RESTRICTED

INSTRUCTION BOOK

for

NAVY TYPE MS RADIO TRANSMITTING AND RECEIVING EQUIPMENT

Contract No. NXs-10825 Date: August 8, 1942

"This instruction book is furnished for the information of commissioned, warrant, enlisted and civilian personnel of the Navy whose duties involve design, instruction, operation and installation of radio and sound equipment. The word "RESTRICTED" as applied to this instruction book signifies that this instruction book is to be read only by the above personnel, and that the contents of it should not be made known to persons not connected with the Navy."

Manufactured for U. S. Navy Department, Bureau of Ships

by

ABBOTT INSTRUMENT, INC.

8 West 18th Street

New York City

INSTALLATION INSTRUCTIONS

COA-43027 - - - - TRANSMITTER-RECEIVER
COA-20165 - - - - POWER UNIT
COA-66066 - - - - ANTENNA
COA-51037 - - - - MICROPHONE

Install antenna as per instruction sheet for COA-66066 antenna.

Open back door of COA-43027 transmitter-receiver and carefully remove packing on top of tubes.

Be sure the clips are still attached to the HY-615 and HY-75 tubes. Then close back door. Remove card on side of case and install 3 volt battery which is mounted in bracket, as per figure (1 & 2) which shows method of mounting. (Battery with bracket attached will be found in spare parts box).

Connect six prong round plug into back of COA-43027 transmitter-receiver as per picture and connect yellow bakelite strip marked "3V+ and - to three volt battery which should be mounted on side of cabinet as shown in figure (1 & 2). Then connect small square four prong plug to COA-20165 power unit. Select proper line cord as shown on picture of COA-20165 power unit and connect large four prong female plug to power unit and other end to six volt battery or to 110 volt AC line as the case may be.

Be sure center slotted head switch is in proper position to the left when power supply is operated from six volt battery and to the right when power unit is operated from 110 volts AC line.

OPERATION (Receiver)

After connecting up all units as per installation instructions, throw switch on power unit to ON position and throw switch on transmitter-receiver unit which is on REGEN control to ON position and turn REGEN knob to about 25 on the dial. Turn knob marked VOLUME to about 90° on the dial.

Turn bottom left switch to RECEIVE position.

Set top right knob to either maximum coupling or within one or two divisions of maximum.

Then adjust REGEN CONTROL to about 25° on dial so that a rushing sound just starts to be heard in the speaker. Then advance REGEN CONTROL about one or two degrees further up on the dial. This will be found to be the most sensitive point for reception.

When strong signals are received, the rushing sound will disappear; when weak signals are received, some of the rush will remain.

In receiving signals, tuning is done with silver dial marked RECEIVER and slight adjustments made with REGEN CONTROL.

On the Receiver dial, 72.5MC will be found at approximately 39° on the dial; 80MC at approximately 26° on the dial; and 60°MC at approximately 77° on the dial.

RECEIVER CHECKING:

If desired, the receiver can be checked further by inserting a 100 MA DC meter attached to a phone plug into jack marked MOD in receive position the meter will read approximately 40 MA if the REGEN control is advanced beyond 25 on the dial, the current in the meter will climb to about 60 MA.

OPERATION (TRANSMITTER):

Insert microphone plug into first jack on the left bottom marked MIC. TURN left bottom switch to TRANSMIT.

Then set silver dial marked TRANSMITTER to frequency it is desired to operate on. For operation on 72.5 MC, the transmitter dial should be set at approximately 34° ; 80 MC at approximately 16° on the dial; 60 MC at approximately 83° on the dial. The silver dial once set to the desired frequency should not be turned while transmitting.

After following the above instructions, press the button on the microphone and talk into the microphone at a distance of about 1/2 inch. While transmitting and receiving, the knob marked VOLUME can be set at between 90-100 and left there.

After contact is established with other station, it is only necessary to turn left bottom switch from transmit to receive as necessary.

When through using transmitter-receiver, be sure to throw switch on REGEN to OFF position and switch on power supply to OFF position.

TRANSMITTER CHECKING:

The 100 MA DC meter can also be used to further check the transmitter if necessary. Plug into jack marked oscillator; with the transmitter functioning properly, the meter will read from 50 MA to approximately 70 MA.

Plug meter into jack marked MOD and meter should read approximately 40 MA.

Talk into microphone and the current will rise to about 55 MA on peaks.

MICROPHONE BATTERY:

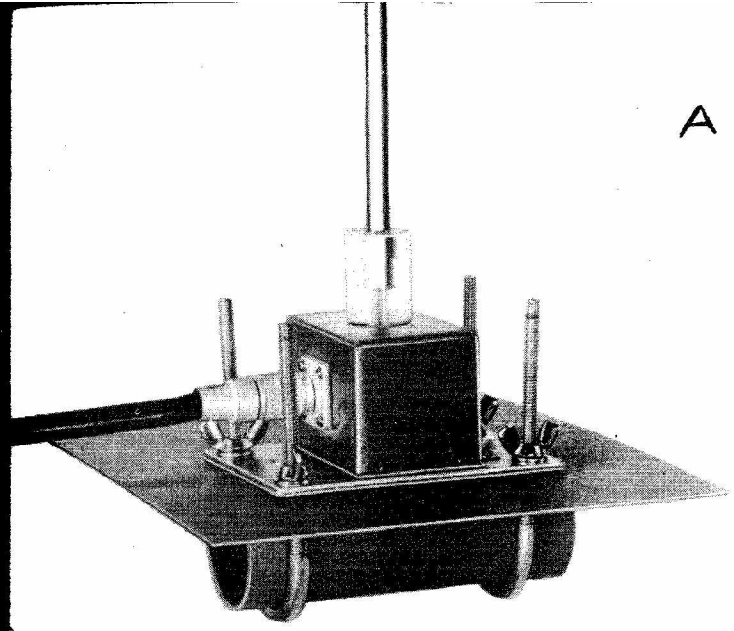
Three volt Burgess F2BP battery should be replaced with a new one when the voltage drops to two volts.

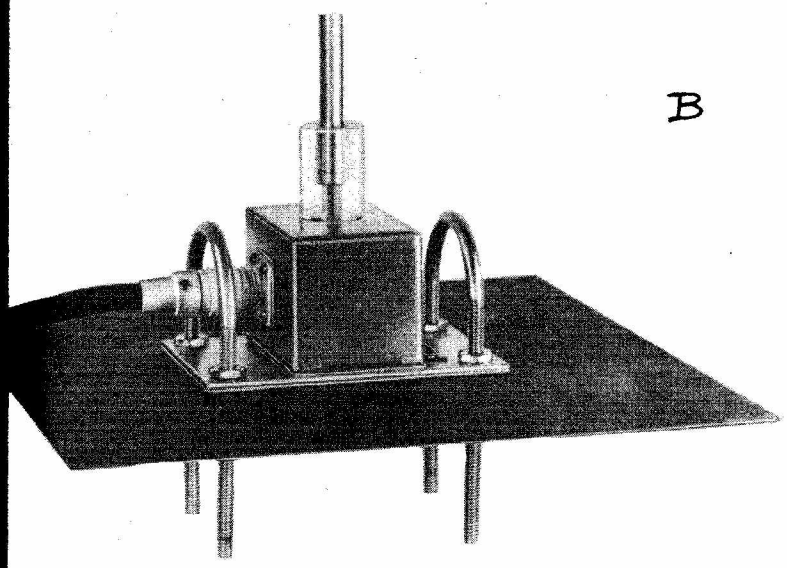
TUBES USED:

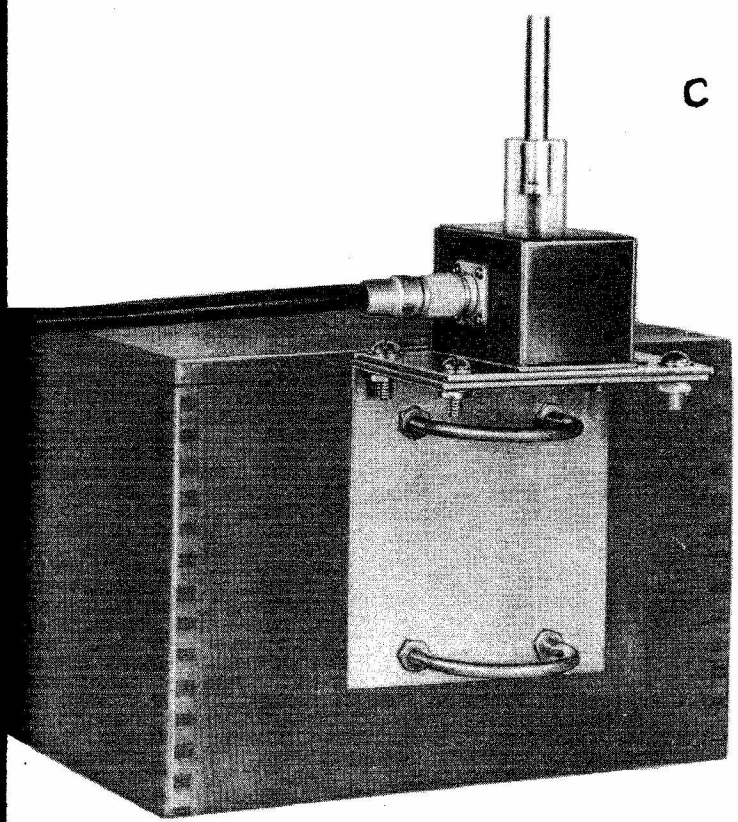
One Hytron HY-615
One Hytron HY-75
One 7F7
One 6L6G

TUBE FUNCTIONS:

Receiver:	HY-615	super-regenerative detector
	7F7	first audio
	6L6G	power audio
Transmitter:		
	HY-75	oscillator
	7F7	audio
	6L6G	modulator







COA-66066 WHIP ANTENNA

INSTALLATION NOTES

GENERAL:

THE FOLLOWING ACCESSORIES WILL BE FOUND WRAPPED IN THE END COMPARTMENT OF THE ANTENNA BOX:

2 - U BOLTS
4 - WASHERS
4 - LOCKWASHERS
4 - NUTS
4 - WING NUTS

FOR CONNECTING THE ANTENNA CABLE TO THE ANTENNA, THE FOLLOWING PROCEDURE SHOULD BE FOLLOWED:
EITHER MALE FITTING AT THE ENDS OF THE CABLE ARE SUITABLE. GRIP THE SHANK OF THE MALE FITTING AND INSERT IT INTO THE FEMALE FITTING ON THE BOX OF THE ANTENNA UNTIL THE COLLAR MESHES WITH THE THREAD ON THE FEMALE FITTING. ROTATE THE KNURLED COLLAR UNTIL THE CONNECTOR IS FIRMLY SEATED, MAKING SURE THAT ALL THE THREADS HAVE BEEN ENGAGED. IT MAY BE NECESSARY TO GIVE THE MALE FITTING A SLIGHT ROTATION IN ORDER TO MESH THEM PROPERLY.

THE SECOND CONNECTOR ON THE OTHER END OF THE CABLE SHOULD BE ATTACHED TO THE FEMALE RECEPTACLE ON THE TOP BRACKET ON THE COA-43027 TRANSMITTER-RECEIVER.

WHERE THE TWO LENGTHS OF CABLE MUST BE USED, CONNECT ONE MALE END OF ONE CABLE TO ONE END OF THE SECOND CABLE WHICH HAS THE FEMALE SPLICE CONNECTOR ALREADY FASTENED TO ONE END.

KEEP ANTENNA ROD IN THE CLEAR AND, IF AT ALL POSSIBLE, FIFTEEN FEET (15') AWAY FROM METAL RIGGING, UPRIGHTS, ETC.

BEST RESULTS WILL BE OBTAINED WITH THE ANTENNA MOUNTED IN AS HIGH A POSITION AS POSSIBLE; FOR INSTANCE, ON TOP OF A CABIN, ETC.

SEE DETAILED INSTRUCTIONS ON SIDE OF EACH TYPE OF MOUNTING LOCATION.

A:
RAIL MOUNTING THE ANTENNA ON ANY SIZE PIPE RAIL BETWEEN 1" IN DIAMETER UP TO 2" DIAMETER IS SUGGESTED AS IN FIGURE "A". AT TIMES, IT MAY BE NECCESSARY TO USE A SQUARE PIECE OF STEEL OR OTHER METAL APPROXIMATELY FOUR TO FIVE FEET SQUARE WHICH SHOULD BE MOUNTED BETWEEN THE BOTTOM PLATE OF THE ANTENNA BOX AND THE RAIL TO WHICH THE U BOLTS ARE ATTACHED.

IF DESIRED, TESTS CAN BE MADE AND WITH ANOTHER COA-43027 TRANSMITTER-RECEIVER AT A DISTANCE OF A MILE OR TWO, AND IF A SATISFACTORY SIGNAL IS RECEIVED, THE STEEL PLATE WILL NOT BE NECESSARY AND THE ANTENNA CAN BE MOUNTED RIGHT ON THE RAIL WITH THE U BOLTS.

B:
METHOD OF MOUNTING ANTENNA ON METAL DECK OR ON TOP OF METAL CABIN.....IN THE EVENT THAT DECK OR CABIN IS OF WOOD, MOUNT FOUR OR FIVE FEET SQUARE METAL PLATE UNDER ANTENNA AS SHOWN:

C:
METHOD OF MOUNTING ANTENNA ON METAL CABIN OR BULKHEAD IS SHOWN....BE SURE TOP OF ANGLE SUPPORT IS FLUSH WITH TOP. IN THE EVENT THAT CABIN IS OF WOOD, MOUNT FOUR TO FIVE FEET SQUARE METAL PLATE BETWEEN BOTTOM OF ANTENNA AND TOP OF ANGLE PLATE IN POSITION SIMILAR TO POSITION OF PLATE ON FIGURE "A".

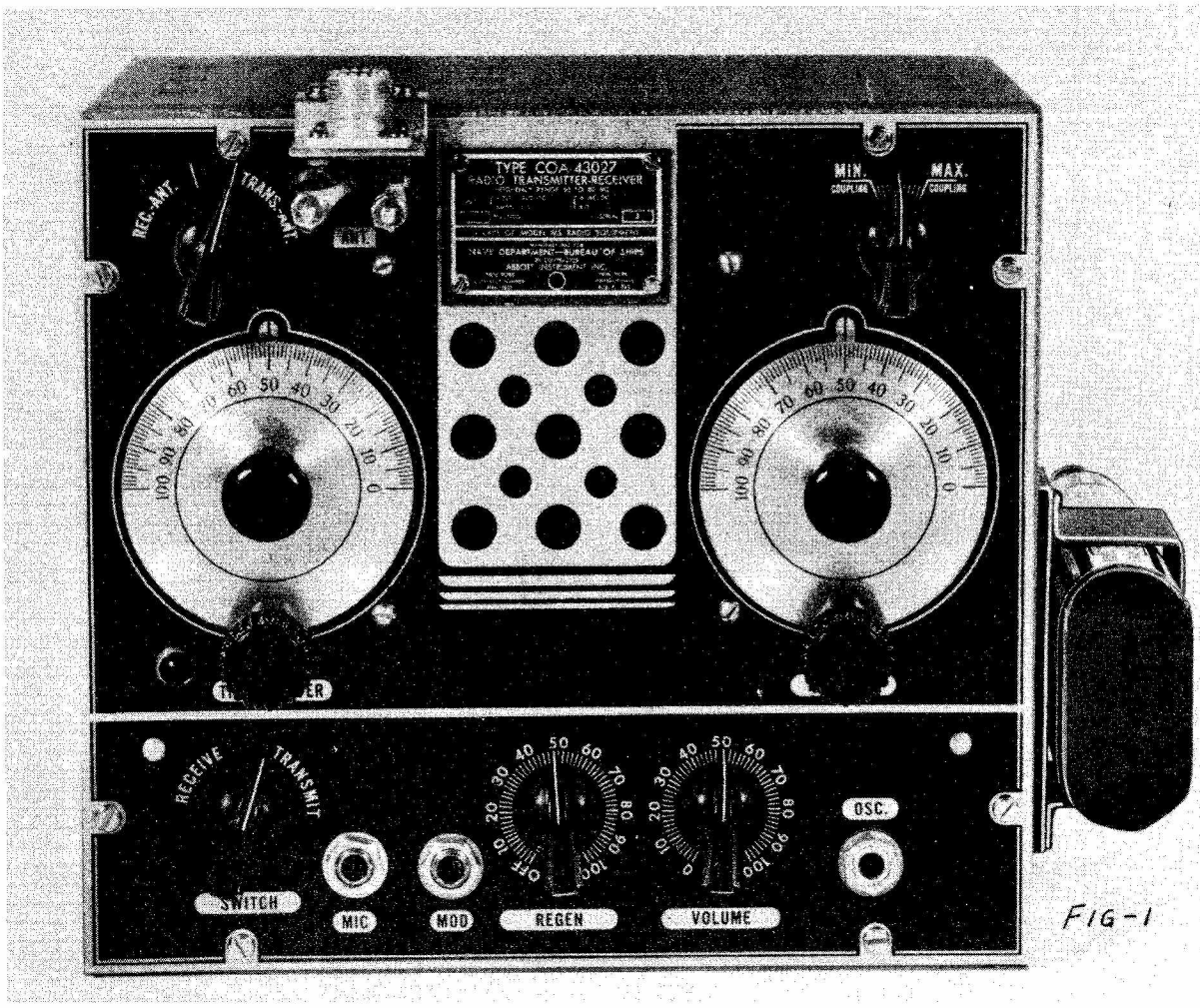

TYPE COA 43027
RADIO TRANSMITTER-RECEIVER
NAVY DEPARTMENT—BUREAU OF SHIPS
REC.-ANT.
TRANS.-ANT.
MIN. COUPLING
MAX. COUPLING
RECEIVE
TRANSMIT
SWITCH
MIC
MOD
REGEN
OFF
VOLUME
OSC.

FIG-1

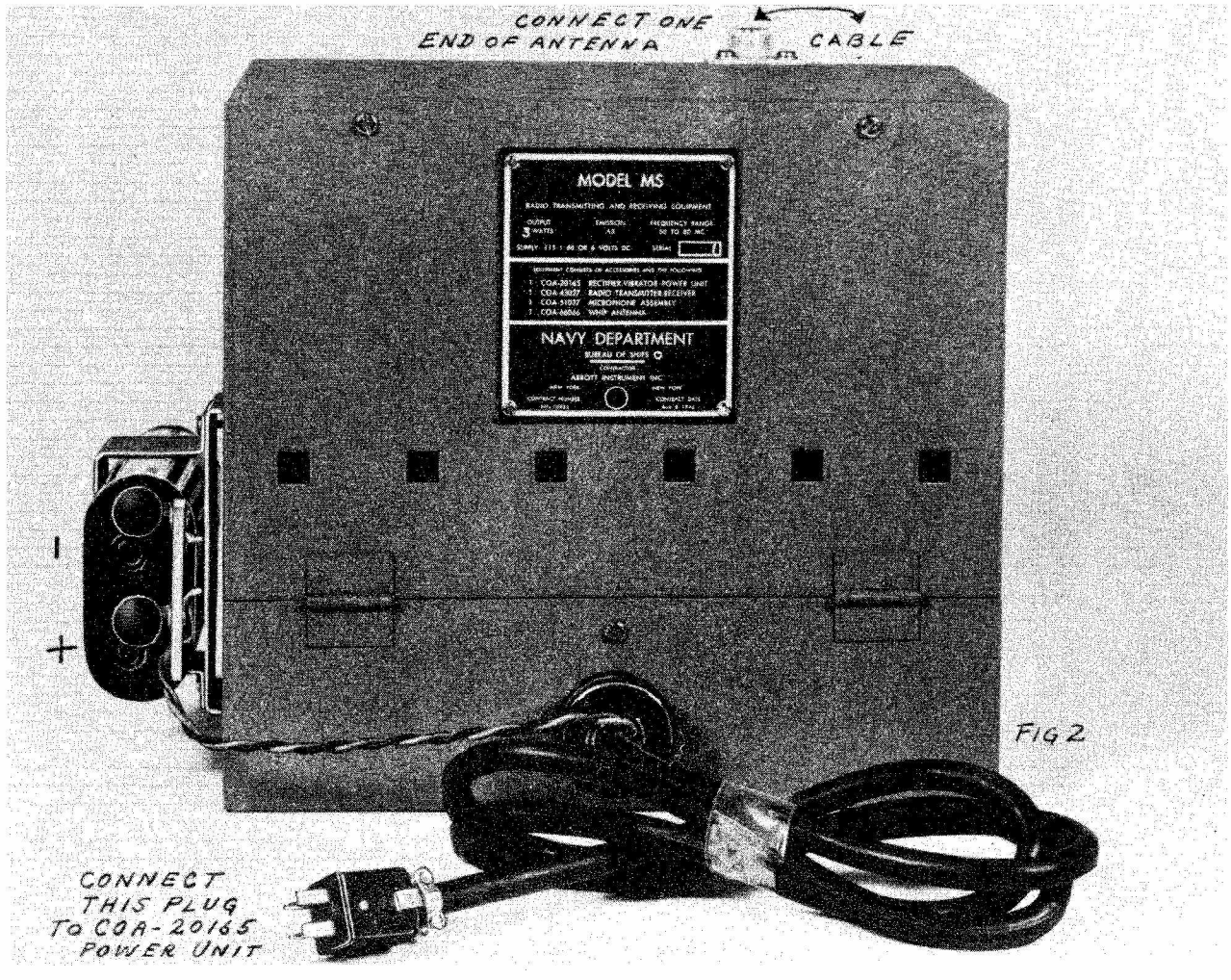

CONNECT ONE END OF ANTENNA
CABLE
MODEL MS
RADIO TRANSMITTING AND RECEIVING EQUIPMENT
NAVY DEPARTMENT
BUREAU OF SHIPS
ABBOTT INSTRUMENT INC.
1 COA-30165 RECTIFIER VIBRATOR POWER UNIT
1 COA-43027 RADIO TRANSMITTER RECEIVER
1 COA-31037 MICROPHONE ASSEMBLY
1 COA-86066 WHIP ANTENNA
I
+
CONNECT THIS PLUG TO COA-20165 POWER UNIT

FIG 2


FOR - 110 V - AC - OPERATE POWER UNIT WITH THIS LINE CORD
FOR 6 V BATTERY OPERATION USE THIS LINE CORD
TYPE COA - 20165 POWER UNIT
INPUT: 6V. DC & 115V. AC
OUTPUT: 300V. DC AT 100 MA. & 6.3V. AT 4 AMP.
VIBRATOR TYPE NO. 1B81087
GND.
6 V. HOT
115 AC
115 AC ON
OFF
6 V. DC
115 V. AC
B+
FIL. HOT
GND.
FUSE
THIS PLUG TO - 110 V AC - LINE
THIS PLUG TO POWER UNIT
THIS SWITCH TO LEFT FOR 6V TO RIGHT FOR 110V-AC
THIS PLUG TO POWER UNIT
TO 6 VOLT STORAGE BATTERY RED WIRE IS +

FIG 3

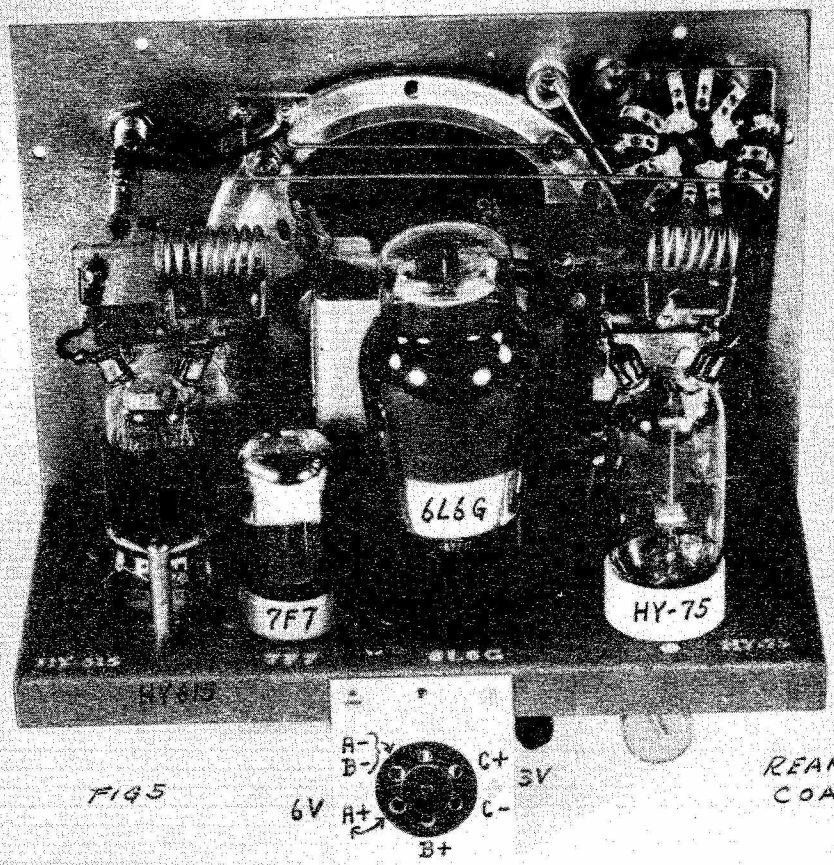


FIG 5

REAR VIEW
COA-43027

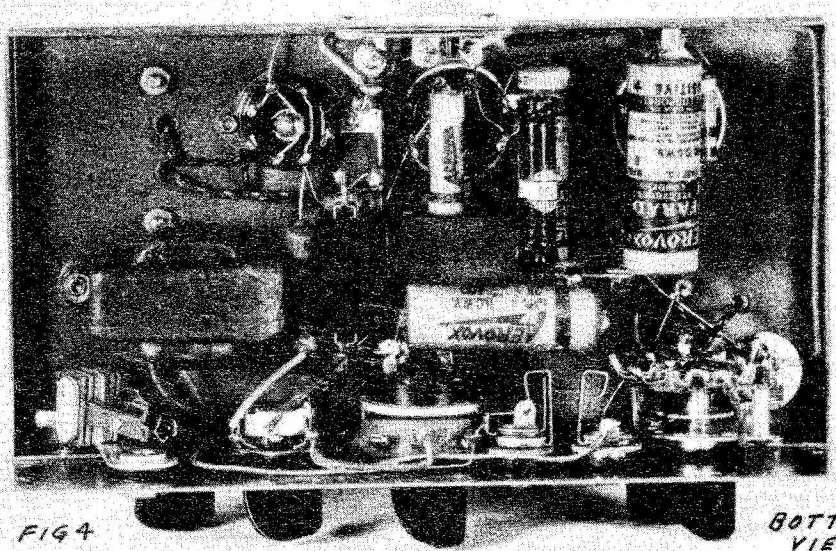
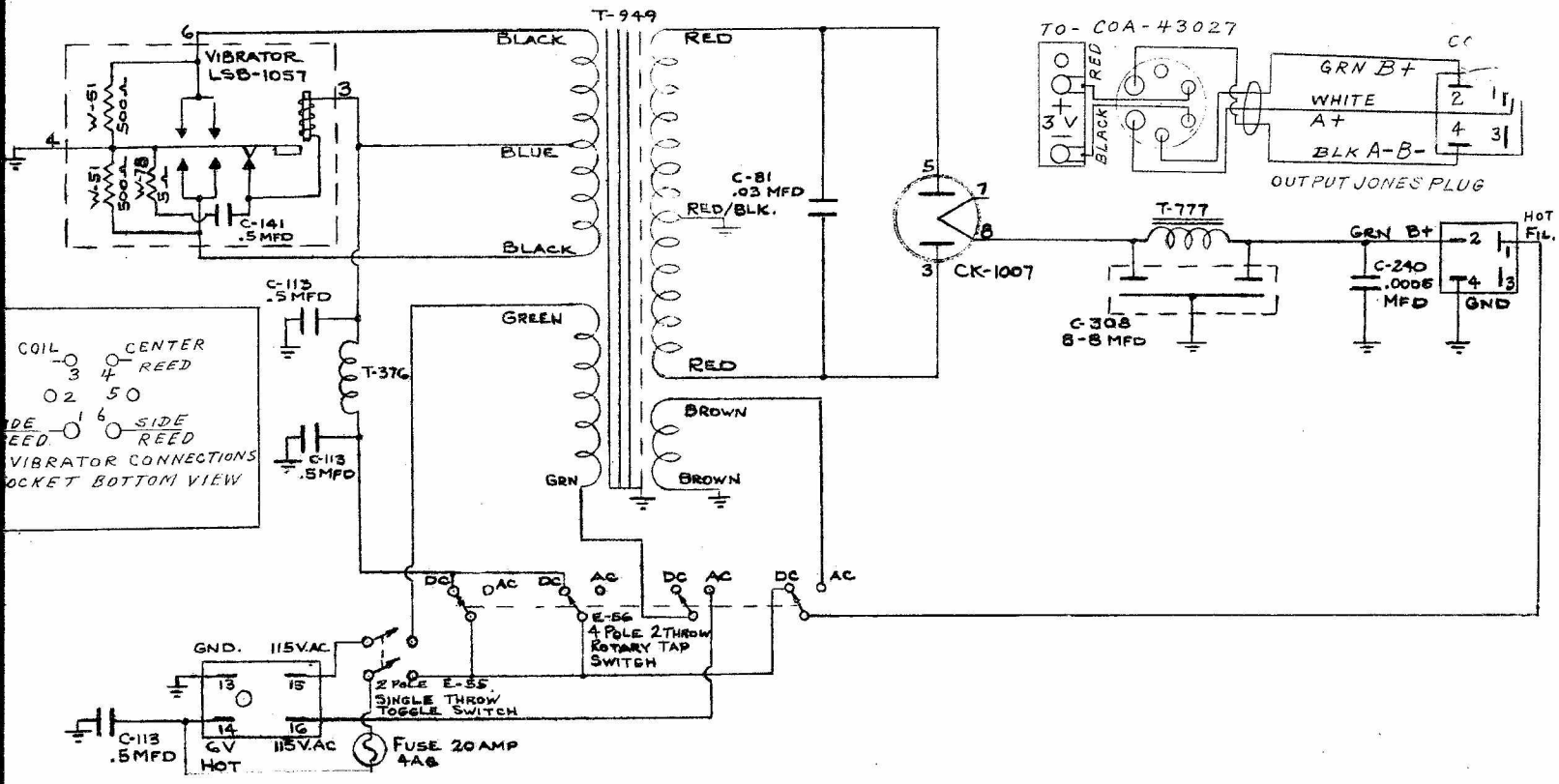
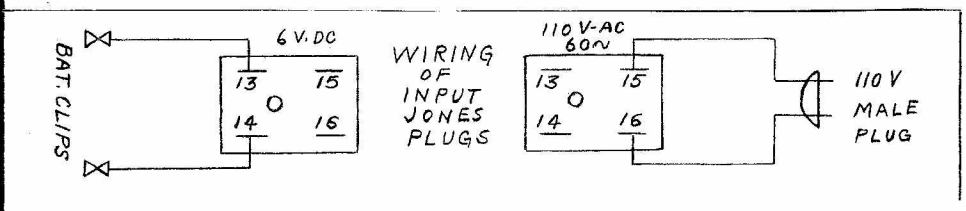


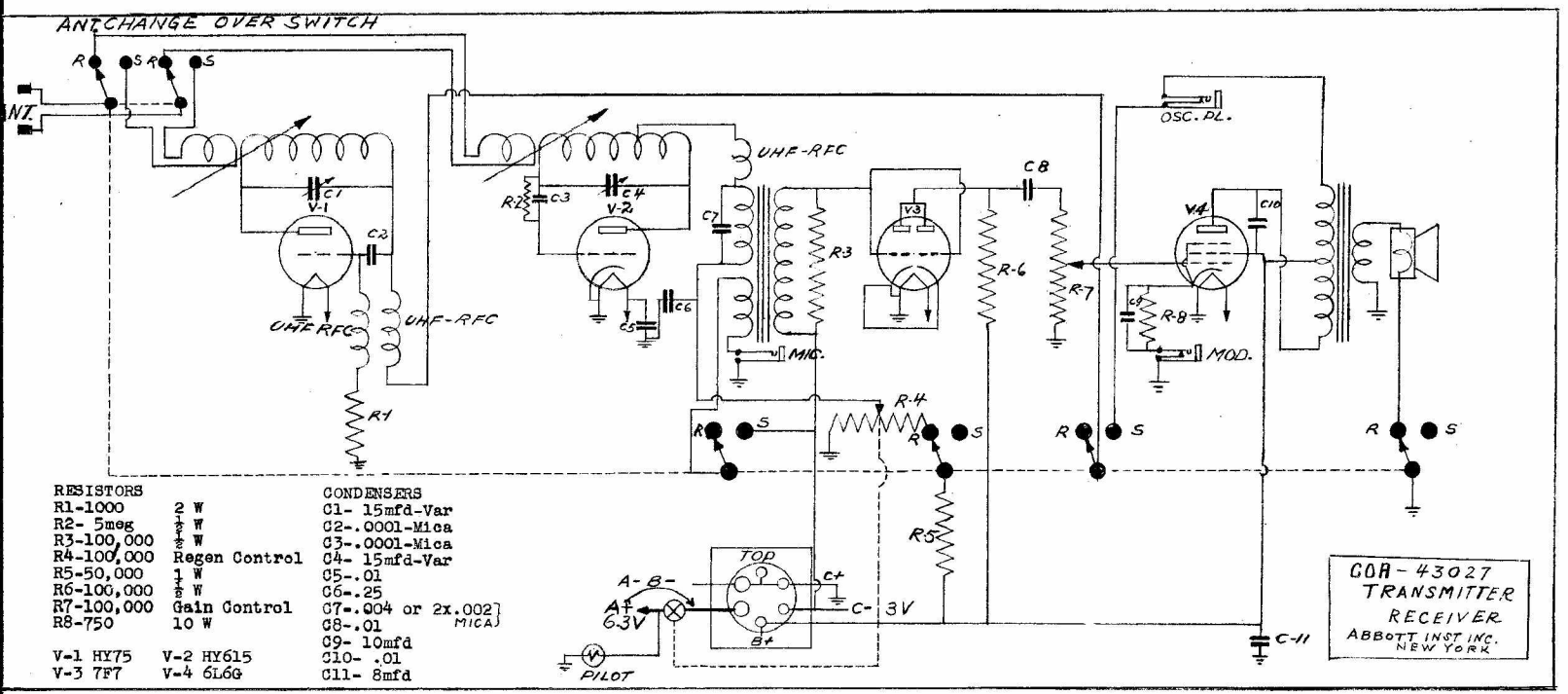
FIG 4

BOTTOM
VIEW
COA-43027



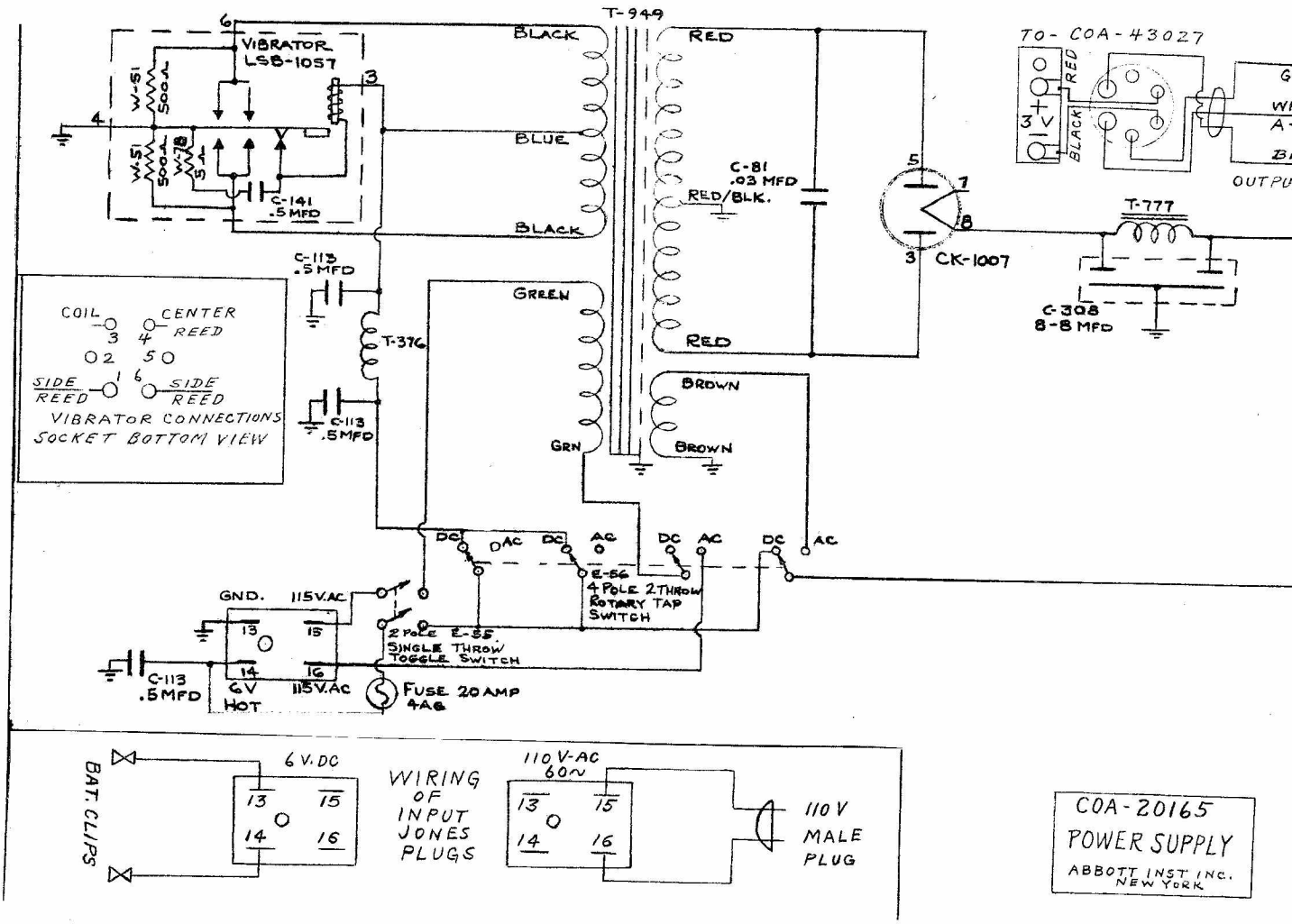


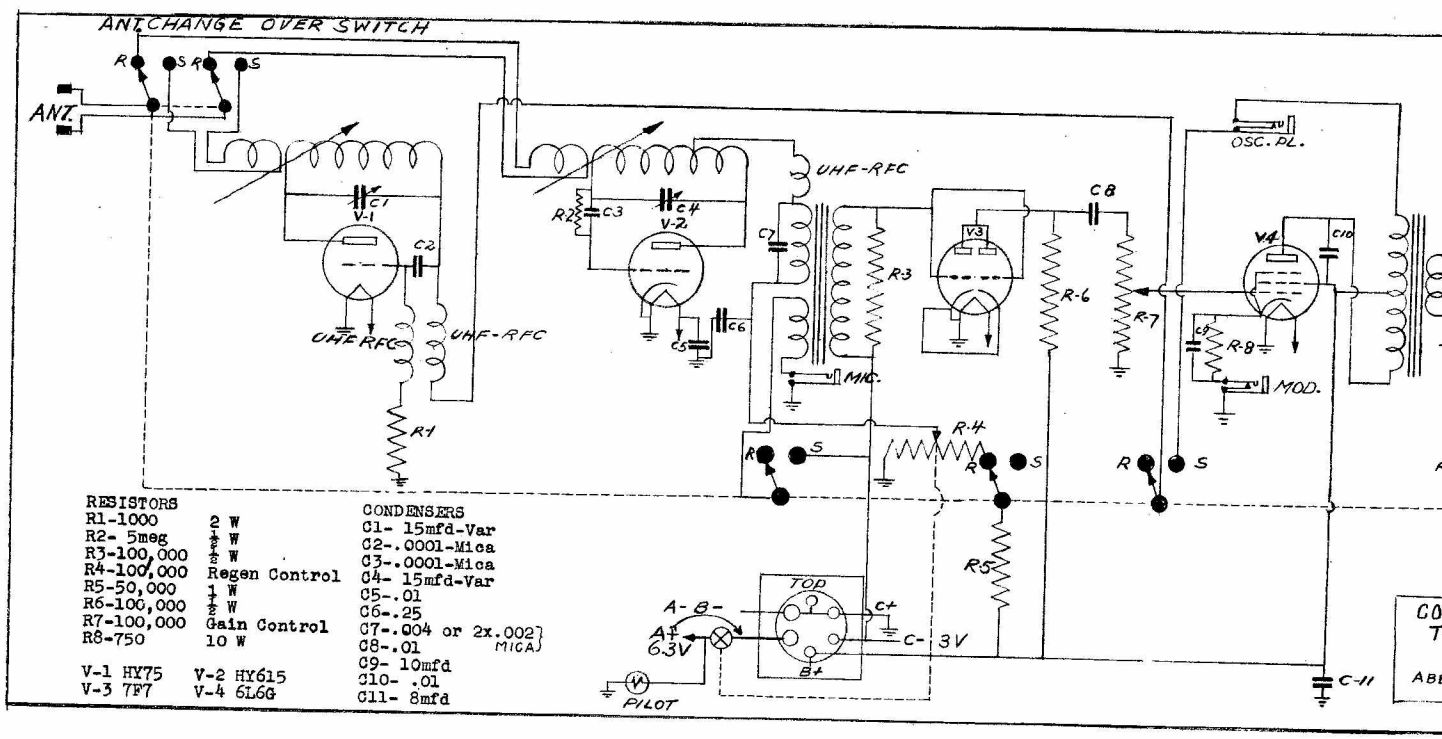
COA-20165
POWER SUPPLY
ABBOTT INST INC.
NEW YORK



RESISTORS		CONDENSERS
R1-1000	2 W	C1- 15mfd-Var
R2- 5meg	½ W	C2-.0001-Mica
R3-100,000	½ W	C3-.0001-Mica
R4-100,000	Regen Control	C4- 15mfd-Var
R5-50,000	1 W	C5-.01
R6-100,000	½ W	C6-.25
R7-100,000	Gain Control	C7-.004 or 2x.002 MICA
R8-750	10 W	C8-.01
		C9- 10mfd
V-1 HY75	V-2 HY615	C10- .01
V-3 7F7	V-4 6L6G	C11- 8mfd

COA-43027
TRANSMITTER
RECEIVER
ABBOTT INST INC.
NEW YORK


T-949
VIBRATOR LSB-1057
W-1 500Ω
W-2 500Ω
W-3 5Ω
C-141 .5 MFD
BLACK
BLUE
BLACK
RED
C-81 .03 MFD
RED/BLK.
CK-1007
TO- COA-43027
T-777
C-308 8-8 MFD
C-113 .5 MFD
T-376
GREEN
RED
BROWN
GRN
BROWN
C-113 .5 MFD
COIL
CENTER REED
SIDE REED
SIDE REED
VIBRATOR CONNECTIONS SOCKET BOTTOM VIEW
DC AC DC AC DC AC DC AC
E-86 4 POLE 2 THROW ROTARY TAP SWITCH
GND.
115V.AC
2 POLE E-85 SINGLE THROW TOGGLE SWITCH
C-113 .5 MFD
6V HOT
115V.AC
FUSE 20 AMP 4AG
BAT. CLIPS
6 V.DC
WIRING OF INPUT JONES PLUGS
110 V-AC 60~
110 V MALE PLUG
COA-20165
POWER SUPPLY
ABBOTT INST INC. NEW YORK


ANT. CHANGE OVER SWITCH
ANT.
R S R S
V-1
V-2
V3
V4
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
R1
R2
R3
R4
R5
R6
R7
R8
UHF-RFC
UHF-RFC
UHF-RFC
OSC. PL.
MIC.
MOD.
TOP
A-
B-
A+ 6.3V
C- 3V
B+
PILOT
C-11
RESISTORS
R1-1000 2 W
R2- 5meg ½ W
R3-100,000 ½ W
R4-100,000 Regen Control
R5-50,000 1 W
R6-100,000 ½ W
R7-100,000 Gain Control
R8-750 10 W
V-1 HY75 V-2 HY615
V-3 7F7 V-4 6L6G
CONDENSERS
C1- 15mfd-Var
C2-.0001-Mica
C3-.0001-Mica
C4- 15mfd-Var
C5-.01
C6-.25
C7-.004 or 2x.002 MICA
C8-.01
C9- 10mfd
C10- .01
C11- 8mfd