

Anritsu Microwave K ConnectorTM and Extended-K ConnectorTM



K101F-R or EK101F-R

K101M-R or EK101M-R

K101M-085-R or EK101M-085-R

K102F-R or EK102F-R

K102M-R or EK102M-R

K103F-R or EK103F-R

K103M-R or EK103M-R

K104F-R or EK104F-R

K104M-R or EK104M-R

K110-1-R or K110-3-R

K110-2-R

01-104

01-108

Anritsu

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K101F-R or EK101F-R

Female Connector for K118 Semi-Rigid Coaxial Cable

Tools and Materials

The following tools and materials are needed to install the [K101F-R or EK101F-R](#) connector on the K118 semirigid 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
Tool kit cable assembly	Anritsu Company	01-118
0.50 mm diameter solder	Kester Company	SAC305
Rosin flux	Kester Company	135
Isopropyl alcohol cleaning fluid	any	any
Soldering Fixture	Anritsu Company	01-107F
Connector torquing tool kit	Anritsu Company	01-105A

Fabrication Instructions

Fabrication instructions for the cable assembly are given below. Refer to [Figure 1-1](#) to identify the connector parts referenced in the procedure.

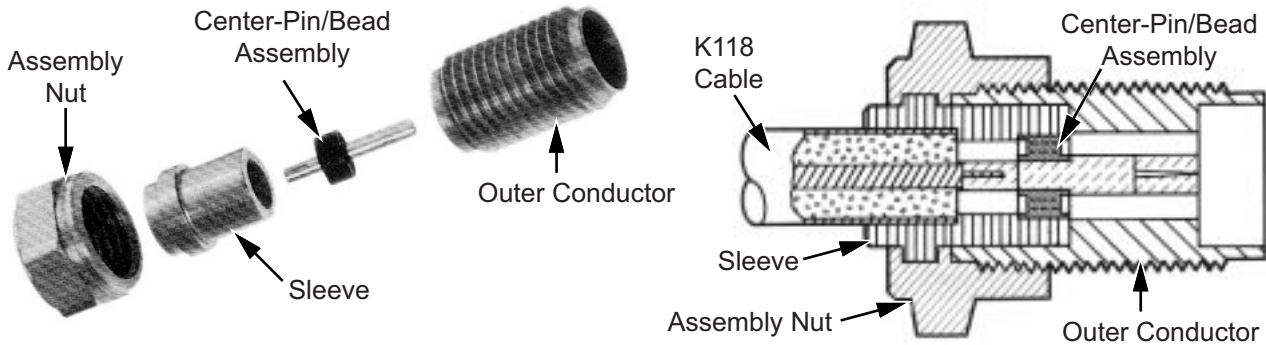


Figure 1-1. [K101F-R or EK101F-R](#) Assembly

1. Remove approximately 6.5 mm of the outer conductor from one end of the cable. The outer conductor should be cut square and be free of burrs. A suggested method using the multipurpose tool in the Anritsu 01-118 tool kit follows:
 - a. Clamp the multipurpose tool in a vise with the hole facing up.
 - b. Insert the end of the semi-rigid cable into the hole as far as it will go.
 - c. While pressing the cable against the bottom of the hole and rotating it, cut a deep groove around the circumference of the outer conductor using a razor blade or saw.
 - d. Break off the outer conductor and remove it from the cable.

2. Remove the exposed teflon insulation and trim it flush with the outer conductor, taking care not to cut into the center conductor.
3. Cut and trim and deburr the exposed center conductor to $1.27 \text{ mm} \pm 0.15 \text{ mm}$. The “F” gauging hole in the 01-118 tool kit may be used to measure this distance. Be careful not to nick or otherwise damage the center conductor.
4. File the center conductor to a smooth point that tapers approximately 0.5 mm back from the point.
5. Slide the assembly nut onto the cable.
6. Clean the end of the cable with a solvent-dampened swab to remove any oils due to handling.

Caution	Avoid cleaning fluids containing halogenated and aromatic hydrocarbons (Freon). These compounds may soften or dissolve the PPO/Teflon bead material.
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7. Slide the sleeve onto the cable, as shown in [Figure 1-1](#), and place the solder ring against it.
8. Set the resistance soldering unit from 50% to 60% and grasp the sleeve, applying pressure to keep the sleeve bottomed out on the cable, and solder it square with the cable. Fixture 01-107F is recommended to hold parts while soldering.

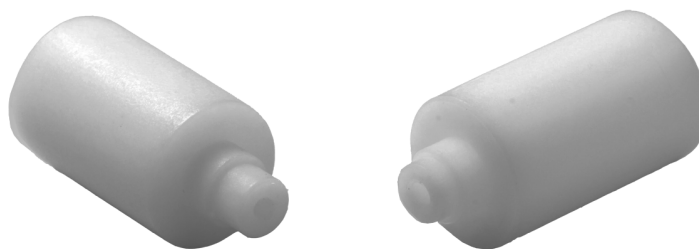


Figure 1-2. 01-107M and 01-107F Soldering Fixtures

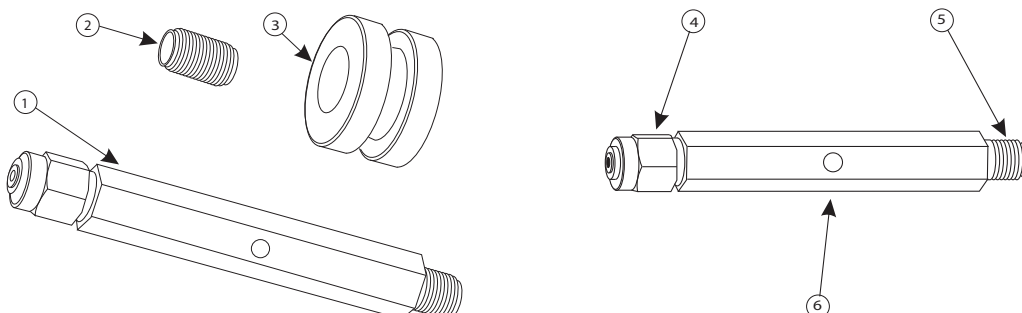
9. Inspect the connection to ensure that there are no solder gaps ([Figure 1-3](#)) and that the sleeve assembly is square with the cable.
10. Clean any flux residue from the Teflon interface on the inside of the connector housing. A small piece of cotton, dampened in solvent and held by tweezers, works best for this cleaning operation.
11. Inspect the inside of the connector to ensure that the solder seam has no gaps. A 30X microscope is best for this inspection. There should be no evidence of solder on the sleeve inner diameter.



Figure 1-3. Examples of Good and Bad Solder Connections

12. Press the center-pin/bead assembly into the sleeve, whereupon, spring-fingers on the pin will connect with the cable center conductor. A recommended method using the 01-118 tool kit's multipurpose tool (Figure 1-4 on page 1-3) follows:
 - a. Slide the assembly-barrel from the tool kit over the sleeve, and screw it into the assembly nut until it is hand-tight.
 - b. Place the long end of the center-pin/bead assembly into the hole on the female end of the multipurpose tool.
 - c. Connect the coupling nut on the multipurpose tool with the assembly-barrel and tighten to press the center-pin/bead assembly into the sleeve.
 - d. Loosen the coupling nut, and remove the multipurpose tool from the end of the cable.
 - e. Unscrew the assembly-barrel from the assembly nut, and replace it with the outer-conductor barrel from the K101F-R or EK101F-R parts bag.
 - f. Torque the outer-conductor barrel to 1.8 N · m. The 01-105 torquing Tool Kit may be used for this purpose.
13. For best performance, purge residue solvent by placing the completed cable assembly in an oven and baking at 65 °C for eight hours minimum.

Caution If solvent is allowed to remain, it may cause increased transmission loss.



Index	Part Number	Description
1	B14850	Multipurpose Tool
2	B14850	Assembly Barrel
3	A14701	Cable Bending Fixture
4	—	Female Connector Bead-Pressing End
5	—	Male Connector Bead-Pressing End
6	—	Outer-Conductor Break-Off and 0.050-Inch Gauging Holes

Figure 1-4. 01-118 Cable Assembly Tool Kit

Cable Bending Instructions

Bending instructions for the cable assembly are given below. Bending should not be attempted until connectors are installed on both ends.

1. Center the cable assembly in the 6.35 mm radius bending fixture supplied with the 01-118 tool kit.
2. Clamp the bending fixture into a vise, and tighten only enough to prevent it from slipping.
3. Bend the cable to the shape of the bending fixture.

Caution Always use the bending fixture for bending the cable. Do not bend the cable unless connectors are installed on both ends.

K101M-R or EK101M-R

Male Connector for K118 Semi-Rigid Coaxial Cable

Tools and Materials

The following tools and materials are needed to install the [K101M-R or EK101M-R](#) connector on the K118 (3.0 mm) semirigid 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 solderer	American Beauty	10541
Tool kit cable assembly	Anritsu Company	01-118
0.50 mm diameter solder	Kester Company	SAC305
Rosin flux	Kester Company	135
Isopropyl alcohol cleaning fluid	any	any
Soldering Fixture	Anritsu Company	01-107M

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.

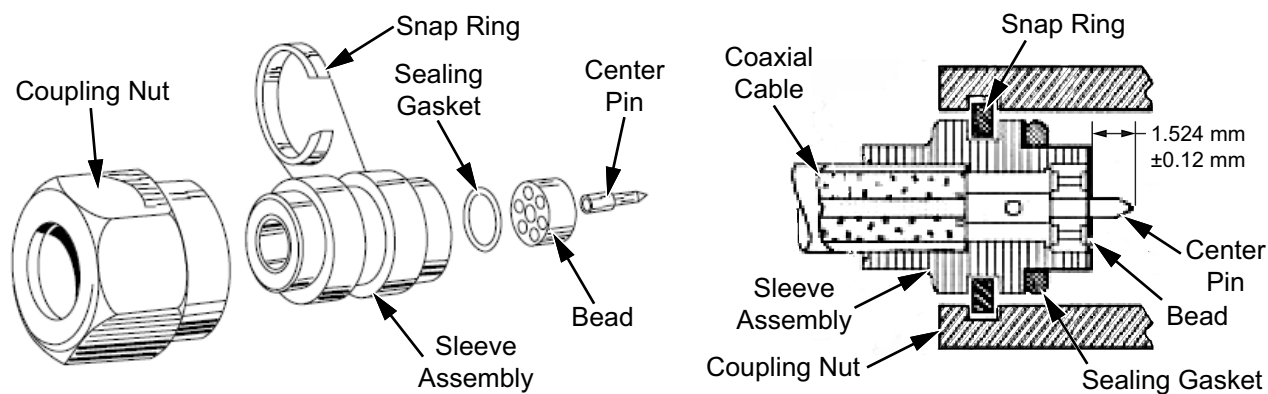
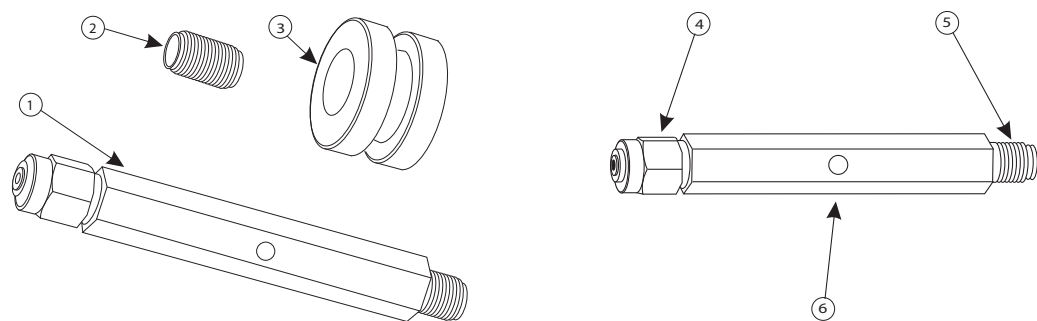


Figure 2-1. [K101M-R or EK101M-R](#) Assembly

1. Remove approximately 6.5 mm of the outer conductor from one end of the cable. The outer conductor should be cut square and be free of burrs. A suggested method using the multipurpose tool in the Anritsu 01-118 tool kit ([Figure 2-2 on page 2-2](#)) follows:
 - a. Clamp the multipurpose tool in a vise with the hole facing up.
 - b. Insert the end of the semi-rigid cable into the hole as far as it will go.
 - c. While pressing the cable against the bottom of the hole and rotating it, cut a deep groove around the circumference of the outer conductor using a razor blade or saw.
 - d. Break off the outer conductor and remove it from the cable.



Index	Part Number	Description
1	B14850	Multipurpose Tool
2	B14850	Assembly Barrel
3	A14701	Cable Bending Fixture
4	–	Female Connector Bead-Pressing End
5	–	Male Connector Bead-Pressing End
6	–	Outer-Conductor Break-Off and 0.050-Inch Gauging Holes

Figure 2-2. 01-118 Cable Assembly Tool Kit

- Trim the Teflon away from the center conductor, taking care not to cut into the center conductor. The trimming of the Teflon must be flush with the outer conductor to properly install the center pin later in this procedure.
- Cut, trim, and deburr the exposed center conductor to $2.286\text{ mm} \pm 0.15\text{ mm}$. The end of the 01-118 multipurpose tool marked “M” can be used to measure this distance. Be careful not to nick or otherwise damage the center conductor.
- Clamp the cable, and, using a soldering iron, tin the exposed center conductor.
- Set the Resistance Soldering Unit to 20% to 30% with the regular tweezer.
- Heat the center pin and slide it onto the center conductor, locating it flush with the Teflon dielectric. Avoid getting solder on the outside of the pin.
- Clean the center pin with a solvent-dampened swab to remove all flux residue.

Caution

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

- Clean the end of the cable with a solvent dampened swab to remove any oils due to handling.
- Apply a small amount of flux to the end of the cable.
- Orient the sleeve assembly so that the smaller end is positioned over the end of the cable.
- Slide the sleeve assembly onto the cable until it reaches the bottom limit of the sleeve. When properly positioned, the center pin will protrude as shown in [Figure 2-1](#), and the sleeve will cover approximately 3.5 mm of the cable. Check pin extension.
- Install the 01-107M Soldering Fixture onto the end of the cable. This will hold the sleeve assembly secure and will also keep it square while it is being soldered onto the cable.

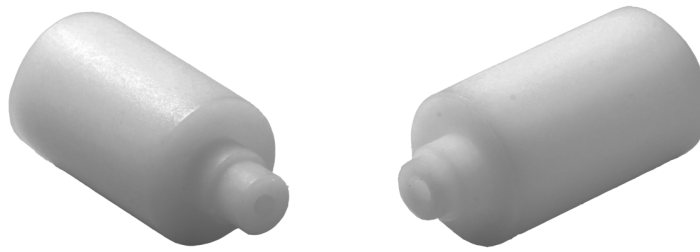


Figure 2-3. 01-107M and 01-107F Soldering Fixtures

13. Set the Resistance Soldering Unit to 50% to 60% with the medium tweezer.
14. Grasp the sleeve assembly with the soldering tongs and apply solder to the back end of the sleeve to solder it to the cable. Ensure that the sleeve assembly does not move on the cable during this operation.
15. Inspect the connection to ensure that there are no solder gaps and that the sleeve assembly is square with the cable.
16. Remove the 01-107M Soldering Fixture.
17. Clean any residue flux from the Teflon interface located on the inside of the connector housing. A small piece of cotton, dampened in solvent and held by tweezers, works best for this cleaning operation.
18. Inspect the inside of the connector to ensure that the solder seam has no gaps. A 30X microscope is best for this inspection. Also, ensure that the pin extension is 1.524 ± 0.15 mm.



Figure 2-4. Examples of Good and Bad Solder Connections

19. Spread the snap-ring and slip it onto the groove of the sleeve assembly.
20. Place the sealing gasket over the large end of the sleeve assembly. It should fit snugly against the shoulder of the sleeve assembly.
21. Using the snap-ring pliers—or other suitable pliers—compress the snap-ring and slip the assembly into the coupling nut. When the assembly is positioned properly, the snap-ring will “click” into place as it fits into the groove inside the coupling nut.
22. Carefully slide the bead over the center pin, and press it into the end of the sleeve assembly. The multipurpose tool in the 01-118 tool kit should be used to press the bead into place. the center pin should not be pushed back during this operation.
23. Inspect the cable assembly to ensure the following:
 - a. That the support bead is flush with or slightly recessed from the end of the sleeve assembly.
 - b. That the center pin extends out from the bead as shown in [Figure 2-1](#).

24. For best performance, purge residue solvent by placing the completed cable assembly in an oven and baking at 65 °C for eight hours minimum.

Caution If solvent is allowed to remain, it may cause increased transmission loss.

Cable Bending Instructions

Bending instructions for the cable assembly are given below. Bending should not be attempted until connectors are installed on both ends.

1. Center the cable assembly in the 6.35 mm radius bending fixture supplied with the 01-118 tool kit.
2. Clamp the bending fixture into a vise, and tighten only enough to prevent it from slipping.
3. Bend the cable to the shape of the bending fixture.

Caution Always use the bending fixture for bending the cable. Do not bend the cable unless connectors are installed on both ends.
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K101M-085-R or EK101M-085-R

Male Connector for V085 Semi-Rigid Coaxial Cable

Tools and Materials

The following tools and materials are needed to install the [K101M-085-R or EK101M-085-R](#) connector on the V085 (2.18 mm outer diameter) semirigid coaxial cable. Equivalent tools may be used if recommended tools are not available.

Table 3-1. 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 solderer	American Beauty	10541
Tool kit cable assembly	Anritsu Company	SC5296
0.50 mm to 0.65 mm diameter solder	Kester Company	SAC305
Rosin flux	Kester Company	135
Isopropyl alcohol cleaning fluid	any	any
Soldering Fixture	Anritsu Company	01-107M

Fabrication Instructions

Fabrication instructions for the cable assembly are given below. Refer to [Figure 3-1](#) to identify the connector parts referenced in the procedure.

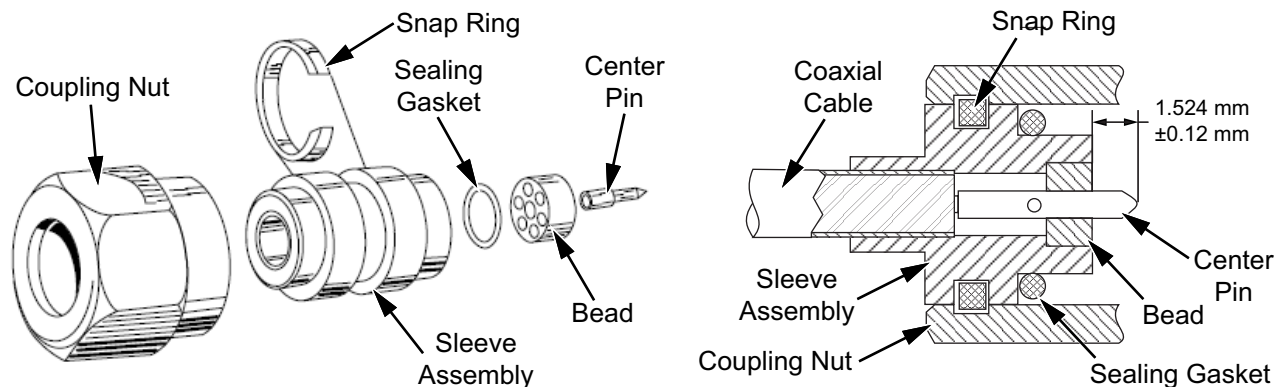


Figure 3-1. [K101M-085-R or EK101M-085-R](#) Assembly

1. Remove approximately 6.5 mm of the outer conductor from one end of the cable. The outer conductor should be cut square and be free of burrs. A suggested method using the multipurpose tool in the Anritsu SC5296 tool kit ([Figure 3-2 on page 3-2](#)) follows:
 - a. Clamp the multipurpose tool in a vise with the hole facing up.
 - b. Insert the end of the semi-rigid cable into the hole as far as it will go.
 - c. While pressing the cable against the bottom of the hole and rotating it, cut a deep groove around the circumference of the outer conductor using a razor blade or saw.
 - d. Break off the outer conductor and remove it from the cable.

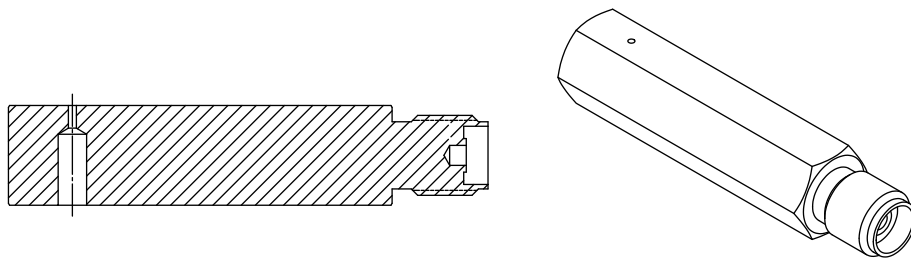


Figure 3-2. SC5296 Cable Assembly Multipurpose Tool

2. Trim the Teflon away from the center conductor, taking care not to cut into the center conductor. The trimming of the Teflon must be flush with the outer conductor to properly install the center pin later in this procedure.
3. Cut, trim, and deburr the exposed center conductor to $2.3 \text{ mm} \pm 0.15 \text{ mm}$. The end of the SC5296 multipurpose tool marked “M” can be used to measure this distance. Be careful not to nick or otherwise damage the center conductor.
4. Clamp the cable, and, using a soldering iron, tin the exposed center conductor.
5. Set the Resistance Soldering Unit to 20% to 30% with the regular tweezer.
6. Heat the center pin and slide it onto the center conductor, locating it flush with the Teflon dielectric. Avoid getting solder on the outside of the pin.
7. Clean the center pin with a solvent-dampened swab to remove all flux residue.

Caution	Avoid cleaning fluids containing halogenated and aromatic hydrocarbons (Freon). These compounds may soften or dissolve the PPO/Teflon bead material.
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8. Clean the end of the cable with a solvent dampened swab to remove any oils due to handling.
9. Apply a small amount of flux to the end of the cable.
10. Orient the sleeve assembly so that the smaller end is positioned over the end of the cable.
11. Slide the sleeve assembly onto the cable until it reaches the bottom limit of the sleeve. When properly positioned, the center pin will protrude as shown in [Figure 3-1](#), and the sleeve will cover approximately 4.76 mm of the cable. Check pin extension.
12. Install the 01-107M Soldering Fixture onto the end of the cable. This will hold the sleeve assembly secure and will also keep it square while it is being soldered onto the cable.

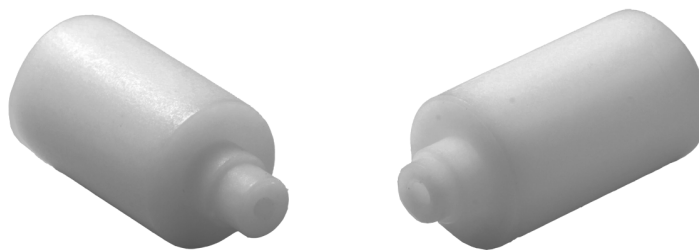


Figure 3-3. 01-107M and 01-107F Soldering Fixtures

13. Set the Resistance Soldering Unit to 50% to 60% with the medium tweezer.

14. Grasp the sleeve assembly with the soldering tongs and apply solder to the back end of the sleeve to solder it to the cable. Ensure that the sleeve assembly does not move on the cable during this operation.
15. Inspect the connection to ensure that there are no solder gaps and that the sleeve assembly is square with the cable.
16. Remove the 01-107M Soldering Fixture.
17. Clean any residue flux from the Teflon interface located on the inside of the connector housing. A small piece of cotton, dampened in solvent and held by tweezers, works best for this cleaning operation.
18. Inspect the inside of the connector to ensure that the solder seam has no gaps. A 30X microscope is best for this inspection. Also, ensure that the pin extension is 1.524 ± 0.15 mm.



Figure 3-4. Examples of Good and Bad Solder Connections

19. Spread the snap-ring and slip it onto the groove of the sleeve assembly.
20. Place the sealing gasket over the large end of the sleeve assembly. It should fit snugly against the shoulder of the sleeve assembly.
21. Using the snap-ring pliers—or other suitable pliers—compress the snap-ring and slip the assembly into the coupling nut. When the assembly is positioned properly, the snap-ring will “click” into place as it fits into the groove inside the coupling nut.
22. Carefully slide the bead over the center pin, and press it into the end of the sleeve assembly. The multipurpose tool in the SC5296 tool kit should be used to press the bead into place. The center pin should not be pushed back during this operation.
23. Inspect the cable assembly to ensure the following:
 - a. That the support bead is flush with or slightly recessed from the end of the sleeve assembly.
 - b. That the center pin extends out from the bead as shown in [Figure 3-1](#). For best performance, purge residue solvent by placing the completed cable assembly in an oven and baking at 65 °C for eight hours minimum.

Caution If solvent is allowed to remain, it may cause increased transmission loss.

Cable Bending Instructions

Bending instructions for the cable assembly are given below. Bending should not be attempted until connectors are installed on both ends.

1. Use any suitable mandrel with a minimum radius of 6.35 mm for a bending fixture.
2. Hold the cable securely against the mandrel while bending the cable to shape.

Caution Always use a suitable mandrel for bending the cable. Do not bend the cable unless connectors are installed on both ends.

K102F-R or EK102F-R

Microstrip to K Female Sparkplug Mount Connector

Tools and Materials

The following tools and materials are needed to install the [K102F-R or EK102F-R](#) Sparkplug Mount 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	01-104 or 01-108
Connector torquing tool kit	Anritsu Company	01-105A
Glass bead holding fixture	Anritsu Company	01-103
Glass bead	Advanced Technology Group Inc.	K100/K100B
0.50 mm to 0.65 mm diameter solder	Kester Company	SAC305 or AuSn
Rosin flux	Kester Company	135
Isopropyl alcohol cleaning fluid	any	any

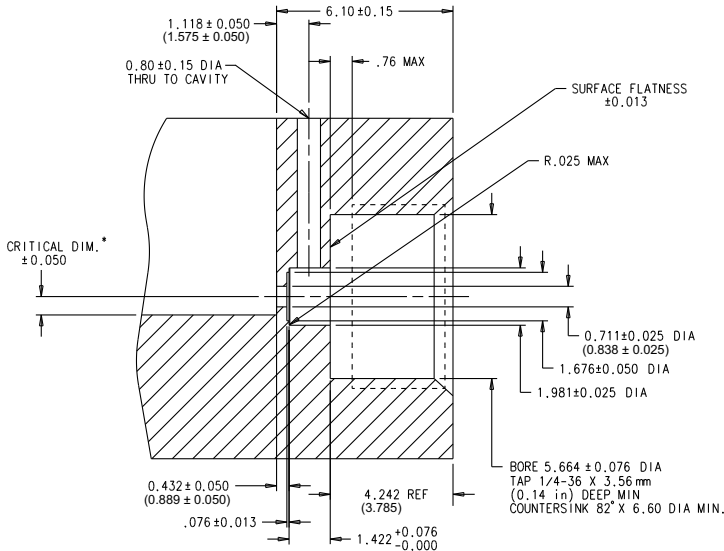
Machining Dimensions

Machining dimensions for the mounting hole required for installation of the microstrip to K female sparkplug mount connector are provided in [Figure 4-1](#) below.

For machining instructions, refer to the [01-104](#) or [01-108](#) 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, custom made drill-bit kits, Models [01-104](#) and [01-108](#), are available from Anritsu.



Notes:

1. All dimensions are in mm (millimeters).
2. The concentricity of the 1.676, 1.981 and 5.664 holes to the 0.711 hole is critical and must be held within ± 0.038 mm.
3. With the Model 01-104 and 01-108 Step Drill Kits, all of the required concentric holes can be machined at the same time using a single bit. Use the 01-108 kit if the K110 series Stress Relief contact is going to be used.
4. The numbers in parentheses apply when the K110 series Stress Relief Contact is used.

* Dimension is 0.152 (Pin Radius)
+ Substrate thickness
+ Solder thickness
+ 0.038 (only if K110 series sliding contact is used)

Figure 4-1. [K102F-R or EK102F-R](#) Machining Dimensions for the Sparkplug Connector Mounting Holes

Fabrication Instructions

Fabrication instructions for the connector assembly are given below. Refer to [Figure 4-2](#) to identify the connector parts referenced in the procedure.

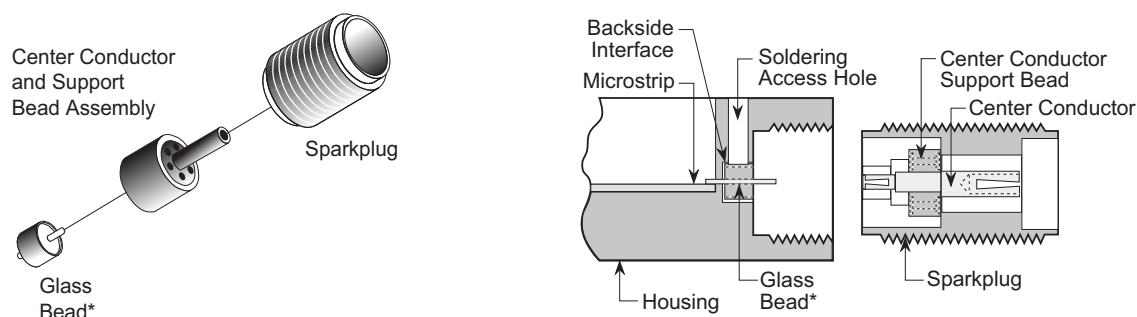


Figure 4-2. K102F-R or EK102F-R Assembly (*Glass Bead not supplied)

1. Install the microstrip into the housing (see [Figure 4-3](#) for dimensional tolerances around the glass bead).
2. Set the hot plate to $235\text{ }^{\circ}\text{C} \pm 10\text{ }^{\circ}\text{C}$ for SAC305, or $310\text{ }^{\circ}\text{C} \pm 10\text{ }^{\circ}\text{C}$ for AuSn solder.
3. Apply flux to the glass bead and insert it, long-end first, into the 01-103 Glass Bead Holding Fixture ([Figure 4-3](#)).

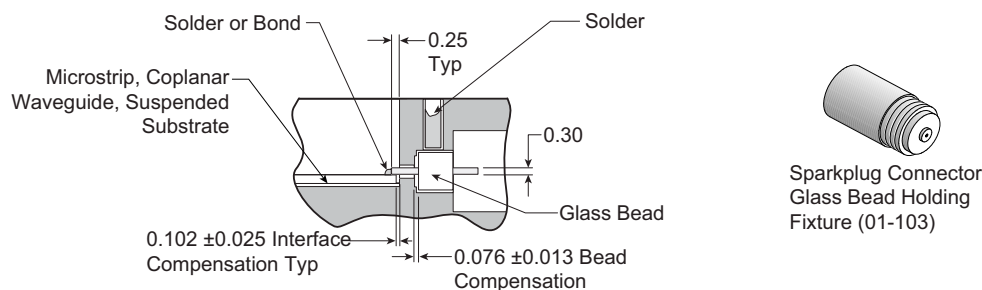


Figure 4-3. K102F-R or EK102F-R Glass Bead Assembly

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 device to remove any 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.

10. Screw the sparkplug assembly into the tapped mounting hole and torque to $1.7\text{ N} \cdot \text{m}$ to $2.0\text{ N} \cdot \text{m}$ using the 01-105A torquing tool kit.

K102M-R or EK102M-R

Microstrip to K Male Sparkplug Launcher Connector

Tools and Materials

The following tools and materials are needed to install the [K102M-R](#) or [EK102M-R](#) Sparkplug Launcher 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	01-104 or 01-108
Connector torquing tool kit	Anritsu Company	01-105A
Glass bead holding fixture	Anritsu Company	01-103
Glass bead	Advanced Technology Group Inc.	K100/K100B
0.50 mm to 0.65 mm diameter solder	Kester Company	SAC305 or AuSn
Rosin flux	Kester Company	135
Isopropyl alcohol cleaning fluid	any	any

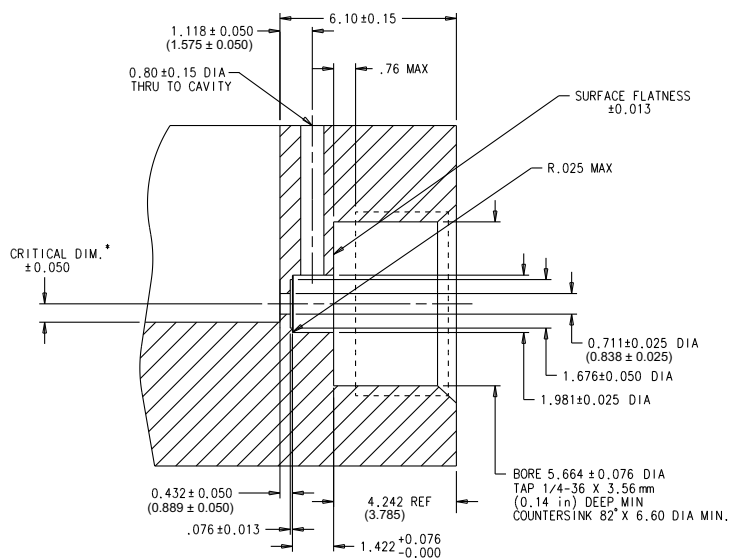
Machining Dimensions

Machining dimensions for the mounting hole required for installation of the microstrip to K male sparkplug launcher connector are provided in [Figure 5-1](#) below.

For machining instructions, refer to the [01-104](#) or [01-108](#) instruction sheet.

Caution

The four 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, custom made drill-bit kits, Models [01-104](#) and [01-108](#), are available from Anritsu.



Notes:

1. All dimensions are in mm (millimeters).
2. The concentricity of the 1.676, 1.981 and 5.664 holes to the 0.711 hole is critical and must be held within ± 0.038 mm.
3. With the Model 01-104 and 01-108 Step Drill Kits, all of the required concentric holes can be machined at the same time using a single bit. Use the 01-108 kit if the K110 series Stress Relief contact is going to be used.
4. The numbers in parentheses apply when the K110 series Stress Relief Contact is used.

* Dimension is 0.152 (Pin Radius)

+ Substrate thickness

+ Solder thickness

+ 0.038 (only if K110 series sliding contact is used)

Figure 5-1. K102M-R or EK102M-R Machining Dimensions for the Sparkplug Launcher Mounting Holes

Fabrication Instructions

Fabrication instructions for the connector assembly are given below. Refer to [Figure 5-2](#) to identify the connector parts referenced in the procedure.

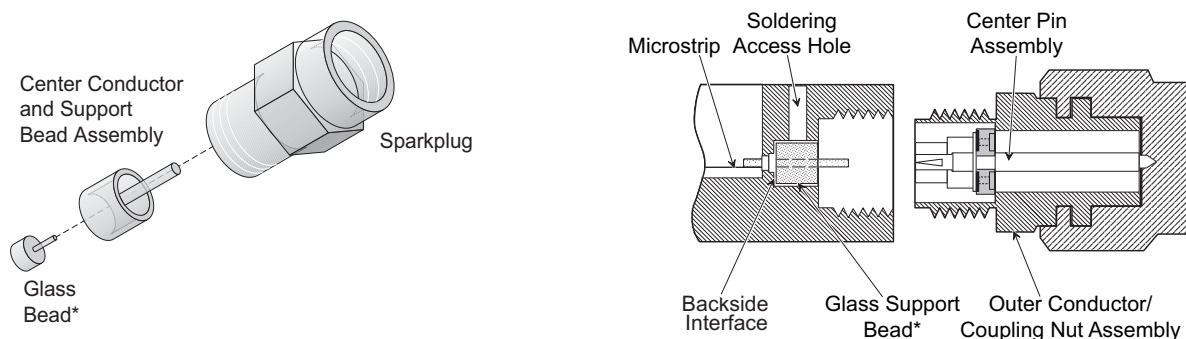


Figure 5-2. K102M-R or EK102M-R Assembly (*Glass Bead not supplied)

1. Install the microstrip into the housing (see [Figure 5-3](#) for dimensional tolerances around the glass bead).
2. Set the hot plate to $235^{\circ}\text{C} \pm 10^{\circ}\text{C}$ for SAC305, or $310^{\circ}\text{C} \pm 10^{\circ}\text{C}$ for AuSn solder.
3. Flux the glass bead and insert it, long-end first, into the 01-103 Glass Bead Holding Fixture ([Figure 5-3](#)).

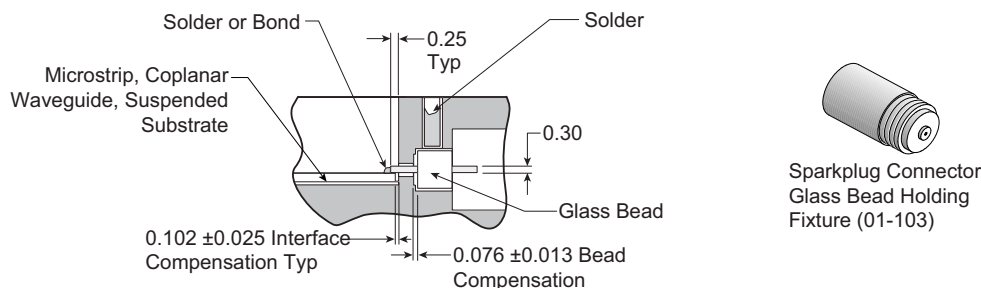


Figure 5-3. K102M-R or EK102M-R Glass Bead Assembly

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 device to remove any 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.
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10. Screw the sparkplug assembly into the tapped mounting hole and torque to 1.7 N · m to 2.0 N · m using the 01-105A torquing tool kit.

K103F-R or EK103F-R

Microstrip to K Female Flange Mount Connector

Tools and Materials

The following tools and materials are needed to install the [K103F-R](#) or [EK103F-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	01-104 or 01-108
Connector torquing tool kit	Anritsu Company	01-105A
Glass bead holding fixture	Anritsu Company	01-106
Glass bead	Advanced Technology Group Inc.	K100/K100B
0.50 mm to 0.65 mm diameter solder	Kester Company	SAC305 or AuSn
Rosin flux	Kester Company	135
Isopropyl alcohol cleaning fluid	any	any

Machining Dimensions

Machining dimensions for the mounting hole required for installation of the microstrip to K female flange mount connector are provided in [Figure 6-1](#) below.

For machining instructions, refer to the [01-104](#) or [01-108](#) 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, custom made drill-bit kits, Models [01-104](#) and [01-108](#), are available from Anritsu.

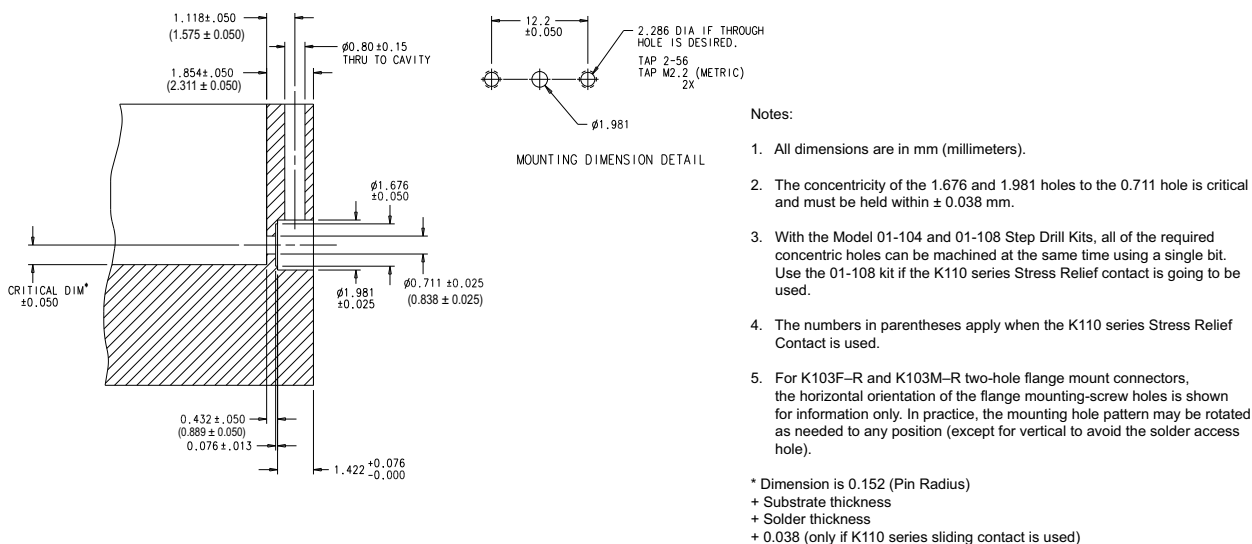


Figure 6-1. [K103F-R](#) or [EK103F-R](#) Machining Dimensions for the Flange Mount Connector Mounting Holes

Fabrication Instructions

Fabrication instructions for the cable assembly are given below. Refer to [Figure 6-2](#) to identify the connector parts referenced in the procedure.

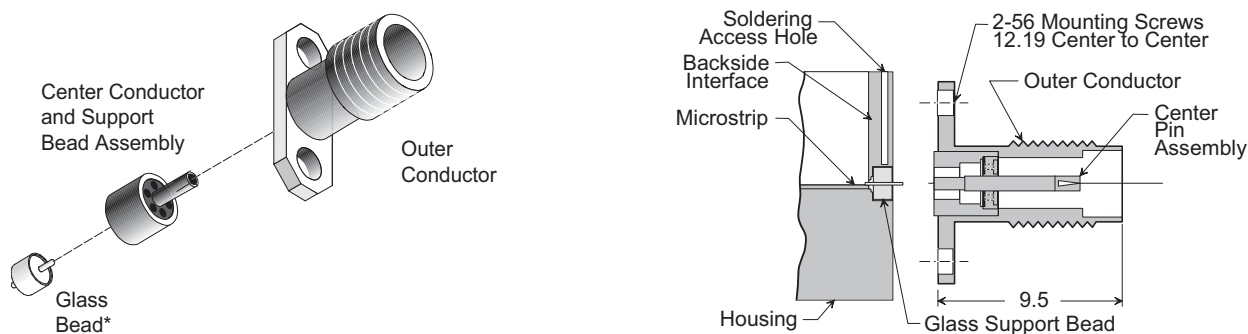


Figure 6-2. K103F-R or EK103F-R Assembly (*Glass Bead not supplied)

1. Install the microstrip into the housing (see [Figure 6-3](#) for dimensional tolerances around the glass bead).
2. Set the hot plate to $235\text{ }^{\circ}\text{C} \pm 10\text{ }^{\circ}\text{C}$ for SAC305, or $310\text{ }^{\circ}\text{C} \pm 10\text{ }^{\circ}\text{C}$ for AuSn solder.
3. Flux the glass bead and insert it, long-end first, into the 01-106 Glass Bead Holding Fixture ([Figure 6-3](#)).

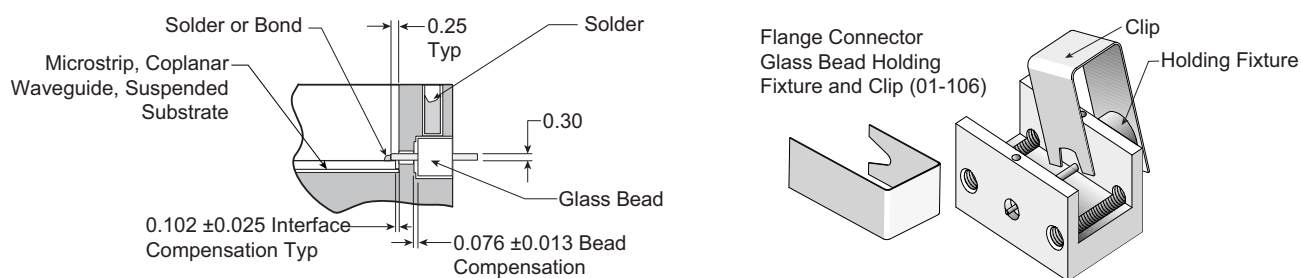


Figure 6-3. K103F-R or EK103F-R Glass Bead Assembly

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 6-3](#)). 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.
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 device to remove any 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.

11. Install the K103F-R or EK103F-R flanged connector onto the housing. Make sure that center conductor mates properly with the glass bead center pin. Secure the connector with two 2-56 or two 2.2 mm screws

(if a metric thread is used). When tightening the screws, use care to keep the flange parallel to the housing.

K103M-R or EK103M-R

Microstrip to K Male Flange Mount Connector

Tools and Materials

The following tools and materials are needed to install the [K103M-R or EK103M-R](#) Flange Mount Connector in a mounting hole on a housing. Equivalent tools may be used if the recommended tools are not available.

Table 7-1. Tools and Materials

Description	Vendor	Model/Part Number
Thermolyne micro hot plate	Baxter Scientific Products	H2155
Step drill kit	Anritsu Company	01-104 or 01-108
Connector torquing tool kit	Anritsu Company	01-105A
Glass bead holding fixture	Anritsu Company	01-106
Glass bead	Advanced Technology Group Inc.	K100/K100B
0.50 mm to 0.65 mm diameter solder	Kester Company	SAC305 or AuSn
Rosin flux	Kester Company	135
Isopropyl alcohol cleaning fluid	any	any

Machining Dimensions

Machining dimensions for the mounting hole required for installation of the microstrip to K male flange mount connector are provided in [Figure 7-1](#) below.

For machining instructions, refer to the [01-104](#) or [01-108](#) instruction sheet.

Caution

The three holes shown in Note 2 of [Figure 7-1](#) must be concentric within ± 0.038 mm. If they are not, connector performance will be degraded. To make this required concentricity easier to achieve, custom made drill-bit kits, Models [01-104](#) and [01-108](#), are available from Anritsu.

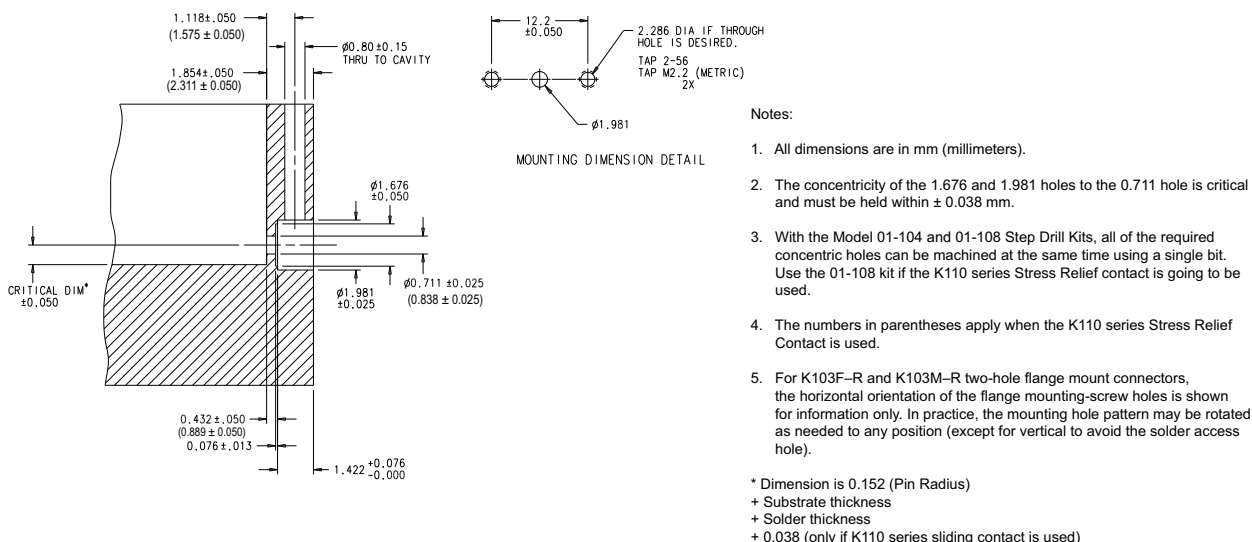


Figure 7-1. [K103M-R or EK103M-R](#) Machining Dimensions for the Flange Mount Connector Mounting Holes

Fabrication Instructions

Fabrication instructions for the cable assembly are given below. Refer to [Figure 7-2](#) to identify the connector parts referenced in the procedure.

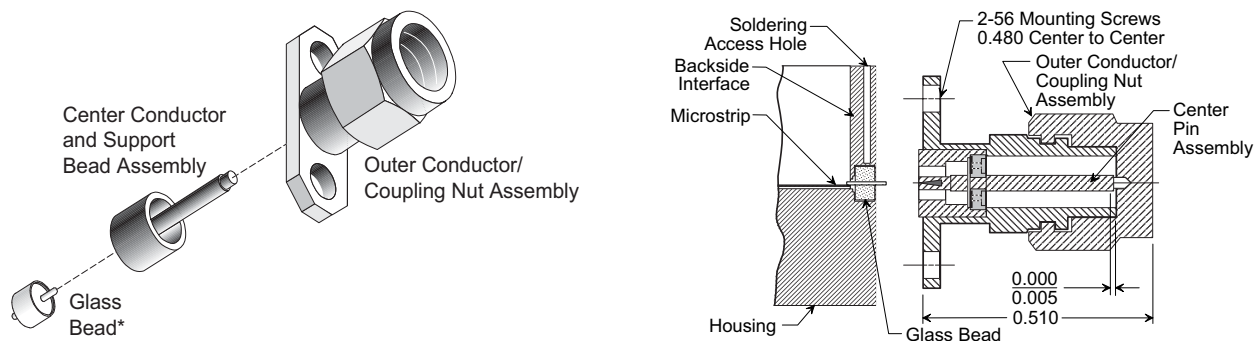


Figure 7-2. K103M-R or EK103M-R Assembly (*Glass Bead not supplied)

1. Install the microstrip into the housing (see [Figure 7-3](#) for dimensional tolerances around the glass bead).
2. Set the hot plate to $235^{\circ}\text{C} \pm 10^{\circ}\text{C}$ for SAC305, or $310^{\circ}\text{C} \pm 10^{\circ}\text{C}$ for AuSn solder.
3. Flux the glass bead and insert it, long-end first, into the 01-103 Glass Bead Holding Fixture ([Figure 7-3](#)).

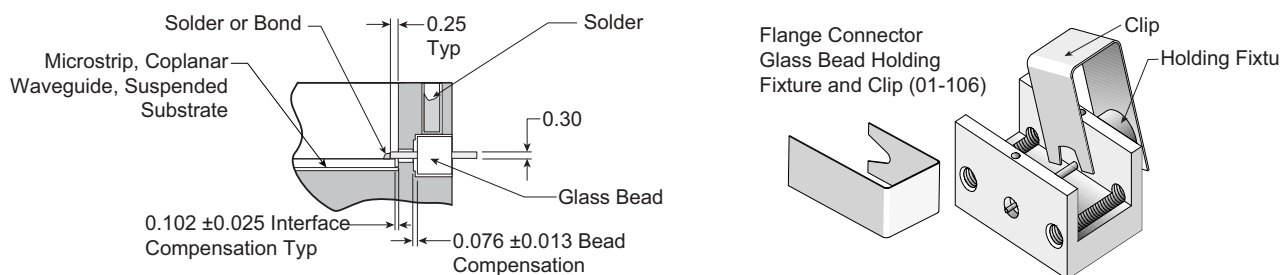


Figure 7-3. K103M-R or EK103M-R Glass Bead Assembly

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 7-3](#)). 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.
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 device to remove any 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.

11. Install the K103M-R or EK103M-R flanged connector onto the housing. Make sure that center conductor mates properly with the glass bead center pin. Secure the connector with two 2-56 or two 2.2 mm screws

(if a metric thread is used). When tightening the screws, use care to keep the flange parallel to the housing.

K104F-R or EK104F-R

Microstrip to K Female Flange Mount Connector

Tools and Materials

The following tools and materials are needed to install the [K104F-R](#) or [EK104F-R](#) Flange Mount Connector in a mounting hole on a housing. Equivalent tools may be used if the recommended tools are not available.

Table 8-1. Tools and Materials

Description	Vendor	Model/Part Number
Thermolyne micro hot plate	Baxter Scientific Products	H2155
Step drill kit	Anritsu Company	01-104 or 01-108
Connector torquing tool kit	Anritsu Company	01-105A
Glass bead holding fixture	Anritsu Company	01-106
Glass bead	Advanced Technology Group Inc.	K100/K100B
0.50 mm to 0.65 mm diameter solder	Kester Company	SAC305 or AuSn
Rosin flux	Kester Company	135
Isopropyl alcohol cleaning fluid	any	any

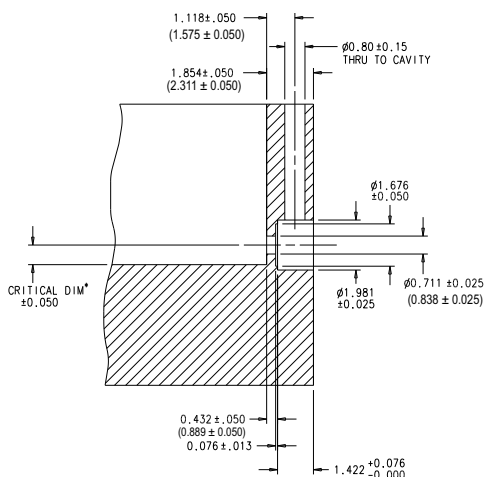
Machining Dimensions

Machining dimensions for the mounting hole required for installation of the microstrip to K female flange mount connector are provided in [Figure 8-1](#) below.

For machining instructions, refer to the [01-104](#) or [01-108](#) instruction sheet.

Caution

The three holes shown in Note 2 of [Figure 8-1](#) must be concentric within ± 0.038 mm. If they are not, connector performance will be degraded. To make this required concentricity easier to achieve, custom made drill-bit kits, Models [01-104](#) and [01-108](#), are available from Anritsu.



Notes:

1. All dimensions are in mm (millimeters).
2. The concentricity of the 1.676 and 1.981 holes to the 0.711 hole is critical and must be held within ± 0.038 mm.
3. With the Model 01-104 and 01-108 Step Drill Kits, all of the required concentric holes can be machined at the same time using a single bit. Use the 01-108 kit if the K110 series Stress Relief contact is going to be used.
4. The numbers in parentheses apply when the K110 series Stress Relief Contact is used.

* Dimension is 0.152 (Pin Radius)
 + Substrate thickness
 + Solder thickness
 + 0.038 (only if K110 series sliding contact is used)

Figure 8-1. [K104F-R](#) or [EK104F-R](#) Machining Dimensions for the Flange Mount Connector Mounting Holes

Fabrication Instructions

Fabrication instructions for the cable assembly are given below. Refer to [Figure 8-2](#) to identify the connector parts referenced in the procedure.

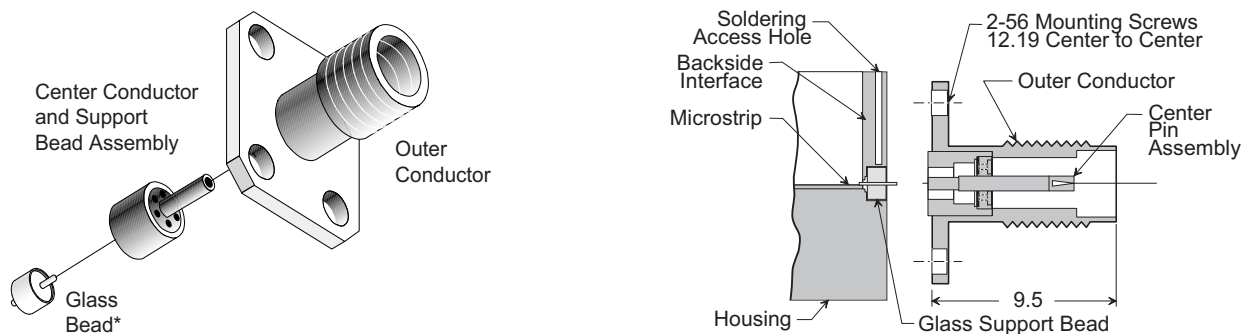


Figure 8-2. K104F-R or EK104F-R Assembly (*Glass Bead not supplied)

1. Install the microstrip into the housing (see [Figure 8-3](#) for dimensional tolerances around the glass bead).
2. Set the hot plate to $235^{\circ}\text{C} \pm 10^{\circ}\text{C}$ for SAC305, or $310^{\circ}\text{C} \pm 10^{\circ}\text{C}$ for AuSn solder.
3. Flux the glass bead and insert it, long-end first, into the 01-103 Glass Bead Holding Fixture ([Figure 8-3](#)).

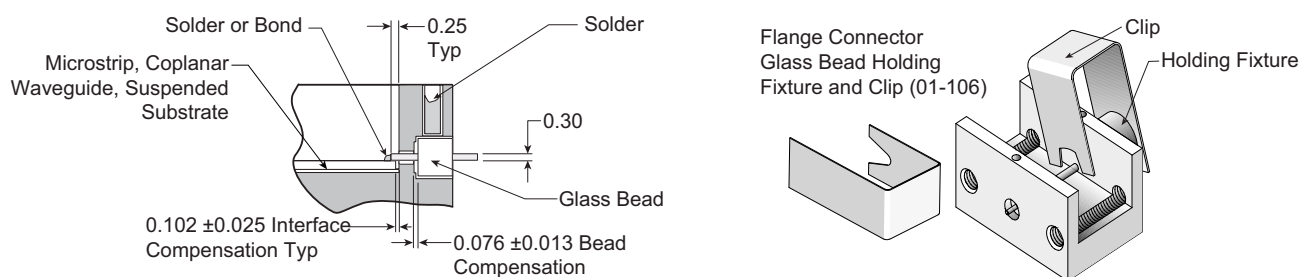


Figure 8-3. K104F-R or EK104F-R Glass Bead Assembly

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 8-3](#)). 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.
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 device to remove any 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.

11. Install the K104F-R or EK104F-R flanged connector onto the housing. Make sure that center conductor mates properly with the glass bead center pin. Secure the connector with four 2-56 or four 2.2 mm screws

(if a metric thread is used). When tightening the screws, use care to keep the flange parallel to the housing.

K104M-R or EK104M-R

Microstrip to K Male Flange Mount Connector

Tools and Materials

The following tools and materials are needed to install the [K104M-R or EK104M-R](#) Flange Mount Connector in a mounting hole on a housing. Equivalent tools may be used if the recommended tools are not available.

Table 9-1. Tools and Materials

Description	Vendor	Model/Part Number
Thermolyne micro hot plate	Baxter Scientific Products	H2155
Step drill kit	Anritsu Company	01-104 or 01-108
Connector torquing tool kit	Anritsu Company	01-105A
Glass bead holding fixture	Anritsu Company	01-106
Glass bead	Advanced Technology Group Inc.	K100/K100B
0.50 mm to 0.65 mm diameter solder	Kester Company	SAC305 or AuSn
Rosin flux	Kester Company	135
Isopropyl alcohol cleaning fluid	any	any

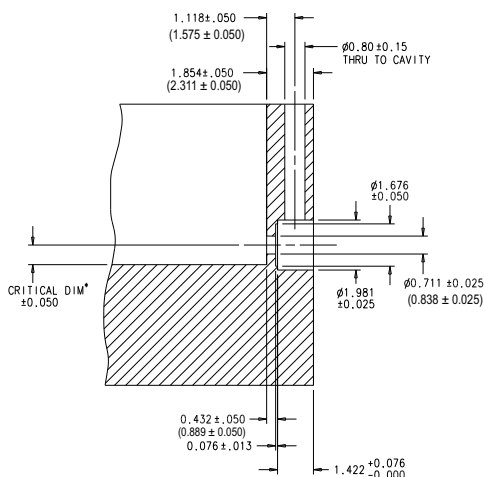
Machining Dimensions

Machining dimensions for the mounting hole required for installation of the microstrip to K male flange mount connector are provided in [Figure 9-1](#) below.

For machining instructions, refer to the [01-104](#) or [01-108](#) instruction sheet.

Caution

The three holes shown in Note 2 of [Figure 9-1](#) must be concentric within ± 0.038 mm. If they are not, connector performance will be degraded. To make this required concentricity easier to achieve, custom made drill-bit kits, Models [01-104](#) and [01-108](#), are available from Anritsu.



Notes:

1. All dimensions are in mm (millimeters).
2. The concentricity of the 1.676 and 1.981 holes to the 0.711 hole is critical and must be held within ± 0.038 mm.
3. With the Model 01-104 and 01-108 Step Drill Kits, all of the required concentric holes can be machined at the same time using a single bit. Use the 01-108 kit if the K110 series Stress Relief contact is going to be used.
4. The numbers in parentheses apply when the K110 series Stress Relief Contact is used.

* Dimension is 0.152 (Pin Radius)
 + Substrate thickness
 + Solder thickness
 + 0.038 (only if K110 series sliding contact is used)

Figure 9-1. [K104M-R or EK104M-R](#) Machining Dimensions for the Flange Mount Connector Mounting Holes

Fabrication Instructions

Fabrication instructions for the cable assembly are given below. Refer to [Figure 9-2](#) to identify the connector parts referenced in the procedure.

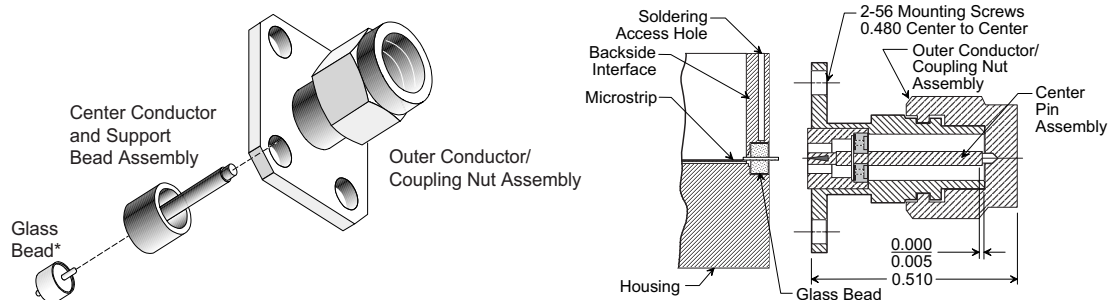


Figure 9-2. K104M-R or EK104M-R Assembly (*Glass Bead not supplied)

1. Install the microstrip into the housing (see [Figure 9-3](#) for dimensional tolerances around the glass bead).
2. Set the hot plate to $235\text{ }^{\circ}\text{C} \pm 10\text{ }^{\circ}\text{C}$ for SAC305, or $310\text{ }^{\circ}\text{C} \pm 10\text{ }^{\circ}\text{C}$ for AuSn solder.
3. Flux the glass bead and insert it, long-end first, into the 01-106 Glass Bead Holding Fixture ([Figure 9-3](#)).

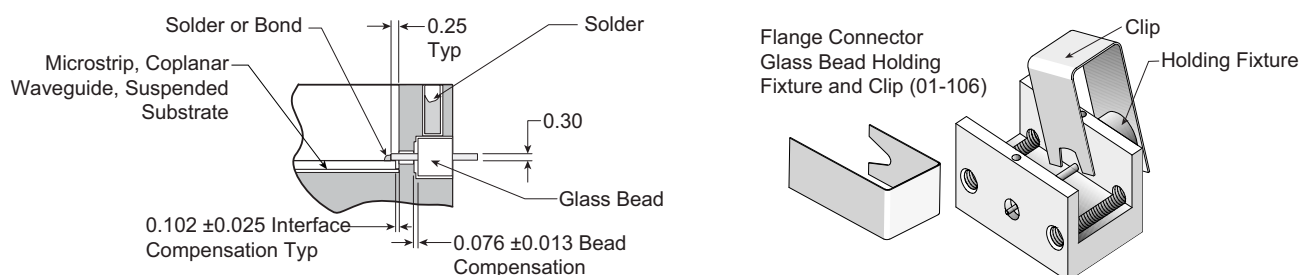


Figure 9-3. K104M-R or EK104M-R Glass Bead Assembly

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 9-3](#)). 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.
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 device to remove any 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.

11. Install the K104M-R or EK104M-R flanged connector onto the housing. Make sure that center conductor mates properly with the glass bead center pin. Secure the connector with four 2-56 or four 2.2 mm screws

(if a metric thread is used). When tightening the screws, use care to keep the flange parallel to the housing.

K110-1-R or K110-3-R

Sliding Contacts for Alumina and Duroid Microstrip

Tools and Materials

The following tools and materials are recommended to install the [K110-1-R or K110-3-R](#) Sliding Contacts on the pin of a glass bead. Equivalent tools may be used if the recommended tools are not available.

Table 10-1. Tools and Materials

Description	Vendor	Model/Part Number
Parallel-Gap Welder and Pulse Bonder	Hughes	WCW550 with VTA-90 Head
Step drill and tap set	Anritsu Company	01-108
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 K Connector assemblies when using K110-1-R or K110-3-R sliding contacts. The dimensions shown in parentheses in the figures should be followed when sliding contacts are used.

- [K102F-R or EK102F-R](#): Figure 4-1 on page 4-1
- [K102M-R or EK102M-R](#): Figure 5-1 on page 5-2
- [K103F-R or EK103F-R](#): Figure 6-1 on page 6-1
- [K103M-R or EK103M-R](#): Figure 7-1 on page 7-1
- [K104F-R or EK104F-R](#): Figure 8-1 on page 8-1
- [K104M-R or EK104M-R](#): Figure 9-1 on page 9-1

The precision step drill listed in [Table 10-1](#) makes it easier to achieve concentricity of the respective three or four holes required for the [K102F-R or EK102F-R](#), [K102M-R or EK102M-R](#), [K103F-R or EK103F-R](#), [K103M-R or EK103M-R](#), [K104F-R or EK104F-R](#), and [K104M-R or EK104M-R](#) installation.

Fabrication Instructions

The sliding contacts slip over the pin of the glass bead and mate with the microcircuit as shown in [Figure 10-1 on page 10-2](#). 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 instruction sheet for the [K102F-R or EK102F-R](#), [K102M-R or EK102M-R](#), [K103F-R or EK103F-R](#), [K103M-R or EK103M-R](#), [K104F-R or EK104F-R](#), and [K104M-R or EK104M-R](#) assembly.
2. Check that the center pin in the glass bead is level with the top of the microcircuit ± 0.051 mm. If necessary, bend the pin to achieve this degree of levelness.
3. Using the tweezers:
 - a. Remove one of the [K110-1-R or K110-3-R](#) Sliding Contacts from the package.
 - b. With the sleeve-end facing the pin on the glass bead, lay the [K110-1-R or K110-3-R](#) on the microcircuit near the bead.

4. Using the tip of the jewelers screwdriver, gently press the **K110-1-R or K110-3-R** tab both down onto the microcircuit and in toward the glass bead.
5. Position the sleeve as shown in **Figure 10-1**.

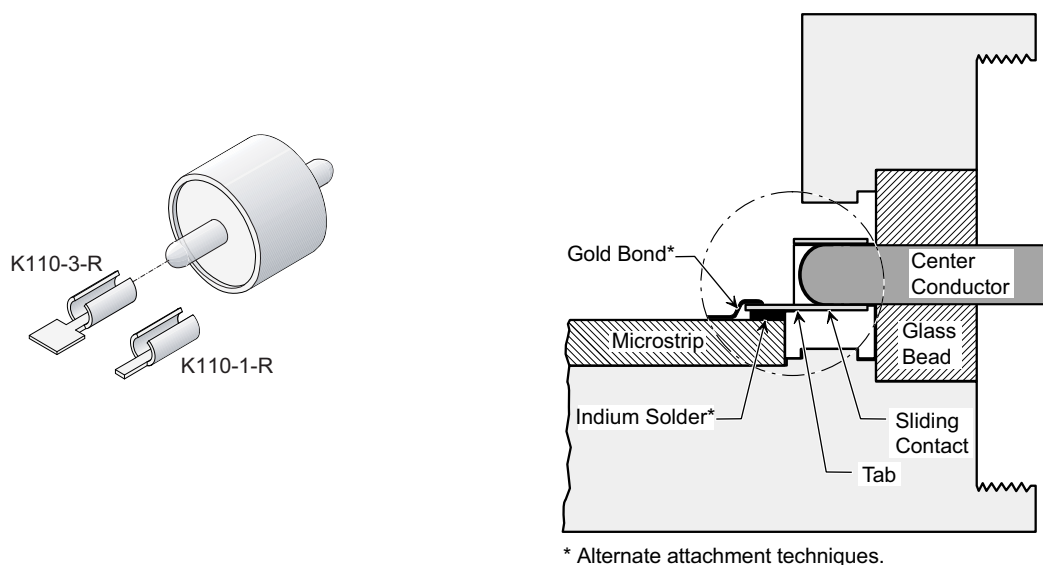


Figure 10-1. **K110-1-R or K110-3-R** Sliding Contact Assembly

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 sliding contact in and out in small increments until the RF performance is optimized.
7. If the sleeve on the **K110-1-R or K110-3-R** should become slightly malformed during the above operation, reform it using the tweezers. However, ensure that it still makes firm contact with the bead pin.
8. Attach the tab on the **K110-1-R or K110-3-R** to the microcircuit by any of the following three methods:
 - a. **Soldering:** For thin-film microcircuits, use Indium solder #183 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.

K110-2-R

Sliding Contact for Stripline

Tools and Materials

The following tools and materials are recommended to install the [K110-2-R](#) Sliding Contacts on the pin of a glass bead. Equivalent tools may be used if the recommended tools are not available.

Table 11-1. Tools and Materials

Description	Vendor	Model/Part Number
Parallel-Gap Welder and Pulse Bonder	Hughes	WCW550 with VTA-90 Head
Step drill and tap set	Anritsu Company	01-108
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 K Connector assemblies when using K110-2-R sliding contacts. The dimensions shown in parentheses in the figures should be followed when sliding contacts are used.

- [K102F-R or EK102F-R](#): Figure 4-1 on page 4-1
- [K102M-R or EK102M-R](#): Figure 5-1 on page 5-2
- [K103F-R or EK103F-R](#): Figure 6-1 on page 6-1
- [K103M-R or EK103M-R](#): Figure 7-1 on page 7-1
- [K104F-R or EK104F-R](#): Figure 8-1 on page 8-1
- [K104M-R or EK104M-R](#): Figure 9-1 on page 9-1

The precision step drill listed in [Table 11-1](#) makes it easier to achieve concentricity of the respective three or four holes required for the [K102F-R or EK102F-R](#), [K102M-R or EK102M-R](#), [K103F-R or EK103F-R](#), [K103M-R or EK103M-R](#), [K104F-R or EK104F-R](#), and [K104M-R or EK104M-R](#) installation.

Fabrication Instructions

The sliding contacts slip over the pin of the glass bead and mate with the microcircuit as shown in [Figure 11-1 on page 11-2](#). 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 instruction sheet for the [K102F-R or EK102F-R](#), [K102M-R or EK102M-R](#), [K103F-R or EK103F-R](#), [K103M-R or EK103M-R](#), [K104F-R or EK104F-R](#), and [K104M-R or EK104M-R](#) assembly.
2. Check that the center pin in the glass bead is level with the top of the microcircuit ± 0.051 mm. If necessary, bend the pin to achieve this degree of levelness.
3. Install the K110-2-R Sliding Contact using either of the following two methods:

Method 1:

- a. Install the lower stripline board.
- b. Using the tweezers, place the K110-2-R onto the center pin and position as shown below in Figure 11-1, left.
- c. Using a jewelers screwdriver, gently push the sliding contact onto the center pin.
- d. Press the tab onto the stripline. Solder bond or epoxy, if desired.
- e. Install the top stripline. The finished assembly should resemble Figure 11-1 below, right.

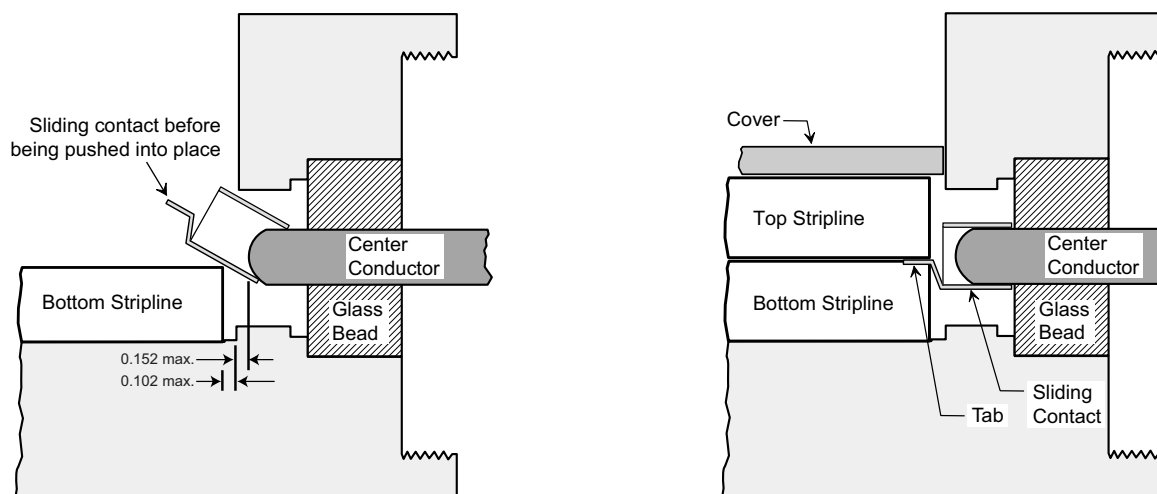


Figure 11-1. K110-2-R Sliding Contact Assembly, Method 1

Method 2:

- a. Using the tweezers, place the K110-2-R onto the center pin of the bead and position it as shown below in Figure 11-2, left. Gently tilt the tab on the K110-2-R upward, then install the bottom stripline into the cavity, sliding it under the tab.
- b. Press the tab onto the stripline. Solder bond or epoxy, if desired.
- c. Install the top stripline. The finished assembly should resemble Figure 11-2 below, right.

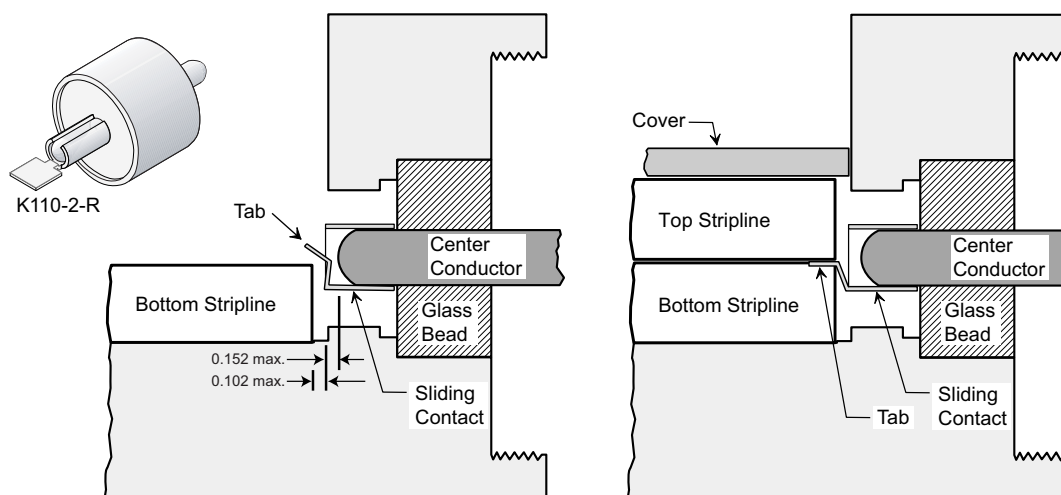


Figure 11-2. K110-2-R Sliding Contact Assembly, Method 2

01-104

Finishing Step Drill and Tap Kit



Figure 12-1. 01-104 Drill and Tap Set

Introduction

This drill and tap set is used to precisely machine the concentric holes needed for mounting K or Extended K 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 0.025 mm to 0.125 mm smaller than each required hole diameter.

Note

Use the 01-104 kit when you are NOT using stress relief contacts (also known as sliding contacts). If you are using K110-1-R, K110-2-R, or K110-3-R stress relief contacts to make connections to your microcircuit, use the 01-108 kit instead.

Kit Contents

- Drill Part No: B-14094
- Tap Part No: 783-255

Machining Dimensions

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

- **K102F-R or EK102F-R:** Figure 4-1 on page 4-1
- **K102M-R or EK102M-R:** Figure 5-1 on page 5-2
- **K103F-R or EK103F-R:** Figure 6-1 on page 6-1
- **K103M-R or EK103M-R:** Figure 7-1 on page 7-1
- **K104F-R or EK104F-R:** Figure 8-1 on page 8-1
- **K104M-R or EK104M-R:** Figure 9-1 on page 9-1

Machining Instructions

The drill bit in this kit simultaneously machines the concentric holes needed to install the K102F/M or EK102F/M Sparkplug connector, and the K103F/M, EK103F/M, K104F/M, or EK104F/M Flange Mount Connectors. When the 01-104 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.

Handle the drill bit with care: It has a 0.711 mm diameter tip.

1. Place the material to be machined into the vise of the mill.

2. Drill a 5.0 mm deep pilot hole using a 1.75 mm drill bit.

3. Install the step drill bit directly into the collet of the mill.

Do not use a drill chuck to hold the bit.

4. Set the drilling speed for 1500 to 2000 rpm and the feed rate for 0.006 mm per revolution.

5. 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.

6. For K102F/M-R and EK102F/M-R Sparkplug Connectors:

a. Drill all holes as specified in the steps above, and in the applicable drawing.

b. Tap the sparkplug hole using the tap supplied with the 01-104 kit.

7. For K103F/M-R and EK103F/M-R two-hole 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 K103F/M-R and EK103F/M-R two-hole flange mount connectors, the horizontal orientation of the flange mounting-screw holes is shown for information only (see [Figure 6-1 on page 6-1](#) and [Figure 7-1 on page 7-1](#)). In practice, the mounting hole pattern may be rotated as needed to any position (except for vertical to avoid the solder access hole).

8. For K104F/M-R and EK104F/M-R four-hole Flange Mount Connectors:

a. Drill all five holes as specified in the steps above, and in the applicable drawing.

b. Tap the four mounting holes as specified in the same drawing.

01-108

Finishing Step Drill and Tap Kit (Sliding Contacts)



Figure 13-1. 01-308 Drill and Tap Set

Introduction

This drill and tap set is used to precisely machine the concentric holes needed for mounting K or Extended K Connectors[®] in housings. The finishing step drill is made of high-speed steel. It 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 ± 0.125 mm of required hole diameters.

Note

Use the 01-108 kit when you are using stress relief contacts (models K110-1-3-R or K110-2-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 K Connector assembly:

- **K102F-R or EK102F-R:** Figure 4-1 on page 4-1
- **K102M-R or EK102M-R:** Figure 5-1 on page 5-2
- **K103F-R or EK103F-R:** Figure 6-1 on page 6-1
- **K103M-R or EK103M-R:** Figure 7-1 on page 7-1
- **K104F-R or EK104F-R:** Figure 8-1 on page 8-1
- **K104M-R or EK104M-R:** Figure 9-1 on page 9-1

Machining Instructions

The drill bit in this kit ([Figure 13-1](#)) simultaneously finishes concentric holes needed to install the K102F/M or EK102F/M Sparkplug, and the K103F/M, EK103F/M, K104F/M, and EK104F/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.
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1. Place the material to be machined into the vise of the mill.
2. Drill pilot holes to within 0.127 mm of each specified hole diameter.
3. Install the step drill bit directly into the collet of the mill.

Do not use a drill chuck to hold the bit.

4. Set the drilling speed for 1500 to 2000 rpm and the feed rate for 0.006 mm per revolution.
5. 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.

6. For K102F/M-R and EK102F/M-R Sparkplug Connectors:
 - a. Drill all holes as specified in the steps above, and in the applicable drawing.
 - b. Tap the hole using the tap supplied with the 01-108 kit.
7. For K103F/M-R and EK103F/M-R two-hole 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 K103F/M-R and EK103F/M-R flange mount connectors, the horizontal orientation of the two flange mounting-screw holes are shown for information only (see Figure 6-1 on page 6-1 and Figure 7-1 on page 7-1). In practice, the mounting hole pattern may be rotated as needed to any position (except for vertical to avoid the solder access hole).
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8. For K104F/M-R and EK104F/M-R four-hole Flange Mount Connectors:
 - a. Drill all five holes as specified in the steps above, and in the applicable drawing.
 - b. Tap the four mounting holes as specified in the same drawing.



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