

# Paraclipse<sup>®</sup>

HIGH PERFORMANCE ANTENNAS  
*Your Complete Reflector Source*

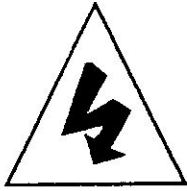


Paraclipse<sup>®</sup>  
CLASSIC  
**16 CD**  
**(4.8 m)**

**INSTALLATION &  
ASSEMBLY INSTRUCTIONS**

FILL OUT WARRANTY CARD PROVIDED AND RETURN TO PARACLIPSE TO SECURE VALUABLE EXTENDED WARRANTY RIGHTS.

## Welcome to the world of satellite television and your Paraclipse satellite antenna



This symbol is intended to alert you of the presence of unusually dangerous voltage within the unit's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.



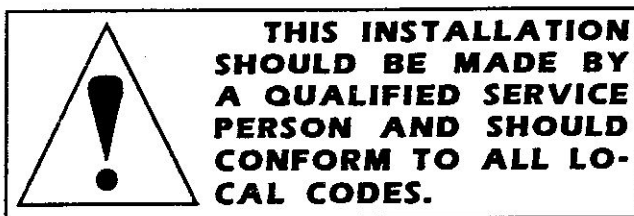
This symbol is intended to alert you of the presence of important operating and maintenance instructions in the literature accompanying the unit.

### WE RECOMMEND THE FOLLOWING:

**1. Site location:** This is extremely important! We recommend that the site survey be performed by qualified personnel to ensure proper antenna location and to test for microwave interference.

**2.** Read the instructions thoroughly prior to assembly so that you may become familiar with our method of installation.

**3.** Please keep this assembly instruction manual for future reference. The information below and inside this manual will help you when ordering replacement parts, and with questions you may have about your antenna.



### MAINTENANCE AND OPERATION:

The condition of your antenna should be checked at least once a year and after severe weather conditions. Replace or tighten any loose or missing hardware, watch for signs of rust on steel components and provide proper protection. Inspect weather protection for electronics and motor drive and perform any maintenance called for by motor drive manufacturer. Check the chain on a periodic basis; grease and tighten as necessary.

Check site location for any obstructions to movement of antenna and clear branches, etc. as needed. **NOTE:** Approximately 17' 4" (5.28 m) is required to rotate the antenna to a horizontal position.

THE ANTENNA SHOULD BE PLACED IN A STOWED POSITION FOR HEAVY STORMS, SNOW, OR LONG UNATTENDED PERIODS OF TIME. THE STOWED POSITION IS WITH THE ANTENNA POINTED AT EITHER HORIZON.

Please fill out the warranty card provided and return to **Paraclipse**.

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Write the serial number of your antenna, the date of purchase, and the name, address, and phone number of your **Paraclipse** dealer. The serial number can be found on ends of packaging boxes, on the antenna mount, and on the packing list packed with the antenna.

Serial #: \_\_\_\_\_

Date purchased: \_\_\_\_\_

Dealer: \_\_\_\_\_

Telephone: \_\_\_\_\_

# Paraclipse<sup>®</sup> CLASSIC

This assembly manual is written for the 16 CD (4.8 m) series antenna.

## 16 CD (4.8 m)

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**NOTE:** On assembly illustrations where circled numbers rather than part names are noted, please refer to page 22 for part identification.

### Manufacturer's Note

**A home satellite antenna system is extremely difficult to correctly install without proper training and specialized equipment. It is therefore recommended that installation be done by an authorized dealer.**

**Before starting installation, check applicable local building codes and restrictions.**

**The antenna can be assembled other than the assembly sequence described in this manual. It can be assembled on the tower without any heavy equipment or special tools, but when hoists, forklifts, scaffolds, etc. are available, assembly is faster.**

**Care and judgment must be used during construction due to the weight and height of the assembly.**

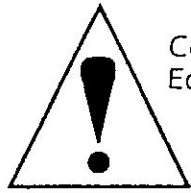
### TOOLS:

- 1) Two 12' (3.7 m) ladders, or scaffolding if possible.
- 2) Hand drill with 1/4" and 7/32" bits.
- 3) Two 15" crescent wrenches.
- 4) 7/16", 1/2", 9/16", 3/4", 15/16", 1 1/8", and 1 1/4" sockets or wrenches.
- 5) Inclinator.
- 6) Bubble level.
- 7) Lineman's pliers or similar tool for bending clips.
- 8) 1/8", 1/4", and 3/8" long handle Allen wrenches.
- 9) Nail aprons for holding hardware during assembly.
- 10) Side-cutting pliers (tin snips).
- 11) Small hand tools.

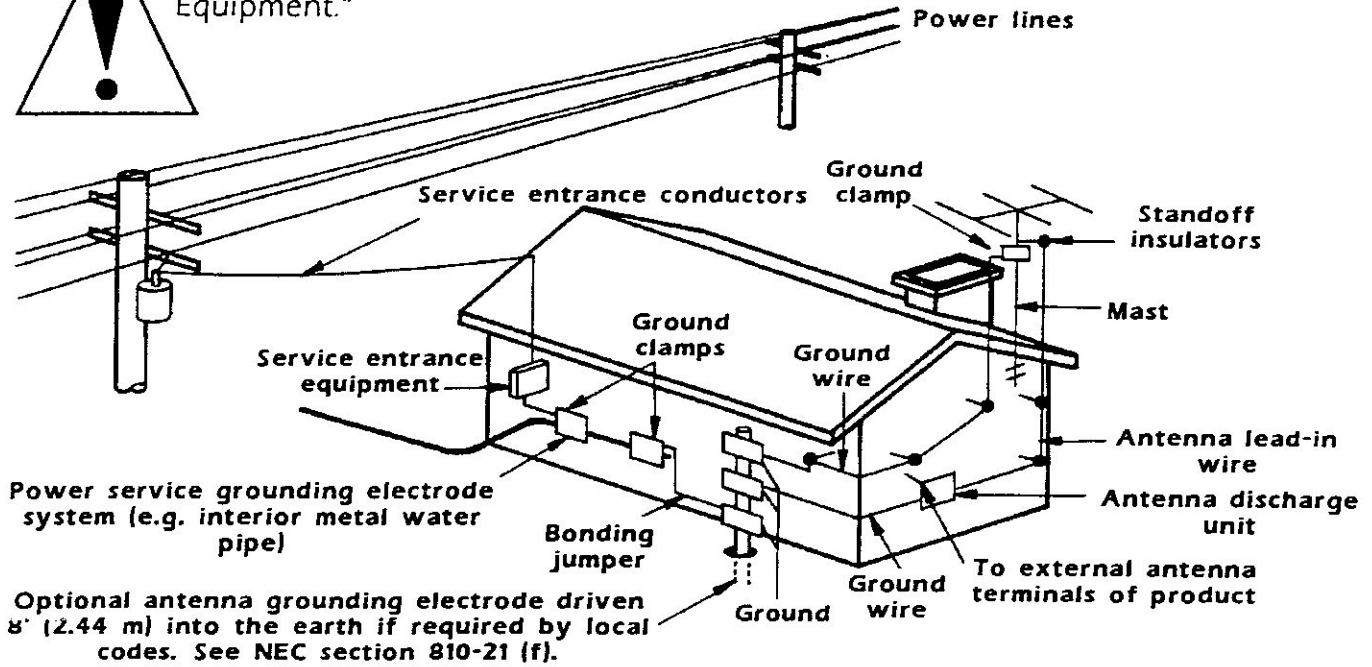
### MATERIALS:

- 1) Approximately four cubic yards (minimum) of concrete.
- 2) Twenty-eight 9' (2.74 m) long #5 (11 mm) diameter reinforcing bars.
- 3) Silicone adhesive.

# GROUNDING FOR PARACLIPSE ANTENNA



Example of antenna grounding according to National Electric Code instructions contained in Article 810 "Radio and Television Equipment."



**1.** Use #10 AWG (2.6 mm) copper, #8 AWG (3.3 mm) aluminum, #17 AWG (1.2 mm) copper-clad steel or bronze wire, or larger, as a ground wire. Use a 0.625" (16 mm) ground rod 8' (2.4 m) minimum into ground.

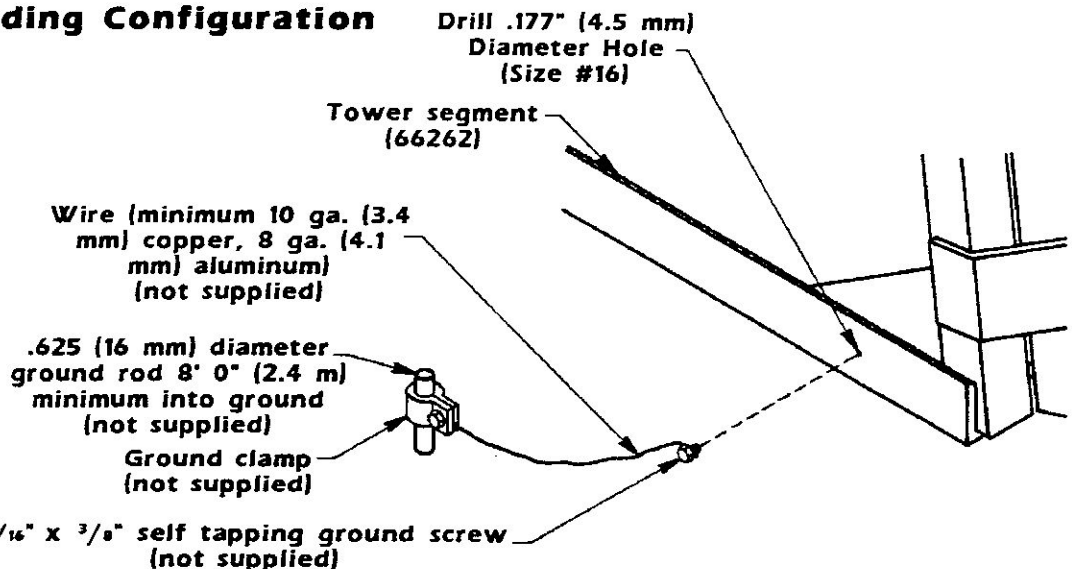
**2.** Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4'-6' (1.22-1.83 m) apart.

**3.** Mount antenna discharge unit as close as possible to where lead-in enters house.

**4.** Use jumper wire not smaller than #6 AWG (4.1 mm) copper, or equivalent, when a separate antenna-grounding electrode is used. See NEC section 810-21 (i).

## Typical Grounding Configuration

**NOTE:** This is a typical grounding configuration only. It should be noted that multiple grounding locations may be required to ground the antenna thoroughly. It is suggested that a ground wire be installed at the mount and at the back hub plate of the antenna.



**Construction Notes**

**1. CONCRETE:** Six sacks of Type 2 Portland Cement per cubic yard (.76 cubic meter). Slump 3" (76 mm) to 4" (102 mm). Air entrained in freezing climate. 3,000 psi (20,700 MPa) minimum compression strength.

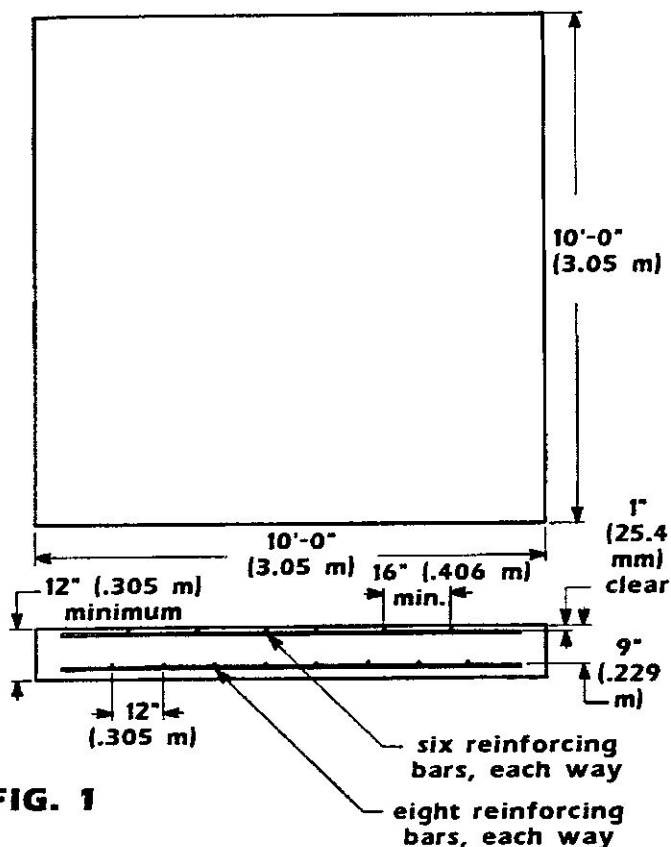
**2. REINFORCING BAR:** ASTM A615 Grade 40 deformed bars. No splices.

**3. SOIL:** Remove all grass and root-bound material from under the footing prior to placing the concrete.

**4. LOCATION:** Bottom of the footing shall be 1' (.31 m) minimum below the frost line.

**Reinforcing Bar and Anchor Bolt Layout**

**1.** The footings should be poured as level as possible in accordance with the dimensions shown in Fig. 1 in order to adequately



**FIG. 1**

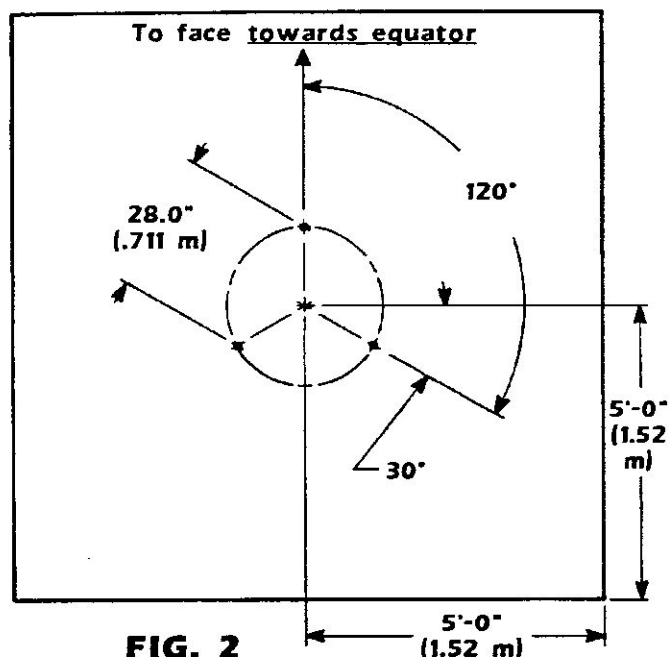
support the antenna during violent weather, hard freeze, or muddy conditions.

**NOTE:** It is recommended to use eye bolts in the corners of the footings to tie down the antenna during assembly and in areas subject to high winds. Eye bolts may be installed later with expansion sleeves, if necessary.

**2.** Place eight #5 (11 mm) diameter reinforcing bars each way 12" (.305 m) apart as shown in Fig. 1 at a depth of 9" (.229 m). Place six #5 (11 mm) diameter reinforcing bars each way as shown in Fig. 1 at a depth of 1" (25.4 mm).

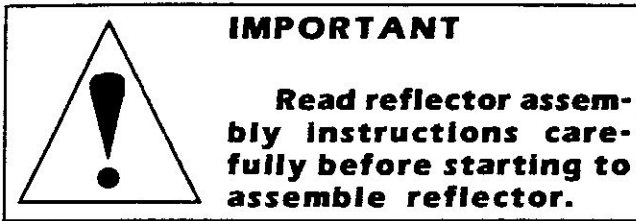
**3.** Cut out the foundation layout template from the outside of the crate. Drill the hole locations in the template. Mount the 1" x 14" anchor bolts centered on the concrete slab with 3" (76 mm) of the 1" x 14" anchor bolts protruding from the concrete. Use the template holes as guides for the 1" by 14" anchor bolt hole locations. If the foundation layout template is unavailable, use the dimensions in Fig. 2 for hole locations.

**NOTE:** See counter balance installation on page 12 for more concrete usage.



**FIG. 2**

## RIB INSTALLATION



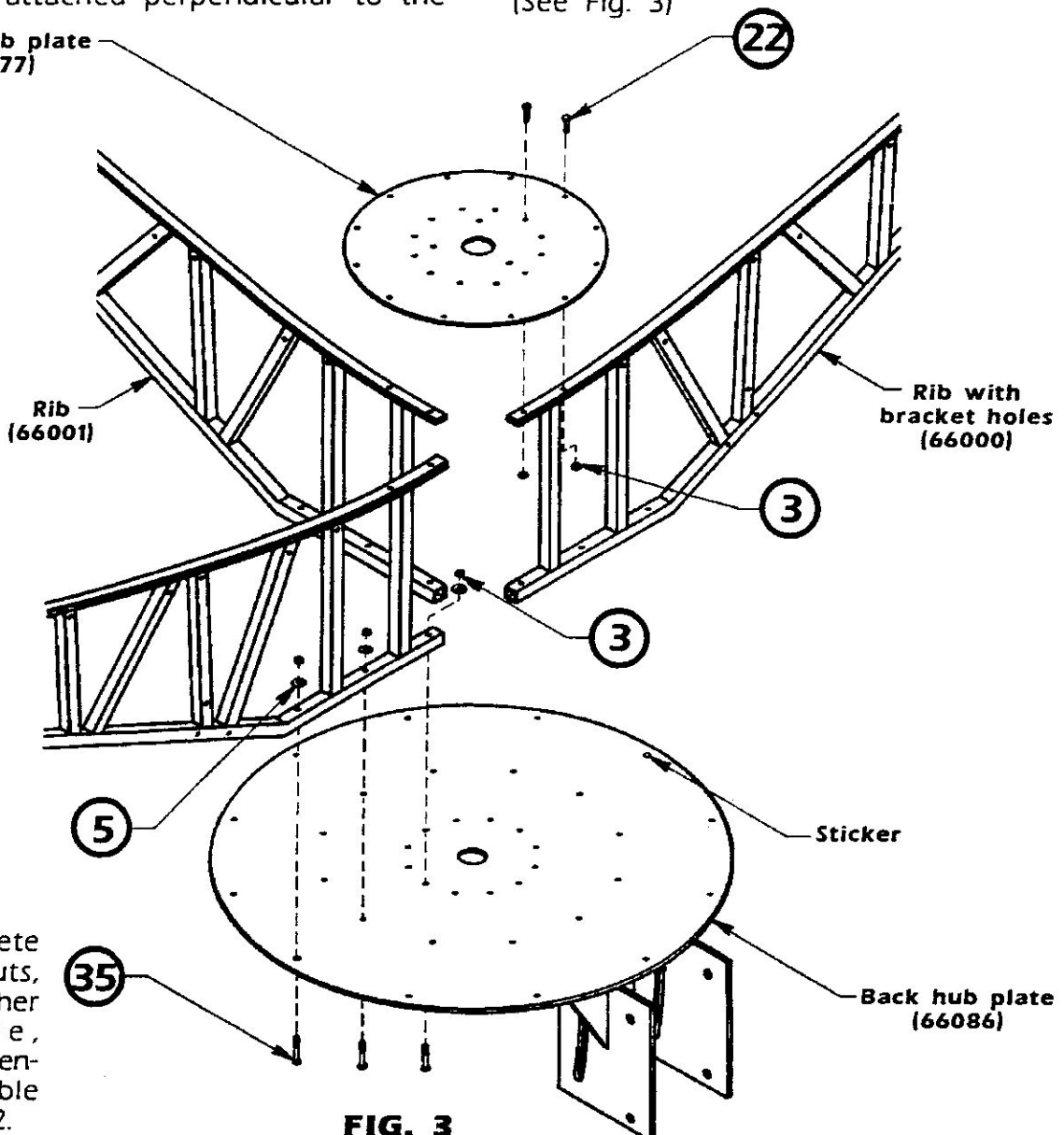
**1.** With the back hub plate level, attach the two ribs with the identifying sticker and three extra holes to the corresponding part of the back hub plate marked with a sticker. (This would mean that these two ribs with bracket holes would be attached perpendicular to the

brackets on the back hub plate.) Secure the ribs with bracket holes with six  $\frac{5}{16}$ " x 2" bolts, six  $\frac{5}{16}$ " USS flat washers, and six  $\frac{5}{16}$ " nuts. **Do not tighten.** (See Fig. 3)

**2.** Attach the remaining ten ribs to the back hub plate using thirty  $\frac{5}{16}$ " x 2" bolts, thirty  $\frac{5}{16}$ " USS flat washers, and thirty  $\frac{5}{16}$ " nuts. **Do not tighten.**

**3.** Attach the front hub plate to the ribs using twenty-four  $\frac{5}{16}$ " x 1" bolts and twenty-four  $\frac{5}{16}$ " nuts. **Do not tighten.** (See Fig. 3)

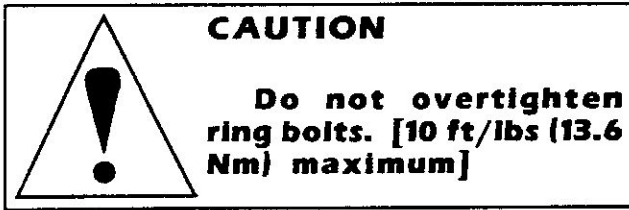
Front hub plate  
(66077)



For a complete listing of nuts, bolts and other hardware, please see identification table on page 22.

**FIG. 3**

## RING INSTALLATION



**1.** Attach all #1 rings (the largest rings) to the outermost holes of the ribs with the curved section facing toward the center of the antenna. Secure the #1 rings using twenty-four  $\frac{1}{4}$ " x  $1\frac{3}{4}$ " bolts and twenty-four  $\frac{1}{4}$ " nuts. Tighten #1 ring bolts (after all #1 rings are assembled) while being careful not to overtighten. Check that the #1 rings are flush with the bottom of the

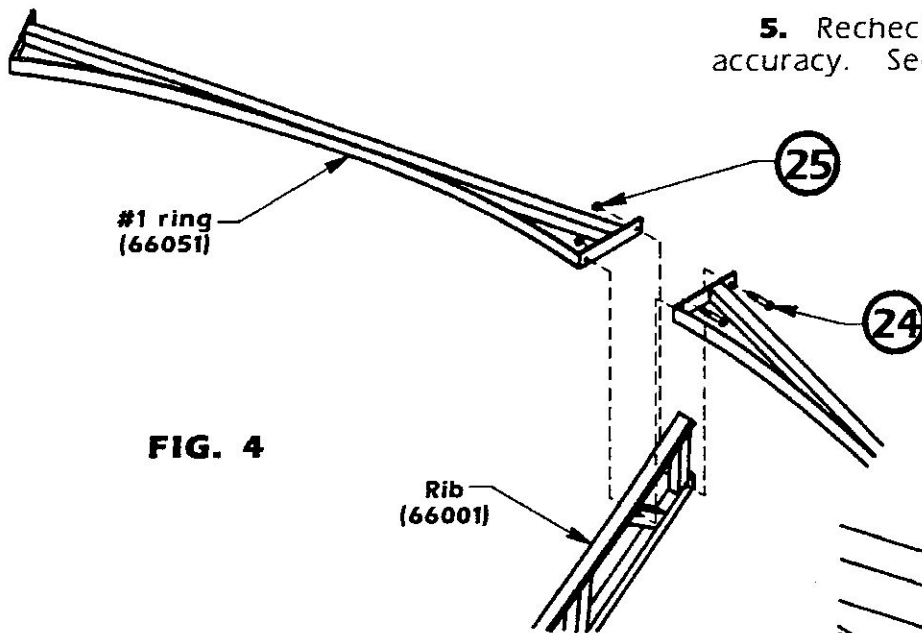
mesh slot of the rib. Tighten all rib bolts. (See Fig. 4 and 5)

**2.** Check the reflector for parabolic accuracy using tests located on the following page. If adjustments are required, loosen the #1 ring bolts and/or rib bolts and make the necessary corrections.

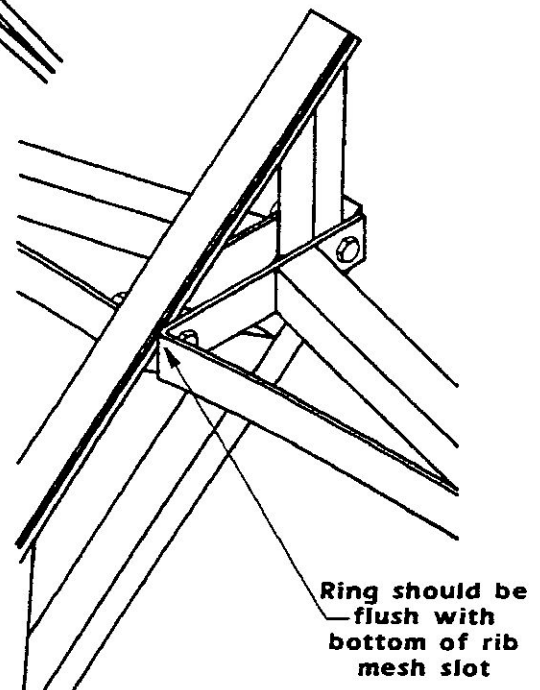
**3.** Attach the remaining rings, in any order, to the ribs. **Do not tighten until all rings are attached.**

**4.** Tighten the remaining ring bolts while being careful not to overtighten. Check that the rings are flush with the bottom of the mesh slot of the rib. (See Fig. 5)

**5.** Recheck the reflector for parabolic accuracy. See the following page.



**FIG. 4**



**FIG. 5**

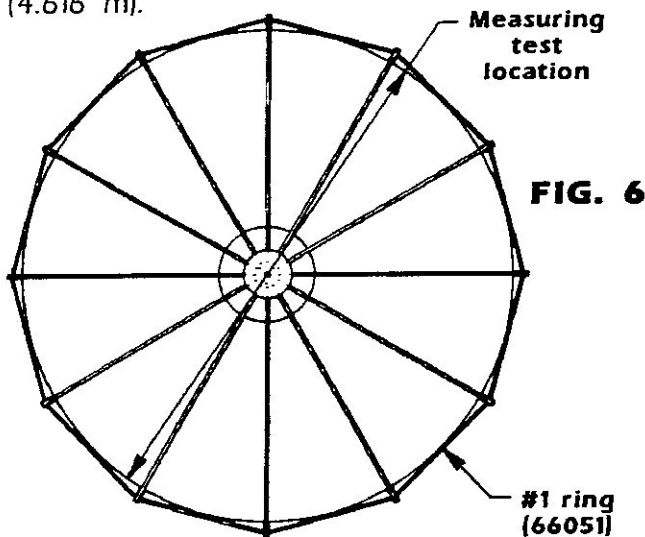
For a complete listing of nuts, bolts and other hardware, please see identification table on page 22.

## Parabolic Integrity

A precise parabolic surface that is both accurate and symmetrical is a must for good antenna performance. The design of the antenna structure must not allow for any change in the shape of the reflector. The reflector cannot elongate, warp, or sag if it is to maintain its picture quality.

## Measuring Test

With an accurate tape measure, measure from the outside of the largest ring (the #1 ring) across the face of the dish to the outside of the largest ring opposite the measuring point. (See Fig. 6) Repeat this step measuring completely around the reflector and making sure that the measurements are consistent. The measurements should be approximately 15'  $\frac{3}{4}$ " (4.616 m).



## String Test

With a ball of string and some masking tape, you can check the antenna for symmetry. Find at least four identical spots on the antenna and run lengths of string to the opposite side. Where the strings cross each other, there should be a perfect intersection. The intersection of the string should be perfectly aligned without horizontal or vertical gaps or tension.

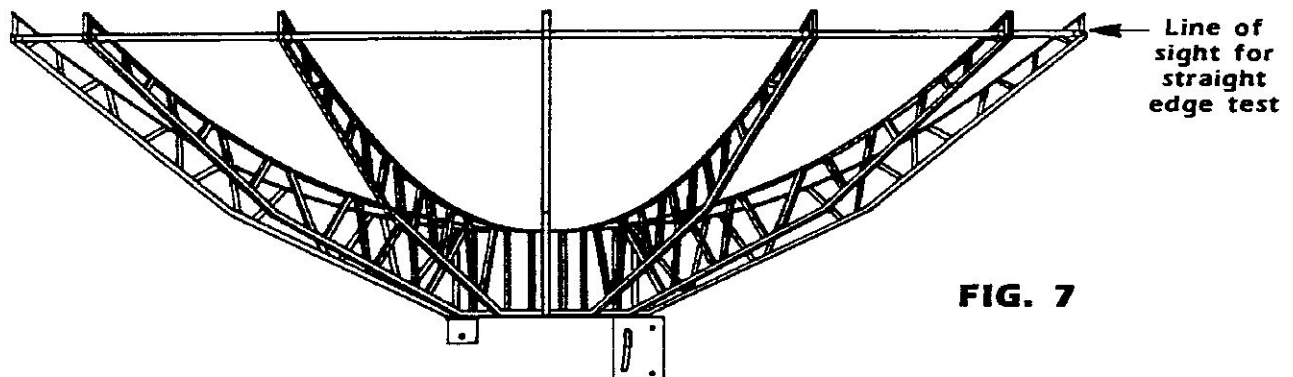
## Straight Edge Test

When you inspect the assembled antenna, lay an imaginary straight edge across the top of the outside ring, close one eye, and sight across the reflector. If you notice a deviation along this edge, you can be certain that the reflector does not have an accurate parabolic shape. (See Fig. 7)

Remember, a total variation of only  $\frac{3}{8}$ " (9.5 mm) from side to side is enough to seriously compromise your picture quality. If you can flex the antenna with your hands, you can be sure that the weather and other natural elements will be flexing it every day for you.

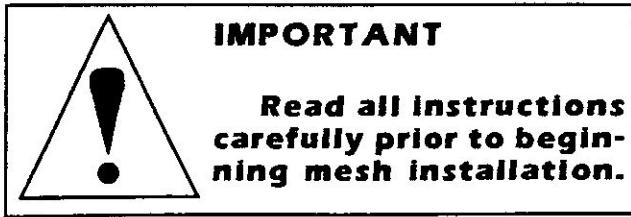
## Adjustments

If any of the above tests show that the dish was incorrectly assembled, loosen the ring bolts (and the front hub plate and back hub plate bolts if necessary) and make the necessary adjustments.



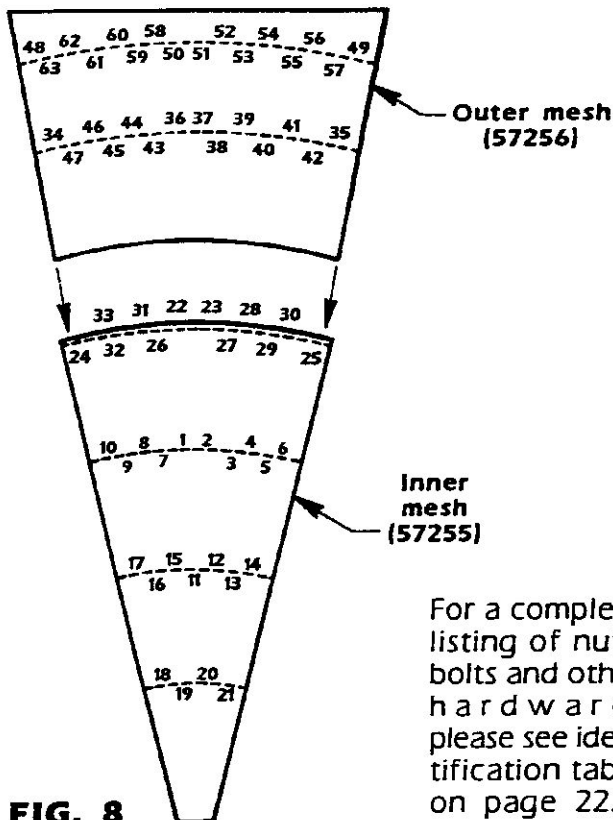


## MESH, J-CLIPS, AND TRIM INSTALLATION



**1. INNER MESH INSTALLATION:** Lay the inner mesh on the rings. Starting with one side of mesh, slide the inner mesh into the slot on top of the rib. Once one side of the inner mesh has been completely installed into the slot, slide it towards the center of the reflector until the other side of the inner mesh begins to touch the opposite rib slot. Completely work the inner mesh into the opposite slot. Then firmly slide the inner mesh towards the center of the reflector, making sure that the sides of the inner mesh stay inside the rib slot.

**NOTE:** The diagrams shown in Fig. 8 for J-clip installation are for reference only. The actual numbers of J-clips re-



**FIG. 8**

quired will vary; one clip every 3" (76 mm) is typical. Mesh must be held firmly against the ribs and rings.

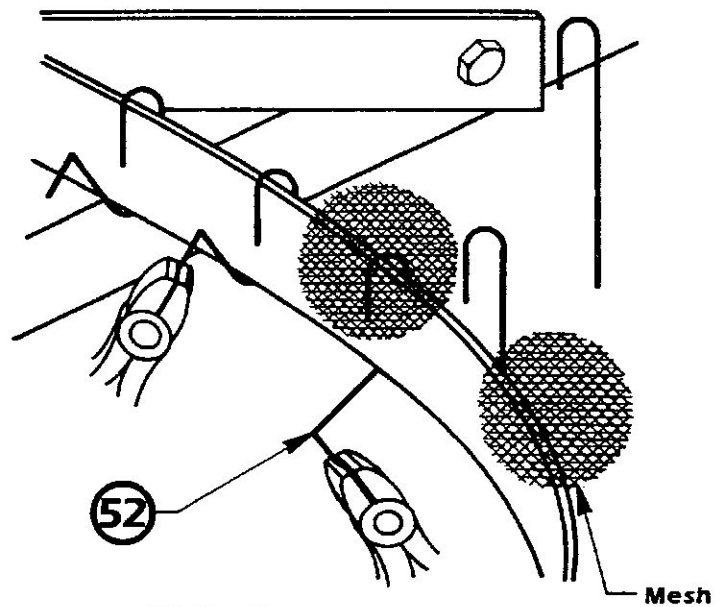
**2. J-CLIP INSTALLATION:** After a piece of inner mesh is in place, install J-clips using the clip installation sequence shown in Fig. 8. When installing the J-clips, firmly pull downward and around the ring while making sure the J-clip is square to the ring. (See Fig. 9)

**NOTE:** There will be one ring (#4 ring) that will not be clipped until the outer mesh is in place.

**3. OUTER MESH INSTALLATION:** Install the outer mesh as per steps #1 and #2 while making sure to slide the outer mesh **under** the inner mesh where the two pieces of mesh overlap.

**4.** Repeat steps #1, #2, and #3 until the antenna is completely meshed.

**5. TRIM INSTALLATION:** When the antenna mesh installation is completed, install the trim. With the flat side up, work the trim onto the edge of the outer mesh panel. Trim the excess with side-cutting pliers.



**FIG. 9**

## TOWER INSTALLATION

**1.** Assemble the three tower segments using eighteen  $\frac{3}{8}$ " x 3" bolts, eighteen  $\frac{3}{8}$ " flat washers, and eighteen  $\frac{3}{8}$ " nyloc nuts. Make sure that all three sections are together and fastened prior to snugging any hardware. **Do not tighten.** (See Fig. 10)

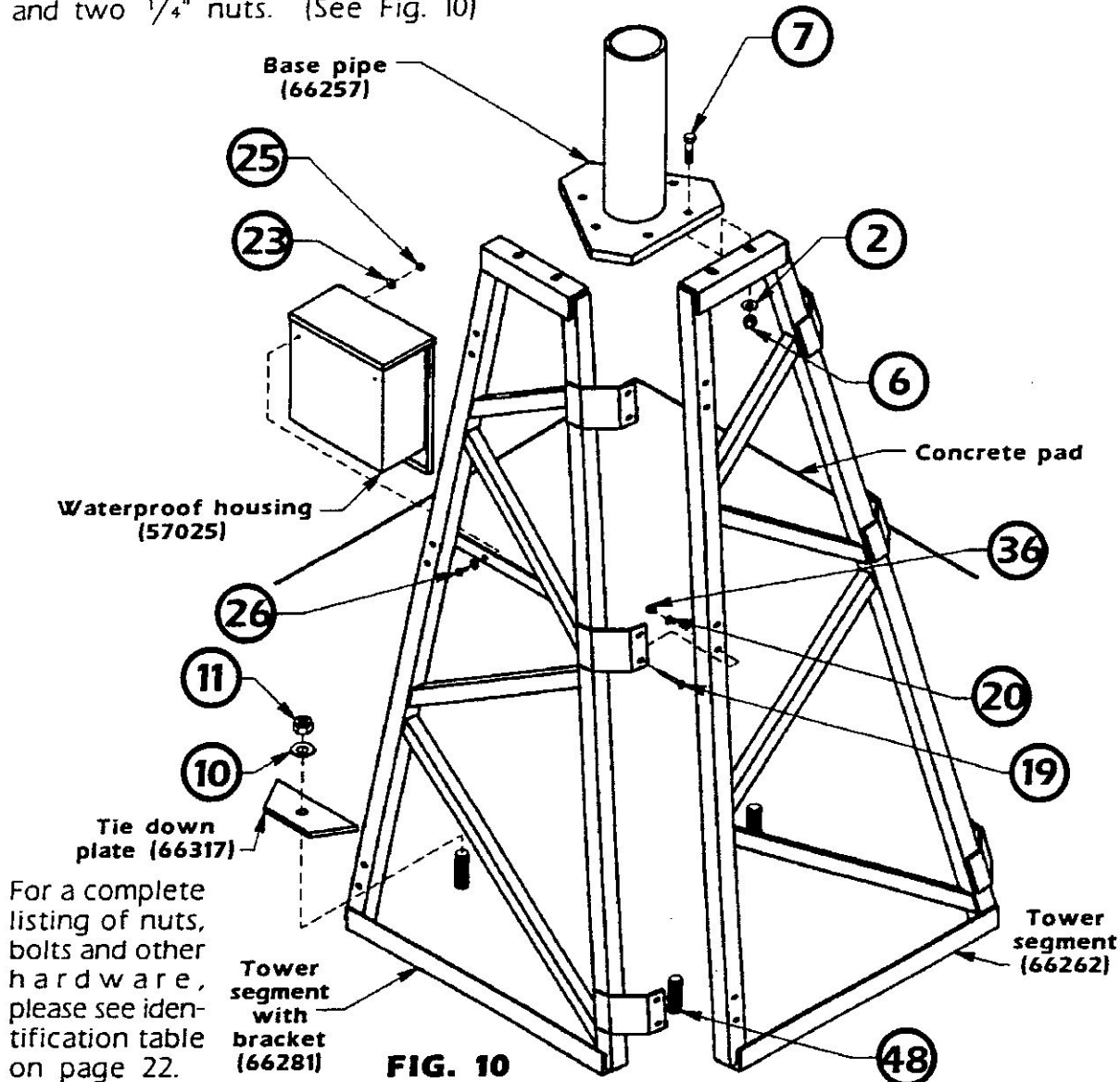
**2.** Attach the base pipe to the assembled tower using six  $\frac{5}{8}$ " x 2  $\frac{1}{2}$ " bolts, six  $\frac{5}{8}$ " flat washers, and six  $\frac{5}{8}$ " nyloc nuts. **Do not tighten.** (See Fig. 10)

**3.** Attach the waterproof housing to the bracket on the assembled tower using two  $\frac{1}{4}$ " x 1" bolts, four  $\frac{1}{4}$ " flat washers, and two  $\frac{1}{4}$ " nuts. (See Fig. 10)

**NOTE:** The waterproof housing will serve as a junction box for your wiring.

**4.** After making sure that the tower segment with the waterproof housing is facing the direction of the cable run, attach the assembled tower to the 1" x 14" anchor bolts using the three tie down plates, three 1" flat washers, and three 1" nyloc nuts. **Do not tighten.** (See Fig. 10)

**5.** After making sure that the assembled tower sits level on the concrete foundation, tighten all hardware.



**FIG. 10**

## MOUNT AND POLAR "T" INSTALLATION

1. Install the mount over the base pipe. Adjust the six  $\frac{3}{4}$ " x  $1\frac{1}{4}$ " set screws so as to center and plumb the mount. When the mount is centered and plumb, snug up the six  $\frac{3}{4}$ " x  $1\frac{1}{4}$ " set screws. (See Fig. 11)

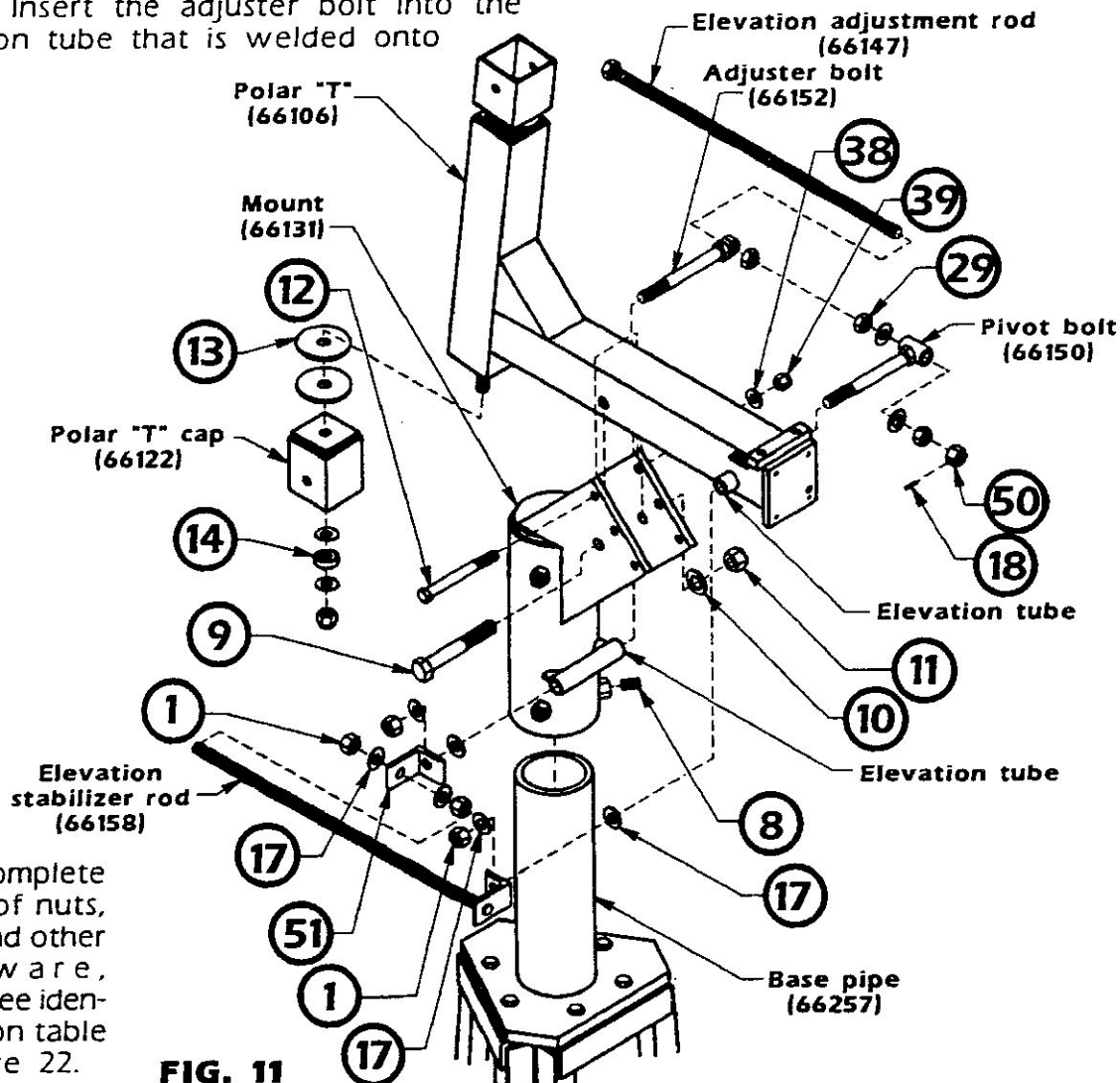
2. Attach the polar "T" to the mount using one 1" x 7" bolt, one 1" flat washer and one 1" nyloc nut. **Do not tighten.** (See Fig. 11)

3. Insert two  $\frac{3}{4}$ " x 7" bolts into the mount and fasten with two  $\frac{3}{4}$ " flat washers, and two  $\frac{3}{4}$ " nyloc nuts. **Do not tighten.** These will be moved as the antenna elevation is adjusted. (See Fig. 11)

4. Insert the adjuster bolt into the elevation tube that is welded onto

the mount. Next, adjust the elevation adjustment rod so that the pivot bolt can be inserted into the elevation tube that is welded into the polar "T" and onto the elevation adjustment rod. (See Fig. 11)

5. Slide one  $\frac{7}{8}$ " flat washer on the adjuster bolt and one  $\frac{7}{8}$ " flat washer on the pivot bolt. On the elevation stabilizer rod, slide the welded elevation stabilizer bracket onto the pivot bolt. Slide the long leg of the other elevation stabilizer bracket onto the elevation stabilizer rod and the short leg onto the adjuster bolt. Secure the pivot bolt and the adjuster bolt with two  $\frac{7}{8}$ " flat washers and two  $\frac{7}{8}$ " nuts. **Do not tighten.** (See Fig. 11)



For a complete listing of nuts, bolts and other hardware, please see identification table on page 22.

FIG. 11

## REFLECTOR AND COUNTER BALANCE INSTALLATION

**NOTE:** This method assumes that a crane will be used. See Manufacturer's note on page 3.

1. Slide the back hub plate of the antenna over both polar "T" caps and secure with two  $\frac{3}{4}$ " x 6" bolts, four  $\frac{3}{4}$ " flat washers, and two  $\frac{3}{4}$ " nyloc nuts. **Do not tighten.** (See Fig. 12)

**CAUTION:** The antenna should be secured at this point to prevent damage to the antenna and for safety.

2. Insert the two plastic end caps on

the two polar "T" cap assemblies. (See Fig. 12)

3. Install the counter balance to the top of the back hub plate with two  $\frac{3}{4}$ " x 6" bolts, two  $\frac{3}{4}$ " flat washers, and two  $\frac{3}{4}$ " nyloc nuts. (See Fig. 12)

4. With the antenna facing the horizon at 0° elevation, fill the counter balance with approximately three cubic feet of concrete. Keep the antenna at this elevation until the concrete cures. If the antenna must be used before it is convenient to add concrete to the counter balance, the concrete may be added later.

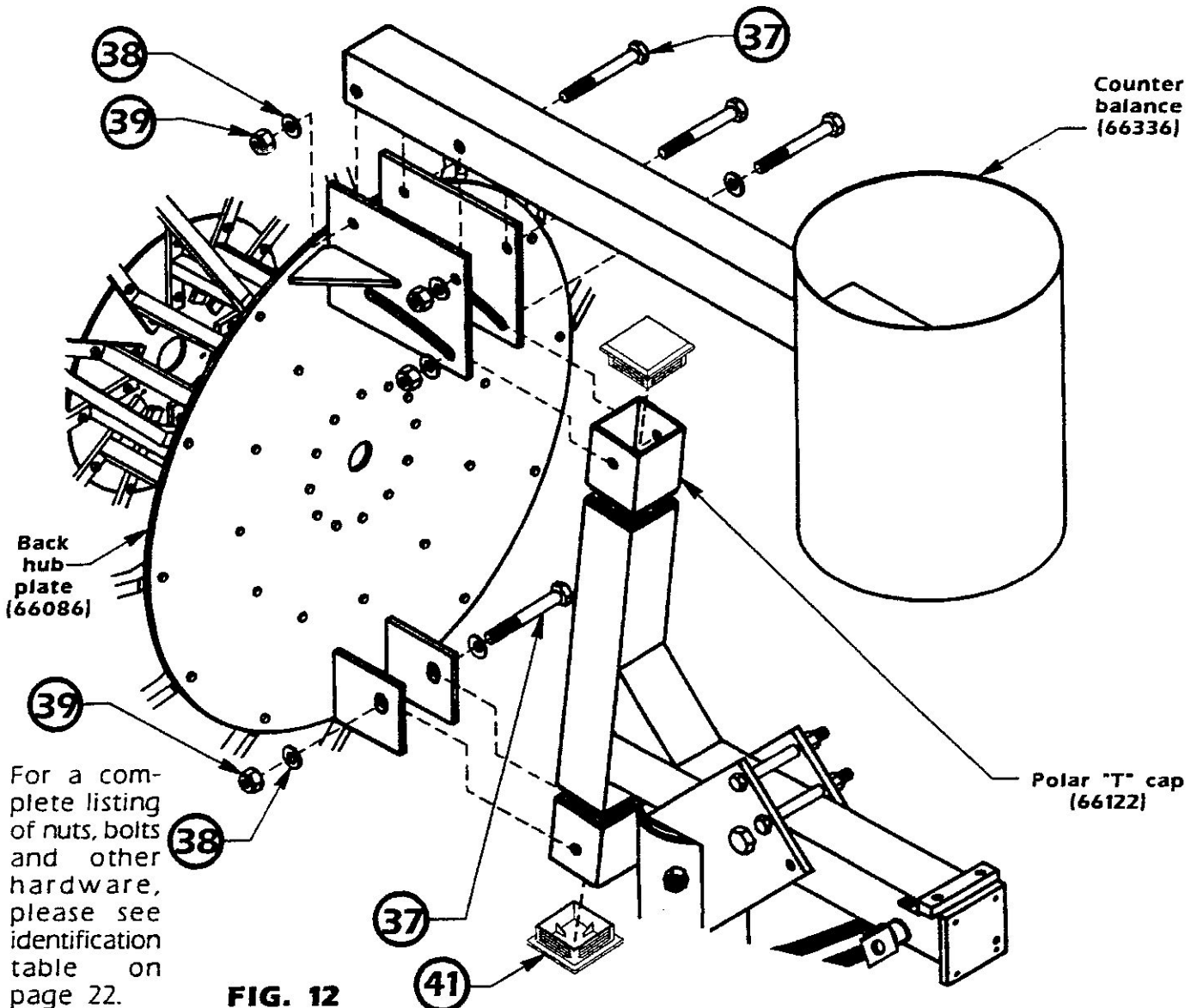


FIG. 12

## DECLINATION ADJUSTMENT

1. The declination, which is the angular difference between the front of the polar "T" and the back hub plate, should now be set. (See Fig. 13)

2. Using an inclinometer and the chart below, set your declination and tighten the  $\frac{3}{4}$ " x 6" bolts holding the back hub plate to the polar "T". (See Fig. 13)

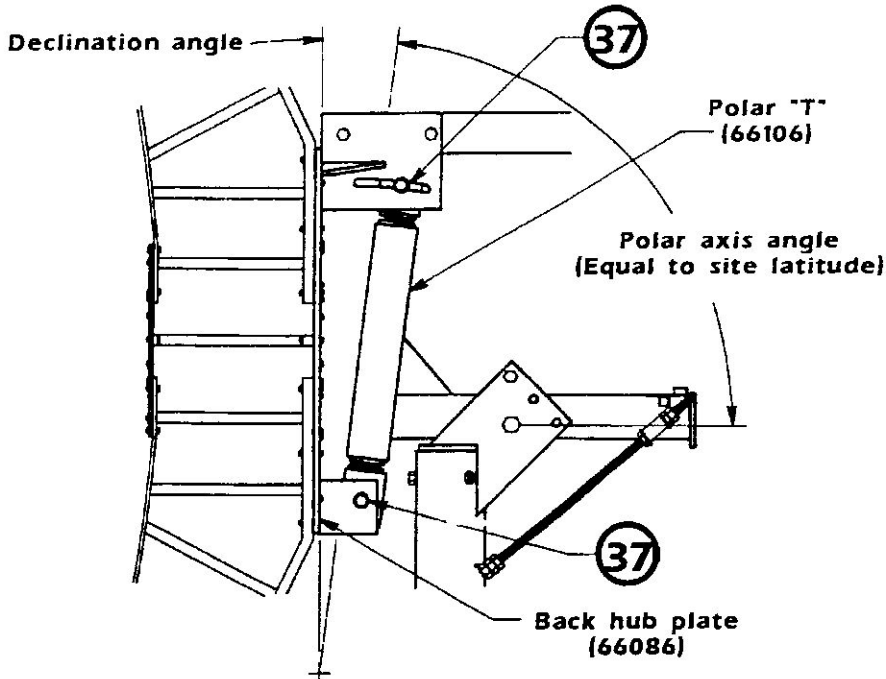


FIG. 13

For a complete listing of nuts, bolts and other hardware, please see identification table on page 22.

Declination & Elevation Chart					
Polar axis angle (equal to site latitude)	Declination	Polar axis angle (equal to site latitude)	Declination	Polar axis angle (equal to site latitude)	Declination
0°	.00°	24°	3.54°	48°	6.41°
2°	.30°	26°	3.81°	50°	6.61°
4°	.61°	28°	4.08°	52°	6.79°
6°	.91°	30°	4.34°	54°	6.97°
8°	1.21°	32°	4.60°	56°	7.14°
10°	1.51°	34°	4.85°	58°	7.30°
12°	1.81°	36°	5.09°	60°	7.45°
14°	2.11°	38°	5.33°	62°	7.59°
16°	2.40°	40°	5.56°	64°	7.72°
18°	2.69°	42°	5.79°	66°	7.84°
20°	2.98°	44°	6.00°	68°	7.95°
22°	3.26°	46°	6.21°	70°	8.06°

## RIB BRACKET AND AZIMUTH RING INSTALLATION

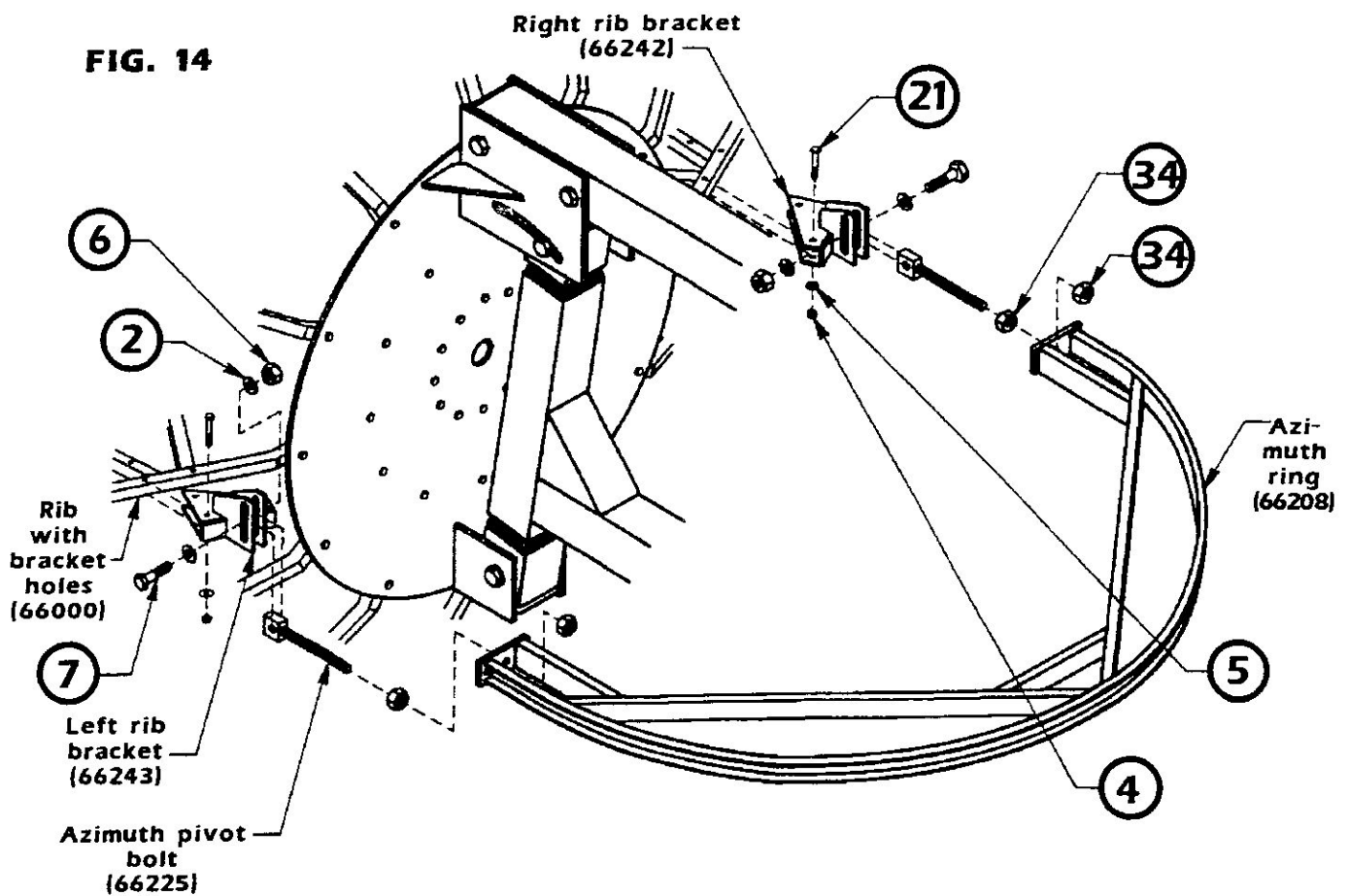
1. Attach the right rib bracket and the left rib bracket to the two ribs with the three extra holes using six  $\frac{5}{16}$ " x  $2\frac{1}{4}$ " bolts, six  $\frac{5}{16}$ " USS flat washers, and six  $\frac{5}{16}$ " nyloc nuts. (See Fig. 14)

2. Attach one azimuth pivot bolt each to the right rib bracket and the left rib bracket using two  $\frac{5}{8}$ " x  $2\frac{1}{2}$ " bolts, four  $\frac{5}{8}$ " flat washers, and two  $\frac{5}{8}$ " nyloc nuts. (See Fig. 14)

3. Attach one  $\frac{5}{8}$ " nut on each azimuth pivot bolt and run them up near the block. (See Fig. 14)


**NOTE:** For the following steps, the antenna should be facing the horizon.

4. Slide the azimuth ring on the azimuth pivot bolts and secure the azimuth ring with two  $\frac{5}{8}$ " nuts. (See Fig. 14)



For a complete listing of nuts, bolts and other hardware, please see identification table on page 22.

# AZIMUTH RING ADJUSTMENT AND GEAR BOX INSTALLATION



**IMPORTANT**

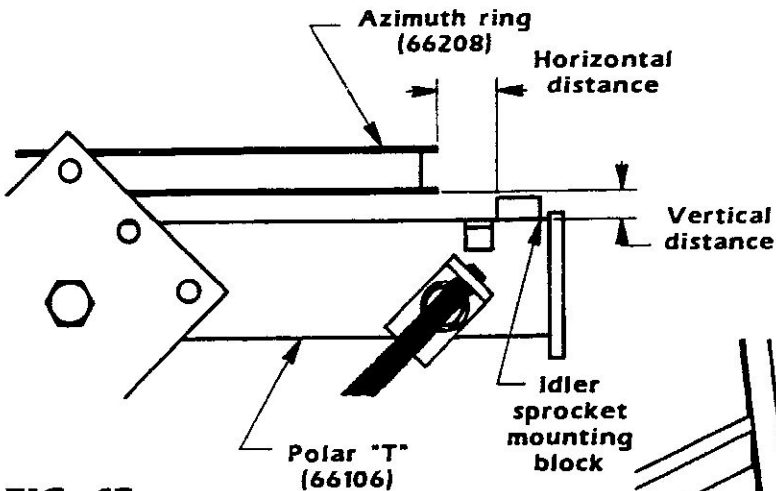
**Do not put the azimuth chain drive on before adjustment of the azimuth ring. The following instructions must be observed or damage may result to the azimuth chain drive and the gear box.**

1. The azimuth ring must be adjusted for proper vertical and horizontal alignment. The reflector should be rotated to both extremes. Using Fig. 15 as a guide, check to see if the vertical distance between the azimuth ring and the polar "T" and the horizontal distance between the

azimuth ring and the idler sprocket mounting block on the polar "T" remains constant.

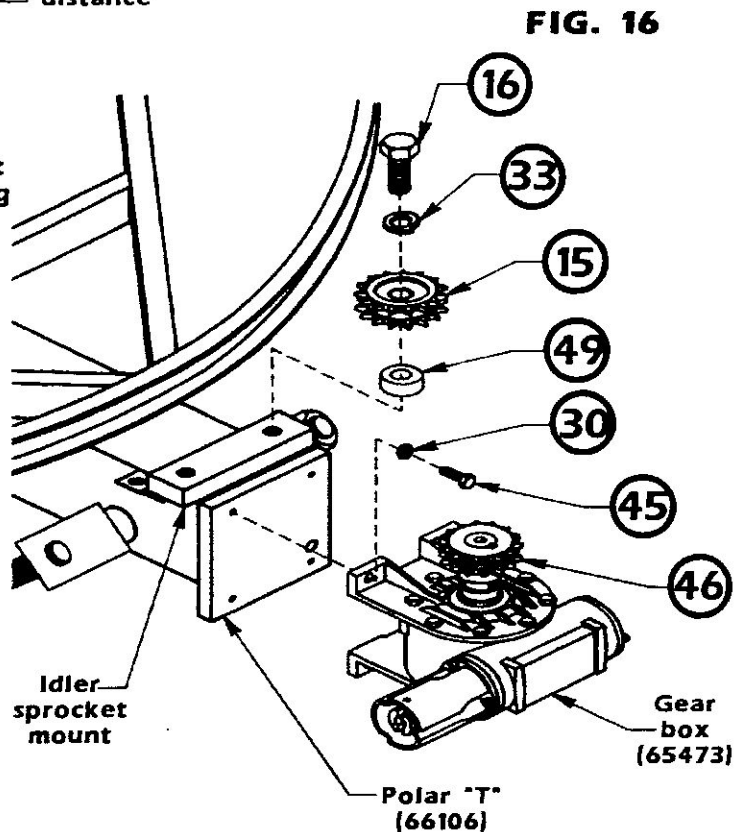
2. If either the vertical or the horizontal distance varies by more than  $\frac{3}{16}$ " (4.8 mm), loosen the  $\frac{5}{8}$ " x  $2\frac{1}{2}$ " bolts on the azimuth pivot bolts, make the necessary adjustments, and repeat step #5 until both the vertical and horizontal variation remains within  $\frac{3}{16}$ " (4.8 mm).

3. With the antenna facing the horizon, mount the gear box to the end of the polar "T" with the shaft (with the drive sprocket) of the gear box pointing upward. Attach the gear box using four  $\frac{5}{16}$ " x  $\frac{7}{8}$ " bolts and four  $\frac{5}{16}$ " lock washers. (See Fig. 16)



**FIG. 15**

For a complete listing of nuts, bolts and other hardware, please see identification table on page 22.

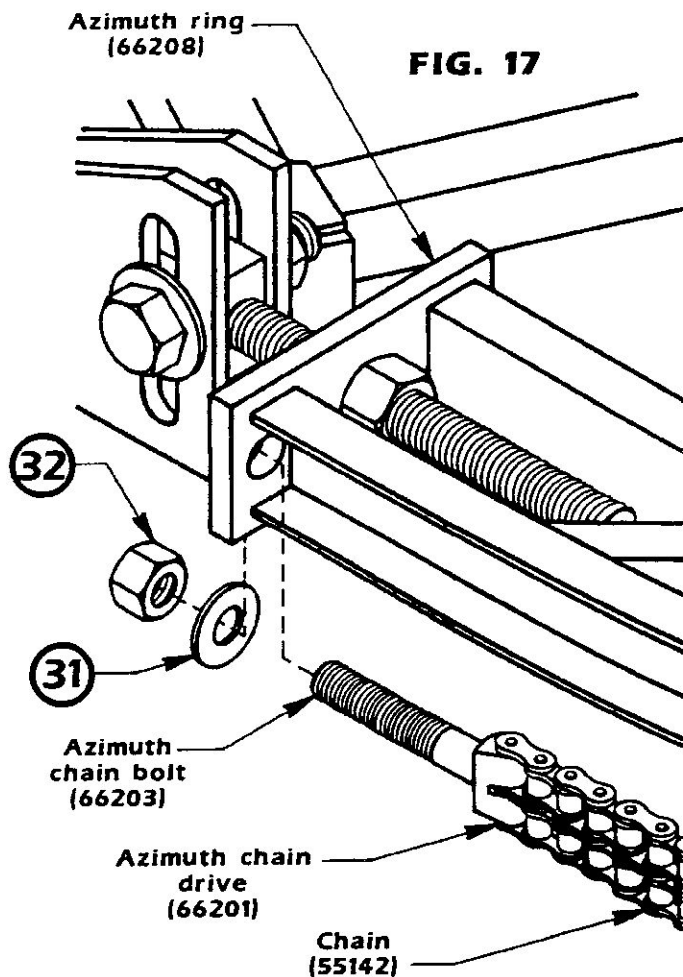


**FIG. 16**

## GEAR BOX, AZIMUTH CHAIN DRIVE, AND IDLER SPROCKET INSTALLATION

1. On the azimuth chain drive, remove two  $\frac{1}{2}$ " flat washers and two  $\frac{1}{2}$ " nuts off of the azimuth chain bolts. Place the azimuth chain drive around the drive sprocket on the drive shaft of the gear box and

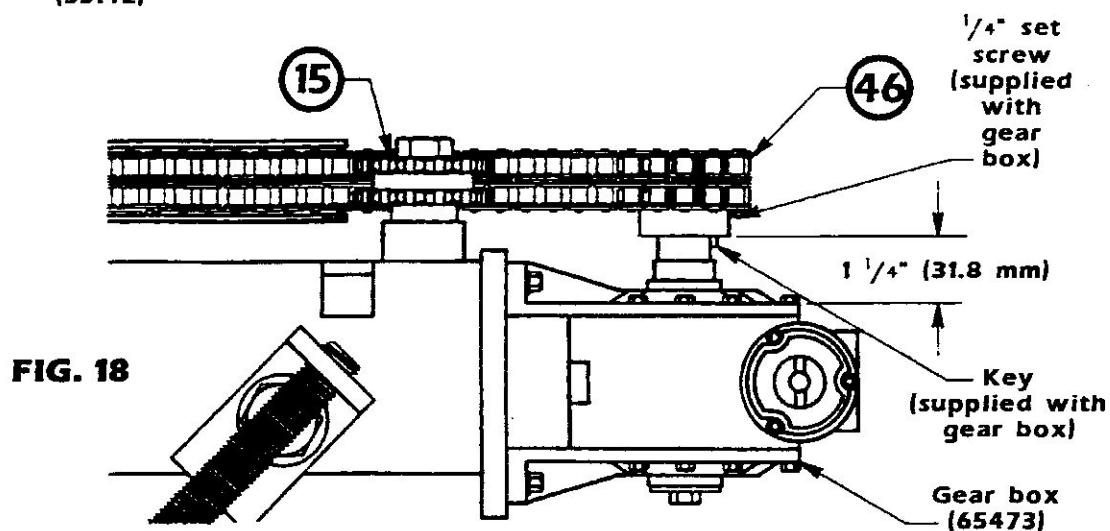
insert the azimuth chain bolts into the ends of the azimuth ring. Secure the azimuth chain drive with the two  $\frac{1}{2}$ " flat washers and two  $\frac{1}{2}$ " nuts that were just removed. Leave the azimuth chain drive loose. (See Fig. 17)



2. Into the two holes of the idler sprocket mount on the polar "T", attach two idler sprockets using two idler sprocket spacers, two  $\frac{5}{8}$ " lock washers, and two  $\frac{5}{8}$ " x  $1\frac{3}{4}$ " bolts. (See Fig. 16 on the preceding page)

**NOTE:** The azimuth chain drive may have to be moved back and the chain loosened to provide enough play to mount the idler sprockets.

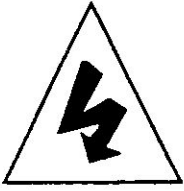
3. Align the drive sprocket with the two idler sprockets so that all sprockets are in the same plane and the chain does not bind. Therefore, the bottom of the drive sprocket should be approximately  $\frac{1}{4}$ " (31.8 mm) from the face of the gear box. With the key aligned with the drive sprocket, tighten the  $\frac{1}{4}$ " set screw on the drive sprocket. (See Fig. 18)



For a complete listing of nuts, bolts and other hardware, please see identification table on page 22.



## ACTUATOR MOTOR HEAD INSTALLATION AND AZIMUTH CHAIN DRIVE ADJUSTMENT



1. The actuator motor head will now have to be connected to the gear box in order to move the reflector. Slide the actuator motor head over the mounting flange on the side of the gear box while noting the position of the drive pin on the actuator motor head and the coupling on the gear box so that they match.

**NOTE: The actuator motor head may be purchased from Paracclipse, otherwise it is not supplied.**

2. After the drive pin and the coupling have been aligned, tighten the two  $\frac{3}{8}$ " bolts, supplied with the actuator motor head, that attach the actuator motor head to the gear box. (See Fig. 19)

3. The azimuth chain drive should have enough tension so as not to jump the sprockets. Check the azimuth chain drive and set the tension if necessary. About 7 ft/lbs (9.5 Nm) of tension should be sufficient. **Do not overtighten.**

4. After the azimuth chain drive has been adjusted, grease it liberally with good quality marine wheel-bearing grease (supplied).

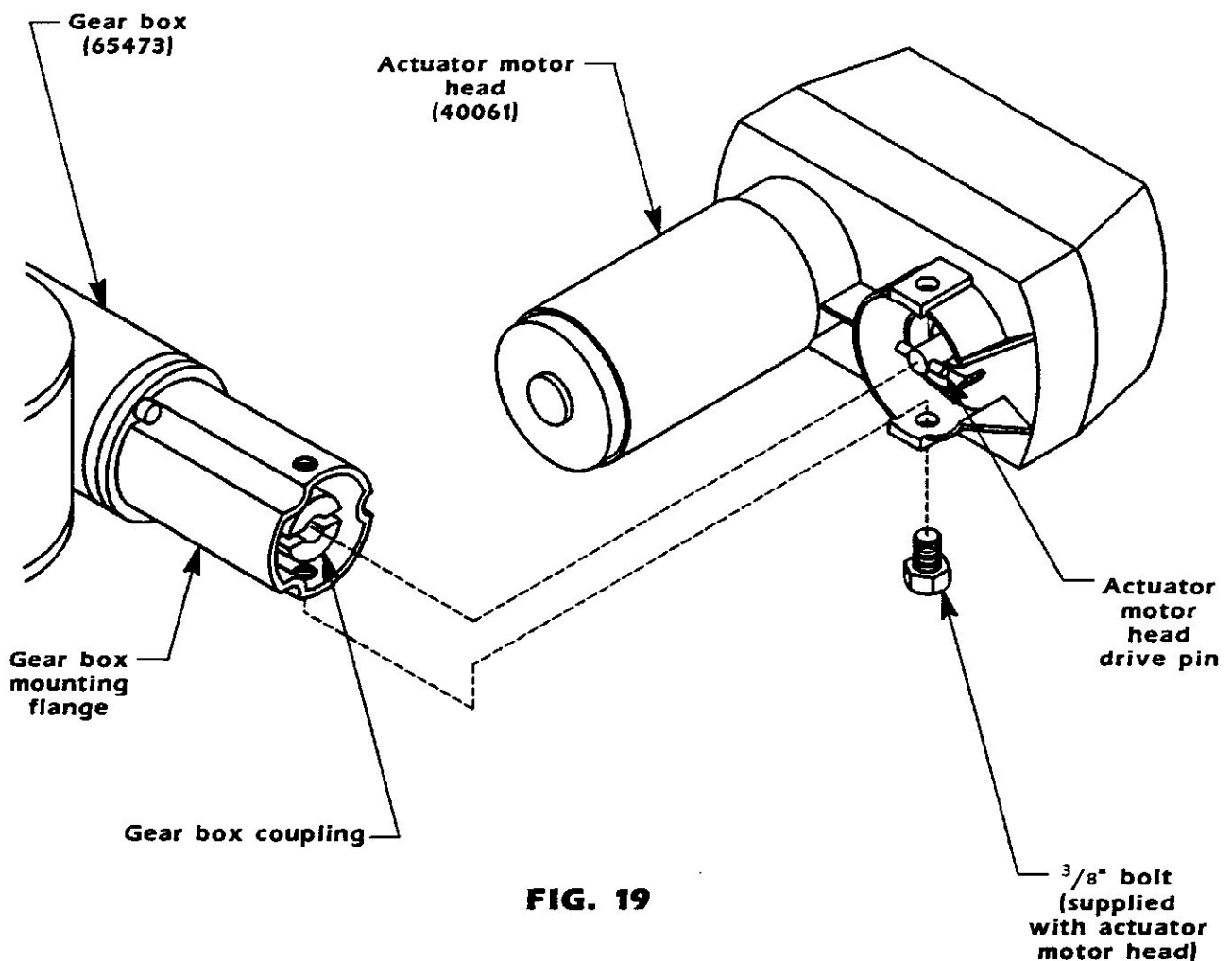


FIG. 19

## FEED POLE AND FEED PLATE INSTALLATION

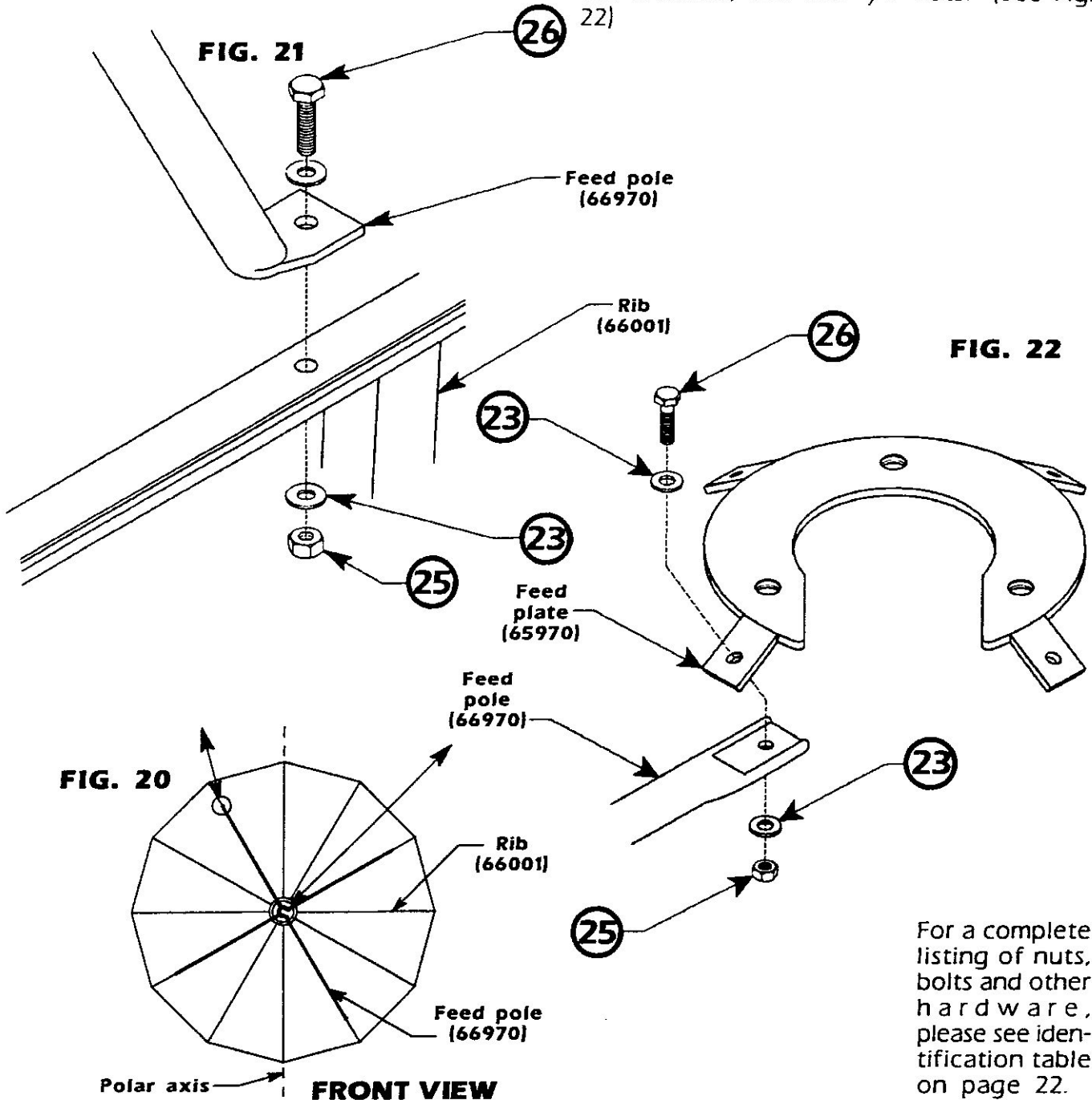
**1.** Assemble the feed horn according to manufacturer's instructions.

**NOTE:** The feed pole to rib assembly mounting locations will vary from feed to feed depending on the feed offset angle with respect to the polar axis. Mount the feed poles and the feed plate on the rib assemblies which suitably accommodate

the individual feed offset angle. Fig. 20 below will suffice in most cases.

**2.** Attach the feed poles to the ribs using four  $\frac{1}{4}$ " x 1" bolts, eight  $\frac{1}{4}$ " flat washers, and four  $\frac{1}{4}$ " nuts. (See Fig. 21)

**3.** Attach the feed plate to the feed poles using four  $\frac{1}{4}$ " x 1" bolts, eight  $\frac{1}{4}$ " flat washers, and four  $\frac{1}{4}$ " nuts. (See Fig. 22)



For a complete listing of nuts, bolts and other hardware, please see identification table on page 22.

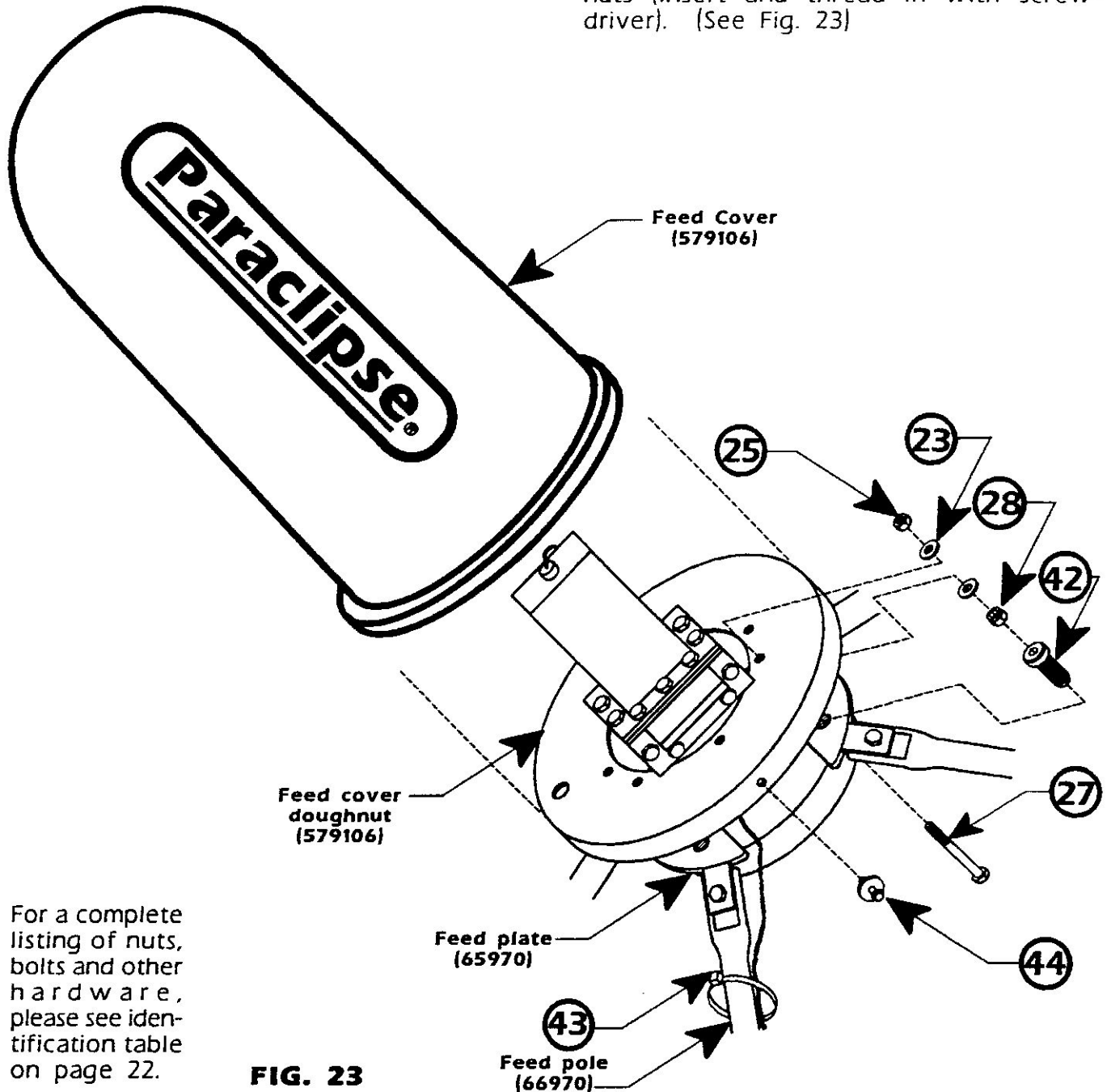
## FEED HORN AND FEED COVER INSTALLATION

1. Attach the feed horn and feed cover doughnut to the feed plate using three  $\frac{1}{4}$ " x  $2\frac{1}{2}$ " bolts, three nylon thumb screws (which thread into the feed plate), three  $\frac{1}{4}$ " nyloc nuts, six  $\frac{1}{4}$ " flat washers, and three  $\frac{1}{4}$ " nuts. (See Fig. 23)

2. Attach the cables to a feed pole and the back of a rib using seven cable tie wraps. (See Fig. 23)

3. Center the feed horn in the antenna. Equal measurements to all ribs is a must. Adjust the focal length (See specifications on page 23). The focal length is measured from the top of the front hub plate to the opening of the feed.

4. Attach the feed cover to the feed cover doughnut using four cover push nuts (insert and thread in with screwdriver). (See Fig. 23)



For a complete listing of nuts, bolts and other hardware, please see identification table on page 22.

FIG. 23

## ALIGNMENT PROCEDURE

**1.** Set antenna elevation. The elevation will vary with the latitude of your location. Use the Declination and Elevation Chart on page 13 as a guide.

**2.** It is necessary to search for the most southerly satellite (for antenna location sites in northern hemisphere) or northerly satellite (for antenna location sites in southern hemisphere) from your location. Refer to a "Satellite Guide" or consult your nearest dealer.

Begin with the antenna pointed in a southerly direction (for antenna location sites in northern hemisphere) or northerly direction (for antenna location sites in southern hemisphere). To begin searching, turn your receiver on to scan-tune (if your receiver is not so equipped, have someone slowly tune the receiver through the transponders). Next, turn the antenna slightly in the direction of the satellite.

**3.** Systematically search for the satellite by making minor adjustments of the elevation. With each adjustment of elevation, slowly swing the antenna using the motor drive from east to west, while looking for a signal on your television.

**NOTE:** If no signal can be found, recheck the antenna elevation/declination, north-south alignment, and plumb of mount. If no problem is found with the mechanical alignment, consult the owner's manual for your receiver or call your local dealer.

**4.** When you find your first satellite, turn off the scan-tune and adjust to an active transponder (channel).

**5.** Carefully adjust elevation and azimuth to maximum signal strength using the signal strength meter on your receiver; or, if available, use a digital or analog volt-ohm meter (VOM). You may also adjust visually by observing your television for the best picture.

**6.** Turn on scan-tune once again and swing the antenna, using the motor drive, while looking for other satellites. If no other satellites are "visible", or you cannot receive all the satellites (and your signal path is not blocked), the mount is not aligned to true north-south.

**7.** North-South alignment:

**NOTE:** If the installation is located east of 105° W longitude, reverse all "west/east" and "raise/lower" references.

a. Swing the antenna to the most westerly satellite and adjust azimuth and elevation for absolute maximum signal. Swing the antenna to the most easterly satellite and do the same. If any azimuth or elevation adjustments are required to peak signal on this satellite, the north-south alignment will still need minor correction.

b. If you raise the antenna to improve the picture, rotate the mount slightly (a fraction of an inch) counterclockwise. If you lower the antenna to improve the picture, rotate the mount slightly clockwise.

c. Repeat steps a and b until there is no adjustment needed from the most westerly satellite to the most easterly satellite.

**8.** While observing a signal strength meter or watching the television picture, retighten all nuts and bolts on the mount firmly to ensure that the signal remains at maximum. Recheck antenna tracking from west to east to make sure that the mount has not moved.

Your **Paraclipse** antenna is now aligned to track the Clarke orbit belt. Therefore, complete your wiring to the television viewing location according to instructions provided with your receiver.

## LIMIT SWITCH INSTALLATION

1. Insert limit switch into the limit switch bracket on the polar "T" and set the clearance from the azimuth ring. Also, allow clearance for magnets. Distance "A" should be  $.50" \pm .25"$  (12.7 mm  $\pm$  6.4 mm). Distance "B" should be  $.69" \pm .25"$  (17.5 mm  $\pm$  6.4 mm). (See Fig. 24)

2. Wire limit switch into motor drive positioner cable as shown in Fig. 25.

3. Use the motor drive to position the antenna to desired limits, east and west, and then place magnets on the azimuth ring over the limit switch. **NOTE:** The antenna will stop when the edge of the magnet is over the limit switch.

4. When the final location for the limit is decided, the magnets should be attached with silicone adhesive or equivalent material. The programmed limits from the receiver should still be used; however, if memory is lost, the limit switch will provide backup limits. The limit switch operates by shorting out the normal motor drive pulses when the magnet passes over the limit switch. The processor for your motor drive will see this as a stalled motor and shut down after about  $\frac{1}{2}$  second of drive.

**NOTE:** Caution should be used, for the antenna can be driven beyond the magnets in  $\frac{1}{2}$  second jogs.

5. Your antenna is now finished. Check the azimuth chain drive tension and give the antenna a final inspection.

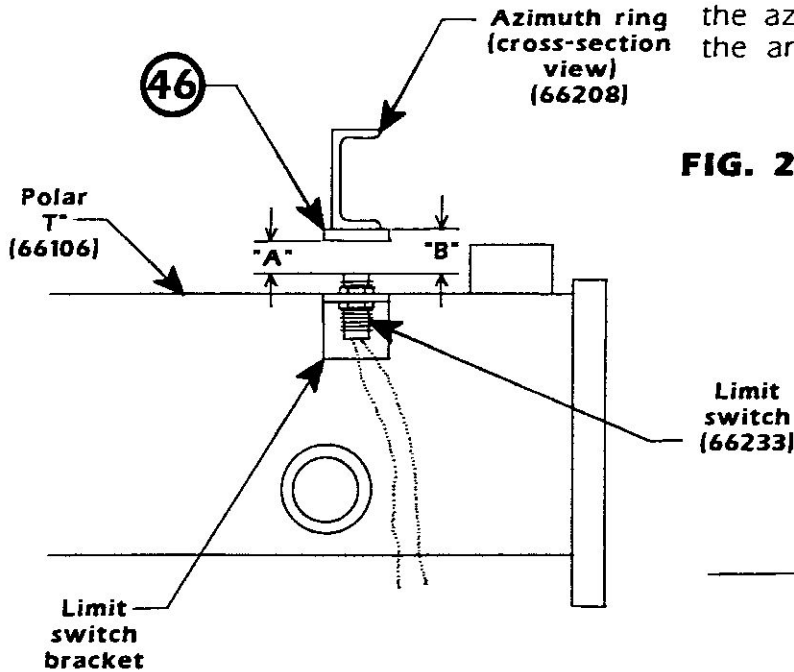
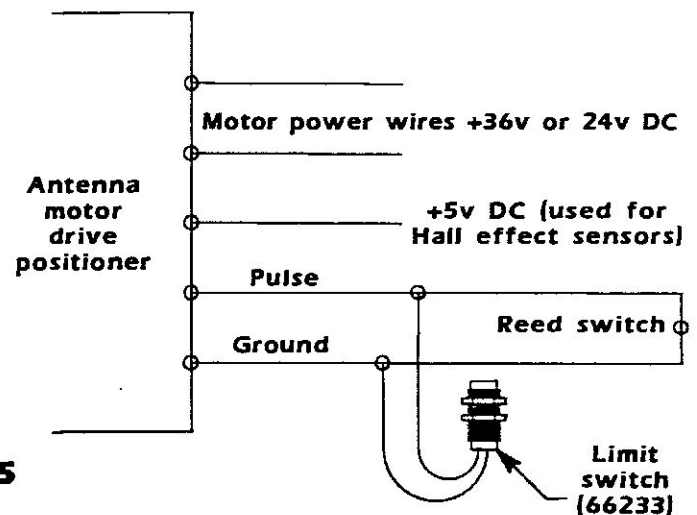


FIG. 24

For a complete listing of nuts, bolts and other hardware, please see identification table on page 22.

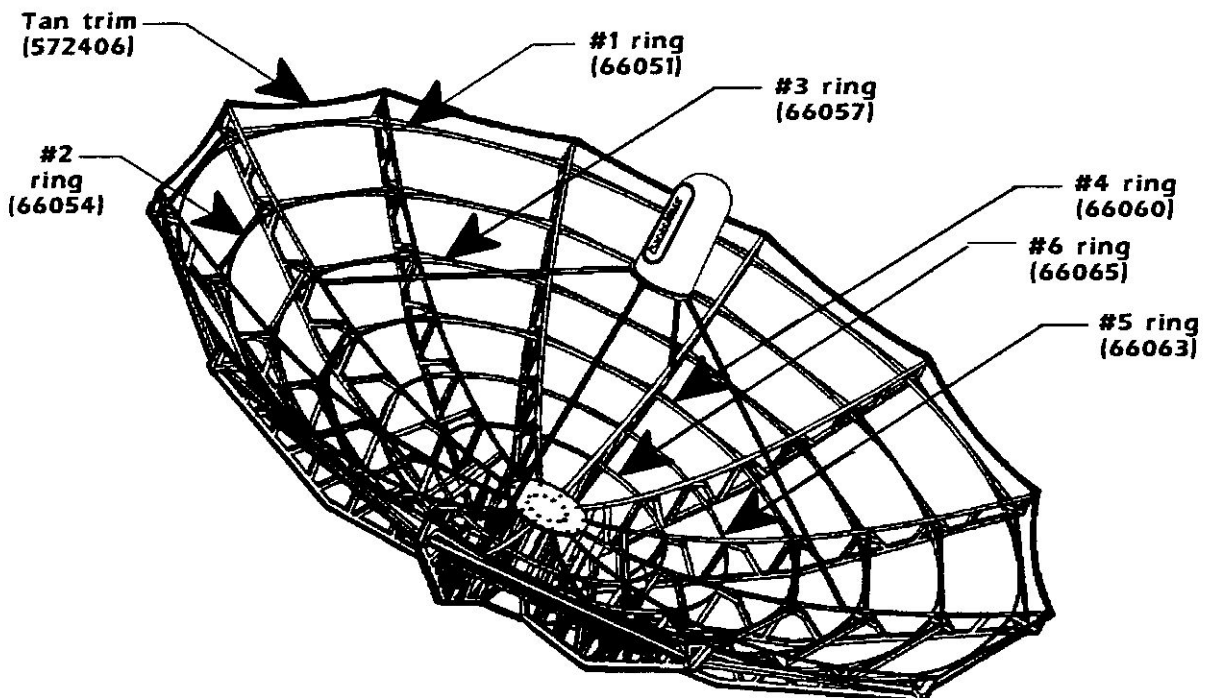
FIG. 25



# REFLECTOR PARTS ILLUSTRATION AND HARDWARE IDENTIFICATION

## 16 CD (4.8 m) HARDWARE TABLE

FIG. PART NO.	NO.	DESCRIPTION	PIECES REQ'D	FIG. PART NO.	NO.	DESCRIPTION	PIECES REQ'D
1	55047	7/8" NUT	5	27	55187	1/4" x 2 1/2" BOLT	3
2	55077	5/8" FLAT WASHER	10	28	55191	1/4" NYLOC NUT	3
3	55087	5/16" NUT	60	29	55194	7/8" JAM NUT	3
4	55114	5/16" NYLOC NUT	6	30	55197	5/16" LOCK WASHER	4
5	55115	5/16" USS FLAT WASHER	48	31	55237	1/2" FLAT WASHER	2
6	55116	5/8" NYLOC NUT	8	32	55238	1/2" NUT	4
7	55117	5/8" x 2 1/2" BOLT	8	33	55242	5/8" LOCK WASHER	2
8	55120	3/4" x 1 1/4" SET SCREW	6	34	55243	5/8" NUT	4
9	55121	1" x 7" BOLT	1	35	55291	5/16" x 2" BOLT	36
10	55122	1" FLAT WASHER	4	36	55295	3/8" NYLOC NUT	18
11	55123	1" NYLOC NUT	4	37	55301	3/4" x 6" BOLT	4
12	55124	3/4" x 7" BOLT	2	38	55302	3/4" FLAT WASHER	8
13	55127	UHMW WASHER	4	39	55303	3/4" NYLOC NUT	6
14	55129	AETNA BEARING	2	40	55304	7/8" NYLOC NUT	2
15	55132	IDLER SPROCKET	2	41	57519	PLASTIC END CAP	2
16	55134	5/8" x 1 3/4" BOLT	2	42	57530	NYLON THUMB SCREW	3
17	55151	7/8" FLAT WASHER	12	43	57560	CABLE TIE WRAP	7
18	55152	3/16" x 1 1/4" ROLL PIN	1	44	57567	COVER PUSH NUT	4
19	55160	3/8" x 3" BOLT	18	45	57579	5/16" x 7/8" BOLT	4
20	55164	3/8" FLAT WASHER	18	46	57584	DRIVE SPROCKET	1
21	55166	5/16" x 2 1/4" BOLT	6	47	57586	MAGNET	4
22	55168	5/16" x 1" BOLT	24	48	57803	1" x 14" ANCHOR BOLT	3
23	55170	1/4" FLAT WASHER	26	49	66116	IDLER SPROCKET SPACER	2
24	55171	1/4" x 1 3/4" BOLT	144	50	66148	DRILLED 7/8" NUT	1
25	55172	1/4" NUT	157	51	66159	ELEVATION STABILIZER BRACKET	1
26	55175	1/4" x 1" BOLT	10	52	66381	J-CLIPS PACKAGE (800)	1



## SPECIFICATIONS

<b>C Band gain</b>	44.8 dBi
<b>KU Band gain</b>	52.3 dBi
<b>C Band efficiency</b>	65%
<b>2° Spacing approved (C &amp; KU)</b>	Yes
<b>C Band 3dB beam width</b>	0.9°
<b>C Band first side lobe</b>	-20.0 dB
<b>C Band antenna noise temperature</b>	21° K @ 45° elevation
<b>F/D</b>	0.300
<b>Focal point (see notes)</b>	56.25' (1.429 m)
<b>Wind survival (please see warranty policy)</b>	80 mph (129 kph) [125 mph (201 kph) stowed]

### NOTES:

**1.** Specifications of Paraclipse I6 CD (4.8 m) antenna are determined by engineering computation methods.

**2.** Different feed horn designs call for special mounting, focal requirements, and extra accessories. Call for correct application or follow manufacturer's suggestions.

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