



# 65 Foot Telescoping Aluminum Antenna Tubing Kit

**DXE-ATK65**

DXE-ATK65-INS-Rev 1



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P.O. Box 1491 · Akron, OH 44309-1491

Phone: (800) 777-0703 · Tech Support and International: (330) 572-3200

Fax: (330) 572-3279 · E-mail: [DXEngineering@DXEngineering.com](mailto:DXEngineering@DXEngineering.com)

# Introduction

The **DXE-ATK65** Aluminum Antenna Tubing Kit is constructed of twelve pieces of high quality aluminum tubing with eleven Stainless Steel clamps. When fully assembled, the overall length is 65 feet. Depending on your application, the length can easily be made shorter by telescoping the elements inward, or removing element sections.

The Aluminum Antenna Tubing Kit is used to make various vertical antennas, or the basics for heavy duty dipoles. Amateur Radio Operators love to experiment and this antenna element stack is an ideal starting point. The telescoping aluminum tubing sizes allow adjustment by the addition or removal of tubing sections as length requirements dictate. Smaller diameter sizes are available from DX Engineering to make a longer assembly. The Aluminum Antenna Tubing Kit is not designed to support other antennas, nor should it be treated as if it were a tower support.

DX Engineering Type 6063-T832 drawn - not extruded - aluminum tubing in three foot and six foot lengths with four slits at one end for fast reliable assembly. In this kit, the 2.125" OD tubing section has slits at both ends and the 2" OD heavy wall (.125") section has no slits.

Rugged aluminum alloy 6063 is most commonly used for seamless structural tube and pipe. It is popular in structural use for both its high strength and great, long lasting appearance. Alloy 6063 provides great resistance to general corrosion, including resistance to stress-corrosion cracking.

Eleven of the aluminum tubes in this kit are six feet in length. The top tube in this kit is three feet in length.

## Parts Included:

Quantity	DX Engineering Part Number	Size		Wall Thickness	Slit	Element Length
1	DXE-AT-1244	0.875"	7/8"	.058"	One End	36"
1	DXE-AT-1209	1.000"	1"	.058"	One End	72"
1	DXE-AT-1210	1.125"	1-1/8"	.058"	One End	72"
1	DXE-AT-1211	1.250"	1-1/4"	.058"	One End	72"
1	DXE-AT-1212	1.375"	1-3/8"	.058"	One End	72"
1	DXE-AT-1213	1.500"	1-1/2"	.058"	One End	72"
1	DXE-AT-1214	1.625"	1-5/8"	.058"	One End	72"
1	DXE-AT-1215	1.750"	1-3/4"	.058"	One End	72"
1	DXE-AT-1216	1.875"	1-7/8"	.058"	One End	72"
1	DXE-AT-1217	2.000"	2"	.058"	One End	72"
1	DXE-AT-1222	2.125"	2-1/8"	.058"	Both Ends	72"
1	DXE-AT-1204	2.000"	2"	.125"	none	72"

2	DXE-ECL-28SS	Stainless Steel Clamp for 2.125" to 2.50"				
2	DXE-ECL-24SS	Stainless Steel Clamp for 1.875" to 2.0"				
2	DXE-ECL-20SS	Stainless Steel Clamp for 1.625" to 1.75"				
2	DXE-ECL-16SS	Stainless Steel Clamp for 1.375" to 1.50"				
1	DXE-ECL-12SS	Stainless Steel Clamp for 1.25"				
2	DXE-ECL-10SS	Stainless Steel Clamp for 1.0" to 1.25"				



# WARNING!

## INSTALLATION OF ANY ANTENNA NEAR POWER LINES IS DANGEROUS



**Warning:** Do not locate any of the aluminum tubing near overhead power lines or other electric light or power circuits, or where it can come into contact with such circuits. When installing any antenna or aluminum tubing, 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.

### Assembly

For a full 65 foot length, the aluminum tubing sections are assembled starting at the bottom 2" OD, heavy wall (.125") aluminum tube and working upward.

*Note: **DXE-P8A Penetrox A Anti-Oxidant** should be used between all aluminum tubing sections. Penetrox 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.*

***DXE-81343 Never-Seez** or **NSBT8 Anti-Seize** should be used on all clamps, bolts and stainless steel threaded hardware to prevent galling 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. Although DX Engineering manufactured aluminum tubing is deburred, you should further assure that there are no ragged edges or protrusions.

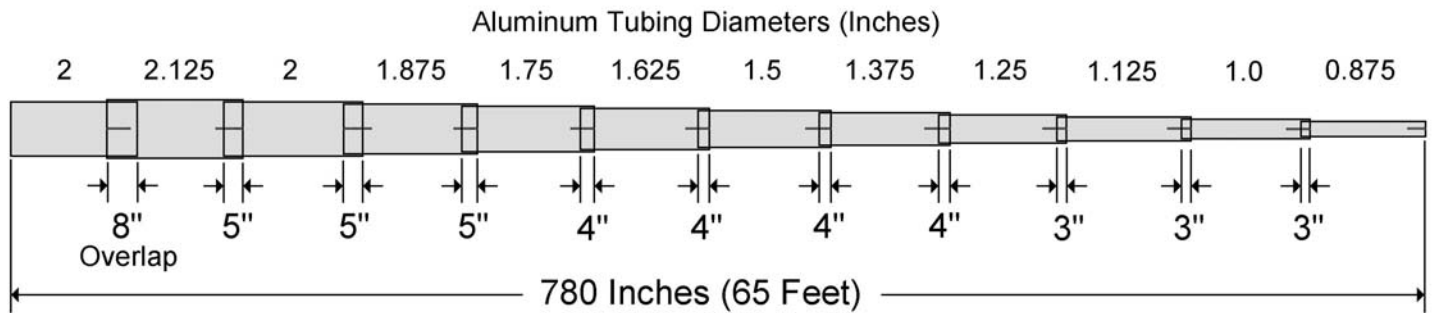
Use the **DXE-22166 Slim Grip Deburring Tool**, or the **DXE-22600 Deburring Tool with Extending Handle and Extra Blades** for this operation.

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 **DXE-P8A Penetrox A** is highly recommended. Penetrox A is an electrical joint compound which effects a substantial electrical connection between metal parts such as telescoping aluminum tubing or other antenna pieces. Using Penetrox A 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 aluminum tubing sections in an area that is flat and has sufficient room for the length of the assembly. Lay the aluminum tubing out in the order shown in **Figure 1**. Orient the slits in the tubes toward the top. The bottom 2" OD section is thick walled and has no slits. The second section is 2.125" and has slits at both ends. The rest of the tubing sections have 4 slits at one end. The first 11 aluminum sections in this kit are 72" long and the top aluminum section is 36" long.

Each aluminum tubing section is inserted into the next section as shown in **Figure 1**. Assembly is easier if the overlaps in the tubing sections are pre-marked. A dark color felt-tip marker works well.

Mark each aluminum section as shown in **Figure 1** from the end of each aluminum section without the slit using a marker so it will be clearly visible. If you are clamping the completed aluminum tubing kit to a mounting plate (example: making a vertical antenna), apply clamps only to this lower thick walled (.125") section. **DXE-SAD-200A** 2 inch U-Bolt Saddle Clamps are strongly recommended for secure clamping without crushing the element tubing.

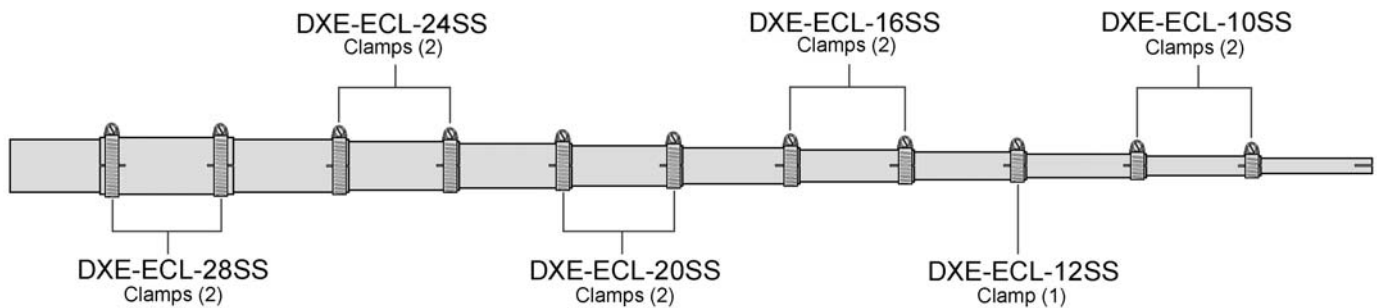


**Figure 1**

Locate the hardware pack containing the eleven stainless steel clamps. Slide all the clamps over each aluminum section as shown in **Figure 2** before putting the tubing sections together. You can lightly tighten the clamps just below the slits in each section to hold them until needed. Align the clamp screws on each section to face the same direction. At final assembly, the body of the clamp should be positioned between the slits in the aluminum tubes and 1/8" from the edge of each aluminum tube as shown in **Figure 2a**.



**Figure 2a**



**Figure - 2 - Clamp Size and Locations**

Making sure dirt or grass does not adhere to the aluminum tubing to be joined, insert the marked end of the tube into the next tube allowing for the overlap as shown in **Figure 1**. Position the stainless steel clamp. Make sure the body of the clamp is positioned between the slits and tighten securely. Continue mating aluminum tubes. Double-check the tubing sections you have just assembled. Total length should measure 65 feet (780 inches).

You may elect to have the tubing in a shorter length. The aluminum tubing may be telescoped inward, outward, or removed depending on your application. Keep in mind you want a minimum of 2 to 8 inches of overlap between tubing sections dependant on location and overall strength.

## Guying and Raising

Some vertical antenna manufacturers indicate their antennas do not need guying. During times of high winds or ice loading, some of these verticals may sustain damage or fail altogether. With the small amount of effort needed to install a four point guying system, the risk hardly seems worth taking. A three level, four point guying scheme provides the best mechanical advantage to prevent wind stress, regardless of direction. The guy lines should be used during raising or lowering to minimize stress on the lower tube sections.

When using an optional **DXE-VA-BASE** Tilt Base, a three level, four point guying system is recommended for use when the **DX-ATK65** is used as a vertical antenna because just one set of the guy ropes has to be loosened when you tilt the vertical antenna element downward. The remaining guys help stabilize the vertical antenna in three directions when being raised by pulling on the loose guys.

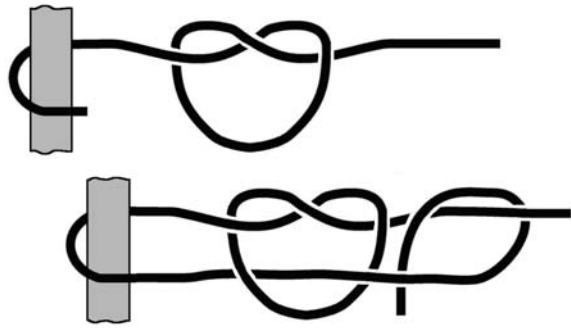
The **DXE-GUY1000-KIT** has been designed to be used with the **DXE-ATK65** or other similar vertical antennas. The guying kit is ideal for fixed or portable installations.

**Figure 3** shows the suggested guying scheme for the **DXE-ATK65** assembly when used as a vertical antenna. Your results may vary since it depends on the length (height) of your particular installation.

Guying of vertical masts or antennas is always recommended for stability. However, if your area encounters severe wind velocities or icing conditions, simple additional guying will help prevent the possibility of failure.

With the **DXE-GUY1000-KIT**, you can install four sets of guy ropes. Use the suggested no slip knot placing the loop just above the element clamps shown in **Figure 3**. 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.

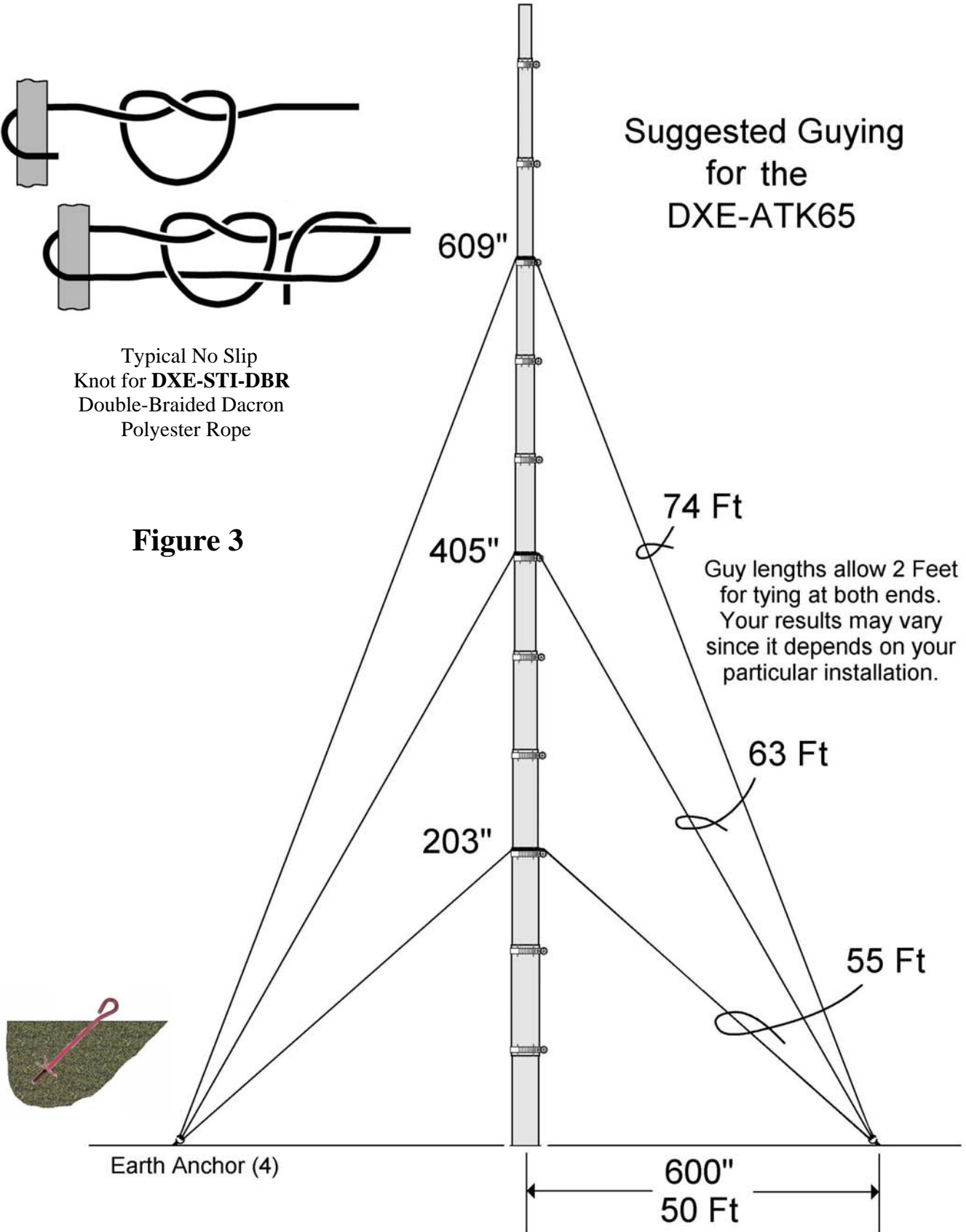
When using the optional **DXE-VA-BASE** Tilt Base, position the guy ropes as shown in **Figure 4**. This will make it easy to raise or lower the vertical antenna and only one set of guy ropes needs to be loosened. The other guy rope sets will help guide the vertical antenna on the way up by pulling on the loose guys.

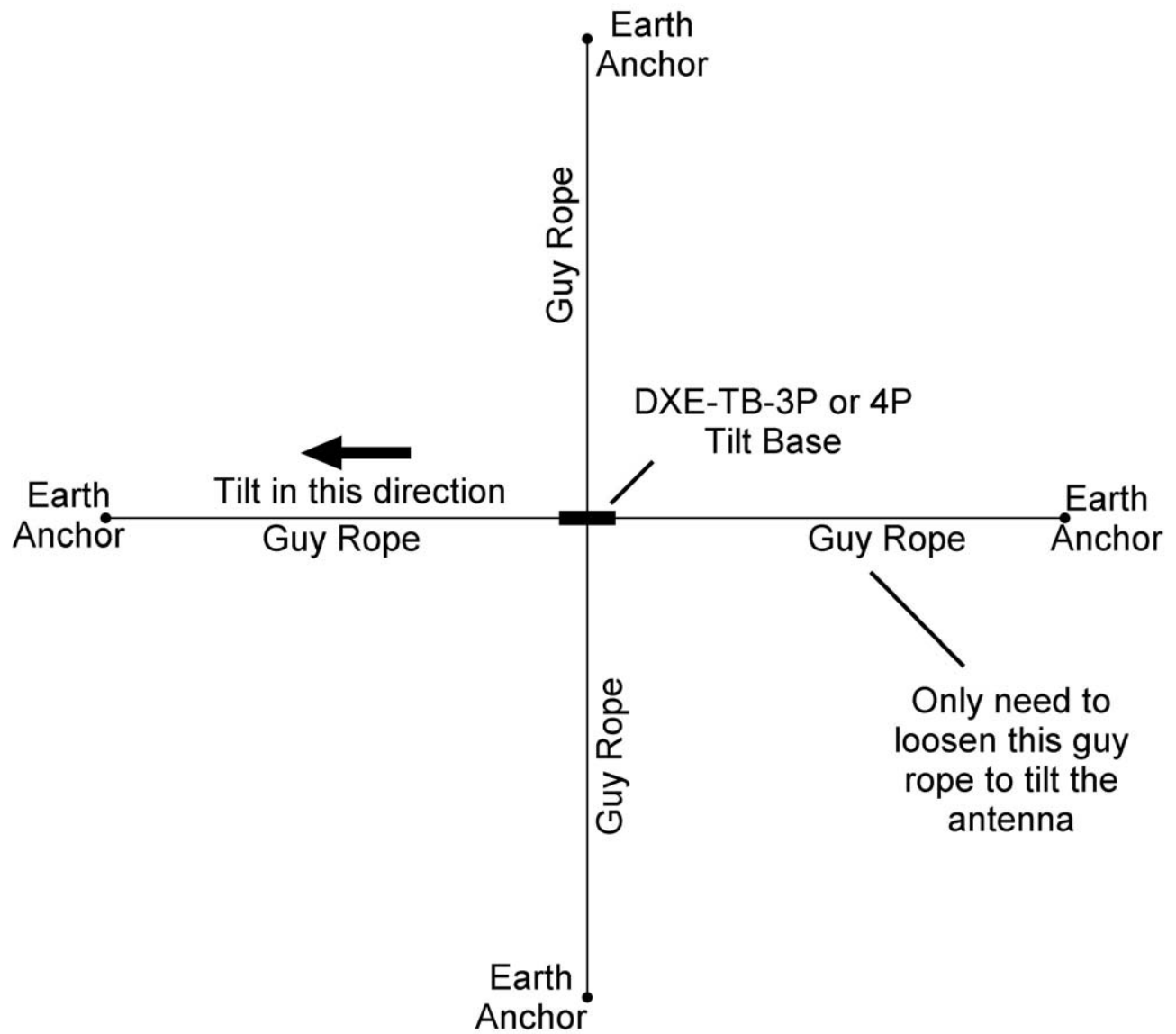


Typical No Slip Knot for **DXE-STI-DBR** Double-Braided Dacron Polyester Rope

**Figure 3**

**Suggested Guying for the DXE-ATK65**





**Figure 4**

Depending on your antenna system, additional or varied guying may be required.



# Optional Items

## **DXE-GUY1000-KIT Four Point, Three Level Guy Kit**

Some vertical manufactures indicate their antennas do not need guying. During times of high winds or ice loading however, some of these verticals may sustain damage or fail altogether. With the small amount of effort needed to install a four point guying system, the risk hardly seems worth taking. A four-point, three level guying scheme provides the best mechanical advantage to prevent wind stress, regardless of direction. The guying is intended for stability, and should never be depended on for primary support. The guying kit can also be used for other ground mounted masts or antennas. The guying kits are ideal for fixed or portable installations. Synthetic Textile Industries Double-braided Dacron/Polyester ropes are not weakened by decay or mildew and provide excellent resistance to abrasion. The color sealed black polyester yarn used in the braided jacket also protects the cord from damage due to ultra-violet light.

- 1000' spool
- 3/32" diameter rope
- Double-braided Dacron/Polyester rope
- Excellent resistance to abrasion
- NOT weakened by decay or mildew
- UV-Resistant
- Rated for a load of 260 lbs
- 4 Earth Anchors - 15" long with 3" Diameter Earth Screws



**STI Double-braided Polyester ropes are not intended and should not be used to guy towers.**

## **DXE-P8A - Penetrox A Anti-Oxidant - 8 oz Squeeze Bottle**

Use Penetrox A electrical joint compound to affect a substantial electrical connection between metal parts such as telescoping aluminum tubing or other antenna pieces. Assures high conductivity at all voltage levels by displacing moisture and preventing corrosion or oxidation.

For Aluminum to Aluminum, Aluminum to Copper or bare conductors.

Not recommended for use with rubber or polyethylene insulated wire.

- 8 oz. squeeze bottle\*

**\* This product is limited to domestic UPS Ground shipping only**



## **DXE-81343, NSBT8 - Anti-Seize & Never-Seez**

An Anti-seize compound **MUST** be used on any Stainless Steel nuts, bolts, clamps or other hardware to prevent galling and thread seizure. Any of these products can be used for this purpose.

*DXE-81343	Anti-Seize, 1 oz. Squeeze Tube
*DXE-81464	Anti-Seize, 8.5 oz. Aerosol Can
*DXE-NSBT8	Never-Seez, 8 oz. Brush Top
*DXE-NMBT8	Never-Seez, 8 oz. Brush Top, Marine Grade

**\* These products are limited to domestic UPS Ground shipping only**



## **DXE-22166 - Slim Grip Deburring Tool**

This Slim-Grip deburring tool allows quick and easy removal of burrs left after cutting or slitting aluminum tubing. Useful for most other deburring applications involving aluminum or steel.

- Slim-Grip design allows deburring in hard-to-reach locations.
- Consists of one replaceable blade, handle and pocket clip.
- Blades can be easily inserted and removed.
- DXE-22110 Replacement Blades for aluminum and steel available in packs of 10



## **DXE-22600 - Deburring Tool with Extending Handle and 2 Blades**

Handy for cleaning burrs after cutting or drilling aluminum or steel. This rugged hand tool features an adjustable length blade holder to allow access to burrs deep inside tubing or other hard to reach places. Extremely versatile and handy.

- Includes one blade for aluminum and steel and one blade for cast iron and brass.
- Holder telescopes from 1/2" to 5" for long reach inside objects.
- Handle has storage compartment for spare blades.
- Blade can be inserted at 90° for deburring cross holes.



**DXE-SAD-200A - 2 in. Saddle Clamp, Stainless 5/16 in. U-Bolt & Hardware**

These Saddle Clamps are made in sizes that fit thick wall tubing, used in antenna construction not like clamps found at your typical automotive sources. The supplied U-bolt is long enough to attach tubing to thick plates and is made with anti-corrosive properties and will grip securely to the tubing.

U-Bolt thread dimensions: 5/16"-18 x 1.12

- Specifically designed for antenna usage, max. surface contact to prevent slippage.
- Saddle cast from 535 aluminum for good surface adhesion and high strength.
- U-bolt made from 18-8\* stainless steel for added strength and excellent corrosion resistant.



**DXE-CAVS-1P - V-Bolt Saddle Clamp, 1/2 in. to 1-3/4 in. O.D. Applications**

This V-Bolt Clamp is made in one size that fits tubing from 1/2 to 1-3/4" O.D. as used in antenna construction. The supplied V-bolt is long enough to attach tubing to thick plates and is made with anti-corrosive properties. The as-cast rippled surface of the saddle will clamp the tubing securely to a flat surface; however, for high-torque applications please use our standard U-bolt Saddle Clamps.

- Used to clamp 1/2 to 1-3/4" (O.D.) tubing
- Designed for attachments that don't require resistance to torque
- V-bolt made from high-strength 18-8\* stainless steel
- V-saddle cast from 535 aluminum with rippled surface



**DXE-CAVS-2P - V-Bolt Saddle Clamp, 1 to 2 in. O.D. Applications**

This V-Bolt Clamp is made in one size that fits tubing from 1 to 2" O.D. as used in antenna construction. The supplied V-bolt is long enough to attach tubing to thick plates and is made with anti-corrosive properties.

The as-cast rippled surface of the saddle will clamp the tubing securely to a flat surface; however, for high-torque applications please use our standard U-bolt Saddle Clamps.

- Used to clamp 1 to 2" (O.D.) tubing
- Designed for attachments that don't require resistance to torque
- V-bolt made from high-strength 18-8\* stainless steel
- V-saddle cast from 535 aluminum with rippled surface



The use of an anti-seize compound is HIGHLY recommended to achieve proper torque and prevent galling.

**Aluminum Tubing Type 6063 - 3 ft and 6 ft lengths**

New - DX Engineering Type 6063-T832 drawn - not extruded - HIGH STRENGTH aluminum tubing in 3 foot and 6 foot lengths. Rugged aluminum alloy 6063 is most commonly used for seamless structural tube and pipe. It is popular in structural use for both its high strength and great, long lasting appearance. Alloy 6063 provides great resistance to general corrosion, including resistance to stress-corrosion cracking. With excellent surface appearance, 6063 is the best alloy for high strength, long lasting antenna applications.



6 Ft Lengths Part umber DXE-AT-	6 Ft Lengths Weight each lb	3 Ft Lengths Part Number DXE-AT-	3 Ft Lengths Weight each lb	OD Size Inches	OD Size Inches	Wall Inches	Slit
1189	0.402	1240	0.200	0.375	3/8	.058	n
1205	0.576	1241	0.286	0.500	1/2	.058	y
1206	0.714	1242	0.356	0.625	5/8	.058	y
1207	0.864	1243	0.428	0.750	3/4	.058	y
1208	1.042	1244	0.516	0.875	7/8	.058	y
1209	1.188	1245	0.612	1.000	1	.058	y
1210	1.304	1246	0.644	1.125	1-1/8	.058	y
1211	1.486	1247	0.736	1.250	1-1/4	.058	y
1212	1.556	1248	0.784	1.375	1-3/8	.058	y
1213	1.868	1249	0.936	1.500	1-1/2	.058	y
1214	1.918	1250	0.960	1.625	1-5/8	.058	y
1215	2.148	1251	1.082	1.750	1-3/4	.058	y
1216	2.276	1252	1.132	1.875	1-7/8	.058	y
1217	2.502	1253	1.248	2.000	2	.058	y
1204	5.136	1255	2.562	2.000	2	.125	n
1218	2.680	1254	1.340	2.125	2-1/8	.058	y

### **DXE-VA-BASE - Vertical Antenna Tilt Base Assembly, Heavy Duty**

For heavy duty applications, the **DXE-VA-BASE** Insulated Vertical Antenna Base with its supplied laser cut stainless steel Tilt Base, and complete stainless steel hardware package is intended to support a 2 inch OD antenna base section in a vertical position and to allow tilting for easy maintenance or tuning. The **DXE-VA-BASE** is designed for vertical antennas that exceed 30-35 feet. The **DXE-VA-BASE** consists of a unique reinforced fiberglass insulating channel which has twice the strength of commonly used nylon and other insulating materials. It is fastened with stainless steel hardware to a rugged 3/16 inch thick stainless steel laser cut Tilt Base. With a DX Engineering Tilt Base, operators can raise or lower their vertical antenna in seconds while leaving the base plate securely attached to the mounting pipe or post. One person can service the antenna. No more climbing ladders or removing brackets. Easily make repairs, tune your vertical or lay your antenna down before bad weather hits. The Tilt Base may be bolted to a secure flat mounting surface, or to the recommended galvanized steel mounting pipe described in the installation instructions with two optional **DXE-CAVS-2P** V-Saddle clamps.



### **DXE-VE-BASE - Vertical Antenna Fixed Base Assembly**

The **DXE-VE-BASE** Insulated Vertical Antenna Base with its supplied 2 inch U-Bolt Saddle Clamps is intended to support a 2 inch OD antenna base section in a fixed vertical position.

For heavy duty applications, or if your antenna height will exceed 30-35 feet, the **DXE-VA-BASE** with its easy tilt-over mounting plate is recommended for ease of installation and lowering.

The **DXE-VE-BASE** consists of a unique reinforced fiberglass insulating channel which has twice the strength of commonly used nylon and other insulating materials. It is fastened with stainless steel hardware to a rugged 1/4 inch thick aluminum mounting plate. The aluminum mounting plate may be bolted to a secure flat mounting surface, or to the recommended galvanized steel mounting pipe (up to 1-3/4" O.D.) described in the installation instructions with two optional **DXE-CAVS-1P** V-Saddle clamps.



The tilt-over feature may be subsequently added by ordering the **DXE-TB-3P** Stainless Steel Tilt Base Assembly.

### **Tilt Base for Hustler BTV Antennas - DXE-TB-3P**

With a DX Engineering Tilt Base, operators can raise or lower their vertical antenna in seconds while leaving the base plate securely attached to the mounting pipe or post. One person can service the antenna—no more climbing ladders or removing brackets. Easily make repairs, tune your vertical or lay your antenna down before bad weather hits. Precision cut from 3/16 in. 304 Stainless Steel, this Tilt Base is virtually indestructible. Conveniently mounts to the same pipe or post that you use for the antenna and radial plate.

**Note:** If you are mounting your Tilt Base to a ground mounted pipe, an additional purchase of two saddle clamps is required to mount the Tilt Base to that pipe. Please consult the Tilt Base Diagram Manuals, or contact us directly for further info. The **CAVS-2P** clamp can be used with pipes from 1" to 2" O.D. or the **SAD-200A** can be used only with a 2 inch O.D. pipe.



## Element Clamps

Our Element Clamps are a marine grade clamp. High nickel alloy stainless steel meets the demands of severe corrosive environment.

- Band and Housing: 9/16" wide grade 300 stainless steel.
- Screw: 5/16" hex-head grade 300 stainless steel



DXE Part Number	Tube OD Size	Description
DXE-ECL-020	0.5"	Element Clamp for 1/2 in. and smaller tube
DXE-ECL-040	0.625"	Element Clamp for 5/8 in. tube
DXE-ECL-060	0.750", 0.875"	Element Clamp for 7/8 in. and 3/4 in. tube
DXE-ECL-10SS	1.000", 1.125"	Element Clamp for 1 in and 1-1/8 in. tube
DXE-ECL-12SS	1.250"	Element Clamp for 1-1/4 in. tube
DXE-ECL-16SS	1.375", 1.500"	Element Clamp for 1-3/8 & 1-1/2 in. tube
DXE-ECL-20SS	1.625", 1.750"	Element Clamp for 1-5/8 & 1-3/4 in. tube
DXE-ECL-24SS	1.875", 2.000"	Element Clamp for 1-7/8 & 2 in. tube
DXE-ECL-28SS	2.125", 2.250"	Element Clamp for 2-1/8 & 2-1/4 in. tube
DXE-ECL-32SS	2.375", 2.500"	Element Clamp for 2-3/8 and 2-1/2 in. tube
DXE-ECL-36SS	2.625", 2.750"	Element Clamp for 2-5/8 & 2-3/4 in. tube
DXE-ECL-40SS	2.875", 3.000"	Element Clamp for 2-7/8 & 3 in. tube
DXE-ECL-44SS	3.250"	Element Clamp for 3-1/4 in. max tube

## 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.

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