

Multi-Band Quarter Wave Sloper Instruction Sheets for Models:

- **DX-A** Quarter Wave Twin Sloper for 160, 80 and 40 meters, one leg 67 ft. for 80 meters, the other leg 60 ft. for 40 and 160 meters.
- **DX-B** Quarter Wave Single Wire Sloper for 160, 80, 40 and 30 meters, 60 ft. overall length.

Alpha Delta HF quarter wave slopers are precision made products, manufactured in the U.S.A. In our ISO-9001 certified facility for the highest quality possible. Due to the design of the ISO-RES inductor coils (not traditional traps), the efficiency of the antennas is outstanding and they are used worldwide with great DX results around the globe! Stainless steel hardware and insulated high tensile strength solid copper 12 ga. wire is used to withstand the most severe environments. When you put it up, it **STAYS** up!

CAUTION! CAUTION! CAUTION! Never install antennas near power lines or drop lines as contact with these is DANGEROUS and could cause bodily injury or death. Think SAFETY!

Any antenna should be installed “in the clear”, away from surrounding objects (metal objects or roof tops) which could de-tune the antenna and impair performance. Any antenna wire should not be closer than 4-6 ft. from any tree, branch or limb (yes, they will de-tune an antenna). Clearance should be at least 20 ft. from any metal objects or roof tops. Our test height is 35 ft. “In the clear” but lower heights can be used depending on the installation site and terrain. Specific SWR bandwidths for each model and each band are a function of the installation “site” conditions.

Before installing either the Model DX-A or the Model DX-B, please read both documents as there are important tips for proper installation and performance that apply to any ¼ wave sloper design.

Where space permits, the Model DX-A Twin Sloper has a wider bandwidth since there is only one inductor in the antenna. For limited space applications, the Model DX-B single wire sloper takes less space but has 2 inductors, so has a more narrow bandwidth. Using a wide range antenna tuner is effective to “broaden out” the bandwidth. Both models are very efficient in performance.

It is also IMPORTANT to note that the graphic for the Model DX-B shows an installation on the side of a house. When installing a ANY sloper model on a structure like that, which is not a metal tower or mast, and one that does not have an HF beam on top, it WILL be necessary to use a wide range “outboard” antenna tuner (auto or manual which has a tuning range of at least 5-500 ohms) as internal built-in tuners typically don’t have the necessary tuning range. A sloper tunes most easily when installed on a metal tower with a horizontal HF size beam on top to act as a “capacity hat” (highly recommended), but other supports can work well when using such a tuner as described above. If you will be using a wide range tuner, just put up the antenna and don’t try to trim it. Just use it as it comes out of the package. This will save a lot of time and headaches.

IMPORTANT INFORMATION!

Wire antennas cannot be returned for credit as they cannot be sold as new. In over 20 years in providing these models, we have found that nearly EVERY case of poor tuning and performance can be traced to problems with the installation site (surrounding objects and height above ground), or installations or assembly that have not followed instructions. Shorted coax connectors at one end or the other of the coax feed line, or even shorted coax “jumpers” are a fairly common problem too. Unlike small VHF/UHF antennas, HF antennas are VERY sensitive to installation site coupling to surrounding objects. This is due to the longer HF wavelengths

being similar in lengths to gutters, roofs, guy wires, or “earth coupling” when low to the ground.

Before contacting the factory, check for shorts in your coax cables and do an SWR “run” across each band in question, moving your SWR meter dial slowly so as not to miss variations in SWR (every 20 kHz from band edge to band edge, then in smaller increments to find the exact SWR minimum, even if it’s high). This specific data will help us find clues to the situation.

Alpha Delta Communications, Inc.

741 Bus c00

Manchester, KY 40962

Web <www.alphadeltacom.com> You will find e-mail contact information through the web site.

Phone 606-598-2029, FAX 606-598-4413

Alpha-Delta DX-A Twin Sloper

Thank you for your purchase of this ALPHA DELTA MODEL DX-A "Twin-Sloper" multiband antenna. We know that you are going to be well pleased with the antenna and its superb performance! Only the best materials and hand craftsmanship have gone into the design and construction. The ALPHA DELTA DX-A will deliver performance far beyond that of antennas of equal size. Like every antenna, the DX-A must be assembled and installed correctly to achieve its inherent peak performance. To help insure that you do obtain good performance, we suggest that you read through this manual entirely and study the figures and diagrams associated with the installation.

—INSTALLATION NOTES—

*Please note that the support structure for the DX-A should be of metal construction and offer a low resistance ground pathway. This simple requirement is easily filled by the normal grounded tower found in amateur usage. If the tower does not offer a good ground return, then we suggest attaching a large diameter (No. 14 or larger) wire to the aluminum DX-A mounting bracket and running this wire to a good RF ground connection at the base of the support. This same method will allow the DX-A to be used in cases where the support structure may be of an insulated type, such as wooden utility poles, chimney mounts, trees, etc. Also, if your tower is of the "crank-up" variety, where there may be some doubt as to the integrity of the metal ground path, this same method of running a ground wire should be followed. If this method is needed, the DX-A aluminum mounting bracket should be drilled for attachment of a machine screw and lug type connector (with ground wire attached).

*Refer to FIGURE NO. 1: The DX-A aluminum mounting bracket will have to be drilled for a U-Bolt (user supplied) to fit your particular tower leg or installation method. It should be noted, if your tower is of the "sectional" type (such as Rohn) then the bracket may be fitted to one of the sectional bolts by simply removing the nut and placing the bracket hole over the bolt and re-installing the nut! In this case, no other hole need be drilled, since the DX-A bracket has already been drilled with a single mounting hole at the factory!

*Plan the layout for your new DX-A "Twin Sloper". The ideal arrangement for the wire elements is such that when installed the two wires are approx. 180 degrees apart (much like the arrangement used for the common inverted vee antenna). We fully realize that this 180 degree span may not be possible in all installation locations. The DX-A will operate very well when the included angle is less than the optimum 180 degrees. Your primary goal should be to fit the DX-A into your property boundaries and antenna system in the best manner possible!

*The DX-A was originally designed as a "free space" antenna (as almost all antennas are). As such, it is possible that the introduction of your DX-A into a tower system employing multiple guy wires or other attached wire antennas may cause a slight detuning of the DX-A antenna. This condition is rarely seen in actual practice, but the chance for it does exist, just as it would for any other antenna of comparable design! The mere presence of other wires or wire antennas can result in direct R.F. coupling which will upset the DX-A antenna system. Refer to Figures No. 5 and No. 6. The point of bracket attachment on the tower should be

as far removed as possible from the attachment point for any guy wire system. The angle of slope for the elements of the DX-A should be such that they are not the same angle as made by any guy wires or other wire antennas (see Figure No. 5)! To help lessen interaction between the DX-A and other wires, it is wise to provide as much separation as possible (see figure NO. 6). THE DX-A wire elements may be so arranged as to dissect the angles made by guy wires. Guy wires should be electrically broken by the inclusion of insulators. In some few instances, it may be necessary to employ the use or a modest antenna tuner to allow some solid state transmitters to fully load.

*The mounting height for the DX-A is not critical. The DX-A is a super good low angle radiator (highly desired for DX work). We have many users with the DX-A mounted as low as 25 feet, and achieving excellent results on the air! Mounting height for the attachment of the bracket is best left to the decision of the end user and the support structure to be used for the DX-A.

"The DX-A has been designed for use on an unguyed metal tower with a beam on top. The beam provides a capacity hat effect and helps to tune the Twin Sloper. Other installation types will require the use of an outboard wide range antenna tuner.

-TWIN SLOPER HINTS & KINKS—

* If at all possible, tape your coaxial feedline to the tower leg (or other support structure). This offers strain relief for the feedline.

* The Alpha Delta TWIN SLOPER has the ability to be used on the 10, 18, 24 MHz bands. A small antenna tuner may be needed in some instances with solid state transceivers to allow proper loading. The TWIN SLOPER is also a good choice for SWL while using one of the latest transceivers with general coverage receive.

* For field day or temporary installations: We suggest the use of a counterpoise wire attached to the aluminum mounting bracket and directed to a driven ground rod.

* We recommend that you install one of our world famous Alpha Delta "Transitrap" lightning protection devices in your new "Twin Sloper" coaxial feedline. Check with your Alpha Delta dealer for information and pricing on our broad array of "Transitraps"!

* Please note: during the initial tune-up phase, when "folding back" the tip ends of the 160 and 80 meter elements, there is a small amount of capacitance introduced. This will have some effect on tuning and the actual resonant frequency points on these two bands. While folding back the element ends is a wise practice Initially, for final installation these ends should be clipped to proper length.

Once again, THANK YOU and good DX'ing.

ALPHA DELTA COMMUNICATIONS, INC.

—INSTALLATION & TUNING INSTRUCTIONS—

(Check off (x) each step as completed)

- () 1. Unroll the DX-A sloper wire elements, removing any kinks that may have been induced during the packing operation.
- () 2. Install the DX-A aluminum mounting bracket on your support structure, as described previously.
- () 3. Using a VOM, check to make certain that this is a good low resistance pathway between the DX-A bracket and the tower leg (or other ground return lead)! Also, be sure to route the wire from the one end of the DX-A bracket so that it is separated from the tower leg as much as possible.
- () 4. PLEASE NOTE: The various elements for each band are supplied longer than needed for resonance within the ham bands. During the initial tuning phase we suggest that you use all of this length and shorten as needed. Please note, also, that there is a single "ISO-RES" coil installed in the 160-40m leg of the antenna. Refer to FIGURE NO. 2 for nomenclature and general layout.
- () 5. Any 50 ohm coaxial feedline may be employed for use with the DX-A Twin Sloper Antenna. We suggest the use of RG-213 cable as it is generally a very good buy and will handle the legal limit of RF power output. The DX-A bracket has been fitted with an Amphenol SO-239 connector so as to accept the standard PL-259 termination. Attach your feedline to the bracket coaxial connector. It is wise to cover this coaxial connection with some form of weather protectant, such as "COAX-SEAL", etc.
- () 6. The element ends have been provided with heavy duty polycarbonate end insulators. Also provided, are two lengths of our special low-stretch nylon rope to secure these two tie off element ends. Please remember: the two antenna ends should be so placed that when installed they will not create a safety hazard since there will be RF voltage present at these ends during normal use! During the tuning process, a simple knot in the rope will be adequate to hold the element ends in place before the final "tie-down".
- () 7. Please note that the 80 meter element is one continuous length of wire. The 40/160M. combined element has one of our Alpha Delta "ISO-RES" coils installed. During the tuning process you will be trimming the tip end (insulator end) of the 80 meter element. The 40 meter element (labeled "B" in Figure No. 2) will be pruned at the top end of the "ISO-RES" coil. Please note the manner in which the wire is terminated at the "ISO-RES" coil. There is a five turn wrap of wire at each end of the "ISO-RES". Note the steps in Figure No. 3 for remaking this connection at the coil. The 160 meter element is adjusted by shortening the wire attached to the lower end of the "ISO-RES" coil at the bottom end insulator. This 160 element wire need not be cut during the initial tune-up, but rather simply folded back on itself above the bottom insulator.
- () 8. Tuning Note: To raise the resonant frequency for any band, that wire element must be shortened. The shorter the wire element, the higher the resonant frequency.
- () 9. Tune the higher frequency band first - i.e., first tune 40 meters then 80 meters, then 160! You should make two passes through the antenna when tuning. During the first pass through the various band elements do not try to achieve a final resonance as there will be some interaction between the bands and as one element length is adjusted it will cause a slight shift in resonance on one or more of the other covered bands. Initially, one should try to achieve resonance at the lower ends of the bands then gradually shorten

the lengths for the exact resonant frequencies desired. Due to the fact that the DX-A uses a low "Q" "ISO-RES" coil instead of a tuned trap, there will be some interaction, especially on the 40 and 160 meter elements. However, the use of the low "Q" "ISO-RES" coil allows one to use higher RF output power due to the fact that the "ISO-RES" does not have a trap capacitor to break down under heavy RF loads!

- () 10. During the initial tune-up, if you can not seem to find resonance, be sure to check just below the normal band edge. The longer-than-needed wire elements would tend to make this condition quite normal.
- () 11. As wire is clipped from the bottom of the 40M. element during the tuning process, remake the connection at the "ISO-RES" coil as discussed earlier in this manual. Refer to the drawing.
- () 12. The "ISO-RES" coil has been given two coats of a special polyurethane with UV light blocking agent. All hardware is of 18-8 stainless steel. No further weatherproofing is needed. If you have some "COAX SEAL", a small amount may be applied to the copper element wire ends at the "ISO-RES". The construction of the "ISO-RES" is such that it should offer a long lifetime of service.
- () 13. This completes the installation and tuning of your new Alpha Delta DX-A Twin Sloper Antenna. **GOOD DX'ING!**
- () 14.. To avoid the possibility of tuning errors and false resonances you will need to de-couple the coax from the antenna at the feedpoint in the following manner. Near the feedpoint make 8 turns of coax at 8 inches in diameter. Tape these turns with electrical tape. Then tape the entire set of turns to the tower leg or at a convenient place so it doesn't pull at the PL259 connector.

WARRANTY AND SERVICE POLICY

Each Alpha Delta Antenna model has been carefully designed and thoroughly field tested to provide a proper match to a 50 ohm source. Conditions of high VSWR can be caused by acquired reactances of towers, ground systems, other antennas, height above ground, roof tops and guy wires. In these cases it may be necessary to employ the use of a wide range

Alpha Delta Warranty is limited to the repair or replacement of any component we find to be defective. Trimmed wire elements are not covered under the warranty.

Should you feel a component is defective **WITHIN 90 DAYS** of purchase do the following:

1.

Alpha Delta Communications, Inc.

(606) 598-2029 - FAX: (606) 598-4413

2. The antenna will be returned to you, shipping prepaid.

NOTE:

Before contacting the factory concerning your installation, please check the following items.

1. GUY WIRES:

Since a quarter wave sloper is "half" of an antenna, with the other "half" being made up of the ground return path through the tower, pole, or "down'lead," it should be noted that any other metallic objects attached to the tower become part of this other "half" circuit and can significantly de-tune the sloper. Therefore, guy wires **MUST** be broken with insulators at the point of attachment to the tower or pole, as well as at non-resonant points along the guys.

2. OTHER WIRE ANTENNAS:

Other wire antennas installed on the same support, or nearby the sloper, will couple to the sloper and raise the VSWR.

3. GUTTERS AND METAL BUILDING WALL SIDING:

If the sloper wires pass generally parallel and near (10 to 15 feet) to aluminum gutters or aluminum siding, the resulting coupling can raise the VSWR of the sloper. Running within several feet of a rooftop can cause the coupling effect also.

4. SLOPER WIRES OPPOSITE EACH OTHER:

Looking down from the top of the tower or pole, the two sloper wires should be 180° from each other. A sloping "V" configuration is also quite acceptable if the two wires are no closer than about 100° from each other. A narrower included angle can raise the minimum VSWR, however.

5. COAX FEEDLINE:

For the same reason as in #1 above, the coax feedline must run straight down vertically from the feed point to the ground. Coax running at angles can cause a high VSWR.

6. Any quarter wave sloper has the lowest VSWR and broadest band width when mounted on the side of a tower with an HF beam on top to serve as a capacity hat. Sloper installations on poles, chimneys or trees may require the use of a tuner to reduce the VSWR.

7. 80 meter minimum VSWR may be a problem if the coax feedline is approximately one quarter wavelength (60-65 ft.) long. If this is the case, add an extra 15 to 20 feet to the feedline.

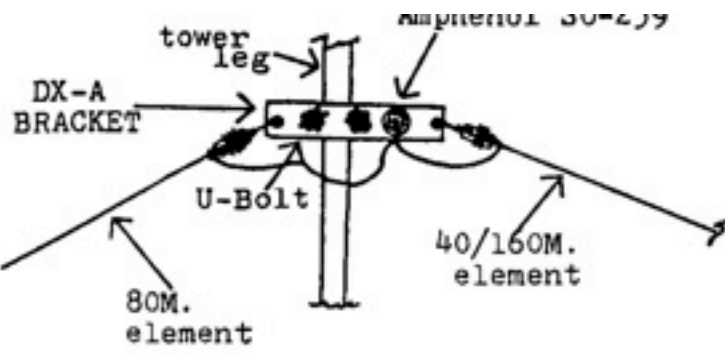


FIGURE - 1

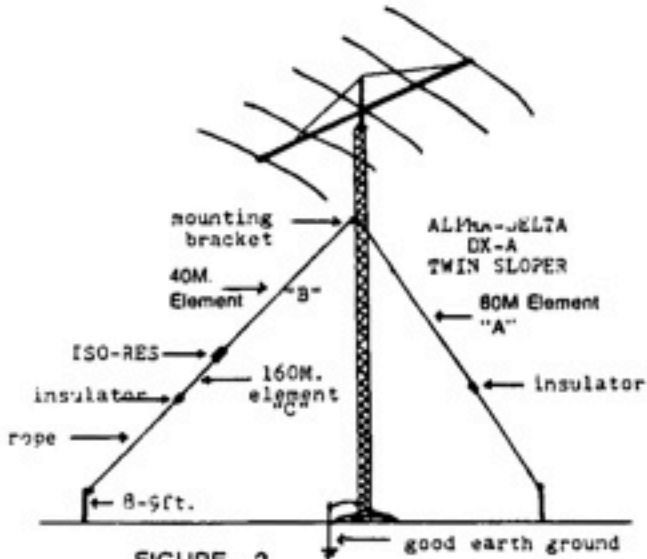


FIGURE - 2

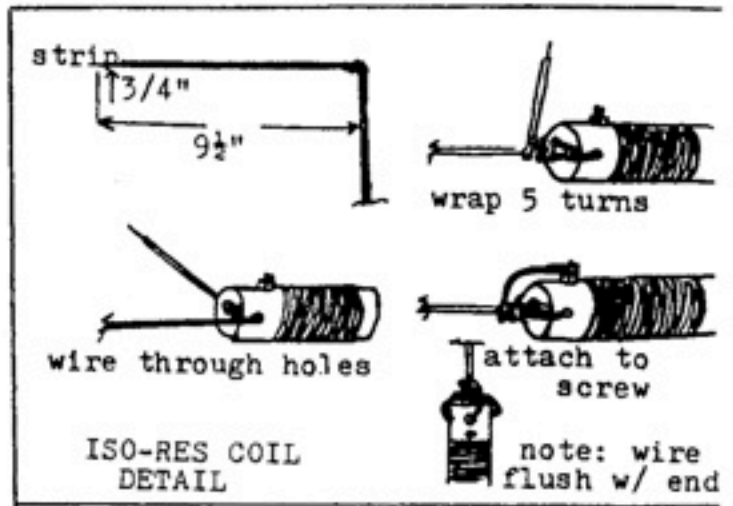
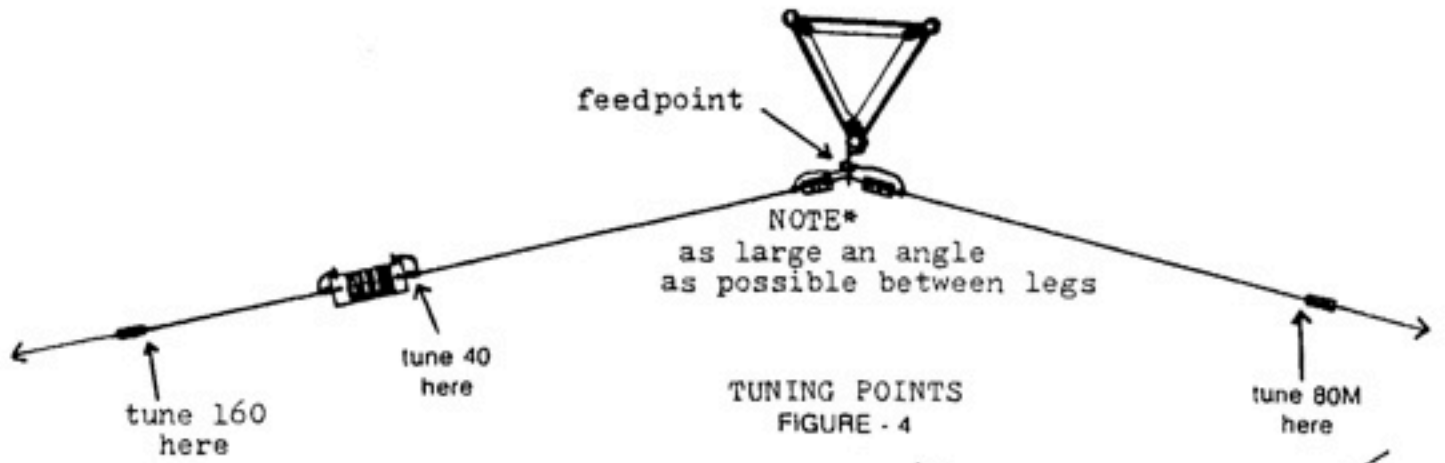
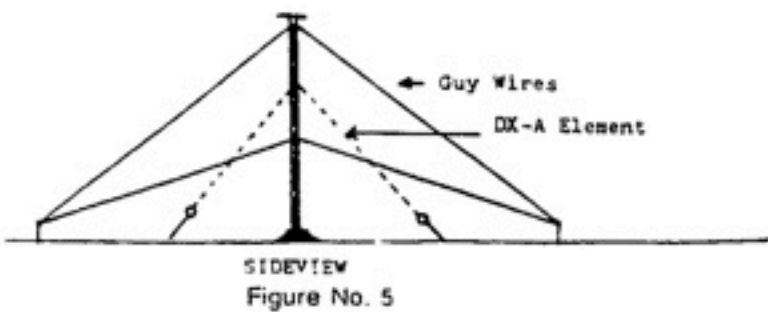


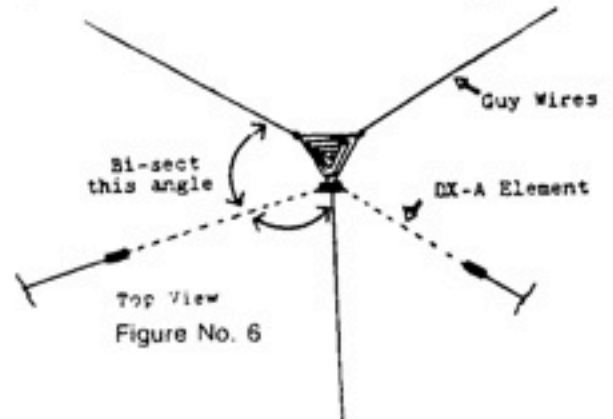
FIGURE - 3



TUNING POINTS
FIGURE - 4



SIDEVIEW
Figure No. 5



Top View
Figure No. 6

Alpha Delta Model DX-B, 160, 80, 40 and 30 meters

Installation notes:

- Review the Model DX-A notes and installation requirements as they apply to the Model DX-B.
- Refer to Figure 1: The DX-B aluminum mounting bracket will have to be drilled for a U bolt (user supplied) to fit your particular tower leg or installation method. It should be noted that if your tower is of the sectional type, like Rohn, then the bracket may be fitted to one of the sectional bolts by removing the nut and placing the bracket hole over the bolt and re-installing the nut. In this case, no other hole need be drilled in the bracket as one hole has already been drilled at the factory.
- The Model DX-B has been designed for use on an un-guyed metal tower or support, with a good ground return path to its grounded base mount. If the support base is not grounded, proper ground rod or rods will need to be installed and attached. There should be an HF size horizontal aluminum type beam on top (like a 20 meter beam or HF tri-bander) to serve as a "capacity hat" for proper tuning, lowest SWR and effective performance. Small 10 meter beams, 6 meter beams, cubical quads, beams with retracted elements, VHF beams or TV type antennas do not provide enough aluminum "square area" to serve this purpose.
- Non metal supports (trees, wood or fiberglass poles or attachments to roof peaks or to roof TV masts) MAY provide effective performance if a large gauge (#10 or larger) "down-lead" wire is attached to the sloper bracket with stainless hardware to an additional drilled hole in the bracket by the user. This down-lead wire must be run to a ground rod with an array of at least 4, 30 ft. radials also attached to the same ground rod. In addition a wide range tuner with a 10:1 tuning range must be employed. The tuner in your transceiver does not have adequate tuning range for this application. Check with your dealer for recommendations for wide range tuners.

INSTALLATION & TUNING INSTRUCTIONS (also see DX-A for ref):

Unroll the DX-B sloper wire elements, removing any kinks that may have been induced during the packing operation. Run the 23-ft. "stub" wire through the pre-drilled acrylic stand-offs as shown in Fig. 1.

Install the DX-B aluminum-mounting bracket on your support structure, as described previously. Then slope the antenna as shown in Fig. 2 (optional "Down-Lead" not required if installed on metal tower).

Using a VOM, check to make certain that there is a good low resistance pathway between the DX-B bracket and the tower leg (or other ground return lead)! Also, be sure to route the wire from the end of the DX-B bracket so that it is separated from the tower leg as much as possible.

Any 50-ohm coaxial feedline may be employed for use with the DX-B Sloper Antenna. We suggest the use of RG-213 cable, as it is generally a very good buy and will handle the legal limit of RF power output. The DX-B bracket has been fitted with an Amphenol SO-239 connector so as to accept the standard PL-259 termination. Attach your feedline to the bracket coaxial connector. It is wise to cover this coaxial connection with some form of weather protectant, such as "COAX-SEAL", etc.

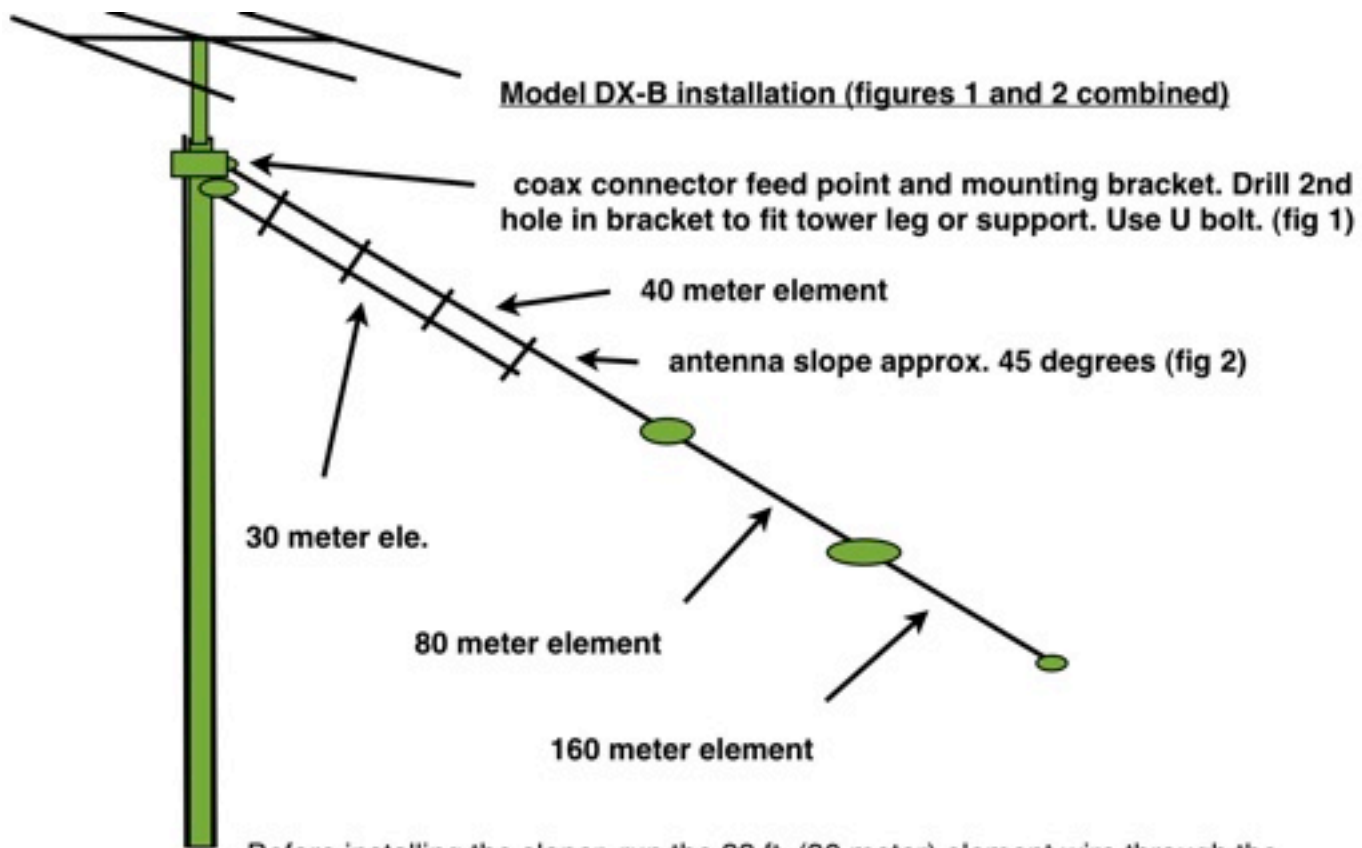
Please remember: the antenna end should be so placed that when installed it will not create a safety hazard since there will be RF voltage present at this end during normal use!

Turning Note: To raise the resonant frequency for any band, that wire element must be shortened. The shorter the wire element, the higher the resonant frequency. Conversely, the longer the wire element the lower the frequency.

The "ISO-RES" coil has been given two coats of special polyurethane with UV light blocking agent. All hardware is of 18-8 stainless steel. No further weatherproofing is needed. If you have some "COAX SEAL", a small amount may be applied to the copper element wire ends at the "ISO-RES". The construction of the "ISO-RES" is such that it should offer a long lifetime of service.

This completes the installation and tuning of your new ALPHA DELTA DX-B Sloper Antenna. GOOD DX'ING!

To avoid the possibility of tuning errors and false resonance's you will need to de-couple the coax from the antenna at the feedpoint in the following manner. Near the feedpoint make 8 turns of coax at 8 inches in diameter. Tape these turns with electrical tape. Then tape the entire set of turns to the tower leg or at a convenient place so it doesn't pull at the PL259 connector.



Before installing the sloper, run the 23 ft. (30 meter) element wire through the spacers as shown, equally spacing the spacers along the wire. Use 6 in. lengths of solid conductor stiff wire as "twist arounds" around the antenna wire and spacer, or plastic to plastic adhesive in the thru-holes to secure the antenna wires in the spacers to prevent movement in wind.

Be sure there is a good ground return path down through the metal support (tower or mast) to ground, AND a good ground from the sloper bracket to the metal support (mast or tower leg). Use a number 10 or larger "down lead" wire to ground (ground rod) from the sloper bracket if the antenna is attached to a non-metal support. This will also be necessary for crank-up type towers or supports. For proper tuning, there must be a HF size beam on top of the sloper, 4-6 ft. above it, as shown, to act as a "capacity hat". This is true for any quarter wave sloper. However, a "capacity hat" is not necessary for 1/2 wave dipoles. See details in the enclosed documents or on our WEB site.

If any other installation is used, that is, without a HF beam on top as a capacity hat, you MUST use an external wide range antenna tuner (10 to 1 tuning range) for proper tuning. A wide range tuner is suggested for any installation, as a convenience, to minimize VSWR and to "broaden out" the SWR bandwidth of the antenna. If you employ a tuner, just use the tuner for adjustments and the antenna does not need to be trimmed. Let the tuner do the work. SWR losses on these lower (160-30 meter) bands will be essentially immeasurable (typically less than 1 dB, when using good coax, for SWRs up to about 7:1, thru 30 meters). Use a tuner of efficient design with a wide tuning range. Check the charts in the ARRL antenna Book or other sources for this data.