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Please note that any printed or downloaded User Manuals or Procedure Sheets may not reflect the most current revisions. The information contained in these materials is subject to change. For the most current information available, visit www.vpc.com.
TOOLS REQUIRED
Soldering Fixture, Part # 910 121 178
Hex Crimp Tool Kit, Part # 910 101 131 for RG178 • 910 101 132 for RG179/316
Contains: Crimper, Locator, Part # 910 101 135, and 5/64 Allen Wrench
Inspection Depth Gauge, Part # 910 121 179

ASSEMBLY INSTRUCTIONS
1. Strip out insulation to reveal the braid and center conductor (Figure A).

NOTE: Dimensions can be found in the chart below (Figure G).

2. Slide the ferrule onto the wire and fold braid back over ferrule (Figure B). Comb braid and make sure that it covers 50-100% of the smaller portion of the ferrule but does not reach past the shoulder. If using a nickel ferrule proceed to step 4.

3. Strip wire center conductor (Figure C).

4. Solder wire center conductor into contact center conductor and clean (Figure D).

NOTE: Contact center conductor and dielectric must touch (Figure E).

5. Calibrate the Inspection Depth Gauge, Part # 910 121 179 (Figure F), by loosening the dial face retaining screw until the dial face allows itself to be turned. Insert the calibration plug 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 “8” and “97”.

<table>
<thead>
<tr>
<th>Contact P/N</th>
<th>Ferrule Finish</th>
<th>Wire Type</th>
<th>Strip 'A'</th>
<th>Strip 'B'</th>
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<td>Nickel</td>
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<td>[1.45 ±0.13/0.00] 0.057 ±0.005/0.00</td>
<td>[4.95 ±0.13/0.00] 0.195 ±0.005/0.00</td>
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<td>No Center Strip</td>
<td>[4.83 ±0.13/0.00] 0.190 ±0.005/0.00</td>
</tr>
</tbody>
</table>

Dimensions shown: [millimeters] inches

For the most current information available, visit www.vpc.com.
ASSEMBLY INSTRUCTIONS, CONTINUED

6. Slide shield conductor over center conductor until the shield conductor stops flush (Figure G).

NOTE: Do not twist the shield conductor; twisting will cause the braid to bunch.

7. Check the flush +.003”/- .008” dimension (Figure H) by using the inspection depth gauge. Insert contact into gauge until contact stops. If pointer measures between “8” and “97”, go to step 8. If the pointer is out of the range of the two markers, slide the ferrule to adjust. Repeat steps 1-7 if necessary.

8. Before using the Hex Crimp Tool (Figure J), you must install the locator (Figure K). Remove the 2 screws using the 5/64 Allen wrench and replace the existing locator with the Locator, Part # 910 101 135 (Figure L). Tighten the 2 screws. The tool is now ready to crimp receiver contacts.

9. Crimp using Hex Crimp Tool Part # 910 101 132 for RG 316 and RG 179, or Hex Crimp Tool Part # 910 101 131 for RG 178 (Figure J). To ensure proper crimp position, press shield conductor flush inside the locator (Figure M).

OBSERVE PRECISION RATCHET ACTION BY OPENING AND CLOSING CRIMP TOOL FULLY SEVERAL TIMES. THE TOOL CANNOT BE OPENED WITHOUT COMPLETING A CYCLE. NEVER ATTEMPT TO DISASSEMBLE TOOL. NEVER TIGHTEN OR LOOSEN STOP NUTS ON BACK OF TOOL.

10. Use the inspection depth gauge to verify the flush +.003”/- .008” dimension as shown in step 7. If the dimension is out of range, repeat steps 1-10.
TOOLS REQUIRED
Soldering Fixture, Part # 910 121 178
Inspection Depth Gauge, Part # 910 121 179

ASSEMBLY INSTRUCTIONS
1. Strip the outer insulation of the wire (Figure A) and tin the braid.
2. Perform second strip (Figure B). 0.17” [4.32] will be trimmed from the front of the wire to remove any solder build up.
3. Solder wire center conductor into contact center conductor, and clean (Figure C).

NOTE: Contact center conductor and dielectric must touch (Figure D).

4. Calibrate the Inspection Depth Gauge, Part # 910 121 179 (Figure E), by loosening the dial face retaining screw until the dial face allows itself to be turned. Insert the calibration plug 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 “8” and “97”.

5. Slide the shield conductor over the center conductor and check the flush +.003”/- .008” dimension (Figure F) by using the inspection depth gauge. Insert contact into gauge until contact stops. If the pointer measures between “8” and “97”, go to the next step. If the pointer measures below the “97” marker, slide the shield to adjust. If the dimension measures above the “8” marker, cut the strip off and repeat steps 1-5.

6. Solder the shield and clean (Figure G).

NOTE: Make sure the shield does not move when soldering.

7. Use the inspection depth gauge to verify the flush +.003”/- .008” dimension as shown in step 5. If the dimension is out of range, repeat steps 1-7.
RECEIVER CONTACT INSTALLATION AND REMOVAL
PART # 610 140 101 / 610 140 102 / 610 140 103 / 610 140 104
510 104 267 / 510 104 306

TOOLS REQUIRED
Phillips Head Screw Driver
Micro Coax/Power Receiver/ITA Extraction Tool, Part # 910 112 123

CONTACT INSTALLATION INSTRUCTIONS
1. Assemble the contact to the respective wire.

NOTE: For more information concerning the contact assembly process, see contact assembly instructions in Section 1 of this User Manual.

2. Insert the terminated contact into the back of the assembled module. The contact can only go into one side. Once in place, pull the wire slightly to ensure that the contact is seated.

CONTACT REMOVAL INSTRUCTIONS
1. Remove the module from the receiver frame.

NOTE: For more information concerning the process of removing the module from the receiver frame, see module installation and removal instructions in Section 4 of this User Manual.

2. Use a Phillips head screw driver to remove the two 2-56 screws located at the top and bottom of the module.

3. 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 mating bottom section, until separated. Be sure to pull both sides of the module simultaneously or contacts could be damaged.

4. Place the Micro Coax/Power Receiver/ITA Extraction Tool (Figure A) over the contact to be removed/replaced. Use care to keep the tool perpendicular to the surface of the module, otherwise the tool or contact could be damaged.

5. Once the extraction tool is seated and the retaining tabs on the retaining ring are compressed (Figure B), push the plunger. The contact will be pushed out of the rear of the module.


6. Replace the module top half using both hands to push the separated halves together. Replace and tighten the module 2-56 screws to a maximum torque of 1.5 in-lbs [0.169 Nm].

NOTE: The process shown here uses 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.

Figure A. Ensure that the tool is kept perpendicular to the module face to avoid damage to the contact or tool.

Figure B. Push the plunger only after the retaining tabs are compressed.
RECEIVER CONTACT INSTALLATION AND REMOVAL

PART # 610 140 101 / 610 140 102 / 610 140 103 / 610 140 104
510 104 270

TOOLS REQUIRED
3/64 Allen Wrench
Micro Coax/Power Receiver/ITA Extraction Tool, Part # 910 112 123

CONTACT INSTALLATION INSTRUCTIONS
1. Assemble the contact to the respective wire.

NOTE: For more information concerning the contact assembly process please see contact assembly instructions in this User Manual.

2. Insert the terminated contact into the back (wiring side) of the assembled module. The contact can only go into one side. Once in place, pull the wire slightly to ensure that the contact is seated.

CONTACT REMOVAL INSTRUCTIONS
1. Remove the module from the receiver frame.

NOTE: For more information concerning the process of removing the module from the receiver frame, see module installation and removal instructions in this User Manual.

2. Use a 3/64 Allen wrench to remove the 0-80 screws (Figure A).

3. 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 mating bottom section, until separated. Be sure to pull both sides of the module simultaneously or contacts could be damaged.

4. Place the Micro Coax/Power Receiver/ITA Extraction Tool, Part # 910 112 123 (Figure B), over the contact to be removed/replaced. Use care to keep the tool perpendicular to the surface of the module, otherwise the tool or contact could be bent.

5. Once the extraction tool is seated and the retaining tabs on the retaining ring are compressed, push the plunger. The contact will be pushed out of the rear of the module.


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 .875 in-lbs [0.10 Nm].

NOTE: The process shown here uses 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.
TOOLS REQUIRED
Soldering Fixture, Part # 910 121 178
Hex Crimp Tool Kit, Part # 910 101 133 for RG178 • 910 101 137 for RG179/316
Contains: Crimper, Locator, Part # 910 101 139, and 5/64 Allen Wrench
Inspection Depth Gauge, Part # 910 121 180

ASSEMBLY INSTRUCTIONS
1. Strip out insulation to reveal the braid and center conductor (Figure A).

NOTE: Dimensions can be found in the cart below (Figure G).

2. Slide the ferrule onto the wire until it stops on outer insulation and fold braid back over the ferrule (Figure B). Comb braid and make sure that it covers 50-100% of the smaller portion of the ferrule but does not reach past the shoulder. If using a nickel ferrule proceed to step 4.

3. Strip center conductor (Figure C).

4. Solder wire center conductor into contact center conductor and clean (Figure D).

NOTE: Contact center conductor and dielectric must touch (Figure E).

5. Calibrate the Inspection Depth Gauge, Part # 910 121 180 (Figure F), by loosening the dial face retaining screw until the dial face allows itself to be turned. Insert the calibration plug 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 “5” and “95”.

<table>
<thead>
<tr>
<th>Contact PN</th>
<th>Wire Type</th>
<th>Ferrule Finish</th>
<th>Strip 'A'</th>
<th>Strip 'B'</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Nickel</td>
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<td></td>
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<td></td>
</tr>
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</table>

Dimensions shown: [millimeters] inches
ASSEMBLY INSTRUCTIONS, CONTINUED

6. Slide shield conductor over center conductor until the shield conductor stops flush (Figure G).

NOTE: Do not twist the shield conductor; twisting will cause the braid to bunch.

7. Check the .136” ± .005 dimension (Figure H) by using the inspection depth gauge. Insert contact into gauge until contact stops. If pointer measures between “5” and “95”, go to step 8. If the pointer is out of the range of the two markers, slide the ferrule to adjust. Repeat steps 1-7, if necessary.

8. Before using the Hex Crimp Tool (Figure J), you must install the locator (Figure K). Remove the 2 screws using the 5/64 Allen wrench and replace the existing locator with the Locator, Part # 910 101 139 (Figure L). Tighten the 2 screws. The tool is now ready to crimp ITA contacts.

9. Crimp using Hex Crimp Tool Part # 910 101 137 for RG 316 and RG 179, or Hex Crimp Tool Part # 910 101 133 for RG 178 (Figure J). To ensure proper crimp position, slide shield conductor over pin on the locator (Figure M).

OBSERVE PRECISION RATCHET ACTION BY OPENING AND CLOSING CRIMP TOOL FULLY SEVERAL TIMES. THE TOOL CANNOT BE OPENED WITHOUT COMPLETING A CYCLE. NEVER ATTEMPT TO DISASSEMBLE TOOL. NEVER TIGHTEN OR LOOSEN STOP NUTS ON BACK OF TOOL.

Wire must not be allowed to pull on the center conductor during crimping (for example, long wire hanging down to floor). Ensure outer shield is flush with ferrule after crimping (Figure N).

10. Use the inspection depth gauge to verify the .136” ± .005 dimension as shown in step 7. If the dimension is out of range, repeat steps 1-10.
TOOLS REQUIRED
Soldering Fixture, Part # 910 121 178
Inspection Depth Gauge, Part # 910 121 180

ASSEMBLY INSTRUCTIONS
1. Strip the outer insulation of the wire (Figure A) and tin the braid.
2. Perform second strip (Figure B). 0.17" [4.32] will be trimmed from the front of the wire to remove any solder build up.
3. Solder wire center conductor into contact center conductor, and clean (Figure C).

NOTE: Contact center conductor and dielectric must touch (Figure D).

4. Calibrate the Inspection Depth Gauge, Part # 910 121 180 (Figure E), by loosening the dial face retaining screw until the dial face allows itself to be turned. Insert the calibration plug 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 “5” and “95”.

5. Slide the shield conductor over the center conductor and check the .136" ± .005 dimension (Figure F) by using the inspection depth gauge. Insert contact into gauge until contact stops. If the pointer measures between “5” and “95”, go to the next step. If the pointer measures below the “95” marker, slide the shield to adjust. If the dimension measures above the “5” marker, cut the strip off and repeat steps 1-5.

6. Solder the shield and clean (Figure G).

7. Use the inspection depth gauge to verify the .136" ± .005 dimension as shown in step 5. If the dimension is out of range, repeat steps 1-7.
TOOLS REQUIRED
Micro Coax/Power Receiver/ITA Extraction Tool, Part # 910 112 123
Micro Coax ITA Extraction Tool, for i2 Micro iCon, Part # 910 112 127

CONTACT INSTALLATION INSTRUCTIONS
1. Assemble the contact to the respective wire.

NOTE: For more information concerning the contact assembly process, see contact assembly instructions in this User Manual.

2. Insert the terminated contact into the back of the module. Push the contact forward until the crimp is inside the module housing. The contact can only go into one side. Once in place, pull the wire slightly to ensure the contact is seated.

CONTACT REMOVAL INSTRUCTIONS
1. Remove the module from the ITA frame.

NOTE: For more information concerning the process of removing the module from the ITA frame, see module installation and removal instructions in this User Manual.

2. Place the Micro Coax/Power Receiver/ITA Extraction Tool (Figure A) over the contact to be removed/replaced. Use care to keep the tool perpendicular to the surface of the module as not to bend the tool or the contact to be removed. 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 tabs on the retaining ring are compressed (Figure B), push the plunger. The contact will be pushed out of the rear of the module.


NOTE: The process shown here uses 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.
90 SERIES MODULE INSTALLATION AND REMOVAL

TOOLS REQUIRED
3/32 Allen Wrench

INSTALLATION INSTRUCTIONS
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 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 seated. Torque the screw to 4 in-lbs [0.45 Nm].

REMOVAL INSTRUCTIONS
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: Push or pull the module evenly from the top and bottom to prevent damage to the module.

NOTE: For optimum performance and system longevity, distribute the contact load evenly throughout the module.
ICON MODULE INSTALLATION AND REMOVAL

TOOLS REQUIRED
Phillips Head Screwdriver

INSTALLATION INSTRUCTIONS
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 such that Position 1 is 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 INSTRUCTIONS
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: Push or pull the module evenly from the top and bottom to prevent damage to the module.

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

## Receiver Contacts

<table>
<thead>
<tr>
<th>RECEIVER CONTACTS</th>
<th>STANDARD/ 90 SERIES RECEIVER MODULES</th>
<th>ICON RECEIVER MODULES</th>
<th>CRIMP TOOLS</th>
<th>LOCATOR</th>
<th>EXTRACTION</th>
<th>MISC.</th>
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<tbody>
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<td>510 160 106</td>
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## Ita Contacts

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CONTACT PERFORMANCE SPECIFICATIONS
PART # 610 140 101 / 610 140 102 / 610 140 103 / 610 141 101 / 610 141 102 / 610 141 103

ELECTRICAL SPECIFICATIONS (PART # 610 140 101/ 610 140 102/ 610 141 101/ 610 141 102)

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<th>50 Ohm for RG316 or RG178/ 75 Ohm for RG179</th>
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<td>FREQUENCY RANGE</td>
<td>DC - 3 GHz for RG316 or RG178/ DC-1 GHz for RG179</td>
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<tr>
<td>DIELECTRIC BREAKDOWN</td>
<td>800 VRMS</td>
</tr>
<tr>
<td>VSWR</td>
<td>1.22 @ 3 GHz</td>
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<tr>
<td>INSERTION LOSS</td>
<td>0.06 x \sqrt{f}(GHz) db</td>
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| RECOMMENDED TERMINATION | 610 140 101/ 610 141 101: RG316  
                          | 610 140 102/ 610 141 102: RG178  
                          | 610 140 103/ 610 141 103: RG179 |

MECHANICAL CHARACTERISTICS

| LIFE EXPECTANCY (CYCLES) | 10,000 |
| MATING FORCE            | 1.5 lbs max [0.68 kg] |
| EXTRACTION FORCE        | 1.5 lbs max [0.68 kg] |

MATERIAL

| OUTER SHIELD (ITA)      | Brass per ASTM - B-16 / .000050” Au over .000100” Ni |
| OUTER SHIELD (RCVR)     | Brass per ASTM - B-16 / .000050” Au over .000100” Ni |
| CENTER CONDUCTOR (ITA)  | BeCu per ASTM - B-196 / .000050” Au over .000100” Ni |
| CENTER CONDUCTOR (RCVR) | BeCu per ASTM - B-196 / .000050” Au over .000100” Ni |
| RETAINING RING          | BeCu per ASTM - B-196 / .000100” Ni |
| FERRULE                 | Brass per ASTM - B-16 / .000010” Au over .000100” Cu |
| DIELECTRIC              | PTFE Fluorocarbon |
DOUBLE SHIELDED CONTACT PERFORMANCE SPECIFICATIONS

PART # 610 140 104 / 610 141 104

ELECTRICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<td>Impedance</td>
<td>50 Ohm for RG316DS</td>
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<td>Frequency Range</td>
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<td>1.0225 + .05 f(GHz)</td>
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<td>.06 x √f(GHz) db</td>
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<tr>
<td>Recommended Termination</td>
<td>RG316DS</td>
</tr>
</tbody>
</table>

MECHANICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Expectancy (cycles)</td>
<td>10,000</td>
</tr>
<tr>
<td>Mating Force</td>
<td>1.5 lbs max [0.68 kg]</td>
</tr>
<tr>
<td>Extraction Force</td>
<td>1.5 lbs max [0.68 kg]</td>
</tr>
</tbody>
</table>

MATERIAL

<table>
<thead>
<tr>
<th>Component</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outer Shield (ITA)</td>
<td>Brass per ASTM - B-16 / .000050&quot; Au over .000100&quot; Ni</td>
</tr>
<tr>
<td>Outer Shield (RCVR)</td>
<td>Brass per ASTM - B-16 / .000050&quot; Au over .000100&quot; Ni</td>
</tr>
<tr>
<td>Center Conductor (ITA)</td>
<td>BeCu per ASTM - B-196 / .000050&quot; Au over .000100&quot; Ni</td>
</tr>
<tr>
<td>Center Conductor (RCVR)</td>
<td>BeCu per ASTM - B-196 / .000050&quot; Au over .000100&quot; Ni</td>
</tr>
<tr>
<td>Retaining Ring</td>
<td>BeCu per ASTM - B-196 / .000100&quot; Ni</td>
</tr>
<tr>
<td>Ferrule</td>
<td>Brass per ASTM - B-16 / .000010&quot; Au over .000100&quot; Cu</td>
</tr>
<tr>
<td>Dielectric</td>
<td>PTFE Fluorocarbon</td>
</tr>
</tbody>
</table>