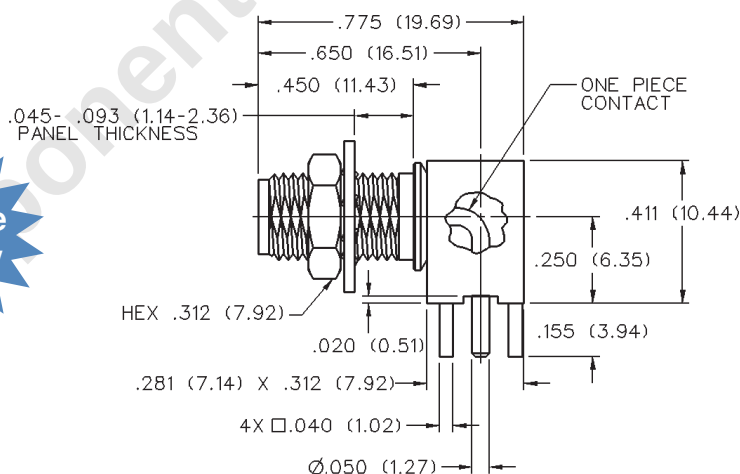
| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 142-4701-201 | 142-4701-206  |

Mounting hole layout figure 2 page 201.

## Right Angle Bulkhead Jack Receptacle



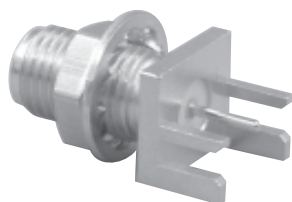
Reverse  
Polarity



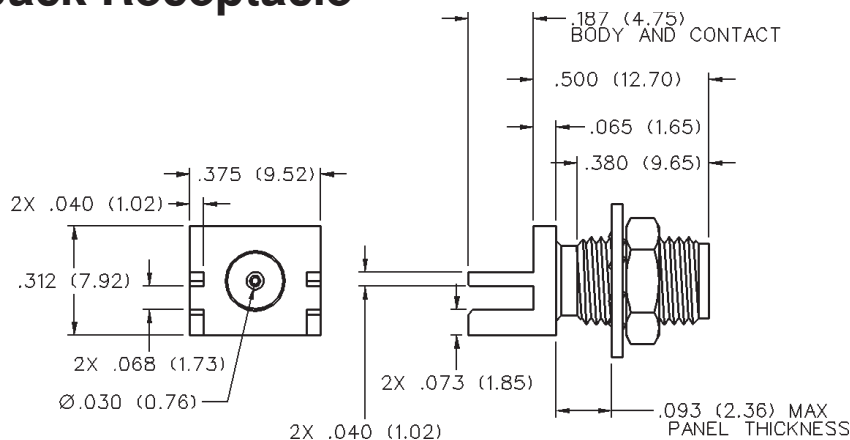
| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 142-4701-501 | 142-4701-506  |

Mounting hole layout figures 1 and 2 page 201.

## End Launch Bulkhead Jack Receptacle



Reverse  
Polarity



| GOLD PLATED  | NICKEL PLATED | BOARD THICKNESS |
|--------------|---------------|-----------------|
| 142-4701-801 | 142-4701-806  | .062 (1.57)     |

# SMA Reverse Thread - 50 Ohm

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Network Power

## Specifications

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### ELECTRICAL RATINGS

**Impedance:** 50 ohms

#### Frequency Range:

Flexible cable connectors ..... 0-12.4 GHz  
Uncabled receptacles ..... 0-18.0 GHz

**VSWR:** (f = GHz)

|                                          | Straight<br>Cabled Connectors | Right Angle<br>Cabled Connectors |
|------------------------------------------|-------------------------------|----------------------------------|
| RG-316, LMR-100 cable ..... 1.15 + .02f  | 1.15 + .03f                   |                                  |
| RG-58, LMR-195 cable ..... 1.15 + .01f   | 1.15 + .02f                   |                                  |
| RG-142 cable ..... 1.15 + .01f           | 1.15 + .02f                   |                                  |
| LMR-200, LMR-240 cable ..... 1.10 + .03f | 1.10 + .06f                   |                                  |
| Uncabled receptacles ..... N/A           |                               |                                  |

**Working Voltage:** (VRMS maximum)<sup>†</sup>

| Connectors for Cable Type                    | Sea Level | 70K Feet |
|----------------------------------------------|-----------|----------|
| RG-316; LMR-100, 195, 200                    | 250       | 65       |
| RG-58, RG-142, LMR-240, uncabled receptacles | 335       | 8        |

**Dielectric Withstanding Voltage:** (VRMS minimum at sea level)<sup>†</sup>

|                                                             |      |
|-------------------------------------------------------------|------|
| Connectors for RG-316; LMR-100, 195, 200                    | 750  |
| Connectors for RG-58, RG-142, LMR-240, uncabled receptacles | 1000 |

**Corona Level:** (Volts minimum at 70,000 feet)<sup>†</sup>

|                                                             |     |
|-------------------------------------------------------------|-----|
| Connectors for RG-316, LMR-100, 195, 200                    | 190 |
| Connectors for RG-58, RG-142, LMR-240, uncabled receptacles | 250 |

**Insertion Loss:** (dB maximum)

|                                                                                            |     |
|--------------------------------------------------------------------------------------------|-----|
| Straight flexible cable connectors ..... $0.06\sqrt{f}$ (GHz), tested at 6 GHz             |     |
| Right angle flexible cable connectors ..... $0.15\sqrt{f}$ (GHz), tested at 6 GHz          |     |
| Low loss flexible straight cable connectors ..... $0.06\sqrt{f}$ (GHz), tested at 1 GHz    |     |
| Low loss flexible right angle cable connectors ..... $0.15\sqrt{f}$ (GHz), tested at 1 GHz |     |
| Uncabled receptacles, field replaceable                                                    | N/A |

**Insulation Resistance:** 5000 megohms minimum

**Contact Resistance:** (milliohms maximum)

|                                                                                 | Initial | After Environmental |
|---------------------------------------------------------------------------------|---------|---------------------|
| Center contact (straight cabled connectors and uncabled receptacles) ..... 3.0* | 4.0*    |                     |
| Center contact (right angle cabled connectors) ..... 4.0                        | 6.0     |                     |
| Outer contact (all connectors) ..... 2.0                                        | N/A     |                     |
| Braid to body (gold plated connectors) ..... 0.5                                | N/A     |                     |
| Braid to body (nickel plated connectors) ..... 5.0                              | N/A     |                     |
| <b>RF Leakage:</b> (dB minimum, tested at 2.5 GHz)                              |         |                     |
| Flexible cable connectors ..... -60 dB                                          |         |                     |
| Uncabled receptacles and adapters ..... N/A                                     |         |                     |

\*All gold-plated parts include a .00005" min. nickel barrier layer.

<sup>†</sup>Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

**RF High Potential Withstanding Voltage:** (VRMS minimum, tested at 4 and 7 MHz)<sup>†</sup>

|                                                             |     |
|-------------------------------------------------------------|-----|
| Connectors for RG-316; LMR-100, 195, 200                    | 500 |
| Connectors for RG-58, RG-142, LMR-240, uncabled receptacles | 670 |

### MECHANICAL RATINGS

**Engagement Design:** mil-c-39012, Series SMA

**Engagement/Disengagement Force:** 2 inch-pounds maximum

**Mating Torque:** 7 to 10 inch-pounds

**Bulkhead Mounting Nut Torque:** 15 inch-pounds

**Coupling Proof Torque:** 15 inch-pounds minimum

**Coupling Nut Retention:** 60 pounds minimum

**Contact Retention:**

|                                                    |
|----------------------------------------------------|
| 6 lbs. minimum axial force (captivated contacts)   |
| 4 inch-ounce minimum torque (uncabled receptacles) |

**Cable Retention:**

|                                | Axial Force* (lbs) | Torque (in-oz) |
|--------------------------------|--------------------|----------------|
| Connectors for RG-316, LMR-100 | 20                 | N/A            |
| Connectors for LMR-195, 200    | 30                 | N/A            |
| Connectors for RG-58; LMR-240  | 40                 | N/A            |
| Connectors for RG-142          | 45                 | N/A            |

\*Or cable breaking strength whichever is less.

**Durability:** 500 cycles minimum

### ENVIRONMENTAL RATINGS

(Meets or exceeds the applicable paragraph of MIL-C-39012)

**Temperature Range:** - 65°C to + 165°C

**Thermal Shock:** MIL-STD-202, Method 107, Condition B

**Corrosion:** MIL-STD-202, Method 101, Condition B

**Shock:** MIL-STD-202, Method 213, Condition I

**Vibration:** MIL-STD-202, Method 204, Condition D

**Moisture Resistance:** MIL-STD-202, Method 106

### MATERIAL SPECIFICATIONS

**Bodies:** Brass per QQ-B-626, gold plated\* per MIL-G-45204

.00001" min. or nickel plated per QQ-N-290

**Contacts:** Male - brass per QQ-B-626, gold plated per MIL-G-45204 .00003" min.

Female - beryllium copper per QQ-C-530, gold plated per MIL-G-45204 .00003" min.

**Nut Retention Spring:** Beryllium copper per QQ-C-533. Unplated

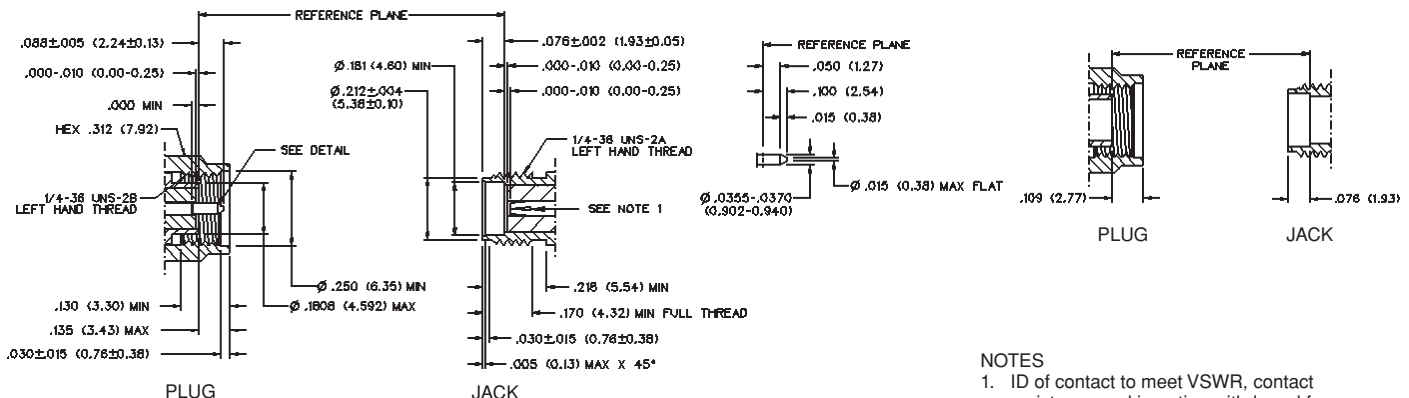
**Insulators:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457 or Tefzel per ASTM D 3159

**Expansion Caps:** Brass per QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Crimp Sleeves:** Copper per WW-T-799 or brass per QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Mounting Hardware:** Brass per QQ-B-626 or QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

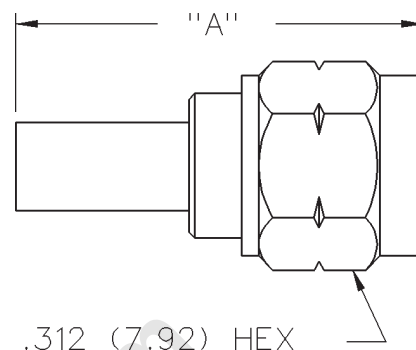
### Mating Engagement for SMA Reverse Thread Series



#### NOTES

1. ID of contact to meet VSWR, contact resistance and insertion withdrawal forces when mated with dia .0355-.0370 male pin.

## Straight Crimp Type Plug - Solder or Crimp Captivated Contact

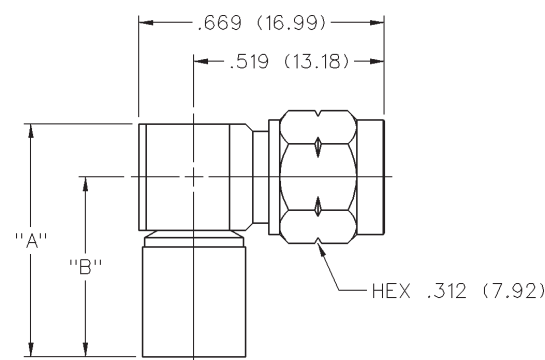
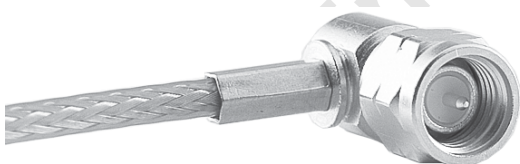


| CABLE TYPE                                          | VSWR & FREQ. RANGE           | GOLD PLATED  | NICKEL PLATED | "A"          |
|-----------------------------------------------------|------------------------------|--------------|---------------|--------------|
| RG-316/U, 188, 174, 161<br>LMR-100, HPF-100, RF-100 | 1.15 + .02f (GHz) 0-12.4 GHz | 142-5403-001 | 142-5403-006  | .706 (17.93) |
| RG-316 DS, 188 DS,                                  | 1.15 + .02f (GHz) 0-12.4 GHz | 142-5404-001 | 142-5404-006  | .706 (17.93) |
| RG-58/U, 141, 303,<br>LMR-195, HPF-195, RF-195      | 1.15 + .01f (GHz) 0-12.4 GHz | 142-5407-001 | 142-5407-006  | .706 (17.93) |
| RG-142/U, 55, 223, 400                              | 1.15 + .01f (GHz) 0-12.4 GHz | 142-5408-001 | 142-5408-006  | .706 (17.93) |
| LMR-200, HPF-200, RF-200                            | 1.10 + .03f (GHz) 0-12.4 GHz | 142-5439-001 | 142-5439-006  | .844 (21.44) |
| LMR-240, HPF-240, RF-240                            | 1.10 + .03f (GHz) 0-12.4 GHz | 142-5435-001 | 142-5435-006  | .844 (21.44) |

Assembly instructions: LMR 195, 200 and 240 page 230.

All other cables page 229. See page 190 for Cable Assembly Tools.

## Right Angle Crimp Type Plug - Captivated Contact



| CABLE TYPE                                          | VSWR & FREQ. RANGE           | GOLD PLATED  | NICKEL PLATED | "A"          | "B"          |
|-----------------------------------------------------|------------------------------|--------------|---------------|--------------|--------------|
| RG-316/U, 188, 174, 161<br>LMR-100, HPF-100, RF-100 | 1.15 + .03f (GHz) 0-12.4 GHz | 142-5403-101 | 142-5403-106  | .611 (15.52) | .470 (11.94) |
| RG-316 DS, 188 DS,                                  | 1.15 + .03f (GHz) 0-12.4 GHz | 142-5404-101 | 142-5404-106  | .611 (15.52) | .470 (11.94) |
| RG-58/U, 141, 303,<br>LMR-195, HPF-195, RF-195      | 1.15 + .02f (GHz) 0-12.4 GHz | 142-5407-101 | 142-5407-106  | .611 (15.52) | .470 (11.94) |
| RG-142/U, 55, 223, 400                              | 1.15 + .02f (GHz) 0-12.4 GHz | 142-5408-101 | 142-5408-106  | .611 (15.52) | .470 (11.94) |
| LMR-200, HPF-200, RF-200                            | 1.10 + .06f (GHz) 0-12.4 GHz | 142-5439-101 | 142-5439-106  | .611 (15.52) | .470 (11.94) |
| LMR-240, HPF-240, RF-240                            | 1.10 + .06f (GHz) 0-12.4 GHz | 142-5435-101 | 142-5435-106  | .635 (16.13) | .490 (12.45) |

Assembly instructions: LMR 195, 200 and 240 page 233.

All other cables page 232. See page 190 for Cable Assembly Tools.

# SMA Reverse Thread - 50 Ohm

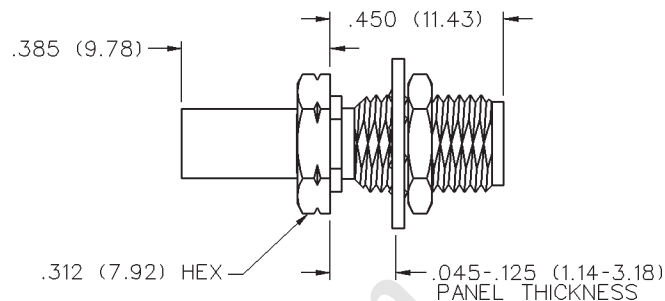
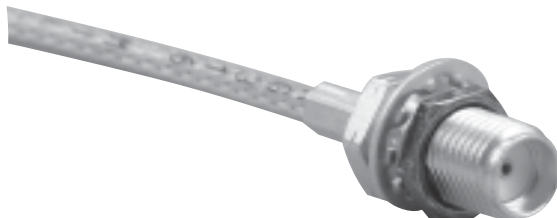
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## Straight Crimp Type Bulkhead Jack - Solder or Crimp Captivated Contact



| CABLE TYPE              | GOLD PLATED  | NICKEL PLATED |
|-------------------------|--------------|---------------|
| RG-316/U, 188, 174, 161 | 142-5303-401 | 142-5303-406  |
| RG-316 DS, 188 DS       | 142-5304-401 | 142-5304-406  |
| RG-58/U, 141, 303       | 142-5307-401 | 142-5307-406  |
| RG-142/U, 55, 223, 400  | 142-5308-401 | 142-5308-406  |

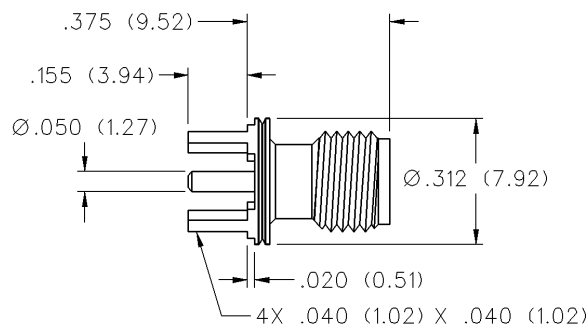
Assembly instructions page 229.  
See page 190 for Cable Assembly Tools.  
Mounting hole layout figure 1 page 201.

## Straight Jack Receptacle

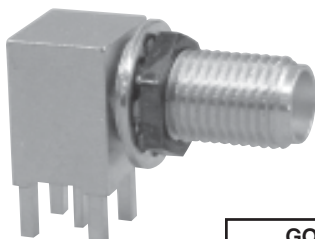


| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 142-5701-201 | 142-5701-206  |

Mounting hole layout figure 2 page 201.

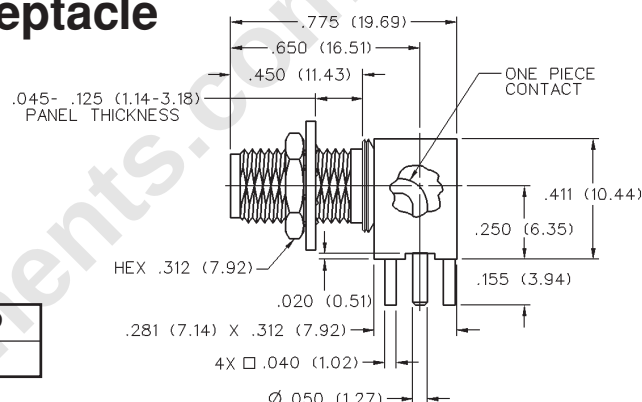


## Right Angle Bulkhead Jack Receptacle

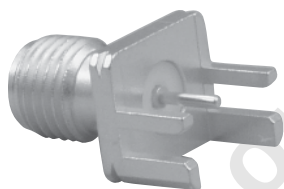


| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 142-5701-501 | 142-5701-506  |

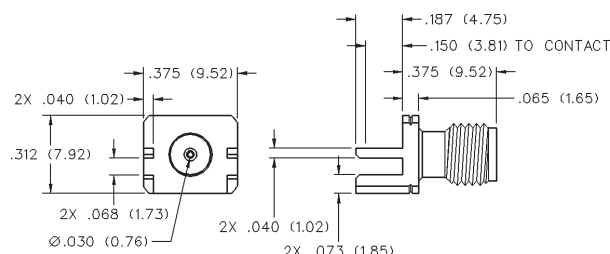
Mounting hole layout figures 1 and 2 page 201.



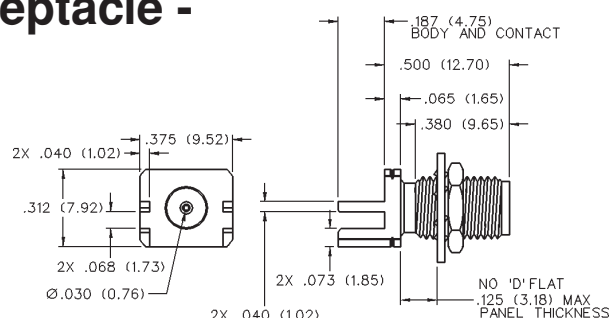
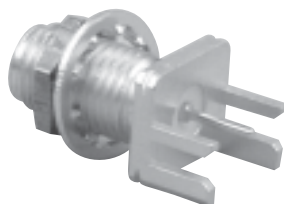
## End Launch Jack Receptacle - Round Contact



| FREQUENCY RANGE | GOLD PLATED  | NICKEL PLATED | BOARD THICKNESS |
|-----------------|--------------|---------------|-----------------|
| 0-18 GHz        | 142-5701-801 | 142-5701-806  | .062 (1.57)     |



## End Launch Bulkhead Jack Receptacle - Round Contact



| GOLD PLATED  | NICKEL PLATED | BOARD THICKNESS |
|--------------|---------------|-----------------|
| 142-5701-811 | 142-5701-816  | .062 (1.57)     |

# SMA Non-Magnetic RF Connectors

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For Flexible Cable

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## ELECTRICAL RATINGS

**Impedance:** 50 ohms

**Frequency Range:** Flexible cable connectors ..... 0-12.4 GHz  
Uncabled receptacles ..... 0-18.0 GHz

**VSWR:** (f = GHz) Straight Cabled Connectors RA Cabled Connectors

RG-316 ..... 1.15 + .02f ..... 1.15 + .03f

RG-58 ..... 1.15 + .01f ..... 1.15 + .02f

Uncabled receptacles ..... N/A

**Working Voltage:** (VRMS maximum)<sup>†</sup>

**Connectors for Cable Type** Sea Level 70K Feet

RG-316 ..... 250 ..... 65

RG-58, uncabled receptacles ..... 335 ..... 85

**Dielectric Withstanding Voltage:** (VRMS minimum at sea level)<sup>†</sup>

Connectors for RG-316 ..... 750

Connectors for RG-58, uncabled receptacles ..... 1000

**Corona Level:** (Volts minimum at 70,000 feet)<sup>†</sup>

Connectors for RG-316 ..... 190

Connectors for RG-58, uncabled receptacles ..... 250

**Insertion Loss:** (dB maximum)

Straight flexible cable connectors .....  $0.06\sqrt{f}$  (GHz), tested at 6 GHz

Right angle flexible cable connectors .....  $0.15\sqrt{f}$  (GHz), tested at 6 GHz

Uncabled receptacles ..... N/A

**Insulation Resistance:** 5000 megohms minimum

**Contact Resistance:** (milliohms maximum)

|                                                                       | Initial | After Environmental |
|-----------------------------------------------------------------------|---------|---------------------|
| Center contact (straight cabled connectors, uncabled receptacles) ... | 3.0     | 4.0                 |
| Center contact (right angle cabled connectors) .....                  | 4.0     | 6.0                 |
| Outer contact (all connectors) .....                                  | 2.0     | N/A                 |
| Braid to body .....                                                   | 0.5     | N/A                 |

<sup>†</sup>Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

**RF Leakage:** (dB minimum, tested at 2.5 GHz)

Flexible cable connectors ..... -60 dB

Uncabled receptacles ..... N/A

**RF High Potential Withstanding Voltage:** (VRMS minimum, tested at 4 and 7 MHz)<sup>†</sup>

Connectors for RG-316 ..... 500

Connectors for RG-58, uncabled receptacles ..... 670

## MECHANICAL RATINGS

**Engagement Design:** MIL-STD-348, Series SMA

**Engagement/Disengagement Force:** 2 inch-pounds maximum

**Mating Torque:** 7 to 10 inch-pounds

**Coupling Proof Torque:** 15 inch-pounds minimum

**Coupling Nut Retention:** 60 pounds minimum

**Contact Retention:** 6 lbs. minimum axial force (captivated contacts)  
4 inch-ounce minimum torque (uncabled receptacles)

|                             | Axial Force* (lbs) | Torque (in-oz) |
|-----------------------------|--------------------|----------------|
| Connectors for RG-316 ..... | 20                 | N/A            |
| Connectors for RG-58 .....  | 40                 | N/A            |

\*Or cable breaking strength whichever is less.

**Durability:** 500 cycles minimum

## ENVIRONMENTAL RATINGS

(Meets or exceeds the applicable paragraph of MIL-C-39012)

**Temperature Range:** -65°C to +165°C

**Thermal Shock:** MIL-STD-202, Method 107, Condition B

**Corrosion:** MIL-STD-202, Method 101, Condition B

**Shock:** MIL-STD-202, Method 213, Condition I

**Vibration:** MIL-STD-202, Method 204, Condition D

**Moisture Resistance:** MIL-STD-202, Method 106

See Non-Magnetic materials page 29.

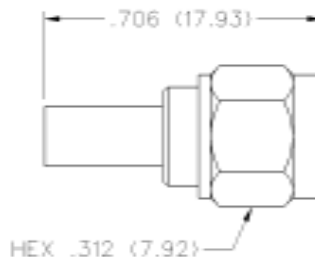
## Straight Crimp Type Plug (3-piece) - Captivated Contact



| CABLE TYPE         | VSWR & FREQ. RANGE           | GOLD PLATED  |
|--------------------|------------------------------|--------------|
| RG-316/U, 188, 174 | 1.15 + .02f (GHz) 0-12.4 GHz | 142-9403-011 |
| RG-316 DS, 188 DS  | 1.15 + .02f (GHz) 0-12.4 GHz | 142-9404-011 |
| RG-58/U, 141       | 1.15 + .01f (GHz) 0-12.4 GHz | 142-9407-001 |

Assembly instructions page 229.

See page 190 for Cable Assembly Tools.



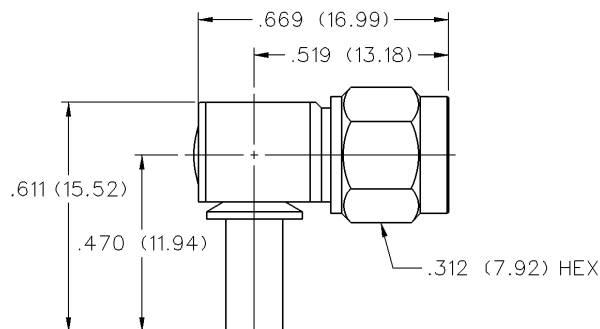
## Right Angle Crimp Type Plug - Captivated Contact



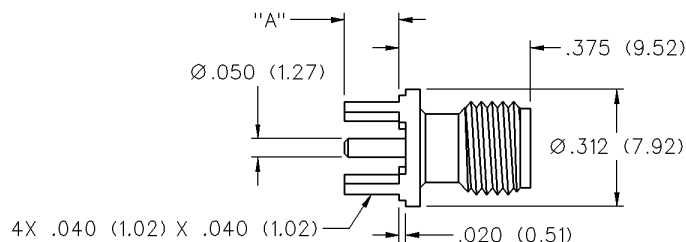
| CABLE TYPE         | VSWR & FREQ. RANGE           | GOLD PLATED  |
|--------------------|------------------------------|--------------|
| RG-316/U, 188, 174 | 1.15 + .03f (GHz) 0-12.4 GHz | 142-9403-101 |
| RG-316 DS, 188 DS  | 1.15 + .03f (GHz) 0-12.4 GHz | 142-9404-101 |
| RG-58/U, 141       | 1.15 + .02f (GHz) 0-12.4 GHz | 142-9407-101 |

Assembly instructions page 232.

See page 190 for Cable Assembly Tools.



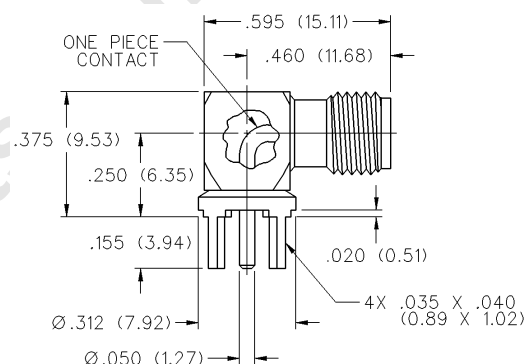
## Straight Jack Receptacle



| FREQUENCY RANGE | GOLD PLATED  | "A"         |
|-----------------|--------------|-------------|
| 0-18 GHz        | 142-9701-201 | .155 (3.94) |
| 0-18 GHz        | 142-9701-211 | .110 (2.79) |

Mounting hole layout figure 2 page 201.

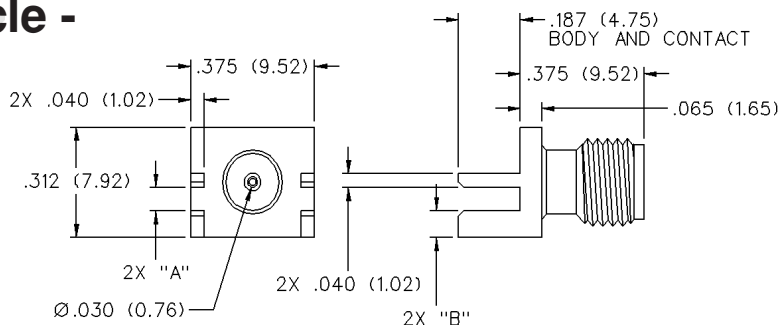
## Right Angle Jack Receptacle



| FREQUENCY RANGE | GOLD PLATED  |
|-----------------|--------------|
| 0-18 GHz        | 142-9701-301 |

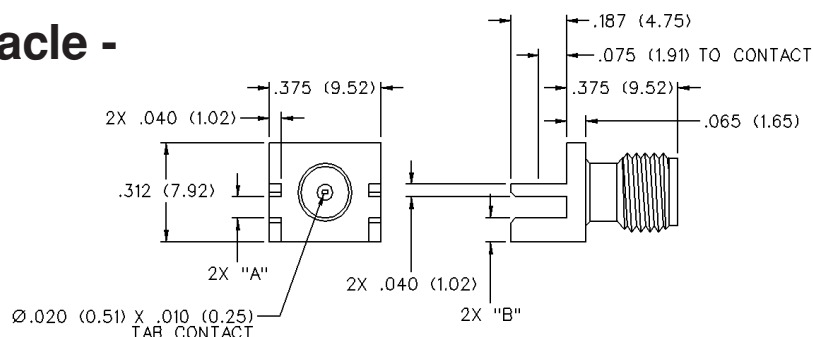
Mounting hole layout figure 2 page 201.

## End Launch Jack Receptacle - Round Contact



| FREQUENCY RANGE | GOLD PLATED  | BOARD THICKNESS | "A"         | "B"         |
|-----------------|--------------|-----------------|-------------|-------------|
| 0-18 GHz        | 142-9701-801 | .062 (1.57)     | .068 (1.73) | .073 (1.85) |

## End Launch Jack Receptacle - Tab Contact



| FREQUENCY RANGE | GOLD PLATED  | BOARD THICKNESS | "A"         | "B"         |
|-----------------|--------------|-----------------|-------------|-------------|
| 0-18 GHz        | 142-9701-811 | .062 (1.57)     | .068 (1.73) | .083 (2.11) |

## Epoxy Staked Feedthrough

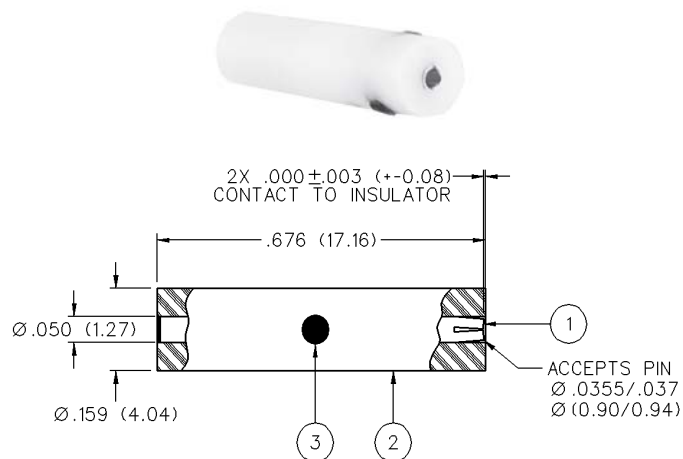


FIG. 1

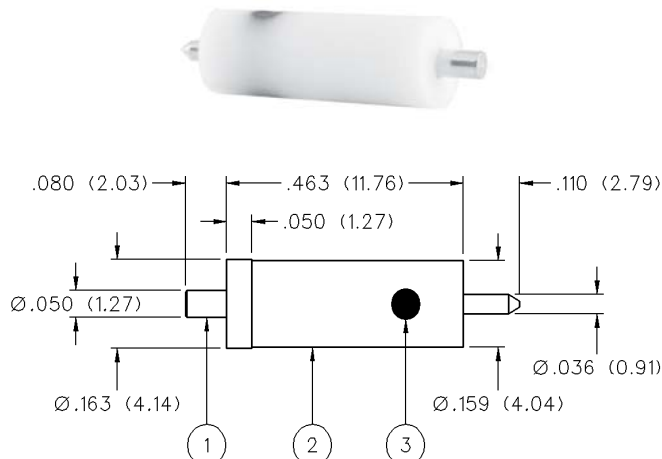


FIG. 2

| PART NO.     | ITEM 1 CONTACT                                                                                    | ITEM 2 INSULATOR | ITEM 3 STAKE | FIGURE |
|--------------|---------------------------------------------------------------------------------------------------|------------------|--------------|--------|
| 142-1000-012 | Beryllium Copper<br>Gold pl .00005 min over<br>Nickel pl .000005 min over<br>Copper pl .00005 min | Teflon           | Epoxy        | 1      |
| 142-1000-018 | Brass<br>Gold pl .00005 min over<br>Nickel pl .000005 min over<br>Copper pl .00005 min            | Teflon           | Epoxy        | 2      |

### Specifications:

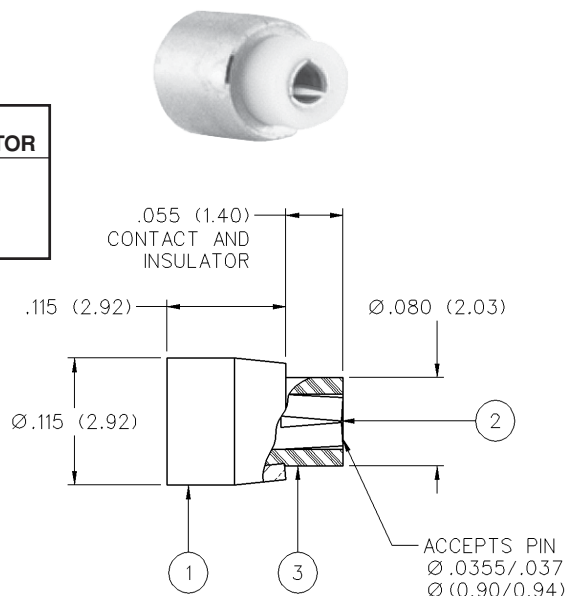
Impedance: 50 Ohms Nominal  
Frequency Range: DC to 26.5 GHz  
VSWR: Dependent upon application  
Working Voltage: 335 VRMS max at sea level  
Dielectric Withstanding Voltage: 1000 VRMS min at sea level  
Insulation Resistance: 5000 Megohm min  
Contact to Insulator Retention: 6 lb. min  
Operating Temperature: -55° C to + 165° C

## PC Board Feedthrough

| PART NO.     | ITEM 1 CONTACT (END CAP)                                                               | ITEM 2 CONTACT (CENTER)                                                                           | ITEM 3 INSULATOR |
|--------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------------|
| 142-1000-022 | Brass<br>Gold pl .00001 min over<br>Nickel pl .000005 min over<br>Copper pl .00005 min | Beryllium Copper<br>Gold pl .00005 min over<br>Nickel pl .000005 min over<br>Copper pl .00005 min | Teflon           |

### Application:

Lower frequency feedthrough.  
Solder end cap to one side of PC board.  
Contact passes through board and is isolated from board by Teflon™ insulator.



**SMB Connectors - 50 Ohm Connectors**

|                                           |     |
|-------------------------------------------|-----|
| Bulkhead Mount and Panel Mount .....      | 98  |
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**Other Information**

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# SMB - 50 Ohm Connectors

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## Specifications

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### ELECTRICAL RATINGS

**Impedance:** 50 Ohms

**Frequency Range:** Connectors ..... 0-4 GHz  
Dummy loads ..... 0-1 GHz

**VSWR:** (f = GHz)

|                                          | Straight Cabled | Right Angle Cabled |
|------------------------------------------|-----------------|--------------------|
| RG-178 cable                             | 1.30 + .04f     | 1.45 + .06f        |
| RG-316, RG-58, and .086 Semi-Rigid cable | 1.25 + .04f     | 1.35 + .04f        |
| Adapters                                 | 1.20 + .04f     |                    |
| Uncabled receptacles, dummy loads        |                 | N/A                |

**Working Voltage:** (VRMS maximum)<sup>†</sup>

| Connectors for Cable Type      | Sea Level | 70K Feet |
|--------------------------------|-----------|----------|
| RG-178                         | 250       | 60       |
| RG-316, RG-58, .086 Semi-Rigid |           |          |
| uncabled receptacles, adapters | 335       | 85       |
| Dummy loads                    |           | N/A      |

**Dielectric Withstanding Voltage:** (VRMS minimum at sea level)<sup>†</sup>

|                                                                               |      |
|-------------------------------------------------------------------------------|------|
| Connectors for RG-178                                                         | 750  |
| Connectors for RG-316, RG-58, .086 Semi-Rigid, uncabled receptacles, adapters | 1000 |
| Dummy loads                                                                   | N/A  |

**Corona Level:** (Volts minimum at 70,000 feet)<sup>†</sup>

|                                               |     |
|-----------------------------------------------|-----|
| Connectors for RG-178                         | 185 |
| Connectors for RG-316, RG-58, .086 Semi-Rigid | 250 |
| Uncabled receptacles, adapters, dummy loads   | N/A |

**Insertion Loss:** (dB maximum, tested at 1.5 GHz)

|                                                |         |
|------------------------------------------------|---------|
| Straight cable connectors                      | 0.30 dB |
| Right angle cable connectors                   | 0.60 dB |
| Uncabled receptacles, adapters and dummy loads | N/A     |

**Insulation Resistance:** 1000 megohms minimum

| Contact Resistance: (milliohms maximum)                              | Initial | After Environmental |
|----------------------------------------------------------------------|---------|---------------------|
| Center contact (straight cabled connectors and uncabled receptacles) | 6.0     | 8.0                 |
| Center contact (right angle cabled connectors and adapters)          | 12.0    | 16.0                |
| Outer contact (gold plated connectors)                               | 1.0     | 1.5                 |
| Outer contact (nickel plated connectors)                             | 2.5     | 3.5                 |
| Braid to body (gold plated connectors)                               | 1.0     | N/A                 |
| Braid to body (nickel plated connectors)                             | 2.5     | N/A                 |

**RF Leakage:** (dB minimum tested at 2.5 GHz)

|                                                |        |
|------------------------------------------------|--------|
| Cable connectors                               | -55 dB |
| Uncabled receptacles, adapters and dummy loads | N/A    |

**RF High Potential Withstanding Voltage:**

(VRMS minimum, tested at 4 and 7 MHz)<sup>†</sup>

|                                   |     |
|-----------------------------------|-----|
| Connectors for RG-178             | 500 |
| Connectors for RG-316, RG-58      | 700 |
| Uncabled receptacles and adapters | 600 |
| Dummy loads                       | N/A |

**Power Rating (Dummy Load):** 0.5 watt @ +25°C, derated to 0.25 watt @ +125°C

### MECHANICAL RATINGS

**Engagement Design:** mil-c-39012, Series SMB

**Engagement/Disengagement Force:** 2 pounds min to 14 pounds maximum axial force

**Contact Retention:** 4 lbs. min axial force (captivated contacts)  
1 inch-ounce min torque (uncabled receptacles)

| Cable Retention:               | Axial Force* (lbs) | Torque (in-oz) |
|--------------------------------|--------------------|----------------|
| Connectors for RG-178          | 10                 | N/A            |
| Connectors for RG-316          | 20                 | N/A            |
| Connectors for RG-58           | 40                 | 16             |
| Connectors for .086 Semi-Rigid | 30                 | 16             |

\* or cable breaking strength whichever is less.

**Durability:** 500 cycles minimum

### ENVIRONMENTAL RATINGS

(Meets or exceeds the applicable paragraph of MIL-C-39012)

**Temperature Range:** Connectors ..... -65°C to +165°C  
Dummy loads ..... -65°C to +125°C

**Thermal Shock:** MIL-STD-202, Method 107, Condition B (N/A dummy loads)

**Corrosion:** MIL-STD-202, Method 101, Condition B (N/A dummy loads)

**Shock:** MIL-STD-202, Method 213, Condition B (N/A dummy loads)

**Vibration:** MIL-STD-202, Method 204, Condition B (N/A dummy loads)

### MATERIAL SPECIFICATIONS

**Bodies:** Brass per QQ-B-626 or zinc per ASTM B86-71, gold plated\*\* per MIL-G-45204 .00001 min or nickel plated per QQ-N-290

**Contacts:** Male - brass per QQ-B-626, gold plated per MIL-G-45204 .00003" min.

Female - beryllium copper per QQ-C-530, gold plated per MIL-G-45204 .00003" min.

**Insulators:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457 OR Teflon PFA 340

**Expansion Caps:** Brass per QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Crimp Sleeves:** Copper per WW-T-799, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

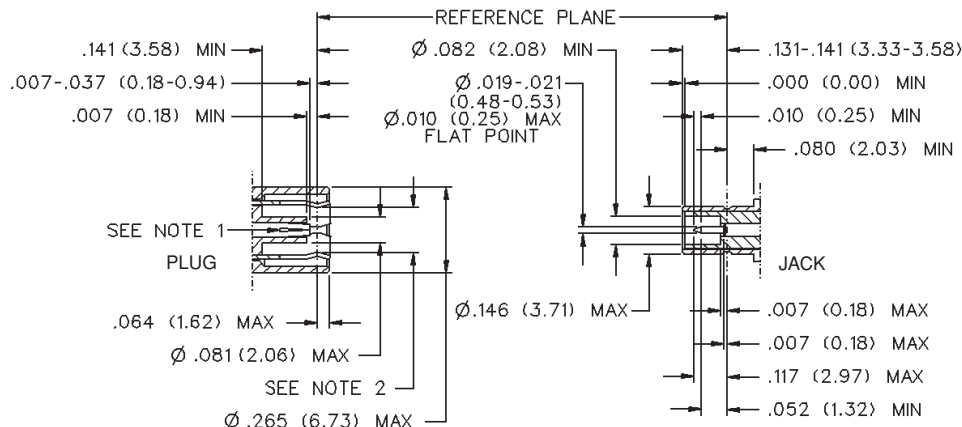
**Mounting Hardware:** Brass (nuts) per QQ-B-626 or phosphor bronze (lockwashers) QQ-B-750, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Cover Rings:** Phosphor Bronze per QQ-B-750, gold plated per MIL-G-45204 .00001 min. or nickel plated per QQ-N-290.

<sup>†</sup>Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

\*\* All gold plated parts include a .00005" min. nickel underplate barrier layer.

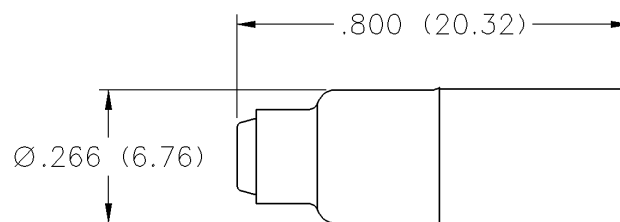
### Mating Engagement for SMB Series



### Notes

1. ID of contact to meet VSWR mating characteristics and connector durability when mated with a dia .019 /0.53 male contact.
2. Must meet the force to engage and disengage when mated with mating part.

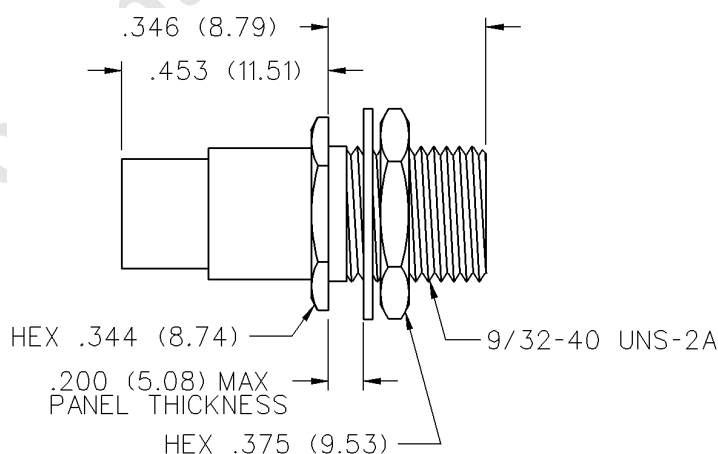
## Straight Solder Type Plug - Captivated Contact



| CABLE TYPE      | GOLD PLATED  | NICKEL PLATED |
|-----------------|--------------|---------------|
| .086 Semi-Rigid | 131-3693-001 | 131-3693-016  |

Assembly instructions page 237.

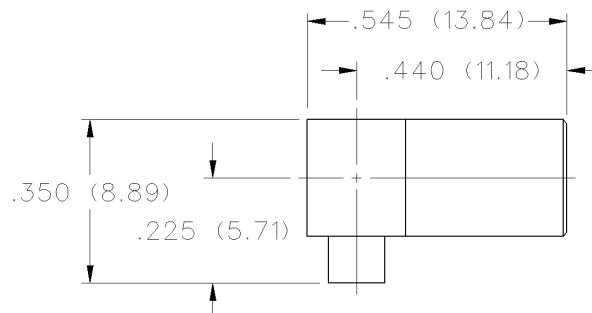
## Straight Solder Type Bulkhead Plug - Captivated Contact



| CABLE TYPE      | GOLD PLATED  | NICKEL PLATED |
|-----------------|--------------|---------------|
| .141 Semi-Rigid | 131-3694-401 | 131-3694-406  |

Assembly instructions page 237.  
Mounting hole Dia. .290 (7.05).

## Right Angle Solder Type Plug - Captivated Contact



| CABLE TYPE      | GOLD PLATED  | NICKEL PLATED |
|-----------------|--------------|---------------|
| .086 Semi-Rigid | 131-3693-101 | 131-3693-116  |

Assembly instructions page 238.

# SMB - 50 Ohm Connectors

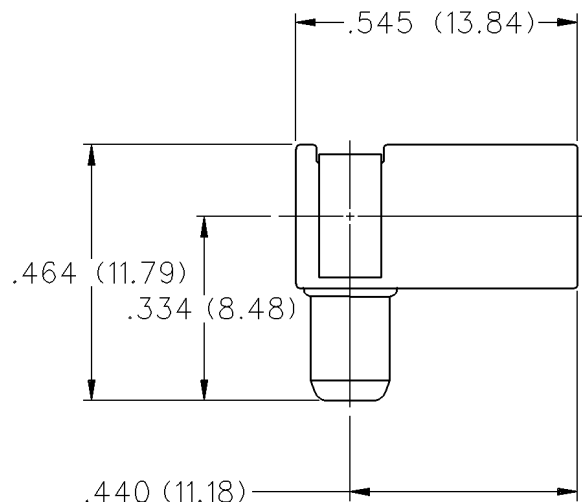
For Semi-Rigid Cable

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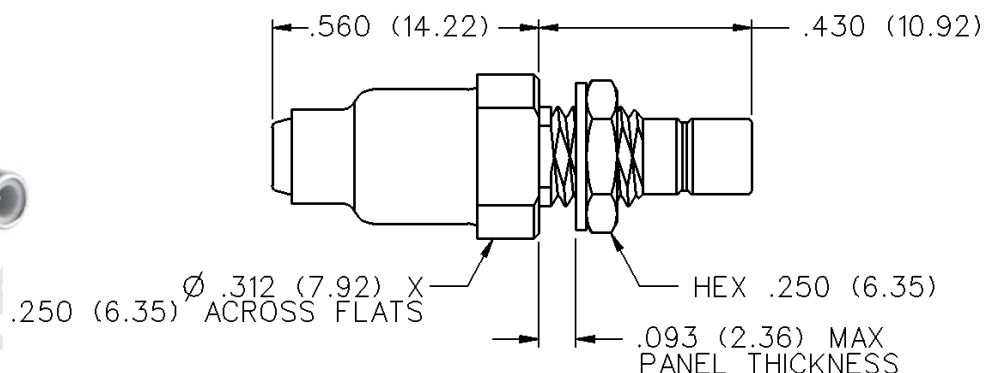
## Right Angle Solder Type Plug - Die Cast - Captivated Contact



| CABLE TYPE      | GOLD PLATED  | NICKEL PLATED |
|-----------------|--------------|---------------|
| .086 Semi-Rigid | 131-1693-101 | 131-1693-116  |

Assembly instructions page 238.

## Straight Bulkhead Solder Type Jack - Captivated Contact



| CABLE TYPE      | GOLD PLATED  | NICKEL PLATED |
|-----------------|--------------|---------------|
| .086 Semi-Rigid | 131-3593-401 | 131-3593-406  |

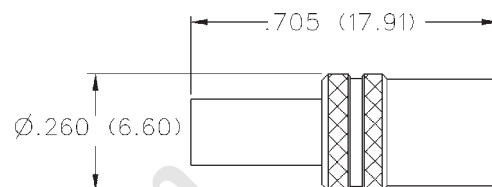
Assembly instructions page 237.

Mounting hole layout figure 5 page 201.

## Straight Crimp Type Plug (3-Piece) - Solder or Crimp Captivated Contact

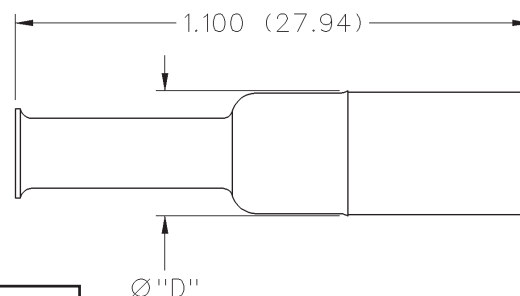


| CABLE TYPE                        | GOLD PLATED  | NICKEL PLATED |
|-----------------------------------|--------------|---------------|
| RG-161/U, 174, 179, 187, 188, 316 | 131-3403-021 | 131-3403-026  |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 131-3404-021 | 131-3404-026  |
| RG-58/U, 141, 303                 | 131-3407-021 | 131-3407-026  |



Assembly instructions page 236.  
See page 190 for Cable Assembly Tools.

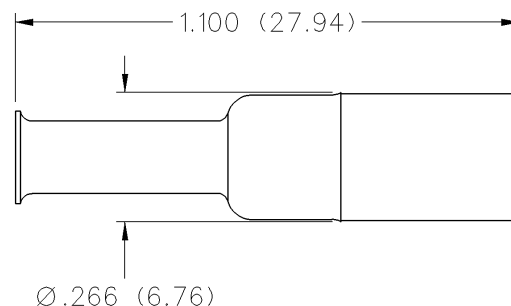
## Straight Crimp Type Plug - Solder or Crimp Captivated Contact



| CABLE TYPE                        | GOLD PLATED  | NICKEL PLATED | CRIMP CONTACT | "D"         |
|-----------------------------------|--------------|---------------|---------------|-------------|
| RG-178/U, 196                     | 131-3402-001 | 131-3402-016  | No            | .266 (6.76) |
| RG-161/U, 174, 179, 187, 188, 316 | 131-3403-001 | 131-3403-016  | Yes           | .266 (6.76) |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 131-3404-001 | 131-3404-016  | Yes           | .266 (6.76) |
| RG-58/U, 141, 303                 | 131-3407-001 | 131-3407-006  | Yes           | .270 (6.86) |

Assembly instructions page 239.  
See page 190 for Cable Assembly Tools.

## Straight Crimp Type Plug - Die Cast - Solder or Crimp Captivated Contact



| CABLE TYPE                        | GOLD PLATED  | NICKEL PLATED |
|-----------------------------------|--------------|---------------|
| RG-161/U, 174, 179, 187, 188, 316 | 131-1403-001 | 131-1403-016  |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 131-1404-001 | 131-1404-016  |

Assembly instructions page 239.  
See page 190 for Cable Assembly Tools.

# SMB - 50 Ohm Connectors

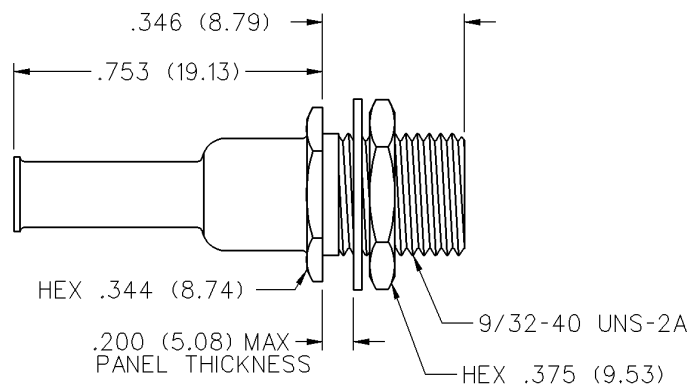
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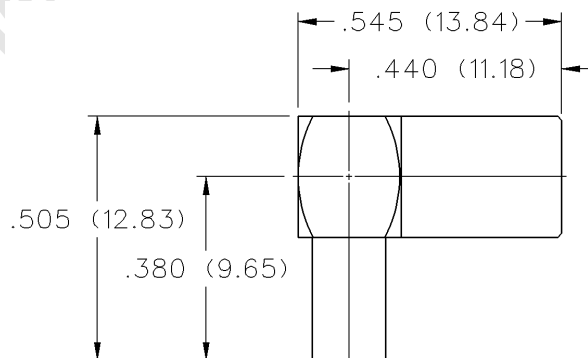
## Straight Crimp Type Bulkhead Plug - Solder or Crimp Captivated Contact



| CABLE TYPE                        | GOLD PLATED  | NICKEL PLATED |
|-----------------------------------|--------------|---------------|
| RG-161/U, 174, 179, 187, 188, 316 | 131-3403-401 | 131-3403-406  |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 131-3404-401 | 131-3404-406  |

Assembly instructions page 239.  
See page 190 for Cable Assembly Tools.  
Mounting hole Dia. .290 (7.05).

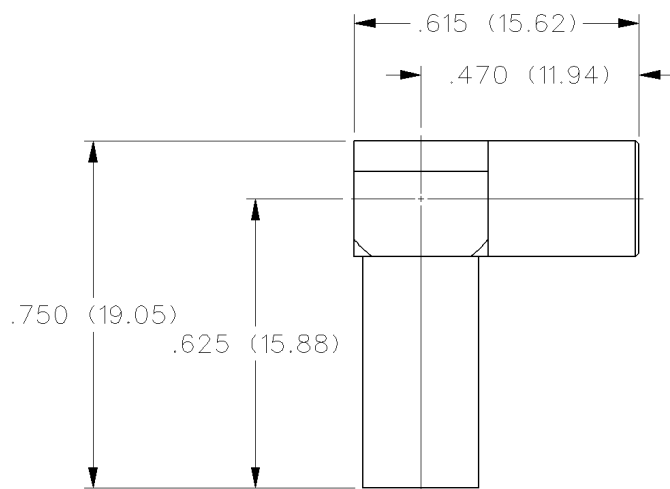
## Right Angle Crimp Type Plug - Captivated Contact



| CABLE TYPE                        | GOLD PLATED  | NICKEL PLATED |
|-----------------------------------|--------------|---------------|
| RG-178/U, 196                     | 131-3402-101 | 131-3402-116  |
| RG-161/U, 174, 179, 187, 188, 316 | 131-3403-101 | 131-3403-116  |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 131-3404-101 | 131-3404-116  |

Assembly instructions page 240.  
See page 190 for Cable Assembly Tools.

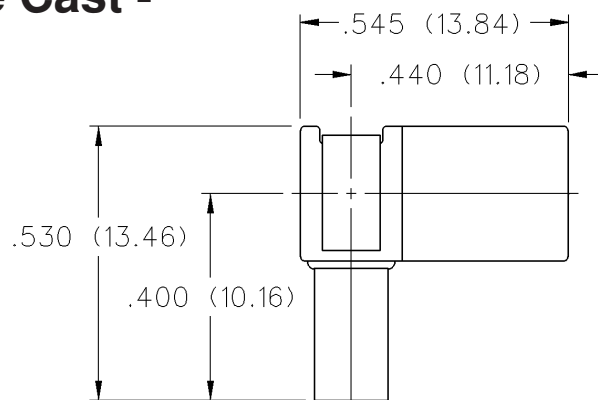
## Right Angle Crimp Type Plug - Captivated Contact



| CABLE TYPE        | GOLD PLATED  | NICKEL PLATED |
|-------------------|--------------|---------------|
| RG-58/U, 141, 303 | 131-3407-101 | 131-3407-106  |

Assembly instructions page 240.  
See page 190 for Cable Assembly Tools.

## Right Angle Crimp Type Plug - Die Cast - Captivated Contact

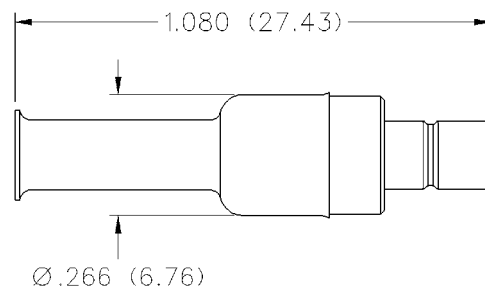


| CABLE TYPE                        | GOLD PLATED  | NICKEL PLATED |
|-----------------------------------|--------------|---------------|
| RG-178/U, 196                     | 131-1402-101 | 131-1402-116  |
| RG-161/U, 174, 179, 187, 188, 316 | 131-1403-101 | 131-1403-116  |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 131-1404-101 | 131-1404-116  |

Assembly instructions page 240.

See page 190 for Cable Assembly Tools.

## Straight Crimp Type Jack - Solder or Crimp Captivated Contact



| CABLE TYPE                        | GOLD PLATED  | NICKEL PLATED | CRIMPABLE CONTACT |
|-----------------------------------|--------------|---------------|-------------------|
| RG-178/U, 196                     | 131-3302-001 | 131-3302-006  | No                |
| RG-161/U, 174, 179, 187, 188, 316 | 131-3303-001 | 131-3303-006  | Yes               |

Assembly instructions page 239.

See page 190 for Cable Assembly Tools.

# SMB - 50 Ohm Connectors

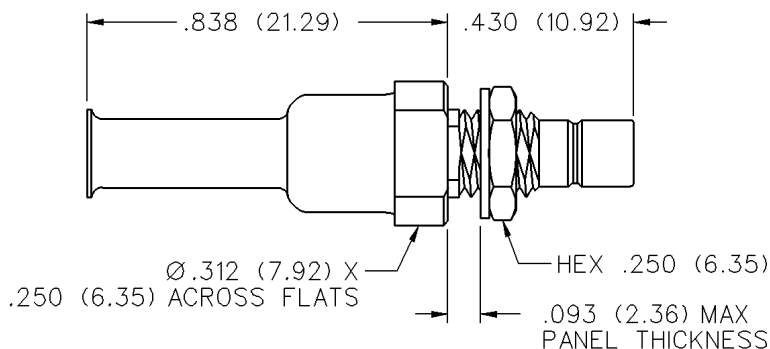
For Flexible Cable

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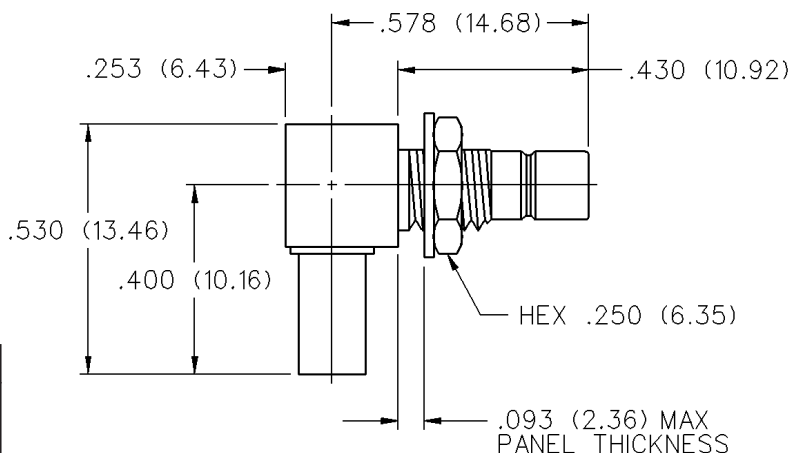
## Straight Crimp Type Bulkhead Jack - Solder or Crimp Captivated Contact



| CABLE TYPE                        | GOLD PLATED  | NICKEL PLATED |
|-----------------------------------|--------------|---------------|
| RG-161/U, 174, 179, 187, 188, 316 | 131-3303-401 | 131-3303-406  |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 131-3304-401 | 131-3304-406  |

Assembly instructions page 239.  
Mounting hole layout figure 5 page 201.  
See page 190 for Cable Assembly Tools.

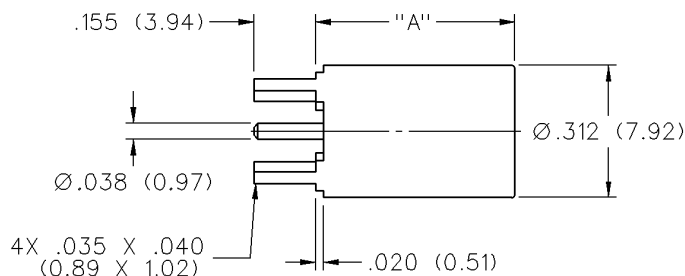
## Right Angle Crimp Type Bulkhead Jack - Captivated Contact



| CABLE TYPE                        | GOLD PLATED  | NICKEL PLATED |
|-----------------------------------|--------------|---------------|
| RG-161/U, 174, 179, 187, 188, 316 | 131-3303-501 | 131-3303-506  |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 131-3304-501 | 131-3304-506  |

Assembly instructions page 240.  
Mounting hole layout figure 5 page 201.  
See page 190 for Cable Assembly Tools.

## Straight Plug Receptacle



| GOLD PLATED  | NICKEL PLATED | "A"          |
|--------------|---------------|--------------|
| 131-3801-201 | 131-3801-216  | .395 (10.03) |
| 131-3801-231 | 131-3801-236  | .500 (12.70) |

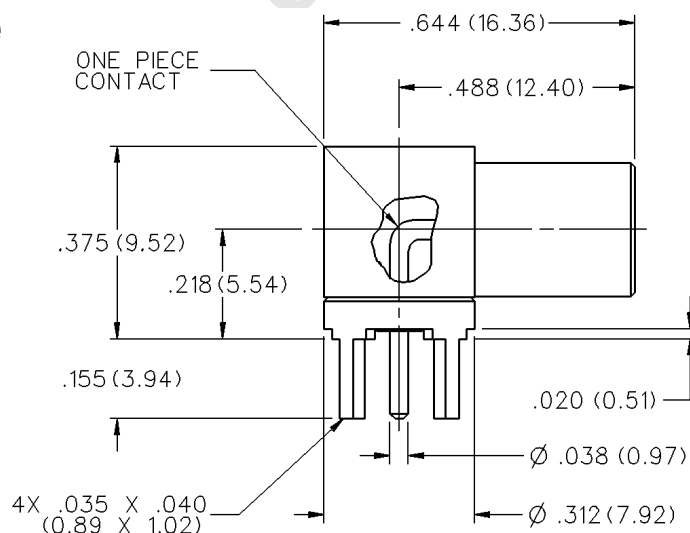
*Mounting hole layout figure 4 page 201.*

## Right Angle Plug Receptacle



|                    |                      |
|--------------------|----------------------|
| <b>GOLD PLATED</b> | <b>NICKEL PLATED</b> |
| 131-3801-301       | 131-3801-316         |

Mounting hole layout figure 4 page 201.

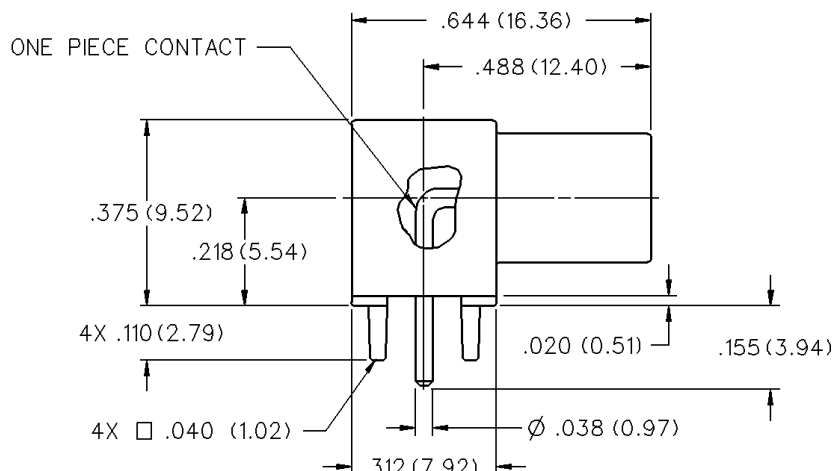


## Right Angle Plug Receptacle - Die Cast

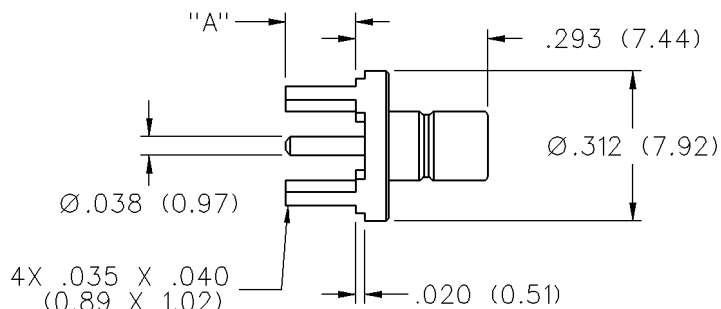


|                    |                      |
|--------------------|----------------------|
| <b>GOLD PLATED</b> | <b>NICKEL PLATED</b> |
| 131-1801-371       | 131-1801-376         |

*Mounting hole layout figure 4 page 201.*



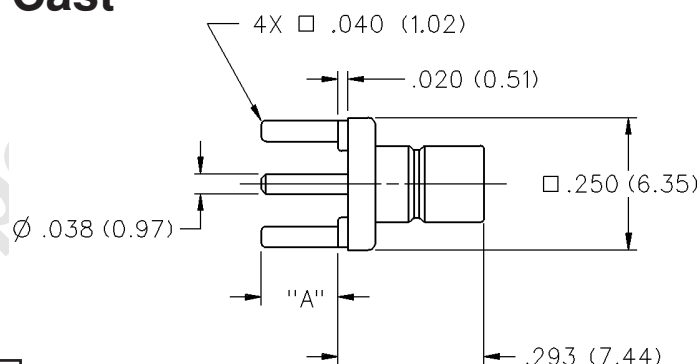
## Straight Jack Receptacle



| GOLD PLATED  | NICKEL PLATED | IR COMPATIBLE* | "A"         |
|--------------|---------------|----------------|-------------|
| 131-3701-201 | 131-3701-206  |                | .155 (3.94) |
| 131-3701-211 | 131-3701-216  | 131-3701-215*  | .110 (2.79) |

\* Tin/Lead solder dipped legs for IR Reflow Compatibility.  
Mounting hole layout figure 4 page 201.

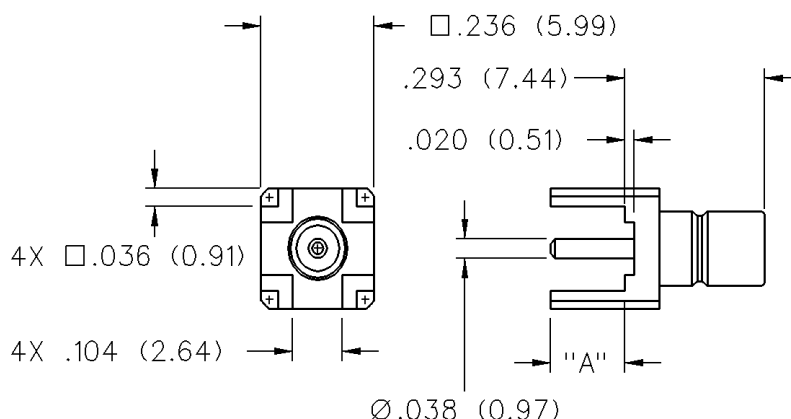
## Straight Jack Receptacle - Die Cast



| GOLD PLATED  | NICKEL PLATED | IR COMPATIBLE* | "A"         |
|--------------|---------------|----------------|-------------|
| 131-1701-201 | 131-1701-206  |                | .155 (3.94) |
| 131-1701-211 | 131-1701-216  | 131-1701-215*  | .095 (2.41) |

\* Tin/Lead solder dipped legs for IR Reflow Compatibility.  
Mounting hole layout figure 4 page 201.

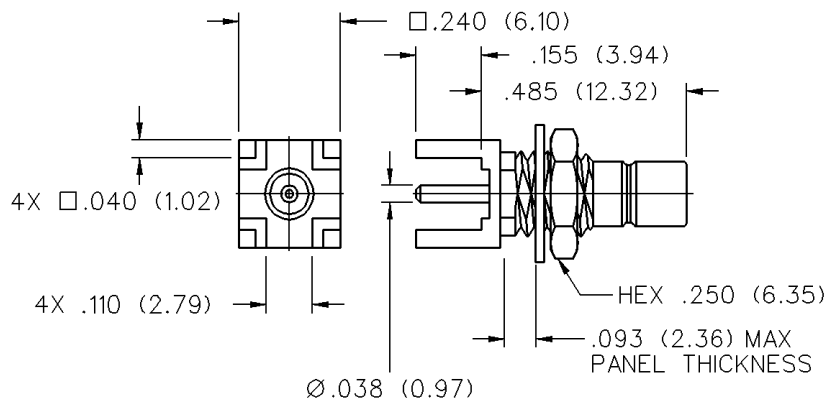
## Straight Jack Receptacle



| GOLD PLATED  | NICKEL PLATED | IR COMPATIBLE* | "A"         |
|--------------|---------------|----------------|-------------|
| 131-3701-261 | 131-3701-266  |                | .155 (3.94) |
| 131-3701-271 | 131-3701-276  | 131-3701-275   | .095 (2.41) |

\* Tin/Lead solder dipped legs for IR Reflow Compatibility.  
Mounting hole layout figure 4 page 201.

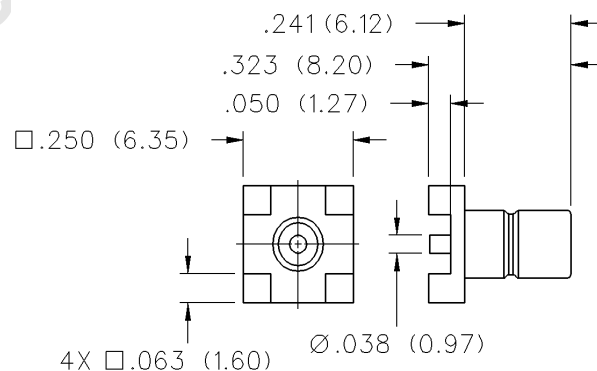
## Straight Bulkhead Jack Receptacle



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 131-3701-231 | 131-3701-236  |

Mounting hole layout figures 4 and 5 page 201.

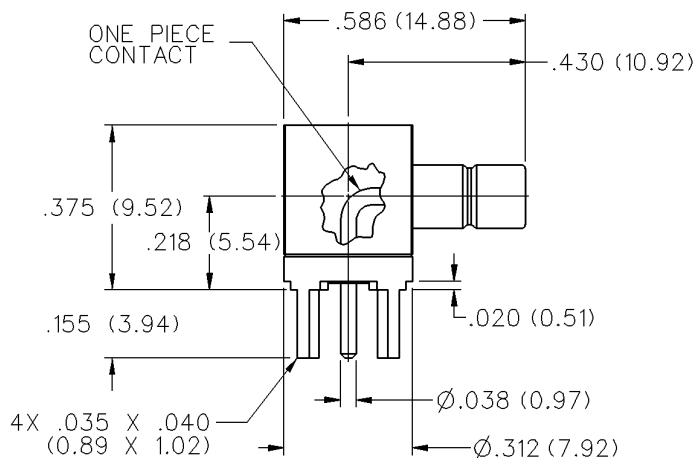
## Straight Jack Receptacle - Surface Mount



| GOLD PLATED  |
|--------------|
| 131-3711-201 |

Recommended Land Pattern figure 9 page 201.

## Right Angle Jack Receptacle



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 131-3701-301 | 131-3701-306  |

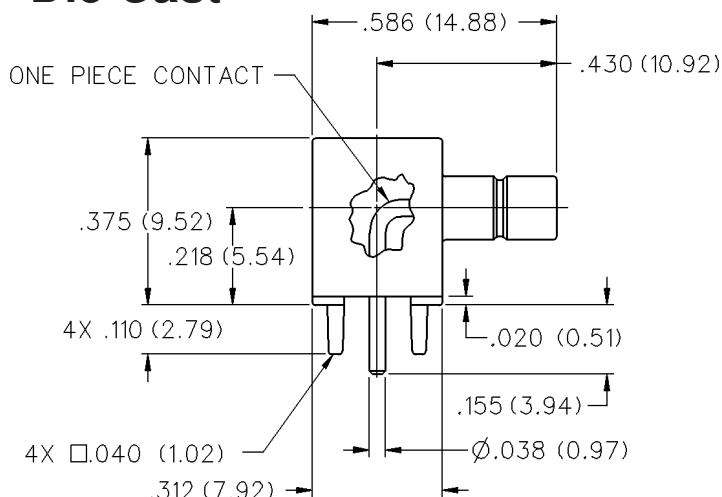
Mounting hole layout figure 4 page 201.

## Right Angle Jack Receptacle - Die Cast

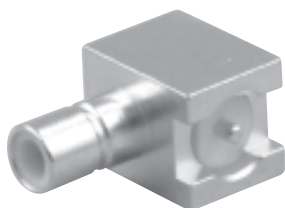


| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 131-1701-371 | 131-1701-376  |

Mounting hole layout figure 4 page 201.

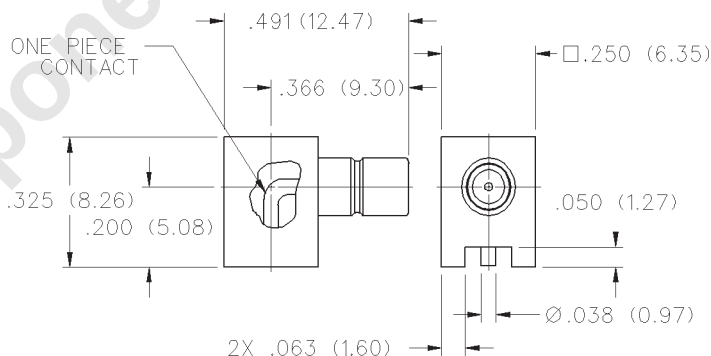


## Right Angle Surface Mount Jack Receptacle



| GOLD PLATED<br>STANDARD PACKAGING | GOLD PLATED<br>TAPE AND REEL |
|-----------------------------------|------------------------------|
| 131-3711-301                      | 131-3711-302<br>425 pcs/reel |

Mounting hole layout figure 9 page 201.

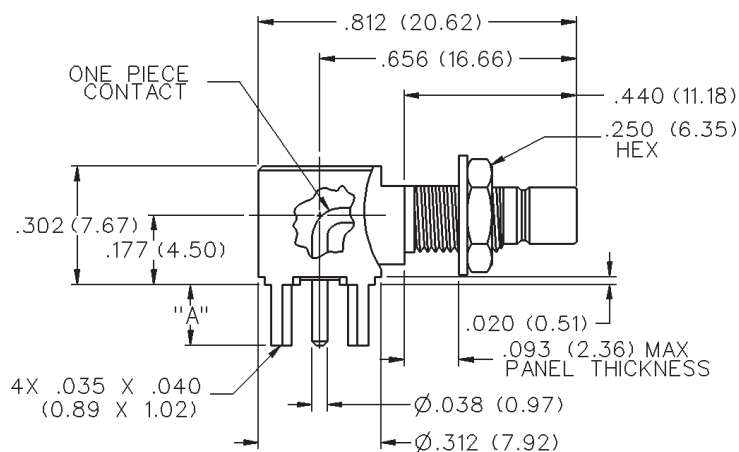


## Right Angle Bulkhead Jack Receptacle

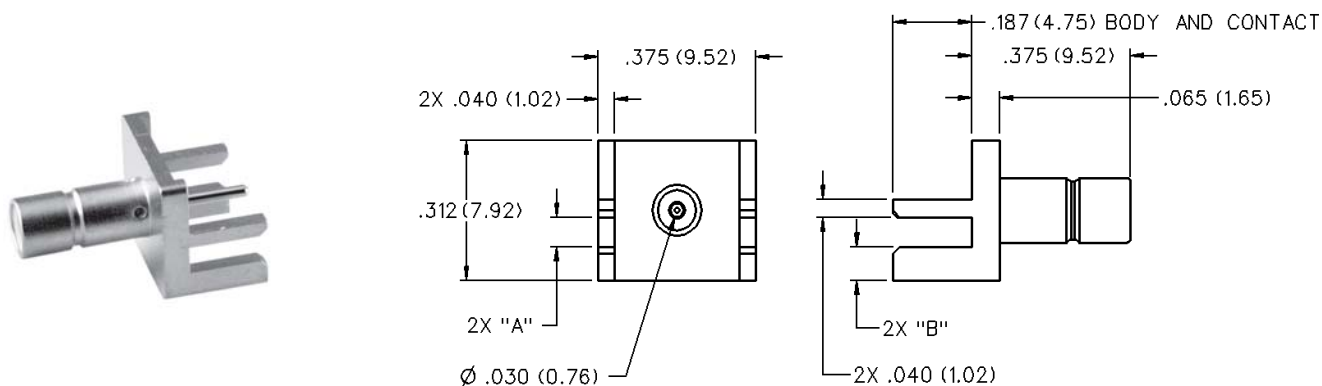


| GOLD PLATED  | NICKEL PLATED | "A"         |
|--------------|---------------|-------------|
| 131-3701-501 | 131-3701-506  | .083 (2.11) |
| 131-3701-511 | 131-3701-516  | .110 (2.79) |
| 131-3701-341 | 131-3701-346  | .155 (3.94) |

Mounting hole layout figures 4 and 5 page 201.

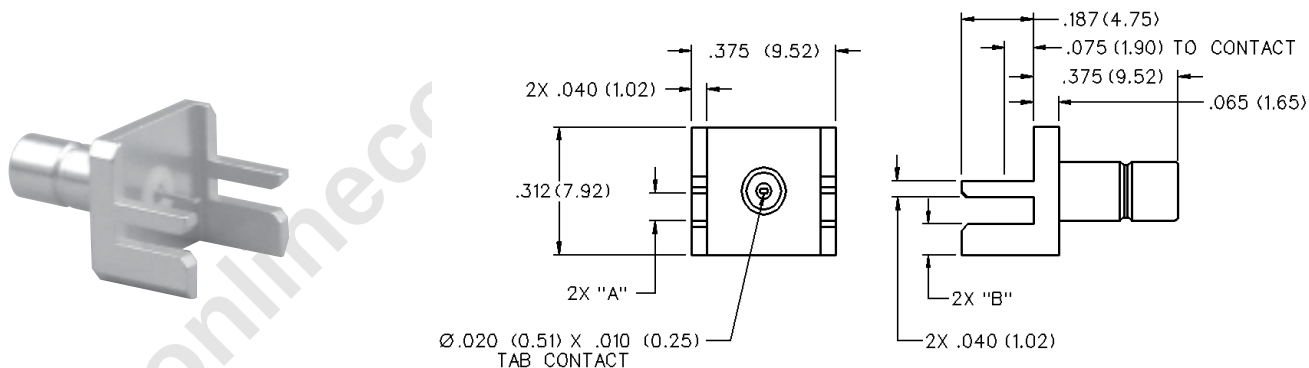


## End Launch Jack Receptacle - Round Contact



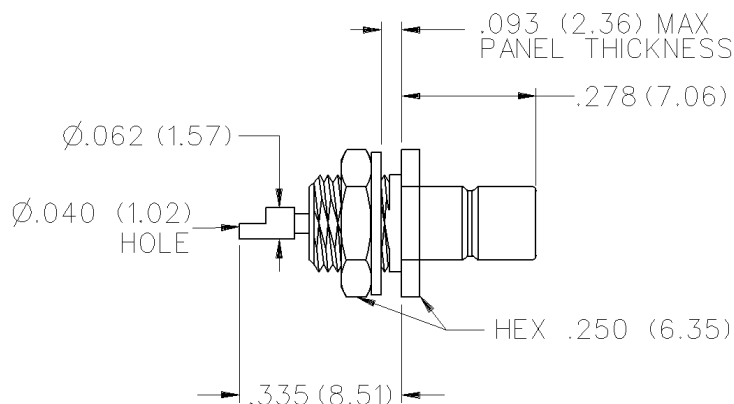
| GOLD PLATED  | NICKEL PLATED | BOARD THICKNESS | "A"         | "B"         |
|--------------|---------------|-----------------|-------------|-------------|
| 131-3701-801 | 131-3701-806  | .062 (1.57)     | .068 (1.73) | .073 (1.85) |
| 131-3701-821 | 131-3701-826  | .042 (1.07)     | .048 (1.22) | .093 (2.36) |

## End Launch Jack Receptacle - Tab Contact



| GOLD PLATED  | NICKEL PLATED | BOARD THICKNESS | "A"         | "B"         |
|--------------|---------------|-----------------|-------------|-------------|
| 131-3701-811 | 131-3701-816  | .062 (1.57)     | .068 (1.73) | .083 (2.11) |
| 131-3701-831 | 131-3701-836  | .042 (1.07)     | .048 (1.22) | .103 (2.62) |

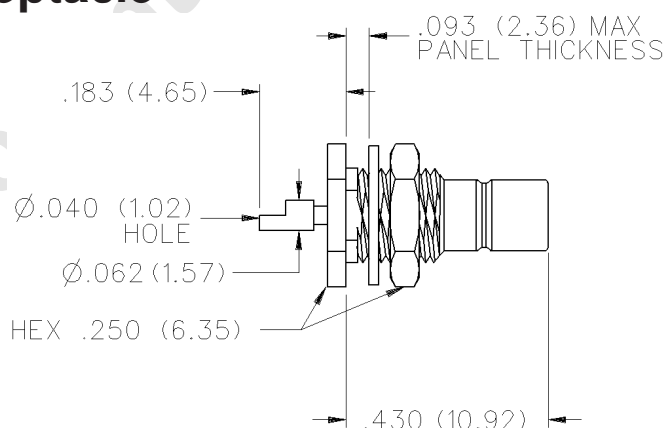
## Front Mount Bulkhead Jack Receptacle



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 131-3701-411 | 131-3701-416  |

Mounting hole layout figure 5 page 201.

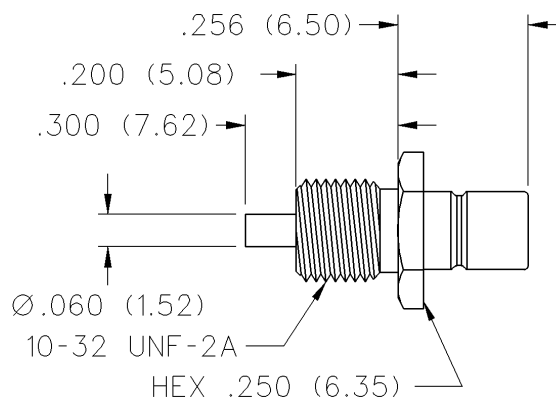
## Rear Mount Bulkhead Jack Receptacle



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 131-3701-401 | 131-3701-406  |

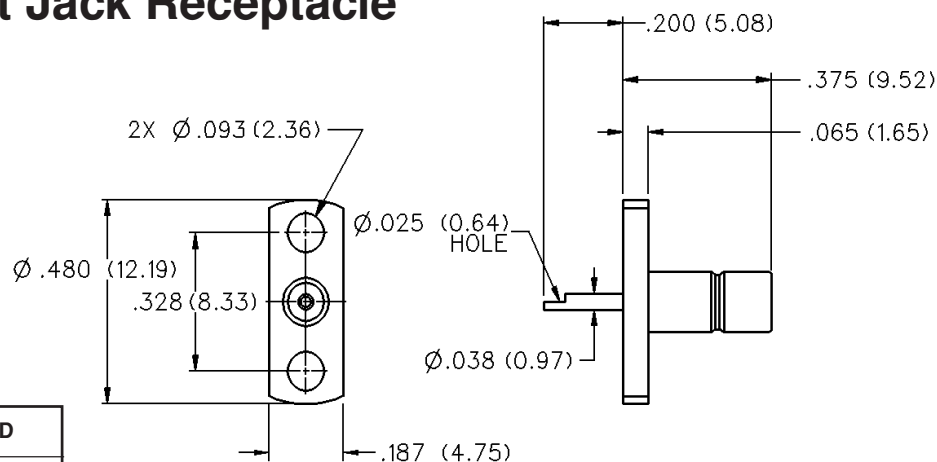
Mounting hole layout figure 5 page 201.

## Round Contact Jack Receptacle - Thread Mount Ruggedized Interface



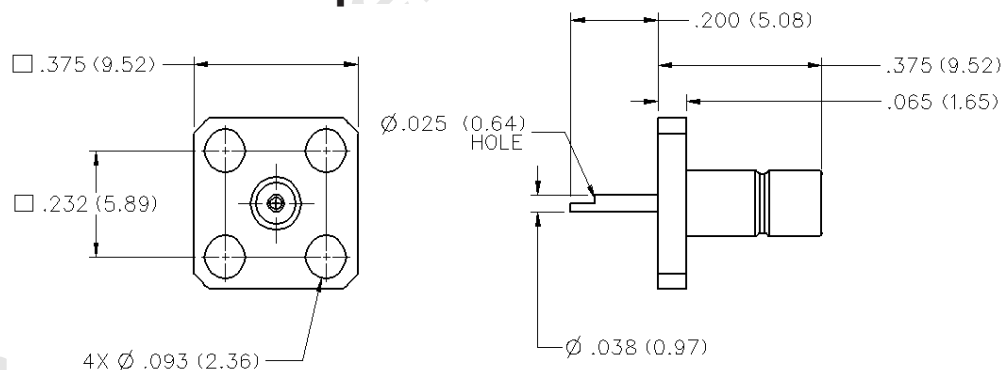
| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 131-3701-441 | 131-3701-446  |

## 2-Hole Flange Mount Jack Receptacle



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 131-3701-621 | 131-3701-626  |

## 4-Hole Flange Mount Jack Receptacle



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 131-3701-631 | 131-3701-636  |

# SMB - 50 Ohm Connectors

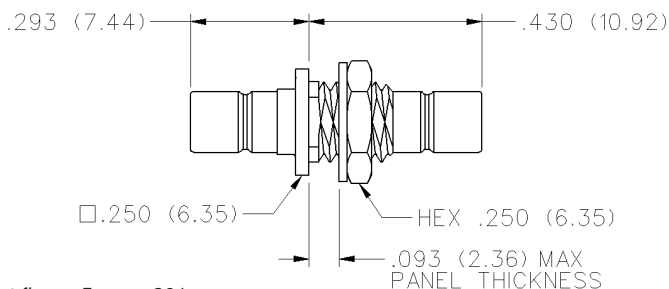
In-Series Adapters and Terminations

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**EMERSON**  
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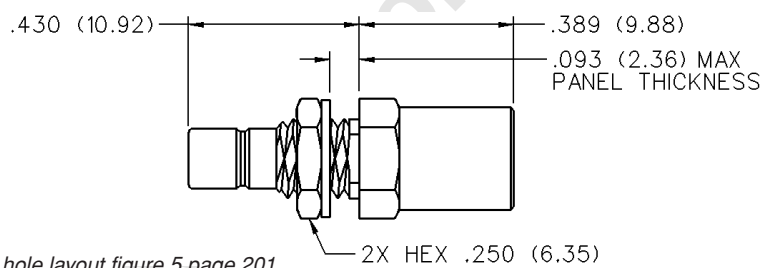
## Jack to Bulkhead Jack Adapter



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 131-3901-401 | 131-3901-406  |

Mounting hole layout figure 5 page 201.

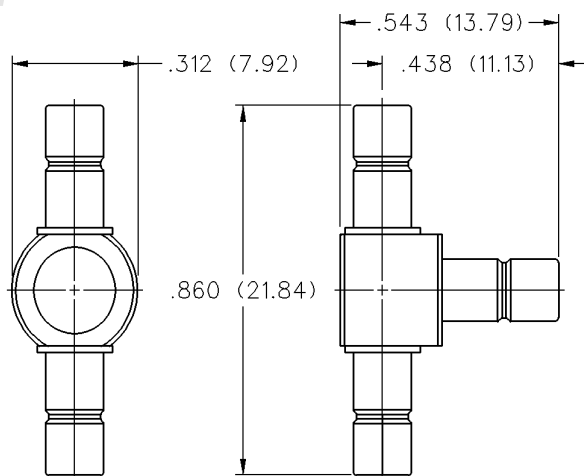
## Plug to Bulkhead Jack Adapter



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 131-3901-411 | 131-3901-416  |

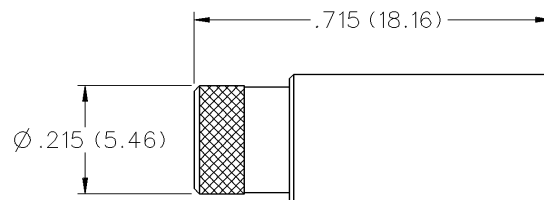
Mounting hole layout figure 5 page 201.

## Jack to Jack to Jack Adapter



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 131-3901-901 | 131-3901-906  |

## Plug Dummy Load - 50 Ohm and 75 Ohm



| FREQ. RANGE | GOLD PLATED  | NICKEL       | RESISTANCE |
|-------------|--------------|--------------|------------|
| 0-1 GHz     | 131-3801-811 | 131-3801-816 | 50 Ohm     |
| 0-1 GHz     | 131-3801-821 | 131-3801-826 | 75 Ohm     |

For precision 75 Ohm termination  
see Mini-75 Ohm SMB section page 110.

## ELECTRICAL RATINGS

**Impedance:** 50 Ohms

**Frequency Range:** 0-4 GHz

**VSWR:** (f = GHz)

|                            | Straight<br>Cabled | Right Angle<br>Cabled |
|----------------------------|--------------------|-----------------------|
| RG-316 .....               | 1.25 + .04f        | 1.35 + .04f           |
| Uncabled receptacles ..... | N/A                |                       |

**Working Voltage:** (VRMS maximum)<sup>†</sup>

| Connectors for Cable Type         | Sea Level | 70K Feet |
|-----------------------------------|-----------|----------|
| RG-316, uncabled connectors ..... | 335       | 85       |

**Dielectric Withstanding Voltage:** (VRMS minimum at sea level)<sup>†</sup>

|                                                   |      |
|---------------------------------------------------|------|
| Connectors for RG-316, uncabled receptacles ..... | 1000 |
|---------------------------------------------------|------|

**Corona Level:** (Volts minimum at 70,000 feet)<sup>†</sup>

|                             |     |
|-----------------------------|-----|
| Connectors for RG-316 ..... | 250 |
| Uncabled receptacles .....  | N/A |

**Insertion Loss:** (dB maximum, tested at 1.5 GHz)

|                                    |         |
|------------------------------------|---------|
| Straight cable connectors .....    | 0.30 dB |
| Right angle cable connectors ..... | 0.60 dB |
| Uncabled receptacles .....         | N/A     |

**Insulation Resistance:** 1000 megohms minimum

**Contact Resistance:** (milliohms maximum)

|                                                                               | Initial | After Environmental |
|-------------------------------------------------------------------------------|---------|---------------------|
| Center contact (straight cabled connectors<br>and uncabled receptacles) ..... | 6.0     | 8.0                 |
| Center contact (right angle cabled connectors) .....                          | 12.0    | 16.0                |
| Outer contact (gold plated connectors) .....                                  | 1.0     | 1.5                 |
| Braid to body (gold plated connectors) .....                                  | 1.0     | N/A                 |

<sup>†</sup>Avoid user injury due to misapplication.

See safety advisory definitions inside front cover.

See Non-Magnetic materials page 29.

**RF Leakage:** (dB minimum tested at 2.5 GHz)

|                            |        |
|----------------------------|--------|
| Cable connectors .....     | -55 dB |
| Uncabled receptacles ..... | N/A    |

**RF High Potential Withstanding Voltage:**

(VRMS minimum, tested at 4 and 7 MHz)<sup>†</sup>

|                             |     |
|-----------------------------|-----|
| Connectors for RG-316 ..... | 700 |
| Uncabled receptacles .....  | 600 |

**Power Rating (Dummy Load):** 0.5 watt @ +25°C, derated to 0.25 watt @ +125° C

## MECHANICAL RATINGS

**Engagement Design:** MIL-STD-348, Series SMB

**Engagement/Disengagement Force:** 2 pounds min to 14 pounds maximum axial force

**Contact Retention:** 4 lbs. min axial force (captivated contacts)

1 inch-ounce min torque (uncabled receptacles)

**Cable Retention:**

Connectors for RG-316

\*or cable breaking strength whichever is less.

**Durability:** 500 cycles minimum

## ENVIRONMENTAL RATINGS

(Meets or exceeds the applicable paragraph of MIL-PRF-39012)

**Temperature Range:** - 65°C to + 165°C

**Thermal Shock:** MIL-STD-202, Method 107, Condition B

**Corrosion:** MIL-STD-202, Method 101, Condition B

**Shock:** MIL-STD-202, Method 213, Condition B

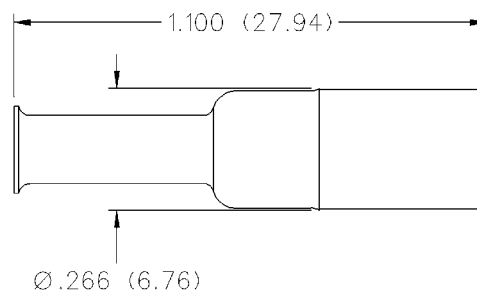
## Straight Crimp Type Plug - Solder or Crimp Captivated Contact



| CABLE TYPE                           | GOLD PLATED  |
|--------------------------------------|--------------|
| RG-316/U, 188, 174,<br>179, 187      | 131-9403-001 |
| RG-316 DS, 188 DS,<br>179 DS, 187 DS | 131-9404-001 |

Assembly instructions page 239.

See page 190 for Cable Assembly Tools.



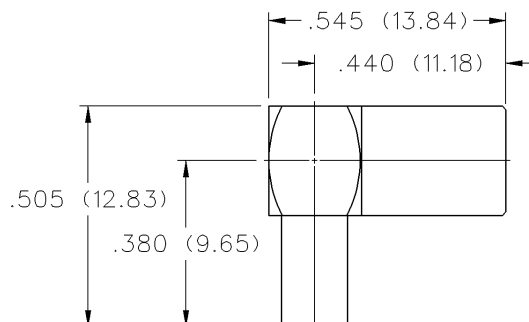
## Right Angle Crimp Type Plug - Captivated Contact



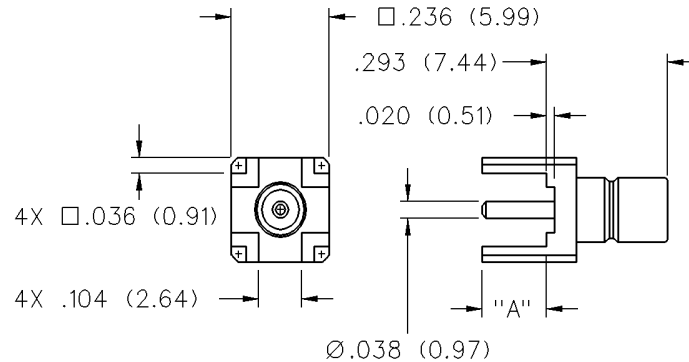
| CABLE TYPE                           | GOLD PLATED  |
|--------------------------------------|--------------|
| RG-316/U, 188, 174,<br>179, 187      | 131-9403-101 |
| RG-316 DS, 188 DS,<br>179 DS, 187 DS | 131-9404-101 |

Assembly instructions page 240.

See page 190 for Cable Assembly Tools.



## Straight Jack Receptacle



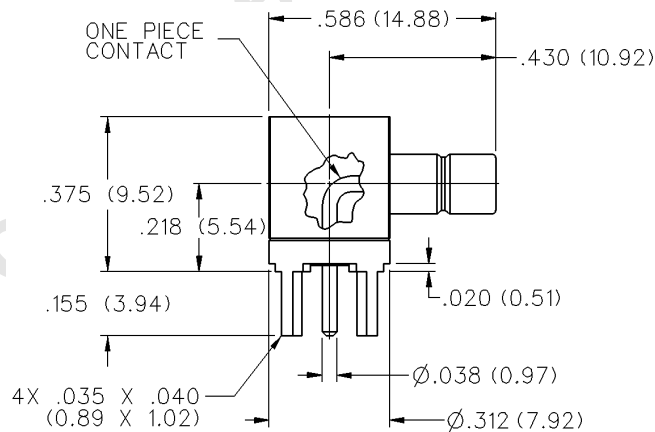
| GOLD PLATED  | "A"         |
|--------------|-------------|
| 131-9701-201 | .155 (3.94) |
| 131-9701-211 | .095 (2.41) |

Mounting hole layout figure 4 page 201.

## Right Angle Jack Receptacle



| GOLD PLATED  |
|--------------|
| 131-9701-301 |



Mounting hole layout figure 4 page 201.

**SMB Connectors - Mini-75 Ohm**

|                                   |     |
|-----------------------------------|-----|
| Between-Series Adapters .....     | 112 |
| Flexible Cable .....              | 105 |
| In-Series Matched Adapters .....  | 111 |
| PC Mount .....                    | 107 |
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**Other Information**

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| Competitor Cross Reference ..... | 281 |

# Mini-75 Ohm SMB Connectors

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## Specifications

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### ELECTRICAL RATINGS

**Impedance:** 75 Ohms

**Frequency Range:** 0-2 GHz

**VSWR:** f = GHz

RG-179, RG-59, Belden 735A cable:

|                                           |             |
|-------------------------------------------|-------------|
| Straight cabled connectors .....          | 1.25 + .04f |
| Right angle cabled connectors .....       | 1.35 + .04f |
| Adapters .....                            | 1.20 + .04f |
| Type N Adapters .....                     | 1.05 + .01f |
| Matching pad 50 Ohm/75 Ohm .....          | 1.05 + .1f  |
| Loads .....                               | 1.05 + .01f |
| Uncabled receptacles, opens, shorts ..... | N/A         |

**Working Voltage:** (VRMS maximum)<sup>†</sup>

| Connectors for Cable Type                                           | Sea Level | 70K Feet |
|---------------------------------------------------------------------|-----------|----------|
| RG-179, RG-59, Belden 735A,<br>uncabled receptacles, adapters ..... | 335       | 85       |
| Open, shorts, loads, matching pad .....                             | N/A       | N/A      |

**Dielectric Withstanding Voltage:** (VRMS minimum at sea level)<sup>†</sup>

|                                                                                    |      |
|------------------------------------------------------------------------------------|------|
| Connectors for RG-179, RG-59, Belden 735A,<br>uncabled receptacles, adapters ..... | 1000 |
| Open, shorts, loads, matching pad .....                                            | N/A  |

**Corona Level:** (Volts minimum at 70,000 feet)<sup>†</sup>

|                                                 |     |
|-------------------------------------------------|-----|
| Connectors for RG-179, RG-59, Belden 735A ..... | 250 |
|-------------------------------------------------|-----|

Uncabled receptacles, adapters, open, shorts, loads, matching pad: N/A

**Electrical Length:** Open  $\pm 1.5^\circ$  ( $\pm 5.2^\circ$  relative to short)

Short  $\pm 1.5^\circ$  ( $\pm 5.2^\circ$  relative to open)

Adapters  $\pm 5.2^\circ$  (N/A for Jack-Bulkhead Jack and N Types)

**Insertion Loss:** (dB maximum, tested at 1.5 GHz)

|                                                            |              |
|------------------------------------------------------------|--------------|
| Straight cable connectors .....                            | 0.30 dB      |
| Right angle cable connectors .....                         | 0.60 dB      |
| Matching pad .....                                         | 6 dB nominal |
| Uncabled receptacles, adapters, opens, shorts, loads ..... | N/A          |

**Insulation Resistance:** 1000 megohms minimum

**Contact Resistance:** (milliohms maximum)

|                                                                                                  | Initial | After<br>Environmental |
|--------------------------------------------------------------------------------------------------|---------|------------------------|
| Center contact (straight cabled connectors,<br>uncabled receptacles, opens, shorts, loads) ..... | 6.0     | 8.0                    |
| Center contact (right angle cabled<br>connectors and adapters) .....                             | 12.0    | 16.0                   |
| Outer contact (gold plated connectors) .....                                                     | 1.0     | 1.5                    |
| Outer contact (nickel plated connectors) .....                                                   | 2.5     | 3.5                    |
| Braid to body (gold plated connectors) .....                                                     | 1.0     | N/A                    |
| Braid to body (nickel plated connectors) .....                                                   | 2.5     | N/A                    |

**RF Leakage:** (dB minimum tested at 2.0 GHz)

|                                                                         |        |
|-------------------------------------------------------------------------|--------|
| Cable connectors .....                                                  | -55 dB |
| Uncabled receptacles, adapters opens, shorts, loads, matching pad...N/A |        |

**RF High Potential Withstanding Voltage:** (VRMS minimum, tested at 4 and 7 MHz)<sup>†</sup>

|                                                 |     |
|-------------------------------------------------|-----|
| Connectors for RG-179, RG-59, Belden 735A ..... | 700 |
| Uncabled receptacles and adapters .....         | 600 |
| Opens, shorts, loads, matching pad .....        | N/A |

**Power Rating:** (Loads and matching pad only) 1.0 watt at +25°C derated linearly to .5 watt at +125°C

### MECHANICAL RATINGS

**Engagement Design:** MIL-PRF-39012, Series SMB

**Engagement/Disengagement Force:** 2 pounds minimum to

14 pounds maximum axial force

**Contact Retention:** 4 lbs. minimum axial force (captivated contacts)

1 inch-ounce minimum torque (uncabled receptacles)

| Cable Retention:                   | Axial Force* (lbs) | Torque (in-oz) |
|------------------------------------|--------------------|----------------|
| Connectors for RG-179, Belden 735A | 20                 | N/A            |
| Connectors for RG-59               | 40                 | N/A            |

\* or cable breaking strength whichever is less.

**Durability:** 500 cycles minimum

### ENVIRONMENTAL RATINGS

(Meets or exceeds the applicable paragraph of MIL-C-39012)

**Temperature Range:** - 65°C to +165°C -- Connectors and adapters

- 65°C to +125°C -- Loads, matching pad

20°C to 26°C -- Opens, shorts

**Thermal Shock:** MIL-STD-202, Method 107, Condition B

(N/A opens, shorts, loads, matching pad)

**Corrosion:** MIL-STD-202, Method 101, Condition B

(N/A opens, shorts, loads, matching pad)

**Shock:** MIL-STD-210, Method 213, Condition B

(N/A opens, shorts, loads, matching pad)

**Vibration:** MIL-STD-202, Method 204, Condition B

(N/A opens, shorts, loads, matching pad)

**Temperature Coefficient:** (Loads only)  $\pm 300$  ppm/°C

### MATERIAL SPECIFICATIONS

**Bodies:** Brass per QQ-B-626, gold plated\*\* per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290  
N type adapters stainless steel per QQ-S-763, passivated per MIL-F-14072

**Contacts:** Male & Female - beryllium copper per QQ-C-530, gold plated per MIL-G-45204 .00003" min.

**Insulators:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457

**Expansion Caps:** Brass per QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

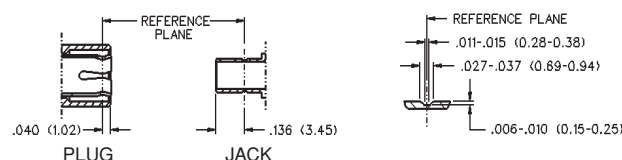
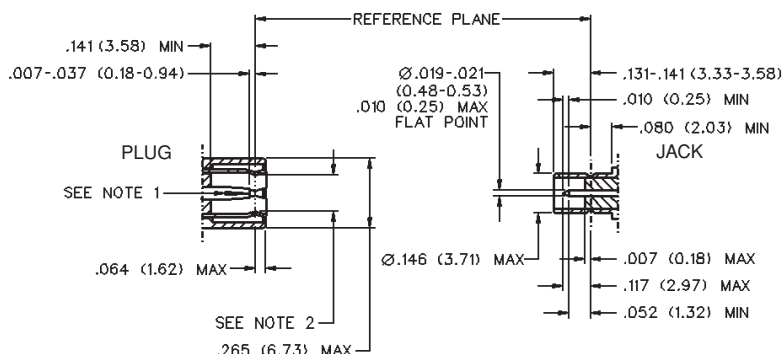
**Crimp Sleeves:** Copper per WW-T-799, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Mounting Hardware:** Brass (nuts) per QQ-B-626 or phosphor bronze (lockwashers) QQ-B-750, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

\*\* All gold plated parts include a .00005" min. nickel underplate barrier layer.

<sup>†</sup>Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

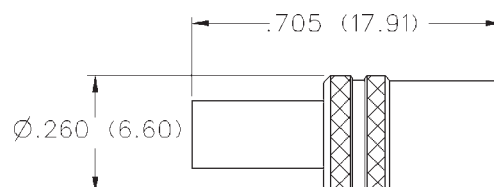
### Mating Engagement for Mini-75 Ohm SMB Series (Intermatable with Standard 50 Ohm SMB)



#### NOTES:

1. ID of contact to meet VSWR, mating characteristics and connector durability when mated with a dia .019-.021 (0.48/0.53) male contact.
2. Must meet the force to engage and disengage when mated with mating part.

## Straight Crimp Type Plug (3-Piece) - Captivated Contact



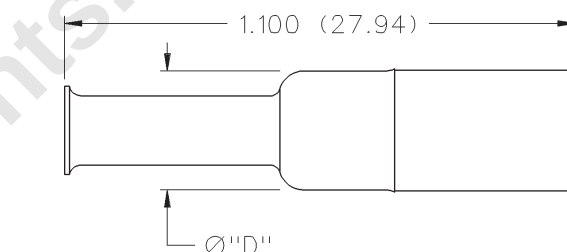
| CABLE TYPE             | GOLD PLATED  | NICKEL PLATED |
|------------------------|--------------|---------------|
| RG-179, RG-187         | 131-8433-001 | 131-8433-006  |
| RG-179 DS<br>RG-187 DS | 131-8434-001 | 131-8434-006  |
| Belden 735A            | 131-8445-011 | 131-8445-016  |

Assembly instructions page 236.  
See page 190 for Cable Assembly Tools.

## Straight Crimp Type Plug - Solder or Crimp Captivated Contact



| CABLE TYPE             | GOLD PLATED  | NICKEL PLATED | "D"         |
|------------------------|--------------|---------------|-------------|
| RG-179, 187            | 131-8403-001 | 131-8403-006  | .266 (6.76) |
| RG-179 DS<br>RG-187 DS | 131-8404-001 | 131-8404-006  | .266 (6.76) |
| Belden 735A            | 131-8445-001 | 131-8445-006  | .266 (6.76) |
| RG-59                  | 131-8409-001 | 131-8409-006  | .312 (7.92) |



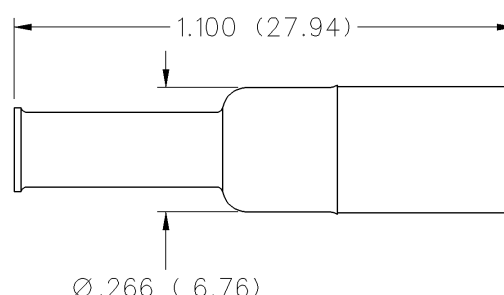
Assembly instructions page 239.  
See page 190 for Cable Assembly Tools.

## Straight Crimp Type Plug - Die Cast - Solder or Crimp Captivated Contact



| CABLE TYPE             | GOLD PLATED  | NICKEL PLATED |
|------------------------|--------------|---------------|
| RG-179, 187            | 131-8403-011 | 131-8403-016  |
| RG-179 DS<br>RG-187 DS | 131-8404-011 | 131-8404-016  |

Assembly instructions page 239.  
See page 190 for Cable Assembly Tools.

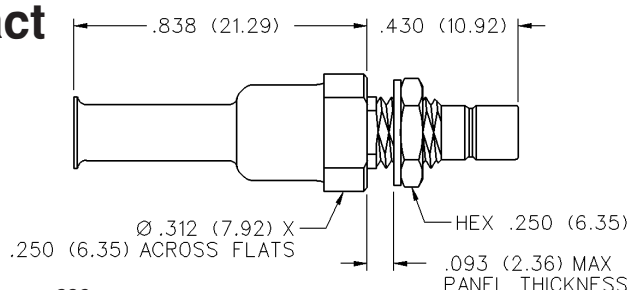


## Straight Crimp Type Bulkhead Jack - Solder or Crimp Captivated Contact



| CABLE TYPE             | GOLD PLATED  | NICKEL PLATED |
|------------------------|--------------|---------------|
| RG-179, 187            | 131-8303-401 | 131-8303-406  |
| RG-179 DS<br>RG-187 DS | 131-8304-401 | 131-8304-406  |

Assembly instructions page 239.  
Mounting hole layout figure 5 page 201.  
See page 190 for Cable Assembly Tools.



# Mini-75 Ohm SMB Connectors

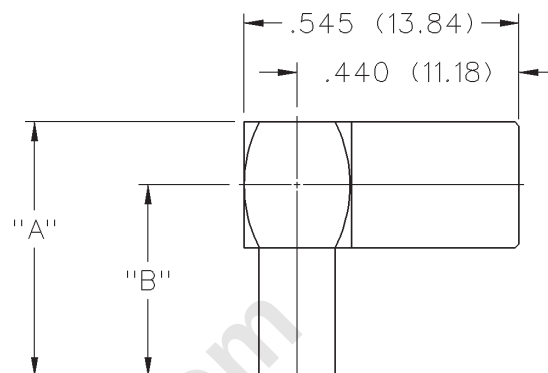
For Flexible Cable

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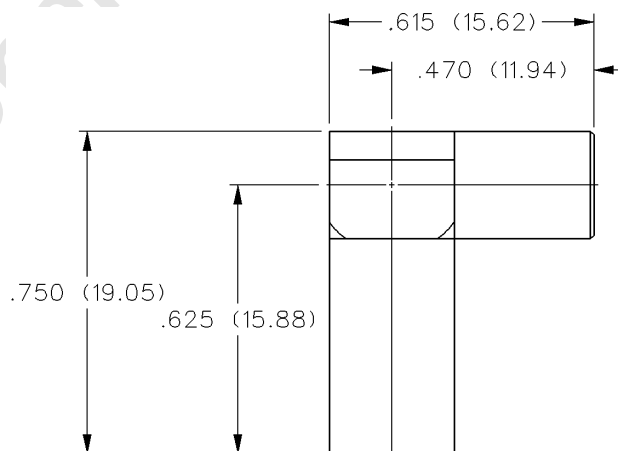
## Right Angle Crimp Type Plug - Captivated Contact



| CABLE TYPE             | GOLD PLATED  | NICKEL PLATED | "A"          | "B"          |
|------------------------|--------------|---------------|--------------|--------------|
| RG-179, 187            | 131-8403-101 | 131-8403-106  | .505 (12.83) | .380 (9.65)  |
| RG-179 DS<br>RG-187 DS | 131-8404-101 | 131-8404-106  | .505 (12.83) | .380 (9.65)  |
| Belden 735A            | 131-8445-101 | 131-8445-106  | .750 (19.05) | .625 (15.88) |

Assembly instructions page 240.  
See page 190 for Cable Assembly Tools.

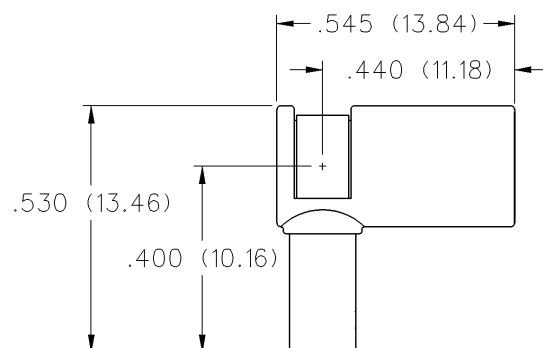
## Right Angle Crimp Type Plug - Captivated Contact



| CABLE TYPE | GOLD PLATED  | NICKEL PLATED |
|------------|--------------|---------------|
| RG-59      | 131-8409-101 | 131-8409-106  |

Assembly instructions page 240.  
See page 190 for Cable Assembly Tools.

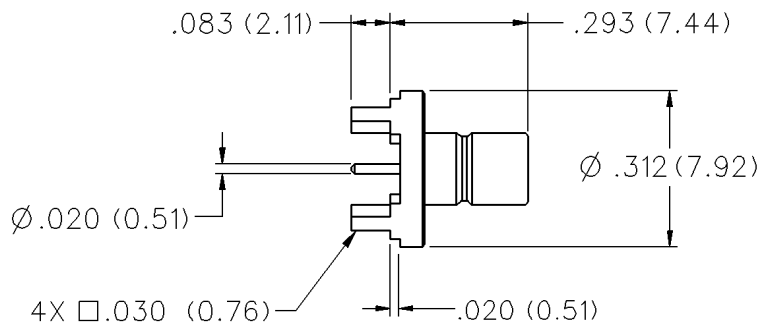
## Right Angle Crimp Type Plug - Captivated Contact - Die Cast



| CABLE TYPE             | GOLD PLATED  | NICKEL PLATED |
|------------------------|--------------|---------------|
| RG-179, 187            | 131-8403-111 | 131-8403-116  |
| RG-179 DS<br>RG-187 DS | 131-8404-111 | 131-8404-116  |

Assembly instructions page 240.  
See page 190 for Cable Assembly Tools.

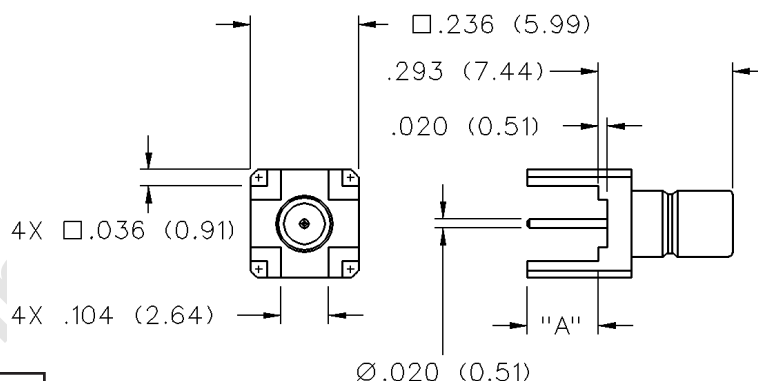
## Straight Jack Receptacle



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 131-8701-201 | 131-8701-206  |

Mounting hole layout figure 7 page 201.

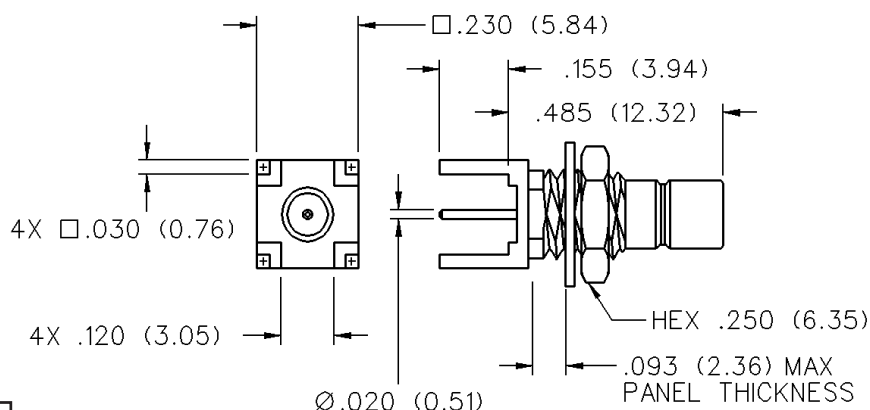
## Straight Jack Receptacle



| GOLD PLATED  | NICKEL PLATED | "A"         |
|--------------|---------------|-------------|
| 131-8701-251 | 131-8701-256  | .155 (3.94) |
| 131-8701-261 | 131-8701-266  | .095 (2.41) |

Mounting hole layout figure 7 page 201.

## Straight Bulkhead Jack Receptacle



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 131-8701-211 | 131-8701-216  |

Mounting hole layout figures 5 and 7 page 201.

# Mini-75 Ohm SMB Connectors

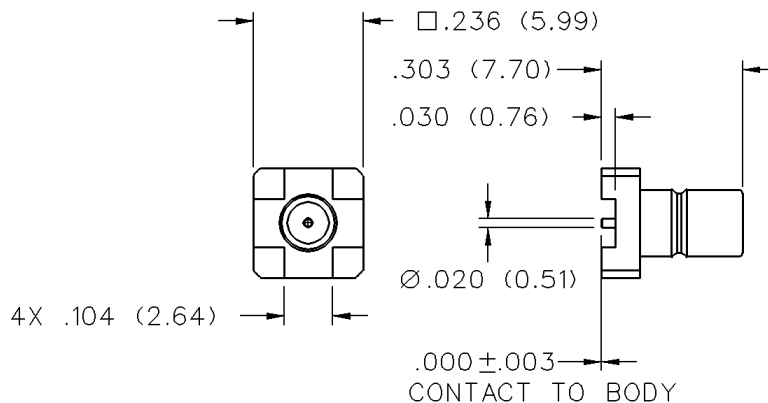
PC Mount

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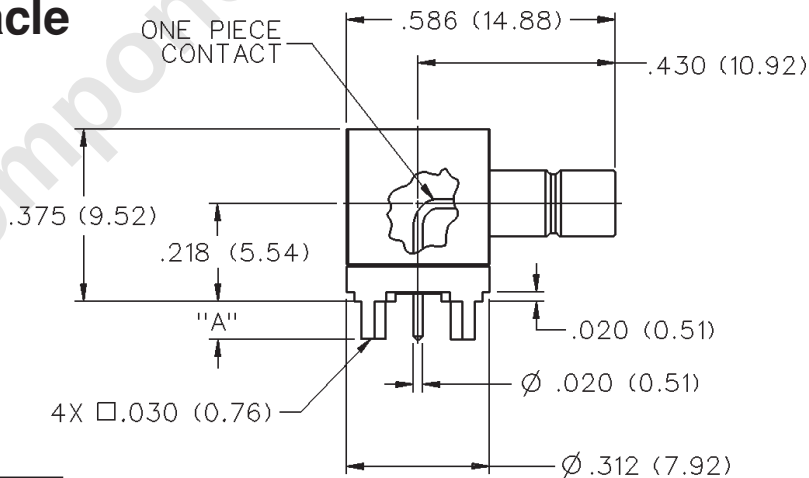
## Straight Jack Receptacle - Surface Mount



| GOLD PLATED  | "PACKAGING"                   |
|--------------|-------------------------------|
| 131-8711-201 | Stock                         |
| 131-8711-202 | Tape and Reel<br>750 pcs/reel |

Recommended land pattern figure 13 page 202.

## Right Angle Jack Receptacle



| GOLD PLATED  | NICKEL PLATED | "A"  |
|--------------|---------------|------|
| 131-8701-301 | 131-8701-306  | .083 |
| 131-8701-311 | 131-8701-316  | .125 |

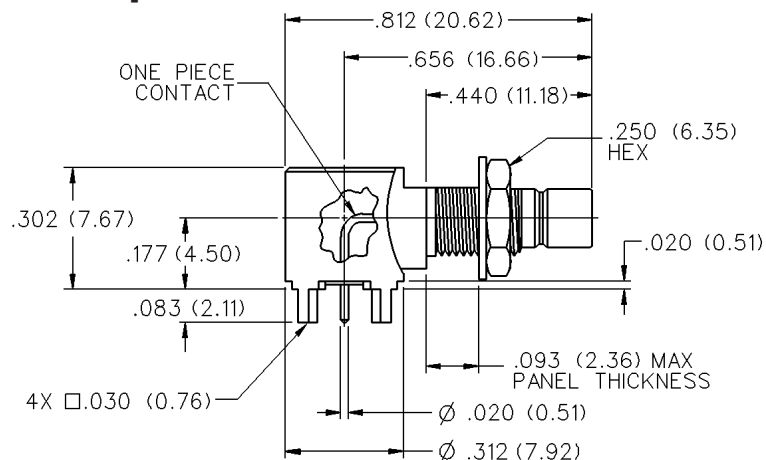
Mounting hole layout figure 7 page 201.

## Right Angle Bulkhead Jack Receptacle



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 131-8701-501 | 131-8701-506  |

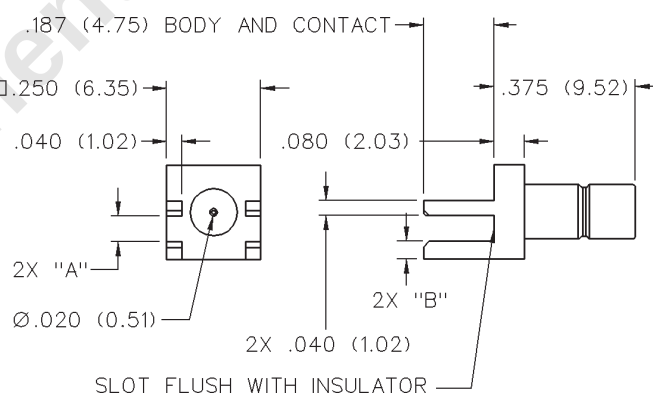
Mounting hole layout figures 5 and 7 page 201.



## End Launch Jack Receptacle



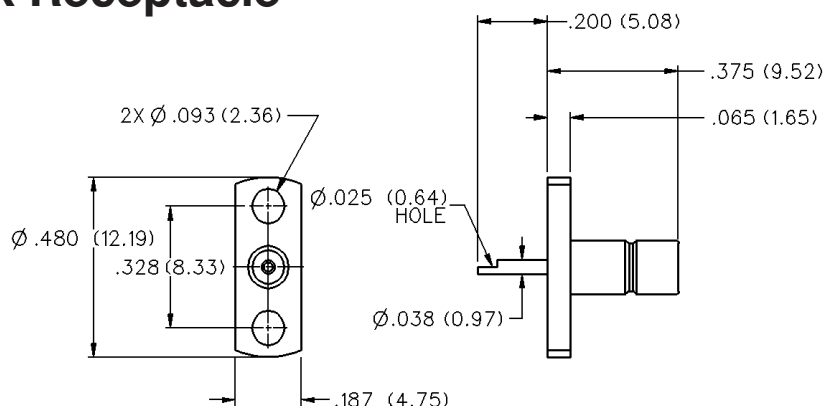
| NICKEL PLATED | GOLD PLATED  | BOARD THICKNESS | "A"         | "B"         |
|---------------|--------------|-----------------|-------------|-------------|
| 131-8701-846  | 131-8701-841 | .062 (1.57)     | .068 (1.73) | .047 (1.19) |



## 2-Hole Flange Mount Jack Receptacle



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 131-8701-601 | 131-8701-606  |



# Mini-75 Ohm SMB Connectors

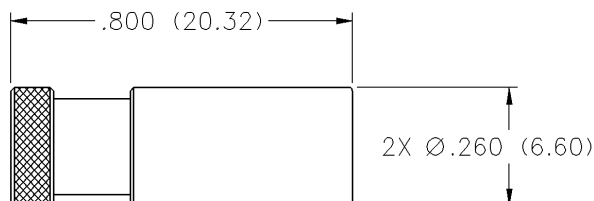
Terminations

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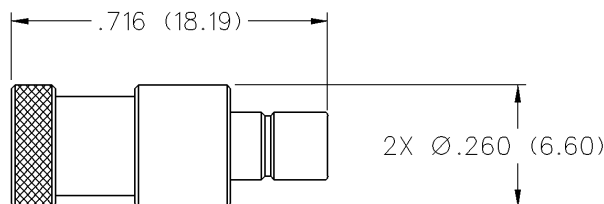
**EMERSON**  
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## Plug Precision Load



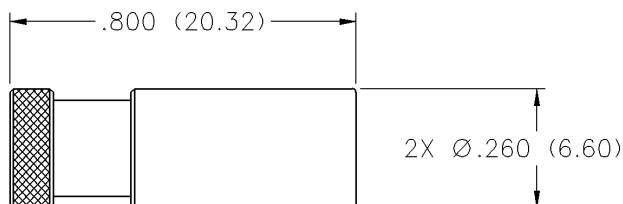
| VSWR & FREQ. RANGE       | GOLD PLATED  |
|--------------------------|--------------|
| 1.05 + .01f (GHz) 0-2GHz | 131-8801-801 |

## Jack Precision Load



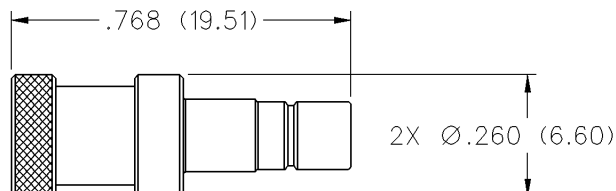
| VSWR & FREQ. RANGE       | GOLD PLATED  |
|--------------------------|--------------|
| 1.05 + .01f (GHz) 0-2GHz | 131-8701-801 |

## Matched Plug Open and Short



| TERMINATION | GOLD PLATED  |
|-------------|--------------|
| OPEN        | 131-8801-821 |
| SHORT       | 131-8801-811 |

## Matched Jack Open and Short



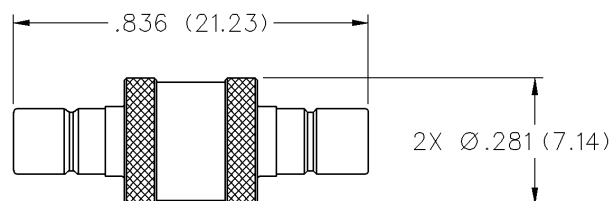
| TERMINATION | GOLD PLATED  |
|-------------|--------------|
| OPEN        | 131-8701-821 |
| SHORT       | 131-8701-811 |

## Jack to Jack Adapter



**GOLD PLATED**

131-8901-801

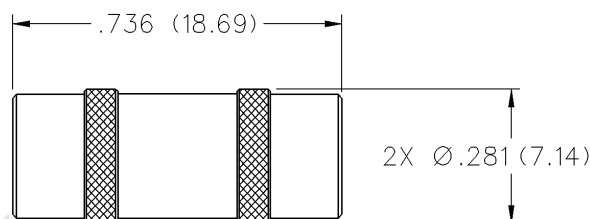


## Plug to Plug Adapter



**GOLD PLATED**

131-8901-811

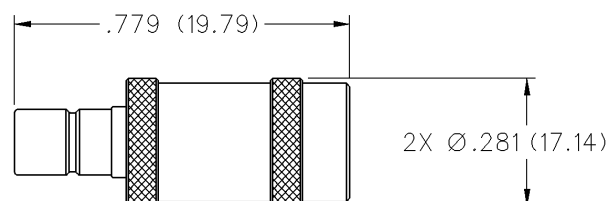


## Jack to Plug Adapter



**GOLD PLATED**

131-8901-821



## Jack to Bulkhead Jack\* Adapter

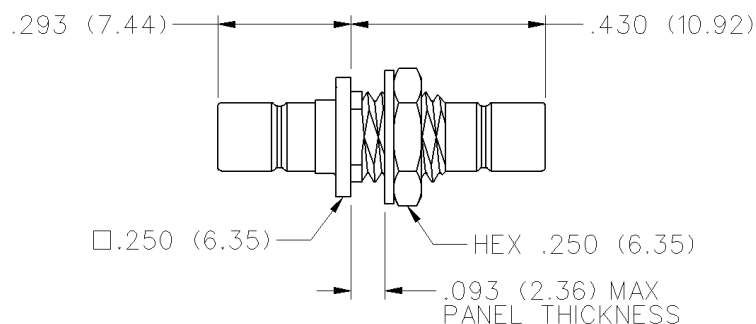


**GOLD PLATED**

131-8901-401

**NICKEL PLATED**

131-8901-406



Mounting hole layout figure 5 page 201.

\* Electrical length not matched to other adapters shown.

# Mini-75 Ohm SMB Connectors

Between-Series Adapters

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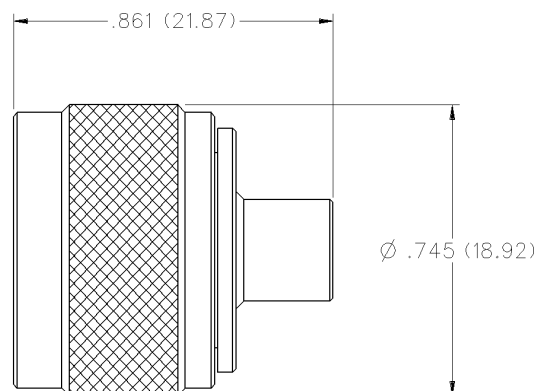
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## 75 Ohm Type N Plug to Mini-75 Ohm SMB Plug Adapter



STAINLESS STEEL PASSIVATED

134-1069-001

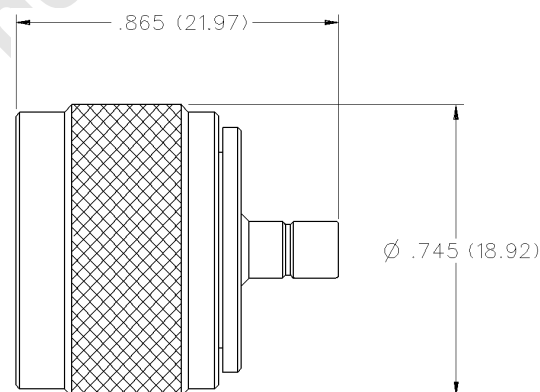


## 75 Ohm Type N Plug to Mini-75 Ohm SMB Jack Adapter

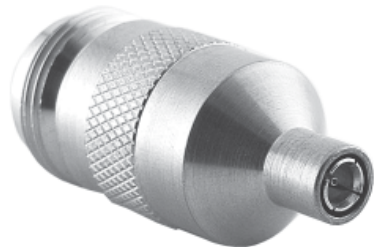


STAINLESS STEEL PASSIVATED

134-1069-011

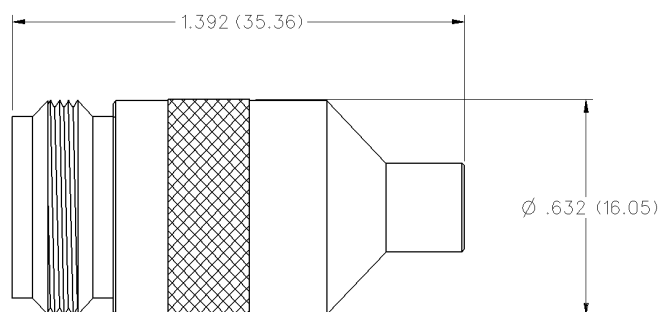


## 75 Ohm Type N Jack to Mini-75 Ohm SMB Plug Adapter



STAINLESS STEEL PASSIVATED

134-1069-021

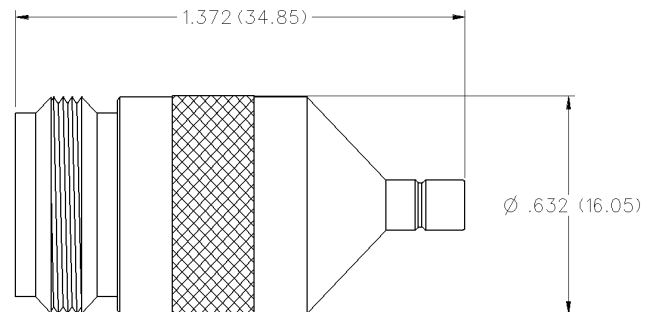


## 75 Ohm Type N Jack to Mini-75 Ohm SMB Jack Adapter

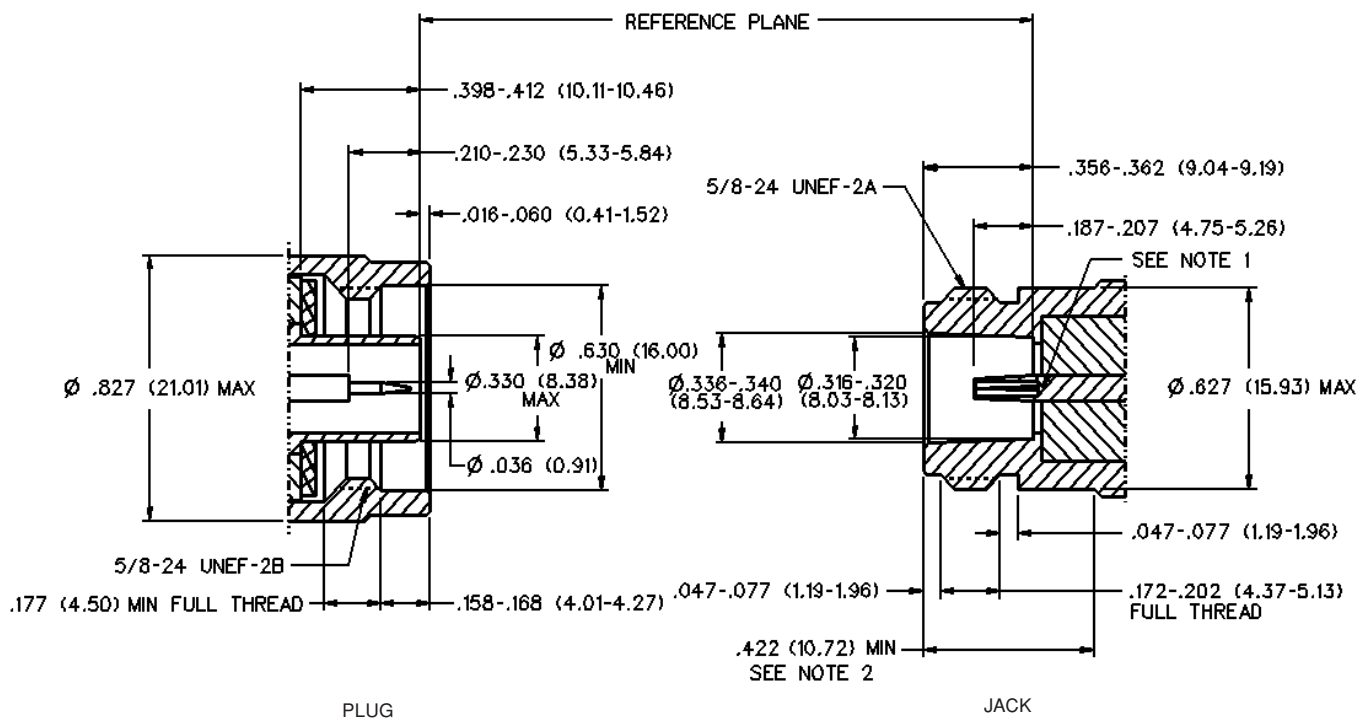


STAINLESS STEEL PASSIVATED

134-1069-031



## Mating Engagement for 75 Ohm "N" Series



## NOTES:

1. ID of contact to meet VSWR, mating characteristics and connector durability when mated with a dia .036/.037 (0.91/0.94) male contact.
2. Clearance for mating connector coupling nut.

## Mini-75 Ohm SMB Standards\* (Calibration) Kit



The Mini-75 Ohm Standards Kit contains precision terminations and adapters necessary for calibrating scalar and vector network analyzers from DC to 2 GHz. Kit includes standards definition data sheet.

| PART NUMBER  |
|--------------|
| 131-8000-001 |

| CONTENTS                                       | PART NUMBER  |
|------------------------------------------------|--------------|
| Load, 75 Ohm SMB Jack                          | 131-8701-801 |
| Short, 75 Ohm SMB Jack                         | 131-8701-811 |
| Open, 75 Ohm SMB Jack                          | 131-8701-821 |
| Load, 75 Ohm SMB Plug                          | 131-8801-801 |
| Short, 75 Ohm SMB Plug                         | 131-8801-811 |
| Open, 75 Ohm SMB Plug                          | 131-8801-821 |
| Adapter, 75 Ohm SMB Jack to 75 Ohm SMB Jack    | 131-8901-801 |
| Adapter, 75 Ohm SMB Plug to 75 Ohm SMB Plug    | 131-8901-811 |
| Adapter, 75 Ohm SMB Plug to 75 Ohm SMB Jack    | 131-8901-821 |
| Adapter, 75 Ohm Type N Plug to 75 Ohm SMB Plug | 134-1069-001 |
| Adapter, 75 Ohm Type N Plug to 75 Ohm SMB Jack | 134-1069-011 |
| Adapter, 75 Ohm Type N Jack to 75 Ohm SMB Plug | 134-1069-021 |
| Adapter, 75 Ohm Type N Jack to 75 Ohm SMB Jack | 134-1069-031 |

### Compatibility

The Johnson Mini-75 Ohm SMB series is a “true” 75 Ohm impedance connector line. These connectors mechanically intermate with MIL-C-39012 50 Ohm SMB connectors.

### \* Conformity Data

Kit is certified to meet Johnson performance specifications. Performance data is available upon request. Kit is not National Institute of Standards (NIST) traceable.

**SMC Connectors - 50 Ohm**

|                                     |     |
|-------------------------------------|-----|
| PC Mount .....                      | 119 |
| Semi-Rigid and Flexible Cable ..... | 117 |
| Specifications .....                | 116 |

**Other Information**

|                                  |     |
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| Competitor Cross Reference ..... | 281 |

# SMC - 50 Ohm Connectors

## Specifications

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### ELECTRICAL RATINGS

**Impedance:** 50 Ohms

**Frequency Range:** 0-10 GHz

| VSWR: (f = GHz)                  | Straight Cabled | Right Angle Cabled |
|----------------------------------|-----------------|--------------------|
| RG-178 cable                     | 1.25 + .04f     | 1.40 + .06f        |
| RG-316 and .086 Semi-Rigid cable | 1.20 + .04f     | 1.30 + .04f        |
| Uncabled receptacles             | N/A             |                    |
| Adapters                         | 1.20 + .04f     |                    |

**Working Voltage:** (VRMS maximum)<sup>†</sup>

| Connectors for Cable Type | Sea Level | 70K Feet |
|---------------------------|-----------|----------|
| RG-178                    | 250       | 60       |
| RG-316, .086 Semi-Rigid   |           |          |

uncabled receptacles, adapters ..... 335 85

**Dielectric Withstanding Voltage:** (VRMS minimum at sea level)<sup>†</sup>

|                                        |      |
|----------------------------------------|------|
| Connectors for RG-178                  | 750  |
| Connectors for RG-316, .086 Semi-Rigid |      |
| uncabled receptacles, adapters         | 1000 |

**Corona Level:** (Volts minimum at 70,000 feet)<sup>†</sup>

|                                        |     |
|----------------------------------------|-----|
| Connectors for RG-178                  | 185 |
| Connectors for RG-316, .086 Semi-Rigid | 250 |
| Uncabled receptacles and adapters      | N/A |

**Insertion Loss:** (dB maximum, tested at 4 GHz)

|                                   |         |
|-----------------------------------|---------|
| Straight cable connectors         | 0.25 dB |
| Right angle cable connectors      | 0.50 dB |
| Uncabled receptacles and adapters | N/A     |

**Insulation Resistance:** 1000 megohms minimum

**Contact Resistance:** (milliohms maximum)

|                                                                      | Initial | After Environmental |
|----------------------------------------------------------------------|---------|---------------------|
| Center contact (straight cabled connectors and uncabled receptacles) | 6.0     | 8.0                 |
| Center contact (right angle cabled connectors and adapters)          | 12.0    | 16.0                |
| Outer contact (gold plated connectors)                               | 1.0     | N/A                 |
| Outer contact (nickel plated connectors)                             | 2.5     | N/A                 |
| Braid to body (gold plated connectors)                               | 1.0     | N/A                 |
| Braid to body (nickel plated connectors)                             | 2.5     | N/A                 |

**RF Leakage:** (dB minimum tested at 2.5 GHz)

|                                   |        |
|-----------------------------------|--------|
| Cable connectors                  | -55 dB |
| Uncabled receptacles and adapters | N/A    |

\*\* All gold plated parts include a .00005" min. nickel underplate barrier layer.

† Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

**RF High Potential Withstanding Voltage:** (VRMS minimum, tested at 4 and 7 MHz)<sup>†</sup>

|                                   |     |
|-----------------------------------|-----|
| Connectors for RG-178             | 500 |
| Connectors for RG-316             | 700 |
| Uncabled receptacles and adapters | 600 |

### MECHANICAL RATINGS

**Engagement Design:** MIL-PRF-39012, Series SMC

**Engagement/Disengagement Force:** 16 inch-ounce maximum torque

**Mating Torque:** 35 to 50 inch-ounce

**Coupling Proof Torque:** 100 inch-ounce minimum

**Coupling Nut Retention:** 35 pounds minimum

**Contact Retention:** 4 lbs. minimum axial force (captivated contacts)

1 inch-ounce minimum torque (uncabled receptacles)

| Cable Retention:               | Axial Force* (lbs) | Torque (in-oz) |
|--------------------------------|--------------------|----------------|
| Connectors for RG-178          | 10                 | N/A            |
| Connectors for RG-316          | 20                 | N/A            |
| Connectors for .086 Semi-Rigid | 30                 | 16             |

\* or cable breaking strength whichever is less

**Durability:** 500 cycles minimum

### ENVIRONMENTAL RATINGS

(Meets or exceeds the applicable paragraph of MIL-C-39012)

**Temperature Range:** - 65°C to + 165°C

**Thermal Shock:** MIL-STD-202, Method 107, Condition B

**Corrosion:** MIL-STD-202, Method 101, Condition B

**Shock:** MIL-STD-210, Method 213, Condition C

**Vibration:** MIL-STD-202, Method 204, Condition D

### MATERIAL SPECIFICATIONS

**Bodies:** Brass per QQ-B-626, gold plated\*\* per MIL-G-45204 .00001" min or nickel plated per QQ-N-290

**Contacts:** Male - brass per QQ-B-626, gold plated per MIL-G-45204 .00003" min.

Female - beryllium copper per QQ-C-530, gold plated per MIL-G-45204 .00003" min.

**Nut Retention Spring:** Beryllium copper per QQ-C-533, unplated

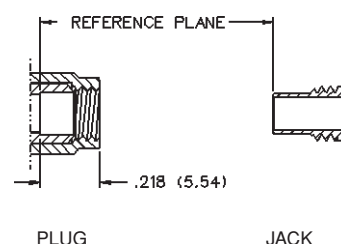
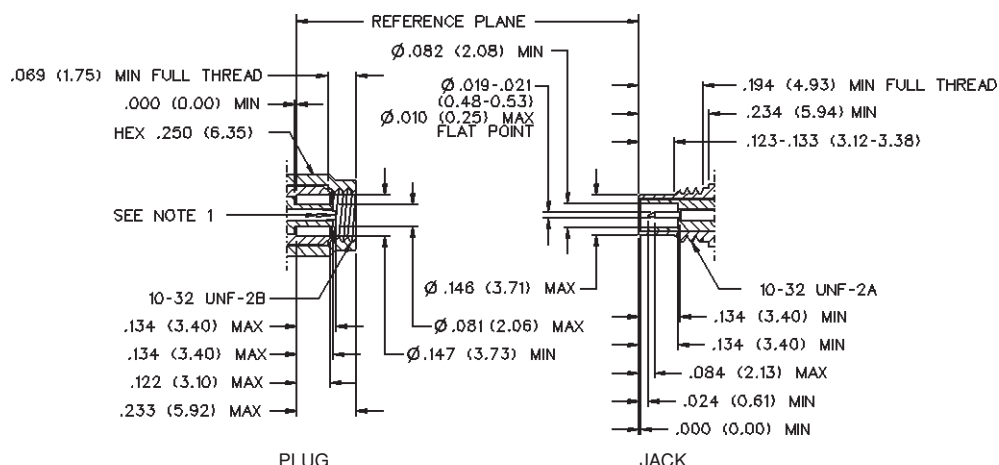
**Insulators:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457

**Expansion Caps:** Brass per QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Crimp Sleeves:** Copper per WW-T-799, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

**Mounting Hardware:** Brass (nuts) per QQ-B-626 or phosphor bronze (lockwashers) per QQ-B-750, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290

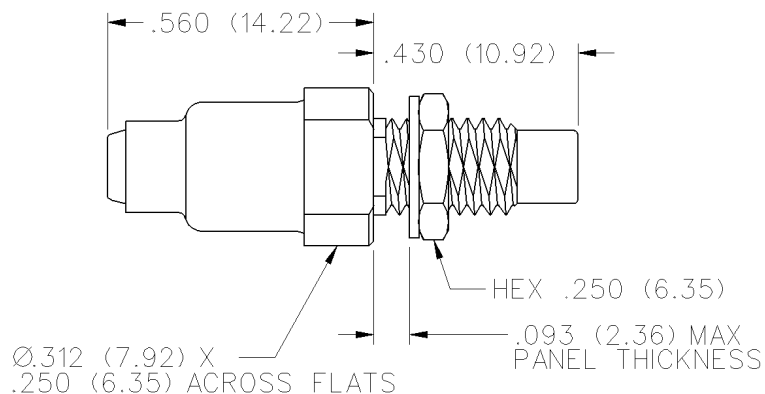
### Mating Engagement for SMC Series



### NOTES

1. Inside of contact to meet VSWR, mating characteristics and connector durability when mated with a dia .019/.021 (0.48/0.53) male contact.

## Straight Solder Type Bulkhead Jack - Captivated Contact

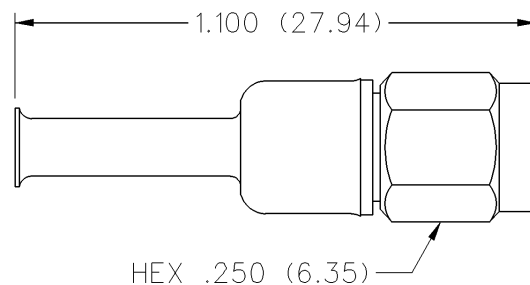


| CABLE TYPE      | GOLD PLATED  | NICKEL PLATED |
|-----------------|--------------|---------------|
| .086 Semi-Rigid | 131-6593-401 | 131-6593-406  |

Assembly instructions page 237.

Mounting hole layout figure 5 page 201.

## Straight Crimp Type Plug - Captivated Contact

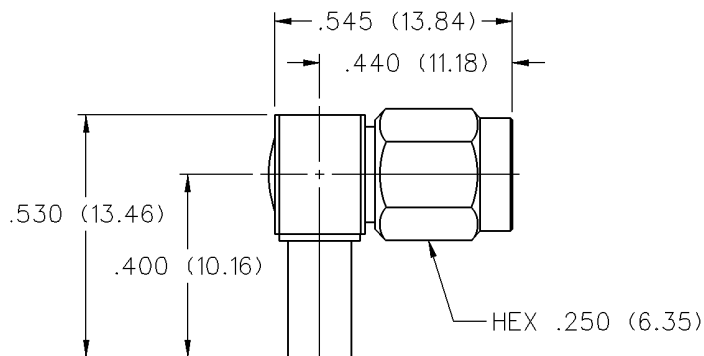


| CABLE TYPE              | GOLD PLATED  | NICKEL PLATED |
|-------------------------|--------------|---------------|
| RG-161/U, 174, 188, 316 | 131-6403-001 | 131-6403-006  |
| RG-316 DS, 188 DS       | 131-6404-001 | 131-6404-006  |
| RG-179/U, 187           | 131-6433-001 | 131-6433-006  |

Assembly instructions page 239.

See page 190 for Cable Assembly Tools.

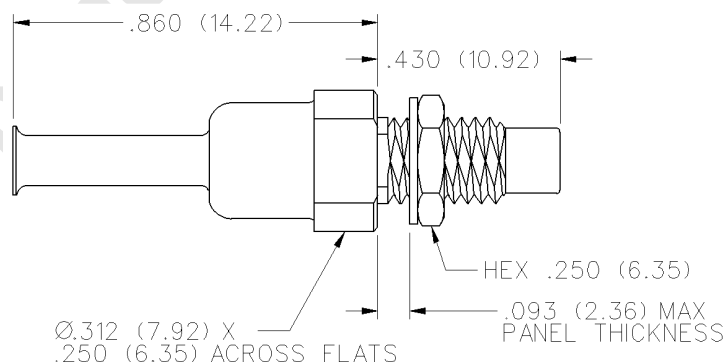
## Right Angle Crimp Type Plug - Captivated Contact



| CABLE TYPE              | GOLD PLATED  | NICKEL PLATED |
|-------------------------|--------------|---------------|
| RG-161/U, 174, 188, 316 | 131-6403-101 | 131-6403-106  |
| RG-316 DS, 188 DS       | 131-6404-101 | 131-6404-106  |
| RG-179/U, 187           | 131-6433-101 | 131-6433-106  |

Assembly instructions page 240.  
See page 190 for Cable Assembly Tools.

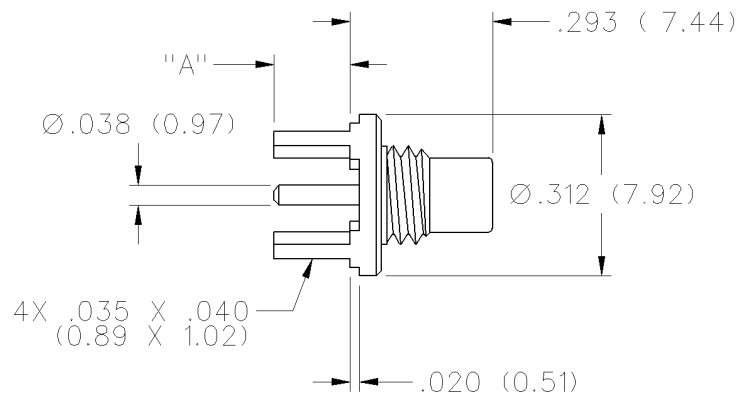
## Straight Crimp Type Bulkhead Jack - Captivated Contact



| CABLE TYPE              | GOLD PLATED  | NICKEL PLATED |
|-------------------------|--------------|---------------|
| RG-161/U, 174, 188, 316 | 131-6303-401 | 131-6303-406  |
| RG-316 DS, 188 DS       | 131-6304-401 | 131-6304-406  |
| RG-179/U, 187           | 131-6333-401 | 131-6333-406  |

Assembly instructions page 239.  
See page 190 for Cable Assembly Tools.  
Mounting hole layout figure 5 page 201.

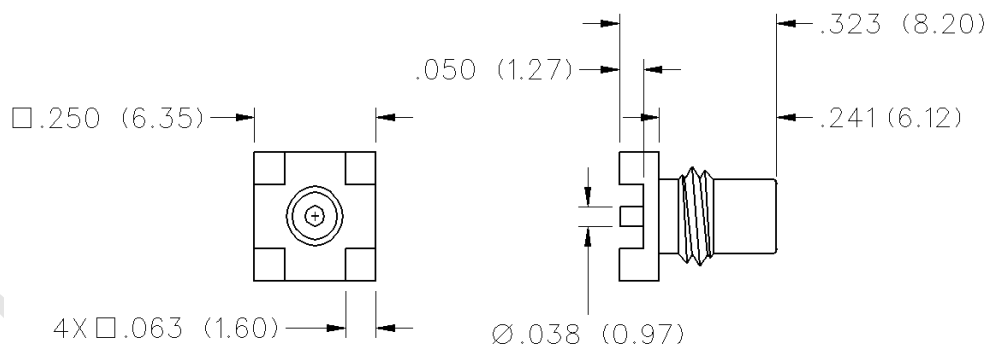
## Straight Jack Receptacle



| GOLD PLATED  | NICKEL PLATED | IR COMPATIBLE* | "A"         |
|--------------|---------------|----------------|-------------|
| 131-6701-201 | 131-6701-206  |                | .155 (3.94) |
| 131-6701-211 | 131-6701-216  | 131-6701-215*  | .110 (2.79) |

\*Tin/Lead Solder dipped legs for IR Reflow Compatibility.  
Mounting hole layout figure 4 page 201.

## Straight Jack Receptacle - Surface Mount



| GOLD PLATED  |
|--------------|
| 131-6711-201 |

Recommended Land Pattern figure 9 page 201.

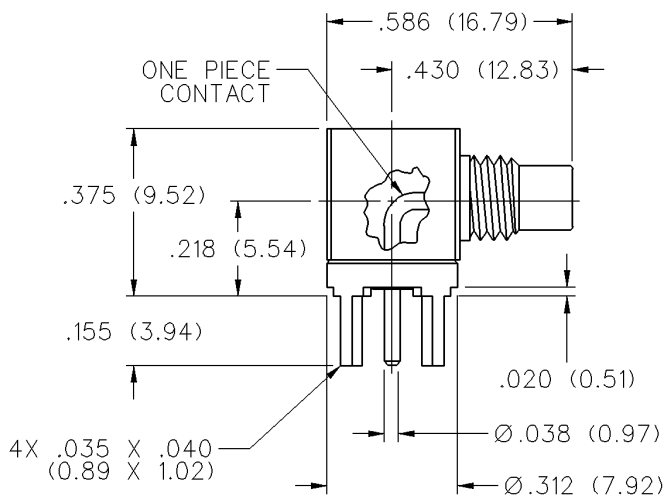
## Right Angle Jack Receptacle



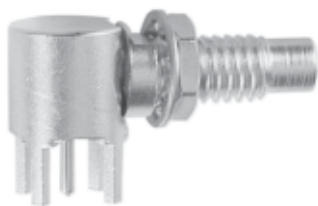
**GOLD PLATED**

131-6701-301

Mounting hole layout figure 4 page 201.



## Right Angle Bulkhead Jack Receptacle



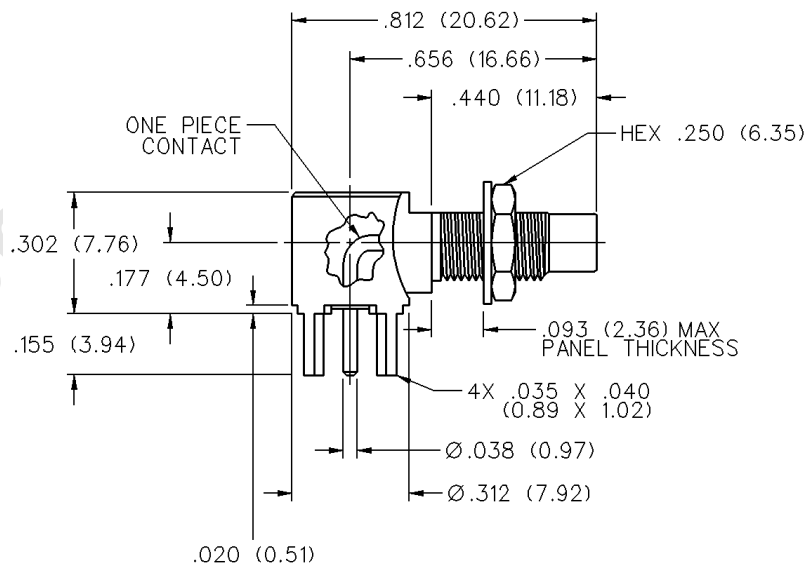
**GOLD PLATED**

131-6701-341

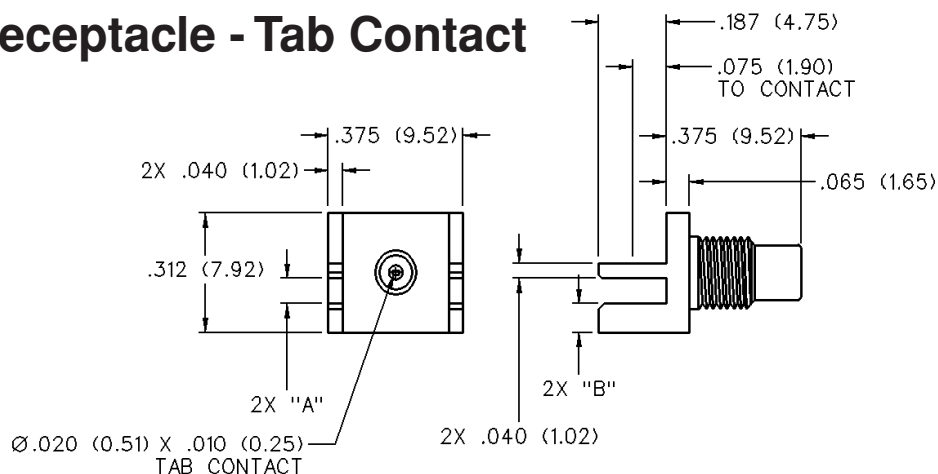
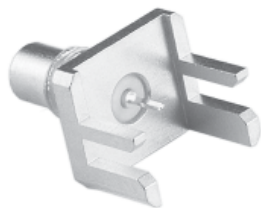
**NICKEL PLATED**

131-6701-346

Mounting hole layout figures 4 and 5 page 201.

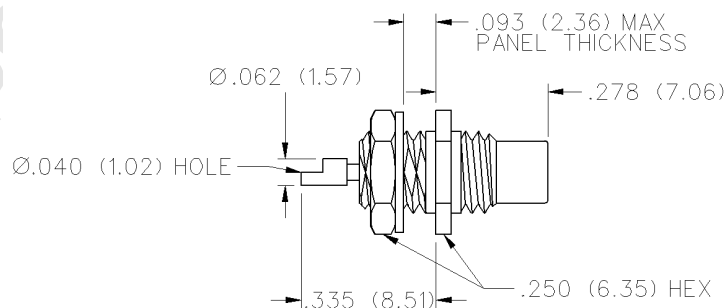


## End Launch Jack Receptacle - Tab Contact



| GOLD PLATED  | NICKEL PLATED | BOARD THICKNESS | "A"         | "B"         |
|--------------|---------------|-----------------|-------------|-------------|
| 131-6701-831 | 131-6701-836  | .062 (1.57)     | .068 (1.73) | .083 (2.11) |

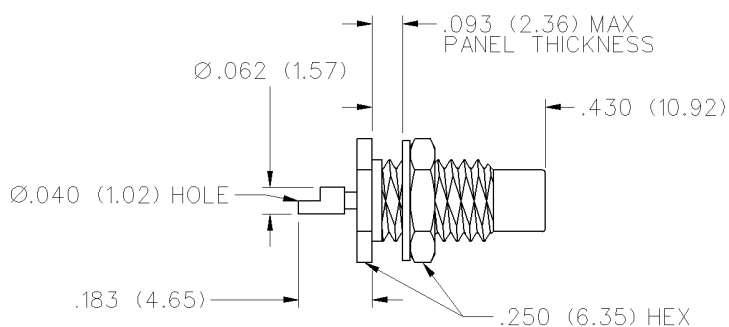
## Front Mount Bulkhead Jack Receptacle



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 131-6701-411 | 131-6701-416  |

Mounting hole layout figure 5 page 201.

## Rear Mount Bulkhead Jack Receptacle



| GOLD PLATED  | NICKEL PLATED |
|--------------|---------------|
| 131-6701-401 | 131-6701-406  |

Mounting hole layout figure 5 page 201.

# Shielded Cable Termination

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THE ONLINE DISTRIBUTOR OF ELECTRONIC COMPONENTS

Alphabetical Index

INCHES (MILLIMETERS) • CUSTOMER DRAWINGS AVAILABLE ON REQUEST



## Shielded Cable Termination

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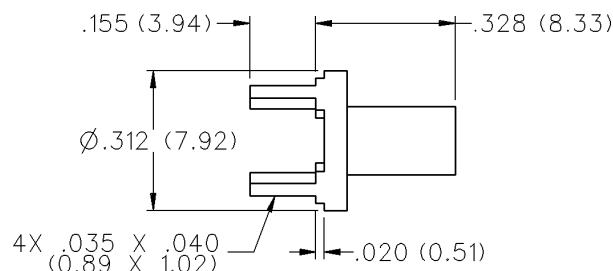
## Shielded Test Jacks

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## Flexible Cable - Straight Crimp Type

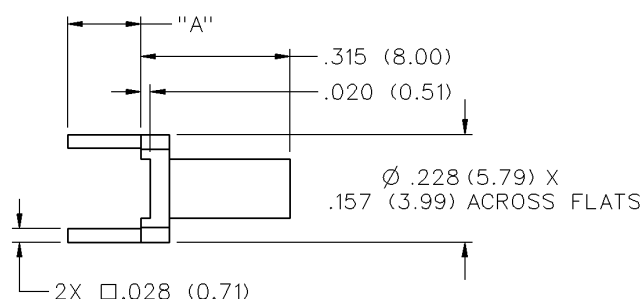


| CABLE TYPE                        | GOLD PLATED  | NICKEL PLATED |
|-----------------------------------|--------------|---------------|
| RG-161/U, 174, 179, 187, 188, 316 | 142-0003-201 | 142-0003-206  |
| RG-316 DS, RG-188 DS              | 142-0004-201 | 142-0004-206  |

Assembly instructions page 242.

Mounting hole layout figure 3 page 201.

## Flexible Cable - Straight Crimp Type

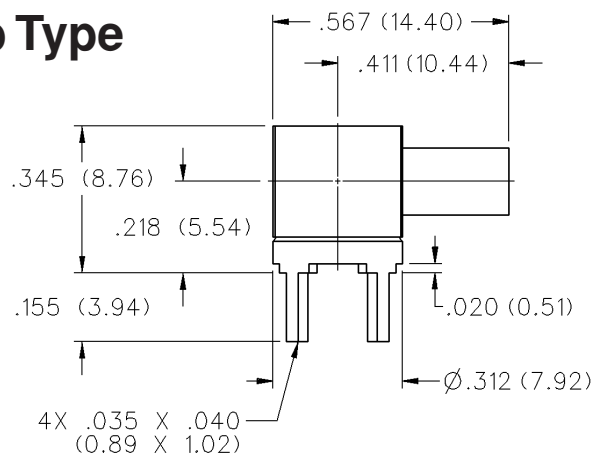


| CABLE TYPE         | GOLD PLATED  | NICKEL PLATED | "A"         |
|--------------------|--------------|---------------|-------------|
| RG-178/U, 196      | 142-0002-221 | 142-0002-226  | .110 (2.79) |
| RG-316/U, 188,     | 142-0003-231 | 142-0003-236  | .155 (3.94) |
| 174, 161, 179, 187 | 142-0003-241 | 142-0003-246  | .110 (2.79) |
| RG-316 DS,         | 142-0004-211 | 142-0004-216  | .155 (3.94) |
| 188 DS             | 142-0004-221 | 142-0004-226  | .110 (2.79) |

Assembly instructions page 242.

Mounting hole layout figure 16 page 202.

## Flexible Cable - Right Angle Crimp Type

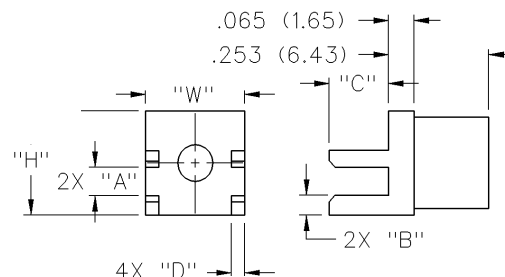


| CABLE TYPE                        | GOLD PLATED  | NICKEL PLATED |
|-----------------------------------|--------------|---------------|
| RG-161/U, 174, 179, 187, 188, 316 | 142-0003-301 | 142-0003-306  |
| RG-316 DS, 188 DS                 | 142-0004-301 | 142-0004-306  |

Assembly instructions page 243.

Mounting hole layout figure 3 page 201.

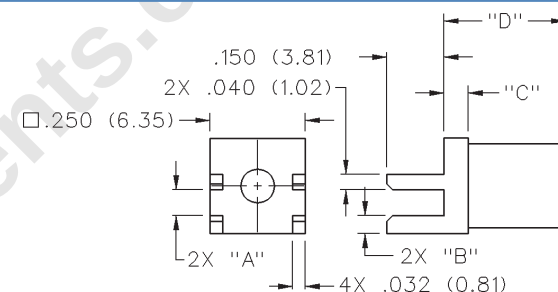
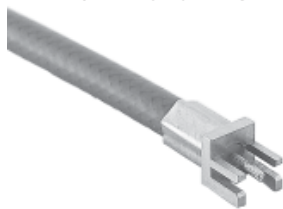
## Semi-Rigid - Straight End Launch



| CABLE TYPE      | GOLD PLATED  | BOARD THICKNESS | "A"          | "B"          | "C"          | "D"          | "H"          | "W"          |
|-----------------|--------------|-----------------|--------------|--------------|--------------|--------------|--------------|--------------|
| .086 Semi-Rigid | 142-0093-801 | 0.062 (1.57)    | 0.068 (1.73) | 0.046 (1.42) | 0.150 (3.81) | 0.032 (0.81) | 0.250 (6.35) | 0.250 (6.35) |
| .141 Semi-Rigid | 142-0094-801 | 0.062 (1.57)    | 0.068 (1.73) | 0.070 (1.78) | 0.187 (4.77) | 0.040 (1.02) | 0.312 (7.92) | 0.375 (9.52) |
| .250 Semi-Rigid | 142-0096-801 | 0.062 (1.57)    | 0.068 (1.73) | 0.053 (1.35) | 0.187 (4.77) | 0.050 (1.27) | 0.312 (7.92) | 0.375 (9.52) |

Assembly instructions page 245. Cable Assembly Tools page 190.

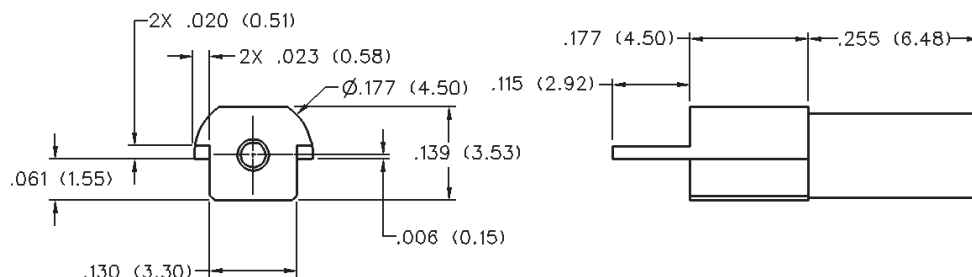
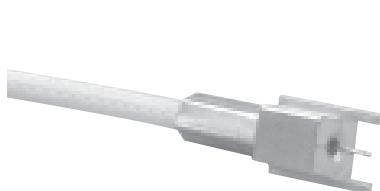
## Flexible Cable - Straight Crimp Type End Launch



| CABLE TYPE                        | GOLD PLATED  | BOARD THICKNESS | "A"          | "B"          | "C"          | "D"          |
|-----------------------------------|--------------|-----------------|--------------|--------------|--------------|--------------|
| RG-316/U, 188, 174, 161, 179, 187 | 142-0003-801 | 0.062 (1.57)    | 0.068 (1.73) | 0.046 (1.02) | 0.055 (1.40) | 0.310 (7.87) |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 142-0004-801 | 0.062 (1.57)    | 0.068 (1.73) | 0.046 (1.02) | 0.065 (1.65) | 0.320 (8.13) |
| RG-58/U, 141, 303                 | 142-0007-801 | 0.062 (1.57)    | 0.068 (1.73) | 0.037 (1.65) | 0.065 (1.65) | 0.320 (8.13) |
| RG-142/U, 55, 223, 400            | 142-0008-801 | 0.062 (1.57)    | 0.068 (1.73) | 0.037 (1.65) | 0.065 (1.65) | 0.320 (8.13) |
| RG-178/U, 196                     | 142-0002-811 | 0.047 (1.19)    | 0.053 (1.35) | 0.065 (1.65) | 0.065 (1.65) | 0.320 (8.13) |
| RG-316/U, 188, 174, 161, 179, 187 | 142-0003-811 | 0.047 (1.19)    | 0.053 (1.35) | 0.061 (1.55) | 0.065 (1.65) | 0.320 (8.13) |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 142-0004-811 | 0.047 (1.19)    | 0.053 (1.35) | 0.061 (1.55) | 0.065 (1.65) | 0.320 (8.13) |
| RG-58/U, 141, 303                 | 142-0007-811 | 0.047 (1.19)    | 0.053 (1.35) | 0.052 (1.32) | 0.065 (1.65) | 0.320 (8.13) |
| RG-142/U, 55, 223, 400            | 142-0008-811 | 0.047 (1.19)    | 0.053 (1.35) | 0.052 (1.32) | 0.065 (1.65) | 0.320 (8.13) |

Assembly instructions page 244. Cable Assembly Tools page 190.

## Flexible Cable - Straight Crimp Type Surface Mount End Launch



| CABLE TYPE    | GOLD PLATED  |
|---------------|--------------|
| RG-178/U, 196 | 142-0002-821 |

Recommended land pattern figure 14 page 202.

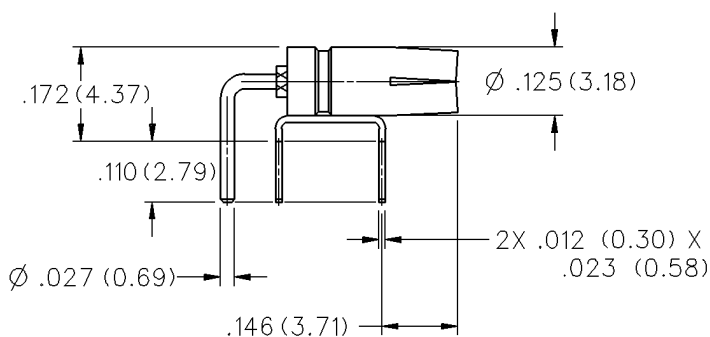
Assembly Instructions page 245.

## Horizontal



| TIN PLATED   | GOLD PLATED  |
|--------------|--------------|
| 129-0701-301 | 129-0701-302 |

Mounting hole layout figure 18 page 202.

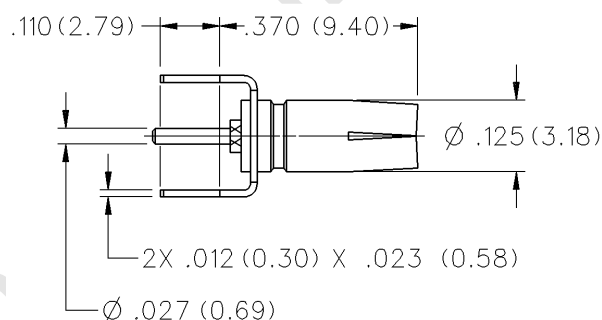


## Vertical



| TIN PLATED   | GOLD PLATED  |
|--------------|--------------|
| 129-0701-201 | 129-0701-202 |

Mounting hole layout figure 17 page 202.



### ELECTRICAL RATINGS

**Impedance:** 29 ohms  
**Frequency Range:** 0 - 2 GHz  
**Working Voltage:** 300 VRMS<sup>†</sup>  
**Dielectric Withstanding Voltage:** 2000 VDC<sup>†</sup>  
**Contact Resistance:** Center Contact: 6 milliohms  
 Outer conductor: 2.5 milliohms

### MECHANICAL RATINGS

**Insertion Force:** Inner conductor: 32 oz. max. 2 oz. min.  
 Outer conductor: 48 oz. max. 6 oz. min.  
**Durability:** 250 cycles

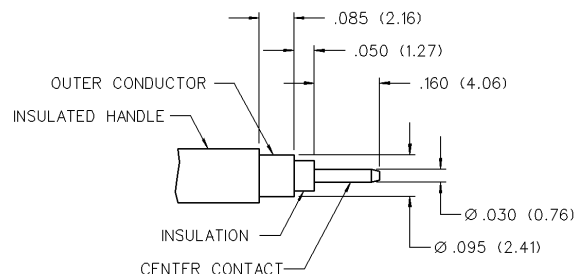
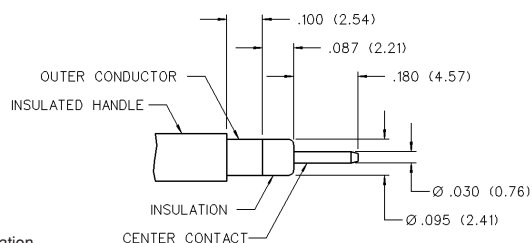
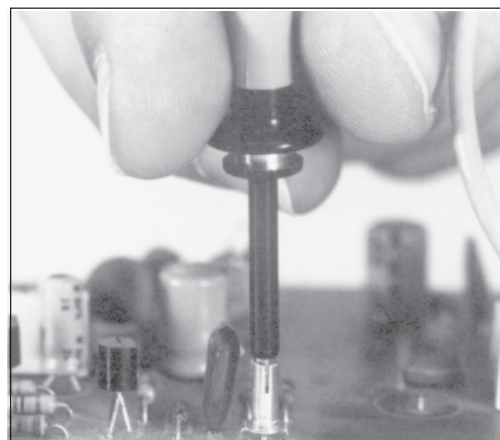
### ENVIRONMENTAL RATINGS

**Temperature Range:** -65° C to + 85° C  
**Corrosion:** Salt spray, 24 hours  
**Shock:** Method 213, Test Condition B, MIL-STD-202  
**Vibration:** Method 204, Test Condition B, MIL-STD-202

### MATERIAL SPECIFICATIONS

**Contact:** Beryllium copper per QQ-C-533/530  
**Insulator Material:** TFE Fluorocarbon per L-P-403  
**Finish:** Center Contact and Body: Bright Tin or Gold

### SHIELDED TEST JACK INTERFACE - TYPICAL PROBE TYPE



<sup>†</sup>Avoid user injury due to misapplication.  
See safety advisory definitions inside front cover.

## Between-Series Adapters

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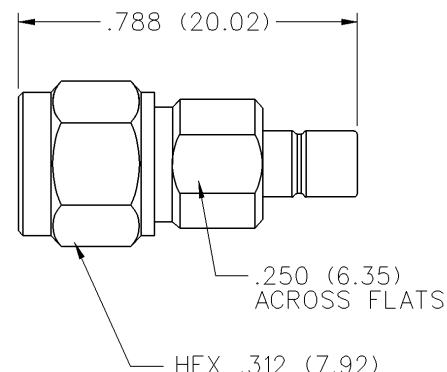
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## SMA Plug to SMB Jack Adapter



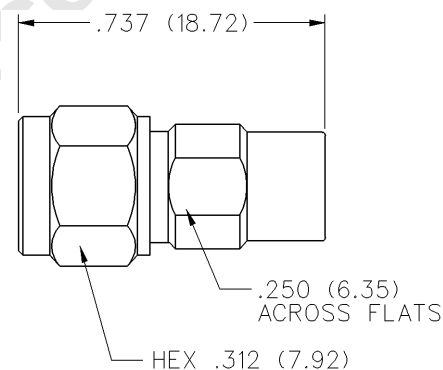
| VSWR & FREQUENCY RANGE    | GOLD PLATED  |
|---------------------------|--------------|
| 1.05 + .01f (GHz) 0-4 GHz | 134-1012-011 |



## SMA Plug to SMB Plug Adapter



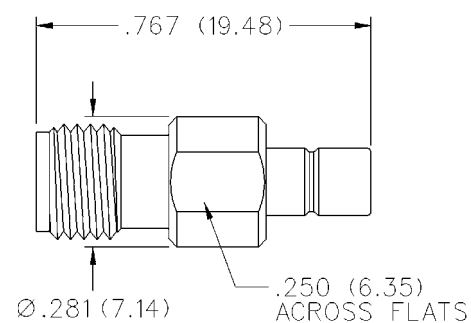
| VSWR & FREQUENCY RANGE    | GOLD PLATED  |
|---------------------------|--------------|
| 1.05 + .01f (GHz) 0-4 GHz | 134-1012-021 |



## SMA Jack to SMB Jack Adapter



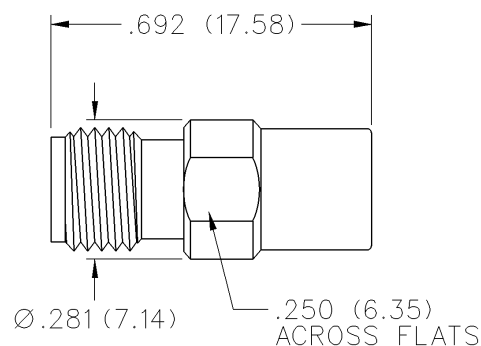
| VSWR & FREQUENCY RANGE    | GOLD PLATED  |
|---------------------------|--------------|
| 1.05 + .01f (GHz) 0-4 GHz | 134-1012-031 |



## SMA Jack to SMB Plug Adapter



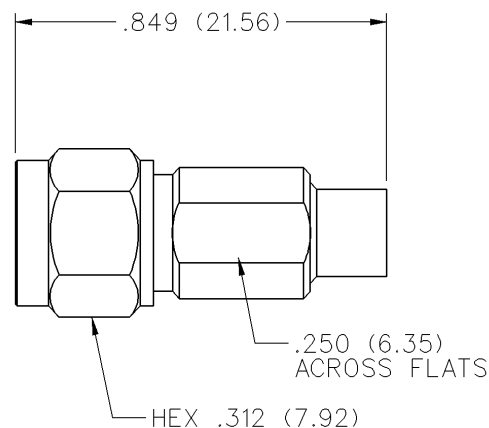
| VSWR & FREQUENCY RANGE    | GOLD PLATED  |
|---------------------------|--------------|
| 1.05 + .01f (GHz) 0-4 GHz | 134-1012-041 |



## SMA Plug to MCX Jack Adapter



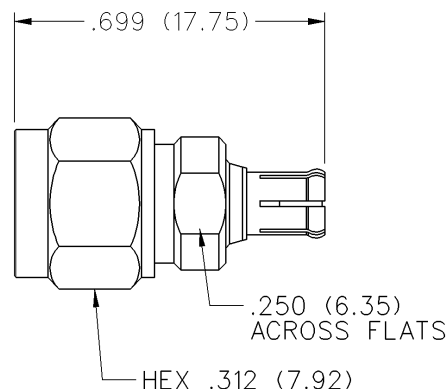
| VSWR & FREQUENCY RANGE    | GOLD PLATED  |
|---------------------------|--------------|
| 1.03 + .03f (GHz) 0-6 GHz | 134-1018-001 |



## SMA Plug to MCX Plug Adapter



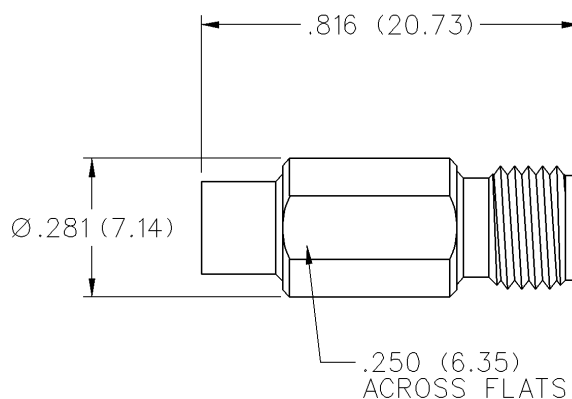
| VSWR & FREQUENCY RANGE    | GOLD PLATED  |
|---------------------------|--------------|
| 1.03 + .03f (GHz) 0-6 GHz | 134-1018-011 |



## SMA Jack to MCX Jack Adapter



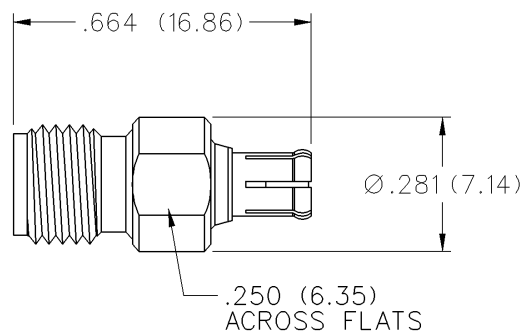
| VSWR & FREQUENCY RANGE    | GOLD PLATED  |
|---------------------------|--------------|
| 1.03 + .03f (GHz) 0-6 GHz | 134-1018-021 |



## SMA Jack to MCX Plug Adapter



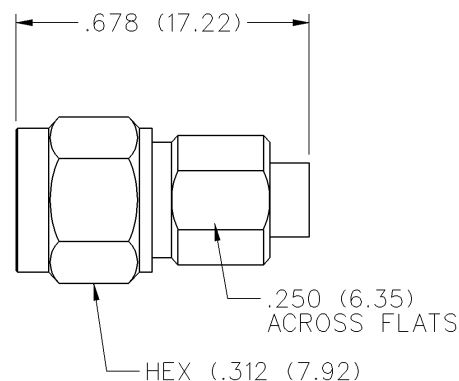
| VSWR & FREQUENCY RANGE    | GOLD PLATED  |
|---------------------------|--------------|
| 1.03 + .03f (GHz) 0-6 GHz | 134-1018-031 |



## SMA Plug to MMCX Jack Adapter



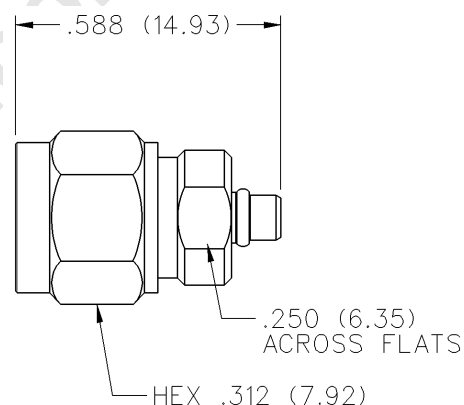
| VSWR & FREQUENCY RANGE    | GOLD PLATED  |
|---------------------------|--------------|
| 1.05 + .05f (GHz) 0-6 GHz | 134-1019-151 |



## SMA Plug to MMCX Plug Adapter



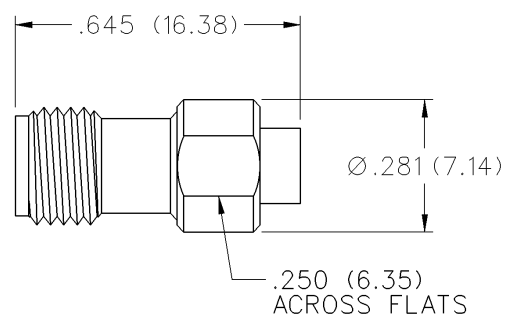
| VSWR & FREQUENCY RANGE    | GOLD PLATED  |
|---------------------------|--------------|
| 1.05 + .05f (GHz) 0-6 GHz | 134-1019-161 |



## SMA Jack to MMCX Jack Adapter



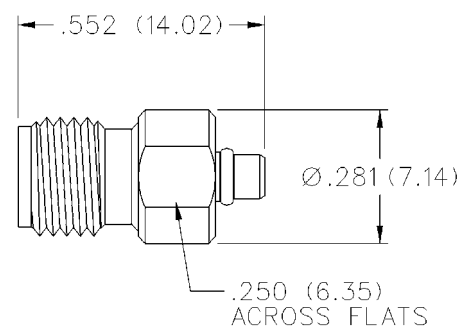
| VSWR & FREQUENCY RANGE    | GOLD PLATED  |
|---------------------------|--------------|
| 1.05 + .05f (GHz) 0-6 GHz | 134-1019-171 |



## SMA Jack to MMCX Plug Adapter



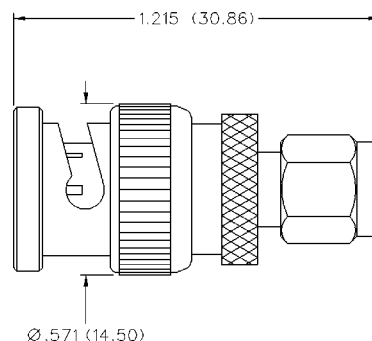
| VSWR & FREQUENCY RANGE    | GOLD PLATED  |
|---------------------------|--------------|
| 1.05 + .05f (GHz) 0-6 GHz | 134-1019-181 |



## BNC Plug to SMA Plug Adapter

PART NO.

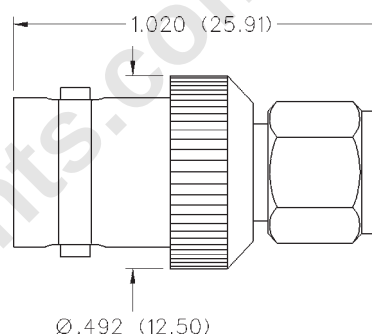
CP-AD582



## BNC Jack to SMA Plug Adapter

PART NO.

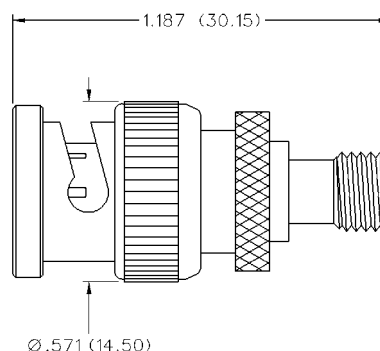
CP-AD508



## BNC Plug to SMA Jack Adapter

PART NO.

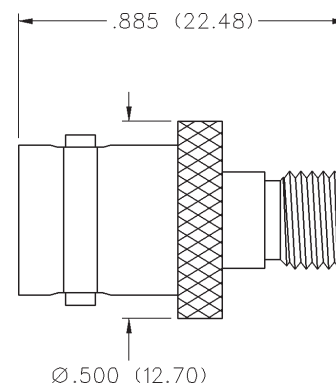
CP-AD583



## BNC Jack to SMA Jack Adapter

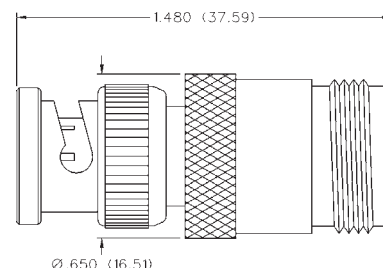
PART NO.

CP-AD507



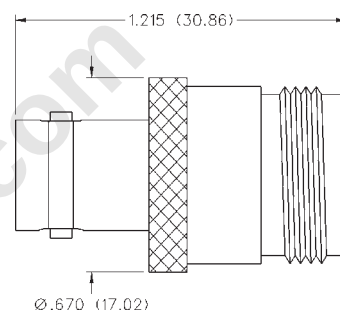
## BNC Plug to N Jack Adapter

|          |
|----------|
| PART NO. |
| CP-AD807 |



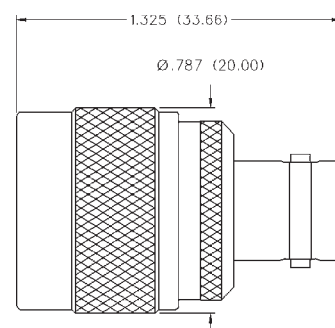
## BNC Jack to N Jack Adapter

|          |
|----------|
| PART NO. |
| CP-AD806 |



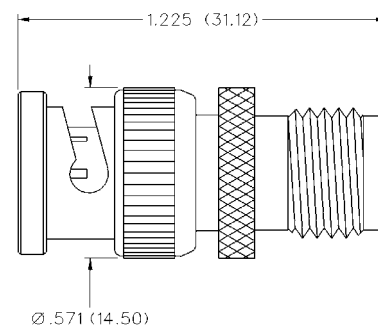
## BNC Jack to N Plug Adapter

|          |
|----------|
| PART NO. |
| CP-AD809 |



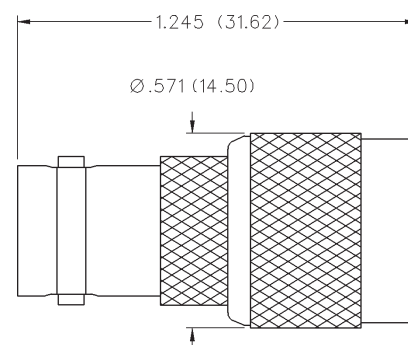
## BNC Plug to TNC Jack Adapter

|          |
|----------|
| PART NO. |
| CP-AD314 |



## BNC Jack to TNC Plug Adapter

|          |
|----------|
| PART NO. |
| CP-AD300 |



# Between-Series Adapters

onlinecomponents.com

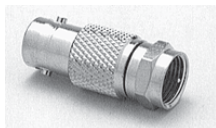
BNC to F, RCA and UHF

INCHES (MILLIMETERS) • CUSTOMER DRAWINGS AVAILABLE ON REQUEST

**EMERSON**  
Network Power

## BNC to F

### BNC Jack to F Plug Adapter



CP-AD502

### BNC Plug to F Jack Adapter



CP-AD516

## BNC to RCA

### BNC Jack to RCA Plug Adapter



CP-AD501

### BNC 50 Ohm Plug to RCA Jack Adapter



CP-AD515

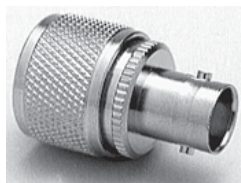
### BNC 75 Ohm Plug to RCA Jack Adapter



CP-AD517

## BNC to UHF

### BNC Jack to UHF Plug Adapter



CP-AD500

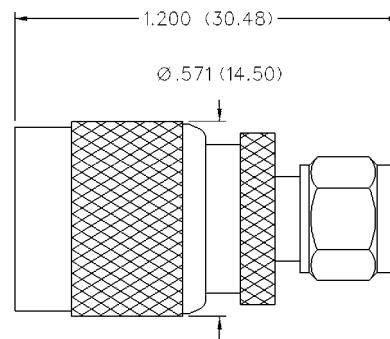
### BNC Plug to UHF Jack Adapter



CP-AD512

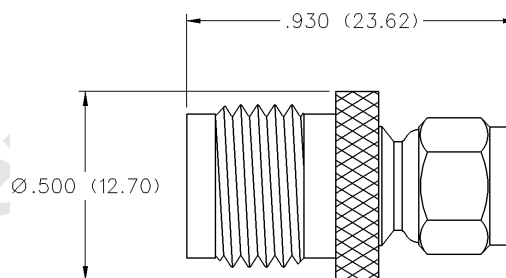
## TNC Plug to SMA Plug Adapter

|                 |
|-----------------|
| <b>PART NO.</b> |
| CP-AD311        |



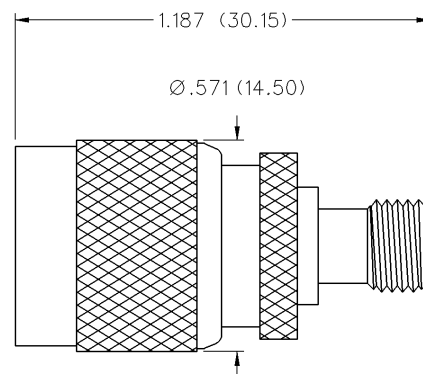
## TNC Jack to SMA Plug Adapter

|                 |
|-----------------|
| <b>PART NO.</b> |
| CP-AD312        |



## TNC Plug to SMA Jack Adapter

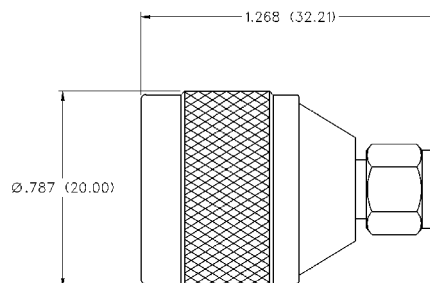
|                 |
|-----------------|
| <b>PART NO.</b> |
| CP-AD313        |



## N Plug to SMA Plug Adapter

PART NO.

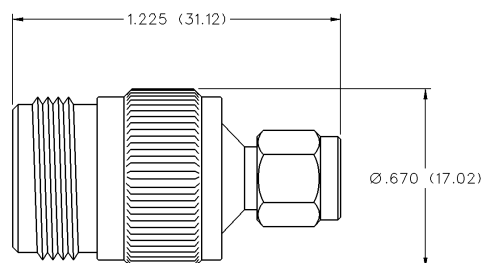
CP-AD817



## N Jack to SMA Plug Adapter

PART NO.

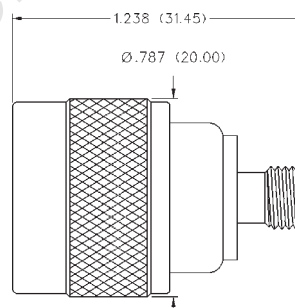
CP-AD818



## N Plug to SMA Jack Adapter

PART NO.

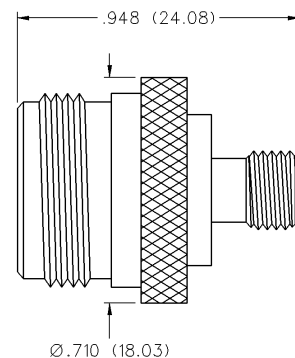
CP-AD810



## N Jack to SMA Jack Adapter

PART NO.

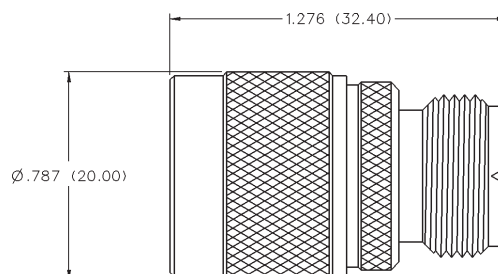
CP-AD819



## N Plug to UHF Jack Adapter

PART NO.

CP-AD808



## F to RCA

### F Jack to RCA Plug Adapter



CP-AD103

## F to UHF

### F Jack to UHF Plug Adapter



CP-AD218

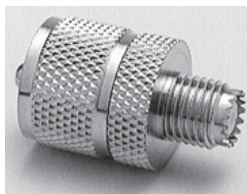
## UHF to Mini-UHF

### UHF Jack to Mini-UHF Plug Adapter



CP-AD214

### UHF Plug to Mini-UHF Jack Adapter



CP-AD219

## **BNC Connectors - 50 Ohm**

|                                |     |
|--------------------------------|-----|
| Bulkhead and Panel Mount ..... | 145 |
| Flexible Cable .....           | 138 |
| In-Series Adapters .....       | 146 |
| Specifications .....           | 137 |

## **BNC Connectors - 75 Ohm Commercial .....**

150

## **BNC Connectors - True 75 Ohm .....**

158

## **Other Information**

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|----------------------------------|-----|
| Assembly Instructions .....      | 205 |
| Assembly Tools .....             | 189 |
| Cable Assembly .....             | 199 |
| Cable Information .....          | 200 |
| Capabilities .....               | 198 |
| Mounting Hole Layouts .....      | 201 |
| Numerical Index .....            | 289 |
| Ordering Information .....       | 2   |
| Competitor Cross Reference ..... | 281 |

The BNC series connector is a commercial quality product that intermates with all standard double bayonet stud BNC designs. All contacts are captivated for ruggedness. The 50 Ohm and 75 Ohm interfaces are intermateable and provide quick, reliable connections for instrumentation, medical and LAN applications.

## Specifications\*

### 50 Ohm BNC

#### Electrical Characteristics

Impedance: 50 Ohm nominal

Frequency range: 0-4 GHz

Working voltage: 500 volts RMS at sea level

Dielectric withstanding voltage: 1500 volts RMS at sea level

Corona level: 375 volts minimum at 70,000 feet

Contact resistance: Outer - 0.2 milliohms maximum

Center - 2.1 milliohms maximum

Insulation resistance: 5000 megohms minimum

#### Environmental Characteristics

Recommended temperature range: -55°C to +85°C

Moisture resistance: MIL-STD-202

#### Mechanical Characteristics

Durability: 500 cycles

Force to engage/disengage: 3 lbs. maximum

Cable retention: 20 lbs., RG-58 C/U cable

#### Materials

Body: Zinc or brass

Contact: Brass, Beryllium copper or phosphor bronze

Spring Washer: Beryllium copper

Crimp sleeve: Brass

Insulator: Delrin® or TPX Polymethylpentene

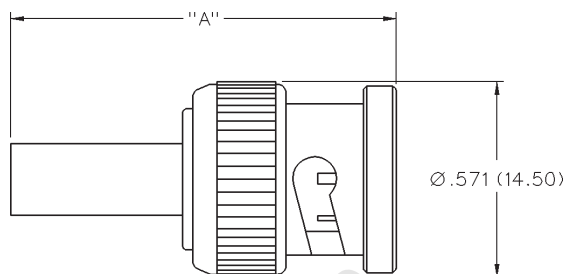
Plating: Body - Nickel (except where noted)

Crimp sleeve - Nickel

Contact - Gold

\* These values are typical and may not apply to all connectors.

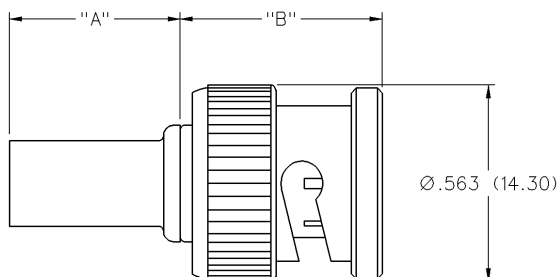
## Straight Crimp Type Plug - Solder or Crimp Contact - 3 and 4 Piece



| PART NO.      | CABLE TYPE       | "A"           | CONTACT I.D. | BODY I.D.   | SLEEVE I.D. | TERMINATION           | PIECES |
|---------------|------------------|---------------|--------------|-------------|-------------|-----------------------|--------|
| CPMC-88-19    | RG-174, 188, 316 | 1.142 (29.00) | .0245 (0.62) | .093 (2.36) | .178 (4.52) | Crimp Sleeve          | 3      |
| CPM-88-19     | RG-174, 188, 316 | 0.932 (23.67) | .0245 (0.62) | .167 (4.24) | .118 (3.00) | Crimp Insert          | 4      |
| CPM-88-19 A/S | RG-174, 188, 316 | 1.272 (32.31) | .0245 (0.42) | .167 (4.24) | .118 (3.00) | Extended Crimp Insert | 4      |
| CPM-88-20     | RG-179, 187      | 0.932 (23.67) | .0165 (0.42) | .167 (4.24) | .118 (3.00) | Crimp Insert          | 4      |

Assembly instructions pages 246 and 247.

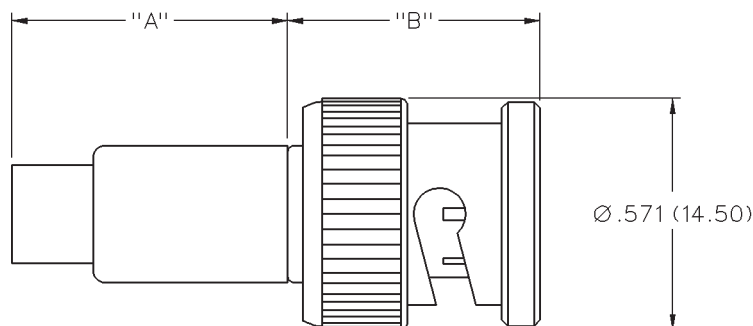
## Straight Crimp Type Plug - Solder or Crimp Contact - 3 Piece



| PART NO.   | CABLE TYPE                 | "A"           | "B"           | CONTACT I.D. | BODY I.D.   | SLEEVE I.D.  |
|------------|----------------------------|---------------|---------------|--------------|-------------|--------------|
| CPMC-88-1  | RG-58, 141                 | .520 (13.20)  | .595 (15.11)  | .044 (1.12)  | .126 (3.20) | .206 (5.23)  |
| CPMC-88-2  | RG-59, 62                  | .520 (13.20)  | .595 (15.11)  | .034 (0.86)  | .173 (4.39) | .261 (6.63)  |
| CPMC-88-3  | BELDEN 8281                | .600 (15.24)  | .645 (16.38)  | .034 (0.86)  | .208 (5.28) | .344 (8.74)  |
| CPMC-88-5  | RG-6                       | .500 (12.70)  | .645 (16.38)  | .044 (1.12)  | .208 (5.28) | .280 (7.11)  |
| CPMC-88-10 | RG-59 PLENUM,<br>62 PLENUM | .520 (13.20)  | .595 (15.11)  | .0325 (0.83) | .141 (3.58) | .206 (5.23)  |
| CPMC-88-11 | RG-58 PLENUM;<br>RG-303    | .541 (13.74)  | .595 (15.11)  | .044 (1.12)  | .126 (3.20) | .192 (4.88)  |
| CPMC-88-13 | RG-142, 223, 400, 55       | .520 (13.20)  | .595 (15.11)  | .044 (1.12)  | .126 (3.20) | .220 (5.59)  |
| CPMC-88-14 | RG-180, 34M, 195           | .520 (13.20)  | .595 (15.11)  | .0165 (0.42) | .107 (2.72) | .175 (4.45)  |
| CPMC-88-17 | RG-8X (MINI 8)             | .520 (13.20)  | .595 (15.11)  | .065 (1.65)  | .173 (4.39) | .261 (6.63)  |
| CPMC-88-18 | BELDEN 8218, MINI 75       | .520 (13.20)  | .595 (15.11)  | .0245 (0.62) | .107 (2.72) | .175 (4.45)  |
| CPMC-88-21 | RG-58, RG-59 PLENUM        | 1.238 (31.45) | 1.143 (29.03) | .034 (0.86)  | .172 (4.37) | .213 (5.41)  |
| CPMC-88-26 | RG-11, BELDEN 1523A        | .709 (18.00)  | .763 (19.38)  | .067 (1.70)  | .291 (7.90) | .417 (10.60) |

Assembly instructions page 246.

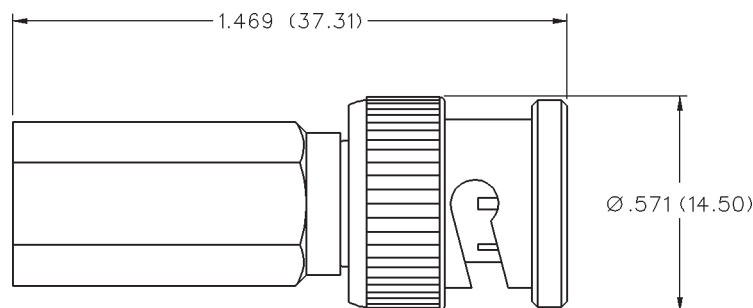
## Straight Crimp Type Plug - Push-On Body - 2 Piece



| PART NO.   | CABLE TYPE                           | CABLE CENTER CONDUCTOR | "A"          | "B"          | WIRE GAUGE | WIRE DECIMAL            | JACKET O.D.             |
|------------|--------------------------------------|------------------------|--------------|--------------|------------|-------------------------|-------------------------|
| CP-88-1    | RG-58                                | SOLID                  | .684 (17.37) | .605 (15.37) | 22-18      | .025 (.064)-.043 (1.09) | .195 (4.95)-.210 (5.33) |
| CP-88-2    | RG-59, 62, RG-6 PLENUM, GENESIS 5352 | SOLID                  | .673 (17.09) | .605 (15.37) | 22-18      | .025 (.064)-.043 (1.09) | .220(5.59)-.250 (6.35)  |
| CP-88-3    | BELDEN 8281, RG-6 QUAD               | SOLID                  | .819 (20.80) | .540 (13.72) | 22-18      | .025 (.064)-.043 (1.09) | .272 (6.91)-.307 (7.80) |
| CP-88-4    | RG-MATV-59                           | SOLID                  | .677 (17.20) | .605 (15.37) | 22-18      | .025 (.064)-.043 (1.09) | .242 (6.15)-.251 (6.38) |
| CP-88-5    | RG-6                                 | SOLID                  | .684 (17.37) | .605 (15.37) | 22-18      | .025 (.064)-.043 (1.09) | .265 (6.73)-.280 (7.11) |
| CP-88-10   | RG-59, 62 PLENUM                     | SOLID                  | .680 (17.27) | .605 (15.37) | 22-18      | .025 (.064)-.043 (1.09) | .195 (4.95)-.210 (5.33) |
| CP-SW88-2  | RG-59, 62, RG-6TFE                   | STRANDED               | .673 (17.09) | .605 (15.37) | 22-18      | .025 (.064)-.043 (1.09) | .220 (5.59)-.250 (6.35) |
| CP-SW88-10 | RG-59AU PLENUM                       | STRANDED               | .673 (17.09) | .605 (15.37) | 22-18      | .025 (.064)-.043 (1.09) | .195 (4.95)-.210 (5.33) |

Assembly instructions page 250.

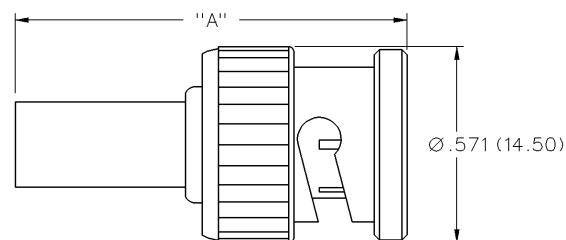
## Straight Twist-On Plug - Field Installable - 1 Piece



| PART NO.     | CABLE TYPE              | CABLE CENTER CONDUCTOR | WIRE GAUGE | WIRE DECIMAL            | JACKET O.D.             |
|--------------|-------------------------|------------------------|------------|-------------------------|-------------------------|
| CPFI-UG88-1  | RG-58                   | SOLID                  | 22-18      | .025 (.064)-.043 (1.09) | .185 (4.70)-.205 (5.21) |
| CPFI-UG88-2  | RG-59, 62               | SOLID                  | 22-18      | .025 (.064)-.043 (1.09) | .220 (5.59)-.250 (6.35) |
| CPFI-UG88-3  | BELDEN 8281, RG-6 QUAD  | SOLID                  | 22-18      | .025 (.064)-.043 (1.09) | .272 (6.91)-.307 (7.80) |
| CPFI-UG88-4  | RG-MATV-59              | SOLID                  | 22-18      | .025 (.064)-.043 (1.09) | .220 (5.59)-.250 (6.35) |
| CPFI-UG88-5  | RG-6 PLENUM             | SOLID                  | 22-18      | .025 (.064)-.043 (1.09) | .270 (6.86)-.280 (7.11) |
| CPFI-UG88-10 | RG-59 PLENUM, 62 PLENUM | SOLID                  | 22-18      | .025 (.064)-.043 (1.09) | .185 (4.70)-.205 (5.21) |

Assembly instructions page 251.

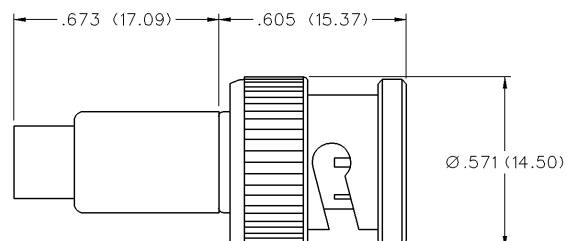
## Straight Crimp Plug - Two Ferrules - 3 Piece



| PART NO.   | CABLE TYPE          | "A"           |               | CONTACT I.D. | BODY I.D.   | SLEEVE I.D. |             |
|------------|---------------------|---------------|---------------|--------------|-------------|-------------|-------------|
| CPMC-88-21 | RG-58, RG-59 PLENUM | 1.238 (31.45) | 1.143 (29.03) | .034 (0.86)  | .172 (4.37) | .213 (5.41) | .261 (6.63) |

Assembly instructions page 248.

## Straight Crimp Plug - Two Ferrules, Push-On Body - 2 Piece



| PART NO.   | CABLE TYPE          |
|------------|---------------------|
| CP-SW88-21 | RG-58, RG-59 PLENUM |

Assembly instructions page 250.

## Straight Crimp Type, Rear Mount Bulkhead Jack - Solder or Crimp Contact - 3 Piece

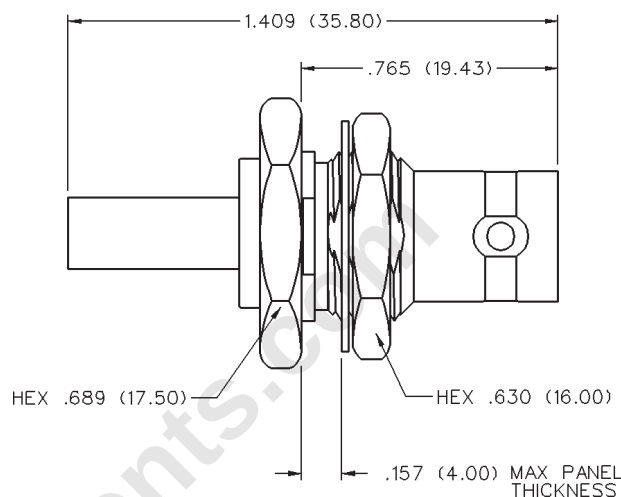


| PART NO.    | CABLE TYPE       |
|-------------|------------------|
| CP-89-19BM1 | RG-174, 188, 316 |

Assembly instructions page 249.

Mounting hole layout figure 24 page 203.

Tapered crimp sleeve as shown in photo.



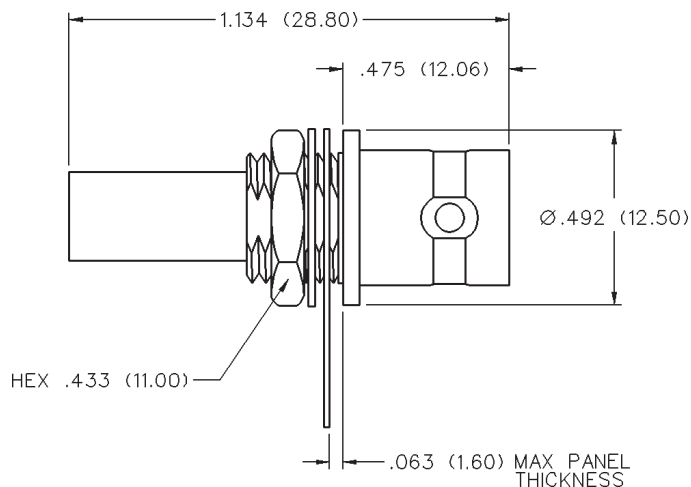
## Straight Crimp Type, Front Mount Bulkhead Jack - Lug Terminal, Solder or Crimp Contact - 3 Piece



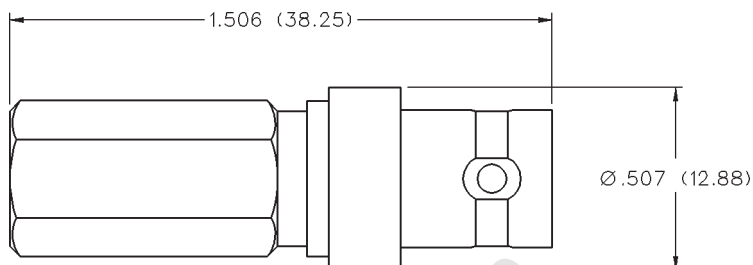
| PART NO.    | CABLE TYPE  |
|-------------|-------------|
| CP-89-27BM2 | RG-178, 196 |

Assembly instructions page 249.

Mounting hole layout figure 25 page 203.

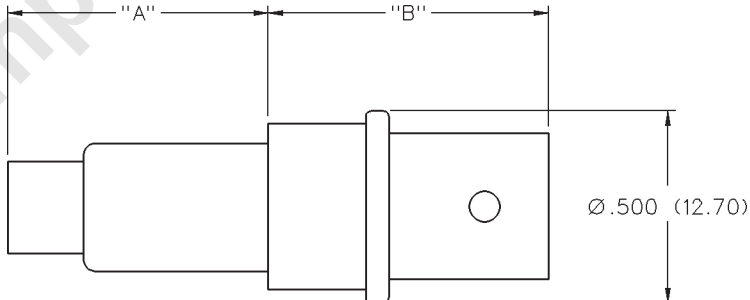


## Straight Twist-On Jack - Field Installable - 1 Piece



| PART NO.    | CABLE TYPE | CABLE CENTER CONDUCTOR | WIRE GAUGE | WIRE DECIMAL | JACKET O.D.             |
|-------------|------------|------------------------|------------|--------------|-------------------------|
| CPFI-UG89-2 | RG-59, 62  | SOLID                  | 22         | .025 (0.64)  | .220 (5.59)-.250 (6.35) |

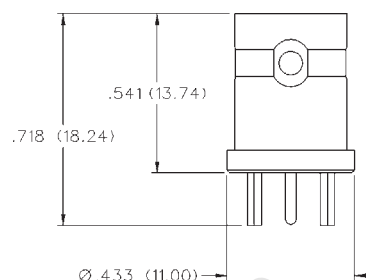
## Straight Crimp Type Jack - Push-On Body - 2 Piece



| PART NO. | CABLE TYPE | CABLE CENTER CONDUCTOR | "A"          | "B"          | WIRE GAUGE | WIRE DECIMAL | JACKET O.D.             |
|----------|------------|------------------------|--------------|--------------|------------|--------------|-------------------------|
| CP-89-1  | RG-58      | SOLID                  | .680 (17.27) | .668 (16.97) | 20         | .032 (0.81)  | .195 (4.95)-.210 (5.33) |
| CP-89-2  | RG-59, 62  | SOLID                  | .673 (17.09) | .675 (17.15) | 22         | .025 (0.64)  | .220 (5.59)-.250 (6.35) |

Assembly instructions page 250.

## Straight Jack Receptacle



| PART NO.     | NOTES              |
|--------------|--------------------|
| CP-BNCPC-001 | Silver plated body |

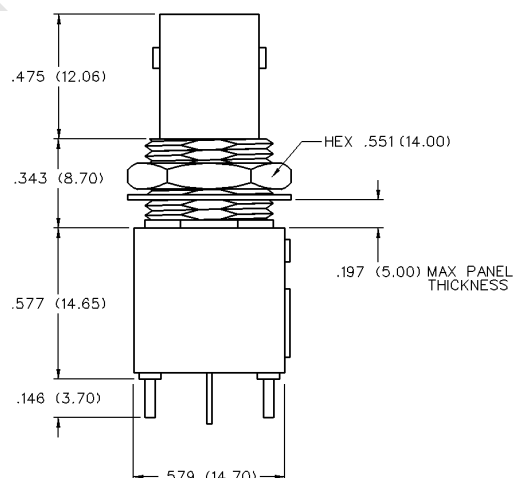
Mounting hole layout figure 26 page 203.

## Straight Bulkhead Jack Receptacle - Shielded



| PART NO.     |
|--------------|
| CP-BNCPC-005 |

Mounting hole layout figures 24 and 27 page 203.

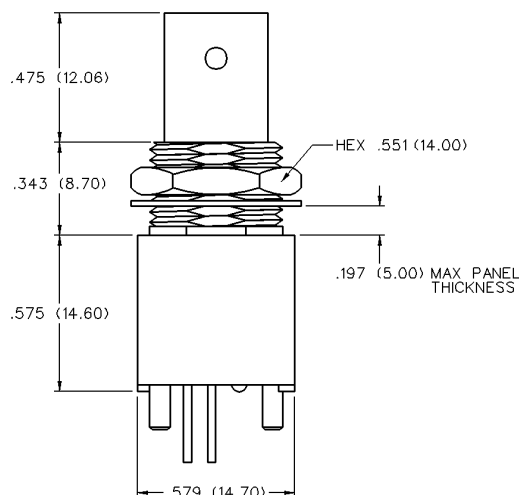


## Straight Bulkhead Jack Receptacle - Isolated



| PART NO.     |
|--------------|
| CP-BNCPC-007 |

Mounting hole layout figures 24 and 27 page 203.

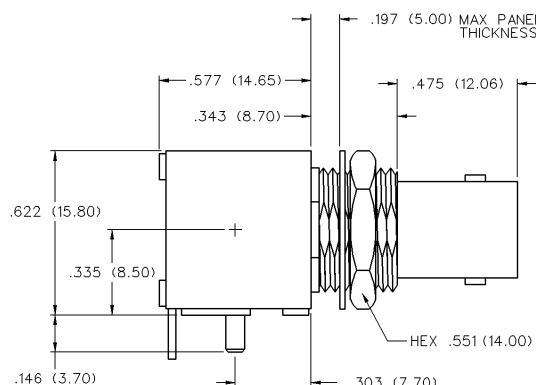


## Right Angle Bulkhead Jack Receptacle - Shielded



| PART NO.     |
|--------------|
| CP-BNCPC-009 |

Mounting hole layout figures 24 and 28 page 203.

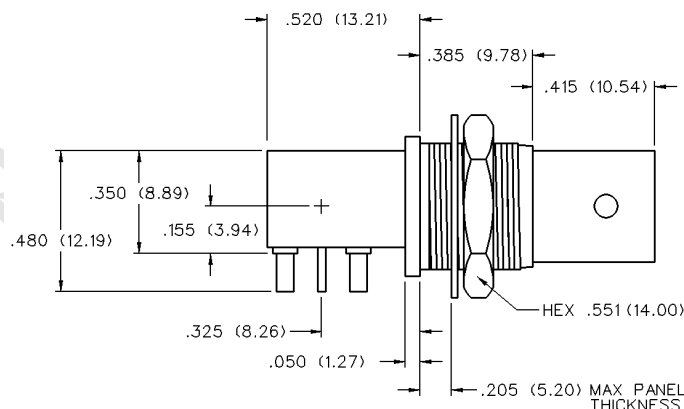


## Right Angle Bulkhead Jack Receptacle - Shielded, Extra Low Profile



| PART NO.     | NOTES           |
|--------------|-----------------|
| CP-BNCPC-013 | Tin plated body |

Mounting hole layout figures 24 and 29 pages 203 and 204.

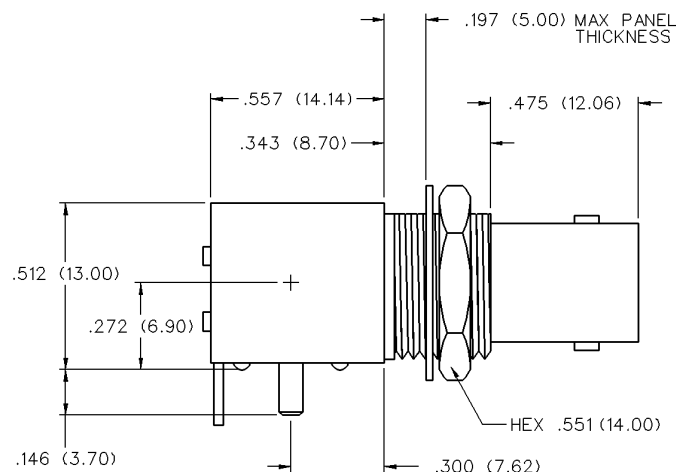


## Right Angle Bulkhead Jack Receptacle - Isolated, Low Profile

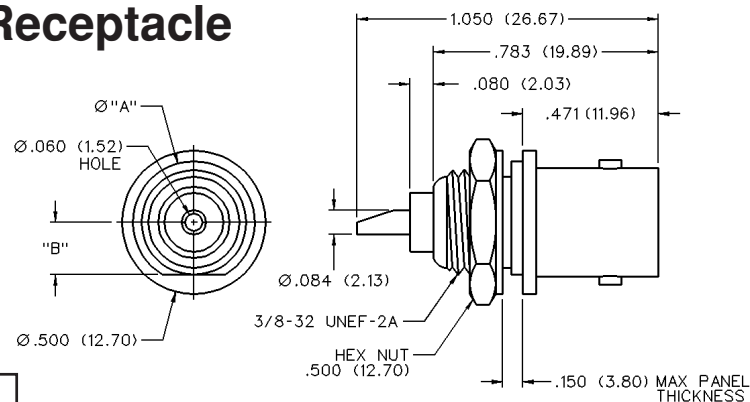


| PART NO.     | NOTES               |
|--------------|---------------------|
| CP-BNCPC-017 | With mounting posts |

Mounting hole layout figures 24 and 28 page 203.



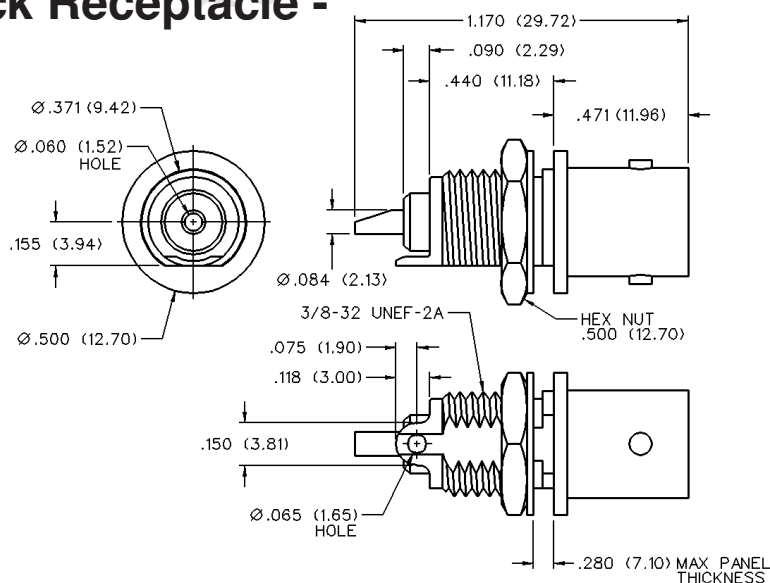
## Front Mount Bulkhead Jack Receptacle



| PART NO.  | "A"          | "B"         | NOTES          |
|-----------|--------------|-------------|----------------|
| CP-625U   | .425 (10.80) | .183 (4.65) | w/o solder lug |
| CP-1094-U | .371 (9.42)  | .155 (3.94) | w/o solder lug |

Mounting hole layout for part number CP-625U figure 30 page 204.  
Mounting hole layout for part number CP-1094-U figure 25 page 203.

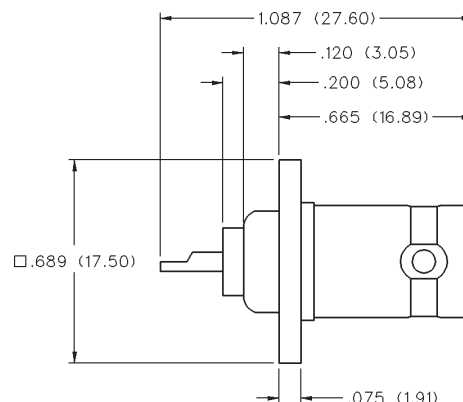
## Front Mount Bulkhead Jack Receptacle - with Solder Tab



| PART NO.    |
|-------------|
| CP-1094-AST |

Mounting hole layout figure 25 page 203.

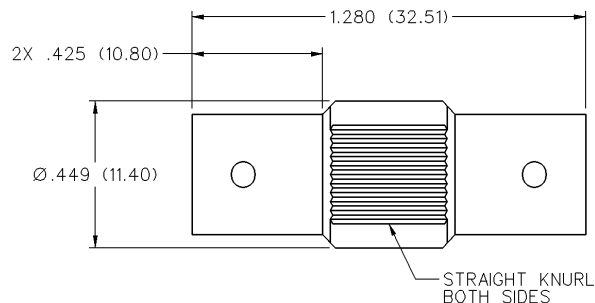
## Flange Mount Jack Receptacle



| PART NO. | NOTES                           |
|----------|---------------------------------|
| CP-AD519 | .126 (3.20) dia. mounting holes |

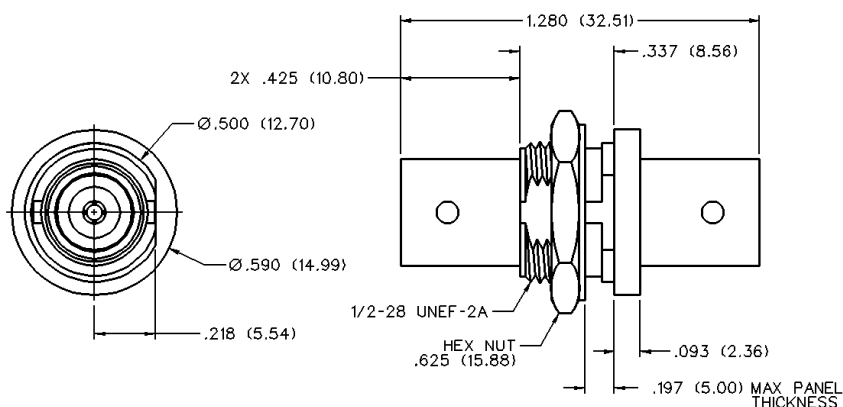
Mounting hole layout figure 31 page 204.

## Jack to Jack Adapter



| PART NO. |
|----------|
| CP-AD555 |

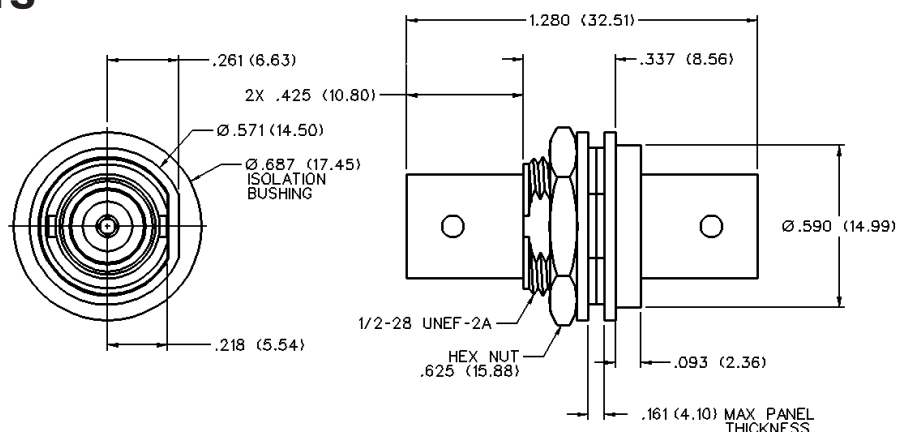
## Bulkhead Jack to Jack Adapter



| PART NO.  | NOTES         |
|-----------|---------------|
| CP-AD556M | w/lock washer |

Mounting hole layout figure 24 page 203.

## Bulkhead Jack to Jack Adapter - With Isolation Washers



| PART NO. | NOTES              |
|----------|--------------------|
| CP-AD558 | w/lock washer      |
| CP-AD521 | Dual Chassis Mount |

Mounting hole layout figure 32 page 204.

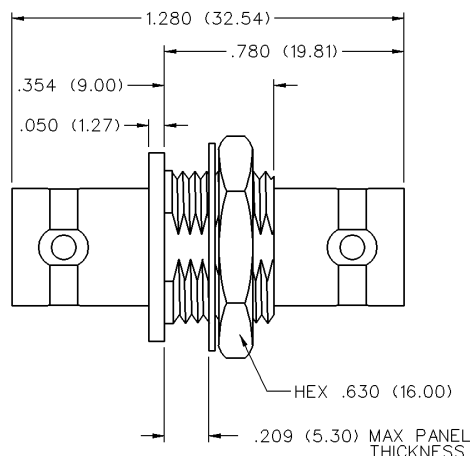
## Bulkhead Jack to Jack Adapter - Isolated



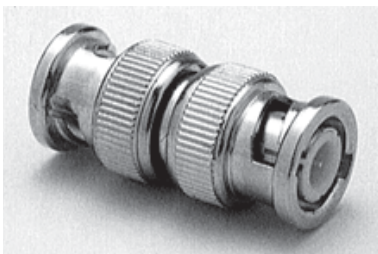
PART NO.

CP-AD580

Mounting hole layout figure 24 page 203.

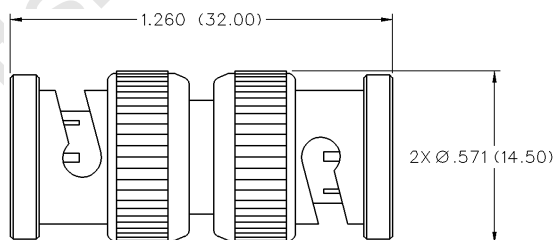


## Plug to Plug Adapter



PART NO.

CP-AD511

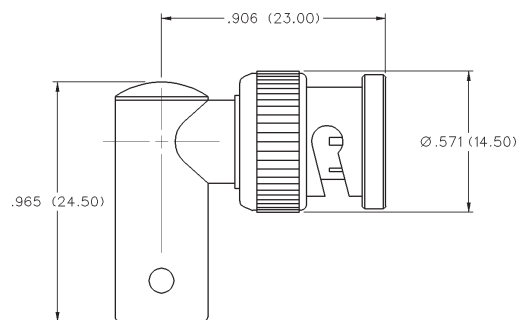


## Jack to Plug Right Angle Adapter



PART NO.

CP-AD503

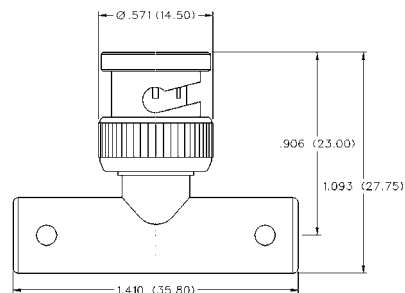


## Jack to Jack to Plug T Adapter

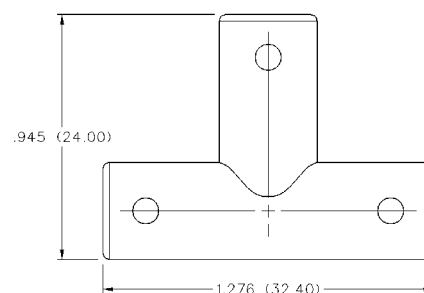
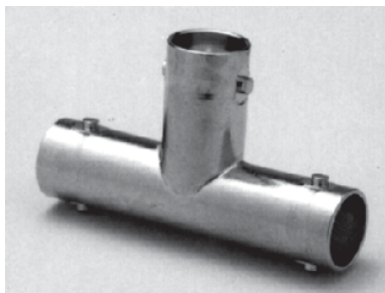


PART NO.

CP-AD505



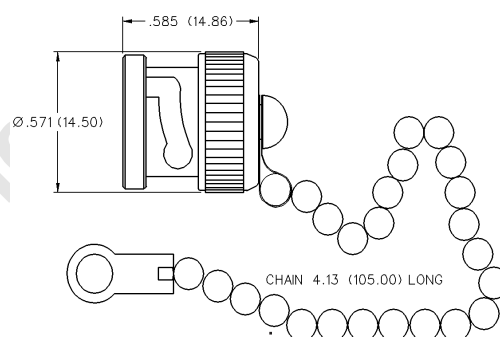
## Jack to Jack to Jack T Adapter



**PART NO.**

CP-AD506

## Dust Cap with Chain



**PART NO.**

CP-BNC-CAP-1

**BNC Connectors - 75 Ohm Commercial**

|                          |     |
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**True 75 Ohm BNC**

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The BNC series connector is a commercial quality product that intermates with all standard double bayonet stud BNC designs. All contacts are captivated for ruggedness. The 50 Ohm and 75 Ohm interfaces are intermateable and provide quick, reliable connections for instrumentation, medical and LAN applications.

## Specifications\*

### 75 Ohm BNC

#### Electrical Characteristics

Impedance: 75 Ohm nominal  
Frequency range: 0-2 GHz  
Working voltage: 500 volts RMS at sea level  
Dielectric withstanding voltage: 1500 volts RMS at sea level  
Corona level: 375 volts minimum at 70,000 feet  
Contact resistance: Outer - 0.2 milliohms maximum  
Center - 2.1 milliohms maximum  
Insulation resistance: 5000 megohms minimum

#### Environmental Characteristics

Recommended temperature range: -55°C to +85°C  
Moisture resistance: MIL-STD-202

#### Mechanical Characteristics

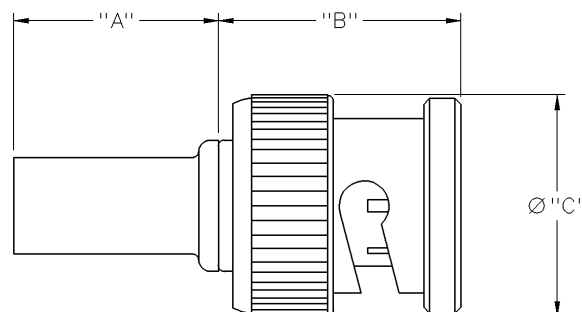
Durability: 500 cycles  
Force to engage/disengage: 3 lbs. maximum  
Cable retention: 20 lbs., RG-58 C/U cable

#### Materials

Body: Zinc or brass  
Contact: Brass or Beryllium copper  
Spring Washer: Beryllium copper  
Crimp sleeve: Brass  
Insulator: TPX  
Plating: Body - Nickel (except where noted)  
Crimp sleeve - Nickel  
Contact - Nickel/Gold

\* These values are typical and may not apply to all connectors.

## Straight Crimp Type Plug - Solder or Crimp Contact - 3 Piece

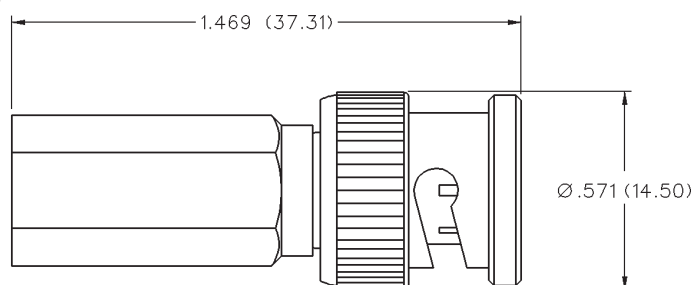


| PART NO.    | CABLE TYPE                  | "A"          | "B"          | "C"          |
|-------------|-----------------------------|--------------|--------------|--------------|
| CPMC-78-2   | RG-59, 62                   | .520 (13.20) | .595 (15.11) | .563 (14.30) |
| CPMC-78-3   | BELDEN 8281, 9141, 9231     | .600 (15.24) | .645 (16.38) | .563 (14.30) |
| CPMC-78-5   | BELDEN RG-6                 | .500 (12.70) | .645 (16.38) | .571 (14.50) |
| CPMC-78-10  | RG-TFE-59, TFE-62           | .520 (13.20) | .595 (15.11) | .563 (14.30) |
| CPMC-78-18  | BELDEN 8218, 1855A, MINI 75 | .520 (13.20) | .595 (15.11) | .571 (14.50) |
| CPMC-78-20* | RG-179, 187                 | .495 (12.57) | .633 (16.08) | .571 (14.50) |

Assembly instructions page 246.

\* Denotes tapered crimp sleeve.

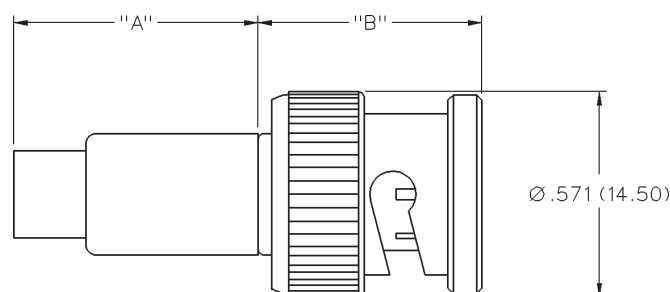
## Straight Twist-On Plug - Field Installable - 1 Piece



| PART NO.    | CABLE TYPE |
|-------------|------------|
| CPFI-UG78-2 | RG-59, 62  |
| CPFI-UG78-5 | RG-6       |

Assembly instructions page 251.

## Straight Crimp Type Plug - Push-On Body - 2 Piece



| PART NO. | CABLE TYPE                 | "A"          | "B"          | WIRE GAUGE | SLEEVE I.D.               |
|----------|----------------------------|--------------|--------------|------------|---------------------------|
| CP-78-2  | RG-59, 62                  | .673 (17.09) | .605 (15.37) | 22-18      | .333 (8.46) / .255 (6.48) |
| CP-78-5  | RG-6 QUAD .275 (6.98) MAX  | .684 (17.37) | .605 (15.37) | 22-18      | .333 (8.46) / .284 (7.21) |
| CP-78-10 | RG-59 PLENUM, RG-62 PLENUM | .600 (17.27) | .605 (15.37) | 22-18      | .333 (8.46) / .216 (5.49) |

Assembly instructions page 250.

## Straight Crimp Type, Rear Mount Bulkhead Jack with O'Ring - Solder or Crimp Contact - 3 Piece

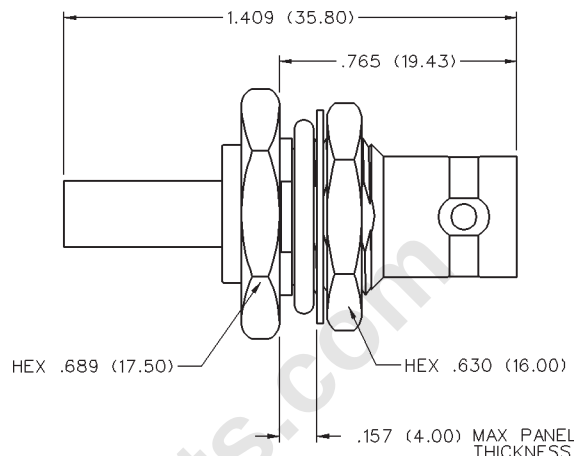


| PART NO.    | CABLE TYPE  |
|-------------|-------------|
| CP-79-20BM1 | RG-179, 187 |

Assembly instructions on page 249.

Mounting hole layout figure 24 page 203.

Tapered crimp sleeve as shown in photo.



## Straight Crimp Type, Front Mount Bulkhead Jack - Lug Terminal, Solder or Crimp Contact - 3 Piece

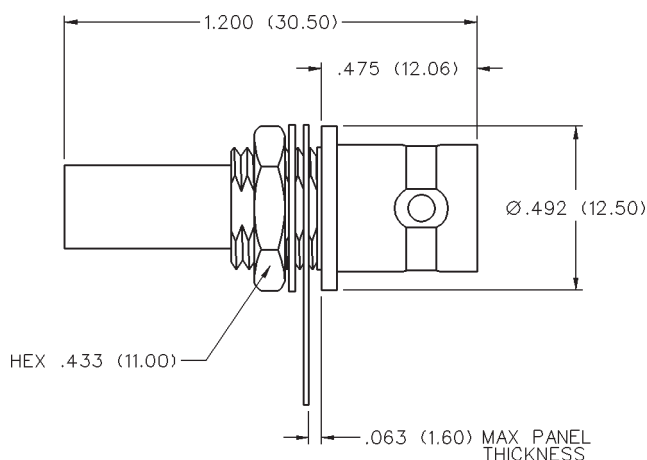


| PART NO.    | CABLE TYPE  |
|-------------|-------------|
| CP-79-20BM2 | RG-179, 187 |

Assembly instructions on page 249.

Mounting hole layout figure 25 page 203.

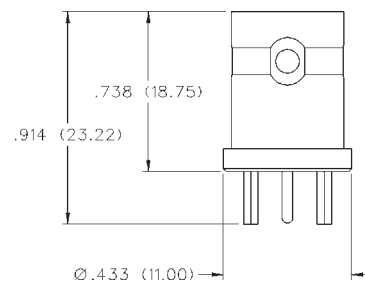
Tapered crimp sleeve as shown in photo.



## Straight Jack Receptacle

| PART NO.     | NOTES           |
|--------------|-----------------|
| CP-BNCPC-004 | Tin plated body |

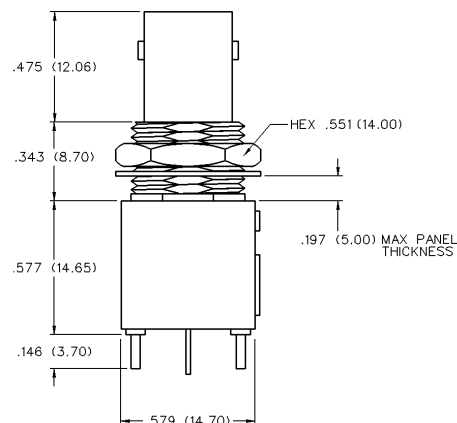
Mounting hole layout figure 26 page 203.



## Straight Bulkhead Jack Receptacle - Shielded

| PART NO.     |
|--------------|
| CP-BNCPC-006 |

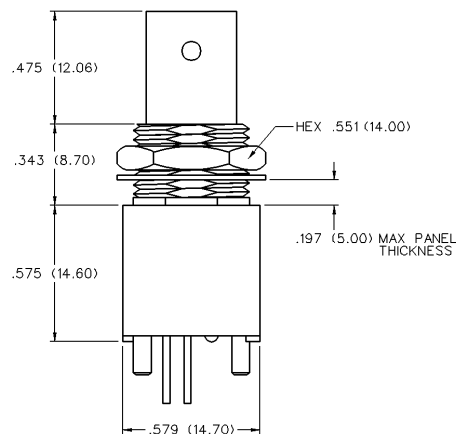
Mounting hole layout figures 24 and 27 page 203.



## Straight Bulkhead Jack Receptacle - Isolated

| PART NO.     |
|--------------|
| CP-BNCPC-008 |

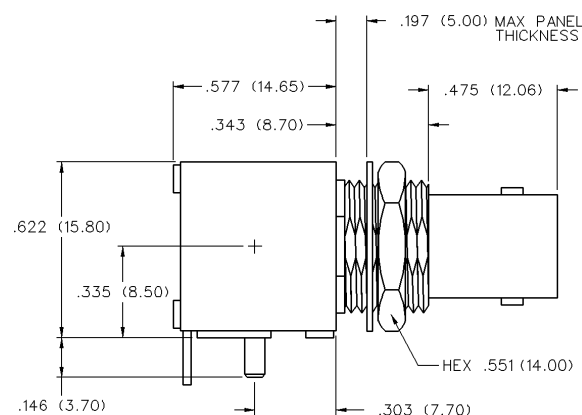
Mounting hole layout figures 24 and 27 page 203.



## Right Angle Bulkhead Jack Receptacle - Shielded

| PART NO.     |
|--------------|
| CP-BNCPC-010 |

Mounting hole layout figures 24 and 28 page 203.

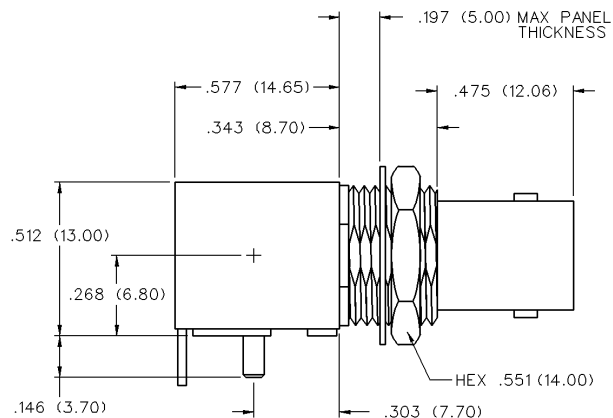


## Right Angle Bulkhead Jack Receptacle - Shielded, Low Profile



| PART NO.     |
|--------------|
| CP-BNCPC-012 |

Mounting hole layout figures 24 and 28 page 203.

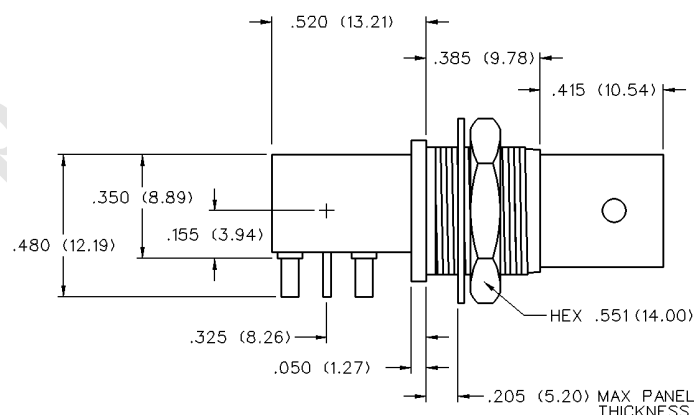


## Right Angle Bulkhead Jack Receptacle - Shielded, Extra Low Profile



| PART NO.     | NOTES           |
|--------------|-----------------|
| CP-BNCPC-014 | Tin plated body |

Mounting hole layout figures 24 and 29 pages 203 and 204.

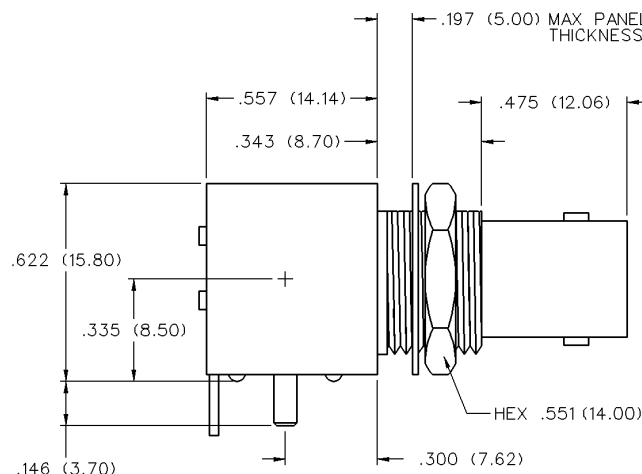


## Right Angle Bulkhead Jack Receptacle - Isolated



| PART NO.     | NOTES               |
|--------------|---------------------|
| CP-BNCPC-016 | With mounting posts |

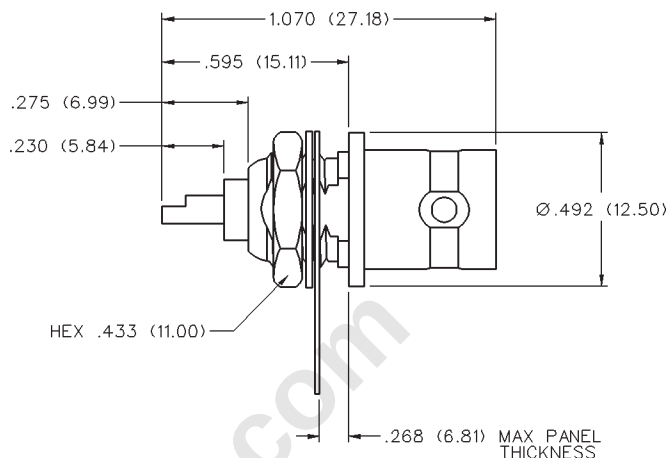
Mounting hole layout figures 24 and 28 page 203.



## Front Mount Bulkhead Jack Receptacle with Lug Terminal

**PART NO.**

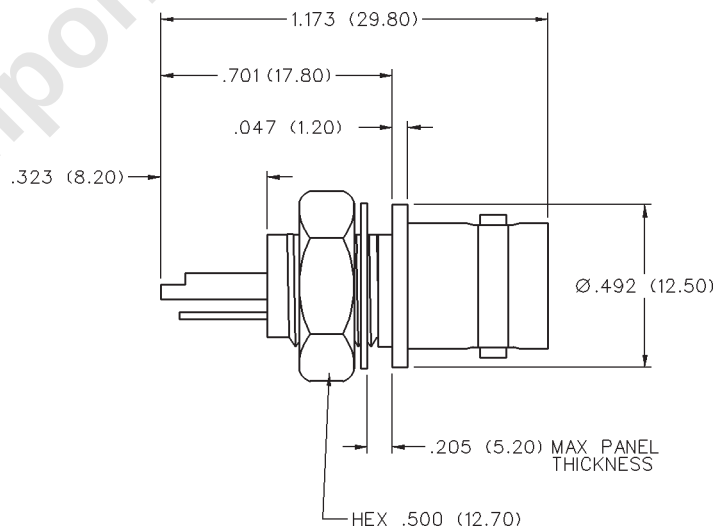
CP-BNC-BM-001

*Mounting hole layout figure 25 page 203.*

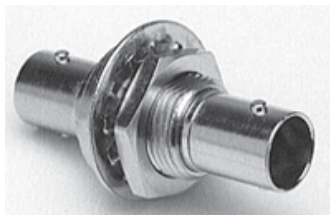
## Front Mount Bulkhead Jack Receptacle - Isolated

**PART NO.**

CP-AD520

*Mounting hole layout figure 25 page 203.*

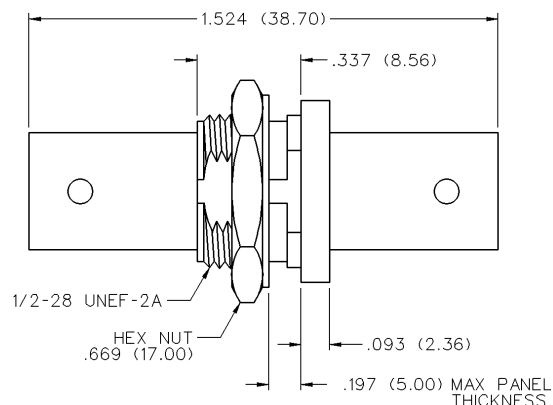
## Bulkhead Jack to Jack Adapter - Dual Chassis Mount



**PART NO.**

CP-AD557

Mounting hole layout figure 24 page 203.

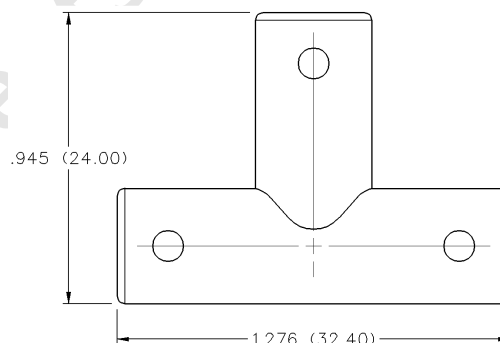


## Jack to Jack to Jack T Adapter



**PART NO.**

CP-AD584

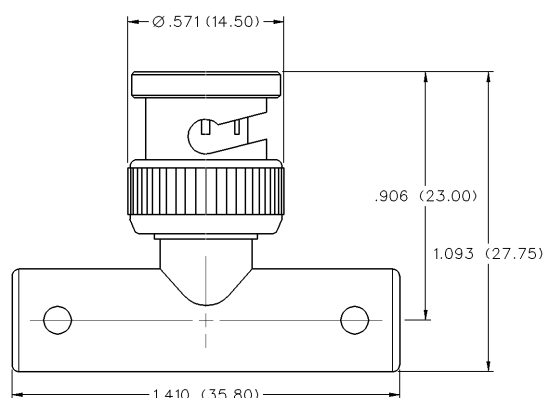


## Jack to Jack to Plug T Adapter

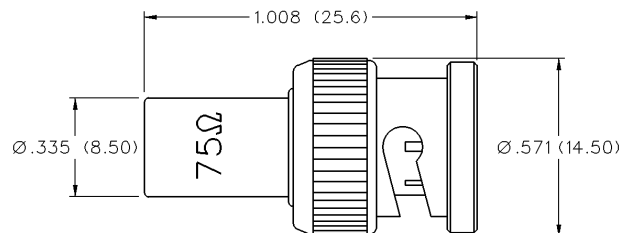


**PART NO.**

CP-AD705



## Terminations



| PART NO.  | CODING | RESISTANCE       | POWER    |
|-----------|--------|------------------|----------|
| CP-88T-75 | Purple | 75 Ohm $\pm 1\%$ | 1/2 Watt |

## Specifications

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### Electrical Characteristics

Impedance: 75 Ohm

Frequency range: 0-3 GHz

VSWR:  $1.10 + .03 F$  (F in GHz) BNC Cabled Plugs

$1.03 + .02 F$  (F in GHz) BNC Adapters

Working voltage: 500 VRMS at sea level

Dielectric withstanding voltage: 1500 VRMS at sea level

Insulation resistance: 5000 megohms minimum

Contact resistance:

Outer - Nickel plated initial 2.5 milliohm max,

after environmental 3.5 milliohm max

Center - Initial 3 milliohm max,

after environmental 4 milliohm max

Braid to Body - 2.5 milliohm max (nickel plated), after environmental not applicable

Corona level: 375 volts minimum at 70,000 feet

RF High Potential Withstanding Voltage: 700 VRMS at 4 and 7 MHz

### Environmental Characteristics

(Meets or exceeds the applicable paragraph of MIL-C-39012)

Thermal shock: MIL-STD-202, Method 107

Operating temperature:  $-65^{\circ}\text{C}$  to  $+165^{\circ}\text{C}$

Corrosion: MIL-STD-202, Method 101, Condition B

Shock: MIL-STD-202, Method 213, Condition B

Vibration: MIL-STD-202, Method 204, Condition B

Moisture resistance: MIL-STD-202, Method 106

### Mechanical Characteristics

Durability: 500 cycles min

Force to engage/disengage: 5 lbs. max, after durability 5 lbs max; 1 lb. min.

Coupling nut retention: 100 lbs. min

Contact retention: 6 lbs. min axial force

### Material Specifications

Body: Brass, nickel plated .0001 min over copper plated .00005 min

Contact: Brass, gold plated .00005 min over nickel plated

.00005 min over copper plated .00005 min

Crimp Sleeve: Copper, nickel plate .0001 min over copper plated .00005 min

Nut: Zinc, nickel plated over copper plated

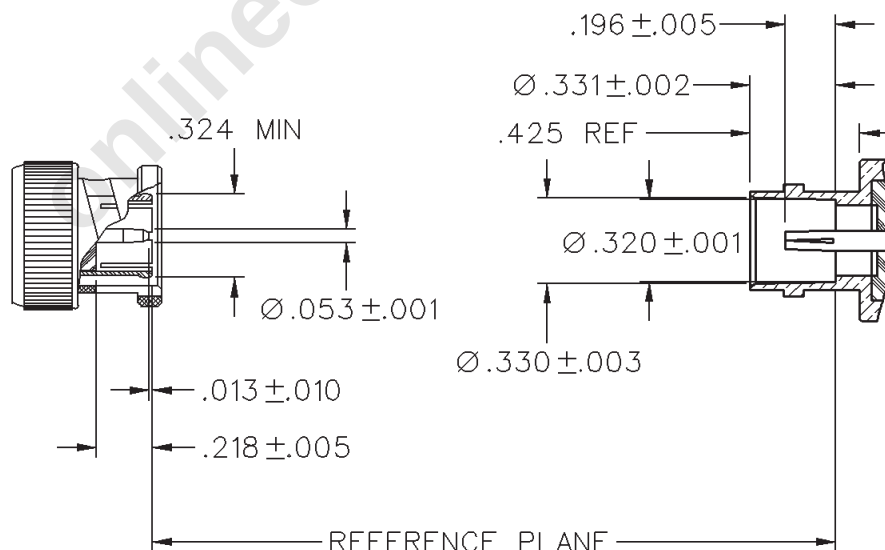
Insulator: Teflon

Spring Washer: Beryllium Copper (unplated)

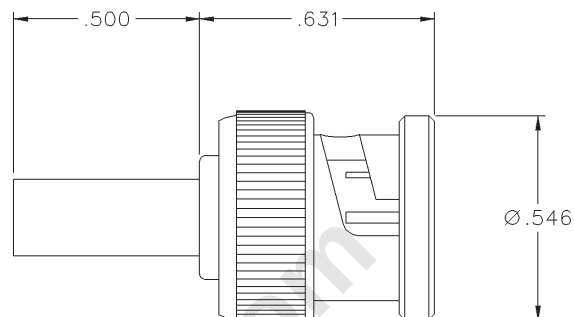
Flat Washer: Steel, nickel plated

Gasket: Silicone rubber

True 75 Ohm BNC Plug and Jack Mating Engagement



## Straight Cabled Plug - 3 Piece - Solder or Crimp Captivated Contact



| PART NO.   | CABLE TYPE                                                                                            | CONTACT I.D. | BODY I.D.   | SLEEVE I.D. |
|------------|-------------------------------------------------------------------------------------------------------|--------------|-------------|-------------|
| CPMC-68-2  | RG-59, 140, 302,<br>Belden 9209A, 8279, 8241, 8263,<br>Commscope 5563,<br>Gepco VJ59U                 | .028 (0.71)  | .152 (3.86) | .252 (6.40) |
| CPMC-68-3  | Belden 8281, 9231, 9141, 728A,<br>Commscope 7501,<br>VP618VC                                          | .036 (0.91)  | .203 (5.16) | .330 (8.38) |
| CPMC-68-5  | RG-6,<br>Belden 8215                                                                                  | .033 (0.84)  | .191 (4.85) | .355 (9.01) |
| CPMC-68-10 | Belden 82108, 89108,<br>Coleman 99969                                                                 | .036 (0.91)  | .149 (3.78) | .234 (5.94) |
| CPMC-68-18 | Belden 8218                                                                                           | .021 (0.53)  | .105 (3.81) | .180 (4.57) |
| CPMC-68-20 | RG-179, 187,<br>Belden 1520A                                                                          | .016 (0.53)  | .067 (1.70) | .128 (3.25) |
| CPMC-68-33 | Belden 735A,<br>Commscope 735,<br>Helex/Hitemp 735,<br>BT3002, TZC75024                               | .021 (0.53)  | .082 (2.08) | .160 (4.06) |
| CPMC-68-34 | Belden 1855A, 720A,<br>Commscope 7538,<br>Gepco VDM 230, VDM 250, Mini-75                             | .028 (0.71)  | .105 (3.81) | .180 (4.57) |
| CPMC-68-35 | Belden 1505A, 734A,<br>Commscope 5565,<br>Gepco VPM2000                                               | .036 (0.91)  | .152 (3.86) | .252 (6.40) |
| CPMC-68-36 | Belden 1695A, 633938,<br>Gepco VSD 2001TS,<br>Commscope 2277V                                         | .044 (1.12)  | .176 (4.47) | .265 (6.73) |
| CPMC-68-45 | Belden 1694A, 9248, 1152,<br>Commscope 5765, 2227K, Gepco VSD 2001,<br>RG-6 Quad .275 (6.98) Max O.D. | .044 (1.12)  | .187 (4.75) | .290 (7.37) |
| CPMC-68-50 | Belden 1506A, 82259, 89259,<br>Gepco VPM2000TK, VPM2000TS                                             | .036 (0.91)  | .138 (3.51) | .234 (5.94) |

Assembly instructions page 252.

# BNC Connectors - True 75 Ohm

In-Series Adapters

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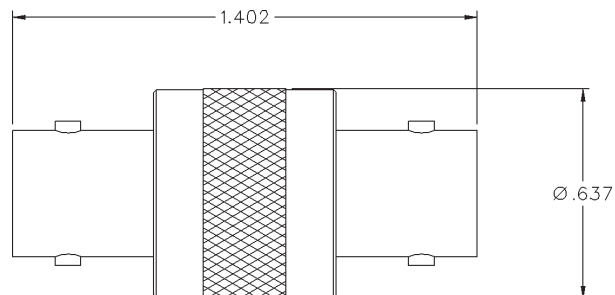
  
**EMERSON**  
Network Power

## Jack to Jack Adapter



PART NO.

CP-AD587

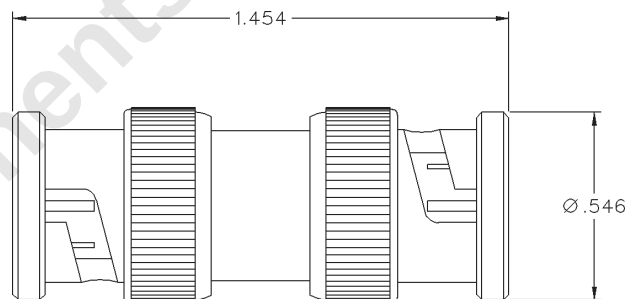


## Plug to Plug Adapter



PART NO.

CP-AD585

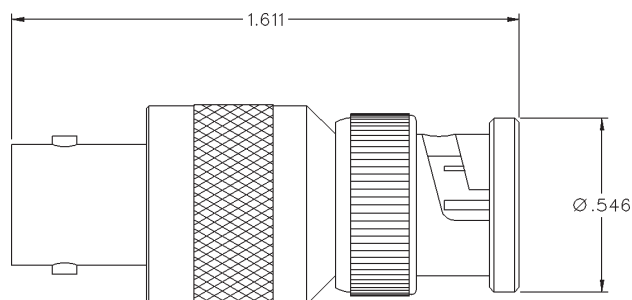


## Jack to Plug Adapter

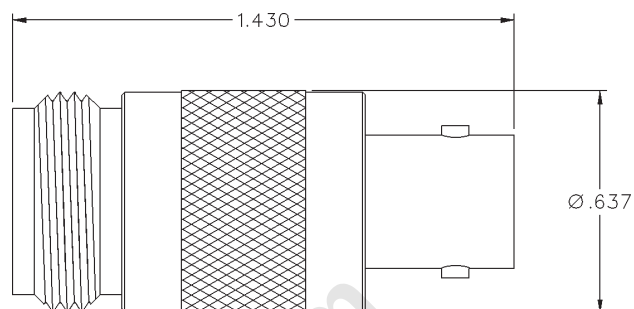


PART NO.

CP-AD586



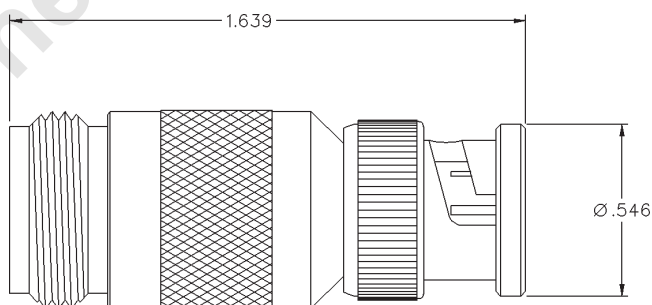
## BNC Jack to N Jack Adapter



PART NO.

CP-AD822

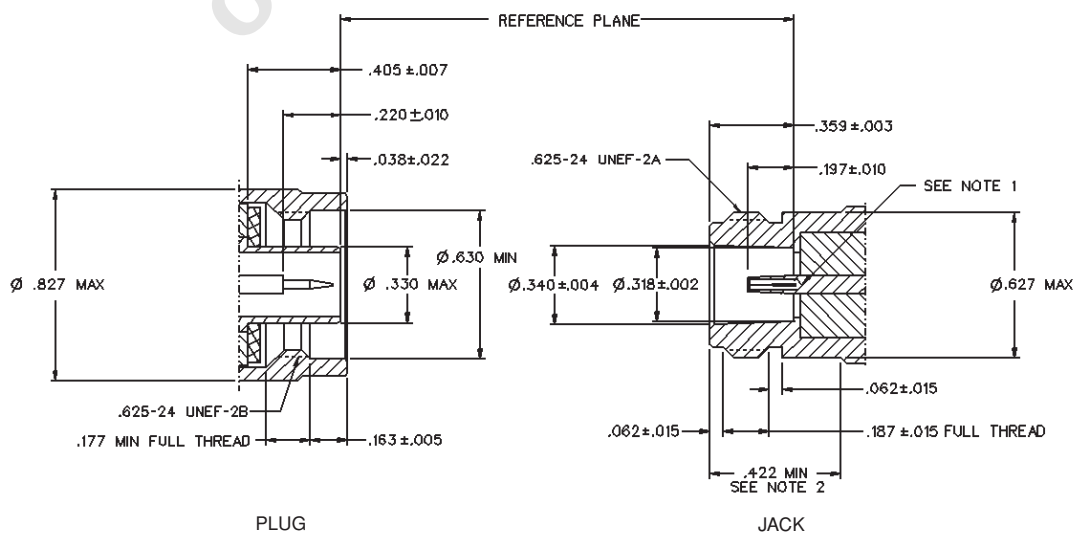
## BNC Plug to N Jack Adapter



PART NO.

CP-AD821

## Mating Engagement for 75 Ohm N Series



## NOTES:

1. ID to meet VSWR and contact resistance when mated with .035/.037 dia pin.
2. Clearance for mating connector coupling nut.
3. 75 Ohm N series connectors are not compatible with 50 Ohm N series connectors.

## Cable Boots and Strain Reliefs



Figure 1



Figure 2



Figure 3

| PART NO.   | CABLE TYPE | COLOR | PACKAGING   | FIGURE |
|------------|------------|-------|-------------|--------|
| 25-7958 BK | RG-58, 141 | BLACK | 100 pcs/bag | 1      |
| 25-7959 BK | RG-59, 62  | BLACK | 100 pcs/bag | 1      |
| 25-B58     | RG-58, 141 | BLACK | 100 pcs/bag | 2      |
| 25-B174    | RG-174     | BLACK | 100 pcs/bag | 3      |

**TNC Connectors**

|                          |     |
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**RF Adapter Kit**

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**F Series Connectors**

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**UHF Connectors**

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**Mini-UHF Connectors**

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The TNC connector is a threaded version of the BNC mating interface. All contacts are captivated for ruggedness. The TNC is a commercial quality connector that provides additional coupling retention for shock and vibration applications. The TNC connector intermates with all standard 50 Ohm TNC connectors.

## Specifications\*

### Electrical Characteristics

Impedance: 50 Ohm nominal (except where noted)  
Frequency range: 0-11 GHz  
Working voltage: 500 volts RMS at sea level  
Dielectric withstanding voltage: 1500 volts RMS at sea level  
Corona level: 375 volts minimum at 70,000 feet  
Contact resistance: Outer - 0.2 milliohms maximum  
Center - 2.1 milliohms maximum  
Insulation resistance: 5000 megohms minimum

### Environmental Characteristics

Recommended temperature range: -55°C to +85°C  
Moisture Resistance: MIL-STD-202

### Mechanical Characteristics

Durability: 500 cycles  
Cable retention: 20 lbs., RG-58 C/U cable

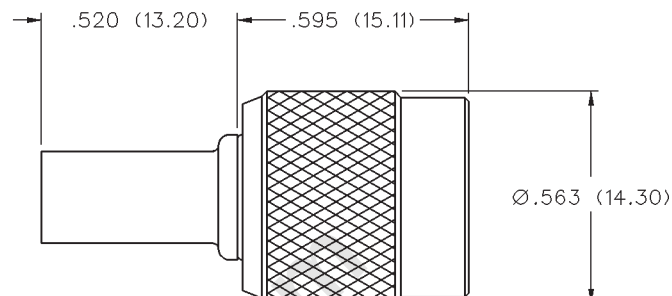
### Materials

Body and coupling nut: Zinc or brass  
Contact: Beryllium copper, phosphor bronze or brass  
Crimp Sleeve: Brass  
Insulator: Teflon®, TPX or Delrin®  
Hardware: Brass  
Plating: Body - Nickel  
Crimp sleeve - Nickel  
Hardware - Nickel  
Contact - Gold

\* These values are typical and may not apply to all connectors.

Delrin® and Teflon® are registered trademarks of Dupont Corporation.

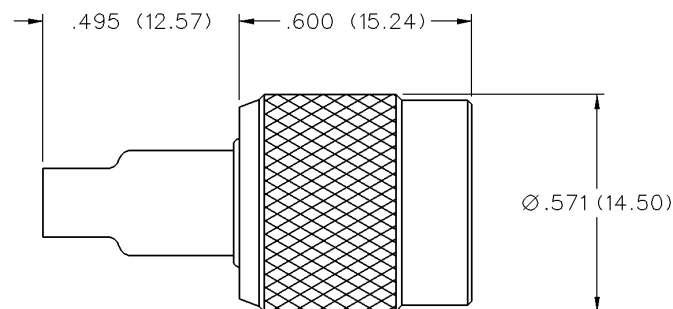
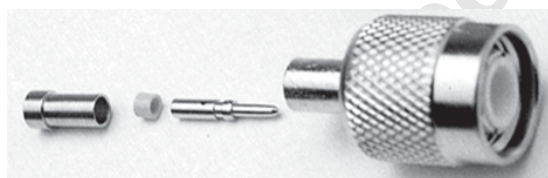
## Straight Crimp Type Plug - Solder or Crimp Contact - 3 Piece



| PART NO.    | CABLE TYPE              | CONTACT I.D. | BODY I.D.   | SLEEVE I.D. |
|-------------|-------------------------|--------------|-------------|-------------|
| CPMC-TNC-1  | RG-58, 141              | .044 (1.12)  | .126 (3.20) | .206 (5.23) |
| CPMC-TNC-2  | RG-59, 62               | .034 (0.86)  | .173 (4.39) | .261 (6.63) |
| CPMC-TNC-13 | RG-142, 223, 400, 55    | .044 (1.12)  | .126 (3.20) | .220 (5.59) |
| CPMC-TNC-16 | Proflex RG-450          | .055 (1.40)  | .173 (4.39) | .261 (6.63) |
| CPMC-TNC-17 | RG-8X (MINI 8), LMR 240 | .065 (1.65)  | .173 (4.39) | .261 (6.63) |

Assembly instructions page 253.

## Straight Crimp Type Plug - Solder or Crimp Contact - 4 Piece



| PART NO.   | CABLE TYPE       | CONTACT I.D. | BODY I.D.   | SLEEVE I.D. | TERMINATION  |
|------------|------------------|--------------|-------------|-------------|--------------|
| CPM-TNC-19 | RG-174, 188, 316 | .0245 (0.62) | .167 (4.24) | .118 (3.00) | Crimp Insert |
| CPM-TNC-20 | RG-179, 187      | .0165 (0.42) | .167 (4.24) | .118 (3.00) | Crimp Insert |

Assembly instructions page 247.

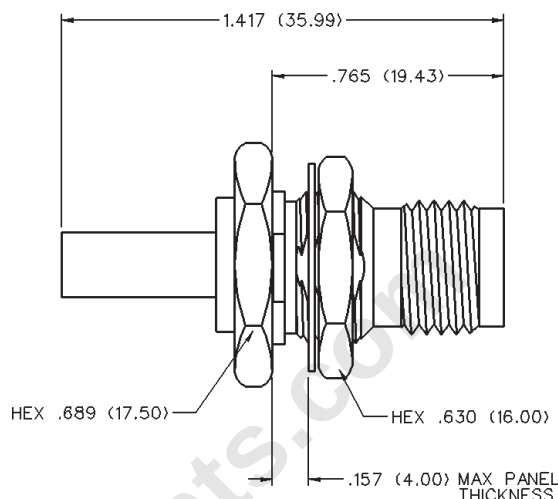
## Straight Crimp Type, Rear Mount Bulkhead Jack - Solder or Crimp Contact - 3 Piece



| PART NO.        | CABLE TYPE       |
|-----------------|------------------|
| CP-TNC-89-19-BM | RG-174, 188, 316 |

Assembly instructions page 253.

Mounting hole layout figure 24 page 203.

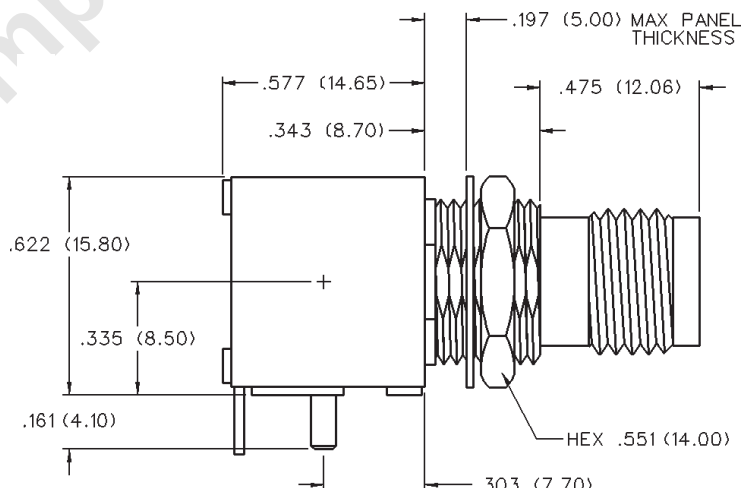


## Right Angle Bulkhead Jack Receptacle - Shielded



| PART NO.       |
|----------------|
| CPM-TNC-PC-002 |

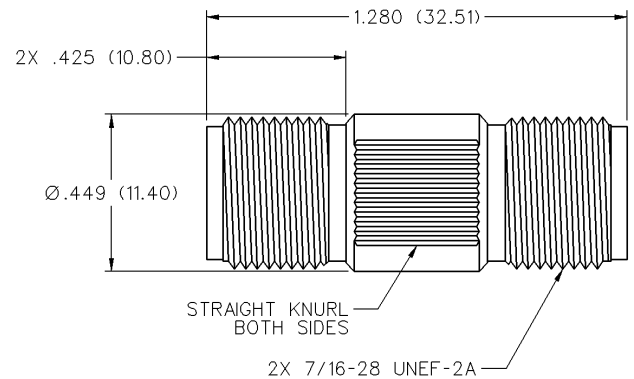
Mounting hole layout figures 24 and 28 page 203.



## Jack to Jack Adapter



|                 |
|-----------------|
| <b>PART NO.</b> |
| CP-AD355        |

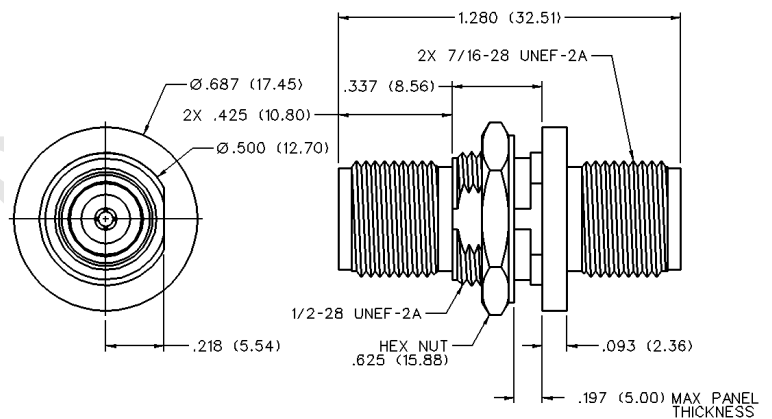


## Jack to Bulkhead Jack Adapter



|                 |
|-----------------|
| <b>PART NO.</b> |
| CP-AD356        |

Mounting hole layout figure 24 page 203.



# RF Adapter Kit

Specifications

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Network Power

## RF Adapter Kit



| PART NO.     |
|--------------|
| 142-0000-005 |

| PART NO.     | DESCRIPTION                      | QTY. | PART NO.  | DESCRIPTION            | QTY. |
|--------------|----------------------------------|------|-----------|------------------------|------|
| 142-0901-401 | SMA Jack to Bkhd. Jack, Gold Pl. | 4    | CP-AD515  | BNC Plug to RCA Jack   | 3    |
| 142-0901-801 | SMA Jack to Jack, Gold Pl.       | 2    | CP-AD555  | BNC Jack to Jack       | 3    |
| 142-0901-811 | SMA Plug to Plug, Gold Pl.       | 4    | CP-AD556M | BNC Jack to Bkhd. Jack | 2    |
| 142-0901-821 | SMA Plug to Jack, Gold Pl.       | 4    | CP-AD582  | SMA Plug to BNC Plug   | 3    |
| 142-0901-921 | RA SMA Jack to Jack, Gold Pl.    | 2    | CP-AD583  | SMA Jack to BNC Plug   | 3    |
| 142-0901-931 | RA SMA Plug to Plug, Gold Pl.    | 2    | CP-AD800  | N Plug to Plug         | 2    |
| 142-0901-941 | RA SMA Plug to Jack, Gold Pl.    | 4    | CP-AD356  | TNC Jack to Bkhd. Jack | 3    |
| 142-0901-861 | SMA Dummy Load Plug, Gold Pl.    | 2    | CP-AD809  | N Plug to BNC Jack     | 2    |
| CP-AD503     | BNC RA BNC Plug to Jack          | 2    | CP-AD810  | N Plug to SMA Jack     | 2    |
| CP-AD505     | BNC Jack to Plug to Jack (T)     | 2    | CP-AD817  | N Plug to SMA Plug     | 2    |
| CP-AD506     | BNC Jack to Jack to Jack (T)     | 2    | CP-AD818  | N Jack to SMA Plug     | 2    |
| CP-AD507     | SMA Jack to BNC Jack             | 3    | CP-AD819  | N Jack to SMA Jack     | 2    |
| CP-AD508     | SMA Plug to BNC Jack             | 3    | CP-AD850  | N Jack to Jack         | 2    |
| CP-AD511     | BNC Plug to Plug                 | 3    | CP-AD851  | N Jack to Bkhd. Jack   | 2    |

**TOTAL: 72 Adapters**

The N connector employs a large diameter threaded interface for excellent strength and reliability. This commercial quality connector handles high power applications such as antenna feeds for radios and cell sites. Termination options include crimp and clamp styles for rugged service.

## Specifications\*

### Electrical Characteristics

Impedance: 50 Ohm nominal  
Frequency range: 0-11 GHz  
Working voltage: 500 volts RMS at sea level  
Dielectric withstanding voltage: 1500 volts RMS at sea level  
Corona level: 375 volts minimum at 70,000 feet  
Contact resistance: Outer - 0.2 milliohms maximum  
Center - 2.1 milliohms maximum  
Insulation resistance: 5000 megohms minimum

### Environmental Characteristics

Recommended temperature range: -55°C to + 85°C  
Moisture Resistance: MIL-STD-202

### Mechanical Characteristics

Durability: 500 cycles  
Cable retention: 20 lbs., RG-58 C/U cable

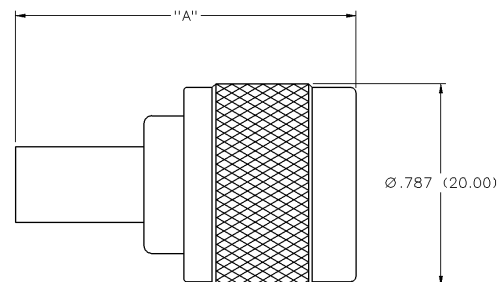
### Materials

Body and coupling nut: Brass  
Contact: Brass, phosphor bronze or beryllium copper  
Crimp sleeve: Brass  
Insulator: Teflon® or Delrin®  
Hardware: Brass  
Plating: Body - Nickel  
Crimp sleeve - Nickel  
Hardware - Nickel  
Contact - Gold

\* These values are typical and may not apply to all connectors.

Delrin® and Teflon® are registered trademarks of Dupont Corporation.

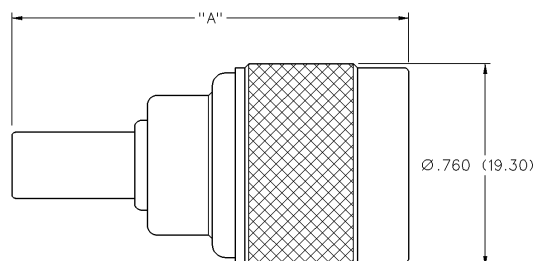
## Straight Crimp Type Plug - Solder or Crimp Contact



| PART NO.  | CABLE TYPE         | "A"           | CONTACT I.D. | BODY I.D.   | SLEEVE I.D.  |
|-----------|--------------------|---------------|--------------|-------------|--------------|
| CPN-68-1  | RG-58; BELDEN 9907 | 1.330 (33.78) | .042 (1.07)  | .125 (3.18) | .212 (5.38)  |
| CPN-68-8  | RG-8, 213          | 1.385 (35.18) | .093 (2.36)  | .293 (7.44) | .430 (10.92) |
| CPN-68-13 | RG-142, 223, 400   | 1.330 (33.78) | .042 (1.07)  | .127 (3.23) | .223 (5.66)  |

Assembly instructions page 254.

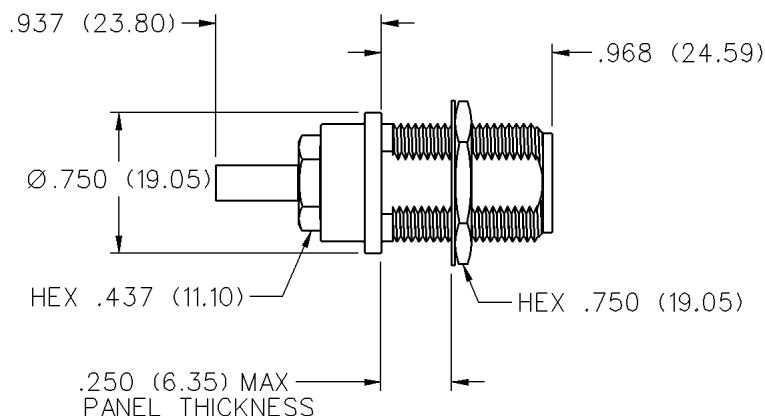
## Straight Crimp Type Plug - 120 Second Termination - 3 Piece



| PART NO.  | CABLE TYPE         | "A"           | CONTACT I.D. | BODY I.D.   | SLEEVE I.D.  |
|-----------|--------------------|---------------|--------------|-------------|--------------|
| CPN-1     | RG-58              | 1.450 (36.83) | .044 (1.12)  | .125 (3.18) | .206 (5.23)  |
| CPN-2     | RG-59, 62          | 1.450 (36.83) | .0325 (0.83) | .173 (4.39) | .261 (6.63)  |
| CPN-8     | RG-8 Types         | 1.550 (39.37) | .089 (2.26)  | .300 (7.62) | .420 (10.67) |
| CPN-8/110 | RG-8, 213, LMR 400 | 1.550 (39.37) | .110 (2.79)  | .300 (7.62) | .420 (10.67) |
| CPN-16    | PROFLEX RG-450     | 1.455 (36.96) | .055 (1.40)  | .173 (4.39) | .261 (6.63)  |
| CPN-17    | RG8X (MINI 8)      | 1.455 (36.96) | .065 (1.65)  | .173 (4.39) | .261 (6.63)  |
| CPN-142T  | RG-142 TFE         | 1.455 (36.96) | .044 (1.12)  | .125 (3.18) | .220 (5.59)  |

Assembly instructions page 255.

## Straight Crimp Type Bulkhead Jack - Diecast Body



| PART NO.     | CABLE TYPE             |
|--------------|------------------------|
| 134-0303-406 | RG-161/U, 174,188, 316 |
| 134-0304-406 | RG-188 DS, RG-316 DS   |
| 134-0307-406 | RG-58/U, 141, 303      |
| 134-0308-406 | RG-55/U, 142, 223, 400 |

Assembly instructions page 241.

Mounting hole layout figure 11 page 201.

N connector plug also available.

## ELECTRICAL RATINGS

Impedance: 50 Ohms

Frequency Range: 0-11 GHz

| VSWR: (f = GHz)    | Typical VSWR | Frequency Range (GHz) |
|--------------------|--------------|-----------------------|
| RG-316 cable ..... | 1.20         | 0-2                   |
|                    | 1.50         | 2-11                  |
| RG-58 cable .....  | 1.30         | 0-5                   |
|                    | 1.70         | 5-11                  |
| RG-142 cable ..... | 1.20         | 0-5                   |
|                    | 1.50         | 5-11                  |

Working Voltage: (VRMS maximum)\*

| Connectors for Cable Type | Sea Level | 70K Feet |
|---------------------------|-----------|----------|
| RG-316 .....              | 335       | 85       |
| RG-58 .....               | 500       | 125      |
| RG-142 .....              | 500       | 125      |

Dielectric Withstanding Voltage: (VRMS minimum at sea level)\*

|              |      |
|--------------|------|
| RG-316 ..... | 1000 |
| RG-58 .....  | 1500 |
| RG-142 ..... | 1500 |

Insulation Resistance: 5000 megohms minimum

Contact Resistance: (milliohms maximum)

|                      | Initial | After Environmental |
|----------------------|---------|---------------------|
| Center contact ..... | 3.0     | 4.0                 |
| Outer contact .....  | 2.0     | N/A                 |
| Braid to body .....  | 5.0     | N/A                 |

\*\* All gold plated parts include a .00005" min. nickel underplate barrier layer.

\*Avoid user injury due to misapplication.

See safety advisory definitions inside front cover.

## MECHANICAL RATINGS

Engagement Design: MIL-STD-348, series N

Engagement Force/Disengagement Force: 6 inch-pounds maximum

Mating Torque: 6 to 10 inch-pounds

Cable Retention: Axial Force (lbs)\*

|              |    |
|--------------|----|
| RG-316 ..... | 20 |
| RG-58 .....  | 40 |
| RG-142 ..... | 45 |

\* Or cable breaking strength whichever is less.

Durability: 500 cycles minimum

## ENVIRONMENTAL RATINGS

(Meets or exceeds the applicable paragraph of MIL-C-39012)

Temperature Range: - 65°C to + 165°C

Thermal Shock: MIL-STD-202, Method 107, Condition B

Corrosion: MIL-STD-202, Method 101, Condition B

Shock: MIL-STD-202, Method 213, Condition I

Vibration: MIL-STD-202, Method 204, Condition B

Moisture Resistance: MIL-STD-202, Method 106

## MATERIAL SPECIFICATIONS

Bodies: Main body - zinc per ASTM B86-71, nickel plated per QQ-N-290

Rear body - brass per QQ-B-626, nickel plated per QQ-N-290

Contacts: Beryllium copper per QQ-C-530, gold plated\*\* per MIL-G-45204, .00001" min.

Insulators: PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457

Crimp Sleeves: Copper per WW-T-799, nickel plated per QQ-N-290

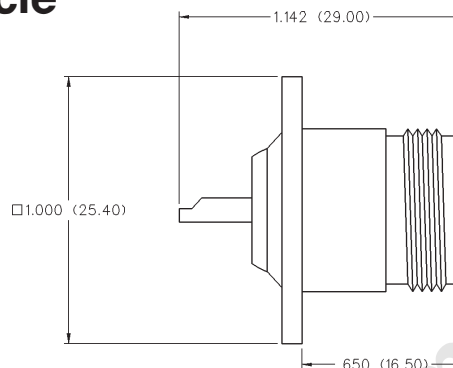
Mounting Hardware:

Nut - brass per QQ-B-626, nickel plated per QQ-N-290

Lockwasher - steel per QQ-S-700, zinc plated per QQ-Z-325

## Flange Mount Jack Receptacle

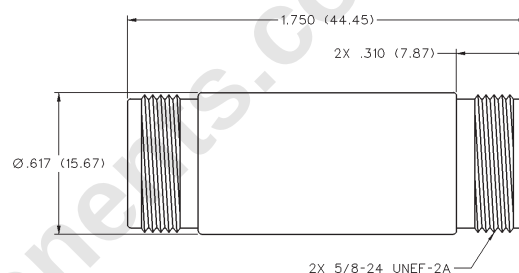
**PART NO.**  
CP-AD801



Mounting hole layout figure 34 page 204.

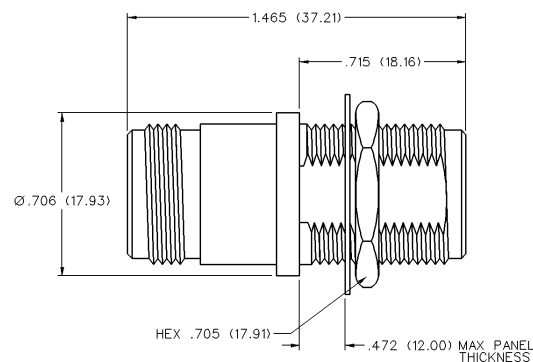
## Jack to Jack Adapter

**PART NO.**  
CP-AD850



## Jack to Bulkhead Jack Adapter

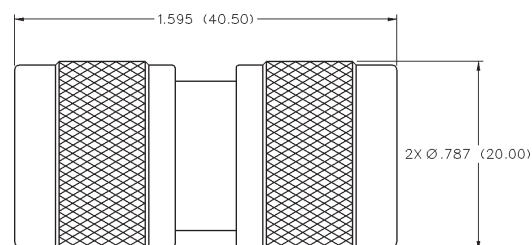
**PART NO.**  
CP-AD851



Mounting hole layout figure 33 page 204.

## Plug to Plug Adapter

**PART NO.**  
CP-AD800



The F Connector provides economical distribution of audio/video TV signals. The F Plug Connector typically employs the center conductor of the cable as the male contact for quick assembly in the field.

### Specifications\*

#### F Series

##### Electrical Characteristics

Impedance: 75 Ohms

Frequency range: 0-750 MHz

Working voltage: 500 VRMS max at sea level

Dielectric withstanding voltage: 1500 VRMS max at sea level

Insulation resistance: 5000 megohms

##### Environmental Characteristics

Temperature range: -55°C to +85°C

Moisture resistance: MIL-STD-202

##### Mechanical Characteristics

Durability: 100 cycles

Cable retention: 20 lbs.

\* These values are typical and may not apply to all connectors.

# F Series Connectors

For Flexible Cable

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## F Series Connectors For RG-59

**Straight Crimp Plug**  
w/separate 1/4" crimp ring



CPF-59 -1/4

**Crimp Tool**  
24-7710

**Hex Size**  
.255 (6.48)

**Straight Crimp Plug**  
w/separate 1/2" crimp ring



CPF-59 -1/2

**Crimp Tool**  
24-7710

**Hex Size**  
.255 (6.48)

**Straight Crimp Plug**  
for standard RG-59 cable



CPF-59-ALM

**Crimp Tool**  
24-7710

**Hex Size**  
.322 (8.18)

**Straight Crimp Plug**  
compression F RG-59 dual  
Tri/Shield



CPF-59-CP

**Compression Tool**  
24-7713P

## F Series Connectors For RG-6

**Straight Crimp Plug**  
for RG-6

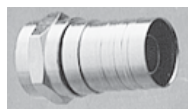


CPF-56-ALM

**Crimp Tool**  
24-7710

**Hex Size**  
.322 (8.18)

**Straight Crimp Plug**  
for Tri-Shield



CPF-56-ALX

**Crimp Tool**  
24-7710

**Hex Size**  
.322 (8.18)

**Straight Crimp Plug**  
for RG-6 Quad Shield



CPF-56-ALS

**Crimp Tool**  
24-7712P

**Hex Size**  
.359 (9.12)

**Straight Crimp Plug**  
for Teflon/Plenum RG-6



CPF-56-P

**Crimp Tool**  
24-7710

**Hex Size**  
.322 (8.18)

**Straight Crimp Plug**  
.324 dia., chrome plated/  
interior gasket for water proofing



CPF-56-ALMWP

**Crimp Tool**  
24-7710

**Hex Size**  
.322 (8.18)

**Straight Plug**  
twist on (no crimp)



CPF-56

**Straight Crimp Plug**  
compression F RG-6  
Dual/Tri/Shield



CPF-56-CP

**Compression Tool**  
24-7713P

## F Series Connector For RG-11

**Straight Crimp Plug**  
for standard RG-11



CPF-11-ALM

**Crimp Tool**  
24-7711P

**Hex Size**  
.448 (11.38)

## F Series Connectors

F Straight and Right Angle PC Mount Connectors

**Side Edge Mount**  
PCB Jack



CPF-61-SE

Board Thickness .062 (1.57)

**Vertical Mount**  
PCB Jack



CPF-61-PC

**Right Angle Mount**  
PCB Bulkhead Jack



CPF-61-SR

## F Plug Termination

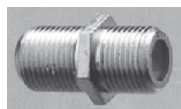
**Plug Termination**  
75 Ohm "F",  
1/2 watt 5% terminator



CPF-59-T

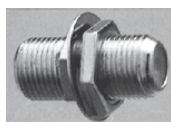
## F In-Series Adapters

**Jack to Jack Adapter**  
3/4" inline splice



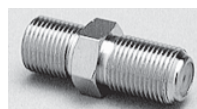
CPF-81

**Jack to Jack Adapter**  
3/4" w/ nut and washer



CPF-81-NW

**Jack to Jack Adapter**  
1" inline splice



CPF-81-L

**Nut and Washer**  
For use with all F Bulkhead  
mounts/splices



CPF-NW

The UHF connectors are low cost, general purpose units designed for low frequency system applications. These commercial quality connectors are equipped with threaded coupling interfaces for secure and reliable connections. The standard UHF and Mini-UHF connectors are not intermateable.

### Specifications\*

#### Standard UHF

##### Electrical Characteristics

Impedance: Non-constant

Frequency range: 0-500 MHz

Working voltage: 500 volts RMS at sea level

Dielectric withstanding voltage: 1500 volts RMS at sea level

Insulation resistance: 5000 megohms minimum

##### Environmental Characteristics

Recommended temperature range: -55°C to +85°C

##### Mechanical Characteristics

Durability: 500 cycles

Cable retention: 20 lbs., RG-58 C/U cable

##### Materials

Body and coupling nut: Zinc or Brass

Contact: Beryllium copper or Brass

Crimp Sleeve: Brass

Insulator: Delrin®

Plating: Body - Nickel

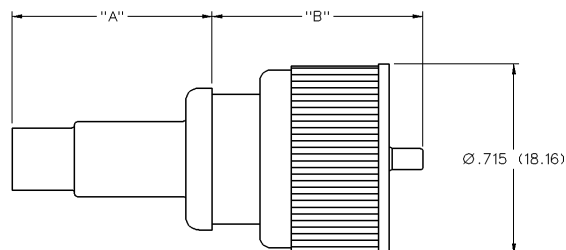
Crimp sleeve - Nickel

Contact - Gold or Nickel

\* These values are typical and may not apply to all connectors.

Delrin® is a registered trademark of Dupont Corporation.

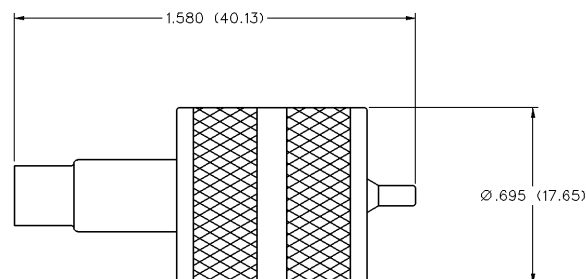
## Straight Crimp Type Plug - Crimp Contact



| PART NO.    | CABLE TYPE     | "A"          | "B"          | WIRE GAUGE | WIRE DECIMAL  | JACKET O.D.               |
|-------------|----------------|--------------|--------------|------------|---------------|---------------------------|
| CPL-259-1   | RG-58          | .754 (19.15) | .810 (20.57) | 20         | .0325 (0.83)  | .185 (4.70)-.205 (5.21)   |
| CPL-259-2   | RG-59, 62      | .688 (17.48) | .810 (20.57) | 22         | .0253 (0.64)  | .220 (5.59)-.250 (6.35)   |
| CPL-259-7   | RG-58 COPHASE  | .700 (17.78) | .832 (21.13) | 2/20       | 2/.032 (0.81) | 2/.185 (4.70)-.205 (5.21) |
| CPL-259-8   | RG-8           | .694 (17.63) | .820 (20.83) | 13         | .085 (2.16)   | .400 (10.16)-.410 (10.41) |
| CPL-259-9   | RG-59 COPHASE  | .700 (17.78) | .856 (21.74) | 2/22       | 2/.025 (0.64) | 2/.220 (5.59)             |
| CPL-259-10* | RG-59 PLENUM   | .696 (17.68) | .710 (18.03) | 20         | .0325 (0.83)  | .205 (5.21)-.220 (5.59)   |
| CPL-259-17  | RG-8X (MINI 8) | .696 (17.68) | .710 (18.03) | 16         | .0504 (1.28)  | .220 (5.59)-.250 (6.35)   |

Assembly instructions page 256. \*1-Piece

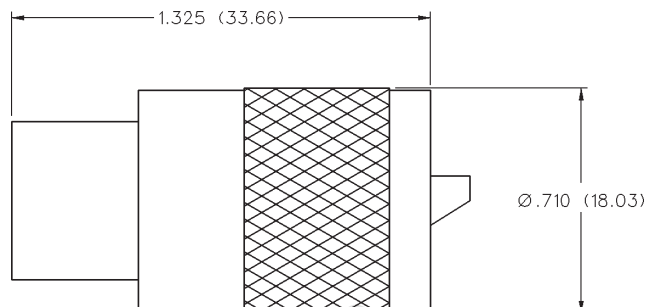
## Straight Crimp Type Plug - Crimp Contact, Double Nut



| PART NO.   | CABLE TYPE | WIRE GAUGE | WIRE DECIMAL | JACKET O.D.             |
|------------|------------|------------|--------------|-------------------------|
| CPL-259-18 | RG-58      | 20         | .0325 (0.88) | .185 (4.70)-.205 (5.21) |

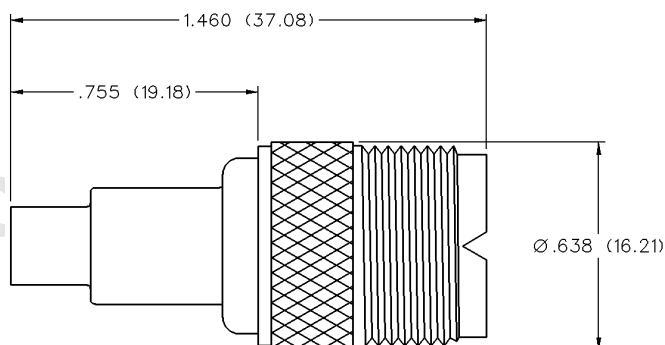
Assembly instructions page 256.

## Straight Solder Type Plug



| PART NO. | CABLE TYPE | DESCRIPTION      |
|----------|------------|------------------|
| CP-AD250 | RG-8, 213  | Standard, PL-259 |

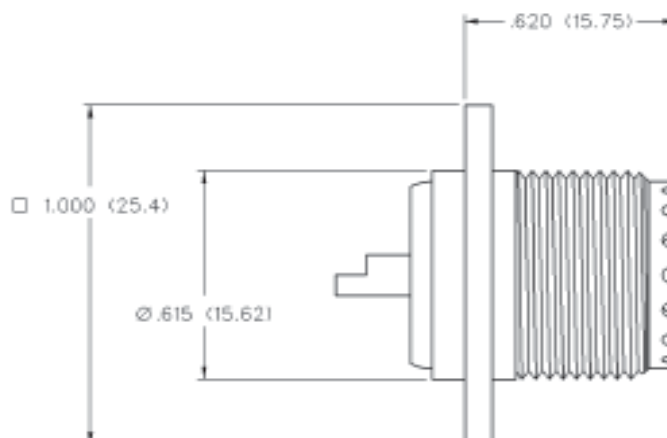
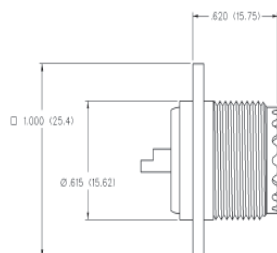
## Straight Crimp Type Jack to Center - Conductor Twist-On - 2 Piece



| PART NO.  | CABLE TYPE | WIRE GAUGE | WIRE DECIMAL | JACKET O.D.             |
|-----------|------------|------------|--------------|-------------------------|
| CPF-249-1 | RG-58      | 20         | .0325 (0.83) | .185 (4.70)-.205 (5.21) |

Assembly instructions page 257.

## 4-Hole Flange Mount Jack

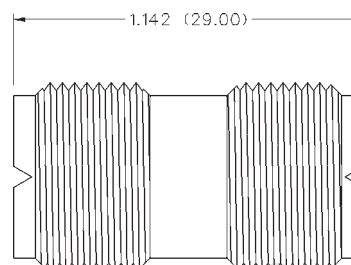


| PART NO. |
|----------|
| CP-AD206 |

## Jack to Jack Adapter



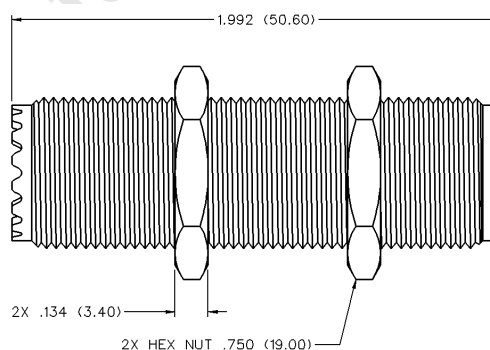
|                 |
|-----------------|
| <b>PART NO.</b> |
| CP-AD204        |



## Bulkhead Jack to Bulkhead Jack Adapter



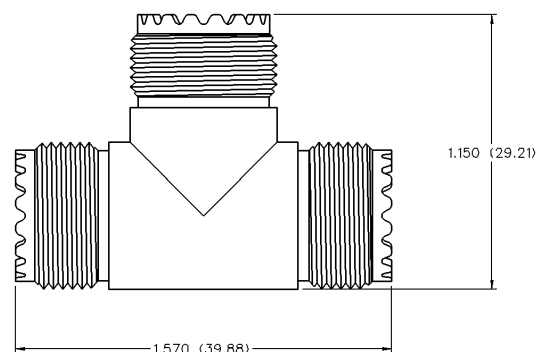
|                 |
|-----------------|
| <b>PART NO.</b> |
| CP-AD207        |



## Jack to Jack to Jack T Adapter



|                 |
|-----------------|
| <b>PART NO.</b> |
| CP-AD210        |



Mini-UHF connectors are low cost, general purpose units designed for low frequency system applications. These commercial quality connectors are equipped with threaded coupling interfaces for secure and reliable connections. The standard UHF and Mini-UHF connectors are not intermateable.

## Specifications\*

### Mini-UHF

#### Electrical Characteristics

Impedance: Non-constant

Frequency range: 0-2 GHz

Working voltage: 500 volts RMS at sea level

Dielectric withstanding voltage: 1500 volts RMS at sea level

Insulation resistance: 5000 megohms minimum

#### Environmental Characteristics

Recommended temperature range: -55°C to +85°C

#### Mechanical Characteristics

Durability: 500 cycles

Cable retention: 20 lbs., RG-58 C/U cable

#### Materials

Body and coupling nut: Zinc or Brass

Contact: Brass

Crimp Sleeve: Brass

Insulator: TPX Polymethylpetene

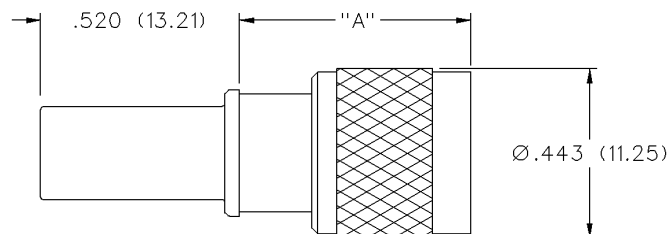
Plating: Body - Nickel

Crimp sleeve - Nickel

Contact - Gold or Nickel

\* These values are typical and may not apply to all connectors.

## Straight Crimp Type Plug - Solder or Crimp Contact



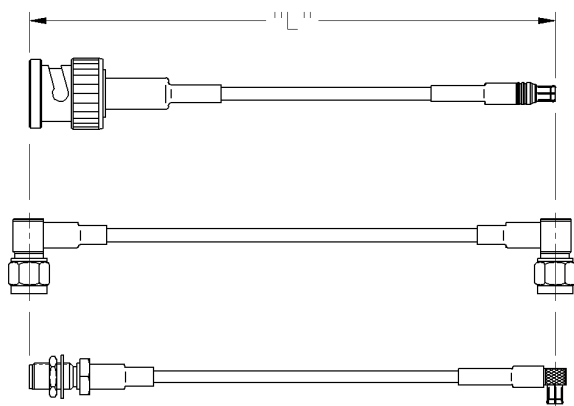
| PART NO.    | CABLE TYPE             | "A"          | CONTACT I.D. | BODY I.D.   | SLEEVE I.D. |
|-------------|------------------------|--------------|--------------|-------------|-------------|
| MINI-UHF-1  | RG-58                  | .610 (15.49) | .044 (1.12)  | .126 (3.20) | .206 (5.23) |
| MINI-UHF-1B | RG-58 Black UV Coating | .613 (15.57) | .044 (1.12)  | .126 (3.20) | .206 (5.23) |
| MINI-UHF-2  | RG-59, 62              | .613 (15.57) | .034 (0.86)  | .173 (4.39) | .261 (6.63) |
| MINI-UHF-16 | PROFLEX RG-450         | .610 (15.49) | .055 (1.40)  | .173 (4.39) | .261 (6.63) |
| MINI-UHF-17 | RG-8X (MINI 8)         | .600 (15.24) | .065 (1.65)  | .173 (4.39) | .261 (6.63) |

Assembly instructions page 258.

## Electrical Ratings

Electrical ratings of a cable assembly are determined by the limiting connector type and cable size.

| Connector       | Cable         | Connector Impedance (Ohms) | Frequency (GHz) | Dielectric Withstanding Voltage (VRMS) | Working Voltage (VRMS) |
|-----------------|---------------|----------------------------|-----------------|----------------------------------------|------------------------|
| MCX             | RG-178        | 50                         | 6               | 750 VRMS                               | 250 VRMS               |
|                 | RG-316        | 50                         | 6               | 1000 VRMS                              | 335 VRMS               |
|                 | RG-316 DS     | 50                         | 6               | 1000 VRMS                              | 335 VRMS               |
| MCX 75 Ohm      | RG-179        | 75                         | 6               | 1000 VRMS                              | 335 VRMS               |
|                 | BELDEN 735A   | 75                         | 6               | 1000 VRMS                              | 335 VRMS               |
| SMA             | RG-178        | 50                         | 12.4            | 500 VRMS                               | 170 VRMS               |
|                 | RG-316        | 50                         | 12.4            | 750 VRMS                               | 250 VRMS               |
|                 | RG-316 DS     | 50                         | 12.4            | 750 VRMS                               | 250 VRMS               |
|                 | RG-58         | 50                         | 12.4            | 1000 VRMS                              | 335 VRMS               |
|                 | RG-142        | 50                         | 12.4            | 1000 VRMS                              | 335 VRMS               |
| SMB             | RG-178        | 50                         | 4               | 750 VRMS                               | 250 VRMS               |
|                 | RG-316        | 50                         | 4               | 1000 VRMS                              | 335 VRMS               |
| SMB Mini 75 Ohm | RG-179        | 75                         | 2               | 1000 VRMS                              | 335 VRMS               |
|                 | RG-179 DS     | 75                         | 2               | 1000 VRMS                              | 335 VRMS               |
|                 | BELDEN 735A   | 75                         | 2               | 1000 VRMS                              | 335 VRMS               |
| BNC             | RG-58         | 50                         | 4               | 1500 VRMS                              | 500 VRMS               |
|                 | BELDEN 8218   | 50                         | 4               | 1500 VRMS                              | 500 VRMS               |
|                 | RG-59         | 50                         | 4               | 1500 VRMS                              | 500 VRMS               |
|                 | RG-59 PLENUM  | 50                         | 4               | 1500 VRMS                              | 500 VRMS               |
| BNC True 75 Ohm | BELDEN 8218   | 75                         | 3               | 1500 VRMS                              | 500 VRMS               |
|                 | RG-59         | 75                         | 3               | 1500 VRMS                              | 500 VRMS               |
|                 | BELDEN 8281   | 75                         | 3               | 1500 VRMS                              | 500 VRMS               |
|                 | COMMSCOPE 735 | 75                         | 3               | 1500 VRMS                              | 500 VRMS               |
|                 | BELDEN 735A   | 75                         | 3               | 1500 VRMS                              | 500 VRMS               |
|                 | BELDEN 734A   | 75                         | 3               | 1500 VRMS                              | 500 VRMS               |
|                 | BELDEN 1694A  | 75                         | 3               | 1500 VRMS                              | 500 VRMS               |
| N               | RG-58         | 50                         | 11              | 1500 VRMS                              | 500 VRMS               |
|                 | RG-142        | 50                         | 11              | 1500 VRMS                              | 500 VRMS               |
|                 | RG-8          | 50                         | 11              | 1500 VRMS                              | 500 VRMS               |
|                 | RG-213        | 50                         | 11              | 1500 VRMS                              | 500 VRMS               |



Cable length is measured to the end of straight connectors and the vertical centroid of right angle connectors.

**MCX Straight Plug to  
MCX Straight Plug**

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0014-006 | RG-178     | 6"           | 133-3402-001 | 133-3402-001 |
| 415-0014-012 | RG-178     | 12"          | 133-3402-001 | 133-3402-001 |
| 415-0014-018 | RG-178     | 18"          | 133-3402-001 | 133-3402-001 |
| 415-0014-024 | RG-178     | 24"          | 133-3402-001 | 133-3402-001 |
| 415-0014-030 | RG-178     | 30"          | 133-3402-001 | 133-3402-001 |
| 415-0014-036 | RG-178     | 36"          | 133-3402-001 | 133-3402-001 |
| 415-0018-006 | RG-316     | 6"           | 133-3403-001 | 133-3403-001 |
| 415-0018-012 | RG-316     | 12"          | 133-3403-001 | 133-3403-001 |
| 415-0018-018 | RG-316     | 18"          | 133-3403-001 | 133-3403-001 |



| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0018-024 | RG-316     | 24"          | 133-3403-001 | 133-3403-001 |
| 415-0018-030 | RG-316     | 30"          | 133-3403-001 | 133-3403-001 |
| 415-0018-036 | RG-316     | 36"          | 133-3403-001 | 133-3403-001 |
| 415-0020-006 | RG-316-DS  | 6"           | 133-3404-001 | 133-3404-001 |
| 415-0020-012 | RG-316-DS  | 12"          | 133-3404-001 | 133-3404-001 |
| 415-0020-018 | RG-316-DS  | 18"          | 133-3404-001 | 133-3404-001 |
| 415-0020-024 | RG-316-DS  | 24"          | 133-3404-001 | 133-3404-001 |
| 415-0020-030 | RG-316-DS  | 30"          | 133-3404-001 | 133-3404-001 |
| 415-0020-036 | RG-316-DS  | 36"          | 133-3404-001 | 133-3404-001 |

**MCX Straight Plug to  
MCX Straight Bulkhead Jack**

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0016-006 | RG-316     | 6"           | 133-3403-001 | 133-3303-401 |
| 415-0016-012 | RG-316     | 12"          | 133-3403-001 | 133-3303-401 |
| 415-0016-018 | RG-316     | 18"          | 133-3403-001 | 133-3303-401 |



| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0016-024 | RG-316     | 24"          | 133-3403-001 | 133-3303-401 |
| 415-0016-030 | RG-316     | 30"          | 133-3403-001 | 133-3303-401 |
| 415-0016-036 | RG-316     | 36"          | 133-3403-001 | 133-3303-401 |

**MCX Straight Plug to  
MCX Right Angle Plug**

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0017-006 | RG-316     | 6"           | 133-3403-001 | 133-3403-101 |
| 415-0017-012 | RG-316     | 12"          | 133-3403-001 | 133-3403-101 |
| 415-0017-018 | RG-316     | 18"          | 133-3403-001 | 133-3403-101 |



| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0017-030 | RG-316     | 30"          | 133-3403-001 | 133-3403-101 |
| 415-0017-036 | RG-316     | 36"          | 133-3403-001 | 133-3403-101 |

**MCX Right Angle Plug to  
MCX Right Angle Plug**

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0015-006 | RG-178     | 6"           | 133-3402-101 | 133-3402-101 |
| 415-0015-012 | RG-178     | 12"          | 133-3402-101 | 133-3402-101 |
| 415-0015-018 | RG-178     | 18"          | 133-3402-101 | 133-3402-101 |
| 415-0015-024 | RG-178     | 24"          | 133-3402-101 | 133-3402-101 |
| 415-0015-030 | RG-178     | 30"          | 133-3402-101 | 133-3402-101 |
| 415-0015-036 | RG-178     | 36"          | 133-3402-101 | 133-3402-101 |
| 415-0019-006 | RG-316     | 6"           | 133-3403-101 | 133-3403-101 |
| 415-0019-012 | RG-316     | 12"          | 133-3403-101 | 133-3403-101 |
| 415-0019-018 | RG-316     | 18"          | 133-3403-101 | 133-3403-101 |



| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0019-024 | RG-316     | 24"          | 133-3403-101 | 133-3403-101 |
| 415-0019-030 | RG-316     | 30"          | 133-3403-101 | 133-3403-101 |
| 415-0019-036 | RG-316     | 36"          | 133-3403-101 | 133-3403-101 |
| 415-0021-006 | RG-316-DS  | 6"           | 133-3404-101 | 133-3404-101 |
| 415-0021-012 | RG-316-DS  | 12"          | 133-3404-101 | 133-3404-101 |
| 415-0021-018 | RG-316-DS  | 18"          | 133-3404-101 | 133-3404-101 |
| 415-0021-024 | RG-316-DS  | 24"          | 133-3404-101 | 133-3404-101 |
| 415-0021-030 | RG-316-DS  | 30"          | 133-3404-101 | 133-3404-101 |
| 415-0021-036 | RG-316-DS  | 36"          | 133-3404-101 | 133-3404-101 |

**MCX 75 Ohm Straight Plug to  
MCX 75 Ohm Straight Plug**

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0022-006 | RG-179     | 6"           | 133-8433-001 | 133-8433-001 |
| 415-0022-012 | RG-179     | 12"          | 133-8433-001 | 133-8433-001 |
| 415-0022-018 | RG-179     | 18"          | 133-8433-001 | 133-8433-001 |
| 415-0022-024 | RG-179     | 24"          | 133-8433-001 | 133-8433-001 |
| 415-0022-030 | RG-179     | 30"          | 133-8433-001 | 133-8433-001 |
| 415-0022-036 | RG-179     | 36"          | 133-8433-001 | 133-8433-001 |



| Part No.     | Cable Type   | Cable Length | Connector A  | Connector B  |
|--------------|--------------|--------------|--------------|--------------|
| 415-0023-006 | Belden 735 A | 6"           | 133-8445-001 | 133-8445-001 |
| 415-0023-012 | Belden 735 A | 12"          | 133-8445-001 | 133-8445-001 |
| 415-0023-018 | Belden 735 A | 18"          | 133-8445-001 | 133-8445-001 |
| 415-0023-024 | Belden 735 A | 24"          | 133-8445-001 | 133-8445-001 |
| 415-0023-030 | Belden 735 A | 30"          | 133-8445-001 | 133-8445-001 |
| 415-0023-036 | Belden 735 A | 36"          | 133-8445-001 | 133-8445-001 |

# Fixed Length Cable Assemblies

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## MCX 75 Ohm Right Angle Plug to MCX 75 Ohm Right Angle Plug



| Part No.     | Cable Type   | Cable Length | Connector A  | Connector B  |
|--------------|--------------|--------------|--------------|--------------|
| 415-0024-006 | Belden 735 A | 6"           | 133-8445-101 | 133-8445-101 |
| 415-0024-012 | Belden 735 A | 12"          | 133-8445-101 | 133-8445-101 |
| 415-0024-018 | Belden 735 A | 18"          | 133-8445-101 | 133-8445-101 |

| Part No.     | Cable Type   | Cable Length | Connector A  | Connector B  |
|--------------|--------------|--------------|--------------|--------------|
| 415-0024-024 | Belden 735 A | 24"          | 133-8445-101 | 133-8445-101 |
| 415-0024-030 | Belden 735 A | 30"          | 133-8445-101 | 133-8445-101 |
| 415-0024-036 | Belden 735 A | 36"          | 133-8445-101 | 133-8445-101 |

## SMA Straight Plug to SMA Straight Plug



| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0025-006 | RG-178     | 6"           | 142-0402-011 | 142-0402-011 |
| 415-0025-012 | RG-178     | 12"          | 142-0402-011 | 142-0402-011 |
| 415-0025-018 | RG-178     | 18"          | 142-0402-011 | 142-0402-011 |
| 415-0025-024 | RG-178     | 24"          | 142-0402-011 | 142-0402-011 |
| 415-0025-036 | RG-178     | 36"          | 142-0402-011 | 142-0402-011 |
| 415-0025-048 | RG-178     | 48"          | 142-0402-011 | 142-0402-011 |
| 415-0029-006 | RG-316     | 6"           | 142-0403-011 | 142-0403-011 |
| 415-0029-012 | RG-316     | 12"          | 142-0403-011 | 142-0403-011 |
| 415-0029-018 | RG-316     | 18"          | 142-0403-011 | 142-0403-011 |
| 415-0029-024 | RG-316     | 24"          | 142-0403-011 | 142-0403-011 |
| 415-0029-036 | RG-316     | 36"          | 142-0403-011 | 142-0403-011 |
| 415-0029-048 | RG-316     | 48"          | 142-0403-011 | 142-0403-011 |
| 415-0033-006 | RG-316 DS  | 6"           | 142-0404-011 | 142-0404-011 |
| 415-0033-012 | RG-316 DS  | 12"          | 142-0404-011 | 142-0404-011 |

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0033-018 | RG-316 DS  | 18"          | 142-0404-011 | 142-0404-011 |
| 415-0033-024 | RG-316 DS  | 24"          | 142-0404-011 | 142-0404-011 |
| 415-0033-036 | RG-316 DS  | 36"          | 142-0404-011 | 142-0404-011 |
| 415-0033-048 | RG-316 DS  | 48"          | 142-0404-011 | 142-0404-011 |
| 415-0038-012 | RG-58      | 12"          | 142-0407-011 | 142-0407-011 |
| 415-0038-024 | RG-58      | 24"          | 142-0407-011 | 142-0407-011 |
| 415-0038-036 | RG-58      | 36"          | 142-0407-011 | 142-0407-011 |
| 415-0038-048 | RG-58      | 48"          | 142-0407-011 | 142-0407-011 |
| 415-0038-060 | RG-58      | 60"          | 142-0407-011 | 142-0407-011 |
| 415-0043-012 | RG-142     | 12"          | 142-0408-011 | 142-0408-011 |
| 415-0043-024 | RG-142     | 24"          | 142-0408-011 | 142-0408-011 |
| 415-0043-036 | RG-142     | 36"          | 142-0408-011 | 142-0408-011 |
| 415-0043-048 | RG-142     | 48"          | 142-0408-011 | 142-0408-011 |
| 415-0043-060 | RG-142     | 60"          | 142-0408-011 | 142-0408-011 |

## SMA Straight Plug to SMA Straight Bulkhead Jack



| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0031-006 | RG-316     | 6"           | 142-0403-011 | 142-0303-411 |
| 415-0031-012 | RG-316     | 12"          | 142-0403-011 | 142-0303-411 |
| 415-0031-018 | RG-316     | 18"          | 142-0403-011 | 142-0303-411 |
| 415-0031-024 | RG-316     | 24"          | 142-0403-011 | 142-0303-411 |
| 415-0031-036 | RG-316     | 36"          | 142-0403-011 | 142-0303-411 |
| 415-0031-048 | RG-316     | 48"          | 142-0403-011 | 142-0303-411 |
| 415-0035-006 | RG-316 DS  | 6"           | 142-0404-011 | 142-0304-411 |
| 415-0035-012 | RG-316 DS  | 12"          | 142-0404-011 | 142-0304-411 |
| 415-0035-018 | RG-316 DS  | 18"          | 142-0404-011 | 142-0304-411 |
| 415-0035-024 | RG-316 DS  | 24"          | 142-0404-011 | 142-0304-411 |
| 415-0035-036 | RG-316 DS  | 36"          | 142-0404-011 | 142-0304-411 |

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0035-048 | RG-316 DS  | 48"          | 142-0404-011 | 142-0304-411 |
| 415-0040-012 | RG-58      | 12"          | 142-0407-011 | 142-0307-411 |
| 415-0040-024 | RG-58      | 24"          | 142-0407-011 | 142-0307-411 |
| 415-0040-036 | RG-58      | 36"          | 142-0407-011 | 142-0307-411 |
| 415-0040-048 | RG-58      | 48"          | 142-0407-011 | 142-0307-411 |
| 415-0040-060 | RG-58      | 60"          | 142-0407-011 | 142-0307-411 |
| 415-0045-012 | RG-142     | 12"          | 142-0408-011 | 142-0308-411 |
| 415-0045-024 | RG-142     | 24"          | 142-0408-011 | 142-0308-411 |
| 415-0045-036 | RG-142     | 36"          | 142-0408-011 | 142-0308-411 |
| 415-0045-048 | RG-142     | 48"          | 142-0408-011 | 142-0308-411 |
| 415-0045-060 | RG-142     | 60"          | 142-0408-011 | 142-0308-411 |

## SMA Straight Plug to SMA Right Angle Plug



| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0026-006 | RG-178     | 6"           | 142-0402-011 | 142-0402-101 |
| 415-0026-012 | RG-178     | 12"          | 142-0402-011 | 142-0402-101 |
| 415-0026-018 | RG-178     | 18"          | 142-0402-011 | 142-0402-101 |
| 415-0026-024 | RG-178     | 24"          | 142-0402-011 | 142-0402-101 |
| 415-0026-036 | RG-178     | 36"          | 142-0402-011 | 142-0402-101 |
| 415-0026-048 | RG-178     | 48"          | 142-0402-011 | 142-0402-101 |
| 415-0030-006 | RG-316     | 6"           | 142-0403-011 | 142-0403-101 |
| 415-0030-012 | RG-316     | 12"          | 142-0403-011 | 142-0403-101 |
| 415-0030-018 | RG-316     | 18"          | 142-0403-011 | 142-0403-101 |
| 415-0030-024 | RG-316     | 24"          | 142-0403-011 | 142-0403-101 |
| 415-0030-036 | RG-316     | 36"          | 142-0403-011 | 142-0403-101 |
| 415-0030-048 | RG-316     | 48"          | 142-0403-011 | 142-0403-101 |
| 415-0034-006 | RG-316 DS  | 6"           | 142-0404-011 | 142-0404-101 |
| 415-0034-012 | RG-316 DS  | 12"          | 142-0404-011 | 142-0404-101 |

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0034-018 | RG-316 DS  | 18"          | 142-0404-011 | 142-0404-101 |
| 415-0034-024 | RG-316 DS  | 24"          | 142-0404-011 | 142-0404-101 |
| 415-0034-036 | RG-316 DS  | 36"          | 142-0404-011 | 142-0404-101 |
| 415-0034-048 | RG-316 DS  | 48"          | 142-0404-011 | 142-0404-101 |
| 415-0039-012 | RG-58      | 12"          | 142-0407-011 | 142-0407-101 |
| 415-0039-024 | RG-58      | 24"          | 142-0407-011 | 142-0407-101 |
| 415-0039-036 | RG-58      | 36"          | 142-0407-011 | 142-0407-101 |
| 415-0039-048 | RG-58      | 48"          | 142-0407-011 | 142-0407-101 |
| 415-0039-060 | RG-58      | 60"          | 142-0407-011 | 142-0407-101 |
| 415-0044-012 | RG-142     | 12"          | 142-0408-011 | 142-0408-101 |
| 415-0044-024 | RG-142     | 24"          | 142-0408-011 | 142-0408-101 |
| 415-0044-036 | RG-142     | 36"          | 142-0408-011 | 142-0408-101 |
| 415-0044-048 | RG-142     | 48"          | 142-0408-011 | 142-0408-101 |
| 415-0044-060 | RG-142     | 60"          | 142-0408-011 | 142-0408-101 |

SMA Right Angle Plug to  
SMA Right Angle Plug

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0027-006 | RG-178     | 6"           | 142-0402-101 | 142-0402-101 |
| 415-0027-012 | RG-178     | 12"          | 142-0402-101 | 142-0402-101 |
| 415-0027-018 | RG-178     | 18"          | 142-0402-101 | 142-0402-101 |
| 415-0027-024 | RG-178     | 24"          | 142-0402-101 | 142-0402-101 |
| 415-0027-036 | RG-178     | 36"          | 142-0402-101 | 142-0402-101 |
| 415-0027-048 | RG-178     | 48"          | 142-0402-101 | 142-0402-101 |
| 415-0032-006 | RG-316     | 6"           | 142-0403-101 | 142-0403-101 |
| 415-0032-012 | RG-316     | 12"          | 142-0403-101 | 142-0403-101 |
| 415-0032-018 | RG-316     | 18"          | 142-0403-101 | 142-0403-101 |
| 415-0032-024 | RG-316     | 24"          | 142-0403-101 | 142-0403-101 |
| 415-0032-036 | RG-316     | 36"          | 142-0403-101 | 142-0403-101 |
| 415-0032-048 | RG-316     | 48"          | 142-0403-101 | 142-0403-101 |
| 415-0036-006 | RG-316 DS  | 6"           | 142-0404-101 | 142-0404-101 |
| 415-0036-012 | RG-316 DS  | 12"          | 142-0404-101 | 142-0404-101 |

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0036-018 | RG-316 DS  | 18"          | 142-0404-101 | 142-0404-101 |
| 415-0036-024 | RG-316 DS  | 24"          | 142-0404-101 | 142-0404-101 |
| 415-0036-036 | RG-316 DS  | 36"          | 142-0404-101 | 142-0404-101 |
| 415-0036-048 | RG-316 DS  | 48"          | 142-0404-101 | 142-0404-101 |
| 415-0041-012 | RG-58      | 12"          | 142-0407-101 | 142-0407-101 |
| 415-0041-024 | RG-58      | 24"          | 142-0407-101 | 142-0407-101 |
| 415-0041-036 | RG-58      | 36"          | 142-0407-101 | 142-0407-101 |
| 415-0041-048 | RG-58      | 48"          | 142-0407-101 | 142-0407-101 |
| 415-0041-060 | RG-58      | 60"          | 142-0407-101 | 142-0407-101 |
| 415-0046-012 | RG-142     | 12"          | 142-0408-101 | 142-0408-101 |
| 415-0046-024 | RG-142     | 24"          | 142-0408-101 | 142-0408-101 |
| 415-0046-036 | RG-142     | 36"          | 142-0408-101 | 142-0408-101 |
| 415-0046-048 | RG-142     | 48"          | 142-0408-101 | 142-0408-101 |
| 415-0046-060 | RG-142     | 60"          | 142-0408-101 | 142-0408-101 |

SMB Straight Plug to  
SMB Straight Plug

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0003-006 | RG-316     | 6"           | 131-1403-001 | 131-1403-001 |
| 415-0003-012 | RG-316     | 12"          | 131-1403-001 | 131-1403-001 |
| 415-0003-018 | RG-316     | 18"          | 131-1403-001 | 131-1403-001 |

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0003-024 | RG-316     | 24"          | 131-1403-001 | 131-1403-001 |
| 415-0003-030 | RG-316     | 30"          | 131-1403-001 | 131-1403-001 |
| 415-0003-036 | RG-316     | 36"          | 131-1403-001 | 131-1403-001 |

SMB Straight Plug to  
SMB Right Angle Plug

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0002-006 | RG-316     | 6"           | 131-1403-001 | 131-1403-101 |
| 415-0002-012 | RG-316     | 12"          | 131-1403-001 | 131-1403-101 |
| 415-0002-018 | RG-316     | 18"          | 131-1403-001 | 131-1403-101 |
| 415-0002-024 | RG-316     | 24"          | 131-1403-001 | 131-1403-101 |
| 415-0002-030 | RG-316     | 30"          | 131-1403-001 | 131-1403-101 |
| 415-0002-036 | RG-316     | 36"          | 131-1403-001 | 131-1403-101 |
| 415-0005-006 | RG-316 DS  | 6"           | 131-1404-001 | 131-1404-101 |
| 415-0005-012 | RG-316 DS  | 12"          | 131-1404-001 | 131-1404-101 |
| 415-0005-018 | RG-316 DS  | 18"          | 131-1404-001 | 131-1404-101 |

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0005-024 | RG-316 DS  | 24"          | 131-1404-001 | 131-1404-101 |
| 415-0005-030 | RG-316 DS  | 30"          | 131-1404-001 | 131-1404-101 |
| 415-0005-036 | RG-316 DS  | 36"          | 131-1404-001 | 131-1404-101 |
| 415-0007-006 | RG-178     | 6"           | 131-3402-001 | 131-1402-101 |
| 415-0007-012 | RG-178     | 12"          | 131-3402-001 | 131-1402-101 |
| 415-0007-018 | RG-178     | 18"          | 131-3402-001 | 131-1402-101 |
| 415-0007-024 | RG-178     | 24"          | 131-3402-001 | 131-1402-101 |
| 415-0007-030 | RG-178     | 30"          | 131-3402-001 | 131-1402-101 |
| 415-0007-036 | RG-178     | 36"          | 131-3402-001 | 131-1402-101 |

SMB Right Angle Plug to  
SMB Right Angle Plug

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0001-006 | RG-178     | 6"           | 131-1402-101 | 131-1402-101 |
| 415-0001-012 | RG-178     | 12"          | 131-1402-101 | 131-1402-101 |
| 415-0001-018 | RG-178     | 18"          | 131-1402-101 | 131-1402-101 |
| 415-0001-024 | RG-178     | 24"          | 131-1402-101 | 131-1402-101 |
| 415-0001-030 | RG-178     | 30"          | 131-1402-101 | 131-1402-101 |
| 415-0001-036 | RG-178     | 36"          | 131-1402-101 | 131-1402-101 |
| 415-0004-006 | RG-316     | 6"           | 131-1403-101 | 131-1403-101 |
| 415-0004-012 | RG-316     | 12"          | 131-1403-101 | 131-1403-101 |
| 415-0004-018 | RG-316     | 18"          | 131-1403-101 | 131-1403-101 |

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0004-024 | RG-316     | 24"          | 131-1403-101 | 131-1403-101 |
| 415-0004-030 | RG-316     | 30"          | 131-1403-101 | 131-1403-101 |
| 415-0004-036 | RG-316     | 36"          | 131-1403-101 | 131-1403-101 |
| 415-0006-006 | RG-316 DS  | 6"           | 131-1404-101 | 131-1404-101 |
| 415-0006-012 | RG-316 DS  | 12"          | 131-1404-101 | 131-1404-101 |
| 415-0006-018 | RG-316 DS  | 18"          | 131-1404-101 | 131-1404-101 |
| 415-0006-024 | RG-316 DS  | 24"          | 131-1404-101 | 131-1404-101 |
| 415-0006-030 | RG-316 DS  | 30"          | 131-1404-101 | 131-1404-101 |
| 415-0006-036 | RG-316 DS  | 36"          | 131-1404-101 | 131-1404-101 |

## SMB Mini-75 Ohm Straight Plug to SMB Mini-75 Ohm Straight Plug

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0008-006 | RG-179     | 6"           | 131-8403-011 | 131-8403-011 |
| 415-0008-012 | RG-179     | 12"          | 131-8403-011 | 131-8403-011 |
| 415-0008-018 | RG-179     | 18"          | 131-8403-011 | 131-8403-011 |
| 415-0008-024 | RG-179     | 24"          | 131-8403-011 | 131-8403-011 |
| 415-0008-030 | RG-179     | 30"          | 131-8403-011 | 131-8403-011 |
| 415-0008-036 | RG-179     | 36"          | 131-8403-011 | 131-8403-011 |
| 415-0010-006 | RG-179 DS  | 6"           | 131-8404-011 | 131-8404-011 |
| 415-0010-012 | RG-179 DS  | 12"          | 131-8404-011 | 131-8404-011 |
| 415-0010-018 | RG-179 DS  | 18"          | 131-8404-011 | 131-8404-011 |



| Part No.     | Cable Type   | Cable Length | Connector A  | Connector B  |
|--------------|--------------|--------------|--------------|--------------|
| 415-0010-024 | RG-179 DS    | 24"          | 131-8404-011 | 131-8404-011 |
| 415-0010-030 | RG-179 DS    | 30"          | 131-8404-011 | 131-8404-011 |
| 415-0010-036 | RG-179 DS    | 36"          | 131-8404-011 | 131-8404-011 |
| 415-0012-006 | Belden 735 A | 6"           | 131-8445-001 | 131-8445-001 |
| 415-0012-012 | Belden 735 A | 12"          | 131-8445-001 | 131-8445-001 |
| 415-0012-018 | Belden 735 A | 18"          | 131-8445-001 | 131-8445-001 |
| 415-0012-024 | Belden 735 A | 24"          | 131-8445-001 | 131-8445-001 |
| 415-0012-030 | Belden 735 A | 30"          | 131-8445-001 | 131-8445-001 |
| 415-0012-036 | Belden 735 A | 36"          | 131-8445-001 | 131-8445-001 |

## SMB Mini-75 Ohm Right Angle Plug to SMB Mini-75 Ohm Right Angle Plug

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B  |
|--------------|------------|--------------|--------------|--------------|
| 415-0009-006 | RG-179     | 6"           | 131-8403-111 | 131-8403-111 |
| 415-0009-012 | RG-179     | 12"          | 131-8403-111 | 131-8403-111 |
| 415-0009-018 | RG-179     | 18"          | 131-8403-111 | 131-8403-111 |
| 415-0009-024 | RG-179     | 24"          | 131-8403-111 | 131-8403-111 |
| 415-0009-030 | RG-179     | 30"          | 131-8403-111 | 131-8403-111 |
| 415-0009-036 | RG-179     | 36"          | 131-8403-111 | 131-8403-111 |
| 415-0011-006 | RG-179 DS  | 6"           | 131-8404-111 | 131-8404-111 |
| 415-0011-012 | RG-179 DS  | 12"          | 131-8404-111 | 131-8404-111 |
| 415-0011-018 | RG-179 DS  | 18"          | 131-8404-111 | 131-8404-111 |



| Part No.     | Cable Type   | Cable Length | Connector A  | Connector B  |
|--------------|--------------|--------------|--------------|--------------|
| 415-0011-024 | RG-179 DS    | 24"          | 131-8404-111 | 131-8404-111 |
| 415-0011-030 | RG-179 DS    | 30"          | 131-8404-111 | 131-8404-111 |
| 415-0011-036 | RG-179 DS    | 36"          | 131-8404-111 | 131-8404-111 |
| 415-0013-006 | Belden 735 A | 6"           | 131-8445-101 | 131-8445-101 |
| 415-0013-012 | Belden 735 A | 12"          | 131-8445-101 | 131-8445-101 |
| 415-0013-018 | Belden 735 A | 18"          | 131-8445-101 | 131-8445-101 |
| 415-0013-024 | Belden 735 A | 24"          | 131-8445-101 | 131-8445-101 |
| 415-0013-030 | Belden 735 A | 30"          | 131-8445-101 | 131-8445-101 |
| 415-0013-036 | Belden 735 A | 36"          | 131-8445-101 | 131-8445-101 |

## N Straight Plug to N Straight Plug

| Part No.     | Cable Type | Cable Length | Connector A | Connector B |
|--------------|------------|--------------|-------------|-------------|
| 415-0058-012 | RG-58      | 12"          | CPN-1       | CPN-1       |
| 415-0058-024 | RG-58      | 24"          | CPN-1       | CPN-1       |
| 415-0058-036 | RG-58      | 36"          | CPN-1       | CPN-1       |
| 415-0058-048 | RG-58      | 48"          | CPN-1       | CPN-1       |
| 415-0058-060 | RG-58      | 60"          | CPN-1       | CPN-1       |
| 415-0060-012 | RG-142     | 12"          | CPN-142T    | CPN-142T    |
| 415-0060-024 | RG-142     | 24"          | CPN-142T    | CPN-142T    |
| 415-0060-036 | RG-142     | 36"          | CPN-142T    | CPN-142T    |
| 415-0060-048 | RG-142     | 48"          | CPN-142T    | CPN-142T    |
| 415-0060-060 | RG-142     | 60"          | CPN-142T    | CPN-142T    |



| Part No.     | Cable Type | Cable Length | Connector A | Connector B |
|--------------|------------|--------------|-------------|-------------|
| 415-0062-012 | RG-8       | 12"          | CPN-8       | CPN-8       |
| 415-0062-024 | RG-8       | 24"          | CPN-8       | CPN-8       |
| 415-0062-036 | RG-8       | 36"          | CPN-8       | CPN-8       |
| 415-0062-048 | RG-8       | 48"          | CPN-8       | CPN-8       |
| 415-0062-060 | RG-8       | 60"          | CPN-8       | CPN-8       |
| 415-0063-012 | RG-213     | 12"          | CPN-8       | CPN-8       |
| 415-0063-024 | RG-213     | 24"          | CPN-8       | CPN-8       |
| 415-0063-036 | RG-213     | 36"          | CPN-8       | CPN-8       |
| 415-0063-048 | RG-213     | 48"          | CPN-8       | CPN-8       |
| 415-0063-060 | RG-213     | 60"          | CPN-8       | CPN-8       |

BNC Straight Plug to  
BNC Straight Plug

With Boot

| Part No.     | Cable Type | Cable Length | Connector A | Connector B |
|--------------|------------|--------------|-------------|-------------|
| 415-0054-012 | RG-58      | 12"          | CPMC-88-1   | CPMC-88-1   |
| 415-0054-024 | RG-58      | 24"          | CPMC-88-1   | CPMC-88-1   |
| 415-0054-036 | RG-58      | 36"          | CPMC-88-1   | CPMC-88-1   |
| 415-0054-048 | RG-58      | 48"          | CPMC-88-1   | CPMC-88-1   |
| 415-0054-060 | RG-58      | 60"          | CPMC-88-1   | CPMC-88-1   |
| 415-0055-012 | RG-59 TFE  | 12"          | CPMC-88-10  | CPMC-88-10  |
| 415-0055-024 | RG-59 TFE  | 24"          | CPMC-88-10  | CPMC-88-10  |
| 415-0055-036 | RG-59 TFE  | 36"          | CPMC-88-10  | CPMC-88-10  |
| 415-0055-048 | RG-59 TFE  | 48"          | CPMC-88-10  | CPMC-88-10  |
| 415-0055-060 | RG-59 TFE  | 60"          | CPMC-88-10  | CPMC-88-10  |
| 415-0057-012 | RG-59      | 12"          | CPMC-88-2   | CPMC-88-2   |
| 415-0057-024 | RG-59      | 24"          | CPMC-88-2   | CPMC-88-2   |
| 415-0057-036 | RG-59      | 36"          | CPMC-88-2   | CPMC-88-2   |
| 415-0057-048 | RG-59      | 48"          | CPMC-88-2   | CPMC-88-2   |
| 415-0057-060 | RG-59      | 60"          | CPMC-88-2   | CPMC-88-2   |

With Heat Shrink

| Part No.     | Cable Type  | Cable Length | Connector A | Connector B |
|--------------|-------------|--------------|-------------|-------------|
| 415-0056-012 | Belden 8218 | 12"          | CPMC-88-18  | CPMC-88-18  |
| 415-0056-024 | Belden 8218 | 24"          | CPMC-88-18  | CPMC-88-18  |
| 415-0056-036 | Belden 8218 | 36"          | CPMC-88-18  | CPMC-88-18  |
| 415-0056-048 | Belden 8218 | 48"          | CPMC-88-18  | CPMC-88-18  |
| 415-0056-060 | Belden 8218 | 60"          | CPMC-88-18  | CPMC-88-18  |

BNC True 75 Ohm Straight Plug to  
BNC True 75 Ohm Straight Plug

With Boot

| Part No.     | Cable Type   | Cable Length | Connector A | Connector B |
|--------------|--------------|--------------|-------------|-------------|
| 415-0048-012 | RG-59        | 12"          | CPMC-68-2   | CPMC-68-2   |
| 415-0048-024 | RG-59        | 24"          | CPMC-68-2   | CPMC-68-2   |
| 415-0048-036 | RG-59        | 36"          | CPMC-68-2   | CPMC-68-2   |
| 415-0048-048 | RG-59        | 48"          | CPMC-68-2   | CPMC-68-2   |
| 415-0048-060 | RG-59        | 60"          | CPMC-68-2   | CPMC-68-2   |
| 415-0052-012 | Belden 734 A | 12"          | CPMC-68-35  | CPMC-68-35  |
| 415-0052-024 | Belden 734 A | 24"          | CPMC-68-35  | CPMC-68-35  |
| 415-0052-036 | Belden 734 A | 36"          | CPMC-68-35  | CPMC-68-35  |
| 415-0052-048 | Belden 734 A | 48"          | CPMC-68-35  | CPMC-68-35  |
| 415-0052-060 | Belden 734 A | 60"          | CPMC-68-35  | CPMC-68-35  |

With Heat Shrink

| Part No.     | Cable Type   | Cable Length | Connector A | Connector B |
|--------------|--------------|--------------|-------------|-------------|
| 415-0047-012 | Belden 8218  | 12"          | CPMC-68-18  | CPMC-68-18  |
| 415-0047-024 | Belden 8218  | 24"          | CPMC-68-18  | CPMC-68-18  |
| 415-0047-036 | Belden 8218  | 36"          | CPMC-68-18  | CPMC-68-18  |
| 415-0047-048 | Belden 8218  | 48"          | CPMC-68-18  | CPMC-68-18  |
| 415-0047-060 | Belden 8218  | 60"          | CPMC-68-18  | CPMC-68-18  |
| 415-0049-012 | Belden 8281  | 12"          | CPMC-68-3   | CPMC-68-3   |
| 415-0049-024 | Belden 8281  | 24"          | CPMC-68-3   | CPMC-68-3   |
| 415-0049-036 | Belden 8281  | 36"          | CPMC-68-3   | CPMC-68-3   |
| 415-0049-048 | Belden 8281  | 48"          | CPMC-68-3   | CPMC-68-3   |
| 415-0049-060 | Belden 8281  | 60"          | CPMC-68-3   | CPMC-68-3   |
| 415-0050-012 | COMSCOPE 735 | 12"          | CPMC-68-33  | CPMC-68-33  |
| 415-0050-024 | COMSCOPE 735 | 24"          | CPMC-68-33  | CPMC-68-33  |
| 415-0050-036 | COMSCOPE 735 | 36"          | CPMC-68-33  | CPMC-68-33  |
| 415-0050-048 | COMSCOPE 735 | 48"          | CPMC-68-33  | CPMC-68-33  |
| 415-0050-060 | COMSCOPE 735 | 60"          | CPMC-68-33  | CPMC-68-33  |
| 415-0051-012 | Belden 735 A | 12"          | CPMC-68-33  | CPMC-68-33  |
| 415-0051-024 | Belden 735 A | 24"          | CPMC-68-33  | CPMC-68-33  |
| 415-0051-036 | Belden 735 A | 36"          | CPMC-68-33  | CPMC-68-33  |
| 415-0051-048 | Belden 735 A | 48"          | CPMC-68-33  | CPMC-68-33  |
| 415-0051-060 | Belden 735 A | 60"          | CPMC-68-33  | CPMC-68-33  |
| 415-0053-012 | Belden 1694A | 12"          | CPMC-68-45  | CPMC-68-45  |
| 415-0053-024 | Belden 1694A | 24"          | CPMC-68-45  | CPMC-68-45  |
| 415-0053-036 | Belden 1694A | 36"          | CPMC-68-45  | CPMC-68-45  |
| 415-0053-048 | Belden 1694A | 48"          | CPMC-68-45  | CPMC-68-45  |
| 415-0053-060 | Belden 1694A | 60"          | CPMC-68-45  | CPMC-68-45  |

SMA Straight Plug to  
N Straight Plug

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B |
|--------------|------------|--------------|--------------|-------------|
| 415-0059-012 | RG-58      | 12"          | 142-0407-011 | CPN-1       |
| 415-0059-024 | RG-58      | 24"          | 142-0407-011 | CPN-1       |
| 415-0059-036 | RG-58      | 36"          | 142-0407-011 | CPN-1       |
| 415-0059-048 | RG-58      | 48"          | 142-0407-011 | CPN-1       |
| 415-0059-060 | RG-58      | 60"          | 142-0407-011 | CPN-1       |

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B |
|--------------|------------|--------------|--------------|-------------|
| 415-0061-012 | RG-142     | 12"          | 142-0408-011 | CPN-142T    |
| 415-0061-024 | RG-142     | 24"          | 142-0408-011 | CPN-142T    |
| 415-0061-036 | RG-142     | 36"          | 142-0408-011 | CPN-142T    |
| 415-0061-048 | RG-142     | 48"          | 142-0408-011 | CPN-142T    |
| 415-0061-060 | RG-142     | 60"          | 142-0408-011 | CPN-142T    |

## SMA Straight Plug to BNC Straight Plug



| Part No.     | Cable Type | Cable Length | Connector A  | Connector B |
|--------------|------------|--------------|--------------|-------------|
| 415-0028-006 | RG-316     | 6"           | 142-0403-011 | CPM-88-19   |
| 415-0028-012 | RG-316     | 12"          | 142-0403-011 | CPM-88-19   |
| 415-0028-018 | RG-316     | 18"          | 142-0403-011 | CPM-88-19   |
| 415-0028-024 | RG-316     | 24"          | 142-0403-011 | CPM-88-19   |
| 415-0028-036 | RG-316     | 36"          | 142-0403-011 | CPM-88-19   |
| 415-0028-048 | RG-316     | 48"          | 142-0403-011 | CPM-88-19   |
| 415-0037-012 | RG-58      | 12"          | 142-0407-011 | CPMC-88-1   |
| 415-0037-024 | RG-58      | 24"          | 142-0407-011 | CPMC-88-1   |

| Part No.     | Cable Type | Cable Length | Connector A  | Connector B |
|--------------|------------|--------------|--------------|-------------|
| 415-0037-036 | RG-58      | 36"          | 142-0407-011 | CPMC-88-1   |
| 415-0037-048 | RG-58      | 48"          | 142-0407-011 | CPMC-88-1   |
| 415-0037-060 | RG-58      | 60"          | 142-0407-011 | CPMC-88-1   |
| 415-0042-012 | RG-142     | 12"          | 142-0408-011 | CPMC-88-13  |
| 415-0042-024 | RG-142     | 24"          | 142-0408-011 | CPMC-88-13  |
| 415-0042-036 | RG-142     | 36"          | 142-0408-011 | CPMC-88-13  |
| 415-0042-048 | RG-142     | 48"          | 142-0408-011 | CPMC-88-13  |
| 415-0042-060 | RG-142     | 60"          | 142-0408-011 | CPMC-88-13  |

**If you don't see the cable assembly you require, we can design and manufacture one to meet your unique specifications!**



- Voltage/Continuity Test Fixture
- Interface location gauging
- VSWR Quality Assurance Scalar Analyzer
- VSWR/TDR Engineering Vector Analyzer
- CNC Hardline Bender (Semi-Rigid cables)
- Tested to customer specifications
- Flexible cable
- Conformable cable
- Semi-Rigid cable
- 0 to 40 GHz
- 50 and 75 Ohms
- Controlled impedance
- Prototype available in 2 weeks

**Call 800-247-8256 to discuss your needs with a Customer Service Representative**

**Assembly Tools**

|                                                  |     |
|--------------------------------------------------|-----|
| 3-Piece SMA - Contact Hand Crimp Tool .....      | 191 |
| 3-Piece SMB, MCX - Contact Hand Crimp Tool ..... | 191 |
| “C” Spring Compression Tool .....                | 192 |
| Economy Hand Crimp Tool .....                    | 191 |
| Hand Crimp Tool .....                            | 190 |
| MCX Right Angle Plug Assembly Tool .....         | 192 |
| MMCX Assembly/Decoupling Tool .....              | 192 |
| Prestige™ Coax & Telephone Cable Strippers ..... | 194 |
| Prestige Professional Ratchet Crimp Tools .....  | 197 |
| Prestige Ratchet and Universal Crimp Tools ..... | 195 |
| RF and CATV Installation Tools .....             | 196 |
| SMA Knurl Mount Assembly Tool .....              | 192 |
| SMB Plug Removal Tool .....                      | 192 |
| SMK (2.92 mm) Tools .....                        | 193 |

## Hand Crimp Tool

Precision Astro Tool hand crimping tool makes cable assembly fast and easy. Crimping tool features interchangeable steel dies. Ratchet action of tool controls crimping operation for precise uniform ferrule crimps.



| CONNECTOR TYPE                         | CABLE TYPE                                                                                           | PREFERRED DIE SET | CRIMP DIMENSIONS                          |
|----------------------------------------|------------------------------------------------------------------------------------------------------|-------------------|-------------------------------------------|
| MCX<br>SMA<br>SMB<br>SMC               | RG-178/U<br>RG-196/U                                                                                 | 141-0000-901      | Hex = .105 (2.67)<br>Width = .325 (8.26)  |
| MCX<br>SMA<br>SMB<br>SMC<br>75 Ohm SMB | RG-161/U, RG-174/U<br>RG-179/U, RG-187/U<br>RG-188/U, RG-316/U<br>LMR-100                            | 141-0000-902      | Hex = .128 (3.25)<br>Width = .400 (10.16) |
|                                        | RG-188 DS, RG-316 DS<br>RG-179 DS, RG-187 DS,<br>BELDEN 735A                                         | 141-0000-905      | Hex = .151 (3.83)<br>Width = .400 (10.16) |
| MCX<br>SMA<br>SMB                      | RG-58/U<br>RG-141/U<br>RG-303/U<br>RG-55/U<br>RG-142/U<br>RG-223/U<br>RG-400/U<br>LMR-195<br>LMR-200 | 141-0000-903      | Hex = .213 (5.41)<br>Width = .375 (9.52)  |
| SMA<br>75 Ohm SMB                      | LMR-240, RG-59                                                                                       | 141-0000-925      | Hex = .255 (6.48)<br>Width = .400 (10.16) |
| N Type                                 | RG-316/U, 316 DS                                                                                     | 141-0000-927      | Hex = .160 (4.06)<br>Width = .400 (10.16) |

\*Economy Hand Crimp Tool also available with four hex sizes in one tool page 191.

## Ordering Information for Crimping Tool

| PART NO.     | DESCRIPTION    | ASTRO TOOL P/N |
|--------------|----------------|----------------|
| 144-0000-900 | Frame Only     | 620175         |
| 141-0000-901 | Single Hex Die | 620932         |
| 141-0000-902 | Single Hex Die | 620419         |
| 141-0000-903 | Single Hex Die | 620676         |
| 141-0000-905 | Single Hex Die | 630055         |
| 141-0000-925 | Single Hex Die | 620938         |
| 141-0000-927 | Single Hex Die | 620297         |

## Crimp Dies for Contacts

use with 144-0000-900

| CONNECTOR TYPE                                       | PREFERRED DIE SET | CRIMP STYLE    |
|------------------------------------------------------|-------------------|----------------|
| SMB Cross Hole Style Body<br>50 Ohm Only             | 141-0000-911      | Double Diamond |
| Mini 75 Ohm SMB, MCX 75 Ohm<br>Cross Hole Style Body | 141-0000-924      | Double Diamond |

## Economy Hand Crimp Tool

Hand crimp tool and die set includes all hex sizes necessary for subminiature connector applications. Ratchet tool action insures a complete crimp every time.

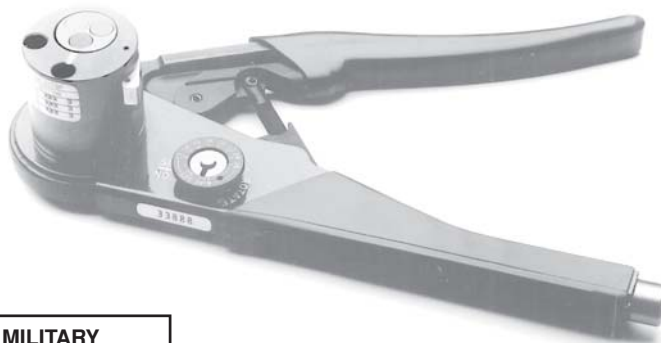


| PART NO.     | DESCRIPTION                                                                                 | HEX                                           | WIDTH       | CONNECTOR TYPE                     |
|--------------|---------------------------------------------------------------------------------------------|-----------------------------------------------|-------------|------------------------------------|
| 140-0000-952 | Hand Crimp<br>Tool Frame Only                                                               |                                               |             |                                    |
| 140-0000-953 | Die for .047" dia. flexible cable;<br>RG-178, RG-316, RG-316 DS<br>and Contact Crimp w/stop | .105 (2.67)                                   | .250 (6.35) | MMCX*, MCX                         |
|              |                                                                                             | .128 (3.25)                                   | .250 (6.35) |                                    |
|              |                                                                                             | .151 (3.83)                                   | .250 (6.35) |                                    |
|              |                                                                                             | Diamond Crimp for<br>.038 (0.96) Dia. Contact |             |                                    |
| 140-0000-951 | Die for RG-178, 316, 316 DS,<br>58, 142, LMR-100, LMR-195,<br>LMR-200                       | .105 (2.67)                                   | .390 (9.91) | MCX, SMB, SMC,<br>SMA, 75 OHM SMB  |
|              |                                                                                             | .128 (3.25)                                   | .390 (9.91) |                                    |
|              |                                                                                             | .151 (3.83)                                   | .390 (9.91) |                                    |
|              |                                                                                             | .213 (5.41)                                   | .390 (9.91) |                                    |
| 140-0000-955 | Die for RG-179, 179 DS, 735A,<br>RG-59, LMR-240                                             | .128 (3.25)                                   | .390 (9.91) | 75 Ohm MCX, SMA<br>Mini-75 Ohm SMB |
|              |                                                                                             | .151 (3.83)                                   | .390 (9.91) |                                    |
|              |                                                                                             | .178 (4.52)                                   | .390 (9.91) |                                    |
|              |                                                                                             | .255 (6.48)                                   | .390 (9.91) |                                    |

\*Use 140-0000-951 for MMCX straight cabled bulkhead jack body crimp.

## 3-Piece SMA - Contact Hand Crimp Tool

Quick and secure crimp assembly of SMA contacts to all cable sizes used by the 3-piece SMA connector line is possible. The crimp tool is used in conjunction with 141-0000-907 turret positioner which positions the crimp location on the contact with no user setup required. Set the selector to the appropriate crimp size, insert contact and cable into tool and squeeze handles of tool. A complete and accurate crimp is obtained every time, with no partial crimp. A ratchet insures a complete cycle of the tool. Automated tooling information is available on request.



| PART NO.     | DESCRIPTION | ASTRO TOOL PART NO. | MILITARY PART NO. |
|--------------|-------------|---------------------|-------------------|
| 144-0000-910 | Frame Only  | 615708              | M22520/1-01       |
| 141-0000-907 | Positioner  | 650027              | N/A               |

## 3-Piece SMB, MCX - Contact Hand Crimp Tool

The micro contact crimp tool provides an accurate eight indent crimp on small diameter contacts used in the 3-Piece SMB and MCX connectors. This crimp tool is used with the 140-0000-971 Variable Positioner. Set the crimp size in the adjustment window and position the variable locator to obtain an accurate repeatable crimp on the contact.



| PART NO.     | DESCRIPTION | ASTRO TOOL PART NO. |
|--------------|-------------|---------------------|
| 140-0000-970 | Frame Only  | 612118-1            |
| 140-0000-971 | Positioner  | N/A                 |

## MMCX Assembly/Decoupling Tool

This tool will assemble the end cap to a standard right angle MMCX plug connector in the field. Simply insert connector and cap into tool cavity, then turn handle to swage the cap into place. The slotted end of the tool can be used to disengage a right angle MMCX plug from a mating receptacle.



| PART NO.     |
|--------------|
| 141-0000-910 |

## MCX Right Angle Plug Assembly Tool

This quick and easy to use tool will press the end cap onto standard right angle MCX plug connectors. Simply insert the connector and cap into the staking nest and a light squeeze of the handles will swage the cap into place.

The jaw tips are shaped to grip a right angle MCX plug body for insertion or disengagement to a mating receptacle. The jaws are hardened steel and the handles are cushioned to minimize stress to the user. For use with all cable groups except RG-58.



| PART NO.     |
|--------------|
| 141-0000-908 |

## “C” Spring Compression Tool

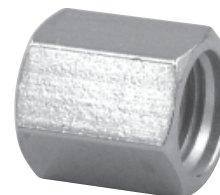
For assembly of SMA Coupling Nut



| PART NO.     |
|--------------|
| 141-0000-904 |

## SMA Knurl Mount Assembly Tool

The Knurl Mount SMA Spark Plug Connectors can be pressed into position using this thread-on fixture designed for low volume lab use.



| PART NO.     |
|--------------|
| 140-0000-954 |

## SMB Plug Removal Tool

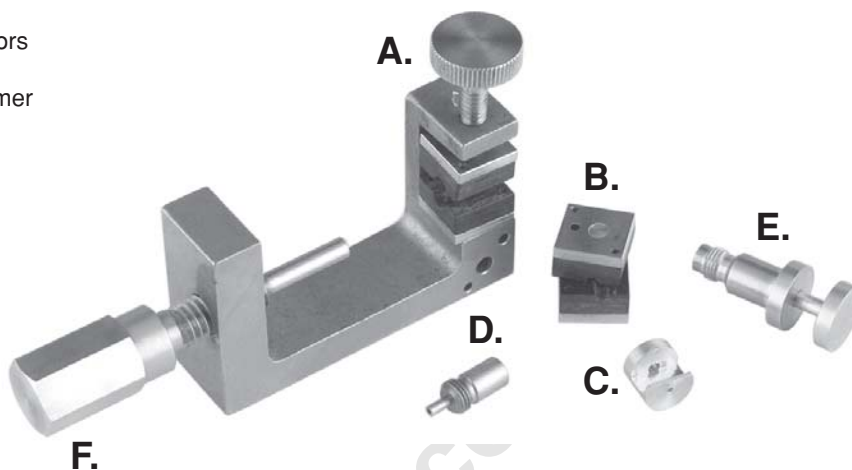
Reaches in to disengage SMB connectors in high density packaging applications.



| PART NO.     |
|--------------|
| 140-0000-956 |

## SMK (2.92mm) Tools

Accurate assembly of the SMK cabled connectors is obtained with the tools listed below. Industry standard devices are used if possible for customer convenience and tool compatibility.



| ITEM | PART NO.                     | DESCRIPTION                                                                  |
|------|------------------------------|------------------------------------------------------------------------------|
| A    | 140-0000-962                 | Semi-Rigid Cable Vise (does not include inserts (B) or Vise Stop (F))        |
| B    | 140-0000-964<br>140-0000-965 | Cable Clamp Inserts, .086 Semi-Rigid<br>Cable Clamp Inserts, .141 Semi-Rigid |
| C    | 140-0000-960<br>140-0000-961 | Contact Soldering Tool, .086 Plug<br>Contact Soldering Tool, .141 Plug       |
| D    | 140-0000-958<br>140-0000-959 | Body Soldering Tool, .086 Plug<br>Body Soldering Tool, .141 Plug             |
| E    | 140-0000-957                 | Bead Assembly Tool, Semi-Rigid Plugs, All Cables                             |
| F    | 140-0000-968                 | Vise Stop, (2.92mm)                                                          |

## Self-Adjusting Blades (Replaceable Cassette)



- 2-step Cable Stripper
- w/replacement cassettes
- for RG-6, 58, 59 and 62

| PART NO. | DESCRIPTION          |
|----------|----------------------|
| 24-7732P | Tool                 |
| 99-7732B | Replacement Cassette |



- 3-step Cable Stripper
- w/replacement cassettes
- for RG-6, 58, 59 and 62

| PART NO. | DESCRIPTION          |
|----------|----------------------|
| 24-7733P | Tool                 |
| 99-7733B | Replacement Cassette |

## Blade Series (w/adjustable blades) Two Step Cut



### Universal Coax Stripper

- Adjustable blades for RG-6, 58, 59 and 62
- w/switchable V-block
- does 2 cuts in 1 motion

| PART NO. | DESCRIPTION                   |
|----------|-------------------------------|
| 24-7734P | Tool                          |
| 99-7734  | Replacement Blades (set of 2) |



### Coax Stripper for Standard and Teflon

- Adjustable blades for RG-58, 59 and 62
- does 2 cuts in 1 motion

| PART NO. | DESCRIPTION                   |
|----------|-------------------------------|
| 24-7735P | Tool                          |
| 99-7735  | Replacement Blades (set of 2) |



### Coax Stripper for Standard and Teflon

- Adjustable blades for RG-6, 58, 8281
- does 2 cuts in 1 motion

| PART NO. | DESCRIPTION                   |
|----------|-------------------------------|
| 24-7736P | Tool                          |
| 99-7735  | Replacement Blades (set of 2) |

## Three Step Cut



### Coax Stripper for RG-58, 59, 62

- adjustable blades
- does 3 cuts in 1 motion

| PART NO. | DESCRIPTION                   |
|----------|-------------------------------|
| 24-7737P | Tool                          |
| 99-7737  | Replacement Blades (set of 3) |



### Coax Stripper for RG-59, RG-6, 8821

- does 3 cuts in 1 motion

| PART NO. | DESCRIPTION                   |
|----------|-------------------------------|
| 24-7738P | Tool                          |
| 99-7737  | Replacement Blades (set of 3) |



### Coax Stripper for RG-8, 11, 213

- does 3 cuts in 1 motion

| PART NO. | DESCRIPTION                   |
|----------|-------------------------------|
| 24-7739P | Tool                          |
| 99-7739  | Replacement Blades (set of 3) |

## Prestige™ Ratchet Crimp Tools Adjustable Standard Series

- Long Life Full Cycle Ratchet Mechanism
- High Quality Steel Construction



**For 3-Piece Crimp Connectors**  
 RG-58, 59, 62, RG-59 PLENUM, RG-58 PLENUM,  
 RG-62, 141, 142, 223, 303, 400,  
 RG-8X, 140, 210, 450  
**Hex Sizes**  
 .060 (1.52), .210 (5.33), .067 (1.70),  
 .255 (6.48)

| PART NO. | DESCRIPTION     |
|----------|-----------------|
| 24-8860P | Tool            |
| 99-8860  | Replacement Die |

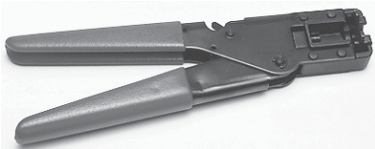
## Prestige™ Universal Crimp Tool

- Adjustable Crimp Force
- With five hex sizes in one tool!
- Crimps 2 and 3 Piece Connectors



| CRIMP HEX   | CABLE                                              |
|-------------|----------------------------------------------------|
| .068 (1.73) | Center Conductor<br>16 to 22 AWG                   |
| .100 (2.54) | Center Conductor<br>10 to 13 AWG                   |
| .213 (5.41) | RG-55, 58, 141,<br>142, 223, 203, 400,<br>RG-59TFE |
| .255 (6.48) | RG-59, 62, 140,<br>210, Belden 8279                |
| .324 (8.23) | RG-6, 142, 212, 222,<br>Belden 8281, 9231, 9144    |

| PART NO. |
|----------|
| 24-9960P |



## Compression Crimp Tool

For "F" (CATV) type weatherproof compression connectors (RG-59 and RG-6 single, Tri/Quad series)

| PART NO. |
|----------|
| 24-7713P |



## "F" Ratchet Crimp Tool

9" inch ratchet crimp tool for RG-59, RG-6, RG-Quad  
.255, .324, .354 Hex size  
(for F Series CATV connectors)

| PART NO. |
|----------|
| 24-8866P |



**Deluxe Crimp Tool for RG-6, 59**  
.322, .255 Hex Size

| PART NO. |
|----------|
| 24-7710P |



**Deluxe Crimp Tool for RG-6, 11, 213**  
.448, .322, .100 Hex Size  
(for F series connectors)

| PART NO. |
|----------|
| 24-7711P |



**Deluxe Crimp Tool for RG-6, 11, UHF-8**  
.406, .359, .102 Hex Size  
(for BNC, N and UHF connectors)

| PART NO. |
|----------|
| 24-7712P |

## Boxed "F" Series Crimp Tool with Connectors



**Deluxe Crimp Tool for RG-6, 59**  
comes with 10 pieces 25-7032  
connectors w/1/2" crimp ring  
.322, .255 Hex Size

| PART NO. |
|----------|
| 24-7710P |

| PART NO. | CABLE SIZE         | DESCRIPTION     | HEX SIZE         | REPLACEMENT DIE |
|----------|--------------------|-----------------|------------------|-----------------|
| 24-302P  | BELDEN 8281        | 2 pc. BNC & TNC | .350, .288       | 99-DC-3         |
| 24-310   | RG-8               | UHF             | .405, .110       | 99-U-8          |
| 24-312   | RG-58, 59, 8x, 450 | N               | .255, .210, .100 | 99-N-1          |
| 24-313   | RG-8               | N               | .429, .100, .080 | 99-N-8          |
| 24-318P  | BELDEN 8281        | 3 pc. BNC & TNC | .310, .065       | 99-MC-3         |
| 24-321P  | RG-6               | 2 pc. BNC & TNC | .385, .320       | 99-DC-5         |



- Full cycle ratchet mechanism
- Quick release safety
- Perform both electrical and mechanical crimp
- High quality steel
- Each tool comes complete with crimp die
- Full range +/- Cam adjustment

## Precision Ergo Hand Crimp Tool with Dieset

| PART NO.                                 | DESCRIPTION                                                          | HEX SIZE                                                  | HEX WIDTH                                    |
|------------------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------|
| 24-9961P<br>(Replacement dieset 99-9961) | Pressmaster K<br>Hand crimp tool frame<br>with dieset<br>.178 (4.52) | .324 (8.22)<br>.264 (6.71)<br>.213 (5.41)<br>.394 (10.00) | .475 (12.06)<br>.475 (12.06)<br>.394 (10.00) |
| 24-9962P<br>(Replacement dieset 99-9962) | Pressmaster K<br>Hand crimp tool frame<br>with dieset<br>.042 (1.07) | .350 (8.89)<br>.288 (5.41)<br>.042 (1.07)                 | .475 (12.06)<br>.475 (12.06)<br>.080 (2.03)  |
| 24-9963P<br>(Replacement dieset 99-9963) | Pressmaster K<br>Hand crimp tool frame<br>with dieset<br>.042 (1.07) | .255 (6.48)<br>.178 (4.52)<br>.128 (3.25)<br>.080 (2.03)  | .475 (12.06)<br>.475 (12.06)<br>.475 (12.06) |



- Longer handles for leverage
- Padded and contoured to fit in hand
- Precision ground die sets
- 50,000 cycle lifespan frame

## Standard Series

- Full cycle ratchet mechanism
- Quick release safety
- Perform both electrical and mechanical crimp
- High quality steel
- Each tool comes complete with crimp die



| PART NO. | CABLE SIZE                                                            | DESCRIPTION                                                                       | HEX SIZE               | REPLACEMENT DIE |
|----------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------|-----------------|
| 24-8789P | RG-58, 59, 62, 58TFE, 59TFE, 62TFE                                    | Crimps BNC-TNC 2 & 3 piece connectors w/ standard crimp rings                     | .257, .210, .060       | 99-8789         |
| 24-8856P | RG-6, 8, 59, 62                                                       | Crimps BNC-TNC 3-piece connectors w/standard crimp ring                           | .390, .275, .065       | 99-8856         |
| 24-8857P | RG-58/U, 58AU, 174, 139, 185, 188, 316                                | Crimps BNC-TNC 3-piece connectors w/ standard crimp rings                         | .235, .128, .065, .042 | 99-8857         |
| 24-8858P | RG-58, 58AU, 59Teflon, 62 Teflon                                      | Crimps BNC-TNC 2 & 3 piece connectors connectors also crimps 1/2"ring F connector | .325, .215, .065       | 99-8858         |
| 24-8859P | RG-59, 62, Belden 8281                                                | Crimps BNC-TNC 2 & 3 piece connectors w/ standard & dual crimp rings              | .325, .258, .065       | 99-8859         |
| 24-9858P | RG-58, 59TFE                                                          | Crimps BNC-TNC 2-piece connectors                                                 | .320, .211             | 99-9858         |
| 24-9958P | RG-58, 58TFE, 59TFE, 141, 142, 223, 400, 303, 55, BELDEN 9907, RG-141 | Crimps 3-piece BNC-TNC connectors and Mini-UHF connectors                         | .213, .067             | 99-9958         |
| 24-9859P | RG-59, 62,                                                            | Crimps BNC-TNC 2-piece connectors                                                 | .320, .250             | 99-9859         |
| 24-9912P | RG-122, 180, 34M, RG-195, 8218, 174, 188, 179, 187, 316 BELDEN 89907  | Crimps 3-piece BNC-TNC connectors                                                 | .184, .066             | 99-9912         |
| 24-9959P | RG-59, 62, 450 Proflex, RG-8x                                         | Crimps 3-piece BNC-TNC connectors and Mini-UHF connectors                         | .255, .065             | 99-9959         |

## We have what you are looking for ... and if we don't, we'll design and manufacture it!!!



**SMA Jack to Slide-on  
SMB Mated Adapters**

Emerson Network Power Connectivity Solutions prides itself in meeting our customers' needs by providing them with customized solutions. We have configured our technical staff and equipped our model shop and QA lab to meet the quick-turn demands of new product development. Prototypes, samples, and short-run quantities are delivered expediently and to print. Your new product development life cycle will be greatly enhanced with us as a partner on your design team.



**SMA Bulkhead Jack  
Receptacle**



**SMB Vertical  
PC Plug**

We have an extensive log of special variations of MMCX, MCX, 75 Ohm MCX, SMK, SMA, SMB, Mini-75 Ohm SMB, SMC, BNC, TNC and N connectors. Special cable sizes, cable assemblies, PC board terminations, adapters, antenna connectors, multi-packs, calibration terminations and hardware products give us a large pool of design experience to assist you with custom development. See page 259 for more information on our custom hardware products.



**SMB Bulkhead Jack Receptacle**

Our sales representatives will review your product application and initiate the quotation process, and our sales and engineering staff will assist you in defining the performance and cost parameters required by your end product. Providing details such as dimensional limitations, frequency, and VSWR performance to our field sales representative will speed the process.

After you have chosen us as your supplier, we can provide samples and a short run quantity prior to production of your custom product. We look forward to providing your special electronic components in the future.



**MCX straight cabled Plug 6 position with  
MCX vertical PC mount Jack 6 position**

**We do it all...**  
Virtually any RF coaxial connector or RF cable assembly; from the engineering, prototyping and tooling stages, to complete production and testing.

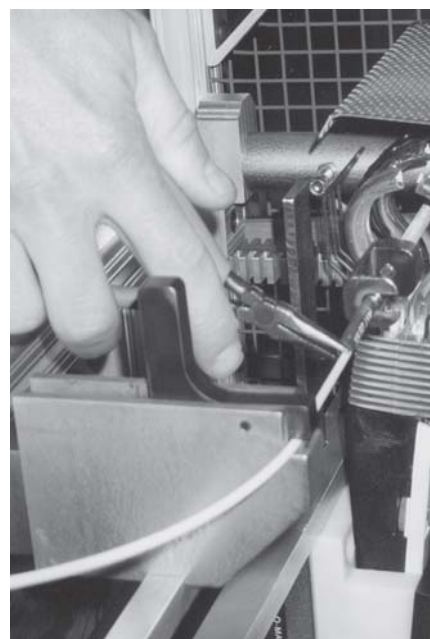
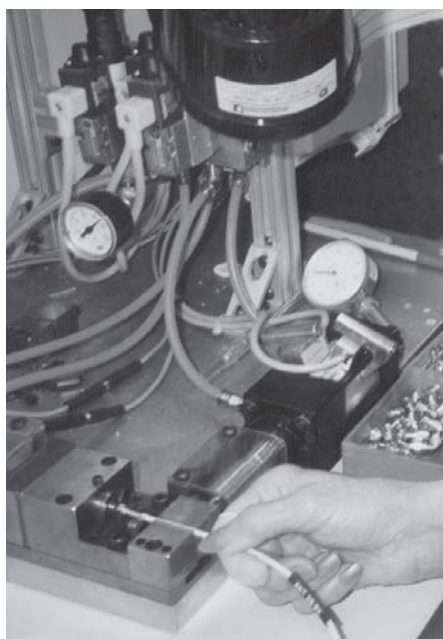
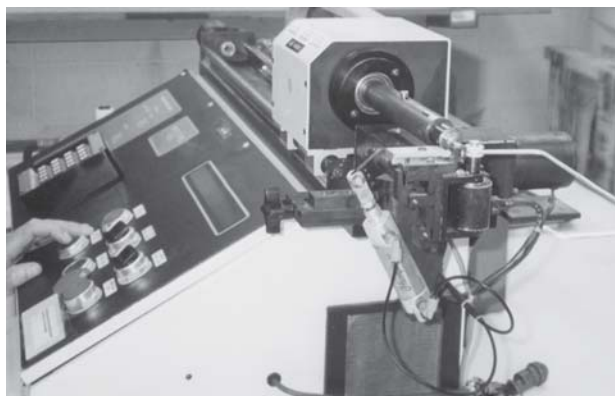
With over 75 years of experience, Emerson Network Power Connectivity Solutions is your interconnect solution for cable assembly design, high quality production and on-time delivery. Our Johnson line of precision cable assemblies includes standard RF coaxial cable assemblies such as flexible, conformable and semi-rigid types for 50 or 75 ohm systems from 0 to 40 GHz. We can work with almost any connector, including our complete line of Johnson connectors including SMK, SMA, SMB, SMC, BNC, TNC, N, F, UHF, Mini-UHF, MCX and MMCX connectors. Cable assemblies manufactured with our RF connectors assure you controlled impedance throughout the cable length. Our skilled personnel adhere to rigorous quality assurance procedures, giving you the cables you need, on time, without hassles.

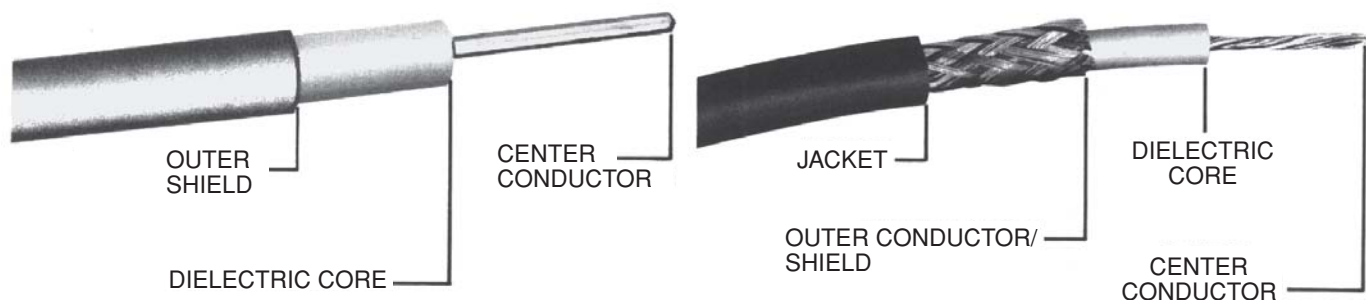
**Backed by test data shipped with the product!** Our assemblies are delivered completely tested to customer specifications and carry our complete customer satisfaction

guarantee. By having us make your cable assemblies, you save the cost of training personnel; discarding damaged parts; cable testing; and replacing faulty inventory. You save on overhead, manufacturing and equipment costs and you receive proven cost effective cable assemblies on time and to your specifications.

We are an industry leader in the RF coaxial connector and electronic hardware market...you can rely on Emerson Network Power Connectivity Solutions for all your assembly needs.

**We're responsive,  
reliable and ready to  
work with you.**





## Semi-Rigid Cable Dimensions

| CABLE    | CENTER CONDUCTOR O.D. | O.D. DIELECTRIC | O.D. SHIELD | IMPEDANCE |
|----------|-----------------------|-----------------|-------------|-----------|
| RG-405/U | .0201 (0.51)          | .0658 (1.67)    | .086 (2.18) | 50        |
| RG-402/U | .0359 (0.91)          | .1175 (2.98)    | .141 (3.58) | 50        |

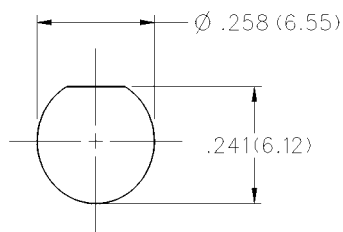
## RF Flexible Cable Dimensions

| CABLE     | CENTER CONDUCTOR | O.D. DIELECTRIC | O.D. SHIELD      | O.D. JACKET | IMPEDANCE |
|-----------|------------------|-----------------|------------------|-------------|-----------|
| .047 dia. | .007 (0.19)      | .020 (0.52)     | .035 (0.90)      | .047 (1.20) | 50        |
| RG-178B/U | .012 (.030)      | .034 (0.86)     | .054 (1.37)      | .071 (1.80) | 50        |
| RG-196A/U | .012 (.030)      | .034 (0.86)     | .054 (1.37)      | .071 (1.80) | 50        |
| RG-174/U  | .019 (0.48)      | .060 (1.52)     | .080 (2.03)      | .110 (2.79) | 50        |
| RG-179B/U | .012 (.030)      | .063 (1.60)     | .084 (2.13)      | .110 (2.79) | 75        |
| RG-187A/U | .012 (.030)      | .060 (1.52)     | .084 (2.13)      | .110 (2.79) | 75        |
| RG-188A/U | .020 (0.51)      | .060 (1.52)     | .081 (2.036)     | .110 (2.79) | 50        |
| RG-316/U  | .020 (0.51)      | .060 (1.52)     | .081 (2.06)      | .110 (2.79) | 50        |
| RG-316 DS | .020 (0.51)      | .060 (1.52)     | (DS) .100 (2.54) | .120 (3.05) | 50        |
| RG-179 DS | .012 (.030)      | .063 (1.60)     | (DS) .103 (2.62) | .120 (3.05) | 75        |
| RG-187 DS | .012 (.030)      | .060 (1.52)     | (DS) .100 (2.54) | .120 (3.05) | 75        |
| RG-188 DS | .020 (0.51)      | .060 (1.52)     | (DS) .100 (2.54) | .120 (3.05) | 50        |
| RG-141A/U | .039 (0.99)      | .116 (2.95)     | .146 (3.71)      | .190 (4.83) | 50        |
| RG-303/U  | .039 (0.96)      | .116 (2.95)     | .146 (3.71)      | .190 (4.83) | 50        |
| RG-400/U  | .038 (0.96)      | .116 (2.95)     | (DS) .171 (4.34) | .195 (4.85) | 50        |
| RG-142B/U | .039 (0.99)      | .116 (2.95)     | (DS) .171 (4.34) | .195 (4.95) | 50        |
| RG-58C/U  | .038 (0.96)      | .116 (2.95)     | .150 (3.81)      | .195 (4.95) | 50        |
| RG-55B/U  | .032 (0.81)      | .116 (2.95)     | (DS) .176 (4.47) | .206 (5.23) | 53.5      |
| RG-223/U  | .032 (0.81)      | .116 (2.95)     | (DS) .176 (4.47) | .206 (5.23) | 53.5      |
| LMR-100   | .022 (.056)      | .062 (1.57)     | .085 (2.16)      | .105 (2.67) | 50        |
| LMR-195   | .037 (0.94)      | .110 (2.79)     | .139 (3.53)      | .195 (4.95) | 50        |
| LMR-200   | .044 (1.12)      | .116 (2.95)     | .144 (3.66)      | .195 (4.95) | 50        |
| LMR-240   | .056 (1.42)      | .150 (3.81)     | .178 (4.52)      | .240 (6.10) | 50        |
| 735A      | .016 (0.41)      | .077 (1.96)     | .101 (2.57)      | .128 (3.25) | 75        |
| RG-59     | .0226 (0.57)     | .146 (3.71)     | .191 (4.85)      | .242 (6.15) | 75        |

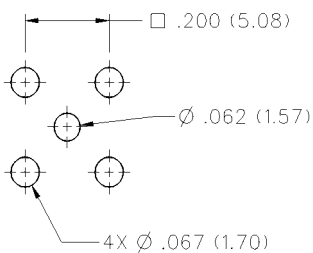
(DS = Double Braid)

## Recommended Mounting Hole Dimensions

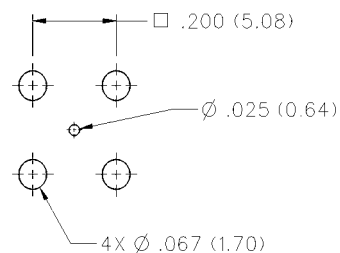
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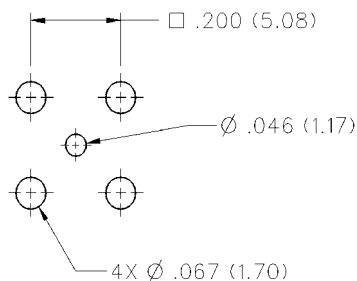
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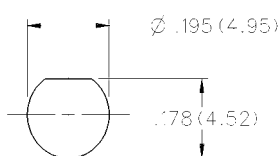
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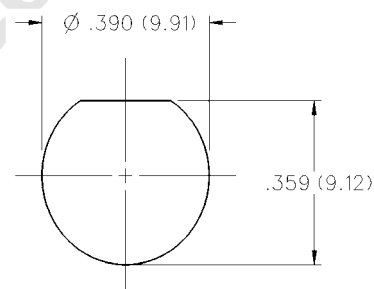
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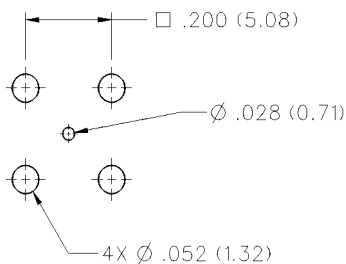
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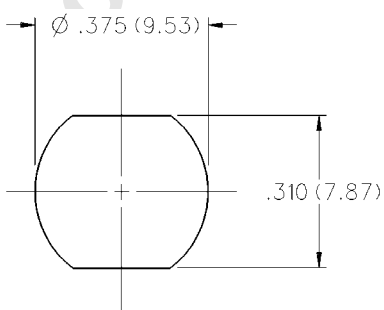
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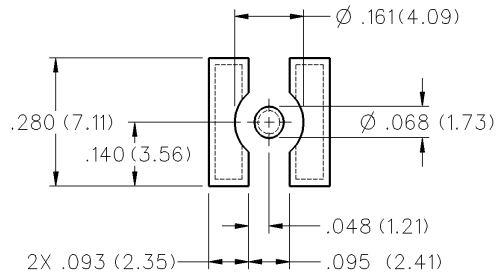
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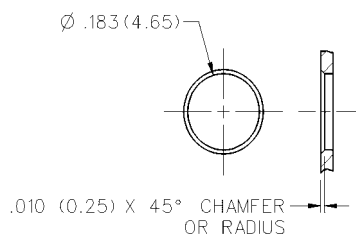
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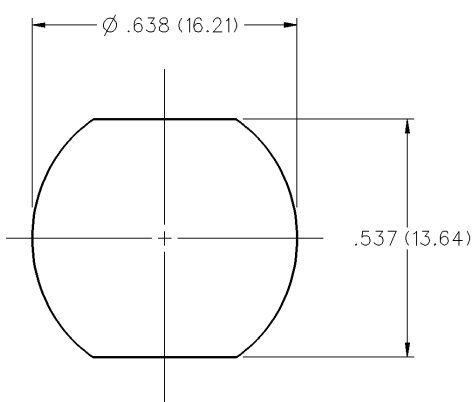
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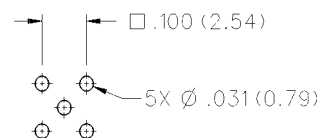
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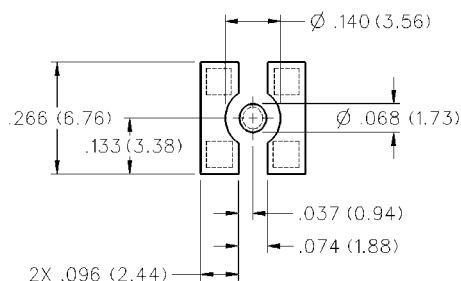


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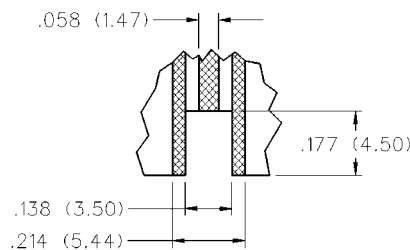


## Recommended Mounting Hole Dimensions

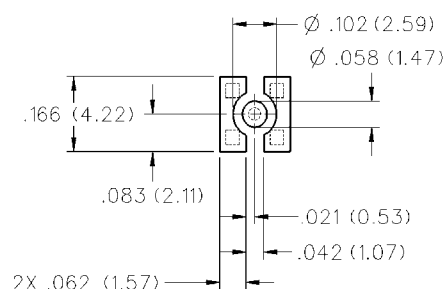
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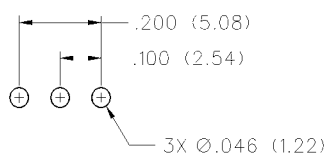
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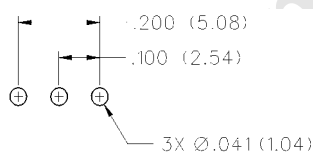
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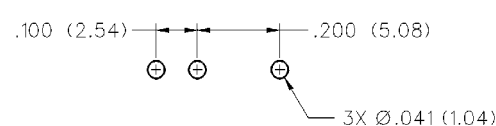
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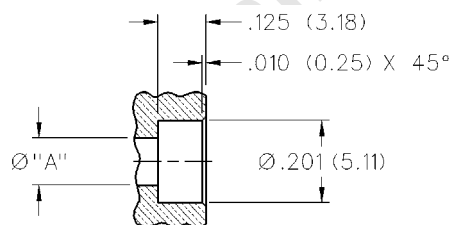
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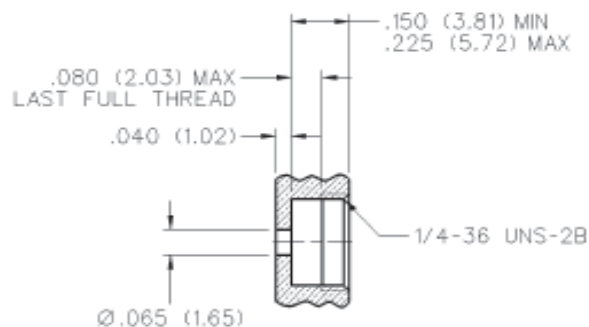


19



NOT INTENDED FOR USE IN MATERIALS  
HARDER THAN ROCKWELL B82

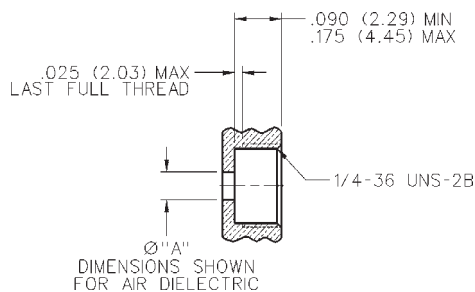
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| PART NO.         | "A"         |
|------------------|-------------|
| 142-0701-481/486 | .116 (2.95) |
| 142-1721-001/026 | .116 (2.95) |
| 142-1721-031/056 | .162 (4.11) |
| 142-1721-011/016 | .069 (1.75) |
| 142-1721-021/026 | .116 (2.95) |

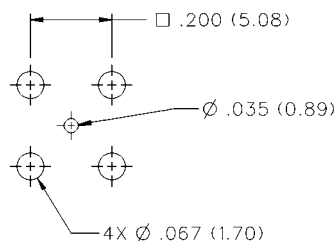
## Recommended Mounting Hole Dimensions

21

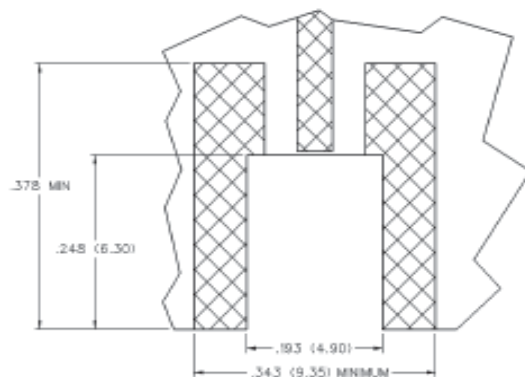


| PART NO.         | "A"         |
|------------------|-------------|
| 142-1731-001/006 | .046 (1.17) |
| 142-1731-011/016 | .083 (2.11) |
| 142-1731-041/046 | .116 (2.95) |

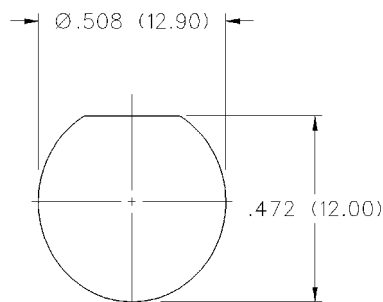
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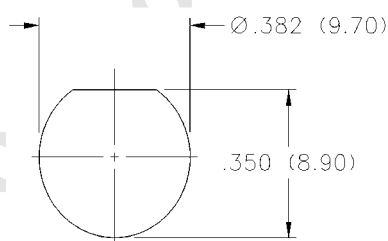
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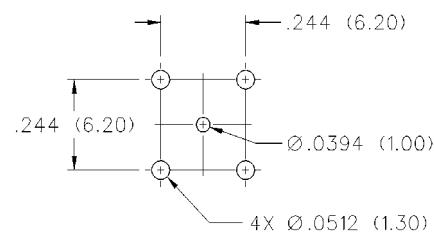
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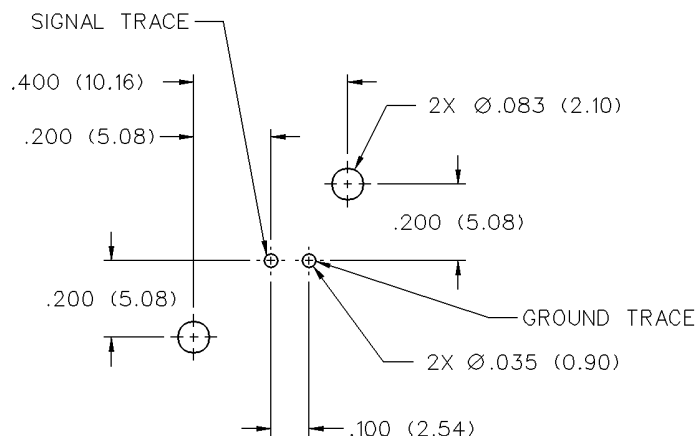
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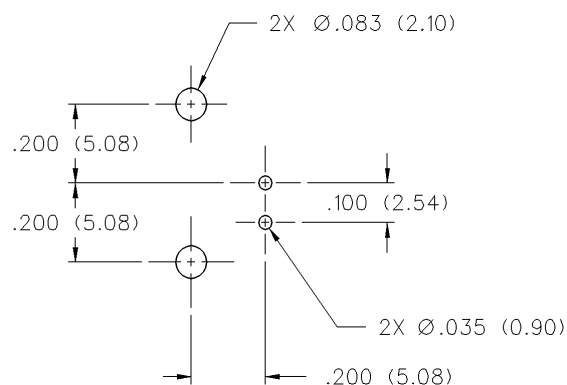
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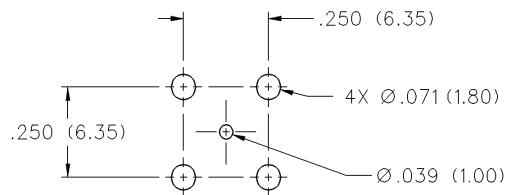


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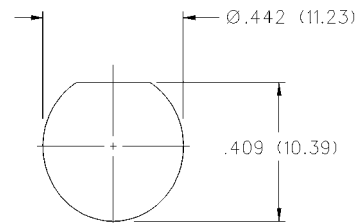


## Recommended Mounting Hole Dimensions

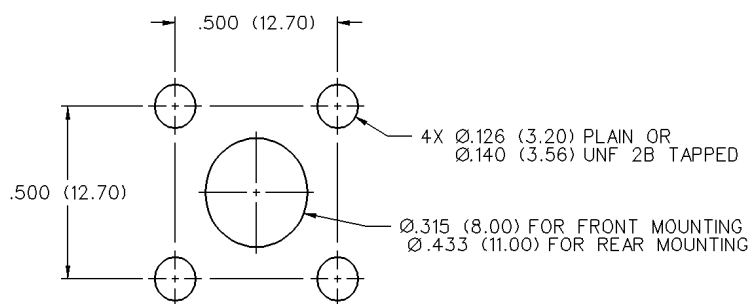
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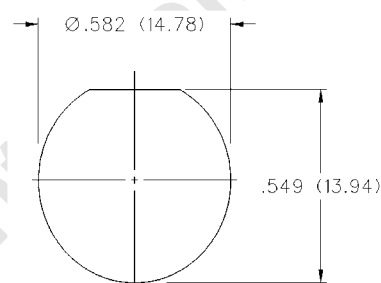
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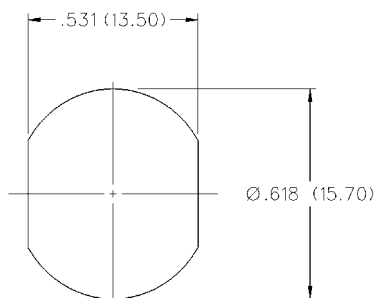
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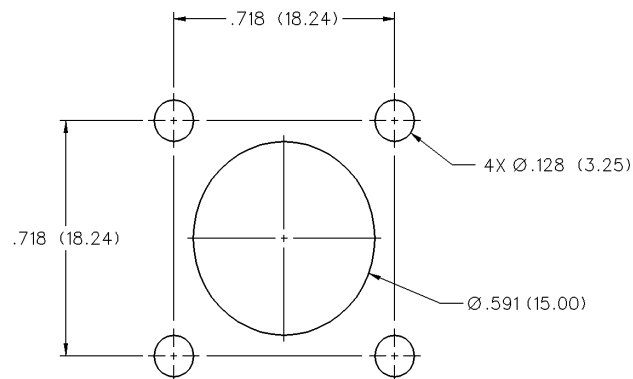
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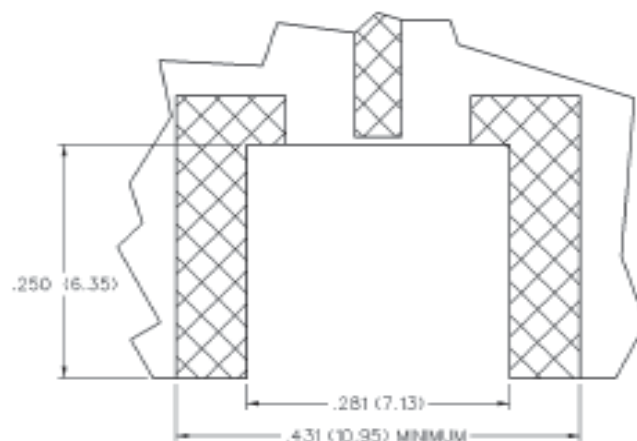
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**34**



**35**



|                        |     |                        |     |                    |     |                    |     |
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| 131-1402-101 .....     | 240 | 131-6404-001 .....     | 239 | 133-3404-001 ..... | 216 | 135-3436-001 ..... | 210 |
| 131-1402-116 .....     | 240 | 131-6404-006 .....     | 239 | 133-3404-006 ..... | 216 | 135-3436-101 ..... | 208 |
| 131-1403-001 .....     | 240 | 131-6404-101 .....     | 240 | 133-3404-101 ..... | 218 | 135-3693-101 ..... | 207 |
| 131-1403-016 .....     | 239 | 131-6404-106 .....     | 240 | 133-3404-106 ..... | 218 | 140-0000-957 ..... | 220 |
| 131-1403-101 .....     | 240 | 131-6433-001 .....     | 239 | 133-3407-101 ..... | 218 | 140-0000-958 ..... | 220 |
| 131-1403-116 .....     | 240 | 131-6433-006 .....     | 239 | 133-3407-106 ..... | 218 | 140-0000-960 ..... | 220 |
| 131-1404-001 .....     | 239 | 131-6433-101 .....     | 240 | 133-3433-001 ..... | 216 | 140-0000-962 ..... | 220 |
| 131-1404-016 .....     | 239 | 131-6433-106 .....     | 240 | 133-3433-006 ..... | 216 | 140-0000-964 ..... | 220 |
| 131-1404-101 .....     | 240 | 131-6593-401 .....     | 237 | 133-3433-101 ..... | 218 | 142-0002-221 ..... | 242 |
| 131-1404-116 .....     | 240 | 131-6593-406 .....     | 237 | 133-3433-106 ..... | 218 | 142-0002-226 ..... | 242 |
| 131-1693-101 .....     | 238 | 131-8303-401 .....     | 239 | 133-3693-001 ..... | 214 | 142-0002-811 ..... | 244 |
| 131-1693-116 .....     | 238 | 131-8303-406 .....     | 239 | 133-3693-006 ..... | 214 | 142-0002-821 ..... | 245 |
| 131-3302-001 .....     | 237 | 131-8304-401 .....     | 239 | 133-3693-101 ..... | 215 | 142-0003-201 ..... | 242 |
| 131-3302-006 .....     | 237 | 131-8304-406 .....     | 239 | 133-3693-106 ..... | 215 | 142-0003-206 ..... | 242 |
| 131-3303-001 .....     | 239 | 131-8403-001 .....     | 239 | 133-5302-401 ..... | 216 | 142-0003-231 ..... | 242 |
| 131-3303-006 .....     | 239 | 131-8403-006 .....     | 239 | 133-5302-406 ..... | 216 | 142-0003-236 ..... | 242 |
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| 131-3303-406 .....     | 239 | 131-8403-016 .....     | 239 | 133-5303-406 ..... | 216 | 142-0003-246 ..... | 242 |
| 131-3303-501 .....     | 240 | 131-8403-101 .....     | 240 | 133-5304-401 ..... | 216 | 142-0003-301 ..... | 243 |
| 131-3303-506 .....     | 240 | 131-8403-106 .....     | 240 | 133-5304-406 ..... | 216 | 142-0003-306 ..... | 243 |
| 131-3304-401 .....     | 239 | 131-8403-111 .....     | 240 | 133-5402-001 ..... | 216 | 142-0003-801 ..... | 244 |
| 131-3304-406 .....     | 239 | 131-8403-116 .....     | 240 | 133-5402-006 ..... | 216 | 142-0003-811 ..... | 244 |
| 131-3304-501 .....     | 240 | 131-8404-001 .....     | 239 | 133-5402-101 ..... | 218 | 142-0004-201 ..... | 242 |
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| 131-3402-116 .....     | 240 | 131-8404-106 .....     | 240 | 133-5403-106 ..... | 218 | 142-0004-226 ..... | 242 |
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| 131-3403-016 .....     | 239 | 131-8404-116 .....     | 240 | 133-5404-006 ..... | 216 | 142-0004-306 ..... | 243 |
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| 131-3403-116 .....     | 240 | 131-8409-101 .....     | 240 | 133-8333-001 ..... | 217 | 142-0007-801 ..... | 244 |
| 131-3403-401 .....     | 239 | 131-8409-106 .....     | 240 | 133-8333-401 ..... | 217 | 142-0007-811 ..... | 244 |
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| 131-3404-406 .....     | 239 | 131-9404-101/116 ..... | 240 | 133-8445-101 ..... | 219 | 142-0096-806 ..... | 245 |
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| 131-3593-401 .....     | 237 | 133-3302-401 .....     | 216 | 134-0304-406 ..... | 241 | 142-0107-406 ..... | 234 |
| 131-3593-406 .....     | 237 | 133-3302-406 .....     | 216 | 134-0307-406 ..... | 241 | 142-0202-011 ..... | 234 |
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| 131-6403-106 .....     | 240 | 133-3403-106 .....     | 218 | 135-3433-001 ..... | 211 | 142-0302-431 ..... | 228 |

# Assembly Instructions

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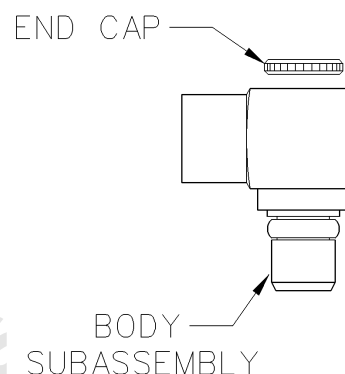
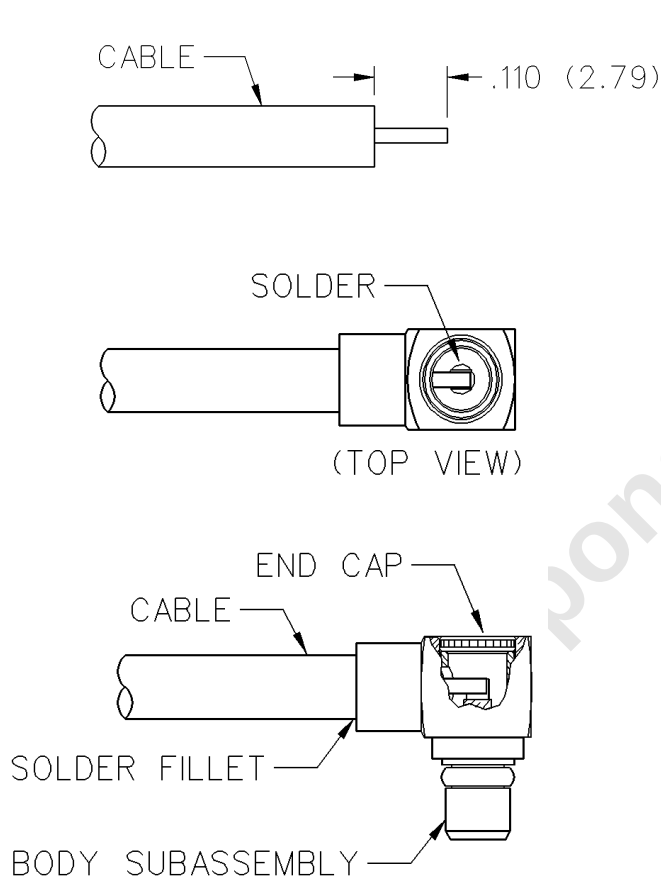
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| 142-0335-406 ..... | 230 | 142-0801-421 .....     | 227 | 142-5435-106 .....    | 233 | CPMC-78-10 .....   | 246 |
| 142-0339-401 ..... | 230 | 142-1403-001/006 ..... | 229 | 142-5439-001 .....    | 230 | CPMC-78-18 .....   | 246 |
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| 142-0402-011 ..... | 228 | 142-1404-001/006 ..... | 229 | 142-5439-101 .....    | 233 | CPMC-88-2 .....    | 246 |
| 142-0402-016 ..... | 228 | 142-1407-001/006 ..... | 229 | 142-5439-106 .....    | 233 | CPMC-88-3 .....    | 246 |
| 142-0402-101 ..... | 232 | 142-1408-001/006 ..... | 229 | 142-9403-101 .....    | 232 | CPMC-88-5 .....    | 246 |
| 142-0402-106 ..... | 232 | 142-4303-401 .....     | 229 | 142-9404-101 .....    | 232 | CPMC-88-10 .....   | 246 |
| 142-0403-001 ..... | 231 | 142-4303-406 .....     | 229 | 142-9407-101 .....    | 232 | CPMC-88-11 .....   | 246 |
| 142-0403-006 ..... | 231 | 142-4304-401 .....     | 229 | CP-78-2 .....         | 250 | CPMC-88-13 .....   | 246 |
| 142-0403-011 ..... | 229 | 142-4304-406 .....     | 229 | CP-78-5 .....         | 250 | CPMC-88-14 .....   | 246 |
| 142-0403-016 ..... | 229 | 142-4307-401 .....     | 229 | CP-78-10 .....        | 250 | CPMC-88-17 .....   | 246 |
| 142-0403-101 ..... | 232 | 142-4307-406 .....     | 229 | CP-79-20BM1 .....     | 249 | CPMC-88-18 .....   | 246 |
| 142-0403-106 ..... | 232 | 142-4308-401 .....     | 229 | CP-79-20BM2 .....     | 249 | CPMC-88-19 .....   | 246 |
| 142-0404-011 ..... | 229 | 142-4308-406 .....     | 229 | CP-TNC-89-19-BM ..... | 253 | CPMC-88-21 .....   | 248 |
| 142-0404-016 ..... | 229 | 142-4403-001 .....     | 229 | CP-88-1 .....         | 250 | CPMC-88-26 .....   | 246 |
| 142-0404-101 ..... | 232 | 142-4403-006 .....     | 229 | CP-88-2 .....         | 250 | CPMC-TNC-1 .....   | 253 |
| 142-0404-106 ..... | 232 | 142-4403-101 .....     | 232 | CP-88-3 .....         | 250 | CPMC-TNC-2 .....   | 253 |
| 142-0407-011 ..... | 229 | 142-4403-106 .....     | 232 | CP-88-4 .....         | 250 | CPMC-TNC-13 .....  | 253 |
| 142-0407-016 ..... | 229 | 142-4404-001 .....     | 229 | CP-88-5 .....         | 250 | CPMC-TNC-16 .....  | 253 |
| 142-0407-101 ..... | 232 | 142-4404-006 .....     | 229 | CP-88-10 .....        | 250 | CPMC-TNC-17 .....  | 253 |
| 142-0407-106 ..... | 232 | 142-4404-101 .....     | 232 | CP-89-1 .....         | 250 | CPN-1 .....        | 255 |
| 142-0408-011 ..... | 229 | 142-4404-106 .....     | 232 | CP-89-2 .....         | 250 | CPN-2 .....        | 255 |
| 142-0408-016 ..... | 229 | 142-4407-001 .....     | 230 | CP-89-19BM1 .....     | 249 | CPN-8 .....        | 255 |
| 142-0408-101 ..... | 232 | 142-4407-006 .....     | 229 | CP-89-27BM2 .....     | 249 | CPN-8/110 .....    | 255 |
| 142-0433-011 ..... | 229 | 142-4407-101 .....     | 232 | CP-SW88-2 .....       | 250 | CPN-16 .....       | 255 |
| 142-0433-016 ..... | 229 | 142-4407-106 .....     | 232 | CP-SW88-10 .....      | 250 | CPN-17 .....       | 255 |
| 142-0433-101 ..... | 232 | 142-4408-001 .....     | 229 | CP-SW88-21 .....      | 250 | CPN-142T .....     | 255 |
| 142-0433-106 ..... | 232 | 142-4408-006 .....     | 229 | CP-SW88-23 .....      | 250 | CPN-68-1 .....     | 254 |
| 142-0435-001 ..... | 230 | 142-4408-101 .....     | 232 | CPF-249-1 .....       | 257 | CPN-68-8 .....     | 254 |
| 142-0435-006 ..... | 230 | 142-4408-106 .....     | 232 | CPFI-UG78-2 .....     | 251 | CPN-68-13 .....    | 254 |
| 142-0435-101 ..... | 233 | 142-4435-001 .....     | 230 | CPFI-UG78-5 .....     | 251 | MINI-UHF-1 .....   | 258 |
| 142-0435-106 ..... | 233 | 142-4435-006 .....     | 230 | CPFI-UG88-1 .....     | 251 | MINI-UHF-1B .....  | 258 |
| 142-0439-001 ..... | 230 | 142-4435-101 .....     | 231 | CPFI-UG88-2 .....     | 251 | MINI-UHF-2 .....   | 258 |
| 142-0439-006 ..... | 230 | 142-4435-106 .....     | 231 | CPFI-UG88-3 .....     | 251 | MINI-UHF-16 .....  | 258 |
| 142-0439-101 ..... | 233 | 142-4439-001 .....     | 230 | CPFI-UG88-4 .....     | 251 | MINI-UHF-17 .....  | 258 |

## MMCX Right Angle Plug for .086 (2.18) Semi-Rigid Cable

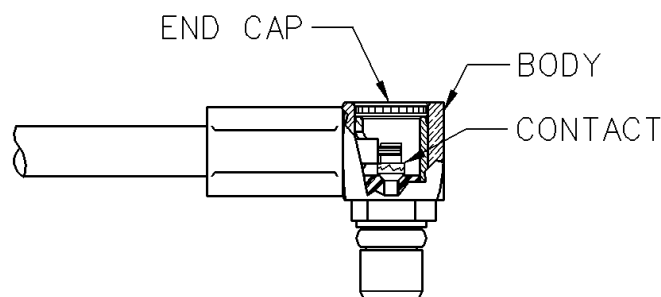
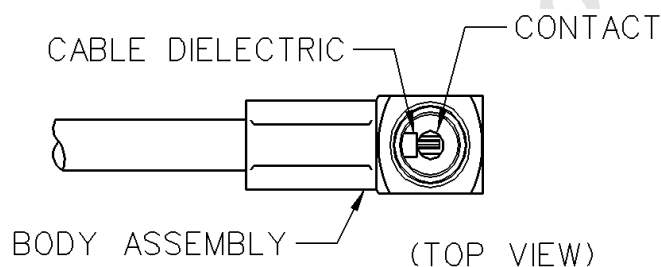
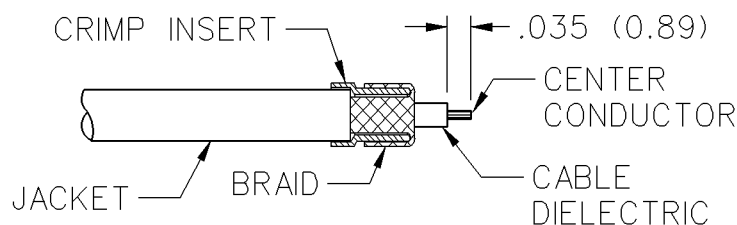
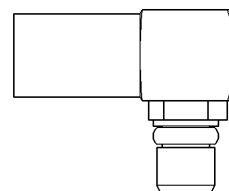
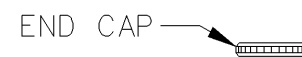
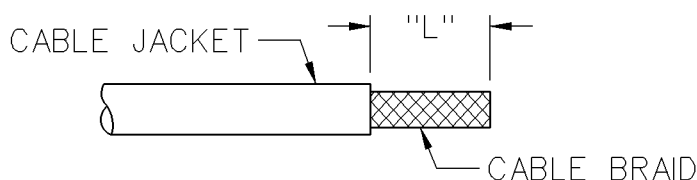
| CABLE GROUP                   | PART NO.     |
|-------------------------------|--------------|
| RG-405/U<br>(.086 Semi-Rigid) | 135-3693-101 |



1. Identify piece parts. (2 piece parts)
2. Strip cable to dimensions shown. Do not nick center conductor.
3. Insert cable into body making certain that jacket bottoms on the connector body. Fixture cable and assembly to prevent movement during soldering.
4. Solder center conductor to contact as shown. Use a minimum amount of solder for a good joint.
5. Solder body to cable as shown. Use a minimum amount of heat to minimize cable insulation movement.
6. Press end cap into body access port using .156 (3.96) diameter flat punch or Johnson assembly tool 141-0000-910.

## MMCX Right Angle Plug for .047 (1.20) Diameter and RG-178 Size Flexible Cable with Crimp Insert

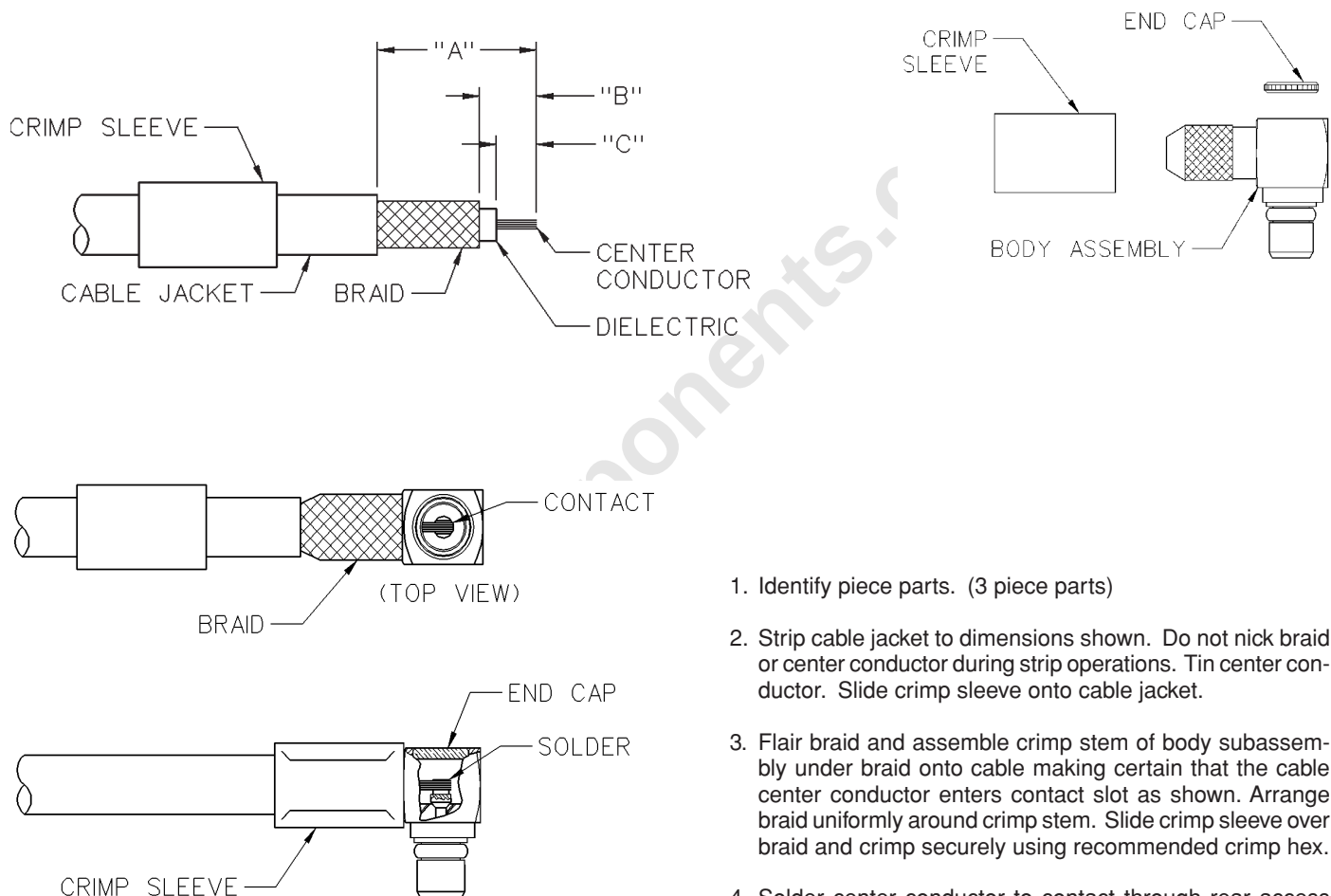
| CABLE GROUP   | PART NO.     | "L"         | CRIMP HEX   |
|---------------|--------------|-------------|-------------|
| .047 Flexible | 135-3436-101 | .140 (3.56) | .105 (2.67) |
| RG-178/U, 196 | 135-3402-101 | .188 (4.78) | .105 (2.67) |



1. Identify piece parts. (3 piece parts)
2. Strip cable jacket to dimensions shown. Do not nick braid or center conductor during strip operations.
3. Slide crimp insert over braid and against jacket. Fold braid around crimp insert as shown. Strip cable dielectric to dimension shown. Tin center conductor.
4. Slide body assembly over cable and crimp insert, then seat firmly so cable dielectric butts against contact as shown. Crimp body using recommended crimp hex. Maintain forward pressure on cable while crimping.
5. Solder contact to center conductor through rear access port. Use a minimum amount of solder for a full fillet joint.
6. Press end cap into access port using .156 (3.96) diameter flat punch or Johnson assembly tool 141-0000-910.

## MMCX Right Angle Plug for RG-178, RG-316, RG-316 DS and RG-179 Size Flexible Cable

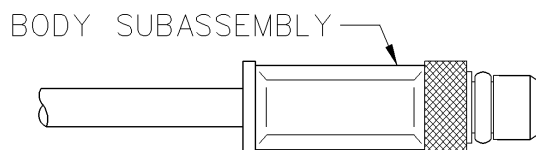
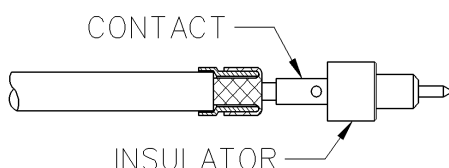
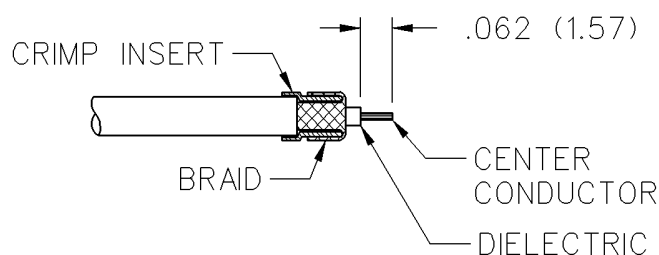
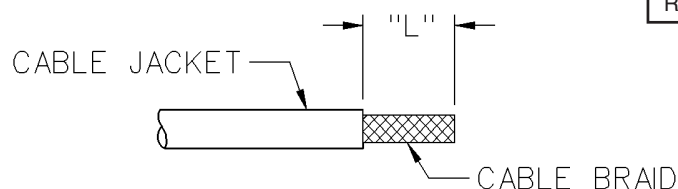
| CABLE GROUP             | PART NO.     | CRIMP HEX   | "A"  | "B"  | "C"  |
|-------------------------|--------------|-------------|------|------|------|
| RG-178, 196             | 135-3402-111 | .105 (2.67) | .310 | .100 | .035 |
| RG-316/U, 188, 187, 179 | 135-3403-101 | .128 (3.25) | .295 | .105 | .075 |
| RG-316 DS, 188 DS       | 135-3404-101 | .151 (3.83) | .295 | .105 | .075 |



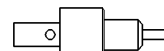
1. Identify piece parts. (3 piece parts)
2. Strip cable jacket to dimensions shown. Do not nick braid or center conductor during strip operations. Tin center conductor. Slide crimp sleeve onto cable jacket.
3. Flair braid and assemble crimp stem of body subassembly under braid onto cable making certain that the cable center conductor enters contact slot as shown. Arrange braid uniformly around crimp stem. Slide crimp sleeve over braid and crimp securely using recommended crimp hex.
4. Solder center conductor to contact through rear access port. Use a minimum amount of solder for a full fillet joint.
5. Press end cap into body access port using .156 (3.96) diameter flat punch or Johnson assembly tool 141-0000-910.

## MMCX Straight Plug for .047 (1.19) Diameter and RG-178 Size Flexible Cable

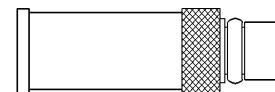
| CABLE GROUP   | PART NO.     | "L"         | CRIMP HEX                   |
|---------------|--------------|-------------|-----------------------------|
| .047 Flexible | 135-3436-001 | .135 (3.43) | .105 (2.67) x .250 (6.35) W |
| RG-178/U, 196 | 135-3402-001 | .184 (4.67) | .105 (2.67) x .250 (6.35) W |



CRIMP  
INSERT



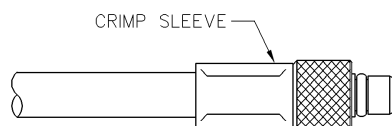
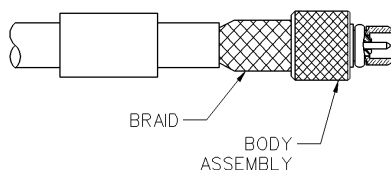
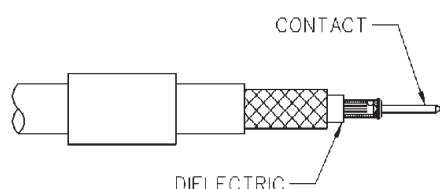
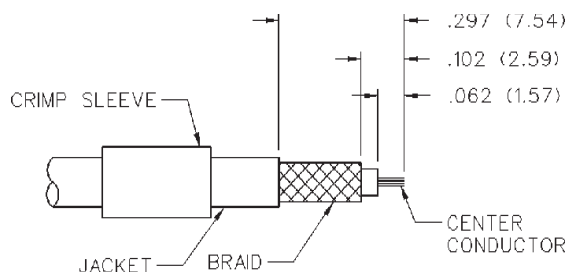
CONTACT  
ASSEMBLY



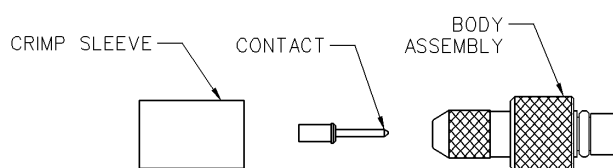
BODY  
ASSEMBLY

1. Identify piece parts. (3 piece parts)
2. Strip cable jacket to dimensions shown. Do not nick braid or center conductor during strip operations.
3. Slide crimp insert over braid and against jacket, fold braid around crimp insert as shown. Strip dielectric to dimension shown. Tin center conductor if contact is to be soldered attached. Do not tin center conductor if contact is to be crimp attached.
4. Assemble contact assembly onto cable as shown.  
**Solder attachment:** Solder contact to center conductor. Care should be taken that excess solder is not applied.  
**Crimp attachment:** Crimp contact to center conductor using Johnson hand tool 140-0000-952 and die set 140-0000-953. Crimp location should be centered between end of contact and cross-hole. Crimp attachment to solid center conductor cables is not recommended.
5. Slide body assembly over contact and crimp insert, then seat firmly as shown. Crimp body using recommended crimp die hex. Maintain forward pressure on cable while crimping.

## MMCX Straight Plug for RG-316, RG-179 and RG-316 DS Size Flexible Cable



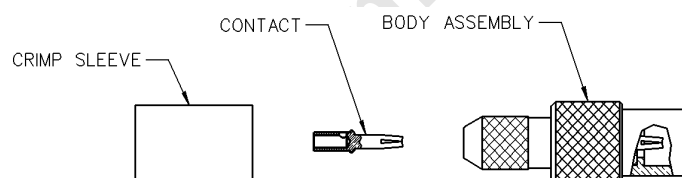
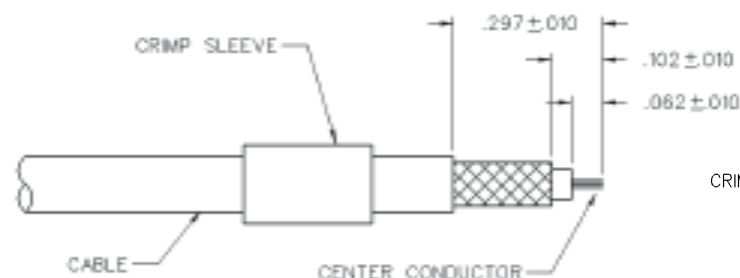
| CABLE GROUP                  | PART NO.     | CRIMP HEX   |
|------------------------------|--------------|-------------|
| RG-316/U, 188, 161, 174      | 135-3403-001 | .128 (3.25) |
| RG-316 DS,<br>188 DS, 187 DS | 135-3404-001 | .151 (3.83) |
| RG-179/U, 187                | 135-3433-001 | .128 (3.25) |



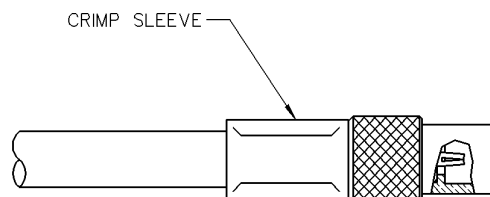
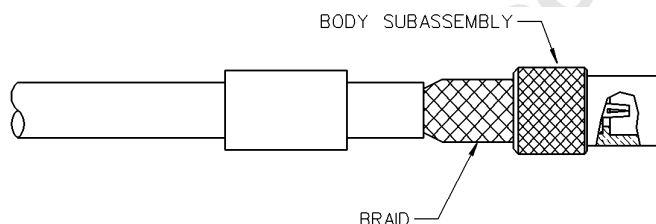
1. Identify connector parts. (3 piece parts)
2. Strip cable jacket to dimensions shown. Do not nick braid or center conductor during strip operations. Tin center conductor if contact will be solder attached. Do not tin center conductor if contact is to be crimp attached. Slide crimp sleeve onto cable jacket.
3. Assemble contact onto cable as shown.  
**Solder attachment:** Solder contact to center conductor. Care should be taken that excess solder is not applied.  
**Crimp attachment:** Crimp contact to center conductor using Johnson hand tool 140-0000-952 and die set 140-0000-953. Crimp location should be centered between end of contact and cross-hole. Crimp attachment to solid center conductor cables is not recommended.
4. Slide body assembly over contact and under braid, then seat firmly onto contact as shown. The body assembly will "snap" over the contact barb. The cable may have to be held in a soft jawed clamping fixture. Slide crimp sleeve forward and crimp using recommended crimp die hex.

## MMCX Straight Jack for RG-316, RG-316 DS and RG-179 Size Flexible Cable

| CABLE GROUP                  | PART NO.     | CRIMP HEX   |
|------------------------------|--------------|-------------|
| RG-316/U, 188, 161, 174      | 135-3303-001 | .128 (3.25) |
| RG-316 DS,<br>188 DS, 187 DS | 135-3304-001 | .151 (3.83) |
| RG-179/U, 187                | 135-3333-001 | .128 (3.25) |

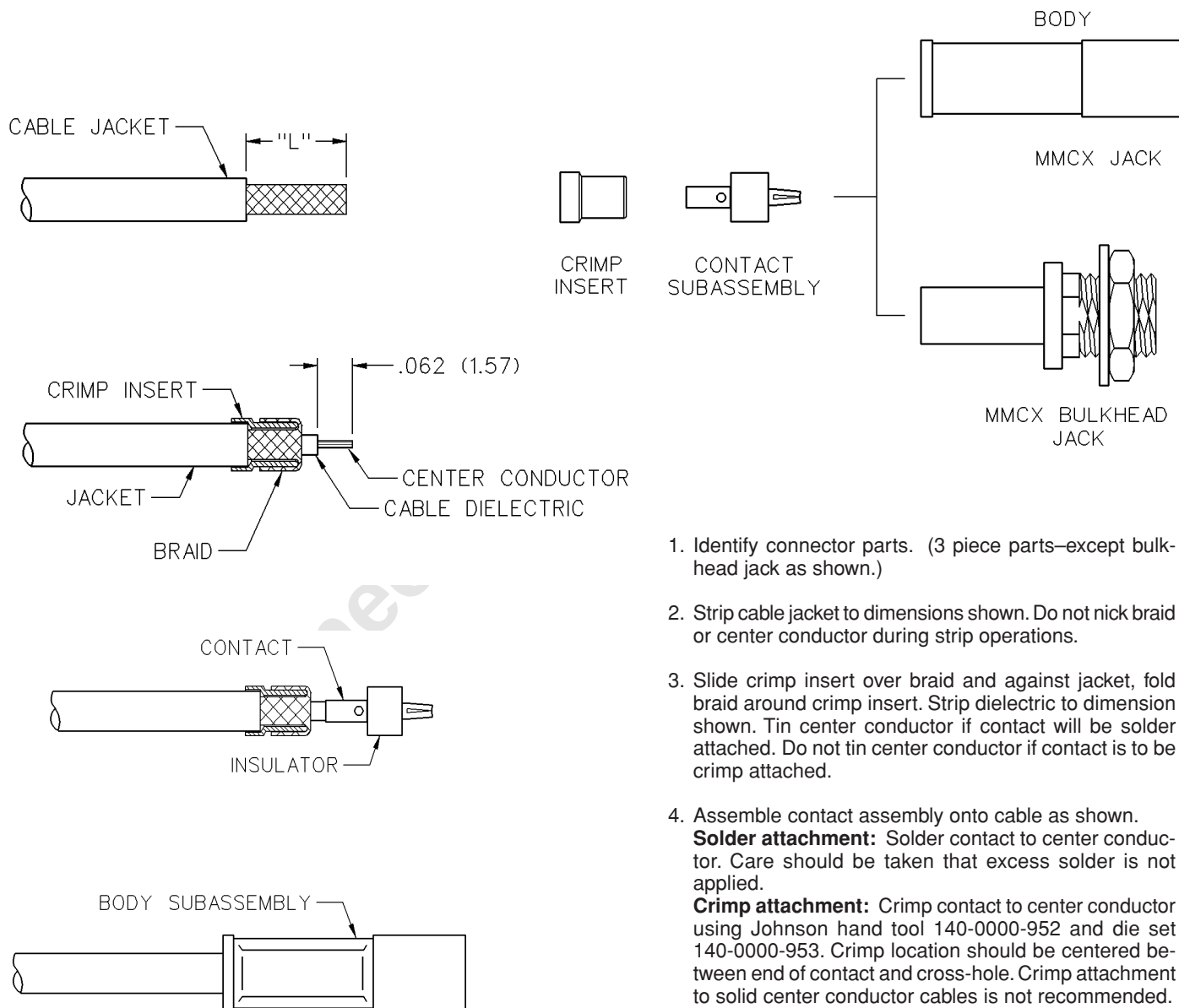


1. Identify connector parts. (3 piece parts)
2. Strip cable jacket to dimensions shown. Do not nick braid or center conductor during strip operations. Tin center conductor if contact will be solder attached. Do not tin center conductor if contact is to be crimp attached. Slide crimp sleeve onto cable jacket.
3. Assemble contact onto cable.  
**Solder attachment:** Solder contact to center conductor. Care should be taken that excess solder is not applied.  
**Crimp attachment:** Crimp contact to center conductor using Johnson hand tool 140-0000-952 and die set 140-0000-953. Crimp location should be centered between end of contact and cross-hole. Crimp attachment to solid center conductor cables is not recommended.
4. Slide body assembly over contact and under braid, then seat firmly onto contact. The body assembly will "snap" over the contact barb. The cable may have to be held in a soft jawed clamping fixture. Slide crimp sleeve forward and crimp using recommended crimp die hex.



## MMCX Straight Jack for .047 Diameter and RG-178 Size Flexible Cable

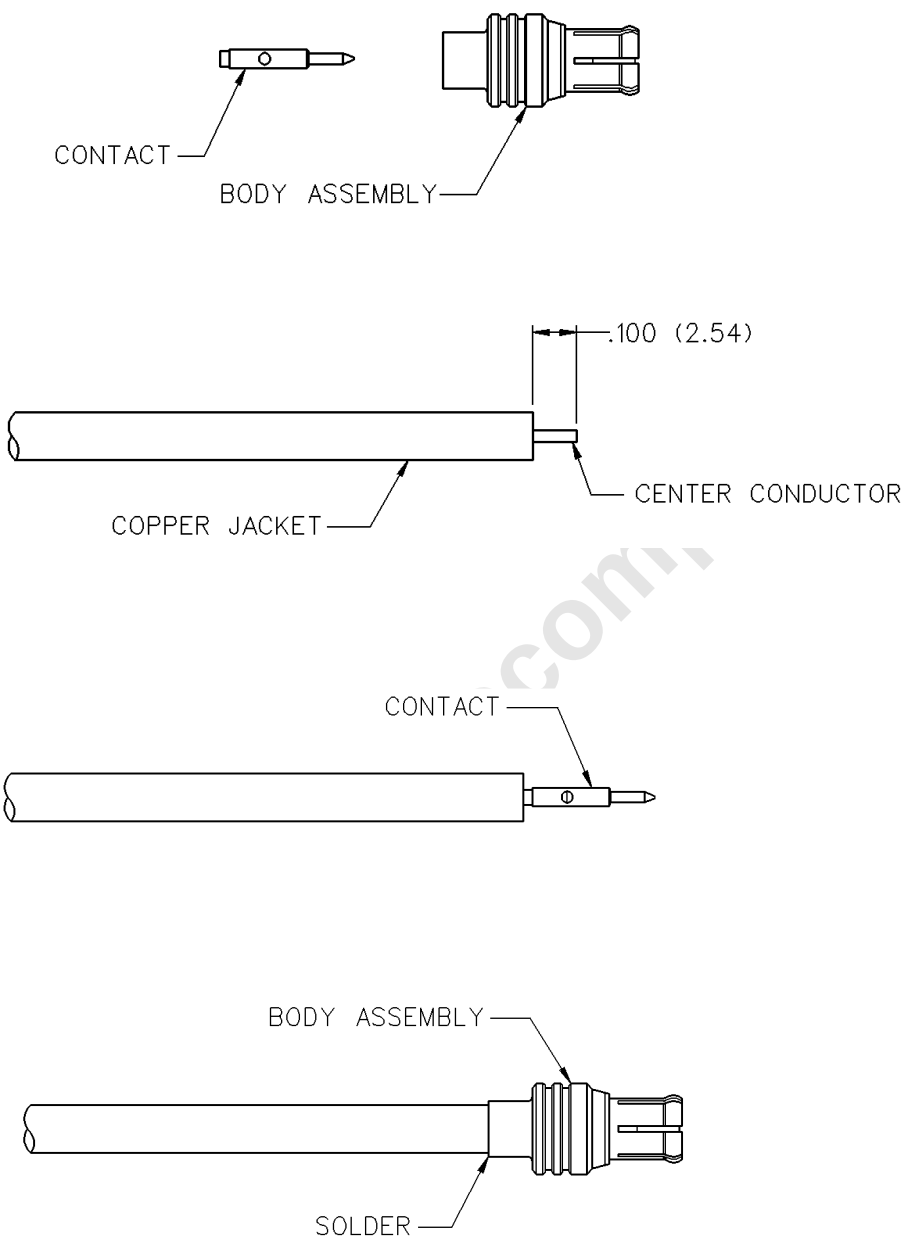
| CABLE GROUP   | PART NO.     | "L"         | CRIMP HEX                   |
|---------------|--------------|-------------|-----------------------------|
| .047 Flexible | 135-3336-001 | .135 (3.43) | .105 (2.67) x .250 (6.35) W |
|               | 135-3336-401 | .135 (3.43) | .105 (2.67) x .250 (6.35) W |
| RG-178/U, 196 | 135-3302-001 | .185 (4.67) | .105 (2.67) x .250 (6.35) W |
|               | 135-3302-401 | .185 (4.67) | .105 (2.67) x .250 (6.35) W |



1. Identify connector parts. (3 piece parts—except bulk-head jack as shown.)
2. Strip cable jacket to dimensions shown. Do not nick braid or center conductor during strip operations.
3. Slide crimp insert over braid and against jacket, fold braid around crimp insert. Strip dielectric to dimension shown. Tin center conductor if contact will be solder attached. Do not tin center conductor if contact is to be crimp attached.
4. Assemble contact assembly onto cable as shown.  
**Solder attachment:** Solder contact to center conductor. Care should be taken that excess solder is not applied.  
**Crimp attachment:** Crimp contact to center conductor using Johnson hand tool 140-0000-952 and die set 140-0000-953. Crimp location should be centered between end of contact and cross-hole. Crimp attachment to solid center conductor cables is not recommended.
5. Slide body assembly over contact and crimp insert, then seat firmly onto contact. Crimp body using recommended crimp hex. Bulkhead jack requires 140-000-951 die set. Maintain forward pressure on cable while crimping.

## MCX Solder Type Straight Plug for Semi-Rigid Cable

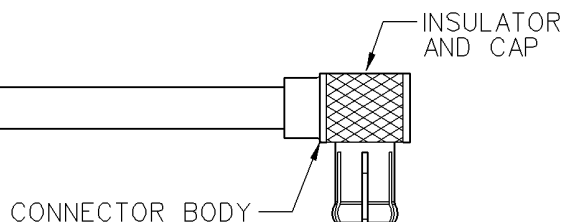
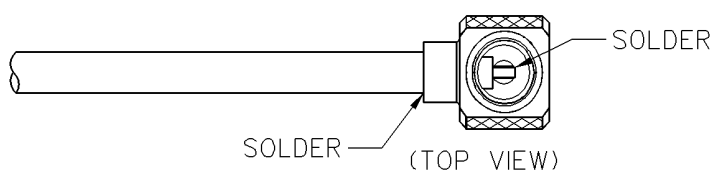
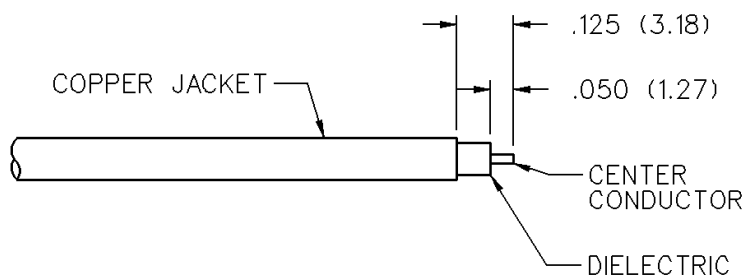
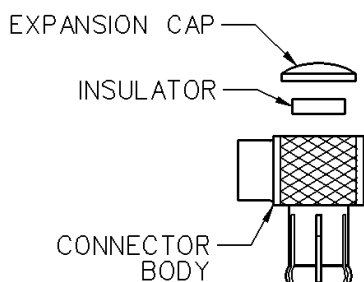
| CABLE TYPE        | PART NO.     |
|-------------------|--------------|
| RG-405/U          | 133-3693-001 |
| (.086 Semi-Rigid) | 133-3693-006 |



1. Identify connector parts. (2 piece parts)
2. Strip cable to dimensions shown. Do not nick center conductor.
3. Place center contact on center conductor making sure contact bottoms against cable insulation. Solder center conductor to center contact through solder hole. Solder **must not** be allowed to run on outside of contact. Use a minimum amount of solder for a good joint. **.020 (0.51) diameter solder is recommended.** Trim excess insulation.
4. Insert contact and cable into body assembly making sure cable is bottomed against insulator in body. Solder body to cable. Use a minimum amount of heat to minimize cable insulation movement.

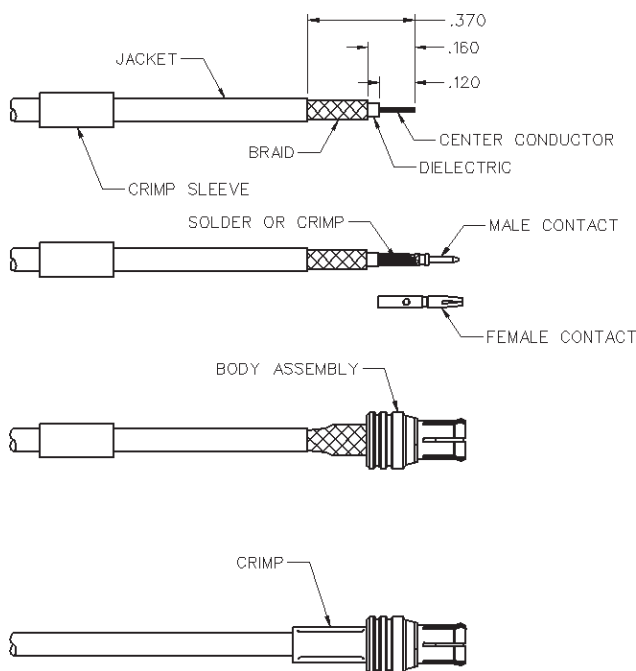
## MCX Solder Type Right Angle Plug for Semi-Rigid Cable

| CABLE GROUP       | PART NO.     |
|-------------------|--------------|
| RG-405/U          | 133-3693-101 |
| (.086 Semi-Rigid) | 133-3693-106 |

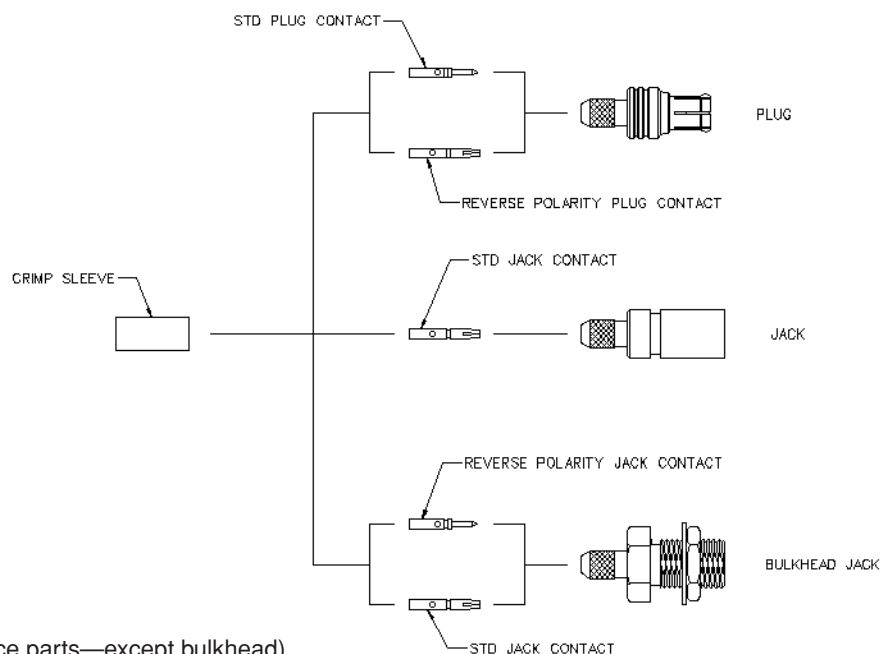


1. Identify connector parts. (3 piece parts)
2. Strip cable to dimensions shown. Do not nick center conductor.
3. Insert cable into body making sure cable insulation bottoms on center contact. Solder center conductor to contact through the rear access port. Use a minimum amount of solder for a good joint. **.020 (0.51) diameter solder is recommended.**
4. Solder body to cable. Use a minimum amount of heat to minimize cable insulation movement. Assemble insulator then place expansion cap in access port and seat with a .156 (3.96) diameter punch or hand tool 141-0000-908.

## MCX Crimp Type Straight Connectors for Flexible Cable



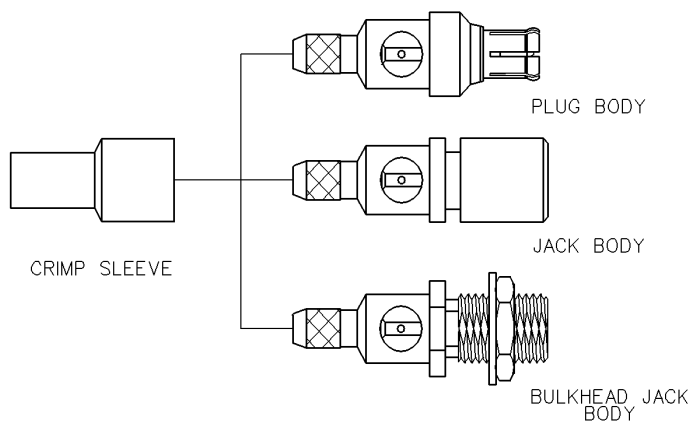
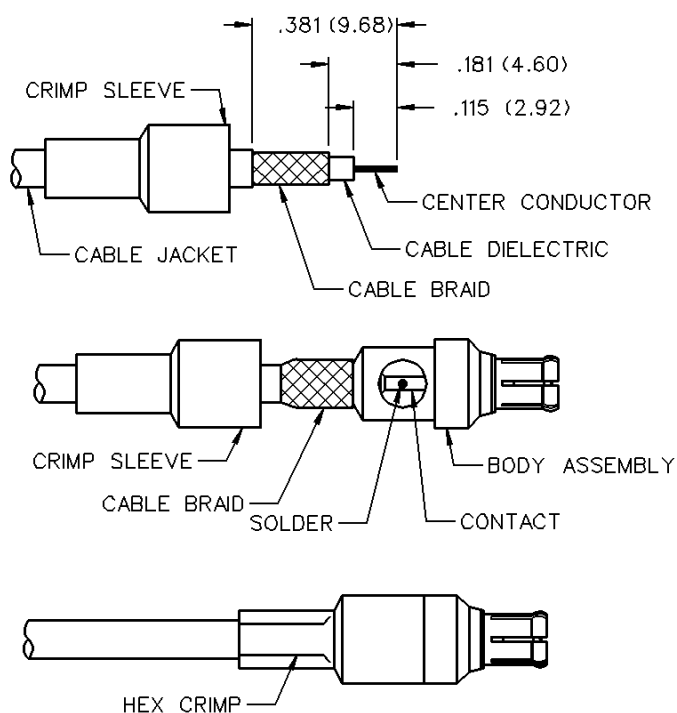
| CABLE GROUP             | PART NO.         | CRIMP HEX   |
|-------------------------|------------------|-------------|
| RG-178/U, 196           | 133-3302-001/006 | .105 (2.67) |
|                         | 133-3302-401/406 | .105 (2.67) |
| RG-316/U, 161, 174, 188 | 133-3303-001/006 | .128 (3.25) |
|                         | 133-3303-401/406 | .128 (3.25) |
| RG-316 DS, 188 DS       | 133-3304-001/006 | .151 (3.83) |
|                         | 133-3304-401/406 | .151 (3.83) |
| RG-178/U, 196           | 133-3402-001/006 | .105 (2.67) |
| RG-316/U, 161, 174, 188 | 133-3403-001/006 | .128 (3.25) |
| RG-316 DS, 188 DS       | 133-3404-001/006 | .151 (3.83) |
| RG-179/U, 187           | 133-3433-001/006 | .128 (3.25) |
| RG-178/U, 196           | 133-5302-401/406 | .105 (2.67) |
| RG-316/U, 161, 174, 188 | 133-5303-401/406 | .128 (3.25) |
| RG-316 DS, 188 DS       | 133-5304-401/406 | .151 (3.83) |
| RG-178/U, 196           | 133-5402-001/006 | .105 (2.67) |
| RG-316/U, 161, 174, 188 | 133-5403-001/006 | .128 (3.25) |
| RG-316 DS, 188 DS       | 133-5404-001/006 | .151 (3.83) |
| RG-316/U, 188, 174      | 133-9403-001     | .128 (3.25) |
| RG-316 DS, 188 DS       | 133-9404-001     | .151 (3.83) |



1. Identify connector parts. (3 piece parts—except bulkhead)
2. Strip cable to dimensions shown. Do not nick braid or center conductor. Tin center conductor if contact is to be solder attached. Do not tin center conductor if contact is to be crimp attached. Slide heat shrink (as applicable) and crimp sleeve onto jacket of cable.
3. Assemble contact onto cable as shown.  
**Solder attachment.** Solder contact to center conductor through solder hole using .020 (0.51) diameter solder. Use a minimum of solder for a good joint.  
**Crimp attachment.** Crimp contact to center conductor using a miniature 8 indent tool 140-0000-970 with positioner 140-0000-971. Crimp location should be centered between end of contact and cross hole. Crimp attachment to solid center conductor cable is not recommended.
4. Flair braid and slide body assembly over contact and under braid. Then seat body assembly firmly onto contact. (RG-178 is non-captivated, RG-316 incorporates snap-fit captivation.) The cable may have to be held in a clamping fixture. Arrange braid uniformly around crimp stem. Slide crimp sleeve forward and crimp using recommended crimp tool. Slide heat shrink forward and shrink (as applicable).

## MCX Crimp Type Straight Connectors for Flexible Cable - 75 Ohm

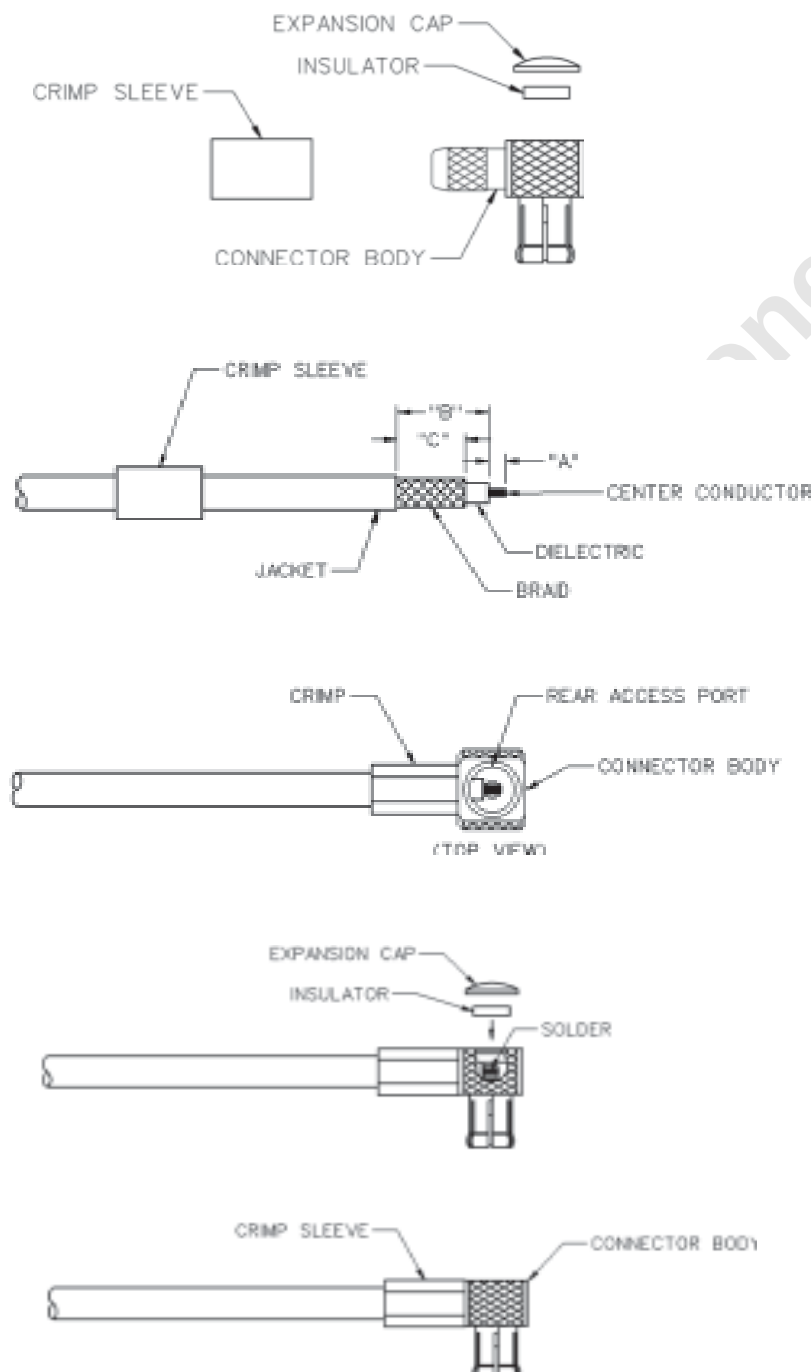
| CABLE GROUP | PART NO.     | CRIMP HEX   |
|-------------|--------------|-------------|
| RG-179      | 133-8433-001 | .128 (3.25) |
| RG-179 DS   | 133-8434-001 | .151 (3.83) |
| RG-179      | 133-8333-001 | .128 (3.25) |
| RG-179 DS   | 133-8334-001 | .151 (3.83) |
| RG-179      | 133-8333-401 | .128 (3.25) |
| RG-179 DS   | 133-8334-401 | .151 (3.83) |
| BELDEN 735A | 133-8445-001 | .151 (3.83) |



1. Identify connector parts. (2 piece parts—except bulkhead)
2. Strip cable to dimensions shown. Do not nick braid or center conductor. A wire stripper of correct size is recommended for this step. Twist stranded center conductor into tight bundle and tin (optional). Slide crimp sleeve onto cable as shown.
3. Flare braid and slide cable into body making certain that the cable dielectric bottoms against center contact.  
**Solder:** Solder center conductor to contact through the side access ports and hole in center contact. Use a minimum amount of solder for a full fillet joint. **.015 (0.38) diameter solder is recommended.**  
**Crimp:** Crimp Contact Attachment: Crimp contact using 141-0000-924 dieset in 144-0000-900 tool frame.
4. Arrange braid uniformly around crimp stem. Slide crimp sleeve over braid and access ports. Crimp securely using recommended hex size and crimp tool.

## MCX Crimp Type Right Angle Plugs for Flexible Cable - 50 Ohm

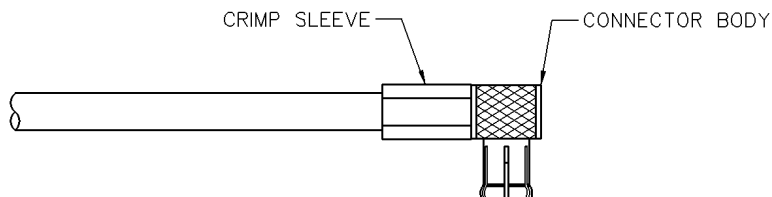
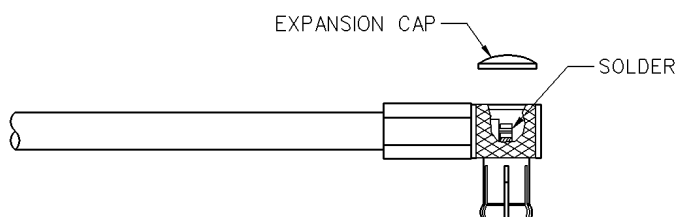
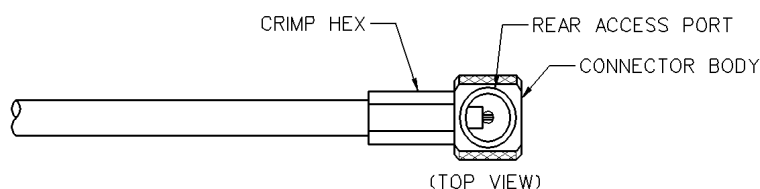
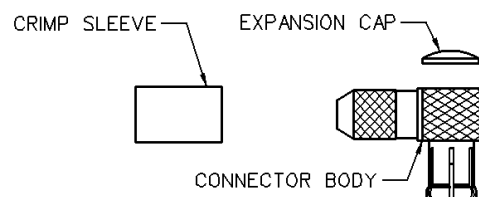
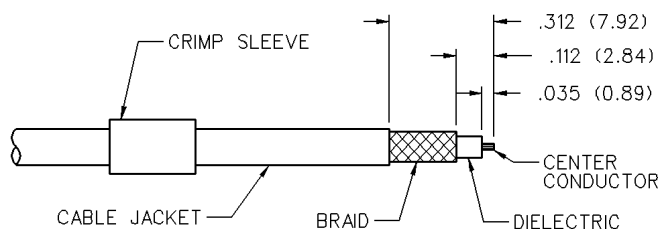
| CABLE GROUP             | PART NO.         | "A"         | "B"         | "C"         | CRIMP HEX   |
|-------------------------|------------------|-------------|-------------|-------------|-------------|
| RG-178/U, 196           | 133-3402-101/106 | .050 (1.27) | .270 (6.86) | .200 (5.08) | .105 (2.67) |
| RG-188/U, 316, 161, 174 | 133-3403-101/106 | .050 (1.27) | .270 (6.86) | .200 (5.08) | .128 (3.25) |
| RG-316 DS, 188 DS       | 133-3404-101/106 | .050 (1.27) | .270 (6.86) | .200 (5.08) | .151 (3.83) |
| RG-179/U, 187           | 133-3433-101/106 | .050 (1.27) | .270 (6.86) | .200 (5.08) | .128 (3.25) |
| RG-178/U, 196           | 133-5402-101/106 | .050 (1.27) | .270 (6.86) | .200 (5.08) | .105 (2.67) |
| RG-188/U, 316, 161, 174 | 133-5403-101/106 | .050 (1.27) | .270 (6.86) | .200 (5.08) | .128 (3.25) |
| RG-316 DS, 188 DS       | 133-5404-101/106 | .050 (1.27) | .270 (6.86) | .200 (5.08) | .151 (3.83) |
| RG-58/U, 303, 141       | 133-3407-101/106 | .067 (1.70) | .295 (7.49) | .210 (5.33) | .213 (5.41) |
| RG-316/U, 188, 174      | 133-9403-101     | .050 (1.27) | .270 (6.86) | .200 (5.08) | .128 (3.25) |
| RG-316 DS, 188 DS       | 133-9404-101     | .050 (1.27) | .270 (6.86) | .200 (5.08) | .151 (3.83) |



1. Identify connector parts. (4 piece parts except RG-58)
2. Strip cable to dimensions shown. Do not nick braid or center conductor. A wire stripper of correct size is recommended for this step. Twist stranded center conductor into tight bundle and tin (optional). Slide crimp sleeve onto cable shown.
3. Flair braid and slide cable into body making certain that the cable insulation bottoms on center contact. Arrange braid uniformly around crimp stem. Slide crimp sleeve over braid and crimp securely using recommended crimp tool.
4. Solder center conductor to contact through rear access port. Use a minimum amount of solder for a full fillet joint. **.020 (0.51) diameter solder is recommended.**
5. Assemble insulator, if applicable; then place expansion cap in access port and seat with .156 (3.96) diameter flat punch or MCX hand assembly tool 141-0000-908. Shrink heat shrink tubing over crimp sleeve if applicable.

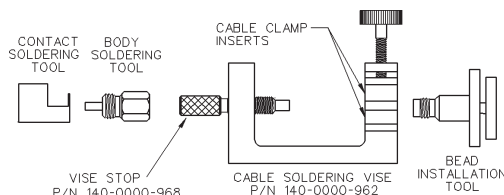
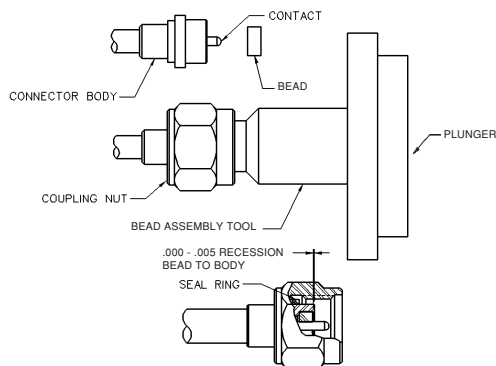
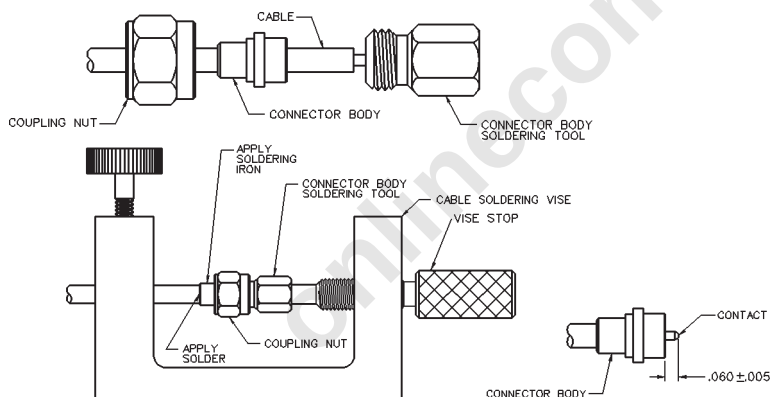
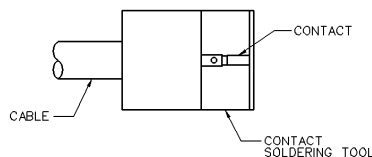
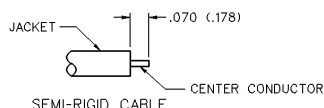
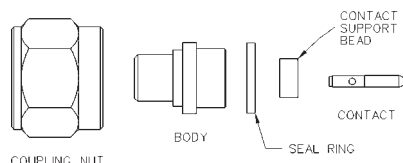
## MCX Crimp Type Right Angle Plugs for Flexible Cable - 75 Ohm

| CABLE TYPE  | PART NO.     | CRIMP HEX   |
|-------------|--------------|-------------|
| RG-179      | 133-8433-101 | .128 (3.25) |
| RG-179 DS   | 133-8434-101 | .151 (3.83) |
| BELDEN 735A | 133-8445-101 | .151 (3.83) |



1. Identify connector parts (3-piece parts).
2. Strip cable to dimensions shown. Do not nick braid or center conductor. A wire stripper of correct size is recommended for this step. Twist stranded center conductor into tight bundle and tin (optional). Slide crimp sleeve onto cable as shown.
3. Flair braid and slide cable into body making certain that the cable dielectric bottoms on center contact. Arrange braid uniformly around crimp stem. Slide crimp sleeve over braid and crimp securely using recommended crimp tool.
4. Solder center conductor to contact through rear access port. Use a minimum amount of solder for a full fillet joint. **.020 (0.51) diameter solder is recommended.**
5. Place expansion cap in access port and seat with .156 (3.96) diameter flat punch or MCX hand assembly tool 141-0000-908. Shrink heat shrink tubing over crimp sleeve if applicable.

## SMK Solder Type Straight Plugs for Semi-Rigid Cable

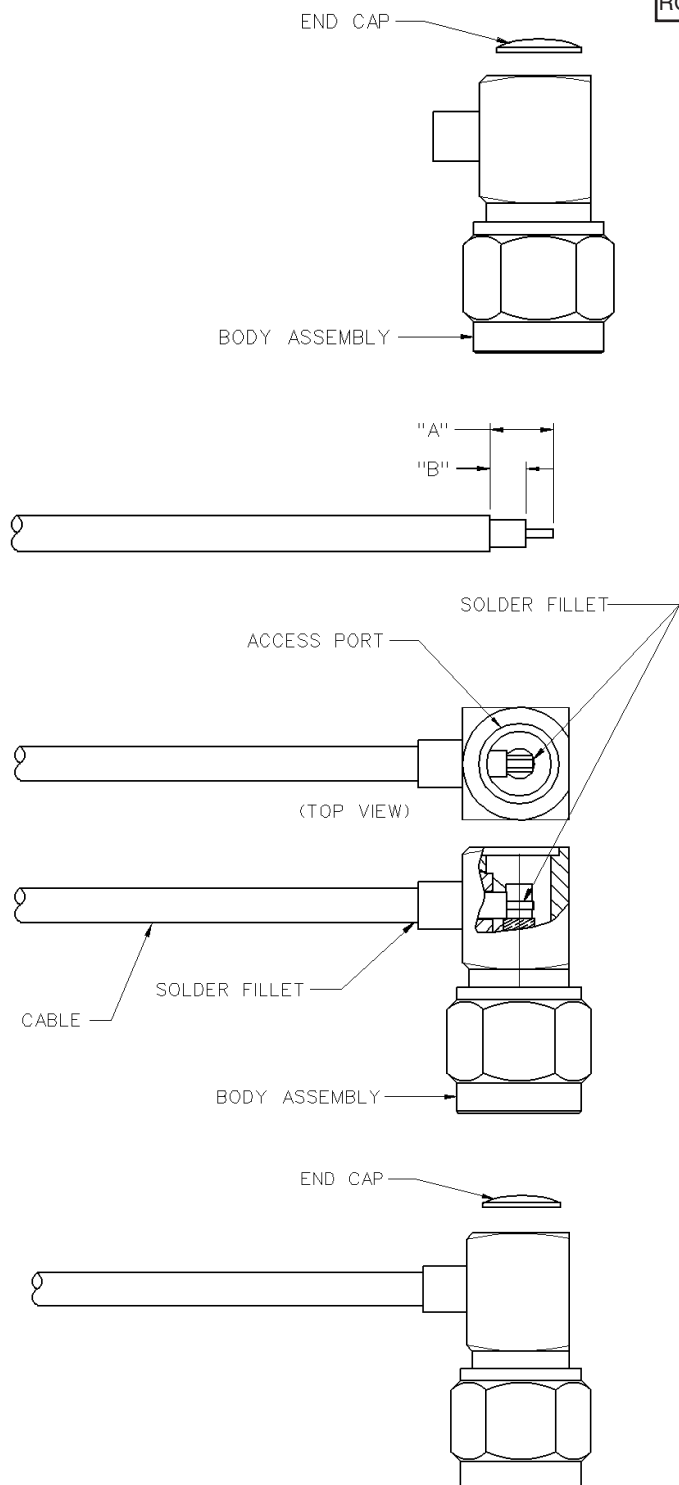


1. Identify connector parts (5 piece parts) and tools (5 tools.)
2. Strip cable jacket and dielectric to dimension shown.
3. Place center contact onto center conductor. Slide contact soldering tool onto contact. Clamp the cable contact and tool into cable soldering vise and solder contact to center conductor. **High temperature** solder, such as 95/5 Sn/Ag is recommended so that contact solder joint remains stable during body soldering operation. Solder paste is recommended for the contact solder joint to minimize excess solder. The assembled contact dimension should be as shown.
4. Remove excess solder from contact with a sharp blade and clean contact. Check for presence of excess solder by sliding body soldering tool over the contact. Remove soldering tool.
5. Place connector nut and body on cable. Place connector body soldering tool over contact and thread the coupling nut and connector body firmly to the tool. Place cable subassembly into cable soldering vise. Clamp cable and soldering tool securely to insure the cable dielectric expansion will not disturb the cable in the vise during soldering. Place hot soldering iron on the connector body sleeve and apply solder from the opposite side. A **low temp** solder, such as 60/40 Sn/Pb is recommended for the body solder joint. Allow the soldered joint to cool and remove from fixture. Check contact location to the body. The best electrical results are achieved when the contact location is within a tolerance of .060 +/- .001.
6. Place bead onto neck portion of the tool. Thread Bead Assembly tool firmly into the coupling nut. Push the tool's plunger between your thumb and fingers to assemble the bead. Check bead location. Assemble seal ring onto body.

| TOOL                   | 145-0693-001/002<br>(for .086 Semi-Rigid) | 145-0694-001/002<br>(for .141 Semi-Rigid) |
|------------------------|-------------------------------------------|-------------------------------------------|
| Semi-Rigid Cable Vise  | 140-0000-962                              | 140-0000-962                              |
| Vise Stop              | 140-0000-968                              | 140-0000-968                              |
| Bead Assy. Tool        | 140-0000-957                              | 140-0000-957                              |
| Contact Soldering Tool | 140-0000-960                              | 140-0000-961                              |
| Body Soldering Tool    | 140-0000-958                              | 140-0000-959                              |
| Cable Clamp Insert     | 140-0000-964                              | 140-0000-965                              |

## SMA Right Angle Solder Type Plug for Semi-Rigid Cable

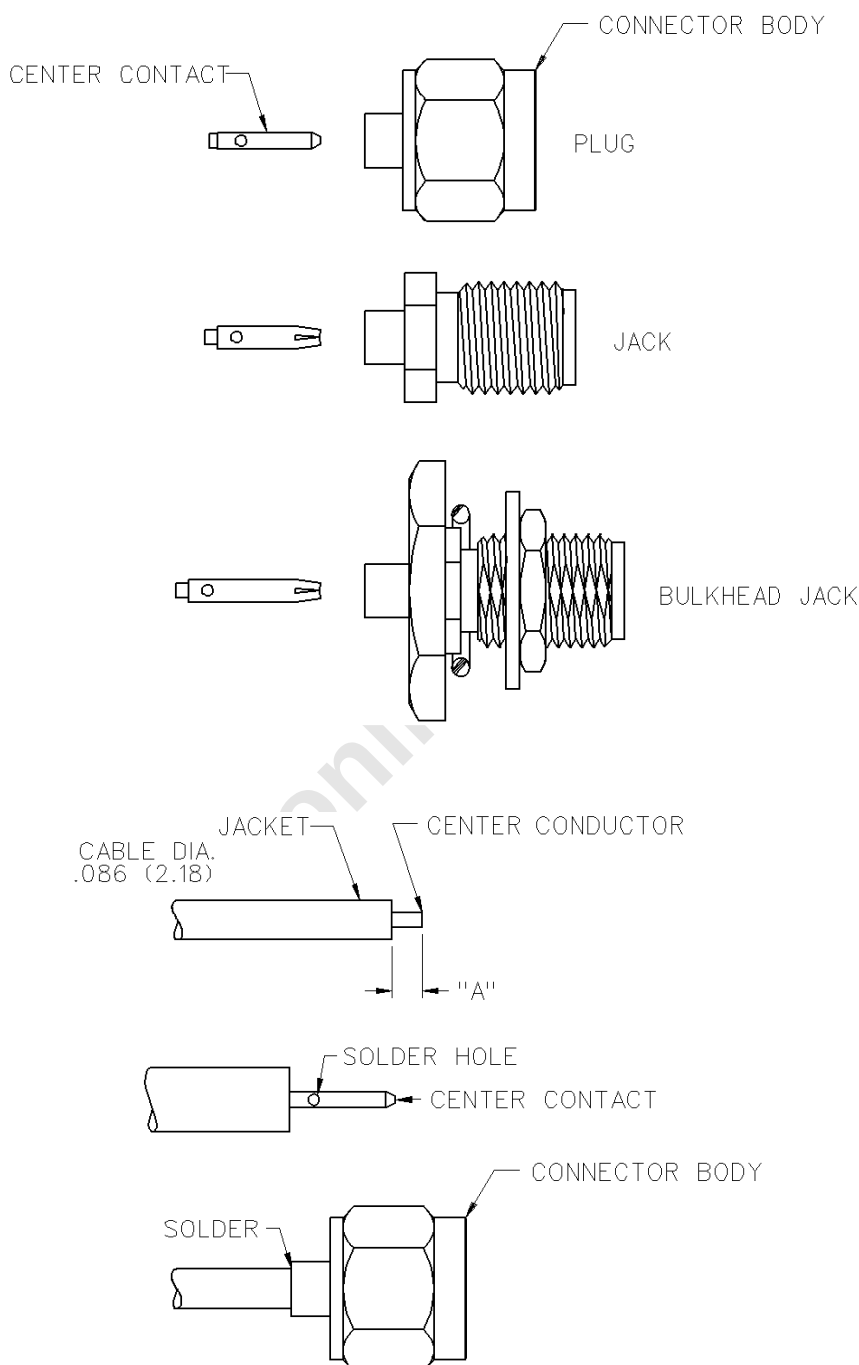
| CABLE GROUP                | PART NO.         | "A"         | "B"         |
|----------------------------|------------------|-------------|-------------|
| RG-405/U (.086 Semi-Rigid) | 142-0693-101/106 | .145 (3.68) | .075 (1.90) |
| RG-402/U (.141 Semi-Rigid) | 142-0694-101/106 | .170 (4.32) | .105 (2.67) |



1. Identify connector parts. (2 piece parts)
2. Strip cable to dimensions shown. Do not nick center conductor during strip operations.
3. Insert cable into body making certain that the cable jacket is butted against internal body shoulder and cable dielectric is started into cross hole. Solder center conductor to contact using 60/40 tin/lead solder as shown. Use a minimum amount of solder for a good joint.
4. Solder body to cable using 60/40 tin/lead solder as shown. Use a minimum of heat to minimize cable dielectric growth. Any growth of cable dielectric shall be flush with contact.
5. Press end cap into body access port using .187 (4.75) dia. flat punch.

## SMA Solder Type Straight Jacks, Straight Plugs, and Straight Bulkhead Jacks for Semi-Rigid Cable

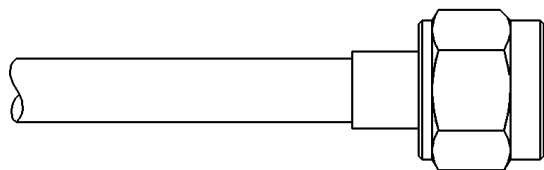
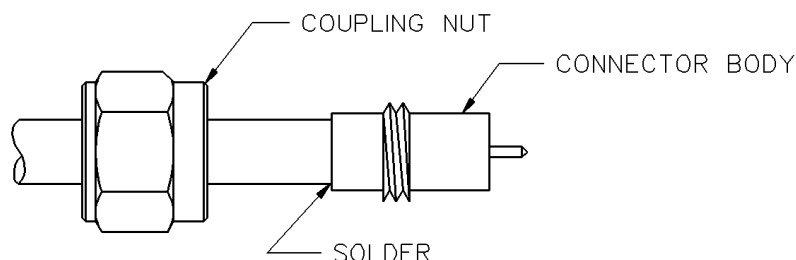
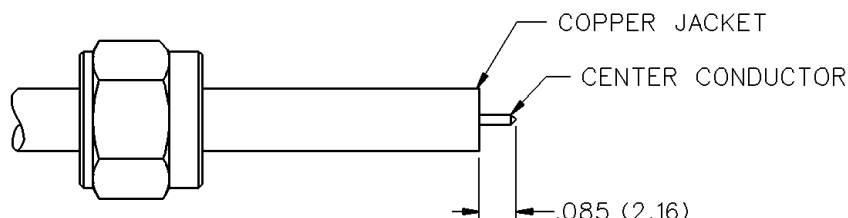
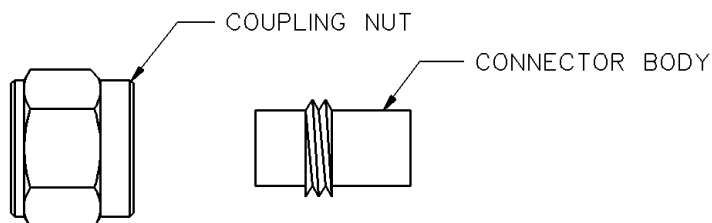
| CABLE GROUP                   | PART NO.         | "A"         |
|-------------------------------|------------------|-------------|
| RG-405/U<br>(.086 Semi-Rigid) | 142-0593-001/006 | .070 (1.78) |
|                               | 142-0593-401/406 |             |
|                               | 142-0593-411/416 |             |
|                               | 142-0693-001/006 |             |
| RG-402/U<br>(.141 Semi-Rigid) | 142-0594-001/006 | .085 (2.16) |
|                               | 142-0594-401/406 |             |
|                               | 142-0694-001/006 |             |



1. Identify connector parts. (2 piece parts)
2. Strip cable to dimensions shown. Do not nick center conductor.
3. Place center contact on center conductor making sure contact bottoms against cable insulation. Solder center conductor to center contact through solder hole. Solder **must not** be allowed to run on outside of contact. Use a minimum amount of solder for a good joint. **.020 (0.51) diameter solder is recommended.** Trim excess insulation.
4. Insert contact and cable into body assembly making sure cable is bottomed against insulator in body. Solder body to cable. Use a minimum amount of heat to minimize cable insulation movement.

## SMA Solder Type Straight Plugs for Semi-Rigid Cable

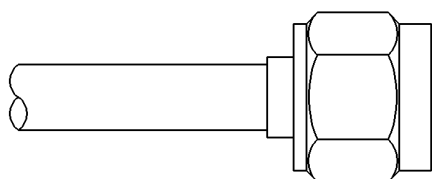
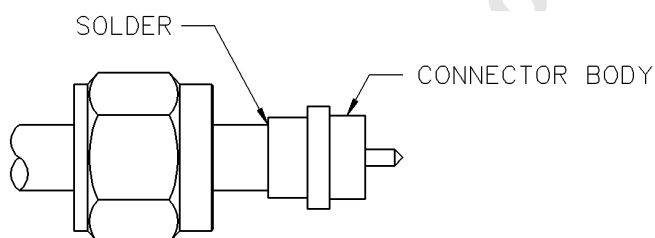
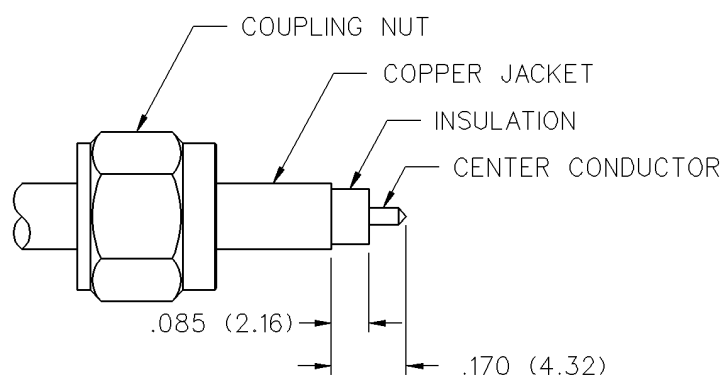
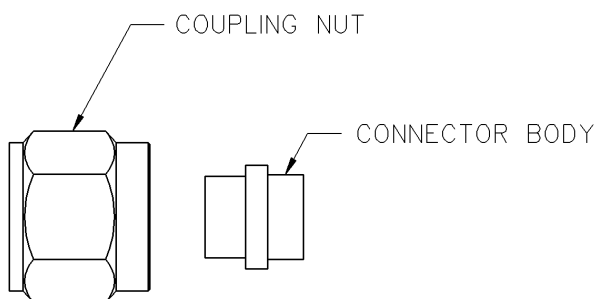
| CABLE GROUP       | PART NO.     |
|-------------------|--------------|
| RG-402/U          | 142-0694-011 |
| (.141 Semi-Rigid) | 142-0694-016 |



1. Identify connector parts. (2 piece parts)
2. Strip cable to dimensions shown. Do not nick center conductor. Bevel the cable center conductor per contact detail of SMA interface on page 24. Slide coupling nut onto cable as shown.
3. Insert cable into body making sure cable jacket is flush with front of body. Solder body to cable. Use a minimum amount of heat to minimize cable insulation movement. Trim expanded insulation flush with front of body or fixture body and cable during soldering to prevent cable insulation expansion.
4. Thread coupling nut over body.

## SMA Solder Type Straight Plugs for Semi-Rigid Cable

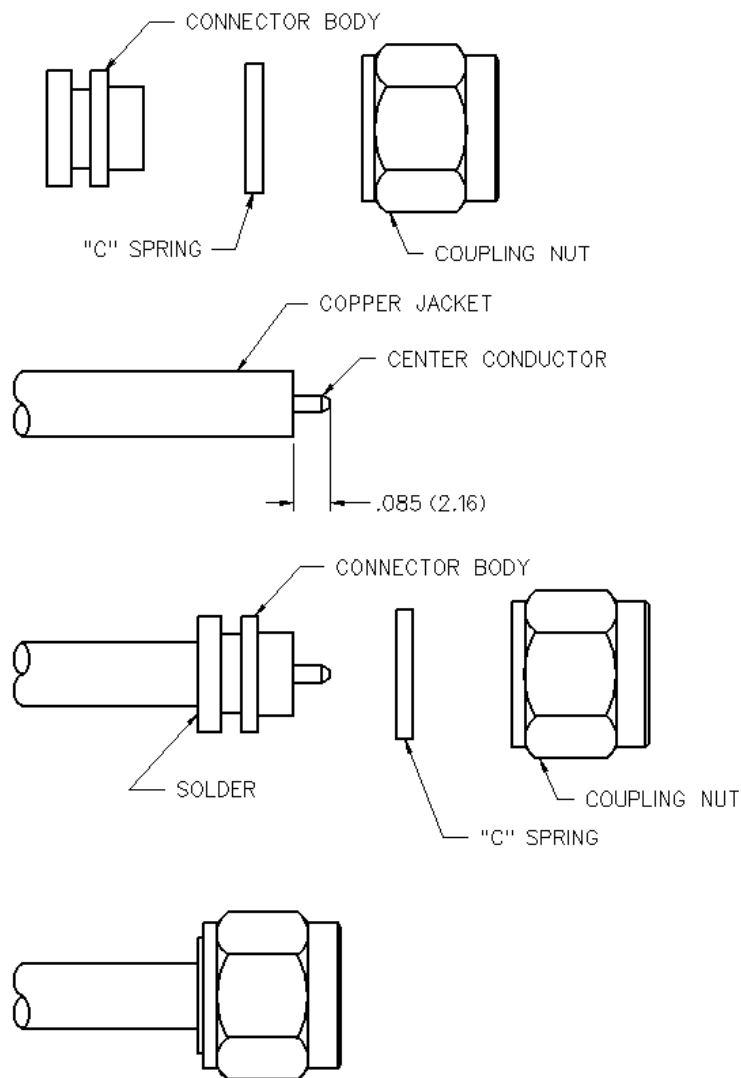
| CABLE GROUP                   | PART NO.     |
|-------------------------------|--------------|
| RG-402/U<br>(.141 Semi-Rigid) | 142-0694-021 |
|                               | 142-0694-026 |
|                               | 142-0694-041 |
|                               | 142-0694-046 |



1. Identify connector parts. (2 piece parts)
2. Strip cable to dimensions shown. Do not nick center conductor. Bevel the cable center conductor per contact detail of SMA interface on page 24. Slide coupling nut onto cable as shown.
3. Insert cable into body making sure cable jacket is bottomed against shoulder inside of body. Solder body to cable. Use a minimum amount of heat to minimize cable insulation movement. Trim expanded insulation flush with front of body or fixture body and cable during soldering to prevent insulation expansion.
4. Thread coupling nut over body.

## SMA Solder Type Straight Plugs for Semi-Rigid Cable

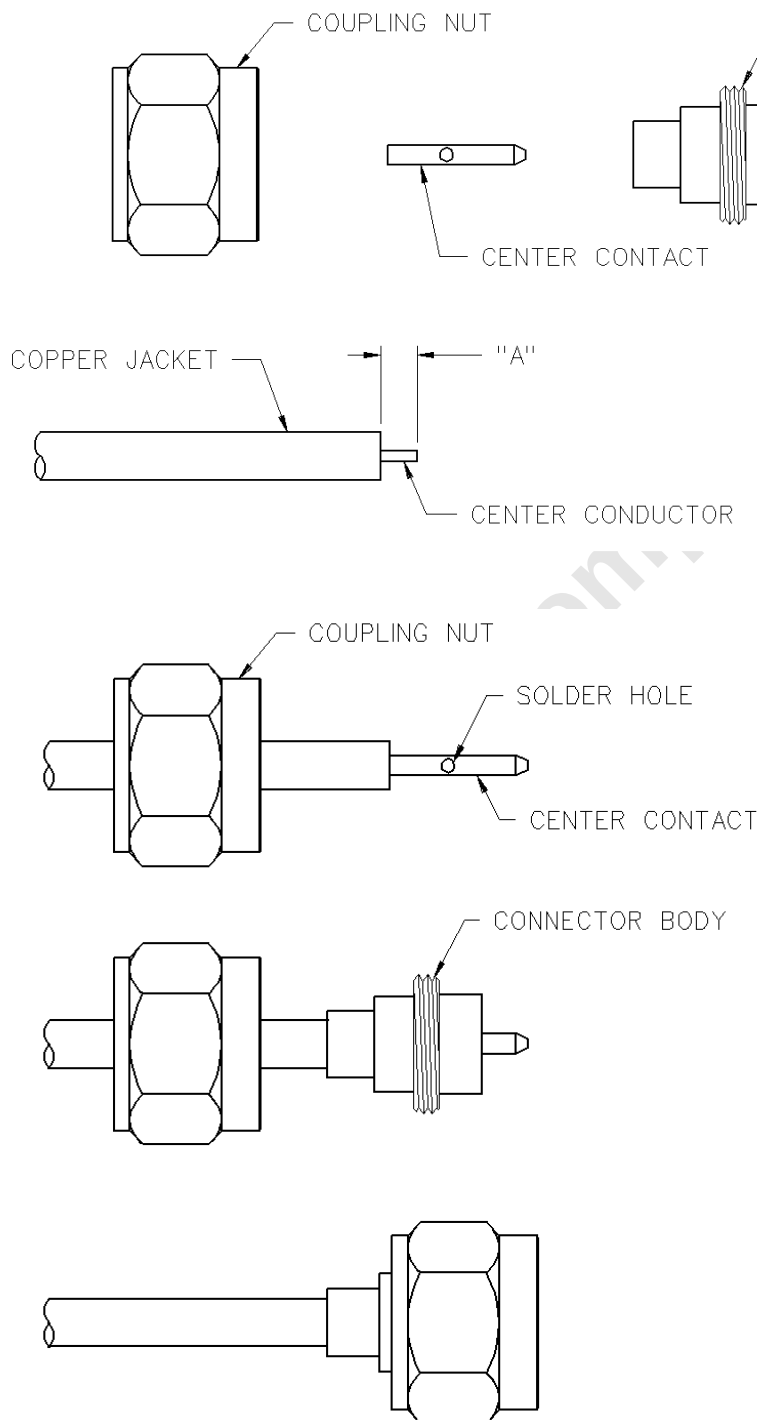
| CABLE GROUP       | PART NO.     |
|-------------------|--------------|
| RG-402/U          | 142-0694-031 |
| (.141 Semi-Rigid) | 142-0694-036 |



1. Identify connector parts. (3 piece parts)
2. Strip cable to dimensions shown. Do not nick center conductor. Bevel the cable center conductor per contact detail of SMA interface on page 24.
3. Insert cable into body making sure cable jacket is flush with front of body. Solder body to cable. Use a minimum amount of heat to minimize cable insulation movement. Trim expanded cable insulation flush with front of body or fixture body and cable during soldering to prevent insulation expansion.
4. Snap "C" spring onto connector body groove. Compress "C" spring using 141-0000-904 compression tool. Install coupling nut onto connector body. Nut should spin freely.

## SMA Solder Type Straight Plugs for Semi-Rigid Cable

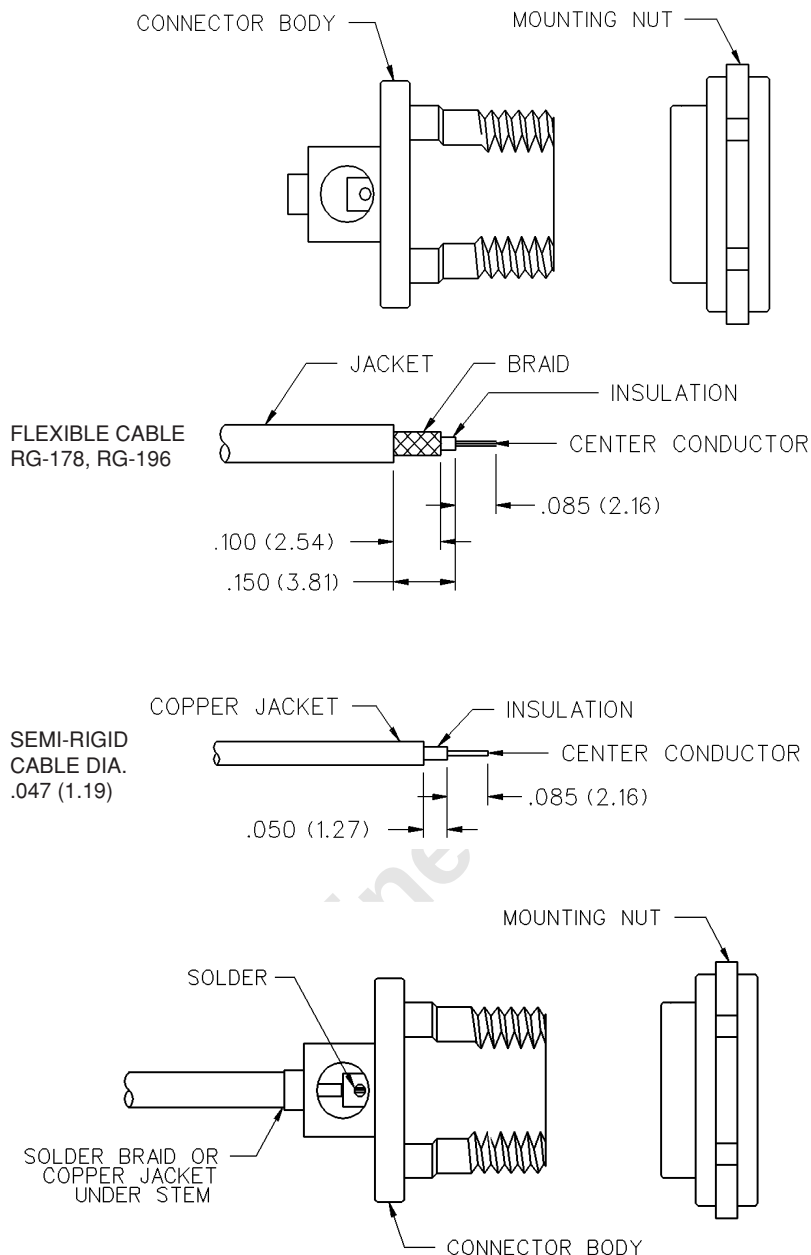
| CABLE GROUP                   | PART NO.     | "A"         |
|-------------------------------|--------------|-------------|
| RG-405/U<br>(.086 Semi-Rigid) | 142-0693-051 | .070 (1.78) |
|                               | 142-0693-056 | .070 (1.78) |
| RG-402/U<br>(.141 Semi-Rigid) | 142-0694-051 | .085 (2.16) |
|                               | 142-0694-056 | .085 (2.16) |



1. Identify connector parts. (3 piece parts)
2. Strip cable to dimensions shown. Do not nick center conductor. Slide coupling nut onto cable as shown.
3. Place center contact on center conductor making sure contact bottoms against cable insulation. Solder center conductor to center contact through solder hole. Solder **must not** be allowed to run on outside of contact. Use a minimum amount of solder for a good joint. **.020 (0.51) diameter solder is recommended.** Trim excess insulation.
4. Insert contact and cable into body making sure cable is bottomed against insulator in body. Solder body to cable. Use a minimum amount of heat to minimize cable insulation movement.
5. Thread coupling nut over body.

## SMA Solder Type Antenna Connector Plug for Flexible or Semi-Rigid Cable

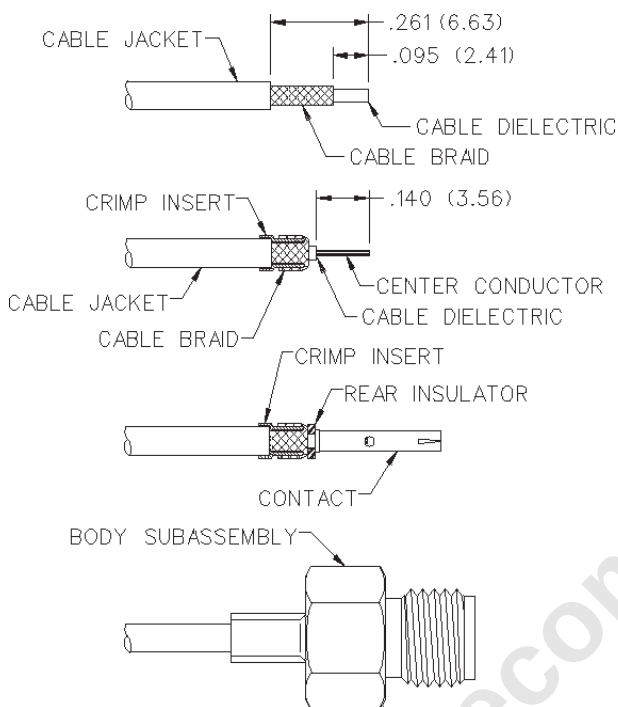
| CABLE GROUP               | PART NO.     |
|---------------------------|--------------|
| RG-178/U, .047 Semi-Rigid | 142-0801-421 |



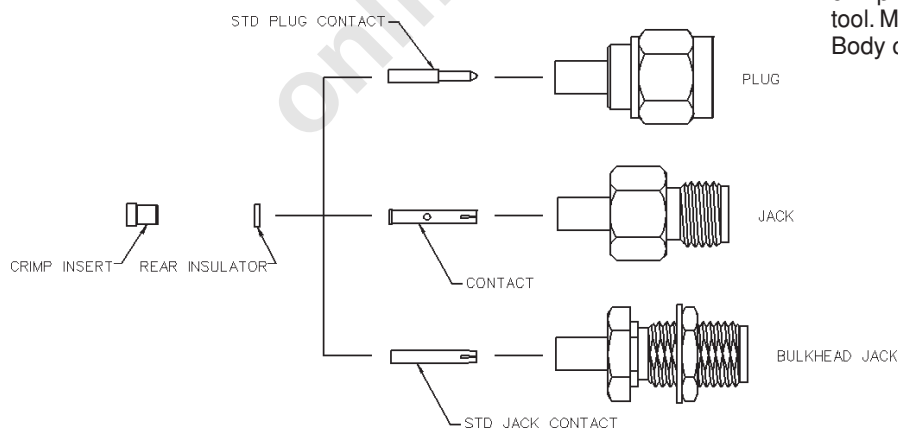
1. Identify connector parts. (2 piece parts)
2. Strip cable to dimensions shown. Do not nick center conductor or braid on flexible cable.
3. **Flexible Cable Attachment:** Twist stranded center conductor into tight bundle and tin (optional). Slide cable into body, making sure cable insulation bottoms on center contact and braid fits inside stem. Solder center conductor to contact through the side access ports. Use a minimum amount of solder for a good joint. **.020 (0.51) diameter solder is recommended.** Solder braid to body. Use a minimum amount of solder to completely join the braid to the body.  
**Semi-Rigid Cable Attachments:** Slide cable into body making certain cable insulation bottoms on center contact. Solder center conductor to contact through the side access ports. Use a minimum amount of solder for a good joint. **.020 (0.51) diameter solder is recommended.** Solder body to cable jacket. Use a minimum amount of heat to minimize cable insulation movement.

## SMA 3-Piece Plug, Jack and Bulkhead Jack for RG-178 Flexible Cable

| CABLE GROUP      | PART NO.     | CRIMP HEX   |
|------------------|--------------|-------------|
| RG-178/U,<br>196 | 142-0402-011 | .105 (2.67) |
|                  | 142-0402-016 | .105 (2.67) |
|                  | 142-0302-011 | .105 (2.67) |
|                  | 142-0302-016 | .105 (2.67) |
|                  | 142-0302-431 | .105 (2.67) |
|                  | 142-0302-436 | .105 (2.67) |



1. Identify piece parts. (4 piece parts plus nut and washer for bulkhead.)
2. Strip cable jacket and braid to dimensions shown. Do not nick braid during strip operations.
3. Slide crimp insert over braid and against jacket. Fold braid around crimp insert as shown. Strip dielectric to dimension shown. If cable is being manually stripped the rear insulator can be assembled and used as a guide. Do not nick center conductor during strip operation. Tin center conductor if contact is to be solder attached. Do not tin center conductor if contact is to be crimp attached.
4. Assemble rear insulator over cable dielectric and contact over center conductor as shown.  
**Solder attachment:** Solder contact to center conductor using 60/40 tin/lead solder. Care should be taken that excess solder is not applied.  
**Crimp attachment:** Crimp contact to center conductor using production tooling or hand tool 144-0000-910, setting #2 with positioner 141-0000-907. Crimp location should be centered between end of contact and x-hole. Crimp attachment to solid center conductor cables is not recommended.
5. Slide body assembly over contact, rear insulator and crimp insert. Crimp body using recommended crimp tool. Maintain forward pressure on cable while crimping. Body crimp die hex: .105 (2.67) hex



# SMA Type Straight Plugs, Straight Jacks, and Straight Bulkhead Jacks for Flexible Cable - Crimp or Solder Contacts

1. Identify connector parts. (3 piece parts—except bulkhead)

2. Strip cable to dimensions shown. Do not nick braid or center conductor. Tin center conductor if contact will be solder attached. Do not tin center conductor if contact is to be crimp attached. When stripping LMR-100 low loss cable, remove foil back to where cable jacket is stripped. A wire stripper of correct size is recommended for this step. Slide heat shrink (as applicable) and crimp sleeve onto jacket of cable.

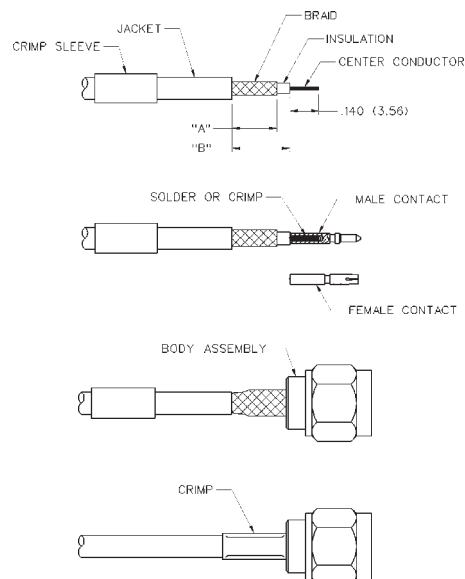
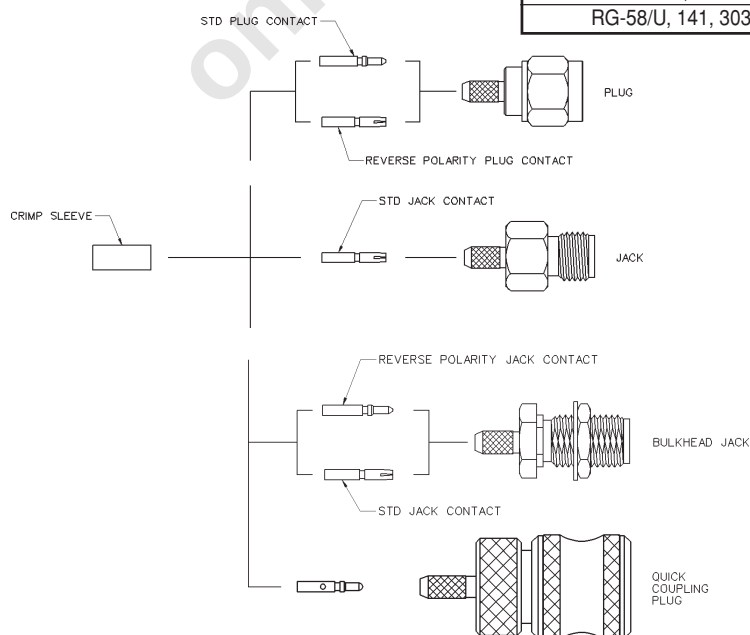
3. Assemble contact onto cable as shown.

**Solder Attachment:** Solder contact to center conductor through solder hole using .020 (0.51) diameter solder. Use a minimum amount of solder for a good joint.

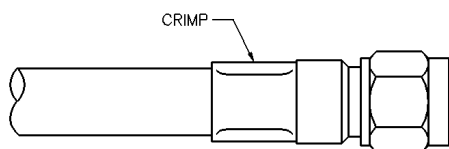
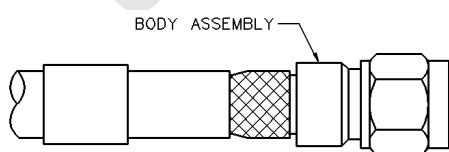
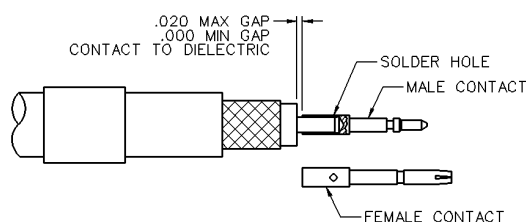
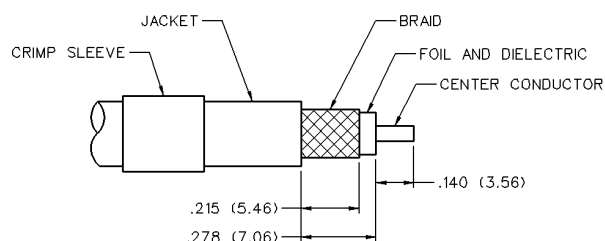
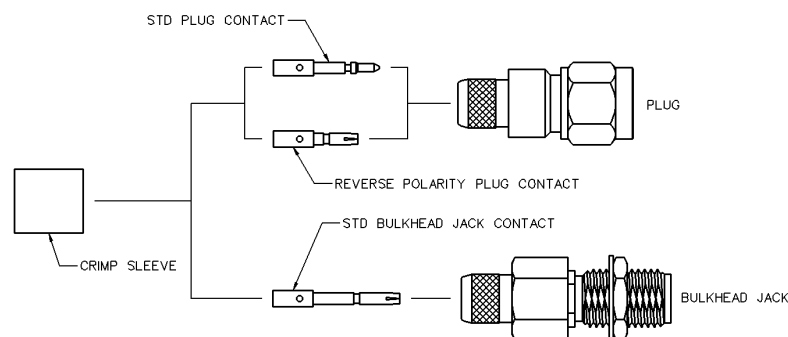
**Crimp Attachment:** Crimp contact to center conductor using Johnson Hand Tool 144-0000-910, setting #2, with positioner 141-0000-907. Crimp location should be centered between end of contact and X-hole. Crimp attachment to solid center conductor cables is not recommended.

4. Flare braid and slide body assembly over contact and under braid. Then seat body assembly firmly onto contact. The cable may have to be held in a clamping fixture. Arrange braid uniformly around crimp stem. Slide crimp sleeve forward and crimp using recommended crimp tool. Slide heat shrink forward and shrink (as applicable).

| CABLE GROUP                      | PART NO.         | "A"         | "B"          | CRIMP HEX   |
|----------------------------------|------------------|-------------|--------------|-------------|
| RG-316/U, 161, 174, 188; LMR-100 | 142-0303-011/016 | .215 (5.46) | .278 (7.06)  | .128 (3.25) |
|                                  | 142-0303-411/416 | .215 (5.46) | .278 (7.06)  | .128 (3.25) |
| RG-316 DS, 188 DS                | 142-0304-011/016 | .215 (5.46) | .278 (7.06)  | .151 (3.83) |
|                                  | 142-0304-411/416 | .215 (5.46) | .278 (7.06)  | .151 (3.83) |
| RG-58/U, 141, 303                | 142-0307-011/016 | .215 (5.46) | .278 (7.06)  | .213 (5.41) |
|                                  | 142-0307-411/416 | .215 (5.46) | .278 (7.06)  | .213 (5.41) |
| RG-55/U, 142, 223, 400           | 142-0308-011/016 | .215 (5.46) | .278 (7.06)  | .213 (5.41) |
|                                  | 142-0308-411/416 | .215 (5.46) | .278 (7.06)  | .213 (5.41) |
| RG-179/U, 187                    | 142-0333-011/016 | .215 (5.46) | .278 (7.06)  | .128 (3.25) |
|                                  | 142-0333-411/416 | .215 (5.46) | .278 (7.06)  | .128 (3.25) |
| RG-316/U, 161, 174, 188; LMR-100 | 142-0403-011/016 | .215 (5.46) | .278 (7.06)  | .128 (3.25) |
| RG-316 DS, 188 DS                | 142-0404-011/016 | .215 (5.46) | .278 (7.06)  | .151 (3.83) |
| RG-58/U, 141, 303                | 142-0407-011/016 | .215 (5.46) | .278 (7.06)  | .213 (5.41) |
| RG-55/U, 142, 223, 400           | 142-0408-011/016 | .215 (5.46) | .278 (7.06)  | .213 (5.41) |
| RG-179/U, 187                    | 142-0433-011/016 | .215 (5.46) | .278 (7.06)  | .128 (3.25) |
| RG-316/U, 161, 174, 188; LMR-100 | 142-1403-001/006 | .280 (7.11) | .715 (18.16) | .128 (3.25) |
| RG-316 DS, 188 DS                | 142-1404-001/006 | .280 (7.11) | .715 (18.16) | .151 (3.83) |
| RG-58/U, 141, 303                | 142-1407-001/006 | .280 (7.11) | .715 (18.16) | .213 (5.41) |
| RG-55/U, 142, 223, 400           | 142-1408-001/006 | .280 (7.11) | .715 (18.16) | .213 (5.41) |
| RG-316/U, 161, 174, 188; LMR-100 | 142-4303-401/406 | .215 (5.46) | .278 (7.06)  | .128 (3.25) |
| RG-316 DS, 188 DS                | 142-4304-401/406 | .215 (5.46) | .278 (7.06)  | .151 (3.83) |
| RG-58/U, 141, 303                | 142-4307-401/406 | .215 (5.46) | .278 (7.06)  | .213 (5.41) |
| RG-55/U, 142, 223, 400           | 142-4308-401/406 | .215 (5.46) | .278 (7.06)  | .213 (5.41) |
| RG-316/U, 161, 174, 188; LMR-100 | 142-4403-001/006 | .215 (5.46) | .278 (7.06)  | .128 (3.25) |
| RG-316 DS, 188 DS                | 142-4404-001/006 | .215 (5.46) | .278 (7.06)  | .151 (3.83) |
| RG-58/U, 141, 303                | 142-4407-001/006 | .215 (5.46) | .278 (7.06)  | .213 (5.41) |
| RG-55/U, 142, 223, 400           | 142-4408-001/006 | .215 (5.46) | .278 (7.06)  | .213 (5.41) |
| RG-316/U, 161, 174, 188; LMR-100 | 142-5303-401/406 | .215 (5.46) | .278 (7.06)  | .128 (3.25) |
| RG-316 DS, 188 DS                | 142-5304-401/406 | .215 (5.46) | .278 (7.06)  | .151 (3.83) |
| RG-58/U, 141, 303                | 142-5307-401/406 | .215 (5.46) | .278 (7.06)  | .213 (5.41) |
| RG-55/U, 142, 223, 400           | 142-5308-401/406 | .215 (5.46) | .278 (7.06)  | .213 (5.41) |
| RG-316/U, 161, 174, 188; LMR-100 | 142-5403-001/006 | .215 (5.46) | .278 (7.06)  | .128 (3.25) |
| RG-316 DS, 18 DS                 | 142-5404-001/006 | .215 (5.46) | .278 (7.06)  | .151 (3.83) |
| RG-58/U, 141, 303                | 142-5407-001/006 | .215 (5.46) | .278 (7.06)  | .213 (5.41) |
| RG-55/U, 142, 223, 400           | 142-5408-001/006 | .215 (5.46) | .278 (7.06)  | .213 (5.41) |
| RG-316/U, 161, 174, 188; LMR-100 | 142-9403-011     | .215 (5.46) | .278 (7.06)  | .128 (3.25) |
| RG-316 DS, 188 DS                | 142-9404-011     | .215 (5.46) | .278 (7.06)  | .151 (3.83) |
| RG-58/U, 141, 303                | 142-9407-011     | .215 (5.46) | .278 (7.06)  | .213 (5.41) |



## Straight SMA Low Loss Diameter .195, .200 and .240 Straight Type Plugs

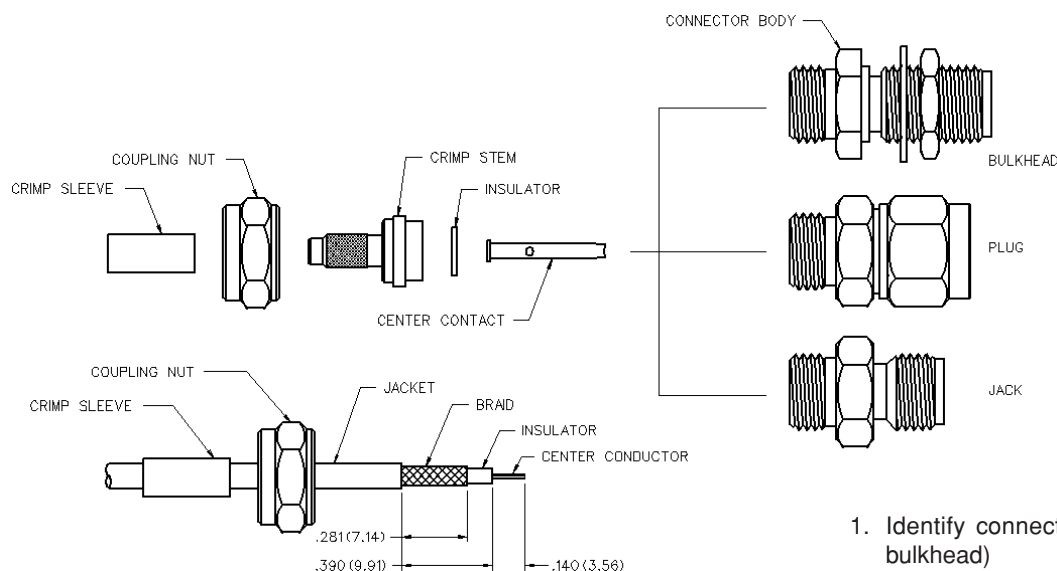


| CABLE GROUP | PART NO.     | CRIMP HEX   |
|-------------|--------------|-------------|
| LMR-195     | 142-0307-411 | .213 (5.41) |
|             | 142-0307-416 | .213 (5.41) |
| LMR-240     | 142-0335-401 | .255 (6.48) |
|             | 142-0335-406 | .255 (6.48) |
| LMR-200     | 142-0339-401 | .213 (5.41) |
|             | 142-0339-406 | .213 (5.41) |
| LMR-195     | 142-0407-011 | .213 (5.41) |
|             | 142-0407-016 | .213 (5.41) |
| LMR-240     | 142-0435-001 | .255 (6.48) |
|             | 142-0435-006 | .255 (6.48) |
| LMR-200     | 142-0439-001 | .213 (5.41) |
|             | 142-0439-006 | .213 (5.41) |
| LMR-240     | 142-4435-001 | .255 (6.48) |
|             | 142-4435-006 | .255 (6.48) |
| LMR-200     | 142-4439-001 | .213 (5.41) |
|             | 142-4439-006 | .213 (5.41) |
| LMR-195     | 142-4407-001 | .213 (5.41) |
|             | 142-4407-006 | .213 (5.41) |
| LMR-240     | 142-5435-001 | .255 (6.48) |
|             | 142-5435-006 | .255 (6.48) |
| LMR-200     | 142-5439-001 | .213 (5.41) |
|             | 142-5439-006 | .213 (5.41) |
| LMR-195     | 142-5407-001 | .213 (5.41) |
|             | 142-5407-006 | .213 (5.41) |

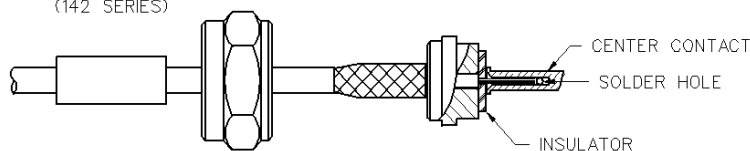
1. Identify connector parts. (3 piece parts—except bulkhead)
2. Strip cable to dimensions shown. Do not nick braid, foil or center conductor. Cut foil flush with dielectric, do not remove foil. Make sure that dielectric is clean and free from all particles. Tin center conductor, keeping solder amount to a minimum. Slide crimp sleeve onto jacket of cable.
3. Assemble contact onto cable as shown. Position contact such that a gap of no more than .020 (0.51) is kept between dielectric and contact. Solder contact to center conductor through solder hole using .020 (0.51) Diameter solder. Use a minimum amount of solder for a good joint. Do not allow contact to move into dielectric during soldering process.
4. Flare braid and slide body assembly over contact, foil and dielectric, then under braid. Seat body assembly firmly onto contact. Arrange braid uniformly around crimp stem. Slide crimp sleeve forward and crimp using Johnson hand crimp tool 141-0000-913 and recommended crimp die hex.

# SMA Crimp Type Straight Plugs, Straight Jacks, and Straight Bulkhead Jacks for Flexible Cable

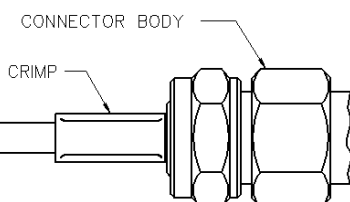
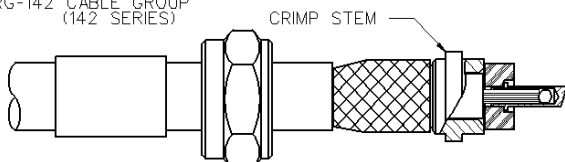
| CABLE GROUP                | PART NO.     | CRIMP HEX   |
|----------------------------|--------------|-------------|
| RG-178/U,<br>196           | 142-0302-401 | .105 (2.67) |
|                            | 142-0302-406 | .105 (2.67) |
| RG-316/U, 161,<br>174, 188 | 142-0303-401 | .128 (3.25) |
|                            | 142-0303-406 | .128 (3.25) |
| RG-316 DS,<br>188 DS       | 142-0304-401 | .151 (3.83) |
|                            | 142-0304-406 | .151 (3.83) |
| RG-58/U,<br>141, 303       | 142-0307-401 | .213 (5.41) |
|                            | 142-0307-406 | .213 (5.41) |
| RG-55/U, 142,<br>223, 400  | 142-0308-401 | .213 (5.41) |
|                            | 142-0308-406 | .213 (5.41) |
| RG-316/U, 161,<br>174, 188 | 142-0403-001 | .128 (3.25) |
|                            | 142-0403-006 | .128 (3.25) |



RG-178, RG-316 CABLE GROUP  
(142 SERIES)

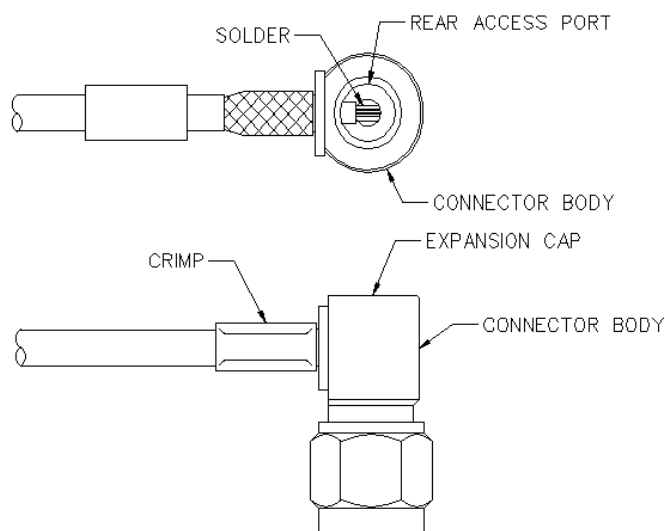
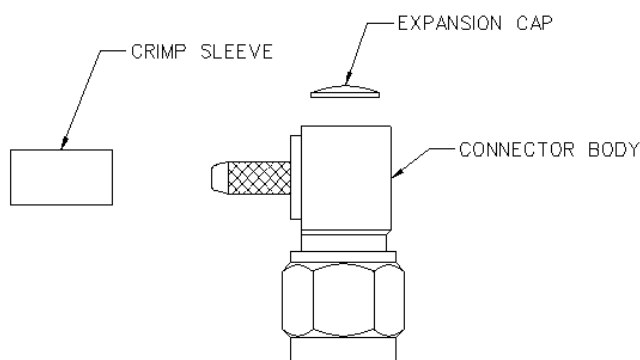
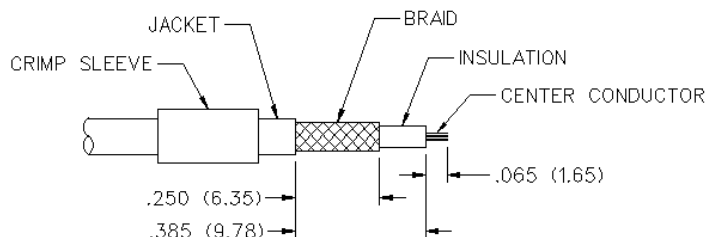


RG-58, RG-142 CABLE GROUP  
(142 SERIES)



1. Identify connector parts. (6 piece parts—except bulkhead)
2. Strip cable to dimensions shown. Do not nick braid or center conductor. A wire stripper of correct size is recommended for this step. Twist stranded center conductor into tight bundle and tin (optional). Slide crimp sleeve, nut and heat shrink tubing (as applicable) onto cable as shown.
3. Flare braid and slide cable into crimp stem. Place rear insulator and center contact over center conductor and position as shown for different cable sizes. Solder center conductor to contact through the solder hole. Solder **must not** be allowed to gather and run on outside of contact. Use a minimum amount of solder for a good joint. **.020 (0.51) diameter solder is recommended.**
4. Arrange braid uniformly around crimp stem. Slide crimp sleeve over braid and crimp securely using recommended crimp tool. Slide center contact assembly into connector body. Thread coupling nut onto body and tighten to 10 in.-lb. torque. Slide heat shrink forward and shrink (as applicable).

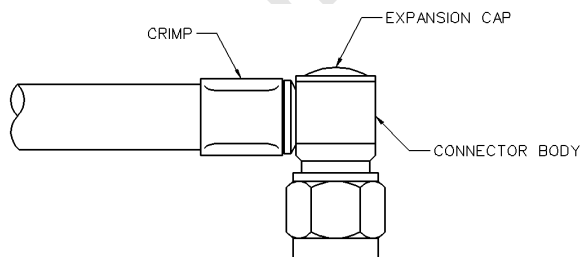
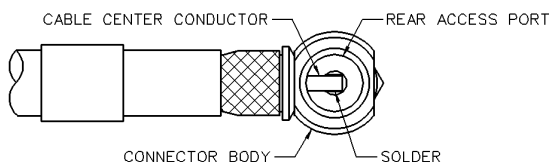
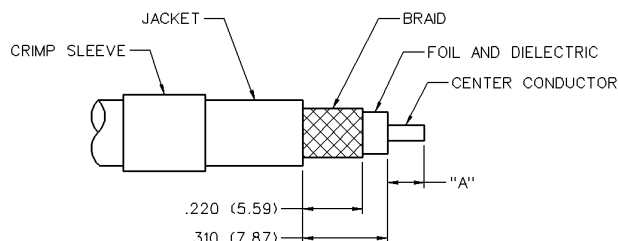
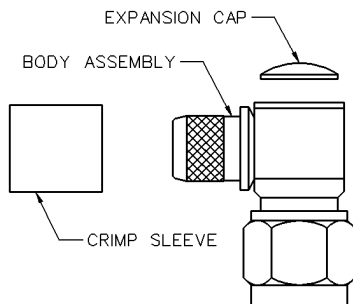
## SMA Crimp Type Right Angle Plugs for Flexible Cable



| CABLE GROUP                         | PART NO.     | CRIMP HEX   |
|-------------------------------------|--------------|-------------|
| RG-178/U,<br>196                    | 142-0402-101 | .105 (2.67) |
|                                     | 142-0402-106 | .105 (2.67) |
| RG-316/U, 161,<br>174, 188; LMR-100 | 142-0403-101 | .128 (3.25) |
|                                     | 142-0403-106 | .128 (3.25) |
| RG-316 DS,<br>188 DS                | 142-0404-101 | .151 (3.83) |
|                                     | 142-0404-106 | .151 (3.83) |
| RG-58/U,<br>141, 303                | 142-0407-101 | .213 (5.41) |
|                                     | 142-0407-106 | .213 (5.41) |
| RG-55/U, 142,<br>223, 400           | 142-0408-101 | .213 (5.41) |
|                                     | 142-0408-106 | .213 (5.41) |
| RG-179/U,<br>187                    | 142-0433-101 | .128 (3.25) |
|                                     | 142-0433-106 | .128 (3.25) |
| RG-316/U, 161,<br>174, 188; LMR-100 | 142-4403-101 | .128 (3.25) |
|                                     | 142-4403-106 | .128 (3.25) |
| RG-316 DS,<br>188 DS                | 142-4404-101 | .151 (3.83) |
|                                     | 142-4404-106 | .151 (3.83) |
| RG-58/U,<br>141, 303                | 142-4407-101 | .213 (5.41) |
|                                     | 142-4407-106 | .213 (5.41) |
| RG-55/U, 142,<br>223, 400           | 142-4408-101 | .213 (5.41) |
|                                     | 142-4408-106 | .213 (5.41) |
| RG-316/U, 161,<br>174, 188; LMR-100 | 142-5403-101 | .128 (3.25) |
|                                     | 142-5403-106 | .128 (3.25) |
| RG-316 DS,<br>188 DS                | 142-5404-101 | .151 (3.83) |
|                                     | 142-5404-106 | .151 (3.83) |
| RG-58/U,<br>141, 303                | 142-5407-101 | .213 (5.41) |
|                                     | 142-5407-106 | .213 (5.41) |
| RG-55/U, 142,<br>223, 400           | 142-5408-101 | .213 (5.41) |
|                                     | 142-5408-106 | .213 (5.41) |
| RG-316/U, 188, 174                  | 142-9403-101 | .128 (3.25) |
| RG-316 DS, 188 DS                   | 142-9404-101 | .151 (3.83) |
| RG-58/U, 141                        | 142-9407-101 | .213 (5.41) |

1. Identify connector parts. (3 piece parts)
2. Strip cable to dimensions shown. Do not nick braid or center conductor. When stripping LMR-100 low loss cable, remove foil back to where cable jacket is stripped. A wire stripper of correct size is recommended for this step. Twist stranded center conductor into tight bundle and tin (optional). Slide crimp sleeve onto cable as shown.
3. Flare braid and slide cable into body making certain that the cable insulation bottoms on center contact. Solder center conductor to contact through the rear access port. Use a minimum amount of solder for a full fillet joint. **.020 (0.51) diameter solder is recommended.**
4. Arrange braid uniformly around crimp stem. Slide crimp sleeve over braid and crimp securely using recommended crimp tool. Place expansion cap in access port and seat with .187 (4.75) diameter flat punch. Shrink heat shrink tubing over crimp sleeve if applicable.

## Right Angle SMA Low Loss Diameter .195, .200 and .240



| CABLE GROUP | PART NO.     | CRIMP HEX   |
|-------------|--------------|-------------|
| LMR-195     | 142-0407-101 | .213 (5.41) |
|             | 142-0407-106 | .213 (5.41) |
| LMR-200     | 142-4439-101 | .213 (5.41) |
|             | 142-4439-106 | .213 (5.41) |
| LMR-240     | 142-0435-101 | .255 (6.48) |
|             | 142-0435-106 | .255 (6.48) |
| LMR-195     | 142-5407-101 | .213 (5.41) |
|             | 142-5407-106 | .213 (5.41) |
| LMR-200     | 142-0439-101 | .213 (5.41) |
|             | 142-0439-106 | .213 (5.41) |
| LMR-240     | 142-5435-101 | .255 (6.48) |
|             | 142-5435-106 | .255 (6.48) |
| LMR-195     | 142-4407-101 | .213 (5.41) |
|             | 142-4407-106 | .213 (5.41) |
| LMR-200     | 142-5439-101 | .213 (5.41) |
|             | 142-5439-106 | .213 (5.41) |
| LMR-240     | 142-4435-101 | .255 (6.48) |
|             | 142-4435-106 | .255 (6.48) |

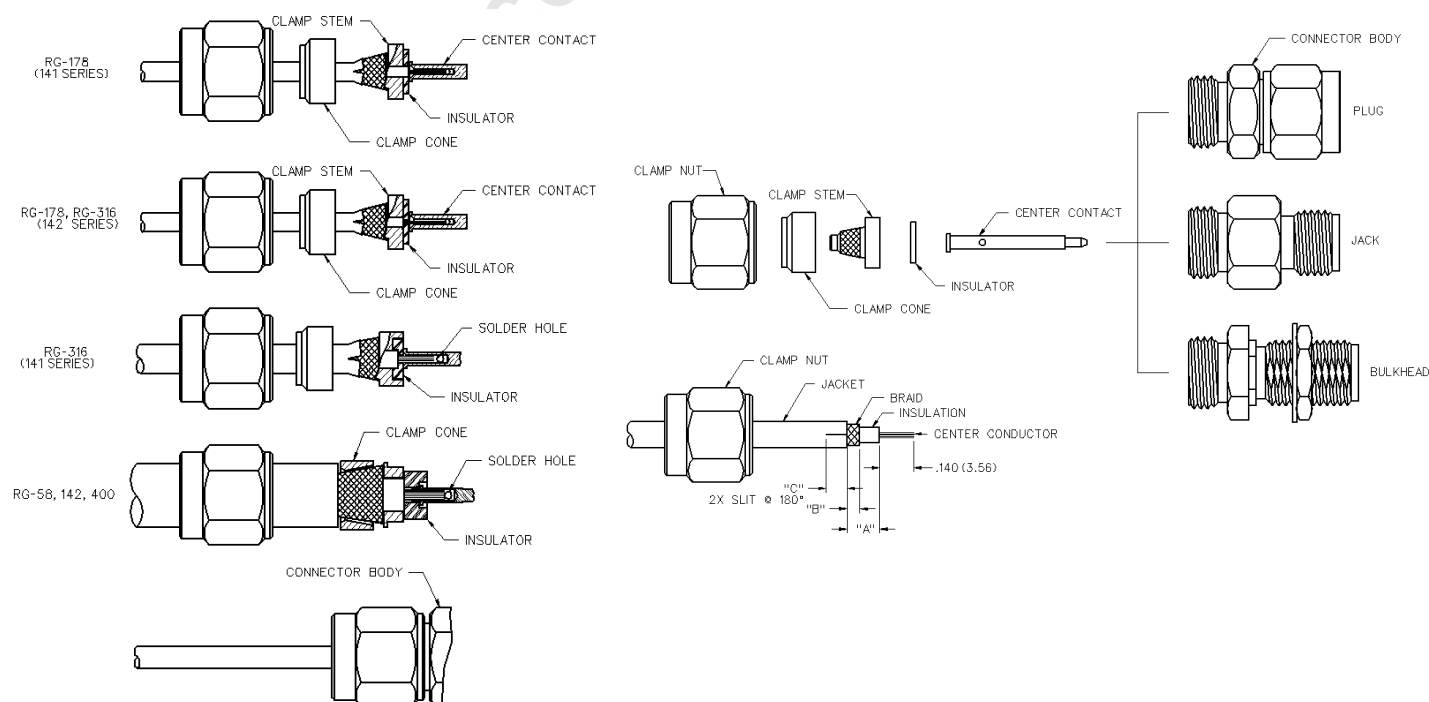
1. Identify connector parts. (3 piece parts)
2. Strip cable to dimensions shown. Do not nick braid, foil or center conductor. Cut foil flush with dielectric, do not remove foil. Make sure that dielectric is clean and free from all particles. Tin center conductor, keeping solder amount to a minimum. Slide crimp sleeve onto jacket of cable.
3. Flare braid and slide body assembly over foil and dielectric, then under braid. Make sure cable center conductor is contained within connector contact, but do not allow foil and dielectric to enter body access port. Solder center conductor to contact through the rear access port. Use a minimum amount of solder for a full fillet joint. .020 (0.51) Diameter solder is recommended.
4. Arrange braid uniformly around crimp stem. Slide crimp sleeve forward and crimp using Johnson hand crimp tool 141-0000-913 and recommended crimp die hex. Place expansion cap in access port and seat with recommended Diameter flat punch.

| LOW LOSS DIA. | "A"         | CRIMP DIE HEX   | FLAT PUNCH DIA. |
|---------------|-------------|-----------------|-----------------|
| 0.195         | .110 (2.79) | .213 (5.41) hex | .187 (4.75)     |
| 0.200         | .110 (2.79) | .213 (5.41) hex | .187 (4.75)     |
| 0.240         | .135 (3.43) | .255 (6.48) hex | .242 (6.15)     |

## SMA Clamp Type Straight Plugs, Straight Jacks, and Straight Bulkhead Jacks for Flexible Cable

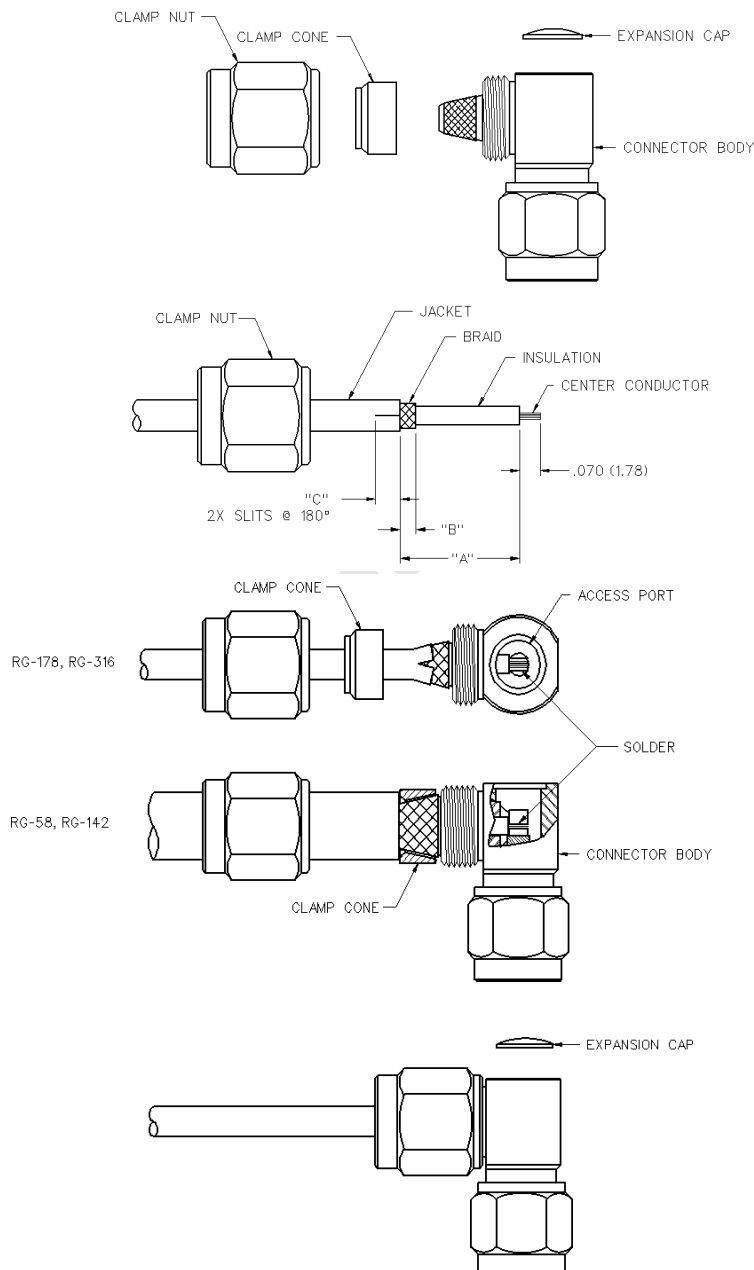
1. Identify connector parts. (6 piece parts—except bulkhead)
2. Strip cable to dimensions shown. Do not nick braid or center conductor. A wire stripper of correct size is recommended for this step. Twist stranded center conductor into tight bundle and tin (optional). Slide clamp nut and clamp cone onto cable as shown. Clamp cone must be oriented as shown for each size of cable. The RG-58/142 clamp cone slides over braid and against jacket.
3. Flare braid and slide cable into clamp stem. Place rear insulator and center contact over center conductor and position as shown for different cable sizes. Solder center conductor to contact through the solder hole. Solder **must not** be allowed to gather and run on outside of contact. Use a minimum amount of solder for a good joint. **.020 (0.51) diameter solder is recommended.**
4. Arrange braid uniformly around clamp stem. Slide center contact assembly into body. Slide clamp nut against clamp cone and braid and tighten to 10 in.-lb. torque.

| CABLE GROUP             | PART NO.         | "A"         | "B"         | "C"         |
|-------------------------|------------------|-------------|-------------|-------------|
| RG-178/U, 196           | 142-0202-011/016 | .133 (3.38) | .053 (1.35) | .085 (2.16) |
| RG-161/U, 174, 188, 316 | 142-0203-011/016 | .133 (3.38) | .053 (1.35) | .085 (2.16) |
| RG-58/U, 141, 303       | 142-0207-011/016 | .225 (5.72) | .145 (3.68) | NONE        |
| RG-142, 223, 55, 400    | 142-0207-011/016 | .285 (7.24) | .165 (4.19) | NONE        |
| RG-178/U, 196           | 142-0102-401/406 | .133 (3.38) | .053 (1.35) | .085 (2.16) |
| RG-161/U, 174, 188, 316 | 142-0103-401/406 | .133 (3.38) | .053 (1.35) | .085 (2.16) |
| RG-58/U, 141, 303       | 142-0107-401/406 | .225 (5.72) | .145 (3.68) | NONE        |
| RG-142, 223, 55, 400    | 142-0107-401/406 | .285 (7.24) | .165 (4.19) | NONE        |



## SMA Clamp Type Right Angle Plugs for Flexible Cable

| CABLE GROUP                | PART NO.     | "A"          | "B"         | "C"         |
|----------------------------|--------------|--------------|-------------|-------------|
| RG-178/U,<br>196           | 142-0202-101 | .280 (7.11)  | .053 (1.35) | .085 (2.16) |
|                            | 142-0202-106 | .280 (7.11)  | .053 (1.35) | .085 (2.16) |
| RG-316/U, 161,<br>174, 188 | 142-0203-101 | .280 (7.11)  | .053 (1.35) | .085 (2.16) |
|                            | 142-0203-106 | .280 (7.11)  | .053 (1.35) | .085 (2.16) |
| RG-58/U,<br>141, 303       | 142-0207-101 | .395 (10.03) | .160 (4.06) | None        |
|                            | 142-0207-106 | .395 (10.03) | .160 (4.06) | None        |
| RG-55/U, 142,<br>233, 400  | 142-0207-101 | .420 (10.67) | .180 (4.57) | None        |
|                            | 142-0207-106 | .420 (10.67) | .180 (4.57) | None        |



1. Identify connector parts. (4 piece parts)

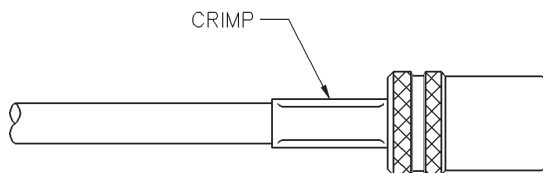
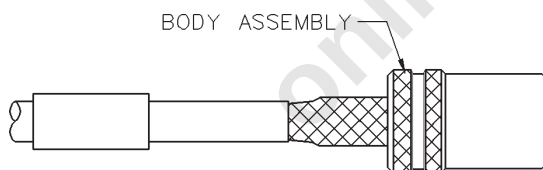
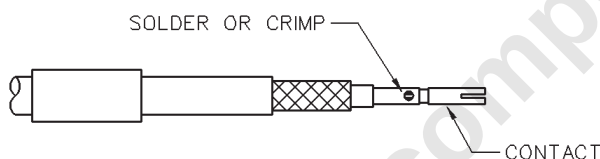
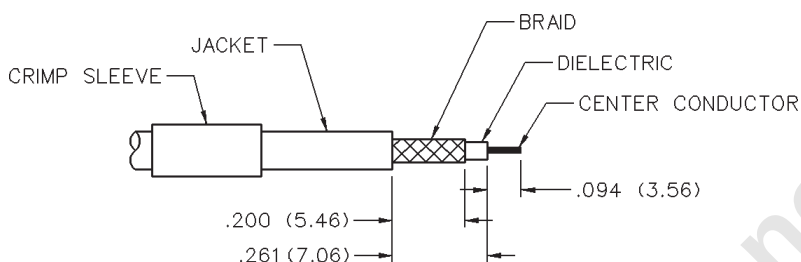
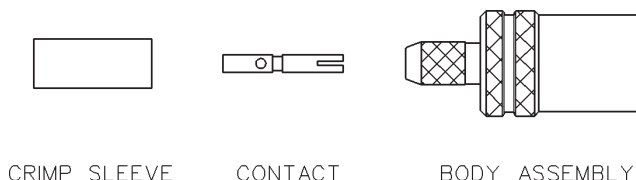
2. Strip cable to dimensions shown. Do not nick braid or center conductor. A wire stripper of correct size is recommended for this step. Twist stranded center conductor into tight bundle and tin (optional). Slide clamp nut and clamp cone onto cable as shown. Clamp cone must be oriented as shown for each size of cable. The RG-58/142 clamp cone slides over braid and against jacket.

3. Flare braid and slide cable into body making certain that the cable insulation bottoms on center contact. Stepped down diameter of stem must slide under braid and jacket. Arrange braid uniformly around crimp stem. Slide clamp nut against clamp cone and braid and tighten to 10 in.-lb. torque.

4. Solder center conductor to contact through the rear access port. Use a minimum amount of solder for a full fillet joint. **.020 (0.51) diameter solder is recommended.** Place expansion cap in access port and seat with .187 (4.75) diameter flat punch.

## SMB 3-Piece Straight Plugs

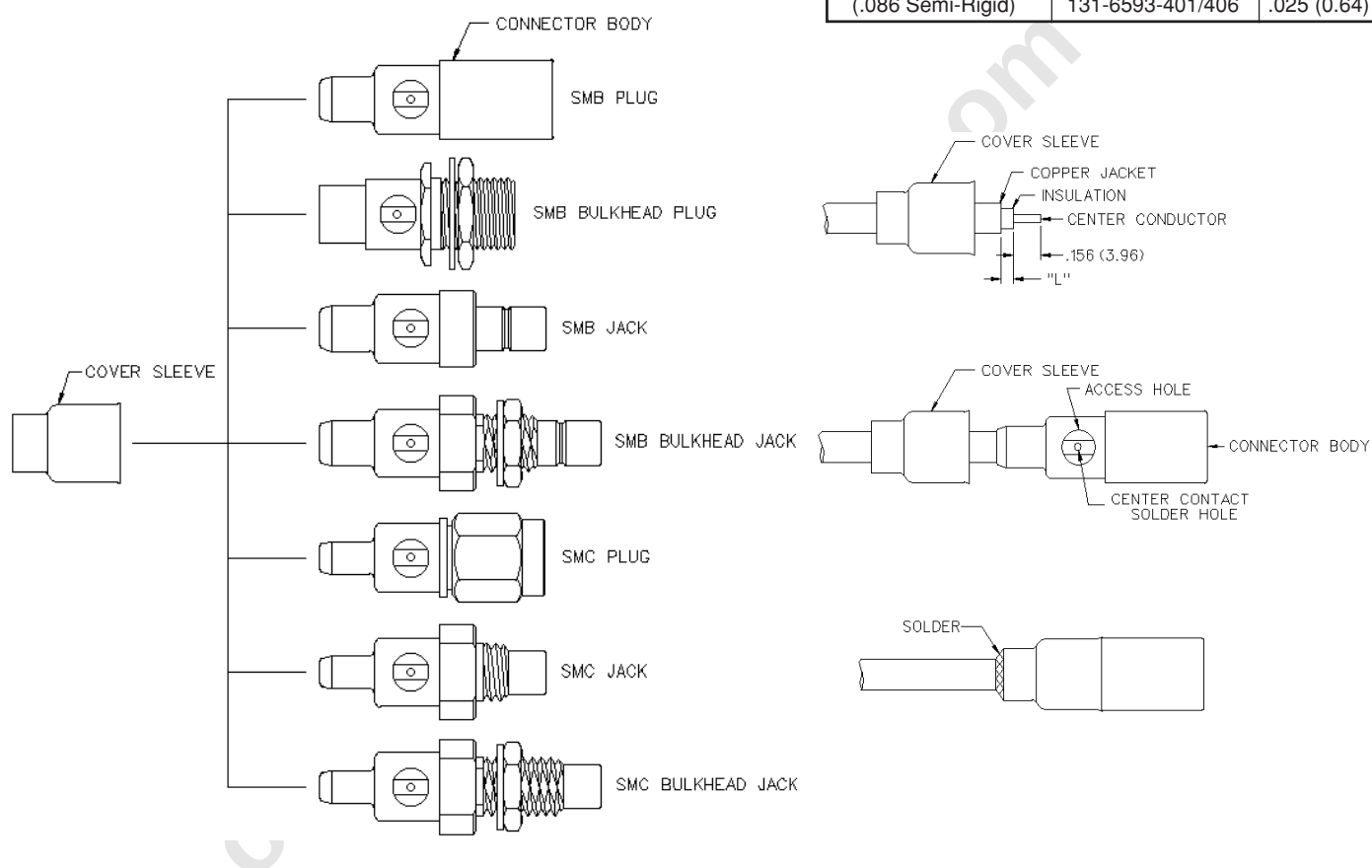
| CABLE GROUP                       | PART NO.         | CRIMP HEX   |
|-----------------------------------|------------------|-------------|
| RG-316/U, 161, 174, 179, 187, 188 | 131-3403-021/026 | .128 (3.25) |
| RG-316 DS, 188 DS, 179 DS         | 131-3404-021/026 | .151 (3.83) |
| RG-58/U, 141, 303                 | 131-3407-011/016 | .213 (5.41) |
| RG-179/U, 187                     | 131-8433-001/006 | .128 (3.25) |
| RG-179 DS, 187 DS                 | 131-8434-001/006 | .151 (3.83) |
| Belden 735A                       | 131-8445-011/016 | .178 (4.52) |



1. Identify connector parts. (3 piece parts): Crimp sleeve, body assembly and contact
2. Strip cable to dimensions shown. Do not nick braid or center conductor. Tin center conductor if contact will be solder attached. Do not tin center conductor if contact is to be crimp attached. Slide heat shrink (as applicable) and crimp sleeve onto jacket of cable.
3. Assemble contact onto cable as shown.  
**Solder Attachment:** Solder contact to center conductor through solder hole using .015 (0.38) diameter solder. Use a minimum amount of solder for a good joint.  
**Crimp Attachment:** A miniature 8 indent crimp tool 140-0000-970 is recommended. Crimp location should be centered between end of contact and X-hole using positioner 140-0000-971. Crimp attachment to solid center conductor cables is not recommended.
4. Flare braid and slide body assembly over contact and under braid. Then seat body assembly firmly onto contact. The cable may have to be held in a clamping fixture. Arrange braid uniformly around crimp stem. Slide crimp sleeve forward and crimp using recommended crimp tool. Slide heat shrink forward and shrink (as applicable).

## SMB/SMC Solder Type Straight Plugs and Jacks for Semi-Rigid Cable

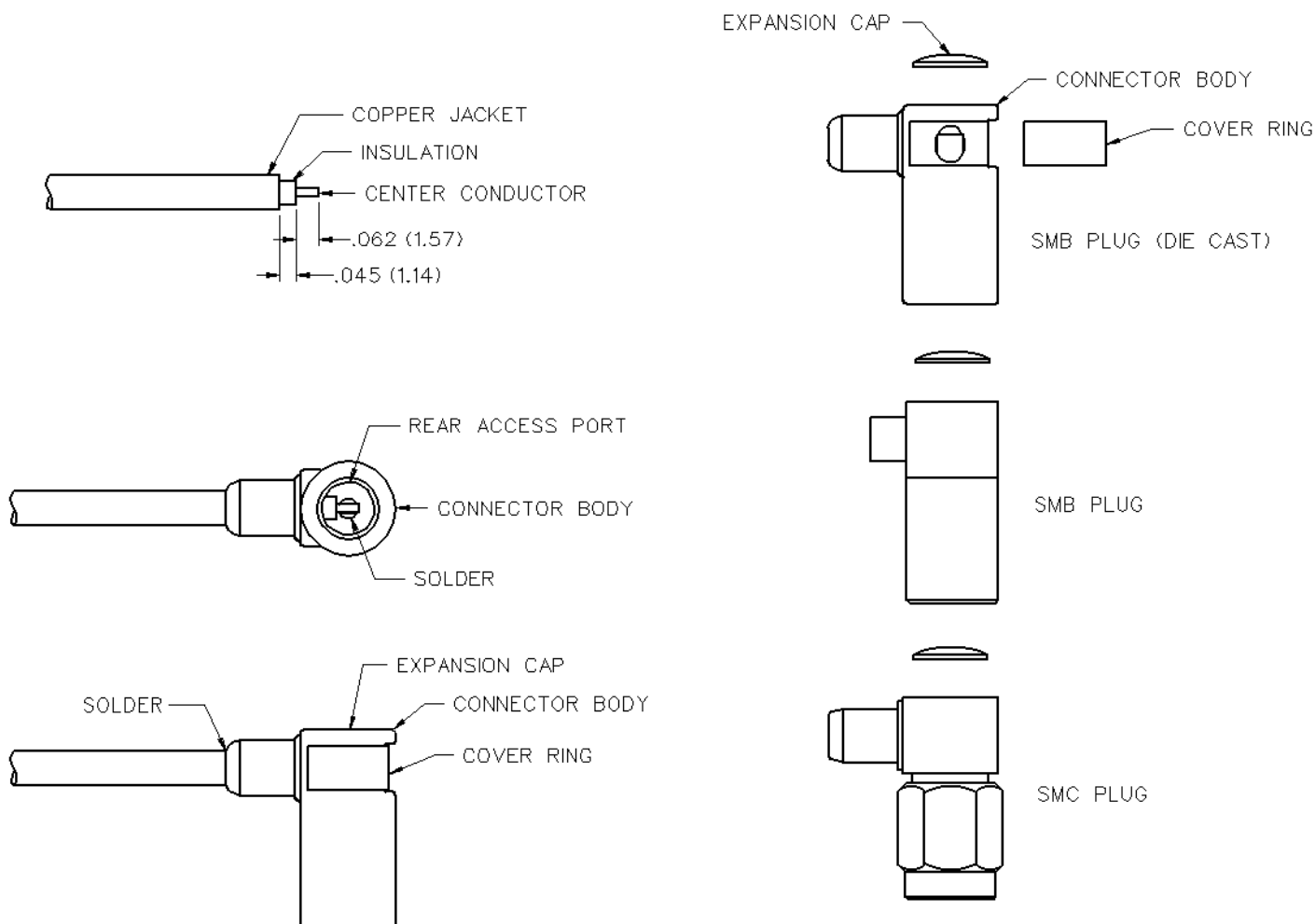
| CABLE GROUP                   | PART NO.         | "L"         |
|-------------------------------|------------------|-------------|
| RG-405/U<br>(.086 Semi-Rigid) | 131-3593-401/406 | .025 (0.64) |
|                               | 131-3693-001/016 | .025 (0.64) |
| RG-402/U<br>(.141 Semi-Rigid) | 131-3694-401/406 | .050 (1.27) |
| RG-405/U<br>(.086 Semi-Rigid) | 131-6593-401/406 | .025 (0.64) |



1. Identify connector parts. (2 piece parts—except bulkhead)
2. Strip cable to dimensions shown. Do not nick center conductor. Slide cover sleeve onto cable as shown.
3. Insert cable into body making certain that the cable insulation bottoms on center contact. Solder center conductor to contact through the side access ports and hole in center contact. Use a minimum amount of solder for a good joint. **.020 (0.51) diameter solder is recommended.**
4. Slide cover sleeve over access ports and solder body to cable and cover sleeve to body. Use a minimum amount of heat to minimize cable insulation movement.

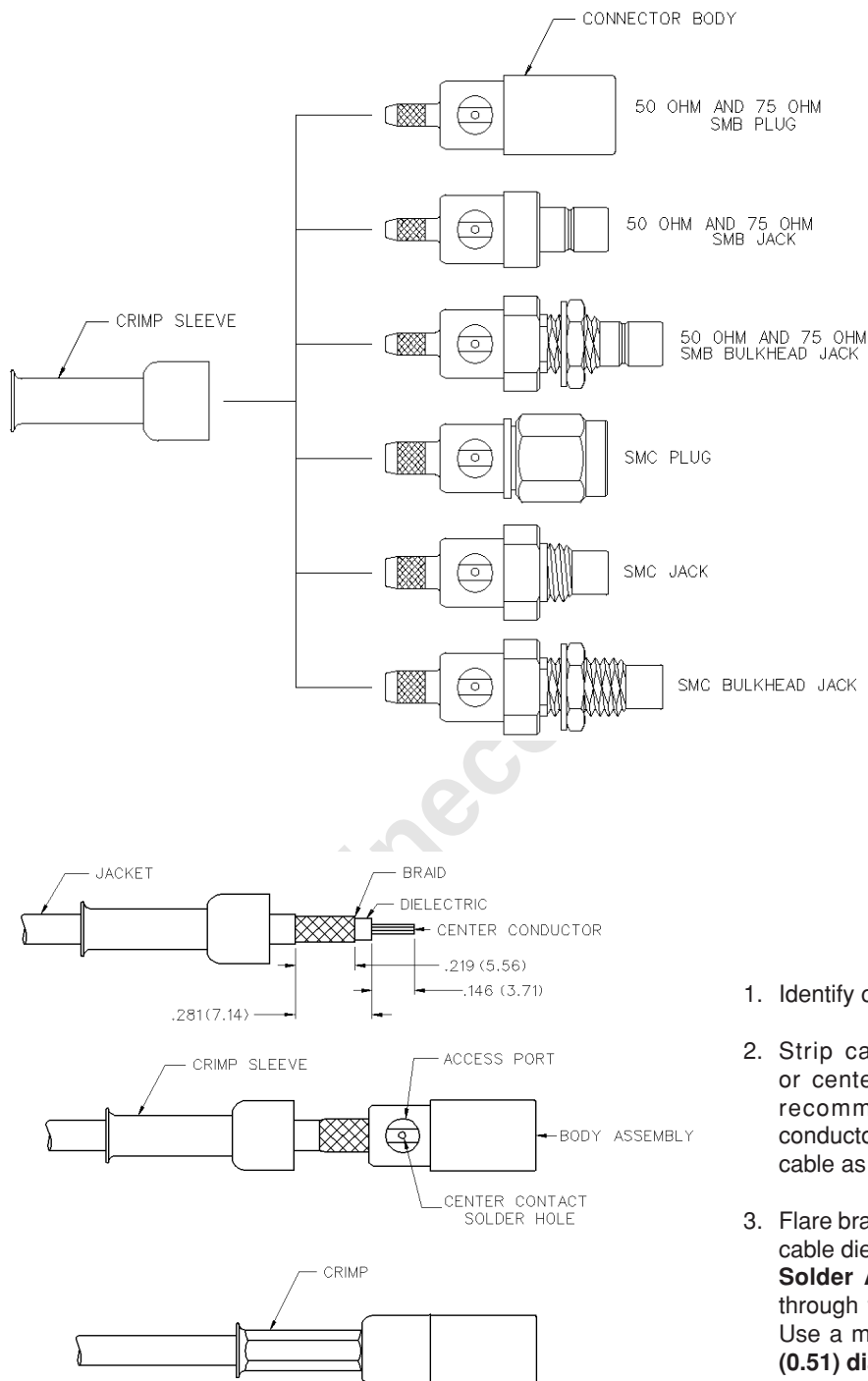
## SMB/SMC Solder Type Right Angle Plugs for Semi-Rigid Cable

| CABLE GROUP                   | PART NO.     |
|-------------------------------|--------------|
| RG-405/U<br>(.086 Semi-Rigid) | 131-1693-101 |
|                               | 131-1693-116 |
|                               | 131-3693-101 |
|                               | 131-3693-116 |



1. Identify connector parts. (2 piece parts - except diecast)
2. Strip cable to dimensions shown. Do not nick center conductor.
3. Insert cable into body making certain that the cable insulation bottoms on center contact. Solder center conductor to contact through the rear and side access ports. Use a minimum amount of solder for a good joint. **.020 (0.51) diameter solder is recommended.**
4. Solder body to cable. Use a minimum amount of heat to minimize cable insulation movement. Place expansion cap in access port and set with .125 (3.17) diameter punch. Snap cover ring over side access port.

## SMB/SMC/Mini-75 Ohm SMB (2-Piece) Crimp Type Straight Plugs, Jacks and Bulkhead Jacks for Flexible Cable



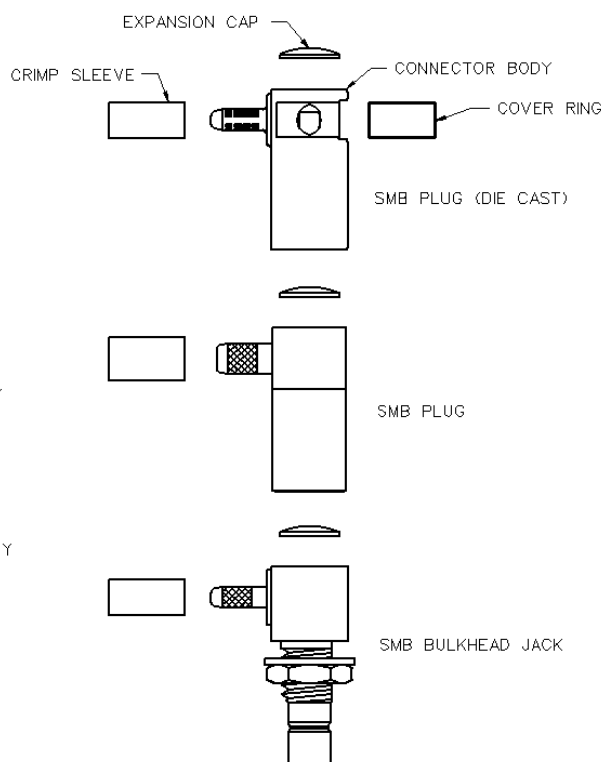
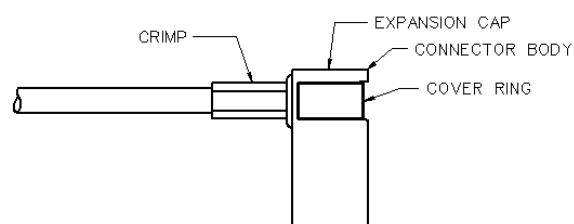
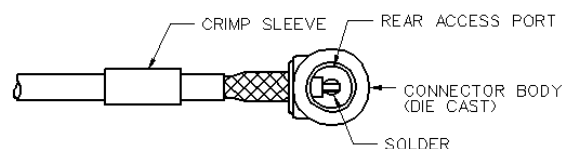
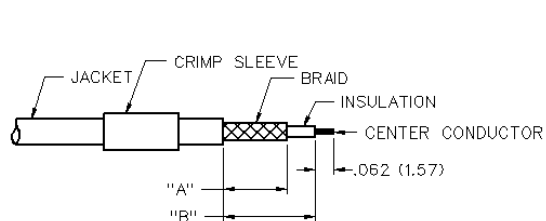
| CABLE GROUP                       | PART NO.         | CRIMP HEX   |
|-----------------------------------|------------------|-------------|
| RG-316/U, 161, 174, 179, 187, 188 | 131-1403-001/016 | .128 (3.25) |
| RG-316 DS, 188 DS, 179 DS         | 131-1404-001/016 | .151 (3.83) |
| RG-178/U, 196                     | 131-3302-001/006 | .105 (2.67) |
| RG-316/U, 161, 174, 179, 187, 188 | 131-3303-001/006 | .128 (3.25) |
|                                   | 131-3303-401/406 | .128 (3.25) |
| RG-179 DS, 187 DS, 188 DS, 316 DS | 131-3304-401/406 | .151 (3.83) |
| RG-178/U, 196                     | 131-3402-001/016 | .105 (2.67) |
| RG-316/U, 161, 174, 179, 187, 188 | 131-3403-001/016 | .128 (3.25) |
|                                   | 131-3403-401/406 | .128 (3.25) |
| RG-179 DS, 187 DS, 188 DS, 316 DS | 131-3404-001/016 | .128 (3.25) |
|                                   | 131-3404-001/016 | .151 (3.83) |
| RG-58/U, 141, 303                 | 131-3407-001/006 | .213 (5.41) |
| RG-316/U, 161, 174, 188           | 131-6303-401/406 | .128 (3.25) |
| RG-316 DS, 188 DS                 | 131-6304-401/406 | .151 (3.83) |
| RG-179/U, 187                     | 131-6333-401/406 | .128 (3.25) |
| RG-316/U, 161, 174, 188           | 131-6403-001/006 | .128 (3.25) |
| RG-316 DS, 188 DS                 | 131-6404-001/006 | .151 (3.83) |
| RG-179/U, 187                     | 131-6433-001/006 | .128 (3.25) |
| RG-179/U, 187, 316, 161, 174, 188 | 131-8303-401/406 | .128 (3.25) |
| RG-179 DS, 187 DS, 188DS, 316DS   | 131-8304-401/406 | .151 (3.83) |
| RG-179/U, 187, 316, 161, 174, 188 | 131-8403-001/006 | .128 (3.25) |
|                                   | 131-8403-011/016 | .128 (3.25) |
| RG-179 DS, 187 DS, 188 DS, 316 DS | 131-8404-001/006 | .151 (3.83) |
|                                   | 131-8404-011/016 | .151 (3.83) |
| RG-59                             | 131-8409-001/006 | .255 (6.48) |
| BELDEN 735A                       | 131-8445-001/006 | .178 (4.52) |
| RG-316/U, 188, 174, 179, 187      | 131-9403-001     | .128 (3.25) |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 131-9404-001     | .151 (3.83) |

1. Identify connector parts. (2 piece parts—except bulkhead)
2. Strip cable to dimensions shown. Do not nick braid or center conductor. A wire stripper of correct size is recommended for this step. Twist stranded center conductor into tight bundle and tin. Slide crimp sleeve onto cable as shown.
3. Flare braid and slide cable into body making certain that the cable dielectric bottoms against center contact.  
**Solder Attachment:** Solder center conductor to contact through the side access ports and hole in center contact. Use a minimum amount of solder for a full fillet joint. **.020 (0.51) diameter solder is recommended.**  
**Crimp Attachment:** Crimp applicable 50 Ohm connector contacts with 141-0000-911 dieset in 144-0000-900 tool frame. Crimp 75 Ohm connector contacts with 141-0000-924 dieset in 144-0000-900 tool frame. Crimp attachment to solid center conductor cables is not recommended.

## SMB/SMC/Mini-75 Ohm SMB Crimp Type Right Angle Plugs and Right Angle Bulkhead Jacks for Flexible Cable

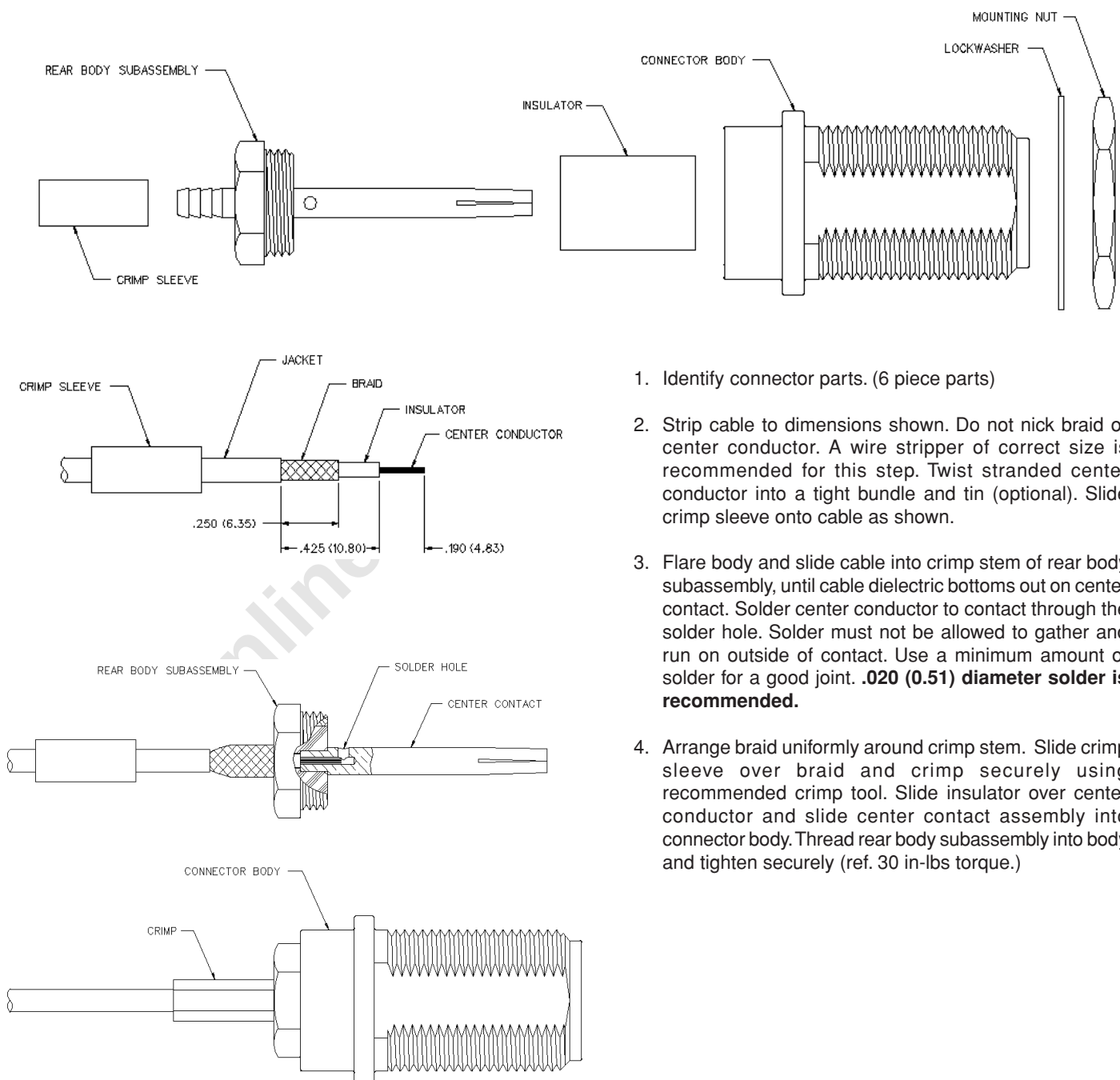
1. Identify connector parts. (4 piece parts: crimp sleeve, body assembly, expansion cap and covering ring. Die cast body only.)
2. Strip cable to dimensions shown. Do not nick braid or center conductor. A wire stripper of correct size is recommended for this step. Twist stranded center conductor into tight bundle and tin (optional). Slide crimp sleeve onto cable as shown.
3. Flare braid and slide cable into body assembly making certain that the cable insulation bottoms on center contact. Arrange braid uniformly around crimp stem of body assembly. Slide crimp sleeve over braid and crimp securely using recommended crimp tool.
4. Solder center conductor to contact through the rear and side access ports. Use a minimum amount of solder for a good joint. **.020 (0.51) diameter solder is recommended.** Place expansion cap in access port and seat with a .125 (3.17) diameter flat punch. Snap cover ring over side access port if applicable.

| CABLE GROUP                                | PART NO.         | "A"         | "B"         | CRIMP HEX   |
|--------------------------------------------|------------------|-------------|-------------|-------------|
| RG-178/U, 196                              | 131-1402-101/116 | .219 (5.56) | .312 (7.92) | .105 (2.67) |
| RG-316/U, 161, 174, 179, 187, 188          | 131-1403-101/116 | .219 (5.56) | .312 (7.92) | .128 (3.25) |
| RG-179 DS, 187 DS, 188DS, 316 DS           | 131-1404-101/116 | .219 (5.56) | .312 (7.92) | .151 (3.83) |
| RG-316/U, 161, 174, 179, 187, 188          | 131-3303-501/506 | .219 (5.56) | .312 (7.92) | .128 (3.25) |
| RG-179 DS, 187 DS, 188 DS, 316 DS          | 131-3304-501/506 | .219 (5.56) | .312 (7.92) | .151 (3.83) |
| RG-178/U, 196                              | 131-3402-101/116 | .177 (4.50) | .289 (7.34) | .105 (2.67) |
| RG-316/U, 161, 174, 179, 187, 188          | 131-3403-101/116 | .177 (4.50) | .289 (7.34) | .128 (3.25) |
| RG-179 DS, 187 DS, 188 DS, 316 DS          | 131-3404-101/116 | .177 (4.50) | .289 (7.34) | .151 (3.83) |
| RG-58/U, 141, 303                          | 131-3407-101/106 | .219 (5.56) | .289 (7.34) | .213 (5.41) |
| RG-316/U, 161, 174, 188 DS, 316 DS, 188 DS | 131-6403-101/106 | .219 (5.56) | .312 (7.92) | .128 (3.25) |
|                                            | 131-6404-101/106 | .219 (5.56) | .312 (7.92) | .151 (3.83) |
| RG-179/U, 187                              | 131-6433-101/106 | .219 (5.56) | .312 (7.92) | .151 (3.83) |
| RG-179/U, 187, 316, 161, 174, 188          | 131-8403-101/106 | .177 (4.50) | .289 (7.34) | .128 (3.25) |
|                                            | 131-8403-111/116 | .219 (5.56) | .312 (7.92) | .128 (3.25) |
| RG-179 DS, 187 DS, 316 DS, 188 DS          | 131-8404-101/106 | .177 (4.50) | .289 (7.34) | .151 (3.83) |
|                                            | 131-8404-111/116 | .219 (5.56) | .312 (7.92) | .151 (3.83) |
| RG-59                                      | 131-8409-101/106 | .219 (5.56) | .289 (7.34) | .255 (6.48) |
| BELDEN 735A                                | 131-8445-101/106 | .177 (4.50) | .289 (7.34) | .178 (4.52) |
| RG-316/U, 188, 174, 179, 187               | 131-9403-101/116 | .177 (4.50) | .289 (7.34) | .128 (3.25) |
| RG-316 DS, 188 DS, 179 DS, 187 DS          | 131-9404-101/116 | .177 (4.50) | .289 (7.34) | .151 (3.83) |



## N Crimp Type Bulkhead Jack for Flexible Cable

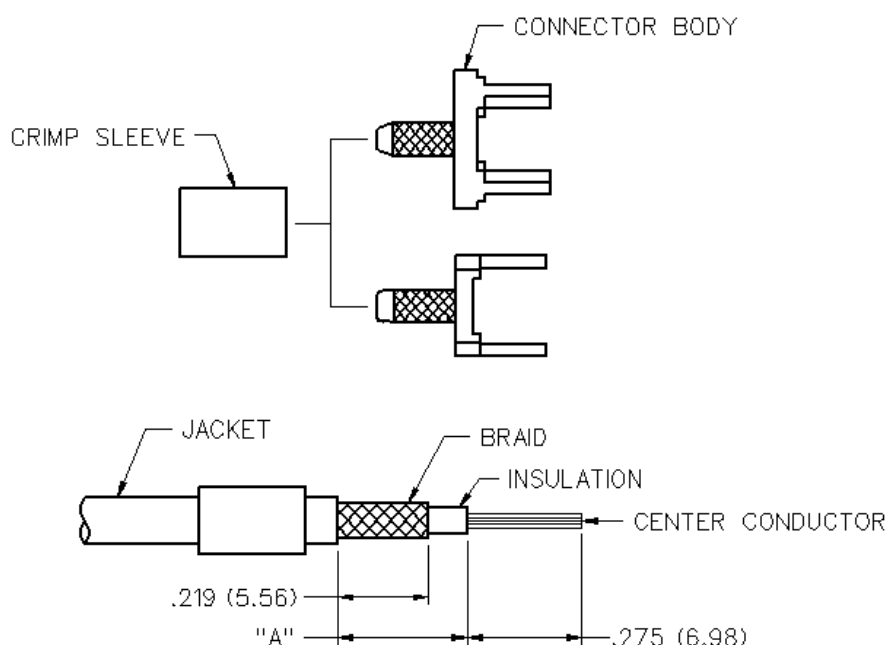
| CABLE GROUP             | PART NO.     | CRIMP HEX   |
|-------------------------|--------------|-------------|
| RG-316/U, 161, 174, 188 | 134-0303-406 | .160 (4.06) |
| RG-316 DS, 188 DS       | 134-0304-406 | .160 (4.06) |
| RG-58/U, 141, 303       | 134-0307-406 | .213 (5.41) |
| RG-55/U, 142, 223, 400  | 134-0308-406 | .213 (5.41) |



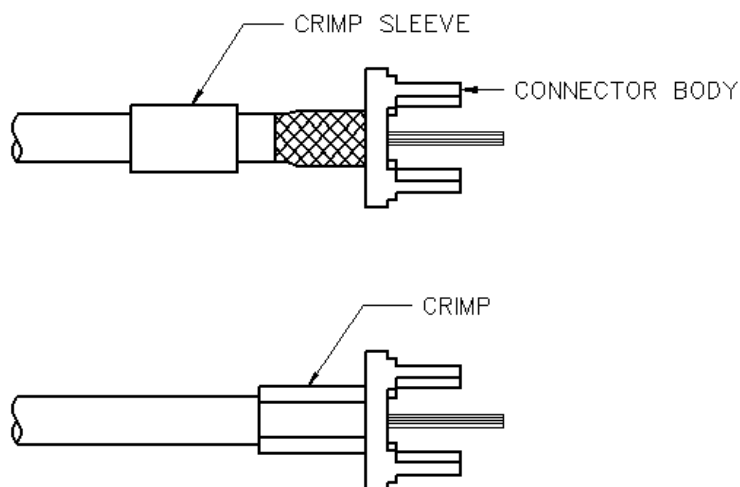
1. Identify connector parts. (6 piece parts)
2. Strip cable to dimensions shown. Do not nick braid or center conductor. A wire stripper of correct size is recommended for this step. Twist stranded center conductor into a tight bundle and tin (optional). Slide crimp sleeve onto cable as shown.
3. Flare body and slide cable into crimp stem of rear body subassembly, until cable dielectric bottoms out on center contact. Solder center conductor to contact through the solder hole. Solder must not be allowed to gather and run on outside of contact. Use a minimum amount of solder for a good joint. **.020 (0.51) diameter solder is recommended.**
4. Arrange braid uniformly around crimp stem. Slide crimp sleeve over braid and crimp securely using recommended crimp tool. Slide insulator over center conductor and slide center contact assembly into connector body. Thread rear body subassembly into body and tighten securely (ref. 30 in-lbs torque.)

## Crimp Type Straight Cable Termination for Flexible Cable

| CABLE GROUP                            | PART NO.         | "A"         | CRIMP HEX   |
|----------------------------------------|------------------|-------------|-------------|
| RG-178/U, 196                          | 142-0002-221/226 | .259 (6.58) | .105 (2.67) |
| RG-316/U,<br>161, 174<br>179, 187, 188 | 142-0003-201/206 | .312 (7.92) | .128 (3.25) |
|                                        | 142-0003-231/236 | .259 (6.58) | .128 (3.25) |
|                                        | 142-0003-241/246 | .259 (6.58) | .128 (3.25) |
| RG-316 DS, 188 DS                      | 142-0004-201/206 | .312 (7.92) | .151 (3.83) |
|                                        | 142-0004-211/216 | .259 (6.58) | .151 (3.83) |
|                                        | 142-0004-221/226 | .259 (6.58) | .151 (3.83) |

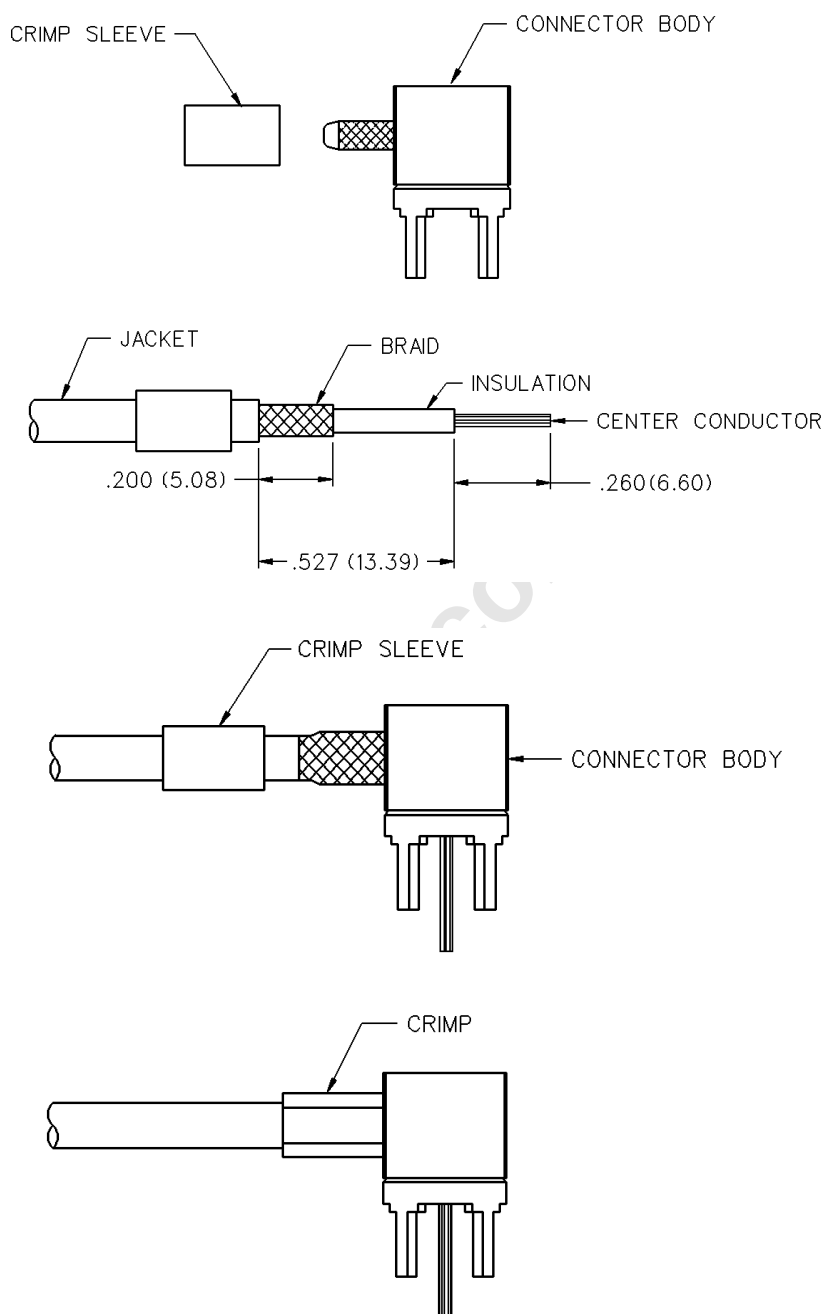


1. Identify connector parts. (2 piece parts)
2. Strip cable to dimensions shown. Do not nick braid or center conductor. A wire stripper of correct size is recommended for this step. Twist stranded center conductor into tight bundle and tin. Slide crimp sleeve onto cable as shown.
3. Flare braid and slide cable into body making certain that the cable insulation is flush with bottom of connector.
4. Arrange braid uniformly around crimp stem. Slide crimp sleeve over braid and crimp securely using recommended crimp tool.



## Crimp Type Right Angle Cable Termination for Flexible Cable

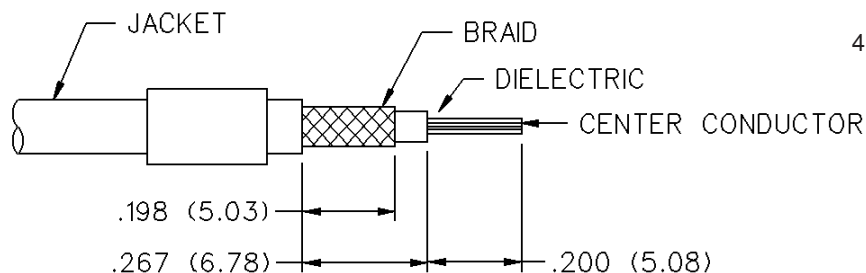
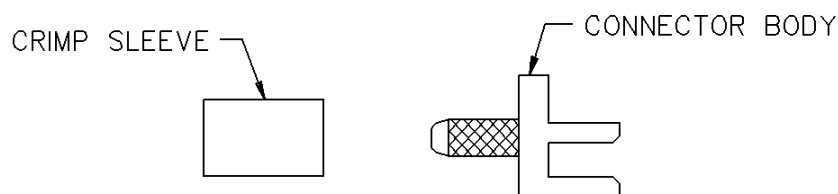
| CABLE GROUP                         | PART NO.         | CRIMP HEX   |
|-------------------------------------|------------------|-------------|
| RG-316/U, 161, 174<br>179, 187, 188 | 142-0003-301/306 | .128 (3.25) |
| RG-316 DS, 188 DS                   | 142-0004-301/306 | .151 (3.83) |



1. Identify connector parts. (2 piece parts)
2. Strip cable to dimensions shown. Do not nick braid or center conductor. A wire stripper of correct size is recommended for this step. Twist stranded center conductor into tight bundle and tin. Slide crimp sleeve onto cable as shown.
3. Flare braid and slide cable into body making certain that the cable insulation is flush with bottom of connector body.
4. Arrange braid uniformly around crimp stem. Slide crimp sleeve over braid and crimp securely using recommended crimp tool.

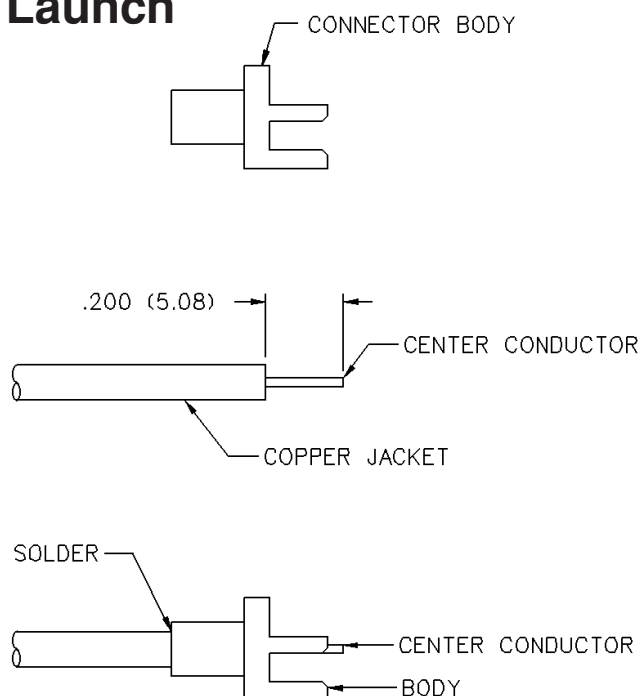
## Crimp Type Straight Cable Termination for End Launch

| CABLE GROUP        | PART NO.     | CRIMP HEX   |
|--------------------|--------------|-------------|
| RG-178/U, 196      | 142-0002-811 | .105 (2.67) |
| RG-316/U, 161, 174 | 142-0003-801 | .128 (3.25) |
| 179, 187, 188      | 142-0003-811 | .128 (3.25) |
| RG-316 DS, 188 DS, | 142-0004-801 | .151 (3.84) |
| 179 DS, 187 DS     | 142-0004-811 | .151 (3.84) |
| RG-58/U,           | 142-0007-801 | .213 (5.41) |
| 141, 303           | 142-0007-811 | .213 (5.41) |
| RG-142/U, 55,      | 142-0008-801 | .213 (5.41) |
| 223, 400           | 142-0008-811 | .213 (5.41) |



1. Identify connector parts. (2 piece parts)
2. Strip cable to dimensions shown. Do not nick braid or center conductor. A wire stripper of correct size is recommended for this step. Twist stranded center conductor into tight bundle and tin. Slide crimp sleeve onto cable as shown.
3. Flare braid and slide cable into body making certain that the cable insulation is flush with bottom of connector body.
4. Arrange braid uniformly around crimp stem. Slide crimp sleeve over braid and crimp securely using recommended crimp tool.

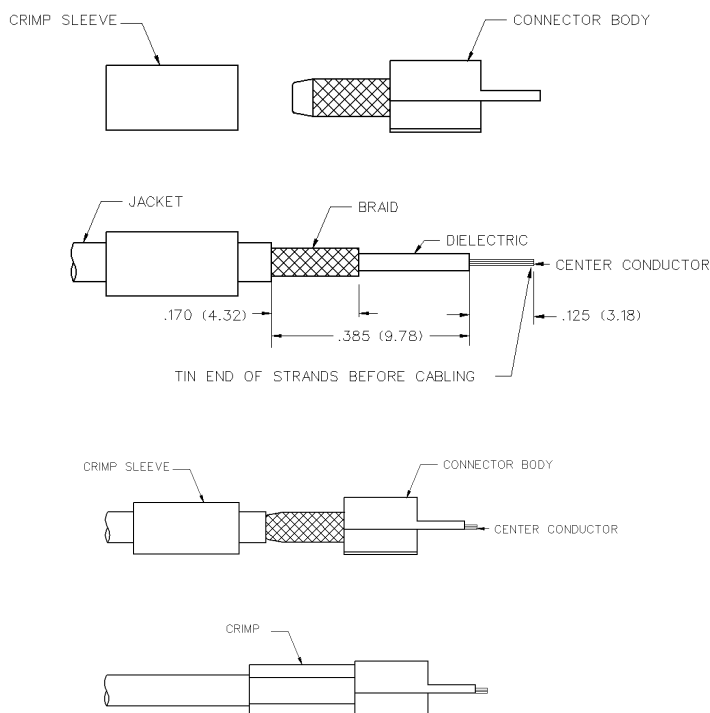
## Solder Type Straight Cable Termination for End Launch



| CABLE GROUP                | PART NO.         |
|----------------------------|------------------|
| RG-405/U (.086 Semi-Rigid) | 142-0093-801/806 |
| RG-402/U (.141 Semi-Rigid) | 142-0094-801/806 |
| .250 Semi-Rigid            | 142-0096-801/806 |

1. Identify connector parts. (1 piece part)
2. Strip cable to dimensions shown. Do not nick braid or center conductor.
3. Insert cable into body making sure cable is bottomed against shoulder body. Solder body to cable. Use a minimum amount of heat to minimize cable dielectric movement.

## Solder Type Straight Cable Termination for End Launch Surface Mount



| CABLE GROUP   | PART NO.     | CRIMP HEX   |
|---------------|--------------|-------------|
| RG-178/U, 196 | 142-0002-821 | .105 (2.67) |

1. Identify connector parts (2-piece parts).
2. Strip cable to dimensions shown. Do not nick braid or center conductor. A wire stripper of correct size is recommended for this step. Twist stranded center conductor into tight bundle and tine. Slide crimp sleeve onto cable as shown.
3. Flare braid and slide cable into body making certain that the cable dielectric is flush with the end of the connector body.
4. Arrange braid uniformly around crimp sleeve. Slide crimp sleeve over braid and crimp securely using recommended crimp tool.

## BNC Straight 3-Piece Crimp Type Plugs for Flexible Cable

| PART NO.   | CABLE              | STRIP DIMENSIONS |             |             | CRIMP SLEEVE HEX | CONTACT CRIMP HEX | RECOMMENDED CRIMP TOOL |
|------------|--------------------|------------------|-------------|-------------|------------------|-------------------|------------------------|
|            |                    | "A"              | "B"         | "C"         |                  |                   |                        |
| CPMC-78-2  | RG-59              | .315 (8.00)      | .248 (6.30) | .157 (4.00) | .255 (6.48)      | .065 (1.65)       | 24-9959P               |
| CPMC-78-5  | BELDEN RG-6        | .315 (8.00)      | .248 (6.30) | .118 (3.00) | .288 (7.32)      | .065 (1.65)       | 24-302P/24-318P        |
| CPMC-78-10 | RG-59 PLENUM       | .315 (8.00)      | .248 (6.30) | .157 (4.00) | .213 (5.41)      | .067 (1.70)       | 24-9958P               |
| CPMC-78-18 | BELDEN 8218, 1855A | .315 (8.00)      | .248 (6.30) | .157 (4.00) | .184 (4.67)      | .066 (1.68)       | 24-9912P               |
| CPMC-88-1  | RG-58              | .315 (8.00)      | .098 (2.50) | .157 (4.00) | .213 (5.41)      | .067 (1.70)       | 24-9958P               |
| CPMC-88-2  | RG-59              | .315 (8.00)      | .118 (3.00) | .157 (4.00) | .258 (6.55)      | .065 (1.65)       | 24-8859P               |
| CPMC-88-3  | BELDEN 8281        | .315 (8.00)      | .118 (3.00) | .157 (4.00) | .310 (7.87)      | .065 (1.65)       | 24-318P                |
| CPMC-88-5  | RG-6               | .315 (8.00)      | .118 (3.00) | .157 (4.00) | .275 (6.98)      | .065 (1.65)       | 24-8856P               |
| CPMC-88-10 | RG-59 PLENUM       | .315 (8.00)      | .118 (3.00) | .157 (4.00) | .213 (5.41)      | .067 (1.70)       | 24-9958P               |
| CPMC-88-11 | RG-58 PLENUM       | .344 (8.75)      | .147 (3.75) | .157 (4.00) | .213 (5.41)      | .067 (1.70)       | 24-9958P               |
| CPMC-88-13 | RG-55, 142         | .315 (8.00)      | .118 (3.00) | .157 (4.00) | .213 (5.41)      | .067 (1.70)       | 24-9958P               |
| CPMC-88-14 | RG-180, 34M, 195   | .315 (8.00)      | .118 (3.00) | .157 (4.00) | .184 (4.67)      | .066 (1.68)       | 24-9912P               |
| CPMC-88-17 | RG-8X (MINI 8 )    | .315 (8.00)      | .118 (3.00) | .157 (4.00) | .255 (6.48)      | .065 (1.65)       | 24-9959P               |
| CPMC-88-18 | BELDEN 8218        | .315 (8.00)      | .118 (3.00) | .157 (4.00) | .184 (4.67)      | .066 (1.68)       | 24-9912P               |
| CPMC-88-19 | RG-174, 188, 316   | .344 (8.75)      | .118 (3.00) | .157 (4.00) | .184 (4.67)      | .066 (1.68)       | 24-9912P               |
| CPMC-88-26 | RG-11              | .300 (7.62)      | .240 (6.10) | .365 (9.27) | .405 (10.29)     | .080 (2.03)       | 24-310/24-313          |

1. Identify connector parts. (3 piece parts)

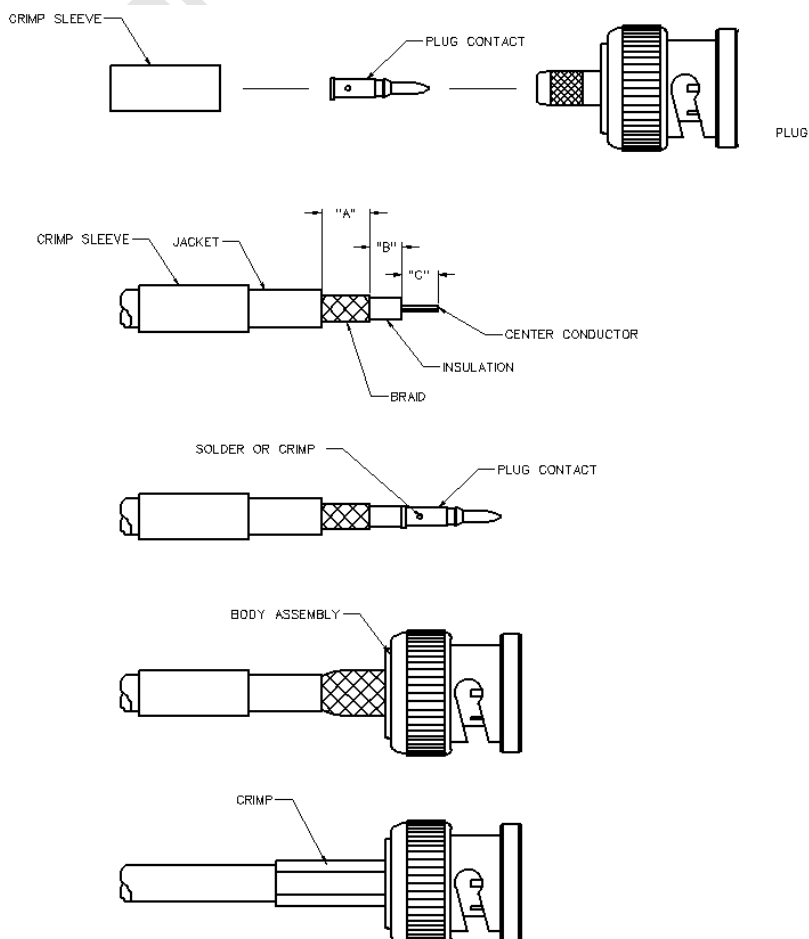
2. Strip cable to dimensions shown. Do not nick braid or center conductor. Tin center conductor if contact will be solder attached. Do not tin center conductor if contact is to be crimp attached. A wire stripper of correct size is recommended for this step. Slide heat shrink (as applicable) and crimp sleeve onto jacket of cable.

3. Assemble contact onto cable as shown.

**Solder Attachment:** Solder contact to center conductor through hole using a minimum amount of solder for a good joint.

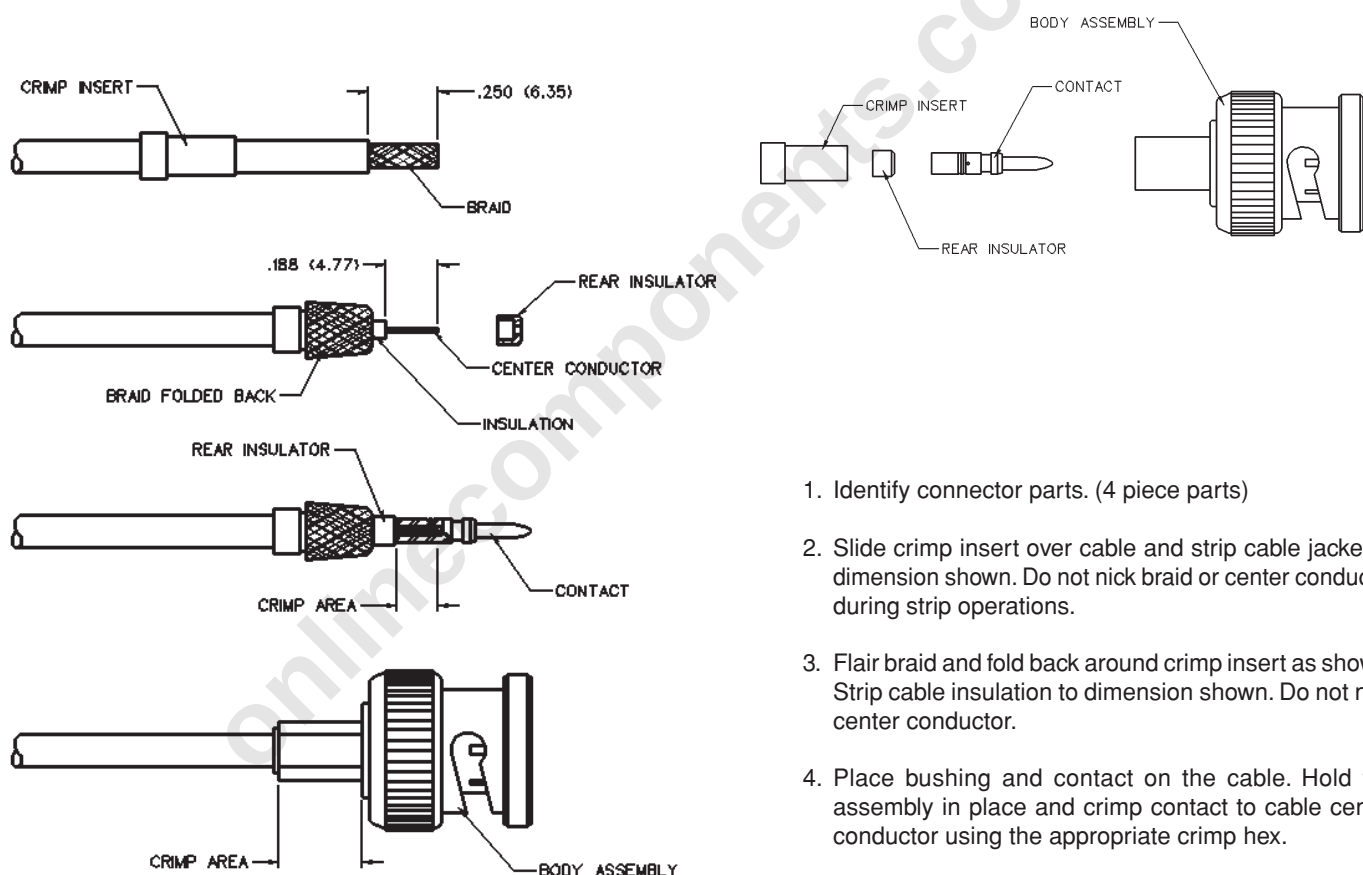
**Crimp Attachment (where applicable):** Crimp contact to center conductor using recommended crimp hex.

4. Flare braid and slide body assembly over contact and under braid. Then seat body assembly firmly onto contact. The cable may have to be held in a clamping fixture. Arrange braid uniformly around crimp stem. Slide crimp sleeve forward and crimp using recommended crimp hex. Slide heat shrink forward and shrink (as applicable).



## BNC, TNC Straight Crimp Type Plugs with Crimp Insert for Flexible Cable

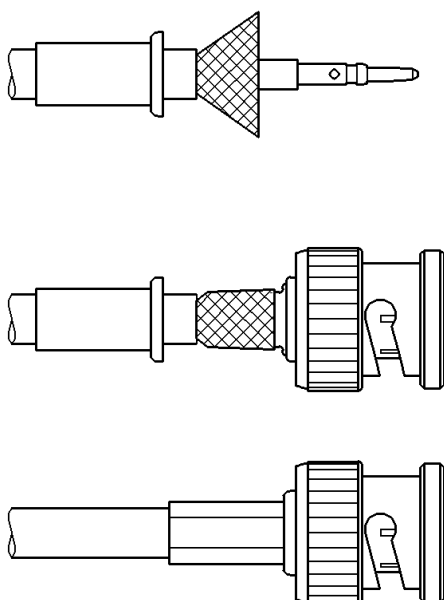
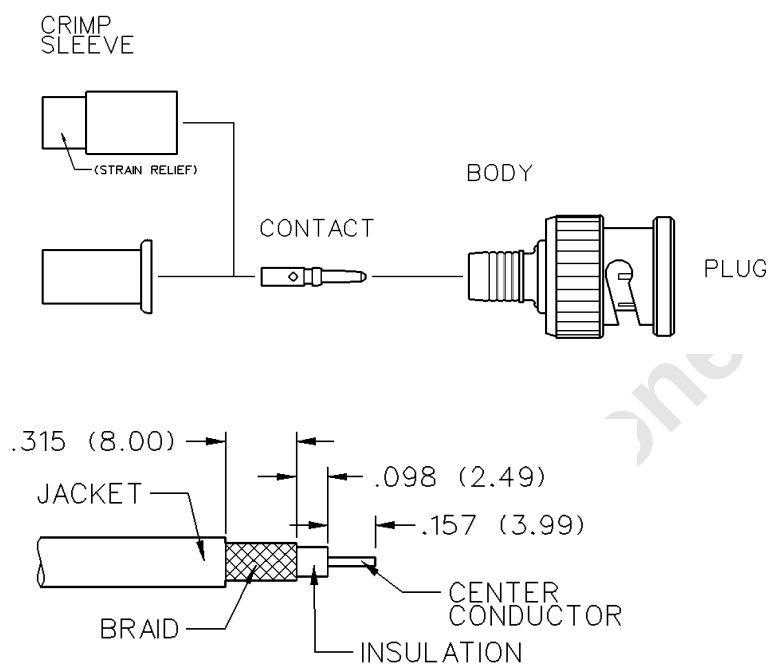
| PART NO.     | BODY CABLE       | CONTACT STEM HEX | CRIMP HEX   | RECOMMENDED CRIMP TOOL |
|--------------|------------------|------------------|-------------|------------------------|
| CPM-88-19    | RG-174, 188, 316 | 0.184 (4.67)     | .066 (1.68) | 24-9912P               |
| CPM-88-19A/S | RG-174, 316      | 0.184 (4.67)     | .066 (1.68) | 24-9912P               |
| CPM-88-20    | RG-179, 187      | 0.184 (4.67)     | .066 (1.68) | 24-9912P               |
| CPM-TNC-19   | RG-174, 188, 316 | 0.184 (4.67)     | .066 (1.68) | 24-9912P               |
| CPM-TNC-20   | RG-179, 187      | 0.184 (4.67)     | .066 (1.68) | 24-9912P               |



1. Identify connector parts. (4 piece parts)
2. Slide crimp insert over cable and strip cable jacket to dimension shown. Do not nick braid or center conductor during strip operations.
3. Flair braid and fold back around crimp insert as shown. Strip cable insulation to dimension shown. Do not nick center conductor.
4. Place bushing and contact on the cable. Hold the assembly in place and crimp contact to cable center conductor using the appropriate crimp hex.
5. Slide body assembly over contact and other connector parts until a slight snap is felt, indicating the contact is in place. Crimp the body assembly in the location shown using the appropriate crimp hex.

## BNC Straight Crimp Type Plugs for Flexible Cable

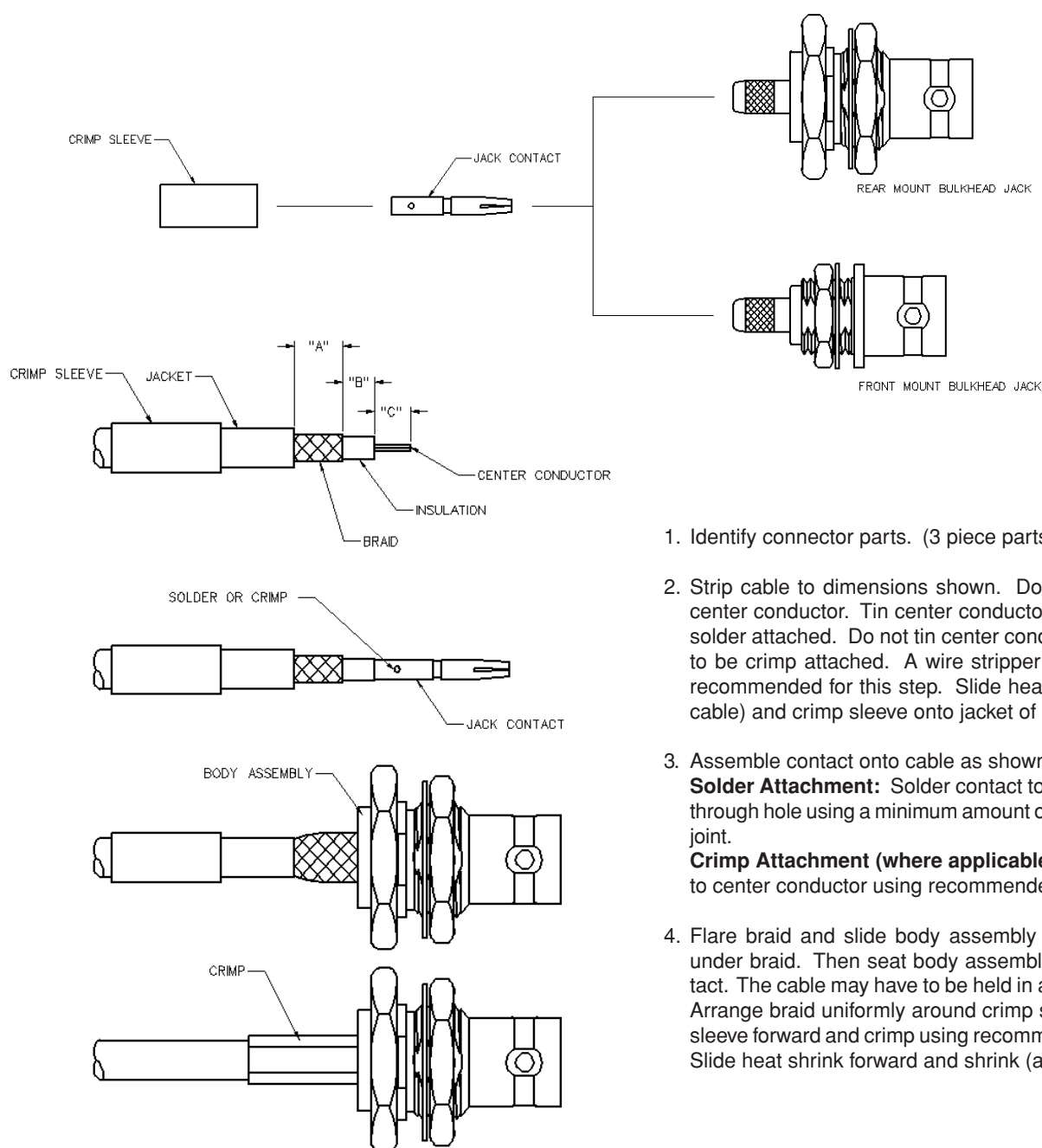
| PART NO.   | CABLE               | CRIMP SLEEVE HEX         | STRAIN RELIEF CRIMP HEX | RECOMMENDED CRIMP TOOL |
|------------|---------------------|--------------------------|-------------------------|------------------------|
| CPMC-88-21 | RG-58, RG-59 PLENUM | .235 (5.97), .250 (6.35) | .210 (5.33)             | 24-8857P/24-9859P      |



1. Identify connector parts. (3 piece parts)
2. Trim the cable to the dimensions shown. Take care not to nick the center conductor or the braid.
3. Slide the crimp sleeve onto the cable, narrow end first. Solder the contact to the center conductor using the minimum amount necessary for a good joint, make sure that the contact is flush with the insulation of the cable. Flare the braid.
4. Slide the body over the contact and under the braid. Then seat the body firmly onto the contact.
5. Arrange the braid uniformly around the crimp stem of the body. Slide the crimp sleeve forward and crimp using the recommended crimp hex.

## BNC Straight Crimp Type Bulkhead Jacks for Flexible Cable

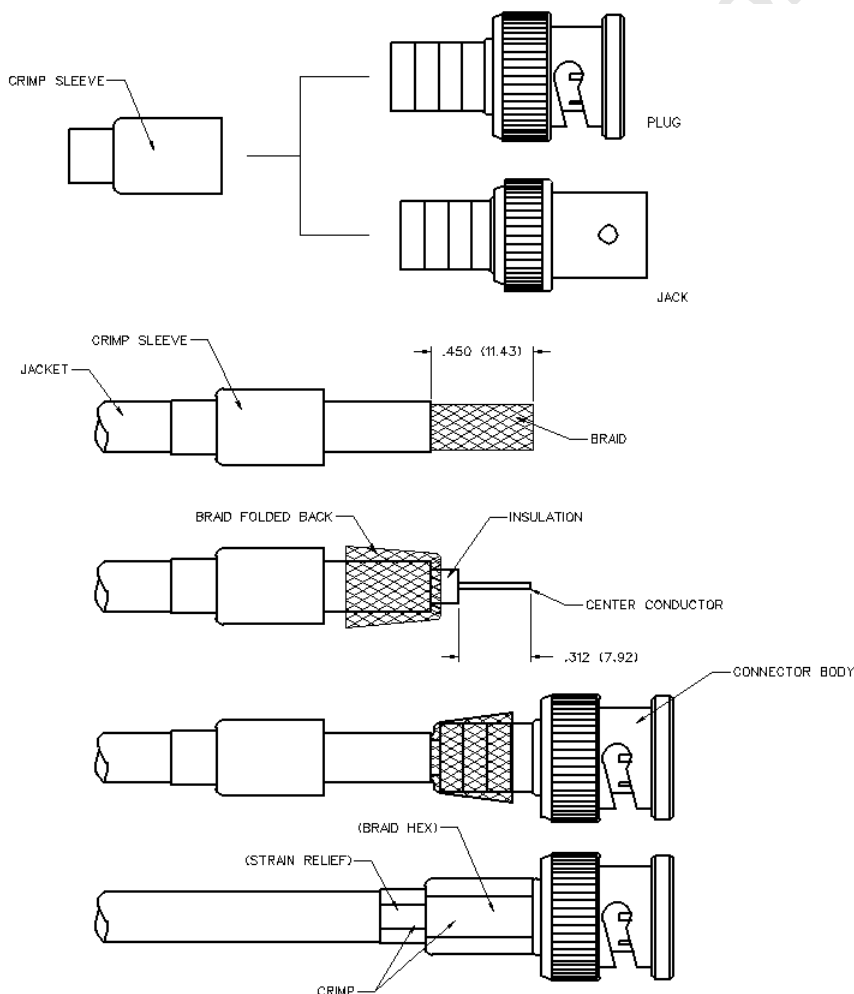
| PART NO.    | CABLE       | STRIP DIMENSIONS |             |             | CRIMP SLEEVE HEX | CONTACT CRIMP HEX  | RECOMMENDED CRIMP TOOL |
|-------------|-------------|------------------|-------------|-------------|------------------|--------------------|------------------------|
|             |             | "A"              | "B"         | "C"         |                  |                    |                        |
| CP-79-20BM1 | RG-179      | .315 (8.00)      | .197 (5.00) | .138 (3.50) | .184 (4.67)      | .066 (1.69)        | 24-9912P               |
| CP-79-20BM2 | RG-179      | .315 (8.00)      | .157 (4.00) | .118 (3.00) | .184 (4.67)      | .066 (1.69)        | 24-9912P               |
| CP-89-19BM1 | RG-174, 316 | .315 (8.00)      | .197 (5.00) | .138 (3.50) | .184 (4.67)      | .066 (1.69)        | 24-9912P               |
| CP-89-27BM2 | RG-178, 196 | .226 (5.75)      | .106 (2.70) | .118 (3.00) | .128 (3.25)      | None (solder Only) | 94-9963P               |



1. Identify connector parts. (3 piece parts)
2. Strip cable to dimensions shown. Do not nick braid or center conductor. Tin center conductor if contact will be solder attached. Do not tin center conductor if contact is to be crimp attached. A wire stripper of correct size is recommended for this step. Slide heat shrink (as applicable) and crimp sleeve onto jacket of cable.
3. Assemble contact onto cable as shown.  
**Solder Attachment:** Solder contact to center conductor through hole using a minimum amount of solder for a good joint.  
**Crimp Attachment (where applicable):** Crimp contact to center conductor using recommended crimp hex.
4. Flare braid and slide body assembly over contact and under braid. Then seat body assembly firmly onto contact. The cable may have to be held in a clamping fixture. Arrange braid uniformly around crimp stem. Slide crimp sleeve forward and crimp using recommended crimp hex. Slide heat shrink forward and shrink (as applicable).

## BNC Straight 2-Piece Crimp Type Plugs and Jacks for Flexible Cable

| PART NO.   | CABLE                  | CRIMP (BRAID HEX) | CRIMP (STRAIN RELIEF) | RECOMMENDED CRIMP TOOL |
|------------|------------------------|-------------------|-----------------------|------------------------|
| CP-78-2    | RG-59, 62              | .320 (8.13)       | .250 (6.35)           | 24-9859P               |
| CP-78-5    | RG-6                   | .320 (8.13)       | .275 (6.99)           | 24-321P/24-8856P       |
| CP-78-10   | RG-59 PLENUM, RG-62    | .320 (8.13)       | .211 (5.36)           | 24-9858P               |
| CP-88-1    | RG-58                  | .320 (8.13)       | .211 (5.36)           | 24-9858P               |
| CP-88-2    | RG-59, 62              | .320 (8.13)       | .250 (6.35)           | 24-9859P               |
| CP-88-3    | BELDEN 8281            | .350 (8.89)       | .288 (7.32)           | 24-302P                |
| CP-88-4    | RG-MATV-59             | .320 (8.13)       | .250 (6.35)           | 24-9859P               |
| CP-88-5    | RG-6                   | .320 (8.13)       | .275 (6.90)           | 24-321P/24-8856P       |
| CP-88-10   | RG-59 PLENUM, 62       | .320 (8.13)       | .211 (5.36)           | 24-9858P               |
| CP-89-1    | RG-58                  | .320 (8.13)       | .211 (5.36)           | 24-9858P               |
| CP-89-2    | RG-59, 62              | .320 (8.13)       | .250 (6.35)           | 24-9859P               |
| CP-SW88-2  | RG-59, 62, RG-6 PLENUM | .320 (8.13)       | .250 (6.35)           | 24-9859P               |
| CP-SW88-10 | RG-59AU PLENUM         | .320 (8.13)       | .211 (5.36)           | 24-9858P               |
| CP-SW88-21 | RG-58, RG-59 PLENUM    | .320 (8.13)       | .211 (5.36)           | 24-9858P               |
| CP-SW88-21 | RG-59                  | .320 (8.13)       | .250 (6.35)           | 24-9859P               |



1. Identify connector parts. (2 piece parts)
2. Slide crimp sleeve over cable and strip cable jacket to dimension shown. Do not nick braid or center conductor during strip operations.
3. Flair braid and fold back. Strip cable insulation to dimension shown. Do not nick center conductor. Cables with stranded center conductors should be tinned for rigidity.
4. Insert center conductor into the guide hole found in the rear of the connector body. Push or twist the body onto the center conductor until the cable insulation butts up to the body.
5. Arrange braid uniformly around crimp stem. Slide crimp sleeve over braid and crimp securely using recommended crimp tool.

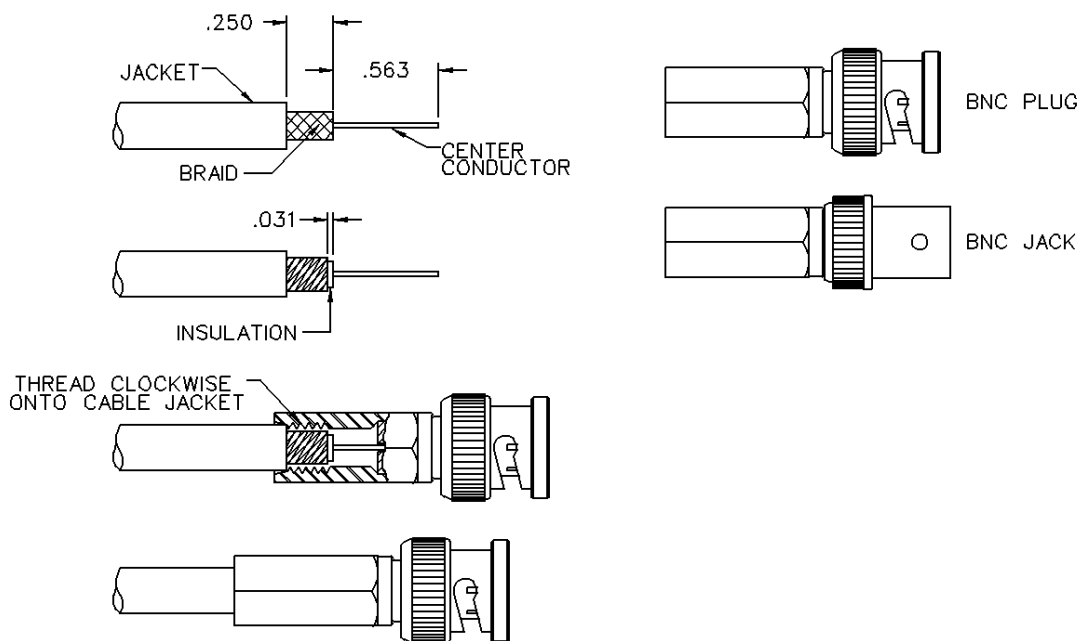
## BNC Twist-on Plugs and Jacks Field Installable

| PART NO.     | CABLE TYPE    | WIRE GAUGE | WIRE DECIMAL | JACKET O.D.             |
|--------------|---------------|------------|--------------|-------------------------|
| CPFI-UG78-2  | RG-59, 62     | 22         | .025 (0.64)  | .220 (5.59)-.250 (6.35) |
| CPFI-UG78-5  | RG-6          | 18         | .040 (1.02)  | .270 (6.86)-.280 (6.35) |
| CPFI-UG88-1  | RG-58         | 20         | .032 (0.81)  | .185 (4.07)-.205 (5.21) |
| CPFI-UG88-2  | RG-59, 62     | 22         | .025 (0.64)  | .220 (5.59)-.250 (6.35) |
| CPFI-UG88-3  | BELDEN 8281   | 20         | .032 (0.81)  | .272 (6.91)-.307 (7.80) |
| CPFI-UG88-4  | RG-MATV-59    | 20         | .032 (0.81)  | .220 (5.59)-.250 (6.35) |
| CPFI-UG88-5  | RG-6          | 18         | .040 (1.02)  | .270 (6.86)-.280 (7.11) |
| CPFI-UG88-10 | RG-TFE-59, 62 | 22         | .025 (0.64)  | .185 (4.07)-.205 (5.21) |
| CPFI-UG89-2  | RG-59, 62     | 22         | .025 (0.64)  | .220 (5.59)-.250 (6.35) |

### CABLE ASSEMBLY CAUTIONS:

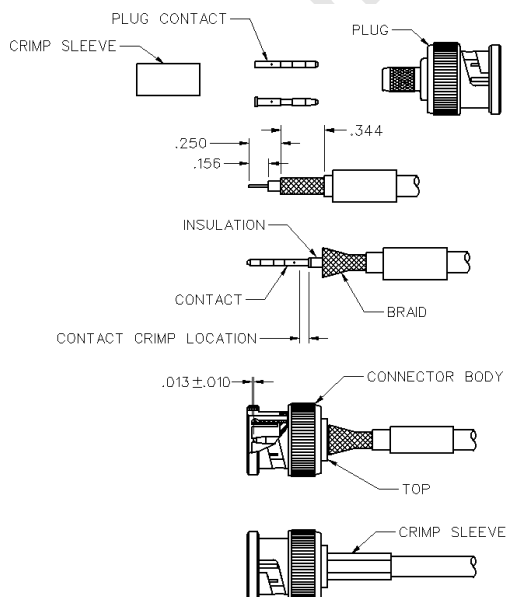
- Series are designed for solid center conductor wire. RG-58 cable will need the center conductor tin dipped (ONLY if it is not a solid center conductor). This is necessary to provide extra support for step 5.
- RG-MATV-59 cable will require caution when using the fingernail to rotate the braids on cable types that include aluminum foil for the outer conductor. DO NOT tear or rip the foil conductor to the 1/32" as suggested by step 3.
- RG-62 cable includes trimming the filament to 9/16" as well. Make sure that the filament does not unravel so that it protrudes past this dimension.

1. Identify connector parts. (1 piece)
2. Trim cable as shown. Taking care not to nick the center conductor or outer braid.
3. Use the fingernail to rotate the outer braids clockwise such that 1/32" of the insulation is bared. Then in the same direction rub the stray braids flat. (Stray or loose braids can cause shorts.)
4. Gently insert the center conductor down the back end of the connector, feeding it into the guide hole. (If the center conductor is not in place, approximately 1/8" of the center conductor—the part closest to the dielectric—will still be viewable.)
5. Firmly push the cable home (a slight clockwise twist may help with insertion). Then screw the connector on the cable in a clockwise direction until it is snugly attached to the jacket.



## BNC 75 Ohm Straight Cabled Plugs

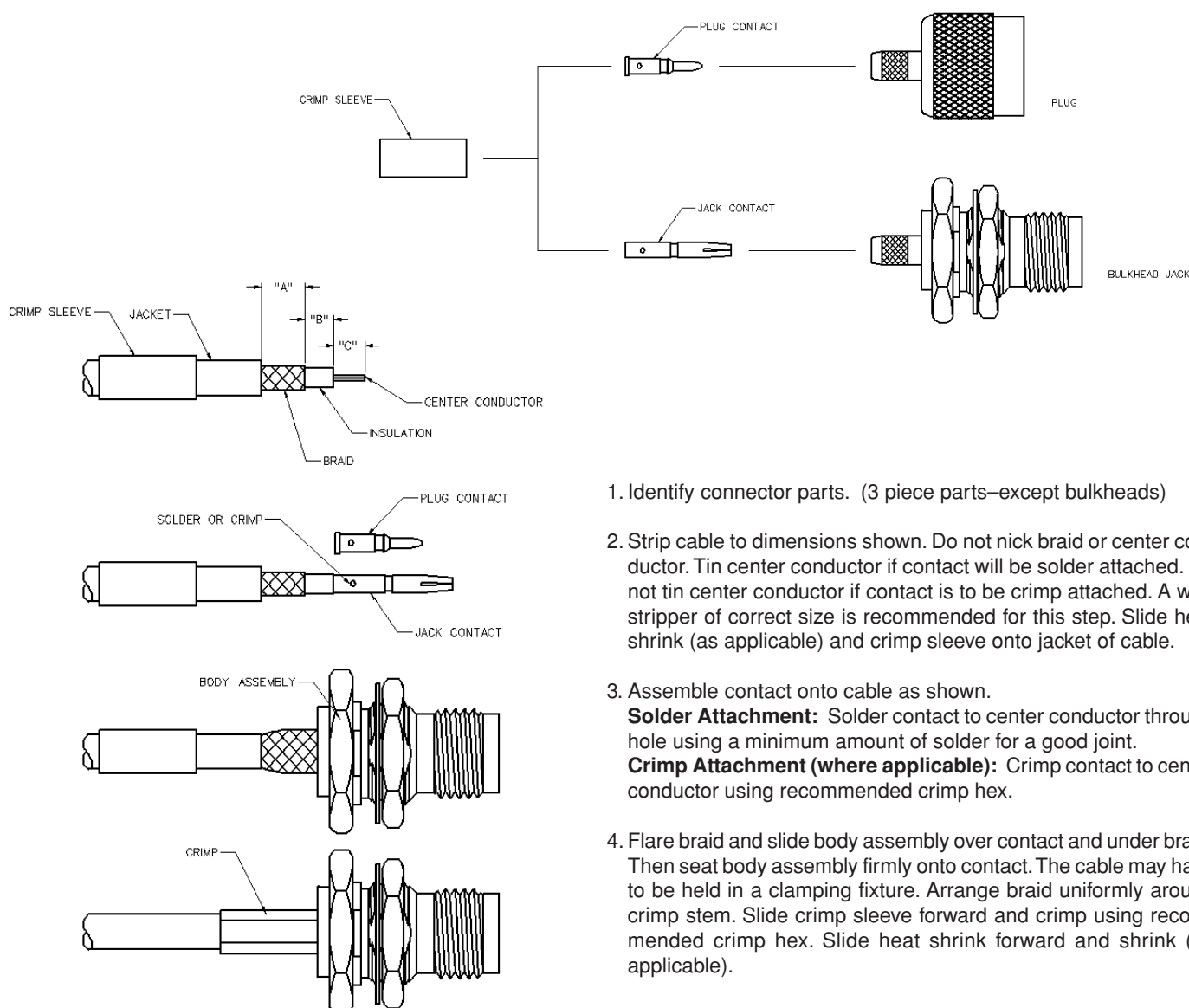
| PART NO.   | CABLE TYPE                                                                   | CRIMP SLEEVE HEX | CONTACT CRIMP HEX | RECOMMENDED CRIMP TOOL |
|------------|------------------------------------------------------------------------------|------------------|-------------------|------------------------|
| CPMC-68-2  | RG-59, 140, 302, Belden 9209A, 8279, 8241, 8263, Commscope 5563, Gepco VJ59U | .255 (6.48)      | .042 (1.07)       | 24-9963P               |
| CPMC-68-3  | Belden 8281, 9231, 9141, 728A, Commscope 7501, VP618PVC                      | .324 (8.23)      | .042 (1.07)       | 24-9961P<br>24-8857P   |
| CPMC-68-5  | RG-6, Belden 8215                                                            | .350 (8.89)      | .042 (1.07)       | 24-9962P               |
| CPMC-68-10 | Belden 82108, 89108, Coleman 99969                                           | .255 (6.48)      | .042 (1.07)       | 24-9963P               |
| CPMC-68-18 | Belden 8218                                                                  | .178 (4.52)      | .042 (1.07)       | 24-9963P               |
| CPMC-68-20 | RG-179, 187, Belden 1520A                                                    | .128 (3.25)      | .042 (1.07)       | 24-9963P               |
| CPMC-68-33 | Belden 735A, Commscope 735, Helex/Hitemp 735, BT3002, TZC75024               | .178 (4.52)      | .042 (1.07)       | 24-9963P               |
| CPMC-68-34 | Belden 1855A, 720A Commscope 7538, Gepco VDM 230, VDM 250, Mini-75           | .178 (4.52)      | .042 (1.07)       | 24-9963P               |
| CPMC-68-35 | Belden 1505A, 734A, Commscope 5565, Gepco VPM2000                            | .255 (6.48)      | .042 (1.07)       | 24-9963P               |
| CPMC-68-36 | Belden 1695A, Gepco VSD2001TS                                                | .264 (6.71)      | .042 (1.07)       | 24-9961P<br>24-8857P   |
| CPMC-68-45 | Belden 1694A, 9248, Commscope 5765, Gepco VSD2001, Coleman 96061             | .288 (7.32)      | .042 (1.07)       | 24-9962P               |
| CPMC-68-50 | Belden 1506A, 82259, 89259, Gepco VPM2000TK, VPM2000TS                       | .255 (6.48)      | .042 (1.07)       | 24-9963P               |



1. Identify connector parts. (3 piece parts)
2. Slide crimp sleeve over the cable as shown.
3. Strip cable per dimensions given and loosen braid.
4. Place contact over cable center conductor and position against insulation.
5. Crimp (.042 crimp hex) or solder contact. If crimping the contact, crimp the contact as close as possible to the cable insulation as shown.
6. Push the cable with the attached contact into the connector body until contact is captured by internal rib within connector body. Contact location shall be per dimension shown. Slide crimp sleeve over braid until it rests against top of connector body. Finish assembly by crimping with appropriate crimp hex die as indicated for each connector by the table.

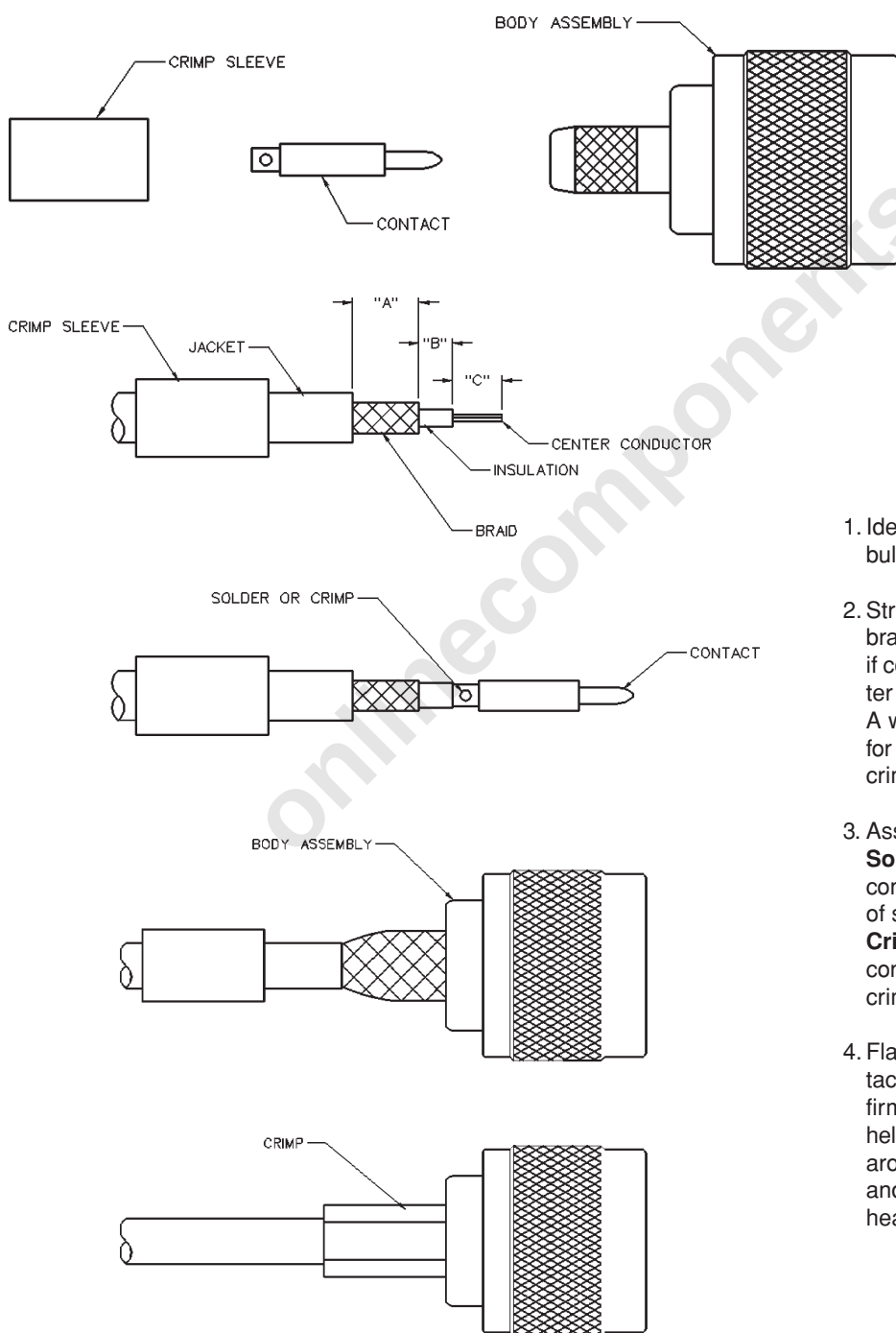
## TNC Straight Crimp Type Plugs and Bulkhead Jacks for Flexible Cable

| PART NO.        | CABLE          | STRIP DIMENSIONS |             |             | CRIMP SLEEVE HEX | CONTACT CRIMP HEX | RECOMMENDED CRIMP TOOL |
|-----------------|----------------|------------------|-------------|-------------|------------------|-------------------|------------------------|
|                 |                | "A"              | "B"         | "C"         |                  |                   |                        |
| CP-TNC-89-19-BM | RG-174, 316    | .335 (8.51)      | .197 (5.00) | .118 (3.00) | .184 (4.67)      | .066 (1.69)       | 24-9912P               |
| CPMC-TNC-1      | RG-58          | .315 (8.00)      | .118 (3.00) | .157 (4.00) | .213 (5.41)      | .067 (1.70)       | 24-9958P               |
| CPMC-TNC-2      | RG-59          | .315 (8.00)      | .118 (3.00) | .157 (4.00) | .255 (6.48)      | .066 (1.68)       | 24-9959P               |
| CPMC-TNC-13     | RG-55, 142     | .315 (8.00)      | .118 (3.00) | .157 (4.00) | .213 (5.41)      | .067 (1.70)       | 24-9958P               |
| CPMC-TNC-16     | Proflex RG-450 | .315 (8.00)      | .118 (3.00) | .157 (4.00) | .255 (6.48)      | .066 (1.68)       | 24-9959P               |
| CPMC-TNC-17     | RG-8X          | .315 (8.00)      | .118 (3.00) | .157 (4.00) | .255 (6.48)      | .066 (1.68)       | 24-9959P               |



## N Straight Crimp Type Plugs for Flexible Cable

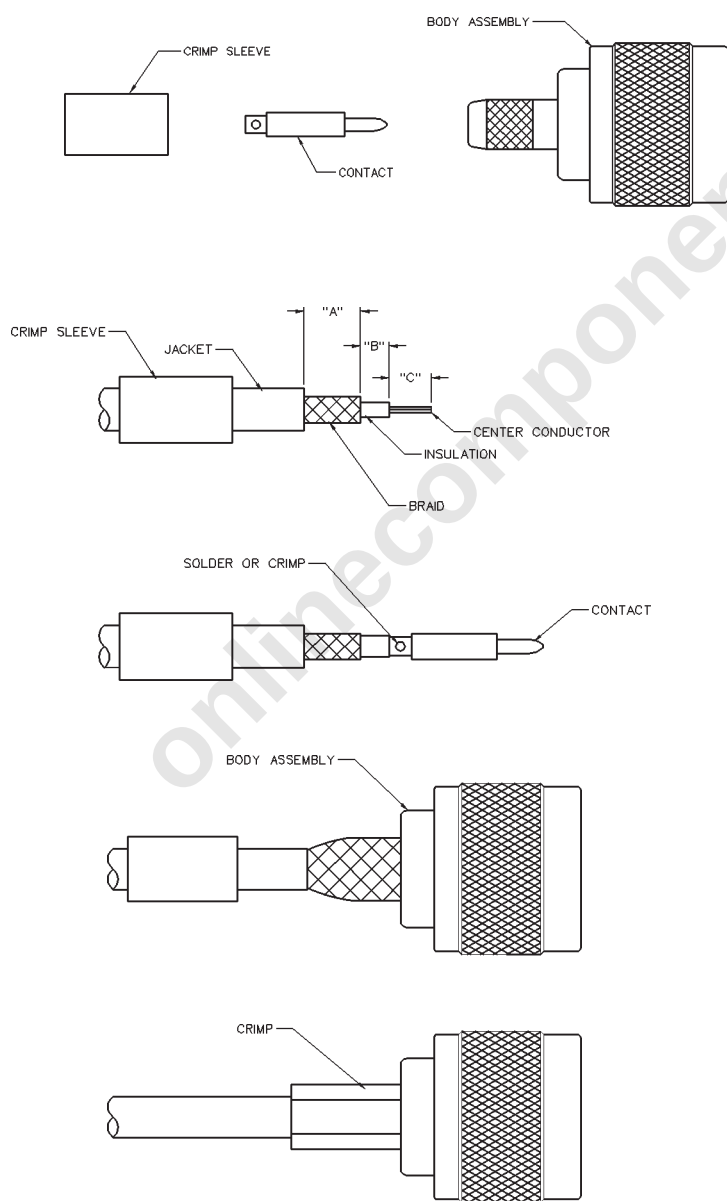
| PART NO.  | CABLE     | STRIP DIMENSIONS |             |             | CRIMP<br>SLEEVE HEX | CONTACT<br>CRIMP HEX | RECOMMENDED<br>CRIMP TOOL |
|-----------|-----------|------------------|-------------|-------------|---------------------|----------------------|---------------------------|
|           |           | "A"              | "B"         | "C"         |                     |                      |                           |
| CPN-68-1  | RG-58     | .335 (8.50)      | .079 (2.00) | .157 (4.00) | .215 (5.46)         | .065 (1.65)          | 24-8858P                  |
| CPN-68-13 | RG-142    | .335 (8.50)      | .079 (2.00) | .157 (4.00) | .215 (5.46)         | .065 (1.65)          | 24-8858P                  |
| CPN-68-8  | RG-8, 213 | .354 (9.00)      | .138 (3.50) | .157 (4.00) | .429 (10.90)        | .100 (2.54)          | 24-313                    |



- Identify connector parts. (3 piece parts—except bulkheads)
- Strip cable to dimensions shown. Do not nick braid or center conductor. Tin center conductor if contact will be solder attached. Do not tin center conductor if contact is to be crimp attached. A wire stripper of correct size is recommended for this step. Slide heat shrink (as applicable) and crimp sleeve onto jacket of cable.
- Assemble contact onto cable as shown.
  - Solder Attachment:** Solder contact to center conductor through hole using a minimum amount of solder for a good joint.
  - Crimp Attachment (where applicable):** Crimp contact to center conductor using recommended crimp hex.
- Flare braid and slide body assembly over contact and under braid. Then seat body assembly firmly onto contact. The cable may have to be held in a clamping fixture. Arrange braid uniformly around crimp stem. Slide crimp sleeve forward and crimp using recommended crimp hex. Slide heat shrink forward and shrink (as applicable).

## N Crimp-Crimp Plugs for Flexible Cable

| PART NO.   | CABLE TYPE          | WIRE GAUGE | WIRE DECIMAL | JACKET O.D.               | HEX SIZE     | CONTACT CRIMP HEX | RECOMMENDED CRIMP TOOL |
|------------|---------------------|------------|--------------|---------------------------|--------------|-------------------|------------------------|
| CPN-1      | RG-58               | 18         | .043 (1.09)  | .185 (4.07)–.205 (5.21)   | .213 (5.41)  | .100 (2.54)       | 24-312                 |
| CPN-2      | RG-59               | 22         | .0253 (6.43) | .220 (5.59)–.250 (6.35)   | .255 (6.48)  | .100 (2.54)       | 24-312                 |
| CPN-8      | RG-8, 213           | 13         | .072 (1.83)  | .400 (10.16)–.410 (10.44) | .406 (10.31) | .102 (2.59)       | 24-7712P               |
| CPN-8/110* | RG-58 LOW LOSS, 213 | 10         | .110 (2.80)  | .400 (10.16)–.410 (10.44) | .406 (10.31) | .102 (2.59)       | 24-7712P               |
| CPN-16     | Proflex RG-450      | 18         | .056 (1.42)  | .220 (5.59)–.250 (6.35)   | .255 (6.48)  | .100 (2.54)       | 24-312                 |
| CPN-17     | RG-8X               | 16         | .065 (1.65)  | .220 (5.59)–.250 (6.35)   | .255 (6.48)  | .100 (2.54)       | 24-312                 |
| CPN-142T   | RG-142TFE           | 20         | .034 (0.86)  | .200 (5.08)–.220 (5.59)   | .213 (5.41)  | .100 (2.54)       | 24-312                 |

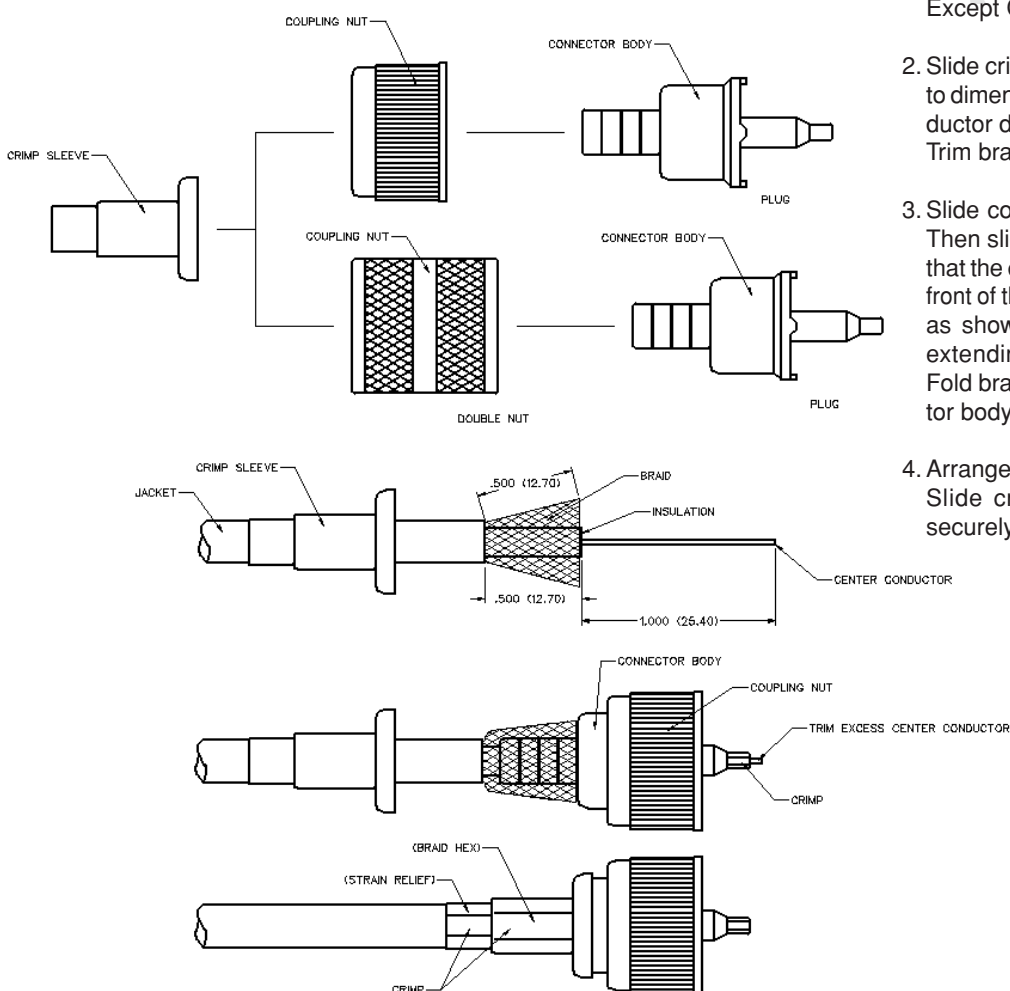


1. Identify connector parts. (3 piece parts)
2. Strip cable to dimensions shown. Do not nick braid or center conductor. Slide the crimp sleeve onto the jacket; crimp narrow end first.
3. Crimp and solder the contact onto the center conductor using the recommended crimp hex or the minimum amount of solder for a good joint. Note: Contacts may need to be pre-fit onto the center conductor and soldered through the hole.
4. Flare the braid and slide the connector body over the contact and under the braid. Then seat the body FIRMLY onto the contact; the cable may need to be held in a clamping fixture. Arrange the braid uniformly around the crimp stem, then slide the crimp sleeve forward to the body and crimp the sleeve using the recommended crimp hex.

\* **Cable Assembly Notes:** The contact of the CPN-8/110 Connector fits RG-8 cable types with a center conductor diameter up to .110".

## Standard UHF Straight Crimp Type Plugs for Flexible Cable

| PART NO.   | CABLE               | WIRE GAUGE | WIRE DECIMAL | JACKET O.D.               | CRIMP (BRAID HEX) | CRIMP (STRAIN RELIEF) | CONTACT CRIMP HEX | RECOMMENDED CRIMP TOOL |
|------------|---------------------|------------|--------------|---------------------------|-------------------|-----------------------|-------------------|------------------------|
| CPL-259-1  | RG-58               | 20         | .0325        | .185 (4.07)–.205 (5.21)   | .255 (6.48)       | .213 (5.41)           | .068 (1.73)       | 24-9960P               |
| CPL-259-2  | RG-59, 62           | 22         | .0253        | .220 (5.59)–.250 (6.35)   | .255 (6.48)       | NONE                  | .065 (1.65)       | 24-9960P               |
| CPL-259-7  | RG-58 COPHASE       | 2/20       | 2/.032       | 2/.185 (4.07)–.205 (5.21) | .255 (6.48)       | NONE                  | NONE              | 24-9960P               |
| CPL-259-8  | RG-8                | 13         | .085         | .400 (10.06)–.410 (10.41) | .405 (10.29)      | NONE                  | .110 (2.79)       | 24-310                 |
| CPL-259-9  | RG-59 COPHASE       | 2/20       | 0/.025       | 2/.220 (5.59)             | .448 (11.44)      | NONE                  | NONE              | 24-7711P               |
| CPL-259-10 | RG-59 PLENUM, RG-62 | 22         | .025         | .185 (4.07)–.205 (5.21)   | .235 (5.97)       | NONE                  | .065 (1.65)       | 24-8857P               |
| CPL-259-17 | RG-8X               | 16         | .0504        | .220 (5.59)–.250 (6.35)   | .255 (6.48)       | NONE                  | NONE              | 24-9960P               |
| CPL-259-18 | RG-58               | 20         | .0325        | .185 (4.07)–.205 (5.21)   | .255 (6.48)       | .213 (5.41)           | .068 (1.73)       | 24-9960P               |



1. Identify connector parts. (3 piece parts)  
Except CPL-259-10 (1 piece)

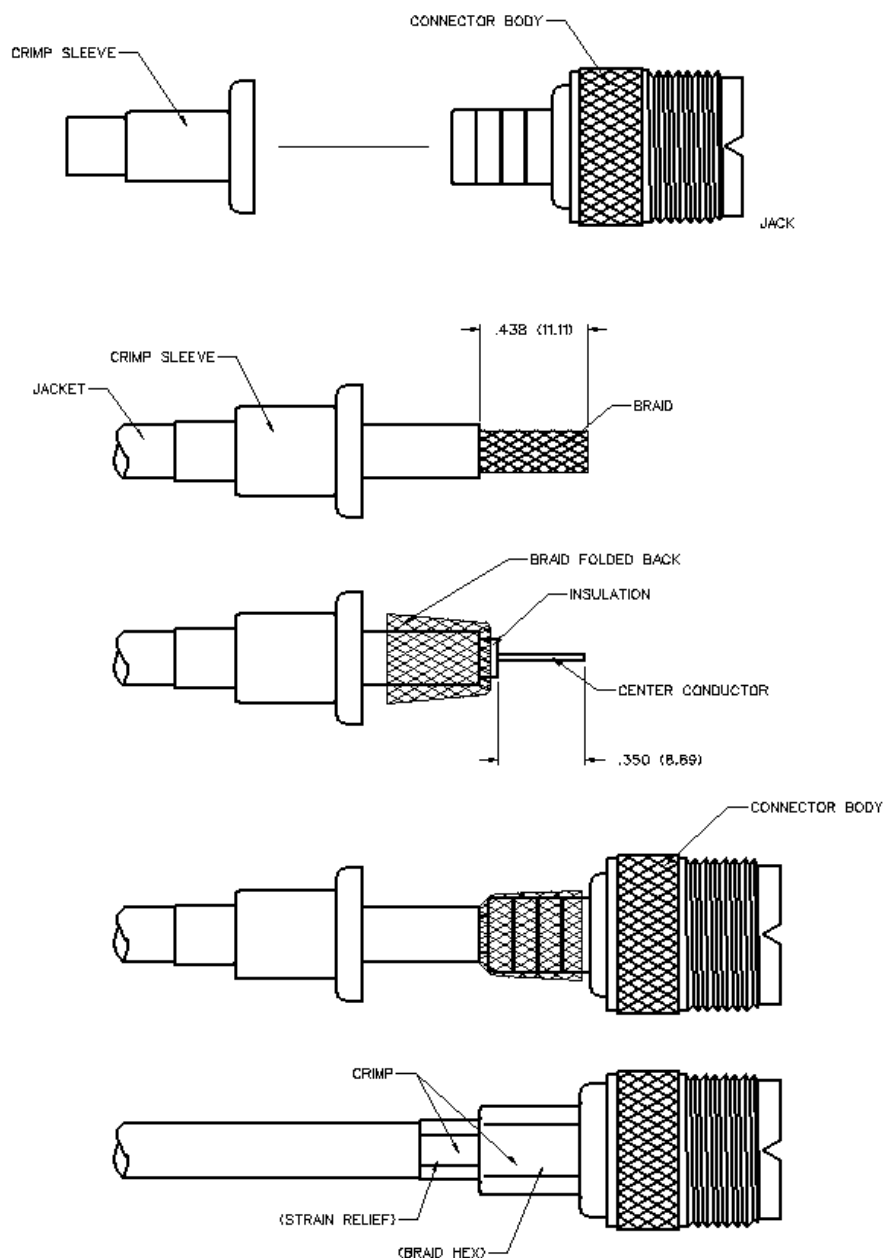
2. Slide crimp sleeve over cable and strip cable to dimensions shown. Do not nick center conductor during strip operations. (CPL-259-10: Trim braid and insulation to .300 (7.62)).

3. Slide coupling nut onto the connector body. Then slide the connector body over cable so that the center conductor extends through the front of the contact. Crimp or solder the contact as shown. Trim away the center conductor extending past the contact. (CPL-259-10: Fold braid onto jacket before sliding connector body onto cable).

4. Arrange braid uniformly around crimp stem. Slide crimp sleeve over braid and crimp securely using recommended crimp tool.

## Standard UHF Straight 2-Piece Crimp Type Jack for Flexible Cable

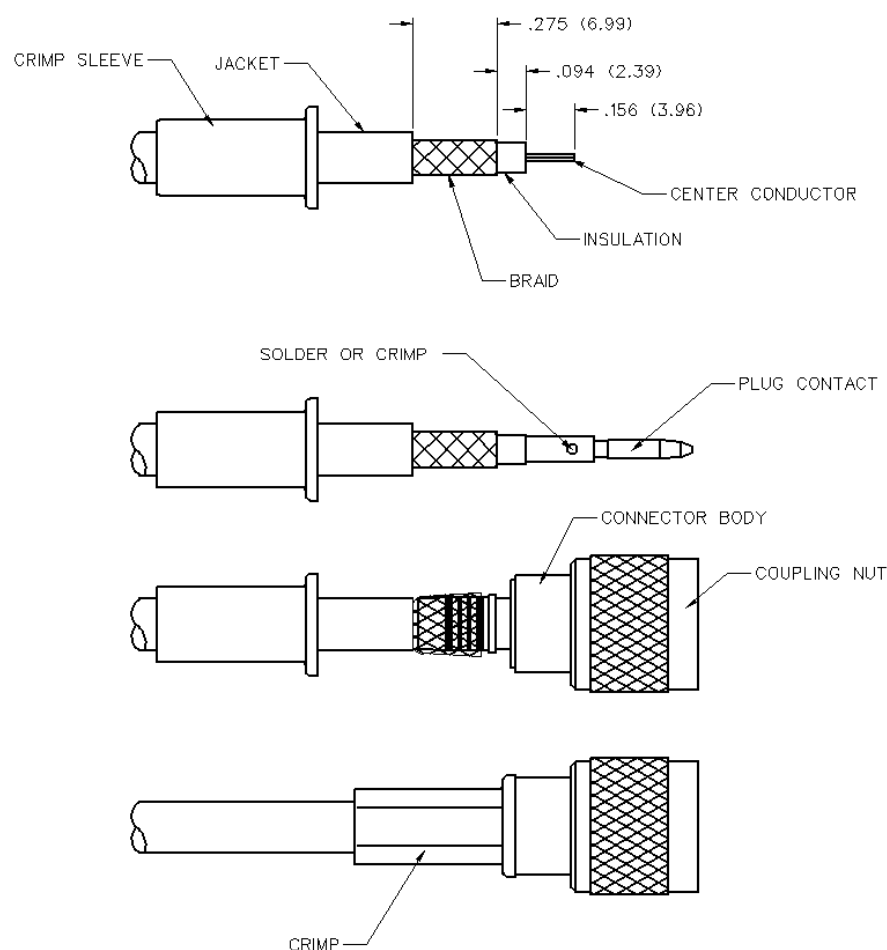
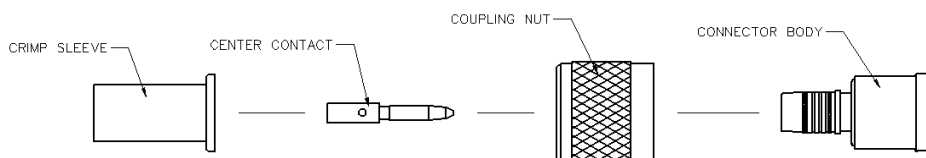
| PART NO.  | CABLE | WIRE GAUGE | WIRE DECIMAL | JACKET O.D.             | CRIMP<br>(BRAID HEX) | CRIMP<br>(STRAIN RELIEF) | RECOMMENDED<br>CRIMP TOOL |
|-----------|-------|------------|--------------|-------------------------|----------------------|--------------------------|---------------------------|
| CPF-249-1 | RG-58 | 20         | .325 (0.83)  | .185 (4.70)-.205 (5.21) | .320 (8.13)          | .211 (5.36)              | 24-9858P                  |



1. Identify connector parts. (2 piece parts)
2. Slide crimp sleeve over cable and strip cable jacket to dimension shown. Do not nick braid or center conductor during strip operations.
3. Flair braid and fold back. Strip cable insulation to dimension shown. Do not nick center conductor.
4. Insert center conductor into the guide hole found in the rear of the connector body. Twist the body onto the center conductor until the cable insulation butts up to the body.
5. Arrange braid uniformly around crimp stem. Slide crimp sleeve over braid and crimp securely using recommended crimp tool.

## Mini-UHF Straight Crimp Type Plugs for Flexible Cable

| PART NO.    | CABLE           | CONTACT I.D. | BODY I.D.   | FERRULE I.D. | CRIMP (BRAID HEX) | CONTACT CRIMP HEX | RECOMMENDED CRIMP TOOL |
|-------------|-----------------|--------------|-------------|--------------|-------------------|-------------------|------------------------|
| MINI-UHF-1  | RG-58           | .044 (1.11)  | .126 (3.20) | .206 (5.23)  | .210 (5.33)       | .060 (1.52)       | 24-8860P               |
| MINI-UHF-1B | RG-58 Black     | .044 (1.11)  | .126 (3.20) | .206 (5.23)  | .210 (5.33)       | .060 (1.52)       | 24-8860P               |
| MINI-UHF-2  | RG-59, 62       | .034 (0.86)  | .173 (4.40) | .261 (6.63)  | .255 (6.48)       | .060 (1.52)       | 24-8860P               |
| MINI-UHF-16 | RG-450, Proflex | .055 (1.40)  | .173 (4.40) | .261 (6.63)  | .255 (6.48)       | .060 (1.52)       | 24-8860P               |
| MINI-UHF-17 | RG-8X           | .065 (1.65)  | .173 (4.40) | .261 (6.63)  | .255 (6.48)       | .060 (1.52)       | 24-8860P               |



1. Identify connector parts. (4 piece parts)

2. Slide heat shrink (as applicable) and crimp sleeve onto jacket of cable. Strip cable to dimensions shown. Do not nick braid or center conductor. Tin center conductor if contact will be solder attached. Do not tin center conductor if contact is to be crimp attached. A wire stripper of correct size is recommended for this step.

3. Assemble contact onto cable as shown.  
**Solder Attachment:** Solder contact to center conductor through hole using a minimum amount of solder for a good joint.  
**Crimp Attachment (where applicable):** Crimp contact to center conductor using recommended crimp tool.

4. Slide coupling nut onto the connector body.

5. Flare braid and slide body assembly over contact and under braid as shown. Then seat body assembly firmly onto contact until a gentle snap is felt indicating the contact is in place. The cable may have to be held in a clamping fixture. Arrange braid uniformly around crimp stem. Slide crimp sleeve forward and crimp using recommended crimp tool. Slide heat shrink forward and shrink (as applicable).

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# Horizontal Test Jacks

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## Insulated Miniature

### SPECIFICATIONS

**Contact:** Copper aluminum alloy\*

**Finish:** Silver

**Body:** Nylon 6/6 per ASTM D4066

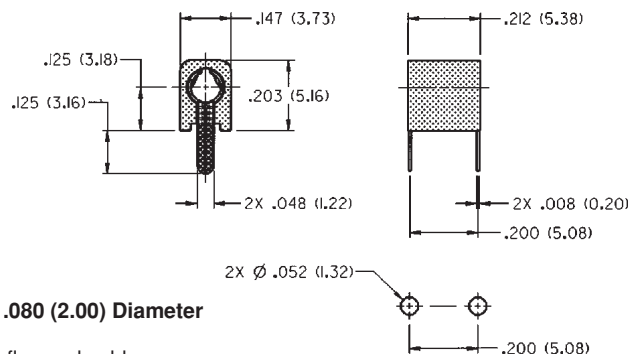
### RATINGS

**Current:** 5 amps

**Breakdown Voltage:** 2100 VRMS minimum†

**Contact Resistance:** 0.010 ohms maximum

**Adjacent Jack C:** 1 pF maximum at 1 MHz



**For Standard Tip Plug: .080 (2.00) Diameter**  
**FEATURES:**

- Contact protected from flux and solder
- Probe access from both ends
- Nylon UL approved for self extinguishing

\*A new material development that, for this application, meets or exceeds beryllium copper.

| SILVER PLATING |       |              |        |
|----------------|-------|--------------|--------|
| PART NO.       | COLOR | PART NO.     | COLOR  |
| 105-1101-001   | White | 105-1107-001 | Yellow |
| 105-1102-001   | Red   | 105-1110-001 | Blue   |
| 105-1103-001   | Black |              |        |
| 105-1104-001   | Green |              |        |

## Insulated Standard

### SPECIFICATIONS

**Contact:** Copper aluminum alloy\*

**Finish:** Gold or Silver

**Body:** Nylon 6/6 per ASTM D4066

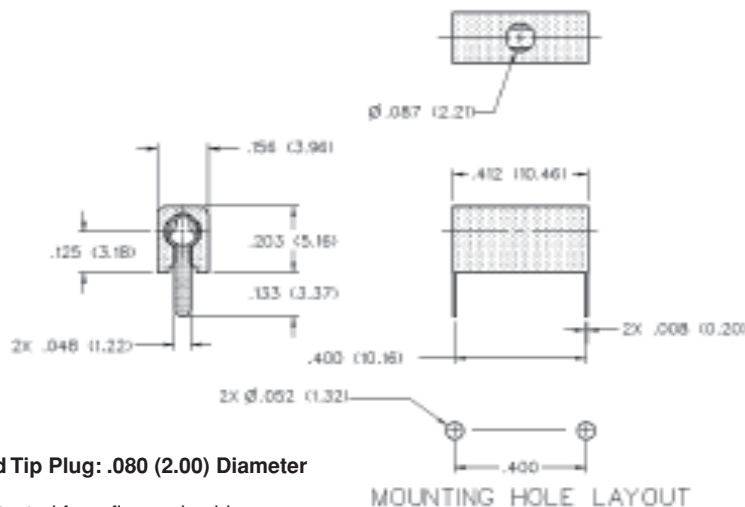
### RATINGS

**Current:** 5 amps

**Breakdown Voltage:** 2100 VRMS minimum†

**Contact Resistance:** Gold: 0.005 ohms maximum  
Silver: 0.010 ohms maximum

**Adjacent Jack C:** 1 pF maximum at 1 MHz



**For Standard Tip Plug: .080 (2.00) Diameter**  
**FEATURES:**

- Contact protected from flux and solder
- Probe access from both ends or top
- Nylon UL approved for self extinguishing

\*A new material development that, for this application, meets or exceeds beryllium copper.

| GOLD PLATING   |        |              |        |
|----------------|--------|--------------|--------|
| PART NO.       | COLOR  | PART NO.     | COLOR  |
| 105-0751-150   | White  | 105-0753-150 | Black  |
| 105-0752-150   | Red    | 105-0757-150 | Yellow |
| SILVER PLATING |        |              |        |
| PART NO.       | COLOR  | PART NO.     | COLOR  |
| 105-0751-001   | White  | 105-0757-001 | Yellow |
| 105-0752-001   | Red    | 105-0758-001 | Brown  |
| 105-0753-001   | Black  | 105-0760-001 | Blue   |
| 105-0754-001   | Green  | 105-0762-001 | Violet |
| 105-0756-001   | Orange | 105-0763-001 | Gray   |

## Insulated Ruggedized: Military Type

### SPECIFICATIONS

**Contact:** Copper aluminum alloy\*

**Finish:** Gold or Silver

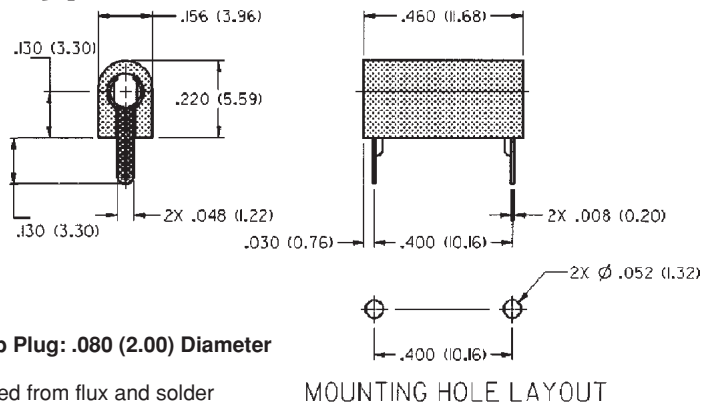
**Body:** Nylon 6/6 per ASTM D4066

### RATINGS

**Current:** 5 amps

**Breakdown Voltage:** 2500 VRMS minimum†

**Contact Resistance:** Gold: 0.005 ohms maximum



**For Standard Tip Plug: .080 (2.00) Diameter**  
**FEATURES:**

- Contact protected from flux and solder
- Probe access from both ends
- Nylon UL approved for self extinguishing
- For Military or Industrial Applications

\*A new material development that, for this application, meets or exceeds beryllium copper.

| GOLD PLATING                                   |        |                |        |
|------------------------------------------------|--------|----------------|--------|
| Part No. to mil-spec. part no. cross reference |        |                |        |
| PART NO.                                       | COLOR  | MIL-C-39024/11 |        |
| 105-2201-105                                   | White  | -01            |        |
| 105-2202-105                                   | Red    | -02            |        |
| 105-2203-105                                   | Black  | -03            |        |
| 105-2204-105                                   | Green  | -05            |        |
| 105-2207-105                                   | Yellow | -08            |        |
| SILVER PLATING                                 |        |                |        |
| PART NO.                                       | COLOR  | PART NO.       | COLOR  |
| 105-2201-101                                   | White  | 105-2204-101   | Green  |
| 105-2202-101                                   | Red    | 105-2207-101   | Yellow |
| 105-2203-101                                   | Black  |                |        |

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## Insulated: Machined Contact

### SPECIFICATIONS:

**Contact:** Beryllium copper per QQ-C-530

**Finish:** Silver

**Body:** Nylon 6/6 per ASTM D4066

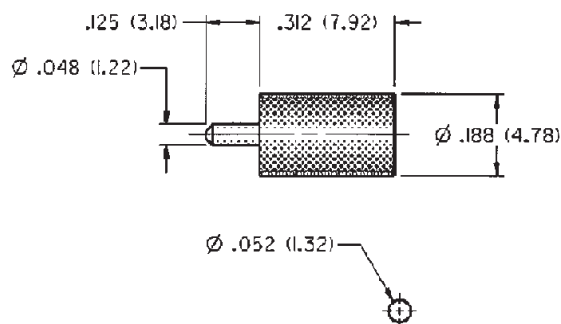
### RATINGS

**Current:** 5 amps

**Breakdown Voltage:** 3500 VRMS minimum†

**Contact Resistance:** 0.010 ohms maximum

**Adjacent Jack C:** 1 pF maximum at 1 MHz



MOUNTING HOLE LAYOUT

| SILVER PLATING |       |              |        |
|----------------|-------|--------------|--------|
| PART NO.       | COLOR | PART NO.     | COLOR  |
| 105-0851-001   | White | 105-0856-001 | Orange |
| 105-0852-001   | Red   | 105-0857-001 | Yellow |
| 105-0853-001   | Black | 105-0858-001 | Brown  |
| 105-0854-001   | Green | 105-0860-001 | Blue   |

**For Standard Tip Plug: .080 (2.00) Diameter**

### FEATURES:

- Contact protected from flux and solder
- Nylon UL approved for self extinguishing

## Insulated: Formed Contact

### SPECIFICATIONS:

**Contact:** Beryllium copper per QQ-C-530

**Finish:** Gold or Silver

**Body:** Nylon 6/6 per ASTM D4066

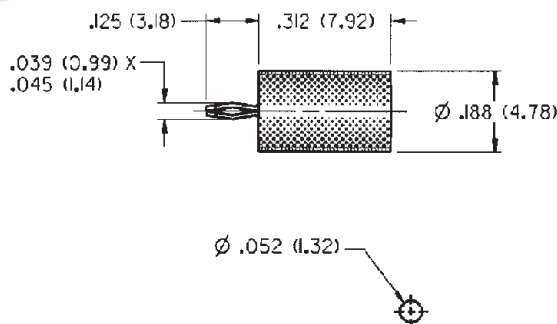
### RATINGS

**Current:** 5 amps

**Breakdown Voltage:** 3500 VRMS minimum†

**Contact Resistance:** Silver: 0.010 ohms maximum

**Adjacent Jack C:** 1 pF maximum at 1 MHz



MOUNTING HOLE LAYOUT

| SILVER PLATING |        |
|----------------|--------|
| PART NO.       | COLOR  |
| 105-2201-201   | White  |
| 105-2202-201   | Red    |
| 105-2203-201   | Black  |
| 105-2204-201   | Green  |
| 105-2207-201   | Yellow |

**For Standard Tip Plug: .080 (2.00) Diameter**

### FEATURES:

- Spring loaded lead to hold in board
- Contact protected from flux and solder
- Nylon UL approved for self extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## Insulated Standard: Rib-Loc® Type



### SPECIFICATIONS

**Contact:** Brass body per QQ-B-626D with wrap around beryllium copper spring per QQ-C-553

**Finish:** Silver

**Body:** Nylon 6/6 per ASTM D4066

**Panel Thickness:** Up to .375 (9.05)

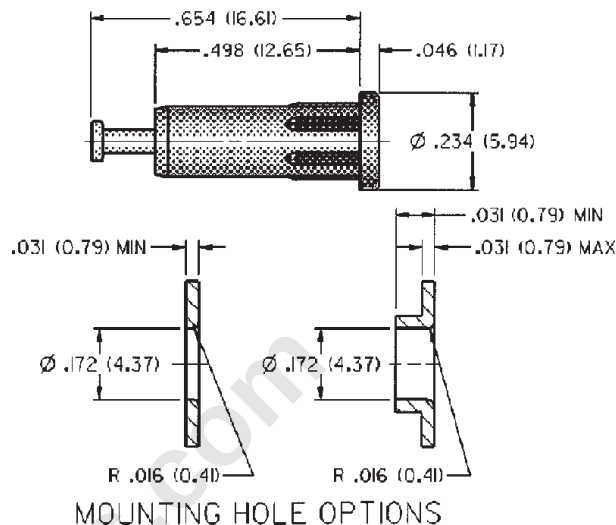
### RATINGS

**Current:** 5 amps

**Breakdown Voltage:** 3500 VRMS minimum†

**Contact Resistance:** 0.005 ohms maximum

**Adjacent Jack C:** 1 pF nominal



| SILVER PLATING |       |              |        |
|----------------|-------|--------------|--------|
| PART NO.       | COLOR | PART NO.     | COLOR  |
| 105-1041-001   | White | 105-1044-001 | Green  |
| 105-1042-001   | Red   | 105-1047-001 | Yellow |
| 105-1043-001   | Black | 105-1050-001 | Blue   |

For Standard Tip Plug: .080 (2.00) Diameter

### FEATURES:

- Machined contact with turret terminal
- Installs by pressing into mounting hole, no mounting hardware required
- Closed entry blocks access or probes greater than .085 (2.16)
- Nylon UL approved for self extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## Insulated Metal Clad: Military Type



### SPECIFICATIONS

**Contact:** Brass per QQ-B-626D with wrap around beryllium copper spring per QQ-C-533

**Finish:** Gold

**Body:** Nylon 6/6 per ASTM D4066

**Threaded Brass Jacket:** Per QQ-B-626D, nickel plated

**Hardware:** Nickel plated washer and nut (unassembled)

**Panel Thickness:** Up to .218 (5.45)

### RATINGS

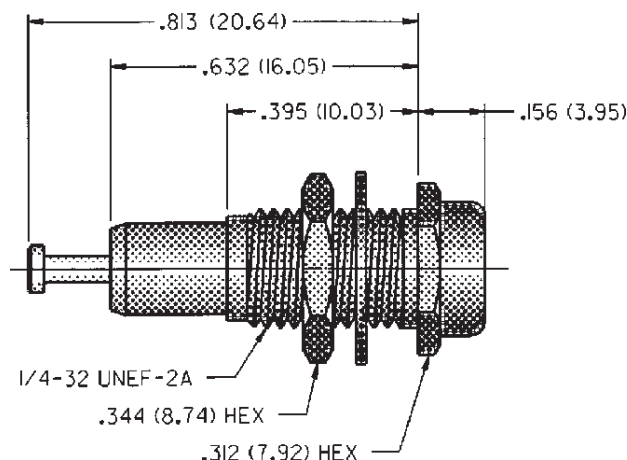
**Current:** 10 amps

**Breakdown Voltage:** 5700 VRMS minimum†

**Contact Resistance:** 0.004 ohms maximum

**Contact-To-Panel C:** 2 pF nominal

Manufactured to meet MIL-C-39024/10



| GOLD PLATING                                   |       |                |
|------------------------------------------------|-------|----------------|
| Part No. to MIL-spec. Part No. Cross Reference |       |                |
| PART NO.                                       | COLOR | MIL-C-39024/10 |
| 105-0201-200                                   | White | -01            |
| 105-0202-200                                   | Red   | -02            |
| 105-0203-200                                   | Black | -03            |
| 105-0204-200                                   | Green | -05            |
| 105-0210-200                                   | Blue  | -07            |

For Standard Tip Plug: .080 (2.00) Diameter

### FEATURES:

- Machined contact with turret terminal
- For military or industrial applications
- Closed entry blocks access or probes greater than .085 (2.16)
- Nylon UL approved for self extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

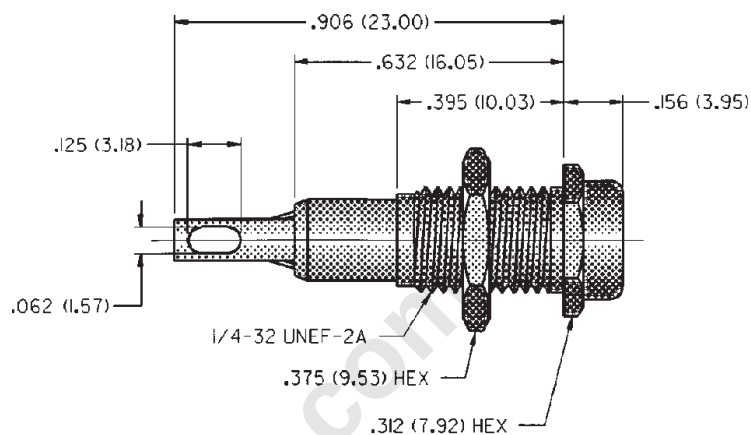
## Insulated Metal Clad: Standard Type



## SPECIFICATIONS

**Contact:** Phosphor bronze per QQ-B-750**Finish:** Silver**Body:** Nylon 6/6 per ASTM D4066**Threaded Brass Jacket:** Per QQ-B-626D, nickel plated**Panel Thickness:** Up to .281 (7.10)

## RATINGS

**Current:** 10 amps**Breakdown Voltage:** 5700 VRMS minimum†**Contact Resistance:** 0.010 ohms maximum**Contact-To-Panel C:** 2 pF nominal

| SILVER PLATING |       |
|----------------|-------|
| PART NO.       | COLOR |
| 105-0251-001   | White |
| 105-0252-001   | Red   |
| 105-0253-001   | Black |

**For Standard Tip Plug: .080 (2.00) Diameter**

## FEATURES:

- Formed contact with slotted terminal
- Nylon UL approved for self extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

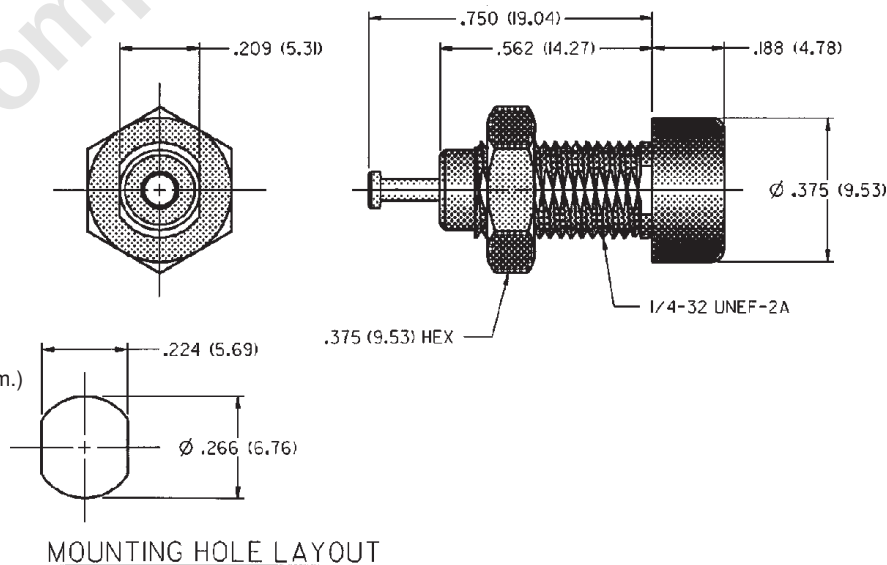
## Insulated Deluxe



## SPECIFICATIONS

**Contact:** Brass per QQ-B-626D with wrap around beryllium copper spring per QQ-C-533**Finish:** Silver**Body:** Nylon 6/6 per ASTM D4066**Hardware:** Nickel plated nut (unassembled)**Body Thread Stripping Torque:** 0.4 lb. in (4.5 kg. cm.)**Panel Thickness:** Up to .437 (11.10)

## RATINGS

**Current:** 10 amps**Breakdown Voltage:** 5700 VRMS minimum†**Contact Resistance:** 0.010 ohms maximum**Contact-To-Panel C:** 2 pF nominal

| SILVER PLATING |       |              |        |
|----------------|-------|--------------|--------|
| PART NO.       | COLOR | PART NO.     | COLOR  |
| 105-0601-001   | White | 105-0604-001 | Green  |
| 105-0602-001   | Red   | 105-0607-001 | Yellow |
| 105-0603-001   | Black | 105-0610-001 | Blue   |

**For Standard Tip Plug: .080 (2.00) Diameter**

## FEATURES:

- Machined contact with turret terminal
- Hex socket head .188 (4.77) for ease in mounting
- Closed entry blocks access of probes greater than .085 (2.16)
- Nylon UL approved for self extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

# Tip Jacks

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## Insulated Standard



### SPECIFICATIONS:

**Contact:** Phosphor bronze per QQ-B-750

**Finish:** Bright tin

**Body:** Nylon 6/6 per ASTM D4066

**Hardware:** Nickel plated nut (unassembled)

**Body Thread Stripping Torque:** 4.0 lb. in.  
(4.5 kg. cm.)

**Panel Thickness:** Up to .437 (11.10)

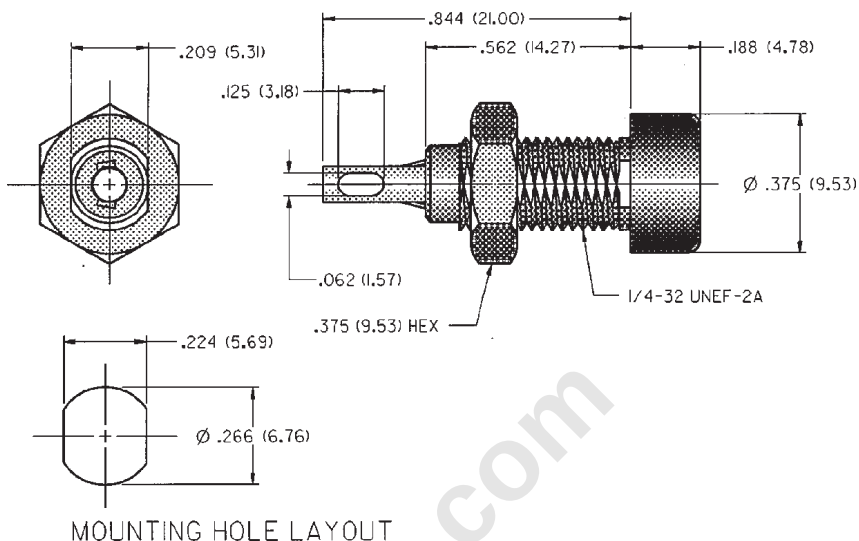
### RATINGS

**Current:** 10 amps

**Breakdown Voltage:** 5700 VRMS minimum†

**Contact Resistance:** 0.010 ohms maximum

**Contact-To-Panel C:** 2 pF nominal



MOUNTING HOLE LAYOUT

| BRIGHT TIN PLATING |       |              |        |
|--------------------|-------|--------------|--------|
| PART NO.           | COLOR | PART NO.     | COLOR  |
| 105-0801-001       | White | 105-0804-001 | Green  |
| 105-0802-001       | Red   | 105-0807-001 | Yellow |
| 105-0803-001       | Black | 105-0810-001 | Blue   |

### For Standard Tip Plug: .080 (2.00) Diameter FEATURES:

- Formed contact with slotted terminal
- Hex socket head .188 (4.77) for ease in mounting
- Nylon UL approved for self extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## Insulated Tip Jack and Sleeve Assembly



### SPECIFICATIONS

**Contact:** Brass per QQ-B-626D with wrap around beryllium copper spring per QQ-C-533

**Finish:** Silver

**Body:** Nylon 6/6 per ASTM D4066

**Hardware:** Nylon handle (assembled)

**Body Thread Stripping Torque:** 4.0 lb. in.  
(4.5 kg. cm.)

**Panel Thickness:** Up to .125 (3.20)

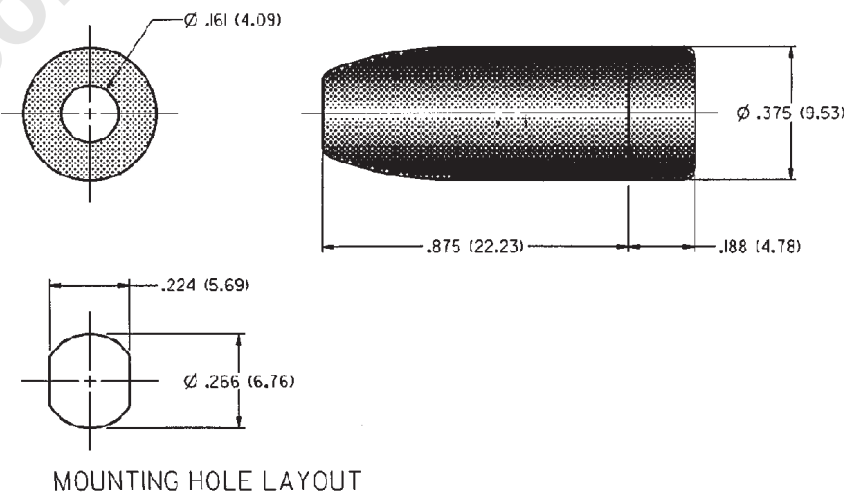
### RATINGS

**Current:** 10 amps

**Breakdown Voltage:** 5700 VRMS minimum†

**Contact Resistance:** 0.010 ohms maximum

**Contact-To-Panel C:** 2 pF nominal



MOUNTING HOLE LAYOUT

| SILVER PLATING |       |
|----------------|-------|
| PART NO.       | COLOR |
| 105-0701-001   | White |
| 105-0702-001   | Red   |
| 105-0703-001   | Black |

### For Standard Tip Plug: .080 (2.00) Diameter FEATURES:

- Machined contact with turret terminal
- Includes deluxe tip jack 105-060X-001
- For panel or line applications
- Hex socket head .188 (4.77) for ease in mounting
- Nylon UL approved for self extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## .060 (1.50) Shrouded Tip Plug

### SPECIFICATIONS

**Contact and Nut:** Brass per QQ-B-626D

**Finish:** Gold or silver

**Body:** Nylon 6/6 per ASTM D4066

**Hardware:** Nickel plated nut (unassembled)

**Body Thread Stripping Torque:** 6 in. lb. (7 kg.cm.)

**Panel Thickness:** Up to .343 (8.80)

### RATINGS

**Current:** 7 amps

**Breakdown Voltage:** 3500 VRMS minimum†

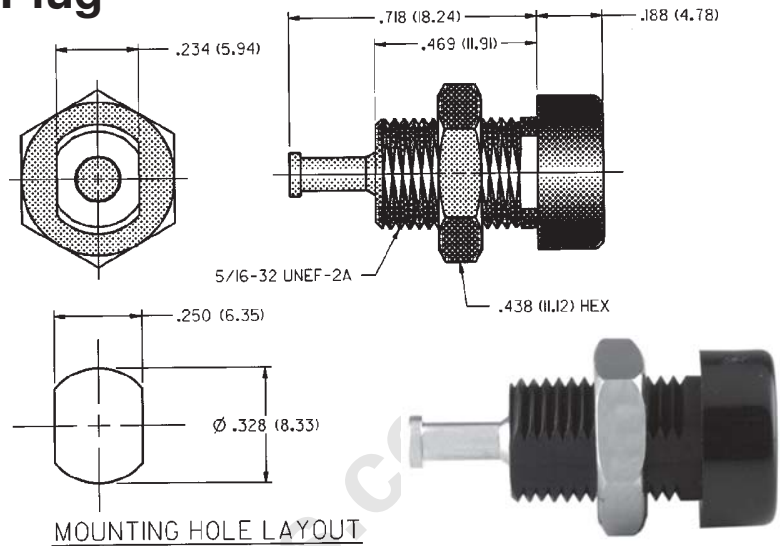
**Contact Resistance:** 0.010 ohms maximum

| GOLD PLATING |       |              |        |
|--------------|-------|--------------|--------|
| PART NO.     | COLOR | PART NO.     | COLOR  |
| 105-1301-002 | White | 105-1304-002 | Green  |
| 105-1302-002 | Red   | 105-1307-002 | Yellow |
| 105-1303-002 | Black | 105-1310-002 | Blue   |

**For Standard Tip Jack: .060 (1.50) Diameter**

### FEATURES:

- Keyed mounting with double flats
- Shrouded
- Nylon UL approved for self extinguishing



†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## .080 (2.00) Insulated Standard: Small Handle (Solder or Crimp)

### SPECIFICATIONS

**Contact:** Brass per QQ-B-626D

**Finish:** Nickel

**Insulated Handle:** Nylon 6/6 per ASTM D4066

### RATINGS

**Current:** 10 amps

**Breakdown Voltage:** 3500 VRMS minimum†

**Contact Resistance:** 0.010 ohms maximum

| NICKEL PLATING                   |                        |
|----------------------------------|------------------------|
| SOLDER TYPE<br>UP TO<br>16 GAUGE | CRIMP TYPE<br>16 GAUGE |
| PART NO.                         | COLOR                  |
| 105-0771-001                     | White                  |
| 105-0772-001                     | Red                    |
| 105-0773-001                     | Black                  |

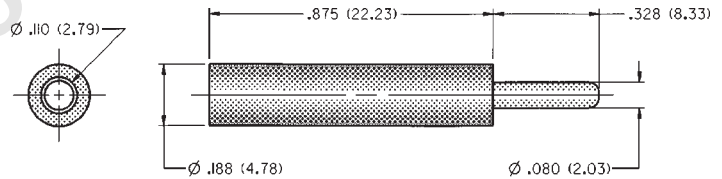
**For Standard Test Jack: .080 (2.00) Diameter**

### FEATURES:

- Solder or crimp type connection
- Accepts wire sizes up to 16 gauge
- Nylon UL approved for self extinguishing
- Designed for use with horizontal and vertical test jacks only

See page xxx for crimp tool.

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.



## .080 (2.00) Insulated: Solderless Type

### SPECIFICATIONS

**Contact:** Brass per QQ-B-626D

**Finish:** Nickel

**Insulated Handle:** Nylon 6/6 per ASTM D4066

### RATINGS

**Current:** 10 amps

**Breakdown Voltage:** 3500 VRMS minimum†

**Contact Resistance:** 0.010 ohms maximum

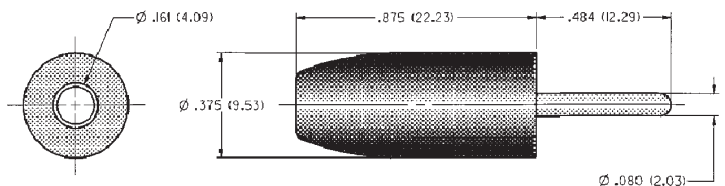
| NICKEL PLATING |       |              |       |
|----------------|-------|--------------|-------|
| PART NO.       | COLOR | PART NO.     | COLOR |
| 105-0301-001   | White | 105-0304-001 | Green |
| 105-0302-001   | Red   | 105-0310-001 | Blue  |
| 105-0303-001   | Black |              |       |

**For Standard Tip Jack: .080 (2.00) Diameter**

### FEATURES:

- Recessed head to reduce shock hazard
- Accepts wire sizes up to 16 gauge
- Nylon UL approved for self extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.



## Uninsulated Rivet Panel Mount:

### Turret Terminal

#### SPECIFICATIONS

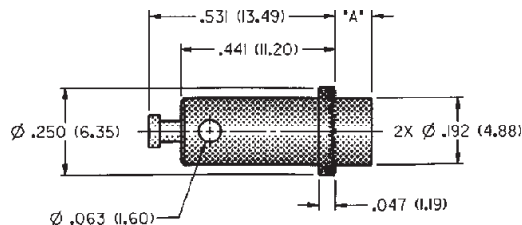
**Jack Body:** Brass per QQ-B-626D

**Finish:** Nickel

#### RATINGS

**Current:** 15 amps

**Contact Resistance:** 0.010 ohms maximum



| NICKEL PLATING |                 |             |
|----------------|-----------------|-------------|
| PART NO.       | PANEL THICKNESS | "A"         |
| 108-2300-501   | .063 (1.6)      | .105 (2.67) |

**For Standard Banana Plug: .175 (4.44) Across Flats**

#### FEATURES:

- Nickel plated brass body with cross hole
- Low cost, easy mounting banana jack

## Uninsulated Standard Type:

### Pierced Lug Terminal

#### SPECIFICATIONS

**Jack Body:** Brass per QQ-B-626D

**Finish:** Nickel

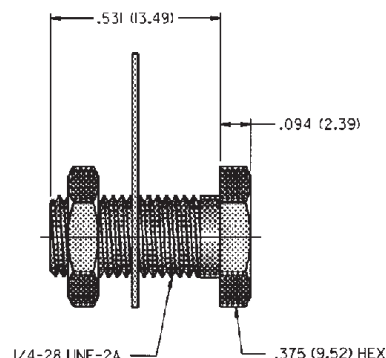
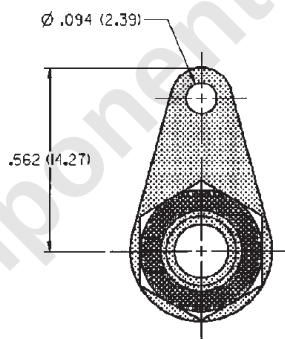
**Hardware:** Nickel plated nut; stamped tin plated solder terminal (unassembled)

**Panel Thickness:** Up to .375 (9.50)

#### RATINGS

**Current:** 15 amps

**Contact Resistance:** 0.010 ohms maximum



| NICKEL PLATING |  |
|----------------|--|
| PART NO.       |  |
| 108-0740-001   |  |

**For Standard Banana Plug: .175 (4.44) Across Flats**

#### FEATURES:

- Accepts up to 12 gauge wire
- Hex head for faster installation
- For higher current designs

## Uninsulated Standard Type:

### Slotted Lug Terminal

#### SPECIFICATIONS

**Jack Body:** Brass per QQ-B-626D

**Finish:** Nickel

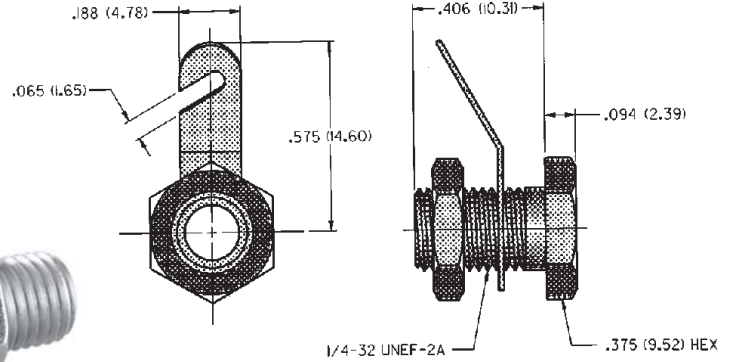
**Hardware:** Nickel plated nut; stamped tin plated solder terminal (unassembled)

**Panel Thickness:** Up to .250 (6.35)

#### RATINGS

**Current:** 15 amps

**Contact Resistance:** 0.010 ohms maximum



#### NICKEL PLATING

##### PART NO.

108-0740-102

**For Standard Banana Plug: .175 (4.44) Across Flats**

#### FEATURES:

- Accepts up to 12 gauge wire
- Hex head for faster installation
- For higher current designs

## Insulated Rib-Loc® Solder Terminal

#### SPECIFICATIONS

**Contact:** Formed brass per QQ-B-626D

**Finish:** Bright tin

**Body:** Nylon 6/6 per ASTM D4066

**Panel Thickness:** Up to .250 (6.35)

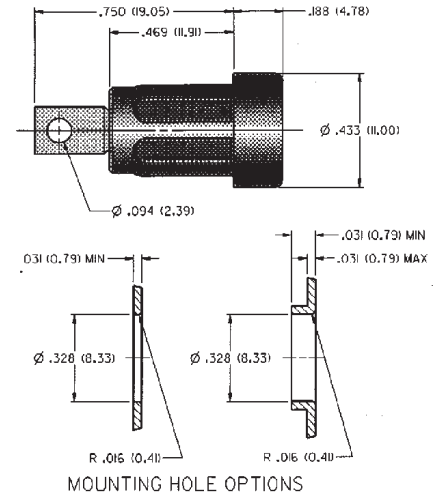
#### RATINGS

**Current:** 15 amps

**Breakdown Voltage:** 7000 VRMS minimum†

**Contact Resistance:** 0.010 ohms maximum

**Contact-To-Panel C:** 2.4 pF nominal



#### BRIGHT TIN PLATING

| PART NO.     | COLOR | PART NO.     | COLOR  |
|--------------|-------|--------------|--------|
| 108-2301-801 | White | 108-2304-801 | Green  |
| 108-2302-801 | Red   | 108-2307-801 | Yellow |
| 108-2303-801 | Black | 108-2310-801 | Blue   |

**For Standard Banana Plug: .175 (4.44) Across Flats**

#### FEATURES:

- Requires no mounting hardware
- Accepts up to 16 gauge wire
- Nylon UL approved for self extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## Insulated Turret Terminal

#### SPECIFICATIONS

**Contact:** Machined brass per QQ-B-626D

**Finish:** Silver

**Body:** Nylon 6/6 per ASTM D4066

**Hardware:** Nickel plated nut (unassembled)

**Body Thread Stripping Torque:** 6.0 lb. in. (7kg. cm.)

**Panel Thickness:** Up to .343 (8.80)

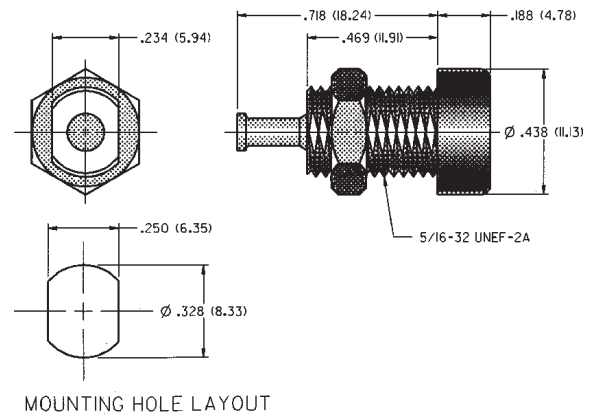
#### RATINGS

**Current:** 15 amps

**Breakdown Voltage:** 7000 VRMS minimum†

**Contact Resistance:** 0.010 ohms maximum

**Contact-To-Panel:** 2.4 pF nominal



#### SILVER PLATING

| PART NO.     | COLOR | PART NO.     | COLOR |
|--------------|-------|--------------|-------|
| 108-2302-621 | Red   | 108-2303-621 | Black |

**For Standard Banana Plug: .175 (4.44) Across Flats**

#### FEATURES:

- Keyed mounting with double flats
- Nylon UL approved for self extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## Insulated Solder Terminal

### SPECIFICATIONS

**Contact:** Formed brass per QQ-B-626D

**Finish:** Bright tin

**Body:** Nylon 6/6 per ASTM D4066

**Hardware:** Nickel plated nut (unassembled)

**Body Thread Stripping Torque:** 6.0 lb. in. (7kg. cm.)

**Panel Thickness:** Up to .343 (8.80)

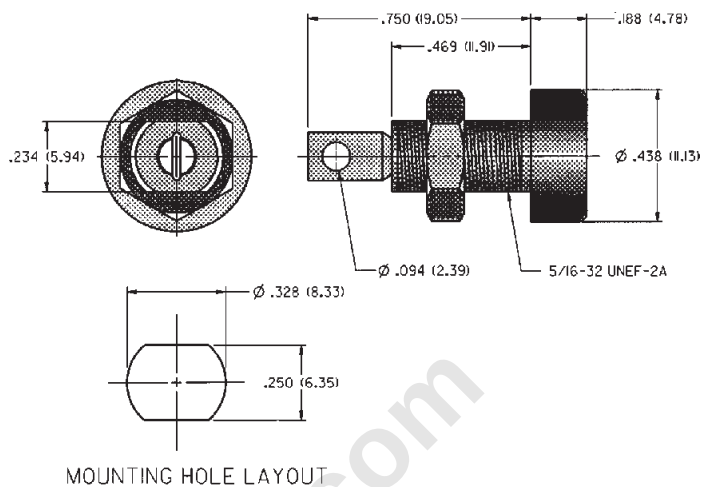
### RATINGS

**Current:** 15 amps

**Breakdown Voltage:** 7000 VRMS minimum†

**Contact Resistance:** 0.010 ohms maximum

**Contact-To-Panel:** 2.4 pF nominal



MOUNTING HOLE LAYOUT

### BRIGHT TIN PLATING

| PART NO.     | COLOR  | PART NO.     | COLOR  |
|--------------|--------|--------------|--------|
| 108-0901-001 | White  | 108-0907-001 | Yellow |
| 108-0902-001 | Red    | 108-0908-001 | Brown  |
| 108-0903-001 | Black  | 108-0910-001 | Blue   |
| 108-0904-001 | Green  | 108-0912-001 | Violet |
| 108-0906-001 | Orange | 108-0913-001 | Gray   |

### For Standard Banana Plug: .175 (4.44) Across Flats

#### FEATURES:

- Keyed mounting with double flats
- Accepts up to 16 gauge wire
- Nylon UL approved for self extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## Insulated Pierced Lug Terminal

### SPECIFICATIONS

**Contact:** Brass per QQ-B-626D

**Finish:** Nickel

**Hex Head:** Molded phenolic

**Hardware:** Nickel plated nut, fiber insulating washer and stamped tin plated solder terminal (unassembled)

**Panel Thickness:** Up to .281 (7.15)

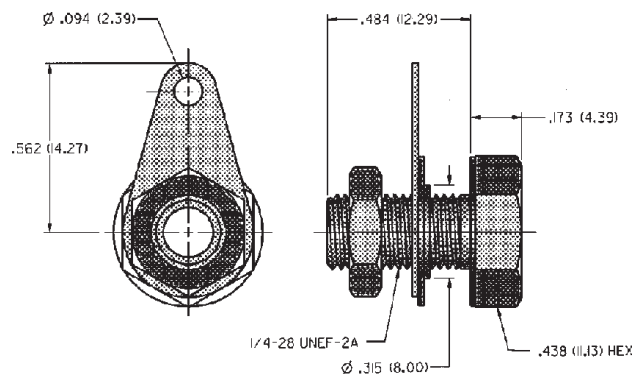
### RATINGS

**Current:** 15 amps

**Breakdown Voltage:** 1500 VRMS minimum†

**Contact Resistance:** 0.010 ohms maximum

**Contact-To-Panel:** 2.4 pF nominal



### NICKEL PLATING

| PART NO.     | COLOR |
|--------------|-------|
| 108-0745-001 | Red   |
| 108-0745-002 | Black |

### For Standard Banana Plug: .175 (4.44) Across Flats

#### FEATURES:

- Withstands extreme temperatures and abuse
- Stamped tin plated solder terminal with hole for up to 12 gauge wire
- Integrally molded hex head for fast installation

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## Uninsulated Rivet Type

### SPECIFICATIONS

**Plug Body:** Brass per QQ-B-626D

**Plug Spring:** Beryllium copper per QQ-C-533

**Finish:** Silver

**Panel Thickness:** Up to .156 (4.00)

### RATINGS

**Current:** 15 amps

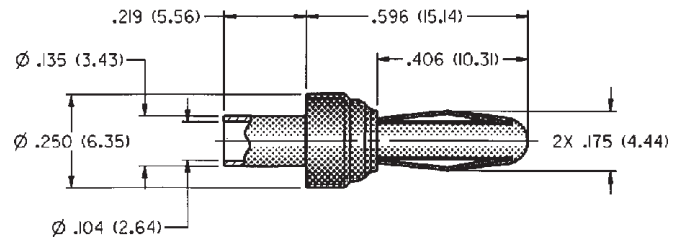
**Contact Resistance:** 0.010 ohms maximum

| SILVER PLATING |
|----------------|
| PART NO.       |
| 108-0754-001   |

**For Standard Banana Jack: .166 (4.23) Diameter**

### FEATURES:

- Shorter spring adapts to standard jack or special size jack
- Ideal for limited space applications



## Uninsulated Panel Mount Threaded Stud

### SPECIFICATIONS

**Plug Body:** Brass per QQ-B-626D

**Plug Spring:** Nickel silver per QQ-C-585

**Finish:** Nickel

**Panel Thickness:** Up to .25 (6.35) .625 (16.00)

**Hardware:** Nickel plated nut, stamped tin plated solder terminal (unassembled)

### RATINGS

**Current:** 15 amps

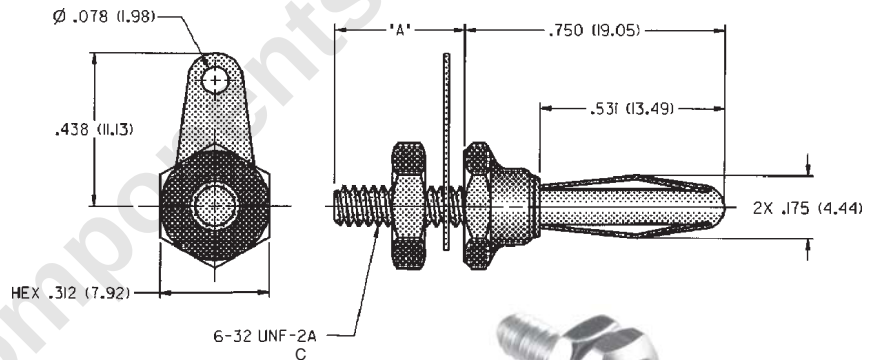
**Contact Resistance:** 0.010 ohms maximum

| NICKEL PLATING |                 |
|----------------|-----------------|
| PART NO.       | STUD LENGTH "A" |
| 108-0750-001   | .375 (9.50)     |
| 108-0750-002   | .750 (19.05)    |

**For Standard Banana Jack: .166 (4.23) Diameter**

### FEATURES:

- Two stud lengths adapt to different panel sizes
- Pierced hole for up to 14 gauge wire



## Uninsulated Panel Mount Screw Type, Nickel Silver Spring

### SPECIFICATIONS

**Plug Body:** Brass per QQ-B-626D

**Plug Spring:** Nickel silver per QQ-C-585

**Finish:** Silver

**Panel Thickness:** Up to .125 (3.20)

**Hardware:** Nickel plated screw, stamped tin plated solder terminal (unassembled)

### RATINGS

**Current:** 15 amps

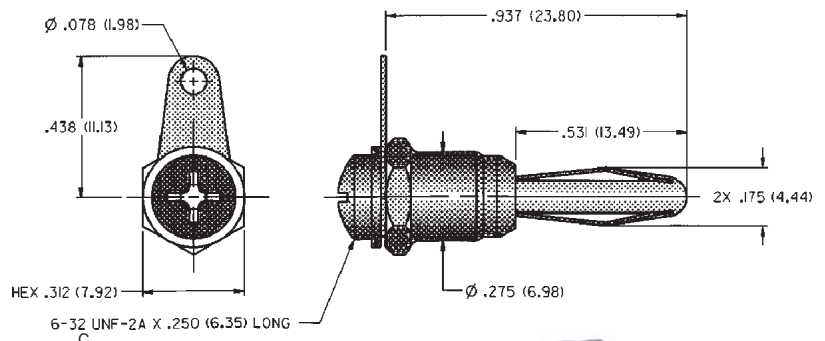
**Contact Resistance:** 0.010 ohms maximum

| NICKEL PLATING |
|----------------|
| PART NO.       |
| 108-0753-001   |

**For Standard Banana Jack: .166 (4.23) Diameter**

### FEATURES:

- Rugged screw type
- Stamped tin plated solder terminal with hole for up to 14 gauge wire



## Uninsulated Panel Mount Screw Type Beryllium Copper Spring

### SPECIFICATIONS

**Plug Body:** Brass per QQ-B-626D

**Plug Spring:** Beryllium copper per QQ-C-533

**Finish:** Nickel

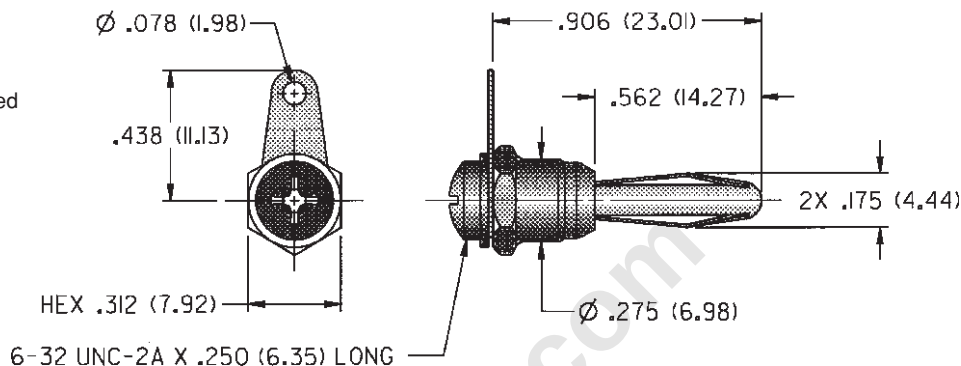
**Panel Thickness:** Up to .156 (4.00)

**Hardware:** Nickel plated nut, stamped tin plated solder terminal (unassembled)

### RATINGS

**Current:** 15 amps

**Contact Resistance:** 0.010 ohms maximum



### NICKEL PLATING

#### PART NO.

108-0753-102

For Standard Banana Jack:  $.166$  (4.23) Diameter

#### FEATURES:

- Rugged screw type
- Stamped tin plated solder terminal with hole for up to 14 gauge wire

## Insulated Solderless Tapered Handle

### SPECIFICATIONS

**Plug Body:** Brass per QQ-B-626D

**Plug Spring:** Nickel silver per QQ-C-533

**Finish:** Nickel

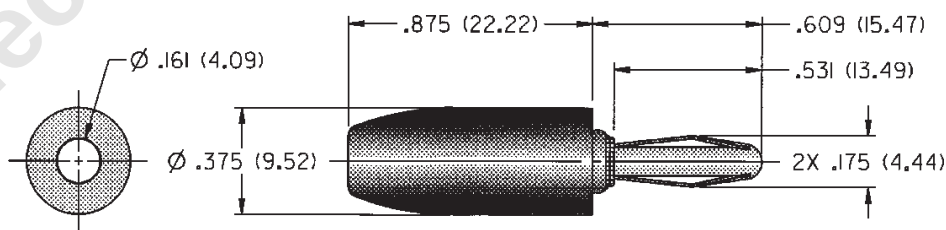
**Insulated Handle:** Nylon 6/6 per ASTM D4066

### RATINGS

**Current:** 15 amps

**Breakdown Voltage:** 3500 VRMS minimum†

**Contact Resistance:** 0.010 ohms maximum



### NICKEL PLATING

| PART NO.     | COLOR  | PART NO.     | COLOR  |
|--------------|--------|--------------|--------|
| 108-0301-001 | White  | 108-0307-001 | Yellow |
| 108-0302-001 | Red    | 108-0308-001 | Brown  |
| 108-0303-001 | Black  | 108-0310-001 | Blue   |
| 108-0304-001 | Green  | 108-0312-001 | Violet |
| 108-0306-001 | Orange | 108-0313-001 | Gray   |

For Standard Banana Jack:  $.166$  (4.23) Diameter

#### FEATURES:

- Fast solderless connection of up to 16 gauge wire
- Recessed plug body to limit shock hazard
- Nylon UL approved for self extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## Insulated Hex Body Solder Type Long Handle

### SPECIFICATIONS

**Plug Body:** Brass per QQ-B-626D

**Plug Spring:** Nickel silver per QQ-C-585

**Finish:** Nickel

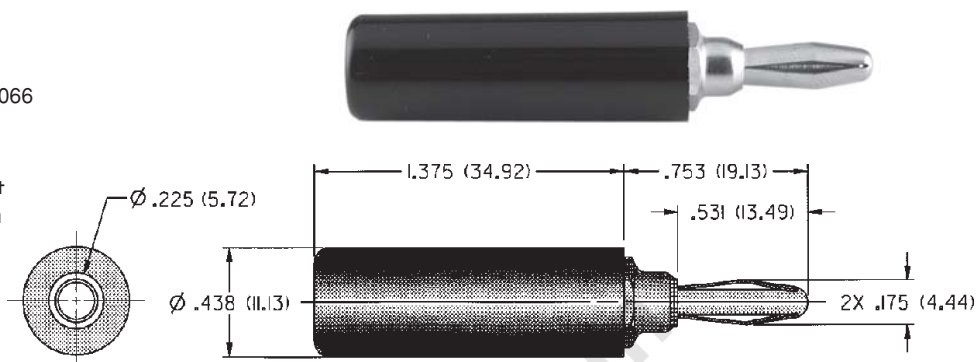
**Insulated Handle:** Nylon 6/6 per ASTM D4066

### RATINGS

**Current:** 15 amps

**Breakdown Voltage:** 3500 VRMS minimum†

**Contact Resistance:** 0.010 ohms maximum



| NICKEL PLATING |       |
|----------------|-------|
| PART NO.       | COLOR |
| 108-0752-001   | Black |
| 108-0752-002   | Red   |

For Standard Banana Jack: .166 (4.23) Diameter

### FEATURES:

- Solder type terminal uses up to 16 gauge wire
- Nylon UL approved for self extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## Insulated Side Set Screw Solderless

### SPECIFICATIONS

**Plug Body:** Brass per QQ-B-626D

**Plug Spring:** Nickel silver per QQ-C-585

**Finish:** Nickel

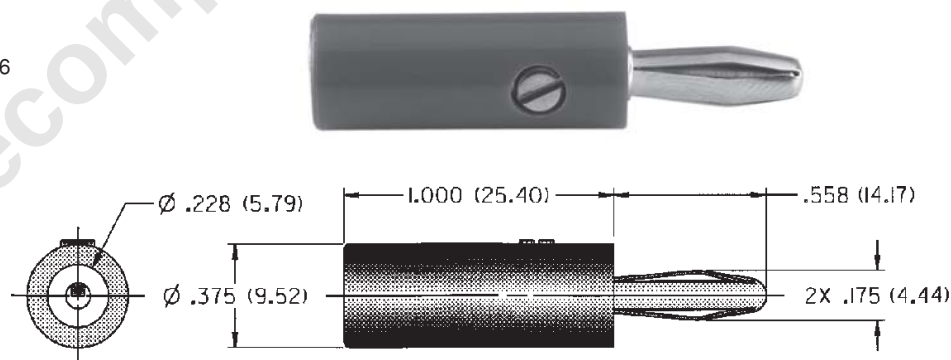
**Insulated Handle:** Nylon 6/6 per ASTM D4066

### RATINGS

**Current:** 15 amps

**Breakdown Voltage:** 35 VRMS minimum†

**Contact Resistance:** 0.010 ohms maximum



| NICKEL PLATING |       |              |       |
|----------------|-------|--------------|-------|
| PART NO.       | COLOR | PART NO.     | COLOR |
| 108-1702-101   | Red   | 108-1703-101 | Black |

For Standard Banana Jack: .166 (4.23) Diameter

For Low Voltage (50 WVDC) Applications

### FEATURES:

- Fast solderless connection of up to 16 gauge wire
- Set screw for dependable connections with low voltage
- Nylon UL approved for self extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## Insulated Hex Body Solder Stud

### SPECIFICATIONS

**Plug Body:** Brass per QQ-B-626D

**Plug Spring:** Nickel silver per QQ-C-585

**Finish:** Nickel

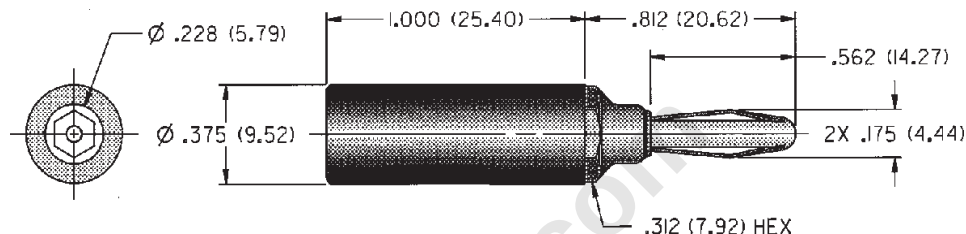
**Insulated Handle:** Nylon 6/6 per ASTM D4066

### RATINGS

**Current:** 15 amps

**Breakdown Voltage:** 3500 VRMS minimum†

**Contact Resistance:** 0.010 ohms maximum



| NICKEL PLATING |       |              |       |
|----------------|-------|--------------|-------|
| PART NO.       | COLOR | PART NO.     | COLOR |
| 108-1762-101   | Red   | 108-1763-101 | Black |

For Standard Banana Jack: .166 (4.23) Diameter

### FEATURES:

- Wire can be soldered to threaded stud
- Solder stud accepts up to 16 gauge wire
- Nylon UL approved for self extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## Insulated Round Body Solder Stud

### SPECIFICATIONS

**Plug Body:** Brass per QQ-B-626D

**Plug Spring:** Nickel silver per QQ-C-585

**Finish:** Nickel

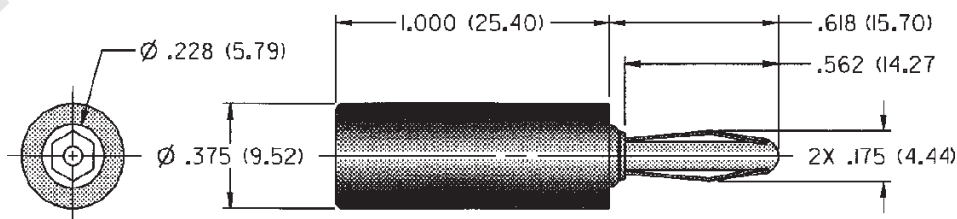
**Insulated Handle:** Nylon 6/6 per ASTM D4066

### RATINGS

**Current:** 15 amps

**Breakdown Voltage:** 3500 VRMS minimum†

**Contact Resistance:** 0.010 ohms maximum



| NICKEL PLATING |       |              |       |
|----------------|-------|--------------|-------|
| PART NO.       | COLOR | PART NO.     | COLOR |
| 108-1722-101   | Red   | 108-1723-101 | Black |

For Standard Banana Jack: .166 (4.23) Diameter

### FEATURES:

- Wire can be soldered to threaded stud
- Solder stud accepts up to 16 gauge wire
- Nylon UL approved for self extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## Insulated Round Body Solderless

### SPECIFICATIONS

**Plug Body:** Brass per QQ-B-626D

**Plug Spring:** Nickel silver per QQ-C-585

**Finish:** Nickel

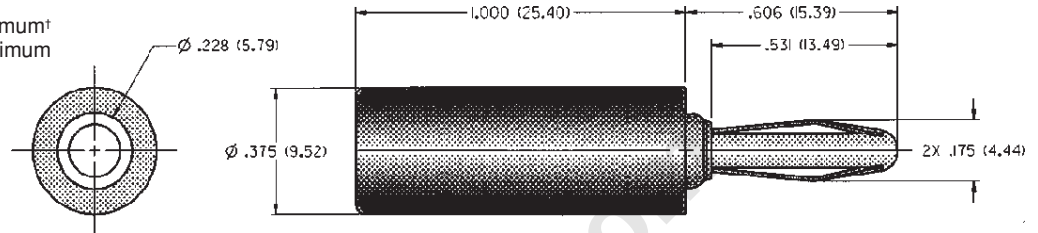
**Insulated Handle:** Nylon 6/6 per ASTM D4066

### RATINGS

**Current:** 15 amps

**Breakdown Voltage:** 3500 VRMS minimum\*

**Contact Resistance:** 0.010 ohms maximum



| NICKEL PLATING |       |              |       |
|----------------|-------|--------------|-------|
| PART NO.       | COLOR | PART NO.     | COLOR |
| 108-1722-103   | Red   | 108-1723-103 | Black |

**For Standard Banana Jack: .166 (4.23) Diameter**

### FEATURES:

- Wire locked in place by screwing down handle
- Accepts up to 16 gauge wire
- Nylon UL approved for self extinguishing

\*Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## Insulated Stacking Single Type

### SPECIFICATIONS

**Plug Body:** Brass per QQ-B-626D

**Plug Spring:** Nickel silver per QQ-C-585

**Finish:** Nickel

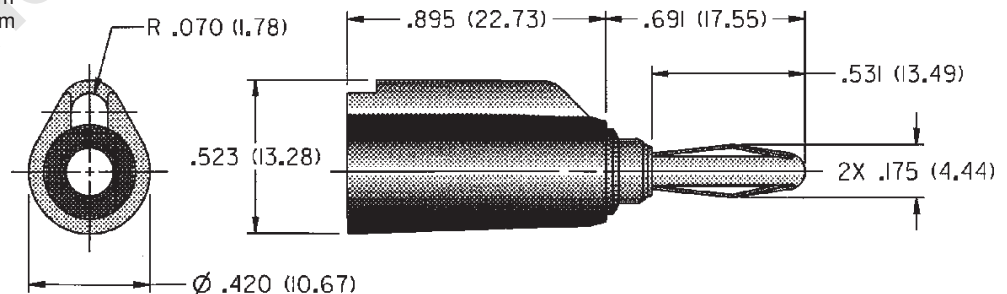
**Insulated Handle:** Nylon 6/6 per ASTM D4066

### RATINGS

**Current:** 15 amps

**Breakdown Voltage:** 3500 VRMS minimum\*

**Contact Resistance:** 0.010 Ohm maximum



| NICKEL PLATING |       |              |        |
|----------------|-------|--------------|--------|
| PART NO.       | COLOR | PART NO.     | COLOR  |
| 108-1081-001   | White | 108-1083-001 | Black  |
| 108-1082-001   | Red   | 108-1087-001 | Yellow |

**For Standard Banana Jack: .166 (4.23) Diameter**

### FEATURES:

- Built in strain relief for long life
- Solder stud accepts up to 16 gauge wire
- Accepts standard banana plug from rear
- Nylon UL approved for self extinguishing

For assembly tools see page 277.

\*Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## Insulated Stacking Dual Type

### SPECIFICATIONS

**Plug Body:** Brass per QQ-B-626D

**Plug Spring:** Nickel silver per QQ-C-586

**Finish:** Nickel

**Insulated Handle:** Nylon 6/6 per ASTM D4066

### RATINGS

**Current:** 15 amps

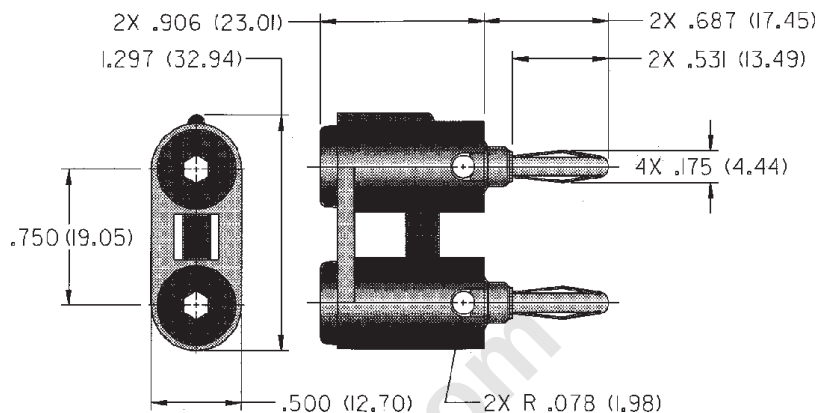
**Breakdown Voltage:** 3500 VRMS minimum\*

**Contact Resistance:** 0.010 ohms maximum

**For Standard Banana Jack:** .166 (4.23) Diameter

### FEATURES:

- Accepts standard banana plug from rear
- Built-in strain relief for long life
- Nylon UL approved for self extinguishing



| NICKEL PLATING                                   |       |
|--------------------------------------------------|-------|
| SET SCREW<br>(Accepts wire sizes up to 14 gauge) |       |
| PART NO.                                         | COLOR |
| 108-0252-001                                     | Red   |
| 108-0253-001                                     | Black |

\*Avoid user injury due to misapplication. See safety advisory definitions inside front cover.



## Insulated Rib-Loc® Turret Terminal

### SPECIFICATIONS

**Contact:** Brass per QQ-B-626D

**Finish:** Silver

**Insulated Handle:** Nylon 6/6 per ASTM D4066

**Panel Thickness:** Up to .313 (80)

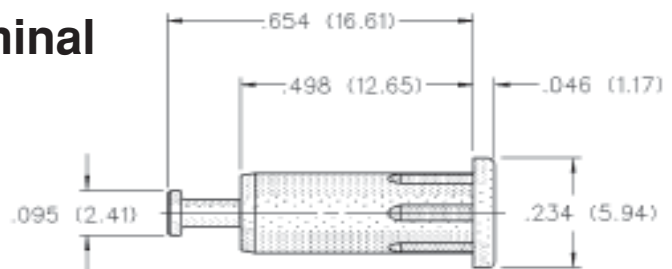
### RATINGS

**Current:** 10 amps

**Breakdown Voltage:** 3500 VRMS minimum†

**Contact Resistance:** 0.010 ohms maximum

**Contact-To-Panel C:** 2.4 pF nominal



Mounting Hole Options

| SILVER PLATING |       |              |       |
|----------------|-------|--------------|-------|
| PART NO.       | COLOR | PART NO.     | COLOR |
| 108-1102-001   | Red   | 108-1103-001 | Black |

**For Miniature Banana Plug: .120 (3.00) Across Flats**

### FEATURES:

- Hardwareless Rib-Loc® mounting design
- Nylon UL approved for self extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## Insulated Solder Type

### SPECIFICATIONS

**Plug Body:** Brass per QQ-B-626D

**Plug Spring:** Beryllium copper per QQ-C-533

**Finish:** Nickel

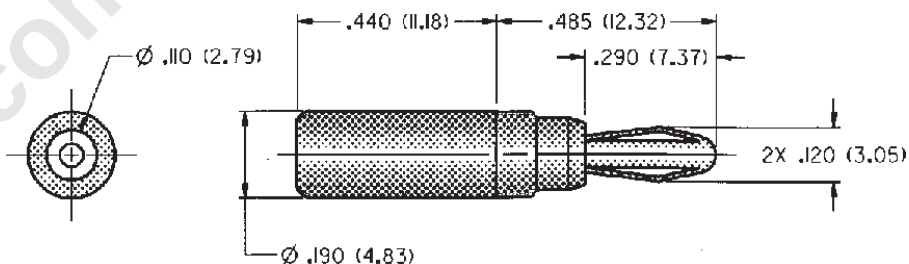
**Insulated Handle:** Nylon 6/6 per ASTM D4066

### RATINGS

**Current:** 10 amps

**Breakdown Voltage:** 3500 VRMS minimum†

**Contact Resistance:** 0.010 ohms maximum



| NICKEL PLATING |       |              |       |
|----------------|-------|--------------|-------|
| PART NO.       | COLOR | PART NO.     | COLOR |
| 108-1002-001   | Red   | 108-1003-001 | Black |

**For Miniature Banana Jack: .104 (2.64) Diameter**

### FEATURES:

- Small size for limited space
- Solder terminal accepts up to 18 gauge wire
- Nylon UL approved for self extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## Uninsulated With Knurled Thumb - Nut-Grounded Type

### SPECIFICATIONS

**Stud:** Brass per QQ-B-626D

**Finish:** Nickel

**Hardware:** Nickel plated nut (unassembled)

**Panel Thickness:** Up to .281 (7.15)

### RATINGS

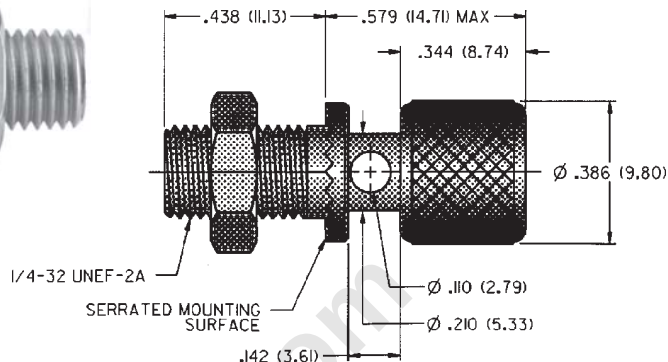
**Current:** 15 amps

| NICKEL PLATING |  |
|----------------|--|
| PART NO.       |  |
| 111-2223-001   |  |

**For Standard Banana Plug: .175 (4.44) Across Flats**

### FEATURES:

- Nickel plated stud with serrated mounting surface prevents turning
- Captive thumb nut .110 (2.79) diameter cross-hole accommodates up to 10 gauge wire



## Insulated Standard

### SPECIFICATIONS

**Stud:** Brass per QQ-B-626D

**Finish:** Silver

**Insulating Material:** Nylon 6/6 per ASTM D4066

**Hardware:** Nickel plated nut (unassembled)

**Body Thread Stripping Torque:**

6.0 lb. in. (7.0 kg cm)

**Panel Thickness:** Up to .281 (7.15)

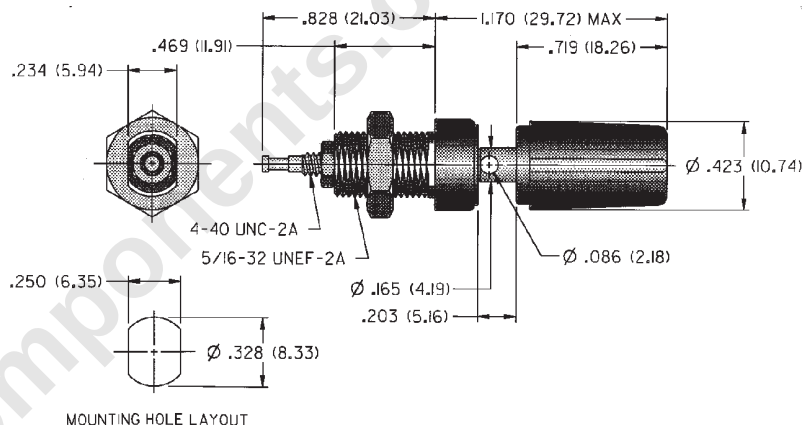
### RATINGS

**Current:** 15 amps

**Contact Resistance:** 0.010 ohms maximum

**Breakdown Voltage:** 5700 VRMS minimum†

**Stud-to-Panel:** 3.3 pF nominal



| SILVER PLATING |       |              |        |
|----------------|-------|--------------|--------|
| PART NO.       | COLOR | PART NO.     | COLOR  |
| 111-0101-001   | White | 111-0104-001 | Green  |
| 111-0102-001   | Red   | 111-0107-001 | Yellow |
| 111-0103-001   | Black | 111-0110-001 | Blue   |

**For Standard Banana Plug: .175 (4.44) Dia.**

### FEATURES:

- Turret terminal
- Captive thumb nut
- Insulated body is flattened to prevent turning
- Nylon UL approved for self-extinguishing



†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

## Insulated Standard With - Thumb Nut-Grounded Type

### SPECIFICATIONS

**Stud:** Brass per QQ-B-626D

**Finish:** Nickel

**Insulating Material:** Nylon 6/6 per ASTM D4066

**Hardware:** Nickel plated nut (unassembled)

**Panel Thickness:** Up to .313 (7.95)

### RATINGS

**Current:** 15 amps

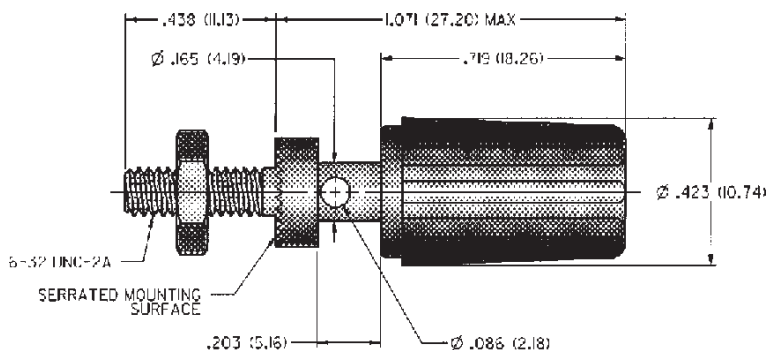
| NICKEL PLATING |       |              |       |
|----------------|-------|--------------|-------|
| PART NO.       | COLOR | PART NO.     | COLOR |
| 111-0702-001   | Red   | 111-0703-001 | Black |

**For Standard Banana Plug: .175 (4.44) Across Flats**

### FEATURES:

- Serrated mounting surface prevents turning
- Captivated thumb nut
- .086 (2.18) accommodates up to 12 gauge wire
- Nylon UL approved for self-extinguishing

†Avoid user injury due to misapplication. See safety advisory definitions inside front cover.

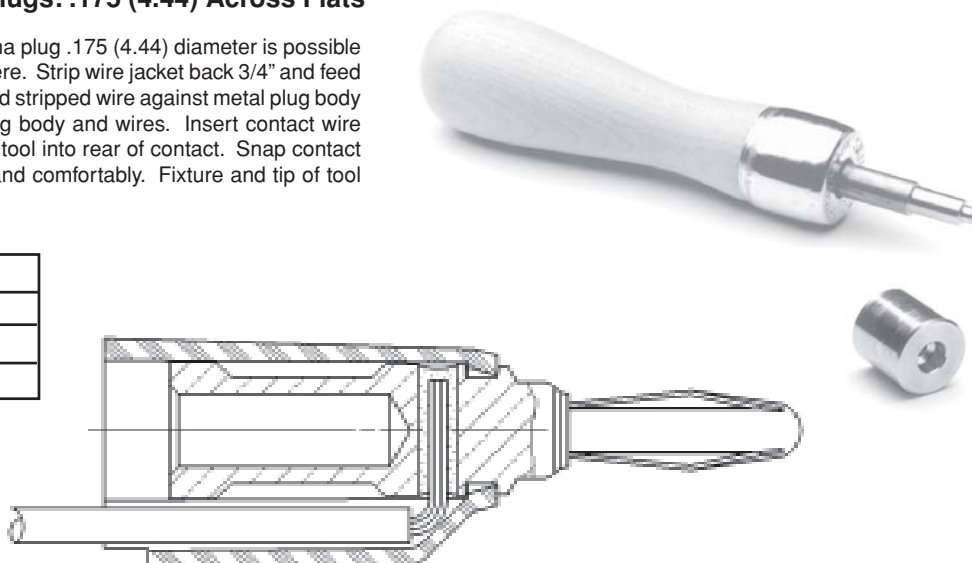


## Assembly Tools and Fixtures (108-108X-001 Series)

### For Standard Stacking Banana Plugs: .175 (4.44) Across Flats

Quick and easy assembly of standard banana plug .175 (4.44) diameter is possible with the assembly tool and fixtures shown here. Strip wire jacket back 3/4" and feed wire through cross hole of metal contact. Fold stripped wire against metal plug body and slide insulated handle over banana plug body and wires. Insert contact wire into housing. Place into fixture. Push tip of tool into rear of contact. Snap contact into place. Handle of tool is curved to fit hand comfortably. Fixture and tip of tool made from tool steel.

| FIXTURE PART NO. |
|------------------|
| 251-0111-003     |
| TOOL PART NO.    |
| 251-0115-002     |

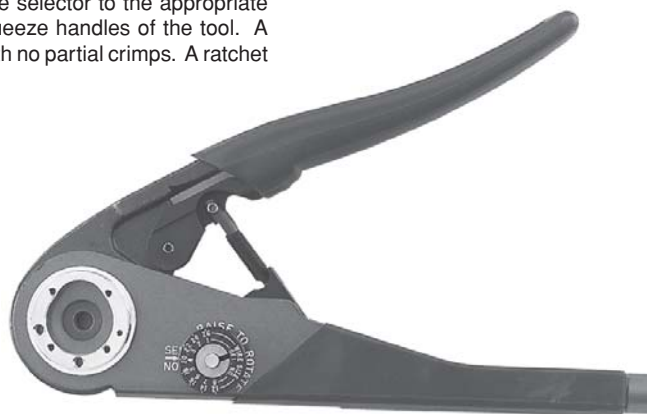


## Crimp Tool (105-077X-XXX Series)

### For Insulated Standard Small Handle Tip Plugs: .080 (2.00) Diameter and .060 (1.50) Tip Jacks

Quick and easy assembly of standard small handle tip plug .080 (2.00) diameter and .060 (1.50) tip jack is possible with the assembly tool shown. Set the selector to the appropriate wire size, strip wire to .180, insert wire and tip plug in tool, squeeze handles of the tool. A complete and accurate crimp is obtained each and every time, with no partial crimps. A ratchet insures a complete cycle of the tool.

| TOOL PART NO.       |
|---------------------|
| 144-0000-910        |
| ASTRO TOOL PART NO. |
| 615708              |
| MILITARY PART NO.   |
| M22520/1-01         |



## Tube Sockets

|                   |     |
|-------------------|-----|
| Power Type .....  | 279 |
| Wafer Type .....  | 279 |
| Septar Type ..... | 280 |

Johnson sockets are designed to provide secure retention of the tube and positive, low-resistance contact between the tube pins and socket contacts for our customers who use tubes for lack of a reliable high power RF semi-conductor.

**Ordering Information:** For a numerical index of the complete electronic hardware product line, refer to page 289.

Each product listing in this section includes mechanical drawings and part numbering information. Material, mechanical and electrical specifications are listed for each item.

**To Order:** When you have determined the part number for the tube socket you require, contact one of our distributors for the socket you need. If you don't know the name of your local distributor or if you have special requirements, call 1-800-247-8256.

## Power Type

## Power Tube Socket

## SPECIFICATIONS

**Housing:** Brass per QQ-B-626D .0001" nickel plated

**Insulator:** Glass base silicone

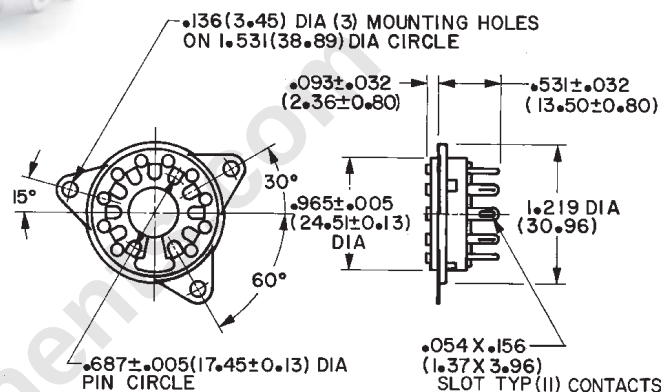
**Contacts:** Beryllium copper (heat treated)  
per QQ-C-533, .0001" silver plated

## FEATURES:

- Raised pads for excellent base pin cooling
- For tubes such as RCA 8072, 8121 and 8122

## Description:

For ultra high frequency tubes. Also suitable for use with CRT tubes 1EP1 and 1EP11 with E.I.A. base no. E11-22. Base material has low dielectric constant which results in low pin-to-pin and shunt capacity. Continuous heat resistance to 500° F. Mounting lugs provide low inductance grounding. Three point mounting stability. Eleven pin configuration.



## PART NO.

124-0311-100 (Industrial Grade)

## Wafer Type

## Giant: 5-Pin Configuration

## SPECIFICATIONS

**Base:** L-423 steatite, DC-200 treated

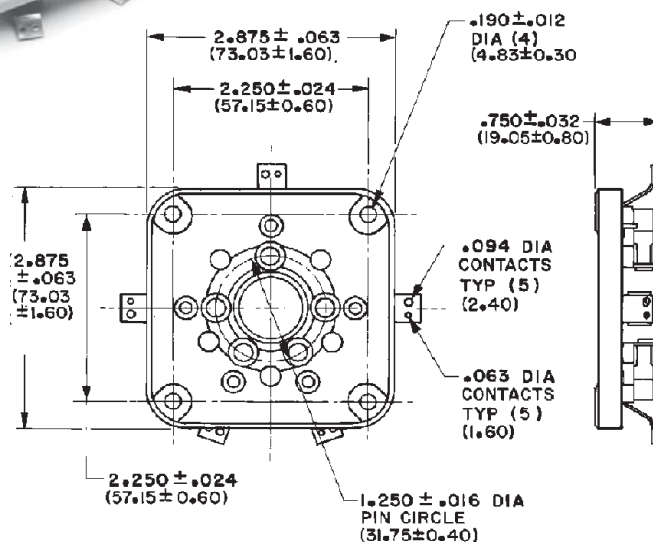
**Contacts:** Brass per QQ-B-626D, with steel springs  
per QQ-S-777, .0001" nickel plated

## FEATURES:

- Ventilating holes to provide tube seal cooling
- Sub-panel mounting possible with countersunk rivets and bossed mounting holes

## Description:

Heavy duty steatite insulate wafer type socket. For tubes such as 4-125A, 4-250A, and RK-48 with E.I.A. base no. A5-19. Standard five pin configuration.



## PART NO.

122-0275-001 (Commercial Grade)

## Septar Type

### 7-Pin Configuration

#### SPECIFICATIONS

**Base:** L-423 steatite, DC-200 treated

**Shell:** Aluminum per QQ-A-200/8, iridated

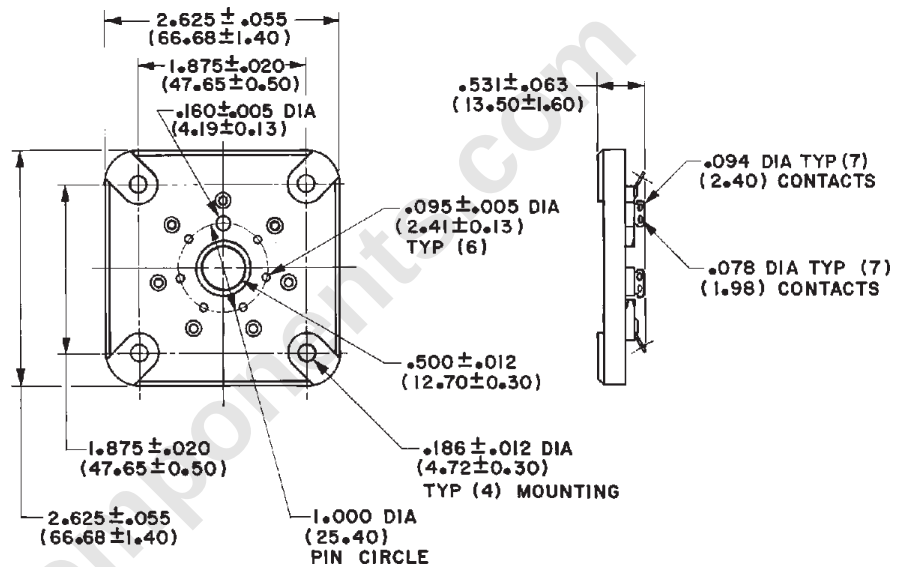
**Contacts:** Phosphor bronze per QQ-B-750, with beryllium copper springs per QQ-C-533, .0005" silver plated

#### FEATURES:

- Securely holds tube
- Positive, low resistance contact between tube pins and socket contacts

#### Description:

Designed for 7-pin tubes with E.I.A. base no. E7-2 such as the 7094.



#### PART NO.

122-0247-202 (Military Grade)

# Competitor Cross Reference

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INCHES (MILLIMETERS) • CUSTOMER DRAWINGS AVAILABLE ON REQUEST

| ADC           | EMERSON        | AEP           | EMERSON      | AEP           | EMERSON             | AMP      | EMERSON       | AMP          | EMERSON         |
|---------------|----------------|---------------|--------------|---------------|---------------------|----------|---------------|--------------|-----------------|
| BNC-1         | CPMC-68-35     | 2010-1511-000 | 131-1701-371 | 9043-1523-002 | 142-0402-101        | 222165-2 | CP-AD503      | 228216-1     | 131-3701-416    |
| BNC-2         | CPMC-68-2      | 2010-1511-000 | 131-3701-301 | 9043-1523-003 | 142-0403-101        | 222319-1 | CP-AD512      | 228226-1     | CP-AD556        |
| BNC-3         | CPMC-68-33     | 2010-7511-000 | 131-1701-376 | 9043-1523-006 | 142-0407-101        | 222321-1 | CP-AD809      | 228509-9     | CP-625U         |
| BNC-4         | CPMC-68-3      | 2010-7511-000 | 131-3701-306 | 9044-9513-000 | 142-1701-606        | 222428-1 | CPFI-UG89-2   | 3-227079-0   | CPMC-88-5       |
| BNC-6         | CPMC-68-10     | 2018-1511-001 | 131-3701-801 | 9044-9513-001 | 142-1701-616        | 222506-2 | CPMC-TNC-2    | 3-227079-1   | CPMC-88-5       |
| BNC-6         | CPMC-68-50     | 2018-7511-001 | 131-3701-806 | 9045-9513-000 | 142-1701-506        | 222506-4 | CPMC-TNC-13   | 3-227079-2   | CPMC-88-5       |
| BNC-7         | CPMC-68-18     | 2019-1511-000 | 131-3701-411 | 9045-9513-001 | 142-1701-516        | 225395-1 | CPMC-88-1     | 3-227079-7   | CPMC-88-14      |
| BNC-8         | CPMC-68-45     | 2019-7511-000 | 131-3701-416 | 9046-9513-000 | 142-1801-606        | 225395-2 | CPMC-88-2     | 3-227086-6   | CPN-1           |
| BNC-10        | CPMC-68-36     | 2025-1511-000 | 131-3801-201 | 9046-9513-001 | 142-1801-616        | 225395-5 | CPMC-88-1     | 329517       | CP-AD503        |
| BNC-13        | CPMC-68-34     | 2025-7511-000 | 131-3801-216 | 9048-9513-000 | 142-1701-626        | 225395-6 | CPMC-88-13    | 329518       | CP-AD505        |
|               |                | 2042-1511-000 | 131-1801-371 | 9049-9513-000 | 142-1701-526        | 225395-7 | CPM-88-19     | 330024       | CP-AD556        |
| <b>AEP</b>    | <b>EMERSON</b> | 2042-1511-000 | 131-3801-301 | 9050-9513-000 | 142-1801-626        | 225395-8 | CPM-88-20     | 331350       | CPMC-88-2       |
| 204           | 131-3701-401   | 2042-7511-000 | 131-1801-376 | 9074-9513-000 | 142-1701-576        | 225395-9 | CPMC-88-14    | 4-227079-1   | CPMC-88-1       |
| 209           | 131-1701-201   | 2042-7511-000 | 131-3801-316 | 9076-1113-000 | 142-1701-011        | 225532-1 | 142-0407-016  | 4-227079-3   | CPMC-88-1       |
| 209           | 131-3701-201   | 2105-1521-002 | 131-1402-101 | 9076-9113-000 | 142-1701-016        | 225532-9 | 142-0407-016  | 4-227079-9   | CPMC-88-10      |
| 210           | 131-1701-371   | 2105-1521-002 | 131-3402-101 | 9079-9513-000 | 142-1701-556        | 225542-1 | 142-0307-016  | 4-331350-0   | CPMC-88-3       |
| 210           | 131-3701-301   | 2105-1521-003 | 131-1403-101 | 9079-9513-001 | 142-1701-566        | 225608-9 | 142-0307-416  | 413592-2     | CP-AD505        |
| 219           | 131-3701-411   | 2105-1521-003 | 131-3403-101 | 9101-1573-003 | 142-0403-001        | 225609-1 | 142-0407-101  | 413592-9     | CP-AD505        |
| 222           | 131-3901-401   | 2105-7521-002 | 131-1402-116 | 9130-1573-002 | 142-0302-401        | 225609-4 | 142-0403-101  | 413771-3     | CP-89-19-BM1    |
| 225           | 131-3801-201   | 2105-7521-002 | 131-3402-116 | 9130-1573-003 | 142-0303-401        | 225661-2 | CPN-1         | 414160-7     | CPN-68-13       |
| 242           | 131-1801-371   | 2105-7521-003 | 131-1403-116 | 9130-1573-006 | 142-0307-401        | 225886-4 | CPMC-88-26    | 414160-9     | CPN-68-1        |
| 242           | 131-3801-301   | 2105-7521-003 | 131-3403-116 | 9201-1553-002 | 142-0202-011        | 226279-1 | CPL-259-1     | 414168-3     | CP-TNC-89-19-BM |
| 1-104         | 131-6701-401   | 2110-1511-000 | 131-3701-341 | 9201-1553-003 | 142-0203-011        | 226279-2 | CPL-259-8     | 414265-1     | CPFI-UG88-1     |
| 1-109         | 131-6701-201   | 2110-7511-000 | 131-3701-346 | 9201-1553-006 | 142-0207-011        | 226279-3 | CPL-259-2     | 414265-3     | CPFI-UG89-2     |
| 1-110         | 131-6701-301   | 218/063       | 131-3701-801 | 9230-1553-002 | 142-0102-401        | 226600-1 | MINI-UHF-1    | 414265-4     | CPFI-UG88-10    |
| 1-119         | 131-6701-411   | 2484-1511-000 | 131-3701-631 | 9230-1553-003 | 142-0103-401        | 227000-5 | CPMC-TNC-1    | 414265-5     | CPFI-UG88-3     |
| 1-302/188     | 131-6403-001   | 2484-7511-000 | 131-3701-636 | 9243-1553-002 | 142-0202-101        | 227000-7 | CPMC-TNC-2    | 414311-1     | CP-AD506        |
| 1-303/188     | 131-6303-401   | 401/188       | 131-3303-001 | 9243-1553-003 | 142-0203-101        | 227079-1 | CPMC-88-1     | 414414-1     | CP-AD555        |
| 1-305/188     | 131-6403-101   | 401/196       | 131-3302-001 | 9243-1553-006 | 142-0207-101        | 227079-2 | CPMC-88-13    | 414459-1     | CP-BNC-PC-016   |
| 1002-1571-003 | 131-6403-001   | 402/188       | 131-1403-001 | 9301-1063-109 | 142-0694-021        | 227079-3 | CPMC-88-2     | 414580-2     | CPFI-UG88-1     |
| 1002-7571-003 | 131-6403-006   | 402/188       | 131-3403-001 | 9304-1113-013 | 142-1701-191        | 227079-5 | CPMC-88-1     | 414580-3     | CPFI-UG89-2     |
| 1003-1571-003 | 131-6303-401   | 402/196       | 131-3402-001 | 9304-9113-013 | 142-1701-196        | 227079-7 | CPMC-88-2     | 414580-5     | CPFI-UG88-10    |
| 1003-7571-003 | 131-6303-406   | 405/188       | 131-1403-101 | 9308-1113-001 | 142-1701-201        | 227079-9 | CPMC-88-1     | 414586-1     | CPMC-88-1       |
| 1004-1511-000 | 131-6701-401   | 405/188       | 131-3403-101 | 9308-9113-001 | 142-1701-206        | 227632-1 | 131-6701-406  | 414586-5     | CPMC-88-1       |
| 1004-7511-000 | 131-6701-406   | 405/196       | 131-1402-101 | 9401-1083-010 | 142-0693-001        | 227633-1 | 131-6701-416  | 414666-1     | CP-AD503        |
| 1009-1511-000 | 131-6701-201   | 405/196       | 131-3402-101 | 9401-1083-109 | 142-0694-001        | 227677-1 | CP-BNC-PC-009 | 51751-1      | 131-6303-401    |
| 1009-7511-000 | 131-6701-206   | 5222-1501-000 | 131-3901-401 | 9402-1083-009 | 142-0594-001        | 227726-3 | CP-AD520      | 51751-3      | 131-6303-401    |
| 1010-1511-000 | 131-6701-301   | 5222-7501-000 | 131-3901-406 | 9402-1083-010 | 142-0593-001        | 227754-1 | CP-1094-U     | 51753-1      | 131-6403-101    |
| 1019-1511-000 | 131-6701-411   | 5909-1103-000 | 142-0901-401 | 9404-1113-000 | 142-0701-631        | 227754-2 | CP-1094-U     | 51753-4      | 131-6403-101    |
| 1019-7511-000 | 131-6701-416   | 5917-1103-000 | 142-0901-801 | 9408-1113-000 | 142-0701-621        | 227754-3 | CP-1094-U     | 5-227079-8   | CPMC-88-3       |
| 1105-1521-003 | 131-6403-101   | 5918-1103-000 | 142-0901-811 | 9412-1113-000 | 142-0701-401        | 227945-2 | CP-AD850      | 5-331350-3   | CPMC-88-2       |
| 1105-7521-003 | 131-6403-106   | 9001-1023-001 | 142-0408-011 | 9413-1113-000 | 142-0701-411        | 227945-5 | CP-AD850      | 5801-7985-63 | 133-3693-001    |
| 1110-1511-000 | 131-6701-341   | 9001-1023-003 | 142-0403-011 | 9424-1513-000 | 142-0701-701        | 227839-1 | CP-TNC-PC-002 | 5818-5002-10 | 142-0003-236    |
| 1110-7511-000 | 131-6701-346   | 9001-1023-006 | 142-0407-011 | 9424-9513-000 | 142-0701-706        | 228226-3 | CP-AD556      | 5818-5003-10 | 142-0003-246    |
| 2001-1571-002 | 131-3302-001   | 9001-1023-019 | 142-0404-011 | 9453-1083-009 | 142-0594-401        | 227984-1 | CPFI-UG88-2   | 5818-5005-10 | 142-0002-226    |
| 2001-1571-003 | 131-3303-001   | 9001-9023-001 | 142-0408-016 | 9453-1083-010 | 142-0593-401        | 228026-2 | 131-6402-006  | 5831-5002-10 | 133-3402-006    |
| 2001-7571-002 | 131-3302-006   | 9001-9023-003 | 142-0403-016 | 9504-9113-009 | 142-1701-546        | 228026-3 | 131-6403-006  | 5831-5003-10 | 133-3403-006    |
| 2001-7571-003 | 131-3303-006   | 9001-9023-006 | 142-0407-016 | 9504-9113-031 | 142-1701-536        | 228028-1 | 131-6303-406  | 5837-5002-10 | 133-3402-106    |
| 2002-1541-010 | 131-3693-001   | 9001-9023-019 | 142-0404-016 | 9508-9113-001 | 142-1701-646        | 228028-3 | 131-6303-406  | 5837-5003-10 | 133-3403-106    |
| 2002-1571-002 | 131-3402-001   | 9002-1023-003 | 142-0303-011 | 9508-9113-002 | 142-1701-636        | 228030-1 | 131-6403-106  | 5837-5010-63 | 133-3403-101    |
| 2002-1571-003 | 131-1403-001   | 9002-1023-006 | 142-0307-011 | 9576-9113-001 | 142-1701-586        | 228030-2 | 131-6402-106  | 5862-5002-10 | 133-3701-216    |
| 2002-1571-003 | 131-3403-001   | 9002-1023-019 | 142-0304-011 | 9576-9113-003 | 142-1701-596        | 228030-3 | 131-6403-106  | 5862-5003-10 | 133-3701-206    |
| 2002-7541-010 | 131-3693-016   | 9002-9023-001 | 142-0308-016 | 9609-1513-000 | 142-0701-531        | 228212-1 | 131-1701-206  | 5862-5004-10 | 133-3701-226    |
| 2003-1541-010 | 131-3593-401   | 9002-9023-003 | 142-0303-016 | 9609-9513-000 | 142-0701-536        | 228212-1 | 131-3701-206  | 5863-0000-10 | 133-3801-201    |
| 2003-7541-010 | 131-3593-406   | 9002-9023-006 | 142-0307-016 | 9649-1113-000 | 142-0801-201        | 228213-1 | 131-1403-016  | 5864-5001-10 | 133-3701-306    |
| 2004-1511-000 | 131-3701-401   | 9002-9023-019 | 142-0304-016 | 9650-1113-000 | 142-0701-201        | 228213-1 | 131-3403-016  | 5864-5002-10 | 133-3701-326    |
| 2004-7511-000 | 131-3701-406   | 9030-0123-001 | 142-0308-411 |               |                     | 228213-2 | 131-3402-016  | 5864-5003-10 | 133-3701-316    |
| 2005-1541-010 | 131-1693-101   | 9030-1023-003 | 142-0303-411 | <b>AMP</b>    | <b>SEE TYCO/AMP</b> | 228213-3 | 131-1403-016  | 6-227079-0   | CPMC-88-13      |
| 2005-1541-010 | 131-3693-101   | 9030-1023-006 | 142-0307-411 | <b>AMP</b>    | <b>EMERSON</b>      | 228213-3 | 131-3403-016  | 6-227079-1   | CPMC-88-13      |
| 2005-7541-010 | 131-3693-116   | 9030-1023-019 | 142-0304-411 | 221984-1      | CPFI-UG88-2         | 228214-1 | 131-1403-116  | 6-227079-2   | CPMC-88-13      |
| 2009-1511-000 | 131-1701-201   | 9030-9023-001 | 142-0308-416 | 221984-5      | CPFI-UG88-3         | 228214-1 | 131-3403-116  | 6-227079-5   | CPMC-88-5       |
| 2009-1511-000 | 131-3701-201   | 9030-9023-003 | 142-0303-416 | 221984-7      | CPFI-UG88-1         | 228214-2 | 131-1402-116  | 6-227079-7   | CPMC-88-11      |
| 2009-7511-000 | 131-1701-206   | 9030-9023-006 | 142-0307-416 | 221984-7      | CPFI-UG88-1         | 228214-2 | 131-3402-116  | BNC58HPC     | CPMC-88-1       |
| 2009-7511-000 | 131-3701-206   | 9030-9023-019 | 142-0304-416 | 221988-1      | CP-AD506            | 228215-1 | 131-3701-406  | BNC58J       | CP-89-1         |

# Competitor Cross Reference

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| AMP        | EMERSON      | AMPHENOL       | EMERSON         | AMPHENOL        | EMERSON      | AMPHENOL       | EMERSON      | AMPHENOL       | EMERSON        |
|------------|--------------|----------------|-----------------|-----------------|--------------|----------------|--------------|----------------|----------------|
| BNC58PC    | CPMC-88-1    | 31-221         | CP-1094U        | 31-70235        | CPMC-68-3    | 901-168        | CP-AD311     | 901-B2501-519  | CP-AD507       |
| BNC58PP    | CPMC-88-11   | 31-221-RFX     | CP-1094U        | 31-70236        | CPMC-68-18   | 901-191        | 142-0901-401 | 901-B2501-520  | CP-AD508       |
| BNC58PTV   | CPFI-UG-88-1 | 31-2218        | CP-AD511        | 31-70237        | CPMC-68-35   | 901-255        | 142-0102-401 | 903-284-52S    | 131-6403-001   |
| BNC59HPC   | CPMC-88-2    | 31-2221        | CP-1094U        | 31-70238        | CPMC-68-33   | 901-256        | 142-0103-401 | 903-285P-51S   | 131-1403-001   |
| BNC59J     | CP-89-2      | 31-2242-RFX    | CPM-TNC-19      | 31-71008        | CPMC-78-2    | 901-276        | 142-0901-821 | 903-285P-51S   | 131-3403-001   |
| BNC59JTW   | CPFI-UG89-2  | 31-2315-RFX    | CPM-TNC-19      | 31-71008-2000   | CPMC-78-10   | 901-281        | 142-0202-011 | 903-287P-51S   | 131-3402-001   |
| BNC59P     | CPMC-88-2    | 31-2318-RFX    | CP-TNC-89-19-BM | 31-71008-RFX    | CPMC-78-2    | 901-292        | CP-AD817     | 903-288P-52A   | 131-6403-101   |
| BNC59PC    | CPMC-88-2    | 31-236         | CP-1094U        | 31-71013        | CPMC-68-20   | 901-293        | CP-AD818     | 903-289P-51A   | 131-1403-101   |
| BNC59PC75  | CPMC-78-2    | 31-2367-RFX    | CPMC-TNC-1      | 31-71032        | CPMC-78-3    | 901-294        | CP-AD810     | 903-289P-51A   | 131-3403-101   |
| BNC59PP    | CPMC-88-10   | 31-2368-RFX    | CPMC-TNC-1      | 31-71042-RFX    | CP-BNCPC-012 | 901-295        | CP-AD819     | 903-291P-51A   | 131-1402-101   |
| BNC59PPC   | CPMC-88-10   | 31-2373        | CPMC-TNC-13     | 31-71043-RFX    | CP-BNCPC-010 | 901-302        | 142-0901-801 | 903-291P-51A   | 131-3402-101   |
| BNC59PTW   | CPFI-UG88-2  | 31-242         | CPM-88-20       | 31-71047-10-RFX | CP-BNCPC-016 | 901-303        | 142-0901-811 | 903-305J-51R   | 131-3701-401   |
| BNC59PTWP  | CPFI-UG88-10 | 31-242-RFX     | CPM-88-20       | 31-71058-RFX    | CP-BNCPC-008 | 901-367        | 142-0202-101 | 903-373J-51A   | 131-1701-371   |
| BNC8281HPS | CPMC-88-3    | 31-245-RFX     | CP-79-20-BM1    | 31-8            | CP-AD505     | 901-9183-1     | 142-0694-031 | 903-373J-51A   | 131-3701-301   |
| BNCBHS     | CP-AD556     | 31-28          | CP-AD500        | 31-830          | CP-AD809     | 901-9201-2A    | 142-0693-001 | 903-376J-51A   | 131-3701-341   |
| BNCILS     | CP-AD555     | 31-315         | CPM-88-19       | 31-9            | CP-AD503     | 901-9202-1A    | 142-0594-001 | 903-402J-51R   | 131-3701-411   |
| BNCISJ     | CP-AD520     | 31-315-RFX     | CPM-88-19       | 31-9-RFX        | CP-AD503     | 901-9202-2A    | 142-0593-001 | 903-407J-51R   | 131-3701-421   |
| BNCTC      | CP-AD505     | 31-318-RFX     | CP-89-19-BM1    | 36650-3RFX1     | CPMC-88-11   | 901-9207-1     | 142-0694-021 | 903-408J-52R   | 131-6701-411   |
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| H-6906-004-919 .....   | 131-3303-001   | 700015 .....           | 131-6701-411   | 5604-4CC-SF .....          | 142-1701-506   | 5941-2CC-SF ..... | 142-1701-586 | 3131-20-1 .....     | 142-1701-531   |
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| H-6932-000-000 .....   | 131-3701-411   | 700056 .....           | 131-6701-301   | 5604-5CC-SF .....          | 142-1701-516   | 5941-4CC-SF ..... | 142-1701-556 | 3131-36-1 .....     | 142-1701-541   |
| H-6937-000-000 .....   | 131-3701-401   | 700166 .....           | 131-3701-411   | 5604-6CC .....             | 142-1701-521   | 5941-5CC .....    | 142-1701-561 | 3131-36-9 .....     | 142-1701-546   |
| H-6957-000-000 .....   | 131-3901-401   | 700169 .....           | 131-3701-401   | 5604-6CC-SF .....          | 142-1701-526   | 5941-5CC-SF ..... | 142-1701-566 | 3131K-12-1 .....    | 142-1701-551   |
| H-6991-000-000 .....   | 131-3801-201   | 700178 .....           | 131-3593-401   | 5606-2CC .....             | 142-1801-631   | 5941-6CC .....    | 142-1701-571 | 3131K-12-9 .....    | 142-1701-556   |
| H-6993-000-000 .....   | 131-1801-371   | 700188 .....           | 131-3901-401   | 5606-2CC-SF .....          | 142-1801-636   | 5941-6CC-SF ..... | 142-1701-576 | 3131K-15-1 .....    | 142-1701-561   |
| H-6995-000-000 .....   | 131-1701-201   | 700209 .....           | 131-1701-201   | 5606-4CC .....             | 142-1801-601   | 5942-4CC .....    | 142-1801-551 | 3131K-15-9 .....    | 142-1701-566   |
| H-6995-000-000 .....   | 131-3701-201   | 700209 .....           | 131-3701-201   | 5606-4CC-SF .....          | 142-1801-606   | 5942-4CC-SF ..... | 142-1801-556 | 3131K-18-1 .....    | 142-1701-571   |
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|                        |                | 700218 .....           | 131-1801-371   | 5606-6CC-SF .....          | 142-1801-626   | 5942-6CC-SF ..... | 142-1801-576 | 3310-20-1 .....     | 142-1801-531   |
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| 3310K-18-1 .....     | 142-1801-571 | 09-9201-1-0310 ..... | 105-2203-105 | 9954-0081-6215 ..... | 142-1701-516 | 1509-102 ..... | 108-0902-001 | 455-112 ..... | 108-0312-001 |         |
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| 22SMB-50-0-11      | 131-3701-421   | 6025     | 105-0252-001 | 6074-1        | 108-0750-001   | KA-59-385-MO6 | CPMC-TNC-2  | KC-59-98      | CPMC-88-1           |
| 22SMB-50-0-2       | 131-3701-411   | 6026     | 105-0253-001 | 6074-2        | 108-0750-002   | KA-59-406-MO6 | CPMC-TNC-1  | KC-79-106     | CP-1094-U           |
| 22SMB-50-0-3       | 131-3701-401   | 6030     | 105-0601-001 | 872-1         | 142-0594-401   | KA-59-44      | CPMC-TNC-1  | KC-79-106     | CP-1094-U           |
| 22SMC-50-0-2       | 131-6701-411   | 6031     | 105-0602-001 | 872-11        | 142-0302-401   | KA-59-45      | CPMC-TNC-13 | KC-79-109     | CP-AD519            |
| 22SMC-50-0-3       | 131-6701-401   | 6032     | 105-0603-001 | 872-12        | 142-0303-401   | KA-59-46      | CPMC-TNC-2  | KC-79-121     | CP-1094-U           |
| 23SMA-50-0-41      | 142-0701-621   | 6033     | 105-0604-001 | 872-8         | 142-0593-401   | KA-59-57      | CPMC-TNC-13 | KC-79-123     | CP-AD519            |
| 23SMA-50-0-44      | 142-0701-631   | 6034     | 105-0607-001 | 873-4         | 142-0594-001   | KA-59-69      | CPM-TNC-19  | KC-79-131     | CP-1094-U           |
| 23SMA-50-0-120     | 142-1701-201   | 6035     | 105-0610-001 | 873-9         | 142-0593-001   | KA-59-86      | CPMC-TNC-13 | KC-79-132     | CP-AD519            |
| 23SMA-50-0-122     | 142-1701-191   | 6036     | 105-0851-001 | 874-1         | 142-0701-401   | KA-59-94      | CPMC-TNC-2  | KC-79-35      | CP-1094-U           |
| 23SMA-50-0-170     | 142-1701-206   | 6037     | 105-0852-001 | 874-5         | 142-0701-411   | KA-91-01      | CP-AD355    | KC-79-46      | CP-1094-U           |
| 23SMA-50-0-172     | 142-1701-196   | 6038     | 105-0853-001 | 875-10-M09    | 142-0693-001   | KA-91-05      | CP-AD306    | KC-99-20      | CP-AD506            |
| 24MCX-50-1-10      | 133-3302-401   | 6039     | 105-0857-001 | 875-13        | 142-0403-001   | KA-91-09      | CP-AD355    | KC-99-30      | CP-AD555            |
| 24MCX-50-1-10      | 133-3303-401   | 6040     | 105-0854-001 | 875-4-M09     | 142-0694-031   | KA-91-18      | CP-AD300    | KC-99-31      | CP-AD505            |
| 24SMA-50-2-41      | 142-0593-401   | 6041     | 105-0860-001 | 875-8-M09     | 142-0694-001   | KA-99-114-MO6 | CP-AD356    | KC-99-32      | CP-AD511            |
| 24SMA-50-3-41      | 142-0594-401   | 6042     | 105-2201-201 | 876-1         | 142-0407-101   | KA-99-59      | CP-AD300    | KC-99-33      | CP-AD556            |
| 24SMC-50-2-10C/111 | 131-6303-401   | 6043     | 105-2202-201 | 876-6         | 142-0403-101   | KA-99-62      | CP-AD355    | KC-99-34      | CP-AD500            |
| 27SMA-50-0-1       | 142-0701-531   | 6044     | 105-2203-201 | 877-1         | 142-0701-631   | KC-59-104     | CPMC-88-13  | KC-99-35      | CP-AD503            |
| 27SMA-50-0-51      | 142-0701-536   | 6045     | 105-2207-201 | 877-2         | 142-0701-621   | KC-59-107     | CPMC-88-12  | KC-99-37      | CP-AD506            |
| 28SMA-50-0-1       | 142-0701-701   | 6046     | 105-2204-201 | 877-21        | 142-0701-301   | KC-59-115     | CPMC-88-13  | KC-99-40      | CP-AD521            |
| 28SMA-50-0-51      | 142-0701-706   | 6048     | 105-1101-001 | 879-13        | 142-0901-401   | KC-59-116     | CPMC-88-13  | KC-99-42      | CP-AD500            |
| 31MCX-50-0-1       | 133-3901-801   | 6049     | 105-1102-001 | 879-2-M09     | 142-0901-811   | KC-59-123     | CPMC-88-1   | KC-99-44      | CP-AD555            |
| 34SMB-50-0-2       | 131-3901-401   | 6050     | 105-1103-001 | 879-3         | 142-0901-801   | KC-59-128     | CPMC-88-2   | KC-99-52      | CP-AD505            |
| 81MCX-50-0-1       | 133-3801-201   | 6051     | 105-1107-001 |               |                | KC-59-152     | CPMC-88-19  | KC-99-54      | CP-AD521            |
| 81MMCX-50-0-1      | 135-3801-201   | 6052     | 105-1104-001 | <b>KINGS</b>  | <b>EMERSON</b> | KC-59-162     | CPMC-88-13  | KC-99-56      | CP-AD511            |
| 81SMB-50-0-1/111   | 131-3801-201   | 6053     | 105-1110-001 | 1209-1-15-MA9 | CP-AD810       | KC-59-167     | CPMC-88-13  | KC-99-64      | CP-AD505            |
| 82MCX-50-0-1/111   | 133-3701-201   | 6054     | 105-0751-001 | 1209-10       | CP-AD803       | KC-59-180     | CPMC-88-3   | KC-99-95-MO6  | CP-AD556            |
| 82MCX-50-0-1/133   | 133-3701-206   | 6055     | 105-0752-001 | 1209-13       | CP-AD850       | KC-59-181     | CPMC-88-3   | KN-59-132     | CPN-8               |
| 82MCX-50-0-10      | 133-3701-231   | 6056     | 105-0753-001 | 1209-18       | CP-AD807       | KC-59-223     | CPMC-88-18  | KN-59-204-MO6 | CPN-1               |
| 82MCX-50-0-2       | 133-3701-201   | 6057     | 105-0757-001 | 1209-7        | CP-AD809       | KC-59-279     | CPMC-88-13  | KN-59-207     | CP-AD802            |
| 82MMCX-50-0-1      | 135-3701-201   | 6058     | 105-0754-001 | 2025-36-9     | CPMC-78-2      | KC-59-290     | CPMC-88-1   | KN-59-273-MO6 | CPN-2               |
| 82SMA-50-0-41      | 142-0701-201   | 6059     | 105-0760-001 | 2025-37-9     | CPMC-78-3      | KC-59-291     | CPMC-88-1   | KN-99-35      | CP-AD809            |
| 82SMB-50-0-1/111   | 131-1701-201   | 6060     | 105-2201-105 | 2025-44-9     | CPMC-68-33     | KC-59-293     | CPMC-88-1   | KN-99-36      | CP-AD809            |
| 82SMC-50-0-1       | 131-6701-201   | 6061     | 105-2202-105 | 2025-51-9     | CPMC-78-2      | KC-59-294     | CPMC-88-2   | KN-99-44      | CP-AD800            |
| 83MCX-0-2-5        | 142-0003-231   | 6062     | 105-2203-105 | 2025-59-9     | CPMC-78-2      | KC-59-300     | CPMC-88-3   | KN-99-46      | CP-AD807            |
| 83SMC-0-2-2        | 142-0003-201   | 6063     | 105-2207-105 | 2025-6-9-MO6  | CPMC-78-2      | KC-59-303     | CPMC-88-13  | KN-99-50      | CP-AD850            |
| 84SMB-50-0-1       | 131-1801-371   | 6064     | 105-2204-105 | 2025-7-9      | CPMC-78-3      | KC-59-306     | CPMC-88-18  | KN-99-69      | CP-AD803            |
| 85 MCX-50-0-1      | 133-3701-301   | 6066     | 105-2201-101 | 2029-16-5     | CP-AD705       | KC-59-307     | CPMC-88-18  | KU-59-22      | CP-AD250            |
| 85MMCX-50-0-1      | 135-3701-301   | 6067     | 105-2202-101 | 2029-16-9     | CP-AD705       | KC-59-346     | CPMC-88-13  | KU-59-35      | CPL-259-2           |
| 85SMA-50-0-44      | 142-0701-301   | 6068     | 105-2203-101 | 2029-17-9     | CP-AD557       | KC-59-347     | CPMC-88-1   | KU-59-48      | CPL-259-8           |
| 85SMB-50-0-1       | 131-1701-371   | 6069     | 105-2207-101 | 2029-3-5      | CP-AD705       | KC-59-348     | CPMC-88-1   | KU-59-53      | CPL-259-1           |
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|                    |                | 6077     | 108-1003-001 | 2065-5-9      | CPMC-68-20     | KC-59-400     | CPMC-88-1   | UG-57 B/U     | CP-AD800            |
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| 6000               | 105-0301-001   | 6079     | 108-0303-001 | 2065-7-9      | CPMC-68-2      | KC-59-414-MO6 | CPMC-88-1   |               |                     |
| 6001               | 105-0302-001   | 6080     | 108-1762-101 | 2065-10-9     | CPMC-68-36     | KC-59-415     | CPMC-88-12  | <b>MA/COM</b> | <b>SEE TYCO/AMP</b> |
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| 6006               | 105-0771-001   | 6084     | 108-1702-101 | 759-3         | CP-AD505       | KC-59-417-MO6 | CPMC-88-13  | 73301-1912    | 142-0693-001        |
| 6007               | 105-0772-001   | 6085     | 108-1703-101 | 759-4         | CP-AD503       | KC-59-421     | CPMC-88-1   | 73303-1812    | 142-0594-001        |
| 6008               | 105-0773-001   | 6088     | 108-0252-001 | 759-5         | CP-AD511       | KC-59-422     | CPMC-88-13  | 73303-1912    | 142-0593-001        |
| 6012               | 105-0201-200   | 6089     | 108-0253-001 | 879-11-15-MA9 | CP-AD507       | KC-59-423     | CPMC-88-1   | 73304-1812    | 142-0594-401        |
| 6013               | 105-0202-200   | 6091     | 108-0902-001 | 879-5-15-MA9  | CP-AD508       | KC-59-465     | CPMC-88-2   | 73304-1912    | 142-0593-401        |
| 6014               | 105-0203-200   | 6092     | 108-0903-001 | KA-59-103     | CPMC-TNC-1     | KC-59-482     | CPMC-88-2   | 73312-1212    | 142-0403-001        |
| 6015               | 105-0204-200   | 6093     | 108-0745-001 | KA-59-225     | CPMC-TNC-1     | KC-59-61      | CPMC-88-1   | 73313-1122    | 142-0407-101        |
| 6017               | 105-0210-200   |          |              |               |                |               |             |               |                     |

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| 73313-1222     | 142-0403-101   | 09-2800-0670  | 131-1403-101   | <b>RADIALL</b> | <b>EMERSON</b> | R114554        | 131-3701-401   | 351-075-0002N | 142-0701-416 |
| 73314-1112     | 142-0207-011   | 09-2800-2670  | 131-1404-101   | R112075        | 131-6403-001   | R114566        | 131-3701-421   | 351-875-0360H | 142-0302-401 |
| 73314-1212     | 142-0203-011   | 09-3450-00    | 131-1701-371   | R112186        | 131-6403-101   | R114665        | 131-1701-371   | 351-875-0360N | 142-0302-406 |
| 73315-1122     | 142-0207-101   | 0909-1180-00  | 131-3901-401   | R112307        | 131-6303-401   | R114720        | 131-3901-401   | 351-875-0630H | 142-0303-401 |
| 73315-1222     | 142-0203-101   | 10-0800-0670  | 131-6403-001   | R112426        | 131-6701-201   | R125052        | 142-0693-001   | 351-875-0630N | 142-0303-406 |
| 73324-1212     | 142-0303-401   | 10-0800-2670  | 131-6404-001   | R112553        | 131-6701-411   | R125054        | 142-0694-031   | 351-875-1161H | 142-0308-401 |
| 73327-1212     | 142-0103-401   | 10-1080-00    | 131-6701-401   | R112554        | 131-6701-401   | R125055        | 142-0694-001   | 351-875-1161N | 142-0308-406 |
| 73333-5002     | 142-0701-631   | 10-1080-01    | 131-6701-411   | R112665        | 131-6701-301   | R125072        | 142-0403-011   | 351-900-0630H | 142-0303-011 |
| 73334-5002     | 142-0701-621   | 10-1450-00    | 131-6701-201   | R113053        | 133-3693-001   | R125072001     | 142-0403-016   | 351-900-0630N | 142-0303-016 |
| 73352-5002     | 142-0701-401   | 10-2800-0670  | 131-6403-101   | R113053020     | 133-3693-006   | R125072008     | 142-0404-011   | 351-900-0631H | 142-0304-011 |
| 73355-5002     | 142-0901-811   | 10-2800-2670  | 131-6404-101   | R113081        | 133-3402-001   | R125073        | 142-0403-001   | 351-900-0631N | 142-0304-016 |
| 73356-5002     | 142-0901-821   | 10-3450-0     | 131-6701-301   | R113081020     | 133-3402-006   | R125075        | 142-0407-011   | 351-900-1160H | 142-0307-011 |
| 73357-5002     | 142-0901-801   | 13-0200-0860  | 133-3693-001   | R113082        | 133-3403-001   | R125075001     | 142-0407-016   | 351-900-1160N | 142-0307-016 |
| 73359-5002     | 142-0901-401   | 13-0450-00    | 133-3801-201   | R113082020     | 133-3403-006   | R125076        | 142-0408-011   | 351-900-1161H | 142-0308-011 |
| 73446-1212     | 133-3403-001   | 13-0900-0400  | 133-3402-001   | R113083        | 133-3404-001   | R125076001     | 142-0408-016   | 351-900-1161N | 142-0308-016 |
| 73446-1412     | 133-3402-001   | 13-0900-0670  | 133-3403-001   | R113083020     | 133-3404-006   | R125091        | 142-0203-011   | 351-975-0630H | 142-0303-411 |
| 73447-1212     | 133-3403-101   | 13-0900-2670  | 133-3404-001   | R113153        | 133-3693-101   | R125172        | 142-0403-101   | 351-975-0630N | 142-0303-416 |
| 73447-1412     | 133-3402-101   | 13-1450-00    | 131-3701-201   | R113153020     | 133-3693-106   | R125175        | 142-0407-101   | 351-975-0631H | 142-0304-411 |
| 73448-1922     | 133-3693-101   | 13-1900-0400  | 133-3302-001   | R113181        | 133-3402-101   | R125222        | 142-0593-001   | 351-975-0631N | 142-0304-416 |
| 73452-1212     | 133-3303-001   | 13-1900-0670  | 133-3303-001   | R113181020     | 133-3402-106   | R125225        | 142-0594-001   | 351-975-1160H | 142-0307-411 |
| 73453-5002     | 133-3701-301   | 13-1900-2670  | 133-3304-001   | R113182        | 133-3403-101   | R125237001     | 142-0307-016   | 351-975-1160N | 142-0307-416 |
| 73454-5002     | 133-3701-231   | 13-2200-0860  | 133-3693-101   | R113182020     | 133-3403-106   | R125238        | 142-0308-011   | 351-975-1161H | 142-0308-411 |
| 73455-5002     | 133-3701-201   | 13-2800-0400  | 133-3402-101   | R113183        | 133-3404-101   | R125238001     | 142-0308-016   | 351-975-1161N | 142-0308-416 |
| 73457-5002     | 133-3701-401   | 13-2800-0670  | 133-3403-101   | R11318320      | 133-3404-106   | R125325        | 142-0594-401   | 352-060-0040H | 142-0801-301 |
| 73301-1812     | 142-0694-001   | 13-2800-2670  | 133-3404-101   | R113236        | 133-3302-001   | R125326        | 142-0593-401   | 352-060-0040N | 142-0801-306 |
| 73301-1912     | 142-0693-001   | 13-3450-00    | 131-3701-301   | R113236020     | 133-3302-006   | R125403        | 142-0701-631   | 352-700-0360H | 142-0202-101 |
| 73303-1812     | 142-0594-001   | 20-1265-1410G | 142-0594-401   | R113240        | 133-3303-001   | R125553        | 142-0701-401   | 352-700-0360N | 142-0202-106 |
| 73303-1912     | 142-0593-001   | 20-1464-00G   | 142-0701-411   | R113240020     | 133-3303-006   | R125560        | 142-0701-411   | 352-700-0630H | 142-0203-101 |
| 73304-1812     | 142-0594-401   | 20-1565-0400G | 142-0102-401   | R113241        | 133-3304-001   | R125680        | 142-0701-301   | 352-700-0630N | 142-0203-106 |
| 73304-1912     | 142-0593-401   | 20-1565-0670G | 142-0103-401   | R113241020     | 133-3304-006   | R125703        | 142-0901-811   | 352-700-1161H | 142-0207-101 |
| 73312-1212     | 142-0403-001   | 20-1865-0402G | 142-0302-401   | R113280280100  | 142-0003-231   | R125704        | 142-0901-821   | 352-700-1161N | 142-0207-106 |
| 73313-1122     | 142-0407-101   | 20-1865-672G  | 142-0303-401   | R113280280120  | 142-0003-236   | R125705        | 142-0901-801   | 352-900-0630H | 142-0403-101 |
| 73313-1222     | 142-0403-101   | 20-2200-0860G | 142-0693-101   | R113306        | 133-3302-401   | R125720        | 142-0901-401   | 352-900-0630N | 142-0403-106 |
| 73314-1112     | 142-0207-011   | 20-2200-1410G | 142-0694-101   | R113306020     | 133-3302-406   |                |                | 352-900-0631H | 142-0404-101 |
| 73314-1212     | 142-0203-011   | 20-2450-00G   | 142-0801-301   | R113310        | 133-3303-401   | <b>RETCONN</b> | <b>EMERSON</b> | 352-900-0631N | 142-0404-106 |
| 73315-1122     | 142-0207-101   | 20-2500-0400G | 142-0202-101   | R113310020     | 133-3303-406   | 350-060-0040H  | 142-0801-201   | 352-900-1160H | 142-0407-101 |
| 73315-1222     | 142-0203-101   | 20-2500-0670G | 142-0203-101   | R113311        | 133-3304-401   | 350-060-0040N  | 142-0801-206   | 352-900-1160N | 142-0407-106 |
| 73324-1212     | 142-0303-401   | 20-2500-1200G | 142-0207-101   | R113311020     | 133-3304-406   | 350-700-0360H  | 142-0202-011   | 352-900-1161H | 142-0408-101 |
| 73327-1212     | 142-0103-401   | 20-2800-0400G | 142-0402-101   | R113426        | 133-3701-201   | 350-700-0360N  | 142-0202-016   | 352-900-1161N | 142-0408-106 |
| 73333-5002     | 142-0701-631   | 20-2800-0670G | 142-0403-101   | R113426020     | 133-3701-206   | 350-700-0630H  | 142-0203-011   | 353-060-0040H | 142-0701-301 |
| 73334-5002     | 142-0701-621   | 20-2800-1200G | 142-0407-101   | R113427        | 133-3701-231   | 350-700-0630N  | 142-0203-016   | 353-060-0040N | 142-0701-306 |
| 73352-5002     | 142-0701-401   | 20-3450-00G   | 142-0701-301   | R113427020     | 133-3701-236   | 350-700-1161H  | 142-0207-011   | 450-060-0046H | 133-3801-201 |
| 73355-5002     | 142-0901-811   | 20-3450-65G   | 142-0701-501   | R113553        | 133-3701-401   | 350-700-1161N  | 142-0207-016   | 450-060-0046N | 133-3801-206 |
| 73356-5002     | 142-0901-821   | 2020-0000-00G | 142-0901-811   | R113553020     | 133-3701-406   | 350-800-0630H  | 142-0403-001   | 450-500-0850H | 133-3693-001 |
| 73357-5002     | 142-0901-801   | 2020-0100-00G | 142-0901-821   | R113665        | 133-3701-301   | 350-800-0630N  | 142-0403-006   | 450-500-0850N | 133-3693-006 |
| 73359-5002     | 142-0901-401   | 2020-1100-00G | 142-0901-801   | R113665020     | 133-3701-306   | 350-900-0630H  | 142-0403-011   | 450-900-0360H | 133-3402-001 |
| 73446-1212     | 133-3403-001   | 2020-1165-00G | 142-0901-401   | R113704        | 133-3901-801   | 350-900-0630N  | 142-0403-016   | 450-900-0360N | 133-3402-006 |
| 73446-1412     | 133-3402-001   | 32-2800-0400  | 135-3402-101   | R113704020     | 133-3901-806   | 350-900-0631H  | 142-0404-011   | 450-900-0630H | 133-3403-001 |
| 73447-1212     | 133-3403-101   | 32-2800-0670  | 135-3403-101   | R114-237       | 131-3302-001   | 350-900-0631N  | 142-0404-016   | 450-900-0630N | 133-3403-006 |
| 73447-1412     | 133-3402-101   | 32-2800-2670  | 135-3404-101   | R114053        | 131-3693-001   | 350-900-1160H  | 142-0407-011   | 450-900-0631H | 133-3404-001 |
| 73448-1922     | 133-3693-101   | 33-0900-0400  | 135-3402-001   | R114073134     | 131-3402-001   | 350-900-1160N  | 142-0407-016   | 450-900-0631N | 133-3404-006 |
| 73452-1212     | 133-3303-001   | 33-0900-0670  | 135-3403-001   | R114073134     | 131-3402-001   | 350-900-1161H  | 142-0408-011   | 451-060-0046H | 133-3701-201 |
| 73453-5002     | 133-3701-301   | 33-0900-2670  | 135-3404-001   | R114075134     | 131-3403-001   | 350-900-1161N  | 142-0408-016   | 451-060-0046N | 133-3701-206 |
| 73454-5002     | 133-3701-231   | 33-1442-00    | 135-3701-201   | R114075134     | 131-3403-001   | 351-060-0040H  | 142-1701-201   | 451-061-0040H | 133-3711-201 |
| 73455-5002     | 133-3701-201   | 33-1486-00    | 135-3711-801   | R114082        | 131-1403-001   | 351-060-0040N  | 142-1701-206   | 451-451-0000H | 133-3901-801 |
| 73457-5002     | 133-3701-401   | 33-2200-086   | 135-3693-101   | R114169        | 131-1693-101   | 351-065-0000H  | 142-0701-631   | 451-451-0000N | 133-3901-806 |
|                |                |               |                | R114183        | 131-1402-101   | 351-065-0000N  | 142-0701-636   | 451-900-0360H | 133-3302-001 |
|                |                |               |                | R114186        | 131-1402-101   | 351-066-0000H  | 142-0701-621   | 451-900-0360N | 133-3302-006 |
|                |                |               |                | R114222        | 131-3593-401   | 351-066-0000N  | 142-0701-626   | 451-900-0630H | 133-3303-001 |
|                |                |               |                | R114237        | 131-3302-001   | 351-066-0040H  | 142-1701-131   | 451-900-0630N | 133-3303-006 |
|                |                |               |                | R114238        | 131-3303-001   | 351-066-0040N  | 142-1701-136   | 451-900-0631H | 133-3304-001 |
|                |                |               |                | R114239        | 131-3303-001   | 351-075-0001H  | 142-0701-401   | 451-900-0631N | 133-3304-006 |
|                |                |               |                | R114426        | 131-1701-201   | 351-075-0001N  | 142-0701-406   | 451-980-0360H | 133-3302-401 |
|                |                |               |                | R114553        | 131-3701-411   | 351-075-0002H  | 142-0701-411   | 451-980-0360N | 133-3302-406 |
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| 09-0450-00     | 131-3801-201   | 3259          | 108-0754-001   |                |                |                |                |               |              |
| 09-0800-677    | 131-1403-001   | 3263          | 108-0750-001   |                |                |                |                |               |              |
| 09-1080-00     | 131-3701-401   | 4511          | 108-0750-002   |                |                |                |                |               |              |
| 09-1080-01     | 131-3701-411   | 1581-0        | 108-2303-621   |                |                |                |                |               |              |
| 09-1450-04     | 131-3701-201   | 1581-2        | 108-2302-621   |                |                |                |                |               |              |
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| 451-980-0630H .....              | 133-3303-401 | <b>SEAELECTRO ..... EMERSON</b> |              | 55-607-9173-31 .....           | 142-0694-001 | <b>SV MICROWAVE ..... EMERSON</b> |              | 2960-6268 .....   | 142-1711-021 |
| 451-980-0630N .....              | 133-3303-406 | 50-024-0000 .....               | 131-6403-001 | 55-608-2002-31 .....           | 142-0593-001 | 066-15-000 .....                  | 142-1000-033 | 2960-6274 .....   | 142-1711-031 |
| 451-980-0631H .....              | 133-3304-401 | 50-027-0000 .....               | 131-6303-401 | 55-608-2003-31 .....           | 142-0594-001 | 2902-6001 .....                   | 142-0694-031 | 2960-6613 .....   | 142-1711-531 |
| 451-980-0631N .....              | 133-3304-406 | 50-043-0000 .....               | 131-6701-401 | 55-608-9182-31 .....           | 142-0593-001 | 2902-6005 .....                   | 142-0694-001 | 2960-6701 .....   | 142-1711-521 |
| 452-500-0850H .....              | 133-3693-101 | 50-045-0000 .....               | 131-6701-411 | 55-608-9183-31 .....           | 142-0594-001 | 2902-6012 .....                   | 142-0694-001 | 2960-6703 .....   | 142-1711-511 |
| 452-500-0850N .....              | 133-3693-106 | 50-051-0000 .....               | 131-6701-201 | 55-610-3702-31 .....           | 142-0593-401 | 2902-6013 .....                   | 142-0694-021 | 2970-6003 .....   | 142-0701-401 |
| 452-900-0360H .....              | 133-3402-101 | 50-053-0000 .....               | 131-6701-301 | 55-610-3703-31 .....           | 142-0594-401 | 2903-6009 .....                   | 142-0403-001 | 2975-6001 .....   | 142-0701-411 |
| 452-900-0360N .....              | 133-3402-106 | 50-328-3188 .....               | 131-6403-101 | 55-610-9172-31 .....           | 142-0594-401 | 2906-6002 .....                   | 142-0693-001 | 2990-6005 .....   | 142-0901-401 |
| 452-900-0630H .....              | 133-3403-101 | 50-607-3141-31 .....            | 142-0207-011 | 55-610-9173-31 .....           | 142-0594-401 | 2911-6001 .....                   | 142-0407-101 | 2992-6001 .....   | 142-0901-801 |
| 452-900-0630N .....              | 133-3403-106 | 50-607-3188-31 .....            | 142-0203-011 | 55-624-3073-31 .....           | 142-0694-021 | 2913-6001 .....                   | 142-0403-101 | 2993-6001 .....   | 142-0901-811 |
| 452-900-0631H .....              | 133-3404-101 | 50-607-3196-31 .....            | 142-0202-011 | <b>SIEMENS ..... EMERSON</b>   |              | 2913-6030 .....                   | 142-0402-101 | 2997-6003 .....   | 142-0901-821 |
| 452-900-0631N .....              | 133-3404-106 | 50-610-3188-31 .....            | 142-0103-401 | V23608-A1027-B1 .....          | 135-3701-201 | 2921-6002 .....                   | 142-0593-001 | SF1503-6103 ..... | 145-0693-002 |
| 453-060-0046H .....              | 133-3701-301 | 50-610-3196-31 .....            | 142-0102-401 | V23608-A109-B1 .....           | 135-3402-001 | 2922-6007 .....                   | 142-0594-001 | SF1550-6400 ..... | 145-0701-612 |
| 453-060-0046N .....              | 133-3701-306 | 50-611-3141-31 .....            | 142-0207-101 | V23608-A109-B11 .....          | 135-3436-001 | 2942-6001 .....                   | 142-0594-401 | SF1552-6002 ..... | 145-0701-602 |
| <b>ROSENBERGER ..... EMERSON</b> |              | 50-611-3188-31 .....            | 142-0203-101 | V23608-A1227-B1 .....          | 135-3701-301 | 2942-6035 .....                   | 142-0303-401 | SF1590-6000 ..... | 145-0901-801 |
| 02-K-521-800S3 .....             | 145-0701-002 | 50-611-3196-31 .....            | 142-0202-101 | V23608-A209-B1 .....           | 135-3402-101 | 2943-6044 .....                   | 142-0302-401 | SF1593-6000 ..... | 145-0901-811 |
| 02-S-121-271S3 .....             | 142-0693-002 | 50-622-9142-31 .....            | 142-0408-011 | V23608-A209-B11 .....          | 135-3436-101 | 2946-6001 .....                   | 142-0593-401 | SF1597-6003 ..... | 145-0901-821 |
| 02-Z-101-000 .....               | 142-1000-033 | 50-622-9188-31 .....            | 142-0403-011 | <b>SPECIALTY ..... EMERSON</b> |              | 2947-6003 .....                   | 142-0701-531 | SF2947-6003 ..... | 142-0701-536 |
| 29 K 100-K00 D3 .....            | 133-3901-801 | 50-624-9188-31 .....            | 142-0403-001 | 39JR293-1 .....                | 142-1701-506 | 2950-6062 .....                   | 142-0701-621 | SF2950-6135 ..... | 142-1701-196 |
| 29 K 101-101 A3 .....            | 133-3302-006 | 50-627-9188-31 .....            | 142-0303-401 | 39JR293-2 .....                | 142-1701-516 | 2950-6081 .....                   | 142-0701-631 | SF2950-6220 ..... | 142-1701-016 |
| 29 K 101-101 D3 .....            | 133-3302-001 | 50-627-9196-31 .....            | 142-0302-401 | 39JR293-3 .....                | 142-1701-526 | 2950-6135 .....                   | 142-1701-191 | SF2950-6336 ..... | 142-1701-206 |
| 29 K 101-102 A3 .....            | 133-3303-006 | 50-628-9141-31 .....            | 142-0407-101 | 39JR293-4 .....                | 142-1701-536 | 2950-6220 .....                   | 142-1701-011 | SF2950-6619 ..... | 142-1701-506 |
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