



ASSEMBLY, INSTALLATION, AND REMOVAL

MINI COAX CONTACTS AND MODULES

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ASSEMBLY, INSTALLATION, AND REMOVAL

MINI COAX CONTACTS AND MODULES

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RECEIVER CONTACT ASSEMBLY

PART # 610104114*- RG316

**Please note: Due to the difficult nature of this contact's assembly process, this contact is available for purchase as a patchcord only. These instructions are made available for customers that may have inventory of this contact purchased prior to this purchase requirement. VPC provides a full range of wiring services for all VPC contacts and most vendor connectors, including assembly of patchcord and cable harnesses. Assembly by VPC ensures accuracy and efficiency. For more information on patchcord creation, [CLICK HERE](#) to explore our Patchcord Designer online tool.*

TOOLS REQUIRED

Hex Crimp Tool (includes locator & die), Part # 910101115

Inspection Depth Gauge Kit, Part # 910121156

1. Strip wire (**Figure A**).
2. Slide the crimp ring onto the wire (**Figure B**).
3. Turn braid back over outer insulation (**Figure C**).
4. Solder center conductor wire into center conductor contact and clean (**Figure D**). Care must be taken not to deform or damage the center conductor tip. VPC solders per IPC'S J-STD-001.
NOTE: Center conductor contact and dielectric must touch.
5. Slide shield conductor over center conductor until the center conductor stops in the Teflon® shield (**Figure E**).
NOTE: Shield conductor and Teflon insulator are supplied as an assembly.

Continued on next page...

Dimensions shown: [millimeters]
inches

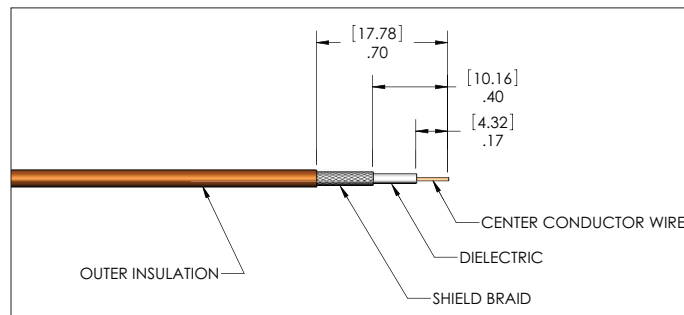


Figure A.

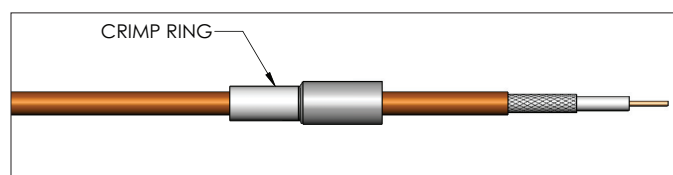


Figure B.

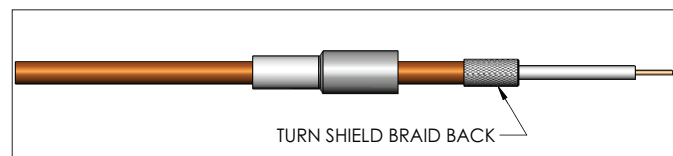


Figure C.

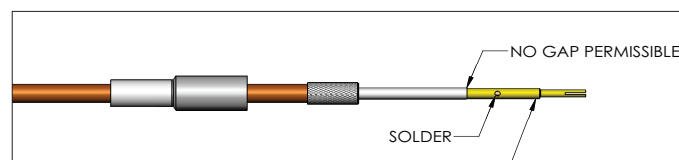


Figure D.

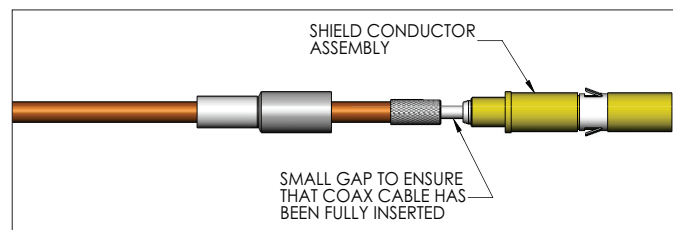


Figure E.

RECEIVER CONTACT ASSEMBLY

PART # 610104114- RG316 (CONT'D)

TOOLS REQUIRED

Hex Crimp Tool (includes locator & die), Part # 910101115

Inspection Depth Gauge Kit, Part # 910121156

6. Turn the braid back toward the front of the shield conductor (**Figure F**). If the braid extends beyond the shoulder, trim the braid back to the face of the shoulder.
7. Slide the crimp ring into position over the braid and crimp using the crimp tool in hex position “A” for the larger end first and in hex position “C” for the small section of the crimp ring (**Figures G & H**). To ensure proper crimp position, slide the shield conductor over the the locator pin. The wire must not pull on the center conductor during crimping (for example, long wire hanging down to floor).
8. Calibrate the inspection depth gauge (**Figure I**), by loosening the dial face retaining screw until the dial face allows itself to be turned. Insert the calibration plug (incl. with kit), into the base of the gauge. While keeping constant pressure on the plug, adjust the dial by rotating until the pointer points to “0.” Re-tighten the retaining screw. Adjust locating markers to “40” and “80.”
9. Check for .06”[1.52 mm] dimensions with the inspection depth gauge. Push the contact onto the pressure plunger of the gauge. After attaining a positive stop and while holding firm pressure (**Do not apply pressure to the plunger on the top of the dial. The plunger is spring-loaded and is self-seated**), read the dial on the gauge. If the pointer measures between “40” and “80,” proceed to the next step. If the pointer is out of range, repeat steps 1-8.



WARNING: IF CONDUCTING ANY TYPE OF TESTING ON COAX CONTACTS/ PATCHCORDS (MICRO, MINI, TWINAX, ETC.), DO NOT USE PROBES OR ANY INSTRUMENT, NOT APPROVED BY VPC, THAT MAKES DIRECT CONTACT WITH THE CENTER CONDUCTOR. CONTACT WITH OR MANIPULATION OF THE CENTER CONDUCTOR MAY CAUSE PRODUCT DAMAGE THAT WILL IMPEDE PERFORMANCE AND VOID ANY PRODUCT WARRANTY.

Dimensions shown: [millimeters]
inches

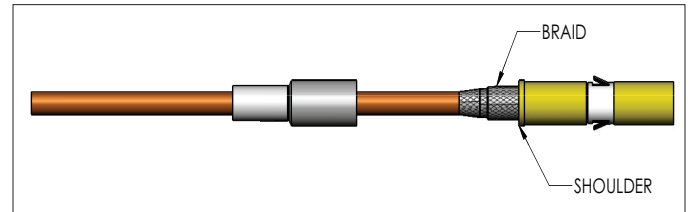


Figure F.

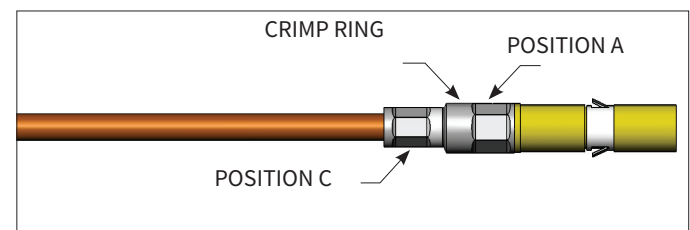


Figure G.

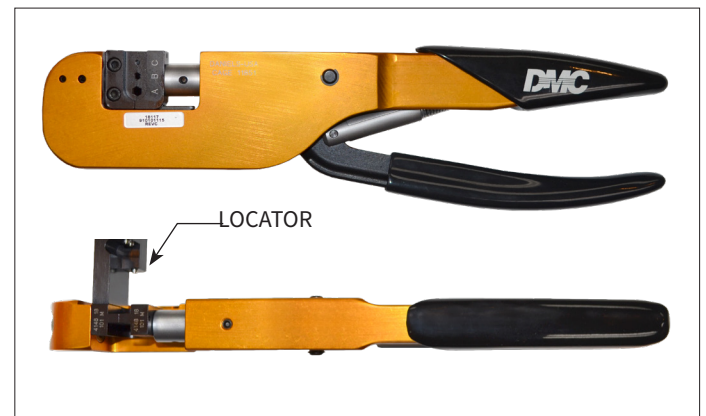


Figure H. Hex Crimp Tool

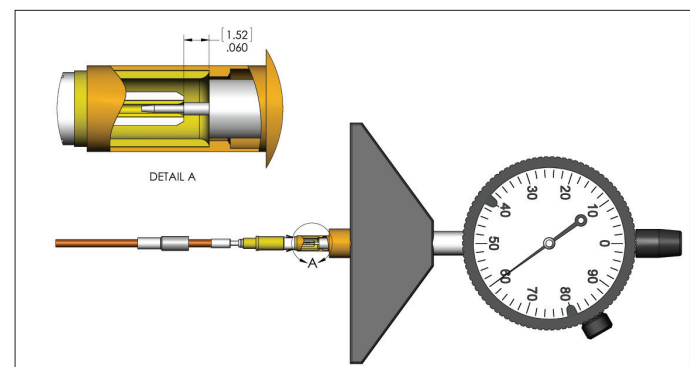


Figure I.

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RECEIVER CONTACT ASSEMBLY

PART # 610104141- RG178

TOOLS REQUIRED

Hex Crimp Tool (includes locator & die), Part # 910101115

Inspection Depth Gauge Kit, Part # 910121156

Dimensions shown: [millimeters]
inches

1. Strip wire (**Figure A**).
 2. Slide the crimp ring onto the wire (**Figure B**).
 3. Turn braid back over outer insulation (**Figure C**).
 4. Slide the spacer tube over the dielectric to edge of the braid (**Figure D**). Use heat gun to shrink spacer to hold onto dielectric.
 5. Tin wire and solder into center conductor and clean (**Figure E**). Center conductor and dielectric must touch. Solder should be visible in the hole. VPC solders per IPC'S J-STD-001.
 6. Slide shield conductor over center conductor until the center conductor stops in the Teflon® shield. To ensure that the coax cable has been fully inserted into the contact, a gap should be observed between the shielding and the contact after achieving a positive stop (**Figure F**).
- NOTE: Shield conductor and Teflon insulator are supplied as an assembly.*

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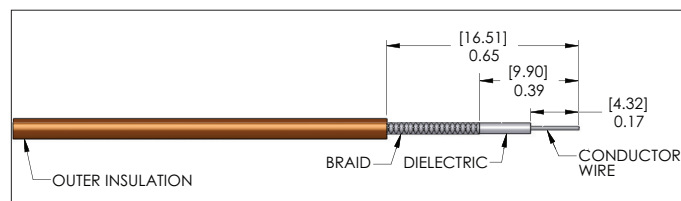


Figure A.

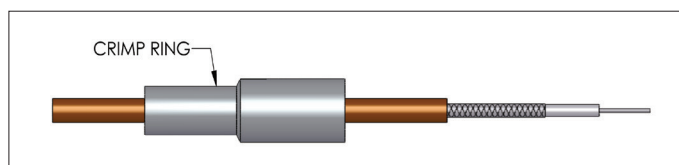


Figure B.

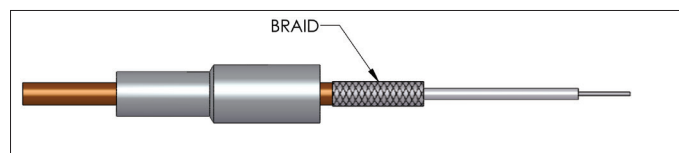


Figure C.

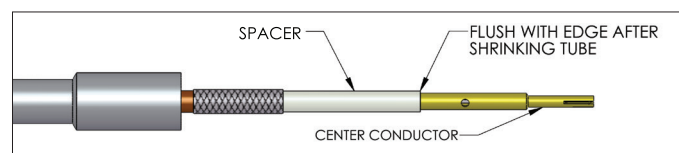


Figure D.

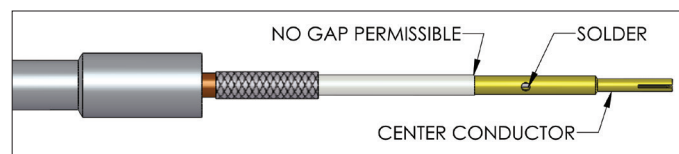


Figure E.

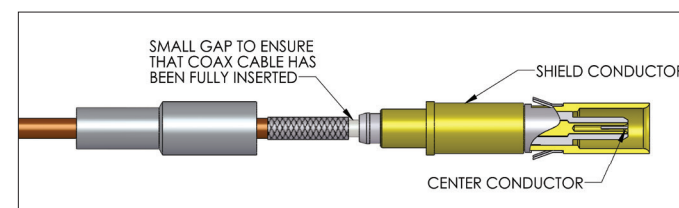


Figure F.

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RECEIVER CONTACT ASSEMBLY

PART # 610104141- RG178 (CONT'D)

TOOLS REQUIRED

Hex Crimp Tool (includes locator & die), Part # 910101115

Inspection Depth Gauge Kit, Part # 910121156

6. Turn the braid back toward the front of the shield conductor (**Figure F**). If the braid extends beyond the shoulder, trim the braid back to the face of the shoulder.
7. Slide the crimp ring into position over the braid and crimp using the crimp tool in hex position "A" for the larger end first and in hex position "C" for the small section of the crimp ring (**Figures G & H**). To ensure proper crimp position, slide the shield conductor over the the locator pin. The wire must not pull on the center conductor during crimping (for example, long wire hanging down to floor).
8. Calibrate the inspection depth gauge (**Figure I**), by loosening the dial face retaining screw until the dial face allows itself to be turned. Insert the calibration plug (incl. with kit), into the base of the gauge. While keeping constant pressure on the plug, adjust the dial by rotating until the pointer points to "0." Re-tighten the retaining screw. Adjust locating markers to "40" and "80."
9. Check for .06"[1.52 mm] dimensions with the inspection depth gauge. Push the contact onto the pressure plunger of the gauge. After attaining a positive stop and while holding firm pressure (**Do not apply pressure to the plunger on the top of the dial. The plunger is spring-loaded and is self-seated**), read the dial on the gauge. If the pointer measures between "40" and "80," proceed to the next step. If the pointer is out of range, repeat steps 1-8.



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Dimensions shown: [millimeters]
inches

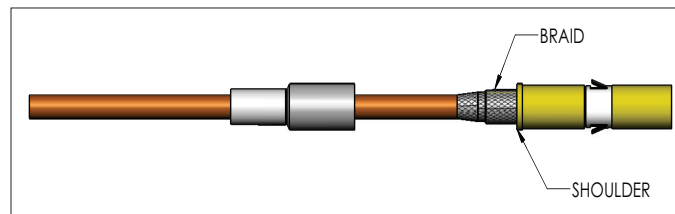


Figure F.

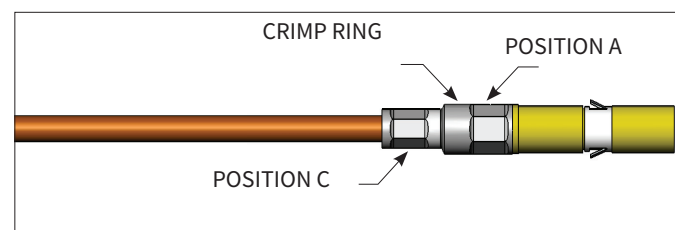


Figure G.

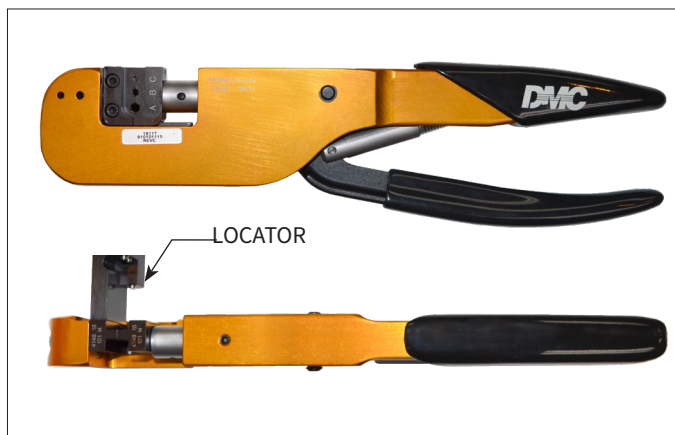


Figure H.

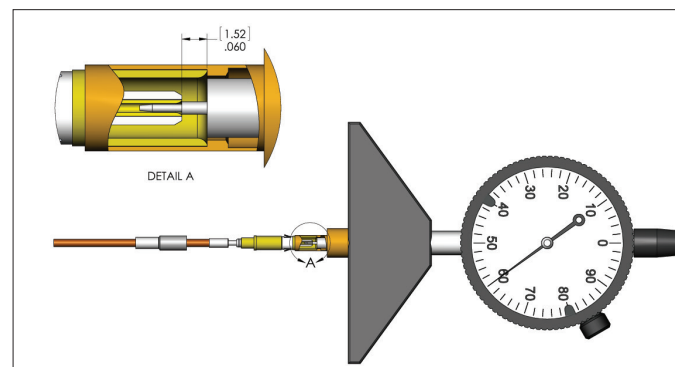


Figure I.

RECEIVER CONTACT ASSEMBLY

PART # 610104149- RG316 DOUBLE SHIELDED

Dimensions shown: [millimeters]
inches

TOOLS REQUIRED

Hex Crimp Tool (includes locator & die), Part # 910101115

Inspection Depth Gauge Kit, Part # 910121156

1. Strip wire (**Figure A**).
2. Slide the crimp ring onto the wire (**Figure B**).
3. Turn both the inner and outer braid back over the outer insulation. Turn the outer braid back and smooth then turn the inner braid back (**Figure B**).
4. Insert the center conductor of the wire into the center conductor contact, solder and clean (**Figure C**). Center conductor contact and dielectric must touch. VPC solders per IPC'S J-STD-001.
5. Slide the shield conductor over the center conductor until the center conductor stops in the Teflon® insulator (**Figure D**).
NOTE: Shield conductor and Teflon insulator are supplied as an assembly.
6. Check to ensure that the center conductor is flush with the Teflon insulator (**Figure E**).

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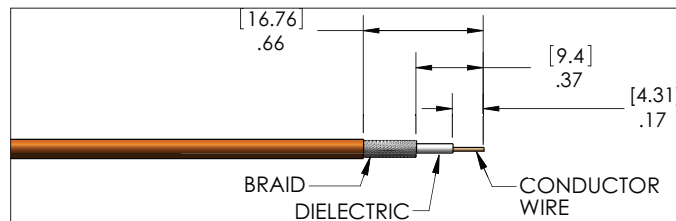


Figure A.

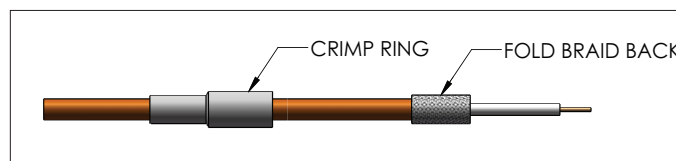


Figure B.

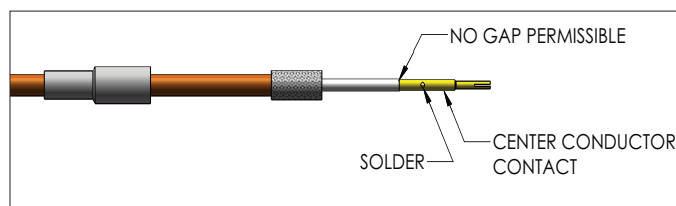


Figure C.

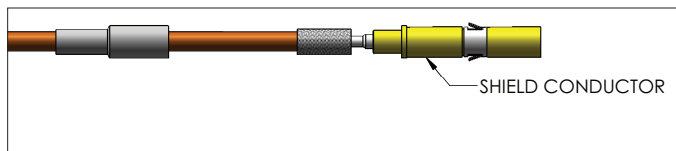


Figure D.

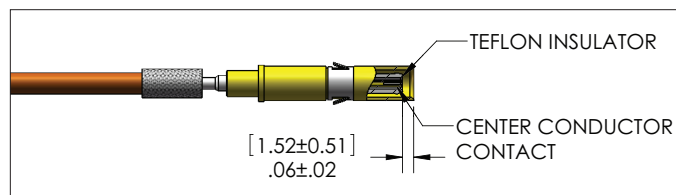


Figure E.

RECEIVER CONTACT ASSEMBLY

PART # 610104149- RG316 DOUBLE SHIELDED

TOOLS REQUIRED

Hex Crimp Tool (includes locator & die), Part # 910101115

Inspection Depth Gauge Kit, Part # 910121156

7. Turn both braids back over the shield conductor (**Figure F**). If the braids extend beyond the shoulder, trim the braids back to the face of the shoulder.
8. Slide the crimp ring over the braids and shield conductor (**Figure G**) and crimp using the Hex Crimp Tool, position "A". To ensure proper crimp position, slide the shield conductor over the dowel pin on the hex crimp tool. The wire must not be allowed to pull on the center conductor during crimping (For example, long wire hanging down to floor).
9. Calibrate the inspection depth gauge (**Figure H**), by loosening the dial face retaining screw until the dial face allows itself to be turned. Insert the calibration plug (incl. with kit), into the base of the gauge. While keeping constant pressure on the plug, adjust the dial by rotating until the pointer points to "0." Re-tighten the retaining screw. Adjust locating markers to "40" and "80."
10. Check for .06"[1.52 mm] dimensions with the inspection depth gauge. Push the contact onto the pressure plunger of the gauge. After attaining a positive stop and while holding firm pressure (**Do not apply pressure to the plunger on the top of the dial. The plunger is spring-loaded and is self-seated**), read the dial on the gauge. If the pointer measures between "40" and "80," proceed to the next step. If the pointer is out of range, repeat steps 1-8 and repeat this step.

Dimensions shown: [millimeters]
inches

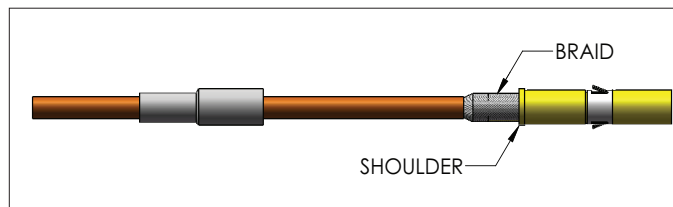


Figure F.

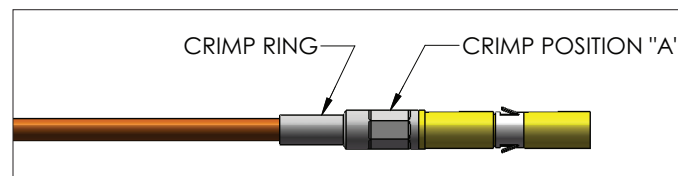


Figure G.

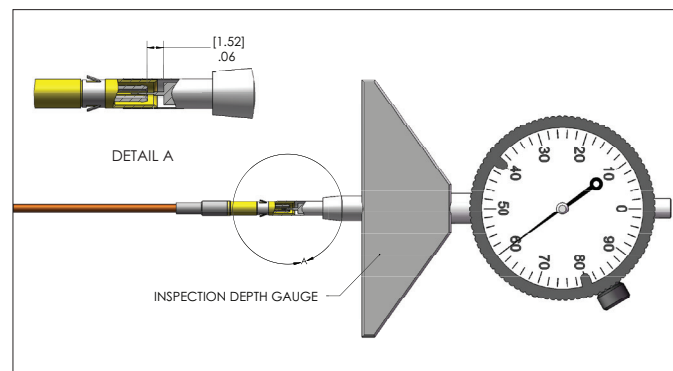


Figure H.



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RECEIVER CONTACT ASSEMBLY

PART # 610104154- RG58

TOOLS REQUIRED

Hex Crimp Tool (includes locator & die), Part # 910101115
 Inspection Depth Gauge Kit, Part # 910121156

1. Strip outer jacket (**Figure A**).
2. Cut $\frac{3}{16}$ tubing 1.75" long and slide over jacket (**Figure A**).
3. Slide crimp ring over braid (**Figure B**).
4. Turn braid over crimp ring and cut .125" off dielectric and strip center conductor (**Figure C**).
5. Solder wire into center contact and clean. Make sure contact touches dielectric (**Figure D**). VPC solders per IPC'S J-STD-001.
6. Slide shield assembly over center conductor (**Figure E**). *Make sure the Teflon® in the shield assembly touches wire dielectric.*
7. Turn braid back toward the front of the shield conductor (**Figure F**). If braid extends beyond shoulder, trim back to face of shoulder.
8. Slide the crimp ring into position over braid and crimp using Hex Crimp Tool in position "A" (**Figure G**). To ensure proper crimp position slide shield conductor over dowel pin in the crimp locator. Wire must not be allowed to pull on the center conductor during crimping (example: long wire hanging down to floor).
9. Slide tubing to back of shoulder and shrink into place. Make sure that the tubing does not extend over the shoulder of the shield conductor.
10. It is recommended that the Inspection Depth Gauge be used to verify the .06 +/- .02 dimension (**Figure H**).



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Dimensions shown: [millimeters]
 inches

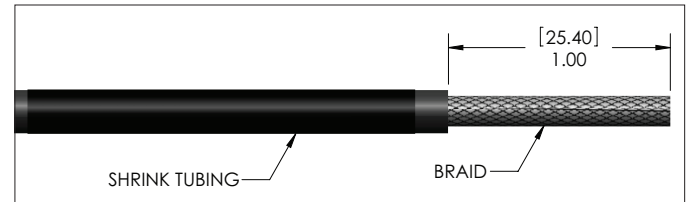


Figure A.



Figure B.

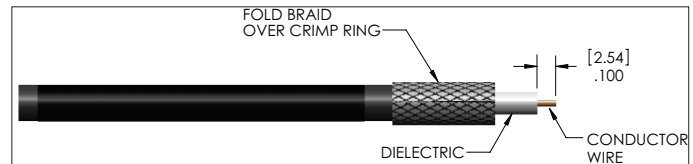


Figure C.

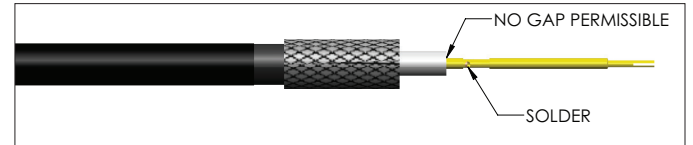


Figure D.



Figure E.



Figure F.

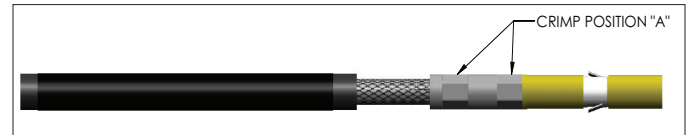


Figure G.



Figure H.

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RECEIVER CONTACT ASSEMBLY

PART # 610104142- RG316 SOLDER SLEEVE

TOOLS REQUIRED

Holding Fixture Kit (includes adapter), Part# 910121144

1. Strip wire (**Figure A**).
2. Straighten the center conductor making sure the stranded center conductor is twisted into its original lay.
3. Tin stranded center conductor with Sn63 solder per QQ-S-571. Use RMA flux per MIL-F-14256 (Alpha #611 or equivalent).
4. Make sure the shield braid is trimmed evenly and no loose strands are extending out across the exposed dielectric or cable jacket.
5. Smooth the braid ends flat against the cable dielectric.
6. Slide the contact over the end of the prepared cable, and carefully push the contact onto the cable until it stops. Rotating the contact slightly during cable insertion will help prevent the braid from catching.
7. Inspect for proper insertion (**Figure B**). The center conductor must be visible through one of the forward inspection windows. The distance from the rear of the contact outer body to the cable jacket insulation should be $0.065''$ [1.65 mm].
8. Install the holding fixture adapter (incl. w/ kit) onto the holding fixture. Insert contact in the adapter side marked "S" for socket, and set-up the dimensions (**Figure C**).
9. Insert the contact/cable assembly into the adapter. Clamp the cable in the holding fixture. The cable must remain fully inserted in the contact and the contact must be fully inserted in the adapter for the adapter to act as a heat sink. The cable must be straight between the contact and the cable clamp.
10. Attach the appropriate reflector to the heating tool. See instruction sheet accompanying heat gun for instructions and safety precautions.
11. Using the holding fixture, position the contact in the heating tool reflector with the forward inspection window centered in the reflector. Continue heating until the small solder preform in the forward inspection window has melted and flowed. The large solder preform in the rear inspection window should have melted and flowed by this time; if it has not, direct hot air at the rear inspection window until it does.
12. If contact is UNDERHEATED, there will be visible remnants of the original shapes of the solder preforms. An underheated contact must be re-heated. If contact is OVERHEATED, solder will wick away from the joint areas, leaving no solder fillets. An overheated contact must be removed and a new contact installed.
13. After the contact has cooled for at least 10 seconds, remove the contact and cable from the holding fixture.
14. Inspect the completed termination for correct assembly. The cable shield must extend into the contact at least as far as the front edge of the rear inspection windows. The center conductor must be visible through one of the forward inspection windows.

Dimensions shown: [millimeters]
inches

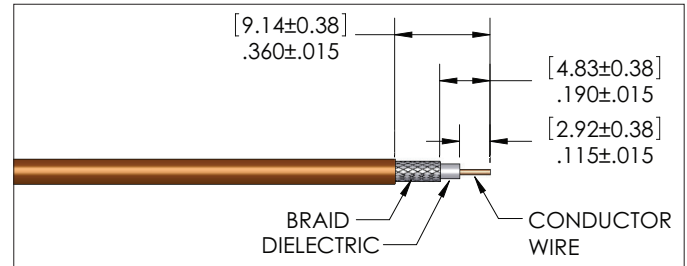


Figure A.

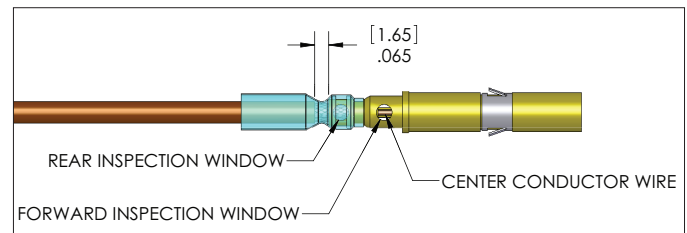


Figure B.

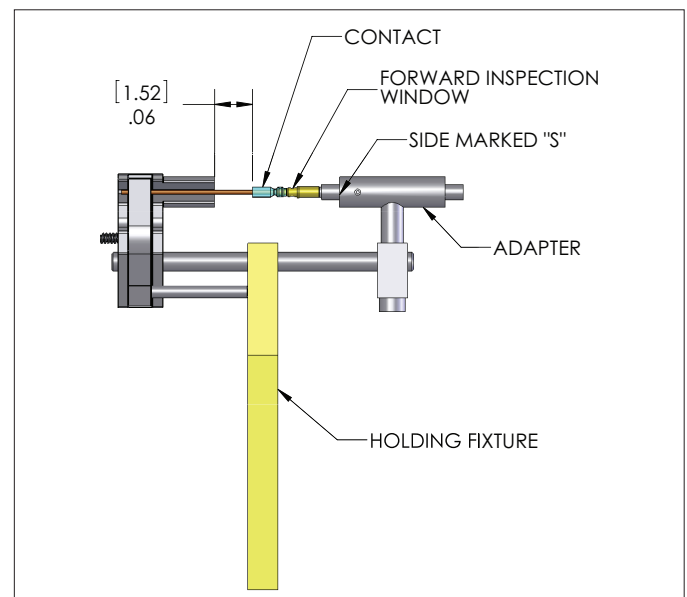


Figure C.

RECEIVER CONTACT ASSEMBLY

PART # 610104142- RG178, JOY CABLE (TYPE 033, 93 OHMS) SOLDER SLEEVE

TOOLS REQUIRED

Holding Fixture Kit (includes adapter), Part# 910121144

1. Strip wire for braid and dielectric (**Figure A**).
2. Turn braid back, smoothing ends flat against cable jacket.
3. Strip for center conductor (**Figure B**).
4. Straighten the center conductor making sure the stranded center conductor is twisted into its original lay.
5. Tin stranded center conductor with Sn63 solder per QQ-S-571. Use RMA flux per MIL-F-14256 (Alpha #611 or equivalent).
6. Fold the center conductor back on itself (**Figure C**).
7. Make sure the shield braid is trimmed evenly and no loose strands are extending out across the exposed dielectric or cable jacket.
8. Smooth the braid ends flat against the cable jacket.
9. Slip the contact over the end of the prepared cable, and carefully push the contact onto the cable until it stops. Rotating the contact slightly during cable insertion will help prevent the braid from catching.
10. Inspect for proper insertion (**Figure D**). The center conductor must be visible through one of the forward inspection windows. The distance from the rear of the contact outer body to the edge of the braid should be 0.015" [0.38 mm].
11. Install the fixture adapter (incl. in kit) into the holding fixture (**Figure E**). Insert a contact in the adapter side marked "S" for socket, and set up dimensions shown(**Figure E**).
12. Insert the contact/cable assembly into the adapter. Clamp the cable in the holding fixture. The cable must remain fully inserted into the contact, and the contact must be fully inserted into the adapter for adapter to correctly function as a heat sink. The cable must be straight between the contact and the cable clamp.
13. With the holding fixture, position the contact in the heating tool reflector with the forward inspection window centered in the reflector. Continue heating until the small solder preform in the forward inspection window has melted and flowed. The large solder preform in the rear inspection window should have melted and flowed by this time; if not, direct hot air at the rear inspection window until it does.
14. If the contact is UNDERHEATED, there will be visible remnants of the original shapes of the solder preforms. An underheated contact must be re-heated.
15. If contact is OVERHEATED, solder will wick away from the joint areas, leaving no solder fillets. An overheated contact must be removed and a new contact installed.
16. After the contact has cooled for at least 10 seconds, remove the contact and cable from the holding fixture.
17. Inspect the completed termination for correct assembly. The cable shield must extend into the contact at least as far as the front edge of the rear inspection windows. The center conductor should be visible through one of the forward inspection windows.

Dimensions shown: [millimeters]
inches

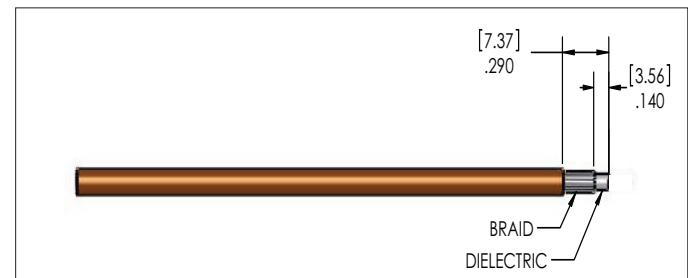


Figure A.

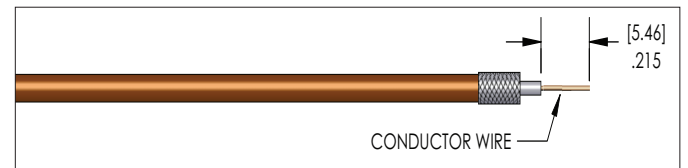


Figure B.

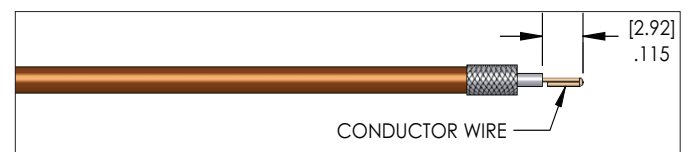


Figure C.

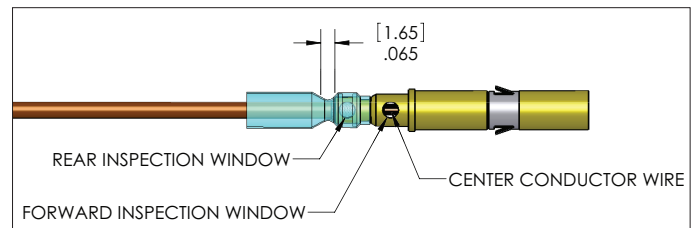


Figure D.

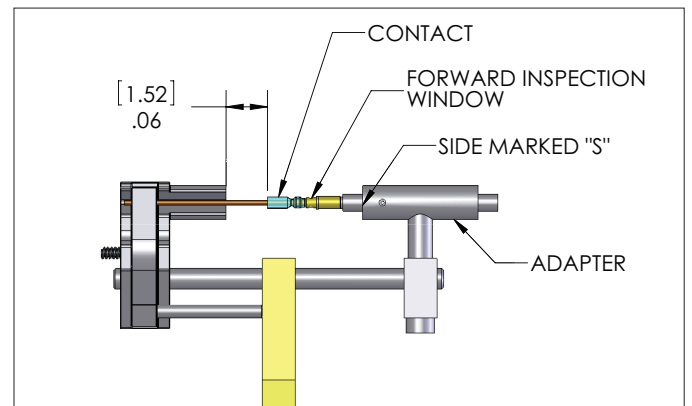


Figure E.

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RECEIVER CONTACT INSTALLATION AND REMOVAL

PART # 510104120, 510104150

TOOLS REQUIRED

Extraction Tool, Part # 910112104
 0.050 " Allen Wrench
 Flat Head Screwdriver
 Phillips Screwdriver (iCon modules)

INSTALLATION

1. Insert the assembled contact into the back (wiring side) of the module. The contact will only install on one side. Do not use force to insert the contact. Using force can cause damage to the contact and/or module.
2. Once in place, pull the wire slightly to ensure that the contact is fully seated.

REMOVAL

1. Remove the module from the receiver frame.
2. Using the 0.050" Allen wrench, remove the module cap screws located at the top, middle and bottom of the module (**Figure B**).
3. Grasp the module halves and apply force in opposite directions, rocking the ends of the module while slightly pulling the module cap away from the mating bottom section. Be sure to open both sides of the module simultaneously, or contacts could be damaged.
4. Place the extraction tool over the contact to be removed/replaced (**Figure C**). Use care to keep the tool perpendicular to the surface of the module, otherwise the tool or contact could be damaged.



DO NOT DEPRESS THE PLUNGER ON THE BACK OF THE EXTRACTION TOOL UNTIL THE TIP OF THE EXTRACTION TOOL HAS FULLY SEATED INTO THE MODULE AND FULLY COMPRESSED THE RETAINING RING TABS ON THE CONTACT.

5. Once the extraction tool is seated and the retaining ring tabs on the contact are compressed, push the plunger. The contact will be pushed out of the rear of the module.
6. For 19 and 76 position modules, do not tighten screws. Insert an ITA contact in positions #2 and #18 or #2A and #18A (for 76 position modules) to ensure proper alignment of the module cap.
7. With the ITA contacts in place, tighten the module cap screws. Do not over-tighten screws; screw torque limit is 13 +/- 1 in-oz.
8. For all other modules, replace the module cap (**Figure A**) using both hands to push the separated halves together. Replace and tighten the module cap screws to a maximum torque of 2 in-lbs [0.23 Nm].

NOTE: The process shown here uses standard/90 series modules. The same process is used for modules from other series.

NOTE: If you are using a hybrid module, you may need to reference the User Manual for the other contact type for extraction instructions.

Dimensions shown: [millimeters]
 inches

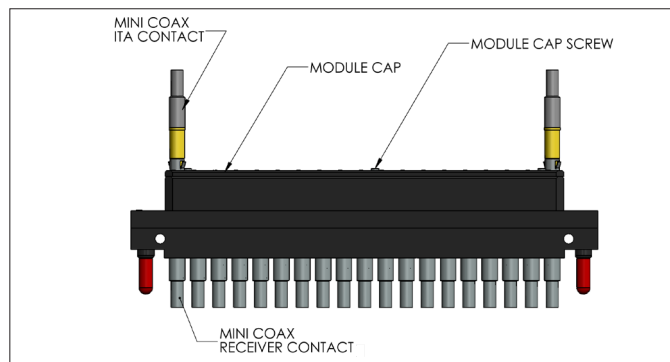


Figure A.

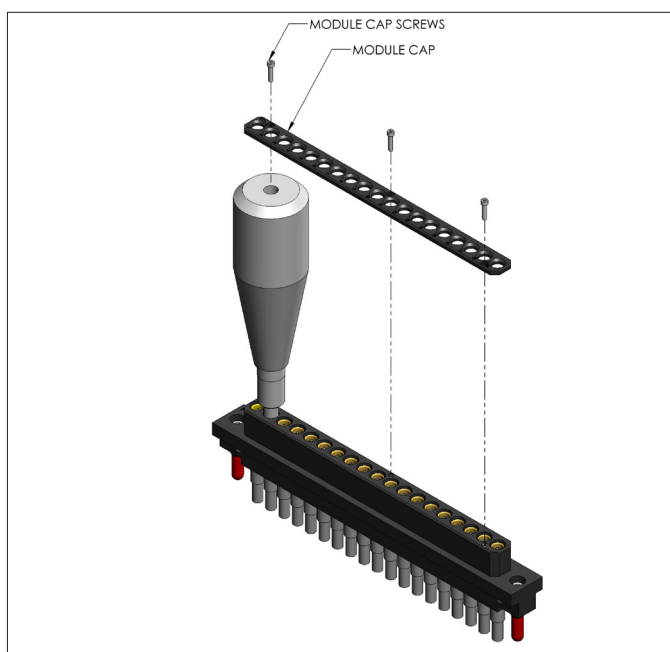


Figure B.

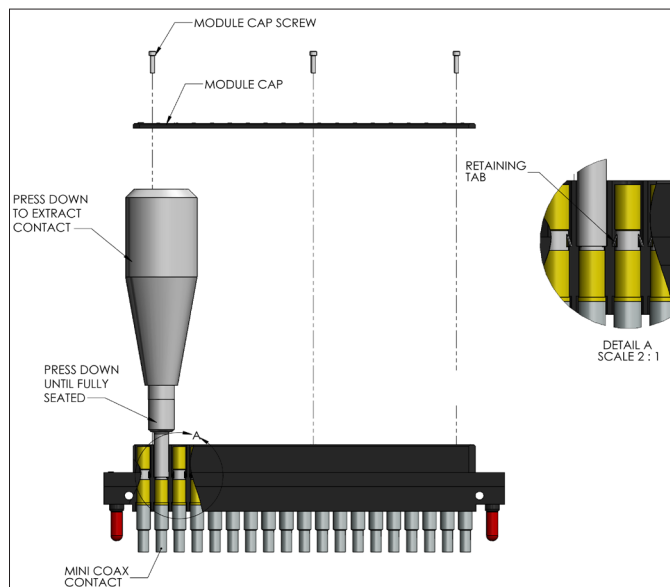


Figure C.

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RECEIVER CONTACT INSTALLATION AND REMOVAL

PART # 510104243, 510104301

TOOLS REQUIRED

Extraction Tool, Part # 910112104

 $\frac{5}{64}$ Allen Wrench

Flat Head Screwdriver

Phillips Screwdriver (iCon modules)

INSTALLATION

1. Insert the assembled contact into the back (wiring side) of the module.
The contact will only install on one side. Do not use force to insert the contact. Using force can cause damage to the contact and/or module.
2. Once in place, pull the wire slightly to ensure that the contact is fully seated.

REMOVAL

1. Use the Allen wrench or Phillips head screwdriver to remove the two 2-56 screws located at the top and bottom of the module (**Figure B**).
2. Grasp the module halves and apply force in opposite directions, rocking the ends of the module while slightly pulling the top of the module away from the bottom section. Be sure to open both sides of the module simultaneously or contacts could be damaged.
3. Place the extraction tool over the contact to be removed/replaced (**Figure C**). Use care to keep the tool perpendicular to the surface of the module, otherwise the tool or contact could be damaged.



DO NOT DEPRESS THE PLUNGER ON THE BACK OF THE EXTRACTION TOOL UNTIL THE TIP OF THE EXTRACTION TOOL HAS FULLY SEATED INTO THE MODULE AND FULLY COMPRESSED THE RETAINING RING TABS ON THE CONTACT.

4. Once the extraction tool is seated and the retaining tab on the contact are compressed, press the tool into the module. The contact will be pushed out of the rear of the module.
5. On the opposite side of the module from the extraction tool, grasp the contact and hold it while removing the extraction tool. This will prevent the contact from being pulled back into the module while the tool is being removed.
6. Replace the module cap using both hands to push the separated halves together. Replace and tighten the module retaining screws to a maximum torque of 1.5 in-lbs [0.16 Nm].

NOTE: The process shown here uses standard/90 series modules. The same process is used for modules from other series.

NOTE: If you are using a hybrid module, you may need to reference the User Manual for the other contact type for extraction instructions.

Dimensions shown: [millimeters]
inches

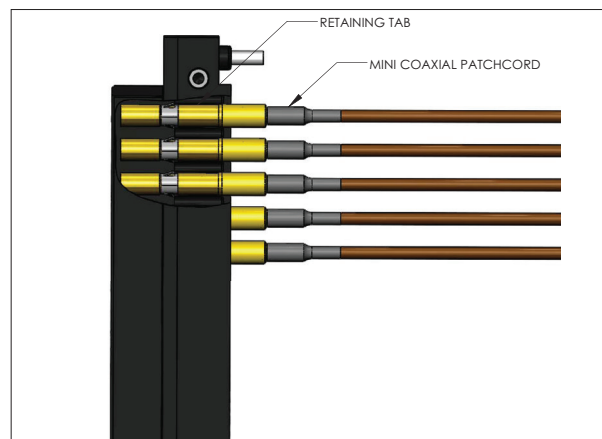


Figure A.

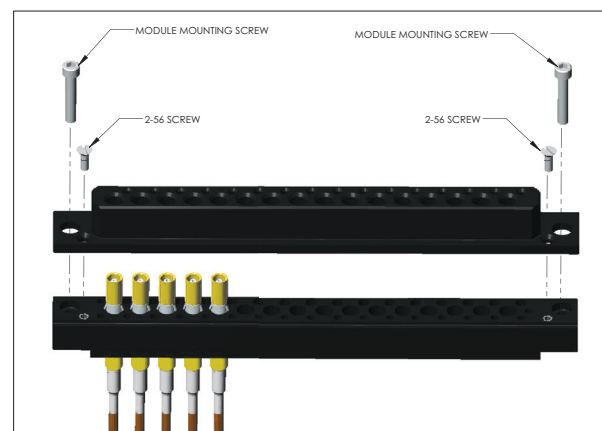


Figure B.

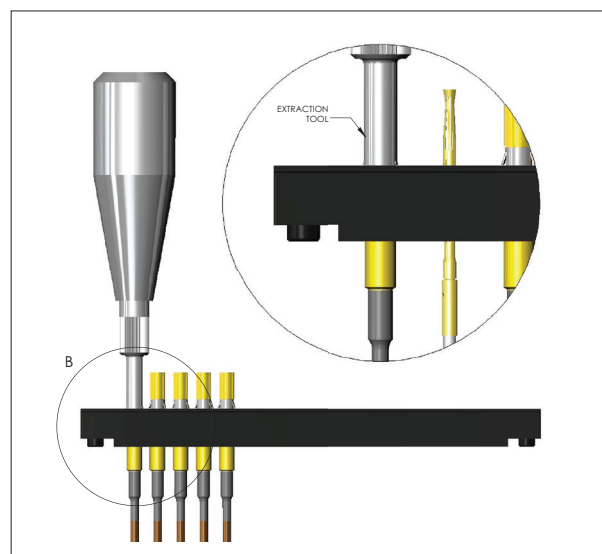


Figure C.

ITA CONTACT ASSEMBLY

PART # 610103115- RG316

Dimensions shown: [millimeters]
inches

TOOLS REQUIRED

Hex Crimp Tool (includes locator & die), Part # 910101115

Inspection Depth Gauge Kit, Part # 910121157

1. Strip wire (**Figure A**).
2. Slide the crimp ring onto the wire (**Figure B**).
3. Solder wire into center conductor and clean (**Figure C**). Center conductor and dielectric must touch. VPC solders per IPC'S J-STD-001.
4. Turn braid back over outer insulation (**Figure D**).
5. Slide the shield over the center conductor tip until it stops. There should be a gap between the Teflon and the folded braid to ensure the center conductor is fully inserted into the contact (**Figure E**).
6. Turn the braid back toward the front of the shield conductor and wrap evenly (**Figure F**). If braid extends beyond shoulder, trim back to face of shoulder.

NOTE: Shield conductor and teflon insulator are supplied as an assembly.

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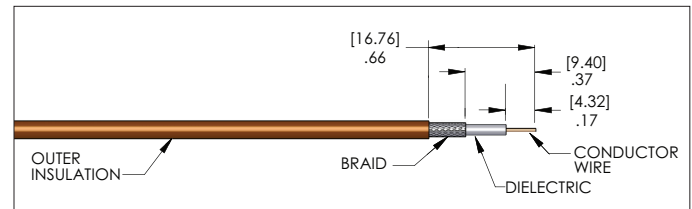


Figure A.

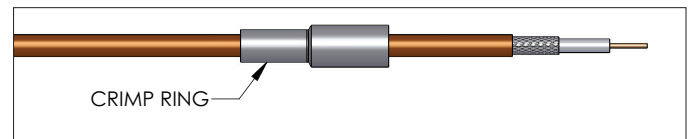


Figure B.

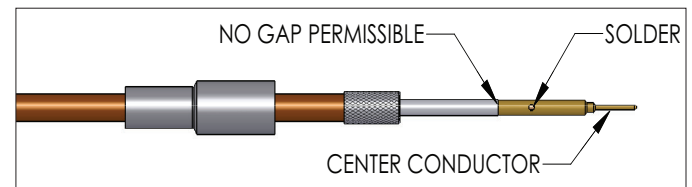


Figure C.

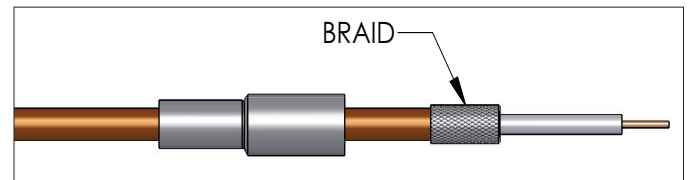


Figure D.

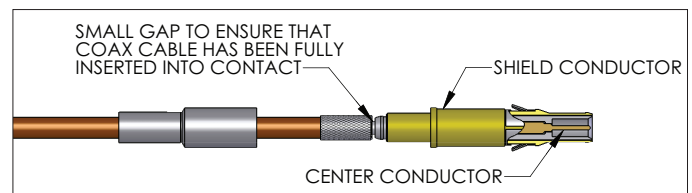


Figure E.

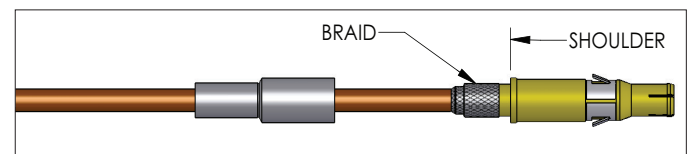


Figure F.

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ITA CONTACT ASSEMBLY

PART # 610103115- RG316

TOOLS REQUIRED

Hex Crimp Tool (includes locator & die), Part # 910101115

Inspection Depth Gauge Kit, Part # 910121157

7. Slide crimp ring into position over the braid (**Figure G**). Do not crimp.
8. Calibrate the Inspection Depth Gauge (**Figure H**) by loosening the dial face retaining screw until the dial face allows itself to be turned. Insert the calibration plug (part of kit) into base of gauge. While keeping constant pressure on the plug, adjust the dial by rotating it such that the pointer points to "0." Re-tighten retaining screw. Adjust locating markers to "20" and "90."
9. Check for .01 [.25 mm] dimension (**Figure I**) with the inspection depth gauge (**Figure H**). Push the contact onto the pressure plunger of the gauge. After attaining a positive stop and while holding firm pressure (**Do not apply pressure to the plunger on the top of the dial. The plunger is spring-loaded and is self-seated**), read the dial on the gauge. If the pointer measures between "20" and "90," go to step 10. If the pointer is out of the range, repeat steps 1-9.
10. To ensure proper crimp position, slide shield conductor over the locator pin (**Figure J**). Ensure insulator is flush with shield (**Figure K**) prior to crimping. Crimp in hex position "A" for the larger end first, and in hex position "B," for the smaller section of the crimp ring.
11. Wire must not be allowed to pull on the center conductor during crimping (for example, long wire hanging down to floor).

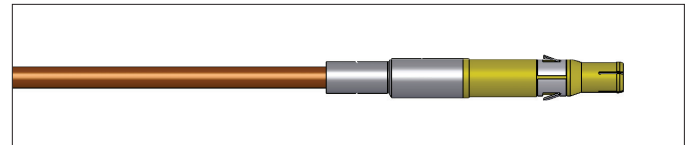


Figure G.

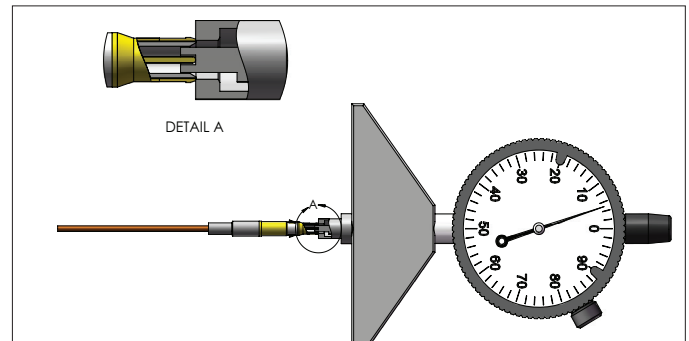


Figure H.

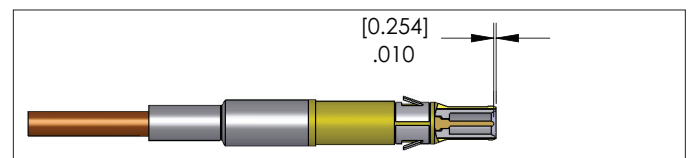


Figure I.

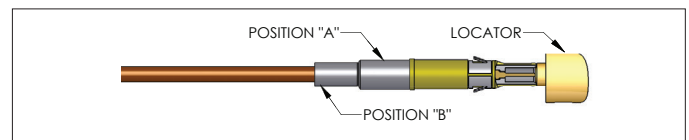


Figure J.

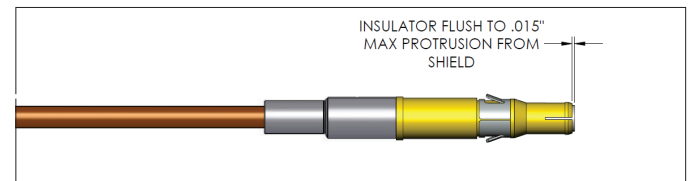


Figure K.



WARNING: IF CONDUCTING ANY TYPE OF TESTING ON COAX CONTACTS/ PATCHCORDS (MICRO, MINI, TWINAX, ETC.), DO NOT USE PROBES OR ANY INSTRUMENT, NOT APPROVED BY VPC, THAT MAKES DIRECT CONTACT WITH THE CENTER CONDUCTOR. CONTACT WITH OR MANIPULATION OF THE CENTER CONDUCTOR MAY CAUSE PRODUCT DAMAGE THAT WILL IMPEDE PERFORMANCE AND VOID ANY PRODUCT WARRANTY.

ITA CONTACT ASSEMBLY

PART # 610103130, 610103157- RG178

TOOLS REQUIRED

Hex Crimp Tool (includes locator & die), Part # 910101115

Inspection Depth Gauge Kit, Part # 910121157

1. Strip wire (**Figure A**).
2. Slide the crimp ring onto the wire (**Figure B**).
3. Turn braid back over outer insulation (**Figure C**).
4. Slide the spacer tube over dielectric to edge of the braid (**Figure D**). Heat spacer tube until spacer shrinks onto dielectric.
Heat spacer tube until spacer shrinks onto dielectric.
5. Slide the center conductor wire into the center conductor contact and solder. Center conductor and dielectric must touch. Clean solder joint (**Figure D**). VPC solders per IPC'S J-STD-001.
6. Slide the shield over the center conductor tip until it stops. There shall be a gap between the Teflon and the folded braid to ensure the center conductor is fully inserted into the contact (**Figure E**).
NOTE: Shield conductor and teflon insulator are supplied as an assembly.
7. Turn braid back over the shield conductor and wrap evenly (**Figure F**). If braid extends beyond shoulder, trim back to face of shoulder.

Continued on next page...

Dimensions shown: [millimeters]
inches

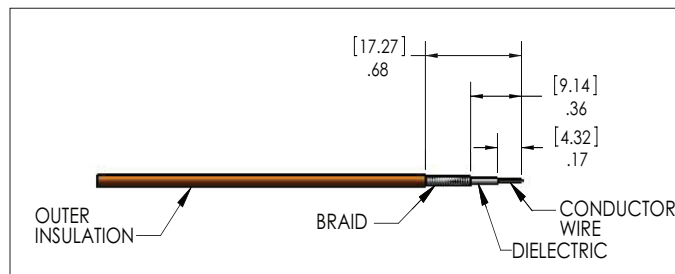


Figure A.

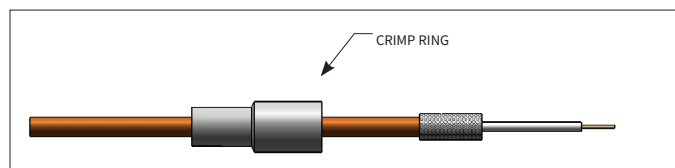


Figure B.

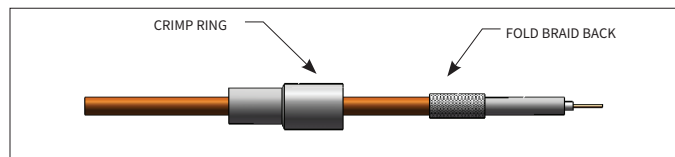


Figure C.

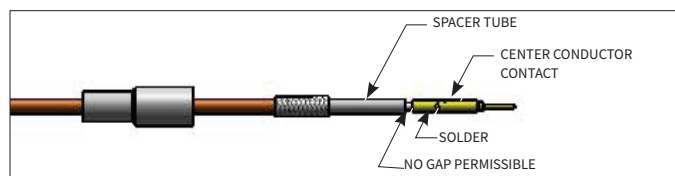


Figure D.

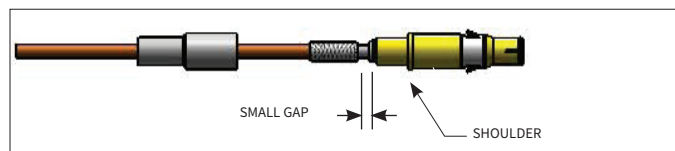


Figure E.

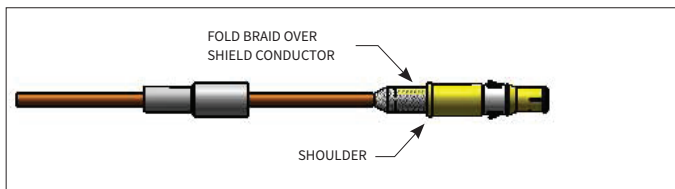


Figure F.

ITA CONTACT ASSEMBLY

PART # 610103130, 610103157- RG178 (CONT'D)

8. Slide crimp ring into position over the braid (**Figure G**). Do not crimp.
9. Calibrate the Inspection Depth Gauge (**Figure H**), by loosening the dial face retaining screw until the dial face allows itself to be turned. Insert the calibration plug (part of kit) into base of gauge. While keeping constant pressure on the plug, adjust the dial by rotating it such that the pointer points to "0." Re-tighten retaining screw. Adjust locating markers to "20" and "90."
10. Check for the .01" [.25 mm] dimension (**Figure J**) with the inspection depth gauge (**Figure H**). Insert contact into the gauge and push contact into collar until contact stops. After attaining a positive stop and while holding firm pressure (**Do not apply pressure to the plunger on the top of the dial. The plunger is spring-loaded and is self-seated**), read the dial on the gauge. If pointer is between the two markers, go to step 11. If the pointer is out of the range of the two markers, repeat steps 1-10.
11. To ensure proper crimp position, slide the shield conductor over the locator pin (**Figure K**). Ensure insulator is flush with shield (**Figure L**) prior to crimping. Crimp using the Hex Crimp Tool (**Figure M**) in hex position "A" for the larger end first, and in hex position "B" for the smaller section of the crimp ring.
12. Wire must not be allowed to pull on the center conductor during crimping (for example, long wire hanging down to floor). Verify that the insulator is flush with shield (**Figure N**).



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Dimensions shown: [millimeters]
inches

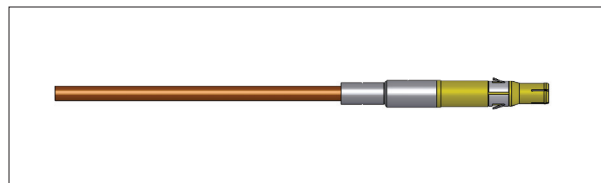


Figure G.

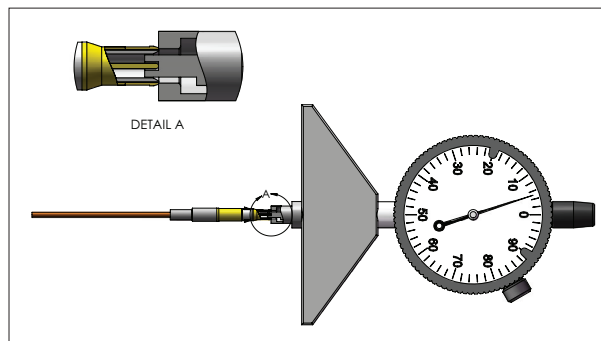


Figure H.

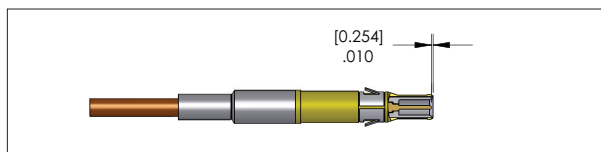


Figure J.

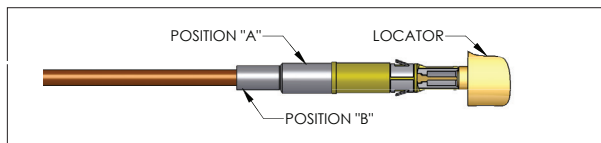


Figure K.

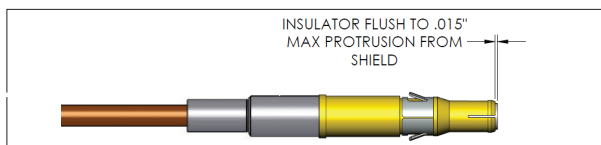


Figure L.

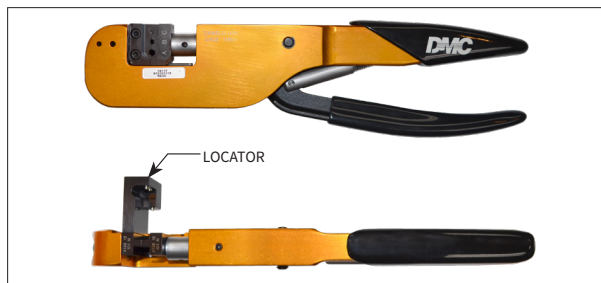


Figure M.

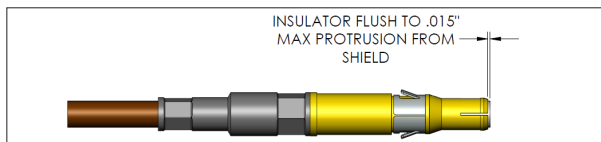


Figure N.

ITA CONTACT ASSEMBLY

PART # 610103136, 610103166- 24 AWG; 610103172- 22 AWG

TOOLS REQUIRED

Crimp Tool, Part# 910101118

Locator, Part # 910104128

CRIMP TOOL SETUP

1. On the crimp tool (**Figure A**), loosen the latch locking screw by turning counter-clockwise, until turning stops.
2. Insert the open end of the locator (**Figure B**), into the crimp tool contact locator retainer. Slide the retaining latch toward the locator until the locator is securely locked into place. The locator may have to be twisted to allow the latch to retain it. Tighten the latch locking screw.

ASSEMBLY

1. Select correct crimp setting for gauge of wire and contact to be used- see table below. While in closed position, check diameter of crimp tool with gauge pins to be sure setting is correct. (This should be done periodically during use to compensate for wear). See calibration instructions for Part # 910101102/103 for pin gauge verification instructions.
2. Strip wire (**Figure C**).
3. Slide tubing onto wire (**Figure C**).
4. Insert contact with wire in place to the depth allowed by die (**Figure D**).
5. Close crimp tool completely until it automatically releases.
6. Contact should be crimped in correct position with no fractures.
7. Gently pull wire to check crimp.
8. Slide tubing into position and shrink (**Figure E**).

CRIMP SETTINGS

WIRE GAUGE	STRIP LENGTH (IN [MM])	MAX. (IN [MM])	MIN. (IN [MM])	PULLOUT FORCE (LBS [N])
24	0.160 [4.06]	0.039 [9.91]	0.035 [8.89]	2 [8.89]
22	0.160 [4.06]	0.037 [9.39]	0.033 [8.38]	2 [8.89]

Dimensions shown: [millimeters]
inches

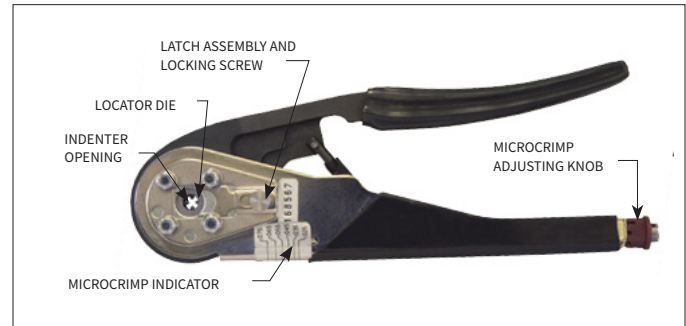


Figure A.



Figure B.

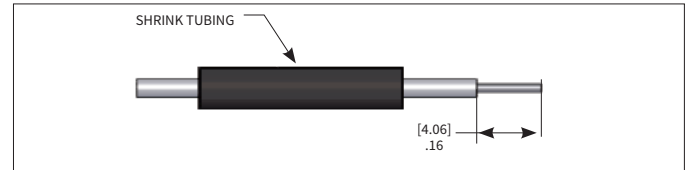


Figure C.

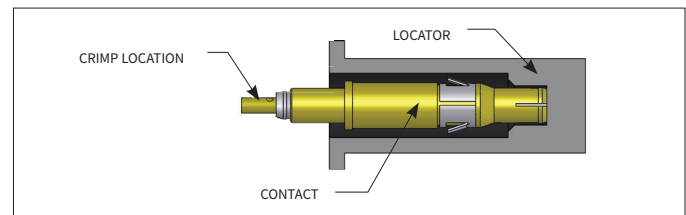


Figure D.

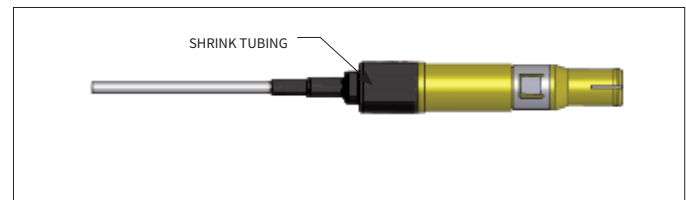


Figure E.

ITA CONTACT ASSEMBLY

PART # 610103152- RG316 DOUBLE-SHIELDED

TOOLS REQUIRED

Hex Crimp Tool (includes locator & die), Part # 910101115

Inspection Depth Gauge Kit, Part # 910121157

1. Strip wire (**Figure A**).
2. Slide the crimp ring onto the wire (**Figure B**).
3. Fold the outer braid back and smooth. Then fold the inner braid back and smooth (**Figure B**).
4. Insert the center conductor of the wire into the center conductor contact and solder (**Figure C**). VPC solders per IPC'S J-STD-001.
NOTE: Center conductor and dielectric must touch.
5. Slide the shield conductor over the center conductor until the center conductor stops in the Teflon® shield (**Figure D**).
NOTE: Shield conductor and Teflon® insulator are supplied as an assembly.
6. Check to ensure that the Teflon® insulator is flush with the tip of the shield conductor (**Figure E**).
7. Turn both braids back over the shield conductor (**Figure F**). If the braid extends beyond shoulder, trim braid back to face of shoulder.

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Dimensions shown: [millimeters]
inches

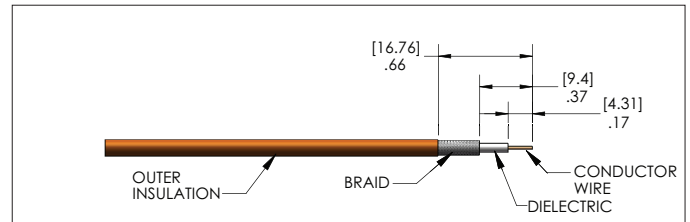


Figure A.

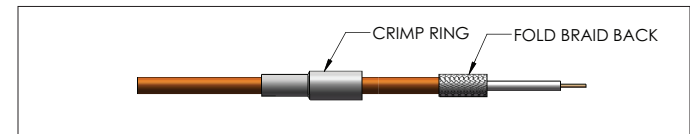


Figure B.

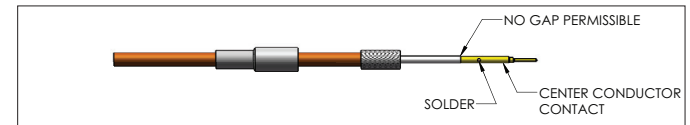


Figure C.

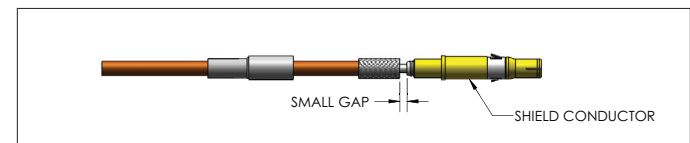


Figure D.

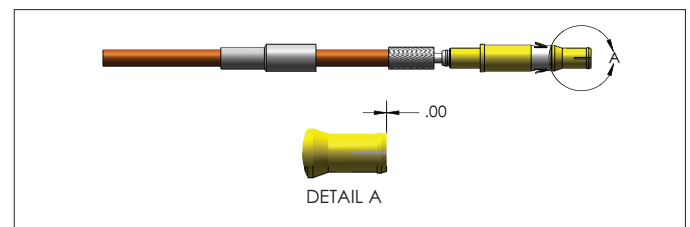


Figure E.

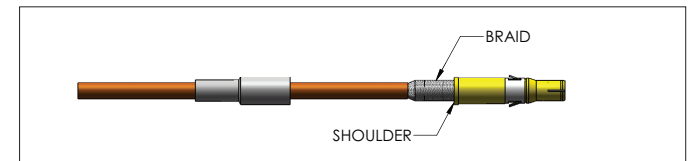


Figure F.

ITA CONTACT ASSEMBLY

PART # 610103152- RG316 DOUBLE SHIELDED (CONT'D)

TOOLS REQUIRED

Hex Crimp Tool (includes locator & die), Part # 910101115
 Inspection Depth Gauge Kit, Part # 910121157

8. Slide the crimp ring over the braid and shield conductor (**Figure G**). Do not crimp.
9. Calibrate the Inspection Depth Gauge (**Figure H**) by loosening the dial face retaining screw until the dial face allows itself to be turned. Insert the calibration plug, (incl. in kit) into base of gauge. While keeping constant pressure on the plug, adjust the dial by rotating it such that the pointer points to "0." Re-tighten retaining screw. Adjust locating markers to "20" and "90."
10. Check the .01" [.25 mm] dimension (**Figure H**) with the inspection depth gauge. Push the contact onto the pressure plunger of the gauge. After attaining a positive stop and while holding firm pressure, push the plunger on top of the dial (to push collar over Teflon), read the dial on the gauge. If the pointer measures between "20" and "90," go to step 11. If the pointer is out of the range, repeat steps 1-8 and repeat this step.
11. To ensure proper crimp position, slide shield conductor over the locator pin (**Figure J**). Crimp (**Figure K**) in hex position "A" (**Figure J**). Wire must not be allowed to pull on the center conductor during crimping (for example, long wire hanging down to floor).



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Dimensions shown: [millimeters]
 inches

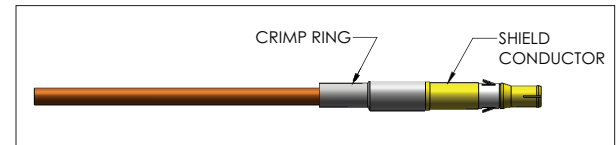


Figure G.

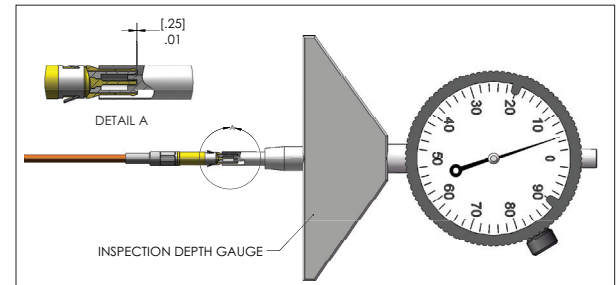


Figure H.

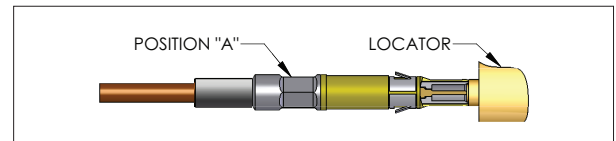


Figure J.

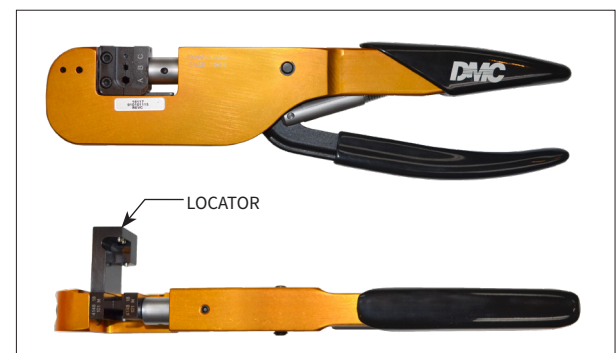


Figure K.

ITA CONTACT ASSEMBLY

PART # 610103161- 24/ 26 AWG TWISTED PAIR, 610103184- 22 AWG TWISTED PAIR

TOOLS REQUIRED

Crimp Tool, Part# 910101118

Locator, Part # 910104128

Dimensions shown: [millimeters]
inches

CRIMP TOOL SETUP

1. Set-up the crimp tool **Figure A**), by loosening the latch locking screw (counter-clockwise until turning stops). Remove any previously used locator.
2. Insert the open end of the locator (**Figure B**) into the locator retainer. Slide the retaining latch toward the locator until it is securely locked into place. The locator may have to be twisted to allow the latch to retain it. Tighten the latch locking screw.

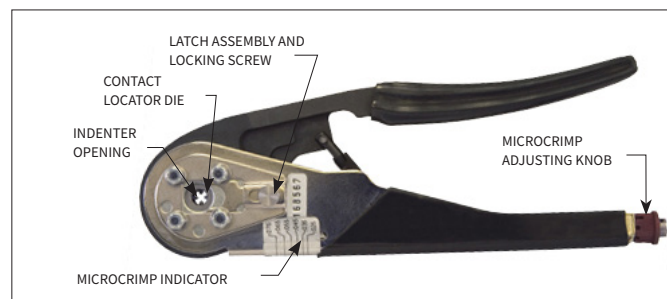


Figure A.



Figure B.

ASSEMBLY

1. Select correct crimp setting for wire gauge to be used- see table below. While in closed position, check diameter of the crimp tool with gauge pins to be sure setting is correct. This should be done periodically during use to compensate for wear. See calibration instructions for Part # 910101102/103 for pin gauge verification instructions.
2. Untwist 2" [50.8 mm] of twisted wire. Cut 0.5" [12.7 mm] off the white wire and strip white wire 0.160" [4.06 mm] (**Figure C**).
3. Slide 1/16 [1.58 mm] shrink tubing 0.25" [6.35 mm] long, over white wire. Slide crimp ring over both wires (smaller end first) (**Figure D**).
4. Insert wire with center conductor in place, at depth allowed by locator, into crimper(**Figure B**) and close tool handles completely (until handles release). Remove crimped center conductor, shield body, and wire. Gently pull on wire to ensure proper crimp.

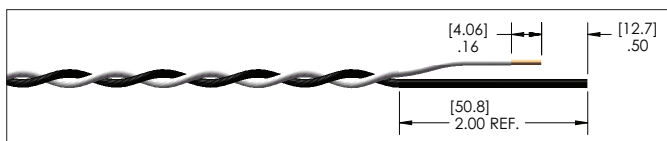


Figure C.

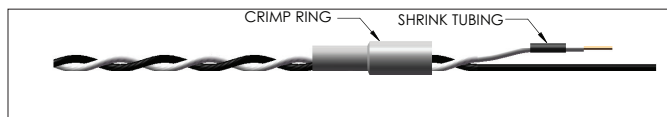


Figure D.

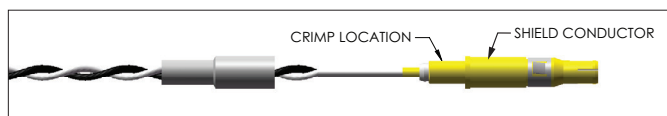


Figure E.

Continued on next page...

CRIMP SETTINGS

WIRE GAUGE	MAX. (in [mm])	MIN. (in [mm])	PULLOUT FORCE (lbs [N])
26	0.032 [0.81]	0.028 [0.71]	2 [8.89]
24	0.039 [9.91]	0.035 [8.89]	2 [8.89]
22	0.037 [9.39]	0.033 [8.38]	2 [8.89]

ITA CONTACT ASSEMBLY

PART # 610103161- 24/ 26 AWG TWISTED PAIR, 610103184- 22 AWG TWISTED PAIR (CONT'D)

ASSEMBLY

5. Slide shrink tubing over crimped area so that it covers all exposed areas of center conductor and touches dielectric. Heat to shrink (**Figure F**).
6. Re-twist black wire around white conductor and shield. Trim excess wire that extends beyond the shoulder of the shield conductor. Strip black wire such that insulation still covers shrink tubing but not crimp area on shield. Unravel and flare strands around shield (**Figure G**).
7. To ensure proper crimp position, slide shield conductor over the locator pin. Crimp using the hex crimp tool (**Figure H**) in hex position "A" for the larger end and hex position "B" for the smaller end (**Figure I**). Wire must not be allowed to pull on the center conductor during crimping (for example, long wire hanging down to floor).

Dimensions shown: [millimeters]
inches



Figure F.

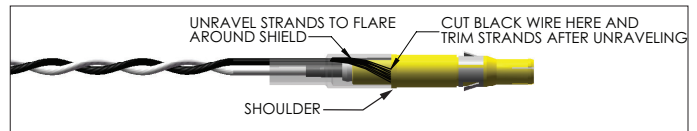


Figure G.

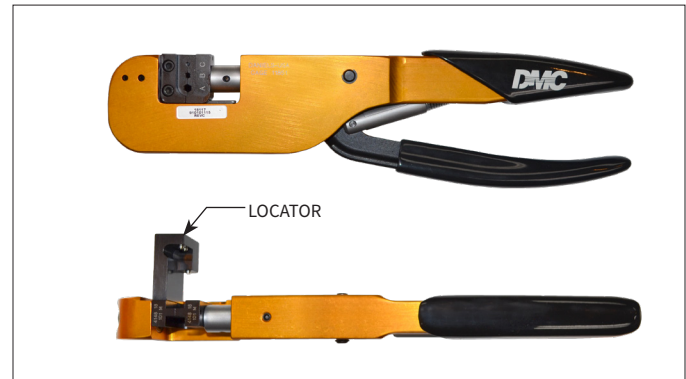


Figure H.



Figure I.



WARNING: IF CONDUCTING ANY TYPE OF TESTING ON COAX CONTACTS/ PATCHCORDS (MICRO, MINI, TWINAX, ETC.), DO NOT USE PROBES OR ANY INSTRUMENT, NOT APPROVED BY VPC, THAT MAKES DIRECT CONTACT WITH THE CENTER CONDUCTOR. CONTACT WITH OR MANIPULATION OF THE CENTER CONDUCTOR MAY CAUSE PRODUCT DAMAGE THAT WILL IMPEDE PERFORMANCE AND VOID ANY PRODUCT WARRANTY.

ITA CONTACT ASSEMBLY

PART # 610103140, 610103158- RG316 SOLDER SLEEVE

TOOLS REQUIRED

Holding Fixture Kit (includes adapter), Part# 910121144

Dimensions shown: [millimeters]
inches

1. Strip wire (**Figure A**).
2. Straighten the center conductor making sure the stranded center conductor is twisted into its original lay.
3. Tin the stranded center conductor with Sn63 solder per QQ-S-571. U Smooth the braid ends flat against the cable dielectric.
4. Slide the contact over the end of the prepared cable, and carefully push the contact onto the cable until it stops. Rotating the contact slightly during cable insertion will help prevent the braid from catching.
5. Inspect for proper insertion (**Figure B**). The center conductor must be visible through one of the forward inspection windows. The distance from the rear of the contact outer body to the cable jacket insulation should be .015" [0.38 mm].
6. Install the adapter (incl. in fixture kit), onto the holding fixture. Insert a contact in the adapter side marked "P" for pin, and set up the dimensions (**Figure C**).
7. Insert the contact/cable assembly into the adapter. Clamp the cable in the holding fixture. The cable must remain fully inserted in the contact and the contact must be fully inserted in the adapter, for the adapter to act as a heat sink. The cable must be straight between the contact and the cable clamp.
8. Using the holding fixture, position the contact in a heating tool reflector, with the forward inspection window centered in the reflector. Heat until the small solder preform in the forward inspection window has melted and is flowing. The large solder preform in the rear inspection window should also have melted and flowed by this time. If not, direct hot air at the rear inspection window, until it does.
9. If contact is UNDERHEATED, there will be visible remnants of the original shapes of the solder preforms. An underheated contact must be re-heated.
10. If contact is OVERHEATED, solder will wick away from the joint areas, leaving no solder fillets. An overheated contact must be removed and a new contact installed.
11. After the contact has cooled for at least 10 seconds, remove the contact and cable from the holding fixture.
12. Inspect the completed termination for correct assembly. The cable shield must extend into the contact, at least as far as the front edge of the rear inspection windows. The center conductor must be visible through one of the forward inspection windows.

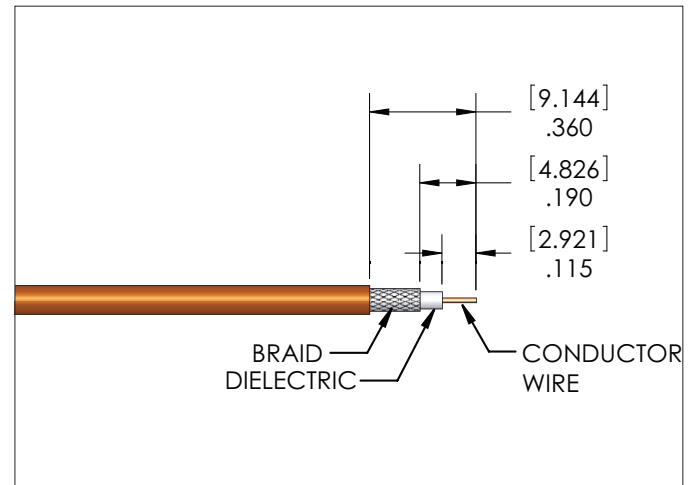


Figure A.

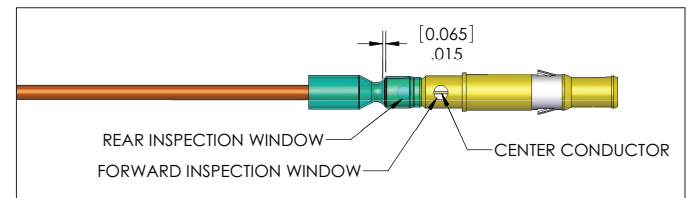


Figure B.

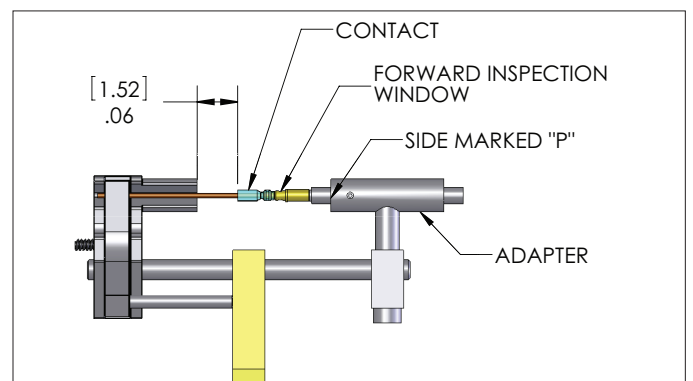


Figure C.

ITA CONTACT ASSEMBLY

PART # 610103140, 610103158- RG178 SOLDER SLEEVE

TOOLS REQUIRED

Holding Fixture Kit (includes adapter), Part# 910121144

1. Strip wire (**Figure A**).
2. Straighten the center conductor making sure the stranded center conductor is twisted into its original lay.
3. Tin stranded center conductor with Sn63 solder per QQ-S-571. Use RMA flux per MIL-F-14256 (Alpha #611 or equivalent).
4. Fold the center conductor back on itself (**Figure B**).
5. Make sure the shield braid is trimmed evenly and no loose strands are extending out across the exposed dielectric or cable jacket.
6. Smooth the braid ends flat against the cable jacket.
7. Slide the contact over the end of the prepared cable, and carefully push the contact onto the cable until it stops. Rotating the contact slightly during cable insertion will help prevent the braid from catching.
8. Inspect for proper insertion (**Figure C**). The center conductor must be visible through one of the forward inspection windows. The distance from the rear of the contact outer body to the cable jacket should be .015" [0.38 mm].
9. Install the adapter (incl. in fixture kit), onto the holding fixture. Insert a contact in the adapter side marked "P" for pin, and set up the dimensions (**Figure C**).
10. Insert the contact/cable assembly into the adapter. Clamp the cable in the holding fixture. The cable must remain fully inserted in the contact and the contact must be fully inserted in the adapter for adapter to act as a heat sink. The cable must be straight between the contact and the cable clamp.
11. Using the holding fixture, position the contact in the heating tool reflector, with the forward inspection window centered in the reflector. Continue heating until the small solder preform in the forward inspection window has melted and is flowing. The large solder preform in the rear inspection window should also have melted and flowed by this time. If not, direct hot air at the rear inspection window, until it does.
12. If contact is UNDERHEATED, there will be visible remnants of the original shapes of the solder preforms. An underheated contact must be re-heated.
13. If contact is OVERHEATED, solder will wick away from the joint areas, leaving no solder fillets. An overheated contact must be removed and a new contact installed.
14. After the contact has cooled for at least 10 seconds, remove the contact and cable from the holding fixture.
15. Inspect the completed termination for correct assembly. The cable shield must extend into the contact at least as far as the front edge of the rear inspection windows. The center conductor must be visible through one of the forward inspection windows.

Dimensions shown: [millimeters]
inches

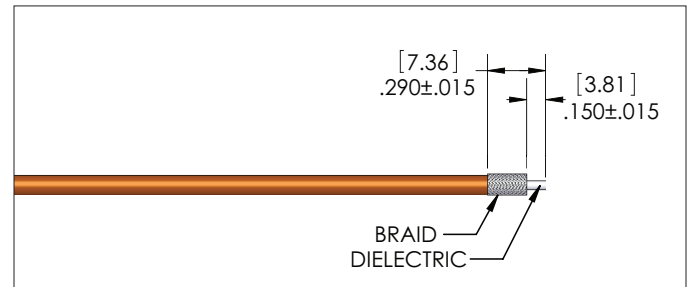


Figure A.

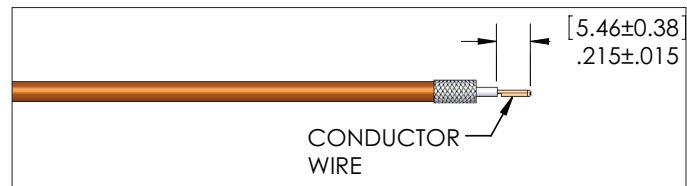


Figure B.

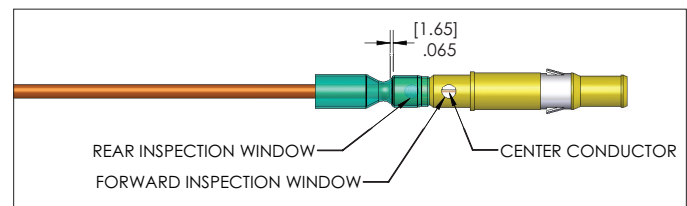


Figure C.

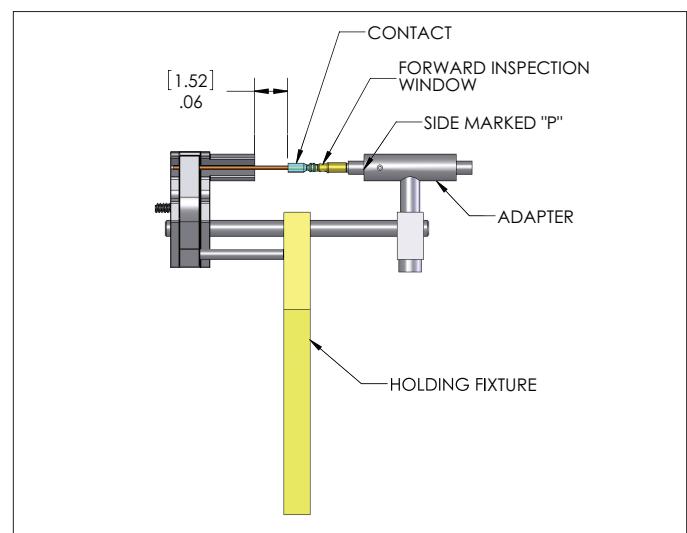


Figure D.

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ITA CONTACT INSTALLATION AND REMOVAL

TOOLS REQUIRED

Extraction Tool (ITA and Receiver), Part # 910112104

CONTACT INSTALLATION

1. After assembling to the wire, insert the contact into the back (wiring side) of the module. Push the contact forward until the crimp is inside the module housing.
2. Once in place, pull the wire slightly to ensure the contact is fully seated.

CONTACT REMOVAL

1. Be sure the module has been removed from the ITA frame.
2. Place the extraction tool over the contact to be removed/replaced (**Figure A**). Use care to keep the tool perpendicular to the surface of the module, otherwise the tool or contact could be damaged. Rotate the tool slightly, while pushing it into the counter bore on the mating side of the module.
3. Once the extraction tool is seated properly and the retaining ring tabs on the contact are compressed, push the tool into the module. The contact will be pushed out of the rear of the module (**Figure B**).



DO NOT DEPRESS THE PLUNGER INTO THE BACK OF THE EXTRACTION TOOL UNTIL THE TIP OF THE EXTRACTION TOOL HAS FULLY SEATED INTO THE MODULE AND COMPRESSED BOTH RETAINING RING TABS ON THE CONTACT.

NOTE: The process shown here uses standard/90 series modules. The same process is used for modules from other series.

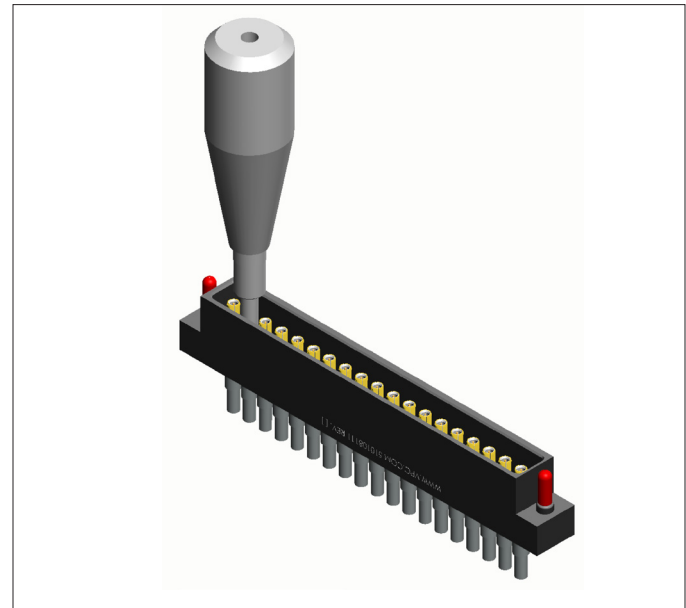


Figure A.

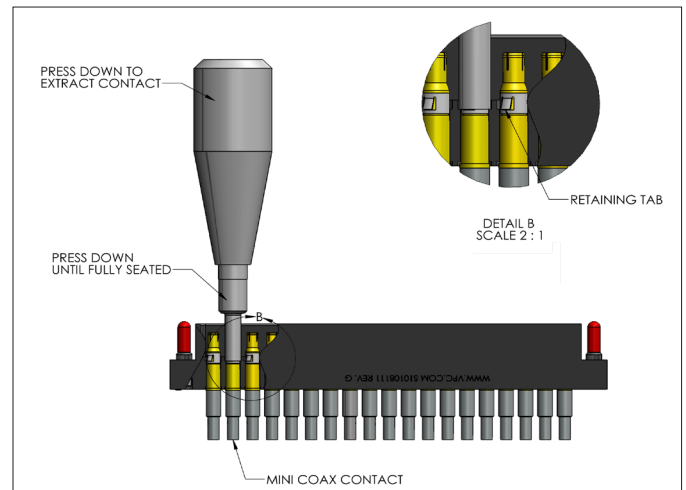


Figure B. Be sure to keep the tool perpendicular to avoid bent pins.

90 SERIES MODULE INSTALLATION AND REMOVAL

RECEIVER PART # 510104120/ 150/ 243/ 280/ 301
ITA PART # 510108111/ 132/ 210/ 276

TOOLS REQUIRED

$\frac{3}{32}$ Allen Wrench

INSTALLATION

1. Place the module in the receiver or ITA until the upper and lower module screws touch the mating holes in the inner frame. Ensure that Position 1 is located at the top for systems in which the modules are oriented vertically or to the left for systems in which the modules are oriented horizontally.
2. Using a $\frac{3}{32}$ Allen wrench, tighten the top screw 1 to 2 full revolutions, while pushing lightly against the face of the module.
3. Maintain this pressure while tightening the bottom screw 1 to 2 full revolutions.
4. Repeat this sequence until the module is fully seated. Torque the screw to 4 in-lbs [0.45 Nm].

REMOVAL

1. To remove, loosen the top screw 1 to 2 full revolutions. Loosen bottom screw 1 to 2 full revolutions.
2. Repeat this sequence until the module is fully separated from the receiver or ITA.

NOTE: For optimum performance and system longevity, distribute the contact load evenly throughout the module.



Figure A.

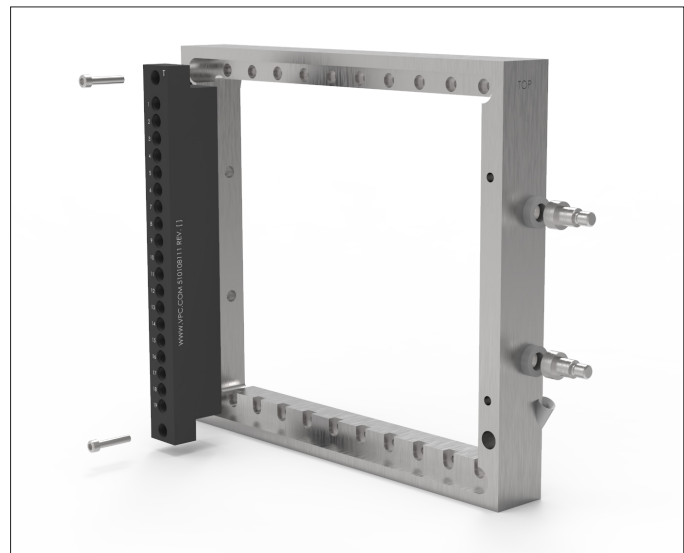


Figure B.

iCON/i1 MODULE INSTALLATION AND REMOVAL

RECEIVER PART # 510160102/ 103/ 104

ITA PART # 510161102/103/104

TOOLS REQUIRED

Phillips Head Screwdriver

INSTALLATION

NOTE: The receiver strain relief plate or the ITA cover may need to be removed prior to installing or removing an iCon module. Please refer to the appropriate User Manual for instructions on how to perform these steps.

1. Place the module in the receiver or ITA until the upper and lower module screws touch the mating holes in the inner frame. Install modules with Position 1 located at the top of the ITA/receiver frame.
2. Using a Phillips head screwdriver, tighten the top screw 1 to 2 full revolutions, while pushing lightly against the face of the module.
3. Maintain this pressure while tightening the bottom screw 1 to 2 full revolutions.
4. Repeat this sequence until the module is seated. Torque the screw to 1.5 in-lbs [0.16 Nm].

REMOVAL

1. To remove, loosen the top screw 1 to 2 full revolutions. Loosen bottom screw 1 to 2 full revolutions.
2. Repeat this sequence until the module is separated from the receiver or ITA.

NOTE: For optimum performance and system longevity, distribute the contact load evenly throughout the module.

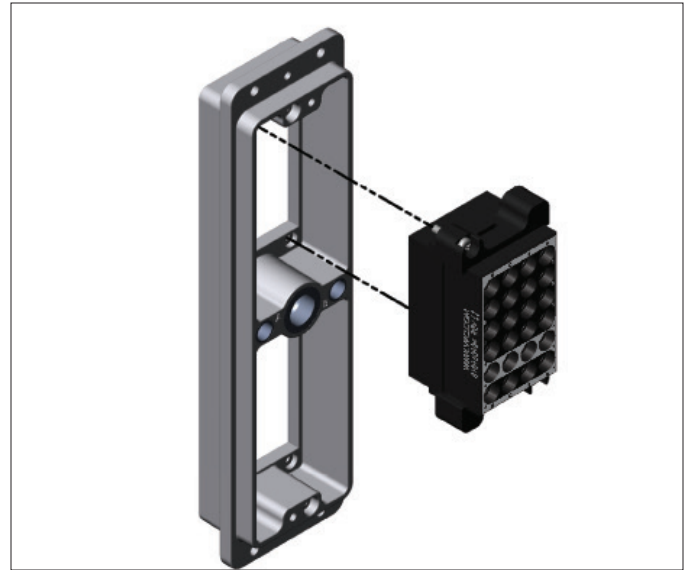


Figure A. Receiver module

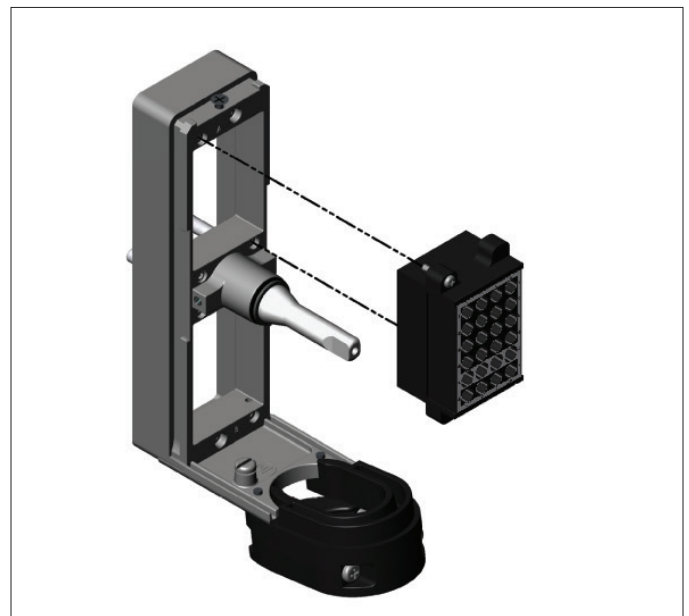
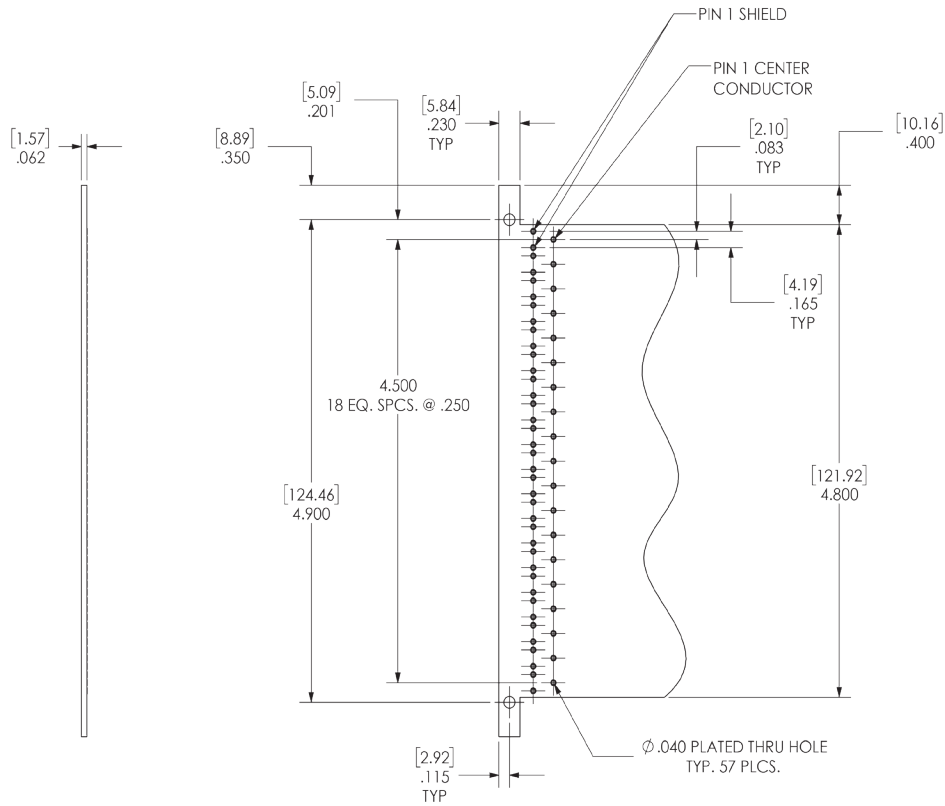


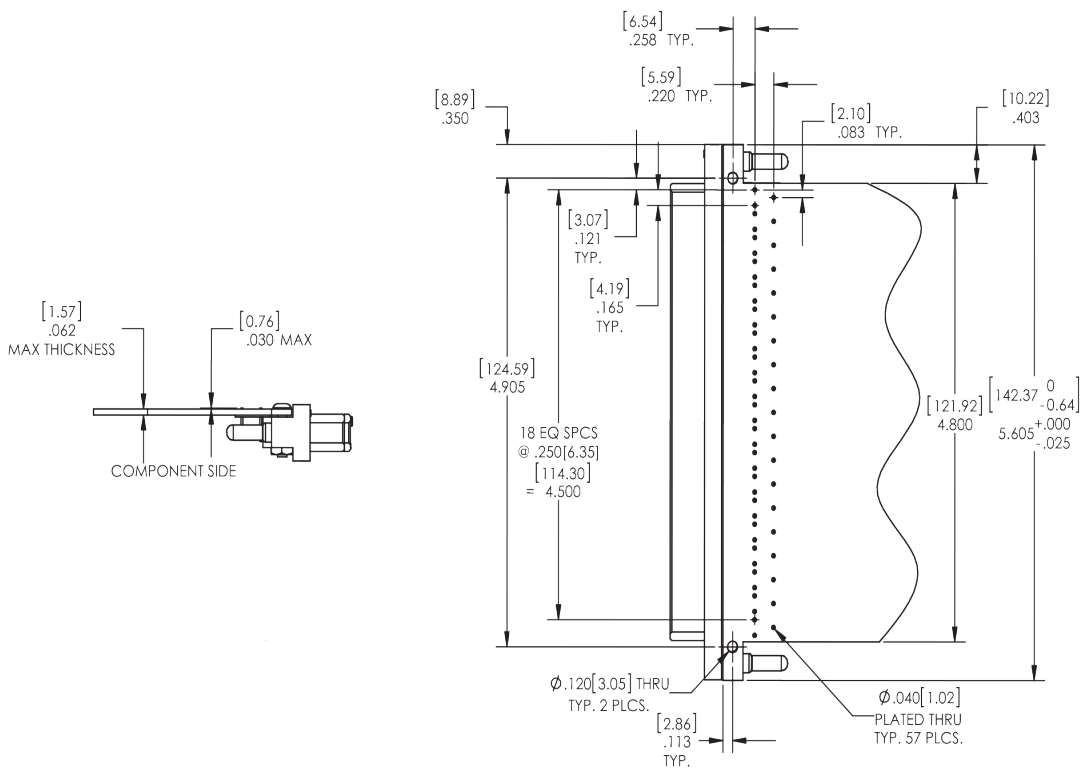
Figure B. ITA Module.

STANDARD PCB LAYOUT

RECEIVER PART # 610104160, 510104319



PCB SOLDER SIDE LAYOUT

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WIRE-WRAP CONTACT TERMINATION

PART # 610104140, 610103129

NOTE: VPC performs wire-wrap terminations in accordance with IPC-A-620 standards. Wire-wrapping must be performed with solid wire; stranded wire will not work. VPC recommends 26-30 AWG wire.

1. Cut and strip the wire. Depending on the style of wire-wrap gun and bit used, the wire is either stripped *before* the wrapping process or stripped *during* the wrapping process.
2. Refer to the user manual of your wire-wrap gun to determine in which fashion your tool operates.
3. Insert the wire into the wire slot on your wire-wrap gun. With modified and standard bits, insert the wire in the wire slot as deeply as possible. With C.S.W. bits the wire has to be inserted all the way through the wire slot until it comes out of the cutting window. The simplified sleeve of the manual tool has no notch.
4. Hold the wire in place by hand (**Figure A**).
5. Position the terminal hole of the wire-wrap gun onto the post to be wrapped. The wire-wrap gun should be parallel with the contact. The wire must continue to be held in place by hand.
6. Engage the wire-wrap gun to wrap the wire. During the wrapping operation, gently press the tool forward onto the wire-wrap post. The turns of the connection have to be neatly wrapped against the other. Do not push using too much pressure or pull backwards.

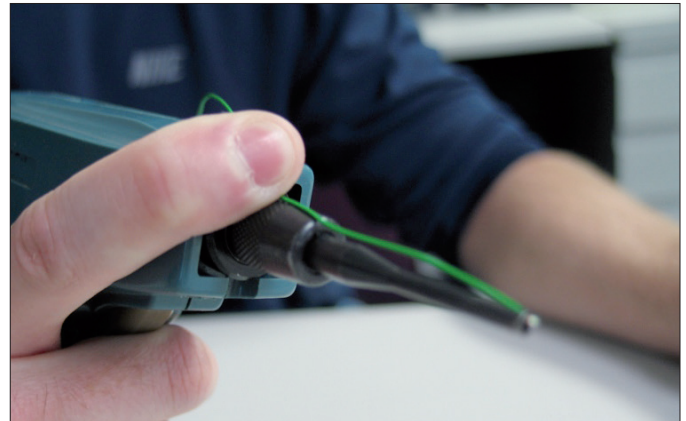


Figure A.

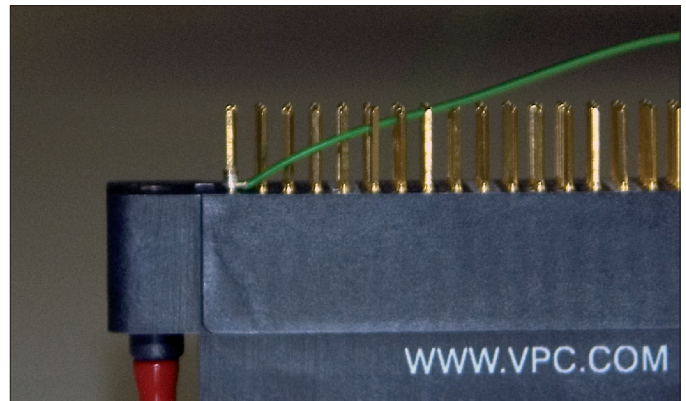


Figure B.

CROSS REFERENCE TABLES

RECEIVER CONTACTS	STANDARD/ 90 SERIES RECEIVER MODULES			ICON RECEIVER MODULES			CASS/80 SERIES RECEIVER MODULES		CRIMP TOOL	EXTRACTION	MISC.						
	510 104 120	510 104 150	510 104 243	510 160 102	510 160 103	510 160 104	510 113 121	510 113 122	910 101 115	910 112 104	910 121 119	910 121 131	910 121 143	910 121 144	910 121 149	910 121 156	910 121 160
610 104 114	X	X	X	X	X	X	X	X	X	X	X	X	X			X	
610 104 140	X	X	X	X	X	X	X	X		X		X				X	
610 104 141	X	X	X	X	X	X	X	X	X	X	X	X	X			X	
610 104 142	X	X	X	X	X	X	X	X		X		X		X	X	X	X
610 104 149	X	X	X	X	X	X			X	X		X	X			X	
610 104 154	X	X	X	X	X	X			X	X			X			X	

ITA CONTACTS	STANDARD/ 90 SERIES ITA MODULES			ICON ITA MODULES			CASS/80 SERIES ITA MODULES		CRIMP TOOLS		LOCATOR	EXTRACTION	MISC.						
	510 108 111	510 108 132	510 108 210	510 161 102	510 161 103	510 161 104	510 114 108	510 114 109	910 101 115	910 101 118	910 104 128	910 112 104	910 121 126	910 121 142	910 121 144	910 121 149	910 121 155	910 121 157	910 121 160
610 103 115	X	X	X	X	X	X	X	X	X			X	X	X			X	X	
610 103 130	X	X	X	X	X	X	X	X	X			X	X	X			X	X	
610 103 136	X	X	X	X	X	X				X	X	X	X	X			X	X	
610 103 140	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X
610 103 152	X	X	X	X	X	X			X			X	X	X			X	X	
610 103 157	X	X	X	X	X	X	X	X	X			X	X	X			X	X	
610 103 158	X	X	X	X	X	X	X	X				X			X	X			X
610 103 161	X	X	X	X	X	X			X	X	X	X	X	X			X	X	
610 103 166	X	X	X	X	X	X	X	X		X	X	X							
610 103 172	X	X	X	X	X	X				X	X	X							
610 113 146	X	X	X	X	X	X			X	X	X	X	X	X			X	X	