

653102 Revision K, July 2025

AISG Smart Bias Tees

ATSBT-4G & ATSBT-5G Series

GENERAL INFORMATION

- Smart Bias Tees are designed to eliminate the long AISG data cable run from the base to the top of a cell site tower by “piggy-backing” power and control signals onto an existing RF coax.
- Each Smart Bias Tee includes grounding hardware that can be used with the ATGK-COMP grounding kit for added lightning protection (Figure 1). This is an optional grounding point, not must. Better to apply when RF cable is over 1 meter.

Note: An AISG TMA includes its own Smart Bias Tee functionality at the top of the site. Therefore, a top Smart Bias Tee unit is not needed if an AISG TMA is used on top.

- The model numbering sequence for this series is encoded as follows:

ATSBT- TOP- FM- 4G

Generation

Gender of connector on *antenna* side of bias tee: Female or Male

Gender of connector on *BTS* side of bias tee: Female or Male

Position is TOP or BOTTOM

Smart Bias Tee

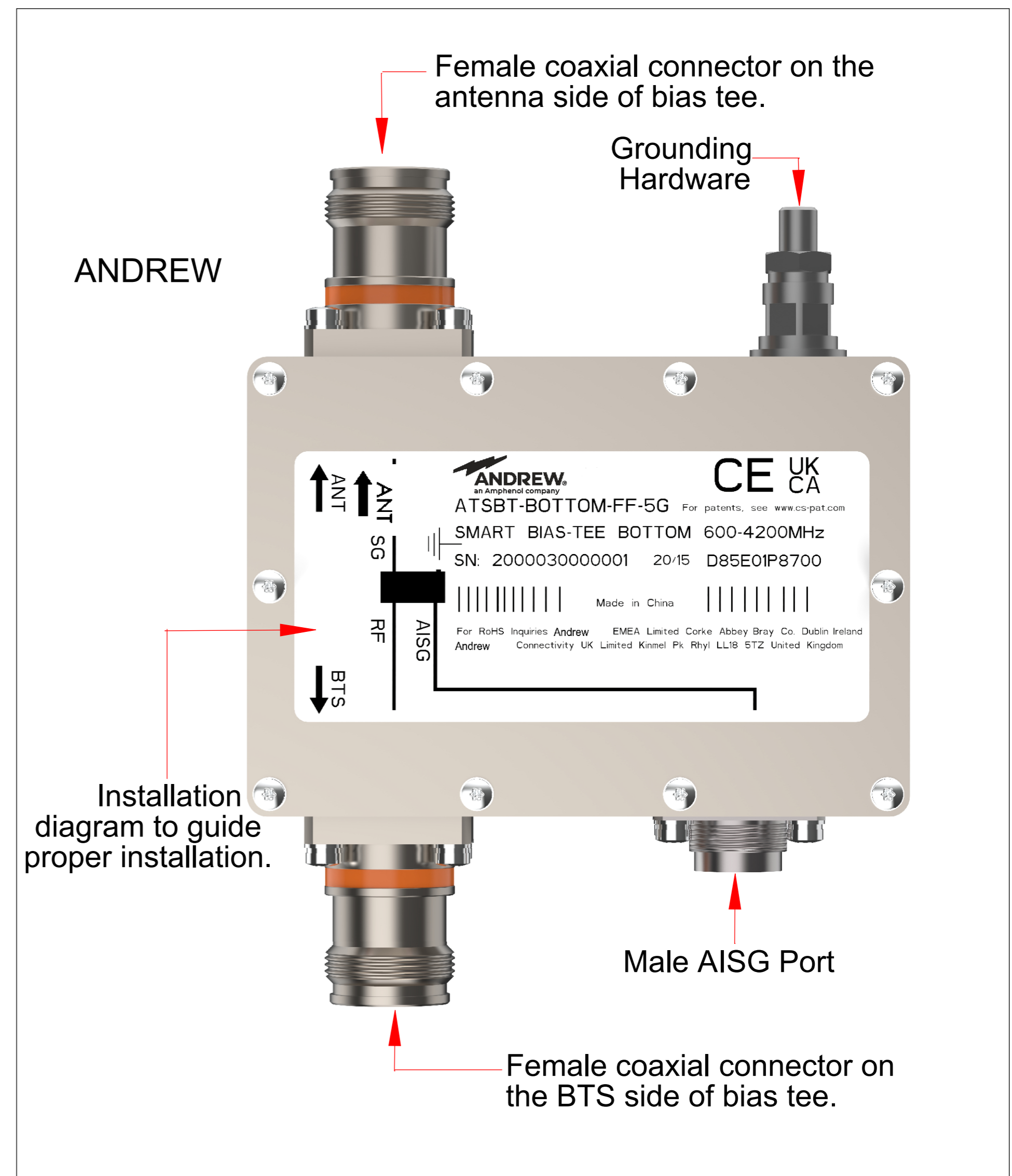


Figure 1. ATSBT-BOTTOM-FF-5G Smart Bias Tee.

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WARRANTY NOTICE

Proper installation procedures must be followed when installing and operating RET equipment. Failure to assure installations are done properly by trained installation personnel and to follow procedures discussed in this bulletin may cause warranty for such products to be void.

Andrew requires pretesting actuators on the ground prior to installation, using the Andrew portable controller and the latest version of the controller software (available online at www.andrew.com/resources/software). This will verify proper actuator functionality and also ensure that the latest available actuator firmware release is installed on the actuator. Failure to conduct pre-test and pre-installation procedures defined by Andrew will void warranty.

Unauthorized removal of a protective shroud to replace actuators voids the Andrew warranty.

SAFETY NOTICE

The installation, maintenance, or removal of an antenna requires qualified, experienced personnel. Andrew installation instructions are written for such installation personnel. Antenna systems should be inspected once a year by qualified personnel to verify proper installation, maintenance, and condition of equipment.

Andrew disclaims any liability or responsibility for the results of improper or unsafe installation practices.

It is recommended that transmit power be turned off when the field installation is performed. Follow all applicable safety precautions as shown on this page.



Do not install near power lines. Power lines, telephone lines, and guy wires look the same. Assume any wire or line can electrocute you.



Do not install on a wet or windy day or when lightning or thunder is in the area. Do not use metal ladder.



Wear shoes with rubber soles and heels. Wear protective clothing including a long-sleeved shirt and rubber gloves.

INSTALLATION DIRECTION

CAUTION:
The Smart Bias Tee should be installed following the direction mark on surface so that the AISG output connector is facing towards the ground.



Figure 2. Installation direction

RECOMMEND THE INSTALLATION POSITION

Vertical position: Keep the AISG port facing ground.



Figure 3. Recommended vertical position

FORBIDDEN INSTALLATION POSITION

Avoid horizontal position and AISG port facing up or tilt up.



Figure 4. The AISG port facing up or tilt up is forbidden.

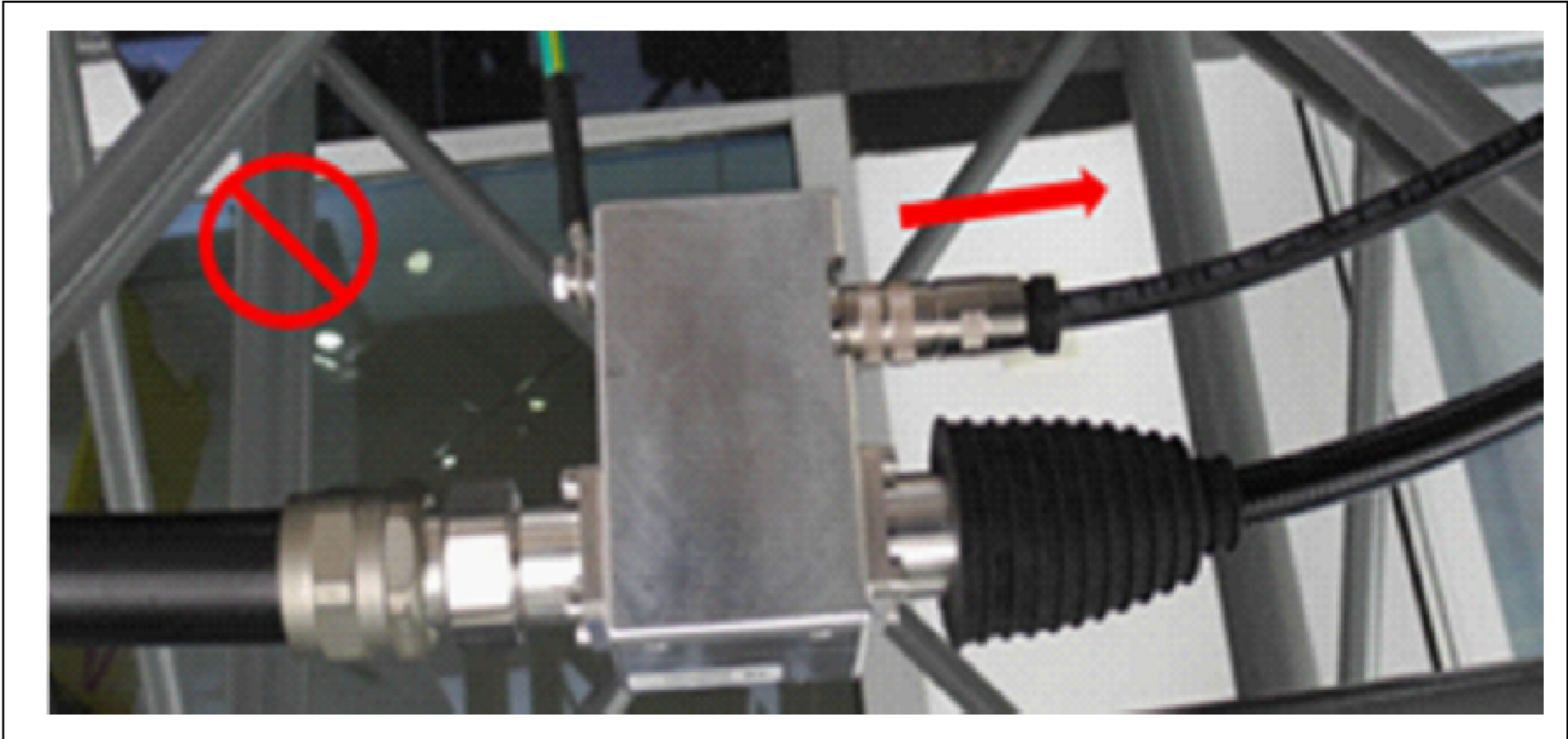


Figure 5. The horizontal position is forbidden .

TIGHTENED AISG CONNECTOR

CAUTION: Hand tighten only! AISG connectors are designed so that hand tightening will provide a seal to IP67. Overtightening will destroy the connector. Visual inspection after tighten: 1mm gap left as shown in figure 6. Don't require any weatherproof tape for AISG connector once it be hand tightened properly

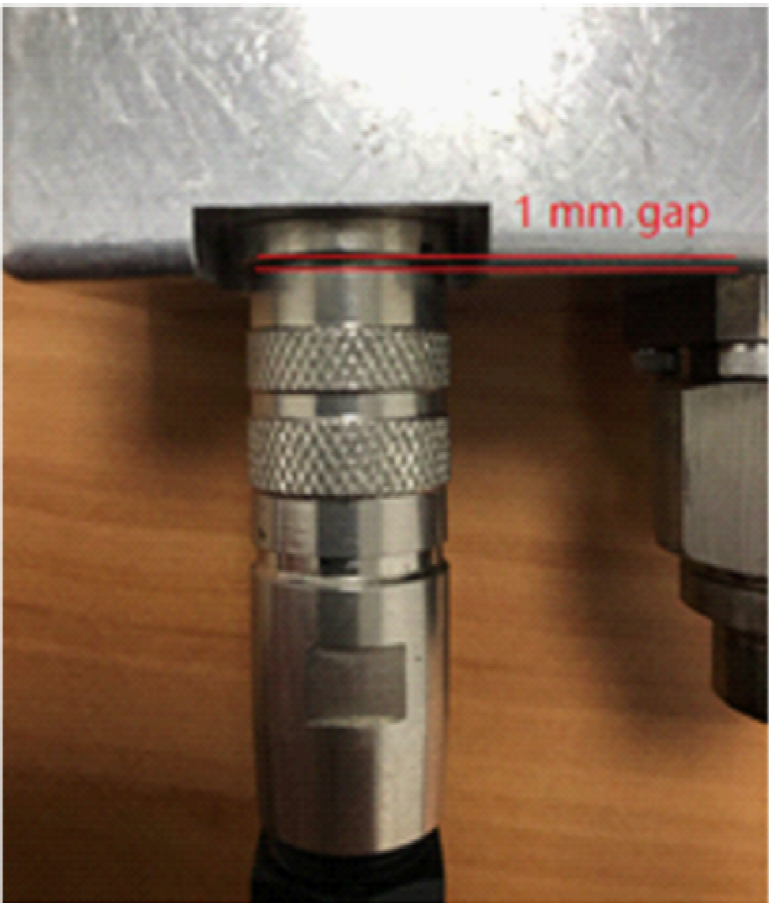


Figure 6. Hand tightened AISG connector .

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INSTALLATION PROCEDURE

Install top and bottom ATSBT-4G or ATSBT-5G Series Smart Bias Tees by following steps 1 through 9, detailed in Figure 7.

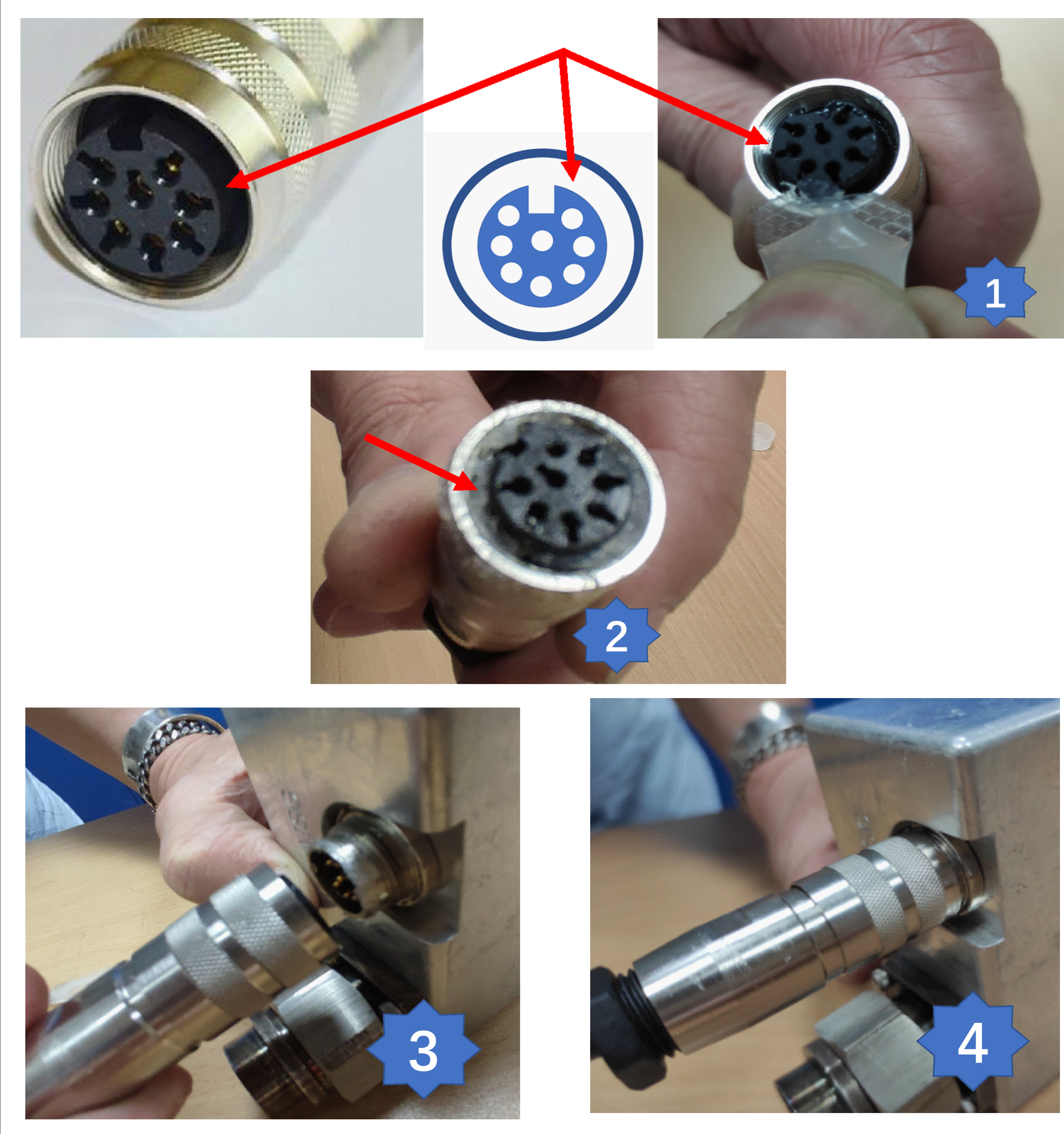
TOP UNIT INSTALLATION INSTRUCTIONS

1.

Connect the top Smart Bias Tee on the coaxial feeder cable that carries the AISG signal.
2.

Connect the top coaxial connector on the Smart Bias Tee to the antenna with a coaxial jumper cable.
3.

a) Use the included Dow Corning 4 silicone grease and fill the clearance between insulator and body of the female RET control cable connector. please follow below steps to paint silicone grease.



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INSTALLATION PROCEDURE

Install top and bottom ATSBT-4G or ATSBT-5G Series Smart Bias Tees by following steps 1 through 9, detailed in Figure 7.

TOP UNIT INSTALLATION INSTRUCTIONS

- b) Depending on the RET cable length, CommScope recommends forming a loop in the cable as shown below in step 3 of Figure 7. Next attach the male end of the RET control cable to the Smart Bias Tee and the female end to the actuator.
- c) With the AISG connector at the bottom of the Smart Bias Tee, the RET cable should hang down so water drains away from the connector.

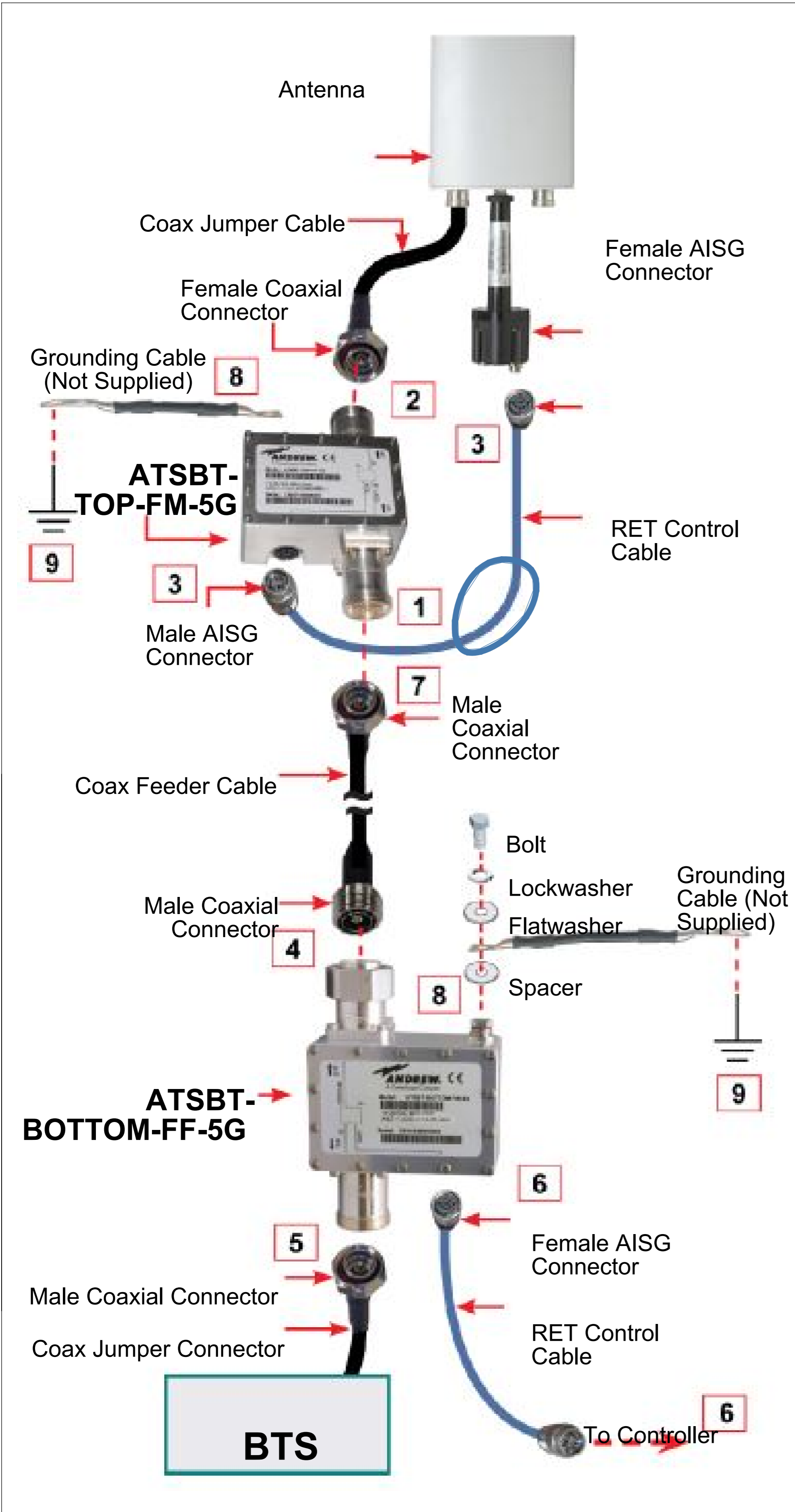


Figure 7. Example Of One Set-Up Using The ABSBT-5G Series Smart Bias Tees In A RET System.

BOTTOM UNIT INSTALLATION INSTRUCTIONS

4. Connect a bottom Smart Bias Tee on the same coaxial feeder cable as the top bias tee or AISG TMA.
5. Connect the lower coaxial connector on the Smart Bias Tee to the BTS with a coaxial jumper cable.
6. Attach the female end of the RET control cable to the Smart Bias Tee, and the male end to the controller. (See caution above.)

Note that the label on the Smart Bias Tee includes a diagram to guide proper installation.

POST INSTALLATION INSTRUCTIONS

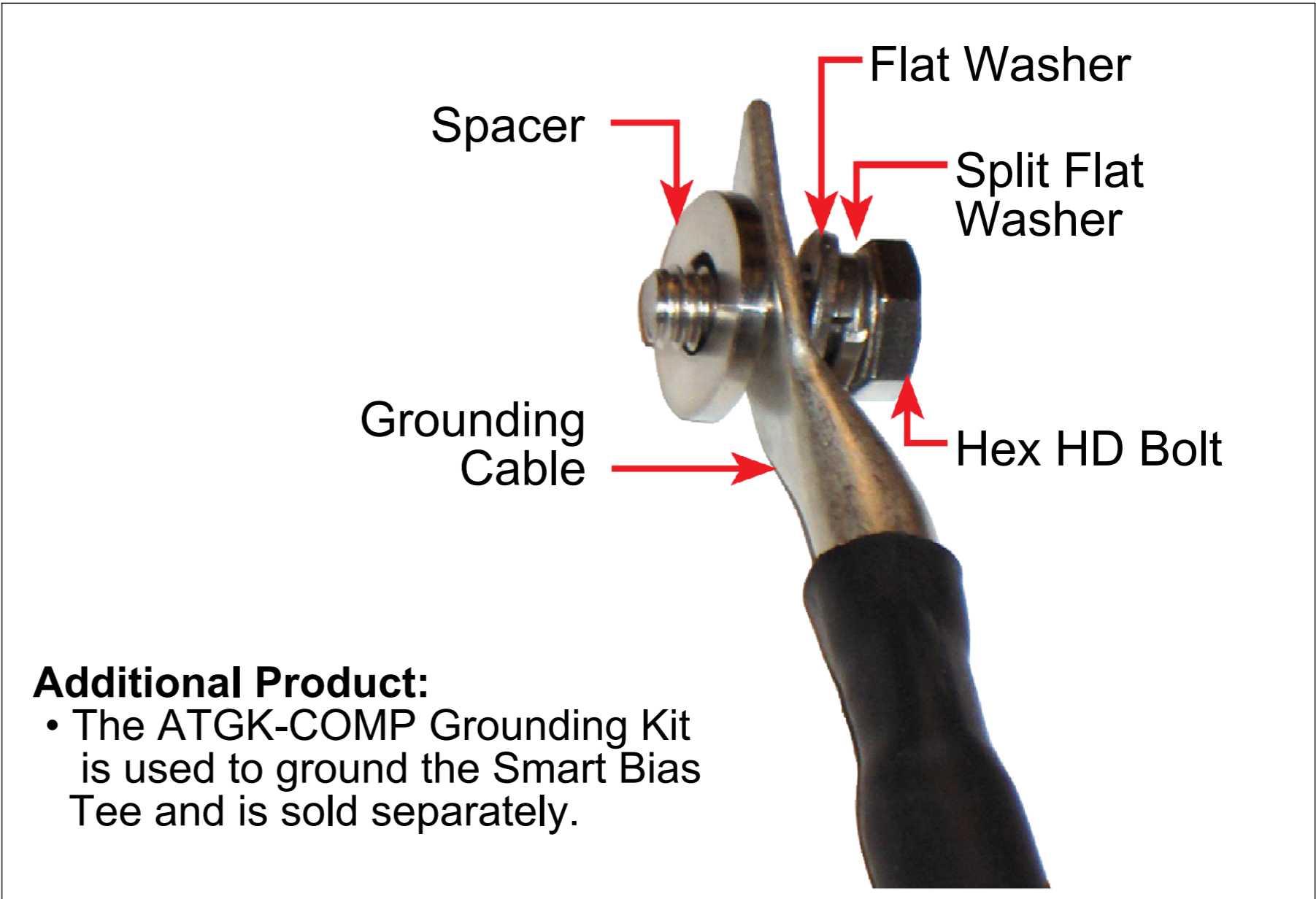
These steps apply after top and bottom units are in place:

7. a) Carefully tighten DIN connections until they are snug, but do not apply heavy force with pliers.
- b) Weatherproof the DIN connections, carefully covering all junctions and the outer jacket of the cable.
8. a) Remove bolt, washers, and spacer from the Smart Bias Tee ground (supplied).
- b) Connect ATGK-COMP ground cable (not supplied) to Smart Bias Tee, as needed.
- c) Reattach bolt and washers to secure the cable.
9. Attach ground cable to tower ground with M10 x 25mm bolts, nuts, and washers (provided with ATGK-COMP kit) or with other appropriate hardware (Figure 8).
10. Use cable tie to fix the Smart Bias Tee properly to avoid the connector loose by vibration.

After installation of Smart Bias Tee units is complete, connect the remaining Teletilt system components according to their respective installation instructions (Figure 9).

After all system components are installed, connect the RET line to the controller and verify successful operation. Refer to Table 1, Troubleshooting When Power Is Not Provided To Tower Top, if needed.

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Additional Product:
• The ATGK-COMP Grounding Kit is used to ground the Smart Bias Tee and is sold separately.

Figure 8. ATGK-COMP Grounding Kit.

FINAL SYSTEM INSTALLATION DIAGRAM

The diagram below (Figure 9) shows the ATC300-1000 controller or the ATC200-LITE-USB portable controller used in a Control System. Power and control signals are directed through ATSBT-4G or ATSBT-5G series Smart Bias Tees to the antenna.

Note: Commscope recommends using a jumper cable between the top SBT and the antenna to prevent excessive force on the connectors and to improve spacing to make waterproofing connectors easier.

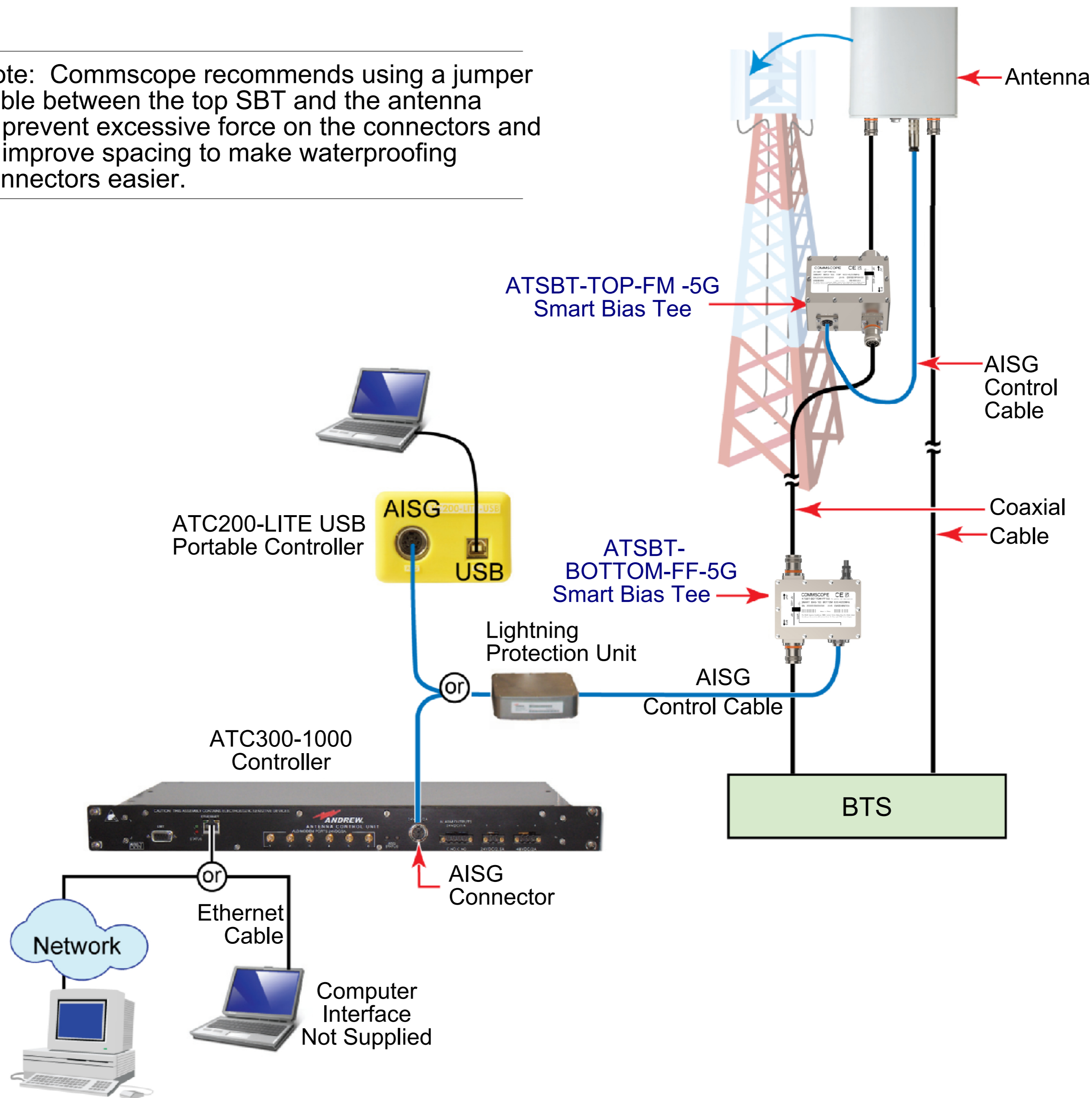


Figure 9. Control System with AISG Smart Bias Tees.

TROUBLESHOOTING WHEN POWER IS NOT PROVIDED TO TOWER TOP	
Possible Cause	Solution
One or both of the Smart Bias Tees are installed backwards.	See Figure 7 and installation diagram on the label for correct orientation.
A dc shunt has been installed in the RF coax cable between the Bias Tees.	Re-install any dc shunt devices either before the bottom bias tee or after the top bias tee. The path between bias tees must not be shorted.
A short exists in one of the AISG cables or devices at the tower top.	Disconnect the system from the top Smart Bias Tee unit, then reconnect one leg at a time to progressively identify the short. Note Andrew offers the ATTK200-KIT cable testing kit to simplify system troubleshooting.

Table 1. Troubleshooting When Power Is Not Provided To Tower Top.