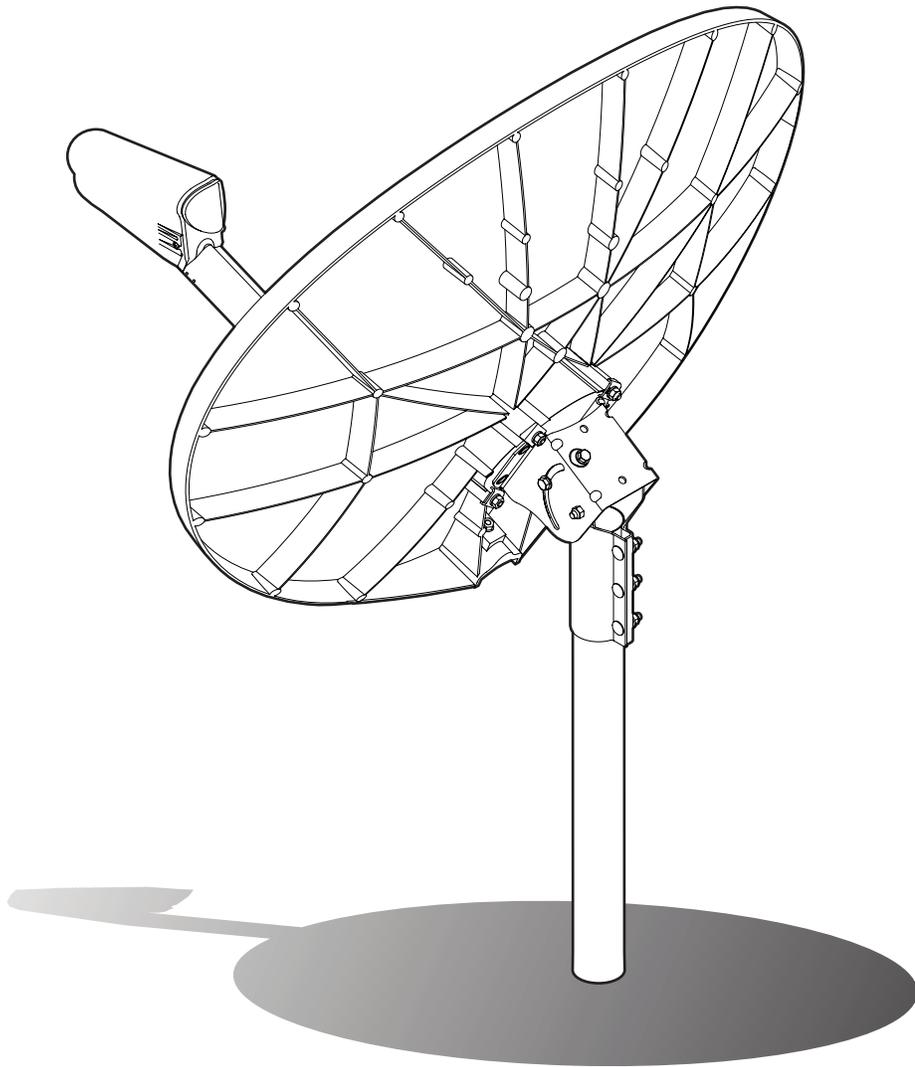


84 cm Elliptical Receive Only Antenna System



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MANUAL REVISION HISTORY

DATE	DESCRIPTION	REVISION
05/08	5078744	Rev A 05/08
03/10	ECR 707	Rev B 03/10

WARRANTY

Skyware Global VERY SMALL APERTURE TERMINAL (VSAT) PRODUCTS TWELVE (12) MONTH LIMITED WARRANTY

Seller warrants that all Skyware Global manufactured VSAT products are transferred rightfully and with good title; that they are free from any lawful security interest or other lien or encumbrance unknown to Buyer. Seller also warrants that for a period of twelve (12) months from the date of shipment from Seller's factory, all its VSAT products shall be free from defects in material and workmanship which arise under proper and normal use and service. Buyer's exclusive remedy hereunder is limited to Seller's correction (either at its plant or at such other place as may be agreed upon between Seller and Buyer) of any such defects by repair or replacement at no cost to Buyer, except for the costs of any transportation in connection with the return of the defective VSAT products to be replaced or repaired, and the costs to remove and/or reinstall the products, which shall be borne by Buyer. The limited warranty period shall not be extended beyond its original term with respect to any part or parts repaired or replaced by seller hereunder.

This warranty shall not apply to VSAT products which (i) have been repaired or altered in any way so as to affect stability or durability, (ii) have been subject to misuse, negligence or accident, (iii) have been damaged by severe weather conditions such as excessive wind, ice, storms, lightning, or other natural occurrences beyond Seller's control; (iv) have presented damages, defects or nonconformances caused by improper shipping, handling or storage, and (v) have not been installed, operated or maintained in accordance with Seller's instructions.

Buyer shall present any claims along with the defective VSAT product(s) to Seller immediately upon failure. Non-compliance with any part of this warranty procedure may invalidate this warranty in whole or in part.

SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, OTHER THAN AS SPECIFICALLY STATED ABOVE. EXPRESSLY EXCLUDED ARE ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE FOREGOING SHALL CONSTITUTE ALL OF SELLER'S LIABILITY (EXCEPT AS TO PATENT INFRINGEMENT) WITH RESPECT TO THE VSAT PRODUCTS. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY LOSS OF PROFITS OR REVENUE, LOSS OF USE, INTERRUPTION OF BUSINESS, OR INDIRECT, SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES OF ANY KIND AS A RESULT OF THE USE OF THE PRODUCTS MANUFACTURED BY SELLER, WHETHER USED IN ACCORDANCE WITH THE INSTRUCTIONS OR NOT. UNDER NO CIRCUMSTANCES SHALL SELLER'S LIABILITY TO BUYER EXCEED THE ACTUAL SALES PRICE OF THE VSAT PRODUCTS HEREUNDER.

In some jurisdictions, Buyer may have other rights under certain statutes that may imply non-excludable warranties. No representative is authorized to assume for Seller any other liability in connection with the VSAT products.



DO NOT DISCARD CONTENTS

The product in this packaging was placed in the market after August 13, 2005. Its components must not be discarded with normal municipal or household waste.

Contact your local waste disposal agency for recovery, recycling, or disposal instructions.

WARNINGS

LAW: Installation and installer must meet local codes and ordinances regarding safety!

DANGER: **WATCH FOR WIRES!** Installation of this product near power lines is extremely dangerous and must never be attempted. Installation of this product near power lines can result in death or serious injury!

For your own safety, you must follow these important safety rules. Failure to follow these rules could result in death or serious injury!

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. Stay at least 6 meters (20 feet) away from all power lines.
3. Do not install antenna or mast assembly on a windy day.
4. If you start to drop antenna or mast assembly, move away from it and let it fall.
5. 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.
6. Make sure that the mast assembly is properly grounded.

WARNING: Assembling dish antennas on windy days is extremely dangerous and must never be attempted. Due to the surface area of the reflector, even slight winds create strong forces. For example, this antenna facing a wind of 20 mph can undergo forces of 35 lb. **BE PREPARED TO SAFELY HANDLE THESE FORCES AT UNEXPECTED MOMENTS. ATTEMPTING TO ASSEMBLE, MOVE OR MOUNT A DISH ON WINDY DAYS COULD RESULT IN DEATH OR SERIOUS INJURY.** Skyware Global 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 and ice) and properly sealed against leaks. **Skyware Global** will not accept liability for any damage caused by a satellite system due to the many unknown variable

PREINSTALLATION CONSIDERATIONS

DESCRIPTION:

The 84 cm Elliptical Receive Only Antenna System is designed for two-way satellite communications, and is suitable for commercial or consumer use.

CARTON CONTENTS:

84 cm Elliptical Reflector
AZ/EL Skew Mount
Rx Feed Assembly
Hardware Bags (2)
Instruction Manual
Feed Support Arm

TOOLS REQUIRED:

Compass
9" Magnetic Level
10 mm/13 mm Open End Wrench
Inclinometer
Screwdriver (#2 Phillips)
7 mm Open End Wrench

RECOMMENDED ADDITIONAL TOOLS:

10 mm Nut Driver
Ratchet Wrench (3/8" Drive)
10 mm Socket (3/8" Drive)
Torque Wrench
13 mm Socket (3/8" Drive)

ADDITIONAL INSTALLATION MATERIALS *(Not Included with Antenna)*

Grounding Rod, Clamp & Grounding Block - As required by National Electric Code or local codes.
Ground Wire - #10 solid copper or #8 aluminum as required by National Electric Code or local codes (length required).
RG-6 Coaxial Cables from antenna to indoor unit(s).
Installation Mount (as required by site survey)

SITE SELECTION

The main objective in conducting a site survey utilizing a compass and inclinometer is to choose a mounting location that will give you the greatest amount of swing for azimuth and elevation for present as well as future use. A thorough preinstallation 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. 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.

Prior to beginning the site survey, the site location and satellite look angles must be determined. Determine your site latitude and longitude and enter the values here:

LATITUDE	° N	LONGITUDE	° W
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Based on your site location and the satellite to be used, determine the correct azimuth, elevation, and skew settings for your installation. Using the charts (beginning on Page 6), obtain these values and enter them here for easy reference. Enter the values here:

AZIMUTH	°	ELEVATION	°	SKEW	°
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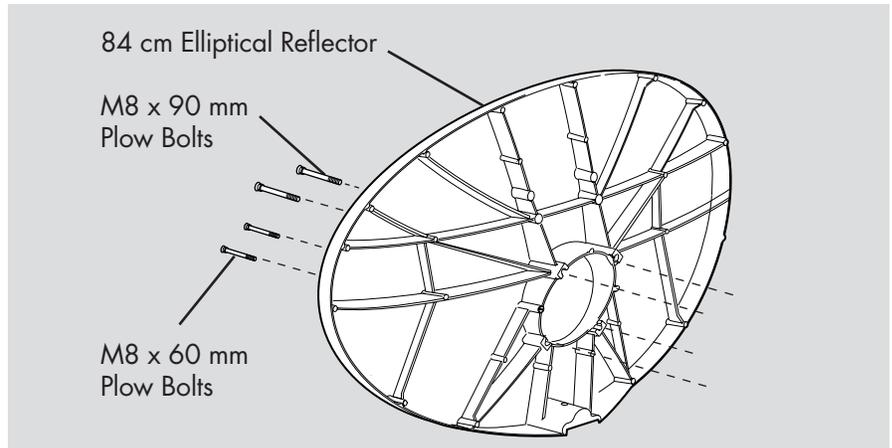
It is important to conduct an on-site survey with a portable antenna or with a compass and inclinometer to avoid interference, obstructions, etc. When selecting "look angle," (Elevation/Azimuth) be sure to observe and take readings approximately 25 degrees to the left and right, above and below your selected "look angle". Once you have chosen a site, select a location and determine the type of installation mount to be used. The satellite antenna can be installed on a ground pole, wall/roof mount, or non-penetrating roof mount with 60 mm (2-3/8") outside diameter mast. The chosen mount type should be assembled and in place before installing the antenna. Refer to instructions packed with mount for its proper installation. **The mast pipe must be vertical and plumb to insure ease of alignment.**

Before any digging or trenching for Interfacility Link (IFL) cables 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.

ANTENNA ASSEMBLY

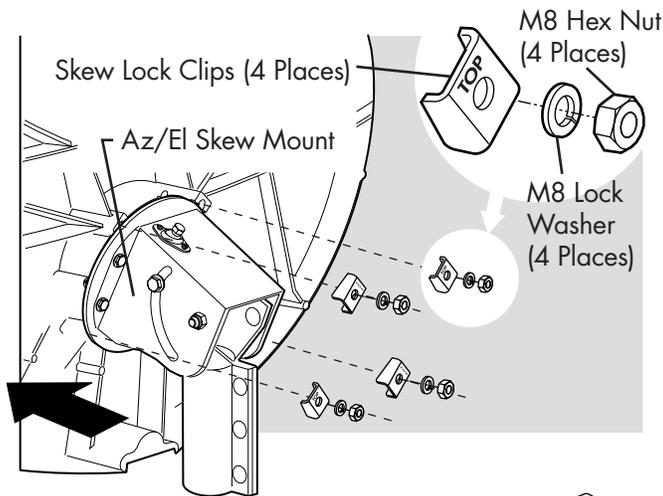
Step 1

Insert M8 x 90 mm plow bolts through upper holes of reflector and M8 x 60 mm plow bolts through lower holes.



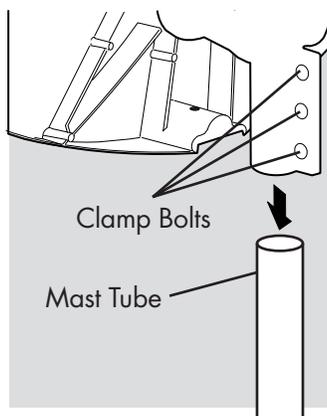
Step 2

Secure Az/El Skew mount to reflector with four clips, M8 lock washers and M8 hex nuts. Note orientation of "TOP" on Skew Lock Clips illustration to properly attach.



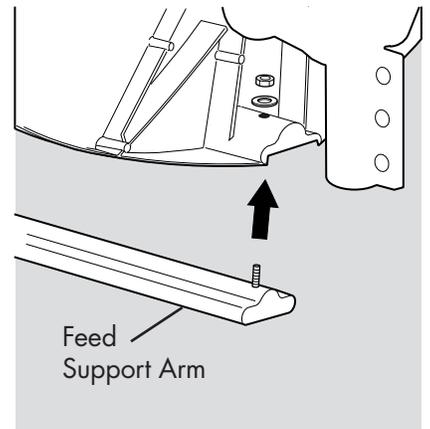
Step 3

Slide Az/El/Skew mount over mount mast tube and loosely fasten clamp bolts until final assembly is complete.



Step 4

Attach feed support arm to reflector with M8 washer and M8 hex nut. Fully tighten all hardware.

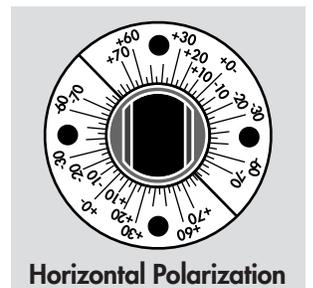
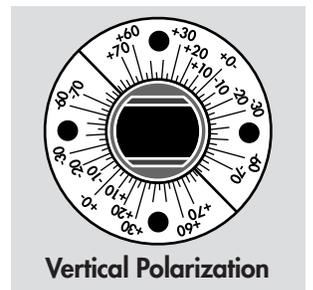
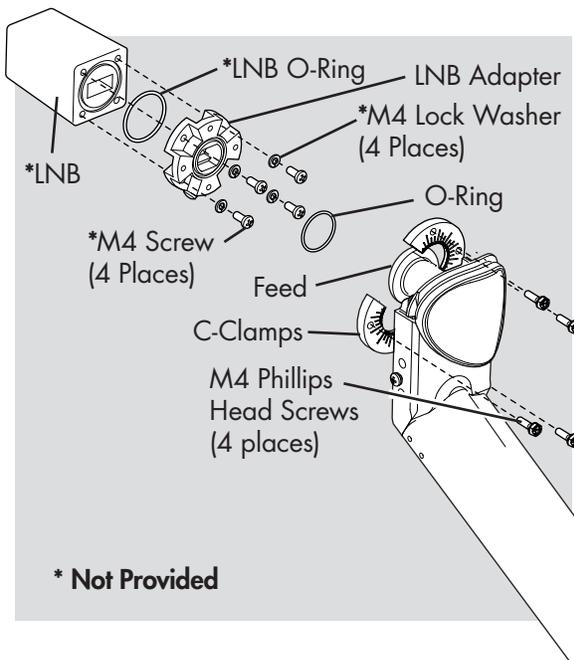


Step 5

Assemble adapter to LNB as shown on right using screws and hardware supplied with LNB.

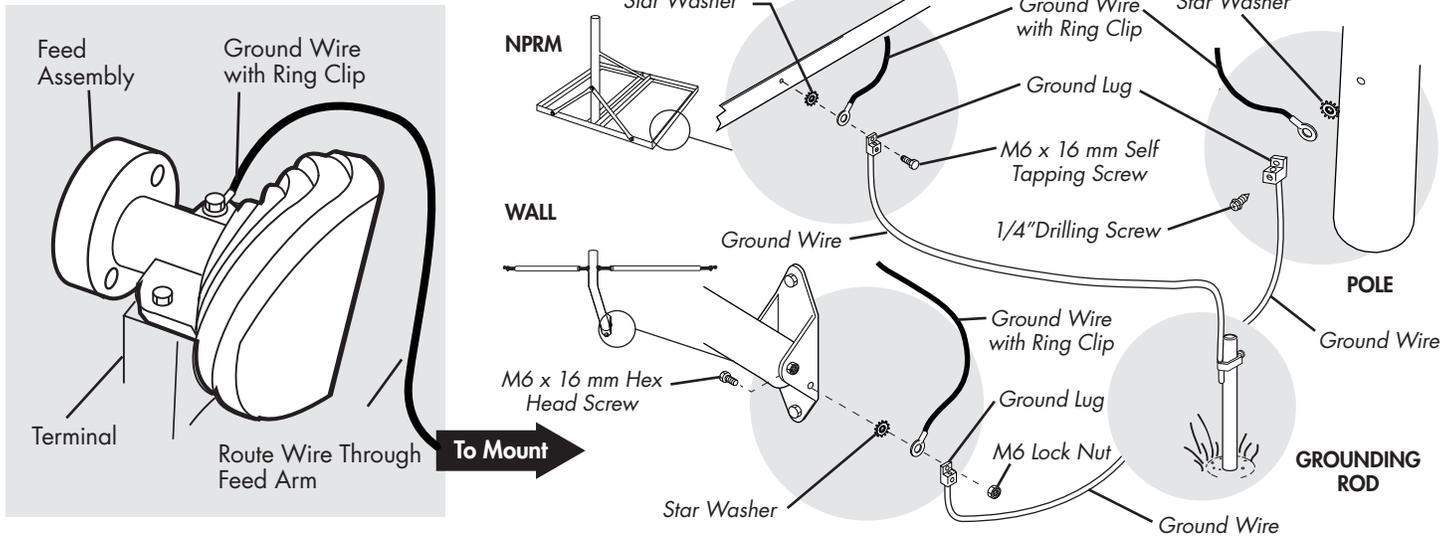
Attach LNB assembly to feed horn with O-ring, two C-Clamps and four M4 Phillips screws provided.

Note Orientation of LNB/Adapter assembly to feed horn and clamps depending on vertical or horizontal polarization. Align 0° to indicator on feed horn. Snug tighten hardware only.



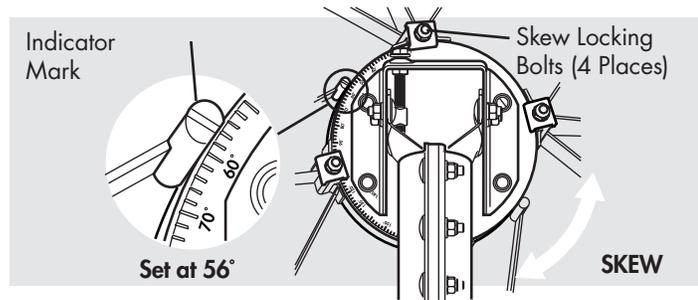
Step 6 Grounding Antenna

Attach #10 AWG copper or #8 AWG aluminum ground wire to feed assembly with M6 x 16 mm philips screw, M6 lock washer and ring clip. Tighten to assure a solid connection. Route ground wire through support arm and down mount tube. Secure ground wire to mount tube with cable ties. Then attach ground wire to NPRM, Wall or Pole mount, as shown in illustrations, with designated hardware. Tighten securely to assure quality connection. Ground the antenna/mount from this point with additional ground wire to a ground rod or an approved common ground point for the location. **NOTE: Ground wire, grounding hardware and cable ties are NOT provided.**



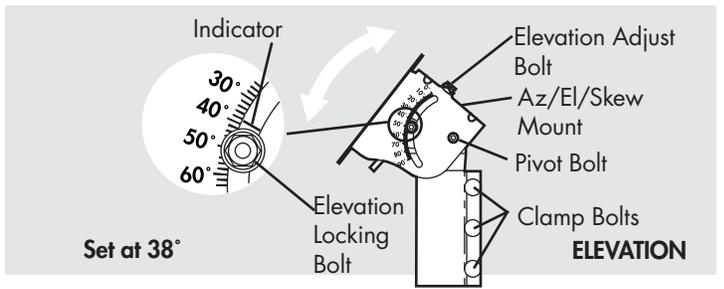
Step 7 Set Skew

Set the SKEW on AZ/EL/Skew mount prior to installation. Loosen the (four) skew locking bolts until they are just finger tight and rotate the AZ/EL/Skew mount to align the indicator mark with correct number on skew scale. Scale is in 2° increments. Torque skew locking bolts to 8 ft-lb. This setting is final and will NOT need to be fine tuned.



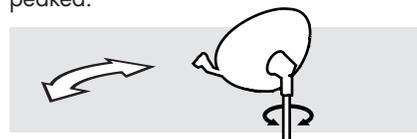
Step 8 Set Elevation

Loose elevation lock bolts in curved slots (both sides), and pivot bolts (both sides) 1/2 turn. Turn elevation adjustment bolt clockwise to decrease elevation and counter clockwise to increase. Align the edge of clamp with mark on housing at the desired elevation reading. Scale is in 2° increments. This is an approximate setting. Optimum setting is achieved when fine tuning.



Step 9 Set Azimuth

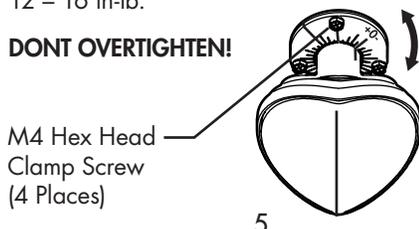
Using a compass to find azimuth heading, rotate the antenna and mount, pointing it to the correct azimuth heading for your location and satellite. Tighten AZ/EL/Skew mount clamp bolts until a slight resistance is reached when rotating antenna and mount. Slowly sweep the antenna in azimuth until a desired signal is found. If the desired signal is not found, increase or decrease elevation setting slightly and repeat the azimuth sweep. Tighten all hardware after signal is peaked.



Step 10 Set Polarity

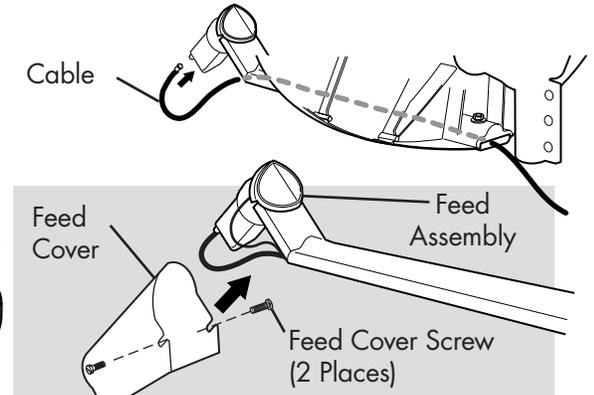
Position the feed as shown with the polarization indicator aligned with 0°. Loosen the four M4 hex head clamp screws one turn to allow polarization fine tuning. Slowly rotate the feed clockwise and counter clockwise until the signal is peaked. Alternately tighten between the M4 clamp screws and torque to 12 – 16 in-lb.

DONT OVERTIGHTEN!

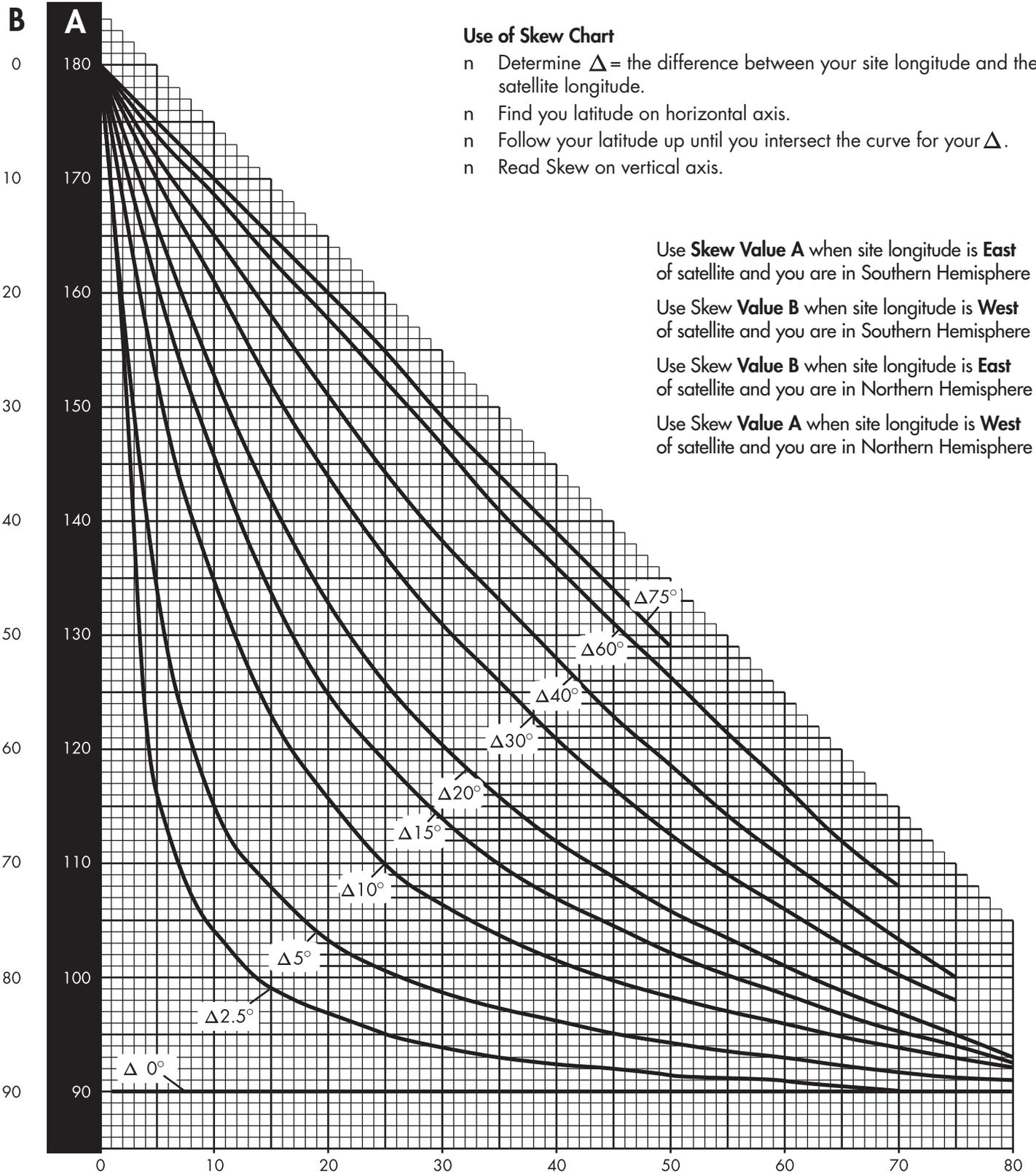


Step 11 Feed Cover

Attach cable to LNB and route through feed support tube. Slide feed cover over feed assembly and secure with two feed cover screws.



SKEW CHART



Use of Skew Chart

- n Determine Δ = the difference between your site longitude and the satellite longitude.
- n Find your latitude on horizontal axis.
- n Follow your latitude up until you intersect the curve for your Δ .
- n Read Skew on vertical axis.

Use **Skew Value A** when site longitude is **East** of satellite and you are in Southern Hemisphere

Use **Skew Value B** when site longitude is **West** of satellite and you are in Southern Hemisphere

Use **Skew Value B** when site longitude is **East** of satellite and you are in Northern Hemisphere

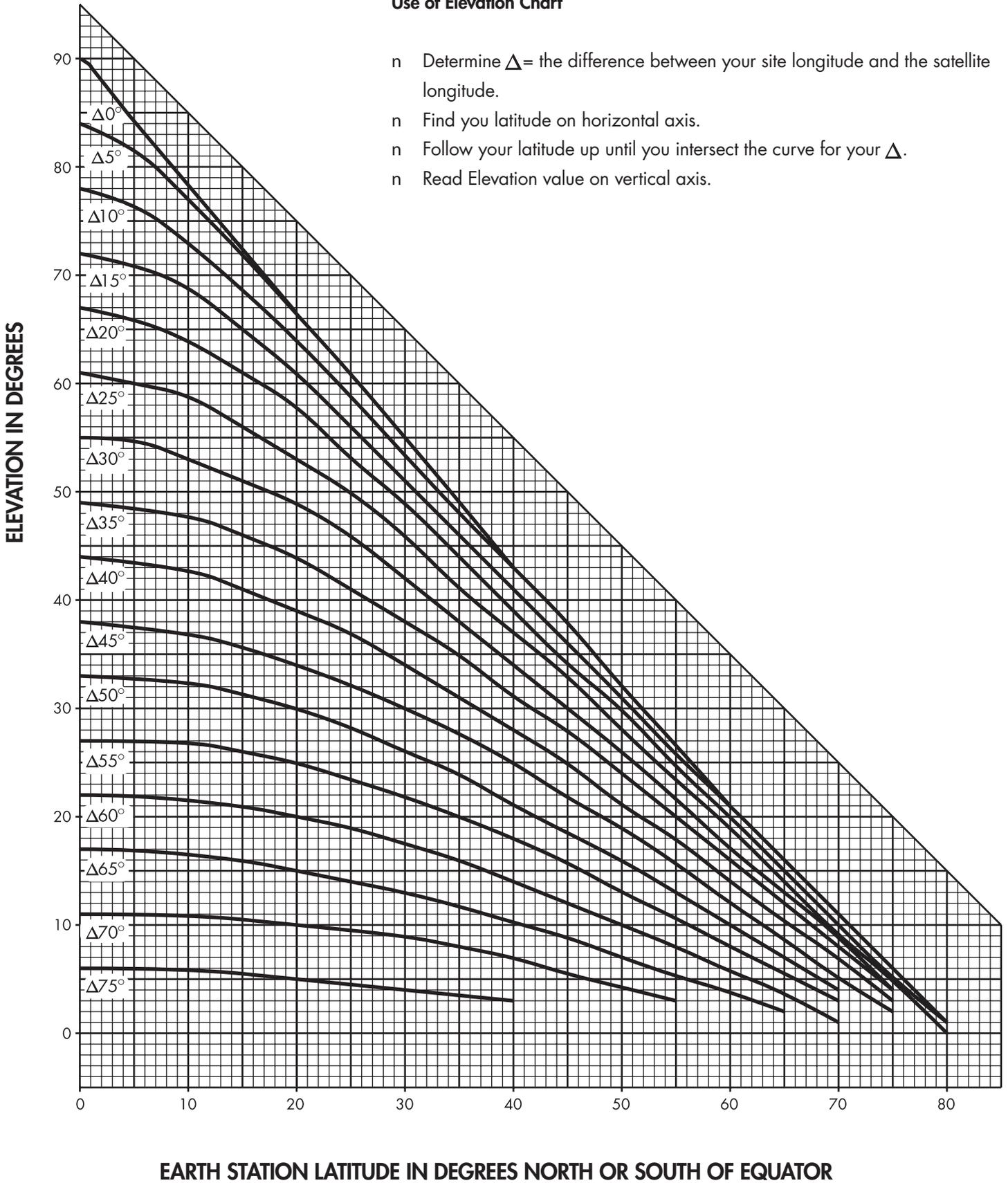
Use **Skew Value A** when site longitude is **West** of satellite and you are in Northern Hemisphere

EARTH STATION LATITUDE IN DEGREES NORTH OR SOUTH OF EQUATOR

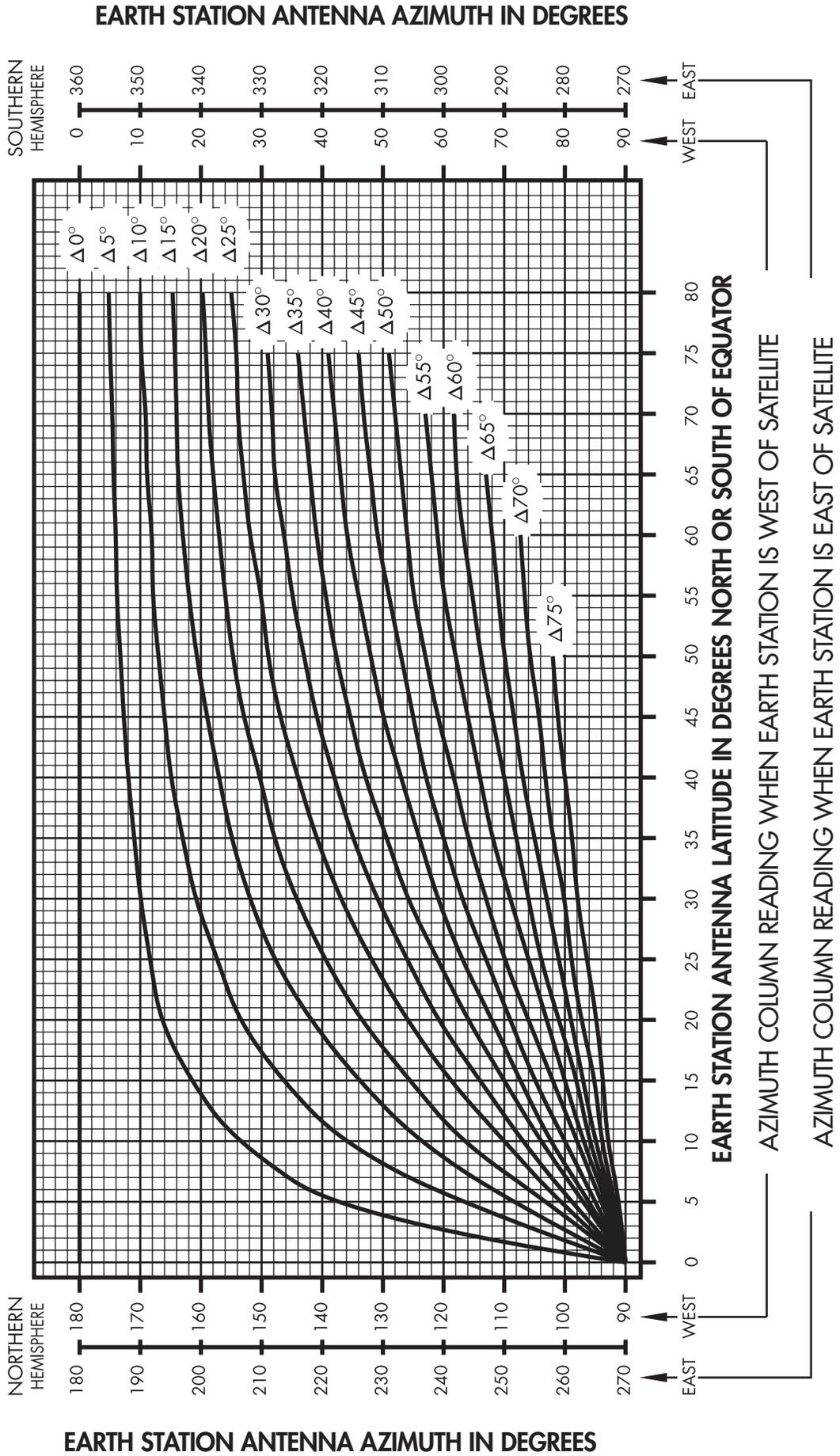
ELEVATION CHART

Use of Elevation Chart

- n Determine Δ = the difference between your site longitude and the satellite longitude.
- n Find your latitude on horizontal axis.
- n Follow your latitude up until you intersect the curve for your Δ .
- n Read Elevation value on vertical axis.



" Δ " IS THE DIFFERENCE BETWEEN THE EARTH STATION ANTENNA SITE LONGITUDE AND THE SATELLITE LONGITUDE

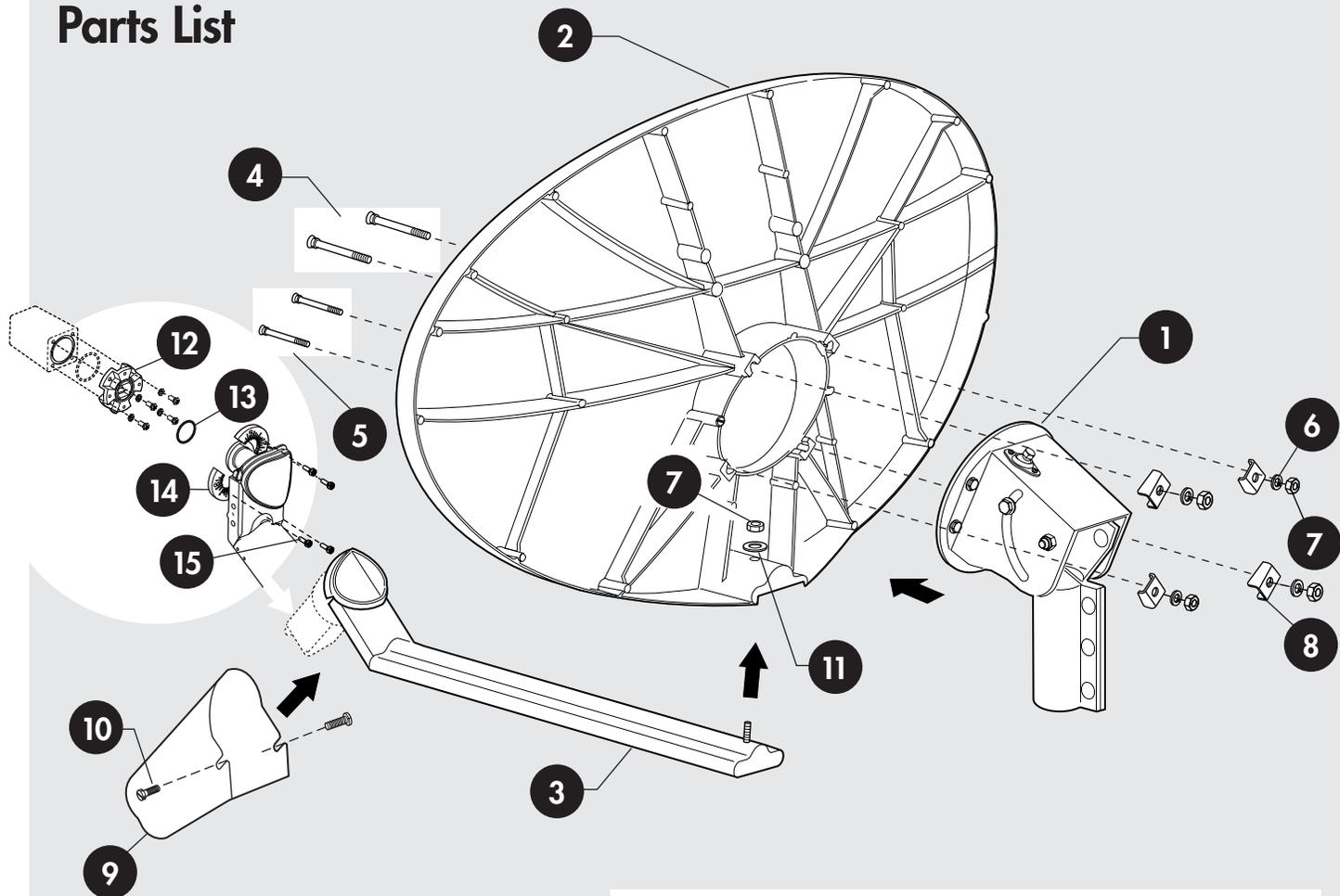


EARTH STATION ANTENNA LATITUDE IN DEGREES NORTH OR SOUTH OF EQUATOR

AZIMUTH COLUMN READING WHEN EARTH STATION IS WEST OF SATELLITE

AZIMUTH COLUMN READING WHEN EARTH STATION IS EAST OF SATELLITE

Parts List



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ITEM	DESCRIPTION	QTY
1	Az/El Skew Mount	1
2	84 cm Elliptical Reflector	1
3	Feed/Feed Support Arm Assembly	1
4	M8 x 90 mm Plow Bolt	2
5	M8 x 60 mm Plow Bolt	2
6	M8 Lock Washer	4
7	M8 Hex Nut	5
8	Skew Lock Clips	4

ITEM	DESCRIPTION	QTY
9	LNB Cover	1
10	Feed Cover Screw	2
11	M8 Flat Washer	1
12	LNB Adapter	1
13	O-Ring	1
14	C-Clamps	2
15	M4 Phillips Head Screws	4