

Type ES56()

5.6-Meter ESA



5.6-Meter Earth Station Antenna

Table of

Introduction	Introduction	3
	Proprietary Data	4
	Information and Assistance	4
	Notice	4
	Technical Assistance	4
How to Use This Manual	Overview	5
	Content	5
Getting Started	Overview	6
	Warnings	6
	Recommended Tools	7
	Parts Verification	8
	Reporting Equipment Loss or Damage	8
	Reporting Visible Loss or Damage	8
	Reporting Concealed Damage	8
	Inventory Equipment Received	8
	Returning Equipment	9
Installation Procedures	Overview	10
	Foundation Preparation	10
	A-325 Tensioning	11
	Tripod Ground Mount Assembly	12
	Azimuth Beam Assembly	12
	Support Legs Assembly	13
	Panning Frame Assembly	16
	Elevation Jackscrew Assembly	23
	Azimuth Jackscrew Assembly	25
	Mount Assembly	25
	Reflector/Backstructure Installation Drawing (239352)	30
	Subreflector and Subreflector Strut Installation Drawing (239438)	37
Operation	Overview	39
	Acquiring A Satellite	39
	Subreflector Adjustment	43
Preventive Maintenance	Overview	44
	General Cleaning	44
	Electrical Parts	44
	Mechanical Parts	45
	Inspection	45
	Local Control/Motor Drive Controller	45
	Antenna	46
	Drive System Voltage and Current Checks	48
	Preservation of Component Parts	50
	Aluminum Parts	50
	Galvanized Surfaces	50
	Lubrication	50
	Jackscrews/Motors	51
	Gear Motor/Housing Fill Drain Requirements	51

5.6-Meter Earth Station Antenna

Introduction

Like all Andrew earth station antennas, the 5.6-Meter Earth Station Antenna provides high gain and exceptional pattern characteristics. The electrical performance and exceptional versatility provides the ability to configure the antenna with your choice of linearly- or circularly-polarized 2-port or 4-port combining network. That versatility is provided at the time of initial purchase, as well as in the future, as your satellite communication requirements evolve.

The aluminum reflector is precision formed for accuracy and strength requiring minimal assembly. The reflector assembly is 18.3-feet (5.6-meters) in diameter and segmented in a sixteen piece configuration to reduce shipping volume and facilitate transport to remote sites. Reflector panels are chromate converted and painted with a highly reflective white paint.

The versatile tripod mount can be purchased with either manual or motorizable capabilities. The tripod mount features 180 degree azimuth coverage in three continuous 120 degree overlapping ranges and executes 90 degree continuous elevation adjustment. This large adjustment range provides non-critical foundation orientation and the ability to view geostationary satellites from horizon-to-horizon, from any location worldwide.

The motorizable tripod mount features self-aligning bearings for the elevation pivots, resulting in "zero" backlash. This mount can be operated manually, but has the ability to be upgraded for motorized operation, including steptracking/Smartrack™ applications. The motorizable mount type is indicated by the **ES56** or **ES56HS** letters within the antenna type number. The addition of the letter "HS" within the antenna type number indicates that the mount includes High-Speed azimuth/elevation machine jackscrews, instead of corresponding azimuth/elevation strut assemblies. The azimuth/elevation jackscrews are equipped for integration with the optional motor drive systems. A cross-axis grounding kit is supplied with each mount to ensure electrical interconnectivity of the complete structure.

The aluminum enclosure and hot-dipped galvanized steel mount maintain pointing accuracy and ensures durability and reliability. The antenna and standard manual mount with enclosure will survive 125 mph (200 km/h) wind, in any position of operation, without damage or permanent deformation in moderate coastal/industrial areas. Severe conditions require additional protection.

Andrew provides a complete line of available options, including motor drive systems (with power interfaces addressing domestic and international standards), remote micro-processor antenna control for motor drive systems, pressurization equipment, and inter-connecting HELIAX® cables and waveguide.

Proprietary Data

The technical data contained herein is proprietary to Andrew Corporation. It is intended for use in operation and maintenance of Andrew supplied equipment. This data shall not be disclosed or duplicated in whole or in part without express written consent of Andrew Corporation.

Information and Assistance

Andrew Corporation provides a world-wide technical support network. Refer to the technical assistance portion of this manual for the contact numbers appropriate to your location.

Notice

The installation, maintenance, or removal of antenna systems requires qualified, experienced personnel. Andrew installation instructions have been written for such personnel. Antenna systems should be inspected by qualified personnel to verify proper installation, maintenance and condition of equipment.

Andrew Corporation disclaims any liability or responsibility for the results of improper or unsafe installation and maintenance practices.

All designs, specifications, and availabilities of products and services presented in this manual are subject to change without notice.

Copyright © 2004, Andrew Corporation

Technical Assistance

24-hour Technical Assistance

For technical assistance, call the following numbers at anytime.

Call From	Call To	Telephone	Fax
North America (toll free)	U. S. A.	1-(800)-255-1479	(800)-349-5444
Any Location (International)	U. S. A.	(708)-349-3300	(708)-349-5410

Customer Service Center

The Andrew Customer Service Center gives you direct access to the information and personnel service you need, such as the following:

- Place or change orders
- Check price and delivery information
- Request technical literature

You can call from any of the following:

Call From	Telephone	Fax
North America	1-800-255-1479 (toll free)	1-(800)-349-5444 (toll free)
United Kingdom	00-800-0-255-1479 (toll free)	00-800-0-349-5444 (toll free)
Australia	0011-800-0-255-1479 (toll free)	0011-800-0-349-5444 (toll free)
China	00-800-0-255-1479 (toll free)	00-800-0-349-5444 (toll free)
New Zealand	00-800-0-255-1479 (toll free)	00-800-0-349-5444 (toll free)
Hong Kong	001-800-0-255-1479 (toll free)	001-800-0-349-5444 (toll free)

How to Use This Manual

Overview

The scope of this manual is intended to provide station personnel with the base installation, operation, and maintenance requirements necessary for a 5.6-Meter C-, X- or Ku-Band Earth Station Antenna. This manual provides a convenient reference for authorized operator/service personnel requiring technical information on general system or specific subsystem equipment.

The tables and figures presented in this manual are used as communication aids for the installation, operation, and maintenance of the 5.6-Meter Earth Station Antenna. These tables and figures instantly convey messages, as well as make the procedures easier to understand. This manual uses tables and figures for the following references:

- **Tables** The tables allow you to locate information quickly and easily.
- **Drawings** The drawings supplement the installation instructions by using a combination of graphics and verbage to assist you in simplifying complex procedures and clarifying components.
- **Photographs** The photographs compliment the installation instructions by providing actual examples of the steps being performed, which allow you to view the installation in concrete form.

Content

The manual is divided into five distinct sections, each dealing with a specific technical topic relating to either system or component subsystem information. The sections contained in this manual are described and listed under the following technical headings:

- **How to Use This Manual** Describes the manual's purpose, content, and communication aids. Additionally, this section lists the related documentation for the 5.6-Meter Earth Station Antenna.
- **Getting Started** Provides the preliminary information needed to perform a successful installation. This section should be reviewed prior to the installation. The warnings, recommended tools, parts verification, instructions on reporting lost or damaged equipment, and installation checklist are located in this section.
- **Installation Procedures** Provides the procedures for the different phases of a 5.6-Meter Earth Station Antenna base installation. This section will help you easily find requirements for an individual task, as well as displays the sequence for each task execution.
- **Operation** Describes the controls, functions, and general operating procedures required for proper operation of the 5.6-Meter Andrew Earth Station Antenna.
- **Preventive Maintenance** Describes preventive maintenance procedures that are required to maintain proper functional operation of your new Andrew Earth Station Antenna.

Getting Started

Overview

The installation, operation, and maintenance of the 5.6-Meter Earth Station Antenna requires qualified and experienced personnel. Andrew installation, operation, and maintenance instructions are illustrated for such personnel. Additionally, the antenna should be inspected by qualified personnel to verify proper installation, maintenance, and condition of equipment as described in Preventive Maintenance. The basic equipment and accessories are either manufactured or design controlled by Andrew Corporation.

The prerequisite information necessary for the 5.6-Meter Earth Station Antenna can be found in this section. Furthermore, this section should be reviewed BEFORE performing the installation, operation, or maintenance. Warnings, recommended tools, and the antenna parts can be verified and/or determined with such a review.

Warnings

When installing the 5.6-Meter Earth Station Antenna, be conscious of the warnings presented below. For further information or clarification of this information, contact the Customer Service Center. The warnings are as follows:

1. Electrical shock from voltages used in this antenna system may cause personal injury or death. Prior to making any electrical connections or performing maintenance or repair, ensure that the power is removed. Electrical connections should be made only by qualified personnel in accordance with local regulations.
2. Installation of antennas may require persons to work at elevated work stations. Whenever persons are working at eight or more feet above the ground and not on a guarded platform, they should wear safety belts with at least one (preferably two) lanyards.
3. Never stand underneath any object while it is being lifted.
4. Always wear a hard hat, especially if someone is above you.
5. Make sure no person is in or under the reflector while it is being lifted or positioned; personal injury can result if the reflector assembly falls.
6. Personnel should never be hoisted in or out of the reflector by the crane; personal injury may result.
7. Andrew earth station antennas supplied to standard product specifications will survive 125 mph winds in any operational position in moderate coastal/industrial areas. Severe conditions require additional protection. Should it be expected that winds will exceed 125 mph, it is recommended that Andrew antennas be steered to specific azimuth and elevation orientations to minimize wind forces upon the structure and thereby increase the probability of survival.
8. It is recommended that all cross-axis waveguide and coaxial cables are secure such that high winds will not cause excessive flexing. Position the antenna to an elevation of 90 degrees. The azimuth jackscrew should be placed in the center of its travel.
9. When the antenna is transmitting, severe eye injury or injury to other parts of the body can result from exposure to radio frequency (RF) energy. The antenna must be turned off before entering the area in front of the reflector and near the feed.

NOTE: Failure to follow an installation procedure could result in damage to equipment or personal injury.

Additional warnings will be displayed throughout this manual for your awareness. These warnings can be identified in warning boxes as shown in the following sample.



Andrew disclaims any liability or responsibility for the results of improper or unsafe installation, operation, or maintenance practices.

Recommended Tools

Andrew supplies all appropriate hardware/parts required for the installation of your 5.6-Meter Earth Station Antenna. All tools necessary for the installation process should be provided by the installation crew. Andrew recommends the following tools to be used for a proper installation of the 5.6-Meter Earth Station Antenna.

Tool	Size	Quantity
Open End or Combination Wrenches	5/16 Inch	2
	7/16 Inch	2
	9/16 Inch	2
	7/8 Inch	2
	3/4 Inch	2
	1/2 Inch	2
	1-1/4 Inch	1
Crane	1 Ton Minimum Capacity, extended end	1
Nylon Web Slings (2000 pound breaking strength)	3 Inch by 14 Foot	2
Rope or Cord (2000 pound breaking strength)	50 Foot	1
Shackles	5/8 Inch	2
Ladder	10 Foot Extension	1
Drive Sockets	1/16 Inch	1
	9/16 Inch	1
	7/8 Inch	1
	3/4 Inch	1
	1-1/4 Inch	1
Breaker Bar	1/2 Inch	1
Spud Wrenches	1-1/16 Inch	1
	1-1/4 Inch	1
Screw Driver	Standard	1
	Phillips	1
Allen Wrench	7/64 Inch	1
	3/16 Inch	1
	1/4 Inch	1
Tape Measure (or other measuring device)	Standard	1
Felt-tip Marker (or other marking device)	Standard	1
Hammer	Standard	1
Rubber Mallet	Standard	1
Pry Bar	Standard	1
Tin Snips	Standard	1
Safety Gloves (each installer)	Standard	1

Table 2-1. Recommended Tools

Parts Verification

Upon receipt of your order, the shipment should be verified to ensure that all parts have reached your site. This process should occur before the installation process begins.

Andrew Corporation thoroughly inspects and carefully packs all equipment before shipment. If you find that there are missing components, please refer to page 9 for step-by-step instructions on how to properly report the equipment loss.

When you have received your order, verify that all parts contained in the shipment correspond to the parts listed on your packing list.

Reporting Equipment Loss or Damage

If you find that there was damage caused to the equipment during the shipping process, a claim should be filed with the carrier. Follow the "Reporting Visible Loss or Damage" or "Reporting Concealed Damage" procedures when filing a claim with the carrier.

Reporting Visible Loss or Damage

Make a note of any loss or evidence of external damage on the freight bill or receipt, and have it signed by the carrier's agent. Failure to adequately describe such external evidence of loss or damage may result in the carrier refusing to honor a damage claim. The form required to file such a claim will be supplied by the carrier.

Reporting Concealed Damage

Concealed damage means damage which does not become apparent until the unit has been unpacked. The contents may be damaged in transit due to rough handling, even though the carton may not show external damage. If you discover damage after unpacking the unit, make a written request for an inspection by the carrier's agent, then file a claim with the carrier since such damage is most likely the carrier's responsibility.

Inventory Equipment Received

After opening your shipment, an inventory of the parts should occur immediately. Check each item received in your shipment against the packing slip included with the shipment. If any items are missing, please notify Andrew Corporation immediately by contacting the Customer Service Center.

Returning Equipment

Andrew Corporation tries to ensure that all items arrive safe and in working order. Occasionally, despite these efforts, equipment is received which is not in working condition. When this occurs, and it is necessary to return the equipment to Andrew Corporation for either repair or replacement, return can be expedited by following the procedure listed below:

Step 1

Call the Andrew Customer Service Center and request a Return Material Authorization (RMA) number, as well as an address to forward the material to.

Step 2

Tag or identify the defective equipment, noting the defect or circumstances. Also, be sure to write the RMA number on the tag. It would be helpful to reference the sales order and purchase order, as well as the date the equipment was received.

Step 3

Pack the equipment in its original container with protective packing material. If the original container and packing material are no longer available; pack the equipment in a sturdy corrugated box, and cushion it with appropriate packing material.

Step 4

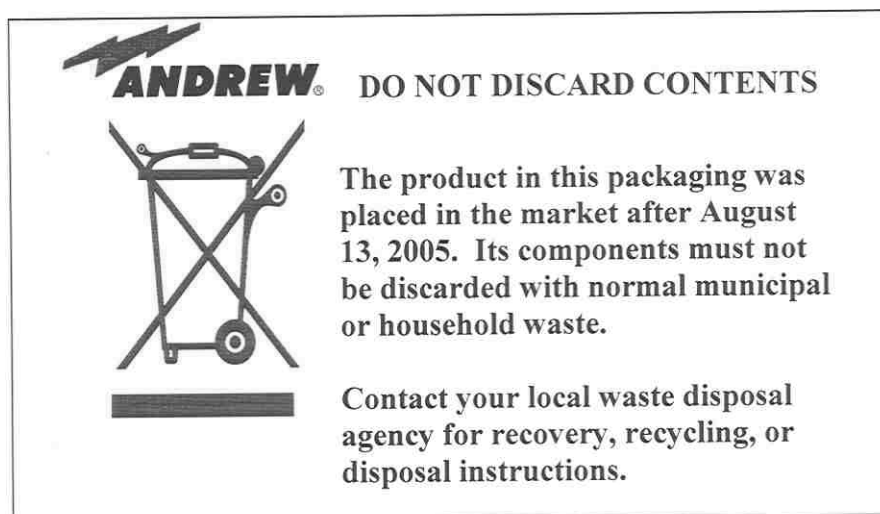
Be sure to include the following information when returning the equipment:

- Your Company Name
- Your Company Address
- City, State, and Zip Code
- Telephone Number
- RMA Number
- Problem Description
- Contact Name

NOTE: Absence of the RMA number will cause a delay in processing your equipment for repair. Be sure to include the RMA number on all correspondence.

Step 5

Ship the equipment to Andrew Corporation using UPS, U.S. Postal Service, or other appropriate carrier; freight prepaid and insured. The material should be forwarded to the address given by the Andrew contact in Step 1.



Installation Procedures

Overview

This section provides installation procedures for the 5.6-Meter Andrew Earth Station Antenna. The installation procedures include instructions on the following antenna components:

- Mount
- Reflector
- Enclosure
- Reflector-to-Mount Assembly
- Subreflector
- Feed System (C-, X- and Ku-band)

Foundation Preparation

Before beginning the installation process on the ground mount assembly, ensure that the foundation has been prepared. Foundation specifications are provided by Andrew and may be used as a reference by civil engineering personnel when preparing the foundation for local soil conditions. These specifications are available before the shipment arrives by contacting the Customer Service Center or your Account Manager.

- Foundation should be dimensioned as detailed in Figure 1.
- Sweep foundation clear of any dirt or debris.
- To ensure smooth surface for mount, scrape foundation pads as shown in Figure 2.
- Studs should extend 3 in. above the ground and are 7/8 in. in diameter
- Apply stick wax to stud threads to ease later connections.

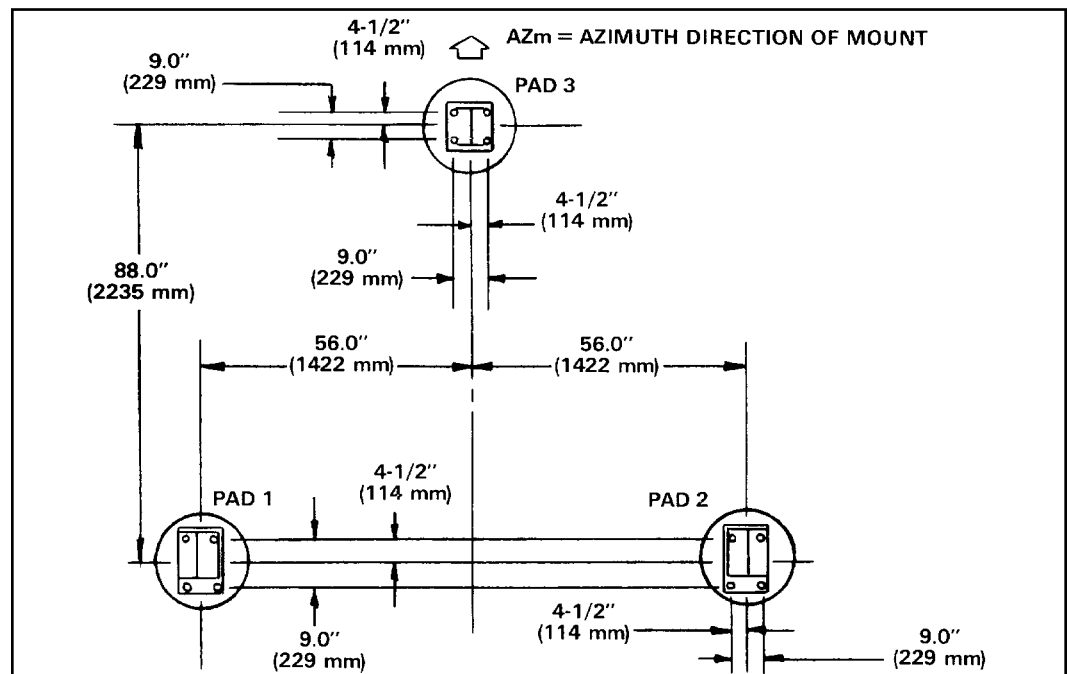


Figure 1



Figure 2

A-325 Tensioning

During the installation process, there are several references to the A-325 hardware tensioning procedure. The A-325 hardware must be properly tensioned to avoid slippage between bolted surfaces under high loads. Slippage can cause the corresponding assembly to move, causing antenna misalignment. When designated, the A-325 hardware should be tightened according to the following tensioning procedure.

NOTE: Tensioned bolts are for final connections only and should not be loosened for reuse.

Step 1

Lubricate the bolt threads with the provided stick wax to reduce friction.

Step 2

Insert the bolt, and add a flat washer—if required. **Do not** allow wax under the flat washer.

Step 3

Add the nut, and finger tighten.

Step 4

After the connections are complete, tighten the bolts until the surfaces are joined and the nuts are snug (for example, full effort of a person using an ordinary spud wrench). Do not proceed with Steps 5 and 6, unless the connection is final and is not intended to be loosened again.

Note: If the bolts are loosened after Steps 5 and 6, discard and replace with new hardware.

Step 5

Using a felt-tip marker, mark the nuts and the ends of the bolts with a straight line as shown in Figure 3-1a and Figure 3-1b.

Step 6

Tighten the nuts further with an extra long wrench until the nuts are moved 1/3 turn (120 degrees) as shown in **Figure 3-1a for bolt lengths less than four diameters** and 1/2 turn (180 degrees) as shown in **Figure 3-1b for bolt lengths over four diameters**.

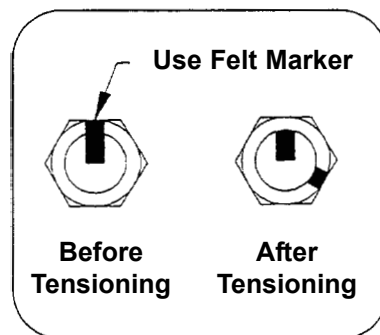


Figure 3-1a: A-325 Tensioning Procedure
For bolts less than 4 diameters

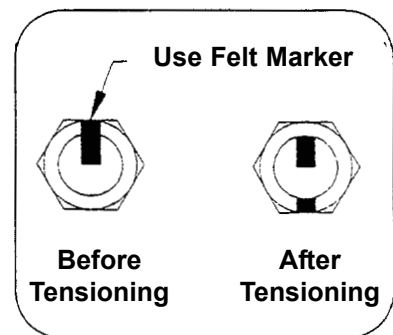


Figure 3-1b: A-325 Tensioning
For bolts over 4 diameters

Tripod Ground Mount Assembly

Azimuth Beam Assembly

Step 1

The three-point mount is an elevation-over-azimuth mount optimized for geostationary satellite applications. The mount enables continuous elevation adjustment from 0 to 90°. Azimuth adjustment is $\pm 90^\circ$ and divided into three 120° ranges with 30° overlap. Follow the subsequent procedures for proper installation of tripod ground mount assembly.

All ground mount hardware is type A-325. Lubricate all A325 bolt threads with supplied stick wax. **Note:** Do not tighten hardware until ground mount installation is complete unless otherwise instructed.

Step 2

Attach 200056 and 200057 supports to upper portion of 201408 beam assembly as shown in Figure 3.

- Use 7/8 x 2-1/4 in (57 mm) hardware

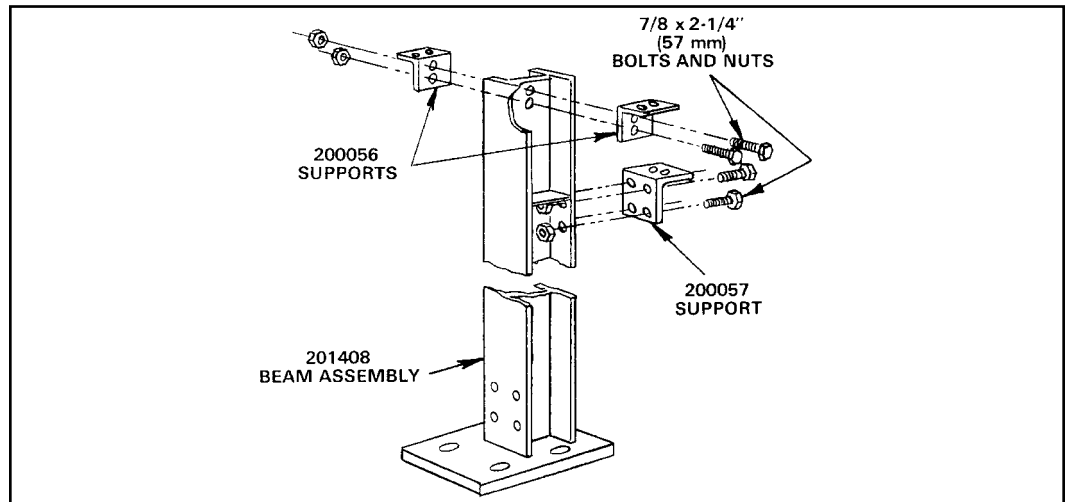


Figure 3

Step 3

Raise 201408 azimuth beam assembly and attach to front foundation pad as shown in Figure 4.

- Use 7/8 in. flatwashers and hex nuts

Note: Hex nuts and flatwashers supplied with 201630 anchor bolt kit

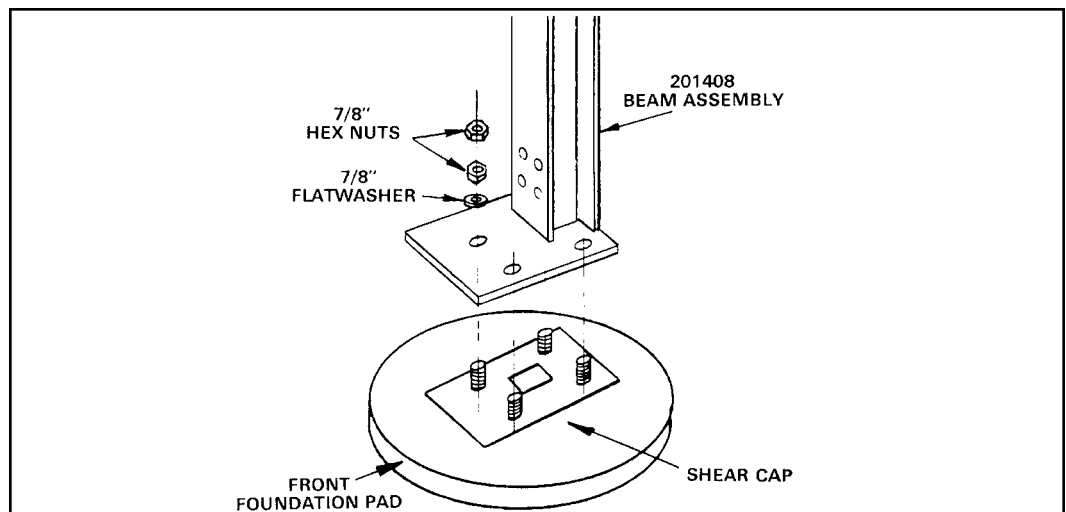


Figure 4

Support Legs Assembly

Step 1

Attach 201327 joint assembly to 201313 beam assembly as shown in Figure 5. Attach 200083 angles to 201313 beam assembly as shown in Figure 5.

- Use 7/8 x 2-1/4 in (57 mm) bolts and nuts for each connection

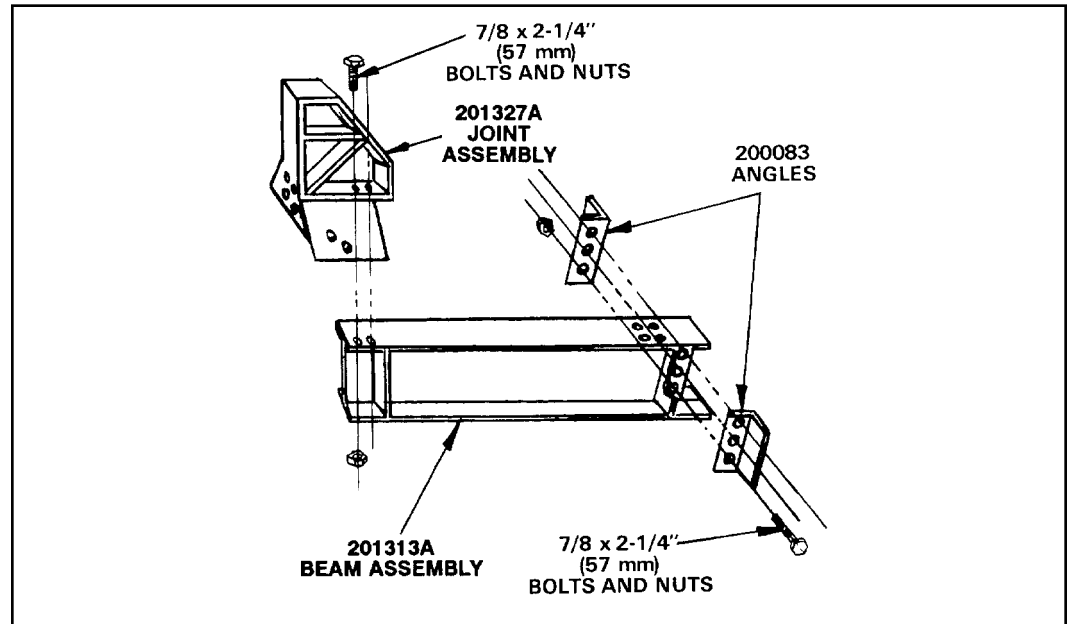


Figure 5

Step 2

Attach 200088 joint assembly to 201313 beam assembly as shown in Figure 6.

- Use 7/8 x 2-1/4 in (57 mm) bolts and nuts

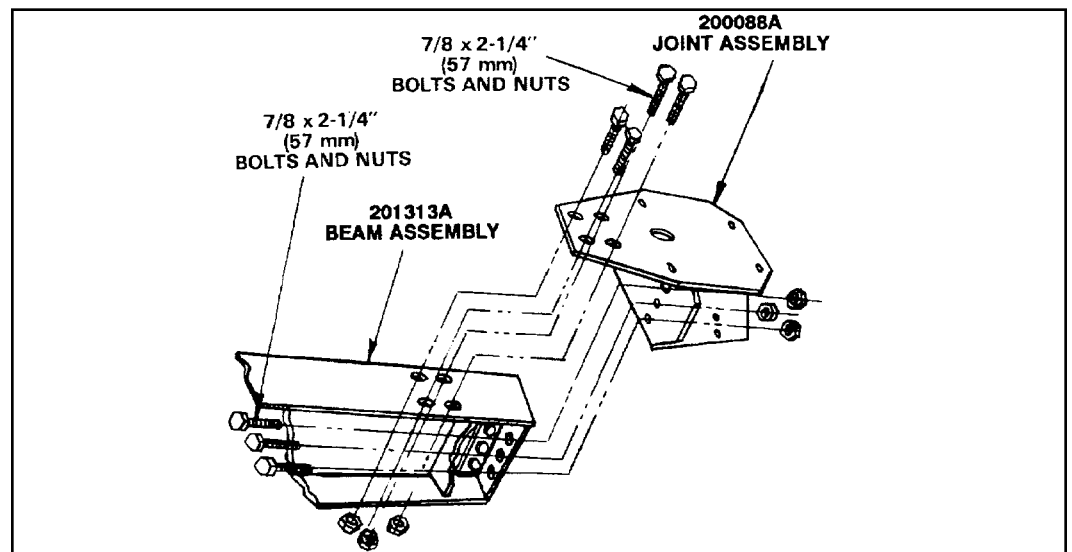


Figure 6

Step 3

Raise 201313 beam assembly to upright position and attach 201315 supports to 201327A joint assembly as shown in Figure 7.

- Use 7/8 x 2-1/4 in (57,ivm) bolts and nuts
- Insert bolts from 201327A joint assembly to supports
- Supports should be installed back-to-back with the flat of angle facing upwards
- Tighten supports until assembly can support itself

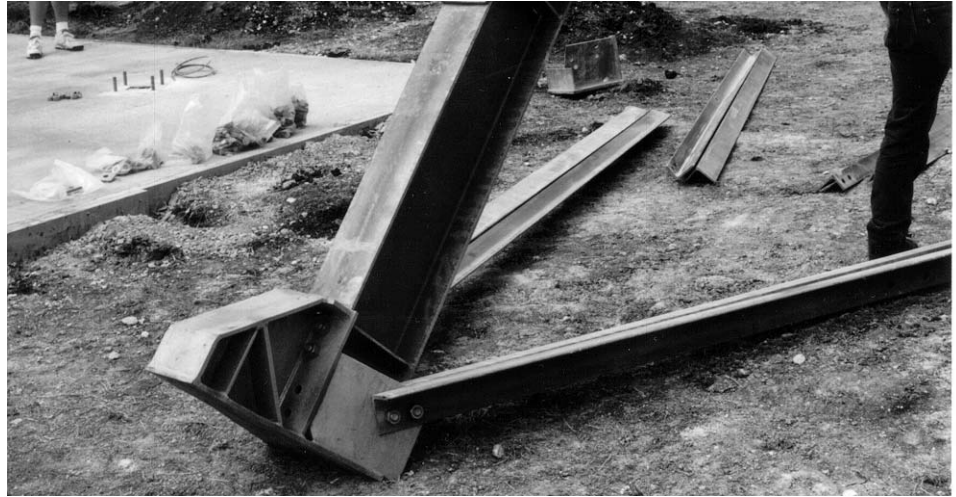


Figure 7

Step 4

Attach 201301/201302 rear pad assembly to 201315 supports as shown in Figure 8.

- Use 7/8 x 2-1/4 in (57 mm) bolts and nuts
- Insert bolt from inside of rear pad assembly to outside of support
- Supports should be installed back-to-back with the edges forward and the flats of angles facing rear



Figure 8

Step 5

Attach 201314 supports to 201301/201302 rear pad assemblies and 201273 joint assembly as shown in Figure 9.

- Use 7/8 x 2-1/4 in (57 mm) bolts and nuts
- Insert bolt from inside of joint assembly to outside of support
- Supports should be installed back-to-back with the edges forward and the flats of angles facing rear



Figure 9

Step 6

Attach 201317 supports between angle pairs as shown in Figure 10. Select corresponding mounting holes so that 201317 supports are parallel to 201313 beam assembly.

- Use 7/8 x 2-1/4 in (57 mm) hardware
- Supports attached with edges inward and flats facing up.

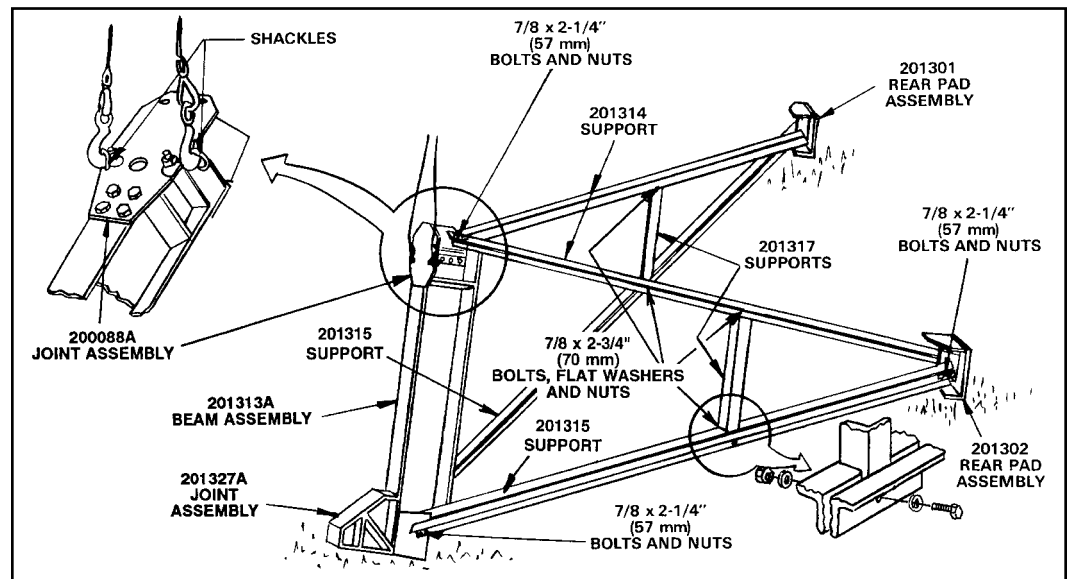


Figure 10

Panning Frame Assembly

Step 1

Attach 201487 panning frame to 201544 azimuth pivot assembly as shown in Figures 11 and 12.

- Use 7/8 x 2-1/4 in (57 mm) hardware
- Bolts should connect from panning frame to pivot assembly



Figure 11

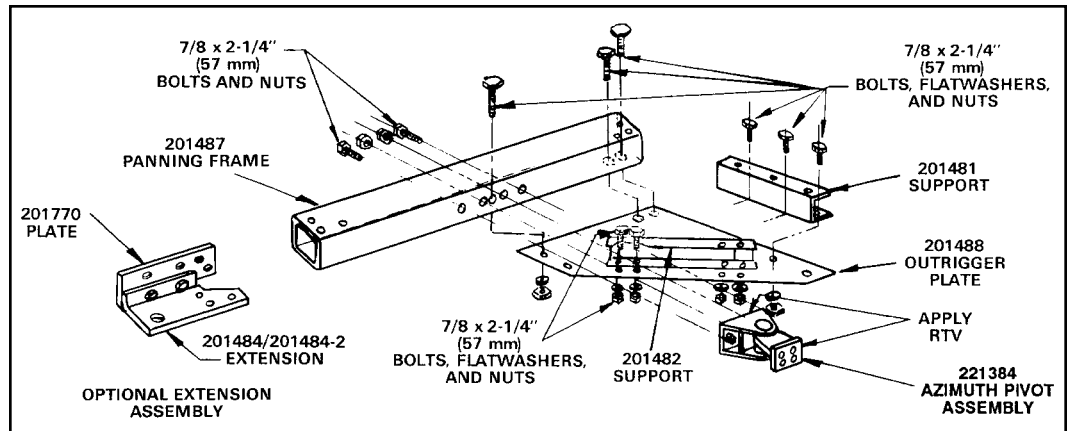


Figure 12

Step 2

Attach 201295/201296 joint assemblies to panning frame as shown in Figures 13 and 14.

- Use 7/8 x 2-1/4 in (57 mm) hardware
- Insert bolts from panning frame to joint assembly



Figure 13

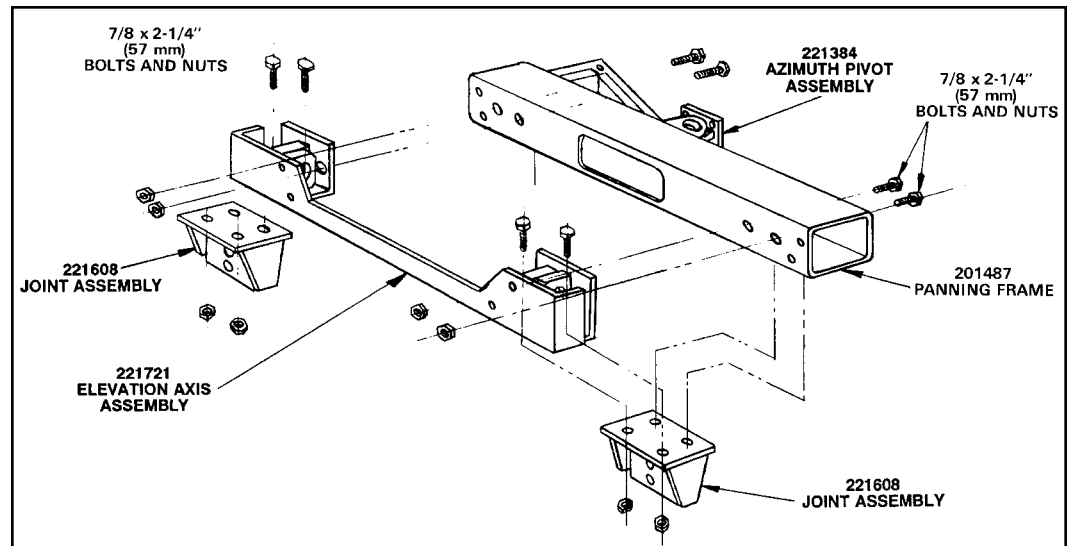


Figure 14

Step 3

Attach 201316 support pairs to 201295/201296 joint assemblies as shown in Figure 15.

- Place supports back-to-back with edges out and flat of angle inward
- Install 45967 spacer at midpoints of support pairs
- Use 7/8 x 2-1/4 in (57 mm) hardware for each connection



Figure 15

Step 4

Attach 201458 azimuth pivot assembly to 201316 support pairs. Attach 201596 mounting plates to 201458 azimuth pivot assembly tab as shown in Figure 16.

- Use 7/8 x 2-1/4 in (57 mm) hardware for each connection
- Insert bolts from rear of pivot assembly to connect supports



Figure 16

Step 5

Attach 201770 plate connecting 201484/201484-2 extension assembly to 201487 panning frame as pictured in Figure 17.

- Use 7/8 x 2-1/4 in (57 mm) hardware
- Insert bolts from inside panning frame assembly

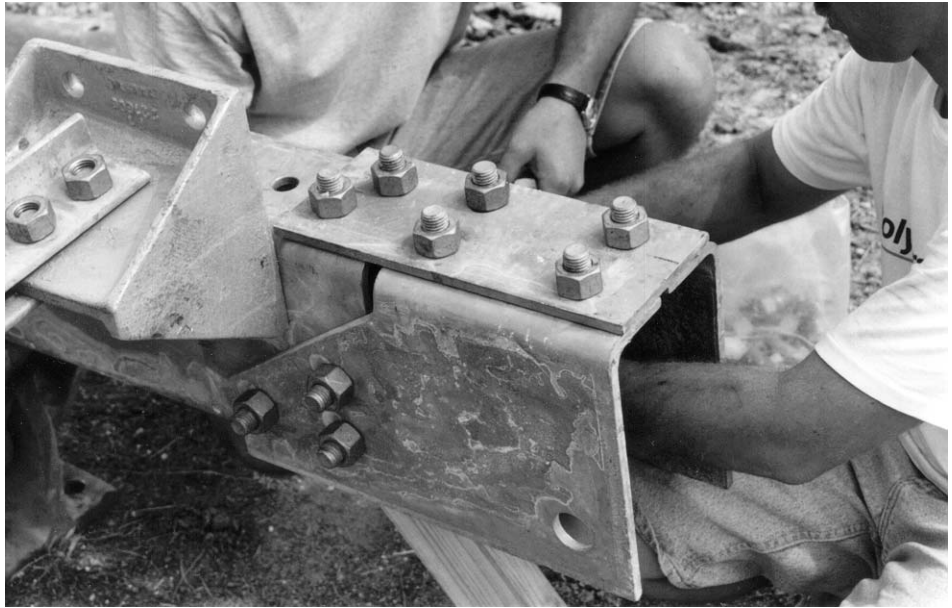


Figure 17

Step 6

Attach 201488 outrigger plate to opposite end of 201487 panning assembly. Attach 201481/201482 supports to outrigger plate as shown in Figure 18.

- Use 7/8 x 2-1/4 in (57 mm) hardware
- Insert bolts from supports to the outrigger plate



Figure 18

Step 7

Attach second 201488 outrigger plate to 201487 panning frame assembly as shown in Figure 19.

- Use 7/8 x 2-1/4 in (57 mm) hardware
- Insert bolts from inside assembly to outrigger plate



Figure 19

Step 8

Attach 201407 elevation axis assembly to 201487 panning frame assembly and 201295 joint assemblies as shown in Figures 20 and 21.

- Use 7/8 x 2-1/4 in (57 mm) hardware
- Insert bolts from elevation axis assembly to panning frame assembly and joint assembly



Figure 20

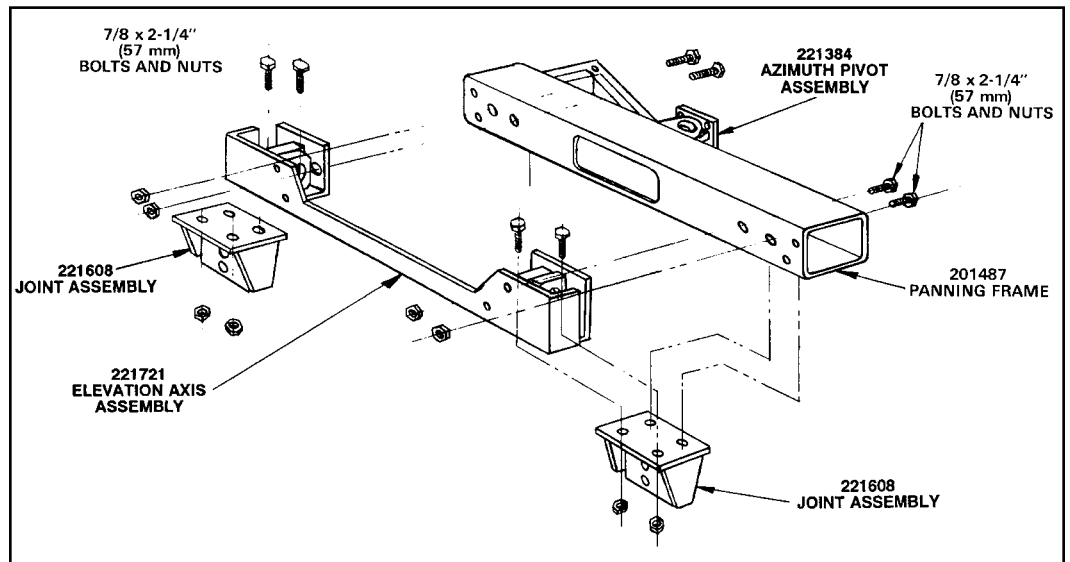


Figure 21

Step 9

Attach 300029 tripod joint bracket to 201407 elevation axis assembly as shown in Figure 22.

- Use 7/8 x 2-1/4 in (57 mm) bolt, flatwasher under bolt and under nut, and nut
- Insert bolts from elevation axis assembly to tripod joint bracket



Figure 22

Step 10

Attach 300026 tripod channel legs to 300029 tripod joint bracket as shown in Figure 23.

- Use 7/8 x 2-1/4 in (57 mm) bolt, flatwasher and nut
- Insert bolts from channel leg to joint bracket



Figure 23

Step 11

Attach 300010 tripod tube weldment to 300026 tripod channel legs as shown in Figure 24.

- Use 7/8 x 2-1/4 in (57 mm) bolt, flatwasher and nut
- Insert bolt from channel leg to tube weldment



Figure 24

**Elevation
Jackscrew
Assembly
Step 1**

Attach 301771/301736 elevation jackscrew assembly to 201596 mounting plates as shown in Figure 25. Tighten connection.

- Use 7/8 x 2-1/2 bolts and nuts

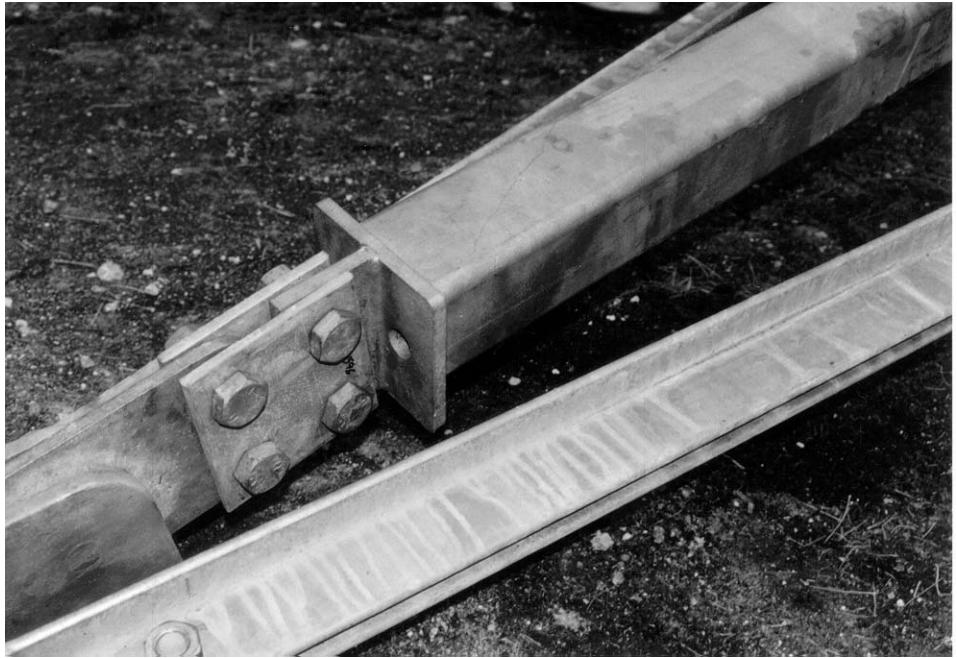


Figure 25

Step 2

Loosen rubber boot from end of jackscrew. Turn elevation drive screw to extend jack to dimension 67.7 in (1719 mm) as shown in Figure 26. Apply grease to screw shaft. Reattach rubber boot.



Figure 26

Step 3

Prop 301771/301736 elevation jackscrew up to align with 300010 tripod tube weldment as shown in Figure 27.



Figure 27

Step 4

Attach 301771/301736 elevation jackscrew to 300010 tripod tube weldment as shown in Figure 28.

- Use 7/8 x 5-1/4 (133 mm) bolt. Fasten with heavy hex nut and flatwasher according to A-325 procedure with the exception of tightening the nut 1/2 turn from snug condition. Tighten jam nut in accordance with A-325 procedure. Apply supplied Loctite to threads to act as locking nut.



Figure 28

Azimuth Jackscrew Assembly

Step 1

Insert 22193/223180 azimuth jackscrew tube into 201287 azimuth pivot assembly as shown in Figure 29. Insert jack carefully to prevent scratching jackscrew tube. **Note:** Ensure jackscrew assembly remains fully retracted at this time.

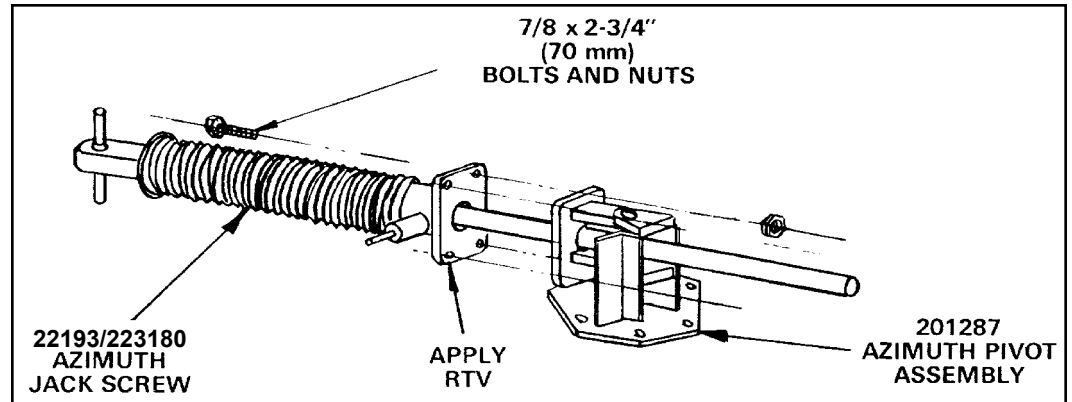


Figure 29

Step 2

Apply RTV to flange surface as shown in Figure 29. Fasten jack to pivot using 7/8 x 2-3/4 in (70 mm) bolts and nuts. Mounting hardware is included with corresponding jack assembly hardware kit.

Mount Assembly

Step 1

Attach shackles to beam assembly as shown in Figure 30.



Figure 30

Step 2

Lift support legs to azimuth beam assembly.

Step 3 Attach rear pad assemblies to rear foundation pads as pictured in Figure 31.

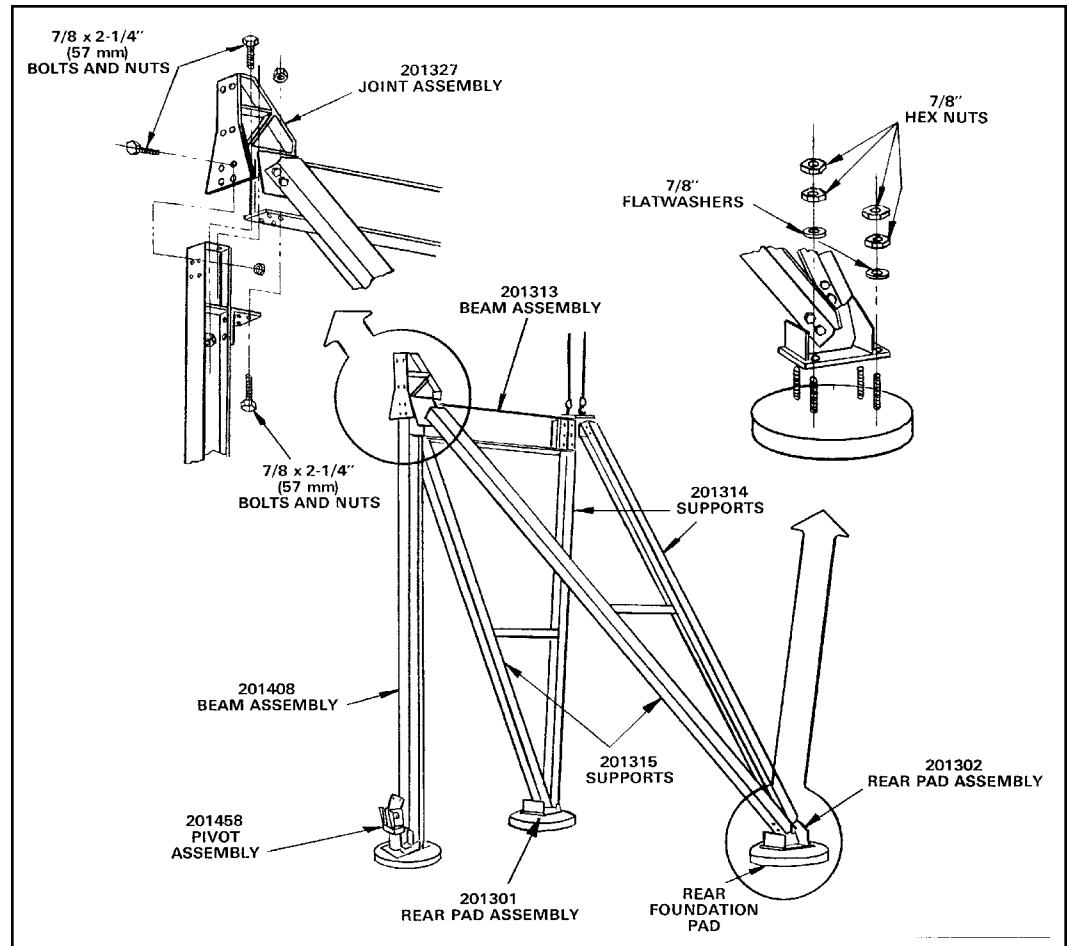


Figure 31

Step 4 Connect beam assembly using 7/8 x 2-1/4 in (57 mm) hardware. Tighten supports to beam assembly per A-325 tensioning procedure.

Step 5

Hoist elevation jackscrew assembly to mount. Attach 201544 azimuth pivot assembly to 201327 joint assembly with 7/8 x 2-1/4 hardware from pivot assembly to joint assembly as shown in Figure 32.

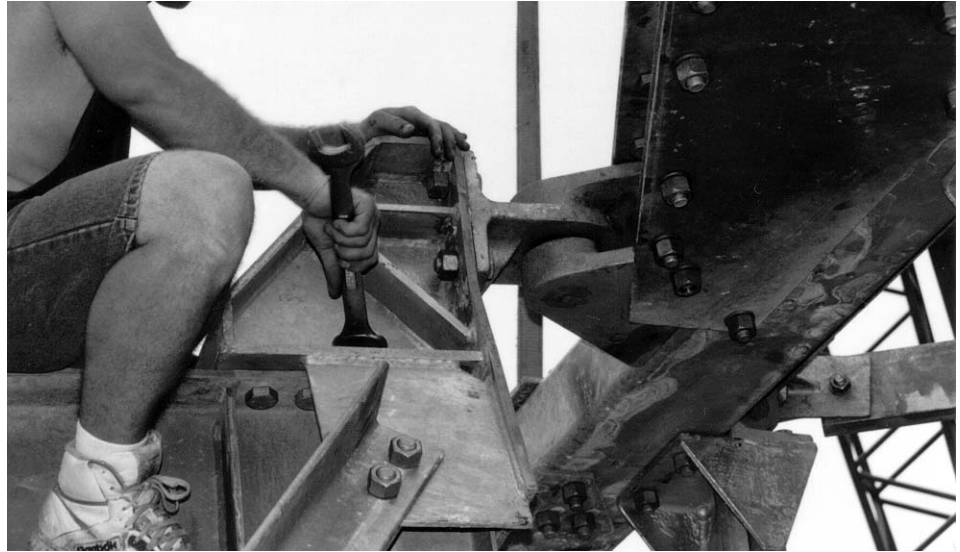


Figure 32

Step 6

Attach 201458 azimuth pivot assembly to 201408 beam assembly with a line of RTV around the plate and four 7/8 x 2-1/4 in (57 mm) bolts inserted from pivot assembly to beam assembly as shown in Figure 33.

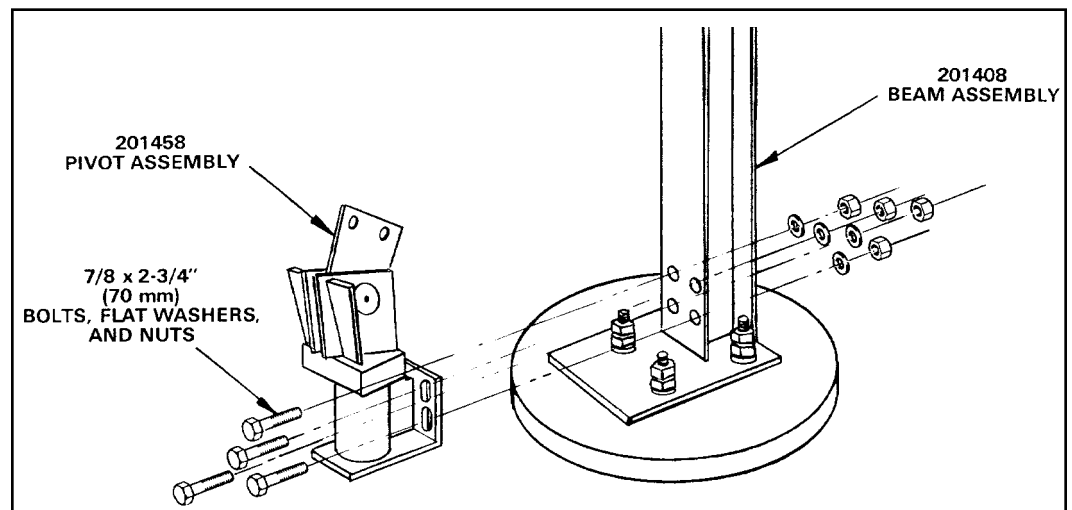


Figure 33

Note: If optional motor drive system is included, install motors at this point. Refer to installation instructions provided with motor kits.

Step 7

Refer to Figure 34. Position hoisting ropes on azimuth motor jack assembly so jack will not roll when hoisted. Attach one rope to motor frame next to gearbox to balance assembly. Tie up loose conduit before lifting jack.



Figure 34

Step 8

Refer to Figure 34. Position hoisting ropes on motor/jack assembly so jack will not roll when hoisted. Attach one rope to large motor frame next to gearbox to balance assembly; do not attach rope to small motor. Tie up loose conduit before lifting jack.

Step 9

Raise 22193/223180 azimuth jackscrew and attach 201287 pivot assembly to 201273 joint assembly with 1 x 2-1/2 in (63 mm) hardware. **Note:** Mounting position of azimuth pivot jackscrew assembly is dependent upon azimuth range requirements and corresponds with mounting position of 201488 outrigger plate or extension assembly.

Step 10

Extend jackscrew to meet outrigger assembly. Loosely re-attach outrigger plate to pin assembly in azimuth jackscrew as shown in Figure 35. **Note:** Realignment of panning frame/pivot assembly may be necessary to ensure proper alignment of azimuth jackscrew pin. Snug panning frame/pivot assembly hardware and fully extend azimuth jackscrew to ensure binding does not occur throughout entire azimuth pivot range.

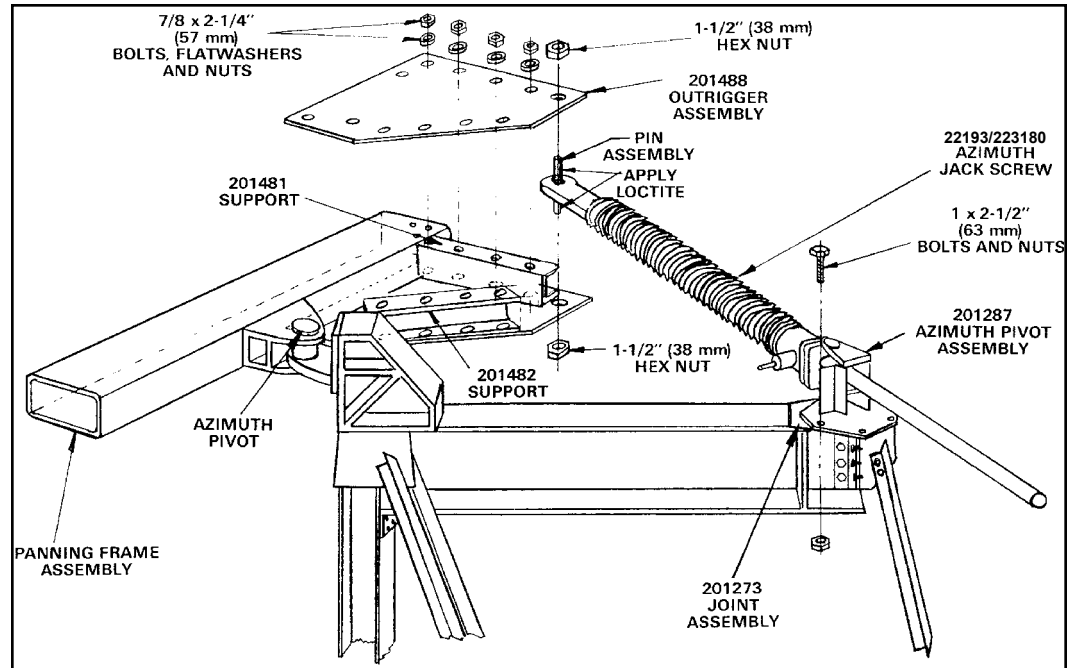


Figure 35

Step 11

Loosen both setscrews in upper and lower collars of pin assembly at end of azimuth jack. **Do not retighten these collars.** Apply supplied Loctite to pin threads and nuts. Attach 1-1/2 in (38 mm) hex nuts to top and bottom of azimuth jackscrew pin assembly and securely tighten mounting hardware using 6 foot (1.8 m) lever arm. Reattach rubber boot. Tighten an outrigger plate hardware.

The tripod ground mount assembly is now completed with the necessary operational essentials. All ground mount options have separate instructional bulletins located in the parts kit that contain the option.

The next step in the installation process is the reflector assembly. Proceed to the next page to begin installation of the reflector.

NOTES: (UNLESS OTHERWISE SPECIFIED)

1. REMOVE ALL BURRS AND SHARP EDGES
2. DIMENSIONS APPLY UNLESS PLATING
3. INSPECT DRAWING FOR AWS 71.20-1002

GENERAL

READ THE INSTRUCTIONS THOROUGHLY BEFORE ASSEMBLY. FOLLOW THE SEQUENCES FOR PROPER ASSEMBLY AND OPERATION.

CAUTION: THIS WARNING INDICATES THAT FAILURE TO FOLLOW THE PROPER PROCEDURE AT THIS POINT COULD RESULT IN DAMAGE TO THE ANTENNA AND/OR OTHER PROPERTY AND POSSIBLE INJURY TO PERSONNEL.

NOTICE: THIS INDICATES INFORMATION THAT SHOULD BE READ BEFORE PROCEEDING.

UNPACKING: CAREFULLY REMOVE ALL PARTS FROM SHIPPING BOXES. THE CONTENT SHOULD CORRESPOND WITH THE PARTS LIST. ANY DAMAGE OR SHORTAGE WILL PREVENT SATISFACTORY ASSEMBLY, INSTALLATION, AND OPERATION OF THE ANTENNA.

NOTICE: THE INSTALLATION, MAINTENANCE OR REMOVAL OF AN ANTENNA REQUIRES QUALIFIED, EXPERIENCED PERSONNEL. ANDREW INSTALLATION INSTRUCTIONS HAVE BEEN WRITTEN AND ILLUSTRATED FOR SUCH INSTALLATION PERSONNEL. ANTENNA SYSTEMS SHOULD BE INSPECTED ONCE A YEAR BY QUALIFIED PERSONNEL TO VERIFY PROPER INSTALLATION, MAINTENANCE AND CONDITION OF EQUIPMENT. ANDREW DISCLAIMS ANY LIABILITY OR RESPONSIBILITY FOR THE RESULTS OF IMPROPER OR UNSAFE INSTALLATION OR MAINTENANCE PRACTICES.

TENSIONING PROCEDURES A-305 HARDWARE

1. LUBRICATE BOLT THREADS WITH STICK WAX (ITEM 39) TO REDUCE FRICTION. DO NOT ALLOW WAX UNDER FLAT WASHER.
2. AFTER CONNECTIONS ARE COMPLETED, TIGHTEN BOLTS UNTIL SURFACES ARE JOINED AND NUTS ARE SNUG. LEAVE EFFORT OF PERSON USING ORDINARY SPUD WRENCH. DO NOT PROCEED WITH STEPS 3 & 4 BELOW UNLESS THE CONNECTION IS FINAL IF BOLTS ARE LOOSENERED AFTER STEPS 3 AND 4, DISCARD AND REPLACE WITH NEW HARDWARE. REPEAT ALL STEPS.
3. MARK NUTS AND END OF BOLTS WITH STRAIGHT LINE. SEE FIGURE L.
4. TIGHTEN NUTS FURTHER WITH EXTRA LONG WRENCH OR POWER WRENCH UNTIL NUTS ARE MOVED 1/2 TURN (180°) FOR BOLT LENGTHS UP TO AND INCLUDING 4 DIAMETERS. SEE FIGURE M. 1/2 TURN (180°) FOR BOLT LENGTHS OVER 4 DIAMETERS. SEE FIGURE N.

FIG. L
BEFORE
TENSIONING

FIG. N
AFTER
TENSIONING

TOOLS RECOMMENDED FOR PROPER INSTALLATION

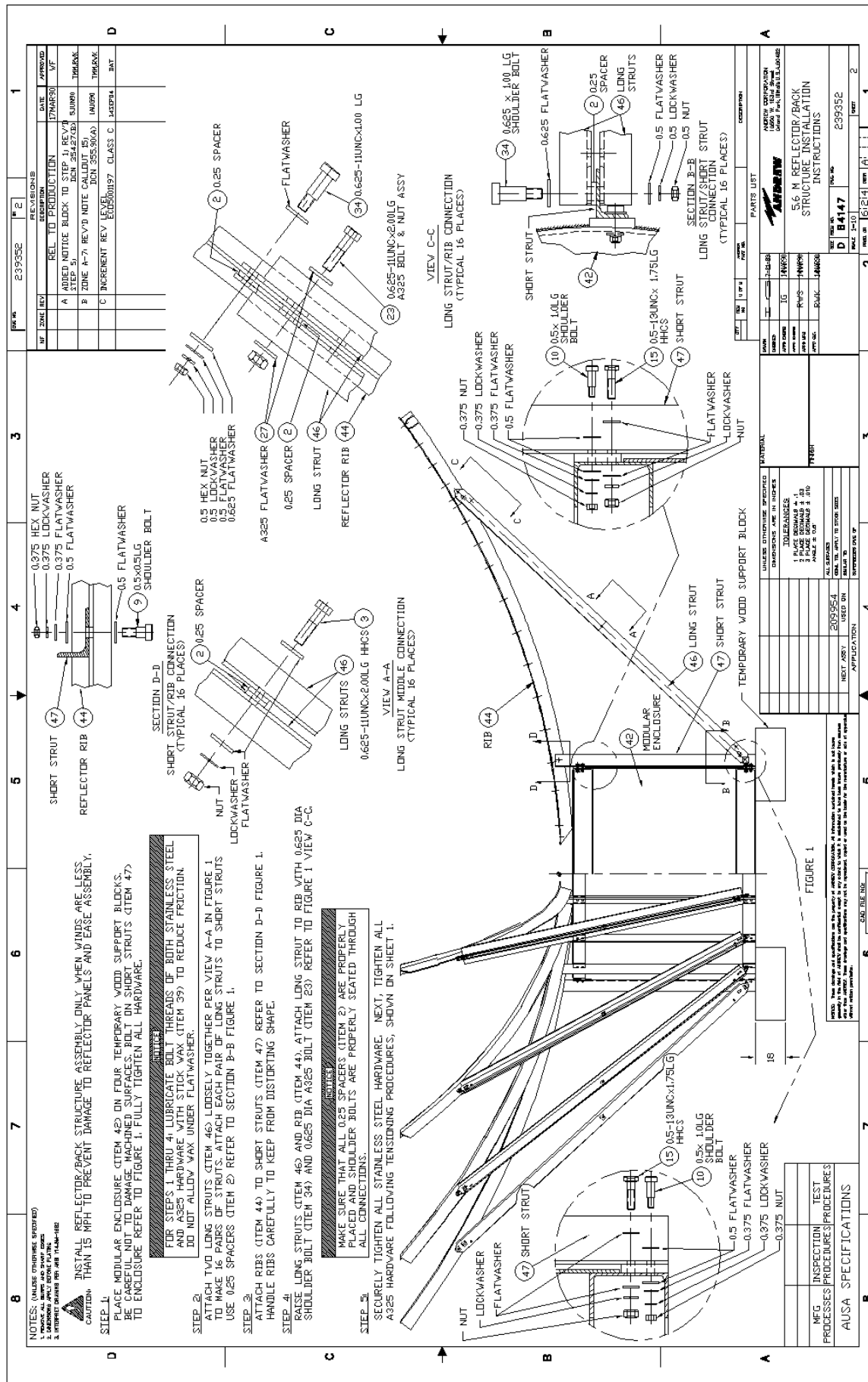
QUANTITY	DESCRIPTION
1	15 TON CRANE
1	SCREWDRIVER (SLOTTED)
1	5/32 HEX SOCKET (ALLEN) WRENCH
1	1/4 HEX SOCKET (ALLEN) WRENCH
1	7/16 SOCKET
1	9/16 SOCKET
1	1/2 SOCKET
1	3/4 SOCKET
1	7/8 SOCKET
1	1 1/16 SOCKET
1	1 1/4 SOCKET
1	1 7/16 SOCKET
1	1/2 DRIVE RATCHET
1	1/2 DRIVE EXTENSION
1	7/16 COMBINATION WRENCH
1	1/2 COMBINATION WRENCH
1	9/16 COMBINATION WRENCH
1	3/4 COMBINATION WRENCH
1	7/8 COMBINATION WRENCH
1	1 1/16 COMBINATION WRENCH
1	1 1/4 COMBINATION WRENCH
1	1 7/16 COMBINATION WRENCH
1	1 1/4 SPUD WRENCH
1	6 FT NYLON CHOKER (3/8" DIA)
1	3 FT NYLON CHOKER (3/8" DIA)
1	PULLER HOIST/1 TON
1	2x4x8 FT LUMBER (TEMPORARY SUPPORT)
4	5/8 SHACKLES
4	20 FT TAG LINE
4	16 FT CHOKER (1/2" DIA)
4	12 FT STEP LADDER
4	25 FT EXTENSION LADDER
1	8" ADJUSTABLE WRENCH
1	TEMPORARY WOOD SUPPORT BLOCKS

REV	ZONE	REV	DESCRIPTION	DATE	APPROVED
F	001	001	ISSUE FOR REVISED SHEET 5.6 M KIT	01/01/94	JLH/KC
G	01	01	ISSUE FOR REVISED SHEET 5.6 M KIT	01/01/94	JLH/KC
H	01	01	ISSUE FOR REVISED SHEET 5.6 M KIT	01/01/94	JLH/KC
I	01	01	ISSUE FOR REVISED SHEET 5.6 M KIT	01/01/94	JLH/KC
J	01	01	ISSUE FOR REVISED SHEET 5.6 M KIT	01/01/94	JLH/KC
K	01	01	ISSUE FOR REVISED SHEET 5.6 M KIT	01/01/94	JLH/KC

TOOLS RECOMMENDED FOR PROPER INSTALLATION

QUANTITY	DESCRIPTION
1	15 TON CRANE
1	SCREWDRIVER (SLOTTED)
1	5/32 HEX SOCKET (ALLEN) WRENCH
1	1/4 HEX SOCKET (ALLEN) WRENCH
1	7/16 SOCKET
1	9/16 SOCKET
1	1/2 SOCKET
1	3/4 SOCKET
1	7/8 SOCKET
1	1 1/16 SOCKET
1	1 1/4 SOCKET
1	1 7/16 SOCKET
1	1/2 DRIVE RATCHET
1	1/2 DRIVE EXTENSION
1	7/16 COMBINATION WRENCH
1	1/2 COMBINATION WRENCH
1	9/16 COMBINATION WRENCH
1	3/4 COMBINATION WRENCH
1	7/8 COMBINATION WRENCH
1	1 1/16 COMBINATION WRENCH
1	1 1/4 COMBINATION WRENCH
1	1 7/16 COMBINATION WRENCH
1	1 1/4 SPUD WRENCH
1	6 FT NYLON CHOKER (3/8" DIA)
1	3 FT NYLON CHOKER (3/8" DIA)
1	PULLER HOIST/1 TON
1	2x4x8 FT LUMBER (TEMPORARY SUPPORT)
4	5/8 SHACKLES
4	20 FT TAG LINE
4	16 FT CHOKER (1/2" DIA)
4	12 FT STEP LADDER
4	25 FT EXTENSION LADDER
1	8" ADJUSTABLE WRENCH
1	TEMPORARY WOOD SUPPORT BLOCKS

REV	ZONE	REV	DESCRIPTION	DATE	APPROVED
1	40	EA	209954	209954	REFLECTOR HARDWARE KIT
2	39	EA	200852	209954	STICK WAX
4	38	EA	9903-10	209954	ALLEN WRENCH
77	37	EA	9997-236	209954	0.625 FLAT WASHER (CSST)
32	36	EA	9997-228	209954	0.50 FLAT WASHER (A325)
16	35	EA	45980-23	209954	0.50-10UNC 200 LG BOLT/NUT ASSY
32	34	EA	9958-22	209954	0.625 100 LG SHOULDER BOLT
4	33	EA	209957	209954	BACKING PLATE
4	32	EA	206278	209954	LIFT TAB
16	31	EA	9974-79	209954	0.625 LDDK WASHER (CSST)
1	30	EA	99		



	MFG PROCESSES	INSPECTION PROCEDURES	TEST PROCEDURES
AUSA SPECIFICATIONS			

NOTES: (UNLESS OTHERWISE SPECIFIED)
 1. MAKE ALL SADD AND NUTS LOOSE
 2. MAKE ALL SADD AND NUTS TIGHT
 3. MAKE ALL SADD AND NUTS TIGHT

STEP 9:
 CHECK REFLECTOR PANEL FITS. INSURE THAT SEAM WIDTHS ARE UNIFORM AND PANELS ARE NOT OVERLAPPING. PROCEED TIGHTENING REFLECTOR PANEL SEAM HARDWARE CLOCKWISE FROM INNER MOST HOLES TO OUTER MOST HOLES. TIGHTEN SKIRT STRAP HARDWARE.

NOTICE
 CHECK TO SEE THAT ALL REFLECTOR HARDWARE IS NOW SECURELY TIGHTENED.

VIEW F-F
 (FRONT VIEW OF REFLECTOR/BACK STRUCTURE ASSEMBLY)

VIEW E-E
 (REAR VIEW OF REFLECTOR/BACK STRUCTURE ASSEMBLY)

VIEW K-K

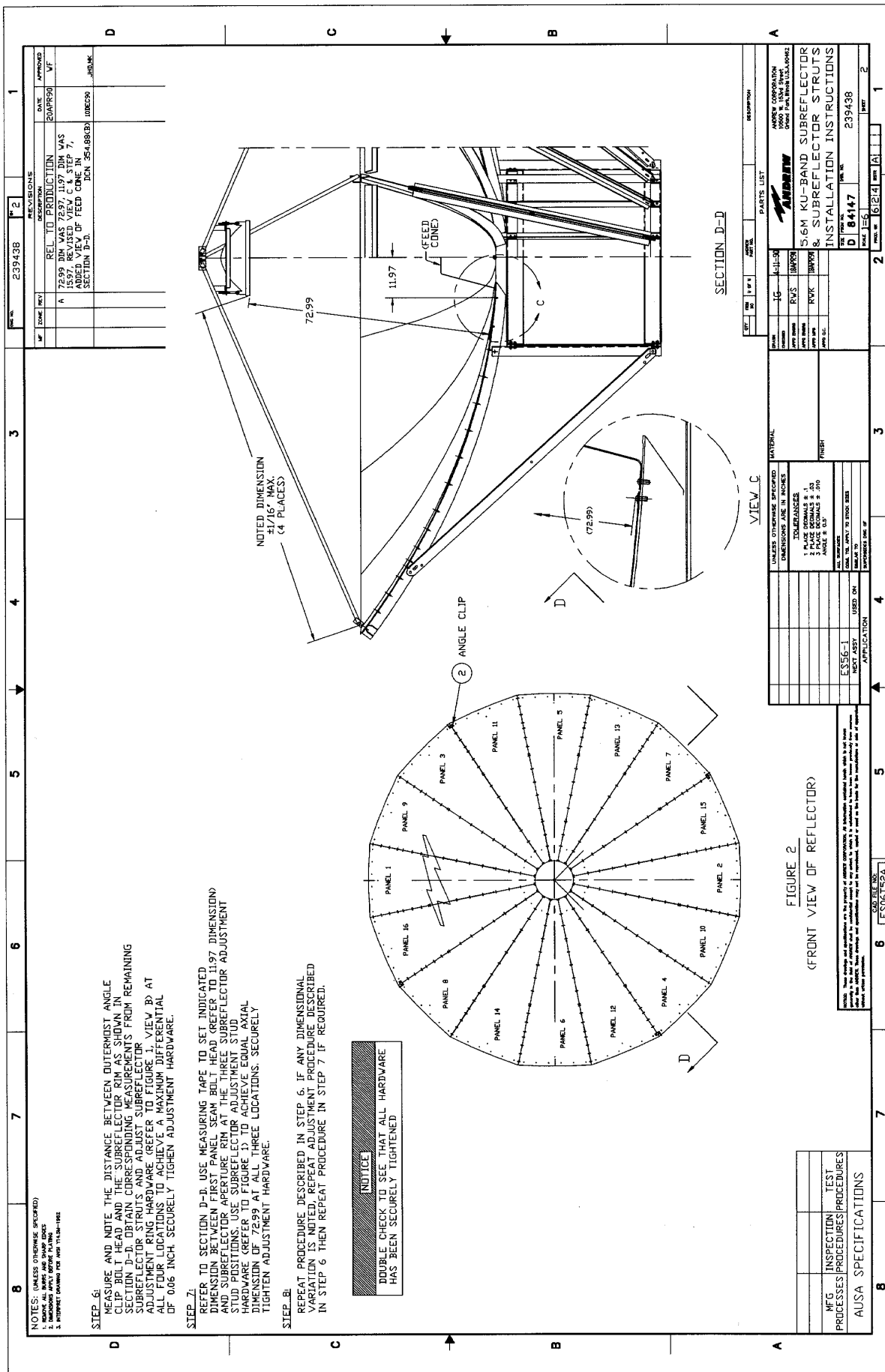
CALLOUTS:
 (5) 0.312-18UNCx 1.5 LG SCREW
 (43) PANEL
 (45) SKIRT
 FLATWASHER
 LOCKWASHER
 HEX NUT
 SKIRT STRAP (1)
 RIB (44)
 40°
 (32) LIFTING TAB
 PANEL 1, PANEL 2, PANEL 3, PANEL 4, PANEL 5, PANEL 6, PANEL 7, PANEL 8, PANEL 9, PANEL 10, PANEL 11, PANEL 12, PANEL 13, PANEL 14, PANEL 15, PANEL 16, PANEL 17, PANEL 18, PANEL 19, PANEL 20, PANEL 21, PANEL 22, PANEL 23, PANEL 24, PANEL 25, PANEL 26, PANEL 27, PANEL 28, PANEL 29, PANEL 30, PANEL 31, PANEL 32, PANEL 33, PANEL 34, PANEL 35, PANEL 36, PANEL 37, PANEL 38, PANEL 39, PANEL 40, PANEL 41, PANEL 42, PANEL 43, PANEL 44, PANEL 45, PANEL 46, PANEL 47, PANEL 48, PANEL 49, PANEL 50, PANEL 51, PANEL 52, PANEL 53, PANEL 54, PANEL 55, PANEL 56, PANEL 57, PANEL 58, PANEL 59, PANEL 60, PANEL 61, PANEL 62, PANEL 63, PANEL 64, PANEL 65, PANEL 66, PANEL 67, PANEL 68, PANEL 69, PANEL 70, PANEL 71, PANEL 72, PANEL 73, PANEL 74, PANEL 75, PANEL 76, PANEL 77, PANEL 78, PANEL 79, PANEL 80, PANEL 81, PANEL 82, PANEL 83, PANEL 84, PANEL 85, PANEL 86, PANEL 87, PANEL 88, PANEL 89, PANEL 90, PANEL 91, PANEL 92, PANEL 93, PANEL 94, PANEL 95, PANEL 96, PANEL 97, PANEL 98, PANEL 99, PANEL 100, PANEL 101, PANEL 102, PANEL 103, PANEL 104, PANEL 105, PANEL 106, PANEL 107, PANEL 108, PANEL 109, PANEL 110, PANEL 111, PANEL 112, PANEL 113, PANEL 114, PANEL 115, PANEL 116, PANEL 117, PANEL 118, PANEL 119, PANEL 120, PANEL 121, PANEL 122, PANEL 123, PANEL 124, PANEL 125, PANEL 126, PANEL 127, PANEL 128, PANEL 129, PANEL 130, PANEL 131, PANEL 132, PANEL 133, PANEL 134, PANEL 135, PANEL 136, PANEL 137, PANEL 138, PANEL 139, PANEL 140, PANEL 141, PANEL 142, PANEL 143, PANEL 144, PANEL 145, PANEL 146, PANEL 147, PANEL 148, PANEL 149, PANEL 150, PANEL 151, PANEL 152, PANEL 153, PANEL 154, PANEL 155, PANEL 156, PANEL 157, PANEL 158, PANEL 159, PANEL 160, PANEL 161, PANEL 162, PANEL 163, PANEL 164, PANEL 165, PANEL 166, PANEL 167, PANEL 168, PANEL 169, PANEL 170, PANEL 171, PANEL 172, PANEL 173, PANEL 174, PANEL 175, PANEL 176, PANEL 177, PANEL 178, PANEL 179, PANEL 180, PANEL 181, PANEL 182, PANEL 183, PANEL 184, PANEL 185, PANEL 186, PANEL 187, PANEL 188, PANEL 189, PANEL 190, PANEL 191, PANEL 192, PANEL 193, PANEL 194, PANEL 195, PANEL 196, PANEL 197, PANEL 198, PANEL 199, PANEL 200, PANEL 201, PANEL 202, PANEL 203, PANEL 204, PANEL 205, PANEL 206, PANEL 207, PANEL 208, PANEL 209, PANEL 210, PANEL 211, PANEL 212, PANEL 213, PANEL 214, PANEL 215, PANEL 216, PANEL 217, PANEL 218, PANEL 219, PANEL 220, PANEL 221, PANEL 222, PANEL 223, PANEL 224, PANEL 225, PANEL 226, PANEL 227, PANEL 228, PANEL 229, PANEL 230, PANEL 231, PANEL 232, PANEL 233, PANEL 234, PANEL 235, PANEL 236, PANEL 237, PANEL 238, PANEL 239, PANEL 240, PANEL 241, PANEL 242, PANEL 243, PANEL 244, PANEL 245, PANEL 246, PANEL 247, PANEL 248, PANEL 249, PANEL 250, PANEL 251, PANEL 252, PANEL 253, PANEL 254, PANEL 255, PANEL 256, PANEL 257, PANEL 258, PANEL 259, PANEL 260, PANEL 261, PANEL 262, PANEL 263, PANEL 264, PANEL 265, PANEL 266, PANEL 267, PANEL 268, PANEL 269, PANEL 270, PANEL 271, PANEL 272, PANEL 273, PANEL 274, PANEL 275, PANEL 276, PANEL 277, PANEL 278, PANEL 279, PANEL 280, PANEL 281, PANEL 282, PANEL 283, PANEL 284, PANEL 285, PANEL 286, PANEL 287, PANEL 288, PANEL 289, PANEL 290, PANEL 291, PANEL 292, PANEL 293, PANEL 294, PANEL 295, PANEL 296, PANEL 297, PANEL 298, PANEL 299, PANEL 300, PANEL 301, PANEL 302, PANEL 303, PANEL 304, PANEL 305, PANEL 306, PANEL 307, PANEL 308, PANEL 309, PANEL 310, PANEL 311, PANEL 312, PANEL 313, PANEL 314, PANEL 315, PANEL 316, PANEL 317, PANEL 318, PANEL 319, PANEL 320, PANEL 321, PANEL 322, PANEL 323, PANEL 324, PANEL 325, PANEL 326, PANEL 327, PANEL 328, PANEL 329, PANEL 330, PANEL 331, PANEL 332, PANEL 333, PANEL 334, PANEL 335, PANEL 336, PANEL 337, PANEL 338, PANEL 339, PANEL 340, PANEL 341, PANEL 342, PANEL 343, PANEL 344, PANEL 345, PANEL 346, PANEL 347, PANEL 348, PANEL 349, PANEL 350, PANEL 351, PANEL 352, PANEL 353, PANEL 354, PANEL 355, PANEL 356, PANEL 357, PANEL 358, PANEL 359, PANEL 360, PANEL 361, PANEL 362, PANEL 363, PANEL 364, PANEL 365, PANEL 366, PANEL 367, PANEL 368, PANEL 369, PANEL 370, PANEL 371, PANEL 372, PANEL 373, PANEL 374, PANEL 375, PANEL 376, PANEL 377, PANEL 378, PANEL 379, PANEL 380, PANEL 381, PANEL 382, PANEL 383, PANEL 384, PANEL 385, PANEL 386, PANEL 387, PANEL 388, PANEL 389, PANEL 390, PANEL 391, PANEL 392, PANEL 393, PANEL 394, PANEL 395, PANEL 396, PANEL 397, PANEL 398, PANEL 399, PANEL 400, PANEL 401, PANEL 402, PANEL 403, PANEL 404, PANEL 405, PANEL 406, PANEL 407, PANEL 408, PANEL 409, PANEL 410, PANEL 411, PANEL 412, PANEL 413, PANEL 414, PANEL 415, PANEL 416, PANEL 417, PANEL 418, PANEL 419, PANEL 420, PANEL 421, PANEL 422, PANEL 423, PANEL 424, PANEL 425, PANEL 426, PANEL 427, PANEL 428, PANEL 429, PANEL 430, PANEL 431, PANEL 432, PANEL 433, PANEL 434, PANEL 435, PANEL 436, PANEL 437, PANEL 438, PANEL 439, PANEL 440, PANEL 441, PANEL 442, PANEL 443, PANEL 444, PANEL 445, PANEL 446, PANEL 447, PANEL 448, PANEL 449, PANEL 450, PANEL 451, PANEL 452, PANEL 453, PANEL 454, PANEL 455, PANEL 456, PANEL 457, PANEL 458, PANEL 459, PANEL 460, PANEL 461, PANEL 462, PANEL 463, PANEL 464, PANEL 465, PANEL 466, PANEL 467, PANEL 468, PANEL 469, PANEL 470, PANEL 471, PANEL 472, PANEL 473, PANEL 474, PANEL 475, PANEL 476, PANEL 477, PANEL 478, PANEL 479, PANEL 480, PANEL 481, PANEL 482, PANEL 483, PANEL 484, PANEL 485, PANEL 486, PANEL 487, PANEL 488, PANEL 489, PANEL 490, PANEL 491, PANEL 492, PANEL 493, PANEL 494, PANEL 495, PANEL 496, PANEL 497, PANEL 498, PANEL 499, PANEL 500, PANEL 501, PANEL 502, PANEL 503, PANEL 504, PANEL 505, PANEL 506, PANEL 507, PANEL 508, PANEL 509, PANEL 510, PANEL 511, PANEL 512, PANEL 513, PANEL 514, PANEL 515, PANEL 516, PANEL 517, PANEL 518, PANEL 519, PANEL 520, PANEL 521, PANEL 522, PANEL 523, PANEL 524, PANEL 525, PANEL 526, PANEL 527, PANEL 528, PANEL 529, PANEL 530, PANEL 531, PANEL 532, PANEL 533, PANEL 534, PANEL 535, PANEL 536, PANEL 537, PANEL 538, PANEL 539, PANEL 540, PANEL 541, PANEL 542, PANEL 543, PANEL 544, PANEL 545, PANEL 546, PANEL 547, PANEL 548, PANEL 549, PANEL 550, PANEL 551, PANEL 552, PANEL 553, PANEL 554, PANEL 555, PANEL 556, PANEL 557, PANEL 558, PANEL 559, PANEL 560, PANEL 561, PANEL 562, PANEL 563, PANEL 564, PANEL 565, PANEL 566, PANEL 567, PANEL 568, PANEL 569, PANEL 570, PANEL 571, PANEL 572, PANEL 573, PANEL 574, PANEL 575, PANEL 576, PANEL 577, PANEL 578, PANEL 579, PANEL 580, PANEL 581, PANEL 582, PANEL 583, PANEL 584, PANEL 585, PANEL 586, PANEL 587, PANEL 588, PANEL 589, PANEL 590, PANEL 591, PANEL 592, PANEL 593, PANEL 594, PANEL 595, PANEL 596, PANEL 597, PANEL 598, PANEL 599, PANEL 600, PANEL 601, PANEL 602, PANEL 603, PANEL 604, PANEL 605, PANEL 606, PANEL 607, PANEL 608, PANEL 609, PANEL 610, PANEL 611, PANEL 612, PANEL 613, PANEL 614, PANEL 615, PANEL 616, PANEL 617, PANEL 618, PANEL 619, PANEL 620, PANEL 621, PANEL 622, PANEL 623, PANEL 624, PANEL 62





[illegible]

[illegible]



Operation

Overview

After you have completed the assembly of your antenna, you are now ready to become operational. In order to operate the earth station antenna, you will need to direct it to the desired satellite adjusting both the elevation and azimuth angles appropriately. The following procedures provide details on how to correctly position your antenna on the desired satellite.

Acquiring A Satellite

There are several procedures that may be used to properly acquire the satellite. Andrew recommends that a spectrum analyzer be used. The following procedures provide explanation as to how to use the spectrum analyzer.

While viewing the spectrum analyzer screen, a pure noise signal as shown in Figure 4-1 will probably be observed. Additionally, some transponder signals may be observed above the noise signal as shown in Figure 4-2.

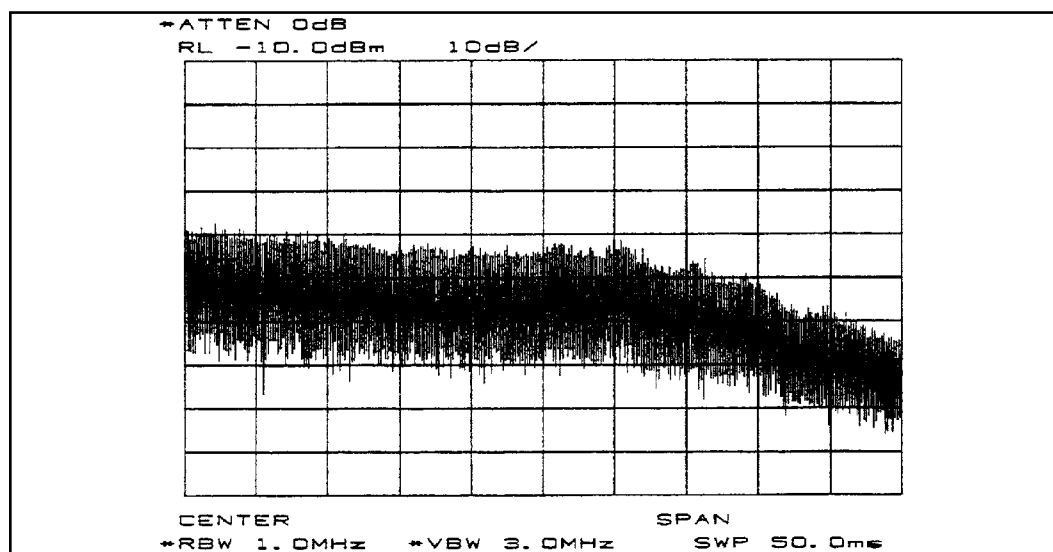


Figure 4-1: Pure Noise Signal on Spectrum Analyzer

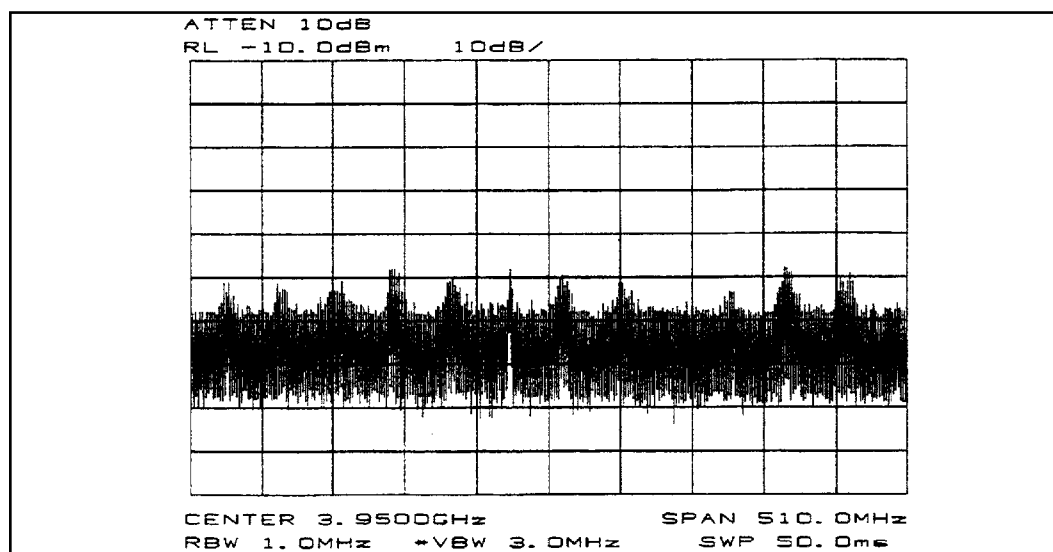


Figure 4-2: Minimum transponder Signal on Spectrum Analyzer

The following steps provide the procedure for acquiring a satellite.

Step 1

Manually move the antenna in the azimuth (scanning back-and-forth) to achieve the maximum (greatest amplitude) transponder signals.

- Scan in one direction until the amplitude continues to diminish and then scan in the opposite direction until the same condition occurs.
- Return to the position yielding the greatest amplitude.

The maximum azimuth excursion from the original setting should not exceed plus or minus 1.5 degrees or the antenna may begin to access a different satellite.

Step 2

With the antenna positioned in azimuth such that the transponder signals are maximized, follow the same procedure manually moving the antenna in elevation (scanning up-and-down) to further maximize the transponder signals.

Step 3

Repeat this procedure alternating between the azimuth and elevation excursions of the antenna to peak the transponder signal amplitude.

A transponder signal amplitude of 30 dB or greater from peak to average noise signal indicates the antenna is receiving the signal on the main beam. A transponder signal amplitude less than 30 dB or greater indicates the antenna is receiving the signal on a side lobe of the main beam.

Step 4

With the antenna peaked on a side lobe in azimuth and/or elevation, move the antenna in azimuth while observing the spectrum analyzer screen as shown in Figure 4-3.

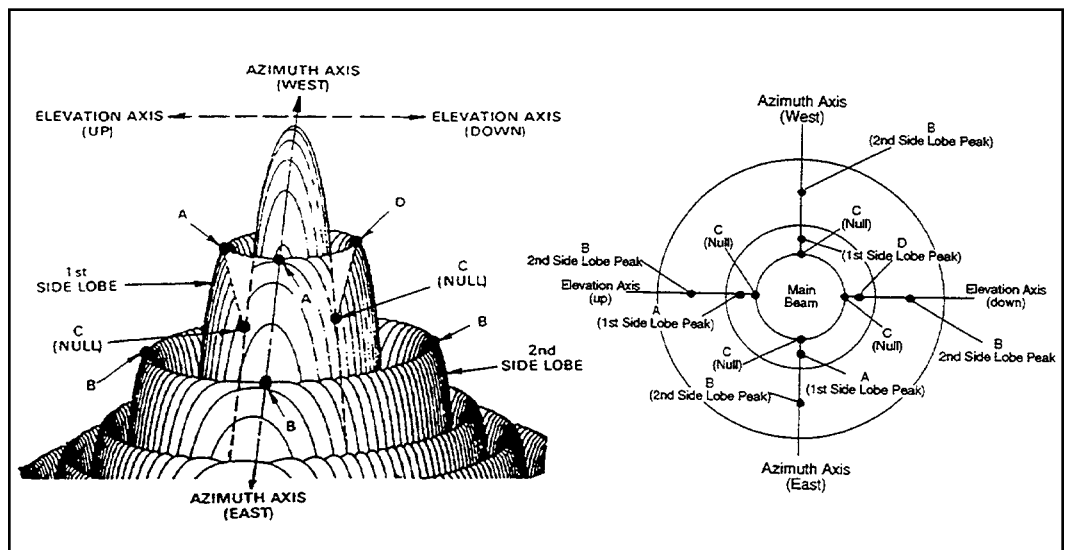


Figure 4-3: Antenna Radiation Pattern Topographical Diagram with Plan View

Step 5

If the signal amplitude diminishes and does not increase (position B) to the level noted when the antenna was peaked on the side lobe, the antenna is moving away from the main beam; reverse the direction of the antenna movement.

From the original side lobe position (position A), the signal amplitude should now diminish to a null point at position C (minimum amplitude showing only signal noise) and then symmetrically increase again to the same level at position D as noted at position A. At the null point (position C), the antenna is aligned with the alternate (elevation) axis. If the antenna was peaked on a side lobe in azimuth, it was appropriately aligned with the elevation axis; proceed with step 6. If the antenna was peaked on a side lobe in elevation, it was appropriately aligned with the azimuth axis; proceed with step 6 moving the antenna in azimuth rather than elevation.

Step 6

Move the antenna in elevation while observing the spectrum analyzer screen. If the signal amplitude increases, decreases and then increases again but to a lesser value, the antenna is moving in the wrong direction; reverse the direction of the antenna movement. From the original null point, the signal level should increase and decrease alternately, but with increasing amplitude until the transponder signal increases to a level of at least 30 dB at which time the main beam. Continue to manually peak the signal to a maximum level using the azimuth and elevation adjustments.

Step 7

If the antenna is aligned in azimuth and elevation (signal maximized) and 24 transponder signals (12 horizontal and 12 vertical) are noted, the polarization adjustment is set incorrectly and must be modified. If 12 transponder signals are noted, they may or may not be the properly polarized signals. Therefore 24 transponder signals must be visually noted in order to determine the proper polarization setting.

Step 8

Rotate the feed assembly clockwise until 24 transponder signals are noted and of approximately equal amplitude.

NOTE: It is more accurate and visually easier to minimize the alternate set of transponder signals rather than maximizing the transponder of interest.

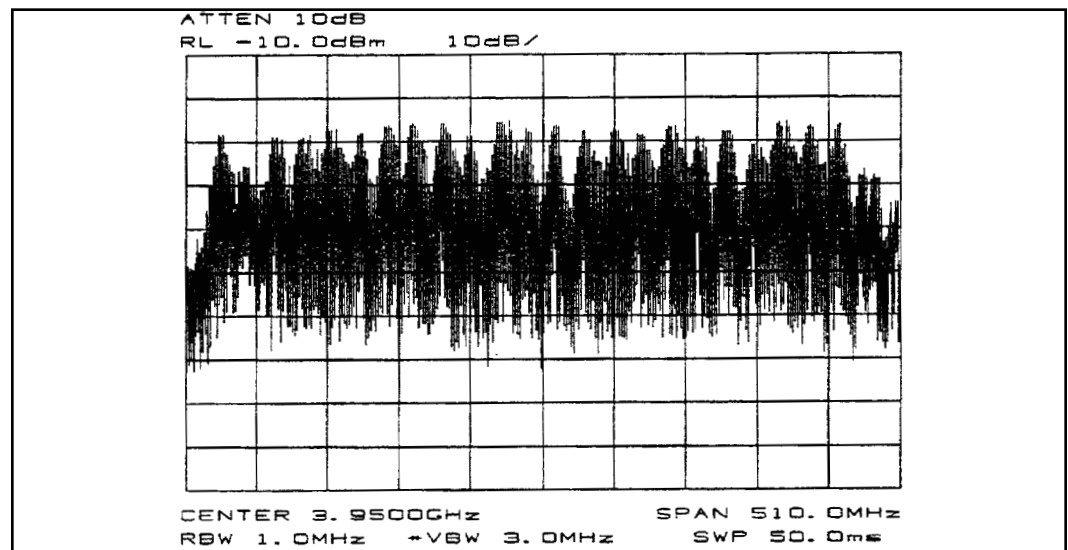


Figure 4-4: Polarization at 45 degrees from Optimum Setting

Step 9

With all 24 transponder signals of approximately equal amplitude appearing on the spectrum analyzer screen determine the specific antenna system and satellite parameters. Rotate the feed assembly as required until the appropriate (odd or even) transponder signals are maximized.

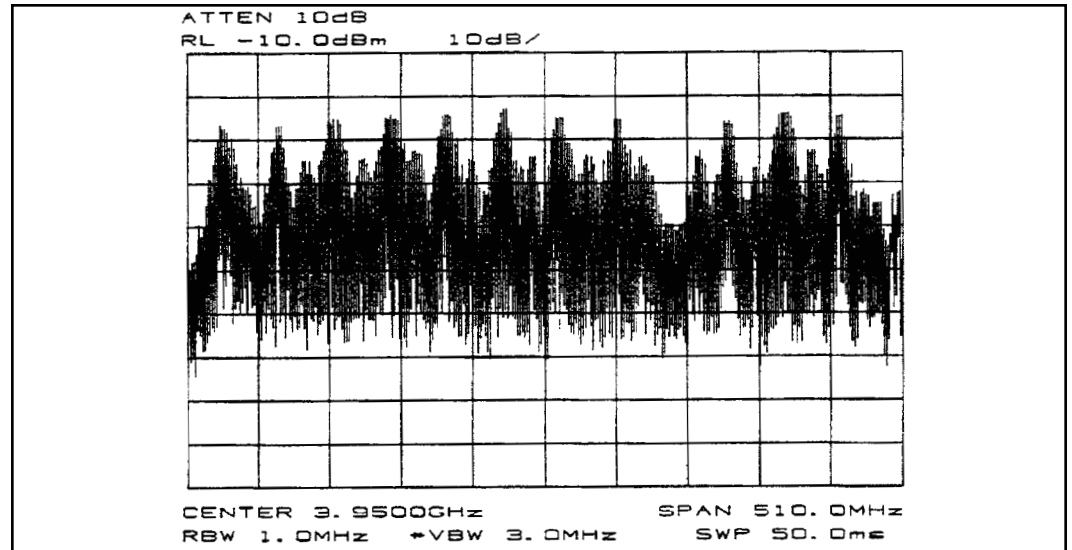


Figure 4-5: Maximizing Odd Transponders

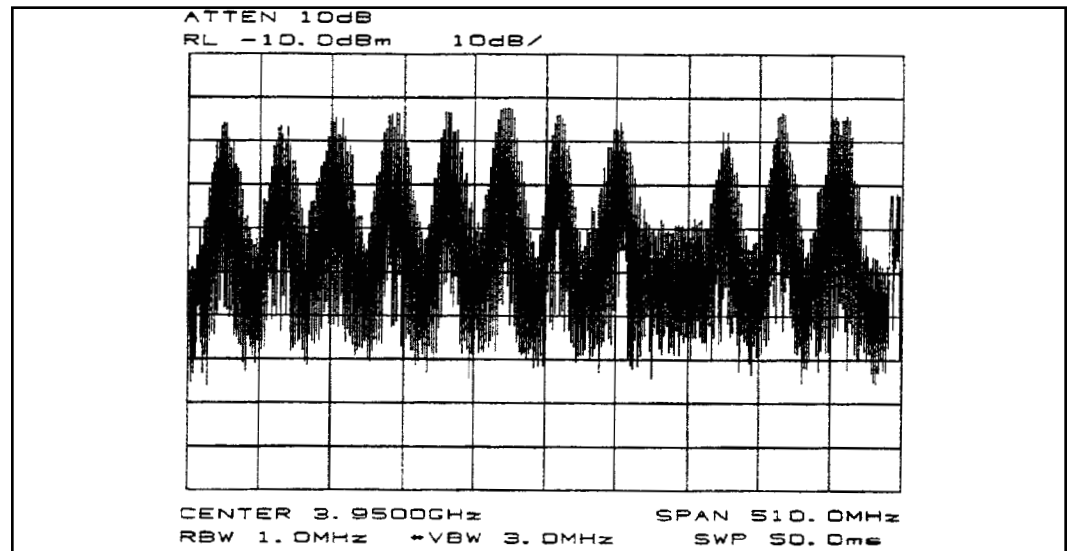


Figure 4-6: Optimum Polarization Setting

Subreflector Adjustment

After the satellite has been acquired and testing has taken place with the spectrum analyzer, the subreflector may need to be adjusted to maximize optimum performance of your antenna. The following procedures should be followed if a subreflector adjustment is required to maximize optimum performance.

NOTE: All INTELSAT Type Approved antennas do not require subreflector adjustment.

Before proceeding, azimuth and elevation patterns should be conducted to determine the adjustments that need to be made. The goal is to achieve a high peak on the main lobe and even distances between the main lobe and sidelobes as shown in Figure 4-6.

NOTE: No adjustments should be made in the receive band.

If your pattern dictates a need to adjust the azimuth angle(the left sidelobe requires adjustment), the west side of the subreflector should be adjusted outward by loosening the screws on the subreflector and adjusting the left side outward. An easy way to remember this adjustment feature is through the acronym WOLD (West Out Left Down).

If your pattern dictates a need to adjust the elevation angle(the right sidelobe requires adjustment), the bottom side of the subreflector should be adjusted downward by loosening the screws between the subreflector and the struts and adjusting the bottom side of the subreflector downward. An easy way to remember this adjustment is through the acronym BOLD (Bold Out Left Down).

Each of these adjustments should be repeated until each sidelobe is of equal distance from the peak of the mainlobe.

After the BOLD and WOLD adjustments have been made, it may be necessary to adjust the main lobe. The goal is to achieve a high null depth (distance between lower intersection of sidelobes and top of main lobe) as shown in Figure 4-6.

In order to adjust the main lobe pattern characteristics **ALL** subreflector adjustment screws should be adjusted at the same degree (Note: Because the azimuth and elevation adjustments have been set, it is very important that the null depth adjustment be carefully conducted. Be careful not to alter any previous adjustments that have been made to the subreflector. Follow the procedure listed below when adjusting the null depth of the main lobe.

C-band feeds - Adjustment screws are 3/4 X 10. Move 1 turn per 1dB of imbalance.

Ku-band feeds - Adjustment screws are 1/4 X 20. Move 1 turn per 1 dB of imbalance.

All adjustments should be continued until the desired pattern is achieved. Upon completion the antenna should be properly aligned with the satellite for maximum performance.

Preventive Maintenance

Overview

This section contains periodic preventive maintenance instructions for the 5.6-Meter Earth Station Antenna. Included in this section are inspection and preventive maintenance procedures including cleaning and lubrication, painting, and an operational voltage/current checkout procedure deemed within the capabilities of the average station technician. Refer to applicable vendor manuals for any repair procedures not included in this section yet designated as capable of being performed in the “field” rather than requiring specialized facilities, tools, and/or test equipment as well as technically trained personnel.

An operational checkout procedure provides an accurate indication of the overall earth station performance and should be performed at intervals of approximately three months. This procedure is essentially performed during the various modes of normal operation of the earth station. In addition, the operational checkout procedure should be performed after any repairs or adjustments have been made, or whenever the earth station is suspected of degraded operation. If any discrepancy in performance exists and the condition cannot be readily remedied to return the earth station to a proper operating condition, the appropriate troubleshooting procedures should be referenced to locate the fault. After the trouble is determined and the repairs affected, a final operational checkout procedure should be performed to verify that all discrepancies have been corrected.

The following paragraphs describe the inspection and preventive maintenance procedures for the earth station. These instructions include general cleaning and inspection, the preservation of metal parts and lubrication. Periodic replacement of assemblies or components as a preventive measure is not required. Malfunctions of the earth station can be traced to components, assemblies, and parts through the use of applicable troubleshooting procedures.

General Cleaning

To prevent the excessive accumulation of dust and dirt as well as the removal of such contaminants, thoroughly clean the equipment whenever visually inspecting the earth station components. No special cleaning procedures are required. However, a thorough cleaning in accordance with the following procedures is required to assure continued trouble-free operation.

Electrical Parts

Minor cleaning, such as the removal of dust and loose foreign particles can be accomplished by one of the following:

- Vacuuming
- Using a soft brush or lint-free cloth
- Blowing out the dust and dirt with low pressure (5 to 25 psi), dry compressed air

When using air to blow off the contaminants, either avoid or be careful when directing the air stream on delicate parts. To remove imbedded dirt, grease, or oil from electrical parts; use a 50 percent solution of isopropyl (rubbing) alcohol and apply with a soft bristle brush. It may be necessary to brush some parts vigorously with a stiff bristle brush to remove imbedded and hardened dirt particles. If possible, avoid excessive use of cleaning solvent on electrical insulation. After cleaning, allow the cleaned parts to dry for 10 to 15 minutes before placing the equipment into operation.

Clean mechanical parts by first removing dust, dirt, and other loose contaminants with a

Mechanical Parts

scraper, stiff brush (bristle or wire in the case of rust or other corrosion), or cloth or compressed air at 25 to 40 psi. Any accumulated imbedded dirt, corrosion, grease, or oil deposits that require further cleaning may be removed with a bristle or wire brush and a cleaning solvent such as trichlorethylene or equal. After cleaning, allow cleaned parts to dry for 10 to 15 minutes before placing the equipment into operation.

Inspection

The frequency of inspection is contingent upon the user's individual standards and the operational environment in which the earth station is located. However, a visual inspection of the earth station components should be performed at least semi-annually. Where there are no established wear limits, perform a visual inspection to locate worn or damaged parts which could cause improper functioning of the earth station. It is recommended that the mechanical and electrical inspection be performed on the assembled or partially disassembled equipment to determine the extent of disassembly required prior to completely disassembling a suspected malfunctioning component or module. In the absence of any special inspection requirements, operational tests are the most effective means in isolating parts and assemblies requiring further inspection. Any condition noted during inspection that may preclude continued proper operation of the earth station prior to the next scheduled inspection should be noted. The discrepant condition should be corrected (repaired or replaced) immediately or at the conclusion of the inspection procedure.

Local Control/Motor Drive Controller

Inspection of the local control/motor drive controller conforms generally to standard visual inspection procedures on electromechanical equipment. In addition to these standard procedures, perform the following checks and visual inspections for the specific conditions noted:

- Check the front panel for illegible and indistinct panel markings.
- Check the three position selector switches (Azimuth Off/Slow/Fast, Elevation-Off/Slow/Fast, and Polarization-CCW/Off/CW) for smooth operation, audible clicking at each actuation (left to center and return) and spring return from right to center. For each of the two position selector switches (Azimuth-East/West, Elevation-Up/Down, and Local/Remote) check for smooth operation and audible clicking at each actuation.
- Inspect all wiring and cables for discolorization and burned insulation, dirt, breaks, security of connection and other signs of deterioration. Examine connections for dirt, flux, corrosion, and mechanical defects. Check for loose or broken lacing and cut, brittle, abraided, frayed, or cracked insulation.
- Examine connectors for corrosion, broken inserts and stripped threads. Check connector shells for distortion and dents, and contact pins for bends, misalignment, or other deformities. Check connector inserts for carbon tracking indicating arc-over.
- Check all electrical components for dirt, cracks, chips, breaks, discoloration and other signs of deterioration and damage. A discolored, blistered, or burnt condition is evidence of overload. Measure actual value of suspect electrical components and compare against specified value.
- Check transformer for an excessive wax deposit on the surface, discoloration, or a

pungent odor indicative of burning vanish denoting overheating or a total breakdown.

- Check all terminal boards for broken or missing terminals and stripped threads. Check tightness of lead attaching hardware.
- Check each starter for a make-after-break provision through the release of one pushbutton as the alternate pushbutton is pressed.
- Check the relays and contactors for free operation of the armatures and contact condition. The contacts are usable even though pitted, burned, worn, or discolored. The contacts or contactor or relay assembly should be replaced only when the contact material has been completely torn away or worn off.
- Visually inspect all mechanical parts for freedom of operation without binding or interference. Check for security of all hardware and stripped or otherwise damaged threads. Check metallic parts for corrosion, dents, distortion, and other deformation.
- Check for evidence of water inside the enclosure. If any water is in evidence, check that all seals are intact and if not, use a coating of RTV-108 (silicone rubber sealant) to seal any exposed electrical fitting, bolt hole, or other possible water entry to the enclosed electrical components in order to maintain a waterproof condition.
- Check or change humidity absorber.

Antenna

Inspection of the antenna conforms generally to standard visual inspection procedures performed on electromechanical equipment. In addition to these procedures, perform the following checks and visual inspections for the specific conditions noted:

- Inspect all wiring and cables particularly the network to enclosure and enclosure to mount interfaces for discoloration and burned insulation, moisture entry, corrosion, dirt, breaks, security of connection, and other signs of deterioration. Examine connections for dirt, corrosion, and mechanical defects. Check for loose or broken lacing and cut, abraided, frayed, brittle, and cracked insulation.
- Examine connectors for corrosion, broken inserts and stripped threads. Check connector shells for distortion and dents, and contact pins for bends, misalignment or other deformities. Check connector inserts for cracks, and carbon tracking, burns or charring indicating arc-over.
- Check all electrical component for dirt, cracks, chips, breaks, discoloration, and other signs of deterioration and damage. A discolored, blistered, or burnt condition is evidence of overload.
- Operate the azimuth and elevation drives as well as the feed rotation in both the plus

and minus direction from the local control/motor drive controller at least once every three months during antenna down time. Check the mechanical limit switches provided at the end points stop antenna and feed movement, and limit travel to prevent structural interference and damage. Check the mechanical limit switches for corrosion and water entry and the arm on each feed limit switch for free movement without binding. Be certain both feed rotation limit switch arms are not distorted and ride centrally on the actuating cam to open their corresponding limit switch.

- Inspect the azimuth and elevation jackscrew boots for security of attachment at both ends, for abrasion, tears, cuts, brittleness and other damage that may expose the jackscrew to the environment (water, dust, etc.). Minor repairs can be made with RTV-108 silicone rubber sealant.
- Visually inspect the feed window for dirt and the feed, feed supports, feed window, and reflector for distortion, foreign object damage and environmental deterioration due to ice and snow, dust, rain, hail, and high winds, etc. which may cause electrical component and/or structural deformation.
- Check the cable attachment to the resolvers and to the LNA or LNB's and enclosure mount interface for security, the cable routing for secure hanger attachment and the cable insulation for cuts, cracking, abrasion, and other deterioration. Check the LNA or LNB's and the resolvers for a secure mechanical attachment. Ensure proper torquing of polarization drive gear box setscrews and appropriate tensioning of corresponding drive chain assembly, if applicable.
- Check (if applicable) that the drain holes in the bottom of the enclosure are not obstructed and there is no evidence of water accumulation. Check the enclosure doors for proper closure and that the door seals are intact, not torn, abraded or otherwise damaged. Check that all other seals are intact and if not, use a coating of RTV-108 (silicone rubber sealant) to seal any exposed electrical fitting, bolt hold, or other possible water entry to electrical components in order to maintain a weatherproof condition. If the enclosure is provided with a vent fan, check for free operation of the fan blade. The fan bearings are permanently lubricated; any binding, abnormal noise or vibration necessitates replacement of the fan assembly. Check and replace the fan filter element if it appears dirty or obstructed with dust.
- Check for the appearance of surface lubricants that will cause the accumulation of dirt and grime. Clean off all excess surface lubricants with a cloth and if required, a cloth dampened not wetted with trichlorethylene, or equal.
- Visually inspect all mechanical parts for freedom of operation with no misalignment, binding or interference. Check all cabling for sufficient slack to prevent cable strain as well as adequate restraint to prevent abrasion or chaffing during antenna and feed movement.
- Check security of antenna mounting and interconnecting assembly hardware. Be cer-

Drive System Voltage and Current Checks

tain all electrical grounding connections (including cross-axis grounding straps) are intact and secure, not corroded or broken. Thoroughly clean any noticeable corroded portions of grounding cables, unplated portion of universal terminals and corresponding mounting surfaces using a wire brush. Replace rather than tighten any loose A-325 structural hardware. The hardware distorts at initial installation and once loosened will not maintain the required high strength friction connection. All other assembly and installation hardware should be tightened to its original torqued condition. When installing new structural hardware, do not use a wrench with a lever arm longer than two feet.

- Examine painted aluminum and galvanized surfaces and touch-up where required.

At the conclusion of the installation procedure prior to turning the system over to the station facility, an installation acceptance check off sheet was prepared and duly signed off if installed by Andrew crew. Part of this check off included voltage readings retaken to determine if proper voltage was available. Current readings were also taken as a reference for future comparison to serve as a troubleshooting aid in determining possible equipment degradation and shortened life. Any current reading taken during the following procedure that varies by more than five percent from the pre-established reference values necessitates troubleshooting the particular system involved to determine the cause and required corrective action.

Step 1

Approximately every three months and during a period of down time, disconnect as applicable the RF transmitter and all power supplies. The main disconnect switch in the main load center box at the antenna site must be in the ON position and the LOCAL/REMOTE switch in the local control motor drive controller must be in the LOCAL position.

Step 2

Open the outer local control/motor drive controller door at the antenna site to gain access to the conductors supplying power to the azimuth, elevation, and polarization drive motors.

NOTE: During the following procedures, the antenna drives (azimuth, elevation, and polarization) will be powered to rotate the antenna and feed in both directions of travel. Check that this condition can be tolerated from a safety as well as an operational standpoint, and that the electrical limits are not reached before the testing is concluded. Reaching an electrical limit before concluding a test necessitates rotating the antenna or feed in the opposite direction a sufficient distance to permit retesting in the desired direction.

Step 3

Turn the FEED CCW/OFF/CW switch to either the CW or CCW position and while the feed is rotating, carefully use a clamp on ammeter in accordance with the ammeter manufacturer's instructions to take current readings off each of the three conductors (phases) connected to the load side of the polarization motor circuit breaker. Record the current draw in the equipment log and compare the readings to the reference values entered in the installation/acceptance check off. If the readings differ by more than five percent, refer to appropriate troubleshooting information and perform applicable corrective action. Then take voltage readings off each of the three conductors; the readings should agree with each other within two percent. Turn the FEED CCW/OFF/CW switch to OFF. Repeat preceding step (3) with the FEED CCW/OFF/CW switch in the alternate operating position.

Step 4

Turn the AZIMUTH EAST/WEST switch to either position and while the antenna is rotating, carefully use a clamp on ammeter in accordance with the ammeter manufacturer's instructions to take current readings off each of the three conductors (phases) connected to the load side of the azimuth drive motor circuit breaker. Record the current draw in the equipment log and compare the readings to the reference values entered in the installation/acceptance check off. If the readings differ by more than five percent, refer to appropriate troubleshooting information and perform applicable corrective action. Then take voltage readings off each of the three conductors; the readings should agree with each other—within two percent. Turn the AZIMUTH switch to OFF.

Step 5

Repeat steps (5) with the AZIMUTH EAST/WEST switch in the alternate operating position.

Step 6

Turn the ELEVATION DOWN/UP switch to either position and while the antenna is rotating, carefully use a clamp on ammeter in accordance with the ammeter manufacturer's instructions to take current readings off each of the three conductors (phases) connected to the load side of the elevation drive motor circuit breaker. Record the current draw in the equipment log and compare the readings to the reference values entered in the installation/acceptance check off. If the readings differ by more than five percent, refer to appropriate troubleshooting information and perform applicable corrective action. Then take voltage readings off each of the three conductors; the readings should agree with each other within two percent. Turn the ELEVATION switch to OFF.

Step 7

Repeat steps (7) with the ELEVATION DOWN/UP switch in the alternate operating position.

Step 8

If all voltage and current readings are within tolerance, close the local control/motor drive controller inner door and place the LOCAL/REMOTE switch in the REMOTE position to return antenna control to the studio. Then close and lock the outer local control/motor drive controller door.

Step 9

When preserving the component parts, refer to the following paragraphs in this section.

Preservation of Component Parts

Aluminum Parts

Remove all loose paint and corrosion by scraping, wire brushing, or using steel wool. If using steel wool near the feed window, make sure that none remains on the feed horn window. Edges of existing paint can be blended with the metal surface by using a fine grit sandpaper. Wipe the surface to be painted with a soft rag dampened in trichlorethylene, lacquer thinner or equal. Be certain to remove all loose paint, corrosion, imbedded dirt, grease, and oil deposits or the paint will not adhere to the surface. Lacquer thinner will dissolve paint if applied heavily and rubbed vigorously. The reflector may be washed with plain water if necessary. Do not use bleach, soap solutions, or kerosene as it is difficult to remove the residue. Allow the cleaned surface to dry thoroughly before priming.

Prime the cleaned surface by applying zinc chromate primer. The primer can be applied with a brush, roller, or pressurized spray. If necessary, thin the primer with lacquer thinner to the proper consistency. Feather primer onto adjacent painted surfaces;. Allow primer to thoroughly dry before applying the finish paint coat.

Paint all RF surfaces, such as the inside of the main reflector and subreflector with a high-reflectance white paint. This type of paint disperses light rays, reducing the focusing effect of the sun's radiation, thereby reducing heat build-up caused by the focused sun's rays on the feed system. Rear surfaces of the reflector and subreflector may be painted with a flat white enamel paint. The paint can be applied with a brush, roller, or pressurized spray. If necessary, thin the paint with the appropriate thinner to the proper consistency. Thoroughly paint over the primed surfaces and blend with the existing painted surface.

Galvanized Surfaces

Remove all loose paint and corrosion by scraping, wire brushing, or using steel wool. Edges of existing paint can be blended with the metal surface by using a fine grit sandpaper. Wipe the surface to be painted with a soft rag dampened in trichlorethylene, lacquer thinner, or equal. Be certain to remove all loose paint, corrosion, imbedded dirt, grease, and oil deposits or the paint will not adhere to the surface. Lacquer thinner will dissolve paint if applied heavily and rubbed vigorously. Do not use bleach, soap solutions, or kerosene as it is difficult to remove the residue. Allow the clean surface to dry thoroughly before painting.

Paint the cleaned surface with a zinc-rich paint. The paint can be applied with a brush, roller, or pressurized spray. If necessary, thin the paint with the appropriate thinner to the proper consistency. Thoroughly paint over the cleaned surface and blend with the existing painted surface.

Lubrication

For long life and trouble-free operation be certain not to extend the lubrication schedule beyond the frequency recommended in the Lubrication Chart. The frequency should be shortened if the antenna is subjected to an adverse environment (e.g., high temperature, extended periods of rainfall, high humidity, dust storms, etc). Any component or part should be immediately be lubricated if during inspection or operation, rough, jarring, or intermittent motion is noted, or if squeaky or other unusual noises are heard. Lubrication is required on all metal-to-metal rolling or sliding parts. Use the lubricants recommended. Do not over lubricate. Over lubrication can often be as damaging as under lubrication. Prior to the application of lubricant to any parts, use a clean cloth and/or bristle brush and remove any old lubricant to prevent an excessive build-up. Remove indicated access plugs from square tube weldment and apply lubricant to panning frame

tube assembly and corresponding thrust pads. Securely replace access plugs in square tube weldment. Be certain to remove any protective caps and clean off each lubrication fitting prior to injecting fresh grease. The elevation and azimuth jackscrew assemblies are equipped with a grease fitting and corresponding pipe plug on opposite sides of the jack housing. Remove the appropriate pipe plug and fill with grease until lubricant seeps from the pipe plug opening. Replace and securely tighten pipe plug.

The following is a list of the lubricant characteristics:

- Mobil Temp SHC32 A non-soap hydrocarbon fluid type grease. Operating temperature range is -65 degrees to 350+ degrees Fahrenheit (-54 degrees to 177+ degrees Celsius).
- Mobil SHC624 A low temperature synthetic oil for worm gear reducers. Operating temperature range is -40 degrees to 125+ degrees Fahrenheit (-40 degrees to 52+ degrees Celsius).
- Moly Grease A grease lubricant containing molybdenum disulfide. Operating temperature range is -85 degrees to 300+ degrees Fahrenheit (-29 degrees to 149+ degrees Celsius).

Periodically inspect lifting screws on jackscrew assemblies to ensure adequate lubrication. Loosen Jackscrew boot clamps to expose the lifting screw assembly. Fully extend jackscrew assembly being careful not to exceed preset mechanical limits. Brush thin coating of Mobil SHC32 grease on exposed lifting screw. Replace boot and attach corresponding boot clamps. If lifting screw is rusty, remove existing lubricant with solvent and wire brush rusted area. Rinse with solvent and apply fresh grease.

Periodically inspect and remove dust or dirt deposits from the motor housings to avoid hindering the heat exchange with the ambient air. Slight dirt accumulation on the air vent screw through splash oil cannot be avoided; however, keep vent screw clean to ensure proper pressure compensation.

Lube points 2, 3, 7 and 8, shown in the Lubrication Chart, require removal of the indicated drain plugs and collecting/measuring the amount of SHC624 drain oil using measuring cup. The specified amount of oil must be added to the gear motor/housing (after installing the drain plug) via the fill/vent plug opening using supplied funnel. Addition of the oil requires use of an appropriate filling utensil. Use of a modified level stick will not correctly gauge the appropriate amount of oil in the gear housings.

Lube Point	Parts to be Lubricated	Action	Frequency	Service Type	Lube Type	Quantity /Points	Andrew Number
------------	------------------------	--------	-----------	--------------	-----------	------------------	---------------

Jackscrews/Motors

Gear Motor/Housing Fill Drain Requirements

Lubrication Chart

Lube Point No.	Components to be Lubricated	Frequency (Months)				Type of Service	Type of Lube	No. of Lube Points or Quantity
		1	3	6	12			
1.	Elevation Jackscrew Housing		X			Pressure Fitting	SHC32	1
2. ¹	Elevation Jackscrew Gear Housing Fill and Drain			I*	C**	Pipe Plugs	SHC624	10 Oz
3. ²	Elevation Drive Intermediate Gearbox Fill and Drain	I*	C**			Pipe Plugs	SHC624	34 Oz.
4.	Elevation Jackscrew Pivot Pin, upper		X			Pressure Fitting	SHC32	1
5.	Azimuth Jackscrew Pivot Pin, front		X			Pressure Fitting	SHC32	1
6.	Azimuth Jackscrew Housing		X			Pressure Fitting	SHC32	2
7. ¹	Azimuth Jackscrew Gear Housing Fill and Drain	I*	C**			Pipe Plugs	SHC624	4 Oz.
8. ²	Azimuth Drive Intermediate Gearbox Fill and Drain			I*	C**	Pipe Plugs	SHC624	34 Oz.
9.	Polarization Drive Gear			X		Brush	SHC32	Minimum Surface Coverage
10.	Feed Rotation Worm Gear Pillow Blocks			X		Pressure Fitting	SHC32	2

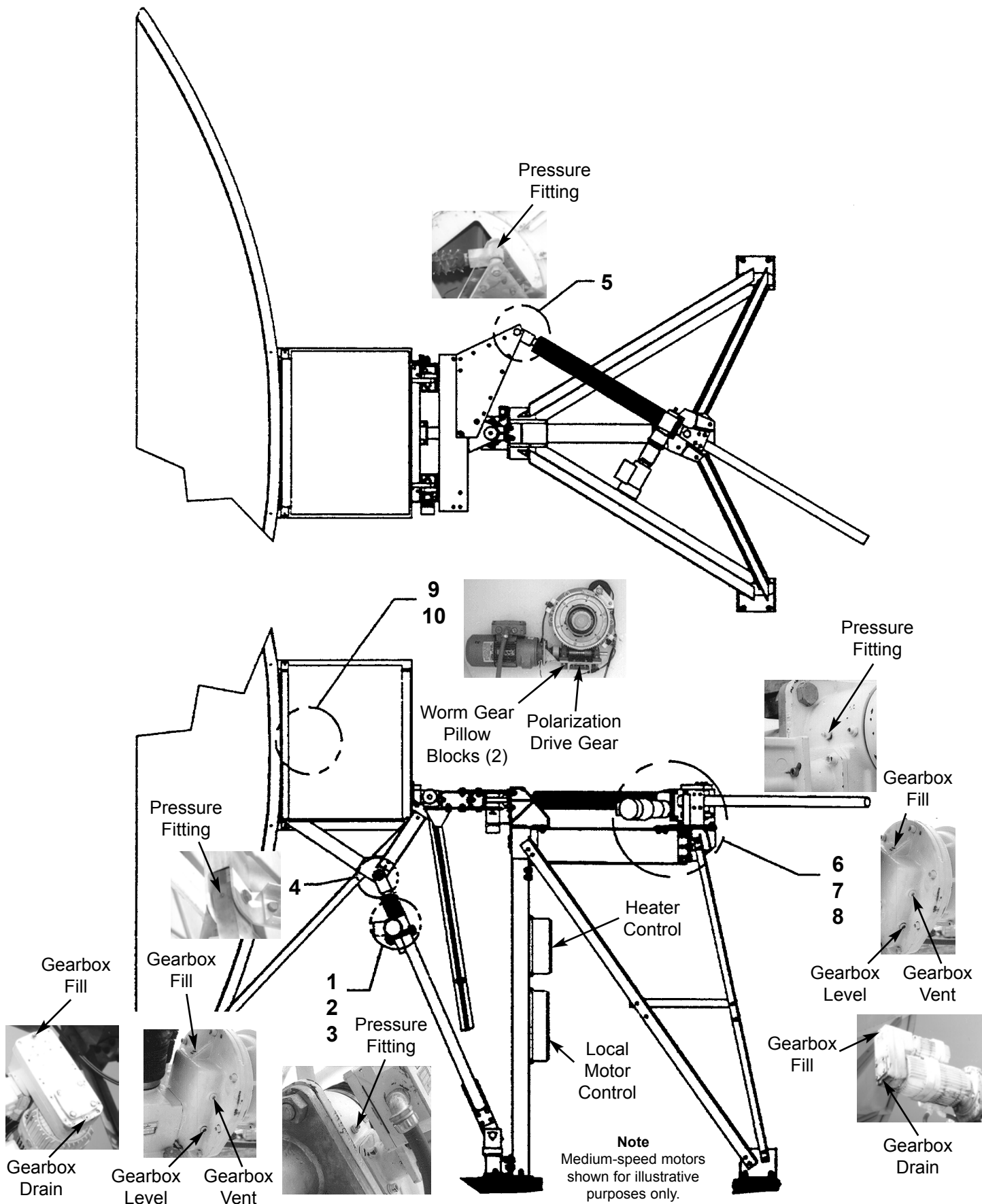
X = Lubricate I = Inspect C = Change

* Inspection requires checking for visible signs of oil leakage, draining replacing and adding oil to ensure appropriate oil level requirements. Excessively dirty oil will require fresh oil replacement. If oil leakage is found to be excessive, refer to appropriate troubleshooting information and perform applicable corrective action. Periodic inspection procedures can be less frequent after first or second scheduled inspections.

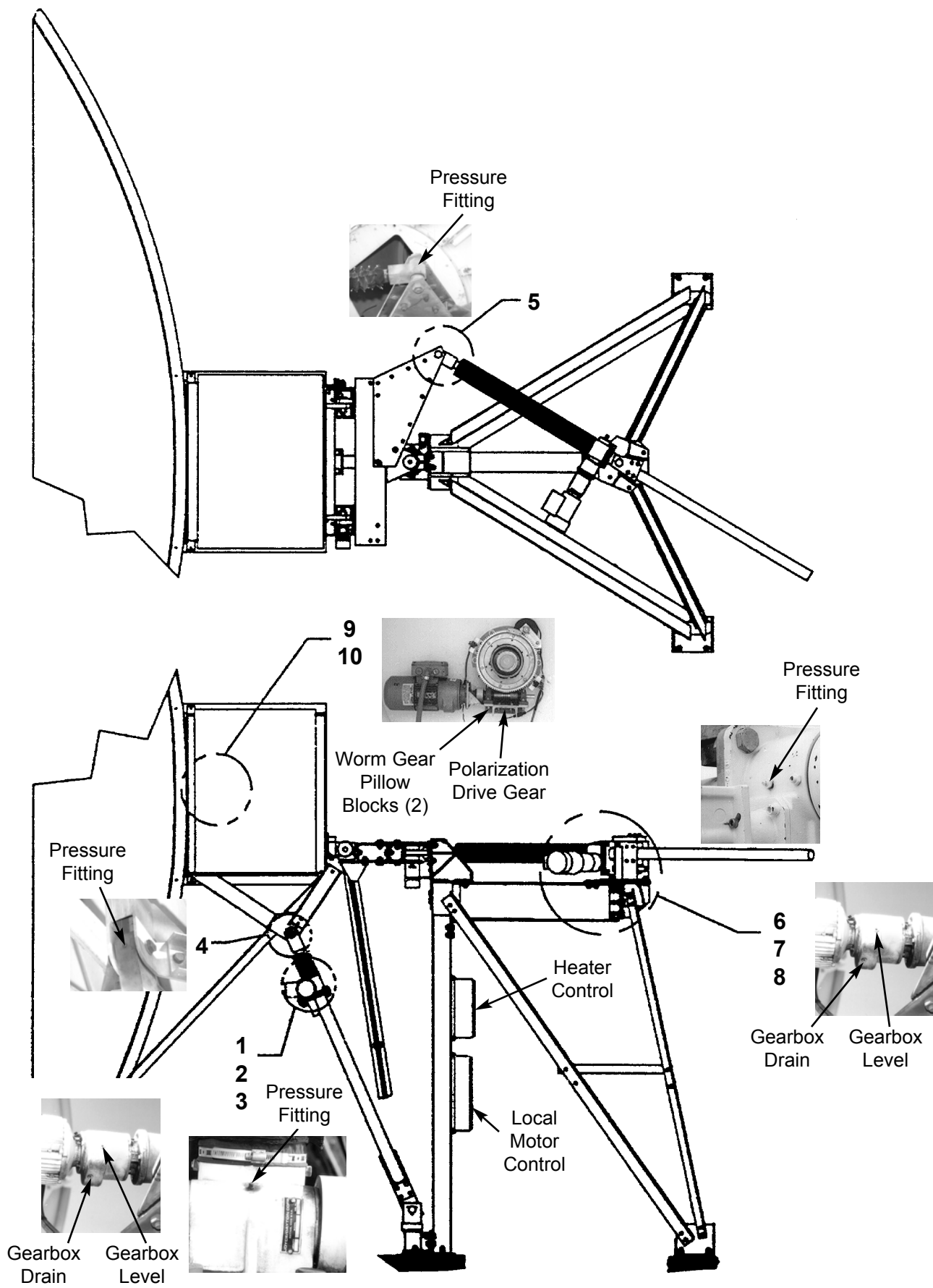
** Initial oil change requirements include flushing gear boxes with a standard cleaning agent.

1 Type 'HS' and 'STHS' drives only. 10 oz. required for gearbox on Type 'MS' drives.

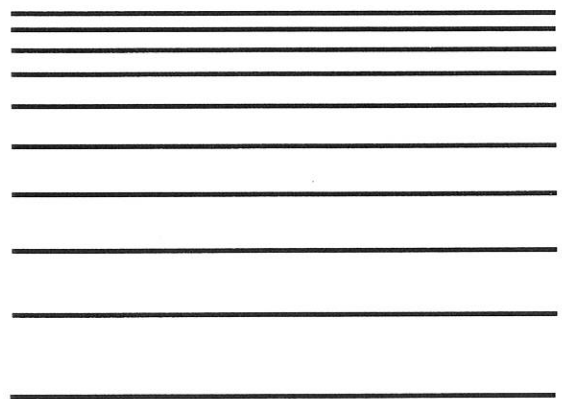
2 Type 'HS' and 'STHS' drives only.



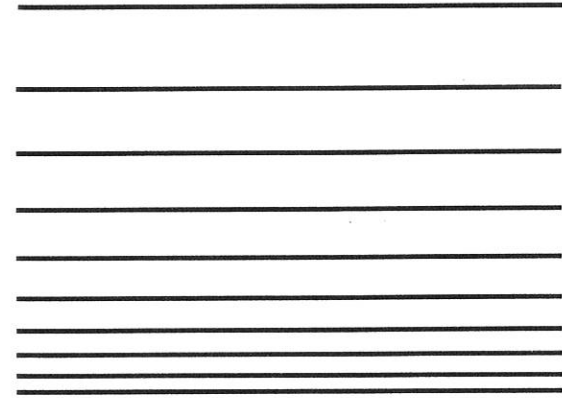
High-Speed Antenna Lubrication Points



Medium-Speed Antenna Lubrication Points



**OPERATIONS AND
MAINTENANCE MANUAL**



237232
5.6M Antenna

SH 1

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally in the field of ANDREW shall be confidential except to any extent to which it is established to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used as the basis for the manufacture or sale of apparatus without written permission.

APPLICATION		REVISIONS				
NEXT ASSY	USED ON	MF	REV	DESCRIPTION	DATE	APPROVED
				REL TO PRODUCTION	28APR89	FFR
			A	REVISED SHTS 6-9. DCN D015.74(B)	29APR98	SJA JTP,SLI
			B	REVISED SHT 4. DCN D016.74(B)	11AUG98	SJA SLI BLA

209906-2
LUBRICATION KIT
MAINTENANCE
INSTRUCTIONS

REVISION
STATUS
OF
SHEET

REVISION	B	-	-	A	-	A	A	A	A
SHEET NO.	1	2	3	4	5	6	7	8	9

MATERIAL

FINISH

UNLESS OTHERWISE SPECIFIED

DRAWN	RWB	1FEB89
CHECKED	KGJ	27APR89
APPD ENGRG	RWS	27APR89
APPD ENGRG	RWK	27APR89
APPD MFG	----	----
APPD Q.C.		

TOLERANCES

PLACE DECIMALS \pm .1
PLACE DECIMALS \pm .03
PLACE DECIMALS \pm .010
ANGLE \pm 0.5°

ALL SURFACES

COMMERCIAL TOL
APPLY TO STOCK SIZES

SIMILAR TO

SUPERSEDES DWG OF



ANDREW CORPORATION
2701 Mayhill Road
Denton, Texas U.S.A. 76208

5.6/7.3/9.3M LUBRICATION
MAINTENANCE INSTRUCTIONS

SIZE A FSCM NO. 84147 DWG. NO. 239306

SCALE \times CAD FILE NO: ES05KX1A SHEET 1 of 9

PROD. GR 6114 DISTR A

GENERAL

READ THE INSTRUCTIONS THOROUGHLY BEFORE ASSEMBLY. FOLLOW THE SEQUENCES FOR PROPER ASSEMBLY AND OPERATION.



CAUTION:

THIS WARNING INDICATES THAT FAILURE TO FOLLOW THE PROPER PROCEDURE AT THIS POINT COULD RESULT IN DAMAGE TO THE ANTENNA AND/OR OTHER PROPERTY AND POSSIBLE INJURY TO

PERSONNEL.

NOTICE

THIS INDICATES INFORMATION THAT SHOULD BE READ BEFORE PROCEEDING.

UNPACKING

CAREFULLY REMOVE ALL PARTS FROM SHIPPING BOXES. THE MATERIAL COMPLEMENT SHOULD CORRESPOND WITH THE PARTS LIST. ANY DAMAGE OR SHORTAGE WILL PREVENT SATISFACTORY ASSEMBLY, INSTALLATION, AND OPERATION OF THE ANTENNA.

NOTICE

'THE INSTALLATION, MAINTENANCE OR REMOVAL OF AN ANTENNA REQUIRES QUALIFIED, EXPERIENCED PERSONNEL. ANDREW INSTALLATION INSTRUCTIONS HAVE BEEN WRITTEN AND ILLUSTRATED FOR SUCH INSTALLATION PERSONNEL. ANTENNA SYSTEMS SHOULD BE INSPECTED ONCE A YEAR BY QUALIFIED PERSONNEL TO VERIFY PROPER INSTALLATION, MAINTENANCE AND CONDITION OF EQUIPMENT. ANDREW DISCLAIMS ANY LIABILITY OR RESPONSIBILITY FOR THE RESULTS OF IMPROPER OR UNSAFE INSTALLATION OR MAINTENANCE PRACTICES.'

SIZE
A

FSCM NO.
84147

239306

SCALE *X*

SHEET 2

CAD
FILE NO. **ES05KX2**



↓

TOOLS RECOMMENDED FOR PROPER INSTALLATION

<u>QTY</u>	<u>DESCRIPTION</u>
1	CARTRIDGE GREASE GUN
1	FUNNEL
1	MEASURING CUP (FILLING UTENSIL)
1	SLOTTED SCREWDRIVER Ø1/4" BLADE
1	ADJUSTABLE WRENCH 8"
1	WIRE BRUSH
1	ALLEN WRENCH SET

PARTS LIST

209906-2 LUBRICATION KIT

<u>QTY</u>	<u>IT. NO.</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
3	1	47497	LUBRICANT
2	2	49208	GREASE
4	3	44799	GREASE FITTING



CAUTION:

WHEN THE ANTENNA IS TRANSMITTING, SEVERE EYE INJURY OR INJURY TO OTHER PARTS OF THE BODY CAN RESULT FROM EXPOSURE TO RADIO FREQUENCY ENERGY. THE ANTENNA MUST BE TURNED OFF BEFORE ENTERING THE AREA IN FRONT OF THE REFLECTOR AND NEAR FEED.

SIZE	FSCM NO.	239306
A	84147	
SCALE	<i>X</i>	SHEET 3

CAD FILE NO. **ES05KX3**



1.1 LUBRICATION

FOR LONG LIFE AND TROUBLE-FREE OPERATION, BE CERTAIN NOT TO EXTEND THE LUBRICATION SCHEDULE BEYOND THE FREQUENCY RECOMMENDED IN TABLE 1 AND TABLE 2, LUBRICATION CHART. THE FREQUENCY SHOULD BE SHORTENED IF THE ANTENNA IS SUBJECTED TO EXTENSIVE USE OR AN ADVERSE ENVIRONMENT (e.g. HIGH TEMPERATURE, EXTENDED PERIODS OF RAINFALL, HIGH HUMIDITY, DUST STORMS, ETC.). ANY COMPONENT OR PART SHOULD IMMEDIATELY BE LUBRICATED IF DURING INSPECTION OR OPERATION, ROUGH, JARRING, OR INTERMITTENT MOTION IS NOTED, OR IF SQUEAKY OR OTHER UNUSUAL NOISES ARE HEARD. LUBRICATION IS REQUIRED ON ALL METAL-TO-METAL ROLLING OR SLIDING PARTS. USE THE LUBRICANTS RECOMMENDED IN PARAGRAPH 1.3. DO NOT OVER-LUBRICATE. OVER-LUBRICATION CAN OFTEN BE AS DAMAGING AS UNDER-LUBRICATION. PRIOR TO THE APPLICATION OF LUBRICANT TO ANY PARTS, USE A CLEAN CLOTH AND/OR BRISTLE BRUSH AND REMOVE ANY OLD LUBRICANT TO PREVENT AN EXCESSIVE BUILDUP. BE CERTAIN TO REMOVE ANY PROTECTIVE CAPS AND CLEAN OFF EACH LUBRICATION FITTING PRIOR TO INJECTING FRESH GREASE. WHEN USING A GREASE GUN ON LUBRICATION FITTINGS, INJECT GREASE UNTIL IT EXTRUDES FROM BOTH SIDES OF THE JOINT. EACH JACKSCREW ASSEMBLY IS EQUIPPED WITH A GREASE FITTING. DEPENDING ON MAKE & MODEL, EACH JACKSCREW ASSEMBLY MAY ALSO HAVE A CORRESPONDING PIPE PLUG OPPOSITE THE GREASE FITTING. IF A CORRESPONDING PIPE PLUG IS PRESENT, REMOVE THE APPROPRIATE PIPE PLUG AND FILL UNIT WITH GREASE UNTIL LUBRICANT SEEPS FROM THE PIPE PLUG OPENING. REPLACE AND SECURELY TIGHTEN PIPE PLUG. IF NO CORRESPONDING PIPE PLUG IS PRESENT, ADD 1/4 DUNCE OF GREASE (ABOUT 8 PUMPS WITH A HAND GREASE GUN) EACH LUBRICATION INTERVAL.

1.2 JACKSCREWS/MOTORS

- A: PERIODICALLY INSPECT LIFTING SCREWS ON JACKSCREW ASSEMBLIES TO ENSURE ADEQUATE LUBRICATION. LOOSEN JACKSCREW BOOT CLAMPS TO EXPOSE THE LIFTING SCREW ASSEMBLY. FULLY EXTEND JACKSCREW ASSEMBLY BEING CAREFUL NOT TO EXCEED PRESET MECHANICAL LIMITS. BRUSH THIN COATING OF MOBIL SHC32 GREASE ON EXPOSED LIFTING SCREW. REPLACE BOOT AND ATTACH CORRESPONDING BOOT CLAMPS. IF LIFTING SCREW IS RUSTY, REMOVE EXISTING LUBRICANT WITH SOLVENT AND WIRE BRUSH RUSTED AREA. RINSE WITH SOLVENT AND APPLY FRESH GREASE.
- B: PERIODICALLY INSPECT AND REMOVE DUST OR DIRT DEPOSITS FROM THE MOTOR HOUSINGS TO AVOID HINDERING THE HEAT EXCHANGE WITH THE AMBIENT AIR. ON PRIMARY ANTENNAS WITH DUAL-MOTORS ON EACH AXIS, SLIGHT DIRT ACCUMULATION ON THE AIR VENT SCREW THROUGH SPLASH OIL CANNOT BE AVOIDED; HOWEVER, KEEP VENT SCREW CLEAN TO ENSURE PROPER PRESSURE COMPENSATION.

SIZE	FSCM NO.	239306
A	84147	
SCALE	<i>X</i>	SHEET 4

CAD
FILE NO. ES05KX4



1.3 LUBRICANT CHARACTERISTICS

- A: MOBIL TEMP SHC32 NON-SOAP HYDROCARBON FLUID TYPE GREASE. OPERATING TEMPERATURE RANGE IS -65 TO +350°F (-54 TO +177°C).
- B: MOBIL SHC624 LOW TEMPERATURE SYNTHETIC OIL FOR WORM GEAR REDUCERS. OPERATING TEMPERATURE RANGE IS -40 TO +125°F (-40 TO +52°C).

1.4 MOTOR GEARBOX/HOUSING FILL AND DRAIN REQUIREMENTS

- A: LUBE POINTS 4, 5, 12 AND 13 (TABLE 2) AND LUBE POINTS 4, 11, 15 AND 16 (TABLE 1) REQUIRE REMOVAL OF THE INDICATED DRAIN PLUGS AND COLLECTING/MEASURING THE AMOUNT OF SHC624 DRAIN OIL USING A MEASURING CUP. THE SPECIFIED AMOUNT OF OIL MUST BE ADDED TO THE GEARBOX/HOUSING (AFTER INSTALLING THE DRAIN PLUG) VIA THE FILL/VENT PLUG OPENING USING A FUNNEL. ADDITION OF THE OIL REQUIRES USE OF AN APPROPRIATE FILLING UTENSIL. USE OF A MODIFIED LEVEL STICK WILL NOT CORRECTLY GAUGE THE APPROPRIATE AMOUNT OF OIL IN THE GEARBOX/HOUSINGS.

SIZE	FSCM NO.	239306
A	84147	
SCALE	<i>X</i>	SHEET 5

CAD
FILE NO. ES05KX5

5.6/7.3/7.6 METRE PRIMARY ANTENNA LUBRICATION CHART

(SEE FIGURE 1)

LUBE POINT LUBE NO.	PARTS TO BE LUBRICATED	(MONTHS) FREQUENCY				TYPE OF SERVICE	LUBE TYPE	NO. OF LUBE POINTS OR QUANTITY
		1	3	6	12			
1	ELEVATION JACKSCREW HOUSING		X			PRESSURE FITTING	SHC32	1
2	ELEVATION JACKSCREW GEAR HOUSING FILL AND DRAIN	I*	C**			PIPE PLUGS	SHC624	10 OUNCES
3	ELEVATION JACKSCREW PIVOT PIN, UPPER		X			PRESSURE FITTING	SHC32	1
4	AZIMUTH JACKSCREW PIVOT PIN, FRONT		X			PRESSURE FITTING	SHC32	1
5	AZIMUTH JACKSCREW HOUSING		X			PRESSURE FITTING	SHC32	2
6	AZIMUTH JACKSCREW GEAR HOUSING FILL AND DRAIN	I*	C**			PIPE PLUGS	SHC624	*
7	POLARIZATION DRIVE GEAR			X		BRUSH	SHC32	MINIMUM SUR- FACE COVERAGE
8	FEED ROTATION WORM GEAR PILLOW BLOCKS			X		PRESSURE FITTING	SHC32	2
9 ***	ELEVATION DRIVE INTERMEDIATE GEARBOX FILL AND DRAIN			I*	C**	PIPE PLUGS	SHC624	34 OUNCES
10 ***	AZIMUTH DRIVE INTERMEDIATE GEARBOX FILL AND DRAIN			I*	C**	PIPE PLUGS	SHC624	34 OUNCES

TABLE 1

X=LUBRICATE I=INSPECT C=CHANGE

* INSPECTION REQUIRES CHECKING FOR VISIBLE SIGNS OF OIL LEAKAGE, DRAINING, REPLACING AND ADDING OIL TO ENSURE APPROPRIATE OIL LEVEL REQUIREMENTS. ANTENNAS WITH DUAL-MOTORS ON EACH AXIS REQUIRE 4 OUNCES OF LUBRICANT IN THE AZIMUTH JACKSCREW GEAR HOUSING. ON ANTENNAS WITH DUAL-WOUND MOTORS, THE AZIMUTH JACKSCREW GEAR HOUSING REQUIRES 10 OUNCES OF LUBRICANT. EXCESSIVELY DIRTY OIL WILL REQUIRE FRESH OIL REPLACEMENT. IF OIL LEAKAGE IS FOUND TO BE EXCESSIVE, REFER TO APPROPRIATE TROUBLESHOOTING INFORMATION AND PERFORM APPLICABLE CORRECTIVE ACTION. PERIODIC INSPECTION PROCEDURES CAN BE LESS FREQUENT AFTER FIRST OR SECOND SCHEDULED INSPECTIONS.

** INITIAL OIL CHANGE REQUIREMENTS INCLUDE FLUSHING GEAR BOXES WITH A STANDARD CLEANING AGENT.

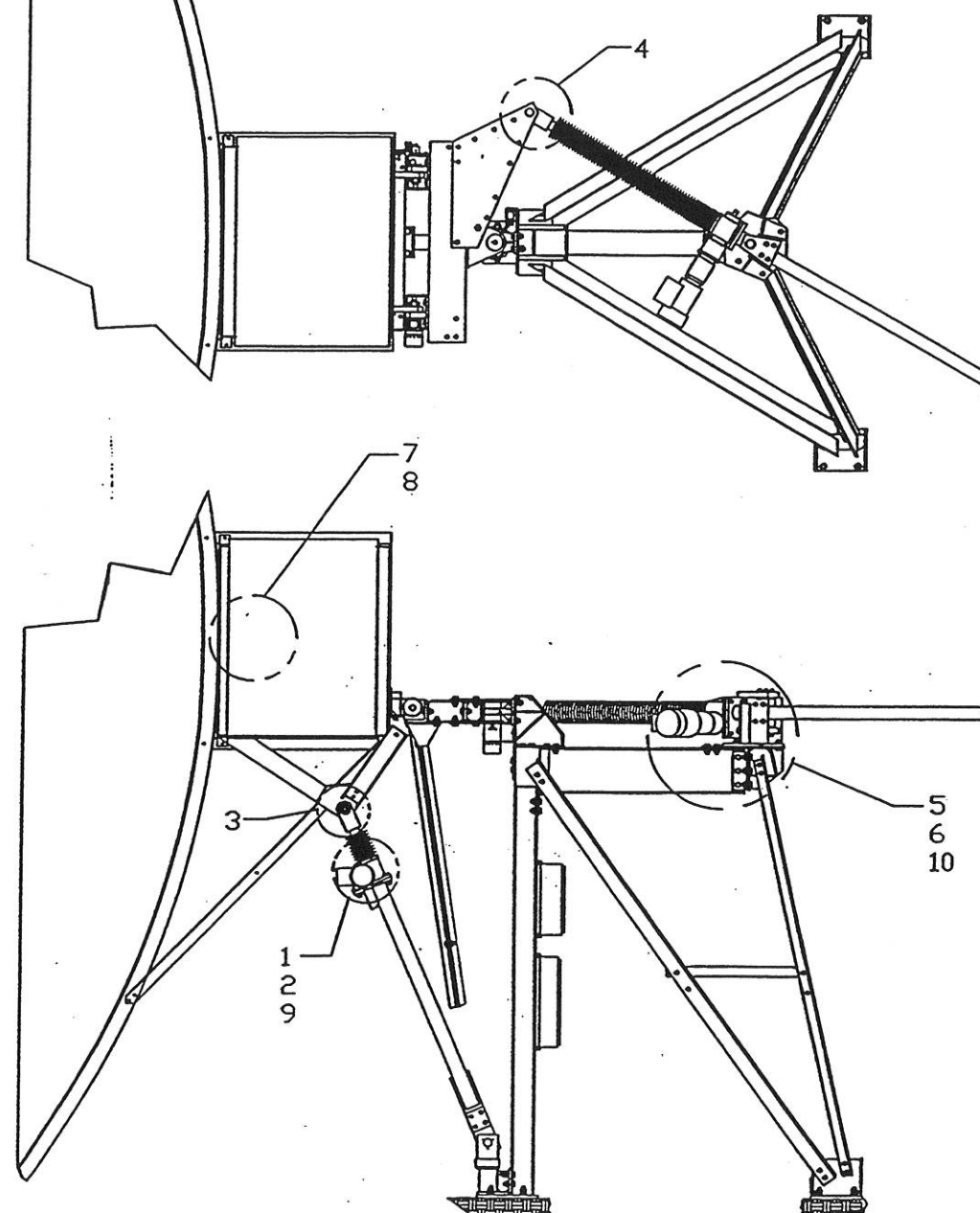
*** NOT REQUIRED ON DUAL-WOUND MOTORS.

SIZE	FSCM NO.	239306
A	84147	
SCALE	X	SHEET 6

CAD FILE NO. ES05KX6A

5.6/7.3 METRE PRIMARY ANTENNA
LUBRICATION POINTS

-FIGURE 1-



SIZE	FSCM NO.	239306
A	84147	
SCALE	$\frac{1}{2}$	SHEET 7

CAD FILE NO. ES05KX7A

9.3 METRE PRIMARY ANTENNA LUBRICATION CHART

(SEE FIGURE 2)

LUBE POINT LUBE NO.	PARTS TO BE LUBRICATED	(MONTHS) FREQUENCY				TYPE OF SERVICE	LUBE TYPE	NO. OF LUBE POINTS OR QUANTITY
		1	3	6	12			
1	AZIMUTH PIVOT PIN, LOWER		X			PRESSURE FITTING	SHC32	2
2	ELEVATION JACKSCREW PIVOT PIN, LOWER		X			PRESSURE FITTING	SHC32	1
3	ELEVATION JACKSCREW HOUSING		X			PRESSURE FITTING	SHC32	1
4	ELEVATION JACKSCREW GEAR HOUSING FILL AND DRAIN	I*	C**			PIPE PLUGS	SHC624	10 OUNCES
5	ELEVATION DRIVE INTERMEDIATE GEARBOX FILL AND DRAIN			I*	C**	PIPE PLUGS	SHC624	34 OUNCES
6	ELEVATION JACKSCREW PIVOT PIN, UPPER		X			PRESSURE FITTING	SHC32	2
7	ELEVATION PIVOT PIN, UPPER RIGHT		X			PRESSURE FITTING	SHC32	2
8	ELEVATION PIVOT PIN, UPPER LEFT		X			PRESSURE FITTING	SHC32	2
9	AZIMUTH PIVOT PIN, UPPER		X			PRESSURE FITTING	SHC32	2
10	AZIMUTH JACKSCREW PIVOT PIN, FRONT		X			PRESSURE FITTING	SHC32	2
11	AZIMUTH JACKSCREW HOUSING		X			PRESSURE FITTING	SHC32	2
12	AZIMUTH JACKSCREW GEAR HOUSING FILL AND DRAIN	I*	C**			PIPE PLUGS	SHC624	4 OUNCES
13	AZIMUTH DRIVE INTERMEDIATE GEARBOX FILL AND DRAIN			I*	C**	PIPE PLUGS	SHC624	34 OUNCES
14	AZIMUTH JACKSCREW PIVOT PIN, REAR		X			PRESSURE FITTING	SHC32	2
15	POLARIZATION DRIVE GEAR			X		BRUSH	SHC32	MINIMUM SURFACE COVERAGE
16	FEED ROTATION WORM GEAR PILLOW BLOCKS			X		PRESSURE FITTING	SHC32	2

TABLE 2

X=LUBRICATE I=INSPECT C=CHANGE

* INSPECTION REQUIRES CHECKING FOR VISIBLE SIGNS OF OIL LEAKAGE, DRAINING, REPLACING AND ADDING OIL TO ENSURE APPROPRIATE OIL LEVEL REQUIREMENTS. EXCESSIVELY DIRTY OIL WILL REQUIRE FRESH OIL REPLACEMENT. IF OIL LEAKAGE IS FOUND TO BE EXCESSIVE, REFER TO APPROPRIATE TROUBLESHOOTING INFORMATION AND PERFORM APPLICABLE CORRECTIVE ACTION. PERIODIC INSPECTION PROCEDURES CAN BE LESS FREQUENT AFTER FIRST OR SECOND SCHEDULED INSPECTIONS.

** INITIAL OIL CHANGE REQUIREMENTS INCLUDE FLUSHING GEAR BOXES WITH A STANDARD CLEANING AGENT.

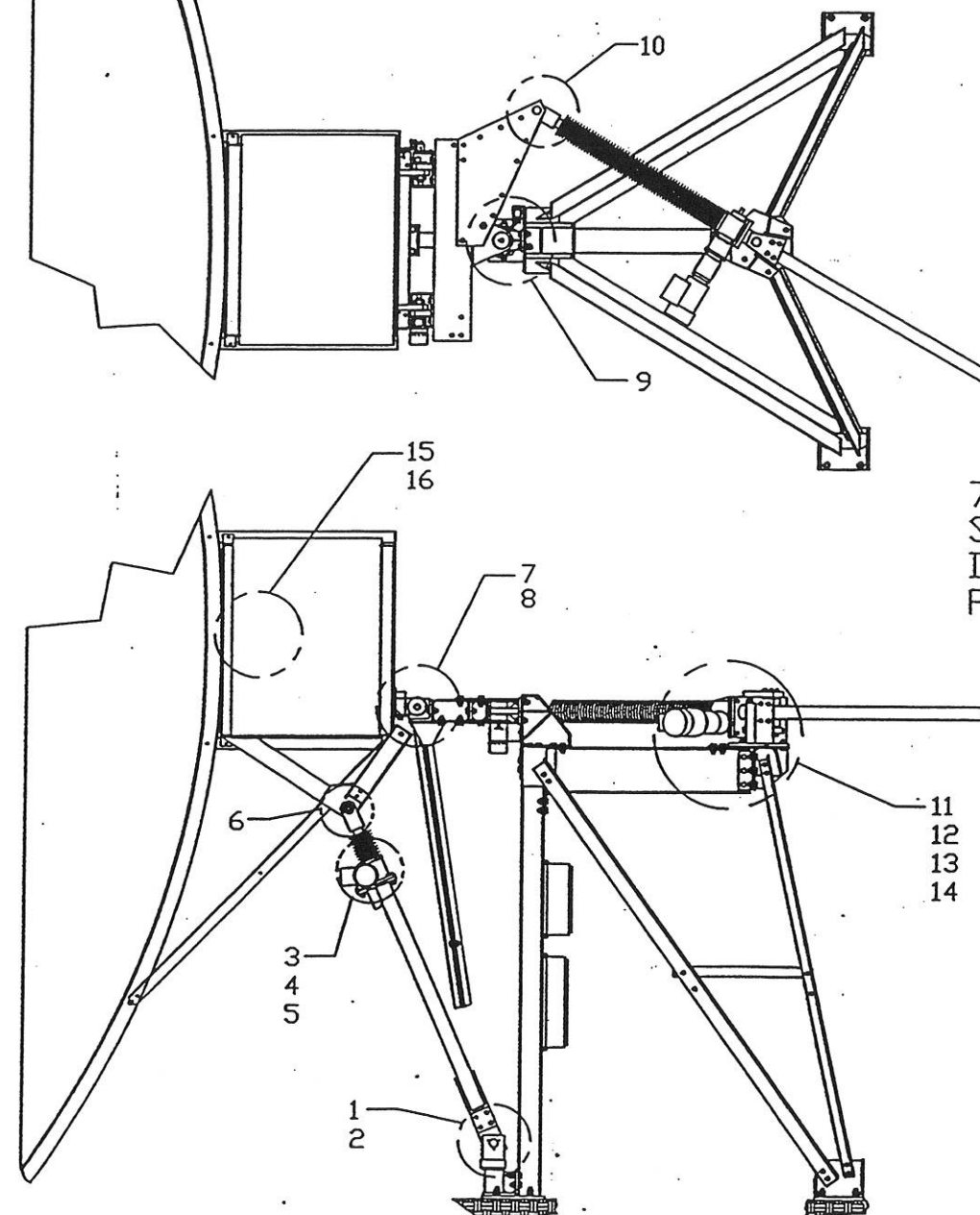
SIZE A	FSCM NO. 84147	239306
SCALE X	SHEET 8	

CAD FILE NO. **ES05KX8A**

9.3 METRE PRIMARY ANTENNA

LUBRICATION CHART

-FIGURE 2-



SIZE	FSCM NO.	239306
A	84147	
SCALE	<input checked="" type="checkbox"/>	SHEET 9

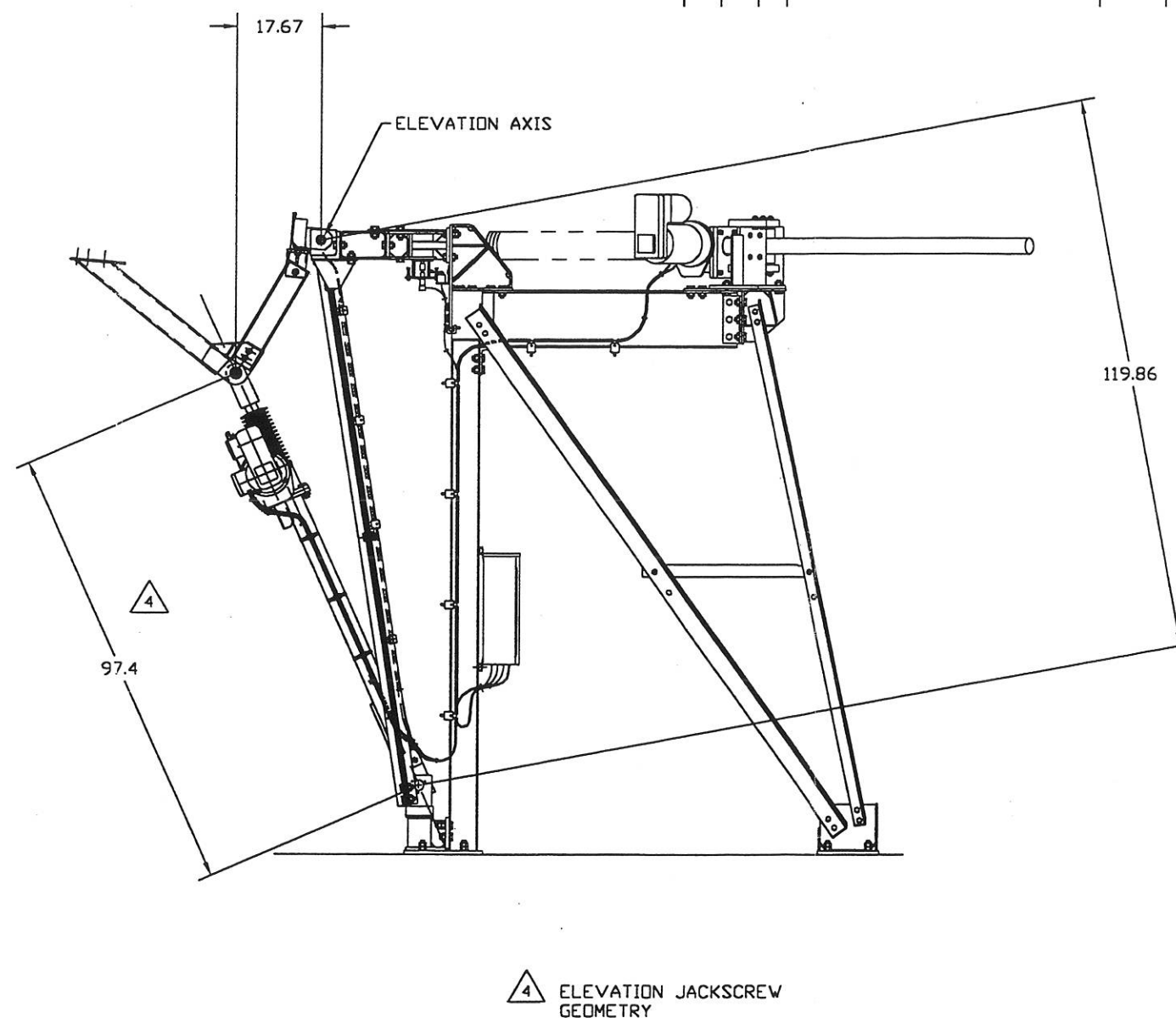
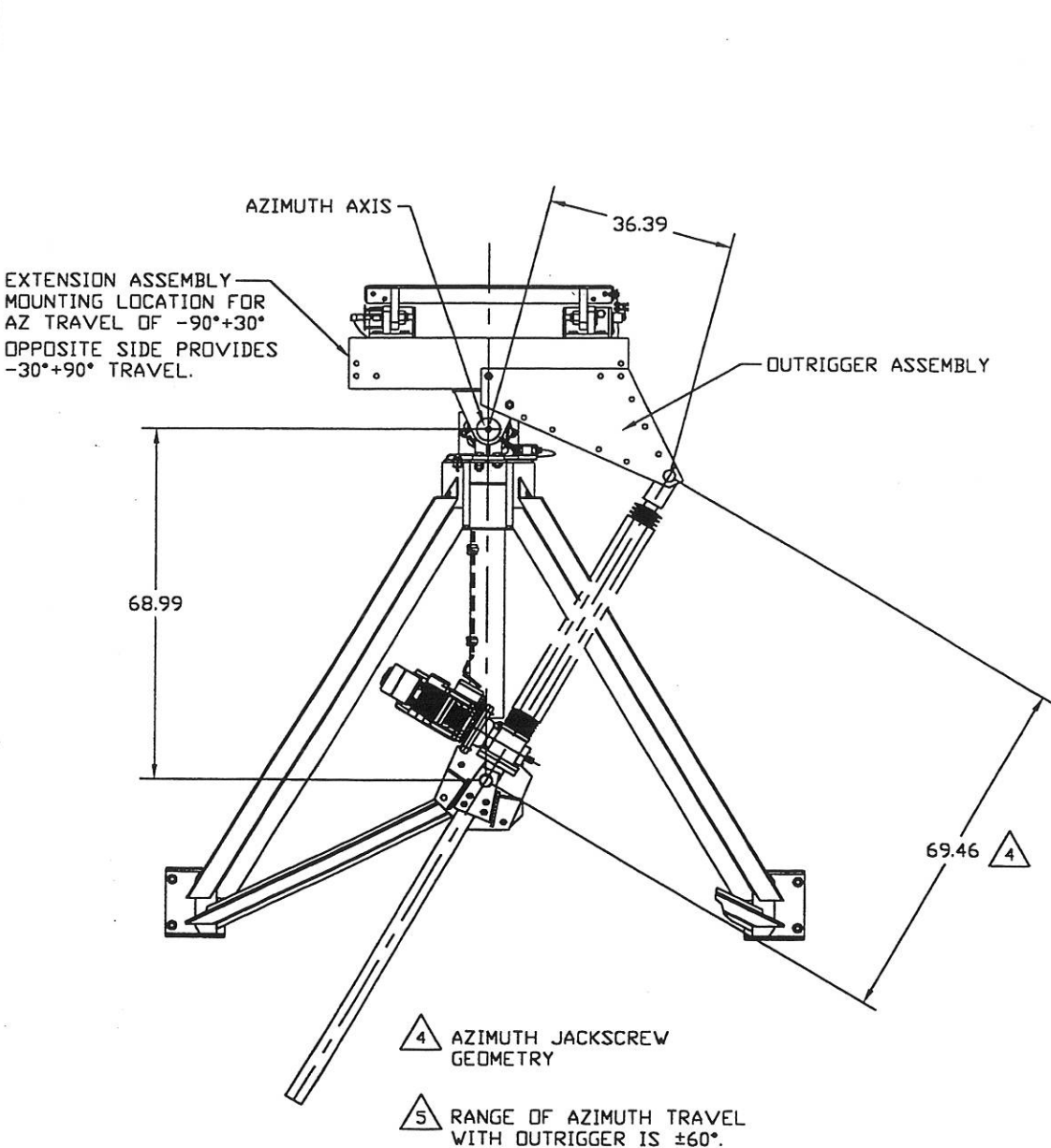
CAD FILE NO: ES05KX9A

NOTES: (UNLESS OTHERWISE SPECIFIED) -
 1. REMOVE ALL BURRS AND SHARP EDGES
 2. DIMENSIONS APPLY BEFORE PLATING
 3. INTERPRET DRAWING FOR AMS Y14.5M-1982

4. JACKSCREW GEOMETRY DIMENSIONS INDICATED ARE FOR ELEVATION ANGLE OF 5° AND AZIMUTH ANGLE OF 0°.

5. OPTIONAL EXTENSION ASSEMBLY (NOT SHOWN) FOR AZIMUTH TRAVEL WILL PROVIDE AZIMUTH TRAVEL OF -90°+30° OR +90° -30° DEPENDING ON MOUNTING LOCATION. WITH THE EXTENSION ASSEMBLY INSTALLED THE AZIMUTH JACKSCREW LENGTH AT AZIMUTH =0° IS 86.16 INCHES.

REVIEWS				DATE		APPROVED	
MF	ZONE	REV	DESCRIPTION				
			REL TO PRODUCTION	18NOV96		BLA	
		A	CHANGED PICTORIALY	21JUL98		SJA	
			DCN D016.53(A)			BLA,SLI	



MFG PROCESSES	INSPECTION PROCEDURES	TEST PROCEDURES
AUSA SPECIFICATIONS		

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally in the field of ANDREW shall be confidential except to any extent to which it is considered to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used in the manufacture or sale of apparatus without written permission.

CAD FILE NO:
DS015N1A

UNLESS OTHERWISE SPECIFIED	
DIMENSIONS ARE IN INCHES	
TOLERANCES	
1 PLACE DECIMALS ± .1	
2 PLACE DECIMALS ± .03	
3 PLACE DECIMALS ± .010	
ANGLE ± 0.5°	
ALL SURFACES	
CONC. TOL. APPLY TO STOCK SIZES	
SIMILAR TO	
SUPERSEDES DWG OF	
NEXT ASSY	USED ON
APPLICATION	

QTY	REV	U OF M	ANDREW PART NO.	DESCRIPTION
PARTS LIST				
DESIGN	CJH	3AUG96		
CHECKED	BLA	NOV96		
APPROVED	SLI	NOV96		
APPROVED	SJA	NOV96		
APPROVED				
5.6, 7.3, 7.6M ANTENNA JACKSCREW AZIMUTH & ELEVATION GEOMETRY				
SIZE	FIG. NO.	DWG. NO.		
D	B4147	301213		
SCALE	NTS			
PROD. OR	61410	DATE	A	

ANDREW CORPORATION
 2701 Mayhill Road
 Denton, Texas U.S.A. 76208

NOTES: (UNLESS OTHERWISE SPECIFIED)

1. REMOVE ALL BURRS AND SHARP EDGES.
2. DIMENSIONS APPLY BEFORE PLATING.
3. INTERPRET DRAWING PER ANSI Y14.5M-1982.

4. GENERAL

READ THE INSTRUCTIONS THOROUGHLY BEFORE ASSEMBLY. FOLLOW SPECIFIED SEQUENCES FOR PROPER ASSEMBLY AND OPERATION.



NOTICE

THIS REPRESENTS INFORMATION THAT
SHOULD BE READ BEFORE PROCEEDING.

UNPACKING

CAREFULLY REMOVE ALL PARTS FROM SHIPPING BOXES. THE CONTENTS SHOULD CORRESPOND WITH THE PARTS LIST. ANY DAMAGE OR SHORTAGE WILL PREVENT SATISFACTORY ASSEMBLY, INSTALLATION AND OPERATION OF THE EQUIPMENT.


NOTICE

'THE INSTALLATION, MAINTENANCE OR REMOVAL OF AN ANTENNA REQUIRES QUALIFIED, EXPERIENCED PERSONNEL. ANDREW INSTALLATION INSTRUCTIONS HAVE BEEN WRITTEN AND ILLUSTRATED FOR SUCH INSTALLATION PERSONNEL. ANTENNA SYSTEMS SHOULD BE INSPECTED ONCE A YEAR BY QUALIFIED PERSONNEL TO VERIFY PROPER INSTALLATION, MAINTENANCE AND CONDITION OF EQUIPMENT. ANDREW DISCLAIMS ANY LIABILITY OR RESPONSIBILITY FOR THE RESULTS OF IMPROPER OR UNSAFE INSTALLATION OR MAINTENANCE PRACTICES.'

5. TOOLS RECOMMENDED FOR PROPER INSTALLATION

QTY	DESCRIPTION
1	3/8" OPEN END OR COMBINATION WRENCH
2	9/16" OPEN END OR COMBINATION WRENCH
2	FLAT BLADE SCREWDRIVERS, SMALL AND MEDIUM
1	PHILLIPS SCREWDRIVER, MEDIUM
1	DIAGONAL CUTTERS OR EQUIVALENT

6. ALL CABLES, UNLESS OTHERWISE SPECIFIED, ARE PART OF LMC CABLE KIT P/N 300500. REFERENCE INSTALLATION DRAWINGS PROVIDED WITH KIT FOR CABLE IDENTIFICATION AND SPECIFIC TERMINATION INFORMATION.
7. POLARIZATION RESOLVER CABLE IS SUPPLIED WITH OPTIONAL POLARIZATION DRIVE ASSEMBLY. AZ/EL RESOLVER CABLES ARE SUPPLIED WITH OPTIONAL ANTENNA RESOLVER KITS.
8. REQUIRED CABLE LENGTH FOR POLARIZATION RESOLVER AND MOTOR/LIMIT SWITCH CABLE WILL VARY DEPENDING UPON SIZE/TYPE OF ANTENNA REFLECTOR. LENGTH TO BE DETERMINED AT INSTALLATION.
9. INSTALL CABLE TIES (ITEM 11) AS REQUIRED. CABLE TIES CAN BE CONNECTED END TO END TO MAKE LONGER LENGTHS AS REQUIRED.
10. REQUIRED CABLE ATTACHMENTS FOR ROUTING OPTIONAL REMOTE CONTROL CABLE [CCK-()]

11.  ALLOW SUFFICIENT SLACK WHEN ROUTING CABLES TO COMPENSATE FOR ANTENNA AZIMUTH AND ELEVATION RANGE ADJUSTMENTS.

12.  LOCAL MOTOR CONTROLLER IS NOT TO BE ENERGIZED AT TIME OF CABLE ROUTING; REFER TO INSTALLATION INSTRUCTIONS 239979.

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally in the field of ANDREW shall be confidential except to any extent to which it is established to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used on the basis for the manufacture or sale of apparatus without written consent.

13. THE ADDITION OF MOTORIZATION REQUIRES SPECIAL SAFETY CONSIDERATIONS IN CE COUNTRIES. ACCESS TO THIS EQUIPMENT MUST BE LIMITED TO SERVICE ENGINEERS AND TECHNICIANS ONLY, THEREFORE ACCESS CONTROL AND WARNING SIGNS ARE REQUIRED IN CE COUNTRIES. THIS EQUIPMENT MUST BE PROTECTED TO THE RELEVANT CE DIRECTIVES AT TIME OF INSTALLATION.



- 15 ITEM QUANTITY SHOWN IS SPECIFIC FOR THE 3.6-9.3M LOCAL MOTOR CONTROLLER MOUNTING AND CABLE ROUTING INSTALLATION. THE INSTALLATION KIT. 300501. INCLUDES SPARES OF VARIOUS HARDWARE ITEMS.

3.6 - 4.6M ANTENNA CABLE SUMMARY / 6.

CABLE FUNCTION	ESTIMATED LENGTH (FT)	QTY REQ'D
AZ MOTOR	20	2
AZ LIMIT SWITCH	8	1
AZ RESOLVER	8	1
EL MOTOR	20	2
EL LIMIT SWITCH	10	1
EL RESOLVER	15	1
POL MOTOR/LIM SW	8	1
POL RESOLVER		1

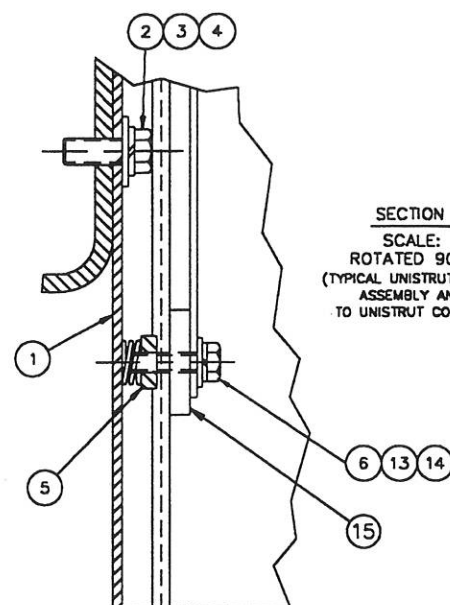
5.6 - 9.3M ANTENNA CABLE SUMMARY ⁶

CABLE FUNCTION	ESTIMATED LENGTH (FT)	QTY REQ'D
AZ MOTOR	25	2
AZ LIMIT SWITCH	20	1
AZ RESOLVER	20	1
EL MOTOR	20	2
EL LIMIT SWITCH	25	1
EL RESOLVER	20	1
POL MOTOR/LIM SW		1
POL RESOLVER	8.	1

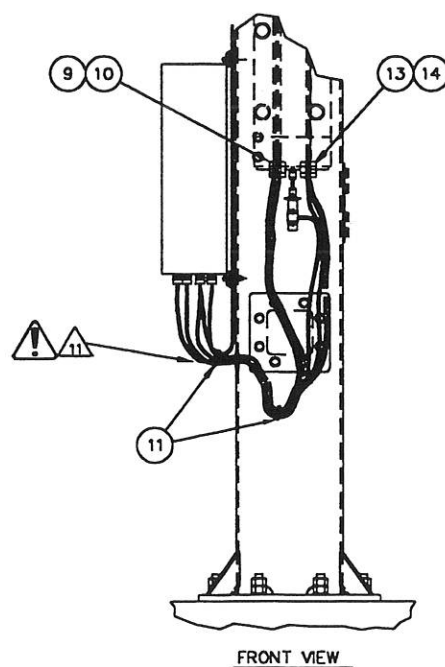
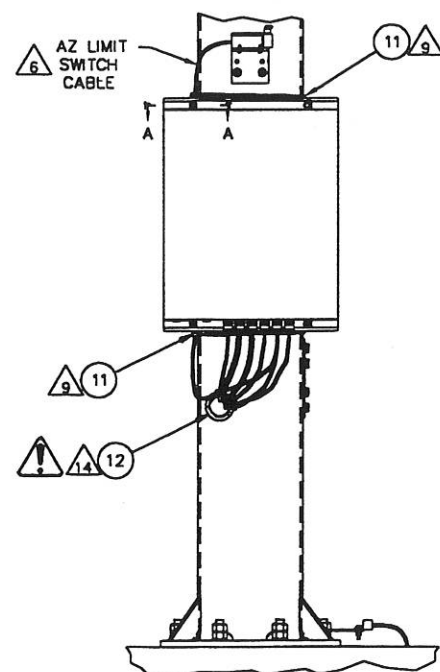
FOR REFERENCE ONLY

4	15	EA	300938	300501	1.625 SQUARE WASHER		
4	14	EA	9997-131	300501	.25 FLAT WASHER,SST		
4	13	EA	EWSHL-11060	300501	WASHER, LOCK,1/4,SST		
1	12	EA	206049	300501	FLEXIBLE TRIM		
20	11	EA	ECLAT-12137	300501	CABLE TIE, 120 LBS		
3	10	EA	36719	300501	INSULATED HANGER KIT		
2	9	EA	31768A-2	300501	ANGLE ADAPTOR KIT		
5	8	EA	ECLMP-18164	300501	CLMP,WORM DR,4.1-7.0 DIA		
4	7	EA	ENUTS-11090	300501	NUT,HEX,3./8-16UNC SST		
4	6	EA	9963-416	300501	SCR,HEX CAP,1/4-20X.75 LG,SST		
4	5	EA	204905-2	300501	.250-20UNC SLIDING NUT		
4	4	EA	EWSHL-11080	300501	WSHR,LOCK,3/8 SST		
4	3	EA	EWSHF-20806	300501	WSHR,FLAT,3/8 X 1.0 SST		
4	2	EA	ESCRS-73818	300501	SCR,HEX CAP,3/8-16X1.25 LG SST		
2	1	EA	AE01M-C0151	300501	CHANNEL,MOD-LMC MTG		
QTY	ITEM	UOM	ANDEW PART NO.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	REF. DESIGNATOR	NOTES

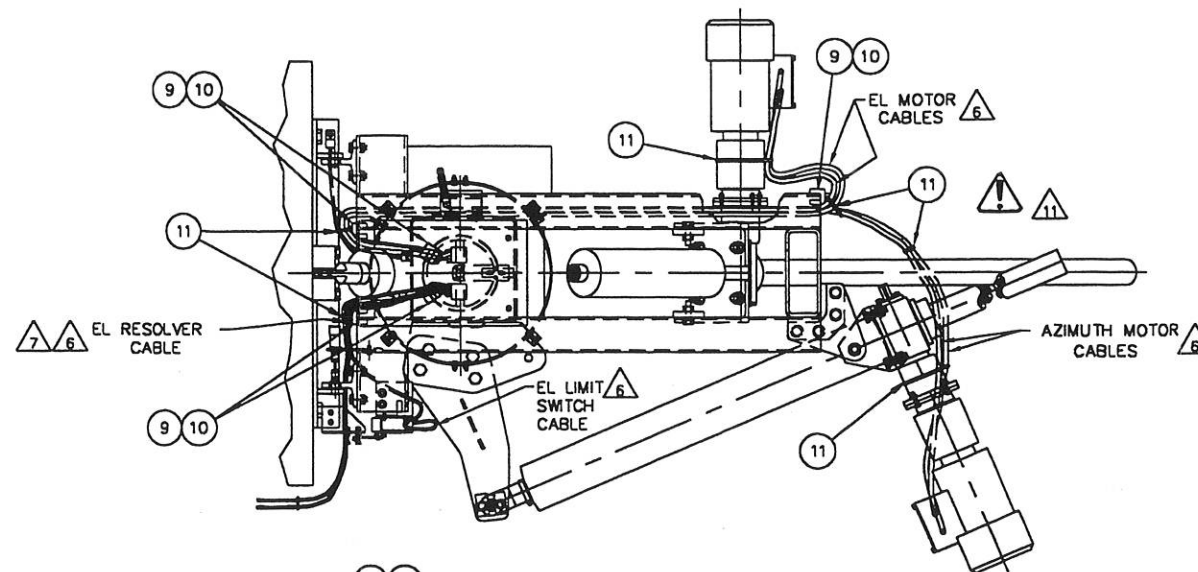
[illegible]



SECTION A-A
SCALE: NONE
ROTATED 90° CCW
(TYPICAL UNISTRUT TO MOUNT
ASSEMBLY AND LMC
TO UNISTRUT CONNECTIONS)



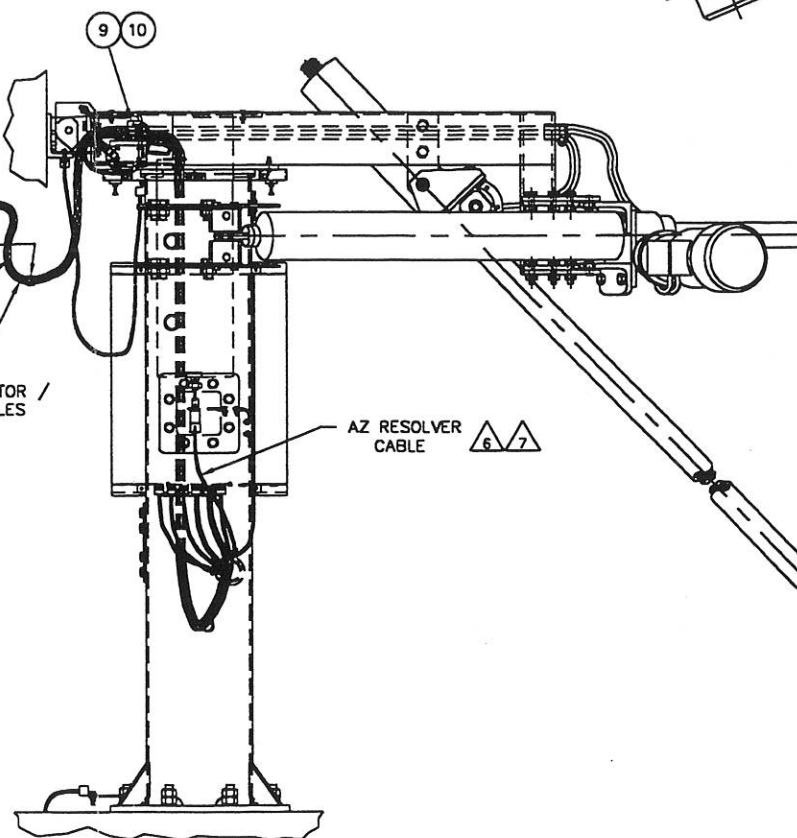
FRONT VIEW



TO POLARIZATION
DRIVE

POLARIZATION
RESOLVER &
POLARIZATION MOTOR /
LIMIT SWITCH CABLES

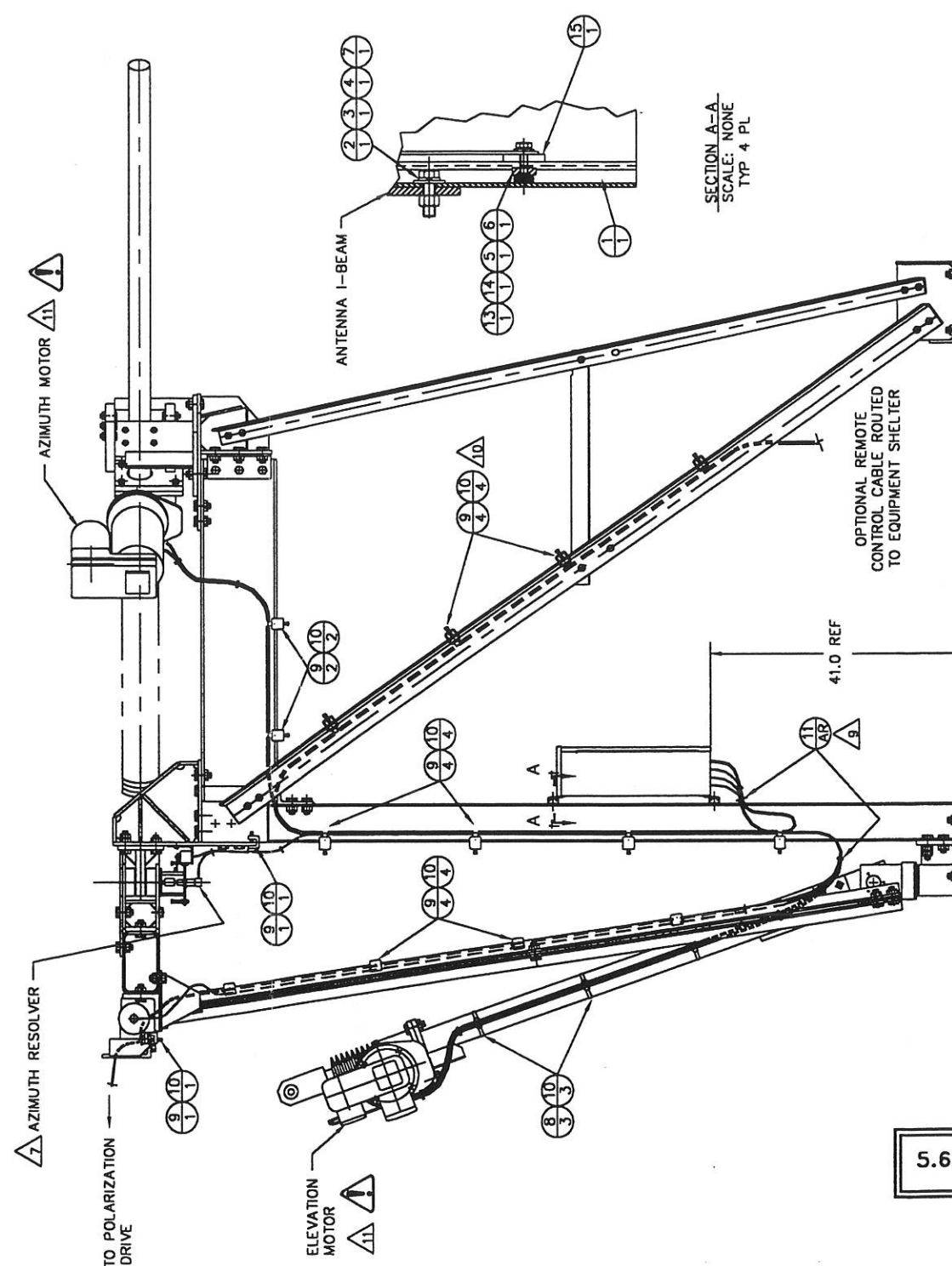
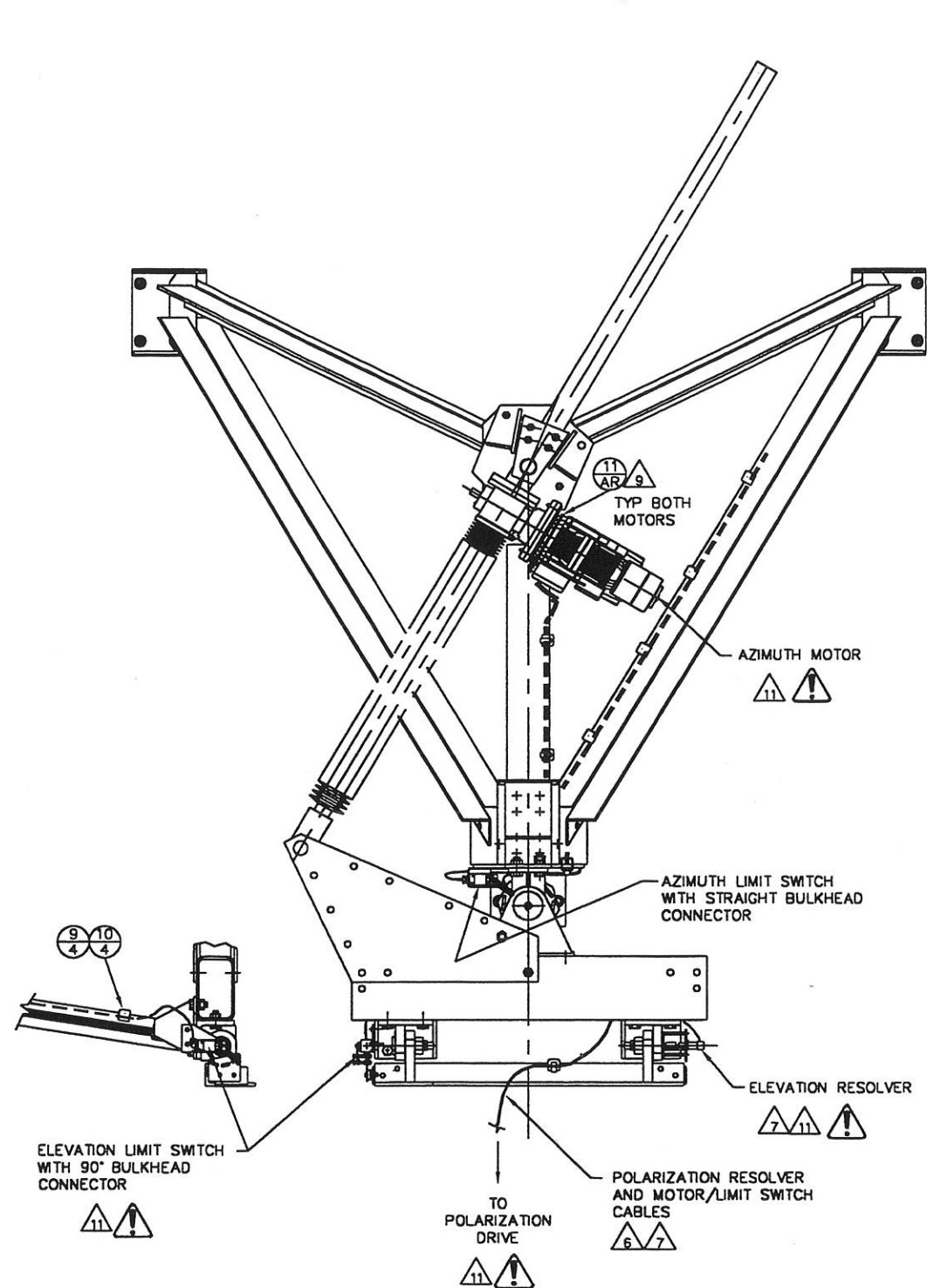
6 7



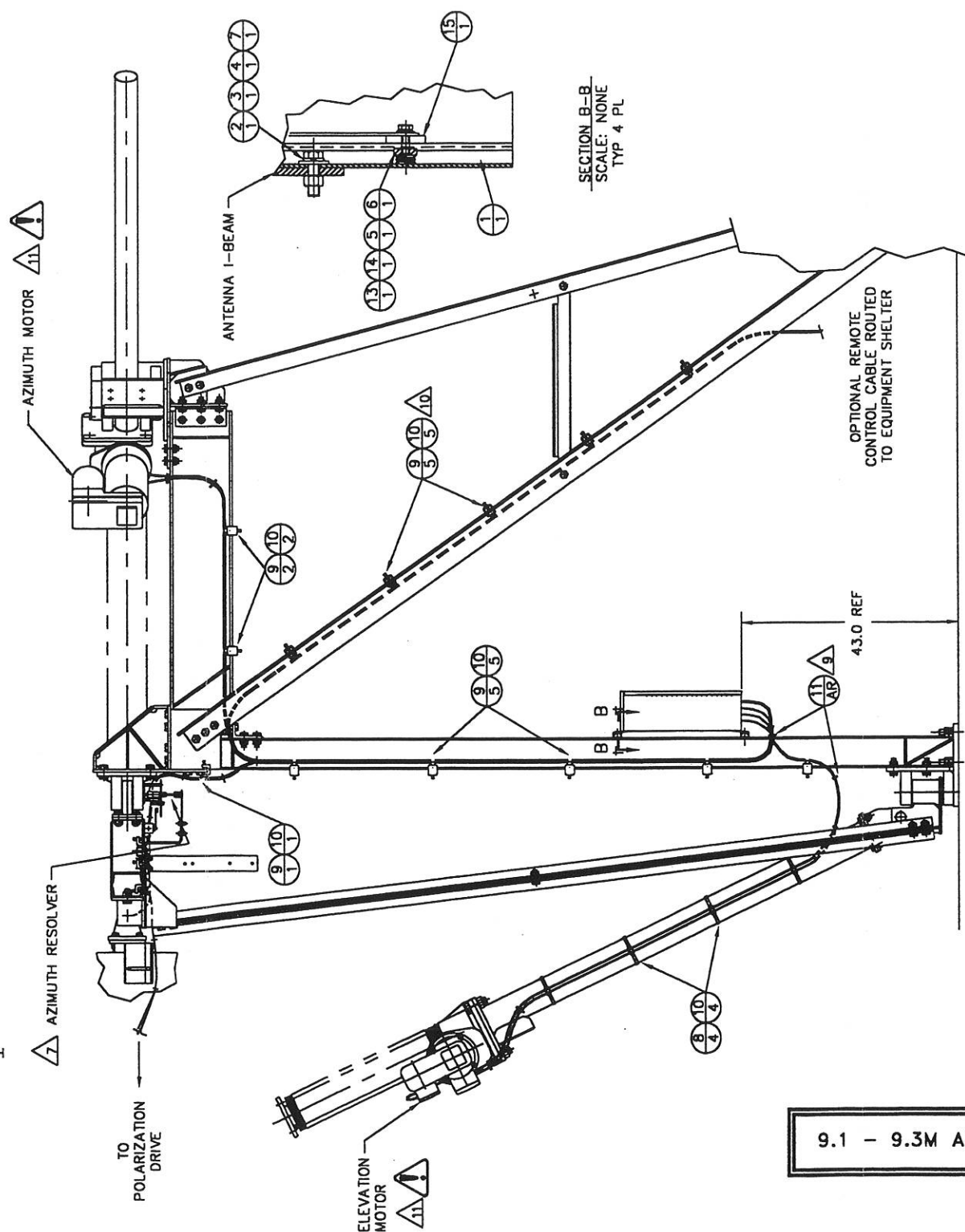
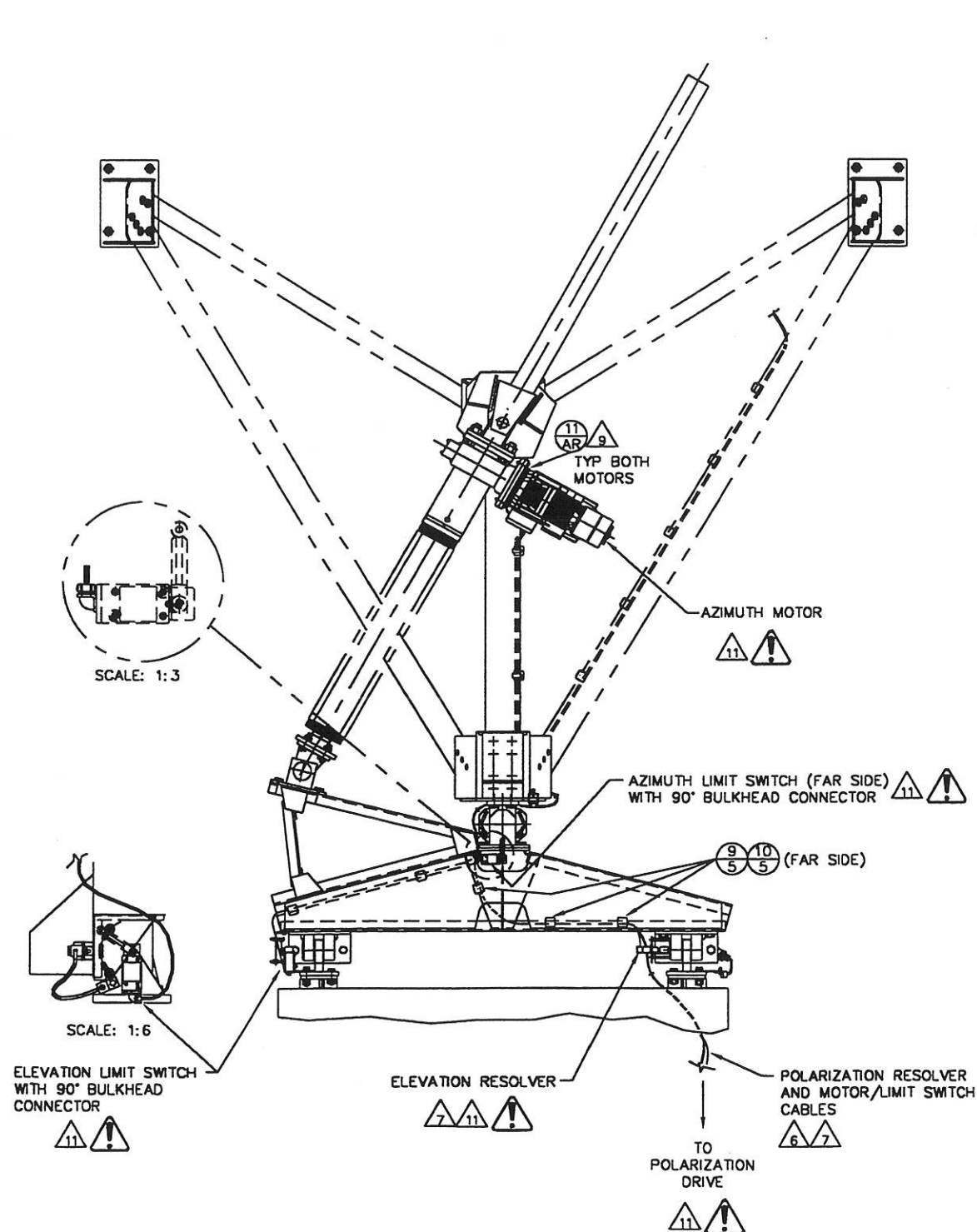
AZ RESOLVER
CABLE

6 7

3.6 - 4.6M ANTENNA INSTALLATIONS



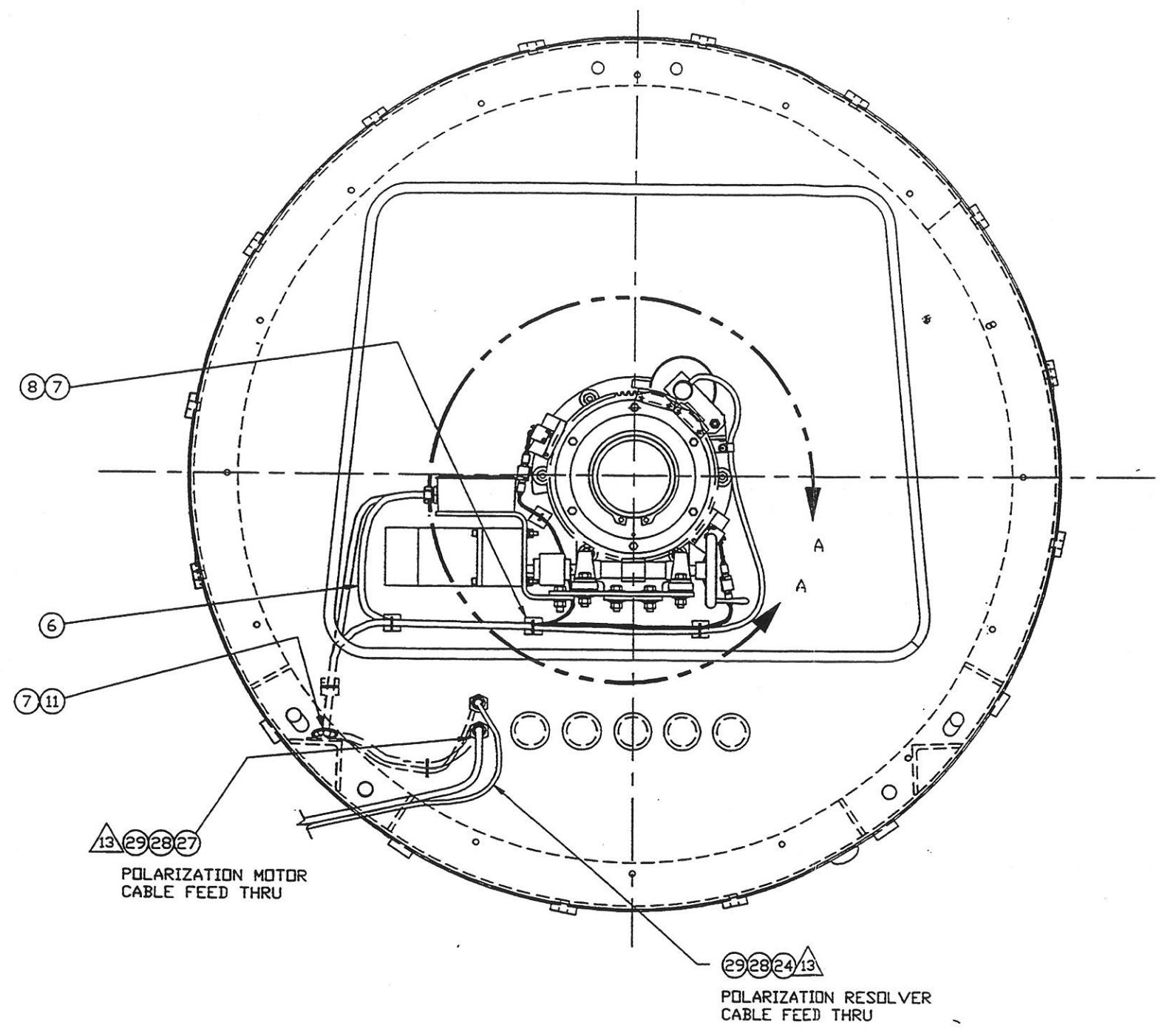
5.6 -- 7.6M ANTENNA INSTALLATIONS



9.1 - 9.3M ANTENNA INSTALLATIONS

NOTES: (UNLESS OTHERWISE SPECIFIED)
1. REMOVE ALL BURRS AND SHARP EDGES
2. DIMENSIONS APPLY BEFORE PLATING
3. INTERPRET DRAWING PER ANSI Y14.5M-1982

DOC NO.		239956		REV		2		1	
REVISIONS									
MF	ZONE	REV	DESCRIPTION				DATE	APPROVED	
			REL TO PRODUCTION				8JUN93	PTF	
		A	REVISED BLOCK IN ZONE A2. DCN D015.17(B)				20 JAN 98	SLL JTP	



CP5.6M/7.6M POLARIZATION DRIVE
INSTALLATION/CABLE ROUTING

MFG PROCESSES	INSPECTION PROCEDURES	TEST PROCEDURES
AUSA SPECIFICATIONS		

NOTE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known previously in the field of ANDREW shall be confidential except to any extent to which it is established to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used as the basis for the construction or sale of apparatus without written permission.

CAD FILE NO:
DS00J42A

		UNLESS OTHERWISE SPECIFIED	
		DIMENSIONS ARE IN INCHES	
		<u>TOLERANCES</u>	
		1 PLACE DECIMALS ± .1	
		2 PLACE DECIMALS ± .03	
		3 PLACE DECIMALS ± .010	
		ANGLE ± 0.5°	
		ALL SURFACES	
		COILS TO APPLY TO STOCK SIZES	
		SIMILAR TO	
NEXT ASSY		USED ON	
APPLICATION			

REVISIONS					
NO	ZONE	REV	DESCRIPTION	DATE	APPROVED
2			REL TO PRODUCTION	8 JUN 93	PTF

A

POLARIZATION MOTOR/LIMIT SWITCH
AND RESOLVER CABLES ROUTED TO
LOCAL MOTOR CONTROLLER

7.3M POLARIZATION DRIVE INSTALLATION/CABLE ROUTING


24 28 29 13
POLARIZATION RESOLVER
CABLE FEED THRU

POLARIZATION MOTOR
CABLE FEED THRU

MFG PROCESSES	INSPECTION PROCEDURES	TEST PROCEDURES
AUSA SPECIFICATIONS		

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally in the field of ANDREW shall be confidential except to any extent to which it is established to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used as the basis for the manufacture or sale of apparatus without written permission.

			UNLESS OTHERWISE SPECIFIED
			DIMENSIONS ARE IN INCHES
			<u>TOLERANCES</u>
			1 PLACE DECIMALS $\pm .1$
			2 PLACE DECIMALS $\pm .03$
			3 PLACE DECIMALS $\pm .010$
			ANGLE $\pm 0.5^\circ$
			ALL SURFACES
			COIL TOL APPLY TO STOCK SIZES
	NEXT ASSY	USED ON	SIMILAR TO
APPLICATION			SUPPLIER'S ENG OF

CITY	PROD. NO.	U OF M	ANDREW PART NO.	DESCRIPTION
PARTS LIST				
DESIGN	T N P I A N 44PP93			 <p>ANDREW CORPORATION 10500 W. 153rd Street Orland Park, Illinois U.S.A. 60464</p>
CHECKED	PTF 3 JUN 93			
APPRO. ENG.	S-2 3 JUN 93			
APPRO. ENG.	S-2 3 JUN 93			
APPRO. MFG.	SIA 3 JUN 93			
APPRO. E.C.	S-2 4 JUN 93			
POLARIZATION DRIVE INSTALLATION INSTRUCTIONS				
SIZE FROM NO.		ENCL. NO.		
D 84147		239956		
SCALE 1=4		SHEET 3		
2	PROD. OR	61114	DISTR	A
				1

8

7

6

5

4

1

•

NOTES: (UNLESS OTHERWISE SPECIFIED)
1. REMOVE ALL BURRS AND SHARP EDGES
2. DIMENSIONS APPLY BEFORE PLATING
3. INTERPRET DRAWING PER ANSI Y14.5M-1982

239956

REVISIONS				
MF	ZONE	REV	DESCRIPTION	DATE
1			REL TO PRODUCTION	8 JUN 93
				PTF

POLARIZATION MOTOR CABLE
FEED THRU (FAR WALL OF
ANTENNA ENCLOSURE)

27
28
29

POLARIZATION RESOLVER CABLE
FEED THRU (FAR WALL OF
ANTENNA ENCLOSURE)


24
28
29

POLARIZATION MOTOR/LIMIT
SWITCH AND RESOLVER CABLES
ROUTED TO LOCAL MOTOR
CONTROLLER

NOTE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known
generally in the field of ANDREW shall be confidential except to any extent to which it is contained in news items from sources
other than ANDREW. These drawings and specifications may not be reproduced, copied or used as the basis for the manufacture or sale of apparatus
without written permission.

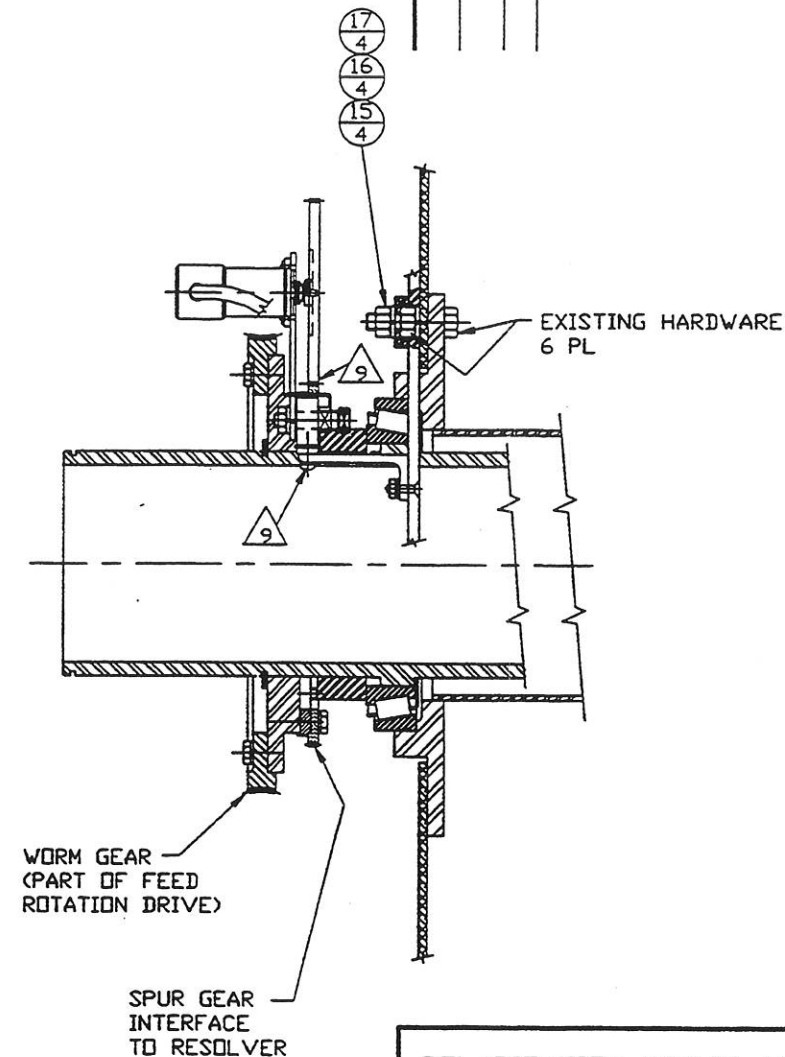
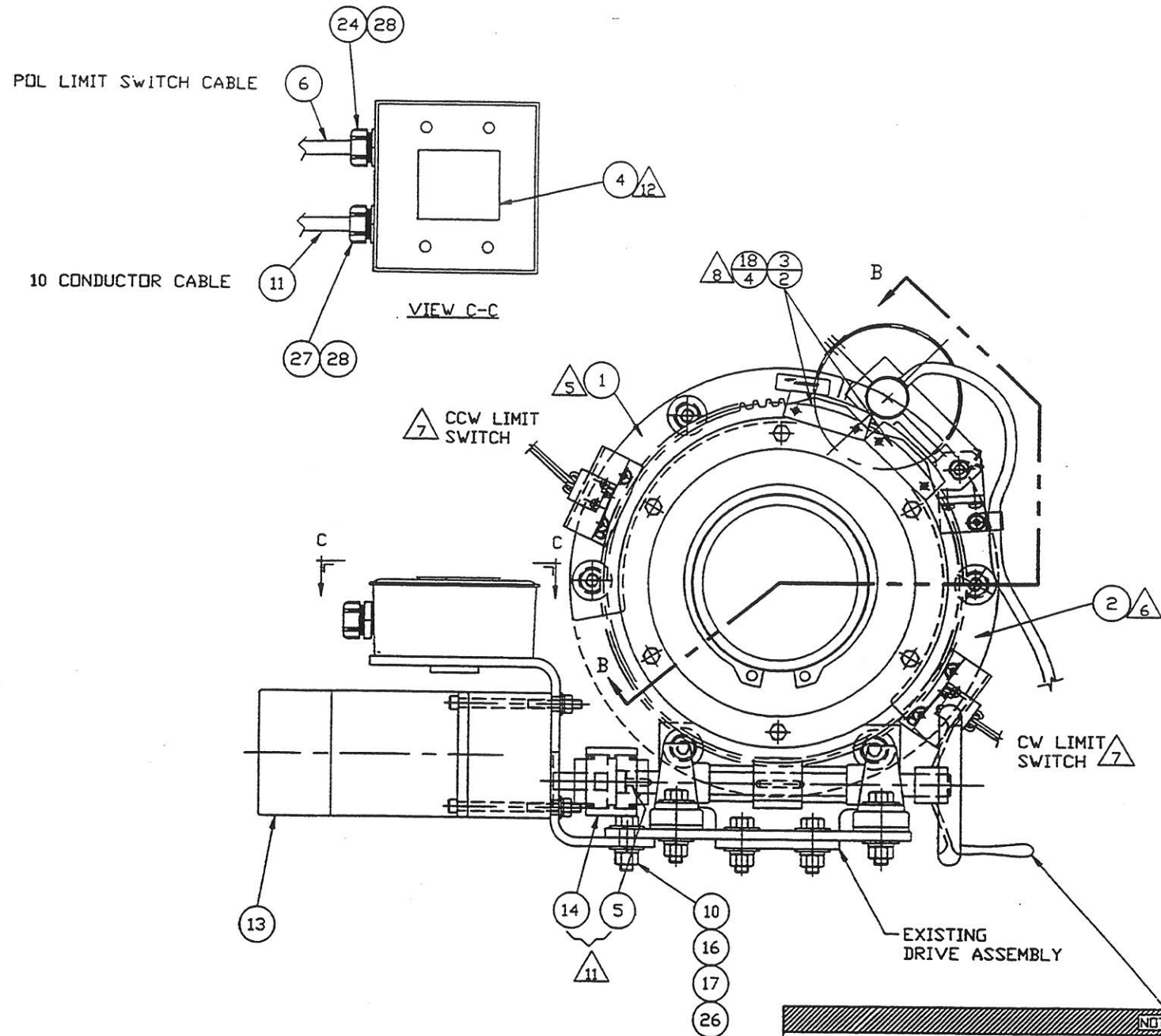
MFG	INSPECTION	TEST
PROCESS	PROCEDURES	PROCEDURES
AUSA SPECIFICATIONS		

UNLESS OTHERWISE SPECIFIED	
DIMENSIONS ARE IN INCHES	
TOLERANCES	
1 PLACE DECIMALS ± .1	
2 PLACE DECIMALS ± .03	
3 PLACE DECIMALS ± .010	
ANGLE ± 0.5°	
ALL SURFACES	
COMM. VOL. APPLY TO STOCK SIZES	
SIMILAR TO	
SUPERSEDES Dwg OF	
NEXT ASSY	USED ON
APPLICATION	

CITY	FROM NO.	U OF M	ANDREW PART NO.	DESCRIPTION
PARTS LIST				
DRW	T.NOLAN	14APR93	 ANDREW CORPORATION 10500 W. 153rd Street Orland Park, Illinois U.S.A. 60462	
CHECKED	PTF	8 JUN 93		
APPRO Dwg	SAZ	8 JUN 93		
APPRO Dwg	SAZ	8 JUN 93		
APPRO MFG	SAZ	8 JUN 93		
APPRO Dwg	SAZ	8 JUN 93		
POLARIZATION DRIVE INSTALLATION INSTRUCTION				
SIZE	FROM NO.	DWG. NO.		
D	84147	239956		
SCALE 1=4		SHEET 4		
PROD. OF	6114	STEP	A	1

NOTES: (UNLESS OTHERWISE SPECIFIED)
 1. REMOVE ALL BURRS AND SHARP EDGES
 2. DIMENSIONS APPLY BEFORE PLATING
 3. INTERPRET DRAWING PER ANSI Y14.5M-1982

REVISIONS					DATE	APPROVED
MF	ZONE	REV	DESCRIPTION			
			REL TO PRODUCTION		8JUN93	PTF
	A		MODIFIED PICTORIAL VIEW OF FEED ROTATION DRIVE TO CURRENT CONFIGURATION. DCN D007.81CB		11NOV94	PTF,SLI KLP,SJA
	B		REVISED BLOCK IN ZONE B2. DCN D015.17CB		20JAN95	SLI SJA,JTP



DETAIL A-A
(CABLES NOT SHOWN FOR CLARITY)

NOTICE
 IN THE EVENT OF A LOSS OF PRIMARY POWER, THE HAND WHEEL CAN BE USED TO ADJUST POLARIZATION AS FOLLOWS:

1. LOOSEN SET SCREW ON COUPLING HALVES.
2. SLIDE COUPLING HALVES APART TO PERMIT DISENGAGEMENT OF OUTER NYLON COLLAR.
3. USE HANDWHEEL TO MAKE POLARIZATION ADJUSTMENT AS NECESSARY.
2. WHEN PRIMARY POWER IS RESTORED, RECONNECT COUPLING TO ORIGINAL CONFIGURATION.

SECTION B-B
(CABLES AND ACTUATORS NOT SHOWN FOR CLARITY)

POLARIZATION DRIVE ASSEMBLY
 CP5.6/7.3/7.6/9.1/9.3M ANTENNAS

QTY	REV	U OF M	ANDREW PART NO.	DESCRIPTION
PARTS LIST				
QTY	REV	U OF M	ANDREW PART NO.	DESCRIPTION
1			T.NOLAN 144PR93	
1			PTF 3JUN93	
1			PTF 3JUN93	
1			SLI 4JUN93	
1			SJA 3JUN93	
1			SLI 4JUN93	
ANDREW CORPORATION 2701 Mayfield Road Denton, Texas U.S.A. 76208				
POLARIZATION DRIVE INSTALLATION INSTRUCTIONS				
SIZE	FROM NO.	REV. NO.		
D	84147	239956		
SCALE	1=2	SHEET	5	
PROJ. NO.	61114	DATE	A: 11	

MFG	INSPECTION	TEST
PROCESSES	PROCEDURES	PROCEDURES
AUSA SPECIFICATIONS		

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally to the field of ANDREW shall be confidential except to any extent to which it is contained in the prior art. No part of this drawing shall be reproduced or used in any manner without written permission.

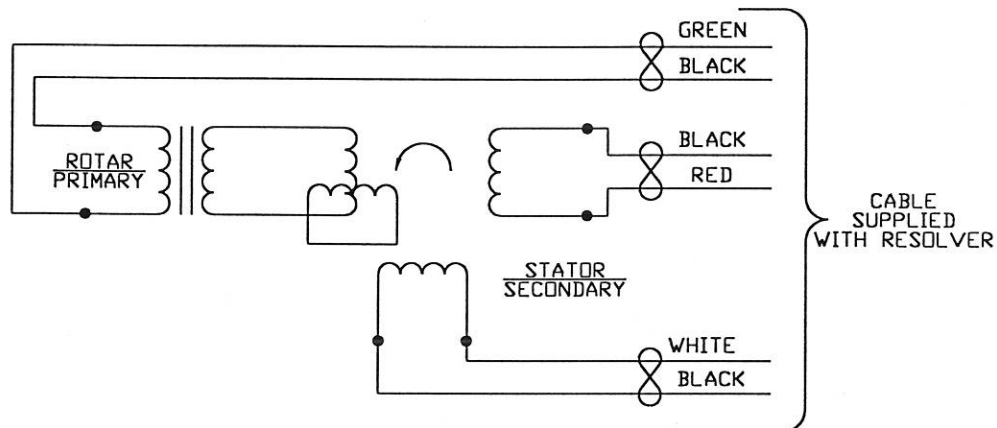
CAD FILE NO:
 DS00J45B

UNLESS OTHERWISE SPECIFIED	MATERIAL
DIMENSIONS ARE IN INCHES	
TOLERANCES	
1 PLACE DECIMALS ± .1	
2 PLACE DECIMALS ± .03	
3 PLACE DECIMALS ± .010	
ANGLE ± 0.5°	
ALL SURFACES	
COND. TOL. APPLY TO SPOK SIZES	
SIMILAR TO	
SUPERSEDES DWG OF	
NEXT ASSY	USED ON
APPLICATION	

NOTES: (UNLESS OTHERWISE SPECIFIED)
1. REMOVE ALL BURRS AND SHARP EDGES
2. DIMENSIONS APPLY BEFORE PLATING
3. INTERPRET DRAWING PER ANSI Y14.5M-1983

REVISEMENTS				
MF	ZONE	REV	DESCRIPTION	DATE
		A	REL TO PRODUCTION	8JUN93
			DCN D018.05(A2)	05FEB99

POLARIZATION RESOLVER



TYPICAL RESOLVER SCHEMATIC DIAGRAM


POLARIZATION LIMIT SWITCHES				POLARIZATION MOTOR				CABLE ROUTED TO LOCAL MOTOR CONTROLLER			
POL LIMIT SWITCH		2 PAIR CALE, 16 AWG CONDUCTORS		TERM ITEM NO.		PK9DR-100 10 CONDUCTOR, 18 AWG, SDN CABLE					
CW	RED	ORN	BLK	RED	25	YEL	WHT	YEL	18 AWG	CW LIMIT SWITCH	
	ORN			ORN	25	RED/BLK		RED/BLK	18 AWG	COM LIMIT SWITCH	
	BLK			BLK	25	BRN		BRN	18 AWG	CCW LIMIT SWITCH	
	BLU			BLU	25	BLK		RED	18 AWG	CW MOTOR	
COM	BLU	BLK	BLK	RED	25	BLK	BLK	BLK	18 AWG	CCW MOTOR	
				BLK	25	BLU		BLU	18 AWG	COM MOTOR/BRAKE	
				ORN	25	ORN/BLK		ORN/BLK	18 AWG	BRAKE	
				ORN	25	BLU/BLK		BLU/BLK	18 AWG	FRAME GROUND	
CCW	FRM	N/A	YEL/BLK	FRM	31	ORN	YEL/BLK	ORN	18 AWG	SPARE	
				N/A	15	YEL/BLK		YEL/BLK	18 AWG	SPARE	

MFG PROCESSES	INSPECTION PROCEDURES	TEST PROCEDURES
AUSA SPECIFICATIONS		

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally in the field of ANDREW shall be confidential except to the extent it is established to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used as the basis for the manufacture or sale of apparatus without written permission.

CAD FILE NO:
DS00J46A

UNLESS OTHERWISE SPECIFIED	
DIMENSIONS ARE IN INCHES	
TOLERANCES	
1 PLACE DECIMALS ± .1	
2 PLACE DECIMALS ± .03	
3 PLACE DECIMALS ± .010	
ANGLE ± 0.5°	
ALL SURFACES	
COM. TOL. APPLY TO STOCK SIZES	
SIMILAR TO	
SUPERSEDES DWG OF	

QTY	ITEM NO.	U OF U	ANDREW PART NO.	DESCRIPTION
PARTS LIST				
DRWN	T.NOLAN	14APR93	 ANDREW CORPORATION 2701 Mayhill Road Denton, Texas U.S.A. 76208	
CHECKED	PTF	3JUN93		
APPROVED	PTF	3JUN93		
APPROVED	SLI	4JUN93		
APPROVED	SJA	3JUN93	POLARIZATION DRIVE INSTALLATION INSTRUCTIONS	
APPROVED	SLI	4JUN93		
SIZE		FROM NO.	DWG. NO.	
D		84147	239956	
SCALE		1=1	SHEET 6	
PROJ. OR		61114	DISTR. A	

NOTES: (UNLESS OTHERWISE SPECIFIED)

1. REMOVE ALL BURRS AND SHARP EDGES
2. DIMENSIONS APPLY BEFORE PLATING
3. INTERPRET DRAWING PER AWS Y14.5M-1982

GENERAL

READ THE INSTRUCTIONS THOROUGHLY BEFORE ASSEMBLY. FOLLOW THE SEQUENCES FOR PROPER ASSEMBLY AND OPERATION.



THIS WARNING INDICATES THAT FAILURE TO FOLLOW THE PROPER PROCEDURE AT THIS POINT COULD RESULT IN DAMAGE TO THE ANTENNA AND/OR OTHER PROPERTY AND POSSIBLE INJURY TO PERSONNEL.

NOTICE

THIS INDICATES INFORMATION THAT SHOULD BE READ BEFORE PROCEEDING.

UNPACKING

CAREFULLY REMOVE ALL PARTS FROM SHIPPING BOXES. THE CONTENT SHOULD CORRESPOND WITH THE PARTS LIST. ANY DAMAGE OR SHORTAGE WILL PREVENT SATISFACTORY ASSEMBLY, INSTALLATION, AND OPERATION OF THE ANTENNA.

NOTICE

'THE INSTALLATION, MAINTENANCE OR REMOVAL OF AN ANTENNA REQUIRES QUALIFIED, EXPERIENCED PERSONNEL. ANDREW INSTALLATION INSTRUCTIONS HAVE BEEN WRITTEN AND ILLUSTRATED FOR SUCH INSTALLATION PERSONNEL. ANTENNA SYSTEMS SHOULD BE INSPECTED ONCE A YEAR BY QUALIFIED PERSONNEL TO VERIFY PROPER INSTALLATION, MAINTENANCE AND CONDITION OF EQUIPMENT. ANDREW DISCLAIMS ANY LIABILITY OR RESPONSIBILITY FOR THE RESULTS OF IMPROPER OR UNSAFE INSTALLATION OR MAINTENANCE PRACTICES.'

TOOLS RECOMMENDED FOR PROPER INSTALLATION

QUANTITY	DESCRIPTION
1	SCREWDRIVER (SLOTTED)
2	9/16 SOCKET
2	9/16 COMBINATION WRENCH
1	12 FT. TAPE MEASURE
2	10 FT. (EYE AND EYE TYPE) NYLON SLING
1	25 FT EXTENSION LADDER

NOTICE

THE FOLLOWING INSTRUCTIONS HAVE BEEN WRITTEN SUCH THAT THE SUBREFLECTOR AND SUPPORT STRUTS ARE PREASSEMBLED ON THE GROUND AND LIFTED INTO REFLECTOR BY USE OF A CRANE. IF A CRANE IS NOT AVAILABLE PREASSEMBLE SUBREFLECTOR SUPPORT IN REFLECTOR THEN INSTALL SUBREFLECTOR.

STEP 1:
PLACE REFLECTOR IN ZENITH (EL=90°) POSITION.

STEP 2:
REFER TO FIGURE 1. LOOSELY ASSEMBLE STRUT WELDMENTS (ITEM 1) AS SHOWN USING SUPPLIED STRUT ANGLES (ITEM 3) AND CORRESPONDING MOUNTING HARDWARE.

STEP 3:
REFER TO FIGURE 1. LOOSELY ATTACH ANGLE CLIPS (ITEM 2) TO PANEL SEGMENTS 8-16, 3-11, 7-15 AND 4-12 AS SHOWN IN FIGURE 2, USING SCREWS, WASHERS, LOCKWASHERS AND NUTS PREVIOUSLY INSTALLED DURING REFLECTOR ASSEMBLY.

STEP 4:
LOOSELY ATTACH PREASSEMBLED SUBREFLECTOR/ADJUSTMENT RING P/N 205825-2 (ITEM 11) TO STRUT WELDMENTS USING CORRESPONDING MOUNTING HARDWARE AS SHOWN IN FIGURE 1 AND VIEW B. ATTACH TEMPORARY NYLON SLINGS BEING CAREFUL NOT TO DAMAGE SUBREFLECTOR ASSEMBLY.

NOTICE

POSITION SUBREFLECTOR ASSEMBLY SO THAT 'TOP' STENCILED ON THE ADJUSTMENT RING IS TOWARD TOP OF THE ANTENNA.

STEP 5:
CAREFULLY RAISE AND ATTACH PREASSEMBLED SUBREFLECTOR/STRUT ASSEMBLIES TO CORRESPONDING ANGLE CLIPS AS SHOWN ON VIEW A-A USING SUPPLIED BOLTS, FLATWASHERS, LOCKWASHERS AND NUTS. SECURELY TIGHTEN ALL SUBREFLECTOR/STRUT ASSEMBLY MOUNTING HARDWARE EXCEPT FOR ADJUSTMENT RING HARDWARE SHOWN IN VIEW B. REMOVE TEMPORARY NYLON SLINGS.

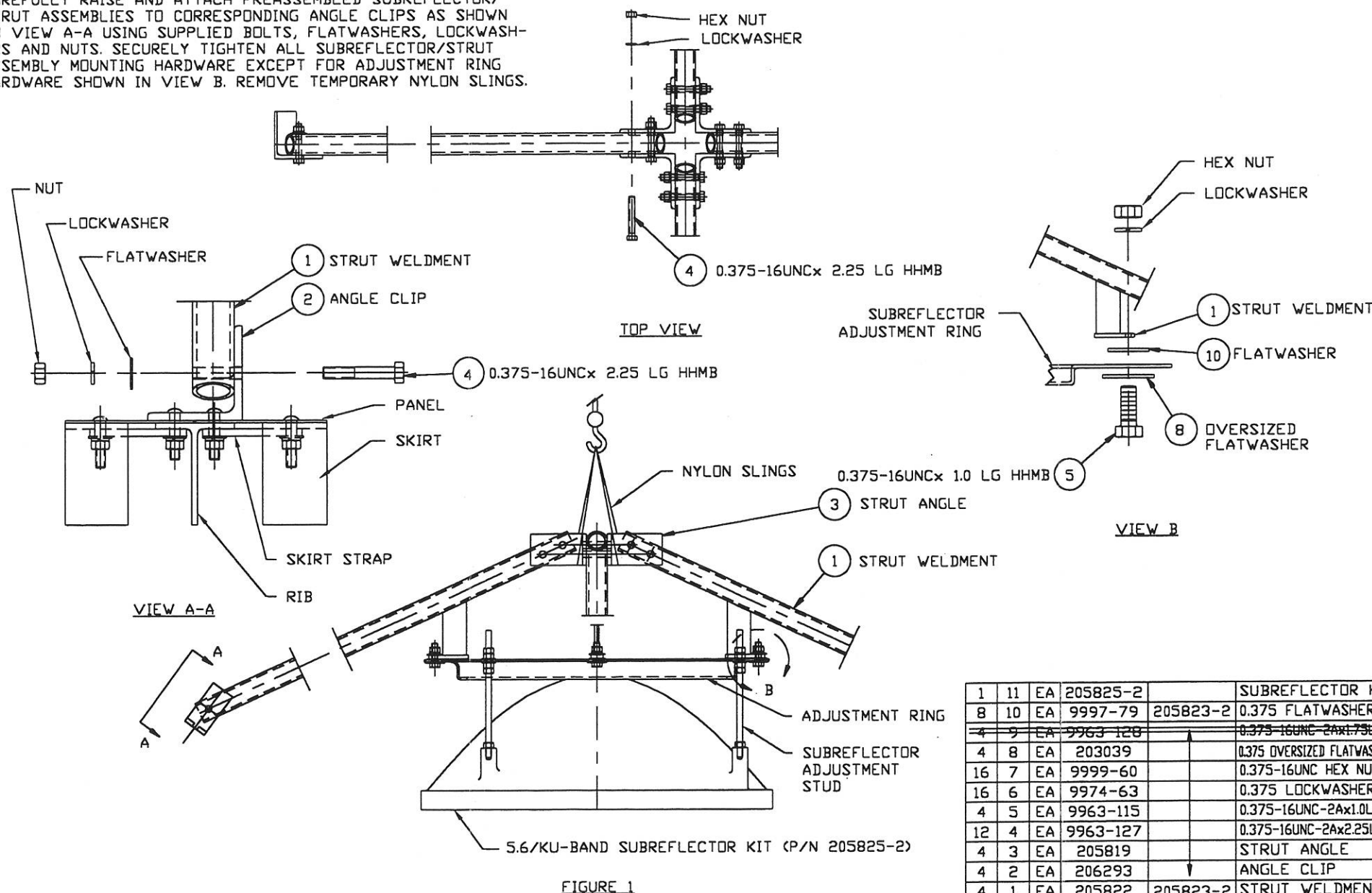


FIGURE 1

QTY	ITEM NO	U OF M	ANDREW PART NO.	PART OF	DESCRIPTION
1	11	EA	205825-2		SUBREFLECTOR KIT
8	10	EA	9997-79	205823-2	0.375 FLATWASHER (SST)
4	9	EA	9963-128		0.375-16UNC-2Ax1.75LG HHMB
4	8	EA	203039		0.375 OVERSIZED FLATWASHER (SST)
16	7	EA	9999-60		0.375-16UNC HEX NUT (SST)
16	6	EA	9974-63		0.375 LOCKWASHER (SST)
4	5	EA	9963-115		0.375-16UNC-2Ax1.0LG HHMB
12	4	EA	9963-127		0.375-16UNC-2Ax2.25LG HHMB
4	3	EA	205819		STRUT ANGLE
4	2	EA	206293		ANGLE CLIP
4	1	EA	205822	205823-2	STRUT WELDMENT

PARTS LIST

DRWR	4-11-90	ANDREW CORPORATION
CHDRD		2701 Mayhill Road
APPD ENGR	RVS	Denton, Texas U.S.A. 76208
APPD ENGR	RVK	
APPD MFG		
APPD D.C.		
5.6M KU-BAND SUBREFLECTOR & SUBREFLECTOR STRUTS INSTALLATION INSTRUCTIONS		
SIZE	1/8" X 1/4"	DRG. NO.
D	84147	239438
SCALE	1=4	SHEET
PROJ. OR	61214	DISTR
	A	1 of 2

MFG PROCESSES
INSPECTION PROCEDURES
TEST PROCEDURES
AUSA SPECIFICATIONS

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally to the field of ANDREW shall be confidential except to any extent to which it is disclosed to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used in the manufacture or sale of apparatus without written permission.

UNLESS OTHERWISE SPECIFIED	MATERIAL
DIMENSIONS ARE IN INCHES	
TOLERANCES	
1 PLACE DECIMALS ± .1	
2 PLACE DECIMALS ± .03	
3 PLACE DECIMALS ± .010	
ANGLE ± 0.5°	
ALL SURFACES	
CON. TOL. APPLY TO STOCK SIZES	
SIMILAR TO	
SUPERSEDES DRG OF	
ES56-1	
NEXT ASSY	USED ON
APPLICATION	

CAD FILE NO:
ES06T51B

NOTES: (UNLESS OTHERWISE SPECIFIED)
1. REMOVE ALL BURRS AND SHARP EDGES
2. DIMENSIONS APPLY BEFORE PLATING
3. INTERPRET DRAWING PER ANSI Y14.5M-1982

STEP 6:

MEASURE AND NOTE THE DISTANCE BETWEEN OUTERMOST ANGLE CLIP BOLT HEAD AND THE SUBREFLECTOR RIM AS SHOWN IN SECTION D-D. OBTAIN CORRESPONDING MEASUREMENTS FROM REMAINING SUBREFLECTOR STRUTS AND ADJUST SUBREFLECTOR ADJUSTMENT RING HARDWARE (REFER TO FIGURE 1, VIEW B) AT ALL FOUR LOCATIONS TO ACHIEVE A MAXIMUM DIFFERENTIAL OF 0.06 INCH. SECURELY TIGHTEN ADJUSTMENT HARDWARE.

STEP 7:

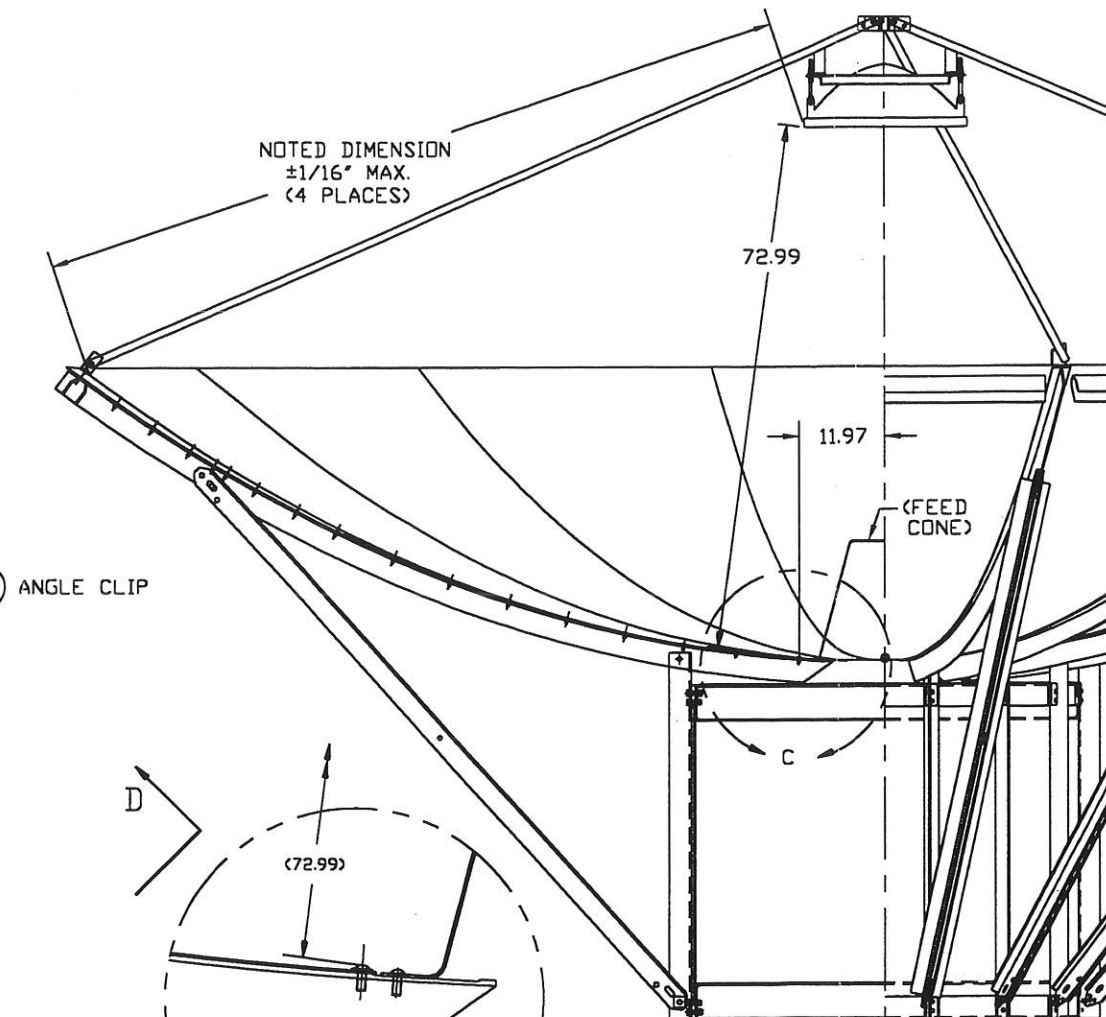
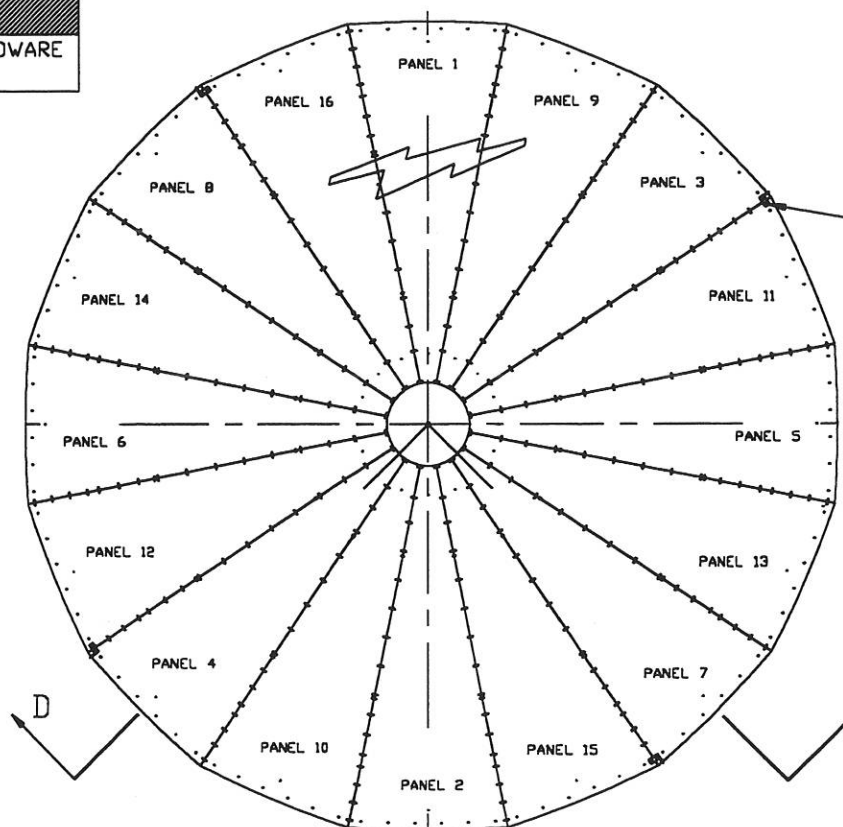
REFER TO SECTION D-D. USE MEASURING TAPE TO SET INDICATED DIMENSION BETWEEN FIRST PANEL SEAM BOLT HEAD (REFER TO 11.97 DIMENSION) AND SUBREFLECTOR APERTURE RIM AT THE THREE SUBREFLECTOR ADJUSTMENT STUD POSITIONS. USE SUBREFLECTOR ADJUSTMENT STUD HARDWARE (REFER TO FIGURE 1) TO ACHIEVE EQUAL AXIAL DIMENSION OF 72.99 AT ALL THREE LOCATIONS. SECURELY TIGHTEN ADJUSTMENT HARDWARE.

STEP 8:

REPEAT PROCEDURE DESCRIBED IN STEP 6. IF ANY DIMENSIONAL VARIATION IS NOTED, REPEAT ADJUSTMENT PROCEDURE DESCRIBED IN STEP 6 THEN REPEAT PROCEDURE IN STEP 7 IF REQUIRED.

NOTICE

DOUBLE CHECK TO SEE THAT ALL HARDWARE HAS BEEN SECURELY TIGHTENED



VIEW C

SECTION D-D

FIGURE 2

(FRONT VIEW OF REFLECTOR)

MFG	INSPECTION	TEST
PROCESSES	PROCEDURES	PROCEDURES
AUSA SPECIFICATIONS		

NOTES: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally in the art of ANDREW shall be confidential except to the extent to which it is established to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used in the manufacture or sale of equipment without written permission.

CAD FILE NO:
ES06T52A

UNLESS OTHERWISE SPECIFIED	MATERIAL
DIMENSIONS ARE IN INCHES	
TOLERANCES	
1 PLACE DECIMALS ± .1	
2 PLACE DECIMALS ± .03	
3 PLACE DECIMALS ± .010	
ANGLE ± 0.5°	
ALL SURFACES	
CON. TOL. APPLY TO STOCK SIZES	
SIMILAR TO	
SUPERSEDES DWG OF	

ES56-1

NEXT ASSY USED ON

APPLICATION

FINISH

QTY	ITEM NO	U OF E	ANDREW PART NO.	DESCRIPTION
PARTS LIST				
QTY	ITEM NO	U OF E	ANDREW PART NO.	DESCRIPTION
1	IG	4-11-90		
1	RWS	18APR90		
1	RWK	18APR90		
1	G.C.			
ANDREW CORPORATION 10500 W. 153rd Street Orland Park, Illinois U.S.A. 60462				
5.6M KU-BAND SUBREFLECTOR & SUBREFLECTOR STRUTS INSTALLATION INSTRUCTIONS				
SIZE	FROM NO.	DWG. NO.		
D	84147	239438		
SCALE	1=6	SHEET	2	
PROJ. OR	61214	DSR	A	

NOTES: (UNLESS OTHERWISE SPECIFIED) -
1. REMOVE ALL BURRS AND SHARP EDGES
2. DIMENSIONS APPLY BEFORE PLATING
3. INTERPRET DRAWING PER ANSI Y14.5M-1982

GENERAL

READ THE INSTRUCTIONS THOROUGHLY BEFORE ASSEMBLY. FOLLOW THE SEQUENCES FOR PROPER ASSEMBLY AND OPERATION.



THIS WARNING INDICATES THAT FAILURE TO FOLLOW THE PROPER PROCEDURE AT THIS POINT COULD RESULT IN DAMAGE TO THE ANTENNA AND/OR OTHER PROPERTY AND POSSIBLE INJURY TO PERSONNEL.

NOTICE

THIS INDICATES INFORMATION THAT SHOULD BE READ BEFORE PROCEEDING.

UNPACKING

CAREFULLY REMOVE ALL PARTS FROM SHIPPING BOXES. THE CONTENT SHOULD CORRESPOND WITH THE PARTS LIST. ANY DAMAGE OR SHORTAGE WILL PREVENT SATISFACTORY ASSEMBLY, INSTALLATION, AND OPERATION OF THE ANTENNA.

NOTICE

"THE INSTALLATION, MAINTENANCE OR REMOVAL OF AN ANTENNA REQUIRES QUALIFIED, EXPERIENCED PERSONNEL. ANDREW INSTALLATION INSTRUCTIONS HAVE BEEN WRITTEN AND ILLUSTRATED FOR SUCH INSTALLATION PERSONNEL. ANTENNA SYSTEMS SHOULD BE INSPECTED ONCE A YEAR BY QUALIFIED PERSONNEL TO VERIFY PROPER INSTALLATION, MAINTENANCE AND CONDITION OF EQUIPMENT. ANDREW DISCLAIMS ANY LIABILITY OR RESPONSIBILITY FOR THE RESULTS OF IMPROPER OR UNSAFE INSTALLATION OR MAINTENANCE PRACTICES."

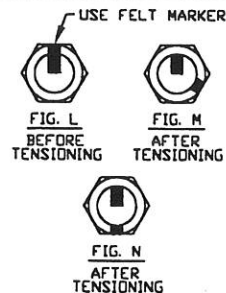
TOOLS RECOMMENDED FOR PROPER INSTALLATION

QUANTITY	DESCRIPTION
1	15 TON CRANE
2	SCREWDRIVER (SLOTTED)
2	5/32 HEX SOCKET (ALLEN) WRENCH
2	1/4 HEX SOCKET (ALLEN) WRENCH
2	7/16 SOCKET
2	9/16 SOCKET
2	1/2 SOCKET
2	3/4 SOCKET
2	7/8 SOCKET
2	1 1/16 SOCKET
2	1 1/4 SOCKET
2	1 7/16 SOCKET
2	1/2 DRIVE RATCHET
2	1/2 DRIVE EXTENSION
2	7/16 COMBINATION WRENCH
2	1/2 COMBINATION WRENCH
2	9/16 COMBINATION WRENCH
2	3/4 COMBINATION WRENCH
2	7/8 COMBINATION WRENCH
2	1 1/16 COMBINATION WRENCH
2	1 1/4 COMBINATION WRENCH
2	1 7/16 COMBINATION WRENCH
1	1 1/4 SPUD WRENCH
1	6 FT NYLON CHOKER (3/8" DIA)
1	3 FT NYLON CHOKER (3/8" DIA)
1	PULLER HOIST/1 TON
4	2x4x8 FT LUMBER (TEMPORARY SUPPORT)
4	5/8 SHACKLES
4	20 FT TAG LINE
4	16 FT CHOCKER (1/2" DIA)
2	12 FT STEP LADDER
2	25 FT EXTENSION LADDER
1	8" ADJUSTABLE WRENCH
4	TEMPORARY WOOD SUPPORT BLOCKS

MFG PROCESSES	INSPECTION PROCEDURES	TEST PROCEDURES
AUSA SPECIFICATIONS		

TENSIONING PROCEDURES A-325 HARDWARE

- LUBRICATE BOLT THREADS WITH STICK WAX (ITEM 39) TO REDUCE FRICTION. DO NOT ALLOW WAX UNDER FLAT WASHER.
- AFTER CONNECTIONS ARE COMPLETED, TIGHTEN BOLTS UNTIL SURFACES ARE JOINED AND NUTS ARE SNUG, i.e. FULL EFFORT OF PERSON USING ORDINARY SPUD WRENCH. DO NOT PROCEED WITH STEPS 3 & 4 BELOW UNLESS THE CONNECTION IS FINAL. IF BOLTS ARE LOOSENED AFTER STEPS 3 AND 4, DISCARD AND REPLACE WITH NEW HARDWARE. REPEAT ALL STEPS.
- MARK NUTS AND END OF BOLTS WITH STRAIGHT LINE. SEE FIGURE L.
- TIGHTEN NUTS FURTHER WITH EXTRA LONG WRENCH OR POWER WRENCH UNTIL NUTS ARE MOVED 1/3 TURN (120°±30°) FOR BOLT LENGTHS UP TO AND INCLUDING 4 DIAMETERS. SEE FIGURE M; 1/2 TURN (180°±30°) FOR BOLT LENGTHS OVER 4 DIAMETERS. SEE FIGURE N.



1	63	EA	301742		LEFT TRIPOD JOINT WELDMENT
10	62	EA	9974-10	209954	LOCKWASHER
10	61	EA	9997-66	209954	WASHER - FLAT
18	60	EA	9999-121	209954	HEAVY HEX NUT
4	59	EA	203672	209954	FULLY THREADED ROD
2	58	EA	301611	209954	LOAD PLATE
4	57	EA	45980-14	209954	0.625-11UNCx1.75LG BOLT & NUT ASSY
2	56	EA	300027	209954	CAST SPACER
4	55	EA	45980-22	209954	0.625-11UNCx2.50LG BOLT & NUT ASSY
4	54	EA	45980-37	209954	0.625-11UNCx3.0LG BOLT & NUT ASSY
4	53	EA	300031	209954	CAST BEVEL WASHER
4	52	EA	209140	209954	CLIPPED WASHER
1	50	EA	301741	220914	RIGHT TRIPOD JOINT WELDMENT
1	49	EA	301772	220914	TRIPOD TUBE WELDMENT
2	48	EA	300026	220914	TRIPOD CHANNEL LEG
16	47	EA	220915	220913	SHORT STRUT
32	46	EA	209950-2	220913	LONG STRUT
16	45	EA	209375-2	220912	5.6M STRETCH-FORMED SKIRT
16	44	EA	220916	220912	MACHINED RIB
16	43	EA	220917	220912	MACHINED PANEL
1	42	EA	220911	220914	MODULAR ENCLOSURE
1	41	EA	209565	220914	ENCLOSURE DOOR ASSEMBLY
QTY	ITEM NO.	U OF #	ANDREW PART NO.	PART OF:	DESCRIPTION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES	
1 PLACE DECIMALS ± .1	
2 PLACE DECIMALS ± .03	
3 PLACE DECIMALS ± .010	
ANGLE ± 0.5°	
ALL SURFACES CONC. TOL. APPLY TO STOCK SIZES	
SIMILAR TO	
SUPERSEDES QWS OF	
209954	USED ON
APPLICATION	

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally in the field of ANDREW shall be confidential except in any extent to which it is considered to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used as the basis for the manufacture or sale of apparatus without written permission.

CAD FILE NO.
ES06541J

239352

1

1

REVISIONS				
MF	ZONE	REV	DESCRIPTION	DATE
		F	SEE MICROFILM FOR PREVIOUS REVISIONS. ADDED ITEM 57. REVISED SHEET 5. ITEM 55 QTY WAS 8. DCN D006.82(A)	18MAR94
		G	IT. 27 WAS QTY 48. IT. 55 WAS P/N 45980-7; 2.25 LG BOLT; REVISED SHT 2. DCN D013.94(CB)	26AUG97
		H	ADDED ITS 58-62; DEL ITS 25 & 33; IT 28 WAS QTY 6; ADDED SHT 7. DCN D016.01(A2)	5MAY98
		J	ADDED ITEM 63 AND REV. ITEMS 49,50,REV. PAGES 5 AND 6. DCN D016.53(A3)	21JUL98

1	40	EA	209954		REFLECTOR HARDWARE KIT
2	39	EA	200852	209954	STICK WAX
4	38	EA	9903-10	209954	ALLEN WRENCH
77	37	EA	9997-236	209954	0.625 FLAT WASHER (SST)
32	36	EA	9997-228	209954	0.50 FLAT WASHER (A325)
16	35	EA	45980-23	209954	0.50-13UNCx 2.00 LG BOLT/NUT ASSY
32	34	EA	9858-22	209954	0.625x 1.00 LG SHOULDER BOLT
4	33	EA	209957	209954	BACKING PLATE
4	32	EA	206278	209954	LIFT TAB
16	31	EA	9974-79	209954	0.625 LOCK WASHER (SST)
1	30	EA	9999-224	209954	0.875-9UNC HEAVY HEX JAM NUT
1	29	EA	9997-174	209954	0.875 FLAT WASHER (A325)
2	28	EA	9997-202	209954	0.75 FLAT WASHER (A325)
60	27	EA	9997-227	209954	0.625 FLAT WASHER (A325)
1	26	EA	45980-35	209954	0.875-9UNCx 5.25 LG BOLT & NUT ASSY
4	25	EA	45980-20	209954	0.750-10UNCx 2.50 LG BOLT & NUT ASSY
2	24	EA	45980-18	209954	0.750-10UNCx 2.00 LG BOLT & NUT ASSY
16	23	EA	45980-1	209954	0.625-11UNCx 2.00 LG BOLT & NUT ASSY
16	21	EA	9999-72	209954	0.625-11UNC NUT (SST)
32	20	EA	9997-131	209954	0.25 FLAT WASHER (SST)
16	19	EA	9999-57	209954	0.25-20UNC HEX NUT (SST)
16	18	EA	9963-76	209954	0.25-20UNCx 1.25 LG HHCS (SST)
64	17	EA	9974-64	209954	0.50 LOCK WASHER (SST)
64	16	EA	9999-61	209954	0.50-13UNC HEX NUT (SST)
32	15	EA	9963-129	209954	0.50-13UNCx 1.75 LG HHCS (SST)
178	14	EA	9997-65	209954	0.50 FLAT WASHER (SST)
48	13	EA	9997-145	209954	0.375 FLAT WASHER (SST)
48	12	EA	9974-63	209954	0.375 LOCK WASHER (SST)
48	11	EA	9999-60	209954	0.375-16UNC HEX NUT (SST)
32	10	EA	9858-18	209954	0.50x 1.00 LG SHOULDER BOLT
16	9	EA	9858-19	209954	0.50x 0.50 LG SHOULDER BOLT
608	8	EA	9974-17	209954	0.312 LOCK WASHER (SST)
64	7	EA	9997-56	209954	0.312 FLAT WASHER (SST)
64	6	EA	9999-59	209954	0.312-18UNC HEX NUT (SST)
64	5	EA	9959-11	209954	0.312-18UNC ROUND HEAD SCREW, 1.50 LG (SST)
544	4	EA	209236	209954	0.312-18UNC BUTTON HEAD SCREW, 0.75 LG (SST)
16	3	EA	9963-222	209954	0.625-11UNCx2.00 LG HHCS (SST)
80	2	EA	209765-1	209954	0.250 SPACER
32	1	EA	220025	209954	SKIRT STRAP
QTY	ITEM NO.	U OF #	ANDREW PART NO.	PART OF:	DESCRIPTION

ANDREW CORPORATION
10500 W. 153rd Street
Orland Park, Illinois U.S.A. 60462

5.6 M REFLECTOR/BACK
STRUCTURE INSTALLATION
INSTRUCTIONS

SIZE: 84147
D: 84147
SCALE: 1=1
SHEET: 1 OF 7

 **CAUTION:** INSTALL REFLECTOR/BACK STRUCTURE ASSEMBLY ONLY WHEN WINDS ARE LESS THAN 15 MPH TO PREVENT DAMAGE TO REFLECTOR PANELS AND EASE ASSEMBLY.

PLACE MODULAR ENCLOSURE (ITEM 42) ON FOUR TEMPORARY WOOD SUPPORT BLOCKS. BE CAREFUL NOT TO DAMAGE MACHINED SURFACES. BOLT ON SHORT STRUTS (ITEM 47) TO ENCLOSURE REFER TO FIGURE 1. FULLY TIGHTEN ALL HARDWARE.

FOR STEPS 1 THRU 4: LUBRICATE BOLT THREADS OF BOTH STAINLESS STEEL AND A325 HARDWARE WITH STICK WAX (ITEM 39) TO REDUCE FRICTION. DO NOT ALLOW WAX UNDER FLATWASHER.

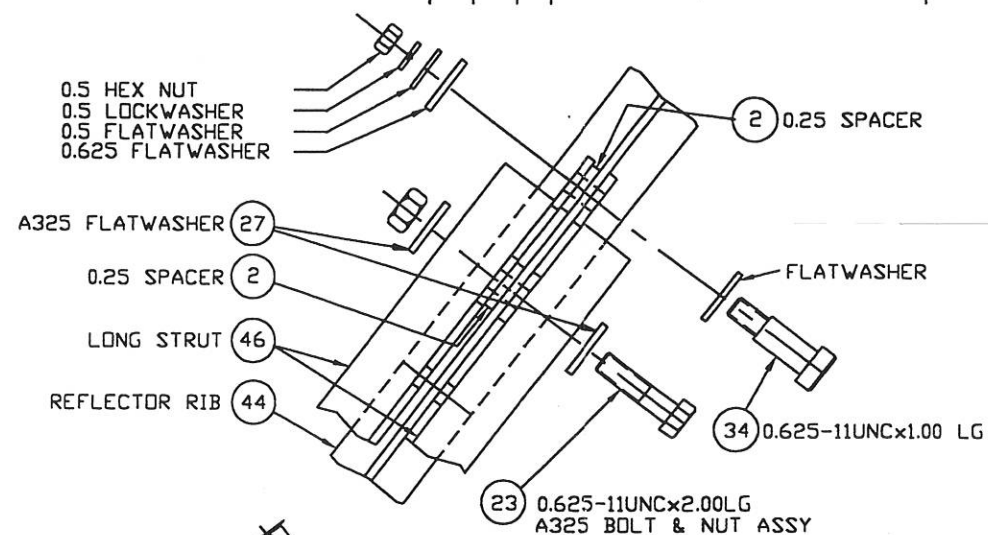
ATTACH TWO LONG STRUTS (ITEM 46) LOOSELY TOGETHER PER VIEW A-A IN FIGURE 1 TO MAKE 16 PAIRS OF STRUTS. ATTACH EACH PAIR OF LONG STRUTS TO SHORT STRUTS USE 0.25 SPACERS (ITEM 2) REFER TO SECTION B-B FIGURE 1.

ATTACH RIBS (ITEM 44) TO SHORT STRUTS (ITEM 47) REFER TO SECTION D-D FIGURE 1.
HANDLE RIBS CAREFULLY TO KEEP FROM DISTORTING SHAPE.

RAISE LONG STRUTS (ITEM 46) AND RIB (ITEM 44). ATTACH LONG STRUT TO RIB WITH 0.625 DIA
SHOULDER BOLT (ITEM 34) AND 0.625 DIA A325 BOLT (ITEM 23) REFER TO FIGURE 1 VIEW C-C.

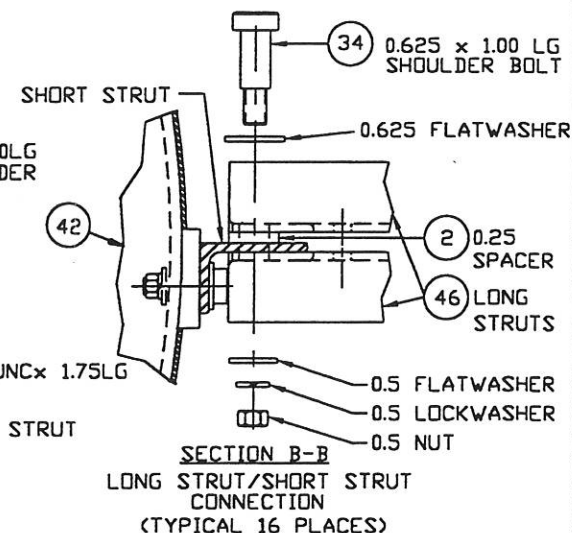
MAKE SURE THAT ALL 0.25 SPACERS (ITEM 2) ARE PROPERLY PLACED AND SHOULDER BOLTS ARE PROPERLY SEATED THROUGH ALL CONNECTIONS.

SECURELY TIGHTEN ALL STAINLESS STEEL HARDWARE. NEXT, TIGHTEN ALL A325 HARDWARE FOLLOWING TENSIONING PROCEDURES. SHOWN ON SHEET 1.



LONG STRUT MIDDLE CONNECTION
(TYPICAL 16 PLACES)

LONG STRUT/RIB CONNECTION
(TYPICAL 16 PLACES)



LONG STRUT/SHORT STRUT
CONNECTION
(TYPICAL 16 PLACES)

USPS NET		
MFG PROCESSES	INSPECTION PROCEDURES	TEST PROCEDURES
AUSA SPECIFICATIONS		

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally in the field of ANDREW shall be confidential except in any extent to which it is established to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used as the basis for the manufacture or sale of apparatus without written permission.

					UNLESS OTHERWISE SPECIFIED
					DIMENSIONS ARE IN INCHES
					TOLERANCES
					1 PLACE DECIMALS ± .1
					2 PLACE DECIMALS ± .03
					3 PLACE DECIMALS ± .010
					ANGLE ± 0.5°
					ALL SURFACES
					CONC. TOL APPLY TO STOCK SIZE
	NEXT ASSY		USED ON	209954	SIMILAR TO
					SUPPLIES ONE OF

MATERIA	
---------	--

FINISH

1

CRASH	IG	7-21-8
DECODE		
APPG EXORG	IG	14MAR7
APPG EXORG		
APPG WFC	RWS	14MAR7
APPG B.C.	R/VK	14MAR7

ANDREW

ANDREW CORPORATION
10500 W. 153rd Street
Orland Park, Illinois U.S.A. 60467

5.6 M REFLECTOR/BACK STRUCTURE INSTALLATION INSTRUCTIONS

DATE	7/20/81	DOC. NO.	239352
D	84147		

SCALE 1=10		SHEET 2	
PROJ. OR	6124	DIST.	A

NOTES: (UNLESS OTHERWISE SPECIFIED) -
1. REMOVE ALL BURRS AND SHARP EDGES
2. DIMENSIONS APPLY BEFORE PLATING
3. INTERPRET DRAWING PER ANSI Y14.5M-1982

STEP 6:

WHILE ON THE GROUND ATTACH STRETCH-FORMED SKIRTS (ITEM 45) TO REFLECTOR PANELS (ITEM 43). REFER TO SECTION G-G.

STEP 7:

ATTACH THE REFLECTOR PANELS TO EACH SET OF RIBS BY LOOSELY ATTACHING SEAM HARDWARE (ITEMS 4 AND 52). PANELS SHOULD BE ADDED OPPOSITE EACH OTHER TO BALANCE THE ENCLOSURE ASSEMBLY. FIRST ATTACH PANEL 1 AND PANEL 2, THEN PANEL 3 AND PANEL 4, AND SO ON REFER TO VIEW "F" SHEET 4.

NOTICE

DIFFERENT LENGTH HARDWARE IS USED ON THE OUTERMOST SEAM CONNECTION (SEE SECTION G-G AND VIEW K-K ON SHEET 4).

STEP 8:

LOOSELY ATTACH SKIRT STRAPS (ITEM 1). REFER TO VIEW K-K, SHEET 4.
ATTACH THE LIFTING TABS (ITEM 32), LOCATED ON THE SECOND AND THIRD SEAM HOLES OF THE PANEL 90° APART FROM EACH OTHER (4 REQUIRED). REFER TO FIGURE 2 AND VIEW F-F, SHEET 4 FOR PROPER ORIENTATION.



CAUTION:

DURING OVERNIGHT OR HIGH-WIND CONDITIONS INSTALL TEMPORARY SUPPORTS AND STAKE TAG LINES AT 4 PLACES APPROXIMATELY 90° TO EACH OTHER. REFER TO FIGURE 2.

0.25-20UNCx 1.25 LG BOLT

FLATWASHER

LIFTING TAB

0.312-18UNCx 0.75 LG
BUTTON HEAD SCREW

REFLECTOR
PANEL

LOCKWASHER

FLATWASHER

HEX NUT

RIB

ENCLOSURE ASSEMBLY

F (SEE SHEET 4)

0.312-18UNCx 0.75 LG
BUTTON HEAD SCREW

LOCKWASHER

PANEL

SKIRT

SECTION G - G
ROTATED

2x4x8 FT LUMBER
TEMPORARY SUPPORT
4 PLACES

(SEE SHEET 4) E

(TO GROUND)

TEMPORARY SUPPORT

TAG LINE
4 PLACES

STAKE
4 PLACES

FIGURE 2

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally to the field of ANDREW shall be confidential except to the extent to which it is established to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used as the basis for the manufacture or sale of apparatus without written permission.

CAD FILE NO:
ES06543B

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES

TOLERANCES

1 PLACE DECIMALS ± .1
2 PLACE DECIMALS ± .03
3 PLACE DECIMALS ± .010
ANGLE ± 0.5°

ALL SURFACES
CONC. TO APPLY TO STOCK SIZE

SIMILAR TO
SUPERSEDES DWS OF

MATERIAL

FINISH

QTY ITEM U OF M ANDREW PART NO. DESCRIPTION

PARTS LIST

ANDREW CORPORATION
10500 W. 153rd Street
Orland Park, Illinois U.S.A. 60462

5.6 M REFLECTOR/BACK
STRUCTURE INSTALLATION
INSTRUCTIONS

SIZE FROM NO. D 84147 DWS NO. 239352

SCALE 1=10 SHEET 3

PROD. OR 61214 DATE A111

MFG	INSPECTION	TEST
PROCESSES	PROCEDURES	PROCEDURES
AUSA SPECIFICATIONS		

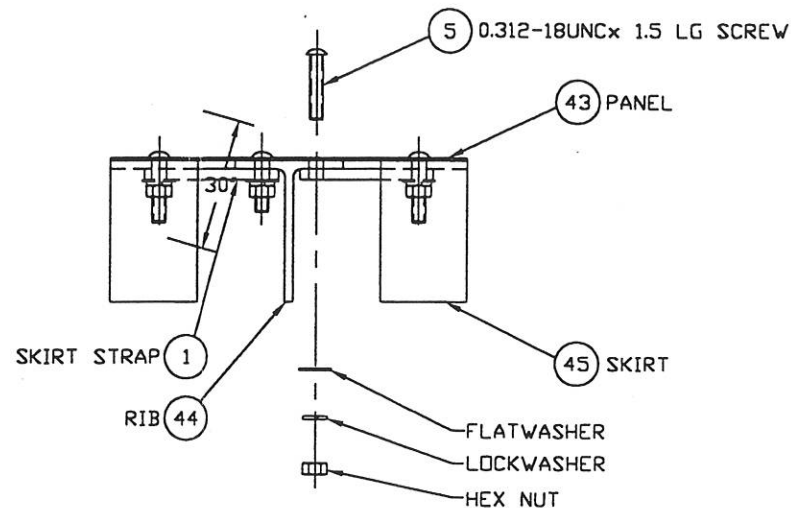
NOTES: (UNLESS OTHERWISE SPECIFIED) -
 1. REMOVE ALL BURRS AND SHARP EDGES
 2. DIMENSIONS APPLY BEFORE PLATING
 3. INTERPRET DRAWING FOR AMS Y14.5M-1982

STEP 9:

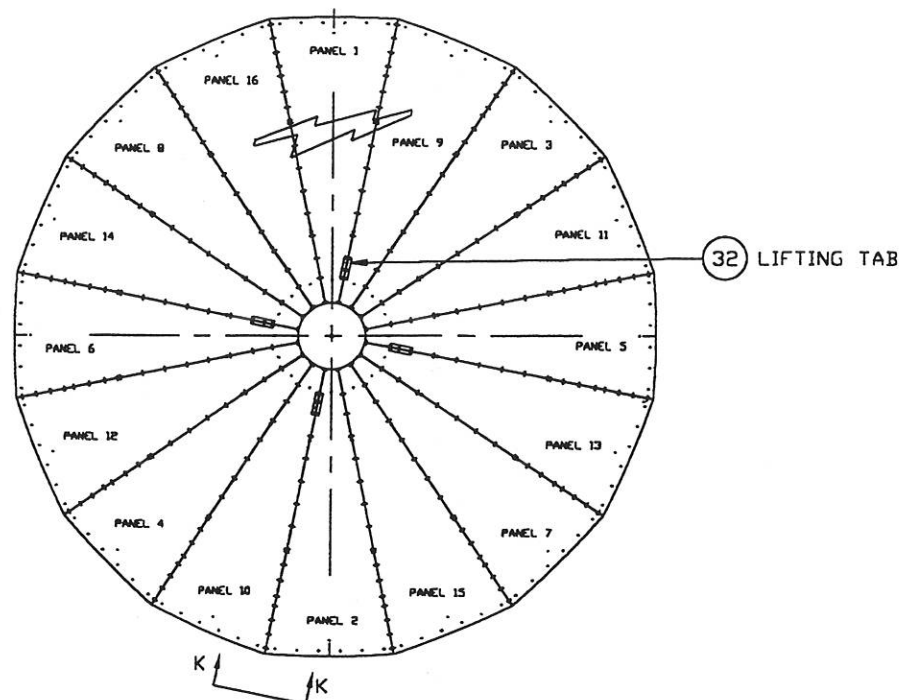
CHECK REFLECTOR PANEL FITS. INSURE THAT SEAM WIDTHS ARE UNIFORM AND PANELS ARE NOT OVERLAPING. PROCEED TIGHTENING REFLECTOR PANEL SEAM HARDWARE CLOCKWISE FROM INNER MOST HOLES TO OUTER MOST HOLES. TIGHTEN SKIRT STRAP HARDWARE.

NOTICE

CHECK TO SEE THAT ALL REFLECTOR HARDWARE IS NOW SECURELY TIGHTENED.

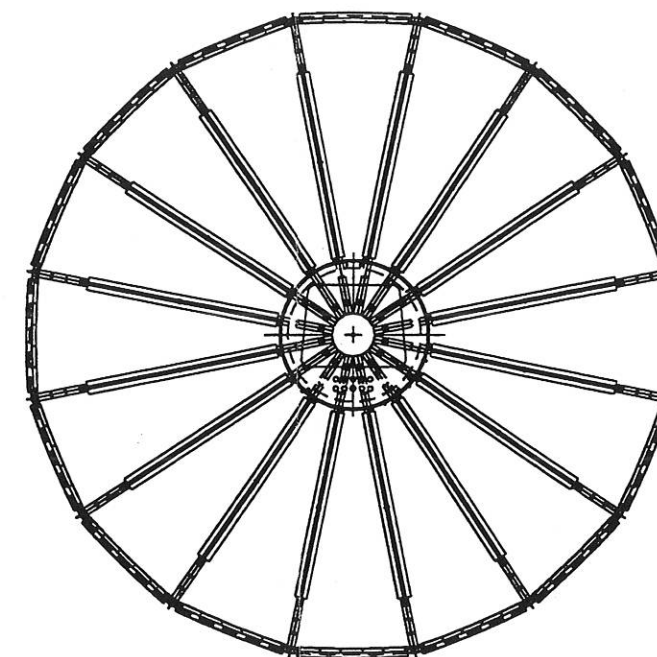


VIEW K-K



VIEW F-F

(FRONT VIEW OF REFLECTOR/BACK STRUCTURE ASSEMBLY)



VIEW E-E

(REAR VIEW OF REFLECTOR/BACK STRUCTURE ASSEMBLY)

QTY	ITEM NO	U OF M	ANDREW PART NO.	DESCRIPTION
PARTS LIST				
1	IG	7-25-89		ANDREW CORPORATION 2701 Mayhill Road Denton, Texas U.S.A. 76208
1	IG	14MAR90		
1	RWS	13MAR90		
1	RWK	14MAR90		
5.6 M REFLECTOR/BACK STRUCTURE INSTALLATION INSTRUCTIONS				
SIZE	D	84147	QTY. NO.	239352
SCALE	NONE			
PROD. OR	61214	DISTR	A	1

UNLESS OTHERWISE SPECIFIED	MATERIAL
DIMENSIONS ARE IN INCHES	
TOLERANCES	
1 PLACE DECIMALS ± .1	
2 PLACE DECIMALS ± .03	
3 PLACE DECIMALS ± .010	
ANGLE ± 0.5°	
ALL SURFACES	
CON. TO APPLY TO STOCK SIZES	
SIMILAR TO	
SUPERSEDES QTY OF	

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally to the field of ANDREW shall be confidential except to any extent to which it is established to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used in the manufacture or sale of apparatus without written permission.

CAD FILE NO:
ES06544

APPLICATION

209954
NEXT ASSY USED ON

MFG	INSPECTION	TEST
PROCESSES	PROCEDURES	PROCEDURES
AUSA SPECIFICATIONS		

NOTES: (UNLESS OTHERWISE SPECIFIED)
 1. REMOVE ALL BURRS AND SHARP EDGES
 2. DIMENSIONS APPLY BEFORE PLATING
 3. INTERPRET DRAWING PER AMS 114.5M-1082

STEP 10:

ATTACH TRIPOD CHANNEL LEGS TO TRIPOD JOINT CASTINGS AND TRIPOD TUBE WELDMENT. REFER TO VIEW G-G. SNUG HARDWARE. RAISE TRIPOD ASSEMBLY AND ATTACH TO ELEVATION AXIS ASSEMBLY ANGLE. LOOSEN RUBBER BOOT FROM END OF JACK SCREW. TURN ELEVATION DRIVE SCREW TO EXTEND JACK TO DIMENSION SHOWN. REATTACH BOOT. RAISE JACK UP TO TRIPOD AND MAKE FINAL CONNECTION. USE THE 3 FT NYLON CHOKER JUST BELOW THE ELEVATION JACK BODY AND THE 6 FT NYLON CHOKER AROUND THE TOP OF THE MOUNT KING POST. CONNECT A PULLER HOIST BETWEEN THE TWO CHOKERS AND APPLY TENSION. REFER TO FIGURE 3. REFER TO INSTALLATION INSTRUCTION P/N 37761B FOR MOUNT ASSEMBLY.

WHEN RAISING, DO NOT ALLOW ANY PERSONNEL UNDER THE JACK.

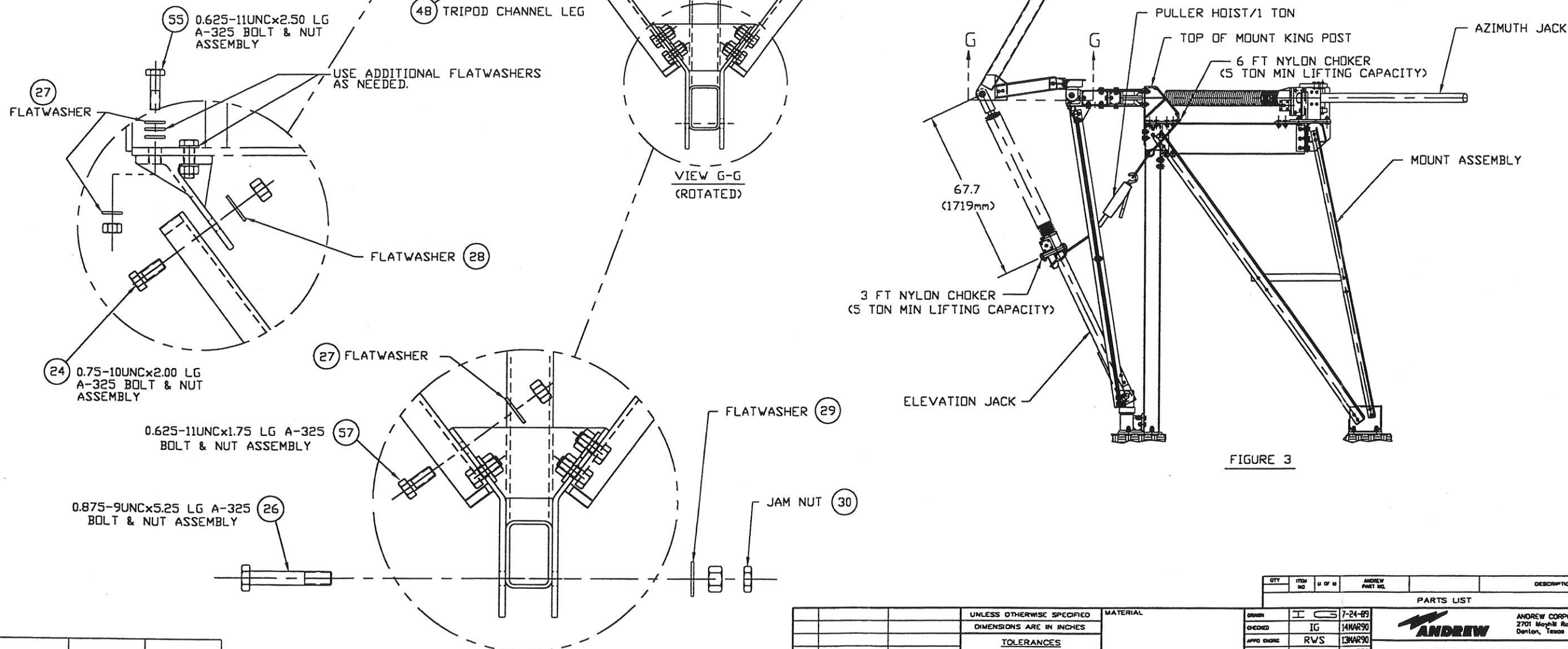


FIGURE 3

QTY	ITEM NO	U OF M	ANDREW PART NO.	DESCRIPTION
PARTS LIST				
1	IG	7-24-89	ANDREW CORPORATION	2701 Mayhill Road
1	RWS	13MAR90	Denton, Texas U.S.A. 76208	
1	RWK	14MAR90		
1				
1				
1				
5.6 M REFLECTOR/BACK STRUCTURE INSTALLATION INSTRUCTIONS				
SIZE	FIG. NO.	QTY.	DATE	APPROVED
D	84147	239352	17MAR90	VF
SCALE	1=20			
PROD. OR	61214	DATE	A	

MFG	INSPECTION	TEST
PROCESSES	PROCEDURES	PROCEDURES
AUSA SPECIFICATIONS		

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally to the field of REFLECTOR shall be confidential except to any extent to which it is considered to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used as the basis for the manufacture or sale of apparatus without written permission.

CAD FILE NO:
 ES06545C

UNLESS OTHERWISE SPECIFIED	MATERIAL
DIMENSIONS ARE IN INCHES	
TOLERANCES	
1 PLACE DECIMALS ± .1	
2 PLACE DECIMALS ± .03	
3 PLACE DECIMALS ± .010	
ANGLE ± 0.5°	
ALL SURFACES	FINISH
CONC. TOL. APPLY TO STOCK SIZES	
SIMILAR TO	
SUPERSEDES ONE OF	
209954	
NEXT ASSY	USED ON
APPLICATION	

NOTES: (UNLESS OTHERWISE SPECIFIED)
 1. REMOVE ALL BURRS AND SHARP EDGES
 2. DIMENSIONS APPLY BEFORE PLATING
 3. INTERPRET DRAWING PER AMS Y14.5M-1982

STEP 11:

ATTACH 5/8" SHACKLES WITH CORRESPONDING 16 FOOT CHOKERS TO FOUR LIFTING TABS ON REFLECTOR ASSEMBLY. REFER TO FIGURE 4. ATTACH 20 FOOT TAG LINES TO SUBREFLECTOR STRUT BRACKETS. RAISE REFLECTOR/BACK STRUCTURE ASSEMBLY AND ALIGN WITH CORRESPONDING HOLES IN ENCLOSURE ASSEMBLY AND ELEVATION AXIS ASSEMBLY USING TAG LINES FOR PROPER GUIDANCE. ATTACH REAR OF ENCLOSURE ASSEMBLY TO ELEVATION AXIS ASSEMBLY. REFER TO VIEW J-J. ALIGN MOUNTING HOLES AND ATTACH FORWARD LEG OF JACK TRIPOD TO FORWARD PORTION OF ENCLOSURE ASSEMBLY. REFER TO VIEW H-H. SECURELY TIGHTEN TRIPOD AND ELEVATION MOUNTING HARDWARE PER A-325 TENSIONING PROCEDURE.

STEP 12:

AFTER ASSEMBLY IS COMPLETE, REMOVE LIFTING TABS AND REPLACE HARDWARE WITH SEAM HARDWARE AS DESCRIBED IN STEP 4 AND SHOWN IN FIGURE 2.

STEP 13:

INSTALL ENCLOSURE DOOR BY ENGAGING DOOR LATCHES.

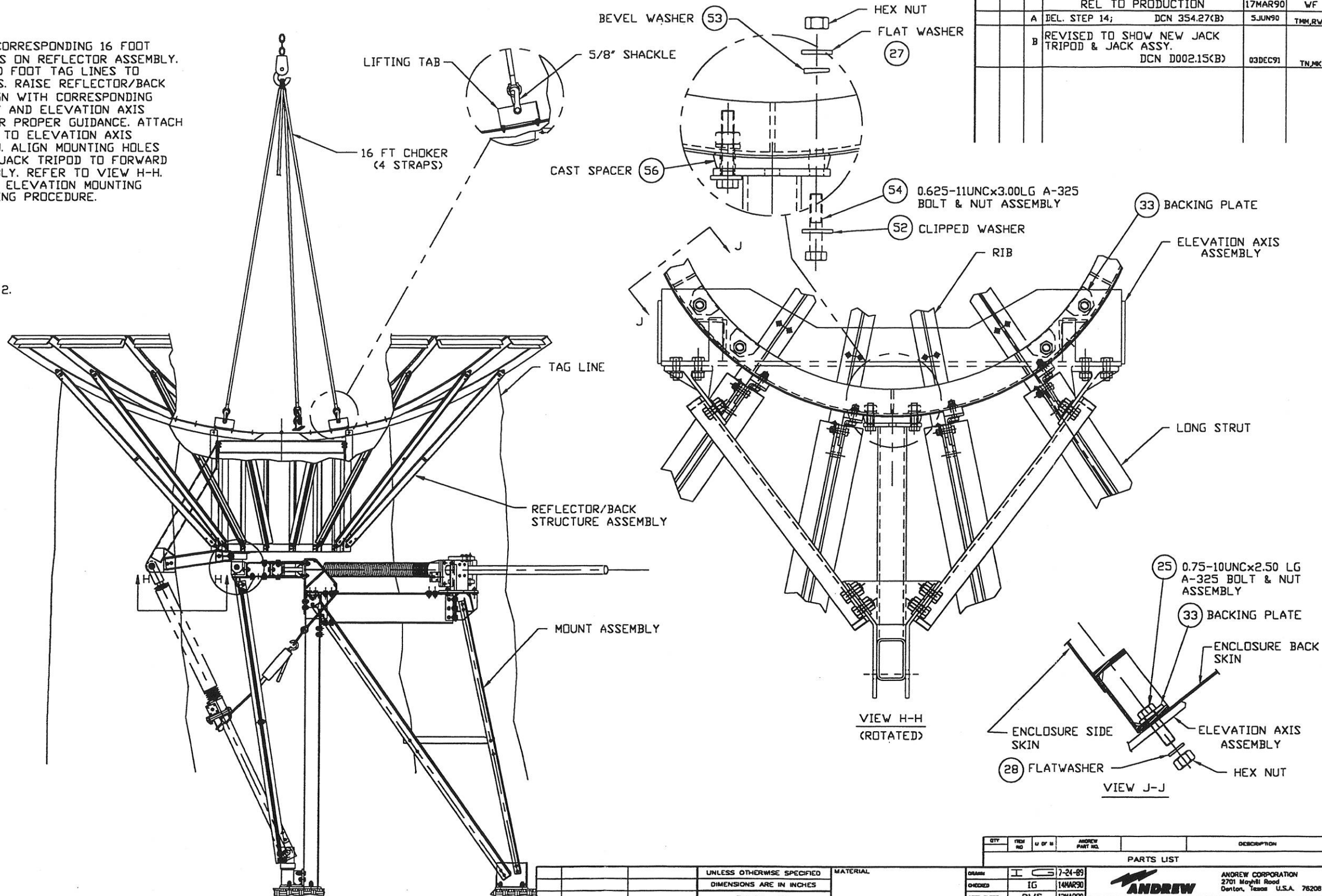


FIGURE 4

REV		DESCRIPTION	DATE	APPROVED
A		REL TO PRODUCTION	17MAR90	WF
B		DEL. STEP 14; DCN 354.27(B)	5JUN90	TMM,RVK
C		REVISED TO SHOW NEW JACK TRIPOD & JACK ASSY. DCN D002.15(B)	03DEC91	TN,MK

QTY	ITEM NO	U OF M	ANDREW PART NO.	DESCRIPTION
PARTS LIST				
1	IG	7-21-89	14MAR90	ANDREW CORPORATION 2701 Mayhill Road Denton, Texas U.S.A. 76208
1	RWS	13MAR90		
1	RWK	14MAR90		
5.6 M REFLECTOR/BACK STRUCTURE INSTALLATION INSTRUCTIONS				
1	D	84147	239352	
1	SCALE	1=20		
1	PROJ. OR	61214	CHG	A
1	SHEET			6

MFG PROCESSES	INSPECTION PROCEDURES	TEST PROCEDURES
AUSA SPECIFICATIONS		

NOTES: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally in the field of ANDREW shall be confidential except to any extent to which it is established to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used in the manufacture or sale of apparatus without written permission.

CAD FILE NO:
ES06546B

UNLESS OTHERWISE SPECIFIED		MATERIAL
DIMENSIONS ARE IN INCHES		
TOLERANCES		
1 PLACE DECIMALS ± .1		
2 PLACE DECIMALS ± .03		
3 PLACE DECIMALS ± .010		
ANGLE ± 0.5°		
ALL SURFACES		FINISH
CONC. TOL. APPLY TO STOCK SIZES		
SIMILAR TO		
SUPERSEDES DWG OF		
209954	USED ON	
APPLICATION		

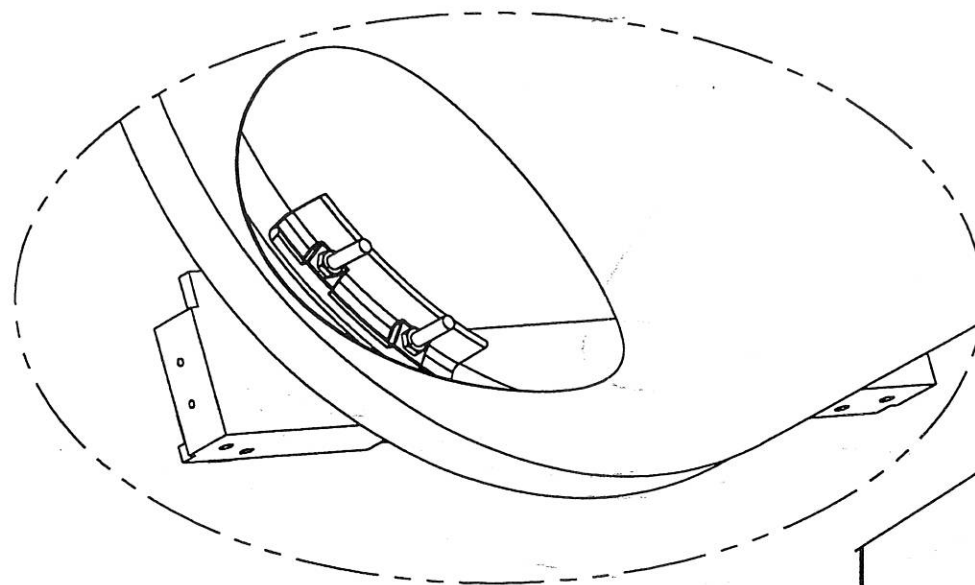
NOTES: (UNLESS OTHERWISE SPECIFIED)

1. REMOVE ALL BURRS AND SHARP EDGES
2. DIMENSIONS APPLY BEFORE PLATING
3. INTERPRET DRAWING FOR AMS Y14.5M-1982

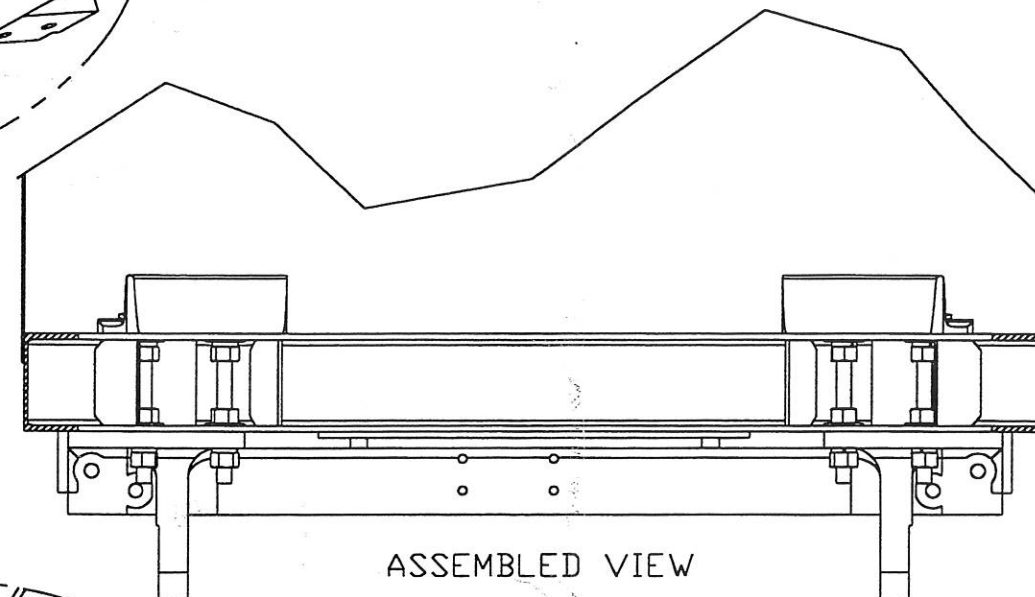
4. ITEMS 60, 61 & 62 INCLUDE 2 SPARES.

5. TIGHTENING SEQUENCE: SET DISTANCE SHOWN IN (A), TIGHTEN SECURELY (B) 135 FT-LB (185 N-m). FINGER TIGHTEN (D) THEN TIGHTEN SECURELY (C) 135 FT-LB (185 N-m). LAST, TIGHTEN (D) TO 135 FT-LB (185 N-m).

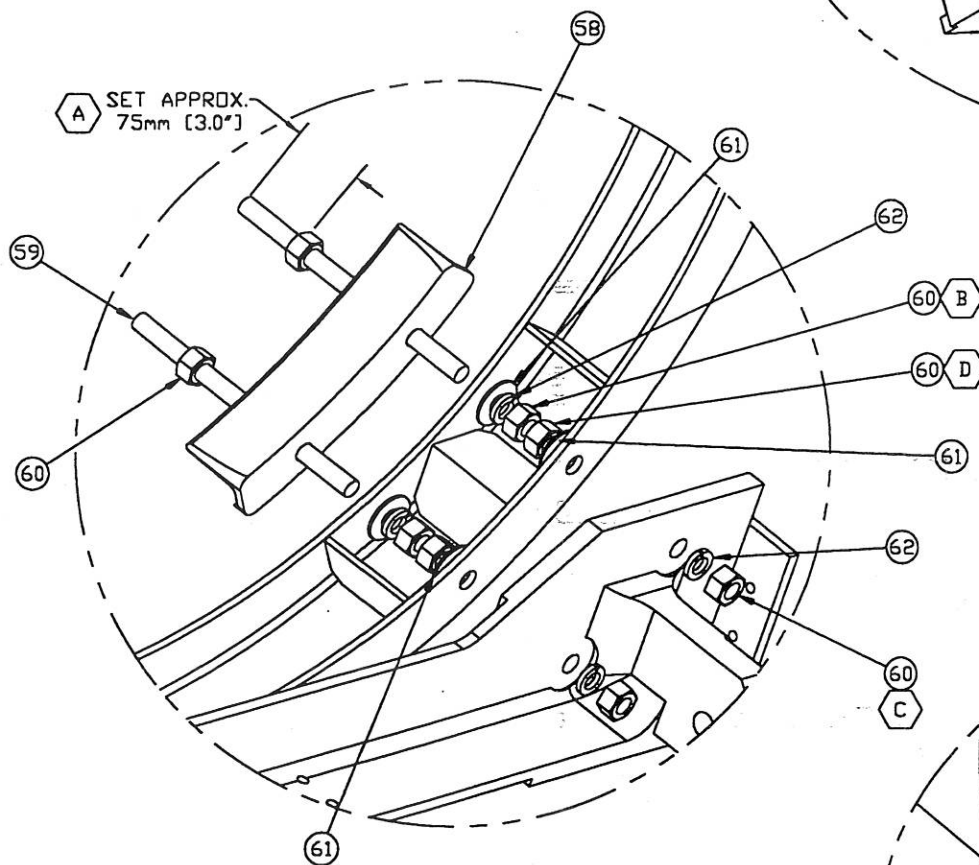
DWG NO.			239352	REV	7	1	
REVISIONS							
MF	ZONE	REV	DESCRIPTION			DATE	APPROVED
			REL TO PRODUCTION			5MAY98	BLA
		</					



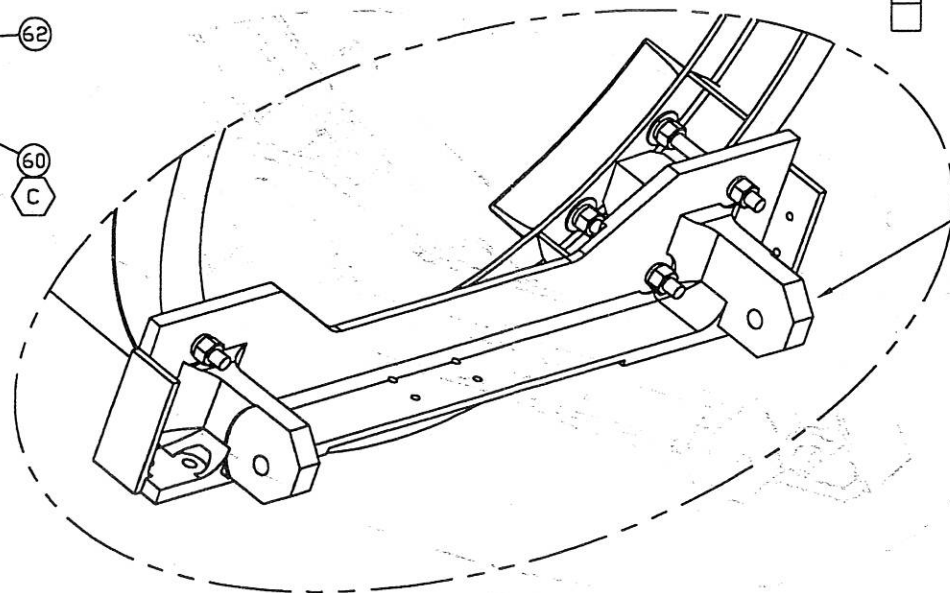
ASSEMBLED VIEW



ASSEMBLED VIEW



EXPLODED VIEW



ASSEMBLED VIEW

ELEVATION PIVOT ASSEMBLY
(SOME ITEMS REMOVED FOR CLARITY)

MFG	INSPECTION	TEST
PROCESSES	PROCEDURES	PROCEDURES
AUSA SPECIFICATIONS		

NOTES: These drawings and specifications are the property of ANDREW CORPORATION, all information contained herein which is not known generally in the field of ANDREW shall be confidential except to the extent to which it is established to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used in the manufacture or sale of equipment without written permission.

CAD FILE NO.
ES06547

UNLESS OTHERWISE SPECIFIED	
DIMENSIONS ARE IN INCHES	
TOLERANCES	
1 PLACE DECIMALS $\pm .1$	
2 PLACE DECIMALS $\pm .03$	
3 PLACE DECIMALS $\pm .010$	
ANGLE $\pm 0.5^\circ$	
ALL SURFACES	
CONC. TO APPLY TO STOCK SIZES	
SIMILAR TO	
SUPERSEDES DWG OF	
NEXT ASSY.	USED ON
APPLICATION	

MATERIAL

FINISH

QTY	REV	U OF M	ANDREW PART NO.	DESCRIPTION
PARTS LIST				
QTY	REV	U OF M	ANDREW PART NO.	DESCRIPTION
CHECKED	BLA	HAY98		
APPROVED	SLI	APR98		
APPROVED	SJA	29APR98		
APPROVED	PAB	APR98		
ANDREW CORPORATION 2701 Mayhill Road Denton, Texas U.S.A. 76208				
5.6/7.6 ENCLOSURE MOUNTING INSTRUCTIONS				
SIZE	FRONT NO.	DWG NO.		
D	84147	239352		
SCALE	NONE	SHEET	7	
PROD. ON	6/2/00	DATE	A: 1:1	