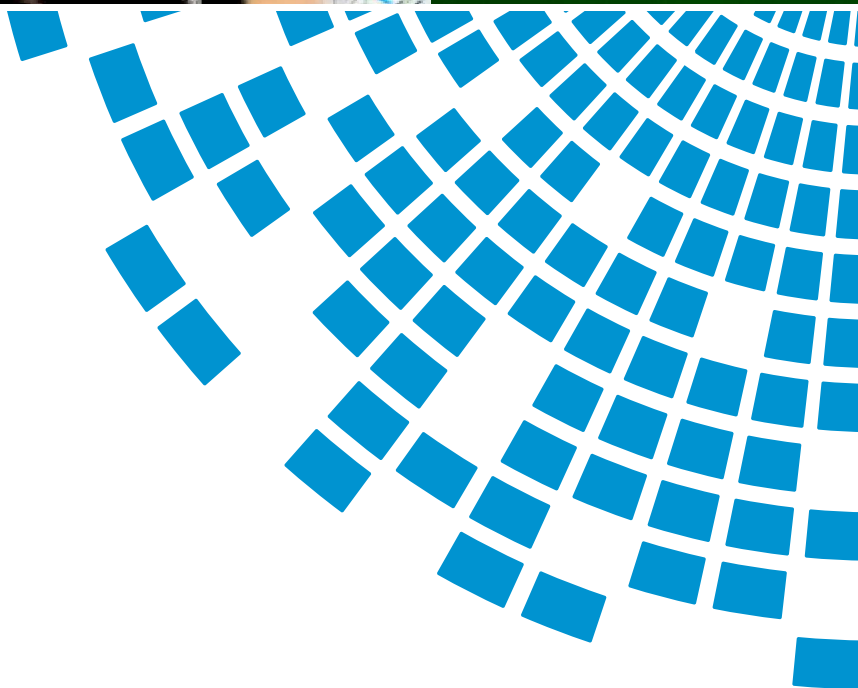




## SMA One Piece Semi-Rigid Connectors

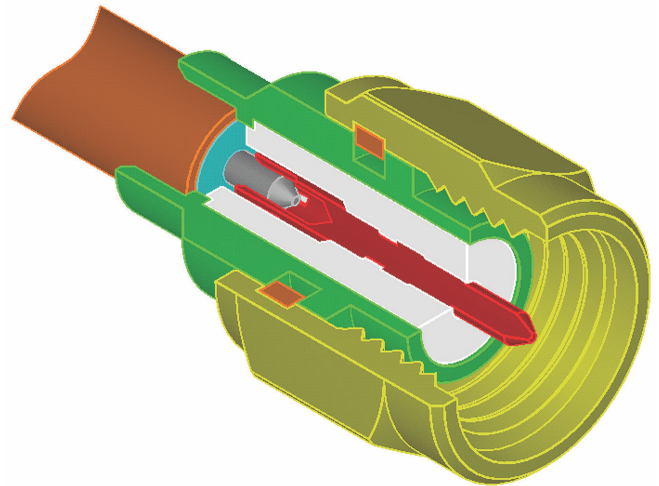


# SMA - 50 OHM CONNECTORS

## For Semi-Rigid Cable

The Johnson® captivated solderless contact connectors for semi-rigid cable provide a unique solution for high frequency cable assemblers. As compared to standard solder-on connectors with separate center contacts, these SMA connectors offer several key advantages:

- Assembly is easier and faster than non-captive contact connectors.
- Captivated center contacts allow the complete connector assembly to simply plug onto the prepared cable. The only soldering required is between the connector body and cable jacket.
- Rugged center contact socket design reduces potential intermittent signals, which can be caused by the use of high temperature lead free solder alloys.
- Precision center contacts provide predictable mechanical and electrical performance. Factory controlled contact location reduces variations in high frequency electrical performance.
- Electrical performance is similar to non-captive contact connectors.
- Low VSWR is specified to 18 GHz. The connectors can be used at higher frequencies with very good Return Loss.
- Plug connectors feature durable thickwall style mating interfaces with extended cutoff frequency to 28 GHz.
- Bulkhead jack connectors are provided with silicone rubber o-rings for environmental sealing of the flange mounting surface.
- Precision hand assembly tooling assures repeatable performance.
- All connectors meet or exceed the performance requirements of MIL-PRF-39012 captive contact semi-rigid SMA connectors.



SMA Captivated Solderless Contact  
Connectors for Semi-Rigid Cable

# SMA - 50 OHM CONNECTORS

## For Semi-Rigid Cable

### MATERIAL SPECIFICATIONS

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

**Contacts:** Beryllium copper per QQ-C-530, gold plated per MIL-G-45204 .00005" min.

**Nut Retention Spring:** Beryllium copper per QQ-C-533.  
 Unplated Insulators: PTFE fluorocarbon per ASTM D 1710 and ASTM D 1457 Mounting Hardware: Brass per QQ-B-626 or QQ-B-613, gold plated per MIL-G-45204 .00001" min. or nickel plated per QQ-N-290 Seal Rings: Silicone rubber per ZZ-R-765

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

### MECHANICAL SPECIFICATIONS

**Engagement Design:** MIL-STD-348, Series SMA Durability: 500 Cycles minimum

**Engagement/Disengagement Force:** 2 inch-pounds maximum Mating Torque: 7 to 10 inch-pounds

**Bulkhead Mounting Nut Torque:** 15 inch-pounds maximum Coupling Proof Torque: 15 inch-pounds minimum Coupling Nut Retention: 60 pounds minimum Contact Retention: 6 pounds minimum axial force

|                         |  |                       |
|-------------------------|--|-----------------------|
| <b>Cable Retention:</b> | <u>Axial Force (lbs)</u>                 | <u>Torque (in-oz)</u> |
|                         | Connectors for .086 semi-rigid . . . . . | 30 . . . . . 16       |
|                         | Connectors for .141 semi-rigid . . . . . | 60 . . . . . 55       |

### ENVIRONMENTAL SPECIFICATIONS

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

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

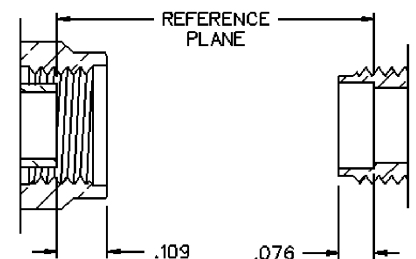
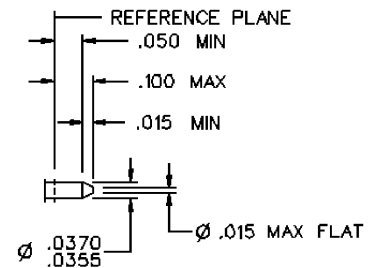
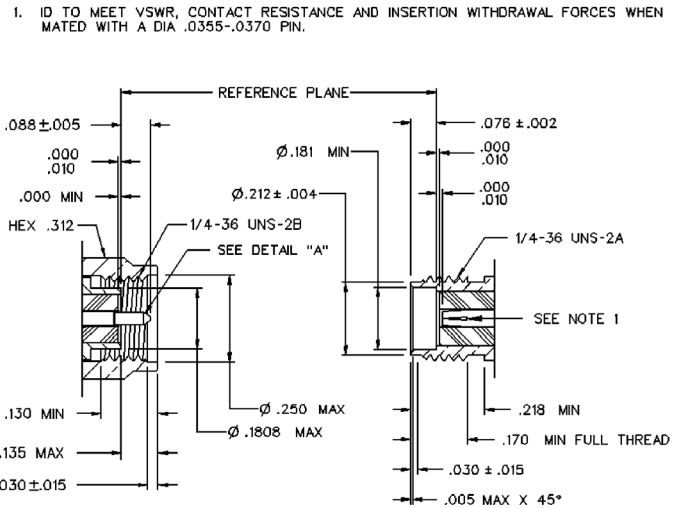
**Thermal Shock:** MIL-STD-202, Method 107, Condition B - Except 115°C High Temp

**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

+ Avoid applications where hazardous voltages are applied to user contacted components.  
 Voltage ratings relate to reliable component operation, not safe application.

### Mating Engagement for SMA Series per MIL-STD-348

MATING ENGAGEMENT FOR SMA SERIES THICKWALL PLUG COMPATIBLE WITH MIL-C-39012



# SMA - 50 OHM CONNECTORS

For Semi-Rigid Cable

## ELECTRICAL SPECIFICATIONS

**Impedance:** 50 Ohms

**Frequency Range:**

|             |          |
|-------------|----------|
| Plugs ..... | 0-28 GHz |
| Jacks ..... | 0-25 GHz |

**VSWR:** (f = GHz)

| Plugs for Cable Type  | 0-18 GHz  | 18-28 GHz     |
|-----------------------|-----------|---------------|
| .086 semi-rigid ..... | 1.07+.01f | <1.30 Typical |
| .141 semi-rigid ..... | 1.05+.01f | <1.25 Typical |
| Jacks for Cable Type  | 0-18 GHz  | 18-25 GHz     |
| .086 semi-rigid ..... | 1.07+.01f | <1.30 Typical |
| .141 semi-rigid ..... | 1.05+.01f | <1.25 Typical |

**Working Voltage:** (Vrms maximum)

| Connectors for Cable Type | Sea Level | 70K Feet |
|---------------------------|-----------|----------|
| .086 semi-rigid.....      | 335       | 85       |
| .141 semi-rigid.....      | 500       | 125      |

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

| Connectors for Cable Type |      |
|---------------------------|------|
| .086 semi-rigid .....     | 1000 |
| .141 semi-rigid .....     | 1500 |

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

| Connectors for Cable Type |     |
|---------------------------|-----|
| .086 semi-rigid .....     | 250 |
| .141 semi-rigid .....     | 375 |

**Insertion Loss:**  $0.03 \sqrt{f(\text{GHz})}$ , dB maximum, tested at 10 GHz

**Insulation Resistance:** 5000 Megohms minimum

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

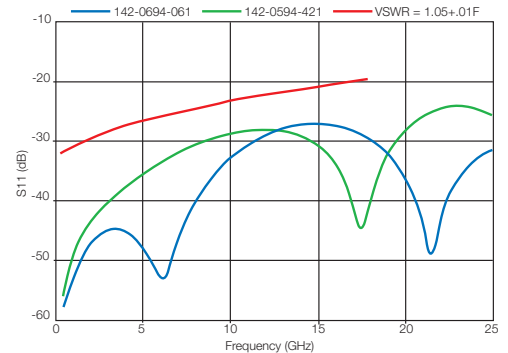
|                       |     |                |
|-----------------------|-----|----------------|
| Center Contact.....   | 3.0 | 5.0            |
| Outer Conductor ..... | 2.0 | Not Applicable |

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

**RF High Potential Withstanding Voltage:** (Vrms minimum, tested at

| 4 and 7 MHz) Connectors for Cable Type |      |
|--|------|
| .086 semi-rigid .....                  | 670  |
| .141 semi-rigid .....                  | 1000 |

Typical Return Loss  
SMA One Piece Captivated  
Contact Connectors  
Assembled to RG-402  
(.141 OD Semi-rigid Cable)



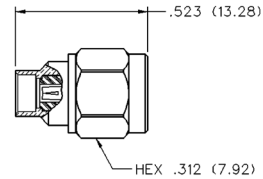
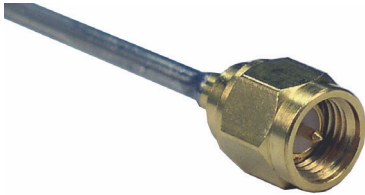
Cinch Connectivity Solutions  
299 Johnson Avenue SW, Suite 100  
Waseca, MN 56093 USA

[cinchconnectivity.com](http://cinchconnectivity.com)

# SMA - 50 OHM CONNECTORS

## For Semi-Rigid Cable

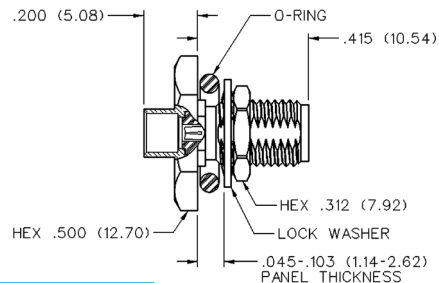
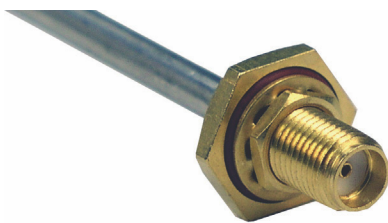
### Straight Solder Type Plug With Captivated Solderless Contact, Captive Nut and Thick Wall Interface



| CABLE TYPE      | VSWR & FREQ. RANGE                                      | GOLD PLATED  | NICKEL PLATED |
|-----------------|---|--------------|---------------|
| .086 Semi-Rigid | 0-18 GHz: 1.07 + .01f (GHz)<br>18-28 GHz: <1.30 Typical | 142-0693-061 | 142-0693-066  |
| .141 Semi-Rigid | 0-18 GHz: 1.05 + .01f (GHz)<br>18-28 GHz: <1.25 Typical | 142-0694-061 | 142-0694-066  |

Assembly instructions on back page.

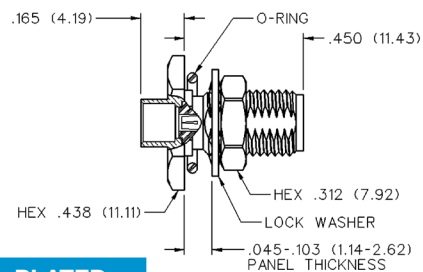
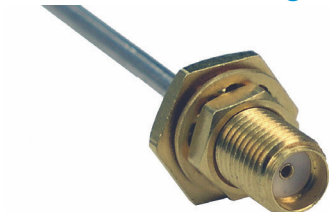
### Straight Solder Type Bulkhead Jack With Captivated Solderless Contact and O-Ring



| CABLE TYPE      | VSWR & FREQ. RANGE                                      | GOLD PLATED  | NICKEL PLATED |
|-----------------|---|--------------|---------------|
| .086 Semi-Rigid | 0-18 GHz: 1.07 + .01f (GHz)<br>18-25 GHz: <1.30 Typical | 142-0593-421 | 142-0593-426  |
| .141 Semi-Rigid | 0-18 GHz: 1.05 + .01f (GHz)<br>18-25 GHz: <1.25 Typical | 142-0594-421 | 142-0594-426  |

Assembly instructions and mounting hole layout on back page.

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



| CABLE TYPE      | VSWR & FREQ. RANGE                                      | GOLD PLATED  | NICKEL PLATED |
|-----------------|---|--------------|---------------|
| .086 Semi-Rigid | 0-18 GHz: 1.07 + .01f (GHz)<br>18-25 GHz: <1.30 Typical | 142-0593-431 | 142-0593-436  |
| .141 Semi-Rigid | 0-18 GHz: 1.05 + .01f (GHz)<br>18-25 GHz: <1.25 Typical | 142-0594-431 | 142-0594-436  |

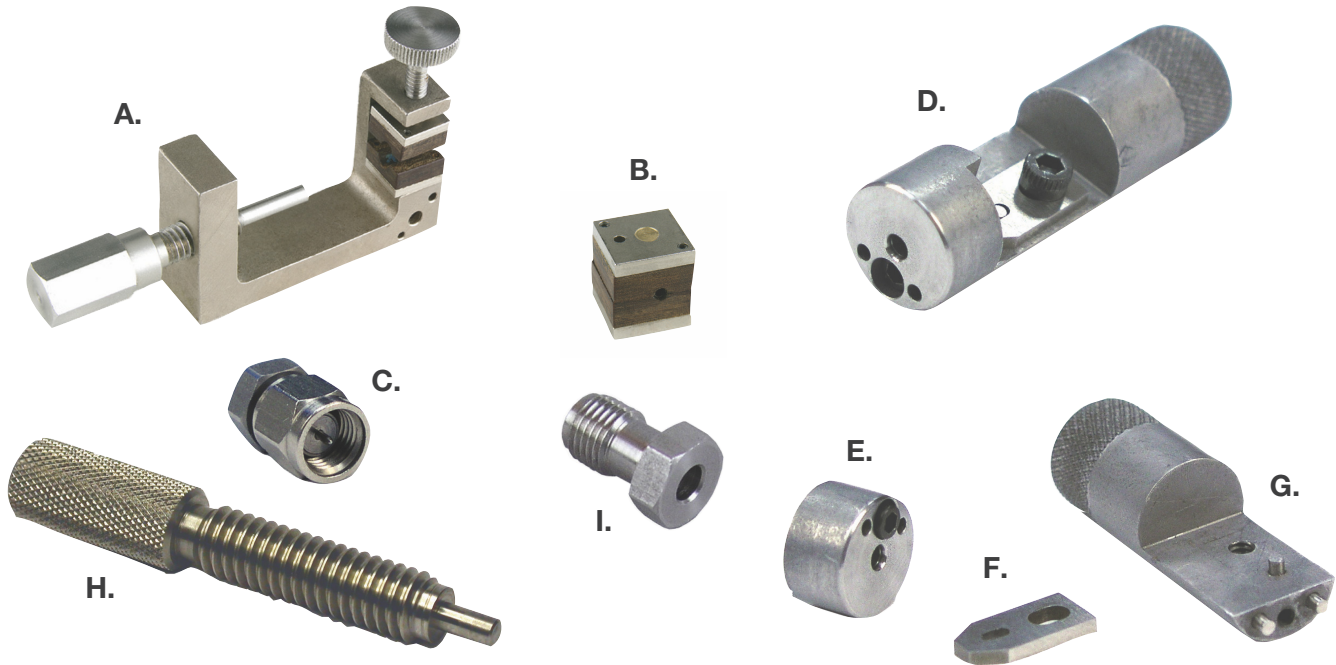
Assembly instructions and mounting hole layout on back page.

# SMA - 50 OHM CONNECTORS

## For Semi-Rigid Cable

### Semi-Rigid Assembly Tools

Accurate assembly of the Semi-Rigid Cabled Connectors is obtained with the tools listed below. Industry standard devices are used if possible for customer convenience and tool compatibility.

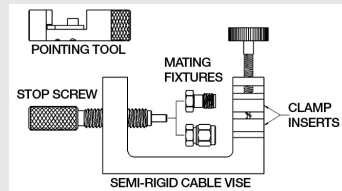


| ITEM | PART NUMBER  | DESCRIPTION  |
|------|--------------|--|
| A    | 140-0000-962 | Soldering Vise (does not include inserts (B) or stop screw (H) ) |
| B    | 140-0000-964 | Semi-Rigid Cable Clamp Inserts for .086" OD Cable                |
|      | 140-0000-965 | Semi-Rigid Cable Clamp Inserts for .141" OD Cable                |
| C    | 140-0000-973 | Soldering Mating Fixture for SMA Jack Connectors                 |
| D    | 140-0000-975 | Complete Center Conductor Pointing Tool for .086" OD Cable       |
|      | 140-0000-976 | Complete Center Conductor Pointing Tool for .141" OD Cable       |
| E    | 140-0000-977 | Bushing for .086" OD Cable Conductor Pointing Tool               |
|      | 140-0000-978 | Bushing for .141" OD Cable Conductor Pointing Tool               |
| F    | 140-0000-979 | Blade for Center Conductor Pointing Tool                         |
| G    | 140-0000-980 | Frame for Center Conductor Pointing Tool                         |
| H    | 140-0000-981 | Stop Screw for Semi-Rigid Cable Soldering Vise                   |
| I    | 140-0000-982 | Soldering Mating Fixture for SMA Plug Connectors                 |

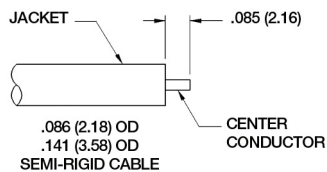
# SMA - 50 OHM CONNECTORS

For Semi-Rigid Cable

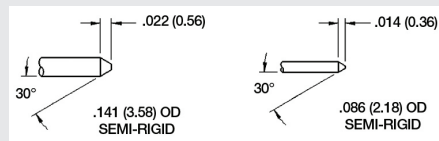
## ASSEMBLY INSTRUCTIONS



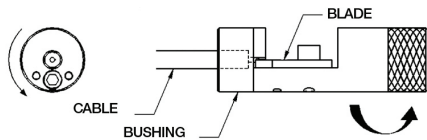
Identify the connector (plug or jack) and tools



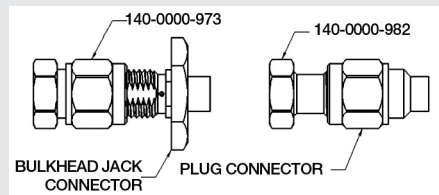
Strip the cable jacket and dielectric to dimension shown. Do not nick the center conductor.



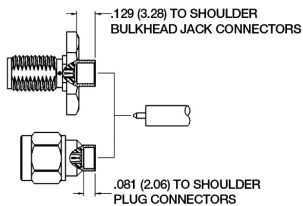
Bevel the entire diameter on the end of the cable center conductor until the point resembles the appropriate dimensional profile. This operation can be accomplished effectively by using the recommended center conductor pointing tool as described in step 4.



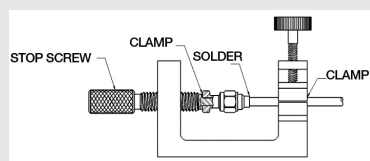
Insert the stripped cable into the bushing of the appropriate pointing tool until the center conductor just touches the blade. While maintaining light pressure on the center conductor against the blade, turn the tool in a counter-clockwise fashion as viewed from the bushing end of the tool. Continue cutting the center conductor point until the cable jacket bottoms out inside the bushing.



Attach the appropriate soldering mating fixture to the connector and tighten to a maximum of 8 inch pounds of torque.



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.



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.