

ERATTA

PAGE 7—V-3 VOLTAGE CHART

Voltage to ground from socket terminal grid 3 should be "0" for tubes V-101, V-102, V-103, V-104 and V-105.

PAGE 51—FIGURE 14—SCHEMATIC WIRING DIAGRAM

Shows suppressor grids of vacuum tubes V-101, V-102, V-103, V-104 and V-105 connected to their respective cathodes. This suppressor grid should be shown connected to chassis (ground).

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SERIAL 2450

INSTRUCTION BOOK

FOR

NAVY TYPE CKB-50172

ANTENNA

MULTICOUPLER UNIT

Navships 900,226-1B

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This Instruction Book is furnished for the information of commissioned, warranted, enlisted and civilian personnel of the Navy and persons authorized by the Bureau of Ships whose duties involve design, manufacture, instruction, operation, and installation of radio, radar, or underwater sound equipment. The word "Restricted", as APPLIED to THIS instruction book signifies that it is to be read only by the above personnel, and that the /its contents should not be made known to unauthorized persons not connected with the Navy.

Manufactured for

U. S. NAVY DEPARTMENT

BUREAU OF SHIPS

By

HOFFMAN RADIO CORPORATION

3430 South Hill Street, Los Angeles, California

CONTRACT NXsr-39138

Date of Contract, 25 October 1943

REPORT OF FAILURE

Report of failure of any part of this equipment, during its service life, shall be made to the Bureau of Ships in accordance with current instructions. The report shall cover all details of the failure and give the date of installation of the equipment. For procedure in reporting failures see Chapter 31 (mimeographed form) of the Manual of Engineering Instructions, or Bureau of Ships Radio and Sound Bulletin Number 7, dated July 1, 1942, or superseding instructions.

Contract No. NXsr-39138 Date of Contract-25
October, 1943.

Serial Number of equipment.....

Date of acceptance by the Navy.....

Date of delivery to contract destination.....

.....
Date of completion of installation.....

Date placed in service.....

Blank spaces in this book shall be filled in at time of installation. Operating personnel shall also mark the "date placed in service" on the date plate located below the model nameplate on the equipment, using suitable methods and care to avoid damaging the equipment.

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RULES FOR RESUSCITATION

Personnel engaged in the installation, operation and maintenance of this equipment or similar equipment are urged to become familiar with the following rules both in theory and in practical application thereof. It is the duty of every radio man to be prepared to give adequate first aid and thereby prevent avoidable loss of life. Your own life may depend on this.

ELECTRIC SHOCK — FIRST-AID TREATMENT.

SAFETY FIRST.

Regard electrical apparatus generally, and especially all current carrying parts, as dangerous, irrespective of voltage. Exercise great care in handling, and avoid broad contacts such as are made by standing on a metal deck or in water.

Dangerous contact may result through lessened resistance when the skin and clothing are wet with perspiration. Contact with damp metal surfaces—deck, bulkheads, guns, machinery—may allow the current to ground through the moist skin and body.

Electric shock is due to current passing through the body—current actually passing—irrespective of the voltage. A pressure as low as 110 volts has caused death. Current passing through the body in the re-

gion of the heart is especially dangerous. In using electric breast drills avoid the possibility of a ground.

Usually electric shock does not kill instantly. Life can often be saved even though breathing has stopped.

I. FREE THE VICTIM FROM THE CIRCUIT IMMEDIATELY.

Use a dry nonconductor (rubber gloves, clothing, rope, board) to move either the victim or the wire. Beware of using metal or moist material.

Shut off the current.

If necessary to cut a live wire, use an axe or hatchet with a *dry* wooden handle; turn your face away from the electric flash.

II. ATTEND INSTANTLY TO THE VICTIM'S BREATHING.

Begin resuscitation at once on the spot. Do not stop to loosen clothing; every moment counts. Feel with your fingers in his mouth and throat for foreign bodies—tobacco, false teeth, etc.—and remove them. If the mouth is tightly shut, pay no attention to it until later.

RESUSCITATION BY THE PRONE PRESSURE METHOD OF ARTIFICIAL RESPIRATION—GAS ASPHYXIATION—ELECTRIC SHOCK—DROWNING!

Waste no time. Lay the victim on his belly with one arm extended overhead, the other bent at the elbow; face turned to the side and resting on the forearm so that the mouth and nose are free for breathing. See Fig. 1.

POSITION

Kneel, straddling the patient's hips with your knees just below his hip bones. Place your hands on the small of the back, fingers extended over the

lower ribs, little finger over the last rib, and finger tips just out of your sight on the side of the chest. See Fig. 1.



Fig. 1

FIRST MOVEMENT

Make pressure while deliberately counting one-two-three, as follows:

With arms straight, bring your weight to bear upon the patient gradually and heavily but not violently. Swing forward slowly. This movement should take three seconds. See Fig. 2.

SECOND MOVEMENT

Release the pressure suddenly by swinging back quickly to the position indicated by Fig. 3. Rest while deliberately counting one-two.

In performing this movement one does not *actually* remove the hands from the patient.



Fig. 2

Repeat these movements from twelve to fifteen times a minute; pressure three seconds; rest two seconds; complete respiration, five seconds—never less than four seconds.

Continue resuscitation movements without interruption for four hours, or until a medical officer has declared further efforts futile, unless natural breathing is restored. If natural breathing stops after temporary restoration, resume artificial respiration at once.

Keep the patient warm. Give him fresh air. Without interrupting resuscitation movements have someone else loosen his clothing about the neck, chest, and waist.

Do not attempt to give any liquid by mouth. Ammonia may be placed near the patient's nose after determining how close it may be brought to someone else's nose without causing irritation.

Someone should smartly tap the patient's shoe heels with a stick or hatchet handle, fifteen or twenty times, every five minutes until respiration has been restored.

Watch carefully for signs indicating the return of natural breathing. Do not block feeble respiratory efforts. Time your movements so that pressure is exerted only while the patient is breathing out. Release pressure instantly when he begins to breathe in.

If the patient revives do not allow him to get up or to be raised for any purpose. *Keep him prone until a medical officer arrives.*

DROWNING

As soon as the victim is taken from the water place him face downward. Clasp your hands under his



Fig. 3

stomach and lift his body several times, letting the head hang down thus draining the stomach, throat, and lungs. Quickly wipe out the mouth and throat with your fingers. Remove any foreign body. Do not waste a second. Begin artificial respiration at once and continue without interruption. Have someone loosen the clothing about the neck, chest, and waist. Keep the patient as warm as possible.

Continue artificial respiration as described above for three hours unless breathing is restored. Keep the patient flat.

GAS ASPHYXIATION

Remove the victim from the poisonous atmosphere. If breathing has stopped, or if it is slow and irregular, begin artificial respiration immediately at the nearest place where *fresh air* can be obtained. Notify the medical officer at once and send for oxygen. Keep the patient prone even though conscious.

THE PRONE PRESSURE METHOD OF ARTIFICIAL RESPIRATION SHOULD BE APPLIED BY ONE WHO HAS PRACTICED ON A VOLUNTEER SUBJECT.

NOTE

As a result of shortages of critical materials, it may be necessary for the contractor to substitute less critical materials in some instances. The data supplied in this book regarding electrical parts is correct as of the date of publication.

To assure that adequate replacement parts are obtained, it is imperative that replacement parts be ordered not only by the contractor's drawing number as it appears in the instruction book but also by the circuit symbol assigned to the particular part.



REQUEST FOR REPLACEMENT MATERIAL

All requests or requisitions for replacement material should include complete descriptive data covering the part desired, in the following form:

1. Name of part desired.
2. Navy Type number (if assigned) (including prefix and suffix as applicable).
3. Model designation (including suffix) of equipment in which used.
4. Navy Type designation (including prefix and suffix where applicable) of major unit in which part is used.
5. Symbol designation of part.
6. (a) Navy Drawing Number.
(b) Manufacturer's Drawing Number.
7. Rating or other descriptive data.
8. Commercial designation.

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CONTRACTUAL GUARANTEE

The equipment including all parts and spare parts, except vacuum tubes, batteries, rubber and material normally consumed in operation, is guaranteed for a period of one year from the date of delivery of the equipment to and acceptance by the Government with the understanding that all such items found to be defective as to material, workmanship or manufacture will be repaired or replaced, f.o.b. any point within the continental limits of the United States designated by the Government, without delay and at no expense to the Government; provided that such guarantee will not obligate the contractor to make repair or replacement of any such defective items unless the defect appears within the aforementioned period and the contractor is notified thereof in writing within a reasonable time and the defect is not the result of normal expected shelf life deterioration.

To the extent the equipment, including all parts and spare parts, as defined above, is of the contractor's design or is a design selected by the contractor, it is also guaranteed, subject to the foregoing conditions, against defects in design with the understanding that if ten per cent (10%) or more of any such item, but not less than two of any such item, of the total quantity comprising such item furnished under the contract, are found to be defective as to design, such item will be con-

clusively presumed to be of defective design and subject to one hundred per cent (100%) correction or replacement by a suitably redesigned item.

All such defective items will be subject to ultimate return to the contractor. In view of the fact that normal activities of the Naval Service may result in the use of equipment in such remote portions of the world or under such conditions as to preclude the return of the defective items for repair or replacement without jeopardizing the integrity of Naval communications, the exigencies of the Service, therefore, may necessitate expeditious repair of such items in order to prevent extended interruption of communications. In such cases the return of the defective items for examination by the contractor prior to repair or replacement will not be mandatory. The report of a responsible authority, including details of the conditions surrounding the failure, will be acceptable as a basis for affecting expeditious adjustment under the provisions of this contractual guarantee.

The above one year period will not include any portion of time the equipment fails to perform satisfactorily due to any such defects, and any items repaired or replaced by the contractor will be guaranteed anew under this provision.

SECTION I GENERAL DESCRIPTION

I-1. FUNCTION.

The Type CKB-50172 Antenna Multicoupler Unit has an effective frequency range of 4 to 24 megacycles, inclusive. A signal within this range which is received by the Antenna Multicoupler Unit's antenna may be coupled to four receivers. Each receiver may then be tuned to a different frequency. Consequently, by using the Antenna Multicoupler Unit, four receivers connected to one antenna may monitor four given frequencies simultaneously.

The interference between frequency channels, which results when two or more superheterodyne receivers are connected to one antenna, is reduced to a negligible factor and signal strength is maintained, thus permitting satisfactory reception of the frequencies in use.

I-2. DESCRIPTION OF UNIT.

The Antenna Multicoupler Unit is housed in a chassis suitable for rack mounting and is supplied with a dust cover. A built-in power supply, which provides all necessary operating voltages, is an integral part of the unit.

(a). Weights and Dimensions.

When mounted in its dust cover the unit has a net weight of 22.75 pounds without cables. The dimensions are: $8\frac{3}{4}$ inches high; 19 inches wide; and $10\frac{3}{8}$ inches deep.

The Antenna Multicoupler Unit, the box containing spare parts, and cables supplied with the equipment are packed in a wooden crate. When packed, this crate has a net weight of 130 pounds and is $13\frac{1}{2}$ inches high, $15\frac{1}{2}$ inches wide and $40\frac{1}{2}$ inches long.

(b). Front Panel

The front panel of the unit is constructed of $\frac{3}{16}$ inch thick aluminum and is finished in Black Wrinkle. Four slots are provided to permit it to be secured to a rack by standard rack mounting screws.

Directly beneath the nameplate, which is centered near the top of the panel, is an indicator light. This light will glow red when power is applied to the unit.

Five coaxial plug receptacles are mounted across the panel's face beneath the indicator

light. These are clearly marked with one quarter inch high lettering engraved directly above each receptacle. The receptacle at the left is marked "ANTENNA" and the other four are designated as "RF OUTPUT 1", "RF OUTPUT 2", "RF OUTPUT 3", and "RF OUTPUT 4", respectively.

Between the receptacles marked "ANTENNA" and "RF OUTPUT 1" is a counter-sunk slotted switch shaft protected by a hinged cover. On the face of the panel, directly above this switch, three indicating lines marked 70, 200 and 600 are engraved. This Impedance Selector Switch permits the selection of proper impedance values to match the impedance of the antenna used.

At the right of the plug receptacles is a two position toggle switch. "POWER" is engraved above it and its "ON" and "OFF" positions are clearly indicated.

Refer to Figure 1, Type CKB-50172 Antenna Multicoupler Unit, Front Panel View, page 25.

(c). Dust Cover

The dust cover of the Antenna Multicoupler Unit is constructed of .037 inch thick sheet steel, flame welded at all corners and seams. The inside of the cover is finished in Telephone Black and the outside, in Black Wrinkle.

Openings in the rear wall of the dust cover provide access to the fuse, a.c. power input plug, and ground and antenna connections on the rear of the unit's chassis. Above these apertures are four sets of two ventilating louvres. Three knurled thumbscrews on the cover's rear permit it to be secured to the chassis.

Two slots are provided in the top of the dust cover to accommodate the chassis' pressure buttons which assist in holding the cover in place.

Refer to Figure 2, Type CKB-50172 Antenna Multicoupler Unit, Rear View of Dust Cover, page 27.

(d). Chassis

The chassis is constructed of .050 inch thick sheet steel, flame welded at all corners and seams, and is mounted on the front panel in such manner as to provide clearance for the components and wiring beneath it. Its con-

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struction permits it to be placed on any of its sides for servicing. Two 1/16 inch thick braces run from the front panel to each side of the chassis to strengthen its construction. Two pressure buttons, one at the top of each angle brace, help to hold the dust cover to the chassis. Bumpers are provided at each corner of the chassis to prevent marring table surfaces. Figure 3, Type CKB-50172 Antenna Multicoupler Unit, View of Underside of Chassis, page 29, and Figure 4, Type CKB-50172 Antenna Multicoupler Unit, View of Top of Chassis, page 31, illustrate chassis construction.

(e). External Connections.

An a.c. power input socket is mounted on the left rear of the chassis to permit a 115 volt, 60 cycle, single phase, power source to be connected to the unit.

On the right rear of the chassis, protected by a removable shield, are two screw terminals. The one on the left which is marked "GND" should be used only in conjunction with the antenna terminal adjacent to it. This terminal, marked "ANT", may be used when it is desired to connect an open wire transmission line to the Antenna Multicoupler Unit.

(f). Inter-connecting Cables.

The coaxial cable leading from the antenna

is to be plugged into the receptacle on the front panel marked "ANTENNA", and the four cables which are connected to the receivers used in conjunction with the unit are to be plugged into the receptacles marked "RF OUTPUT 1" "RF OUTPUT 2", "RF OUTPUT 3" and "RF OUTPUT 4", respectively.

(g). Tube Complement.

The six tubes employed in the Antenna Multicoupler Unit are listed below:

<i>Symbol</i>	<i>Navy Type</i>	<i>Commercial Type</i>	<i>Function</i>
V-101	6AC7	6AC7	R.F. Amplifier
V-102	6AC7	6AC7	R.F. Amplifier
V-103	6AC7	6AC7	R.F. Amplifier
V-104	6AC7	6AC7	R.F. Amplifier
V-105	6AC7	6AC7	R.F. Amplifier
V-106	6X5	6X5	Rectifier

ALL TUBES SUPPLIED WITH THE EQUIPMENT OR AS SPARES ON THE EQUIPMENT CONTRACT SHALL BE USED IN THE EQUIPMENT PRIOR TO EMPLOYMENT OF TUBES FROM GENERAL STOCK.

SECTION II

RADIO CIRCUIT CHARACTERISTICS

Refer to Figure 14, Type CKB-50172 Antenna Multicoupler Unit, Schematic Wiring Diagram, page 51.

II-1. THEORETICAL OPERATION.

A coaxial transmission line carries the signal received by the Antenna Multicoupler Unit's antenna to the coaxial receptacle J-101. The impedance transformer T-102 and its associated impedance matching network, consisting of resistors R-117, R-118 and R-119 and peaking coils L-107 and L-108, permit the unit's impedance to be matched to the impedance of the antenna by means of a switching arrangement.

The switching arrangement consists of matching resistor R-117 paralleled to the transformer T-102 for 70 ohm impedance; matching resistor R-118 in series combination with peaking coil L-107, paralleled to transformer T-102 for 200 ohms impedance; and matching resistor R-119 in series combination with peaking coil L-108, paralleled to transformer T-102 for 600 ohms impedance.

Through one of the combinations given above the signal is applied as a voltage to the grid of the 6AC7 R.F. Amplifier tube V-101.

The values of resistor R-106 and inductor L-102 are chosen to act in conjunction with the total input capacitance of the 6AC7 R. F. Amplifier tubes V-102, V-103, V-104, and V-105, and the output capacitance of the mixer tube V-101, in order to obtain a flat frequency response on frequencies ranging from 4 to 24 megacycles.

The r.f. component of the plate current from the 6AC7 tube V-101 is applied through the blocking condenser C-111, which serves to keep the d.c. plate voltage out of the grid circuits of the tubes V-102, V-103, V-104, and V-105. As these grids are in parallel, the plate output of V-101 appears simultaneously and with equal values on these tubes.

Each of the 6AC7 tubes, V-102, V-103, V-104, and V-105 possesses a load impedance network consisting of an inductor and a resistor in series. (L-103 and R-107 for V-102; L-104 and R-108 for V-103; L-105 and R-109 for V-104; L-106 and R-110 for V-105.)

The plate output of these tubes is applied individually through each tube's coupling condenser, (C-112, C-113, C-114, and C-115, respectively) to the R.F. Output sockets J-102, J-103, J-104, and J-105. Each inter-connecting cable which is plugged into one of these sockets is connected at its other end to the antenna binding post of one of the four receivers used in conjunction with the Antenna Multicoupler Unit.

Each of these receivers may then be tuned to a different frequency within the frequency range of the Antenna Multicoupler Unit.

II-2. OTHER COMPONENTS' FUNCTIONS.

The cathode circuit of each of the 6AC7 tubes (V-101, V-102, V-103, V-104, and V-105) contains one of the five resistors R-101, R-102, R-103, R-104, or R-105. These resistors determine the cathode bias voltage applied to their respective tubes, and the condensers C-101, C-102, C-103, C-104, and C-105 eliminate degenerative effects in their associated tube circuits.

One of the resistors, R-111, R-112, R-113, R-114, or R-115, is placed in each plate supply circuit to isolate one channel from another and prevent inter-action. Resistor R-116 is the grid return resistor which serves to prevent the grids of the 6AC7 tubes V-102, V-103, V-104, and V-105, from blocking by returning the grids to ground.

Radio frequency currents are kept out of the power supply by the condensers C-106, C-107, C-108, C-109, and C-110, as the r.f. is effectively grounded through these condensers.

II-3. POWER SUPPLY.

All voltages required to operate the Antenna Multicoupler Unit are taken from the secondary of the power transformer T-101. Power input receptacle P-101 permits a 115 volt A.C. 50/60 cycle, single phase power source to be connected to the unit.

Fuse F-101 is a one ampere fuse of the replaceable type and protects the power transformer from an over-load. The "ON-OFF" power

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control switch S-101 is mounted on the front panel of the unit for the operator's convenience.

Transformer T-101 secondary taps 3 and 4 apply 6.3 volts to the filaments of tubes V-101, V-102, V-103, V-104, V-105, and V-106. Indicator light I-101 is connected across this circuit to cause it to glow when power is applied

to the unit. Taps 5, 6, and 7 provide 178 volts to the plates of the rectifier tube and voltages for the operation of the 6AC7 tubes V-101, V-102, V-103, V-104, and V-105 are supplied by the rectifier 6X5 tube V-106 through its filter network consisting of condensers C-116, and C-117, and inductor L-101.

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SECTION III INSTALLATION PROCEDURE

(1). Remove the dust cover from the chassis and ascertain that all packing materials have been removed from the underside as well as from the top of the chassis. Replace the dust cover.

(2). Prepare the coaxial cable and connector plugs in accordance with instructions given in Section VI, Paragraph 1, and Figure 12, Type CKB-50172 Antenna Multicoupler Unit, Coaxial Cable Connector Assembly Procedure Drawing, page 47.

(3). An a.c. power input socket is mounted on the rear of the chassis. Connect a 115 volt, 60 cycle, single phase power source to this socket.

(4). Connect the antenna transmission cable's plug to the receptacle on the front panel marked "ANTENNA".

(5). Connect the receiver's cable plugs of the lines leading to the four receivers used in conjunction with the unit to the receptacles marked "RF OUTPUT 1", "RF OUTPUT 2", "RF OUTPUT 3", and "RF OUTPUT 4", respectively.

(6). On the right rear of the unit's chassis, protected by a removable shield are two screw terminals. Refer to Figure 2, Type CKB-50172 Antenna Multicoupler Unit, Rear View of Dust Cover, page 27. These terminals may be used when it is desired to connect an open wire transmission line to the Antenna Multicoupler Unit. The open wire line should be connected to the terminals marked "ANT" and "GND".

(7). See that all tubes are firmly seated in their sockets and that all connections are properly made. Secure the dust cover to the chassis and ascertain that all thumbscrews are tight.

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SECTION IV OPERATION

Prior to setting the Antenna Multicoupler Unit in operation it is necessary to adjust the unit's impedance to match the impedance of the antenna to be used.

(1). Determine the impedance value of the transmission line. Then remove the protective cover of the Impedance Selector Switch indicated on Figure 1, Type CKB-50172 Antenna Multicoupler Unit, Front Panel View, page 25.

(2). Insert a screwdriver into the slot of the shaft beneath this cover and turn it until its indicating line is aligned with the indicating

line bearing the closest impedance value to the transmission line impedance.

(3). Return the protective cover of this switch to its original position.

(4). Throw the switch marked "POWER" to its "ON" position. The red pilot light on the front panel should glow to indicate that power is being applied to the unit.

(5). To turn the Antenna Multicoupler Unit off, throw the "POWER" switch to its "OFF" position.

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SECTION V
MAINTENANCE AND REPAIRS

V-1. MAINTENANCE.

The simplicity of the circuit and components of the Type CKB-50172 Antenna Multicoupler Unit is such that a minimum of maintenance is required. Ordinary precautionary care should be sufficient to keep the apparatus in good operating condition.

V-2. REPAIRS.

Failure of any of the components of the unit will usually make itself evident. If the unit ceases to function and the replacement of a tube or tubes does not rectify the difficulty, a simple voltage check in accordance with the chart given below will serve to localize the trouble.

V-3. VOLTAGE CHART.

The above values were obtained with a voltmeter possessing an a.c. resistance of 1,000 ohms per volt and a d.c. resistance of 20,000 ohms per volt.

Similar measurements may be taken for comparison with the values given, using the Selective Analyzer and the Socket Selector units of the Navy Model OE Equipments or equivalents.

All such measurement should be made in accordance with the procedures outlined in the instructions furnished with the particular analyzing equipment in use.

Upon identifying a faulty resistor, condenser or inductor, proceed to test it in accordance with standard practise and if necessary replace the faulty component.

All resistors and condensers used in the Type

VOLTAGE TO GROUND. 115 VOLTS A.C. 60 CYCLE						
Socket Terminal	V-101	V-102	V-103	V-104	V-105	V-106
Shield 1.	0	0	0	0	0	
Heater 2.	6.3	6.3	6.3	6.3	6.3	6.3
Grid 3.	2.00	1.35	1.35	1.35	1.35	
Plate 3.						178 ac
Grid 4.						
Plate 5.						178 ac
Cathode 5.	2.00	1.38	1.38	1.38	1.38	
Grid 6.	130	130	130	130	130	
Heater 7.	0	0	0	0	0	0
Cathode 8.						177 dc
Plate 8.	128	117	117	117	117	*

All voltage readings are taken from tube socket pin to ground (chassis) and are subject to a ± 10 per cent variation. Socket terminal numbers are standard markings for the type of tube specified.

CKB-50172 Antenna Multicoupler Unit are color coded in accordance with the Standard RMA Color Code given in Section VI, Paragraph 2.

SECTION VI
SUPPLEMENTARY DATA

VI-1. COAXIAL CABLE ASSEMBLY PROCEDURE.

Refer to Figure 12, CKB-50172 Antenna Multicoupler Unit, Coaxial Connector Assembly Procedure drawing, page 47. The detailed procedure required to attach coaxial connector plugs to the coaxial cable supplied with the Antenna Multicoupler Unit is illustrated in this drawing. The sequence of steps in the procedure

is shown as well as a list of tools required for this operation.

VI-2. RMA STANDARD COLOR CODE.

The composition resistors and small molded capacitors supplied in the equipment are marked in accordance with the following RMA Standard Color Code.

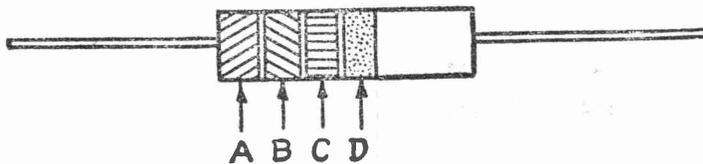
RMA COLOR CODE FOR RESISTORS AND CAPACITORS				
Color	Significant Figure	Decimal Multiplier	Tolerance	Voltage Rating
Black	0	1		
Brown	1	10	1%	100 Volts
Red	2	100	2%	200 Volts
Orange	3	1,000		300 Volts
Yellow	4	10,000		400 Volts
Green	5	100,000	5%	500 Volts
Blue	6	1,000,000		600 Volts
Violet	7	10,000,000		700 Volts
Grey	8	100,000,000		800 Volts
White	9	1,000,000,000		
Gold	-----	0.1	± 5%	
Silver	-----	0.01	± 10%	
No Color	-----	-----	± 20%	500 Volts

a. Resistors.

The nominal resistance value of fixed composition resistors is indicated in two manners. The one in most common use indicates the value by bands of color as follows:

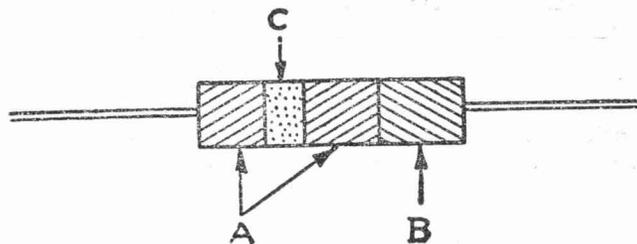
Band B indicates the second significant figure. Band C indicates the decimal multiplier. Band D, if any, indicates the tolerance limits about the nominal resistance value.

The less common system used for indicating



Band A indicates the first significant figure of the resistance of the resistor.

nominal resistance value is as follows:



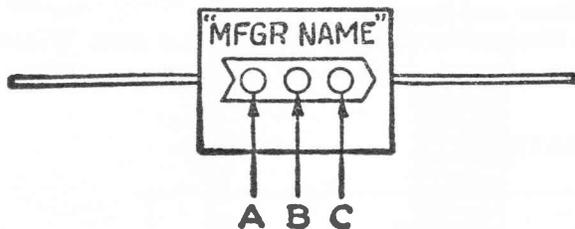
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The Body (A) of the resistor is colored to represent the first significant figure of the resistance value. One end (B) is colored to represent the second significant figure and a band, or dot (C) of color, located within the body color, indicates the decimal multiplier.

b. Capacitors.

Two systems for color coding small fixed capacitors are in use. In either case, capacity is expressed in micromicrofarads and some means to avoid ambiguity in interpretation of colors provided. An arrow pointing from left to right or the manufacturer's name is generally used.

In general, capacitors having a working voltage of 500 volts are coded by means of three dots of color as follows:



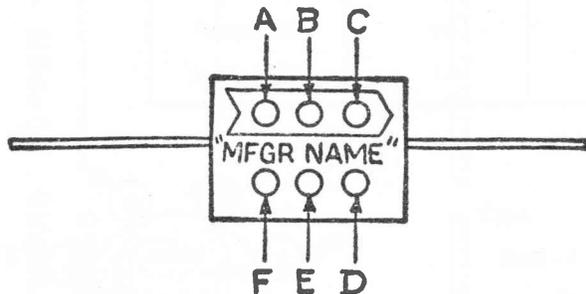
Dot A indicates the first significant figure of the capacitance of the capacitor.

Dot B indicates the second significant figure.

Dot C indicates the decimal multiplier.

An additional dot is sometimes shown when the working voltage is other than 500 volts. This dot indicates the voltage rating of the capacitor.

A second system now coming into common use involves six dots of color as follows:



Dot A indicates the first significant figure of the capacitance of the capacitor.

Dot B indicates the second significant figure.

Dot C indicates the third significant figure.

Dot D indicates the decimal multiplier.

Dot E indicates the tolerance about the nominal capacitance value.

Dot F indicates the voltage rating of the capacitor.

In addition to the individual marking of each resistor and capacitor by one of the foregoing methods, all electrical parts of the Type CKB-50172 Antenna Multicoupler Unit are marked with symbol designations corresponding to those shown in the diagram. (Figure 14), and their nominal values can be determined by reference to Table II. Their actual values can readily be measured with the ohmeter portion of the Selective Analyzer and the Capacity Meter units of the Navy Model OE Equipment, respectively, by following the instructions furnished therewith.

VI-3 TECHNICAL TUBE DATA.

Technical data on Type 6AC7 and Type 6X5 vacuum tubes used in the Type CKB-50172 Antenna Multicoupler Unit are given on page 10 to page 12, inclusive.

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TECHNICAL DATA
TYPE 6AC7 VACUUM TUBE

The 6AC7 is a pentode of the single-ended metal type for use in television receivers.

From a circuit standpoint, the proximity of grid pin to cathode pin simplifies wiring and

decreases the size of the inductance loop connecting the input circuit to the tube. These are features important at high frequencies because they provide decreased feedback and improved circuit stability.

CHARACTERISTICS

Heater Voltage (A.C. or D. C.)	6.3	Volts
Heater Current	0.45	Ampere
Grid-Plate Capacitance*	0.015 max.	mmfd.
Input Capacitance*	11	mmfd.
Output Capacitance*	5	mmfd.

*With shell connected to cathode

AS CLASS A AMPLIFIER

Plate Voltage	300 max.	Volts
Screen Voltage	150 max.	Volts
Screen Supply Voltage	300 max.	Volts
Plate and Screen Dissipation (Total)	3.4 max.	Watts
Screen Dissipation	0.38 max.	Watt

TYPICAL OPERATION:

	Condition I*	Condition II**	
Plate Voltage	300	300	Volts
Suppressor Voltage	0	0	Volts
Screen Supply Voltage	150	300†	Volts
Screen Series Resistor		60000	Ohms
Cathode-Bias Resistor	160 min.	160 min.	Ohms
Plate Resistance (Approx.)	0.75	0.75	Megohm
Transconductance	9000	9000	Micromhos
Plate Current	10	10	Milliamperes
Screen Current	2.5	2.5	Milliamperes

*With fixed screen supply.

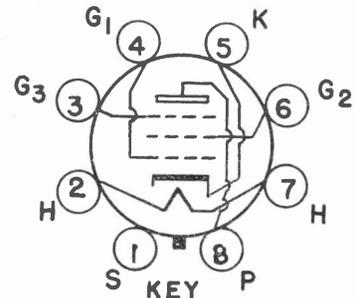
**With series screen resistor.

†Screen supply voltages in excess of 150 volts require use of a series dropping resistor to limit the voltage at the screen to 150 volts when the plate current is at its normal value of 10 milliamperes.

INSTALLATION AND APPLICATION

The base of the 6AC7 fits the standard octal socket which should be installed to hold the tube preferably in a vertical position. Horizontal operation is permissible if the socket is positioned so that pins No. 2 and 7 are in a vertical plane.

- 6AC7
- S - Shell
 - H - Heater
 - G - Grid
 - K - Cathode
 - P - Plate (Anode)



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Numerical subscripts are used (1) in multi-grid types to indicate relative position of grids to cathode or filament, and (2) in multi-unit types to differentiate between two identical electrodes which would otherwise have the same designation.

EXCEPT WHERE INDICATING INSTRUMENTS ARE ALREADY INCORPORATED IN THE EQUIPMENT OPERATING PERSONNEL SHOULD NOT ATTEMPT TO MEASURE POTENTIALS IN EXCESS OF 250 VOLTS WITHIN THE EQUIPMENT DUE TO HAZARDS TO LIFE.

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TECHNICAL DATA
TYPE 6X5 VACUUM TUBE

The 6X5 (6X5-GT/G) tube is a full-wave, high-vacuum rectifier of the heater-cathode type.

CHARACTERISTICS

Heater Voltage (A.C. or D.C.) 6.3 Volts
Heater Current 0.6 Ampere

AS FULL-WAVE RECTIFIER

Peak Inverse Voltage 1250 max. Volts
Peak Plate Current Per Plate 210 max. Milli-amperes
D-C Heater-Cathode Potential 450 max. Volts

Typical Operation with Condenser-Input Filter:

A-C Plate Voltage per Plate (RMS) 325 max. Volts
Total Effective Plate-Supply Impedance per Plate* 150 min. Ohms
D-C Output Current 70 max. Milli-amperes

Typical Operation with Choke-Input Filter:

A-C Plate Voltage per Plate (RMS) 450 max. Volts
Input-Choke Inductance 8 min. Henries
D-C Output Current 70 max. Milli-amperes

*When a filter-input condenser larger than 40 mfd. is used, it may be necessary to use more plate-supply impedance than the minimum value shown to limit the peak plate current to the rated value.

INSTALLATION AND APPLICATION

The base of either the 6X5 (6X5-GT/G) fits the standard octal socket. The socket for the 6X5 should be installed to hold the tube preferably in a vertical position. Horizontal operation is permissible if pins 3 and 5 are in a horizontal plane. The 6X5 may be operated in any position. Pin 1 of this tube has no connection.

The heater should be operated at 6.3 volts. Under no condition should the heater voltage ever fluctuate so that it exceeds 7.5 volts.

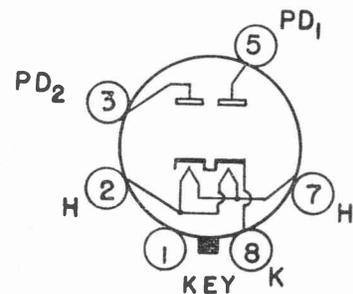
6X5

H - Heater

PD₁ - Plate

PD₂ - Plate

K - Cathode



Alphabetical subscripts D, P, T, and HX indicate, respectively, diode unit, pentode unit, triode unit, and hexode unit in multi-unit types.

Numerical subscripts are used (1) in multi-grid types to indicate relative position of grids to cathode or filament, and (2) in multi-unit types to differentiate between two identical electrodes which would otherwise have the same designation.

EXCEPT WHERE INDICATING INSTRUMENTS ARE ALREADY INCORPORATED IN THE EQUIPMENT OPERATING PERSONNEL SHOULD NOT ATTEMPT TO MEASURE POTENTIALS IN EXCESS OF 250 VOLTS WITHIN THE EQUIPMENT DUE TO HAZARDS TO LIFE

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TABLE I

LIST OF MAJOR UNITS FOR TYPE CKB-50172
ANTENNA MULTICOUPLER UNIT

<i>Navy Type Number</i>	<i>Name</i>	<i>Quantity</i>	<i>Assembly Dwg. Number</i>
CKB-50172	Antenna Multicoupler Unit	1	33-004A003-3
ACCESSORIES			
<i>Navy Type Number</i>	<i>Name</i>	<i>Quantity per Unit</i>	<i>Assembly Dwg. Number</i>
-49121-A	Coaxial Cable (50 ohms)	100 feet	33-A00356-1
	Coaxial Connector Plug	5	33-A7045-1
	Power Input Plug	1	33-A7012-1
	Instruction Book	2	33-004A025-1

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**TABLE II
PARTS LIST BY SYMBOL DESIGNATION FOR
TYPE CKB-50172 ANTENNA MULTICOUPLER UNIT**

<i>Symbol</i>	<i>Function</i>	<i>Description</i>	<i>Navy Type Number</i>	<i>American War Standard or Navy Spec. No.</i>	<i>Mfr.</i>	<i>Mfr's. Desig.</i>	<i>Hoffman Dwg. No.</i>
CAPACITORS							
*C-101	Blocking Condenser	.0015 mfd. \pm 10% 500 v. Mica	CM 30A 152K	C 75.3	2		33-A3025-1
*C-102	Same as C-101	Same as C-101	-----	-----	-----		-----
*C-103	Same as C-101	Same as C-101	-----	-----	-----		-----
*C-104	Same as C-101	Same as C-101	-----	-----	-----		-----
*C-105	Same as C-101	Same as C-101	-----	-----	-----		-----
*C-106	By Pass Condenser	Same as C-101	-----	-----	-----		-----
*C-107	Same as C-106	Same as C-101	-----	-----	-----		-----
*C-108	Same as C-106	Same as C-101	-----	-----	-----		-----
*C-109	Same as C-106	Same as C-101	-----	-----	-----		-----
*C-110	Same as C-106	Same as C-101	-----	-----	-----		-----
*C-111	Blocking Condenser	.0005 mfd. \pm 10% 500 v. Mica	CM 20A 501K	C75.3	2	5 S	33-A3008-1
*C-112	Coupling Condenser	Same as C-111	-----	-----	-----		-----
*C-113	Same as C-112	Same as C-111	-----	-----	-----		-----
*C-114	Same as C-112	Same as C-111	-----	-----	-----		-----
*C-115	Same as C-112	Same as C-111	-----	-----	-----		-----
*C-116	Filter Condenser	4 mfd. 600 v. Oil Paper	-----	-----	5	CIE 5070	33-A3014-1
*C-117	Same as C-116	Same as C-116	-----	-----	-----		-----
MISCELLANEOUS							
E-101	Antenna Connector	Terminal Assembly			13		33-A00122-1
E-102	Ground Connector	Same as E-101					
FUSES							
*F-101	Power Line Fuse	1 ampere 250 volts			6	1040	33-A0010-1
-----	Fuse Holder	Fuse Holder and Nut			6	1075-S	33-A0084-1
INDICATOR LIGHT							
*I-101	Power Indicator Light	Pilot Light 6.3 v. .25 amp.			3		33-A0083-1

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TABLE II (Continued)

<i>Symbol</i>	<i>Function</i>	<i>Description</i>	<i>Navy Type Number</i>	<i>American War Standard or Navy Spec. No.</i>	<i>Mfr.</i>	<i>Mfr's. Desig.</i>	<i>Hoffman Dwg. No.</i>
JACKS AND RECEPTACLES							
*J-101	Antenna Connector	Coaxial Chassis Coupler	-49120		7		33-A7044-1
*J-102	Receiver Connector	Same as J-101	-----		-----		-----
*J-103	Same as J-102	Same as J-101	-----		-----		-----
*J-104	Same as J-102	Same as J-101	-----		-----		-----
*J-105	Same as J-102	Same as J-101	-----		-----		-----
*J-106	Power Input Receptacle	AC Chassis Plug Assembly	-49065	RE 49 AA 122	15		33-A7014-1
INDUCTORS							
*L-101	Filter Choke	15 H., 75 mils Smoothing Choke			9		33-A4011-1
L-102	Peaking Coil	RF Choke			12		33-A5006-1
L-103	Same as L-102	RF Choke			12		33-A5005-1
L-104	Same as L-102	Same as L-102			-----		-----
L-105	Same as L-102	Same as L-102			-----		-----
L-106	Same as L-102	Same as L-102			-----		-----
L-107	Peaking Coil	100 ohms reactance, 25 mc.			10		33-5A004-1
L-108	Peaking Coil	300 ohms reactance, 20 mc.			10		33-5A003-1
RESISTORS							
*R-101	Cathode Bias Resistor	200 ohms \pm 10% $\frac{1}{2}$ W. Comp.	RC 20 BF 201 K	C 75.7	14		33-A1020-1
*R-102	Same as R-101	100 ohms \pm 10% $\frac{1}{2}$ W. Comp.	RC 20 BF 101 K	-----	14		33-A1003-1
*R-103	Same as R-101	Same as R-101	-----	-----	-----		-----
*R-104	Same as R-101	Same as R-101	-----	-----	-----		-----
*R-105	Same as R-101	Same as R-101	-----	-----	-----		-----
*R-106	Load Resistor	Same as R-101	-----	-----	-----		-----
*R-107	Same as R-106	1,000 ohms \pm 10% $\frac{1}{2}$ W. Comp.	RC 20 BF 201 K	-----	14		33-A1022-1
*R-108	Same as R-106	Same as R-107	-----	-----	-----		-----
*R-109	Same as R-107	Same as R-107	-----	-----	-----		-----

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TABLE II (Continued)

<i>Symbol</i>	<i>Function</i>	<i>Description</i>	<i>Navy Type Number</i>	<i>American War Standard or Navy Spec. No.</i>	<i>Mfr.</i>	<i>Mfr's. Desig.</i>	<i>Hoffman Dwg. No.</i>
*R-110	Same as R-107	Same as R-107	-----	-----			-----
*R-111	Decoupling Resistor	1,500 ohms \pm 10% 1/2 W. Comp.	RC 20 BF 152 K	C 75.7	14		33-A1019-1
*R-112	Same as R-111	Same as R-111	-----	-----			-----
*R-113	Same as R-111	Same as R-111	-----	-----			-----
*R-114	Same as R-111	Same as R-111	-----	-----			-----
*R-115	Same as R-111	Same as R-111	-----	-----			-----
*R-116	Grid Return Resistor	10,000 ohms \pm 10% 1/2 W. Comp.	RC 20 BF 103 K	C 75.7	14		33-A1021-1
*R-117	Matching Resistor	68 ohms \pm 10% 1/2 W. Comp.	RC 20 BF 680 K	C 75.7	14		33-A1056-1
*R-118	Same as R-117	Same as R-101	RC 20 BF 201 K	C 75.7	14		33-A1020-1
*R-119	Same as R-117	560 ohms \pm 10% 1/2 W. Comp.	RC 20 BF 561 K	C 75.7	14		33-A1057-1
SWITCHES							
*S-101	Power Switch	S.P.S.T. (ON-OFF) Toggle	-24041	RE 24 AA 118 B	3	1GA1A93	33-A6002-1
*S-102	Impedance Selector	Ceramic, Low Capacity Rotary 1 pole-3 position			8		33-A6015-1
TRANSFORMERS							
*T-101	Power Transformer	110 v. pr., 6.3 v. Sec. and 360 v. Sec. C.T.			9		33-A4010-2
T-102	Input Transformer	R.F. Coil Assembly			10		33-5A002-1
TUBES							
*V-101	RF Amplifier	6AC7/1852	6AC7		11	6AC7/1852	33-A0085-1
*V-102	Same as V-101	6AC7/1852	-----				-----
*V-103	Same as V-101	6AC7/1852	-----				-----
*V-104	Same as V-101	6AC7/1852	-----				-----
*V-105	Same as V-101	6AC7/1852	-----				-----
*V-106	Rectifier	6X5GT/G	6X5		11	6X5GT/G	33-A0074-1

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TABLE II (Continued)

<i>Symbol</i>	<i>Function</i>	<i>Description</i>	<i>Navy Type Number</i>	<i>American War Standard or Navy Spec. No.</i>	<i>Mfr.</i>	<i>Mfr's. Desig.</i>	<i>Hoffman Dwg. No.</i>
SOCKETS							
*X-101	Socket for V-101	Octal, Ceramic Retaining Ring and Mounting Plate			1	SS 8 M	33-A7042-1
*X-102	Socket for V-102	Same as -101			-----	-----	-----
*X-103	Socket for V-103	Same as -101			-----	-----	-----
*X-104	Socket for V-104	Same as -101			-----	-----	-----
*X-105	Socket for V-105	Same as -101			-----	-----	-----
*X-106	Socket for V-106	Same as -101			-----	-----	-----
*X-107	Indicator I-101 Socket	Red Jewel Assembly			4	403	33-A0081-1

*For actual quantity of spares furnished refer to Table IV.

TABLE III

PARTS LIST BY NAVY TYPE NUMBERS FOR
TYPE CKB-50172 ANTENNA MULTICOUPLER UNIT

Quantity Used in Each Equipment	Navy Type or American War Standard Number	All Symbol Designations Involved
MISCELLANEOUS — CLASS 10		
2		E-101, E-102
1		I-101
SWITCHES — CLASS 24		
1	-24041	S-101
1		S-102
FUSES — CLASS 28		
1		F-101
TRANSFORMERS — CLASS 30		
1		T-101
1		T-102
VACUUM TUBES — CLASS 38		
5	6AC7	V-101 V-102, V-103, V-104, V-105
1	6X5	V-106
RF CHOKES AND INDUCTORS — CLASS 47		
1		L-101
5		L-102, L-103, L-104, L-105, L-106
1		L-107
1		L-108
QUANTITY USED IN EACH EQUIPMENT		
CAPACITORS — CLASS 48		
10	CM 30A 152 K	C-101, C-102, C-103, C-104, C-105, C-106, C-107, C-108, C-109, C-110
5	CM 20A 501 K	C-111, C-112, C-113, C-114, C-115
2		C-116, C-117
JACKS AND RECEPTACLES — CLASS 49		
5	-49120	J-101, J-102, J-103, J-104, J-105
1	-49065	J-106
SOCKETS — CLASS 49		
6		X-101, X-102, X-103, X-104, X-105, X-106
1		X-107
RESISTORS — CLASS 63		
1	RC 20 BF 680 K	R-117
4	RC 20 BF 101 K	R-102, R-103, R-104, R-105
3	RC 20 BF 201 K	R-101, R-106 R-118,
1	RC 20 BF 561 K	R-119
4	RC 20 BF 102 K	R-107, R-108, R-109, R-110
5	RC 20 BF 152 K	R-111, R-112, R-113, R-114, R-115
1	RC 20 BF 103 K	R-116

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TABLE IV

EQUIPMENT SPARE PARTS LIST BY NAVY TYPE NUMBERS
FOR TYPE CKB-50172 ANTENNA MULTICOUPLER UNIT

Quantity	Navy Type Number	All Symbol Designations Involved	Description	Amer. War Standard or Navy Spec. No.	Mfr.	Manufacturer's Designation	Hoffman Dwg. No.
MISCELLANEOUS — CLASS 10							
2		I-101	Pilot Light 6.3 v. .25 amps.		3		33-A0083-1
SWITCHES — CLASS 24							
1	-24041	S-101	S.P.S.T. (ON-OFF) Toggle Ceramic, Low Capacity Rotary 1 pole-3 position	RE 24AA 118 B	3	1G1A93	33-A6002-1
1		S-102			8		33-A6015-1
FUSES — CLASS 28							
20		F-101	1 amp. 250 volts Fuse Holder and Nut		6	1040	33-A0010-1
1					6	1075 S	33-A0084-1
TRANSFORMERS — CLASS 30							
1		T-101	Power: 110 v. p.F., 6.3 v. Sec., and 360 v. Sec. C. T.		9		33-A4010-2
VACUUM TUBES — CLASS 38							
10	6AC7	V-101, V-102, V-103, V-104, V-105	6AC7/1852		11	6AC7/1852	33-A0085-1
2	6X5	V-106	6X5GT/G		11	6X5GT/G	33-A0074-1
INDUCTORS — CLASS 47							
1		L-101	15 H. 75 mils. Smoothing Choke		9		33-A4011-1
CAPACITORS—CLASS 48							
3	CM 30 A 152K	C-101, C-102, C-103, C-104, C-105, C-106, C-107, C-108, C-109, C-110	.0015 mfd. ± 10% 500 v. Mica	C 75.3	2		33-A3025-1

TABLE IV (Continued)

Quantity	Navy Type Number	All Symbol Designations Involved	Description	Amer. War Standard or Navy Spec. No.	Mfr.	Manufacturer's Designation	Hoffman Dwg. No.
CAPACITORS — CLASS 48 (Continued)							
1	CM 20 A 501 K	C-111, C-112, C-113, C-114, C-115	.0005 mfd. ± 10% 500 v. Mica	C75.3	2	5 S	33-A3008-1
1		C-116, C-117	4 mfd. 600 v. Oil paper		5	CIE 5070	33-A3014-1
SOCKETS — CLASS 49							
3		X-101, X-102, X-103, X-104, X-105, X-106	Octal Ceramic, Retaining Ring and Mounting Plate		1	SS 8M	33-A7042-1
1		X-107	Red Jewel Indicator Assembly		4	403	33-A0081-1
JACKS AND RECEPTACLES — CLASS 49							
3	-49120	J-101, J-102, J-103, J-104, J-105	Coaxial Chassis Coupler		7		33-A7044-1
1	-49065	J-106	AC Chassis Plug Assembly	RE 49AA 122	15		33-A7014-1
PLUGS — CLASS 49							
1	-49071A		AC Input Plug		15		33-A7012-2
3	-49121A		Coaxial Plug		7		33-A7045-1
RESISTORS — CLASS 63							
2	RC 20 BF 201 K	R-101, R-118, R-106	200 ohms ± 10% ½ W. Comp.	C75.7	14		33-A1020-1
2	RC 20 BF 101 K	R-102, R-103, R-104, R-105	100 ohms ± 10% ½ W. Comp.	C75.7	14		33-A1003-1
2	RC 20 BF 102 K	R-107, R-108, R-109, R-110	1000 ohms ± 10% ½ W. Comp.	C75.7	14		33-A1022-1
3	RC 20 BF 152 K	R-111, R-112, R-113, R-114, R-115	1500 ohms ± 10% ½ W. Comp.	C75.7	14		33-A1019-1
1	RC 20 BF 103 K	R-116	10000 ohms ± 10% ½ W. Comp.	C75.7	14		33-A1021-1
1	RC 20 BF 680 K	R-117	70 ohms ± 10% ½ W. Comp.	C75.7	14		33-A1056-1
1	RC 20 BF 561 K	R-119	560 ohms ± 10% ½ W. Comp.	C75.7	14		33-A1057-1

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TABLE V

STOCK SPARE PARTS LIST BY NAVY TYPE NUMBERS
FOR TYPE CKB-50172 ANTENNA MULTICOUPLER UNIT

Quantity	Navy Type Number	All Symbol Designations Involved	Description	Amer. War Standard or Navy Spec. No.	Mfr.	Manufacturer's Designation	Hoffman Dwg. No.
MISCELLANEOUS — CLASS 10							
6	I-101		Pilot Light 6.3 v. .25 amp.		3		33-A0083-1
SWITCHES — CLASS 24							
1	-24041	S-101	SPST (ON-OFF) Toggle	RE 24 AA 118 B	3	1GAI1A93	33-A6002-1
1		S-102	Ceramic Low Capacity Rotary 1 pole-3 position		8		33-A6015-1
FUSES CLASS 28							
100		F-101	1 amp. 250 volts		6	1040	33-A0010-1
1			Fuse holder and nut		6	1075 S	33-A0084-1
TRANSFORMERS — CLASS 30							
3		T-101	Power: 110 v. 6.3 v. Sec., 360 v. Sec., C.T.		9		33-A4010-2
1		T-102	R.F. Coil Assembly		10		33-A5002-1
INDUCTORS — CLASS 47							
3		L-101	15 H. 75 mils smoothing choke		9		33-A4011-1
1		L-102	R. F. Choke		12		33-A5006-1
4		L-103, L-104, L-105, L-106	R. F. Choke		12		33-A5005-1
1		L-107	Peaking Coil, 100 ohms, reactance 25 mc.		10		33-5A004-1
1		L-108	Peaking Coil, 300 ohms reactance 20 mc.		10		33-5A003-1

TABLE V (Continued)

Quantity	Navy Type Number	All Symbol Designations Involved	Description	Amer. War Standard or Navy Spec. No.	Mfr.	Manufacturer's Designation	Hoffman Dwg. No.
CAPACITORS — CLASS 48							
15	CM 30 A 152 K	C-101, C-102, C-103, C-104, C-105, C-106, C-107, C-108, C-109, C-110	.0015 mfd. \pm 10% 500 v. Mica	C75.3	2		33-A3025-1
5	CM 20 A 501 K	C-111, C-112, C-113, C-114, C-115	.0005 mfd. \pm 10% 500 v. Mica	C75.3	2	5 S	33-A3008-1
5		C-116, C-117	4 mfd. 600 v. Oil Paper		5	CIE 5070	33-A3014-1
SOCKETS — CLASS 49							
6		X-101, X-102, X-103, X-104, X-105, X-106	Octal, Ceramic, Retaining Ring and Mounting Plate		1	SS 8 M	33-A7042-1
1		X-107	Red Jewel Indicator Assembly		4	403	33-A0081-1
JACKS AND RECEPTACLES — CLASS 49							
10	-49120	J-101, J-102, J-103, J-104, J-105	Coaxial Chassis Coupler		7		33-A7044-1
2	-49065	J-106	AC Chassis Plug Assembly	RE 49 AA 122	15		33-A7014-1
2	-49071A		AC Input Plug		15		33-A7012-2
10	-49121A		Coaxial Plug		7		33-A7045-1
RESISTORS — CLASS 63							
8	RC 20 BF 201 K	R-101, R-106, R-118	200 ohms \pm 10% $\frac{1}{2}$ W. Comp.	C75.7	14		33-A1020-1
10	RC 20 BF 101 K	R-102, R-103, R-104, R-105	100 ohms \pm 10% $\frac{1}{2}$ W. Comp.	C75.7	14		33-A1003-1
10	RC 20 BF 103 K	R-107, R-108, R-109, R-110	1000 ohms \pm 10% $\frac{1}{2}$ W. Comp.	C75.7	14		33-A1022-1
13	RC 20 BF 152 K	R-111, R-112, R-113, R-114, R-115	1500 ohms \pm 10% $\frac{1}{2}$ W. Comp.	C75.7	14		33-A1019-1
3	RC 20 BF 103 K	R-116	10,000 ohms \pm 10% $\frac{1}{2}$ W. Comp.	C75.7	14		33-A1021-1
3	RC 20 BF 680 K	R-117	70 ohms \pm 10% $\frac{1}{2}$ W. Comp.	C75.7	14		33-A1056-1
3	RC 20 BF 561 K	R-119	560 ohms \pm 10% $\frac{1}{2}$ W. Comp.	C75.7	14		33-A1057-1

RESTRICTED

TABLE VI

LIST OF MANUFACTURERS

<i>Code Number</i>	<i>Manufacturer's Prefix</i>	<i>Name and Address</i>
1	CPH	American Phenolic Corp. 1830 S. 54th Ave., Chicago, Illinois
2	CD	Cornell-Dubilier Electric Corp. 333 Hamilton Blvd., South Plainfield, New Jersey
3	CG	General Electric Supply Co. 700 Turner Street, Los Angeles, California
4		Gothard Mfg. Co. 1300 N. 9th St., Springfield, Illinois
5	CIE	Industrial Condenser Corp. 1724 West North Ave., Chicago, Illinois
6		Littlefuse Company 200 Ong Street, El Monte, California
7		National Electric Corp. 2014 Fifth St., N. E. Washington 2, D. C.
8	COC	Oak Mfg. Company 1260 Clybourn Ave., Chicago, Illinois
9	CPU	Peerless Electric Products Corp. 6920 McKinley Ave., Los Angeles, California
10		Precision Radio Products 8312 S. Broadway, Los Angeles, California
11	CRC	R.C.A. Radiotron Division R.C.A. Mfg. Corp., Inc. Harrison, New Jersey
12	CJJ	Sound Equipment Corp. 6245 Lexington Ave., Los Angeles, California
13		Sta-Hi Screw Corp. 1020 Crocker St., Los Angeles, California
14	CSA	The Stackpole Carbon Co. St. Mary's, Pennsylvania
15	CAGY	Walter L. Schott Co. 9306 Santa Monica Blvd., Beverly Hills, California

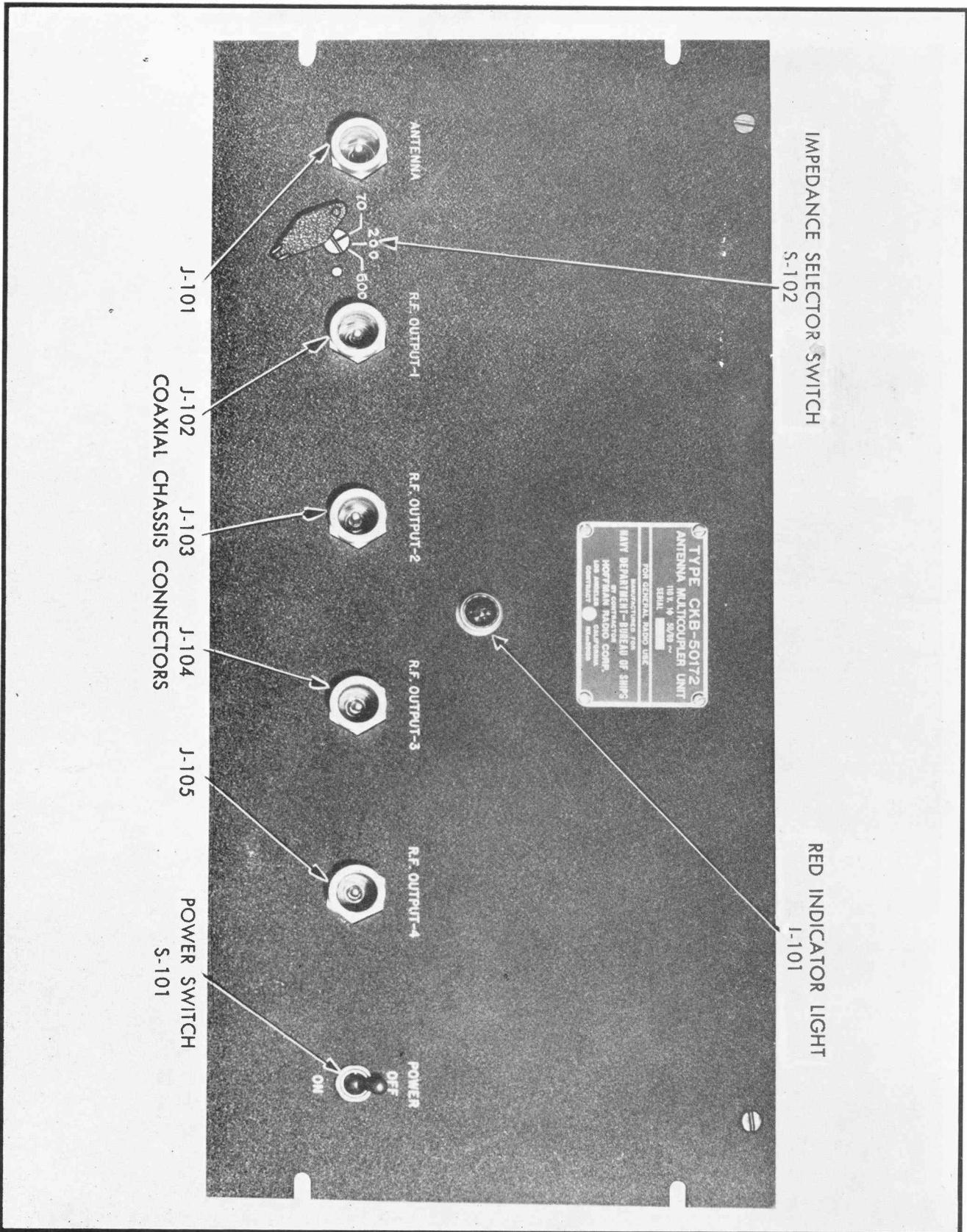


Figure 1—Type CKB-50172 Antenna Multicoupler Unit, Front Panel View.

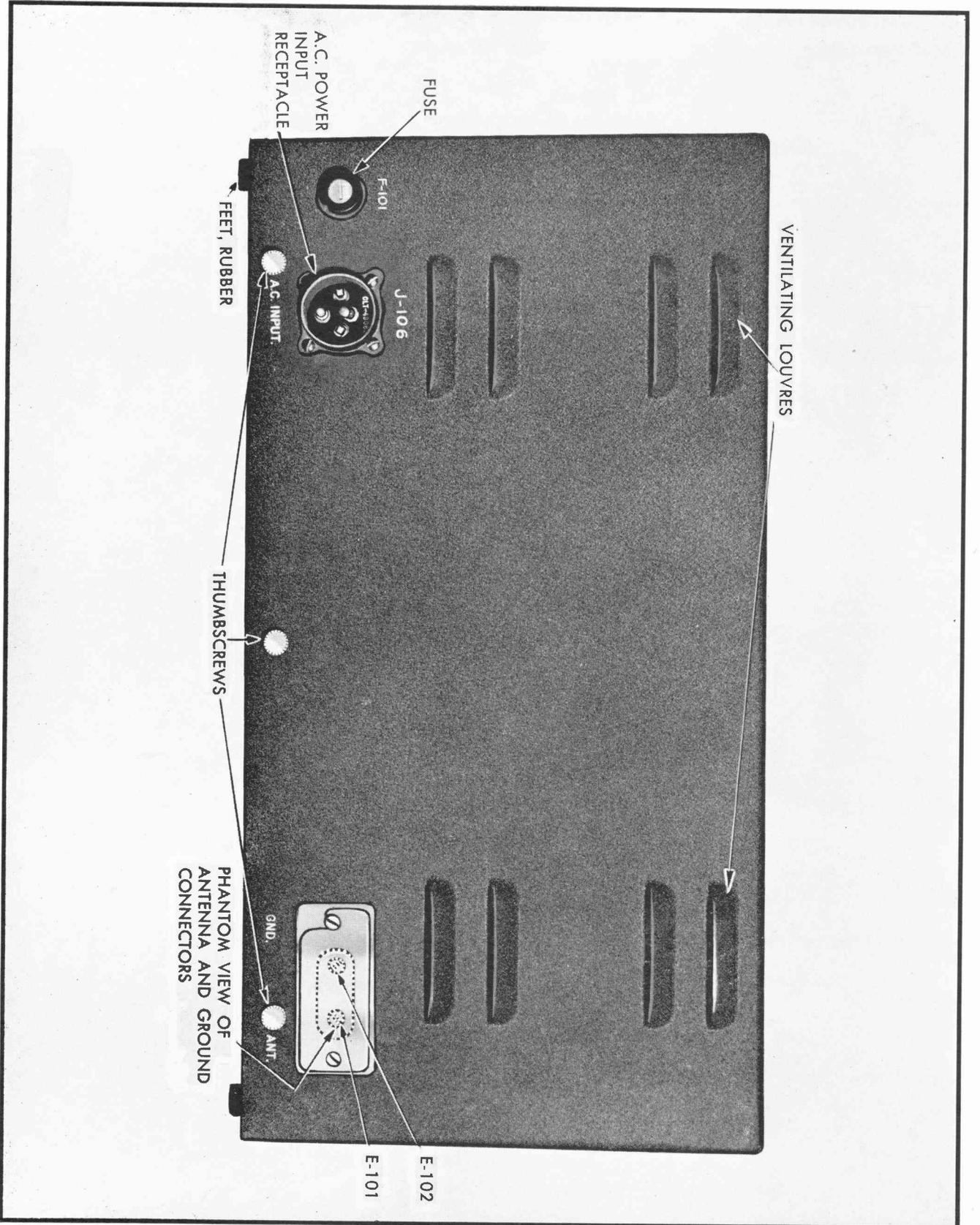


Figure 2—Type CKB-50172 Antenna Multicoupler Unit, Rear View of Dust Cover.

BLOCKING AND BY-PASS CONDENSERS
REFER TO TABLE II

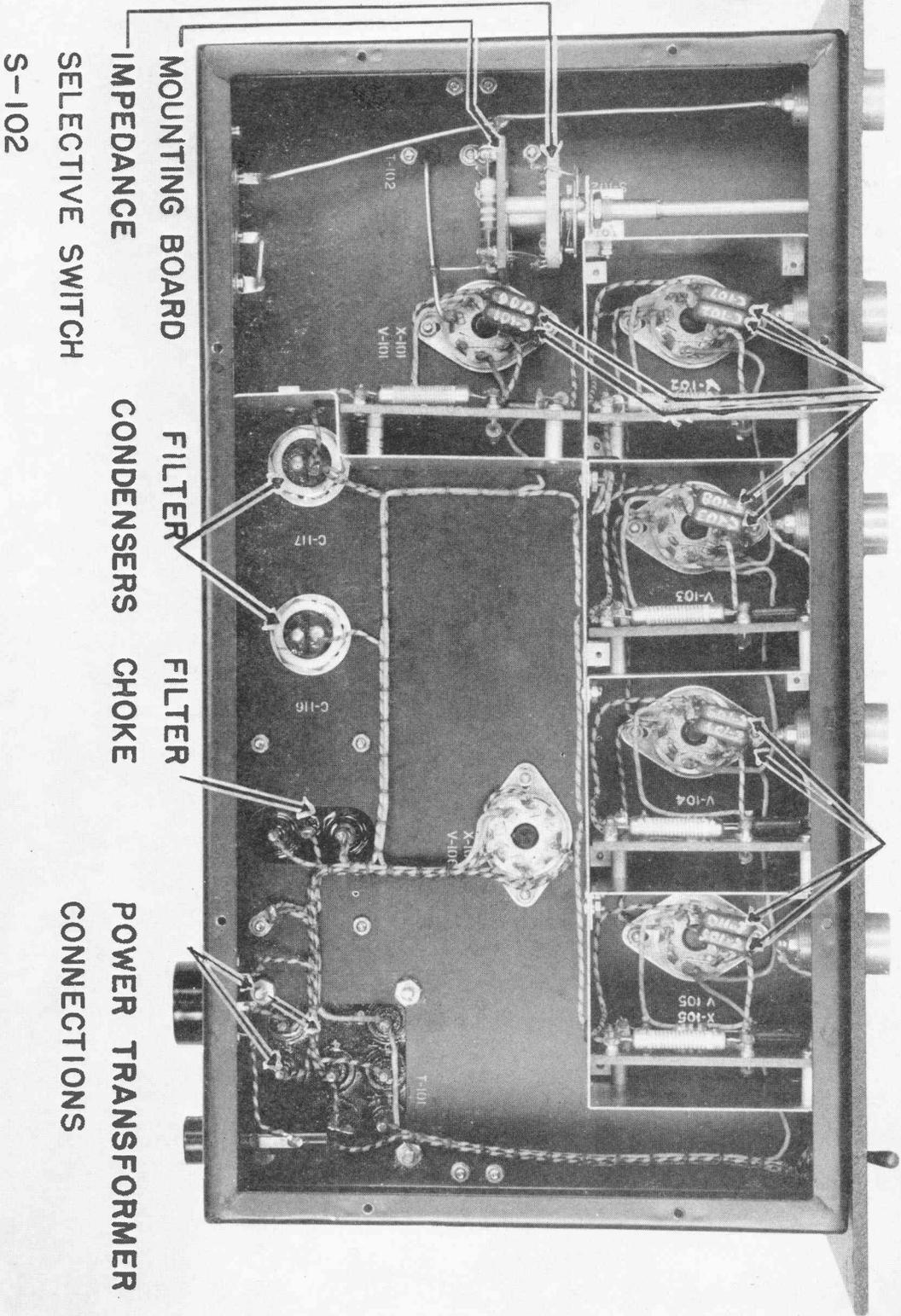


Figure 3—Type CKB-50172 Antenna Multicoupler Unit, View of Underside of Chassis.

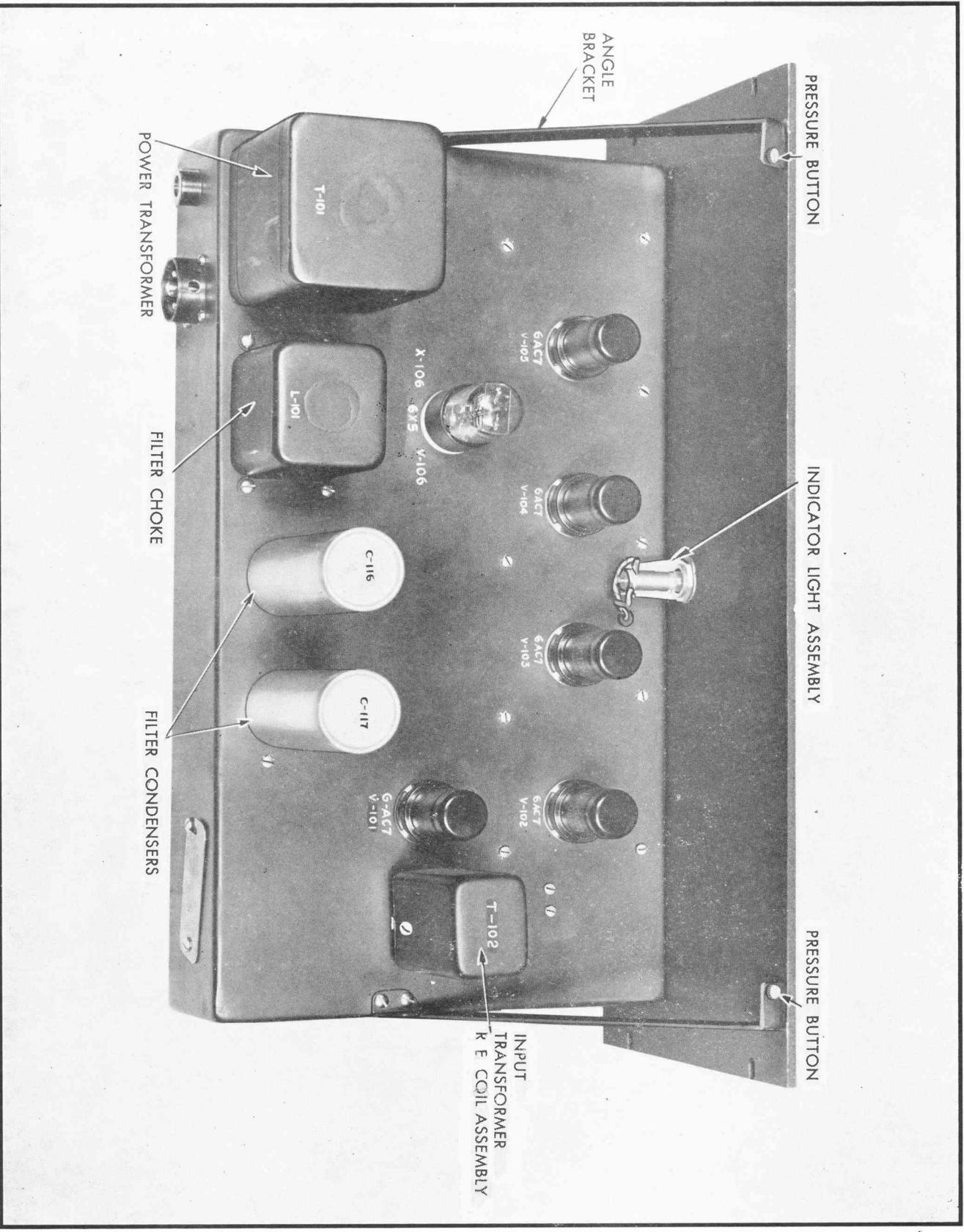
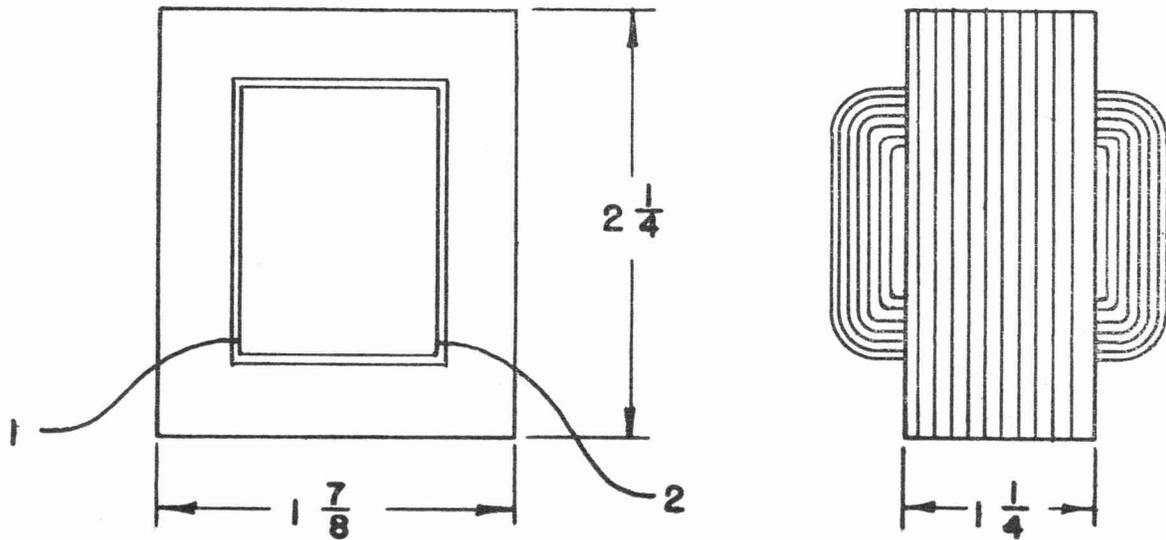


Figure 4—Type CKB-50172 Antenna Multicoupler Unit, View of Top of Chassis.

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FILTER CHOKE, PEERLESS ELECTRIC No. 13598 OR EQUAL

Winding tube— $\frac{3}{4}$ " x $1\frac{1}{4}$ " x $1\frac{3}{32}$ "; 4 layers .007 Kraft paper; 1 layer .003 varnished paper.

Coil data—4000 turns No. 34 enamel wire, 36 layers.

Layer insulation—1 layer No. 20 Glassine.

Coil wrapper—2 layers .005 gummed Red Rope.

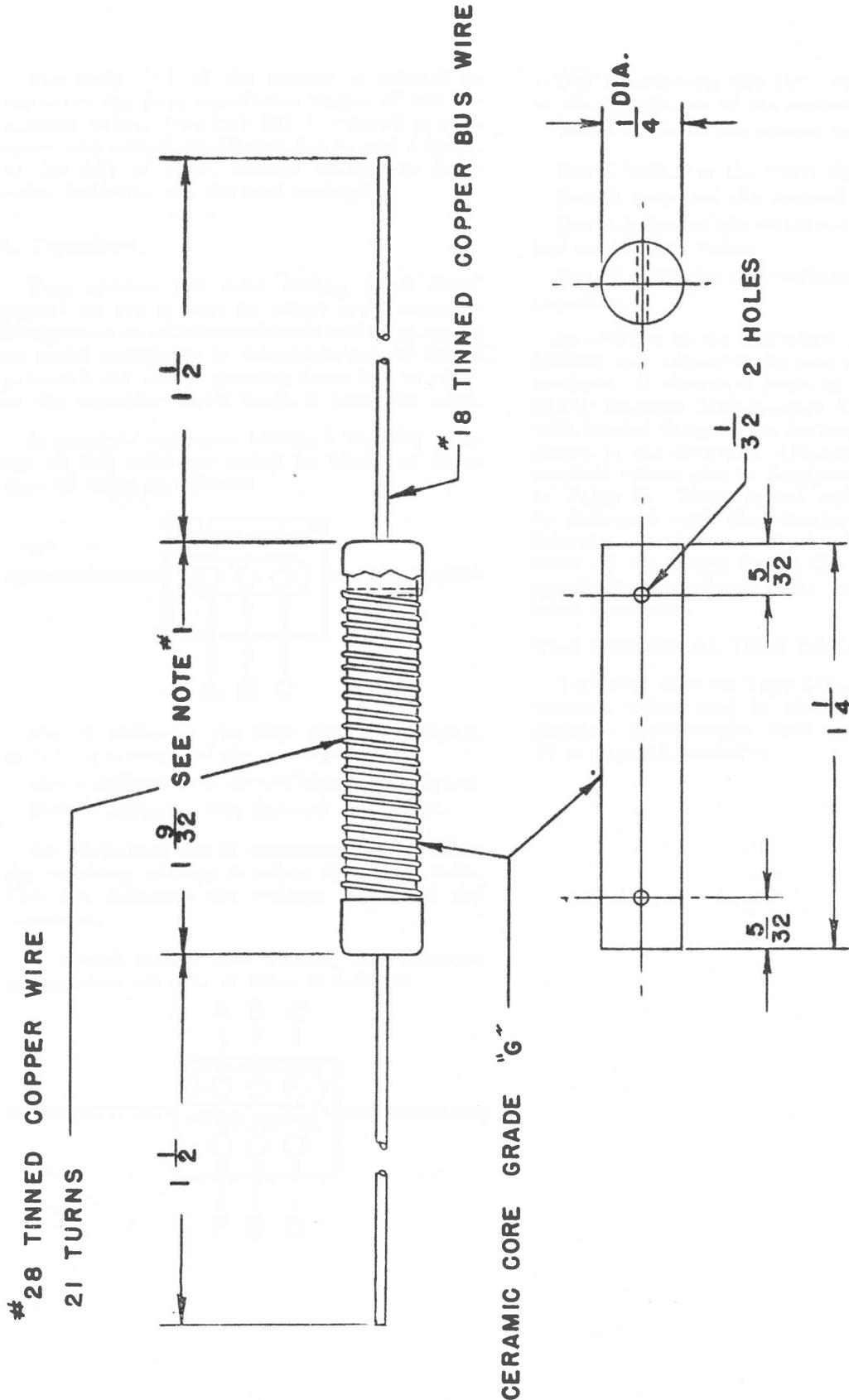
Impregnation—Prebake four hours at 250°

Fahrenheit, vacuum treat with Harvel No. 612-C and bake at 250° Fahrenheit for eight hours.

Potting—After assembly, bake choke two hours at 230° Fahrenheit; then fill while hot with Robertson RP-417 asphalt. Solder shut and Glyptal terminals for hermetic seal.

Tests—1500 volts winding to ground minimum, 12 henries at .075 amperes, 450 ohms D.C. resistance.

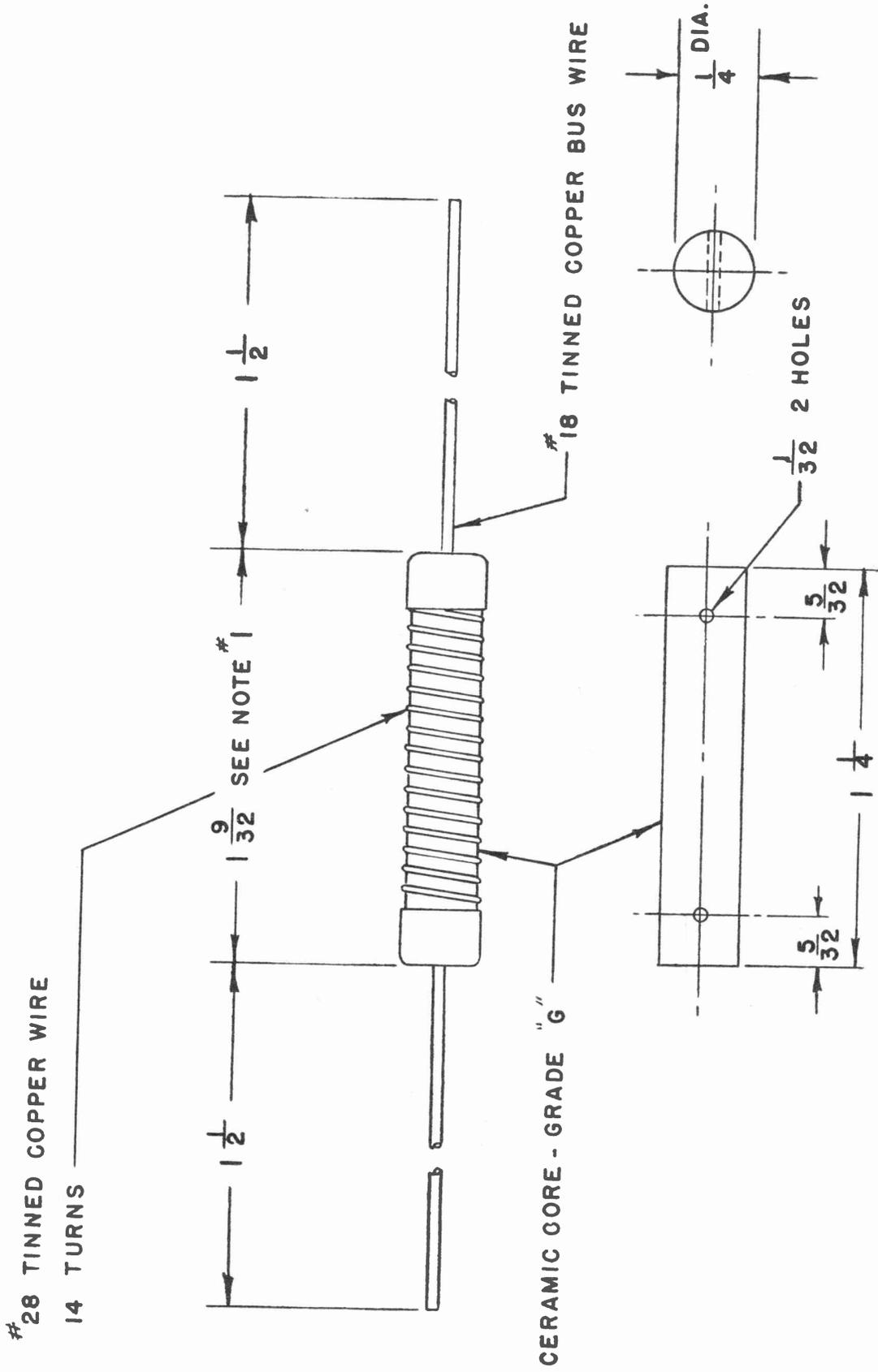
Figure 5—Coil Winding Data, Filter Choke L-101.



10 megacycles.
 $Q=82 \pm 10\%$ as measured on Boonton Radio Corp Q meter, type 160A; Serial No. 499.

1. Dip in Insul-X-Type No. 85 or 67 (clear) 1 9/32" length only.
2. Inductance, .825 \pm 5% microhenries at

Figure 6—Coil Winding Data, Peaking Coil L-102.



1. Dip in Insul-X-Type No. 85 or 67 (clear) 12 megacycles.
1 9/32" length only.
2. Inductance, .406 ± 5% microhenries at Q=70 ± 10% as measured on Boonton Radio Corp. Q meter, type 160A; Serial No. 499.

Figure 7—Coil Winding Data, Peaking Coils L-103, L-104, L-105, L-106.

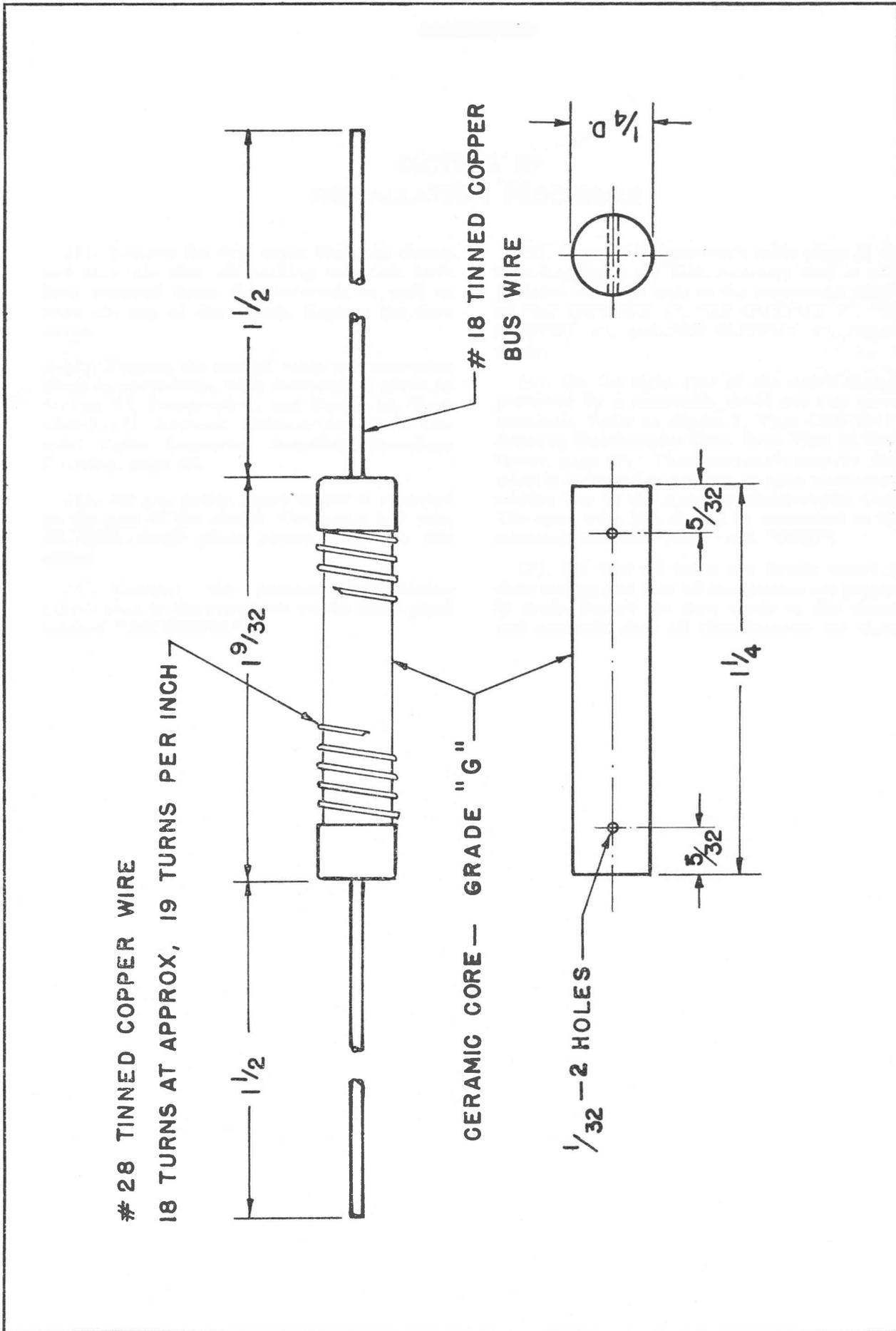
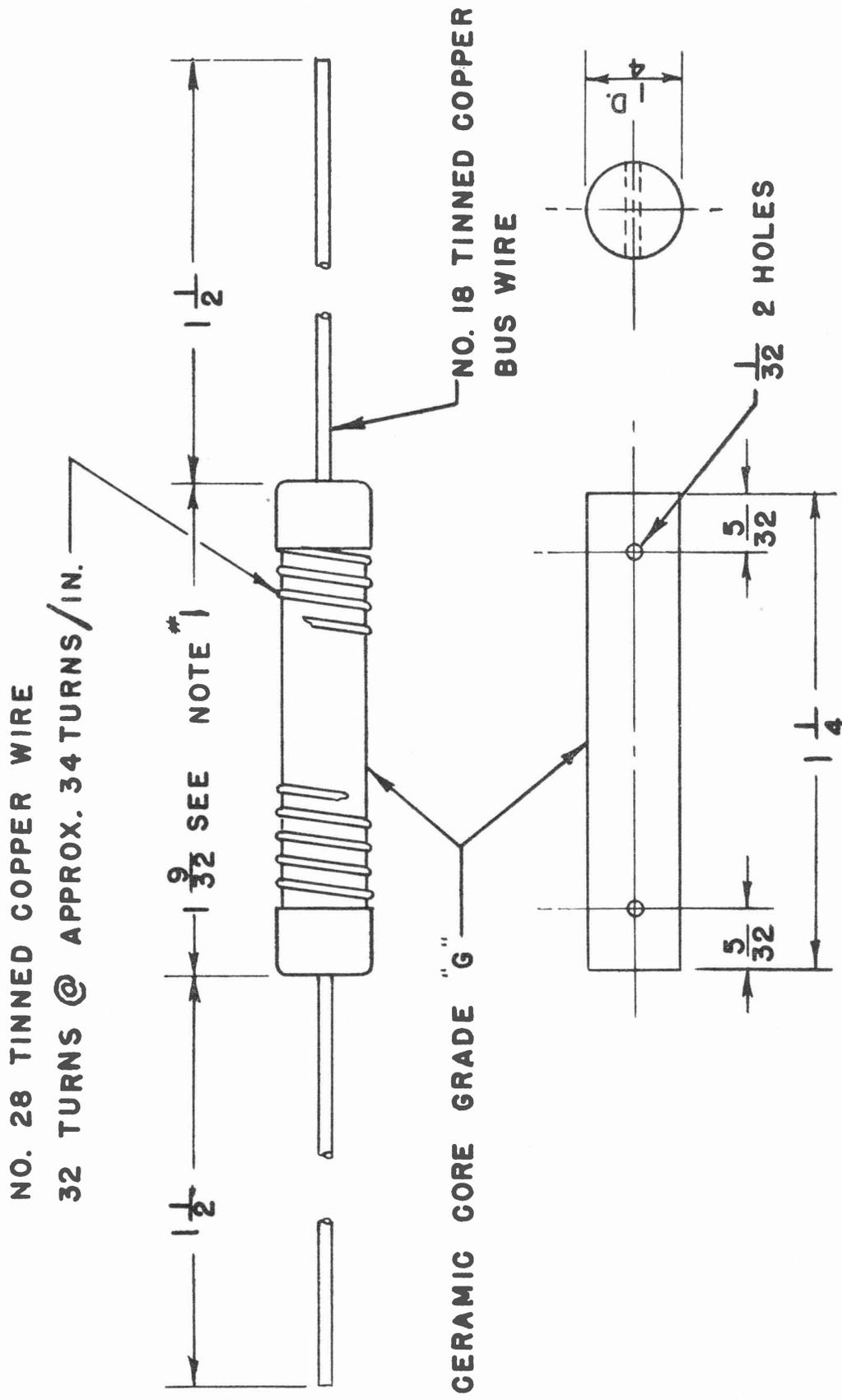


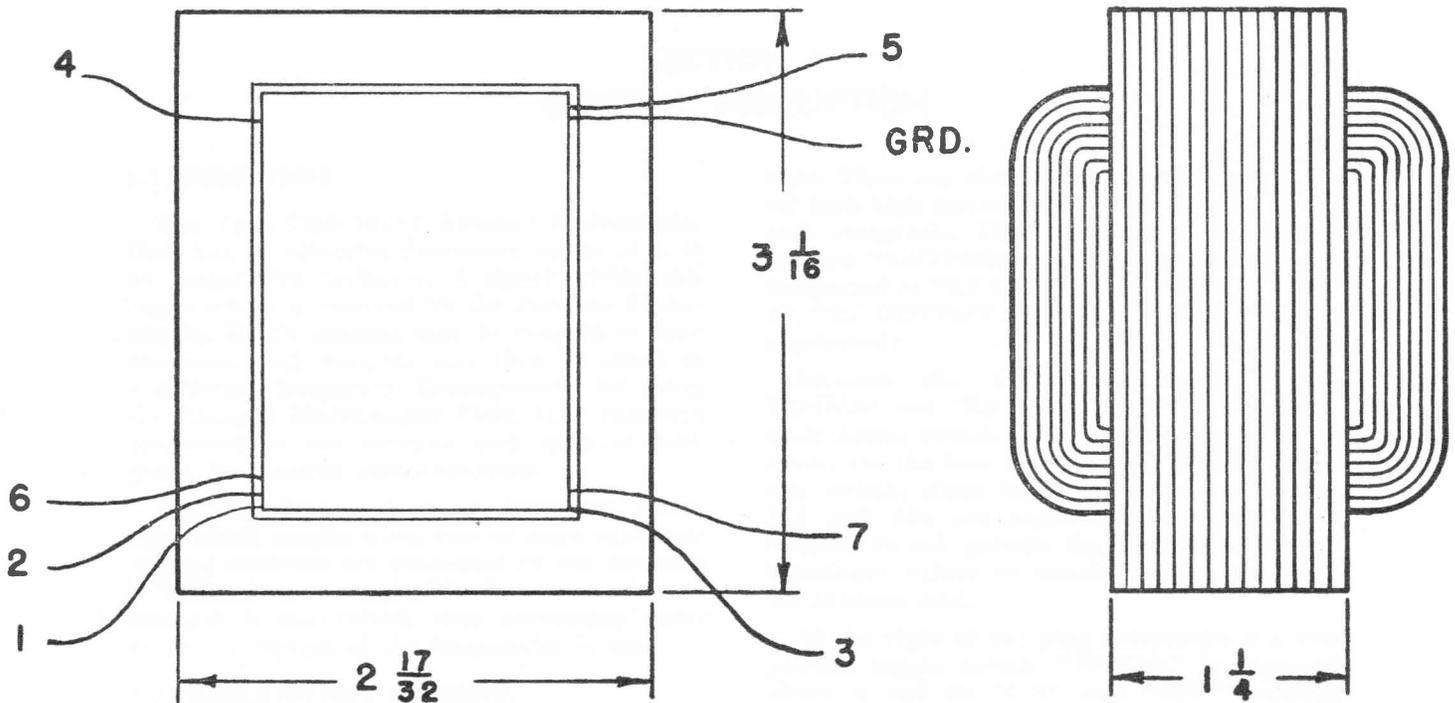
Figure 8—Coil Winding Data, Peaking Coil L-107.

1. Dip in Insul-X-Type No. 85 or 67 (clear) 25 megacycles.
1 9/32" length only. $Q=95 \pm 10\%$ as measured on Boonton Radio Corp. Q Meter, type 160A; Serial No. 499.
2. Inductance, .636 \pm 5% microhenries at



1. Dip in Insul-X-Type No. 85 or 67 (clear) 20 megacycles.
1 9/32 inch length only.
2. Inductance, 1.91 ± 5% microhenries at Q=109 ± 10% as measured on Boonton Radio Corp. Q meter, type 160 A; Serial No. 499.

Figure 9—Coil Winding Data, Peaking Coil L-108.



POWER TRANSFORMER, PEERLESS ELECTRIC No. 5286 OR EQUAL

- Primary winding—115 volts 50/60 cycles.
- Secondary winding—360 volts C.T. .075 amps. D.C.
- Filament winding—6.3 volts 3.25 amps.

CONSTRUCTION DATA

- Winding tube—1" x 1 1/4" x 1 1/2"; 6 layers .007 Kraft paper; 1 layer .003 varnished paper.
- Secondary winding—1820 turns No. 34 enameled wire tapped at 910 turns, 12 layers total; layer insulation No. 20 Glassine.
- Coil wrapper—1 layer .003 varnished paper; 4 layers No. 50 Glassine.
- Electronic shield—1 layer copper .003 x 4 3/16".
- Shield wrapper—1 layer .003 varnished paper; 4 layers No. 50 Glassine.
- Primary winding—540 turns No. 25 enameled wire, 9 layers; layer insulation No. 50 Glassine.
- Coil wrapper—2 layers .005 gummed Armite.
- Filament winding—32 turns of double No. 20

enameled wire; 2 layers; layer insulation, .005 Armite.

Coil wrapper—2 layers .005 gummed Red Rope.

Laminations—1" wasteless lamination Peerless EI-100 1 1/4" stack No. 24 gauge dynamo silicon steel, interleaved two by two.

Impregnation—Prebake four hours at 250° Fahrenheit, vacuum treat with Harvel No. 612-C varnish and bake at 250° Fahrenheit for eight hours.

Potting—After assembly, bake transformer two hours at 230° Fahrenheit; then fill while hot with Robertson RP-417 asphalt. Solder shut and Glyptal terminals for hermetic seal.

No load test—115 volts primary. 388 volts plate winding C.T. 6.81 volts filament.

Induced voltage test—250 volts, 500 cycles for 1/2 minute between C.T. and end of plate winding (terminals 4 and 5)

Ground test—2000 volts to ground, all windings.

Figure 10—Coil Winding Data, Power Transformer T-101.

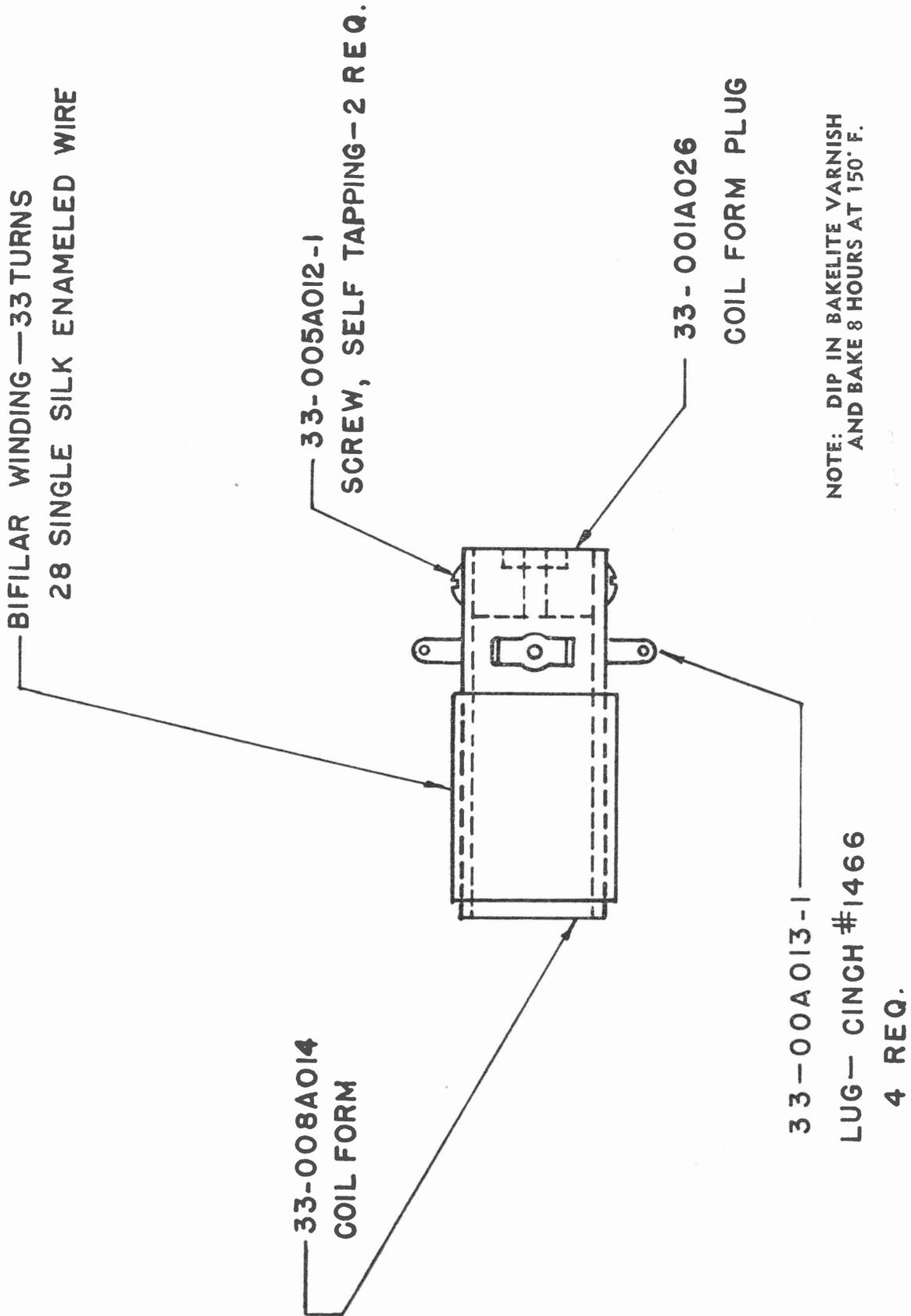
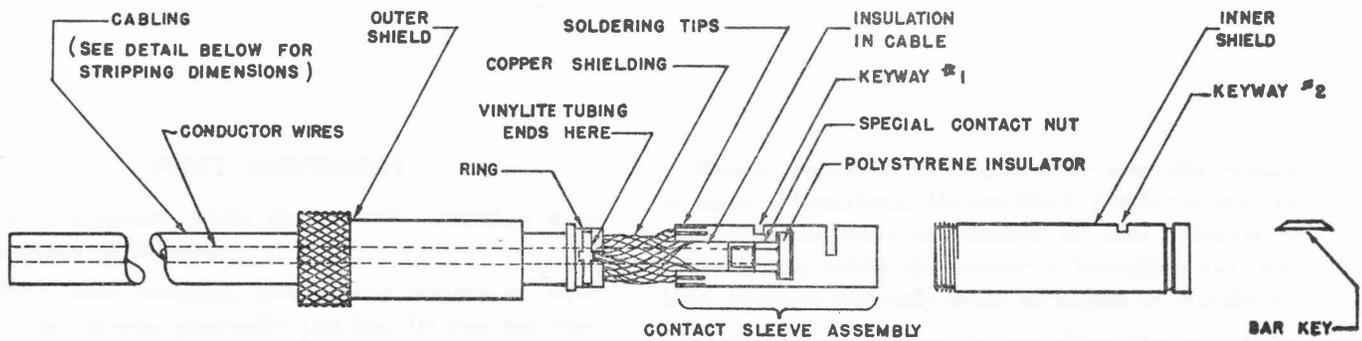
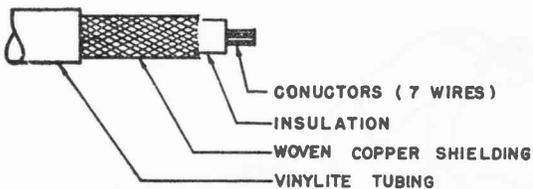


Figure 11—Coil Assembly Data, R.F. Coil Assembly T-102.

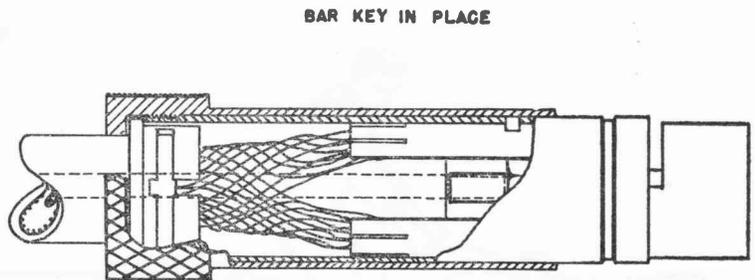
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ASSEMBLY PROCEDURE
REFERENCE VIEW FOR ASSEMBLING INSTRUCTIONS



CABLE DETAIL
AFTER STRIPPING



ENLARGED BREAKAWAY VIEW AFTER ASSEMBLY

TOOLS REQUIRED

- Soldering Iron (75 to 125 watts)
- Solder (Rosin core)
- 2 Spin-tite Wrenches (1/4")
- Pen Knife (For stripping cable)

Assembly Procedure

1. Cut required length of cable and strip one end to dimensions shown in Cable Detail.
2. Tin cable CONDUCTOR ends and exposed portion of COPPER SHIELDING to prevent fraying.
3. Disassemble CONNECTOR PLUG by unscrewing OUTER SHELL and withdraw BAR KEY to enable INNER SHELL to be removed.
4. Put OUTER SHELL and FRICTION RING on cable as indicated.

5. Remove hollow CENTER PIN from CONTACT SLEEVE ASSEMBLY using the SPIN-TITE wrenches for the SPECIAL CONTACT NUT and solder the CONDUCTOR wires into the centerbore of the CENTER PIN.

DO NOT APPLY HEAT TO THE POLYSTYRENE INSULATOR SURROUNDING THE CENTER PIN.

6. Replace CENTER PIN in CONTACT SLEEVE ASSEMBLY. Bend the two CENTER SOLDERING TIPS on each side of the CONTACT-SLEEVE inward, until they press firmly on the tinned COPPER SHIELDING, and solder.

7. Slide INNER SHIELD over CONTACT ASSEMBLY and align KEYWAY 1 with KEYWAY 2. Insert BAR KEY.

8. Slide OUTER SHIELD over INNER SHIELD and secure.

Figure 12—Type CKB-50172, Antenna Multicoupler Unit, Coaxial Connector Assembly Procedure.

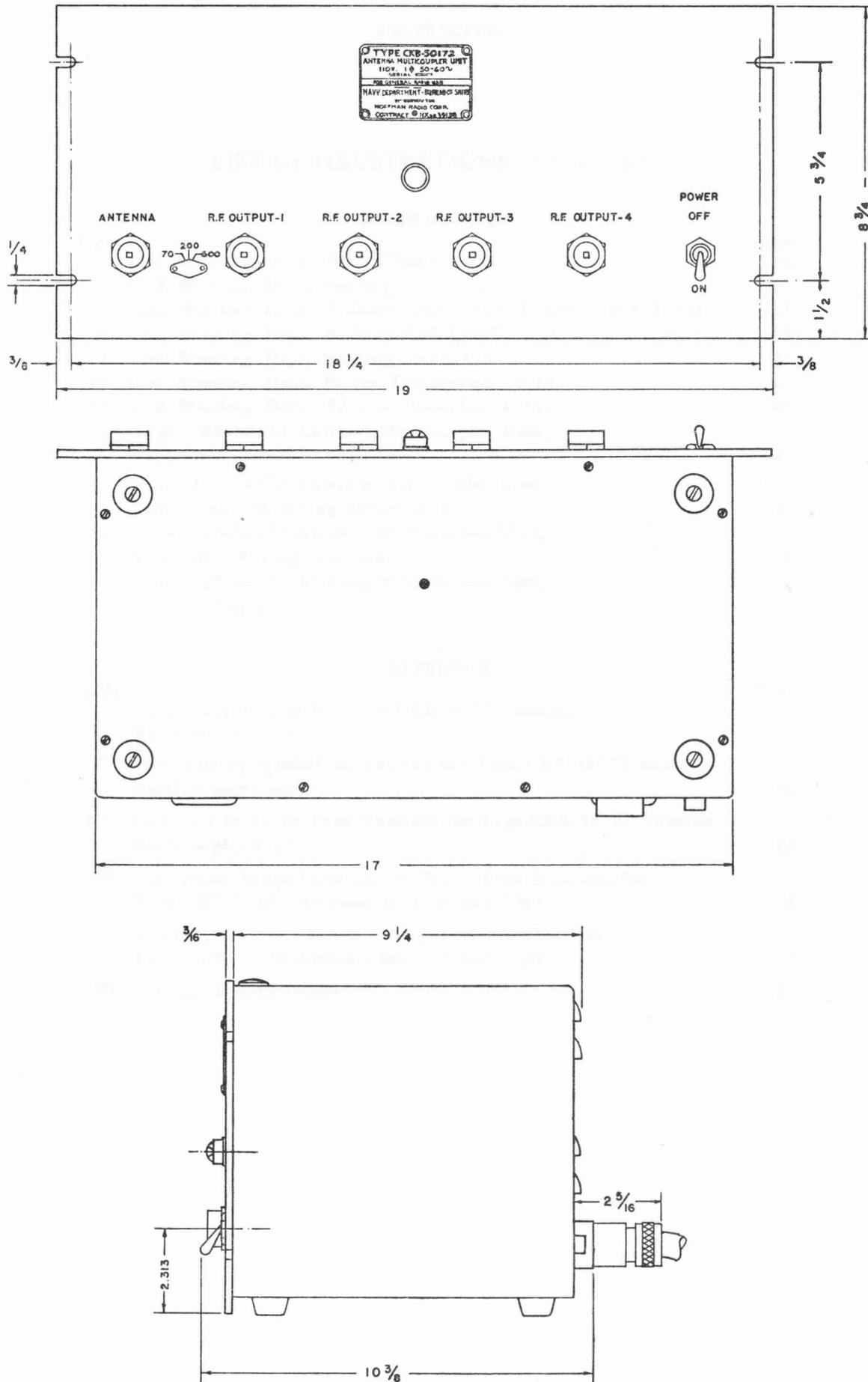


Figure 13—Type CKB-50172. Antenna Multicoupler Unit, Outline and Mounting Dimensions

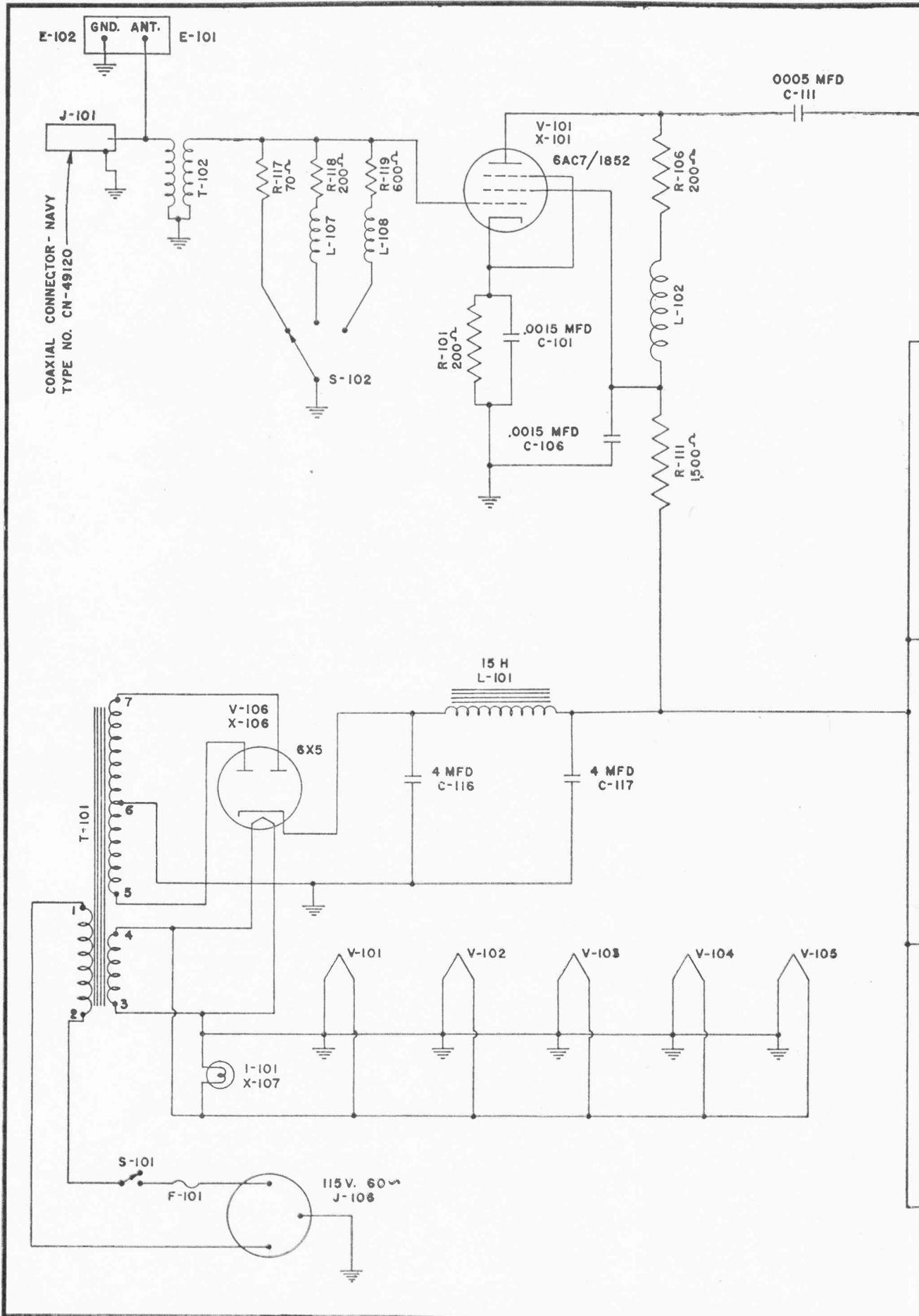
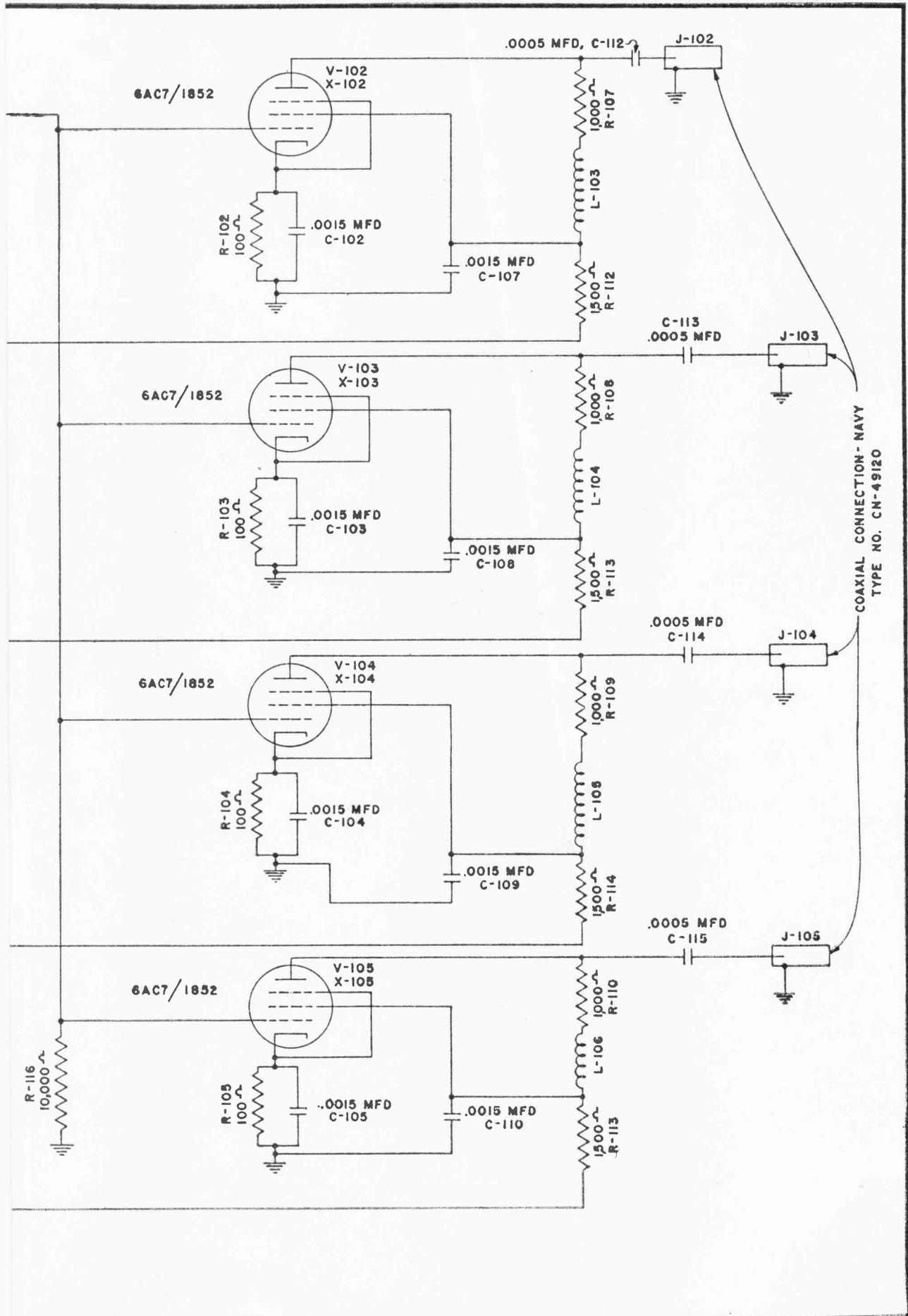
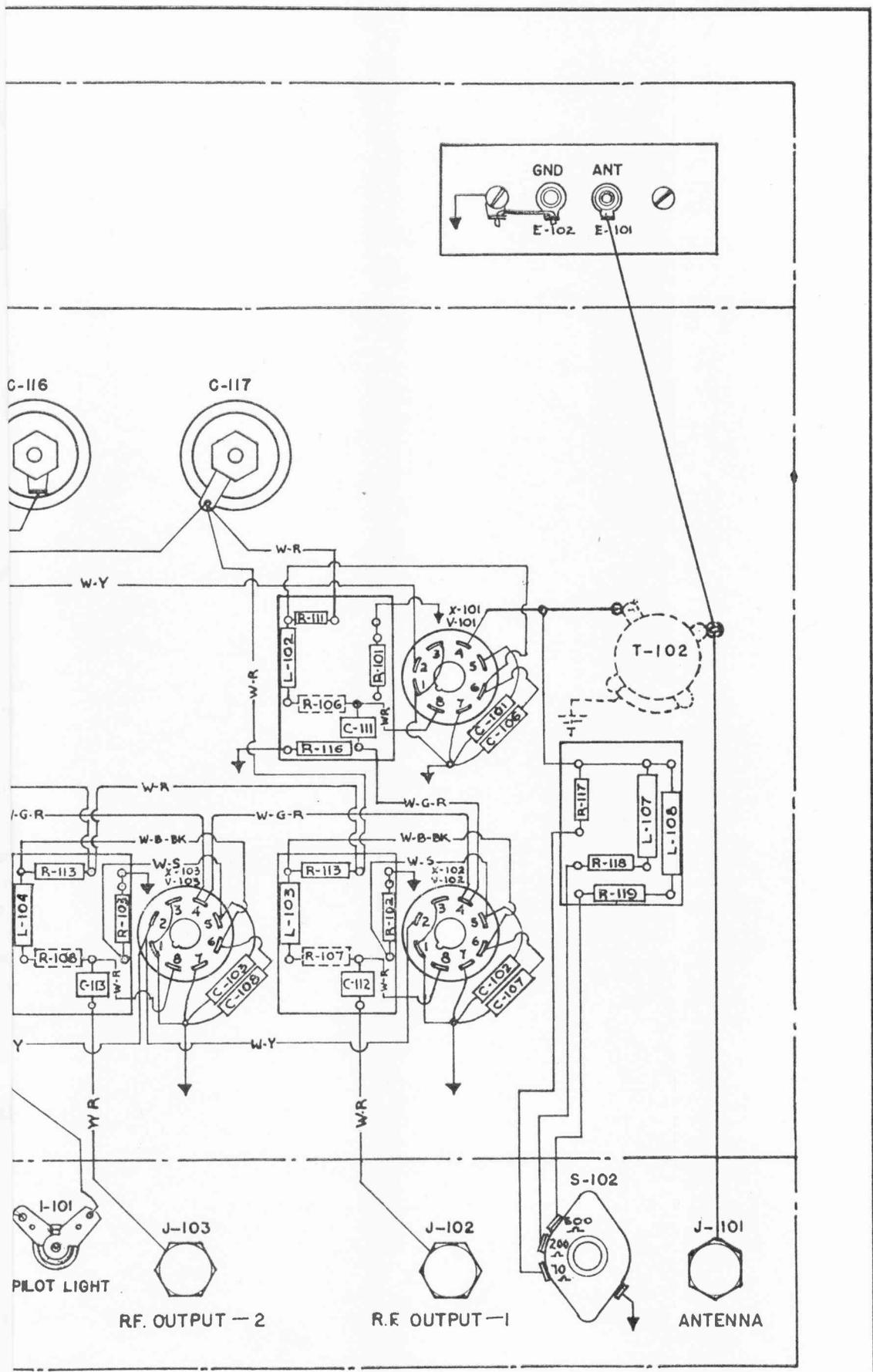


Figure 14—Type CKB-50172 Antenna Multicoupler



er Unit, Schematic Wiring Diagram.



-Green R—Red S—Slate W—White Y—Yellow
 Antenna Multicoupler Unit, Wiring Diagram.