GENERAL DYNAMICS
SATCOM Technologies

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July 27, 2009

Revision E
Assembly Manual

3.7M C-BAND Rx/Tx W/Az/El TRUSS MOUNT

General Dynamics
SATCOM Technologies
1500 Prodelin Drive
Newton NC 28658

3.7 Meter C-Band Rx/Tx

With Az/El Truss Mount

E	Revised Company Name, Logo, and Part Tables	7/27/09	RAH
D	Revised Address	1/10/02	RAH
C	Revised Part list page 11	7/26/01	RAH
B	Changed P/N to 0490-211 was 0490-324	8/26/96	R. Frye
-	ORIGINAL RELEASE	10/09/92	R. Frye
REV.	**DESCRIPTION**	**DATE**	**APPROVED**

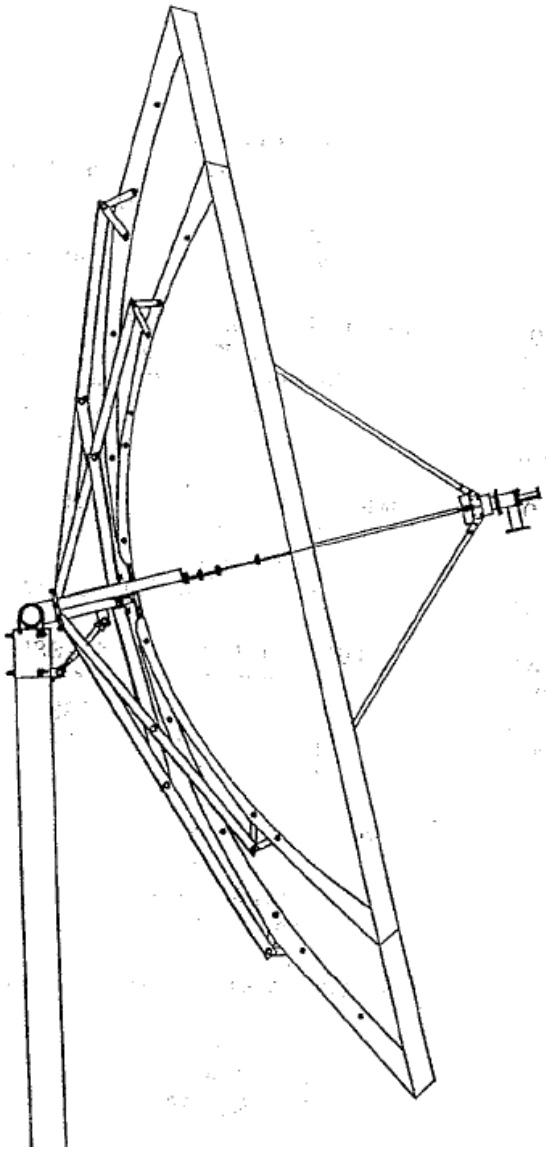


Table Of Contents

SECTION I GENERAL INFORMATION

1.1 UNPACKING AND INSPECTION

1. **UNPACKING & INSPECTION** - The antenna containers should be unpacked and inspected at the earliest date to ensure that all material has been received and is in good condition. A complete packing list for each major component is supplied.

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

3. **MATERIAL - MISSING OR DAMAGED** - Any questions regarding missing or damaged materials that is not due to freight carrier should be directed to General Dynamics' Customer Service Department at:

General Dynamics SATCOM Technologies
1500 Prodelin Drive
Newton NC 28658 USA
(828) 464-4141

1.2 TOOLS REQUIRED

REQUIRED TOOL LIST TABLE 1.2			
TOOLS	**SIZE**	**FOR USE ON**	**TORQUE SPECS.**
COMB.WRENCH & SOCKET	7/16"	1/4" BOLTS ON CENTER HUB PLATE AND FEED ASSEMBLY	5 FT/LBS
COMB.WRENCH & SOCKET	9/16"	3/8" BOLTS ON REFLECTOR	15 FT/LBS
COMB. WRENCH	5/8"	5/8" SQ. HD. BOLTS ON CANISTER	70 FT/LBS
COMB. WRENCH & SOCKET	3/4"	1/2" BOLTS ON FEED SUPPORT REFLECTOR SUPPORT AND ELEV. ADJ.	35 FT/LBS
COMB WRENCH & SOCKET	15/16"	5/8" HARDWARE	70 FT/LBS
COMB. WRENCH	1-1/8"	ELEVATION ADJUSTMENT	120 FT/LBS
ADJ. WRENCH	10"	WHEREVER APPLICABLE	
RACHET	1/2"		
INCLINOMETER	N/A	ELEVATION ADJUSTMENT	
COMPASS	N/A	AZIMUTH ADJUSTMENT	
LADDER	8 FT.	MOUNTING FEED	

1.3 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.

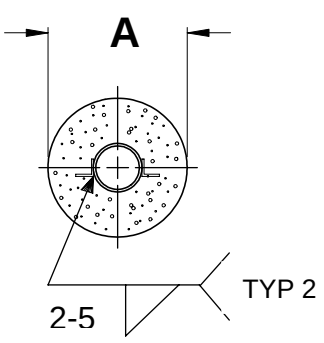
2. The site should be relatively flat and level for ease of installation and access to the antenna.

3. The site should be checked for underground obstruction, such as buried cables or pipes.

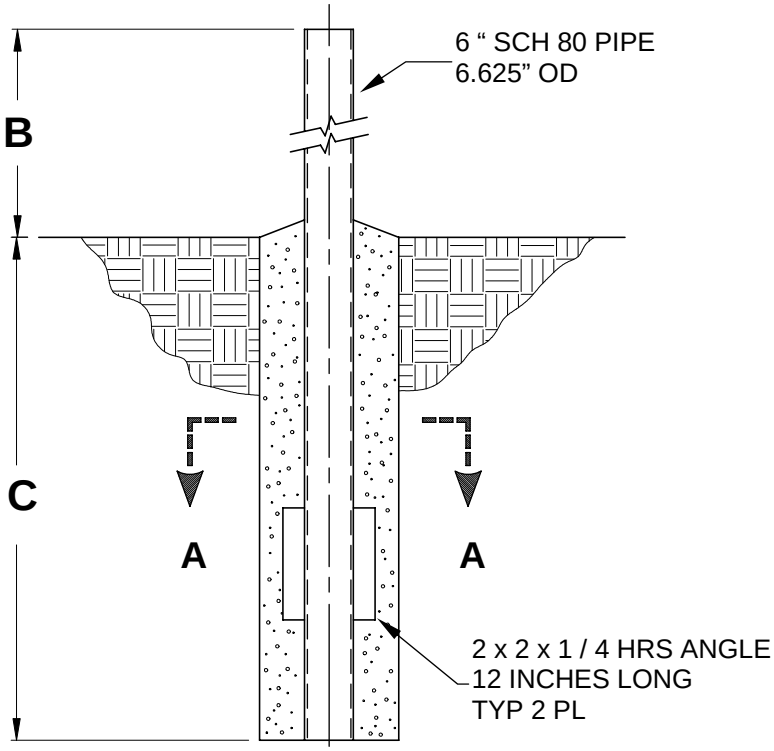
4. All local building codes should be adhered to (i.e. grounding, foundation requirements, zoning rules, setbacks, etc.).

1.4 FOUNDATION REQUIREMENTS

General Dynamics' recommended foundation for the antenna system is shown in figure 1. however, each installation must be tailored to the specific requirements of the site. It may be necessary to contact a local engineer or building department for foundation design or approval at any particular site.



SECTION A-A



	3.4M	3.7M
A	24.0	24.0
B	54.0	60.0
C	66.0	72.0

NOTES:

1. 2 x 2 x 1/4 HRS ANGLE & 6" SCHEDULE 80 PIPE SHOULD CONFORM WITH ASTM A36 STRUCTURAL STEEL AND ASTM A53 PIPE..
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 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.

SECTION II REFLECTOR AND SUPPORT STRUCTURE ASSEMBLY

NOTE: Assembly of the reflector should be on a level surface to prevent warping or misalignment of the reflector's parabolic shape during assembly. Any loss of contour may affect the antenna's signal quality. If a level surface is not available, proceed to the alternative assembly method in section 4. After antenna assembly (by either method) refer to section 6.4 for tips on how to check the reflector shape and correct it if necessary.

2.1 REFLECTOR PRE-ASSEMBLY

Refer to figure 2.1-1 and the parts list (table 2.4) and follow the instructions in the listed sequence.

1. The reflector consist of eight interchangeable petals of compression molded glass-fiber reinforced material. This material is very strong, yet the reflector is lightweight and easy to handle. The reflector will possess a very accurate parabolic shape when properly assembled, and will retain this shape for years under adverse environmental conditions. The microwave reflective surface is provided by a molded-in, fine mesh screen that lies just beneath the surface of the petals.

2. Identify the reflector petals and parts of the reflector support structure according to the parts list in table 2.4.

3. Note: Four reflector petals have a 1/2" hole through the center. These holes are for the feed clevises. Pre-assemble these reflector petals as follows:

4. Run the 1/2-13 hex nut (item# 10) up the threads of the clevis (item# 3), and place a 1/2" flatwasher (item# 11) against the nut. Adjust the nut until the distance from the far side of the flatwasher to the center of the clevis hole is 2" as referenced in figure 2.1-1.

5. Place the clevis assembly through the hole in the reflector petal (item# 1) from the front and secure with the 1/2" flatwasher, lockwasher, and hex nut (items # 10,11,12) as shown in figure 2.1-1. Hand tighten only.

2.2 REFLECTOR ASSEMBLY

1. Refer to figure 2.2-1 for the correct orientation and placement of the four petals with the feed clevises attached. (NOTE: Every other petal has a feed clevis.) Place two petals rim down on the level surface with their flanges next to each other. A 24" long wooden support such as a 4 x 4, will help hold the narrow ends of the petals (figure 2.2-2).

2. Begin the assembly at the flange with the 3/8" hardware (items # 16,17,18,19) in holes A,B,C,D,E,F,G,H as shown in figure 2.2-2. Do not fully tighten bolts until instructed. You may notice that the hardware fits snugly in the holes. This is to insure accurate alignment of the petals. Gently tap or thread the bolts into the holes if necessary.

3. Continue assembling additional petals as above. The wooden support should be moved as necessary to support the weight of the petals being assembled. Before installing the last petal, place the center plate (item# 5) on top of the wooden support, underneath the center of the reflector, and attach the center hub (item# 4) on top with the 1/4" hardware (items # 13,14,15) as shown in figure 2.2-3. Leave hardware loose enough to rotate the hub.

4. Place the last petal in position, making sure that the lip on its inner edge is sandwiched between the center hub and center plate. Attach this petal to the adjacent petals using the same 3/8" hardware as above, in holes A and B. At this time, the reflector is strong enough to sustain the weight of the installer to place the bolts in holes C,D,E,F,G,H. Be sure to step only on the ribs, not on the surface between the ribs.

5. Now to tighten all reflector bolts. Before tightening, check to be sure that the petals are aligned properly. You may need to adjust one petal in or out (radially) until the rim is flush. Also check up and down alignment. It is possible to lift the reflector slightly to feel the front surface, making sure it is flush. Tighten all A bolts first. Next tighten all B bolts, then C ,then D, etc. NOTE: Before tightening the last set of reflector bolts, the ones closest to the hub, check to make sure that the lip on the inner edges of all petals are sandwiched between the center plate and the center hub in the reflector.

6. Attach the reflector support brackets (item# 6) to the reflector at location C and D at all eight petal seams (figure 2.2-6) using the 3/8" hardware already there. Be sure that the shorter, pointed, leg of each bracket is toward the reflector center. Attach all brackets to the left side of the flanges. Do not tighten this hardware until instructed.

2.3 REFLECTOR SUPPORT STRUCTURE ASSEMBLY

1. Rotate the center hub until the elevation tab is centered over a petal without a feed clevis (item# 2) as shown in figure 2.3-1.

2. Attach the chamfered end of one of the long angle braces (item# 8) to the underside of the upper ring with [1] 1/2-13 x 1.25" bolt, [2] flatwasher, [1] lockwasher, and [1] 1/2-13 hex nut (items # 9,10,11,12) as shown in figure 2.3-2. Position the other end on the right side of mount bracket (item# 6) using the above mentioned hardware. Attach the remaining long braces from each of the mounting brackets to the center hub in the same manner. Do not tighten until instructed. Attach all the short braces (item# 7) between the long braces and the lower ring on the center hub with the same hardware as above.

3. Be sure the reflector is laying flat and level, as after tightening the reflector support structure, its shape will be fixed. The center hub now may be centered in, and secured to the reflector by tightening the 1/4" bolts to the center plate. Tighten all the hardware that attaches the brace mount brackets to the reflector. Tighten the outermost 1/2" bolt (long brace to reflector support bracket) all around the reflector. Next tighten the bolts connecting the long braces to the center hub all the way around. Next tighten the bolts connecting the long and short braces all the way around. Finally tighten the bolts from the short braces to the hub.

2.4 REFLECTOR AND SUPPORT STRUCTURE PARTS LIST

REFLECTOR AND SUPPORT STRUCTURE PARTS LIST TABLE 2.4

ITEM#	PART#	DESCRIPTION	QTY
1	0179-261	REFLECTOR PETAL - W/HOLE	4
2	0179-260	REFLECTOR PETAL - W/O HOLE	4
3	0217-073	FEED SUPPORT CLEVIS	4
4	0490-374	CENTER HUB	1
5	0156-808	CENTER PLATE	1
6	0211-528	REFLECTOR SUPPORT BRACKET	8
7	0225-421	SUPPORT BRACE - LONG	8
8	0225-420	SUPPORT BRACE - SHORT	8
9	8033-010	1/2-13 x 1.25" BOLT	32
10	8104-007	1/2-13 HEX NUT	32
11	8201-030	1/2" FLATWASHER	64
12	8202-043	1/2" LOCKWASHER	32
13	8030-010	1/4-20 X 1.25" BOLT	6
14	8201-040	1/4" FLATWASHER	6
15	8202-040	1/4" LOCKWASHER	6
16	8032-010	3/8-16 X 1.25" BOLT	64
17	8201-042	3/8" FLATWASHER	128
18	8202-042	3/8" LOCKWASHER	64
19	8102-007	3/8-16 HEX NUT	64

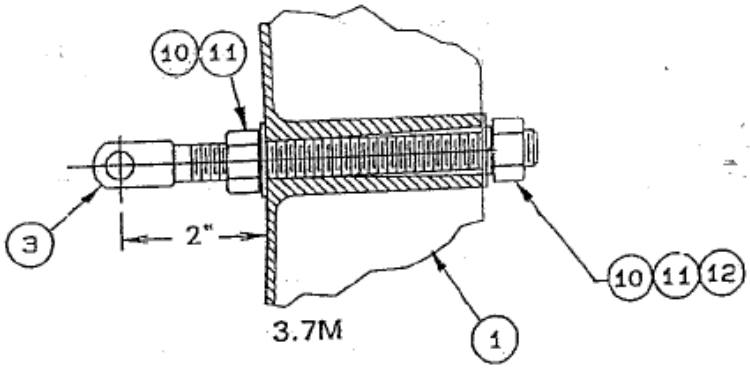


FIGURE 2.1-1

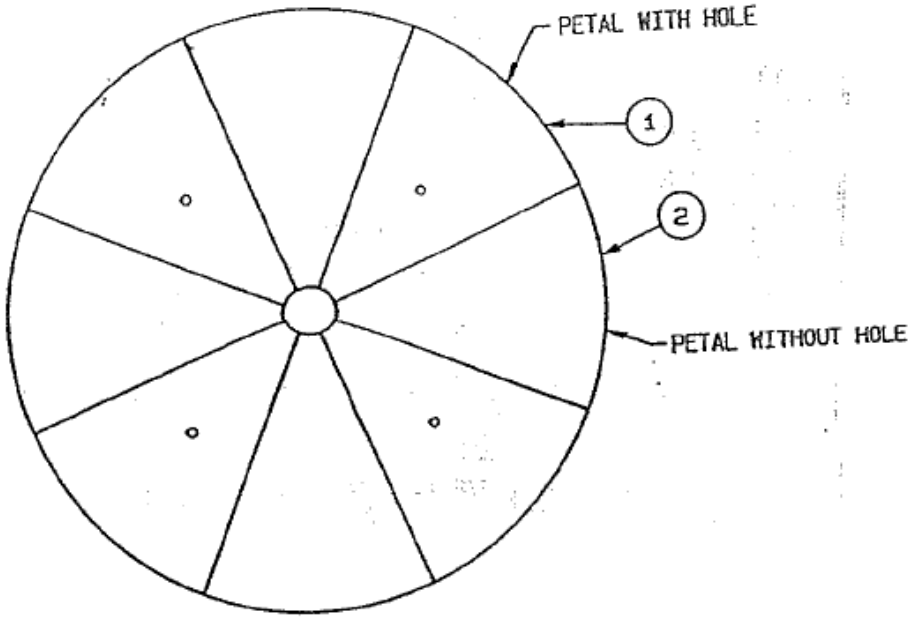


FIGURE 2.2-1

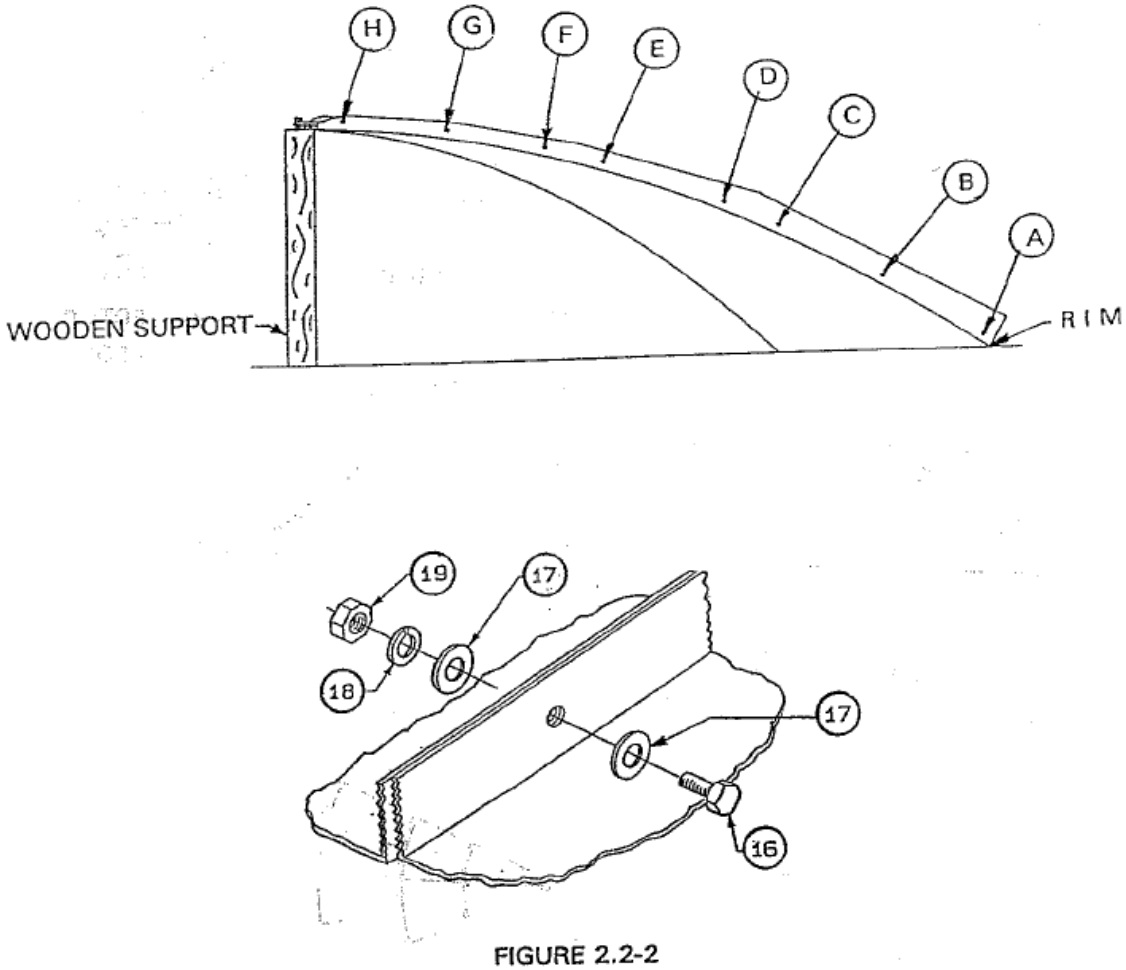


FIGURE 2.2-2

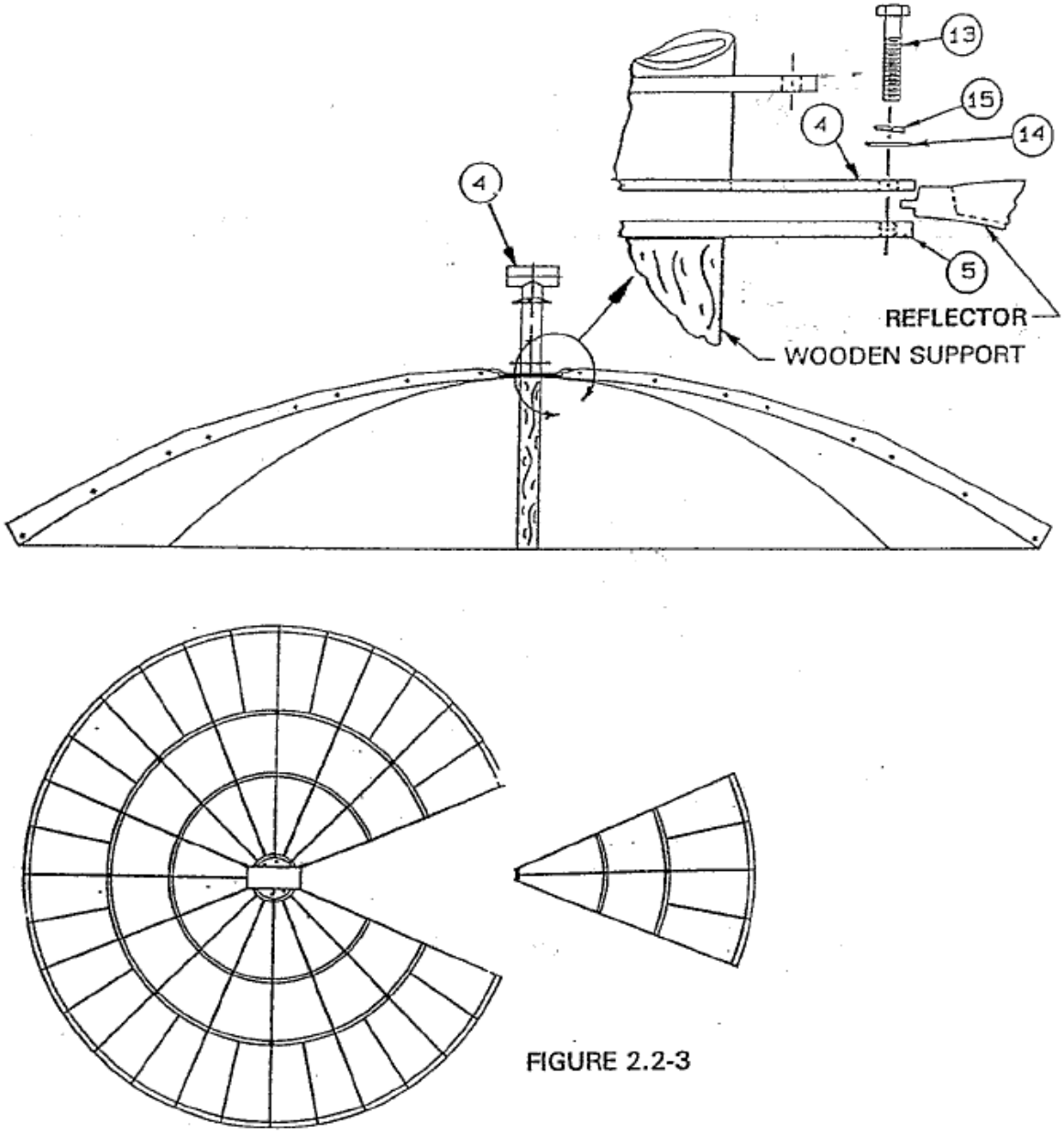


FIGURE 2.2-3

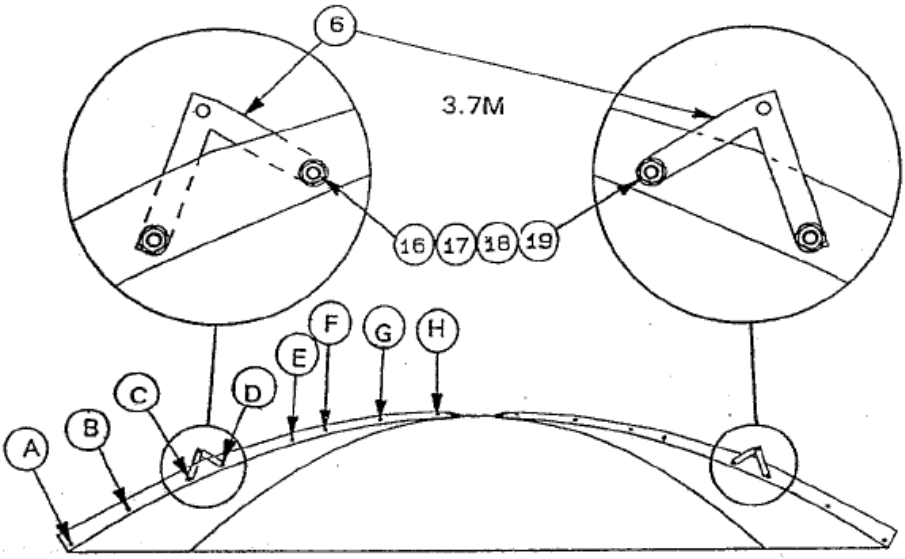


FIGURE 2.2-4

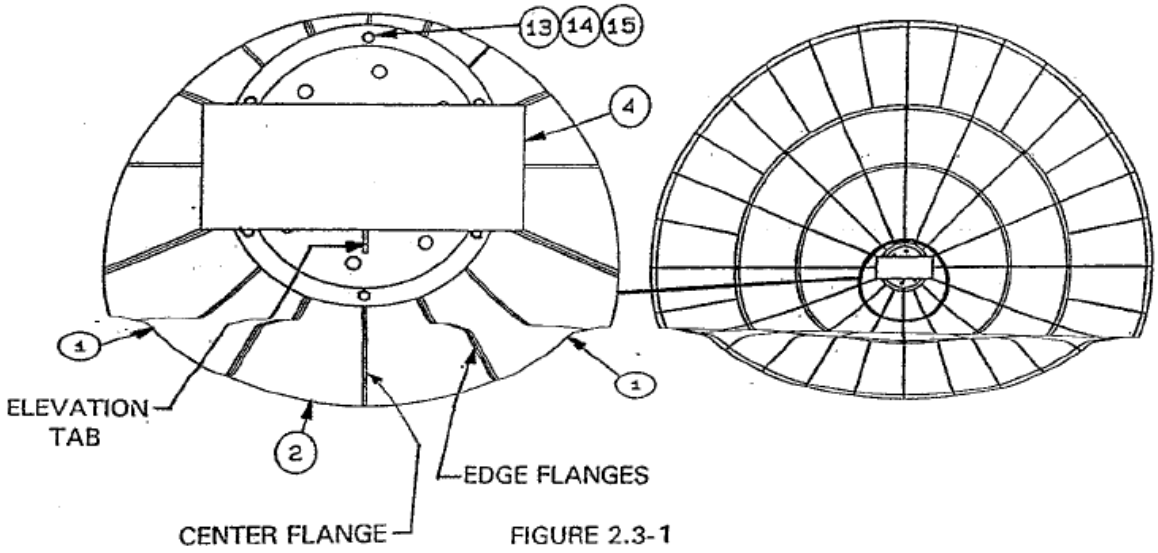
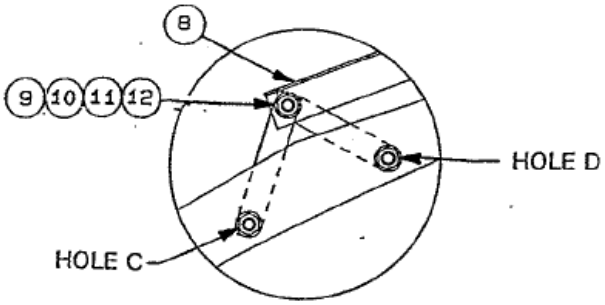


FIGURE 2.3-1



DETAIL "A"

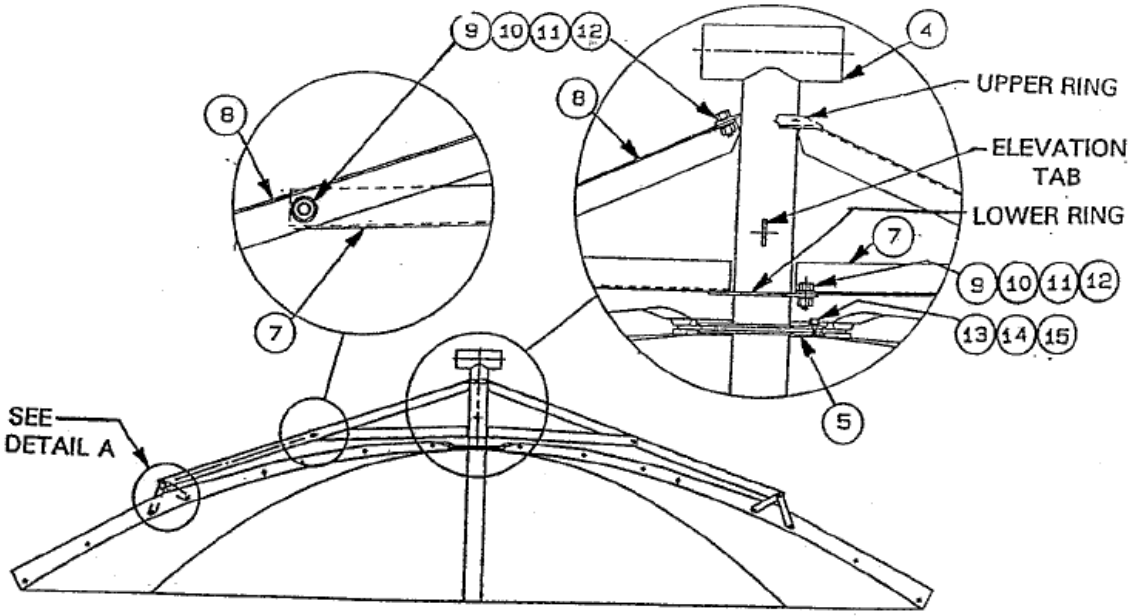


FIGURE 2.3-2

SECTION III REFLECTOR INSTALLATION

NOTE: At least three persons are recommended for the installation of the antenna onto the mast pipe. After the reflector is positioned in the cradle of the canister, two people can steady the reflector while the other secures it with the U-bolts.

3.1 CANISTER & ELEVATION ROD ASSEMBLY

Refer to the reflector mount parts list (table 3.3) and figure 3.1-1 and follow the instructions in the listed sequence.

1. Run a 5/8-11 hex nut (item# 15) onto each square head set screw (item# 5), then insert them into the canister (item# 1), only a few turns, so that the bolts do not extend into the canister, and position it on the mast. Insure it rotates freely and is seated all the way down on the mast pipe. A ground strap may be attached behind a hex nut as shown.

2. Assemble the elevation rod by placing the inner strut (item# 3) all the way into the outer strut (item# 4), and securing with [1] 1/2-13 x 2.25" bolt, [2] flatwashers, [1] lockwasher, and [1] 1/2-13 hex nut (items # 7,9,10,& 11). Next run [1] 3/4-10 hex nut (item# 16) up the threads of the inner strut, place a 3/4" flatwasher (item# 17) against the hex nut, and insert the strut through the elevation adjustment block (item #2). Secure with another 3/4" flatwasher and 3/4-10 hex nut. The elevation rod assembly should now be as shown in figure 3.1-1. ***NOTE: There is a an optional short inner and outer strut available from General Dynamics for an elevation look angle range of 0^o to 50^o. There is an optional elevation mounting bracket for an elevation look angle range up to 90^o. Contact General Dynamics for more information.***

3.2 REFLECTOR POSITIONING

1. Bring the completed reflector assembly to the pedestal, and locate it about 1-1/2 to 2 feet from the mast. Make sure that the elevation tab is closest to the mast and toward the bottom. Use the reflector carton (or similar object) as a rest for under the edge of the reflector, and orient the reflector so that the cross-tube of the center hub is perpendicular to the mast (see figure 3.2-1). Attach the elevation rod assembly to the elevation tab on the hub with [1] 5/8-11 x 2.00" bolt, [2] flatwashers, [1] lockwasher, and [1] 5/8-11 hex nut (items # 12,13,14,15) as shown in figure 3.2-2. Have the 1/2" U-bolts and hardware (items # 8,9,10,& 11) close at hand.

2. Swing the reflector up until the cross-tube can be placed in the cradle of the canister, as shown in figure 3.2-3. Raise the reflector's lower edge until two persons can steady the reflector in the cradle. The other installer can now secure the reflector with the U-bolts, flatwashers, lockwashers, and nuts (items # 8, 9, 10, & 11). Tighten the U-bolts enough to hold the cross-tube in place, but still allowing it to rotate in elevation.

3. Raise or lower the reflector until you can place the elevation adj. block (item# 2) between the two tabs on the canister and secure with two 1/2-13 x 1.50" bolts, flatwashers, lockwashers (items # 6,9,10) as shown in figure 3.2-3. Do not tighten these bolts until section 5.1.

3.3 PARTS LIST TABLE

REFLECTOR MOUNT PARTS LIST TABLE 3.3

ITEM #	PART #	DESCRIPTION	QTY
1	0490-125	CANISTER	1
2	0168-085	ELEVATION ADJ. BLOCK	1
3	0490-100	ELEVATION STRUT - INNER - LONG	1
	0490-382	ELEVATION STRUT - INNER - SHORT (OPTIONAL)	1
4	0490-306	ELEVATION STRUT - OUTER - LONG	1
	0490-383	ELEVATION STRUT - OUTER - SHORT (OPTIONAL)	1
5	8317-006	5/8-11 x 1.50" SQUARE HEAD SET SCREW	6
6	8033-012	1/2-13 x 1.50" BOLT	2
7	8033-018	1/2-13 x 2.25" BOLT	1
8	8403-008	1/2-13 x 4.00" U-BOLT	2
9	8201-030	1/2" NARROW FLATWASHER	8
10	8202-043	1/2" LOCKWASHER	7
11	8104-007	1/2-13 HEX NUT	5
12	8034-016	5/8-11 x 2.00" BOLT	1
13	8201-039	5/8" FLATWASHER, NARROW	2
14	8202-044	5/8" LOCKWASHER	1
15	8105-007	5/8-11 HEX NUT	1
16	8106-007	3/4-10 HEX NUT	2
17	8201-045	3/4" FLATWASHER	2

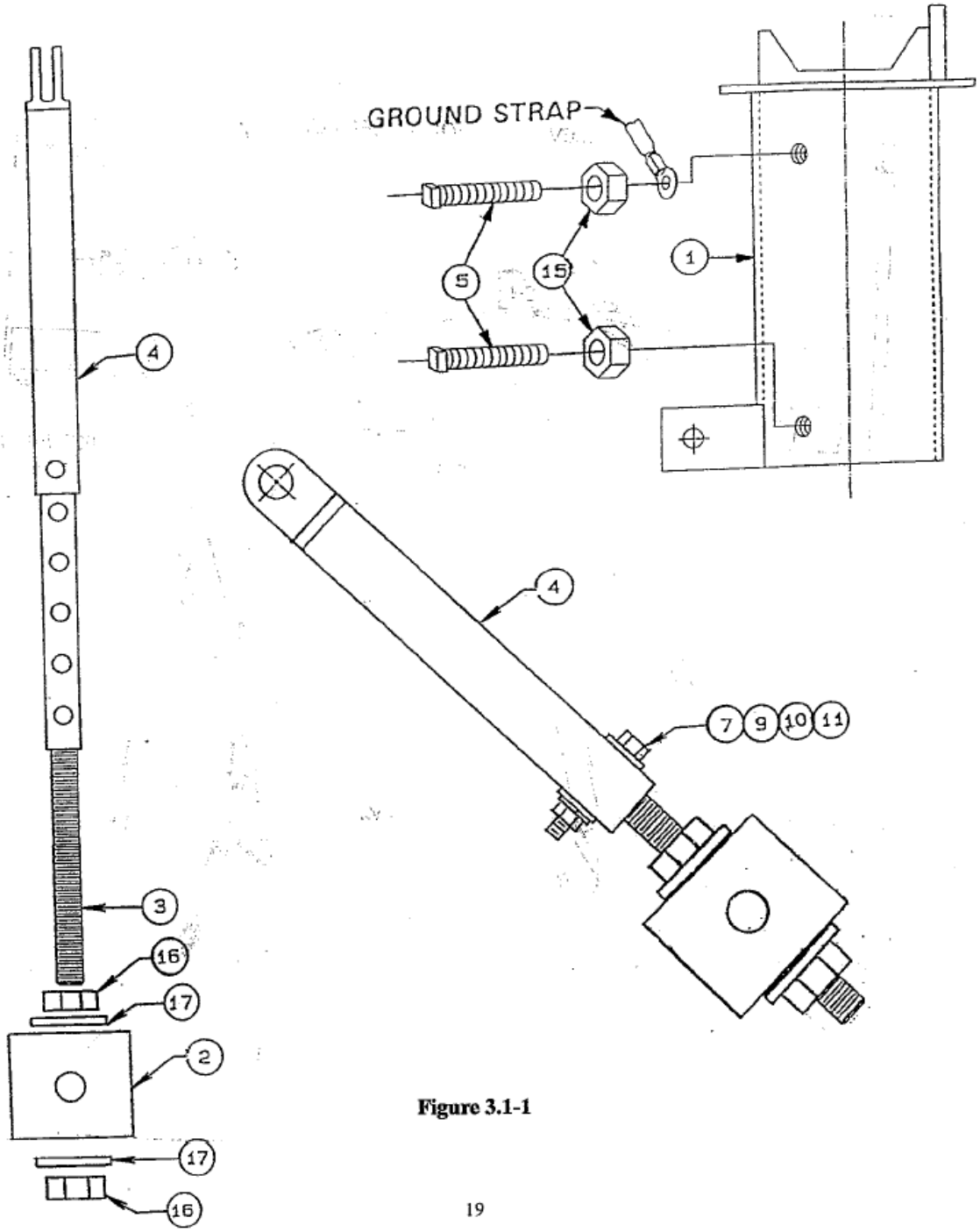


Figure 3.1-1

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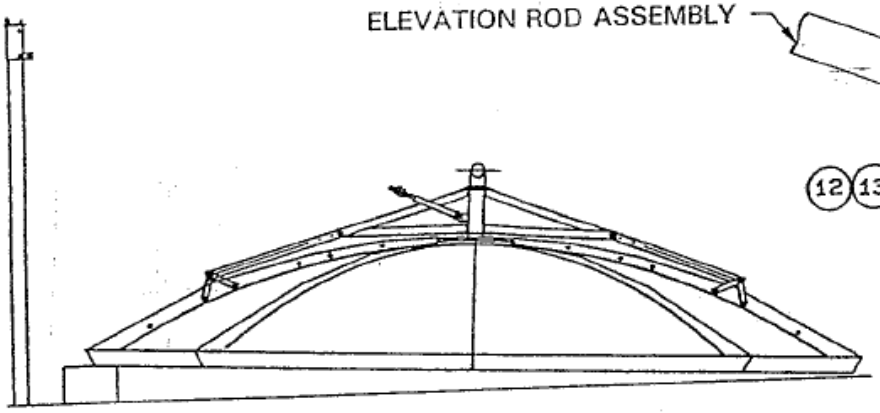


FIGURE 3.2-1

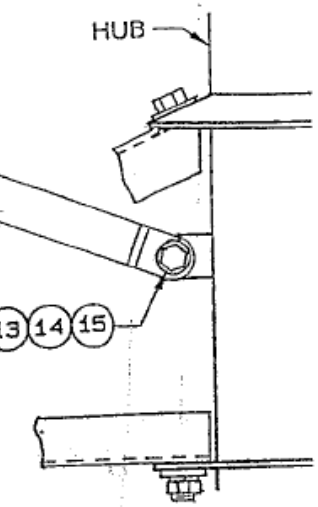


FIGURE 3.2-2

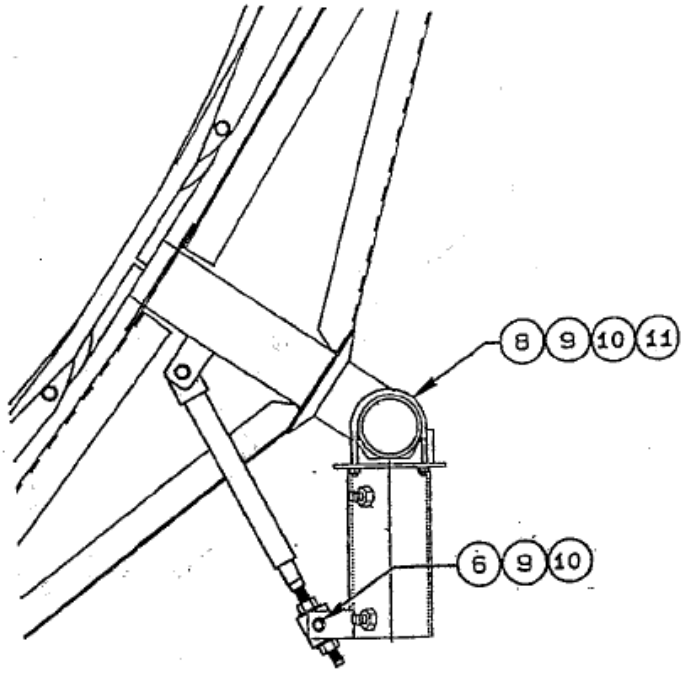
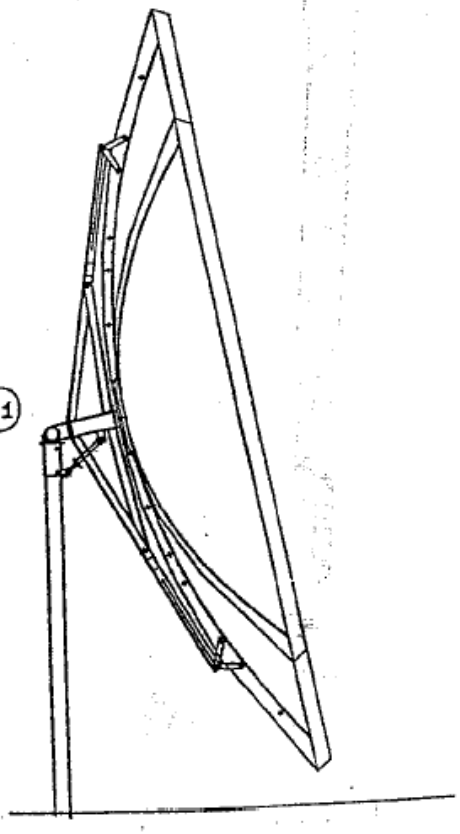


Figure 3.2-3



SECTION IV ALTERNATIVE ASSEMBLY

If you have performed all the steps in sections 2 and 3, skip section 4 and proceed to section 5. This section is for antenna assembly where level ground (or floor space) is not available. The reflector and reflector support structure are assembled (in a birdbath fashion) directly onto the canister after the canister is positioned onto the mast pipe with a temporary assembly rod. The temporary assembly rod is then removed and replaced by the elevation rod assembly. NOTE: At least three people are recommended to assemble the reflector onto the support structure.

4.1 ALTERNATIVE REFLECTOR PRE-ASSEMBLY

1. Refer to section 2.1, steps 1 through 5, then proceed to section 4.2.

4.2 ALTERNATIVE CANISTER ASSEMBLY

1. Refer to section 3.1, step 1 only, then proceed to section 4.3.

4.3 ALTERNATIVE REFLECTOR SUPPORT STRUCTURE ASSEMBLY

Refer to figures 4.3-1 through 4.3-2 and the parts list (table 4.3) and follow the instructions in the listed sequence.

1. Attach the center hub (item# 1) to the canister in an inverted position with [2] 1/2-13 x 4.00" U-bolts, [2] flatwashers, [2] lockwashers, and [2] 1/2-13 hex nuts (items # 7,9,10,11). Make sure the elevation tabs on the hub are on the same side as the elevation tabs on the canister. See figure 4.3-1.

2. Place the elevation adjustment block (item# 2) between the two tabs on the canister and secure with [2] 1/2-13 x 1.50" bolts, [2] flatwashers, and [2] lockwashers (items # 9,10,18) as shown. Do not tighten.

3. Mount the temporary assembly rod (item# 3) to the elevation block with [2] 3/4-10 hex nuts, and [2] flatwashers (items # 16,17). Bolt the other end of the rod to the tabs of the canister with [1] 5/8-11 x 2.00" bolt, [2] flatwashers, [1] lockwasher and [1] 5/8-11 hex nut (items # 12,13,14,15). Tighten all hardware securely. See figure 4.3-1.

4. Attach the chamfered end of one of the long angle braces (item# 4) on top of the hub's lower ring with [1] 1/2-13 x 1.25" bolt, [2] flatwashers, [1] lockwasher, and [1] 1/2-13 hex nut (items # 8,9,10,11). Mount a short brace (item# 5) to the bottom of the upper ring and the middle of the long brace with the same 1/2" hardware. Attach a reflector mount bracket (item# 6) to the end of the long brace, making sure that the shorter, pointed, leg of each bracket is pointed up and towards the hub, using same 1/2-13 x 1.25" bolts and hardware (8,9,10,11). Attach the remaining long and short braces and reflector mounting brackets to the center hub in the same manner. **Tighten only until lockwashers are flattened at this time.** See figure 4.3-2.

ALTERNATE ASSEMBLY PARTS LIST TABLE 4.0

ITEM#	PART#	DESCRIPTION	QTY
1	0490-374	CENTER HUB	1
2	0168-085	ELEVATION ADJUSTMENT BLOCK	1
3	0490-384	TEMPORARY ASSEMBLY ROD	1
4	0225-421	ANGLE BRACE, LONG	8
5	0225-420	ANGLE BRACE, SHORT	8
6	0211-528	REFLECTOR SUPPORT BRACKET	8
7	8403-008	U-BOLT, 1/2-13 x 4.00"	2
8	8033-010	BOLT, 1/2-13 x 1.25"	32
9	8201-043	FLATWASHER, 1/2"	66
10	8202-043	LOCKWASHER, 1/2"	34
11	8104-007	NUT, HEX, 1/2-13	32
12	8034-016	BOLT, 5/8-11 x 2.00"	1
13	8201-039	FLATWASHER, NARROW, 5/8"	2
14	8202-044	LOCKWASHER, 5/8"	1
15	8105-007	NUT, HEX, 5/8-11	1
16	8201-047	FLATWASHER, 3/4"	2
17	8106-002	NUT, HEX, 3/4-10	2
18	8033-012	BOLT, 1/2-13 x 1.50"	2

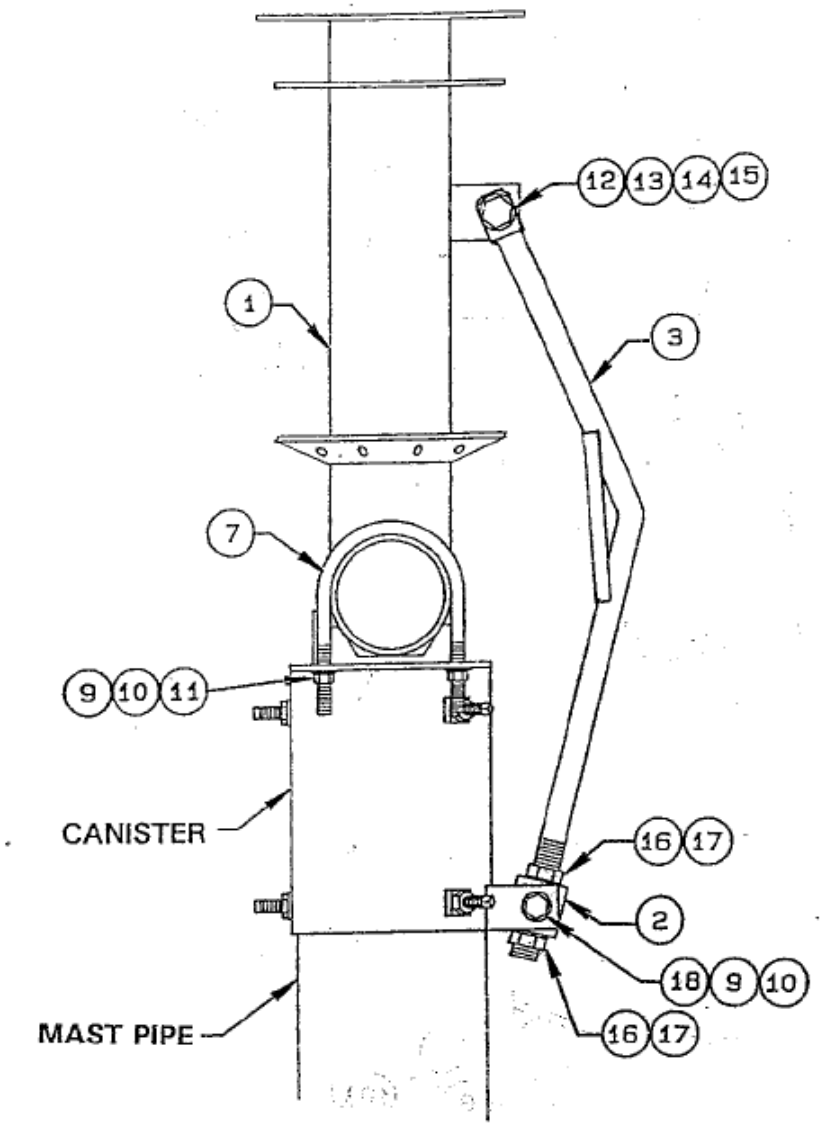


Figure 4.3-1

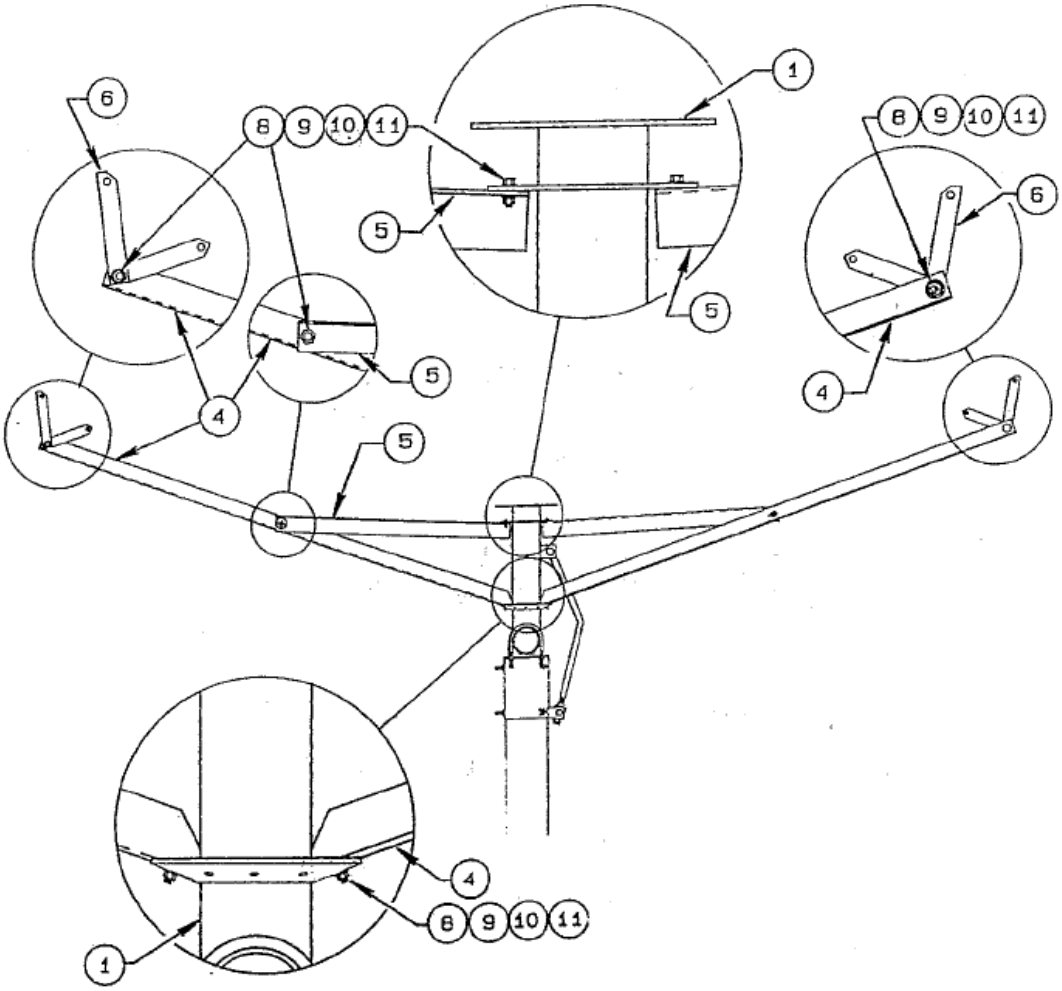


Figure 4.3-2

4.4 ALTERNATIVE REFLECTOR ASSEMBLY

1. Select a reflector petal without a clevis (item# 2). Center it, face up, over the temporary assembly rod with the inner lip of the petal resting on the rim of the hub. Attach the nearest reflector mounting bracket to holes C and D on the right hand side of the petal with [2] 3/8-13 x 1.25" bolts, [4] flatwashers, [2] lockwashers, and [2] hex nuts (items # 9,10,11,12). Insert [2] more 3/8" bolts and flatwashers through the reflector mounting bracket and left hand petal flange and hold in place while another petal with a clevis (item# 1) is positioned, face up, on that side. Attach the second petal to the first petal and reflector mounting bracket with the 3/8" hardware. Hand tighten only. Note: all mounting brackets mount to the right hand side of the petal flanges. See figure 4.4-1 for petal placement.

2. Install 3/8-13 x 1.25" bolts, flatwashers, lockwashers, and hex nuts (items # 9,10,11,12) in all remaining flange holes in the connected petal flanges. Hand tighten only. Insert [2] more 3/8" bolts and flatwashers through the reflector mounting bracket and left hand petal flange and hold in place while another petal without a clevis is positioned on that side. Continue in this fashion, placing one petal with a clevis next to a petal without a clevis until there is one petal left to be installed.

3. Before installing the last petal, place the center plate (item# 3) on top of the center hub with the 1/4-20 x 1.25" bolt, flatwasher, and lockwasher (items # 6,7,8) as shown in figure 4.4-2. Leave plate loose enough to insert the last petal.

4. Unbolt the mounting bracket from the right hand side of the first petal installed and install the last petal using the remaining 3/8" hardware. It may be helpful to have helpers equally spaced around the reflector to gently lift up on the reflector to install the 3/8" hardware connecting the last two petal flanges.

5. After all the petals are installed it is time to tighten all reflector bolts. Before tightening, check to be sure that the petals are positioned and aligned properly. You may need to adjust a petal in or out (radially) until the rim is flush. Also check up and down alignment. It is possible to lift the reflector slightly to feel the front surface, making sure it is flush. Tighten all A (outer most) bolts first. Next tighten all B bolts, then C, then D, etc. NOTE: Before tightening the last set of reflector bolts (bolts H, closest to the hub) check to make sure that the lip on the inner edges of all petals are sandwiched between the center plate and the center hub in the reflector.

6. The center hub now may be centered in the reflector carefully moving the reflector around. Tighten the 1/4" bolts to the center plate. Tighten the outermost 1/2" bolts (long brace to reflector support bracket) all around the reflector. Next tighten the 1/2" bolts connecting the long braces to the center hub all the way around. Next tighten the 1/2" bolts connecting the long and short braces all the way around. Finally tighten the 1/2" bolts from the short braces to the hub. The reflector assembly is now complete.

7. Remove the temporary assembly rod from the hub and canister (leaving the elevation block attached to the canister) and lower the reflector to a vertical position.

8. Assemble the elevation rod by placing the inner strut (item# 4) all the way into the outer strut (item# 5), and installing [1] 1/2-13 x 2.25" bolt, [2] flatwashers, [1] lockwasher, and [1] 1/2-13 hex nut (items # 13,14,15,16). NOTE: There is a long and short inner and outer strut. Use the long strut pieces for elevation look angle range of 10^{o} to 70^{o} and the short strut pieces for elevation look angle range of 0^{o} to 50^{o}. Next run one of the 3/4" nuts (removed from the temporary assembly rod) up the threads of the inner strut, place a 3/4" flatwasher against the nut, and insert the strut through the elevation block. Secure with the other 3/4" flatwasher and nut. The elevation rod assembly should now be attached to the hub using the same 5/8" hardware used to hold the temporary assembly rod. See figure 4.4-3.

ALTERNATIVE REFLECTOR ASSEMBLY PARTS LIST TABLE 4.4			
ITEM#	**PART#**	**DESCRIPTION**	**QTY**
1		REFLECTOR PETAL W/ CLEVIS	8
2		REFLECTOR PETAL W/O CLEVIS	8
3	0156-808	CENTER PLATE	1
4	0490-100	ELEVATION ROD, INNER STRUT - LONG	1
	0490-382	ELEVATION ROD, INNER STRUT - SHORT	1
5	0490-306	ELEVATION ROD, OUTER STRUT - LONG	1
	0490-383	ELEVATION ROD, OUTER STRUT - SHORT	1
6	8030-010	BOLT, 1/4-20 x 1.25"	6
7	8201-040	FLATWASHER, 1/4"	6
8	8202-040	LOCKWASHER, 1/4"	6
9	8202-010	BOLT, 3/8-16 x 1.25"	64
10	8201-042	FLATWASHER, 3/8"	128
11	8202-042	LOCKWASHER, 3/8"	64
12	8102-007	NUT, HEX, 3/8-16	64
13	8033-018	BOLT, 1/2-13 x 2.25"	1
14	8201-043	FLATWASHER, 1/2"	2
15	8202-043	LOCKWASHER, 1/2"	1
16	8104-007	NUT, HEX, 1/2-13	1

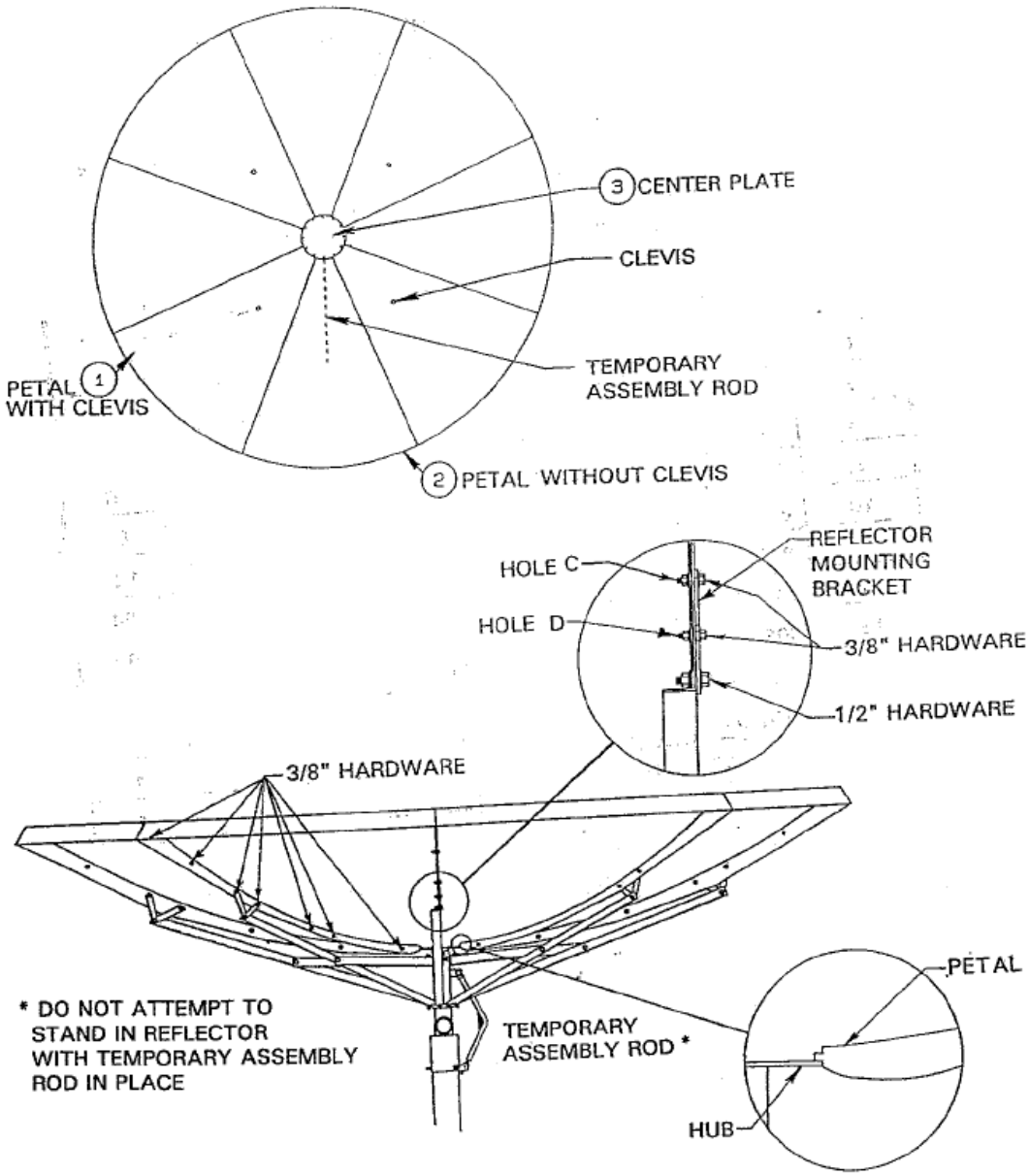

3 CENTER PLATE
CLEVIS
TEMPORARY ASSEMBLY ROD
PETAL WITH CLEVIS
1
2 PETAL WITHOUT CLEVIS
HOLE C
HOLE D
REFLECTOR MOUNTING BRACKET
3/8" HARDWARE
1/2" HARDWARE
3/8" HARDWARE
* DO NOT ATTEMPT TO STAND IN REFLECTOR WITH TEMPORARY ASSEMBLY ROD IN PLACE
TEMPORARY ASSEMBLY ROD *
PETAL
HUB

Figure 4.4-1

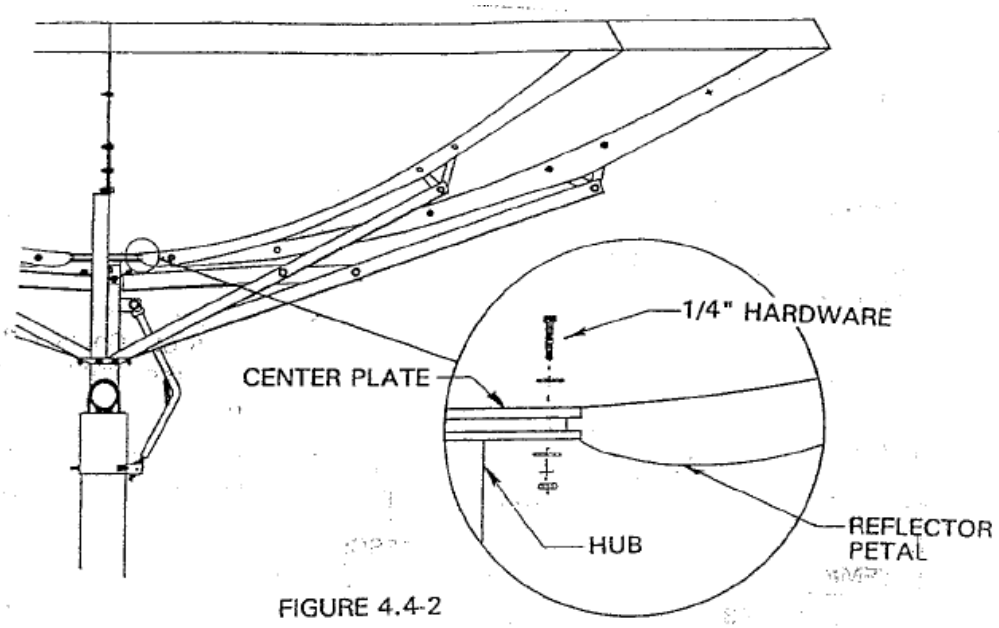


FIGURE 4.4-2

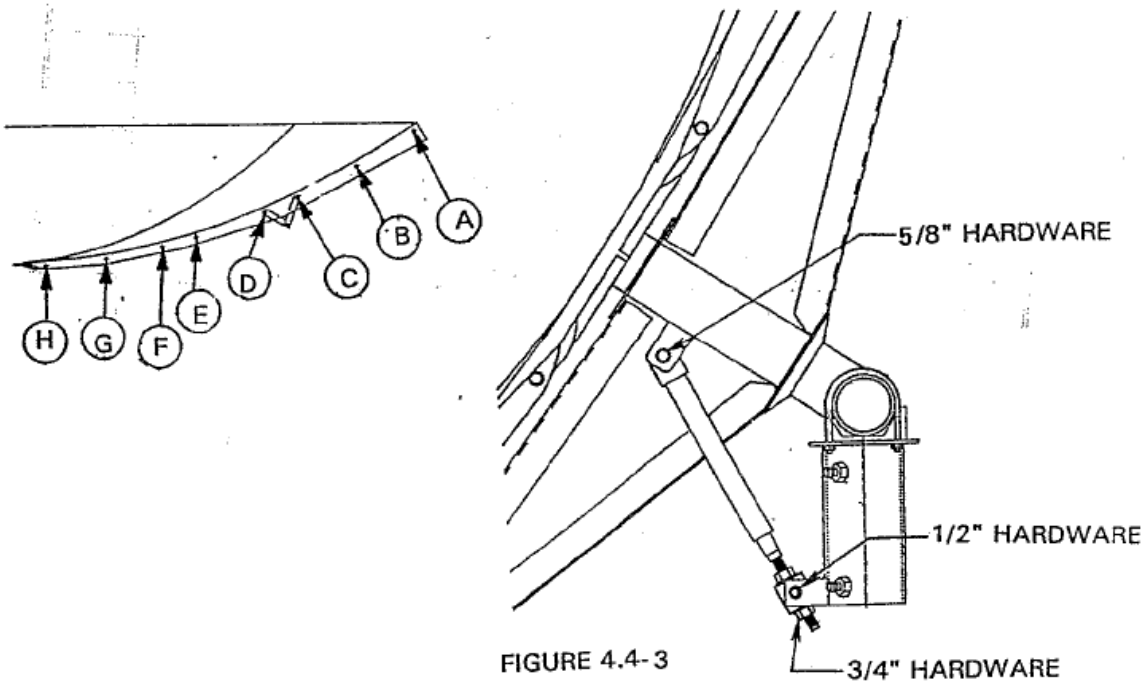


FIGURE 4.4-3

SECTION V FEED INSTALLATION

5.1 FEED ASSEMBLY

C-BAND Rx/Tx FEED SYSTEM

There are four feed assembly configurations available. Refer to figure 5.1-1, 5.1-2, and the parts list below for your type system.

Attach the LNB/LNA (customer supplied) to the side flange of the feed assembly (item# 1) with the 1/4" hardware and gasket (items # 2,3,4,5,6). Connect the transmit device (customer provided) to the through port using the hardware and gasket that come with the transmit device. Tighten securely.

FEED ASSEMBLY - PARTS LIST TABLE 5.0

ITEM#	PART#	DESCRIPTION	QTY
1	0183-387	FEED HORN ASSEMBLY, WR137 CROSS-POL	1
	0183-388	FEED HORN ASSEMBLY, WR137 CO-POL	
	0183-389	FEED HORN ASSEMBLY, N TYPE CROSS-POL	
	0183-390	FEED HORN ASSEMBLY, N TYPE CO-POL	
2	0171-073	GASKET	1
3	8023-008	1/4-20 x 1.00 BOLT	10
4	8201-036	1/4" FLATWASHER, S.S., STD.	10
5	8202-031	1/4" LOCKWASHER, S.S., STD.	10
6	8100-005	1/4-20 HEX NUT, S.S., STD.	10

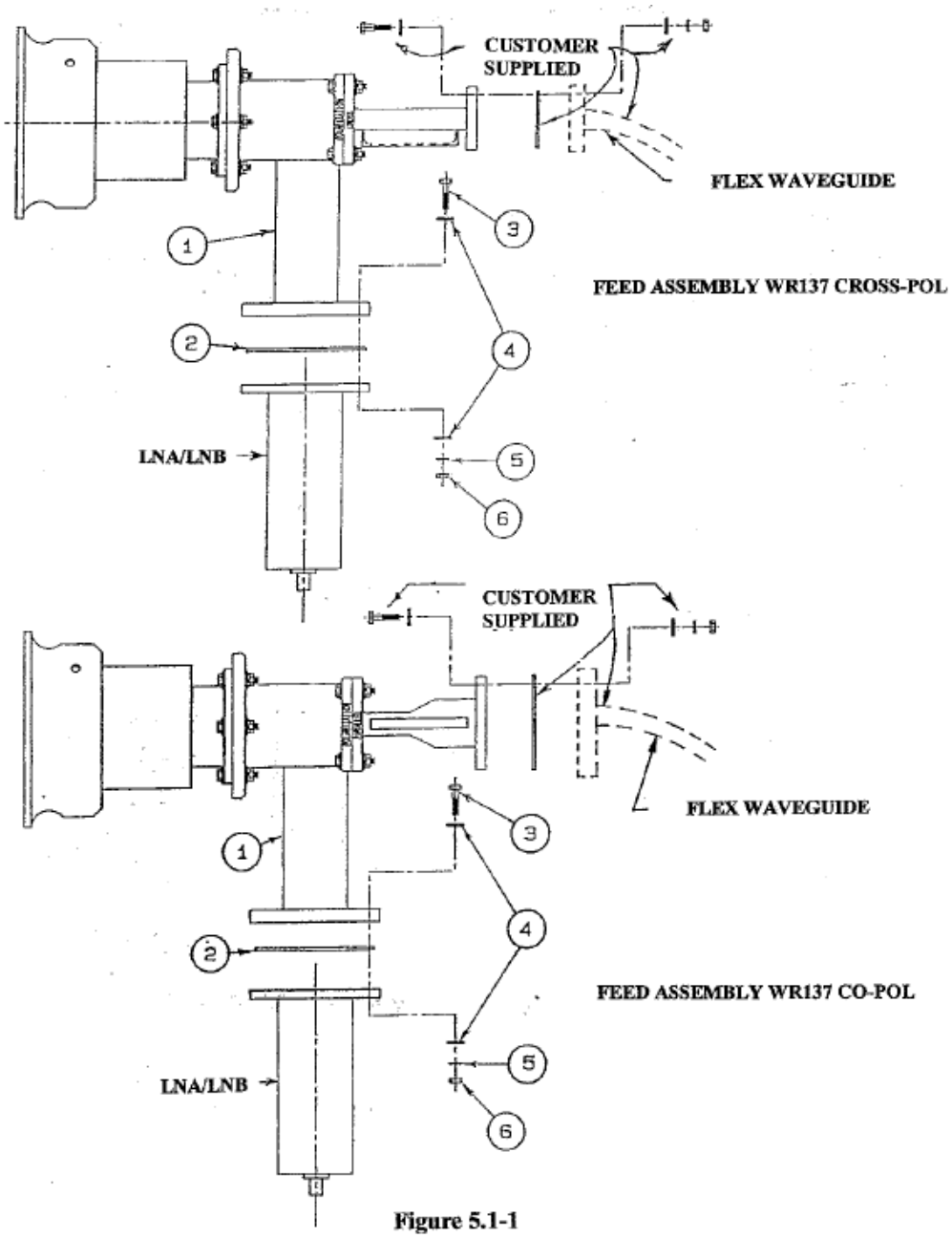

CUSTOMER SUPPLIED
FLEX WAVEGUIDE
1
2
3
4
5
6
FEED ASSEMBLY WR137 CROSS-POL
LNA/LNB
CUSTOMER SUPPLIED
FLEX WAVEGUIDE
1
2
3
4
5
6
FEED ASSEMBLY WR137 CO-POL
LNA/LNB
Figure 5.1-1

Figure 5.1-1

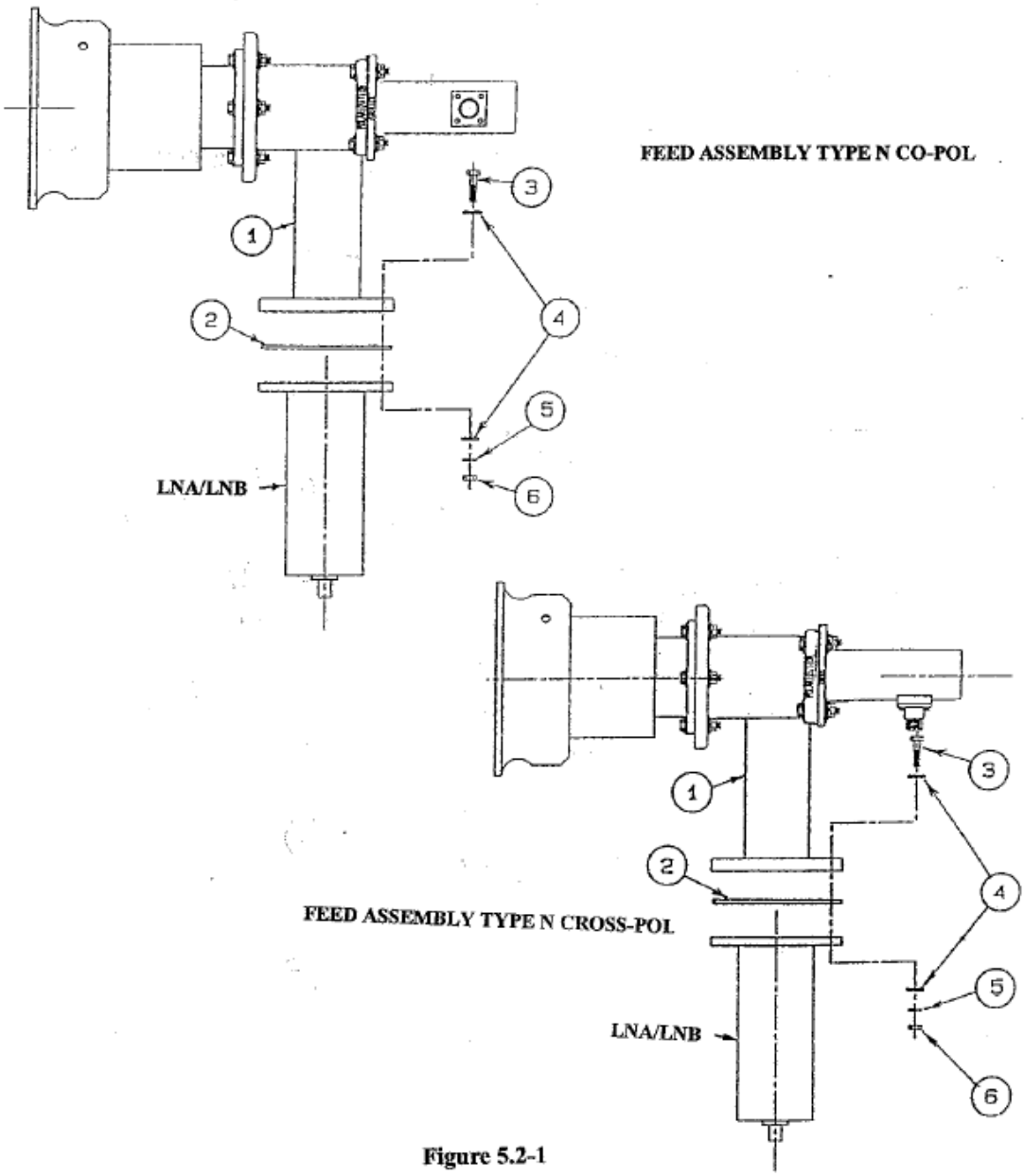


Figure 5.2-1

Figure 5.2-1

5.2 FEED SUPPORT ASSEMBLY

NOTE: Refer to the parts list in table 5.2 for the following sections.

1. Attach each of the feed support rods (item# 1) to a feed support clevis with a 3/8-16 x 1.00" bolt, two flatwashers, a lockwasher, and a hex nut (items # 2,3,4,5). Note that each rod should be attached to the same side of the clevis. See figure 5.2-1.

2. Attach the feed support bracket (item# 6) to the four feed rods with eight 3/8-16 x 1.00" bolts, eight lockwashers, and eight hex nuts (items # 2,4,5). Tighten the 3/8" hardware in step 1 and 2 securely.

5.3 FEED INSTALLATION

1. Remove the dielectric (plastic) ring from the feed assembly by loosening the 1/4" set screws and sliding the ring off the assembly. See figure 5.3-1.

2. Insert the feed assembly through the feed support bracket as shown. Slide the dielectric ring fully onto the feed assembly and re-tighten the ring set screws.

3. Check the focal length by measuring from the face of the feed horn (not the dielectric ring) to the reflector cover plate as shown in figure 5.3-2. If the focal length is incorrect, adjust the feed clevises in or out at the reflector surface as needed. Be sure that the clevises are adjusted equally. When the focal length is correct, tighten all feed support and clevis hardware securely. The focal length is 54" for the 3.7M. The F/D ratio is .37 for the 3.7M.

4. Slide the dielectric ring firmly against the feed support bracket and tighten the feed support bracket set screws.

5. POLARITY ADJUSTMENT - On C-band feed systems, polarity is adjusted by loosening the feed support bracket set screws (see figure 5.3-2) and rotating the feed horn 90 degrees, then re-tighten the set screws. After adjusting polarity, focal length must be checked.

FEED SUPPORT ASSEMBLY - PARTS LIST TABLE 5.2			
ITEM#	**PART#**	**DESCRIPTION**	**QTY**
1	0176-214	FEED ROD	4
2	8032-008	3/8-16 x 1.00" BOLT	12
3	8201-042	3/8" FLATWASHER	8
4	8202-042	3/8" LOCKWASHER	12
5	8102-007	3/8-16 HEX NUT	12
6	0490-211	FEED SUPPORT BRACKET	1

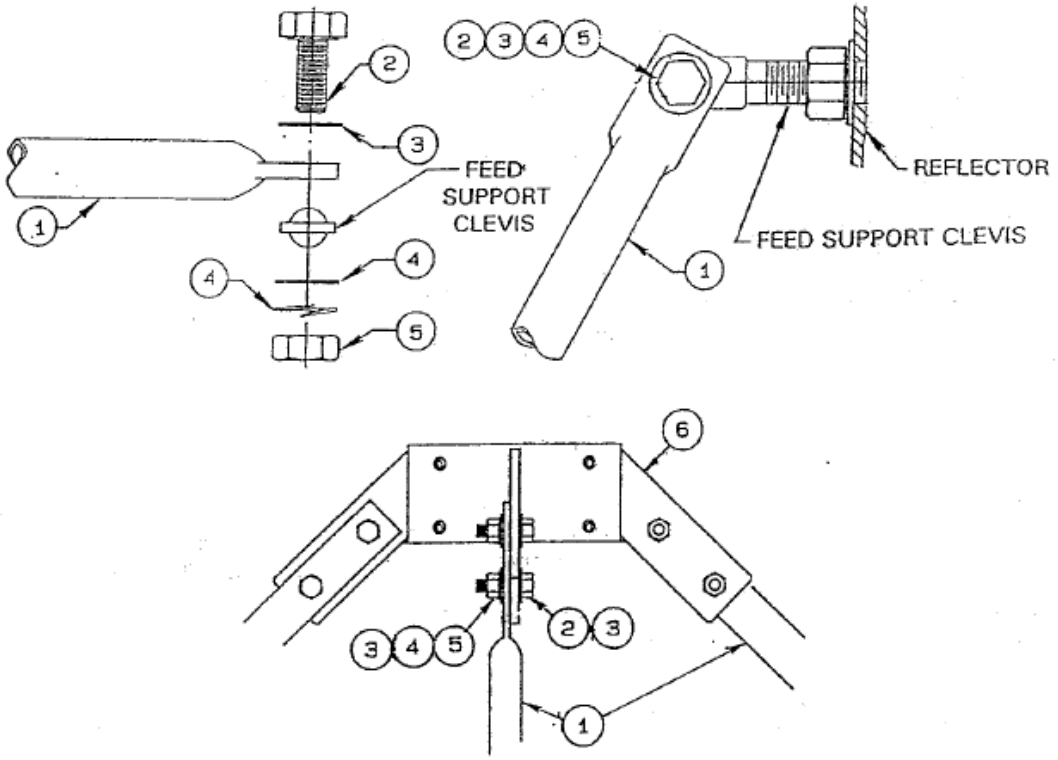


Figure 5.2-1

Figure 5.2-1

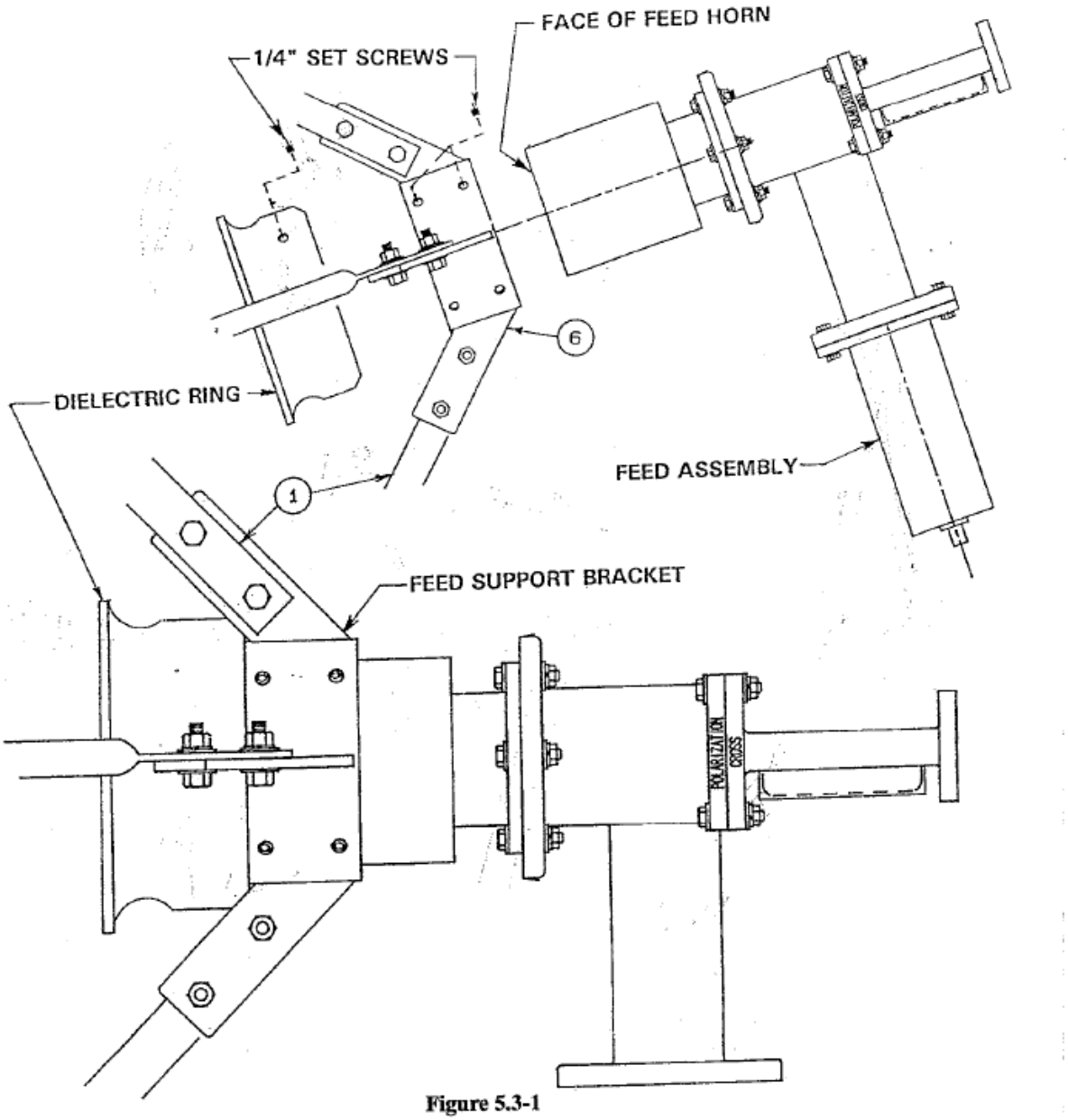

FACE OF FEED HORN
1/4" SET SCREWS
6
DIELECTRIC RING
FEED ASSEMBLY
1
FEED SUPPORT BRACKET
POLARIZATION
CROSS
Figure 5.3-1

Figure 5.3-1

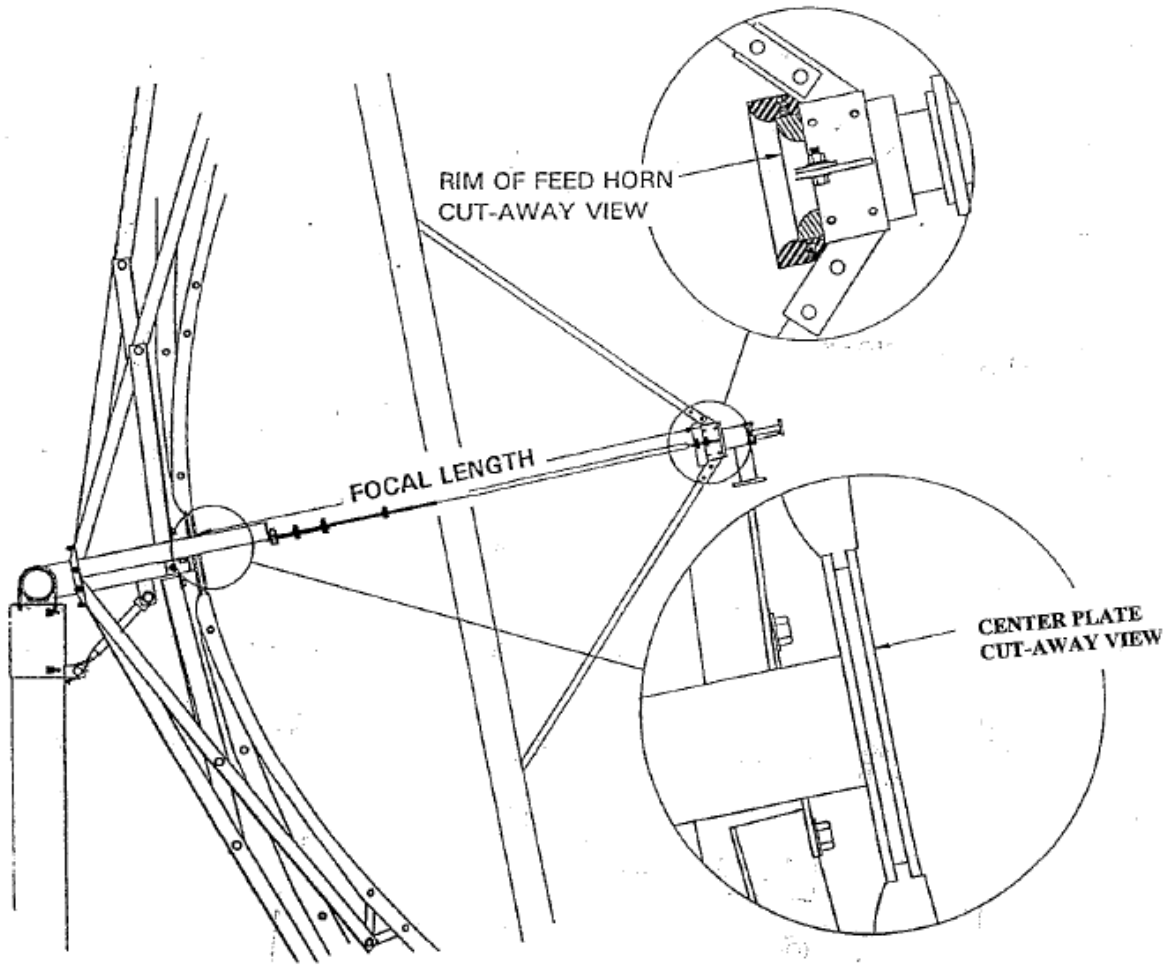


Figure 5.3-2

Figure 5.3-2

SECTION VI ANTENNA ALIGNMENT AND TUNING

6.1 ELEVATION ADJUSTMENT

1. Prior to setting the rough elevation angle, make sure that the threaded portion of the elevation rod is centered in the elevation block. Place an inclinometer on the hub as shown in figure 6.1-1.

2. The rough elevation angle is set by raising up on the lower edge of the reflector and removing the 1/2" bolt through the two struts of the elevation adjustment rod. Continue lifting up on the reflector until the desired angle is read on the inclinometer. Place the 1/2" bolt through the hole in the strut that is closest to this angle. Adjust the 3/4" nuts at the elevation block until the exact angle is read on the inclinometer.

6.2 AZIMUTH ADJUSTMENT

1. Make sure that all the 5/8" set screws in the canister are loose. Sweep the antenna in the azimuth until the desired signal is found. If the desired signal is not found, it may be necessary to alter the elevation angle slightly. Rotate in azimuth slowly until loss of signal is observed. Rotate the antenna in the opposite direction until the signal strengthens, and then weakens again. Set the azimuth between these two points and snug the canister.

6.3 FINE TUNING

1. After setting the azimuth, return to the elevation adjustment and fine tune in the same way, splitting the difference between the two points where loss of signal is first observed. Check the azimuth adjustment once more, then tighten all canister and elevation rod hardware.

6.4 REFLECTOR FINE ADJUSTMENT

1. As discussed in section 2, a level surface is necessary for assembly of the reflector. If a level surface is not available, the reflector may be checked for accuracy by use of strings across the aperture.

2. Use thin cord across the reflector diameter from rim to rim, at four places. One end of each string should be taped to the rim just to one side of the seam between two petals. The other end should be fastened 180 degrees opposite. All four strings should lightly touch where they cross at the center. The distance from center of the reflector (center plate) to the strings should be 24" for the 3.7M.

3. If the reflector does not check out as described above within approximately 1/4", reflector adjustment may be done. Identify the point on the rim that is either high or low. Loosen the four bolts on the long and short angle brace behind the radial line of the reflector. Gently push or pull on the reflector rim until it is brought into position. While one installer holds the rim, the other should tighten all the brace bolts fully. Repeat this process as required, loosening and tightening only one set of braces at a time.

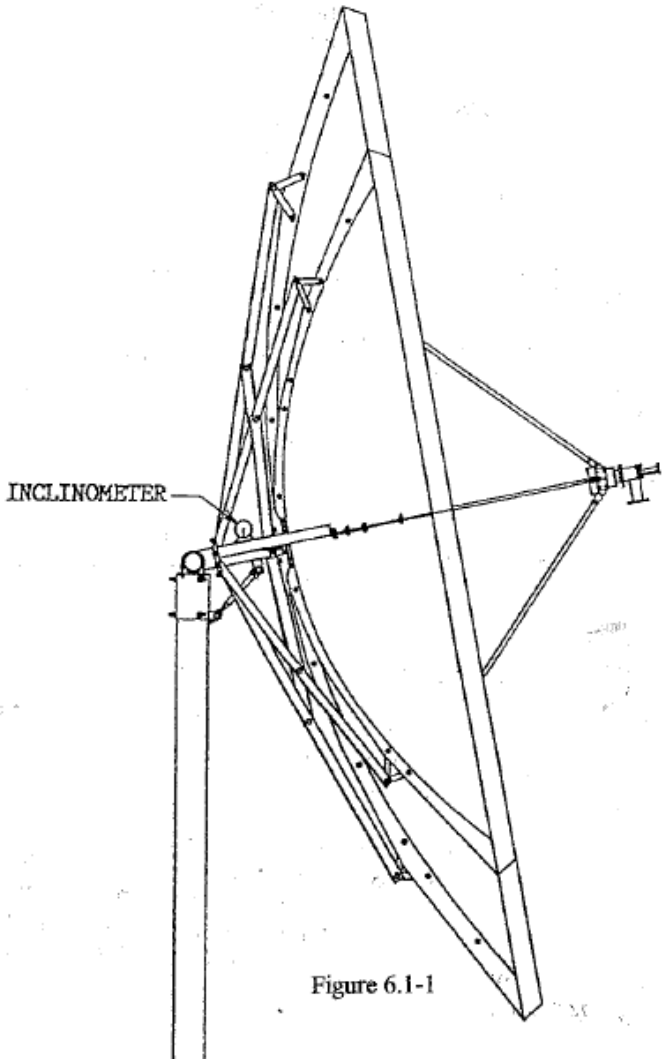


Figure 6.1-1