

5.0m COMMERCIAL ANTENNA  
KING POST MOUNT

# PATRIOT

## LIMITED TWELVE (12) MONTH WARRANTY

This PATRIOT ANTENNA equipment is warranted to be free from defects in material and workmanship under normal use and service. PATRIOT ANTENNA shall repair or replace defective equipment, at no charge, or at its option, refund the purchase price, if the equipment is returned to PATRIOT ANTENNA not more than twelve (12) months after shipment. Removal or reinstallation of equipment and its transportation shall not be at cost of PATRIOT ANTENNA except PATRIOT ANTENNA shall return repaired or replaced equipment freight prepaid.

This Warranty shall not apply to equipment which has been repaired or altered in any way so as to affect its stability or durability, or which has been subject to misuse, negligence or accident. This Warranty does not cover equipment which has been impaired by severe weather conditions such as excessive wind, ice, storms, lightning, or other natural occurrences over which PATRIOT ANTENNA has no control, and this Warranty shall not apply to equipment which has been operated or installed other than in accordance with the instructions furnished by PATRIOT ANTENNA.

Claimants under this Warranty shall present their claims along with the defective equipment to PATRIOT ANTENNA immediately upon failure. Noncompliance with any part of this claim procedure may invalidate this warranty in whole or in part.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER AGREEMENTS AND WARRANTIES, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY. PATRIOT ANTENNA DOES NOT AUTHORIZE ANY PERSON TO ASSUME FOR IT THE OBLIGATIONS CONTAINED IN THIS WARRANTY AND PATRIOT ANTENNA NEITHER ASSUMES NOR AUTHORIZES ANY REPRESENTATIVE OR OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE EQUIPMENT DELIVERED OR PROVIDED.

IN NO EVENT SHALL PATRIOT ANTENNA BE LIABLE FOR ANY LOSS OF PROFITS, LOSS OF USE, INTERRUPTION OF BUSINESS, OR INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY KIND.

In no event shall PATRIOT ANTENNA be liable for damages in an amount greater than the purchase price of the equipment.

Some states do not allow limitations on how long an implied warranty lasts, or allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

PATRIOT ANTENNA has the right to void the warranty when the antenna is installed by someone other than a certified installer.

Product Serial Number- \_\_\_\_\_

Date Purchased- \_\_\_\_\_

Patriot Antenna Systems

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Albion, MI 49224 USA

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## **IMPORTANT!!!**

INSTALLATION OF THIS PRODUCT SHOULD BE PERFORMED ONLY BY A PROFESSIONAL INSTALLER AND IS NOT RECOMMENDED FOR CONSUMER D.I.Y. (DO-IT-YOURSELF) INSTALLATIONS.

### **WATCH FOR WIRES!**

**Installation of this product near power lines is dangerous. For your own safety, follow these important safety rules.**

1. Perform as many functions as possible on the ground.
2. Watch out for overhead power lines. Check the distance to the power lines before starting installation. We recommend you stay a minimum of 6 meters (20 feet) from all power lines.
3. Do not use metal ladders.
4. Do not install antenna or mast assembly on a windy day.
5. If you start to drop antenna or mast assembly, get away from it and let it fall.
6. If any part of the antenna or mast assembly comes in contact with a power line, call your local power company. **DO NOT TRY TO REMOVE IT YOURSELF!** They will remove it safely.
7. Make sure that the mast assembly is properly grounded.

### **WARNING**

Assembling dish antennas on windy days can be dangerous. Because of the antenna surface, even slight winds create strong forces. For example, a 1.0m antenna facing a wind of 32 km/h (20 mph) can undergo forces of 269 N (60 lbs.). Be prepared to safely handle these forces at unexpected moments. Do not attempt to assemble, move or mount dish on windy days or serious, even fatal accidents may occur. PATRIOT ANTENNA SYSTEMS is not responsible or liable for damage or injury resulting from antenna installations.

### **WARNING**

Antennas improperly installed or installed to an inadequate structure are very susceptible to wind damage. This damage can be very serious or even life threatening. The owner and installer assumes full responsibility that the installation is structurally sound to support all loads (weight, wind & ice) and properly sealed against leaks. PATRIOT ANTENNA SYSTEMS will not accept liability for any damage caused by a satellite system due to the many unknown variable applications.

## **Introduction**

Thank you for purchasing your Patriot Commercial Antenna. We trust that you will find this to be a well designed product that will provide many years of reliable service. Please read this manual thoroughly before beginning assembly. For best results in the assembly process, perform each step in the same sequence as listed in this manual. Record the serial number of the unit on page two for future reference and read the warranty information. The serial number plate can be found on the pedestal mount.

## **Unpacking and Inspection**

Shipping cartons should be unpacked and contents checked for damaged or missing parts. Should there be any parts that are damaged or missing, please contact technical support for replacement.

## **Site Selection**

The main objective of conducting a site survey utilizing a compass and inclinometer is to choose a mounting location on the ground that will give you the greatest amount of swing for azimuth and elevation for present as well as future use. A thorough pre-installation site survey is strongly recommended because it can alert you to any "look angle", soil, wind or other problems.

The first and most important consideration when choosing a prospective antenna site is whether or not the area can provide an acceptable "look angle" to the satellite. A site with a clear, unobstructed view facing south, southeast is required. Your antenna site must be selected in advance so that you will be able to receive the strongest signal available. Also consider obstructions that may occur in the future such as the growth of trees.

It is important to conduct an on-site survey with a portable antenna or with a compass and clinometer to avoid interference, obstructions, etc.

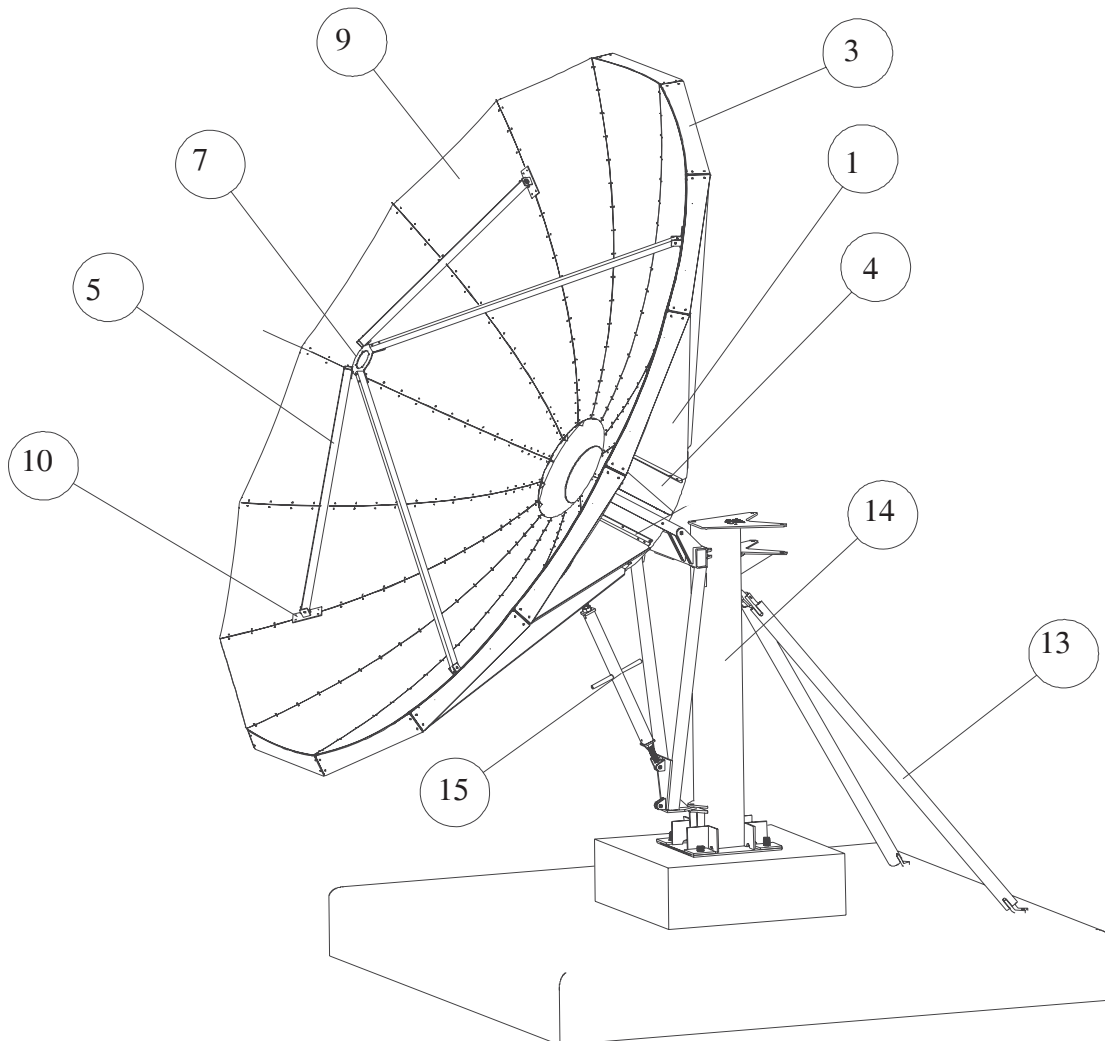
When selecting "look angle", be sure to observe and take readings approximately 10 deg to the left and right, above and below your selected "look angle".

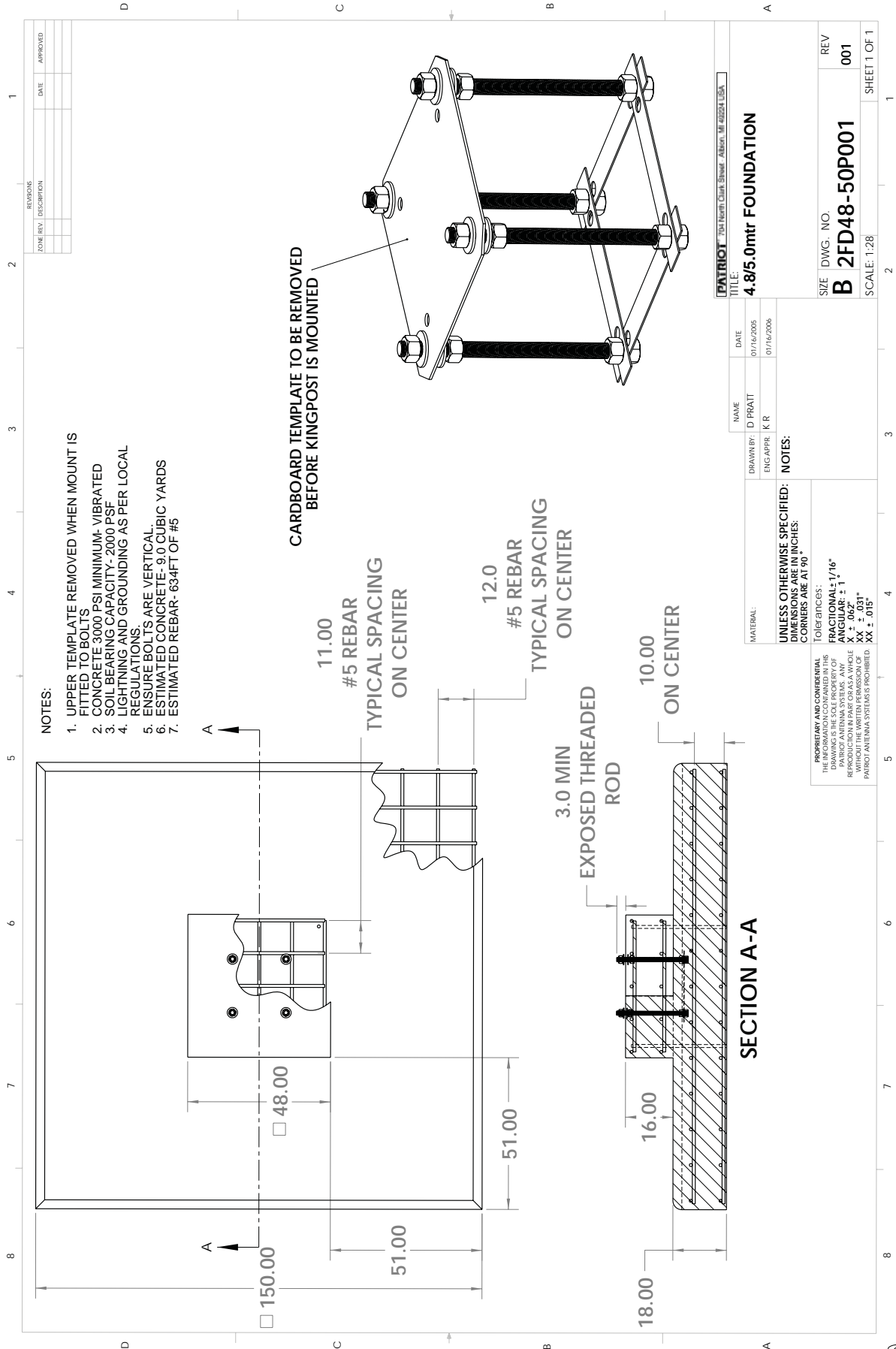
Before Ground Pole Installation, the soil type should be checked because soil conditions vary widely in composition and load bearing capacity. A soil check will help you to determine the type and size of foundation required to provide a stable base for the antenna.

Before digging is done, information regarding the possibility of underground telephone lines, power lines, storm drains, etc., in the excavation area should be obtained from the appropriate agency.

As with any other type of construction, a local building permit may be required before installing an antenna. It is the property owner's responsibility to obtain any and all permits. Ground mounts are certified for 125 mph wind survival.

ITEM NO	DESCRIPTION	PART #	REV	QTY
1	ASSEM, RADIAL BEAM 5.0M	250001	000	14
3	ASSEM, 5.0M OUTBOARD SKIRT	250004	000	14
4	ASSY, 5.0M HUB	250007	000	1
5	TUBE, 5.0 FEED STRUT	250009	000	4
6	APLATE, 5.0 OUTBOARD SKIRT INSTALL	250010	000	1
7	PLATE, 5.0 FEED	250023	000	1
8	SPACER, 5.0 HUB ELEVATION (ZIP TIE TO HUB PICK-UP)	250024	000	2
9	PANEL, 5.0M PRIME	250100	000	14
10	ASSEM, 6.3/7.5 FEED ANCHOR FOOT	263007	000	4
11	5.0M MASTER HARDWARE KIT	3HP-PRT500AZKP	001	1
12	PAINT, OFF WHITE TOUCH UP, 8 OZ.	4M9055	000	1
13.	ASSY, 5.0m MAST STRUT	250111	000	2
14.	MOUNT, 4.5/3.8m KINGPOST	PRT-KING450	001	1
15.	ASSY, 4.5 TURNBUCKLE	245002	000	1





**NOTES:**

1. UPPER TEMPLATE REMOVED WHEN MOUNT IS FITTED TO BOLTS
2. CONCRETE 3000 PSI MINIMUM- VIBRATED
3. SOIL BEARING CAPACITY- 2000 PSF
4. LIGHTING AND GROUNDING AS PER LOCAL REGULATIONS
5. ENSURE BOLTS ARE VERTICAL
6. ESTIMATED CONCRETE- 9.0 CUBIC YARDS
7. ESTIMATED REBAR- 634FT OF #5

CARDBOARD TEMPLATE TO BE REMOVED BEFORE KINGPOST IS MOUNTED

11.00  
#5 REBAR  
TYPICAL SPACING  
ON CENTER

12.0  
#5 REBAR  
TYPICAL SPACING  
ON CENTER

3.0 MIN  
EXPOSED THREADED  
ROD  
ON CENTER

**SECTION A-A**

<b>PATRIOT™</b> 704 North Clark Street, Auburn, WI 42224, USA	
<b>TITLE:</b> <b>4.8/5.0mtr FOUNDATION</b>	<b>DATE:</b> 01/16/2005
<b>NAME:</b> D PRATT	<b>DATE:</b> 01/16/2006
<b>DRAWN BY:</b> K R	<b>ENG APPR:</b> K R
<b>MATERIAL:</b> UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES: CORNERS ARE AT 90°	
<b>TOLERANCES:</b> FRACTIONAL: ± 1/16" ANGULAR: ± 1° XX: ± .062" XXX: ± .031" AX: ± .015"	
<b>PROPRIETARY AND CONFIDENTIAL</b> THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF PATRIOT ANTENNA SYSTEMS. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF PATRIOT ANTENNA SYSTEMS IS PROHIBITED.	
<b>SIZE DWG. NO.</b> <b>B 2FD48-50P001</b>	<b>REV</b> <b>001</b>
<b>SCALE:</b> 1:28	<b>SHEET 1 OF 1</b>

## Mount Assembly- Fixed

1. With one set of nuts and washers in place on the pre-installed foundation studs, place the King Post assembly onto the foundation sliding the bottom plate on to the threaded studs pointing the "A-frame" assembly of the mount in the desired direction- south in the northern hemisphere, north in the southern hemisphere.

Tighten the nuts so that the square tube mast is relatively plumb.

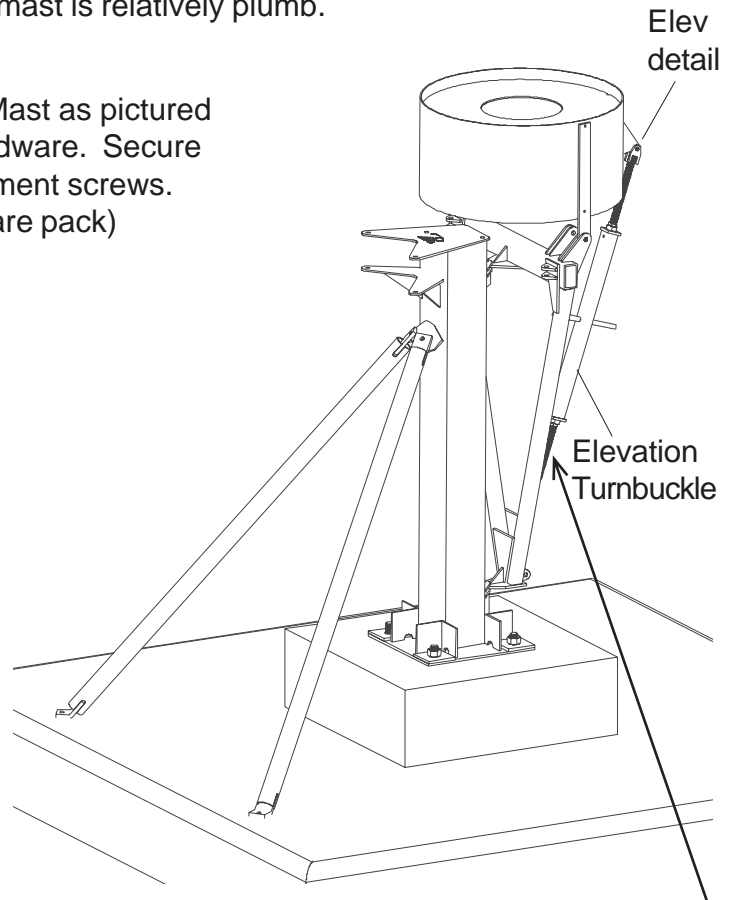
2. Attach the Mast Support to Kingpost Mast as pictured using 5/8ncx2" bolts and matching hardware. Secure support tubes to concrete pad with cement screws. (cement screws not included in hardware pack)

3. Assemble the Azimuth Lock down threaded rod, shown below to the main post clevis double nutting it with the pre-assembled washers and nuts. Attach the thru-hole end to the A-frame attachment details. Snug the Lock down bar hardware so the Hub assembly can be safely placed.

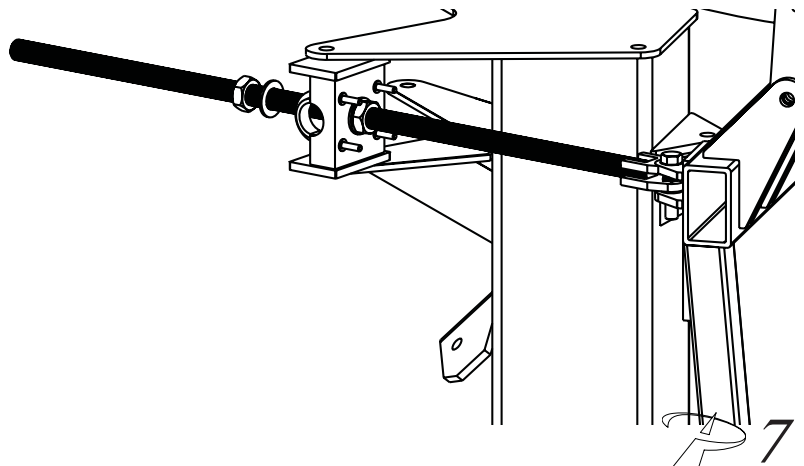
4. With 2 helpers place the Hub assembly in the zenith (bird bath) position on top of the King Post A-frame as shown using the preassembled hardware in place on the A-frame. (Note the position of the Elevation detail!!)

5. Assemble the elevation Turnbuckle as shown, and adjust it to position the Hub assembly in the upward "bird bath" position.

**NOTE: Attach turnbuckle to either the higher or lower attachment based on your elevation requirements.**



CLEAN AND GREASE THREADED ROD ON BOTH ENDS BEFORE ANY ADJUSTMENT WHEN THREADED RODS ARE EXPOSED



## Mount Assembly- Motorized

1. With one set of nuts and washers in place on the foundation studs, place the King Post assembly onto the foundation sliding the bottom plate on to the threaded studs pointing the "A-frame" assembly of the mount in the desired direction- south in the northern hemisphere, north in the southern hemisphere, plus the degree of rotation needed to track the arc.

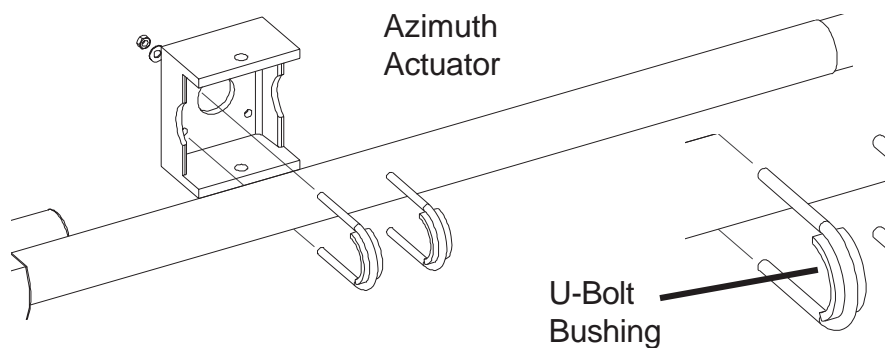
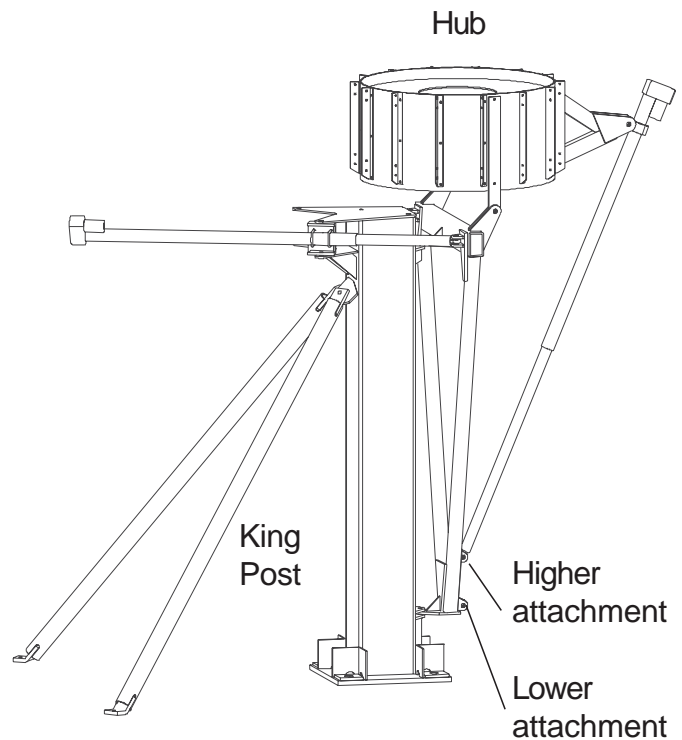
Tighten the nuts so that the square tube mast is relatively plumb.

2. Assemble the azimuth actuator to the main post and A-frame locking it into a steady position so the Hub assembly can be safely placed.

3. With 2 helpers place the hub assembly in the zenith (bird bath) position on top of the King Post A-frame as shown using the preassembled hardware in place on the A-frame. (Note the position of the Elevation detail!!)

4. Assemble the elevation actuator as shown, and adjust it to position the Hub assembly in the upward "bird bath" position.

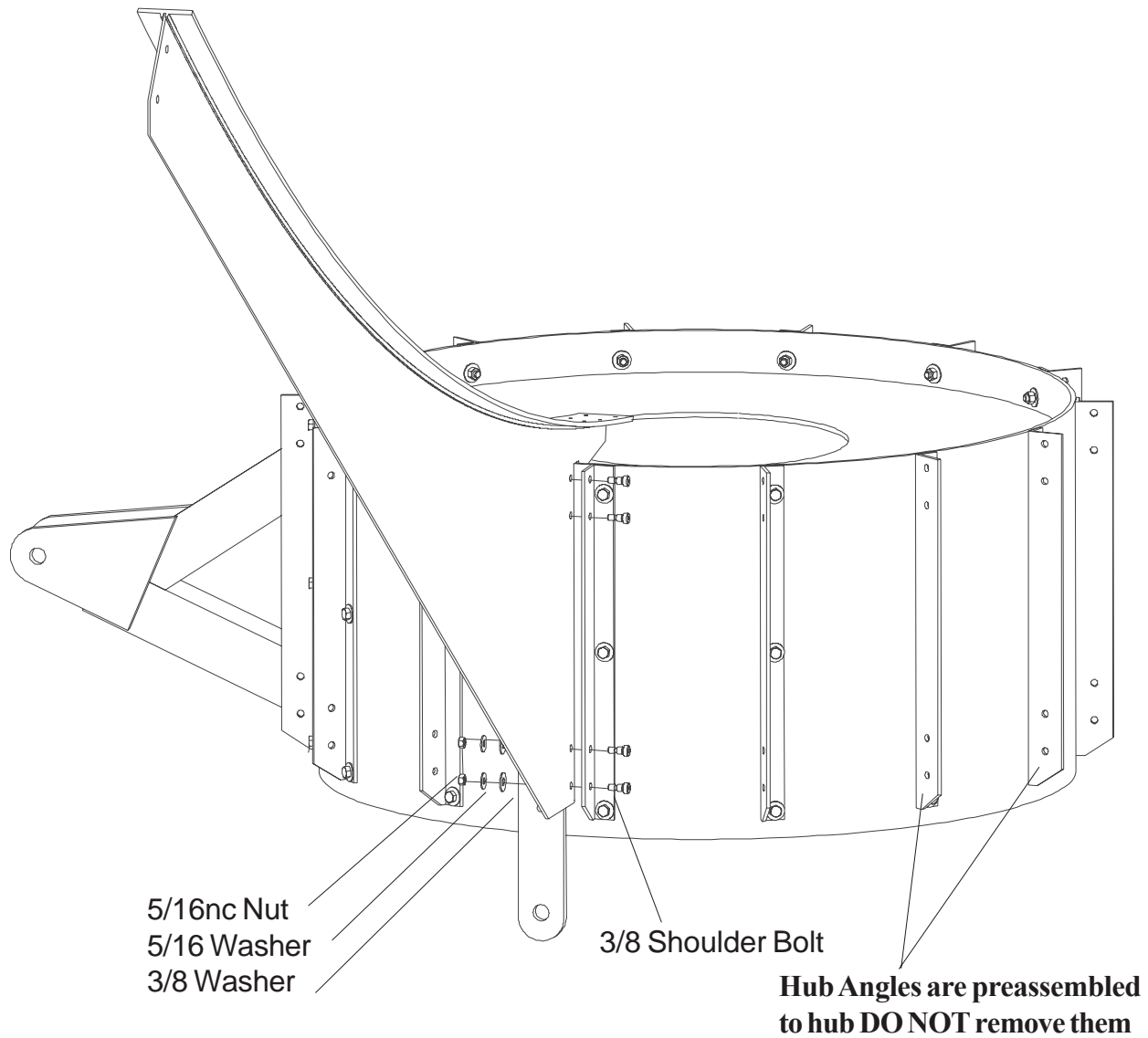
**NOTE: Attach turnbuckle to either the higher or lower attachment based on your elevation requirements.**





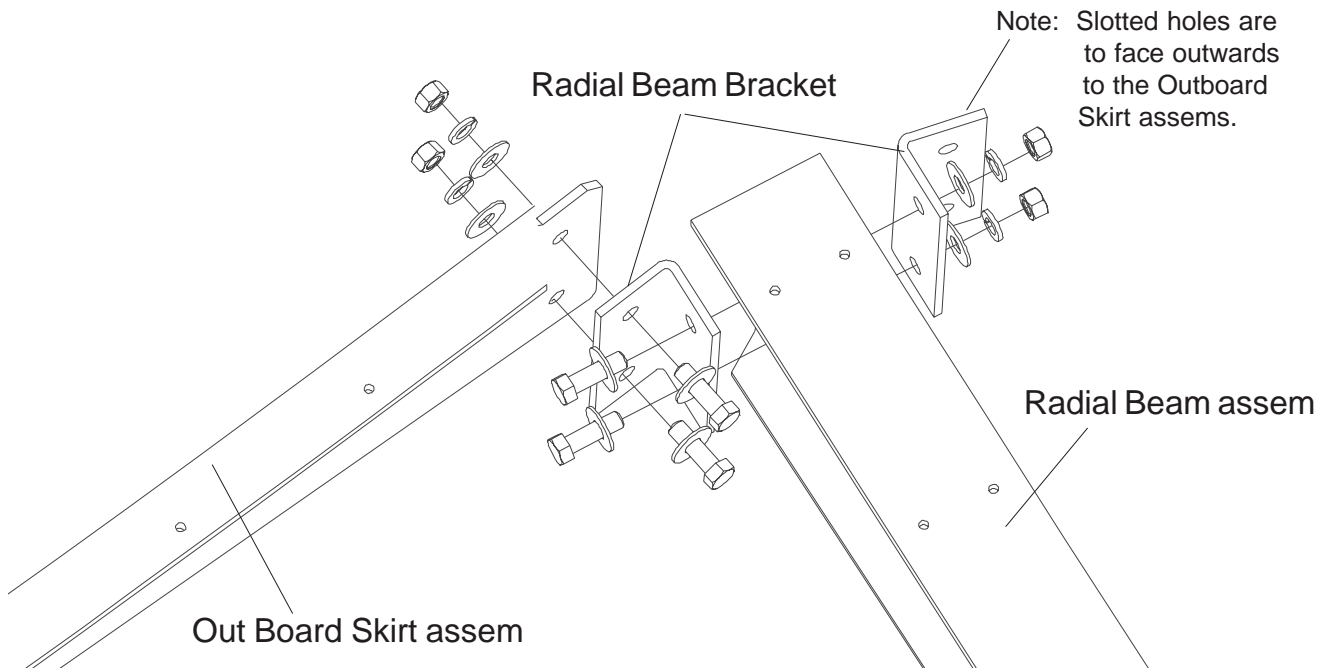
## Reflector Assembly

1. Attach Radial Beams to Hub Angles as pictured using 3/8" shoulder bolts and matching hardware. Make sure the Radial Beam is attached to the OUTSIDE of Hub Angle.

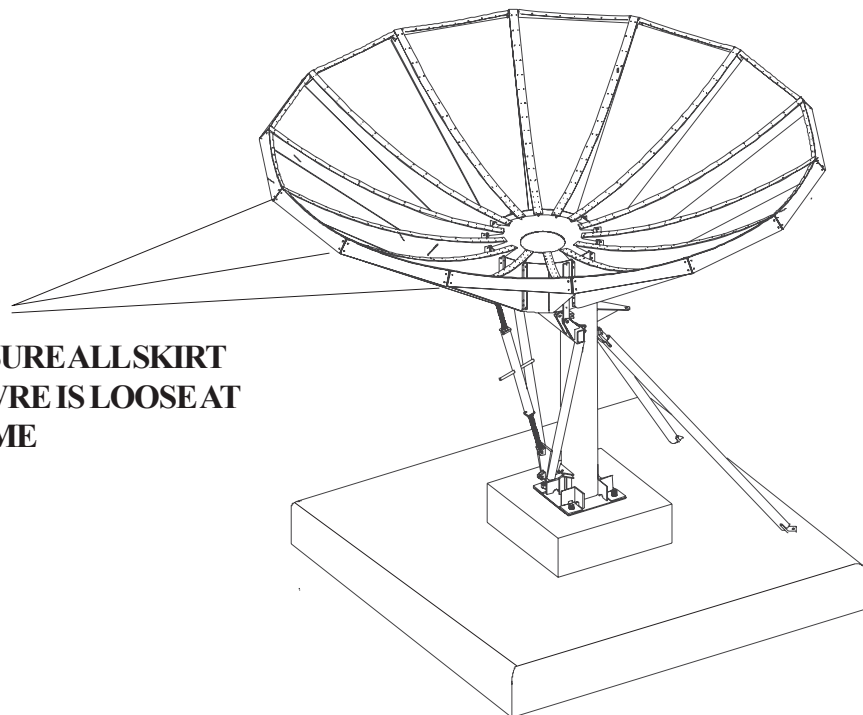


## Reflector Assembly Continued

3. Assemble the Out Board Skirt to the Radial Beam using Radial Beam Brackets as pictured. Make sure hard ware is installed as pictured Leave loose at this time.

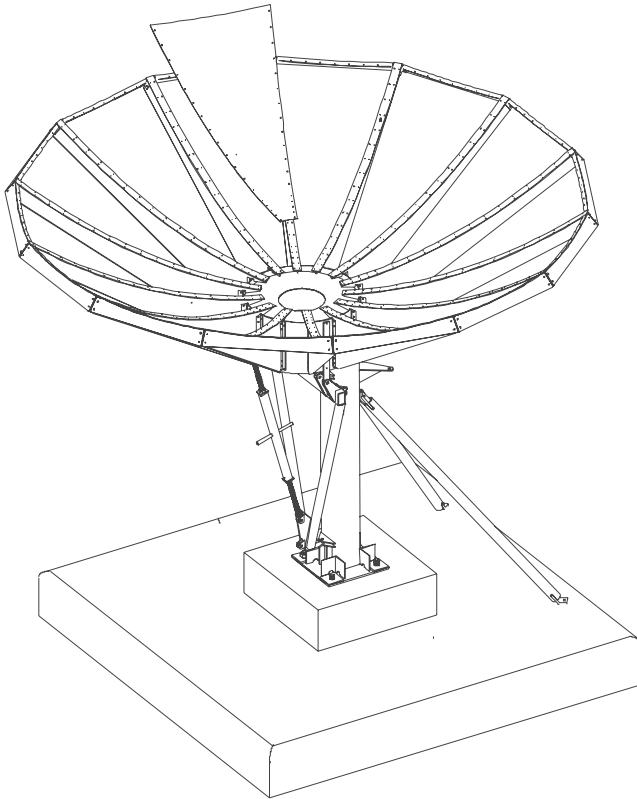


**NOTE:  
MAKE SURE ALL SKIRT  
HARDWARE IS LOOSE AT  
THIS TIME**



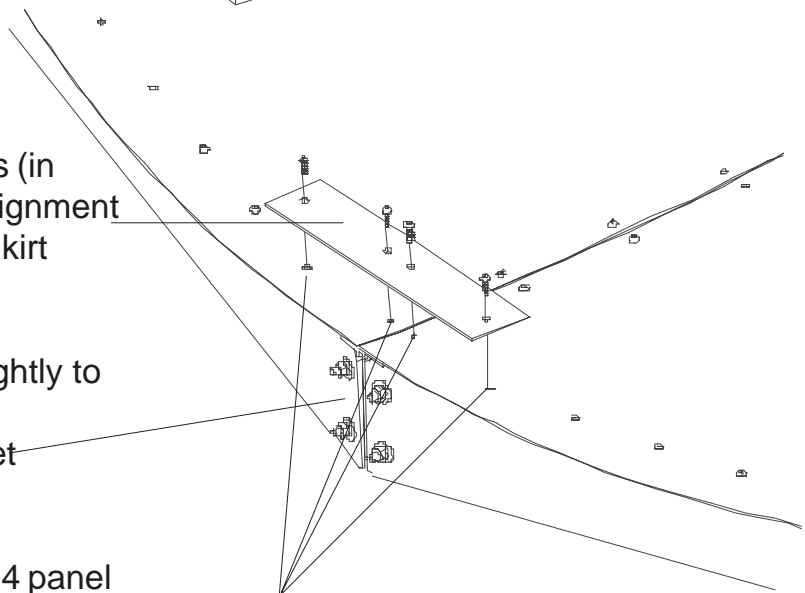
## Panel Assembly

1. Attach Panels to Radial Beams using 1/4-20x1/2 button head screws. Do not use screws in holes as pictured at this time. (see fig.1)  
(Make sure that when fastening Panels that all weight is supported on Radial Beams. Do not step in center of panel)



## Skirt Alignment

- 1) Using 1/4-20 X 3/4" panel screws (in Hardware bag 7) fasten Skirt Alignment Tool to Radial Beam and Outer Skirt Assemblies.
- 2) Once Skirt Alignment is fitted tightly to radial beam and skirt assems, tighten that sections skirt bracket hardware.
- 3) Remove tool and install remainig 4 panel bolts.
- 4) Repeat process on all panels



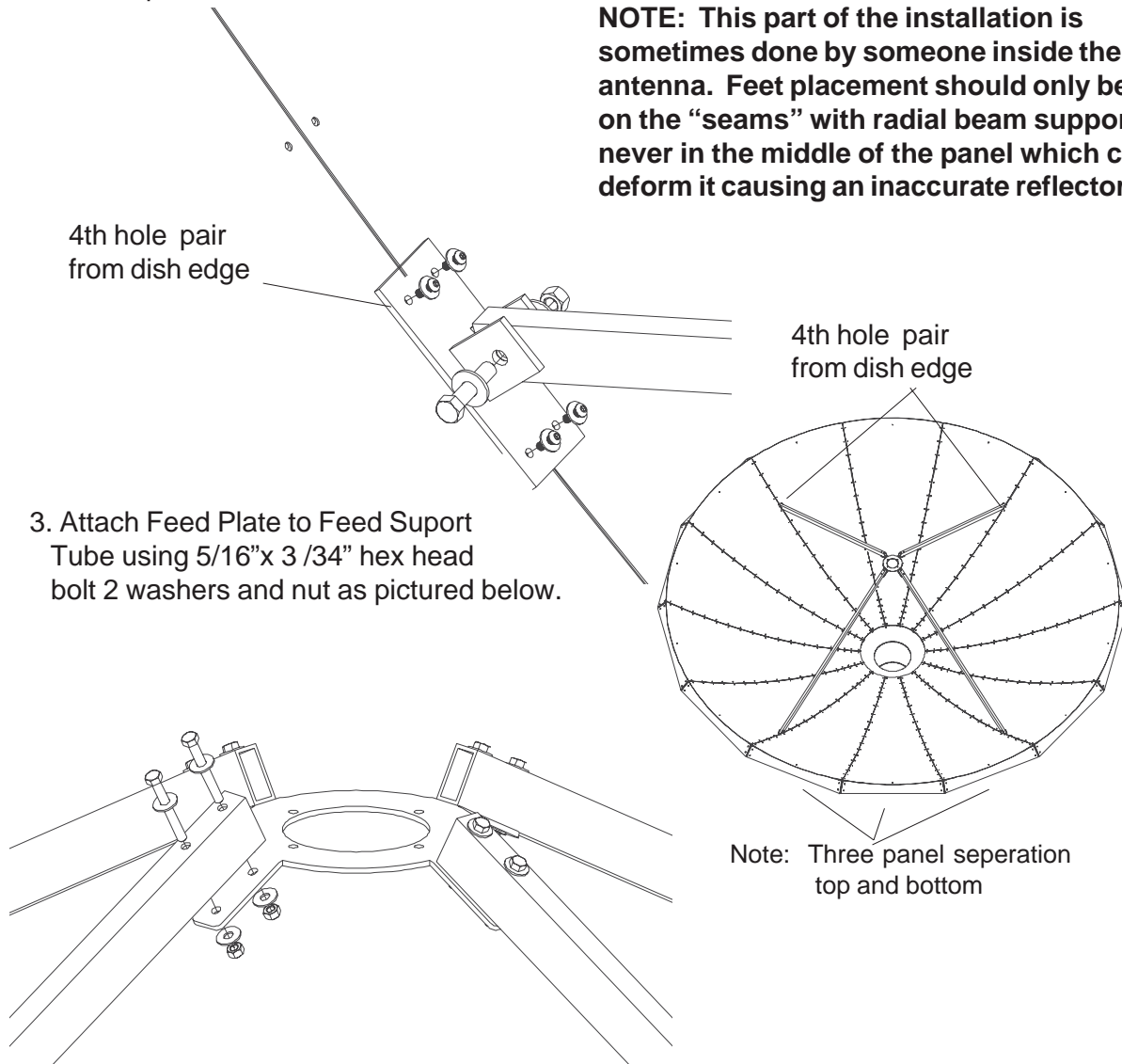
**Do not install Panel Screws here at this time per step one above**

**(Fig. 1)**

## Feed Support Assembly

1. Fasten Feed Clevis to panel using 1/4x3/4" button head screws and washers as pictured below. (Use fourth hole pair to secure clevis to radial beam.)
2. Attach Feed Support Tube to Feed Clevis using 1/2x2 1/4" hex head bolt two washers and a nut as pictured below.

**NOTE: This part of the installation is sometimes done by someone inside the antenna. Feet placement should only be on the "seams" with radial beam support, never in the middle of the panel which can deform it causing an inaccurate reflector!**



3. Attach Feed Plate to Feed Support Tube using 5/16"x 3/34" hex head bolt 2 washers and nut as pictured below.

Note: Three panel separation top and bottom

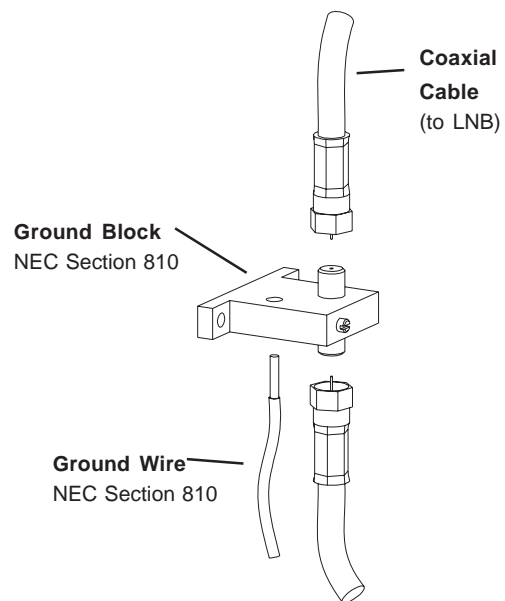
4. Check Focal Distance (64.32") after feed has been attached to feed plate

## Grounding

### Grounding Antenna Feed Cables

1. Ground antenna feed cables in accordance with current National Electric code and local electric codes. The illustration shows a typical grounding method.

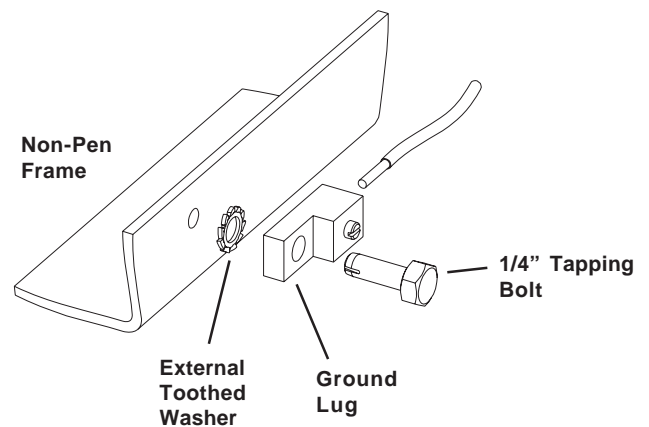
Clamps that provide a solid connection between ground wire and a ground source should be used.



### Grounding Non-Penetrating Mount Frame (if applicable)

1. Ground the Non-Penetrating mount frame. The illustration shows a typical grounding method.

Refer to the NEC Section 810 and local electric codes for specific instructions on grounding the remaining end of the ground wire.



### Antenna Pointing

- 1) Begin by obtaining the correct Az/EI pointing data for the satellite of interest based for your site location.
- 2) Using an inclinometer or position readout form controller placed on the enclosure drum surface, position the antenna to the specified elevation angle.
- 3) Manually scan the antenna (back-and-forth in the azimuth around the direction of the specified azimuth angle) to achieve the maximum transponder signal.
- 4) Next repeat the procedure for elevation.
- 5) Repeat this procedure alternating between the azimuth and elevation until maximum transponder signal is achieved.

## Windload Information

### Windload Imposed at 125 mph

Force on Dish - 12,805 lbs.  
Torque at Base of Mount- 21,908 ft. lbs.  
Overturning moment- 90,060 ft lbs.

Motorized King Post Operational Wind Load-	45mph to Gusts of 60mph
Fixed King Post Operational Wind Load-	60mph to Gusts of 85mph

***Note: For Windloads in excess of 80 mph on non-motorized installs, we recommend using a second azimuth lock down bar for stability (not supplied).***

### NOTES:



**Toll Free 1-800-470-3510**

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## Specifications

### **Electrical**

Gain Midband  
Efficiency  
3dB Beamwidth  
Avg 1st Side Lobe  
Cross Polarization  
VSWR (typ)  
Noise @ 30deg elevation

### **C-Band**

44.1 dBi  
60%  
1.0Deg  
-22dB  
>30dB  
1.3:1  
25K

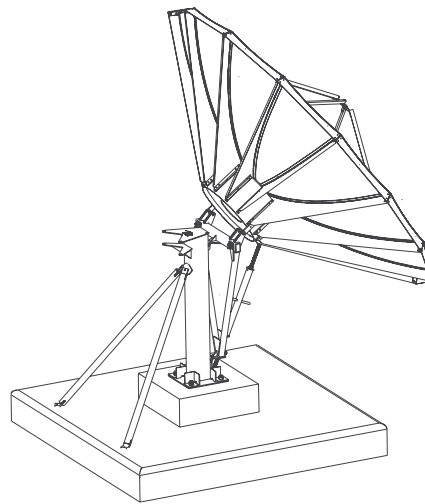
### **Ku-Band**

53.2 dBi  
60%  
.35Deg  
-22dB  
>30dB  
1.3:1  
35K

### **Mechanical**

Antenna Size  
Focal Distance  
F/D  
Operational Wind  
Survival Wind  
Operational Temp  
Rain  
  
Ice

5.0m (16.4")  
1.63m (64.32")  
.33  
50mph  
125mph (see wind spec. pg. 13)  
-40 to 140 F  
Operational = 1/2in./hr  
Survival = 3in./hr  
1 in. Radial -or-  
1/2 in. + 60mph wind



***PATRIOT ANTENNA SYSTEMS***  
***704 NORTH CLARK STREET***  
***ALBION, MICHIGAN 49224 USA***  
***WWW.SEPATRIOT.COM***