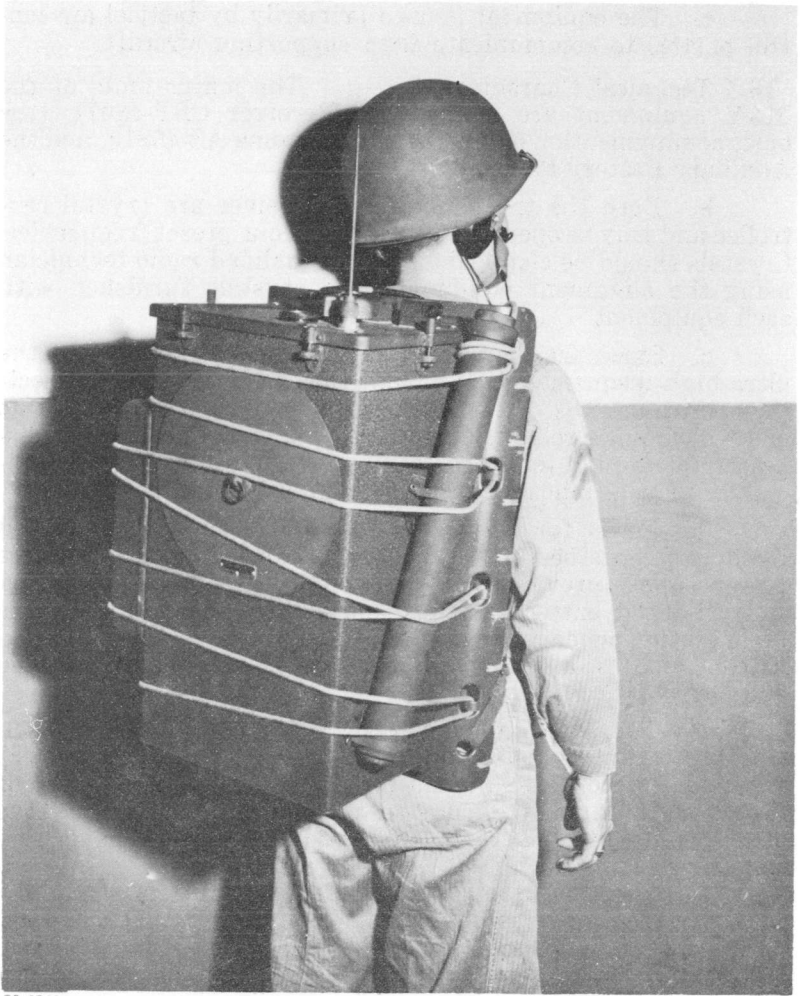


### SECTION 3

#### RADIO SET MAY

15. **Purpose and Use.**—a. Radio Transmitting and Receiving Equipment, Navy Model MAY, is a two-way, battery operated field set, designed for packboard carry. This set pro-



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Figure 15.—Packboard operation of Radio Set MAY.

vides voice or modulated continuous wave (MCW) communication on any one of four preset channels in the 225-390 megacycle frequency range.

b. Although the equipment is designed primarily for packboard operation it can also be operated in a fixed position or from a vehicle. The equipment is submergence proof, buoyant in fresh water, and is designed to present a low silhouette when carried by a man lying prone.

c. The equipment is used primarily by tactical air control parties to communicate with supporting aircraft.

**16. Technical Characteristics.—a.** The major units of the MAY equipment are Transmitter-Receiver CRP-43071 (the basic communication unit), Discone Antenna AS-40810, and the Auxiliary Battery Pack CRP-19062.

b. Both the transmitter and receiver are crystal controlled and may be operated from any of four preset frequencies. Crystals should be changed only by a qualified radio technician using the alignment equipment and crystals furnished with each equipment.

c. Since the equipment is designed to operate in the ultra-high-frequency (UHF) band, care must be taken in selecting operating sites. The transmitter has an output of 1 watt and will provide reliable communication over line-of-sight distances for ground to ground communication and over approximately 10 to 12 miles for ground to air communication.

d. Power for the transmitter and receiver is furnished by a self-contained 6-volt lead-acid battery and a vibrator power supply provides the necessary operating voltages. A fully charged battery will provide approximately four hours of operation when alternating five minutes on transmit and fifteen minutes on receive. Spare batteries are carried in the auxiliary battery pack.

e. Three antennas are furnished with each set, two Discone antennas for stationary operation of the equipment and a telescopic whip antenna for pack operation. The use of the Discone antenna is considerably more efficient than the panel-mounted whip antenna, and should be used whenever possible.

f. The weight of the receiver-transmitter, ready for packboard operation, is 44 pounds. The auxiliary battery pack, with two spare batteries, spare tubes and vibrator, and the cone assembly for the Discone antenna, is approximately 42 pounds.

**17. Transmitter-Receiver CRP-43071.—a.** All operating controls of the transmitter-receiver are located on the control panel and are readily accessible during packboard carry by reaching

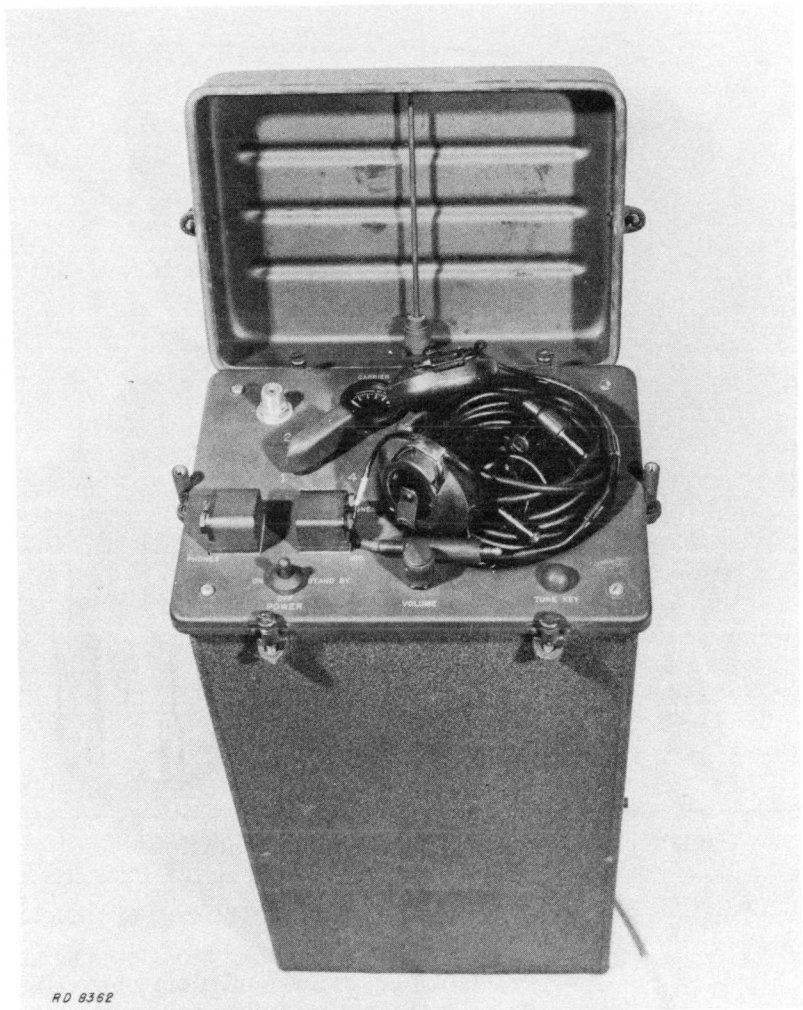


Figure 16.—Transmitter-Receiver CRP-43071.

over the shoulder. The channel selector switch is so shaped that the operator can determine by touch which of the four channels is in circuit; it can be rotated continuously either clockwise or counterclockwise, and can be conveniently manipulated even by an operator wearing winter gloves.

b. The controls for the receiver-transmitter are illustrated in Figure 17; their functions are described in the following chart:

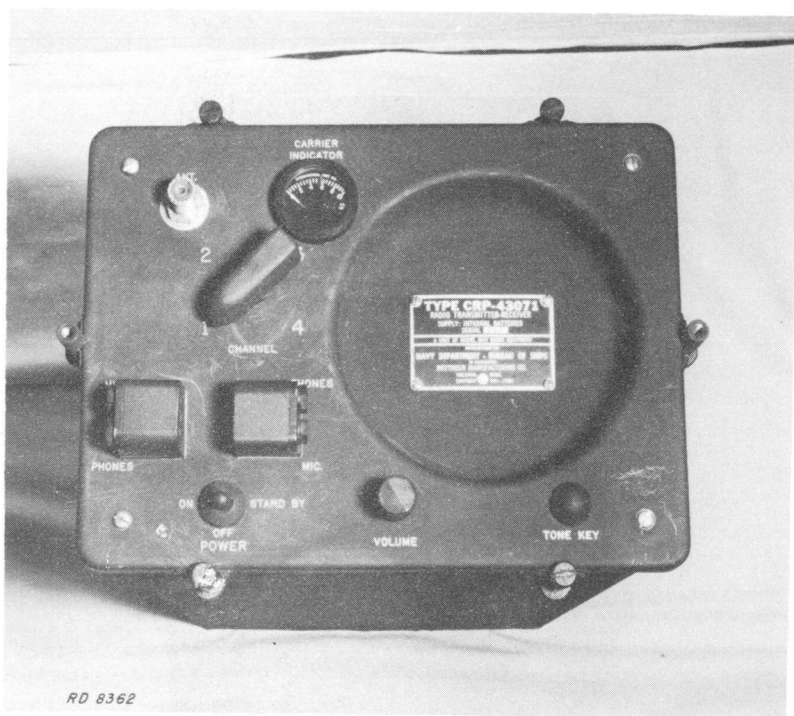


Figure 17.—Operating controls.

Control or instrument	Function
CHANNEL selector	Selects the desired operating channel.
ANT.	Connector for either the telescopic antenna or for antenna cable when using the Discone antenna.
CARRIER INDICATOR	Shows voltage of internal battery when POWER switch is in STAND-BY POSITION. During voice transmission meter should read between "1" and "3". A slight flicker should also occur when TONE KEY is operated for MCW transmissions.
MIC. and PHONES	Jacks for connecting plugs from operators headset and microphone. An auxiliary headset and microphone may also be connected.

Control or instrument	Function
POWER	<p>Opens and closes power circuit.</p> <p>OFF: Removes all power from the transmitter-receiver.</p> <p>STANDBY: Connects power supply to CARRIER INDICATOR to enable operator to determine battery voltage.</p> <p>ON: Connects power supply directly to transmitter-receiver.</p>
VOLUME	Control for increasing or decreasing the signal level of the receiver.
TONE KEY	When push-to-talk button on microphone cord is depressed, the TONE KEY may be operated to transmit MCW signals.

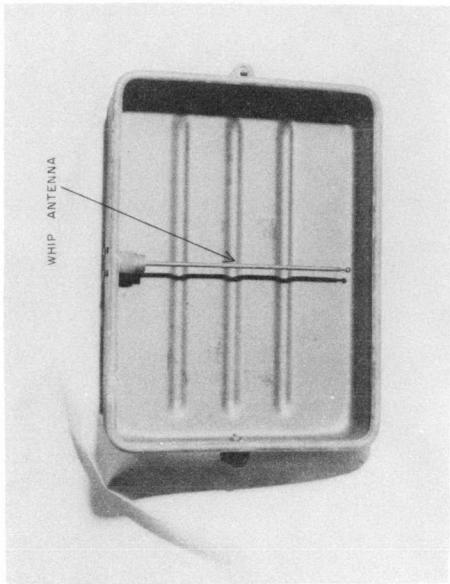
c. All accessories required for field operation are carried in the transmitter-receiver unit. The telescopic whip antenna and a 10-foot coaxial cable for the Discone antenna are carried inside the front cover, while the headset and microphone assemblies together with their extension cords and the push-to-talk button are stored within the front panel well. The Discone antenna may be carried either on the transmitter-receiver or on the auxiliary battery pack, or it may be split between the two units.

18. **Discone Antenna AS-408/U.**—a. The Discone antenna is a collapsible broad-band antenna of the ground-plane type which may be operated over the entire 225-390 mc frequency range without adjustment of any kind. Two lengths of coaxial cable with appropriate connectors attached (10 feet of RG-58/U and 60 feet of RG-8/U) permit placement of the antenna in a location favorable for communication purposes. In general, improved performance and greater range will be secured by locating the antenna as high above ground and as much in the clear as possible.

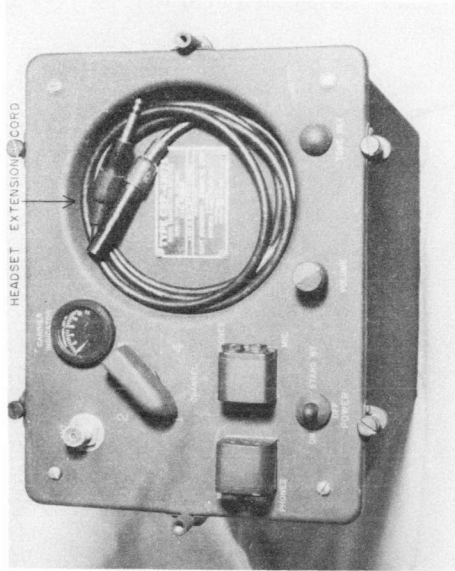
b. Optional mountings, provided as integral parts of the antenna assembly, permit hanging the antenna from a tree limb, securing it to a standard  $\frac{3}{4}$ -inch pipe-thread mount on a truck or other vehicle, thrusting its pointed spike into the ground, or setting the antenna itself directly on the ground or other surface.

c. The Discone antenna provides omnidirectional coverage in the horizontal plane, and possesses a vertical pattern suitable for communication with both ground and aircraft equipments.

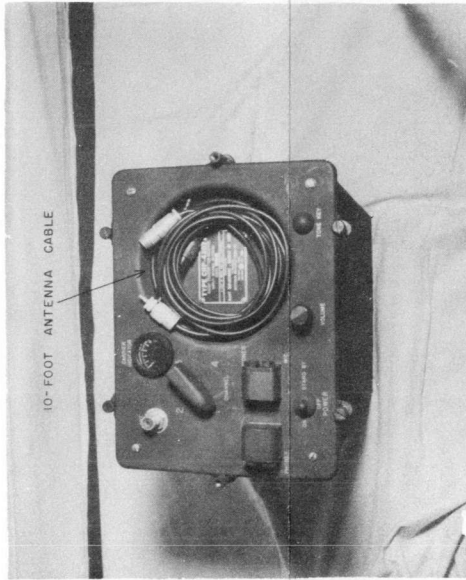
1



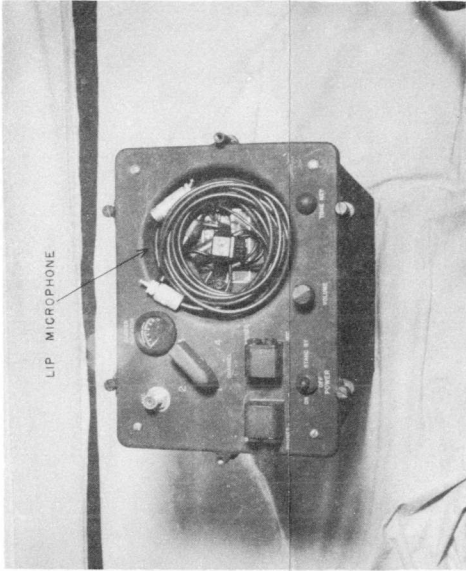
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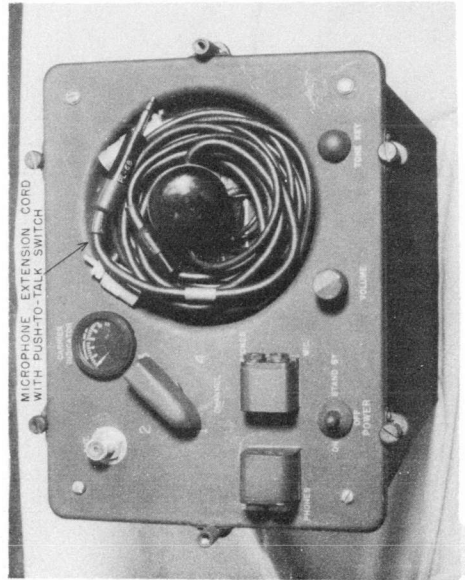
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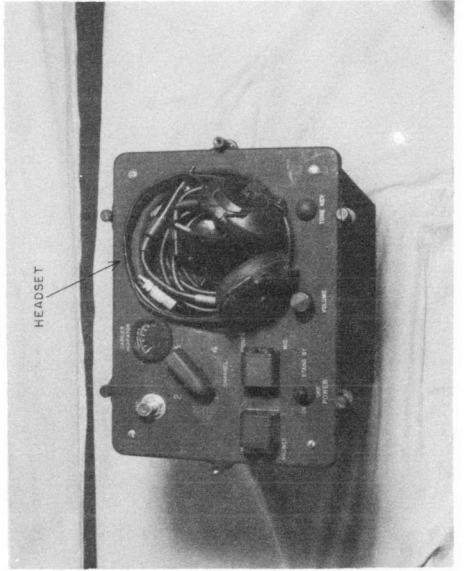
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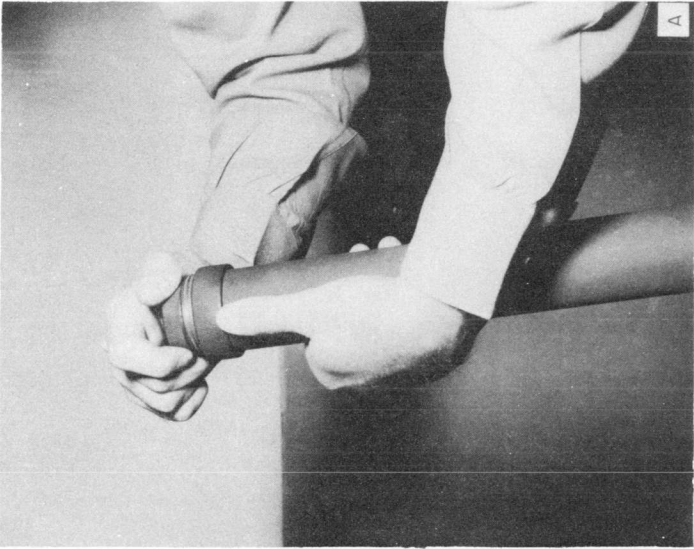


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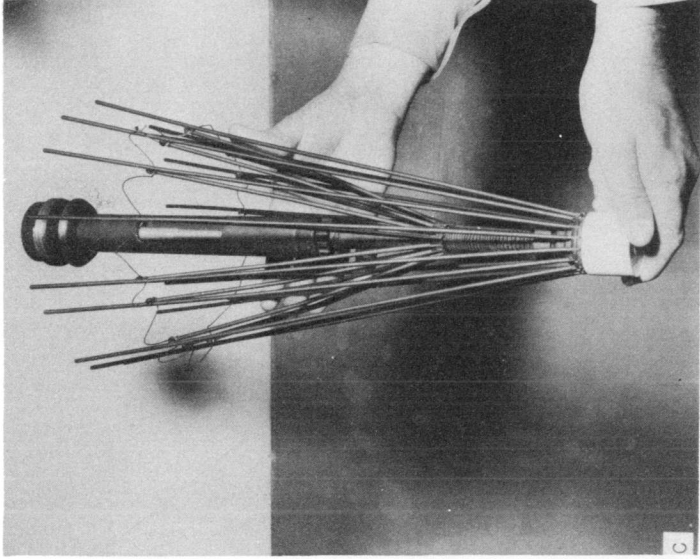


NOTE: Screw whip antenna to receptacle in cover and stow accessories in panel well, following the sequence shown above

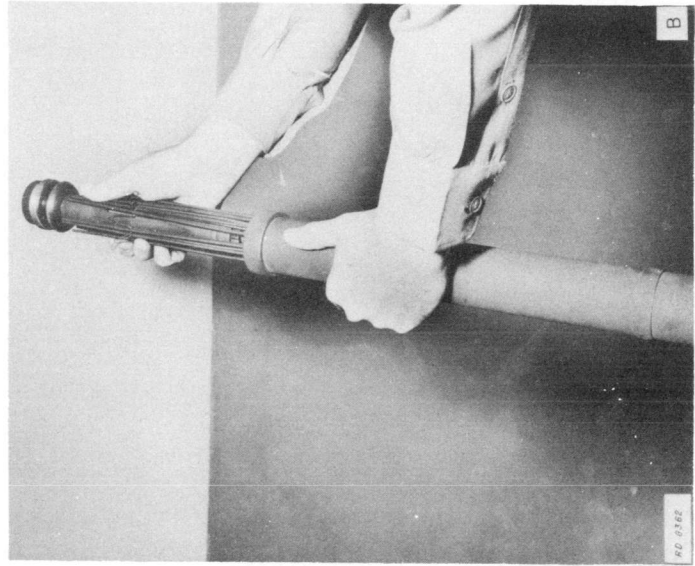
Figure 18.—Method of packing transmitter-receiver accessories.



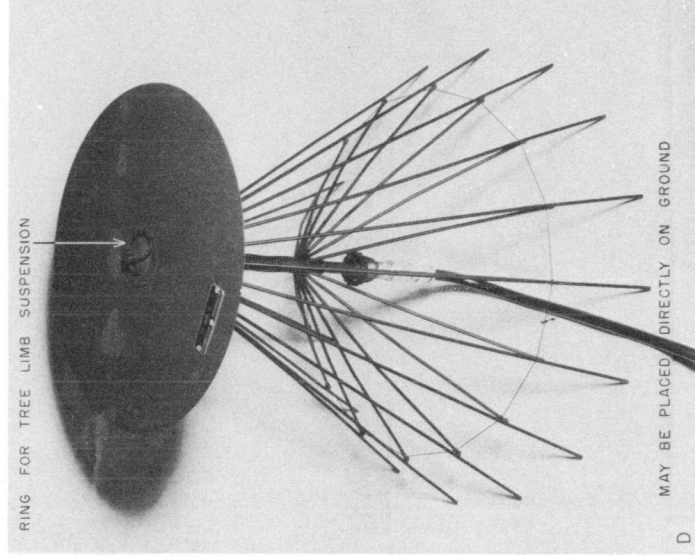
A



C



B



RING FOR TREE LIMB SUSPENSION

MAY BE PLACED DIRECTLY ON GROUND

D

Figure 19.—Assembly of Disccone Antenna.

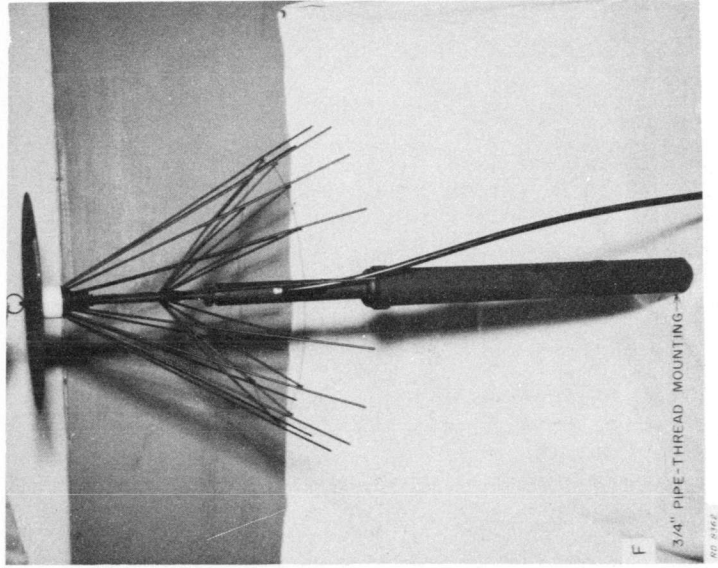
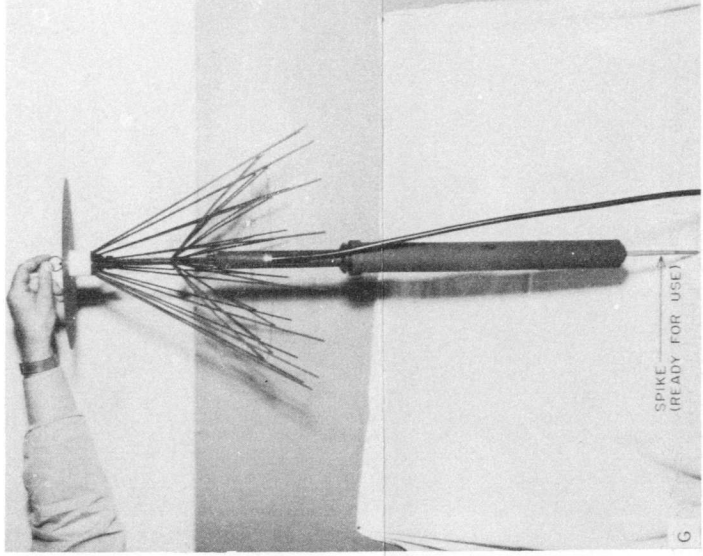
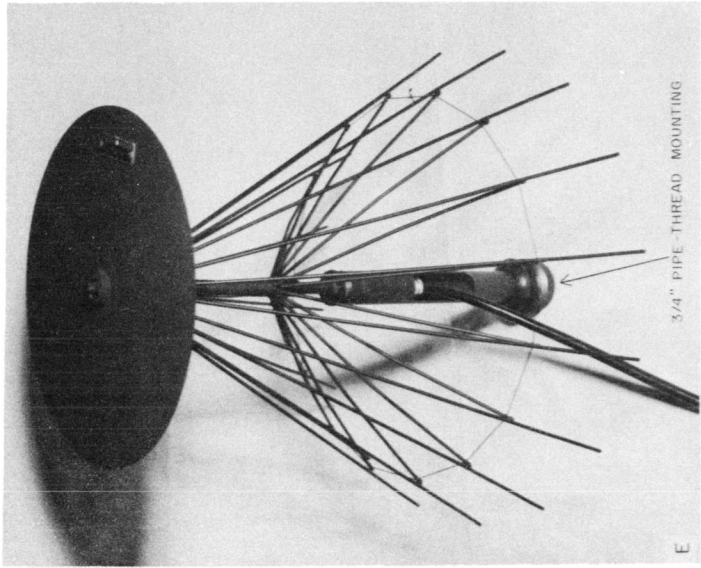


Figure 20.—Assembly of Discscone Antenna, continued.



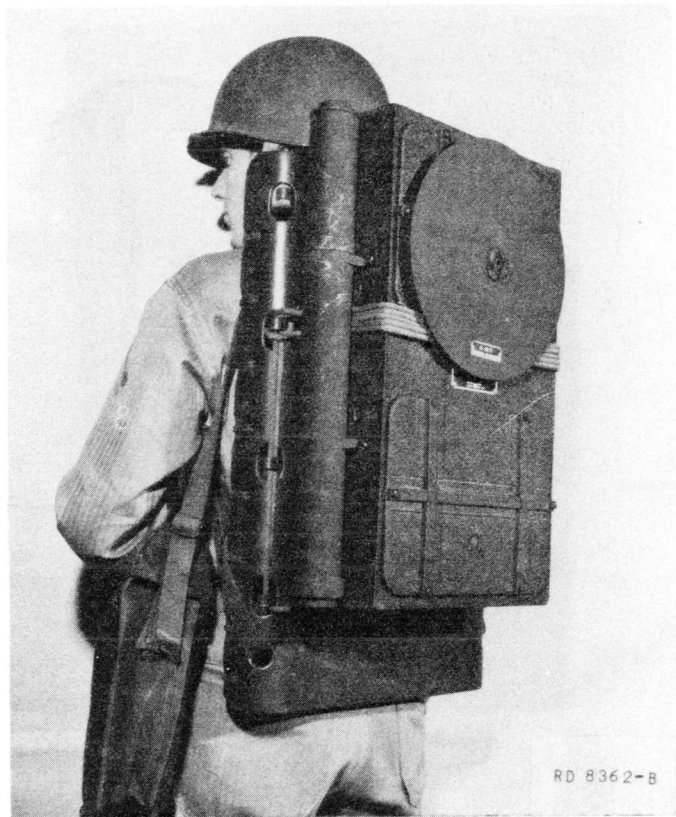


Figure 21.—Auxiliary Battery Pack CRP-19062.

**19. Auxiliary Battery Pack CRP-19062.**—This pack has two vented but watertight storage compartments for spare batteries; it also contains one spare tube of each field-replaceable type and a spare vibrator, all securely packed in sponge rubber pockets. Provision is made for carrying a complete Discone antenna on this pack if desired.

**20. Preparation for Operation.**—a. If the storage batteries are new and have not been used previously, each battery must be filled with electrolyte and given a booster charge. The batteries must be charged for approximately 20 hours at a 4-ampere rate. The time necessary for charging the batteries must be taken into consideration when the use of this equipment is planned. If the batteries have been used previously the voltages should be checked to see if they are fully charged. A fully charged battery should show a reading of 6.1 to 6.3 volts. A battery with a voltage of 5.7 must be recharged before being used in the equipment.

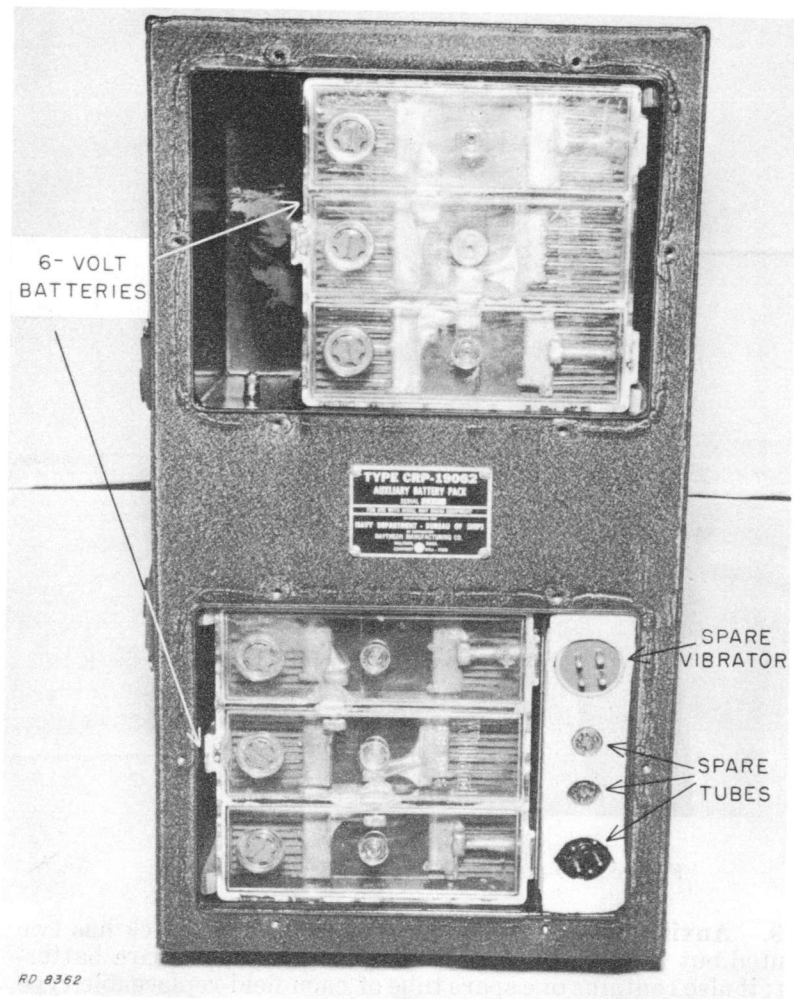


Figure 22.—Auxiliary Battery Pack, covers removed.

b. A battery must be placed in the compartment in the bottom of the transmitter-receiver case prior to operation. This is accomplished by loosening the six screws securing the battery compartment above.

c. After the battery has been installed, either the telescopic or Discone antenna, and the headset-microphone assemblies should be attached to the transmitter-receiver and an operational check of the equipment made.

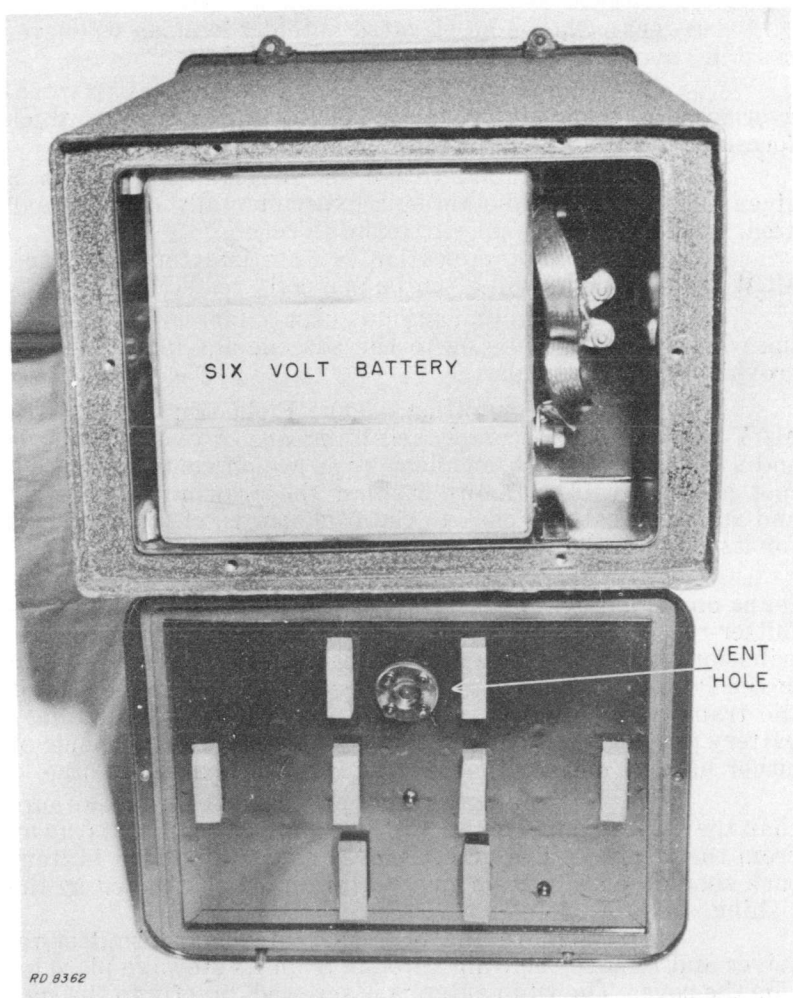


Figure 23.—Transmitter-receiver battery compartment.

d. The eight crystals, four for the transmitter and four for the receiver, necessary for operation must necessarily be installed before the operational check can be made. This function should be performed only by a radio technician in accordance with the instruction book issued with each radio set.

**21. Operation.—a. General.**—The choice of an operating location will have considerable bearing on the quality of communication to be expected. Certain general rules can be laid down which, if followed, will ensure optimum results under normal conditions. These are:

(1) Choose an **elevated** antenna location whenever possible; avoid ravines, river beds, and tunnels.

(2) Choose an **unobstructed** antenna location whenever possible; avoid steel bridges, steel-framed buildings, thick forests, and high hills in the transmission path.

(3) If communication is unsatisfactory from a given location, move the antenna experimentally over a small area. A few feet may make a great difference.

(4) If communication is unsatisfactory on voice, MCW transmissions will often be perfectly readable.

(5) If communication is unsatisfactory when using the whip antenna, changing to the Discone antenna will often provide readable signals.

b. **Packboard operation.**—(1) Field transport of the MAY equipment is accomplished by means of two packboards and a canvas bag with shoulder strap which contains the 60-foot antenna cable. Before lashing the transmitter-receiver and auxiliary battery pack to the packboards, check each unit for its full complement of accessories.

(2) Carrying the main assembly of the Discone antenna on the auxiliary battery pack and the disc on the transmitter-receiver case will provide for a nearly equal weight distribution and both units will then float in fresh water. The disc of the Discone antenna may be screwed to a stud on the rear of the transmitter-receiver case or on the front of the auxiliary battery pack. The antenna itself may be attached to the side of either unit by means of spring clamps attached to the case.

(3) In lashing the units to the packboard make sure that the ANT. connector of the transmitter-receiver is **away** from the wearer. The access panels of the auxiliary battery pack should be away from the wearer and unobstructed by the lashing.

(4) Remove the top cover of the transmitter-receiver and remove the whip antenna from its stowage place inside the cover. The whip antenna is screwed directly to the control panel ANT. connector when the transmitter-receiver is to be used during packboard carry. It will be necessary to adjust the length of the whip antenna to correspond to the channel in use as indicated in the chart shown below. Note that there are three standard operating positions for this antenna: fully closed, half extended (as indicated by the etched mark on the telescopic section), and fully extended.

**Frequency Range (MC)**

225—279.8

280—334.8

335—390

**Antenna Position**

Fully extended

Half extended

Fully closed

(5) Choose the desired communications channel by means of the CHANNEL selector. Although the action of the CHANNEL selector is positive, it is possible to stop its pointer between channel numbers. Always make sure that the pointer is properly on the channel before attempting to operate the equipment.

(6) Snap the POWER switch to the STANDBY position. The CARRIER INDICATOR meter will now show the battery voltage. Leave the switch in this position for approximately one minute and then snap the switch to ON. The receiver will now be in operation and the VOLUME control may be adjusted to a comfortable signal or background level.

(7) To transmit on voice, hold down the push-to-talk button on the microphone assembly cord and talk into the microphone. The lip microphone used with this equipment is very sensitive and the operator need talk only in a normal tone of voice. Releasing the push-to-talk button automatically restores the equipment to the receive position.

(8) To transmit on MCW hold down the push-to-talk button and operate the TONE KEY. Release the push-to-talk button to receive.

(9) To remove power from the equipment, snap the POWER switch to the OFF position. Since the life of the batteries used with this equipment is comparatively short the operator should never leave the POWER switch in the ON position unless the equipment is actually in use. The POWER switch should not be left in the STANDBY position unless the ability to transmit or receive instantaneously is important. It only takes about one minute for the equipment to warm up from a cold start.

**c. Operation in fixed locations.—**(1) When used in a fixed location, the transmitter-receiver should be placed in an upright position to secure maximum battery life. A concealed or inconspicuous operating location is usually selected for tactical reasons, but for optimum performance the Discone antenna should be located as high and as much in the clear as possible. The 10-foot antenna cable is slightly more efficient than the 60-foot cable. Therefore, the 60-foot cable should be employed only when its use results in an improved antenna location. When connecting either cable, make sure that the connectors at both ends are taken up tight. Loose antenna connections often cause noise in the receiver and erratic performance.

(2) The Discone antenna may be set up in a variety of positions as shown in Figures 19D and 20. It may be set directly on the ground, Figure 19D; hung from a tree or other tall object, Figure 19D; mounted on a vehicle, Figures 20E and F; or stuck into the ground by means of a spike, Figure 20G.

(3) The Discone antenna should always be employed when the transmitter-receiver is to be used in a fixed location. It will provide superior equipment performance and needs no adjustment of any kind regardless of the channel being used.

(4) After the Discone antenna has been connected to the equipment, operation of the radio set is the same as that described for packboard operation.

d. **Vehicular operation.**—The transmitter-receiver may be installed in a truck or other vehicle. In such installations the Discone antenna should be employed. The antenna assembly pictured in Figure 20F is particularly adapted to a vehicular installation, and the 10-foot antenna cable is long enough to permit locating the equipment at any convenient point in the vehicle. Do not attempt to use the vehicle battery as a power source for the MAY equipment unless it is definitely known that the battery is of the 6-volt type **with a positive ground**. Use the self-contained MAY battery unless otherwise instructed.