Instruction Sheets

Anritsu Microwave V Connector®


V101F-R


V101M-R


V102F-R


V102M-R


V103F-R


V103M-R


V110-1-R

01-304


01-308

Anritsu Company
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USA

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RoHS Compliant

Chinese RoHS Compliance Statement

产品中有毒有害物质或元素的名称及含量　For Chinese Customers Only　NLNB

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 [Cr(VI)]	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷线路板 (PCA)	×	○	×	×	○	○
机壳、支架 (Chassis)	×	○	×	×	○	○
其他(电缆、风扇、连接器等) (Appended goods)	×	○	×	×	○	○

○：表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。

×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。

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注）生产日期标于产品序号的前四码(如 S/N 0728XXXX 为 07 年第 28 周生产)。

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To prevent the risk of personal injury or loss related to equipment malfunction, Anritsu Company uses the following symbols to indicate safety-related information. For your own safety, please read the information carefully *before* operating the equipment.

Symbols Used in Manuals

Danger

This indicates a risk from a very dangerous condition or procedure that could result in serious injury or death and possible loss related to equipment malfunction. Follow all precautions and procedures to minimize this risk.

Warning

This indicates a risk from a hazardous condition or procedure that could result in light-to-severe injury or loss related to equipment malfunction. Follow all precautions and procedures to minimize this risk.

Caution

This indicates a risk from a hazardous procedure that could result in loss related to equipment malfunction. Follow all precautions and procedures to minimize this risk.

Safety Symbols Used on Equipment and in Manuals

The following safety symbols are used inside or on the equipment near operation locations to provide information about safety items and operation precautions. Ensure that you clearly understand the meanings of the symbols and take the necessary precautions *before* operating the equipment. Some or all of the following five symbols may or may not be used on all Anritsu equipment. In addition, there may be other labels attached to products that are not shown in the diagrams in this manual.

This indicates a prohibited operation. The prohibited operation is indicated symbolically in or near the barred circle.

This indicates a compulsory safety precaution. The required operation is indicated symbolically in or near the circle.

This indicates a warning or caution. The contents are indicated symbolically in or near the triangle.

This indicates a note. The contents are described in the box.

These indicate that the marked part should be recycled.

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V101F-R

Female Connector for V085 Semi-Rigid Coaxial Cable

Tools and Materials

The following tools and materials are needed to install the V101F-R connector on V085 (2.18 mm outer diameter) semi-rigid coaxial cable. Equivalent tools may be used if recommended tools are not available.

Table 1-1. Tools and Materials

Description	Vendor	Model/Part Number
250 Watt resistance soldering unit with medium tweezers and foot pedal	American Beauty	10504
Regular tweezer for resistance solder	American Beauty	10541
V Connector Cable Assembling Fixture for V085 semi-rigid cable	Anritsu Company	01-309
Cable Sleeve Soldering Fixture	Anritsu Company	01-307F
0.50 mm diameter solder	Kester Company	SAC305
Rosin flux	Kester Company	135
Isopropyl alcohol (IPA) cleaning fluid	any	any

Fabrication Instructions

Fabrication instructions for the cable assembly are given below. Refer to Figure 1-1 and Figure 1-3 to identify the connector parts referenced in the procedure.

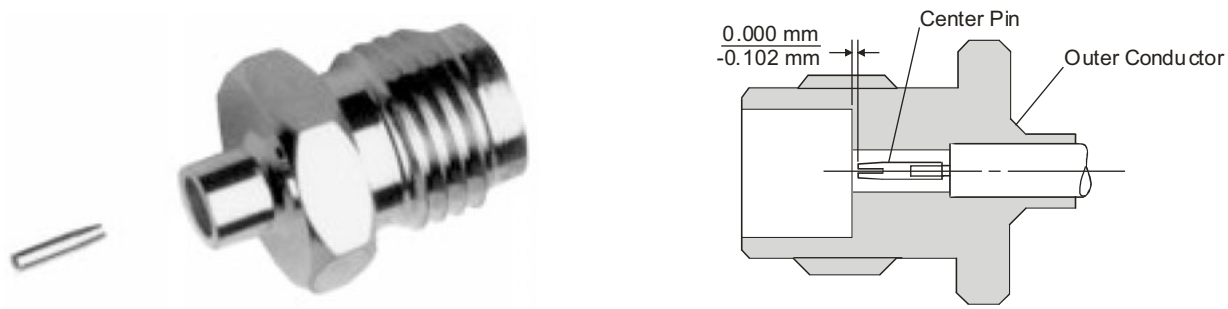


Figure 1-1. V101F-R Assembly

1. Cut the cable to the desired length and deburr the ends.
2. Using a 2.26 mm gauge pin, wrap the 0.50 mm solder to form two rings.
3. Using an X-Acto knife or saw, initially score the cable back 2.54 mm from the end. Make the scoring deep enough to break the metal jacket cleanly without distortion or jagged edges.
4. Remove the metal jacket.
5. Deburr the cable end using care not to damage or distort the Teflon dielectric.
6. Insert the cable into position 1 of the 01-309 fixture until the outer conductor bottoms in the hole and the Teflon dielectric is protruding from the back of the fixture.

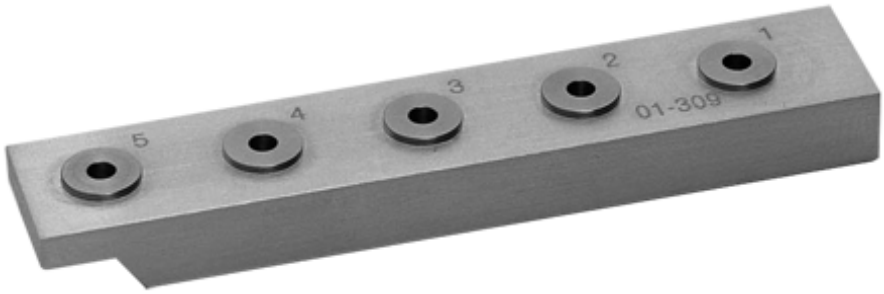


Figure 1-2. 01-309 Cable Assembling Fixture

7. Using an X-Acto knife or razor blade, cut the Teflon dielectric flush with the fixture. Do not score the center conductor. After cutting, the Teflon dielectric should protrude 0.127 mm from the outer conductor (Figure 1-3, left).

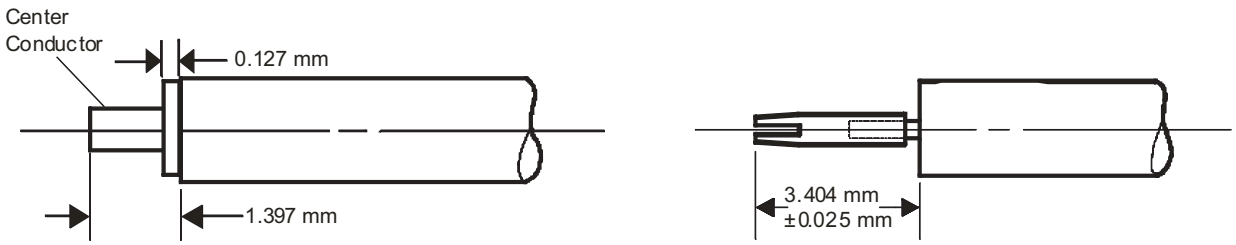


Figure 1-3. V101F-R Cable Preparation and Center Pin Assembly

8. Insert the cable into position 2 of the 01-309 fixture until the outer conductor bottoms in the hole and the center conductor is protruding from the back of the fixture.

9. Using a cutting tool, cut the center conductor flush with the fixture. After cutting, the center conductor should protrude 1.397 mm from the outer conductor (Figure 1-3, left).

10. Tin the cable center conductor with solder and slip the V101F center pin onto the center conductor. Position it adjacent to the Teflon face.

11. Set the resistance soldering unit to 20% to 30% and, with regular tweezers, grasp the center pin and reflow the solder. Do not grasp the fingers of the center pin.

12. Using an X-Acto knife or razor blade, carefully remove the Teflon dielectric behind the center pin flush with the outer conductor (Figure 1-3, right). Do not score the center conductor.

13. Slide the two previously prepared solder rings onto the cable.

14. Place the connector outer conductor onto the cable.

15. Set the soldering unit to 50% to 60%.

Note	Soldering Fixture 01-307F (Figure 1-4 on page 1-3) is recommended to hold parts while soldering.

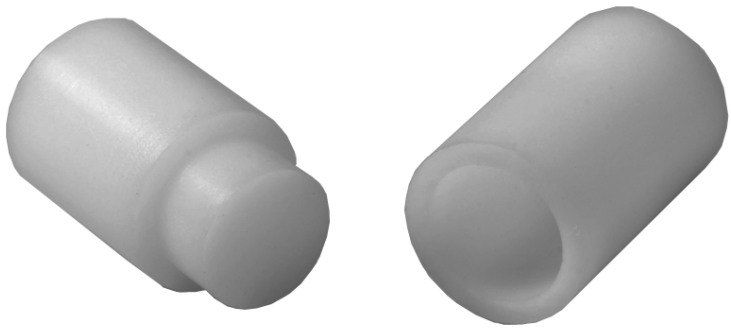


Figure 1-4. 01-307M and 01-307F Cable Soldering Fixtures

16. With medium tweezers, grasp the outer conductor in the space between the hex and the threads.

17. Heat the assembly and, at the same time, apply pressure to the outer conductor to ensure a snug fit with the cable. Avoid getting solder on the outer face of the connector. Clean the end of cable with an IPA dampened swab to remove any flux residue and oils due to handling.

Caution	Excessive heat can cause the Teflon dielectric to shrink below acceptable levels. Use care to heat the solder only until it starts flowing.

18. Place the cable assembly in a 55 °C oven for 30 minutes to ensure complete evaporation of the solvent.

V101M-R

Male Connector for V085 Semi-Rigid Coaxial Cable

Tools and Materials

The following tools and materials are needed to install the V101M-R connector on V085 (2.18 mm outer diameter) semi-rigid coaxial cable. Equivalent tools may be used if recommended tools are not available.

Table 2-1. Tools and Materials

Description	Vendor	Model/Part Number
250 Watt resistance soldering unit with medium tweezers and foot pedal	American Beauty	10504
Regular tweezer for resistance solder	American Beauty	10541
V Connector Cable Assembling Fixture for V085 semi-rigid cable	Anritsu Company	01-309
Cable Sleeve Soldering Fixture	Anritsu Company	01-307M
0.50 mm diameter solder	Kester Company	SAC305
Rosin flux	Kester Company	135
Isopropyl alcohol (IPA) cleaning fluid	any	any

Fabrication Instructions

Fabrication instructions for the cable assembly are given below. Refer to Figure 2-1 to identify the connector parts referenced in the procedure.

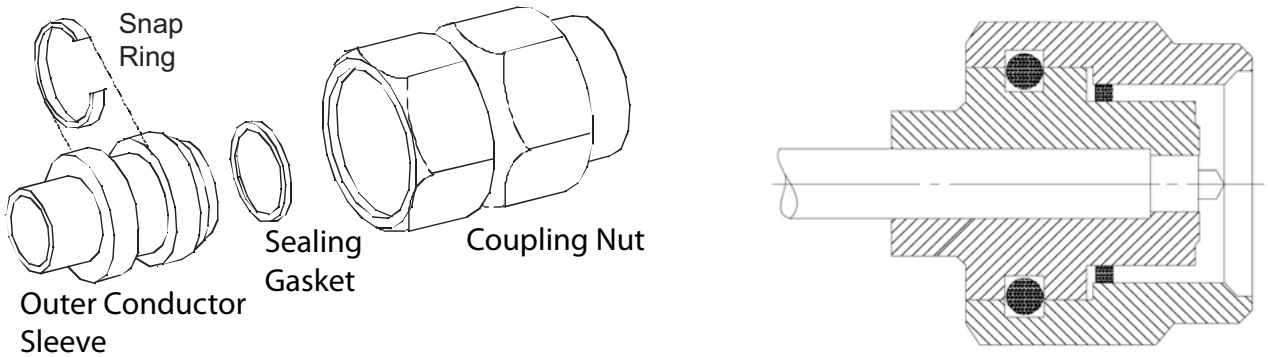


Figure 2-1. V101M-R Assembly

1. Cut the cable to the length desired and deburr the ends. Refer to Figure 2 while performing the following steps.
2. Using a 2.26 mm drill bit or gauge pin, wrap with 0.50 mm solder to form two rings.
3. Using an X-Acto knife or saw, initially score the cable back 3.81 mm (0.15 in.) from the end. Make the scoring deep enough to break the metal jacket cleanly, without distortion or jagged edges.
4. Remove the cable outer conductor.
5. Deburr the outer conductor end using care to avoid damaging or distorting the Teflon dielectric.
6. Insert the cable into position 3 of the 01-309 fixture (Figure 2-2)until the outer conductor bottoms in the hole and the Teflon dielectric is protruding from the back of the fixture.

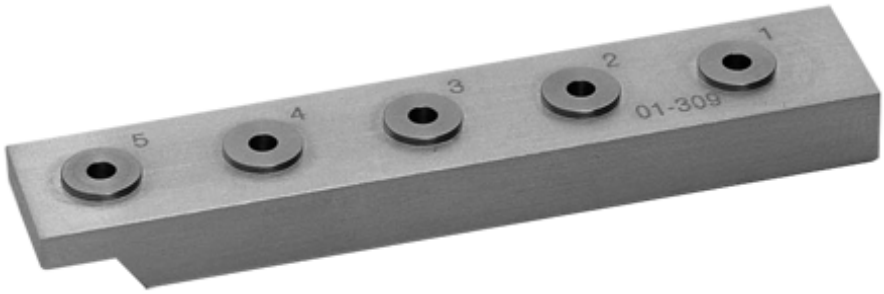


Figure 2-2. 01-309 Cable Assembling Fixture

7. Using an X-ACTO-type knife or razor blade, cut the Teflon dielectric flush with the fixture. Do not score the center conductor. After cutting, the Teflon dielectric should protrude 1.14 mm (0.04 in.) from the outer conductor as shown in Figure 2-3, left.

8. Insert the cable into position 4 of the 01-309 fixture until the outer conductor bottoms in the hole and the center conductor is protruding from the back of the fixture.

9. Using the cutting tool, cut the center conductor flush with the fixture. After cutting, the center conductor should protrude 3.81 mm (0.15 in.) from the outer conductor.

10. Insert the cable into position 5 of the 01-309 fixture until the outer conductor bottoms in the hole and the center conductor is protruding from the back of the fixture.

11. While rotating the cable in the hole of the fixture, carefully file the center conductor to a smoothly tapered tip. Refer to Figure 2-3, right.

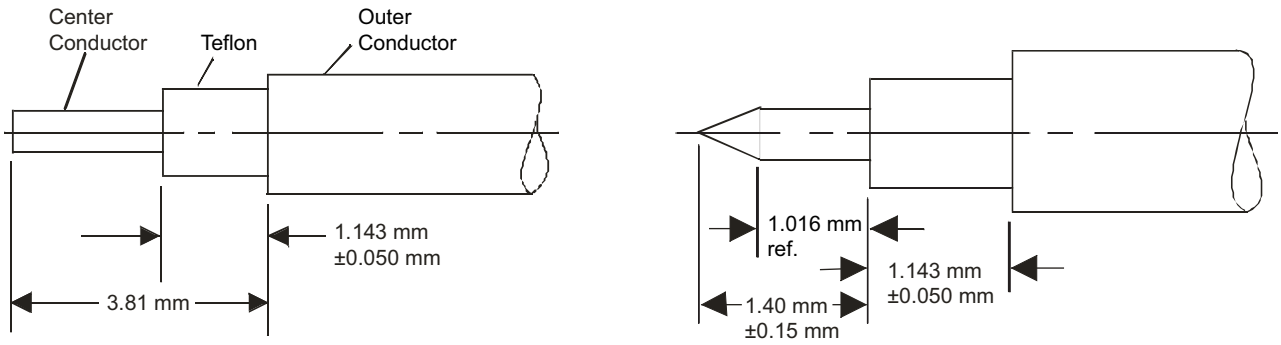


Figure 2-3. V101M-R Cable Preparation and Center Pin Assembly

12. Slide the two previously prepared solder rings onto the cable.

13. Place the connector outer conductor onto the cable.

14. Set the soldering unit to 50% to 60%.

Note	Soldering Fixture 01-307M (Figure 2-4 on page 2-3) is recommended to hold parts while soldering.

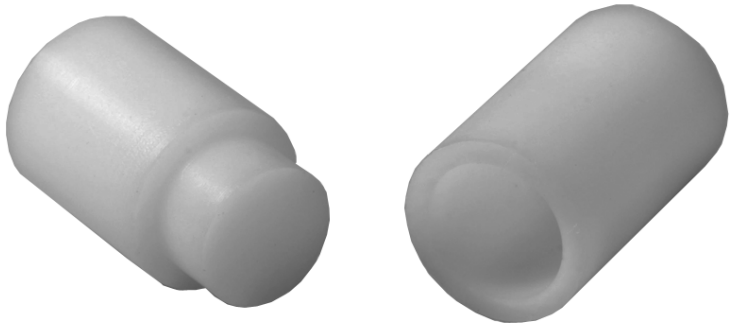


Figure 2-4. 01-307M and 01-307F Cable Soldering Fixtures

15. With medium tweezers, grasp the outer conductor sleeve in the snap-ring groove.

16. Heat the assembly and, at the same time, apply pressure to the outer conductor sleeve to ensure a snug fit with the cable. Avoid getting solder on the outer face of the connector.

Caution	Excessive heat can cause the Teflon dielectric to shrink below acceptable levels. Use care to heat the solder only until it starts flowing.

17. Clean the end of the cable with an IPA dampened swab to remove any flux residue and oils due to handling.

18. Place the cable assembly in a 55 °C oven for 30 minutes to ensure evaporation of the solvent.

19. Slip the snap ring into the groove of the outer conductor sleeve.

20. Place the sealing gasket over the end of the outer conductor sleeve.

21. Using snap ring pliers or other suitable pliers, compress the snap ring and slip the coupling nut onto the outer conductor sleeve. When properly positioned, the snap ring will click into place as it fits into the groove inside the coupling nut.

22. Referring to Figure 2-1, right, inspect the cable assembly to ensure the following:

- **a.** The center conductor is tapered smoothly and has no nicks.
- **b.** The face of the microporous Teflon dielectric is 0.125 mm (0.005 in.) below the face of the outer conductor.
- **c.** The Teflon is not distorted.

V102F-R

Microstrip to V Female Sparkplug Connector

Fabrication instructions for the V102F-R assembly are given below. Refer to Figure 3-3 to identify the connector parts referenced in the procedure.

Tools and Materials

The following tools and materials are needed to install the V102F-R Sparkplug Connector in a mounting hole on a housing. Equivalent tools may be used if the recommended tools are not available.

Table 3-1. Tools and Materials

Description	Vendor	Model/Part Number
Thermolyne micro hot plate	Baxter Scientific Products	H2155
Step drill kit	Anritsu Company	01-304 and 01-308
Connector torquing tool kit	Anritsu Company	01-105A
Glass bead holding fixture (For sparkplug launcher glass bead)	Anritsu Company	01-303
Glass bead	Advanced Technology Group Inc.	V100/V100B
0.50 mm to 0.65 mm diameter solder	Kester Company	SAC305 or AuSn
Rosin flux	Kester Company	135
Isopropyl alcohol (IPA) cleaning fluid	any	any
Retaining compound (optional)	Loctite	RC/609

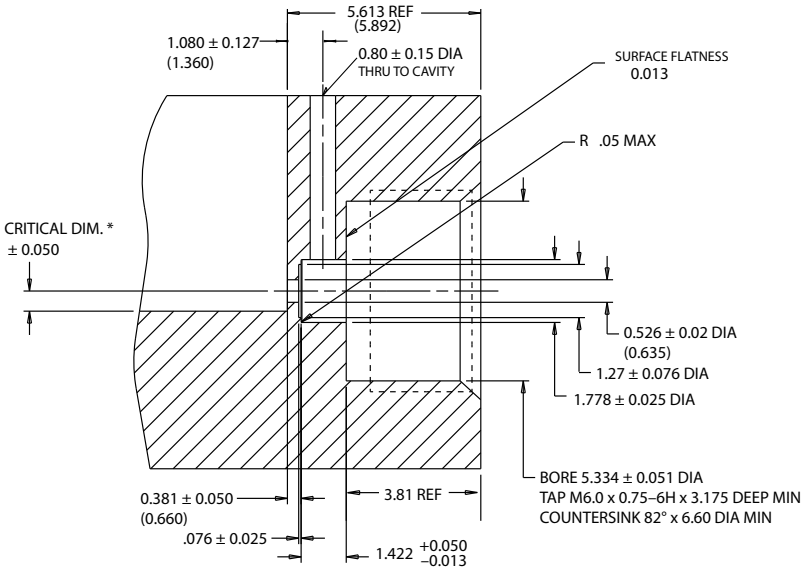
Machining Dimensions

Machining dimensions for the mounting hole required for installation of the microstrip to a V female sparkplug connector are shown in Figure 3-1 on page 3-2.

For machining instructions, refer to the 01-304 or 01-308 instruction sheet.

Caution	The four holes shown in Note 2 of Figure 3-1 must be concentric within ± 0.038 mm. If they are not, connector performance will be degraded. To make this required concentricity easier to achieve, the custom made Finishing Step Drill & Tap Kits, Models 01-304 and 01-308, are available from Anritsu.

Note	Use the 01-304 Finishing Step Drill & Tap Kit when you are NOT using stress relief contacts (also known as sliding contacts). If you are using V110-1-R stress relief contacts to make connections to your microcircuit, use the 01-308 kit instead.



Notes:

1. All dimensions are in millimeters.
2. The concentricity of the 0.526 and 1.27 holes to the 1.778 hole is critical, and must be held within 0.038 mm.
3. With the Model 01-304 and 01-308 Step Drill Kits, all of the required concentric holes can be machined at the same time using a single bit. Use the 01-308 kit if the V110-1 Stress Relief contact is going to be used.
4. The numbers in parentheses apply when the V110-1 Stress Relief Contact is used.

* Dimension is 0.121 (Pin Radius)
+ Substrate thickness
+ Solder thicknes
(+ 0.038 if V110-1 sliding contact is used)

Figure 3-1. V102F-R Machining Dimensions for the Sparkplug Connector Mounting Holes

Glass Bead Installation

1. Install the microstrip into the housing (see Figure 3-2 for dimensional tolerances around the glass bead).

2. Set the hot plate to 235 °C ± 10 °C for SAC305, or 310 °C ± 10 °C for AuSn solder.

3. Apply flux to the glass bead and insert it, long-end first, into the 01-303 Glass Bead Holding Fixture.

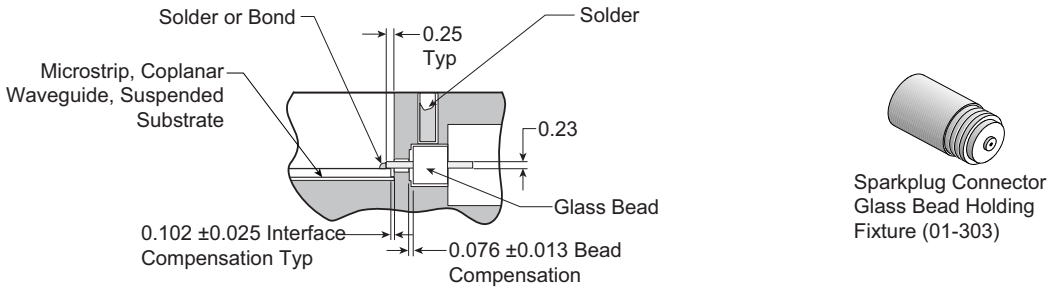


Figure 3-2. V102F-R Glass Bead Assembly

4. Using the holding fixture to handle the bead, screw the bead into the mounting hole opening until the center conductor protrudes through the backside interface and contacts the microstrip.

5. Insert a length of solder into the soldering access hole and cut it flush with the top of the hole.

6. Place the device on the hot plate and leave it there for approximately 15 seconds **after** the solder melts.

7. Remove the device from the hot plate and allow it to cool.

8. If a sliding contact *is not* used, bond or solder the center conductor to the microstrip. Use a minimum amount of solder. If a sliding contact *is* used, refer to the sliding contact instruction sheet.

9. Remove the glass support bead holding fixture and clean the assembly with IPA to remove flux residue.

Caution	Avoid cleaning fluids containing halogenated and aromatic hydrocarbons (Freon.). These compounds may soften or dissolve the PPO/Teflon bead material in the center pin support bead.

Connector Installation

1. Optionally, you may apply a small amount of Loctite to the housing threads of the sparkplug connector assembly.
2. Screw the V102F-R sparkplug assembly into the tapped mounting hole of the housing, making sure that the center conductor mates properly with the glass bead, and torque to between 1.7 N·m and 2.0 N·m (15 lbf/in and 17 lbf/in) using the 01-105A Torquing Tool Kit.

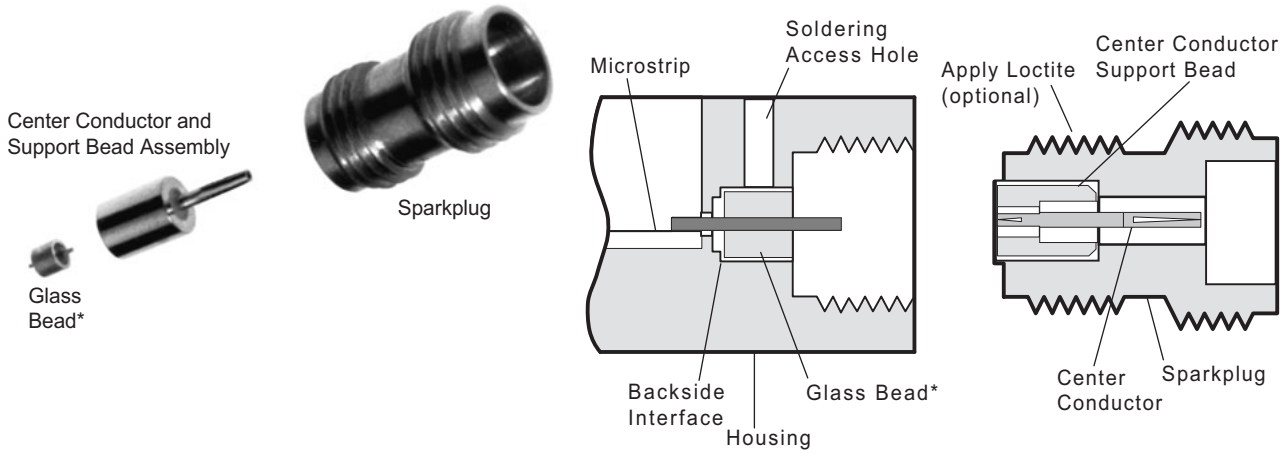


Figure 3-3. V102F-R Assembly (*Glass Bead not supplied)

V102M-R

Microstrip to V Male Sparkplug Connector

Tools and Materials

The following tools and materials are needed to install the V102M-R Sparkplug Connector in a mounting hole on a housing. Equivalent tools may be used if the recommended tools are not available.

Table 4-1. Tools and Materials

Description	Vendor	Model/Part Number
Thermolyne micro hot plate	Baxter Scientific Products	H2155
Step drill kit	Anritsu Company	01-304 and 01-308
Connector torquing tool kit	Anritsu Company	01-105A
Glass bead holding fixture (For sparkplug launcher glass bead)	Anritsu Company	01-303
Glass bead	Advanced Technology Group Inc.	V100/V100B
0.50 mm to 0.65 mm diameter solder	Kester Company	SAC305 or AuSn
Rosin flux	Kester Company	135
Isopropyl alcohol (IPA) cleaning fluid	any	any
Retaining compound (optional)	Loctite	RC/609

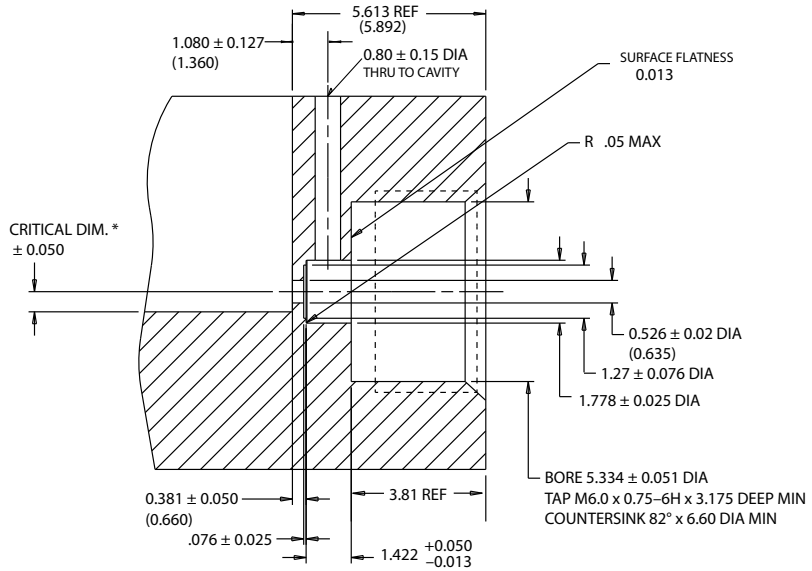
Machining Dimensions

Machining dimensions for the mounting hole required for installation of the microstrip to a V male sparkplug connector are provided in Figure 4-1 on page 4-2.

For machining instructions, refer to the 01-304 or 01-308 instruction sheet.

Caution	The four holes shown in Note 2 of Figure 4-1 must be concentric within ± 0.038 mm. If they are not, connector performance will be degraded. To make this required concentricity easier to achieve, the custom made Finishing Step Drill & Tap Kits, Models 01-304 and 01-308, are available from Anritsu.

Note	Use the 01-304 Finishing Step Drill & Tap Kit when you are NOT using stress relief contacts (also known as sliding contacts). If you are using V110-1-R stress relief contacts to make connections to your microcircuit, use the 01-308 kit instead.



Notes:

1. All dimensions are in millimeters.
2. The concentricity of the 0.526 and 1.27 holes to the 1.778 hole is critical, and must be held within 0.038 mm.
3. With the Model 01-304 and 01-308 Step Drill Kits, all of the required concentric holes can be machined at the same time using a single bit. Use the 01-308 kit if the V110-1 Stress Relief contact is going to be used.
4. The numbers in parentheses apply when the V110-1 Stress Relief Contact is used.

* Dimension is 0.121 (Pin Radius)
+ Substrate thickness
+ Solder thicknes
(+ 0.038 if V110-1 sliding contact is used)

Figure 4-1. V102M-R Machining Dimensions for the Sparkplug Connector Mounting Holes

Glass Bead Installation

1. Install the microstrip into the housing (see Figure 4-2 for dimensional tolerances around the glass bead).

2. Set the hot plate to 235 °C ± 10 °C for SAC305, or 310 °C ± 10 °C for AuSn solder.

3. Apply flux to the glass bead and insert it, long-end first, into the 01-303 Glass Bead Holding Fixture.

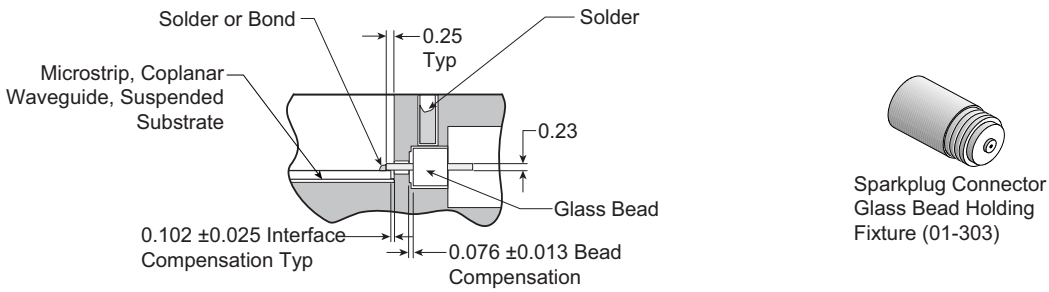


Figure 4-2. V102M-R Glass Bead Assembly

4. Using the holding fixture to handle the bead, screw the bead into the mounting hole opening until the center conductor protrudes through the backside interface and contacts the microstrip.

5. Insert a length of solder into the soldering access hole and cut it flush with the top of the hole.

6. Place the device on the hot plate and leave it there for approximately 15 seconds **after** the solder melts.

7. Remove the device from the hot plate and allow it to cool.

8. If a sliding contact *is not* used, bond or solder the center conductor to the microstrip. Use a minimum amount of solder. If a sliding contact *is* used, refer to the sliding contact instruction sheet.

9. Remove the glass support bead holding fixture and clean the assembly with IPA to remove flux residue.

Caution	Avoid cleaning fluids containing halogenated and aromatic hydrocarbons (Freon.). These compounds may soften or dissolve the PPO/Teflon bead material in the center pin support bead.

Installation Instructions

Fabrication instructions for the V102M-R assembly are given below. Refer to Figure 4-3 to identify the connector parts referenced in the procedure.

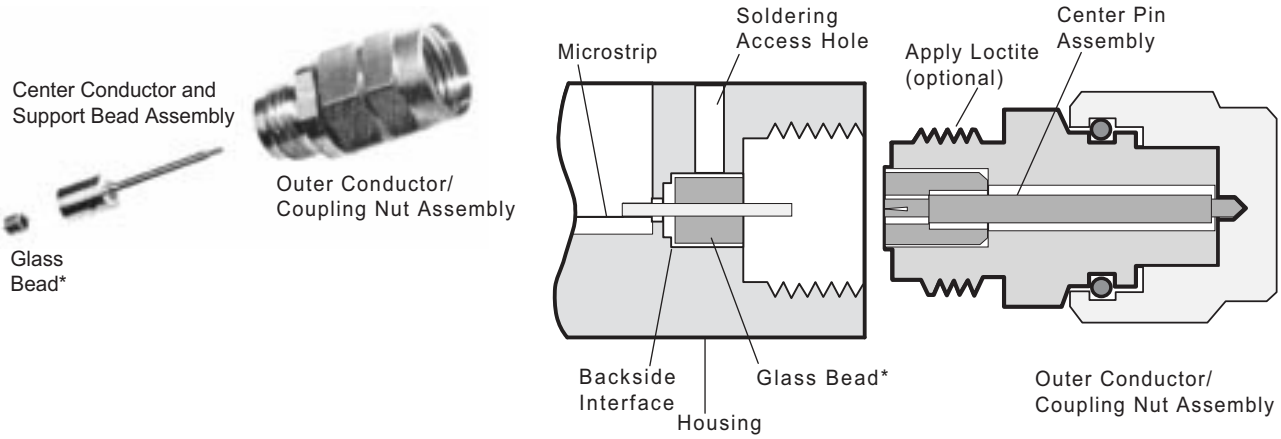


Figure 4-3. V102M-R Assembly (*Glass Bead not supplied)

1. Optionally, you may apply a small amount of Loctite to the housing threads of the sparkplug connector assembly.
2. Screw the V102M-R sparkplug assembly into the tapped mounting hole of the housing, making sure that the center conductor mates properly with the glass bead, and torque to between 1.7 N·m and 2.0 N·m (15 lbf/in and 17 lbf/in) using the 01-105A Torquing Tool Kit.

V103F-R

Microstrip to V Female Flange Mount Connector

Tools and Materials

The following tools and materials are needed to install the V103F-R Flange Mount Connector in a mounting hole on a housing. Equivalent tools may be used if the recommended tools are not available.

Table 5-1. Tools and Materials

Description	Vendor	Model/Part Number
Thermolyne micro hot plate	Baxter Scientific Products	H2155
Step drill kit	Anritsu Company	01-304 and 01-308
Connector torquing tool kit	Anritsu Company	01-105A
Glass bead holding fixture and clip (For flange launcher glass bead)	Anritsu Company	01-306
Glass bead	Advanced Technology Group Inc.	V100/V100B
0.50 mm to 0.65 mm diameter solder	Kester Company	SAC305 or AuSn
Rosin flux	Kester Company	135
Isopropyl alcohol (IPA) cleaning fluid	any	any

Machining Dimensions

Machining dimensions for the mounting hole required for installation of the microstrip to V female flange mount connector are provided in Figure 5-1 below.

For machining instructions, refer to the01-304 or 01-308 instruction sheet.

Caution	The three holes shown in Note 2 of Figure 5-1 must be concentric within ± 0.038 mm. If they are not, connector performance will be degraded. To make this required concentricity easier to achieve, the custom made Finishing Step Drill & Tap Kits, Models 01-304 and 01-308, are available from Anritsu.

Note	Use the 01-304 Finishing Step Drill & Tap Kit when you are NOT using stress relief contacts (also known as sliding contacts). If you are using V110-1-R stress relief contacts to make connections to your microcircuit, use the 01-308 kit instead.

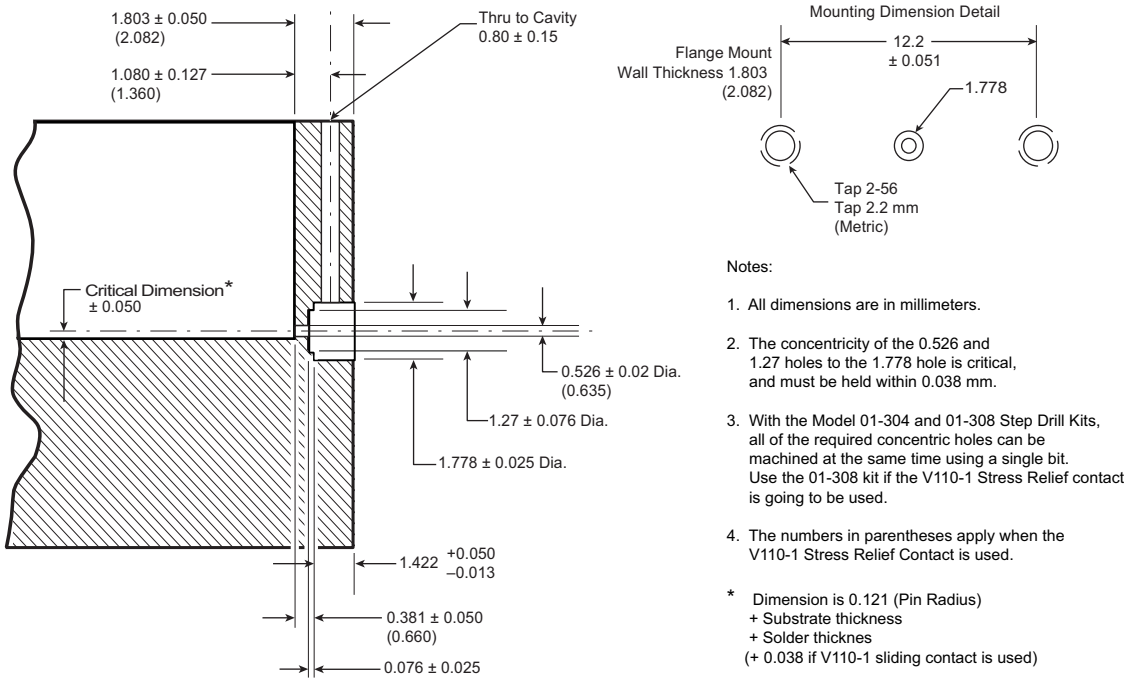


Figure 5-1. V103F-R Machining Dimensions for the Flange Mount Connector Mounting Holes

Glass Bead Installation

1. Install the microstrip into the housing (see Figure 5-2 for dimensional tolerances around the glass bead).
2. Set the hot plate to 235 °C ± 10 °C for SAC305, or 310 °C ± 10 °C for AuSn solder.
3. Apply flux to the glass bead and insert it, long-end first, into the 01-306 Glass Bead Holding Fixture.
4. Using the holding fixture to handle the bead, slide the bead into the mounting hole opening until the center conductor protrudes through the backside interface and contacts the microstrip.
5. Secure the holding fixture in place by using the spring clip furnished with the fixture (Figure 5-2). Position the spring clip so as not to obstruct the solder access hole in the housing. Ensure that the glass bead is centered and that it is making good contact with the microstrip.
6. Insert a length of solder into the soldering access hole and cut it flush with the top of the hole.

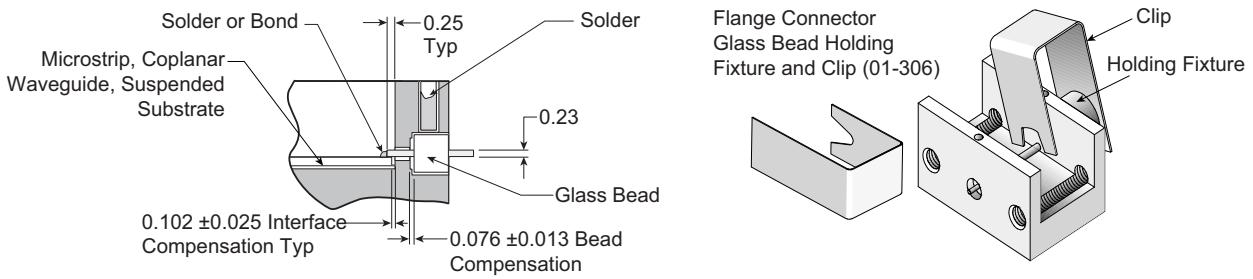


Figure 5-2. V103F-R Glass Bead Assembly

7. Place the device on the hot plate and leave it there for approximately 15 seconds **after** the solder melts.
8. Remove the device from the hot plate and allow it to cool.
9. If a sliding contact *is not* used, bond or solder the center conductor to the microstrip. Use a minimum amount of solder. If a sliding contact *is* used, refer to the sliding contact instruction sheet.

10. Remove the glass support bead holding fixture and clean the assembly with IPA to remove flux residue.

Caution	Avoid cleaning fluids containing halogenated and aromatic hydrocarbons (Freon.). These compounds may soften or dissolve the PPO/Teflon bead material in the center pin support bead.

Installation Instructions

Fabrication instructions for the cable assembly are given below. Refer to Figure 5-3 to identify the connector parts referenced in the procedure.

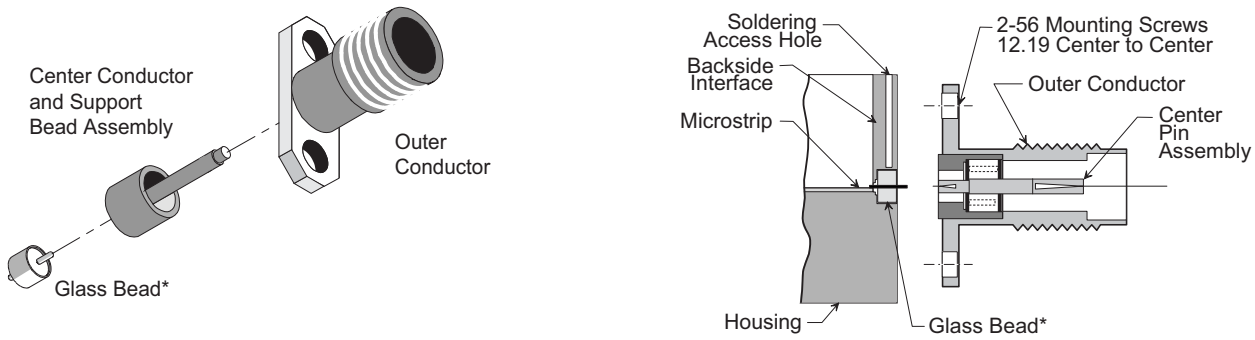


Figure 5-3. V103F-R Assembly (*Glass Bead not supplied)

11. Install the V103F-R onto the housing making sure that the center conductor mates properly with the glass bead.

12. Secure the flanged connector with two 2-56 screws (or two 2.2 mm screws if a metric thread is used).

13. Tighten the screws to approximately 0.226 N·m (0.167 lbf/in). When tightening the screws, use care to keep flanges parallel to the housing.

V103M-R

Microstrip to V Male Flange Mount Connector

Tools and Materials

The following tools and materials are needed to install the V103M-R Flange Mount Connector in a mounting hole on a housing. Equivalent tools may be used if the recommended tools are not available.

Table 6-1. Tools and Materials

Description	Vendor	Model/Part Number
Thermolyne micro hot plate	Baxter Scientific Products	H2155
Step drill kit	Anritsu Company	01-304 and 01-308
Connector torquing tool kit	Anritsu Company	01-105A
Glass bead holding fixture and clip (For flange launcher glass bead)	Anritsu Company	01-306
Glass bead	Advanced Technology Group Inc.	V100/V100B
0.50 mm to 0.65 mm diameter solder	Kester Company	SAC305 or AuSn
Rosin flux	Kester Company	135
Isopropyl alcohol (IPA) cleaning fluid	any	any

Machining Dimensions

Machining dimensions for the mounting hole required for installation of the microstrip to V female flange mount connector are provided in Figure 6-1 on page 6-2.

For machining instructions, refer to the 01-304 or 01-308 instruction sheet.

Caution	The three holes shown in Note 2 of Figure 6-1 must be concentric within ± 0.038 mm. If they are not, connector performance will be degraded. To make this required concentricity easier to achieve, the custom made Finishing Step Drill & Tap Kits, Models 01-304 and 01-308, are available from Anritsu.

Note	Use the 01-304 Finishing Step Drill & Tap Kit when you are NOT using stress relief contacts (also known as sliding contacts). If you are using V110-1-R stress relief contacts to make connections to your microcircuit, use the 01-308 kit instead.

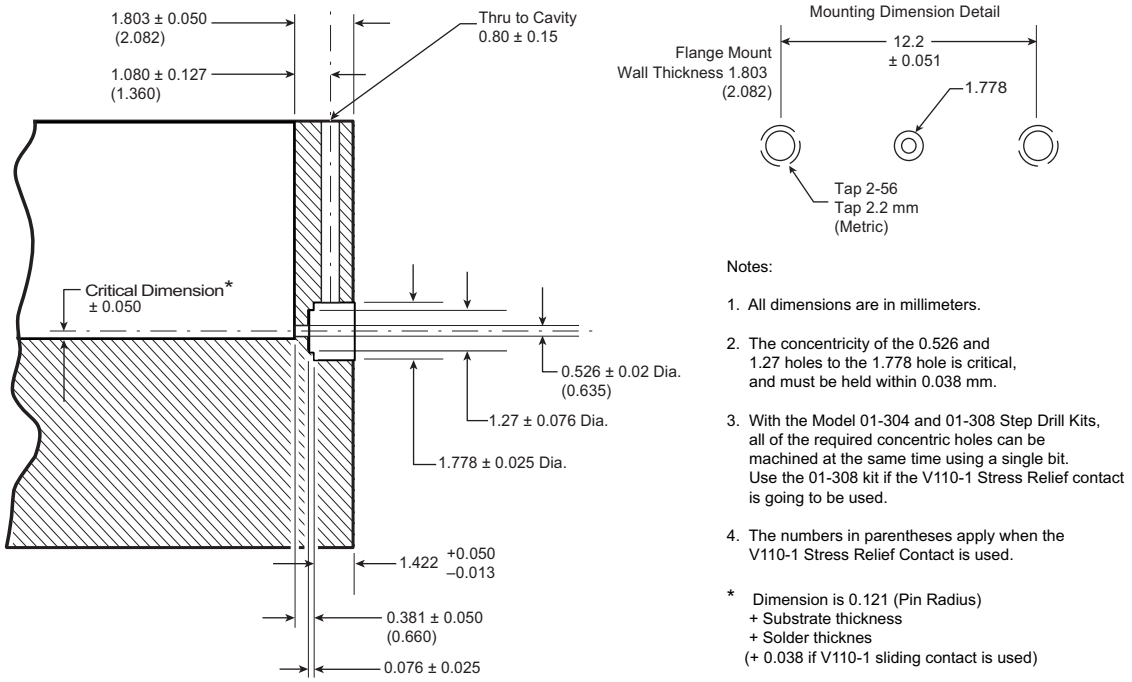


Figure 6-1. V103M-R Machining Dimensions for the Flange Mount Connector Mounting Holes

Glass Bead Installation

1. Install the microstrip into the housing (see Figure 6-2 for dimensional tolerances around the glass bead).
2. Set the hot plate to 235 °C ± 10 °C for SAC305, or 310 °C ± 10 °C for AuSn solder.
3. Apply flux to the glass bead and insert it, long-end first, into the 01-306 Glass Bead Holding Fixture.
4. Using the holding fixture to handle the bead, slide the bead into the mounting hole opening until the center conductor protrudes through the backside interface and contacts the microstrip.
5. Secure the holding fixture in place by using the spring clip furnished with the fixture (Figure 6-2). Position the spring clip so as not to obstruct the solder access hole in the housing. Ensure that the glass bead is centered and that it is making good contact with the microstrip.
6. Insert a length of solder into the soldering access hole and cut it flush with the top of the hole.Insert a length of solder into the soldering access hole and cut it flush with the top of the hole.

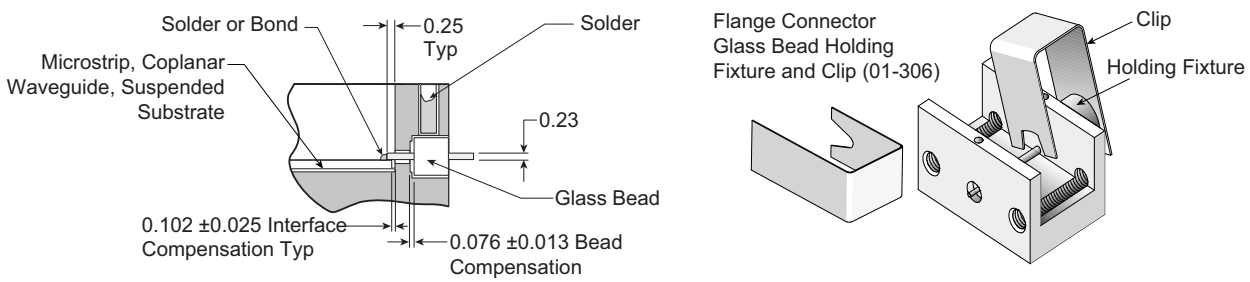


Figure 6-2. V103M-R Glass Bead Assembly

7. Place the device on the hot plate and leave it there for approximately 15 seconds **after** the solder melts.
8. Remove the device from the hot plate and allow it to cool.
9. If a sliding contact *is not* used, bond or solder the center conductor to the microstrip. Use a minimum amount of solder. If a sliding contact *is* used, refer to the sliding contact instruction sheet.

10. Remove the glass support bead holding fixture and clean the assembly with IPA to remove flux residue.

Caution	Avoid cleaning fluids containing halogenated and aromatic hydrocarbons (Freon.). These compounds may soften or dissolve the PPO/Teflon bead material in the center pin support bead.

Installation Instructions

Fabrication instructions for the cable assembly are given below. Refer to Figure 6-3 to identify the connector parts referenced in the procedure.

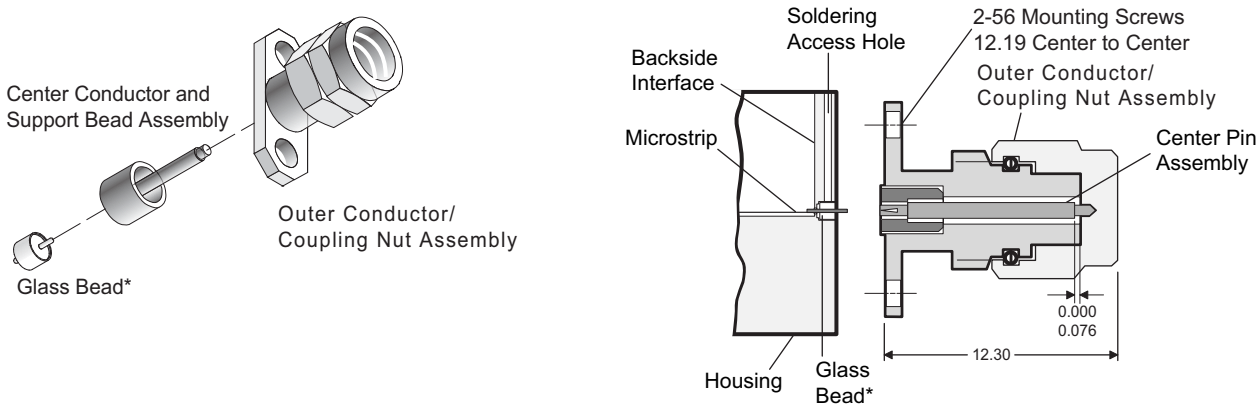


Figure 6-3. V103M-R Assembly (*Glass Bead not supplied)

11. Install the V103M-R onto the housing making sure that the center conductor mates properly with the glass bead.

12. Secure the flanged connector with two 2-56 screws (or two 2.2 mm screws if a metric thread is used).

13. Tighten the screws to approximately 0.226 N-meter. When tightening the screws, use care to keep flanges parallel to the housing.

V110-1-R

Sliding Contacts for Alumina and Duroid Microstrip

Tools and Materials

The following tools and materials are recommended to install the V110-1-R Sliding Contacts on the pin of a glass bead. Equivalent tools may be used if the recommended tools are not available.

Table 7-1. Tools and Materials

Description	Vendor	Model/Part Number
Parallel-Gap Welder and Pulse Bonder	Hughes	WCW550 with VTA-90 Head
Thermo-Compression bonder	MECH-EL or West Bond	907 or 7416
Step drill and tap set	Anritsu Company	01-308
Jewelers screwdriver	any	any
Tweezers	any	any
Solder	Indium Corporation	#183 (88Au 12Ge)

Machining Dimensions

The following list provides references to the mounting hole dimensions required for installation of the V Connector assemblies when using V110-1-R sliding contacts. The dimensions shown in parentheses in the figures should be followed when sliding contacts are used.

- **V102F-R:** Figure 3-1 on page 3-2
- **V102M-R:** Figure 4-1 on page 4-2
- **V103F-R:** Figure 5-1 on page 5-2
- **V103M-R:** Figure 6-1 on page 6-2

The precision step drill listed in Table 7-1 makes it easier to achieve concentricity of the respective three or four holes required for the V102F-R, V102M-R, V103F-R, and V103M-R installation.

Fabrication Instructions

The sliding contacts slip over the pin of the glass bead and mate with the microcircuit as shown in Figure 7-1 (following page). The following is the recommended procedure for installing the sliding contacts and mating them with the microcircuit.

1. Drill the required holes and install the microcircuit and glass bead as shown in the appropriate instruction for the V102F-R, V102M-R, V103F-R, and V103M-R assembly.
2. Check that the center pin in the glass bead is 0.038 (V110-1-R thickness) above the top of the microcircuit. If necessary, bend the pin to achieve this degree of levelness.
3. Using the tweezers:
   a. Remove the V110-1-R Sliding Contact from the package.
   b. With the sleeve-end facing the pin on the glass bead, lay the V110-1-R on the microcircuit near the bead.
4. Using the tip of the jewelers screwdriver, gently press the V110-1-R tab both down onto the microcircuit and in toward the glass bead.
5. Position the sleeve as shown in Figure 7-1.

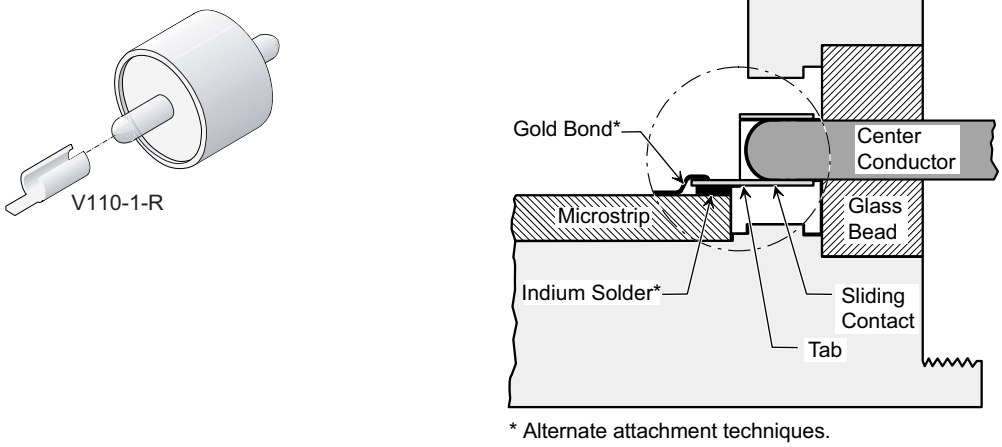


Figure 7-1. V110-1-R Sliding Contact Assembly

6. For optimum RF performance, position the sliding contacts dynamically on the center pin as follows:

a. Ensure that the tab makes good electrical contact with the microcircuit.

b. Measure the SWR (return loss) of the connection.

c. Slide the sleeve back and forth in small increments until the RF performance is optimized.

7. If the sleeve on the V110-1-R should become slightly malformed during the above operation, reform it using the tweezers and ensure that it still makes firm contact with the bead pin.

8. Attach the tab on the V110-1-R to the microcircuit by any of the following three methods:

a. Soldering: For thin-film microcircuits, use Indium #183 solder to prevent the leaching of gold from the microcircuit. For other types, use any acceptable solder.

Caution	Use a minimum amount of solder to prevent the sleeve from becoming soldered to the pin.

b. TC Bonding: Use ultrasonic or pulse bonding. Ensure that the tab firmly contacts the microcircuit for best RF performance.

c. Parallel-Gap Welding: Use a tip that is approximately the same size as the tab (0.203 mm). Optimize the voltage, duration, and weight for a strong weld.

01-304

Finishing Step Drill and Tap Kit

Figure 8-1. 01-304 Drill and Tap Set

Introduction

This drill and tap set is used to precisely machine the concentric holes needed for mounting V Connectors® in housings. The finishing step drill is made of high-speed steel and is designed for use on aluminum and brass housings.

Caution	The drill bit in this kit is not intended for use with stainless steel, Invar, or Kovar ®. However, satisfactory operation–with a limited life–can be obtained with these materials if a pilot hole is drilled first. This pilot hole should be within ± 0.127 mm of each required hole diameter.

Note	Use the 01-304 kit when you are NOT using stress relief contacts (also known as sliding contacts). If you are using V110-1-R stress relief contacts to make connections to your microcircuit, use the 01-308 kit instead.

Kit Contents

- Drill Part No: 783-568
- Tap Part No: 783-569

Machining Dimensions

The following list provides references to the machining dimensions required for installation of the applicable V Connector assembly:

- **V102F-R:** Figure 3-1 on page 3-2
- **V102M-R:** Figure 4-1 on page 4-2
- **V103F-R:** Figure 5-1 on page 5-2
- **V103M-R:** Figure 6-1 on page 6-2

Machining Instructions

The drill bit in this kit simultaneously machines the concentric holes needed to install the V102F/M Sparkplug and V103F/M Flange Mount Connectors . When the 01-304 drill bit is used in the manner described below, it should provide reliable performance for thousands of operations.

Caution	Do not use a drill press for the following steps. The precise tolerances needed require a milling machine.

1. Drill pilot holes to within 0.127 mm of each specified hole diameter.
2. Install the step drill bit directly into the collet of the mill.

   Do not use a drill chuck to hold the bit.
3. Set the drilling speed for 1500 to 2000 rpm and the feed rate for 0.006 mm per revolution.
4. Drill the holes using full-flood coolant and a steady, even feed.

   Periodically withdraw the drill bit and clear away the chips to make the drilling easier. This will also make the drill bit less likely to break.
5. For V102F–R and V102M-R Sparkplug Connectors:
   a. Drill the hole as specified in the steps above, and in the applicable drawing.
   b. Tap the hole using the tap supplied with the 01-304 kit.
6. For V103F–R and V103M–R Flange Mount Connectors:
   a. Drill all three holes as specified in the steps above, and in the applicable drawing.
   b. Tap the two mounting holes as specified in the same drawing.

Note	For V103F–R and V103M–R flange mount connectors, the horizontal orientation of the flange mounting-screw holes are shown for information only (see Figure 5-1 on page 5-2 and Figure 6-1 on page 6-2). In practice, the mounting hole pattern may be rotated as needed to any position (except for vertical to avoid the solder access hole).

01-308

Finishing Step Drill and Tap Kit (Sliding Contacts)

Figure 9-1. 01-308 Drill and Tap Set

Introduction

This drill and tap set is used to precisely machine the concentric holes needed for mounting V Connectors® in housings. The finishing step drill is made of high-speed steel and is designed for use on aluminum and brass housings.

Caution	The drill bit in this kit is not intended for use with stainless steel, Invar, or Kovar ®. However, satisfactory operation–with a limited life–can be obtained with these materials if a pilot hole is drilled first. This pilot hole should be within ± 0.127 mm of required hole diameters.

Note	Use the 01-308 kit when you are using stress relief contacts (model V110-1-R) to connect to your microcircuit. If you are NOT using stress relief contacts, use the 01-304 kit instead.

Kit Contents

- Drill Part No: 55300
- Tap Part No: 783-569

Machining Dimensions

The following list provides references to the machining dimensions required for installation of the applicable V Connector assembly:

- **V102F-R:** Figure 3-1 on page 3-2
- **V102M-R:** Figure 4-1 on page 4-2
- **V103F-R:** Figure 5-1 on page 5-2
- **V103M-R:** Figure 6-1 on page 6-2

Machining Instructions

The drill bit in this kit (Figure 9-1) simultaneously machines the concentric holes needed to install the V102F/M Sparkplug and V103F/M Flange Mount Connectors. When the 01-308 drill bit is used in the manner described below, it should provide reliable performance for thousands of operations.

Caution	Do not use a drill press for the following steps. The precise tolerances needed require a milling machine.

1. Drill pilot holes to within 0.127 mm of each specified hole diameter.
2. Install the step drill bit directly into the collet of the mill.

   Do not use a drill chuck to hold the bit.
3. Set the drilling speed for 1500 to 2000 rpm and the feed rate for 0.006 mm per revolution.
4. Drill the holes using full-flood coolant and a steady, even feed.

   Periodically withdraw the drill bit and clear away the chips to make the drilling easier. This will also make the drill bit less likely to break.
5. For V102F/M Sparkplug Connectors:
   a. Drill the hole as specified in the steps above, and in the applicable drawing.
   b. Tap the hole using the tap supplied with the 01-308 kit.
6. For V103F/M Flange Mount Connectors:
   a. Drill all three holes as specified in the steps above, and in the applicable drawing.
   b. Tap the two mounting holes as specified in the same drawing.

Note	For V103F–R and V103M–R flange mount connectors, the horizontal orientation of the flange mounting-screw holes are shown for information only (see Figure 5-1 on page 5-2 and Figure 6-1 on page 6-2). In practice, the mounting hole pattern may be rotated as needed to any position (except for vertical to avoid the solder access hole).

Notes

Notes

Anritsu

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