

Introduction

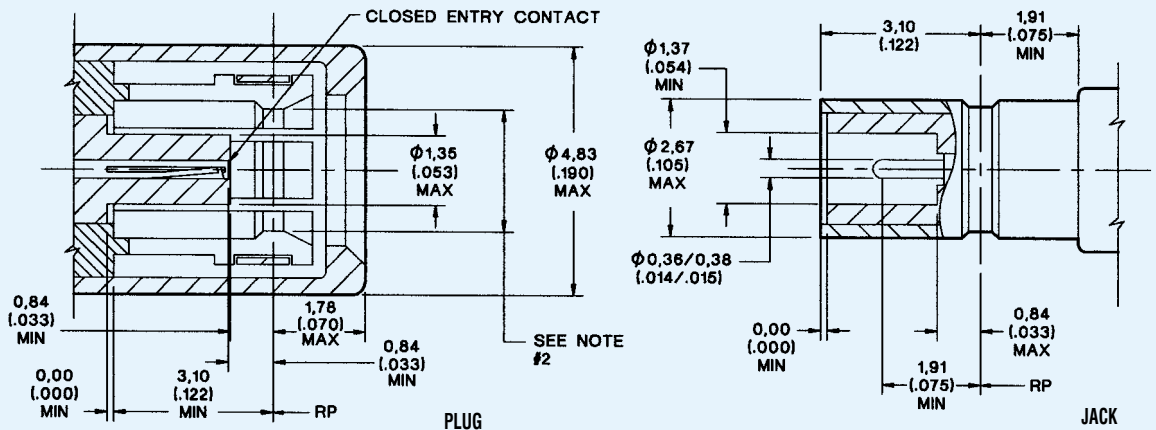
This range of 50 ohm microminiature radio frequency connectors is suitable for both military and commercial equipment operating at frequencies up to 4 GHz (SSMB) and 12.4 GHz (SSMC). They provide a choice of Snap-on (SSMB) or Screw-on (SSMC) and are available for a wide range of flexible cables.

SSMC connectors are used where a positive mechanical engagement is required and where space permits the use of torque wrenches. SSMB connectors are quick disconnect versions of the SSMC and are used in applications where limited space prohibits the use of torque wrenches or when components or modules must be quickly changed to keep down time to a minimum.

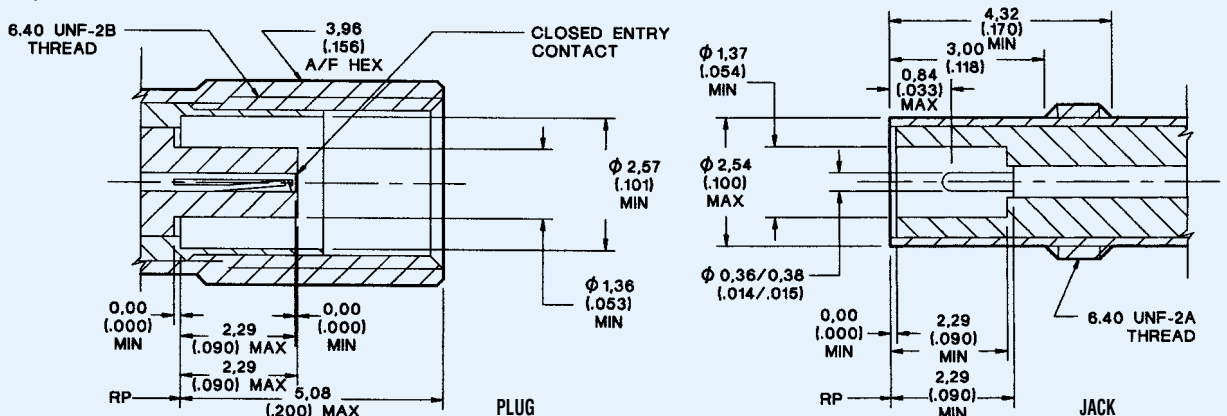


Mating Interfaces

SSMB (Snap-on)



SSMC (Screw-on)



NOTES

1) Inside diameter of female contact to meet VSWR mating characteristics and connector durability

when mated with a 0,36 - 0,38 (.014 - .015) diameter male contact.

2) Must meet the force to engage and disengage when mated with its mating part.

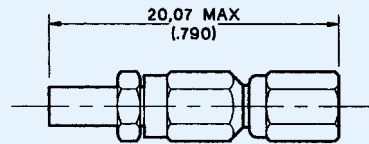
Plugs and Receptacles

Straight Plug

| Part Number | Cable Numbers |
|-----------------|------------------|
| 050-424-3188220 | RG174/U, RG316/U |
| 050-424-3196220 | RG178/U, RG196/U |
| 050-424-3875220 | RD316 |

Assembly Instructions

| | |
|-----------------|-------------------|
| 050-424-3188220 | AI 663 (Page 114) |
| 050-424-3196220 | AI 128 (Page 114) |
| 050-424-3875220 | AI 663 (Page 114) |

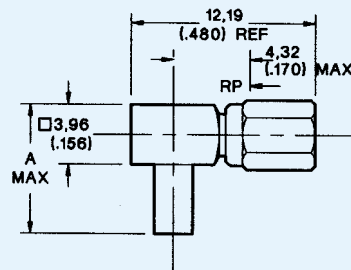


Right Angle Plug

| Part Number | Cable Numbers | A |
|-----------------|------------------|--------------|
| A50-428-3188220 | RG174/U, RG316/U | 10,16 (.400) |
| A50-428-3196220 | RG178/U, RG196/U | 9,40 (.370) |

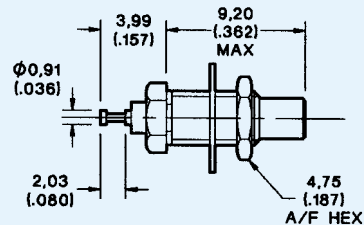
Assembly Instructions

| | |
|-----------------|-------------------|
| A50-428-3188220 | AI 286 (Page 115) |
| A50-428-3196220 | AI 696 (Page 115) |



Bulkhead Receptacle – Rear Mount

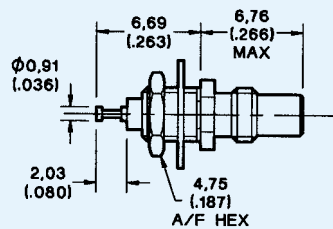
Part Number
050-443-0000220



Mounting Plan U (Page 109)

Bulkhead Receptacle – Front Mount

Part Number
050-445-0000220

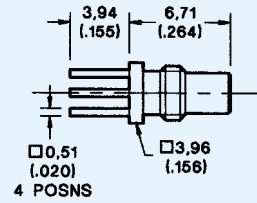


Mounting Plan U (Page 109)

Printed Circuit Receptacles

Printed Circuit Receptacle – Straight Jack

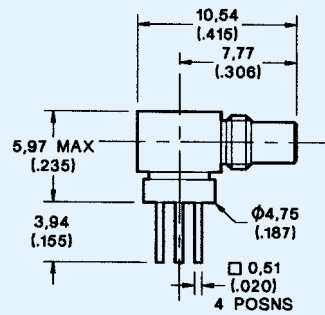
Part Number
050-451-0000220



Mounting Plan C (Page 108)

Printed Circuit Receptacle – Right Angle Jack

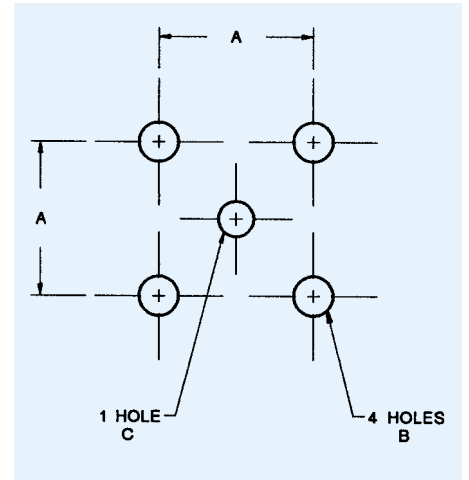
Part Number
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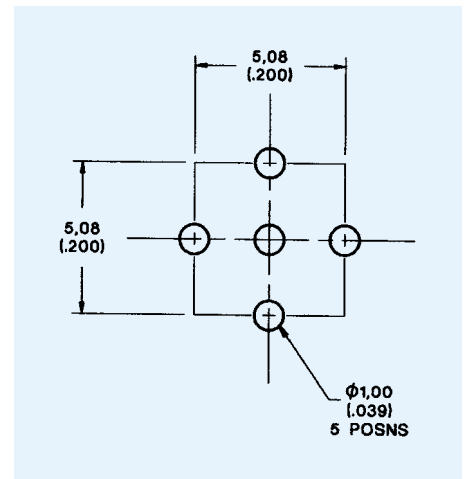
Mounting Plan C (Page 108)

Recommended Mounting Hole Dimensions

| Plan | A | B (min.) 4 positions | C (min.) 1 position |
|------|-------------|-------------------------|-------------------------|
| A | 5,08 (.200) | ∅ 1,70/1,85 (.067/.080) | ∅ 1,17/1,35 (.046/.053) |
| B | 5,08 (.200) | ∅ 1,30 (.051) | ∅ 1,30 (.051) |
| C | 2,54 (.100) | ∅ 0,97 (.038) | ∅ 0,91 (.036) |
| D | 5,08 (.200) | ∅ 1,70 (.067) | ∅ 1,70 (.067) |
| E | 5,60 (.220) | ∅ 1,60 (.063) | ∅ 1,30 (.051) |
| F | 5,08 (.200) | ∅ 1,50 (.059) | ∅ 1,10 (.043) |
| G | 5,08 (.200) | ∅ 1,00 (.039) | ∅ 1,00 (.039) |

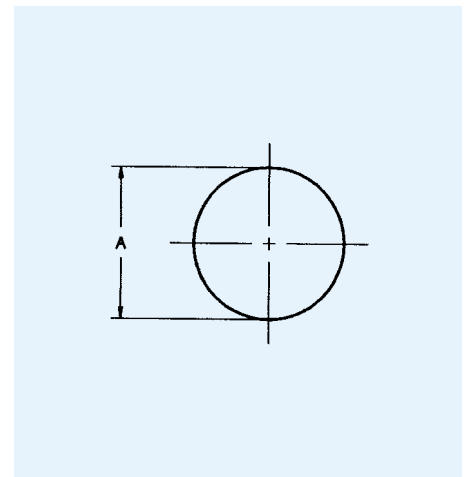


Plan A - G



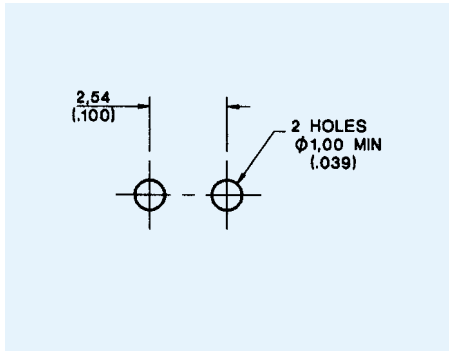
Plan H

| Plan | Thread Size | A min. | A max. |
|------|------------------|-------------|-------------|
| I | N/A | 5,44 (.214) | 5,49 (.216) |
| J | N/A | 5,67 (.223) | 5,80 (.228) |
| K | N/A | 6,16 (.243) | 6,33 (.249) |
| L | N/A | 6,50 (.256) | 6,55 (.258) |
| M | 9/32-40, UNS-2A | 7,14 (.281) | 7,24 (.285) |
| N | 5/16-32, UNEF-2A | 7,94 (.313) | 8,04 (.317) |
| O | N/A | 9,91 (.390) | 9,96 (.392) |
| P | M9 | 9,20 (.362) | 9,40 (.370) |
| Q | N/A | 9,15 (.360) | 9,35 (.368) |

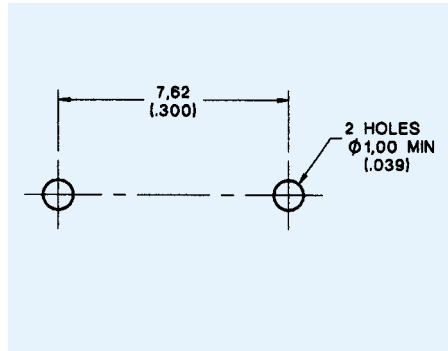


Plan I - Q

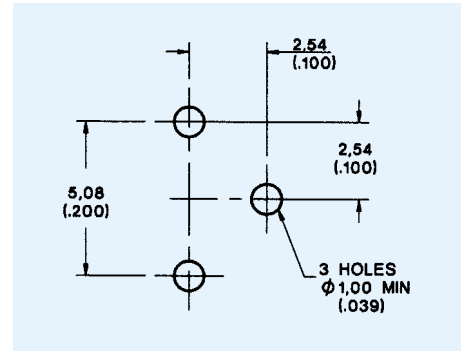
Recommended Mounting Hole Dimensions



Plan R

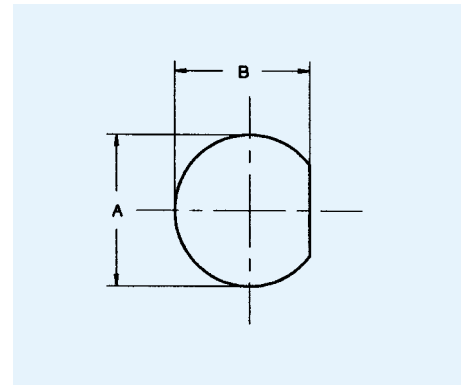


Plan S



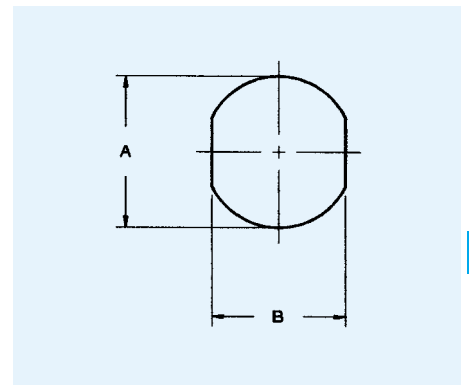
Plan T

| Plan | Thread Size | A ^{+0.13 (.005)} -0.00 (.000) | B ^{+0.13 (.005)} -0.00 (.000) |
|------|-----------------|---|---|
| U | 6-40 UNF-2A | 3.56 (.140) | 3.20 (.126) |
| V | 10-32 UNF-2A | 4.95 (.195) | 4.50 (.177) |
| W | 1/4-36 UNS-2A | 6.73 (.265) | 5.92 (.233) |
| X | 5/16-32 UNEF-2A | 7.94 (.313) | 7.40 (.291) |
| Y | 7/16-28 UNEF-2A | 11.91 (.469) | 10.41 (.410) |
| Z | 1/2-28 UNEF-2A | 13.08 (.515) | 12.19 (.480) |
| AA | 5/8-24 UNEF-2A | 16.26 (.640) | 15.24 (.600) |

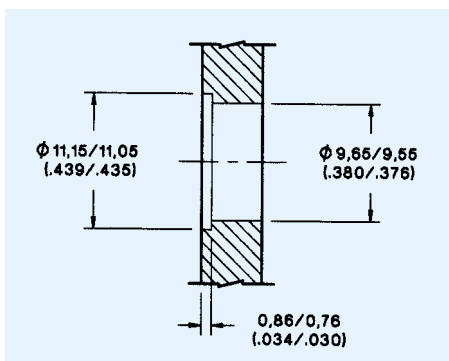


Plan U - AA

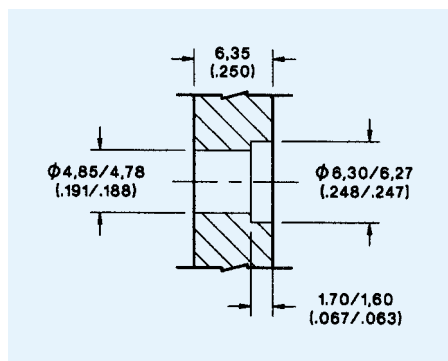
| Plan | Thread Size | A ^{+0.10 (.004)} -0.03 (.001) | B ^{+0.10 (.004)} -0.03 (.001) |
|------|-------------|---|---|
| BB | M9 | 9.20 (.362) | 8.20 (.322) |
| CC | M5 | 5.90 (.232) | 5.00 (.197) |



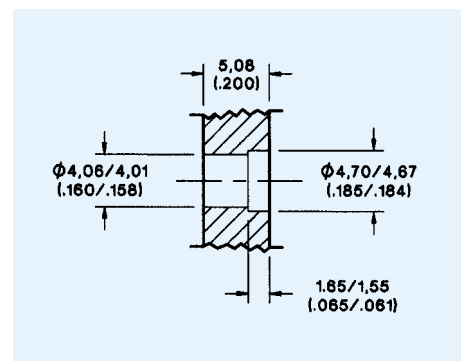
Plan BB-CC



Plan DD

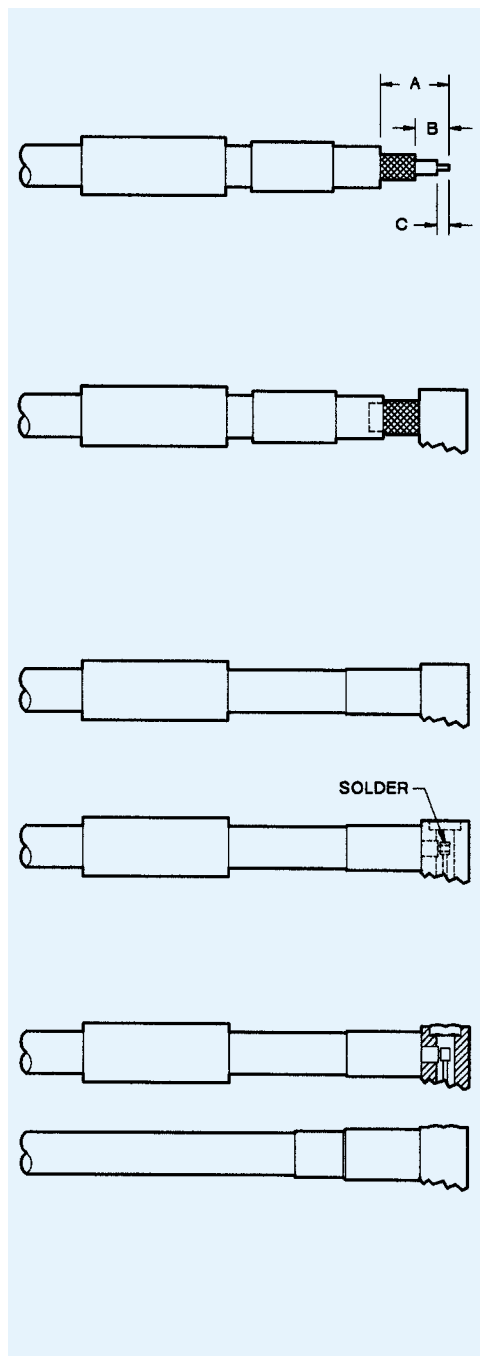
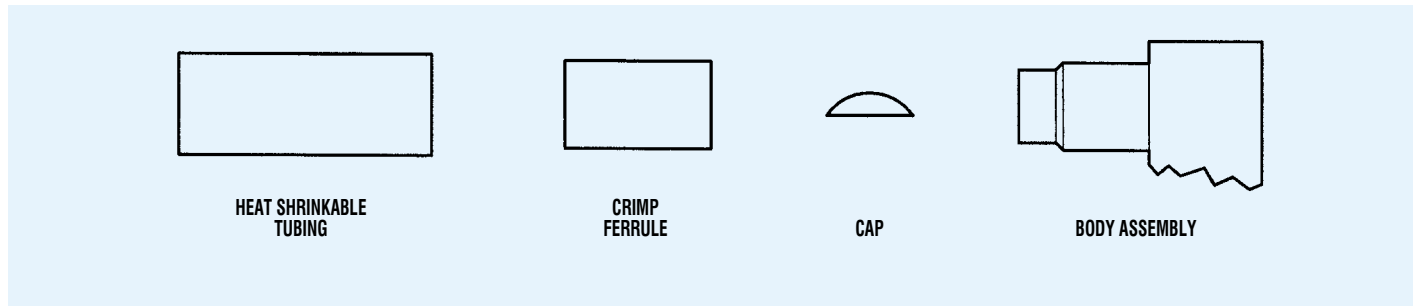


Plan EE



Plan FF

AI-90, AI-237, AI-773 & BBAI-1212 SMA & MCX Right Angle Connectors, Crimp Type for Braided Cable



- Slide ferrule and (if supplied) heat shrinkable tubing on to cable.
- Trim cable to dimensions shown.

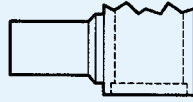
| Assembly Instruction No. | A | B | C |
|--------------------------|--------------|-------------|-------------|
| AI-90 & AI-237 | 11,10 (.437) | 5,16 (.203) | 1,57 (.062) |
| AI-773 | 11,68 (.460) | 4,55 (.179) | 1,78 (.070) |
| BBAI-1212 | 8,50 (.335) | 3,00 (.118) | 2,00 (.078) |

- Tin center conductor (DO NOT OVER TIN).
- Slide body over cable dielectric and under the braid until braid is flush against under-side of body. Ensure center conductor is located in the forked end of the contact.
NOTE: When using cables with inflexible jackets it is permissible to make two 3,17 (.125) longitudinal slits in the outer jacket.
- Slide ferrule flush against the body and crimp in position using ITT Cannon's Crimp Tool and suitable die set (see table).
- Using a small soldering iron solder center conductor to contact.
NOTE: The center conductor should not protrude beyond the contact or touch the body. Solder should not protrude beyond the slotted section of the contact.
- Locate the cap in rear of body and dimple or lightly punch to ensure it is locked in position.
- Slide heat shrinkable tubing over ferrule flush against body and heat until tubing shrinks down.

Only common cable retention features are shown in detail. Various body configurations can apply.

| Cable | Cable Code | Die Size |
|---------|------------|-------------|
| RG142/U | 9142 | 5,42 (.213) |
| RG196/U | 9196 | 2,67 (.105) |
| RG316/U | 9188 | 3,25 (.128) |
| RD 316 | 9399/9875 | 3,84 (.151) |

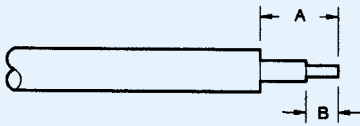
AI-98 SMA Right Angle Connectors, Direct Solder Type for Semi-Rigid Cable



BODY ASSEMBLY

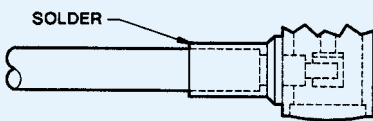


CAP

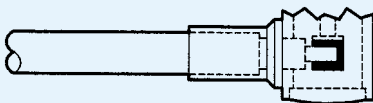


1. Trim cable jacket, dielectric and center conductor to dimensions shown, being careful not to fracture the center conductor. Tin center conductor (DO NOT OVER TIN).

| A | B |
|-----------------------------------|-----------------------------------|
| $4,75 \pm 0,13$ (.187 \pm .005) | $2,29 \pm 0,13$ (.097 \pm .005) |



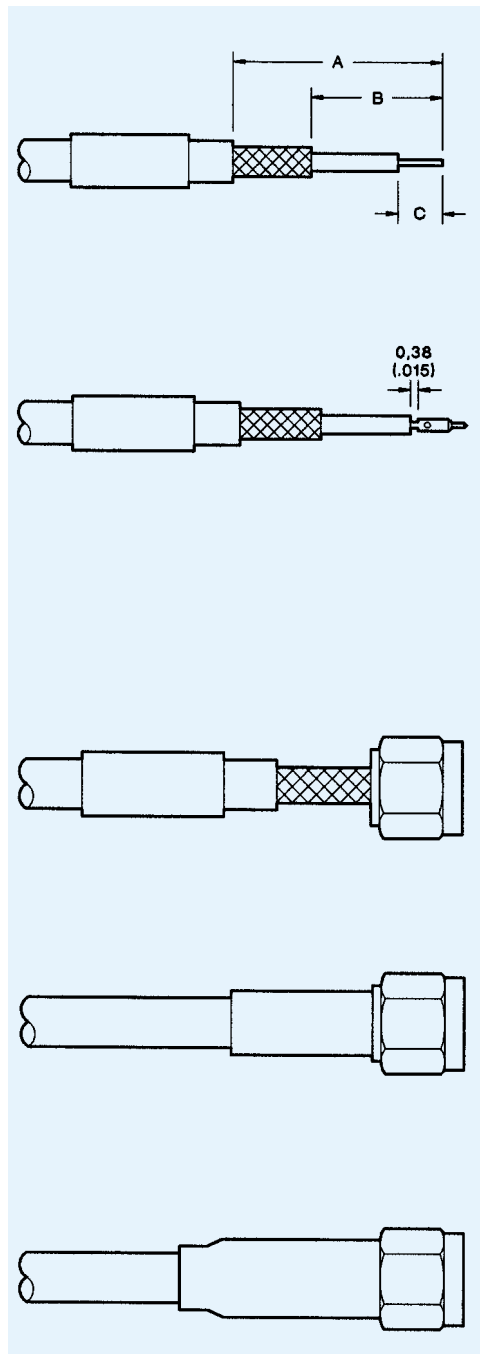
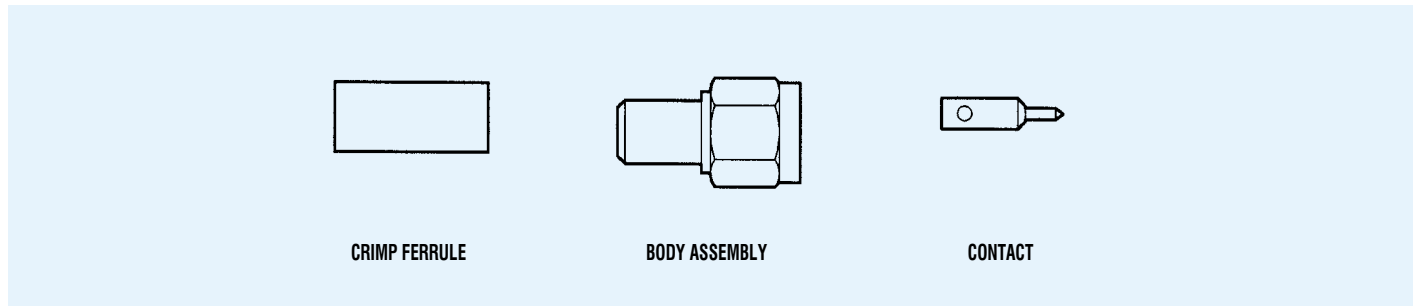
2. Slide cable into body and solder into place.



3. Solder center conductor to contact (do not over solder), then locate the cap in rear of body and dimple or lightly punch to ensure it is locked in position.

Assy I

AI-102, AI-236 & AI-771 SMA Straight Connectors, Crimp Type for Braided Cable



- Trim cable to dimensions shown being careful not to nick the braid or center conductor. Tin center conductor, (DO NOT OVER TIN) then slip ferrule (and shrink tubing if supplied) over cable.

| Assembly Instruction No. | A | B | C |
|--------------------------|--------------|-------------|-------------|
| AI-102 & AI-236 | 10,31 (.406) | 4,37 (.172) | 2,77 (.109) |
| AI-771 | 10,62 (.418) | 5,16 (.203) | 3,56 (.140) |

- Solder center conductor to contact. With AI-771 the contact bottoms on the dielectric. With AI-102 & AI-236 the gap shown is to be maintained.

Alternatively with AI-771.
Crimp attachment: Crimp contact to inner conductor using ITT Cannon's Hand Tool P/N 050-000-0155 (Astro tool P/N 615708), setting 3 with positioner P/N 050-000-0156. (Astro turret head P/N 650027), color code per chart.

| Cable Type | Colour Code |
|------------------|-------------|
| RG161/U, RG171/U | Red |
| RG188/U, RG316/U | |
| RD316 | |

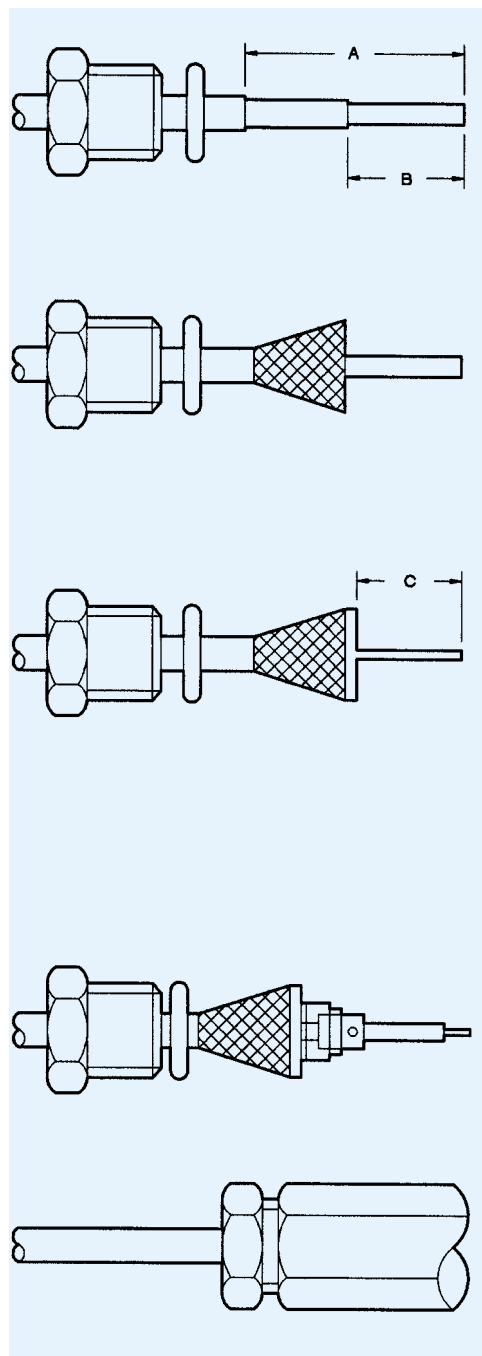
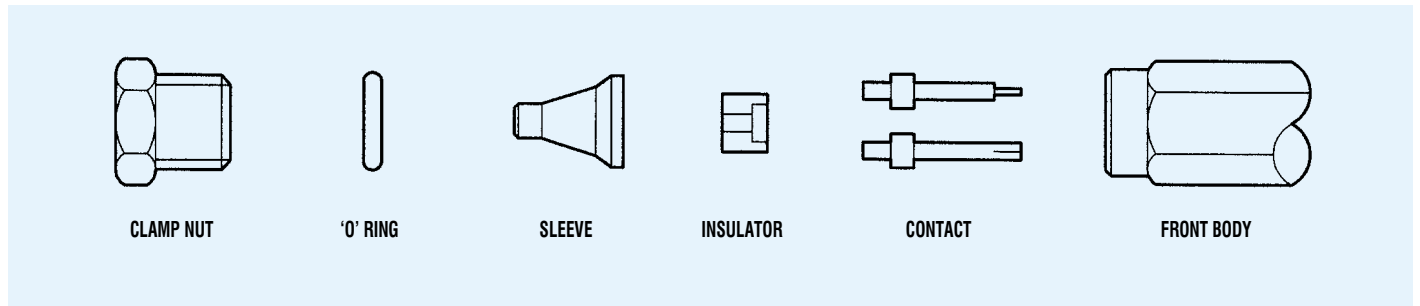
- Insert trimmed cable into the rear of the body assembly. Tubular body extension will slide under the braid with the rear portion of extension fitting under the jacket as shown.
NOTE: When using cables with inflexible jackets it is permissible to make two 3,17 (.125) long longitudinal slits in the outer jacket.

- Slip ferrule flush against the body and crimp in position using ITT Cannon crimp tool and suitable die set (see table).

| Cable | Cable Code | Die Size |
|---------|------------|-------------|
| RG141/U | 9141 | 5,42 (.213) |
| RG142/U | 9142 | 5,42 (.213) |
| RG188/U | 9188 | 3,25 (.128) |
| RG196/U | 9196 | 2,67 (.105) |
| RD316 | 9875/9399 | 3,84 (.151) |

- Slide heat shrinkable tubing over ferrule and apply heat until tubing shrinks down.

AI-106 SMA Straight Connectors, Clamp Type for Braided Cable



1. Slide clamp nut and 'O' ring over cable.

2. Trim cable to dimensions shown being careful not to nick the braid.

| A | B | C |
|-------------|-------------|-------------|
| 6,35 (.250) | 4,78 (.188) | 3,18 (.125) |

3. Thumb braid out radially to expose the cable dielectric.

4. Slide sleeve over dielectric and under braid until sleeve is flush with braid. N.B. When using cables with inflexible jackets it is permissible to make two 3,17 (.125) long longitudinal slits in the outer jacket.

5. Trim braid flush with flange of sleeve.

6. Trim back dielectric to dimension shown.

7. Tin center conductor (DO NOT OVER TIN).

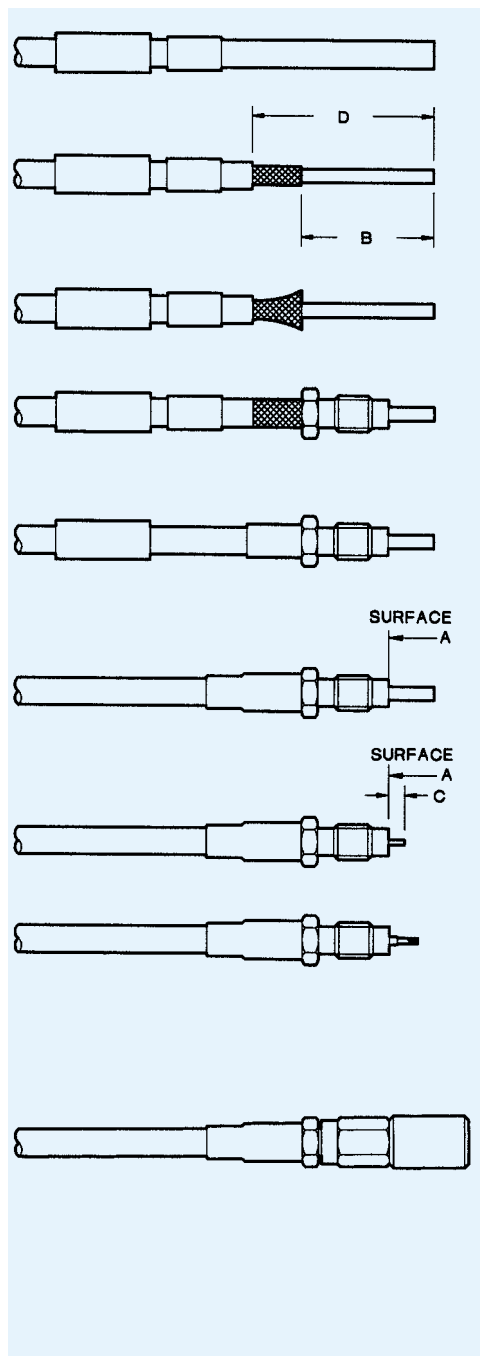
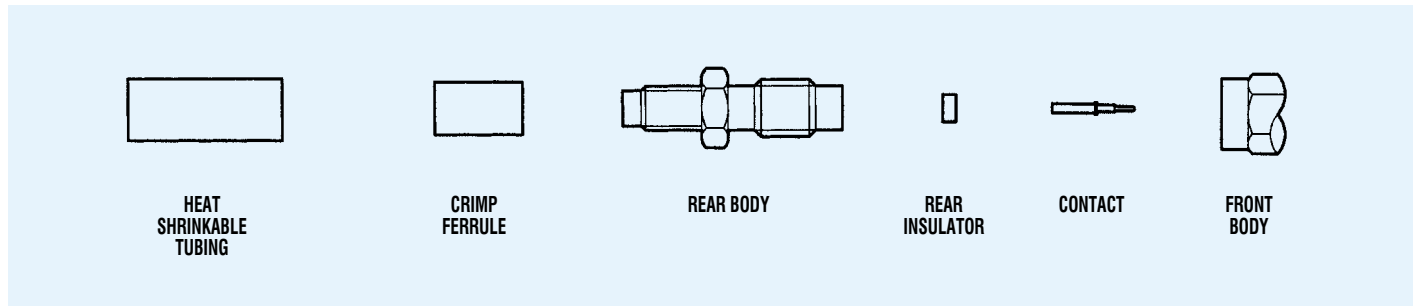
8. Fit insulator over center conductor with counterbore in direction shown.

9. Place a small solder preform made from 0,26 - 0,31 (.010 - .012) dia. (28 swg) multi-core solder in rear of contact on center conductor. Heat to make solder connection ensuring shoulder of contact is flush against rear insulator. Do not allow solder to protrude outside spill hole.

10. Fit front insulator if not part of body.

11. Thread on body and tighten clamp nut to 1.02 Nm (9 in. lbs.).

AI-128 & AI-663 SSMB/SSMC Straight Connectors, Crimp Type for Braided Cable



- Slide heat shrinkable tubing and ferrule on to cable.
- Trim cable to dimensions shown.

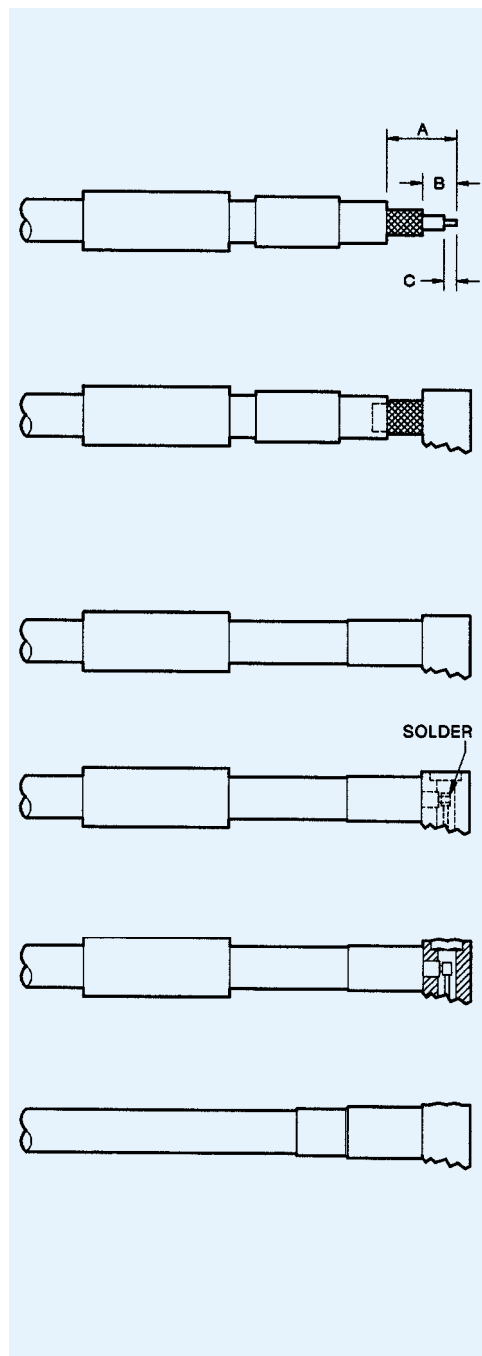
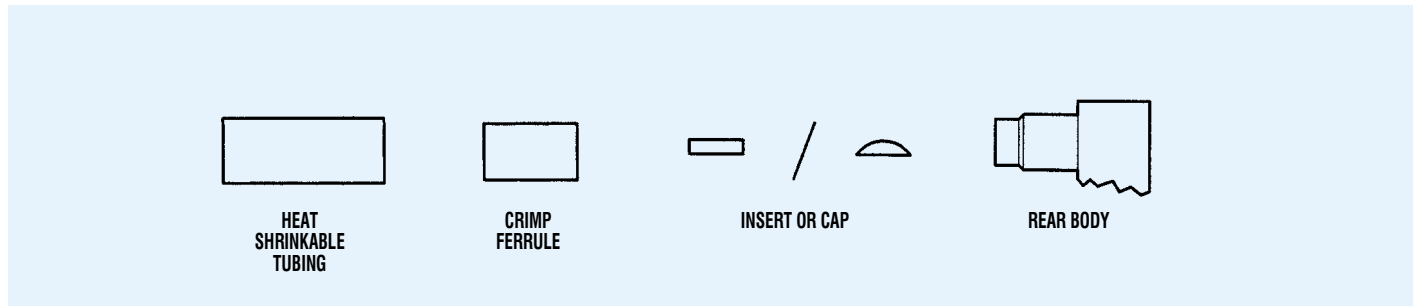
| Assembly Instruction No. | B | C | D |
|--|-------------|-------------|--------------|
| AI-663 | 6,86 (.270) | 2,29 (.090) | 10,41 (.410) |
| AI-128 - For center conductors \varnothing 0,51 (.020) | 6,76 (.266) | 2,29 (.090) | 9,53 (.375) |
| AI-128 - For all other conductor sizes | 7,54 (.297) | 3,05 (.120) | 10,31 (.406) |

- Slide rear body over dielectric and under the braid until braid is flush with flange.
N.B. When using cable with inflexible jackets it is permissible to make two 3,00 (.118) long longitudinal slits in the outer jacket.
- Slide ferrule over exposed braid up to hex. flange.
- Crimp using ITT Cannon Crimp Tool and suitable die set (see table). Ensure ferrule is held close to hex. flange.
- Slide heat shrinkable tubing over crimp and heat shrink into place using hot air gun. Air temperature should be approximately 125°C.
- Trim dielectric flush with surface 'A' on body using a sharp knife. Take care not to nick center conductor.
- Trim center conductor as shown.
- Tin center conductor (do not allow solder to touch end of body or dielectric).
- Place a small solder preform made from 0,26 - 0,31 (.010 - .012) dia. (28 swg) multi-core solder in rear of contact.
- Place rear insulator over center conductor. When insulator has counterbore, the contact fits into the counterbore.
- Assemble contact onto center conductor, heat to make solder connection. Do not allow solder to protrude outside spill hole.
- Solder should be visible at inspection hole, if excess solder runs from inspection hole, remove with sharp blade taking care not to damage plating.
- Screw on the front body and tighten to a torque of 0.14 Nm (20 in. ozs.).

Only common cable retention features are shown in detail - various body configurations can apply.

| Cable Type | Cable Code | Die Size |
|------------|------------|-------------|
| RG196/U | 3196 | 2,67 (.105) |
| RG316/U | 3188 | 3,25 (.128) |
| RD316 | 3875 | 3,84 (.151) |

AI-129, AI-286 & AI-696 SSMB/SSMC Right Angle Connectors, Crimp Type for Braided Cable



1. Slide heat shrinkable tubing and ferrule on to cable.

2. Trim cable to dimensions shown.

| Assembly Instruction No. | A | B | C |
|--------------------------|-------------|-------------|-------------|
| AI-129 | 5,56 (.219) | 2,77 (.109) | 1,19 (.047) |
| AI-286 | 6,35 (.250) | 2,77 (.109) | 0,79 (.031) |
| AI-696 | 6,22 (.245) | 2,54 (.100) | 1,14 (.045) |

3. Tin center conductor (DO NOT OVER TIN).

4. Slide body over cable dielectric and under the braid until braid is flush against under-side of rear body. Ensure center conductor is located in the forked end of the contact.
NOTE: When using cables with inflexible jackets it is permissible to make two 3,00 (.118) longitudinal slits in the outer jacket.

5. Slide ferrule flush against the body and crimp in position using ITT Cannon Crimp Tool and suitable die set (see table).

6. Using a small soldering iron solder center conduct to contact.
NOTE: The center conductor should not protrude beyond the contact or touch the body. Solder should not protrude beyond the slotted section of the contact.

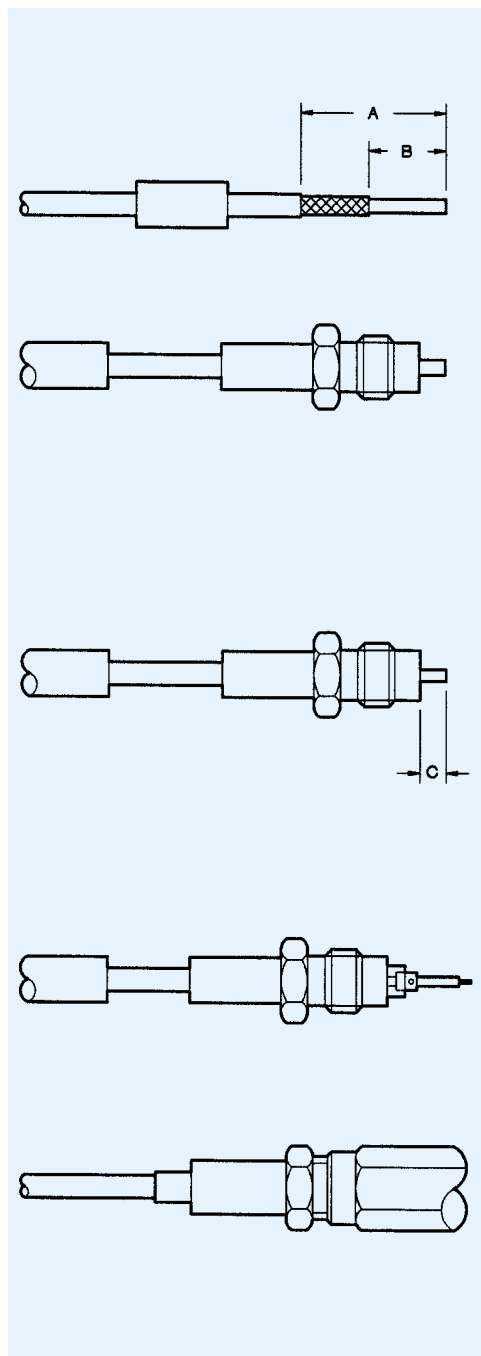
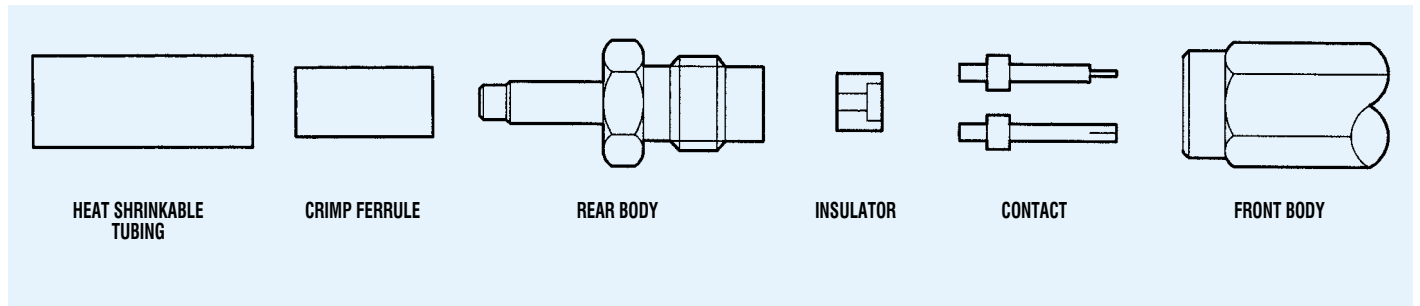
7. Press insert into place or locate the cap in rear of body and dimple or lightly punch to ensure it is locked in position (recommended tool, flat pin $\varnothing 3,07 \pm 0,05$ (.121 \pm .002)).

8. Slide heat shrinkable tubing over ferrule flush against body and heat until tubing shrinks down.

Only common cable retention features are shown in detail. Various body configurations can apply.

| Cable Type | Cable Code | Die Size |
|------------|------------|-------------|
| RG196/U | 3196 | 2,67 (.105) |
| RG316/U | 3188 | 3,25 (.128) |
| RD316 | 3875 | 3,84 (.151) |

AI-227 SMA Straight Connectors, Crimp Type for Braided Cable — Captive Contact



1. Slide ferrule and heat shrinkable tubing on to cable.

2. Trim cable to dimensions as shown

| A | B | C |
|--------------|-------------|-------------|
| 15,00 (.590) | 9,00 (.354) | 3,00 (.118) |

3. Slide body over cable dielectric and under the braid until the braid is flush against the rear of the hexagonal nut.

NOTE: When using cables with inflexible jackets, it is permissible to make two 3,17 (.125) longitudinal slits in the outer jacket.

4. Slide ferrule flush against the body and crimp in position using ITT Cannon Crimp Tool and suitable die set (see table).

5. Trim back dielectric and center conductor to dimensions shown.

6. Tin center conductor (DO NOT OVER TIN).

7. Assemble insulator over center conductor with counterbore in direction shown.

8. Place a small solder preform made from 0,26 - 0,31 (.010 - .012) dia. (28 swg) multi-core solder in rear of contact.

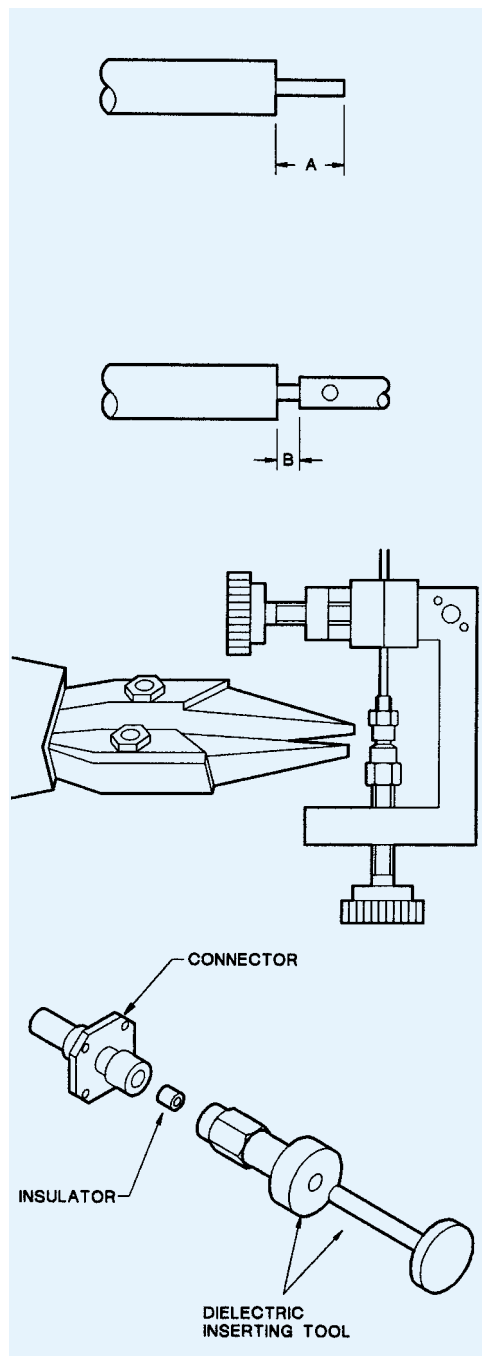
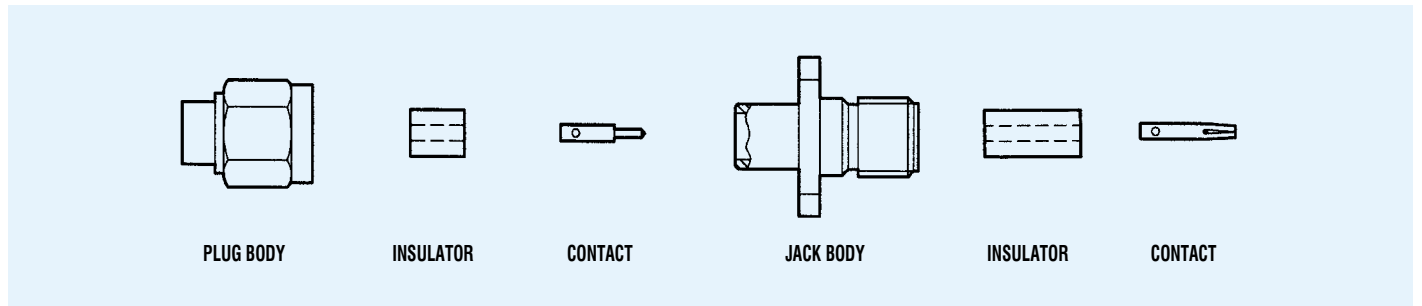
9. Assemble contact on center conductor, heat to make solder connection ensuring shoulder of contact is flush against rear insulator. Do not allow solder to protrude outside spill hole.

10. Insert crimped assembly into back end of body and tighten to a torque of 0.70 - 0.80 Nm (100 - 110 in. ozs.).

11. Slide heat shrinkable tubing over ferrule and apply heat until tubing shrinks down.

| Cable Type | Cable Code | Die Size |
|------------|------------|-------------|
| RG142/U | 3196 | 2,67 (.105) |
| RG316/U | 3188 | 3,25 (.128) |
| RD316 | 3875 | 3,84 (.151) |

AI-252 & AI-278 SMA Straight Connectors, Direct Solder (Separate Center Contact) Type for Semi-Rigid Cable



1. Cut cable end square. Trim the cable outer conductor and dielectric as shown taking care not to nick the center conductor. Deburr outer conductor at point of cut.

| Assembly Instruction No. | Configuration | A | B |
|--------------------------|---------------|---------------------------|-------------|
| AI-252 | Plug | 3,18 ± 0,25 (.125 ± .010) | 0,38 (.015) |
| AI-278 | Flange Jack | 2,54 ± 0,25 (.100 ± .010) | 0,38 (.015) |

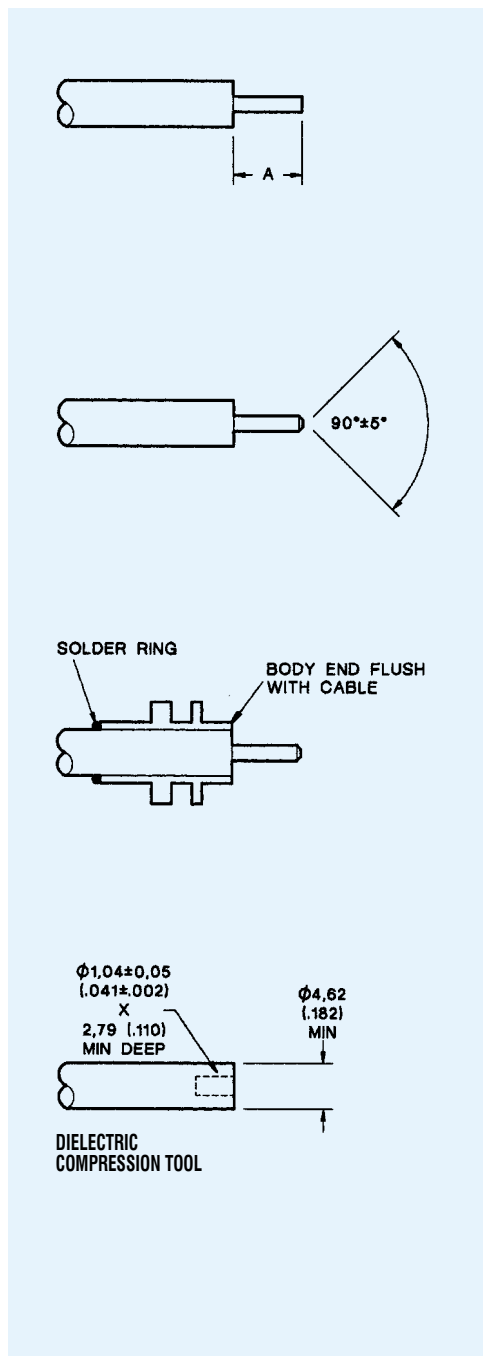
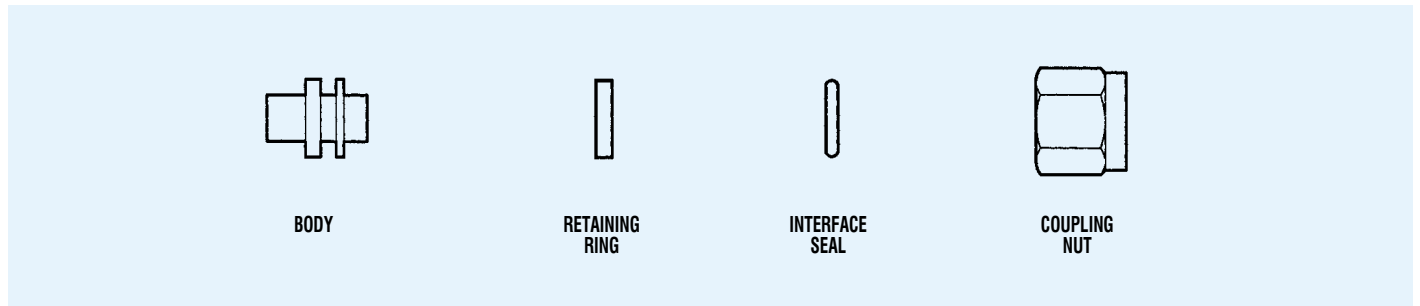
2. Tin center conductor (DO NOT OVER TIN).
3. Solder contact to center conductor ensuring that dimension shown is maintained. Remove any excess solder.
4. Clean housing area of outer conductor with abrasive paper and clean in a suitable agent.
5. Place connector assembly in Assembly Jig T1848, or other suitable clamping arrangement, with contact in locator tool as shown.

Tighten screw to secure cable between inserts then tighten locator to seat cable firmly. Place solder ring around cable adjacent to connector body and heat the connector body using an appropriate heat source (solder tongs with variable control). Apply sufficient heat for solder to flow but using minimum heat cycle.

6. Using dielectric insertion Tool T2508 (for plugs) or T2509 (for jacks), press insulator into body. Assembly is now ready for use.

N.B. Various body configurations can apply.

AI-302 SMA Straight Connectors, Direct Solder (Cable Conductor used as Center Contact) Type for Semi-Rigid Cable



1. Trim the cable outer conductor and dielectric as shown taking care not to nick the center conductor using Tool T2624, if available, or other cable cutting tool. Deburr outer conductor at point of cut.

$$'A' = 2,16 \pm 0,13 (.085 \pm .005)$$

2. Point the end of the center conductor using Tool T2297 if available or a miniature file.

3. If style - 9073 is being assembled slip the coupling nut onto the cable.

4. Clean housing area of outer conductor with abrasive paper and clean in a suitable agent. Place 24 s.w.g. soldering ring and connector body on prepared end of cable. Ensure body is correct way round. End of cable to be flush with end of connector body as shown.

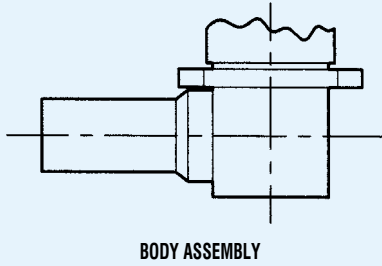
Using Assembly Jig T1848, or other suitable clamping arrangement, clamp in a vertical position. Heat the connector body using an appropriate heat source (solder tongs with variable control). Apply sufficient heat for solder to flow but using minimum heat cycle.

5. Compress expanded dielectric back into cable outer conductor with Dielectric Compression Tool as shown, until it is flush with end of body and outer conductor.

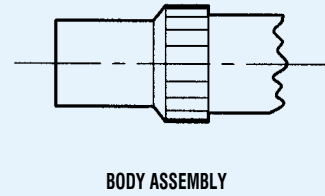
6. Fit the interface seal.

7. Install the spring retaining ring, compress with tool T0557/1 and fit the coupling nut.

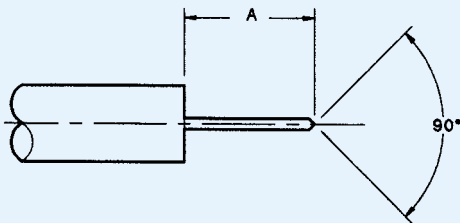
AI-436, AI-499 & AI-523 SMS & SSIS® Straight and Right Angle Connectors, Direct Solder Type for Semi-Rigid Cable



BODY ASSEMBLY

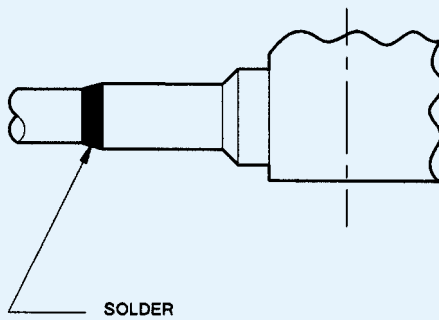


BODY ASSEMBLY



1. Trim cable to dimensions shown, being careful not to nick center conductor

'A' = 2,29 (.090).

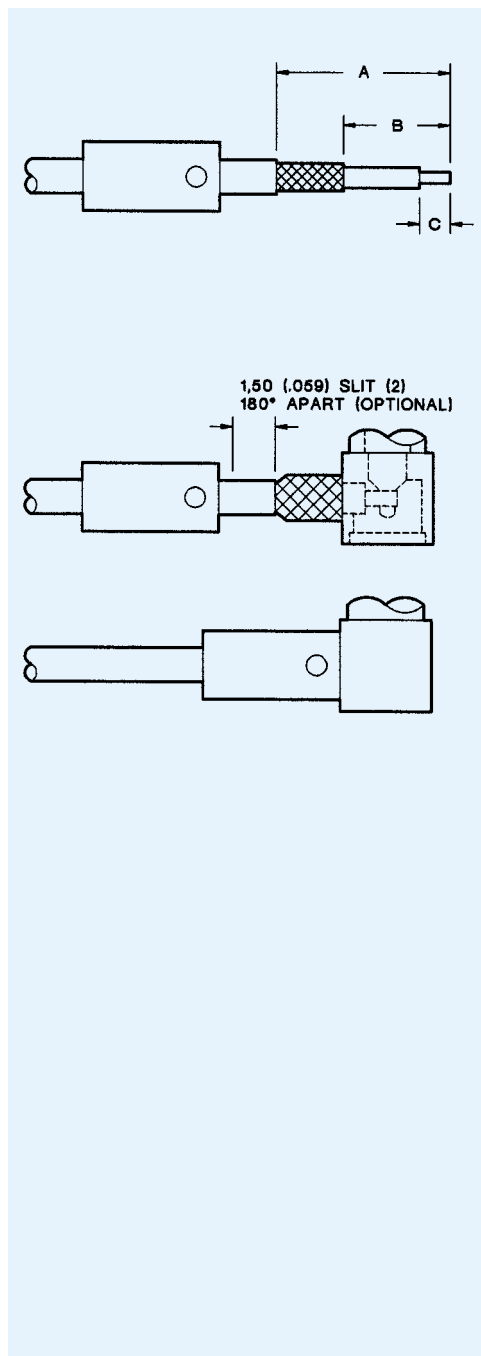
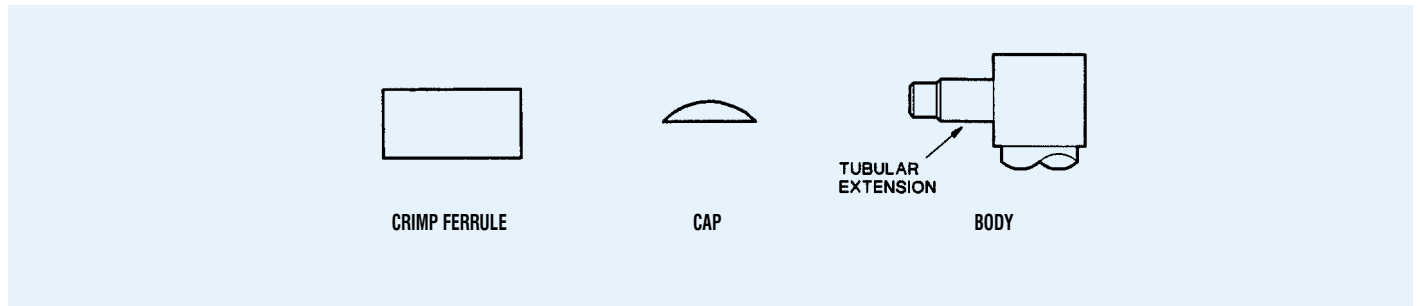


2. Insert cable into rear of body until cable seats in counterbore. Holding firm in this position. Solder cable to body.

NOTE

Only common cable entry features are shown in detail. Various body configurations can apply.

AI-472 & BAI-015 SMB & SMS Right Angle Connectors, Crimp Type for Braided Cable



- Trim cable to dimensions shown taking care not to nick braid or center conductor. Tin center conductor (DO NOT OVER TIN) then slip crimp ferrule (and tubing with SMS) over cable with inspection hole toward trimmed end.

| Assembly Instruction No. | A | B | C |
|--------------------------|--------------|-------------|-------------|
| BAI-015 | 10,00 (.393) | 4,00 (.157) | 1,50 (.059) |
| AI-472 | 11,10 (.437) | 4,37 (.172) | 0,79 (.031) |

- Insert trimmed cable into back end of body. The tubular body extension will slide under the braid with the rear portion of extension fitting under the jacket as shown. The center conductor will extend into slot in contact.
NOTE: On smaller diameter cables, two longitudinal slits in the jacket, 180° apart, may be cut to ease assembly.

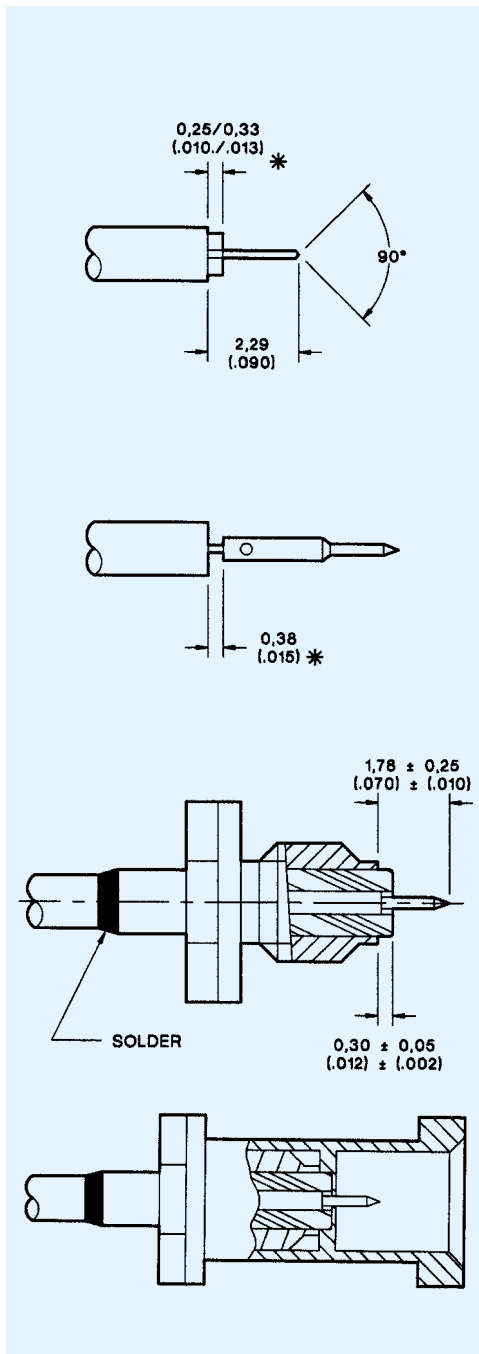
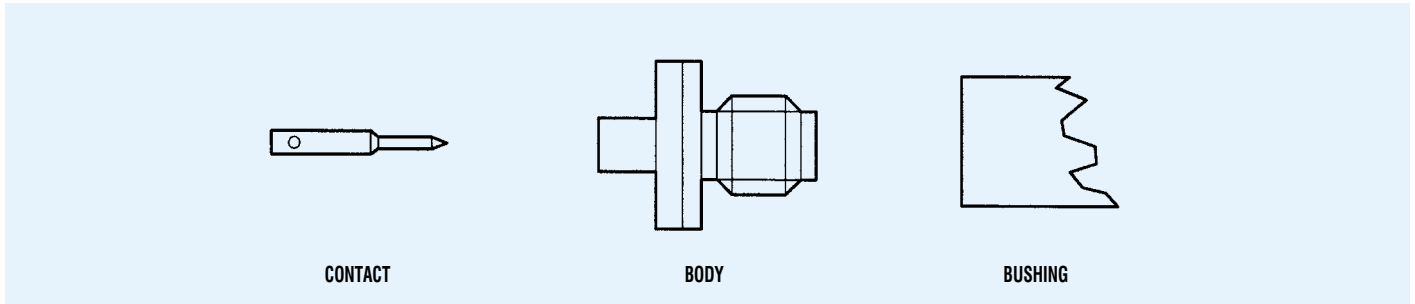
- Slip ferrule up over braid to face of square body and crimp, using ITT Cannon Crimp Tool and suitable die set (see table).

| Cable Type | Cable Code | Die Size |
|------------|------------|-------------|
| RG142/U | 9052 | 5,41 (.213) |
| RG196/U | 3196 | 2,67 (.105) |
| RG316/U | 0000 | 3,25 (.128) |
| RG316/U | 3188/9416 | 3,25 (.128) |
| RD316 | 9399 | 3,84 (.151) |

- Using a small soldering iron solder center conductor to contact.
NOTE: The center conductor should not protrude beyond the contact to touch the body. Solder should not protrude beyond the slotted section of the contact.
- Locate the cap in rear of body and dimple or lightly punch to ensure it is locked in position. (A flat punch is recommended).
- On SMS slip tubing over the ferrule and heat until the shrinkable tubing fits smoothly around the cable.

Only common cable retention features are shown in detail. Various body configurations can apply.

AI-480 SSIS® Straight Plug Connectors, Direct Solder Type for Semi-Rigid Cable



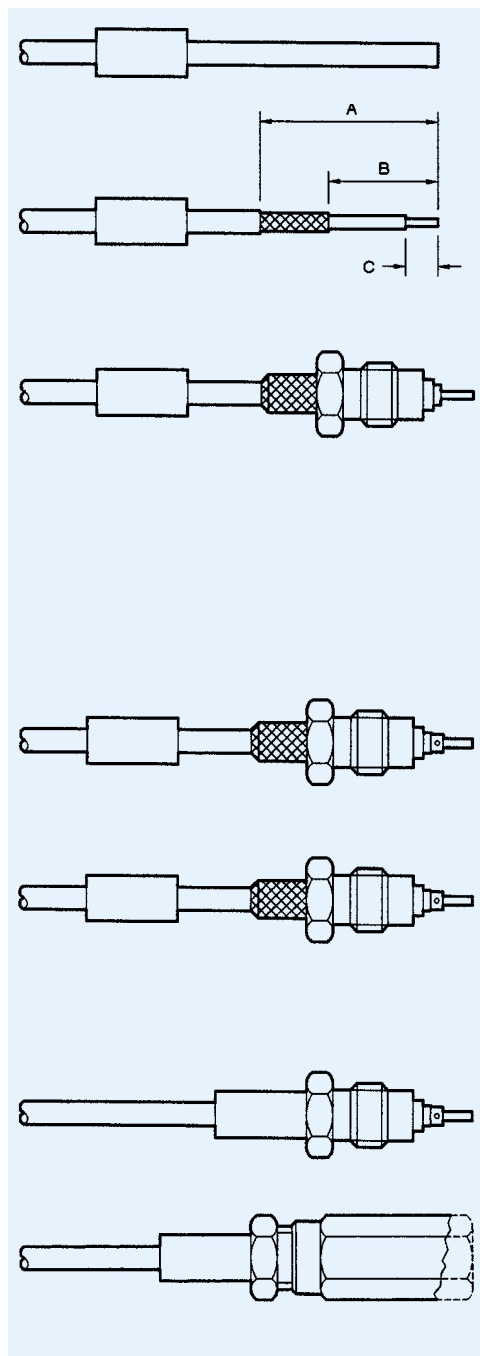
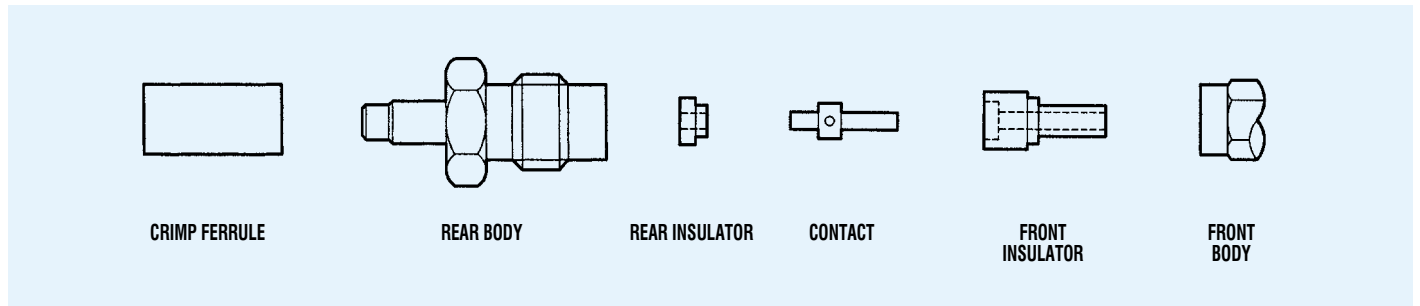
1. Trim cable to dimensions shown, being careful not to nick center conductor. Tin center conductor (DO NOT OVER TIN).
* Trim dielectric as shown for Belden Conformable cable only.

2. Using a 0,38 (.015) spacer, solder contact to center conductor.
* Use 0,13 (.005) spacer on Belden Conformable cable only.

3. Slide cable into rear of body. Holding securely in this position, solder body to cable.

4. Insert into rear of bushing and tighten with a torque of 0,21 Nm (30 in. ozs.)

AI-504 & BAI-003 SMB/SMC & SMS Straight Connectors, Crimp Type for Braided Cable



1. Slide ferrule on cable, (and tubing with SMS)

2. Trim cable to dimensions shown taking care not to nick braid or center conductor.

| Assembly Instruction No. | A | B | C |
|--------------------------|--------------|--------------|-------------|
| BAI-003 | 15,50 (.610) | 9,50 (.374) | 2,50 (.098) |
| AI-504 | 17,01 (.672) | 11,13 (.438) | 3,18 (.125) |

3. Tin center conductor (DO NOT OVER TIN).

4. Slide rear body over cable dielectric and under the braid until the braid is flush against the rear of the hexagonal nut.
NOTE: When using cables with inflexible jackets two 3,17 (.125) slits in the outer jacket are permissible.

5. Slide on rear insulator so that the counterbore rests against the cable dielectric.

6. Place a small solder preform made from 0,26 - 0,31 (.010 - .012) dia (28 swg) multi-core solder in rear of contact.

7. Assemble contact on center conductor, heat to make solder connection ensuring shoulder of contact is flush against rear insulator.
N.B. Do not allow solder to protrude outside spill hole.

8. Slide ferrule against body and crimp using ITT Cannon Crimp Tool and suitable die set (see table below).

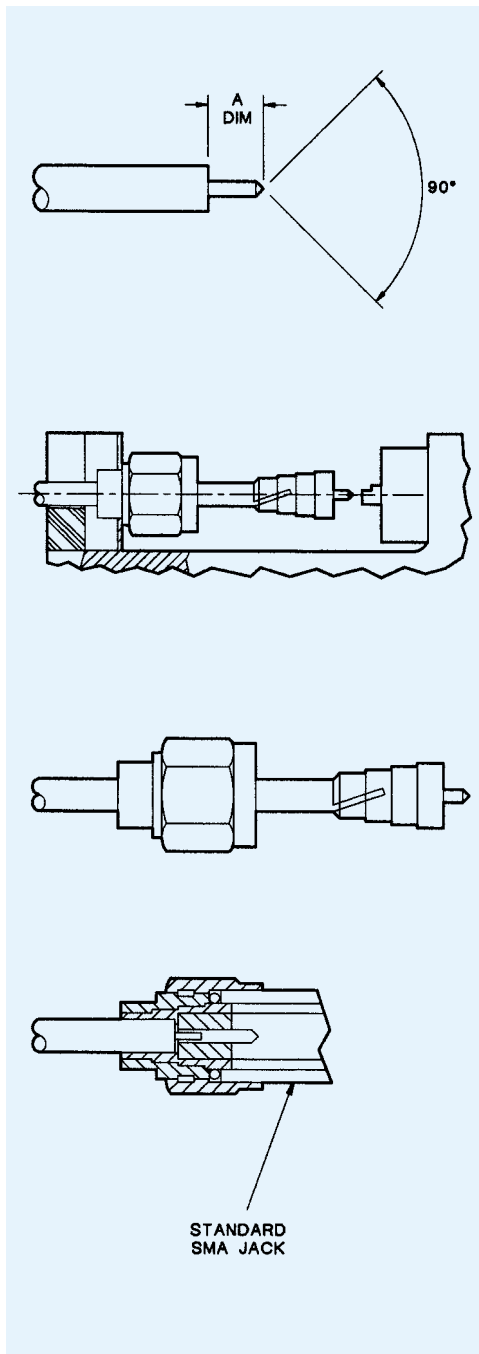
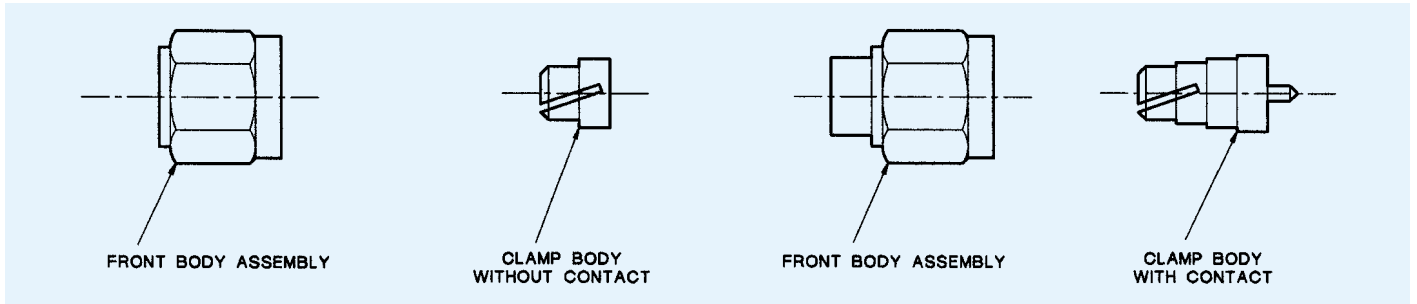
9. Slide on front insulator (if not already assembled in body).

10. Screw on front body and tighten to 0,63 - 0,70 Nm (90 - 100 in. ozs.).

11. On SMS slip tubing over the ferrule and heat until the shrinkable tubing fits smoothly around the cable.
Only common cable retention features are shown in detail. Various body configurations can apply.

| Cable Type | Cable Code | Die Size |
|------------|------------|-------------|
| RG142/U | 9052 | 5,41 (.213) |
| RG196/U | 3196 | 2,67 (.105) |
| RG316/U | 0000/9416 | 3,25 (.128) |
| RD316 | 9399 | 3,84 (.151) |

AI-507 & AI-521 SMA Straight Connectors, Solderless Type for Semi-Rigid Cable



1. Trim cable to dimensions shown. Be careful not to nick center conductor. Ensure dielectric is flush. Remove burrs from the copper jacket end. Pointing of the center conductor is essential.

| Assembly Instruction No. | Part Number | A |
|--------------------------|-----------------|---------------------------|
| AI 507 | 055-624-6703890 | 2,16 ± 0,13 (.085 ± .005) |
| AI 521 | 055-607-6702890 | 1,78 ± 0,13 (.085 ± .005) |
| AI 521 | 055-607-6203890 | 2,16 ± 0,13 (.085 ± .005) |

2. Slide front body assembly onto cable. Firmly seat the clamp body collet on end of cable. Place assembly into tool 050-000-0130000 with cable in holding jaws and cable end in piston die. Squeeze tool handles fully and release.

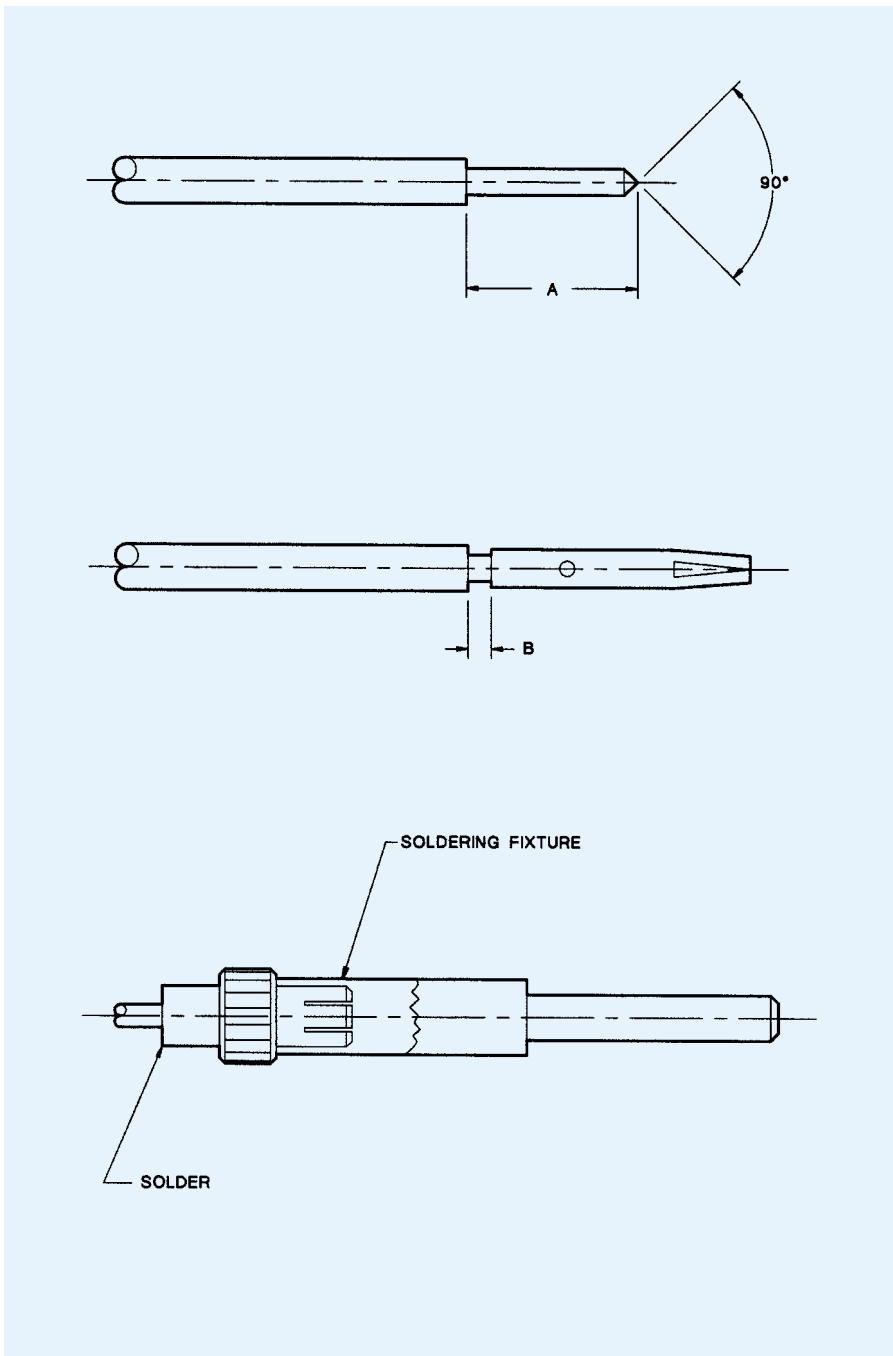
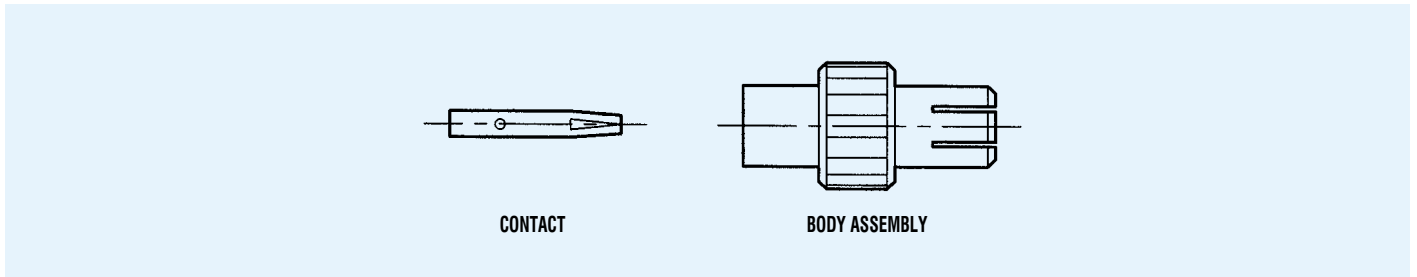
Alternatively

3. Slide front body assembly onto cable, then slide cable into rear end of clamp body until it seats firmly in counterbore.

NOTE: Where the separate contact versions are used the clamp body should be held securely in any standard SMA jack to avoid undue pressure on the center contact. The center conductor should click into place as it overcomes tension on the tynes.

4. Push front body assembly up over the clamp body then holding cable securely in counterbore, and using any standard SMA jack as shown, complete assembly by simply tightening mating jack with a torque of 0.79 to 1.13 Nm (7 to 10 in. lbs.).

AI-632 SSIS® Straight Jack Connectors, Direct Solder Type for Semi-Rigid Cable



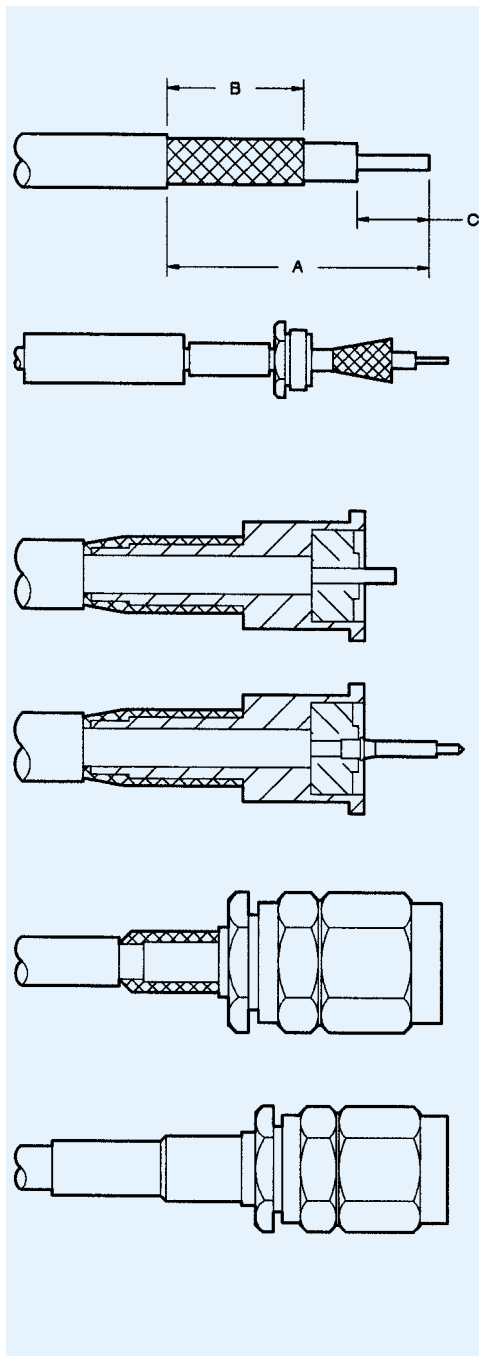
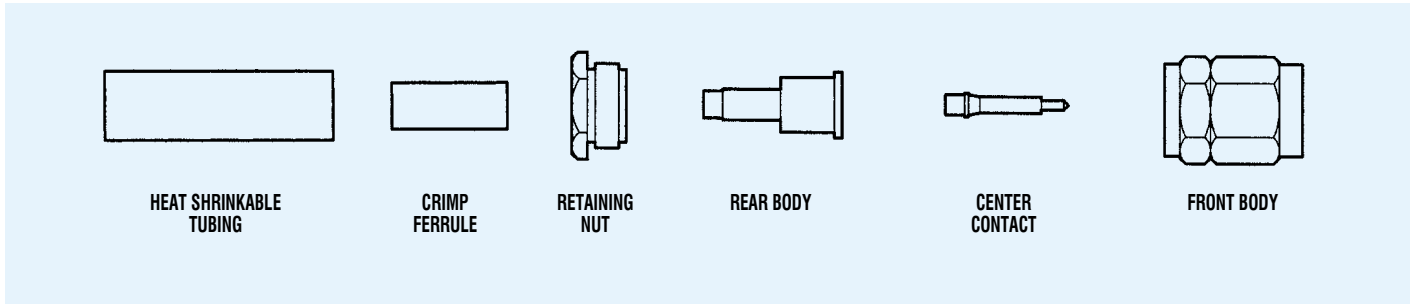
1. Trim cable to dimension shown. Being careful not to nick center conductor.

| A | B |
|-------------|----------------------------|
| 2,29 (.090) | 0,25 ± 0,025 (.010 ± .001) |

2. Solder contact to center conductor, maintaining 'B' dimension. Remove excess solder from outside of contact.

3. Insert body and insulator sub-assembly completely into soldering fixture (050-000-0930). Insert cable assembly into rear of sub-assembly with the contact butting against the soldering fixture. Apply soft solder to rear of sub-assembly and heat to make solder connection. Remove assembly from fixture.

AI-703 SMA Straight Connectors, Captive Contact, Crimp Type for Braided Cable



- Strip cable to dimensions shown. Do not nick outer or inner conductors. Tin inner conductor.

| A | B | C |
|--------------|-------------|-------------|
| 13,46 (.530) | 7,11 (.280) | 3,56 (.140) |

- Place shrink tubing, crimp ferrule and retaining nut on cable. Flare the cable outer conductor as shown.

- Insert cable dielectric into rear body until it bottoms firmly against insulator as shown.

- Place a 0,38 (.015) dia x 2,50 ± 0,51 (.100 ± .020) long solder wire into solder hole of the center contact. Heat center contact and push it over cable inner conductor until it bottoms against insulator as shown. Remove excess solder if necessary.

- Insert rear body into front body. Engage threads of retaining nut to front body and hand tighten retaining nut. Hold front body firmly with a 7,93 (.312) hex. torque wrench and torque it to 1,13-1,69 Nm (10-15 in. lbs.). by turning retaining nut only.

- Slide crimp ferrule over flared portion of cable outer conductor. Crimp outer sleeve in place as shown. Push cable firmly toward connector when crimping. Trim and remove any excess outer conductor strands if necessary. Position shrink tubing over crimp sleeve apply indirect heat to shrink tubing down.

| Cable Type | Cable Code | Die Size |
|------------|------------|-------------|
| RG142/U | 9142 | 5,41 (.213) |
| RG316/U | 9188 | 3,25 (.128) |
| RD316 | 9875 | 3,84 (.151) |

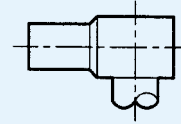
AI-755 MCX Right Angle Connectors, Direct Solder Type for Times T - Flex Cable



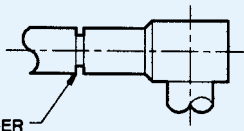
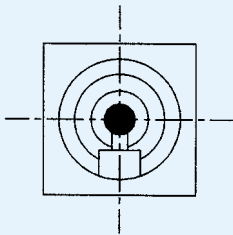
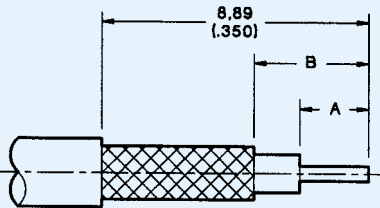
CAP



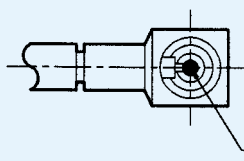
INSULATION DISC



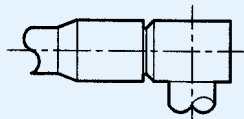
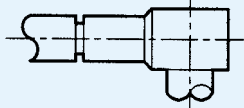
BODY ASSEMBLY



SOLDER



SOLDER



1. Dip 9,50 (.374) to 12,70 (.500) of both ends of the cable into a solder pot. Flux may be applied to the ends of the cable prior to dipping, if desired.

2. Trim cable to dimensions shown being careful not to nick the center conductor or braid. Trim center conductor (DO NOT OVER TIN).

| A | B |
|-------------|-------------|
| 2,29 (.090) | 3,69 (.145) |

3. Orientate slot of contact and insulator to be parallel to the cable entry hole as shown.

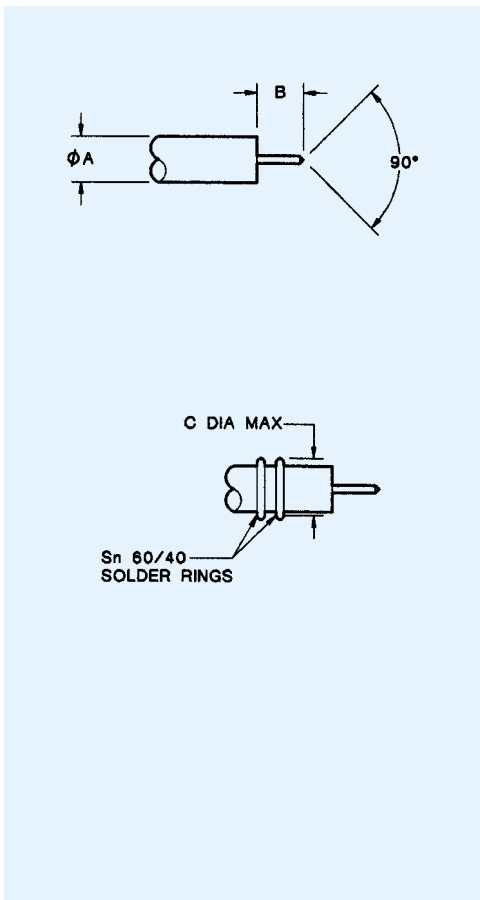
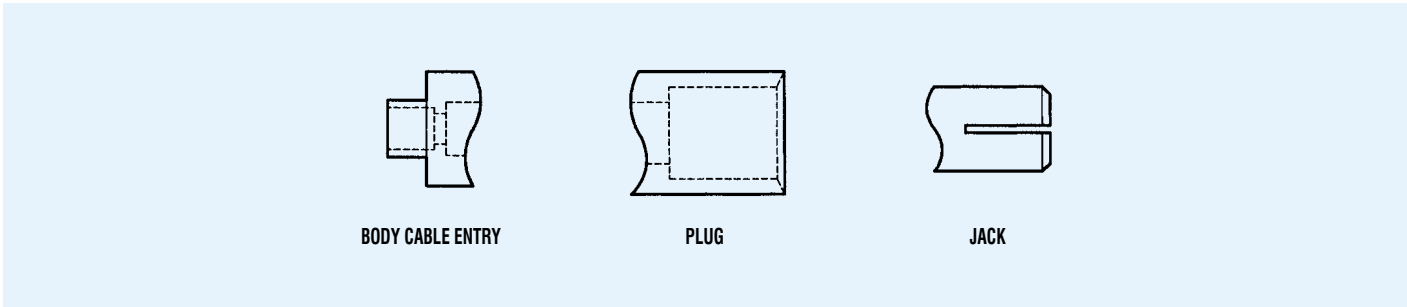
4. Push cable into body and solder in place.

5. Solder center conductor to center contact (do not over solder).

6. Insert insulation disc (if supplied), into bore then dimple or lightly punch cap into counterbore until fully home.

7. Install shrink tubing as shown, apply indirect heat to shrink the tubing down.

AI-762 & AI-763 CMM Straight Connectors, Direct Solder Type for Semi-Rigid Cable



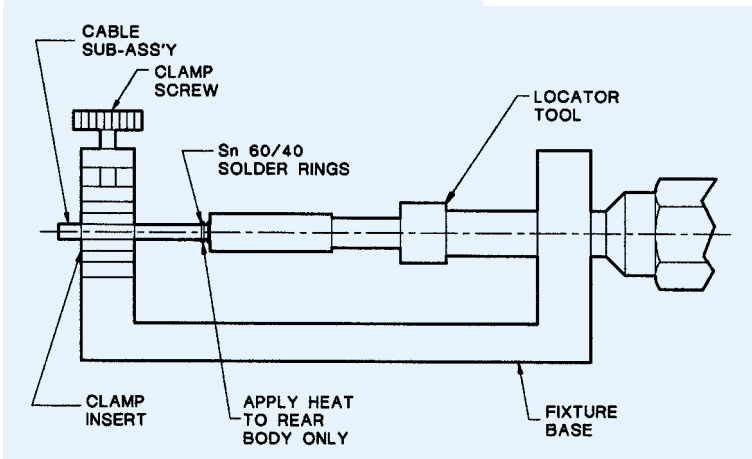
1. Trim cable to dimension 'B' shown. Being careful not to nick the center conductor.

| Cable Dia. A | B |
|--------------|-------------|
| 1,20 (.047) | 2,04 (.080) |

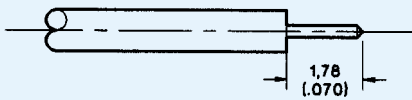
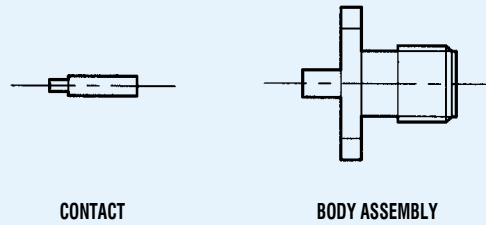
2. Place two solder rings per table below, over the cable.

| Cable Dia. | 'C' Dia. max | Solder Wire Dia. |
|-------------|--------------|------------------|
| 1,20 (.047) | 1,78 (.070) | 0,26 (.010) |

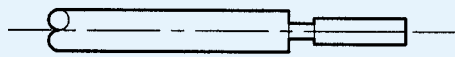
3. Place connector in fixture base seated against locator and insert cable into cable entry end of connector until cable seats firmly. Tighten Clamp screw to secure cable. Tighten locator tool firmly against connector interface (plug) or front of connector (jack). Slide solder rings against rear body as shown. Apply sufficient heat to rear body only using an appropriate heat source (solder tongs with variable control) for solder to flow but using minimum heat cycle.



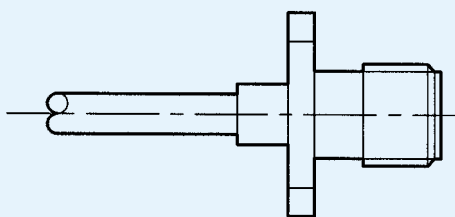
AI-770 SMA Flange Mount Connectors, Direct Solder Type for Semi-Rigid Cable



1. Strip cable to dimension shown, do not nick inner conductor.

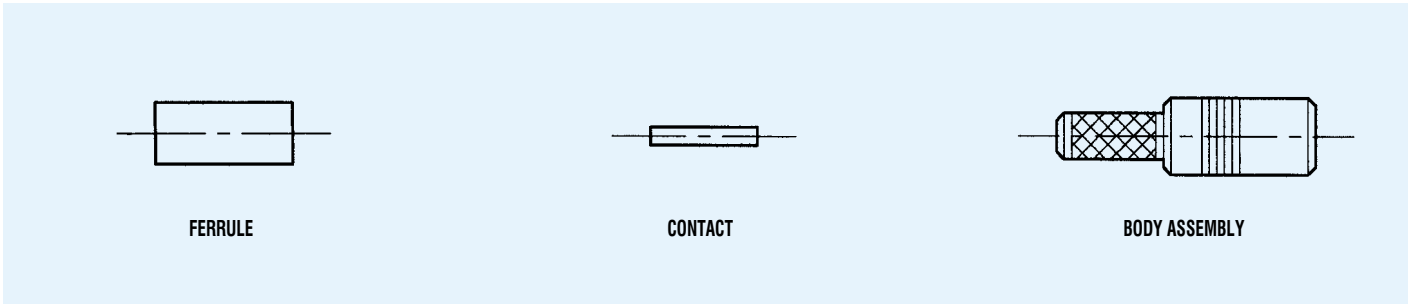


2. Insert contact over inner conductor and push until it bottoms against the cable dielectric as shown. Solder contact to inner conductor through solder hole. Trim excess of cable dielectric, if required.



3. Slide contact and cable into rear of body assembly until it seats firmly against insulator in body. Solder cable to body applying sufficient heat to body for solder to flow, but using minimum heat cycle.

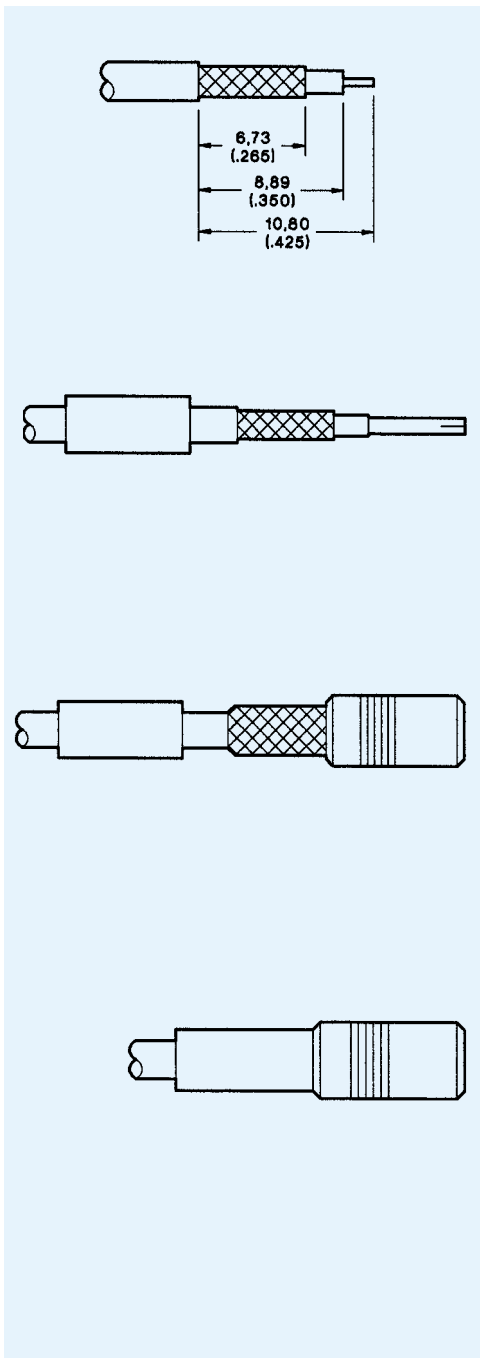
AI-772 MCX Straight Connectors, Crimp Type for Braided Cable



FERRULE

CONTACT

BODY ASSEMBLY



1. Trim cable to dimensions shown. Do not nick outer braid or center conductor. Tin center conductor with solder (DO NOT OVER TIN).

2. Slide ferrule over stripped end of cable. Tin inside diameter of contact with solder. Slide contact over center conductor while applying heat until contact butts on the dielectric of the cable.

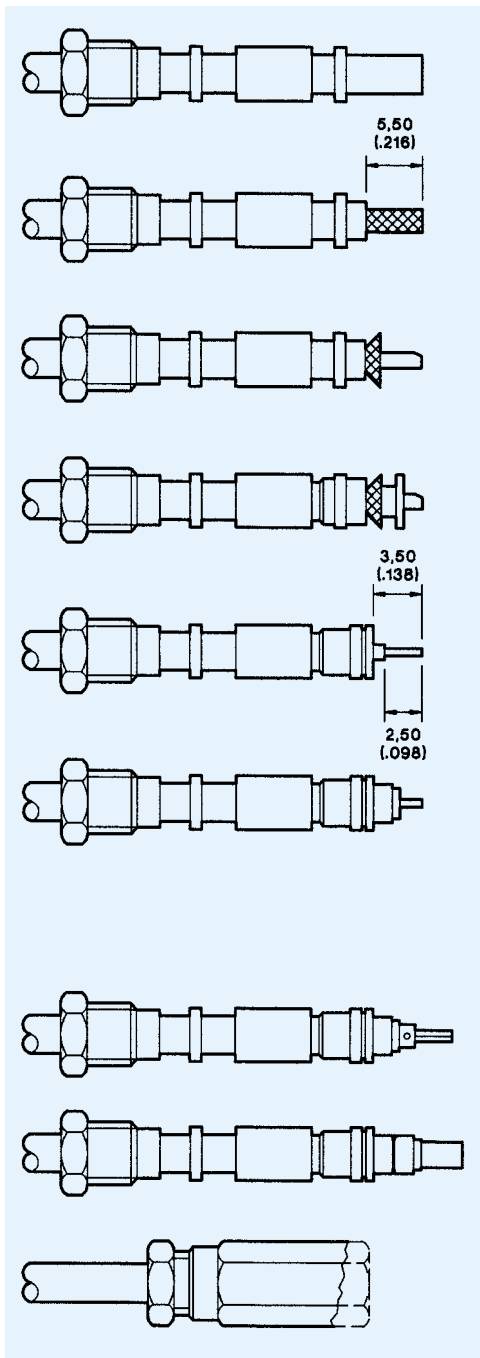
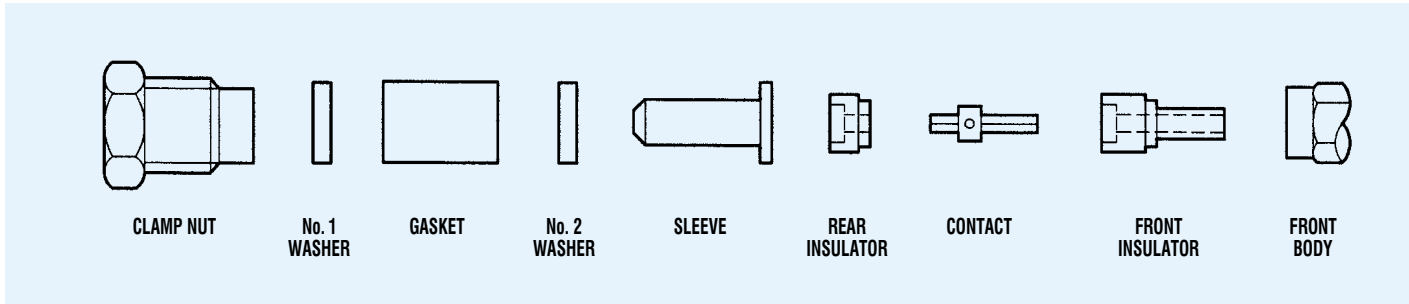
3. Slide contact and cable into the body sub-assembly until the dielectric of the cable stops on the insulator.

4. Slide ferrule up over the cable braid until it touches the body. Crimp the ferrule in place as shown using ITT Cannon Crimp Tool and suitable die set (see table).

| Cable Type | Die Size |
|------------|-------------|
| RG178/U | 2,67 (.105) |
| RG316/U | 3,25 (.128) |

Assy I

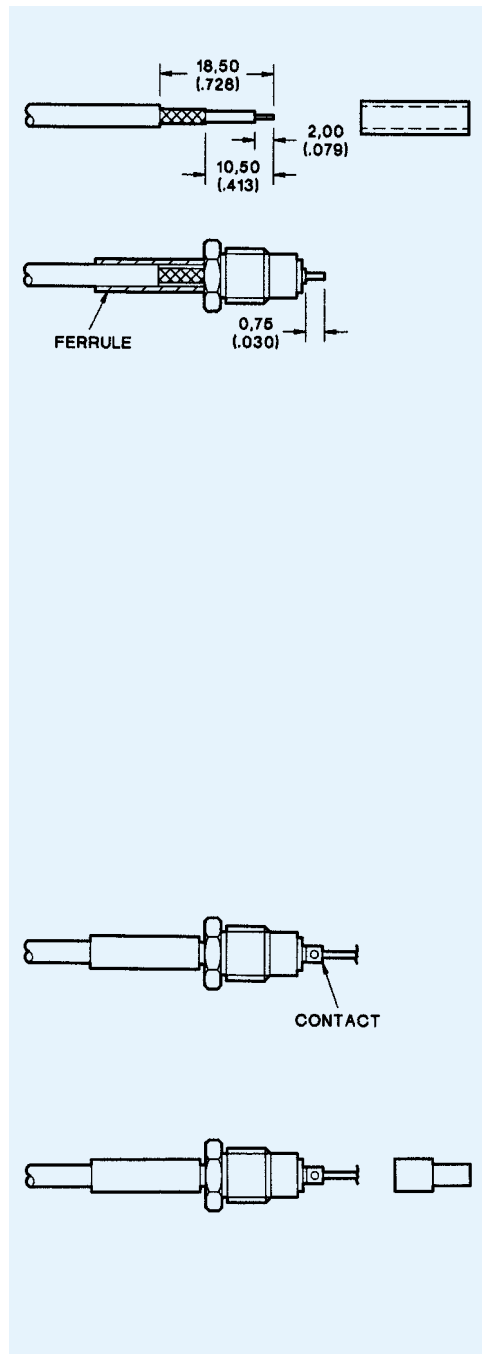
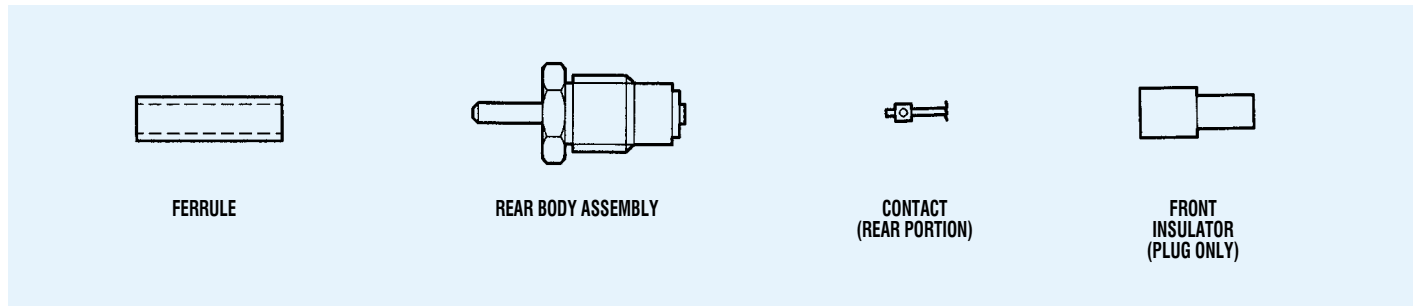
BAI-001 SMB/SMC Straight Connectors, Clamp Type for Braided Cable



1. Slide clamp nut, No. 1 washer, gasket and No. 2 washer over cable.
2. Trim cable to dimension shown taking care not to nick the braid.
3. Thumb braid out radially at right angles to dielectric.
4. A small chamfer may now be cut on the end of cable dielectric, to assist assembly of sleeve.
5. Slide sleeve over cable dielectric and under braid and outer jacket until the flange of the sleeve is flush against the braid.
6. Move No.2 washer up to braid and trim braid flush with the flange of the sleeve.
7. Trim cable dielectric and center conductor to dimensions shown taking care not to nick the center conductor.
8. Tin center conductor (DO NOT OVER TIN).
9. Slide rear insulator over cable.
10. Place a small solder preform made from 0,26 - 0,31 (.010 - .012) dia (28 swg) multi-core solder in rear of contact.
11. Push contact on center conductor as far as possible. Heat center conductor and push until the shoulder of the contact is flush against the rear insulator. Do not allow solder to protrude outside spill hole.
12. Slide on front insulator flush against rear insulator (if not already assembled in body).
13. Move clamp nut, No. 1 washer and gasket up to No. 2 washer, slide on front body and tighten clamp nut to required torque: 0,63 - 0,70 Nm (90 - 100 in. ozs.).

Only common cable retention features are shown in detail. Various body configurations can apply.

BBAI-1040 SMZ Straight Connectors, Solder Contact, for Braided Cable



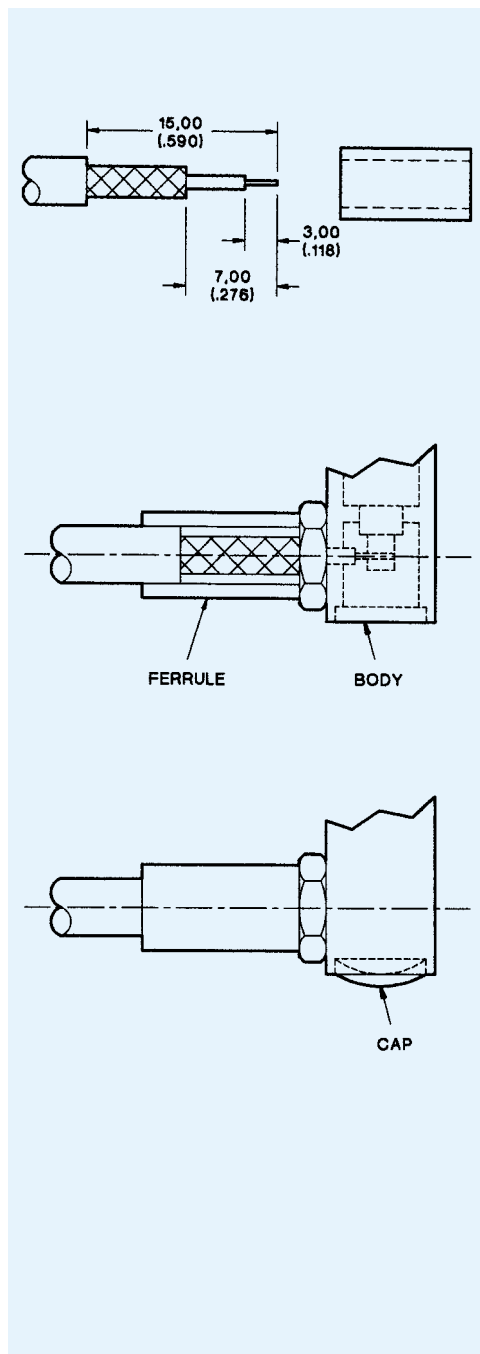
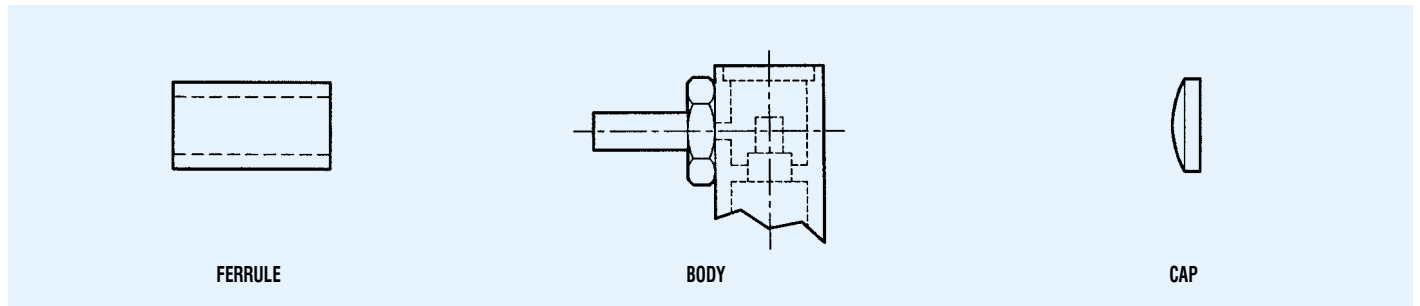
1. Trim cable to dimensions shown being careful not to nick the braid or center conductor. Tin center conductor, (DO NOT OVER TIN) then slip ferrule over cable.
2. Insert trimmed cable into back end of rear body. The tubular extension will slide under the braid. The tinned end of the center conductor should project 0,75 (.030) beyond the face of the insulator. Slip ferrule up to hex. Face of rear body and crimp in position using ITT Cannon crimp tool and suitable die set (see table).

| Cable | Die Size |
|----------|-------------|
| BT2001 | 4,52 (.178) |
| BT2002 | 5,18 (.204) |
| BT2003 | 6,81 (.268) |
| BT3002 | 4,52 (.178) |
| RG59B/U | 6,48 (.255) |
| RG62/U | 6,48 (.255) |
| RG140/U | 6,48 (.255) |
| RG179B/U | 3,25 (.128) |
| RG180/U | 4,52 (.178) |
| RG187A/U | 3,25 (.128) |
| RG195A/U | 4,52 (.178) |
| RD179 | 3,84 (.151) |
| TZC75024 | 4,52 (.178) |

3. Add 2,00 (.078) long slug of 24 SWG60/40 tin/lead solder to bore of contact. Assemble contact onto center conductor with the shoulder of contact flush with insulator as shown. Heat to make soldered connection.
4. Assemble front insulator over contact (jack front insulator is pre-assembled into front body at the factory) then slip front body onto rear body and tighten with torque of 0,99 - 1,06 Nm (140 - 150 in. ozs.)

Assy I

BBAI-1041 SMZ Right Angle Connectors, Solder Contact, for Braided Cable



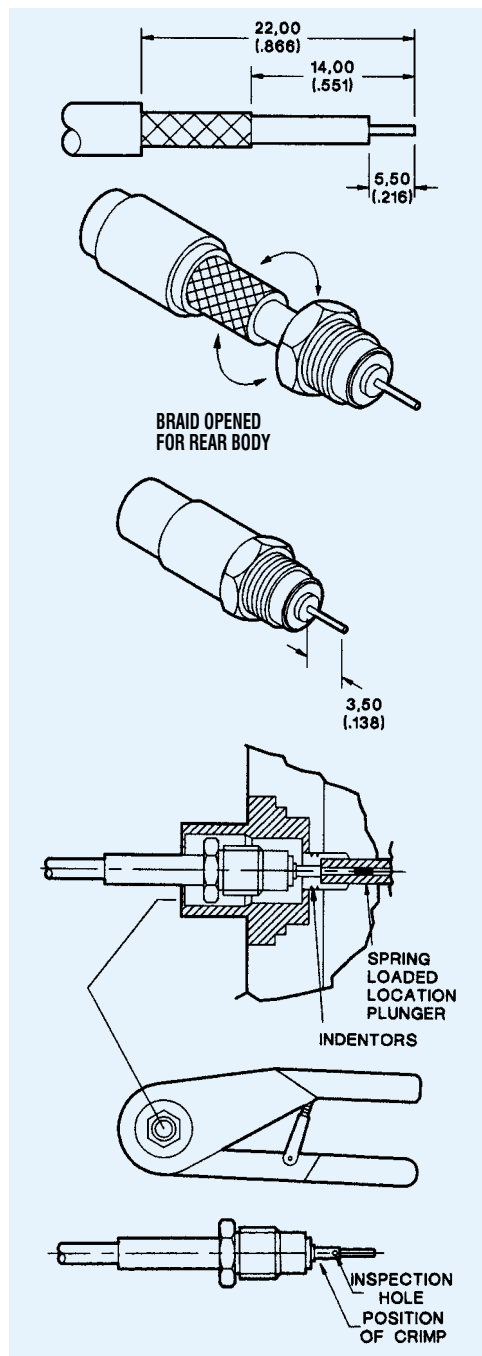
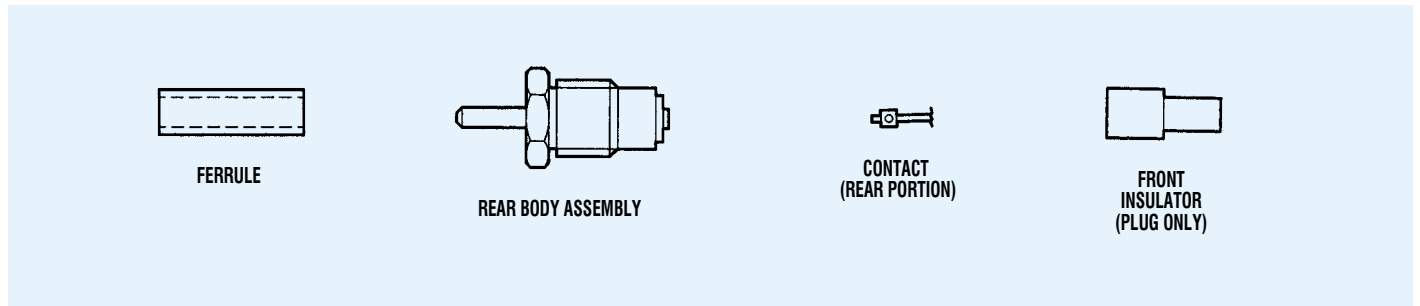
1. Trim cable to dimensions shown being careful not to nick the braid or center conductor. Tin center conductor, (DO NOT OVER TIN), then slip ferrule over cable.

2. Insert trimmed cable into tubular extension. This will slide under the braid. The center conductor will extend into the slotted contact.

3. Slip cable and ferrule up to face of body and crimp in position using ITT Cannon crimp tool and suitable die set (see table). Solder center conductor to contact. Press cap into body using a flat punch or ITT Cannon Tool T2921.

| Cable | Die Size |
|----------|-------------|
| BT2001 | 4,52 (.178) |
| BT2002 | 5,18 (.204) |
| BT2003 | 6,81 (.268) |
| BT3002 | 4,52 (.178) |
| RG59B/U | 6,48 (.255) |
| RG62/U | 6,48 (.255) |
| RG140/U | 6,48 (.255) |
| RG179B/U | 3,25 (.128) |
| RG180/U | 4,52 (.178) |
| RG187A/U | 3,25 (.128) |
| RG195A/U | 4,52 (.178) |
| RD179 | 3,84 (.151) |
| TZC75024 | 4,52 (.178) |

BBAI-1119 SMZ Straight Connectors, Crimp Contact, for Braided Cable

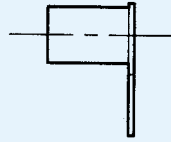


1. Check that the center contact is a free fit in the front insulator and that you have all the connector parts. The termination technique and cable preparation dimensions for the sockets are the same.
2. Strip the cable to the dimensions shown taking care not to damage the braid, dielectric or inner conductor. Slip ferrule over cable.
3. Slide the connector body over the cable so that the rear body goes between the dielectric and the braid. Gently twisting and rocking the connector body to spread the braid will help. Care must be taken to ensure that no strands of braid are trapped under the body.
4. Slide the crimp ferrule forward over the braid until it butts up against the backnut. Crimp using ITT Cannon crimp tool fitted with suitable die set (see table).

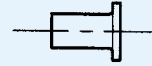
| Cable | Die Size |
|----------|-------------|
| BT2001 | 4,52 (.178) |
| BT2002 | 5,18 (.204) |
| BT2003 | 6,81 (.268) |
| BT3002 | 4,52 (.178) |
| RG59B/U | 6,48 (.255) |
| RG179B/U | 3,25 (.128) |
| RG187A/U | 3,25 (.128) |
| TZC75024 | 4,52 (.178) |

5. Trim the center conductor so that 3,50 (.138) protrudes from the face of the rear insulator. Position the crimp type center pin over the end of the center conductor. The wire should be visible through the inspection hole when positioned for crimping.
6. A separate crimping tool will be needed to crimp the center pin. A suitable tool being the ITT Cannon crimp tool T4519.
7. The center pin together with the connector body is inserted into the locator of the crimp tool, taking care that the center pin does not fall off in the process! As the connector body is inserted, the spring loaded plunger positions the center pin against the rear insulator. With the connector firmly pushed into the locator, crimp the center pin. (Ensure assembly is resting on bottom of locator.)
8. Withdraw the connector. Assemble the front and rear bodies. If a free fit front insulator is utilised ensure that it is positioned the correct way round. Finally tighten the two body sections using torque wrenches ITT Cannon part numbers T0854/M8/E and T0854/13/E, to a torque of 0,98 - 1,06 Nm (140 - 150 in. ozs.).

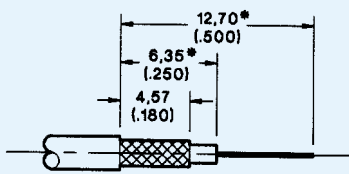
BBAI-1203 Coaxial Terminations, 1 and 2 Point Direct PCB



TAB FERRULE

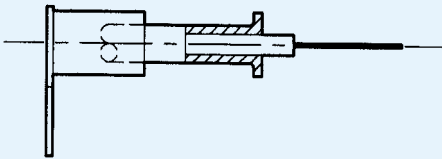


CRIMP BODY



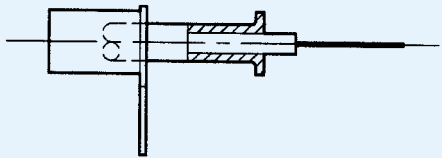
1. Trim cable to dimensions shown being careful not to nick or damage braids or center conductor. Trim center conductor.

* These dimensions suit 2,54 (.100) and 7,62 (.300) PCB pitches, for other pitches see Note 4.



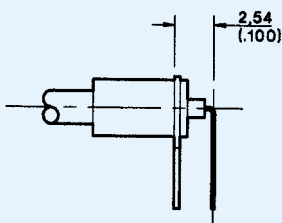
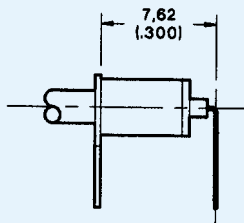
2. Slide Tab-Ferrule over cable.

NOTE: Orientation of tab-ferrule is optional depending upon mounting requirements. Flare braids and slide crimp body over cable dielectric until braids meet flange on crimp body.



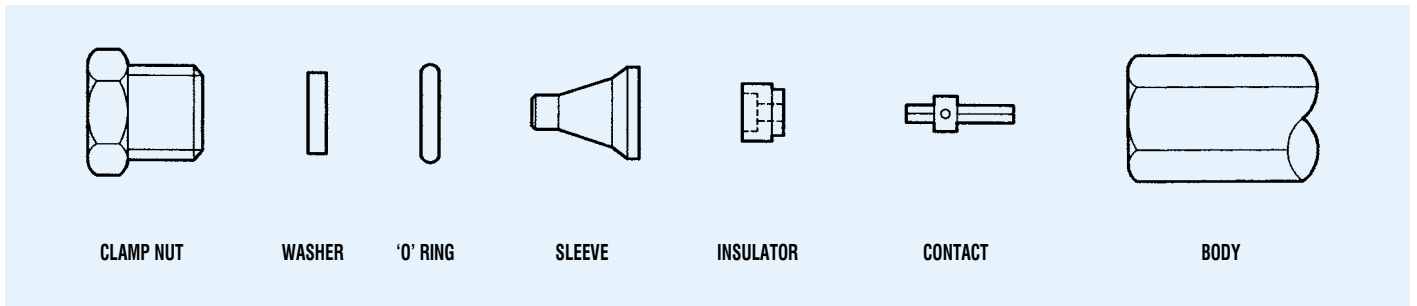
3. Slide tab-ferrule over braids to face of flange and crimp using ITT Cannon crimp tool and suitable die set (see table).

| Cable | Die Size |
|---------|-------------|
| RG174/U | 3,25 (.128) |
| RG178/U | 2,67 (.105) |
| RG179/U | 3,25 (.128) |
| RG188/U | 3,25 (.128) |
| RG196/U | 2,67 (.105) |
| RG316/U | 3,25 (.128) |



4. Bend center conductor to dimension shown depending upon preferred orientation. These dimensions suit 2,54 (.100) and 7,62 (.300) PCB pitches. For other pitches of 2,54 (.100) multiples add 2,54 (.100) multiples, to the 12,70 (.500) and 6,35 (.250) dimensions in the cable stripping instructions Note 1.

BBAI-1213 SMB Straight Connectors, Clamp Type for Braided Cable



CLAMP NUT

WASHER

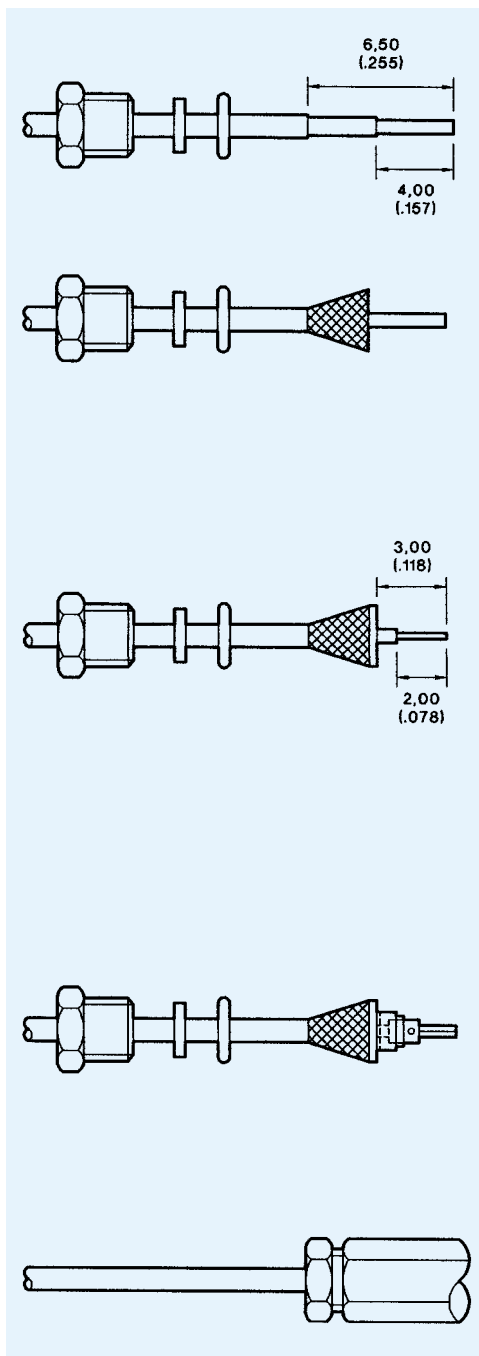
'O' RING

SLEEVE

INSULATOR

CONTACT

BODY



1. Slide clamp nut, washer and 'O' ring over cable.

2. Trim cable to dimensions shown being careful not to nick the braid.

3. Thumb braid out radially at right angles to cable dielectric.

4. Slide sleeve over dielectric and under braid until sleeve is flush with braid.

NOTE: When using cables with inflexible jackets it is permissible to make two 3,17 (.125) longitudinal slits in the outer jacket.

5. Trim braid flush with flange of sleeve.

6. Trim back dielectric to dimensions shown.

7. Tin center conductor (DO NOT OVER TIN).

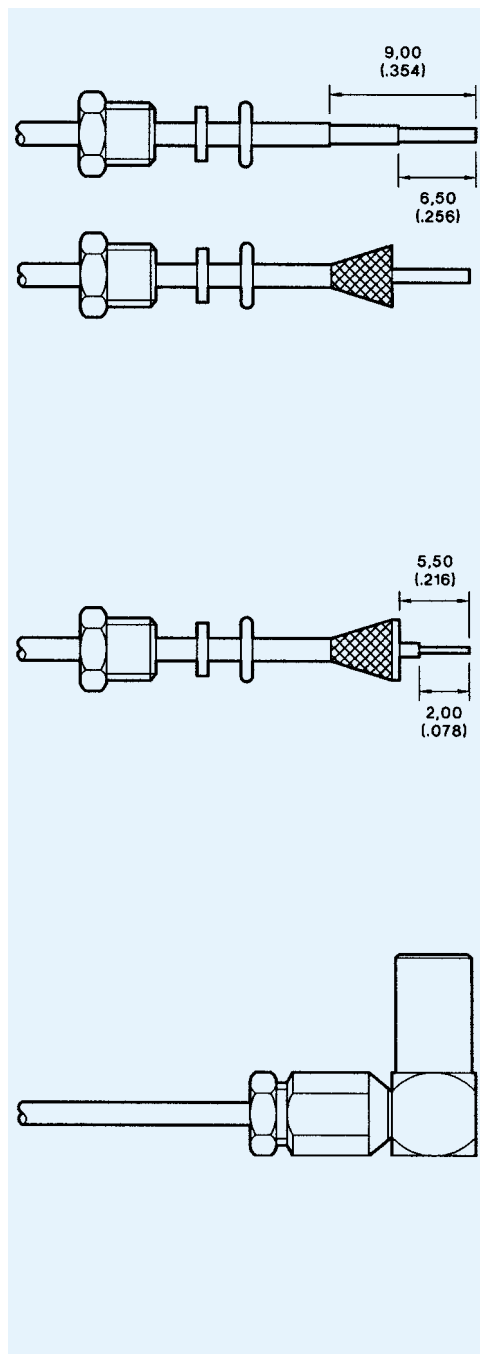
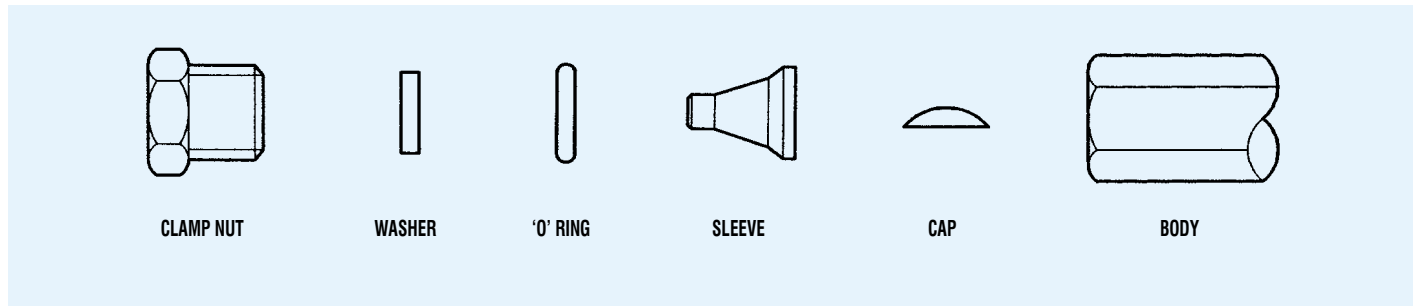
8. Fit insulator over center conductor.

9. Place a solder preform, made from 0,26 - 0,31 (.010 - .012) dia. (28 swg) multi-core solder in rear of contact on center conductor. Heat to make solder connection ensuring shoulder of contact is flush against rear insulator. Do not allow solder to protrude outside spill hole.

10. Fit front insulator if not part of body. Slide 'O' ring forward to trap braid around sleeve.

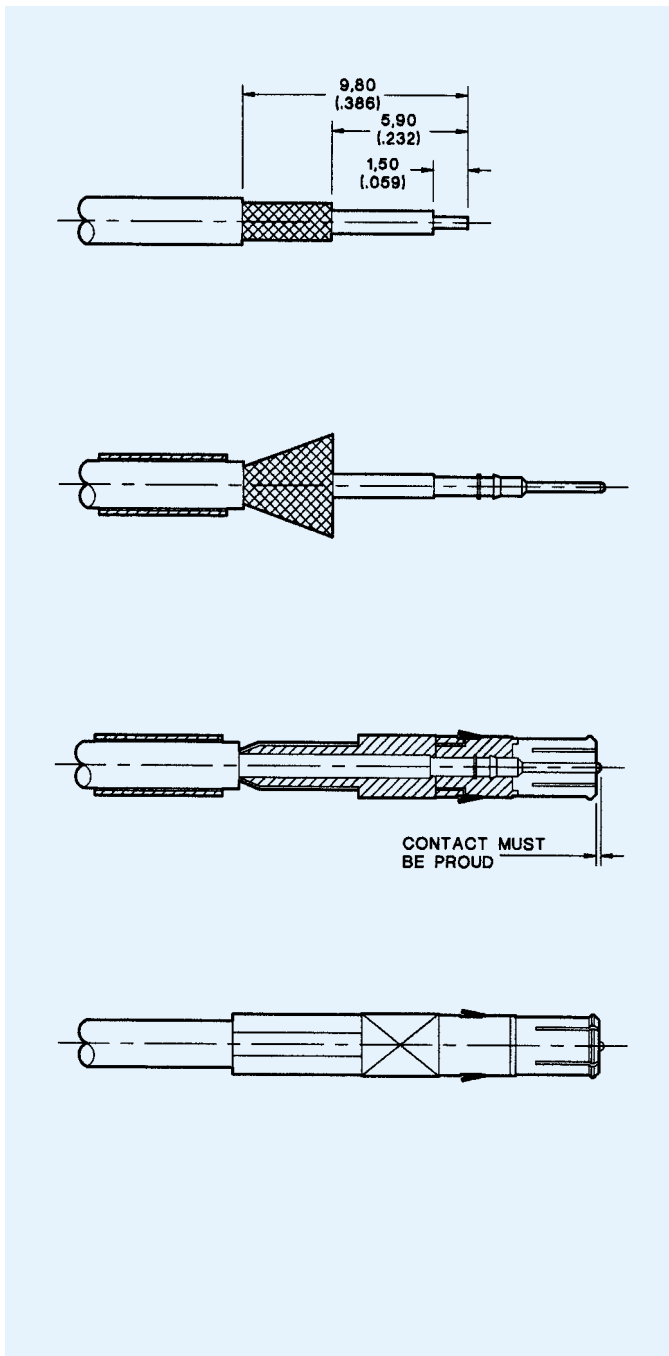
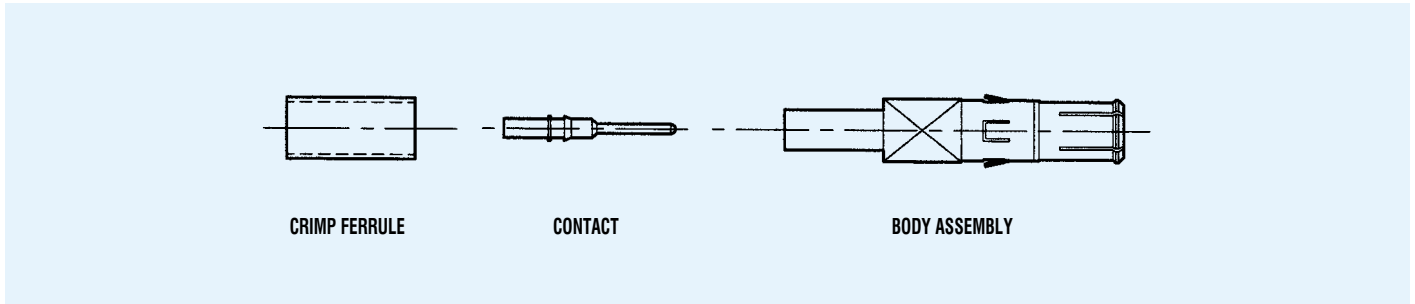
11. Thread on body and tighten clamp nut to 1.02 Nm (9 in. lbs.).

BBAI-1221 SMB Right Angle Connectors, Clamp Type for Braided Cable



- Slide clamp nut, washer and 'O' ring over cable.
- Trim cable to dimensions shown being careful not to nick the braid.
- Thumb braid out radially at right angles to cable dielectric.
- Slide sleeve over dielectric and under braid until sleeve is flush with braid.
N.B. When using cables with inflexible jackets it is permissible to make two 3,17 (.125) longitudinal slits in the outer jacket.
- Trim braid flush with flange of sleeve.
- Trim back dielectric to dimension shown.
- Tin center conductor (DO NOT OVER TIN).
- Slide 'O' ring forward to trap braid around sleeve.
- Thread into rear body and tighten clamp nut to 1,02 Nm (9 in. lbs.).
- Center conductor will extend into contact slot. Using a small soldering iron solder center conductor onto contact.
- Locate the cap in rear of body and dimple or lightly punch to ensure it is locked in position (recommended tool is a flat punch).

BBAI-1228 MPC Straight Connectors, Crimp Type for Braided Cable



1. Trim cable to dimensions shown being careful not to nick or damage braids or center conductor. Twist center conductor filaments together.

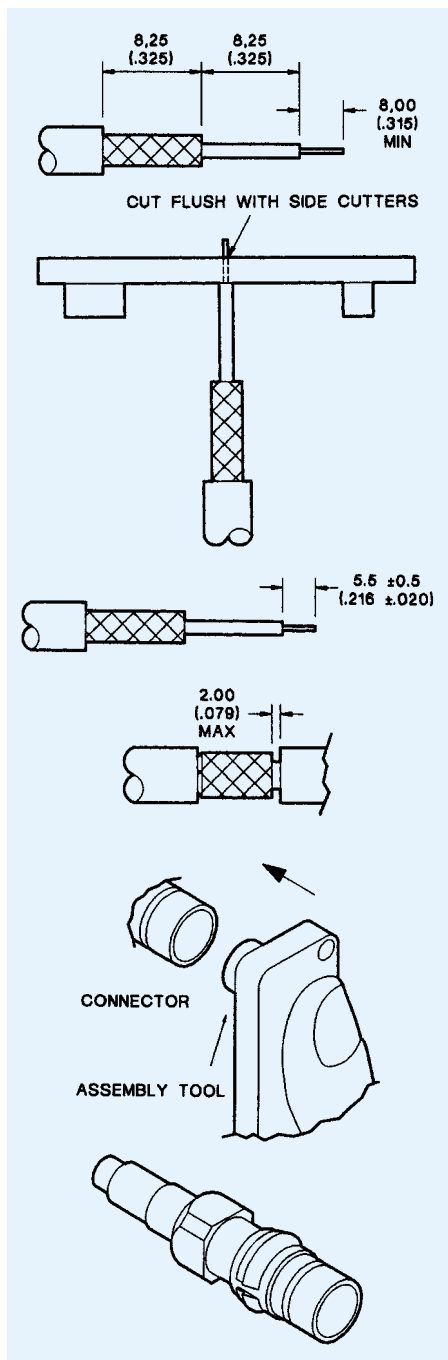
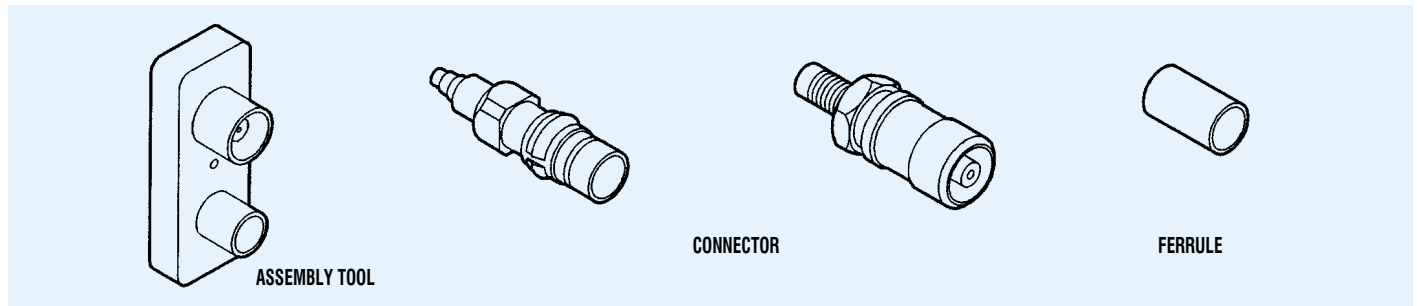
2. Slide ferrule over cable. Slide contact over center conductor and crimp using ITT Cannon Tool CT120090-53 and Positioner 077350-1044. Flare braids as shown.

3. Slide rear end of body assembly over contact and cable and under braids until contact butts inside insulator, with full contact radius just protruding from front of insert, as shown.

4. Slide ferrule over braids until it butts against insert square flange and crimp using ITT Cannon Tool T1025/- and die set T1025/3.

Assy I

BBAI-1238 SMZ QT™ Connectors for Braided Cable



1. Prepare cable, using a suitable stripping, tool to the dimensions shown being careful not to damage the braid, dielectric or inner conductor.

NOTE: Do not attempt to mate unterminated connectors.

2. Trim center conductor to dimensions shown by inserting conductor through the hole in the center of the assembly tool and trimming, with sharp side cutters, flush with the face of the tool. DIMENSIONS CAN BE CHECKED USING THE TEMPLATE ON THE REAR FACE OF THE ASSEMBLY TOOL.

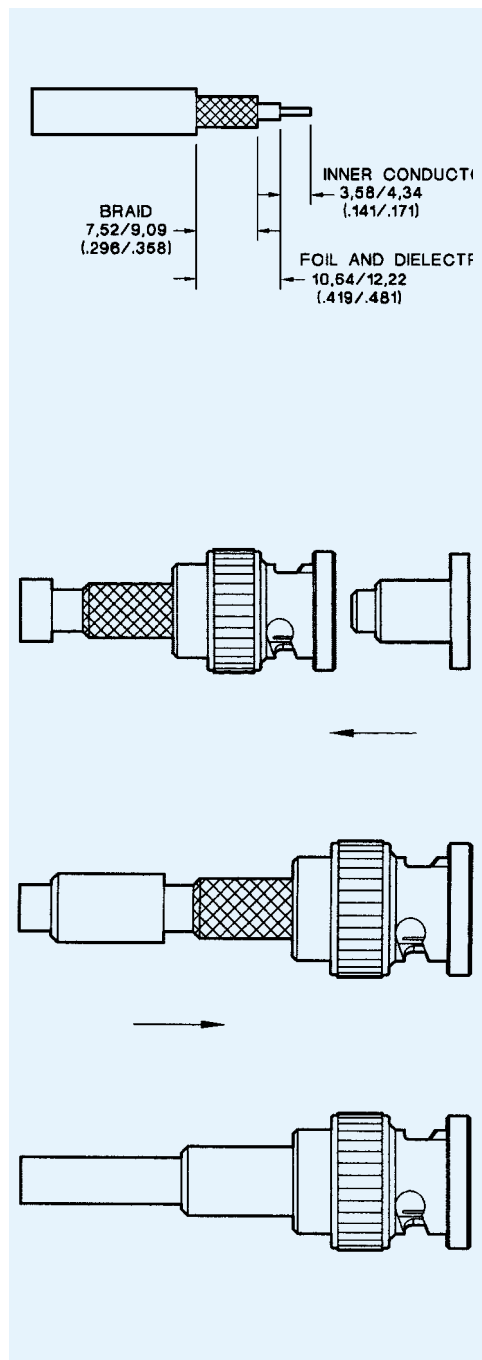
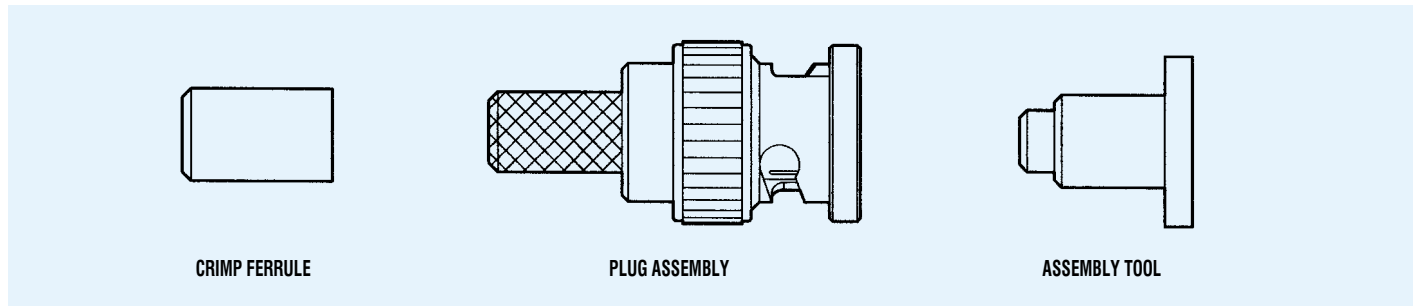
3. ENSURE THAT THE INNER CONDUCTOR IS STRAIGHT. Slide the crimp ferrule over the cable sheath. Fit the connector body onto the cable so that the rear body slides between the dielectric and the braid (gently twisting and rocking the connector body to spread the braid will help). Care must be taken to ensure that no strands of braid are trapped under the body. A small gap [2,00 (.079) maximum] should be evident between braid and face of body.

4. Support cable/connector in one hand. Press home insulator using assembly tool provided, using the larger for the DDF jack and the smaller for the Posilock plug.

5. Slide the crimp ferrule forward, over the braid, until it butts up against the rear of the connector. Crimp using ITT Cannon crimp tool fitted with a suitable die set (see table).

| Cable | Die Size |
|----------|-------------|
| BT2003 | 6,81 (.268) |
| BT3002 | 4,52 (.178) |
| TZC75024 | 4,52 (.178) |

BBAI-1243 QT™ 75Ω BNC Plug for Braided Cable



1. Prepare cable using a suitable stripping tool to the dimensions shown, being careful not to damage the braid, dielectric, foil or inner conductor.

NOTE: Do not attempt to mate unterminated connectors.

2. ENSURE THAT THE INNER CONDUCTOR IS STRAIGHT.
After removal of the assembly tool from the crimp barrel (if fitted), slide crimp ferrule over the cable sheath. Fit the plug assembly onto the cable so that the crimp barrel slides between the dielectric/foil and the braid (gently twisting and rocking the plug assembly to spread the braid will help). Care must be taken to ensure that no strands of braid are trapped under the body. The cable must be inserted until the dielectric can be felt butting against the rear insulator.

3. Supporting the cable and plug assembly in one hand, press the front insulator fully home using the assembly tool provided. A light pull on the cable will confirm the captivation of the center conductor.

4. Slide the ferrule over braid until it butts up to the back of the connector. Crimp in position using an ITT Cannon Crimp Tool and suitable die set (See table).

Alternative method, using combined assembly/crimp tool

Load the connector assembly into the combined assembly/crimp tool (see table) making sure that the center pin is aligned with the hole in the dielectric bushing and the ferrule aligned in the die. Close tool handles until ratchet releases. Allow tool handles to return to the open position and remove crimped connector assembly.

| Cable | Cap Color | Cable Code | Die Size | Combined Assembly/ Crimp Tool Part Number |
|---------------|------------|------------|-------------|--|
| 735A | Red | 9019 | 4,52 (.178) | 050-000-0030020 |
| 734 | Dark Blue | 9029 | 6,48 (.255) | 050-000-0030040 |
| M17/29-RG59/U | Light Blue | 9039 | 6,48 (.255) | 050-000-0030040 |
| 1694A | Black | 9049 | 7,72 (.304) | 050-000-0030010 |

Torque Wrenches

| Jaw Size | Torque Nm (In. ozs.) | Part Number (USA) | Part Number (UK) |
|-------------|-------------------------|-------------------|------------------|
| 5,54 (.218) | 0,42 - 0,49 (60 - 70) | 050-000-0854080 | T0854/8/A |
| 5,54 (.218) | 0,64 - 0,71 (90 - 100) | 050-000-2854080 | T0854/8/C |
| 5,94 (.234) | 0,42 - 0,49 (60 - 70) | 050-000-0854090 | T0854/9/A |
| 5,94 (.234) | 0,64 - 0,71 (90 - 100) | 050-000-2854090 | T0854/9/C |
| 6,35 (.250) | 0,56 - 0,64 (80 - 90) | 050-000-1854100 | T0854/10/K |
| 7,92 (.312) | 0,99 - 1,06 (140 - 150) | 050-000-4854120 | T0854/M8/E |

This is not the entire range of Torque Wrenches. Contact Sales Department for details of other styles.

Crimp Tools and Die Sets

| Description | Part Number (USA) | Part Number (UK) |
|---|-------------------|----------------------|
| Crimp Tool without Die Set | 050-000-0000000 | T1025/- |
| Die Set for Cables RG178/U, 196/U | 050-000-0290000* | K29263 *2,67 (.105) |
| Die Set for Cables RG174/U, 316/U | 050-000-0290000* | K29263 * 3,25 (.128) |
| Die Set for Cable RG142/U | 050-000-0291000** | K29265 5,41 (.213) |
| Die Set for Cable RD316 | 050-000-0292000 | T1025/9 3,84 (.151) |
| Die Set for Cables 2001, 3002, TZC75024 | | T1025/5 4,52 (.178) |
| Die Set for Cable 2002 | | T1025/6 5,18 (.204) |
| Die Set for Cable 2003 | | T1025/8 6,81 (.268) |

This is not the entire range of Crimp Tools. Contact Sales Department for details of other styles.

| | A/F Dimension |
|------------------|---|
| * 3 way die set | 2,67 (.105) 3,25 (.128) 4,52 (.178) |
| ** 2 way die set | 3,25 (.128) 5,41 (.213) |

SMA Tools

| Description | Part Number |
|---|-----------------|
| Universal Assembly Jig | T1848 |
| Insulator Insertion Tool (Plugs) | T2508 |
| Insulator Insertion Tool (Jacks) | T2509 |
| Circlip Pliers | T0557/1 |
| Center Conductor Pointing Tool for 3,58 (.141) Semi-Rigid Cable | T2297 |
| Solderless Connector Compression Tool | 050-000-0130000 |

SMZ Tools

| Description | Part Number |
|--|-------------|
| Center Contact Crimp Tool for SMZ Connectors | T4519 |
| Assembly Jig for Straight SMZ | T2887/A |
| Assembly Jig for Right Angle SMZ Connectors | T2921 |
| Stripping Tool for 2001, 2002 & 2003 Cables | T4555 |
| Stripping Tool for 3002 Cable | T4809 |
| HDC Combination Extractor Tool | T4825 |
| Extractor Tool 65A | T4653 |

QT™-BNC Assembly/Crimp Tools

| For Cable Number | Part Number |
|-----------------------|-----------------|
| Beldon 1694A | 050-000-0030010 |
| 735A (AT&T) | 050-000-0030020 |
| 734 and M17/29-RG59/U | 050-000-0030040 |

What do you mean, "Impedance"?

In every job speciality there are certain words and phrases used by the "insiders" which after a time become almost a language unique to that speciality. Radio frequency (RF) and microwave technology is a typical example of that condition.

The following pages provide some explanations, in an attempt to clarify some of the terms that are commonly used by engineers and sales staff at ITT Cannon.

The list is not comprehensive, but highlights many of the expressions commonly used. Should you have any comments or additions please contact us. Feedback will be appreciated.

1.0/2.3 - A miniature connector in both 50 and 75 Ω versions used for communications and instrumentation. 75 Ω now popular in telecommunications.

1.6/5.6 - A 75 Ω connector used extensively in telecommunication systems.

Anti-cocking - A mechanism to prevent a connector from mis-aligning.

Attenuation - Decrease in power due to resistance or mismatch in transmission line.

Back Mounted - When applied to a coaxial connector it is that connector mounted from the rear of a panel with the fixing nut on the outside.

Bandwidth - Is the distance between two frequencies over which a RF or microwave device is intended to work.

Between Series Adaptor - An adaptor used to connect two different generic types of connector.

Blind mate - Connectors which may be mated when out of view owing to their float mount facility.

BMA - A blind mate connector capable of working to 18 GHz; this range is covered by MIL spec style BMA.

BMB™ - A blind mate connector capable of working to 18 GHz. Not compatible with BMA.

BNC - Bayonet Nut Connector. Probably the most commonly used coaxial connector in professional electronics.

Braid - A weave of metal strands used as an electrical shield for an insulated conductor or group of conductors.

BS9210 - The generic British Standard specification covering coaxial connectors.

BT - British Telecom. Designation given to cable and connectors specified by this telecom operator.

Bulkhead mount - The type of connector fitted to a chassis using a single cut-out hole.

Cable retention - The mechanism that joins the connector to the cable.

Cable retention force - The axial force which a connector/cable join can withstand.

Captive - A component such as a contact which is held firmly in position.

Characteristic Impedance - That impedance at which the transmission line is intended to work. A change from the characteristic impedance along its length will cause mismatch and loss of power.

Clamp - The holding of a cable by use of a screw thread action.

Closed entry contact - A female contact which is designed to prevent insertion of a contact larger than that specified.

CMM - Self-aligning microminiature blind mate connectors with non-butting interface

Coaxial Cable - A transmission line where the one conductor is concentric inside another; often abbreviated to 'coax'.

Coaxial termination - A resistive element used to end a coaxial line in its characteristic impedance.

Coaxial terminator - A device for terminating coaxial cable to a PCB or bulkhead (purely a mechanical device and should not be confused with coaxial termination)

Coaxitube - Trade name for Precision Tube Inc.'s semi-rigid cable.

Conhex - Trade name covering SMB and SMC, both in 50 Ohm and 75 Ohm impedances (Discontinued).

Connector durability - The number of times a connector can be physically mated and still maintain its specified performance.

Contact resistance - The measurement of the DC electrical resistance between a pair of mated contacts. Usually specified as being measured after a given number of mating cycles.

Corona - A discharge of electricity caused by the ionisation of the air around a conductor just prior to total breakdown or flashover.

Crimp - The action of distorting a metal tube to give intimate contact with a conductor; a good crimp should be gas tight and not be impacted by environmental change.

Crimp dies - The tool inserts which determine the shape of the distortion to create a consistently good crimp.

Crimp tool - The tool which holds crimp dies to apply the necessary force.

Cross talk - The amount of signal which may be transferred from one signal carrying line to an adjacent line.

Cut off frequency - The frequency at which the loss exceeds a predetermined level.

dB - Abbreviation for Decibel.

DDF - Digital Distribution Frame. Used in telecommunication exchanges.

Decibel (dB) - A unit of measurement of RF power loss.

Dielectric - The insulating medium which holds the center conductor concentric within the connector or cable.

Dielectric constant - The electrical value of the dielectric which determines the impedance in cables or connectors with constant diameters.

Dielectric withstanding voltage - The maximum voltage that a dielectric material can withstand without failure.

Direct solder - A common method of terminating connectors to semi-rigid cable by soldering the cable jacket to the connector.

Discontinuity - A dramatic change in characteristic impedance which gives rise to a reflected wave.

Dissipation - The unused or lost energy in a system e.g. heat.

Distortion - An unwanted change in a signal wave form.

Dummy load - A device connected to the end of a transmission line to absorb transmitted power and prevent reflected energy.

Dust cap - A mechanical device attached to the mating face of an unmated connector to prevent ingress of contaminants and provide protection against mechanical damage.

Duty factor - The way of deriving the average power.

Electromagnetic compatibility (EMC) - The ability of a device to operate within its intended environment without being effected by or generating electromagnetic interference (EMI).

EMI - Electro-magnetic interference (created by the field force surrounding a transmission line carrying RF power)

Engagement and separation forces - The forces required to mate and unmate a pair of connectors. The forces are usually specified as a max & min for each action.

Environmentally sealed - A connector that is provided with seals or other devices to prevent ingress of dust, moisture or other contaminants whilst mated which might impair performance.

Flexible cable - A coaxial cable where the outer conductor is flexible (usually braided).

Flexit - A flexible cable from ITT Cannon which has similar properties to semi-rigid.

Float mount - A mounting mechanism that allows the connector to move enabling compensation for axial and radial misalignment.

Fret corrosion - The increase in speed of oxidation created by two materials in intimate contact and subject to vibration.

Gang mounted - The mounting of multiple connectors on a single panel.

Gigahertz (GHz) - A measure of frequency representing 1 billion Hertz (cycles per second).

HDC - High Density Connector. A variant of SMZ connector.

Hermetic seal - The fixed half of a connector which is sealed against the passage of gas from one side of a bulkhead to another in the mated or unmated condition.

Impedance - See "Characteristic impedance".

In-series adaptor - An adaptor which enables the connection of two connectors of the same generic type.

Insertion loss - The loss of power due to a particular component in a transmission line (e.g. cable)

Insulation resistance - The electrical resistance between two conductors separated by an insulating medium.

Inter modulation - The mixing of two or more frequencies which are not intended to mix.

Interface - The two surfaces of a connector which come into intimate contact when the two halves are mated.

Inter-series adaptor - See "Between Series Adaptor".

Isolation - The measure of interaction between two or more transmission lines.

Jack - One half of a mating pair of connectors. The jack interface normally goes inside the plug interface.

Line stretcher - Alternative name for Phase Adjuster.

MCX - A miniature connector with a size between the SMB & SSMB.

Mean power - The mean value of the rate at which energy is transmitted from one place to another.

Micro strip - A Transmission line consisting of a flat conductor on a dielectric above a single ground plane. (The ground plane is frequently a metalised face of the dielectric).

Microwave - Very short electromagnetic waves. Frequency range above 1 GHz.

MIL-C-39012 - The generic specification covering USA military coaxial connectors.

MIL-C-17 - The generic Mil spec covering coaxial cables.

Mismatch - The condition in which the impedance of the source and load are not the same. This reduces power transfer and causes reflections.

Mounting plan - The design of the PCB or panel cut-out used to mount the connector.

MPC Coax - Microminiature coaxial connectors for mobile telephone or similar applications.

N Connector - This was the first true microwave connector capable of working to 18GHz, initially designed for test applications.

Nanohex - Trade name covering SSMB & SSMC. (Discontinued).

Noise - An external electromagnetic signal which interferes with the desired signal.

Non-captive - A component such as a contact which does not have a retention feature.

Ohm - A measure of DC resistance or RF impedance represented by Ω .

Panel mount - The type of connector fitted to a chassis using a 2 or 4 hole flange mounting.

Passivation - This is a surface treatment applied primarily to stainless steel. The process removes contaminating iron particles and produces a passive surface.

PCB - Printed Circuit Board.

Peak power - Is the maximum power which may be handled by a connector or cable.

Phase adjuster - A device to change the electrical length and therefore the relative phase of a microwave signal. Sometimes referred to as a Line Stretcher.

Plug - One half of a mating pair of connectors. The plug interface normally goes outside the jack interface.

Posi-Lock - A positive locking device by means of a latching sleeve. This prevents accidental disconnection of connector.

POSNS - Abbreviation for "positions".

Press-in mount - A connector which is mounted into a panel using a knurled body.

PTFE - Abbreviation of polytetrafluorethylene. This is the most commonly used dielectric (insulator) used in professional coaxial connectors.

Push-on - See "Slide-on".

Push-Pull - The mating engagement of latch sleeve connectors preventing accidental disengagement.

PWB - Printed Wiring Board.

QPL - Qualified Parts List. Parts approved to MIL-C-39012 specification.

QT™ - A range of connectors developed by ITT Cannon giving Quick Termination and therefore reduced installation cost.

Receptacle - A term used to describe a connector usually bulkhead or PCB mounted.

Return loss - A reason for losing RF energy due to signals being reflected due to a mismatch in a transmission line.

RF - An abbreviation for Radio Frequency.

RFI - An abbreviation for Radio Frequency Interference. (Electronic Pollution).

RF leakage - The RF power lost from a transmission line or device. Measured in dB.

RG - The traditional prefix for MIL. spec. coaxial cables.

Screw Lock - An alternative locking mechanism to prevent accidental disconnection of connectors.

Screw-on - The mating action of connectors which are joined using a screw thread. e.g. SMC.

Sealflex 2™ - An ITT Cannon trade name for a flexible microwave cable assembly which has a performance similar to semi-rigid cable.

Semi-rigid cable - A coaxial cable where the outer conductor is a solid metal tube.

SHV - A high voltage coax connector.

SIS™ - ITT Cannon range of blind-mate slide-on connectors.

Skin effect - The tendency of alternating currents to flow near to the surface of a conductor; this increases resistance and becomes more marked the higher the frequency.

Slide-on - The mating action of connectors which push together using low force. Also known as blind mate. e.g. BMB.

SMA - A microwave connector with normal operating frequency of 18GHz (some have been extended to 22GHz).

SMB - A snap together miniature coaxial connector normally restricted to 4 GHz.

SMC - A miniature coaxial connector of the same size as SMB but secured by means of a threaded coupling nut.

SMD - Sometimes used as an abbreviation for slide-on variants of SMB. This is a misnomer, the more common use is for Surface Mount Device.

SMS - Rack and panel slide-on connectors with the same line size as SMA. These are covered by MIL. spec. BMB.

SMZ - A 75 Ω snap-on connector previously known as 75 Ω Conhex. Also known as Type 43.

Snap-on - A term used to describe the mating action of SMB and SSMB connectors.

Solderless SMA - An SMA connector that can be connected to semi-rigid cable by compressing the inner body rather than by soldering. (sometimes referred to as semi-rigid 'crimp' connectors).

SSIS™ - ITT Cannon range of microminiature blind-mate slide-on connectors.

SSMA - A miniature version of the SMA. This range has a theoretical frequency capability of 40 GHz, however has limitations regarding its physical strength.

SSMB - A micro-miniature snap-on coupling coaxial connector (smaller SMB).

SSMC - A micro-miniature threaded coupling coaxial connector (smaller SMC).

Stripline - A method of building a microwave circuit. The circuitry is sandwiched between 2 ground planes. Sometimes referred to as Tri-plate.

Teflon - Du Pont trade name for PTFE.

TEM transmission line - A high performance cable assembly.

Tensile strength - The greatest force a device can withstand without tearing or pulling apart. This is frequently the method of determining the effectiveness of a crimp.

TEP 1E - A British Telecom Equipment Practice which uses connectors based on the ITT Cannon 75 Ω Conhex. Referred to as "SMZ-Type 43".

Teplack - A method of rapid connect/disconnect on Digital Distribution Frames.

TNC - Thread Nut Connector same size as BNC; the only obvious difference is the coupling nut.

Tri-plate - See Stripline.

Type 43 connectors - The SMZ coaxial connector used extensively in telecommunication systems.

UG symbol - Used to indicate a connector made to US government spec.

UHF - An old style coaxial connector, recently used on larger portable cellular radio receivers as the antenna connector.

Voltage standing wave ratio (VSWR) - A way of expressing the resultant loss of power as a result of signal reflections due to discontinuity.

RF Coaxial Connectors

Old to New Part Number Cross Reference

| Previous Part Number | New Part Number | Previous Part Number | New Part Number | Previous Part Number | New Part Number |
|----------------------|-----------------|----------------------|-----------------|----------------------|-----------------|
| 050-051-0000 | B50-051-0000 | 051-024-3875 | B51-024-9399 | 051-424-3196 | A51-424-3196 |
| 050-051-9019 | B50-051-9019 | 051-024-9399 | B51-024-9399 | 051-427-3196 | A51-427-3196 |
| 050-053-0000 | B50-053-0000 | 051-027-3875 | 051-027-9399 | 051-428-3188 | A51-428-3188 |
| 050-053-9019 | B50-053-9019 | 051-051-0000 | B51-351-0000 | 051-428-3196 | A51-428-3196 |
| 050-328-3188 | B50-328-3188 | 051-051-9029 | B51-051-9029 | 051-428-3875 | A51-428-3875 |
| 050-624-9142 | A50-624-9142 | 051-051-9999 | B51-351-0000 | 051-428-9399 | A51-428-3875 |
| 050-624-9188 | A50-624-9188 | 051-053-0000 | B51-053-0000 | 051-443-9009 | 051-443-0000 |
| 050-624-9399 | A50-624-9875 | 051-053-0349 | B51-053-0000 | 051-451-0000 | A51-451-0000 |
| 050-628-9399 | 050-628-9875 | 051-053-9029 | B51-053-9029 | 051-451-9019 | A51-451-0000 |
| 050-645-4504 | A50-645-4504 | 051-124-3187 | 051-124-9309 | 051-453-0000 | A51-453-0000 |
| 050-645-4520 | A50-645-4520 | 051-127-3187 | 051-127-9309 | 051-453-9019 | A51-453-0000 |
| 050-645-4526 | A50-645-4526 | 051-151-0000 | 051-151-9019 | 051-911-9072 | 051-C11-9072 |
| 050-645-4528 | A50-645-4528 | 051-153-0000 | 051-153-9089 | 051-923-9188 | 051-C23-9188 |
| 050-645-4540 | A50-645-4540 | 051-153-9069 | 051-153-9089 | 051-928-9019 | 051-C28-9019 |
| 050-645-4575 | A50-645-4575 | 051-311-3188 | B51-011-0000 | 051-928-9029 | 051-C28-9029 |
| 051-007-0000 | B51-007-0000 | 051-328-0029 | B51-328-3188 | 051-951-9039 | 051-C51-9039 |
| 051-007-3187 | B51-007-0000 | 051-328-0059 | B51-328-9399 | 055-607-2203 | 055-607-9173 |
| 051-007-3196 | B51-007-3196 | 051-328-3188 | B51-328-3188 | 055-607-3702 | 055-607-9172 |
| 051-011-0000 | B51-011-0000 | 051-328-3196 | B51-328-3196 | B51-451-0000 | 051-451-0000 |
| 051-024-0000 | B51-024-0000 | 051-328-3875 | B51-328-9399 | C51-428-3196 | A51-428-3196 |
| 051-024-3196 | B51-024-3196 | 051-328-9399 | B51-328-9399 | | |

QPL Part Number Cross Reference

| US Government Designation | ITT Cannon Part Number | Cat. | Cable Types | US Government Designation | ITT Cannon Part Number | Cat. | Cable Types |
|---------------------------|------------------------|------|-----------------------|---------------------------|------------------------|------|-----------------------|
| M39012/55-3006 | 050-607-5506899 | A | RG178/U | M39012/73B0009 | 050-324-7309229 | B | RG174/U, 316/U |
| M39012/55-3007 | 050-607-5507899 | A | RG174/U, 316/U | M39012/74-0003 | 050-308-7403229 | A | RG178/U |
| M39012/55-3009 | 050-607-5509899 | A | RG58/U, 142/U, 223/U | M39012/74-0004 | 050-308-7404229 | A | RG174/U, 179/U, 316/U |
| M39012/55-3026 | 050-624-5526899 | C | RG174/U, 316/U | M39012/74B0009 | 050-325-7409229 | B | RG174/U, 316/U |
| M39012/55-3028 | 050-624-5528899 | C | RG142/U, 223/U | M39012/75-0003 | 050-311-7503229 | A | RG178/U |
| M39012/55-3107 | 050-607-5517899 | A | RG174/U, 316/U | M39012/75-0004 | 050-311-7504229 | A | RG174/U, 179/U, 316/U |
| M39012/55-3126 | 050-624-5566899 | C | RG174/U, 316/U | M39012/75B0008 | 050-328-7508229 | B | RG178/U |
| M39012/55-3128 | 050-624-5568899 | C | RG142/U, 223/U | M39012/75B0009 | 050-328-7509229 | B | RG174/U, 316/U |
| M39012/55B3019 | 050-624-5519899 | | | M39012/76-0003 | 050-310-7603229 | A | RG178/U |
| M39012/56-3007 | 050-611-5607899 | A | RG174/U, 316/U | M39012/76-0004 | 050-310-7604229 | A | RG174/U, 179/U, 316/U |
| M39012/56-3026 | 050-628-5626899 | C | RG174/U, 316/U | M39012/76B0009 | 050-327-7609229 | B | RG174/U, 316/U |
| M39012/56-3028 | 050-628-5628899 | C | RG142/U, 223/U | M39012/77-0001 | 050-043-7701229 | | |
| M39012/56-3029 | 050-628-5629899 | C | RG58/U, 303/U | M39012/79B3002 | 050-607-7902899 | B | RG402/U |
| M39012/56-3126 | 050-628-5666899 | C | RG174/U, 316/U | M39012/79B3101 | 050-607-7911899 | B | RG405/U |
| M39012/59-3009 | 050-610-5909899 | A | RG58/U, 142/U, 223/U | M39012/80B3003 | 055-611-8003899 | B | RG405/U |
| M39012/59-3026 | 050-627-5926899 | C | RG174/U, 316/U | M39012/80-3006 | 055-611-8006899 | E | RG402/U |
| M39012/59-3028 | 050-627-5928899 | C | RG142/U, 223/U | M39012/83-3009 | 050-610-8369899 | A | RG405/U |
| M39012/67-0003 | 051-307-6703229 | A | RG178/U | M39012/92-3001 | 055-607-9201899 | | RG402/U |
| M39012/67-0004 | 051-307-6704229 | A | RG174/U, 179/U, 316/U | M39012/93-3001 | 050-651-9301319 | | |
| M39012/67B0009 | 051-324-6709229 | B | RG174/U, 316/U | M39012/93-3002 | 050-651-9302319 | | |
| M39012/69-0003 | 051-311-6903229 | A | RG178/U | M39012/94-3001 | 050-653-9401319 | | |
| M39012/69-0004 | 051-311-6904229 | A | RG174/U, 179/U, 316/U | M39012/94-3002 | 050-653-9402319 | | |
| M39012/69B0009 | 051-328-6909229 | B | RG174/U, 316/U | M39012/95-0001 | 051-051-9501229 | | |
| M39012/70-0003 | 051-310-7003229 | A | RG178/U | M39012/95-0002 | 051-051-9502229 | | |
| M39012/71-0001 | 051-043-7101229 | | | M39012/95-0003 | 051-051-9503229 | | |
| M39012/73-0003 | 050-307-7303229 | A | RG178/U | M39012/96-0001 | 051-053-9601229 | | |
| M39012/73-0004 | 050-307-7304229 | A | RG174/U, 179/U, 316/U | M39012/96-0002 | 051-053-9602229 | | |
| M39012/73B0008 | 050-324-7308229 | B | RG178/U | M39012/96-0003 | 051-053-9603229 | | |