

GENERAL DYNAMICS

SATCOM Technologies

4096-693
May 31, 2016
Revision C

ASSEMBLY MANUAL

Small Aperture Rx/Tx Antenna Systems **Series 1890, 1920, 1100, and 1120**

General Dynamics SATCOM Technologies
1700 Cable Drive NE
Conover NC 28613 USA
Phone 770-689-2040
www.gdsatcom.com

Small Aperture Rx/Tx Antenna Systems Series 1890, 1920, 1100, and 1120

C	Add Conover Address	5/31/16	RAH
B	Revised Company Name and Logo	5/28/09	RAH
A	General Revision	5-18-07	R Frye
-	ORIGINAL RELEASE	04/28/05	R Frye
REV.	DESCRIPTION	DATE	APPROVED

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SECTION I INTRODUCTION

1.0 GENERAL INFORMATION

This manual describes the assembly and installation of General Dynamics' small aperture antenna mount. The General Dynamics small aperture system is a rugged and reliable antenna system which operates at ku-band frequencies with high efficiency.

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 satellite and maintenance.

1.1 UNPACKING AND INSPECTION

The antenna containers should be unpacked and inspected at the earliest date to insure that all material has been received and is in good condition.

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 General Dynamics' Customer Service Department at:

**General Dynamics SATCOM Technologies
1700 Cable Drive NE
Conover NC 28613 USA
Phone 770-689-2040
www.gdsatcom.com**

1.4 MECHANICAL INSTALLATION TOOLS

The following tools are suggested for the antenna installation.

1 Ratchet (3/8" drive)	1 Torque wrench
1 Socket 7/16" (3/8" drive)	1 Compass
1 Socket 1/2" (3/8" drive)	1 Inclinator
1 Wrench combination - 7/16"	1 Magnetic level
1 Wrench combination - 1/2"	

1.5 TORQUE VALUES

The following torque values should be used during assembly.

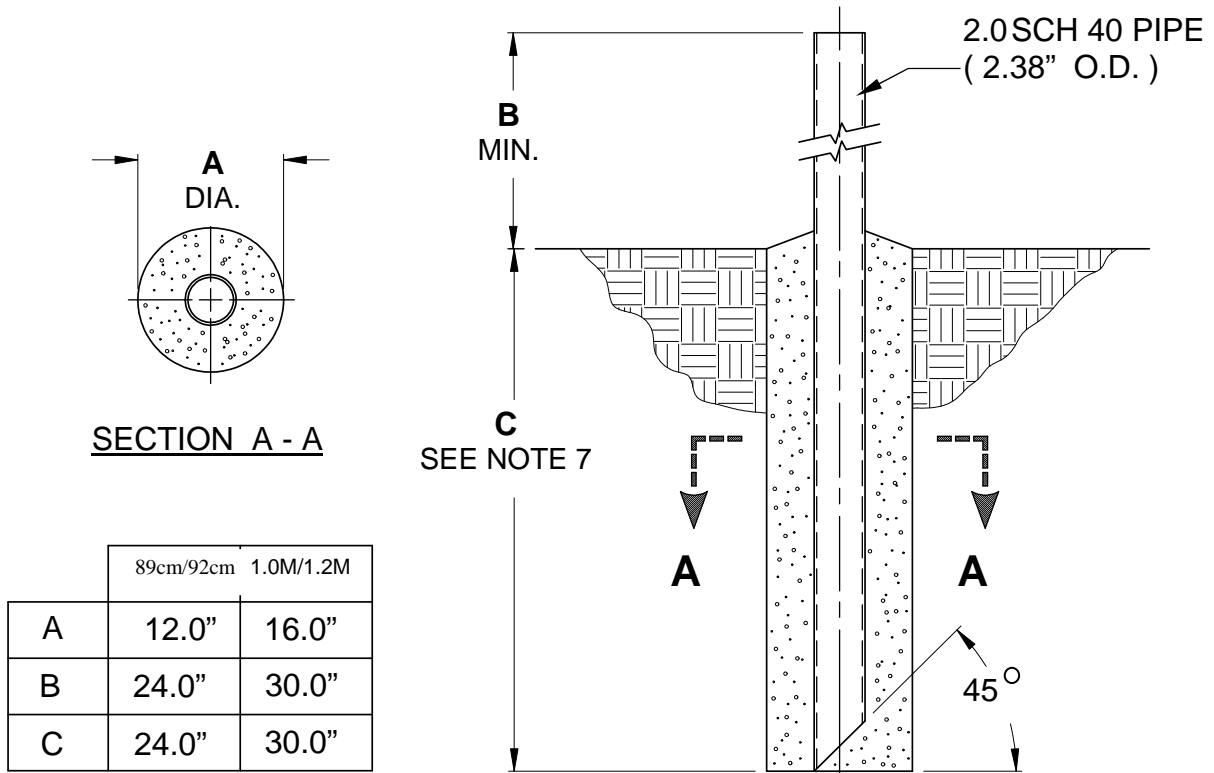
<u>HARDWARE SIZE</u>	<u>TORQUE.</u>	
1/4" FEED SYSTEM HARDWARE	6 ft/lb	
5/16" Az/EI CAP HARDWARE	12 ft/lb	
BACK REFLECTOR SCREWS	10 ft/lb	(89cm, 92cm, 1.0M)
	15 ft/lb	(1.2M)

NOTE: If reflector screws must be removed after initial install, it is important that they are reinstalled in the original thread paths in the reflector.

NOTE: The Minimum Torque applied should not be less than 10% of maximum recommended torque.

1.6 SUGGESTED FOUNDATION

All local building codes should be adhered to, i.e. grounding, foundation requirements, zoning rules, setbacks, etc. The following is a suggested foundation only.



Notes:

1. 2.0" SCHEDULE 40 PIPE SHOULD CONFORM WITH ASTM A36 STRUCTURAL STEEL.
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 200 PSF.
4. CONCRETE SHOULD BE POURED AGAINST UNDISTURBED SOIL.
5. ALLOW CONCRETE 24 HOUR SET TIME BEFORE INSTALLATION OF ANTENNA.
6. THE ANTENNA SHOULD BE PROPERLY GROUNDED TO MEET APPLICABLE LOCAL CODES.
7. MINIMUM DEPTH AS SHOWN OR EXTENDED TO LOCAL FROST LINE.

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

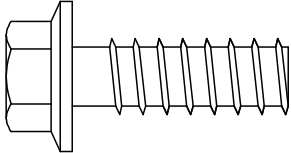
SECTION II ANTENNA ASSEMBLY

2.0 ANTENNA ASSEMBLY OVERVIEW

The small aperture mount is designed to support General Dynamics' 89cm thru 1.2m antennas. Refer to the figures and parts list and follow the instructions in the listed sequence.

2.1 MOUNT AND REFLECTOR ASSEMBLY

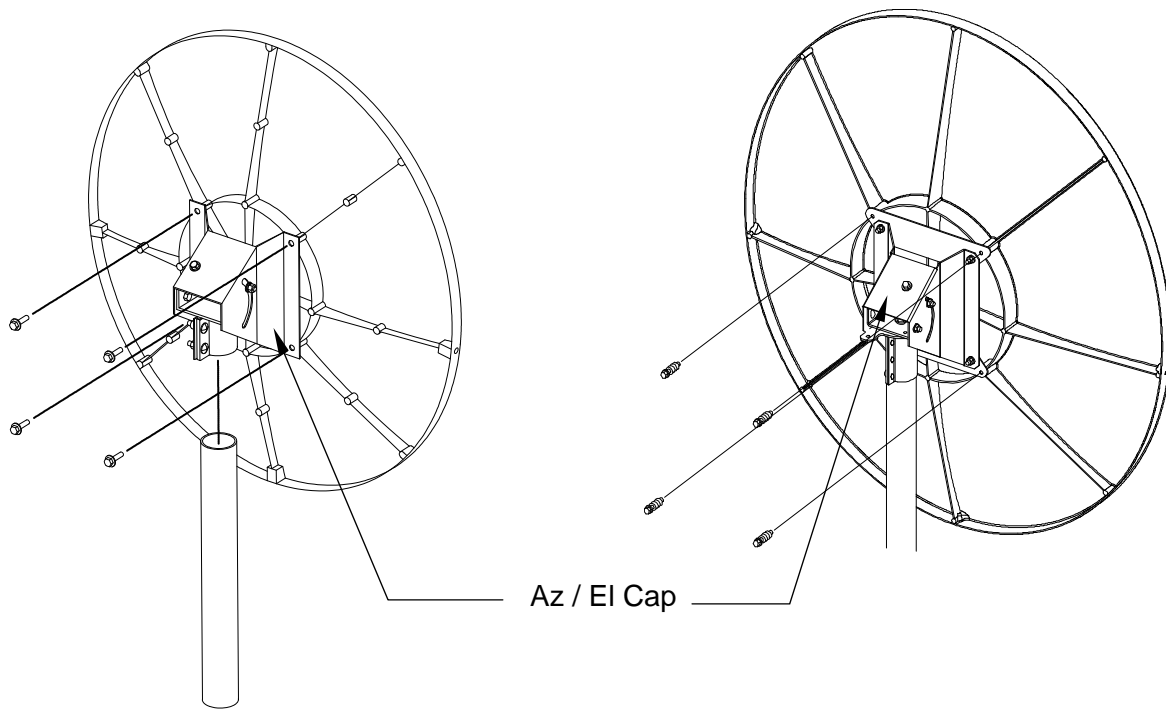
REFLECTOR AND MOUNT PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	Varies	89cm REFLECTOR or 92cm REFLECTOR or 1.0M REFLECTOR or 1.2M REFLECTOR	1 1 1 1
2	0185-577 or 0185-599	Az/EI CAP ASSEMBLY (89cm, 92cm, 1.0m) Or Az/EI CAP ASSEMBLY (1.2m)	1 1
3	8319-005 or 8319-006	SCREW, Hi-Lo THD 11/32 x 1.125 (89cm, 92cm, 1.0m) Or SCREW, Hi-Lo THD 27/64 x 1.375 (1.2m)	4 4



- STEP 1:** Attach the reflector to the Az/EI Cap with four hi-lo screws (item# 3). Note: The bottom of the reflector has a hole for the feed rod, the top does not.
- Tighten the four screws to 10 ft/lbs for the .89/92/1.0M antennas.
 - Tighten the four screws to 15 ft/lbs for the 1.2M antenna.

See figure 5.

- STEP 2:** Place the Az/EI Cap/reflector assembly over the mast pipe and secure by tightening the two 5/16" nuts on the canister, snug, but not tight enough to prevent Azimuth rotation.



89cm/92cm/1.0M
Torque hi/lo screws to
10 ft/lbs

1.2M
Torque hi/lo screws to
15 ft/lbs

FIGURE 5.

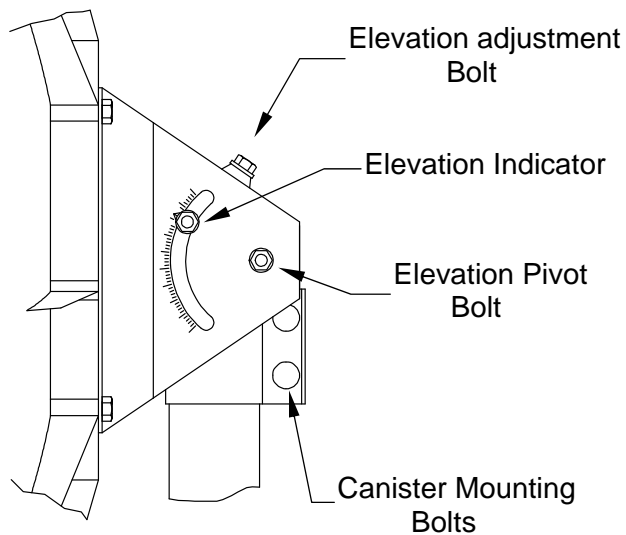
2.2 FEED ASSEMBLY

Refer to the installation instructions supplied with your antenna system for feed support and feed installation details.

SECTION III SATELLITE ALIGNMENT

3.0 SATELLITE ALIGNMENT

After installation of the feed and feed support, the antenna assembly is complete and the antenna is ready to be aligned to the selected satellite.



STEP 1:

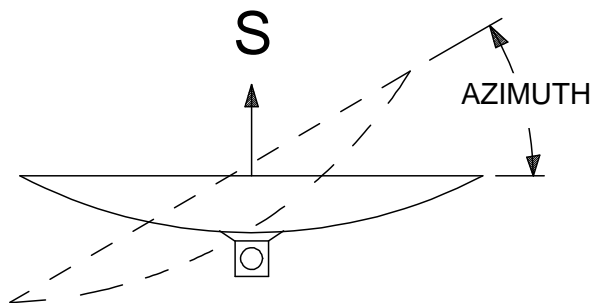
- A) Refer to the elevation scale located on the side of the Az/EI positioner as shown. To set the antenna system to the correct elevation angle, loosen the elevation pivot hardware on both sides of the mount just enough to unlock the lockwashers. Then turn the elevation adjustment screw.

Note: the scale has a 22.5 degree offset angle built in to it. Therefore, when the elevation angle is read on the scale, the 22.5 degree offset in the reflector has been accounted for.

STEP 2:

- A) After making the cable connections to the electronics, rotate the antenna in azimuth to the correct azimuth heading using a compass to determine direction. Sweep the antenna slowly in azimuth until a signal is found.

- B) If the desired signal is not found, it may be necessary to alter the elevation angle slightly, and then repeat the above procedure.



STEP 3:

After the satellite is located, peak the signal by making small, incremental adjustments in both elevation and azimuth. After peak signal is found, tighten all hardware used for adjustment.

SECTION IV MAINTENANCE

4.0 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. The materials used in the construction of this Earth Station Antenna virtually eliminate any maintenance repairs.

4.1 PERIODIC INSPECTION

It is suggested that a periodic inspection be performed at least every six months.

NOTE: After any severe weather conditions, inspection of the antenna should be performed to determine if foreign objects have caused damage or if survival specifications have been exceeded.

This inspection should include the following:

STEP 1: Check all bolting locations - all bolts should be tight.

STEP 2: Check all structural members - repair or replace if damaged.

STEP 3: Check the foundation anchor bolts (if applicable) - they must be secure and no failure signs in foundation.

STEP 4: Check for corrosion - on the reflector structure and the mount.