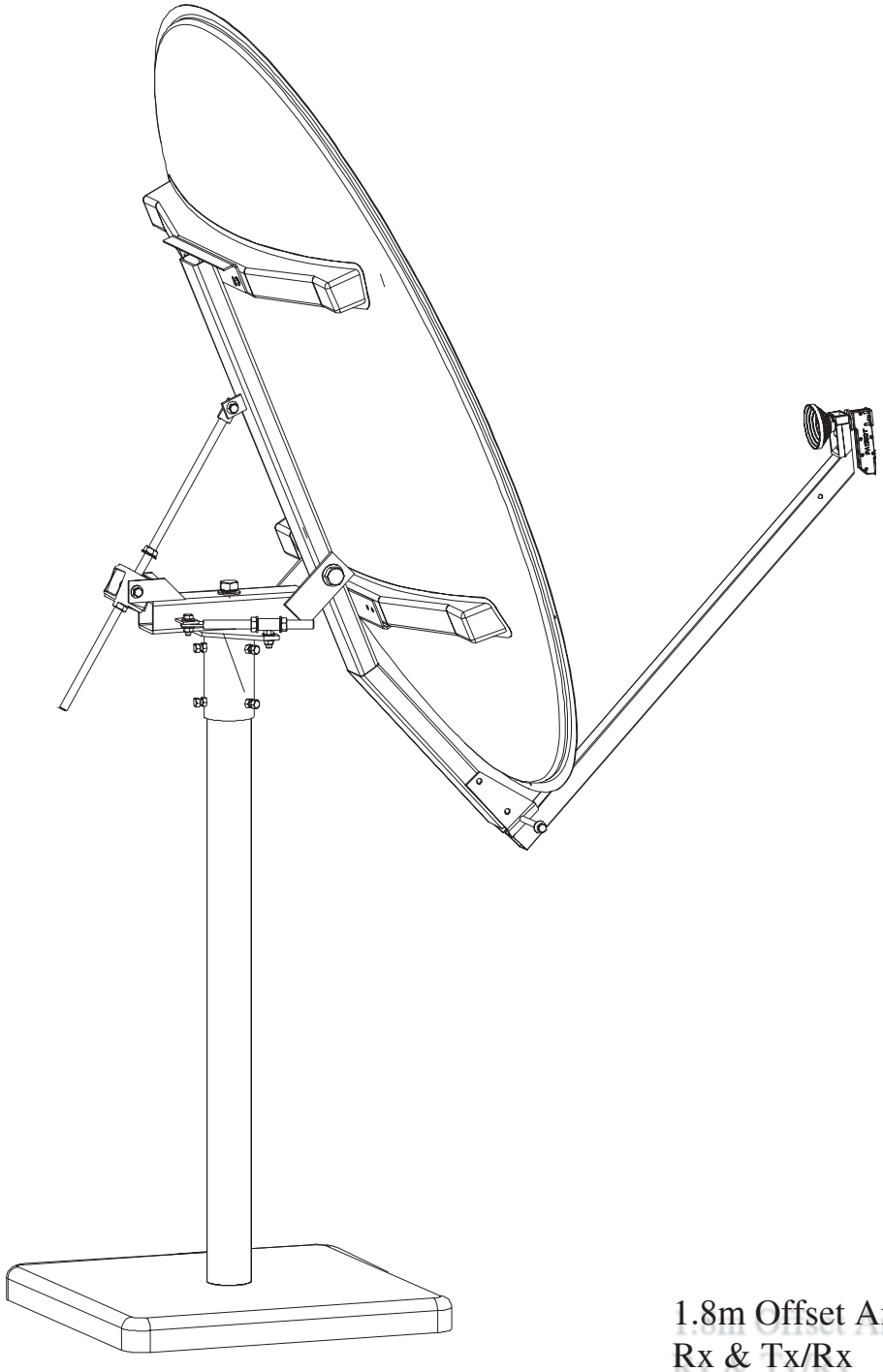
PATRIOT



1.8m Offset Antenna
Rx & Tx/Rx

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 then 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 if 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 purching your Patriot Commercial Antenna. We trust that you will find this to be a well designed product that will proved 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 munber of the unit on to page two for future refferance and read the warrenty 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.

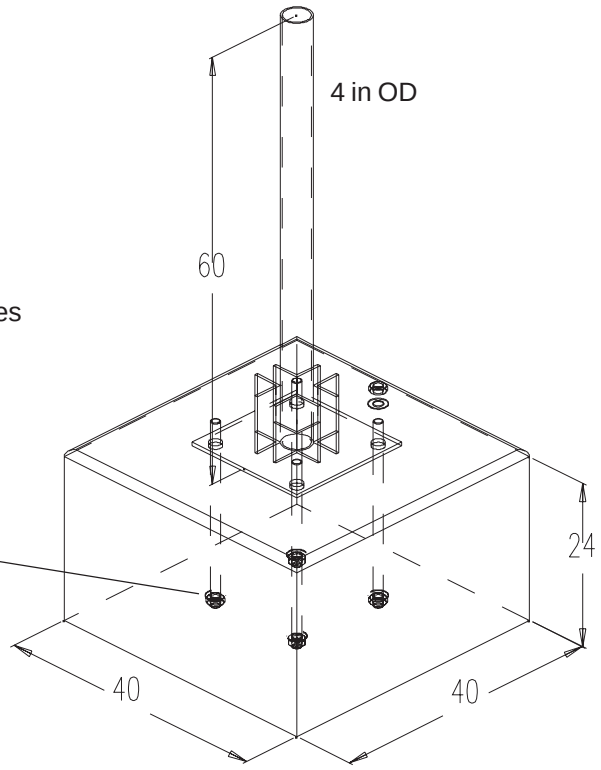
When selecting “look angle”, be sure to observe and take readings approximately 10 deg to the left and right, above and below your selected “look angle”.

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.

In-Ground Mast Foundation



Base plate 18 x 18 x 1/2"
Use #4 rebar in all concrete pad sufaces

Place nut-washer on this end of all-thread

The Optional Kit Includes:

Description

- 60" Steel Pipe Mast
  18x18x1/2" Base plate with 14" centered holes
  Reinforced Steel Angles for support
  3-1/2" (4" O.D.) schedule 40 pipe
- 18x18" Templates
- 1 1/4x24" Threaded Rod (bolts)
- 1/ 1/4" Nuts, Washers

Foundation Requirements & Specifications:

- Recommended Pad Size: 40x40x24"
- Concrete: 3000 psi at 28 days, poured against undistrurbed soil (Allow concrete 24 hour set time before installation of antenna)
- Ground the Antenna to meet applicable local Codes.

Hardware Table

No.	Description	Qty	No.	Description	Qty
1	Reflector assm	1	7	Elev. Pivot Block	1
2	Back Frame Assy	1	8	Elev. Rod	1
3	Az/El Assy	1	9	Azimuth Rod	1
4	Pipe Adapter Assy	1	10	Clevis	1
5	Feed Support Assy	1	11	Mount Hdw Pack	1
6	TxRx Feed System	1			

Tools Required

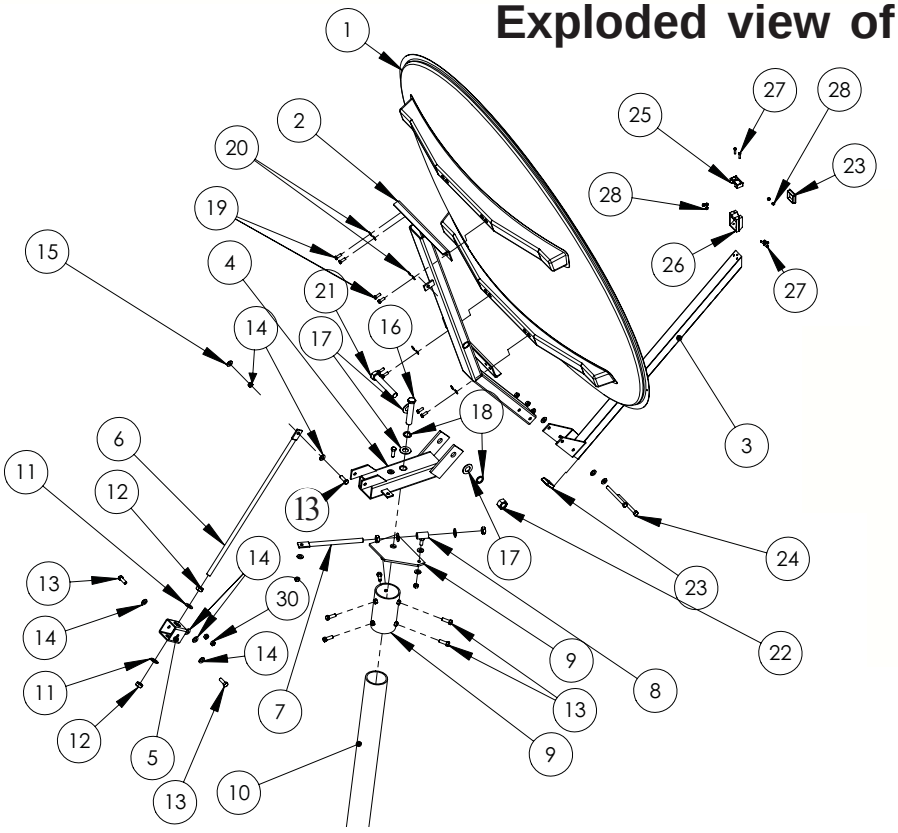
1– Drive Socket set (7/16" through 3/4")
1– Combination wrench set (7/16" through 3/4")
1– 1-1/8" Combination wrench
1– 1-1/2" Combination wrench
1– 15" Adjustable wrench

Requirements

1- Pre-installed 4" OD Pipe (not included)

ITEM	PART NO.	DESCRIPTION	QTY.
1	218007	Reflector Assembly, 1.8m	1
2	218002	Back Frame Assembly	1
3	218009	Feed Boom	1
4	218003	Az-El Assembly	1
5	231104	Elevation Pivot Block	1
6	218005	Elevation Rod	1
7	218008	Azimuth Fine Tune Rod	1
8	218006	Clevis Assembly	1
9	218004	Pipe Adaptor	1
10	29500006	ASSY,5' 4"OD PIPE STAND (OPTIONAL)	1
11	3HP18162 HARDWARE KIT	Large USS 3/4 Washer	2
12		Large USS 3/4 Nut	2
13		1/2" x 1 1/2" Bolt	10
14		1/2" Washer	12
15		1/2" Nut	8
16		1" x 5" Bolt	1
17		1" Washer	4
18		1" Lock Washer	2
19		3/8" x 1" Bolt	8
20		3/8" Washer	8
21		1" x 6" Bolt	1
22		1" Heavy Hex Nut (Refer to Pg. 6 to see location of second nut)	2
23		Plastic Plug	1
24		1/2" x 5 1/2" Bolt	3
25	PE0400A	Feed Holder, Top	2
26	PE0400B	Feed Holder, Bottom	2
27	3HP18162 HARDWARE KIT	1/4-20 x 1 SOC CAP SC	1
28		1/4-20 Fin Hex Nut	1

Exploded view of 1.8 Tx/Rx Antenna



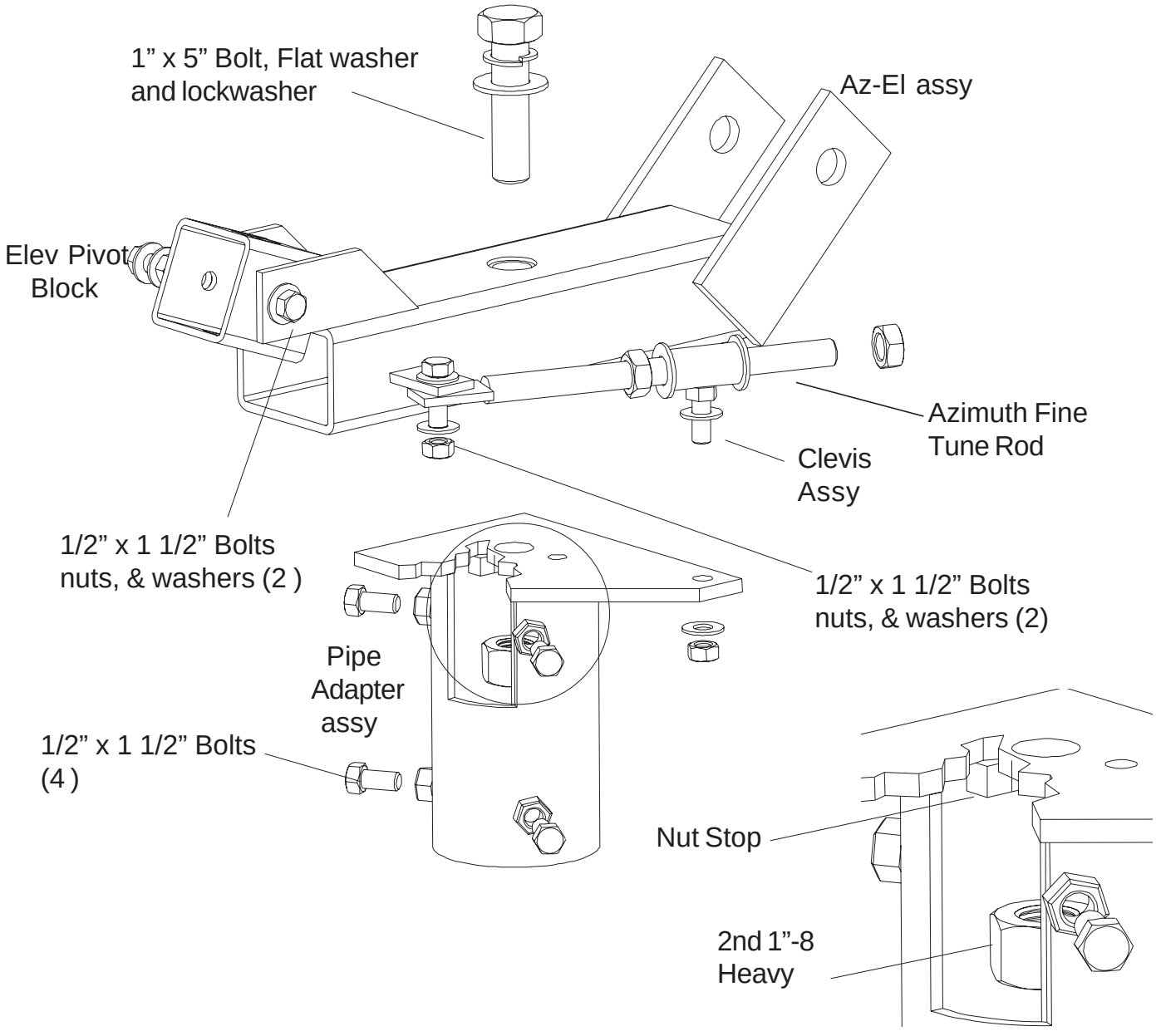
Mount Assembly

1. Assemble the AzEl to the Pipe Adaptor using 1 x 5” bolt, lock washer and washer and 1”-8 nut shown below.

2. Place the Pipe Adapter Assembly on to the 4in OD ground pipe, using 1/2” x 1 1/2” bolts.

3. Attach the Azimuth Fine Tune Rod as shown using 1/2” x 1 1/2” bolts,nuts, and washers.

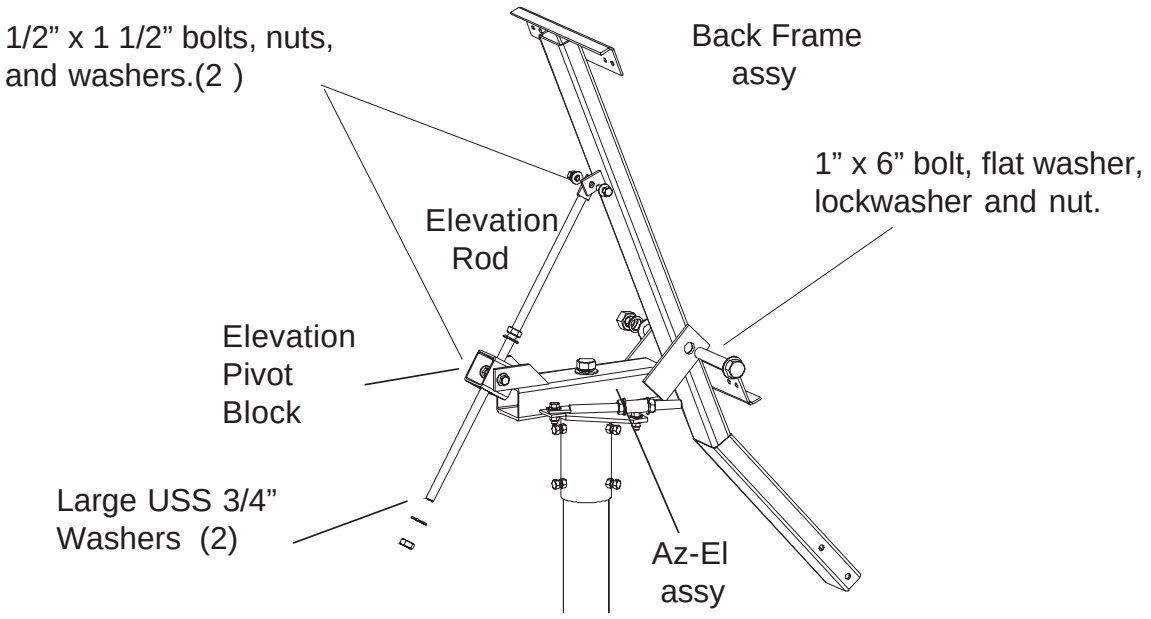
4. Install the Elevation Pivot Block as shown using 1/2” x 1 1/2” bolts, nuts, and washers.



Back Frame to Mount assembly

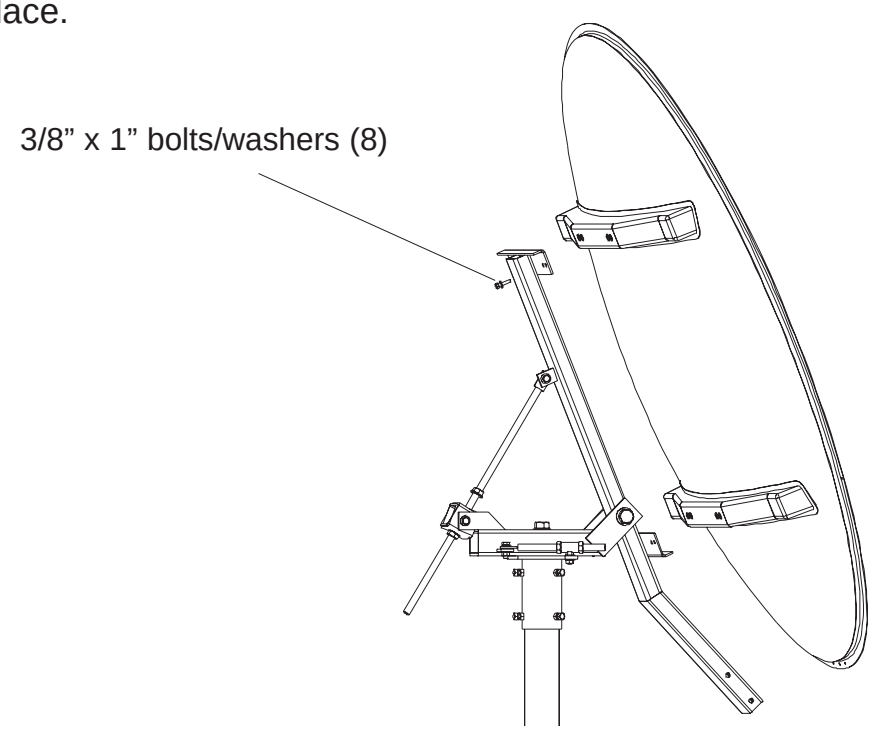
1. With the help of an assistant, lift the Back Frame assembly and place it onto the Az-El assy as shown. Attach using 1" x 6" bolt, flat washer, lockwasher and nut.

2. Assemble the Elevation Rod as shown using 3/4" nuts, washers(large USS) on each side of the elevation pivot block, and 1/2" x 1 1/2" bolts, nuts, and washers.



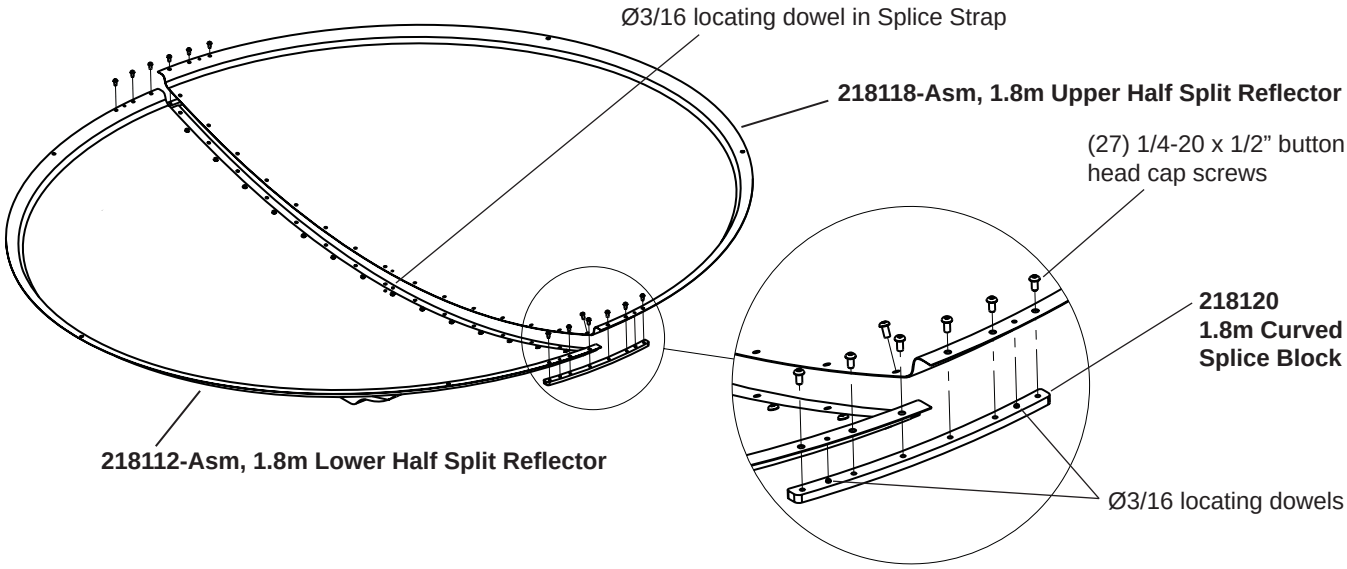
Reflector assembly

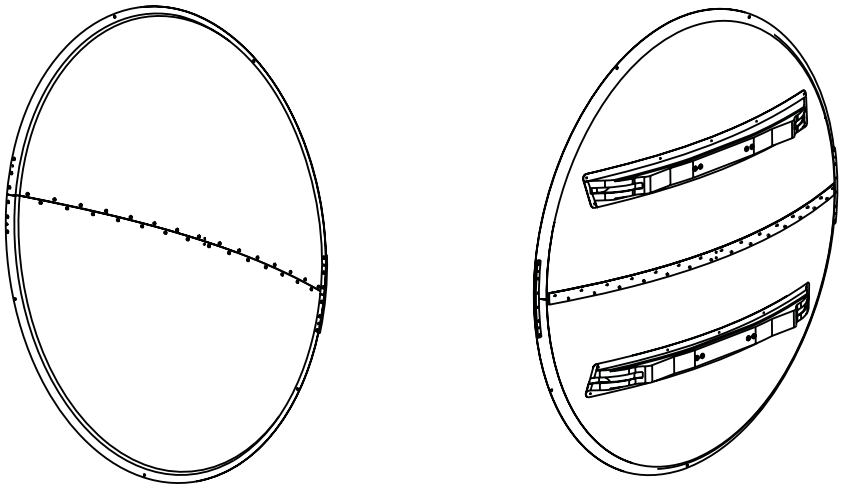
1**.** With the help of an assistant, lift Reflector assembly and place it onto the Back Frame as shown. Use 3/8" x 1" bolts/washers to fasten. Tighten hardware after all bolts are in place.



Split Reflector Assembly (Model TXINT-180KUG-SPLIT)

1. Lay part no. **218112-Asm, 1.8m Lower Half Split Reflector** on a flat and level surface, face up.
2. With the help of an assistant, lower p/n **218118-Asm, 1.8m Upper Half Split Reflector** into place carefully locating the 3/16 dia. hole over dowel at center of Splice Strap on 218112.
3. Using (3) 1/4-20 x 1/2" button head cap screws from **Pre-bag 3HP18164**, loosely fasten Upper Reflector Asm. in place with a 5/32" hex key.
4. Using (12) 1/4-20 x 1/2" bhcs, loosely attach (2) **218120 Curved Splice Blocks** to the Reflector flange aligning 3/16 dia. dowels to matching holes as shown below.
5. Insert remainder of screws and final tighten all fasteners as evenly as possible.
6. With the help of an assistant, lift the assembled **TXREF-180SPLIT 1.8m Split Reflector,** into place against the Back Frame and fasten into place the same as shown on page 8 for a single piece Reflector.



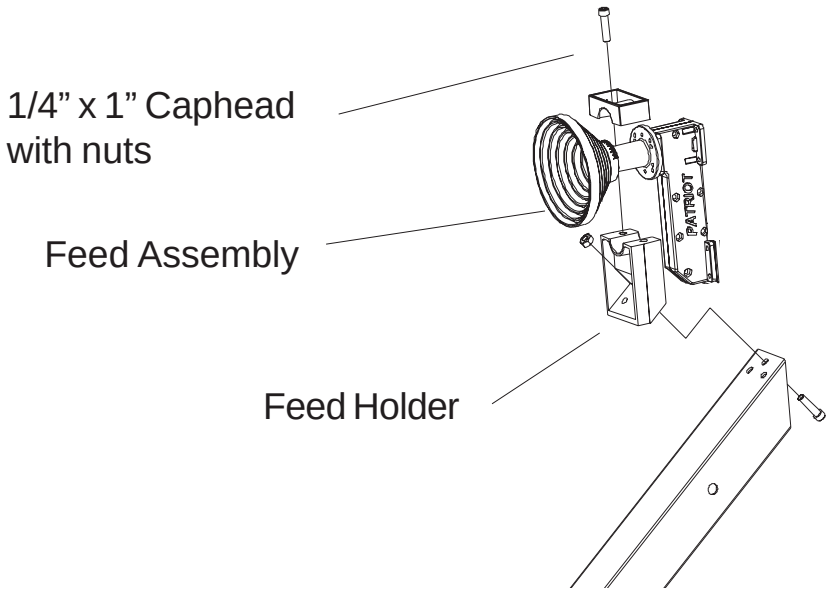


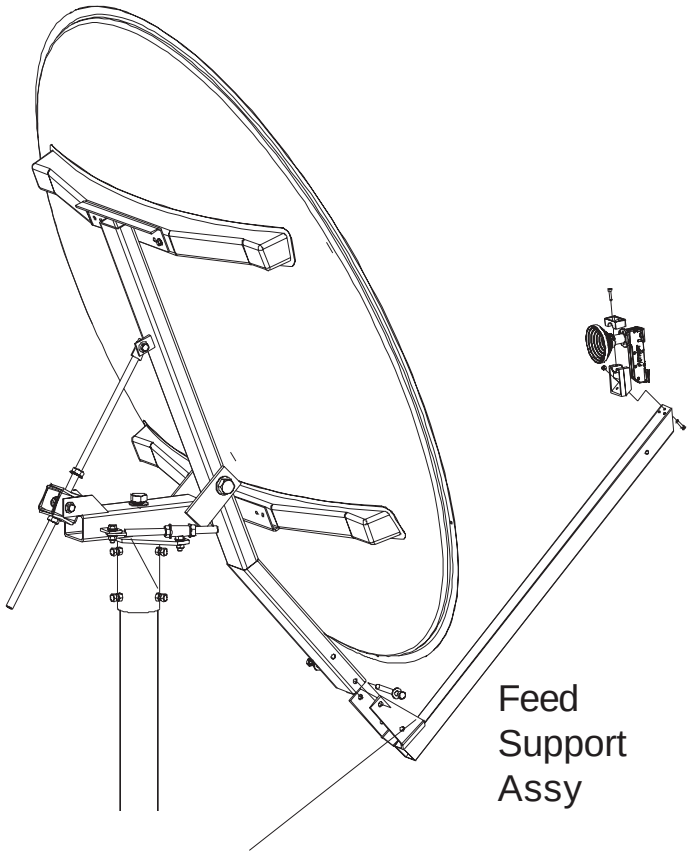
TXREF-180SPLIT 1.8m Split Reflector
(assembled and ready for attachment to Back Frame)

Feed Support Assembly

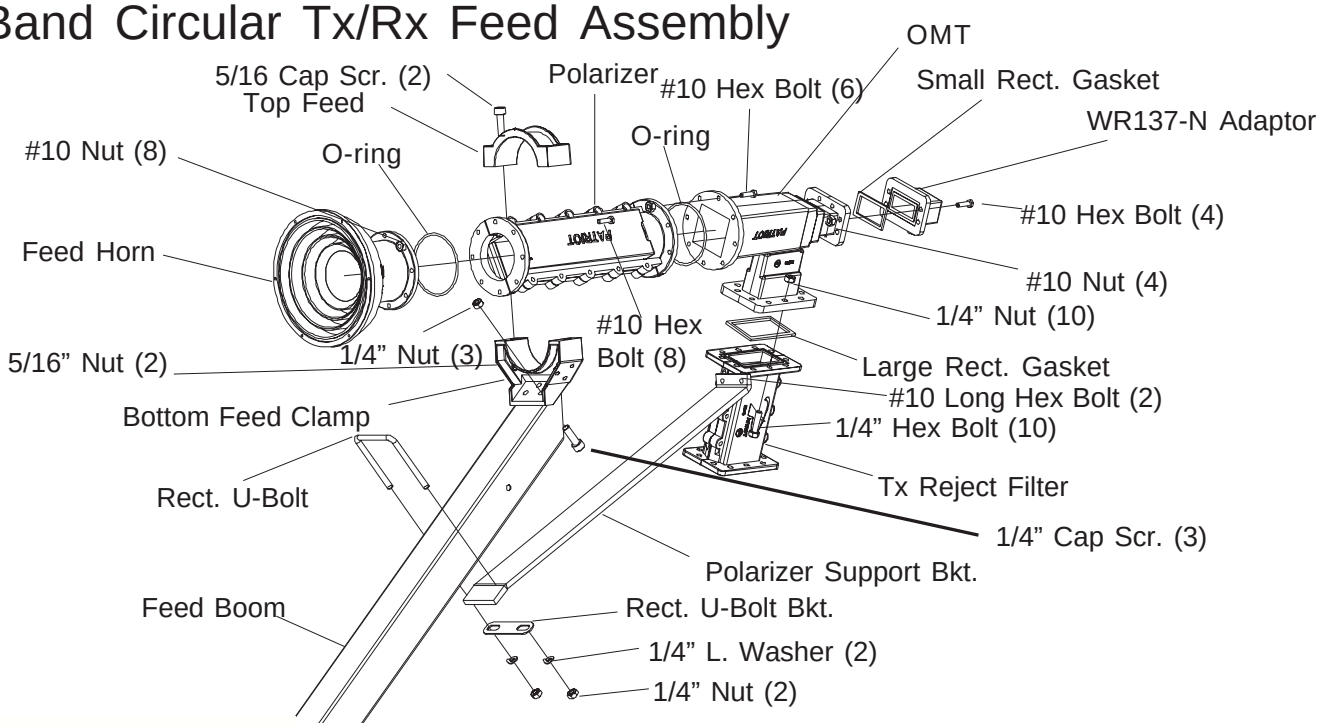
1. Attach Feed Support assy to the lower tube extension of the Back frame using 1/2" x 5 1/2" bolts, nuts and washers.

2. Assemble the Feed holder and Feed Assembly as shown using 1/4" socket head cap screw hardware.



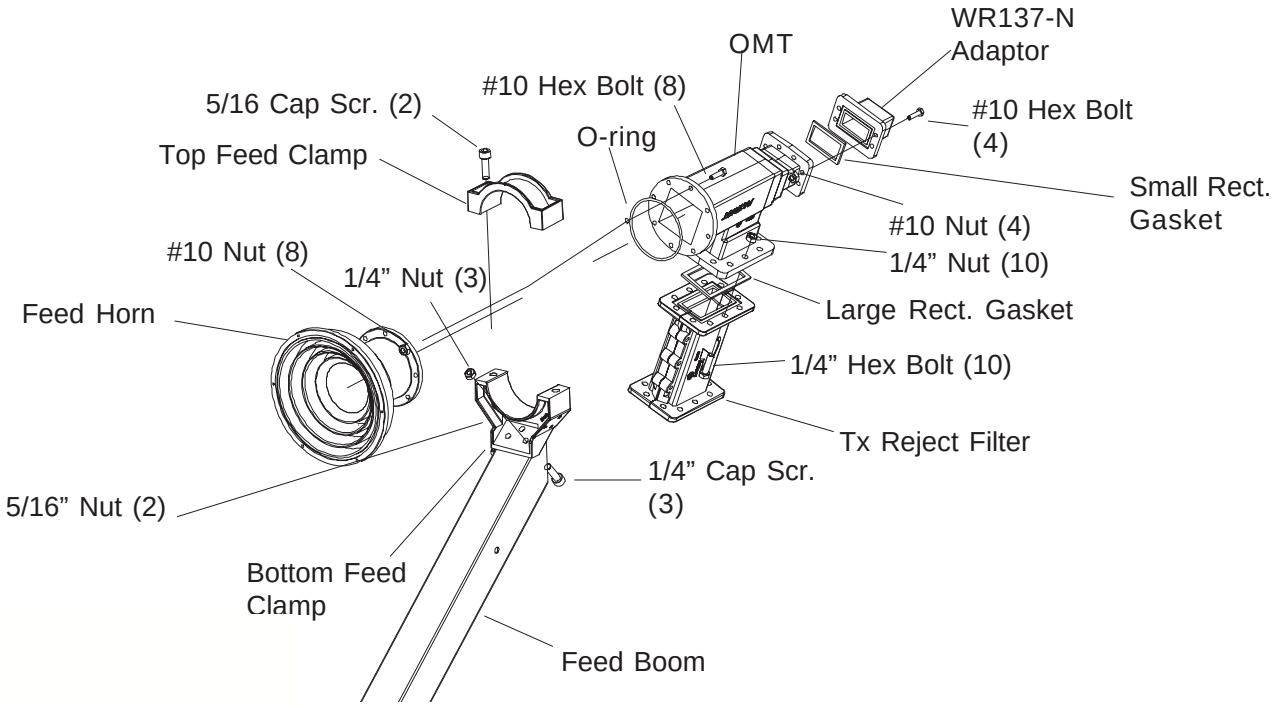


C-Band Circular Tx/Rx Feed Assembly



View shown is for Tx-LHCP, Rx-RHCP.
For opposite polarity, rotate OMT 90 deg.

C-Band Linear Tx/Rx Feed Assembly

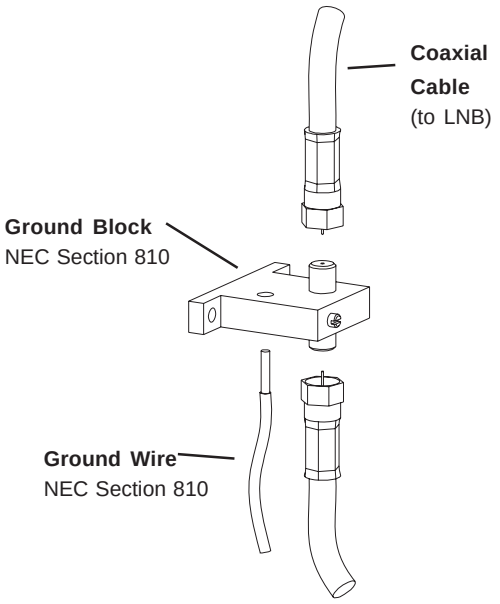


NOTES:

Grounding

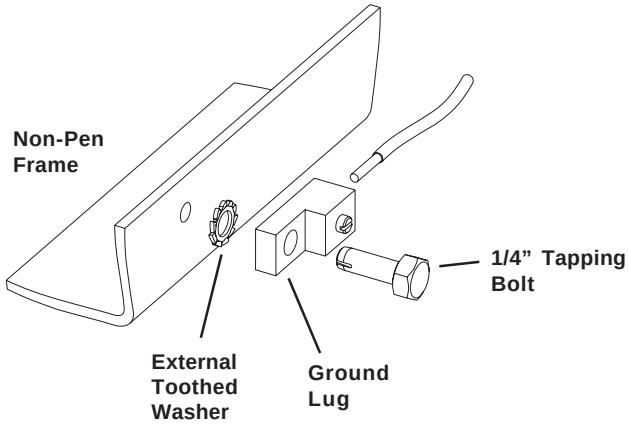
Grounding Antenna Feed Cables

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/El 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.

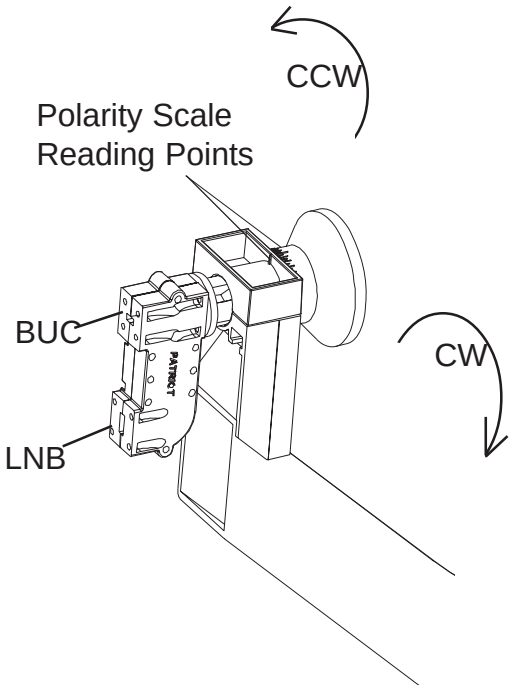
5) Repeat this procedure alternating between the azimuth and elevation until maximum transponder signal is achieved.

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.



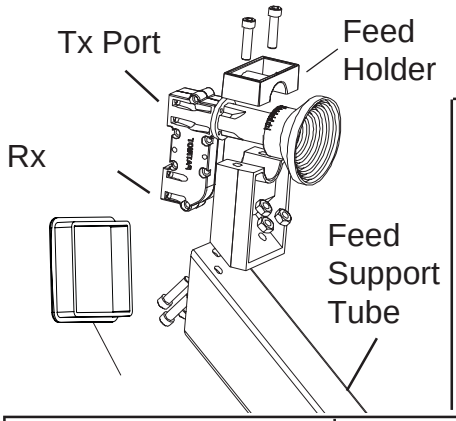
Feed Rotation Chart

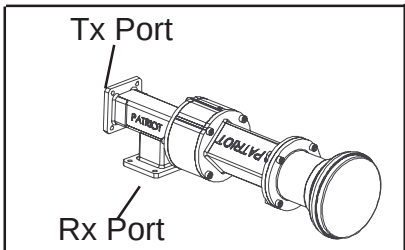
Install site west of satellite	Install site East of satellite	
CW	CCW	Northern Hemisphere
CCW	CW	Southern Hemisphere

Feed Assembly

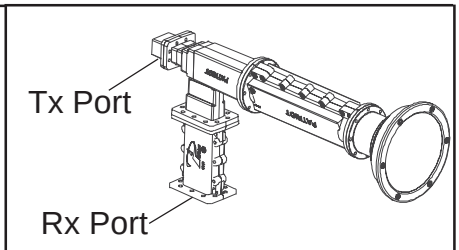
1. Attach the relevant Feed Assembly.
2. Insert the Feed Assembly into the Feed holder and assemble to the Feed Support Tube using the hardware illustrated below.

3. Ir upport tube.

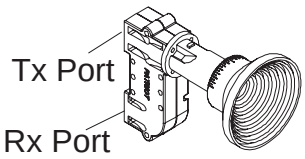




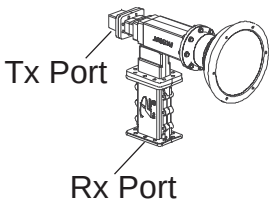
X-Band Circular



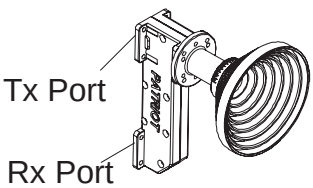
C-Band Circular



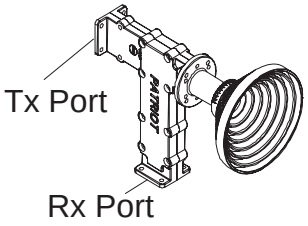
KA-Band Linear Tx/Rx



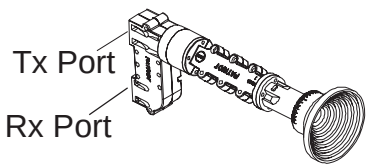
C-Band Linear



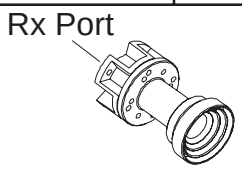
Ku Band Tx/Rx



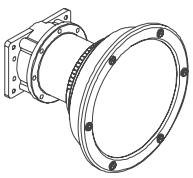
Ku-Band Co-Pol Tx/Rx



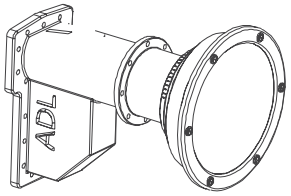
KA-Band Circular Tx/Rx



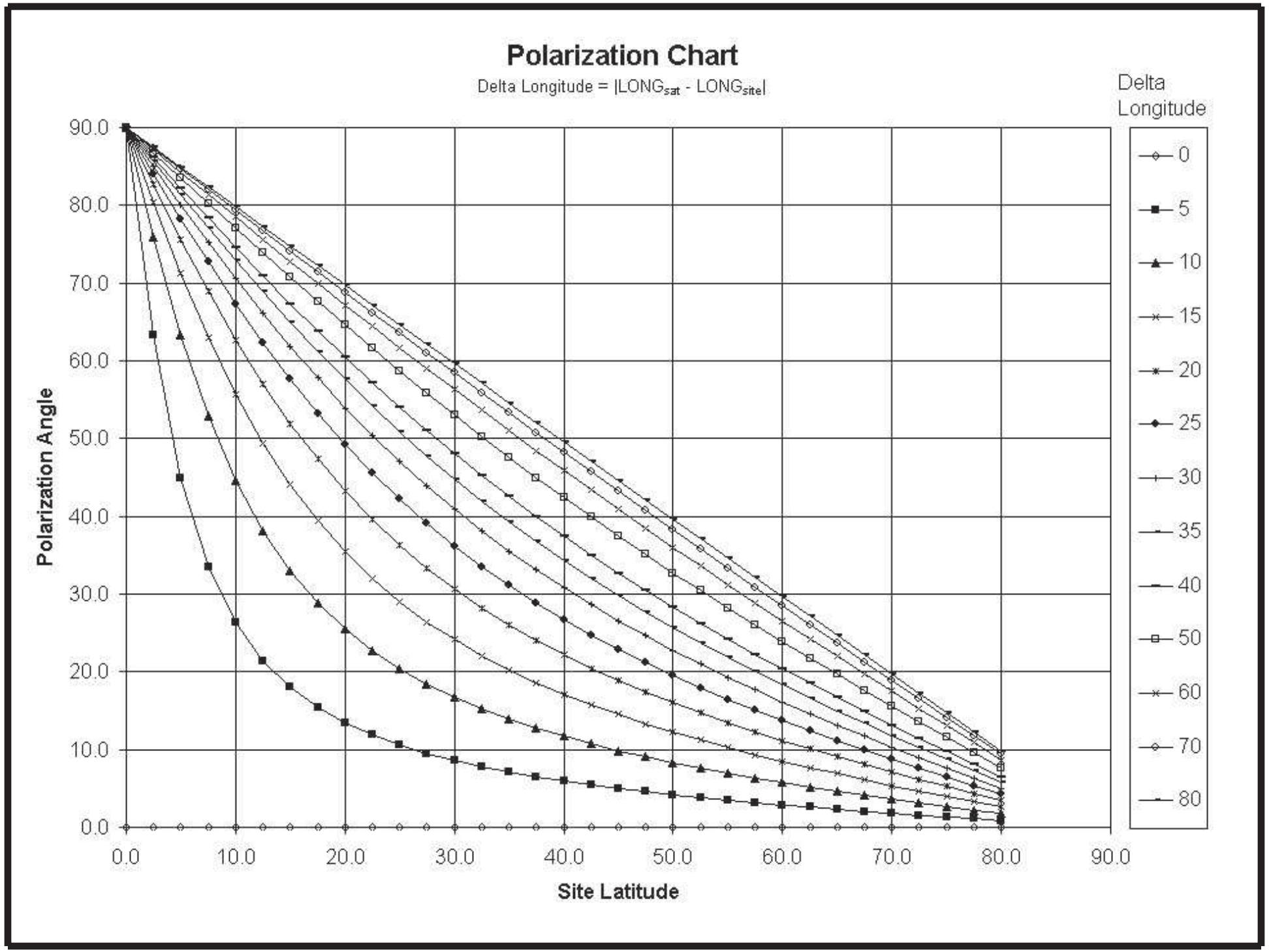
Ku Band Rx



C-Band Rx



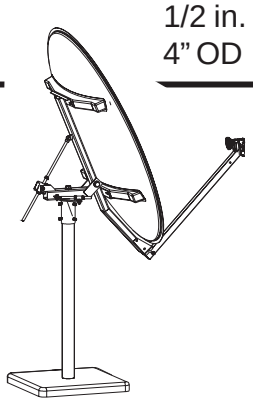
C-Band Dual Rx


Polarization Chart
Delta Longitude = |LONG$_{sat}$ - LONG$_{site}$|
Delta Longitude
0
5
10
15
20
25
30
35
40
50
60
70
80
Polarization Angle
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
80.0
90.0
Site Latitude

Specifications

Ka	Rx	Tx
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



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