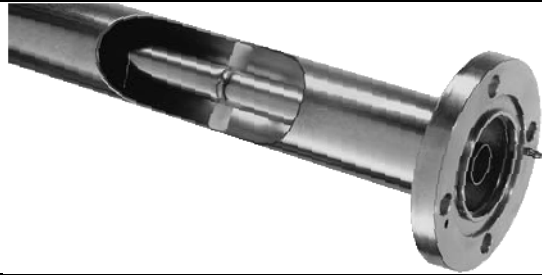


Installation Instructions

Standard Rigid Coaxial Transmission Lines

Bulletin 15311A

Revision I



Hardware Torque Specifications	
Hardware Size	Torque Value
1/4-inch (6 mm)	7 lb.-ft (9 Nm)
5/16-inch (8 mm)	12 lb.-ft (16 Nm)
3/8-inch (10 mm)	21 lb.-ft (28 Nm)
1/2-inch (13 mm)	46 lb.-ft (62 Nm)
5/8-inch (16 mm)	76 lb.-ft (103 Nm)

Line and Flange Information							
Type Number	STD150	STD350	STD650B	STD675B	STD775	STD875	
Line Diameter, in.	1-5/8	3-1/8	6-1/8	6-1/8	7-3/16	8-3/16	
Characteristic Impedance (ohms)	50	50	50	75	75	75	
Flange Diameter, in. (mm)	3-1/2 (89)	5-3/16 (132)	8-1/8 (207)	8-1/8 (207)	9-1/2 (241)	9-1/2 (241)	
Bolt Circle Diameter, in. (mm)	2-13/16 (71)	4-3/8 (111)	7-3/8 (188)	7-3/8 (188)	8-3/4 (222)	8-3/4 (222)	
Number of Holes	4	6	12	12	14	14	
Hardware Size, in.	5/16	3/8	3/8	3/8	3/8	3/8	
Special Cut Flanged Lengths							
Cut outer conductor shorter than measured length to allow for flange(s), in. (mm)	One flange	1/4 (6)	17/64 (7)	19/64 (8)	9/32 (7)	11/32 (9)	1/2 (13)
	Total both flanges	1/2 (13)	17/32 (13)	19/32 (15)	19/32 (15)	11/16 (18)	1 (26)
Cut inner conductor shorter than outer conductor to allow for inner connector, in. (mm)	One end	5/8 (16)	1-3/32 (28)	1-15/32 (37)	1-3/8 (35)	1-17/32 (39)	1-3/4 (45)
	Total both ends	1-1/4 (32)	1-15/16 (49)	2-11/16 (68)	2-19/32 (66)	2-27/32 (72)	2-1/2 (90)
Unflanged Lengths							
Outer conductor allowance for coupling insulator, in. (mm)		1/4 (6)	3/8 (10)	9/32 (7)	9/32 (7)	Not applicable	Not applicable
Cut inner conductors (each side of inner connector) shorter than outer conductors, in. (mm)		9/16 (14)	27/32 (21)	9/16 (14)	9/16 (14)	Not applicable	Not applicable

Read These Instructions Thoroughly Before Assembly Vertical Installation

The inner connector insulator and protective cover provide support for the inner conductor of each line section during the hoisting operation. **Note:** Do not attach hoisting sling to line section flanges.

Transmission Line Installation

Transmission line installation may begin at either end of the proposed vertical run. Installations originating at the top or antenna end of the vertical run will require proper positioning of the bottom miter elbow to allow for both expansion and contraction of the rigid line over the anticipated operational temperature range.

Installations originating at the bottom or transmitter end of the vertical run will require careful alignment with the antenna. Additional miter elbows and field flanged sections will probably be required at the upper portion of the vertical run with additional rigid hangers at the bottom portion of the vertical run for increased support during assembly.

Note: These additional hangers used during installation must be removed prior to placing the system into operation.

Remove protective cover from end of line section and retain supplied O-ring gasket. One O-ring is supplied per line section and may be located under either protective end cover or in a separately supplied hardware kit.

Slightly pull inner conductor from outer conductor while inserting supplied inner connector assembly into inner conductor using a twisting motion to ensure full engagement. Push assembly back into outer conductor and ensure inner connector insulator is properly seated in flange insulator groove. **Note:** Proper installation is achieved when half of the insulator remains exposed. Apply thin coating of silicone grease to supplied O-ring gasket to temporarily secure O-ring in position during assembly.

Note: Ensure both gasket and flange groove are free of dirt to ensure pressure tight seal. Remove and discard protective cover from end of previous line section. Align

flange pins with corresponding flange alignment holes and join mating sections. Firmly push line sections together ensuring O-ring gasket remains in place and inner connector insulator seats properly in mating flanges.

Install and alternately snug mounting hardware at 180° intervals while maintaining a uniform gap between flanges. Perform final torquing sequence in a circular pattern. Do not overtighten. When properly installed, a small uniform gap should be noted around flange circumference. **Note:** If hardware becomes galled during the tightening procedure, remove damaged hardware by sawing or breaking and install replacement hardware to ensure proper electrical contact between mating surfaces.

Refer to supplied installation instructions and install appropriate hangers (rigid or spring types) as line sections are being installed using proper number and type of hangers correctly spaced. Differential line expansion is compensated by inner connectors and spring hanger assemblies. **Note:** Do not support more than one section of line on flange joint without using hangers.

Ensure all exposed horizontal runs are well protected from accumulated or falling ice and possible damage from other falling objects.

Special Cut Lengths

A section of transmission line may be cut at any point without affecting the electrical characteristics.

Refer to line and flange table on page 1 and corresponding field flange instruction bulletin for information regarding the proper installation of field flanges.

The overall length of the inner conductor must be a minimum of an inner connector width shorter than the overall length of the outer conductor (including flanges) to allow for standard inner connector at each end of the line section. **Note:** If cut is less than 2" (51 mm) from an inner conductor support, trim the opposite end of inner conductor instead. Both ends of the inner conductor should be a minimum of 2" (51 mm) from an inner conductor support to allow for installation of an inner connector.

Unflanged Lines

Unflanged lines for indoor unpressurized installations are joined by straight couplings comprised of an inner connector, a copper sleeve and corresponding clamps. Allowances must be made for inner connector and insulator installations in determining final line section lengths. Refer to the line and flange information table on page 1.

Pressurization

Maximum pressurization values [normally less than 10 lbs./in² (70 kPa)] are determined by the lowest rated system component and should not be exceeded. The transmission line is rated at 10 lbs./in² maximum. Consult applicable pressurization specifications on other system components (usually much lower) to determine maximum system pressurization limit (generally 3 psi with antenna, 1/2 psi with rectangular wave guide).

After the installation is complete, pressurize the line and check all flange connections for leakage. Use a commercial leak detector or liquid detergent over joints and check for evidence of bubbles. Unbroken soap film over an entire joint for several minutes indicates absence of noticeable leaks.

Transmission line must be pressurized at all times to prevent changes in ambient air temperature from causing condensation to occur and seriously impair system efficiency. If moist air has entered the system, it must be purged by removing the gas port plug located on the gas barrier or behind the antenna input flange. An alternative method is to pressurize and let air escape at a transmitter end of line for one hour. Repeat procedure several times allowing one hour each time for air to mix. After purging, replace gas port plug and repressurize line.

Pressurization can be accomplished by manual or automatic means depending upon the quantity of line in use at the station and whether or not the site is attended. A dry air hand pump is satisfactory for attended sites using relatively small quantities of line. Automatic electric dehydrators are recommended for unattended sites or where large quantities of line are utilized. A compressed air cylinder can also be used. A regulating tank in the pressurization system can be utilized to provide low pressure outputs.

Note: Line assemblies are not hermetically sealed and may exhibit a low leakage rate; consequently, line installations not using an automatic air supply must be periodically inspected. Dry air or nitrogen is normally used for pressurizing. When pressurization equipment is connected to the gas port on a gas barrier, or whenever pipe fittings are reassembled, threads must be covered with Teflon tape to ensure a leak-proof connection.

Notice

The installation, maintenance, or removal of antenna systems requires qualified, experienced personnel. ERI installation instructions are written for such personnel. Antenna systems should be inspected once a year by qualified personnel to verify proper installation, maintenance, and condition of equipment. ERI disclaims any liability or responsibility for the results of improper or unsafe installation practices.



Electronics Research, Inc.
7777 Gardner Road
Chandler, Indiana 47610 USA
+1 (812) 925-6000 | www.eriinc.com

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