

## Polar Mount

Model 6033 for 1.0m & 1.2m Antenna (uses 76mm (3.0") Diameter Tube)

Modes 6034 for 60cm & 75cm Antenna (uses 57mm (2-1/4") Diameter Tube)



**VSAT ANTENNA/MOUNT/LNB  
LIMITED TWELVE (12) MONTH WARRANTY**

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

Claimants under this Warranty shall present their claims along with the defective equipment to ANDREW immediately upon failure. Non-compliance 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. ANDREW DOES NOT AUTHORIZE ANY PERSON TO ASSUME FOR IT THE OBLIGATIONS CONTAINED IN THIS WARRANTY AND ANDREW 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 ANDREW 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 ANDREW 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.

<b>DATE</b>	<b>DESCRIPTION</b>	<b>REV.</b>
4/20/90	Change pages 1, 3, 5-10, 12-13 ECN9001567	A
9/10/90	Change cover page, pages 1, 3, 5, 7, 9-13 ECN9001616	B
11/19/90	Change cover, pages 1-8 ECN9001665	C
1/91	Change cover, pages 1-3, 13-14 ECN9001692	D
1/94	Change cover, inside front cover and page 1 ECN9002344	E
5/04	ECN9006666	

## **DANGER!!!**

**WATCH FOR WIRES! YOU COULD BE KILLED IF THIS PRODUCT COMES NEAR POWER LINES. Installation of this product near power lines is dangerous. YOU COULD BE KILLED. 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 a dish on windy days or serious, even fatal accidents may occur. ANDREW is not responsible or liable for damage or injury resulting from antenna installations.**

## **INTRODUCTION**

This manual covers the assembly and installation of the ANDREW Polar Mount for use with the 60cm, 75cm, 1.0m and 1.2m antenna system. For best results in the assembly process, perform each step in the same sequence as listed in this manual.

## **SPECIFICATIONS**

<b>POLAR MOUNT MODEL NO.</b>	<b>DECLINATION LATITUDE RANGE</b>	<b>MOUNT WEIGHT</b>	<b>DIAMETER OF GROUND TUBE</b>	<b>COMPATIBLE ANTENNA MODEL NO.</b>	<b>COMPATIBLE GROUND TUBE MODEL NO.</b>	<b>COMPATIBLE JACK (ACTUATOR)</b>
<b>6033</b>	<b>20°-70°</b>	<b>3.6kg (7.96 lbs.)</b>	<b>76mm (3.0")</b>	<b>6020-1.0m OFFSET SMC ANTENNA 6022-1.2M OFFSET SMC ANTENNA</b>	<b>6048 GROUND TUBE</b>	<b>MO. 6737</b>
<b>6034</b>	<b>20°-70°</b>	<b>2.1kg (4.65 lbs.)</b>	<b>57mm (2 1/4")</b>	<b>6016-60cm OFFSET SMC ANTENNA 6017-75CM OFFSET SMC ANTENNA</b>	<b>6047 GROUND TUBE</b>	<b>MO. 6738</b>

## **UNPACKING, INSPECTION AND TOOLS REQUIRED**

### **CARTON CONTENTS**

<b>MODEL NO.</b>	<b>QTY.</b>	<b>NAME</b>	<b>QTY.</b>	<b>NAME</b>
6033	1	Polar Mount Assembly	1	Hardware Bag
6034	1	Polar Mount Assembly	1	Hardware Bag

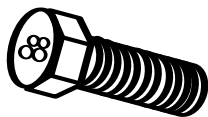
## UNPACKING AND INSPECTION

The polar mount shipping cartons should be unpacked and contents checked for damaged or missing parts. Should there be any parts that are damaged or missing contact: USA: ANDREW CORPORATION  
1315 Industrial Park Drive  
Smithfield, NC 27577 USA  
(919) 989-2210

## ASSEMBLY TOOLS REQUIRED

The following list of tools are those required for hand assembly and installation of the antenna.

- 1–Ratchet Wrench (3/8" Drive)
- 1–10mm Socket (3/8" Drive)
- 1–10mm Nut Driver
- 1–13mm Socket (3/8" Drive)
- 1–13mm Open/Box End Wrench (Spanner)
- 1–3/4" Open/Box End Wrench (Spanner)
- 1–Phillips Screwdriver (Cross Point)
- 1–Compass
- 1–Clinometer
- 1–Torque Wrench



APPLY 24 N-M (18 FT-LBS.)  
OF TORQUE TO M8 BOLT

### GRADE 8.8 (8G)–GOLD COLOR

M6	M8	M10	M12	M16	M20
9.5 N-m	24 N-m	43 N-m	79 N-m	195 N-m	353 N-m
7 ft-lbs	18 ft-lbs	32 ft-lbs	58 ft-lbs	144 ft-lbs	260 ft-lbs

NOTE: TORQUE FOR M8 ROUND HEAD, SQUARE NECK BOLT IS 16.3 N-m (12 FT-LBS)

## SITE SELECTION

The first and most important consideration when choosing a prospective antenna site is whether or not the area can provide an acceptable “look angle” at the satellites. A site with a clear, unobstructed view facing south, southeast or southwest is required. Your antenna site must be select in advance so that you will be able to receive the strongest signal available. To avoid interference, obstructions, etc., it is important to conduct an on-site survey with a portable antenna.

The site survey can alert you to any “look angle”, soil, or other problems. We strongly recommend a pre-installation site survey.

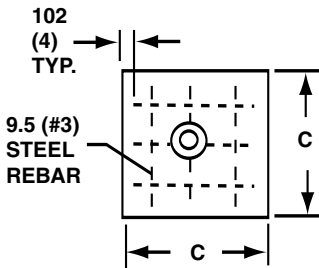
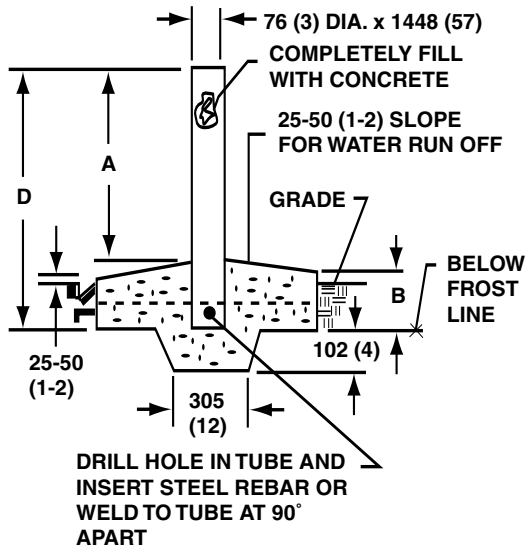
Because soils vary widely in composition and load capacity, the local soil type should be determined at the site selection time in order to determine the type and size of foundation required to provide a stable base for the antenna.

Before digging is done, information regarding the possibility of underground telephone lines, power lines, storm drains, etc., in 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.

# FOUNDATION

## SLAB FOUNDATION



Although more expensive in materials, the slab foundation has been used to support many satellite earth stations. The dimensions of the slab depend on a number of factors including soil, frost conditions, and local winds. Because of these differences in local conditions it is strongly recommended that the services of a civil or other consulting engineer be used to determine the necessary dimensions.

Soil should be excavated from an area equal to the required size of the slab. All loose soil must be removed and the bottom of the hole should be tamped. Sides of hole should be straight to prevent frost heaving. A concrete form can be used, but this may be avoided if the excavation dimensions are the same as the desired foundation size.

- NOTE:** (1) Be certain that the slab depth exceeds the frost line according to conditions.
- (2) All internal steel parts including rebar and base tube should be 102mm (4") from any outside concrete surface.

ANT. SIZE	WIND VELOCITY	CONCRETE DIM.			CONCRETE VOLUME M <sup>3</sup> (YDS. <sup>3</sup> )	TUBE SIZE O.D. X WALL THK.	*TUBE LENGTH "D"	TUBE Fy MPA (PSI)
		"A"	"B"	"C"				
1.0m	145 km/h (90 mph)	1002 (43)	305 (12)	762 (30)	.19 (.25)	76 X 1.6 (3.0 X 16 GA.)	1448 (57)	276 (40000)
	193 km/h (120 mph)	1002 (43)	305 (12)	762 (37)	.27 (.35)	76 X 3.2 (3.0 X 10 GA.)	1448 (57)	276 (40000)
2.0m	145 km/h (90 mph)	1002 (43)	305 (12)	914 (36)	.26 (.34)	76 X 1.6 (3.0 X 10 GA.)	1448 (57)	276 (40000)
	193 km/h (120 mph)	1002 (43)	305 (12)	1143 (45)	.46 (.60)	76 X 3.2 (3.0 X 10 GA.)	1448 (57)	345 (50000)
						or 76 x 4.6 (3.0 x 7 GA.)		276 (40000)

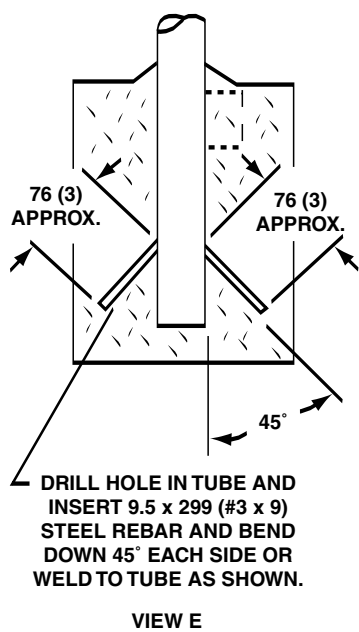
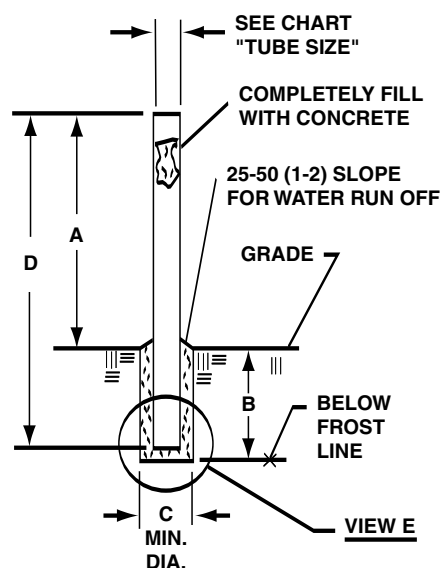
\*IF DEPTH OF FOUNDATION MUST BE INCREASED TO BE BELOW FROST LINE, LENGTH OF TUBE MUST BE INCREASED ACCORDINGLY.

NOTE: IF MODEL 6048 GROUND TUBE IS USED, CUT OFF 533 (21) OF LENGTH ON END OPPOSITE HOLES FOR REBAR.

X.XX = MILLIMETERS

(Y.YY) = INCHES

**FIG. 1.0 – SLAB FOUNDATION**



## PIER FOUNDATION

Design based on allowable vertical soil bearing pressure of 96KPa (2000 psf) and lateral pressure of 19KPa (400 psf). Soil conditions vary and you should consult with a local professional engineer for modifications, if any, to suit local soil conditions and code requirements.

ANT. SIZE	WIND VELOCITY	CONCRETE DIM.			CONCRETE VOLUME M <sup>3</sup> (YDS. <sup>3</sup> )	TUBE SIZE O.D. X WALL THK.	*TUBE LENGTH "D"
		"A"	"B"	"C"			
75cm	145 km/h (90 mph)	889 (35)	762 (30)	279 (11)	.05 (.06)	57 X 2.1 (2 1/4 X 14 GA.)	1575 (62)
	193 km/h (120 mph)	889 (35)	762 (30)	356 (14)	.09 (.10)	57 X 3.0 (2 1/4 X 11 GA.)	1575 (62)
1.0m	145 km/h (90 mph)	1002 (43)	940 (37)	305 (12)	.07 (.10)	76 X 1.6 (3.0 X 16 GA.)	1981 (78)
	193 km/h (120 mph)	1002 (43)	991 (39)	381 (15)	.12 (.15)	76 X 3.2 (3.0 X 10 GA.)	1981 (78)
	145 km/h (90 mph)	1002 (43)	991 (39)	305 (12)	.07 (.10)	76 X 3.2 (3.0 X 10 GA.)	1981 (78)
1.2m	193 km/h (120 mph)	1002 (43)	991 (39)	483 (19)	.19 (.27)	76 X 3.2 (3.0 X 10 GA.) or 76 x 4.6 (3.0 x 7 GA.)	1981 (78)

\*IF DEPTH OF FOUNDATION MUST BE INCREASED TO BE BELOW FROST LINE, LENGTH OF TUBE MUST BE INCREASED ACCORDINGLY.

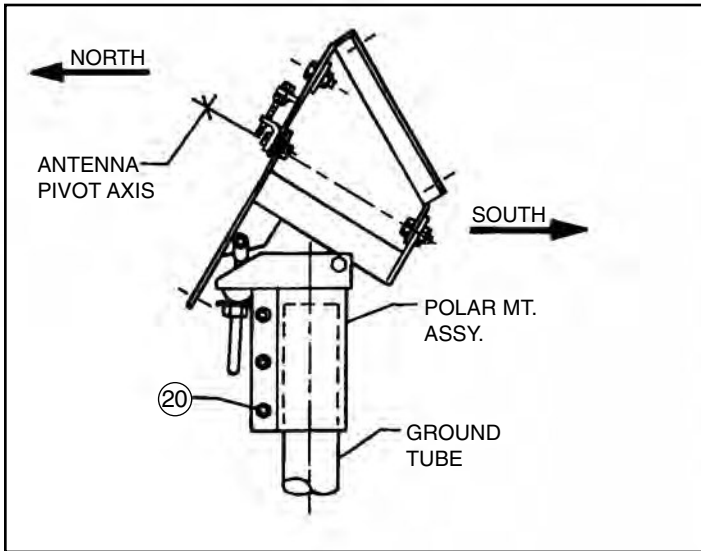
NOTE: 57mm (2 1/4") DIA. TUBES (75cm ANTENNA SIZE) YIELD STRESS IS 284 MPa (36000 psi), 76mm (3.0") DIA. TUBES (1.0m & 1.2m ANTENNA SIZE) YIELD STRESS AS SHOWN ON CHART (F<sub>y</sub>) ON PRECEDING PAGE.

\*\*MODELS 6047 (75cm ANTENNA) & 6048 (1.0m & 1.2m ANTENNAS) GROUND TUBES ARE FURNISHED WITH PRE-DRILLED HOLES. ALLOWABLE WIND VELOCITY IS 193 km/h (120 mph).

X.XX = MILLIMETERS  
(Y.YY) = INCHES

FIG. 1.1 – PIER FOUNDATION

## INSTALLATION



**FIG. 2.0 – INSTALLING POLAR MOUNT ONTO GROUND TUBE**

### POLAR MOUNT TO TUBE

After ground tube foundation concrete has cured, slide assembled polar mount onto ground tube. Swivel polar mount on tube until the antenna pivot axis points approximately North. Tighten the M8 (5/16") hex nuts (20) so that the mount is held stationary on the tube, but can be swiveled with slight pressure (Ref. Fig. 2.0).

### JACK (ACTUATOR) TO POLAR MOUNT

Referring to Fig. 2.1 and 2.2, determine on which side of the polar mount the jack power bar and jack (actuator) is to be assembled. For sites West of 15° East Longitude, assemble as shown in Fig. 2.2.

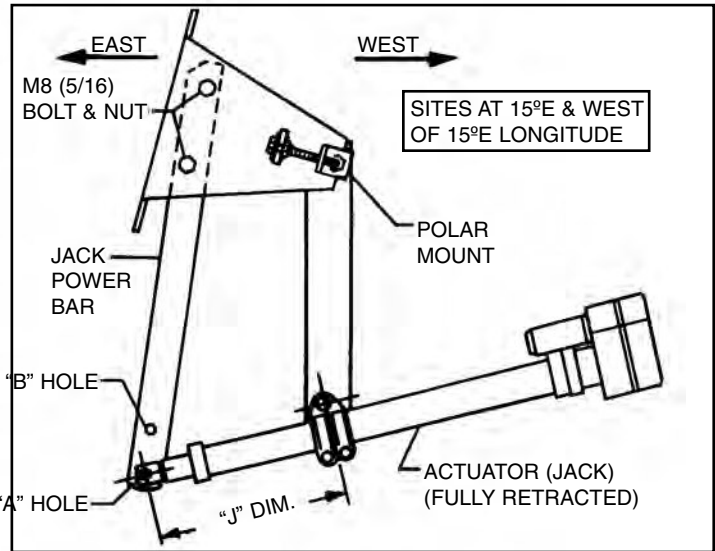
Assemble power bar to polar mount using two M8 (5/16") hex bolts, lock washers and hex nuts (supplied). Tighten and torque.

**NOTE:** For maximum range and rigidity, a 457mm (18") jack is recommended. A 305mm (12") jack is acceptable.

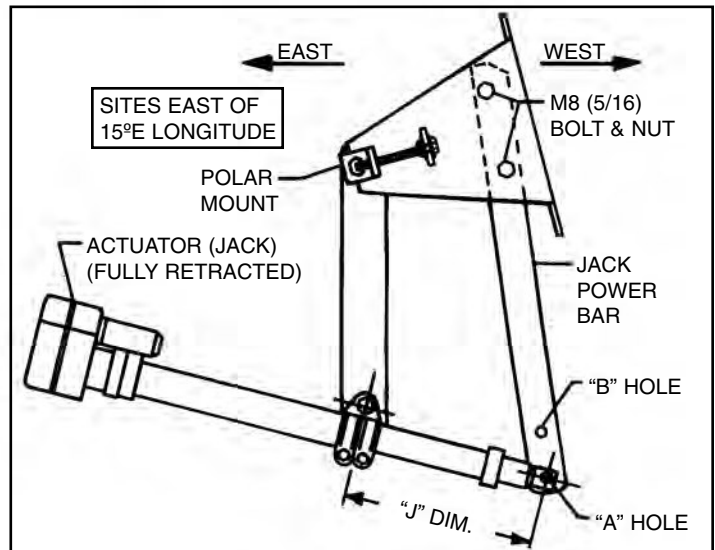
Assemble jack to polar mount (Ref. Fig. 2.1, 2.2 and 2.3). Install jack clamp onto support bar. Tighten and torque clamp pivot bolt. Assemble nose end of jack to power bar. If 305mm (12") jack is used, use hole "B". For 457mm (18") jack, use hole "A". Tighten and torque pivot bolt.

**NOTE:** Fig. 2.3 illustrates a typical jack installation. Refer to instructions supplied with your unit.

Referring to "J" dimension chart, slide jack through jack clamp to set "J" dimension for size of jack used. Tighten and torque clamp bolts.



**FIG. 2.1 – INSTALLATION OF JACK (ACTUATOR)**



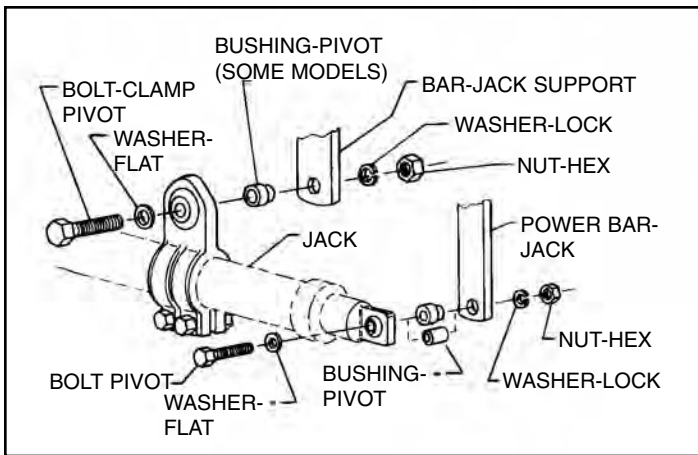
**FIG. 2.2 – INSTALLATION OF JACK (ACTUATOR)**

JACK SIZE	JACK STROKE	"J" DIMENSION		HOLE USED
		20°-45° LATITUDE	45°-70° LATITUDE	
305mm (12 in.)	298mm (11.75 in.)	152mm (6 1/16 in.)	163mm (6 7/16 in.)	"B"
457mm (18 in.)	330mm (13 in.)	210mm (8 1/4 in.)	220mm (8 5/8 in.)	"A"

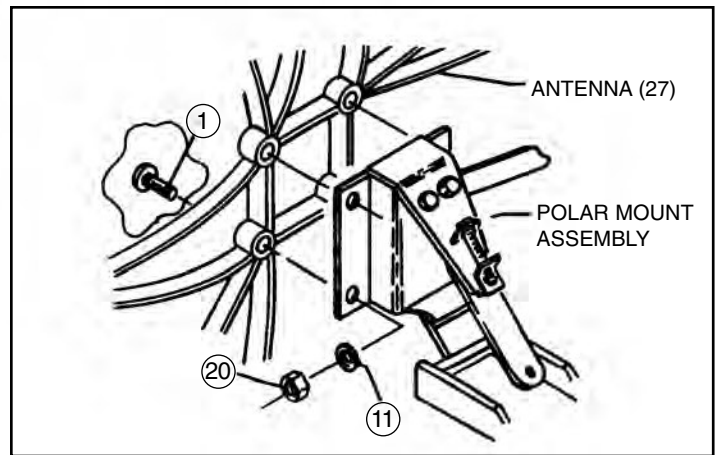
**NOTE:** "J" DIMENSION SHOWN SHOULD BE SUFFICIENT, BUT IF NEEDED, MAY BE DECREASED UP TO 7mm (1/4 in.) TO IMPROVE LOW LOOK ANGLES.

**CAUTION:** Jack or mount components could be damaged if "J" dimension is exceeded. Limit switch must be set for the correct dimension. Be sure to observe jack for complete cycle, in and out, to be sure jack or mount parts are not damaged.





**FIG. 2.3 – INSTALLING JACK (ACTUATOR) TO POLAR MOUNT**



**FIG. 2.4 – ASSEMBLING ANTENNA TO POLAR MOUNT ASSEMBLY**

### ANTENNA AND FEED TO POLAR MOUNT

Install antenna onto polar mount and secure using four M8 x 60 round head, square neck bolts (1), lock washers (11) and hex nuts (20). (Ref. Fig 2.4).

Assemble feed assembly and feed legs to antenna as shown in Fig. 2.5.

Insert bottom feed leg (32) into hole in bottom edge of antenna (27). **NOTE:** Bottom feed leg is the one with a slight bend on one end of leg, lance on opposite end, and is shorter than the side legs.

Install side legs (31) to antenna, from back side of antenna, and secure with M6 x 30mm (1/4" x 1 3/16") hex bolts and 1/4" flat washer (29 & 28). Do not tighten.

Insert one side leg (31) into junction block (22) and secure with M6 x 30mm (1/4" x 1 3/16") hex bolts and 1/4" flat washer (29 & 28). Do not tighten.

Insert bottom leg (32) into hole on center of junction block (22) until lance on leg is engaged.

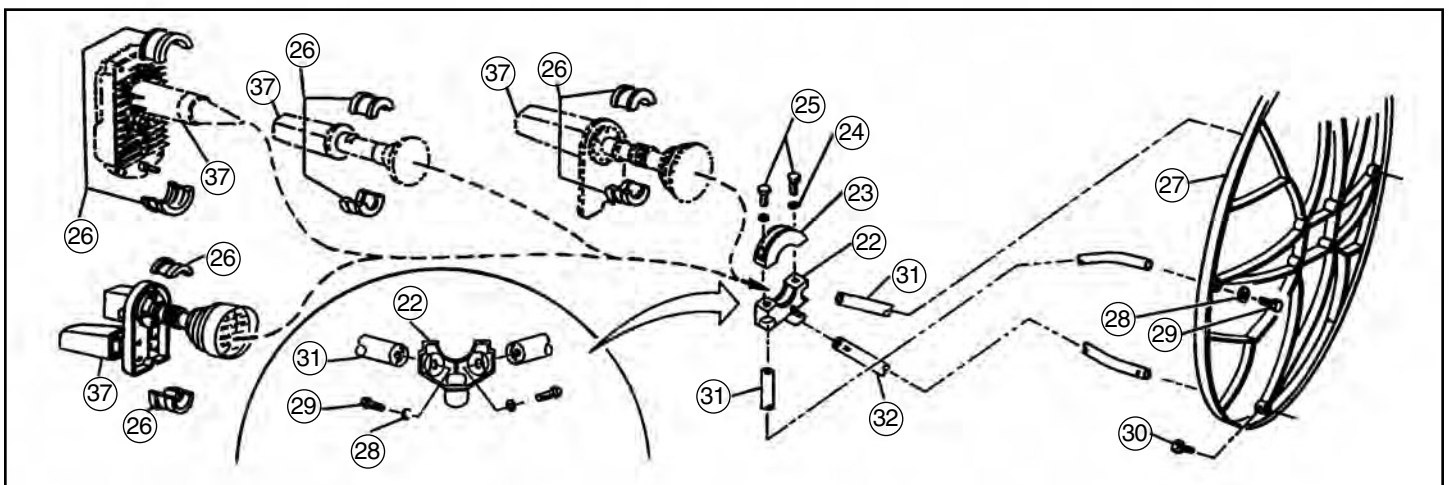
Insert opposite side leg (31) into junction block (22) and secure with M6 x 30mm hex bolts and 1/4" flat washer (29 & 28). **IMPORTANT: Tighten and torque bolts securing side legs to junction block and antenna to 4 ft-lbs (5.4 N-m).**

Using appropriate bushing (26), assemble feed assembly (37), junction block (22) and clamp (23) using two M6 x 20mm bolts and M6 flat washers (25 & 24) as shown in Figure 2.5.

Use bottom feed leg as conduit and route coaxial cable up thru leg. Leave approximately 12" beyond junction block. Install "F" connector onto cable for assembly to LNB.

Make sure bottom feed leg is seated and tighten hex screw (8) securing to antenna on bottom boss, back side of antenna.

Complete feed assembly installation as specified in instructions supplied with feed assembly and as shown below. Use appropriate bushings (26), if required, to assemble feed assembly (37) to junction block (22).



# ANTENNA ALIGNMENT AND ARC TRACKING PROCEDURE

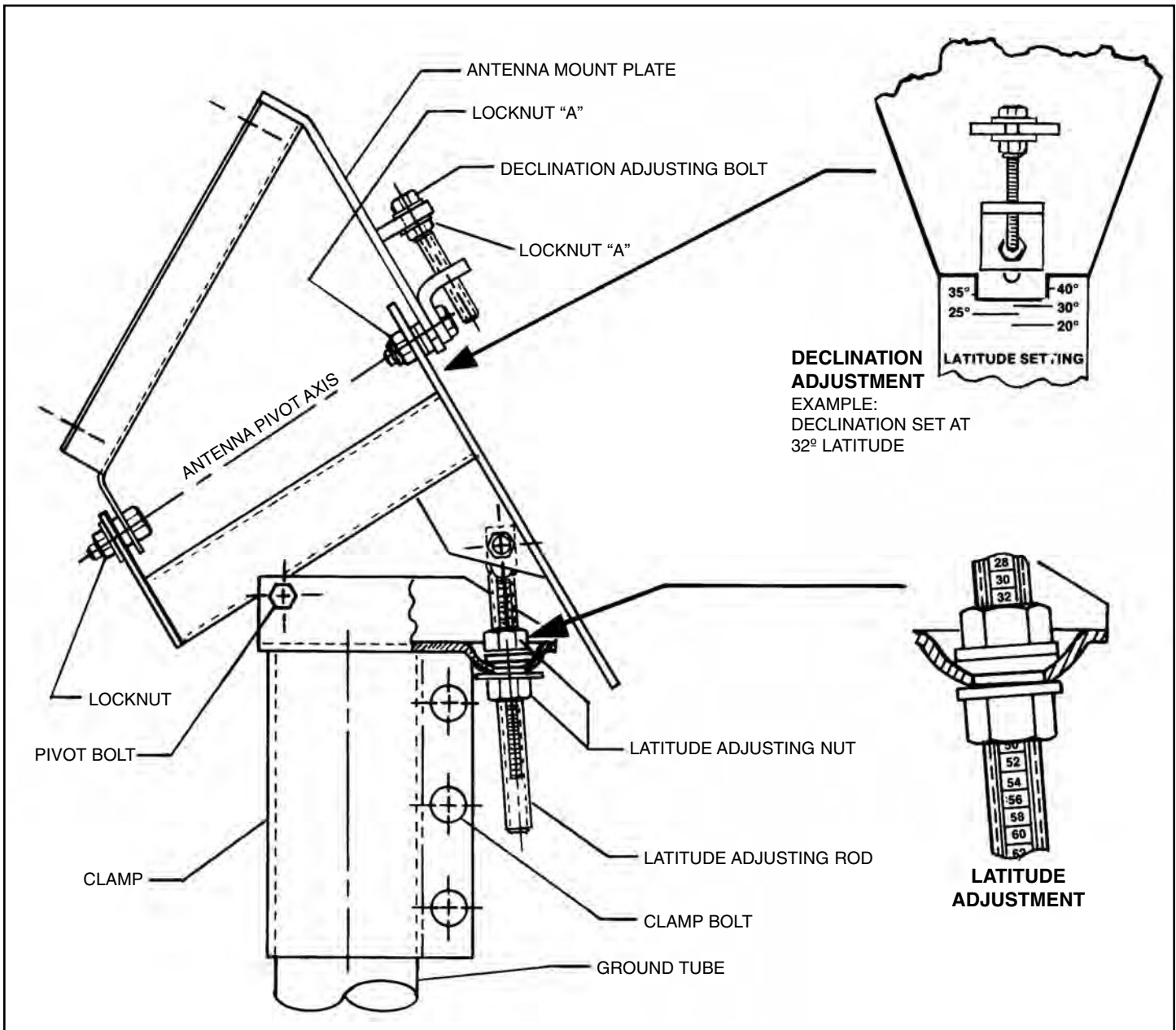


FIG. 3.0 – DECLINATION AND LATITUDE ADJUSTMENTS

## DECLINATION ADJUSTMENT

The Polar Mount declination is factory set for sites at 32° latitude. For other latitudes, change declination by turning M8 adjusting bolt to arrive at declination setting for your latitude (Ref. Fig. 3.0). Align bottom edge of antenna mount plate with reading on scale. **Tighten and torque the two locknuts marked "A" in Fig. 3.0.**

**Note: NEVER** readjust declination after initial setting. This setting is extremely accurate. The declination, latitude and true north adjustments all interact with each other. Fixing the decli-

nation reduces the variable to only latitude and true North, making final alignment quicker and closer to tracking the satellite arc.

## LATITUDE ADJUSTMENT

Loosen the two 1/2" nuts on the latitude adjusting rod and adjust latitude by turning nuts on adjusting rod to arrive at latitude for your site. Align the upper edge of the upper nut with the scale for your site latitude (see sample). (Ref. Fig. 3.0).

## USA INSTALLATIONS

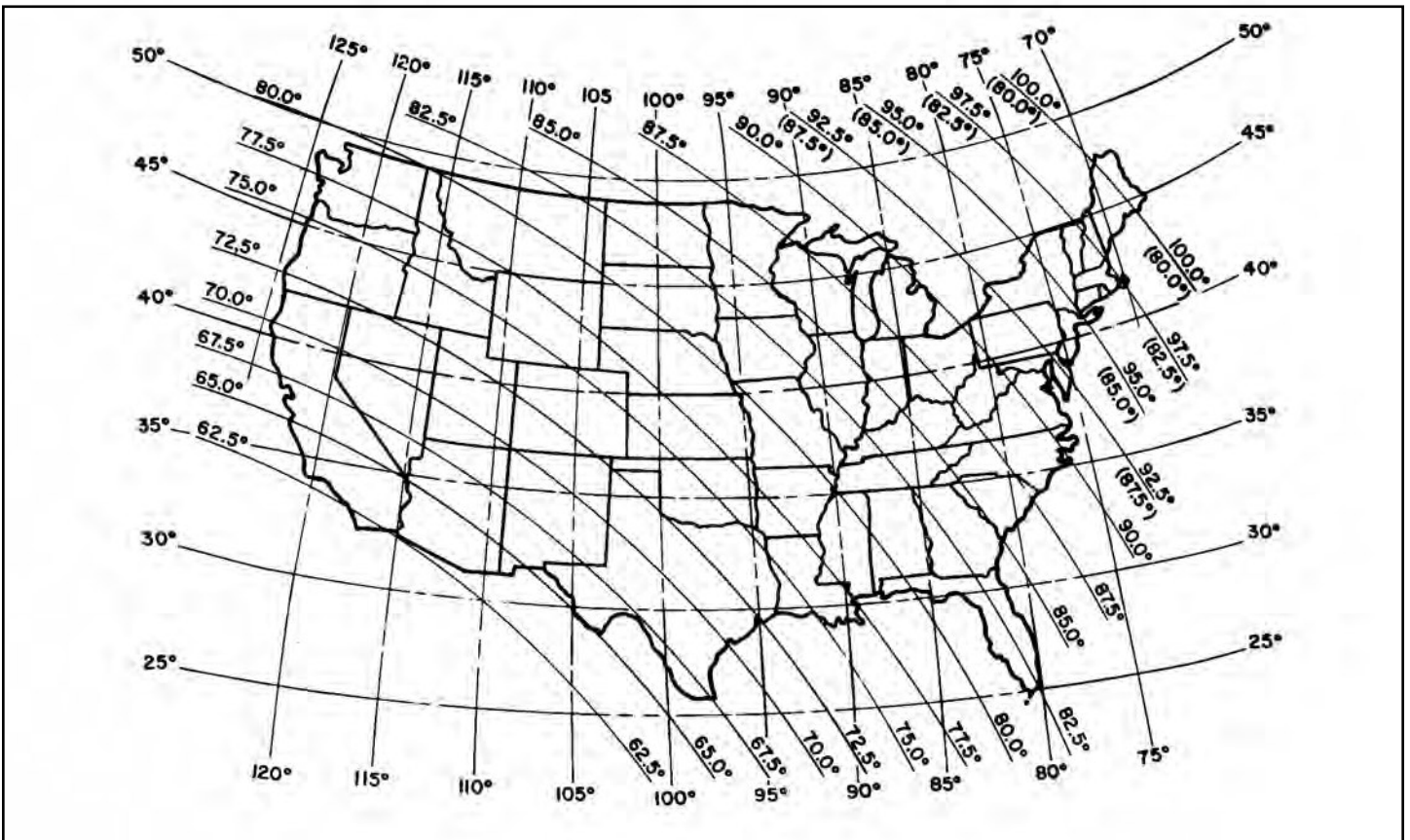


FIG. 3.1 – ASC 1 SATELLITE REFLECTOR FACE ANGLE CHART

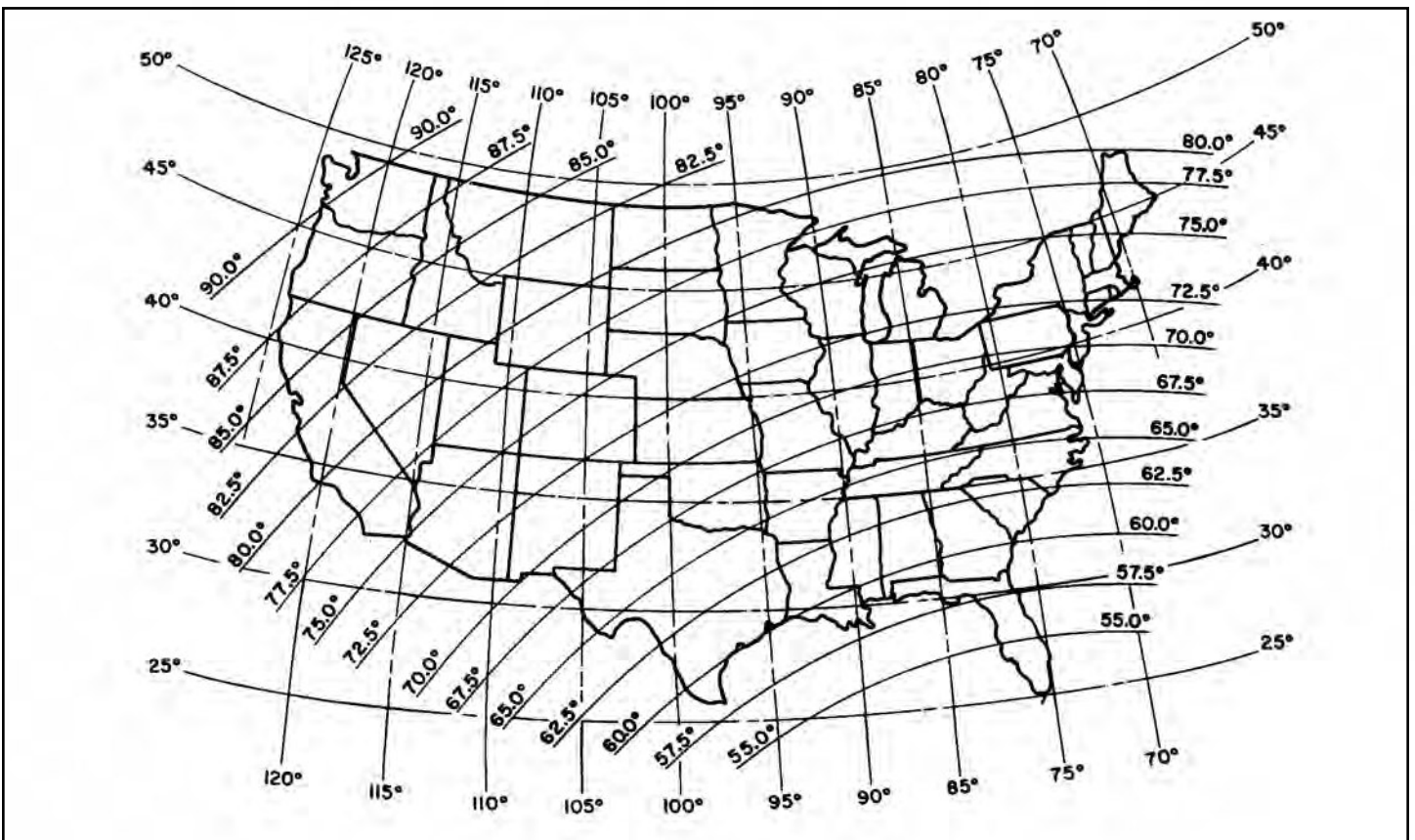


FIG. 3.2 – SATCOM K2 SATELLITE REFLECTOR FACE ANGLE CHART

## EUROPEAN INSTALLATIONS

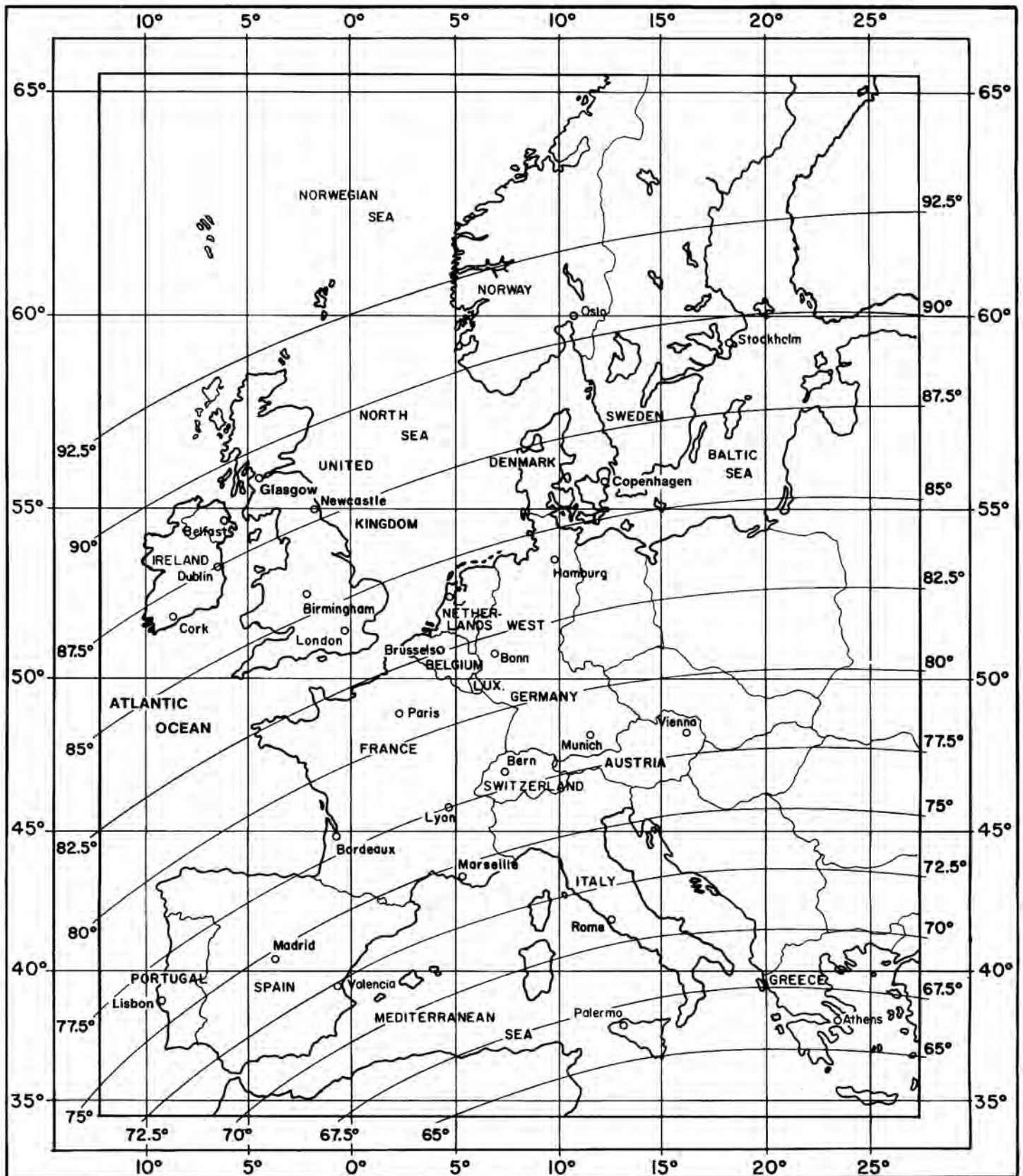


FIG. 3.1 – ASTRA SATELLITE REFLECTOR FACE ANGLE CHART



## EUROPEAN INSTALLATIONS

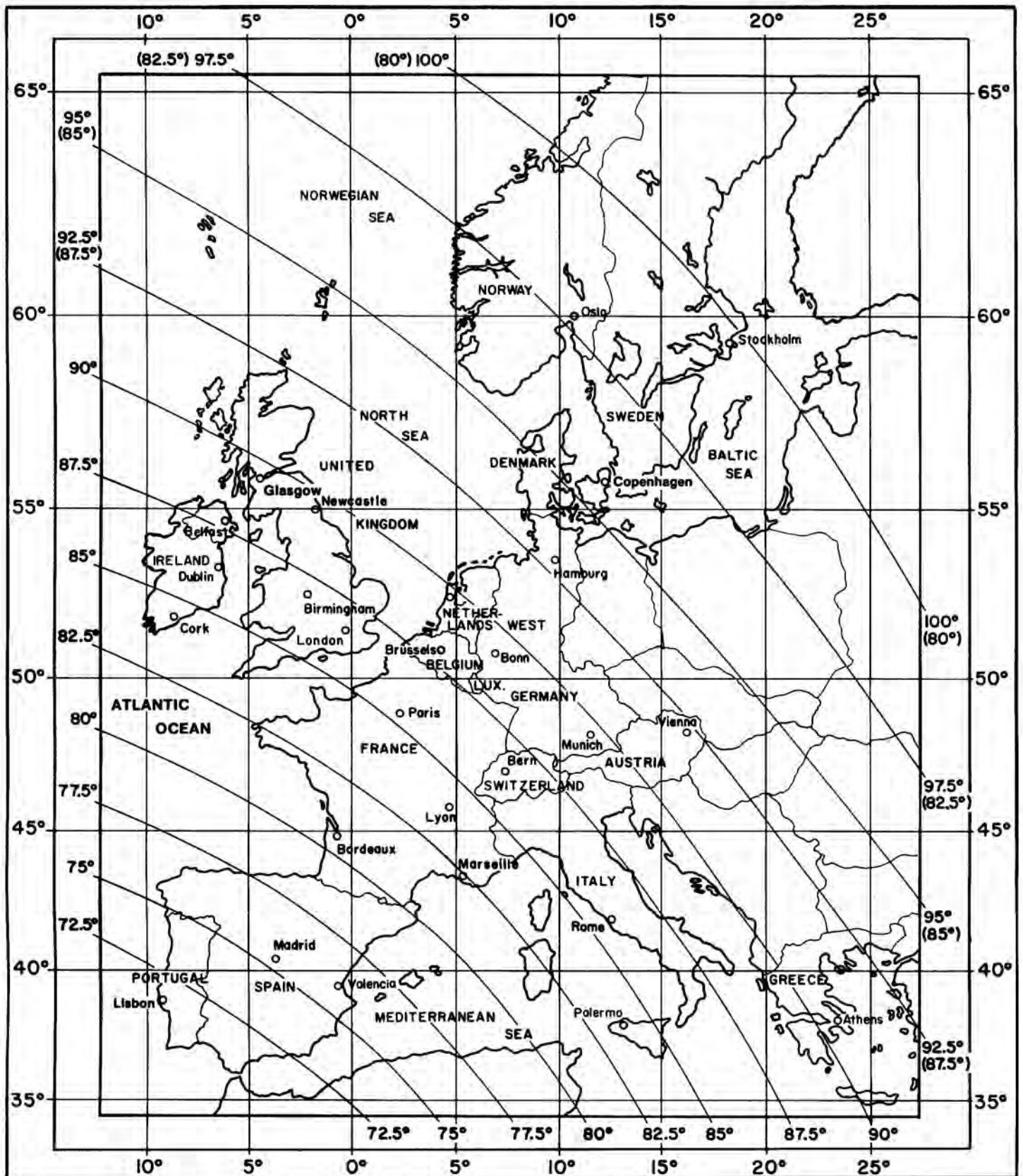
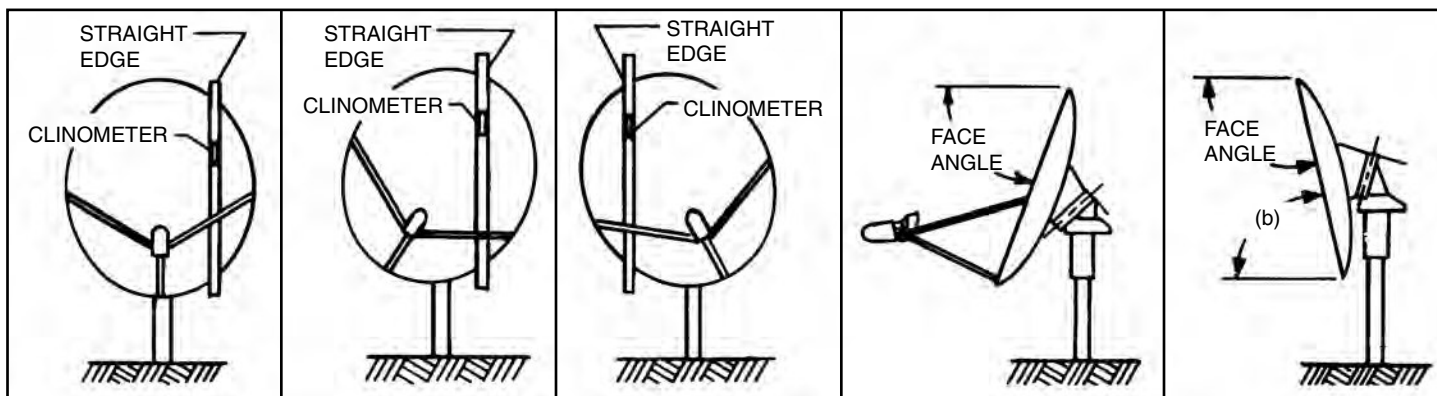


FIG. 3.2 – INTELSAT VA F11 SATELLITE REFLECTOR FACE ANGLE CHART



## ADJUSTING FOR NORTH/SOUTH ALIGNMENT

Place a straight edge along the outside rim of the antenna perpendicular to ground, as shown in Fig. 3.3. Place a clinometer on the straight edge and adjust your jack to obtain the indicated reading from the appropriate antenna face angle chart (see Fig. 3.1 or 3.2). Interpolate if your location is between face angle lines. When the face angle exceeds 90°, use angle “b” shown in parenthesis for a direct clinometer reading.

### EUROPEAN INSTALLATIONS:

For locations east of Birmingham, England (2° West long.), use Intelsat VA F11 satellite. For locations west of Birmingham, England, use ASTRA Satellite.

### USA INSTALLATIONS:

For locations east of Denver, Colorado (104° long.), use SATCOM K2 Satellite. For locations west of Denver, Colorado, use ASC 1 Satellite.

Swivel the antenna on the mast pole to find the satellite required for your location. Alternate between adjusting the jack and swiveling the antenna on the mast pole to obtain the maximum signal strength. This will be very close to true North.

## FINE TUNING

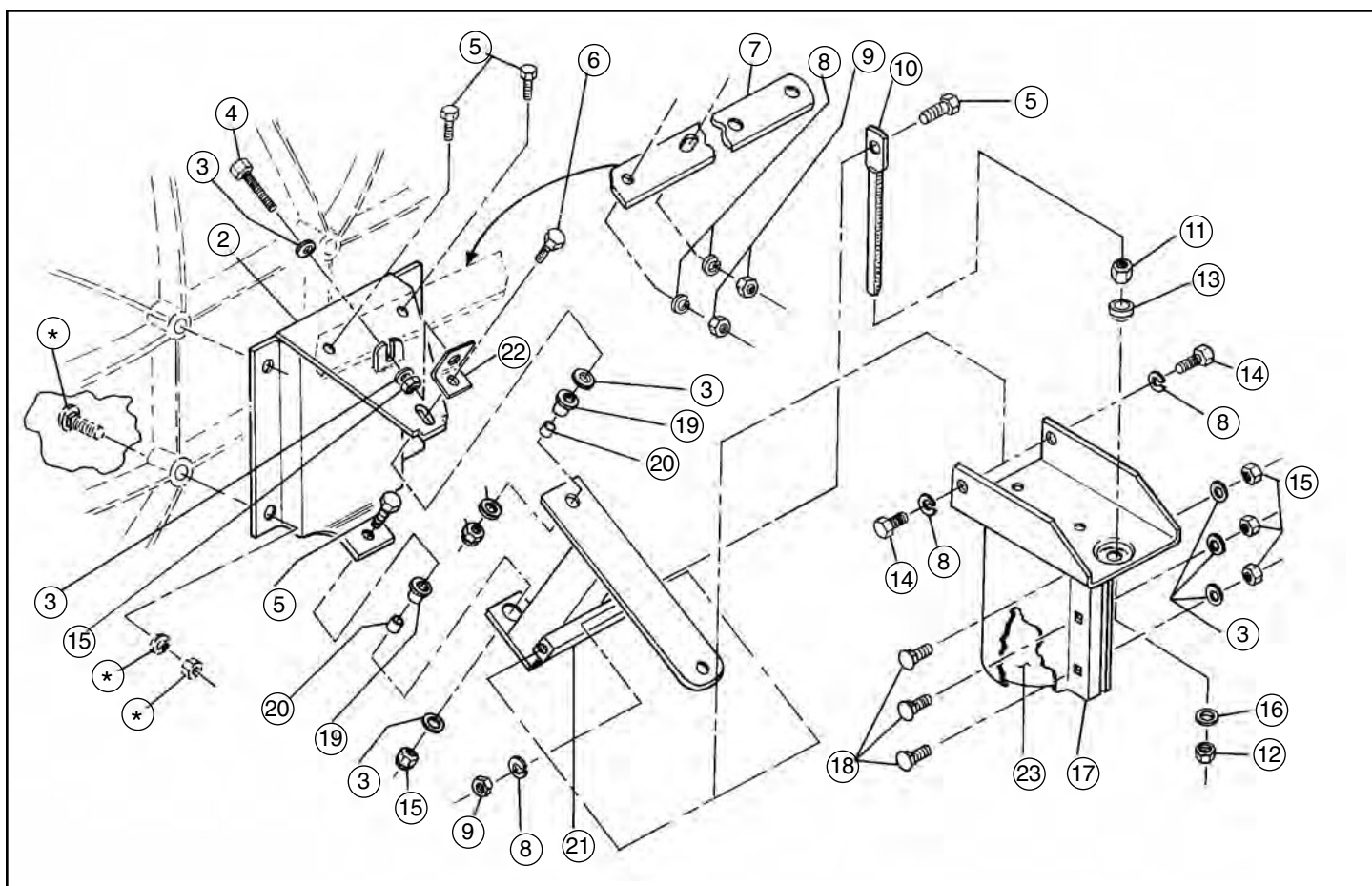
Move the antenna up to a satellite that has nearly the same longitude as your location. The antenna should be facing almost due South. Adjust latitude adjustment rod up or down slightly for maximum signal strength. DO NOT swivel mount on mast pole for North/South adjustment in this position.

Move the antenna back down to the satellite near the horizon used for North/South alignment. Slowly swivel the antenna on the mast pole for maximum signal. DO NOT adjust latitude rod in the low satellite position. To verify that antenna is peaked on lower satellite, pull east or west on rim of antenna while monitoring signal strength. The signal should drop in both directions and return to maximum signal.

Move the antenna back up to the due South position and pull top or bottom on rim. Again, the signal should drop in both directions, and return to maximum strength when released. If it does, antenna is peaked for upper satellite.

When alignment is complete, tighten and torque the clamp bolts to 15-16 N-m (11-12 ft-lbs) and latitude adjustment rod nuts. Recheck signal level against previous reading to insure no signal was lost during tightening and torquing of bolts.

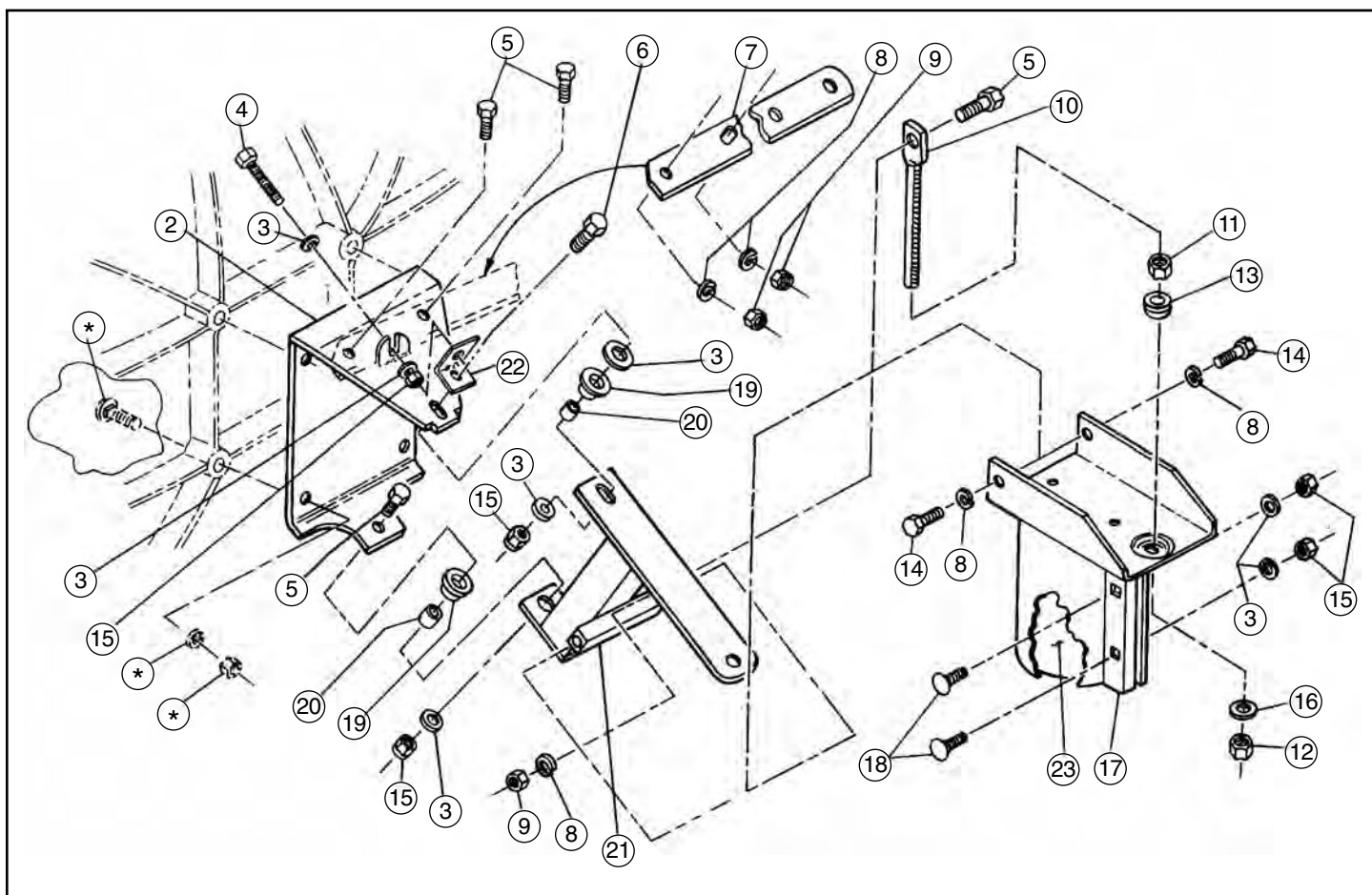
## PARTS AND HARDWARE LISTING



**FIG. 4.0 – MODEL 6033 POLAR MOUNT ASSEMBLY (FOR 1.0m & 1.2m ANTENNA)**

NO.		QTY.	NO.		QTY.	NO.		QTY.	NO.		QTY.
*	Hardware supplied with antenna		7	Power bar-jack	1	13	Washer-spherical	1	19	Bearing-bronze	2
2	Mount plate-ant.	1	8	Washer-lock M8	5	14	Bolt-hex M8 x 20	2	20	Bushing-bearing	2
3	Washer-flat M8	8	9	Nut-hex M8	3	15	Nut-elastic stop	6	21	Main body	1
4	Bolt-hex M8 x 65	1	10	Bolt-latitude adj.	1	16	Washer-flat (1/2)	1	22	Clip-declination	1
5	Bolt-hex M8 x 25	4	11	Nut-hex jam 1/2-13	1	17	Clamp assy.-welded	1	—	Antenna-offset	—
6	Bolt-hex M8 x 35	1	12	Nut-hex 1/2-13	1	18	Bolt-crg hd M8 x 35	3	—	Antenna-offset	—
									23	Non-skid abrsypad	1

## PARTS AND HARDWARE LISTING



**FIG. 4.1 – MODEL 6034 POLAR MOUNT ASSEMBLY (FOR 60CM & 75CM ANTENNA)**

NO.		QTY.	NO.		QTY.	NO.		QTY.	NO.		QTY.
*	Hardware supplied with antenna		7	Power bar-jack	1	13	Washer-spherical	1	19	Bearing-bronze	2
2	Mount plate-ant.	1	8	Washer-lock M8	5	14	Bolt-hex M8 x 20	2	20	Bushing-bearing	2
3	Washer-flat M8	7	9	Nut-hex M8	3	15	Nut-elastic stop	6	21	Main body	1
4	Bolt-hex M8 x 65	1	10	Bolt-latitude adj.	1	16	Washer-flat (1/2)	1	22	Clip-declination	1
5	Bolt-hex M8 x 25	4	11	Nut-hex jam 1/2-13	1	17	Clamp assy.-welded	1	—	Antenna-offset 75cm	—
6	Bolt-hex M8 x 35	1	12	Nut-hex 1/2-13	1	18	Bolt-crg hd M8 x 35	2	—	Antenna-offset 60cm	—
									23	Non-skid abrsypad	1