

NAVSHIPS 94760

(Non-Registered)

★

TECHNICAL MANUAL

*for*

ANTENNA AS-1390/U

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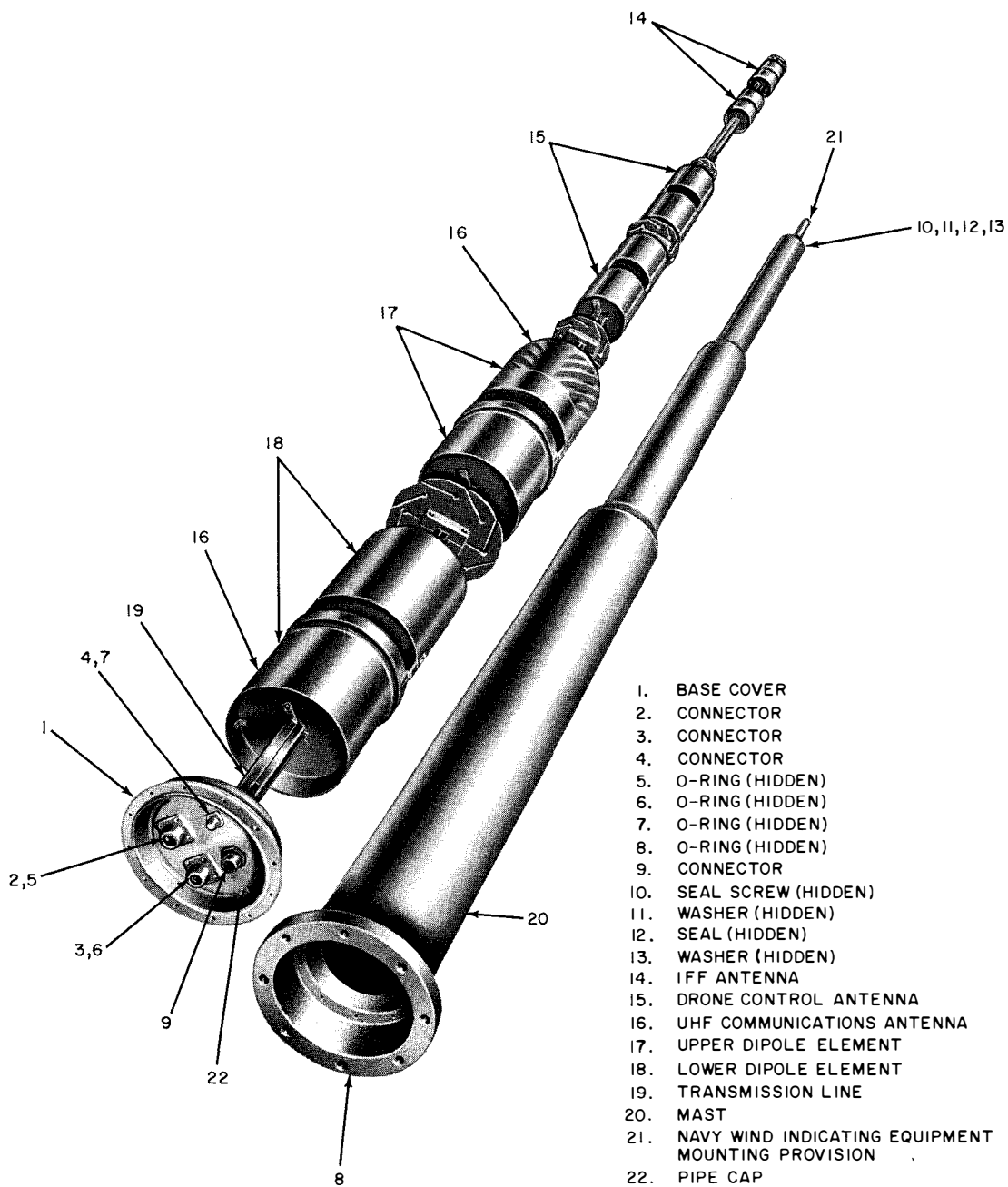


Figure 1-1. Antenna AS-1390/U, Relationship of Units

## SECTION 1 GENERAL INFORMATION

### 1-1. EQUIPMENT ILLUSTRATION.

Antenna AS-1390/U is shown in figure 1-1.

### 1-2. FUNCTIONAL DESCRIPTION.

Antenna AS-1390/U is a single vertical unit containing three separate omnidirectional antennas. This antenna assembly consists of: a UHF communications antenna, identical in electro-magnetic characteristics to Navy type AS-1018/URC (lower unit); a drone control operations antenna, identical in electromagnetic characteristics to Navy type AT-948/U (middle unit); and an IFF operations antenna (upper unit). The multi-unit antenna assembly is designed to provide unobstructed and interference-free antenna operation for UHF communications, drone control operations, and IFF operations. With all three antennas in a single vertical assembly, isolation greater than 25 db between antennas is provided. The antenna assembly contains three vertically polarized base-fed antenna array sub-assemblies covering the 225 mc to 400 mc (UHF communications antenna), 400 mc to 550 mc (drone control antenna), and 1000 mc to 1150 mc (IFF antenna) frequency bands for shipboard and shore station applications. The entire antenna assembly and internal transmission lines are completely enclosed in a fiberglas mast. Provision is made for mounting Navy Wind Indicating Equipment, Type B, atop the antenna assembly.

### 1-3. FACTORY OR FIELD CHANGES.

No factory or field changes have been made to Antenna AS-1390/U. Refer to Electronics Installation and Maintenance Book (EIMB), NAVSHIPS 900,000 for the complete field change index.

### 1-4. QUICK REFERENCE DATA.

#### a. FREQUENCY RANGE.

(1) UHF communications antenna: 225 mc to 400 mc.

(2) Drone control antenna: 400 mc to 550 mc.

(3) IFF antenna: 1000 mc to 1150 mc.

#### b. R-F POWER HANDLING CAPABILITY.

(1) UHF communications antenna: 2 kw average throughout 225 mc to 400 mc frequency range.

(2) Drone control antenna: 2 kw average throughout 400 mc to 550 mc frequency range.

(3) IFF antenna: 1 kw average throughout 1000 mc to 1150 mc frequency range.

c. POLARIZATION. - All three antennas are vertically polarized.

d. GAIN. - Approximately 5 db above an isotropic source for all three antennas.

e. INPUT IMPEDANCE. - 50 ohms for all three antennas.

#### f. MAXIMUM VOLTAGE STANDING WAVE RATIO.

(1) UHF communications antenna: 2.0:1.0.

(2) Drone control antenna: 1.8:1.0.

(3) IFF antenna: 1.8:1.0.

g. CIRCULARITY OF PATTERN. - Horizontal radiation patterns omnidirectional to within  $\pm 1.0$  db throughout 225 mc to 400 mc, 400 mc to 550 mc, and 1000 mc to 1150 mc frequency ranges.

h. TILT OF PATTERN. - The vertical lobes of all three antennas are tilted upward to place lower half power points on or below horizon.

i. WIND LOAD. - 120 mph.

j. MAXIMUM PRESSURIZATION. - 15 psig.

k. AMBIENT OPERATIONAL TEMPERATURE RANGE. - -32°C (-26°F) to +52°C (+125°F).

l. ISOLATION BETWEEN ANTENNAS. - Minimum of 25 db.

a. EQUIPMENT AND PUBLICATIONS SUPPLIED. Table 1-1 lists the equipment and publications supplied for Antenna AS-1390/U.

b. EQUIPMENT AND PUBLICATIONS REQUIRED BUT NOT SUPPLIED. - No special purpose equipment or publications are required for Antenna AS-1390/U.

c. SHIPPING DATA. - Table 1-2 lists the shipping data for Antenna AS-1390/U.

**1-5. EQUIPMENT LISTS.**

**TABLE 1-1. ANTENNA AS-1390/U, EQUIPMENT AND PUBLICATIONS SUPPLIED**

| QUANT. PER EQUIP. | NOMENCLATURE                   |                | *OVERALL DIMENSIONS |       |       | *VOLUME | *WEIGHT |
|-------------------|--------------------------------|----------------|---------------------|-------|-------|---------|---------|
|                   | NAME                           | DESIGNATION    | HEIGHT              | WIDTH | DEPTH |         |         |
| 1                 | Antenna                        | AS-1390/U      | 166                 | 14    | 14    | 60      | 98      |
| 2                 | Technical Manual for AS-1390/U | NAVSHIPS 94760 |                     |       |       |         |         |

\*Unless otherwise stated, dimensions are in inches, volume in cubic feet, weight in pounds.

**TABLE 1-2. ANTENNA AS-1390/U, SHIPPING DATA**

| BOX NO. | NOMENCLATURE                   |                | *OVERALL DIMENSIONS |       |       | *VOLUME | *WEIGHT |
|---------|--------------------------------|----------------|---------------------|-------|-------|---------|---------|
|         | NAME                           | DESIGNATION    | HEIGHT              | WIDTH | DEPTH |         |         |
| 1       | Antenna                        | AS-1390/U      | 180                 | 18    | 18    | 32      | 275     |
|         | Technical Manual for AS-1390/U | NAVSHIPS 94760 |                     |       |       |         |         |

\*Unless otherwise noted, dimensions are in inches, volume in cubic feet, and weight in pounds; equipment crated and ready for shipment.



## SECTION 2 INSTALLATION

### 2-1. UNPACKING AND HANDLING.

a. UNPACKING. - Antenna AS-1390/U and the two technical manuals shipped with it are packaged in the same shipping container. Shipping data is listed in Table 1-2. Wooden cradles and blocks secure the antenna assembly in its shipping container. The wooden cradles are padded with one inch of Tuflex packing covered by waterproof paper. To unpack, carefully pry off the cover, and remove the antenna assembly and the two technical manuals from the container.

#### NOTE

The shipping container is reusable. Save it to pack the antenna assembly for reshipment.

b. HANDLING. - Observe normal precautions when handling Antenna AS-1390/U. No special handling procedures are required.

### 2-2. SITE SELECTION.

Antenna AS-1390/U is designed primarily for ship-board usage. The AS-1390/U can also be used at shore installations.

### 2-3. POWER REQUIREMENTS AND DISTRIBUTION.

Antenna AS-1390/U has an r-f power handling capability of 2 kw average in the 225 mc to 400 mc and 400 mc to 550 mc frequency ranges, and of 1 kw average in the 1000 mc to 1150 mc frequency range.

### 2-4. INSTALLATION LAYOUT.

The optimum installation layout for Antenna AS-1390/U is determined by the particular installation, and is shown in the plans for that installation.

### 2-5. INSTALLATION REQUIREMENTS.

The mounting flange of the fiberglass mast of Antenna AS-1390/U contains eight 7/8-inch diameter holes on a 12-1/4 inch diameter bolt circle. Eight bolts are used to mount the antenna to a suitable mounting plate. This mounting plate must be provided with a hole to accommodate the transmission lines to the antenna assembly. The AS-1390/U is equipped with four electrical connectors, which are mounted on its recessed base cover. Table 2-1 lists each connector with its index number on figure 1-1, its function, and its mating connector. The mating connectors are not supplied with Antenna AS-1390/U.

**TABLE 2-1. ANTENNA AS-1390/U ELECTRICAL CONNECTORS**

| CONNECTOR                                  | FIGURE 1-1<br>INDEX NO. | FUNCTION   | MATING<br>CONNECTOR |
|--|-------------------------|--|---------------------|
| Mfg. Part B-2451<br>UG-352A/U Modification | 2                       | Electrical Interconnection<br>for UHF communications<br>antenna (225 mc to 400 mc) | UG-154A/U           |
| Mfg. Part B-2451<br>UG-352A/U Modification | 3                       | Electrical Interconnection<br>for drone control antenna<br>(400 mc to 550 mc)      | UG-154A/U           |
| Mfg. Part B-2879<br>UG58A/U Modification   | 4                       | Electrical Interconnection<br>for IFF antenna (1000 mc<br>to 1150 mc)              | UG-21 E/U           |
| BFR-18-8P                                  | 11                      | Electrical Interconnection<br>for Navy Wind Indicating<br>Equipment, Type B        | MS3106E18-8s        |

## NOTE

Perform the inspection and adjustments described in paragraph 2-6 prior to installing the antenna assembly.

## 2-6. INSPECTION AND ADJUSTMENTS.

a. VISUAL INSPECTION. - Examine the exterior of Antenna AS-1390/U for damage. Make sure that the four electrical connectors (2, 3, 4, and 11; figure 1-1) are not deformed, misaligned, or fractured.

b. INSULATION RESISTANCE TESTS. - Using either a 500 vdc or a 1000 vdc insulation resistance tester, measure the insulation resistance between the inner and outer conductors of each of the three coaxial connectors (2, 3, and 4; figure 1-1). These three resistances should each be one megohm or more. If any insulation resistance is less than one megohm, purge the antenna assembly as described in paragraph 2-6c.

c. PURGING. - (See figure 1-1.) The following procedure is recommended for purging Antenna AS-1390/U.

Step 1. Loosen the seal screw (12) at the top of the mast.

Step 2. Remove the pipe cap (22) from the close nipple in the base cover.

Step 3. Connect a source of dry nitrogen to the close nipple in the base cover.

Step 4. Apply dry nitrogen at a pressure not to exceed 15 psig, until all old air has been dispelled from the antenna assembly.

## NOTE

A small flame held near the opening at the seal atop the mast will dim when all old air has been dispelled from the antenna assembly.

Step 5. Disconnect the source of dry nitrogen from the close nipple in the base cover.

Step 6. Replace the pipe cap on the close nipple in the base cover.

Step 7. Tighten the seal screw (12) at the top of the mast.

d. PRESSURIZATION. - The antenna is designed to operate unpressurized; however, it can be pressurized to 5 psig if necessary. The following procedure is recommended for pressurizing the antenna.

Step 1. Remove the pipe cap from the close nipple in the base cover, and replace the pipe cap with a 1/8-inch I. P. S. pet cock.

Step 2. Connect a source of dry nitrogen to the pet cock.

Step 3. Pressurize the AS-1390/U to 5 psig with dry nitrogen.

Step 4. Close the pet cock and disconnect the source of dry nitrogen.

## 2-7. INTERFERENCE REDUCTION.

The installation plan of the particular installation should be such that interference between Antenna AS-1390/U and other equipment is kept within tolerable limits. Interference can be caused in other equipment by the AS-1390/U and vice versa. If either or both types of interference cannot be kept within tolerable limits, consideration should be given to changing the installation plan.

## 2-8. PREPARATION FOR RESHIPMENT.

Antenna AS-1390/U may be reshipped in its original shipping container. Place the antenna and the two technical manuals shipped with it in their original positions in the container, and replace the cover on the container. Advise the packaging and packing facility as to the type of equipment; as to the type of shipment (domestic shipment - immediate use, domestic shipment and storage, or overseas shipment); and as to marking each shipping container "TECHNICAL MANUALS INSIDE".

### SECTION 3 PRINCIPLES OF OPERATION

#### 3-1. OVER-ALL FUNCTIONAL DESCRIPTION.

Antenna AS-1390/U is a multi-unit assembly designed to provide unobstructed and interference-free r-f energy transmission in the ultra-high-frequency (UHF) range. The AS-1390/U consists basically of internal r-f transmission lines, three

transmitting antennas, connections for Navy Wind Indicating Equipment, and the fiberglass mast which completely encloses them. The three antennas are a 225 to 400 mc UHF communications antenna, a 400 to 550 mc drone control antenna, and a 1000 to 1150 mc IFF antenna. Provision is made for mounting Navy Wind Indicating Equipment, Type B, atop the

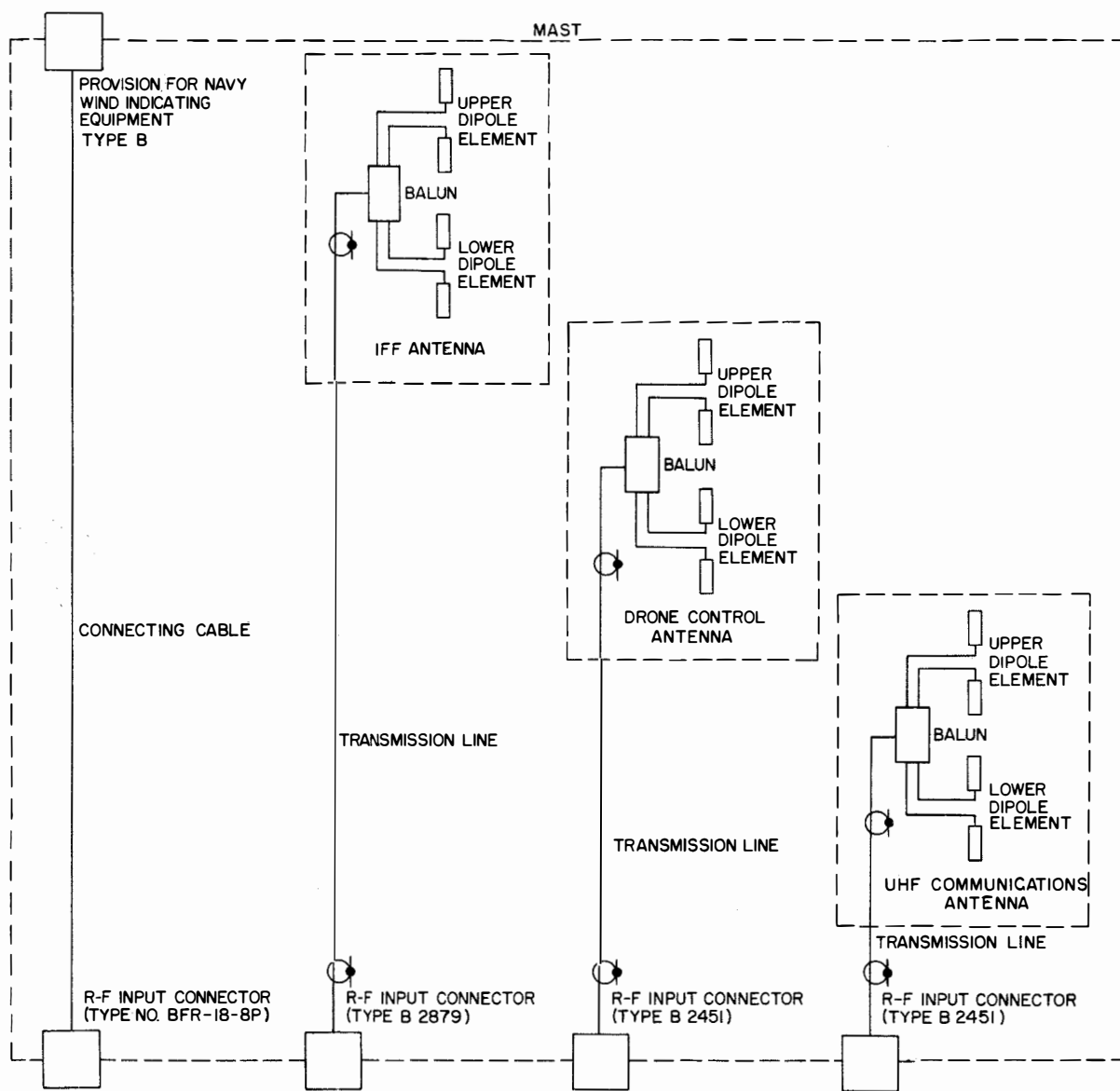


Figure 3-1. Antenna AS-1390/U, Block Diagram

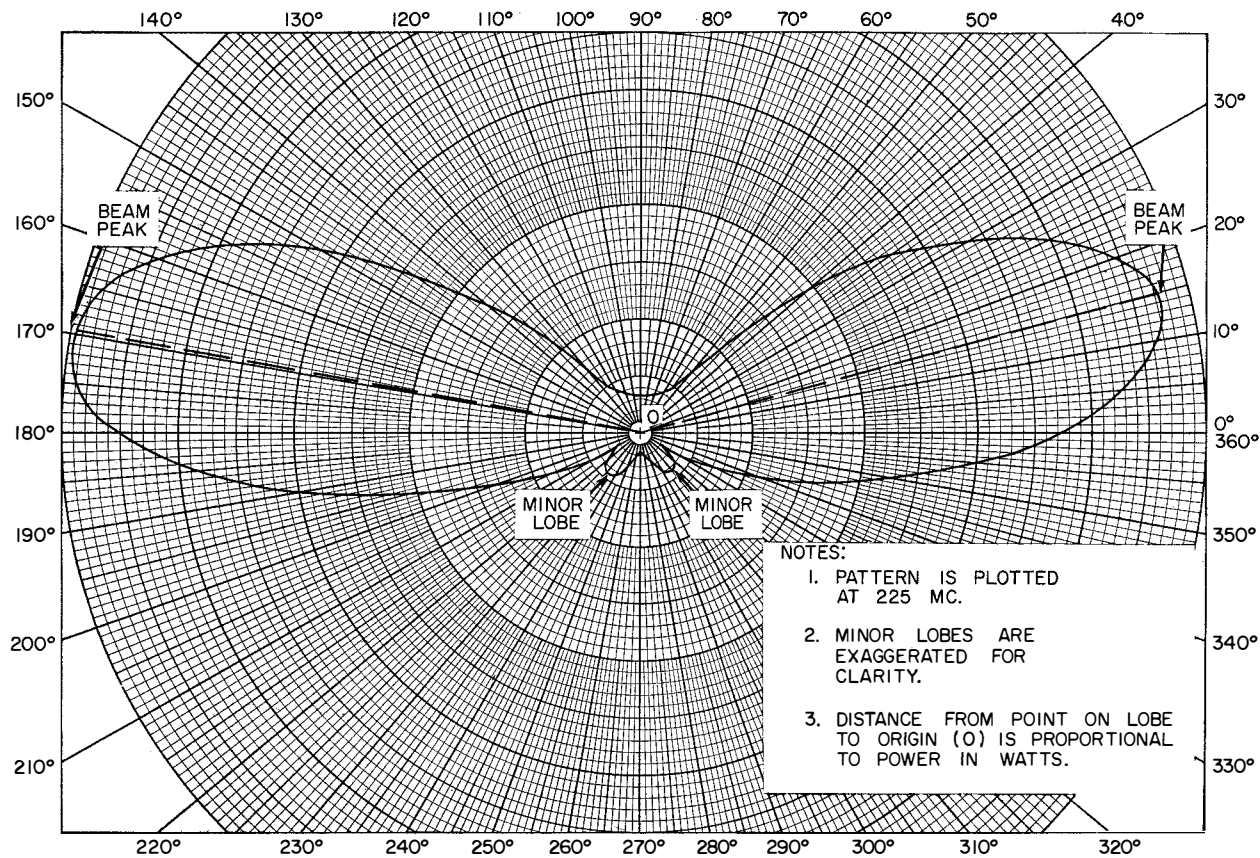


Figure 3-2. Antenna, UHF Communications, Vertical Radiation Pattern

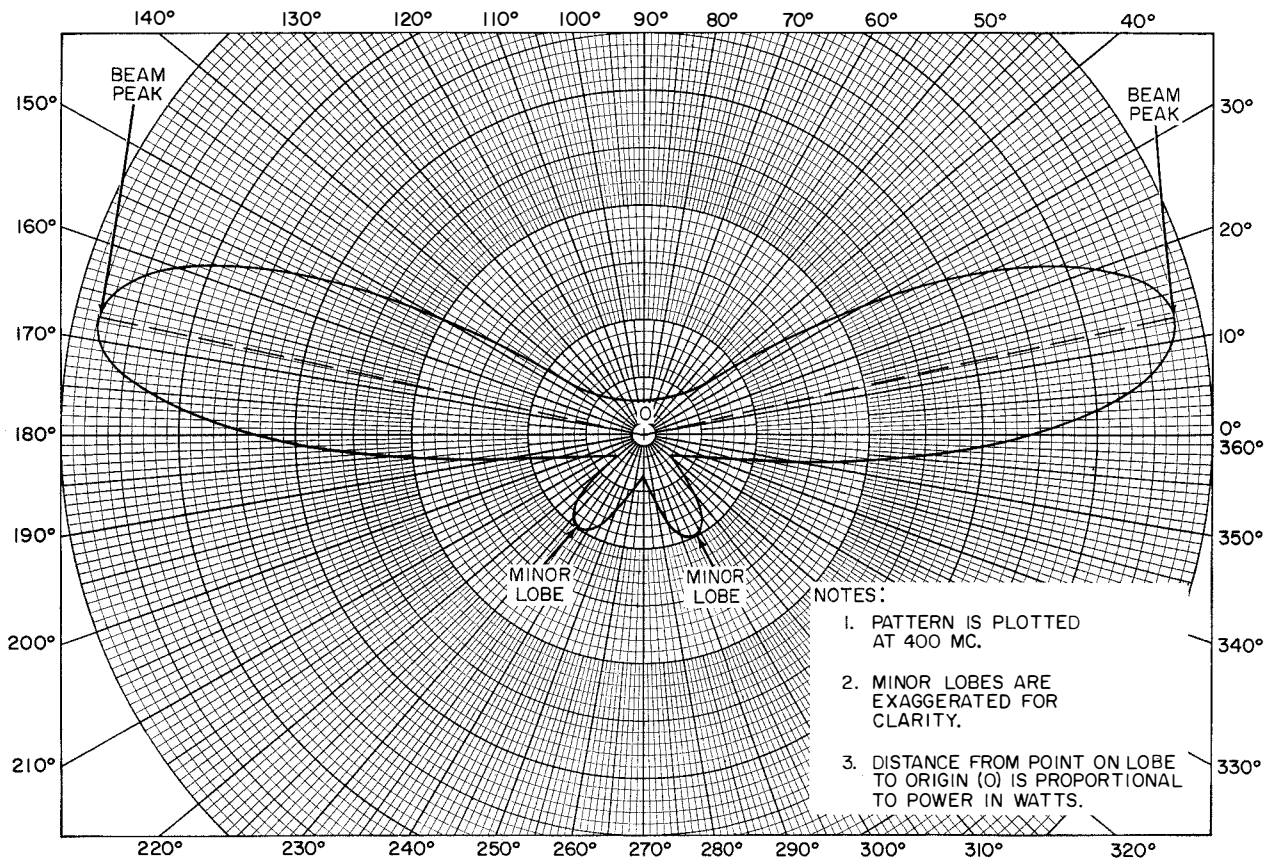


Figure 3-3. Antenna, Drone Control, Vertical Radiation Pattern

antenna assembly. A block diagram of the AS-1390/U is shown in figure 3-1.

**3-2. FUNCTIONAL SECTIONS.**

a. INTERNAL TRANSMISSION LINES. - The three internal r-f transmission lines, each of which consists of a circular inner conductor and a square outer conductor, match the 50-ohm impedances of the three external r-f transmission lines to the three antennas. The antenna assembly has a rigid, coaxial transmission line assembly which is contained within the radiating elements, so as not to interfere with omnidirectionality. The connecting cable for Navy Wind Indicating Equipment, Type B, is routed through the antenna assembly.

b. TRANSMITTING ANTENNAS. - Each of the three antennas is a colinear array of two cylindrical, parallel-fed, dipole elements, and has a gain of approximately +5.0 db above an isotropic source. The non-resonant cylindrical dipoles provide

broadband coverage and horizontal radiation patterns which are omnidirectional (circular) to within  $\pm 1.0$  db. The lower half-power points of the vertically polarized propagations fall on or below the horizon. The required pattern tilts are achieved by feeding the dipoles of each antenna so that the upper dipole lags the lower dipole in phase by a few degrees. Figures 3-2, 3-3, and 3-4 illustrate the vertical radiation patterns of the three antennas. The cones of silence of the UHF communications antenna and the drone control are filled by vertical propagation upward. The upper dipoles of these antennas are altered to provide both horizontal and vertical current components, thus producing the required upward propagations. These vertical propagations are horizontally polarized.

c. FIBERGLAS MAST. - The fiberglass mast completely encloses the internal transmission lines and the antennas. This mast provides a rugged, weather-proof covering for both lines and antennas, without interfering with the radiation from the antennas.

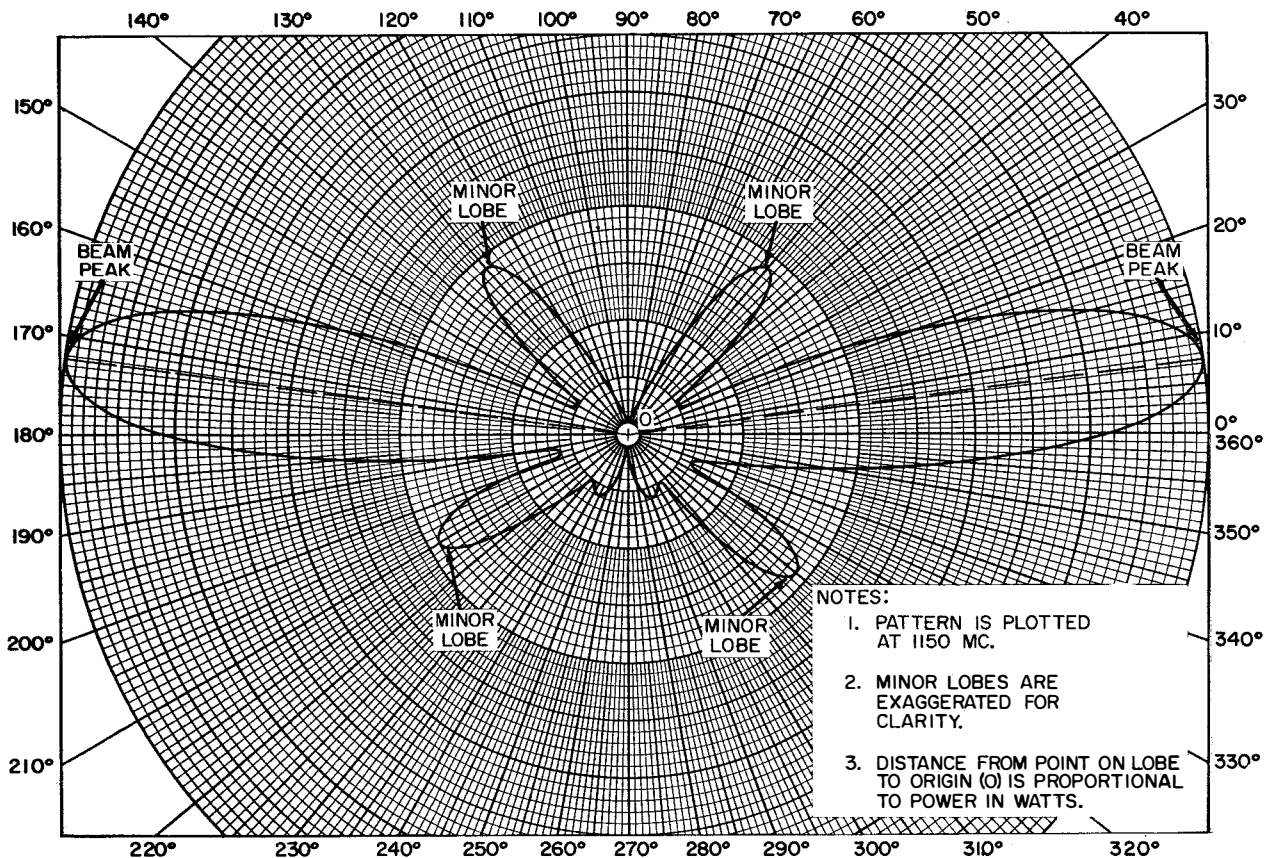


Figure 3-4. Antenna, IFF, Vertical Radiation Pattern

## SECTION 4 TROUBLE-SHOOTING

### 4-1. GENERAL.

Transmission trouble in the transmitting equipment of which Antenna AS-1390/U is a unit may be caused by a malfunction in the antennas or a malfunction in another piece of equipment. If transmission trouble occurs, first check to see that all pieces of equipment (including the external transmission lines to the antenna assembly) other than the AS-1390/U are functioning properly, check out the AS-1390/U as described in this section.

### 4-2. TEST EQUIPMENT AND SPECIAL TOOLS.

Table 4-1 lists the test equipment and special tools required for trouble-shooting Antenna AS-1390/U.

### 4-3. OVER-ALL TROUBLE-SHOOTING.

a. **PRELIMINARY CHECK.** - Make a thorough visual inspection of Antenna AS-1390/U. Examine the exterior of the antenna for damage. Make sure that the four electrical connectors (2, 3, 4, and 11; figure 1-1) are not deformed, misaligned, or fractured.

b. **TROUBLE-SHOOTING CHART.** - Table 4-2 provides a trouble-shooting chart for Antenna AS-1390/U.

**TABLE 4-1. ANTENNA AS-1390/U TEST EQUIPMENT AND SPECIAL TOOLS**

| EQUIPMENT OR TOOL   | REQUIRED USE                               |
|---|--|
| AN/PSM-2 Insulation Resistance Tester (500 vdc or 1000 vdc) | Measure insulation resistance of AS-1390/U |
| Dry Nitrogen Source (Maximum Pressure: 15 psig)             | Purge AS-1390/U                            |

**TABLE 4-2. ANTENNA AS-1390/U TROUBLE-SHOOTING CHART**

| STEP | PRELIMINARY ACTION  | NORMAL INDICATION  | NEXT STEP  |
|------|---|--|--|
| 1    | Connect AN/PSM-2, 500 vdc or 1000 vdc insulation resistance tester between inner and outer conductors of UG-352 A/U and UG/58 A/U connectors (2, 3, and 4; figure 1-1). | One megohm or more   | If insulation resistance is one megohm or more, perform step 2 when possible. If insulation resistance is less than one megohm, purge AS-1390/U as described in paragraph 2-6c. After purging, repeat step 1. If insulation resistance is one megohm or more, check for leaky or defective seal. If insulation resistance is still less than one megohm, check for defective connector.  |
| 2    | Perform VSWR test described in paragraph 5-2.   | 2.0:1.0 or less communications antenna or 1.8:1.0 or less for drone control antenna and IFF antenna. | If VSWR is 2.0:1.0 and 1.8:1.0 or less, AS-1390/U is operating properly. If VSWR is greater than 2.0:1.0 for communications antenna or greater than 1.8:1.0 for drone control antenna and IFF antenna, purge AS-1390/U as described in paragraph 2-6c. After purging, repeat step 1. If VSWR is now 2.0:1.0 and 1.8:1.0 or more, check for leaky or defective seal. If VSWR is still greater than 2.0:1.0 or 1.8:1.0, check for defective connector. |

**4-4. TYPICAL TROUBLES**

Table 4-3 lists the natures of typical troubles which may occur in Antenna AS-1390/U. The natures of the troubles are listed in the order of their expected frequency.

**4-5. LOCATION OF PARTS.**

Figure 1-1 shows the location of parts for Antenna AS-1390/U.

**TABLE 4-3. ANTENNA AS-1390/U TYPICAL TROUBLES**

| TROUBLE                     | NATURE OF TROUBLE   | SYMPTOMS  |
|-----------------------------|---|---|
| Subnormal antenna operation | <p>Defective connector(s) (2, 3, 4, and 11, figure 1-1)</p> <p>Defective internal assembly or part.</p> <p><b>CAUTION</b></p> <p>Antenna AS-1390/U is an integrally constructed unit. The only maintenance parts are the base cover, connectors, o-rings, and seal screw components. If a defective antenna cannot be repaired by replacement of a maintenance part or by purging the unit, the entire unit must be replaced and returned to the manufacturer for repair.</p> | <p>Low insulation resistance or high VSWR (greater than 2.0:1.0 or 1.8:1.0)</p> <p>Low insulation resistance or high VSWR (greater than 2.0:1.0 or 1.8:1.0)</p> |

## SECTION 5 SERVICE AND REPAIR

### 5-1. PREVENTIVE MAINTENANCE.

The only periodic preventive maintenance required for Antenna AS-1390/U is the cleaning of the mast. The time interval is determined by the particular installation.

### 5-2. MAINTENANCE STANDARDS.

a. GENERAL. - The only maintenance standard for Antenna AS-1390/U is a voltage standing wave ratio (VSWR) of 2.0:1.0 or less for the communications antenna, and 1.8:1.0 or less for the drone control antenna and the IFF antenna.

b. TEST EQUIPMENT. - Table 5-1 lists the test equipment required to perform a voltage standing wave ratio (VSWR) test on Antenna AS-1390/U.

c. VOLTAGE STANDING WAVE RATIO (VSWR) TEST. - Tables 5-2, 5-3 and 5-4 list the procedure for performing a VSWR test on Antenna AS-1390/U. The test set-up for the VSWR tests are shown in figures 5-1, 5-2, and 5-3.

**TABLE 5-1. ANTENNA AS-1390/U  
TEST EQUIPMENT**

| QUANTITY<br>REQUIRED | NAME                                |
|----------------------|-------------------------------------|
| 1                    | Power Supply                        |
| 1                    | Modulating Source                   |
| 1                    | TS-202A/U, UHF Generator            |
| 1                    | L-band Generator                    |
| 1                    | Low Pass Filter                     |
| 1                    | CAQI-803-A, Impedance Bridge        |
| 1                    | Slotted Line                        |
| 1                    | AN/USM-37A, Standing Wave Indicator |

**TABLE 5-2. ANTENNA, UHF COMMUNICATIONS,  
VOLTAGE STANDING WAVE RATIO (VSWR) TEST**

| STEP |  | PRELIMINARY ACTION   | READ<br>INDICATION<br>ON           | REF. STD.       |
|------|--|--|------------------------------------|-----------------|
| NO.  | QUANTITY REQUIRED  |  |                                    |                 |
| 1    | Check VSWR   | Prepare test set-up of figure 5-1. At 225 mc, and at 10 mc intervals between 230 mc and 400 mc inclusive, perform steps 1.1 through 1.3. | AN/USM-37A Standing Wave Indicator | 2.0:1.0 or less |
| 1.1  | Tune TS-202A/U UHF Generator to desired frequency          |  |                                    |                 |
| 1.2  | Set reference levels                                       |  |                                    |                 |
| 1.3  | Read VSWR indication on AN/USM-37A Standing Wave Indicator |  |                                    |                 |

**TABLE 5-3. ANTENNA, DRONE CONTROL VOLTAGE  
STANDING WAVE RATIO (VSWR) TEST**

| STEP |  | PRELIMINARY ACTION   | READ<br>INDICATION<br>ON           | REF. STD.       |
|------|--|--|------------------------------------|-----------------|
| NO.  | ACTION REQUIRED  |  |                                    |                 |
| 1    | Check VSWR.  | Prepare test set-up of figure 5-2. At 400 mc, and at 10 mc intervals between 410 mc and 550 mc inclusive, perform steps 1.1 through 1.3. | AN/USM-37A Standing Wave Indicator | 1.8:1.0 or less |
| 1.1  | Tune TS-202A/U UHF Generator to desired frequency          |  |                                    |                 |
| 1.2  | Set reference levels                                       |  |                                    |                 |
| 1.3  | Read VSWR indication on AN/USM-37A Standing Wave Indicator |  |                                    |                 |



**NOTE**

Slotted line may be substituted for CAQI-803-A Impedance Bridge in VSWR test of the communications antenna and drone control antenna. Slotted line only may be used for IFF antenna VSWR test.

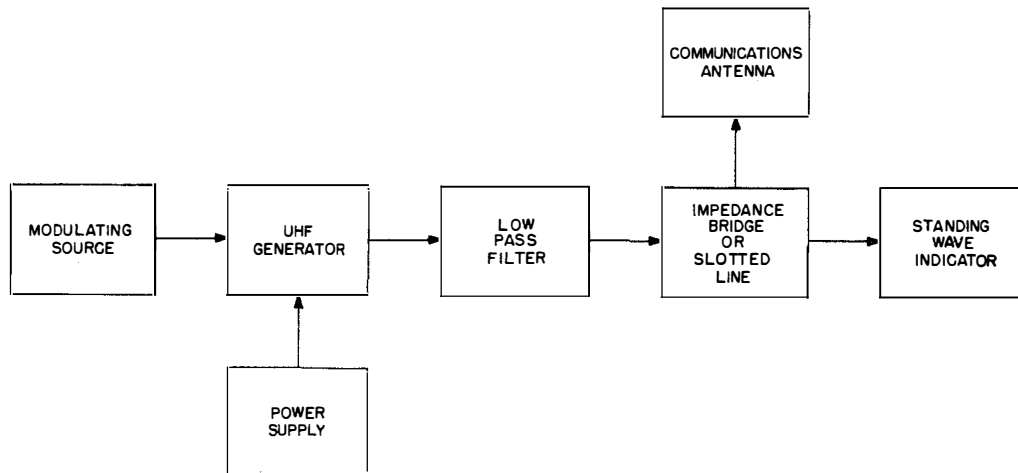
**NOTE**

The Bureau of Ships no longer requires the submission of failure reports for all equipments. Failure Reports and Performance and Operational Reports are to be accomplished for designated equipments to the extent required by existing directives. All failures shall be reported for those equipments requiring Failure Reports.

**5-3. REPAIR**

**TABLE 5-4. ANTENNA, IFF, VOLTAGE STANDING WAVE RATIO (VSWR) TEST**

| STEP |   | PRELIMINARY ACTION   | READ INDICATION ON                 | REF. STD.       |
|------|---|--|------------------------------------|-----------------|
| NO.  | ACTION REQUIRED   |  |                                    |                 |
| 1    | Check VSWR  | Prepare test set-up of figure 5-3. At 1000 mc and at 10 mc intervals between 1010 mc and 1150 mc inclusive perform steps 1.1 through 1.5 | AN/USM-37A Standing Wave Indicator | 1.8:1.0 or less |
| 1.1  | Tune L-band Generator to desired frequency.                 |  |                                    |                 |
| 1.2  | Move probe to maximum power output on slot line.            |  |                                    |                 |
| 1.3  | Set reference levels.                                       |  |                                    |                 |
| 1.4  | Move probe to minimum power output on slot line.            |  |                                    |                 |
| 1.5  | Read VSWR Indication on AN/USM-37A Standing Wave Indicator. |  |                                    |                 |



**Figure 5-1. Antenna, UHF Communications, Voltage Standing Wave Ratio (VSWR) Test Set-Up**

a. TUNING AND ADJUSTMENT. - Antenna AS-1390/U requires no tuning or adjustment.

b. REMOVAL, ADJUSTMENT, REPAIR AND REASSEMBLY OF PARTS, AND SUBASSEMBLIES.

### CAUTION

Antenna AS-1390/U is an integrally constructed unit. The only maintenance parts are the base cover, connectors, o-rings and seal screw components. If a defective antenna cannot be repaired by replacement of a maintenance part or by purging the assembly, the entire assembly must be replaced and returned to the manufacturer for repair.

(1) ILLUSTRATIONS. - The relative locations of the maintenance parts for Antenna AS-1390/U are shown in figure 1-1.

(2) REMOVAL.

(a) GENERAL. - The following paragraphs describe removal procedures for the maintenance parts of Antenna AS-1390/U.

(b) CONNECTORS. - The UHF communication, drone control, and IFF connectors are removed as follows (see 2, 3, and 4, figure 1-1). Carefully

remove the connectors and the o-rings by removing the four screws, four lockwashers, and four plain washers which fasten each connector to the base cover.

(c) NAVY WIND INDICATING EQUIPMENT CONNECTOR. - The connector is removed as follows. Remove the screws and lockwashers holding the base cover to the mast and the nut holding the wind indicating equipment connector to the base. Partially remove the antenna assembly about 1 foot from the mast by carefully pulling the base cover directly to the rear along the axis of the antenna. Remove the connectors (see 2, 3, 4, figure 1-1). Remove the screws and lockwashers holding the base cover to the transmission line. Remove the base cover. Unsolder the cable leads from the connector.

(d) MAST TOP SEAL. - The mast top seal for the provisional Navy Wind Indicating Equipment is removed as follows. Carefully loosen and remove the screw seal, washer, seal and inner washer.

(e) BASE COVER. - The base cover is removed as follows. Remove the screws and lockwashers holding the base cover to the mast and the nut holding the wind indicating equipment connector to the base. Partially remove the antenna assembly about 1 foot from the mast by carefully pulling the base cover directly to the rear along the axis of the antenna.

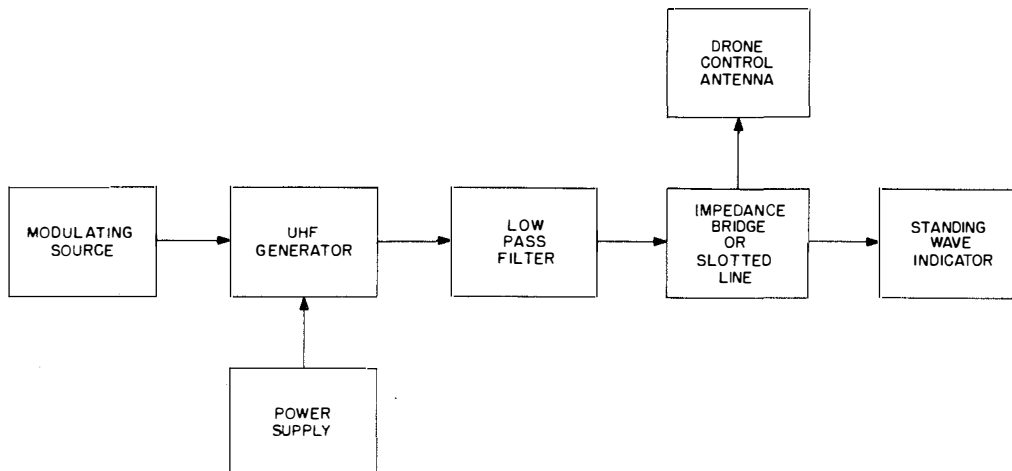


Figure 5-2. Antenna, Drone Control, Voltage Standing Wave Ratio (VSWR) Test Set-Up

Carefully remove the connectors. Do not unsolder wind indicating equipment connector leads. Carefully remove the screws and lockwashers holding the base cover to the transmission line. Carefully pull the base cover directly to the rear along the antenna axis.

(3) ADJUSTMENT AND REPAIR. - No adjustment or repair is applicable to the maintenance parts of Antenna AS-1390/U. Defective maintenance parts must be replaced.

(4) REASSEMBLY.

(a) GENERAL. - The following paragraphs describe reassembly procedures for the maintenance parts of Antenna AS-1390/U.

(b) CONNECTORS. - The UHF communications, drone control, and IFF connectors are reassembled as follows. Seat the o-rings in the groove in the base cover, and fasten each connector to the base with the four screws, four lockwashers, and four plain washers provided for each connector.

(c) NAVY WIND INDICATING EQUIPMENT CONNECTOR. - The connector is reassembled as follows. Solder the cable leads to the connector as

indicated in Table 5-5, the Table of Terminals and Color Coding of Wires. Carefully push the antenna assembly into the mast until it is possible to attach the connector to the base cover. Attach the connector to the base cover by inserting the connector through the hole in the base cover and tightening the nut on the reverse side. Attach the base cover. Attach the remaining connectors. Carefully insert and tighten the base cover screws.

(d) MAST TOP SEAL. - The mast top seal for the provisional Navy Wind Indicating Equipment is reassembled as follows. Carefully seat the inner washer, seal and washer in the mast top. Insert screw seal and tighten.

(e) BASE COVER. - The base cover is reassembled as follows. Carefully align the base cover with the plate on the end of the transmission line. Attach the base cover to the transmission line by inserting and tightening the screws and washers supplied. Attach the remaining connectors. Attach the base cover to the mast by inserting and tightening the screws.

c. OVER-ALL BLOCK DIAGRAM. - An over-all block diagram of Antenna AS-1390/U is shown in figure 3-1.

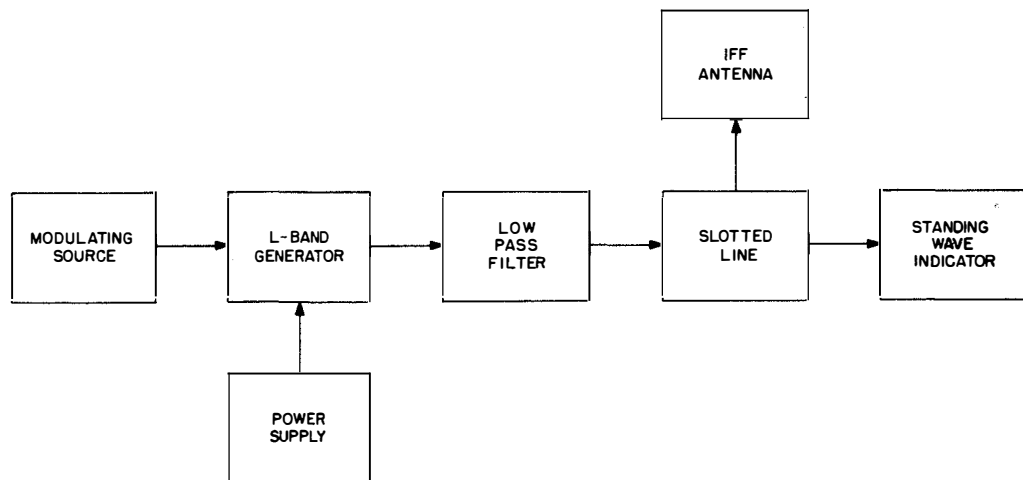


Figure 5-3. Antenna, IFF, Voltage Standing Wave Ratio (VSWR) Test Set-Up

**TABLE 5-5. TABLE OF TERMINALS AND COLOR CODING OF WIRES**

| WIRE COLOR | TERMINALS ON SYNCHRO | PIN NO. ON CONNECTOR | COLLECTOR RING ASSEMBLY | ANTENNA (BFR-18-8P) CONNECTOR |             | LOCATION                             |
|------------|----------------------|----------------------|-------------------------|-------------------------------|-------------|--------------------------------------|
|            |                      |                      |                         | Pin No.                       | Cable Color |                                      |
| White      | R1                   | 1 (HD)               |                         | 1                             | White       | Direction Synchro to Connector       |
| Black      | R2                   | 2 (HDD)              |                         | 2                             | Black       |                                      |
| Green      | S1                   | 3 (HD4)              |                         | 3                             | Green       |                                      |
| Red        | S2                   | 4 (HD5)              |                         | 4                             | Red         |                                      |
| Orange     | S3                   | 5 (HD6)              |                         | 5                             | Orange      |                                      |
| White      | R1                   |                      | 1                       |                               |             | Speed Synchro to Collector Ring      |
| Black      | R2                   |                      | 2                       |                               |             |                                      |
| Green      | S1                   |                      | 3                       |                               |             |                                      |
| Red        | S2                   |                      | 4                       |                               |             |                                      |
| Orange     | S3                   |                      | 5                       |                               |             |                                      |
| White      |                      | 1 (HD)               | 1                       |                               |             | Collector Ring Assembly to Connector |
| Black      |                      | 2 (HDD)              | 2                       |                               |             |                                      |
| Green      |                      | 6 (HE4)              | 3                       | 6                             | Yellow      |                                      |
| Red        |                      | 7 (HE5)              | 4                       | 7                             | Blue        |                                      |
| Orange     |                      | 8 (HE6)              | 5                       | 8                             | Brown       |                                      |

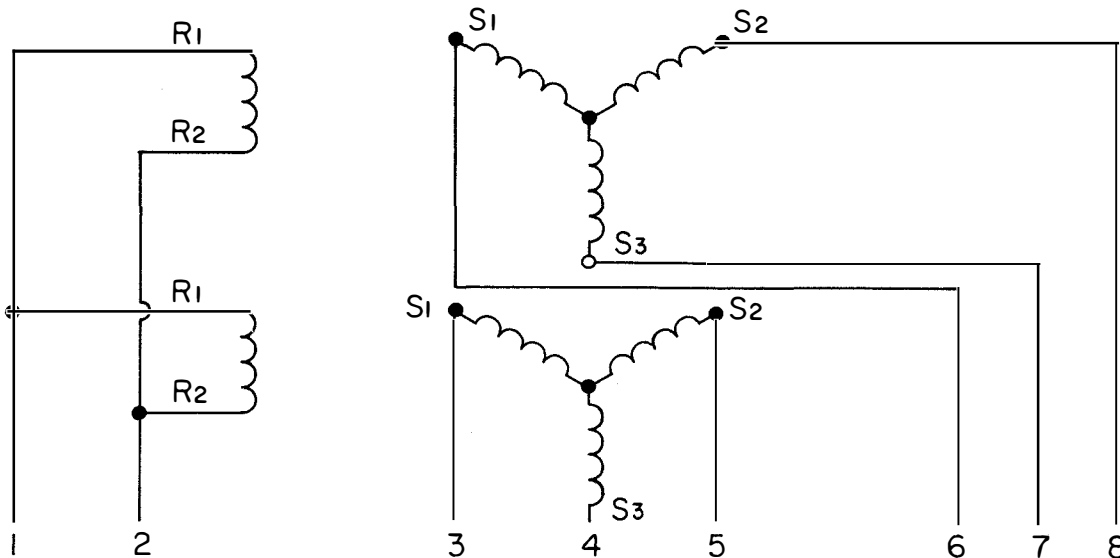


Figure 5-4. Schematic for Navy Wind Indicating Equipment

## SECTION 6 PARTS LIST

### 6-1. INTRODUCTION.

Reference designations have been assigned to identify all maintenance parts of Antenna AS-1390/U. These reference designations are included in the text, illustrations, and tables of the technical manual. Stock number of parts used in this equipment may be obtained by referring to the Stock Number Identification Table (SNIT) published by ESO.

### 6-2. MAINTENANCE PARTS LIST.

Table 6-1 lists Antenna AS-1390/U and its maintenance parts. Column 1 lists the reference series of the AS-1390/U followed by the reference designations of the maintenance parts in numerical order. Column 2 gives the name and describes the maintenance parts. Column 3 indicates how the part is used and gives its functional location in the equipment. It also includes the figure number of the pictorial illustration on which the part is identified.

**TABLE 6-1. ANTENNA AS-1390/U, MAINTENANCE PARTS LIST**

| REF<br>DESIGN | NAME AND DESCRIPTION                       | LOCATION FUNCTION   |
|---------------|--|---|
| 1             | Base Cover, Mfg. Part D-2836               | Supports antenna assembly and houses connectors. Figure 1-1 (1)   |
| 2             | Connector, Feed, Mfg. Part B-2451 Modified | Electrical Interconnection at Base Cover for communications antenna, Figure 1-1 (2)                                     |
| 3             | Connector, Feed, Mfg. Part B-2451          | Electrical Interconnection at Base Cover for drone control antenna, Figure 1-1 (3)                                      |
| 4             | Connector, Feed, Mfg. Part B-2879          | Electrical Interconnection at Base Cover for IFF antenna, Figure 1-1 (4)  |
| 5             | O-ring, Type AN-6227B-22                   | Provides seating for 2, Figure 1-1  |
| 6             | O-ring (Same as 5)                         | Provides seating for 3, Figure 1-1  |
| 7             | O-ring, Type AN-6227B-14                   | Provides seating for 4, Figure 1-1  |
| 8             | O-ring, Type AN-6227B-73                   | Provides seating for fiberglass mast and base plate, Figure 1-1   |
| 9             | Connector, Type BFR-18-8P                  | Integral o-ring for electrical Interconnection at Base Cover for provisional Navy Wind Indicating Equipment, Figure 1-1 |
| 10            | Screw, seal, Mfg. Part B-2890              | Connection for provisional Navy Wind Indicating Equipment at top of antenna assembly, Figure 1-1                        |
| 11            | Washer, Mfg. Part B-2891                   | (Same as 10)  |
| 12            | Seal, Mfg. Part B-2892                     | (Same as 10)  |
| 13            | Washer, Mfg. Part B-2883                   | (Same as 10)  |



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