

1.8m Commercial Antenna
Navigator Mount-Motorized

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

704 North Clark Street

Albion, MI 49224 USA

Tel: (517)629-5990

Fax: (517)629-6690

E-mail: info@sepatriot.com

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.

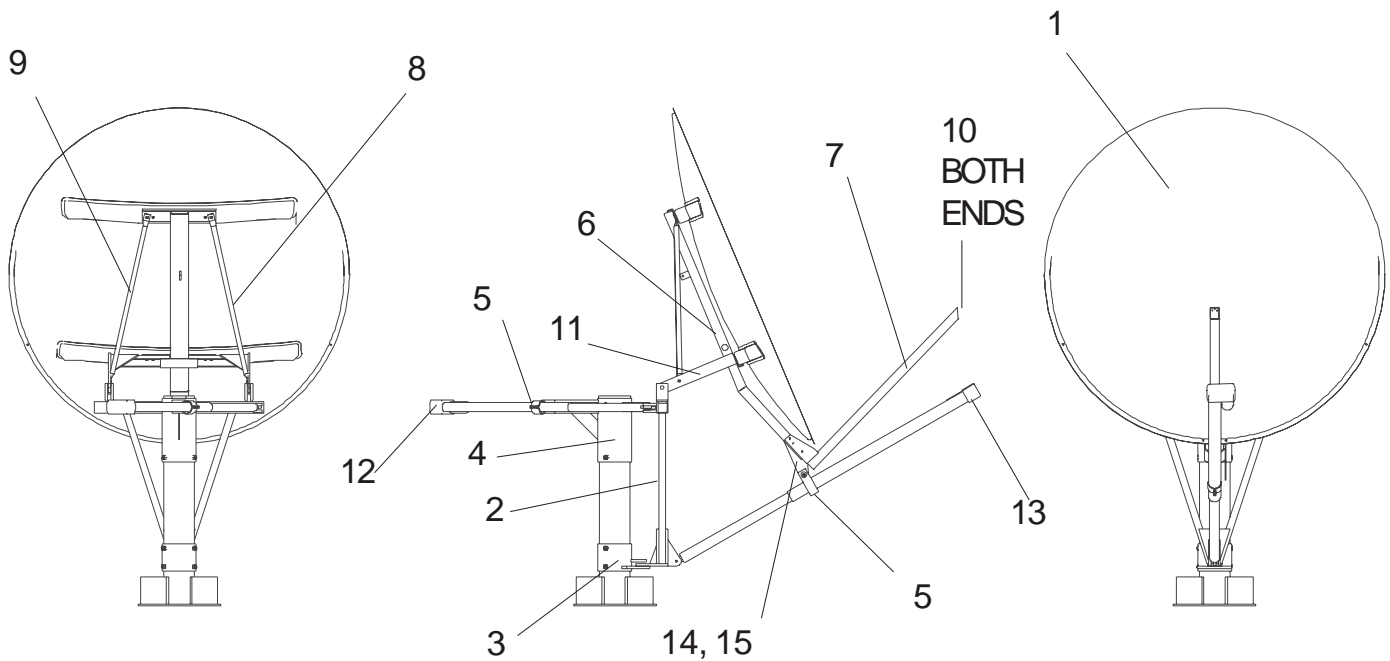
When selecting "look angle", be sure to observe and take readings approximately 10 deg to the left and right, above and below your selected "look angle".

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.

Part Description	Part Number	REV	Qt
1)1.8M TX, REFLECTOR STEEL GRAY	21800001	000	1
NAVIGATOR MOUNT COMPONENTS (PRT-NAV180)			
2) ASSEM, 3.8M NAV YOKE GALV	295047G	000	1
3) ASSEM, 3.8M NAV BTM COUPLING GALV	295031G	001	1
4) ASSEM, 3.8M NAV TOP COUPLER GALV	295032G	001	1
5) CLAMP,ACTUATOR KIT FOR THOMSON	TS-CLMP	000	2
1.8 METER NAVIGATOR KIT			
6) ASSY,1.8M TX BACK STRUCT NAV GALV	218002G	000	1
7) ASSY,1.8TX FEED SUPPORT GALV	218009G	000	1
8) TUBE, NAV ADAPT BRKT 1.8M OFFSET R	218OF0005	000	1
9) TUBE, NAV ADAPT BRKT 1.8M OFFSET L	218OF0006	000	1
10) CAP,2X2 PLASTIC TUBE	4M10010	000	2
11) ASSEM, NAV ADPT BRKT 1.8M WLDMT GAL	20000022G	000	1
12)THOMPSON ACTUATOR (24")	TS24BRL	000	1
13)THOMPSON ACTUATOR (36")	TS36BRC	000	1
14)SPACER, 1.8m NAV 1.44	295045	000	2
15)SPACER, 1.8m NAV .44	295046	000	2
16)BRACKET, 1.8m NAV ELEVATION	295044G	000	2

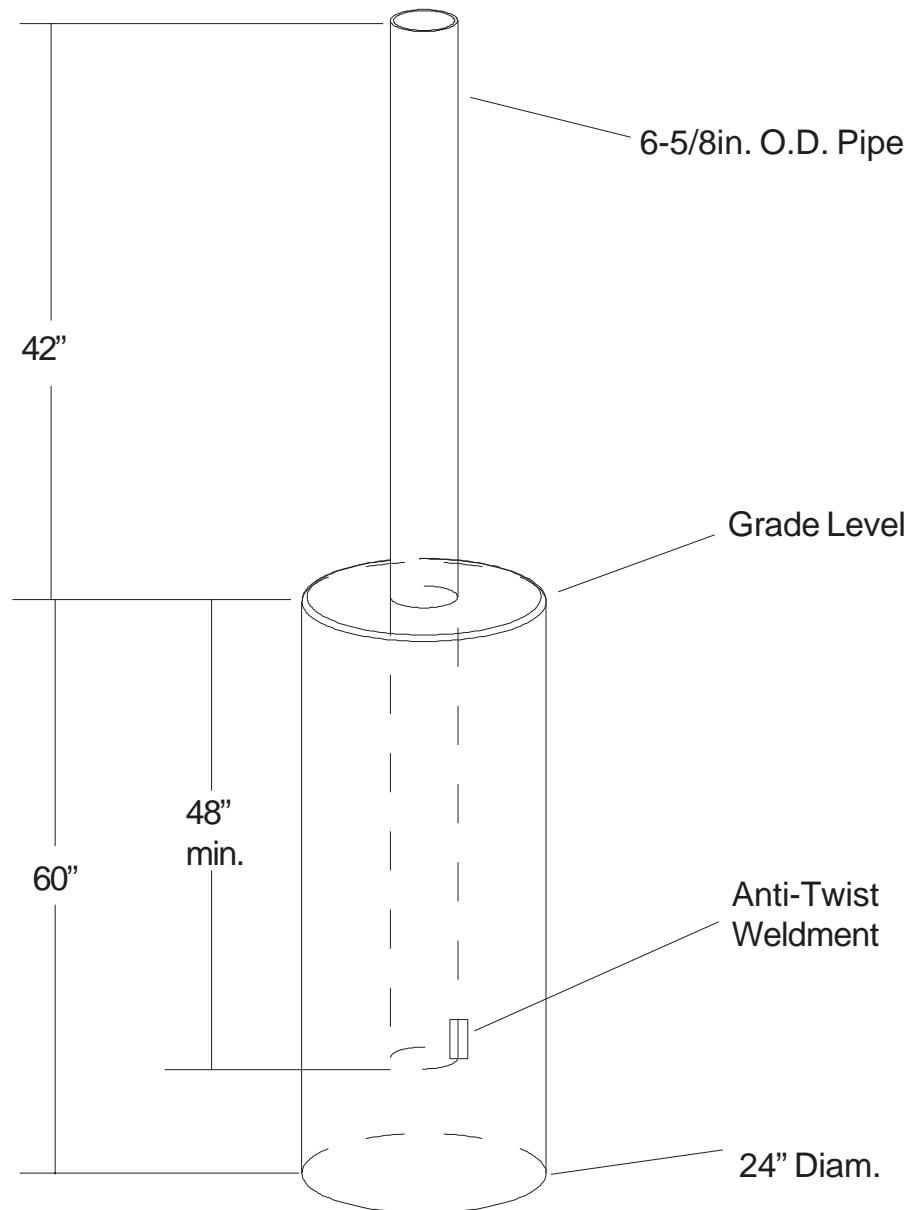


Tools Required

- 1- Combination wrench set (thru 3/4")
- 1- Adjustable wrench 12in
- 1- Ratchet/Allen inch socket set
- 1- Level
- 1- 8ft ladder

Note: A 3/8 inch drive socket set, a battery operated drill, and air tools can help speed up the installation.

In-Ground Mast Foundation



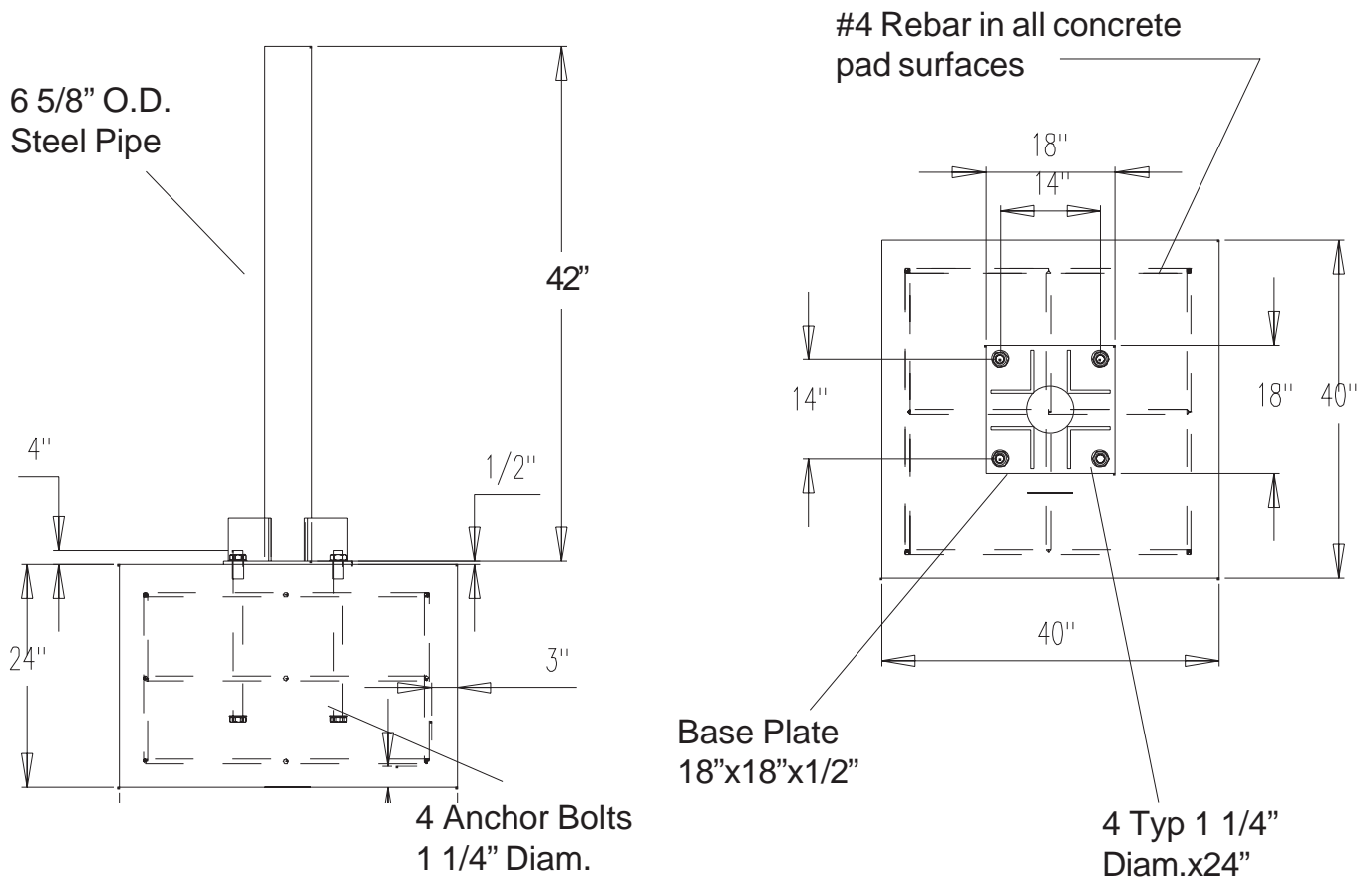
Foundation Requirements & Specifications:

- Steel Mast: 6" Schedule 80, L=120"; 6 5/8" O.D.
- Concrete: 3000 psi at 28 days, poured against undisturbed soil
(Allow concrete 24 hour set time before installation of antenna)
- Soil Bearing Capacity > 2000 psf.
- Ground the Antenna to meet applicable local Codes.

NOTE: Required space needed for Navigator is 42" minimum on pole above ground.

Mast Pipe(optional)

with Bolt & Template Kit



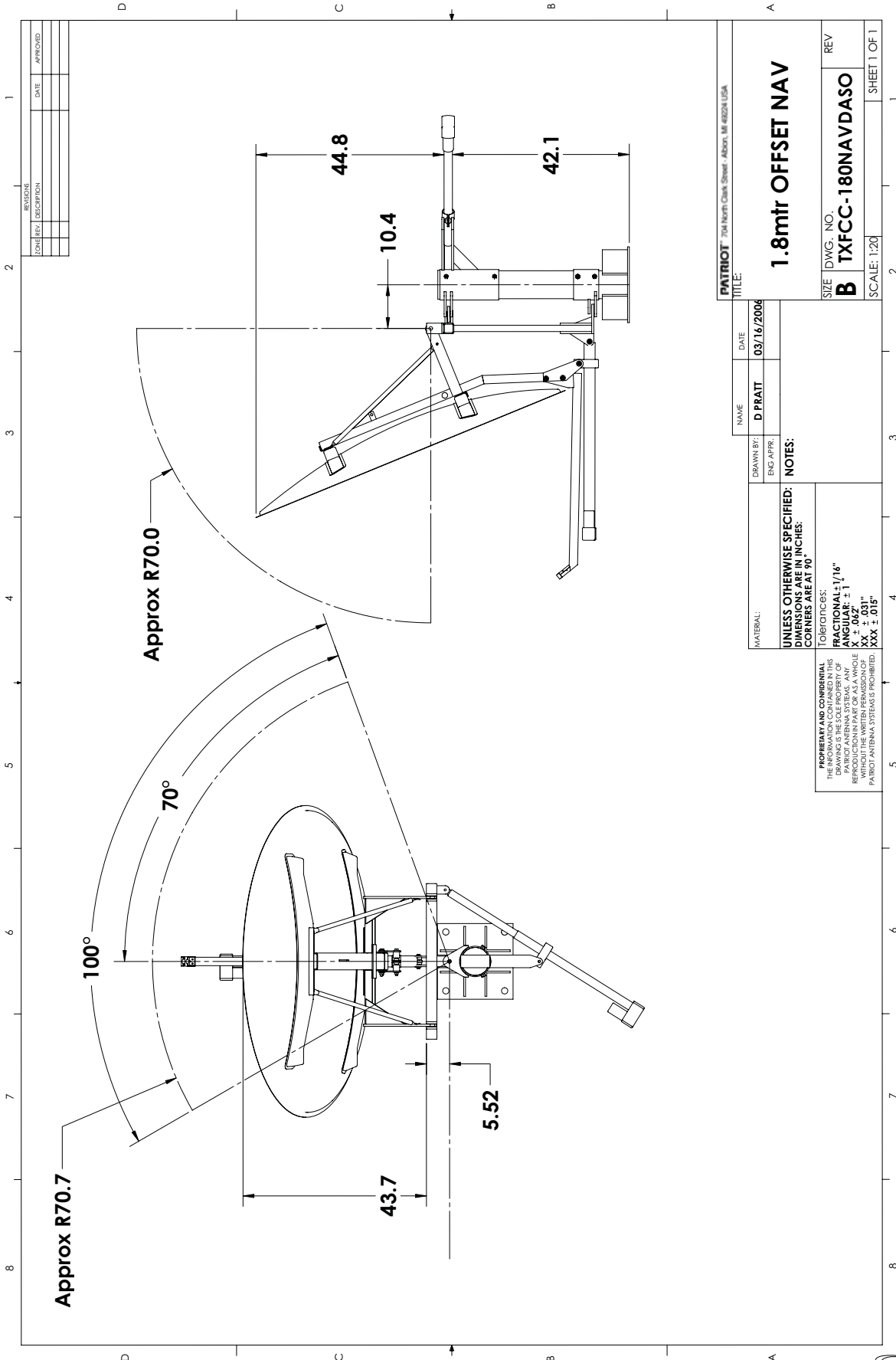
The Optional Kit Includes:

Schedule 40 (6-5/8" OD)
42" Mast Steel Pipe
18"x18"x1/2" Base Plate
with 14" Centered Holes
Reinforced Steel Angles for Support

(2) 18"x18" Templates
(4) 1-1/4x24" Threaded Rod (Bolts)
(8) 1-1/4" Nuts & Washers

Bolt and Template Kit with Pipe (On one skid) = 215 Lbs.

Note: See Foundation Requirements & Specifications on previous page.



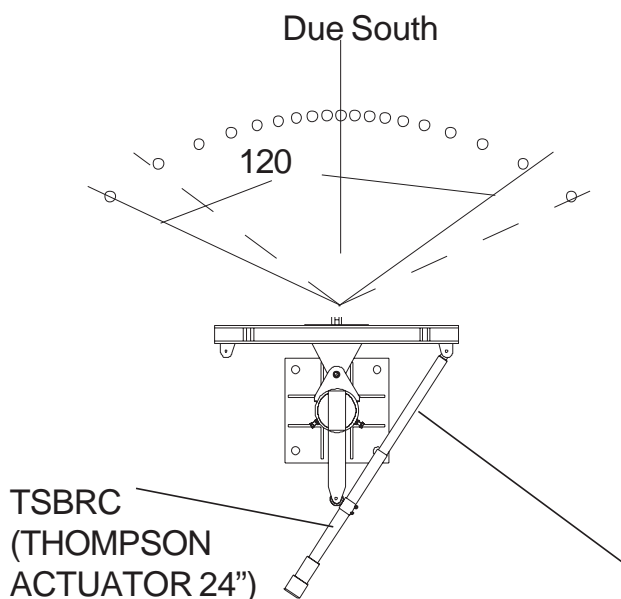
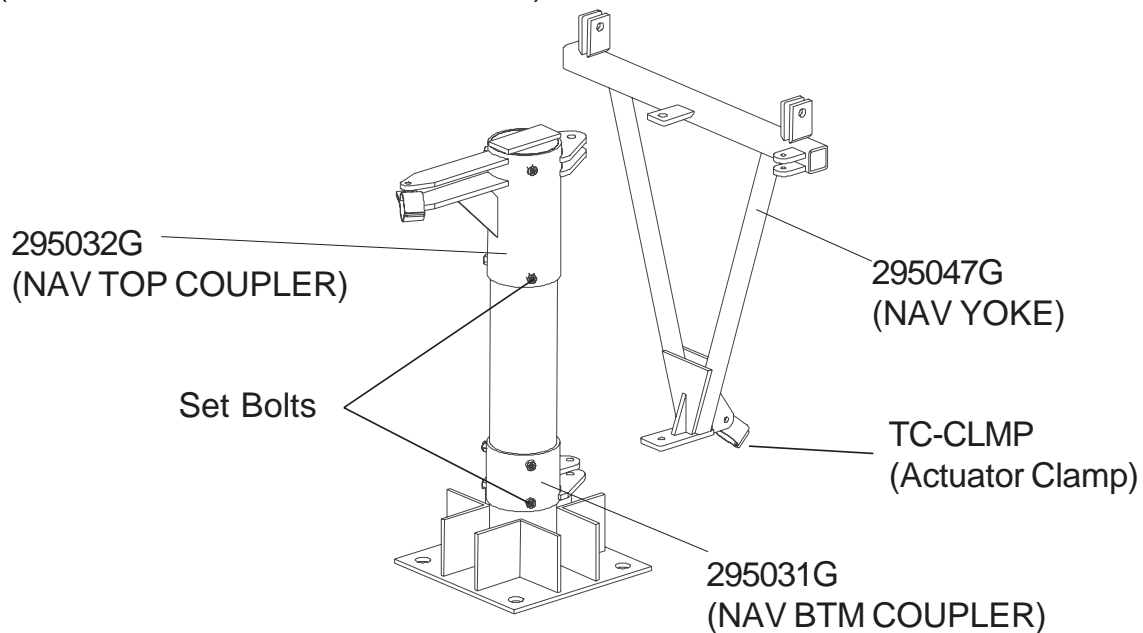
REV	DESCRIPTION	DATE	APPROVED

PATRIOT™ 704 North Clark Street - Auburn, MA 04204 USA		DATE	03/16/2006
TITLE:		NAME	D PRAIT
SIZE DWG. NO.		DRAWN BY:	D PRAIT
1.8mtr OFFSET NAV		ENG APPR:	
SCALE: 1:20		NOTES:	
SHEET 1 OF 1		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES. DIMENSIONS ARE AT 70°	
REV		TOLERANCES:	
B TXFCC-180NAVDASO		FRACTIONAL ± 1/16"	
		DECIMAL ± .001"	
		ANGLE ± .04°	
		HOLE ± .003"	
		XXX ± .015"	
		PARIOT ANTENNA SYSTEMS IS PROHIBITED.	

AP 8

Mount Assembly

1. Slide 295031G (NAV BTM COUPLER), and then 295032G (NAV TOP COUPLER) over the mast pipe as shown. Do not tighten the set bolts at this time.
 2. Attach 295047G (NAV YOKE) to 295032G (NAV TOP COUPLER) and 295031G (NAV BTM COUPLER) using pre-installed $\frac{3}{4}$ shoulder bolts and $\frac{5}{8}$ nuts.
 3. Carefully align 295031G with 295032G by means of "squaring" them with the 295047G (NAV YOKE) and then tighten the set bolts on the collars.
- NOTE: 295047G (NAV YOKE) (when pointing directly away and perpendicular to the collars) and collars should be initially aligned due south.
4. Remove TC-CLMP (Actuator Clamp), hardware and spacers from elevation pick up on NAV YOKE. (DO NOT DISCARD THESE ITEMS)



Align the mount for range of tracking.

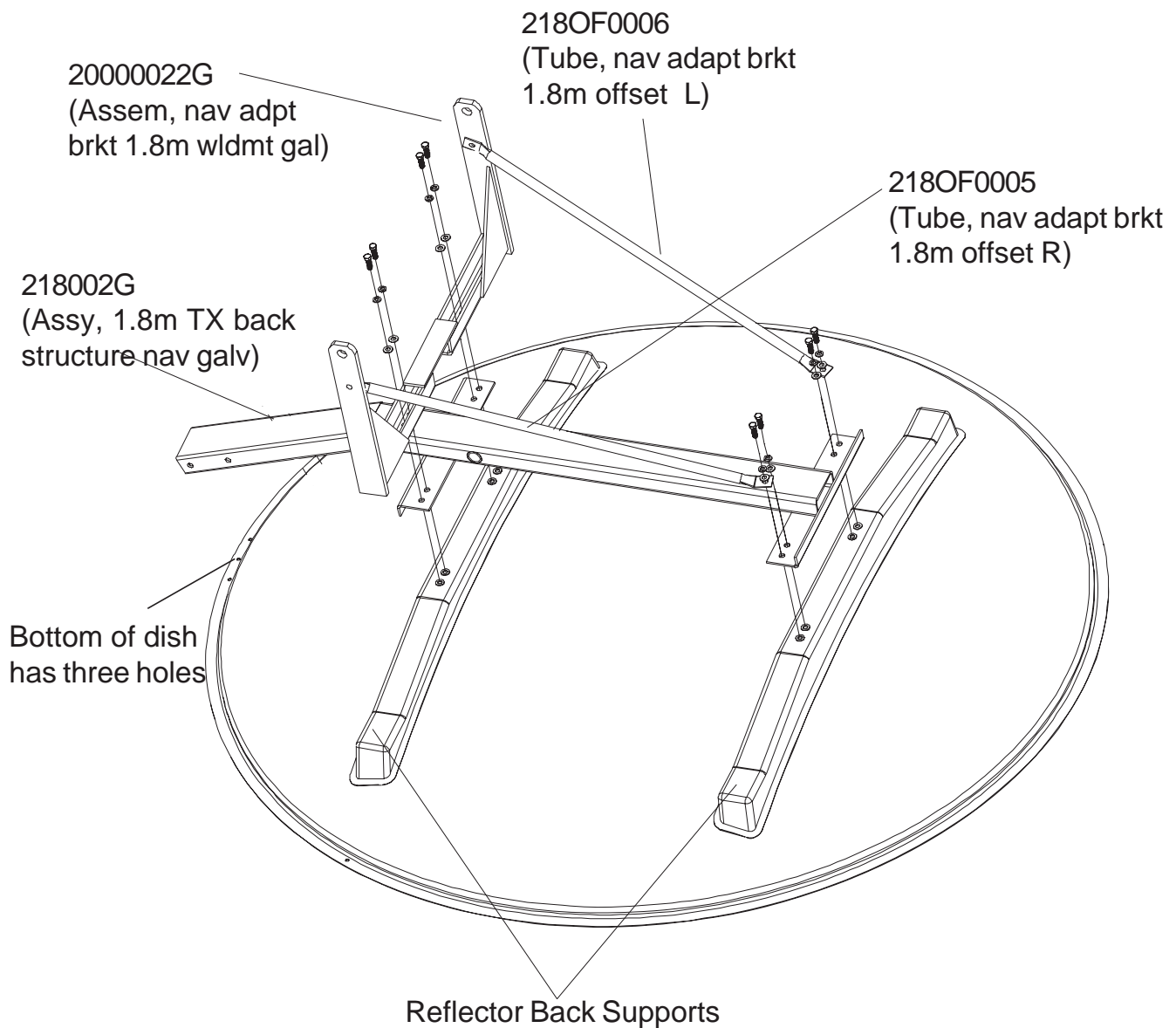
IMPORTANT INITIAL ALIGNMENT PROCEDURE. It is important that the drive system components be so aligned (with reference to east and west) to allow the antenna to be driven by the controller to the lowest satellite above horizon in either the east or the west as viewed from your location. Place the Actuator arm on this side of the mount. You may have to adjust off from due south while siting in later in the installation.

5. Install the Azimuth Actuator as shown.

SEE PAGE 15 FOR INSTALLATION INSTRUCTIONS

Reflector assembly

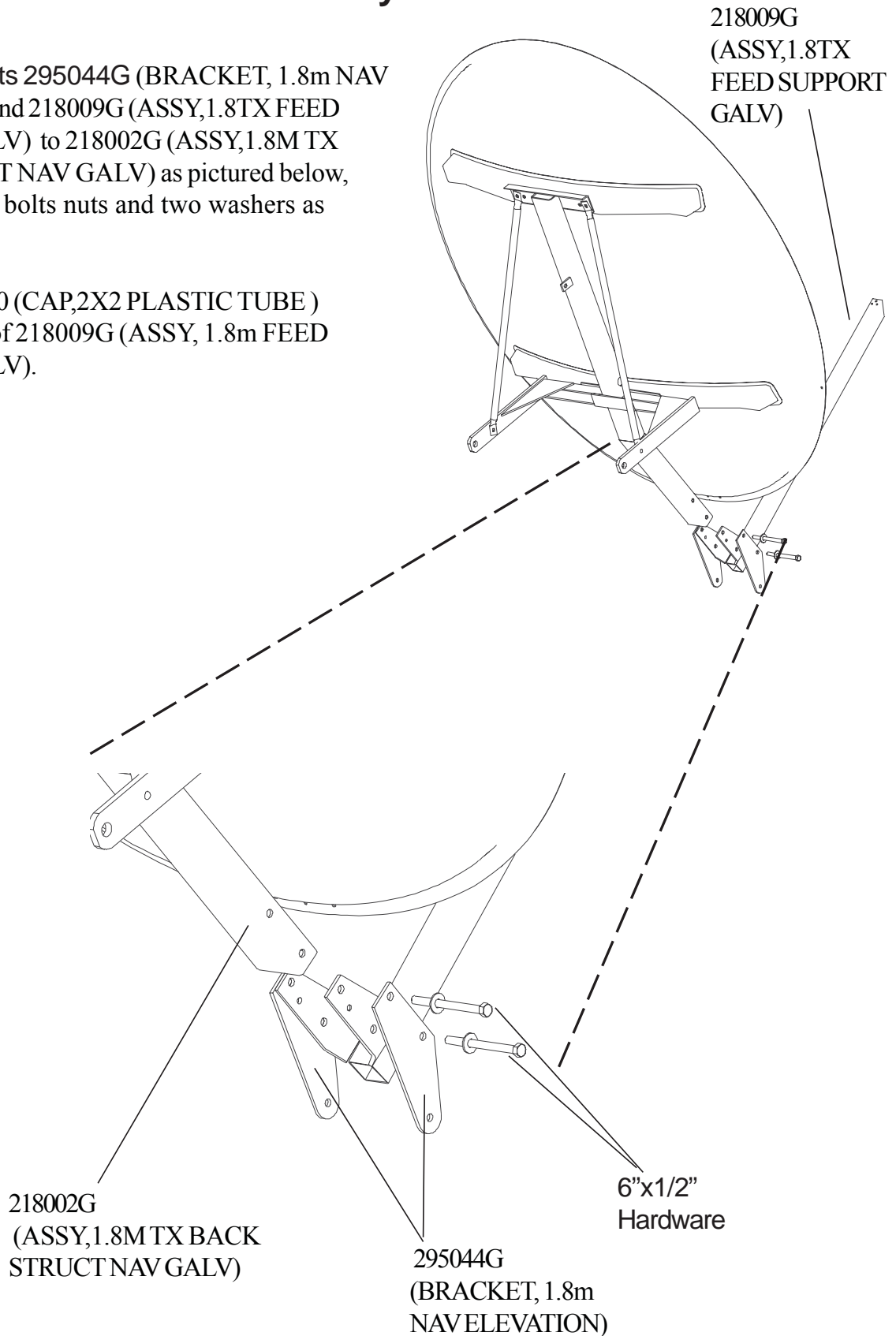
- 1) Assemble PT# 218002G (Assy, 1.8m TX back structure nav galv) and 20000022G (Assem, nav adpt brkt 1.8m wldmt gal) to reflector back supports as pictured below. Leave hardware loose at this time.
- 2) Attach 218OF0006 (Tube, nav adapt brkt 1.8m offset R) and 218OF0005 (Tube, nav adapt brkt 1.8m offset L) to reflector and NAV WELDMENT as pictured below.
- 3) Tighten all hardware at this time.



Antenna Feed Boom Assembly

1) Attach brackets 295044G (BRACKET, 1.8m NAV ELEVATION) and 218009G (ASSY,1.8TX FEED SUPPORT GALV) to 218002G (ASSY,1.8M TX BACK STRUCT NAV GALV) as pictured below, using 6"x1/2" bolts nuts and two washers as pictured below.

2) Insert 4M10010 (CAP,2X2 PLASTIC TUBE) into both ends of 218009G (ASSY, 1.8m FEED SUPPORT GALV).

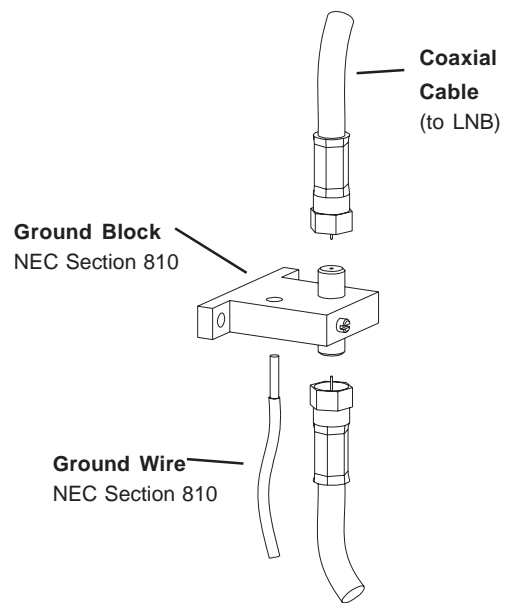


Grounding

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.

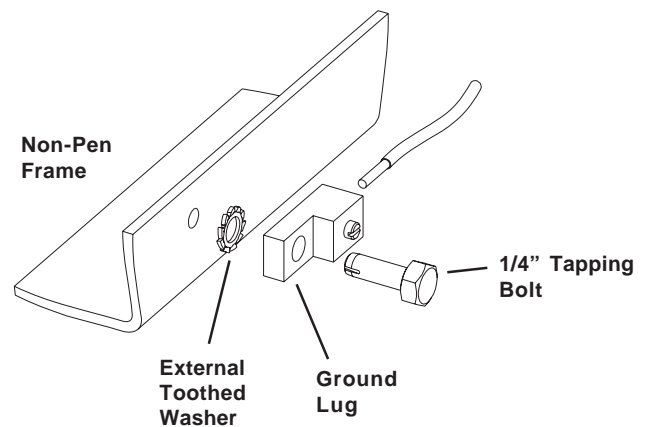
Clamps that provide a solid connection between ground wire and a ground source should be used.



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

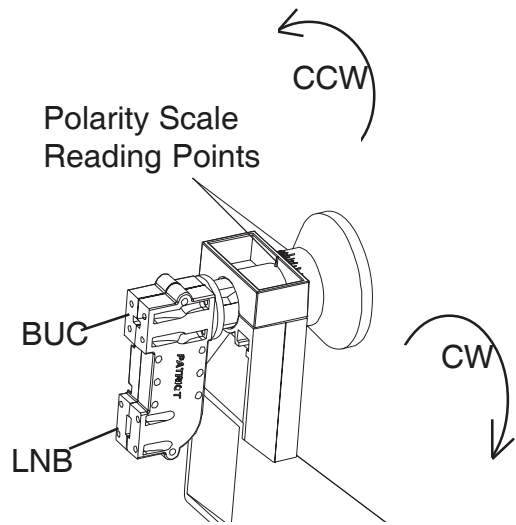
- 1) Begin by obtaining the correct Az/EI pointing data for the satellite of interest based for your site location.
- 2) Using an inclinometer or position readout form controller placed on the enclosure drum surface, position the antenna to the specified elevation angle.
- 3) Manually scan the antenna (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.

Feed Adjustment (Polarity tuning)

1. Adjust the Feed to the appropriate skew angle using the provided scale reference.

NOTE: Refer to the chart on back for polarization angle. Elevation and polarity are both dependent on site azimuth and the difference between satellite and site longitude.

NOTE: Some satellites have a slant angle with respect to the satellite belt angle. Contact the satellite operator for details.

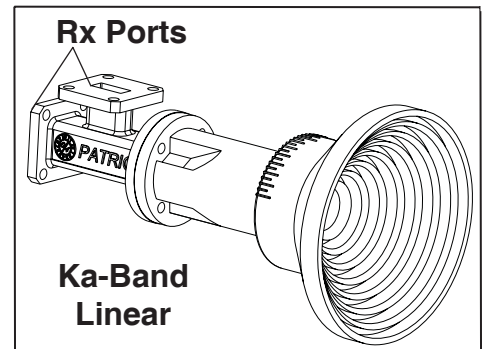
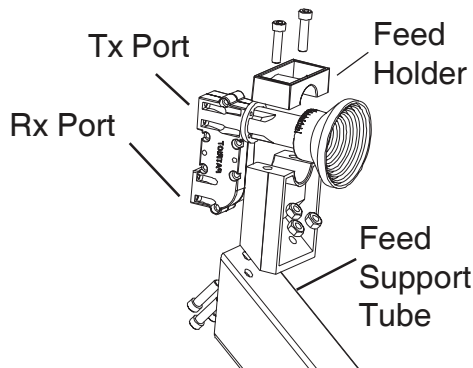


Feed Rotation Chart

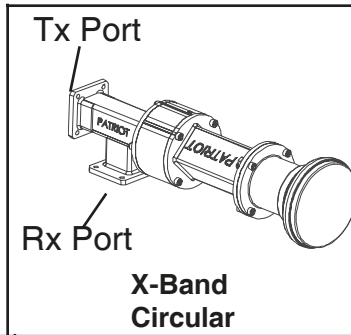
Install site west of satellite	Install site East of satellite	
CW	CCW	Northern Hemisphere
CCW	CW	Southern Hemisphere

Feed Assembly

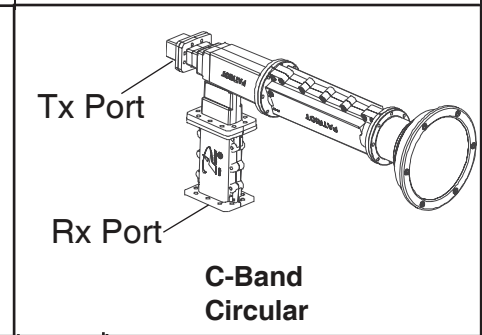
1. Attach the relevant Feed Assembly.
2. Insert the Feed Assembly into the Feed holder and assemble to the Feed Support Tube using the hardware illustrated below.
3. Insert plastic plug into end of feed support tube.



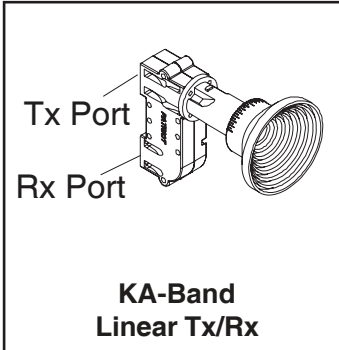
Rx Ports
Ka-Band Linear



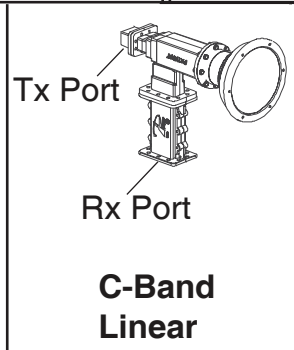
X-Band Circular



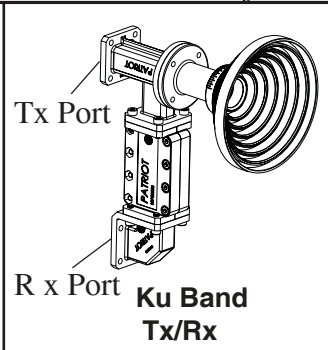
C-Band Circular



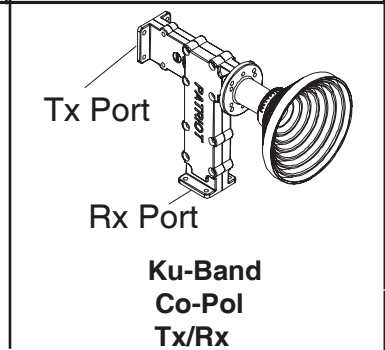
KA-Band Linear Tx/Rx



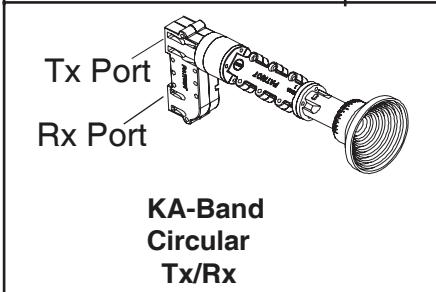
C-Band Linear



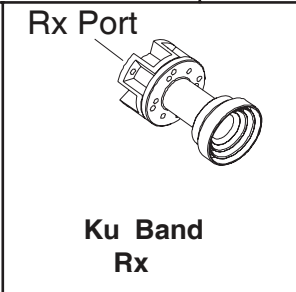
Ku Band Tx/Rx



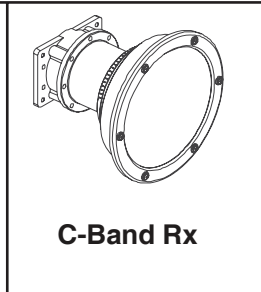
Ku-Band Co-Pol Tx/Rx



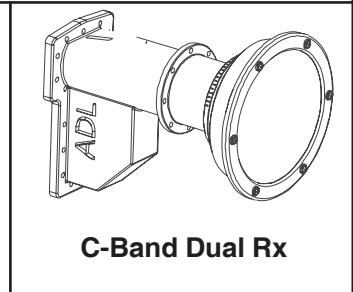
KA-Band Circular Tx/Rx



Ku Band Rx



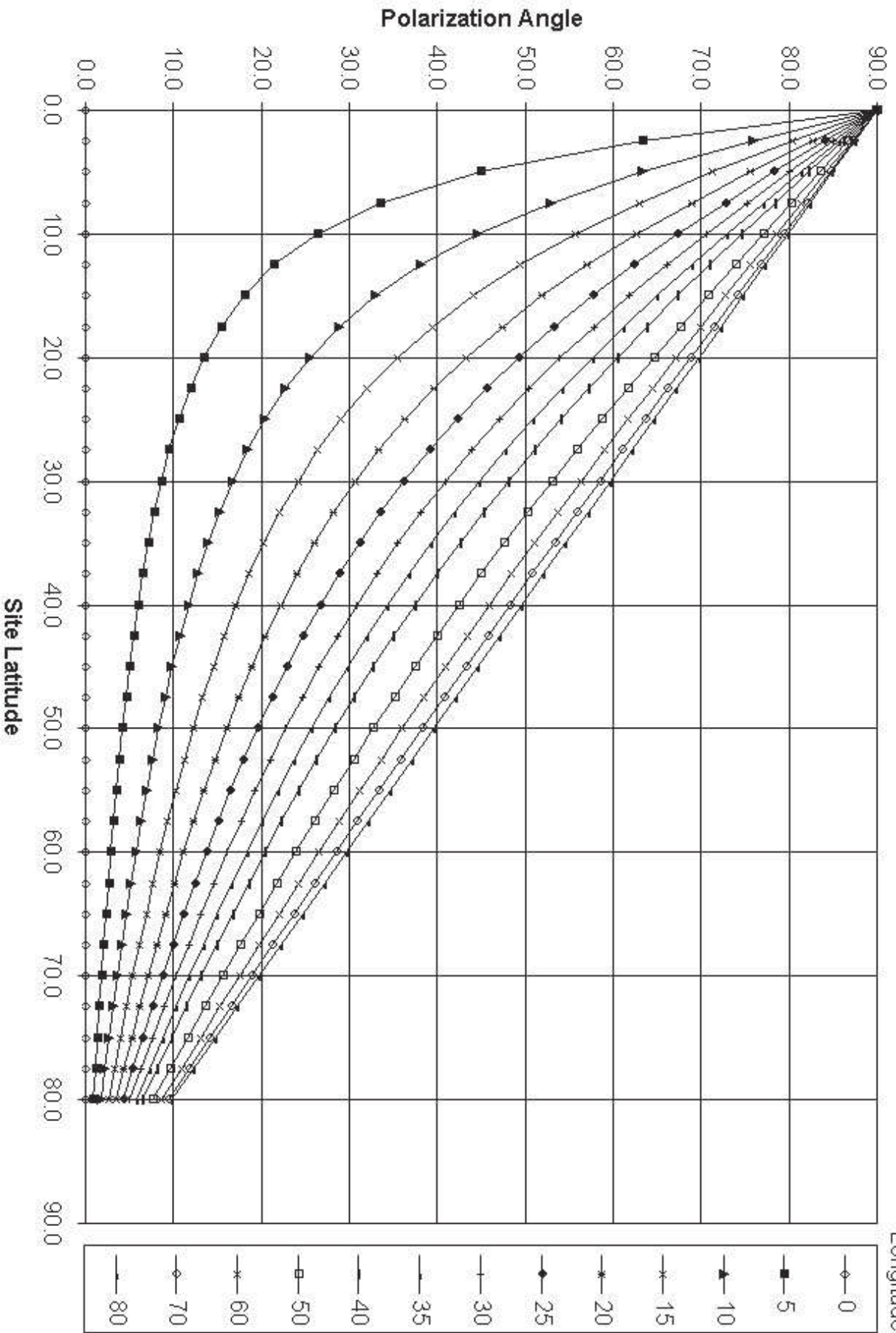
C-Band Rx



C-Band Dual Rx

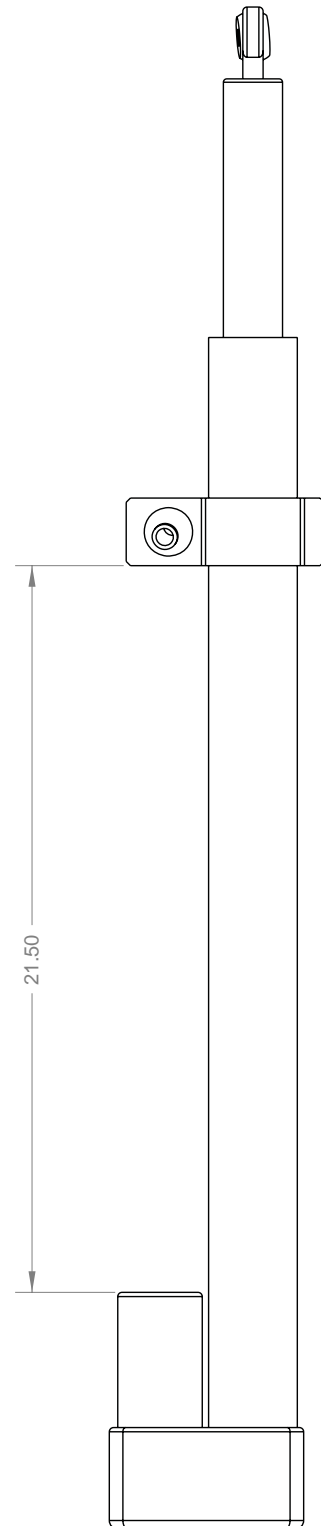
Polarization Chart

Delta Longitude = $|LONG_{sat} - LONG_{site}|$



ATTENTION

**WHEN INSTALLING AZIMUTH ACTUATOR VERIFY
THAT THE ACTUATOR CLAMP IS
21.50 INCHES FROM THE MOTOR HOUSING AS
PICTURED HERE. IF NOT POSSIBLE
DAMAGE TO THE ACTUATOR COULD RESULT**



Specifications

Ka

Gain (19.95Rx,29.75Tx)	49.5dBi	53.0dBi
Efficiency		65%
Noise Temp. (10 degree elev)	70K	-
Cross Polarization		-35dB

Ku

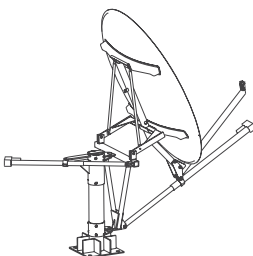
Gain (11.75Rx,14.12Tx)	48.0dBi	49.6dBi
Efficiency		70%
Noise Temp. (10 degree elev)	55K	-
Cross Polarization		-35dB

C-Band

Gain (3.9Rx,6.1Tx)	38.2dBi	42.5dBi
Efficiency		70%
Noise Temp. (10 degree elev)	45K	-
Cross Polarization	-35dB-LP	17.7dB-CP

Mechanical

Antenna Size	1.8m
Offset Angle	22.3
F/D	.62
Operational Wind	50mph
Survival Wind	125mph
Operational Temp	-40 to 140 F
Rain	Operational = 1/2in./hr Survival = 3in./hr
Ice	1 in. Radial -or- 1/2 in. + 60mph wind
Pole Size	4" OD



PATRIOT ANTENNA SYSTEMS
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