# PRODUCT CATALOG

## RF & Microwave
## Connectors & Cable Assemblies

EMERSON™
Network Power

Johnson
Connectivity Solutions

**Emerson Network Power Connectivity Solutions** has a wide range of cable assemblies and connectors suited for RF, Microwave and Fiber Optic signal transmission. Connectivity Solutions is a vertically integrated supplier of custom, fixed length and semi-rigid cable assemblies from DC to 50 GHz. Our product lines deliver custom-engineered products and solutions to satisfy the most demanding and complex requirements.

## AIM-Cambridge
Connectivity Solutions

AIM-Cambridge has a universal line of products that offer cost effective, high quality solutions for connectivity. Our connectors are available in BNC, Type N, F Type, RCA, UHF, Mini-UHF, TNC, D-Sub and Modular Plugs for Data/Telecom applications. In addition, we stock a wide variety of cables for A/V, SATV, CATV, computer and LAN applications, as well as a complete line of termination tools and structured cabling products. AIM-Cambridge promises that its product will provide you with unmatched consistency, quality, reliability and ease of use.

## Johnson
Connectivity Solutions

Johnson designs and manufactures an industry leading line of RF coaxial connectors and adapters, which are available in both 50 and 75 ohm versions. Johnson connectors are designed to provide the highest quality data transmission for audio, video and data applications. The Johnson line of products can address frequency ranges from DC to 46GHz and all sizes from Ultra-miniature interfaces (UMC), Micro-miniature, (MCX, MMCX, SMP), Subminiature (SMA, SMB, SMK, kwiQMAte™), Medium connectors (Type N connectors) through to large connectors (DIN7/16). The breadth of products available within the Johnson range includes board and cable mount connectors as well as semi-rigid, conformable, and flexible RF coaxial cables.

## Midwest Microwave
Connectivity Solutions

Midwest Microwave manufacturers passive coaxial microwave components that are known for their precision performance and high quality that meets the precise requirements of the RF/Microwave industry. Our broad product portfolio includes: Attenuators, Precision Adapters, Terminations, DC Blocks, Power Dividers, Couplers, Equalizers, Phase Shifters, Connectors, Custom Cable Assemblies and Test Cables that are designed and manufactured for both military and commercial applications.

Midwest also offers a wide variety of Qualified Product List (QPL) approved products in the M3933, M39030 and M39012 series, as well as many DESC/DSCC approved models.

## Semflex
Connectivity Solutions

Semflex designs and manufactures low loss, flexible, microwave coaxial cable and custom cable assemblies for the military/aerospace, commercial OEM and test instrumentation markets. Semflex offers cables ranging from DC to 50 GHz, available with ultra low insertion loss, power ratings up to 21 KW, and available with all popular connectors.

## Stratos
Connectivity Solutions

Stratos optical connectivity products is globally recognized as highly reliable, cost-effective, and provides optical connectivity solutions that are virtually immune to dust, mud, oil, water, and other contaminants.

Our expanded beam connectivity products are ideal for harsh environment applications in the broadcast, industrial, petrochemical and military/aerospace markets where high reliability, low maintenance and quick serviceability are critical requirements. Our optical active products are used mainly in military, aerospace and industrial markets where high speed/high reliable performance is mission critical. The actives product line includes optical transceivers, optical media converters and custom devices tailored to your application.

## Trompeter
Connectivity Solutions

Trompeter is recognized as a global leader in delivering best in class RF connectivity products. The Trompeter line of patch jacks, RF connectors, cable assemblies, HDTV digital technology and DS3 connectivity solutions is unrivalled. Our mission is to provide products that continually deliver the highest quality signal integrity for the most demanding applications in Telecom, Central Office, Broadcast, Military Aerospace, and Instrumentation markets worldwide. Our extensive line of cost-effective products are rigorously designed and tested to provide the critically engineered solutions necessary to enhance the end-user's overall experience.

## Vitelec
Connectivity Solutions

Vitelec provides a comprehensive range of RF coaxial interconnect products and cable assemblies. The company has a long established reputation for offering quality and innovation with a wide range of both standard and custom designed products for the electronic and communication industries.



# Table of Contents



## MMCX Connectors

50 Ohm Connectors
Specifications ..... 4
Semi-Rigid and Flexible Cable ..... 6
PC Mount ..... 8
Termination ..... 9

Non-Magnetic Connectors - 50 Ohm
Specifications ..... 11
Semi-Rigid and Flexible Cable ..... 12
PC Mount ..... 12

Other Information
Assembly Tools ..... 185
Cable Information ..... 192
Assembly Instructions ..... 193
Mounting Hole Layouts ..... 194
Index ..... 274
Competitor Cross Reference ..... 280

*While every precaution has been taken to ensure accuracy and completeness herein, Emerson Network Power Connectivity Solutions assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Specifications subject to change without notice.*

3 MMCX Connectors
13 MCX Connectors
39 SMK Connectors
45 SMA Connectors
103 SMB Connectors
131 SMC Connectors
137 SMP Connectors
145 Type N Connectors
153 Shielded Cable Terminations
157 Between-Series Adapters
161 Fixed Length Cable Assemblies
173 Ultra Miniature Connectors (UMC)
181 kwiQMAte ™ Connectors
185 Tools
193 Assembly Instructions
257 Electronic Hardware
274 Index

# Specifications

## Electrical Specifications

**Impedance:** 50 Ohms
**Frequency Range:**
Connectors ..... 0-6 GHz
Dummy loads ..... 0-1 GHz
**VSWR (max):** (f = GHz)

| | Straight Cable Connectors | Right Angle Cable Connectors |
|---|---|---|
| .047 OD | 1.20 | 1.14 + .07f |
| RG-178, RG-316, RG-316 DS | 1.20 | 1.25 |
| RG-405 | 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 max)

| | Initial | After 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 min, tested at 2.5 GHz)
Flexible cable ..... -60 dB
RG-405 ..... -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 Specifications

**Engagement Design:** Series MMCX
**Engagement/Disengagement Force:** 8 lbs max axial engagement
1.4 lbs min axial disengagement
**Contact Retention:** 2.0 lbs min axial force

| | Axial Force* (lbs) | Torque (oz-in) |
|---|---|---|
| **Cable Retention:** | | |
| .047 flexible | 3.5 | N/A |
| RG-178 | 7.0 | N/A |
| RG-316 | 20.0 | N/A |
| RG-316 DS | 25.0 | N/A |
| RG-405 | 30.0 | 16 |

*Or cable breaking strength whichever is less.
**Durability:** ..... 500 cycles min





## Environmental Specifications

(Meets or Exceeds the Applicable Paragraph of MIL-PRF-39012)

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

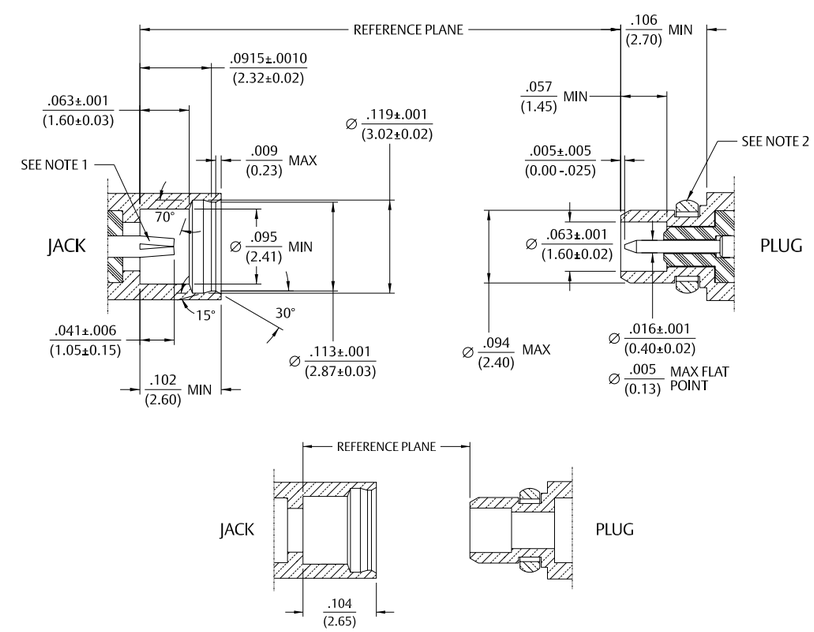
## Material Specifications

**Bodies:** Brass per ASTM B16, gold plated** per MIL-DTL-45204 .00001" min
**Contacts:** Beryllium copper per ASTM B196, gold plated per MIL-DTL-45204 .00003" min
**Interface Spring:** Beryllium copper per ASTM B196, gold plated per MIL-DTL-45204 .00003" min
**Insulators:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457
**Crimp Sleeves:** Copper per ASTM B301 or brass per ASTM B16, gold plated per MIL-DTL-45204 .00001" min
**Mounting Hardware:** Brass (nuts) per ASTM B16 or phosphor bronze (lockwashers) per ASTM B139, gold plated per MIL-DTL-45204 .00001" min

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

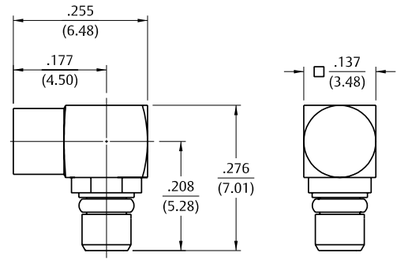
## Mating Engagement for MMCX Series

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.




**For more information, please contact customer service at (507) 833-8822 or (800) 247-8256 • www.EmersonConnectivity.com**
*Illustrations are shown in inches (millimeters).*

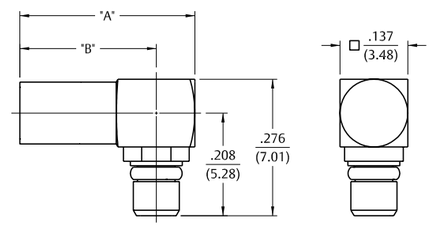
## Right Angle Solder Type Plug – Captivated Contact




| Cable Type | Gold Plated |
|---|---|
| RG-405 | 135-3693-101 |

Assembly instructions page 198.

## Right Angle Crimp Type Plug – Captivated Contact




| Cable Type | Gold Plated | "A" | "B" | Termination |
|---|---|---|---|---|
| .047" OD Flexible | 135-3436-101 | .354 (8.99) | .276 (7.01) | Crimp Insert |
| RG-178, 196 | 135-3402-101 | .354 (8.99) | .276 (7.01) | Crimp Insert |
| RG-178, 196 | 135-3402-111 | .412 (10.46) | .334 (8.48) | Crimp Sleeve |
| RG-316, 188, 161, 174, 179, 187 | 135-3403-101 | .412 (10.46) | .334 (8.48) | Crimp Sleeve |
| RG-316 DS, 188 DS | 135-3404-101 | .412 (10.46) | .334 (8.48) | Crimp Sleeve |

Assembly instructions page 200 and 201.



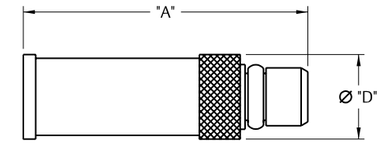








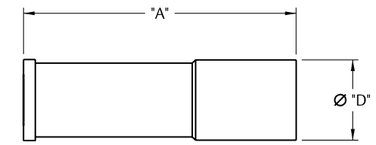
## Straight Crimp Type Plug – Solder or Crimp Captivated Contact




| Cable Type | Gold Plated | "A" | "D" | Termination |
|---|---|---|---|---|
| .047" OD Flexible | 135-3436-001 | .462 (11.73) | .137 (3.48) | Crimp Insert |
| RG-178, 196 | 135-3402-001 | .462 (11.73) | .137 (3.48) | Crimp Insert |
| RG-316, 188, 161, 174 | 135-3403-001 | .509 (12.93) | .173 (4.39) | Crimp Sleeve |
| RG-316 DS, 188 DS | 135-3404-001 | .509 (12.93) | .173 (4.39) | Crimp Sleeve |
| RG-179, 187 | 135-3433-001 | .509 (12.93) | .173 (4.39) | Crimp Sleeve |

Assembly instructions page 202 and 203.

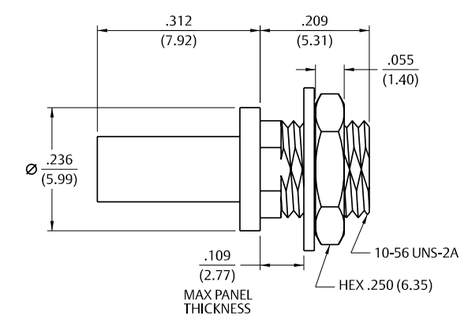
## Straight Crimp Type Jack – Solder or Crimp Captivated Contact




| Cable Type | Part No. | "A" | "D" | Termination |
|---|---|---|---|---|
| .047" OD Flexible | 135-3336-001 | .462 (11.73) | .137 (3.48) | Crimp Insert |
| RG-178, 196 | 135-3302-001 | .462 (11.73) | .137 (3.48) | Crimp Insert |
| RG-316, 188, 161, 174 | 135-3303-001 | .545 (13.84) | .173 (4.39) | Crimp Sleeve |
| RG-316 DS, 188 DS | 135-3304-001 | .545 (13.84) | .173 (4.39) | Crimp Sleeve |
| RG-179, 187 | 135-3333-001 | .545 (13.84)) | .173 (4.39) | Crimp Sleeve |

Assembly instructions page 204 and 205.

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




| Cable Type | Gold Plated | Termination |
|---|---|---|
| .047" OD Flexible | 135-3336-401 | Crimp Insert |
| RG-178, 196 | 135-3302-401 | Crimp Insert |

Assembly instructions page 205.
Mounting Hole layout figure 5 page 194.



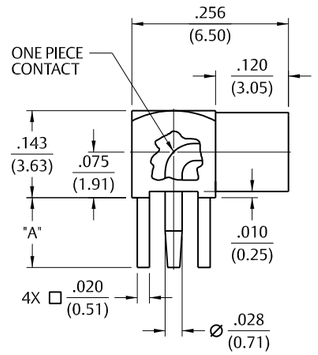
*Illustrations are shown in inches (millimeters).*

# PC Mount

## Right Angle Jack Receptacle

| Gold Plated | "A" |
|---|---|
| 135-3701-301 | .115 (2.92) |
| 135-3701-311 | .068 (1.73) |

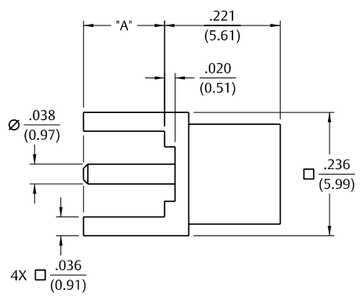
Mounting Hole layout figure 12 page 194.




## Straight Jack Receptacle

| Gold Plated | "A" |
|---|---|
| 135-3701-201 | .115 (2.92) |
| 135-3701-211 | .068 (1.73) |

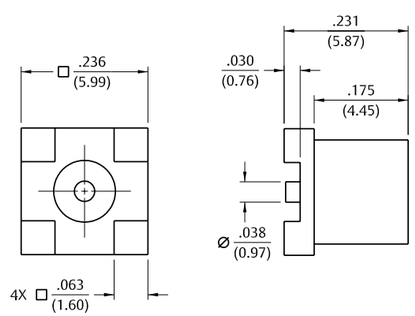
Mounting Hole layout figure 12 page 194.




## Straight Surface Mount Jack Receptacle

| Gold Plated | Packaging |
|---|---|
| 135-3711-201 | Stock |
| 135-3711-202 | Tape and Reel, 1500 pcs/reel |

Recommended Land Pattern figure 15 page 195.
Tape and Reel .315 (8.0) component pitch .630 (16.0) wide.



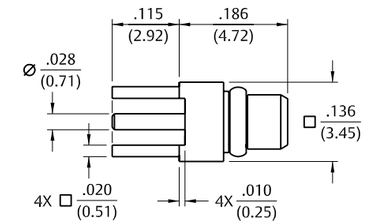





## Straight Plug Receptacle

| Gold Plated |
|---|
| 135-3801-201 |

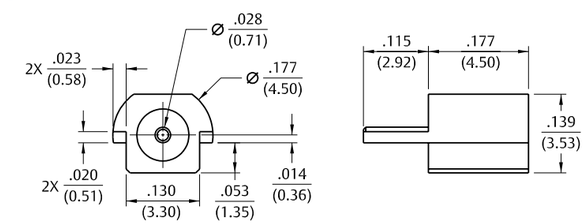
Mounting Hole layout figure 12 page 194.




## End Launch Surface Mount Jack Receptacle

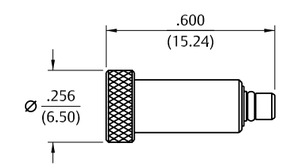
| Gold Plated | Packaging |
|---|---|
| 135-3711-801 | Stock |
| 135-3711-802 | Tape and Reel, 1000 pcs/reel |

Recommended Land Pattern and Board Notch figure 14 page 195.
Tape and Reel .316 (8.0) component pitch .630 (16.0) wide.




## Plug Dummy Load

| Gold Plated | Resistance |
|---|---|
| 135-3801-811 | 50 Ohms |



# Non-Magnetic RF Connectors

## Non-Magnetic Connectors

Our line of non-magnetic connectors is one of many successful examples of how Johnson® commercializes the high-end, custom application into the cost-sensitive solution that maintains the original Mil-Spec performance. As MRI and other magnetically sensitive technologies grow and evolve so to must the Johnson connector portfolio. Stronger magnetic fields, demands for better signal-to-noise ratios, custom-sized and modular flex coils for increasingly smaller machines: the RF connectors within the equipment have to bear an increasingly tricky role of delivering higher through-put while creating less interference.

With SMA, SMB, MCX, MMCX and soon SMP interfaces made available in a variety of PC and Cable-Mount designs, we can deliver the imaging performance your customers count on.

- 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 (typically DC-6 GHz).
- The copper alloys of the body, springs and contact parts are designed to provide uniformity and maintain low permeability and magnetic susceptibility.
- Gold finishes are altered to eliminate magnetic barrier layers and provide excellent corrosion resistance and wear characteristics.
- Plugs maintain their electrical and mechanical performances in the environments of high-vibration common with MRI machines.
- A robust connector assembly design allows for a high count of mating cycles.
- As a helpful visual cue the connectors are marked “NM”.

**Emerson Connectivity Solutions Non-Magnetic design capabilities expand beyond the parts and interfaces listed in this catalog. Please contact technical support to discuss the options for manufacturing your customized interconnects.**





## Electrical Specifications

**Impedance:** 50 Ohms
**Frequency Range:** ..... 0-6 GHz

| **VSWR (max):** (max) (f = GHz) | Straight Cabled Connectors | Right Angle Cabled Connectors |
|---|---|---|
| .047 dia | 1.20 | 1.14 + .07f |
| RG-178, RG-316, RG-316 DS | 1.20 | 1.25 |

**Working Voltage:**
Connectors ..... 170 VRMS at sea level†
**Dielectric Withstanding Voltage:**
Connectors ..... 500 VRMS at sea level†
**Insulation Resistance:** 1000 megohms min

| **Contact Resistance:** (milliohms max) | Initial | After 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†
**Insertion Loss:** (dB max, tested at 1 GHz)
Straight cabled connectors ..... 0.1
Right angle cabled connectors ..... 0.2
Uncabled receptacles ..... N/A
**RF Leakage:** (dB min, tested at 2.5 GHz)
Flexible cable ..... -60 dB
**RF High Potential Withstanding Voltage:** 400 VRMS min (tested at 4 and 7 MHz)†

## Mechanical Specifications

**Engagement Design:** Series MMCX
**Engagement/Disengagement Force:** 8 lbs max axial engagement
1.4 lbs min axial disengagement
**Contact Retention:** 2.0 lbs min axial force

| **Cable Retention:** | Axial Force* (lbs) | Torque (oz-in) |
|---|---|---|
| .047 flexible | 3.5 | N/A |
| RG-178 | 7.0 | N/A |
| RG-316 | 20.0 | N/A |
| RG-316 DS | 25.0 | N/A |
| RG-405 | 30.0 | 16 |

*Or cable breaking strength whichever is less.
**Durability:** ..... 500 cycles min

## Environmental Specifications

(Meets or Exceeds the Applicable Paragraph of MIL-PRF-39012)

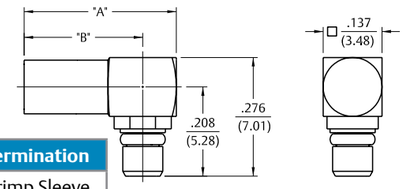
**Temperature Range:** ..... - 65°C to + 165°C
**Thermal Shock:** MIL-STD-202, Method 107, Condition C (except -55° C to +155° C)
**Corrosion:** MIL-STD-202, Method 101, Condition B
**Shock:** MIL-STD-202, Method 213, Condition B
**Vibration:** MIL-STD-202, Method 204, Condition D
**Moisture Resistance:** MIL-STD-202, Method 106

## Material Specifications

(See non-magnetic materials page 10)

# Flexible Cable and PC Mount

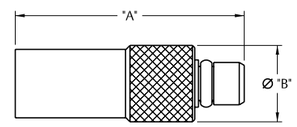
## Right Angle Crimp Type Plug – Captivated Contact




| Cable Type | Gold Plated | "A" | "B" | Termination |
|---|---|---|---|---|
| RG-316, 188, 187, 179, 161, 174 | 135-9403-101 | .412 (10.46) | .334 (8.48) | Crimp Sleeve |
| RG-178, 196 | 135-9402-111 | .412 (10.46) | .334 (8.48) | Crimp Sleeve |
| .047 OD Flexible | 135-9436-101 | .354 (8.99) | .276 (6.98) | Crimp Insert |

Assembly instructions page 199 and 200.

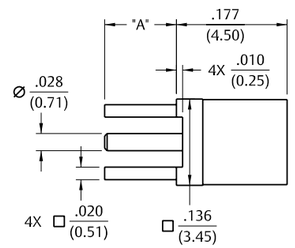
## Straight Crimp Type Plug – Solder or Crimp Contact – Captivated Contact




| Cable Type | Gold Plated | "A" | "B" | Termination |
|---|---|---|---|---|
| RG-316, 188, 161, 174 | 135-9403-001 | .509 (12.93) | .173 (4.39) | Crimp Sleeve |
| RG-178, 196 | 135-9402-001 | .462 (11.73) | .137 (3.48) | Crimp Insert |
| .047 OD Flexible | 135-9436-001 | .462 (11.73) | .137 (7.01) | Crimp Insert |

Assembly instructions page 204 and 205.

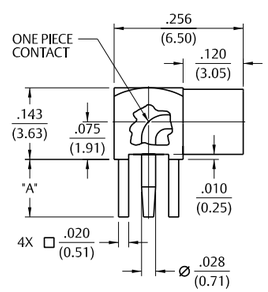
## Straight Jack Receptacle




| Gold Plated | "A" |
|---|---|
| 135-9701-201 | .115 (2.92) |
| 135-9701-211 | .068 (1.73) |

Mounting hole layout figure 12 on page 195.

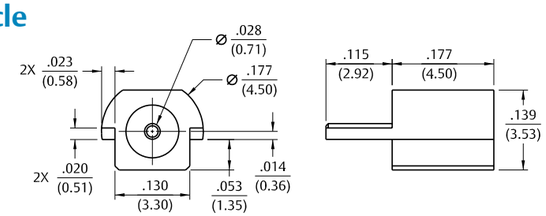
## Right Angle Jack Receptacle




| Gold Plated | "A" |
|---|---|
| 135-9701-301 | .155 (3.94) |
| 135-9701-311 | .068 (1.73) |

Mounting hole layout figure 12 on page 195.

## End Launch Surface Mount Jack Receptacle




| Gold Plated | Packaging |
|---|---|
| 135-9711-801 | Stock |
| 135-9711-802 | Tape and Reel 1000 pcs/reel |

Recommended land pattern figure 14 on page 195.
Tape and Reel .316 (8.0) component pitch .630 (16.0) wide.



# Table of Contents





## MCX Connectors

50 Ohm Connectors
Specifications....14
Semi-Rigid & Flexible Cable....16
PC Mount....18
Bulkhead & Panel Mount....22
Adapters....23
Terminations....23

Reverse Polarity 50 Ohm Connectors
Specifications....24
Semi-Rigid & Flexible Cable....26
PC Mount....27

75 Ohm Connectors
Specifications....28
Semi-Rigid & Flexible Cable....31
PC Mount....32
Adapters....34
Terminiations....35

50 Ohm Non-Magnetic Connectors
Specifications....36
Semi-Rigid & Flexible Cable....37
PC Mount....38

Other Information
Assembly Tools....185
Capabilities....190
Cable Information....192
Assembly Instruction....193
Mounting Hole Layouts....194
Numerical Index....274
Competitor Cross Reference....280

*While every precaution has been taken to ensure accuracy and completeness herein, Emerson Network Power Connectivity Solutions assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Specifications subject to change without notice.*

3 MMCX Connectors
13 MCX Connectors
39 SMK Connectors
45 SMA Connectors
103 SMB Connectors
131 SMC Connectors
137 SMP Connectors
145 Type N Connectors
153 Shielded Cable Terminations
157 Between-Series Adapters
161 Fixed Length Cable Assemblies
173 Ultra Miniature Connectors (UMC)
181 kwiQMAte ™ Connectors
185 Tools
193 Assembly Instructions
257 Electronic Hardware
274 Index

# Specifications

## Electrical Specifications

**Impedance:** 50 Ohms
**Frequency Range:**
Connectors ..... 0-6 GHz
Dummy loads ..... 0-1 GHz

| **VSWR:** (max) (f = GHz) | Straight Cabled Connectors | Right Angle Cabled Connectors |
|---|---|---|
| RG-178 | 1.17 + .04f | 1.07 + .06f |
| RG-316 and RG-405 | 1.13 + .04f | 1.07 + .04f |
| Adapters | 1.13 + .04f | |
| Uncabled receptacles, Dummy loads | N/A | |

| **Working Voltage:** (VRMS max)† | Sea Level | 70K Feet |
|---|---|---|
| RG-178 | 250 | 65 |
| RG-316, RG-405, uncabled receptacles, adapters | 335 | 85 |
| Dummy loads | | N/A |

**Dielectric Withstanding Voltage:** (VRMS min at sea level)†
RG-178 ..... 750
RG-316, RG-405, uncabled receptacles, adapters ..... 1000
Dummy loads ..... N/A

**Insulation Resistance:** 1,000 megohms min

| **Contact Resistance:** (milliohms max) | Initial | After Environmental |
|---|---|---|
| Center contact (straight cabled connectors and uncabled receptacles) | 5.0 | 8.0 |
| Center contact (right angle cabled connectors, adapters) | 5.0 | 15.0 |
| Outer contact (all connectors) | 1.0 | 1.5 |
| Braid to body (gold plated connectors) | 1.0 | N/A |
| Braid to body (nickel plated connectors) | 2.5 | N/A |

**Corona Level:** (Volts min at 70,000 feet)
RG-178 ..... 190
RG-316,RG-405 uncabled receptacles, adapters ..... 250
Dummy loads ..... N/A

**Insertion Loss:** (dB max tested at 1 GHz)
Straight cabled connectors, adapters ..... 0.1 dB
Right angle cabled connectors ..... 0.2 dB
Uncabled receptacles, dummy loads ..... N/A

**RF Leakage:** (dB min, tested at 2.5 GHz)
Cable connectors ..... -55 dB
Uncabled receptacles and adapters, dummy load ..... N/A

**RF High Potential Withstanding Voltage:** (VRMS min, tested at 4 and 7 MHz)†
RG-178 ..... 500
RG-316 and adapters ..... 700
RG-405 ..... 670
Uncabled receptacles ..... 600
Dummy loads ..... N/A

**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 Specifications

**Engagement Design:** Compatible with CECC 22220, Series MCX
**Engagement Force:** 5.6 lbs max axial force
**Disengagement Force:** 8 lbs max axial force, 1 lb min
**Contact Retention:** 2.3lbs min axial force (captivated contacts) 1 oz-in min torque (uncabled receptacles)

| | Axial Force* (lbs) | Torque (oz-in) |
|---|---|---|
| RG-178 | 10.0 | N/A |
| RG-316 | 20.0 | N/A |
| RG-316 DS | 25.0 | N/A |
| RG-405 | 30.0 | 16 |

*Or cable breaking strength whichever is less.

**Durability:** ..... 500 cycles min





## Environmental Specifications

(Meets or Exceeds the Applicable Paragraph of MIL-PRF-39012)

**Temperature Range:**
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)

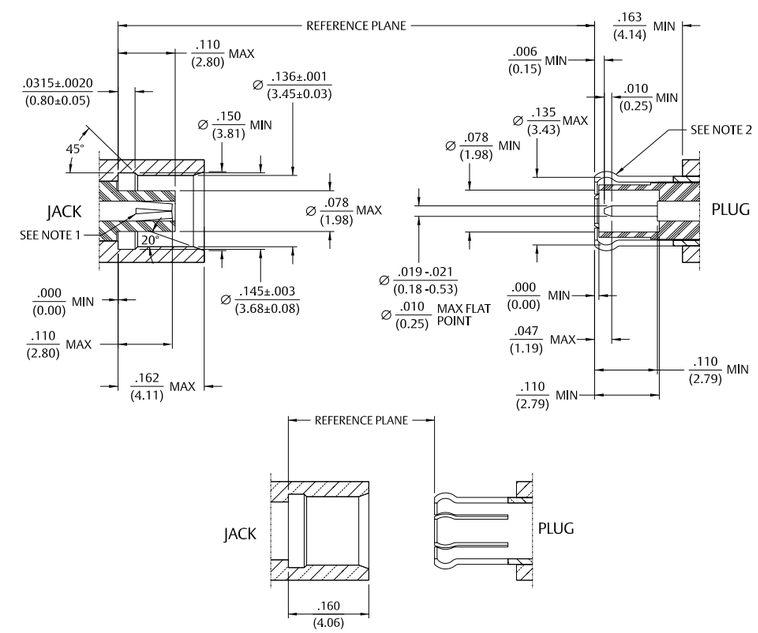
## Material Specifications

**Bodies:** Brass per ASTM B16, gold plated** per MIL-DTL-45204 .00001" min or nickel plated per AMS-QQ-N-290
**Contacts:** Male - brass per ASTM B16 , gold plated per MIL-DTL-45204 .00003" min
Female - beryllium copper per ASTM B196, gold plated per MIL-DTL-45204 .00003" min
**Insulators:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457
**Expansion Caps:** Brass per ASTM B16 , gold plated per MIL-DTL-45204 .00001" min or nickel plated per AMS-QQ-N-290
**Crimp Sleeves:** Copper per ASTM B301, gold plated per MIL-DTL-45204 .00001" min or nickel plated per AMS-QQ-N-290
**Mounting Hardware:** Brass (nuts) per ASTM B16 or phosphor bronze (lockwashers) per ASTM B139, gold plated per MIL-DTL-45204 .00001" min or nickel plated per AMS-QQ-N-290

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

## Mating Engagement for MCX Series Compatible with CECC 22220

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.

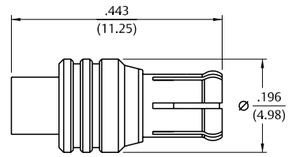



**For more information, please contact customer service at (507) 833-8822 or (800) 247-8256 • www.EmersonConnectivity.com**

*Illustrations are shown in inches (millimeters).*

# Semi-Rigid Cable & Flexible Cable

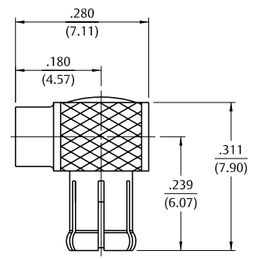
## Straight Solder Type Plug




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-405 | 133-3693-001 | 133-3693-006 |

Assembly instructions page 206.

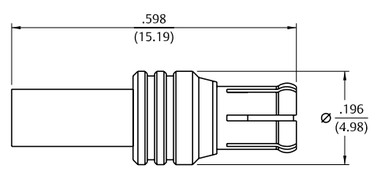
## Right Angle Solder Type Plug – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-405 | 133-3693-101 | 133-3693-106 |

Assembly instructions page 206.

## Straight Crimp Type Plug – Solder or Crimp Contact



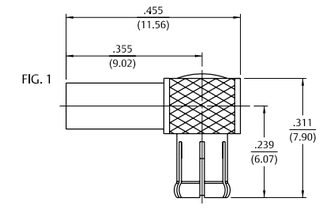

| Cable Type | Gold Plated | Nickel Plated | Captivated Contact |
|---|---|---|---|
| RG-178, 196 | 133-3402-001 | 133-3402-006 | No |
| RG-316, 188, 161, 174 | 133-3403-001 | 133-3403-006 | Yes |
| RG-316 DS, 188DS | 133-3404-001 | 133-3404-006 | Yes |
| RG-179, 187 | 133-3433-001 | 133-3433-006 | Yes |

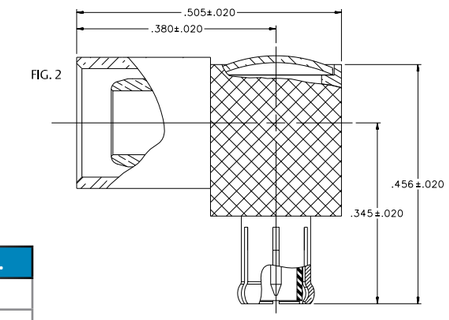
Assembly instructions page 207.





## Right Angle Crimp Type Plug – Captivated Contact

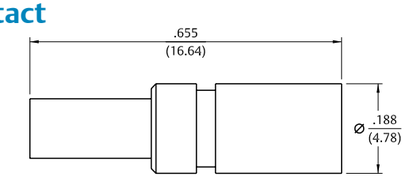



| Cable Type | Gold Plated | Nickel Plated | Fig. |
|---|---|---|---|
| RG-178, 196 | 133-3402-101 | 133-3402-106 | 1 |
| RG-316, 188, 161, 174 | 133-3403-101 | 133-3403-106 | 1 |
| RG-316 DS, 188 DS | 133-3404-101 | 133-3404-106 | 1 |
| RG-58, 303, 141 | 133-3407-101 | 133-3407-106 | 2 |
| RG-179, 187 | 133-3433-101 | 133-3433-106 | 1 |

Assembly instructions page 210.

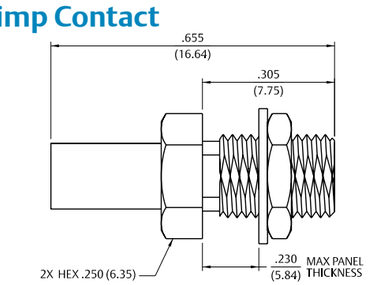
## Straight Crimp Type Jack – Solder or Crimp Contact




| Cable Type | Gold Plated | Nickel Plated | Captivated Contact |
|---|---|---|---|
| RG-178, 196 | 133-3302-001 | 133-3302-006 | No |
| RG-316, 188, 161, 174, 179, 187 | 133-3303-001 | 133-3303-006 | Yes |
| RG-316 DS, 188 DS | 133-3304-001 | 133-3304-006 | Yes |

Assembly instructions page 207.

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




| Cable Type | Gold Plated | Nickel Plated | Captivated Contact |
|---|---|---|---|
| RG-178, 196 | 133-3302-401 | 133-3302-406 | No |
| RG-316, 188, 161, 174, 179, 187 | 133-3303-401 | 133-3303-406 | Yes |
| RG-316 DS, 188 DS | 133-3304-401 | 133-3304-406 | Yes |

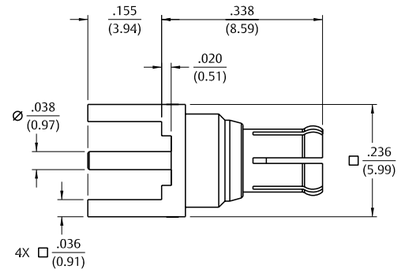
Assembly instructions page 207. Mounting hole layout figure 5 page 194.

# PC Mount

## Straight Plug Receptacle

| Gold Plated | Nickel Plated |
|---|---|
| 133-3801-201 | 133-3801-206 |

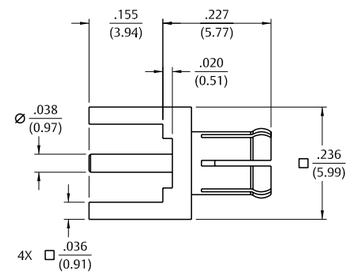
Mounting hole layout figure 4 page 194.




## Straight Plug Receptacle – Low Profile

| Gold Plated | Nickel Plated |
|---|---|
| 133-3801-211 | 133-3801-216 |

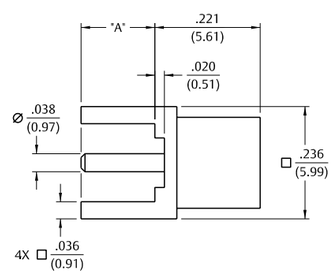
Mounting hole layout figure 4 page 194.




## Straight Jack Receptacle

| Gold Plated | Nickel Plated | "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 194.
Four and six connector ganged receptacles available. See page 190.



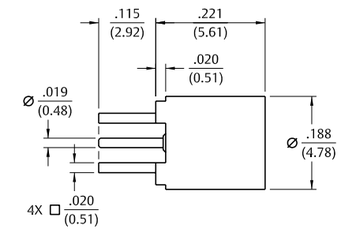





## Straight Jack Receptacle – .100" Layout

| Gold Plated | Nickel Plated |
|---|---|
| 133-3701-231 | 133-3701-236 |

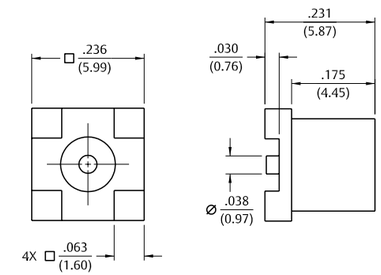
Mounting hole layout figure 12 page 194.




## Straight Surface Mount Jack Receptacle

| Gold Plated | Packaging |
|---|---|
| 133-3711-201 | Stock |
| 133-3711-202 | Tape and Reel 750 pcs/reel |

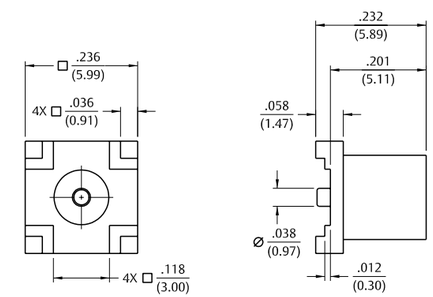
Recommended land pattern figure 13 on page 195.
Tape and Reel .315 (8.0) component pitch .630 (16.0) wide.




## Straight Surface Mount Jack Receptacle

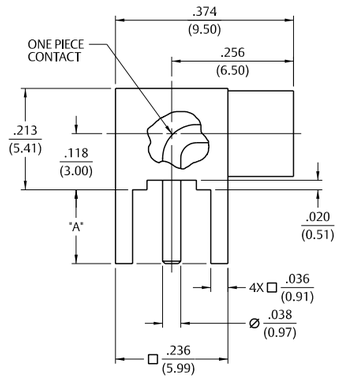
| Gold Plated | Packaging |
|---|---|
| 133-3711-211 | Stock |
| 133-3711-212 | Tape and Reel 750 pcs/reel |

Recommended land pattern figure 13 on page 195.
Tape and Reel .472 (12.0) component pitch .630 (16.0) wide.



# PC Mount

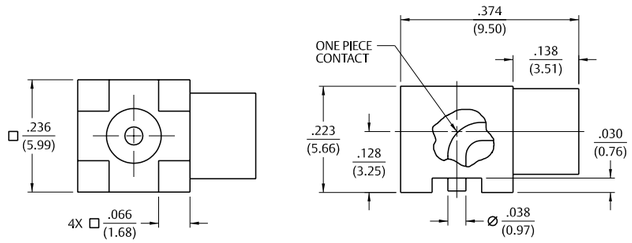
## Right Angle Jack Receptacle




| 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 194.

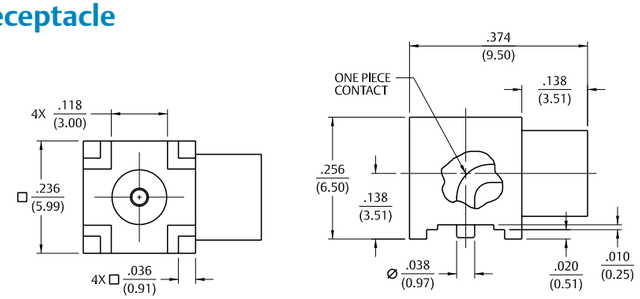
## Right Angle Surface Mount Jack Receptacle




| Gold Plated | Packaging |
|---|---|
| 133-3711-301 | Stock |
| 133-3711-302 | Tape and Reel 750 pcs/reel |

Recommended land pattern figure 13 on page 195.
Tape and Reel .472 (12.0) component pitch .945 (24.0) wide.

## Right Angle Surface Mount Jack Receptacle



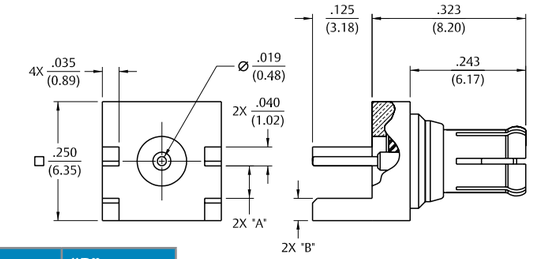

| Gold Plated | Packaging |
|---|---|
| 133-3711-311 | Stock |
| 133-3711-312 | Tape and Reel 750 pcs/reel |

Recommended land pattern figure 4 on page 194.
Tape and Reel .472 (12.0) component pitch .945 (24.0) wide.



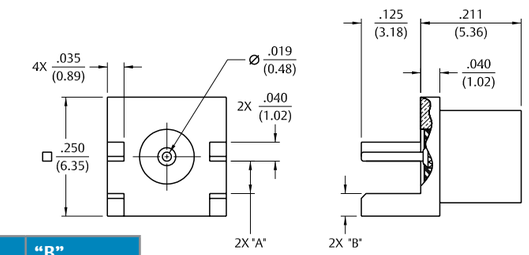


## End Launch Plug Receptacle



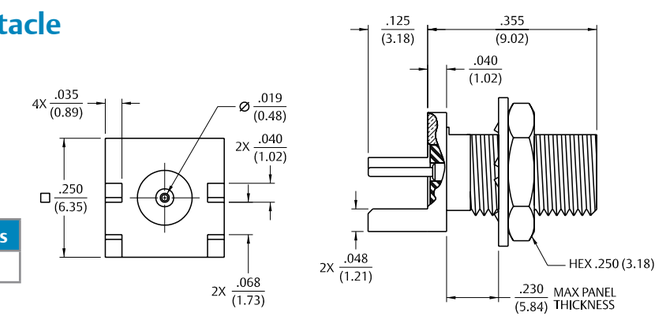

| Gold Plated | Nickel Plated | Board Thickness | "A" | "B" |
|---|---|---|---|---|
| 133-3801-841 | 133-3801-846 | .062 (1.57) | .068 (1.73) | .048 (1.22) |
| 133-3801-851 | 133-3801-856 | .042 (1.07) | .048 (1.22) | .068 (1.73) |

## End Launch Jack Receptacle




| 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) |

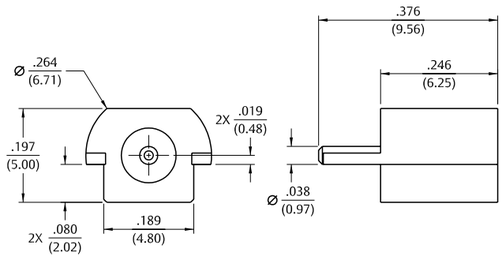
## End Launch Bulkhead Jack Receptacle




| Gold Plated | Nickel Plated | Board Thickness |
|---|---|---|
| 133-3701-821 | 133-3701-826 | .062 (1.57) |

# PC Mount, Bulkhead Mount & Panel Mount

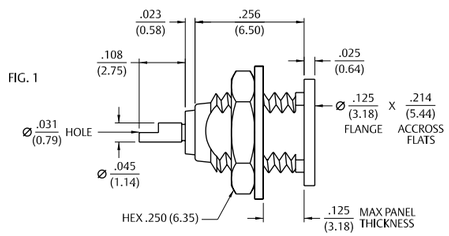
## End Launch Surface Mount Jack Receptacle




| Gold Plated | Packaging |
|---|---|
| 133-3711-801 | Stock |
| 133-3711-802 | Tape and Reel 1000 pcs/reel |

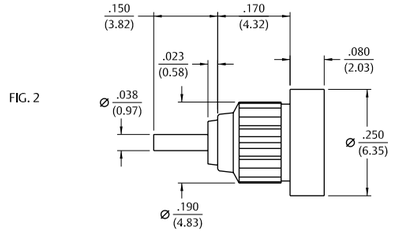
Recommended land pattern figure 21 page 195.
Tape and Reel .472 (12.0) component pitch .945 (24.0) wide

## Front Mount Bulkhead Jack Receptacle

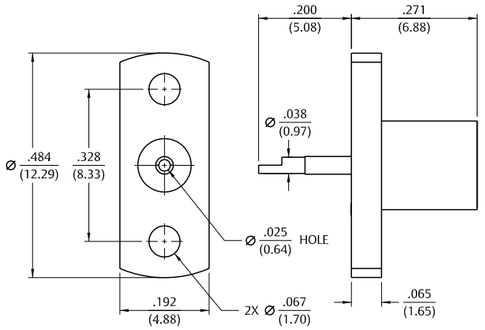



| Gold Plated | Nickel Plated | Mounting Style | Fig |
|---|---|---|---|
| 133-3701-401 | 133-3701-406 | D Flat Threaded | 1 |
| 133-3701-411 | 133-3701-416 | Press Fit Knurl | 2 |

Mounting hole layout for 133-3701-401 figure 5 page 194.
Mounting hole layout for 133-3701-406 figure 5 page 194.
Mounting hole layout for 133-3701-411 figure 10 page 194.
Mounting hole layout for 133-3701-416 figure 10 page 194.




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

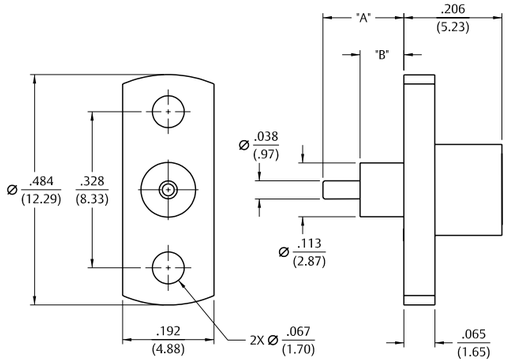



| Gold Plated | Nickel Plated |
|---|---|
| 133-3701-601 | 133-3701-606 |



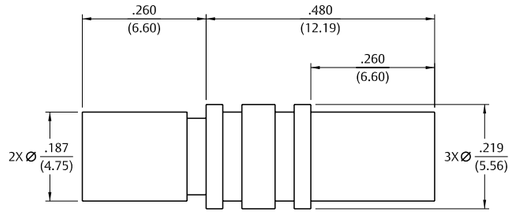


## 2-Hole Flange Mount Jack Receptacle – Extended Dielectric



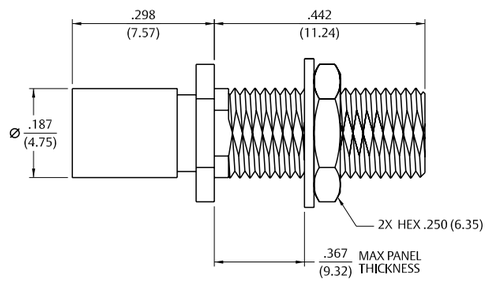

| Gold Plated | Nickel Plated | "A" | "B" |
|---|---|---|---|
| 133-3701-611 | 133-3701-616 | .170 (4.32) | .092 (2.34) |
| 133-3701-621 | 133-3701-626 | .300 (7.62) | .200 (5.08) |

## Jack to Jack Adapter




| Gold Plated | Nickel Plated |
|---|---|
| 133-3901-801 | 133-3901-806 |

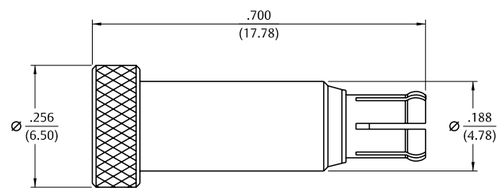
## Jack to Bulkhead Jack Adapter




| Gold Plated | Nickel Plated |
|---|---|
| 133-3901-401 | 133-3901-406 |

Mounting hole layout figure 5 page 194.

## 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 |

# Specifications

## Electrical Specifications

**Impedance:** 50 Ohms
**Frequency Range:** ..... 0-6 GHz

| **VSWR** (max): (f = GHz) | Straight Cabled Connectors | Right Angle Cabled Connectors |
|---|---|---|
| RG-178 | 1.17 + .04f | 1.07 + .06f |
| RG-316 | 1.13 + .04f | 1.07 + .04f |
| Uncabled receptacles | | N/A |

| **Working Voltage:** (VRMS max)† | Sea Level | 70K Feet |
|---|---|---|
| RG-178 | 250 | 65 |
| RG-316 | 335 | 85 |

**Dielectric Withstanding Voltage:** (VRMS min at sea level)†
RG-178 ..... 750
RG-316, uncabled receptacles ..... 1000

**Corona Level:** (Volts min at 70,000 feet)
RG-178 ..... 190
RG-316, uncabled receptacles ..... 250

**Insertion Loss:** (dB max tested at 1 GHz)
Straight cabled connectors ..... 0.1 dB
Right angle cabled connectors ..... 0.2 dB
Uncabled receptacles ..... N/A

**Insulation Resistance:** 1000 megohms min

| **Contact Resistance:** (milliohms max) | Initial | After 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 (gold plated connectors) | 1.0 | N/A |
| Braid to body (nickel plated connectors) | 2.5 | N/A |

**RF Leakage:** (dB min, tested at 2.5 GHz)
Cable connectors ..... -55 dB
Uncabled receptacles ..... N/A

**RF High Potential Withstanding Voltage:** (VRMS min tested at 4 and 7 MHz) †
RG-178 ..... 500
RG-316 ..... 700
Uncabled receptacles ..... 600

*† Avoid user injury due to misapplication. See safety advisory definitions.*

## Mechanical Specifications

**Engagement Force:** 5.6 lbs max axial force
**Disengagement Force:** 8 lbs max axial force, 1 lbs min.
**Contact Retention:** 2.3 lbs min axial force (captivated contacts) 1 oz-in min torque (uncabled receptacles)

| **Cable Retention:** | Axial Force* (lbs) | Torque (oz-in) |
|---|---|---|
| RG-178 | 10.0 | N/A |
| RG-316 | 20.0 | N/A |
| RG-316 DS | 25.0 | N/A |

*Or cable breaking strength whichever is less.

**Durability:** ..... 500 cycles min

## Environmental Specifications

(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

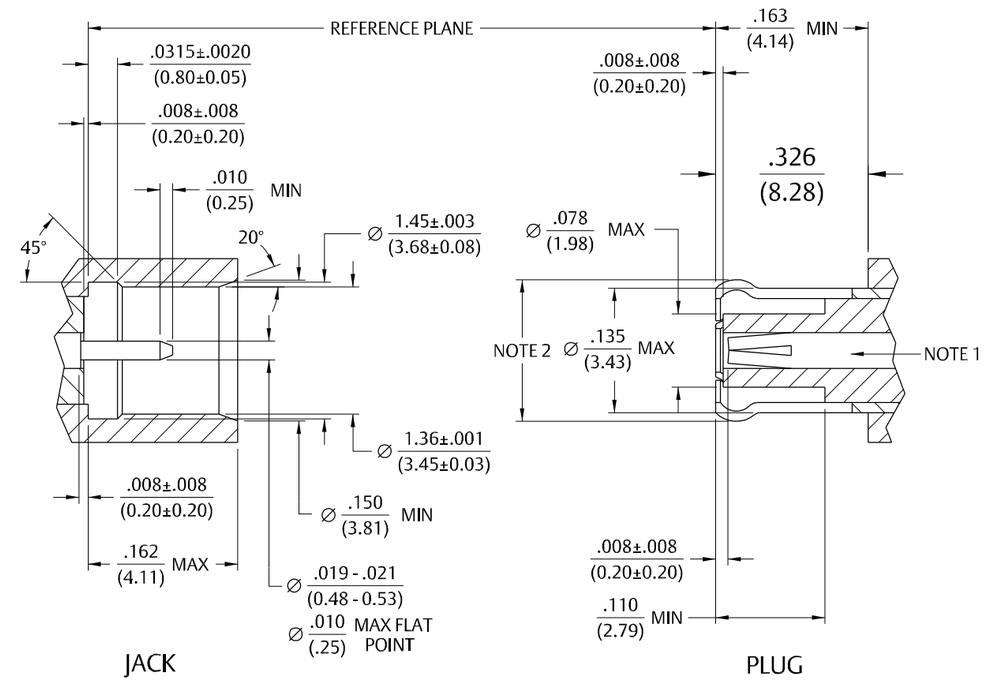


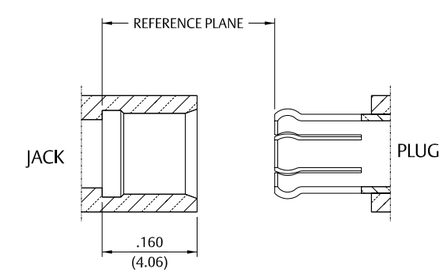


## Material Specifications

**Bodies:** Brass per ASTM B16 or zinc per ASTM B86-71, gold plated** per MIL-DTL-45204 .00001" min or nickel plated per AMS-QQ-N-290
**Contacts:** Male - brass per ASTM B16 , gold plated per MIL-DTL-45204 .00003" min
Female - beryllium copper per ASTM B196, gold plated per MIL-DTL-45204 .00003" min
**Insulators:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457
**Expansion Caps:** Brass per ASTM B16 , gold plated per MIL-DTL-45204 .00001" min or nickel plated per AMS-QQ-N-290
**Crimp Sleeves:** Copper per ASTM B301, gold plated per MIL-DTL-45204 .00001" min or nickel plated per AMS-QQ-N-290
**Mounting Hardware:** Brass (nuts) per ASTM B16 or phosphor bronze (lockwashers) ASTM B139, gold plated per MIL-DTL-45204 .00001" min or nickel plated per AMS-QQ-N-290

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



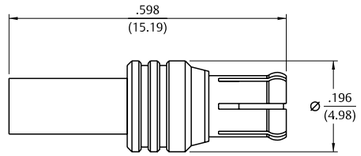




*Notes:*
*1. ID of contact to meet VSWR mating characteristics and connector durability when mated with a dia. .019-.021 (.48-.53) male contact.*
*2. Must meet the force to engage and disengage when mated with mating part.*

**For more information, please contact customer service at (507) 833-8822 or (800) 247-8256 • www.EmersonConnectivity.com**
*Illustrations are shown in inches (millimeters).*

# Flexible Cable

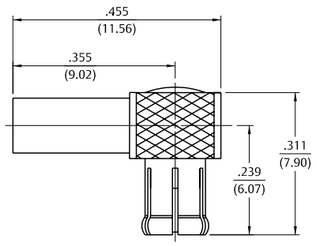
## Straight Crimp Type Plug – Solder or Crimp Contact




| Cable Type | Gold Plated | Nickel Plated | Captivated Contact |
|---|---|---|---|
| RG-178, 196 | 133-5402-001 | 133-5402-006 | No |
| RG-316, 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 207.

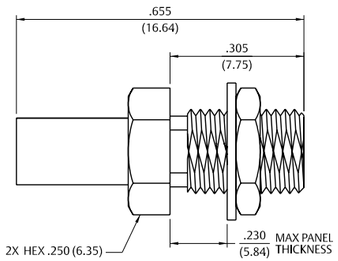
## Right Angle Crimp Type Plug – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-178, 196 | 133-5402-101 | 133-5402-106 |
| RG-316, 188, 161, 174 | 133-5403-101 | 133-5403-106 |
| RG-316 DS, 188 DS | 133-5404-101 | 133-5404-106 |

Assembly instructions page 210.

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



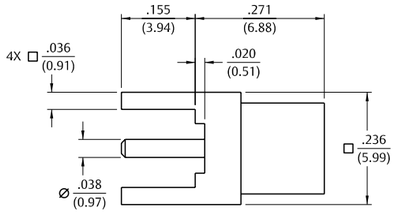

| Cable Type | Gold Plated | Nickel Plated | Captivated Contact |
|---|---|---|---|
| RG-178, 196 | 133-5302-401 | 133-5302-406 | No |
| RG-316, 188, 161, 174 | 133-5303-401 | 133-5303-406 | Yes |
| RG-316 DS, 188 DS | 133-5304-401 | 133-5304-406 | Yes |

Mounting hole layout figure 5 page 194.
Assembly instructions page 207.





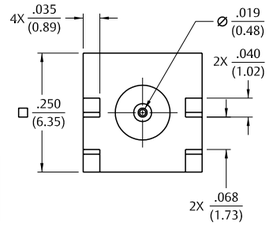
## Straight Jack Receptacle

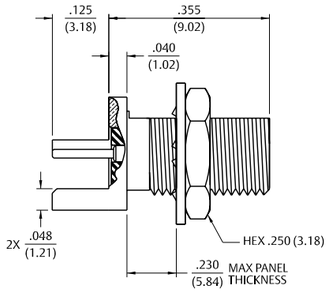



| Gold Plated | Nickel Plated |
|---|---|
| 133-5701-201 | 133-5701-206 |

Mounting hole layout figure 4 page 194.

## End Launch Bulkhead Jack Receptacle




| Gold Plated | Nickel Plated |
|---|---|
| 133-5701-801 | 133-5701-806 |

Mounting hole layout figure 4 page 194.



Johnson Connectivity Solutions

MCX CONNECTORS – REVERSE POLARITY – 50 OHM

# Specifications

## Electrical Specifications

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

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

| **Working Voltage:** (VRMS max)† | Sea Level | 70K Feet |
|---|---|---|
| RG-179 | 335 | 85 |
| Uncabled receptacles, adapters | 335 | 85 |
| Loads, matching pad | | N/A |

**Dielectric Withstanding Voltage:** (VRMS min at sea level)†
RG-179 ..... 1000
Uncabled receptacles, adapters ..... 1000
Loads ..... N/A
**Insulation Resistance:** 1,000 megohms min

| **Contact Resistance:** (milliohms max) | Initial | After Environmental |
|---|---|---|
| Center contact (straight cabled connectors and uncabled receptacles) | 5.0 | 8.0 |
| Center contact (right angle cabled connectors, adapters) | 10.0 | 15.0 |
| Center contact (loads) | N/A | |
| Outer contact | 1.0 | 1.5 |
| Braid to body (gold plated connectors) | 1.0 | N/A |

**Corona Level:** (Volts min at 70,000 feet) †
RG-179 ..... 250
Uncabled receptacles, adapters ..... 250
Loads matching pad ..... N/A
**Insertion Loss:** (dB max tested at 1 GHz)
Straight cabled connectors ..... 0.1 dB
Right angle cabled connectors ..... 0.2 dB
Uncabled receptacles, adapters ..... N/A
**RF Leakage:** (dB min, tested at 2.5 GHz)
Cable connectors ..... -55 dB typical
Uncabled receptacles, adapters, loads ..... N/A
**RF High Potential Withstanding Voltage:** (VRMS min, tested at 4 and 7 MHz)†
Cabled Connectors for RG-179 ..... 700
Uncabled receptacles, adapters ..... 600
Loads ..... N/A
**Power Rating:** (Loads) 1.0 Watt at +25°C, derated linearly to 0.5 Watts at +125°C

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





## Mechanical Specifications

**Engagement Design:** Compatible with CECC 22220, Series MCX 50 Ohm
**Engagement Force:** 5.6 lbs max axial force
**Disengagement Force:** 8 lbs max axial force, 1 lb min
**Contact Retention:** 2.3 lbs min axial force (captivated contacts) 1 oz-in - min torque (uncabled receptacles)

| | Axial Force (lbs) * | Torque (oz-in) |
|---|---|---|
| RG-179, BELDEN 735A | 20.0 | N/A |
| RG-179 DS | 25.0 | N/A |

*Or cable breaking strength whichever is less.
**Durability:** ..... 500 cycles min

## Environmental Specifications

(Meets or Exceeds the Applicable Paragraph of MIL-PRF-39012)

**Temperature Range:**
All Connectors, Adapters ..... - 65°C to + 165°C
Loads ..... - 65°C to + 125°C

| | |
|---|---|
| **Thermal Shock:** | MIL-STD-202, Method 107, Condition F (N/A Loads) |
| **Temperature Coefficient:** | Loads +/- 300ppm/°C |
| **Corrosion:** | MIL-STD-202, Method 101, Condition B (N/A Loads) |
| **Shock:** | MIL-STD-202, Method 213, Condition B (N/A Loads) |
| **Vibration:** | MIL-STD-202, Method 204, Condition B (N/A Loads) |
| **Moisture Resistance:** | MIL-STD-202, Method 106 (N/A Loads) |

## Material Specifications

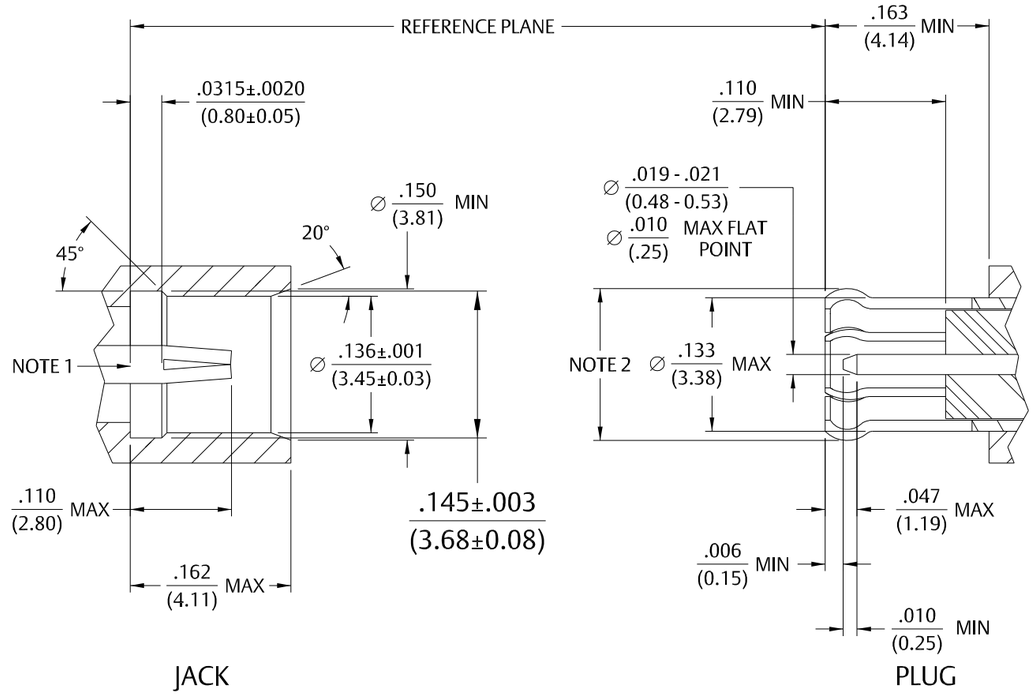
| | |
|---|---|
| **Bodies:** | Brass per ASTM B16, gold plated** per MIL-DTL-45204 .00001" min or stainless steel, type 303 per ASTM A582, passivated per MIL-F-14072 (EL70) |
| **Contacts:** | Male - brass per ASTM B16 , gold plated per MIL-DTL-45204 .00003" min<br>Female - beryllium copper per ASTM B196, gold plated per MIL-DTL-45204 .00003" min |
| **Insulators:** | PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457 |
| **Expansion Caps:** | Brass per ASTM B16 , gold plated per MIL-DTL-45204 .00001" min |
| **Crimp Sleeves:** | Copper, gold plated per MIL-DTL-45204 .00001" min |
| **Mounting Hardware:** | Brass (nuts) per ASTM B16 or phosphor bronze (lockwashers) ASTM B139, gold plated per MIL-DTL-45204 .00001" min |

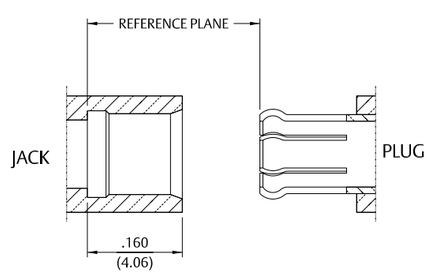
*** All gold plated parts include a .00005" min. nickel underplate barrier layer.*

# Specifications

## Mating Engagement for 75 Ohm MCX Series (Intermatable with CECC22220 50 Ohm MCX)

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

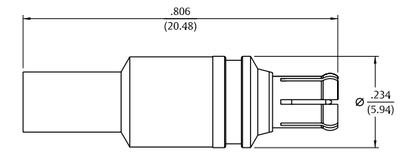







## Straight Crimp Type Plug – Solder or Crimp Captivated Contact




| Cable Type | Gold Plated |
|---|---|
| RG-179 | 133-8433-001 |
| RG-179 DS | 133-8434-001 |
| Belden 735A | 133-8445-001 |

Assembly instructions page 209.

## 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 211.

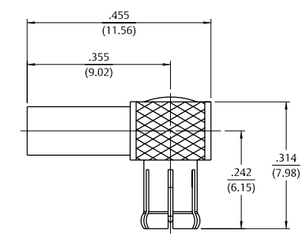



FIG. 1

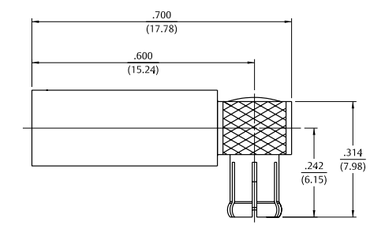
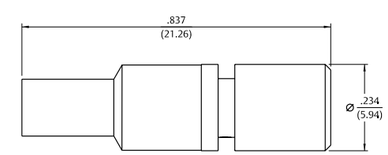



FIG. 2

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




| Cable Type | Gold Plated |
|---|---|
| RG-179 | 133-8333-001 |
| RG-179 DS | 133-8334-001 |

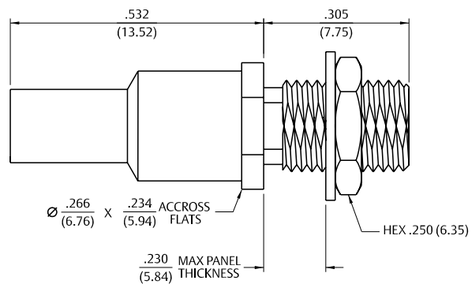
Assembly instructions page 209.

# Flexible Cable & PC Mount

## 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 |

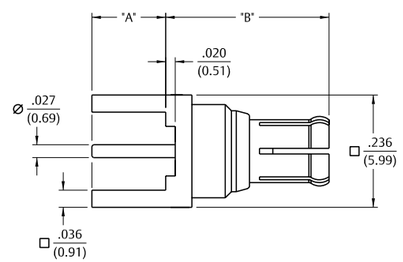
Assembly instructions page 209.
Mounting hole layout figure 5 page 194.




## 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) |

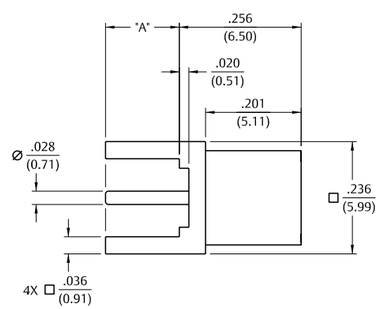
Mounting hole layout figure 20 page 195.




## Straight Jack Receptacle

| Gold Plated | "A" |
|---|---|
| 133-8701-201 | .155 (3.80) |
| 133-8701-211 | .100 (2.54) |

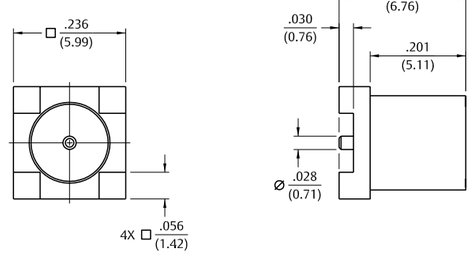
Mounting hole layout figure 20 page 195.




## Surface Mount Jack Receptacle

| Gold Plated | Packaging |
|---|---|
| 133-8711-201 | Bulk Packs |
| 133-8711-202 | Tape and Reel 770 pcs/reel |

Mounting hole layout figure 11 page 194.
Tape and Reel .472 (12.0) component pitch .630 (16.0) wide.



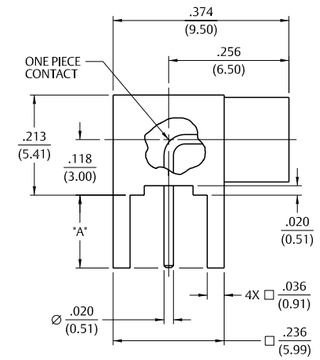





## Right Angle Jack Receptacle

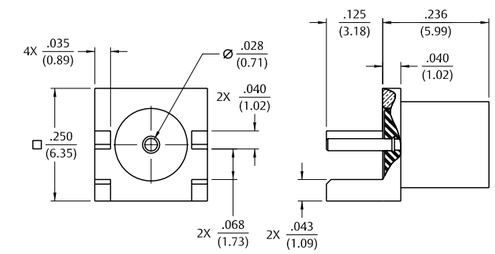
| Gold Plated | "A" |
|---|---|
| 133-8701-301 | .155 (3.80) |
| 133-8701-311 | .110 (2.70) |

Mounting hole layout figure 20 page 195.




## End Launch Jack Receptacle

| Cable Type | Board Thickness |
|---|---|
| 133-8701-801 | .062 (1.57) |

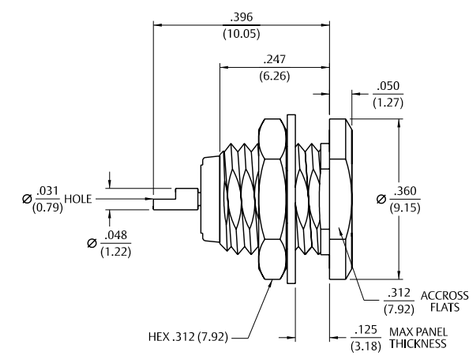



# Bulkhead Mount & In-Series Adapters

## Bulkhead Jack Receptacle

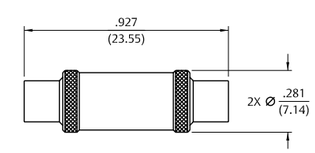
| Gold Plated |
|---|
| 133-8701-401 |

Mounting hole layout figure 1 page 194.




## Jack to Jack Adapter

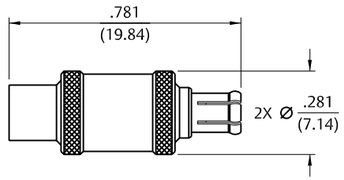
| Gold Plated |
|---|
| 133-8901-801 |



# In-Series Adapters & Between Series Adapters

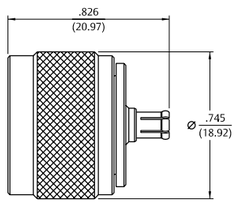
## Jack to Plug Adapter

| Gold Plated |
|---|
| 133-8901-821 |



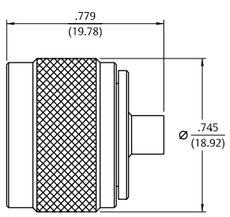

## 75 Ohm Type N Plug to 75 Ohm MCX Plug Adapter

| Stainless Steel Passivated |
|---|
| 134-1068-001 |




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

| Stainless Steel Passivated |
|---|
| 134-1068-011 |



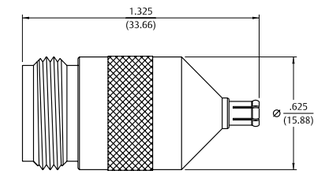



# Between-Series Adapters & Terminations



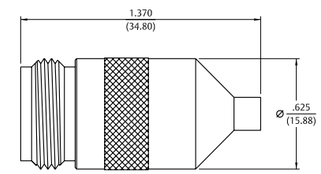
## 75 Ohm Type N Jack to 75 Ohm MCX Plug Adapter

| Stainless Steel Passivated |
|---|
| 134-1068-021 |



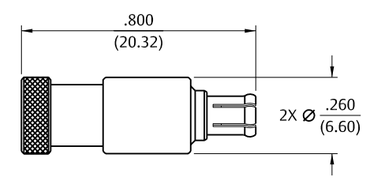

## 75 Ohm Type N Jack to 75 Ohm MCX Jack Adapter

| Stainless Steel Passivated |
|---|
| 134-1068-031 |



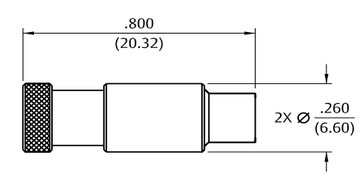

## Plug Precision Load

| Gold Plated |
|---|
| 133-8801-831 |




## Jack Precision Load

| Gold Plated |
|---|
| 133-8701-831 |



# Specifications

## Electrical Specifications

**Impedance:** 50 Ohms
**Frequency Range:** ..... 0-6 GHz
**VSWR** (max): (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 max)†

| | Sea Level | 70K Feet |
|---|---|---|
| RG-316 | 335 | 85 |

**Dielectric Withstanding Voltage:** (VRMS min at sea level)†
RG-316, uncabled receptacles ..... 1000
**Insulation Resistance:** 1,000 megohms min
**Contact Resistance:** (milliohms max)

| | Initial | After 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 | 1.0 | 1.5 |
| Braid to body | 1.0 | N/A |

**Corona Level:** (Volts min at 70,000 feet) †
RG-316, uncabled receptacles ..... 250
**Insertion Loss:** (dB max tested at 1 GHz)
Straight cabled connectors ..... 0.1 dB
Right angle cabled connectors ..... 0.2 dB
Uncabled receptacles ..... N/A
**RF Leakage:** (dB min, tested at 2.5 GHz)
Cabled connectors ..... -55 dB
Uncabled receptacles ..... N/A
**RF High Potential Withstanding Voltage:** (VRMS min tested at 4 and 7 MHz)
Cabled Connectors ..... 700
Uncabled receptacles ..... 600

*† Avoid user injury due to misapplication. See safety advisory definitions.*

## Mechanical Specifications

**Engagement Design:** Compatible with CECC 22220, Series MCX 50 Ohm
**Engagement Force:** 5.6 lbs max axial force
**Disengagement Force:** 8 lbs max axial force, 1 lb min
**Contact Retention:** 2.3 lbs min axial force (captivated contacts) 1 oz-in min torque (uncabled receptacles)

| | Axial Force (lbs) * | Torque (oz-in) |
|---|---|---|
| RG-316 | 20.0 | N/A |
| RG-316 DS | 25.0 | N/A |

*Or cable breaking strength whichever is less.
**Durability:** ..... 500 cycles min

## Environmental Specifications

(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

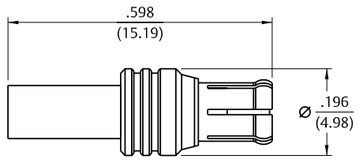
## Material Specifications

(See non-magnetic materials page 10)





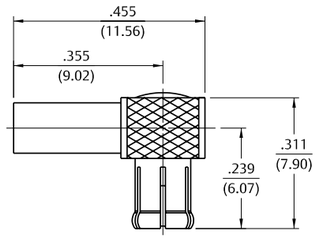
## Straight Crimp Type Plug – Solder or Crimp Contact – Captivated Contact




| Cable Type | Gold Plated |
|---|---|
| RG-316, 188, 174 | 133-9403-001 |
| RG-316 DS, 188 DS | 133-9404-001 |

Assembly instructions page 208.

## Right Angle Crimp Type Plug – Captivated Contact




| Cable Type | Gold Plated |
|---|---|
| RG-316, 188, 174 | 133-9403-101 |
| RG-316 DS, 188 DS | 133-9404-101 |

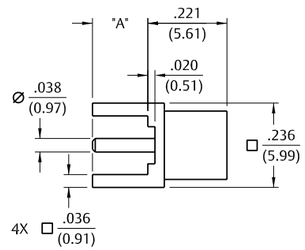
Assembly instructions page 207.

# Non-Magnetic RF Connectors – For PC Mount

## Straight Jack Receptacle

| Gold Plated | "A" |
|---|---|
| 133-9701-201 | .155 (3.94) |
| 133-9701-211 | .110 (2.79) |

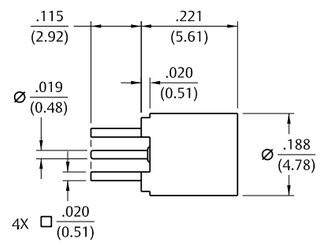
Mounting hole layout figure 4 page 194.




## Straight Jack Receptacle – .100" Layout

| Gold Plated |
|---|
| 133-9701-231 |

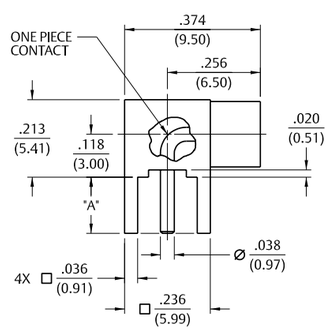
Mounting hole layout figure 12 page 194.




## Right Angle Jack Receptacle

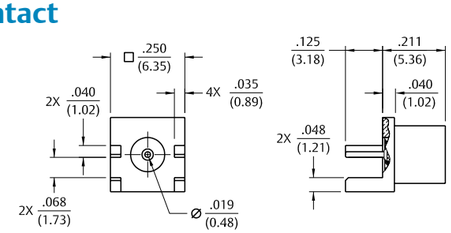
| Gold Plated | "A" |
|---|---|
| 133-9701-301 | .155 (3.94) |
| 133-9701-311 | .110 (2.79) |

Mounting hole layout figure 4 page 194.




## End Launch Jack Receptacle – Round Contact

| Gold Plated | Board Thickness |
|---|---|
| 133-9701-801 | .062 (1.57) |






# Table of Contents





## SMK Connectors

50 Ohm Connectors
Specifications ..... 40
Semi-Rigid & Flexible Cable ..... 43
Adapters ..... 44

Other Information
Assembly Tools ..... 185
Capabilities ..... 190
Cable Information ..... 192
Assembly Instruction ..... 193
Mounting Hole Layouts ..... 194
Numerical Index ..... 274
Competitor Cross Reference ..... 280

*While every precaution has been taken to ensure accuracy and completeness herein, Emerson Network Power Connectivity Solutions assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Specifications subject to change without notice.*

3 MMCX Connectors
13 MCX Connectors
39 SMK Connectors
45 SMA Connectors
103 SMB Connectors
131 SMC Connectors
137 SMP Connectors
145 Type N Connectors
153 Shielded Cable Terminations
157 Between-Series Adapters
161 Fixed Length Cable Assemblies
173 Ultra Miniature Connectors (UMC)
181 kwiQMAte ™ Connectors
185 Tools
193 Assembly Instructions
257 Electronic Hardware
274 Index

# Specifications

## SMK (2.92mm) Connectors

The Johnson line of SMK Connectors 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
- 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
- Field Replaceable Jacks are teamed with a high quality hermetic seal feed thru for use in sealed circuit modules
- 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

## Electrical Specifications

**Impedance:** 50 Ohms
**Frequency Range:** 0-40 GHz
**VSWR** (max): (f = GHz)
Semi-Rigid straight cabled connectors and adapters ..... 1.20 max
Field replaceable (see typical return loss graph) ..... N/A
**Working Voltage:** (VRMS max)

| **Connectors for Cable Type** | Sea Level | 70K Feet |
|---|---|---|
| RG-405 and field replaceable | 335 | 85 |
| RG-402 and adapters | 500 | 125 |

**Dielectric Withstanding Voltage**: (VRMS min at sea level)
RG-405 and field replaceable ..... 1000
RG-402 and adapters ..... 1500
**Corona Level:** (Volts min at 70,000 feet)
RG-405 and field replaceable ..... 250
RG-402 and adapters ..... 375
**Insertion Loss:** (dB max)
Adapters ..... 0.06 f (GHz), tested at 6 GHz
Straight Semi-Rigid cable connectors ..... 0.03 f (GHz), tested at 10 GHz
**Insulation Resistance:** 5000 megohms min

| **Contact Resistance:** (milliohms max) | 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 min, tested at 2.5 GHz) ..... -90dB
**RF High Potential Withstanding Voltage:** (VRMS min., tested at 4 and 7 MHz)†
RG-405 and field replaceable ..... 670
RG-402 and adapters ..... 1000

## Mechanical Specifications

**Engagement Design:** MIL-STD-348, Series SMK (2.92mm)
**Engagement/Disengagement Force:** 2 lb-in max
**Mating Torque**: 7 to 10 in-lb
**Bulkhead Mounting Nut Torque:** 15 in-lb
**Coupling Proof Torque:** 15 in-lb min
**Coupling Nut Retention:** 60 lbs min
**Contact Retention:** 6 lbs min axial force (captivated contacts)

| **Cable Retention:** | Axial Force* (lbs) | Torque (in-oz) |
|---|---|---|
| RG-405 | 30 | 16 |
| RG-402 | 60 | 55 |

*Or cable breaking strength whichever is less
**Durability:** 500 cycles min

*† Avoid user injury due to misapplication. See safety advisory definitions.*





## Environmental Specifications

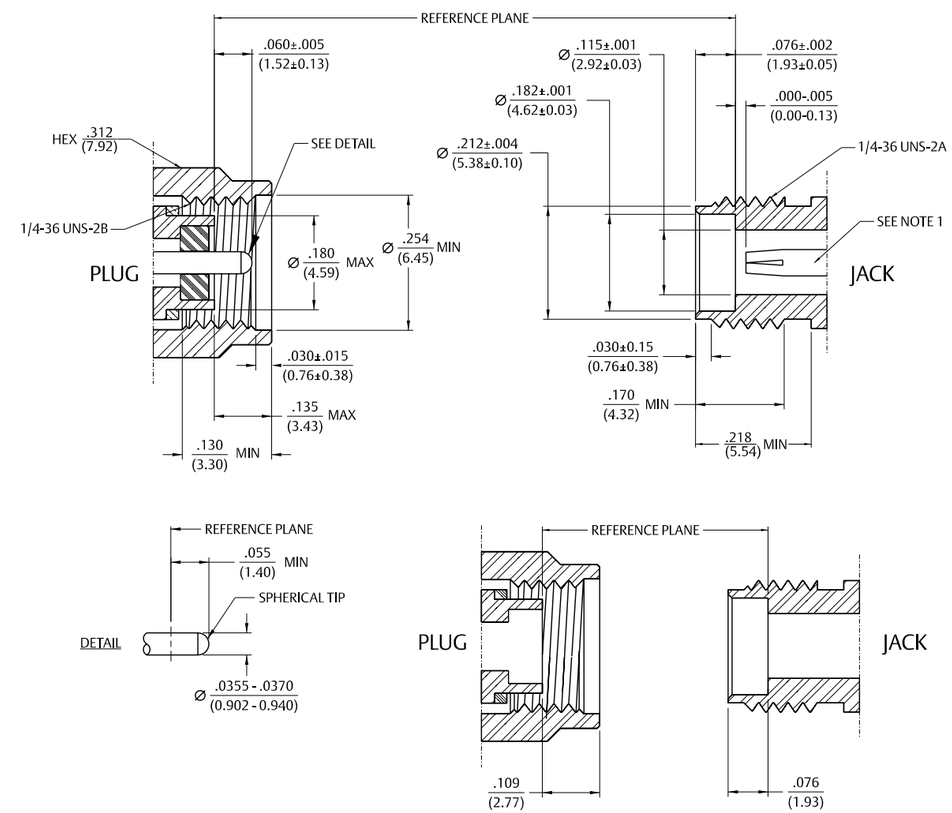
(Meets or Exceeds the Applicable Paragraph of MIL-PRF-C-39012)

**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:** Stainless steel per ASTM B16, gold plated* per MIL-G-45204 .00005" min. or passivated per MIL-DTL-14072
**Contacts:** Female - beryllium copper per ASTM B1960, gold plated per MIL-DTL- 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 layered

### 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.*

**For more information, please contact customer service at (507) 833-8822 or (800) 247-8256 • www.EmersonConnectivity.com**
*Illustrations are shown in inches (millimeters).*

# Specifications

## Field Replaceable Application Notes

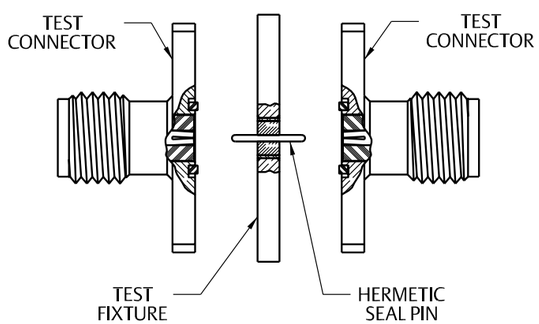
These field replaceable connectors are easy to install and replace. The hermetic seal is mounted into the circuit module wall and the connector can be removed and replaced without destroying the hermeticity of the circuit housing.

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:

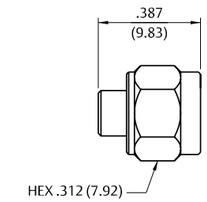
1. For optimum electrical performance, we recommend the use of our standard 142-1000-033 hermetic seal with a pin diameter of .0120+/-.0005 (0.305+/-0.013).
2. It is recommended that the hermetic seal be mounted flush with the circuit housing. Tolerance variations between the hermetic seal and machined 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.







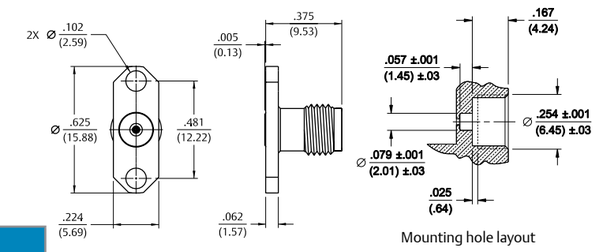

## Straight Solder Type Plug – with Contact, Slide-On Nut




| Cable Type | Gold Plated | Passivated* |
|---|---|---|
| RG-405 RG-402 | 145-0693-001 | 145-0693-002 |
| RG-405 RG-402 | 145-0694-001 | 145-0694-002 |

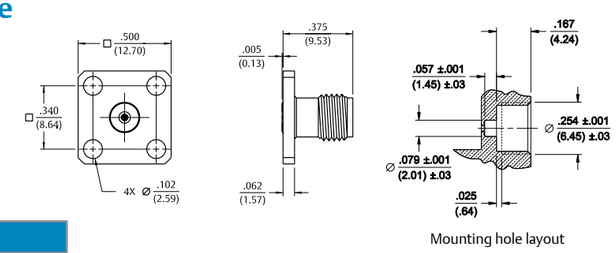
Assembly instructions page 212.
*Passivated coupling nut with gold plated body.

## 2-Hole Flange Mount Jack Receptacle



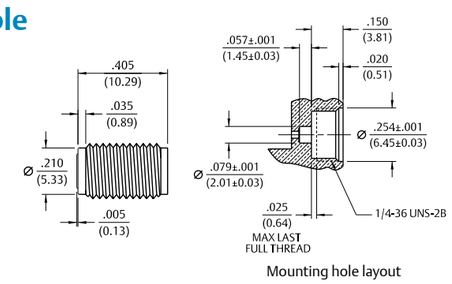

| Gold Plated | Passivated | Accepts Pin Size |
|---|---|---|
| 145-0701-601 | 145-0701-602 | .0120+/-.0005(0.305+/-0.013) |

## 4-Hole Flange Mount Jack Receptacle




| Gold Plated | Passivated | Accepts Pin Size |
|---|---|---|
| 145-0701-611 | 145-0701-612 | .0120+/-.0005(0.305+/-0.013) |

## Jack Receptacle – Thread Mount Field Replaceable



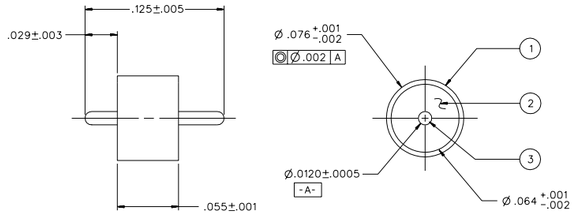

| Gold Plated | Passivated | Accepts Pin Size |
|---|---|---|
| 145-0701-001 | 145-0701-002 | .0120 +/-.0005 (0.305 +/-0.013) |



*Illustrations are shown in inches (millimeters).*

# In-Series Adapters

## Hermetic Seal Feedthru




| Part No. | Item 1 – Outer Ring | Item 2 – Insulator | Item 3 – 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. |

Notes:
1. 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.
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!**

## Electrical

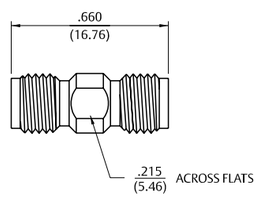
**Impedance:** 50 Ohms
**Frequency Range:** DC to 40 GHz
**VSWR:** Dependent upon application
**Working Voltage:** 250 VRMS max at sea level
**Dielectric Withstanding Voltage:** 500 VRMS min at sea level
**Insulation Resistance:** 5000 Megohm min
**Insertion Loss:** 0.2 dB max at 40 GHz

## Environmental

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

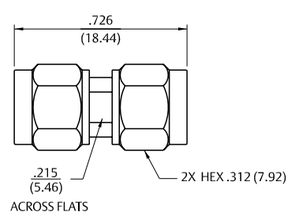
## Jack to Jack In-Series Adapter

| Gold Plated |
|---|
| 145-0901-801 |



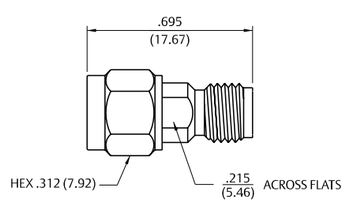

## Plug to Plug In-Series Adapter

| Gold Plated |
|---|
| 145-0901-811 |




## Plug to Jack In-Series Adapter

| Gold Plated |
|---|
| 145-0901-821 |






# Table of Contents




## SMA Connectors

50 Ohm Connectors
Specifications ..... 46
Quick Connect ..... 49
Semi-Rigid & Flexible Cable ..... 50
PC Mount ..... 56
Bulkhead & Panel Mount ..... 62
Self-Fixture End Launch ..... 63
Field Replaceable ..... 71
Adapters ..... 76
Terminations ..... 77
Reverse Polarity
Specifications ..... 78
Semi-Rigid & Flexible Cable ..... 80
PC Mount ..... 81
Reverse Thread
Specifications ..... 82
Semi-Rigid & Flexible Cable ..... 83
PC Mount ..... 85
50 Ohm Non-Magnetic Connectors
Specifications ..... 86
Semi-Rigid & Flexible Cable ..... 87
PC Mount ..... 88
50 Ohm High Frequency End Launch
Specifications ..... 90
PC Mount ..... 92
50 Ohm Stainless Steel
Specifications ..... 94
Semi-Rigid & Flexible Cable ..... 97
PC Mount ..... 100
Bulkhead & Panel Mount ..... 100
Fixed Attenuators
Specifications ..... 102
Attenuators ..... 113
Other Information
Assembly Tools ..... 185
Capabilities ..... 190
Cable Information ..... 192
Assembly Instruction ..... 193
Mounting Hole Layouts ..... 194
Numerical Index ..... 274
Competitor Cross Reference ..... 280

3 MMCX Connectors
13 MCX Connectors
39 SMK Connectors
45 SMA Connectors
103 SMB Connectors
131 SMC Connectors
137 SMP Connectors
145 Type N Connectors
153 Shielded Cable Terminations
157 Between-Series Adapters
161 Fixed Length Cable Assemblies
173 Ultra Miniature Connectors (UMC)
181 kwiQMAte ™ Connectors
185 Tools
193 Assembly Instructions
257 Electronic Hardware
274 Index


*While every precaution has been taken to ensure accuracy and completeness herein, Emerson Network Power Connectivity Solutions assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Specifications subject to change without notice.*

# Specifications

## Electrical Ratings

**Impedance:** 50 Ohms

**Frequency Range:**

| | |
|---|---|
| Dummy loads | 0-2.00 GHz |
| Flexible cabled connectors | 0-12.4 GHz |
| Uncabled receptacles, Right Angle Semi-Rigid cabled connectors and adapters | 0-18.0 GHz |
| Straight Semi-Rigid cabled connectors and field replaceable connectors | 0-26.5 GHz |

**VSWR:** (max) (f = GHz)

| | Straight Cabled Connectors | Right Angle Cabled Connectors |
|---|---|---|
| RG-178 | 1.20 + .025f | 1.20 + .03f |
| RG-316, LMR-100 | 1.15 + .02f | 1.15 + .03f |
| RG-58, LMR-195 | 1.15 + .01f | 1.15 + .02f |
| RG-142 | 1.15 + .01f | 1.15 + .02f |
| LMR-200, LMR-240 | 1.10 + .03f | 1.10 + .06f |
| RG-405 | 1.07 + .008f | 1.18 + .015f |
| RG-402 (w/contact) | 1.05 + .008f | 1.15 + .015f |
| RG-402 (w/o contact) | 1.035 + .005f | |
| Jack-bulkhead jack adapter and plug-plug adapter | | 1.05 + .010f |
| Jack-jack adapter and plug-jack adapter | | 1.05 + .005f |
| Uncabled receptacles, dummy loads | | N/A |
| Field replaceable (see page 80) | | N/A |

**Working Voltage:** (VRMS max)†

| | Sea Level | 70K Feet |
|---|---|---|
| RG-178 | 170 | 45 |
| RG-316, LMR-100, 195, 200 | 250 | 65 |
| RG-58, RG-142, LMR-240, RG-405, uncabled receptacles, RG-402 w/o contact | 335 | 85 |
| RG-402 with contact and adapters | 500 | 125 |
| Dummy loads | | N/A |

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

| | |
|---|---|
| RG-178 | 500 |
| RG-316, LMR-100, 195, 200 | 750 |
| RG-58, RG-142, LMR-240, RG-405, field replaceable, uncabled receptacles | 1000 |
| RG-402 with contact and adapters | 1500 |
| RG-402 w/o contact, dummy loads | N/A |

**Insulation Resistance:** 5000 megohms min

**Contact Resistance:** (milliohms max)

| | 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

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

| | |
|---|---|
| RG-178 | 125 |
| RG-316, LMR-100, 195, 200 | 190 |
| RG-58, RG-142, LMR-240, RG-405, uncabled receptacles, RG-402 w/o contact | 250 |
| RG-402 with contact and adapters | 375 |
| Dummy loads | N/A |





**Insertion Loss:** (dB max)

| | |
|---|---|
| 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 |

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

| | |
|---|---|
| Flexible cable connectors, adapters and RG-402 connectors w/o contact | -60 dB |
| Field replaceable w/o EMI gasket | -70 dB |
| RG-405 connectors and RG-402 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 min, tested at 4 and 7 MHz)†

| | |
|---|---|
| RG-178 | 335 |
| RG-316, LMR-100, 195, 200 | 500 |
| RG-58, RG-142, LMR-240, RG-405, RG-402 connectors w/o contact, uncabled receptacles | 670 |
| RG-402 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-STD-348, Series SMA |
| **Engagement/Disengagement Force:** | 2 lb-in max |
| **Mating Torque:** | 7 to 10 lb-in |
| **Bulkhead Mounting Nut Torque:** | 15 lb-in |
| **Coupling Proof Torque:** | 15 lb-in min |
| **Coupling Nut Retention:** | 60 lbs min |
| **Contact Retention:** | 6 lbs min axial force (captivated contacts)<br>4 oz-in min torque (uncabled receptacles) |

**Cable Retention:**

| | Axial Force* (lbs) | Torque (oz-in) |
|---|---|---|
| RG-178 | 10 | N/A |
| RG-316, LMR-100 | 20 | N/A |
| LMR-195, 200 | 30 | N/A |
| RG-58, LMR-240 | 40 | N/A |
| RG-142 | 45 | N/A |
| RG-405 | 30 | 16 |
| RG-402 | 60 | 55 |

*Or cable breaking strength whichever is less.

**Durability:** 500 cycles min 100 cycles min for RG-402 connectors w/o contact

## Environmental Specifications

(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 (N/A dummy loads) |
| **Corrosion:** | MIL-STD-202, Method 101, Condition B (N/A dummy loads) |
| **Shock:** | MIL-STD-202, Method 213, Condition I (N/A dummy loads) |
| **Vibration:** | MIL-STD-202, Method 204, Condition Dv |
| **Moisture Resistance:** | MIL-STD-202, Method 106 (N/A dummy loads) |

*† Avoid user injury due to misapplication. See safety advisory definitions.*

# Specifications

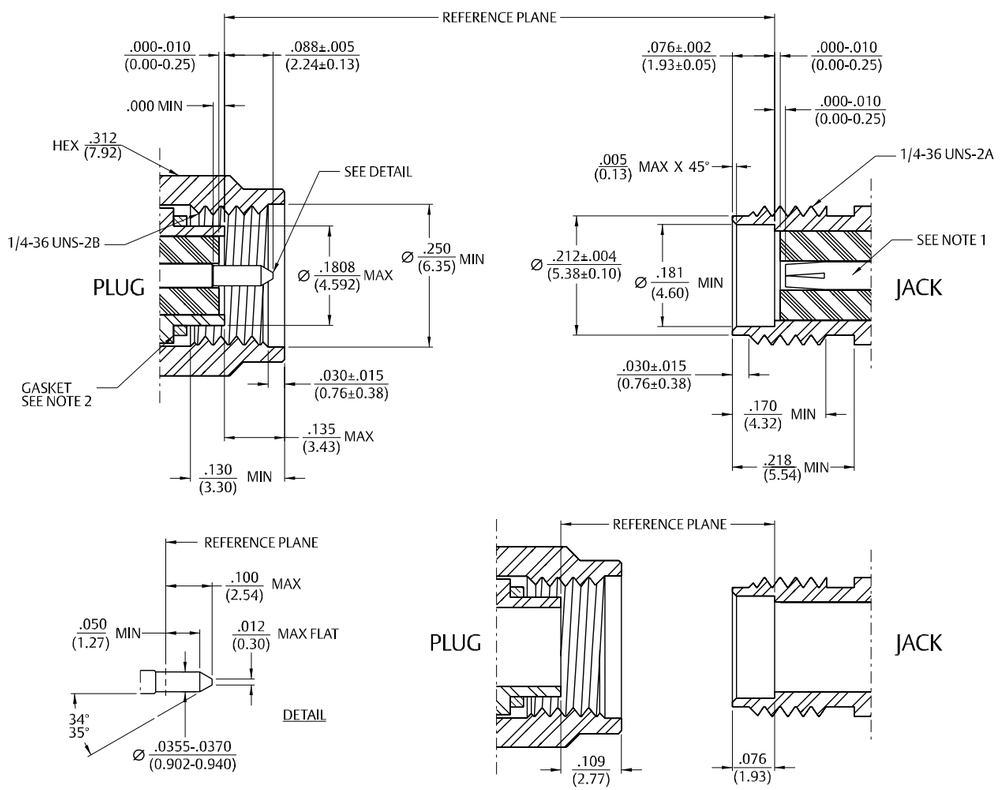
## Material Specifications

| | |
|---|---|
| **Bodies:** | Brass per ASTM B16, gold plated* per MIL-DTL-45204 .00001" min. or nickel plated per SAE-AMS2423 |
| **Contacts:** | Male - brass per ASTM B16, gold plated per MIL-DTL-45204 .00005" min<br>Female - beryllium copper per ASTM B196, gold plated per MIL-DTL-45204 .00005" min |
| **Nut Retention Spring:** | Beryllium copper per ASTM B196, 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 ASTM B36, gold plated per MIL-DTL-45204 .00001" min. or nickel plated per SAE-AMS2423 |
| **Crimp Sleeves:** | Copper per ASTM B301 or brass per ASTM B16, gold plated per MIL-DTL-45204 .00001" min or nickel plated per SAE-AMS2423 |
| **Mounting Hardware:** | Brass (nuts) per ASTM B16 or phosphor bronze (lockwashers), gold plated per MIL-DTL-45204 .00005" min or nickel plated per SAE-AMS2423 |
| **Seal Rings:** | Silicone rubber per A-A-59588A |
| **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

NOTES
1. ID to meet VSWR, contact resistance and insertion withdrawl forces when mated with a dia. .0355-.0370 pin.
2. Gasket is not supplied with brass connectors.

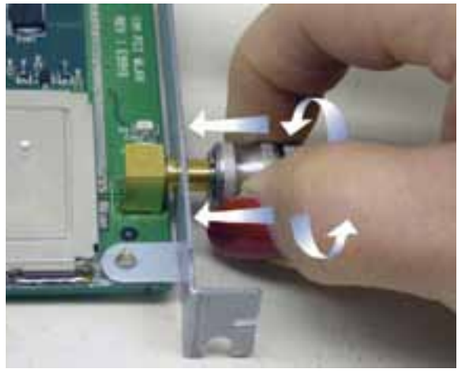







The Johnson line of **SMA Quick-Connect Plug** quickly mates to a standard, threaded SMA Jack receptacle allowing rapid test connections to devices utilizing SMA threaded jacks.

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-PRF-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.

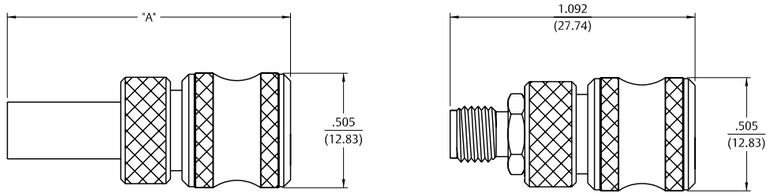
The SMA Quick-Connect Plug Adapter converts a standard SMA Plug test cable into a Quick-Connect cable. This makes the testing process more efficient by reducing the time and effort required to connect and disconnect the test cable.

Note: Push-on using front of connector, twist back-end coupling nut to secure.

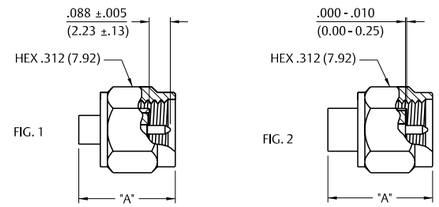
| Plugs | | |
|---|---|---|
| **Cable Type** | **Gold Plated*** | **"A"** |
| RG-161, 174, 188, 316 | 142-1403-001 | 1.249 |
| RG-188 DS, RG-316 DS | 142-1404-001 | 1.249 |
| RG-58, 141, 303 | 142-1407-001 | 1.099 |
| RG-55, 142, 223, 400 | 142-1408-001 | 1.249 |

| Adapters |
|---|
| **Gold Plated*** |
| 142-1901-821 |

*Nickel plated coupling hardware, gold plated body
Assembly instructions page 219.



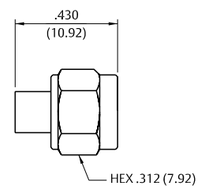
## Straight Solder Type Plug – with Contact, Captive Nut Thin Wall Connector Interface




| Cable Type | Gold Plated | Nickel Plated | Fig. | "A" |
|---|---|---|---|---|
| RG-405 | 142-0693-001 | 142-0693-006 | 1 | .405 (10.29) |
| RG-402 | 142-0694-001* | 142-0694-006* | 2 | .440 (11.18) |

Assembly instructions page 214.
*Mating torque 8 lb-in max, coupling proof torque 8 lb-in max.

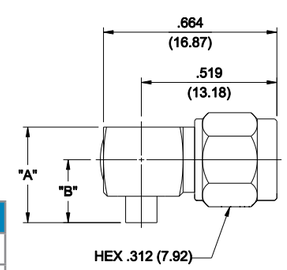
## Straight Solder Type Plug – without Contact, Thread-on Nut




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-402 | 142-0694-011 | 142-0694-016 |

Assembly instructions page 214.
Center conductor of cable serves as contact.

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




| Cable Type | Gold Plated | Nickel Plated | "A" | "B" |
|---|---|---|---|---|
| RG-405 | 142-0693-101 | 142-0693-106 | .336 (8.53) | .253 (6.43) |
| RG-402 | 142-0694-101 | 142-0694-106 | .462 (11.73) | .306 (7.77) |

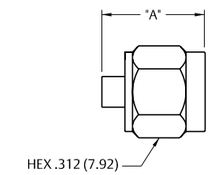
Assembly instructions page 213.







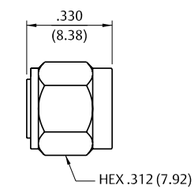
## Straight Solder Type Plug – with Contact, Thread-on Nut




| Cable Type | Gold Plated | Nickel Plated | "A" |
|---|---|---|---|
| RG-405 | 142-0693-051 | 142-0693-056 | .405 (10.29) |
| RG-402 | 142-0694-051 | 142-0694-056 | .438 (11.13) |

Assembly instructions page 216.

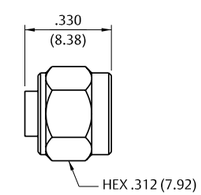
## Straight Solder Type Plug – Short Profile – without Contact, Captive Nut




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-402 | 142-0694-031 | 142-0694-036 |

Assembly instructions page 215. Center conductor of cable serves as contact.

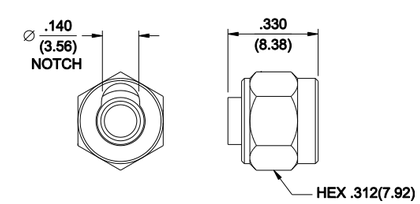
## Straight Solder Type Plug – without Contact, Slide-on Nut




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-402 | 142-0694-021 | 142-0694-026 |

Assembly instructions page 215.
Center conductor of cable serves as contact.

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




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-402 | 142-0694-041 | 142-0694-046 |

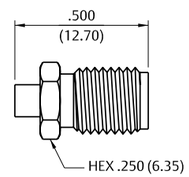
Assembly instructions page 215. Center conductor of cable serves as contact.



*Illustrations are shown in inches (millimeters).*

# Semi-Rigid Cable

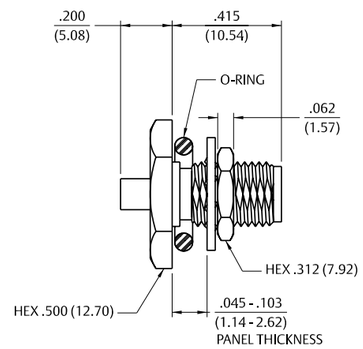
## Straight Solder Type Jack




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-405 | 142-0593-001 | 142-0593-006 |
| RG-402 | 142-0594-001 | 142-0594-006 |

Assembly instructions page 214.

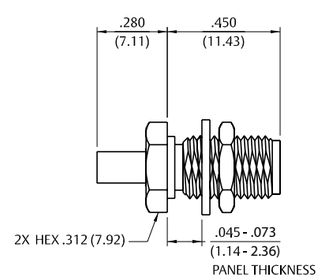
## Straight Solder Type Bulkhead Jack with O-Ring




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-405 | 142-0593-401 | 142-0593-406 |
| RG-402 | 142-0594-401 | 142-0594-406 |

Assembly instructions page 214.
Mounting hole layout figure 1 page 194.

## Straight Solder Type Bulkhead Jack



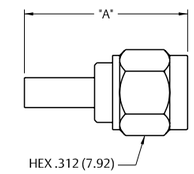

| Cable Type | Gold Plated |
|---|---|
| RG-405 | 142-0593-411 |

Assembly instructions page 214.
Mounting hole layout figure 1 page 194.





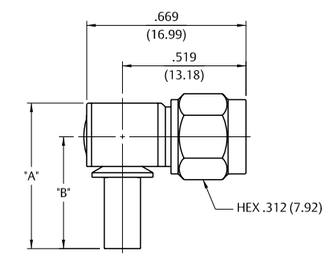
## Straight Crimp Type Plug (3-piece) – Solder or Crimp Captivated Contact




| Cable Type | Gold Plated | Nickel Plated | "A" |
|---|---|---|---|
| RG-178, 196 | 142-0402-011 | 142-0402-016 | .591 (15.01) |
| RG-161, 174,188, 316, LMR-100 HPF-100 RF-100 | 142-0403-011 | 142-0403-016 | .706 (17.93) |
| RG-188 DS, RG-316 DS | 142-0404-011 | 142-0404-016 | .706 (17.93) |
| RG-58, 141, 303, LMR-195, HPF-195, RF-195 | 142-0407-011 | 142-0407-016 | .706 (17.93) |
| RG-55, 142, 223, 400 | 142-0408-011 | 142-0408-016 | .706 (17.93) |
| RG-179, 187 | 142-0433-011 | 142-0433-016 | .706 (17.93) |
| LMR-200, HPF-200, RF-200 | 142-0439-001 | 142-0439-006 | .844 (21.44) |
| LMR-240, HPF-240, RF-240 | 142-0435-001 | 142-0435-006 | .844 (21.44) |

Assembly Instructions: RG-178 page 217. LMR 195, 200 and 240, see page 220.
Other cable groups, see page 219.

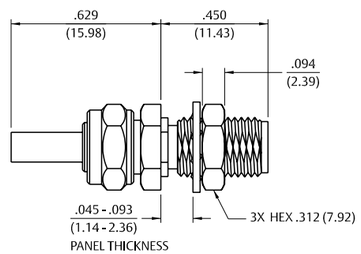
## Right Angle Crimp Type Plug – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated | "A" | "B" |
|---|---|---|---|---|
| RG-178, 196 | 142-0402-101 | 142-0402-106 | .611 (15.52) | .470 (11.94) |
| R-161, 174,188, 316, LMR-100, HPF-100, RF-100 | 142-0403-101 | 142-0403-106 | .611 (15.52) | .470 (11.94) |
| RG-188 DS, RG-316 DS | 142-0404-101 | 142-0404-106 | .611 (15.52) | .470 (11.94) |
| LMR-195, HPF-195, RF-195, RG-58, 141, 303 | 142-0407-101 | 142-0407-106 | .611 (15.52) | .470 (11.94) |
| RG-55, 142, 223, 400 | 142-0408-101 | 142-0408-106 | .611 (15.52) | .470 (11.94) |
| RG-179, 187 | 142-0433-101 | 142-0433-106 | .611 (15.52) | .470 (11.94) |
| LMR-200, HPF-200, RF-200 | 142-0439-101 | 142-0439-106 | .611 (15.52) | .470 (11.94) |
| LMR-240, HPF-240, RF-240 | 142-0435-101 | 142-0435-106 | .635 (16.13) | .490 (12.45) |

Assembly Instructions: LMR 195, 200 and 240 page 229.
Other cable groups, see page 224.

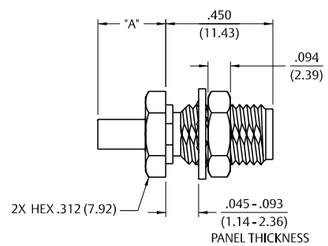
## Straight Crimp Type Bulkhead Jack – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-178, 196 | 142-0302-401 | 142-0302-406 |
| RG-161, 174,188, 316 | 142-0303-401 | 142-0303-406 |
| RG-188 DS, RG-316 DS | 142-0304-401 | 142-0304-406 |
| RG-58, 141, 303 | 142-0307-401 | 142-0307-406 |
| RG-55, 142, 223, 400 | 142-0308-401 | 142-0308-406 |

Assembly instructions page 225.
Mounting hole layout figure 1 page 194.

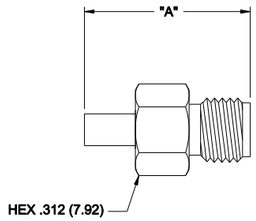
## Straight Crimp Type Bulkhead Jack (3-piece) – Solder or Crimp Captivated Conact




| Cable Type | Gold Plated | Nickel Plated | "A" |
|---|---|---|---|
| RG-178, 196 | 142-0302-431 | 142-0302-436 | .285 (7.24) |
| RG-161, RG-16, 174,188, 316, LMR-100 HPF-100 RF-100 | 142-0303-411 | 142-0303-416 | .385 (9.78) |
| RG-188 DS, RG-316 DS | 142-0304-411 | 142-0304-416 | .385 (9.78) |
| RG-58, 141, 303, LMR-195, HPF-195, RF-195 | 142-0307-411 | 142-0307-416 | .385(9.78) |
| RG-55, 142, 223, 400 | 142-0308-411 | 142-0308-416 | .385 (9.78) |
| RG-179, 187 | 142-0333-411 | 142-0333-416 | .385 (9.78) |
| LMR-200, HPF-200, RF-200 | 142-0339-401 | 142-0339-406 | .545 (13.84) |
| LMR-240, HPF-240, RF-240 | 142-0335-401 | 142-0335-406 | .545 (13.84) |

Assembly Instructions: RG-178 page 217. LMR 195, 200 and 240, see page 220.
Other cable groups, see page 219. Mounting hole layout figure 1 page 194.

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




| Cable Type | Gold Plated | Nickel Plated | "A" |
|---|---|---|---|
| RG-178, 196 | 142-0302-011 | 142-0302-016 | .651 (16.54) |
| RG-161, 174,188, 316 | 142-0303-011 | 142-0303-016 | .756 (19.20) |
| RG-188 DS, RG-316 DS | 142-0304-011 | 142-0304-016 | .756 (19.20) |
| RG-58, 141, 303 | 142-0307-011 | 142-0307-016 | .756 (19.20) |
| RG-55, 142, 223, 400 | 142-0308-011 | 142-0308-016 | .756 (19.20) |

Assembly Instructions: RG-178 page 217. LMR 195, 200 and 240, see page 220.
Other cable groups, see page 219. Mounting hole layout figure 1 page 194.

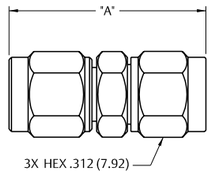








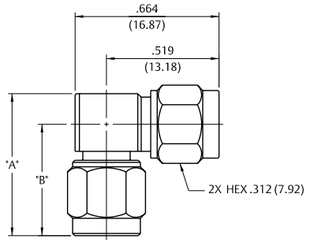
## Straight Clamp Type Plug – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated | "A" |
|---|---|---|---|
| RG-178, 196 | 142-0202-011 | 142-0202-016 | .816 (20.73) |
| RG-161, 174, 188, 316 | 142-0203-011 | 142-0203-016 | .816 (20.73) |
| RG-58, 141, 303, 55, 142, 223, 400 | 142-0207-011 | 142-0207-016 | .895 (22.73) |

Assembly instructions page 230.
Mounting hole layout figure 1 page 194.

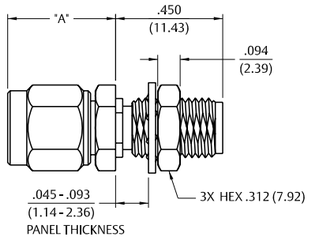
## Right Angle Clamp Type Plug – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated | "A" | "B" |
|---|---|---|---|---|
| RG-178 196 | 142-0202-101 | 142-0202-106 | .569 (14.45) | .428 (10.81) |
| RG-161 174, 188,316 | 142-0203-101 | 142-0203-106 | .574 (14.58) | .433 (11.00) |
| RG-58, 141, 303, 55, 142, 223, 400 | 142-0207-101 | 142-0207-106 | .686 (17.42) | .545 (13.84) |

Assembly instructions page 231.
Mounting hole layout figure 1 page 194.

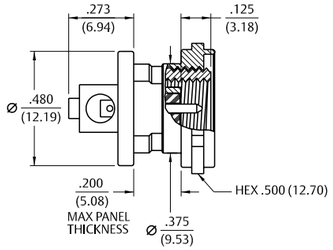
## Straight Clamp Type Bulkhead Jack – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated | "A" |
|---|---|---|---|
| RG-178, 196 | 142-0102-401 | 142-0102-406 | .452 (11.48) |
| RG-161, 174, 188, 316 | 142-0103-401 | 142-0103-406 | .487 (12.37) |
| RG-58, 141, 303, 55, 142, 223, 400 | 142-0107-401 | 142-0107-406 | .531 (13.49) |

Assembly instructions page 230.

## Rear Mount Bulkhead Plug – Antenna Connector




| Cable Type | Gold Plated |
|---|---|
| RG-178, .047 Semi-Rigid | 142-0801-421* |

* With Nickel mounting nut. Assembly instructions page 216.
Mates with SMA Jack Antenna Interface.



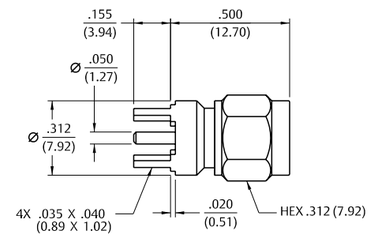
*Illustrations are shown in inches (millimeters).*

# PC Mount

## Straight Plug Receptacle

| Gold Plated | Nickel Plated |
|---|---|
| 142-0801-201 | 142-0801-206 |

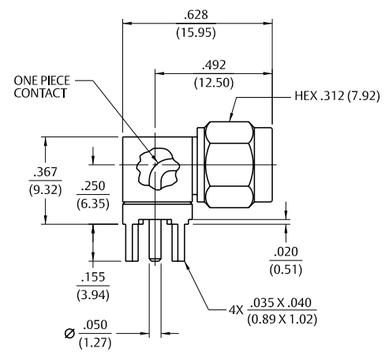
Mounting hole layout figure 2 page 194.




## Right Angle Plug Receptacle

| Gold Plated | Nickel Plated |
|---|---|
| 142-0801-301 | 142-0801-306 |

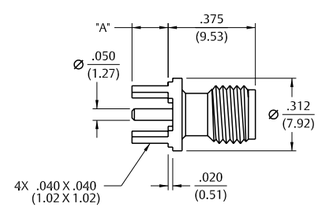
Mounting hole layout figure 2 page 194.




## Straight Jack Receptacle

| Gold Plated | Nickel Plated | "A" |
|---|---|---|
| 142-0701-201 | 142-0701-206 | .155 (3.94) |
| 142-0701-231 | 142-0701-236 | .110 (2.79) |

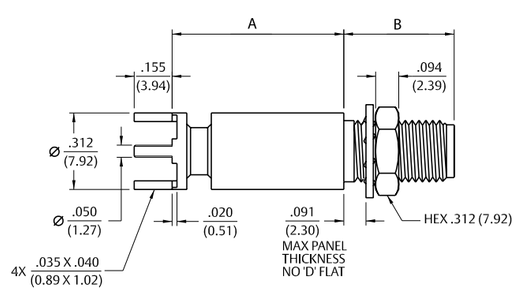
Mounting hole layout figure 2 page 194.




## Straight Bulkhead Jack Receptacle

| Gold Plated | Nickel Plated | "A" | "B" |
|---|---|---|---|
| 142-0701-421 | 142-0701-426 | .700 (17.78) | .450 (11.43) |
| 142-0701-491 | 142-0701-496 | .065 (1.65) | .755 (19.18) |

Mounting hole layout figure 2 page 194.

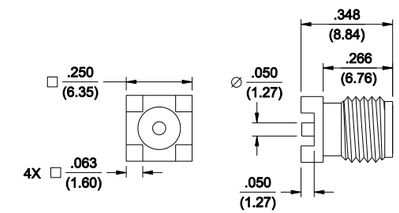







## Straight Jack Receptacle – Surface Mount

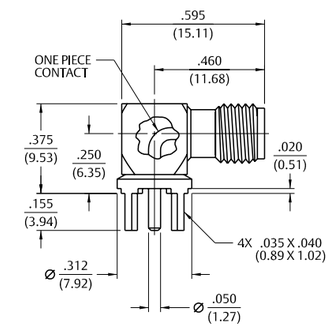
| Gold Plated | Packaging |
|---|---|
| 142-0711-201 | Stock |
| 142-0711-202 | Tape and Reel 500 pcs/reel |




## Right Angle Jack Receptacle

| Gold Plated | Nickel Plated |
|---|---|
| 142-0701-301 | 142-0701-306 |

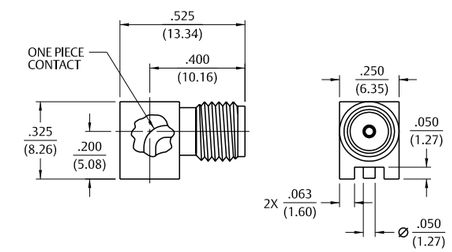
Recommended Land Pattern figure 2 page 194.




## Right Angle Jack Receptacle – Surface Mount

| Gold Plated | Packaging |
|---|---|
| 142-0711-301 | Stock |
| 142-0711-302 | Tape and Reel 425 pcs/reel |

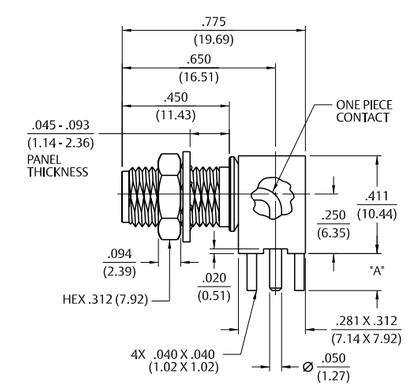
Recommended Land Pattern figure 7 page 194.




## Right Angle Bulkhead Jack Receptacle

| Gold Plated | Nickel Plated | "A" |
|---|---|---|
| 142-0701-501 | 142-0701-506 | .155 (3.94) |
| 142-0701-551 | 142-0701-556 | .110 (2.79) |

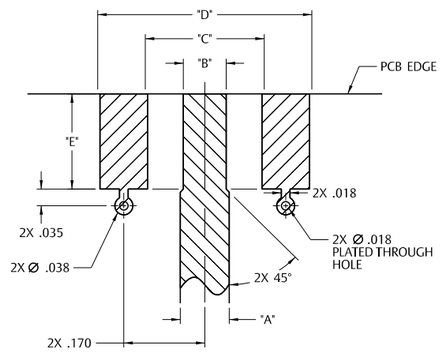
Mounting hole layout figure 1 and 2 page 194.



# PC Mount

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 connectors 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.



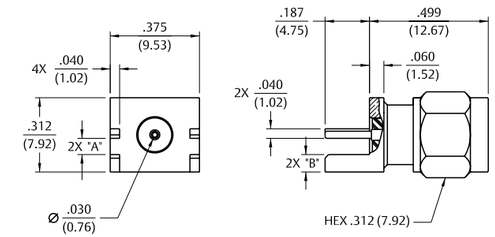

| Part No. | Base Width | Board Thickness | "A" | "B" | "C" | "D" | "E" |
|---|---|---|---|---|---|---|---|
| 142-0701-801/806 | .375 | .062 | .103 | .090 | .250 | .440 | .200 |
| 142-0701-851/858 | .375 | .062 | .103 | .090 | .250 | .440 | .200 |
| 142-0701-871/876 | .375 | .062 | .103 | .090 | .250 | .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.



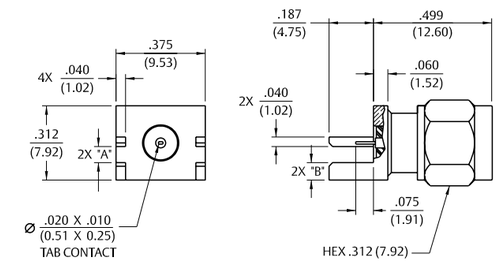


## End Launch Plug Receptacle – Round Contact



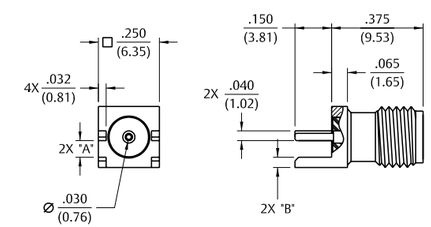

| Gold Plated | Nickel Plated | Board Thickness | "A" | "B" |
|---|---|---|---|---|
| 142-0801-801 | 142-0801-806 | .062 (1.57) | .068 (1.73) | .073 (1.85) |
| 142-0801-821 | 142-0801-826 | .042 (1.07) | .048 (1.22) | .093 (2.36) |

## End Launch Plug Receptacle – Tab Contact




| Gold Plated | Nickel Plated | Board Thickness | "A" | "B" |
|---|---|---|---|---|
| 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) |

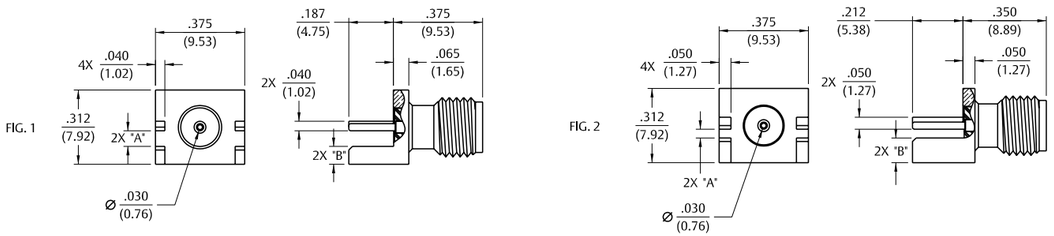
## End Launch Plug Receptacle – Round Contact




| Gold Plated | Nickel Plated | Board Thickness | "A" | "B" |
|---|---|---|---|---|
| 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) |

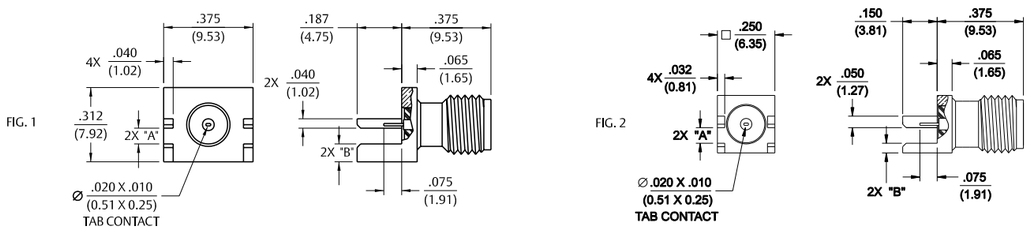
Coupling proof torque 8 lb-ins maximum without support .083 (2.11) wrench.

## End Launch Jack Receptacle – Round Contact




| Gold Plated | Nickel Plated | Board Thickness | "A" | "B" | Figure |
|---|---|---|---|---|---|
| 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




| Gold Plated | Nickel Plated | Board Thickness | "A" | "B" | Figure |
|---|---|---|---|---|---|
| 142-0701-851 | 142-0701-856 | .062 (1.57) | .068 (1.73) | .083 (2.11) | 1 |
| 142-0701-841 | 142-0701-846 | .042 (1.07) | .048 (1.22) | .103 (2.62) | 1 |
| 142-0711-881 | 142-0711-886 | .047 (1.19) | .053 (1.35) | .098 (2.24) | 1 |
| 142-0721-811 | 142-0721-816 | .025 (0.64) | .030 (0.76) | .121 (3.07) | 1 |
| 142-0721-861 | 142-0721-866 | .032 (0.81) | .037 (0.94) | .083 (2.11) | 2 |

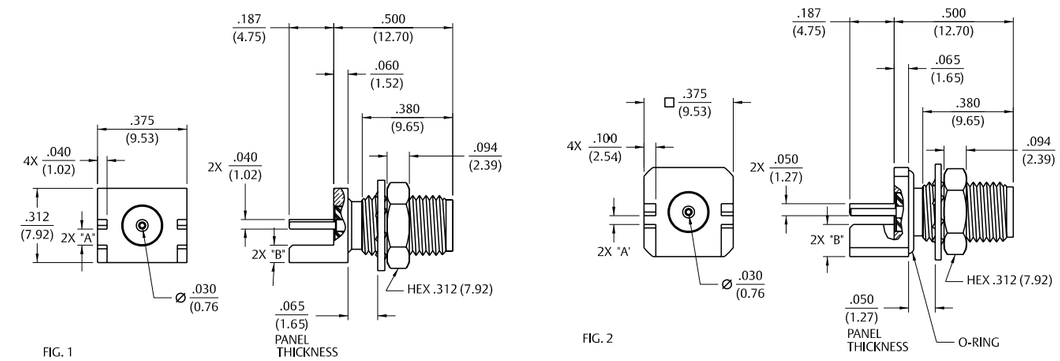








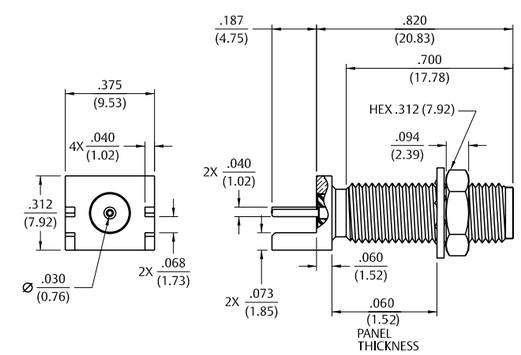
## End Launch Bulkhead Jack Receptacle – Round Contact




| Gold Plated | Nickel Plated | Board Thickness | "A" | "B" | "O" Ring | Figure |
|---|---|---|---|---|---|---|
| 142-0701-871 | 142-0701-876 | .062 (1.57) | .068 (1.73) | .073 (1.85) | No | 1 |
| 142-0721-871 | 142-0721-876 | .074 (1.88) | .080 (2.03) | .061 (1.55) | 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

| Gold Plated | Nickel Plated | Board Thickness |
|---|---|---|
| 142-0711-811 | 142-0711-816 | .062 (1.57) |

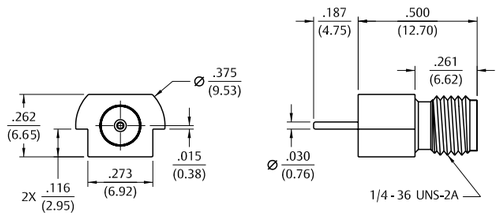





*Illustrations are shown in inches (millimeters).*

# Bulkhead Mount

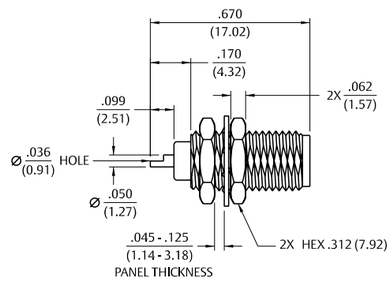
## End Launch Jack Receptacle – Surface Mount




| Gold Plated | Packaging |
|---|---|
| 142-0721-881 | Stock |
| 142-0721-882 | Tape and Reel 475 pcs/reel |

Recommended land pattern figure 22 page 195.

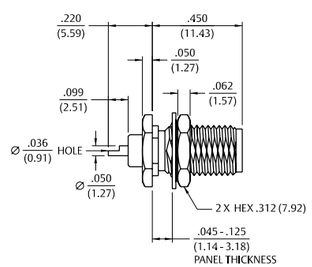
## Front Mount Bulkhead Jack Receptacle




| Gold Plated | Nickel Plated |
|---|---|
| 142-0701-411 | 142-0701-416 |

Mounting hole layout figure 1 page 194.

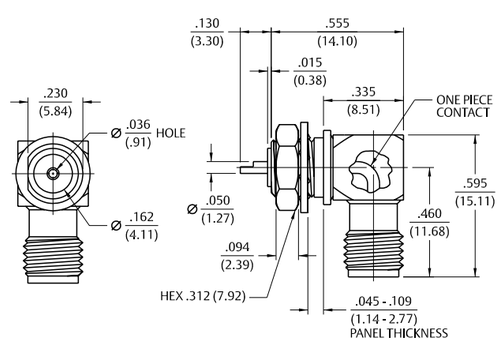
## Rear Mount Bulkhead Jack Receptacle




| Gold Plated | Nickel Plated |
|---|---|
| 142-0701-401 | 142-0701-406 |

Mounting hole layout figure 1 page 194.

## Right Angle Bulkhead Mount Jack Receptacle



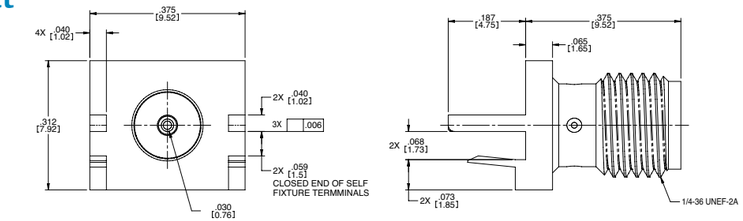

| Gold Plated | Nickel Plated |
|---|---|
| 142-0701-531 | 142-0701-536 |

Mounting hole layout figure 1 page 194.





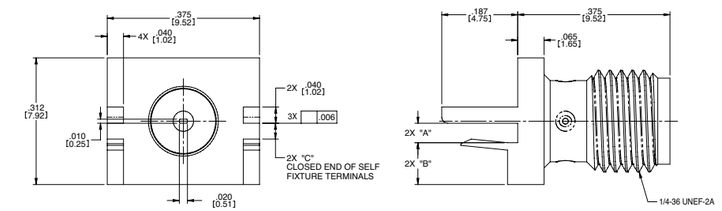
## Gold Plated, Round Contact




| Part No. | Board Thickness |
|---|---|
| 142-0791-801 | .062 (1.57) |

Assembly instructions page 227.

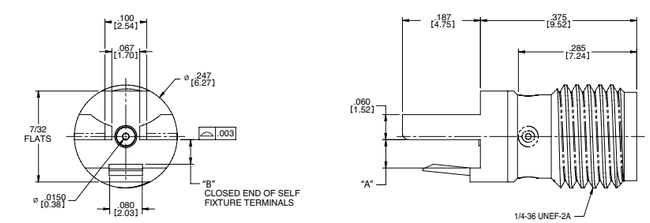
## Gold Plated, Tab Contact




| Part No. | Board Thickness | "A" | "B" | "C" |
|---|---|---|---|---|
| 142-0791-811 | .042 (1.07) | .048 (1.22) | .103 (2.62) | .039 (0.99) |
| 142-0791-821 | .062 (1.57) | .068 (1.73) | .083 (2.11) | .059 (1.50) |

Assembly instructions page 227.

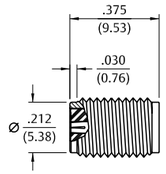
## Gold Plated, Round Contact – High Frequency




| Part No. | Frequency Range | Board Thickness | "A" | "B" |
|---|---|---|---|---|
| 142-1701-821 | 0-26.5 GHz | .062 (1.57) | .068 | .059 |
| 142-1701-831 | 0-26.5 GHz | .059 (1.49) | .063 | .054 |

Assembly instructions page 227.

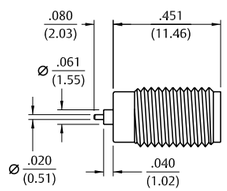
## Jack Receptacle – Thread Mount Field Replaceable




| 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 19 page 195.

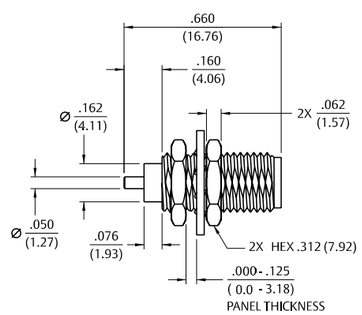
## Jack Receptacle – Thread Mount Extended Dielectric (Non-Hermetic)




| Gold Plated | Nickel Plated |
|---|---|
| 142-1731-021 | 142-1731-026 |

Mounting hole layout for 142-1731-021 figure 19 page 195.
Mounting hole layout for 142-1731-026 figure 18 page 195.

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




| Gold Plated | Nickel Plated |
|---|---|
| 142-1731-031 | 142-1731-036 |

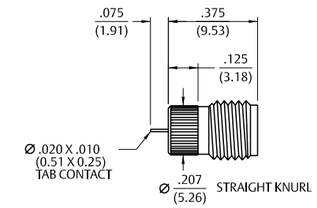
Mounting hole layout for 142-1731-031 figure 18 page 195.
Mounting hole layout for 142-1731-036 figure 1 page 194.







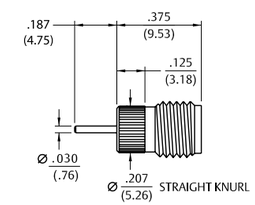
## Jack Receptacle – Knurl Mount* Tab Contact




| 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 188.
Mounting hole layout figure 17 page 195.

## 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 188.
Mounting hole layout figure 17 page 195.



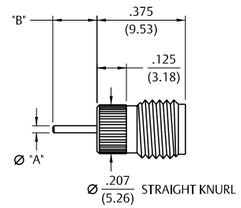


*Illustrations are shown in inches (millimeters).*

# Spark Plugs



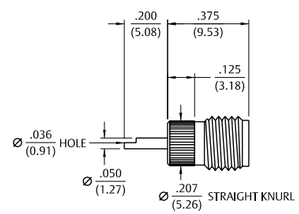
## Jack Receptacle – Knurl Mount* Round Contact




| Gold Plated | Nickel Plated | "A" | "B" |
|---|---|---|---|
| 142-1721-011 | 142-1721-016 | .030 (0.76) | .187 (3.18) |
| 142-1721-021 | 142-1721-026 | .050 (1.24) | .190 (4.83) |

* Not intended for use in materials harder than Rockwell B82.
Mounting hole layout figure 17 page 195.

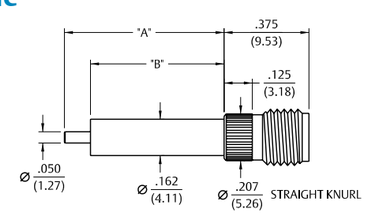
## Jack Receptacle – Knurl Mount* Solder Cup Contact




| Gold Plated | Nickel Plated |
|---|---|
| 142-0701-481 | 142-0701-486 |

* Not intended for use in materials harder than Rockwell B82.
Mounting hole layout figure 17 page 195.

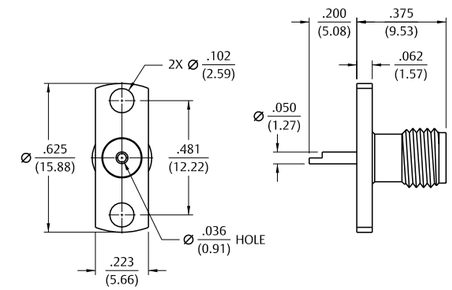
## Jack Receptacle – Knurl Mount* Extended Dielectric




| 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) |

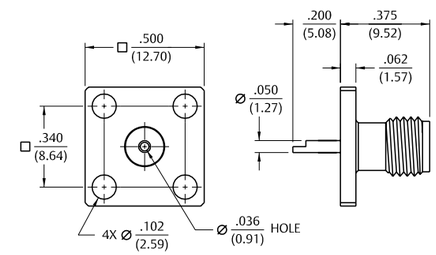
* Not intended for use in materials harder than Rockwell B82.
Mounting hole layout figure 17 page 195.

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



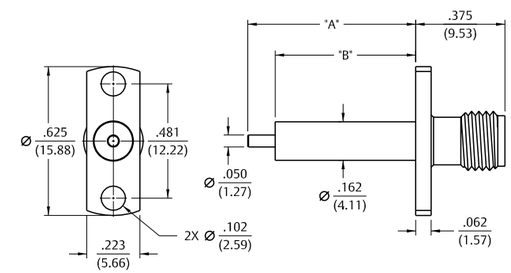

| Gold Plated | Nickel Plated |
|---|---|
| 142-0701-621 | 142-0701-626 |

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




| Gold Plated | Nickel Plated |
|---|---|
| 142-0701-631 | 142-0701-636 |

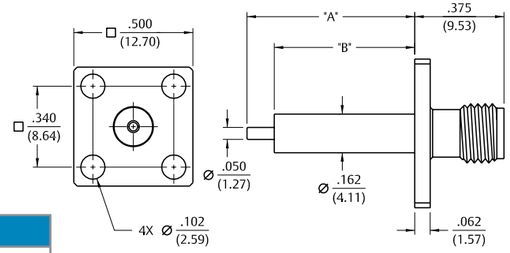
## 2-Hole Flange Mount Jack Receptacle – Extended Dielectric




| Gold Plated | Nickel Plated | "A" | "B" |
|---|---|---|---|
| 142-1701-131 | 142-1701-136 | .705 (17.91) | .590 (14.99) |
| 142-1701-031 | 142-1701-036 | .240 (6.10) | .180 (4.57) |

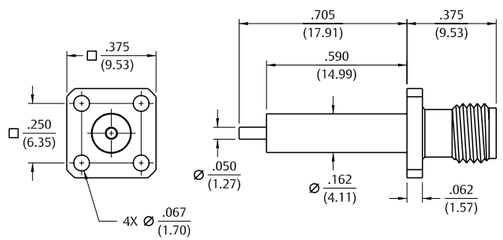
# Panel Mount

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



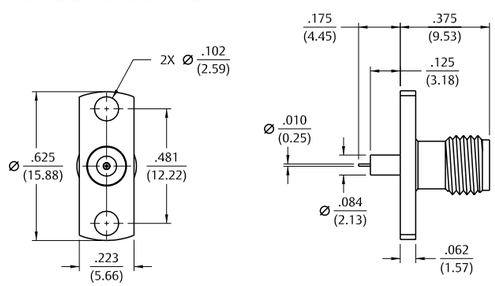

| Gold Plated | Nickel Plated | "A" | "B" |
|---|---|---|---|
| 142-1701-121 | 142-1701-126 | .705 (17.91) | .590 (14.99) |
| 142-1701-041 | 142-1701-046 | .190 (4.83) | .095 (2.41) |

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




| Gold Plated | Nickel Plated |
|---|---|
| 142-1701-011 | 142-1701-016 |

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

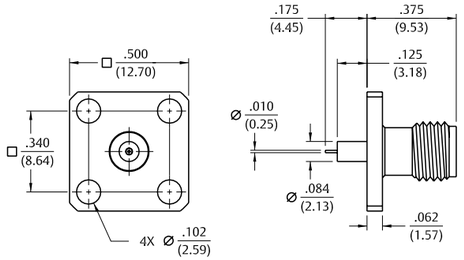



| Gold Plated | Nickel Plated |
|---|---|
| 142-1701-201 | 142-1701-206 |



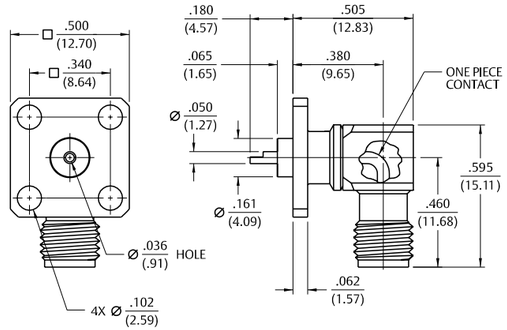


## 4-Hole Flange Mount Jack Receptacle – Extended Dielectric



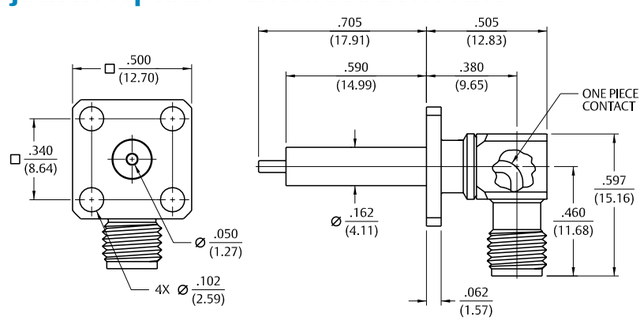

| Gold Plated | Nickel Plated |
|---|---|
| 142-1701-191 | 142-1701-196 |

## 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



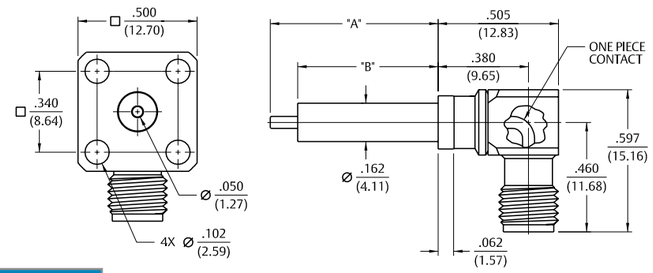

| Gold Plated | Nickel Plated |
|---|---|
| 142-1711-001 | 142-1711-006 |



*Illustrations are shown in inches (millimeters).*

# Panel Mount

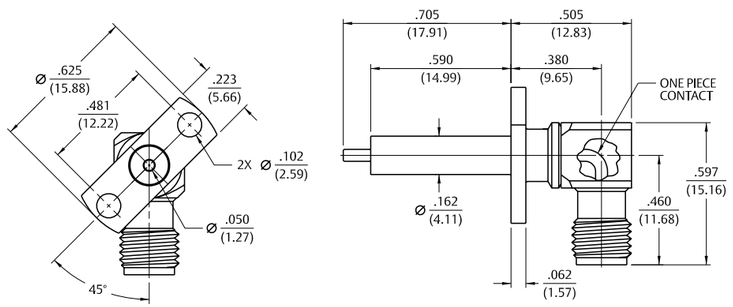
## 2-Hole Right Angle Flange Mount Jack Receptacle – Extended Dielectric 90° Orientation




| Gold Plated | Nickel Plated | "A" | "B" |
|---|---|---|---|
| 142-1711-011 | 142-1711-016 | .705 (17.91) | .590 (14.99) |
| 142-1711-061 | 142-1711-066 | .195 (4.95) | .130 (3.30) |

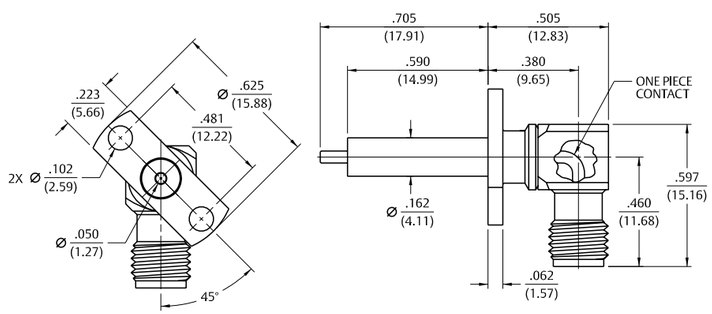
## 2-Hole Right Angle Flange Mount Jack Receptacle – Extended Dielectric +45° Orientation

| 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 |





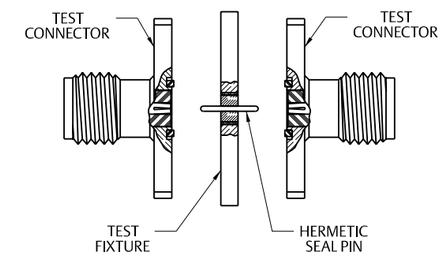



## Application Notes

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 = GHz). A VSWR specification is not stated because an industry standardized 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 (.30), .015 (.38), .018 (0.46) and .020 (0.51). Custom hermetic seal configurations can be quoted.

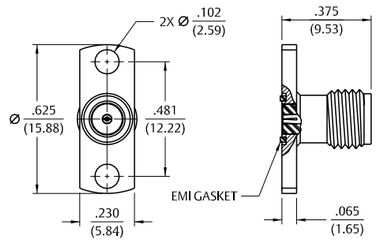
2. It is recommended that the hermetic seal be mounted flush with the circuit housing. Tolerance variations between the hermetic seal and machined housing do not always guarantee an optimum transition to the connector. Emerson does not recommend the addition of a counter bore in the circuit housing to accommodate solder washers as solder voids will cause electrical discontinuities.

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."

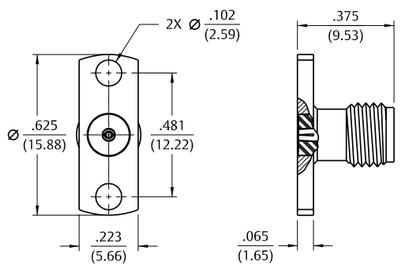
# Field Replaceable Panel Mount

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



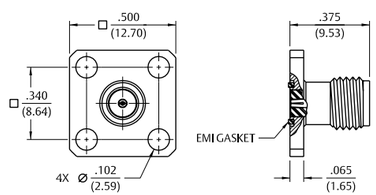

| Accepts Pin Size | Gold Plated | Nickel Plated |
|---|---|---|
| .012 (0.30) | 142-1701-601 | 142-1701-606 |
| .015 (0.38) | 142-1701-611 | 142-1701-616 |
| .018 (0.46) | 142-1701-621 | 142-1701-626 |

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




| Accepts Pin Size | Gold Plated | Nickel Plated |
|---|---|---|
| .020 (0.51) | 142-1701-631 | 142-1701-636 |
| .036 (0.91) | 142-1701-641 | 142-1701-646 |

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

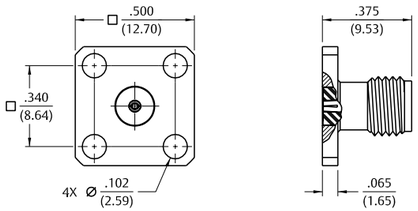



| Accepts Pin Size | Gold Plated | Nickel Plated |
|---|---|---|
| .012 (0.30) | 142-1701-501 | 142-1701-506 |
| .015 (0.38) | 142-1701-511 | 142-1701-516 |
| .018 (0.46) | 142-1701-521 | 142-1701-526 |



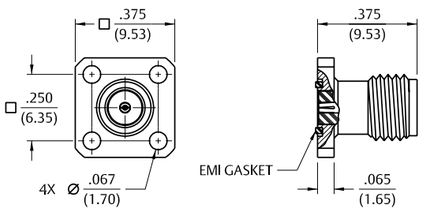


## 4-Hole Flange Mount Jack Receptacle – without EMI Gasket



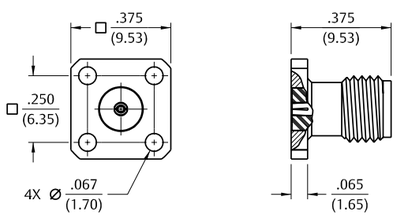

| Accepts Pin Size | Gold Plated | Nickel Plated |
|---|---|---|
| .020 (0.51) | 142-1701-531 | 142-1701-536 |
| .036 (0.91) | 142-1701-541 | 142-1701-546 |

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




| Accepts Pin Size | Gold Plated | Nickel Plated |
|---|---|---|
| .012 (0.30) | 142-1701-551 | 142-1701-556 |
| .015 (0.38) | 142-1701-561 | 142-1701-566 |
| .018 (0.46) | 142-1701-571 | 142-1701-576 |

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



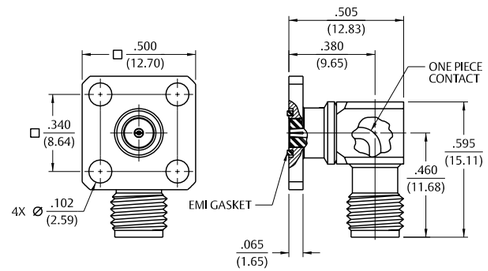

| Accepts Pin Size | Gold Plated | Nickel Plated |
|---|---|---|
| .020 (0.51) | 142-1701-581 | 142-1701-586 |
| .036 (0.91) | 142-1701-591 | 142-1701-596 |



*Illustrations are shown in inches (millimeters).*

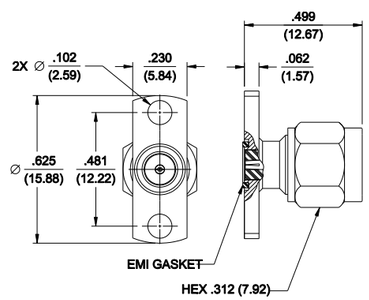
# Field Replaceable Panel Mount

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



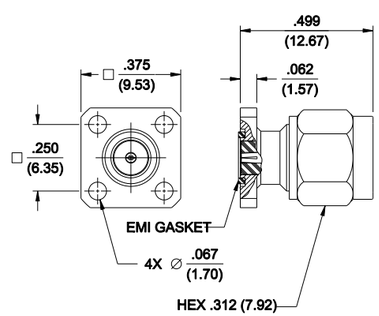

| Accepts Pin Size | Gold Plated | Nickel Plated |
|---|---|---|
| .015 (0.38) | 142-1711-511 | 142-1711-516 |
| .018 (0.46) | 142-1711-521 | 142-1711-526 |

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




| Accepts Pin Size | Gold Plated | Nickel Plated |
|---|---|---|
| .012 (0.30) | 142-1801-601 | 142-1801-606 |
| .015 (0.38) | 142-1801-611 | 142-1801-616 |
| .018 (0.46) | 142-1801-621 | 142-1801-626 |

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

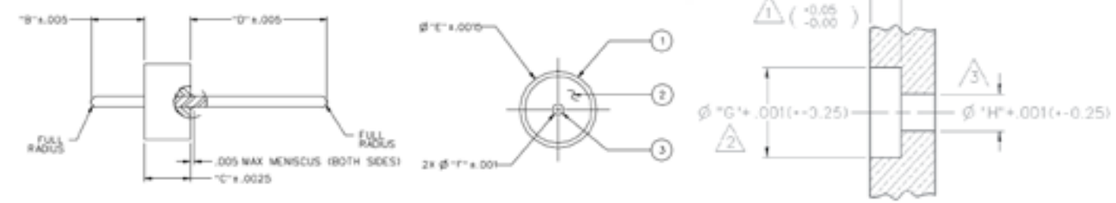



| Accepts Pin Size | Gold Plated | Nickel Plated |
|---|---|---|
| .012 (0.30) | 142-1801-551 | 142-1801-556 |
| .015 (0.38) | 142-1801-561 | 142-1801-566 |
| .018 (0.46) | 142-1801-571 | 142-1801-576 |





## Hermetic Seal Feedthrough




Recommended Mounting Hole Detail

| Part No. | Item 1 Outer Ring | Item 2 Insulator | Item 3 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<br>(1.78) | .0625<br>(1.59) | .180<br>(4.57) | .0985<br>(2.50) | .012<br>(0.30) |
| 142-1000-002 | Kovar<br>Gold pl .00005min over<br>Nickel pl .000005 min | Glass<br>Corning 7070<br>or equivalent | Kovar<br>Gold pl .00005 min over<br>Nickel pl .000005 mm | .072<br>(1.83) | .0625<br>(1.59) | .180<br>(4.57) | .0985<br>(2.50) | .015<br>(0.38) |
| 142-1000-003 | Kovar<br>Gold pl .00005 min over<br>Nickel pl .000005 min | Glass<br>Corning 7050<br>or equivalent | Kovar<br>Gold pl .00005 min over<br>Nickel p1 .000005 min | .072<br>(1.83) | .0600<br>(1.52) | .180<br>(4.57) | .1100<br>(2.79) | .018<br>(0.46) |
| 142-1000-004 | Kovar<br>Gold pl .00005min 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<br>(1.78) | .0600<br>(1.52) | .203<br>(5.16) | .1580<br>(4.01) | .020<br>(0.51) |

## Mounting Hole Dimensions

| Part No. | Pin Diameter | "F" | "G" | Air "H" | Teflon* "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) |

* Teflon is a registered trademark of DuPont

**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 insupporting 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)

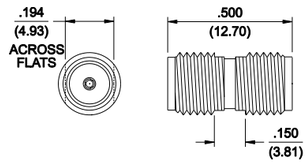
## Environmental

**Hermeticity:** $1x10^{-8}$ cc/sec at one atmosphere
**Solderability:** MIL-STD-202, Method 209
**Operating Temperature:** -55° C to +165° C

# In-Series Adapters

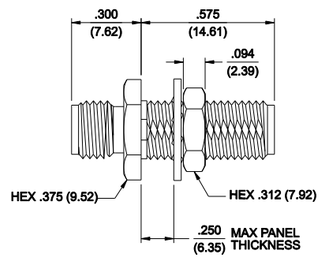
## Jack to Jack Adapter

| Gold Plated | Nickel Plated |
|---|---|
| 142-0901-801 | 142-0901-806 |



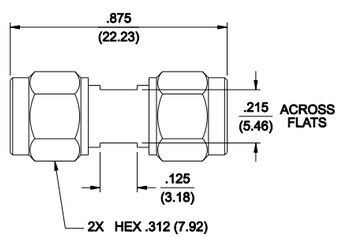

## Jack to Bulkhead Jack Adapter

| Gold Plated | Nickel Plated |
|---|---|
| 142-0901-401 | 142-0901-406 |



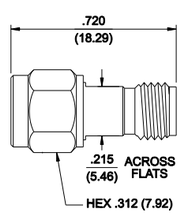

## Plug to Plug Adapter

| Gold Plated | Nickel Plated |
|---|---|
| 142-0901-811 | 142-0901-816 |




## Plug to Jack Adapter

| Gold Plated | Nickel Plated |
|---|---|
| 142-0901-821 | 142-0901-826 |

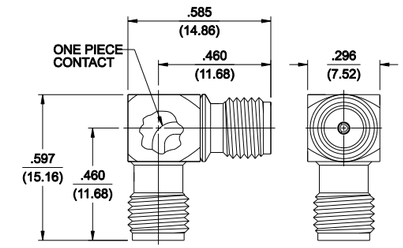






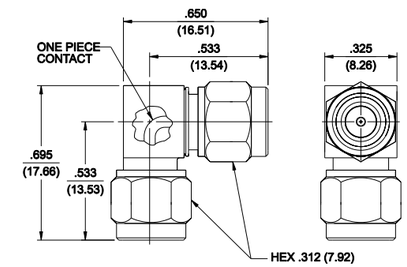

## Right Angle Jack to Jack Adapter

| Gold Plated |
|---|
| 142-0901-921 |



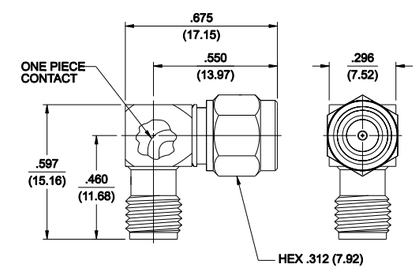

## Right Angle Plug to Plug Adapter

| Gold Plated |
|---|
| 142-0901-931 |



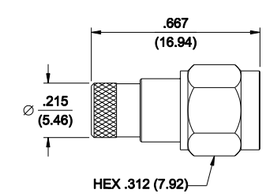

## Right Angle Jack to Plug Adapter

| Gold Plated |
|---|
| 142-0901-941 |




## Dummy Load Plug

| Gold Plated | Nickel Plated | Resistance |
|---|---|---|
| 142-0801-861 | 142-0801-866 | 50 Ohm |




**For more information, please contact customer service at (507) 833-8822 or (800) 247-8256 • www.EmersonConnectivity.com**

*Illustrations are shown in inches (millimeters).*

# Specifications

## Electrical Specifications

**Impedance:** 50 Ohms
**Frequency Range:**
Flexible cable connectors ..... 0-12.4 GHz
Flexible cable connectors ..... 0-18.0 GHz

| **VSWR:** (max) (f = GHz) | Straight Cabled Connectors | Right Angle 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 max) | 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 min at sea level)
RG-316; LMR-100, 195, 200 ..... 750
RG-58, RG-142, LMR-240, uncabled receptacles ..... 1000
**Insulation Resistance:** 5000 megohms min

| **Contact Resistance:** (milliohms max) | 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 |

**Corona Level:** (Volts min at 70,000 feet)
RG-316, LMR-100, 195, 200 ..... 190
RG-58, RG-142, LMR-240, uncabled receptacles ..... 250
**Insertion Loss:** (dB max)
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
**RF Leakage:** (dB min, tested at 2.5 GHz)
Flexible cable connectors ..... -60 dB
Uncabled receptacles and adapters ..... N/A
**RF High Potential Withstanding Voltage:**
(VRMS min tested at 4 and 7 MHz)† RG-316; LMR-100, 195, 200 ..... 500
RG-58, RG-142, LMR-240, uncabled receptacles ..... 670

*† Avoid user injury due to misapplication. See safety advisory definitions.*

## Mechanical Ratings

**Engagement Design:** Reverse Polarity, Series SMA
**Engagement/Disengagement Force:** 2 lb-in max max
**Mating Torque**: 7 to 10 lb-in
**Bulkhead Mounting Nut Torque:** 15 lb-in
**Coupling Proof Torque:** 15 lb-in min
**Coupling Nut Retention:** 60 lbs min
**Contact Retention:** 6 lbs min axial force (captivated contacts)
4 oz-in min 4 oz-in min

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

(Meets or Exceeds the Applicable Paragraph of MIL-PRF-39012)

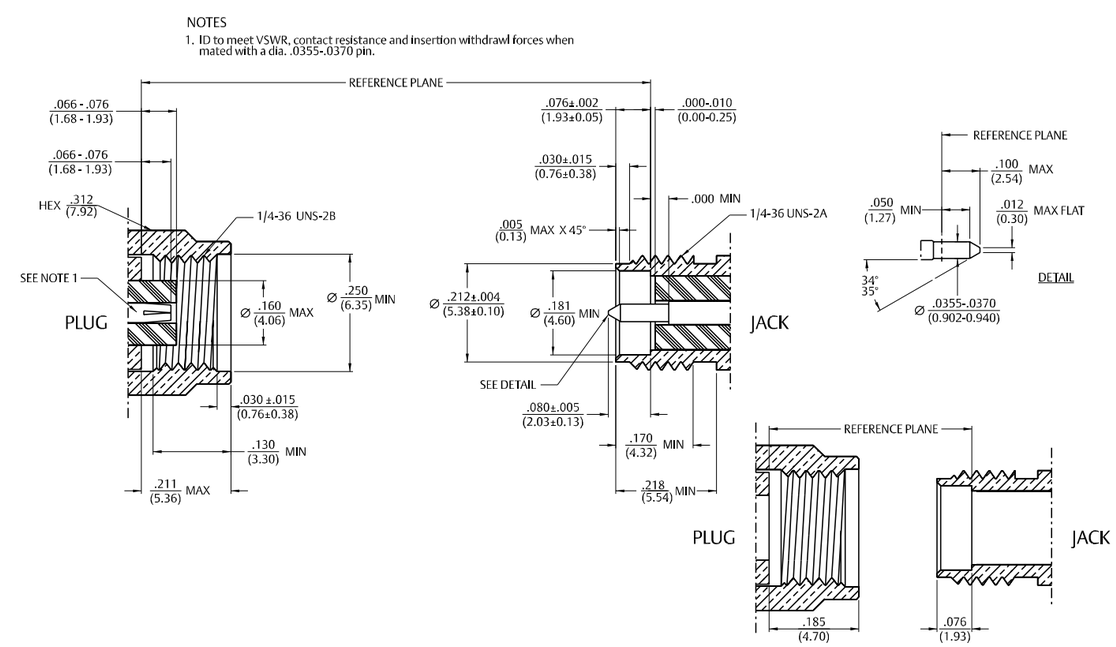
| | |
|---|---|
| **Temperature Range:** | - 65°C to + 165°C |
| **Thermal Shock**: | MIL-STD-202, Method 107, Condition B |
| **Corrosion:** | MIL-STD-202, Method 101, Condition B |
| **Shock:** | MIL-STD-202, Method 213, Condition I |
| **Vibration:** | MIL-STD-202, Method 204, Condition D |
| **Moisture Resistance:** | MIL-STD-202, Method 106 |

## Material Specifications

| | |
|---|---|
| **Bodies:** | Brass per ASTM B16, gold plated* per MIL-DTL-45204 .00001" min or nickel plated per ASTM B16 |
| **Contacts:** | Male - brass per QQ-B-626, gold plated per MIL-DTL-45204 .00003" min<br>Female - beryllium copper per ASTM B196, gold plated* per MIL-DTL-45204 .00003" min |
| **Nut Retention Spring:** | Beryllium copper per ASTM B196, unplated |
| **Insulators:** | PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457 or Tefzel per ASTM D 3159 |
| **Expansion Caps:** | Brass per ASTM B16, gold plated* per MIL-DTL-45204 .00001" min. or nickel plated per SAE-AMS2423 |
| **Crimp Sleeves:** | Copper per ASTM B301 or brass per ASTM B16, gold plated* per MIL-DTL-45204 .00001" min or nickel plated per SAE-AMS2423 |
| **Mounting Hardware:** | Brass (nuts) per ASTM B16 or phosphor bronze (lockwashers) per ASTM B139, gold plated* per MIL-DTL-45204 .00001" min |

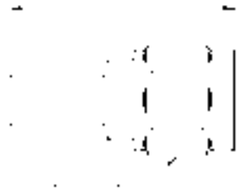
** All gold plated parts include a .00005" min nickel barrier layer.*
*† Avoid user injury due to misapplication. See safety advisory definitions.*

### Mating Engagement for SMA Reverse Polarity Series



# Flexible Cable

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



| Cable Type | Gold Plated | Nickel Plated | "A" |
|---|---|---|---|
| RG-316/U, 188, 174, 161, LMR-100 HPF-100, RF-100 | 142-4403-001 | 142-4403-006 | .706 (17.93) |
| RG-316 DS, 188 DS | 142-4404-001 | 142-4404-006 | .706 (17.93) |
| RG-58, 141, 303 LMR-195, HPF-195,RF-195 | 142-4407-001 | 142-4407-006 | .706 (17.93) |
| RG-142, 55, 223, 400 | 142-4408-001 | 142-4408-006 | .706 (17.93) |
| LMR-200, HPF-200, RF-200 | 142-4439-001 | 142-4439-006 | .844 (21.44) |
| LMR-240, HPF-240, RF-240 | 142-4435-001 | 142-4435-006 | .844 (21.44) |

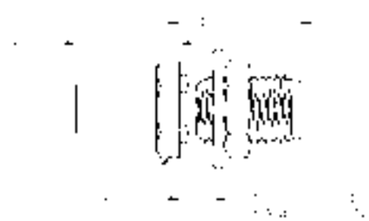
Assembly Instructions: LMR 195, 200 and 240 page 219. All other cables page 220.

## Right Angle Crimp Type Plug – Captivated Contact

| Cable Type | Gold Plated | Nickel Plated | "A" | "B" |
|---|---|---|---|---|
| RG-316, 188, 174, 161, LMR-100, HPF-100, RF-100 | 142-4403-101 | 142-4403-106 | .611 (15.52) | .470 (11.94) |
| RG-316 DS, 188 DS | 142-4404-101 | 142-4404-106 | .611 (15.52) | .470 (11.94) |
| RG-58, 141, 303, LMR-195, HPF-195, RF-195 | 142-4407-101 | 142-4407-106 | .611 (15.52) | .470 (11.94) |
| RG-142, 55, 223, 400 | 142-4408-101 | 142-4408-106 | .611 (15.52) | .470 (11.94) |
| LMR-200, HPF-200, RF-200 | 142-4439-101 | 142-4439-106 | .611 (15.52) | .470 (11.94) |
| LMR-240, HPF-240, RF-240 | 142-4435-101 | 142-4435-106 | .635 (16.13) | .490 (12.45) |

Assembly Instructions: LMR 195, 200 and 240 page 224. All other cables page 229.
Center conductor of cable serves as contact.

## Straight Crimp Type Bulkhead Jack – Captivated Contact



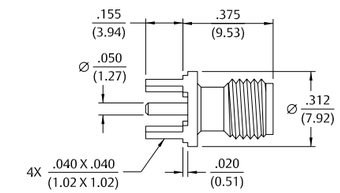
| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-316, 188, 174, 161 | 142-4303-401 | 142-4303-406 |
| RG-316 DS, 188 DS | 142-4304-401 | 142-4304-406 |
| RG-58, 141, 303 | 142-4307-401 | 142-4307-406 |
| RG-142, 55, 223, 400 | 142-4308-401 | 142-4308-406 |

Assembly instructions page 219.
Mounting hole layout figure 1 page 194.





## Straight Jack Receptacle




| Gold Plated | Nickel Plated |
|---|---|
| 142-4701-201 | 142-4701-206 |

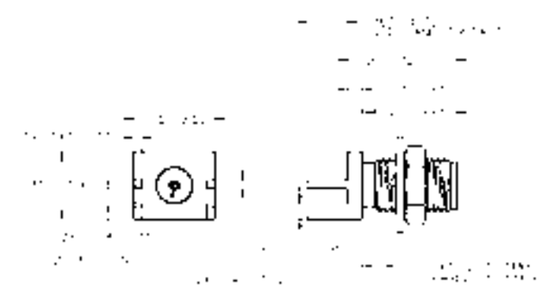
Mounting hole layout figure 2 page 194.

## Right Angle Bulkhead Jack Receptacle

| Gold Plated | Nickel Plated |
|---|---|
| 142-4701-501 | 142-4701-506 |

Mounting hole layout figure 1 and 2 page 194.

## End Launch Bulkhead Jack Receptacle



| Gold Plated | Nickel Plated | Board Thickness |
|---|---|---|
| 142-4701-801 | 142-4701-806 | .062 (1.57) |

## Electrical Specifications

**Impedance:** 50 Ohms
**Frequency Range:**

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

| **VSWR:** (max) (f = GHz) | Straight Cabled Connectors | Right Angle 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 max) | 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 min at sea level)

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

**Insulation Resistance:** 5000 megohms min

| **Contact Resistance:** (milliohms max) | 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 |

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

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

**Insertion Loss:** (dB max)

| | |
|---|---|
| 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 |

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

*† Avoid user injury due to misapplication. See safety advisory definitions.*

## Mechanical Ratings

| | |
|---|---|
| **Engagement Design:** | Reverse Thread, Series SMA |
| **Engagement/Disengagement Force:** | 2 lb-in max |
| **Mating Torque**: | 7 to 10 lb-in |
| **Bulkhead Mounting Nut Torque:** | 15 lb-in |
| **Coupling Proof Torque:** | 15 lb-in min |
| **Coupling Nut Retention:** | 60 lbs min |
| **Contact Retention:** | 6 lbs. min axial force (captivated contacts)<br>4 oz-in min torque (uncabled receptacles) |

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

*Or cable breaking strength whichever is less.

**Durability:** 500 cycles min











## Environmental Specifications

(Meets or Exceeds the Applicable Paragraph of MIL-PRF-39012)

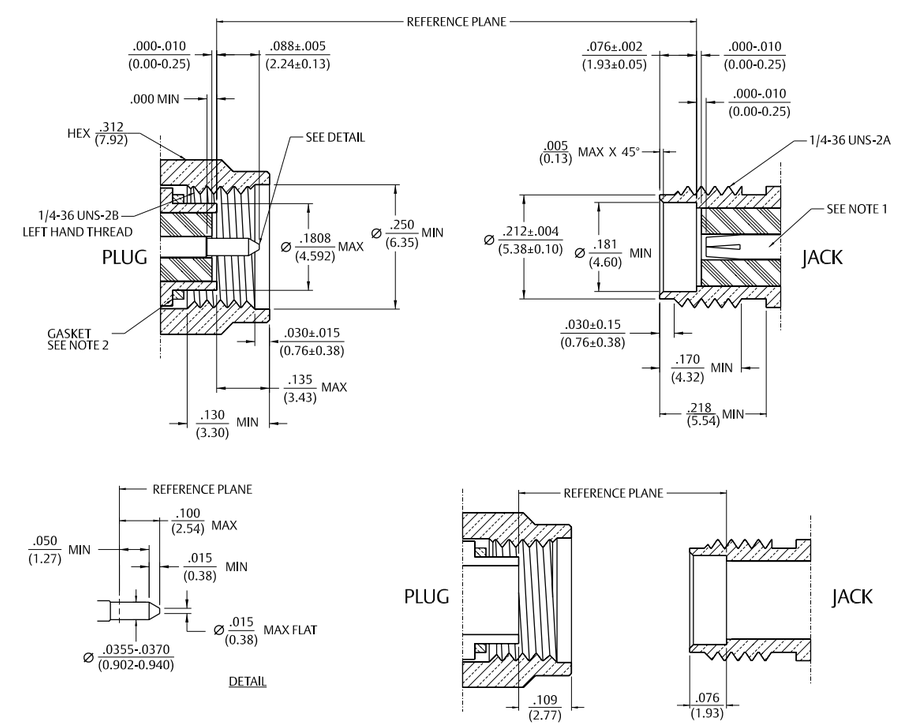
| | |
|---|---|
| **Temperature Range:** | - 65°C to + 165°C |
| **Thermal Shock**: | MIL-STD-202, Method 107, Condition B |
| **Corrosion:** | MIL-STD-202, Method 101, Condition B |
| **Shock:** | MIL-STD-202, Method 213, Condition I |
| **Vibration:** | MIL-STD-202, Method 204, Condition D |
| **Moisture Resistance:** | MIL-STD-202, Method 106 |

## Material Specifications

| | |
|---|---|
| **Bodies:** | Brass per ASTM B16, gold plated* per MIL-DTL-45204 .00001" min or nickel plated per ASTM B16 |
| **Contacts:** | Male - brass per QQ-B-626, gold plated* per MIL-DTL-45204 .00003" min<br>Female - beryllium copper per ASTM B196, gold plated* per MIL-DTL-45204 .00003" min |
| **Nut Retention Spring:** | Beryllium copper per ASTM B196. Unplated |
| **Insulators:** | PTFE fluorocarbon per ASTM D1710 and ASTM D1457 or Tefzel per ASTM D 3159 |
| **Expansion Caps:** | Brass per ASTM B16, gold plated per MIL-DTL-45204 .00001" min or nickel plated* per SAE-AMS2423 |
| **Crimp Sleeves:** | Copper per ASTM B301 or brass per ASTM B301, gold plated* per MIL-DTL-45204 .00001" min or nickel plated per SAE-AMS2423 |
| **Mounting Nut:** | Brass per ASTM B16, green chromate over zinc plated Mounting Lockwasher: Phosphor bronze per ASTM B139, gold plated* per MIL-DTL-45204 .00001" min or nickel plated per SAE-AMS2423 |

** All gold plated parts include a .00005" min nickel barrier layer.*
*† Avoid user injury due to misapplication. See safety advisory definitions.*

### Mating Engagement for SMA Reverse Thread Series



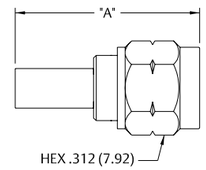



*Illustrations are shown in inches (millimeters).*

# Flexible Cable



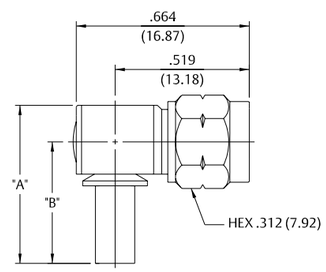
## Straight Crimp Type Plug – Solder or Crimp Captivated Contact




| Cable Type | Gold Plated | Nickel Plated | "A" |
|---|---|---|---|
| RG-316, 188, 174, 161, LMR-100 HPF-100 RF-100 | 142-5403-001 | 142-5403-006 | .706 (17.93) |
| RG-316 DS, 188 DS, | 142-5404-001 | 142-5404-006 | .706 (17.93) |
| RG-58, 141, 303 LMR-195, HPF-195, RF-195 | 142-5407-001 | 142-5407-006 | .706 (17.93) |
| RG-142, 55, 223, 400 | 142-5408-001 | 142-5408-006 | .706 (17.93) |
| LMR-200, HPF-200, RF-200 | 142-5439-001 | 142-5439-006 | .844 (21.44) |
| LMR-240, HPF-240, RF-240 | 142-5435-001 | 142-5435-006 | .844 (21.44) |

Assembly Instructions: LMR 195, 200 and 240 page 220. All other cables page 219.

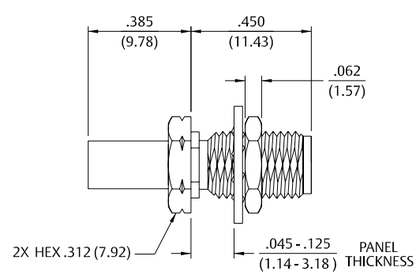
## Right Angle Crimp Type Plug – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated | "A" | "B" |
|---|---|---|---|---|
| RG-316, 188, 174, 161, LMR-100 HPF-100 RF-100 | 142-5403-101 | 142-5403-106 | .611 (15.52) | .470 (11.94) |
| RG-316 DS 188 DS | 142-5404-101 | 142-5404-106 | .611 (15.52) | .470 (11.94) |
| RG-58, 141, 303, LMR-195 HPF-195 RF195 | 142-5407-101 | 142-5407-106 | .611 (15.52) | .470 (11.94) |
| RG-142, 55, 223, 400 | 142-5408-101 | 142-5408-106 | .611 (15.52) | .470 (11.94) |
| LMR-200 HPF-200 RF-200 | 142-5439-101 | 142-5439-106 | .611 (15.52) | .470 (11.94) |
| LMR-240 HPF-240 RF-240 | 142-5435-101 | 142-5435-106 | .635 (16.13) | .490 (12.45) |

Assembly instructions: LMR 195, 200 and 240 page 229. All other cables page 224.

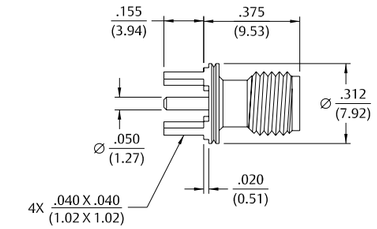
## Straight Crimp Type Bulkhead Jack – Solder or Crimp




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-316, 188, 174, 161 | 142-5303-401 | 142-5303-406 |
| RG-316 DS, 188 DS | 142-5304-401 | 142-5304-406 |
| RG-58, 141, 303 | 142-5307-401 | 142-5307-406 |
| RG-142, 55, 223, 400 | 142-5308-401 | 142-5308-406 |

Assembly instructions page 219.
Mounting hole layout figure 1 page 194.

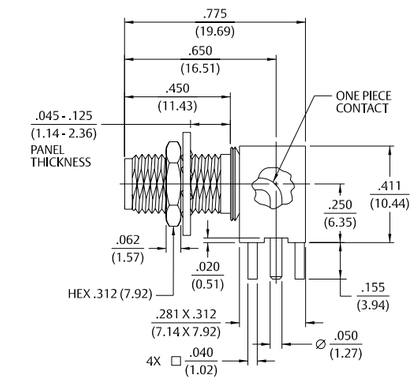
## Straight Jack Receptacle




| Gold Plated | Nickel Plated |
|---|---|
| 142-5701-201 | 142-5701-206 |

Mounting hole layout figure 2 page 194.

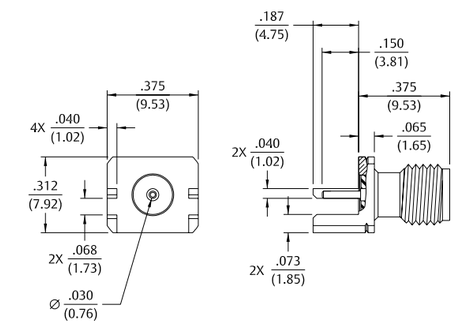
## Right Angle Bulkhead Jack Receptacle




| Gold Plated | Nickel Plated |
|---|---|
| 142-5701-501 | 142-5701-506 |

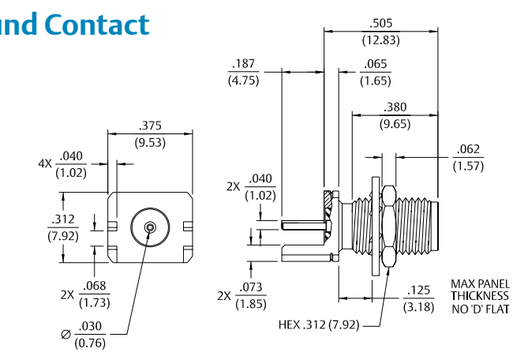
Mounting hole layout figures 1 and 2 page 194.

## End Launch Bulkhead – Round Contact




| Gold Plated | Nickel Plated | Board Thickness |
|---|---|---|
| 142-5701-801 | 142-5701-806 | .062 (1.57) |

## End Launch Bulkhead Jack Receptacle – Round Contact






*Illustrations are shown in inches (millimeters).*



SMA CONNECTORS – REVERSE THREAD – 50 OHM

# Specifications

## Electrical Specifications

**Impedance:** 50 Ohms
**Frequency Range:** Flexible cable connectors ..... 0-12.4 GHz
Uncabled receptacles ..... 0-18.0 GHz

| **VSWR:** (max) (f = GHz) | Straight Cabled Connectors | Right Angle Cabled Connectors |
|---|---|---|
| RG-316 cable | 1.15 + .02f | 1.15 + .03f |
| RG-58 cable | 1.15 + .01f | 1.15 + .02f |
| Uncabled receptacles | | N/A |

| Working Voltage: (VRMS max)† | Sea Level | 70K Feet |
|---|---|---|
| RG-316 | 250 | 65 |
| RG-58, uncabled receptacles | 335 | 85 |

**Dielectric Withstanding Voltage:** (VRMS min at sea level)†
RG-316 ..... 750
RG-58, uncabled receptacles ..... 1000
**Insulation Resistance:** 5000 megohms min

| **Contact Resistance:** (milliohms max ) | 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 |

**Corona Level:** (Volts min at 70,000 feet)†
RG-316 190
RG-58, uncabled receptacles ..... 250
**Insertion Loss:** (dB max)
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
**RF Leakage:** (dB min 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)†
RG-316 ..... 500
RG-58, uncabled receptacles ..... 670

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

## Mechanical Specifications

**Engagement Design:** MIL-STD-348, Series SMA
**Engagement/Disengagement Force:** 2 lb-in min max
**Mating Torque:** 7 to 10 lb-in min
**Coupling Proof Torque:** 15 lb-in min
**Coupling Nut Retention:** 60 lbs min
**Contact Retention:** 6 lbs min axial force (captivated contacts)
4 oz-in min torque (uncabled receptacles)

| **Cable Retention:** | Axial Force* (lbs) | Torque (oz-in) |
|---|---|---|
| RG-316 | 20 | N/A |
| RG-58 | 40 | N/A |

*Or cable breaking strength whichever is less.
**Durability:** 500 cycles min

## Environmental Specifications

(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 I
**Vibration:** MIL-STD-202, Method 204, Condition D
**Moisture Resistance:** MIL-STD-202, Method 106

## Material Specifications

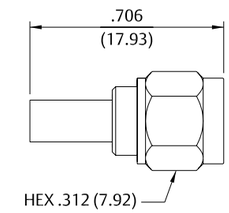
(See non-magnetic materials page 10)

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





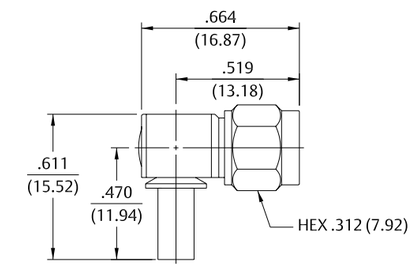
## Straight Crimp Type Plug (3-piece) – Captivated Contact




| Cable Type | Gold Plated |
|---|---|
| RG-316, 188, 174 | 142-9403-011 |
| RG-316 DS, 188 DS | 142-9404-011 |
| RG-58, 141, 303 | 142-9407-001 |

Assembly instructions page 219.

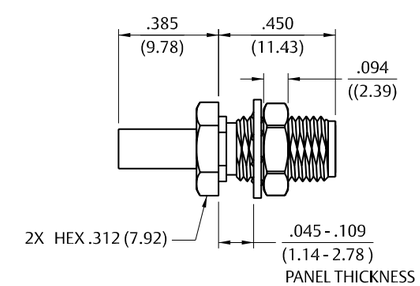
## Right Angle Crimp Type Plug – Captivated Contact




| Cable Type | Gold Plated |
|---|---|
| RG-316, 188, 174 | 142-9403-101 |
| RG-316 DS, 188 DS | 142-9404-101 |
| RG-58, 141 | 142-9407-101 |

Assembly instructions page 224.

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




| Cable Type | Gold Plated |
|---|---|
| RG-316, 188, 174 | 142-9303-411 |

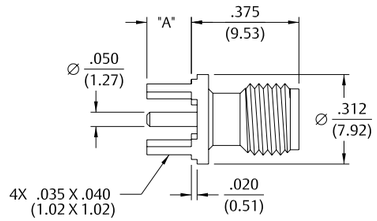
Assembly instructions page 219.

# PC Mount

## Straight Jack Receptacle

| Gold Plated | "A" |
|---|---|
| 142-9701-201 | .155 (3.94) |
| 142-9701-211 | .110 (2.79) |

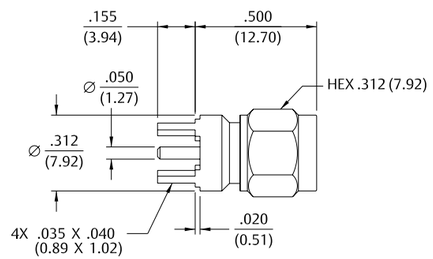
Mounting hole layout figure 3 on page 194.




## Straight Plug Receptacle

| Gold Plated |
|---|
| 142-9801-201 |

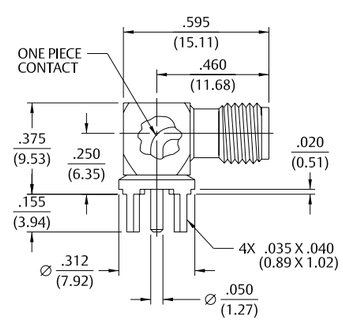
Mounting hole layout figure 3 on page 194.




## Right Angle Jack Receptacle

| Gold Plated |
|---|
| 142-9701-301 |

Mounting hole layout figure 3 on page 194.

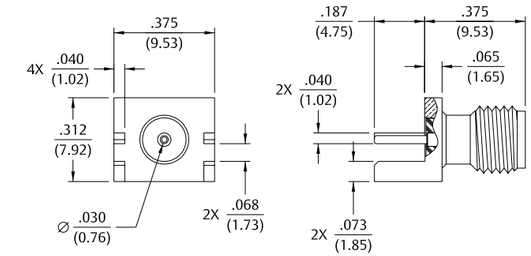






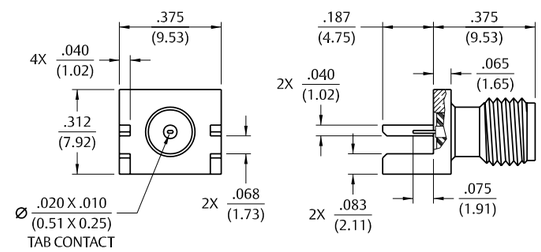

## End Launch Jack Receptacle – Round Contact

| Gold Plated | Board Thickness |
|---|---|
| 142-9701-801 | .062 (1.57) |




## End Launch Jack Receptacle – Tab Contact

| Gold Plated | Board Thickness |
|---|---|
| 142-9701-811 | .062 (1.57) |








*Illustrations are shown in inches (millimeters).*

# Specifications

## Electrical Specifications

**Impedance:** 50 Ohms
**Frequency Range:** 0-26.5 GHz
**VSWR:** (max) 1.05+.02f(GHz) max at 0-18 GHz, <1.50 typical at 18-26.5 GHz
**Working Voltage:** 170 VRMS max at sea level, 45 VRMS max at 70K feet
**Dielectric Withstanding Voltage:** 500 VRMS min at sea level
**Insulation Resistance:** 1000 Megohms min

| **Contact Resistance:** (milliohms max) | Initial | After Environmental |
|---|---|---|
| Center Contact | 3.0 | 4.0 |
| Outer Conductor | 2.0 | NA |

**Corona Level:** 125 Volts at 70K feet
**Insertion Loss:** (Dependant upon application)
**RF Leakage:** Not Applicable
**RF High Potential Withstanding Voltage:** 335 VRMS min at 4 and 7 MHz

## Mechanical Specifications

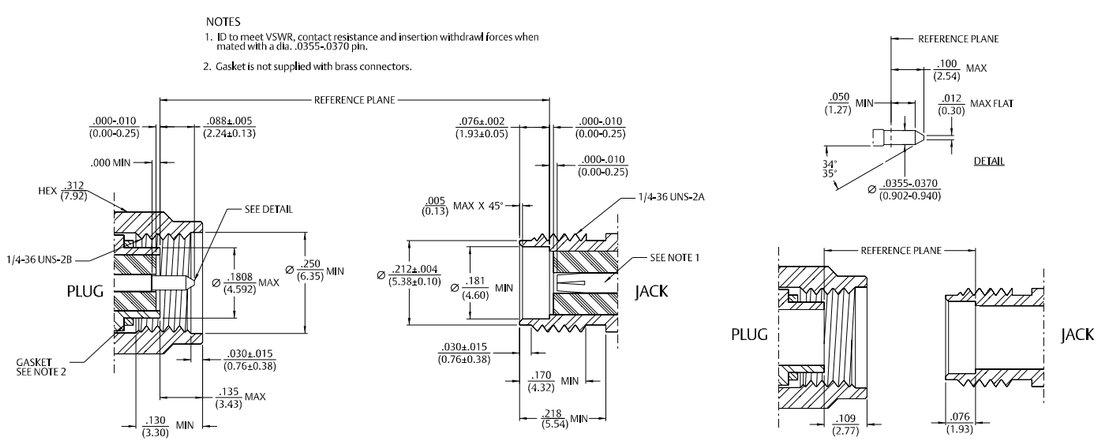
**Engagement Design:** MIL-STD-348, Series SMA
**Engagement/Disengagement Force:** 2 lb-in max
**Mating Torque:** 7 to 10 lb-in
**Contact Retention:** 6 lbs min axial force, 4 oz-in min radial torque

## 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 - Except 115°C High Temp
**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

### Mating Engagement for SMA Series Thickwall Plug Compatable with MIL-STD-348





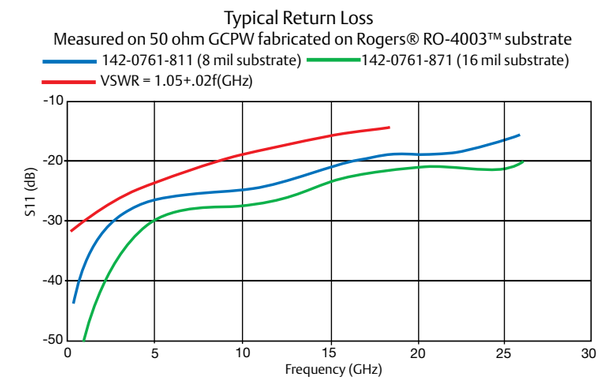



## High Frequency SMA End Launch Connectors for Microwave PC Board Substrates

The Johnson line of High Frequency End Launch connectors are used to transition microwave energy from coaxial to planar transmission line structures. These connectors provide a unique solution for microwave engineers who fabricate circuit designs on very thin high frequency board substrates. The in-line connector design minimizes reflections as compared to a right-angle (perpendicular) pc mount transition.

- Cellular Linear Power Amplifiers
- Broadband MMIC Power Amplifiers
- Microwave Filters, Mixers and Combiners
- Wireless Infrastructure Antennas
- DBS Low-Noise Block Down Converters
- Remote Sensing and Metering
- Global Positioning Satellite Antennas
- Phased Array Antennas
- Radar Systems
- High Speed Routers and Switches
- Automated Test Equipment
- RF Identification Tags

High Frequency End Launch connectors are designed to attach directly to a high frequency coplanar waveguide (CPW) circuit board transmission line, although other lines such as microstrip can be used with good results. These connectors can be used on high frequency PC board substrate layers as thin as 8 mils, and operate at frequencies up to 26.5 GHz (see Return Loss chart).

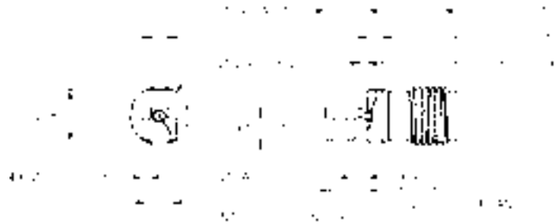



### Design Features

This connector is an economical alternative to other high frequency designs in the industry. This design differentiates itself from other launch connectors:

- Design of the connector is self contained, no external mounting screws, adapter sections, spring clips, etc. are required for assembly to the circuit board.
- Center contact pin does not require special orientation to the surface of the circuit board. The center contact is mechanically captivated and optimized to maintain proper impedance while withstanding torque and axial force stress.
- Output coax of the connector at board launch is sized appropriately to match the thickness of the high frequency board substrate. The output coax section extends well within the connector while maintaining constant inner and outer coaxial diameters.
- Signal side grounding legs of the connector are spaced close enough to keep grounding paths short, but far enough apart to maintain constant impedance in the launch transition area.
- Signal side grounding legs and GCPW geometry control radiation, no additional shielding is required to prevent signal cross-talk effects in the transition area. The launch transition is effectively isolated from adjacent transmission lines in the signal plane.
- Connector is not locked into position when placed on the circuit board. Intentional floating design allows proper alignment in X, Y and Z, minimizing discontinuities due to manufacturing tolerances.
- The distinctive through hole mounting technique allows the use of one connector with varying circuit board thicknesses. The connectors are also available in a traditional straddle mount end launch design, which was pioneered by Emerson Network Power Connectivity Solutions over 30 years ago.
- A small amount of PTFE insulation projects from the rear mating plane of the connector, acting as a seal when soldering the center conductor pin to the trace. The connector is held against the circuit board edge during the soldering process, compressing the PTFE insulation. This effectively creates a barrier between the inner and outer conductors, preventing the bridging of solder.
- Appropriate sized connectors do not require additional compensation to standard coplanar or microstrip matched impedance line geometries. Transition can be fine-tuned by pulling the trace back a slight amount from the board edge.

## Jack Receptacle – Round Body



| Gold Plated | High Frequency Substrate Thickness | "A" | "B" | "C" |
|---|---|---|---|---|
| 142-0761-801 | .008 (0.20) - .014 (0.36) | .010 (0.25) | .050 (1.27) | .096 (2.44) |
| 142-0761-821 | .014 (0.36) - .020 (0.51) | .015 (0.38) | .067 (1.70) | .113 (2.87) |

Assembly instructions page 228.

## Jack Receptacle, Square Body

| Gold Plated | High Frequency Substrate Thickness | "A" | "B" | "C" |
|---|---|---|---|---|
| 142-0761-811 | .008 (0.20) - .014 (0.36) | .010 (0.25) | .050 (1.27) | .096 (2.44) |
| 142-0761-831 | .014 (0.36) - .020 (0.51) | .015 (0.38) | .067 (1.70) | .113 (2.87) |

Assembly instructions page 228.

## Jack Receptacle – PC Mount, Round Body with Thick Legs

| Gold Plated | High Frequency Substrate Thickness | "A" | "B" | "C" |
|---|---|---|---|---|
| 142-0761-881 | .008 (0.20) - .014 (0.36) | .010 (0.25) | .050 (1.27) | .096 (2.44) |
| 142-0771-821 | .014 (0.36) - .020 (0.51) | .015 (0.38) | .067 (1.70) | .113 (2.87) |

Assembly instructions page 228.

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







## Jack Receptacle – for .062 Board, Round Body

| Gold Plated | High Frequency Substrate Thickness | "A" | "B" | "C" |
|---|---|---|---|---|
| 142-0761-841 | .008 (0.20) - .014 (0.36) | .010 (0.25) | .050 (1.27) | .032 (0.81) |
| 142-0761-861 | .014 (0.36) - .020 (0.51) | .015 (0.38) | .067 (1.70) | .040 (1.02) |

Assembly instructions page 228.

## Jack Receptacle – for .062 Board, Square Body

| Gold Plated | High Frequency Substrate Thickness | "A" | "B" | "C" |
|---|---|---|---|---|
| 142-0761-851 | .008 (0.20) - .014 (0.36) | .010 (0.25) | .050 (1.27) | .032 (0.81) |
| 142-0761-871 | .014 (0.36) - .020 (0.51) | .015 (0.38) | .067 (1.70) | .040 (1.02) |

Assembly instructions page 228.

## Jack Receptacle – for .062 Board, Round Body with Thick Legs

| Gold Plated | High Frequency Substrate Thickness | "A" | "B" | "C" |
|---|---|---|---|---|
| 142-0761-891 | .008 (0.20) - .014 (0.36) | .010 (0.25) | .050 (1.27) | .032 (0.81) |
| 142-0771-831 | .014 (0.36) - .020 (0.51) | .015 (0.38) | .067 (1.70) | .040 (1.02) |

Assembly instructions page 228.

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

# Specifications

## Electrical Ratings

**Impedance:** 50 Ohms

**Frequency Range:**

| | |
|---|---|
| Flexible cable connectors | 0-12.4 GHz |
| Uncabled receptacles | 0-18.0 GHz |
| Straight Semi-Rigid cable connectors | 0-26.5 GHz |

**VSWR:** (max) (f = GHz)

| | Straight Cabled Connectors | Right Angle 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 |
| RG-405 cable (0 - 18 GHz) | 1.07+.008f | |
| RG-405 cable (18 - 26.5 GHz) | 1.35 max | |
| RG-402 cable (w/contact) | 1.05+.008f | |
| RG-402 cable (w/o contact) | 1.035+.005f | |

**Insertion Loss:** (dB max)

| | |
|---|---|
| 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 |
| Straight Semi-Rigid cable connectors with contact | 0.03 $\sqrt{f\ (GHz)}$, tested at 10 GHz |
| Straight Semi-Rigid cable connectors w/o contact | 0.03 $\sqrt{f\ (GHz)}$, tested at 16 GHz |
| Uncabled receptacles | N/A |

**Working Voltage:** (VRMS max)

| | Sea Level | 70K Feet |
|---|---|---|
| RG-316, LMR-100, 195 | 250 | 65 |
| RG-58, RG-142, RG-405, uncabled receptacles, RG-402 w/o contact | 335 | 85 |
| RG-402 with contact | 500 | 125 |

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

| | Sea Level |
|---|---|
| RG-316, LMR-100, 195 | 750 |
| RG-58, RG-142,RG-405, uncabled receptacles | 1000 |
| RG-402 with contact | 1500 |
| RG-402 w/o contact | N/A |

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

| | 70K Feet |
|---|---|
| RG-316, LMR-100, 195 | 190 |
| RG-58, RG-142, .086 Semi-Rigid, uncabled receptacles, RG-402 w/o contact | 250 |
| RG-402 with contact | 375 |

**Insulation Resistance:** 5000 Megohms min

| Contact Resistance: (milliohms max) | 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 bodies) | 0.5 | N/A |

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

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

| | |
|---|---|
| Flexible cable connectors and RG-402 connectors w/o contact | -60 |
| RG-405 connectors and RG-402 connectors with contact | -90 |
| Uncabled receptacles | N/A |

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

| | |
|---|---|
| RG-316, LMR-100, 195 | 500 |
| RG-58, RG-142, RG-405, RG-402 cable w/o contact, Uncabled receptacles | 670 |
| RG-402 with contact | 1000 |

*† Avoid user injury due to misapplication. See safety advisory definitions.*





## Mechanical Specifications

| | |
|---|---|
| **Engagement Design:** | MIL-STD-348, Series SMA |
| **Durability:** | 500 cycles min<br>100 cycles min for RG-402 connectors w/o contact |
| **Engagement/Disengagement Force:** | 2 inch-pounds max |
| **Mating Torque:** | 7 to 10 lb-in |
| **Bulkhead Mounting Nut Torque:** | 15 lb-ins recommended |
| **Coupling Proof Torque:** | 15 lb-ins min |
| **Coupling Nut Retention:** | 60-lbs min |
| **Contact Retention:** | 6 lbs. min axial force (captivated contacts)<br>4 oz-in min torque (uncabled receptacles) |

**Cable Retention: (minimum*)**

| | Axial Force (lbs) | Torque (oz-in) |
|---|---|---|
| RG-316, LMR-100 | 20 | N/A |
| RG-58 | 40 | N/A |
| RG-142 Cabled | 45 | N/A |
| RG-405 | 30 | 16 |
| RG-402 | 60 | 55 |
| LMR-195 | 30 | N/A |

* Or cable breaking strength, whichever is less

## Environmental Specifications

(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 (except +85°C high temperature) |
| **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

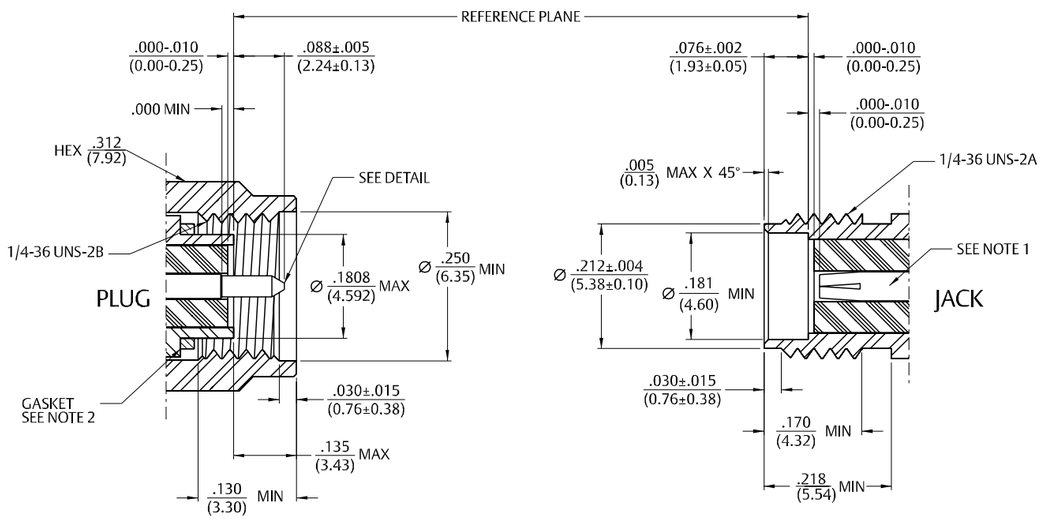
| | |
|---|---|
| **Bodies:** | Stainless Steel, type 303, per ASTM A 582, passivated per MIL-DTL-14072 (EL 300), or gold Plated per MIL-G-45204 .00005" min |
| **Contacts:** | Male - Brass per ASTM B16, Gold plated* per MIL-G-45204 (.00005" min) Female – Beryllium Copper per ASTM B196, Gold plated* per MIL-G-45204 (.00005" min) |
| **Insulators:** | PTFE Fluorocarbon per ASTM D1710 and ASTM D1457 |
| **Gaskets:** | Silicon Rubber per A-A-59588A |
| **Expansion Caps:** | Brass per ASTM B16, gold plated per MIL-G-45204 .00005" min or nickel plated per AMS-QQ-N-290 |
| **Crimp Sleeves:** | Copper per ASTM A75, gold plated per MIL-G-45204 .0005"min or nickel per AMS-QQ-N-290 plated (.00005" min) |
| **Nut Retention Spring (Plugs):** | Beryllium Copper per ASTM B196, un-plated |
| **Mounting Hardware:** | Stainless Steel, type 303, Per ASTM A582, passivated per MIL-DTL-14072 (EL 300), or gold plated* per MIL-G-45204 .00005" min |

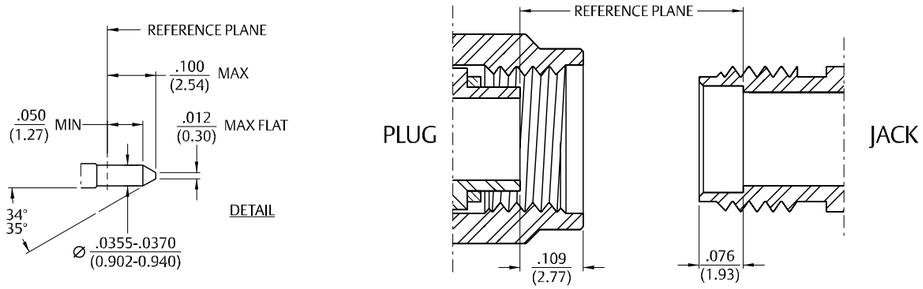
*Note: All Gold plated parts include a .00005" min Nickel under plated barrier layer.*

# Specifications

## Mating Engagement for Stainless Steel SMA Series Per MIL-STD-348A

NOTES
1. ID to meet VSWR, contact resistance and insertion withdrawl forces when mated with a dia. .0355-.0370 pin.
2. Gasket is not supplied with brass connectors.

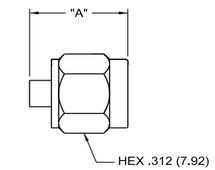






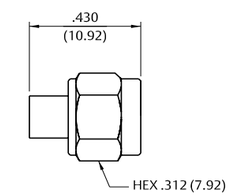

## Straight Solder Type Plug – with Contact, Captive Nut Thin Wall




| Cable Type | Gold Plated Body | "A" |
|---|---|---|
| RG-405 | 141-0693-002 | .405 |
| RG-402 | 141-0694-002 | .440 |

Assembly instructions page 214.

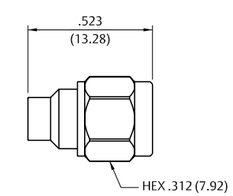
## Straight Solder Type Plug – Without Contact, Thread-On Nut




| Cable Type | Gold Plated Body |
|---|---|
| RG-402 | 141-0694-012 |

Assembly instructions page 214.

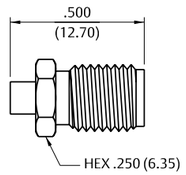
## Straight Solder Type Plug with Captivated Solderless Contact, Captive Nut and Thick Wall Interface




| Cable Type | Gold Plated Body |
|---|---|
| RG-405 | 141-0693-062 |
| RG-402 | 141-0694-062 |

Assembly instructions page 222.

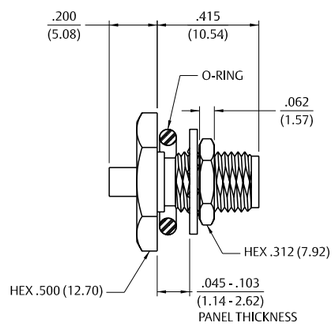
## Straight Solder Type Jack




| Cable Type | Gold Plated Body |
|---|---|
| RG-405 | 141-0593-001 |
| RG-402 | 141-0594-001 |

Assembly instructions page 214.

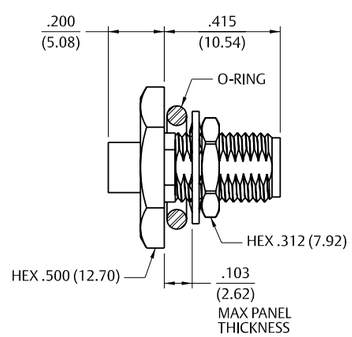
## Straight Solder Type Bulkhead Jack with O-Ring




| Cable Type | Gold Plated Body |
|---|---|
| RG-405 | 141-0593-401 |
| RG-402 | 141-0594-401 |

Assembly instructions page 214.

## Straight Solder Type Bulkhead Jack with Captivated Solderless Contact and O-Ring




| Cable Type | Gold Plated Body |
|---|---|
| RG-405 | 141-0593-421 |
| RG-402 | 141-0594-421 |

Assembly instructions page 222.



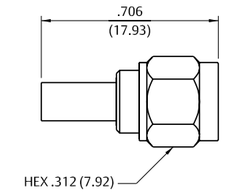








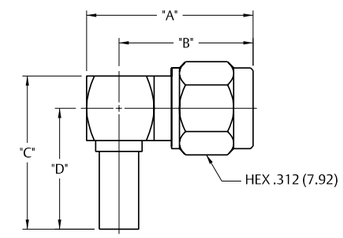
## Straight Crimp Type Plug (3-piece) – Solder or Crimp Captivated Contact




| Cable Type | Passivated |
|---|---|
| RG-161, 174,188, 316, LMR-100, HPF-100, RF-100 | 141-0403-012 |
| RG-188 DS, RG-316 DS | 141-0404-012 |
| RG-58, 141, 303, LMR-195, HPF-195, RF-195 | 141-0407-012 |
| RG-55, 142, 223, 400 | 141-0408-012 |

Assembly instructions page 219.

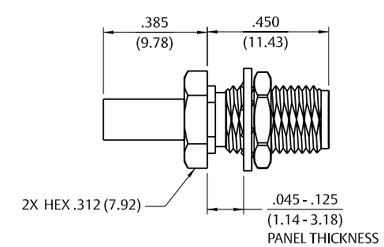
## Right Angle Crimp Type Plug – Captivated Contact




| Cable Type | Passivated | "A" | "B" | "C" | "D" |
|---|---|---|---|---|---|
| RG-161, 174,188, 316 | 141-0403-102 | .652 | .527 | .593 | .467 |
| RG-188 DS, RG-316 DS | 141-0404-112 | .652 | .527 | .593 | .467 |
| RG-58, 141, 303 | 141-0407-102 | .636 | .519 | .596 | .471 |
| RG-55, 142, 223, 400 | 141-0408-102 | .636 | .519 | .596 | .471 |

Assembly instructions page 224.

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




| Cable Type | Passivated |
|---|---|
| RG-161, 174,188, 316 | 141-0303-412 |
| RG-188 DS, RG-316 DS | 141-0304-412 |
| RG-58, 141, 303 | 141-0307-412 |
| RG-55, 142, 223, 400 | 141-0308-412 |

Assembly instructions page 219.

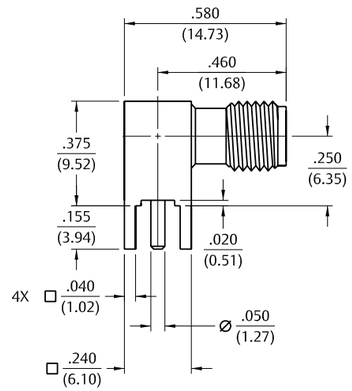


*Illustrations are shown in inches (millimeters).*

# PC Mount, Bulkhead and Panel Mount

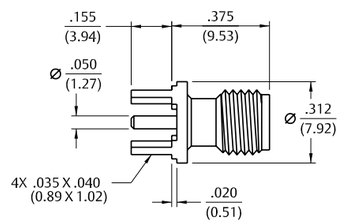
## Right Angle PC Mount Jack Receptacle

| Gold Plated |
|---|
| 141-0701-301 |



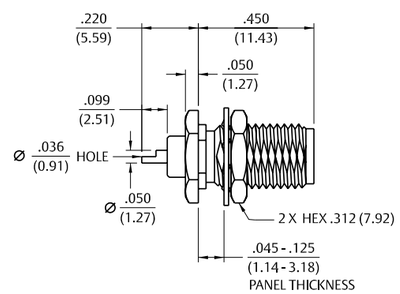

## Straight PC Mount Jack Receptacle

| Gold Plated |
|---|
| 141-0701-201 |



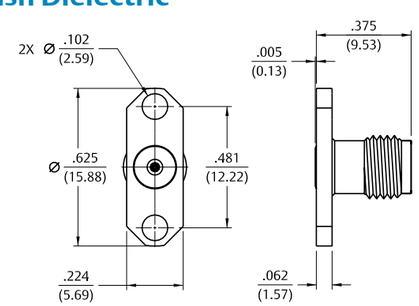

## Rear Mount Bulkhead Jack Receptacle

| Passivated |
|---|
| 141-0701-402 |




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

| Passivated |
|---|
| 141-0701-602 |

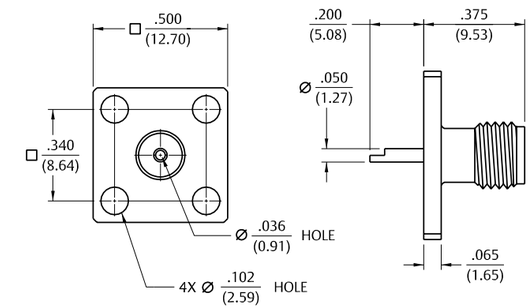






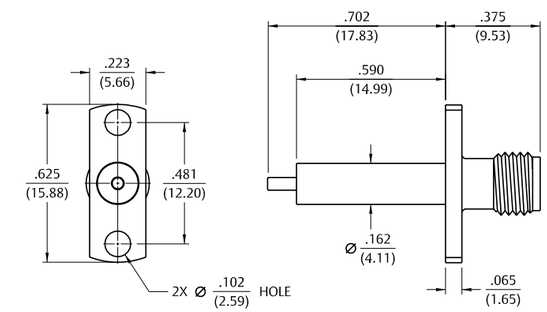

## 4-Hole Flange Mount Jack Receptacle – Flush Dielectric

| Passivated |
|---|
| 141-0701-612 |



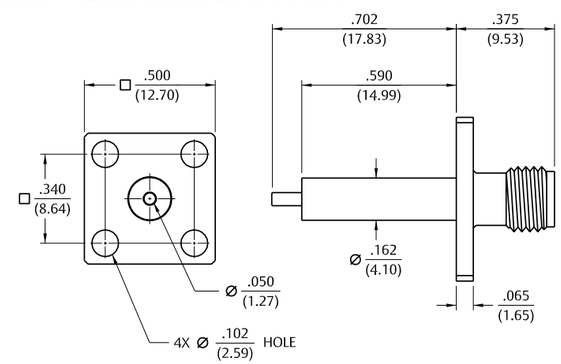

## 2-Hole Flange Mount Jack Receptacle – Extended Dielectric

| Passivated |
|---|
| 141-0701-622 |




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

| Passivated |
|---|
| 141-0701-632 |






*Illustrations are shown in inches (millimeters).*

# Specifications

## Electrical Specifications

**Impedance:** 50 Ohms
**Frequency Range:** 0-6 GHz
**Attenuation Values:** 1, 2, 3, 6 and 10 dB Nominal*
**Attenuation Accuracy:**

| dB* | 0 - 4 GHz | 4 - 6 GHz |
|---|---|---|
| 1-3 | ±0.3 | ±0.5 |
| 4-6 | ±0.4 | ±0.5 |
| 7-10 | ±0.5 | ±0.5 |

**VSWR Max:**

| dB* | 0 - 2.5 GHz | 2.5 - 4 GHz | 4 - 6 GHz |
|---|---|---|---|
| 1-3 | 1.15 : 1 | 1.20 : 1 | 1.25 : 1 |
| 4-6 | 1.15 : 1 | 1.20 : 1 | 1.25 : 1 |
| 7-10 | 1.15 : 1 | 1.25 : 1 | 1.30 : 1 |

**Average Input Power:** 2 W Max @ +25°C
Derated Linearly to 0.5W at +125°C

*Other values available, please contact Factory

## Mechanical Specifications

**SMA Connectors:** Per MIL-STD-348A

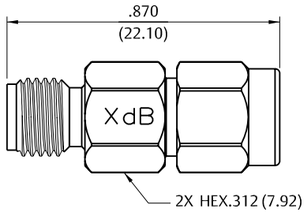
## Environmental Specifications

**Temperature Range:** -55°C to +125°C
**Thermal Shock:** MIL-STD-202, Method 107, Condition B except +100°C high temperature)
**Shock:** MIL-STD-202, Method 213, Condition I
**Vibration:** MIL-STD-202, Method 204, Condition D

## Material Specifications

**Connector Body:** 303 Stainless Steel per ASTM A582, Passivated per MIL-F-14-72 (EL 300)
**Coupling Nut:** 303 Stainless Steel per ASTM A582, Passivated per MIL-F-14-72 (EL 300)
**Retaining Ring:** Beryllium Copper per ASTM B196, Unplated
**SMA Plug Gasket:** Silicone Rubber per ZZ-R-765
**Male Contact:** Brass per ASTM B16, Gold Plated per MIL-G-45204 (.00003 min)
**Female Contact:** Beryllium Copper per ASTM B196, Gold Plated per MIL-G-45204 (.00003 min)
**Insulators:** PTFE per ASTM D1710
**Attenuator Card:** Alumina per Mil-I-10, RoHS Compliant Terminals

## SMA Fixed Attenuators Commercial Series




| Attenuation (dB Nominal)* | Freq. Range | Stainless Steel Passivated |
|---|---|---|
| 1 | (0-6 GHz) | 141-3901-801 |
| 2 | (0-6 GHz) | 141-3901-802 |
| 3 | (0-6 GHz) | 141-3901-803 |
| 6 | (0-6 GHz) | 141-3901-806 |
| 10 | (0-6 GHz) | 141-3901-810 |

* Standard values shown. Contact factory for other requirements. Inches (millimeters).



# Table of Contents





## SMB Connectors

50 Ohm Connectors
Specifications....104
Semi-Rigid & Flexible Cable....107
PC Mount....111
Bulkhead & Panel Mount....115
Adapters....116
Terminations....116

50 Ohm Non-Magnetic Connectors
Specifications....117
Semi-Rigid & Flexible Cable....118
PC Mount....119

75 Ohm Connectors
Specifications....120
Semi-Rigid & Flexible Cable....123
PC Mount....125
Panel Mount....127
Terminations....129
Adapters....130

Other Information
Assembly Tools....185
Capabilities....190
Cable Information....192
Assembly Instruction....193
Mounting Hole Layouts....194
Numerical Index....274
Competitor Cross Reference....280

3 MMCX Connectors
13 MCX Connectors
39 SMK Connectors
45 SMA Connectors
103 SMB Connectors
131 SMC Connectors
137 SMP Connectors
145 Type N Connectors
153 Shielded Cable Terminations
157 Between-Series Adapters
161 Fixed Length Cable Assemblies
173 Ultra Miniature Connectors (UMC)
181 kwiQMAte ™ Connectors
185 Tools
193 Assembly Instructions
257 Electronic Hardware
274 Index

*While every precaution has been taken to ensure accuracy and completeness herein, Emerson Network Power Connectivity Solutions assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Specifications subject to change without notice.*

# Specifications

## Electrical Specifications

**Impedance:** 50 Ohms

**Frequency Range:**

| | |
|---|---|
| Connectors | 0-4 GHz |
| Dummy loads | 0-1 GHz |

**VSWR:** (max) (f = GHz)

| | Straight Cabled Connectors | Right Angle Cabled Connectors |
|---|---|---|
| RG-178 | 1.30 + .04f | 1.45 + .06f |
| RG-316, RG-58, and RG-405 | 1.25 + .04f | 1.35 + .04f |
| Adapters | 1.20 + .04f | |
| Uncabled receptacles, dummy loads | | N/A |

**Working Voltage:** (VRMS max)†

| | Sea Level | 70K Feet |
|---|---|---|
| RG-178 | 250 | 60 |
| RG-316, RG-58, RG-405, uncabled receptacles, adapters | 335 | 85 |
| Dummy loads | | N/A |

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

| | |
|---|---|
| RG-316 | 750 |
| RG-58, RG-142, uncabled receptacles | 1000 |
| Dummy loads | N/A |

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

| | |
|---|---|
| RG-178 | 185 |
| RG-316, RG-58, RG-405 | 250 |
| Uncabled receptacles, adapters, dummy loads | N/A |

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

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

**Insulation Resistance:** 1000 megohms min

**Contact Resistance:** (milliohms max)

| | 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 min, tested at 2.5 GHz)

| | |
|---|---|
| Cabled connectors | -55 dB |
| Uncabled recepacles, adapters, dummy loads | N/A |

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

| | |
|---|---|
| RG-178 | 500 |
| 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 Specifications

**Engagement Design:** MIL-STD-348, Series SMB
**Engagement/Disengagement Force:** 2 lbs min to 14 lbs max axial force
**Contact Retention:** 4 lbs min axial force (captivated contacts)
1 oz-in min torque (uncabled receptacles)

**Cable Retention:**

| | Axial Force* (lbs) | Torque (oz-in) |
|---|---|---|
| RG-178 | 10 | N/A |
| RG-316 | 20 | N/A |
| RG-58 | 40 | N/A |
| RG-405 | 30 | 16 |

*Or cable breaking strength whichever is less.

**Durability:** 500 cycles min

## Environmental Specifications

(Meets or Exceeds the Applicable Paragraph of MIL-PRF-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)

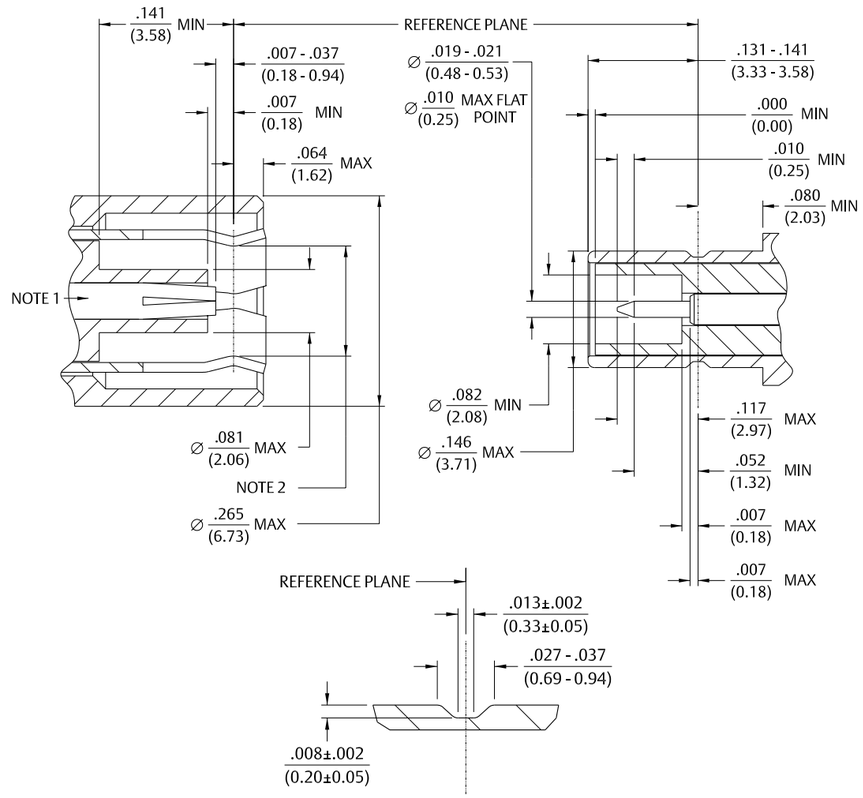
## Material Specifications

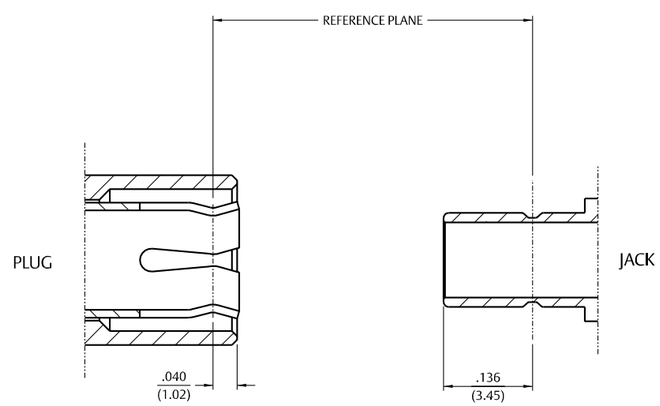
**Bodies:** Brass per ASTM B16 or zinc per ASTM B86-71, gold plated per MIL-DTL-45204 .00001" min or nickel plated per SAE-AMS2423
**Contacts:** Male - brass per ASTM B16, gold plated per MIL-DTL-45204 .00003" min
Female - beryllium copper per ASTM B196, gold plated per MIL-DTL-45204 .00003" min
**Insulators:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457 or Teflon PFA 340
**Expansion Caps:** Brass per ASTM B36, gold plated per MIL-DTL-45204 .00001" min or nickel plated per SAE-AMS2423
**Crimp Sleeves:** Copper per ASTM B301 or brass per ASTM B16, gold plated per MIL-DTL-45204 .00001" min or nickel plated per SAE-AMS2423
**Mounting Hardware:** Brass (nuts) per ASTM B16 or phosphor bronze (lockwashers) per ASTM B139, gold plated per MIL-DTL-45204 .00001" min or nickel plated per SAE-AMS2423
**Cover Rings:** Phosphor Bronze per ASTM B139, gold plated per MIL-DTL-45204 .00001 min or nickel plated per SAE-AMS2423

*† Avoid user injury due to misapplication. See safety advisory definitions inside front cover.*
*Note: All Gold plated parts include a .00005" min Nickel under plated barrier layer.*

# Specifications

## Mating Engagement for SMB Series



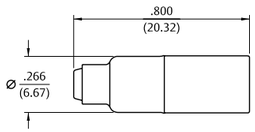




Notes 1. ID of contact to meet VSWR, mating characteristics and connector durability when mated with a dia .019/.021 (0.48/0.53) male contact.
2. Must meet the force to engage and disengage when mated with mating part.





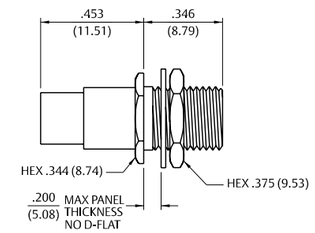
## Straight Solder Type Plug – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-405 | 131-3693-001 | 131-3693-016 |

Assembly instructions page 233.

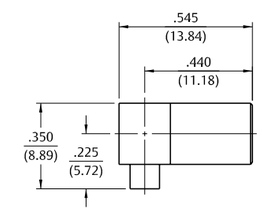
## Straight Solder Type Bulkhead Plug – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-402 | 131-3694-401 | 131-3694-406 |

Assembly instructions page 233.
Mounting hole dia. .290 (7.05).

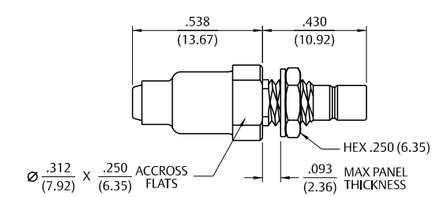
## Right Angle Solder Type Plug – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-405 | 131-3693-101 | 131-3693-116 |

Assembly instructions page 234.

## Straight Bulkhead Solder Type Jack – Captivated Contact

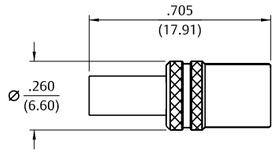



| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-405 | 131-3593-401 | 131-3593-406 |

Assembly instructions page 233.
Mounting hole layout figure 5 page 194.

# Flexible Cable

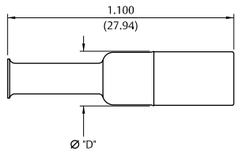
## Straight Crimp Type Plug (3-Piece) – Solder or Crimp Captivated Contact




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-161, 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, 141, 303 | 131-3407-011 | 131-3407-016 |

Assembly instructions page 232.

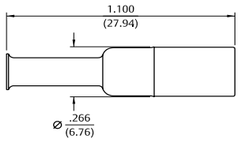
## Straight Solder Type Bulkhead Plug – Solder or Crimp Captivated Contact




| Cable Type | Gold Plated | Nickel Plated | Crimp Contact | "D" |
|---|---|---|---|---|
| RG-178, 196 | 131-3402-001 | 131-3402-016 | No | .266 (6.76) |
| RG-161, 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, 141, 303 | 131-3407-001 | 131-3407-006 | Yes | .270 (6.86) |

Assembly instructions page 237.

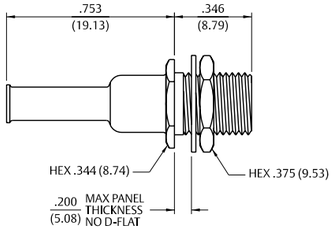
## Straight Crimp Type Plug – Die Cast – Solder or Crimp Captivated Contact




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-161, 174, 179, 187,188,316 | 131-1403-001 | 131-1403-016 |
| RG-316 DS, 188 DS, 179 DS, 187DS | 131-1404-001 | 131-1404-016 |

Assembly instructions page 237.

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



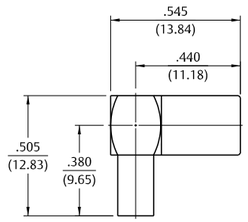

| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-161U, 174, 179, 187, 188, 316 | 131-3403-401 | 131-3403-406 |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 131-3404-401 | 131-3404-406 |

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





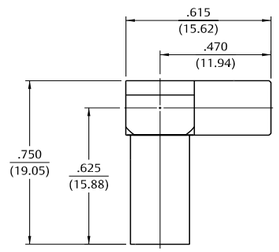
## Right Angle Crimp Type Plug – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-178, 196 | 131-3402-101 | 131-3402-116 |
| RG-161, 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 238.

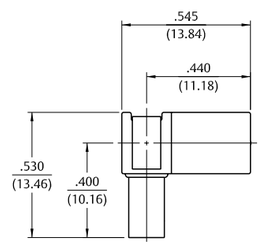
## Right Angle Crimp Type Plug – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-58, 141, 303 | 131-3407-101 | 131-3407-106 |

Assembly instructions page 238.

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




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-178, 196 | 131-1402-101 | 131-1402-116 |
| RG-161, 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 |

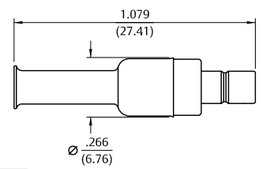
Assembly instructions page 238.

# Flexible Cable





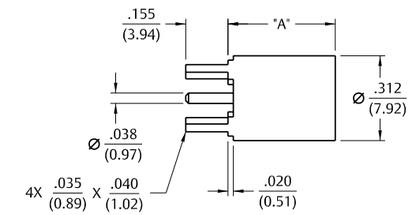
## Straight Crimp Type Jack – Solder or Crimp Captivated Contact




| Cable Type | Gold Plated | Nickel Plated | Crimp Contact |
|---|---|---|---|
| RG-178, 196 | 131-3302-001 | 131-3302-006 | No |
| RG-161, 174, 179, 187, 188, 316 | 131-3303-001 | 131-3303-006 | Yes |

Assembly instructions page 237.
Mounting hole layout figure 5 page 194.

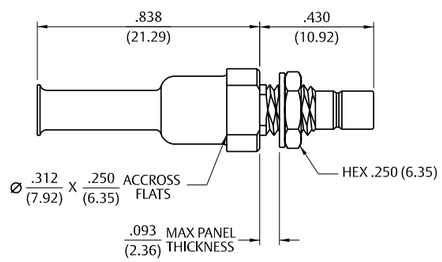
## Straight Plug Receptacle




| 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 194.

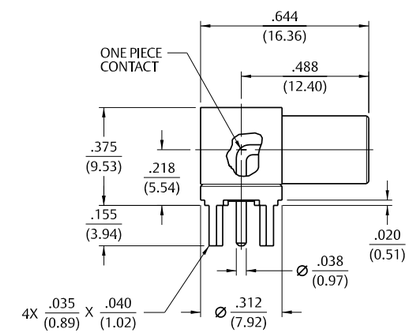
## Straight Crimp Type Bulkhead Jack – Solder or Crimp Captivated Contact




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-161, 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 237.
Mounting hole layout figure 5 page 194.

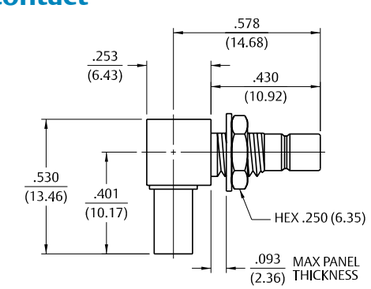
## Right Angle Plug Receptacle




| Gold Plated | Nickel Plated |
|---|---|
| 131-3801-301 | 131-3801-316 |

Mounting hole layout figure 4 page 194.

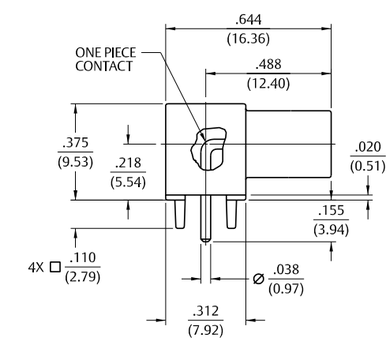
## Right Angle Crimp Type Bulkhead Jack – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-161, 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 238.
Mounting hole layout figure 5 page 194.

## Right Angle Plug Receptacle – Die Cast




| Gold Plated | Nickel Plated |
|---|---|
| 131-1801-371 | 131-1801-376 |

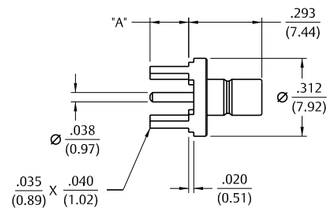
Mounting hole layout figure 4 page 194.



*Illustrations are shown in inches (millimeters).*

# PC Mount

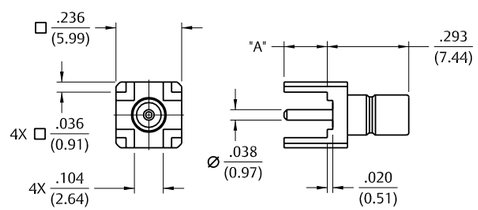
## Straight Jack Receptacle




| Gold Plated | Nickel Plated | "A" |
|---|---|---|
| 131-3701-201 | 131-3701-206 | .155 (3.94) |
| 131-3701-211 | 131-3701-216 | .110 (2.79) |

Mounting hole layout figure 4 page 194.

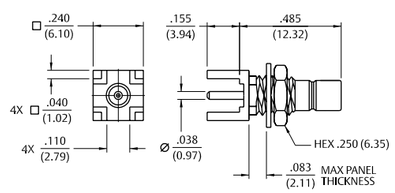
## Straight Jack Receptacle




| Gold Plated | Nickel Plated | "A" |
|---|---|---|
| 131-3701-261 | 131-3701-266 | .155 (3.94) |
| 131-3701-271 | 131-3701-276 | .095 (2.41) |

Mounting hole layout figure 4 page 194.

## Straight Bulkhead Jack Receptacle



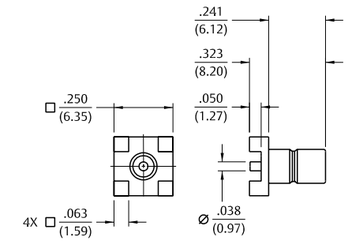

| Gold Plated | Nickel Plated |
|---|---|
| 131-3701-231 | 131-3701-236 |

Mounting hole layout figures 4 and 5 page 195.





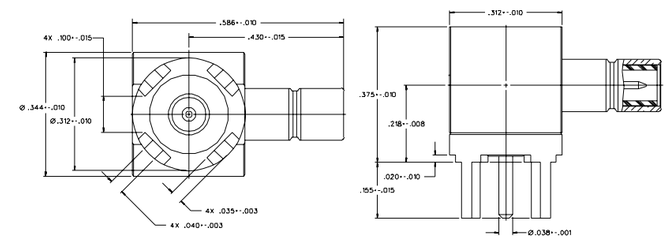
## Straight Jack Receptacle – Surface Mount




| Gold Plated |
|---|
| 131-3711-201 |

Recommended Land pattern figure 9 page 194.

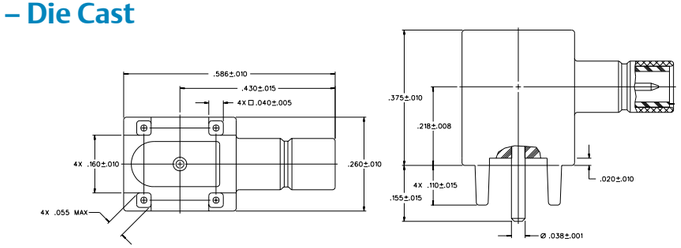
## Right Angle Jack Receptacle



| Gold Plated | Nickel Plated |
|---|---|
| 131-3701-301 | 131-3701-306 |

Mounting hole layout figure 4 page 194.

## Right Angle Jack Receptacle – Die Cast

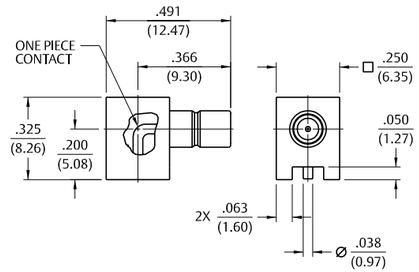


| Gold Plated | Nickel Plated |
|---|---|
| 131-1701-371 | 131-1701-376 |

Mounting hole layout figure 4 page 194.

# PC Mount

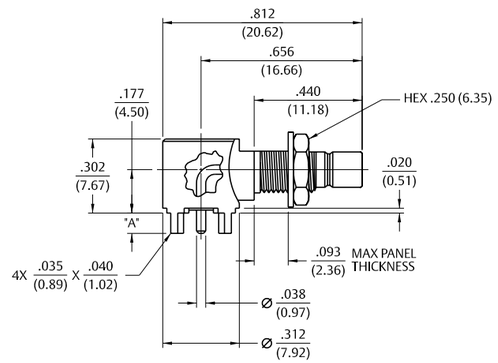
## Right Angle Surface Mount Jack Receptacle




| Gold Plated | Packaging |
|---|---|
| 131-3711-301 | Stock |
| 131-3711-302 | Tape and Reel, 425 pcs/reel |

Mounting hole layout figure 9 page 194.
Tape and Reel .630 (16.0) component pitch .945 (24.0) wide

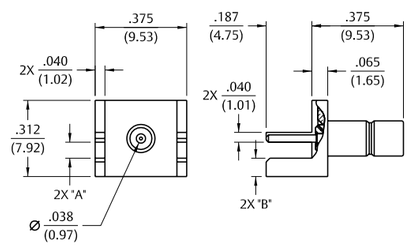
## Right Angle Bulkhead Jack Receptacle




| 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) |

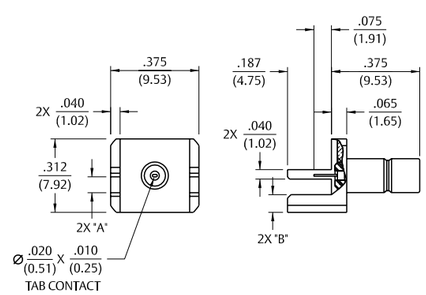
Mounting hole layout figures 4 and 5 page 194.

## 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

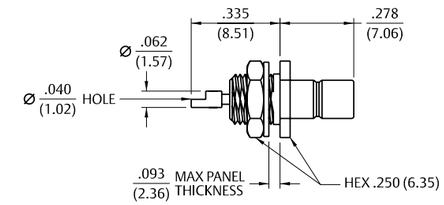



| Gold Plated | Nickel Plated | Board Thickness | "A" | "B" |
|---|---|---|---|---|
| 131-3701-811 | 131-3701-816 | .062 (1.57) | .068 (1.73) | .083 (2.11) |
| 131-3701-831 | 131-3701-836 | .042 (1.07) | .048 (1.22) | .103 (2.62) |





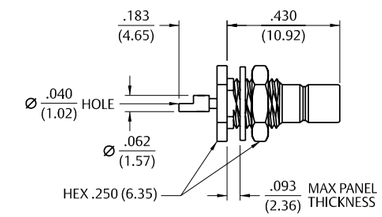
## Front Mount Bulkhead Jack Receptacle




| Gold Plated | Nickel Plated |
|---|---|
| 131-3701-411 | 131-3701-416 |

Mounting hole layout figure 5 page 194.

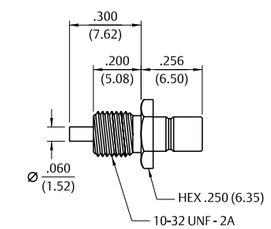
## Rear Mount Bulkhead Jack Receptacle




| Gold Plated | Nickel Plated |
|---|---|
| 131-3701-401 | 131-3701-406 |

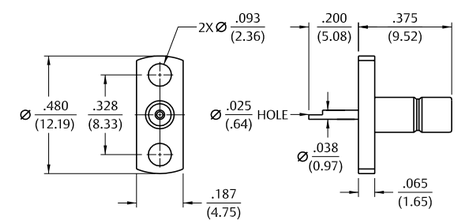
Mounting hole layout figure 5 page 194.

## Front Mount Bulkhead Jack Receptacle – Thread Mount Ruggedized Interface – Round Contact



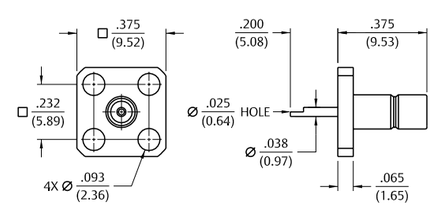

| Gold Plated | Nickel Plated |
|---|---|
| 131-3701-441 | 131-3701-446 |

## 2-Hole Flange Mount Jack Receptacle




| Gold Plated | Nickel Plated |
|---|---|
| 131-3701-621 | 131-3701-626 |

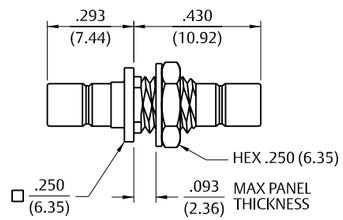
## 4-Hole Flange Mount Jack Receptacle




| Gold Plated | Nickel Plated |
|---|---|
| 131-3701-631 | 131-3701-636 |

# In-Series Adapters & Terminations

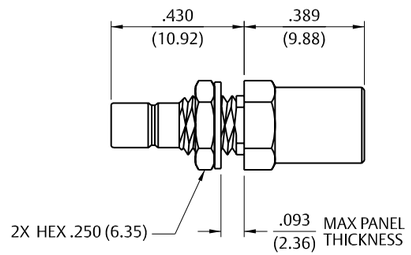
## Jack to Bulkhead Jack Adapter




| Gold Plated | Nickel Plated |
|---|---|
| 131-3901-401 | 131-3901-406 |

Mounting hole layout figure 5 page 194.

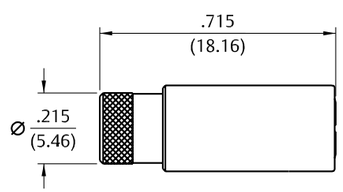
## Plug to Bulkhead Jack Adapter




| Gold Plated | Nickel Plated |
|---|---|
| 131-3901-411 | 131-3901-416 |

Mounting hole layout figure 5 page 194.

## Plug Dummy Load – 50 Ohm and 75 Ohm




| Gold Plated | Nickel Plated | Resistance |
|---|---|---|
| 131-3801-811 | 131-3801-816 | 50 Ohm |
| 131-3801-821 | 131-3801-826 | 75 Ohm |







## Electrical Specifications

**Impedance:** 50 Ohms
**Frequency Range:**
Connectors ..... 0-4 GHz

| **VSWR:** (max) (f = GHz) | Straight Cabled Connectors | Right Angle Cabled Connectors |
|---|---|---|
| RG-316 | 1.25 + .04f | 1.35 + .04f |
| Uncabled receptacles | N/A | |

**Working Voltage:** (VRMS max)†

| | Sea Level | 70K Feet |
|---|---|---|
| RG-316, uncabled connectors | 335 | 85 |

**Dielectric Withstanding Voltage:** (VRMS min at sea level)†
RG-316, uncabled receptacles ..... 1000
**Corona Level:** (Volts min at 70,000 feet)†
RG-316 ..... 250
Uncabled receptacles ..... N/A
**Insertion Loss:** (dB max, tested at 1.5 GHz)
Straight cabled connectors ..... 0.30 dB
Right angle cabled connectors ..... 0.60 dB
Uncabled receptacles ..... N/A
**Insulation Resistance:** 1000 megohms min

| **Contact Resistance:** (milliohms max) | Initial | After Environmental |
|---|---|---|
| Center contact (straight cabled connectors and uncabled receptacles) | 6.0 | 8.0 |
| Center contact (right angle cabled connectors | 12.0 | 16.0 |
| Outer contact | 1.0 | 1.5 |
| Braid to body | 1.0 | N/A |

**RF Leakage:** (dB min tested at 2.5 GHz)
Cabled connectors ..... -55 dB
Uncabled receptacles ..... N/A
**RF High Potential Withstanding Voltage:** (Vrms min, tested at 4 and 7 MHz)†
Connectors for RG-316 ..... 700
Uncabled receptacles ..... 600

## Mechanical Specifications

**Engagement Design:** MIL-STD-348, Series SMB
**Engagement/Disengagement Force:** 2 pounds min to 14 pounds max axial force
**Contact Retention:** 4 lbs. min axial force (captivated contacts)
1 inch-ounce min torque (uncabled receptacles)

| **Cable Retention:** | Axial Force* (lbs) | Torque (oz-in) |
|---|---|---|
| RG-316 | 20 | N/A |

*or cable breaking strength whichever is less.
**Durability:** 500 cycles min

## Environmental Specifications

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

** See Non-Magnetic materials specifications page X.*
*† Avoid user injury due to misapplication. See safety advisory definitions inside front cover.*
*Refer back to Page 121 for Mating Engagement detail.*

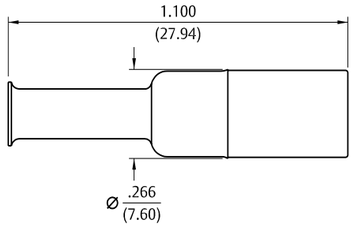
## Material Specifications

(See non-magnetic materials page 10)

# Flexible Cable



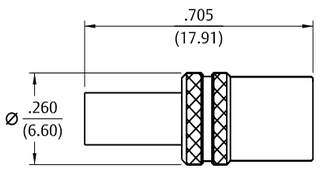
## Straight Crimp Type Plug – Solder or Crimp Captivated Contact




| Cable Type | Gold Plated |
|---|---|
| RG-316, 188, 174, 179, 187 | 131-9403-001 |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 131-9404-001 |

Assembly instructions page 235.

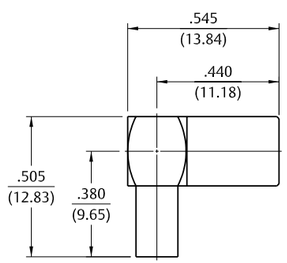
## Straight Crimp Type Plug (3-piece) Solder or Crimp Captivated Contact




| Cable Type | Gold Plated |
|---|---|
| RG-316, 188, 174, 179, 187 | 131-9403-021 |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 131-9404-021 |

Assembly instructions page 232.

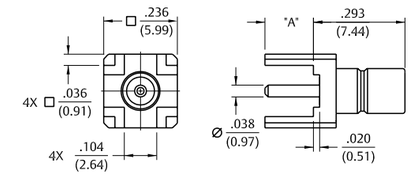
## Right Angle Crimp Type Plug – Captivated Contact




| Cable Type | Gold Plated |
|---|---|
| RG-316, 188, 174, 179, 187 | 131-9403-101 |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 131-9404-101 |

Assembly instructions page 236.

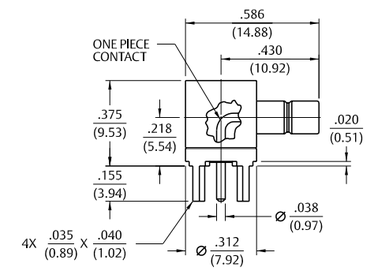
## Straight Jack Receptacle




| Gold Plated | "A" |
|---|---|
| 131-9701-201 | .155 (3.94) |
| 131-9701-211 | .095 (2.41) |

Mounting hole layout figure 4 page 194.

## Right Angle Jack Receptacle




| Gold Plated |
|---|
| 131-9701-301 |

Mounting hole layout figure 4 page 194.

# Specifications

## Electrical Specifications

**Impedance:** 75 Ohms
**Frequency Range:** 0-2 GHz
**VSWR:** (max) (f = GHz)
RG-179, RG-59, Belden 735A:
Straight cabled connectors ..... 1.25 + .04f
Right angle cabled connectors ..... 1.35 + .04f
Adapters ..... 1.20 + .04f
Type N Adapters ..... 1.05 +. 01f
Precision loads ..... 1.05 + .01f
Uncabled receptacles, opens, shorts ..... N/A

| **Working Voltage:** (VRMS max) | Sea Level | 70K Feet |
|---|---|---|
| RG-179, RG-59, Belden 735A, uncabled receptacles, adapters | 335 | 85 |
| Open, shorts, loads | N/A | N/A |

**Dielectric Withstanding Voltage**: (Vrms min at sea level)†
RG-179, RG-59, Belden 735A, uncabled receptacles, adapters ..... 1000
Open, shorts, loads ..... N/A
**Insulation Resistance:** 1000 megohms min

| **Contact Resistance:** (milliohms max) | Initial | After Environmental |
|---|---|---|
| Center contact (straight cabled connectors, uncabled receptacles, opens, shorts, loads) | 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 |

**Corona Level:** (Volts min at 70,000 ft)†
RG-179, RG-59, Belden 735A ..... 250
Uncabled receptacles, adapters, open, shorts, loads ..... N/A
**Insertion Loss:** (dB max, tested at 1.5 GHz)
Straight cabled connectors ..... 0.30 dB
Right angle cabled connectors ..... 0.60 dB
Uncabled receptacles, adapters, opens, shorts, loads ..... N/A
**RF Leakage:** (dB min tested at 2.0 GHz)
Cabled connectors ..... -55 dB
Uncabled receptacles, adapters opens, shorts, loads ..... N/A
**RF High Potential Withstanding Voltage:**
(VRMS min, tested at 4 and 7 MHz)†
RG-179, RG-59, Belden 735A ..... 700
Uncabled receptacles and adapters ..... 600
Opens, shorts, loads ..... N/A
**Power Rating:** (Loads) 1.0 watt at +25°C derated linearly to .5 watt at +125°C
**Electrical Length:** Open ± 1.5° (±5.2° relative to short)
Short ± 1.5° (±5.2° relative to open)
Adapters ±5.2° (N/A for Jack-Bulkhead Jack and N Types)







## Mechanical Specifications

**Engagement Design:** Compatable with MIL-STD-348, Series SMB
**Engagement/Disengagement Force:** 2 lbs min to 14 lbs max axial force
**Contact Retention:** 4 lbs. min axial force (captivated contacts)
1 oz-in min torque (uncabled receptacles)

| **Cable Retention:** | Axial Force* (lbs) | Torque (oz-in) |
|---|---|---|
| RG-179, Belden 735A | 20 | N/A |
| RG-59 | 40 | N/A |

* or cable breaking strength whichever is less.
**Durability:** 500 cycles min

## Environmental Specifications

(Meets or Exceeds the Applicable Paragraph of MIL-PRF-39012)

**Temperature Range:** - 65°C to +165°C - Connectors and adapters, - 65°C to +125°C - Loads, 20°C to 26°C -- Opens, shorts
**Thermal Shock:** MIL-STD-202, Method 107, Condition B (N/A opens, shorts, loads)
**Corrosion:** MIL-STD-202, Method 101, Condition B (N/A opens, shorts, loads)
**Shock:** MIL-STD-202, Method 213, Condition B (N/A opens, shorts, loads)
**Vibration:** MIL-STD-202, Method 204, Condition B (N/A opens, shorts, loads)
**Temperature Coefficient:** (Loads only) ± 300 ppm/°C

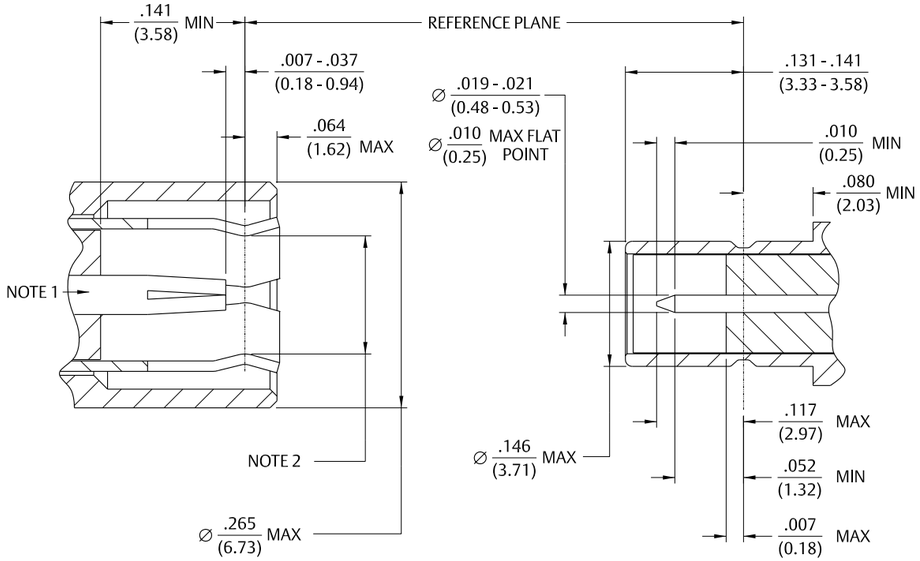
## Material Specifications

**Bodies:** Brass per ASTM B16, gold plated** per MIL-DTL-45204 .00001" min or nickel plated per SAE-AMS2423 N type adapters stainless steel per SAE-AMS QQ-S-763, passivated per MIL-DTL-14072
**Contacts:** Male & Female - beryllium copper per ASTM B196, gold plated per MIL-DTL-45204 .00003" min
**Insulators:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457
**Expansion Caps:** Brass per ASTM B36, gold plated per MIL-DTL-45204 .00001" min or nickel plated per SAE-AMS2423
**Crimp Sleeves:** Copper per ASTM B301, gold plated per MIL-DTL-45204 .00001" min or nickel plated per SAE-AMS2423
**Mounting Hardware:** Brass (nuts) per ASTM B16 or phosphor bronze (lockwashers) per ASTM B139, gold plated per MIL-DTL-45204 .00001" min or nickel plated per SAE-AMS2423

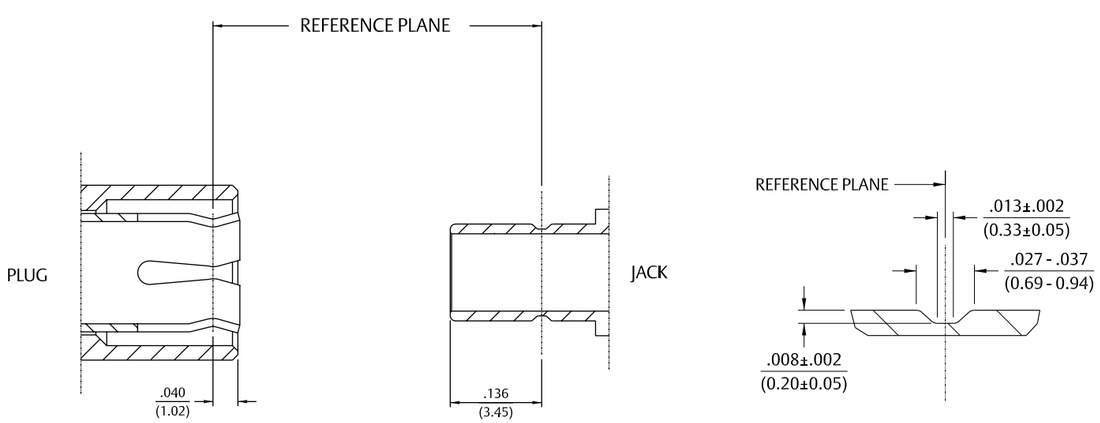
*Note: All gold plated parts include a .00005"min nickel underplate barrier layer.*
*† Avoid user injury due to misapplication. See safety advisory definitions inside front cover.*

# Specifications

## Mating Engagement for Mini-75 Ohm SMB Series (Intermatable with Standard 50 Ohm SMB)




PLUG JACK



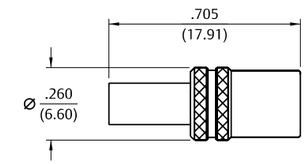

Notes 1. ID of contact to meet VSWR, mating characteristics and connector durability when mated with a dia .019/.021 (0.48/0.53) male contact.
2. Must meet the force to engage and disengage when mated with mating part.





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

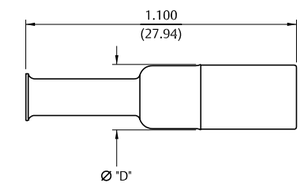
| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-179, RG-187 | 131-8433-001 | 131-8433-006 |
| RG-179 DS, RG-187 DS | 131-8434-001 | 131-8434-006 |
| Belden 735A | 131-8445-011 | 131-8445-016 |




Assembly instructions page 232.

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

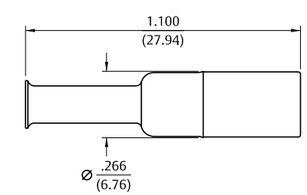
| Cable Type | Gold Plated | Nickel Plated | "D" |
|---|---|---|---|
| RG-179, 187 | 131-8403-001 | 131-8403-006 | .266 (6.76) |
| RG-179 DS, RG-187 DS | 131-8404-001 | 131-8404-006 | .266 (6.76) |
| Belden 735A | 131-8445-001 | 131-8445-006 | .266 (6.76) |
| RG-59 | 131-8409-001 | 131-8409-006 | .312 (7.92) |




Assembly instructions page 237.

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

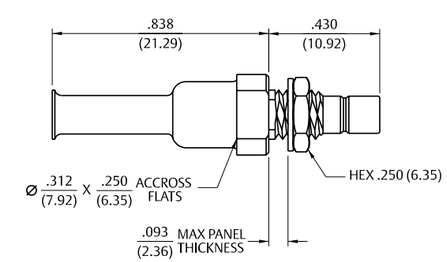
| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-179, 187 | 131-8403-011 | 131-8403-016 |
| RG-179 DS, RG-187 DS | 131-8404-011 | 131-8404-016 |




Assembly instructions page 237.

## 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, RG-187 DS | 131-8304-401 | 131-8304-406 |

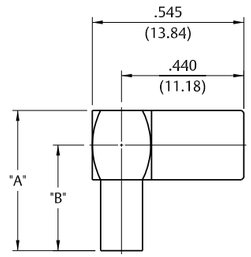



Assembly instructions page 237.

# Flexible Cable



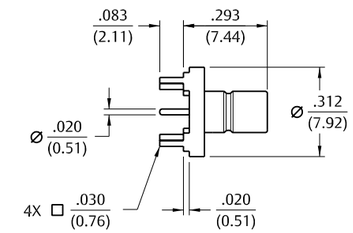
## Right Angle Crimp Type Plug – Captivated Contact




| 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, 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 238.

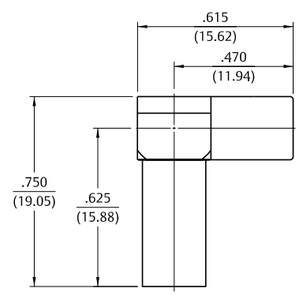
## Straight Jack Receptacle




| Gold Plated | Nickel Plated |
|---|---|
| 131-8701-201 | 131-8701-206 |

Mounting hole layout figure 6 page 194.

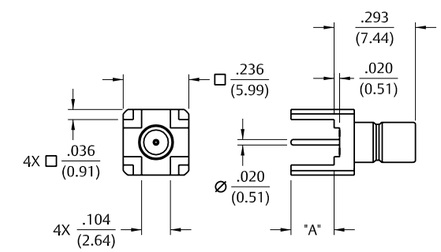
## Right Angle Crimp Type Plug – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-59 | 131-8409-101 | 131-8409-106 |

Assembly instructions page 238.

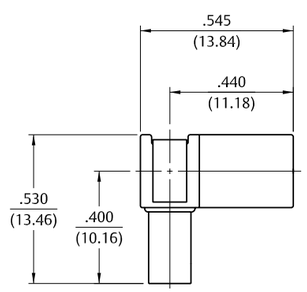
## Straight Jack Receptacle




| Cable Type | Gold Plated | "A" |
|---|---|---|
| 131-8701-251 | 131-8701-256 | .155 (3.94) |
| 131-8701-261 | 131-8701-266 | .095 (2.41) |

Mounting hole layout figure 6 page 194.

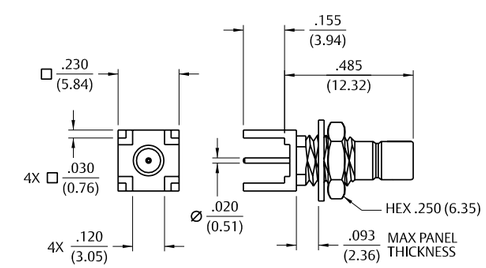
## Right Angle Crimp Type Plug – Captivated Contact – Die Cast




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-179, 187 | 131-8403-111 | 131-8403-116 |
| RG-179 DS, RG-187DS | 131-8404-111 | 131-8404-116 |

Assembly instructions page 238.

## Straight Bulkhead Jack Receptacle




| Gold Plated | Nickel Plated |
|---|---|
| 131-8701-211 | 131-8701-216 |

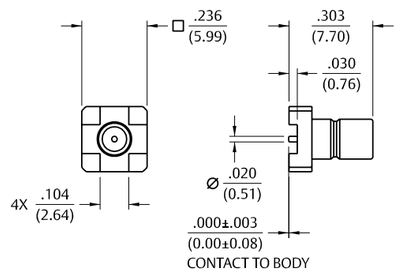
Mounting hole layout figures 5 and 6 page 195.

# PC Mount

## Straight Jack Receptacle – Surface Mount

| Gold Plated | Packaging |
|---|---|
| 131-8711-201 | Stock |
| 131-8711-202 | Tape and Reel 750 pcs/reel |

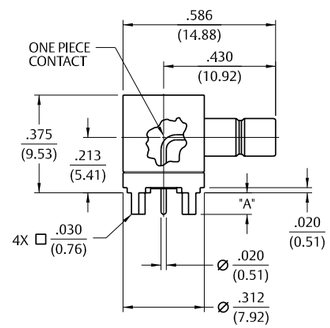
Mounting hole layout figure 11 page 194.




## Right Angle Jack Receptacle

| Gold Plated | Nickel Plated | "A" |
|---|---|---|
| 131-8701-301 | 131-8701-306 | .083 |
| 131-8701-311 | 131-8701-316 | .125 |

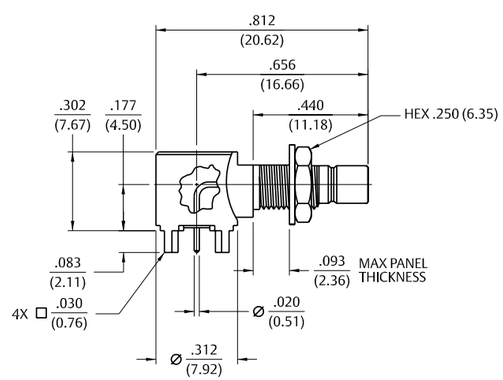
Mounting hole layout figure 7 page 194.




## Right Angle Bulkhead Jack Receptacle

| Gold Plated | Nickel Plated |
|---|---|
| 131-8701-501 | 131-8701-506 |

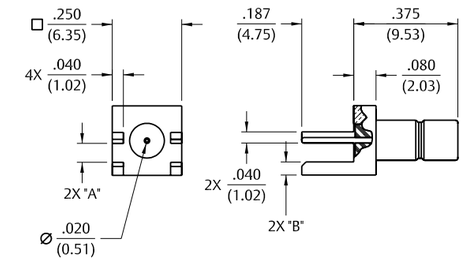
Mounting hole layout figures 5 and 7 page 194.







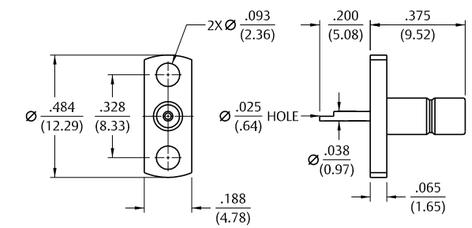

## End Launch Jack Receptacle




| Gold Plated | Nickel Plated | Board Thickness | "A" | "B" |
|---|---|---|---|---|
| 131-8701-841 | 131-8701-846 | .062 (1.57) | .068 (1.73) | .047 (1.19) |

## 2-Hole Flange Mount Jack Receptacle

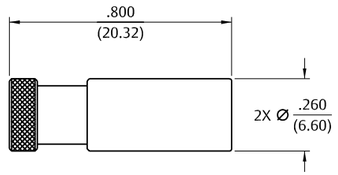
| Gold Plated | Nickel Plated |
|---|---|
| 131-8701-601 | 131-8701-606 |



# Terminations

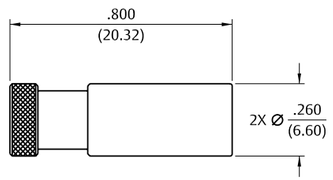
## Plug Precision Load

| Gold Plated |
|---|
| 131-8801-801 |



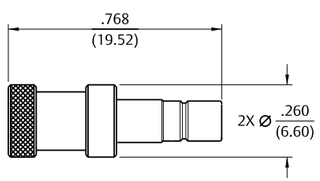

## Matched Plug Open and Short

| Type | Gold Plated |
|---|---|
| OPEN | 131-8801-821 |
| SHORT | 131-8801-811 |




## Matched Jack Open and Short

| Type | Gold Plated |
|---|---|
| OPEN | 131-8701-821 |
| SHORT | 131-8701-811 |

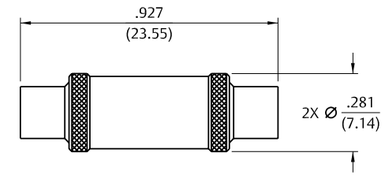






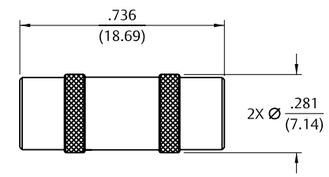

## Jack to Jack Adapter

| Gold Plated |
|---|
| 131-8901-801 |



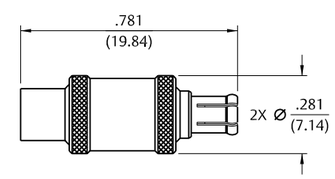

## Plug to Plug Adapter

| Gold Plated |
|---|
| 131-8901-811 |



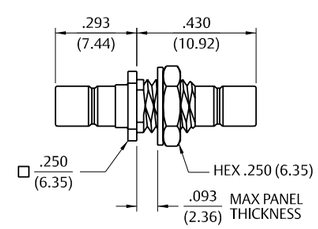

## Jack to Plug Adapter

| Gold Plated |
|---|
| 131-8901-821 |




## Jack to Bulkhead Jack* Adapter

| Gold Plated | Nickel Plated |
|---|---|
| 131-8901-401 | 131-8901-406 |

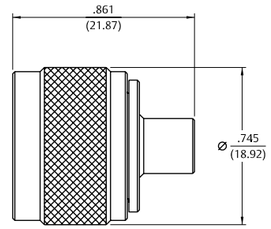



Mounting hole layout figure 5 page 194. * Electrical length not matched to other adapters shown.

# Between-Series Adapter

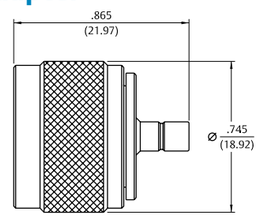
## 75 Ohm Type N Plug to Mini-75 Ohm SMB Plug Adapter

| Stainless Steel Passivated |
|---|
| 134-1069-001 |



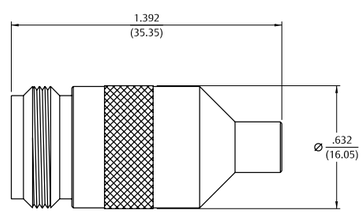

## 75 Ohm Type N Plug to Mini-75 Ohm SMB Jack Adapter

| Stainless Steel Passivated |
|---|
| 134-1069-011 |



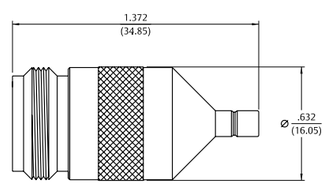

## 75 Ohm Type N Jack to Mini-75 SMB Plug Adapter

| Stainless Steel Passivated |
|---|
| 134-1069-021 |




## 75 Ohm Type N Plug to Mini-75 Ohm SMB Jack Adapter

| Stainless Steel Passivated |
|---|
| 134-1069-031 |






# Table of Contents





## SMC Connectors

50 Ohm Connectors
Specifications....132
Semi-Rigid & Flexible Cable....134
PC Mount....135
Bulkhead & Panel Mount....136

Other Information
Assembly Tools....185
Capabilities....190
Cable Information....192
Assembly Instruction....193
Mounting Hole Layouts....194
Numerical Index....274
Competitor Cross Reference.... 280

*While every precaution has been taken to ensure accuracy and completeness herein, Emerson Network Power Connectivity Solutions assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Specifications subject to change without notice.*

3 MMCX Connectors
13 MCX Connectors
39 SMK Connectors
45 SMA Connectors
103 SMB Connectors
131 SMC Connectors
137 SMP Connectors
145 Type N Connectors
153 Shielded Cable Terminations
157 Between-Series Adapters
161 Fixed Length Cable Assemblies
173 Ultra Miniature Connectors (UMC)
181 kwiQMAte ™ Connectors
185 Tools
193 Assembly Instructions
257 Electronic Hardware
274 Index

# Specifications

## Electrical Specifications

**Impedance:** 50 Ohms
**Frequency Range:** ..... 0-10 GHz

| **VSWR:** (max) (f = GHz) | Straight Cabled Connectors | Right Angle Cabled Connectors |
|---|---|---|
| RG-178 | 1.25 + .04f | 1.40 + .06f |
| RG-316 and RG-405 | 1.20 + .04f | 1.30 + .04f |
| Uncabled receptacles | N/A | |

| **Working Voltage:** (VRMS max)† | Sea Level | 70K Feet |
|---|---|---|
| RG-178 | 250 | 60 |
| RG-316, RG-405 uncabled receptacles | 335 | 85 |

**Dielectric Withstanding Voltage:** (VRMS min at sea level)†
RG-178 ..... 750
RG-316, RG-405 uncabled receptacles ..... 1000

**Corona Level:** (Volts min at 70,000 feet)†
RG-178 ..... 185
RG-316, RG-405 ..... 250
Uncabled receptacles ..... N/A

**Insertion Loss**: (dB max, tested at 4 GHz)
Straight cabled connectors ..... 0.25 dB
Right angle cabled connectors ..... 0.50 dB
Uncabled receptacles ..... N/A

**Insulation Resistance:** 1000 megohms min

| **Contact Resistance:** (milliohms max) | Initial | After Environmental |
|---|---|---|
| Center contact (straight cabled connectors and uncabled receptacles) | 6.0 | 8.0 |
| Center contact (right angle cabled connectors) | 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 min tested at 2.5 GHz)
Cabled connectors ..... -55 dB
Uncabled receptacles ..... N/A

**RF High Potential Withstanding Voltage:** (VRMS min, tested at 4 and 7 MHz)†
RG-178 ..... 500
RG-316 ..... 700
Uncabled receptacles ..... 600

## Mechanical Specifications

**Engagement Design:** MIL-STD-348, Series SMC
**Engagement/Disengagement Force:** 16 oz-in max torque
**Mating Torque:** 35 to 50 oz-in
**Coupling Proof Torque:** 100 oz-in min
**Coupling Nut Retention**: 35 lbs min
**Contact Retention:** 4 lbs min axial force (captivated contacts)
1 oz-in min torque (uncabled receptacles)

| **Cable Retention:** | Axial Force* (lbs) | Torque (oz-in) |
|---|---|---|
| RG-178 | 10 | N/A |
| RG-316 | 20 | N/A |
| RG-405 | 30 | 16 |

* or cable breaking strength whichever is less
**Durability:** 500 cycles min





## Environmental Ratings

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

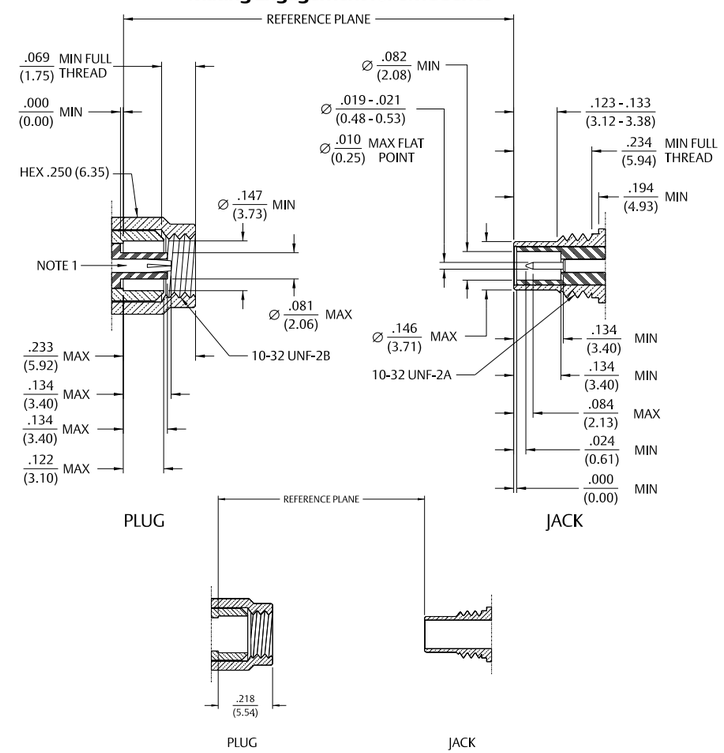
**Temperature Range:** - 65°C to + 165°C
**Thermal Shock:** MIL-STD-202, Method 107, Condition B
**Corrosion:** MIL-STD-202, Method 101, Condition B
**Shock:** MIL-STD-202, Method 213, Condition C
**Vibration:** MIL-STD-202, Method 204, Condition D

## Material Specifications

**Bodies:** Brass per ASTM B16, gold plated per MIL-DTL-45204 .00001" min or nickel plated per SAE-AMS2432
**Contacts:** Male – Brass per ASTM B16, gold plated per MIL-DTL-45204 .00003" min.
Female – Beryllium copper per ASTM B196, gold plated per MIL-DTL-45204 .00003" min.
**Nut Retention Spring:** Beryllium copper per ASTM B196, unplated
**Insulators:** PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457
**Expansion Caps:** Brass per ASTM B36, gold plated per MIL-DTL-45204 .00001" min. or nickel plated per SAE-AMS2423
**Crimp Sleeves:** Copper per ASTM B301, gold plated per MIL-DTL-45204 .00001" min. or nickel plated per SAE-AMS2423
**Mounting Hardware:** Brass (nuts) per ASTM B16 or phosphor bronze (lockwashers) per ASTM B139, gold plated per MIL-DTL-45204 .00001" min. or nickel plated per SAE-AMS2423

** All Gold plated parts include a .00005" minumum Nickel under plated barrier layer

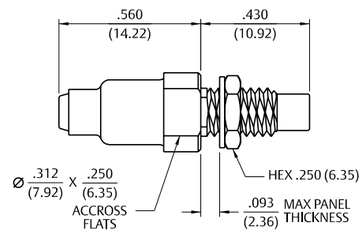
**Mating Engagement for SMC Series**




Notes:
1. Inside of contact to meet VSWR mating characteristics and connector durability when mated with a dia. .019/.021 (.48/.53) male contact.

**For more information, please contact customer service at (507) 833-8822 or (800) 247-8256 • www.EmersonConnectivity.com**
*Illustrations are shown in inches (millimeters).*

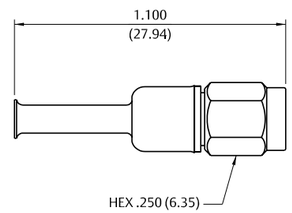
## Straight Solder Type Bulkhead Jack – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-405 | 131-6593-401 | 131-6593-406 |

Assembly instructions page 233.
Mounting hole layout figure 5 page 194.

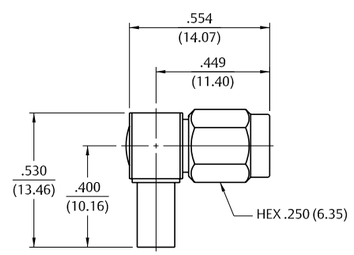
## Straight Crimp Type Plug – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-161, 174, 188, 316 | 131-6403-001 | 131-6403-006 |
| RG-316 DS, 188 DS | 131-6404-001 | 131-6404-006 |
| RG-179, 187 | 131-6433-001 | 131-6433-006 |

Assembly instructions page 237.

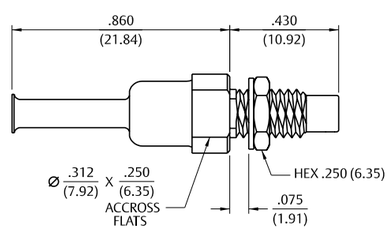
## Right Angle Crimp Type Plug – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-161, 174, 188, 316 | 131-6403-101 | 131-6403-106 |
| RG-316 DS, 188 DS | 131-6404-101 | 131-6404-106 |
| RG-179, 187 | 131-6433-101 | 131-6433-106 |

Assembly instructions page 238.

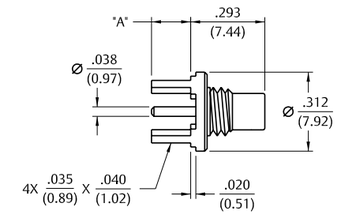
## Straight Crimp Type Bulkhead Jack – Captivated Contact




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-161, 174, 188, 316 | 131-6303-401 | 131-6303-406 |
| RG-316 DS, 188 DS | 131-6304-401 | 131-6304-406 |
| RG-179, 187 | 131-6333-401 | 131-6333-406 |

Assembly instructions page 237.
Mounting hole layout figure 5 page 194.

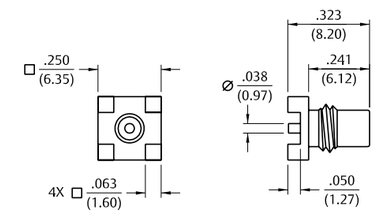
## Straight Jack Receptacle




| Gold Plated | Nickel Plated | "A" |
|---|---|---|
| 131-6701-201 | 131-6701-206 | .155 (3.94) |
| 131-6701-211 | 131-6701-216 | .110 (2.79) |

Mounting hole layout figure 4 page 194.

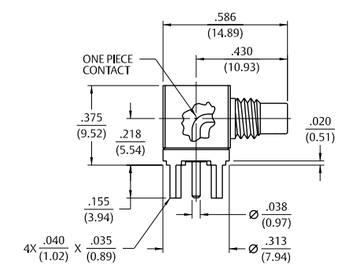
## Straight Jack Receptacle – Surface Mount




| Gold Plated |
|---|
| 131-6711-201 |

Mounting hole layout figure 7 page 194.

## Right Angle Jack Receptacle



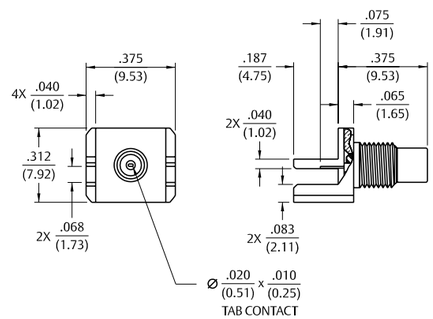

| Gold Plated |
|---|
| 131-6701-301 |

Mounting hole layout figure 4 page 194.

# PC Mount and Bulkhead Mount

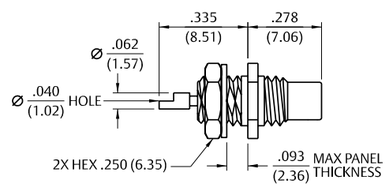
## End Launch Jack Receptacle – Tab Contact

| Gold Plated | Nickel Plated | Board Thickness |
|---|---|---|
| 131-6701-831 | 131-6701-836 | .062 (1.57) |




## Front Mount Bulkhead Jack Receptacle

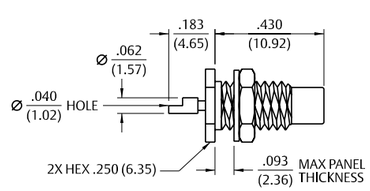
| Gold Plated | Nickel Plated |
|---|---|
| 131-6701-411 | 131-6701-416 |




## Rear Mount Bulkhead Jack Receptacle

| Gold Plated | Nickel Plated |
|---|---|
| 131-6701-401 | 131-6701-406 |

Mounting hole layout figure 5 page 194.






# Table of Contents





## SMP Connectors

50 Ohm Connectors
Specifications....139
Semi-Rigid & Flexible Cable....142
PC Mount....142
Bulkhead & Panel Mount....143

Other Information
Assembly Tools....185
Capabilities....190
Cable Information....192
Assembly Instruction....193
Mounting Hole Layouts....194
Numerical Index....274
Competitor Cross Reference....280

3 MMCX Connectors
13 MCX Connectors
39 SMK Connectors
45 SMA Connectors
103 SMB Connectors
131 SMC Connectors
137 SMP Connectors
145 Type N Connectors
153 Shielded Cable Terminations
157 Between-Series Adapters
161 Fixed Length Cable Assemblies
173 Ultra Miniature Connectors (UMC)
181 kwiQMAte ™ Connectors
185 Tools
193 Assembly Instructions
257 Electronic Hardware
274 Index

*While every precaution has been taken to ensure accuracy and completeness herein, Emerson Network Power Connectivity Solutions assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Specifications subject to change without notice.*

# Introduction

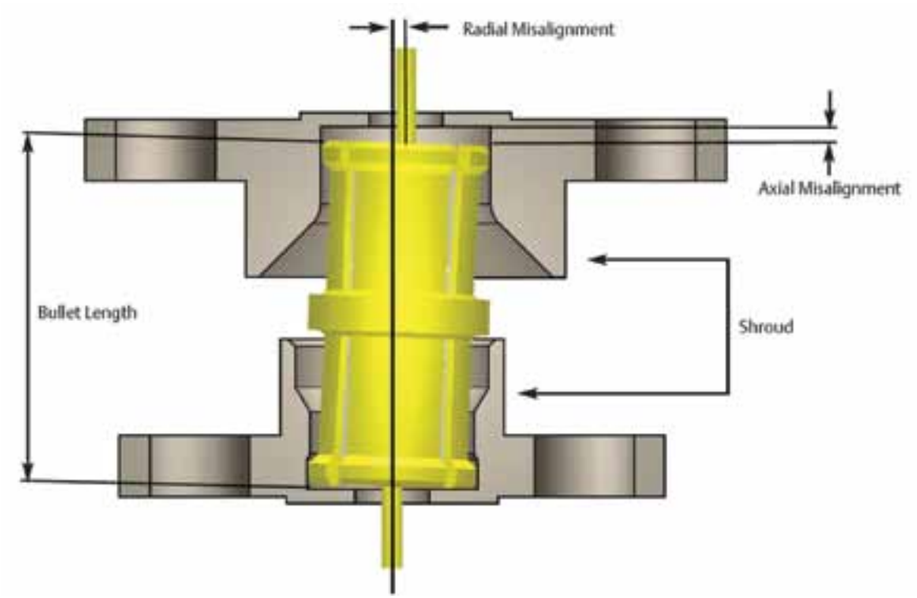
## Description

One of the key benefits of the SMP connector interface is its use in high frequency blind-mate applications. The design of the SMP bullet and shroud system allows for both axial and radial misalignment. The basic system is comprised of an inner "bullet" adapter, and two outer receptacles called "shrouds". The bullet provides a flexible link between the shroud connections.

In blind-mate applications, one shroud connector will be typically specified as a snap-on interface and the other as a slide-on. This ensures that the bullet adapter remains fixed in the same shroud connector when the connection is disengaged.

The two snap-on interfaces Full Detent (FD) and Limited Detent (LD) each have different engage and disengage coupling forces. The LD is typically selected as the snap-on interface in PCB mount or blind-mate applications, while the FD is mainly used for cabled connections where higher retention forces are required.

The two slide-on interfaces Smooth Bore (SB) and Catcher's Mitt (CM) allow for reduced connection forces as compared to the snap-on versions. The push-on interface creates a sliding connection that does not physically locate the mating reference planes, allowing for axial and radial misalignment. Both the SB and CM have the same engage/disengage forces; however the CM is typically specified as the shroud configuration in blind-mate applications as its generous lead-in chamfer helps capture and guide the bullet into place.








## Electrical Specifications

**Impedance:** 50 Ohms
**Frequency Range:**
- Bullet Adapter (.254 length), Semi-Rigid Straight Cabled Connectors ..... 0-40 GHz
- All other In-Series Adapters, Semi-Rigid Right Angle Cabled Connectors, Field Replaceable Connectors, End Launch Connectors, Hermetic Feedthroughs ..... 0-18 GHz
- PC Mount Connectors ..... 0-12 GHz

**VSWR:** (max) (f = GHz)

| | 0-18 GHz | 18-23 GHz | 23-26.5 GHz | 26.5-40 GHz |
|---|---|---|---|---|
| Bullet Adapter (.254 length) | 1.10 | 1.15 | 1.30 | 1.70 |

| | 0-18 GHz | 18-26.5 GHz | 26.5-40 GHz |
|---|---|---|---|
| Semi-Rigid Straight Cabled Connectors | 1 .20 | 1.35 | 1.70 |

| | 0-4 GHz | 4-12 GHz | 12-18 GHz |
|---|---|---|---|
| All other In-Series Adapters | 1.10 | 1.15 | 1.20 |

| | 0-18 GHz |
|---|---|
| Semi-Rigid Right Angle Cabled Connectors | 1.20 |

| | 0-18 GHz |
|---|---|
| Field Replaceable Connectors (typical, measured back to back with seal pin) | 1.15 |
| Un-cabled Connectors (dependant on application) | N/A |

**Working Voltage:** 335 VRMS max at sea level, 65 VRMS max at 70,000 feet
**Dielectric Withstanding Voltage:** 500 Vrms min at sea level
**Insulation Resistance:** 5000 megohms min
**Contact Resistance:** (milliohms max initial, not applicable after environmental testing)
- Center Contact (Connectors and Adapters) ..... 6.0
- Outer Contact (Connectors and Adapters) ..... 2.0
- Cable Shield to Body (Semi-Rigid Cabled Connectors Only) ..... 0.5

**Corona Level:** 190 VRMS min at 70,000 feet
**Insertion Loss:** (dB max)
**Insertion Loss:** (dB max, tested at 10 GHz)
- In-Series Adapters, Field Replaceable Connectors ..... $0.10\sqrt{F\ (GHz)}$
- Semi-Rigid Cabled Connectors ..... $0.12\sqrt{F\ (GHz)}$
- All other Un-cabled Connectors ..... N/A

**Insertion Loss:** (dB max)
**RF Leakage:** (dB typical, tested at 2.5 GHz)
- Cabled and Field Replaceable Connectors ..... -80
- In-Series Adapters ..... -65
- All other Un-cabled Connectors ..... N/A

**RF High Potential Withstanding Voltage:** 325 VRMS min at sea level, tested at 4 and 7 MHz

## Mechanical Specifications

**Interface Design:** MIL-STD-348A, Series SMP
**Engagement Force:** (lbs max, mated pair)
- Full Detent (FD) ..... 15.0
- Limited Detent (LD) ..... 10.0
- Smooth Bore and Catcher's Mitt (SB and CM) ..... 2.0

**Disengagement Force:** (lbs min, mated pair)
- Full Detent (FD) ..... 5.0
- Limited Detent (LD) ..... 2.0
- Smooth Bore and Catcher's Mitt (SB and CM) ..... 0.5

**Mated Radial Misalignment:** (in max allowed, female adapters only)
- Between Centerlines of Mating Planes (FD, LD, SB) ..... .010
- Between Centerlines of Mating Planes (CM only) ..... .020

**Mated Axial Misalignment:** .010 in max allowed between mating planes (female adapters only)
**Durability:** (mating cycles min)
- Full Detent (all female connectors and adapters) ..... 100
- Limited Detent (female adapters only) ..... 500
- Smooth Bore and Catcher's Mitt (female adapters only) ..... 1000

**Contact Retention:** 1.5 lbs min axial force (captivated contacts only)
**Cable Retention:** (min)

| | Axial Force* (lbs) | Torque (oz-in) |
|---|---|---|
| Cabled Connectors for RG-405 | 30 | 16.0 |
| Cabled Connectors for M17/151 | 20 | N/A |

* Or cable breaking strength, whichever is less

**For more information, please contact customer service at (507) 833-8822 or (800) 247-8256 • www.EmersonConnectivity.com**

*Illustrations are shown in inches (millimeters).*

# Specifications

## Environmental Ratings

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

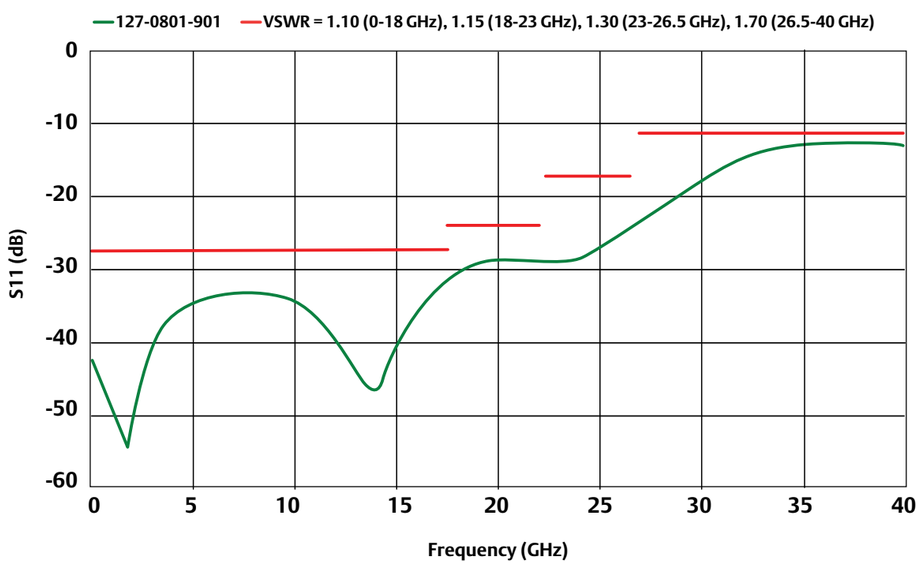
**Operating Temperature:** -65°C to +165°C
**Thermal Shock:** MIL-STD-202, Method 107, Condition B (except high temp +165°C or max high temp of cable)
**Corrosion:** MIL-STD-202, Method 101, Condition B
**Shock (specified pulse):** MIL-STD-202, Method 213, Condition I
**Vibration:** MIL-STD-202, Method 204, Condition D
**Moisture Resistance:** MIL-STD-202, Method 106 (except step 7b omitted)

## Material Specifications

**Spring Finger (female) and End Launch (male) Bodies:** Beryllium Copper per ASTM B196, Gold plated* per MIL-DTL-45204 (.00005" min)
**Hermetic Seal Bodies (male):** Kovar Alloy per ASTM F15, Gold plated* per MIL-DTL-45204 (.00005" min)
**All other Shroud Bodies (male):** Stainless Steel, Type 303, per ASTM A582, Passivated per MIL-DTL-14072 (EL 300)
**Connector and Adapter Contacts (male and female):** Beryllium Copper per ASTM B196, Gold plated* per MIL-DTL-45204 (.00005" min)
**Hermetic Seal Center Pins:** Kovar Alloy per ASTM F15, Gold plated* per MIL-DTL-45204 (.00005" min)
**EMI/Anti-Rock Rings:** Beryllium Copper per ASTM B196, Gold plated* per MIL-DTL-45204 (.00003" min)
**PC Mount Legs:** Brass per ASTM B16, Gold plated* per MIL-DTL-45204 (.00003" min)
**Connector and Adapter Insulators:** PTFE per ASTM D1710
**Hermetic Seal Glass:** Corning 7070

* All Gold plated parts include a .00005" minumum Nickel barrier layer

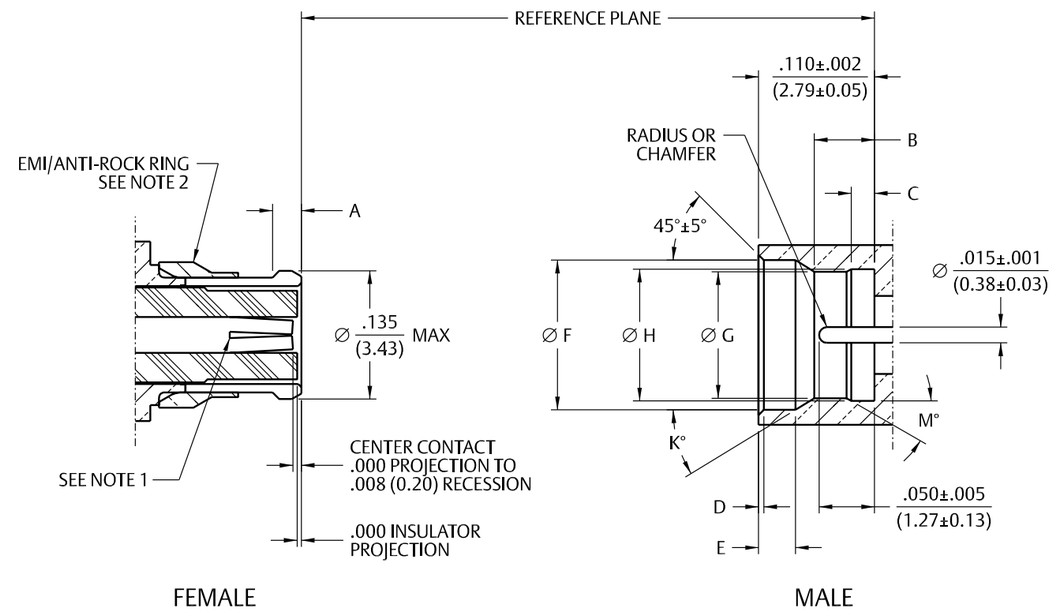
### Typical Measured Return Loss
### Bullet Adapter 127-0901-801








### Mating Engagement for SMP Series per MIL-STD-348A




*Notes:*

1. *Socket to accept mating pin Ø.015±.001 (0.38±0.03).*
2. *EMI/Anti-Rock Ring configuration optional, used on cabled connectors only. Shall not prevent proper mating engagement.*
3. *All dimensions shown in inches. Metric equivalents (rounded to nearest 0.01mm) are given for general information only.*

### SMP Female Connector Interface

| Dimension | Cabled | | Uncabled | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | .025 (0.64) | .035 (0.89) | .018 (0.46) | .025 (0.64) |

### SMP Male Connector Interface

| Dimension | Full Detent | | Limited Detent | | Smooth Bore | | Catcher's Mitt | |
|---|---|---|---|---|---|---|---|---|
| | Min | Max | Min | Max | Min | Max | Min | Max |
| B | .051 (1.30) | .057 (1.45) | .054 (1.37) | .060 (1.52) | .059 (1.50) | .065 (1.65) | N/A | N/A |
| C | .0205 (0.52) | .0235 (0.60) | .0205 (0.52) | .0235 (0.60) | N/A | N/A | N/A | N/A |
| D | .003 (0.08) | .008 (0.20) | .003 (0.08) | .008 (0.20) | .003 (0.08) | .008 (0.20) | .043 (1.09) | .047 (1.19) |
| E | .033 (0.84) | .037 (0.94) | .033 (0.84) | .037 (0.94) | .033 (0.84) | .037 (0.94) | N/A | N/A |
| F | .139 (3.53) | .145 (3.68) | .139 (3.53) | .145 (3.68) | .139 (3.53) | .145 (3.68) | .123 (3.12) | .127 (3.23) |
| G | .114 (2.90) | .118 (3.00) | .118 (3.00) | .122 (3.10) | .123 (3.12) | .127 (3.23) | N/A | N/A |
| H | .124 (3.15) | .126 (3.20) | .124 (3.15) | .126 (3.20) | N/A | N/A | N/A | N/A |
| K | 35° REF | 35° REF | 35° REF | 35° REF | 35° REF | 35° REF | N/A | N/A |
| M | 30° REF | 30° REF | 30° REF | 30° REF | N/A | N/A | N/A | N/A |

# Semi-Rigid Cable and PC Mount

## Female Straight Cabled, Semi-Rigid

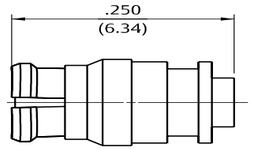



Fig 1

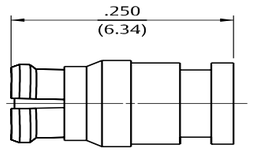
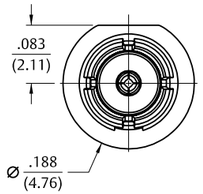


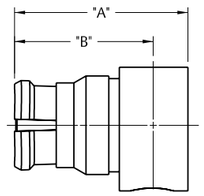

Fig 2

| Cable Type | Gold Plated | Figure |
|---|---|---|
| M17/151 | 127-0692-001 | 1 |
| RG-405 | 127-0693-001 | 2 |

* Specifications dependant on cable ratings.

## Right Angle Cabled Female

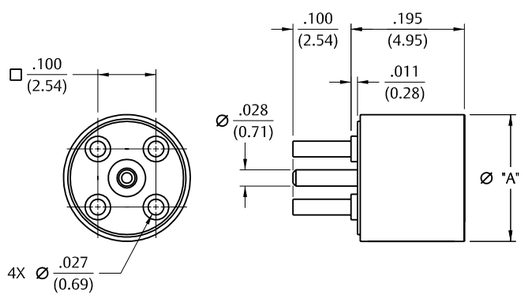



| Cable Type | Gold Plated | "A" | "B" |
|---|---|---|---|
| M17/151 | 127-0692-101 | .248 (6.30) | .197 (5.00) |
| RG-405 | 127-0693-101 | .271 (6.88) | .209 (5.31) |

* Specifications dependant on cable ratings.

## Straight PC Mount Male Receptacle




| Interface | Passivated | "A" |
|---|---|---|
| Full Detent | 127-0701-201 | .218 (5.54) |
| Limited Detent | 127-1701-201 | .218 (5.54) |
| Smooth Bore | 127-2701-201 | .218 (5.54) |
| Catcher's Mitt | 127-3701-201 | .234 (5.94) |

Base and legs gold plated brass.

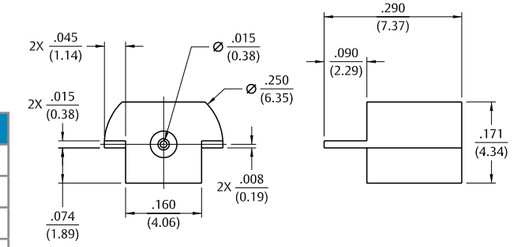




## End Launch Male Receptacle – Surface Mount

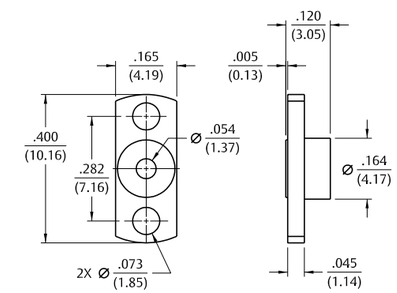
| Interface | Gold Plated | Packaging |
|---|---|---|
| Full Detent | 127-0701-801 | Stock |
| Full Detent | 127-0701-802 | Tape and Reel 1000 pcs/reel |
| Limited Detent | 127-1701-801 | Stock |
| Limited Detent | 127-1701-802 | Tape and Reel 1000 pcs/reel |
| Smooth Bore | 127-2701-801 | Stock |
| Smooth Bore | 127-2701-802 | Tape and Reel 1000 pcs/reel |

Mounting hole layout figure 1 page 194.



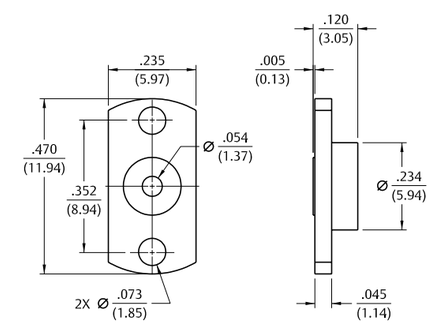

## 2-Hole Flange Mount Male Shroud – Without Contact

| Interface | Passivated |
|---|---|
| Full Detent | 127-0701-602 |
| Limited Detent | 127-1701-602 |
| Smooth Bore | 127-2701-602 |




## 2-Hole Flange Mount Male Catcher's Mitt Shroud – Without Contact

| Interface | Passivated |
|---|---|
| Catcher's Mitt | 127-3701-602 |





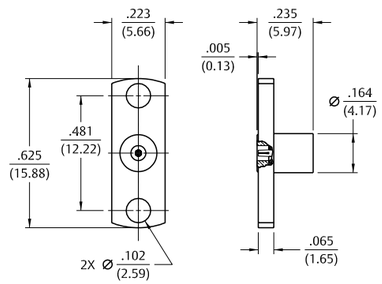

*Illustrations are shown in inches (millimeters).*

Johnson Connectivity Solutions

# Panel Mount and Adapters

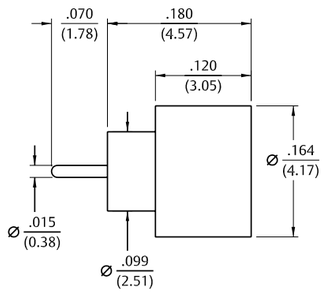
## 2-Hole Flange Mount Male Field Replaceable

| Interface | Passivated | Pin Size |
|---|---|---|
| Full Detent | 127-0701-612 | .012 (.030) |
| Limited Detent | 127-1701-612 | .012 (.030) |
| Smooth Bore | 127-2701-612 | .012 (.030) |



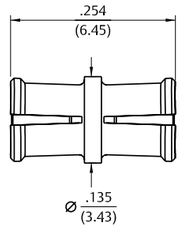

## Hermetic Seal Male

| Interface | Gold Plated |
|---|---|
| Full Detent | 127-0711-601 |
| Limited Detent | 127-1711-601 |
| Smooth Bore | 127-2711-601 |



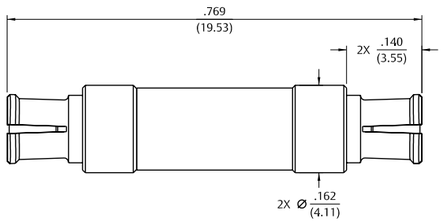

## Female to Female Bullet Adapter

| Gold Plated |
|---|
| 127-0901-801 |



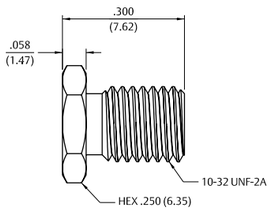

## Female to Female Adapter

| Gold Plated |
|---|
| 127-0901-811 |




## Male to Male Catcher's Mitt Adapter

| Interface | Passivated |
|---|---|
| Full Detent | 127-0901-821 |
| Limited Detent | 127-1901-821 |
| Smooth Bore | 127-2901-821 |






# Table of Contents





## Type N Connectors

50 Ohm Connectors
Specifications....146
Semi-Rigid & Flexible Cable....149
Bulkhead & Panel Mount Mount....151
Adapters....151

Other Information
Assembly Tools....185
Capabilities....190
Cable Information....192
Assembly Instruction....193
Mounting Hole Layouts....194
Numerical Index....274
Competitor Cross Reference....280

3 MMCX Connectors
13 MCX Connectors
39 SMK Connectors
45 SMA Connectors
103 SMB Connectors
131 SMC Connectors
137 SMP Connectors
145 Type N Connectors
153 Shielded Cable Terminations
157 Between-Series Adapters
161 Fixed Length Cable Assemblies
173 Ultra Miniature Connectors (UMC)
181 kwiQMAte ™ Connectors
185 Tools
193 Assembly Instructions
257 Electronic Hardware
274 Index

*While every precaution has been taken to ensure accuracy and completeness herein, Emerson Network Power Connectivity Solutions assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Specifications subject to change without notice.*

## Electrical Specifications

**Impedance:** 50 Ohms
**Frequency Range:**
Flexible Cabled Connectors and Receptacles ..... 0-11 GHz
Semi-rigid Cabled Connectors and Receptacles ..... 0-18 GHz
**VSWR:** max (f-GHz) ..... 0-11 GHz
Straight Flexible Cabled Connectors ..... 1.30 max

| | 0-9 GHz | 9-11 GHz |
|---|---|---|
| Right Angle Flexible Cabled | 1.35 max | 1.50 max |

| | 0-11 GHz | 11-18 GHz |
|---|---|---|
| RG-405 Semi-Rigid Plugs | 1.07+.01f | <1.25 Typical |
| RG-402 Semi-Rigid Plugs | 1.05+.01f | <1.25 Typical |
| RG-401 Semi-Rigid Plugs | 1.06+.01f | <1.25 Typical |
| RG-405 Semi-Rigid Jacks | 1.15+.02f | <1.50 Typical |
| RG-402 Semi-Rigid Jacks | 1.10+.02f | <1.50 Typical |
| RG-401 Semi-Rigid Jacks | 1.10+.02f | <1.50 Typical |

| | 0-18 GHz |
|---|---|
| Adapters | 1.05+.01f |
| Uncabled Receptacles | N/A |

**Working Voltage:** (VRMS max)†

| | Sea Level | 70K Feet |
|---|---|---|
| RG-316, 316 DS | 250 | 65 |
| RG-58, 142, 405 | 335 | 85 |
| RG-402 | 500 | 125 |
| RG-213, 214, 401, LMR-400 | 1000 | 250 |
| Uncabled Receptacles and Adapters | 1000 | 250 |

**Dielectric Withstanding Voltage:** (VRMS min at sea level)†
RG-316, 316 DS ..... 750
RG-58, 142, 405 ..... 1000
RG-402 ..... 1500
RG-213, 214, 401, LMR-400 ..... 2500
Uncabled Receptacles and Adapters ..... 2500
**Insulation Resistance:** 5000 Megohms min
**Contact Resistance:** (milliohms max)

| Center Contact | Initial | After Environmental |
|---|---|---|
| Straight Cabled Connectors (non-captivated) | 1.0 | 1.5 |
| Straight Cabled Connectors (captivated) | 2.5 | 3.0 |
| Right Angle Cabled Connectors | 2.5 | 3.0 |
| Uncabled Receptacles and Adapters | 1.0 | 1.5 |
| Outer Contact | 0.2 | N/A |
| Braid to Body (Flexible Cabled Connectors Only) | 0.05 | N/A |

**Corona Level:** (Volts min at 70K feet)†
RG-316, 316 DS ..... 190
RG-58, 142, 405 ..... 250
RG-402 ..... 375
RG-213, 214, 401, LMR-400 and Adapters ..... 500
Uncabled Receptacles ..... N/A
**Insertion Loss:** (dB max, tested at 9 GHz)
Straight Flexible Cabled Connectors ..... 0.15 max
Right Angle Flexible Cabled Connectors ..... 0.30
Semi-rigid Cabled Connectors and Adapters ..... $0.05\sqrt{f(GHz)}$
Uncabled Receptacles ..... N/A
**RF Leakage:** (dB min, tested at 2.5 GHz)
Cabled Connectors and Adapters ..... -90
Uncabled Receptacles ..... N/A
**RF High Potential Withstanding Voltage:** (Vrms min, tested at 4 and 7 MHz)†
RG-316, 316 DS ..... 500
RG-58, 142, 405 ..... 670
RG-402 ..... 1000
RG-213, 214, 401, LMR-400 ..... 1500
Uncabled Receptacles and Adapters ..... 1500
**IMP3:** Typically <-90 dBm (tested per IEC Guidelines using 20W inputs swept over 1930-1990 MHz)

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

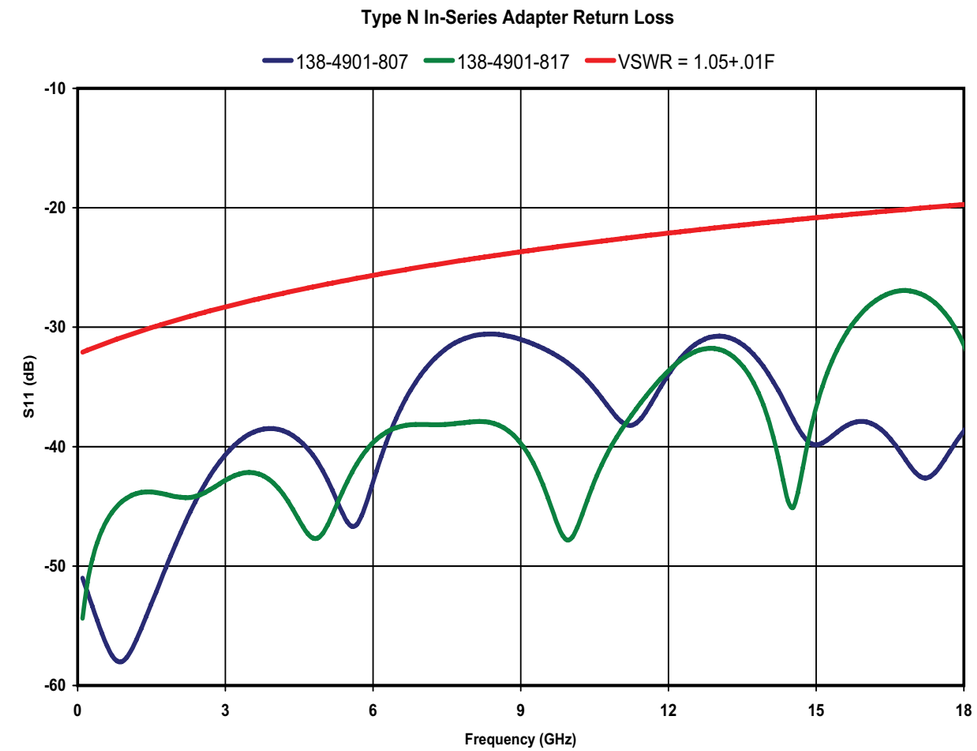













## Mechanical Specifications

**Engagement Design:** MIL-STD-348A, Series N
**Durability:** 500 Cycles min
**Engagement/Disengagement Force:** 6 lb-in max
**Mating Torque:** 7 to 10 lb-in
**Bulkhead Mounting Nut Torque:** 15 lb-in recommended
**Coupling Proof Torque:** 15 lb-in min
**Coupling Nut Retention:** 100 lbs min
**Contact Retention:** (min - captivated contacts only)

| | Axial Force (lbs) | Torque (oz-in) |
|---|---|---|
| Cabled Connectors and Adapters | 6 | N/A |
| Uncabled Receptacles | 6 | 4 |

**Cable Retention: (minimum*)**

| | Axial Force (lbs) | Torque (oz-in) |
|---|---|---|
| RG-316 | 20 | N/A |
| RG-316DS | 30 | N/A |
| RG-58 | 40 | N/A |
| RG-142 | 45 | N/A |
| RG-213, 214 and LMR-400 | 90 | N/A |
| RG-405 | 30 | 16 |
| RG-402 | 60 | 55 |
| RG-401 | 90 | 80 |

* or cable breaking strength, whichever is less.



*Illustrations are shown in inches (millimeters).*

# Specifications

## Environmental Specifications

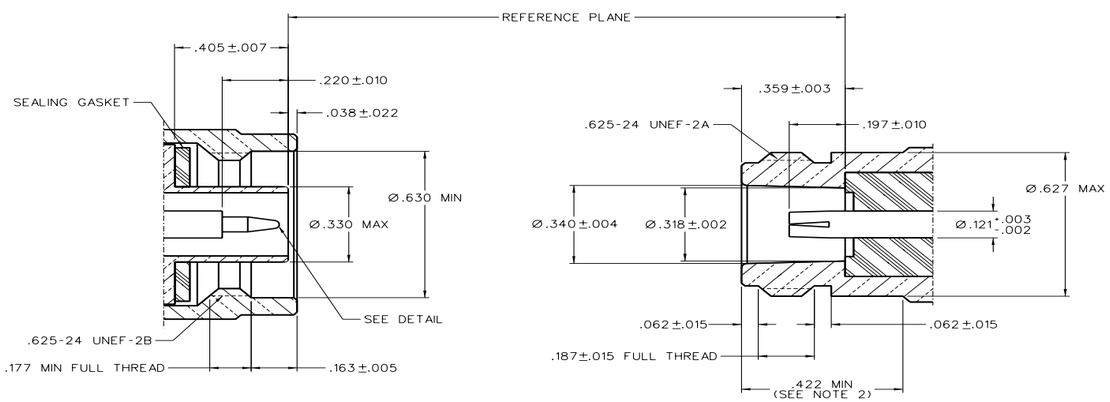
(Meets or Exceeds the Applicable Paragraph of MIL-PRF-39012)

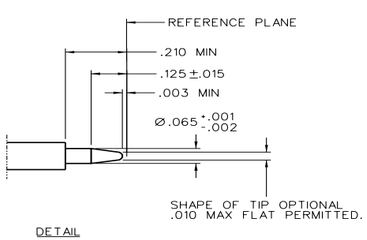
**Temperature Range:** -65°C to +165°C
**Thermal Shock:** MIL-STD-202, Method 107, Condition B (except +85°C high temperature)
**Corrosion:** MIL-STD-202, Method 101, Condition B
**Shock:** MIL-STD-202, Method 213, Condition I
**Vibration:** MIL-STD-202, Method 204, Condition B
**Moisture Resistance:** MIL-STD-202, Method 106

## Material Specifications

**Bodies:** Crimp – Brass per ASTM B16, Tri-Alloy (Cu/Sn/Zn) plated (.0001" min)
Solder – Brass per ASTM B16, Gold plated* per SAE-AMS2423 (.00001" min)
Adapter – Brass per ASTM B16, Tri-Alloy (Cu/Sn/Zn) or Nickel per QQ-N-290 plated (.0001" min)
**Contacts:** Male – Brass per ASTM B16, Gold plated* per MIL-G-45204 (.00005" min)
Female – Beryllium Copper per ASTM B196, Gold plated* per MIL-DTL-45204 (.00005" min)
Adapter – Beryllium Copper per ASTM B196, Gold plated* per MIL-DTL-45204 (.00005" min)
**Insulators:** PTFE Fluorocarbon per ASTM D1710 and ASTM D1457
**Gaskets:** Silicon Rubber per A-A-59588A
**Crimp Sleeves:** Copper per ASTM B301, Tri-Alloy (Cu/Sn/Zn) plated (.0001" min)
**End Caps:** Brass per ASTM B16, Tri-Alloy (Cu/Sn/Zn) plated (.0001" min)
**Nut Retention Spring (Plugs):** Beryllium Copper per ASTM B196, un-plated
**Mounting Nut (Bulkhead Jacks):** Brass per ASTM B16, Nickel plated per SAE-AMS2423 (.0001" min)
**Lock Washer (Bulkhead Jacks):** Steel, Zinc plated (.0001" min)

** All Gold plated parts include a .00005" minumum Nickel under plated barrier layer*



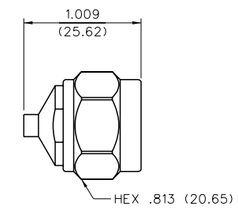




NOTES:
1. THIS INTERFACE SHALL MEET THE GAUGE REQUIREMENTS AS SPECIFIED IN MIL-PRF-39012/1G AND /2G.
2. CLEARANCE FOR MATING CONNECTOR COUPLING NUT.





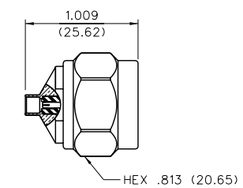
## Straight Solder Type Plug – With Solder Contact




| Cable Type | Gold Plated |
|---|---|
| RG-405 | 138-4693-001* |
| RG-402 | 138-4694-001* |
| RG-401 | 138-4696-001* |

Assembly instructions page 246.
* Tri-Alloy plated coupling nut

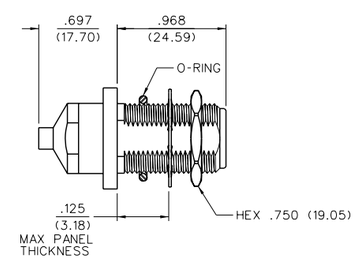
## Straight Solder Type Plug – Captivated Solderless Contact




| Cable Type | Gold Plated |
|---|---|
| RG-405 | 138-4693-011* |
| RG-402 | 138-4694-011* |
| RG-401 | 138-4696-011* |

Assembly instructions page 247.
* Tri-Alloy plated coupling nut

## Straight Solder Type Bulkhead Jack – With Solder Contact




| Cable Type | Gold Plated |
|---|---|
| RG-405 | 138-4593-401* |
| RG-402 | 138-4594-401* |
| RG-401 | 138-4596-401* |

Assembly instructions page 250.
* Tri-Alloy plated bulkhead jack body
Mounting hole layout figure 5 page 194.

# Flexible Cable

## Straight Crimp Type Plug – Solder or Crimp Contact

| Cable Type | Tri-Alloy Plated | Figure |
|---|---|---|
| RG-161, 174, 188, 316 | 138-4403-007 | 1 |
| RG-188 DS, RG-316 DS | 138-4404-007 | 1 |
| RG-58, 141, 303 | 138-4407-007 | 2 |
| RG-55, 142, 223, 400 | 138-4408-007 | 2 |
| RG-8, 213 | 138-4416-007 | 3 |
| RG-9, 214 | 138-4418-007 | 3 |
| LMR-400, BELDEN 9913 | 138-4449-007 | 3 |

Assembly instructions page 242 and 243.
* Tri-Alloy plated coupling nut

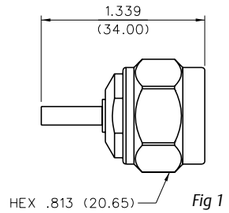


Fig 1

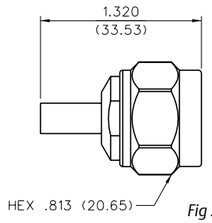


Fig 2

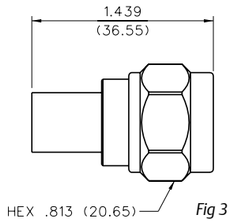


Fig 3

## Right Angle Crimp Type Plug – Captivated Contact

| Cable Type | Tri-Alloy Plated | Figure | "A" | "B" |
|---|---|---|---|---|
| RG-161, 174, 188, 316 | 138-4403-107 | 1 | 1.227 (31.17) | 0.977 (24.82) |
| RG-188 DS, RG-316 DS | 138-4404-107 | 1 | 1.227 (31.17) | 0.977 (24.82) |
| RG-58, 141, 303 | 138-4407-107 | 2 | 1.253 (31.83) | 1.003 (25.48) |
| RG-55, 142, 223, 400 | 138-4408-107 | 2 | 1.253 (31.83) | 1.003 (25.48) |
| RG-8, 213 | 138-4416-107 | 2 | 1.365 (34.67) | 1.115 (28.32) |
| RG-9, 214 | 138-4418-107 | 2 | 1.365 (34.67) | 1.115 (28.32) |

Assembly instructions page 244 and 245.
* Tri-Alloy plated coupling nut

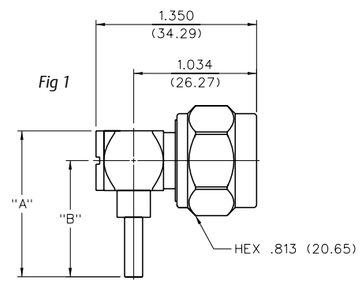


Fig 1

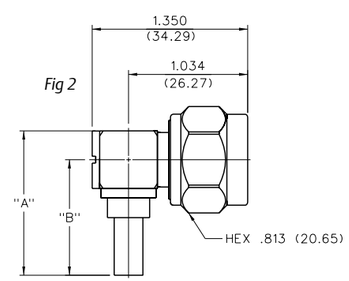
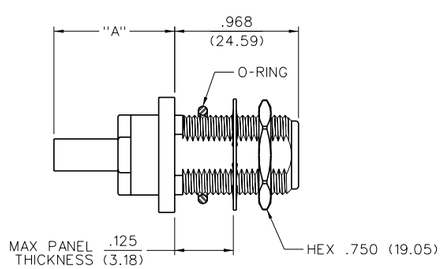


Fig 2

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

| Cable Type | Tri-Alloy Plated | "A" |
|---|---|---|
| RG-161, 174, 188, 316 | 138-4303-407 | .943 (23.95) |
| RG-188 DS, RG-316 DS | 138-4304-407 | .943 (23.95) |
| RG-58, 141, 303 | 138-4307-407 | .943 (23.95) |
| RG-55, 142, 223, 400 | 138-4308-407 | .943 (23.95) |
| RG-8, 213 | 138-4316-407 | .997 (25.32) |
| RG-9, 214 | 138-4318-407 | .997 (25.32) |
| LMR-400, BELDEN 9913 | 138-4349-407 | .997 (25.32) |

Assembly instructions page 248 and 251.
Mounting hole layout figure 9 page 194.

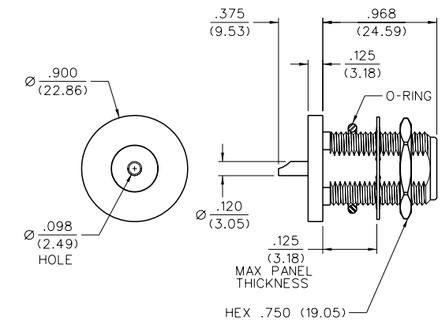






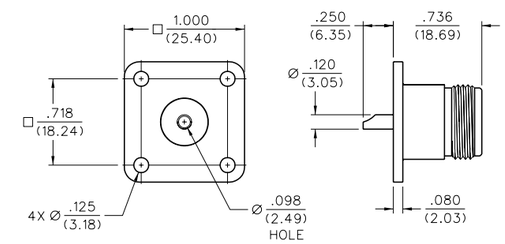

## Rear Mount Bulkhead Jack Receptacle

| Tri-Alloy Plated |
|---|
| 138-4701-407 |



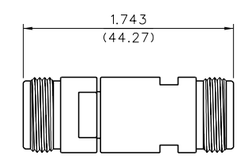

## 4-Hole Flange Mount Jack Receptacle – Flush Dielectric

| Tri-Alloy Plated |
|---|
| 138-4701-607 |




## Jack to Jack Adapter

| Tri-Alloy Plated |
|---|
| 138-4901-807 |

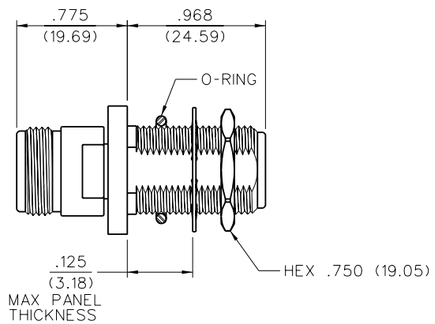


# In-Series Adapters

## Jack to Bulkhead Jack Adapter

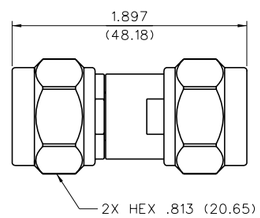
**Tri-Alloy Plated**
138-4901-407

Mounting hole layout figure 1 page 194.




## Plug to Plug Adapter

**Tri-Alloy Plated**
138-4901-817






# Table of Contents





## Shielded Cable Terminations

50 Ohm Connectors
Specifications....154
Semi-Rigid & Flexible Cable....155
PC Mount....156

Other Information
Assembly Tools....185
Capabilities....190
Cable Information....192
Assembly Instruction....193
Mounting Hole Layouts....194
Numerical Index....274
Competitor Cross Reference....280

*While every precaution has been taken to ensure accuracy and completeness herein, Emerson Network Power Connectivity Solutions assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Specifications subject to change without notice.*

3 MMCX Connectors
13 MCX Connectors
39 SMK Connectors
45 SMA Connectors
103 SMB Connectors
131 SMC Connectors
137 SMP Connectors
145 Type N Connectors
153 Shielded Cable Terminations
157 Between-Series Adapters
161 Fixed Length Cable Assemblies
173 Ultra Miniature Connectors (UMC)
181 kwiQMAte ™ Connectors
185 Tools
193 Assembly Instructions
257 Electronic Hardware
274 Index

# Specifications

## Electrical Specifications

**Engagement Design:** Impedance: 29 ohms
**Frequency Range:** 0 - 2 GHz
**Working Voltage:** 300 VRMS†
**Dielectric Withstanding Voltage:** 2000 VDC†
**Contact Resistance:** Center Contact: 6 milliohms
Outer conductor: 2.5 milliohms

## Mechanical Specifications

**Insertion Force:** Inner conductor: 32 oz. max. 2 oz. min.
Outer conductor: 48 oz. max. 6 oz. min.
**Durability:** 250 cycles

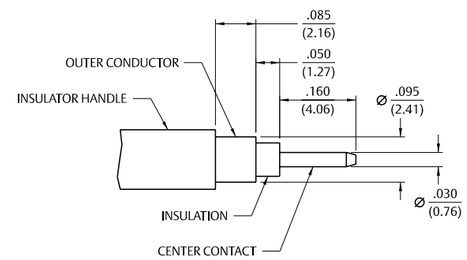
## Environmental Ratings

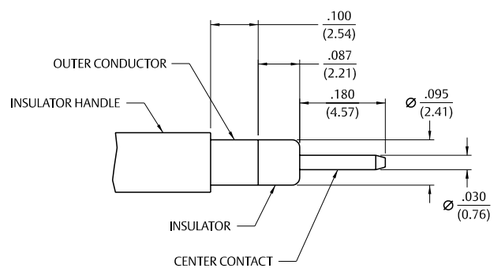
**Temperature Range:** -65° C to + 85° C
**Corrosion:** Salt spray, 24 hours
**Shock:** Method 213, Test Condition B, MIL-STD-202
**Vibration:** Method 204, Test Condition B, MIL-STD-202

## Material Specifications

**Contact:** Beryllium copper per QQ-C-533/530
**Insulator Material:** TFE Fluorocarbon per L-P-403
**Finish:** Center Contact and Body: Gold

**SHIELDED TEST JACK INTERFACE - TYPICAL PROBE TYPE**

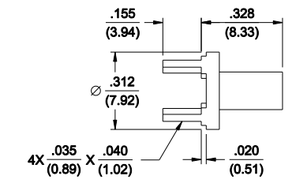






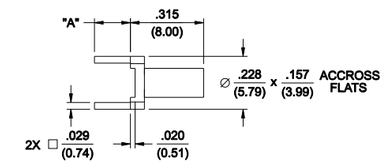

## Flexible Cable – Straight Crimp Type




| 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 252. Mounting hole layout figure 3 page 194.

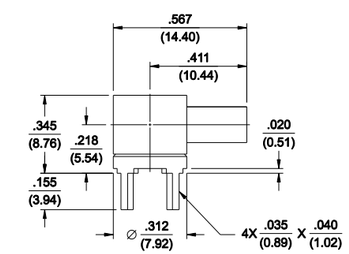
## Flexible Cable – Straight Crimp Type




| Cable Type | Gold Plated | Nickel Plated | "A" |
|---|---|---|---|
| RG-178/U, 196 | 142-0002-221 | 142-0002-226 | .110 (2.79) |
| RG-316/U, 188, 174, 161, 179, 187 | 142-0003-231 | 142-0003-236 | .155 (3.94) |
| | 142-0003-241 | 142-0003-246 | .110 (2.79) |
| RG-316 DS, 188 DS | 142-0004-211 | 142-0004-216 | .155 (3.94) |
| | 142-0004-221 | 142-0004-226 | .110 (2.79) |

Assembly instructions page 252. Mounting hole layout figure 14 page 195.

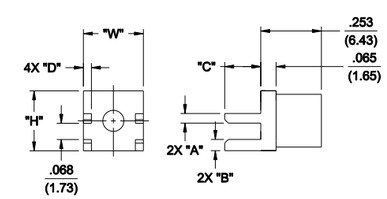
## Flexible Cable – Right Angle Crimp Type




| Cable Type | Gold Plated | Nickel Plated |
|---|---|---|
| RG-161/U, 174, 179, 187, 188, 316 | 142-0003-301 | 142-0003-306 |
| RG-316 DS, RG-188 DS | 142-0004-301 | 142-0004-306 |

Assembly instructions page 252. Mounting hole layout figure 3 page 194.

## Semi-Rigid – Straight Solder Type End Launch

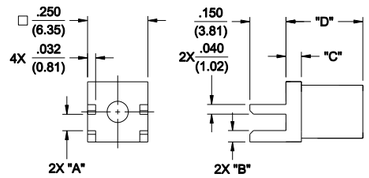



| Cable Type | Gold Plated | Board Thickness | "A" | "B" | "C" | "D" | "H" | "W" |
|---|---|---|---|---|---|---|---|---|
| .086 Semi-Rigid | 142-0093-801 | 0.062 (1.57) | 0.068 (1.73) | 0.046 (1.42) | 0.150 (3.81) | 0.032 (0.81) | 0.250 (6.35) | 0.250 (6.35) |
| .141 Semi-Rigid | 142-0094-801 | 0.062 (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 253.

# Flexible Cable & PC Mount

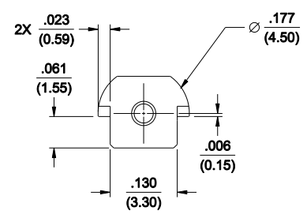
## Flexible Cable – Straight Crimp Type End Launch




| 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 253.

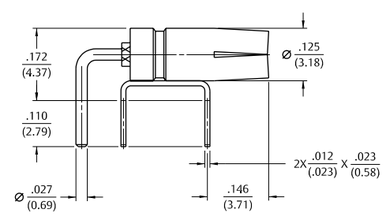
## Flexible Cable – Straight Crimp Type Surface Mount End Launch




| Cable Type | Gold Plated |
|---|---|
| RG-178/U, 196 | 142-0002-821 |

Recommended land pattern figure 12 page 194.
Assembly instructions page 254.

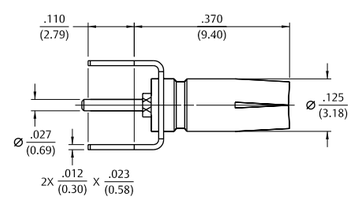
## Horizontal




| Gold Plated |
|---|
| 129-0701-302 |

Mounting hole layout figure 15 page 195.

## Vertical




| Gold Plated |
|---|
| 129-0701-202 |

Mounting hole layout figure 16 page 195.



# Table of Contents





## Between-Series Adapters

SMA to SMB....160
SMA to MCX....160
SMA to MMCX....160

Other Information
Assembly Tools....185
Capabilities....190
Cable Information....192
Assembly Instruction....193
Mounting Hole Layouts....194
Numerical Index....274
Competitor Cross Reference....280

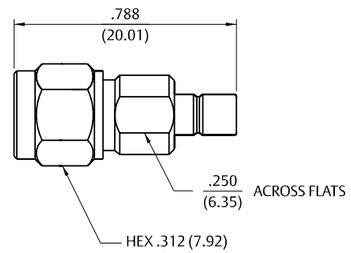
3 MMCX Connectors
13 MCX Connectors
39 SMK Connectors
45 SMA Connectors
103 SMB Connectors
131 SMC Connectors
137 SMP Connectors
145 Type N Connectors
153 Shielded Cable Terminations
157 Between-Series Adapters
161 Fixed Length Cable Assemblies
173 Ultra Miniature Connectors (UMC)
181 kwiQMAte ™ Connectors
185 Tools
193 Assembly Instructions
257 Electronic Hardware
274 Index

*While every precaution has been taken to ensure accuracy and completeness herein, Emerson Network Power Connectivity Solutions assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Specifications subject to change without notice.*

# SMA to SMB

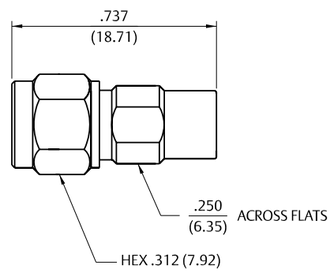
## SMA Plug to SMB Jack Adapter

| Gold Plated |
|---|
| 134-1012-011 |



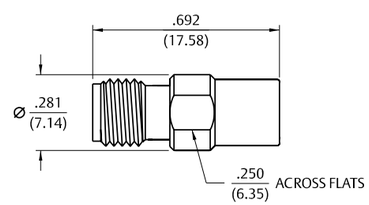

## SMA Plug to SMB Plug Adapter

| Gold Plated |
|---|
| 134-1012-021 |




## SMA Jack to SMB Plug Adapter

| Gold Plated |
|---|
| 134-1012-041 |

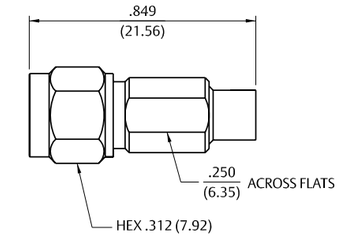






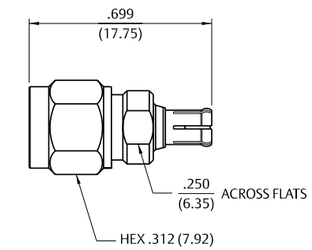

## SMA Plug to MCX Jack Adapter

| Gold Plated |
|---|
| 134-1018-001 |



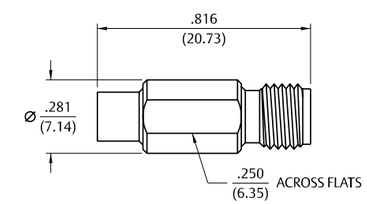

## SMA Plug to MCX Plug Adapter

| Gold Plated |
|---|
| 134-1018-011 |



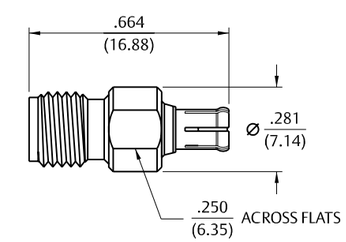

## SMA Jack to MCX Jack Adapter

| Gold Plated |
|---|
| 134-1018-021 |




## SMA Jack to MCX Plug Adapter

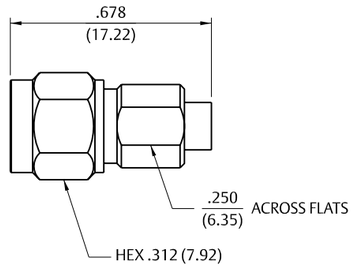
| Gold Plated |
|---|
| 134-1018-031 |



# SMA to MMCX

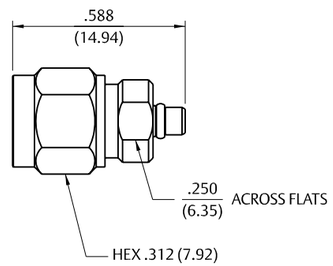
## SMA Plug to MMCX Jack Adapter

| Gold Plated |
|---|
| 134-1019-151 |



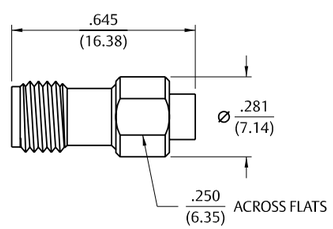

## SMA Plug to MMCX Plug Adapter

| Gold Plated |
|---|
| 134-1019-161 |



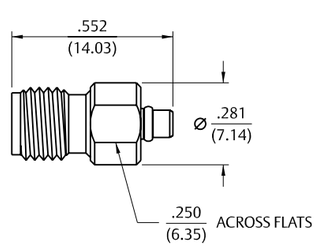

## SMA Jack to MMCX Jack Adapter

| Gold Plated |
|---|
| 134-1019-171 |




## SMA Jack to MMCX Plug Adapter

| Gold Plated |
|---|
| 134-1019-181 |






# Table of Contents





## Fixed Length Cable Assemblies

Specification ....162
MMCX to MMCX ....163
MMCX to SMA ....163
MCX to MCX ....164
SMA to SMA ....165
SMB to SMB ....168
Type N to Type N ....170
BNC to BNC ....170
75 Ohm to 75 Ohm BNC ....171
SMA to BNC ....171
SMA to Type N ....171
QMA to QMA ....172
BNC to BNC ....170

Other Information
Assembly Tools ....185
Capabilities ....190
Cable Information ....192
Assembly Instruction ....193
Mounting Hole Layouts ....194
Numerical Index ....274
Competitor Cross Reference .... 280

*While every precaution has been taken to ensure accuracy and completeness herein, Emerson Network Power Connectivity Solutions assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Specifications subject to change without notice.*

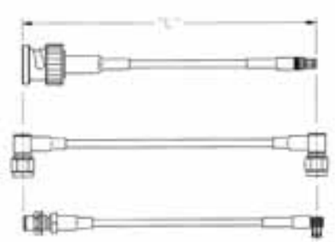
3 MMCX Connectors
13 MCX Connectors
39 SMK Connectors
45 SMA Connectors
103 SMB Connectors
131 SMC Connectors
137 SMP Connectors
145 Type N Connectors
153 Shielded Cable Terminations
157 Between-Series Adapters
161 Fixed Length Cable Assemblies
173 Ultra Miniature Connectors (UMC)
181 kwiQMAte ™ Connectors
185 Tools
193 Assembly Instructions
257 Electronic Hardware
274 Index

# Specifications

## 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 With-standing Voltage (VRMS) | Working Voltage (VRMS) |
|---|---|---|---|---|---|
| MMCX | RG-178 | 50 | 6 | 500 Vms | 170 Vms |
| | RG-316 | 50 | 6 | 500 Vms | 170 Vms |
| MCX | RG-178 | 50 | 6 | 750 Vms | 250 Vms |
| | RG-316 | 50 | 6 | 1000 Vms | 335 Vms |
| | RG-316DS | 50 | 6 | 1000 Vms | 335 Vms |
| MCX 75 Ohm | RG-179 | 75 | 6 | 1000 Vms | 335 Vms |
| | BELDEN 735A | 75 | 6 | 1000 Vms | 335 Vms |
| SMA | RG-178 | 50 | 12.4 | 500 Vms | 170 Vms |
| | RG-316 | 50 | 12.4 | 750 Vms | 250 Vms |
| | RG-316DS | 50 | 12.4 | 750 Vms | 250 Vms |
| | RG-58 | 50 | 12.4 | 1000 Vms | 335 Vms |
| | RG-142 | 50 | 12.4 | 1000 Vms | 335 Vms |
| | Hand-Formable .086 | 50 | 26.5 | 1000 Vms | 335 Vms |
| | Hand-Formable .141 | 50 | 26.5 | 1500 Vms | 500 Vms |
| SMB | RG-178 | 50 | 4 | 750 Vms | 250 Vms |
| | RG-316 | 50 | 4 | 1000 Vms | 335 Vms |
| SMB Mini 75 Ohm | RG-179 | 75 | 2 | 1000 Vms | 335 Vms |
| | RG-179DS | 75 | 2 | 1000 Vms | 335 Vms |
| | BELDEN 735A | 75 | 2 | 1000 Vms | 335 Vms |
| BNC | RG-58 | 50 | 4 | 1500 Vms | 500 Vms |
| | BELDEN 8218 | 50 | 4 | 1500 Vms | 500 Vms |
| | RG-59 | 50 | 4 | 1500 Vms | 500 Vms |
| | RG-59 PLENUM | 50 | 4 | 1500 Vms | 500 Vms |
| BNC 75 Ohm | BELDEN 8218 | 75 | 3 | 1500 Vms | 500 Vms |
| | RG-59 | 75 | 3 | 1500 Vms | 500 Vms |
| | BELDEN 8281 | 75 | 3 | 1500 Vms | 500 Vms |
| | COMM SCOPE 735 | 75 | 3 | 1500 Vms | 500 Vms |
| | BELDEN 735A | 75 | 3 | 1500 Vms | 500 Vms |
| | BELDEN 734A | 75 | 3 | 1500 Vms | 500 Vms |
| | BELDEN 1694A | 75 | 3 | 1500 Vms | 500 Vms |
| N | RG-58 | 50 | 11 | 1500 Vms | 500 Vms |
| | RG -142 | 50 | 11 | 1500 Vms | 500 Vms |
| | RG-8 | 50 | 11 | 1500 Vms | 500 Vms |
| | RG-213 | 50 | 11 | 1500 Vms | 500 Vms |



Emerson Connectivity Solutions cable length applies to the end of straight connectors. The length is applied to the vertical centroid of right angle connectors.





## MMCX Straight Plug to MMCX Straight Plug

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0066-006 | RG-176 | 6” | 135-3402-001 | 135-3402-001 |
| 415-0066-012 | RG-178 | 12” | 135-3402-001 | 135-3402-001 |
| 415-0066-018 | RG-178 | 18” | 135-3402-001 | 135-3402-001 |
| 415-0066-024 | RG-178 | 24” | 135-3402-001 | 135-3402-001 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0067-006 | RG-316 | 6” | 135-3403-001 | 135-3403-001 |
| 415-0067-012 | RG-316 | 12” | 135-3403-001 | 135-3403-001 |
| 415-0067-018 | RG-316 | 18” | 135-3403-001 | 135-3403-001 |
| 415-0067-024 | RG-316 | 24” | 135-3403-001 | 135-3403-001 |

## MMCX Right Angle Plug to MMCX Right Angle Plug

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0068-006 | RG-178 | 6” | 135-3402-101 | 135-3402-101 |
| 415-0068-012 | RG-178 | 12” | 135-3402-101 | 135-3402-101 |
| 415-0068-018 | RG-178 | 18” | 135-3402-101 | 135-3402-101 |
| 415-0068-024 | RG-178 | 24” | 135-3402-101 | 135-3402-101 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0069-006 | RG-316 | 6” | 135-34 | 135-3403-101 |
| 415-0069-012 | RG-316 | 12” | 135-3403-101 | 135-3403-101 |
| 415-0069-018 | RG-316 | 18” | 135-3403-101 | 135-3403-101 |
| 415-0069-024 | RG-316 | 24” | 135-3403-101 | 135-3403-101 |

## MMCX Straight Plug to SMA Straight Bulkhead Jack

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0070-006 | RC -178 | 6” | 135-3402-001 | 142-0302-431 |
| 415-0070-012 | RG-178 | 12” | 135-3402-001 | 142-0302-431 |
| 415-0070-018 | RG-178 | 18” | 135-3402-001 | 142-0302-431 |
| 415-0070-024 | RG-178 | 24” | 135-3402-001 | 142-0302-431 |
| 415-0070-036 | RG-178 | 36” | 135-3402-001 | 142-0302-431 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0071-006 | RC -316 | 6” | 135-3403-001 | 142-0303-411 |
| 415-0071-012 | RG-316 | 12” | 135-3403-001 | 142-0303-411 |
| 415-0071-018 | RG-316 | 18” | 135-3403-001 | 142-0303-411 |
| 415-0071-024 | RG-316 | 24” | 135-3403-001 | 142-0303-411 |
| 415-0071-036 | RG-316 | 36” | 135-3403-001 | 142-0303-411 |

## MMCX Right Angle Plug to SMA Straight Bulkhead Jack

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0072-006 | RG-178 | 6” | 135-3402-101 | 142-0302-431 |
| 415-0072-012 | RG-178 | 12” | 135-3402-101 | 142-0302-431 |
| 415-0072-018 | RG-178 | 18” | 135-3402-101 | 142-0302-431 |
| 415-0072-024 | RG-178 | 24” | 135-3402-101 | 142-0302-431 |
| 415-0072-036 | RG-178 | 36” | 135-3402-101 | 142-0302-431 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0073-006 | RG-316 | 6” | 135-3403-101 | 142-0303-411 |
| 415-0073-012 | RG-316 | 12” | 135-3403-101 | 142-0303-411 |
| 415-0073-018 | RG-316 | 18” | 135-3403-101 | 142-0303-411 |
| 415-0073-024 | RG-316 | 24” | 135-3403-101 | 142-0303-411 |
| 415-0073-036 | RG-316 | 36” | 135-3403-101 | 142-0303-411 |

## MCX Straight Plug to MCX Straight Plug

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0014-006 | RG -178 | 6” | 133-3402-021 | 133-3402-021 |
| 415-0014-012 | RG -176 | 12” | 133-3402-021 | 133-3402-021 |
| 415-0014-018 | RG -178 | 18” | 133-3402-021 | 133-3402-021 |
| 415-0014-024 | RG -178 | 24” | 133-3402-021 | 133-3402-021 |
| 415-0014-030 | RG -178 | 30” | 133-3402-021 | 133-3402-021 |
| 415-0014-036 | RG -178 | 36” | 133-3402-021 | 133-3402-021 |
| 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 | 6” | 133-3404-001 | 133-3404-001 |
| 415-0020-012 | RG-316DS | 12” | 133-3404-001 | 133-3404-001 |
| 415-0020-018 | RG-316DS | 18” | 133-3404-001 | 133-3404-001 |
| 415-0020-024 | RG-316DS | 24” | 133-3404-001 | 133-3404-001 |
| 415-0020-030 | RG-316DS | 30” | 133-3404-001 | 133-3404-001 |
| 415-0020-036 | RG-316DS | 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 |
|---|---|---|---|---|
| 415-0017-024 | RG -316 | 24” | 133-3403-001 | 133-3403-101 |
| 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 |
| 415-0012-006 | RG -316 | 6” | 133-3403-101 | 133-3403-101 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0021-006 | RG-316DS | 6” | 133-3404-101 | 133-3404-101 |
| 415-0021-012 | RG-316DS | 12” | 133-3404-101 | 133-3404-101 |
| 415-0021-018 | RG-316DS | 18” | 133-3404-101 | 133-3404-101 |
| 415-0021-024 | RG-316DS | 24” | 133-3404-101 | 133-3404-101 |
| 415-0021-030 | RG-316DS | 30” | 133-3404-101 | 133-3404-101 |
| 415-0021-036 | RG-316DS | 36” | 133-3404-101 | 133-3404-101 |





## MCX 75 Ohm Straight Plug to MCX 75 Ohn 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 735A | 6” | 133-8445-001 | 133-8445-001 |
| 415-0023-012 | Belden 735A | 12” | 133-8445-001 | 133-8445-001 |
| 415-0023-018 | Belden 735A | 18” | 133-8445-001 | 133-8445-001 |
| 415-0023-024 | Belden 735A | 24” | 133-8445-001 | 133-8445-001 |
| 415-0023-030 | Belden 735A | 30” | 133-8445-001 | 133-8445-001 |
| 415-0023-036 | Belden 735A | 36” | 133-8445-001 | 133-8445-001 |

## 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 735A | 6” | 133-8445-101 | 133-8445-101 |
| 415-0024-012 | Belden 735A | 12” | 133-8445-101 | 133-8445-101 |
| 415-0024-018 | Belden 735A | 18” | 133-8445-101 | 133-8445-101 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0024-024 | Belden 735A | 24” | 133-8445-101 | 133-8445-101 |
| 415-0024-030 | Belden 735A | 30” | 133-8445-101 | 133-8445-101 |
| 415-0024-036 | Belden 735A | 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 -316DS | 6” | 142-0404-011 | 142-0404-011 |
| 415-0033-012 | RG -316DS | 12” | 142-0404-011 | 142-0404-011 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0033-018 | RG-316DS | 18” | 142-0404-011 | 142-0404-011 |
| 415-0033-024 | RG-316DS | 24” | 142-0404-011 | 142-0404-011 |
| 415-0033-036 | RG-316DS | 36” | 142-0404-011 | 142-0404-011 |
| 415-0033-048 | RG-316DS | 48” | 142-0404-011 | 142-0304-411 |
| 415-0038-012 | RG -58 | 12” | 142-0407-011 | 142-0307-411 |
| 415-0038-024 | RG -58 | 24” | 142-0407-011 | 142-0307-411 |
| 415-0038-036 | RG -58 | 36” | 142-0407-011 | 142-0307-411 |
| 415-0038-048 | RG -58 | 48” | 142-0407-011 | 142-0307-411 |
| 415-0038-060 | RG-58 | 60” | 142-0407-011 | 142-0307-411 |
| 415-0043-012 | RG-142 | 12” | 142-0408-011 | 142-0308-411 |
| 415-0043-024 | RG-142 | 24” | 142-0408-011 | 142-0308-411 |
| 415-0043-036 | RG-142 | 36” | 142-0408-011 | 142-0308-411 |
| 415-0043-048 | RG -142 | 48” | 142-0408-011 | 142-0308-411 |
| 415-0043-060 | RG-142 | 60” | 142-0408-011 | 142-0308-411 |

**For more information, please contact customer service at (507) 833-8822 or (800) 247-8256 • www.EmersonConnectivity.com**

*Illustrations are shown in inches (millimeters).*

## Hand Formable SMA Straight Plug to SMA Straight Plug

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0081-003 | Hand Formable .086 | 3” | 142-0693-001 | 142-0693-001 |
| 415-0081-004 | Hand Formable .086 | 4” | 142-0693-001 | 142-0693-001 |
| 415-0081-005 | Hand Formable .086 | 5” | 142-0693-001 | 142-0693-001 |
| 415-0081-006 | Hand Formable .086 | 6” | 142-0693-001 | 142-0693-001 |
| 415-0081-007 | Hand Formable .086 | 7” | 142-0693-001 | 142-0693-001 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0081-008 | Hand Formable .086 | 8” | 142-0693-001 | 142-0693-001 |
| 415-0081-012 | Hand Formable .086 | 12” | 142-0693-001 | 142-0693-001 |
| 415-0081-018 | Hand Formable .086 | 18” | 142-0693-001 | 142-0693-001 |
| 415-0081-024 | Hand Formable .086 | 24” | 142-0693-001 | 142-0693-001 |

## Hand Formable SMA Straight Plug to SMA Straight Plug

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0082-003 | Hand Formable .141 | 3” | 142-0694-001 | 142-0694-001 |
| 415-0082-004 | Hand Formable .141 | 4” | 142-0694-001 | 142-0694-001 |
| 415-0082-005 | Hand Formable .141 | 5” | 142-0694-001 | 142-0694-001 |
| 415-0082-006 | Hand Formable .141 | 6” | 142-0694-001 | 142-0694-001 |
| 415-0082-007 | Hand Formable .141 | 7” | 142-0694-001 | 142-0694-001 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0082-008 | Hand Formable .141 | 8” | 142-0694-001 | 142-0694-001 |
| 415-0082-012 | Hand Formable .141 | 12” | 142-0694-001 | 142-0694-001 |
| 415-0082-018 | Hand Formable .141 | 18” | 142-0694-001 | 142-0694-001 |
| 415-0082-024 | Hand Formable .141 | 24” | 142-0694-001 | 142-0694-001 |

## 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-316DS | 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-176 | 12” | 142-0402-011 | 142-0402-101 |
| 415-0026-016 | 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 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0034-006 | RG-316 | 6” | 142-0404-011 | 142-0404-101 |
| 415-0034-012 | RG-316 | 12” | 142-0404-011 | 142-0404-101 |
| 415-0034-018 | RG-316 | 18” | 142-0404-011 | 142-0404-101 |
| 415-0034-024 | RG-316 | 24” | 142-0404-011 | 142-0404-101 |
| 415-0034-036 | RG-316 | 36” | 142-0404-011 | 142-0404-101 |
| 415-0034-048 | RG-316 | 48” | 142-0404-011 | 142-0404-101 |
| 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-316DS | 6” | 142-0404-101 | 142-0404-101 |
| 415-0036-012 | RG-316DS | 12” | 142-0404-101 | 142-0404-101 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0036-018 | RG-316 | 18” | 142-0404-101 | 142-0404-101 |
| 415-0036-024 | RG-316 | 24” | 142-0404-101 | 142-0404-101 |
| 415-0036-036 | RG-316 | 36” | 142-0404-101 | 142-0404-101 |
| 415-0036-048 | RG-316 | 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 |

## SMA Right Angle Plug to SMA Straight Bulkhead Jack

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0074-006 | RG-316 | 6” | 142-0403-101 | 142-0303-411 |
| 415-0074-012 | RG-316 | 12” | 142-0403-101 | 142-0303-411 |
| 415-0074-024 | RG-316 | 24” | 142-0403-101 | 142-0303-411 |
| 415-0074-036 | RG-316 | 36” | 142-0403-101 | 142-0303-411 |
| 415-0074-048 | RG-316 | 48” | 142-0403-101 | 142-0303-411 |
| 415-0064-006 | RG-316DS | 6” | 142-0404-101 | 142-0304-411 |
| 415-0064-012 | RG-316DS | 12” | 142-0404-101 | 142-0304-411 |
| 415-0064-024 | RG-316DS | 24” | 142-0404-101 | 142-0304-411 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0064-036 | RG-316DS | 36” | 142-0404-101 | 142-0304-411 |
| 415-0064-048 | RG-316DS | 48” | 142-0404-101 | 142-0304-411 |
| 415-0075-006 | RG-142 | 6” | 142-0406-101 | 142-0306-411 |
| 415-0075-012 | RG-142 | 12” | 142-0406-101 | 142-0306-411 |
| 415-0075-024 | RG-142 | 24” | 142-0406-101 | 142-0306-411 |
| 415-0075-036 | RG-142 | 36” | 142-0406-101 | 142-0306-411 |
| 415-0075-048 | RG-142 | 48” | 142-0406-101 | 142-0306-411 |

## Straight SMA Quick-Connect Plug to Straight SMA Quick-Connect Plug

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0065-006 | RG-316 | 6” | 142-1403-001 | 142-1403-001 |
| 415-0065-012 | RG-316 | 12” | 142-1403-001 | 142-1403-001 |
| 415-0065-018 | RG-316 | 18” | 142-1403-001 | 142-1403-001 |
| 415-0065-024 | RG-316 | 24” | 142-1403-001 | 142-1403-001 |
| 415-0065-036 | RG-316 | 36” | 142-1403-001 | 142-1403-001 |
| 415-0065-048 | RG-316 | 48” | 142-1403-001 | 142-1403-001 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0076-012 | RG-316DS | 12” | 142-1404-001 | 142-1404-001 |
| 415-0076-024 | RG-316DS | 24” | 142-1404-001 | 142-1404-001 |
| 415-0076-036 | RG-316DS | 36” | 142-1404-001 | 142-1404-001 |
| 415-0077-012 | RG-142 | 12” | 142-1408-001 | 142-1408-001 |
| 415-0077-024 | RG-142 | 24” | 142-1408-001 | 142-1408-001 |
| 415-0077-036 | RG-142 | 36” | 142-1408-001 | 142-1408-001 |

## Straight SMA Quick-Connect Plug to Straight SMA Plug

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0078-012 | RG-316DS | 12” | 142-1404-001 | 142-0404-011 |
| 415-0078-024 | RG-316DS | 24” | 142-1404-001 | 142-0404-011 |
| 415-0078-036 | RG-316DS | 36” | 142-1404-001 | 142-0404-011 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0079-012 | RG-142 | 12” | 142-1408-001 | 142-0408-011 |
| 415-0079-024 | RG-142 | 24” | 142-1408-001 | 142-0408-011 |
| 415-0079-036 | RG-142 | 36” | 142-1408-001 | 142-0408-011 |

## SMB Straight Plug to SMB Straight Plug

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 413-0003-000 | 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 |
|---|---|---|---|---|
| 413-0003-024 | 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 |
|---|---|---|---|---|
| 415-0007-006 | RG -178 | 6” | 131-3462-661 | 131-1462-161 |
| 415-0007-012 | RG -178 | 12” | 131-3402-001 | 131-1402-101 |
| 415-0007-018 | RG -178 | 18” | 131-3462-661 | 131-1462-161 |
| 415-0007-024 | RG -178 | 24” | 131-3462-661 | 131-1462-161 |
| 415-0007-030 | RG -178 | 36” | 131-3462-661 | 131-1462-161 |
| 415-0007-036 | RG -178 | 36” | 131-3462-661 | 131-1462-161 |
| 415-0002-006 | RG-316 | 6” | 131-1463-661 | 131-1463-161 |
| 415-0002-012 | RG-316 | 12” | 131-1463-661 | 131-1463-161 |
| 415-0002-018 | RG-316 | 18” | 131-1463-661 | 131-1463-161 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 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 | 16” | 131-1404-001 | 131-1404-101 |
| 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 |

## 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-316DS | 6” | 131-1404-101 | 131-1404-101 |
| 415-0006-012 | RG-316DS | 12” | 131-1404-101 | 131-1404-101 |
| 415-0006-018 | RG-316DS | 18” | 131-1404-101 | 131-1404-101 |
| 415-0006-024 | RG-316DS | 24” | 131-1404-101 | 131-1404-101 |
| 415-0006-030 | RG-316DS | 30” | 131-1404-101 | 131-1404-101 |
| 415-0006-036 | RG-316DS | 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” | 131-6403-011 | 131-6403-011 |
| 415-0008-024 | RG-179 | 24” | 131-6403-011 | 131-6403-011 |
| 415-0008-030 | RG -179 | 30” | 131-8403-011 | 131-8403-011 |
| 415-0008-036 | RG -179 | 36” | 131-8403-011 | 131-8403-011 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0010-006 | RG -179 DS | 6” | 131-6404-011 | 131-6404-011 |
| 415-0010-012 | RG -179 DS | 12” | 131-6404-011 | 131-6404-011 |
| 415-0010-018 | RG -179 DS | 18” | 131-6404-011 | 131-6404-011 |
| 415-0010-024 | RG -179 DS | 24” | 131-6404-011 | 131-6404-011 |
| 415-0010-030 | RG -179 DS | 30” | 131-6404-011 | 131-6404-011 |
| 415-0010-036 | RG -179 DS | 36” | 131-6404-011 | 131-6404-011 |

## SMB Mini-75 Ohm Straight 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 735A | 6” | 131-8445-101 | 131-8445-101 |
| 415-0013-012 | Belden 735A | 12” | 131-8445-101 | 131-8445-101 |
| 415-0013-018 | Belden 735A | 18” | 131-8445-101 | 131-8445-101 |
| 415-0013-024 | Belden 735A | 24” | 131-8445-101 | 131-8445-101 |
| 415-0013-030 | Belden 735A | 30” | 131-8445-101 | 131-8445-101 |
| 415-0013-036 | Belden 735A | 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

| 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 |
| 415-0057-012 | 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 |

| 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 |

+ with Heat Shrink





## 75 Ohm BNC Straight Plug to 75 Ohm BNC Straight Plug

| 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 734A | 12” | CPMC-68-35 | CPMC-68-35 |
| 415-0052-024 | Belden 734A | 24” | CPMC-68-3 | CPMC-68-35 |
| 415-0052-036 | Belden 734A | 36” | CPMC-68-35 | CPMC-68-35 |
| 415-0052-048 | Belden 734A | 48” | CPMC-68-35 | CPMC-68-35 |
| 415-0052-060 | Belden 734A | 60” | CPMC-68-35 | CPMC-68-35 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0047-012 | Belden 8218 | 12” | CPMC-68-18 | CPMC-58-18 |
| 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 | Comm Scope 735 | 12” | CPMC-68-33 | CPMC-68-33 |
| 415-0050-024 | Comm Scope 735 | 24” | CPMC-68-33 | CPMC-68-33 |
| 415-0050-036 | Comm Scope 735 | 36” | CPMC-68-33 | CPMC-68-33 |
| 415-0050-048 | Comm Scope 735 | 48” | CPMC-68-33 | CPMC-68-33 |
| 415-0050-060 | Comm Scope 735 | 60” | CPMC-68-33 | CPMC-68-33 |
| 415-0051-012 | Belden 735A | 12” | CPMC-68-33 | CPMC-68-33 |
| 415-0051-024 | Belden 735A | 24” | CPMC-68-33 | CPMC-68-33 |
| 415-0051-036 | Belden 735A | 36” | CPMC-68-33 | CPMC-68-33 |
| 415-0051-048 | Belden 735A | 48” | CPMC-68-33 | CPMC-68-33 |
| 415-0051-060 | Belden 735A | 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 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 |

## 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 |

## kwiQMAte ™ Straight to Straight

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0162-006 | RG-316DS | 6” | 146-0404-007 | 146-0404-007 |
| 415-0162-012 | RG-316DS | 12” | 146-0404-007 | 146-0404-007 |
| 415-0162-024 | RG-316DS | 24” | 146-0404-007 | 146-0404-007 |
| 415-0162-036 | RG-316DS | 36” | 146-0404-007 | 146-0404-007 |
| 415-0162-048 | RG-316DS | 48” | 146-0404-007 | 146-0404-007 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0163-006 | RG-316 | 6” | 146-0403-007 | 146-0403-007 |
| 415-0163-012 | RG-316 | 12” | 146-0403-007 | 146-0403-007 |
| 415-0163-024 | RG-316 | 24” | 146-0403-007 | 146-0403-007 |
| 415-0163-036 | RG-316 | 36” | 146-0403-007 | 146-0403-007 |
| 415-0163-048 | RG-316 | 48” | 146-0403-007 | 146-0403-007 |

## kwiQMAte ™ Straight to Right Angle

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0171-006 | RG-316DS | 6” | 146-0404-007 | 146-0404-107 |
| 415-0171-012 | RG-316DS | 12” | 146-0404-007 | 146-0404-107 |
| 415-0171-024 | RG-316DS | 24” | 146-0404-007 | 146-0404-107 |
| 415-0171-036 | RG-316DS | 36” | 146-0404-007 | 146-0404-107 |
| 415-0171-048 | RG-316DS | 48” | 146-0404-007 | 146-0404-107 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0172-006 | RG-316 | 6” | 146-0403-007 | 146-0403-107 |
| 415-0172-012 | RG-316 | 12” | 146-0403-007 | 146-0403-107 |
| 415-0172-024 | RG-316 | 24” | 146-0403-007 | 146-0403-107 |
| 415-0172-036 | RG-316 | 36” | 146-0403-007 | 146-0403-107 |
| 415-0172-048 | RG-316 | 48” | 146-0403-007 | 146-0403-107 |

## kwiQMAte ™ Right Angle to Right Angle

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0174-006 | RG-316DS | 6” | 146-0404-107 | 146-0404-107 |
| 415-0174-012 | RG-316DS | 12” | 146-0404-107 | 146-0404-107 |
| 415-0174-024 | RG-316DS | 24” | 146-0404-107 | 146-0404-107 |
| 415-0174-036 | RG-316DS | 36” | 146-0404-107 | 146-0404-107 |
| 415-0174-048 | RG-316DS | 48” | 146-0404-107 | 146-0404-107 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0175-006 | RG-316 | 6” | 146-0403-107 | 146-0403-107 |
| 415-0175-012 | RG-316 | 12” | 146-0403-107 | 146-0403-107 |
| 415-0175-024 | RG-316 | 24” | 146-0403-107 | 146-0403-107 |
| 415-0175-036 | RG-316 | 36” | 146-0403-107 | 146-0403-107 |
| 415-0175-048 | RG-316 | 48” | 146-0403-107 | 146-0403-107 |

## kwiQMAte ™ Straight to SMA Straight

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0165-006 | RG-316DS | 6” | 146-0404-007 | 142-0404-016 |
| 415-0165-012 | RG-316DS | 12” | 146-0404-007 | 142-0404-016 |
| 415-0165-024 | RG-316DS | 24” | 146-0404-007 | 142-0404-016 |
| 415-0165-036 | RG-316DS | 36” | 146-0404-007 | 142-0404-016 |
| 415-0165-048 | RG-316DS | 48” | 146-0404-007 | 142-0404-016 |

| Part No. | Cable Type | Cable Length | Connector A | Connector B |
|---|---|---|---|---|
| 415-0166-006 | RG-316 | 6” | 146-0403-007 | 142-0403-016 |
| 415-0166-012 | RG-316 | 12” | 146-0403-007 | 142-0403-016 |
| 415-0166-024 | RG-316 | 24” | 146-0403-007 | 142-0403-016 |
| 415-0166-036 | RG-316 | 36” | 146-0403-007 | 142-0403-016 |
| 415-0166-048 | RG-316 | 48” | 146-0403-007 | 142-0403-016 |







## Ultra Miniature Cable Assemblies

MMCX Cable Assemblies
Specification ..... 174
UMC to UMC ..... 174
UMC to MMCX ..... 175
UMC to SMA ..... 176
Pigtail Cable ..... 178
UMC Surface Mount Connector ..... 179
Pigtail Cable Adapters ..... 180

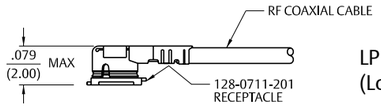
Other Information
Assembly Tools ..... 185
Capabilities ..... 190
Cable Information ..... 192
Assembly Instruction ..... 193
Mounting Hole Layouts ..... 194
Numerical Index ..... 274
Competitor Cross Reference ..... 280

*While every precaution has been taken to ensure accuracy and completeness herein, Emerson Network Power Connectivity Solutions assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Specifications subject to change without notice.*

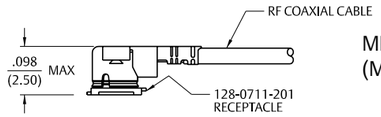
3 MMCX Connectors
13 MCX Connectors
39 SMK Connectors
45 SMA Connectors
103 SMB Connectors
131 SMC Connectors
137 SMP Connectors
145 Type N Connectors
153 Shielded Cable Terminations
157 Between-Series Adapters
161 Fixed Length Cable Assemblies
173 Ultra Miniature Connectors (UMC)
181 kwiQMAte ™ Connectors
185 Tools
193 Assembly Instructions
257 Electronic Hardware
274 Index

# Specifications

| | |
|---|---|
| **Impedance:** | 50 Ω (Nominal) |
| **Temperature Range:** | -40°C to +90°C |
| **Frequency Rating:** | 0-6 GHz |
| **VSWR:** | 1.30 max (0-6 GHz) |
| **Contact Resistance:** | 20 m Ω max. (Center)<br>20 m Ω max. (Outer, for plug)<br>10 m Ω max. (Outer, for receptacle) |
| **Withstanding Voltage:** | 200 V AC |
| **Insulation Resistance:** | 500 M Ω min. |
| **Durability:** | 30 cycles |
| **Holding Force (min.):** | 0.15 N (Female contact) |




LP Plug
(Low Profile Plug)




MP Plug
(Medium Profile Plug)

## Low Profile UMC Right Angle Cable Plug to UMC Right Angle Cable Plug

| Part No. | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Plug Mated Height | Connector B |
|---|---|---|---|---|---|
| 415-0084-050 | 0.81 mm | 50 mm | UMC LP PLUG | 2.0 mm | UMC LP PLUG |
| 415-0084-100 | 0.81 mm | 100 mm | UMC LP PLUG | 2.0 mm | UMC LP PLUG |
| 415-0084-150 | 0.81 mm | 150 mm | UMC LP PLUG | 2.0 mm | UMC LP PLUG |
| 415-0084-200 | 0.81 mm | 200 mm | UMC LP PLUG | 2.0 mm | UMC LP PLUG |
| 415-0084-250 | 0.81 mm | 250 mm | UMC LP PLUG | 2.0 mm | UMC LP PLUG |
| 415-0084-300 | 0.81 mm | 300 mm | UMC LP PLUG | 2.0 mm | UMC LP PLUG |
| 415-0084-500 | 0.81 mm | 500 mm | UMC LP PLUG | 2.0 mm | UMC LP PLUG |

## Medium Profile UMC Right Angle Cable Plug to UMC Right Angle Cable Plug

| Part No. | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Plug Mated Height | Connector B |
|---|---|---|---|---|---|
| 415-0085-050 | 0.81 mm | 50 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0085-100 | 0.81 mm | 100 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0085-150 | 0.81 mm | 150 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0085-200 | 0.81 mm | 200 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0085-250 | 0.81 mm | 250 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0085-300 | 0.81 mm | 300 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0085-500 | 0.81 mm | 500 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0086-050 | 1.13 mm | 50 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0086-100 | 1.13 mm | 100 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0086-150 | 1.13 mm | 150 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0086-200 | 1.13 mm | 200 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0086-250 | 1.13 mm | 250 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0086-300 | 1.13 mm | 300 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0086-500 | 1.13 mm | 500 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0087-050 | 1.32 mm | 50 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0087-100 | 1.32 mm | 100 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0087-150 | 1.32 mm | 150 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0087-200 | 1.32 mm | 200 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0087-250 | 1.32 mm | 250 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0087-300 | 1.32 mm | 300 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0087-500 | 1.32 mm | 500 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0088-050 | 1.37 mm | 50 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0088-100 | 1.37 mm | 100 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0088-150 | 1.37 mm | 150 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0088-200 | 1.37 mm | 200 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0088-250 | 1.37 mm | 250 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0088-300 | 1.37 mm | 300 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |
| 415-0088-500 | 1.37 mm | 500 mm | UMC MP PLUG | 2.5 mm | UMC MP PLUG |





## UMC Right Angle Cable Plug to MMCX Right Angle Plug

### Low Profile

| Part No. | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Plug Mated Height | Connector B |
|---|---|---|---|---|---|
| 415-0101-150 | 0.81 mm | 150 mm | UMC LP PLUG | 2.0 mm | MMCX RA PLUG |
| 415-0101-250 | 0.81 mm | 250 mm | UMC LP PLUG | 2.0 mm | MMCX RA PLUG |

### Medium Profile

| Part No. | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Plug Mated Height | Connector B |
|---|---|---|---|---|---|
| 415-0102-150 | 0.81 mm | 150 mm | UMC LP PLUG | 2.5 mm | MMCX RA PLUG |
| 415-0102-250 | 0.81 mm | 250 mm | UMC LP PLUG | 2.5 mm | MMCX RA PLUG |

# SMA Cable Assembly

## UMC Right Angle Cable Plug to SMA Straight Plug

### Low Profile

| Part No. | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Plug Mated Height | Connector B |
|---|---|---|---|---|---|
| 415-0089-150 | 0.81 mm | 150 mm | UMC LP PLUG | 2.0 mm | SMA STR. PLUG |
| 415-0089-250 | 0.81 mm | 250 mm | UMC LP PLUG | 2.0 mm | SMA STR. PLUG |

### Medium Profile

| Part No. | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Plug Mated Height | Connector B |
|---|---|---|---|---|---|
| 415-0090-150 | 0.81 mm | 150 mm | UMC MP PLUG | 2.5 mm | SMA STR. PLUG |
| 415-0090-250 | 0.81 mm | 250 mm | UMC MP PLUG | 2.5 mm | SMA STR. PLUG |
| 415-0091-150 | 1.37 mm | 150 mm | UMC MP PLUG | 2.5 mm | SMA STR. PLUG |
| 415-0091-250 | 1.37 mm | 250 mm | UMC MP PLUG | 2.5 mm | SMA STR. PLUG |

## UMC Right Angle Cable Plug to SMA Bulkhead Straight Jack

### Low Profile

| Part No. | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Plug Mated Height | Connector B |
|---|---|---|---|---|---|
| 415-0095-150 | 0.81 mm | 150 mm | UMC LP PLUG | 2.0 mm | SMA STR BKHD. JACK |
| 415-0095-250 | 0.81 mm | 250 mm | UMC LP PLUG | 2.0 mm | SMA STR BKHD. JACK |

### Medium Profile

| Part No. | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Plug Mated Height | Connector B |
|---|---|---|---|---|---|
| 415-0096-150 | 0.81 mm | 150 mm | UMC MP PLUG | 2.5 mm | SMA STR BKHD. JACK |
| 415-0096-250 | 0.81 mm | 250 mm | UMC MP PLUG | 2.5 mm | SMA STR BKHD. JACK |
| 415-0097-150 | 1.37 mm | 150 mm | UMC MP PLUG | 2.5 mm | SMA STR BKHD. JACK |
| 415-0097-250 | 1.37 mm | 250 mm | UMC MP PLUG | 2.5 mm | SMA STR BKHD. JACK |



# SMA Reverse Polarity Cable Assembly



## UMC Right Angle Cable Plug to SMA Straight Reverse Polarity Plug

### Low Profile

| Part No. | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Plug Mated Height | Connector B |
|---|---|---|---|---|---|
| 415-0092-150 | 0.81 mm | 150 mm | UMC LP PLUG | 2.0 mm | SMA STR. RP PLUG |
| 415-0092-250 | 0.81 mm | 250 mm | UMC LP PLUG | 2.0 mm | SMA STR. RP PLUG |

### Medium Profile

| Part No. | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Plug Mated Height | Connector B |
|---|---|---|---|---|---|
| 415-0093-150 | 0.81 mm | 150 mm | UMC MP PLUG | 2.5 mm | SMA STR. RP PLUG |
| 415-0093-250 | 0.81 mm | 250 mm | UMC MP PLUG | 2.5 mm | SMA STR. RP PLUG |
| 415-0094-150 | 1.37 mm | 150 mm | UMC MP PLUG | 2.5 mm | SMA STR. RP PLUG |
| 415-0094-250 | 1.37 mm | 250 mm | UMC MP PLUG | 2.5 mm | SMA STR. RP PLUG |

## UMC Right Angle Cable Plug to SMA Straight Bulkhead Rev. Polarity Jack

### Low Profile

| Part No. | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Plug Mated Height | Connector B |
|---|---|---|---|---|---|
| 415-0098-150 | 0.81 mm | 150 mm | UMC LP PLUG | 2.0 mm | SMA STR BKHD. RP JACK |
| 415-0098-250 | 0.81 mm | 250 mm | UMC LP PLUG | 2.0 mm | SMA STR BKHD. RP JACK |

### Medium Profile

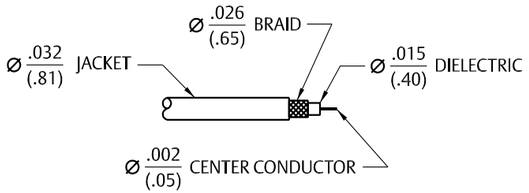
| Part No. | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Plug Mated Height | Connector B |
|---|---|---|---|---|---|
| 415-0099-150 | 0.81 mm | 150 mm | UMC MP PLUG | 2.5 mm | SMA STR BKHD. RP JACK |
| 415-0099-250 | 0.81 mm | 250 mm | UMC MP PLUG | 2.5 mm | SMA STR BKHD. RP JACK |
| 415-0100-150 | 1.37 mm | 150 mm | UMC MP PLUG | 2.5 mm | SMA STR BKHD. RP JACK |
| 415-0100-250 | 1.37 mm | 250 mm | UMC MP PLUG | 2.5 mm | SMA STR BKHD. RP JACK |



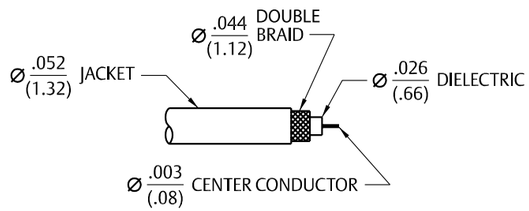
*Illustrations are shown in inches (millimeters).*

# Pigtail Cable Assembly

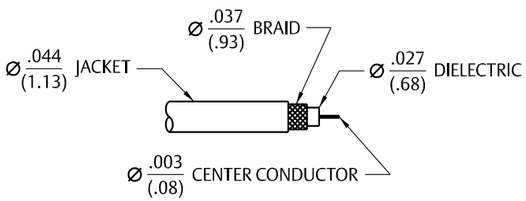
### 0.81 mm Coaxial Cable



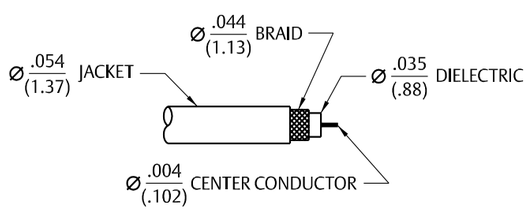

### 1.32 mm Coaxial Cable




### 1.13 mm Coaxial Cable




### 1.37 mm Coaxial Cable




## UMC Right Angle Cable Plug to Bare End

### Low Profile

| Part No. | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Plug Mated Height | Connector B |
|---|---|---|---|---|---|
| 415-0104-150 | 0.81 mm | 150 mm | UMC LP PLUG | 2.0 mm | BARE END |
| 415-0104-250 | 0.81 mm | 250 mm | UMC LP PLUG | 2.0 mm | BARE END |

### Medium Profile

| Part No. | Teflon Coaxial Cable O.D. | Cable Length | Connector A | Plug Mated Height | Connector B |
|---|---|---|---|---|---|
| 415-0105-150 | 0.81 mm | 150 mm | UMC MP PLUG | 2.5 mm | BARE END |
| 415-0105-250 | 0.81 mm | 250 mm | UMC MP PLUG | 2.5 mm | BARE END |
| 415-0106-150 | 1.13 mm | 150 mm | UMC MP PLUG | 2.5 mm | BARE END |
| 415-0106-250 | 1.13 mm | 250 mm | UMC MP PLUG | 2.5 mm | BARE END |
| 415-0107-150 | 1.32 mm | 150 mm | UMC MP PLUG | 2.5 mm | BARE END |
| 415-0107-250 | 1.32 mm | 250 mm | UMC MP PLUG | 2.5 mm | BARE END |
| 415-0108-150 | 1.37 mm | 150 mm | UMC MP PLUG | 2.5 mm | BARE END |
| 415-0108-250 | 1.37 mm | 250 mm | UMC MP PLUG | 2.5 mm | BARE END |

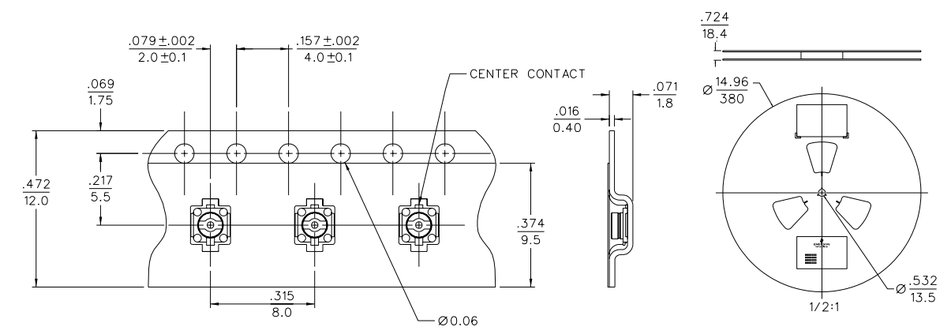


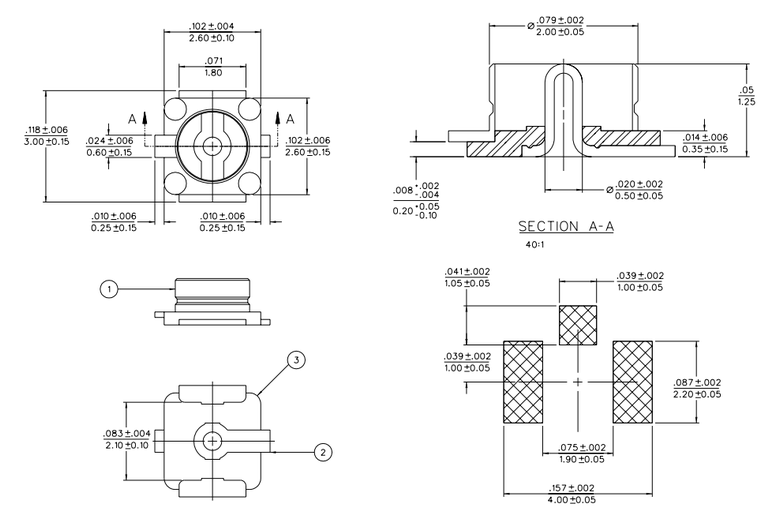


## Straight Jack Receptable – Surface Mount

| Part No. | Packaging |
|---|---|
| 128-0711-201 | Stock |
| 128-0711-202 | Tape & Reel 2,500 pcs/reel |

## Tape and Reel Specifications



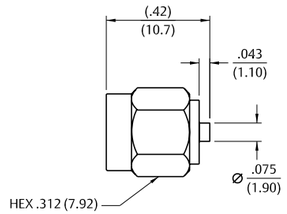

**For more information, please contact customer service at (507) 833-8822 or (800) 247-8256 • www.EmersonConnectivity.com**

*Illustrations are shown in inches (millimeters).*

# Pigtail Assembly Adapters

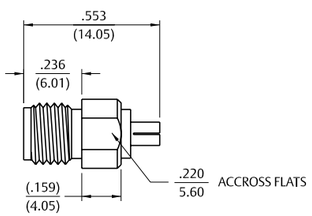
## SMA Conversion Adapter for Mating UMC Plugs (SMA Plug to UMC Jack)

| Part No. |
|---|
| 134-1019-361 |



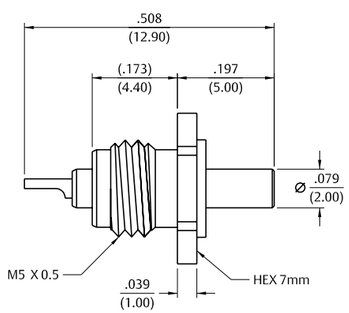

## SMA Conversion Adapter for Surface Mt. Jack Receptacle 128-0711-201 (SMA Jack to UMC Plug)

| Part No. |
|---|
| 134-1019-371 |




## Inspection Tool for Cable Assembly

| Part No. |
|---|
| 134-1019-381 |




## UMC Separation Key

| Part No. |
|---|
| 128-0000-901 |



# Table of Contents



## kwiQMAte™ Connectors

Specification ....182
Semi-Rigid & Flexible Cable ....184
PC Mount ....184

Other Information
Assembly Tools ....185
Capabilities ....190
Cable Information ....192
Assembly Instruction ....193
Mounting Hole Layouts ....194
Numerical Index ....274
Competitor Cross Reference .... 280

3 MMCX Connectors
13 MCX Connectors
39 SMK Connectors
45 SMA Connectors
103 SMB Connectors
131 SMC Connectors
137 SMP Connectors
145 Type N Connectors
153 Shielded Cable Terminations
157 Between-Series Adapters
161 Fixed Length Cable Assemblies
173 Ultra Miniature Connectors (UMC)
181 kwiQMAte ™ Connectors
185 Tools
193 Assembly Instructions
257 Electronic Hardware
274 Index

*While every precaution has been taken to ensure accuracy and completeness herein, Emerson Network Power Connectivity Solutions assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Specifications subject to change without notice.*



**For more information, please contact customer service at (507) 833-8822 or (800) 247-8256 • www.EmersonConnectivity.com**

## Electrical Specifications

**Impedance:** 50 Ohms
**Frequency Range:** 12.4 GHz

**VSWR:** (f = GHz)

| | Straight Cable Connectors | Right Angle Cable Connectors |
|---|---|---|
| RG-316, RG-316 DS | 1.15+.02f | 1.15+.03f |
| Uncabled receptacles | N/A | |

**Working Voltage:** (VRMS max)

| | Sea Level | 70K Feet |
|---|---|---|
| RG-316, RG-316 DS | 250 | 65 |
| Uncabled receptacles | 335 | 85 |

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

| | |
|---|---|
| Connectors for RG-316, RG-316 DS | 750 |
| Uncabled receptacles | 1000 |

**Insulation Resistance:** 5000 Megohms min

**Contact Resistance:** (milliohms max)

| | 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 (Tri-Alloy plated bodies) | 3.0 | N/A |
| Braid to Body (gold plated bodies) | 0.5 | N/A |

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

| | |
|---|---|
| Connectors for RG-316, RG-316 DS | 190 |
| Uncabled receptacles | 250 |

**Insertion Loss:** (dB max)

| | |
|---|---|
| Straight flexible cable connectors | 0.06 $f\sqrt{(GHz)}$, tested at 6 GHz |
| Right angle flexible cable connectors | 0.15 $f\sqrt{(GHz)}$, tested at 6 GHz |
| Uncabled receptacles | N/A |

**RF Leakage:** (dB max, tested at 3 GHz)

| | |
|---|---|
| Cable connectors | -80 |
| Uncabled receptacles | N/A |

**RF High Potential Withstanding Voltage:** (Vrms min, tested at 4 and 7 MHz)

| | |
|---|---|
| Connectors for RG-316, RG-316 DS | 500 |
| Uncabled receptacles | 670 |

## Mechanical Specifications

**Engagement Design:**
**Durability:** 500 cycles min
**Engagement/Disengagement Force:** 8 lbs max (5 lbs typical)
**Coupling Retention Force:** 10 lbs min
**Contact Retention:** 6 lbs min axial force (captivated contacts)
4 oz-in min torque (uncabled receptacles)

**Cable Retention:** (min*)

| | Axial Force (lbs) | Torque (oz-in) |
|---|---|---|
| Connectors for RG-316, RG-316 DS | 20 | N/A |

* Or cable breaking strength, whichever is less





## Material Specifications

| | |
|---|---|
| **Bodies:** | Brass per QQ-B-626, Tri-Alloy (Cu/Sn/Zn) plated .0001" min |
| **Contacts:** | Male - Brass per ASTM B16, Gold plated* per MIL-G-45204 .00005" min<br>Female – Beryllium Copper per ASTM B196, Gold plated* per MIL-G-45204 .00005" min |
| **Insulators:** | PTFE Fluorocarbon per ASTM D1710 and ASTM D1457 |
| **Gaskets:** | Silicon Rubber per ZZ-R-765 |
| **Expansion Caps:** | Brass per QQ-B-613, Tri-Alloy (Cu/Sn/Zn) plated .0001" min |
| **Crimp Sleeves:** | Copper per ASTM A75, Tri-Alloy (Cu/Sn/Zn) plated .0001"min |
| **Coupling Retention Spring (Plugs):** | Beryllium Copper per ASTM B196, Tri-Alloy (Cu/Sn/Zn) plated .0001"min |
| **Mounting Hardware:** | Brass per QQ-B-626, or QQ-B 613, Tri-Alloy (Cu/Sn/Zn) plated .0001"min |

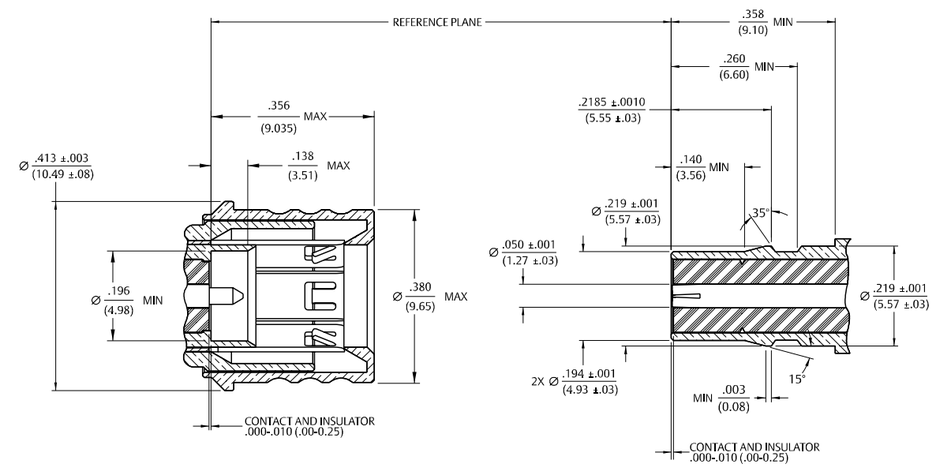
* Gold plated parts include a .00005" min nickel barrier layer

## Environmental Specifications

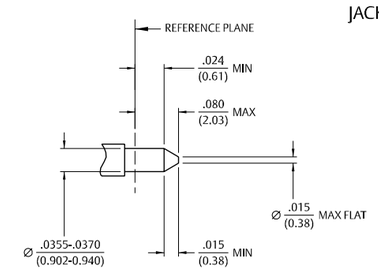
(Meets or Exceeds the Applicable Paragraph of MIL-PRF-39012)

| | |
|---|---|
| **Temperature Range:** | -65°C to +165°C |
| **Thermal Shock:** | MIL-STD-202, Method 107, Condition B (except +85°C high temperature) |
| **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 |

**MATING ENGAGEMENT FOR kwiQMAte™**



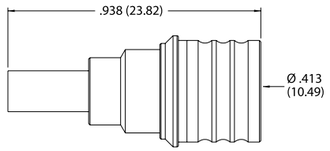

PLUG JACK




**For more information, please contact customer service at (507) 833-8822 or (800) 247-8256 • www.EmersonConnectivity.com**

*Illustrations are shown in inches (millimeters).*

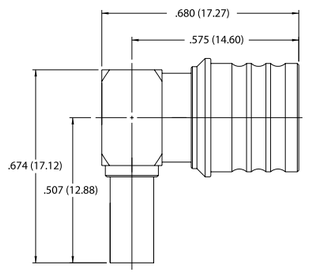
## Straight Crimp Type Plug (3-piece) – Captivated Contact




| Cable Type | Tri-Alloy Plated |
|---|---|
| RG-316 | 146-0403-007 |
| RG-316 DS | 146-0404-007 |

Assembly instructions page 256.

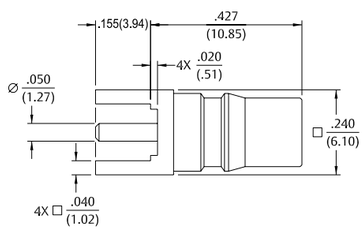
## Right Angle Crimp Type Plug (1-piece body) – Captivated Contact




| Cable Type | Tri-Alloy Plated |
|---|---|
| RG-316 | 146-0403-107 |
| RG-316 DS | 146-0404-107 |

Assembly instructions page 255.

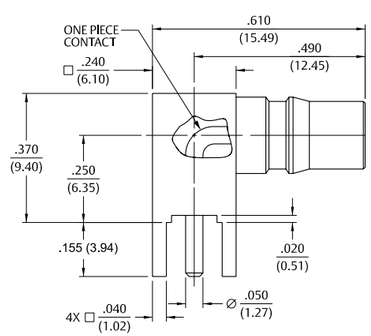
## Straight Jack Receptacle




| Gold Plated |
|---|
| 146-0701-201 |

Mounting hole layout figure 2 page 194.

## Right Angle Jack Receptacle




| Gold Plated |
|---|
| 146-0701-301 |

Mounting hole layout figure 2 page 194.



# Table of Contents



## Tools

Other Information
Assembly Tools ..... 185
Capabilities ..... 190
Cable Information ..... 192
Assembly Instruction ..... 193
Mounting Hole Layouts ..... 194
Numerical Index ..... 274
Competitor Cross Reference ..... 280

*While every precaution has been taken to ensure accuracy and completeness herein, Emerson Network Power Connectivity Solutions assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Specifications subject to change without notice.*

3 MMCX Connectors
13 MCX Connectors
39 SMK Connectors
45 SMA Connectors
103 SMB Connectors
131 SMC Connectors
137 SMP Connectors
145 Type N Connectors
153 Shielded Cable Terminations
157 Between-Series Adapters
161 Fixed Length Cable Assemblies
173 Ultra Miniature Connectors (UMC)
181 kwiQMAte ™ Connectors
185 Tools
193 Assembly Instructions
257 Electronic Hardware
274 Index

# Coaxial Connector Assembly Tools

## 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/U, RG316/U<br>RG-179/U, RG-187/U<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 187.

## Ordering Information for Crimp Tool

| Part No. | Description | ASTRO Tool Part No. |
|---|---|---|
| 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 |

## Ordering Information for Crimp Tool

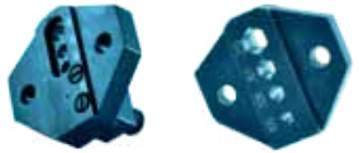
| Connector Type | Preferred Die Ste | Crimp Style |
|---|---|---|
| SMB Cross Hole Style Body 50 Ohm Only | 141-0000-911 | Double Diamond |
| Mini 75 Ohm SMB, MCX 75 Ohm Cross Hole Style Body | 141-0000-924 | Double Diamond |





## 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 Tool Frame Only | | | |
| 140-0000-953 | Die for .047" dia. flexible cable; RG-178, RG-316, RG-316 DS and Contact Crimp w/stop | .105 (2.67)<br>.128 (3.25)<br>.151 (3.83)<br>Diamond Crimp for 038 (0.96) Dia. Contact | .250 (6.35)<br>.250 (6.35)<br>.250 (6.35)<br>.035 (0.89) | MMCX*, MCX |
| 140-0000-951 | Die for RG-178, 316, 316 DS 58, 142, LMR-100, LMR-195, LMR-200A | .105 (2.67)<br>.128 (3.25)<br>.151 (3.83)<br>.213 (5.41) | .390 (9.91)<br>.390 (9.91)<br>.390 (9.91)<br>.390 (9.91) | MCX, SMB, SMC, SMA, 75 OHM SMB |
| 140-0000-955 | Die for RG-179, 179 DS, 735A, RG-59, LMR-240 | .128 (3.25)<br>.151 (3.83)<br>.178 (4.52)<br>.255 (6.48) | .390 (9.91)<br>.390 (9.91)<br>.390 (9.91)<br>.390 (9.91) | 75 Ohm MCX, SMA Mini-75 Ohm SMB |

* Use 140-0000-951 for MMCX straight cabled bulkhead jack body crimp.

## 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 | ASTRO Tool Part No. | Military Part No. |
|---|---|---|---|
| 144-0000-910 | Frame Only | 615708 | M22520/1-01 |
| 141-0000-907 | Positioner | 650027 | N/A |

## 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 | 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 |

# Coaxial Connector Assembly Tools

## 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 |

## 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.

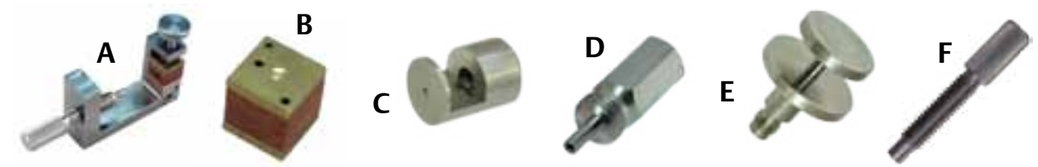
| Part No. |
|---|
| 140-0000-956 |





## 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) |

# We Have What You Are Looking For ... and If We Don't, We'll Design and Manufacture It!!!

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.

We have an extensive log of special variations of MMCX, MCX, 75 Ohm MCX, SMK, SMA, SMP, 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.

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.

**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.**

N Jack 75 Ohm to MCX Plug
75 Ohm Assembly, Adapter

Ganged MCX Right-Angle
Board Mount

SMB Vertical
PC Plug



# Custom Engineered RF Coaxial Cable Assemblies



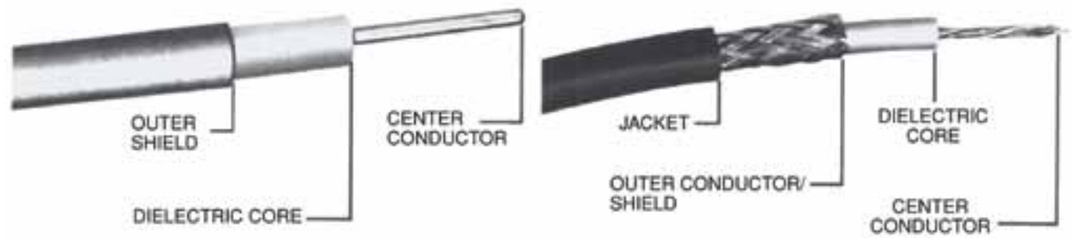
With over 75 years of experience, Emerson Network Power Connectivity Solutions is your interconnect solution for cable assembly design, high quality production and on-time delivery. Our Johnson line of precision cable assemblies includes standard RF coaxial cable assemblies such as flexible, conformable 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, SMP, 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.**

2x3 Position SMA Straight Plug
to MCX Straight Plug

# Cable Information




## 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 Dimension

| 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 (2.06) | .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 |



# Table of Contents



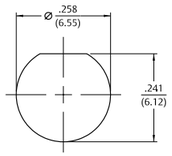
## Assembly Instructions

Other Information
Assembly Tools ..... 185
Capabilities ..... 190
Cable Information ..... 192
Assembly Instruction ..... 193
Mounting Hole Layouts ..... 194
Numerical Index ..... 274
Competitor Cross Reference ..... 280

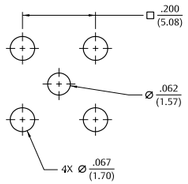
3 MMCX Connectors
13 MCX Connectors
39 SMK Connectors
45 SMA Connectors
103 SMB Connectors
131 SMC Connectors
137 SMP Connectors
145 Type N Connectors
153 Shielded Cable Terminations
157 Between-Series Adapters
161 Fixed Length Cable Assemblies
173 Ultra Miniature Connectors (UMC)
181 kwiQMAte ™ Connectors
185 Tools
193 Assembly Instructions
257 Electronic Hardware
274 Index

*While every precaution has been taken to ensure accuracy and completeness herein, Emerson Network Power Connectivity Solutions assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Specifications subject to change without notice.*

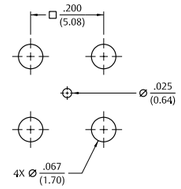
# Recommended Mounting Hole Dimensions



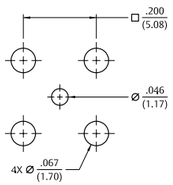

1



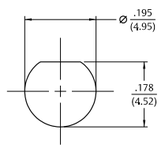

2



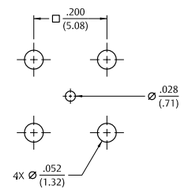

3



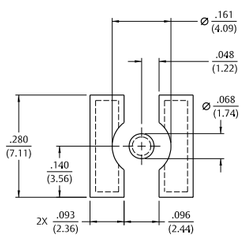

4



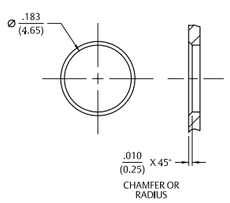

5



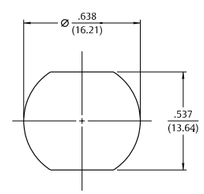

6



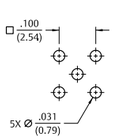

7



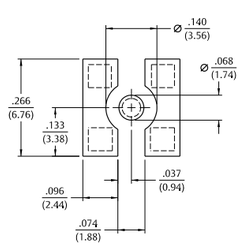

8



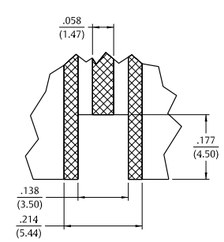

9




10



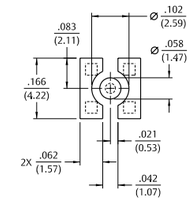

11



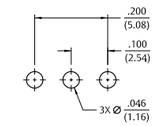

12



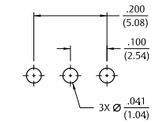




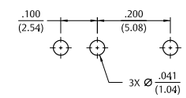

13



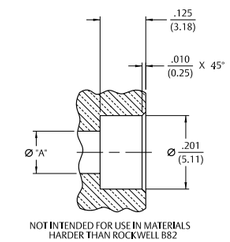

14



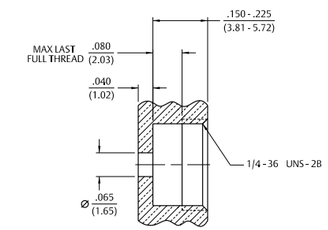

15



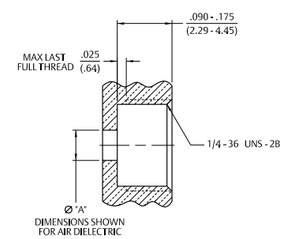

16



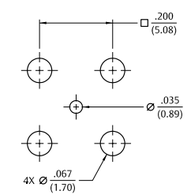

17



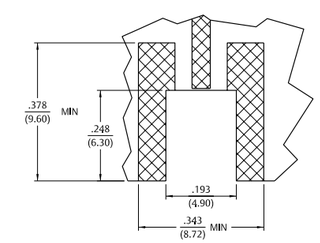

18



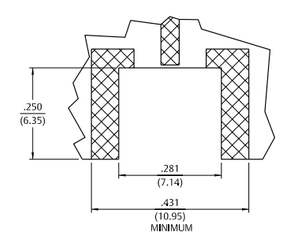

19




20




21




22



*Illustrations are shown in inches (millimeters).*

131-1402-101 ..... 238
131-1402-116 ..... 238
131-1403-001 ..... 237
131-1403-016 ..... 237
131-1403-101 ..... 238
131-1403-116 ..... 238
131-1404-001 ..... 237
131-1404-016 ..... 237
131-1404-101 ..... 238
131-1404-116 ..... 238
131-1693-101 ..... 234
131-1693-116 ..... 234
131-3302-001 ..... 237
131-3302-006 ..... 237
131-3303-001 ..... 237
131-3303-006 ..... 237
131-3303-401 ..... 237
131-3303-406 ..... 237
131-3303-501 ..... 238
131-3303-506 ..... 238
131-3304-401 ..... 237
131-3304-406 ..... 237
131-3304-501 ..... 238
131-3304-506 ..... 238
131-3402-001 ..... 237
131-3402-016 ..... 237
131-3402-101 ..... 238
131-3402-116 ..... 238
131-3403-001 ..... 237
131-3403-016 ..... 237
131-3403-021 ..... 232
131-3403-026 ..... 232
131-3403-101 ..... 238
131-3403-116 ..... 238
131-3403-401 ..... 237
131-3403-406 ..... 237
131-3404-001 ..... 237
131-3404-016 ..... 237
131-3404-021 ..... 232
131-3404-026 ..... 232
131-3404-101 ..... 238
131-3404-116 ..... 238
131-3404-401 ..... 237
131-3404-406 ..... 237
131-3407-001 ..... 237
131-3407-006 ..... 237
131-3407-011 ..... 232
131-3407-016 ..... 232
131-3407-101 ..... 238
131-3407-106 ..... 238
131-3593-401 ..... 233
131-3593-406 ..... 233
131-3693-001 ..... 233
131-3693-016 ..... 233
131-3693-101 ..... 234
131-3693-116 ..... 234
131-3694-401 ..... 233
131-3694-406 ..... 233
131-6303-401 ..... 237
131-6303-406 ..... 237
131-6304-401 ..... 237
131-6304-406 ..... 237
131-6333-401 ..... 237
131-6333-406 ..... 237
131-6403-001 ..... 237
131-6403-006 ..... 237
131-6403-101 ..... 238
131-6403-106 ..... 238
131-6404-001 ..... 237
131-6404-006 ..... 237
131-6404-101 ..... 238
131-6404-106 ..... 238
131-6433-001 ..... 237
131-6433-006 ..... 237
131-6433-101 ..... 238
131-6433-106 ..... 238
131-6593-401 ..... 233
131-6593-406 ..... 233
131-8303-401 ..... 237
131-8303-406 ..... 237
131-8304-401 ..... 237
131-8304-406 ..... 237
131-8403-001 ..... 237
131-8403-006 ..... 237
131-8403-011 ..... 237
131-8403-016 ..... 237
131-8403-101 ..... 238
131-8403-106 ..... 238
131-8403-111 ..... 238
131-8403-116 ..... 238
131-8404-001 ..... 237
131-8404-006 ..... 237
131-8404-011 ..... 237
131-8404-016 ..... 237
131-8404-101 ..... 238
131-8404-106 ..... 238
131-8404-111 ..... 238
131-8404-116 ..... 238
131-8409-001 ..... 237
131-8409-006 ..... 237
131-8409-101 ..... 238
131-8409-106 ..... 238
131-8433-001 ..... 232
131-8433-006 ..... 232
131-8434-001 ..... 232
131-8434-006 ..... 232
131-8445-001 ..... 237
131-8445-006 ..... 237
131-8445-011 ..... 232
131-8445-016 ..... 232
131-8445-101 ..... 238
131-8445-106 ..... 238
131-9403-001 ..... 235
131-9403-021 ..... 232
131-9403-101 ..... 236
131-9403-116 ..... 236
131-9404-001 ..... 235
131-9404-021 ..... 232
131-9404-101 ..... 236
131-9404-116 ..... 236
133-3302-001 ..... 207
133-3302-006 ..... 207
133-3302-401 ..... 207
133-3302-406 ..... 207
133-3303-001 ..... 207
133-3303-006 ..... 207
133-3303-401 ..... 207
133-3303-406 ..... 207
133-3304-001 ..... 207
133-3304-006 ..... 207
133-3304-401 ..... 207
133-3304-406 ..... 207
133-3402-001 ..... 207
133-3402-006 ..... 207
133-3402-101 ..... 210
133-3402-106 ..... 210
133-3403-001 ..... 207
133-3403-006 ..... 207
133-3403-101 ..... 210
133-3403-106 ..... 210
133-3404-001 ..... 207
133-3404-006 ..... 207
133-3404-101 ..... 210
133-3404-106 ..... 210
133-3407-101 ..... 210
133-3407-106 ..... 210
133-3433-001 ..... 207
133-3433-006 ..... 207
133-3433-101 ..... 210
133-3433-106 ..... 210
133-3693-001 ..... 206
133-3693-006 ..... 206
133-3693-101 ..... 206
133-3693-106 ..... 206
133-5302-401 ..... 207
133-5302-406 ..... 207
133-5303-401 ..... 207
133-5303-406 ..... 207
133-5304-401 ..... 207
133-5304-406 ..... 207
133-5402-001 ..... 207
133-5402-006 ..... 207
133-5402-101 ..... 210
133-5402-106 ..... 210
133-5403-001 ..... 207
133-5403-006 ..... 207
133-5403-101 ..... 210
133-5403-106 ..... 210
133-5404-001 ..... 207
133-5404-006 ..... 207
133-5404-101 ..... 210
133-5404-106 ..... 210
133-8333-001 ..... 209
133-8333-401 ..... 209
133-8334-001 ..... 209
133-8334-401 ..... 209
133-8433-001 ..... 209
133-8433-101 ..... 211
133-8434-001 ..... 209
133-8434-101 ..... 211
133-8445-001 ..... 209
133-8445-101 ..... 211
133-9402-101 ..... 208
133-9403-001 ..... 207
133-9403-101 ..... 208
133-9403-104 ..... 208
133-9404-001 ..... 207
133-9404-101 ..... 208
134-0303-406 ..... 239
134-0304-406 ..... 239
134-0307-406 ..... 239
134-0308-406 ..... 239
135-3302-001 ..... 205
135-3302-401 ..... 205
135-3303-001 ..... 204
135-3304-001 ..... 204
135-3333-001 ..... 204
135-3336-001 ..... 205
135-3336-401 ..... 205
135-3402-001 ..... 202
135-3402-101 ..... 200
135-3402-111 ..... 201
135-3403-001 ..... 203
135-3403-101 ..... 201
135-3404-001 ..... 203
135-3404-101 ..... 201
135-3433-001 ..... 203
135-3436-001 ..... 202
135-3436-101 ..... 200
135-3693-101 ..... 198
135-9402-001 ..... 205
135-9402-111 ..... 199
135-9403-001 ..... 204
135-9403-101 ..... 199
135-9404-001 ..... 204
135-9436-001 ..... 205
135-9436-101 ..... 200
138-4303-407 ..... 248
138-4304-407 ..... 248
138-4307-407 ..... 251
138-4308-407 ..... 251
138-4316-407 ..... 251
138-4318-407 ..... 251
138-4349-407 ..... 251
138-4403-007 ..... 242
138-4403-107 ..... 244
138-4404-007 ..... 242
138-4404-107 ..... 244
138-4407-007 ..... 243
138-4407-107 ..... 244
138-4408-007 ..... 243
138-4408-107 ..... 244
138-4416-007 ..... 243
138-4416-107 ..... 245
138-4418-007 ..... 243
138-4418-107 ..... 245
138-4449-007 ..... 243
138-4593-401 ..... 250
138-4594-401 ..... 250
138-4596-401 ..... 250
138-4693-001 ..... 246
138-4693-011 ..... 247
138-4694-001 ..... 246
138-4694-011 ..... 247
138-4696-001 ..... 246
138-4696-011 ..... 247
138-9408-007 ..... 240
138-9449-007 ..... 240
141-0303-412 ..... 219
141-0304-412 ..... 219
141-0307-412 ..... 219
141-0308-412 ..... 219
141-0403-012 ..... 219
141-0403-102 ..... 224
141-0404-012 ..... 219
141-0404-112 ..... 224
141-0407-012 ..... 219
141-0407-102 ..... 224
141-0408-012 ..... 219
141-0408-102 ..... 224
141-0593-001 ..... 214
141-0593-401 ..... 214
141-0593-421 ..... 222
141-0594-001 ..... 214
141-0594-401 ..... 214
141-0594-421 ..... 222
141-0693-002 ..... 214
141-0693-062 ..... 222
141-0694-002 ..... 214
141-0694-012 ..... 214
141-0694-062 ..... 222
142-0002-221 ..... 252
142-0002-226 ..... 252
142-0002-811 ..... 253
142-0002-821 ..... 254
142-0003-201 ..... 252
142-0003-206 ..... 252
142-0003-231 ..... 252
142-0003-236 ..... 252
142-0003-241 ..... 252
142-0003-246 ..... 252
142-0003-301 ..... 252
142-0003-306 ..... 252
142-0003-801 ..... 253
142-0003-811 ..... 253
142-0004-201 ..... 252
142-0004-206 ..... 252
142-0004-211 ..... 252
142-0004-216 ..... 252
142-0004-221 ..... 252
142-0004-226 ..... 252
142-0004-301 ..... 252
142-0004-306 ..... 252
142-0004-801 ..... 253
142-0004-811 ..... 253
142-0007-801 ..... 253
142-0007-811 ..... 253
142-0008-801 ..... 253
142-0008-811 ..... 253
142-0093-801 ..... 253
142-0093-806 ..... 253
142-0094-801 ..... 253
142-0094-806 ..... 253
142-0096-801 ..... 253
142-0096-806 ..... 253
142-0102-401 ..... 230
142-0102-406 ..... 230
142-0103-401 ..... 230
142-0103-406 ..... 230
142-0107-401 ..... 230
142-0107-406 ..... 230
142-0202-011 ..... 230
142-0202-016 ..... 230
142-0202-101 ..... 231
142-0202-106 ..... 231
142-0203-011 ..... 230
142-0203-016 ..... 230
142-0203-101 ..... 231
142-0203-106 ..... 231
142-0207-011 ..... 230
142-0207-016 ..... 230
142-0207-101 ..... 231
142-0207-106 ..... 231
142-0302-011 ..... 217
142-0302-016 ..... 217
142-0302-401 ..... 225
142-0302-406 ..... 225
142-0302-431 ..... 217
142-0302-436 ..... 217
142-0303-011 ..... 219
142-0303-016 ..... 219
142-0303-401 ..... 225
142-0303-406 ..... 225
142-0303-411 ..... 219
142-0303-416 ..... 219
142-0304-011 ..... 219
142-0304-016 ..... 219
142-0304-401 ..... 225
142-0304-406 ..... 225
142-0304-411 ..... 219
142-0304-416 ..... 219
142-0307-011 ..... 219
142-0307-016 ..... 219
142-0307-401 ..... 225
142-0307-406 ..... 225
142-0307-411 ..... 219
142-0307-416 ..... 219
142-0308-011 ..... 219
142-0308-016 ..... 219
142-0308-401 ..... 225
142-0308-406 ..... 225
142-0308-411 ..... 219
142-0308-416 ..... 219
142-0333-011 ..... 219
142-0333-016 ..... 219
142-0333-411 ..... 219
142-0333-416 ..... 219
142-0335-401 ..... 220
142-0335-406 ..... 220
142-0339-401 ..... 220
142-0339-406 ..... 220
142-0402-011 ..... 217
142-0402-016 ..... 217
142-0402-101 ..... 224
142-0402-106 ..... 224
142-0403-001 ..... 225
142-0403-006 ..... 225
142-0403-011 ..... 219
142-0403-016 ..... 219
142-0403-101 ..... 224
142-0403-106 ..... 224
142-0404-011 ..... 219
142-0404-016 ..... 219
142-0404-101 ..... 224
142-0404-106 ..... 224
142-0407-011 ..... 219
142-0407-016 ..... 219
142-0407-101 ..... 229
142--0407-101 ..... 224
142-0407-106 ..... 224
142-0408-011 ..... 219
142-0408-016 ..... 219
142-0408-101 ..... 224
142-0408-106 ..... 224
142-0433-011 ..... 219
142-0433-016 ..... 219
142-0433-101 ..... 224
142-0433-106 ..... 224
142-0435-001 ..... 220
142-0435-006 ..... 220
142-0435-101 ..... 229
142-0435-106 ..... 229
142-0439-001 ..... 220
142-0439-006 ..... 220
142-0439-101 ..... 229
142-0439-106 ..... 229
142-0593-001 ..... 214
142-0593-006 ..... 214
142-0593-401 ..... 214
142-0593-406 ..... 214
142-0593-411 ..... 214
142-0593-416 ..... 214
142-0594-001 ..... 214
142-0594-006 ..... 214
142-0594-401 ..... 214
142-0594-406 ..... 214
142-0693-001 ..... 214
142-0693-006 ..... 214
142-0693-051 ..... 216
142-0693-056 ..... 216
142-0693-101 ..... 213
142-0693-106 ..... 213
142-0694-001 ..... 214
142-0694-006 ..... 214
142-0694-011 ..... 214
142-0694-016 ..... 214
142-0694-021 ..... 215
142-0694-026 ..... 215
142-0694-031 ..... 215
142-0694-036 ..... 215
142-0694-041 ..... 215
142-0694-046 ..... 215
142-0694-051 ..... 216
142-0694-056 ..... 216
142-0694-101 ..... 213
142-0694-106 ..... 213
142-0761-801 ..... 228
142-0761-811 ..... 228
142-0761-821 ..... 228
142-0761-831 ..... 228
142-0761-841 ..... 228
142-0761-851 ..... 228
142-0761-861 ..... 228
142-0761-871 ..... 228
142-0761-881 ..... 228
142-0761-891 ..... 228
142-0771-821 ..... 228
142-0771-831 ..... 228
142-0791-801 ..... 227
142-0791-811 ..... 227
142-0791-821 ..... 227
142-0801-421 ..... 216
142-1403-001 ..... 219
142-1403-006 ..... 219
142-1404-001 ..... 219
142-1404-006 ..... 219
142-1407-001 ..... 219
142-1407-006 ..... 219
142-1408-001 ..... 219
142-1408-006 ..... 219
142-1701-821 ..... 227
142-1701-831 ..... 227
142-4303-401 ..... 219
142-4303-406 ..... 219
142-4304-401 ..... 219
142-4304-406 ..... 219
142-4307-401 ..... 219
142-4307-406 ..... 219
142-4308-401 ..... 219
142-4308-406 ..... 219
142-4403-001 ..... 219
142-4403-006 ..... 219
142-4403-101 ..... 224
142-4403-106 ..... 224
142-4404-001 ..... 219
142-4404-006 ..... 219
142-4404-101 ..... 224
142-4404-106 ..... 224
142-4407-001 ..... 219
142-4407-006 ..... 219
142-4407-101 ..... 224
142-4407-106 ..... 224
142-4408-001 ..... 219
142-4408-006 ..... 219
142-4408-101 ..... 224
142-4408-106 ..... 224
142-4435-001 ..... 220
142-4435-006 ..... 220
142-4435-101 ..... 229
142-4435-106 ..... 229
142-4439-001 ..... 220
142-4439-006 ..... 220
142-4439-101 ..... 229
142-4439-106 ..... 229
142-5303-401 ..... 219
142-5303-406 ..... 219
142-5304-401 ..... 219
142-5304-406 ..... 219
142-5307-401 ..... 219
142-5307-406 ..... 219
142-5308-401 ..... 219
142-5308-406 ..... 219
142-5403-001 ..... 219
142-5403-006 ..... 219
142-5403-101 ..... 224
142-5403-106 ..... 224
142-5404-001 ..... 219
142-5404-006 ..... 219
142-5404-101 ..... 224
142-5404-106 ..... 224
142-5407-001 ..... 219
142-5407-006 ..... 219
142-5407-101 ..... 224
142-5407-106 ..... 224
142-5408-001 ..... 219
142-5408-006 ..... 219
142-5408-101 ..... 224
142-5408-106 ..... 224
142-5435-001 ..... 220
142-5435-006 ..... 220
142-5435-101 ..... 229
142-5435-106 ..... 229
142-5439-001 ..... 220
142-5439-006 ..... 220
142-5439-101 ..... 229
142-5439-106 ..... 229
142-9303-411 ..... 219
142-9403-011 ..... 219
142-9403-101 ..... 224
142-9404-011 ..... 219
142-9404-101 ..... 224
142-9407-001 ..... 219
142-9407-101 ..... 224
145-0693-001 ..... 212
145-0693-002 ..... 212
145-0694-001 ..... 212
145-0694-002 ..... 212
146-0403-007 ..... 256
146-0403-107 ..... 255
146-0404-007 ..... 256
146-0404-107 ..... 255
CPN-1 ..... 241
CPN-110 ..... 241
CPN-142T ..... 241
CPN-16 ..... 241
CPN-17 ..... 241
CPN-2 ..... 241
CPN-68-1 ..... 240
CPN-68-13 ..... 240
CPN-68-8 ..... 240
CPN-8 ..... 241



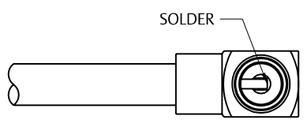
*Illustrations are shown in inches (millimeters).*

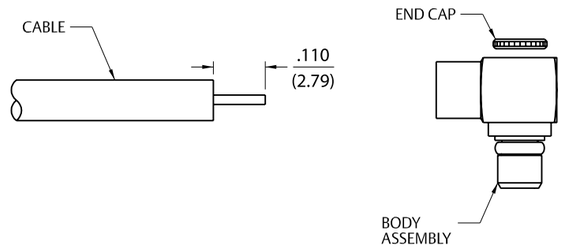
ASSEMBLY INSTRUCTIONS

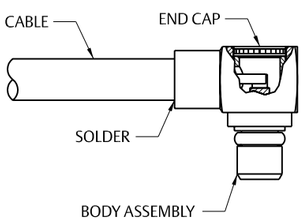
## MMCX Right Angle Plug for .086 (2.18) Semi-Rigid Cable

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.

| Cable Group | Part No. |
|---|---|
| RG-405/U (.086 Semi-Rigid) | 135-3693-101 |



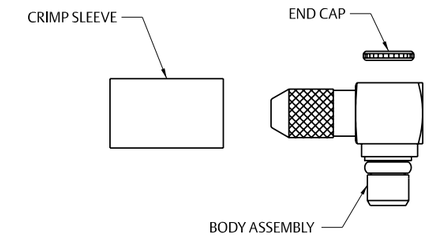



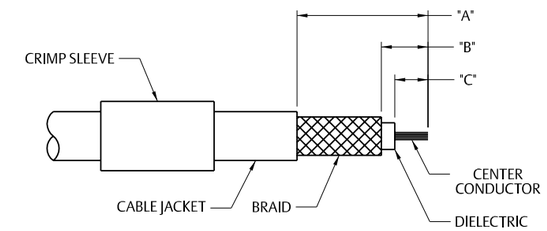


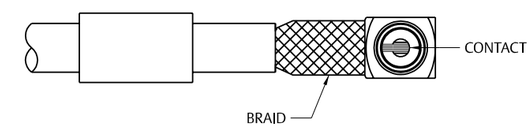


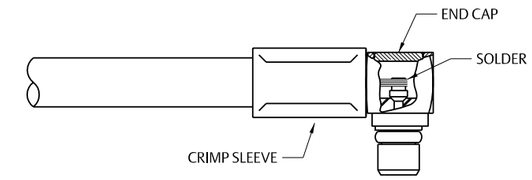

## MMCX Right Angle Plug for RG-178 and RG-316 Size Flexible Cable

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 141-0000-91.



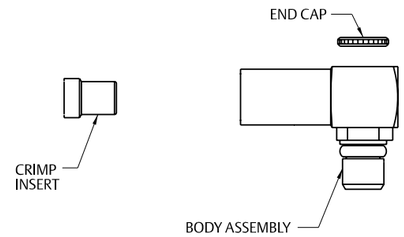



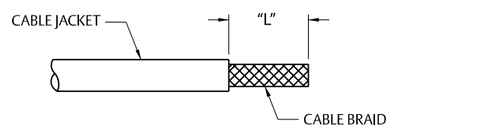

| Cable Group | Part No. | Sleeve Hex | "A" | "B" | "C" |
|---|---|---|---|---|---|
| RG-178, 196 | 135-9402-111 | .105 (2.67) | .310 | .100 | .035 |
| RG-316/U, 188, 187, 179 | 135-9403-101 | .128 (3.25) | .295 | .105 | .075 |

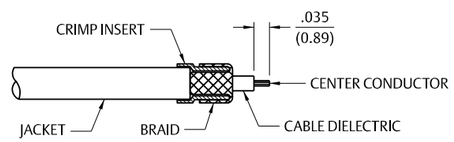
## MMCX Right Angle Plug for .047 (1.20) Diameter and RG-178 Size Flexible Cable with Crimp Insert

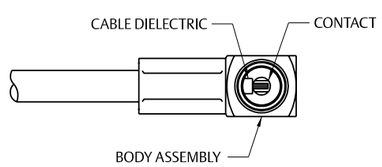
1. Identify piece parts. (3 piece parts)
2. Strip cable jacket to dimensions shown. Do not nick braid or center conductor during strip operations.
3. Slide crimp insert over braid and against jacket. Fold braid around crimp insert as shown. Strip cable dielectric to dimension shown. Tin center conductor.
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.

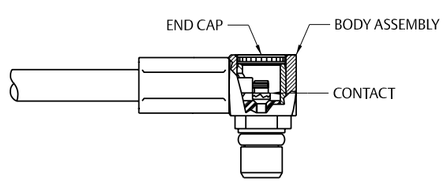
| Cable Group | Part No. | "L" | Crimp Hex |
|---|---|---|---|
| .047 Flexible | 135-3436-101 | .140 (3.56) | .105 (2.67) |
| RG-178/U, 196 | 135-3402-101 | .188 (4.78) | .105 (2.67) |
| .047 Flexible | 135-9436-101 | .140 (3.56) | .105 (2.67) |



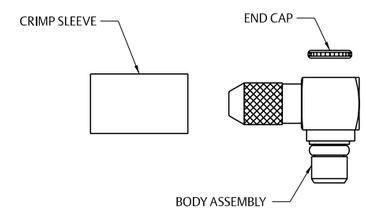



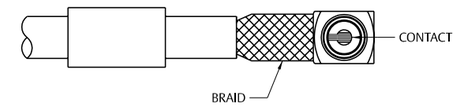



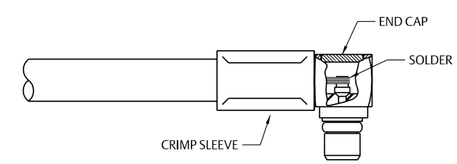

## MMCX Right Angle Plug for RG-178, RG-316, RG-316 DS and RG-179 Size Flexible Cable

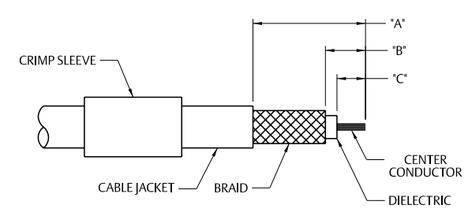
1. Identify connector parts. (3 piece parts)
2. Strip cable jacket to dimensions shown. Do not nick braid or center conductor during strip operations. Tin center conductor. Slide crimp sleeve onto cable jacket.
3. Flair braid and assemble crimp stem of body subassembly under braid onto cable making certain 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 prot. 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 141-000-910.

| 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 |



## MMCX Straight Plug for .047 (1.19) Diameter and RG-178 Size Flexible Cable

1. Identify piece parts. (3 piece parts)

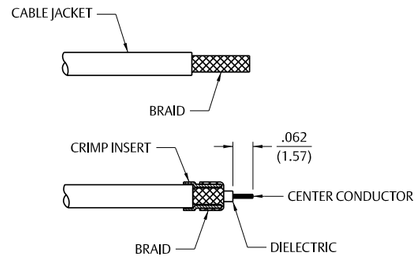
2. Strip cable jacket to dimensions shown. Do not nick braid or center conductor during strip operations.

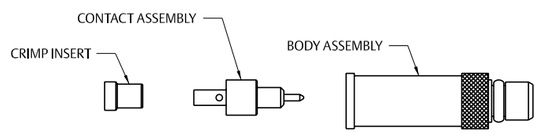
3. Slide crimp insert over braid and against jacket. Fold braid around crimp insert as shown. Strip dielectric to dimension shown. Tin center conductor if contact is to be soldered attached. Do not tin center conductor if contact is to be crimp attached.

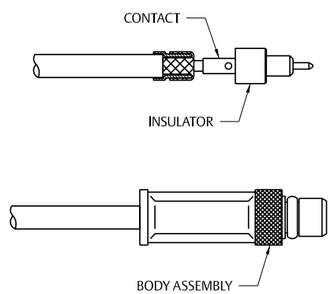
4. Assemble contact assembly onto cable as shown. **Solder attachment:** Solder contact to center conductor. Care should be taken that excess solder is not applied. **Crimp attachment:** Crimp contact to center conductor using Johnson hand tool 140-0000-952 and die set 140-000-953. Crimp location should be centered between and 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.

| Cable Group | Part No. | Strip Length | 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 |








## MMCX Straight Plug for RG-316, RG-179 and RG-316 DS Size Flexible Cable

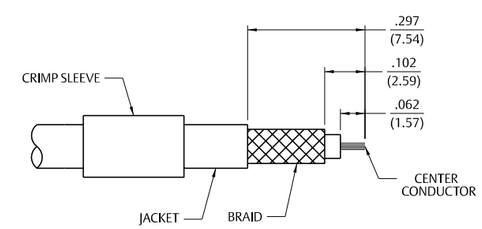
1. Identify connector parts. (3 piece parts)

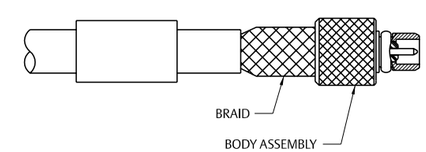
2. Strip cable jacket to dimensions shown. Do not nick braid or center conductor during strip operations. Tin center conductor if contact will be solder attached. Do not tin center conductor if contact is to be crimp attached. Slide crimp sleeve onto cable jacket.

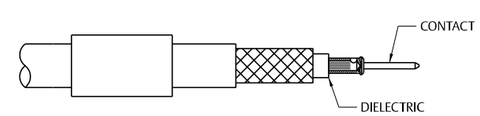
3. Assemble contact onto cable as shown. **Solder attachment:** Solder contact to center conductor. Care should be taken that excess solder is not applied. **Crimp attachment:** Crimp contact to center conductor using Johnson hand tool 140-0000-952 and die set 140-0000-953. Crimp location should be centered between end of contact and cross-hole. Crimp attachment to solid center conductor cables is not recommended.

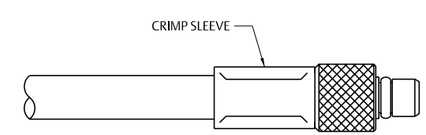
4. Slide body assembly over contact and under braid, then seat firmly onto contact as shown. The body assembly will "snap" over the contact barb. The cable may have to be held in a soft jawed clamping fixture. Slide crimp sleeve forward and crimp using recommended crimp die hex.

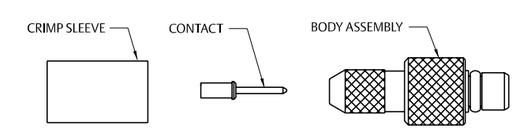
| Cable Group | Part No. | Crimp Hex |
|---|---|---|
| RG-316/U, 188, 161, 174 | 135-3403-001 | .128 (3.25) |
| RG-316 DS, 188 DS, 187 DS | 135-3404-001 | .151 (3.83) |
| RG-179/U, 187 | 135-3433-001 | .128 (3.25) |






*Illustrations are shown in inches (millimeters).*

## MMCX Straight Jack for RG-316, RG-316 DS and RG-179 Size Flexible Cable

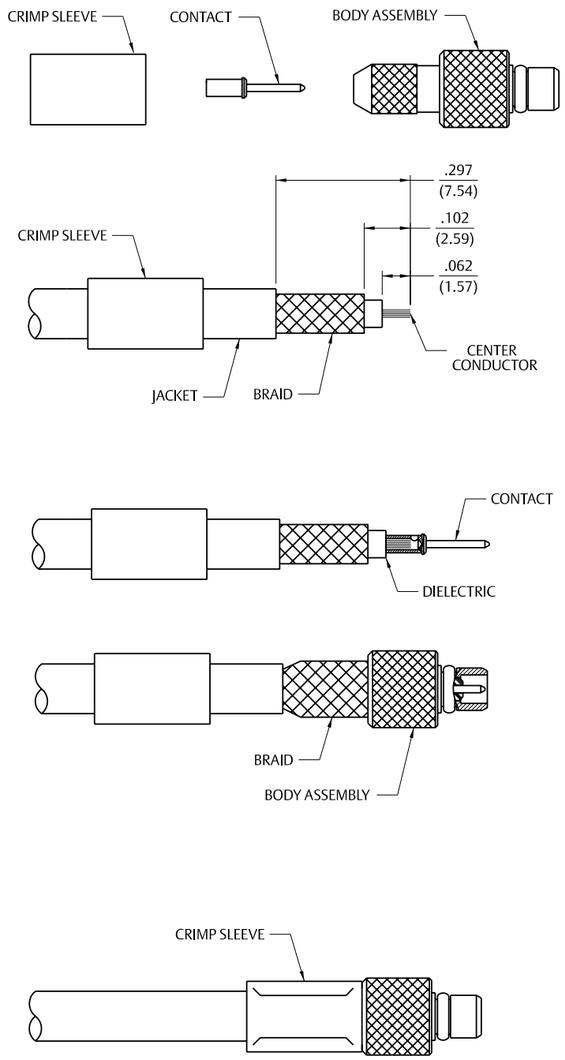
1. Identify connector parts. (3 piece parts)

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.

| Cable Group | Part No. | Crimp Hex |
|---|---|---|
| RG-316/U, 188, 161, 174 | 135-3303-001 | .128 (3.25) |
| RG-316 DS, 188 DS, 187 DS | 135-3304-001 | .151 (3.83) |
| RG-179/U, 187 | 135-3333-001 | .128 (3.25) |
| RG-316/u, 188, 174 | 135-9403-001 | .128 (3.25) |
| RG-316 DS, 188 DS | 135-9404-001 | .151 (3.83) |








## MMCX Straight Jack for .047 Diameter and RG-178 Size Flexible Cable

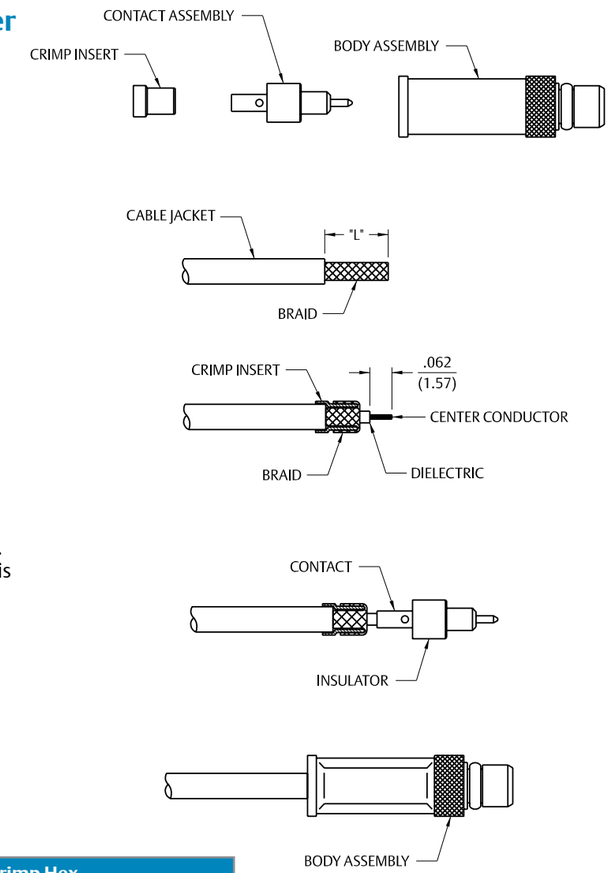
1. Identify connector parts. (3 piece parts – except bulkhead jack as shown.)

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 dieset. Maintain forward pressure on cable while crimping.




| Cable Group | Part No. | "L" | Crimp Hex |
|---|---|---|---|
| .047 Flexible | 135-3336-001<br>135-3336-401 | .135 (3.43)<br>.135 (3.43) | .105 (2.67) x .250 (6.35) W<br>.105 (2.67) x .250 (6.35) W |
| RG-178/U, 196 | 135-3302-001<br>135-3302-401 | .185 (4.67)<br>.185 (4.67) | .105 (2.67) x .250 (6.35) W<br>.105 (2.67) x .250 (6.35) W |
| .047 Flexible | 135-9436-001 | .135 (3.43) | .105 (2.67) x .250 (6.35) W |
| RG-178/U, 196 | 135-9402-001 | .185 (4.67) | .105 (2.67) x .250 (6.35) W |

## MCX Solder Type Straight Plug for Semi-Rigid Cable

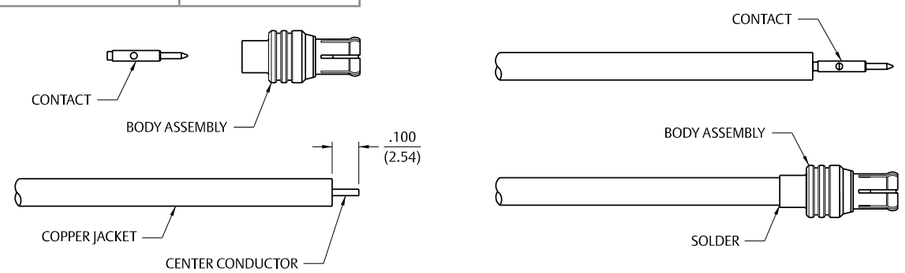
1. Identify connector parts. (2 piece parts)

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.

| Cable Group | Part No. |
|---|---|
| RG-405/U (.086 Semi-Rigid) | 133-3693-001 |
| | 133-3693-006 |




## MCX Solder Type Right Angle Plug for Semi-Rigid Cable

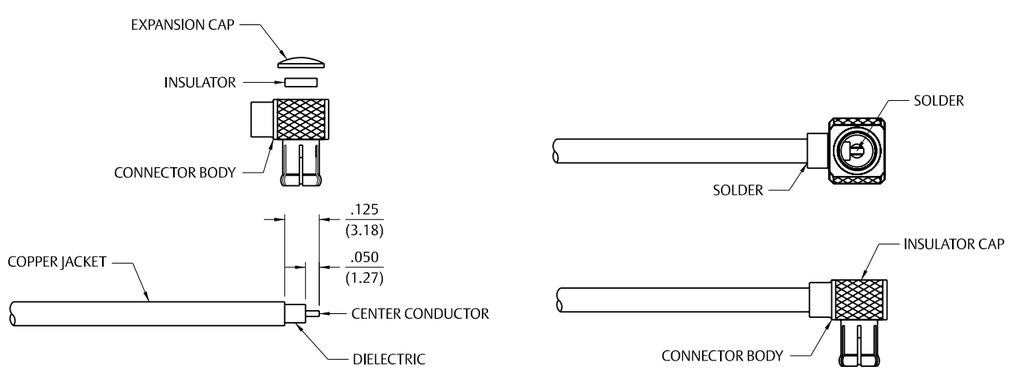
1. Identify connector parts. (3 piece parts)

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.

| Cable Group | Part No. |
|---|---|
| RG-405/U (.086 Semi-Rigid) | 133-3693-101 |
| | 133-3693-106 |







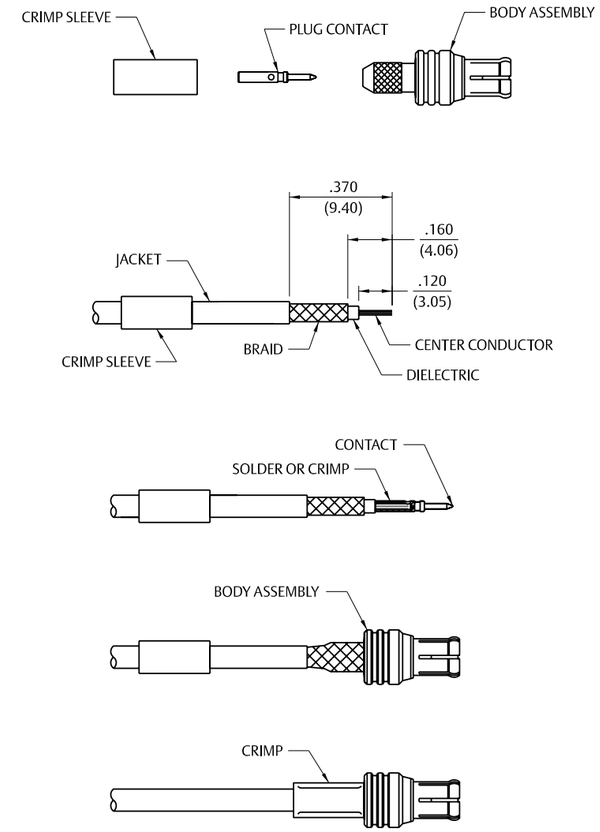

## MCX Crimp Type Straight Connectors for Flexible Cable

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).

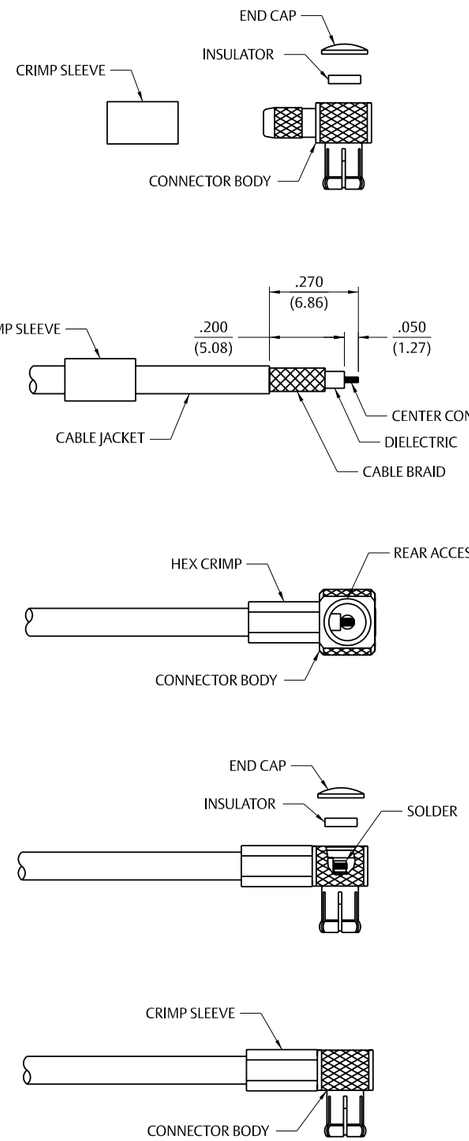



| Cable Group | Part No. | Crimp Hex |
|---|---|---|
| RG-178/U, 196 | 133-3302-001/006<br>133-3302-401/406 | .105 (2.67)<br>.105 (2.67) |
| RG-316/U, 161, 174, 188 | 133-3303-001/006<br>133-3303-401/406 | .128 (3.25)<br>.128 (3.25) |
| RG-316 DS, 188 DS | 133-3304-001/006<br>133-3304-401/406 | .151 (3.83)<br>.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) |

## MCX Crimp Type Right Angle Plugs for Flexible Cable

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 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 41-0000-924 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.

| Cable Group | Part No. | Sleeve Hex |
|---|---|---|
| RG-316/U, 188, 174 | 133-9403-101/104 | .128 (3.25) |
| RG-316 DS, 188 DS | 133-9404-101 | .151 (3.83) |
| RG-178 | 133-9402-101 | .105 (2.67) |



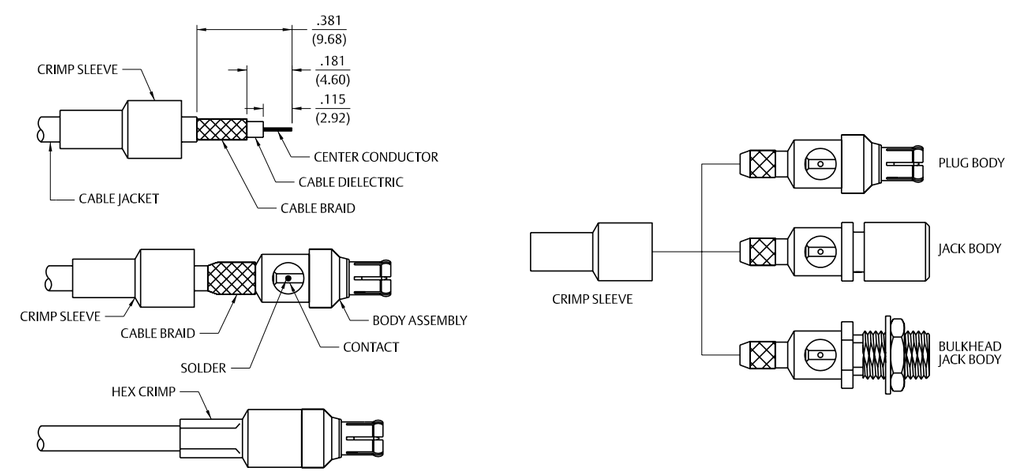





## MCX Crimp Type Straight Connectors for Flexible Cable – 75 Ohm

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.

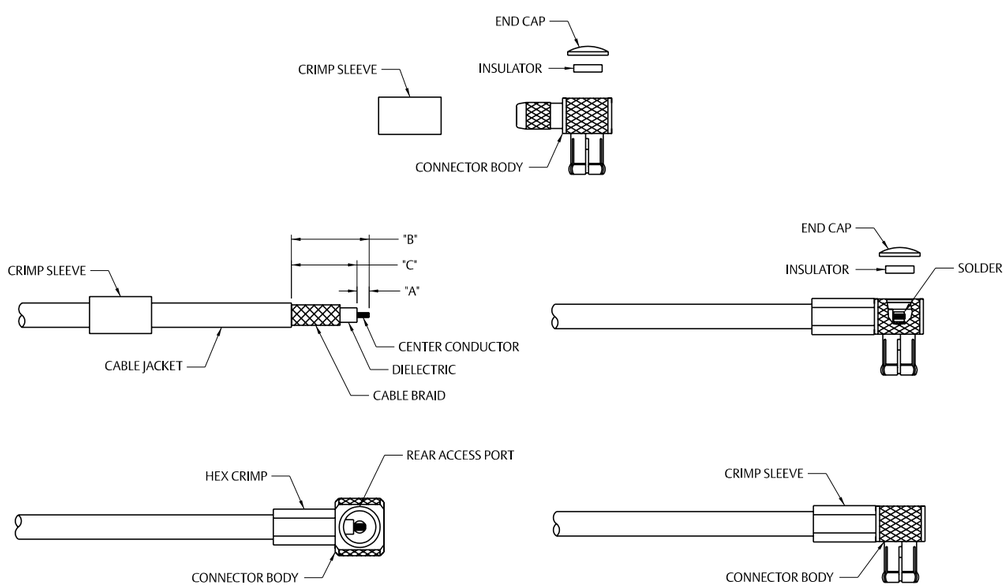
| Cable Group | Part No. | Crimp Hex |
|---|---|---|
| RG-179 | 133-8433-001 | .128 (3.25) |
| RG-179 DS | 133-8434-001 | .151 (3.83) |
| RG-179 | 133-8333-001 | .128 (3.25) |
| RG-179 DS | 133-8334-001 | .151 (3.83) |
| RG-179 | 133-8333-401 | .128 (3.25) |
| RG-179 DS | 133-8334-401 | .151 (3.83) |
| BELDEN 735A | 133-8445-001 | .151 (3.83) |



## MCX Crimp Type Right Angle Plugs for Flexible Cable – 50 Ohm

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.

| 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) |



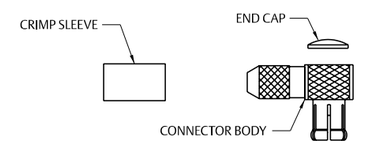


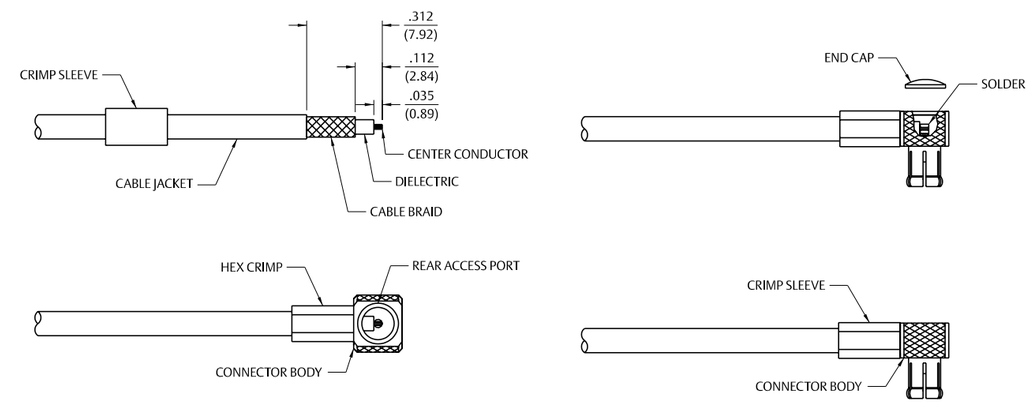



## MCX Crimp Type Right Angle Plugs for Flexible Cable – 75 Ohm

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.

| Cable Group | 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) |

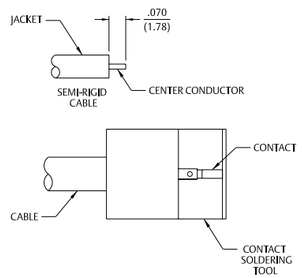


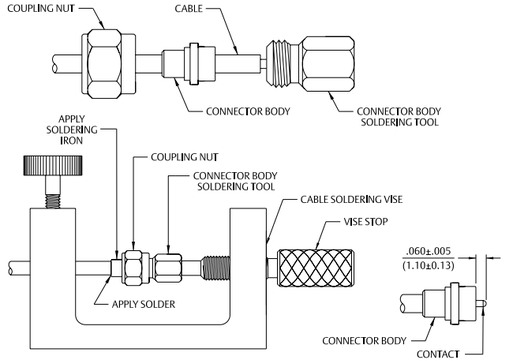



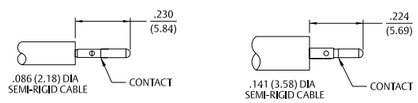
## SMK Solder Type Straight Plugs for Semi-Rigid Cable

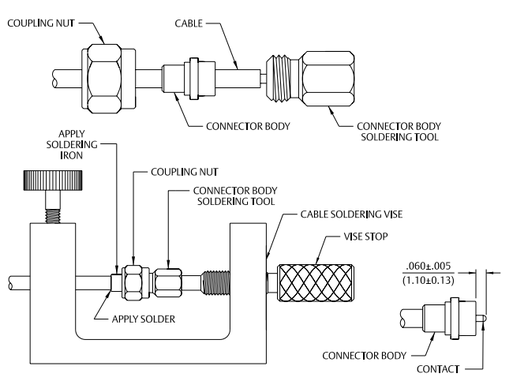
1. Identify connector parts (5 piece parts) and tools (5 tools.)
2. Strip cable jacket and dielectric to dimension shown.
3. Place center contact onto center conductor. Slide contact soldering tool onto contact. Clamp the cable contact and tool into cable soldering vise and solder contact to center conductor. 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.

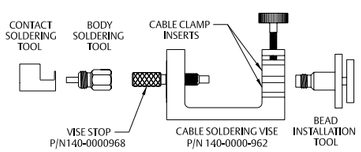
| Tool | 145-0693-001/002 (for .086 Semi-Rigid) | 145-0694-001/02 (for .141 Semi-Rigid) |
|---|---|---|
| Semi-Rigid Cable Vise | 140-0000-962 | 140-0000-962 |
| Vise Stop | 140-0000-968 | 140-0000-968 |
| Bead Assy. Tool | 140-0000-957 | 140-0000-957 |
| Contact Soldering Tool | 140-0000-960 | 140-0000-961 |
| Body Soldering Tool | 140-0000-958 | 140-0000-959 |
| Cable Clamp Insert | 140-0000-964 | 140-0000-965 |

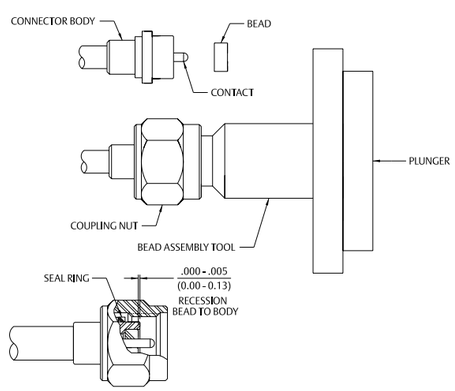


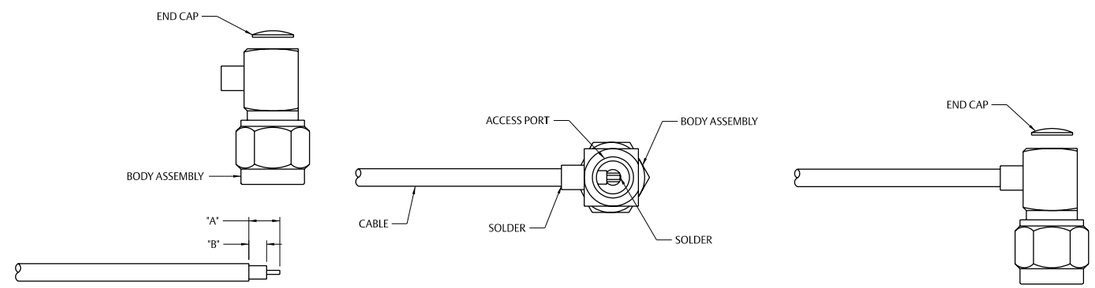





## SMA Right Angle Solder Type Plug for Semi-Rigid Cable

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.

| 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) |



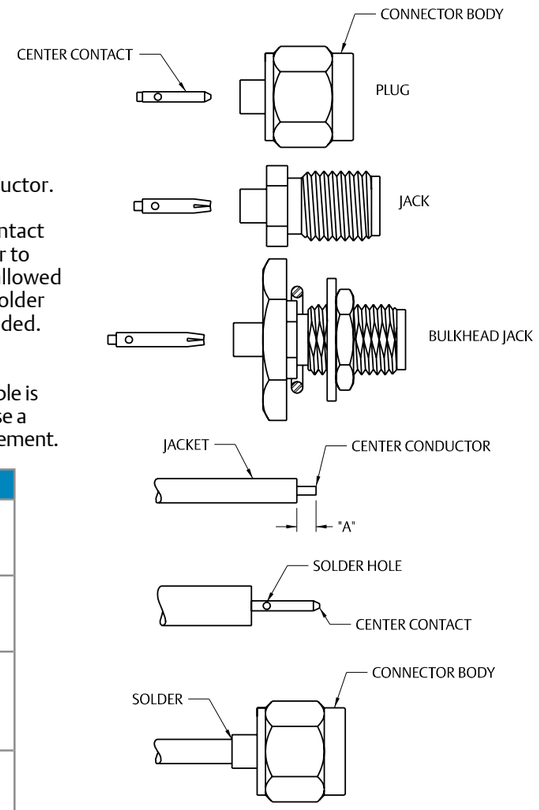



*Illustrations are shown in inches (millimeters).*

## SMA Solder Type Straight Jacks, Straight Plugs, and Straight Bulkhead Jacks for Semi-Rigid Cable

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.

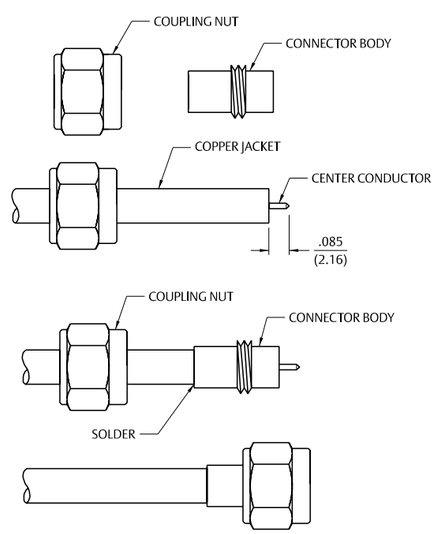
| Cable Group | Part No. | "A" |
|---|---|---|
| RG-405/U (.086 Semi-Rigid) | 141-0593-001<br>141-0593-401<br>141-0693-002 | .070 (1.78)<br>.070 (1.78)<br>.070 (1.78) |
| RG-402/U (.141 Semi-Rigid) | 141-0594-001<br>141-0594-401<br>141-0694-002 | .085 (2.16)<br>.085 (2.16)<br>.085 (2.16) |
| RG-405/U (.086 Semi-Rigid) | 142-0593-001/006<br>142-0593-401/406<br>142-0593-411/416<br>142-0693-001/006 | .070 (1.78)<br>.070 (1.78)<br>.070 (1.78)<br>.070 (1.78) |
| RG-402/U (.141 Semi-Rigid) | 142-0594-001/006<br>142-0594-401/406<br>142-0694-001/006 | .085 (2.16)<br>.085 (2.16)<br>.085 (2.16) |




## SMA Solder Type Straight Plugs for Semi-Rigid Cable

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 48. 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.

| Cable Group | Part No. |
|---|---|
| RG-402/U (.141 Semi-Rigid) | 142-0694-011<br>142-0694-016<br>141-0694-012 |



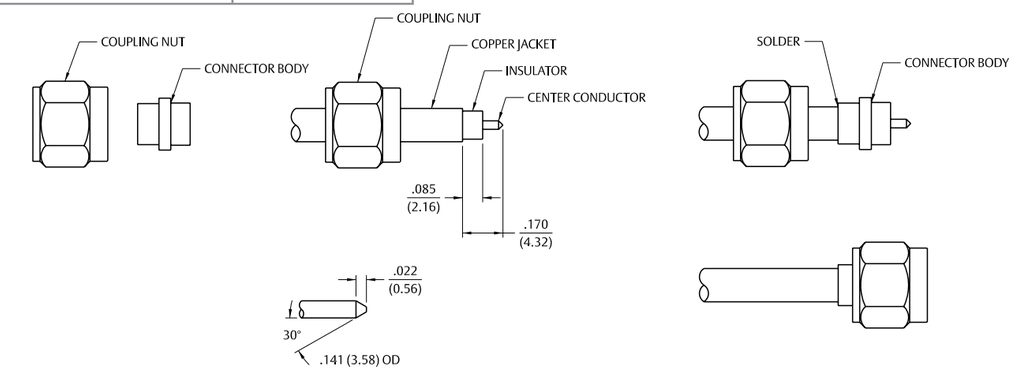





## SMA Solder Type Straight Plugs for Semi-Rigid Cable

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 48. 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.

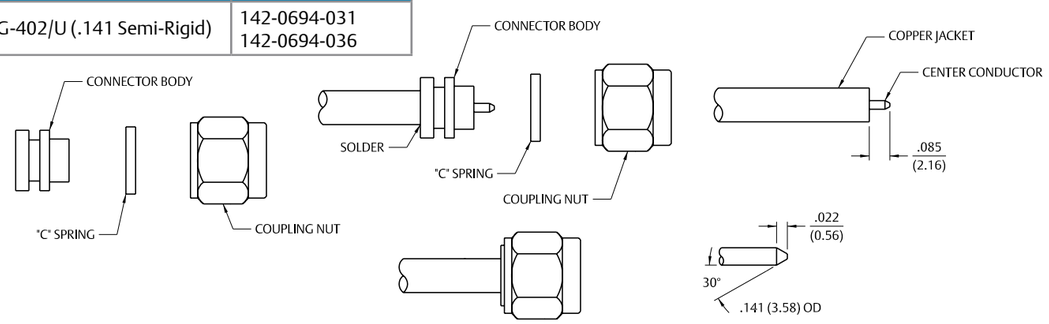
| Cable Group | Part No. |
|---|---|
| RG-402/U<br>(.141 Semi-Rigid) | 142-0694-021<br>142-0694-026<br>142-0694-041<br>142-0694-046 |




## SMA Solder Type Straight Plugs for Semi-Rigid Cable

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 48.
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.

| Cable Group | Part No. |
|---|---|
| RG-402/U (.141 Semi-Rigid) | 142-0694-031<br>142-0694-036 |



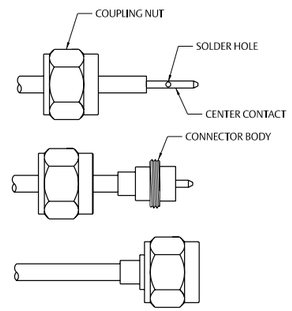


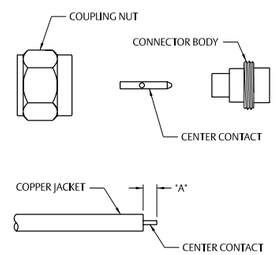

*Illustrations are shown in inches (millimeters).*

## SMA Solder Type Straight Plugs for Semi-Rigid Cable

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

| Cable Group | Part No. | "A" |
|---|---|---|
| RG-405/U (.086 Semi-Rigid) | 142-0693-051<br>142-0693-056 | .070 (1.78)<br>.070 (1.78) |
| RG-402/U (.141 Semi-Rigid) | 142-0694-051<br>142-0694-056 | .085 (2.16)<br>.085 (2.16) |

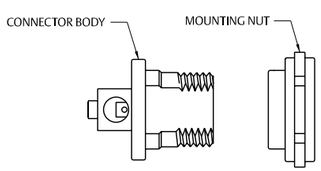


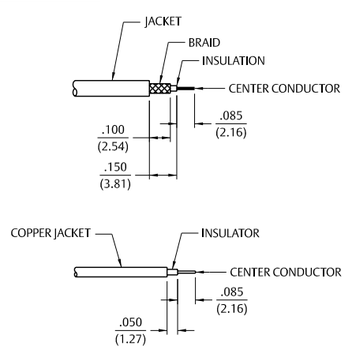



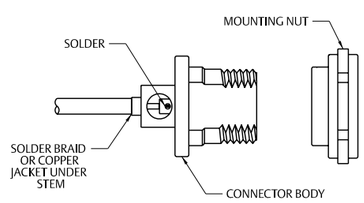

## SMA Solder Type Antenna Connector Plug for Flexible or Semi-Rigid Cable

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.

| Cable Group | Part No. |
|---|---|
| RG-178/U, .047 Semi-Rigid | 142-0801-421 |



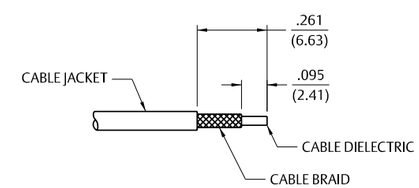


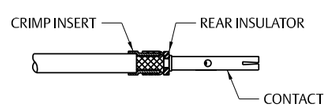


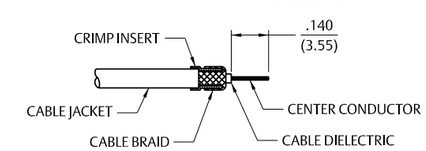

## SMA 3-Piece Plug, Jack and Bulkhead Jack for RG-178 Flexible Cable

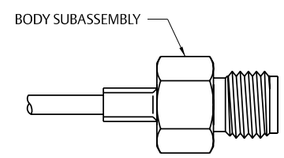
1. Identify piece parts. (4 piece parts plus nut and washer for bulkhead.)
2. Strip cable jacket and braid to dimensions shown. Do not nick braid during strip operations.
3. Slide crimp insert over braid and against jacket. Fold braid around crimp insert as shown. Strip dielectric to dimension shown. 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.

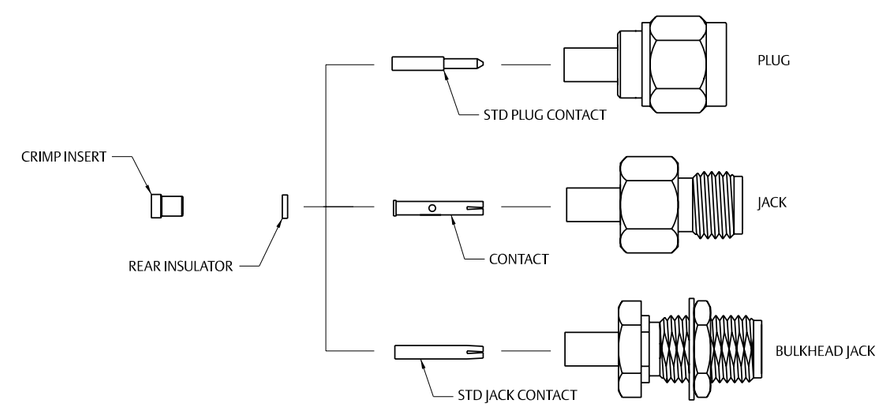
| Cable Group | Part No. | Crimp Hex |
|---|---|---|
| RG-178/U, 196 | 142-0402-011<br>142-0402-016<br>142-0302-011<br>142-0302-016<br>142-0302-431<br>142-0302-436 | .105 (2.67)<br>.105 (2.67)<br>.105 (2.67)<br>.105 (2.67)<br>.105 (2.67)<br>.105 (2.67) |




**For more information, please contact customer service at (507) 833-8822 or (800) 247-8256 • www.EmersonConnectivity.com**

*Illustrations are shown in inches (millimeters).*

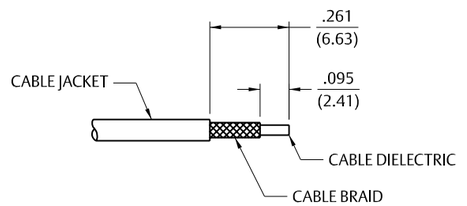
## SMA Type Straight Plugs, Straight Jacks, and Straight Bulkhead Jacks for Flexible Cable – Crimp or Solder Contacts

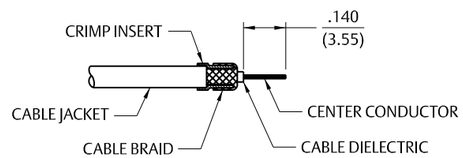
1. Identify connector parts. (3 piece parts – except bulkhead)

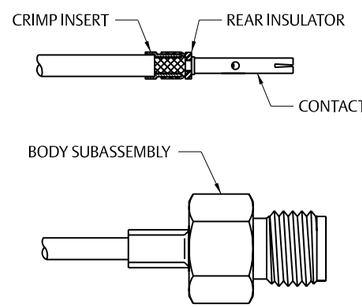
2. Strip cable to dimensions shown. Do not nick braid or center conductor. Tin center conductor if contact will be solder attached. Do not tin center conductor if contact is to be crimp attached. When stripping LMR-100 low loss cable, remove foil back to where cable jacket is stripped. A wire stripper of correct size is recommended for this step. Slide heat shrink (as applicable) and crimp sleeve onto jacket of cable.

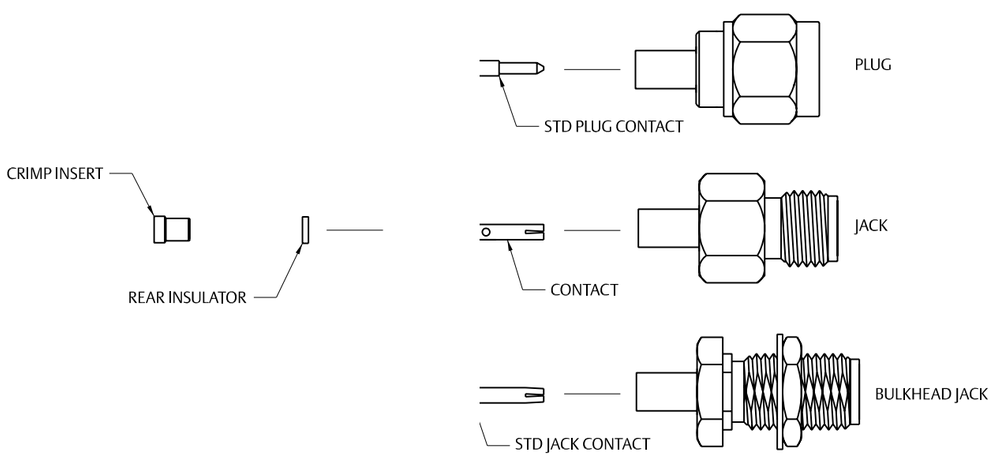
3. Assemble contact onto cable as shown.
   **Solder Attachment:** Solder contact to center conductor through solder hole using .020 (0.51) diameter solder. Use a minimum amount of solder for a good joint.
   **Crimp Attachment:** Crimp contact to center conductor using Johnson Hand Tool 144-0000-910, 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).







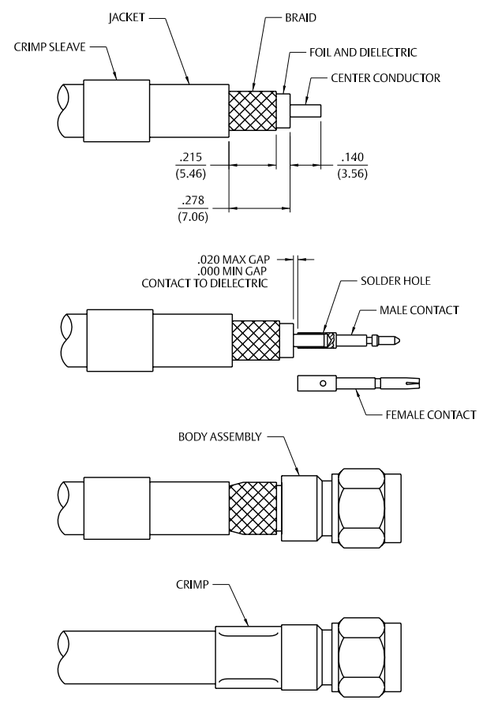

## SMA Type Straight Plugs, Straight Jacks, and Straight Bulkhead Jacks for Flexible Cable – Crimp or Solder Contacts (cont'd from last page )

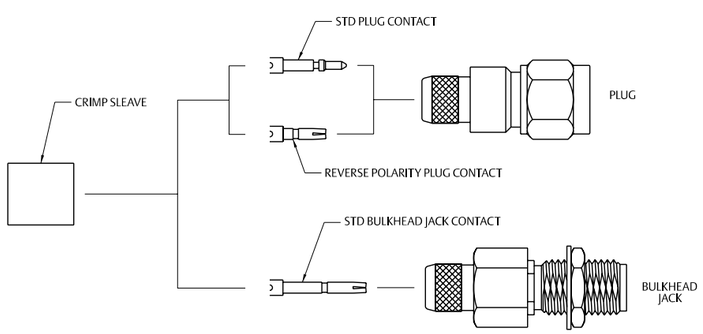
| Cable Group | Part No. | "A" | "B" | Crimp Hex |
|---|---|---|---|---|
| RG-316/U, 161, 174, 188; LMR-100 | 141-0303-412 | .128 (3.25) | .270 (6.86) | .105 (2.67) |
| RG-316 DS, 188 DS | 141-0304-412 | .151 (3.83) | .270 (6.86) | .128 (3.25) |
| RG-58/U, 141, 303 | 141-0307-412 | .213 (5.41) | .270 (6.86) | .151 (3.83) |
| RG-55/U, 142, 223, 400 | 141-0308-412 | .213 (5.41) | .270 (6.86) | .128 (3.25) |
| RG-316/U, 161, 174, 188; LMR-100 | 141-0403-012 | .128 (3.25) | .270 (6.86) | .105 (2.67) |
| RG-316 DS, 188 DS | 141-0404-012 | .151 (3.83) | .270 (6.86) | .128 (3.25) |
| RG-58/U, 141, 303 | 141-0407-012 | .213 (5.41) | .270 (6.86) | .151 (3.83) |
| RG-55/U, 142, 223, 400 | 141-0408-012 | .213 (5.41) | .295 (7.49) | .213 (5.41) |
| RG-316/U, 161, 174, 188; LMR-100 | 142-0303-011/016<br>142-0303-411/416<br>142-9303-411 | .215 (5.46)<br>.215 (5.46) | .278 (7.06)<br>.278 (7.06) | .128 (3.25)<br>.128 (3.25) |
| RG-316 DS, 188 DS | 142-0304-011/016<br>142-0304-411/416 | .215 (5.46)<br>.215 (5.46) | .278 (7.06)<br>.278 (7.06) | .151 (3.83)<br>.151 (3.83) |
| RG-58/U, 141, 303 | 142-0307-011/016<br>142-0307-411/416 | .215 (5.46)<br>.215 (5.46) | .278 (7.06)<br>.278 (7.06) | .213 (5.41)<br>.213 (5.41) |
| RG-55/U, 142, 223, 400 | 142-0308-011/016<br>142-0308-411/416 | .215 (5.46)<br>.215 (5.46) | .278 (7.06)<br>.278 (7.06) | .213 (5.41)<br>.213 (5.41) |
| RG-179/U, 187 | 142-0333-011/016<br>142-0333-411/416 | .215 (5.46)<br>.215 (5.46) | .278 (7.06)<br>.278 (7.06) | .128 (3.25)<br>.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

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.

| Cable Group | Part No. | Crimp Hex |
|---|---|---|
| LMR-195 | 142-0307-411<br>142-0307-416 | .213 (5.41)<br>.213 (5.41) |
| LMR-240 | 142-0335-401<br>142-0335-406 | .255 (6.48)<br>.255 (6.48) |
| LMR-200 | 142-0339-401<br>142-0339-406 | .213 (5.41)<br>.213 (5.41) |
| LMR-195 | 142-0407-011<br>142-0407-016 | .213 (5.41)<br>.213 (5.41) |
| LMR-240 | 142-0435-001<br>142-0435-006 | .255 (6.48)<br>.255 (6.48) |
| LMR-200 | 142-0439-001<br>142-0439-006 | .213 (5.41)<br>.213 (5.41) |
| LMR-240 | 142-4435-001<br>142-4435-006 | .255 (6.48)<br>.255 (6.48) |
| LMR-200 | 142-4439-001<br>142-4439-006 | .213 (5.41)<br>.213 (5.41) |
| LMR-195 | 142-4407-001<br>142-4407-006 | .213 (5.41)<br>.213 (5.41) |
| LMR-240 | 142-5435-001<br>142-5435-006 | .255 (6.48)<br>.255 (6.48) |
| LMR-200 | 142-5439-001<br>142-5439-006 | .213 (5.41)<br>.213 (5.41) |
| LMR-195 | 142-5407-001<br>142-5407-006 | .213 (5.41)<br>.213 (5.41) |



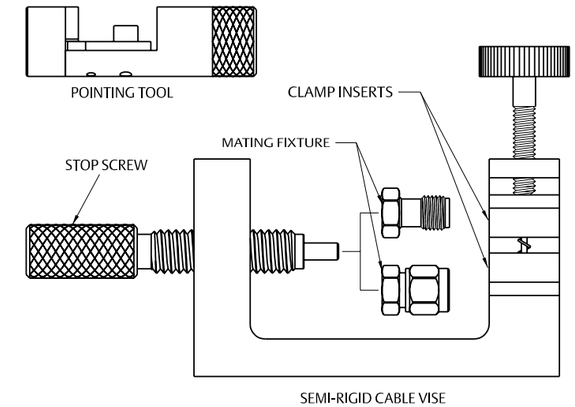



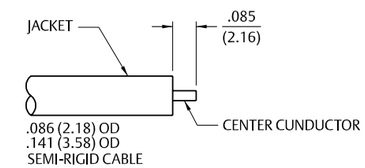


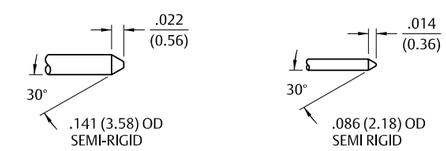


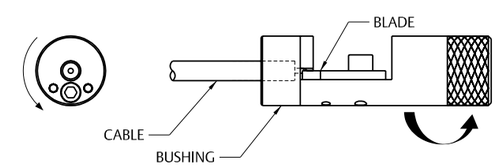

## SMA Straight Solder Type for Semi-Rigid Cables

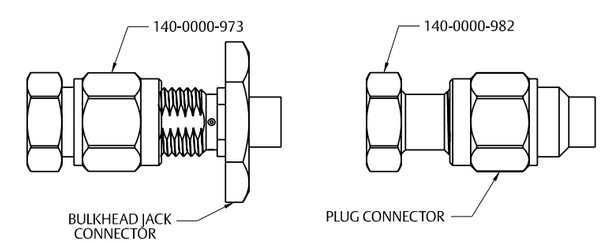
1. Identify the connector (plug or jack) and tools.
2. Strip the cable jacket and dielectric to dimension shown. Do not nick the center conductor.
3. Bevel the entire diameter on the end of the cable center conductor until the point resembles the appropriate dimensional profile. This operation can be accomplished effectively by using the recommended center conductor pointing tool as described in step 4.
4. Insert the stripped cable into the bushing of the appropriate pointing tool until the center conductor just touches the blade. While maintaining light pressure on the center conductor against the blade, turn the tool in a counter-clockwise fashion as viewed from the bushing end of the tool. Continue cutting the center conductor point until the cable jacket bottoms out inside the bushing.
5. Attach the appropriate soldering mating fixture to the connector and tighten to a maximum of 8 inch pounds of torque.
6. Clean all debris from the prepared cable and insert the cable into the connector, making sure that the cable jacket bottoms out against the internal shoulder of the connector body.
7. Insert the stop screw into the mating fixture. Clamp the cable and fixtured connector assembly securely in the soldering vise. Solder the connector body to the cable as shown, while insuring the cable dielectric expansion does not move the assembly. Allow the assembly to cool before removing the connector from the fixture.



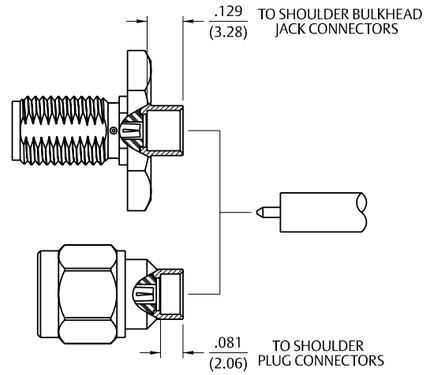



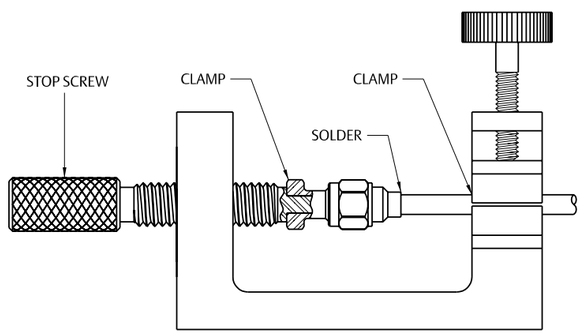



## SMA Straight Solder Type for Semi-Rigid Cables (cont'd from last page)

| Cable Group | Part No. |
|---|---|
| RG-405/U (.086 Semi-Rigid) | 141-0593-421<br>141-0693-062 |
| RG-402/U (.141 Semi-Rigid) | 141-0594-421<br>141-0694-062 |







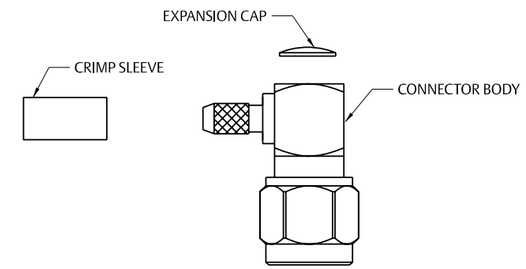

## SMA Crimp Type Right Angle Plugs for Flexible Cable

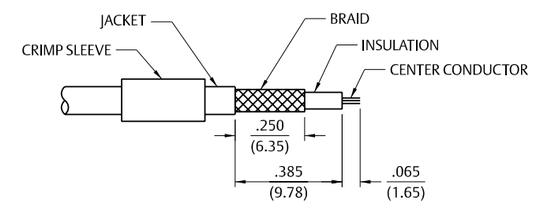
1. Identify connector parts. (3 piece parts)

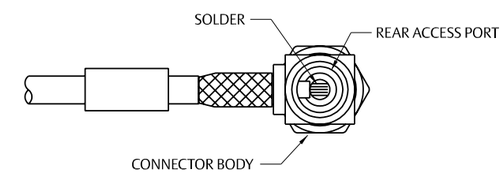
2. Strip cable to dimensions shown. Do not nick braid or center conductor. When stripping LMR-100 low loss cable, remove foil back to where cable jacket is stripped. A wire stripper of correct size is recommended for this step. Twist stranded center conductor into tight bundle and tin (optional). Slide crimp sleeve onto cable as shown.

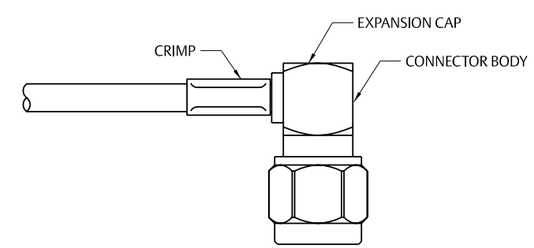
3. Flare braid and slide cable into body making certain that the cable insulation bottoms on center contact. Solder center conductor to contact through the rear access port. Use a minimum amount of solder for a full fillet joint. .020 (0.51) diameter solder is recommended.

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.



## SMA Crimp Type Right Angle Plugs for Flexible Cable (cont'd from last page)

| Cable Group | Part No. | Crimp Hex |
|---|---|---|
| RG-316/U, 161, 174, 188; LMR-100 | 141-0403-102 | .128 (3.25) |
| RG-316 DS, 188 DS | 141-0404-112 | .151 (3.83) |
| RG-58/U, 141, 303 | 141-0407-102 | .213 (5.41) |
| RG-55/U, 142, 223, 400 | 141-0408-102 | .213 (5.41) |
| RG-178/U, 196 | 142-0402-101<br>142-0402-106 | .105 (2.67)<br>.105 (2.67) |
| RG-316/U, 161, 174, 188; LMR-100 | 142-0403-101<br>142-0403-106 | .128 (3.25)<br>.128 (3.25) |
| RG-316 DS, 188 DS | 142-0404-101<br>142-0404-106 | .151 (3.83)<br>.151 (3.83) |
| RG-58/U, 141, 303 | 142-0407-101<br>142-0407-106 | .213 (5.41)<br>.213 (5.41) |
| RG-55/U, 142, 223, 400 | 142-0408-101<br>142-0408-106 | .213 (5.41)<br>.213 (5.41) |
| RG-179/U, 187 | 142-0433-101<br>142-0433-106 | .128 (3.25)<br>.128 (3.25) |
| RG-316/U, 161, 174, 188; LMR-100 | 142-4403-101<br>142-4403-106 | .128 (3.25)<br>.128 (3.25) |
| RG-316 DS, 188 DS | 142-4404-101<br>142-4404-106 | .151 (3.83)<br>.151 (3.83) |
| RG-58/U, 141, 303 | 142-4407-101<br>142-4407-106 | .213 (5.41)<br>.213 (5.41) |
| RG-55/U, 142, 223, 400 | 142-4408-101<br>142-4408-106 | .213 (5.41)<br>.213 (5.41) |
| RG-316/U, 161, 174, 188; LMR-100 | 142-5403-101<br>142-5403-106 | .128 (3.25)<br>.128 (3.25) |
| RG-316 DS, 188 DS | 142-5404-101<br>142-5404-106 | .151 (3.83)<br>.151 (3.83) |
| RG-58/U, 141, 303 | 142-5407-101<br>142-5407-106 | .213 (5.41)<br>.213 (5.41) |
| RG-55/U, 142, 223, 400 | 142-5408-101<br>142-5408-106 | .213 (5.41)<br>.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) |

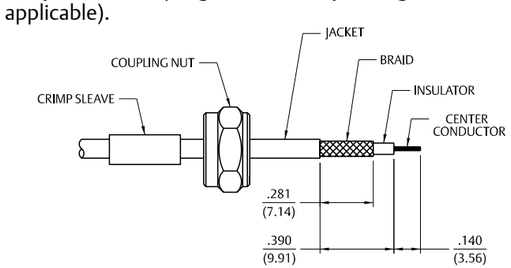


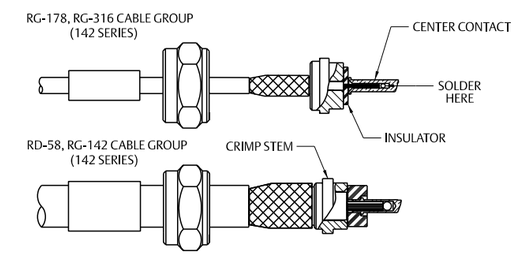


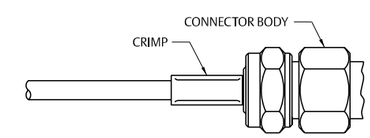
## SMA Crimp Type Straight Plugs, Straight Jacks, and Straight Bulkhead Jacks for Flexible Cable

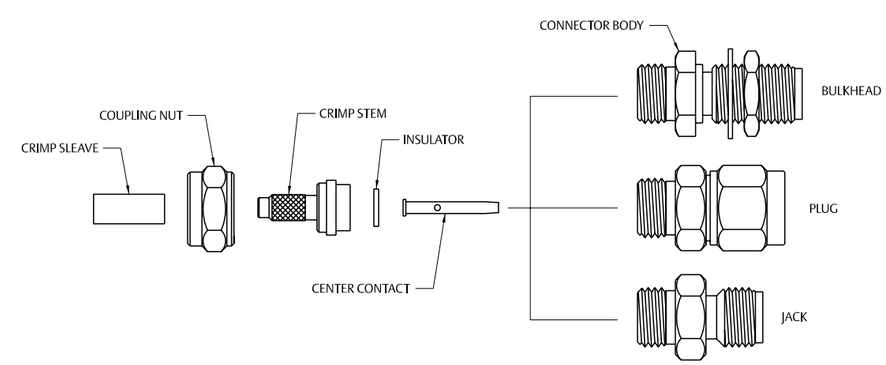
1. Identify connector parts. (6 piece parts – except bulkhead)
2. Strip cable to dimensions shown. Do not nick braid or center conductor. A wire stripper of correct size is recommended for this step. Twist stranded center conductor into tight bundle and tin (optional). Slide crimp sleeve, nut and heat 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).

| Cable Group | Part No. | Crimp Hex |
|---|---|---|
| RG-178/U, 196 | 142-0302-401<br>142-0302-406 | .105 (2.67)<br>.105 (2.67) |
| RG-316/U, 161, 174, 188 | 142-0303-401<br>142-0303-406 | .128 (3.25)<br>.128 (3.25) |
| RG-316 DS, 188 DS | 142-0304-401<br>142-0304-406 | .151 (3.83)<br>.151 (3.83) |
| RG-58/U, 141, 303 | 142-0307-401<br>142-0307-406 | .213 (5.41)<br>.213 (5.41) |
| RG-55/U, 142, 223, 400 | 142-0308-401<br>142-0308-406 | .213 (5.41)<br>.213 (5.41) |
| RG-316/U, 161, 174, 188 | 142-0403-001<br>142-0403-006 | .128 (3.25)<br>.128 (3.25) |




**For more information, please contact customer service at (507) 833-8822 or (800) 247-8256 • www.EmersonConnectivity.com**

*Illustrations are shown in inches (millimeters).*

## SMA High Frequency End Launch Connectors PC Mounting Instructions

High frequency end launch performance is dependent upon proper mounting. The following factors must be controlled for optimum performance:

a. The connector should fit tightly against the circuit board edge, avoid gaps.
b. The center contact pin must lie parallel and flat against the circuit board, avoid gaps.
c. The contact pin should be centered on the circuit board signal trace.
d. Use a minimal amount of solder between the contact pin and signal trace. Do not allow excess solder to build up or flow down the trace.
e. Clean all excess flux and other residue from the launch area, especially between the trace and ground.

The basic steps required to mount the end launch connector to the circuit board are as follows:

1. Fixture 140-0000-973 should be used as an aid during manual soldering. The fixture protects the connector from damage during clamping and also maintains the proper location of the connector's insulator and contact. To use the fixture, thread the coupling nut on the mating end of the connector and hand tighten. This mounting assembly can now be held in a vice or similar clamping device, as shown in Figure 1.

2. Position connector on the circuit board, making sure the contact pin is aligned with the center of the signal trace as shown in Figure 2. Make sure that the connector legs and contact pin are held flush against the top of the circuit board, keeping the axis of the connector parallel to the plane of the circuit board, as shown in Figure 3.

3. A small amount of Teflon® insulation projects from rear mating plane of the connector, which acts as a seal when soldering the center conductor pin to the trace. Clamp the connector tightly against the edge of the board. This action compresses the insulator seal against the board edge. This effectively creates a barrier between the inner and outer conductors, preventing the bridging of solder.

4. While ensuring the connector is held in the correct position, solder the ground legs and/or ground posts to the top and bottom of the board prior to bonding the center pin to the trace.

5. Once the connector body is properly grounded to the board, the center contact pin can be bonded to the trace by using a minimal amount of solder as shown in Figure 4. It is important that solder flows along the length of the exposed pin, creating a good electrical and mechanical connection. Remove any excess solder that is not required for a solid joint.

6. Clean all flux and other residues from the trace area between the signal side ground legs, as any flux present between the signal trace and ground will affect performance. The completed mounting assembly should look similar to the one shown in Figure 5.

Figure 1

Figure 2

Figure 3

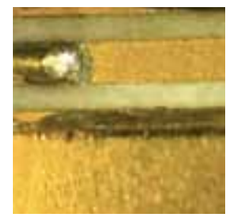


Figure 4

Figure 5

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 the pads on the board. For optimum high frequency preformance, the connector to circuit board transtion must be ajdusted 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 tabluated 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 uses connectors for these tests that are double-sided FR4 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 (millimeters).

| Part No. | Base Width | Board Thickness | "A" | "B" | "C" | "D" | "E" |
|---|---|---|---|---|---|---|---|
| 142-0791-801 | .375 | .062 (1.57) | .073 | .073 | .250 | .440 | .200 |
| 142-0791-811 | .375 | .042 (1.07) | .103 | .103 | .250 | .440 | .200 |
| 142-0791-821 | .375 | .062 (1.57) | .083 | .083 | .250 | .440 | .200 |
| 142-1701-821 | .375 | .062 (1.57) | See Figure 2 below for attachment dimensions | | | | |
| 142-1701-831 | .375 | .059 (1.50) | See Figure 2 below for attachment dimensions | | | | |

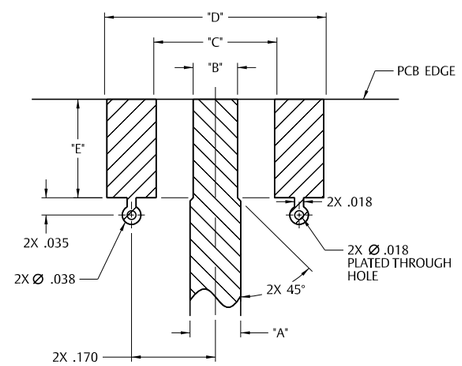


**Figure 1**

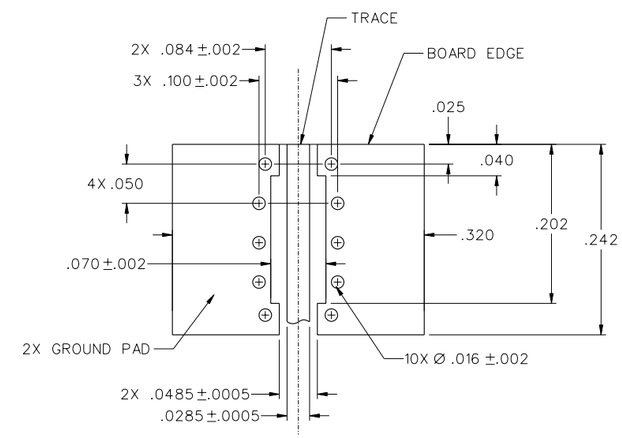


**Figure 2**

## Reference dimensions for 50 Ohm grounded coplanar waveguide using Rogers Corporation RO4003C™ high frequency substrate laminate*

| Holes | GCPW 50Ω Impedence Reference Dimensions* | | | | Mounting and Via | | |
|---|---|---|---|---|---|---|---|
| Part No. | Substrate Thickness | Conductor Thickness | Trace Width "A" | Ground Gaps "B" | Fig | "C" | "D" |
| 142-0761-801 | .0080 (0.203) | .0014 (0.036) | .0155 (0.394) | .0100 (0.254) | 1 | .066 (1.68) | .096 (2.44) |
| 142-0761-811 | .0080 (0.203) | .0014 (0.036) | .0155 (0.394) | .0100 (0.254) | 1 | .066 (1.68) | .096 (2.44) |
| 142-0761-821 | .0160 (0.406) | .0014 (0.036) | .0285 (0.724) | .0100 (0.254) | 1 | .084 (2.13) | .113 (2.87) |
| 142-0761-831 | .0160 (0.406) | .0014 (0.036) | .0285 (0.724) | .0100 (0.254) | 1 | .084 (2.13) | .113 (2.87) |
| 142-0761-841 | .0080 (0.203) | .0014 (0.036) | .0155 (0.394) | .0100 (0.254) | 2 | .066 (1.68) | |
| 142-0761-851 | .0080 (0.203) | .0014 (0.036) | .0155 (0.394) | .0100 (0.254) | 2 | .066 (1.68) | |
| 142-0761-861 | .0160 (0.406) | .0014 (0.036) | .0285 (0.724) | .0100 (0.254) | 2 | .084 (2.13) | |
| 142-0761-871 | .0160 (0.406) | .0014 (0.036) | .0285 (0.724) | .0100 (0.254) | 2 | .084 (2.13) | |
| 142-0761-881 | .0080 (0.203) | .0014 (0.036) | .0155 (0.394) | .0100 (0.254) | 1 | .066 (1.68) | .096 (2.44) |
| 142-0761-891 | .0080 (0.203) | .0014 (0.036) | .0155 (0.394) | .0100 (0.254) | 2 | .066 (1.68) | |
| 142-0771-821 | .0160 (0.406) | .0014 (0.036) | .0285 (0.724) | .0100 (0.254) | 1 | .084 (2.13) | .113 (2.87) |
| 142-0771-831 | .0160 (0.406) | .0014 (0.036) | .0285 (0.724) | .0100 (0.254) | 2 | .084 (2.13) | |

* These calculated dimensions assume a quasi-static mode of propagation, but dispersion does exist for coplanar waveguide. The characteristic impedance and effective dielectric constant may increase slightly for X-band and higher frequencies, unless very small ground to ground gap spacing is used.

It is assumed the conductors have rectangular cross-sections. The etching process used in circuit board fabrication actually produces trapezoidal shapes. Therefore, the GCPW impedance may increase somewhere between that of a perfect rectangular conductor and a theoretical zero thickness conductor.

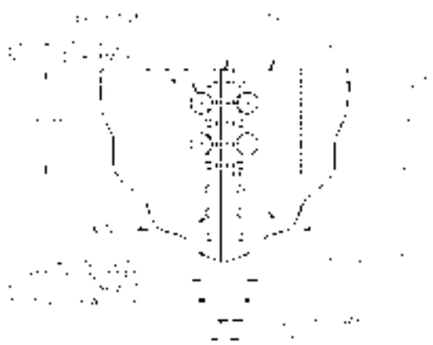


**Figure 1**

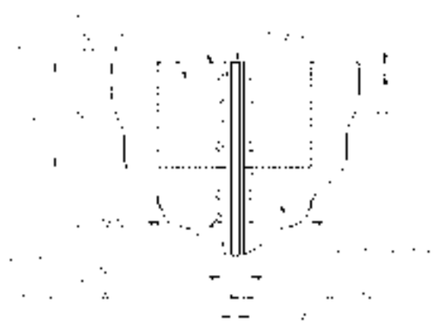


**Figure 2**

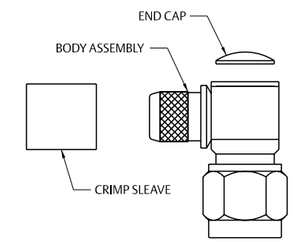




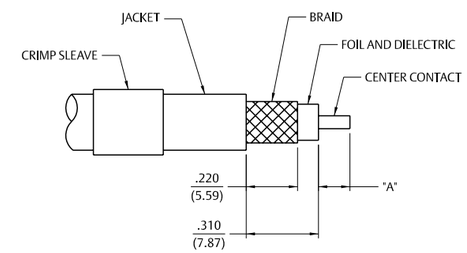
## Right Angle SMA Low Loss Diameter .195, .200 and .240

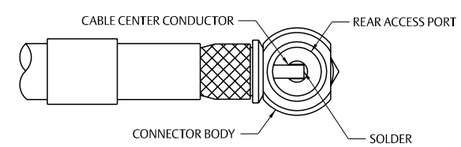
1. Identify connector parts. (3 piece parts)
2. Strip cable to dimensions shown. Do not nick braid, foil or center conductor. Cut foil flush with dielectric, do not remove foil. Make sure that dielectric is clean and free from all particles. Tin center conductor, keeping solder amount to a minimum. Slide 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.

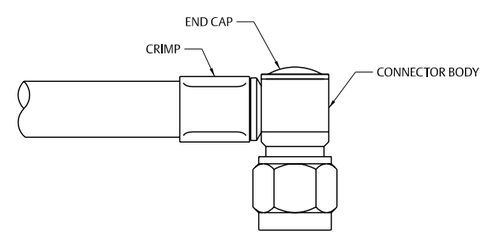
| Low Loss Diameter | "A" | Crimp Die Hex | Flat Punch Diameter |
|---|---|---|---|
| 0.195 | .110 (2.79) | .213 (5.41) hex | .187 (4.75) |
| 0.200 | .110 (2.79) | .213 (5.41) hex | .187 (4.75) |
| 0.240 | .135 (3.43) | .255 (6.48) hex | .242 (6.15) |




| Cable Group | Part No. | Crimp Hex |
|---|---|---|
| LMR-195 | 142-0407-101<br>142-0407-106 | .213 (5.41)<br>.213 (5.41) |
| LMR-200 | 142-4439-101<br>142-4439-106 | .213 (5.41)<br>.213 (5.41) |
| LMR-240 | 142-0435-101<br>142-0435-106 | .255 (6.48)<br>.255 (6.48) |
| LMR-195 | 142-5407-101<br>142-5407-106 | .213 (5.41)<br>.213 (5.41) |
| LMR-200 | 142-0439-101<br>142-0439-106 | .213 (5.41)<br>.213 (5.41) |
| LMR-240 | 142-5435-101<br>142-5435-106 | .255 (6.48)<br>.255 (6.48) |
| LMR-195 | 142-4407-101<br>142-4407-106 | .213 (5.41)<br>.213 (5.41) |
| LMR-200 | 142-5439-101<br>142-5439-106 | .213 (5.41)<br>.213 (5.41) |
| LMR-240 | 142-4435-101<br>142-4435-106 | .255 (6.48)<br>.255 (6.48) |






*Illustrations are shown in inches (millimeters).*

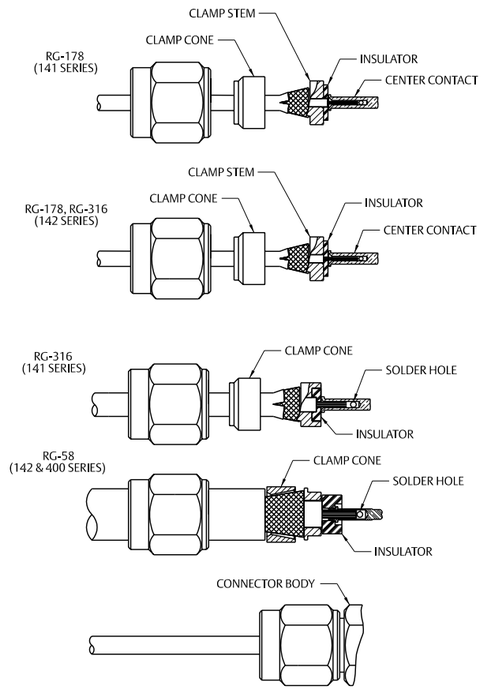
## SMA Clamp Type Straight Plugs, Straight Jacks, and Straight Bulkhead Jacks for Flexible Cable

1. Identify connector parts. (6 piece parts – except bulkhead)

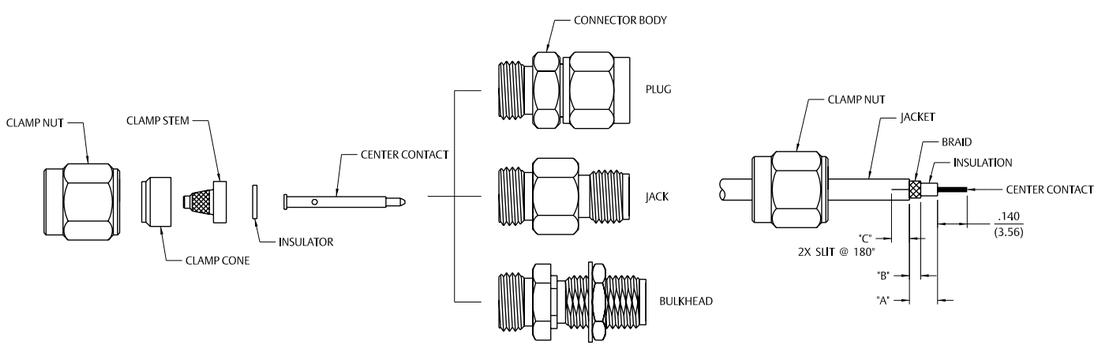
2. Strip cable to dimensions shown. Do not nick braid or center conductor. A wire stripper of correct size is recommended for this step. Twist stranded center conductor into tight bundle and tin (optional). Slide clamp nut and clamp cone onto cable as shown. Clamp cone must be oriented as shown for each 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

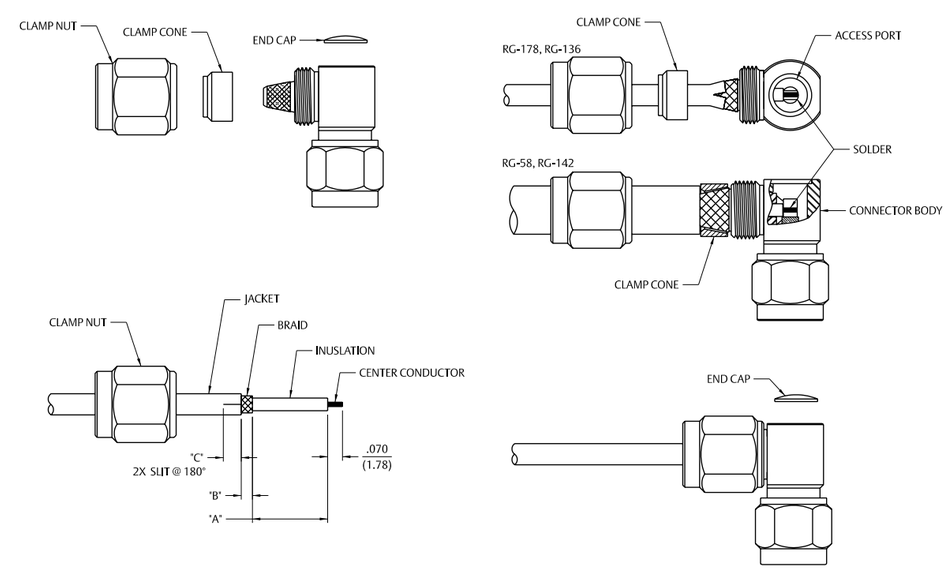
1. Identify connector parts. (4 piece parts)

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.

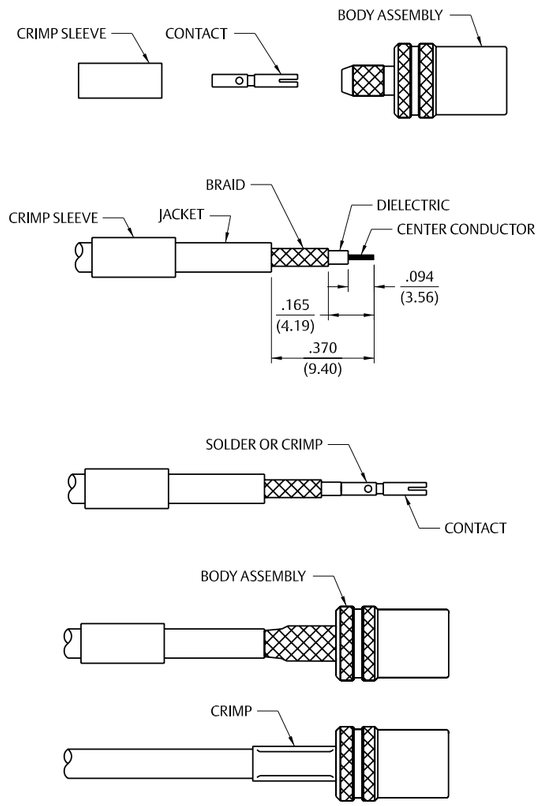
4. Solder center conductor to contact through the rear access port. Use a minimum amount of solder for a full fillet joint. .020 (0.51) diameter solder is recommended. Place expansion cap in access port and seat with .187 (4.75) diameter flat punch.

| Cable Group | Part No. | "A" | "B" | "C" |
|---|---|---|---|---|
| RG-178/U, 196 | 142-0202-101<br>142-0202-106 | .280 (7.11)<br>.280 (7.11) | .053 (1.35)<br>.053 (1.35) | .085 (2.16)<br>.085 (2.16) |
| RG-316/U, 161, 174, 188 | 142-0203-101<br>142-0203-106 | .280 (7.11)<br>.280 (7.11) | .053 (1.35)<br>.053 (1.35) | .085 (2.16)<br>.085 (2.16) |
| RG-58/U 141, 303 | 142-0207-101<br>142-0207-106 | .395 (10.03)<br>.395 (10.03) | .160 (4.06)<br>.160 (4.06) | NONE<br>NONE |
| RG-55/U, 142, 233, 400 | 142-0207-101<br>142-0207-106 | .420 (10.67)<br>.420 (10.67) | .180 (4.57)<br>.180 (4.57) | NONE<br>NONE |



## SMB 3-Piece Straight Plugs

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).




| 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) |
| RG-316/U, 188, 174, 179, 187 | 131-9403-021 | .128 (3.25) |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 131-9404-021 | .151 (3.83) |

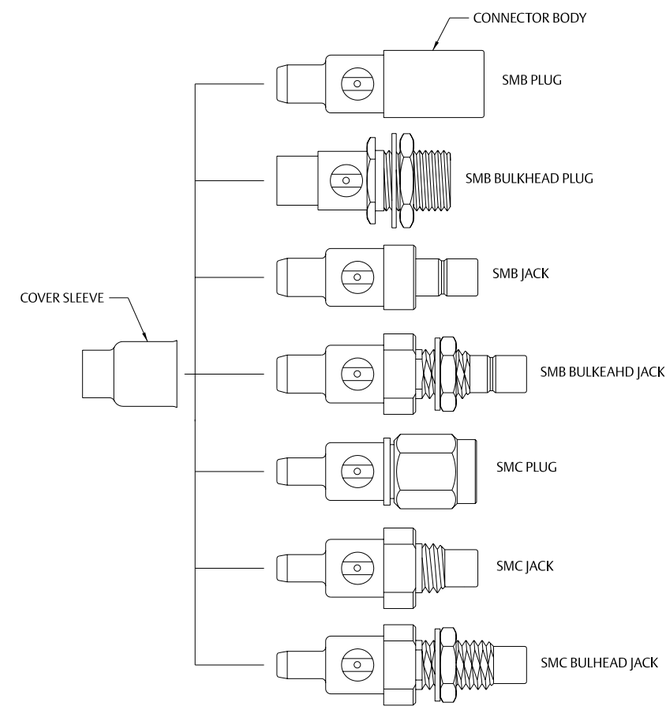


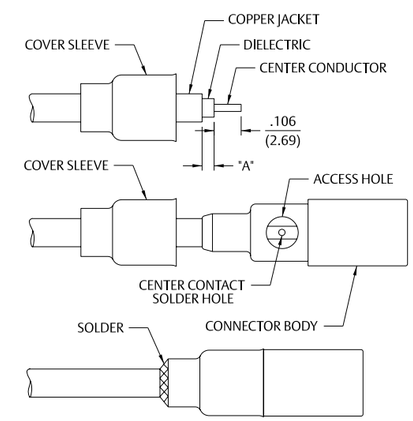


## SMB/SMC Solder Type Straight Plugs and Jacks for Semi-Rigid Cable

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.

| Cable Group | Part No. | "A" |
|---|---|---|
| RG-405/U<br>(.086 Semi-Rigid) | 131-3593-401/406<br>131-3693-001/016 | .025 (0.64)<br>.025 (0.64) |
| RG-402/U (.141 Semi-Rigid) | 131-3694-401/406 | .050 (1.27) |
| RG-405/U (.086 Semi-Rigid) | 131-6593-401/406 | .025 (0.64) |

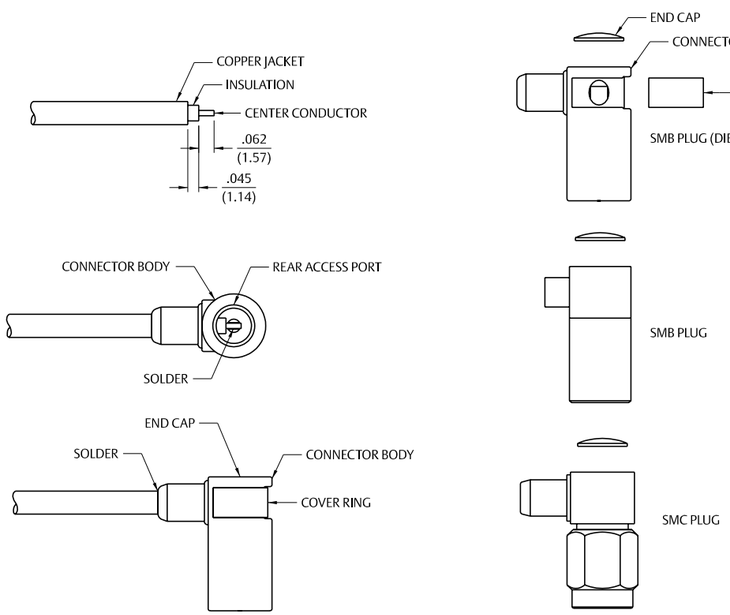


## SMB/SMC Solder Type Right Angle Plugs for Semi-Rigid Cable

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.

| Cable Group | Part No. |
|---|---|
| RG-405/U (.086 Semi-Rigid) | 131-1693-101<br>131-1693-116<br>131-3693-101<br>131-3693-116 |

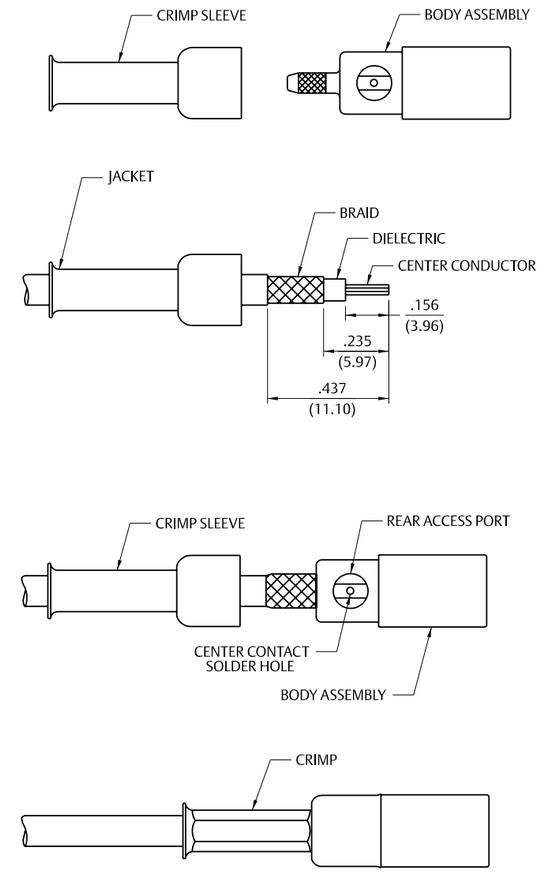







## SMB Straight Crimp Type Straight Plugs for Flexible Cable

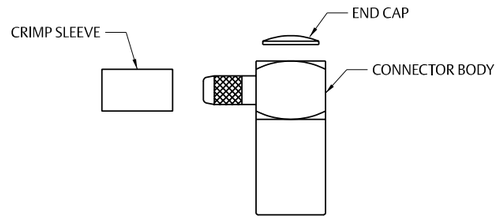
1. Identify connector parts. (2 piece parts)
2. Strip cable to dimensions shown. Do not nick braid or center conductor. A wire stripper of correct size is recommended for this step. Twist stranded center conductor into tight bundle and tin. Slide crimp sleeve onto cable as shown.
3. Flare braid and slide cable into body making certain that the cable 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 contacts with 141-0000-911 dieset in 144-0000-900 tool frame.

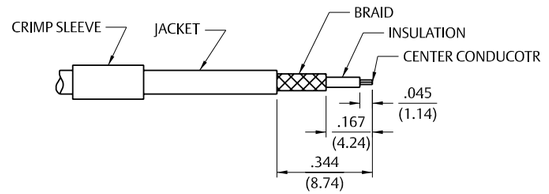


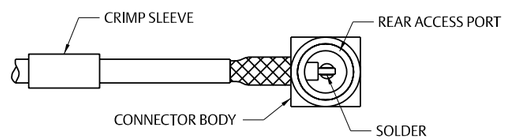

| Cable Group | Part No. | Crimp Hex |
|---|---|---|
| RG-316/U, 188, 174, 179, 187 | 131-9403-001 | .128 (3.25) |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 131-9404-001 | .151 (3.83) |

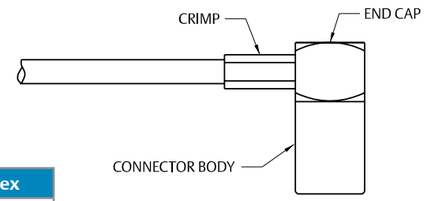
## SMB Right Angle Crimp Type Straight Plugs for Flexible Cable

1. Identify connector parts. (3 piece parts: crimp sleeve, body assembly and expansion cap.)
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.



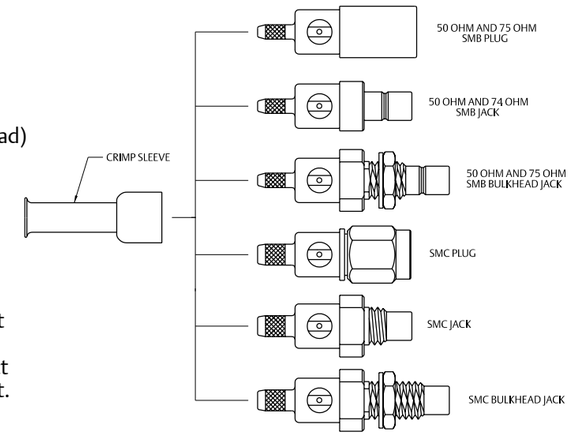

| Cable Group | Part No. | Crimp Hex |
|---|---|---|
| RG-316/U, 188, 174, 179,187 | 131-9403-101 / -116 | .128 (3.25) |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 131-9404-101 / -116 | .151 (3.83) |

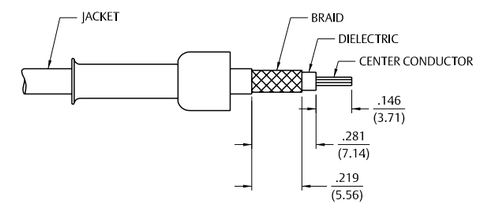


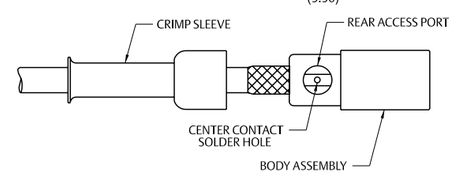


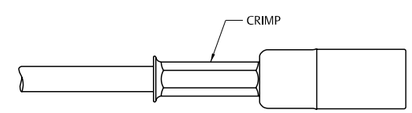
## SMB/SMC/Mini-75Ohm SMB (2-Piece) Crimp Type Straight Plugs, Jacks and Bulkhead Jacks for Flexible Cable

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.




| 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, | 131-3303-001/006 | .128 (3.25) |
| 174, 179, 187, 188 | 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, | 131-3403-001/016 | .128 (3.25) |
| 174, 179, 187, 188 | 131-3403-401/406 | .128 (3.25) |
| RG-179 DS, 187 DS, | 131-3404-401/406 | .128 (3.25) |
| 188 DS, 316 DS | 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, | 131-8403-001/006 | .128 (3.25) |
| 161, 174, 188 | 131-8403-011/016 | .128 (3.25) |
| RG-179 DS, 187 DS, | 131-8404-001/006 | .151 (3.83) |
| 188 DS, 316 DS | 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) |

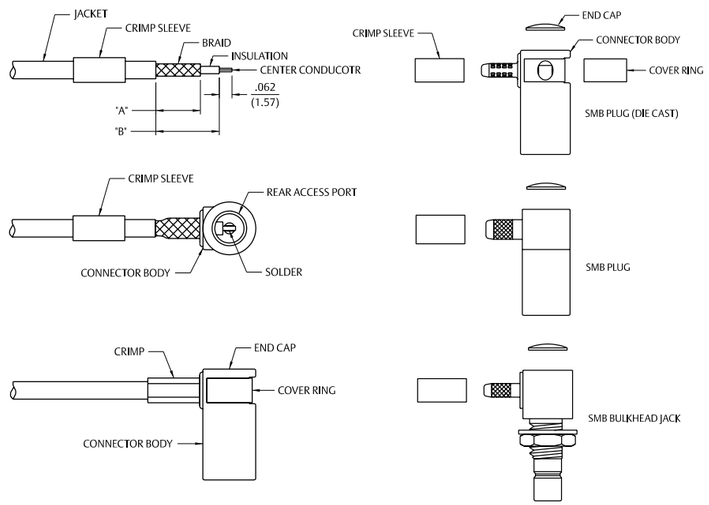
## SMB/SMC/Mini-75Ohm SMB Crimp Type Right Angle Plugs and Right Angle Bulkhead Jacks for Flexible Cable

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 | 131-6403-101/106 | .219 (5.56) | .312 (7.92) | .128 (3.25) |
| 316 DS, 188 DS | 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, | 131-8403-101/106 | .177 (4.50) | .289 (7.34) | .128 (3.25) |
| 161, 174, 188 | 131-8403-111/116 | .219 (5.56) | .312 (7.92) | .128 (3.25) |
| RG-179 DS, 187 DS | 131-8404-101/106 | .177 (4.50) | .289 (7.34) | .151 (3.83) |
| 316 DS, 188 DS | 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) | 2.89 (7.34) | .151 (3.83) |





## Type N Crimp Type Bulkhead Jack for Flexible Cable

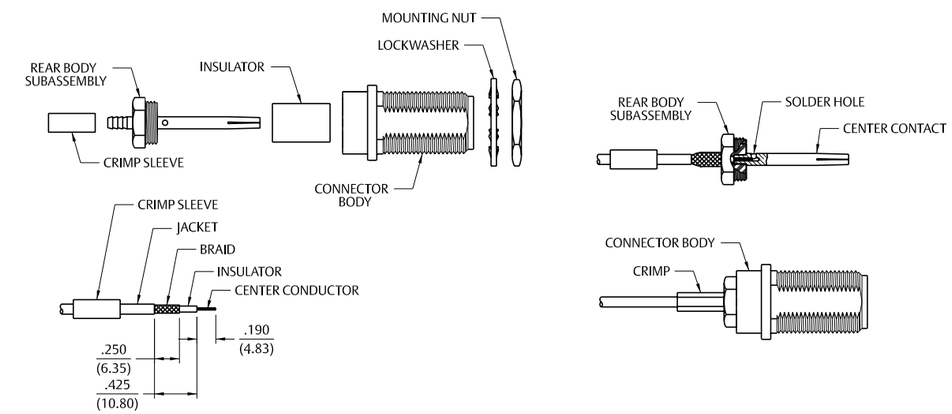
1. Identify connector parts. (6 piece parts)

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.)

| 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) |



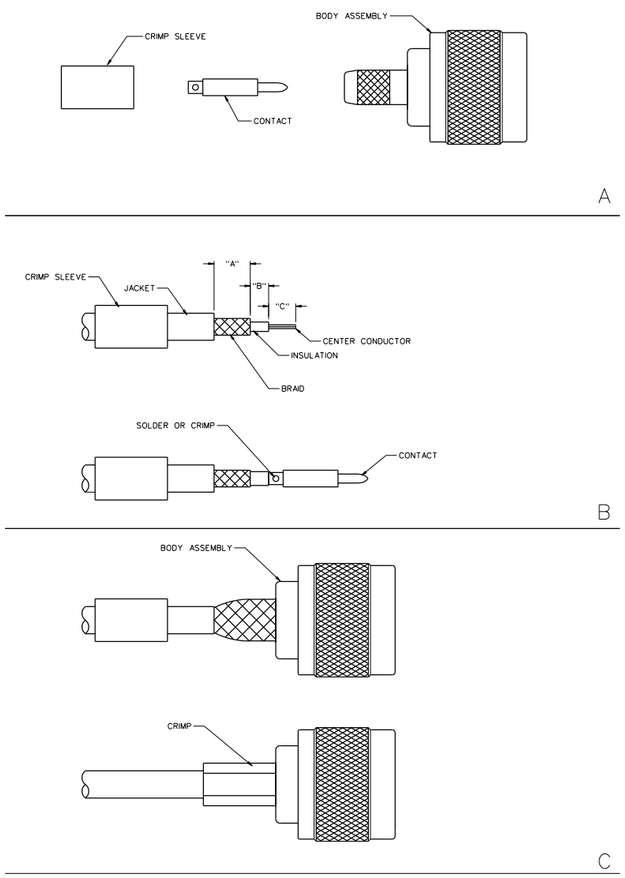
## Type N Straight Crimp Type Plugs for Flexible Cable

1. Identify connector parts. (3 piece parts – except bulkheads)

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).




| Part No. | Cable | Strip Dimensions | | | Crimp Sleeve Hex | Contact Crimp Hex | Recommended Crimp |
|---|---|---|---|---|---|---|---|
| Hex | | "A" | "B" | "C" | | | |
| CPN681 | RG-58 | .335 (8.50) | .079 (2.00) | .157 (4.00) | .215 (5.46) | .065 (1.65) | 24-8858P |
| CPN6813 | RG-142 | .335 (8.50) | .079 (2.00) | .157 (4.00) | .215 (5.46) | .065 (1.65) | 24-8858P |
| CPN688 | RG-8, 213 | .354 (9.00) | .138 (3.50) | .157 (4.00) | .429 (10.90) | .100 (2.54) | 24-313 |
| 138-4408-007 | RG-55/U, 142, 223, 400 | .301 (7.65) | .140 (3.56) | | .213 (5.41) | .068 (1.73) | .113 (2.87) |
| 138-4449-007 | LMR-400, BELDEN 9913 | .385 (9.78) | .170 (4.32) | | .429 (10.90) | .116 (2.95) | |





## Type N Crimp – Crimp Plugs for Flexible Cable

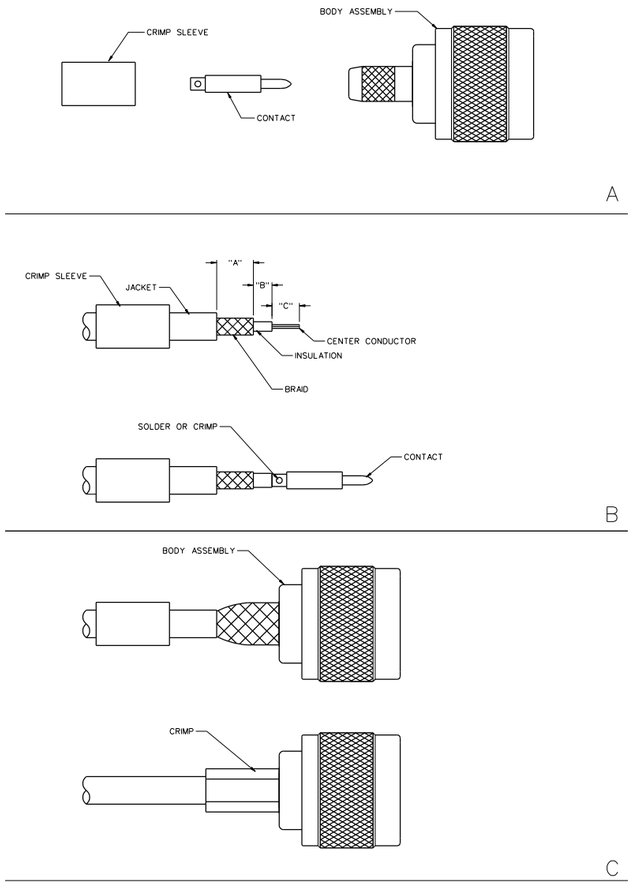
1. Identify connector parts. (3 piece parts)

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".*




| 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 |

## Type N Straight Plug Crimp Style for RG-316 and 316DS Flexible Cable

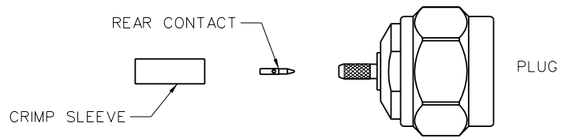
1 Identify connector parts. (3 piece parts)

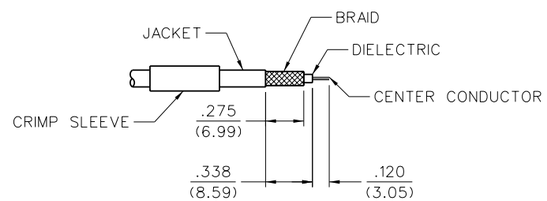
2. Strip cable to dimensions shown. Do not nick center conductor. A wire stripper of correct size is recommended for this step. Tin center conductor if contact will be solder attached. Do not tin center conductor if contact will be crimp attached. Slide crimp sleeve onto jacket of cable.

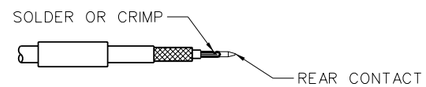
3. Assemble rear contact onto cable as shown Rear contact should butt against cable dielectric during attachment.
**Solder Attachment:** Solder rear contact to center conductor through solder hole using .020 (.051) diameter flux core solder wire. Use a minimum amount of solder for a good joint.
**Crimp Attachment:** Crimp rear contact to center conductor using Johnson indent hand tool 140-0000-970. Crimp location should be centered between end of rear contact and solder hole using positioning tool 140-0000-971. Crimp attachment to solid center conductor cables is not recommended.

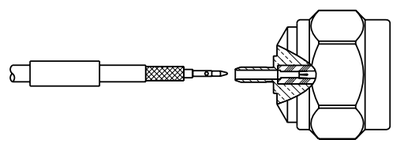
4. Flare braid and slide plug connector assembly over rear contact and under braid. Rear contact must engage fully with internal captivated plug contact. Cable jacket should be located near end of crimp stem when contacts are fully engaged.

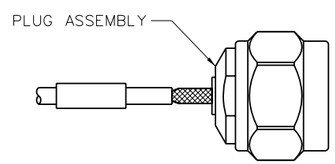
5. Arrange braid uniformly around crimp stem. Slide crimp sleeve forward and crimp using Johnson ergonomic hand crimp frame 140-0000-967 with recommended hex size die set. Maintain forward pressure on cable while crimping.

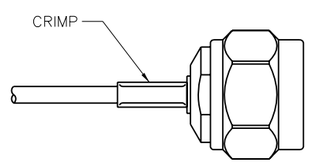





| Cable Group | Part No. | Crimp Sleeve Hex Size | Contact Crimp |
|---|---|---|---|
| RG-316/U, 161, 174, 188 | 138-4403-007 | .128 (3.25) | 8 INDENT |
| RG-316 DS, 188 DS | 138-4404-007 | .151 (3.84) | 8 INDENT |

| | Assembly |
|---|---|
| Tool | 138-4403/4404-007 |
| Crimp Frame | 140-0000-967 |
| Die Set | 140-0000-990 |
| Contact Tool | 140-0000-970 |
| Positioner | 140-0000-971 |





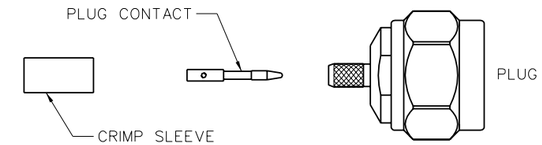
## Type N Straight Plug Crimp Style for RG-58, 142, 213, 214 and LMR-400 Flexible Cable

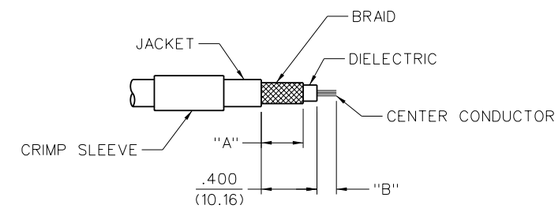
1. Identify connector parts. (3 piece parts)

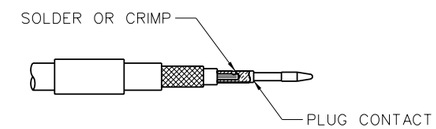
2. Strip cable to dimensions shown. Do not nick center conductor. A wire stripper of correct size is recommended for this step. Tin center conductor if contact will be solder attached. Do not tin center conductor if contact will be crimp attached. Slide crimp sleeve onto jacket of cable.

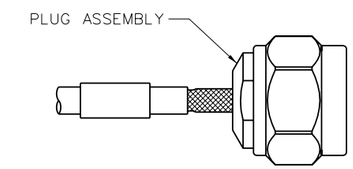
3. Assemble plug contact onto cable as shown. Plug contact should butt against cable dielectric during attachment.
**Solder Attachment:** Solder plug contact to center conductor through solder hole using .020 (.051) diameter flux core solder wire. Use a minimum amount of solder for a good joint.
**Crimp Attachment:** Crimp plug contact to center conductor using Johnson ergonomic hand crimp frame 140-0000-967 with recommended hex size die set. Crimp location should be on end of plug contact next to cable dielectric. Crimp attachment to solid center conductor cables is not recommended.

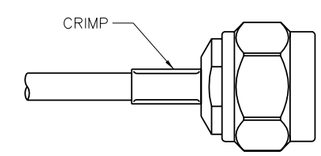
4. Flare braid and slide plug connector assembly over plug contact and under braid. Seat plug connector assembly firmly onto contact. Arrange braid uniformly around crimp stem. Slide crimp sleeve forward and crimp using Johnson ergonomic hand crimp frame 140-0000-967 with recommended hex size die set. Maintain forward pressure on cable while crimping.




| Cable Group | Part No. | "A" | "B" | Crimp Sleeve Hex Size | Contact Hex Size |
|---|---|---|---|---|---|
| RG-58/U, 141, 303 | 138-4407-007 | .301 (7.65) | .140 (3.56) | .213 (5.41) | .068 (1.73) |
| RG-55/U, 142, 223, 400 | 138-4408-007 | .301 (7.65) | .140 (3.56) | .213 (5.41) | .068 (1.73) |
| RG-8, 213 | 138-4416-007 | .385 (9.78) | .170 (4.32) | .429 (10.90) | .111 (2.82) |
| RG-9, 214 | 138-4418-007 | .385 (9.78) | .170 (4.32) | .429 (10.90) | .111 (2.82) |
| LMR-400, BELDEN 9913 | 138-4449-007 | .385 (9.78) | .170 (4.32) | .429 (10.90) | .116 (2.95) |

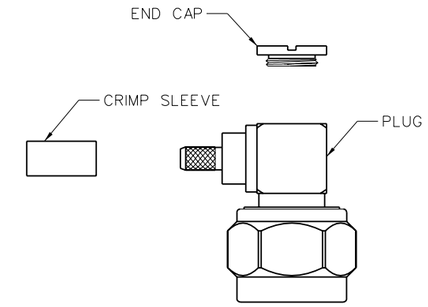
| | Assembly | |
|---|---|---|
| Tool | 138-4407/4408-007 | 138-4416/4418/4449-007 |
| Crimp Frame | 140-0000-967 | 140-0000-967 |
| Die Set | 140-0000-990 | 140-0000-991 |

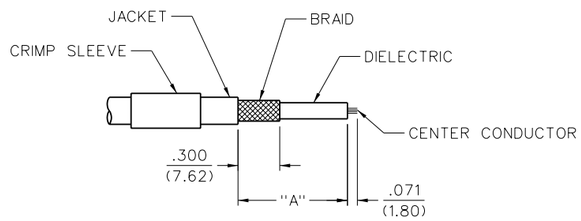


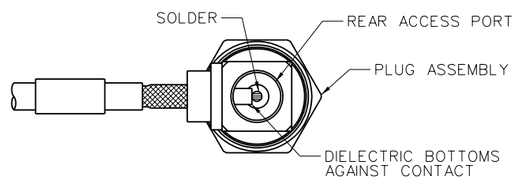
*Illustrations are shown in inches (millimeters).*

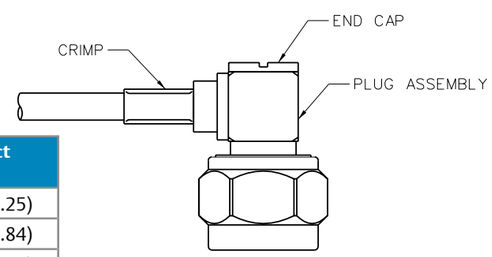
## Type N Right Angle Plug Crimp Style for RG-316, 316DX, 58, and 142 Flexible Cable

1. Identify connector parts. (3 piece parts)
2. Strip cable to dimensions shown. Do not nick 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 jacket of cable.
3. Flare braid and slide plug connector assembly over cable dielectric and under braid. Make sure cable dielectric bottoms against plug contact as shown. Solder center conductor to contact through rear access port. Use a minimum amount of solder for a full fillet joint.
4. Arrange braid uniformly around crimp stem. Slide crimp sleeve forward and crimp using Johnson ergonomic hand crimp frame 140-0000-967 with recommended hex size die set. Screw end cap into access port.




| Cable Group | Part No. | Crimp Sleeve Hex Size | Contact Crimp |
|---|---|---|---|
| RG-316/U, 161, 174, 188 | 138-4403-107 | .755 (19.18) | .128 (3.25) |
| RG-316 DS, 188 DS | 138-4404-107 | .755 (19.18) | .151 (3.84) |
| RG-58/U, 141, 303 | 138-4407-107 | .788 (20.02) | .213 (5.41) |
| RG-55/U, 142, 223, 400 | 138-4408-107 | .788 (20.02) | .213 (5.41) |

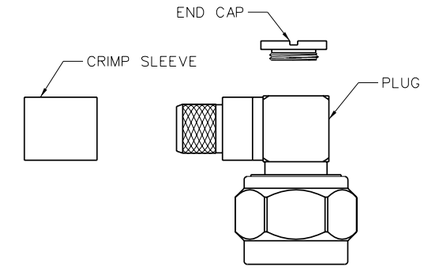
| | Assembly |
|---|---|
| Tool | 138-4403/4404/4407/4408-107 |
| Crimp Frame | 140-0000-967 |
| Die Set | 140-0000-990 |

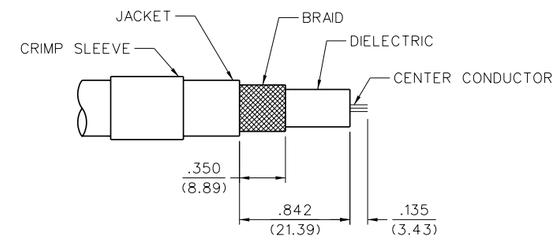


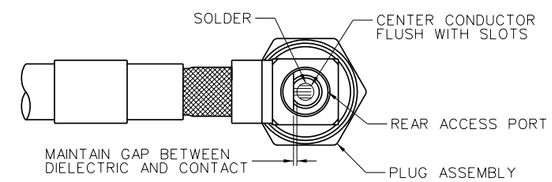


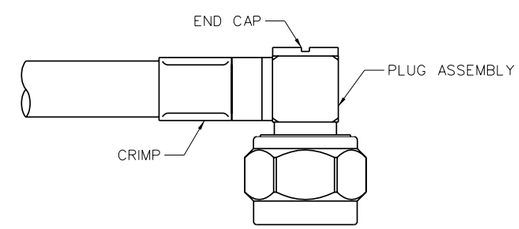
## Type N Right Angle Plug Crimp Style for RG-213 and 214 Flexible Cable

1. Identify connector parts. (3 piece parts)
2. Strip cable to dimensions shown. Do not nick center conductor. A wire stripper of correct size is recommended for this step. Slide crimp sleeve onto jacket of cable.
3. Flare braid and slide plug connector assembly over cable dielectric and under braid. Make sure center conductor is contained within plug contact as shown. Center conductor should not protrude above slots in plug contact and cable dielectric should not touch plug contact. Solder center conductor to plug contact through rear access port. Use a minimum amount of solder for a full fillet joint.
4. Arrange braid uniformly around crimp stem. Slide crimp sleeve forward and crimp using Johnson ergonomic hand crimp frame 140-0000-967 with recommended hex size die set. Screw end cap into access port.




| Cable Group | Part No. | Contact Crimp |
|---|---|---|
| RG-8, 213 | 138-4416-107 | .429 (10.90) |
| RG-9, 214 | 138-4418-107 | .429 (10.90) |

| | Assembly |
|---|---|
| Tool | 138-4416/4418-107 |
| Crimp Frame | 140-0000-967 |
| Die Set | 140-0000-991 |



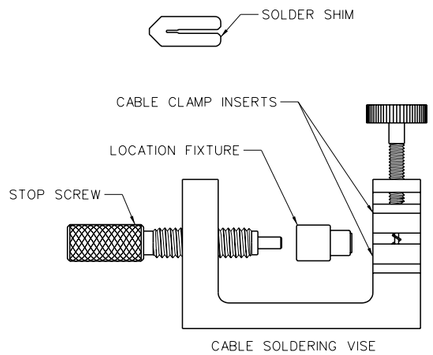
*Illustrations are shown in inches (millimeters).*

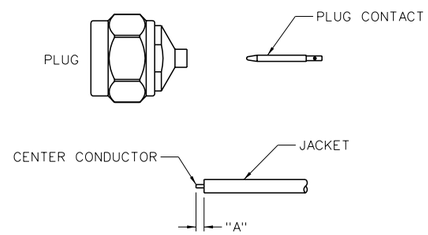
## Type N Straight Plug Solder Style for Semi-Rigid Cable

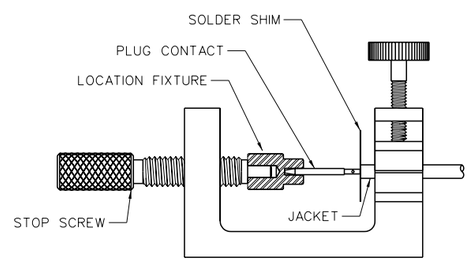
1. Identify connector parts (2 piece parts) and tools (5 piece parts).
2. Strip cable jacket and dielectric to dimension shown. Do not nick center conductor. Clean all debris from cable.
3. Place plug contact onto center conductor, insert appropriate sized solder shim between cable jacket and contact.
4. Insert contact into location fixture and clamp cable in vise. Tighten stop screw until light pressure is applied between contact, solder shim and cable jacket.
5. Solder contact to center conductor through solder hole using .020 (.051) diameter flux core solder wire. Use a minimum amount of solder for a good joint.
6. After solder joint has cooled, loosen stop screw and remove solder shim. Remove cable from vise and remove any excess solder from contact with a sharp blade and clean all debris from contact and cable.
7. Insert contact and cable into plug connector assembly, making sure cable jacket bottoms out against internal shoulder of connector assembly. Insert location fixture into connector assembly and clamp cable in vise. Tighten stop screw until light pressure is applied between connector assembly and cable jacket.
8. Solder connector body to cable jacket, using a minimum amount of solder for a full fillet joint. Allow assembly to cool before removing connector from vise.

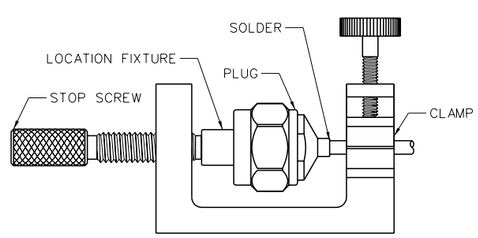
| Cable Group | Part No. | "A" |
|---|---|---|
| RG-405, .086 Semi-Rigid | 138-4693-001 | .085 (2.16) |
| RG-402, .141 Semi-Rigid | 138-4694-001 | .085 (2.16) |
| RG-401, .250 Semi-Rigid | 138-4696-001 | .100 (2.54) |

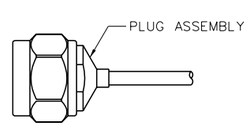
| Assembly | | | |
|---|---|---|---|
| Tool | 138-4693-001 | 138-4694-001 | 138-4696-001 |
| Solder Shim | 140-0000-984 | 140-0000-984 | 140-0000-985 |
| Location Fixture | 140-0000-983 | 140-0000-983 | 140-0000-983 |
| Cable Vise | 140-0000-962 | 140-0000-962 | 140-0000-962 |
| Clamp Inserts | 140-0000-964 | 140-0000-965 | 140-0000-986 |



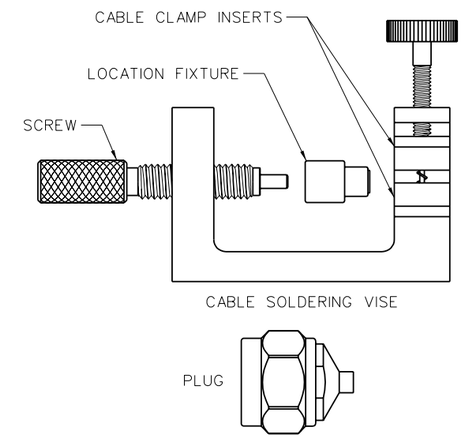



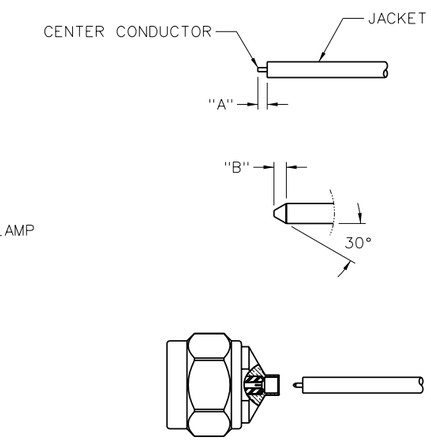


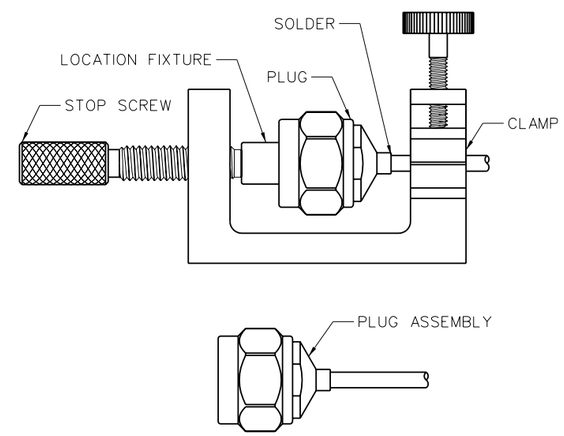



## Type N Straight Plug One Piece Style for Semi-Rigid Cable

1. Identify connector and tools. (4 piece parts)
2. Strip cable jacket and dielectric to dimension shown. Do not nick center conductor.
3. Bevel end of cable center conductor per appropriate dimensional profile.
4. Clean all debris from prepared cable and insert cable into connector assembly, making sure cable jacket bottoms out against internal shoulder of connector assembly and center conductor engages with internal captivated plug contact.
5. Insert location fixture into connector assembly and clamp cable in vise. Tighten stop screw until light pressure is applied between connector assembly and cable jacket.
6. Solder connector body to cable jacket, using a minimum amount of solder for a full fillet joint. Allow assembly to cool before removing connector from vise.




| Cable Group | Part No. | "A" | "B" |
|---|---|---|---|
| RG-405, .086 Semi-Rigid | 138-4693-011 | .085 (2.16) | .014 (0.36) |
| RG-402, .141 Semi-Rigid | 138-4694-011 | .085 (2.16) | .022 (0.56) |
| RG-401, .250 Semi-Rigid | 138-4696-011 | .150 (3.81) | .045 (1.14) |

| Assembly | | | |
|---|---|---|---|
| Location Fixture | 140-0000-983 | 140-0000-983 | 140-0000-983 |
| Cable Vise | 140-0000-962 | 140-0000-962 | 140-0000-962 |
| Clamp Inserts | 140-0000-964 | 140-0000-965 | 140-0000-986 |
| Stop Screw | 140-0000-981 | 140-0000-981 | 140-0000-981 |

## Type N Bulkhead Jack Crimp Style for RG-316 and 316DS Flexible Cable

1. Identify connector parts. (6 piece parts)

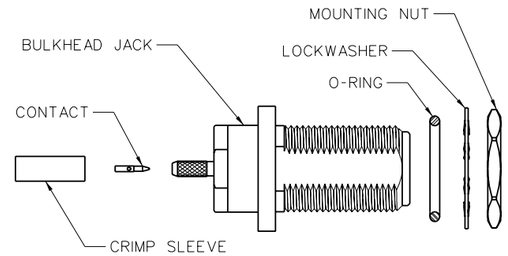
2. Strip cable to dimensions shown. Do not nick center conductor. A wire stripper of correct size is recommended for this step. Tin center conductor if contact will be solder attached. Do not tin center conductor if contact will be crimp attached. Slide crimp sleeve onto jacket of cable.

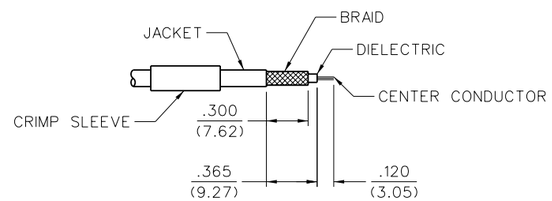
3. Assemble rear contact onto cable as shown. Rear contact should butt against cable dielectric during attachment.
   **Solder Attachment:** Solder rear contact to center conductor through solder hole using .020 (.051) diameter flux core solder wire. Use a minimum amount of solder for a good joint.
   **Crimp Attachment:** Crimp rear contact to center conductor using Johnson indent hand tool 140-0000-970. Crimp location should be centered between end of rear contact and solder hole using positioning tool 140-0000-971. Crimp attachment to solid center conductor cables is not recommended.

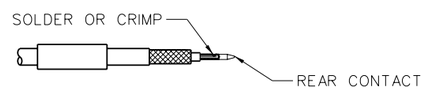
4. Flare braid and slide bulkhead jack connector assembly over rear contact and under braid. Rear contact must engage fully with internal captivated jack contact. Cable jacket should be located near end of crimp stem when contacts are fully engaged.

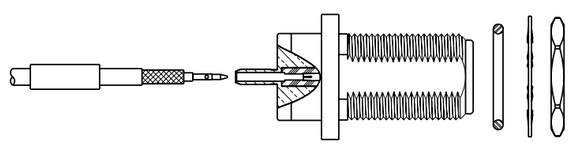
5. Arrange braid uniformly around crimp stem. Slide crimp sleeve forward and crimp using Johnson ergonomic hand crimp frame 140-0000-967 with recommended hex size die set. Maintain forward pressure on cable while crimping.

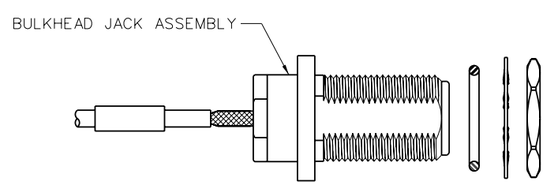
6. Add gasket, lock washer and mounting nut when installing.

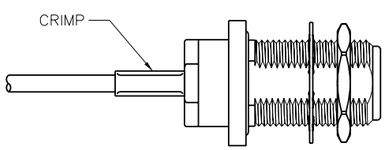





| Cable Group | Part No. | Crimp Sleeve Hex Size | Contact Crimp |
|---|---|---|---|
| RG-316/U, 161, 174, 188 | 138-4303-407 | .128 (3.25) | 8 INDENT |
| RG-316 DS, 188 DS | 138-4304-407 | .151 (3.84) | 8 INDENT |

| | Assembly |
|---|---|
| Die Set | 140-0000-990 |
| Contact Tool | 140-0000-970 |
| Positioner | 140-0000-971 |





## Type N Bulkhead Jack Solder Style for Semi-Rigid Cable

1. Identify connector parts (8 piece parts) and tools (4 piece parts).

2. Strip cable jacket and dielectric to dimension shown. Do not nick center conductor. Clean all debris from cable.

3. Slide stem over cable jacket, keeping stem correctly oriented to end of cable.

4. Insert jack contact into rear insulator. Make sure insulator is correctly oriented to contact. Place jack contact and rear insulator onto center conductor, keeping insulator correctly oriented between cable jacket and contact.

5. Slide stem away from jack contact. Insert contact into stop screw and clamp cable in vise. Tighten stop screw until light pressure is applied between jack contact, rear insulator and cable jacket.

6. Solder jack contact to center conductor through solder hole using .020 (.051) diameter flux core solder wire. Use a minimum amount of solder for a good joint.

7. After solder joint has cooled, remove cable from vise and remove any excess solder from jack contact with a sharp blade and clean all debris from contact and rear insulator.

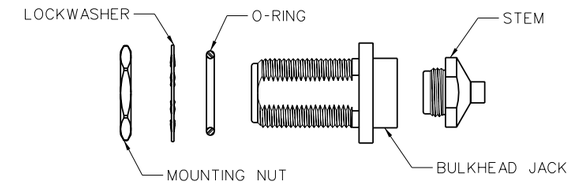
8. Slide stem over rear insulator and tighten stem into location fixture until stem bottoms out.

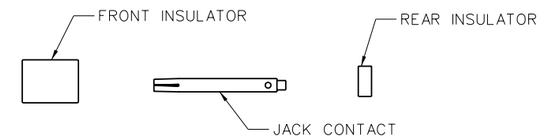
9. Insert cable into vise, but do not clamp. Insert jack contact into stop screw and tighten location fixture until stop screw bottoms out. Clamp cable in vise.

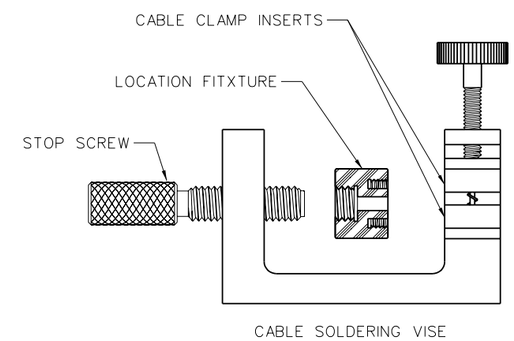
10. Solder stem to cable jacket, using a minimum amount of solder for a full fillet joint. Allow assembly to cool before removing from vise.

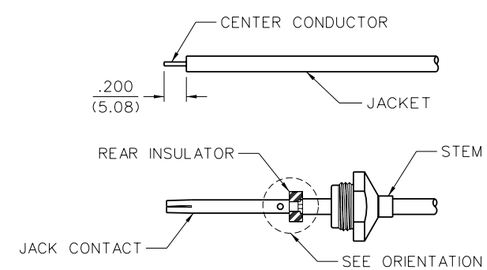
11. After solder joint has cooled, un-clamp cable and remove location fixture from stop screw and cable assembly. Insert front insulator into bulkhead jack body. Insert cable assembly into body and tighten to 25-30 in-lbs.

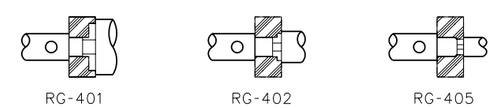
12. Add gasket, lock washer and mounting nut when installing connector to panel.



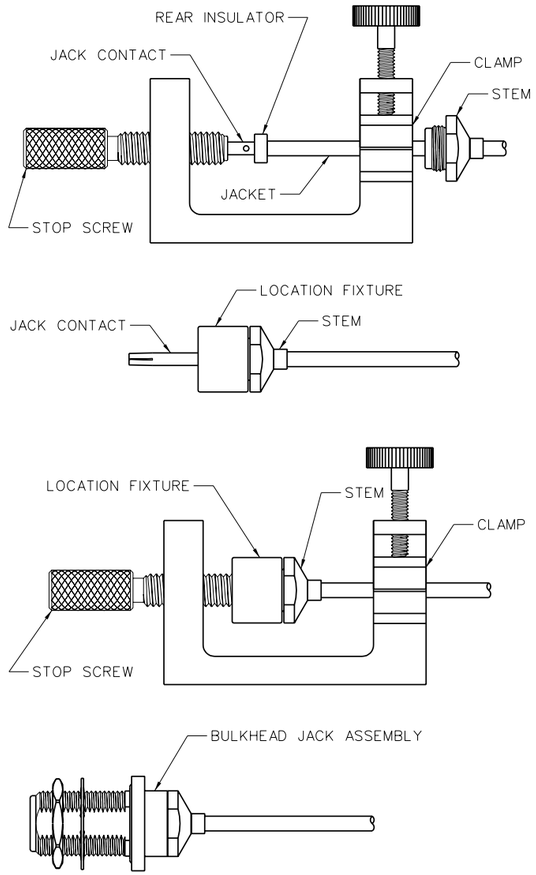



## Type N Bulkhead Jack Solder Style for Semi-Rigid Cable (cont'd from last page)




| Cable Group | Part No. |
|---|---|
| RG-405, .086 Semi-Rigid | 138-4593-401 |
| RG-402, .141 Semi-Rigid | 138-4594-401 |
| RG-401, .250 Semi-Rigid | 138-4596-401 |

| Assembly | | | |
|---|---|---|---|
| Tool | 138-4593-401 | 138-4594-401 | 138-4596-401 |
| Stop Screw | 140-0000-972 | 140-0000-972 | 140-0000-972 |
| Cable Vise | 140-0000-962 | 140-0000-962 | 140-0000-962 |
| Clamp Inserts | 140-0000-964 | 140-0000-965 | 140-0000-986 |
| Location Fixture | 140-0000-987 | 140-0000-988 | 140-0000-989 |





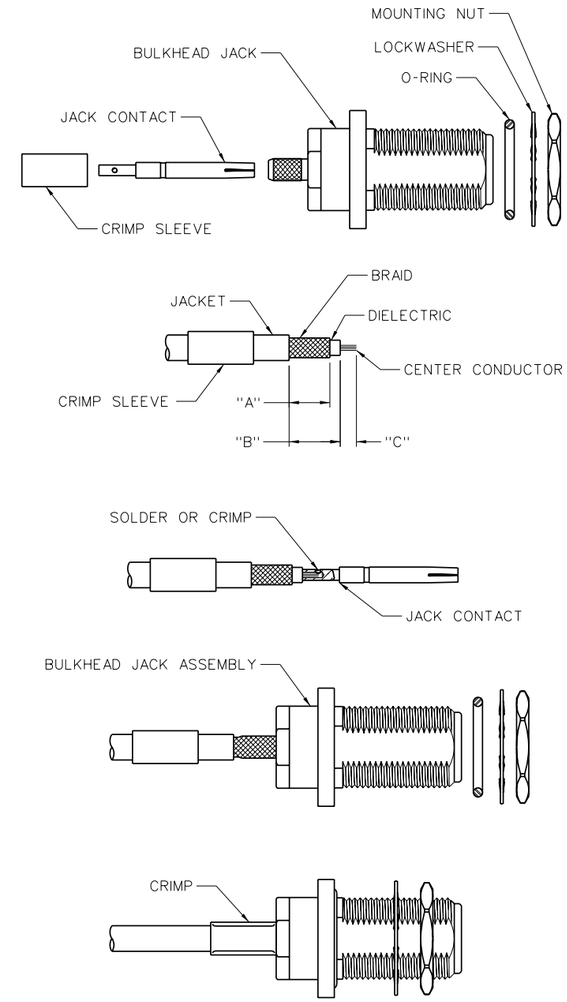
## Type N Bulkhead Jack Crimp Style for RG-58, 142, 213, 214 and LMR-400 Flexible Cable

1. Identify connector parts. (6 piece parts)

2. Strip cable to dimensions shown. Do not nick center conductor. A wire stripper of correct size is recommended for this step. Tin center conductor if contact will be solder attached. Do not tin center conductor if contact will be crimp attached. Slide crimp sleeve onto jacket of cable.

3. Assemble jack contact onto cable as shown. Jack contact should butt against cable dielectric during attachment.
   **Solder Attachment:** Solder jack contact to center conductor through solder hole using .020 (.051) diameter flux core solder wire. Use a minimum amount of solder for a good joint.
   **Crimp Attachment:** Crimp jack contact to center conductor using Johnson ergonomic hand crimp frame 140-0000-967 with recommended hex size die set. Crimp location should be on end of jack contact next to cable dielectric. Crimp attachment to solid center conductor cables is not recommended.

4. Flare braid and slide bulkhead jack connector assembly over jack contact and under braid. Seat bulkhead jack connector assembly firmly onto contact. Arrange braid uniformly around crimp stem. Slide crimp sleeve forward and crimp using Johnson ergonomic hand crimp frame 140-0000-967 with recommended hex size die set. Maintain forward pressure on cable while crimping.



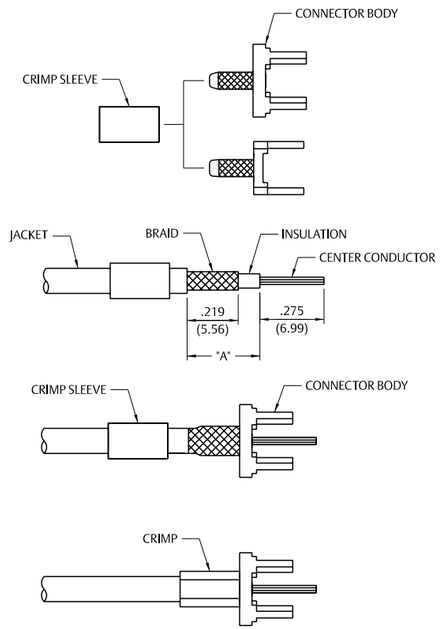

| Cable Group | Part No. | "A" | "B" | Crimp Sleeve "C" | Contact Hex Size | Hex Size |
|---|---|---|---|---|---|---|
| RG-58/U, 141, 303 | 138-4307-407 | .310 (7.87) | .389 (9.88) | .135 (3.43) | .213 (5.41) | .068 (1.73) |
| RG-55/U, 142, 223, 400 | 138-4308-407 | .310 (7.87) | .389 (9.88) | .135 (3.43) | .213 (5.41) | .068 (1.73) |
| RG-8, 213 | 138-4316-407 | .385 (9.78) | .400 (10.16) | .165 (4.19) | .429 (10.90) | .111 (2.82) |
| RG-9, 214 | 138-4318-407 | .385 (9.78) | .400 (10.16) | .165 (4.19) | .429 (10.90) | .111 (2.82) |

| Assembly | | |
|---|---|---|
| Tool | 138-4307/4308-407 | 138-4316/4318/4349-407 |
| Crimp Frame | 140-0000-967 | 140-0000-967 |
| Die Set | 140-0000-990 | 140-0000-991 |

## Crimp Type Straight Cable Termination for Flexible Cable

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.

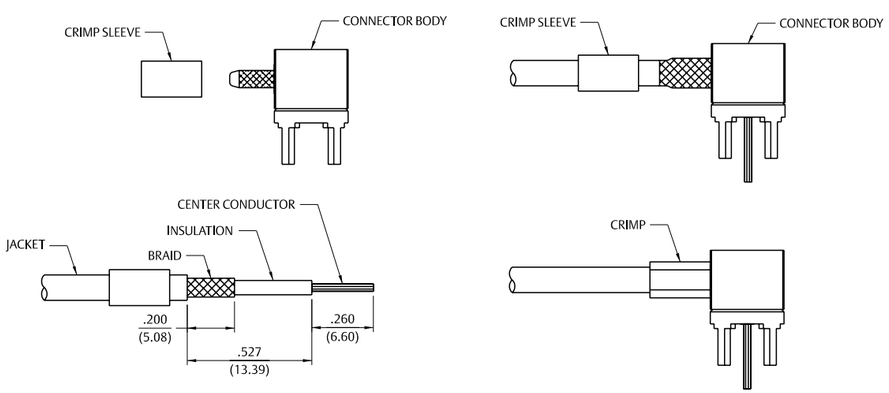
| Cable Group | Part No. | "A" | Crimp Hex |
|---|---|---|---|
| RG-178/U, 196 | 142-0002-221/226 | .259 (6.58) | .105 (2.67) |
| RG-316/U, 161, 174, 179, 187, 188 | 142-0003-201/206<br>142-0003-231/236<br>142-0003-241/246 | .312 (7.92)<br>.259 (6.58)<br>.259 (6.58) | .128 (3.25)<br>.128 (3.25)<br>.128 (3.25) |
| RG-316 DS, 188 DS | 142-0004-201/206<br>142-0004-211/216<br>142-0004-221/226 | .312 (7.92)<br>.259 (6.58)<br>.259 (6.58) | .151 (3.83)<br>.151 (3.83)<br>.151 (3.83) |




## Crimp Type Right Angle Cable Termination for Flexible Cable

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.

| Cable Group | Part No. | Crimp Hex |
|---|---|---|
| RG-316/U, 161, 174, 179, 187, 188 | 142-0003-301/306 | .128 (3.25) |
| RG-316 DS, 188 DS | 142-0004-301/306 | .151 (3.83) |



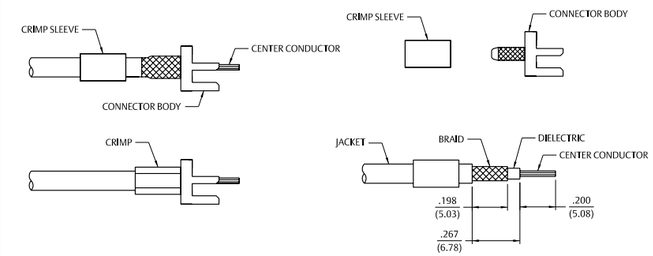





## Crimp Type Straight Cable Termination for End Launch

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.

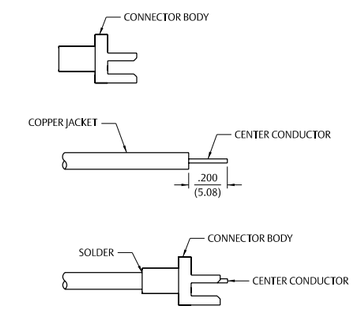
| Cable Group | Part No. | Crimp Hex |
|---|---|---|
| RG-178/U, 196 | 142-0002-811 | .105 (2.67) |
| RG-316/U, 161, 174, 179, 187, 188 | 142-0003-801<br>142-0003-811 | .128 (3.25)<br>.128 (3.25) |
| RG-316 DS, 188 DS, 179 DS, 187 DS | 142-0004-801<br>142-0004-811 | .151 (3.84)<br>.151 (3.84) |
| RG-58/U, 141, 303 | 142-0007-801<br>142-0007-811 | .213 (5.41)<br>.213 (5.41) |
| RG-142/U, 55, 223, 400 | 142-0008-801<br>142-0008-811 | .213 (5.41)<br>.213 (5.41) |




## Solder Type Straight Cable Termination for End Launch

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.

| 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 |



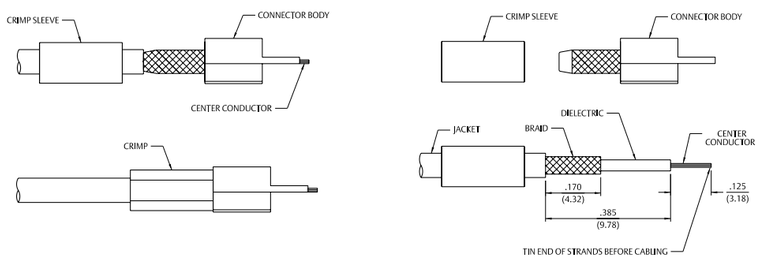



*Illustrations are shown in inches (millimeters).*

## Solder Type Straight Cable Termination for End Launch Surface Mount

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.

| Cable Group | Part No. | Crimp Hex |
|---|---|---|
| RG-178/U, 196 | 142-0002-821 | .105 (2.67) |



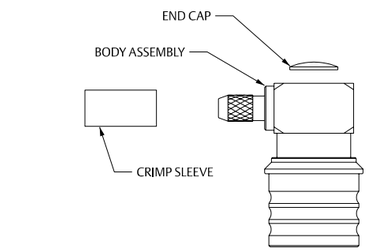


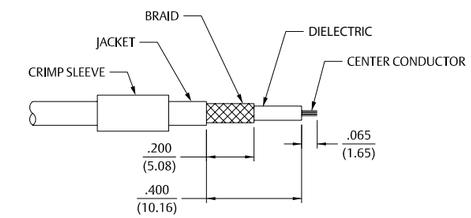


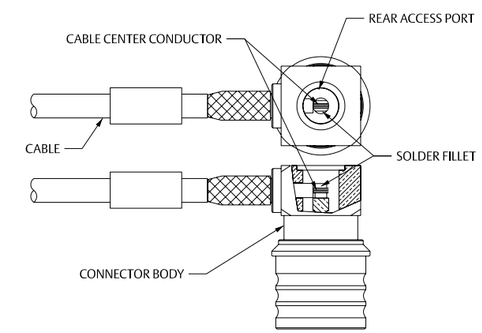

## kwiQMAte™ Crimp Type Right Angle Plugs for Flexible Cable

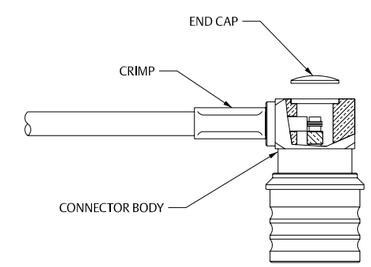
1. Identify connector parts. (3 piece parts)
2. Strip cable to dimensions shown. Do not nick braid or center conductor. Twist stranded center conductor into tight bundle and tin (optional). Slide crimp sleeve onto cable as shown.
3. Flare braid and slide cable into body making certain that the cable dielectric bottoms 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.

| Cable Type | Part No. | Crimp Hex |
|---|---|---|
| RG-316 | 146-0403-107 | .128 (3.25) |
| RG-316 DS | 146-0404-107 | .151 (3.83) |



## kwiQMAte™ Straight Plugs for Flexible Cable – Crimp or Solder Contacts

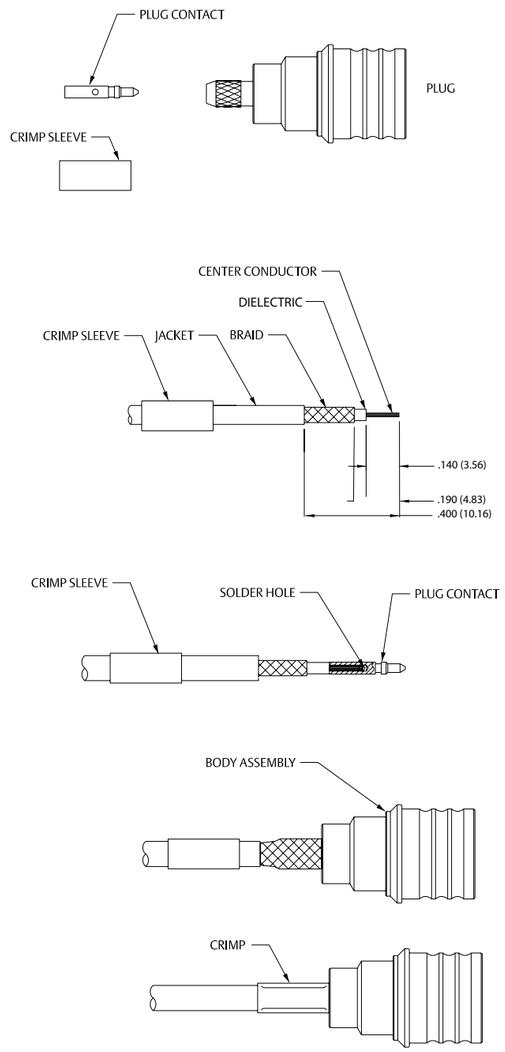
1. Identify connector parts. (3 piece parts)

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. 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. 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 Type | Part No. | Crimp Hex |
|---|---|---|
| RG-316 | 146-0403-007 | .128 (3.25) |
| RG-316 DS | 146-0404-007 | .151 (3.83) |










## Electronic Hardware

Other Information
Assembly Tools ..... 185
Capabilities ..... 190
Cable Information ..... 192
Assembly Instruction ..... 193
Mounting Hole Layouts ..... 194
Numerical Index ..... 274
Competitor Cross Reference ..... 280

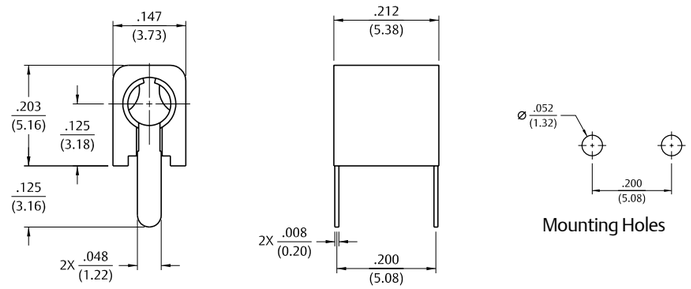
3 MMCX Connectors
13 MCX Connectors
39 SMK Connectors
45 SMA Connectors
103 SMB Connectors
131 SMC Connectors
137 SMP Connectors
145 Type N Connectors
153 Shielded Cable Terminations
157 Between-Series Adapters
161 Fixed Length Cable Assemblies
173 Ultra Miniature Connectors (UMC)
181 kwiQMAte ™ Connectors
185 Tools
193 Assembly Instructions
257 Electronic Hardware
274 Index

*While every precaution has been taken to ensure accuracy and completeness herein, Emerson Network Power Connectivity Solutions assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Specifications subject to change without notice.*

# Horizontal Test Jacks – For Test Points

## Insulated Miniature

| Silver Plating | |
|---|---|
| **Part No.** | **Color** |
| 105-1101-001 | White |
| 105-1102-001 | Red |
| 105-1103-001 | Black |
| 105-1104-001 | Green |
| 105-1107-001 | Yellow |




**SPECIFICATIONS**
**Contact:** Copper aluminum alloy*
**Finish:** Silver
**Body:** Nylon 6/6 per ASTM D4066

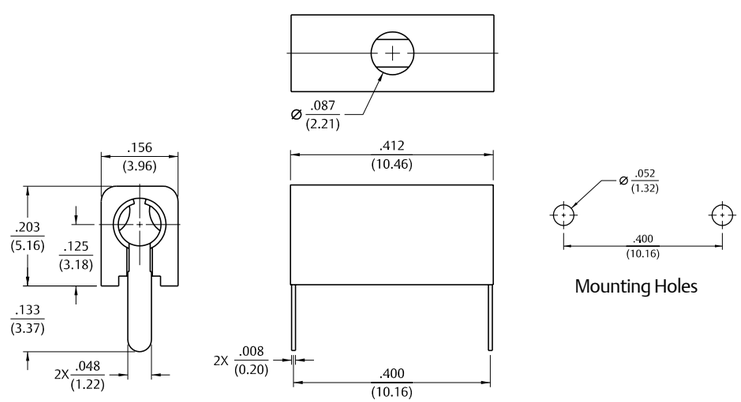
**RATINGS**
**Current:** 5 amps
**Breakdown Voltage:** 2100 VRMS minimum
**Contact Resistance:** 0.010 ohms maximum
**Adjacent Jack C:** 1 pF maximum at 1 MHz

**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.

## Insulated Standard

| Silver Plating | |
|---|---|
| **Part No.** | **Color** |
| 105-0751-001 | White |
| 105-0752-001 | Red |
| 105-0753-001 | Black |
| 105-0754-001 | Green |
| 105-0756-001 | Orange |
| 105-0757-001 | Yellow |
| 105-0758-001 | Brown |
| 105-0760-001 | Blue |
| 105-0762-001 | Violet |
| 105-0763-001 | Gray |




**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:** 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
- Nylon UL approved for self extinguishing

*A new material development that, for this application, meets or exceeds beryllium copper.

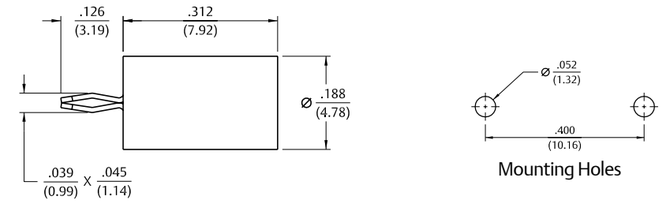


# Vertical Test Jacks – For Test Points



## Insulated: Formed Contact

| 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 |




**SPECIFICATIONS**
**Contact:** Beryllium copper per QQ-C-533
**Finish:** Silver
**Body:** Nylon 6/6 per ASTM D4066

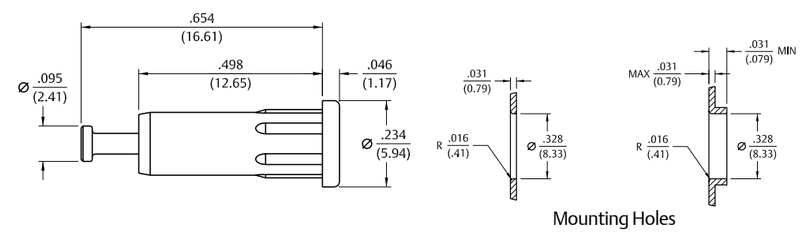
**RATINGS**
**Current:** 5 amps
**Breakdown Voltage:** 3500 VRMS minimum†
**Contact Resistance:** Silver: 0.010 ohms maximum
**Adjacent Jack C:** 1 pF maximum at 1 MHz

**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-Lock™ Type

| Silver Plating | |
|---|---|
| **Part No.** | **Color** |
| 105-1041-001 | White |
| 105-1042-001 | Red |
| 105-1043-001 | Black |




**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

**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

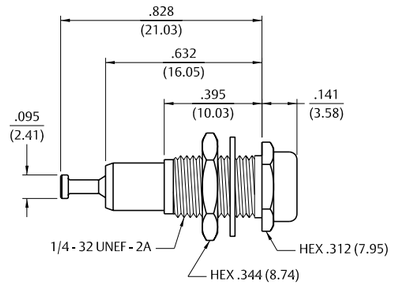
† Avoid user injury due to misapplication. See safety advisory definitions inside front cover.



*Illustrations are shown in inches (millimeters).*

# Tip Jacks – For Connections to Test Equipment, Power Supplies, and Electronic Instrumentation

## Insulated Metal Clad: Military Type




| Gold Plating<br>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 |

**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
**Hardware:** Nickel plated washer and nut (unassembled)
**Panel Thickness:** Up to .218 (5.45)

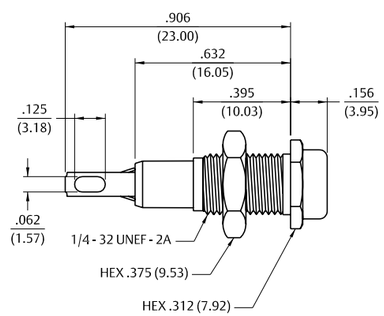
**RATINGS**
**Current:** 10 amps
**Breakdown Voltage:** 5700 VRMS minimum
**Contact Resistance:** 0.004 ohms maximum
**Contact-To-Panel C:** 2 pF nominal

Manufactured to meet MIL-C-39024/10

**For Standard Tip Plug:**
**.080 (2.00) Diameter**
**FEATURES**
- Machined contact with turret terminal
- For military or industrial applications
- 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.

## Insulated Metal Clad: Standard Type




| Silver Plating | |
|---|---|
| Part No. | Color |
| 105-0251-001 | White |
| 105-0252-001 | Red |
| 105-0253-001 | Black |

**SPECIFICATIONS**
**Contact:** Phosphor bronze per QQ-B-750
**Finish:** Silver
**Body:** Nylon 6/6 per ASTM D4066
**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

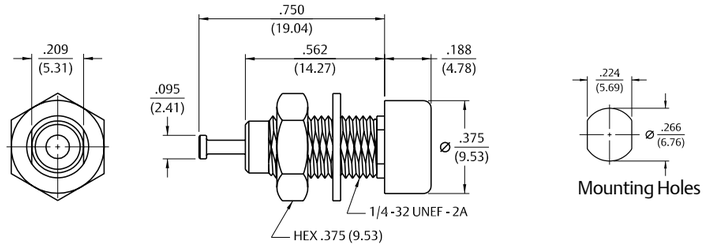
**For Standard Tip Plug:**
**.080 (2.00) Diameter**
**FEATURES**
- Formed contact with slotted terminal
- Nylon UL approved for self extinguishing

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





## Insulated Deluxe




| Silver Plating | |
|---|---|
| Part No. | Color |
| 105-0601-001 | White |
| 105-0602-001 | Red |
| 105-0603-001 | Black |

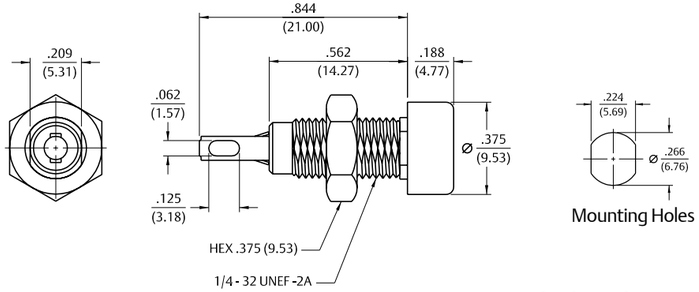
**SPECIFICATIONS**
**Contact:** Brass per QQ-B-626D with wrap around beryllium copper spring per QQ-C-533
**Finish:** Silver
**Body:** Nylon 6/6 per ASTM D4066
**Hardware:** Nickel plated nut (unassembled)
**Body Thread Stripping Torque:** 0.4 lb. in (4.5 kg cm)
**Panel Thickness:** Up to .437 (11.10)

**RATINGS**
**Current:** 10 amps
**Breakdown Voltage:** 5700 VRMS minimum†
**Contact Resistance:** 0.010 ohms maximum
**Contact-To-Panel C:** 2 pF nominal

**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.

## Insulated Standard




| Bright Tin Plating | |
|---|---|
| Part No. | Color |
| 105-0801-001 | White |
| 105-0802-001 | Red |
| 105-0803-001 | Black |
| 105-0804-001 | Green |
| 105-0807-001 | Yellow |

**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)

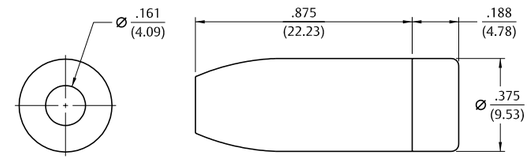
**RATINGS**
**Current:** 10 amps
**Breakdown Voltage:** 5700 VRMS minimum†
**Contact Resistance:** 0.010 ohms maximum
**Contact-To-Panel C:** 2 pF nominal

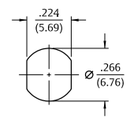
**For Standard Tip Plug:**
**.080 (2.00) Diameter**
**FEATURES**
- Formed contact with slotted terminal
- Hex socket head .188 (4.77) for ease in mounting
- Nylon UL approved for self extinguishing

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

# Tip Jacks – For Connections to Test Equipment, Power Supplies, and Electronic Instrumentation

## Insulated Metal Clad: Military Type




Mounting Holes

| Silver Plating | |
|---|---|
| **Part No.** | **Color** |
| 105-0701-001 | White |
| 105-0702-001 | Red |
| 105-0703-001 | Black |

**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
**Threaded Brass Jacket:** Per QQ-B-626D, nickel
**Hardware:** Nickel plated washer and nut (unassembled)
**Panel Thickness:** Up to .218 (5.45)

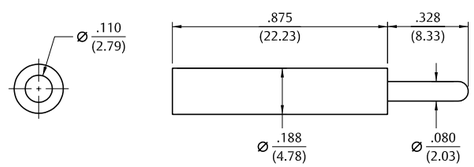
**RATINGS**
**Current:** 10 amps
**Breakdown Voltage:** 5700 VRMS minimum
**Contact Resistance:** 0.004 ohms maximum
**Contact-To-Panel C:** 2 pF nominal

Manufactured to meet MIL-C-39024/10

**For Standard Tip Plug:**
**.080 (2.00) Diameter**
**FEATURES**
- Machined contact with turret terminal
- For military or industrial applications
- 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.

## Insulated Metal Clad: Standard Type




| Nickel Plating | |
|---|---|
| **Solder Type Up to 16 Gauge Part No.** | **Crimp Type 16 Gauge Plating Color** |
| 105-0771-001 | White |
| 105-0772-001 | Red |
| 105-0773-001 | Black |

**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

**For Standard Tip Plug:**
**.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

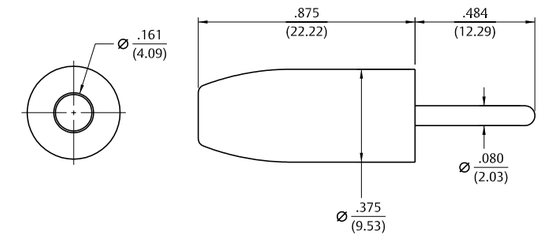
† Avoid user injury due to misapplication. See safety advisory definitions inside front cover.





# Tip Plugs & Banana Jacks – For Connections to Monitoring Equipment

## Insulated Deluxe




| Nickel Plating | |
|---|---|
| **Part No.** | **Color** |
| 105-0301-001 | White |
| 105-0302-001 | Red |
| 105-0303-001 | Black |
| 105-0304-001 | Green |
| 105-0310-001 | Blue |

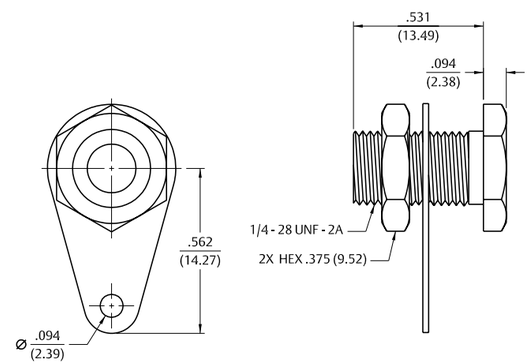
**SPECIFICATIONS**
**Contact:** Brass per QQ-B-626D
**Finish:** Nickel
**Insulated Handle:** Nylon 6/6 per ASTM D4066

**RATINGS**
**Current:** 10 amps
**Breakdown Voltage:** 3500 VRMS minimum†
**Contact Resistance:** 0.010 ohms maximum

**For Standard Tip Plug:**
**.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.

## Insulated Standard




| Nickel Plating | |
|---|---|
| **Part No.** | **Color** |
| 108-0740-001 | Nickel |

**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)

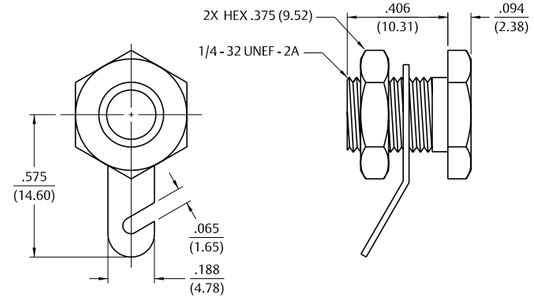
**RATINGS**
**Current:** 15 amps
**Contact Resistance:** 0.010 ohms maximum

**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

# Banana Jacks – For Test Equipment and Power Supplies

## Uninsulated Standard Type: Slotted Lug Terminal

| Nickel Plating | |
|---|---|
| Part No. | Color |
| 108-0740-102 | Nickel |



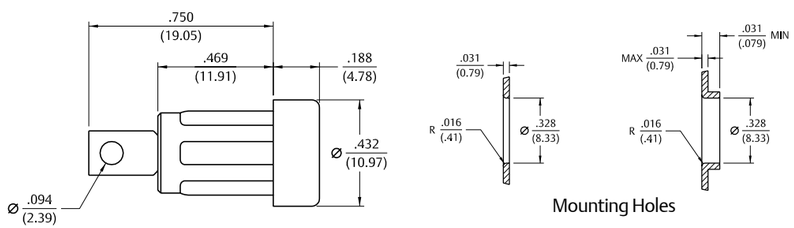

**SPECIFICATIONS**
**Jack Body:** Brass per QQ-B-626D
**Finish:** Nickel
**Hardware:** Nickel plated nut; stamped tin plated solder terminal (unassembled)
**Panel Thickness:** Up to .250 (6.35)

**RATINGS**
**Current:** 15 amps
**Contact Resistance:** 0.010 ohms maximum

**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

| Bright Tin Plating | |
|---|---|
| Part No. | Color |
| 108-2301-801 | White |
| 108-2302-801 | Red |
| 108-2303-801 | Black |
| 108-2307-801 | Yellow |
| 108-2310-801 | Blue |




**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

**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

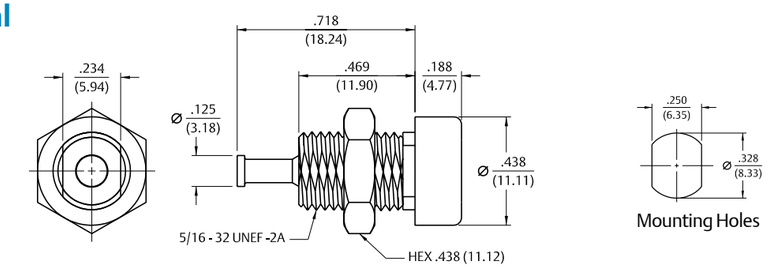
† Avoid user injury due to misapplication. See safety advisory definitions inside front cover.





## Insulated Turret Terminal

| Silver Plating | |
|---|---|
| Part No. | Color |
| 108-2302-621 | Red |
| 108-2303-621 | Black |



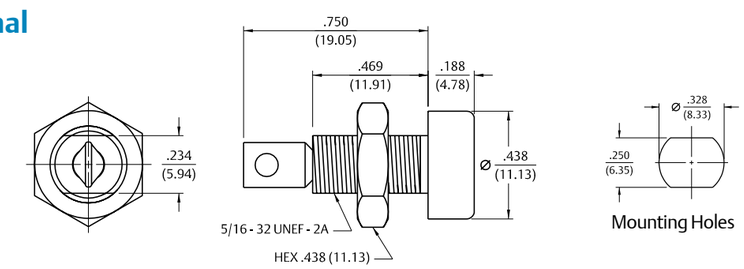

**SPECIFICATIONS**
**Contact:** Machined brass per QQ-B-626D
**Finish:** Silver
**Body:** Nylon 6/6 per ASTM D4066
**Hardware:** Nickel plated nut (unassembled)
**Body Thread Stripping Torque:** 6.0 lb. in. (7 kg cm)
**Panel Thickness:** Up to .343 (8.80)

**RATINGS**
**Current:** 15 amps
**Breakdown Voltage:** 7000 VRMS minimum
**Contact Resistance:** 0.010 ohms maximum
**Contact-To-Panel:** 2.4 pF nominal

**For Standard Banana Plug: .175 (4.44) Across Flat**
**FEATURES**
- Keyed mounting with double flats
- Nylon UL approved for self extinguishing

## Insulated Solder Terminal

| Bright Tin Plating | |
|---|---|
| Part No. | Color |
| 108-0901-001 | White |
| 108-0902-001 | Red |
| 108-0903-001 | Black |
| 108-0904-001 | Green |
| 108-0906-001 | Orange |
| 108-0907-001 | Yellow |
| 108-0908-001 | Brown |
| 108-0910-001 | Blue |
| 108-0912-001 | Violet |
| 108-0913-001 | Gray |




**SPECIFICATIONS**
**Jack Body:** 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. (7 kg 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

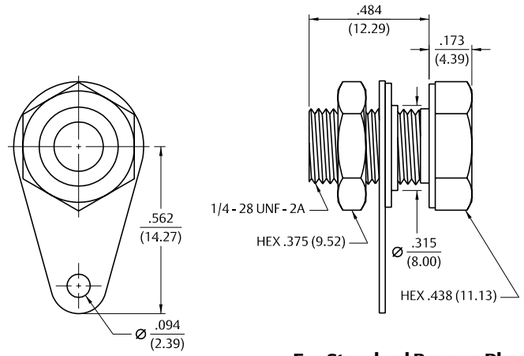
**For Standard Banana Plug: .175 (4.44) Across Flats**
**FEATURES**
- Accepts up to 12 gauge wire
- Hex head for faster installation
- For higher current designs

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

# Banana Jacks & Plugs – For Test Equipment and Power Supplies

## Insulated Pierced Lug Terminal

| Nickel Plating | |
|---|---|
| Part No. | Color |
| 108-0745-001 | Red |
| 108-0745-002 | Black |




**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)

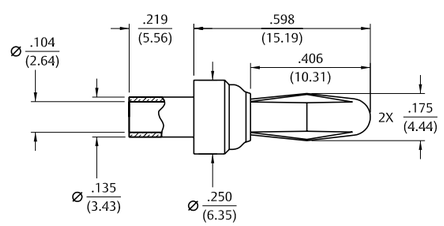
**RATINGS**
**Current:** 15 amps
**Breakdown Voltage:** 1500 VRMS minimum†
**Contact Resistance:** 0.010 ohms maximum
**Contact-To-Panel:** 2.4 pF nominal

**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

| Silver Plating | |
|---|---|
| Part No. | Color |
| 108-0754-001 | Silver |




**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

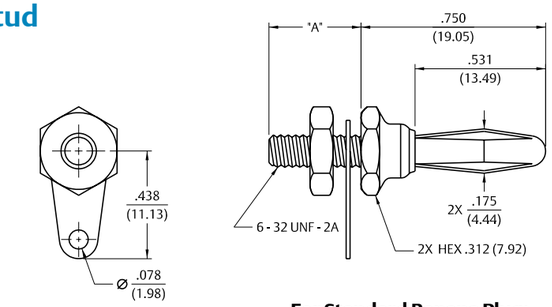
**For Standard Banana Plug:**
**.166 (4.23) Diameter**
**FEATURES**
- Shorter spring adapts to standard jack or special size jack
- Ideal for limited space applications





## Uninsulated Panel Mount Threaded Stud

| Nickel Plating | |
|---|---|
| Part No. | Stud Length "A" |
| 108-0750-001 | .375 (9.50) |
| 108-0750-002 | .750 (19.05) |



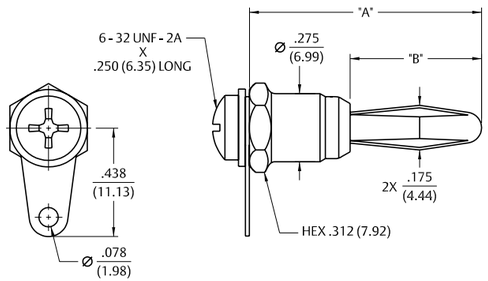

**SPECIFICATIONS**
**Plug Body:** Brass per QQ-B-626D
**Plug Spring:** Nickel silver per QQ-C-585
**Finish:** Nickel
**Panel Thickness:** Up to .25 (6.35) .625 (16.00)
**Hardware:** Nickel plated nut, stamped tin plated solder terminal (unassembled)

**RATINGS**
**Current:** 15 amps
**Contact Resistance:** 0.010 ohms maximum

**For Standard Banana Plug:**
**.166 (4.23) Diameter**
**FEATURES**
- Pierced hole for up to 14 gauge wires

## Uninsulated Panel Mount Screw Type Beryllium Copper Spring

| Nickel Plating | | | | |
|---|---|---|---|---|
| | Body Length | | Panel Thickness | |
| Part No. | A | B | A | B |
| 108-0753-102 | 906 (32.01) | 562 (14.27) | .156 max | .125 max |



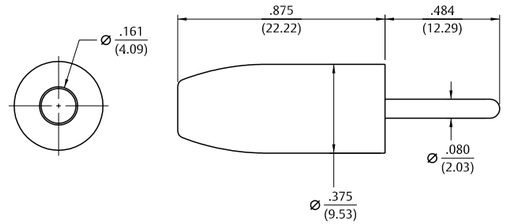

**SPECIFICATIONS**
**Plug Body:** Brass per QQ-B-626D
**Plug Spring:** Beryllium copper per QQ-C-533
**Finish:** Nickel
**Panel Thickness:** Up to .156 (4.00)
**Hardware:** Nickel plated nut, stamped tin plated solder terminal (unassembled)

**RATINGS**
**Current:** 15 amps
**Contact Resistance:** 0.010 ohms maximum

**For Standard Banana Plug:**
**.166 (4.23) Diameter**
**FEATURES**
- Rugged screw type
- Stamped tin plated solder terminal with hole for up to 14 gauge wire

# Banana Plugs – For Test Equipment and Power Supplies

## Insulated Solderless Tapered Handle




| Nickel Plating | |
|---|---|
| **Part No.** | **Color** |
| 108-0301-001 | White |
| 108-0302-001 | Red |
| 108-0303-001 | Black |
| 108-0304-001 | Green |
| 108-0306-001 | Orange |
| 108-0307-001 | Yellow |
| 108-0308-001 | Brown |
| 108-0310-001 | Blue |
| 108-0312-001 | Violet |
| 108-0313-001 | Gray |

**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

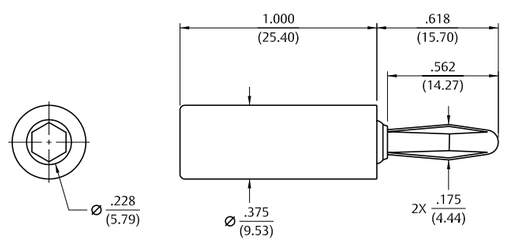
**Panel Thickness:** Up to .281 (7.15)

**RATINGS**
**Current:** 15 amps
**Breakdown Voltage:** 3500 VRMS minimum†
**Contact Resistance:** 0.010 ohms maximum

**For Standard Banana Plug: .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 Side Set Screw Solderless




| Nickel Plating | |
|---|---|
| **Part No.** | **Color** |
| 108-1702-101 | Red |
| 108-1703-101 | Black |

**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†

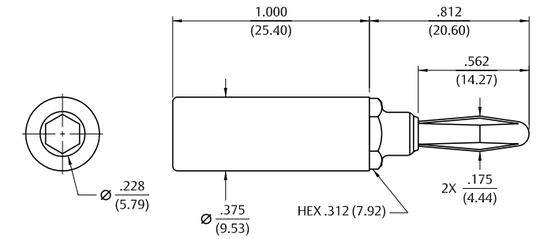
**For Standard Banana Plug: .166 (4.23) Diameter For Low Voltage (50 WVDC) Applications**
**FEATURES**
- Fast solderless connection of up to 16 gauge wire
- Set screw for dependable connections with low voltage
- Nylon UL approved for self extinguishing

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



Banana Plugs – For Test Equipment and Power Supplies


## Insulated Hex Body Solder Stud




| Nickel Plating | |
|---|---|
| **Part No.** | **Color** |
| 108-1762-101 | Red |
| 108-1763-101 | Black |

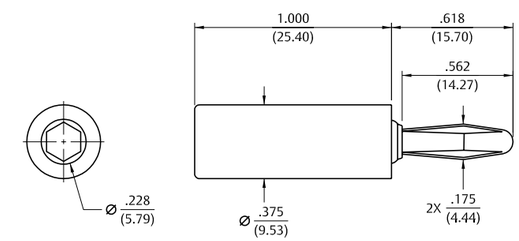
**SPECIFICATIONS**
**Plug Body:** Brass per QQ-B-626D
**Plug Spring:** Nickel silver per QQ-C-585
**Finish:** Nickel
**Insulated Handle:** Nylon 6/6 per ASTM D4066

**RATINGS**
**Current:** 15 amps
**Breakdown Voltage:** 3500 VRMS minimum†
**Contact Resistance:** 0.010 ohms maximum

**For Standard Banana Plug: .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




| Nickel Plating | |
|---|---|
| **Part No.** | **Color** |
| 108-1722-101 | Red |
| 108-1723-101 | Black |

**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†

**For Standard Banana Plug: .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

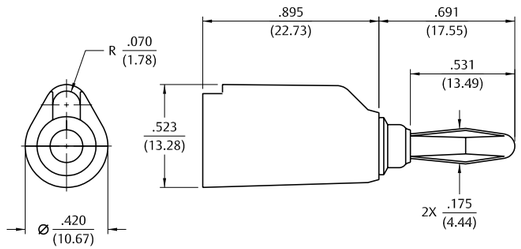
† Avoid user injury due to misapplication. See safety advisory definitions inside front cover.


*Illustrations are shown in inches (millimeters).*

# Banana Plugs – For Test Equipment and Power Supplies

## Insulated Stacking Single Type

| Nickel Plating | |
|---|---|
| Part No. | Color |
| 108-1081-001 | White |
| 108-1082-001 | Red |
| 108-1083-001 | Black |
| 108-1087-001 | Yellow |




**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

**Panel Thickness:** Up to .281 (7.15)

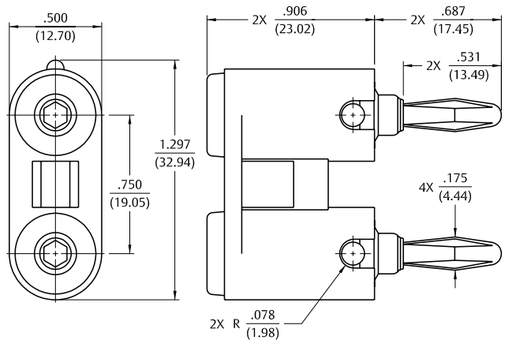
**RATINGS**
**Current:** 15 amps
**Breakdown Voltage:** 3500 VRMS minimum†
**Contact Resistance:** 0.010 ohms maximum

**For Standard Banana Plug:**
**.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 Stacking Dual Type

| Nickel Plating Set Screw (Accepts Wire Sizes Up To 14 Gauge) | |
|---|---|
| Part No. | Color |
| 108-0252-001 | Red |
| 108-0253-001 | Black |




**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 Plug:**
**.166 (4.23) Diameter**
**FEATURES**
- Accepts standard banana plug from rear
- Built-in strain relief for long life
- Nylon UL approved for self extinguishing

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

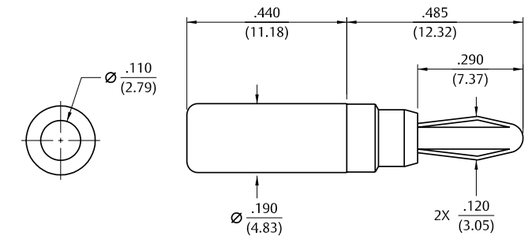


# Banana Plugs – For Audio Circuitry and RF Circuitry



## Insulated Solder Type

| Nickel Plating | |
|---|---|
| Part No. | Color |
| 108-1002-001 | Red |
| 108-1003-001 | Black |




**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

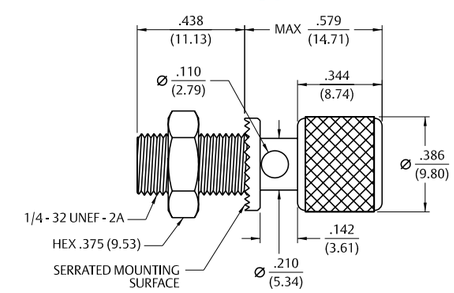
**RATINGS**
**Current:** 10 amps
**Breakdown Voltage:** 3500 VRMS minimum†
**Contact Resistance:** 0.010 ohms maximum

**For Miniature Banana Jack:**
**.104 (2.64) 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.

## Uninsulated With Knurled Thumb-Nut-Grounded Type

| Nickel Plating | |
|---|---|
| Part No. | Color |
| 111-2223-001 | Nickel |




**SPECIFICATIONS**
**Stud:** Brass per QQ-B-626D
**Finish:** Nickel
**Hardware:** Nickel plated nut (unassembled)
**Panel Thickness:** Up to .281 (7.15)

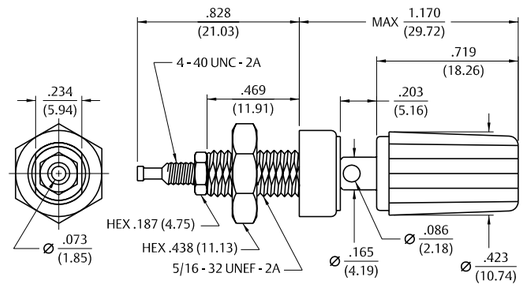
**RATINGS**
**Current:** 15 amps

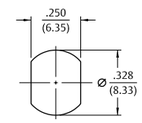
**For Standard Banana Plug:**
**.175 (4.44) Across Flats**
**FEATURES**
- Nickel plated stud with serrated mounting surface prevents turning
- Captive thumb nut .110 (2.79) diameter cross-hole accommodates up to 10 gauge wire

# Binding Posts – For Audio Circuitry and RF Circuitry

## Insulated Standard

| Silver Plating | |
|---|---|
| **Part No.** | **Color** |
| 111-0101-001 | White |
| 111-0102-001 | Red |
| 111-0104-001 | Green |
| 111-0103-001 | Black |
| 111-0107-001 | Yellow |
| 111-0110-001 | Blue |




Mounting Holes

**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)

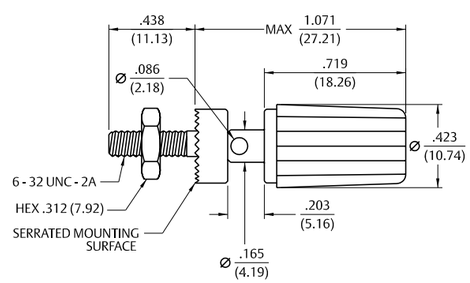
**RATINGS**
**Current:** 15 amps
**Contact Resistance:** 0.010 ohms maximum
**Breakdown Voltage:** 5700 VRMS minimum†
**Stud-To-Panel:** 3.3 pF nominal

**For Standard Banana Plug: .175 (4.44) Diameter**
**FEATURES**
- Turret terminal
- Captive thumb nut
- Insulated body is flatted 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

| Nickel Plating | |
|---|---|
| **Part No.** | **Color** |
| 111-0702-001 | Red |
| 111-0703-001 | Black |




**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

**For Standard Banana Plug: .166 (4.23) Diameter**
**FEATURES**
- Accepts standard banana plug from rear
- Built-in strain relief for long life
- Nylon UL approved for self extinguishing

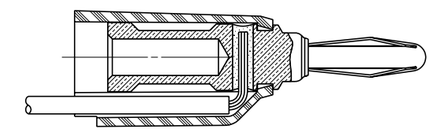
† Avoid user injury due to misapplication. See safety advisory definitions inside front cover.





## Assembly Tools and Fixtures (108-108X-001 Series)

| Fixture Part No. | Tool Part No. |
|---|---|
| 251-0111-003 | 251-0115-002 |



**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.

## Crimp Tool (105-077X-XXX Series)

| Tool Part No. | MIL Part No. |
|---|---|
| 144-0000-910 | M22520/1-01 |

**For Insulated Standard Small Handle Tip Plugs: .080 (2.00) Diameter and .060 (1.50) Tip Jacks**
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.

# Table of Contents

## Part Number and Competitor Cross-Reference Index


Other Information
Assembly Tools ..... 185
Capabilities ..... 190
Cable Information ..... 192
Assembly Instruction ..... 193
Mounting Hole Layouts ..... 194
Numerical Index ..... 274
Competitor Cross Reference ..... 280

3 MMCX Connectors
13 MCX Connectors
39 SMK Connectors
45 SMA Connectors
103 SMB Connectors
131 SMC Connectors
137 SMP Connectors
145 Type N Connectors
153 Shielded Cable Terminations
157 Between-Series Adapters
161 Fixed Length Cable Assemblies
173 Ultra Miniature Connectors (UMC)
181 kwiQMAte ™ Connectors
185 Tools
193 Assembly Instructions
257 Electronic Hardware
274 Index


*While every precaution has been taken to ensure accuracy and completeness herein, Emerson Network Power Connectivity Solutions assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Specifications subject to change without notice.*



# Part Number Index




105-0201-200 ..... 260
105-0202-200 ..... 260
105-0203-200 ..... 260
105-0251-001 ..... 260
105-0252-001 ..... 260
105-0253-001 ..... 260
105-0301-001 ..... 263
105-0302-001 ..... 263
105-0303-001 ..... 263
105-0304-001 ..... 263
105-0310-001 ..... 263
105-0601-001 ..... 261
105-0602-001 ..... 261
105-0603-001 ..... 261
105-0701-001 ..... 262
105-0702-001 ..... 262
105-0703-001 ..... 262
105-0751-001 ..... 258
105-0752-001 ..... 258
105-0753-001 ..... 258
105-0754-001 ..... 258
105-0756-001 ..... 258
105-0757-001 ..... 258
105-0758-001 ..... 258
105-0760-001 ..... 258
105-0762-001 ..... 258
105-0763-001 ..... 258
105-0771-001 ..... 262
105-0772-001 ..... 262
105-0773-001 ..... 262
105-0801-001 ..... 261
105-0802-001 ..... 261
105-0803-001 ..... 261
105-0804-001 ..... 261
105-0807-001 ..... 261
105-1041-001 ..... 259
105-1042-001 ..... 259
105-1043-001 ..... 259
105-1101-001 ..... 258
105-1102-001 ..... 258
105-1103-001 ..... 258
105-1104-001 ..... 258
105-1107-001 ..... 258
105-2201-201 ..... 259
105-2202-201 ..... 259
105-2203-201 ..... 259
105-2204-201 ..... 259
105-2207-201 ..... 259
108-0252-001 ..... 270
108-0253-001 ..... 270
108-0301-001 ..... 268
108-0302-001 ..... 268
108-0303-001 ..... 268
108-0304-001 ..... 268
108-0306-001 ..... 268
108-0307-001 ..... 268
108-0308-001 ..... 268
108-0310-001 ..... 268
108-0312-001 ..... 268
108-0740-001 ..... 263
108-0740-102 ..... 264
108-0745-001 ..... 266
108-0745-002 ..... 266
108-0750-001 ..... 267
108-0750-002 ..... 267
108-0753-102 ..... 267
108-0754-001 ..... 266
108-0901-001 ..... 265
108-0902-001 ..... 265
108-0903-001 ..... 265
108-0904-001 ..... 265
108-0906-001 ..... 265
108-0907-001 ..... 265
108-0908-001 ..... 265
108-0910-001 ..... 265
108-0912-001 ..... 265
108-0913-001 ..... 265
108-1002-001 ..... 271
108-1003-001 ..... 271
108-1081-001 ..... 270
108-1082-001 ..... 270
108-1083-001 ..... 270
108-1087-001 ..... 270
108-1702-101 ..... 268
108-1703-101 ..... 268
108-1722-101 ..... 269
108-1723-101 ..... 269
108-1762-101 ..... 269
108-1763-101 ..... 269
108-2301-801 ..... 264
108-2302-621 ..... 265
108-2302-801 ..... 264
108-2303-621 ..... 265
108-2303-801 ..... 264
108-2307-801 ..... 264
108-2310-801 ..... 264
111-0101-001 ..... 272
111-0102-001 ..... 272
111-0103-001 ..... 272
111-0104-001 ..... 272
111-0107-001 ..... 272
111-0110-001 ..... 272
111-0702-001 ..... 272
111-0703-001 ..... 272
111-2223-001 ..... 271
127-0692-001 ..... 142
127-0692-101 ..... 142
127-0693-001 ..... 142
127-0693-101 ..... 142
127-0701-201 ..... 142
127-0701-602 ..... 143
127-0701-612 ..... 144
127-0701-801 ..... 143
127-0701-802 ..... 143
127-0711-601 ..... 144
127-0901-801 ..... 144
127-0901-811 ..... 144
127-0901-821 ..... 144
127-1701-201 ..... 142
127-1701-602 ..... 143
127-1701-612 ..... 144
127-1701-801 ..... 143
127-1701-802 ..... 143
127-1711-601 ..... 144
127-1901-821 ..... 144
127-2701-201 ..... 142
127-2701-602 ..... 143
127-2701-612 ..... 144
127-2701-801 ..... 143
127-2701-802 ..... 143
127-2711-601 ..... 144
127-2901-821 ..... 144
127-3701-201 ..... 142
127-3701-602 ..... 143
128-0000-901 ..... 180
128-0711-201 ..... 179
128-0711-202 ..... 179
129-0701-301 ..... 156
129-0701-302 ..... 156
131-1402-101 ..... 109
131-1402-101 ..... 239
131-1402-116 ..... 109
131-1402-116 ..... 239
131-1403-001 ..... 108
131-1403-001 ..... 238
131-1403-016 ..... 108
131-1403-016 ..... 238
131-1403-101 ..... 109
131-1403-101 ..... 239
131-1403-116 ..... 109
131-1403-116 ..... 239
131-1404-001 ..... 108
131-1404-001 ..... 238
131-1404-016 ..... 108
131-1404-016 ..... 238
131-1404-101 ..... 109
131-1404-101 ..... 239
131-1404-116 ..... 109
131-1404-116 ..... 239
131-1693-101 ..... 234
131-1693-116 ..... 234
131-1701-371 ..... 113
131-1701-376 ..... 113
131-1801-371 ..... 111
131-1801-376 ..... 111
131-3302-001 ..... 110
131-3302-001 ..... 238
131-3302-006 ..... 110
131-3302-006 ..... 238
131-3303-001 ..... 110
131-3303-001 ..... 238
131-3303-006 ..... 110
131-3303-006 ..... 238
131-3303-401 ..... 110
131-3303-401 ..... 238
131-3303-406 ..... 110
131-3303-406 ..... 238
131-3303-501 ..... 110
131-3303-501 ..... 239
131-3303-506 ..... 110
131-3303-506 ..... 239
131-3304-401 ..... 110
131-3304-401 ..... 238
131-3304-406 ..... 110
131-3304-406 ..... 238
131-3304-501 ..... 110
131-3304-501 ..... 239
131-3304-506 ..... 110
131-3304-506 ..... 239
131-3402-001 ..... 108
131-3402-001 ..... 238
131-3402-016 ..... 108
131-3402-016 ..... 238
131-3402-101 ..... 109
131-3402-101 ..... 239
131-3402-116 ..... 109
131-3402-116 ..... 239
131-3403-001 ..... 108
131-3403-001 ..... 238
131-3403-016 ..... 108
131-3403-016 ..... 238
131-3403-021 ..... 108
131-3403-021 ..... 232
131-3403-026 ..... 108
131-3403-026 ..... 232
131-3403-101 ..... 109
131-3403-101 ..... 239
131-3403-116 ..... 109
131-3403-116 ..... 239
131-3403-401 ..... 108
131-3403-401 ..... 238
131-3403-406 ..... 108
131-3403-406 ..... 238
131-3404-001 ..... 108
131-3404-001 ..... 238
131-3404-016 ..... 108
131-3404-016 ..... 238
131-3404-021 ..... 108
131-3404-021 ..... 232
131-3404-026 ..... 108
131-3404-026 ..... 232
131-3404-101 ..... 109
131-3404-101 ..... 239
131-3404-116 ..... 109
131-3404-116 ..... 239
131-3404-401 ..... 108
131-3404-401 ..... 238
131-3404-406 ..... 108
131-3404-406 ..... 238
131-3407-001 ..... 108
131-3407-001 ..... 238
131-3407-006 ..... 108
131-3407-006 ..... 238
131-3407-011 ..... 108
131-3407-011 ..... 232
131-3407-016 ..... 108
131-3407-016 ..... 232
131-3407-101 ..... 109
131-3407-101 ..... 239
131-3407-106 ..... 109
131-3407-106 ..... 239
131-3593-401 ..... 107
131-3593-401 ..... 233
131-3593-406 ..... 107
131-3593-406 ..... 233
131-3693-001 ..... 107
131-3693-001 ..... 233
131-3693-016 ..... 107
131-3693-016 ..... 233
131-3693-101 ..... 107
131-3693-101 ..... 234
131-3693-116 ..... 107
131-3693-116 ..... 234
131-3694-401 ..... 107
131-3694-401 ..... 233
131-3694-406 ..... 107
131-3694-406 ..... 233
131-3701-201 ..... 112
131-3701-206 ..... 112
131-3701-211 ..... 112
131-3701-216 ..... 112
131-3701-231 ..... 112
131-3701-236 ..... 112
131-3701-261 ..... 112
131-3701-266 ..... 112
131-3701-271 ..... 112
131-3701-276 ..... 112
131-3701-301 ..... 113
131-3701-306 ..... 113
131-3701-341 ..... 114
131-3701-346 ..... 114
131-3701-401 ..... 115
131-3701-406 ..... 115
131-3701-411 ..... 115
131-3701-416 ..... 115
131-3701-441 ..... 115
131-3701-446 ..... 115
131-3701-501 ..... 114
131-3701-506 ..... 114
131-3701-511 ..... 114
131-3701-516 ..... 114
131-3701-621 ..... 115
131-3701-626 ..... 115
131-3701-631 ..... 115
131-3701-636 ..... 115
131-3701-801 ..... 114
131-3701-806 ..... 114
131-3701-811 ..... 114
131-3701-816 ..... 114
131-3701-821 ..... 114
131-3701-826 ..... 114
131-3701-831 ..... 114
131-3701-836 ..... 114
131-3711-201 ..... 113
131-3711-301 ..... 114
131-3711-302 ..... 114
131-3801-201 ..... 111
131-3801-216 ..... 111
131-3801-231 ..... 111
131-3801-236 ..... 111
131-3801-301 ..... 111
131-3801-316 ..... 111
131-3801-811 ..... 116
131-3801-816 ..... 116
131-3801-821 ..... 116
131-3801-826 ..... 116
131-3901-401 ..... 116
131-3901-406 ..... 116
131-3901-411 ..... 116
131-3901-416 ..... 116
131-6303-401 ..... 134
131-6303-401 ..... 238
131-6303-406 ..... 134
131-6303-406 ..... 238
131-6304-401 ..... 134
131-6304-401 ..... 238
131-6304-406 ..... 134
131-6304-406 ..... 238
131-6333-401 ..... 134
131-6333-401 ..... 238
131-6333-406 ..... 134
131-6333-406 ..... 238
131-6403-001 ..... 134
131-6403-001 ..... 238
131-6403-006 ..... 134
131-6403-006 ..... 238
131-6403-101 ..... 134
131-6403-101 ..... 239
131-6403-106 ..... 142
131-6403-106 ..... 239
131-6404-001 ..... 134
131-6404-001 ..... 238
131-6404-006 ..... 134
131-6404-006 ..... 238
131-6404-101 ..... 134
131-6404-101 ..... 239
131-6404-106 ..... 134
131-6404-106 ..... 239
131-6433-001 ..... 134
131-6433-001 ..... 238
131-6433-006 ..... 134
131-6433-006 ..... 238
131-6433-101 ..... 134
131-6433-101 ..... 239
131-6433-106 ..... 134
131-6433-106 ..... 239
131-6593-401 ..... 134
131-6593-401 ..... 233
131-6593-406 ..... 134
131-6593-406 ..... 233
131-6701-201 ..... 135
131-6701-206 ..... 135
131-6701-211 ..... 135
131-6701-216 ..... 135
131-6701-301 ..... 135
131-6701-401 ..... 136
131-6701-406 ..... 136
131-6701-411 ..... 136
131-6701-416 ..... 136
131-6701-831 ..... 136
131-6701-836 ..... 136
131-6711-201 ..... 135
131-8303-401 ..... 123
131-8303-401 ..... 238
131-8303-406 ..... 123
131-8303-406 ..... 238
131-8304-401 ..... 123
131-8304-401 ..... 238
131-8304-406 ..... 123
131-8304-406 ..... 238
131-8403-001 ..... 123
131-8403-001 ..... 238
131-8403-006 ..... 123
131-8403-006 ..... 238
131-8403-011 ..... 123
131-8403-011 ..... 238
131-8403-016 ..... 123
131-8403-016 ..... 238
131-8403-101 ..... 124
131-8403-101 ..... 239
131-8403-106 ..... 124
131-8403-106 ..... 239
131-8403-111 ..... 124
131-8403-111 ..... 239
131-8403-116 ..... 124
131-8403-116 ..... 239
131-8404-001 ..... 123
131-8404-001 ..... 238
131-8404-006 ..... 123
131-8404-006 ..... 238
131-8404-011 ..... 123
131-8404-011 ..... 238
131-8404-016 ..... 123
131-8404-016 ..... 238
131-8404-101 ..... 124
131-8404-101 ..... 239
131-8404-106 ..... 124
131-8404-106 ..... 239
131-8404-111 ..... 124
131-8404-111 ..... 239
131-8404-116 ..... 124
131-8404-116 ..... 239
131-8409-001 ..... 123
131-8409-001 ..... 238
131-8409-006 ..... 123
131-8409-006 ..... 238
131-8409-101 ..... 124
131-8409-101 ..... 239
131-8409-106 ..... 124
131-8409-106 ..... 239
131-8433-001 ..... 123
131-8433-001 ..... 232
131-8433-006 ..... 123
131-8433-006 ..... 232
131-8434-001 ..... 123
131-8434-001 ..... 232
131-8434-006 ..... 123
131-8434-006 ..... 232
131-8445-001 ..... 123
131-8445-001 ..... 238
131-8445-006 ..... 123
131-8445-006 ..... 238
131-8445-011 ..... 123
131-8445-011 ..... 232
131-8445-016 ..... 123
131-8445-016 ..... 232
131-8445-101 ..... 124
131-8445-101 ..... 239
131-8445-106 ..... 124
131-8445-106 ..... 239
131-8701-201 ..... 125
131-8701-206 ..... 125
131-8701-211 ..... 125
131-8701-216 ..... 125
131-8701-251 ..... 125
131-8701-256 ..... 125
131-8701-261 ..... 125
131-8701-266 ..... 125
131-8701-301 ..... 126
131-8701-306 ..... 126
131-8701-311 ..... 126
131-8701-316 ..... 126
131-8701-501 ..... 126
131-8701-506 ..... 126
131-8701-601 ..... 127

# Part Number Index


131-8701-606 127
131-8701-811 128
131-8701-821 128
131-8701-841 127
131-8701-846 127
131-8711-201 126
131-8711-202 126
131-8801-801 128
131-8801-811 128
131-8801-821 128
131-8901-401 129
131-8901-406 129
131-8901-801 129
131-8901-811 129
131-8901-821 129
131-9403-001 118
131-9403-001 235
131-9403-021 118
131-9403-021 232
131-9403-101 118
131-9403-101 237
131-9403-101 239
131-9403-116 237
131-9403-116 239
131-9404-001 118
131-9404-001 235
131-9404-021 118
131-9404-021 232
131-9404-101 118
131-9404-101 237
131-9404-101 239
131-9404-116 237
131-9404-116 239
131-9701-201 119
131-9701-211 119
131-9701-301 119
133-3302-001 17
133-3302-001 207
133-3302-006 17
133-3302-006 207
133-3302-401 17
133-3302-401 207
133-3302-406 17
133-3302-406 207
133-3303-001 17
133-3303-001 207
133-3303-006 17
133-3303-006 207
133-3303-401 17
133-3303-401 207
133-3303-406 17
133-3303-406 207
133-3304-001 17
133-3304-001 207
133-3304-006 17
133-3304-006 207
133-3304-401 17
133-3304-401 207
133-3304-406 17
133-3304-406 207
133-3402-001 16
133-3402-001 207
133-3402-006 16
133-3402-006 207
133-3402-101 17
133-3402-101 210
133-3402-106 17
133-3402-106 210
133-3403-001 16
133-3403-001 207
133-3403-006 16
133-3403-006 207
133-3403-101 17
133-3403-101 210
133-3403-106 17
133-3403-106 210
133-3404-001 16
133-3404-001 207
133-3404-006 16
133-3404-006 207
133-3404-101 17
133-3404-101 210
133-3404-106 17
133-3404-106 210
133-3407-101 17
133-3407-101 210
133-3407-106 17
133-3407-106 210
133-3433-001 16
133-3433-001 207
133-3433-006 16
133-3433-006 207
133-3433-101 17
133-3433-101 210
133-3433-106 17
133-3433-106 210
133-3693-001 16
133-3693-001 206
133-3693-006 16
133-3693-006 206
133-3693-101 16
133-3693-101 206
133-3693-106 16
133-3693-106 206
133-3701-201 18
133-3701-206 18
133-3701-211 18
133-3701-216 18
133-3701-221 18
133-3701-226 18
133-3701-231 19
133-3701-236 19
133-3701-301 20
133-3701-306 20
133-3701-311 20
133-3701-316 20
133-3701-321 20
133-3701-326 20
133-3701-401 22
133-3701-406 22
133-3701-411 22
133-3701-416 22
133-3701-601 22
133-3701-606 22
133-3701-611 23
133-3701-616 23
133-3701-621 23
133-3701-626 23
133-3701-801 21
133-3701-806 21
133-3701-811 21
133-3701-816 21
133-3701-821 21
133-3701-826 21
133-3711-201 19
133-3711-202 19
133-3711-211 19
133-3711-212 19
133-3711-301 20
133-3711-302 20
133-3711-311 20
133-3711-312 20
133-3711-801 22
133-3711-802 22
133-3801-201 18
133-3801-206 18
133-3801-211 18
133-3801-216 18
133-3801-801 23
133-3801-806 23
133-3801-821 23
133-3801-826 23
133-3801-841 21
133-3801-846 21
133-3801-851 21
133-3801-856 21
133-3901-401 23
133-3901-406 23
133-3901-801 23
133-3901-806 23
133-5302-401 26
133-5302-401 207
133-5302-406 26
133-5302-406 207
133-5303-401 26
133-5303-401 207
133-5303-406 26
133-5303-406 207
133-5304-401 26
133-5304-401 207
133-5304-406 26
133-5304-406 207
133-5402-001 26
133-5402-001 207
133-5402-006 26
133-5402-006 207
133-5402-101 26
133-5402-101 210
133-5402-106 26
133-5402-106 210
133-5403-001 26
133-5403-001 207
133-5403-006 26
133-5403-006 207
133-5403-101 26
133-5403-101 210
133-5403-106 26
133-5403-106 210
133-5404-001 26
133-5404-001 207
133-5404-006 26
133-5404-006 207
133-5404-101 26
133-5404-101 210
133-5404-106 26
133-5404-106 210
133-5701-201 27
133-5701-206 27
133-5701-801 27
133-5701-806 27
133-8333-001 31
133-8333-001 209
133-8333-401 32
133-8333-401 209
133-8334-001 31
133-8334-001 209
133-8334-401 32
133-8334-401 209
133-8433-001 31
133-8433-001 209
133-8433-101 31
133-8433-101 211
133-8434-001 31
133-8434-001 209
133-8434-101 31
133-8434-101 211
133-8445-001 31
133-8445-001 209
133-8445-101 31
133-8445-101 211
133-8701-201 32
133-8701-211 32
133-8701-301 33
133-8701-311 33
133-8701-401 33
133-8701-801 33
133-8701-831 35
133-8711-201 32
133-8711-211 32
133-8801-201 32
133-8801-211 32
133-8801-221 32
133-8801-831 35
133-8901-801 33
133-8901-821 34
133-9402-101 208
133-9403-001 37
133-9403-001 207
133-9403-101 37
133-9403-101 208
133-9403-104 208
133-9404-001 37
133-9404-001 207
133-9404-101 37
133-9404-101 208
133-9701-201 38
133-9701-211 38
133-9701-231 38
133-9701-301 38
133-9701-311 38
133-9701-801 38
134-0303-406 240
134-0304-406 240
134-0307-406 240
134-0308-406 240
134-1012-011 158
134-1012-021 158
134-1012-041 159
134-1018-001 159
134-1018-011 159
134-1018-021 159
134-1018-031 159
134-1019-151 160
134-1019-161 160
134-1019-171 160
134-1019-181 161
134-1019-361 180
134-1019-371 180
134-1019-381 180
134-1068-001 34
134-1068-011 34
134-1068-021 35
134-1068-031 35
134-1069-001 130
134-1069-011 130
134-1069-021 130
134-1069-031 130
135-3302-001 7
135-3302-001 205
135-3302-401 7
135-3302-401 205
135-3303-001 7
135-3303-001 204
135-3304-001 7
135-3304-001 204
135-3333-001 7
135-3333-001 204
135-3336-001 7
135-3336-001 205
135-3336-401 7
135-3336-401 205
135-3402-001 7
135-3402-001 202
135-3402-101 6
135-3402-101 200
135-3402-111 6
135-3402-111 201
135-3403-001 7
135-3403-001 203
135-3403-101 6
135-3403-101 201
135-3404-001 7
135-3404-001 203
135-3404-101 6
135-3404-101 201
135-3433-001 7
135-3433-001 203
135-3436-001 7
135-3436-001 202
135-3436-101 6
135-3436-101 200
135-3693-101 6
135-3693-101 198
135-3701-201 8
135-3701-211 8
135-3701-301 8
135-3701-311 8
135-3711-201 8
135-3711-202 8
135-3711-801 9
135-3711-802 9
135-3801-201 9
135-3801-811 9
135-9402-001 12
135-9402-001 205
135-9402-111 12
135-9402-111 199
135-9403-001 12
135-9403-001 204
135-9403-101 12
135-9403-101 199
135-9404-001 204
135-9436-001 12
135-9436-001 205
135-9436-101 12
135-9436-101 200
135-9701-201 12
135-9701-211 12
135-9701-301 13
135-9701-311 13
135-9711-801 13
135-9711-802 13
138-4303-407 150
138-4303-407 249
138-4304-407 150
138-4304-407 249
138-4307-407 150
138-4307-407 252
138-4308-407 150
138-4308-407 252
138-4316-407 150
138-4316-407 252
138-4318-407 150
138-4318-407 252
138-4349-407 150
138-4349-407 252
138-4403-007 150
138-4403-007 243
138-4403-107 150
138-4403-107 245
138-4404-007 150
138-4404-007 243
138-4404-107 150
138-4404-107 245
138-4407-007 150
138-4407-007 244
138-4407-107 150
138-4407-107 245
138-4408-007 150
138-4408-007 244
138-4408-107 150
138-4408-107 245
138-4416-007 150
138-4416-007 244
138-4416-107 150
138-4416-107 246
138-4418-007 150
138-4418-007 244
138-4418-107 150
138-4418-107 246
138-4449-007 150
138-4449-007 244
138-4593-401 149
138-4593-401 251
138-4594-401 149
138-4594-401 251
138-4596-401 149
138-4596-401 251
138-4693-001 149
138-4693-001 247
138-4693-011 149
138-4693-011 248
138-4694-001 149
138-4694-001 247
138-4694-011 149
138-4694-011 248
138-4696-001 149
138-4696-001 247
138-4696-011 149
138-4696-011 248
138-4701-407 151
138-4701-607 151
138-4901-407 152
138-4901-807 151
138-4901-817 152
138-9408-007 241
138-9449-007 241
140-0000-951 187
140-0000-952 187
140-0000-953 187
140-0000-954 188
140-0000-955 187
140-0000-956 188
140-0000-957 189
140-0000-958 189
140-0000-959 189
140-0000-960 189
140-0000-961 189
140-0000-962 189
140-0000-964 189
140-0000-965 189
140-0000-968 189
140-0000-970 187
140-0000-971 187
141-0000-901 186
141-0000-902 186
141-0000-903 186
141-0000-904 188
141-0000-905 186
141-0000-907 187
141-0000-908 188
141-0000-910 187
141-0000-911 186
141-0000-924 186
141-0000-925 186
141-0000-927 186
141-0303-412 99
141-0303-412 219
141-0304-412 99
141-0304-412 219
141-0307-412 99
141-0307-412 219
141-0308-412 99
141-0308-412 219
141-0403-012 99







141-0403-012 219
141-0403-102 99
141-0403-102 224
141-0404-012 99
141-0404-012 219
141-0404-112 99
141-0404-112 224
141-0407-012 99
141-0407-012 219
141-0407-102 99
141-0407-102 224
141-0408-012 99
141-0408-012 219
141-0408-102 99
141-0408-102 224
141-0593-001 98
141-0593-001 214
141-0593-401 98
141-0593-401 214
141-0593-421 98
141-0593-421 222
141-0594-001 98
141-0594-001 214
141-0594-401 98
141-0594-401 214
141-0594-421 98
141-0594-421 222
141-0693-002 97
141-0693-002 214
141-0693-062 97
141-0693-062 222
141-0694-002 97
141-0694-002 214
141-0694-012 97
141-0694-012 214
141-0694-062 97
141-0694-062 222
141-0701-201 100
141-0701-301 100
141-0701-402 100
141-0701-602 101
141-0701-612 101
141-0701-622 101
141-0701-632 101
141-3901-801 102
141-3901-802 102
141-3901-803 102
141-3901-806 102
141-3901-810 102
142-0002-221 155
142-0002-221 253
142-0002-226 155
142-0002-226 253
142-0002-811 156
142-0002-811 254
142-0002-821 156
142-0002-821 254
142-0003-201 155
142-0003-201 253
142-0003-206 155
142-0003-206 253
142-0003-231 155
142-0003-231 253
142-0003-236 155
142-0003-236 253
142-0003-241 155
142-0003-241 253
142-0003-246 155
142-0003-246 253
142-0003-301 155
142-0003-301 253
142-0003-306 155
142-0003-306 253
142-0003-801 156
142-0003-801 254
142-0003-811 156
142-0003-811 254
142-0004-201 155
142-0004-201 253
142-0004-206 155
142-0004-206 253
142-0004-211 155
142-0004-211 253
142-0004-216 155
142-0004-216 253
142-0004-221 155
142-0004-221 253
142-0004-226 155
142-0004-226 253
142-0004-301 155
142-0004-301 253
142-0004-306 155
142-0004-306 253
142-0004-801 156
142-0004-801 254
142-0004-811 156
142-0004-811 254
142-0007-801 156
142-0007-801 254
142-0007-811 156
142-0007-811 254
142-0008-801 156
142-0008-801 254
142-0008-811 156
142-0008-811 254
142-0093-801 155
142-0093-801 254
142-0093-806 254
142-0094-801 155
142-0094-801 254
142-0094-806 254
142-0096-801 155
142-0096-801 254
142-0096-806 254
142-0102-401 55
142-0102-401 230
142-0102-406 55
142-0102-406 230
142-0103-401 55
142-0103-401 230
142-0103-406 55
142-0103-406 230
142-0107-401 55
142-0107-401 230
142-0107-401 230
142-0107-406 55
142-0107-406 230
142-0107-406 230
142-0202-011 55
142-0202-011 230
142-0202-016 55
142-0202-016 230
142-0202-101 55
142-0202-101 231
142-0202-106 55
142-0202-106 231
142-0203-011 55
142-0203-011 230
142-0203-016 55
142-0203-016 230
142-0203-101 55
142-0203-101 231
142-0203-106 55
142-0203-106 231
142-0207-011 55
142-0207-011 230
142-0207-011 230
142-0207-016 55
142-0207-016 230
142-0207-016 230
142-0207-101 55
142-0207-101 231
142-0207-101 231
142-0207-106 55
142-0207-106 231
142-0207-106 231
142-0302-011 54
142-0302-011 217
142-0302-016 54
142-0302-016 217
142-0302-401 54
142-0302-401 225
142-0302-406 54
142-0302-406 225
142-0302-431 54
142-0302-431 217
142-0302-436 54
142-0302-436 217
142-0303-011 54
142-0303-011 219
142-0303-016 54
142-0303-016 219
142-0303-401 54
142-0303-401 225
142-0303-406 54
142-0303-406 225
142-0303-411 54
142-0303-411 219
142-0303-416 54
142-0303-416 219
142-0304-011 54
142-0304-011 219
142-0304-016 54
142-0304-016 219
142-0304-401 54
142-0304-401 225
142-0304-406 54
142-0304-406 225
142-0304-411 54
142-0304-411 219
142-0304-416 54
142-0304-416 219
142-0307-011 54
142-0307-011 219
142-0307-016 54
142-0307-016 219
142-0307-401 54
142-0307-401 225
142-0307-406 54
142-0307-406 225
142-0307-411 54
142-0307-411 219
142-0307-411 220
142-0307-416 54
142-0307-416 219
142-0307-416 220
142-0308-011 54
142-0308-011 219
142-0308-016 54
142-0308-016 219
142-0308-401 54
142-0308-401 225
142-0308-406 54
142-0308-406 225
142-0308-411 54
142-0308-411 219
142-0308-416 54
142-0308-416 219
142-0333-011 219
142-0333-016 219
142-0333-411 54
142-0333-411 219
142-0333-416 54
142-0333-416 219
142-0335-401 54
142-0335-401 220
142-0335-406 54
142-0335-406 220
142-0339-401 54
142-0339-401 220
142-0339-406 54
142-0339-406 220
142-0402-011 53
142-0402-011 217
142-0402-016 53
142-0402-016 217
142-0402-101 53
142-0402-101 224
142-0402-106 53
142-0402-106 224
142-0403-001 225
142-0403-006 225
142-0403-011 53
142-0403-011 219
142-0403-016 53
142-0403-016 219
142-0403-101 53
142-0403-101 224
142-0403-106 53
142-0403-106 224
142-0404-011 53
142-0404-011 219
142-0404-016 53
142-0404-016 219
142-0404-101 53
142-0404-101 224
142-0404-106 53
142-0404-106 224
142-0407-011 53
142-0407-011 219
142-0407-016 53
142-0407-016 220
142-0407-101 53
142-0407-101 229
142--0407-101 224
142-0407-106 53
142-0407-106 224
142-0407-106 229
142-0408-011 53
142-0408-011 219
142-0408-016 53
142-0408-016 219
142-0408-101 53
142-0408-101 224
142-0408-106 53
142-0408-106 224
142-0433-011 53
142-0433-011 219
142-0433-016 53
142-0433-016 219
142-0433-101 53
142-0433-101 224
142-0433-106 53
142-0433-106 224
142-0435-001 53
142-0435-001 220
142-0435-006 53
142-0435-006 220
142-0435-101 53
142-0435-101 229
142-0435-106 53
142-0435-106 229
142-0439-001 53
142-0439-001 220
142-0439-006 53
142-0439-006 220
142-0439-101 53
142-0439-101 229
142-0439-106 53
142-0439-106 229
142-0593-001 52
142-0593-001 214
142-0593-006 52
142-0593-006 214
142-0593-401 52
142-0593-401 214
142-0593-406 52
142-0593-406 214
142-0593-411 52
142-0593-411 214
142-0593-416 214
142-0594-001 52
142-0594-001 214
142-0594-006 52
142-0594-006 214
142-0594-401 52
142-0594-401 214
142-0594-406 52
142-0594-406 214
142-0693-001 50
142-0693-001 214
142-0693-006 50
142-0693-006 214
142-0693-051 51
142-0693-051 216
142-0693-056 51
142-0693-056 216
142-0693-101 50
142-0693-101 213
142-0693-106 50
142-0693-106 213
142-0694-001 50
142-0694-001 214
142-0694-006 50
142-0694-006 214
142-0694-011 50
142-0694-011 214
142-0694-016 50
142-0694-016 214
142-0694-021 51
142-0694-021 215
142-0694-026 51
142-0694-026 215
142-0694-031 51
142-0694-031 215
142-0694-036 51
142-0694-036 215
142-0694-041 51
142-0694-041 215
142-0694-046 51
142-0694-046 215
142-0694-051 51
142-0694-051 216
142-0694-056 51
142-0694-056 216
142-0694-101 50
142-0694-101 213
142-0694-106 50
142-0694-106 213
142-0701-201 56
142-0701-206 56
142-0701-231 56
142-0701-236 56
142-0701-301 57
142-0701-306 57
142-0701-401 62
142-0701-406 62
142-0701-411 62
142-0701-416 62
142-0701-421 56
142-0701-426 56
142-0701-481 66
142-0701-486 66
142-0701-491 56
142-0701-496 56
142-0701-501 57
142-0701-506 57
142-0701-531 62
142-0701-536 62
142-0701-551 57
142-0701-556 57
142-0701-621 67
142-0701-626 67
142-0701-631 67
142-0701-636 67
142-0701-801 60
142-0701-806 60
142-0701-831 60
142-0701-836 60
142-0701-841 60
142-0701-846 60
142-0701-851 60
142-0701-856 60
142-0701-871 61
142-0701-876 61
142-0701-881 60
142-0701-886 60
142-0711-201 57
142-0711-202 57
142-0711-301 57
142-0711-302 57
142-0711-811 61
142-0711-816 61
142-0711-821 59
142-0711-826 59
142-0711-841 59
142-0711-846 59
142-0711-871 60
142-0711-876 60
142-0711-881 60
142-0711-886 60
142-0721-811 60
142-0721-816 60
142-0721-841 61
142-0721-846 61
142-0721-861 60
142-0721-866 60
142-0721-871 61
142-0721-876 61
142-0721-881 62
142-0721-882 62
142-0731-861 61
142-0731-866 61
142-0761-801 92
142-0761-801 228
142-0761-811 92
142-0761-811 228
142-0761-821 92
142-0761-821 228
142-0761-831 92
142-0761-831 228
142-0761-841 93
142-0761-841 228
142-0761-851 93
142-0761-851 228
142-0761-861 93
142-0761-861 228
142-0761-871 93

# Part Number Index


142-0761-871 228
142-0761-881 92
142-0761-881 228
142-0761-891 93
142-0761-891 228
142-0771-821 92
142-0771-821 228
142-0771-831 93
142-0771-831 228
142-0791-801 63
142-0791-801 227
142-0791-801 236
142-0791-811 63
142-0791-811 227
142-0791-811 236
142-0791-821 63
142-0791-821 227
142-0791-821 236
142-0801-201 56
142-0801-206 56
142-0801-301 56
142-0801-306 56
142-0801-421 55
142-0801-421 216
142-0801-801 59
142-0801-806 59
142-0801-811 59
142-0801-816 59
142-0801-821 59
142-0801-826 59
142-0801-831 59
142-0801-836 59
142-0901-401 76
142-0901-406 76
142-0901-801 76
142-0901-806 76
142-0901-811 76
142-0901-816 76
142-0901-821 76
142-0901-826 76
142-0901-861 77
142-0901-866 77
142-0901-921 77
142-0901-931 77
142-0901-941 77
142-1000-001 75
142-1000-002 75
142-1000-003 75
142-1000-004 75
142-1000-033 44
142-1403-001 49
142-1403-001 219
142-1403-006 219
142-1404-001 49
142-1404-001 219
142-1404-006 219
142-1407-001 49
142-1407-001 219
142-1407-006 219
142-1408-001 49
142-1408-001 219
142-1408-006 219
142-1701-011 68
142-1701-016 68
142-1701-031 67
142-1701-036 67
142-1701-041 68
142-1701-046 68
142-1701-121 68
142-1701-126 68
142-1701-131 67
142-1701-136 67
142-1701-191 69
142-1701-196 69
142-1701-201 68
142-1701-206 68
142-1701-501 72
142-1701-506 72
142-1701-511 72
142-1701-516 72
142-1701-521 72
142-1701-526 72
142-1701-531 73
142-1701-536 73
142-1701-541 73
142-1701-546 73
142-1701-551 73
142-1701-556 73
142-1701-561 73
142-1701-566 73
142-1701-571 73
142-1701-576 73
142-1701-581 73
142-1701-586 73
142-1701-591 73
142-1701-596 73
142-1701-601 70
142-1701-606 72
142-1701-611 72
142-1701-616 72
142-1701-621 72
142-1701-626 72
142-1701-631 72
142-1701-636 72
142-1701-641 72
142-1701-646 72
142-1701-701 69
142-1701-706 69
142-1701-821 63
142-1701-821 227
142-1701-821 236
142-1701-831 63
142-1701-831 227
142-1701-831 236
142-1711-001 69
142-1711-006 69
142-1711-011 70
142-1711-016 70
142-1711-021 70
142-1711-026 70
142-1711-031 70
142-1711-036 70
142-1711-061 70
142-1711-066 70
142-1711-511 74
142-1711-516 74
142-1711-521 74
142-1711-526 74
142-1721-001 65
142-1721-006 65
142-1721-011 65
142-1721-016 65
142-1721-021 66
142-1721-026 66
142-1721-031 66
142-1721-036 66
142-1721-041 66
142-1721-046 66
142-1721-051 66
142-1721-056 66
142-1731-006 64
142-1731-011 64
142-1731-016 64
142-1731-021 64
142-1731-026 64
142-1731-031 64
142-1731-036 64
142-1801-551 74
142-1801-556 74
142-1801-561 74
142-1801-566 74
142-1801-571 74
142-1801-576 74
142-1801-601 74
142-1801-606 74
142-1801-611 74
142-1801-616 74
142-1801-621 74
142-1801-626 74
142-1901-821 49
142-4303-401 80
142-4303-401 219
142-4303-406 80
142-4303-406 219
142-4304-401 80
142-4304-401 219
142-4304-406 80
142-4304-406 219
142-4307-401 80
142-4307-401 219
142-4307-406 80
142-4307-406 219
142-4308-401 80
142-4308-401 219
142-4308-406 80
142-4308-406 219
142-4403-001 80
142-4403-001 219
142-4403-006 80
142-4403-006 219
142-4403-101 80
142-4403-101 224
142-4403-106 80
142-4403-106 224
142-4404-001 80
142-4404-001 219
142-4404-006 80
142-4404-006 219
142-4404-101 80
142-4404-101 224
142-4404-106 80
142-4404-106 224
142-4407-001 80
142-4407-001 219
142-4407-001 220
142-4407-006 80
142-4407-006 219
142-4407-006 220
142-4407-101 80
142-4407-101 224
142-4407-101 229
142-4407-106 80
142-4407-106 224
142-4407-106 229
142-4408-001 80
142-4408-001 219
142-4408-006 80
142-4408-006 219
142-4408-101 80
142-4408-101 224
142-4408-106 80
142-4408-106 224
142-4435-001 80
142-4435-001 220
142-4435-006 80
142-4435-006 220
142-4435-101 80
142-4435-101 229
142-4435-106 80
142-4435-106 229
142-4439-001 80
142-4439-001 220
142-4439-006 80
142-4439-006 220
142-4439-101 80
142-4439-101 229
142-4439-106 80
142-4439-106 229
142-4701-201 81
142-4701-206 81
142-4701-501 81
142-4701-506 81
142-4701-801 81
142-4701-806 81
142-5303-401 84
142-5303-401 219
142-5303-406 84
142-5303-406 219
142-5304-401 84
142-5304-401 219
142-5304-406 84
142-5304-406 219
142-5307-401 84
142-5307-401 219
142-5307-406 84
142-5307-406 219
142-5308-401 84
142-5308-401 219
142-5308-406 84
142-5308-406 219
142-5403-001 84
142-5403-001 219
142-5403-006 84
142-5403-006 219
142-5403-101 84
142-5403-101 224
142-5403-106 84
142-5403-106 224
142-5404-001 84
142-5404-001 219
142-5404-006 84
142-5404-006 219
142-5404-101 84
142-5404-101 224
142-5404-106 84
142-5404-106 224
142-5407-001 84
142-5407-001 219
142-5407-001 220
142-5407-006 84
142-5407-006 219
142-5407-006 220
142-5407-101 84
142-5407-101 224
142-5407-101 229
142-5407-106 84
142-5407-106 224
142-5407-106 229
142-5408-001 84
142-5408-001 219
142-5408-006 84
142-5408-006 219
142-5408-101 84
142-5408-101 224
142-5408-106 84
142-5408-106 224
142-5435-001 84
142-5435-001 220
142-5435-006 84
142-5435-006 220
142-5435-101 84
142-5435-101 229
142-5435-106 84
142-5435-106 229
142-5439-001 84
142-5439-001 220
142-5439-006 84
142-5439-006 220
142-5439-101 84
142-5439-101 229
142-5439-106 84
142-5439-106 229
142-5701-201 85
142-5701-206 85
142-5701-501 85
142-5701-506 85
142-5701-801 85
142-5701-806 85
142-5701-811 85
142-5701-816 85
142-9303-411 87
142-9303-411 219
142-9403-011 87
142-9403-011 219
142-9403-101 87
142-9403-101 224
142-9404-011 87
142-9404-011 219
142-9404-101 87
142-9404-101 224
142-9407-001 87
142-9407-001 219
142-9407-101 87
142-9407-101 224
142-9701-201 88
142-9701-211 88
142-9701-301 88
142-9701-801 89
142-9701-811 89
142-9801-201 88
144-0000-910 187
144-0000-910 273
145-0693-001 43
145-0693-001 212
145-0693-002 43
145-0693-002 212
145-0694-001 43
145-0694-001 212
145-0694-002 43
145-0694-002 212
145-0701-001 43
145-0701-002 43
145-0701-601 43
145-0701-602 43
145-0701-611 43
145-0701-612 43
145-0901-801 44
145-0901-811 44
145-0901-821 44
146-0403-007 184
146-0403-007 256
146-0403-107 184
146-0403-107 255
146-0404-007 184
146-0404-007 256
146-0404-107 184
146-0404-107 255
146-0701-201 184
146-0701-301 184
1-8-0313-001 268
251-0111-003 273
251-0115-002 273
415-0001-006 169
415-0001-012 169
415-0001-018 169
415-0001-024 169
415-0001-030 169
415-0001-036 169
415-0002-006 169
415-0002-012 169
415-0002-018 169
415-0002-024 169
415-0002-030 169
415-0002-036 169
415-0003-006 168
415-0003-012 168
415-0003-018 168
415-0003-024 168
415-0003-030 168
415-0003-036 168
415-0004-006 169
415-0004-012 169
415-0004-018 169
415-0004-024 169
415-0004-030 169
415-0004-036 169
415-0005-006 169
415-0005-012 169
415-0005-018 169
415-0005-024 169
415-0005-030 169
415-0005-036 169
415-0006-006 169
415-0006-012 169
415-0006-018 169
415-0006-024 169
415-0006-030 169
415-0006-036 169
415-0007-006 169
415-0007-012 169
415-0007-018 169
415-0007-024 169
415-0007-030 169
415-0007-036 169
415-0008-006 169
415-0008-012 169
415-0008-018 169
415-0008-024 169
415-0008-030 169
415-0008-036 169
415-0009-006 170
415-0009-012 170
415-0009-018 170
415-0009-024 170
415-0009-030 170
415-0009-036 170
415-0010-006 169
415-0010-012 169
415-0010-018 169
415-0010-024 169
415-0010-030 169
415-0010-036 169
415-0011-006 170
415-0011-012 170
415-0011-018 170
415-0011-024 170
415-0011-030 170
415-0011-036 170
415-0013-006 170
415-0013-012 170
415-0013-018 170
415-0013-024 170
415-0013-030 170
415-0013-036 170
415-0014-006 164
415-0014-012 164
415-0014-018 164
415-0014-024 164
415-0014-030 164
415-0014-036 164
415-0015-006 164
415-0015-012 164
415-0015-018 164
415-0015-024 164
415-0015-030 164
415-0015-036 164
415-0016-006 164
415-0016-012 164
415-0016-018 164
415-0016-024 164
415-0016-030 164
415-0016-036 164
415-0017-006 164
415-0017-012 164
415-0017-018 164
415-0017-024 164
415-0017-030 164
415-0017-036 164
415-0018-006 164
415-0018-012 164
415-0018-018 164
415-0018-024 164
415-0018-030 164
415-0018-036 164
415-0020-006 164
415-0020-012 164
415-0020-018 164
415-0020-024 164
415-0020-030 164
415-0020-036 164
415-0021-006 164
415-0021-012 164
415-0021-018 164
415-0021-024 164
415-0021-030 164
415-0021-036 164
415-0022-006 165
415-0022-012 165
415-0022-018 165
415-0022-024 165
415-0022-030 165
415-0022-036 165
415-0023-006 165
415-0023-012 165
415-0023-018 165
415-0023-024 165
415-0023-030 165
415-0023-036 165
415-0024-006 165
415-0024-012 165
415-0024-018 165
415-0024-024 165
415-0024-030 165
415-0024-036 165
415-0025-006 165
415-0025-012 165
415-0025-018 165
415-0025-024 165
415-0025-036 165
415-0025-048 165
415-0026-006 167
415-0026-012 167
415-0026-018 167
415-0026-024 167
415-0026-036 167
415-0026-048 167
415-0027-006 167
415-0027-012 167
415-0027-018 167
415-0027-024 167
415-0027-036 167
415-0027-048 167
415-0028-006 171
415-0028-012 171
415-0028-018 171
415-0028-024 171
415-0028-036 171
415-0028-048 171
415-0029-006 165
415-0029-012 165
415-0029-018 165
415-0029-024 165
415-0029-036 165
415-0029-048 165
415-0030-006 167
415-0030-012 167
415-0030-018 167
415-0030-024 167
415-0030-036 167
415-0030-048 167
415-0031-006 166
415-0031-012 166
415-0031-018 166
415-0031-024 166
415-0031-036 166
415-0031-048 166
415-0032-006 167
415-0032-012 167
415-0032-018 167
415-0032-024 167
415-0032-036 167
415-0032-048 167
415-0033-006 165
415-0033-012 165
415-0033-018 165
415-0033-024 165
415-0033-036 165
415-0033-048 165
415-0034-006 167
415-0034-012 167
415-0034-018 167
415-0034-024 167
415-0034-036 167
415-0034-048 167
415-0035-006 166
415-0035-012 166
415-0035-018 166
415-0035-024 166
415-0035-036 166
415-0035-048 166
415-0036-006 167
415-0036-012 167
415-0036-018 167
415-0036-024 167
415-0036-036 167
415-0036-048 167
415-0037-012 171
415-0037-024 171
415-0037-036 171
415-0037-048 171
415-0037-060 171
415-0038-012 165
415-0038-024 165
415-0038-036 165
415-0038-048 165
415-0038-060 165
415-0040-012 166
415-0040-024 166
415-0040-036 166
415-0040-048 166
415-0040-060 166
415-0041-012 167
415-0041-024 167
415-0041-036 167
415-0041-048 167
415-0041-060 167
415-0042-012 171
415-0042-024 171
415-0042-036 171
415-0042-048 171
415-0042-060 171
415-0043-012 165
415-0043-024 165
415-0043-036 165
415-0043-048 165
415-0043-060 165
415-0044-012 167
415-0044-024 167
415-0044-036 167
415-0044-048 167
415-0044-060 167
415-0045-012 166
415-0045-024 166
415-0045-036 166
415-0045-048 166
415-0045-060 166
415-0046-012 167
415-0046-024 167
415-0046-036 167
415-0046-048 167
415-0046-060 167
415-0047-012 171
415-0047-024 171
415-0047-036 171
415-0047-048 171
415-0047-060 171
415-0048-012 171
415-0048-024 171
415-0048-036 171
415-0048-048 171
415-0048-060 171
415-0049-012 171
415-0049-024 171
415-0049-036 171
415-0049-048 171
415-0049-060 171
415-0050-012 171
415-0050-024 171
415-0050-036 171
415-0050-048 171
415-0050-060 171
415-0051-012 171
415-0051-024 171
415-0051-036 171
415-0051-048 171
415-0051-060 171
415-0052-012 171
415-0052-024 171
415-0052-036 171
415-0052-048 171
415-0052-060 171
415-0053-012 171
415-0053-024 171
415-0053-036 171
415-0053-048 171
415-0053-060 171
415-0054-012 170
415-0054-024 170
415-0054-036 170
415-0054-048 170
415-0054-060 170
415-0056-012 170
415-0056-024 170
415-0056-036 170
415-0056-048 170
415-0056-060 170
415-0057-012 170
415-0057-024 170
415-0057-036 170
415-0057-048 170
415-0057-060 170
415-0058-012 170
415-0058-024 170
415-0058-036 170
415-0058-048 170
415-0058-060 170
415-0059-012 171
415-0059-024 171
415-0059-036 171
415-0059-048 171
415-0059-060 171
415-0060-012 170
415-0060-024 170
415-0060-036 170
415-0060-048 170
415-0060-060 170
415-0061-012 171
415-0061-024 171
415-0061-036 171
415-0061-048 171
415-0061-060 171
415-0062-012 170
415-0062-024 170
415-0062-036 170
415-0062-048 170
415-0062-060 170
415-0063-012 170
415-0063-024 170
415-0063-036 170
415-0063-048 170
415-0063-060 170
415-0064-006 168
415-0064-012 168
415-0064-024 168
415-0064-036 168
415-0064-048 168
415-0065-006 168
415-0065-012 168
415-0065-018 168
415-0065-024 168
415-0065-036 168
415-0065-048 168
415-0066-006 163
415-0066-012 163
415-0066-018 163
415-0066-024 163
415-0067-006 163
415-0067-012 163
415-0067-018 163
415-0067-024 163
415-0068-006 163
415-0068-012 163
415-0068-018 163
415-0068-024 163
415-0069-006 163
415-0069-012 163
415-0069-018 163
415-0069-024 163
415-0070-006 163
415-0070-012 163
415-0070-018 163
415-0070-024 163
415-0070-036 163
415-0071-006 163
415-0071-012 163
415-0071-018 163
415-0071-024 163
415-0071-036 163
415-0072-006 163
415-0072-012 163
415-0072-018 163
415-0072-024 163
415-0072-036 163
415-0073-006 163
415-0073-012 163
415-0073-018 163
415-0073-024 163
415-0073-036 163
415-0074-006 168
415-0074-012 168
415-0074-024 168
415-0074-036 168
415-0074-048 168
415-0075-006 168
415-0075-012 168
415-0075-024 168
415-0075-036 168
415-0075-048 168
415-0076-012 168
415-0076-024 168
415-0076-036 168
415-0077-012 168
415-0077-024 168
415-0077-036 168
415-0078-012 168
415-0078-024 168
415-0078-036 168
415-0079-012 168
415-0079-024 168
415-0079-036 168
415-0081-003 166
415-0081-004 166
415-0081-005 166
415-0081-006 166
415-0081-007 166
415-0081-008 166
415-0081-012 166
415-0081-018 166
415-0081-024 166
415-0082-004 166
415-0082-005 166
415-0082-006 166
415-0082-007 166
415-0082-008 166
415-0082-012 166
415-0082-018 166
415-0082-024 166
415-0084-050 174
415-0084-100 174
415-0084-150 174
415-0084-200 174
415-0084-250 174
415-0084-300 174
415-0084-500 174
415-0085-050 174
415-0085-100 174
415-0085-150 174
415-0085-200 174
415-0085-250 174
415-0085-300 174
415-0085-500 174
415-0086-050 174
415-0086-100 174
415-0086-150 174
415-0086-200 174
415-0086-250 174
415-0086-300 174
415-0086-500 174
415-0087-050 174
415-0087-100 174
415-0087-150 174
415-0087-200 174
415-0087-250 174
415-0087-300 174
415-0087-500 174
415-0088-050 174
415-0088-100 174
415-0088-150 174
415-0088-200 174
415-0088-250 174
415-0088-300 174
415-0088-500 174
415-0089-150 176
415-0089-250 176
415-0090-150 176
415-0090-250 176
415-0091-150 176
415-0091-250 176
415-0092-150 177
415-0092-250 177
415-0093-150 177
415-0093-250 177
415-0094-150 177
415-0094-250 177
415-0095-150 176
415-0095-250 176
415-0096-150 176
415-0096-250 176
415-0097-150 176
415-0097-250 176
415-0098-150 177
415-0098-250 177
415-0099-150 177
415-0099-250 177
415-0100-150 177
415-0100-250 177
415-0101-150 175
415-0101-250 175
415-0102-150 175
415-0102-250 175
415-0104-150 178
415-0104-250 178
415-0105-150 178
415-0105-250 178
415-0106-150 178
415-0106-250 178
415-0107-150 178
415-0107-250 178
415-0108-150 178
415-0108-250 178
415-0162-006 172
415-0162-012 172
415-0162-024 172
415-0162-036 172
415-0162-048 172
415-0163-006 172
415-0163-012 172
415-0163-024 172
415-0163-036 172
415-0163-048 172
415-0165-006 172
415-0165-012 172
415-0165-024 172
415-0165-036 172
415-0165-048 172
415-0166-006 172
415-0166-012 172
415-0166-024 172
415-0166-036 172
415-0166-048 172
CPN-1 242
CPN-110 242
CPN-142T 242
CPN-16 242
CPN-17 242
CPN-2 242
CPN-68-1 241
CPN-68-13 241
CPN-68-8 241
CPN-8 242
M22520/1-01 273

# Competitor Cross Reference

| | |
|---|---|
| **ADC** | **EMERSON** |
| BNC-1 | CPMC-68-35 |
| BNC-2 | CPMC-68-2 |
| BNC-3 | CPMC-68-33 |
| BNC-4 | CPMC-68-3 |
| BNC-6 | CPMC-68-10 |
| BNC-6 | CPMC-68-50 |
| BNC-7 | CPMC-68-18 |
| BNC-8 | CPMC-68-45 |
| BNC-10 | CPMC-68-36 |
| BNC-13 | CPMC-68-34 |
| **AEP** | **EMERSON** |
| 204 | 131-3701-401 |
| 209 | 131-1701-201 |
| 209 | 131-3701-201 |
| 210 | 131-1701-371 |
| 210 | 131-3701-301 |
| 219 | 131-3701-411 |
| 222 | 131-3901-401 |
| 225 | 131-3801-201 |
| 242 | 131-1801-371 |
| 242 | 131-3801-301 |
| 1-104 | 131-6701-401 |
| 1-109 | 131-6701-201 |
| 1-110 | 131-6701-301 |
| 1-119 | 131-6701-411 |
| 1-302/188 | 131-6403-001 |
| 1-303/188 | 131-6303-401 |
| 1-305/188 | 131-6403-101 |
| 1002-1571-003 | 131-6403-001 |
| 1002-7571-003 | 131-6403-006 |
| 1003-1571-003 | 131-6303-401 |
| 1003-7571-003 | 131-6303-406 |
| 1004-1511-000 | 131-6701-401 |
| 1004-7511-000 | 131-6701-406 |
| 1009-1511-000 | 131-6701-201 |
| 1009-7511-000 | 131-6701-206 |
| 1010-1511-000 | 131-6701-301 |
| 1019-1511-000 | 131-6701-411 |
| 1019-7511-000 | 131-6701-416 |
| 1105-1521-003 | 131-6403-101 |
| 1105-7521-003 | 131-6403-106 |
| 1110-1511-000 | 131-6701-341 |
| 1110-7511-000 | 131-6701-346 |
| 2001-1571-002 | 131-3302-001 |
| 2001-1571-003 | 131-3303-001 |
| 2001-7571-002 | 131-3302-006 |
| 2001-7571-003 | 131-3303-006 |
| 2002-1541-010 | 131-3693-001 |
| 2002-1571-002 | 131-3402-001 |
| 2002-1571-003 | 131-1403-001 |
| 2002-1571-003 | 131-3403-001 |
| 2002-7541-010 | 131-3693-016 |
| 2003-1541-010 | 131-3593-401 |
| 2003-7541-010 | 131-3593-406 |
| 2004-1511-000 | 131-3701-401 |
| 2004-7511-000 | 131-3701-406 |
| 2005-1541-010 | 131-1693-101 |
| 2005-1541-010 | 131-3693-101 |
| 2005-7541-010 | 131-3693-116 |
| 2009-1511-000 | 131-1701-201 |
| 2009-1511-000 | 131-3701-201 |
| 2009-7511-000 | 131-1701-206 |
| 2009-7511-000 | 131-3701-206 |
| 2010-1511-000 | 131-1701-371 |
| 2010-1511-000 | 131-3701-301 |
| 2010-7511-000 | 131-1701-376 |
| 2010-7511-000 | 131-3701-306 |
| 2018-1511-001 | 131-3701-801 |
| 2018-7511-001 | 131-3701-806 |
| 2019-1511-000 | 131-3701-411 |
| 2019-7511-000 | 131-3701-416 |
| 2025-1511-000 | 131-3801-201 |
| 2025-7511-000 | 131-3801-216 |
| 2042-1511-000 | 131-1801-371 |
| 2042-1511-000 | 131-3801-301 |
| 2042-7511-000 | 131-1801-376 |
| 2042-7511-000 | 131-3801-316 |
| 2105-1521-002 | 131-1402-101 |
| 2105-1521-002 | 131-3402-101 |
| 2105-1521-003 | 131-1403-101 |
| 2105-1521-003 | 131-3403-101 |
| 2105-7521-002 | 131-1402-116 |
| 2105-7521-002 | 131-3402-116 |
| 2105-7521-003 | 131-1403-116 |
| 2105-7521-003 | 131-3403-116 |
| 2110-1511-000 | 131-3701-341 |
| 2110-7511-000 | 131-3701-346 |
| 218/063 | 131-3701-801 |
| 2484-1511-000 | 131-3701-631 |
| 2484-7511-000 | 131-3701-636 |
| 401/188 | 131-3303-001 |
| 401/196 | 131-3302-001 |
| 402/188 | 131-1403-001 |
| 402/188 | 131-3403-001 |
| 402/196 | 131-3402-001 |
| 405/188 | 131-1403-101 |
| 405/188 | 131-3403-101 |
| 405/196 | 131-1402-101 |
| 405/196 | 131-3402-101 |
| 5222-1501-000 | 131-3901-401 |
| 5222-7501-000 | 131-3901-406 |
| 5909-1103-000 | 142-0901-401 |
| 5917-1103-000 | 142-0901-801 |
| 5918-1103-000 | 142-0901-811 |
| 9001-1023-001 | 142-0408-011 |
| 9001-1023-003 | 142-0403-011 |
| 9001-1023-006 | 142-0407-011 |
| 9001-1023-019 | 142-0404-011 |
| 9001-9023-001 | 142-0408-016 |
| 9001-9023-003 | 142-0403-016 |
| 9001-9023-006 | 142-0407-016 |
| 9001-9023-019 | 142-0404-016 |
| 9002-1023-003 | 142-0303-011 |
| 9002-1023-006 | 142-0307-011 |
| 9002-1023-019 | 142-0304-011 |
| 9002-9023-001 | 142-0308-016 |
| 9002-9023-003 | 142-0303-016 |
| 9002-9023-006 | 142-0307-016 |
| 9002-9023-019 | 142-0304-016 |
| 9030-0123-001 | 142-0308-411 |
| 9030-1023-003 | 142-0303-411 |
| 9030-1023-006 | 142-0307-411 |
| 9030-1023-019 | 142-0304-411 |
| 9030-9023-001 | 142-0308-416 |
| 9030-9023-003 | 142-0303-416 |
| 9030-9023-006 | 142-0307-416 |
| 9030-9023-019 | 142-0304-416 |
| 9043-1523-002 | 142-0402-101 |
| 9043-1523-003 | 142-0403-101 |
| 9043-1523-006 | 142-0407-101 |
| 9044-9513-000 | 142-1701-606 |
| 9044-9513-001 | 142-1701-616 |
| 9045-9513-000 | 142-1701-506 |
| 9045-9513-001 | 142-1701-516 |
| 9046-9513-000 | 142-1801-606 |
| 9046-9513-001 | 142-1801-616 |
| 9048-9513-000 | 142-1701-626 |
| 9049-9513-000 | 142-1701-526 |
| 9050-9513-000 | 142-1801-626 |
| 9074-9513-000 | 142-1701-576 |
| 9076-1113-000 | 142-1701-011 |
| 9076-9113-000 | 142-1701-016 |
| 9079-9513-000 | 142-1701-556 |
| 9079-9513-001 | 142-1701-566 |
| 9101-1573-003 | 142-0403-001 |
| 9130-1573-002 | 142-0302-401 |
| 9130-1573-003 | 142-0303-401 |
| 9130-1573-006 | 142-0307-401 |
| 9201-1553-002 | 142-0202-011 |
| 9201-1553-003 | 142-0203-011 |
| 9201-1553-006 | 142-0207-011 |
| 9230-1553-002 | 142-0102-401 |
| 9230-1553-003 | 142-0103-401 |
| 9243-1553-002 | 142-0202-101 |
| 9243-1553-003 | 142-0203-101 |
| 9243-1553-006 | 142-0207-101 |
| 9301-1063-109 | 142-0694-021 |
| 9304-1113-013 | 142-1701-191 |
| 9304-9113-013 | 142-1701-196 |
| 9308-1113-001 | 142-1701-201 |
| 9308-9113-001 | 142-1701-206 |
| 9401-1083-010 | 142-0693-001 |
| 9401-1083-109 | 142-0694-001 |
| 9402-1083-009 | 142-0594-001 |
| 9402-1083-010 | 142-0593-001 |
| 9404-1113-000 | 142-0701-631 |
| 9408-1113-000 | 142-0701-621 |
| 9412-1113-000 | 142-0701-401 |
| 9413-1113-000 | 142-0701-411 |
| 9424-1513-000 | 142-0701-701 |
| 9424-9513-000 | 142-0701-706 |
| 9453-1083-009 | 142-0594-401 |
| 9453-1083-010 | 142-0593-401 |
| 9504-9113-009 | 142-1701-546 |
| 9504-9113-031 | 142-1701-536 |
| 9508-9113-001 | 142-1701-646 |
| 9508-9113-002 | 142-1701-636 |
| 9576-9113-001 | 142-1701-586 |
| 9576-9113-003 | 142-1701-596 |
| 9609-1513-000 | 142-0701-531 |
| 9609-9513-000 | 142-0701-536 |
| 9649-1113-000 | 142-0801-201 |
| 9650-1113-000 | 142-0701-201 |
| **AMP** | **SEE TYCO/AMP** |
| **AMP** | **EMERSON** |
| 221984-1 | CPFI-UG88-2 |
| 221984-5 | CPFI-UG88-3 |
| 221984-7 | CPFI-UG88-1 |
| 221988-1 | CP-AD506 |
| 222165-2 | CP-AD503 |
| 222319-1 | CP-AD512 |
| 222321-1 | CP-AD809 |
| 222428-1 | CPFI-UG89-2 |
| 222506-2 | CPMC-TNC-2 |
| 222506-4 | CPMC-TNC-13 |
| 225395-1 | CPMC-88-1 |
| 225395-2 | CPMC-88-2 |
| 225395-5 | CPMC-88-1 |
| 225395-6 | CPMC-88-13 |
| 225395-7 | CPM-88-19 |
| 225395-8 | CPM-88-20 |
| 225395-9 | CPMC-88-14 |
| 225532-1 | 142-0407-016 |
| 225532-9 | 142-0407-016 |
| 225542-1 | 142-0307-016 |
| 225608-9 | 142-0307-416 |
| 225609-1 | 142-0407-101 |
| 225609-4 | 142-0403-101 |
| 225661-2 | CPN-1 |
| 225886-4 | CPMC-88-26 |
| 226279-1 | CPL-259-1 |
| 226279-2 | CPL-259-8 |
| 226279-3 | CPL-259-2 |
| 226600-1 | MINI-UHF-1 |
| 227000-5 | CPMC-TNC-1 |
| 227000-7 | CPMC-TNC-2 |
| 227079-1 | CPMC-88-1 |
| 227079-2 | CPMC-88-13 |
| 227079-3 | CPMC-88-2 |
| 227079-5 | CPMC-88-1 |
| 227079-7 | CPMC-88-2 |
| 227079-9 | CPMC-88-1 |
| 227632-1 | 131-6701-406 |
| 227633-1 | 131-6701-416 |
| 227677-1 | CP-BNC-PC-009 |
| 227726-3 | CP-AD520 |
| 227754-1 | CP-1094-U |
| 227754-2 | CP-1094-U |
| 227754-3 | CP-1094-U |
| 227945-2 | CP-AD850 |
| 227945-5 | CP-AD850 |
| 227839-1 | CP-TNC-PC-002 |
| 228226-3 | CP-AD556 |
| 227984-1 | CPFI-UG88-2 |
| 228026-2 | 131-6402-006 |
| 228026-3 | 131-6403-006 |
| 228028-1 | 131-6303-406 |
| 228028-3 | 131-6303-406 |
| 228030-1 | 131-6403-106 |
| 228030-2 | 131-6402-106 |
| 228030-3 | 131-6403-106 |
| 228212-1 | 131-1701-206 |
| 228212-1 | 131-3701-206 |
| 228213-1 | 131-1403-016 |
| 228213-1 | 131-3403-016 |
| 228213-2 | 131-3402-016 |
| 228213-3 | 131-1403-016 |
| 228213-3 | 131-3403-016 |
| 228214-1 | 131-1403-116 |
| 228214-1 | 131-3403-116 |
| 228214-2 | 131-1402-116 |
| 228214-2 | 131-3402-116 |
| 228215-1 | 131-3701-406 |
| 228216-1 | 131-3701-416 |
| 228226-1 | CP-AD556 |
| 228509-9 | CP-625U |
| 3-227079-0 | CPMC-88-5 |
| 3-227079-1 | CPMC-88-5 |
| 3-227079-2 | CPMC-88-5 |
| 3-227079-7 | CPMC-88-14 |
| 3-227086-6 | CPN-1 |
| 329517 | CP-AD503 |
| 329518 | CP-AD505 |
| 330024 | CP-AD556 |
| 331350 | CPMC-88-2 |
| 4-227079-1 | CPMC-88-1 |
| 4-227079-3 | CPMC-88-1 |
| 4-227079-9 | CPMC-88-10 |
| 4-331350-0 | CPMC-88-3 |
| 413592-2 | CP-AD505 |
| 413592-9 | CP-AD505 |
| 413771-3 | CP-89-19-BM1 |
| 414160-7 | CPN-68-13 |
| 414160-9 | CPN-68-1 |
| 414168-3 | CP-TNC-89-19-BM |
| 414265-1 | CPFI-UG88-1 |
| 414265-3 | CPFI-UG89-2 |
| 414265-4 | CPFI-UG88-10 |
| 414265-5 | CPFI-UG88-3 |
| 414311-1 | CP-AD506 |
| 414414-1 | CP-AD555 |
| 414459-1 | CP-BNC-PC-016 |
| 414580-2 | CPFI-UG88-1 |
| 414580-3 | CPFI-UG89-2 |
| 414580-5 | CPFI-UG88-10 |
| 414586-1 | CPMC-88-1 |
| 414586-5 | CPMC-88-1 |
| 414666-1 | CP-AD503 |
| 51751-1 | 131-6303-401 |
| 51751-3 | 131-6303-401 |
| 51753-1 | 131-6403-101 |
| 51753-4 | 131-6403-101 |
| 5-227079-8 | CPMC-88-3 |
| 5-331350-3 | CPMC-88-2 |
| 5801-7985-63 | 133-3693-001 |
| 5818-5002-10 | 142-0003-236 |
| 5818-5003-10 | 142-0003-246 |
| 5818-5005-10 | 142-0002-226 |
| 5831-5002-10 | 133-3402-006 |
| 5831-5003-10 | 133-3403-006 |
| 5837-5002-10 | 133-3402-106 |
| 5837-5003-10 | 133-3403-106 |
| 5837-5010-63 | 133-3403-101 |
| 5862-5002-10 | 133-3701-216 |
| 5862-5003-10 | 133-3701-206 |
| 5862-5004-10 | 133-3701-226 |
| 5863-0000-10 | 133-3801-201 |
| 5864-5001-10 | 133-3701-306 |
| 5864-5002-10 | 133-3701-326 |
| 5864-5003-10 | 133-3701-316 |
| 6-227079-0 | CPMC-88-13 |
| 6-227079-1 | CPMC-88-13 |
| 6-227079-2 | CPMC-88-13 |
| 6-227079-5 | CPMC-88-5 |
| 6-227079-7 | CPMC-88-11 |
| BNC58HPC | CPMC-88-1 |
| BNC58J | CP-89-1 |
| BNC58PC | CPMC-88-1 |
| BNC58PP | CPMC-88-11 |
| BNC58PTV | CPFI-UG-88-1 |
| BNC59HPC | CPMC-88-2 |
| BNC59J | CP-89-2 |
| BNC59JTW | CPFI-UG89-2 |
| BNC59P | CPMC-88-2 |
| BNC59PC | CPMC-88-2 |
| BNC59PC75 | CPMC-78-2 |
| BNC59PP | CPMC-88-10 |
| BNC59PPC | CPMC-88-10 |
| BNC59PTW | CPFI-UG88-2 |
| BNC59PTWP | CPFI-UG88-10 |
| BNC8281HPS | CPMC-88-3 |
| BNCBHS | CP-AD556 |
| BNCILS | CP-AD555 |
| BNCISJ | CP-AD520 |
| BNCTC | CP-AD505 |
| F59PIC | CPF-59-1/4 |
| NP8C | CP-N-1 |
| TNC58P | CPMC-TNC-1 |
| TNC58PC | CPMC-TNC-1 |
| TNC59P | CPMC-TNC-2 |
| TNC59PC | CPMC-TNC-2 |
| TNCBHS | CP-AD356 |
| TNCILS | CP-AD355 |
| **AMPHENOL** | **EMERSON** |
| 27-10 | 131-6303-401 |
| 27-101 | 131-6701-401 |
| 27-175 | 131-1801-371 |
| 27-175 | 131-3801-301 |
| 27-2 | 131-3303-001 |
| 27-31 | 131-3302-001 |
| 27-5 | 131-3901-401 |
| 27-5050 | 131-3693-001 |
| 27-5052 | 131-1693-101 |
| 27-5052 | 131-3693-101 |
| 27-845 | 131-6303-401 |
| 27-849 | 131-3303-001 |
| 2900 | CP-AD512 |
| 2925 | CP-AD512 |
| 5575 | CP-1094U |
| 12025 | CP-AD500 |
| 17450 | CP-AD506 |
| 34525 | CPN-2 |
| 36650 | CPMC-88-14 |
| 36875 | CPMC-88-13 |
| 68175 | CPMC-88-2 |
| 79100 | CP-AD356 |
| 79675 | CP-AD300 |
| 31-10 | CP-AD520 |
| 31-10-75-RFX | CP-AD520 |
| 31-10-RFX | CP-AD520 |
| 31-203 | CP-AD519 |
| 31-203-RFX | CP-AD519 |
| 31-208 | CP-AD505 |
| 31-208RFX | CP-AD505 |
| 31-217 | CP-AD807 |
| 31-218 | CP-AD511 |
| 31-218-RFX | CP-AD511 |
| 31-219 | CP-AD555 |
| 31-219RFX | CP-AD555 |
| 31-2208 | CP-AD505 |
| 31-221 | CP-1094U |
| 31-221-RFX | CP-1094U |
| 31-2218 | CP-AD511 |
| 31-2221 | CP-1094U |
| 31-2242-RFX | CPM-TNC-19 |
| 31-2315-RFX | CPM-TNC-19 |
| 31-2318-RFX | CP-TNC-89-19-BM |
| 31-236 | CP-1094U |
| 31-2367-RFX | CPMC-TNC-1 |
| 31-2368-RFX | CPMC-TNC-1 |
| 31-2373 | CPMC-TNC-13 |
| 31-242 | CPM-88-20 |
| 31-242-RFX | CPM-88-20 |
| 31-245-RFX | CP-79-20-BM1 |
| 31-28 | CP-AD500 |
| 31-315 | CPM-88-19 |
| 31-315-RFX | CPM-88-19 |
| 31-318-RFX | CP-89-19-BM1 |
| 31-320 | CPMC-88-1 |
| 31-320-1006 | CPMC-88-11 |
| 31-320-RFX | CPMC-88-1 |
| 31-321 | CPMC-88-2 |
| 31-321-1 RFX1 | CPMC-88-2 |
| 31-321-1000 | CPMC-88-3 |
| 31-321-RFX1 | CPMC-88-2 |
| 31-3220 | CP-AD521 |
| 31-323 | CPMC-88-14 |
| 31-325 | CPMC-88-18 |
| 31-326 | CPMC-88-13 |
| 31-326-RFX | CPMC-88-3 |
| 31-4791 | CP-AD355 |
| 31-4791-RFX | CP-AD355 |
| 31-4803 | CP-AD521 |
| 31-4803-RFX | CP-AD580 |
| 31-5136 | CPFI-UG88-2 |
| 31-5136-RFX | CPFI-UG88-2 |
| 31-5137 | CPFI-UG88-1 |
| 31-5137-RFX | CPFI-UG88-1 |
| 31-5138 | CPFI-UG89-2 |
| 31-5141 | CPMC-88-18 |
| 31-5151 | CPFI-UG88-3 |
| 31-5156 | CPMC-88-2 |
| 31-5157 | CPMC-TNC-2 |
| 31-5369-RFX | CPFI-UG88-10 |
| 31-5493-RFX | CP-BNCPC-007 |
| 31-5556-RFX | CP-88-2 |
| 31-5557-RFX | CP-88-1 |
| 31-5558-RFX | CPMC-88-5 |
| 31-5560-RFX | CP-88-10 |
| 31-5633 | CP-BNCPC-005 |
| 31-5640-RFX | CP-BNCPC-009 |
| 31-5888-RFX | CP-TNC-PC-002 |
| 31-5893-RFX | CP-AD355 |
| 31-5900 | CPMC-88-21 |
| 31-5912-RFX | CPMC-88-19 |
| 31-5913-RFX | CPMC-78-20 |
| 31-5976-50-RFX | CP-BNCPC-001 |
| 31-5980-RFX | CP-AD558 |
| 31-6-RFX | CP-BNC-CAP-1 |
| 31-70008 | CPMC-68-2 |
| 31-70008 | CPMC-78-2 |
| 31-70036 | CP-AD705 |
| 31-70222 | CPMC-78-3 |
| 31-70234 | CPMC-68-45 |
| 31-70235 | CPMC-68-3 |
| 31-70236 | CPMC-68-18 |
| 31-70237 | CPMC-68-35 |
| 31-70238 | CPMC-68-33 |
| 31-71008 | CPMC-78-2 |
| 31-71008-2000 | CPMC-78-10 |
| 31-71008-RFX | CPMC-78-2 |
| 31-71013 | CPMC-68-20 |
| 31-71032 | CPMC-78-3 |
| 31-71042-RFX | CP-BNCPC-012 |
| 31-71043-RFX | CP-BNCPC-010 |
| 31-71047-10-RFX | CP-BNCPC-016 |
| 31-71058-RFX | CP-BNCPC-008 |
| 31-8 | CP-AD505 |
| 31-830 | CP-AD809 |
| 31-9 | CP-AD503 |
| 31-9-RFX | CP-AD503 |
| 36650-3RFX1 | CPMC-88-11 |
| 36650-RFX | CPMC-88-11 |
| 37-71008-RFX | CPMC-78-2 |
| 68175-1004 | CPMC-88-2 |
| 68175-1005 | CPMC-88-2 |
| 68175-11-RFX | CPMC-88-10 |
| 68175-5-RFX | CPMC-88-2 |
| 68175-5RFX1 | CPMC-88-2 |
| 79100-NRFX | CP-AD356 |
| 81-115 | MINI-UHF-1 |
| 81-115-RFX | MINI-UHF-1 |
| 82-100 | CP-AD800 |
| 82-100-RFX | CP-AD800 |
| 82-101 | CP-AD850 |
| 82-101-RFX | CP-AD850 |
| 82-24 | CP-AD801 |
| 82-36 | CP-AD803 |
| 82-4352-1 | CPN-8 |
| 82-4426-11-RFX | CPN-8 |
| 82-5375 | CPN-1 |
| 82-5375-RFX | CPN-1 |
| 82-5380 | CPN-2 |
| 82-61 | CPN-8 |
| 82-64 | CP-AD803 |
| 82-97-RFX | CP-AD801 |
| 83-15P-15-RFX | CP-AD250 |
| 83-1F | CP-AD207 |
| 83-1J | CP-AD204 |
| 83-1J-RFX | CP-AD204 |
| 83-1R | CP-AD206 |
| 83-1R-RFX | CP-AD206 |
| 83-58FCP-RFX | CPL-259-1 |
| 83-58SCP | CPL-259-1 |
| 83-58SCP-RFX | CPL-259-1 |
| 83-59DCP | CPL-259-2 |
| 83-59DCP-RFX | CPL-259-2 |
| 83-85P | CPL-259-8 |
| 83-8SP-RFX | CPL-259-8 |
| 901-164 | CP-AD582 |
| 901-165 | CP-AD583 |
| 901-166 | CP-AD508 |
| 901-130 | 142-0207-101 |
| 901-140 | 142-0203-101 |
| 901-143-6RFX | 142-0701-301 |
| 901-144-8RFX | 142-0701-201 |
| 901-149 | 142-0407-101 |
| 901-155 | 142-0403-001 |
| 901-168 | CP-AD311 |
| 901-191 | 142-0901-401 |
| 901-255 | 142-0102-401 |
| 901-256 | 142-0103-401 |
| 901-276 | 142-0901-821 |
| 901-281 | 142-0202-011 |
| 901-292 | CP-AD817 |
| 901-293 | CP-AD818 |
| 901-294 | CP-AD810 |
| 901-295 | CP-AD819 |
| 901-302 | 142-0901-801 |
| 901-303 | 142-0901-811 |
| 901-367 | 142-0202-101 |
| 901-9183-1 | 142-0694-031 |
| 901-9201-2A | 142-0693-001 |
| 901-9202-1A | 142-0594-001 |
| 901-9202-2A | 142-0593-001 |
| 901-9207-1 | 142-0694-021 |
| 901-9210-1 | 142-0594-401 |
| 901-9210-2 | 142-0593-401 |
| 901-9215 | 142-0701-631 |
| 901-9220 | 142-0701-411 |
| 901-9221-1A | 142-0694-101 |
| 901-9221-2A | 142-0693-101 |
| 901-9244-2 | 142-0701-621 |
| 901-9511-1 | 142-0408-011 |
| 901-9511-12SF | 142-0404-016 |
| 901-9511-12SFC | 142-0404-016 |
| 901-9511-1S | 142-0408-016 |
| 901-9511-1SFC | 142-0408-016 |
| 901-9511-3 | 142-0403-011 |
| 901-9511-3SF | 142-0403-016 |
| 901-9511-3SFC | 142-0403-016 |
| 901-9531-3 | 142-0403-101 |
| 901-9867-RFX | 142-0693-001 |
| 901-9868-RFX | 142-0694-001 |
| 901-9876-RFX | 142-0407-011 |
| 901-9877-RFX | 142-0403-011 |
| 901-9879-RFX | 142-0303-411 |
| 901-9880-RFX | 142-0407-101 |
| 901-9881-RFX | 142-0403-101 |
| 901-9889-RFX | 142-0701-411 |
| 901-9890-RFX | 142-0701-401 |
| 901-9891-RFX | 142-1701-131 |
| 901-9892-RFX | 142-0701-631 |
| 901-9893-RFX | 142-0701-621 |
| 901-9894-RFX | 142-0801-301 |
| 901-9895-RFX | 142-0801-201 |
| 901-9940-RFX | 142-0694-011 |
| 901-9943-RFX | 142-0593-001 |
| 901-9944-RFX | 142-0594-001 |
| 901-9945-RFX | 142-0593-401 |
| 901-9946-RFX | 142-0594-401 |
| 901-9951-RFX | 142-0693-101 |
| 901-9952-RFX | 142-0694-101 |
| 901-9953-RFX | 142-0307-011 |
| 901-9954-RFX | 142-0303-011 |
| 901-9955-RFX | 142-0307-411 |
| 901-9978-RFX | 142-1701-511 |
| 901-9979-RFX | 142-1701-611 |
| 901-9984-RFX | 142-0901-811 |
| 901-9985-RFX | 142-0901-801 |
| 901-9986-RFX | 142-0901-401 |
| 901-9987-RFX | 142-0901-821 |
| 901-B2501-519 | CP-AD507 |
| 901-B2501-520 | CP-AD508 |
| 903-284-52S | 131-6403-001 |
| 903-285P-51S | 131-1403-001 |
| 903-285P-51S | 131-3403-001 |
| 903-287P-51S | 131-3402-001 |
| 903-288P-52A | 131-6403-101 |
| 903-289P-51A | 131-1403-101 |
| 903-289P-51A | 131-3403-101 |
| 903-291P-51A | 131-1402-101 |
| 903-291P-51A | 131-3402-101 |
| 903-305J-51R | 131-3701-401 |
| 903-373J-51A | 131-1701-371 |
| 903-373J-51A | 131-3701-301 |
| 903-376J-51A | 131-3701-341 |
| 903-402J-51R | 131-3701-411 |
| 903-407J-51R | 131-3701-421 |
| 903-408J-52R | 131-6701-411 |
| 903-419J-52A | 131-6701-341 |
| 903-420J-52P | 131-6701-201 |
| 903-422J-51A | 131-3303-501 |
| 903-550P-51SX | 131-1403-001 |
| 903-551P-52SX | 131-6403-001 |
| 903-552J-51SX | 131-3303-001 |
| 903-555J-52SX | 131-6303-401 |
| 903-556P-51AX | 131-3403-101 |
| 903-557P-52AX | 131-6403-101 |
| 903-558P-51AX | 131-1403-101 |
| 903-561P-51PX | 131-3801-201 |
| 903-564J-52PX | 131-6701-201 |
| 903-565P-51A | 131-3801-301 |
| 903-566P-52A | 131-6801-301 |
| 903-567J-51A | 131-3701-301 |
| 903-568J-52A | 131-6701-301 |
| 903-569J-51RX | 131-3701-411 |
| 903-570J-52RX | 131-6701-411 |
| 903-571J-51RX | 131-3701-401 |
| 903-572J-52RX | 131-6701-401 |
| 908-21103 | 135-3801-201 |
| 908-22100 | 135-3711-801 |
| 908-24100 | 135-3701-301 |
| 908-41200 | 135-3402-001 |
| 908-41300 | 135-3403-001 |
| 908-41500 | 135-3404-001 |
| 908-42300 | 135-3303-001 |
| 908-43200 | 135-3402-101 |
| 908-43300 | 135-3403-101 |
| 908-43400 | 135-3693-101 |
| 908-43500 | 135-3404-101 |
| BNC-AAPJ | CP-AD503 |
| BNC-AS-JJ | CP-AD555 |
| BNC-PC2C-P5962 | CP-88-10 |
| BNC-PS2C-58 | CP-88-1 |
| BNC-PS2C-5962 | CP-88-2 |







COMPETITOR CROSS REFERENCE

# Competitor Cross Reference

| | |
|---|---|
| BNC-PS3C-174 | CPM-88-19 |
| BNC-PS3C-P5962 | CPMC-88-10 |
| BNC-PS3C-PL58 | CPMC-88-11 |
| BNC-T-JPJ | CP-AD505 |
| TNC-A5-JJ | CP-AD355 |
| TNC-PS3C-58 | CPMC-TNC-1 |
| TNC-PS3C-5962 | CPMC-TNC-2 |

**ANRITSU ..... EMERSON**

| | |
|---|---|
| K100B | 142-1000-033 |
| K101M-85 | 145-0693-002 |
| K102F | 145-0701-002 |
| K103F | 145-0701-602 |
| K104F | 145-0701-612 |

**AUTOMATIC ..... EMERSON**

| | |
|---|---|
| 3301-640-919 | 142-0403-001 |
| 3301-940-801 | 142-0202-011 |
| 3301-940-819 | 142-0203-011 |
| 3301-940-888 | 142-0207-011 |
| 3302-640-901 | 142-0402-101 |
| 3302-640-980 | 142-0407-101 |
| 3302-940-801 | 142-0202-101 |
| 3302-940-819 | 142-0203-101 |
| 3302-940-888 | 142-0207-101 |
| 3307-640-901 | 142-0302-401 |
| 3307-640-919 | 142-0303-401 |
| 3307-940-801 | 142-0102-401 |
| 3307-940-819 | 142-0103-401 |
| E-3301-042-104 | 142-0694-001 |
| E-3301-044-104 | 142-0694-031 |
| E-3301-044-124 | 142-0693-001 |
| E-3302-045-919 | 142-0403-101 |
| E-3306-942-104 | 142-0594-001 |
| E-3306-942-124 | 142-0593-001 |
| E-3307-962-104 | 142-0594-401 |
| E-3307-962-124 | 142-0593-401 |
| E-3337-945-000 | 142-0701-401 |
| E-3341-000-000 | 142-0701-631 |
| E-3341-960-100 | 142-0701-621 |
| E-3352-960-000 | 142-0901-811 |
| E-3353-000-000 | 142-0901-821 |
| E-3356-000-000 | 142-0901-801 |
| E-3357-040-000 | 142-0901-401 |
| H-4601-004-919 | 131-6403-001 |
| H-4602-045-919 | 131-6403-101 |
| H-4607-004-919 | 131-6303-401 |
| H-4632-000-000 | 131-6701-411 |
| H-4637-000-000 | 131-6701-401 |
| H-4695-000-000 | 131-6701-201 |
| H-4697-000-000 | 131-6701-301 |
| H-6491-000-703 | 131-3701-631 |
| H-6901-004-919 | 131-1403-001 |
| H-6901-004-919 | 131-3403-001 |
| H-6901-045-125 | 131-3693-001 |
| H-6902-040-125 | 131-1693-101 |
| H-6902-040-125 | 131-3693-101 |
| H-6902-045-901 | 131-1402-101 |
| H-6902-045-919 | 131-1403-101 |
| H-6902-045-919 | 131-3403-101 |
| H-6906-004-901 | 131-3302-001 |
| H-6906-004-919 | 131-3303-001 |
| H-6907-045-125 | 131-3593-401 |
| H-6932-000-000 | 131-3701-411 |
| H-6937-000-000 | 131-3701-401 |
| H-6957-000-000 | 131-3901-401 |
| H-6991-000-000 | 131-3801-201 |
| H-6993-000-000 | 131-1801-371 |
| H-6995-000-000 | 131-1701-201 |
| H-6995-000-000 | 131-3701-201 |
| H-6997-000-000 | 131-1701-371 |
| H-6997-000-000 | 131-3701-301 |
| Sl333-2704-308 | 142-0701-411 |

**BERG ..... EMERSON**

| | |
|---|---|
| 32AS100-1 | 131-3901-401 |
| 32J102-1 | 131-3303-001 |
| 32JR104-1 | 131-3701-401 |
| 32JR107-1 | 131-3701-201 |
| 32JR110-1 | 131-3701-411 |
| 32JR111-1 | 131-3701-301 |
| 32JR122-1 | 131-3701-341 |
| 32JR189-1 | 131-3711-201 |
| 32P100-1 | 131-1403-001 |
| 32P100-6 | 131-3402-001 |
| 32P111-1 | 131-1403-101 |
| 32P111-13 | 131-1402-101 |
| 32PR103-1 | 131-3801-201 |
| 32PR104-1 | 131-3801-301 |
| 37JR101-1 | 131-6701-411 |
| 37JR104-2 | 131-6701-201 |
| 37JR108-1 | 131-6701-401 |
| 37JR110-1 | 131-6701-301 |
| 37JS102-1 | 131-6303-401 |
| 37P104-1 | 131-6403-101 |
| 37P106-1 | 131-6403-001 |
| 37T100-1 | 142-0003-301 |
| 39JR128-5 | 142-0701-301 |
| 39JR359-1 | 142-0701-201 |
| 39JR363-1 | 142-0701-876 |
| 39JR364-1 | 142-0701-506 |
| 39JR364-2 | 142-0701-501 |
| 69JR100-2 | 135-3701-201 |
| 69JR101-2 | 135-3701-301 |
| 69JR103-2 | 135-3711-801 |
| 69P101-2 | 135-3801-201 |
| 69P103-4 | 135-3404-001 |
| 69P103-6 | 135-3403-001 |
| 69P104-3 | 135-3403-101 |
| 69P104-4 | 135-3404-101 |
| 69P104-6 | 135-3402-101 |

**BIRNBACH ..... EMERSON**

| | |
|---|---|
| 400 | 108-0750-001 |
| 401 | 108-0753-001 |
| 406 | 108-0745-101 |
| 414 | 108-0750-002 |
| 1160 | 108-030X-001 |
| 1164 | 108-030X-001 |
| 1169 | 108-030X-001 |
| 400A | 108-0750-001 |

**CABLEWAVE ..... EMERSON**

| | |
|---|---|
| 700012 | 131-6701-401 |
| 700013 | 131-6701-401 |
| 700015 | 131-6701-411 |
| 700053 | 131-6701-201 |
| 700056 | 131-6701-301 |
| 700166 | 131-3701-411 |
| 700169 | 131-3701-401 |
| 700178 | 131-3593-401 |
| 700188 | 131-3901-401 |
| 700209 | 131-1701-201 |
| 700209 | 131-3701-201 |
| 700213 | 131-3801-201 |
| 700214 | 131-1701-371 |
| 700214 | 131-3701-301 |
| 700218 | 131-1801-371 |
| 700218 | 131-3801-301 |
| 700306 | 131-6403-001 |
| 700311 | 131-6303-401 |
| 700326 | 131-6403-101 |
| 700400 | 131-3303-001 |
| 700401 | 131-3302-001 |
| 700405 | 131-1403-001 |
| 700405 | 131-3403-001 |
| 700406 | 131-3402-001 |
| 700425 | 131-1403-101 |
| 700425 | 131-3403-101 |
| 700426 | 131-1402-101 |
| 700426 | 131-3402-101 |
| 700466 | 131-3693-001 |
| 700473 | 131-1693-101 |
| 700473 | 131-3693-101 |

**CDI/TENSOLITE ..... EMERSON**

| | |
|---|---|
| 201-1CC | 145-0694-001 |
| 201-1CCSF | 145-0694-002 |
| 201-2CC | 145-0693-001 |
| 201-2CCSF | 145-0693-002 |
| 204CC | 145-0701-001 |
| 223CC | 145-0901-811 |
| 224CC | 145-0901-801 |
| 225CC | 145-0901-821 |
| 230CC | 145-0701-611 |
| 230CCSF | 145-0701-612 |
| 231CC | 145-0701-601 |
| 231CCSF | 145-0701-602 |
| 240CCSF | 145-0701-002 |
| 5602-2CC | 142-1701-631 |
| 5602-2CC-SF | 142-1701-636 |
| 5602-4CC | 142-1701-601 |
| 5602-4CC-SF | 142-1701-606 |
| 5602-5CC | 142-1701-611 |
| 5602-5CC-SF | 142-1701-616 |
| 5602-6CC | 142-1701-621 |
| 5602-6CC-SF | 142-1701-626 |
| 5603-2CC | 142-1701-581 |
| 5603-2CC-SF | 142-1701-586 |
| 5603-4CC | 142-1701-551 |
| 5603-4CC-SF | 142-1701-556 |
| 5603-5CC | 142-1701-561 |
| 5603-5CC-SF | 142-1701-566 |
| 5603-6CC | 142-1701-571 |
| 5603-6CC-SF | 142-1701-576 |
| 5604-2CC | 142-1701-531 |
| 5604-2CC-SF | 142-1701-536 |
| 5604-4CC | 142-1701-501 |
| 5604-4CC-SF | 142-1701-506 |
| 5604-5CC | 142-1701-511 |
| 5604-5CC-SF | 142-1701-516 |
| 5604-6CC | 142-1701-521 |
| 5604-6CC-SF | 142-1701-526 |
| 5606-2CC | 142-1801-631 |
| 5606-2CC-SF | 142-1801-636 |
| 5606-4CC | 142-1801-601 |
| 5606-4CC-SF | 142-1801-606 |
| 5606-5CC | 142-1801-611 |
| 5606-5CC-SF | 142-1801-616 |
| 5606-6CC | 142-1801-621 |
| 5606-6CC-SF | 142-1801-626 |
| 5607-4CC | 142-1801-551 |
| 5607-4CC-SF | 142-1801-556 |
| 5607-5CC | 142-1801-561 |
| 5607-5CC-SF | 142-1801-566 |
| 5607-6CC | 142-1801-571 |
| 5607-6CC-SF | 142-1801-576 |
| 5608-2CC | 142-1801-531 |
| 5608-2CC-SF | 142-1801-536 |
| 5663-2CC | 142-1701-631 |
| 5663-2CC-SF | 142-1701-636 |
| 5663-4CC | 142-1701-601 |
| 5663-4CC-SF | 142-1701-606 |
| 5663-5CC | 142-1701-611 |
| 5663-5CC-SF | 142-1701-616 |
| 5663-6CC | 142-1701-621 |
| 5663-6CC-SF | 142-1701-626 |
| 5664-2CC | 142-1801-631 |
| 5664-2CC-SF | 142-1801-636 |
| 5664-4CC | 142-1801-601 |
| 5664-4CC-SF | 142-1801-606 |
| 5664-5CC | 142-1801-611 |
| 5664-5CC-SF | 142-1801-616 |
| 5664-6CC | 142-1801-621 |
| 5664-6CC-SF | 142-1801-626 |
| 5665-2CC | 142-1701-531 |
| 5665-2CC-SF | 142-1701-536 |
| 5665-4CC | 142-1701-501 |
| 5665-4CC-SF | 142-1701-506 |
| 5665-5CC | 142-1701-511 |
| 5665-5CC-SF | 142-1701-516 |
| 5665-6CC | 142-1701-521 |
| 5665-6CC-SF | 142-1701-526 |
| 5666-2CC | 142-1801-531 |
| 5666-2CC-SF | 142-1801-536 |
| 5850-1CC | 142-0693-101 |
| 5850-2CC | 142-0694-101 |
| 5937-2CC | 142-1701-581 |
| 5937-2CC-SF | 142-1701-586 |
| 5937-4CC | 142-1701-551 |
| 5937-4CC-SF | 142-1701-556 |
| 5937-5CC | 142-1701-561 |
| 5937-5CC-SF | 142-1701-566 |
| 5937-6CC | 142-1701-571 |
| 5937-6CC-SF | 142-1701-576 |
| 5938-4CC | 142-1801-551 |
| 5938-4CC-SF | 142-1801-556 |
| 5938-5CC | 142-1801-561 |
| 5938-5CC-SF | 142-1801-566 |
| 5938-6CC | 142-1801-571 |
| 5938-6CC-SF | 142-1801-576 |
| 5941-2CC | 142-1701-581 |
| 5941-2CC-SF | 142-1701-586 |
| 5941-4CC | 142-1701-551 |
| 5941-4CC-SF | 142-1701-556 |
| 5941-5CC | 142-1701-561 |
| 5941-5CC-SF | 142-1701-566 |
| 5941-6CC | 142-1701-571 |
| 5941-6CC-SF | 142-1701-576 |
| 5942-4CC | 142-1801-551 |
| 5942-4CC-SF | 142-1801-556 |
| 5942-5CC | 142-1801-561 |
| 5942-5CC-SF | 142-1801-561 |
| 5942-6CC | 142-1801-571 |
| 5942-6CC-SF | 142-1801-576 |
| 5980-1CC | 142-1701-541 |
| 5980-1CC-SF | 142-1701-546 |
| 5980-2CC | 142-1701-531 |
| 5980-2CC-SF | 142-1701-536 |
| 5980-4CC | 142-1701-501 |
| 5980-4CC-SF | 142-1701-506 |
| 5980-5CC | 142-1701-511 |
| 5980-5CC-SF | 142-1701-516 |
| 5980-6CC | 142-1701-521 |
| 5980-6CC-SF | 142-1701-526 |
| 5981-1CC | 142-1701-641 |
| 5981-1CC-SF | 142-1701-646 |
| 5981-2CC | 142-1701-631 |
| 5981-2CC-SF | 142-1701-636 |
| 5981-4CC | 142-1701-601 |
| 5981-4CC-SF | 142-1701-606 |
| 5981-5CC | 142-1701-611 |
| 5981-5CC-SF | 142-1701-616 |
| 5981-6CC | 142-1701-621 |
| 5981-6CC-SF | 142-1701-626 |
| 5982-1CC | 142-1801-541 |
| 5982-1CC-SF | 142-1801-546 |
| 5982-2CC | 142-1801-531 |
| 5982-2CC-SF | 142-1801-536 |
| 5983-1CC | 142-1801-641 |
| 5983-1CC-SF | 142-1801-646 |
| 5983-2CC | 142-1801-631 |
| 5983-2CC-SF | 142-1801-636 |
| 5983-4CC | 142-1801-601 |
| 5983-4CC-SF | 142-1801-606 |
| 5983-5CC | 142-1801-611 |
| 5983-5CC-SF | 142-1801-616 |
| 5983-6CC | 142-1801-621 |
| 5983-6CC-SF | 142-1801-626 |

**COAXIM ..... EMERSON**

| | |
|---|---|
| 3130-12-1 | 142-1701-601 |
| 3130-12-9 | 142-1701-606 |
| 3130-15-1 | 142-1701-611 |
| 3130-15-9 | 142-1701-616 |
| 3130-18-1 | 142-1701-621 |
| 3130-18-9 | 142-1701-626 |
| 3130-20-1 | 142-1701-631 |
| 3130-20-9 | 142-1701-636 |
| 3130-36-1 | 142-1701-641 |
| 3130-36-9 | 142-1701-646 |
| 12/1/31 | 142-1701-501 |
| 12/9/31 | 142-1701-506 |
| 3131-15-1 | 142-1701-511 |
| 3131-15-9 | 142-1701-516 |





| | |
|---|---|
| 3131-18-1 | 142-1701-521 |
| 3131-18-9 | 142-1701-526 |
| 3131-20-1 | 142-1701-531 |
| 3131-20-9 | 142-1701-536 |
| 3131-36-1 | 142-1701-541 |
| 3131-36-9 | 142-1701-546 |
| 3131K-12-1 | 142-1701-551 |
| 3131K-12-9 | 142-1701-556 |
| 3131K-15-1 | 142-1701-561 |
| 3131K-15-9 | 142-1701-566 |
| 3131K-18-1 | 142-1701-571 |
| 3131K-18-9 | 142-1701-576 |
| 3131K-20-1 | 142-1701-581 |
| 3131K-20-9 | 142-1701-586 |
| 3310-20-1 | 142-1801-531 |
| 3310-20-9 | 142-1801-536 |
| 3310-36-1 | 142-1801-541 |
| 3310-36-9 | 142-1801-546 |
| 3310K-12-1 | 142-1801-551 |
| 3310K-12-9 | 142-1801-556 |
| 3310K-15-1 | 142-1801-561 |
| 3310K-15-9 | 142-1801-566 |
| 3310K-18-1 | 142-1801-571 |
| 3310K-18-9 | 142-1801-576 |
| 12/1/11 | 142-1801-601 |
| 12/9/11 | 142-1801-606 |
| 3311-15-1 | 142-1801-611 |
| 3311-15-9 | 142-1801-616 |
| 3311-18-1 | 142-1801-621 |
| 3311-18-9 | 142-1801-626 |
| 3311-20-1 | 142-1801-631 |
| 3311-20-9 | 142-1801-636 |
| 3311-36-1 | 142-1801-641 |
| 3311-36-9 | 142-1801-646 |

**CONCORD ..... EMERSON**

| | |
|---|---|
| 01-1044-1-0210 | 111-0103-001 |
| 01-1044-1-0212 | 111-0102-001 |
| 01-1044-1-0214 | 111-0107-001 |
| 01-1044-1-0215 | 111-0104-001 |
| 01-1044-1-0216 | 111-0110-001 |
| 01-1044-1-0219 | 111-0101-001 |
| 01-2002-1-0210 | 108-1763-101 |
| 01-2002-1-0212 | 108-1762-101 |
| 01-2006-1-0210 | 108-1703-101 |
| 01-2006-1-0212 | 108-1702-101 |
| 01-2011-1-0210 | 108-1723-101 |
| 01-2011-1-0212 | 108-1722-101 |
| 01-2071-1-0210 | 108-0303-001 |
| 01-2071-1-0211 | 108-0308-001 |
| 01-2071-1-0212 | 108-0302-001 |
| 01-2071-1-0213 | 108-0306-001 |
| 01-2071-1-0214 | 108-0307-001 |
| 01-2071-1-0215 | 108-0304-001 |
| 01-2071-1-0216 | 108-0310-001 |
| 01-2071-1-0217 | 108-0312-001 |
| 01-2071-1-0218 | 108-0313-001 |
| 01-2071-1-0219 | 108-0301-001 |
| 01-2135-1-0210 | 105-0303-001 |
| 01-2135-1-0212 | 105-0302-001 |
| 01-2135-1-0215 | 105-0304-001 |
| 01-2135-1-0216 | 105-0310-001 |
| 01-2135-1-0219 | 105-0301-001 |
| 01-2255-3 | 108-0754-001 |
| 01-2310-1 | 108-0750-001 |
| 01-2312-1 | 108-0750-002 |
| 01-2341-1-02 | 108-0753-102 |
| 01-2520-2 | 108-2300-501 |
| 01-2540-1-02 | 108-0740-102 |
| 01-2552-1-0210 | 108-0253-001 |
| 01-2552-1-0212 | 108-0252-001 |
| 09-9074-1-0310 | 105-0203-200 |
| 09-9074-1-0312 | 105-0202-200 |
| 09-9074-1-0315 | 105-0204-200 |
| 09-9074-1-0316 | 105-0210-200 |
| 09-9074-1-0319 | 105-0201-200 |
| 09-9126-1-04410 | 108-0903-001 |
| 09-9126-1-04411 | 108-0908-001 |
| 09-9126-1-04412 | 108-0902-001 |
| 09-9126-1-04413 | 108-0906-001 |
| 09-9126-1-04414 | 108-0907-001 |
| 09-9126-1-04415 | 108-0904-001 |
| 09-9126-1-04416 | 108-0910-001 |
| 09-9126-1-04417 | 108-0912-001 |
| 09-9126-1-04418 | 108-0913-001 |
| 09-9126-1-04419 | 108-0901-001 |
| 09-9201-1-0310 | 105-2203-105 |
| 09-9201-1-0312 | 105-2202-105 |
| 09-9201-1-0314 | 105-2207-105 |
| 09-9201-1-0315 | 105-2204-105 |
| 09-9201-1-0319 | 105-2201-105 |
| 09-9221-1-0110 | 105-0853-001 |
| 09-9221-1-0111 | 105-0858-001 |
| 09-9221-1-0112 | 105-0852-001 |
| 09-9221-1-0113 | 105-0856-001 |
| 09-9221-1-0114 | 105-0857-001 |
| 09-9221-1-0115 | 105-0854-001 |
| 09-9221-1-0116 | 105-0860-001 |
| 09-9221-1-0119 | 105-0851-001 |
| 21-9205-1-0110 | 105-0753-001 |
| 21-9205-1-0111 | 105-0758-001 |
| 21-9205-1-0112 | 105-0752-001 |
| 21-9205-1-0113 | 105-0756-001 |
| 21-9205-1-0114 | 105-0757-001 |
| 21-9205-1-0115 | 105-0754-001 |
| 21-9205-1-0116 | 105-0760-001 |
| 21-9205-1-0117 | 105-0762-001 |
| 21-9205-1-0118 | 105-0763-001 |
| 21-9205-1-0119 | 105-0751-001 |
| 21-9205-1-0310 | 105-0753-150 |
| 21-9205-1-0312 | 105-0752-150 |
| 21-9205-1-0314 | 105-0757-150 |
| 21-9205-1-0319 | 105-0751-150 |
| 25-2573-1-0210 | 108-0253-001 |
| 25-2573-1-0212 | 108-0252-001 |
| BP105B | 111-0103-001 |
| BP106R | 111-0102-001 |
| TJ103R | 105-0202-200 |
| TJ105BL | 105-0203-200 |
| TJ106GN | 105-0204-200 |
| TJ107MB | 105-0210-200 |
| TJ108W | 105-0201-200 |

**DYNAWAVE ..... EMERSON**

| | |
|---|---|
| 9852-0081-6215 | 142-1801-606 |
| 9852-0081-6215 | 142-1801-616 |
| 9852-0081-6220 | 142-1801-626 |
| 9852-0081-6220 | 142-1801-636 |
| 9852-0781-6215 | 142-1801-606 |
| 9852-0781-6215 | 142-1801-616 |
| 9852-0781-6220 | 142-1801-626 |
| 9852-0781-6220 | 142-1801-636 |
| 9854-0081-6217 | 142-1801-556 |
| 9854-0081-6217 | 142-1801-566 |
| 9854-0081-6220 | 142-1801-536 |
| 9854-0081-6227 | 142-1801-576 |
| 9854-0781-6217 | 142-1801-556 |
| 9854-0781-6217 | 142-1801-566 |
| 9854-0781-6220 | 142-1801-536 |
| 9854-0781-6227 | 142-1801-576 |
| 9952-0081-6215 | 142-1701-606 |
| 9952-0081-6215 | 142-1701-616 |
| 9952-0081-6220 | 142-1701-626 |
| 9952-0081-6220 | 142-1701-636 |
| 9952-0081-6236 | 142-1701-646 |
| 9952-0781-6215 | 142-1701-606 |
| 9952-0781-6215 | 142-1701-616 |
| 9952-0781-6220 | 142-1701-626 |
| 9952-0781-6220 | 142-1701-636 |
| 9954-0081-6215 | 142-1701-506 |
| 9954-0081-6215 | 142-1701-516 |
| 9954-0081-6217 | 142-1701-556 |
| 9954-0081-6217 | 142-1701-566 |
| 9954-0081-6220 | 142-1701-526 |
| 9954-0081-6220 | 142-1701-536 |
| 9954-0081-6227 | 142-1701-576 |
| 9954-0081-6236 | 142-1701-546 |
| 9954-0781-6215 | 142-1701-506 |
| 9954-0781-6215 | 142-1701-516 |
| 9954-0781-6217 | 142-1701-556 |
| 9954-0781-6217 | 142-1701-566 |
| 9954-0781-6220 | 142-1701-526 |
| 9954-0781-6220 | 142-1701-536 |
| 9954-0781-6227 | 142-1701-576 |
| 9954-0781-6227 | 142-1701-586 |

**HH SMITH ..... EMERSON**

| | |
|---|---|
| 100 | 108-0753-001 |
| 101 | 108-0740-102 |
| 102 | 108-0750-001 |
| 109 | 108-0740-001 |
| 121 | 108-0754-001 |
| 190 | 108-0753-102 |
| 431 | 108-0750-001 |
| 433 | 108-0750-002 |
| 443 | 108-0750-001 |
| 445 | 108-0750-002 |
| 2079 | 108-2300-501 |
| 1463-101 | 111-0101-001 |
| 1463-102 | 111-0102-001 |
| 1463-103 | 111-0103-001 |
| 1463-104 | 111-0104-001 |
| 1463-105 | 111-0110-001 |
| 1463-107 | 111-0107-001 |
| 1464-101 | 111-0101-001 |
| 1464-102 | 111-0102-001 |
| 1464-103 | 111-0103-001 |
| 1464-104 | 111-0104-001 |
| 1464-105 | 111-0110-001 |
| 1464-107 | 111-0107-001 |
| 1483-102 | 111-0702-001 |
| 1483-103 | 111-0703-001 |
| 1498-102 | 108-2302-621 |
| 1498-103 | 108-2303-621 |
| 1499-102 | 108-2302-621 |
| 1499-103 | 108-2303-621 |
| 1501-101 | 105-0201-200 |
| 1501-102 | 105-0202-200 |
| 1501-103 | 105-0203-200 |
| 1501-104 | 105-0204-200 |
| 1501-105 | 105-0210-200 |
| 1502-10X | 105-025X-001 |
| 1508-101 | 108-0901-001 |
| 1508-102 | 108-0902-001 |
| 1508-103 | 108-0903-001 |
| 1508-104 | 108-0904-001 |
| 1508-105 | 108-0910-001 |
| 1508-106 | 108-0906-001 |
| 1508-107 | 108-0907-001 |
| 1508-108 | 108-0908-001 |
| 1508-112 | 108-0912-001 |
| 1508-113 | 108-0913-001 |
| 1509-101 | 108-0901-001 |
| 1509-102 | 108-0902-001 |
| 1509-103 | 108-0903-001 |
| 1509-104 | 108-0904-001 |
| 1509-105 | 108-0910-001 |
| 1509-106 | 108-0906-001 |
| 1509-107 | 108-0907-001 |
| 1509-108 | 108-0908-001 |
| 1509-112 | 108-0912-001 |
| 1509-113 | 108-0913-001 |
| 1513-102 | 105-0702-001 |
| 1513-103 | 105-0703-001 |
| 1598-10X | 105-104X-001 |
| 1675-10X | 108-025X-001 |
| 1677-102 | 108-0252-001 |
| 1677-103 | 108-0253-001 |
| 204-102 | 108-1702-101 |
| 204-103 | 108-1703-101 |
| 205-102 | 108-0745-101 |
| 205-103 | 108-0745-102 |
| 210-102 | 108-0252-001 |
| 210-103 | 108-0253-001 |
| 211-102 | 108-1722-101 |
| 211-103 | 108-1723-101 |
| 212-102 | 108-1762-101 |
| 212-103 | 108-1763-101 |
| 219-10X | 108-0745-10X |
| 232-10X | 108-176X-101 |
| 242-10X | 108-176X-101 |
| 244-102 | 105-0772-001 |
| 244-103 | 105-0773-001 |
| 254-10X | 108-170X-101 |
| 261-10X | 108-172X-101 |
| 262-10X | 108-176X-101 |
| 268-102 | 108-1002-001 |
| 268-103 | 108-1003-001 |
| 271-10X | 108-172X-101 |
| 281-10X | 108-172X-101 |
| 325-101 | 105-2201-105 |
| 325-102 | 105-2202-105 |
| 325-103 | 105-2203-105 |
| 325-104 | 105-2204-105 |
| 325-107 | 105-2207-105 |
| 3502-101 | 105-0251-001 |
| 3502-102 | 105-0252-001 |
| 3502-103 | 105-0253-001 |
| 359-101 | 105-2201-101 |
| 359-102 | 105-2202-101 |
| 359-103 | 105-2203-101 |
| 359-104 | 105-2204-101 |
| 359-107 | 105-2207-101 |
| 398-101 | 108-2301-801 |
| 398-102 | 108-2302-801 |
| 398-103 | 108-2303-801 |
| 398-104 | 108-2304-801 |
| 398-105 | 108-2310-801 |
| 398-107 | 108-2307-801 |
| 455-101 | 108-0301-001 |
| 455-102 | 108-0302-001 |
| 455-103 | 108-0303-001 |
| 455-104 | 108-0304-001 |
| 455-105 | 108-0310-001 |
| 455-106 | 108-0306-001 |
| 455-107 | 108-0307-001 |
| 455-108 | 108-0308-001 |
| 455-112 | 108-0312-001 |
| 455-113 | 108-0313-001 |
| 456-101 | 108-0301-001 |
| 456-102 | 108-0302-001 |
| 456-103 | 108-0303-001 |
| 456-104 | 108-0304-001 |
| 456-105 | 108-0310-001 |
| 456-106 | 108-0306-001 |
| 456-107 | 108-0307-001 |
| 456-108 | 108-0308-001 |
| 456-112 | 108-0312-001 |
| 456-113 | 108-0313-001 |
| 457-10X | 108-030X-001 |
| 458-10X | 108-030X-001 |
| 476-10X | 108-030X-001 |
| 477-10X | 108-030X-001 |
| 478-10X | 108-030X-001 |
| 479-10X | 108-030X-001 |
| 491-101 | 105-0301-001 |
| 491-102 | 105-0302-001 |
| 491-103 | 105-0303-001 |
| 491-104 | 105-0304-001 |
| 491-105 | 105-0310-001 |
| 492-101 | 105-0301-001 |
| 492-102 | 105-0302-001 |
| 492-103 | 105-0303-001 |
| 492-104 | 105-0304-001 |
| 492-105 | 105-0310-001 |

**HUBER-SUHNER ..... EMERSON**

| | |
|---|---|
| 11MCX-50-2-10 | 133-3403-001 |
| 11MCX-50-1-10 | 133-3402-001 |
| 11MCX-50-2-3 | 133-3693-001 |
| 11MMCX-50-1-1 | 135-3402-001 |
| 11MMCX-50-1-2 | 135-3436-001 |
| 11SMA-50-2-42 | 142-0403-011 |
| 11SMA-50-2-65 | 142-0693-001 |

# Competitor Cross Reference

11SMA-50-3-42 142-0694-031
11SMA-50-3-64 142-0694-011
11SMA-50-3-65 142-0694-001
11SMB-50-2-13 131-3693-001
11SMB-50-1-10 131-3402-001
11SMC-50-2-10/111 131-6403-001
16MCX-50-1-5 133-3402-101
16MCX-50-2-5/111 133-3403-101
16MCX-50-2-5/133 133-3403-106
16MCX-50-2-3 133-3693-101
16MMCX-50-1-1 135-3402-101
16MMCX-50-1-2 135-3436-101
16MMCX-50-2-1 135-3693-101
16MMCX-50-2-4 135-3403-101
16MMCX-50-2-6 135-3404-101
16SMA-50-2-45 142-0403-101
16SMA-50-2-3 142-0693-101
16SMA-50-2-3 142-0694-101
16SMB-50-1-20 131-1402-101
16SMB-50-2-20 131-1403-101
16SMC-50-2-20 131-6403-101
21MCX-50-1-10 133-3302-001
21MCX-50-2-10 133-3303-001
21MMCX-50-1-1 135-3302-001
21MMCX-50-1-2 135-3303-001
22MCX-50-0-2 133-3701-401
22SMA-50-0-44 142-0701-401
22SMB-50-0-11 131-3701-421
22SMB-50-0-2 131-3701-411
22SMB-50-0-3 131-3701-401
22SMC-50-0-2 131-6701-411
22SMC-50-0-3 131-6701-401
23SMA-50-0-41 142-0701-621
23SMA-50-0-44 142-0701-631
23SMA-50-0-120 142-1701-201
23SMA-50-0-122 142-1701-191
23SMA-50-0-170 142-1701-206
23SMA-50-0-172 142-1701-196
24MCX-50-1-10 133-3302-401
24MCX-50-1-10 133-3303-401
24SMA-50-2-41 142-0593-401
24SMA-50-3-41 142-0594-401
24SMC-50-2-10C/111 131-6303-401
27SMA-50-0-1 142-0701-531
27SMA-50-0-51 142-0701-536
28SMA-50-0-1 142-0701-701
28SMA-50-0-51 142-0701-706
31MCX-50-0-1 133-3901-801
34SMB-50-0-2 131-3901-401
81MCX-50-0-1 133-3801-201
81MMCX-50-0-1 135-3801-201
81SMB-50-0-1/111 131-3801-201
82MCX-50-0-1/111 133-3701-201
82MCX-50-0-1/133 133-3701-206
82MCX-50-0-10 133-3701-231
82MCX-50-0-2 133-3701-201
82MMCX-50-0-1 135-3701-201
82SMA-50-0-41 142-0701-201
82SMB-50-0-1/111 131-1701-201
82SMC-50-0-1 131-6701-201
83MCX-0-2-5 142-0003-231
83SMC-0-2-2 142-0003-201
84SMB-50-0-1 131-1801-371
85 MCX-50-0-1 133-3701-301
85MMCX-50-0-1 135-3701-301
85SMA-50-0-44 142-0701-301
85SMB-50-0-1 131-1701-371
85SMC-50-0-1/111 131-6701-301
86SMC-50-2-2 142-0003-301

**KEYSTONE ..... EMERSON**

6000 105-0301-001
6001 105-0302-001
6002 105-0303-001
6003 105-0304-001
6005 105-0310-001
6006 105-0771-001
6007 105-0772-001
6008 105-0773-001
6012 105-0201-200
6013 105-0202-200
6014 105-0203-200
6015 105-0204-200
6017 105-0210-200
6018 105-0801-001
6019 105-0802-001
6020 105-0803-001
6021 105-0804-001
6022 105-0807-001
6023 105-0810-001
6024 105-0251-001
6025 105-0252-001
6026 105-0253-001
6030 105-0601-001
6031 105-0602-001
6032 105-0603-001
6033 105-0604-001
6034 105-0607-001
6035 105-0610-001
6036 105-0851-001
6037 105-0852-001
6038 105-0853-001
6039 105-0857-001
6040 105-0854-001
6041 105-0860-001
6042 105-2201-201
6043 105-2202-201
6044 105-2203-201
6045 105-2207-201
6046 105-2204-201
6048 105-1101-001
6049 105-1102-001
6050 105-1103-001
6051 105-1107-001
6052 105-1104-001
6053 105-1110-001
6054 105-0751-001
6055 105-0752-001
6056 105-0753-001
6057 105-0757-001
6058 105-0754-001
6059 105-0760-001
6060 105-2201-105
6061 105-2202-105
6062 105-2203-105
6063 105-2207-105
6064 105-2204-105
6066 105-2201-101
6067 105-2202-101
6068 105-2203-101
6069 105-2207-101
6070 105-2204-101
6072 108-0753-001
6076 108-1002-001
6077 108-1003-001
6078 108-0302-001
6079 108-0303-001
6080 108-1762-101
6081 108-1763-101
6082 108-1762-101
6083 108-1763-101
6084 108-1702-101
6085 108-1703-101
6088 108-0252-001
6089 108-0253-001
6091 108-0902-001
6092 108-0903-001
6093 108-0745-001
6094 108-0745-002
6095 108-0740-102
7004 111-0102-001
7005 111-0103-001
7006 111-0702-001
7007 111-0703-001
552-4 108-0754-001
6074-1 108-0750-001
6074-2 108-0750-002
872-1 142-0594-401
872-11 142-0302-401
872-12 142-0303-401
872-8 142-0593-401
873-4 142-0594-001
873-9 142-0593-001
874-1 142-0701-401
874-5 142-0701-411
875-10-M09 142-0693-001
875-13 142-0403-001
875-4-M09 142-0694-031
875-8-M09 142-0694-001
876-1 142-0407-101
876-6 142-0403-101
877-1 142-0701-631
877-2 142-0701-621
877-21 142-0701-301
879-13 142-0901-401
879-2-M09 142-0901-811
879-3 142-0901-801

**KINGS ..... EMERSON**

1209-1-15-MA9 CP-AD810
1209-10 CP-AD803
1209-13 CP-AD850
1209-18 CP-AD807
1209-7 CP-AD809
2025-36-9 CPMC-78-2
2025-37-9 CPMC-78-3
2025-44-9 CPMC-68-33
2025-51-9 CPMC-78-2
2025-59-9 CPMC-78-2
2025-6-9-MO6 CPMC-78-2
2025-7-9 CPMC-78-3
2029-16-5 CP-AD705
2029-16-9 CP-AD705
2029-17-9 CP-AD557
2029-3-5 CP-AD705
2065-1-9 CPMC-68-2
2065-2-9 CPMC-68-35
2065-3-9 CPMC-68-50
2065-5-9 CPMC-68-20
2065-6-9 CPMC-68-3
2065-7-9 CPMC-68-2
2065-10-9 CPMC-68-36
2065-10-9 CPMC-68-45
2065-11-9 CPMC-68-34
759-1 CP-AD555
759-3 CP-AD505
759-4 CP-AD503
759-5 CP-AD511
879-11-15-MA9 CP-AD507
879-5-15-MA9 CP-AD508
KA-59-103 CPMC-TNC-1
KA-59-225 CPMC-TNC-1
KA-59-230 CPMC-TNC-13
KA-59-231 CPMC-TNC-1
KA-59-232 CPMC-TNC-2
KA-59-263 CPMC-TNC-2
KA-59-265 CPMC-TNC-1
KA-59-287 CPMC-TNC-1
KA-59-292 CPMC-TNC-13
KA-59-385-MO6 CPMC-TNC-2
KA-59-406-MO6 CPMC-TNC-1
KA-59-44 CPMC-TNC-1
KA-59-45 CPMC-TNC-13
KA-59-46 CPMC-TNC-2
KA-59-57 CPMC-TNC-13
KA-59-69 CPM-TNC-19
KA-59-86 CPMC-TNC-13
KA-59-94 CPMC-TNC-2
KA-91-01 CP-AD355
KA-91-05 CP-AD306
KA-91-09 CP-AD355
KA-91-18 CP-AD300
KA-99-114-MO6 CP-AD356
KA-99-59 CP-AD300
KA-99-62 CP-AD355
KC-59-104 CPMC-88-13
KC-59-107 CPMC-88-12
KC-59-115 CPMC-88-13
KC-59-116 CPMC-88-13
KC-59-123 CPMC-88-1
KC-59-128 CPMC-88-2
KC-59-152 CPMC-88-19
KC-59-162 CPMC-88-13
KC-59-167 CPMC-88-13
KC-59-180 CPMC-88-3
KC-59-181 CPMC-88-3
KC-59-223 CPMC-88-18
KC-59-279 CPMC-88-13
KC-59-290 CPMC-88-1
KC-59-291 CPMC-88-1
KC-59-293 CPMC-88-1
KC-59-294 CPMC-88-2
KC-59-300 CPMC-88-3
KC-59-303 CPMC-88-13
KC-59-306 CPMC-88-18
KC-59-307 CPMC-88-18
KC-59-346 CPMC-88-13
KC-59-347 CPMC-88-1
KC-59-348 CPMC-88-1
KC-59-362 CPMC-88-19
KC-59-397 CPMC-88-2
KC-59-399 CPMC-88-13
KC-59-400 CPMC-88-1
KC-59-414 CPMC-88-1
KC-59-414-MO6 CPMC-88-1
KC-59-415 CPMC-88-12
KC-59-416 CPMC-88-14
KC-59-416-MO6 CPMC-88-14
KC-59-417 CPMC-88-13
KC-59-417-MO6 CPMC-88-13
KC-59-421 CPMC-88-1
KC-59-422 CPMC-88-13
KC-59-423 CPMC-88-1
KC-59-465 CPMC-88-2
KC-59-482 CPMC-88-2
KC-59-61 CPMC-88-1
KC-59-616-MO6 CPMC-88-3
KC-59-632-MO6 CPMC-88-1
KC-59-655-MO6 CPMC-88-14
KC-59-78 CPMC-88-1
KC-59-79 CPMC-88-1
KC-59-80 CPMC-88-13
KC-59-95 CPMC-88-19
KC-59-98 CPMC-88-1
KC-79-106 CP-1094-U
KC-79-106 CP-1094-U
KC-79-109 CP-AD519
KC-79-121 CP-1094-U
KC-79-123 CP-AD519
KC-79-131 CP-1094-U
KC-79-132 CP-AD519
KC-79-35 CP-1094-U
KC-79-46 CP-1094-U
KC-99-20 CP-AD506
KC-99-30 CP-AD555
KC-99-31 CP-AD505
KC-99-32 CP-AD511
KC-99-33 CP-AD556
KC-99-34 CP-AD500
KC-99-35 CP-AD503
KC-99-37 CP-AD506
KC-99-40 CP-AD521
KC-99-42 CP-AD500
KC-99-44 CP-AD555
KC-99-52 CP-AD505
KC-99-54 CP-AD521
KC-99-56 CP-AD511
KC-99-64 CP-AD505
KC-99-95-MO6 CP-AD556
KN-59-132 CPN-8
KN-59-204-MO6 CPN-1
KN-59-207 CP-AD802
KN-59-273-MO6 CPN-2
KN-99-35 CP-AD809
KN-99-36 CP-AD809





KN-99-44 CP-AD800
KN-99-46 CP-AD807
KN-99-50 CP-AD850
KN-99-69 CP-AD803
KU-59-22 CP-AD250
KU-59-35 CPL-259-2
KU-59-48 CPL-259-8
KU-59-53 CPL-259-1
KU-99-08 CP-AD250
PL-259 CP-AD250
UG-224/U CP-AD207
UG-57 B/U CP-AD800
UG-914/U CP-AD555

**MA/COM ..... SEE TYCO/AMP**

**MOLEX ..... EMERSON**

73301-1812 142-0694-001
73301-1912 142-0693-001
73303-1812 142-0594-001
73303-1912 142-0593-001
73304-1812 142-0594-401
73304-1912 142-0593-401
73312-1212 142-0403-001
73313-1122 142-0407-101
73313-1222 142-0403-101
73314-1112 142-0207-011
73314-1212 142-0203-011
73315-1122 142-0207-101
73315-1222 142-0203-101
73324-1212 142-0303-401
73327-1212 142-0103-401
73333-5002 142-0701-631
73334-5002 142-0701-621
73352-5002 142-0701-401
73355-5002 142-0901-811
73356-5002 142-0901-821
73357-5002 142-0901-801
73359-5002 142-0901-401
73446-1212 133-3403-001
73446-1412 133-3402-001
73447-1212 133-3403-101
73447-1412 133-3402-101
73448-1922 133-3693-101
73452-1212 133-3303-001
73453-5002 133-3701-301
73454-5002 133-3701-231
73455-5002 133-3701-201
73457-5002 133-3701-401

**PHOENIX ..... EMERSON**

09-0450-00 131-3801-201
09-0800-677 131-1403-001
09-1080-00 131-3701-401
09-1080-01 131-3701-411
09-1450-04 131-3701-201
09-2800-0400 131-1402-101
09-2800-0670 131-1403-101
09-2800-2670 131-1404-101
09-3450-00 131-1701-371
0909-1180-00 131-3901-401
10-0800-0670 131-6403-001
10-0800-2670 131-6404-001
10-1080-00 131-6701-401
10-1080-01 131-6701-411
10-1450-00 131-6701-201
10-2800-0670 131-6403-101
10-2800-2670 131-6404-101
10-3450-0 131-6701-301
13-0200-0860 133-3693-001
13-0450-00 133-3801-201
13-0900-0400 133-3402-001
13-0900-0670 133-3403-001
13-0900-2670 133-3404-001
13-1450-00 131-3701-201
13-1900-0400 133-3302-001
13-1900-0670 133-3303-001
13-1900-2670 133-3304-001
13-2200-0860 133-3693-101
13-2800-0400 133-3402-101
13-2800-0670 133-3403-101
13-2800-2670 133-3404-101
13-3450-00 131-3701-301
20-1265-1410G 142-0594-401
20-1464-00G 142-0701-411
20-1565-0400G 142-0102-401
20-1565-0670G 142-0103-401
20-1865-0402G 142-0302-401
20-1865-672G 142-0303-401
20-2200-0860G 142-0693-101
20-2200-1410G 142-0694-101
20-2450-00G 142-0801-301
20-2500-0400G 142-0202-101
20-2500-0670G 142-0203-101
20-2500-1200G 142-0207-101
20-2800-0400G 142-0402-101
20-2800-0670G 142-0403-101
20-2800-1200G 142-0407-101
20-3450-00G 142-0701-301
20-3450-65G 142-0701-501
2020-0000-00G 142-0901-811
2020-0100-00G 142-0901-821
2020-1100-00G 142-0901-801
2020-1165-00G 142-0901-401
32-2800-0400 135-3402-101
32-2800-0670 135-3403-101
32-2800-2670 135-3404-101
33-0900-0400 135-3402-001
33-0900-0670 135-3403-001
33-0900-2670 135-3404-001
33-1442-00 135-3701-201
33-1486-00 135-3711-801
33-2200-086 135-3693-101

**POMONA ..... EMERSON**

3259 108-0754-001
3263 108-0750-001
4511 108-0750-002
1581-0 108-2303-621
1581-2 108-2302-621

**RADIALL ..... EMERSON**

R112075 131-6403-001
R112186 131-6403-101
R112307 131-6303-401
R112426 131-6701-201
R112553 131-6701-411
R112554 131-6701-401
R112665 131-6701-301
R113053 133-3693-001
R113053020 133-3693-006
R113081 133-3402-001
R113081020 133-3402-006
R113082 133-3403-001
R113082020 133-3403-006
R113083 133-3404-001
R113083020 133-3404-006
R113153 133-3693-101
R113153020 133-3693-106
R113181 133-3402-101
R113181020 133-3402-106
R113182 133-3403-101
R113182020 133-3403-106
R113183 133-3404-101
R113183020 133-3404-106
R113236 133-3302-001
R113236020 133-3302-006
R113240 133-3303-001
R113240020 133-3303-006
R113241 133-3304-001
R113241020 133-3304-006
R113280280100 142-0003-231
R113280280120 142-0003-236
R113306 133-3302-401
R113306020 133-3302-406
R113310 133-3303-401
R113310020 133-3303-406
R113311 133-3304-401
R113311020 133-3304-406
R113426 133-3701-201
R113426020 133-3701-206
R113427 133-3701-231
R113427020 133-3701-236
R113553 133-3701-401
R113553020 133-3701-406
R113665 133-3701-301
R113665020 133-3701-306
R113704 133-3901-801
R113704020 133-3901-806
R114-237 131-3302-001
R114053 131-3693-001
R114073134 131-3402-001
R114073134 131-3402-001
R114075134 131-3403-001
R114075134 131-3403-001
R114082 131-1403-001
R114169 131-1693-101
R114183 131-1402-101
R114186 131-1402-101
R114222 131-3593-401
R114237 131-3302-001
R114238 131-3303-001
R114239 131-3303-001
R114426 131-1701-201
R114553 131-3701-411
R114554 131-3701-401
R114566 131-3701-421
R114665 131-1701-371
R114720 131-3901-401
R125052 142-0693-001
R125054 142-0694-031
R125055 142-0694-001
R125072 142-0403-011
R125072001 142-0403-016
R125072008 142-0404-011
R125073 142-0403-001
R125075 142-0407-011
R125075001 142-0407-016
R125076 142-0408-011
R125076001 142-0408-016
R125091 142-0203-011
R125172 142-0403-101
R125175 142-0407-101
R125222 142-0593-001
R125225 142-0594-001
R125237001 142-0307-016
R125238 142-0308-011
R125238001 142-0308-016
R125325 142-0594-401
R125326 142-0593-401
R125403 142-0701-631
R125553 142-0701-401
R125560 142-0701-411
R125680 142-0701-301
R125703 142-0901-811
R125704 142-0901-821
R125705 142-0901-801
R125720 142-0901-401
RETCONN ..... EMERSON
350-060-0040H 142-0801-201
350-060-0040N 142-0801-206
350-700-0360H 142-0202-011
350-700-0360N 142-0202-016
350-700-0630H 142-0203-011
350-700-0630N 142-0203-016
350-700-1161H 142-0207-011
350-700-1161N 142-0207-016
350-800-0630H 142-0403-001
350-800-0630N 142-0403-006
350-900-0630H 142-0403-011
350-900-0630N 142-0403-016
350-900-0631H 142-0404-011
350-900-0631N 142-0404-016
350-900-1160H 142-0407-011
350-900-1160N 142-0407-016
350-900-1161H 142-0408-011
350-900-1161N 142-0408-016
351-060-0040H 142-1701-201
351-060-0040N 142-1701-206
351-065-0000H 142-0701-631
351-065-0000N 142-0701-636
351-066-0000H 142-0701-621
351-066-0000N 142-0701-626
351-066-0040H 142-1701-131
351-066-0040N 142-1701-136
351-075-0001H 142-0701-401
351-075-0001N 142-0701-406
351-075-0002H 142-0701-411
351-075-0002N 142-0701-416
351-875-0360H 142-0302-401
351-875-0360N 142-0302-406
351-875-0630H 142-0303-401
351-875-0630N 142-0303-406
351-875-1161H 142-0308-401
351-875-1161N 142-0308-406
351-900-0630H 142-0303-011
351-900-0630N 142-0303-016
351-900-0631H 142-0304-011
351-900-0631N 142-0304-016
351-900-1160H 142-0307-011
351-900-1160N 142-0307-016
351-900-1161H 142-0308-011
351-900-1161N 142-0308-016
351-975-0630H 142-0303-411
351-975-0630N 142-0303-416
351-975-0631H 142-0304-411
351-975-0631N 142-0304-416
351-975-1160H 142-0307-411
351-975-1160N 142-0307-416
351-975-1161H 142-0308-411
351-975-1161N 142-0308-416
352-060-0040H 142-0801-301
352-060-0040N 142-0801-306
352-700-0360H 142-0202-101
352-700-0360N 142-0202-106
352-700-0630H 142-0203-101
352-700-0630N 142-0203-106
352-700-1161H 142-0207-101
352-700-1161N 142-0207-106
352-900-0630H 142-0403-101
352-900-0630N 142-0403-106

# Competitor Cross Reference

352-900-0631H .....142-0404-101
352-900-0631N .....142-0404-106
352-900-1160H .....142-0407-101
352-900-1160N .....142-0407-106
352-900-1161H .....142-0408-101
352-900-1161N .....142-0408-106
353-060-0040H .....142-0701-301
353-060-0040N .....142-0701-306
450-060-0046H .....133-3801-201
450-060-0046N .....133-3801-206
450-500-0850H .....133-3693-001
450-500-0850N .....133-3693-006
450-900-0360H .....133-3402-001
450-900-0360N .....133-3402-006
450-900-0630H .....133-3403-001
450-900-0630N .....133-3403-006
450-900-0631H .....133-3404-001
450-900-0631N .....133-3404-006
451-060-0046H .....133-3701-201
451-060-0046N .....133-3701-206
451-061-0040H .....133-3711-201
451-451-0000H .....133-3901-801
451-451-0000N .....133-3901-806
451-900-0360H .....133-3302-001
451-900-0360N .....133-3302-006
451-900-0630H .....133-3303-001
451-900-0630N .....133-3303-006
451-900-0631H .....133-3304-001
451-900-0631N .....133-3304-006
451-980-0360H .....133-3302-401
451-980-0360N .....133-3302-406
451-980-0630H .....133-3303-401
451-980-0630N .....133-3303-406
451-980-0631H .....133-3304-401
451-980-0631N .....133-3304-406
452-500-0850H .....133-3693-101
452-500-0850N .....133-3693-106
452-900-0360H .....133-3402-101
452-900-0360N .....133-3402-106
452-900-0630H .....133-3403-101
452-900-0630N .....133-3403-106
452-900-0631H .....133-3404-101
452-900-0631N .....133-3404-106
453-060-0046H .....133-3701-301
453-060-0046N .....133-3701-306

**ROSENBERGER..... EMERSON**
02-K-521-800S3.....145-0701-002
02-S-121-271S3.....142-0693-002
02-Z-101-000.....142-1000-033
29 K 100-K00 D3 .....133-3901-801
29 K 101-101 A3.....133-3302-006
29 K 101-101 D3 .....133-3302-001
29 K 101-102 A3.....133-3303-006
29 K 101-102 D3 .....133-3303-001
29 K 101-103 A3.....133-3304-006
29 K 101-103 D3 .....133-3304-001
29 K 101-400 A3.....133-3701-206
29 K 101-400 D3 .....133-3701-201
29 K 101-K00 A3 .....133-3901-806
29 K 104-400 A3.....133-3701-236
29 K 104-400 D3 .....133-3701-231
29 K 203-400 A3.....133-3701-306
29 K 203-400 D3 .....133-3701-301
29 K 501-101 A3.....133-3302-406
29 K 501-101 D3 .....133-3302-401
29 K 501-102 A3.....133-3303-406
29 K 501-102 D3 .....133-3303-401
29 K 501-103 A3.....133-3304-406
29 K 501-103 D3 .....133-3304-401
29 K 501-500 A3.....133-3701-406
29 K 501-500 D3 .....133-3701-401
29 S 101-101 A3.....133-3402-006
29 S 101-101 D3.....133-3402-001
29 S 101-102 A3.....133-3403-006
29 S 101-102 D3.....133-3403-001
29 S 101-103 A3.....133-3404-006
29 S 101-103 D3.....133-3404-001
29 S 101-271 A3.....133-3693-006
29 S 101-271 D3.....133-3693-001
29 S 201-271 A3.....133-3693-106
29 S 201-271 D3.....133-3693-101
29 S 201-301 A3.....133-3402-106
29 S 201-301 D3.....133-3402-101
29 S 201-302 A3.....133-3403-106
29 S 201-302 D3.....133-3403-101
29 S 201-303 A3.....133-3404-106
29 S 201-303 D3.....133-3404-101
29 Z 101-102 A3.....142-0003-236
29 Z 101-102 D3 .....142-0003-231
29 Z 101-103 A3.....142-0004-216
29 Z 101-103 D3 .....142-0004-211

**SEALECTRO ..... EMERSON**
50-024-0000.....131-6403-001
50-027-0000.....131-6303-401
50-043-0000.....131-6701-401
50-045-0000.....131-6701-411
50-051-0000.....131-6701-201
50-053-0000.....131-6701-301
50-328-3188.....131-6403-101
50-607-3141-31.....142-0207-011
50-607-3188-31.....142-0203-011
50-607-3196-31.....142-0202-011
50-610-3188-31.....142-0103-401
50-610-3196-31.....142-0102-401
50-611-3141-31.....142-0207-101
50-611-3188-31.....142-0203-101
50-611-3196-31.....142-0202-101
50-622-9141-31.....142-0407-011
50-622-9142-31.....142-0408-011
50-622-9188-31.....142-0403-011
50-624-9188-31.....142-0403-001
50-627-9188-31.....142-0303-401
50-627-9196-31.....142-0302-401
50-628-9141-31.....142-0407-101
50-628-9188-31.....142-0403-101
50-628-9196-31.....142-0402-101
50-643-0000-31.....142-0701-401
50-643-4312-31.....142-0701-411
50-645-4504-31.....142-0701-631
50-645-4526-31.....142-0701-621
50-651-0000-31.....142-0701-201
50-652-0000-31.....142-0801-201
50-653-0000-31.....142-0701-301
50-654-0000-31.....142-0801-301
50-672-0000-31.....142-0901-801
50-673-0000-31.....142-0901-811
50-674-0000-31.....142-0901-821
50-675-0000-31.....142-0901-401
51-024-0000.....131-1403-001
51-024-0000.....131-3403-001
51-024-3196.....131-3402-001
51-025-0000.....131-3303-001
51-025-3196.....131-3302-001
51-043-0000.....131-3701-401
51-045-0000.....131-3701-411
51-045-4504.....131-3701-631
51-045-4524.....131-3701-621
51-049-0000.....131-3701-421
51-051-0000.....131-1701-201
51-051-0000.....131-3701-201
51-052-0000.....131-3801-201
51-053-0000.....131-1701-371
51-053-0000.....131-3701-301
51-054-0000.....131-3801-301
51-062-2210.....131-3701-801
51-075-0000.....131-3901-401
51-328-3188.....131-1403-101
51-328-3188.....131-3403-101
51-328-3196.....131-1402-101
51-328-3196.....131-3402-101
55-607-0369-31.....142-0694-031
55-607-2203-31.....142-0694-001
55-607-3702-31.....142-0693-001
55-607-9073-31.....142-0694-011
55-607-9172-31.....142-0693-001
55-607-9173-31.....142-0694-001
55-608-2002-31.....142-0593-001
55-608-2003-31.....142-0594-001
55-608-9182-31.....142-0593-001
55-608-9183-31.....142-0594-001
55-610-3702-31.....142-0593-401
55-610-3703-31.....142-0594-401
55-610-9172-31.....142-0594-401
55-610-9173-31.....142-0594-401
55-624-3073-31.....142-0694-021

**SIEMENS..... EMERSON**
V23608-A1027-B1 .....135-3701-201
V23608-A109-B1 .....135-3402-001
V23608-A109-B11 .....135-3436-001
V23608-A1227-B1 .....135-3701-301
V23608-A209-B1 .....135-3402-101
V23608-A209-B11 .....135-3436-101

**SPECIALTY..... EMERSON**
39JR293-1 .....142-1701-506
39JR293-2 .....142-1701-516
39JR293-3 .....142-1701-526
39JR293-4 .....142-1701-536
39JR293-5 .....142-1701-546
39JR294-1 .....142-1701-606
39JR294-2 .....142-1701-616
39JR294-3 .....142-1701-626
39JR294-4 .....142-1701-636
39JR294-5 .....142-1701-646
39JR295-1 .....142-1701-506
39JR295-2 .....142-1701-516
39JR295-3 .....142-1701-526
39JR295-4 .....142-1701-536
39JR295-5 .....142-1701-546
39JR296-1 .....142-1701-606
39JR296-2 .....142-1701-616
39JR296-3 .....142-1701-626
39JR296-4 .....142-1701-636
39JR296-5 .....142-1701-646
39PR130-4 .....142-1801-536
39PR130-5 .....142-1801-546
39PR131-1 .....142-1801-606
39PR131-2 .....142-1801-616
39PR131-3 .....142-1801-626
39PR131-4 .....142-1801-636
39PR131-5 .....142-1801-646
39PR132-4 .....142-1801-536
39PR132-5 .....142-1801-546
39PR133-1 .....142-1801-606
39PR133-2 .....142-1801-616
39PR133-3 .....142-1801-626
39PR133-4 .....142-1801-636
39PR133-5 .....142-1801-646

**SRI ..... EMERSON**
24-000-1041-90.....145-0694-002
24-924-0000-90.....145-0901-811
24-925-0000-90.....145-0901-821
25-130-1500-90.....145-0701-602
25-131-1500-90.....145-0701-612
25-925-0000-90.....145-0901-801
26-000-1085-90.....145-0693-002

**SV MICROWAVE..... EMERSON**
066-15-000.....142-1000-033
2902-6001 .....142-0694-031
2902-6005 .....142-0694-001
2902-6012 .....142-0694-001
2902-6013 .....142-0694-021
2903-6009 .....142-0403-001
2906-6002 .....142-0693-001
2911-6001 .....142-0407-101
2913-6001 .....142-0403-101
2913-6030 .....142-0402-101
2921-6002 .....142-0593-001
2922-6007 .....142-0594-001
2942-6001 .....142-0594-401
2942-6035 .....142-0303-401
2943-6044 .....142-0302-401
2946-6001 .....142-0593-401
2947-6003 .....142-0701-531
2950-6062 .....142-0701-621
2950-6081 .....142-0701-631
2950-6135 .....142-1701-191
2950-6220 .....142-1701-011
2950-6336 .....142-1701-201
2950-6619 .....142-1701-501
2950-6662 .....142-1701-521
2950-6662 .....142-1701-531
2950-6720 .....142-1701-601
2950-6731 .....142-1701-541
2950-6769 .....142-1701-501
2950-6780 .....142-1701-621
2950-6780 .....142-1701-631
2950-6781 .....142-1701-641
2950-6784 .....142-1701-621
2950-6784 .....142-1701-631
2950-6786 .....142-1701-601
2950-6789 .....142-1701-521
2950-6789 .....142-1701-531
2951-6106 .....142-1701-551
2951-6107 .....142-1701-571
2951-6107 .....142-1701-581
2951-6110 .....142-1701-611
2951-6112 .....142-1701-561
2951-6114 .....142-1701-551
2951-6115 .....142-1701-571
2951-6115 .....142-1701-581
2951-6116 .....142-1701-591
2951-6122 .....142-1701-611
2951-6124 .....142-1701-561
2951-6125 .....142-1701-511
2951-6146 .....142-1701-511
2955-6166 .....142-1801-541
2955-6177 .....142-1801-601
2955-6178 .....142-1801-531
2955-6197 .....142-1801-621
2955-6197 .....142-1801-631
2955-6297 .....142-1801-531
2955-6298 .....142-1801-601
2955-6299 .....142-1801-621
2955-6299 .....142-1801-631
2955-6300 .....142-1801-641
2955-6305 .....142-1801-611
2955-6333 .....142-1801-611
2960-6001 .....142-0701-701
2960-6025 .....142-1711-001
2960-6268 .....142-1711-021
2960-6274 .....142-1711-031
2960-6613 .....142-1711-531
2960-6701 .....142-1711-521
2960-6703 .....142-1711-511
2970-6003 .....142-0701-401
2975-6001 .....142-0701-411
2990-6005 .....142-0901-401
2992-6001 .....142-0901-801
2993-6001 .....142-0901-811
2997-6003 .....142-0901-821
SF1503-6103.....145-0693-002
SF1550-6400.....145-0701-612
SF1552-6002.....145-0701-602
SF1590-6000.....145-0901-801
SF1593-6000.....145-0901-811
SF1597-6003.....145-0901-821
SF2947-6003.....142-0701-536
SF2950-6135.....142-1701-196
SF2950-6220.....142-1701-016
SF2950-6336.....142-1701-206
SF2950-6619.....142-1701-506
SF2950-6662.....142-1701-526
SF2950-6662.....142-1701-536
SF2950-6720.....142-1701-606
SF2950-6731.....142-1701-546
SF2950-6769.....142-1701-506
SF2950-6780.....142-1701-626
SF2950-6781.....142-1701-636
SF2950-6784.....142-1701-626
SF2950-6784.....142-1701-636
SF2950-6786.....142-1701-606
SF2950-6789.....142-1701-526
SF2950-6789.....142-1701-536
SF2951-6106.....142-1701-556
SF2951-6107.....142-1701-576
SF2951-6107.....142-1701-586
SF2951-6110.....142-1701-616
SF2951-6112.....142-1701-566
SF2951-6114.....142-1701-556
SF2951-6115.....142-1701-576
SF2951-6115.....142-1701-586
SF2951-6116.....142-1701-596
SF2951-6122.....142-1701-616
SF2951-6124.....142-1701-566
SF2951-6125.....142-1701-516
SF2951-6146.....142-1701-516
SF2955-6166.....142-1801-546
SF2955-6177.....142-1801-606
SF2955-6178.....142-1801-536
SF2955-6197.....142-1801-626
SF2955-6197.....142-1801-636
SF2955-6297.....142-1801-536
SF2955-6298.....142-1801-606
SF2955-6299.....142-1801-626
SF2955-6299.....142-1801-636
SF2955-6300.....142-1801-646
SF2955-6305.....142-1801-616
SF2955-6333.....142-1801-616
SF2960-6001.....142-0701-706
SF2960-6025.....142-1711-006
SF2960-6268.....142-1711-026
SF2960-6274.....142-1711-036
SF2960-6613.....142-1711-536
SF2960-6701.....142-1711-526
SF2960-6703.....142-1711-516
211-03SF.....142-1801-536
211-12SF.....142-1801-556
211-14SF.....142-1801-566
211-16SF.....142-1801-576
212-01SF.....142-1701-516
212-03SF.....142-1701-536
212-06SF.....142-1701-526
212-08SF.....142-1701-566
212-10SF.....142-1701-586
212-12SF.....142-1701-576
212-13SF.....142-1701-556
212-26SF.....142-1701-506
213-01SF.....142-1801-616
213-03SF.....142-1801-636
213-06SF.....142-1801-626
213-08SF.....142-1801-606
214-01SF.....142-1701-616
214-03SF.....142-1701-636
214-06SF.....142-1701-626
214-08SF.....142-1701-606

**TELEGARTNER..... EMERSON**
H01000A005 7.....142-0003-236
J01270A000 1 .....133-3402-001
J01270A000 9 .....133-3402-006
J01270A002 1 .....133-3403-001
J01270A002 9 .....133-3403-006
J01270A005 1 .....133-3402-101
J01270A005 9 .....133-3402-106
J01270A006 1 .....133-3403-101
J01270A006 9 .....133-3403-106
J01270A009 1 .....133-3693-101
J01270A009 9 .....133-3693-106
J01271A000 1 .....133-3302-001
J01271A000 9 .....133-3302-006
J01271A010 1 .....133-3701-401
J01271A010 9 .....133-3701-406
J01271A013 1 .....133-3701-201
J01271A013 9 .....133-3701-206
J01271A014 1 .....133-3701-231
J01271A016 1 .....133-3701-311
J01271A016 9 .....133-3701-316

**TROMPETER..... EMERSON**
UPL220-009 ..... CPMC-68-18
UPL220-017 ..... CPMC-68-5
UPL220-023 ..... CPMC-68-10
UPL220-026 ..... CPMC-68-33
UPL2000-D1..... CPMC-68-34
UPL2000-D2..... CPMC-68-35
UPL2000-D3..... CPMC-68-2
UPL2000-D4..... CPMC-68-45
UPL2000-D6..... CPMC-68-36
UPL2000-D7..... CPMC-68-20
UPL2000-D8..... CPMC-68-50
UPL2000-D10..... CPMC-68-3

**TYCO/AMP..... EMERSON**
1-221128-0 ..... CPMC-88-1
1-221128-1 ..... CPMC-88-2
1-221128-2 ..... CPMC-88-3
1-221128-6 ..... CPMC-88-2
1-221128-7 ..... CPMC-88-2
1-226208-3 .....CPL-259-18
1-227079-0 ..... CPMC-88-13
1-227079-1 ..... CPMC-88-2
1-227079-3 ..... CPMC-88-2
1-227079-4 .....CPM-88-19
1-227079-5 .....CPM-88-19
1-227079-6 .....CPM-88-19
1-227079-7 ..... CPMC-88-18
1-227079-9 ..... CPMC-88-18
1-227086-0 ..... CPN-1
1-228509-2 ..... CP-625U
1-330022-2 ..... CP-BNC-CAP-1
134866-1 .....CPMC-TNC-2
1-413592-4 ..... CP-AD505
1-414586-4 ..... CPMC-88-3
1060031-1 .....145-0701-602
1060035-1 .....145-0701-002
1060041-1 .....145-0901-801
1060041-1 .....145-0901-811
1063404-11 .....142-1000-033
2-221128-5 ..... CPMC-88-14
2-221128-7 ..... CPMC-88-2
2-225395-0 ..... CPMC-88-2
2-225395-9 ..... CPMC-88-3
2-227079-0 .....CPM-88-20
2-227079-1 .....CPM-88-20
2-227079-2 .....CPM-88-20
2-331350-1 ..... CPMC-88-1
2-331350-2 ..... CPMC-88-18
2-331350-4 .....CPM-88-19
2-331350-5 .....CPM-88-20
2-331350-6 ..... CPMC-88-14
2-331350-9 ..... CPMC-88-13
2001-5003-00.....142-0694-001
2001-5025-00.....142-0694-021
2001-5031-00.....142-0694-011
2001-7141-00.....142-0207-011
2001-7188-00.....142-0203-011
2001-7941-00.....142-0694-031
2001-7985-00.....142-0693-001
2002-5015-00.....142-0594-001
2002-5016-00.....142-0593-001
2004-7188-00.....142-0103-401
2004-7941-00.....142-0594-401
2004-7985-00.....142-0593-401
2007-5054-02.....142-0694-101
2007-5055-02.....142-0693-101
2007-7141-00.....142-0207-101
2007-7188-00.....142-0203-101
2013-5005-00.....142-0408-011
2031-5005-02.....142-0408-016
2031-5006-00.....142-0403-011
2031-5006-02.....142-0403-016
2031-5012-00.....142-0403-001
2031-5055-00.....142-0407-011
2031-5055-02.....142-0407-016
2034-5005-00.....142-0303-401
2034-5031-00.....142-0302-401
2037-5008-00.....142-0403-101
2037-5056-00.....142-0407-101
2037-5100-00.....142-0402-101
2051-1350-00.....142-1801-601
2051-3354-00.....142-1801-601
2051-3354-02.....142-1801-606
2051-3356-00.....142-1801-621
2051-3356-02.....142-1801-626
2051-3358-00.....142-1801-541
2051-3358-02.....142-1801-546
2051-3359-00.....142-1801-641
2051-3359-02.....142-1801-646
2051-3362-00.....142-1801-531
2051-3362-02.....142-1801-536
2051-3363-00.....142-1801-631
2051-3363-02.....142-1801-636
2052-0000-00.....142-0701-631
2052-1215-00.....142-1701-191
2052-1215-02.....142-1701-196
2052-1350-00.....142-1701-621
2052-3350-00.....142-1701-501
2052-3350-02.....142-1701-506
2052-3352-00.....142-1701-521
2052-3352-02.....142-1701-526
2052-3354-00.....142-1701-601
2052-3354-02.....142-1701-606
2052-3356-00.....142-1701-621
2052-3356-02.....142-1701-626
2052-3358-00.....142-1701-541
2052-3358-02.....142-1701-546
2052-3359-00.....142-1701-641
2052-3359-02.....142-1701-646
2052-3362-00.....142-1701-531
2052-3362-02.....142-1701-536
2052-3363-00.....142-1701-631
2052-3363-02.....142-1701-636
2052-3375-00.....142-1701-571
2052-3375-02.....142-1701-576
2052-3393-00.....142-1701-551
2052-3393-02.....142-1701-556
2052-3500-00.....142-1701-511
2052-3500-02.....142-1701-516
2052-3501-00.....142-1701-561
2052-3501-02.....142-1701-566
2052-3502-00.....142-1701-611
2052-3502-02.....142-1701-616
2052-5674-00.....142-1701-201
2052-5674-02.....142-1701-206
2054-0000-00.....142-0701-701
2054-0000-02.....142-0701-706
2054-1201-00.....142-1711-001
2054-1201-02.....142-1711-006
2054-1231-00.....142-1711-001
2054-1231-02.....142-1711-006
2054-1241-00.....142-1711-011
2054-1241-02.....142-1711-016
2054-1251-00.....142-1711-031
2054-1251-02.....142-1711-036
2054-1261-00.....142-1711-021
2054-1261-02.....142-1711-026
2056-0000-00.....142-0701-401
2056-5006-00.....142-0701-411
2060-0000-00.....142-0701-531
2060-0000-02.....142-0701-536
2064-0000-00.....142-0701-301
2080-0000-00.....142-0901-801
2081-0000-00.....142-0901-811
2082-5133-00.....142-0901-821
2084-0000-00.....142-0901-401
221117-1 .....142-0408-016
221117-2 .....142-0403-016
221117-3 .....142-0404-016
221119-1 .....142-0308-016
221119-2 .....142-0303-016
221119-3 .....142-0304-016
221128-1 ..... CPMC-88-1
221128-2 ..... CPMC-88-2
221128-3 ..... CPMC-88-3
221128-4 ..... CPMC-88-1
221128-5 ..... CPMC-88-2
221128-6 ..... CPMC-88-3
221169-1 .....142-0308-416
221169-2 .....142-0303-416
221169-3 .....142-0304-416
221185-2 ..... CPMC-78-2
221244-1 .....CP-BNC-BM-001
221325-1 ..... CP-AD355
221543-2 ..... CP-AD505
221551-3 ..... CP-AD555
2831-7316-02.....142-0404-016
2831-7341-02.....142-0408-016
2831-7358-02.....142-0407-016
2831-7388-02.....142-0403-016
2834-7316-02.....142-0304-416
2834-7341-02.....142-0308-416
2834-7358-02.....142-0307-416
2834-7388-02.....142-0303-416
2837-7316-02.....142-0404-106
2837-7341-02.....142-0408-106
2837-7358-02.....142-0407-106
2837-7388-02.....142-0403-106
4801-7985-02.....145-0693-002
4852-3575-02.....145-0701-602
4852-3576-02.....145-0701-612
4858-3577-02.....145-0701-002
4880-2362-02.....145-0901-801
4881-2361-02.....145-0901-811
4882-2361-02.....145-0901-821
5031-7188-09.....131-6403-001
5034-7188-09.....131-6303-401
5037-7188-09.....131-6403-101
5056-0000-09.....131-6701-401
5058-0000-09.....131-6701-411
5062-0000-09.....131-6701-201
5064-0000-09.....131-6701-301
5131-7188-09.....131-1403-001
5131-7188-09.....131-3403-001
5131-7196-09.....131-3402-001
5132-7188-09.....131-3303-001
5132-7196-09.....131-3302-001
5137-7188-09.....131-1403-101
5137-7188-09.....131-3403-101
5137-7196-09.....131-1402-101
5137-7196-09.....131-3402-101
5152-0000-09.....131-3701-631
5156-0000-09.....131-3701-401
5158-0000-09.....131-3701-411
5162-0000-09.....131-1701-201
5162-0000-09.....131-3701-201
5164-0000-09.....131-1701-371
5164-0000-09.....131-3701-301
5801-7985-63.....133-3693-001
5818-5002-10.....142-0003-236
5818-5003-10.....142-0003-246
5818-5005-10.....142-0002-226
5831-5002-10.....133-3402-006
5831-5003-10.....133-3403-006
5837-5002-10.....133-3402-106
5837-5003-10.....133-3403-106
5837-5010-63.....133-3403-101
5862-5002-10.....133-3701-216
5862-5003-10.....133-3701-206
5862-5004-10.....133-3701-226
5863-0000-10.....133-3801-201
5864-5001-10.....133-3701-306
5864-5002-10.....133-3701-326
5864-5003-10.....133-3701-316
8598-0294-00.....142-1000-033
X65 X08 G022 X99.....142-0003-201
X65 X08 J022 X99.....142-0003-206
X65 X11 G022 X99.....142-0003-301
X65 X11 J022 X99.....142-0003-306

# Competitor Cross Reference

## Ultra Miniature Connectors UMC to U.FL Cross Reference

| Emerson | Hirose |
|---|---|
| 128-0711-201 | U.FL-R-SMT(10) |
| 415-0084-050 | U.FL-2LP(V)-04N1-A-50 |
| 415-0084-100 | U.FL-2LP(V)-04N1-A-100 |
| 415-0084-150 | U.FL-2LP(V)-04N1-A-150 |
| 415-0084-200 | U.FL-2LP(V)-04N1-A-200 |
| 415-0084-250 | U.FL-2LP(V)-04N1-A-250 |
| 415-0084-300 | U.FL-2LP(V)-04N1-A-300 |
| 415-0084-500 | U.FL-2LP(V)-04N1-A-500 |
| 415-0085-050 | U.FL-2LP-04N2-A-50 |
| 415-0085-100 | U.FL-2LP-04N2-A-100 |
| 415-0085-150 | U.FL-2LP-04N2-A-150 |
| 415-0085-200 | U.FL-2LP-04N2-A-200 |
| 415-0085-250 | U.FL-2LP-04N2-A-250 |
| 415-0085-300 | U.FL-2LP-04N2-A-300 |
| 415-0085-300 | U.FL-2LP-04N2-A-500 |
| 415-0086-050 | U.FL-2LP-068N2-A-50 |
| 415-0086-100 | U.FL-2LP-068N2-A-100 |
| 415-0086-150 | U.FL-2LP-068N2-A-150 |
| 415-0086-200 | U.FL-2LP-068N2-A-200 |
| 415-0086-250 | U.FL-2LP-068N2-A-250 |
| 415-0086-300 | U.FL-2LP-068N2-A-300 |
| 415-0086-500 | U.FL-2LP-068N2-A-500 |
| 415-0087-050 | U.FL-2LP-066J2-A-50 |

| Emerson | Hirose |
|---|---|
| 415-0087-100 | U.FL-2LP-066J2-A-100 |
| 415-0087-150 | U.FL-2LP-066J2-A-150 |
| 415-0087-200 | U.FL-2LP-066J2-A-200 |
| 415-0087-250 | U.FL-2LP-066J2-A-250 |
| 415-0087-300 | U.FL-2LP-066J2-A-300 |
| 415-0087-500 | U.FL-2LP-066J2-A-500 |
| 415-0088-050 | U.FL-2LP-088K2T-A-50 |
| 415-0088-100 | U.FL-2LP-088K2T-A-100 |
| 415-0088-150 | U.FL-2LP-088K2T-A-150 |
| 415-0088-200 | U.FL-2LP-088K2T-A-200 |
| 415-0088-250 | U.FL-2LP-088K2T-A-250 |
| 415-0088-300 | U.FL-2LP-088K2T-A-300 |
| 415-0088-500 | U.FL-2LP-088K2T-A-500 |
| 415-0104-150 | U.FL-LP(V)-04N1-A-150 |
| 415-0104-250 | U.FL-LP(V)-04N1-A-250 |
| 415-0105-150 | U.FL-LP-04N2-A-150 |
| 415-0105-250 | U.FL-LP-04N2-A-250 |
| 415-0106-150 | U.FL-LP-068N2-A-150 |
| 415-0106-250 | U.FL-LP-068N2-A-250 |
| 415-0107-150 | U.FL-LP-066J2-A-150 |
| 415-0107-250 | U.FL-LP-066J2-A-250 |
| 415-0108-150 | U.FL-LP-088K2T-A-150 |
| 415-0108-250 | U.FL-LP-088K2T-A-25 |





## UMC Compatibility Table Emerson vs. HIROSE

| | | | Emerson | | HIROSE | |
|---|---|---|---|---|---|---|
| UMC Family | Mated Height (mm) | AWG (O.D. mm) | Plating (Contact/Ground) | Part No. | Plating (Contact/Ground) | Part No. |
| UMC Receptacle | 2.5 | N/A | Gold | 128-0711-201 | Gold/Silver | U.FL-R-SMT (10) |
| UMC MP Plug | 2.5 | 30 (1.37) | Gold | 415-0088-xxx | Gold/Silver | U.FL-LP-088 |
| UMC MP Plug | 2.5 | 32 (1.32) | Gold | 415-0087-xxx | Gold/Silver | U.FL-LP-066 |
| | | 32 (1.13) | Gold | 415-0086-xxx | Gold/Silver | U.FL-LP-066 |
| | | 36 (0.81) | Gold | 415-0085-xxx | Gold/Silver | U.FL-LP-040 |
| UMC LP Plug | 2.0 | 36 (0.81) | Gold | 415-0084-xxx | Gold/Silver | U.FL-LP(V)-040 |
| UMC ULP Plug | 1.55 | N/A | Gold | 415-0109-xxx | Gold/Silver | CL-331-0482-6-10 |

## Non-Magnetic RF Competitor Cross Reference

| Emerson Part No. | Competitor Part No. | Competitor |
|---|---|---|
| 135-9403-001 | 908-NM41300 | Amphenol |
| 135-9402-001 | 908-NM41200 | Amphenol |
| 135-9403-101 | 908-NM43300 | Amphenol |
| 135-9402-111 | 908-NM43200 | Amphenol |
| 135-9701-201 | 908-NM22106 | Amphenol |
| 135-9701-301 | 908-NM24100 | Amphenol |
| 133-9403-001 | 919-NM101P-51S | Amphenol |
| 133-9403-101 | 919-NM104P-51A | Amphenol |
| 133-9402-101 | 919-NM109J-51P | Amphenol |
| 133-9701-201 | 919-NM109J-51P | Amphenol |
| 131-9403-021 | 903NM285P-51S | Amphenol |
| 131-9403-101 | 903-NM289P-51A | Amphenol |
| 131-9701-201 | 903-NM415J-51P | Amphenol |
| 135-9402-111 | R110 170 117 | Radiall |
| 135-9701-201 | R110 426 097 | Radiall |
| 142-9407-001 | R125 075 097 | Radiall |
| 142-9403-101 | R125 172 167 | Radiall |
| 142-9701-201 | R125 426 067 | Radiall |
| 131-9403-021 | R114 082 097 | Radiall |
| 131-9403-101 | R114 186 097 | Radiall |

# Competitor Cross Reference

## Type N Competitor Cross Reference

| Emerson | Radiall | M/A-Com | Amphenol | Tyco/Amp | Telegartner | Rosenberger | Huber-Suhner |
|---|---|---|---|---|---|---|---|
| 138-4303-407 | R161311300 | 3004-7388-10 | 82-6156 | | | 53K507-802N3 | |
| 138-4304-407 | R161311300 | | | | | 53K507-803N3 | |
| 138-4307-407 | R161329000 | 3004-7341-10 | 82-5378 | 1-225667-2 | J01021A0147 | 53K507-106N3 | 24N-50-3-11C |
| 138-4308-407 | R161329200 | 3004-7341-10 | 82-5373 | 225363-2 | J01021A0148 | 53K507-108N3 | 24N-50-3-12C |
| 138-4316-407 | R161331000 | N15H61H001X99 | 82-346-RFX | 225094-2 | J01021A0060 | 53K501-115N3 | 24N-50-7-14C |
| 138-4318-407 | R161331200 | N15H61H004X99 | | 225667-1 | J01021A0092 | 53K501-117N3 | 24N-50-7-15C |
| 138-4349-407 | R161331060 | | 82-6143-1000 | | | | |
| 138-4403-007 | R161072000 | 3031-7338-10 | | | J01020A0103 | 53S107-802N3 | |
| 138-4403-107 | R161181000 | | 82-6048-1000 | | J01020A0040 | | |
| 138-4404-007 | R161072000 | | | | J01020A0104 | 53S107-803N3 | |
| 138-4404-107 | R161181300 | | | | J01020A0039 | | |
| 138-4407-007 | R161082000 | 3031-7358-10 | 82-5375 | 1-225661-2 | J01010A0108 | 53S107-106N3 | 11N-50-3-28C |
| 138-4407-107 | R161182000 | | | 1-225669-2 | J01020A0035 | 53S205-315N3 | 16N-50-3-26C |
| 138-4408-007 | R161083000 | 3031-7341-10 | 82-5370 | 225699-1 | J01020A0113 | 53S107-108N3 | 11N-50-3-29C |
| 138-4408-107 | R161183000 | | 82-4442 | 225365-2 | J01020A0036 | 53S205-317N3 | 16N-50-3-27C |
| 138-4416-007 | R161075000 | N15A61H001X99 | 82-340 | 225661-2 | J01020A0107 | 53S101-115N3 | 11N-50-7-43C |
| 138-4416-107 | R161184000 | N15B61H001X99 | 82-336 | 225669-2 | J01020A0046 | | 16N-50-7-30C |
| 138-4418-007 | R161088000 | N15A61H004X99 | 82-332 | 225661-1 | J01020A0110 | 53S101-115N3 | 11N-50-7-44C |
| 138-4418-107 | R161186000 | N15B61H004X99 | 82-4440-1001 | 225669-1 | J01020A0045 | | 16N-50-7-31C |
| 138-4449-007 | R161075060 | | 82-340-1052 | | J01020A0127 | 53S101-1N9N3 | |
| 138-4593-401 | R161335200 | 3004-7985-00 | 82-6093-RFX | 228658-2 | J01021H0087 | 52K504-271N3 | 24N-50-2-14 |
| 138-4594-401 | R161336000 | 3004-7941-00 | 82-6097-RFX | 228658-1 | J01021A0151 | 53K504-272N3 | 24N-50-3-14 |
| 138-4596-401 | R161337200 | | 82-6162 | | J01021A0109 | 53K504-273N3 | 24N-50-5-39C |
| 138-4693-001 | R161050300 | 3001-7985-00 | | 1057094-1 | | | 11N-50-2-14 |
| 138-4693-011 | R161050300 | 3001-7985-00 | | | | | 11N-50-2-14 |
| 138-4694-001 | R161051000 | 3001-7941-00 | 82-5955-RFX | 1057088-1 | J01020A0109 | 53S101-272B1 | 11N-50-3-13 |
| 138-4694-011 | R161051000 | 3001-7941-00 | 82-5955-RFX | | J01020A0109 | 53S101-272B1 | 11N-50-3-13 |
| 138-4696-001 | R161054000 | | 82-6124 | | J01020A0112 | 53S101-273B1 | 11N-50-5-39C |
| 138-4696-011 | R161054000 | | 82-6124 | | J01020A0112 | 53S101-273B1 | 11N-50-5-39C |
| 138-4701-407 | R161586137 | N15M35999X99 | | | J01021A1084 | 53K505-200N3 | |
| 138-4701-607 | R161404000 | 3052-0000-10 | 82-97 | 1-1337418-0 | J01021A1082 | 53K401-200N3 | 23N-50-0-23 |
| 138-4901-407 | R161730000 | N15R07999X99 | 82-66 | | J01024A1088 | 53K501-K00N3 | 34N-50-0-51 |
| 138-4901-807 | R161705000 | 3680-0000-02 | 82-101 | 227945-2 | J01024A1092 | 53K101-K00N3 | 31N-50-0-51 |
| 138-4901-817 | R161703000 | 3681-0000-02 | 82-100 | 1058661-1 | J01024A1094 | 53K101-S00N3 | 32N-50-0-51 |





## SMA Stainless Steel Competitor Cross Reference

| Emerson | Huber-Suhner | Amp/Tyco | Radiall | Amphenol | AEP |
|---|---|---|---|---|---|
| 141-0403-012 | 11SMA-50-2-55C | 225532-4 | R125072001 | 901-9511-3SFC | 9101-9573-03 |
| 141-0404-012 | 11SMA-50-2-56C | | R125072081 | 901-9511-12SFC | 9101-9573-19 |
| 141-0407-012 | 11SMA-50-3-55C | 225532-1 | R125075001 | 901-9511-2SF | 9101-9573-06 |
| 141-0408-012 | 11SMA-50-3-56C | 225532-3 | R125076001 | 901-9511-1SF | 9101-9573-01 |
| 141-0403-102 | 16SMA-50-2-55C | 225609-4 | R125172001 | 901-9531-3SF | 9043-9523-03 |
| 141-0404-102 | 16SMA-50-2-56C | | R125174011 | 901-9531-12SF | 9043-9523-19 |
| 141-0407-102 | 16SMA-50-3-55C | 225609-1 | R125175001 | 901-9531-2SF | 9043-9523-06 |
| 141-0408-102 | 16SMA-50-3-56C | 225609-3 | R125176001 | 901-9531-1 | 9043-9523-01 |
| 141-0693-002 | 11SMA-50-2-65 | | R125052002 | 901-9201-2A | 9401-1083-010 |
| 141-0694-002 | 11SMA-50-3-65 | | | | 9401-1083-109 |
| 141-0694-012 | 11SMA-50-3-64 | | R125054002 | 901-9201-1A | 9301-1063-009 |
| 141-0693-062 | 11SMA-50-2-65 | | R125052002 | 901-9723 | 9401-1583-010 |
| 141-0694-062 | 11SMA-50-3-65 | | R125057002 | 901-9808 | 9401-1583-109 |
| 141-0303-412 | | 225608-4 | R125312121 | 901-9610-3SF | 9130-9573-03 |
| 141-0304-412 | | 1-225608-1 | R125313121 | 901-9610-12SF | 9130-9573-19 |
| 141-0307-412 | | | R125314121 | 901-9610-2SF | 9130-9573-06 |
| 141-0308-412 | | 225608-3 | R125315121 | 901-9610-1SF | 9130-9573-01 |
| 141-0593-001 | | | R125222000 | 901-9202-2A | 9402-1533-010 |
| 141-0594-001 | | | R125225000 | 901-9202-1A | 9402-1583-009 |
| 141-0593-401 | 24SMA-50-2-41 | | R125326000 | | 9453-1083-010 |
| 141-0594-401 | 24SMA-50-3-41 | | R125325000 | | 9453-1083-009 |
| 141-0593-421 | 24SMA-50-2-41 | | R125326000 | | 9453-1583-010 |
| 141-0594-421 | 24SMA-50-3-41 | | R125325000 | | 9453-1083-009 |
| 141-0701-201 | 82SMA-50-0-1 | 221789-1 | R125426000 | 901-144 | 9650-1113-000 |
| 141-0701-301 | 85SMA-50-0-1 | 221790-1 | R125680000 | 901-143 | 9647-1513-000 |
| 141-0701-402 | 22SMA-50-0-54 | 228496-1 | R125553001 | 901-9211-SF | 9412-9113-000 |
| 141-0701-602 | 23SMA-50-0-61 | 221641-1 | R125454001 | | 9408-9113-000 |
| 141-0701-612 | 23SMA-50-0-51 | 221640-1 | R125403001 | 901-9215-SF | 9404-9113-000 |
| 141-0701-622 | 23SMA-50-0-63 | | R125464274 | 901-9000-CCSF | 9008-9113-000 |
| 141-0701-602 | 23SMA-50-0-53 | | R125415275 | 901-9204-CCSF | 9004-9113-0001 |

## Emerson Network Power Connectivity Solutions, Inc., including its subsidiaries Stratos International, Inc., Trompeter Electronics, Inc., and Semflex, Inc.

# TERMS AND CONDITIONS OF SALE

Emerson Network Power Connectivity Solutions, Inc. is herein referred to as the "Seller" and the customer or person or entity purchasing goods ("Goods") from Seller is referred to as the "Buyer." These Terms and Conditions, any price list or schedule, quotation, acknowledgment or invoice from Seller relevant to the sale of the Goods and all documents incorporated by specific reference herein or therein, constitute the complete and exclusive statement of the terms of the agreement governing the sale of Goods by Seller to Buyer. Buyer's acceptance of the Goods will manifest Buyer's assent to these Terms and Conditions. Seller reserves the right in its sole discretion to refuse orders.

**1. PRICES:** Unless otherwise specified in writing by Seller, the price quoted or specified by Seller for the Goods shall remain in effect for thirty (30) days after the date of Seller's quotation or acknowledgment of Buyer's order for the Goods, whichever occurs first, provided an unconditional authorization from Buyer for the shipment of the Goods is received and accepted by Seller within such time period. If such authorization is not received by Seller within such thirty (30) day period, Seller shall have the right to change the price for the Goods to Seller's price for the Goods at the time of shipment. All prices are exclusive of taxes, transportation and insurance, which are to be borne by Buyer.

**2. TAXES:** Any current or future tax or governmental charge (or increase in same) affecting Seller's costs of production, sale, or delivery or shipment, or which Seller is otherwise required to pay or collect in connection with the sale, purchase, delivery, storage, processing, use or consumption of Goods, shall be for Buyer's account and shall be added to the price.

**3. TERMS OF PAYMENT:** Unless otherwise specified by Seller, terms are net thirty (30) days from date of Seller's invoice in U.S. currency. Seller shall have the right, among other remedies, either to terminate this agreement or to suspend further performance under this and/or other agreements with Buyer in the event Buyer fails to make any payment when due, which other agreements Buyer and Seller hereby amend accordingly. Buyer shall be liable for all expenses, including attorneys' fees, relating to the collection of past due amounts. If any payment owed to Seller is not paid when due, it shall bear interest, at a rate to be determined by Seller, which shall not exceed the maximum rate permitted by law, from the date on which it is due until it is paid. Should Buyer's financial responsibility become unsatisfactory to Seller, cash payments or security satisfactory to Seller may be required by Seller for future deliveries and for the Goods theretofore delivered. If such cash payment or security is not provided, in addition to Seller's other rights and remedies, Seller may discontinue deliveries.

**4. SHIPMENT AND DELIVERY:** While Seller will use all reasonable commercial efforts to maintain the delivery date(s) acknowledged or quoted by Seller, all shipping dates are approximate and not guaranteed. Seller reserves the right to make partial shipments. Seller, at its option, shall not be bound to tender delivery of any Goods for which Buyer has not provided shipping instructions and other required information. If the shipment of the Goods is postponed or delayed by Buyer for any reason, Buyer agrees to reimburse Seller for any and all storage costs and other additional expenses resulting therefrom. Risk of loss and legal title to the Goods shall transfer to Buyer for sales in which the end destination of the Goods is outside of the United States immediately after the Goods have passed beyond the territorial limits of the United States. For all other shipments, risk of loss for damage and responsibility shall pass from Seller to Buyer upon delivery to and receipt by carrier at Seller's shipping point. All shipments are F.O.B. Seller's shipping point. Any claims for shortages or damages suffered in transit are the responsibility of Buyer and shall be submitted by Buyer directly to the carrier.

Shortages or damages must be identified and signed for at the time of delivery. Buyer shall inspect Goods delivered to it by Seller immediately upon receipt, and, any course of dealing to the contrary notwithstanding, failure of Buyer to give Seller notice of any claim within 30 days after receipt of such Goods shall be an unqualified acceptance of such Goods.

**5. LIMITED WARRANTY:** Subject to the limitations of Section 6, Seller warrants that the Goods manufactured by Seller will be free from defects in material and workmanship under normal use and regular service and maintenance for a period of one year from the date of shipment of the Goods by Seller, unless otherwise specified by Seller in writing. **THIS IS THE SOLE AND EXCLUSIVE WARRANTY GIVEN BY SELLER WITH RESPECT TO THE GOODS AND IS IN LIEU OF AND EXCLUDE ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ARISING BY OPERATION OF LAW OR OTHERWISE, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHETHER OR NOT THE PURPOSE OR USE HAS BEEN DISCLOSED TO SELLER IN SPECIFICATIONS, DRAWINGS OR OTHERWISE, AND WHETHER OR NOT SELLER'S PRODUCTS ARE SPECIFICALLY DESIGNED AND/OR MANUFACTURED BY SELLER FOR BUYER'S USE OR PURPOSE.**

This warranty does not extend to any losses or damages due to misuse, accident, abuse, neglect, normal wear and tear, negligence (other than Seller's), unauthorized modification or alteration, use beyond rated capacity, unsuitable power sources or environmental conditions, improper installation, repair, handling, maintenance or application or any other cause not the fault of Seller. To the extent that Buyer or its agents has supplied specifications, information, representation of operating conditions or other data to Seller in the selection or design of the Goods and the preparation of Seller's quotation, and in the event that actual operating conditions or other conditions differ from those represented by Buyer, any warranties or other provisions contained herein which are affected by such conditions shall be null and void.

If within thirty (30) days after Buyer's discovery of any warranty defects within the warranty period, Buyer notifies Seller thereof in writing, Seller shall, at its option and as Buyer's exclusive remedy, repair, correct or replace F.O.B. point of manufacture, or refund the purchase price for, that portion of the Goods found by Seller to be defective. Failure by Buyer to give such written notice within the applicable time period shall be deemed an absolute and unconditional waiver of Buyer's claim for such defects. All costs of dismantling, reinstallation and freight and the time and expense of Seller's personnel and representatives for site travel and diagnosis under this warranty shall be borne by Buyer unless accepted in writing by Seller. Goods repaired or replaced during the warranty period shall be covered by the foregoing warranty for the remainder of the original warranty period or ninety (90) days from the date of shipment, whichever is longer.

Buyer assumes all other responsibility for any loss, damage, or injury to persons or property arising out of, connected with, or resulting from the use of Goods, either alone or in combination with other products/components.

Section 5 applies to any entity or person who may buy, acquire or use the Goods, including any entity or person who obtains the Goods from Buyer, and shall be bound by the limitations therein, including Section 6. Buyer agrees to provide such subsequent transferee conspicuous, written notice of the provisions of Sections 5 and 6.

**6. LIMITATION OF REMEDY AND LIABILITY: THE SOLE AND EXCLUSIVE REMEDY FOR BREACH OF ANY WARRANTY HEREUNDER OTHER THAN THE WARRANTY PROVIDED UNDER SECTION 7 SHALL BE LIMITED TO REPAIR, CORRECTION OR REPLACEMENT, OR REFUND OF THE PURCHASE PRICE UNDER SECTION 5.**

**SELLER SHALL NOT BE LIABLE FOR DAMAGES CAUSED BY DELAY IN PERFORMANCE AND THE REMEDIES SET FORTH IN THIS AGREEMENT ARE EXCLUSIVE. IN NO EVENT, REGARDLESS OF THE FORM OF THE CLAIM OR CAUSE OF ACTION (WHETHER BASED IN CONTRACT, INFRINGEMENT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE), SHALL SELLER'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXCEED THE PRICE PAID BY BUYER FOR THE SPECIFIC GOODS PROVIDED BY SELLER GIVING RISE TO THE CLAIM OR CAUSE OF ACTION. BUYER AGREES THAT IN NO EVENT SHALL SELLER'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXTEND TO INCLUDE INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES.** The term "consequential damages" shall include, but not be limited to, loss of anticipated profits, business interruption, loss of use, revenue, reputation and data, costs incurred, including without limitation, for capital, fuel, power and loss or damage to property or equipment.

Buyer expressly acknowledges and agrees that Seller has set its prices and entered into this agreement in reliance upon the limitations of liability and other terms and conditions specified herein, which allocates the risk between Seller and Buyer and form a basis of this bargain between the parties.

It is expressly understood that any technical advice furnished by Seller with respect to the use of the Goods is given without charge, and Seller assumes no obligation or liability for the advice given, or results obtained, all such advice being given and accepted at Buyer's risk.

**7. PATENTS AND COPYRIGHTS:** Subject to the limitations of the second paragraph of Section 6, Seller warrants that the Goods sold, except as are made specifically for Buyer according to Buyer's specifications, do not infringe any valid U.S. patent or copyright in existence as of the date of shipment. This warranty is given upon the condition that Buyer promptly notify Seller of any claim or suit involving Buyer in which such infringement is alleged and cooperate fully with Seller and permit Seller to control completely the defense, settlement or compromise of any such allegation of infringement. Seller's warranty as to use patents only applies to infringement arising solely out of the inherent operation according to Seller's specifications and instructions (i) of such Goods, or (ii) of any combination of Goods acquired from Seller in a system designed by Seller. In the event such Goods are held to infringe such a U.S. patent or copyright in such suit, and the use of such Goods is enjoined, or in the case of a compromise or settlement by Seller, Seller shall have the right, at its option and expense, to procure for Buyer the right to continue using such Goods, or replace them with non-infringing Goods, or modify same to become non-infringing, or grant Buyer a credit for the depreciated value of such Goods and accept return of them. In the event of the foregoing, Seller may also, at its option, cancel the agreement as to future deliveries of such Goods, without liability.

**8. EXCUSE OF PERFORMANCE:** Seller shall not be liable for delays in performance or for non-performance due to acts of God; acts of Buyer; war; fire; flood; weather; sabotage; strikes or labor disputes; civil disturbances or riots; governmental requests, restrictions, allocations, laws, regulations, orders or actions; unavailability of or delays in transportation; default of suppliers; or unforeseen circumstances or any events or causes beyond Seller's reasonable control. Deliveries or other performance may be suspended for an appropriate period of time or canceled by Seller upon notice to Buyer in the event of any of the foregoing, but the balance of the agreement shall otherwise remain unaffected as a result of the foregoing.

If Seller determines that its ability to supply the total demand for the Goods, or to obtain material used directly or indirectly in the manufacture of the Goods, is hindered, limited or made impracticable due to causes set forth in the preceding paragraph, Seller may allocate its available supply of the Goods or such material without obligation to acquire other supplies of any such Goods or material among itself and its purchasers on such basis as Seller determines to be equitable without liability for any failure of performance which may result therefrom.

**9. CANCELLATION:** Unless otherwise agreed in writing by Seller, orders under this agreement may not be canceled by Buyer for any reason.

**10. CHANGES:** Buyer may request changes or additions to the Goods consistent with Seller's specifications and criteria. In the event such changes or additions are accepted by Seller, Seller may revise the price and dates of delivery.

Seller reserves the right to change designs and specifications for the Goods without prior notice to Buyer, except with respect to Goods being made-to-order for Buyer. Seller shall have no obligation to install or make such change in any Goods manufactured prior to the date of such change.

**11. NUCLEAR/MEDICAL.** GOODS AND SERVICES SOLD HEREUNDER ARE NOT FOR USE IN CONNECTION WITH ANY NUCLEAR, MEDICAL, LIFESUPPORT AND RELATED APPLICATIONS. Buyer accepts goods and services with the foregoing understanding, agrees to communicate the same in writing to any subsequent purchasers or users and to defend, indemnify and hold harmless Seller from any claims, losses, suits, judgments and damages, including incidental and consequential damages, arising from such use, whether the cause of action be based in tort, contract or otherwise, including allegations that the Seller's liability is based on negligence or strict liability.

**12. BUYER'S COMPLIANCE WITH LAWS:** In connection with the transactions contemplated by this agreement, Buyer is familiar with and shall fully comply with all applicable laws, regulations, rules and other requirements of the United States and of any applicable state, foreign and local governmental body in connection with the purchase, receipt, use, transfer and disposal of the Goods.

**13. EXPORT/IMPORT: Buyer agrees that all applicable import and export control laws, regulations, orders and requirements, including without limitation those of the United States and the European Union, and the jurisdictions in which the Seller and Buyer are established or from which Goods and Services may be supplied, will apply to their receipt and use. In no event shall Buyer use, transfer, release, import, export, Goods in violation of such applicable laws, regulations, orders or requirements.**

**14. TOOLING:** Tool, die, and pattern charges, if any, are in addition to the price of the Goods and are due and payable upon completion of the tooling. All such tools, dies and patterns shall be and remain the property of Seller. Charges for tools, dies, and patterns do not convey to Buyer, title, ownership interest in, or rights to possession or removal, or prevent their use by Seller for other purchasers, except as otherwise expressly provided by Seller and Buyer in writing with reference to this provision.

**15. RETURNED GOODS:** Except as otherwise provided with respect to warranty defects in Section 5, advance written permission to return Goods must be obtained from Seller's customer service department. Such Goods must be current, unused, catalogued Goods and must be shipped, transportation prepaid, to the Seller's specified return location. Returns made without proper written permission will not be accepted by Seller. Credit or exchange for such returned Goods will be at the billing price or current price, whichever is lower, from which will be deducted an inspection, restocking and repacking charge and the cost of any reconditioning. Seller reserves the right to inspect Goods prior to authorizing return.

**16. BUYER SUPPLIED DATA:** To the extent that Seller has been provided by or on behalf of Buyer any specifications, description of operating conditions or other data and information in connection with the selection or design of the Goods, and the actual operating conditions or other circumstances differ from those provided by Buyer and relied upon by Seller, any warranties or other provisions contained herein which are affected by such conditions shall be null and void.

**17. SOFTWARE[1]:** Notwithstanding any other provision herein to the contrary, Seller or applicable third party licensor to Seller shall retain all rights of ownership and title in its respective Software, including without limitation all rights of ownership and title in its respective copies of such Software. Except as otherwise provided herein, Buyer is hereby granted a nonexclusive, nontransferable royalty free license to use the Software incorporated into the Goods solely for purposes of Buyer properly utilizing such Goods purchased from Seller. All other Software shall be furnished to, and used by, Buyer only after execution of Seller's (or the licensor's) applicable standard license agreement, the terms of which are incorporated herein by reference.

**18. DRAWINGS:** Seller's prints and drawings (including without limitation, the underlying technology) furnished by Seller to Buyer in connection with this agreement are the property of Seller and Seller retains all rights, including without limitation, exclusive rights of use, licensing and sale. Possession of such prints or drawings does not convey to Buyer any rights or license, and Buyer shall return all copies (in whatever medium) of such prints or drawings to Seller immediately upon request therefore.

**18. ASSIGNMENT:** Buyer shall not assign its rights or delegate its duties hereunder or any interest herein without the prior written consent of Seller, and any such assignment, without such consent, shall be void.

**19. GENERAL PROVISIONS:** These terms and conditions supersede all other communications, negotiations and prior oral or written statements regarding the subject matter of these terms and conditions. No change, modification, rescission, discharge, abandonment, or waiver of these terms and conditions shall be binding upon the Seller unless made in writing and signed on its behalf by a duly authorized representative of Seller. No conditions, usage of trade, course of dealing or performance, understanding or agreement purporting to modify, vary, explain, or supplement these terms and conditions shall be binding unless hereafter made in writing and signed by the party to be bound, and no modification or additional terms shall be applicable to this agreement by Seller's receipt, acknowledgment, or acceptance of purchase orders, shipping instruction forms, or other documentation containing terms at variance with or in addition to those set forth herein. Any such modifications or additional terms are specifically rejected and deemed a material alteration hereof. If this document shall be deemed an acceptance of a prior offer by Buyer, such acceptance is expressly conditional upon Buyer's assent to any additional or different terms set forth herein. No waiver by either party with respect to any breach or default or of any right or remedy, and no course of dealing, shall be deemed to constitute a continuing waiver of any other breach or default or of any other right or remedy, unless such waiver be expressed in writing and signed by the party to be bound. All typographical or clerical errors made by Seller in any quotation, acknowledgment or publication are subject to correction.

The validity, performance, and all other matters relating to the interpretation and effect of this agreement shall be governed by the law of the state of Missouri. Buyer and Seller agree that the proper venue for all actions arising in connection herewith shall be only in Missouri and the parties agree to submit to such jurisdiction. No action, regardless of form, arising out of transactions relating to this contract, may be brought by either party more than two (2) years after the cause of action has accrued. The U.N. Convention on Contracts for the International Sales of Goods shall not apply to this agreement.

[1] Note the definition of "Software" includes "firmware."

(Revision 7/2009)

## Notes

**Emerson Network Power Connectivity Solutions** has a wide range of cable assemblies and connectors suited for RF, Microwave and Fiber Optic signal transmission. Connectivity Solutions is a vertically integrated supplier of custom, fixed length and semi rigid cable assemblies from DC to 50 GHz. Our product lines deliver custom-engineered products and solutions to satisfy the most demanding and complex requirements.

**Emerson Connectivity Solutions** products support wire line and wireless communications, data networking, test and measurement, telecomm, broadcast, medical, military, aerospace and industrial applications.

**EmersonConnectivity.com**
**Toll free: 800-247-8256**
**Phone: 507-833-8822**

Connectivity Solutions

EMERSON
Network Power

**EMERSON. CONSIDER IT SOLVED.™**

EMERSON
Network Power

## Connectivity Solutions


**Emerson Network Power Connectivity Solutions**

**US Headquarters**
3000 Lakeside Drive, Ste. 308N
Bannockburn, IL 60015, USA

**North America**
299 Johnson Avenue, Ste. 100
Waseca, MN 56093, USA
Toll Free: 800.247.8256
Tel: 507.833.8822
Fax: 507.833.6287
**ECSorders@Emerson.com**

**Europe, Middle East, Africa**
Emerson Network Power Connectivity Solutions, Ltd.
11 Bilton Road
Chelmsford
Essex CM1 2UP
England
Tel: +44 1245.359.515
Fax: +44 1245.358.938
**EMEAConnectivitySales@Emerson.com**

**Asia Pacific**
Emerson Network Power Connectivity Solutions
(Shanghai) Co., Ltd.
Building 1, No. 800 ShenFu Road
XinZhuang Industry Park
Shanghai, China 201108
Tel: +86 21.5442.7668
Fax: +86 21.5442.7628
**APConnectivitySales@Emerson.com**


**About Emerson Network Power Connectivity Solutions**

Emerson Network Power Connectivity Solutions, an Emerson business, serves the needs of wireless communications, military, telephony and data networks, CATV security systems, health care and industrial facilities with a full spectrum of RF/microwave and fiber optic connectivity products. For more information, visit **www.EmersonConnectivity.com**

**About Emerson**

Emerson (NYSE: EMR), based in St. Louis, Missouri (USA), is a global leader in bringing technology and engineering together to provide innovative solutions for customers in industrial, commercial, and consumer markets around the world. The company is comprised of five business segments: Process Management, Industrial Automation, Network Power, Climate Technologies, and Commercial & Residential Solutions. For more information, visit **www.Emerson.com**

**www.EmersonConnectivity.com**
**www.EmersonNetworkPower.com/Connectivity**

**Emerson Network Power**
The global leader in enabling business-critical continuity.

- AC Power Systems
- Connectivity
- DC Power Systems
- Embedded Power
- Inbound Power
- Integrated Cabinet
- Outside Plant
- Precision Cooling
- Site Monitoring and Services

Emerson Network Power and the Emerson Network Power logo are trademarks and service marks of Emerson Electric Co. ©2013 Emerson Electric Co. Rev. 05/13

Мы молодая и активно развивающаяся компания в области поставок электронных компонентов. Мы поставляем электронные компоненты отечественного и импортного производства напрямую от производителей и с крупнейших складов мира.

Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

Собственная эффективная логистика и склад в обеспечивает надежную поставку продукции в точно указанные сроки по всей России.

Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

Осуществляем поставки продукции под контролем ВП МО РФ на предприятия военно-промышленного комплекса России , а также работаем в рамках 275 ФЗ с открытием отдельных счетов в уполномоченном банке. Система менеджмента качества компании соответствует требованиям ГОСТ ISO 9001.

Минимальные сроки поставки, гибкие цены, неограниченный ассортимент и индивидуальный подход к клиентам являются основой для выстраивания долгосрочного и эффективного сотрудничества с предприятиями радиоэлектронной промышленности, предприятиями ВПК и научно-исследовательскими институтами России.

С нами вы становитесь еще успешнее!

**Наши контакты:**

**Телефон:** +7 812 627 14 35

**Электронная почта:** sales@st-electron.ru

**Адрес:** 198099, Санкт-Петербург, Промышленная ул, дом № 19, литера Н, помещение 100-Н Офис 331