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TM 11-2631

WAR DEPARTMENT TECHNICAL MANUAL



ANTENNA EQUIPMENT RC-154-A

RESTRICTED. DISSEMINATION OF RESTRICTED MATTER.
The information contained in restricted documents and the essential characteristics of restricted materiel may be given to any person known to be in the service of the United States and to persons of undoubted loyalty and discretion who are cooperating in Government work, but will not be communicated to the public or to the press except by authorized military public relations agencies. (See also par. 28, AR 380-5, 15 Mar 1944.)

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9 OCTOBER 1944

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WAR DEPARTMENT,
WASHINGTON 25, D. C., 9 OCTOBER 1944.

TM 11-2631, Antenna Equipment RC-154-A, is published for the information and guidance of all concerned.

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(For explanation of symbols see FM 21-6.)

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1944



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DESTRUCTION NOTICE

WHY —To prevent the enemy from using or salvaging this equipment for his benefit.

WHEN—When ordered by your commander.

HOW —1. Smash—Use sledges, axes, handaxes, pickaxes, hammers, crowbars, heavy tools.

2. Cut —Use axes, handaxes, machetes.

3. Burn —Use gasoline, kerosene, oil, flame throwers, incendiary grenades.

4. Explosives—Use firearms, grenades, TNT.

5. Disposal —Bury in slit trenches, fox holes, other holes. Throw in streams. Scatter.

USE ANYTHING IMMEDIATELY AVAILABLE FOR DESTRUCTION OF THIS EQUIPMENT.

WHAT—1. Smash—Masts, control box, cables, rods.

2. Cut —All wires, cables, ropes.

3. Burn —All equipment, including this technical manual.

4. Bend —Masts, antenna elements, and mounting assemblies.

5. Bury or scatter—Any or all of the above equipment.

DESTROY EVERYTHING



Figure 1. Antenna Equipment RC-154-A, erected.

RESTRICTED

SECTION I

DESCRIPTION

1. GENERAL.

Antenna Equipment RC-154-A is a semi-portable antenna system for fixed station use, designed to mount on the side of a vehicle or building (fig. 1). It provides either directional or nondirectional reception on three ultra-high frequency bands and nondirectional reception on one low-frequency band for one or more radio receivers simultaneously. The antenna equipment consists of an insulated 24½-foot, two-section, steel mast with three tiers of dipole assemblies mounted on the upper half of the mast. Each tier consists of two dipole antennas mounted at right angles to each other. The three tiers cover the three ultra-high frequency bands; tier No. 1 (the top tier) covers the frequencies from 81 to 145 mc, tier No. 2 (the middle tier) covers the frequencies from 45 to 84 mc, and tier No. 3 (the bottom tier) covers the frequencies from 27 to 46 mc. The mast, which is insulated from the ground by its mounting clamps, can be used as a low-frequency antenna.

2. LIST OF COMPONENTS.

a. Shipping Cases. The components of Antenna Equipment RC-154-A are shipped in two wooden cases. Case No. 1 is 155 by 11½ by 7 inches and weighs 163 pounds. Case No. 2 is 42 by 17½ by 11 inches and weighs 94 pounds. The following charts list the items packed in each case.

b. Case No. 1.

<i>Item</i>	<i>Quantity</i>	<i>Dimensions</i>	<i>Weight</i>
Top mast section	1	12' x 2¼" (diam)	34½ lb
Bottom mast section	1	12½' x 2¼" (diam)	38½ lb
Mast cradle assembly	2	9¾" x 5½" x 1¾"	2 lb
Carriage bolts with nuts and washers	4	¼" - 20 x 5"	1 oz
Antenna element (tier No. 1)	8	23" x 7/16" (diam)	4½ oz
Antenna element (tier No. 2)	8	41" x 7/16" (diam)	7 oz
Antenna element (tier No. 3)	8	71" x 7/16" (diam)	12½ oz
Technical Manual TM 11-2631	2	5½" x 8½"	

c. Case No. 2.

<i>Item</i>	<i>Quantity</i>	<i>Dimensions</i>	<i>Weight</i>
Control Box BC-1278-A	1.	6" x 10 ³ / ₄ " x 5 ¹ / ₄ "	5 ² / ₁₆ lb
Dipole mounting assembly (tier No. 1)	2	14" x 9" x 2 ³ / ₄ "	3 lb
Dipole mounting assembly (tier No. 2)	2	19" x 9" x 2 ³ / ₄ "	3 ¹ / ₁₆ lb
Dipole mounting assembly (tier No. 3)	2	24" x 9" x 2 ³ / ₄ "	3 ³ / ₁₆ lb
Cord CD-1032 (tier No. 1)	2	20'	2 ⁶ / ₁₆ lb
Cord CD-1032 (tier No. 2)	2	16'5"	2 lb
Cord CD-1032 (tier No. 3)	2	10'	1 ⁶ / ₁₆ lb
Cord CD-1030	3	10'	1 ² / ₁₆ lb
Cord CD-1031	1	7'	13 oz
Guy assembly	3	38' x 1 ¹ / ₄ " (diam)	1 ⁷ / ₁₆ lb
Mast mounting clamp	2	5 ¹ / ₄ " x 8 ³ / ₈ " x 2"	5 ² / ₁₆ lb

SECTION II

INSTALLATION AND OPERATION

3. UNPACKING.

a. Place the two cases at a point convenient to the site where the antenna is to be erected and unpack the equipment. Check the contents with the lists in paragraphs 2b and c.

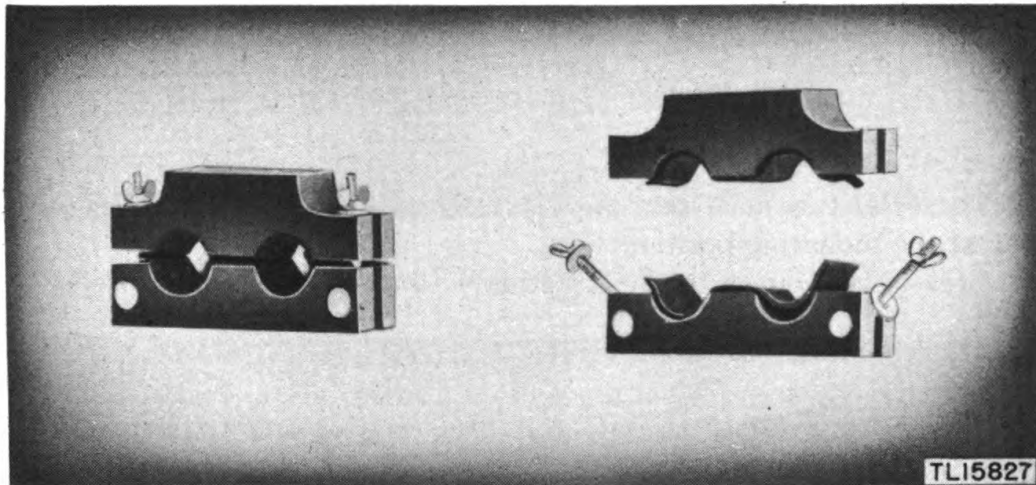


Figure 2. Mast cradles.

b. When unpacking Case No. 1, save the cradles (fig. 2) holding the mast sections. They will be used whenever the antenna is repacked.

4. PREPARATION FOR ERECTION.

a. **General.** The antenna should be mounted close to the radio receiver with which it will be used, either on the side of a vehicle or shelter (fig. 1).

b. **Mounting.** Drill two holes, $\frac{7}{8}$ inch diameter, 60 to 65 inches apart along a vertical line, in the side of the shelter or vehicle. Mount a mast clamp assembly (fig. 3) in each hole. Place a $\frac{3}{4}$ -inch rubber gasket next to the wall on the outside, backed up by a steel washer. Put another steel washer on the inside and then turn up the nuts by hand.

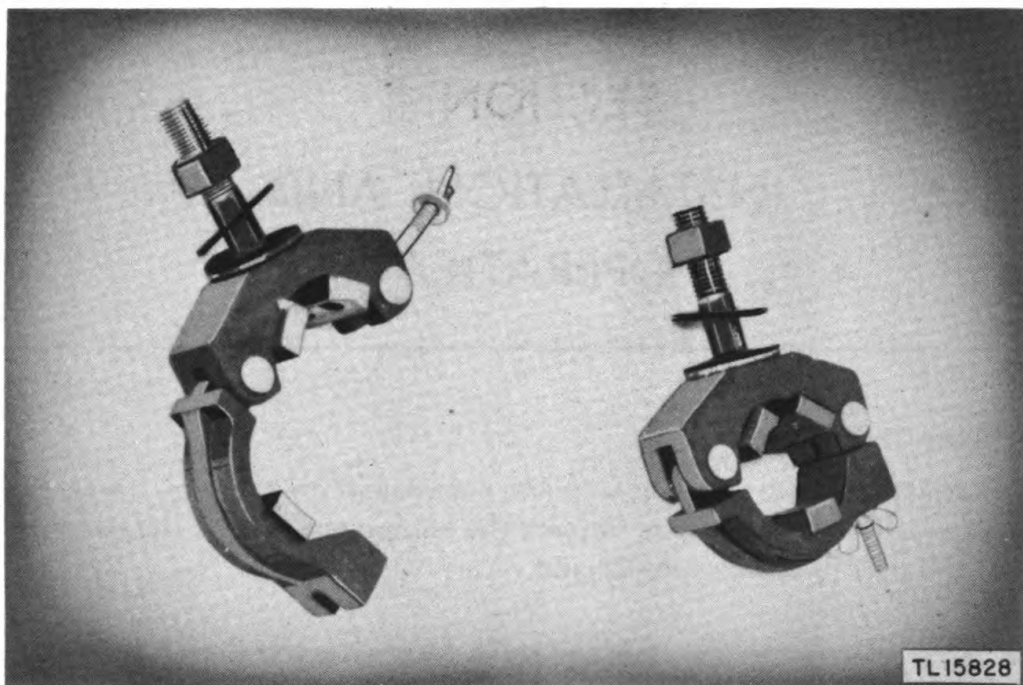


Figure 3. Mast clamp assembly, open and closed.

c. Mast Assembly.

- (1) Place the two mast sections on the ground with the base section nearest the mounting position.
- (2) Grease the joint on the base section with a small amount of grease*.

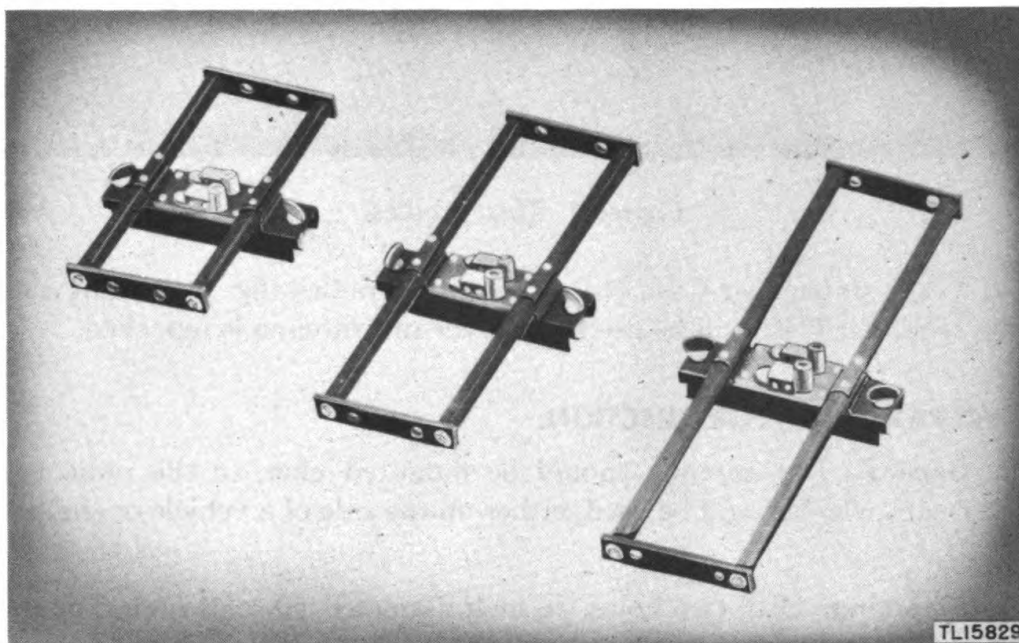


Figure 4. Dipole mounting assemblies.

*Grease, Lubricating, Special (GL), Ordnance Dept. Spec AXS-637.

Join the two mast sections making sure the positioning pin in the lower section fits in the locating slot in the top section.

d. Dipole Mounting Assemblies.

- (1) Raise and support the mast from the ground at a distance sufficient to provide for assembly and protection of the dipole mountings and antenna elements.
- (2) Attach the six dipole mounting assemblies (fig. 4) to the top mast section so that the cable plug holes are toward the base of the mast. Attach the dipole mounting assemblies marked TIER-1 to the top position, and TIER-2 and TIER-3 to the middle and bottom positions, respectively. Wing screws which screw into threaded inserts brazed to the mast are provided to hold the assemblies in position.

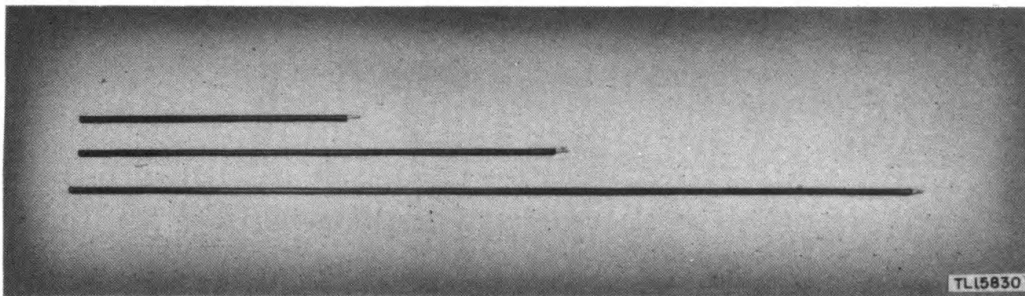


Figure 5. Antenna elements.

- (3) Insert the antenna elements (fig. 5) into the connection blocks through the bakelite insulators at the ends of the dowel spreaders. Push the rods all the way in so that the tapered portion of the banana plug seats in the tapered part of the hole in the connection block. The eight 23-inch antenna elements are for TIER-1; the eight 41-inch antenna elements for TIER-2 and the eight 71-inch elements for TIER-3. Figure 6 shows one tier installed.

e. Coaxial Cables.

- (1) Connect the longest pair of coaxial cables to TIER-1. The cable plug assembly marked T1-TOP connects to the upper dipole mounting assembly and the other plug, T1, connects to the lower dipole mounting assembly of TIER-1.
- (2) Connect the cables marked T2-TOP and T2 to TIER-2 and the cables marked T3-TOP and T3 to TIER-3. In each case the cable plug marked with the suffix, TOP, connects to the upper dipole mounting assembly of the designated tier.

f. Rope Guys. Attach the three rope guys, one to each eye in the eye band located below TIER-2. Position the free ends of the rope so they may be used to assist in the erection of the mast.

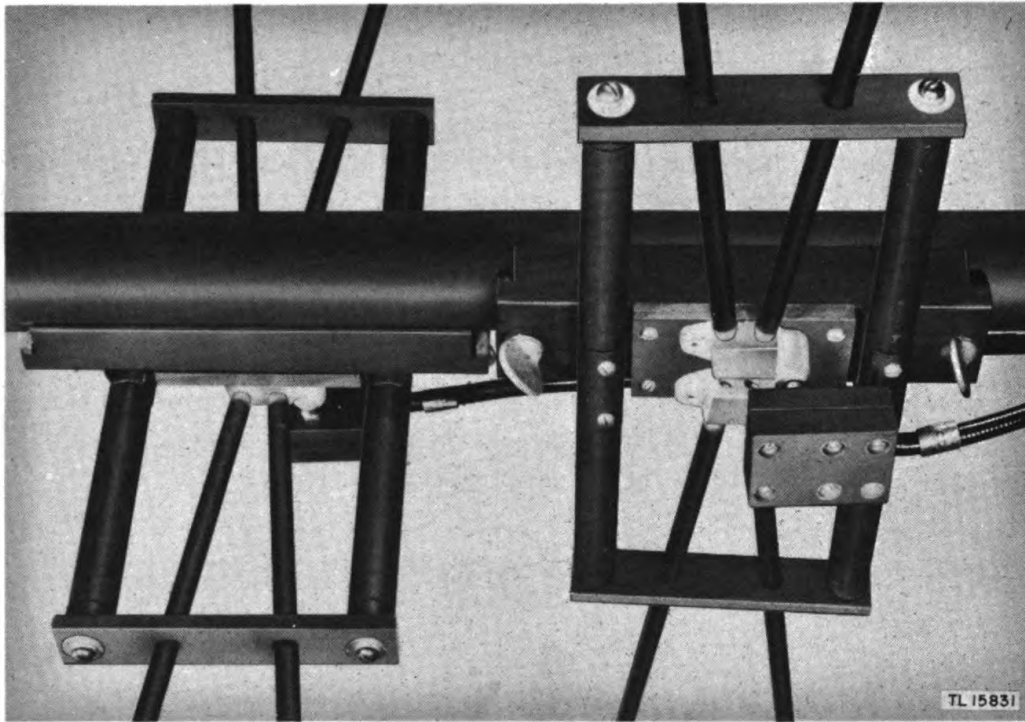


Figure 6. Two dipole mounting assemblies, with cables connected and elements in place.

5. ERECTING THE MAST.

a. Place the bottom end of the mast on either firm ground or a hard object. Holding the mast down at the base, erect it to a vertical position. Use of the guy ropes will assist in raising as well as steadying the mast after it is raised.

b. With the mast in a vertical position, lift it vertically and place it in the open mast clamps so that the stop ring attached to the lower mast section rests on the bakelite insulators of the upper mast clamp.

c. Close the mast clamps and tighten the wingnuts slightly.

d. Turn the antenna mast until the dipoles are in the desired direction, and tighten the wingnuts securely.

e. Tighten the nut on each mast clamp assembly (par. 4b).

f. Place the ring of each rope guy assembly on a stake or fasten it to some solid anchor and tighten the tent slides until all three guys have equal tension.

6. INSTALLATION OF CONTROL BOX BC-1278-A.

a. Cut a rectangular-shaped hole $4\frac{3}{4}$ by $9\frac{1}{2}$ inches in the wall of the vehicle or building at a point near the upper mast mounting clamp.

b. Cut four slots in the lower side of the rectangular hole to accommodate the four receptacles shown in figure 7.

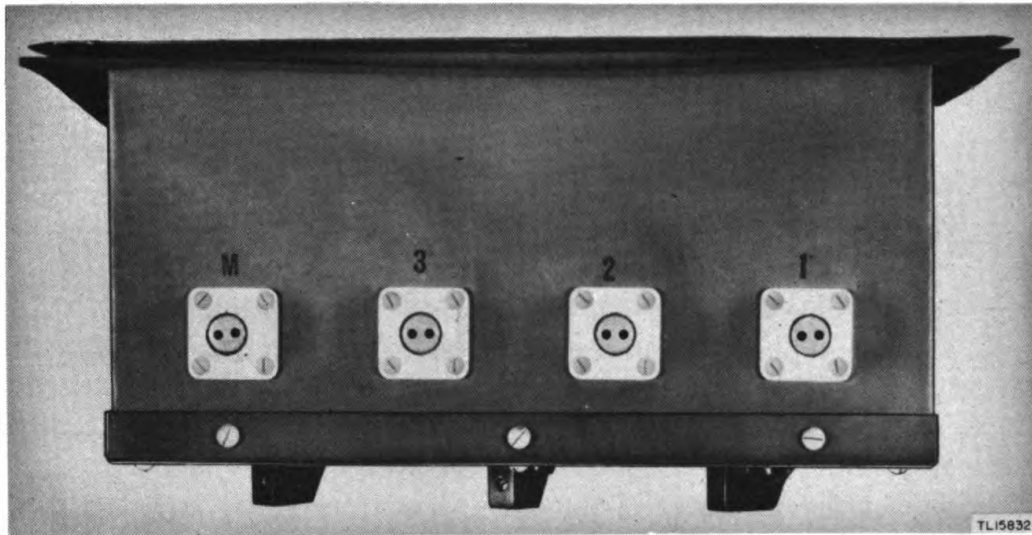


Figure 7. Control Box BC-1278-A, output receptacles.

c. Mount the control box from the outside (with waterproofing gasket between the wall and the control box) using wood or machine screws, depending upon the material of the wall.

7. CONNECTION OF CABLES TO CONTROL BOX BC-1278-A (fig. 8).

a. The two cables from TIER-1 are marked T1-TOP and T1. The receptacles in the rear of the control box are marked 1, 2, 3, and M.

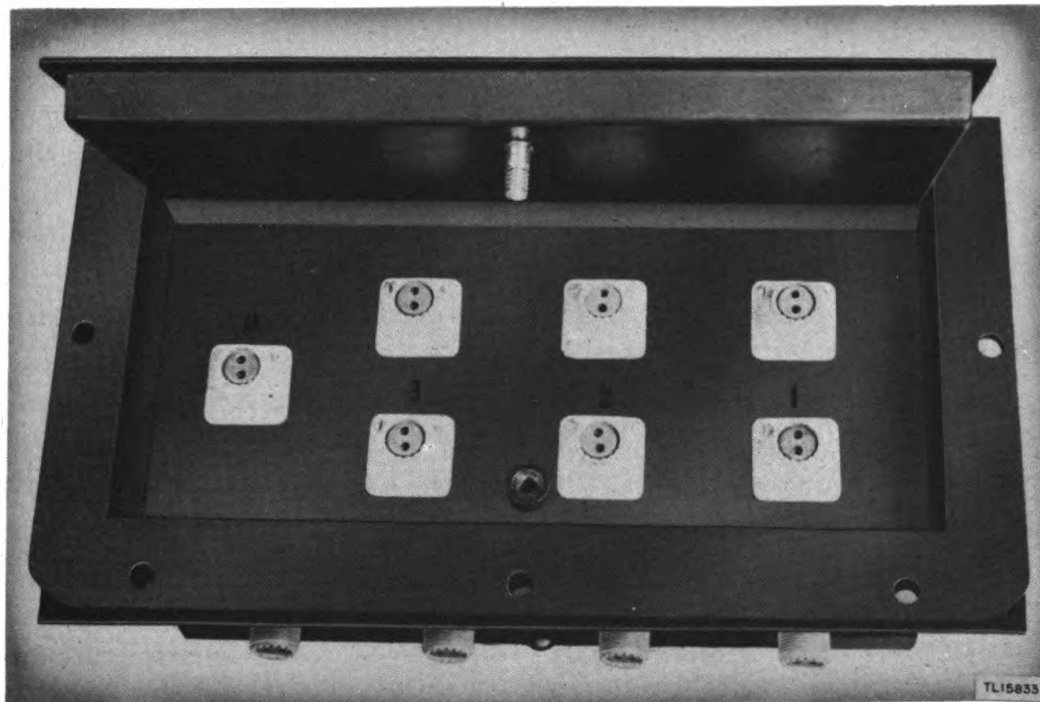


Figure 8. Control Box BC-1278-A, rear view.

- (1) Connect the cable marked T1-TOP to the receptacle above 1.
- (2) Connect the cable marked T1 to the receptacle below 1.
 - b.** The two cables from TIER-2 are marked T2-TOP and T2.
 - (1) Connect the cable marked T2-TOP to the receptacle above 2.
 - (2) Connect the cable marked T2 to the receptacle below 2.
 - c.** The two cables from TIER-3 are marked T3-TOP and T3.
 - (1) Connect the cable marked T3-TOP to the receptacle above 3.
 - (2) Connect the cable marked T3 to the receptacle below 3.
 - d.** The remaining antenna cable (7-foot Cord CD-1031) is marked MAST.
 - (1) Screw the threaded end of Cord CD-1031 into one of the threaded holes located in the stop ring on the lower mast section.
 - (2) Connect the other end of the cable to the receptacle located below the letter M on the rear of the control box.
 - e.** After the seven input cables are connected, the final step in the installation of the antenna is to connect the three 10-foot output cables Cord CD-1030, to the exposed receptacles (fig. 7) marked with adjacent numbers 1, 2, and 3. No output cable is furnished with Antenna RC-154-A for connection to the only remaining exposed socket, marked with adjacent letter M.

8. DISMANTLING OF EQUIPMENT.

- a.** Disconnect all cables from the control box.
- b.** Release the three rope guys, exercising care to steady the mast with the three ropes.
- c.** Loosen wingnuts on the mast mounting clamps, while holding the mast against the stationary portion of the clamps.
- d.** Remove the mast from its position in the mast mounting clamps and rest the lower end on a firm spot on the ground.
- e.** Tilt the antenna mast and lower it gradually to a position where the various elements are accessible from the ground.
- f.** Remove antenna elements, cables, dipole mounting assemblies, and rope guys from the mast.
- g.** Separate the two mast sections and place them in the mast cradles.
- h.** Remove the control box from its support.
- i.** Save all parts and hardware for the next installation. If the equipment is to be stored for periods of less than 30 days, lubricate all parts that may corrode by applying Oil, Lubricating, Preservative, Special, U.S. Army Spec No. 2-120. For storage in excess of 30 days one of the following compounds should be used; the one selected will depend upon what is available and what the personnel at hand is best equipped to use.

<i>Symbol</i>	<i>Standard Nomenclature</i>	<i>Spec. No.</i>
CH	Compound, Rust-preventive, Heavy	U.S. Army 2-82C
CM	Compound, Rust-preventive, Medium	U.S. Army 2-121
CL	Compound, Rust-preventive, Light	U.S. Army 2-84B

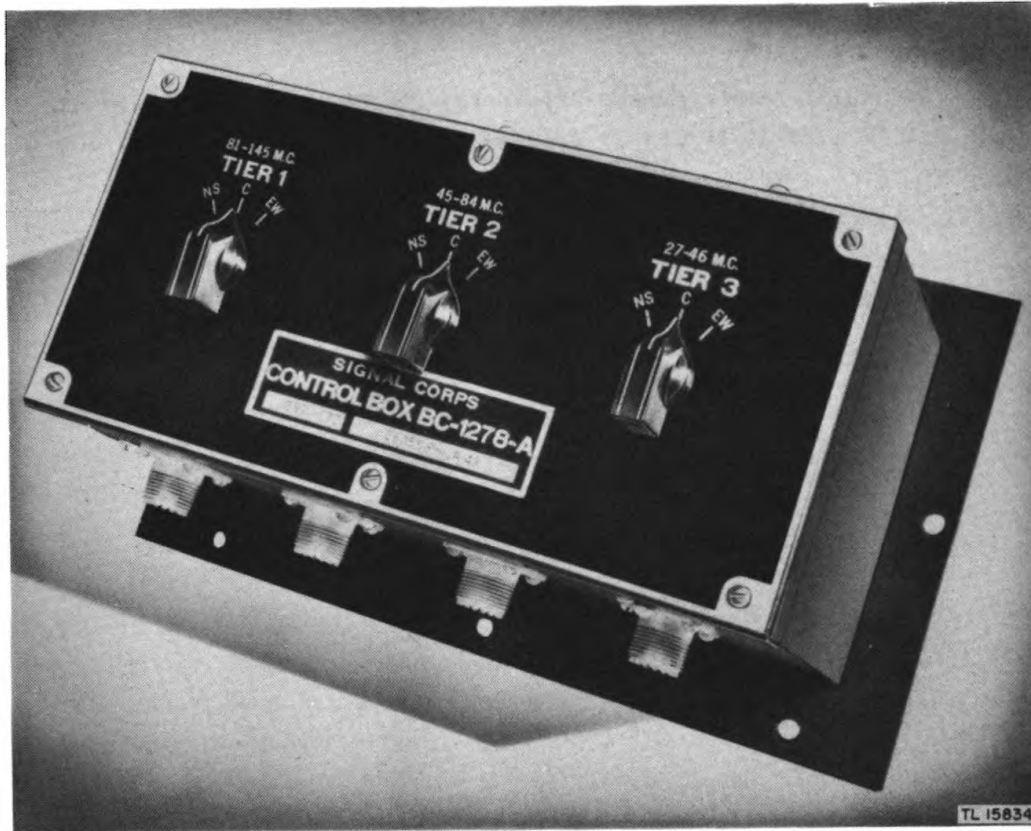


Figure 9. Control Box BC-1278-A, showing switch positions.

9. OPERATION OF CONTROL BOX BC-1278-A (fig. 9).

a. The control box permits the operator to select the dipole assembly which will, in conjunction with the receiver used, produce the most readable signal. Three switch positions are provided for each band of frequencies covered by the antenna. Normally the switches are turned to the C position.

b. In actual use, suppose a signal is being received on 100 mc. This falls within the range covered by TIER-1. The switch is set to C position.

- (1) Turn TIER-1 switch to NS position and note if any improvement occurs.
- (2) Turn TIER-1 switch to EW position and note any change in reception. The position which makes possible the strongest signal or the greatest reduction in interference, if interference is present, should be used.

NOTE: When the strength of the interfering signal is not sufficiently reduced by moving TIER-1 switch to either EW or NS position, loosen the wingnuts on the mast clamps, release the tension on the rope guys, and slowly rotate the mast until the strength of the interfering signal is at a minimum. Remove the stakes and reset them to correspond to the changed position of the rope guys. Reinstall and tighten the rope guys.

c. If the signal received falls within the limits of 45-84 mc, TIER-2 switch will be used in the same manner as TIER-1 switch explained in subparagraph *b* above.

d. If the signal received falls within the limits of 27-46 mc, TIER-3 switch will be used in the same manner as TIER-1 switch explained in subparagraph *b* above.

e. The socket marked M is not controlled by any switch. It can be used on any low-frequency band. (The required output cable must first be procured and connected to socket M and to the receiver being used.)

SECTION III

FUNCTIONING OF PARTS

10. OVER-ALL FUNCTIONING OF DIPOLES.

Each antenna tier is made up of a twin set of double V-shaped dipole antennas, installed at right angles to each other. Either of the twin dipoles of each tier may be used individually, or they may be used together by correctly setting the corresponding selector switch on Control Box BC-1278-A. Each tier operates independently of the other tiers. The dipole antennas are supported by a single mast, since each tier of antennas has only a small effect upon the other tiers and that is mainly due to the physical proximity of one tier to the others.

11. DIPOLE FUNCTIONING.

The twin dipoles of each tier are set at right angles to each other and connected to separate transmission lines. When a selector switch is set at position C, the NS and EW dipoles are effectively in parallel, providing reasonable 360° reception. When a selector switch is set at either NS or EW position one of the dipole assemblies is selected, providing maximum interception of signals arriving perpendicular to the dipole assembly. For signals arriving from directions other than perpendicular, the response decreases as the path of the signal becomes parallel to the plane of the dipole.

12. DIPOLE DESIGN AND FREQUENCY RESPONSE.

Each dipole utilizes two double V-shaped rod assemblies connected together at their apex, so that each antenna tier will possess a broad frequency response. These V-shaped rod assemblies, fanning out as they do, present a relatively pure resistance to the feeder line over a wide frequency range. The double V-shaped dipoles provide a broad-band response combined with physical lightness and ease of handling.

13. TRANSMISSION LINE FUNCTIONING.

The transmission lines connecting the various dipoles of the three tiers have a characteristic impedance matching the average characteristic impedance of the dipoles at their mean operating frequencies, thus providing minimum transmission-line loss. Because of this matched con-

dition, and shielding effect of the outer transmission-line sheath, the transmission lines do not function as part of the antenna, but merely conduct energy from the dipole to the receiver.

14. FUNCTIONING OF THE MAST AS AN ANTENNA.

For the reception of low-frequency signals the mast itself may be used as an antenna, when it is properly attached to the antenna binding post of a receiver, and the receiver properly grounded. Used in this fashion, the mast acts as a vertical Marconi antenna, providing good reception of signals from vertically polarized transmitting antennas within ground-wave radius. When used for the reception of low-frequency long-distance signals reflected from the ionosphere, the mast responds to the vertically polarized component of these waves, likewise providing satisfactory reception. The 24-foot mast is self-resonant at approximately 20 megacycles as a half-wave dipole antenna (high impedance at base); and at approximately 10 megacycles as a quarter-wave dipole antenna (low impedance at base). At lower frequencies the antenna presents capacitive reactance to the receiver, and internal inductive loading must be provided for efficient signal transfer.

SECTION IV MAINTENANCE

NOTE: Failure or unsatisfactory performance of equipment will be reported on W.D., A.G.O. Form No. 468. If this form is not available, see TM 38-250.

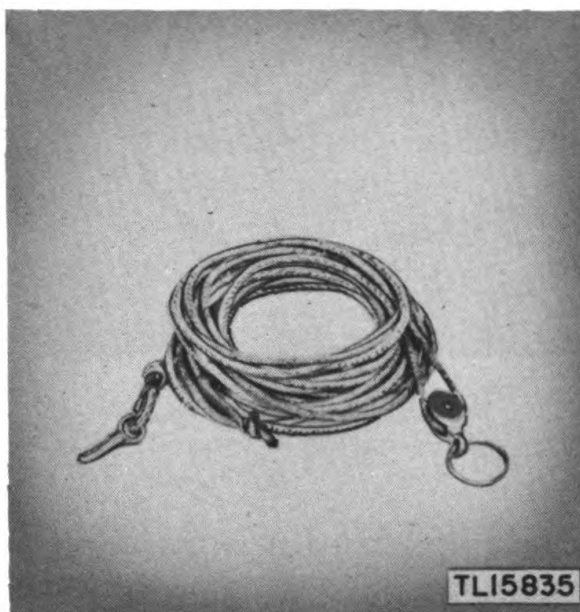


Figure 10. Rope guys.

15. ROPE GUYS (fig. 10).

- a.** Inspect the rope guys daily. If they become loose, take up the slack by adjusting the tent slides.
- b.** If stakes are used, make sure they are tight. If they become loose, pull them out and drive them into the ground in new locations. Then retighten the rope guys.

16. MAST CONNECTIONS.

If the antenna is left standing for periods of over 30 days, corrosion of the electrical contacts between the two mast sections may occur.

- a.** Disassemble the antenna, following the procedure outlined in paragraph 8.

b. Inspect the electrical contacts between the two mast sections, and polish them thoroughly with crocus cloth if there is any evidence of corrosion.

c. Polish the mast sections with crocus cloth if they show any signs of corrosion, and lubricate them with Oil, Lubricating, Preservative, Special, U. S. Army Spec No. 2-120.

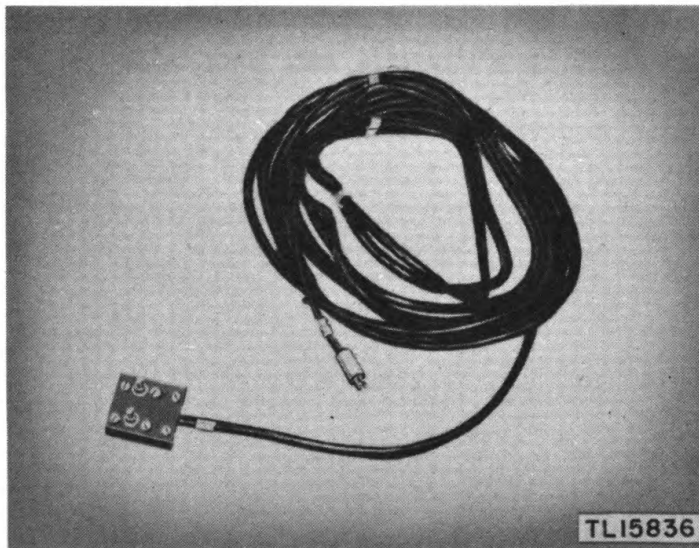


Figure 11. A typical cable.

17. CABLES (fig. 11).

A sudden decrease in signal strength or the reception of intermittent noises frequently indicates a defective cable. Check the two conductors in each cable, with an accurate ohmmeter, for open or short circuits. If either conductor shows an open circuit, resistance in excess of one ohm, or a short from either conductor to the braided shield soldered to the plug body, replace the cable. When the antenna is in use, shaking or swinging a cable will localize the cause of intermittent noises. When the defective cable is found, replace it.

18. REPLACEMENT OF PLUG PL-284.

Thirteen Plugs PL-284 are found on cables furnished with the equipment. If it should become necessary to replace one of these plugs, proceed as follows:

a. Prepare the cable by cutting off all exposed braid and conductor wire to obtain a fresh or undamaged cross section of the cable, but do not cut the wire too short to be used. (If new cable is used, this preparatory step will not be necessary.)

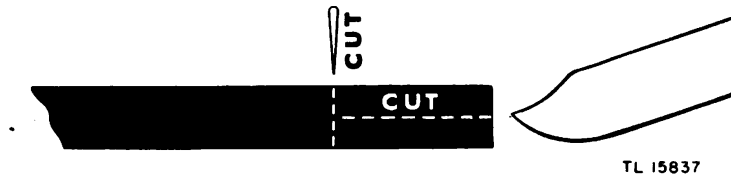


Figure 12. Removing vinyl jacket from coaxial cable.

- b. Heat Plug PL-284 with a hot soldering iron and remove all wire, braid, and solder from the plug. (If a new Plug PL-284 is used, this step will not be necessary.)
- c. Remove $1\frac{1}{8}$ inches of the outer vinyl jacket from the cable (fig. 12). Do not cut too deeply or the braid will be damaged.

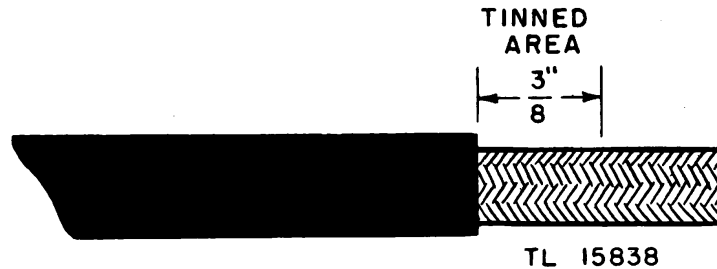


Figure 13. Coaxial cable, with braid tinned.

- d. Tin the braided shield lightly for $\frac{3}{8}$ inch from the end of the vinyl jacket (fig. 13). The solder keeps the copper shield from spreading, but any excess solder will prevent assembly of the plug in paragraph 18g(2).

CAUTION: In all soldering operations of this cable, use a very hot soldering iron and work fast to avoid damage to the intelin insulation under the braid.

- e. Carefully cut around the untinned braid and remove it from the cable (fig. 14).

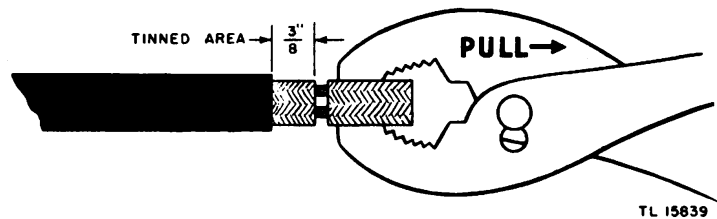


Figure 14. Coaxial cable, with excess braid removed.

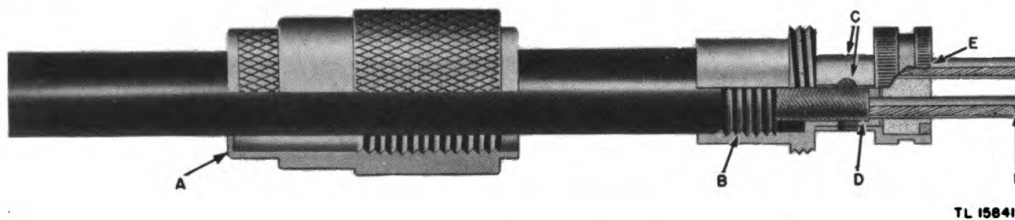


TL 15840

Figure 15. Coaxial cable, final step in preparation.

f. Carefully cut the intelin insulation (avoid cutting the two conductors). Pull off the insulation, leaving the cable prepared as shown in figure 15.

g. Assemble the plug on the cable as follows (fig. 16):



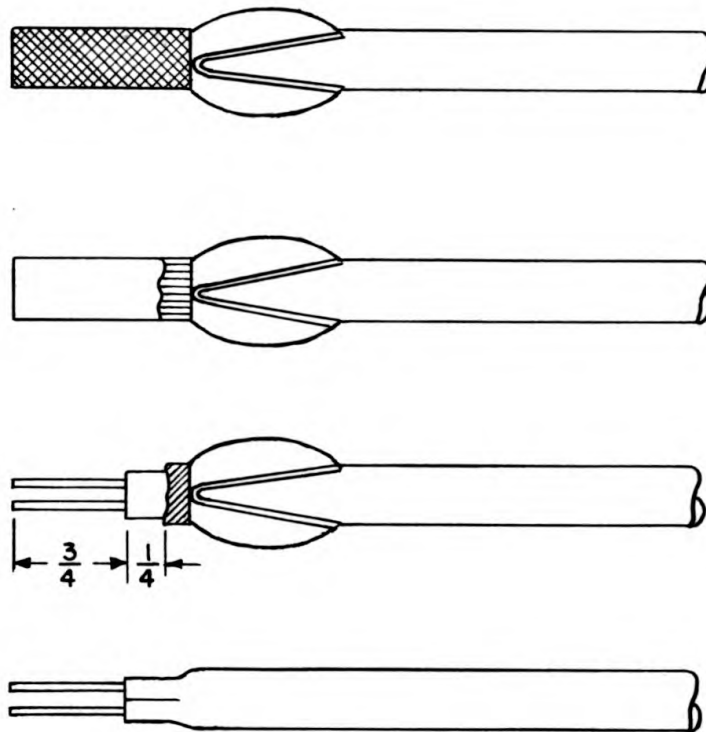
TL 15841

Figure 16. Cross-sectional view of Plug PL-284 assembled on cable.

- (1) Slide the gland nut "A" onto the cable.
- (2) Push and screw the center section of the plug "B" onto the cable until the threads are firmly secured in the vinyl jacket and the tinned braid is visible through the four holes "C".
- (3) Feed the two conductors through the prongs in the "D" section of the plug and push "D" over the shoulder of "C". (Turn "B" slightly if necessary to line up the four holes in "C" and "D".)
- (4) Solder through the four holes to the braid, using a hot iron as noted in subparagraph *d* above.
- (5) Solder the conductors "E" and "F" to the prongs, and trim off excess wire.

19. REPLACEMENT OF PLUG NO. 759.

- a. Prepare cable as described in paragraph 18a.
- b. Refer to figure 17. Slit the outer vinyl jacket approximately one inch. Open it up, and fold it back on itself.
- c. Trim away the exposed braid with a pair of scissors.
- d. With a sharp knife, carefully cut, and then remove $\frac{3}{4}$ inch of the intelin insulation, exposing the two conductors.
- e. Fold the vinyl jacket back over the end and trim it so that it is even with the edge of the intelin insulation.



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Figure 17. Preparation of cable for plug No. 759 and plug No. 761.

- f. Place the prepared end of the cable in plug No. 759 (fig. 18).
- g. Anchor one conductor to the solder tab on one banana plug, and the second conductor to the solder tab on the other banana plug. Solder the two connections.

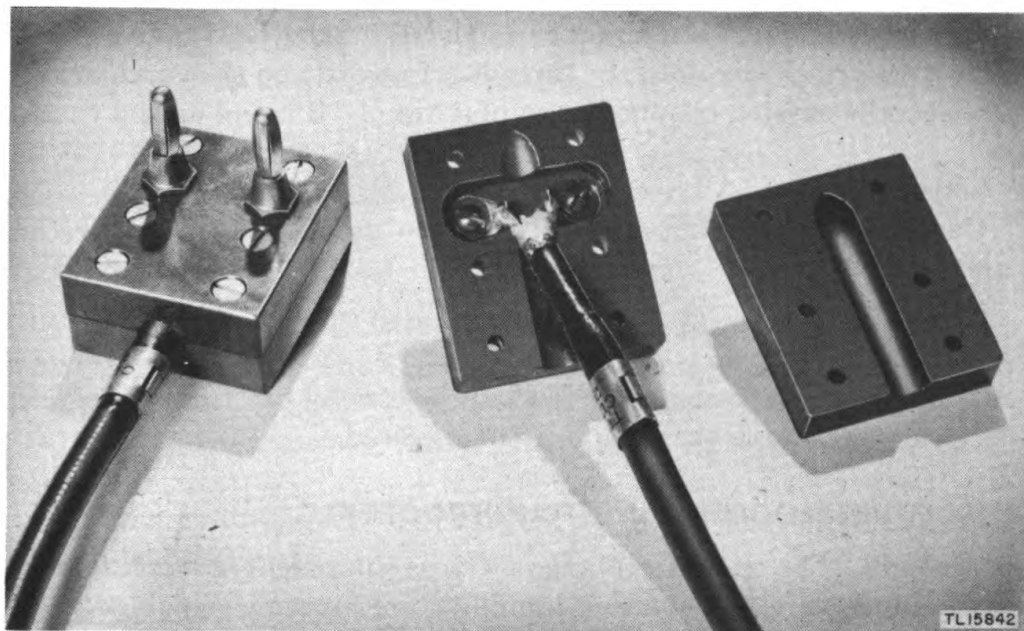


Figure 18. Plug No. 759, two views.

h. Place the top bakelite block over the bottom part, and fasten them together with the six bolts and nuts furnished. The cable should be firm in the plug and should not turn when twisted.

20. REPLACEMENT OF PLUG NO. 761.

This is the threaded plug which screws into the mast stop ring to make the mast available as an antenna.

a. Prepare the cable according to instructions given in paragraphs 19a through e (fig. 17).

b. Twist the two conductors together.

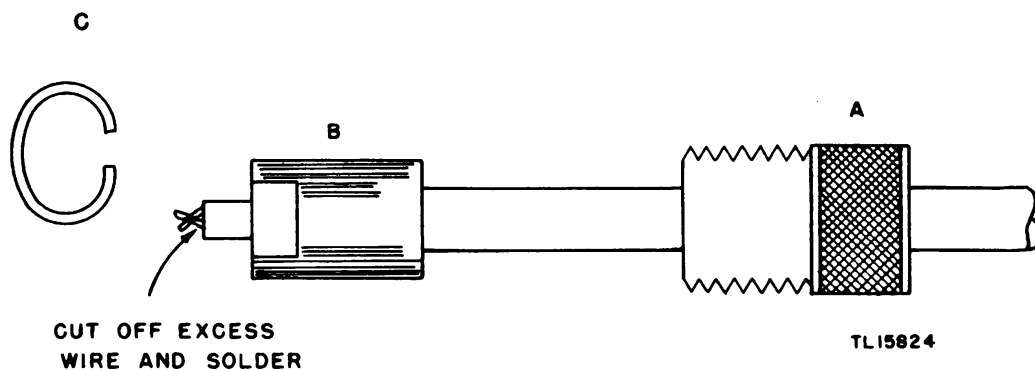


Figure 19. Assembly of plug No. 761.

c. Assemble the plug as shown in figure 19.

- (1) Slide the gland nut "A" over the end of the cable.
- (2) Feed the twisted conductors through "B", then, with pliers, push and turn "B" clockwise until the threads grip tightly on the vinyl jacket.
- (3) Solder the twisted conductors to plug tip of "B", and cut off excess wire.
- (4) Slide gland nut "A" over "B".
- (5) Compress spring "C" and force it into groove "A" as shown in figure 20.

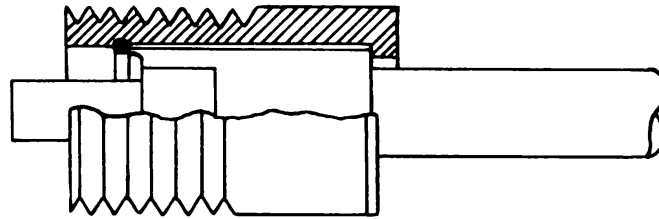
21. CONTROL BOX.

Any of the 3 switches or 11 sockets in the control box can be replaced if necessary, or any broken connections repaired.

22. MOISTUREPROOFING AND FUNGIPROOFING.

a. General. The operation of Signal Corps equipment in tropical areas where temperature and relative humidity are extremely high requires special attention. The following items represent problems which may be encountered in operation:

SPLIT RING IN PLACE



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Figure 20. Plug No. 761, assembled, cutaway view.

- (1) Hook-up wire and cable insulation break down. Fungus growth accelerates deterioration.
- (2) Moisture forms electrical leakage paths on terminal boards and insulating strips.

b. Treatment. A moistureproofing and fungiproofing treatment has been devised which, if properly applied, provides a reasonable degree of protection against fungus growth, insects, corrosion, salt spray, and moisture. The treatment involves the use of a moisture- and fungus-resistant varnish applied with a spray gun or brush. Refer to TB SIG 13, Moistureproofing and Fungiproofing Signal Corps Equipment, for a detailed description of the varnish-spray method of moistureproofing and fungiproofing.

CAUTION: Varnish spray may have toxic effects if inhaled. To avoid inhaling spray, use respirator if available; otherwise, fasten cheesecloth or other cloth material over nose and mouth.

c. Step-by-step Instructions for Treating Antenna Equipment RC-154-A.

(1) PREPARATION. Make all repairs and adjustments necessary for proper operation of the equipment.

(2) DISASSEMBLY.

(a) If the antenna has been erected, follow the procedure outlined in paragraph 8 of this technical manual. Disassemble the equipment to the point where the components could be placed in the chests.

(b) Further disassembly of the mast or its components is not necessary.

(c) Clean all dirt, dust, rust, fungus, oil, grease, etc., from the equipment to be processed.

(3) MASKING.

(a) On each of the tier bracket assemblies, cover with masking tape

the socket holes used for connecting the cables and antenna dipoles.

(b) Cover with masking tape the banana plugs on Cords CD-1032.

(4) DRYING.

(a) Place the six tier brackets in the oven or under heat lamps and dry for 2 to 3 hours at 160° F.

(b) Do not bake any of the cords. Dry the phenolic insulator that supports the banana plugs by wiping and exposing to sunlight. (If sufficient sunlight to dry the phenolic insulators is not available, remove the insulators from their respective cords and dry them by baking or placing under heat lamps as noted above. Then reassemble the cords and insulators.)

(5) VARNISHING.

(a) Apply three coats of Lacquer, Fungus-resistant, Spec No. 71-2202 (Stock No. 6G1005.3) or equal, with spray gun, as follows:

(b) Spray all surfaces of each tier bracket.

(c) Spray the phenolic insulator on each cord assembly.

(d) Bake the tier brackets for 10 minutes.

(e) Air-dry the phenolic insulator on each cord assembly until the varnish is dry.

(f) Repeat steps (a), (b), (c), (d), and (e) for three coats of lacquer.

(6) REASSEMBLY.

(a) Remove all masking tape.

(b) Clean all contacts with varnish remover, and burnish the contacts.

(c) This completes the processing of the mast assembly. Now it may be reassembled for use.

d. Step-by-step Instructions for Treating Control Box BC-1278-A.

(1) PREPARATION. Make all repairs and adjustments necessary for proper operation of the equipment.

(2) DISASSEMBLY.

(a) Disconnect all cables from the control box, unless this has been done previously (par. 8).

(b) If the control box is mounted, remove the screws fastening it to its supporting surface.

(c) Remove the large rubber gasket which is around the box.

(d) Remove the three switch knobs.

(e) Remove the cover plate. This cover is retained by six screws, three on each of the two long sides of the flange folding over the top of the box.

(f) Clean all dirt, dust, rust, fungus, oil, grease, etc., from the equipment to be processed.

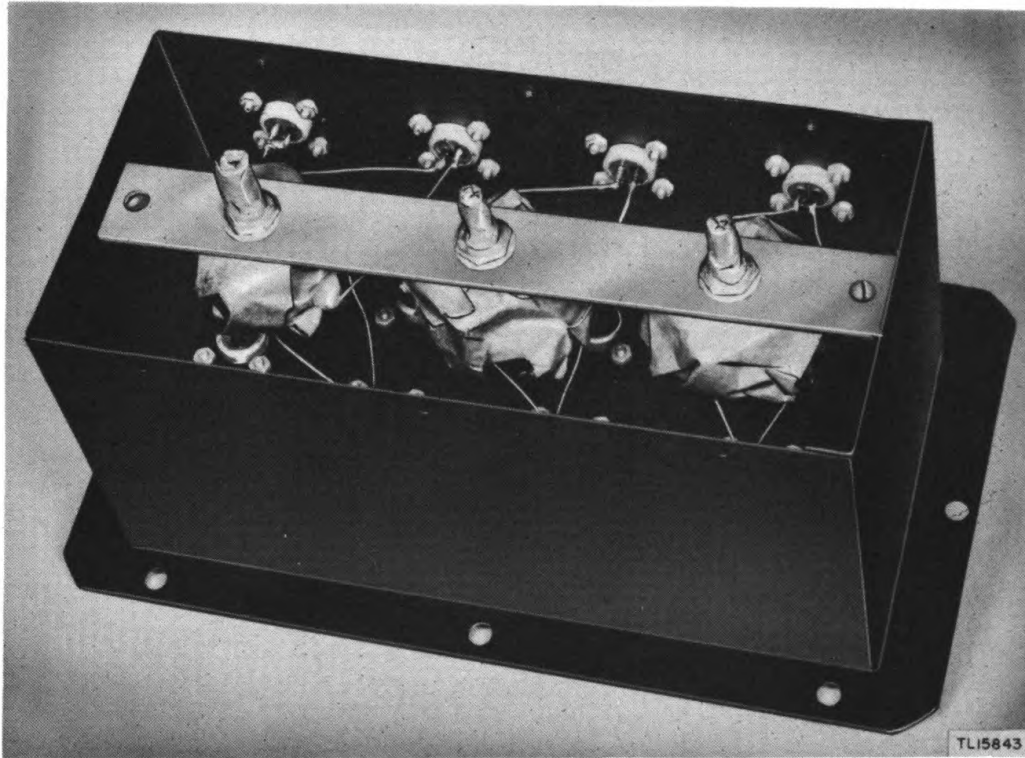


Figure 21. Control Box BC-1278-A, switches masked for moistureproofing and fungiproofing.

(3) MASKING (figs. 21 and 22).

- (a) Cover with masking tape the contacts and detent mechanism of the three switches.
- (b) Mask all 11 cable sockets.
- (c) Mask the threads of the screw that fastens the back cover. Also mask the threaded hole into which it turns.

(4) DRYING. Bake the unit by placing it in an oven or under heat lamps for 2 to 3 hours at 160° F.

(5) VARNISHING.

- (a) Apply three coats of Lacquer, Fungus-resistant, Spec No. 71-2202 (Stock No. 6G1005.3) or equal, with spray gun and brush as follows:
 - (b) Spray interior and exterior of control box (place cover and escutcheon plate of control box face down when spraying to avoid getting any varnish on the lettering).
 - (c) Turn the control box over and spray the interior of the rear compartment housing the seven sockets (fig. 22).
 - (d) Bake the control box and cover for 10 minutes.



Figure 22. Control Box BC-1278-A, receptacles masked for moistureproofing and fungiproofing.

- (e) Repeat steps (b), (c), and (d) for three coats of lacquer.
- (f) Remove masking tape on switches.
- (g) Apply fungus-resistant lacquer with a brush to exposed parts of switches except contacts.
- (h) Bake control box for 10 minutes.
- (i) Repeat steps (g) and (h) for three coats of lacquer.

(6) REASSEMBLY.

- (a) Remove all remaining masking tape from the control box.
- (b) Reassemble the control box and test its operation.
- (c) This completes the processing of Control Box BC-1278-A.

(7) MARKING. Mark the antenna and control box with "MFP" and the date of treatment.

Example: MFP——8 June 1944.

23. MAINTENANCE PARTS LIST FOR ANTENNA EQUIPMENT RC-154-A.

<i>Ref symbol</i>	<i>Signal Corps stock No.</i>	<i>Name of part and description</i>	<i>Quan per unit</i>	<i>Run-ning spares</i>	<i>Orgn stock</i>	<i>3d ech</i>	<i>4th ech</i>	<i>5th ech</i>	<i>Depot stock</i>
	2A289-154A/E1	ANTENNA ELEMENT ASSEMBLY: for tier 1.	8			*	*	*	*
	2A289-154A/E2	ANTENNA ELEMENT ASSEMBLY: for tier 2.	8			*	*	*	*
	2A289-154A/E3	ANTENNA ELEMENT ASSEMBLY: for tier 3.	8			*	*	*	*
	2Z3022	CABLE PLUG ASSEMBLY: for tiers 1, 2, and 3.	6			*	*	*	*
	1F4F1.51	COAXIAL CABLE: twin-conductor; 90- to 110- ohms; B-51 Intelin coaxial cable, double-conductor and braided shield, Fed Tel & Rad. (Specify length when requisitioning.)	128			*	*	*	*
	2A289-154A/D1	DIPOLE MOUNTING ASSEMBLY: for tier 1.	2			*	*	*	*
	2A289-154A/D2	DIPOLE MOUNTING ASSEMBLY: for tier 2.	2			*	*	*	*
	2A289-154A/D3	DIPOLE MOUNTING ASSEMBLY: for tier 3.	2			*	*	*	*
	2A289-154A/S1	DOWEL SPREADER ASSEMBLY: for tier 1.	2			*	*	*	*
	2A289-154A/S2	DOWEL SPREADER ASSEMBLY, for tier 2.	2			*	*	*	*
	2A289-154A/S3	DOWEL SPREADER ASSEMBLY: for tier 3.	2			*	*	*	*
	2Z5790-10	KNOB: black bakelite.	3			*	*	*	*
	2Z7226-284	PLUG: double-conductor coaxial connector; (mounted on end of cables to control box).	13			*	*	*	*
	2Z7104-14	PLUG ASSEMBLY: single-conductor, coaxial cable.	1			*	*	*	*
	2Z8799-264	RECEPTACLE: double-conductor, coaxial cable; (mounted to control box).	11			*	*	*	*
	3Z9825-60.7	SWITCH ASSEMBLY: rotary; (special).	3			*	*	*	*

* Indicates stock available.

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