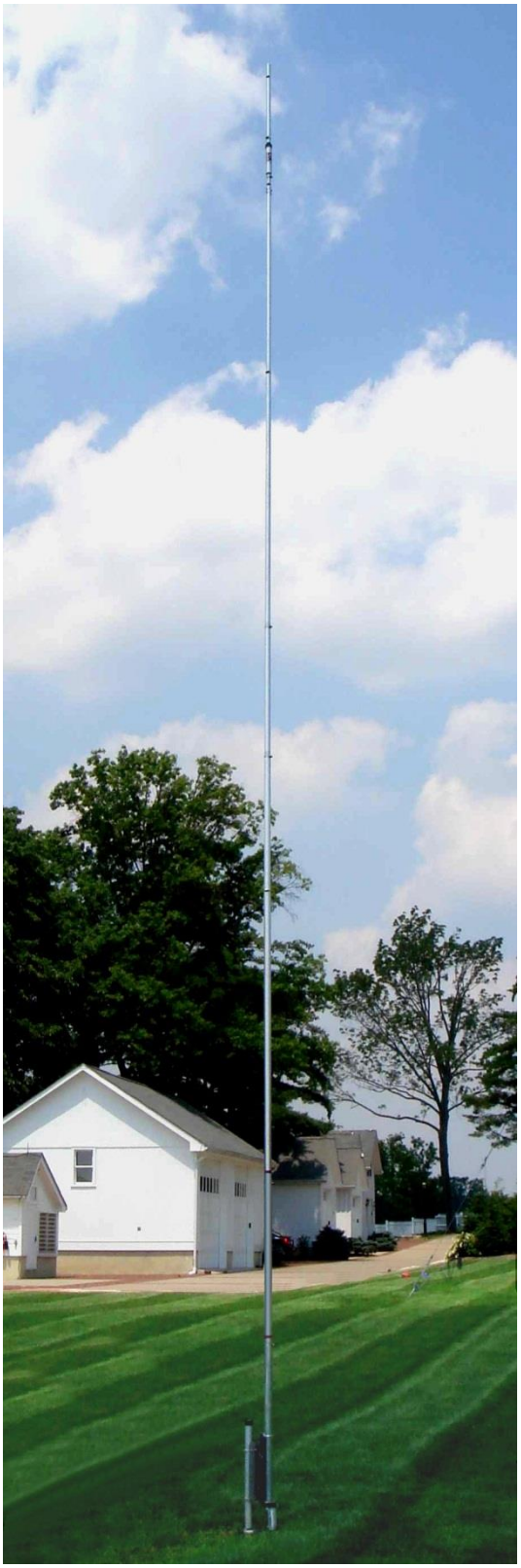
40/30 Meter Dual-Band Vertical Antenna



DXE-4030VA-1

DXE-4030VA-1-INS-Revision 5c

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Introduction

The DX Engineering **40/30 Meter Vertical Antenna** is a high performance 40/30 meter vertical dual-band antenna that is tunable to operate with an SWR of 1.5:1 or less. Designed with 6063 corrosion-resistant aluminum tubing and stainless steel hardware, this antenna is very durable, free standing, attractive, and is an optimized height of less than 30 feet.

Of course, another key to performance is a good ground radial system. 32 radials, 32 feet long are recommended. Fewer radials will work, but with diminished results.

The **40/30 Meter Vertical Antenna** includes the antenna element, insulated mounting channel, mounting plate, patented Tilt Base, stainless steel hardware, and stainless steel element clamps.

Features

- Full band coverage on 40 and 30 meters with SWR under 1.5:1 No Tuner needed
- Bandwidth greater than 750 kHz with SWR under 2:1
- Tunable above and below 7 MHz range for MARS and CAP frequencies
- Power Handling up to 2 kW
- Less than 30 ft overall height
- Self Supporting Vertical Antenna
- Heavy Duty design to withstand 60 MPH wind without guying

Supplied Installation Items:

DX Engineering's *patented* **Tilt Base** - Precision laser cut from 3/16 inch thick 304 Stainless Steel, this mounting plate is virtually indestructible. Using the included two **DXE-SSVC-2P** V-Clamps, the Tilt Base is mounted to the same mast that you use for the optional radial plate. The Tilt Base Allows for easy installation, tuning or severe weather lay-down.

Additional Material Needed but not Supplied:

- **Antenna Mounting** - Steel mounting pipe, up to 2.0″ OD, 0.25″ wall thickness. A standard 1-1/2" galvanized water pipe (with its 1.9" OD) will work for this application and can usually be found at your local home building supply store. DX Engineering also has the **DXE-VGMT-2CG** Steel tubing for ground mount antennas made from high strength Chromoly: 2 inch OD x .25 Wall thickness x 5 foot 4 inch length.
- **Quik-Set Concrete** - Mounting pipe installation (depending on your landscape material)
- **JTL-12555 Jet-Lube™ SS-30 Pure Copper Anti-Seize** - To ensure good connection for aluminum element sections. Also used on the threads of Stainless Steel Hardware to prevent galling and aid in proper tightening torque

Parts List for the DXE-4030VA-1 40 - 30 Meter Vertical Antenna

Lower Tilt Base Assembly	Quantity
Tilt Base, patented Stainless Steel, Laser Cut, 3/16"	1
DXE-SSVC-2P V-Clamp Kit	2
Insulated Tilt Base, Extren® Mast Mount Channel	1
Tilt Base Aluminum Mounting Plate	1
1/4-20 x 2" Stainless Steel Hex Head Bolt, full thread	4
1/4" Flat Washer	4
1/4" Stainless Steel Split Washer	4
1/4" Dia. X 1/4" x 1/2" OD Aluminum Spacer	4
1/4-20 Stainless Steel Hex nut	4
1/4" Fender Washer, 1" OD	4
1/4-20 Stainless Steel Flanged Nut	2
1/4-20 Nyloc nut	4
3/8" U-Bolt x 2" ID x 3.25" leg, Saddle & Hardware Kit	2

Feedline Connection	Quantity
1/4-20 x 1" Stainless Steel Hex Head Bolt, full thread	1
1/4" Stainless Steel External Tooth Washer	2
1/4" Flat Washer	2
1/4-20 Stainless Steel Hex nut	2

Antenna Assembly	Quantity
2.00" x 0.058" x 36" Element (Slit 1 end & drilled)	1
1.875" & 1.750" x 72" Element Riveted. (Slit one end & drilled)	1
1.750" & 1.625" x 72" Element Riveted. (Slit one end)	1
1.625" x 0.058" x 36" Element (Slit one end)	1
1.500" x 0.058" x 36" Element (Slit one end)	1
1.375" x 0.058" x 72" Element (Slit one end)	1
1.250" x 0.058" x 36" Element (Slit one end)	1
DX Engineering 30 Meter Trap	1
1.250" x 0.058" x 36" Element (Slit both ends)	1
1.125" x 0.058" x 12" Element	1
Element Clamp, 1.875" - 2.00"	2
Element Clamp, 1.625" - 1.75"	2
Element Clamp, 1.375" - 1.50"	2
Element Clamp, 1.25"	3
Black Vinyl Cap.	1

Suggested Parts Not Included

DXE-RADP-3 (*US Patent 7,432,875*) Radial Plate: Made from Laser Cut Stainless Steel with 20 Sets of Stainless Steel Radial Attachment Hardware. The DX Engineering Radial Plate is meant for those having a vertical antenna and want easy, neat and effective way to connect the essential radial wires to your antenna system for the highest efficiency and strongest signals.

DXE-SSVC-2P Stainless Steel V-Clamp. One required for mounting the optional *patented* **DXE-RADP-3** Radial Plate to the antenna mounting pipe of 1" to 2" outside diameter. One required for mounting the optional **DXE-VFCC-H05A** Vertical Feedline Current Choke.

DXE-VFCC-H05-A - 2/5 kW Vertical Feedline Current Choke for Coaxially Fed 50 Ω HF Vertical Antennas - Prevents unwanted RFI by eliminating feedline current and radiation allowing all power to go to the antenna improving efficiency. Reduces noise or unwanted signals picked-up by the feedline and overcome a less than optimal ground system The V-Clamp, used to mount the VFCC, part number **DXE-SSVC-2P,** is not included and must be purchased separately.

RADIAL WIRE KITS: There are optional DX Engineering Radial Wire Kits available. **DXE-RADW-500K/BD** contains a 500 foot spool of 14 gauge copper stranded wire with black PVC insulation, 20 Terminal Lugs and 100 Steel or Biodegradable Lawn Staples. The **DXE-RADW-1000K/BD** Radial Wire Kit contains a 1,000 foot spool of 14 gauge copper stranded wire with black PVC insulation, 40 Terminal Lugs and 200 Steel or Biodegradable Lawn Staples. **RADW-20RT, -32RT** or **-65RT** contain 20 each radial wires with 1/4" terminal attached. These kits come in 20 Ft, 32 Ft, or 65 Ft lengths.

Tools Required

Two 7/16” wrenches, (one of them should be open-end)
1/2” and 7/16” socket and drive
3/16” and 7/64” Allen wrenches
Medium size screwdriver or 5/16” nut driver for the element clamps
Tape measure
Felt-tip marker

Manual Updates

Every effort is made to supply the latest manual revision with each product. Occasionally a manual will be updated between the time your DX Engineering product is shipped and when you receive it. Please check the DX Engineering web site (www.dxengineering.com) for the latest revision manual.

WARNING!

INSTALLATION OF ANY ANTENNA NEAR POWER LINES IS DANGEROUS

Warning: Do not locate the antenna near overhead power lines or other electric light or power circuits, or where it can come into contact with such circuits. When installing the antenna, take extreme care not to come into contact with such circuits, because they may cause serious injury or death.

Overhead Power Line Safety

Before you begin working, check carefully for overhead power lines in the area you will be working. Don't assume that wires are telephone or cable lines: check with your electric utility for advice. Although overhead power lines may appear to be insulated, often these coverings are intended only to protect metal wires from weather conditions and may not protect you from electric shock

Keep your distance! Remember the 10-foot rule: When carrying and using ladders and other long tools, keep them at least 10 feet away from all overhead lines - including any lines from the power pole to your home.

Installation

Site Selection

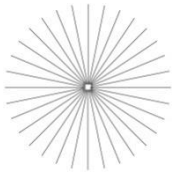
Select a mounting location clear from power lines, structures and other antennas by a minimum of 35 feet. **Consider overhead power lines, utility cables and wires**. The vertical antenna should be mounted away from local noise sources or other metallic objects which can re-radiate noise and affect the tuning, radiation pattern and SWR. Determine the direction you want the antenna to tilt down and make sure there is adequate clearance (at least 35 feet). There should also be a clear diameter of at least 33 feet from the antenna for the guying and radial systems that will extend away from the antenna.

Radial System

The use of a radial system is a key requirement for a high performance quarter wave vertical antenna system. With a vertical antenna system, the radials are the second half of the antenna. The radials contribute to the radiation efficiency of the entire vertical antenna system.

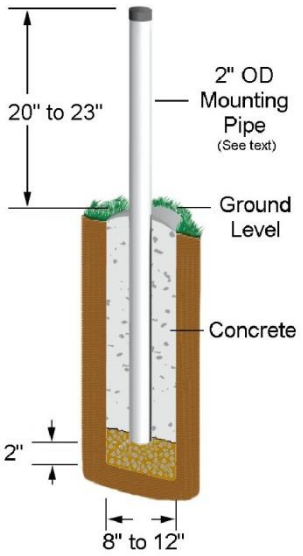
At a minimum, 20 radials, each 32 feet long, should be used with this antenna. Using 32 (or more) radials at 32 feet long is preferred and highly recommended. The extra radials help overcome unknown poor-soil conditions, improve bandwidth, and ensure the best performance possible from the vertical antenna. **DXE-RADW** Radial Wire, a 14 gauge stranded copper wire with black relaxed PVC insulation, is suggested for the best results.

The wire radials should placed as symmetrically as possible straight from the feedpoint around the vertical antenna and spaced evenly, regardless of how many radials are used. Do not cross or bunch any radial wires as this nullifies their effectiveness. If you have limited space, put in as many straight radials as you can. The radials must be connected to the shield of your feedline. The **DXE-RADP-3** Stainless Steel Radial Plate is an ideal optional item which provides an excellent system for attaching radial wires to your vertical antenna system feedpoint.



Radial wires can be laid on the roots of the grass using **DXE-STPL** Radial Wire Anchor Pins to hold them down. Using enough staples will ensure the wires will not be snagged by mowers, people, or animals. Grass will quickly overgrow the radials and it will be virtually impossible to see them. An article describing this process is available the DX Engineering website www.dxengineering.com in the **Tech Info** section. Radials can also be buried just under the surface by using a power edger to make a slit in the soil.

Mounting Pipe



Use a customer supplied thick-walled galvanized steel mounting pipe *at least* 4 feet long. This will allow approximately 2 feet or more to be below ground and 2 feet above ground. A thick-walled steel pipe 1-3/4" to 2" OD is recommended with a minimum thickness of 1/8" (1/4" preferred) should be used. A standard 1-1/2" galvanized water pipe (with its 1.9" OD) will work for this application and can usually be found at your local home building supply store. DX Engineering also has the **DXE-VGMT-2CG** Steel tubing for ground mount antennas made from high strength Chromoly: 2 inch OD x .25 Wall thickness x 5 foot 4 inch length. For permanent mounting, use a post-hole digger to make a hole deep enough to accommodate 2 feet of pipe and a couple inches of gravel at the bottom for drainage. Set the pipe on the gravel, use the pre-mix concrete to fill around the pipe, adding water and mixing as you fill or mix the concrete first, then pour in the hole. Fill the hole until the concrete is level with the ground around it. Use a level as you fill the hole to be sure the pipe is straight. Allow to set overnight. **Your location, landscape and ground conditions may require different mounting solutions in order to have the steel mounting pipe and the vertical antenna in a secure position.**

Note: *Steel, rather than aluminum, is much more suitable for mounting in concrete. Aluminum will quickly corrode due to incompatibility with the materials used to make concrete.*

Note: *The following assembly instructions are based on using a 2" OD Mounting Pipe, with the optional **DXE-RADP-3** Radial Plate and **DXE-VFCC-H05-A** Vertical Feedline Current Choke. If you are not using these options, connection of the radial system can be done in a number of ways but is not described here. If not using the VFCC, connect the feedline to the antenna and the radial system. (See the Alternate Feedline Connections section in this manual).*

Assembly

The **DXE-40/30 Meter Vertical Antenna** shipping box contains the vertical tubing sections, an insulated U-channel, two 3/8" U-Bolts, saddles with hardware, a backing plate, a Tilt Base, stainless steel element clamps, a black vinyl cap, and stainless steel hardware.

Carefully un-pack the antenna and separate the various parts. Check the parts against the parts list.

> ***Note: JTL-12555 Jet-Lube™ SS-30 Anti-Oxidant*** *should be used between all antenna element sections. Jet-Lube™ SS-30 is an electrical joint compound to affect a substantial electrical connection between metal parts such as telescoping aluminum tubing or other antenna pieces. It ensures high conductivity at all voltage levels by displacing moisture and preventing corrosion or oxidation.*
>
> *Jet-Lube™ SS-30 should also be used on all element clamps and stainless steel threaded hardware to provide good electrical contact, prevent galling, allowing easier disassembly and to ensure proper tightening.*

Radial Plate to Mounting Pipe

Install the optional **DXE-RADP-3** Radial Plate on the 2" mounting pipe using an optional **DXE-SSVC-2P** V-Clamp as shown in **Figure 1**. Mount the Radial Plate so you have approximately 1" of space between the bottom of the plate and the ground level. This will allow easy access to install the radial wire hardware. The **DXE-RADP-3** Radial Plate comes with 20 sets of stainless steel hardware for mounting the radial wires. Mount the plate as shown in relation to how the Tilt Base is mounted. (For reference, **Figure 7** shows the completed installation.)

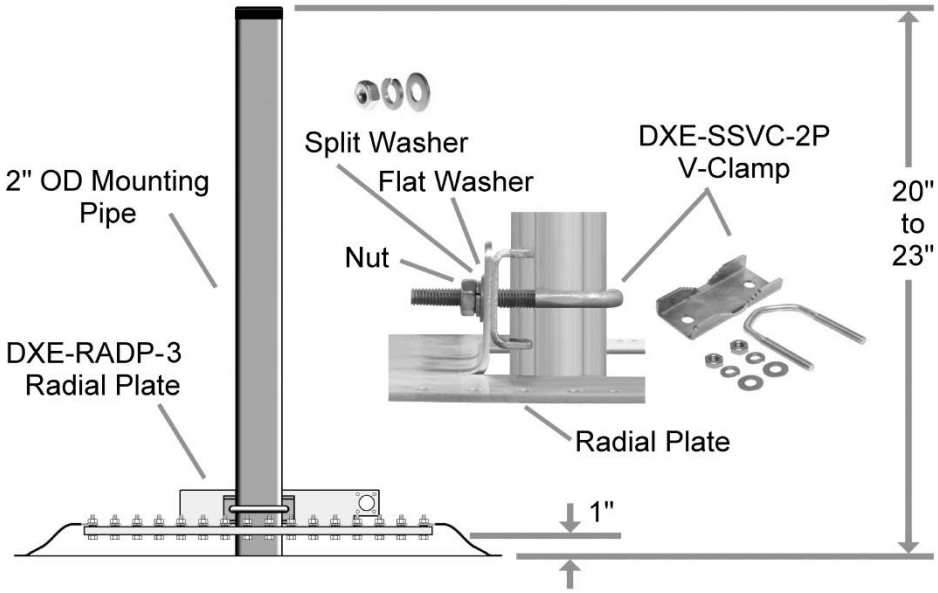


Figure - 1 - Optional DXE-RADP-3 Radial Plate Installation

Attaching Ground Radial Wires to the Radial Plate

Using the 20 sets of supplied 1/4" stainless steel hardware (Bolt, Flat Washer, Star Washer, Split Washer, Nut) connect the optional ground radial wires to the **DXE-RADP-3** Radial Plate as shown in **Figure 2**. Additional hardware kits are available (**DXE-RADP-1HWK**) that contain 20 sets of Radial Plate Hardware.

There are optional DX Engineering Radial Wire Kits available. **DXE-RADW-500K/BD** contains a 500 foot spool of 14 gauge copper stranded wire with black PVC insulation, 20 Terminal Lugs and 100 Steel or Biodegradable Lawn Staples. The **DXE-RADW-1000K/BD** Radial Wire Kit contains a 1,000 foot spool of 14 gauge copper stranded wire with black PVC insulation, 40 Terminal Lugs and 200 Steel or Biodegradable Lawn Staples. **RADW-20RT, -32RT** or **-65RT** contain 20 each radial wires with 1/4" terminal attached. These kits come in 20', 32', or 65' lengths.

Depending on the number of radial wires used, space their attachment evenly around the Radial Plate. The Radial Plate will accommodate up to 60 radial wires (60 laser drilled holes), or up to 120 radials if doubled up.

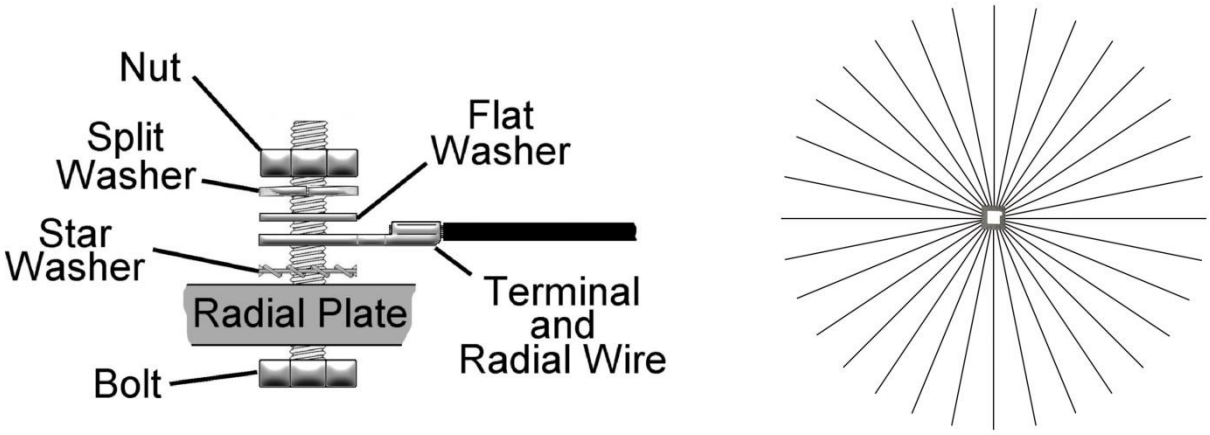


Figure - 2 - Radial Wire Hardware Installation

Tilt Base to Mounting Pipe

Install the Tilt Base to the 2" mounting pipe using the two supplied **DXE-SSVC-2P** V-Clamps allowing approximately 7" clearance between the bottom of the tilt base plate, to the top of the **DXE-RADP-3** Radial Plate as shown in **Figure 3**. Make sure the Tilt Base and optional **DXE-RADP-3** Radial Plate are oriented correctly for the direction you wish to tilt the antenna. When fully assembled and you are standing in front of the antenna and can read the DX Engineering logo on the tilt plate, the antenna tilts to the right. Refer to **Figure 9** or **Figure 15** for a picture showing the front of the antenna. Tighten the clamps evenly so the length of the exposed threads is approximately equal. Any clamp should be tightened evenly from side-to-side with an equal amount of thread above each nut.

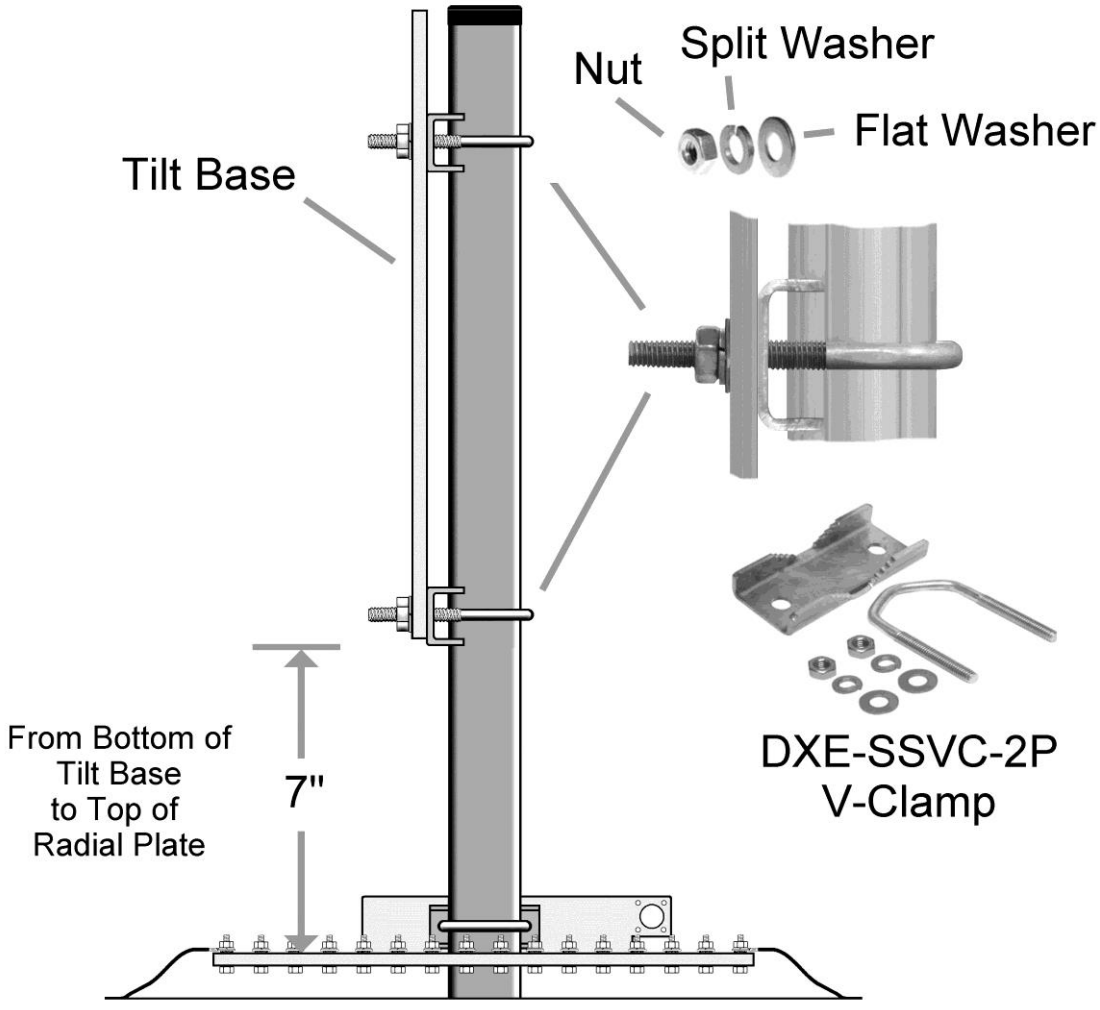


Figure - 3

Vertical Base Section

The base section is made up of an Extren® insulated mounting channel with hardware, a mounting plate, two 3/8" U-Bolt assemblies and the base antenna element sections.

Using **Figure 4**, attach the aluminum backing plate to the back of the insulated channel. The base hardware kit contains four 2" bolts, four flat washers, four aluminum spacers, four split washers and four nuts. From the inside of the channel, insert a 2" bolt with a flat washer through each of the middle four holes, through the backing plate. Put on the aluminum spacers, split washers and plain hex nuts. Tighten firmly, but not enough to crush the insulated channel.

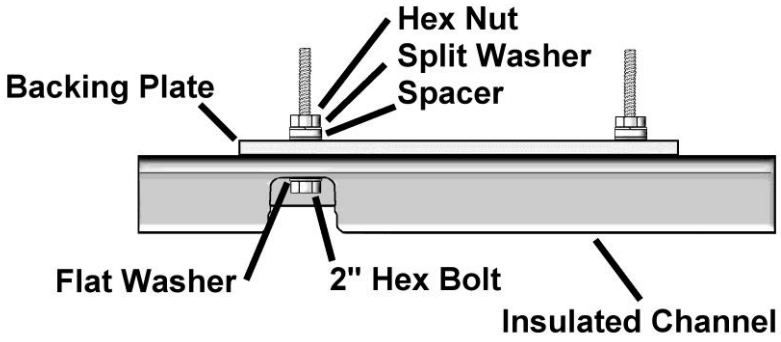


Figure - 4

Assemble the two bottom element sections, aligning them so the feedpoint holes match up together as shown in **Figure 5**.

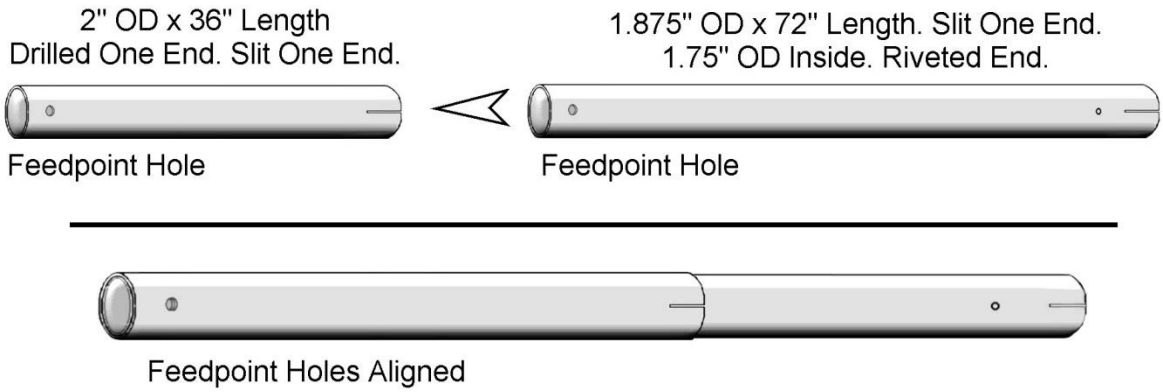


Figure 5

Install the 1/4-20 x 1" bolt through the feedpoint hole in the elements from the inside, so the threads stick out. Install a star washer, flat washer, then a standard nut. Tighten securely. Add another star washer, flat washer and standard nut, but do not tighten. The connection from the Vertical Feedline Current Choke attaches to this hardware. **Figure 6** shows the completed feedline assembly.

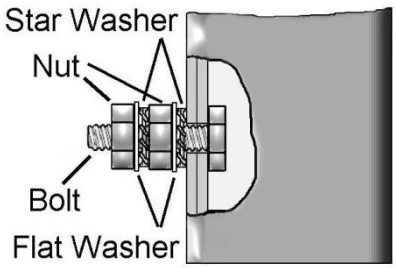


Figure - 6

Install the lower sections to the insulated channel using the 2 - 3/8" x 2" U-Bolts, 2 saddle clamps, 4 flat washers, 4 split washers, and 4 nuts as shown in **Figure 7**. The base section tube should extend 1-1/4" beyond the bottom of the U-bolt clamp. When tightening, observe the split washers. When they fully seat (flatten out), the clamp is tight enough. Any clamp should be tightened evenly from side-to-side with an equal amount of thread above each nut.

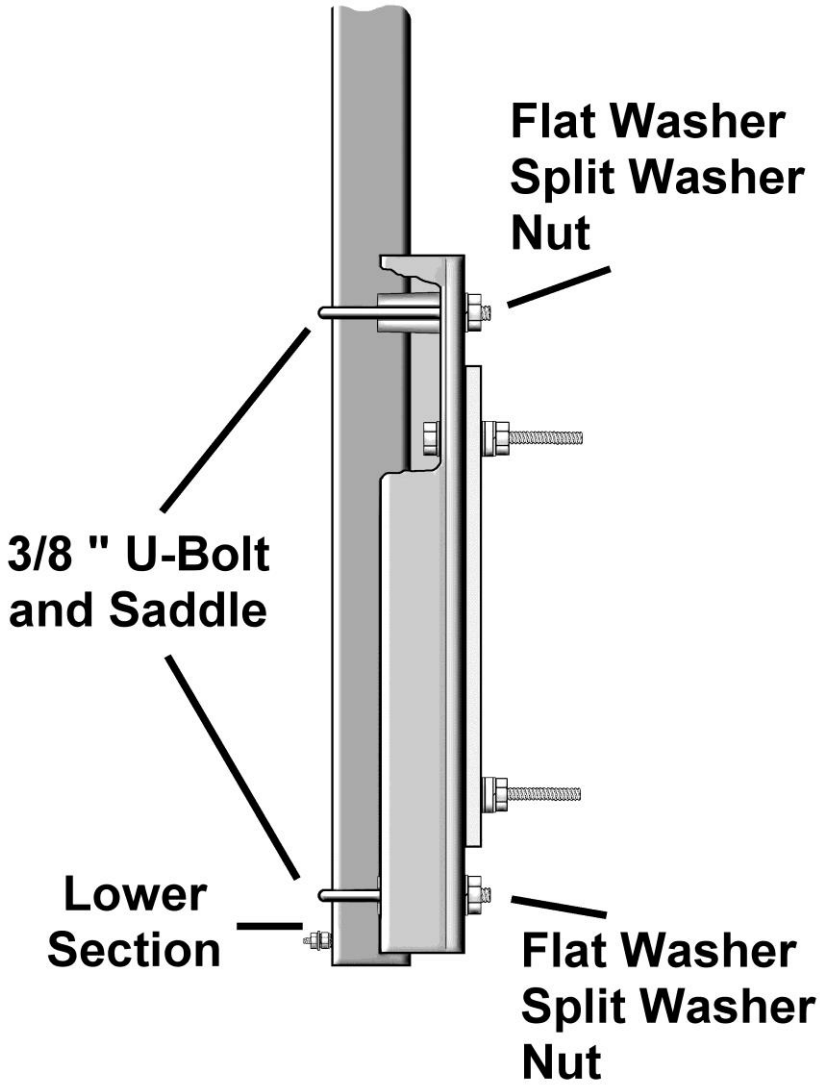


Figure - 7

Base Section to Tilt Base

Place the Lower Base Section into the holes of the Tilt Base and loosely install the Tilt Base mounting hardware shown in **Figure 8**.

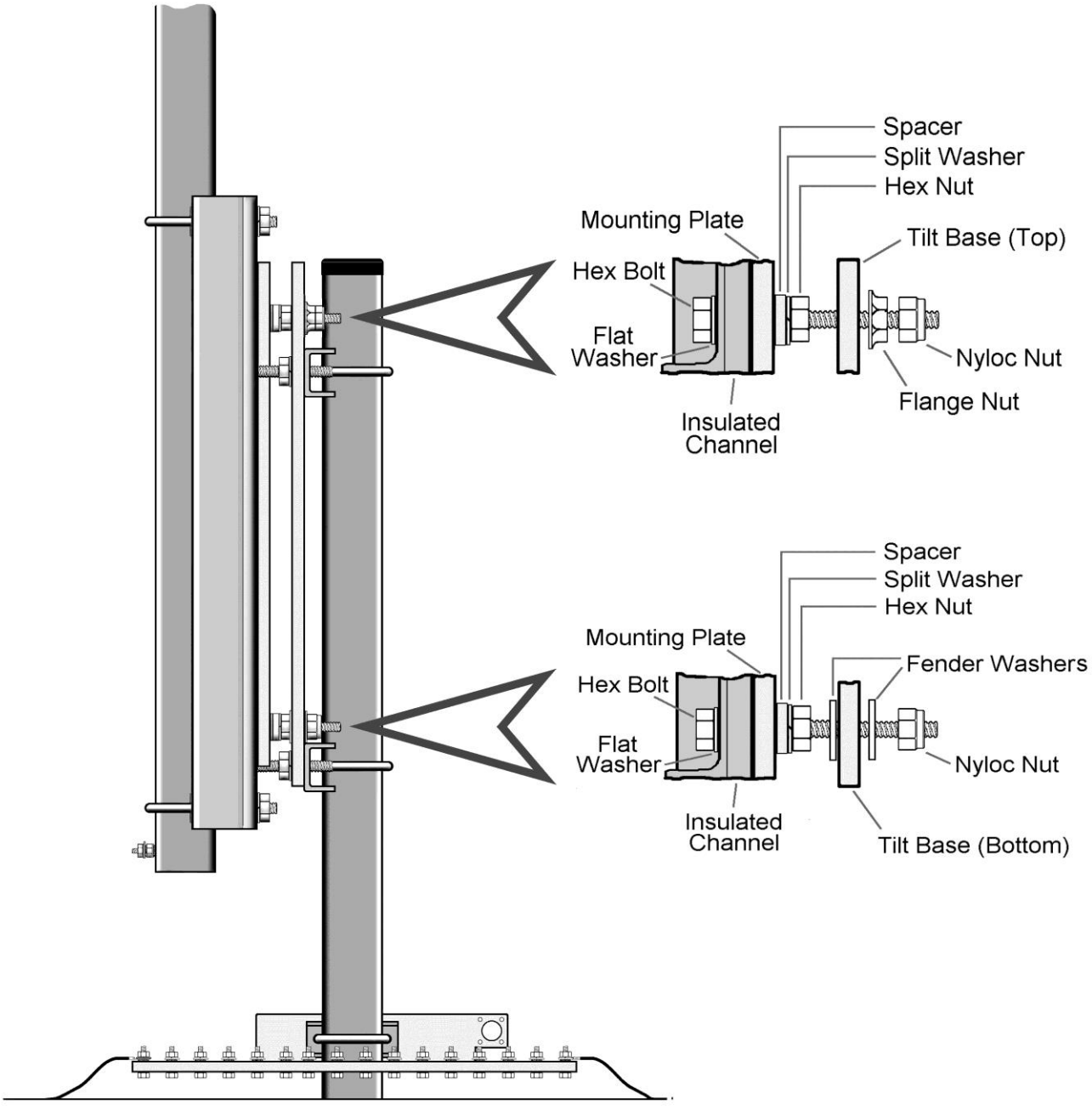


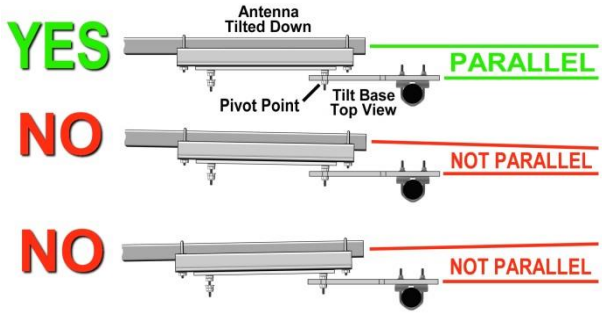
Figure - 8

Using a wrench or nut driver, securely tighten the two Nyloc nuts at the bottom of the Tilt Base. Then loosen them one-half turn each. This will allow proper movement of the Tilt Base while raising or lowering the antenna. It is not necessary to tighten these nuts more securely unless further tilt operation is no longer required. They should not be loosened more than one-half turn at any time.

Test the tilt function to ensure proper clearances. Standing in front of the Tilt Base, lift the antenna base section, slide it to the right, and let it down slightly until the lower outside bolt is resting in the pivot point. Then slowly tilt as shown in **Figure 9**. Make sure when you are tilting the antenna to **lift, slide to the right**, and ***then*** tilt. Be careful to keep the pivot bolt resting in the pivot point. Reverse the process when raising the antenna.

It is important to note that the lower, outside bolt becomes the pivot point while raising or lowering the antenna. This pivot bolt **MUST** be retained in the pivot point. It seems natural to *push* the antenna toward the Tilt Base while raising. ***Push up*** while raising, but not toward the base since this could cause the pivot bolt to lift out of the slot and allow the mechanism to bind up and bend the lower bolts.

The Tilt Base is not made to support the whole antenna by itself when tilted. When the antenna is tilted over, ensure you have some sort of table, stand, or saw horse to set the antenna on to aid in supporting the weight. When the antenna is in the upright position, ensure the mounting hardware (reference **Figure 8**) is tightened.



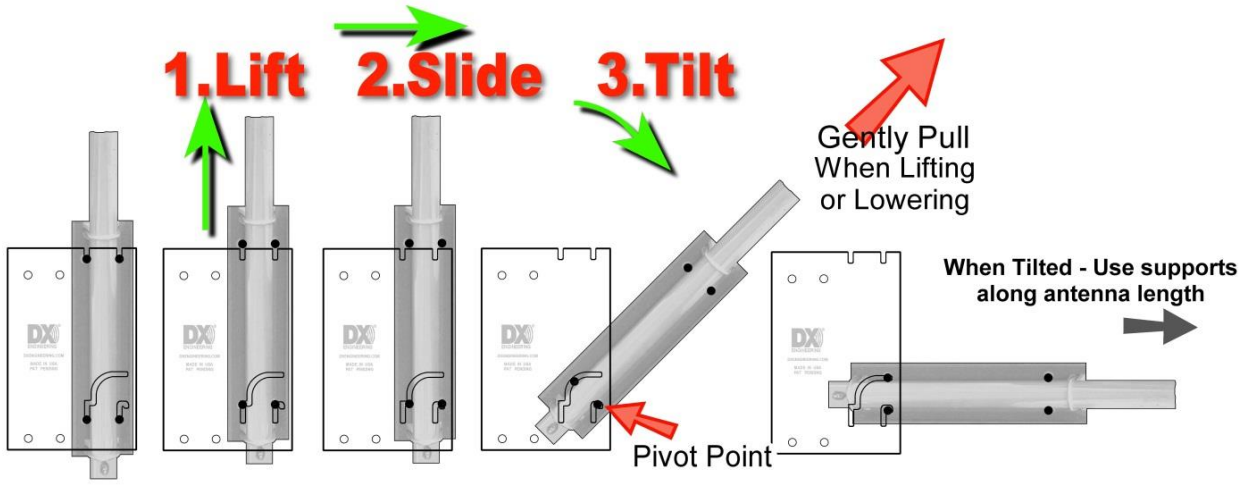


Figure - 9 - Tilt Action
The antenna is mounted to the front of the Tilt Plate.
(This picture shows the antenna as if you could look through it to see the grooves in the tilt plate. You can see a partially tilted antenna in Figure 15).

Note: *A pair of sawhorses or ladders should be used to support the vertical sections during assembly with the tilt-base and whenever the vertical is tilted down. Do not allow the Tilt Base to support the entire weight of the vertical when horizontal.*

Assembling the Vertical Sections

Note: ***JTL-12555 Jet-Lube™ SS-30*** *Anti-Oxidant should be used between all antenna element sections. Jet-Lube™ SS-30 is an electrical joint compound to affect a substantial electrical connection between metal parts such as* ***telescoping aluminum tubing*** *or other antenna pieces. It ensures high conductivity at all voltage levels by displacing moisture and preventing corrosion or oxidation. Jet-Lube™ SS-30 should also be used on all* ***element clamps and stainless steel threaded hardware*** *to provide good electrical contact, prevent galling, allowing easier disassembly and to ensure proper tightening.*

When assembling any telescoping aluminum tubing sections you should take the following steps:

1. Make sure the edges are smooth and not sharp. Deburring may be necessary, since burrs and shavings can occur on seams as well as edges. All surfaces need to be completely smooth to allow easy assembly of tubing sections.

Caution

Aluminum tubing edges can be very sharp.
Take precautions to ensure you do not get accidentally cut.

The raised particles and shavings that appear when the aluminum tubing is machined are referred to as burrs, and the process by which they are removed is known as deburring.

Deburring is a finishing method used in manufacturing. Our aluminum tubing is machine cut on both ends and machine slit on one end and you should further assure there are no ragged edges or protrusions.

Use the **DXE-22166 Slim Grip Deburring Tool**, or the **DXE-22600 Deburring Tool with Extending Handle and Extra Blades** for this operation.

2. Clean the inside of the aluminum tubing to clear out any dirt or foreign material that would cause the aluminum tubing sections to bind during assembly. Do not use any type of oil or general lubricant between the aluminum tubing sections. Oils or general lubricants can cause poor electrical connections for radio frequencies.

3. Clean the outside of the aluminum tubing to clear any dirt or foreign material that would cause the clamps to malfunction during assembly.

4. The use of **JTL-12555 Jet-Lube™ SS-30 Pure Copper Anti-Seize** is highly recommended. Jet-Lube™ SS-30 is an electrical joint compound which effects a substantial electrical connection between metal parts such as telescoping aluminum tubing or other antenna pieces. Using Jet-Lube™ SS-30 assures high conductivity at all voltage levels by displacing moisture and preventing corrosion or oxidation.

5. When assembling the aluminum tubing sections, ensure the area is clear of grass, dirt or other foreign material that could cause problems during assembly of the closely fitted telescoping sections.

Assemble the vertical sections in an area that is flat and has sufficient room for the length of the antenna during assembly. Lay the tubing out in descending OD sizes. Orient the slits in the tubes as shown in **Figure 11**.

Each element section is inserted into the next element section. Assembly is easier if the overlaps in the tubing sections are pre-marked. A dark color felt-tip marker works well. Measure and mark from the end of each tube without the slit using a marker so it will be clearly visible.

Locate the hardware pack containing element clamps. Refer to **Figure 12** for element clamp sizes and placement. Slide all the clamps over each element section before putting them together. You can lightly tighten the element clamps just below the slits in each element section to hold them until needed. Align the clamp screws on each section to face the same direction. At final assembly, body of the clamp should be positioned between the slits in the tubes and 1/8" from the edge of each tube as shown in **Figure 10**.

Figure - 10

Using **Figure 11** and **Figure 12** for dimensions, assemble the 40/30 Vertical Antenna making sure dirt or grass does not adhere to the element sections to be joined Double-check the vertical sections you have just assembled. They should measure 29 feet and 2 inches overall. This overall height was determined to be the optimum length during the engineering testing. There is adequate overlap that will allow you to adjust the length as needed for your particular installation. Refer to the tuning section of this manual.

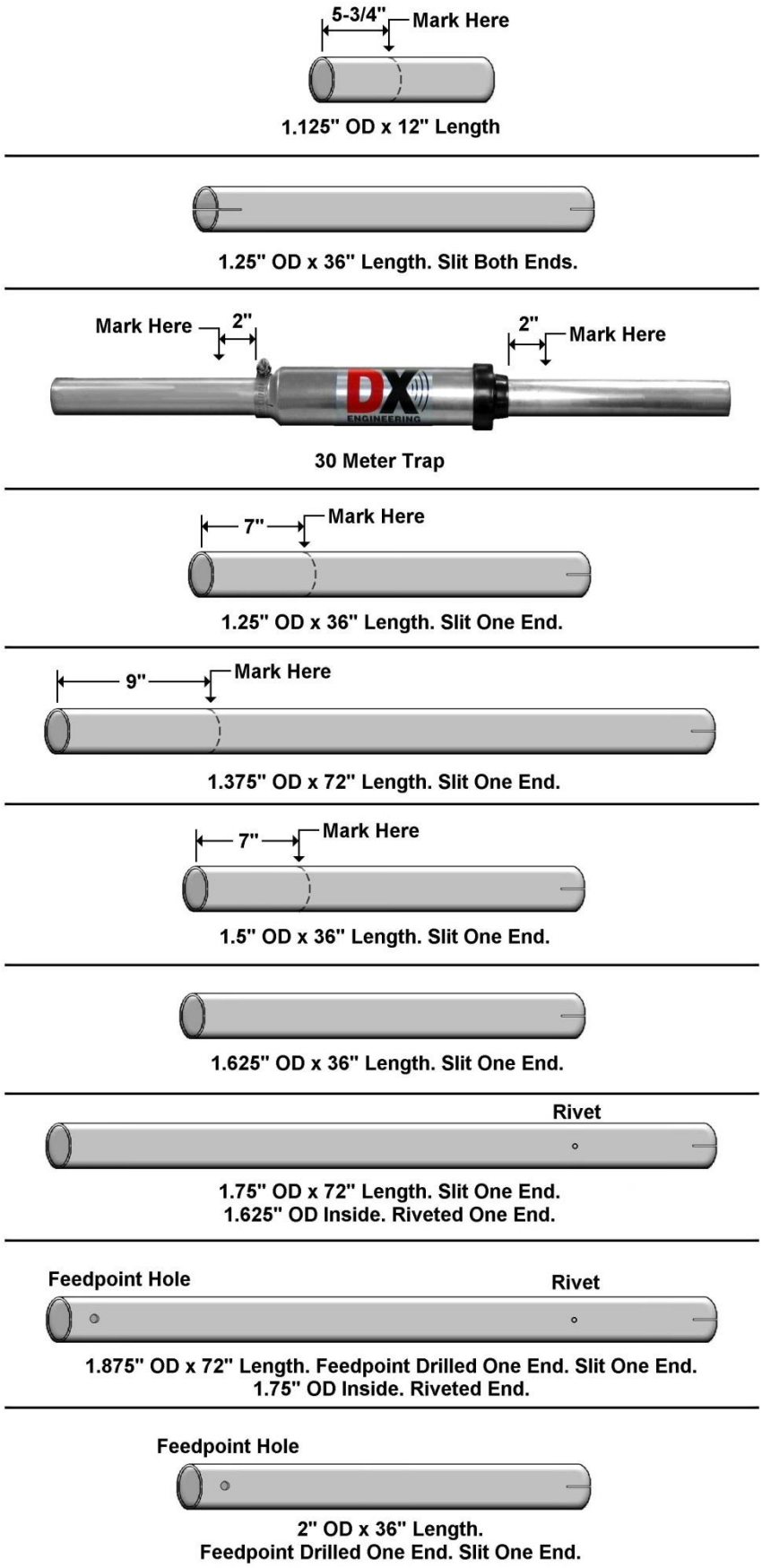
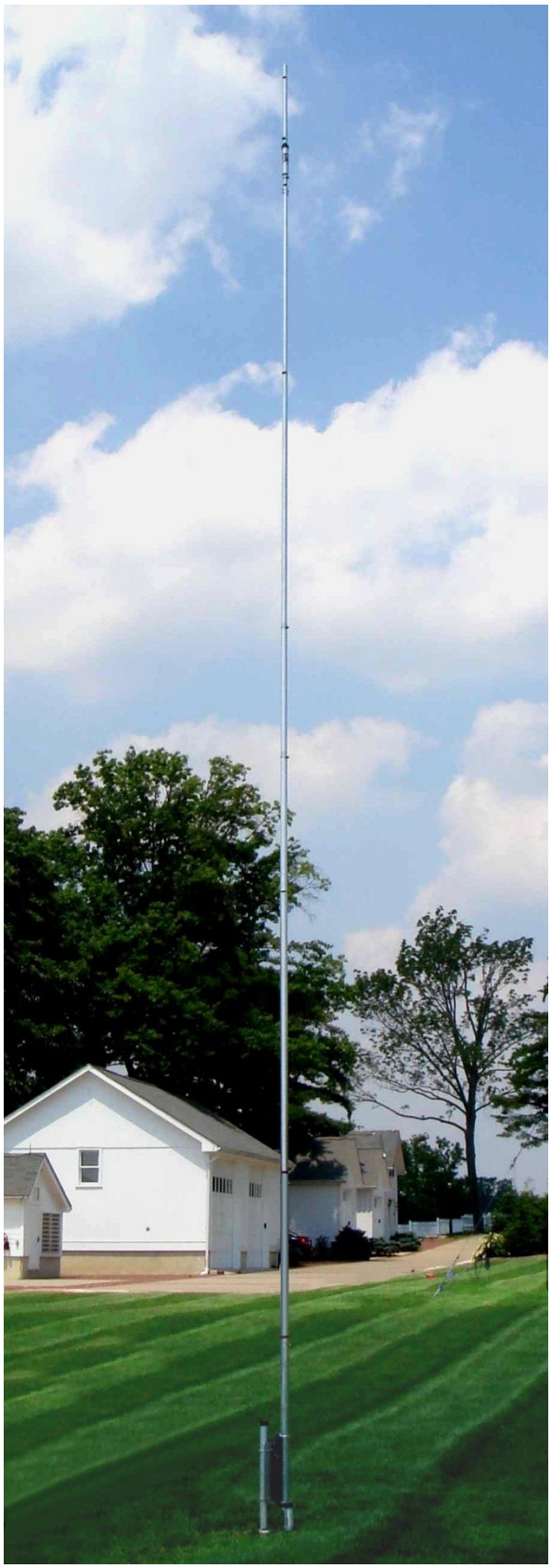


Figure 11 - Element Sections



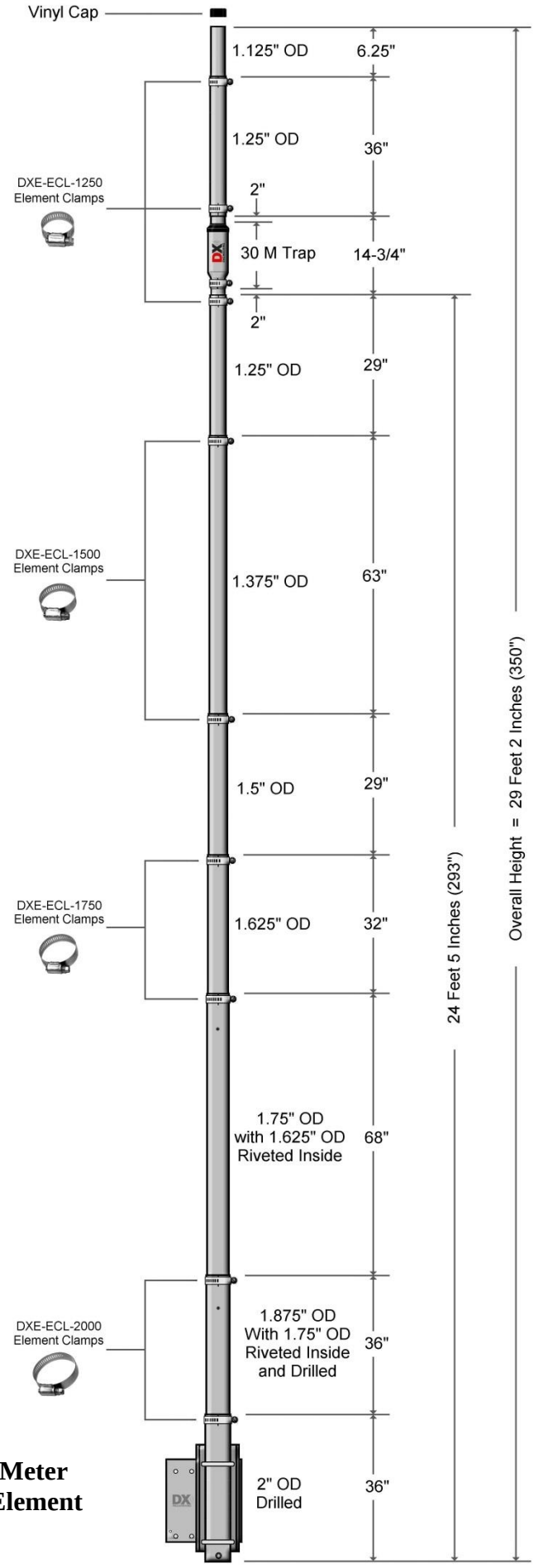


Figure 12 - 30-40 Meter Vertical Antenna Element

Mating the Vertical Sections to the Tilt Base

CAUTION: Attempting final assembly without proper precaution can be dangerous.
You should have someone help you steady the vertical antenna sections during mating with the base section.

Note: *A pair of sawhorses or ladders should be used to support the vertical sections during assembly with the Tilt Base and whenever the vertical is tilted down. Do not allow the tilt-base to support the entire weight of the vertical when horizontal.*

With the base section in the tilted position, mate the vertical sections to the base tube section by sliding the lower element section of the vertical antenna over the previously assembled base section elements (refer to **Figure 5**). Slide it in until it makes contact with the element section nested inside the bottom section (4 inches). See **Figure 12**.

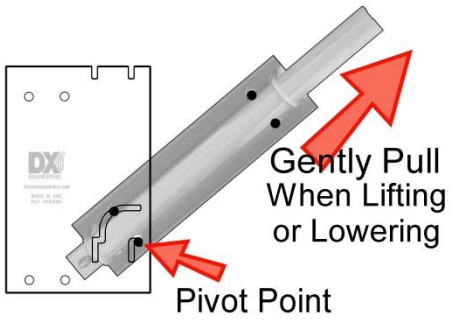
Note: *Using a small amount of Jet-Lube™ SS-30 on the element sections will make the fit easier and help provide a positive electrical contact between the elements.*

Slide the appropriate element camp down to the edge of the bottom section, between the slits, and tighten. Install the rest of the element clamps.

Raising the Vertical

DANGER: Make sure you have not inadvertently located the antenna underneath power lines.
Residential power lines are often less than 40' high.
Contact With Any Power or Utility Lines Can Be Lethal !

The Tilt Base certainly makes it easier however, this antenna can be challenging to put up the first time or with gusty winds. If you have properly laid out your optional guy system in advance, it will help keep the vertical stable as you raise it – and stop you from going beyond vertical at the apex of the lift.



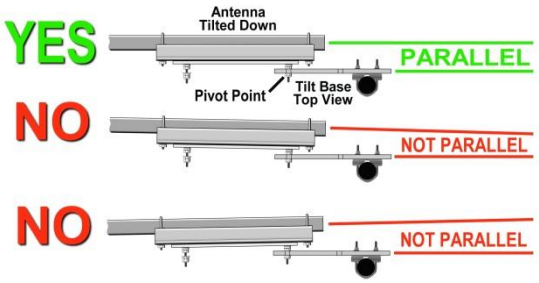
Make sure the optional guy ropes are in the clear before you begin.

While raising the antenna, keep a constant pulling pressure away from the Tilt Base. This will ensure that the pivot point bolt will not jump out of the pivot slot and cause the tilt mechanism to bind up and bend the bolts.

Starting from the top of the antenna, walk it up slowly using an overhead hand-over-hand motion, maintaining a slow and steady pace.

Once the antenna is vertical, lift and slide the antenna to the left toward the Tilt Base mounting pipe to allow the two parts of the Tilt Base to line up and drop down into the slots. Lightly tighten the top flange nuts on the Tilt Base to hold the antenna.

Note: As you raise the antenna to the vertical position, it's important to maintain the parallel alignment between the antenna mounting channel and the Tilt Base backing plate to minimize binding. Make sure the lower tilt-base bolts are never excessively loose before raising. They should be first tightened securely and then backed off no more than 1/2 turn



Once the antenna is fully raised, tighten the tilt base hardware (Top two Nyloc nuts and two flange nuts, bottom two Nyloc nuts).

Assembling the Balun Shelf and Vertical Feedline Choke

Using the 10-24 hex bolts, flat washers, split washers, and hex nuts, assemble the optional **DXE-VFCC-H05-A** Vertical Feedline Current Choke to the Balun Shelf and Balun Shelf Bracket as shown in **Figure 13**. (Note: newer Baluns do not have the spare wing nut.)

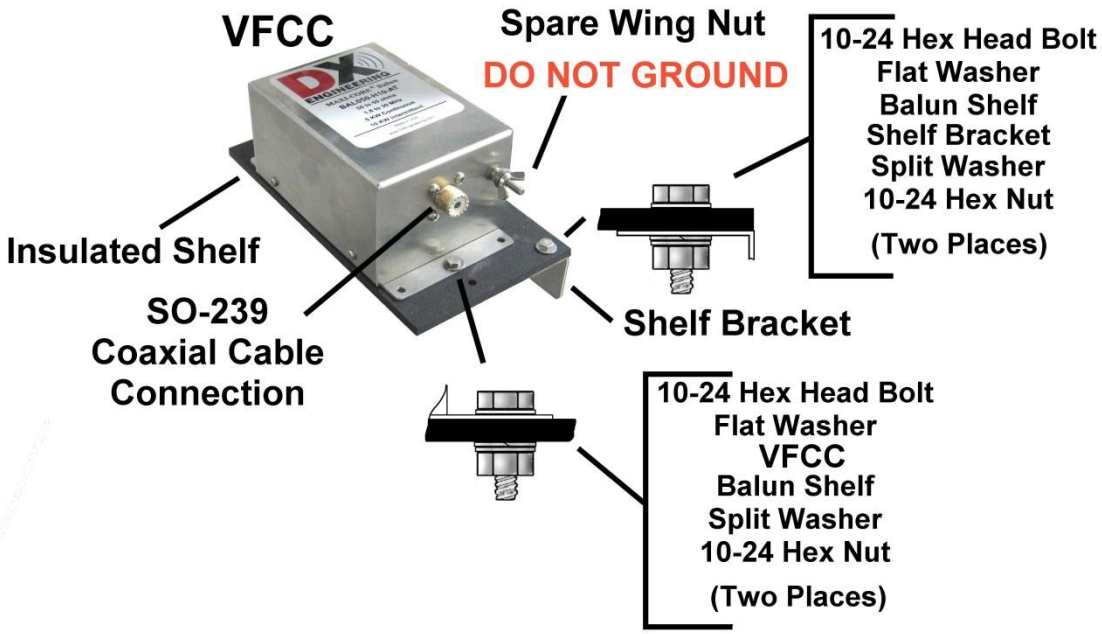


Figure 13

Installation of Vertical Feedline Choke Assembly to Antenna Mount

The completed **DXE-VFCC-H05-A** Vertical Feedline Current Choke and Shelf assembly are mounted to the antenna mast pipe using the supplied **DXE-SSVC-2P** V-Camp assembly. Position the Balun Shelf Bracket approximately 1/4" above the Radial Plate mounting flange as shown in **Figure 14**. Tighten the clamp to hold the assembly in place. When tightening, observe the split washers. When they fully seat (flatten out), the clamp is tight enough. Any clamp should be tightened evenly from side-to-side with an equal amount of thread above each nut.

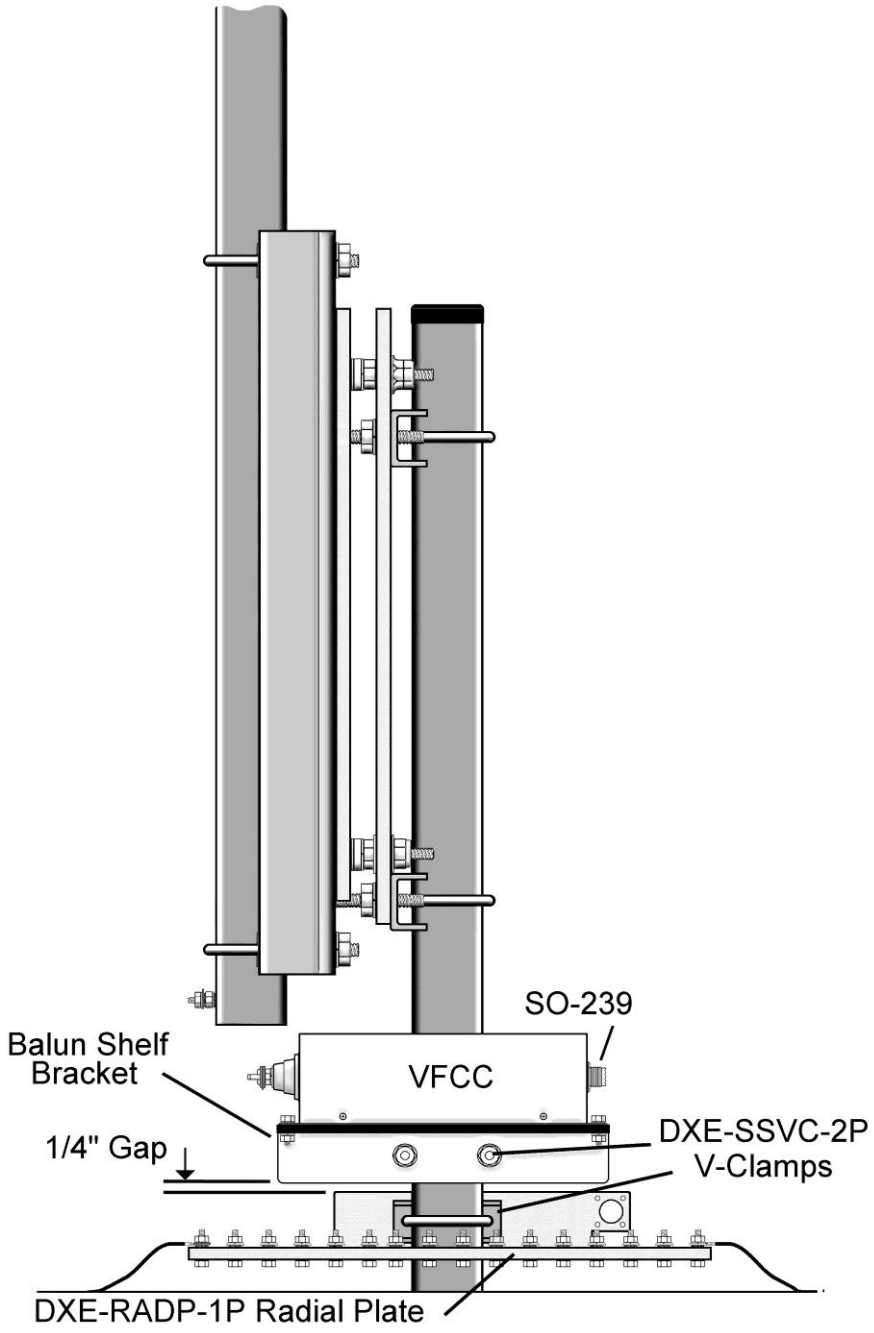


Figure 14

Feedline Connections

Vertical Feedline Current Choke Connections

The optional **DXE-VFCC-H05-A** Vertical Feedline Current Choke is attached to the feedline using the **DXE-TCB-FPK** - Feed Point Connection Kit which contains two pre-drilled copper tinned braids for connection to the vertical antenna system. One braid is 8-1/2" long and the shorter is 7-1/2" long. Connect the longer 8-1/2" braid from the antenna feedpoint located on the base section of the antenna to the terminal on the **DXE-VFCC-H05-A** Vertical Feedline Current Choke closest to the **Red "D"** in "**DX Engineering**" on the label as shown in **Figure 15**.

Connect the other 7-1/2" braid from the terminal on the **DXE-VFCC-H05-A** Vertical Feedline Current Choke closest to the **Black "X"** on the label to the closest radial wire bolt on the optional **DXE-RADP-3** Radial Plate as shown in **Figures 15 and 15a**. Route both braided cables as shown.

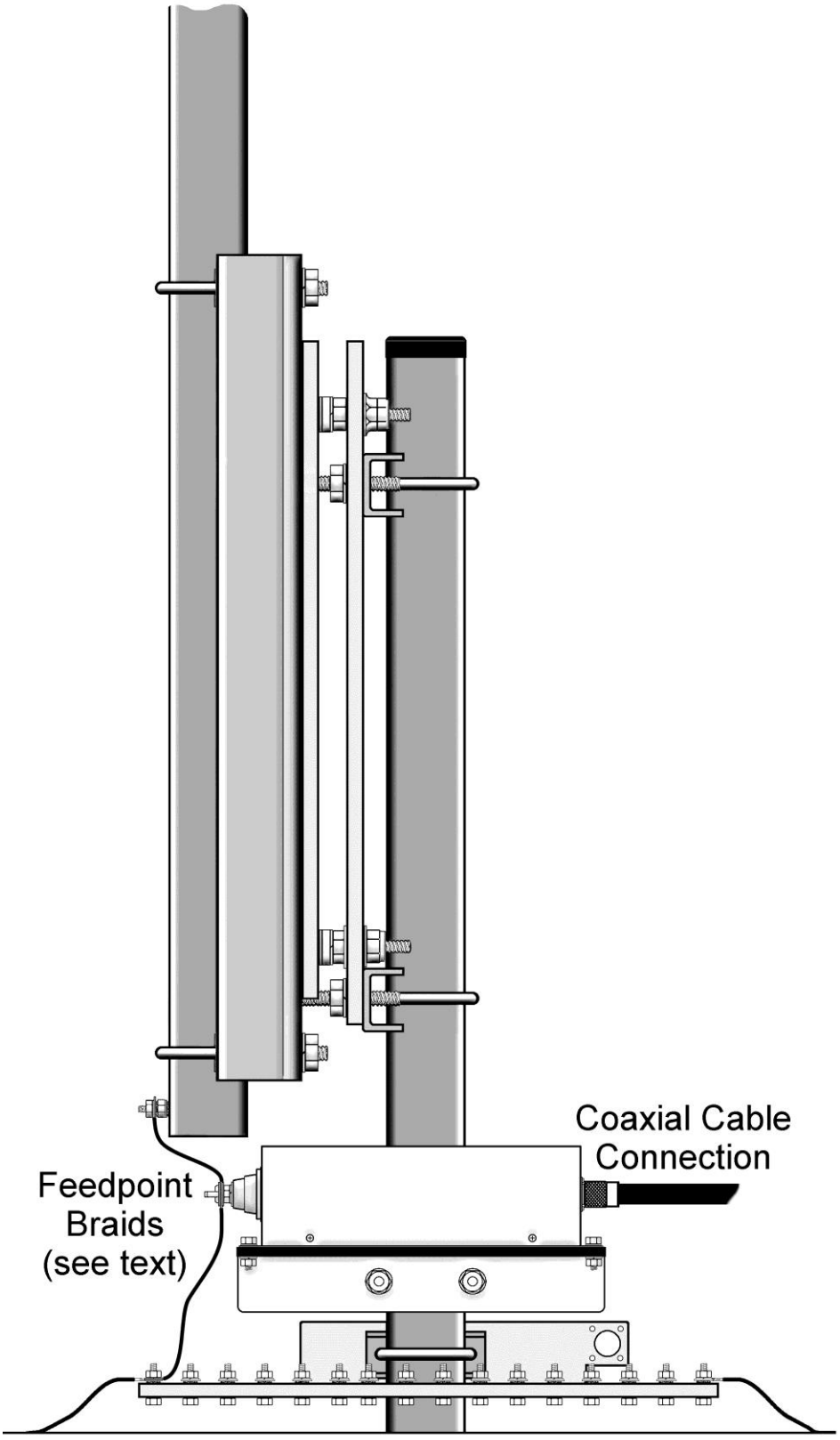
Note: ***Ensure the braided connections do not interfere with the tilting process, and are not accidentally touching anything that could cause a short.***

Figure 15

Your coaxial cable from the radio connects direct to the SO-239 connector on the **DXE-VFCC-H05A** Vertical Feedline Current Choke.

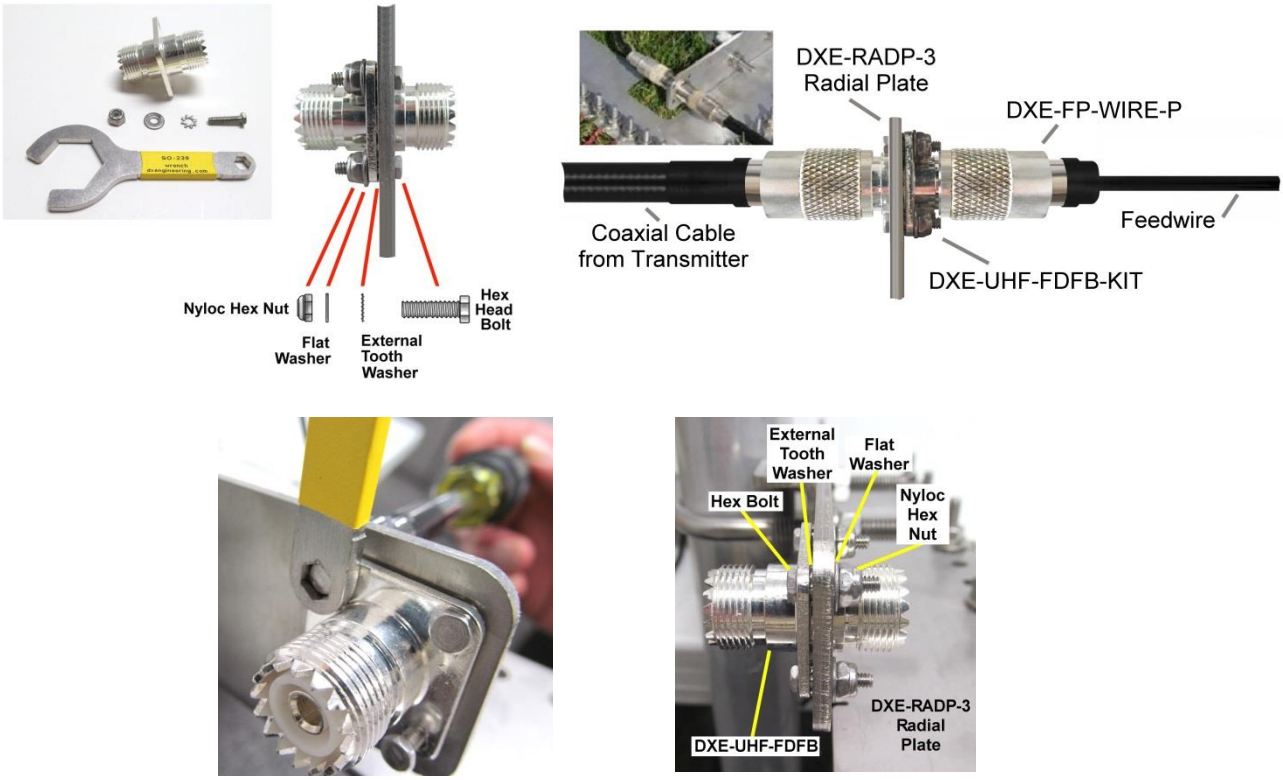
If there is a wing nut and hardware near the SO-239, they are ***spares*** for the top two terminals. **DO NOT GROUND** this connection.

Figure 15a - Completed Base Assembly for Reference



Alternate Feedpoint Connection

If not using the VFCC, the customer will have to make a secure and positive connection from the coax to the feedline connection on the antenna base and a connection to the Radial Plate. A **DXE-UHF-FDFB-KIT** SecureMount™ double SO-239 Bulkhead Mount and a **DXE-FP-WIRE-P** Feedpoint Wire Connector Assembly should be used.



Using the SecureMount™ Bulkhead Connector and the Feedpoint Wire Assembly

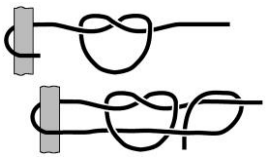
Tuning the Vertical Antenna System

Tuning the DXE 40/30 Meter Vertical Antenna is accomplished by adjusting the length from the bottom of the vertical antenna to the bottom of the 30 meter trap for the 30 meter band. Then adjust the height from the top of the 30 meter trap to the top of the vertical antenna for the 40 meter band. Adjustments may interact, and you may have to try various positions until you get the desired tuning accomplished.

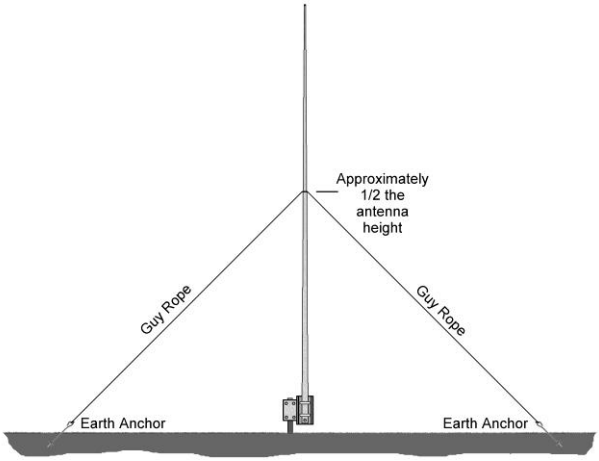
Guying a Vertical Antenna System

Guying of vertical antennas is always recommended for stability. However, if your area encounters severe wind velocities or icing conditions, simple guying will reduce the possibility of failure. Using the **DXE-GUY** kits, you can install four guy ropes starting approximately 1/2 the way up the vertical antenna system to ground level. Guying should be tightened just enough to permit the antenna to swing a few inches. The ends of the ropes are tied to the earth anchors that are screwed into the ground at about the same angle as the ropes will be. When using the Tilt Base, position the

guy wires as shown below. This will make it easy to raise or lower the antenna and only one guy line needs to be loosened. The other guy lines will help guide the antenna on the way up. Depending on your antenna system, additional guys at points higher on the antenna may be required.



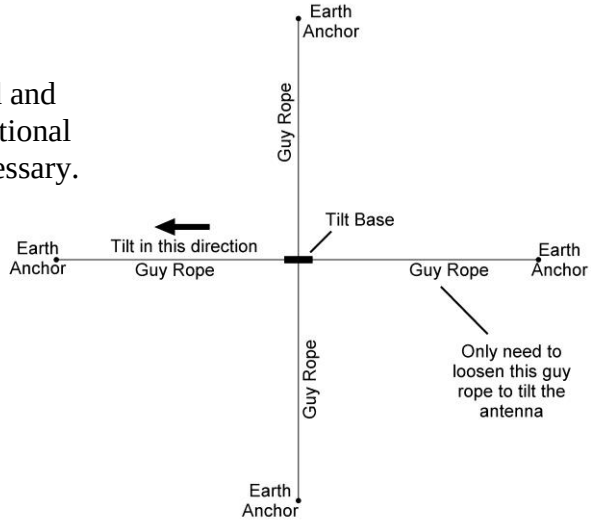
Typical No Slip Knot for **SYN-DBR** Double-Braided Dacron Polyester Rope



Side View
The earth anchors are approximately 25 feet from the antenna

DXE-GUY-200

Note: Depending on wind and ice conditions, additional guying may be necessary.



Top View

Technical Support

If you have questions about this product, or if you experience difficulties during the installation, contact DX Engineering at (330) 572-3200. You can also e-mail us at: DXEngineering@DXEngineering.com

For best service, please take a few minutes to review this manual before you call.

Warranty

All products manufactured by DX Engineering are warranted to be free from defects in material and workmanship for a period of one (1) year from date of shipment. DX Engineering's sole obligation under these warranties shall be to issue credit, repair or replace any item or part thereof which is proved to be other than as warranted; no allowance shall be made for any labor charges of Buyer for replacement of parts, adjustment or repairs, or any other work, unless such charges are authorized in advance by DX Engineering. If DX Engineering's products are claimed to be defective in material or workmanship, DX Engineering shall, upon prompt notice thereof, issue shipping instructions for return to DX Engineering (transportation-charges prepaid by Buyer). Every such claim for breach of these warranties shall be deemed to be waived by Buyer unless made in writing. The above warranties shall not extend to any products or parts thereof which have been subjected to any misuse or neglect, damaged by accident, rendered defective by reason of improper installation, damaged from severe weather including floods, or abnormal environmental conditions such as prolonged exposure to corrosives or power surges, or by the performance of repairs or alterations outside of our plant, and shall not apply to any goods or parts thereof furnished by Buyer or acquired from others at Buyer's specifications. In addition, DX Engineering's warranties do not extend to other equipment and parts manufactured by others except to the extent of the original manufacturer's warranty to DX Engineering. The obligations under the foregoing warranties are limited to the precise terms thereof. These warranties provide exclusive remedies, expressly in lieu of all other remedies including claims for special or consequential damages. SELLER NEITHER MAKES NOR ASSUMES ANY OTHER WARRANTY WHATSOEVER, WHETHER EXPRESS, STATUTORY, OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS, AND NO PERSON IS AUTHORIZED TO ASSUME FOR DX ENGINEERING ANY OBLIGATION OR LIABILITY NOT STRICTLY IN ACCORDANCE WITH THE FOREGOING.

DXE-4030VA-1-INS