SMC Series Subminiature RF Connectors

Screw-on mating
Frequency range DC-10 GHz
Lightweight and economical

SLB and SMB connectors also shown for comparison
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SMC Specifications

**Specifications (MIL-PRF-39012 as applicable)**

**Materials:**
- **Body components, male contacts:** Brass per ASTM-B-16, alloy 360, 1/2 hard.
- **Female contacts:** Beryllium copper per ASTM-B-196, Condition HT.
- **Insulators:** Teflon TFE per ASTM-D-1710.

**Finish:**
- **Center contacts:** Gold plated per current revision of MIL-PRF-39012*
- **Other metal parts:** Gold or nickel plated to meet current MIL-PRF-39012 corrosion requirements.*

**Electrical:**
- **Impedance:** 50Ω.
- **Frequency range:** DC–10 GHz.
- **Insulation Resistance:** 1,000 megohms minimum.
- **Voltage Rating:** 250VRMS @ sea level (RG-178 cable); 335VRMS @ sea level (RG-316 cable).
- **Dielectric Withstanding Voltage:** 750VRMS @ sea level (RG-178 cable); 1000VRMS @ sea level (RG-316 cable).

**Contact Resistance:**
- Straight connectors: Initial: 6 milliohms maximum; after environmental test conditions: 8 milliohms maximum.
- Right angle connectors: Initial: 12 milliohms maximum; after environmental test conditions: 16 milliohms maximum.

**Corona level:** 125V @70,000 ft. RF highpot: 400 VRMS @ 5 MHz.
- **RF leakage:** -60 dB min @ 2–3 GHz. **Insertion loss:** .25 dB max (straight connectors), .50 dB max (right angle connectors) @ 1.5 GHz.

**VSWR:**
- Straight connector
- RG-178: 1.25 + (.04 x F[GHz])
- RG-316: 1.20 + (.04 x F[GHz])
- Right angle connector
- RG-178: 1.40 + (.06 x F[GHz])
- RG-316: 1.33 + (.04 x F[GHz])

**Mechanical:**
- **Mating torque:** 35–50 inch-ounces. **Coupling nut pulloff resistance:** 35 pounds min.
- **Contact retention:** 2 pounds min axial force. **Durability:** 500 mating cycles.

**Environmental (MIL-STD-202):**
- **Temperature range:** -65˚ C to +165˚ C. **Corrosion:** Method 101, condition B, 5% salt solution.
- **Vibration (Method 204):** Condition D.
- **Mechanical shock (Method 213):** Condition C. **Thermal shock (Method 107):** Condition B.

*These specifications change periodically with updates to MIL-PRF-39012 requirements. Contact factory for latest specifications.

### Interface Dimensions

**Jack**

**Plug**

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APPLIED ENGINEERING PRODUCTS
(203) 776-2813 • FAX (203) 776-8294 www.aepconnectors.com • aepsales@aepconnectors.com
SMC Cable Attachment Methods

All SMC cable connectors in this catalog have captivated contacts which are soldered to the cable center conductor. Both crimp and clamp types for flexible cable grip the cable braid with a force greater than the breaking strength of the braid.

**Clamp Type For Flexible Cable**

These connectors can be assembled without special tooling, and are field replaceable. They provide metal-to-metal clamping of the cable braid.

**Crimp Type For Flexible Cable**

Crimping the cable braid is the most reliable and repeatable method of cable assembly, and provides support for the cable during flexure. AEP crimp type connectors are assembled quickly and easily using readily-available commercial or MIL crimp tools.

**Solder-Clamp For Semi-Rigid Cable**

This method allows retrimming of the cable dielectric, if necessary, during assembly. Connectors can be repositioned relative to the cable after assembly by loosening the clamp nut. Solder-clamp connectors are field replaceable without special tools.
SMC Cable Plugs
Click on part number to go directly to cable assembly instructions

Straight Plugs

Straight Female Cable Plug
Clamp type for flexible cable: Solder-clamp for semi-rigid cable:
1002-1551-0XX (Gold plated) 1002-1541-0XX (Gold plated)
1002-7551-0XX (Nickel plated) 1002-7541-0XX (Nickel plated)
QPL version available (M39012/73)

Right Angle Plugs

Right Angle Female Cable Plug
Clamp type for flexible cable: Solder-clamp for semi-rigid cable:
1005-1551-0XX (Gold plated) 1005-1541-0XX (Gold plated)
1005-7551-0XX (Nickel plated) 1005-7541-0XX (Nickel plated)
QPL version available (M39012/75)

Right Angle Female Cable Plug
Crimp type for flexible cable: QPL version available (M39012/75)
1105-1521-0XX (Gold plated)
1105-7521-0XX (Nickel plated)

Substitute the appropriate cable group number for “XX” when ordering:

<table>
<thead>
<tr>
<th>GROUP</th>
<th>CABLE TYPES</th>
<th>GROUP</th>
<th>CABLE TYPES</th>
<th>GROUP</th>
<th>CABLE TYPES</th>
</tr>
</thead>
<tbody>
<tr>
<td>02</td>
<td>RG178, RG196, M17/93, M17/169</td>
<td>05</td>
<td>RG178DS, RG196DS</td>
<td>09</td>
<td>.141” semi-rigid, RG 402M17/130</td>
</tr>
<tr>
<td>03</td>
<td>RG174, RG179, RG316, M17/113, M17/119, M17/172, M17/189</td>
<td>10</td>
<td>.085” semi-rigid, RG405, M17/133</td>
<td>19</td>
<td>RG174DS, RG316DS, M17/151, M17/152, Times RD-316</td>
</tr>
</tbody>
</table>
SMC Cable Jacks
Click on part number to go directly to cable assembly instructions

Straight Jacks

**Straight Male Cable Jack**

Clamp type for flexible cable: Solder-clamp for semi-rigid cable:
1001-1551-0XX (Gold plated) 1001-1541-0XX (Gold plated)
1001-7551-0XX (Nickel plated) 1001-7541-0XX (Nickel plated)
QPL version available (M39012/74)

**Straight Male Cable Jack**

Crimp type for flexible cable:
1001-1571-0XX (Gold plated)
1001-7571-0XX (Nickel plated)
QPL version available (M39012/74)

Right Angle Jacks

**Right Angle Male Cable Jack**

Clamp type for flexible cable:
1041-1551-0XX (Gold plated)
1041-7551-0XX (Nickel plated)

Solder-clamp for semi-rigid cable:
1041-1541-0XX (Gold plated)
1041-7541-0XX (Nickel plated)

**Right Angle Male Cable Jack**

Crimp type for flexible cable:
1141-1521-0XX (Gold plated)
1141-7521-0XX (Nickel plated)

---

Substitute the appropriate cable group number for “XX” when ordering:

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<td>RG174, RG179, RG316, M17/113, M17/119, M17/172, M17/189</td>
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<td>RG174DS, RG316DS, M17/151, M17/152, Times RD-316</td>
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APPLIED ENGINEERING PRODUCTS
(203) 776-2813 • FAX (203) 776-8294 www.aepconnectors.com • aepsales@aepconnectors.com
SMC Bulkhead Mounted Cable Jacks
Click on part number to go directly to cable assembly instructions

**Straight Jacks**

**Straight Male Bulkhead Cable Jack**

Clamp type for flexible cable: 1003-1551-0XX (Gold plated)
1003-7551-0XX (Nickel plated)

Solder-clamp for semi-rigid cable: 1003-1541-0XX (Gold plated)
1003-7541-0XX (Nickel plated)

QPL version available (M39012/76)

**Right Angle Jacks**

**Bulkhead Mounted Right Angle Male Cable Jack**

Clamp type for flexible cable: 1006-1551-0XX (Gold plated)
1006-7551-0XX (Nickel plated)

Solder-clamp for semi-rigid cable: 1006-1541-0XX (Gold plated)
1006-7541-0XX (Nickel plated)

**Bulkhead Mounted Right Angle Male Cable Jack**

Crimp type for flexible cable: 1106-1521-0XX (Gold plated)
1106-7521-0XX (Nickel plated)

---

Substitute the appropriate cable group number for "XX" when ordering:

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<tr>
<th>GROUP</th>
<th>CABLE TYPES</th>
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<td>RG174, RG179, RG316, M17/113, M17/119, M17/172, M17/189</td>
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<td>RG178DS, RG196DS</td>
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<td>09</td>
<td>.141” semi-rigid, RG 402M17/130</td>
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<td>10</td>
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</tr>
<tr>
<td>19</td>
<td>RG174DS, RG316DS, M17/151, M17/152, Times RD-316</td>
</tr>
</tbody>
</table>
SMC Bulkhead Receptacles

**Straight Jacks**

**Straight Male Bulkhead Jack Receptacle**
- Solder pot contact
- Rear mount

1004-1511-000 (Gold plated)
1004-7511-000 (Nickel plated)

QPL version available (M39012/77)

**Straight Male Bulkhead Jack Receptacle**
- Solder pot contact
- Front mount

1019-1511-000 (Gold plated)
1019-7511-000 (Nickel plated)

QPL version available (M39012/77)

**Right Angle Jack**

**Right Angle Male Bulkhead Jack Receptacle**
- Solder pot contact
- Front mount

1012-1511-000 (Gold plated)
1012-7511-000 (Nickel plated)

**Straight Plug**

**Straight Female Bulkhead Plug Receptacle**
- Solder pot contact
- Front mount

1017-1511-000 (Gold plated)
1017-7511-000 (Nickel plated)

(All fit .093" max panel thickness)
SMC P.C. Board Receptacles

**Straight Jacks**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
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<tbody>
<tr>
<td>.450</td>
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<tr>
<td>.295</td>
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<tr>
<td>.155</td>
<td></td>
</tr>
<tr>
<td>250 SQ</td>
<td></td>
</tr>
<tr>
<td>.200 (TYP)</td>
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<tr>
<td>.040 SQ (TYP)</td>
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</tr>
<tr>
<td>.038 DIA</td>
<td></td>
</tr>
</tbody>
</table>

**Straight Male Jack Receptacle**

- 1009-1511-000 (Gold plated)
- 1009-7511-000 (Nickel plated)

**Bulkhead Mounted Straight Male Jack P.C. Board Receptacle**

- 1109-1511-000 (Gold plated)
- 1109-7511-000 (Nickel plated)

**Straight Plug**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
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<tbody>
<tr>
<td>.50</td>
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<td>.35</td>
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<tr>
<td>.155</td>
<td></td>
</tr>
<tr>
<td>250 SQ</td>
<td></td>
</tr>
<tr>
<td>.200 (TYP)</td>
<td></td>
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<tr>
<td>.040 SQ (TYP)</td>
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</tr>
<tr>
<td>.038 DIA</td>
<td></td>
</tr>
<tr>
<td>7/32 HEX</td>
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</table>

**Straight Female Plug Receptacle**

- 1025-1511-000 (Gold plated)
- 1025-7511-000 (Nickel plated)
SMC P.C. Board Receptacles

Right Angle Jacks

Right Angle Male Jack Receptacle

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>.43</td>
<td>.15</td>
<td>.55</td>
<td>.42</td>
</tr>
</tbody>
</table>

1010-1511-000 (Gold plated)
1010-7511-000 (Nickel plated)

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>.50</td>
<td>.215</td>
<td>.55</td>
<td>.42</td>
</tr>
</tbody>
</table>

1010-1511-001 (Gold plated)
1010-7511-001 (Nickel plated)

Bulkhead Mounted Right Angle Male Jack P.C. Board Receptacle

1110-1511-000 (Gold plated)
1110-7511-000 (Nickel plated)

Right Angle Plug

Right Angle Female Plug Receptacle

1042-1511-000 (Gold plated)
1042-7511-000 (Nickel plated)
SMC Panel Receptacles

**Straight Jack**

**Straight Male Panel Receptacle**

<table>
<thead>
<tr>
<th>A sq.</th>
<th>B</th>
<th>C dia.</th>
</tr>
</thead>
<tbody>
<tr>
<td>.500</td>
<td>.340</td>
<td>.102</td>
</tr>
<tr>
<td>1486-1511-000</td>
<td>(Gold plated)</td>
<td></td>
</tr>
<tr>
<td>1486-7511-000</td>
<td>(Nickel plated)</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>A sq.</th>
<th>B</th>
<th>C dia.</th>
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<tr>
<td>.375</td>
<td>.232</td>
<td>.093</td>
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<tr>
<td>1484-1511-000</td>
<td>(Gold plated)</td>
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</tr>
<tr>
<td>1484-7511-000</td>
<td>(Nickel plated)</td>
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</table>

**Right Angle Jack**

**Right Angle Male Panel Receptacle**

<table>
<thead>
<tr>
<th>A sq.</th>
<th>B</th>
<th>C dia.</th>
</tr>
</thead>
<tbody>
<tr>
<td>.500</td>
<td>.340</td>
<td>.102</td>
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<tr>
<td>1490-1511-000</td>
<td>(Gold plated)</td>
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</tr>
<tr>
<td>1490-7511-000</td>
<td>(Nickel plated)</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>A sq.</th>
<th>B</th>
<th>C dia.</th>
</tr>
</thead>
<tbody>
<tr>
<td>.375</td>
<td>.232</td>
<td>.093</td>
</tr>
<tr>
<td>1488-1511-000</td>
<td>(Gold plated)</td>
<td></td>
</tr>
<tr>
<td>1488-7511-000</td>
<td>(Nickel plated)</td>
<td></td>
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</table>
SMC Stripline Receptacles

**Straight Jack**

![Straight Male Top Launch Jack Diagram]

- Non-captive contact

<table>
<thead>
<tr>
<th>Dim. A</th>
<th>Part number</th>
<th>Plating</th>
</tr>
</thead>
<tbody>
<tr>
<td>.031</td>
<td>1029-1211-001</td>
<td>Gold plated</td>
</tr>
<tr>
<td></td>
<td>1029-7211-001</td>
<td>Nickel plated</td>
</tr>
<tr>
<td>.063</td>
<td>1029-1211-002</td>
<td>Gold plated</td>
</tr>
<tr>
<td></td>
<td>1029-7211-002</td>
<td>Nickel plated</td>
</tr>
<tr>
<td>.125</td>
<td>1029-1211-003</td>
<td>Gold plated</td>
</tr>
<tr>
<td></td>
<td>1029-7211-003</td>
<td>Nickel plated</td>
</tr>
</tbody>
</table>

**Right Angle Jack**

![Right Angle Male Top Launch Jack Diagram]

- Removable rear contact

<table>
<thead>
<tr>
<th>Dim. A</th>
<th>Part number</th>
<th>Plating</th>
</tr>
</thead>
<tbody>
<tr>
<td>.031</td>
<td>1092-1511-001</td>
<td>Gold plated</td>
</tr>
<tr>
<td></td>
<td>1092-7511-001</td>
<td>Nickel plated</td>
</tr>
<tr>
<td>.063</td>
<td>1092-1511-002</td>
<td>Gold plated</td>
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<tr>
<td></td>
<td>1092-7511-002</td>
<td>Nickel plated</td>
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<tr>
<td>.125</td>
<td>1092-1511-003</td>
<td>Gold plated</td>
</tr>
<tr>
<td></td>
<td>1092-7511-003</td>
<td>Nickel plated</td>
</tr>
</tbody>
</table>
SMC Adapters

**Straight Adapters**

**Straight Male**
**Jack To Jack Adapter**
- Connects two plugs

5813-1501-000 (Gold plated)
5813-7501-000 (Nickel plated)

**Bulkhead Mounted**
**Straight Male**
**Jack To Jack Adapter**
- Connects two plugs
- For .093” max. panel

5822-1501-000 (Gold plated)
5822-7501-000 (Nickel plated)

**Straight Female**
**Plug To Plug Adapter**
- Connects two jacks

5816-1501-000 (Gold plated)
5816-7501-000 (Nickel plated)
SMC Adapters

Tee Adapters

**Tee Adapter**
(Unmatched Power Divider)
**Jack To Plug To Jack**
- Connects two plugs and one jack

5815-1501-000 (Gold plated)
5815-7501-000 (Nickel plated)

---

**Tee Adapter**
(Unmatched Power Divider)
**Jack To Jack To Jack**
- Connects three plugs

5807-1501-000 (Gold plated)
5807-7501-000 (Nickel plated)

---

**Tee Adapter**
(Unmatched Power Divider)
**Plug To Plug To Plug**
- Connects three jacks

5808-1501-000 (Gold plated)
5808-7501-000 (Nickel plated)
SMC Terminations

Plug Termination

Female Plug Resistive Termination
(Dummy load)

Standard resistor:
51 ohm, 1/2 watt,
5% tolerance

1036-1511-051 (Gold plated)
1036-7511-051 (Nickel plated)

Available with other resistances

Jack Termination

Male Jack Resistive Termination
(Dummy load)

Standard resistor:
51 ohm, 1/2 watt,
5% tolerance

1037-1511-051 (Gold plated)
1037-7511-051 (Nickel plated)

Available with other resistances
Cable Assembly Instructions
Clamp type connectors for flexible cable

Straight Connectors—Flexible Cable

Parts list

- Body assembly
- Insulator
- Ferrule
- Compression washer
- Contact (male or female)
- Backnut

1. Assemble contact onto cable center conductor.
2. Trim cable per trim code below; tin end of center conductor.
3. Slide backnut onto cable. Slide compression washer onto cable in the orientation shown until it stops against cable jacket.
4. Flare cable braid by rotating dielectric and slide ferrule under braid.

Right Angle Connectors—Flexible Cable

Parts list

- Insulator
- Cap
- Ferrule
- Compression washer
- Body assembly
- Backnut

1. Trim cable per trim code below; tin end of center conductor.
2. Slide backnut onto cable. Slide compression washer onto cable in the orientation shown until it stops against cable jacket.
3. Flare cable braid by rotating dielectric and slide ferrule under braid.

Cable Trim Dimensions

<table>
<thead>
<tr>
<th>Connector Type</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
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<tbody>
<tr>
<td>Straight Connectors</td>
<td>.080</td>
<td>.120</td>
<td>.240</td>
</tr>
<tr>
<td>Right Angle Connectors</td>
<td>.080</td>
<td>.180</td>
<td>.300</td>
</tr>
</tbody>
</table>

- Place insulator in body cavity, and press cap into place. Properly assembled cap will be slightly below end of body assembly.
Cable Assembly Instructions
Crimp type connectors for flexible cable

Straight Connectors—Flexible Cable

Parts list

1. Assemble insulator and contact onto cable dielectric and center conductor.
   - Solder contact to center conductor by heating rear of contact (do not feed additional solder through inspection hole in contact).

2. Position cable so braid touches rear of body assembly.
   - Slide crimp sleeve forward to touch rear of body assembly.
   - Crimp braid with appropriate die size from chart below.

3. Trim cable per trim code below; tin end of center conductor.
   - Slide heat-shrink tubing and crimp sleeve over cable.
   - Flare cable braid by rotating dielectric and slide cable into crimp tail.

4. Insert cable assembly into body assembly. Tighten to 90–100 inch-ounces torque. (Hold cable/hardware assembly stationary and rotate body when tightening.)
   - Slide shrink tubing over crimp sleeve and shrink to fit.

Right Angle Connectors—Flexible Cable

Parts list

1. Trim cable per trim code below; tin end of center conductor.
   - Slide heat-shrink tubing and crimp sleeve over cable.
   - Flare cable braid by rotating dielectric and slide cable into crimp tail.

2. Position cable so braid touches rear of body assembly.
   - Slide crimp sleeve forward to touch rear of body assembly.
   - Crimp braid with appropriate die size from chart below.

3. Solder center conductor into notch in rear of contact with .025–.032" diameter chisel-tip soldering iron.
   - Solder should cover center conductor, but not extend over top of notch in contact, or exceed contact diameter.

4. Place insulator in body cavity, and press cap into place. Properly assembled cap will be slightly below end of body assembly.
   - Slide shrink tubing over crimp sleeve and shrink to fit.

Cable Trim Dimensions

Center conductor

Dielectric

Braid

Jacket

A

B

C

Straight Connectors—Flexible Cable

<table>
<thead>
<tr>
<th>CONNECTOR TYPE</th>
<th>A</th>
<th>B</th>
<th>C</th>
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<tbody>
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<td>STRAIGHT CONNECTORS</td>
<td>.100</td>
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<td>RIGHT ANGLE CONNECTORS</td>
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<td>.200</td>
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Crimp Die Sizes

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<th>HEX DIE SIZE</th>
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<td>.128</td>
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Cable Assembly Instructions
Solder-clamp connectors for semi-rigid cable

**Straight Connectors—Semi-Rigid Cable**

**Parts list**
- Body assembly
- Solder Ferrule
- Backnut
- Insulator
- Contact (male or female)

1. **Trim cable per trim code below; tin end of center conductor.**
2. **Slide backnut over cable. Slide solder ferrule over cable until it stops against cable jacket.**
3. **Solder cable jacket to ferrule.**

**Cable Trim Dimensions**

<table>
<thead>
<tr>
<th>Connector Type</th>
<th>A</th>
<th>B</th>
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<tr>
<td>STRAIGHT CONNECTORS–.085” cable</td>
<td>.090</td>
<td>.170</td>
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<td>STRAIGHT CONNECTORS–.141” cable</td>
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<tr>
<td>RIGHT ANGLE CONNECTORS</td>
<td>.110</td>
<td>.150</td>
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</table>

**Right Angle Connectors—Semi-Rigid Cable**

**Parts list**
- Insulator
- Solder Ferrule
- Cap
- Backnut

1. **Trim cable per trim code below; tin end of center conductor.**
2. **Slide backnut over cable. Slide solder ferrule over cable until it stops against cable jacket.**
3. **Solder cable jacket to ferrule.**

---

**Cable Assembly Instructions**

- Solder-clamp connectors for semi-rigid cable

1. **Assemble insulator and contact onto cable dielectric and center conductor. If insulator is not flush against solder ferrule due to dielectric extrusion, retrim dielectric.**
2. **Solder contact to center conductor by heating rear of contact (do not feed additional solder through inspection hole in contact).**
3. **Insert cable assembly into body assembly. Tighten to 90–100 inch-ounces torque. (Hold cable/hardware assembly stationary and rotate body when tightening.)**
4. **Solder center conductor into notch in rear of contact with .025–.032” diameter chisel-tip soldering iron.**
5. **Solder should cover center conductor, but not extend over top of notch in contact, or exceed contact diameter.**
6. **Place insulator in body cavity, and press cap into place. Properly assembled cap will be slightly below end of body assembly.**

---

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Mounting Dimensions

**Bulkhead Receptacles**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>AEP P/N</th>
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<tbody>
<tr>
<td>Crimp tool with .105&quot; and .128&quot; hex dies</td>
<td>TA-0105</td>
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**P.C. Board Receptacles**

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<td>Torque wrench with 7/32&quot; jaws for SMC connector backnuts; 95 inch-ounces torque</td>
<td>TA-0436</td>
</tr>
<tr>
<td>Torque wrench with 7/32&quot; jaws for SMC coupling nuts; 3 inch-pounds torque</td>
<td>TA-0398</td>
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Flat of mounting surface is aligned with body hex as shown.

Assembly Tooling

**Crimp tool**

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<th>DESCRIPTION</th>
<th>AEP P/N</th>
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<tr>
<td>Crimp tool with .105&quot; and .128&quot; hex dies</td>
<td>TA-0105</td>
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</table>

**Torque Wrench**

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<tr>
<td>Torque wrench with 7/32&quot; jaws for SMC coupling nuts; 3 inch-pounds torque</td>
<td>TA-0398</td>
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**Capping Press**

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<td>Capping tool (arbor press) with base for SMC right angle plugs</td>
<td>CP-7</td>
</tr>
<tr>
<td>Capping tool (arbor press) with base for SMC right angle jacks</td>
<td>CP-8</td>
</tr>
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</table>

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## Index by Part Number

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* Indicates cable connectors with various types on specified page.
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- SSMB
- SSMC
- SLB (Slide-on version of SMB)
- SSLB (Slide-on version of SSMB)
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- 75Ω Screw-on mating
- Adapters within and between series
- Flexible cable assemblies
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- And over 100 styles of MIL-PRF-39012 QPL connectors in series SMA, SMB, and SMC

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