

**ABB1000-MS**

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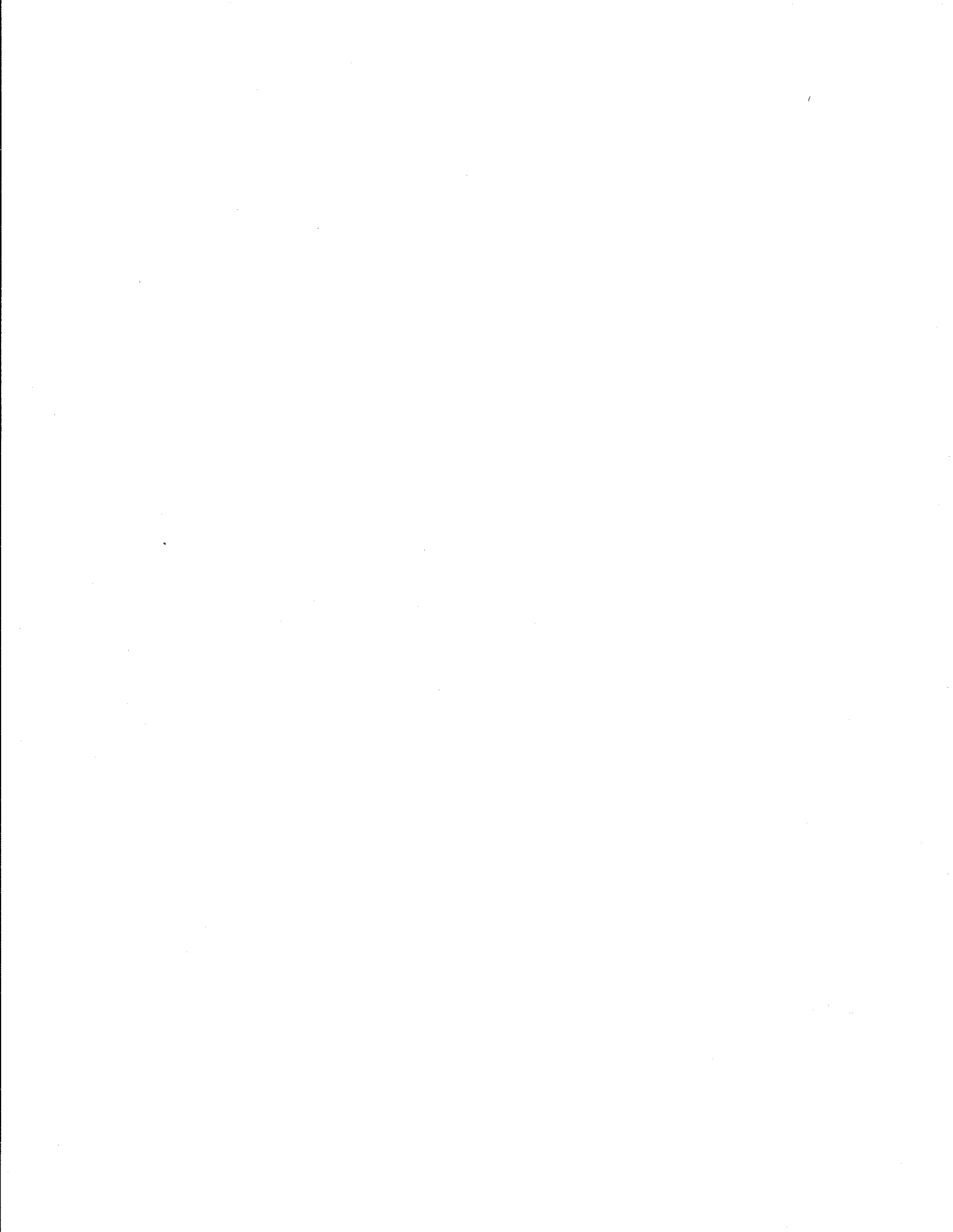
**ABB1000**  
**BROADBAND ANTENNA**  
**TECHNICAL MANUAL**



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Datron World Communications Inc.  
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Should it be impractical to return the equipment for repair, Datron will provide replacements for defective parts contained in the equipment for a period of 12 months from the date of installation of the equipment, but in no event later than 15 months from the date of shipment.

This warranty is limited to the original purchaser and is not transferable. Repair service performed by Datron is warranted for the balance of the original warranty or 90 days, whichever is longer.

**Exclusive Warranty** There are no other warranties beyond the warranty as contained herein. No agent, employee, or representative of Datron has any authority to bind Datron to any affirmation, representation, or warranty concerning the equipment or its parts that is not in conformity with the warranties contained herein. EXCEPT AS EXPRESSLY SET FORTH ABOVE, NO OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, ARE MADE WITH RESPECT TO THE EQUIPMENT OR THE PARTS CONTAINED

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**Limitations of Warranty** This warranty does not cover:

Physical damage to the equipment or its parts that does not involve defects in design, material, or workmanship, including damage by impact, liquids, temperature, or gases.

Damage to the equipment or its parts caused by lightning, static discharge, voltage transients, or application of incorrect supply voltages.

Defects or failures caused by unauthorized attempts to repair or modify the equipment.

Defects or failures caused by Buyer abuse or misuse.

**Return of Equipment - Domestic** To obtain performance of any obligation under this warranty, the equipment must be returned freight prepaid to the Technical Support Services, Datron World Communications Inc., 3030 Enterprise Court, Vista, California 92083. The equipment must be packed securely. Datron shall not be responsible for any damage incurred in transit. A letter containing the following information must be included with the equipment.

- a. Model, serial number, and date of installation.
- b. Name of dealer or supplier of the equipment.
- c. Detailed explanation of problem.
- d. Return shipping instructions.
- e. Telephone or fax number where Buyer may be contacted.

Datron will return the equipment prepaid by United Parcel Service, Parcel Post, or truck. If alternate shipping is specified by Buyer, freight charges will be made collect.

**Return of Equipment - International:** Contact Datron or your local Representative for specific instructions. Do not return equipment without authorization. It is usually not possible to clear equipment through U.S. Customs without the correct documentation. If equipment is returned without authorization, Buyer is responsible for all taxes, customs duties, clearance charges, and other associated costs.

**Parts Replacement** The following instructions for the supply of replacement parts must be followed:

- a. Return the parts prepaid to "Parts Replacement" Datron World Communications Inc., 3030 Enterprise Court, Vista, California 92083; and
- b. Include a letter with the following information:
  1. Part number
  2. Serial number and model of equipment
  3. Date of installation

Parts returned without this information will not be replaced. In the event of a dispute over the age of the

replacement part, components date-coded over 24 months previously will be considered out of warranty.

**Remedies** Buyer's sole remedies and the entire liability of Datron are set forth above. In no event will Datron be liable to Buyer or any other person for any damages, including any incidental or consequential damages, expenses, lost profits, lost savings, or other damages arising out of use of or inability to use the equipment. 1/95

## Safety Considerations

This product and manual must be thoroughly understood before attempting installation and operation. To do so without proper knowledge can result in equipment failure and bodily injury.

**Caution** Before applying ac power, be sure that the equipment has been properly configured for the available line voltage. Attempted operation at the wrong voltage can result in damage and voids the warranty. See the manuals section on installation. DO NOT operate equipment with cover removed.

**Earth Ground** All Datron products are supplied with a standard, 3-wire, grounded ac plug. DO NOT attempt to disable the ground terminal by using 2-wire adapters of any type. Any disconnection of the equipment ground causes a potential shock hazard that could result in personal injury. DO NOT operate any equipment until a suitable ground has been established. Consult the manual section on grounding.

**Servicing** Trained personnel should only carry out servicing. To avoid electric shock, DO NOT open the case unless qualified to do so.

Various measurements and adjustments described in this manual are performed in ac power applied and the protective covers removed. Capacitors (particularly the large power supply electrolytics) can remain charged for a considerable time after the unit has been shut off. Use particular care when working around them, as a short circuit can release sufficient energy to cause damage to the equipment and possible injury.

To protect against fire hazard, always replace line fuses with ones of the same current rating and type (normal delay, slow-blow, etc.). DO NOT use higher value replacements in an attempt to prevent fuse failure. If fuses are failing repeatedly this indicates a probable defect in the equipment that needs attention.

Use only genuine Datron factory parts for full performance and safety of this product.



**Made in the USA**

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# ABB1000 BROADBAND ANTENNA

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## Description

The Datron World Communications Inc. (DWC) ABB1000 antenna system is a broadband antenna having a VSWR of less than 2:1 throughout the majority of the frequency range. The ABB1000 will operate continuously at 1000W of RF power from 2 to 30 MHz.

This manual provides you with all of the information necessary for effectively installing and operating the ABB1000 antenna. Included are unpacking and installation instructions, operation recommendations, and replacement information.

The following models of the ABB1000 can be purchased from DWC.

- ABB1000A Broadband antenna 2 to 30 MHz, 1000W, supplied with a 30m RG213 coaxial cable and PL-259 (UHF) connector. Extended length model for increased efficiency in the 2 to 10 MHz range (antenna length is 43.3m).
- ABB1000B Broadband antenna 2 to 30 MHz, 1000W, supplied with a 30m RG213 coaxial cable and PL-259 (UHF) connector (antenna length is 34.1m).
- ABB1000AN Broadband antenna 2 to 30 MHz, 1000W, supplied with a 30m RG213 coaxial cable and PL-259 (UHF) connector (antenna length is 34.1m).
- ABB1000BN Broadband antenna, 2 to 30 MHz, 1000W, supplied with a 30m RG213 coaxial cable and type N connector. Extended length model for increased efficiency in the 2 to 10 MHz range (antenna length is 43.3m).

The supporting masts are not supplied as part of any ABB1000 antenna. However, DWC does offer a portable mast kit, the AMX, for the antenna.

**Note:** *Before unpacking and assembling, carefully read all instructions.*

## Unpacking and Inspecting

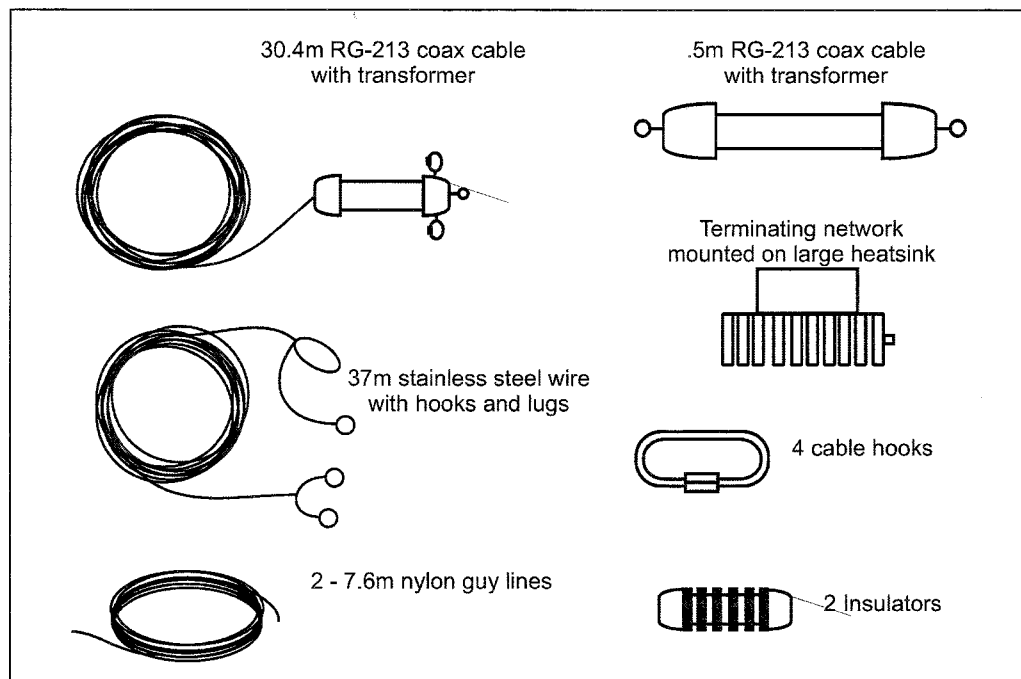
When unpacking the ABB1000, carefully remove the equipment from its container and inspect it for any damage. Notify DWC if anything is damaged.

**Note:** *Do not unwrap wires or cables at this time.*

You should have the following parts:

- 1 - 30.4m RG-213 coax cable with transformer
- 2 - 37m stainless steel wire with hooks and lugs
- 1 - Terminating network mounted on large heat sink
- 2 - 7.6m nylon guy line
- 4 - Cable hooks
- 1 - .5m RG-213 coax cable with transformer
- 2 - Insulators

See Figure 1 for an illustration of all parts.



**Figure 1**  
**ABB1000 Antenna Components**



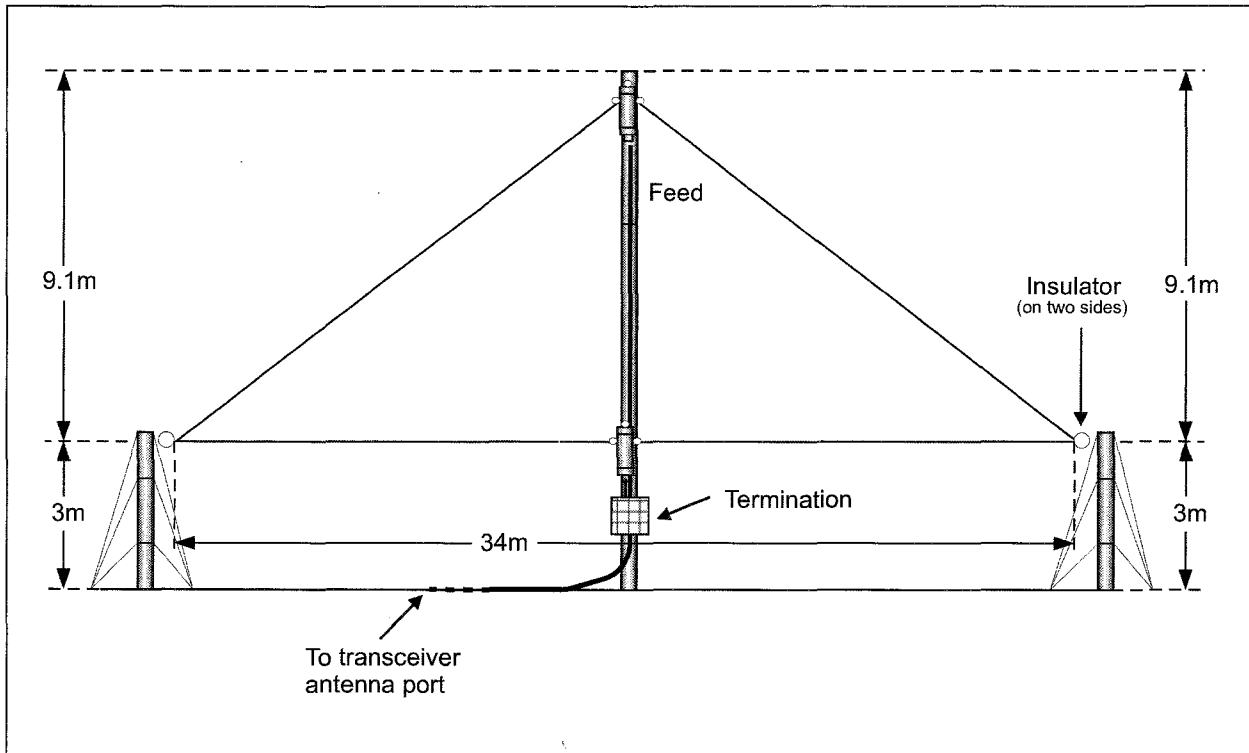
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## Operating Characteristics

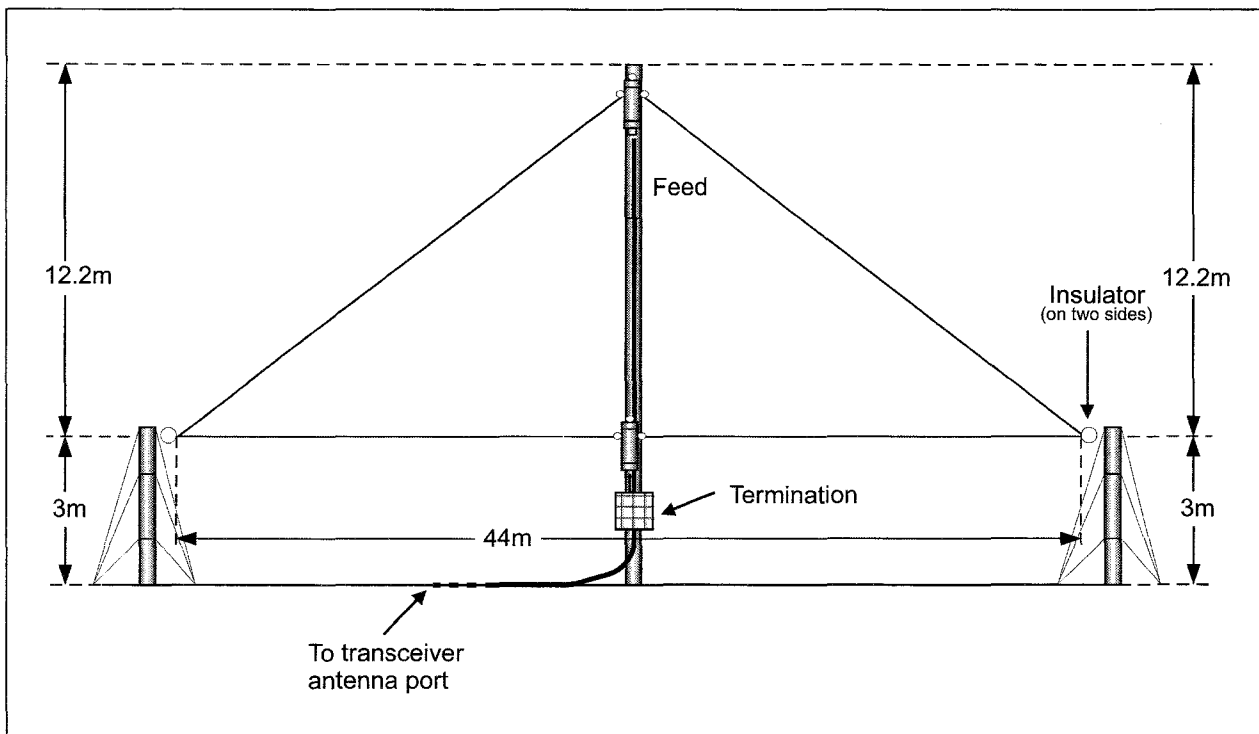
The ABB1000 can be mounted in many different configurations depending on your available space and communication requirements. The best mounting configuration for most installations is the Delta loop which has a large aperture for convenient installation. The standard version of the antenna is the ABB1000B, while the ABB1000A is an extended length version for increasing efficiency in the 2 to 10 MHz range. The mounting arrangement for those configurations are shown in Figures 2 and 3. These are only suggested mounting configurations; because of the flexibility of the antenna system, you can tailor the final installation for any site restrictions while maintaining good communications.

Figure 4 shows the ABB1000A model in a diamond configuration, and Figure 5 shows the same model in a rectangle configuration. Two additional insulators are included to aid in the construction of these alternative configurations. There is very little change in performance if you change the dimension or shape, providing the total wire length is maintained and the aperture of the antenna is kept as large as possible.

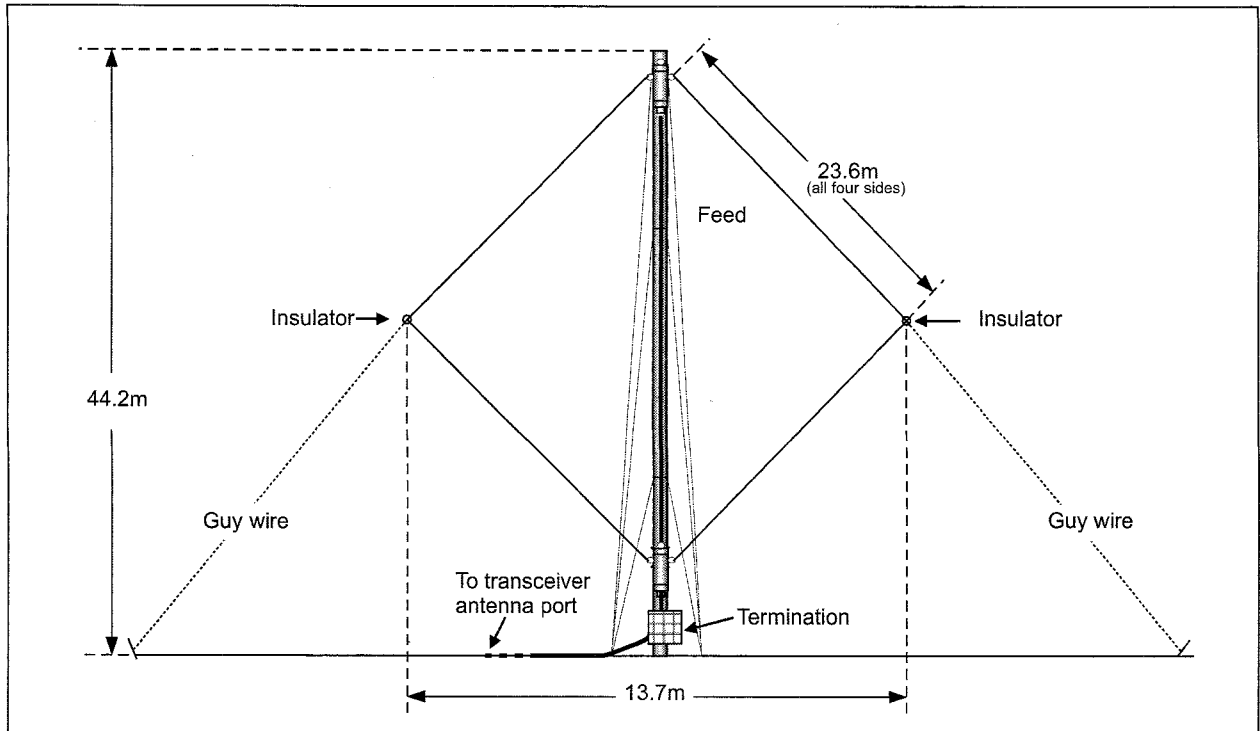
In order to maintain efficiency and matching, it is recommended that the antenna not be erected with shorter masts than those shown in Figures 2 and 3. However, if there are space restrictions, smaller configurations can be used with some degradation in matching of some frequencies and radiation efficiency (especially at low frequencies). This performance degradation will be minimal as long as the base section of the antenna is at least 26m to 28m in length and is kept 2m above the ground.



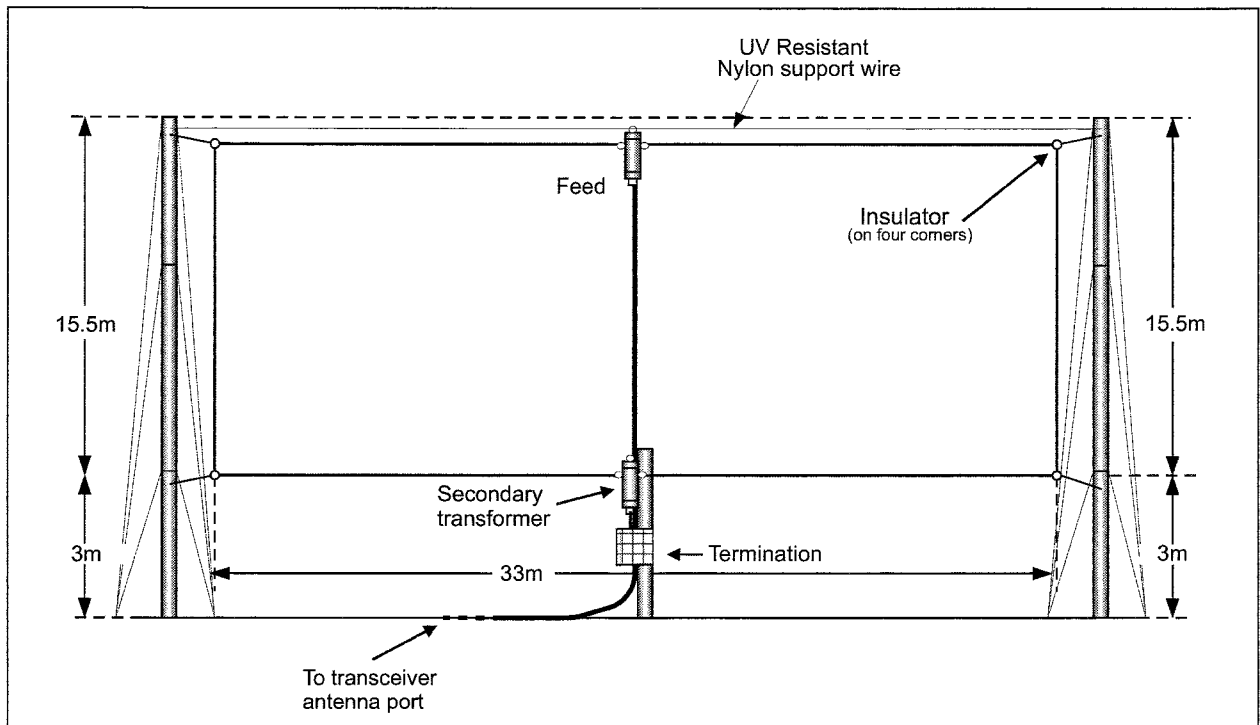
**Figure 2**  
**ABB1000B Configuration**



**Figure 3**  
**ABB1000A Configuration**



**Figure 4**  
**Diamond Antenna Configuration for Model ABB1000A**



**Figure 5**  
**Rectangle Antenna Configuration for Model ABB1000A**

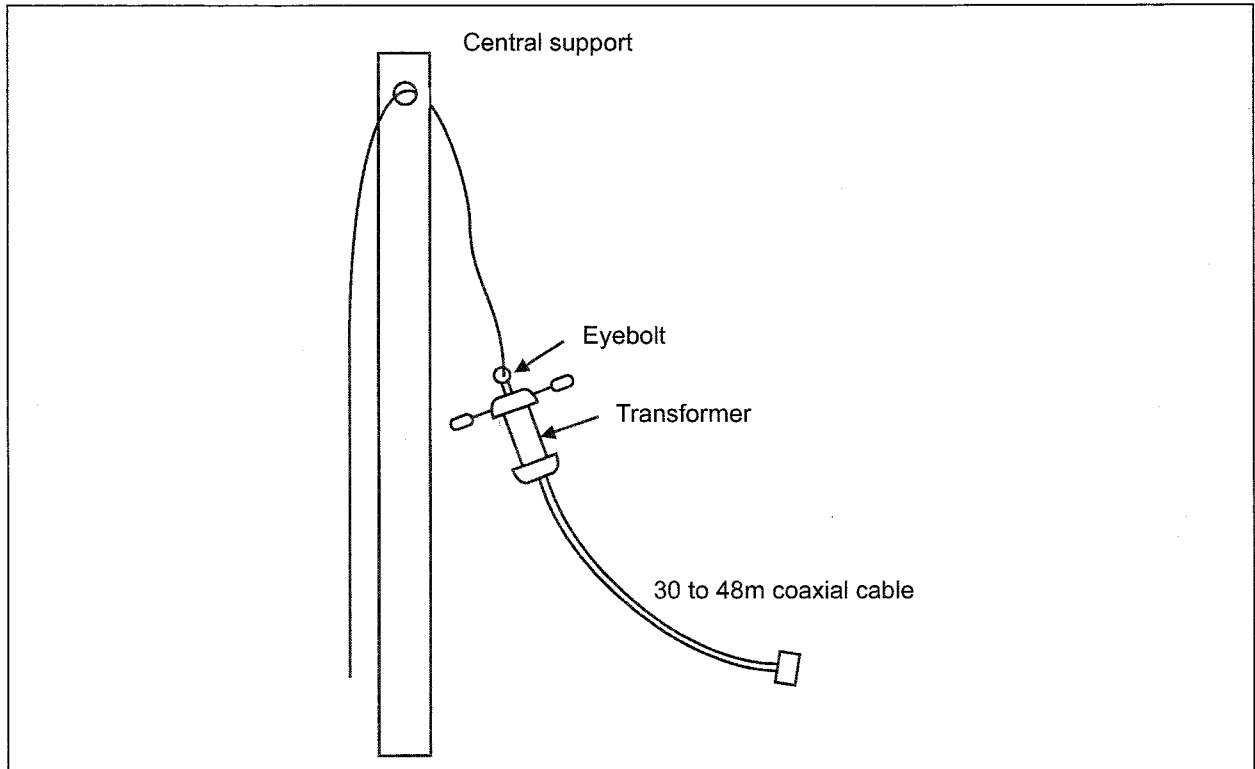
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## Installing

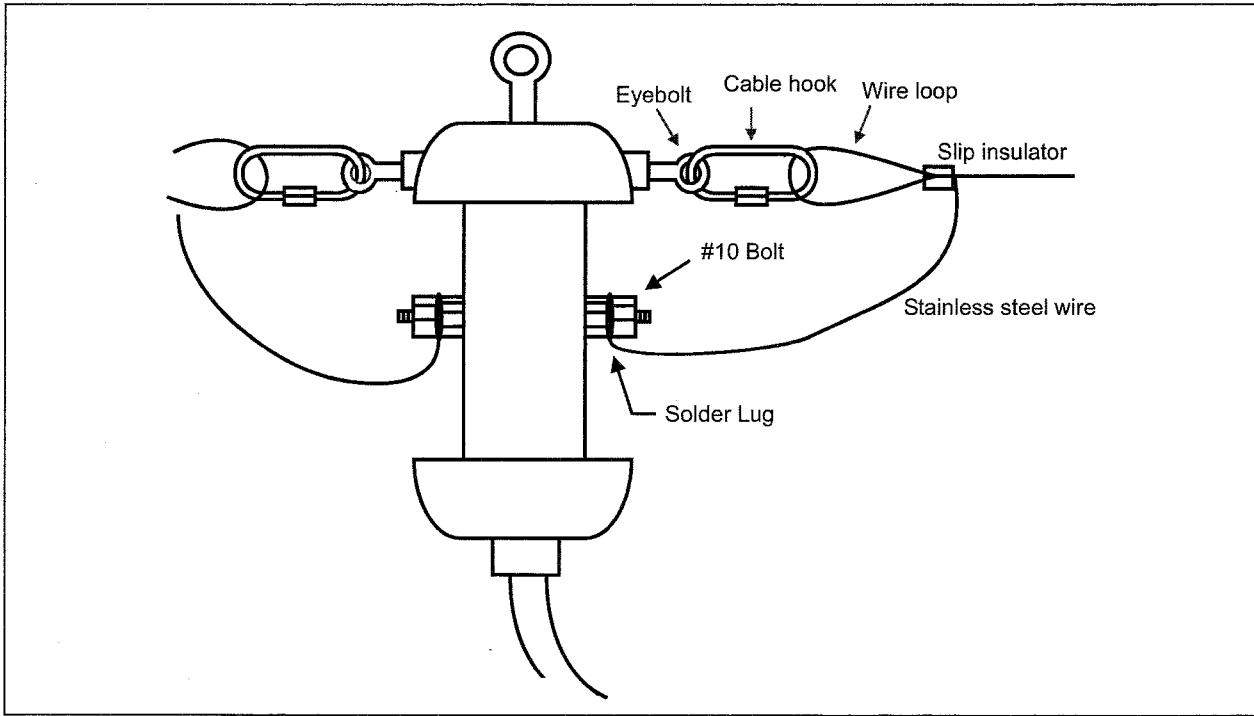
The following steps are for mounting the ABB1000 antenna using the standard Delta loop model which needs a center support and two end supports. Mount the antenna clear of all metal objects and power lines. It should be as high as possible and as much in the clear as possible.

1. Carefully unwind the 30.4m coax cable and lay it straight out from the center support tower. The cable should be free and straight. Do not allow kinks in the coaxial cable.
2. Attach the pull-up cable to the eyebolt on the transformer and pull the transformer up to an easy working height (1.5m to 1.8m above the ground). See Figure 6.
3. Very carefully unwind the stainless steel cables. This cable will twist badly if not done carefully. As you lay out the wire, unwind and walk away from the free end. This cable must NOT be kinked. Lay each stainless steel cable out and away from the center support structure in a direction towards the intended mast locations.
4. Using the cable hooks, attach the end of the stainless steel cable to the eyebolts on the side of the transformer. Install the solder lug onto the #10 bolts located on each side of the transformer. Tighten the nuts securely. See Figure 7.
5. Located on each stainless steel wire is a slip insulator. Slide this insulator to the approximate center of each stainless steel wire.
6. Using the U-bolts mounted on the terminating network (large heat sink), mount the terminating network on the support structure at the same height as the end mounting supports. Connect the transformer with the short coax to the matching network. Screw on the coax connector and tape the connector for environmental protection.
7. Carefully bring each end of the stainless steel cable that was laid out from the center support and attach it to the transformer mentioned in step 6 (see Figure 8). Attach each end as in Figure 7.
8. Raise the top transformer to the top of the support structure and secure. Tie the nylon cords to each of the sliding insulators on the outside of the stainless steel wires. Pull the nylon lines and attach to the end support structures. Pull these fairly tight as to remove most of the slack in the stainless steel wires.

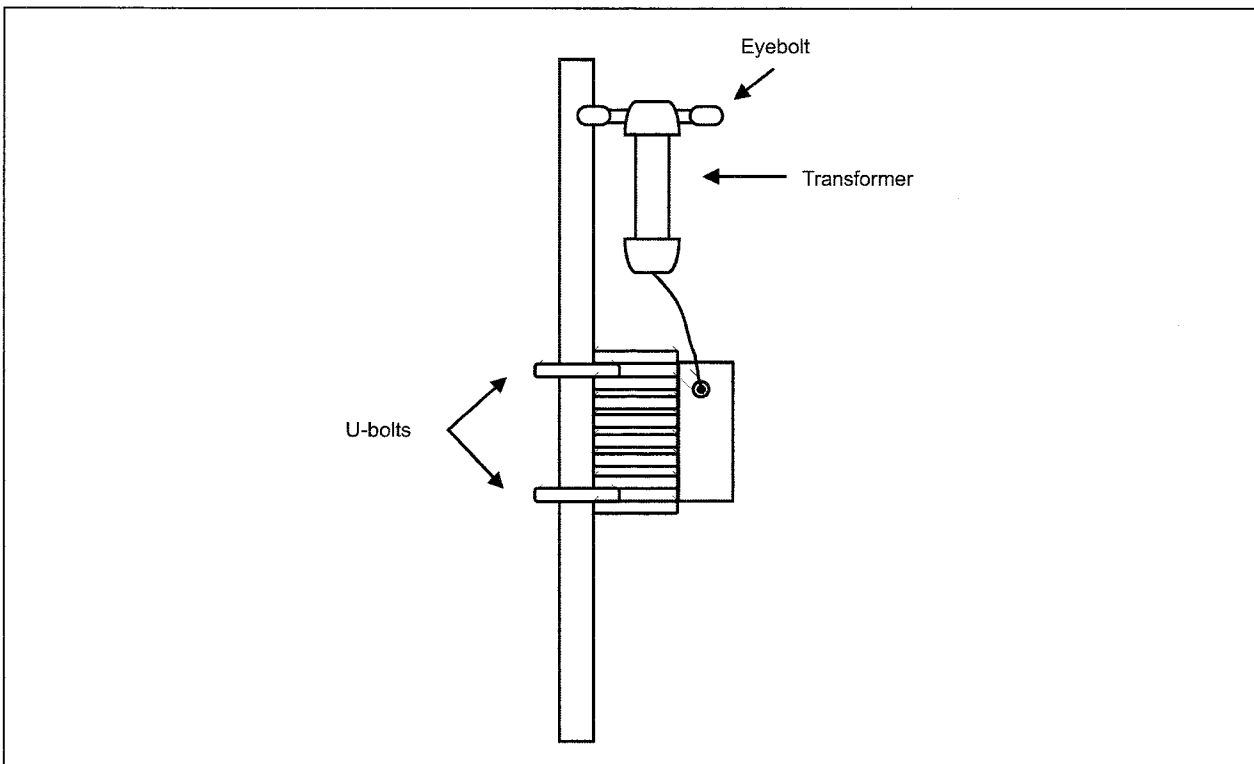
9. The distance between the top transformer and the bottom transformer should be no less than 9m and no greater than 15m. The bottom stainless steel wire should be a minimum of 3m above the ground or roof of the building.
10. Connect the long coax to your communications system antenna output. Your system is now ready to operate.



**Figure 6**  
**Positioning the Transformer**



**Figure 7**  
**Attaching Cable to Transformer**



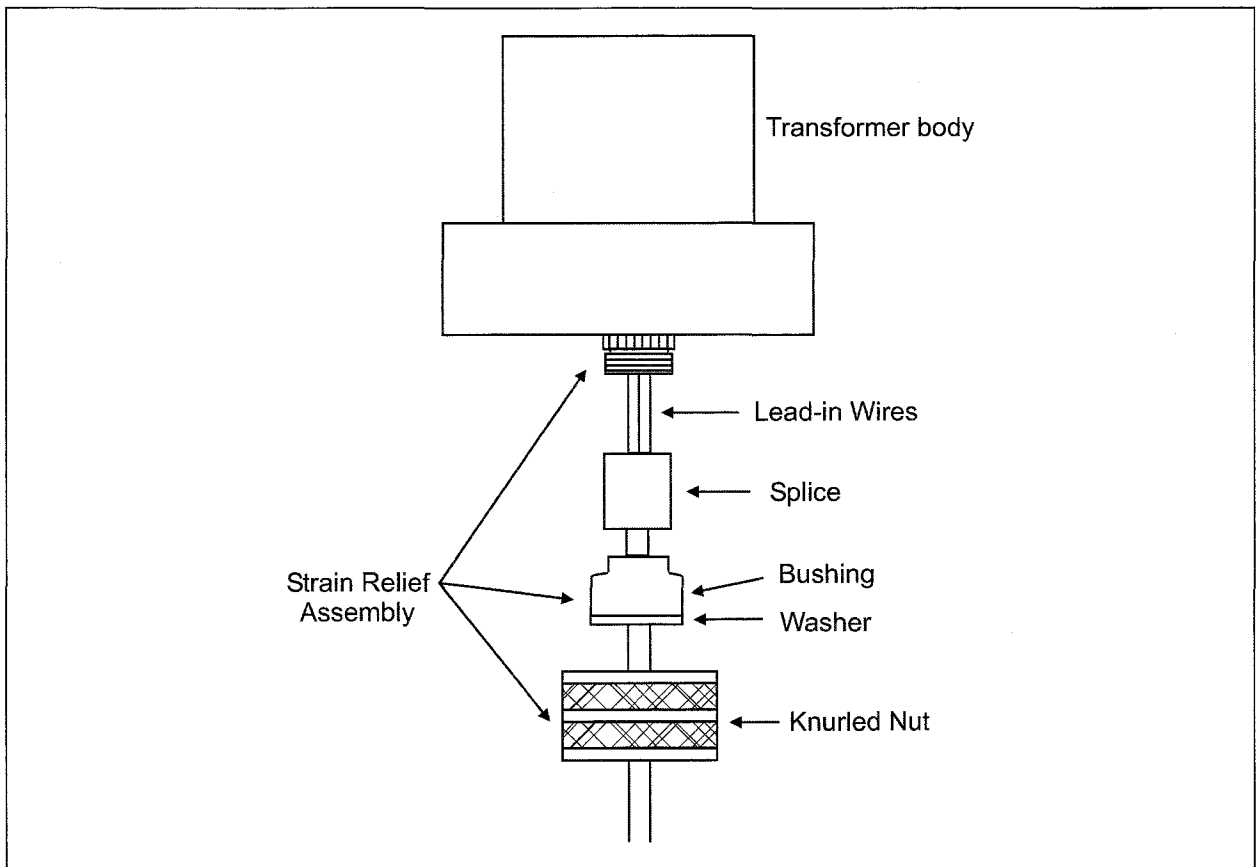
**Figure 8**  
**Attaching Cable to Terminating Network**

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## Replacing the Transformer Coax

The transformers are built so that the coax can be replaced if necessary. To replace the coax to the transformer:

1. Loosen the nut on the strain relief and pull the coax through the strain relief. This exposes the lead-in wires used to attach the coax to the balun inside the transformer assembly.
2. Cut the coax off at the end of the lead-in wires (cutting off as little of the lead-in wires as possible).
3. Prepare and reattach the coax to the lead-in wires.
4. Stuff the lead-in wires and coax back through the strain relief. Tighten the nut on the strain relief.



**Figure 9**  
**Replacement of Transformer Coax**

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