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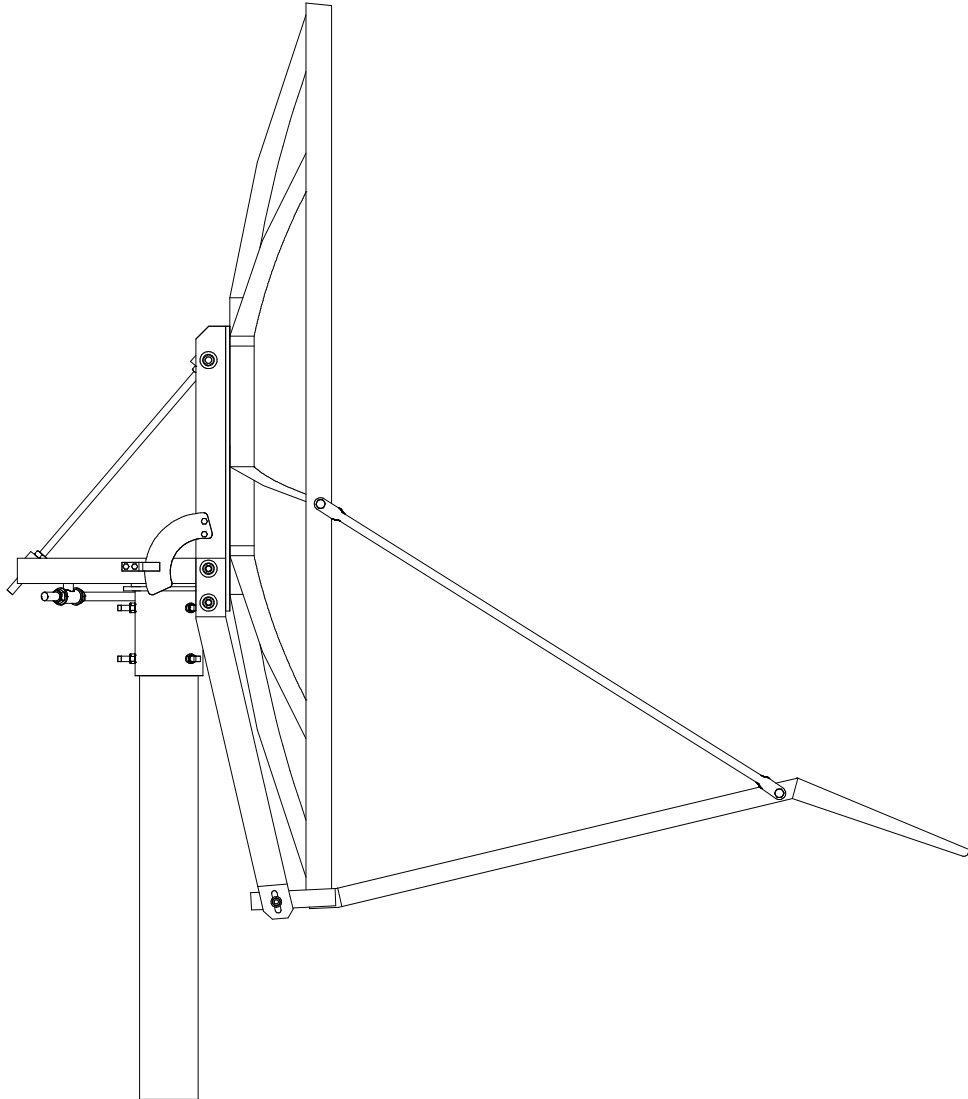
**ASSEMBLY MANUAL**

# **1.2M Ku-BAND Rx/Tx SERIES 1123 ANTENNA SYSTEM**

**PRODELIN CORPORATION  
1500 Prodelin Drive  
Newton NC 28685 USA**

# 1.2M Ku-BAND Rx/Tx SERIES 1123 ANTENNA SYSTEM

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B	Revise per canister assembly	3/23/98	PGW
A	Revise and Update	3/6/98	PGW
-	ORIGINAL RELEASE	9/22/94	R.FRYE
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**SECTION I            INTRODUCTION****1.0    GENERAL INFORMATION**

This manual describes the assembly and installation of Prodelin's 1.2 meter antenna system. The Prodelin 1.2 meter is a rugged and reliable mount which will operate in the Ku-Band frequency with high efficiency and at the same time successfully withstand the effects of the environment.

These instructions are listed by sections that cover all areas of assembly and installation. Additional sections are included in the manual to provide information on antenna alignment to the satellite and maintenance.

**1.1    UNPACKING AND INSPECTION**

The system containers should be unpacked and inspected at the earliest date to insure that all material has been received and is in good condition. A complete packing list for each major component is supplied.

**1.2    FREIGHT DAMAGE**

Any damage to materials while in transit should be immediately directed to the freight carrier. He will instruct you on matters regarding any freight damage claims.

**1.3    MATERIAL - MISSING OR DAMAGED**

Any questions regarding missing or damaged materials that is not due to the freight carrier should be directed to Prodelin's Customer Service Department at:

PRODELIN CORPORATION  
1500 Prodelin Drive  
Newton NC 28658  
USA  
(828) 464-4141

**1.4 MECHANICAL INSTALLATION TOOLS**

The following tools are suggested for the antenna installation.

HARDWARE SIZE	SAE WRENCH SIZE	METRIC WRENCH SIZE	MAXIMUM REC. TORQUE
#10	3 / 8"	10 mm	FLATTEN LOCK WASHERS
1 / 4"	7 / 16"	11 mm	49 in-lbs.
5/16"	1 / 2"	13 mm	12 ft-lbs.
3 / 8"	9 / 16"	14 mm	15 ft-lbs.
27/64" (Hilo)	1 / 2"	13 mm	Snug
1 / 2"	3 / 4"	20 mm	35 ft-lbs.
5 / 8"	15 / 16 "	24 mm	70 ft-lbs.

Also recommended for installation:

- Inclinometer
- Compass
- Adjustable Wrench
- Screw Driver (standard blade)

**1.5 SITE SELECTION**

In order to achieve maximum performance of your antenna system, it is important to select the correct location for the antenna. The following guidelines should be observed when selecting a site for the installation.

1. The line of site to the satellite should be clear of any obstructions, such as trees or buildings.
2. The site should be relatively flat and level for ease of installation and access to the antenna.
3. The site should be checked for underground obstruction, such as buried cables or pipes.
4. All local building codes should be adhered to (i.e. grounding, foundation requirements, zoning rules, setbacks, etc.).

**1.6 FOUNDATION INTERFACE**

The required interface from the foundation to the mount is 2-1/2" schedule 40 pipe (2.88" O.D.). A suggested in-ground foundation is shown in Figure 1.

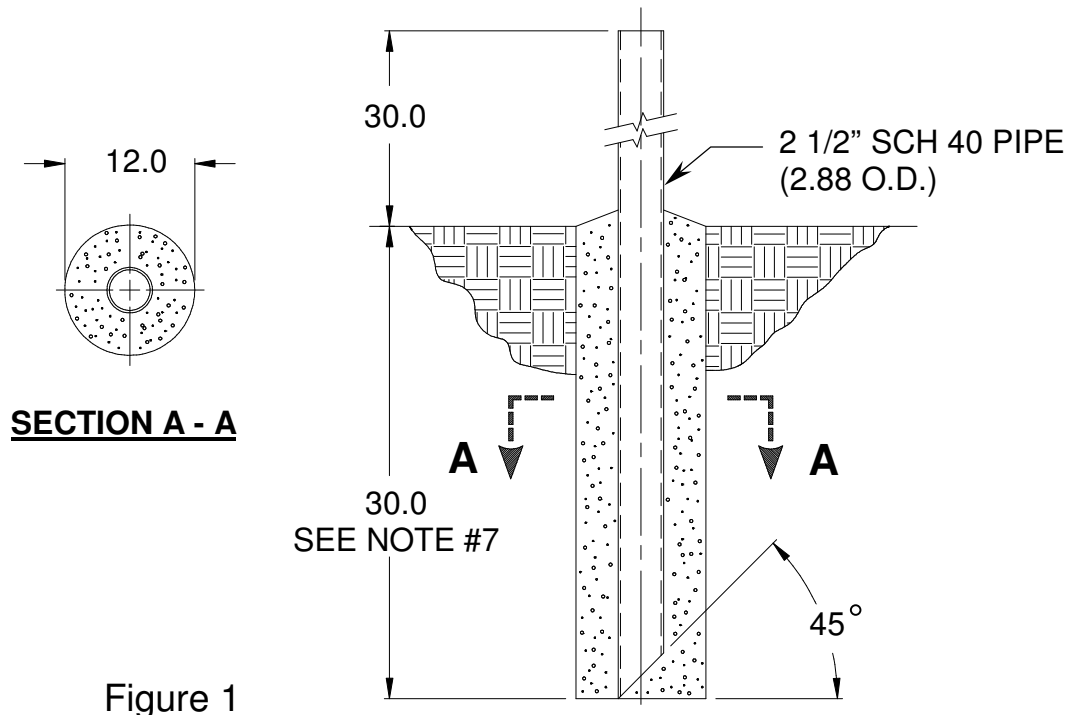


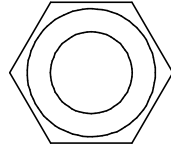
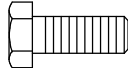
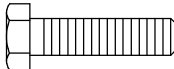
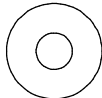


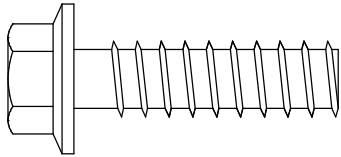
Figure 1

**NOTES:**

1. 2 1/2" schedule 40 pipe should conform with ASTM A53.
2. All concrete should conform to building code standards and have a minimum compressive strength of 3000 PSI at 28 days. (Per ACI-318-77)
3. Soil bearing capacity should be no less than 2000 PSF.
4. Concrete should be poured against undisturbed soil.
5. Allow concrete 24 hours set time before installation of antenna.
6. The antenna should be properly grounded to meet applicable local codes.
7. Minimum depth as shown or extend to local frost line.
8. Foundation meets the design requirements as set forth by the uniform building code. (1982 edition)

(PRODELIN CORPORATION DOES NOT REPRESENT OR WARRANT THAT ANY PARTICULAR DESIGN OR SIZE OF FOUNDATION IS APPROPRIATE FOR ANY LOCALITY OR EARTH STATION INSTALLATION.)

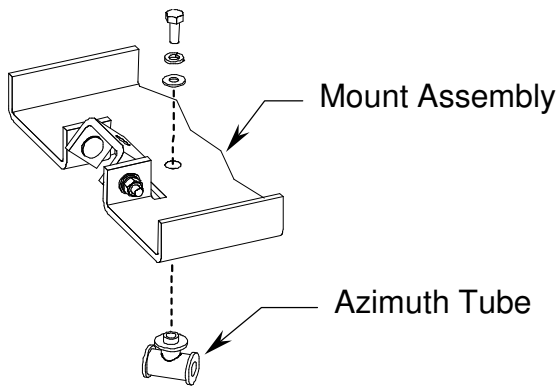
**SECTION II      ANTENNA SYSTEM ASSEMBLY**

<b>REFLECTOR AND SUPPORT ASSEMBLY PART LIST- TABLE 2.0</b>			
<b>ITEM</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>	<b>QTY</b>
1	0181-585	Canister Assembly	1
2	0181-399	Mount Assembly	1
3	VARIABLES	1.2M Reflector	1
4	0156-572	Elevation Marking Plate	1
5	0211-552	Elevation Indicator	1
6	8115-003	1/2" Coupling Nut	1
7	8104-007	1/2" Hex Nut	1
			
8	8302-006	#10 x .50 Screw	2
			
9	8302-004	#10 x .75 Screw	2
			
10	8201-037	#10 Flatwasher	6
			
11	8202-032	#10 Lockwasher	4
			
12	8111-005	#10 Hex Nut	2
			
13	8319-006	Hi-Lo Screw	4
			



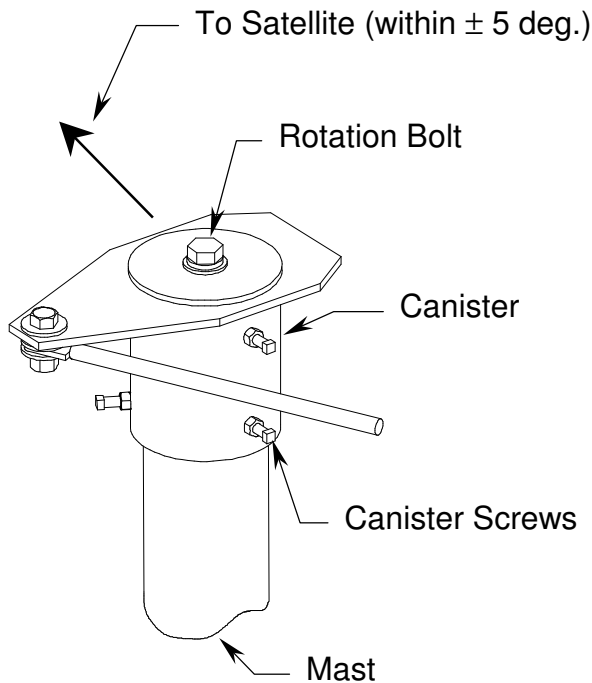
**2.1 ANTENNA ASSEMBLY**

**CAUTION:** During the assembly procedure, the sequence of instructions must be followed. Do not tighten any hardware until instructed. Refer to the part list and referenced steps below.



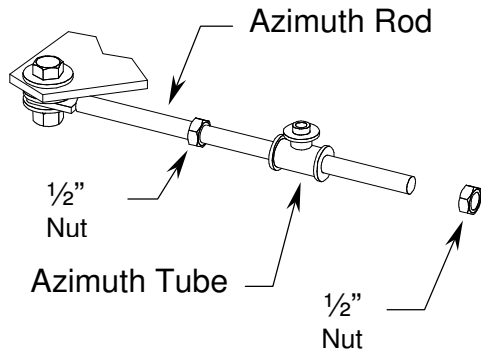
**STEP 1.**

Remove the azimuth tube from the mount assembly and set tube and hardware aside.



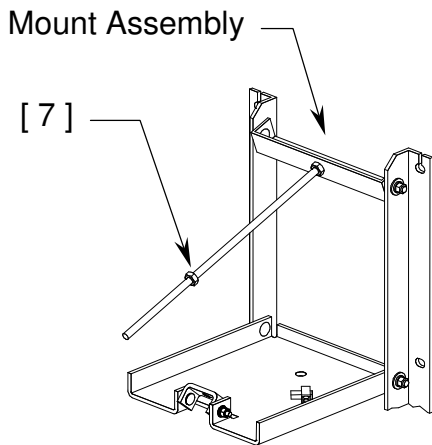
**STEP 2.**

- A) Remove rotation bolt, washer and lockwasher and set aside.
- B) Place the canister assembly onto the mast pipe.
- C) Orient the canister assembly towards the center of the satellite orbital arc to within  $\pm 5$  degrees.
- D) Securely tighten the [6] canister screws.
- E) Tighten [6] lock nuts against canister.



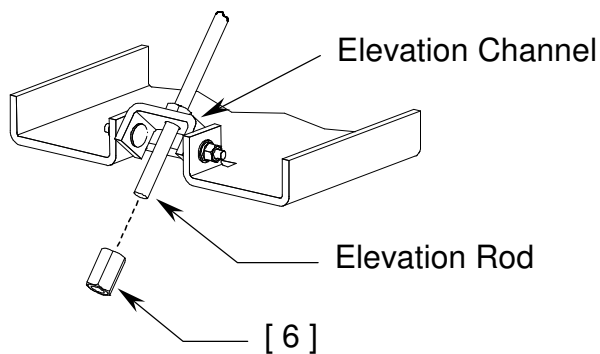
**STEP 3.**

- A) Remove one 1/2" hex nut (item 7) from the azimuth rod.
- B) Slide azimuth tube ( from step 1 ) onto the azimuth rod.
- C) Thread the previously removed 1/2" nut (item 7) onto the azimuth rod to hold the tube in place.



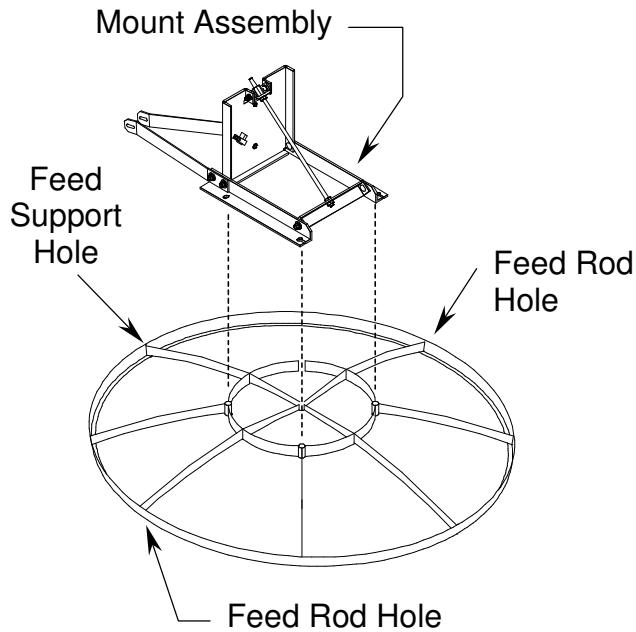
**STEP 4.**

Thread a 1/2" hex nut (item 7) a distance of 6" onto the elevation rod.



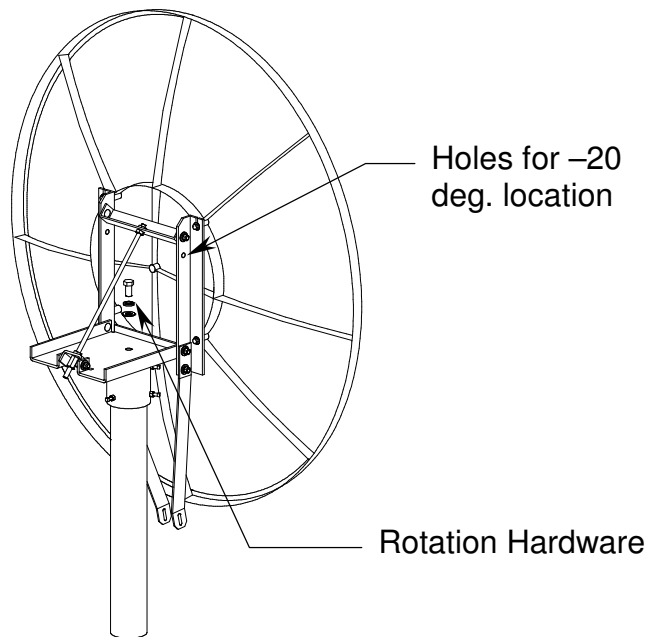
**STEP 5.**

- A) Maneuver the mount assembly so that the end of the elevation rod can be inserted through the hole in the elevation channel.
- B) Thread the 1/2" coupling nut (item 6) onto the elevation rod.
- C) Snug all the hardware on the mount assembly at this time.



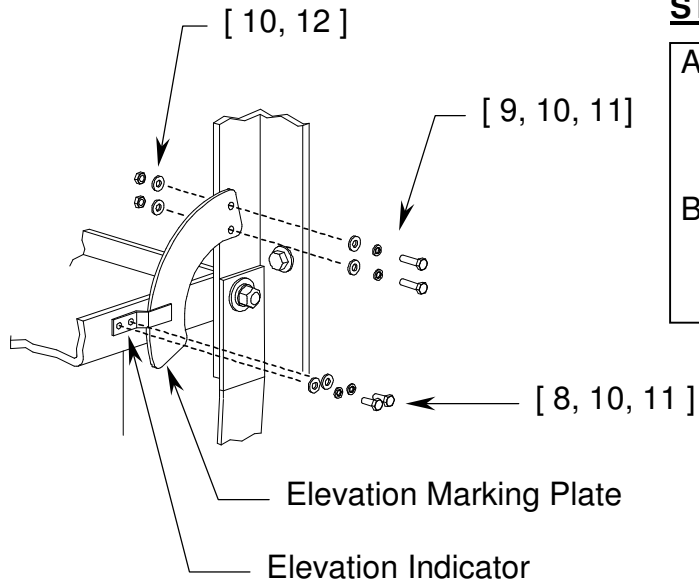
**STEP 6.**

- A) Place the 1.2M reflector face down on a flat surface.
- B) Place the mount onto the back of the reflector and orient as shown.
- C) Attach the mount assembly to the reflector with [4] HiLo screws (item 13).
- D) Tighten securely but **DO NOT** over tighten as this may cause damage to the reflector.



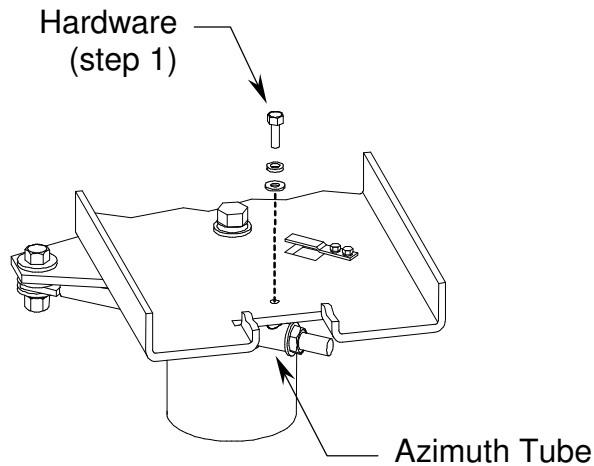
**STEP 7.**

- A) Place the reflector mount assembly (step 6) onto the canister assembly.
- B) Secure the reflector mount assembly to the canister with rotation bolt, washer and lockwasher from Step 2.
- C) When elevations below 20 degrees are required, move the elevation bracket and elevation rod to the lower set of holes on the mount assembly angles.



**STEP 8.**

- A) Attach elevation marking plate to the mount assembly with #10 hardware (items 9, 10, 11, 12).
- B) Attach elevation indicator to the bottom plate of the mount assembly with #10 hardware (items 8, 10, 11).



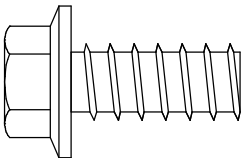
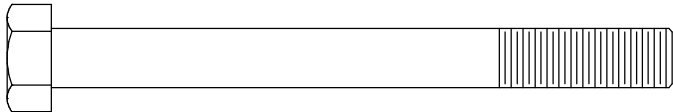
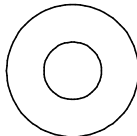
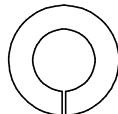
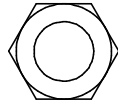
**STEP 9.**

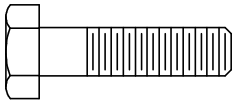
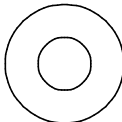
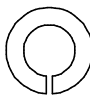

- A) Adjust azimuth tube so that the tube will fit into the hole in the bottom plate of the mount assembly.
- B) Secure tube to the mount assembly with hardware set aside in Step 1.
- C) Tighten all hardware at this time.

**SECTION III      FEED SUPPORT ASSEMBLY**

These Instructions are intended as a general reference for feed support assembly. If your antenna system has specific feed support instructions, refer to them at this time.

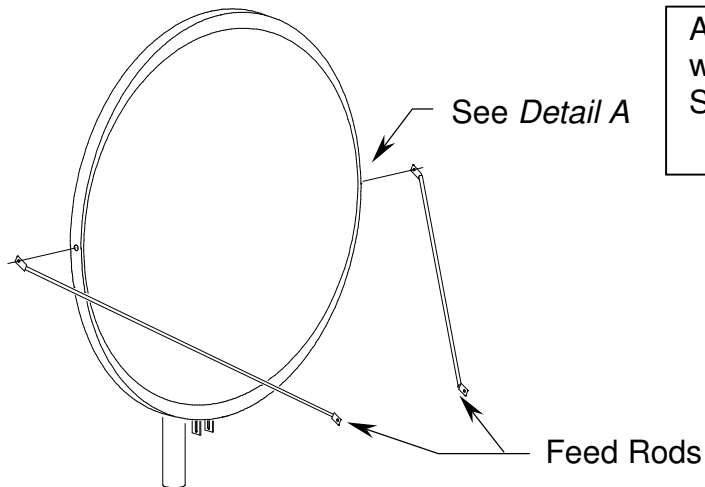
**CAUTION:** During the assembly procedure, the sequence of instructions must be followed. Do not tighten any hardware until instructed. Refer to the part list and referenced steps below.

<b>FEED SUPPORT PART LIST- TABLE 3.0</b>			
<b>ITEM</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>	<b>QTY</b>
1	0176-213	Feed Rod	2
2	VARIES	Feed Support	1
3	8319-004	Hi-Lo Screw 	3
4	8031-026	5/16" x 3.25 Bolt 	1
5	8201-041	5/16" Flatwasher 	2
6	8202-041	5/16" Lockwasher 	1
7	8101-009	5/16" Hex Nut 	1

PART LIST - CONTINUED			
ITEM	PART NO.	DESCRIPTION	QTY
8	8030-008	1/4 x 1.00 Bolt 	2
9	8201-040	1/4" Flatwasher 	4
10	8202-040	1/4" Lockwasher 	2
11	8100-007	1/4" Hex Nut 	2

**3.1 FEED SUPPORT ASSEMBLY**

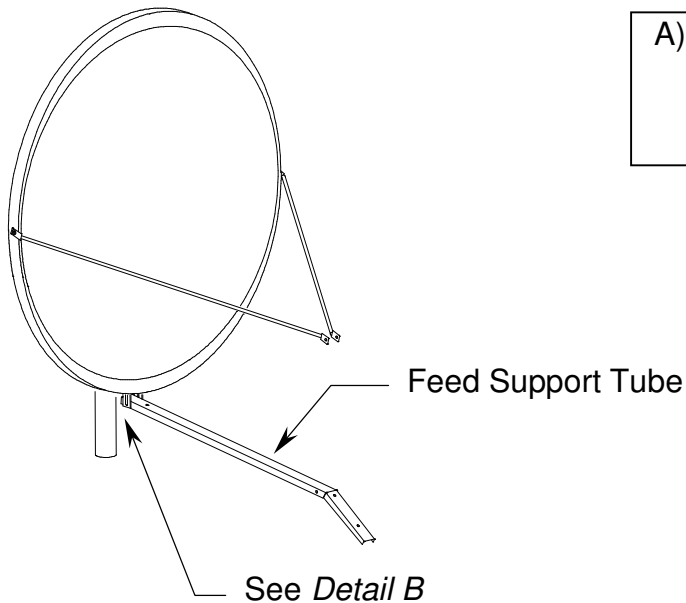
**STEP 1.**



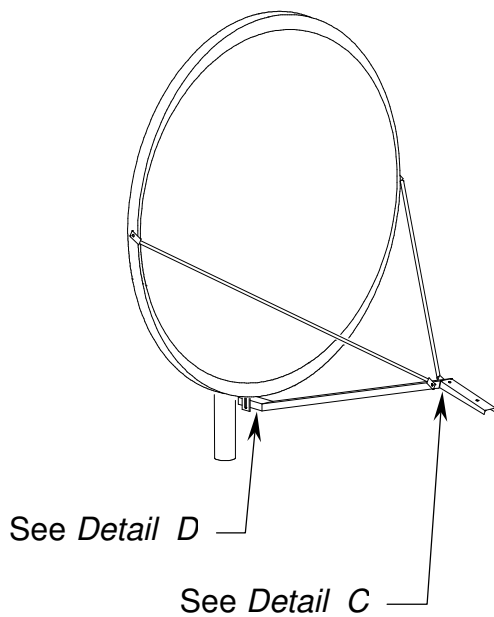
A) Attach feed rods to reflector with 2 Hi-Lo screws (Item 3). See Detail A.

**STEP 2.**

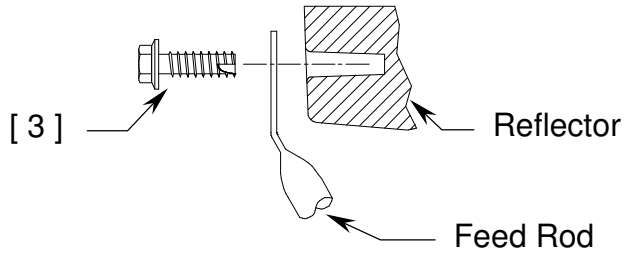
- A) Mount feed support tube between the feed support brackets with [2] of ( items: 8, 9, 10, 11 ). See Detail B.

**STEP 3.**

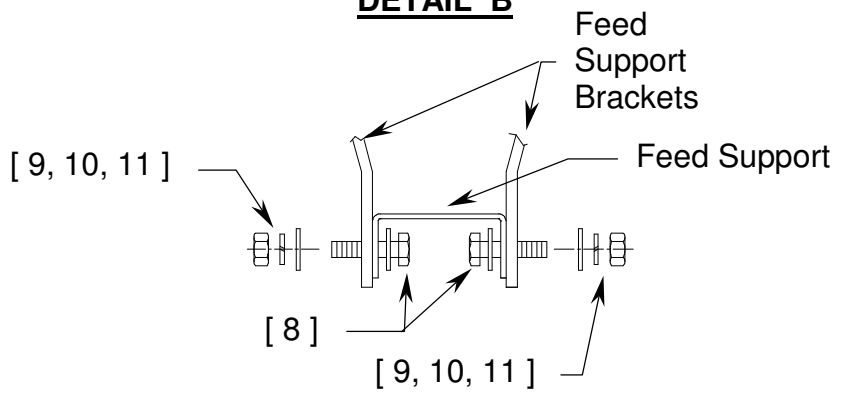
- A) Connect the feed support tube to the feed rods with 5/16" hardware (items 4, 5, 6, 7). See Detail C.
- B) Attach the feed support to the reflector with Hi-Lo screw (item 3). See Detail D.
- C) Tighten the hardware at the reflector rim snug (details A & D ). **Do Not** over tighten as this can cause damage to the reflector.
- D) Next tighten the 5/16" hardware and then tighten the 1/4" hardware.
- E) Attach the feed/ODE assembly to the feed support.



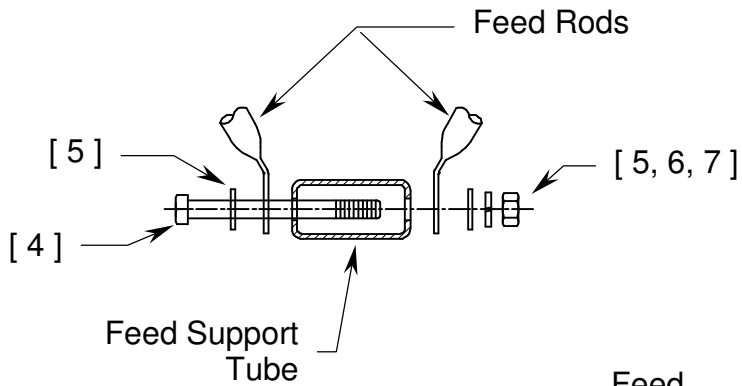
**DETAIL A**



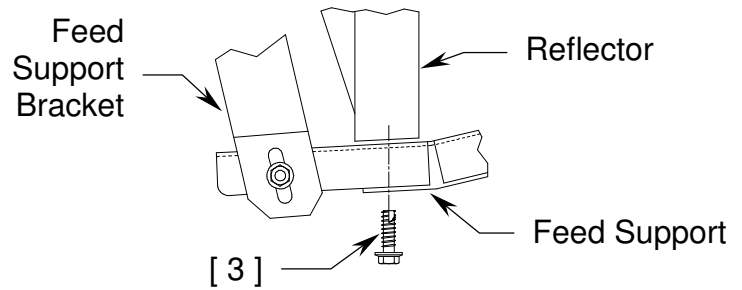
**DETAIL B**



**DETAIL C**



**DETAIL D**





**SECTION IV      ANTENNA POINTING****4.0      INITIAL POINTING**

The 1.2 meter reflector contains a 22.6° elevation offset look angle. Therefore, when the reflector aperture is perpendicular to the ground, the antenna is actually looking 22.6° in elevation. Refer to Figure 2.

- Step 1:      Place an inclinometer on the reflector support angle as shown in Figure 2.
- Step 2:      Adjust the reflector up or down in elevation by turning the two 1/2" hex nuts at the elevation channel until the desired elevation is read on the (inclinometer reading plus 22.6° = elevation angle). Note: Be sure that the elevation pivot hardware (5 places) is loose enough to allow adjustment without damaging (bending) the elevation rod. Snug the hardware.
- Step 3:      Azimuth Adjustment: With the electronics set to acquire the satellite, rotate the antenna in azimuth until the satellite is found. Snug the azimuth adjustment hardware.
- Step 4:      Peak the antenna signal by fine adjustments made in both azimuth and elevation until the optimum signal is achieved.
- Step 5:      Tighten all hardware used for adjustment.
- Step 6:      Scribe a line next to the Azimuth and Elevation indicators to mark the satellite location as shown in Figure 3 and 4.
- Step 7:      If desired, locate a secondary satellite by repeating steps 1 through 5. Mark this satellite location as described in step 6 and then return to the primary satellite by returning azimuth and elevation to the first set of scribe lines made.

#### 4.1 REPOINTING

The quick repoint features of the antenna system make future repointing to another satellite quick and easy to do with a minimum of tools and little or no training.

Loosen the elevation hardware just enough to allow adjustment and raise or lower the antenna until the elevation indicator aligns with the scribe line for the secondary satellite. Tighten the hardware.

Loosen the azimuth hardware and rotate the antenna until the azimuth indicator aligns with the scribe line for the secondary satellite. Tighten the bolt and the repoint is complete.

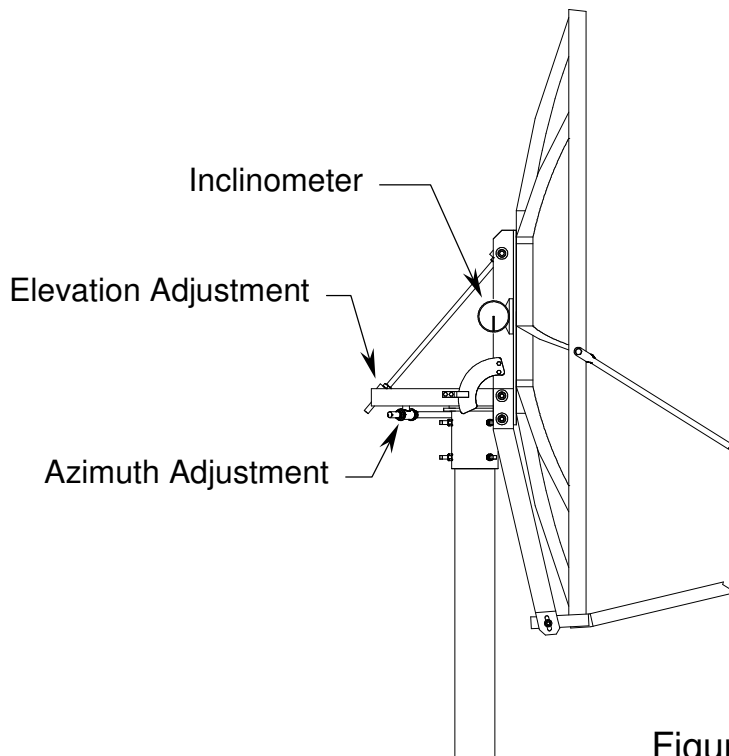


Figure 2

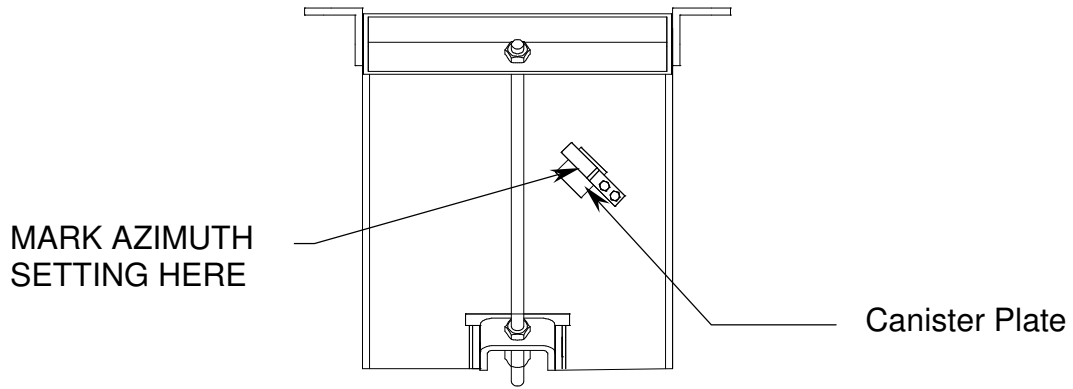


Figure 3

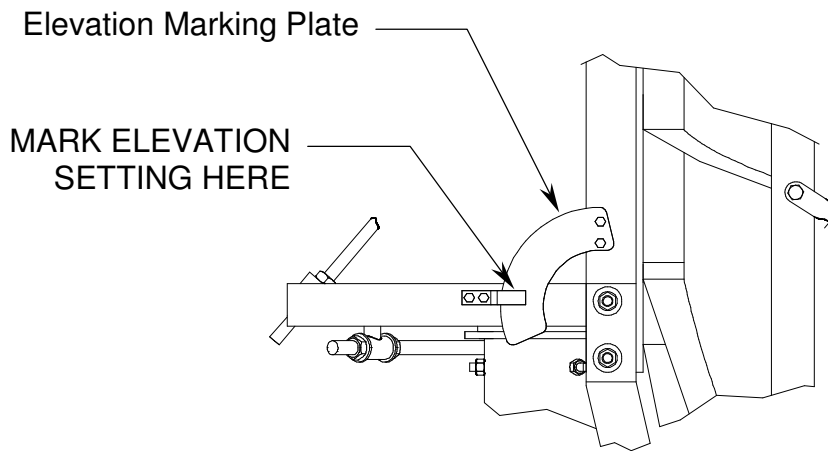


Figure 4

**SECTION V        MAINTENANCE****5.0    MAINTENANCE OVERVIEW**

After installation, the antenna requires only periodic inspection. It is anticipated that maintenance, if required, will be minimal and easily handled by a local or in-house maintenance staff.

**5.1    REFLECTOR**

Prodelin's reflector does not require any maintenance. The composite construction of the reflector is virtually impervious to any damages that could be caused by weather or atmospheric conditions.

It is only necessary to inspect for any physical damage done by vandalism or very severe weather conditions.

Should any damage be detected to a portion of the reflector, contact the Customer Service Department at Prodelin for recommendations involving reflector repair.

**5.2    MOUNT AND REFLECTOR SUPPORT STRUCTURE**

The mount and reflector support structure supplied with this antenna is of steel construction and has a galvanized finish.

If there are any signs of structural failure, the mount members that are damaged should be repaired or replaced.

CORROSION: Any corrosion on steel members may be repaired with a cold, zinc-rich galvanizing paint.

**5.3    FEED AND FEED SUPPORT**

The feed support and feed rods should be inspected to insure that all hardware is secure. The feed/radio mounting bolts should be tight.

The feed horn window should be inspected to insure that it is intact so that no moisture can collect inside the feed horn.