

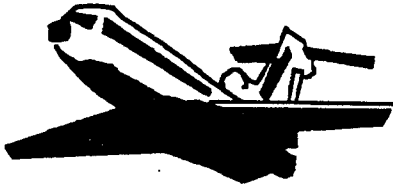
**ADB** A SIEMENS COMPANY

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*A Leader in Airfield Lighting*



*Since 1946*

**INSTALLATION MANUAL**

**BRITEE MICROWAVE  
RECEIVER/TRANSMITTER**

**ADB**

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## SECTION 1. GENERAL INFORMATION AND REQUIREMENTS

### 1.1 INTRODUCTION.

The BRITEE Microwave Transmitter/Receiver System is used at airports to control and monitor taxiway Stop-Bars. One or more microwave systems are installed on a taxiway so that when an aircraft interrupts the microwave detector signal, Stop-Bar lights will be re-lighted or turned off depending on the aircraft's location.

### 1.2 EQUIPMENT SPECIFICATION DATA.

Table 1-1 list part numbers. Table 1-2 list the equipment data. Table 1-3 lists equipment required but not supplied.

**Table 1-1. Part Numbers**

<u>Description</u>	<u>ADB Part Number</u>
Microwave System: (includes Microwave Transmitter & Receiver) .....	105A0134
Microwave Transmitter .....	105A0134-1000
Microwave Receiver .....	105A0134-2000

## TABLE 1-2. EQUIPMENT DATA

- Carrier Frequency of 10.525 GHz  $\pm$ 25 MHz
  - Output of less than .25 V/m, max. at 98 ft.
  - Operating Range (Ingress/Egress): 328 ft
  - Antenna Pattern: Adjustable (short range: 24°; medium range: 16°; long range: 11°)
  - Antenna Polarization: E-plane vertical; Optional E-plane horizontal
  - Operating Current and Voltage: 70 mA max., 11 to 15 VDC
- 
- Receiver Frequency of 10.525 GHz
  - Alarm Delay: 0.5 sec. to 10 sec. (adjustable)
  - Alarm Relay Contact: rated 2A at 28 VDC
  - Antenna Pattern: Adjustable (short range: 24°; medium range: 16°; long range: 11°)
  - Antenna Polarization: E-plane vertical; Optional E-plane horizontal
  - Operating Current and Voltage: 30 mA max., 11 to 15 VDC
- 
- Temperature Range of Installation: -40°C to +70°C (-40° to +158°F)
  - Humidity: 0 to 100%
  - Altitude: Sea level to 10,000 feet maximum

**Table 1-3. EQUIPMENT REQUIRED, BUT NOT SUPPLIED**

<b>Description</b>	<b>Quantity</b>
Screwdriver 1/4" flat tip	1
Screwdriver 1/8" flat tip	1
Small Phillips Screwdriver	1
Adjustable Wrench	1
Digital Multimeter (Fluke Model 87)	1
L867 (12 x 24") Light Base (OLSON #127CC24)	2

## SECTION 2. PARTS LIST

### Table 2-1 Parts List

<b>Item No Fig. 12a</b>	<b>Description Microwave Mounting Pole Assembly (Transmitter), BRITEE</b>	<b>ADB Part Number</b>
1	Microwave Transmitter System	105A0134-1000
2	2-Hub Heavy Baseplate with Gasket	44A2360
3	Microwave Baseplate	44C2356
4	Frangible Coupling - MW Tower	62B0581
5	Frangible Coupling, Baseplate	62B0588
6	Strain Relief	63A0563
7	Hex Hd Screw, 1/2-13 x 2	64A0178-32
8	1/2 Flatwasher	66A0015-33
9	1/2 Split Lockwasher	66A0026-33
10	Anti-Seize Compound	67A0048
11	Lead Assembly, 3-pin Plug	70A0429
12	Microwave Extension Cordset, 3-pin	70A0437
13	Heat Shrink, Black	71A0071
14	Terminal, Fork, 22-18 AWG, #6 Stud	72A0036
15	Flexible Conduit	77A0071
16	Connector, Conduit	77A0072
17	Pipe Cap	77A0121
18	3-inch Pipe Column	77A0122
19	3-inch Pipe Coupling	77A0123
20	Reducer Bushing, Baseplate	77A0124
21	Pipe Plug	77A0126
22	Resistor, 10K, 1/4 W	R250M1002M12

<b>Item No Fig. 13a</b>	<b>Description Microwave Mounting Pole Assembly (Receiver), BRITEE</b>	<b>ADB Part Number</b>
1	Microwave Receiver Unit	105A0134-2000
2	2-Hub Heavy Baseplate with Gasket	44A2360
3	Microwave Baseplate	44C2356
4	Frangible Coupling - MW Tower	62B0581
5	Frangible Coupling, Baseplate	62B0588
6	Strain Relief	63A0563
7	Hex Hd Screw, 1/2-13 x 2	64A0178-32
8	1/2 Flatwasher	66A0015-33
9	1/2 Split Lockwasher	66A0026-33
10	Anti-Seize Compound	67A0048
11	Lead Assembly, 3-pin Plug	70A0429
12	Microwave Extension Cordset, 3-pin	70A0437

<b>Item No Fig. 13a</b>	<b>Description Microwave Mounting Pole Assembly (Receiver), BRITTE</b>	<b>ADB Part Number</b>
13	Heat Shrink, Black	71A0071
14	Terminal, Fork, 22-18 AWG, #6 Stud	72A0036
15	Flexible Conduit	77A0071
16	Connector, Conduit	77A0072
17	Pipe Cap	77A0121
18	3-inch Pipe Column	77A0122
19	3-inch Pipe Coupling	77A0123
20	Reducer Bushing	77A0124
21	Pipe Plug	77A0126

NOTE: The following spare parts require a special order. Contact ADB Sales Department for price and minimum order quantities.

<b>Item</b>	<b>Description</b>	<b>ADB Part Number</b>
1	Microwave Receiver PCB	44B4011
2	Microwave Transmitter PCB	44B4012
3	Screw (used on microwave cover in conjunction with O-ring, Item 4). A total of 4 screws are used per cover.	64A0302
4	O-Ring (used on microwave cover in conjunction with screw, Item 3). A total of 4 O-Rings are used per cover.	63A0708

## SECTION 3. INSTALLATION

### 3.1 INSTALLATION SITE

#### 3.11 Site Preparation

Site preparation is necessary for performance of the BRITEE Microwave Receiver/Transmitter System. The physical properties of the detection zone should reflect the physical specifications below for optimal performance:

- Transmitter/receiver separation distance no longer than 328 ft (100 m).
- Terrain must be level to grade,  $\pm 3$  in. (7.6 cm).
- Terrain finished as a paved zone completely void of vegetation.
- Transmitter/receiver units mounted a minimum of 24 in. (60 cm) beam centerline (center of antenna) to ground.

#### 3.12 Site Selection

A physical survey of the intended site is essential. During this survey, a rough sketch of all physical features of the site should be made including accurate distance measurements of the area. Pictures of the survey area are also a valuable aid. The following parameters for site selections are important:

- **LINE OF SIGHT:** A clear, direct line-of-sight between receiver and transmitter units must be maintained at all times. The sensor system will work best with a long, flat detection zone.
- **MOVEMENT:** Movement (brush, animals, ponds of water, etc.) in the detection zone can cause nuisance activation of the detection system.
- **VEGETATION:** Brush, shrubs, tall grass within the detection zone will have an adverse effect on the nuisance activation rate, especially when this vegetation is wet with rain or dew. Airport maintenance procedures should include provisions for eliminating vegetation between the microwave transmitter and receiver.
- **GROUND COVER:** The type of ground cover in the detection zone may effect the sensor system. A paved surface is recommended if the detection zone requires snow removal. Dense accumulated snow that builds up in front of the sensors will interfere with the detection characteristics. Also, closely mowed grass (3 inches or less) and hard packed clay are satisfactory surfaces.

- **PROXIMITY MOVEMENT:** The movement of semi-rigid objects (fences, materials, etc.) that are outside the intended detection zone may produce nuisance activations if the objects are illuminated by the transmitted microwave signal.

### 3.13 Site Design

Detailed site design drawings for the microwave sensor system should be prepared as soon as possible after the site survey. Dimensions and elevations should be shown on these drawings, as well as the location of any physical objects noted during the survey. After the site drawings have been completed, the next step is to plot each microwave zone. Zone placement and zone length are essential to the design of a reliable detection system.

- **ZONE PLACEMENT:** The transmitter and receiver units must be mounted so a direct, unobstructed line-of-sight is between them.
- **ZONE LENGTH:** The optimum length of each zone depends on :
  1. Physical constraints (semi-rigid objects in area)
  2. Space available for the detection zone

## 3.2 Field Assembly Instructions for Microwave Tower and Baseplate

### 3.21 Installation of the Microwave Tower

1. Remove tower base and column from packing box. Inspect for damage. Contact ADB immediately if parts are received damaged. Notify commercial carrier and file damage claim.
2. Take the lower tower components (baseplate assembly, frangible coupling, and pipe coupling) and position on concrete pad. Transfer the four mounting bolt hole locations in the baseplate to the concrete pad. (See Figs. 2, 12a and 13a.)
3. Install bolt anchors (for 1/2-inch bolts) or other suitable devices in concrete pad.
4. Bolt base assembly to the concrete pad.
5. Tighten frangible coupling into baseplate hub. Coat frangible coupling with an anti-seize compound. After threading coupling into hub by hand, tighten with a pipe strap or chain wrench. (Use wrench for 3-inch pipe.)

**NOTE:** Grip frangible coupling **BELOW** the frangible groove when tightening with wrench. Do not over tighten.



6. Take the MW tower column and coat threads with an anti-seize compound. Install pipe cap on one end and the pipe coupling on the other end. Tighten with pipe strap or chain wrench.
7. Coat exposed threads on the frangible coupling with an anti-seize compound and then hand tighten tower column assembly (ref. 6 above) onto the frangible coupling. Tighten with pipe strap or chain wrench.

**CAUTION**

Do not over tighten or frangible coupling may shear at groove.

8. Tower is now ready for microwave unit.

### 3.22 Installation of Microwave (MW) Receiver and Transmitter to Tower

1. Remove MW Receiver or Transmitter from box and attach 2-piece mounting bracket assembly (bracket and clamp channel) to the back of the MW housing. Then insert 2 pipe clamps into the mounting bracket and attach MW units to the tower column. All hardware is supplied with each MW unit (see Figure 6).

Note: J8 and J5 ports in MW Receiver/Transmitter housing should be aligned with J8 and J5 ports in the baseplate. Location of J8 and J5 ports are stamped on the side of the MW housing.

2. Attach MW units to towers using the mounting brackets and hardware kit supplied with the MW units. Mount the MW (Receiver and Transmitter) at the vertical height required by the site plans and specifications. If the installation height has not been determined, set MW unit at the highest distance to insure the power cords and conduit are of sufficient length to allow for some vertical adjustment.

### 3.23 Connection of Conduit/Cable to Baseplate

1. Locate the 3-pin microwave plugs, J8 and J5, and push each cordset plug through their respective 2-inch boss found on the bottom of the baseplate (see Fig. 3).

**CAUTION**

J8 and J5 in baseplate must be aligned with the J8 and J5 cordsets coming out of the microwave units. When you face the front of either the microwave receiver or transmitter *J8 is on the left and J5 is on the right.*

2. Feed the loose end of the cable through the frangible coupling, reducer bushing and conduit connector. Insert frangible coupling into the 2-inch port of the baseplate. Coat threads with anti-seize compound. (See Figs. 8a and 8b.)
3. After pushing J8 and J5 plugs through the hole in the boss on the bottom of the baseplate, attach cable clamp (see Figures 4 and 5) approximately 1/2 inch from the end of the cable plug. Tighten the screws to secure the cable clamp to the plug.
4. Push the cable clamp back down into the boss recess.
5. Take the 3-pin MW plug in the bottom of the baseplate and place it into the 3-pin receptacle end of the extension cord set (see Figs. 7a and 7b).

Note: The frangible coupling's inner diameter is counterbored to provide clearance for the cable clamp installed on the 3-pin receptacle cord. When the frangible coupling is screwed into the hub of the baseplate, it will trap the cable clamp and make the joint frangible (see Fig. 8c).

6. Measure the distance between the bottom of the MW housing to the baseplate. Allowing for slack in the Liqueflex flexible conduit, cut it to match this distance.
7. Install the flexible conduit in the Liqueflex connector found in the top of the frangible coupling. This is accomplished by removing the connector nut, ferrule and split sealing ring and inserting them on one end of the conduit in reverse order. Insert conduit/cable into the end of the connector and install and tighten the connector nut. (See Figs. 9 and 10.)
8. Repeat these steps for the other cable.

### **3.24 Installation of Microwave BRITEE Slave in L-867 Light Base**

1. Remove 2-hub baseplate assembly from packing box. Inspect for damage. Contact ADB immediately if part is damaged. Notify commercial carrier and file damage claim.
2. Place brick on the bottom of light base. Set Microwave BRITEE Slave on brick. Connect series circuit primary leads, P1 and J1. In accord with local practice, wrap electrical tape or heat shrink splice.
3. Place baseplate gasket (supplied with Item 2, Figs. 12a & 13a) on top of L-867 light base. Align holes in gasket with holes in the light base.

4. Place the 2-hub baseplate near edge of opening in light base so that you have access to the two hubs on the bottom of the baseplate. Position the baseplate so that hubs are aligned with J8 and J5 cord sets coming from the Microwave Slave.
5. Attach the 3-pin extension cord set (Figs. 12a and 13a) to their respective 3-pin receptacle (J8 and J5) on the BRITEE Slave assembly. In accord with local codes, wrap electrical tape or heat shrink connection.
6. Connect the earth ground lug on top of the Slave to the local earth ground connection in the L-867 base using AWG 8 wire minimum.
7. After J8 and J5 receptacles from the microwave assembly are installed, place the baseplate on top of the L-867 light base. Align the bolts in the baseplate with holes in gasket and tapped holes in the flange of the L-867 light base. Use 3/8-16 x 1.0 long hex head screws and 3/8 lockwasher and fasten the baseplate to the light base.

### 3.25 Connection of Conduit/Cable to MW Units

1. Remove the connector nut, ferrule, and split sealing ring from either the J8 or J5 connector found in the MW housing. Install the nut, ferrule, and sealing ring in reverse order on the other end of the conduit (see Fig. 10).
2. Note: The cable supplied is 8 ft long and may need to be shortened before it is stripped and terminals are installed. Strip cable jacket approximately 12 inches. You will need from 2 to 10 inches inside the MW to make connections to the terminal block, depending upon which cable (J8 or J5) is being hooked up.
3. Remove front cover on the MW unit by removing the 4 screws located in the corners of the lid (see Fig. 11).

#### CAUTION

Screws holding lid are very small and each screw has an O-ring attached. Prevent screws and O-rings from being lost and lid from being damaged.

4. Push the two conductors through the conduit connector and into the inside of the MW housing. Insert the conduit/cable into the end of the connector and tighten the nut.
5. Feed cable into the inside of the MW housing. Strip ends of wire and install fork terminals for AWG 16 wire. See Wiring Schematic in Figure 12b and 13b.
6. TRANSMITTER WIRING: See Figure 12b for a wiring diagram of the microwave transmitter and instructions for setting up the jumper positions.

- **Power Source: Terminals 1 and 2.**  
The transmitter requires 15 VDC to operate. Terminal 1 is ground, Terminal 2 is +15 V DC.
  - **Remote Self Test: Terminal 6.**  
The transmitter provides a test signal that will dynamically test the detection zone to the sensitivity required of that zone. This capability is remotely activated by the Remote unit (Slave).
  - **Normal Jumper Settings for Transmitter:**  
R-10, modulation depth, is used for self test functionality, and should be turned fully clockwise.
7. **RECEIVER WIRING:** See Figure 13b for a wiring diagram of the receiver unit and instructions for setting up the jumper positions.

- **Power Source: Terminals 1 and 2.**  
The receiver unit requires 15 VDC. Terminal 1 is ground, Terminal 2 is +15 VDC.
- **Normal Jumper Settings for Receiver:**  
S1 must be in the timed position.

**Range Switch:** This is a small jumper on the receiver circuit board located by the coax input from the antenna. This jumper (S5) should be set in the "L" position for most applications.

**Sensitivity Jumper:** The position of the Sensitivity Jumper is determined by application. This jumper reduces the maximum detection sensitivity, preventing excessive sensitivity which can result in nuisance activations of the system. This jumper (S7) should be set in the "L" position for most applications.

**Antenna Sensitivity:** Potentiometer R-55, Detection Sensitivity, should be set fully counter-clockwise and then turned a quarter of a turn clockwise. R-76, Duration, should be set to the half-way point.

- **Alarm Circuit: Terminals 6 and 7.**
- **Multipath Sidetone: Phono plug adjacent to terminal 12. (Optional)**  
This is an audio output (2 milliwatts, 600 ohm) whose frequency and amplitude are proportional to the amount and location of a source of motion within the detection zone. It can be used as a local test signal. Shielded #18 audio wire should be used to connect this signal.

### **3.3 ALIGNMENT OF MICROWAVE TRANSMITTER AND RECEIVER**

#### **3.31. Aiming and Calibration of the Microwave Transmitter and Receiver**

1. Loosen screws securing MW units to the tower column and move MW units vertically and horizontally to visually align the center lines of the Transmitter to the Receiver. The MW housing has angular adjustment by loosening the four screws on the side of the MW bracket and tilting the MW up or down.

Note: The MW antenna is located in the upper portion of the MW unit. The cover lid has a molded ridge in the shape of an "X". The center of the "X" is the center line of the antenna.

2. Using Mounting Height Chart, Figure 18, determine the approximate mounting height of the units.

Note: Determining Preliminary Mounting Height: Figure 18 is used to determine the best theoretical mounting height of the transmitter/receiver units for optimum efficiency of the sensor system. This height chart is intended to furnish a preliminary mounting height only; the final operating height will be determined during mechanical alignment and final adjustment.

3. Once the sensor system is mounted and wiring installation completed, a preliminary check, channel selection, and antenna pattern selection is required before applying power to the system.
4. CHANNEL SELECT SWITCH: Refer to the Channel Selection Matrix Chart on the Receiver and Transmitter Wiring Diagrams, Figures 12b and 13b. The channel select switch on each transmitter/receiver pair must be set to the same operating channel.

#### **3.32. Electrical Alignment of the Receiver and Transmitter Units**

1. Power up units.
2. At the receiver, connect a digital voltmeter between TP-10 (+) and TB1-1 (-). This is the automatic gain control (AGC) voltage, and, after final alignment, should be between 1.7 and 7.3 VDC. Temporarily, move the "LATCHED-TIMED" jumper to the "LATCHED" position to speed up the AGC response.
3. Slowly move the receiver unit up and down the post while monitoring the receiver unit AGC voltage. Once a maximum AGC voltage is obtained, rotate the receiver

until maximum AGC is obtained on this axis. Tilt the receiver antenna slightly, again adjusting for maximum AGC voltage.

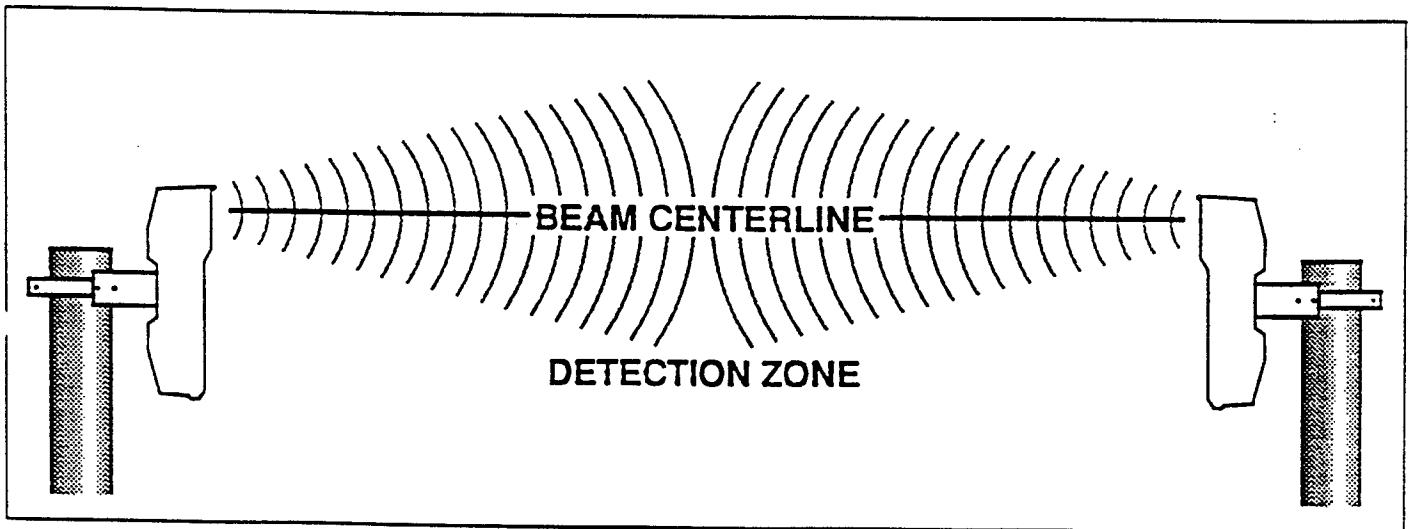
4. Continue to monitor the AGC voltage at the receiver while moving the transmitter in all three axis until maximum AGC voltage is obtained.
5. After securing hardware, repeat the electrical alignment steps for the transmitter and receiver units to obtain maximum AGC readings on all the rotational axis.
6. Secure the mounting nuts and bolts. Make sure that the AGC voltage remains high while this hardware is tightened.

### **3.33 Test for Adequate Sensitivity and Detection**

1. First, make sure the receiver "ALARM" LED is not lit and that the Sensitivity Jumper (S7) is set to "L" position. Then connect an ohmmeter between TB1 terminals 10 and 11; it will read less than 0.5 ohms when the system is operational (armed) and infinity when the unit has detected an obstruction. Leave the ohmmeter connected.
2. Walk across the detection zone to ensure the unit activates ("ALARM LED lit, ohmmeter to infinity). If it does not, adjust the sensitivity potentiometer (R55) clockwise; then walk test the zone again. An alarm detection should normally occur just before a line of sight between the transmitter and receiver units is broken by the walker.

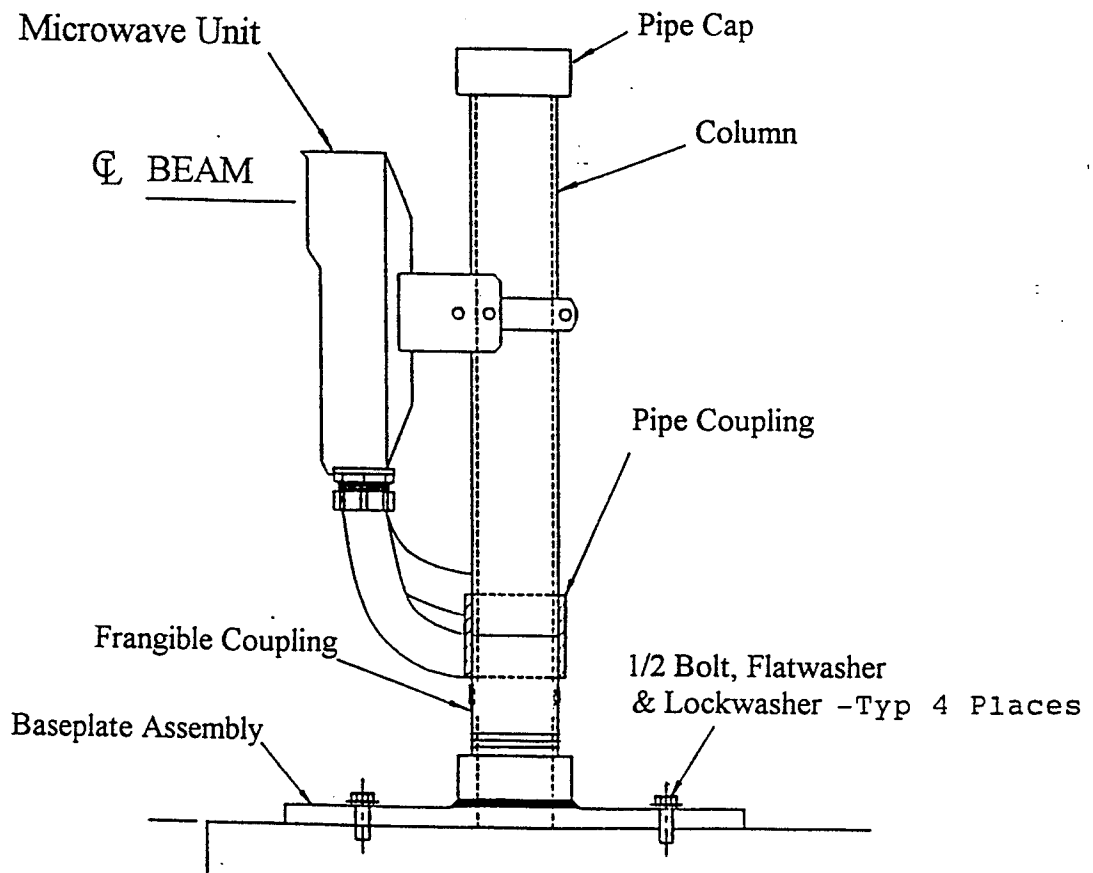
### **3.4 FINAL CHECKS**

1. Be sure to put the "Latched-Timed" jumper back into the timed position.
2. Tighten all hardware.
3. When replacing covers make sure that the O-rings are put into place in order to maintain a good waterproof seal.
4. After aiming and the above calibrations are completed the MW units are ready for service.



## Microwave Receiver/Transmitter

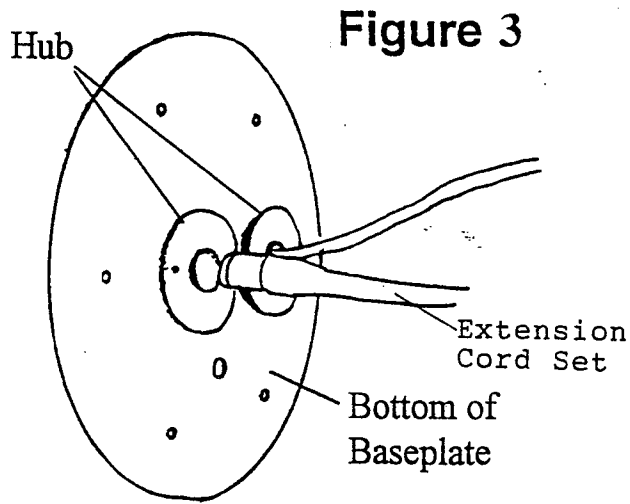
Figure 1



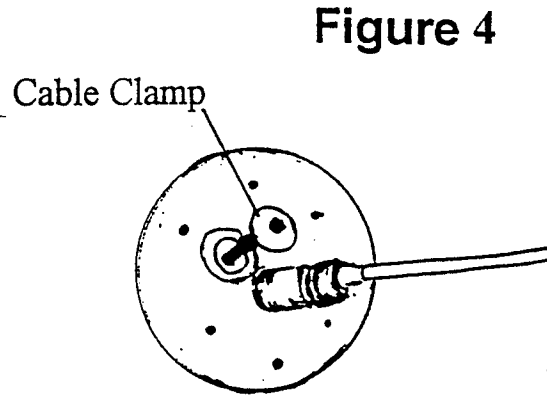
**Representation of Transmitter or Receiver**

**Figure 2**

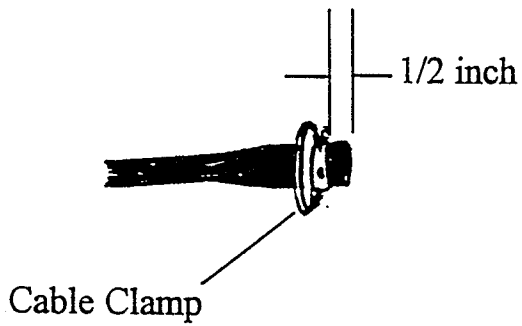




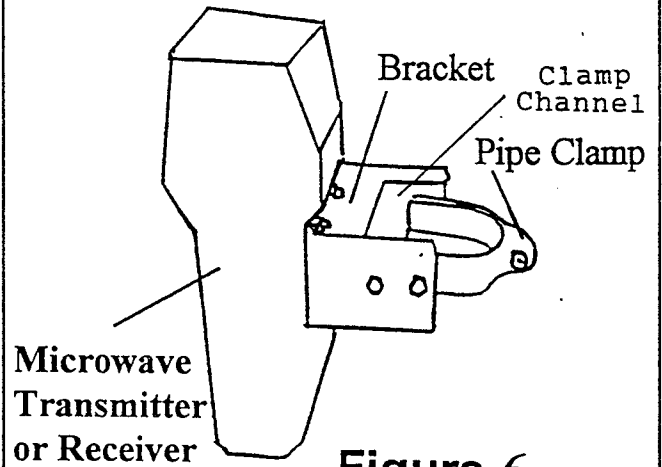
**Figure 3**



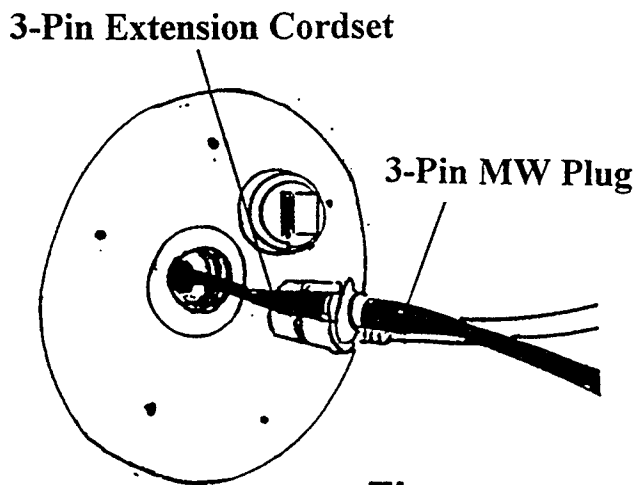
**Figure 4**



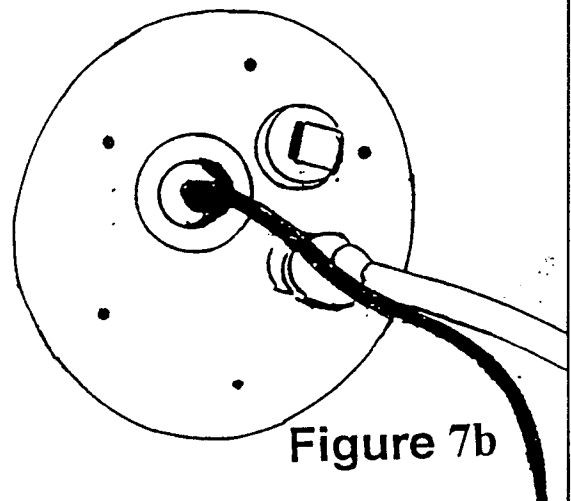
**Figure 5**



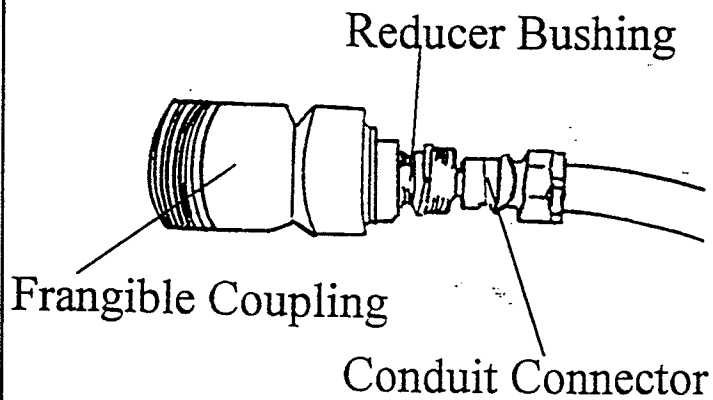
**Figure 6**



**Figure 7a**

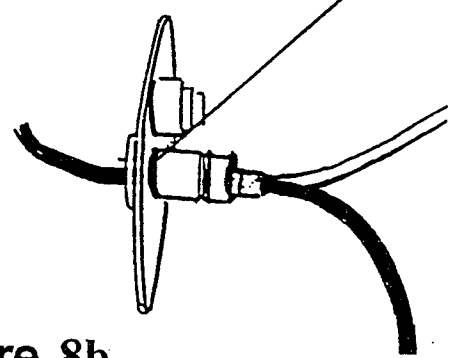


**Figure 7b**

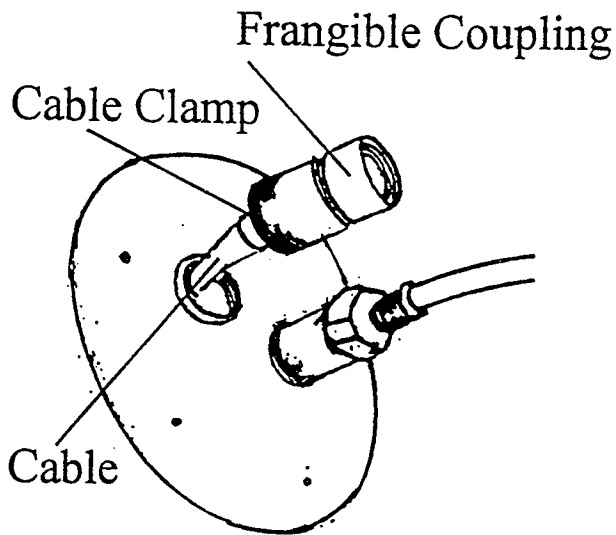


**Figure 8a**

Baseplate 2-inch Port

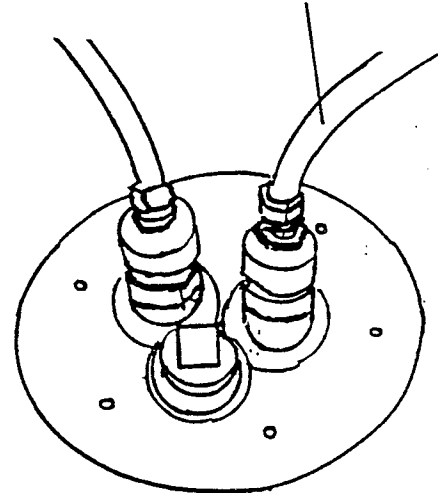


**Figure 8b**

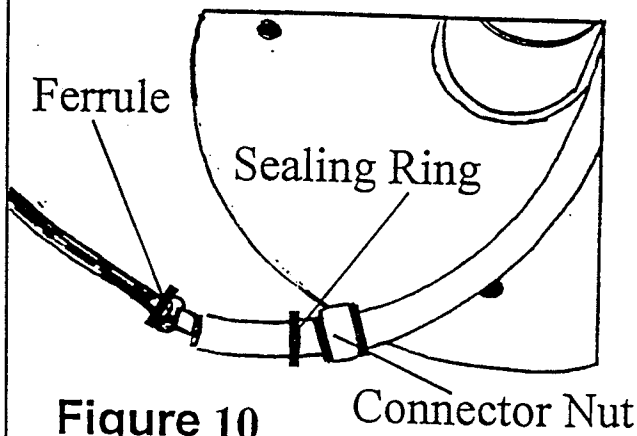


**Figure 8c**

Repeat Steps for Other Cable

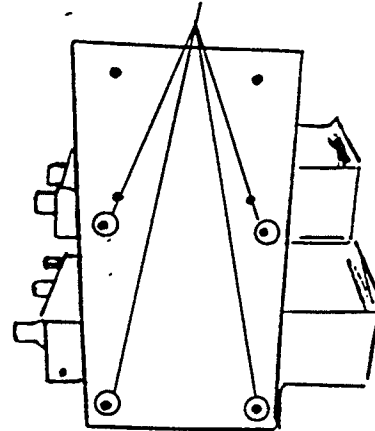


**Figure 9**



**Figure 10**

Remove 4 Screws in Lid



**Figure 11**

- ASSEMBLY PROCEDURES:**
- CAREFULLY REMOVE THE FOUR SCREWS THAT HOLD THE FRONT COVER IN PLACE. TAKE CARE NOT TO MISPLACE THE SMALL O-RINGS ON THE SCREWS AS THEY ARE FOR EMI/RFI SHIELDING, AND ARE A NECESSARY PART OF THE ENCLOSURE.
  - CAREFULLY REMOVE THE PCB AND PLACE IN A CONDUCTIVE BAG. WARNING: THE PCB IS EXTREMELY SENSITIVE TO STATIC ELECTRICITY, AND SHOULD BE HANDLED USING THE GROUNDING STRAPS FOR STATIC PROTECTION. BE SURE TO REMOVE THE STRAPS FROM THE BACK INTO THE SAME ENVELOPE FROM WHICH THEY CAME.
  - AFTER REMOVING THE PCB, DRILL THE TWO HOLES IN THE BOTTOM OF THE ENCLOSURE AS SHOWN BELOW. CONTINUE TO HANDLE THIS BOX WITH CARE, AS THERE ARE SOME ELECTRONICS THAT CANNOT BE REMOVED AND ARE SENSITIVE TO VIBRATION.
  - REMOVE ANY DEBRIS LEFT BY THE DRILLING FROM THE BOX. CAREFULLY RE-INSTALL THE PCB, AND WIRE AS SHOWN. SET UP SWITCH SETTINGS PER NOTES.
  - INK STAMP A "T" ON THE BOTTOM OF THE BOX WHERE THE CORDSETS ENTER, TO IDENTIFY IT AS THE TRANSMITTER. ALSO, INK STAMP "J5" AND "J8" ON THE SIDE OF THE BOX, INDICATING EACH CORDSET.
  - REPLACE THE FRONT COVER, MAKING CERTAIN THAT THE O-RINGS ARE IN PLACE.
  - R4 WILL NEED TO HAVE HEATSHRINK AROUND IT.

- NOTES:**
- THIS ASSEMBLY IS USED WITH THE BRITTEE MICROWAVE REMOTE, 44D3110/0057.
  - THE BLACK WIRE ON J8 IS NOT USED ON THE TRANSMITTER. PLACE HEATSHRINK ON THE END TO INSULATE IT.
  - THIS BANK OF DIP SWITCHES SELECTS THE OPERATING FREQUENCY OF THE UNIT. A TABLE OF VALID SETTING IS SHOWN BELOW. THE TRANSMITTER AND RECEIVER MUST BE USED AS MATCHED SETS, THEREFORE THESE SWITCHES MUST BE SET THE SAME ON BOTH THE TRANSMITTER AND RECEIVER. ALSO, IF THERE ARE MULTIPLE SETS OF MICROWAVE UNITS AT THE INSTALLATION SITE, EACH PAIR MUST HAVE AN UNIQUE SETTING. RFD IS USED TO SET THE MODULATION DEPTH, WHICH ALLOWS THE UNIT TO RUN DIAGNOSTICS. GENERALLY THIS POTENTIOMETER SHOULD BE SET FULLY CLOCKWISE.

TABLE 1: Valid Channel Settings

CHANNEL	1	2	3	4	5	6	7	8
CHANNEL A								9521 Hz
CHANNEL B								10914 Hz
CHANNEL C								12094 Hz
CHANNEL D								13161 Hz
CHANNEL E								14435 Hz
CHANNEL F								15981 Hz

Information contained on this drawing is to be used expressly in accordance with the purpose for which it was submitted. Any disclosure of this information strictly prohibited except as ADB-ALINACO may otherwise agree in writing. Do not scale drawing.

**ADB**  
ALINACO  
A SEMENS CO.

ADB-ALINACO, INC.  
977 GAHANNA PARKWAY  
COLUMBUS, OHIO 43230

PART NAME: MICROWAVE TRANSMITTER MOUNTING ASSEMBLY

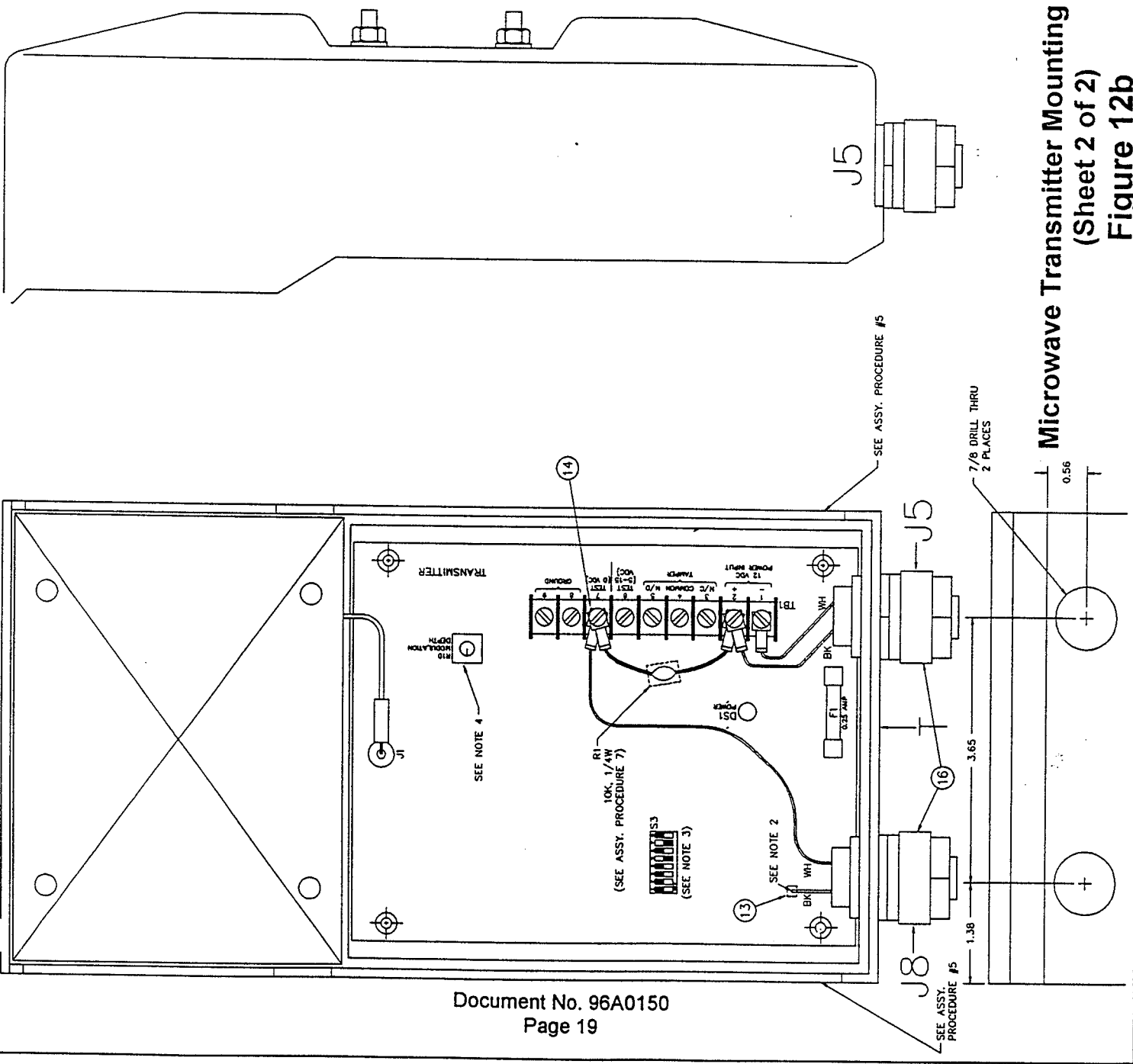
HEAT ASSEMBLY: \_\_\_\_\_ DATE: \_\_\_\_\_

CHKD BY: \_\_\_\_\_ DATE: \_\_\_\_\_

SCALE: NTS DRAWN BY: T.L.K. DATE: 26MAY92

BRUING NO: \_\_\_\_\_

44C4002-1000E



**Microwave Transmitter Mounting Assembly**  
(Sheet 2 of 2)  
Figure 12b

GENERAL ASSEMBLY BILL OF MATERIAL

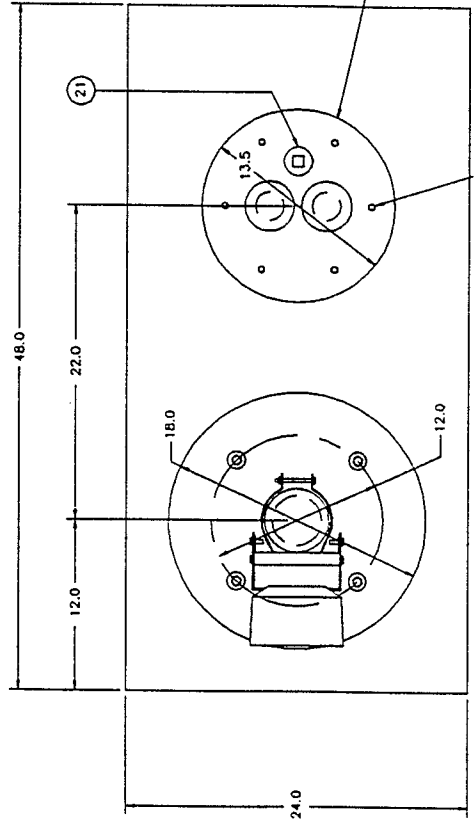
ITEM NO.	PART NUMBER	PART NAME/DESCRIPTION	MATERIAL	UNITS	QTY.
1	105A0134/1000	MICROWAVE TRANSMITTER UNIT			1
2	44A2360	2 RUB HEAVY BASEPLATE WELDMENT ASSY W/GASKET			1
3	44C2356	MICROWAVE BASEPLATE WELDMENT			1
4	62B00381	FRANGIBLE COUPLING, MICROWAVE TOWER	77A0120		1
5	62B00388	FRANGIBLE COUPLING, BASE PLATE	8BB0064		2
6	63A00363	STRAIN RELIEF			1
7	64A0178/32	1/2" - 13 x 2 HEX HD SCREW			4
8	66A0015/23	1/2" FLATWASHER			4
9	66A0028/23	1/2" SPLIT LOCKWASHER			4
10	67A00048	ANTI-SEIZE COMPOUND			A/R
11	70A0429	LEAD ASSY, 3 PIN PLUG			2
12	70A0437	3-PIN MICROWAVE EXTENSION CORD SET			2
13	71A0071	HEAT SHRINK, BLACK			6IN
14	72A0036	TERMINAL FORK, 22-18AWG, #6 STUD			5
15	77A0071	FLEXIBLE CONDUIT			BFT
16	77A0072	CONNECTOR, CONDUIT			4
17	77A0121	PIPE CAP			4
18	77A0122	3" PIPE COLUMN			1
19	77A0123	3" PIPE COUPLING			1
20	77A0124	REDUCER BUSHING, BASE PLATE			2
21	77A0126	PIPE PLUG			1
R1	R250M1002M12	RESISTOR, 10K, 1/4W			1

NOTES:

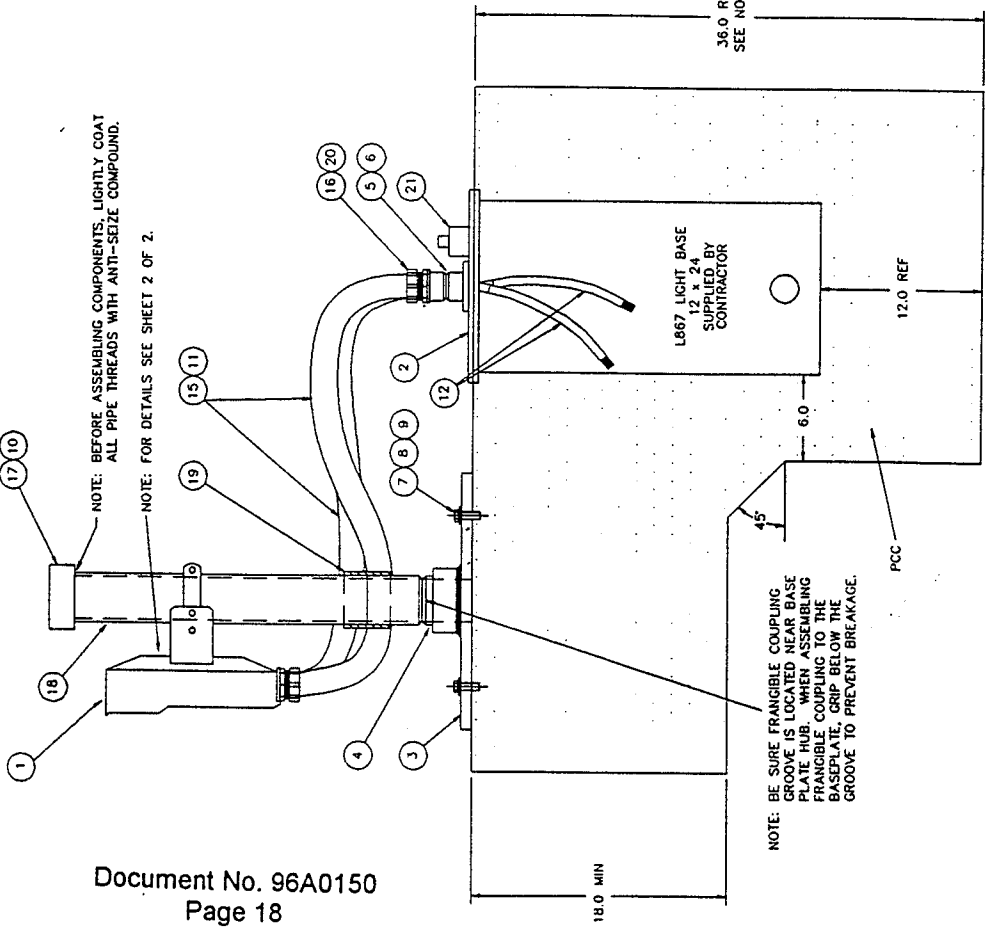
- DEPTH OF CONCRETE PAD TO BE DETERMINED BY CONTRACTOR FOR SITE SOIL CONDITIONS.
- MICROWAVE SYSTEM IS SHIPPED AS A SET, BUT TRANSMITTER AND RECEIVER CAN ALSO BE ORDERED SEPARATELY. USE THE FOLLOWING PART NUMBERS:
 

ADB PART NO.	ITEM	ADB POLE ASSY NO.
105A0134	MICROWAVE SYSTEM	
105A0134-1000	MICROWAVE TRANSMITTER	44C4602-1000
105A0134-2000	MICROWAVE RECEIVER	44C4003-2000
- UNLESS ORDERED AS A SPARE, ALL ITEMS ARE FIELD ASSEMBLED.
- 3/8"-16 HEX BOLTS AND GASKET ARE SHIPPED WITH ITEM 2.
- SEE ADB INSTRUCTION MANUAL 96A0150 FOR ASSEMBLY PROCEDURE.

TOP VIEW



SEE NOTE 4



SIDE VIEW

Microwave Transmitter Mounting Assembly  
(Sheet 1 of 2)  
Figure 12a

Information contained on this drawing is to be used exclusively in accordance with the purpose for which it was submitted. Any disclosure of this information strictly prohibited except on ADB-ALMACO may otherwise agree in writing. Do not scale drawing.

**ADB ALMACO**  
 ADB SYSTEMS CO.  
 67 PARKWAY  
 COLUMBUS, OHIO 43230

PART NAME: MICROWAVE TRANSMITTER MOUNTING ASSEMBLY

NEXT ASSEMBLY: BRITTEE

DATE: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 SCALE: NIS  
 CHECKED BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_

44C4002-1000

SHEET 1 OF 2

LET	E.C. No	REVISION	BY	DATE	CHKD/APPRD
E		ADDED NOTES	TLK	07/19/93	
D		AS INSTALLED	TLK	08/23/93	
C		PROD. RELEASE	CSH	10/26/92	
LET					

GENERAL ASSEMBLY BILL OF MATERIAL ORDER OF ENTRY; NUMERICAL ORDER OF ALL COMPON. LINE EVERY FIFTH COMPONENT AT A MINIMUM. RM NUMBERS LISTED LAST.

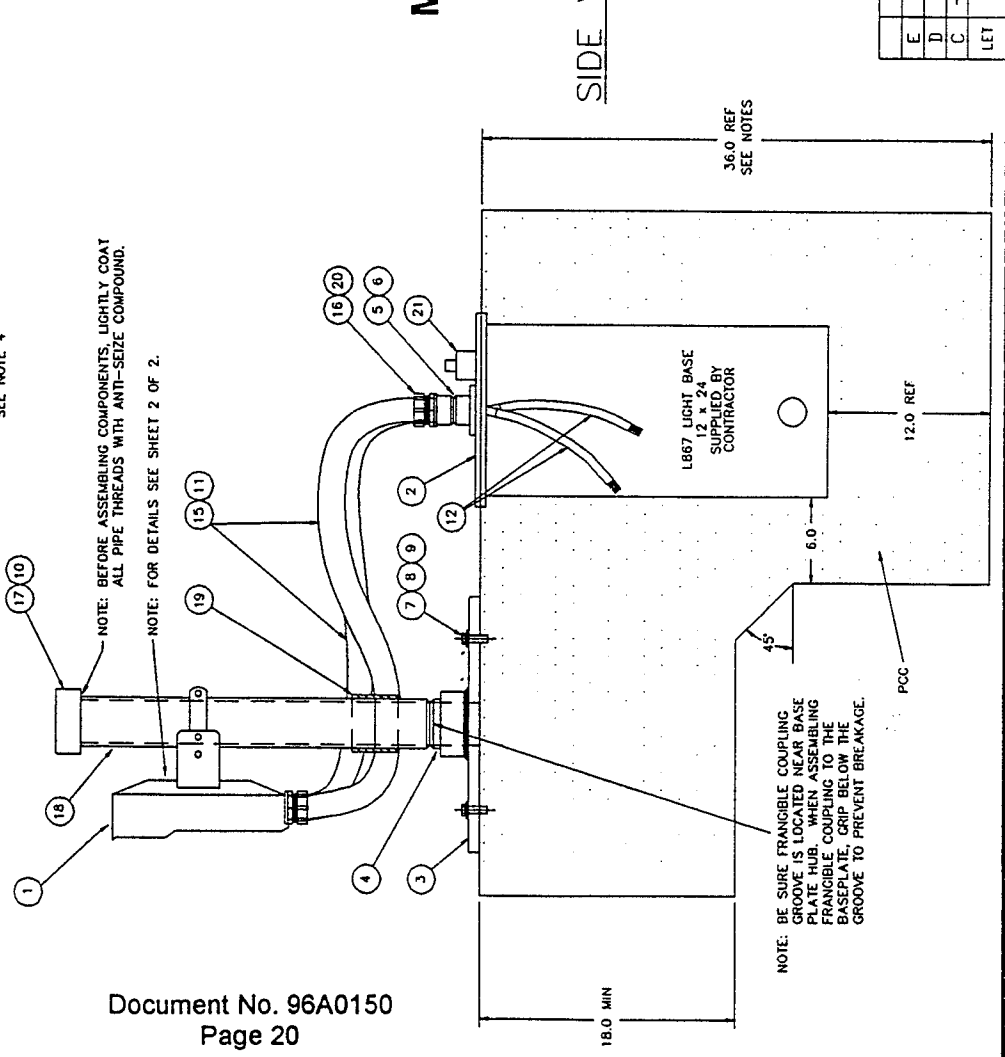
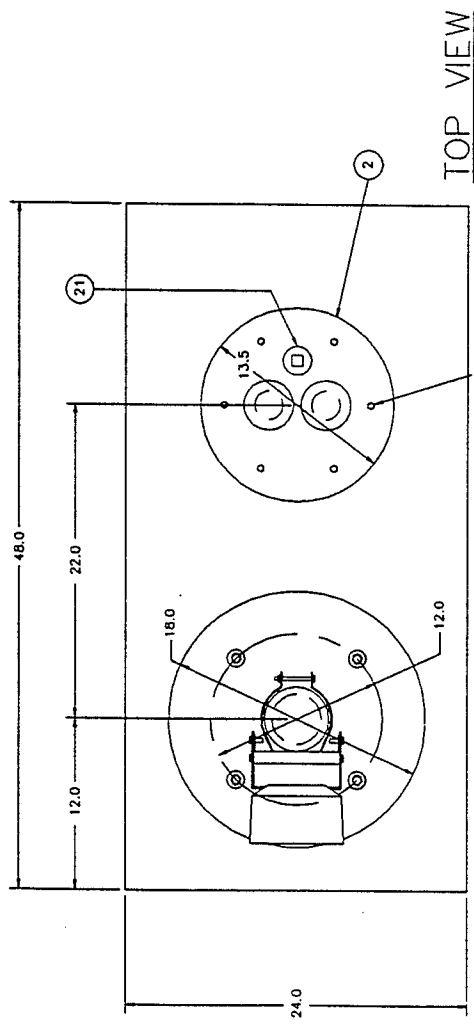
ITEM	PART NUMBER	PART NAME/DESCRIPTION	MATERIAL	UNITS	QTY
1	105A0134-2000	MICROWAVE RECEIVER UNIT			1
2	44A2360	2 HUB HEAVY BASEPLATE W/EDMENT ASSY W/GASKET			1
3	44C2356	MICROWAVE BASEPLATE WELDMENT			1
4	62B0581	FRANGIBLE COUPLING, MICROWAVE TOWER	77A0120		1
5	62B0588	FRANGIBLE COUPLING, BASE PLATE	88B0064		2
6	63A0563	STRAIN RELIEF			1
7	84A0178/32	1/2-13 x 2 HEX HD SCREW			4
8	66A0015/33	1/2" FLATWASHER			4
9	66A0026/33	1/2 SPLIT LOCKWASHER			4
10	67A0048	ANTI-SEIZE COMPOUND			4
11	70A0429	LEAD ASSY, 3 PIN PLUG			A/R
12	70A0437	3-PIN MICROWAVE EXTENSION CORD SET			2
13	71A0071	HEAT SHRINK, BLACK			6IN
14	72A0036	TERMINAL, FORK, 22-18AWG, #6 STUD			5
15	77A0071	FLEXIBLE CONDUIT			8FT
16	77A0072	CONNECTOR, CONDUIT			A/R
17	77A0121	PIPE CAP			4
18	77A0122	3" PIPE COLUMN			1
19	77A0123	3" PIPE COUPLING			1
20	77A0124	REDUCER BUSHING, BASE PLATE			2
21	77A0126	PIPE PLUG			1

NOTES:

1. DEPTH OF CONCRETE PAD TO BE DETERMINED BY CONTRACTOR FOR SITE SOIL CONDITIONS.
  2. MICROWAVE SYSTEM IS SHIPPED AS A SET, BUT TRANSMITTER AND RECEIVER CAN ALSO BE ORDERED SEPARATELY. USE THE FOLLOWING PART NUMBERS:
- | ADB PART NO.  | ITEM                  | ADB POLE ASSY NO. |
|---------------|-----------------------|-------------------|
| 105A0134-2000 | MICROWAVE SYSTEM      | 44C-0002-1000     |
| 105A0134-2000 | MICROWAVE TRANSMITTER | 44C-0002-1000     |
| 105A0134-2000 | MICROWAVE RECEIVER    | 44C-0002-2000     |
3. UNLESS ORDERED AS A SPARE, ALL ITEMS ARE FIELD ASSEMBLED.
  4. 3/8-16 HEX BOLTS AND GASKET ARE SHIPPED WITH ITEM 2.
  5. SEE ADB INSTRUCTION MANUAL 96A0150 FOR ASSEMBLY PROCEDURE.

# Microwave Receiver Mounting Assembly (Sheet 1 of 2) Figure 13a

SIDE VIEW



Information contained on this drawing is to be used expressly in excess with purpose for which it was submitted. Any disclosure of this information strictly prohibited except as ADB-ALMAGO may otherwise agree in writing. Do not scale drawing.

**ADB**  
A DB GROUP  
ALMAGO  
A SERVICE CO

ADB-ALMAGO, INC.  
A SERVICE COMPANY  
917 COLUMBIANA PARKWAY  
COLUMBUS, OHIO 43230

PART NAME: MICROWAVE RECEIVER MOUNTING ASSEMBLY  
BRITTEE

DATE: 10/22/92  
DRAWN BY: DHB  
SCALE: NTS  
CHECKED BY: CSH  
DATE: 10/22/92

44C4003-2000E

SHEET 1 OF 2

ADD'D	NOTES	BY	DATE	REVISION
E	ADDED NOTES	TLK	07/14/92	
D	AS INSTALLED	TLK	10/16/92	
C	PROD. RELEASE	CSH	10/16/92	
LET	E.C. No			

- ASSEMBLY PROCEDURES:
- CAREFULLY REMOVE THE FOUR SCREWS THAT HOLD THE FRONT COVER IN PLACE. TAKE CARE NOT TO MISPLACE THE SMALL O-RINGS ON THE SCREWS AS THEY ARE FOR EMI/RFI SHIELDING, AND ARE A NECESSARY PART OF THE ENCLOSURE.
  - CAREFULLY REMOVE THE PCB AND PLACE IN A CONDUCTIVE BAG. WARNING: THE PCB IS EXTREMELY SENSITIVE TO STATIC ELECTRICITY AND MUST BE HANDLED USING THE GROUNDING STRAPS FOR STATIC PROTECTION. ALSO, MAKE CERTAIN THAT THIS PCB GOES BACK INTO THE SAME ENCLOSURE FROM WHICH IT CAME.
  - AFTER REMOVING THE PCB, DRILL THE TWO HOLES IN THE BOTTOM OF THE ENCLOSURE AS SHOWN BELOW. CONTINUE TO HANDLE THIS BOX WITH CARE, AS THERE ARE SOME ELECTRONICS THAT CANNOT BE REMOVED AND ARE SENSITIVE TO VIBRATION.
  - REMOVE ANY DEBRIS LEFT BY THE DRILLING FROM THE BOX. CAREFULLY RE-INSTALL THE PCB, AND WIRE AS SHOWN. SET UP SWITCH SETTINGS PER NOTES.
  - INK STAMP A "R" ON THE BOTTOM OF THE BOX WHERE THE CONDUITS ENTER, TO IDENTIFY IT AS THE RECEIVER. ALSO, INK STAMP "J5" AND "J8" ON THE SIDE OF THE BOX, INDICATING EACH CONDUIT.
  - REPLACE THE FRONT COVER, MAKING CERTAIN THAT THE O-RINGS ARE IN PLACE.

- NOTES:
- THIS ASSEMBLY IS USED WITH THE BRITTEE MICROWAVE REMOTE, 44DJ110/0087.
  - THE WHITE WIRE ON J8 IS NOT USED ON THE RECEIVER.
  - PLACE HEATSHRINK ON THE END TO INSULATE IT.
  - THIS BANK OF DIP SWITCHES SELECTS THE OPERATING FREQUENCY OF THE UNIT. A TABLE OF VALID SETTING IS SHOWN BELOW. THE TRANSMITTER AND RECEIVER MUST BE USED AS MATCHED SETS, THEREFORE THESE SWITCHES MUST BE SET THE SAME ON BOTH THE TRANSMITTER AND RECEIVER. ALSO, IF THERE ARE ONE OR MORE "OFF" SWITCHES ON EITHER UNIT, THE INSTALLATION SITE MUST BE IN A RADIATION FREE ZONE. JUMPER S5 SELECTS THE RANGE OF THE DETECTOR, AND SHOULD BE SET IN THE "L" (LONG RANGE) POSITION.
  - JUMPER S7 IS THE COARSE ADJUSTMENT FOR THE SENSITIVITY, AND SHOULD BE SET AT THE LOW "L" POSITION. THE POTENTIOMETER, R55 SHOULD BE SET FULLY COUNTER CLOCKWISE AND THEN TURNED CLOCKWISE (A QUARTER TURN) TO "J" POSITION. THE DURATION POT, R76 SELECTS THE AMOUNT OF TIME THE RELAY CONTACT STAYS PULLED IN DURING A DETECTION. IT SHOULD BE SET AT APPROXIMATELY THE HALFWAY POINT.

TABLE 1: Valid Channel Settings

CHANNEL	1	2	3	4	5	6	7	8
CHANNEL A								9521 Hz
CHANNEL B								10914 Hz
CHANNEL C								12094 Hz
CHANNEL D								13161 Hz
CHANNEL E								14435 Hz
CHANNEL F								15981 Hz

Information contained on this drawing is to be used expressly in accord with purpose for which it was submitted. No other use of this information is strictly prohibited except as ADB-ALINACO may otherwise agree in writing. Do not scale drawing.

**ADB**  
A DB ALWAYS  
A DB ALWAYS CO.

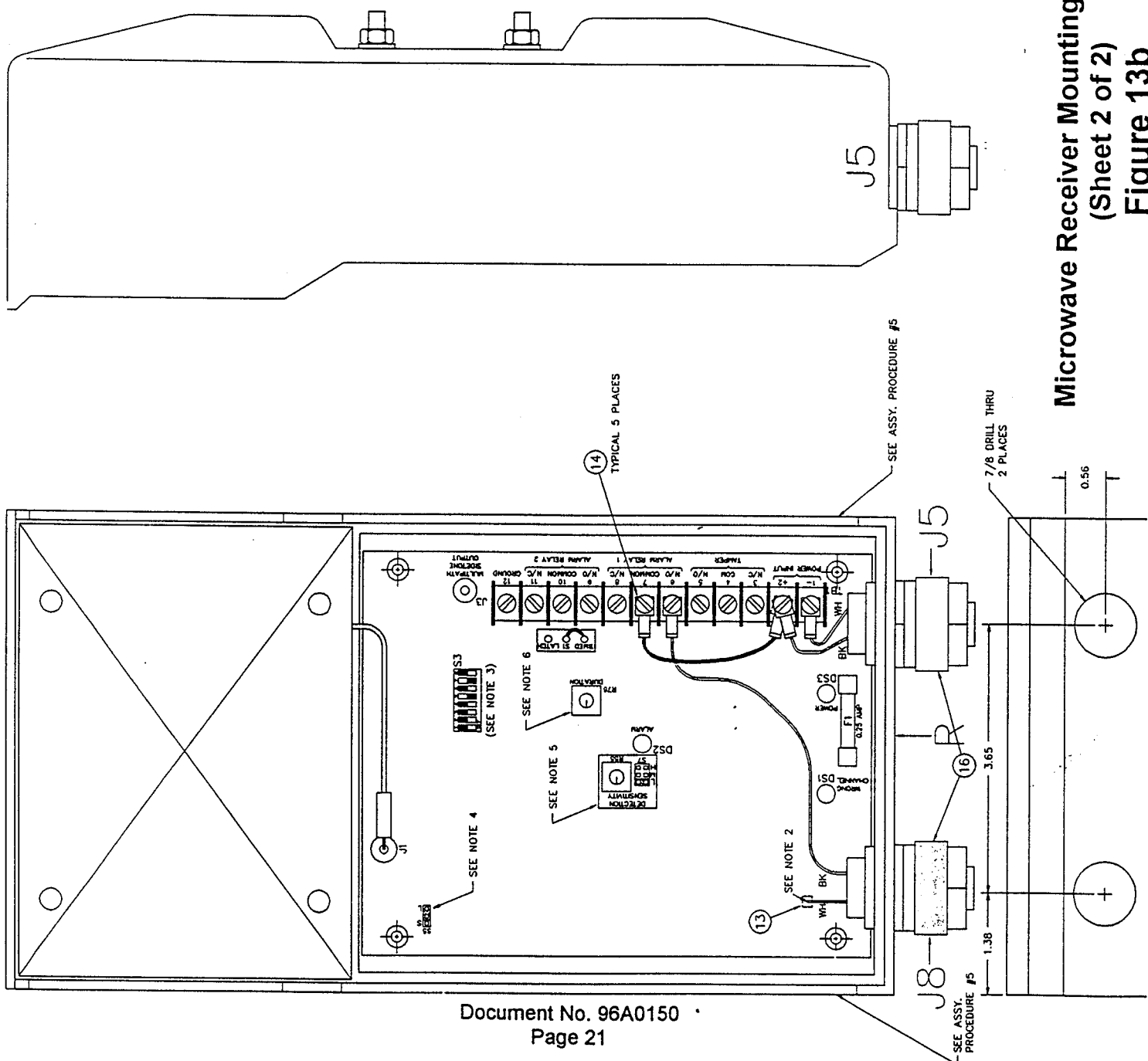
ADB-ALINACO, INC.  
A. SIEMENS CO.  
777 GARDENIA PARKWAY  
COLUMBUS, OHIO 43230

PART NAME: MICROWAVE RECEIVER MOUNTING ASSEMBLY  
BRITTEE

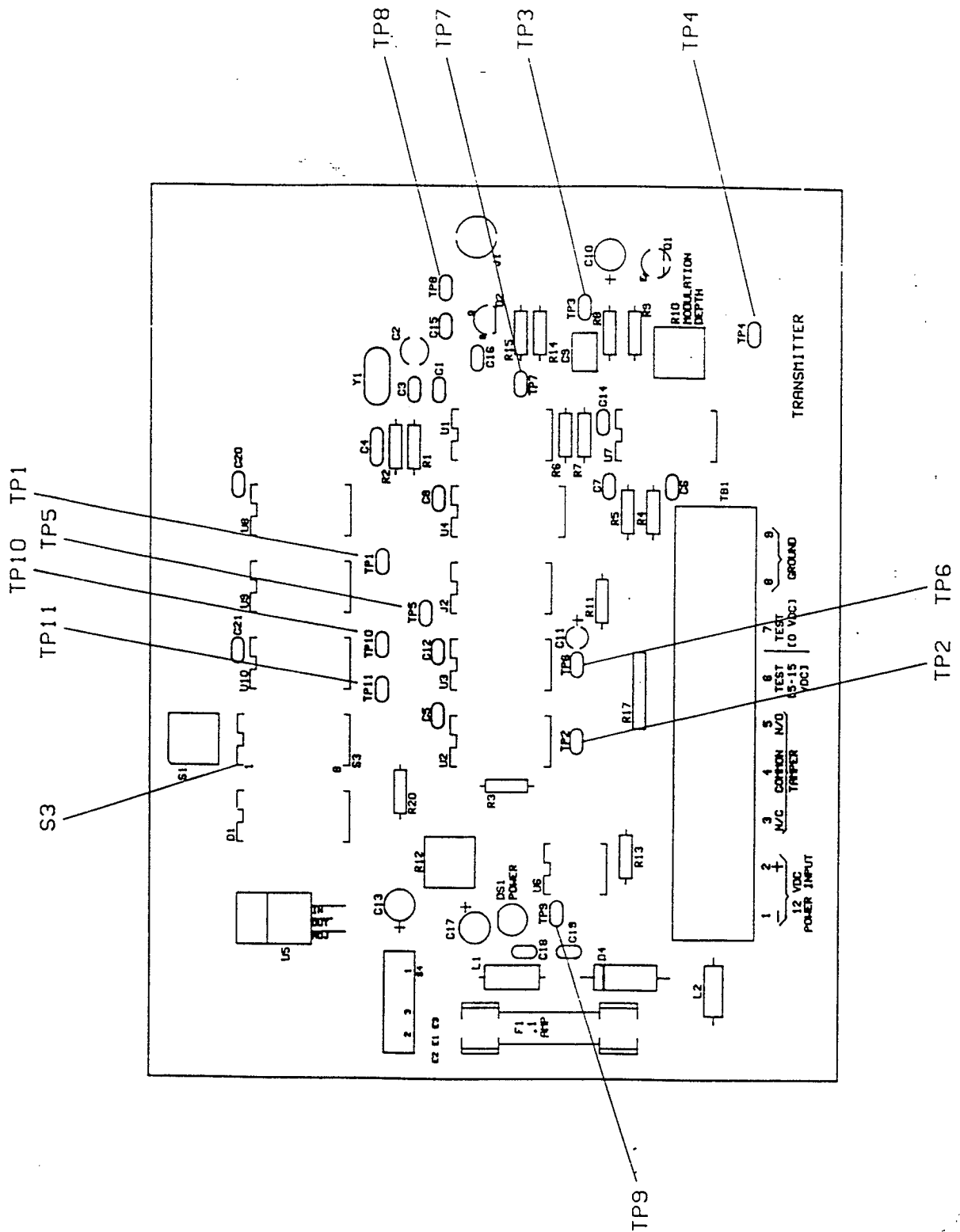
NEXT ASSEMBLY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 CRO BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

SCALE: NTS DRAWING NO: \_\_\_\_\_ DRAWN BY: T.L.K. DATE: 25 MAR 93  
 REV. \_\_\_\_\_

44C4003-2000E

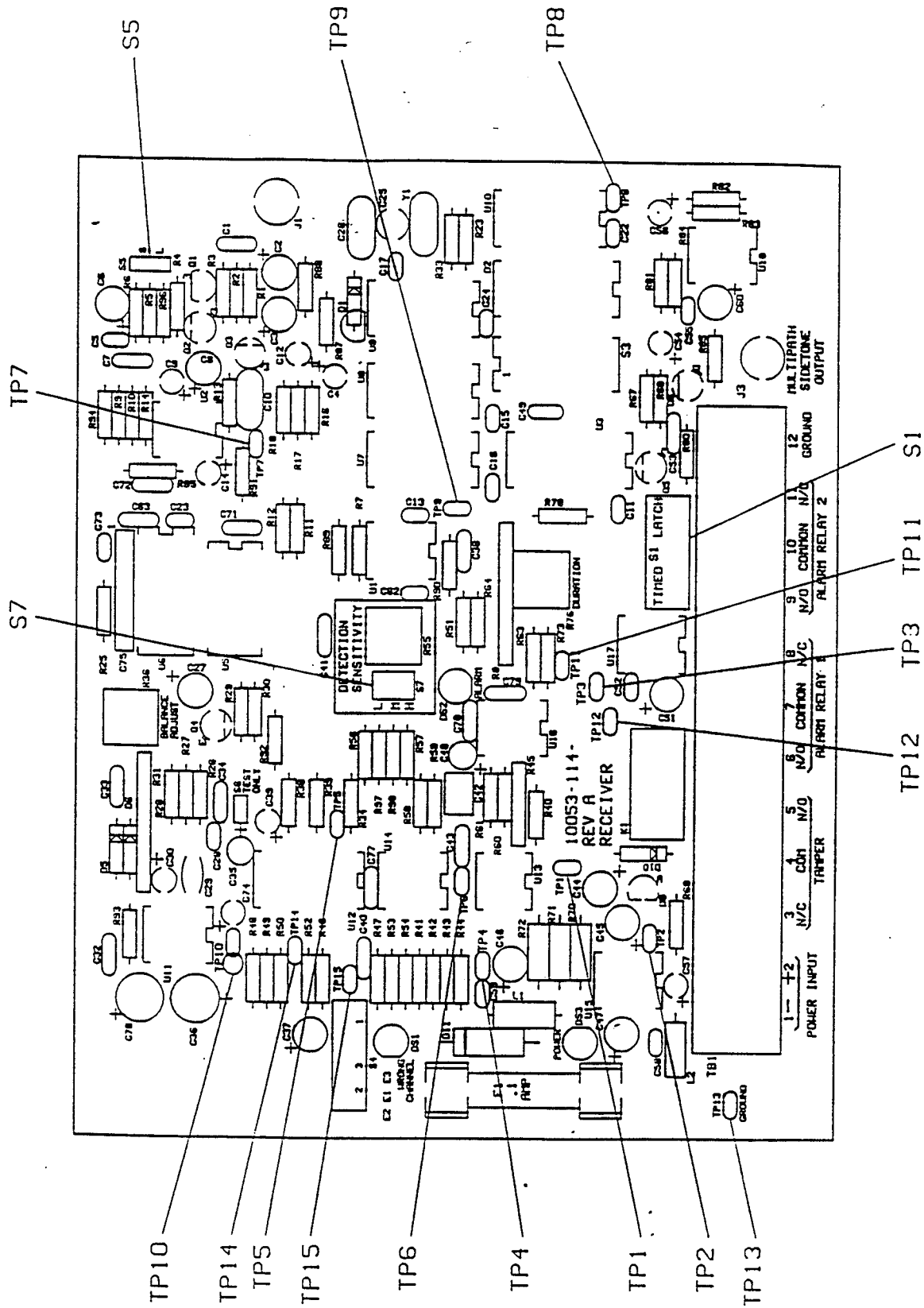


Microwave Receiver Mounting Assembly  
(Sheet 2 of 2)  
Figure 13b



Transmitter Circuit Board

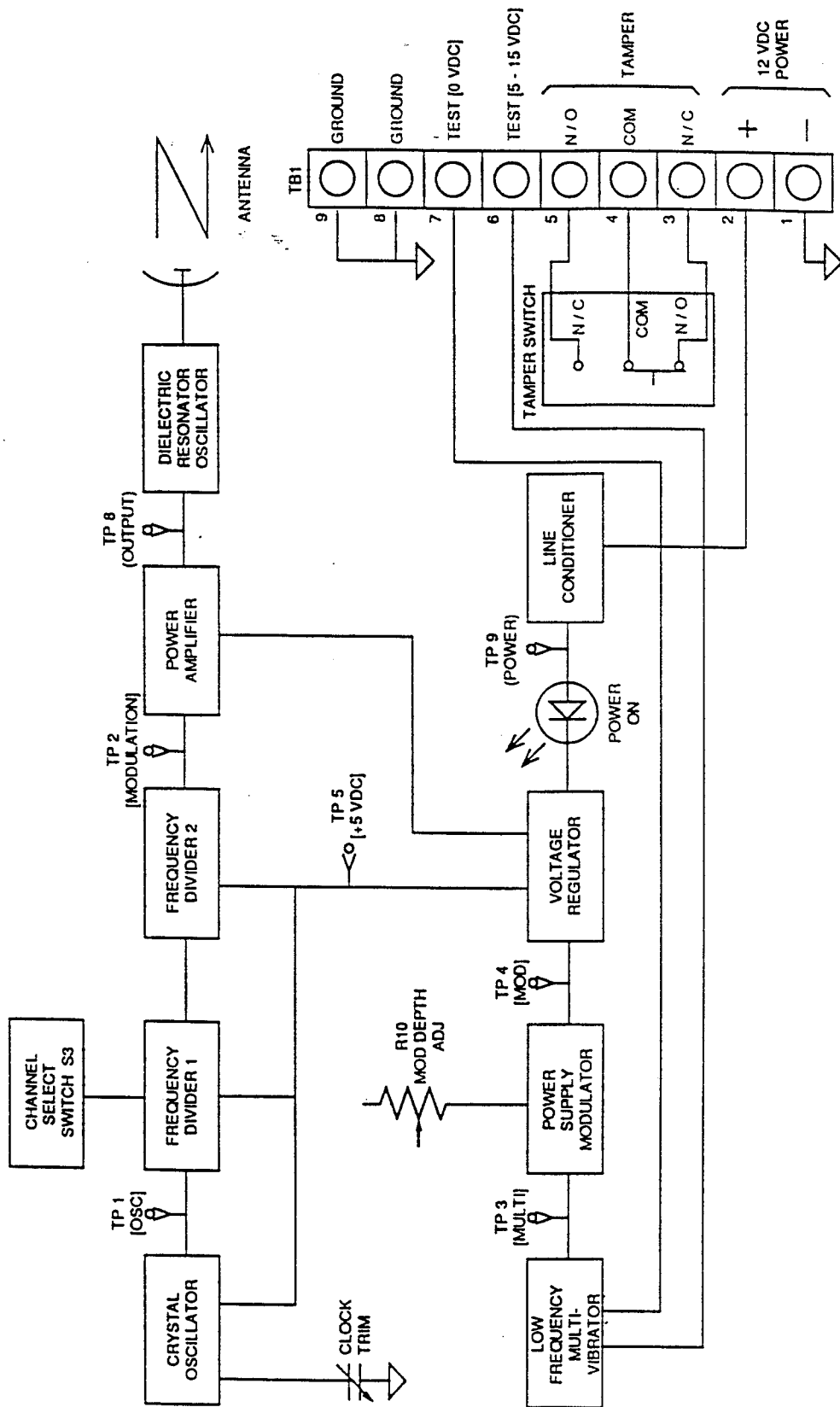
Figure 14



Receiver Circuit Board

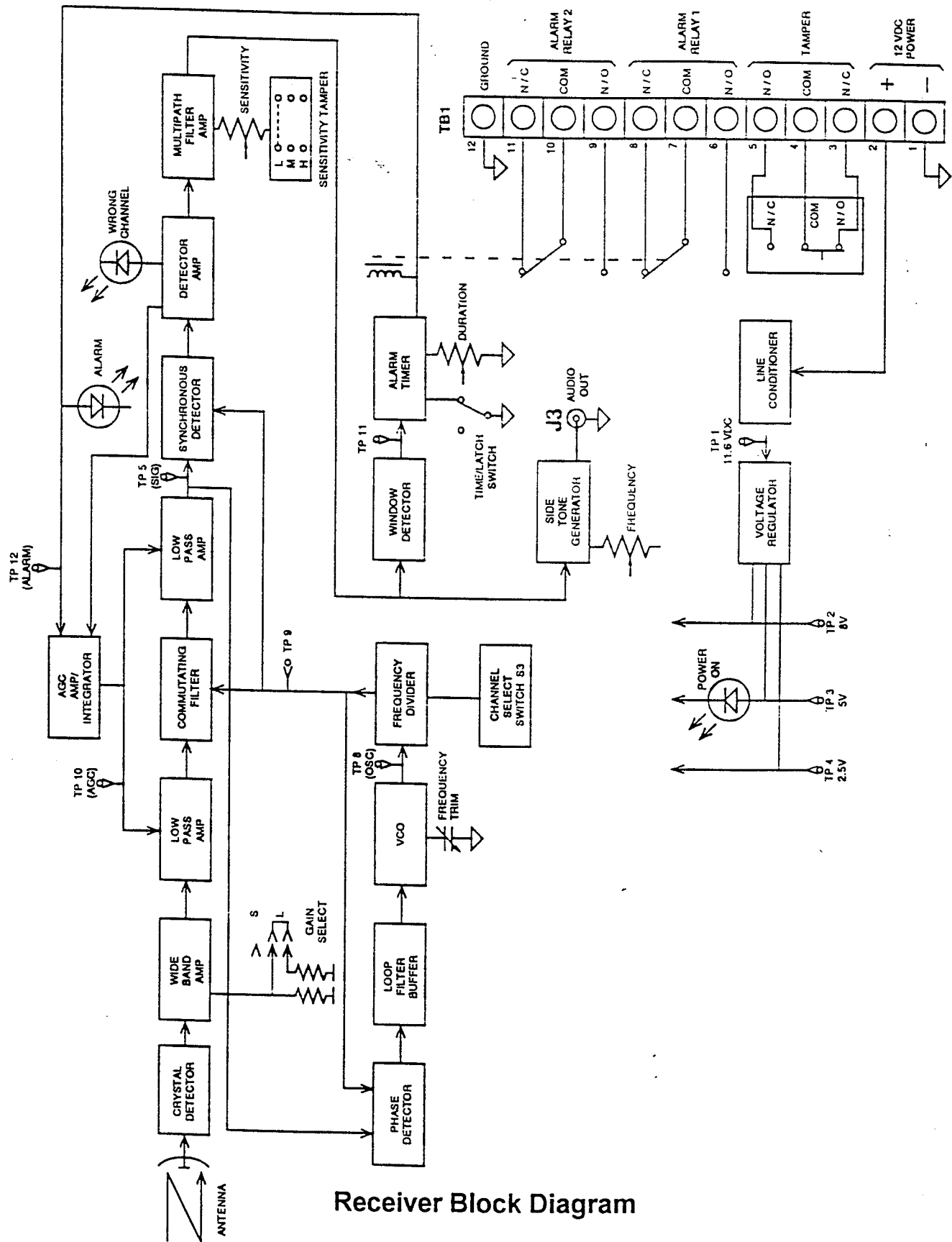
Figure 15





Transmitter Block Diagram

Figure 16



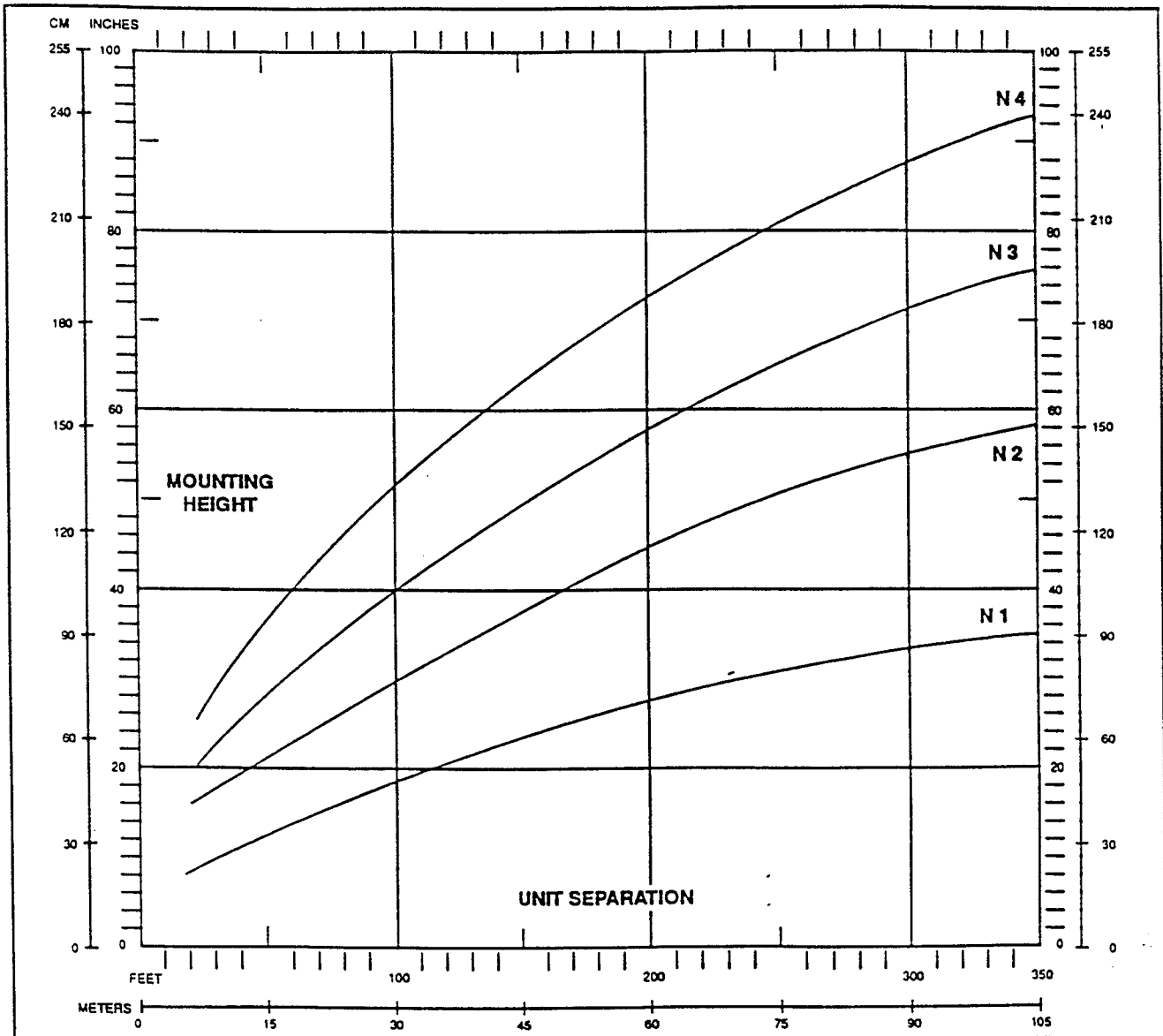
Receiver Block Diagram

Figure 17

**Chart Axis:** The horizontal axis of the height chart below represents the distance between the transmitter and receiver units. The vertical axis represents the mounting height of the transmitter/receiver units from the center of the parabolic antenna to the ground.

**Node Curves:** The node curves (N1, N2, N3 and N4) represent the pivot point for the coordinating distance (horizontal axis) to mounting height (vertical axis). Those mounting height and distance coordinate lines that meet in the area between the node curves should be avoided. Coordinate lines that meet on the node curves are preferred because they will result in higher signal strength at the receiver and a wider fade margin. However, choosing a mounting height at N1 or below will also allow satisfactory system operation.

**Example:** The distance between the transmitter and receiver is 300 feet. Locate this distance on the height chart's horizontal axis. Plot a vertical line from this distance point across the node curves. These height measurements represent the best theoretical mounting heights for this example. They are 32 inches or less for the N1 curve and below, 54 inches for the N2 curve, etc.



**Mounting Height Chart**

**Figure 18**