

RESTRICTED

SERIAL NO. \_\_\_\_\_

PRELIMINARY

INSTRUCTION BOOK

FOR

NAVY MODEL RBL-5

RADIO RECEIVING EQUIPMENT

SUPPLY

115 VOLTS  
50/60 CYCLES  
ONE PHASE

FREQUENCY RANGE

15 to 600  
KILOCYCLES

This document contains information affecting the National Defense of the United States within the meaning of the Espionage ACT (U.S.C.50: 31, 32). The transmission of this document or the revelation of its contents in any manner to any unauthorized person is prohibited.

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 contents should not be made known to unauthorized persons not connected with the Navy.

MANUFACTURED FOR

U.S. NAVY DEPARTMENT

BUREAU OF SHIPS

BY

NATIONAL COMPANY, INC.

MALDEN, MASS. U.S.A.

CONTRACT NXsr-38306

DATE OF CONTRACT SEPTEMBER 22, 1943

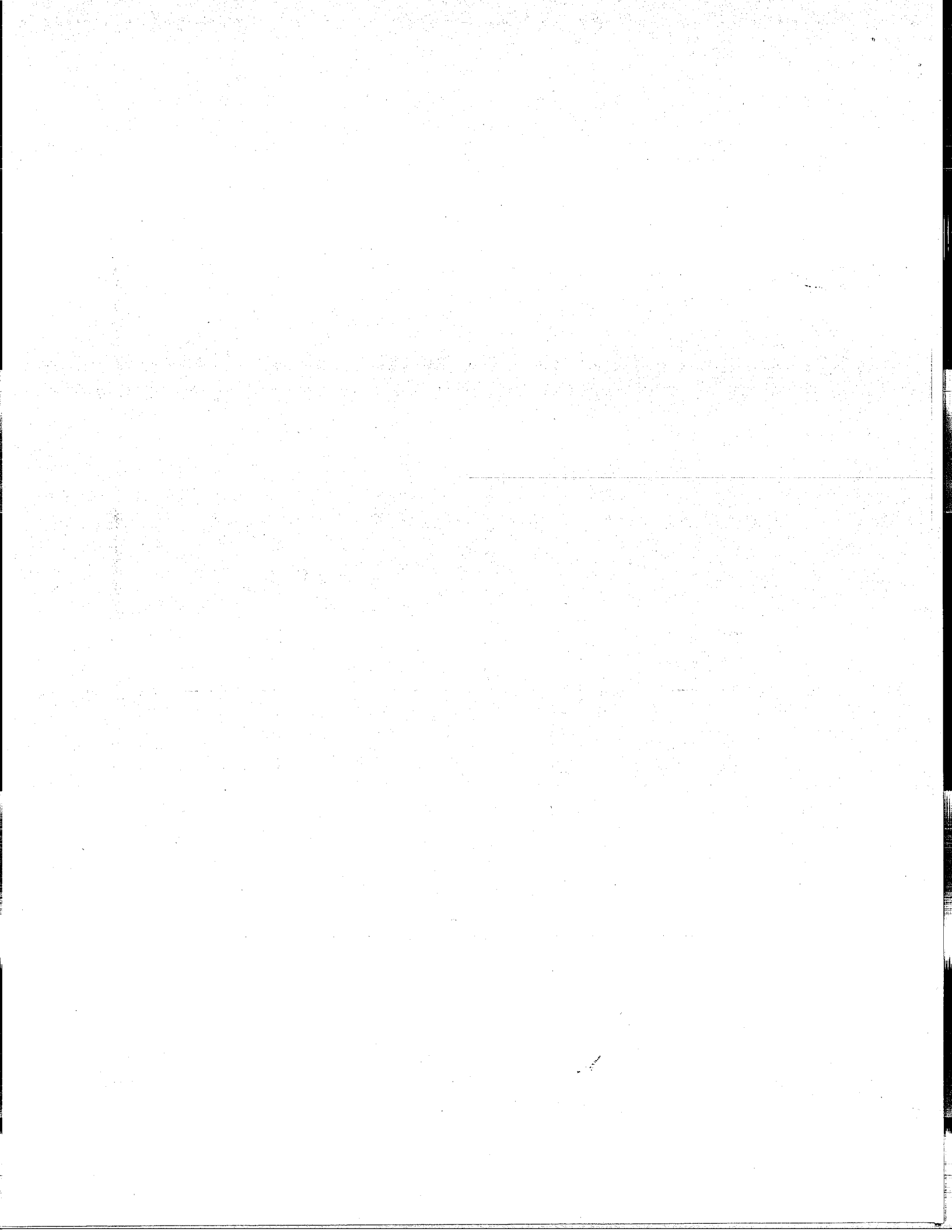


TABLE OF CONTENTS

MODEL RBL-5 RADIO RECEIVING EQUIPMENT

	Page
SECTION 1. General Description.....	1
1-1 General.....	1
1-2 General.....	1
1-3 List of Major Units.....	1
1-4 Power Requirements.....	1
1-5 Net Weights and Dimensions.....	1
1-6 Description of Major Units.....	2
1-6-1 The Type CNA-46161-B Radio Receiver.....	2
1-7 Circuit Details.....	2
1-8 The Type CNA-10124 Mounting Base.....	4
SECTION 2. Installation.....	4
2-1 Unpacking.....	4
2-2 Mounting.....	5
2-3 External Connections.....	5
SECTION 3. Operating Instructions.....	6
3-1 Preliminary Test.....	6
3-2 Controls.....	7
3-3 C. W. Reception.....	9
3-4 M.C.W. Reception.....	10

TABLE OF CONTENTS (CONT.)

	Page
SECTION 4. Alignment.....	10
4-1 General.....	10
4-2 Detector Alignment.....	11
4-3 Second R.F. Amplifier Alignment.....	11
4-4 First R.F. Amplifier Alignment.....	11
4-5 Alignment Data.....	11
SECTION 5. Maintenance.....	13
5-1 Location of Trouble.....	13
5-2 Socket Voltages and Cathode Currents.....	15
SECTION 6. Parts Lists.....	16
6-1 Table I List of Major Units.....	16
6-2 Table II Parts List by Symbol Designations.....	17
6-3 Table III Not Included	
6-4 Table IV Equipment Spare Parts by Navy Type Numbers.....	36
6-4 Table IV Tender Spare Parts by Navy Type Numbers.	39
6-5 Table V List of Manufacturers.....	42
SECTION 7. Drawings and Illustrations.....	
Fig. 1. Schematic Wiring Diagram - Type CNA-46161-B Radio Receiver.....	43
Fig. 2. Coil Switch Diagram - Type CNA-46161-B Radio Receiver.....	44
Fig. 3. Outline Drawing - Type CNA-46161-B Radio Receiver.....	45
Fig. 4. Outline Drawing - Type CNA-10124 Mounting Base.....	46

TABLE OF CONTENTS (CONT.)

	Page
Fig. 5. Trimmer Positions.....	47
Fig. 6. Tube Positions.....	48
Fig. 7. Tube Base Diagrams.....	49
Fig. 8. Color Code Chart.....	50

## 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 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 of 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 said 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 conclusively 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 the 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.

## 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.

### PERTINENT DATES

Contract NXsr-38306 Date of Contract September 22, 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.

## REQUESTS 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.



## 1. GENERAL DESCRIPTION

1-1 The Model RBL-5 Radio Receiving Equipment is suitable in all respects for use at Naval Radio Stations ashore or afloat.

1-2 The equipment may be used for the reception of radio telephone and telegraph signals (either CW or MCW) when detector radiation measured at the antenna input circuit must be less than 400 micro-micro-watts.

1-3 Each complete equipment consists of the following:

- 1 Type CNA-46161-B Radio Receiver
  - 1 Type CNA-10124 Mounting Base
  - 1 Set of Spare Parts
    - Stock Spare Parts
    - Tender Spare Parts
  - Instruction Books
- } - Furnished on the basis of one set per ten equipments.

### 1-4 Power Requirements

The Model RBL-5 Radio Receiving Equipment is intended to operate from a 115 volt, 50-60 cycle A.C. supply source or from batteries or other D.C. sources capable of supplying 6.3 volts D.C. at 2.2 amperes and 135 volts D.C. at 30 milliamperes. Normal power consumption on A.C. is 45 watts.

### 1-5 Net Weights and Overall Dimensions

#### Net Weights:

Type CNA-46161-B Radio Receiver.....	75 lbs.
Type CNA-10124 Mounting Base.....	5-1/2 lbs.
Equipment Spare Parts, packed.....	64 lbs.
Shipping Weight, crated.....	225 lbs.
Stock Spares, packed.....	
Tender Spares, packed.....	

#### Overall Dimensions

	<u>Receiver on Base</u>	<u>Receiver</u>
Depth.....	17-1/4 in.	16-5/8 in.
Height.....	12-10/32 in.	10-21/32 in.
Width.....	17-11/16 in.	17-3/16 in.

Dimensions, crated.....42½" X 22½" X 17½" Deep  
Cubic Volume.....9.7 cu. ft.

## 1-6 Description of Major Units

### 1-6-1 Type CNA-46161-B Radio Receiver

The type CNA-46161-B Radio Receiver is a seven tube, table mounting, tuned radio frequency receiver covering a continuous frequency range of from 15 to 600 kilocycles in six working bands. The receiver is enclosed within a copper-plated steel cabinet having a black wrinkle finish. The chassis and other steel parts are copper-plated and given a gray enamel finish. The circuit employed on all bands is shown in the schematic diagram Figure No.

1. It comprises two stages of radio frequency amplification, a regenerative detector, a resistance coupled audio stage, a low pass filter with two possible cut-off frequencies, a high pass filter with fixed cut-off, an adjustable audio limiter, and a resistance coupled audio output stage. The audio output is available at a phone jack and at a terminal strip on the rear of the receiver. A built in A.C. power supply provides the proper filament and plate voltages required by the receiver. Provision is made for battery operation in the form of a D.C. power socket mounted on the rear of the receiver chassis.

1-6-2 The frequency range of the receiver is covered in five working bands as follows:

Band A	15 - 25	Kilocycles
Band B	25 - 45	Kilocycles
Band C	45 - 80	Kilocycles
Band D	80 - 155	Kilocycles
Band E	155 - 310	Kilocycles
Band F	310 - 600	Kilocycles

The Type CNA-46161-B Radio Receiver has a dial with six scales calibrated in accordance with the frequency coverage of the six bands. A moving pointer indicates the frequency setting. The band in use is indicated by a band indicator dial, which turns with the band change knob. In addition to the frequency calibrated scales, an auxiliary numerical dial is employed. This dial may be read to one part in one thousand and is useful when logging signals.

### 1-7 Circuit Details

1-7-1 Two sets of tapped radio frequency transformers are mounted in six copper shield cans. Band selection is accomplished by means of a six section coil switch which selects the correct taps for the antenna, plate, and grid circuits of the transformers. A seventh section of the band switch selects the proper tap on the detector transformer tickler. Dead spots are avoided by grounding or detuning unused portions of the transformer windings. Trimmer capacitors are connected where necessary to compensate for inductive or capacitive variations. The r.f. transformers are wound on ceramic forms and are wax-impregnated.

#### 1-7-2 R.F. Amplifier

A two-stage impedance coupled r.f. amplifier is used and is provided with an automatic sensitivity control consisting of a rheostat ganged to the main tuning capacitor. The rheostat serves to adjust the amplification of the r.f. tubes to compensate for the variation in gain due to change of L/C ratio with tuning. The plate taps on the tuned circuits are selected so as to maintain satisfactory sensitivity and selectivity over the wide frequency range covered by the receiver.

#### 1-7-3 Detector Stage

The detector stage utilizes a pentode tube connected in an electron-coupled regenerative circuit. The plate of the tube is at ground potential for radio frequencies, thus serving to isolate the regenerative circuit from loading effects or other variations in the audio circuit. Regeneration is controlled by means of a screen potentiometer and an oscillation test button is provided.

#### 1-7-4 Audio Amplifier

The audio system consists of two stages of amplification which are resistance coupled. Filters between the first and second audio tubes are used to reduce noise and unwanted signal components as well as to improve the CW audio selectivity. An audio output limiter is connected before the input of the second audio stage.

An output transformer, having a balanced secondary, couples the output of the second audio stage to a phone jack and to a terminal strip on the rear of the chassis.

#### 1-7-5 Low Pass Filter

A low pass filter is connected directly after the first audio stage. A two position switch permits adjustment of the filter to provide a broad and sharp audio characteristic. In the sharp position the pass band is approximately 500 cycles wide at 20 db. down, peak response occurring at 700 cycles per second. In the broad position the pass band is approximately 3500 cycles wide at 20 db. down with the peak response at 1100 cycles per second.

#### 1-7-6 High Pass Filter

Following the low pass filter is a high pass filter which is connected to the input of the audio limiter tube. The high pass filter has a fixed cut-off frequency of 800 cycles/sec. increasing attenuation taking place at frequencies lower than 800 cycles per second.

### 1-7-7 Output Limiter

The audio output from the audio filters is coupled to the elements of a twin-diode tube which is connected so as to limit or clip the peaks of both alternations of an audio cycle, the amount of limiting being dependent on the setting of an output level control. With the output level control set to give a particular audio level, noise and audio peaks will be limited to this level, thus providing an automatic volume control action.

### 1-7-8 Power Supply

The power supply is of the transformer-rectifier type having a two-section filter. Two power input sockets are mounted on the rear of the chassis. A.C. power is supplied through a removable connector plug together with a jumpered plug in the D.C. power socket, the jumpers serving to complete the A.C. connections. For D.C. operation, the jumper plug is removed and replaced with a similar plug wired to the D.C. or battery supplies.

### 1-7-9 Tube complement

The tubes employed in the Type CNA-46161-B Radio Receiver are as follows:

<u>Symbol</u>	<u>Navy Type</u>	<u>Function</u>
V-101	-6SK7	First R.F. Amplifier
V-102	-6SK7	Second R.F. Amplifier
V-103	-6SE7	Regenerative Detector
V-104	-6SG7	First Audio Amplifier
V-105	-6H6	Audio Limiter
V-106	-6K6GT/G	Power Audio Amplifier
V-107	-5Y3G	Rectifier

### 1-8 Type CNA-10124 Mounting Base

The Type CNA-10124 Mounting Base is a cradle or frame work which is fitted with four rubber shock mounts. The shock mounts are rubber insulated bushings and serve to pass the mounting bolts. Thumb screws at the front and rear corner of the base are used to secure the receiver to the base. The outline drawing and mounting dimensions for the mounting base are shown in Figure No. 4.

## 2. INSTALLATION

2-1 The major units and spare parts of the Model RBL-5 Equipment are packed in a single wooden crate. The recommended procedure to employ in unpacking the equipment is as follows:

- (1) Place the packing crate so that the identification stenciling is uppermost.
- (2) Remove the side or cover of the packing crate which is now uppermost. This cover is secured by nails and an ordinary nail puller or claw hammer may be employed.
- (3) Remove the receiver by carefully turning the crate upside down and lifting the crate off. The receiver is protected from scratching or marring by the cardboard carton in which it is enclosed.
- (4) Remove the receiver from the cardboard carton.
- (5) Release the spare parts container from the crate by removing the retaining cleats with a pry bar or claw hammer.
- (6) Remove the spare parts container from the crate.
- (7) Inspect the parts and controls of the receiver for any damage incurred during shipment.
- (8) The packing crate, cardboard carton and spare parts container should be saved if the equipment is to be repacked and re-shipped.

## 2-2 Mounting

After unpacking, the Type CNA-10124 Mounting Base should be fastened to the operating table, allowing clearance for the external connections at the rear of the receiver. The receiver should be secured to the mounting base by means of the thumb-screws located at the front and rear corners of the mounting base. The outline drawing and mounting dimensions for the Type CNA-10124 Mounting Base are shown in Figure No. 4.

## 2-3 External Connections

### 2-3-1 Power Connections

For A.C. operation connect the A.C. connector plug P-102 to a 115 Volt 50/60 cycle power source; plug the A.C. connector plug P-102 into the A.C. power socket J-102; A.C. JUMPER plug P-103 must be plugged into D.C. Power socket J-103 to complete A.C. power connections.

For D.C. operation, remove A.C. JUMPER plug from the D.C. POWER socket J-103 and replace with a similar plug wired to a suitable D.C. source. If the receiver is to be operated mainly from a D.C. source, the A.C. JUMPER plug P-103 may be revised for use on D.C. For D.C. cable connections see FIG. NO. 1. Two separate supplies must be used for D.C. operation, a 6.3 volt filament supply and a 135 volt D.C. supply.

### 2-3-2 Antenna Connections

The input circuit is so arranged as to be suitable for

use with either an unbalanced feed-line or a simple antenna-ground combination. Static drain resistors are incorporated in the receiver for the protection of the antenna series capacitors.

A concentric jack J-104 is mounted near the left end of the chassis as viewed from the rear. A matching plug P-104 is provided to which the antenna must be connected. When a single wire lead-in is used, it should be soldered to the center pin of P-104. In an installation having a concentric feed-line, connect the inner conductor to the center pin of plug P-104, and the outer conductor should be securely connected to the shell of P-104.

Provision is made for use of either a short or long antenna; this adjustment consists of insulated binding posts E-102 to which may be clamped a flexible lead connected to antenna jack J-104. For use with a short antenna, the flexible lead should be clamped to the left-hand insulated terminal, as viewed from the front of the receiver. The right-hand insulated terminal is for use with a long or high capacity antenna. This adjustment should be checked by means of the ANTENNA COMPENSATOR which should resonate the first R.F. stage on all bands.

The equipment should be permanently grounded by means of a properly grounded concentric feed-line or by means of a ground connection made to terminal E-103.

### 2-3-3 Output Connections

The 600 ohm balanced secondary of the output transformer is terminated at the OUTPUT terminals E-101 located at the rear of the receiver. Connected in parallel with E-101 is the head-phone jack J-101 which is mounted on the front panel. An amplifier or other equipment may be connected to terminal strip E-101. The total impedance of the output load should be 600 ohms.

Since the output transformer secondary is of the balanced type having a grounded center tap, no ground connection should be made to this circuit at any other point.

## 3. OPERATING INSTRUCTIONS

### 3-1 Preliminary Test

3-1-1 When the Type CNA-46161-B Radio Receiver has been installed and connected to the proper power source and all other connections have been made in accordance with the data in Sec. 2-3, External Connections, a preliminary test of the receiver should be made by setting the controls as follows:

<u>Control Symbol</u>	<u>Control</u>	<u>Setting</u>
S-102 - S-103	POWER Switch	ON
S-106	AUDIO Switch	BROAD
R-134	R.F. GAIN	10
S-105	OUTPUT LIMITER Switch	OFF
R-120	OUTPUT LEVEL	0
R-127	REGENERATION	Below Oscillation
C-104	ANT. COMPENSATOR	For Maximum Gain
C-109	R.F. TRIGGER	For Maximum Gain
S-107	BAND SELECTOR	To Desired Band
C-103	MAIN TUNING	To Signal Frequency

After the tubes have warmed up, background noise should be heard and MCW signals from a test oscillator or transmitter may be tuned in. For CW signals advance REGENERATION control to point of oscillation. To turn off Power: Turn Power switch to OFF.

### 3-2 Controls

3-2-1 All switches and controls (with the exception of the main tuning dial and the band selector knob) of the Type CNA-46161-B Radio Receiver are identified by etched panel plates or dial scales. The symbol numbers in the following paragraphs of this Section refer to the schematic diagrams and the Parts List.

3-2-2 The POWER switch (S-102, S-103) is located at the left-hand side of the receiver panel near the top. Turning this control to the maximum clockwise position completes the necessary supply circuits and places the receiver in operation.

3-2-3 The main tuning dial is located at the center of the front panel of the receiver. The dial scale is calibrated in accordance with the frequency response of the six bands. In addition to the frequency calibrated scales, an auxiliary numerical dial is employed. This dial has 100 divisions and makes 10 revolutions while the tuning capacitor rotates 180 degrees; it is direct reading to one part in one thousand. The accuracy of calibration can be relied upon to plus or minus 2%.

3-2-4 The band selector knob is located near the bottom of the front panel at the center. The knob must be rotated approximately one sixth of a turn to change from one band to an adjacent band. The band in use is indicated by the pointer attached to the band selector knob. A positive detent insures proper positioning of the band selector switch contacts.

3-2-5 Directly beneath the power switch is located the AUDIO band-width control switch. In the sharp position the pass band

is approximately 500 cycles wide at 20 db. down, with the peak response occurring at 700 cycles per second. In the broad position the pass band is approximately 3500 cycles wide at 20 db. down with the peak response occurring at 1100 cycles per second.

3-2-6 The REGENERATION control is located directly below the AUDIO band-width control. Clockwise rotation of this control increases the regeneration in detector circuit. The detector tube may be made to oscillate when the REGENERATION control is turned sufficiently in the clockwise direction thus providing a means for heterodyne detection of CW radio telegraph signals.

3-2-7 The R.F. GAIN control is located to the left of the REGENERATION control. Clockwise rotation of this control increases the amplification of the two R.F. amplifier tubes V-101 and V-102.

3-2-8 The ANTENNA COMPENSATOR control is located at the right of the band selector control. This control is used to compensate for antenna capacity, which tends to detune the first R.F. stage. It should be adjusted for maximum amplification.

3-2-9 The R.F. TRIMMER control is located to the right of the ANTENNA COMPENSATOR. The function of this control is to compensate for unavoidable error in tracking in the second R.F. stage and should be adjusted for maximum amplification.

3-2-10 The OSCILLATION TEST button is located between the ANTENNA COMPENSATOR and R.F. TRIMMER. In the absence of a received signal, this control is useful in determining whether or not the detector is oscillating. The detector slides in and out of oscillation so smoothly that it is often difficult to determine whether or not it is oscillating. If a click is heard in the headphones when the OSCILLATION TEST button is pressed and another click observed when it is released, this indicates that the detector is in the oscillating condition.

3-2-11 The OUTPUT LIMITER control is located directly above the ANTENNA COMPENSATOR control. In the OFF position the limiter circuits are inoperative. In the ON position the limiter circuits are operative and limit all audio voltage peaks to a definite maximum value determined by the setting of the OUTPUT LEVEL control. The type of limiter employed limits both alternations of an audio frequency cycle to approximately the same peak value.

3-2-12 The OUTPUT LEVEL control is located directly above the OUTPUT LIMITER control. Turning this control in a counterclockwise direction increases limiter action by decreasing the peak value



of audio frequency voltages that appear in output of the limiter circuit. The limiter may thus be used to limit noise peaks or pulses which are greater than the maximum value that the limiter will pass, or in addition to this action it may also be used to provide a means of automatic volume control. Automatic volume control action is obtained by increasing the receiver gain and decreasing the output level by means of the limiter so that when the desired signal fades to the lowest usable level, the limiter still cuts off the desired signal peaks to a slight extent.

### 3-3 C.W. Reception

3-3-1 After the Model RBL-5 Equipment is properly installed, in accordance with Section 2, it is put into operation by turning the POWER switch to the ON position. the AUDIO band-width switch should be at the SHARP position; the radio frequency GAIN control well advanced; the REGENERATION control advanced sufficiently to cause the detector to oscillate; the OUTPUT LIMITER control turned OFF; and the ANTENNA COMPENSATOR and R.F. TRIMMER adjusted for maximum receiver background noise. The receiver is now adjusted for the reception of C.W. signals and will tune to the approximate frequency indicated by the main tuning dial and band in use.

3-3-2 In order to obtain heterodyne detection and the desired resultant audio beat note, the REGENERATION control must be advanced sufficiently to cause the detector tube to oscillate. This condition may be checked by the OSCILLATION TEST button. (Par. 3-2-10). With the AUDIO band-width switch in the sharp position, the heterodyne beat note frequency should be approximately 700 cycles per second to insure that the beat note will pass through the audio band pass filter with minimum attenuation. This condition must be fulfilled by adjusting the main tuning dial to the high frequency side of the point where oscillations from the detector "zero beat" with the received signal. The ANTENNA COMPENSATOR and R.F. TRIMMER should then be adjusted for maximum signal. Should adjustment of the ANTENNA COMPENSATOR or R.F. TRIMMER cause any change in the frequency of the beat note produced, this change may be corrected by readjustment of the main tuning control.

3-3-3 The selectivity of the Type CNA-46161-B Radio Receiver may be reduced by turning the AUDIO band-width control to the BROAD position. This makes the tuning less critical and the frequency of the heterodyne beat note may be any value between 700 to 2,500 cycles per second. Preliminary adjustment of the ANTENNA COMPENSATOR and R.F. TRIMMER should be made in accordance with Par. 3-3-1. The ANTENNA COMPENSATOR and R.F. TRIMMER will then be in correct adjustment when the AUDIO switch is turned from the SHARP to the BROAD position.

3-3-4 If the signal is partially obscured by static peaks or noise pulses of high intensity and short duration, the best signal-to-noise ratio will be obtained by turning the OUTPUT LIMITER control to the ON position and adjusting the OUTPUT LEVEL control. Automatic volume control action may be obtained at a sacrifice in audio quality by advancing the OUTPUT LEVEL control counter-clockwise beyond the point where audio distortion is observed. See Par. 3-2-12.

#### 3-4 M.C.W. Reception

3-4-1 Although primarily suited to C.W. reception, the Type CNA-46161-B Receiver may be used for M.C.W. reception on frequencies between 200 and 600 Kc. Set controls as follows: POWER switch in the ON position, AUDIO band-width switch in the BROAD position, R.F. GAIN control well advanced, OUTPUT LIMITER switch ON, and OUTPUT LEVEL control at 10. The REGENERATION control should be set just below the point where the detector starts to oscillate. Adjust ANTENNA COMPENSATOR and R.F. TRIMMER controls for maximum background noise. The receiver is now adjusted for M.C.W. reception.

3-4-2 The OUTPUT LEVEL control may be used in M.C.W. code reception as described in Par. 3-3-4. When receiving voice, the OUTPUT LEVEL control may be used to suppress undesired static peaks, but cannot be used to provide AVC action without excessive distortion.

### 4. ALIGNMENT

4-1 Realignment of the Type CNA-46161-B Radio Receiver is indicated if the frequency calibration is found to be in error by more than plus or minus 2 per cent or if the panel trimmers cannot be resonated throughout any band.

4-1-1 The complete alignment of the receiver may be divided into three steps:

- (1) Detector alignment
- (2) Second R.F. Amplifier alignment
- (3) First R.F. Amplifier alignment

Each band must be checked in the above order, commencing with the highest frequency band.

4-1-2 Dial scales bearing drawing number D-581 are calibrated for detector "zero beat" with C.W. signals of known frequency. The 1st and 2nd R.F. stages are aligned with the receiver tuned 750 cycles higher than "zero beat".

Dial scales bearing drawing number D-581-1 are calibra-

ted and all stages aligned with receiver tuned 750 cycles higher than the signal.

4-1-3 An accurate signal generator covering the frequency range from 15-600 kilocycles together with a 600 ohm output meter, are required to make the alignment adjustments. A standard dummy antenna should be used between the generator and the receiver input circuit.

The receiver must be adjusted for C.W. operation as described in Sec. 3-3 with the antenna jumper connected as for use with a short antenna. The 600 ohm output meter should be connected to the phone jack circuit or to the OUTPUT terminal strip E-101. The bottom plate of the receiver must be removed to gain access to the various trimmer capacitors. Trimmer positions are shown in Fig. No. 5.

#### 4-2 Detector Alignment

With the main tuning dial set at the high frequency end of the band being adjusted, apply a signal of correct frequency and adjust detector trimmer in accordance with dial calibration, which was explained in Par. 4-1-2. Detector trimmer capacitor C-113 serves to align the high frequency end of bands D, E, and F; a compromise setting should be made if the setting is not the same for these bands.

#### 4-3 Second R.F. Amplifier Alignment

With the receiver producing a 750 cycle beat note, (change main tuning 750 cycles higher if dial is calibrated for "zero beat",) set panel R.F. TRIMMER at "0" and adjust second R.F. trimmer of band being aligned for maximum reading as indicated by the output meter. Trimmer capacitor C-110 serves to align the second R.F. circuits of bands D, E, and F while trimmer capacitor C-112 is used to align the second R.F. circuits of bands A and B. A compromise setting should be made if the trimmer setting is not the same for different bands.

#### 4-4 First R.F. Amplifier Alignment

The range of the Antenna Compensator is great enough to provide proper alignment of all bands without additional trimmer capacitors. The setting of this control should remain fairly constant over any given band for good alignment. Antennas having different characteristics will cause some change in the setting of the antenna compensator.

#### 4-5 Alignment Data

The alignment frequencies for the various bands and their associated trimmers are shown in the following table:

<u>Band</u>	<u>Frequency</u>	<u>Trimmer</u>	
		<u>2nd R.F. Amplifier</u>	<u>Detector</u>
F	600 Kc.	C-110	C-113
E	310 Kc.	C-110	C-113
D	155 Kc.	C-110	C-113
C	80 Kc.	C-111	C-114
B	45 Kc.	C-112	C-115
A	25 Kc.	C-112	C-116

4-5-1 Errors in calibration from the middle to the low frequency end of the bands may be corrected by bending the end plates of the main tuning capacitor; this adjustment should not be made unless it is required by all or a majority of the bands.

4-5-2 Alignment adjustments should be made using the Standard Output level of 6 milli-watts into a 600 ohm output meter. A larger output level will require a stronger signal at the antenna input which may result in overloading the R.F. amplifier.

4-5-3 To check sensitivity after alignment adjustments are completed, connect the signal generator and receiver as for alignment adjustments (see Par. 4-1-3). The bottom plate of the receiver should be in place. Apply an unmodulated signal of correct frequency for the band under test and adjust receiver to produce a 750 cycle beat note. Set the Regeneration control for Standard Oscillation (3 db. below output level with optimum oscillation). Adjust R.F. Gain control for Standard Noise Level of 60 micro-watts with generator off. Turn generator on and adjust signal strength until 6 milli-watts is indicated on the 600 ohm output meter with the 750 cycle beat note being maintained. The strength of the signal applied by the generator indicates the sensitivity of the receiver. Nominal sensitivity measurements of a typical receiver are as follows:

<u>Band</u>	<u>Frequency (Kc.)</u>	<u>SENSITIVITY (uV)</u> <u>(audio "Sharp")</u>
F	600	3
	310	4.8
E	310	2.4
	160	5
D	160	3.3
	80	6
C	80	3.5
	44.7	7
B	44.7	2.7
	25.5	4
A	25.5	3.5
	15	7.5

Sensitivity measurements using "BROAD" audio selectivity should be made with a 1000 cycle beat note which corresponds with the audio response. The sensitivity is slightly lower for "BROAD" audio operation.

## 5. MAINTENANCE

### 5-1 Location of Troubles

A thorough inspection of the receiver and its external connections should be made before any adjustments or repairs are attempted.

Fuses F-101 and F-102 are connected in the A.C. supply circuit. These fuses protect the receiver from damage in the event of a high voltage surge on the A.C. supply line or if a short circuit occurs in the power supply section of the receiver. A burned out fuse does not necessarily indicate a fault in the receiver as excessive line voltage or surges may be the cause.

Failure of a vacuum tube in the receiver may reduce the sensitivity, produce intermittent operation, or cause the equipment to be completely inoperative. In all cases of reduced sensitivity or noisy operation, all tubes should be checked, preferably by replacement with tubes of proven quality. The replacement tube should be selected with care to avoid changes in calibration and sensitivity. A poor connection in a tube can usually be found by lightly tapping the tube in question with the receiver adjusted for normal operation. Measurement of voltages will show which tube is bad. If the failure is a short between tube elements, the filter resistors or voltage divider resistor associated with the tube should be checked for burnout or possible change in value.

Failure of any by-pass or filter capacitor may seriously overload resistors of the associated circuits. Overloads of sufficient magnitude to permanently damage a resistor will cause the painted surface of the resistor to be scorched, making the defective unit easy to locate by visual inspection.

By-pass or filter capacitors which develop poor connections internally, or which become open-circuited, will in most cases cause decreased sensitivity, oscillation, or affect the normal characteristics of the equipment. The defective unit can be located by temporarily connecting a good capacitor in parallel with each capacitor that is under suspicion.

Intermittent or noisy operation of the receiver may be caused by loose connections in the wiring or external circuits. Noise may also be caused by solder or metallic particles which cause false connections and/or capacitive changes in r.f. circuits. Such faults are often difficult to find but can usually be located by lightly tapping each circuit element or component with a piece of insulating material. Faults may sometimes be located by observing some peculiar action of one of the controls.

The table of Socket Voltages and Cathode Currents, Par. 5-2, should be consulted when locating faults, and to check the correctness of repairs.

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.

### 5-1-1 Replacement of Band Switch Section

Provision has been made to permit removal of faulty switch sections when necessary. Often, however, it is possible to correct switch contact faults by bending the control springs slightly to assure a good contact.

In instances where it is necessary to replace a switch section, this replacement is most easily accomplished by the following procedure:

(1) Remove the cover plate at the rear of the chassis, which will permit the desired switch shaft to be removed.

(2) Loosen the set screws which fasten the shaft to the indent mechanism. The shaft may now be slid rearward until free of the switch section to be removed.

(3) Remove the two mounting screws which secure the switch section to the switch frame.

(4) Unsolder the leads of the faulty switch and, if practical, immediately resolder to the new switch section. With short leads, this procedure may be impractical and in such cases due care should be exercised to assure that proper connections are made.

(5) Remount the switch section, replacing the spacer washers and lock washers, but leaving the mounting screws loose enough to permit aligning the switch section with the shaft.

(6) Carefully replace the switch shaft, first ascertaining that the rotor blades of all switch sections are indexed alike. After tightening the shaft set screws, check the band switch at either end of its travel; the selector knob should be at the corresponding band A or F position. The mounting screws should be secured after the operation of the band switch has been checked.

## TUBE SOCKET VOLTAGES AND CATHODE CURRENTS

Measure from Terminal to chassis	Pin No.	Variable Symbol	Setting	Voltage		Current	
				Variable At 0	Variable At 10	DC at 0	DC At 10
V-101 Grid	4	R-134		0	0	0	0
V0101 Cathode	5	R-134		59(100)	10.5(25)	0	2.25
V-101 Screen	6	R-134		110(250)	100(250)	0	.45
V-101 Plate	8	R-134		210(250)	188(250)	0	1.6
V-101 Suppressor	3	R-134		59(100)	10.5(25)	0	0
V-102 Grid	4	R-134		0	0	0	0
V-102 Cathode	5	R-134		59(100)	10.5(25)	0	2.15
V-102 Screen	6	R-134		110(250)	100(250)	0	.45
V-102 Plate	8	R-134		210(250)	185(250)	0	1.7
V-102 Suppressor	3	R-134		59(100)	10.5(25)	0	0
V-103 Grid	4			0	0(10)	0	0
V-103 Cathode	5			0	0	0	1.1
V-103 Screen	6	R-127		0	37(50)	0	.3
V-103 Plate	8			190(250)	100(250)	0	.8
V-103 Suppressor	3				0		0
V-104 Grid	4			0	0+	0	0+
V-104 Cathode	3-5			.7(1.0)			1.35
V-104 Screen	6				31(50)		.35
V-104 Plate	8				90(100)		1.0
V-104 Suppressor	3-5				.7(1.0)		0
V-105 Plate D2	3	S-105	Off		55(100)		.15
V-105 Cathode D2	4	S-105	Off		55(100)		.15
V-105 Plate D1	5	S-105	Off		55(100)		.40
V-105 Cathode D1	8	S-105	Off		55(100)		.40
V-106 Grid	5				55(100)		0
V-106 Cathode	8				14(25)		28
V-106 Screen	4				205(250)		3
V-106 Plate	3				192(250)		25
V-107 Heater	2-8				218(250)		
V-105 Plate D2	3	S-105	On		9.4(10)	0	.03
		R-127					
V-105 Cathode D2	4	S-105	On	.4(1.0)	9.7(10)	0	.03
		R-127					
V-105 Plate D1	5	S-105	On	-.25(1.0)	9.5(10)	0-	.07
		R-127					
V-105 Cathode D1	8	S-105	On	.4(1.0)	9.7(10)	0	.07
		R-127					
Filter Output (B+)					192		50

All measurements should be made with the equipment connected for normal operation as follows: R.F. Gain at 10, Regeneration at 0 Audio at Broad, Output Limiter at Off, Dial at High Frequency End of Band F, Output Level at 0 and Power Switch at On. Voltage measurements are made with a 20,000 ohms per volt voltmeter such as the Navy Model CE or equivalent set analyzer. Numbers in parenthesis after voltage readings indicate the voltmeter range that should be used for each measurement. All readings will depend (in varying degree) upon the resistance of the meter and there fore upon the meter range that is used. These voltages should not be considered as operating voltages as in many cases the voltmeter loading renders circuits inoperative with resultant departure from true operating voltages.

6. PARTS LISTS

TABLE I LIST OF MAJOR UNITS FOR MODEL RBL-5 RADIO RECEIVING EQUIPMENT				
Quantity	Symbol Group	Navy Type Designation	Name	Assembly Drawing No.
1	101-199	CNA-46161-B	Radio Receiver	F-680
1	201-299	CNA-10124	Mounting Base	D-911

NOTICE

References to RBL Equipment in Table II headings should be interpreted to mean RBL-5 Equipment.



TABLE II  
PARTS LIST BY SYMBOL DESIGNATION  
FOR MODEL REL EQUIPMENT

SYMBOL DESIG.	FUNCTION	DESCRIPTION	NAVY TYPE NUMBER	NAVY DRAWING OR SPEC.	MFR DESIG.	SPECIAL TOLERANCE, RATING OR MODIFICATION	NATIONAL CO DRAWING AND PART NUMBER	PAGE OF	
								BY	DATE
STRUCTURAL PARTS									
A-101	Main Dial Window	Window, Cellulose Acetate			1	B-513			B-513
		CAPACITORS							
*C-101	Long Antenna Coupling	Mica: .0003 Mfd. $\pm 10\%$ , 500 V DC W	-481014-10	RE 48A 148C	14	1A68	WAI DIP		D-774
C-101'	Long Antenna Coupling	Ceramic: .0003 Mfd. $\pm 10\%$ , 500 V DC W			10	Dual C			B-603
C-101''	Long Antenna Coupling	Ceramic: .0003 Mfd. $\pm 10\%$ , 500 V DC W			10	C			D-825-C
*C-102	Short Antenna Coupling	Mica: .0008 Mfd. $\pm 10\%$ , 500 V DC W	-481428-10	RE 48A 143	14	1A67	WAI DIP		D-775
C-103	Main Tuning	Variable Air: Three Section							
A	First R.F. Tuning	24-470 Mmf.			1	SA-19-B			D-618
B	Second R.F. Tuning	24-470 Mmf.							
C	Detector Tuning	24-470 Mmf.							
*C-104	Antenna Compensator	Variable Air: 8-95 Mmf. 1000 V DC W	-481555		1	SA-19	SS-90		D-809
*C-105	Antenna Coupling, Bands D, E, F.	Mica: .000045 Mfd. $\pm 5\%$ , 500 V DC W	-481559-5	RE 48A 148	14	1A68	WAI DIP		D-774
C-105'	Antenna Coupling, Bands D, E, F.	Ceramic: .000045 Mfd. $\pm 5\%$ , 500 V DC W			10	D			D-825-D
*C-106	Antenna Coupling, Band B	Mica: .001 Mfd. $\pm 10\%$ , 500 V DC W	-48983-10	RE 48AA 143D	14	1A67	WAI DIP		D-775
*For actual quantity of spares furnished refer to Table IV.									
'May be used in place of part listed with corresponding symbol.									

SYMBOL DESIG.	FUNCTION	DESCRIPTION	NAVY TYPE NUMBER	NAVY DRAWING OR SPEC.	MFR DESIG.	SPECIAL TOLERANCE, RATING OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
CAPACITORS (continued)							
*C-107	Antenna Coupling, Band C.	Mica: .00006 Mfd. $\pm 5\%$ , 500 V DC W	-481065-5	RE 48A 148C	14 1468	MAX DIP	D-774
C-107'	Antenna Coupling, Band C.	Ceramic: .00006 Mfd. $\pm 5\%$ , 500 VDCW			10 C		P-825-C
*C-108	L-109 Trimmer, Bands D, E, F.	Mica: .00004 Mfd. $\pm 10\%$ , 500 V DC W			14 1468	MAX DIP	D-774
C-108'	L-109 Trimmer, Bands, D, E, F	Ceramic: .00004 Mfd. $\pm 10\%$ , 500 V DC W			10 C		D-825-C
*C-109	R.F. Trimmer	Variable Air: 6-37 Mmf. 1000V DC W	-481554		1 SA:19-A	SS-35	D-808
*C-110	L-111 Trimmer, Bands D, E, F.	Variable Air: 5-55 Mmf. 500 V DC W	-481556		1 SA:435		
*C-111	L-112 Trimmer, Band C.	Variable Air: 6-75 Mmf. 500 V DC W	-481557		1 SA:436		
*C-112	L-112 Trimmer, Bands A, B.	Variable Air: 8-100 Mmf. 500V DC W	-481558		1 SA:437		
*C-113	L-113 Trimmer, Bands D, E, F.	Same as C-111	-481557				
*C-114	L-114 Trimmer, Band C.	Same as C-112	-481558				
*For actual quantity of Spares furnished refer to Table IV.							
*May be used in place of part listed with corresponding symbol.							

TABLE II  
PARTS LIST BY SYMBOL DESIGNATION  
FOR MODEL RBL EQUIPMENT

PAGE OF  
BY  
CHECKED

DATE  
DATE

FUNCTION

DESCRIPTION

CAPACITORS (Continued)

SYMBOL  
DESIG.

NAVY TYPE  
NUMBER

NAVY DRAWING  
OR SPEC.

MFR  
DESIG.

SPECIAL  
TOLERANCE,  
RATING OR  
MODIFICATION

NATIONAL CO.  
DRAWING AND  
PART NUMBER

*C-115	L-114 Trimmer, Band B.	Same as C-111							
*C-116	L-114 Trimmer, Band A.	Same as C-110							
*C-117	L-114 Anti-Resonance, Band E.	Mica: .0009 Mfd. $\pm 10\%$ , 500 V DC W	RE 48A 143F	14	1467		WAX DIP		D-775
*C-118	V-101 Cathode By-pass	Foil-Paper: .5 Mfd. $\pm 10\%$ , 600 V DC W	RE 48A 174			110 OM-650-B			D-744
C-118'	V-101 Cathode By-pass	Foil-Paper: .5 Mfd. $\pm 10\%$ , 600 V DC W						With Bracket	F-289
*C-119	V-101 Screen By-pass	Same as C-118							
*C-120	V-101 Plate Filter	Foil-Paper: 1. Mfd. $\pm 10\%$ , 600 V DC W	RE 48A 174			110 OM-601-B			D-744
C-120'	V-101 Plate Filter	Foil-Paper: 1. Mfd. $\pm 10\%$ , 600 V DC W							
C-121	V-102 Grid Coupling	Mica: .0005 Mfd. $\pm 10\%$ , 500 V DC W	RE 48A 143	14	1468		With Bracket		F-289
C-121'	V-102 Grid Coupling	Ceramic: .0005 Mfd. $\pm 10\%$ , 500 V DC W				10 Dual C	WAX DIP		D-774
									E-603
*C-122	V-102 Cathode By-pass	Same as C-118							
*C-123	V-102 Screen By-pass	Same as C-118							
*C-124	V-102 Grid-Plate Shield	Same as C-106							
*C-125	V-102 Plate Filter	Same as C-120							
*C-126	V-102 Plate Filter	Foil-Paper: 1. Mfd. $\pm 10\%$ , 600 V DC W							
C-126'	V-102 Plate Filter	Foil-Paper: 1. Mfd. $\pm 10\%$ , 600 V DC W	RE 48A 147	110	OM-601				D-745
*C-127	V-103 Grid Coupling	Same as C-121				110 CM-601-0	With Bracket		F-289

\*For actual quantity of spares furnished refer to Table IV.  
\*May be used in place of part listed with corresponding symbol.

TABLE II

PARTS LIST BY SYMBOL DESIGNATION  
FOR MODEL RBL EQUIPMENT

PAGE OF

BY  
CHECKEDDATE  
DATE

SYMBOL DESIG.	FUNCTION	DESCRIPTION	NAVY TYPE NUMBER	NAVY DRAWING OR SPEC.	MFR DESIG.	MFR DESIG.	SPECIAL TOLERANCE, RATING OR MODIFICATION, PART NUMBER
CAPACITORS (Continued)							
*C-128	V-103 Screen By-pass	Same as C-120	-481550-10				
*C-129	V-103 Screen Filter	Same as C-120	-481550-10				
C-130	V-103 Plate R.F. By-pass	Same as C-106	-48983-10				
*C-131	V-103 Plate R.F. Filter	Same as C-106	-48983-10				
*C-132	V-103 Plate Filter	Same as C-120	-481550-10				
C-133	V-104 Grid Coupling	Mica: .01 Mfd. $\pm 10\%$ , 300 V DC W	-48848-10	RE 48A 143A	14	1467	WAX DIP D-775
*C-134	V-104 Cathode By-pass	Same as C-120	-481550-10				
*C-135	V-104 Screen By-pass	Same as C-120	-481550-10				
*C-136	V-104 Plate Filter	Same as C-126	-481551-10				
*C-137	V-104 to AF-101 Coupling	Same as C-118	-481549-10				
*C-138	Part of AF-101	Mica: .00035 Mfd. $\pm 10\%$ , 500 V DC W	-48676-10	RE 48A 148C	14	1468	WAX DIP D-774
C-138*	Part of AF-101	Ceramic: .00035 Mfd. $\pm 10\%$ , 500 V DC W			10	Dual C	E-503
*C-139	Part of AF-101	Mica: .004 Mfd. $\pm 10\%$ , 300 V DC W	-48929-10	RE 48A 143W	14	1467	WAX DIP D-775
C-139*	Part of AF-101	Paper: .004 Mfd. $\pm 10\%$ , 400 V DC W				218 339	E-783
C-139*	Part of AF-101	Paper: .004 Mfd. $\pm 10\%$ , 400 V DC W				218 340	E-784
*For actual quantity of Spares furnished refer to Table IV.							
*May be used in place of part listed with corresponding symbol.							

TABLE II  
PARTS LIST BY SYMBOL DESIGNATION  
FOR MODEL RBL EQUIPMENT

PAGE OF  
BY DATE  
CHECKED

SYMBOL DESIG.	FUNCTION	DESCRIPTION	NAVY TYPE NUMBER	NAVY DRAWING OR SPEC.	MFR	MFR. DESIG.	SPECIAL TOLERANCE, RATING OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
CAPACITORS (Continued)								
*C-140	Part of AF-101	Mica: .005 Mfd. ±10%, 300 V DC W	-481037-10	RE 48A 143	14	1467	WAX DIP	D-775
C-140*	Part of AF-101	Paper: .005 Mfd. ±10%, 400 V DC W			218	340		E-784
*C-141	Part of AF-101	Same as C-133	-48848-10					
*C-142	Part of AF-101	Same as C-117	-481098-10					
*C-143	Part of AF-101	Same as C-117	-481098-10					
*C-144	Part of AF-101	Same as C-139	-48929-10					
*C-145	Part of AF-101	Same as C-133	-48848-10					
*C-146	Part of AF-101	Same as C-140	-481037-10					
*C-147	Part of AF-101	Same as C-138	-48676-10					
*C-148	Part of AF-102	Same as C-140	-481037-10					
*C-149	Part of AF-102	Mica: .006 Mfd. ±10%, 300 V DC W	-48847-10	RE 48A 143F	14	1467	WAX DIP	D-775
C-149*	Part of AF-102	Paper: .006 Mfd. ±10%, 400 V DC W			218	340		E-784
*C-150	Part of AF-102	Mica: .008 Mfd. ±10%, 300 V DC W	-481560-10	RE 48A 143	14	1467	WAX DIP	D-775
C-150*	Part of AF-102	Paper: .008 Mfd. ±10%, 400 V DC W			218	340		E-784
*C-151	Part of AF-102	Same as C-150	-481560-10					
*C-152	Part of AF-102	Same as C-140	-481037-10					
*C-153	Part of AF-102	Same as C-149	-48847-10					
*C-154	V-105 Plate Filter	Foil-Paper: .1 Mfd. ±10%, 400 V DC W	-481073-10	RE 13A 488C	14	489		E-369
**For actual quantity of Spares furnished refer to Table IV.								
*May be used in place of part listed with corresponding symbol.								

TABLE II  
PARTS LIST BY SYMBOL DESIGNATION  
FOR MODEL RBL EQUIPMENT

PAGE

OF

BY  
CHECKED

DATE  
DATE

SYMBOL DESIG.	FUNCTION	DESCRIPTION	NAVY TYPE NUMBER	NAVY DRAWING OR SPEC.	MFR.	MFR. DESIG.	SPECIAL TOLERANCE, RATING OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
*C-155	V-105 Plate Filter	Same as C-118	-481549-10					
*C-156	V-106 Output By-pass	Mica: .0025 Mfd. $\pm 10\%$ , 500 V DC W	-481089-10	RE 48A 143F	14	1467	WAX DIP	D-775
C-157	V-105 to V-106 Coupling	Same as C-133	-48848-10					
*C-158	V-106 Cathode By-pass	Same as C-120	-481550-10					
*C-159	Power Supply Filter	Foil-Paper:4. Mfd. $\pm 10\%$ , 600 V DC W	-481080-10		13	P8213		
C-159'	Power Supply Filter	Foil-Paper:4. Mfd. $\pm 10\%$ , 600 V DC W	-481080-10		14	610N2-4		E-333
C-159'	Power Supply Filter	Foil-Paper:4. Mfd. $\pm 10\%$ , 600 V DC W	-481080-10		110	NAT-104		E-333
*C-160	Power Supply Filter	Same as C-159	-481080-10		12	TLAD-6040		E-333
*C-161	Power Supply Filter	Same as C-159	-481080-10					
*C-162	A.C. Line By-pass	Same as C-118	-481549-10					
*C-163	A.C. Line By-pass	Same as C-118	-481549-10					
C-164	L-114 Trimmer Band B	Mica: .0005 Mfd. $\pm 10\%$ , 500 V DC W	-48895-10	RE 48A 148C	14	1468	WAX DIP	D-774
C-164'	L-114 Trimmer Band B	Ceramic: .00005 Mfd. $\pm 10\%$ , 500V DC W			10	D		D-825-D
*C-165	L-114 Trimmer Band A	Same as C-108	-48674-10					
*C-166	Part of AF-101	Mica: .003 Mfd. $\pm 10\%$ , 500 V DC W	-481036-10	RE 48A 143F	14	1467	WAX DIP	D-775
C-166'	Part of AF-101	Paper: .003 Mfd. $\pm 10\%$ , 400 V DC W			218	339		E-783
C-166'	Part of AF-101	Paper: .003 Mfd. $\pm 10\%$ , 400 V DC W			218	340		E-784
*C-167	Part of AF-101	Same as C-166	-481036-10					
*C-168	R.F. Gain Control By-pass	Same as C-154	-481073-10					
*For actual quantity of Spares furnished refer to Table IV.								
*May be used in place of part listed with corresponding symbol.								

CAPACITORS (Continued)

TABLE II  
PARTS LIST BY SYMBOL DESIGNATION  
FOR MODEL RBL EQUIPMENT

SYMBOL DESIG.	FUNCTION	DESCRIPTION	NAVY TYPE NUMBER	NAVY DRAWING OR SPEC.	BY CHECKED		SPECIAL TOLERANCE, DRAWING OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER	
					MFR.	MFR. DESIG.			
MISCELLANEOUS ELECTRICAL PARTS									
*E-101	Audio Output Terminals	Insulated Screw Terminals			1	E-265 Pt 6		E-265 Pt 6	
*E-102	Antenna Terminals	Insulated Binding Posts			1	SA:26-C		D-672	
*E-103	Ground Terminal	Binding Post			1	SA:91-D			
E-104	Ground Terminal	Screw Terminal			1	E-604		E-604	
*F-101	A.C. Line Fuse	2 Amperes, Glass Enclosed Same as F-101			76	1042		F-135 Pt 4	
*F-102	A.C. Line Fuse								
*I-101	Dial Lamp	INDICATING DEVICES							
*I-102	Dial Lamp		6.3V., .15A. Bayonet Base Same as I-101			18	47		F-136 Pt 6
*J-101	Phone Jack	JACKS AND RECEPTACLES							
*J-102	A.C. Socket		Single Circuit			129	IJ-102		D-777 Pt 1
*J-103	Power Socket		Socket			93	7486		F-438 Pt 1
*J-104	Concentric antenna Jack		Recessed Male, Small 7 Prong Concentric Jack	-49201 -49120		128	61CP7S		D-789 Pt 1
*L-101	R.F. Filter Reactor	INDUCTORS							
L-102	Part of AF-101		18 Henry $\pm 20\%$ , 470 Ohm $\pm 10\%$ , DC Res.	-47252		1	SA:31-D		D-781
L-103	Part of AF-101	4.7H. $\pm 10\%$ , 3600T., No.31R, 200 Ohms $\pm 10\%$			1	13131			
		7.7H. $\pm 10\%$ , 4600T., No.33R, 400 Ohms $\pm 10\%$			1	14004			
*For actual quantity of Spares furnished refer to Table IV									

TABLE II  
PARTS LIST BY SYMBOL DESIGNATION  
FOR MODEL RBL EQUIPMENT

BY

CHECKED

SPECIAL  
TOLERANCE,  
RATING OR  
MODIFICATIONMFR.  
DESIG.

MFR

NAVY DRAWING  
OR SPEC.NAVY TYPE  
NUMBER

DESCRIPTION

FUNCTION

SYMBOL  
DESIG.

SYMBOL DESIG.	FUNCTION	DESCRIPTION	NAVY TYPE NUMBER	NAVY DRAWING OR SPEC.	MFR	MFR. DESIG.	SPECIAL TOLERANCE, RATING OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
INDUCTORS (Continued)								
L-104	Part of AF-101	Same as L-102						
L-105	Part of AF-102	18H. $\pm 10\%$ , 7500T., No. 34E, 470 Ohms $\pm 10\%$			1	NCT10019		
L-106	Part of AF-102	10.8H. $\pm 10\%$ , 7500T., No. 34E, 470 Ohms $\pm 10\%$			1	NCT10019	Air Gap	
L-107	Part of AF-102	Same as L-105						
* L-108	Power Supply Filter Reactor	17 Henry $\pm 20\%$ , 300 Ohms $\pm 10\%$ DC Res.	-30931		1	SA-31-E		D-782
* L-109	1st R.F. Input Bands D, E, and F	Four Windings on a Ceramic Spool	-47247		1	SA-55-H		D-785
* L-110	1st R.F. Input Bands A, B, and C	Three Windings on a Ceramic Spool	-47250		1	SA-55-E		D-788
* L-111	2nd R.F. Input Bands D, E, and F	Four Windings on a Ceramic Spool	-47248		1	SA-55-G		D-786
* L-112	2nd R.F. Input Bands A, B, and C	Three Windings on a Ceramic Spool	-47251		1	SA-55-D		D-789
* L-113	Det. Input Bands D, E, and F	Five Windings on a Ceramic Spool	-47246		1	SA-55-F		D-784
* L-114	Det. Input Bands A, B, and C	Five Windings on a Ceramic Spool	-47249		1	SA-55-C		D-787



TABLE II

PAGE \_\_\_\_\_ OF \_\_\_\_\_

PARTS LIST BY SYMBOL DESIGNATION  
FOR MODEL RBL EQUIPMENTDATE \_\_\_\_\_  
DATE \_\_\_\_\_BY \_\_\_\_\_  
CHECKED \_\_\_\_\_

SYMBOL DESIG.	FUNCTION	DESCRIPTION	NAVY TYPE NUMBER	NAVY DRAWING OR SPEC.	MFR	MFR. DESIG.	SPECIAL TOLERANCE, RATING OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
N-101	Equipment Nameplate	Etched Zinc			1	D-711	RBL Only	D-711
N-102	Receiver Nameplate	Etched Zinc			1	D-705	RBL Only	D-705
N-103	Acceptance Nameplate	Etched Zinc			1	D-457	RBL Only	D-457
N-101	Equipment Nameplate	Etched Zinc			1	D-712	RBL-1 Only	D-712
N-102	Receiver Nameplate	Etched Zinc			1	D-713	RBL-1 Only	D-713
N-103	Acceptance Nameplate	Etched Zinc			1	D-457	RBL-1 Only	D-457
N-101	Equipment Nameplate	Stamped Bakelite			1	D-714	RBL-2 Only	D-714
N-102	Receiver Nameplate	Stamped Bakelite			1	D-715	RBL-2 Only	D-715
N-103	Acceptance Nameplate	Stamped Bakelite			1	D-457A	RBL-2 Only	D-457A
N-101	Equipment Model-Type Plate	Etched Aluminum			1	F-516	RBL-5 Only	F-516
N-102	Not used							
N-103	Acceptance Nameplate	Etched Aluminum			1	D-457	RBL-5 Only	D-457
N-104	Dial Scale	Etched Brass			1	D-581		D-581
N-105	Auxiliary Logging Dial	Etched Brass			1	D-611		D-611
N-106	R-134 Scale	Etched Zinc			1	D-678 Pt. 1		D-678 Pt. 1
N-107	J-101 Scale	Etched Zinc			1	D-689		D-689
N-108	B-127 Scale	Etched Zinc			1	D-678 Pt. 2		D-678 Pt. 2
N-109	S-107 Scale	Etched Zinc			1	D-687		D-687

NAMEPLATES AND DIALS

SYMBOL		FUNCTION	DESCRIPTION	NAVY TYPE NUMBER	NAVY DRAWING OR SPEC.	MFR	MFR DESIG.	SPECIAL TOLERANCE, RATING OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
DESIG.									
NAMEPLATES AND DIALS									
N-110		C-104 Scale	Etched Zinc			1	D-678A Pt 3		D-678A Pt 3
N-111		S-101 Scale	Etched Zinc			1	D-688		D-688
N-112		C-109 Scale	Etched Zinc			1	D-678A Pt 4		D-678A Pt 4
N-113		R-120, S-105 Scale	Etched Zinc			1	D-685 Pt 2		D-685 Pt 2
N-114		S-102, S-106 Scale	Etched Zinc			1	D-685 Pt 1		D-685 Pt 1
N-115		R-134 Knob	Molded Bakelite			1	SA:2-B		
N-116		R-127 Knob	Same as N-115						
N-117		S-107 Knob	Molded Bakelite			1	SA:2-C		
N-118		C-104 Knob	Same as N-115						
N-119		C-109 Knob	Same as N-115						
N-120		S-105 Knob	Same as N-115						
N-121		R-120 Knob	Same as N-115						
N-122		C-103 Knob	Same as N-117						
N-123		S-102 Knob	Same as N-115						
N-124		S-106 Knob	Same as N-115						
N-125		S-107 Pointer	Etched Zinc			1	D-686		D-686
N-126		S-101 Knob	Moulded Bakelite			1			
P-101		Not used							
P-102		A.C. Power Plug	Plug			93	7484		F-439 Pt 1
P-103		A.C. Jumper Plug	Seven Prong, Female			1	SA:1196		
P-104		Concentric antenna Plug	Concentric Plug			259			F-456 Pt 1

SYMBOL		FUNCTION	DESCRIPTION	NAVY TYPE NUMBER	NAVY DRAWING OR SPEC.	MFR	MFR. DESIG.	SPECIAL TOLERANCE, RATING OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
DESIG.									
RESISTORS									
*R-101	V-101 Cathode		350 Ohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	RE 13A 372G	10	310		D-770
*R-101'	V-101 Cathode		350 Ohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	RE 13A 372G	220	SCI-1/2		E-635
*R-102	V-101 Screen Filter		10,000 Ohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	RE 13A 372G	10	310		D-770
*R-102'	V-101 Screen Filter		10,000 Ohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	RE 13A 372G	220	SCI-1/2		E-635
*R-103	V-102 Grid		5. Megohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	RE 13A 372G	10	310		D-770
*R-103'	V-102 Grid		5. Megohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	RE 13A 372G	220	SCI-1/2		E-635
*R-104	V-102 Cathode		Same as R-101	-63360-10					
*R-105	V-102 Screen Filter		Same as R-102	-63360-10					
*R-106	V-103 Grid		2.5 Megohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	RE 13A 372G	10	310		D-770
*R-106'	V-103 Grid		2.5 Megohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	RE 13A 372G	220	SCI-1/2		E-635
*R-107	V-103 Screen Filter		Same as R-102	-63360-10					
*R-108	V-103 Plate RF Filter		25,000 Ohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	RE 13A 372G	10	310		D-770
*R-108'	V-103 Plate RF Filter		25,000 Ohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	RE 13A 372G	220	SCI-1/2		E-635
*R-109	V-103 Plate		70,000 Ohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	RE 13A 372G	10	310		D-770
*R-109'	V-103 Plate		70,000 Ohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	RE 13A 372G	220	SCI-1/2		E-635
*R-110	V-103 Plate Filter		Same as R-102	-63360-10					
*For actual quantity of Spares furnished refer to Table IV.									
*May be used in place of part listed with corresponding symbol.									

SYMBOL		FUNCTION	DESCRIPTION	NAVY TYPE NUMBER	NAVY DRAWING OR SPEC.	MFR	MFR DESIG.	SPECIAL TOLERANCE, RATING OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
DESIG.									
RESISTORS (Continued)									
*R-111	V-104 Grid		.5 Megohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	EE 13A 372G	10	310		D-770
*R-111'	V-104 Grid		.5 Megohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	EE 13A 372G	220	SCI-1/2		E-635
*R-112	V-104 Cathode		500 Ohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	EE 13A 372G	10	310		D-770
*R-112'	V-104 Cathode		500 Ohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	EE 13A 372G	220	SCI-1/2		E-635
*R-113	V-104 Screen Filter		Same as R-111	-63360-10					
*R-114	V-104 Plate		.1 Megohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	EE 13A 372G	10	310		D-770
*R-114'	V-104 Plate		.1 Megohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	EE 13A 372G	220	SCI-1/2		E-635
*R-115	AF-101 Termination		Same as R-108	-63360-10					
*R-116	V-105 Input Plate		Same as R-114	-63360-10					
*R-117	V-105 Plate Filter		20,000 Ohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	EE 13A 372G	10	310		D-770
*R-117'	V-105 Plate Filter		20,000 Ohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	EE 13A 372G	220	SCI-1/2		E-635
*R-118	V-105 Cathode		Same as R-114	-63360-10					
*R-119	V-105 Output Plate		.25 Megohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	EE 13A 372G	10	310		D-770
*R-119'	V-105 Output Plate		.25 Megohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	EE 13A 372G	220	SCI-1/2		E-635
*R-120	Limiting Control		10,000 Ohm, W.W. Var., 1.5 Watt	-631286	EE 13A 492	11	P58-10000V	0-60	D-771
*R-121	Voltage Divider		50,000 Ohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	EE 13A 372G	10	310		D-770
*For actual quantity of Spares furnished refer to Table IV.									
'May be used in place of part listed with corresponding symbol.									

TABLE II  
PARTS LIST BY SYMBOL DESIGNATION  
FOR MODEL RBL EQUIPMENT

OF  
PAGE  
BY  
CHECKED  
DATE  
DATE

TABLE II

PARTS LIST BY SYMBOL DESIGNATION  
FOR MODEL RBL EQUIPMENTPAGE \_\_\_\_\_ OF \_\_\_\_\_  
BY \_\_\_\_\_  
CHECKED \_\_\_\_\_  
DATE \_\_\_\_\_

SYMBOL DESIG.	FUNCTION	DESCRIPTION	NAVY TYPE NUMBER	NAVY DRAWING OR SPEC.	MFR	MFR. DESIG.	SPECIAL TOLERANCE, RATING OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
RESISTORS (Continued)								
*R-121'	Voltage Divider	50,000 Ohm $\pm 10\%$ , 1/2 Watt, Fixed	-63360-10	RE 13A 3720	220	SCI-1/2		E-635
*R-122	V-105 Plate Filter	Same as R-121	-63360-10					
*R-123	V-106 Grid	Same as R-111	-63360-10					
*R-124	V-106 Cathode	500 Ohm $\pm 10\%$ , 2 Watt, Fixed	-63474-10	RE 13A 3720	10	316		D-791
*R-124'	V-106 Cathode	500 Ohm $\pm 10\%$ , 2 Watt, Fixed	-63474-10	RE 13A 3720	220	SI-2		E-637
*R-125	V-104 Plate Filter	Same as R-117	-63360-10					
*R-126	V-102 and V-103 Plate Filter	10,000 Ohm $\pm 10\%$ , 2 Watt, Fixed	-63474-10	RE 13A 3720	10	316		D-791
*R-126'	V-102 and V-103 Plate Filter	10,000 Ohm $\pm 10\%$ , 2 Watt, Fixed	-63474-10	RE 13A 3720	220	SI-2		E-637
*R-127	Regeneration Control	25,000 Ohm, W.W. Var., 1.5 Watt	-631287	RE 13A 492	11	P58-25000	I-4168-B	D-771
*R-128	V-103 Screen Filter	.1 Megohm $\pm 10\%$ , 2 Watt, Fixed	-63474-10	RE 13A 3720	10	316		D-791
*R-128'	V-103 Screen Filter	.1 Megohm $\pm 10\%$ , 2 Watt, Fixed	-63474-10	RE 13A 3720	220	SI-2		E-637
*R-129	V-102 Plate Filter	Same as R-102	-63360-10					
*R-130	V-101 Plate Filter	Same as R-102	-63360-10					
*R-131	Voltage Divider	20,000 Ohm $\pm 10\%$ , 2 Watt, Fixed	-63474-10	RE 13A 3720	10	316		D-791
*R-131'	Voltage Divider	20,000 Ohm $\pm 10\%$ , 2 Watt, Fixed	-63474-10	RE 13A 3720	220	SI-2		E-637
*For actual quantity of Spares furnished refer to Table IV.								
'May be used in place of part listed with corresponding symbol.								

SYMBOL		FUNCTION	DESCRIPTION	NAVY TYPE NUMBER	NAVY DRAWING OR SPEC.	MFR	MFR. DESIG.	SPECIAL TOLERANCE, RATING OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
DESIG.									
RESISTORS (Continued)									
*R-132		Voltage Divider	Same as R-131	-63474-10					
*R-133		Gain Compensation	750 Ohm, W.W. Var., 1.5 Watt	-631284	RE 13A 492	11	P58-750	D-595	D-595
*R-134		R.F. Gain Control	5,000 Ohm, W.W. Var., 1.5 Watt	-631285	RE 13A 492	11	P58-5000	I-4168-A	D-771
*R-135		Voltage Divider	5,000 Ohm $\pm 10\%$ , 2 Watt, Fixed	-63474-10	RE 13A 372G	10	316		D-791
*R-135'		Voltage Divider	5,000 Ohm $\pm 10\%$ , 2 Watt, Fixed	-63474-10	RE 13A 372G	220	SI-2		E-637
*R-136		Long Ant. Static Drain	Same as R-111	-63360-10					
*R-137		Short Ant. Static Drain	Same as R-119	-63360-10					
			SWITCHES						
*S-101		Oscillation Test Switch	Single Circuit Closing	-24047		5	2001		D-776
*S-102		Power Supply Switch	Dual Switch Assembly			3	1570-NM		D-666
	A	A.C. Line Switch	SPST Toggle, Slotted Handle	-24146		3	80993-C		D-772
	B	Heater and B+ Switch	DPST Toggle, Slotted Handle	-24147		3	81009-P		D-773
S-103		Not Used							
S-104		Not Used							
*S-105		Limiter Switch Assembly	Single Switch Assembly			3	81021-Y		D-667
	A	Limiter Switch	SPDT Toggle, Slotted Handle	-24148		3	81021-W		D-863
*S-106		Audio Selectivity Switch	4PST Rotary, Ceramic	-24148		111	22744-HIC		D-807
			*For actual quantity of Spares furnished refer to Table IV.						
			*May be used in place of part listed with corresponding symbol.						

SYMBOL		FUNCTION	DESCRIPTION	NAVY TYPE NUMBER	NAVY DRAWING OR SPEC.	MFR	MFR. DESIG.	SPECIAL TOLERANCE, RATING OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
DESIG.									
SWITCHES (Continued)									
S-107		Band Switch	14 Pole 6 Position Rotary			1	SA-66-A		D-659
A		Band Switch Section	1 Pole 6 Position Ceramic Section			1	D-550		D-550
B		Band Switch Section	Same as S-107A						
C		Band Switch Section	Same as S-107A						
D		Band Switch Section	Same as S-107A						
E		Band Switch Section	Same as S-107A						
F		Band Switch Section	Same as S-107A						
G		Band Switch Section	Same as S-107A						
H		Band Switch Section	Same as S-107A						
J		Band Switch Section	Same as S-107A						
K		Band Switch Section	Same as S-107A						
L		Band Switch Section	Same as S-107A						
M		Band Switch Section	Same as S-107A						
N		Band Switch Section	Same as S-107A						
P		Band Switch Section	Same as S-107A						
TRANSFORMERS									
*T-101		Power Transformer	115 V., 50/60 Cycle, 1 Phase, 50 Watt			1	SA-31-0		D-778
		Primary: Terminals 1 and 4	600T, No. 25E, DC Res. 10 Ohms						
			$\pm 10\%$ , 115 V., 0.5 Amp.						
		Heater Secondary: Terminals 3 and 6	35T, No. 16E, DC Res. .12 Ohms						
			$\pm 10\%$ , 6.3 V., 3 Amp.						







TABLE II

PARTS LIST BY SYMBOL DESIGNATION  
FOR MODEL RBL EQUIPMENT

PAGE

OF

BY  
CHECKEDDATE  
DATE

FUNCTION

DESCRIPTION

NAVY TYPE  
NUMBERNAVY DRAWING  
OR SPEC.

MFR.

MFR.  
DESIG.SPECIAL  
TOLERANCE,  
RATING OR,  
MODIFICATIONNATIONAL CO.  
DRAWING AND  
PART NUMBER

SYMBOL	FUNCTION	DESCRIPTION	NAVY TYPE NUMBER	NAVY DRAWING OR SPEC.	MFR.	MFR. DESIG.	SPECIAL TOLERANCE, RATING OR, MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
* X-111	Holder for F-102	Same as X-110						
* AF-101	Low-Pass Filter	FILTERS Three Section; Cut-off at 800 Or 3500 C/S by External Switch Impedance: 50,000/50,000 Ohms	-53108		1	SA-31-F		D-780
* AF-102	High-Pass Filter	Three Section; Cut-off at 800 C/S, Impedance: 50,000/50,000 Ohms	-53109		1	SA-31-I		D-779
* A-201	Shock Mount	STRUCTURAL PARTS Rubber Shock Mount						
* A-202	Shock Mount	Same as A-201			125	200PH26		
* A-203	Shock Mount	Same as A-201						
* A-204	Shock Mount	Same as A-201						
H-201	Receiver Mounting Screw	HARDWARE Screw, 1/2" Hex. Head, 12-24 Thd., 1 3/16" Long			1	D-759		D-759
H-202	Receiver Mounting Screw	Same as H-201						
H-203	Receiver Mounting Screw	Same as H-201						
H-204	Receiver Mounting Screw	Same as H-201						

SYMBOL		FUNCTION	DESCRIPTION	NAVY TYPE NUMBER	NAVY DRAWING OR SPEC.	MFR.	MFR. DESIG.	SPECIAL TOLERANCE, RATING OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
DESIG.									
N-201		Mounting Base Name Plate	Etched Zinc			1	D-901	RBL Only	D-901
N-201		Mounting Base Name Plate	Etched Zinc			1	D-929	RBL-1 Only	D-929
N-201		Mounting Base Name Plate	Stamped Bakelite			1	D-930	RBL-2 Only	D-930
N-201		Mounting Base Name Plate	Etched Aluminum			1	F-672	RBL-5 Only	F-672

NAMEPLATES

EQUIPMENT SPARE PARTS BY NAVY TYPE DESIGNATION

FOR MODEL RBL-5 EQUIPMENT

QUANTITY	NAVY TYPE NUMBER	ALL SYMBOL DESIGNATIONS INVOLVED	DESCRIPTION	NAVY DRAWING OR SPEC.	MFR. DESIG.	SPECIAL TOLERANCE OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
MISCELLANEOUS CLASS 10							
1	E-101		Terminal Panel		E-265 Pt 6		E-265 Pt 6
1	E-102		Binding Posts		SA:26-C		
1	K-103		Binding Post		SA:91-D		
4	A-201, A-202, A-203, A-204		Shockproof Mount		200PH25		
2			Tube Socket Contact		E-769 Pt 1		
2			Insulator Holder		D-664		
2			Insulated Mounting Lugs		1510		
2			Insulated Mounting Lugs		1513		
2			Insulated Mounting Lugs		1520		
1			Insulated Mounting Lugs		1528		
1			Insulated Mounting Lugs		1525		
4	I-101, I-102		Spare Parts Box		D-890 Pt 11		
1			Spring		B-367 Pt 2		
1			Switch Section		D-550		
1			Spanner Wrench		SA:101-H		
1			Allen Wrench, #6		F-131 Pt 2		
1			Allen Wrench, #8		F-131 Pt 3		
4			Lamp		47		
SWITCHES CLASS 24							
1	-24047	S-101	Switch, Single Circuit Closing		2001		
1		S-102	Switch, Dual Rotary Assembly		1570-NM		D-776 Pt 1
1		S-105	Switch, SFPT Rotary Assembly		81021-V		D-666
1		S-106	Switch, 4PST Rotary, Ceramic		22744-HLC		D-667
FUSES CLASS 28							
20		F-101, F-102	Fuse, 2 Amp. Glass Enclosed		76	1042	F-135 Pt 4
TRANSFORMERS AND REACTORS CLASS 30							
1	-30930	T-101	Transformer, 115V $\pm 10\%$ , 50 Watts		1	SA:31-C	
1	-30931	L-100	Reactor, 17 Henry $\pm 20\%$		1	SA:31-E	D-778
1	-30932	T-102	Transformer, 56,000/600 Ohms		1	SA:31-H	D-782 Pt 1
VACUUM TUBES CLASS 38							
2	-5Y3G	V-107	Vacuum Tube, Rectifier				
2	-6H6	V-105	Vacuum Tube, Dual Diode				
2	-6K6GT	V-106	Vacuum Tube, Power Output				
2	-6SG7	V-104	Vacuum Tube, Pentode				
6	-6SK7	V-101, V-102, V-103	Vacuum Tube, Triple Grid Amp.				

Spare parts supplied are as listed, or the equivalent

EQUIPMENT SPARE PARTS LIST BY NAVY TYPE DESIGNATION  
FOR MODEL RBL-6 EQUIPMENT

QUANTITY	NAVY TYPE NUMBER	ALL SYMBOL DESIGNATIONS INVOLVED	DESCRIPTION	NAVY DRAWING OR SPEC.	MFR. DESIG.	SPECIAL TOLERANCE OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
R. F. TRANSFORMERS AND INDUCTORS CLASS 47							
1	-47252	L-101	Inductor, 18 H. ±20%		SA:31-D		D-78L Pt 1
1		L-113	R.F. Transformer Assembly, Det.		SA:53-D	Bands D, E, & F	
1		L-109	R.F. Transformer Assembly, 1st RF		SA:53-F	Bands D, E, & F	
1		L-111	R.F. Transformer Assembly, 2nd RF		SA:53-K	Bands A, B, & C	
1		L-114	R.F. Transformer Assembly, Det.		SA:53-A	Bands A, B, & C	
1		L-110	R.F. Transformer Assembly, 1st RF		SA:53-C	Bands A, B, & C	
1		L-112	R.F. Transformer Assembly, 2nd RF		SA:53-B	Bands A, B, & C	
CAPACITORS CLASS 48							
1	-48983	C-106, C-124, C-130, C-131	Mica .001		1487	±10%	D-775 Pt 55
2	-481073	C-154, C-168, C-169	Paper .1		14 489	±10%	E-369 Pt 16
2	-481080	C-159, C-160, C-161	Paper 4.		13 P8213	±10%	E-353 Pt 2
1	-481098	C-117, C-142, C-143	Mica .0009		14 1467	±10%	D-775 Pt 63
4	-481428	C-102	Mica .0008		14 1467	±10%	D-775 Pt 69
4	-481997	C-118, C-119, C-122, C-123	Paper .5		110 OM-650-0	±10%	F-289 Pt 2
5	-481998	C-137, C-155, C-162, C-163	Paper 1.		110 OM-601-0	±10%	F-289 Pt 1
		C-120, C-125, C-126, C-128					
		C-129, C-132, C-134, C-135					
		C-136, C-158					
1		C-156	Paper .0025		340	±10%	E-784 Pt 10
1		C-166, C-167	Paper .003		340	±10%	E-784 Pt 12
1		C-139, C-144	Paper .004		340	±10%	E-784 Pt 14
2		C-140, C-146, C-148, C-152	Paper .005		340	±10%	E-784 Pt 2
1		C-149, C-153	Paper .006		340	±10%	E-784 Pt 4
1		C-150, C-151	Paper .008		340	±10%	E-784 Pt 6
2		C-141, C-145	Paper .01		340	±10%	E-784 Pt 8
1		C-108	Ceramic .00004		Class D	±5%	D-825-D Pt 420
1		C-105	Ceramic .000045		Class D	±5%	D-825-D Pt 416
1		C-184	Ceramic .00005		Class D	±10%	D-825-D Pt 417
1		C-107	Ceramic .00006		Class C	±5%	D-825-C Pt 319
1		C-127, C-165	Ceramic .0001		Class C	±10%	D-825-C Pt 324
1		C-101	Ceramic .0003		Class C	±10%	D-825-C Pt 333
1		C-138, C-147	Ceramic .00035		Class C	±10%	D-825-C Pt 330
PLUGS, JACKS AND SOCKETS CLASS 49							
1	-49120	J-104	Jack, Concentric Antenna		259		F-455 Pt 1
1	-49121-A	P-104	Plug, Concentric Antenna		259		F-456 Pt 1
1	-49201	J-103	Socket, Power, Small 7 Prong		128 610P7S		D-769 Pt 1
1		P-102	Plug, Three Wire AC Power		93 7484		F-439 Pt 1
1		J-102	Socket, Three Wire AC Power		93 7486		F-438 Pt 1
1		J-101	Phone Jack		129 IJ-102		D-777 Pt 1
1		P-103	Plug Assembly, 7 Prong, Female		1 SA:1196		

Spare parts supplied are as listed, or the equivalent

EQUIPMENT SPARE PARTS LIST BY NAVY TYPE DESIGNATION  
FOR MODEL REL-5 EQUIPMENT

QUANTITY	NAVY TYPE NUMBER	ALL SYMBOL DESIGNATIONS INVOLVED	DESCRIPTION	NAVY DRAWING OR SPEC.	MFR. DESIG.	SPECIAL TOLERANCE CR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
PLUGS, JACKS AND SOCKETS (CONTINUED) CLASS 49							
1		X-110, X-111	Fuse Extractor Post		76		
1		X-108, X-109	Lamp Socket Assembly, Bayonet		127		
4	-49373	X-101 Through X-107	Socket, Octal, Ceramio		128		D-887 C-465 Pt 1 D-806 Pt 1
FILTERS CLASS 53							
1	-53108	AF-101	Low Pass Filter				
1	-53109	AF-102	High Pass Filter				
INSULATORS CLASS 61							
4			Insulator		1	SA:31-F SA:31-I	D-780 Pt 1 D-779 Pt 1
RESISTORS CLASS 63							
1	-63360	R-101, R-104	Fixed, 350 Ohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
1	-63360	R-102, R-105, R-107, R-110	Fixed, 500 Ohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
4	-63360	R-129, R-130, R-138	Fixed, 10000 Ohms, 2 Watt		220	SCI-2	E-635 Pt 2
1	-63360	R-117, R-125	Fixed, 20000 Ohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
1	-63360	R-108, R-115	Fixed, 25000 Ohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
1	-63360	R-121, R-122	Fixed, 50000 Ohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
1	-63360	R-114, R-116, R-118	Fixed, 100000 Ohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
2	-63360	R-109, R-119, R-137	Fixed, 250000 Ohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
2	-63360	R-111, R-113, R-123, R-136	Fixed, 500000 Ohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
1	-63360	R-103	Fixed, 5 Megohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
1	-63474	R-106	Fixed, 10 Megohms, 1/2 Watt		220	SI-2	E-635 Pt 2
1	-63474	R-124	Fixed, 500 Ohms, 2 Watt		220	SI-2	E-635 Pt 2
1	-63474	R-155	Fixed, 5000 Ohms, 2 Watt		220	SI-2	E-635 Pt 2
1	-63474	R-126	Fixed, 10000 Ohms, 2 Watt		220	SI-2	E-635 Pt 2
1	-63474	R-151, R-132	Fixed, 20000 Ohms, 2 Watt		220	SI-2	E-635 Pt 2
1	-63474	R-128	Fixed, 20000 Ohms, 2 Watt		220	SI-2	E-635 Pt 2
1	-631284	R-133	Fixed, 100000 Ohms, 2 Watt		220	SI-2	E-637 Pt 2
1	-631285	R-134	Var., 750 Ohms, 1/2 Watt		11	SI-2	E-637 Pt 2
1	-631286	R-120	Var., 5000 Ohms, 1/2 Watt		11	P58-750	E-637 Pt 2
1	-631287	R-127	Var., 10000 Ohms, 1/2 Watt		11	P58-5000	D-595 Pt 1
			Var., 25000 Ohms, 1/2 Watt		11	P58-25000	D-771 Pt 1 D-771 Pt 3 D-771 Pt 5

Spare parts supplied are as listed, or the equivalent

TENDER SPARE PARTS LIST BY NAVY TYPE DESIGNATION  
FOR MODEL RBL-5 EQUIPMENT

QUANTITY	NAVY TYPE NUMBER	ALL SYMBOL DESIGNATIONS INVOLVED	DESCRIPTION	NAVY DRAWING OR SPEC.	MFR.	MFR. DESIG.	SPECIAL TOLERANCE OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
MISCELLANEOUS CLASS 10								
1	E-101		Terminal Panel		1	E-265 Pt 6		E-265 Pt 6
1	E-102		Binding Post		1	SA:26-C		F-136 Pt 6
1	E-103		Binding Post		1	SA:91-D		E-808 Pt 1
8	I-101, I-102		Lamp		18	47		E-789 Pt 1
4	A-201, A-202, A-203, A-204		Shockproof Mount		125	200PH25		D-664
4			Tube Socket Contact		1	E-769 Pt 1		D-947 Pt 1
4			Insulator Holder		8	1510		D-947 Pt 2
4			Insulated Mounting Lugs		8	1513		D-947 Pt 4
3			Insulated Mounting Lugs		8	1520		D-947 Pt 6
3			Insulated Mounting Lugs		8	1529		D-947 Pt 7
4			Insulated Mounting Lugs		8	1525		D-890 Pt 12
1			Spare Parts Box		1	D-890 Pt 12		D-890 Pt 12
2			Spring		1	E-367 Pt 2		B-367 Pt 2
7			Switch Section		1	D-550		B-550
1			Spanner Wrench		1	SA:101-H		F-131 Pt 2
1			Allen Wrench		1	F-131 Pt 2		F-131 Pt 3
1			Allen Wrench		1	F-131 Pt 5		
2			Coupling		1	SA:22-H		D-694 Pt 1
2			Coupling		1	D-694 Pt 1		D-694 Pt 1
1			Spur Gear		1	D-435 Pt 2		D-435 Pt 2
1			Spur Gear		1	D-435 Pt 3		D-435 Pt 3
1			Spur Gear		1	D-435 Pt 4		D-435 Pt 4
1			Spur Gear		1	D-949		D-949
1			Stop Gear		1	D-858		D-858
1			Drive Gear		1	E-114		E-114
SWITCHES CLASS 24								
1	-24047	S-101	Switch, Single Circuit Closing		5	2001		D-776 Pt 1
1		S-102	Switch, Dual Rotary Assembly		3	1570-NM		D-666
1		S-105	Switch, SPDT Rotary Assembly		3	81021-V		D-667
1		S-106	Switch, 4PST Rotary, Ceramic		111	22744-HIC		D-807
FUSES CLASS 26								
40		F-101, F-102	Fuse, 2 Amp. Glass Enclosed		76	1042		F-135 Pt 4
A.F. TRANSFORMERS AND REACTORS CLASS 30								
2	-30930	T-101	Transformer, 115V $\pm$ 10%, 50 Watts		1	SA:31-G		D-778 Pt 1
2	-30931	L-108	Reactor, 17 Henry $\pm$ 20%		1	SA:31-E		D-782 Pt 1
2	-30932	T-102	Transformer, 36,000/600 Ohms		1	SA:31-H		D-783 Pt 1

Spare parts supplied are as listed, or the equivalent

TENDER SPARE PARTS LIST BY NAVY TYPE DESIGNATION  
FOR MODEL RBL-5 EQUIPMENT

QUANTITY	NAVY TYPE NUMBER	ALL SYMBOL DESIGNATIONS INVOLVED	DESCRIPTION	NAVY DRAWING OR SPEC.	MFR. DESIG.	SPECIAL TOLERANCE OR MODIFICATION	NATIONAL CC. DRAWING AND PART NUMBER
VACUUM TUBES CLASS 38							
3	-5Y3G	V-107	Vacuum Tube, Rectifier		5Y3G		
3	-6H6	V-105	Vacuum Tube, Dual Diode		6H6		
3	-6K6GT	V-106	Vacuum Tube, Power Output		6K6GT		
9	-6SK7	V-101, V-102, V-103	Vacuum Tube, Pentode		6SK7		
3	-6SG7	V-104	Vacuum Tube, Triple Grid Amp.		6SG7		
R. F. TRANSFORMERS AND INDUCTORS CLASS 47							
2	-47252	L-101	Inductor, 18 H. $\pm 20\%$		SA:31-D	Bands D, E, & F	D-781 Pt 1
2		L-113	R.F. Transformer Assembly, Det		SA:53-D	Bands D, E, & F	
2		L-109	R.F. Transformer Assembly, 1st RF		SA:53-F	Bands D, E, & F	
2		L-111	R.F. Transformer Assembly, 2nd RF		SA:53-E	Bands A, B, & C	
2		L-114	R.F. Transformer Assembly, Det.		SA:53-A	Bands A, B, & C	
2		L-110	R.F. Transformer Assembly, 1st RF		SA:53-C	Bands A, B, & C	
2		L-112	R.F. Transformer Assembly, 2nd RF		SA:53-B	Bands A, B, & C	
CAPACITORS CLASS 48							
3	-48983	C-106, C-124, C-130, C-131	Mica .001	Mfd. 500 V DC W	14	1467	$\pm 10\%$
5	-481073	C-154, C-168	Paper .1	Mfd. 400 V DC W	14	489	$\pm 10\%$
5	-481080	C-159, C-160, C-161	Paper 4.	Mfd. 600 V DC W	13	P-8213	$\pm 10\%$
2	-481098	C-117, C-142, C-143	Mica .0009	Mfd. 500 V DC W	14	1467	$\pm 10\%$
1	-481428	C-102	Mica .0008	Mfd. 500 V DC W	14	1467	$\pm 10\%$
12	-481997	C-118 C-119, C-122, C-123	Paper .5	Mfd. 600 V DC W	110	OK-650-0	$\pm 10\%$
15	-481998	C-137, C-158, C-162, C-163	Paper 1.	Mfd. 600 V DC W	110	OK-601-0	$\pm 10\%$
		C-120, C-125, C-126, C-128					
		C-129, C-132, C-134, C-135					
		C-136					
		C-156					
2		C-166, C-167	Paper .0025	Mfd. 400 V DC W	218	340	$\pm 10\%$
3		C-139, C-144	Paper .003	Mfd. 400 V DC W	218	340	$\pm 10\%$
3		C-140, C-146, C-148, C-152	Paper .004	Mfd. 400 V DC W	218	340	$\pm 10\%$
3		C-149, C-153	Paper .005	Mfd. 400 V DC W	218	340	$\pm 10\%$
3		C-160, C-151	Paper .006	Mfd. 400 V DC W	218	340	$\pm 10\%$
6		C-141, C-145	Paper .01	Mfd. 400 V DC W	218	340	$\pm 10\%$
2		C-108	Ceramic .00004	Mfd. 500 V DC W	218	340	$\pm 10\%$
1		C-105	Ceramic .000045	Mfd. 500 V DC W	10	Class D	$\pm 10\%$
1		C-164	Ceramic .00005	Mfd. 500 V DC W	10	Class D	$\pm 15\%$
1		C-107	Ceramic .00006	Mfd. 500 V DC W	10	Class D	$\pm 15\%$
2		C-108, C-165	Ceramic .0001	Mfd. 500 V DC W	10	Class C	$\pm 15\%$
1		C-101	Ceramic .0003	Mfd. 500 V DC W	10	Class C	$\pm 10\%$
2		C-138, C-147	Ceramic .00035	Mfd. 500 V DC W	10	Class C	$\pm 10\%$
PLUGS, JACKS AND SOCKETS CLASS 49							
1	-49F20	J-104	Jack, Concentric Antenna		259		F-455 Pt 1

Spare parts supplied are as listed, or the equivalent



TENDER SPARE PARTS LIST BY NAVY TYPE DESIGNATION  
FOR MODEL RBL-5 EQUIPMENT

QUANTITY	NAVY TYPE NUMBER	ALL SYMBOL DESIGNATIONS INVOLVED	DESCRIPTION	NAVY DRAWING OR SPEC.	MFR. DESIG.	SPECIAL TOLERANCE OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
PLUGS, JACKS AND SOCKETS (CONTINUED) CLASS 49							
1	-49121-A	P-104	Plug, Concentric Antenna		259		F-456 Pt 1
1	-49201	J-103	Socket, Power, Small 7 Prong		128	61CP7S	D-769 Pt 1
4	-49373	X-101 Through X-107	Socket, Octal, Ceramic		128	RSS-8M	D-806 Pt 1
1		J-101	Phone Jack		129	IJ-102	D-777 Pt 1
1		P-102	Socket, Three Wire AC Power		93	7486	D-438 Pt 1
1		X-108, X-109	Plug, Three Wire AC Power		93	7484	F-439 Pt 1
1		X-110, X-111	Lamp Socket Assembly, Bayonet		127	85-UL	C-455 Pt 1
1		P-103	Fuse Extractor Post		76	1075	D-887
1			Plug Assembly, 7 Prong, Female		1	SA:1196	
FILTERS CLASS 53							
2	-53108	AF-102	Low Pass Filter		1	SA:31-F	D-780 Pt 1
2	-53109	AF-101	High Pass Filter		1	SA:31-I	D-779 Pt 1
INSULATORS CLASS 61							
8			Insulator		1	C-812	C-812
RESISTORS CLASS 63							
3	-63360	R-101, R-104	Fixed, 350 Ohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
2	-63360	R-112	Fixed, 500 Ohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
11	-63360	R-102, R-105, R-107, R-110 R-129, R-130, R-138	Fixed, 10000 Ohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
3	-63360	R-117, R-125	Fixed, 20000 Ohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
3	-63360	R-108, R-115	Fixed, 25000 Ohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
3	-63360	R-121, R-122	Fixed, 50000 Ohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
5	-63360	R-114, R-116, R-118	Fixed, 100000 Ohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
5	-63360	R-119, R-137	Fixed, 250000 Ohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
6	-63360	R-111, R-113, R-123, R-136	Fixed, 500000 Ohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
2	-63360	R-103	Fixed, 5 Megohms, 1/2 Watt		220	SCI-1	E-635 Pt 2
2	-63360	R-106	Fixed, 10 Megohms, 1/2 Watt		220	SI-2	E-637 Pt 2
2	-63474	R-124	Fixed, 500 Ohms, 2 Watt		220	SI-2	E-637 Pt 2
2	-63474	R-135	Fixed, 5000 Ohms, 2 Watt		220	SI-2	E-637 Pt 2
2	-63474	R-126	Fixed, 10000 Ohms, 2 Watt		220	SI-2	E-637 Pt 2
2	-63474	R-131, R-132	Fixed, 20000 Ohms, 2 Watt		220	SI-2	E-637 Pt 2
3	-63474	R-128	Fixed, 100000 Ohms, 2 Watt		220	SI-2	E-637 Pt 2
3	-631284	R-133	Var., 760 Ohms, 1/2 Watt		11	P58-750	D-595 Pt 1
3	-631285	R-134	Var., 5000 Ohms, 1/2 Watt		11	P58-5000	D-595 Pt 1
3	-631286	R-120	Var., 10000 Ohms, 1/2 Watt		11	P58-10000	D-771 Pt 3
3	-631287	R-127	Var., 25000 Ohms, 1/2 Watt		11	P58-25000	D-771 Pt 5

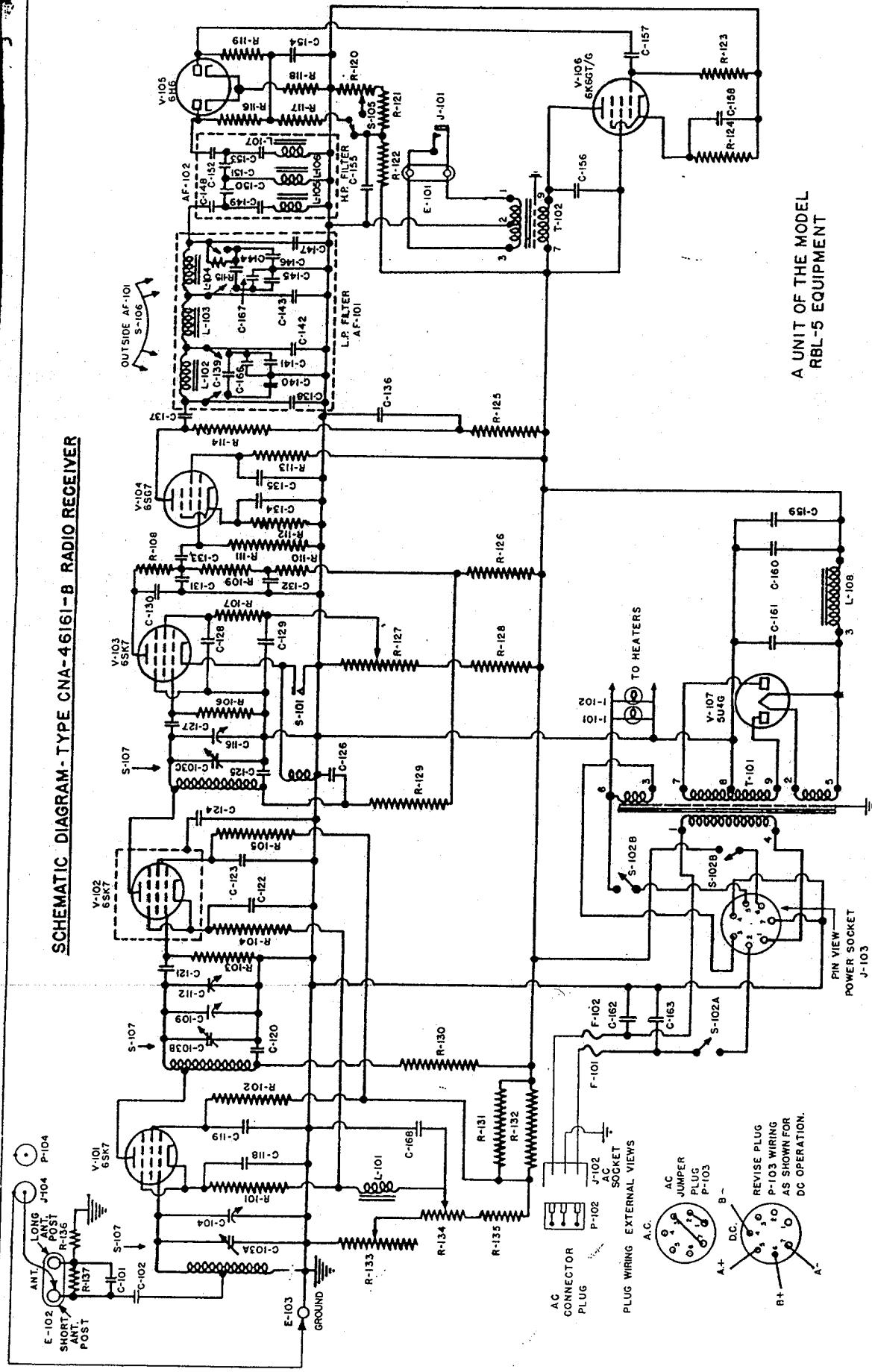
Spare parts supplied are as listed, or the equivalent

TABLE V  
LIST OF MANUFACTURERS

FOR MODEL RBL-5 RECEIVING EQUIPMENT

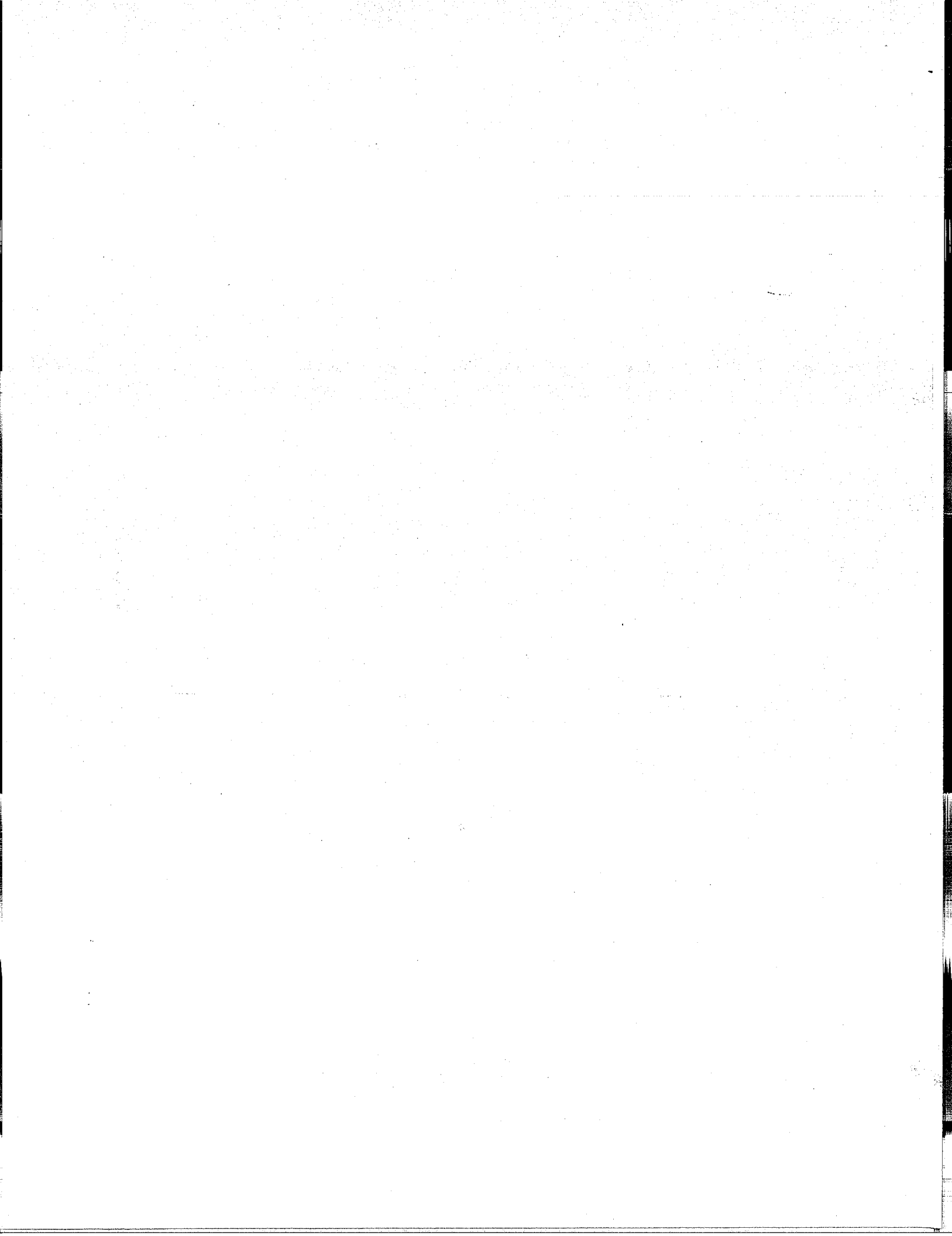
CODE NO	MFR. PREFIX	NAMES	ADDRESS
1	CNA	National Company, Inc.	Malden, Massachusetts
3	CHH	Arrow, Hart & Hegeman	Hartford, Connecticut
5	CMA	P. R. Mallory & Co.	Indianapolis, Indiana
8		Cinch Manufacturing Co.	Chicago, Illinois
10	CBN	Central Radio Laboratories	Milwaukee, Wisconsin
11	CMC	Claroostat Manufacturing Co.	Brooklyn, New York
13	CSF	Sprague Specialties Co.	North Adams, Massachusetts
14	CAAW	Aerovox Corporation	North Bedford, Massachusetts
18	CG	General Electric Company	Cleveland, Ohio
69		Cornish Wire Company, Inc.	New York City, New York
76	CLF	Littlefuse Laboratories	Chicago, Illinois
83		Hubbell, Harvey	Bridgeport, Connecticut
110	CTD	Tobe Deutschmann Corp.	Canton, Massachusetts
111		Oak Manufacturing Co.	Chicago, Illinois
125		Lord Manufacturing Co.	Erie, Pennsylvania
127		Alden Products Co.	Brockton, Massachusetts
128	CPH	American Phenolic Co.	Chicago, Illinois
129		Utah Radio Products Co.	Chicago, Illinois
259	CN	National Elec. Machine Shops	Washington, D.C.

**SCHEMATIC DIAGRAM-TYPE CNA-46161-B RADIO RECEIVER**



A UNIT OF THE MODEL  
RBL-5 EQUIPMENT

Fig. 1. Schematic Wiring Diagram - Type CNA-46161-B Radio Receiver



COIL SWITCH DIAGRAM - TYPE CNA-46161-B RADIO RECEIVER  
CA UNIT OF THE MODEL RBL-5 EQUIPMENT

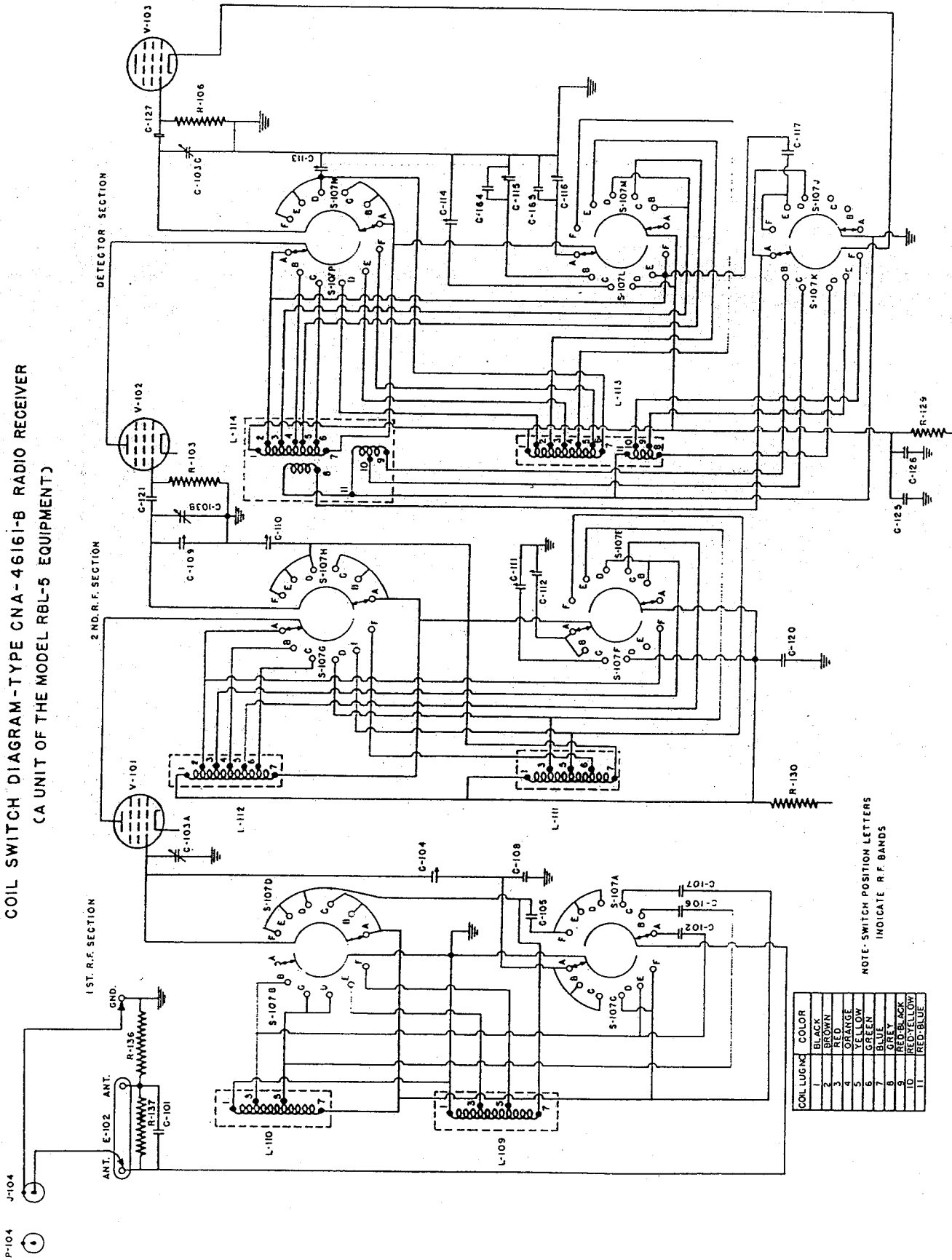
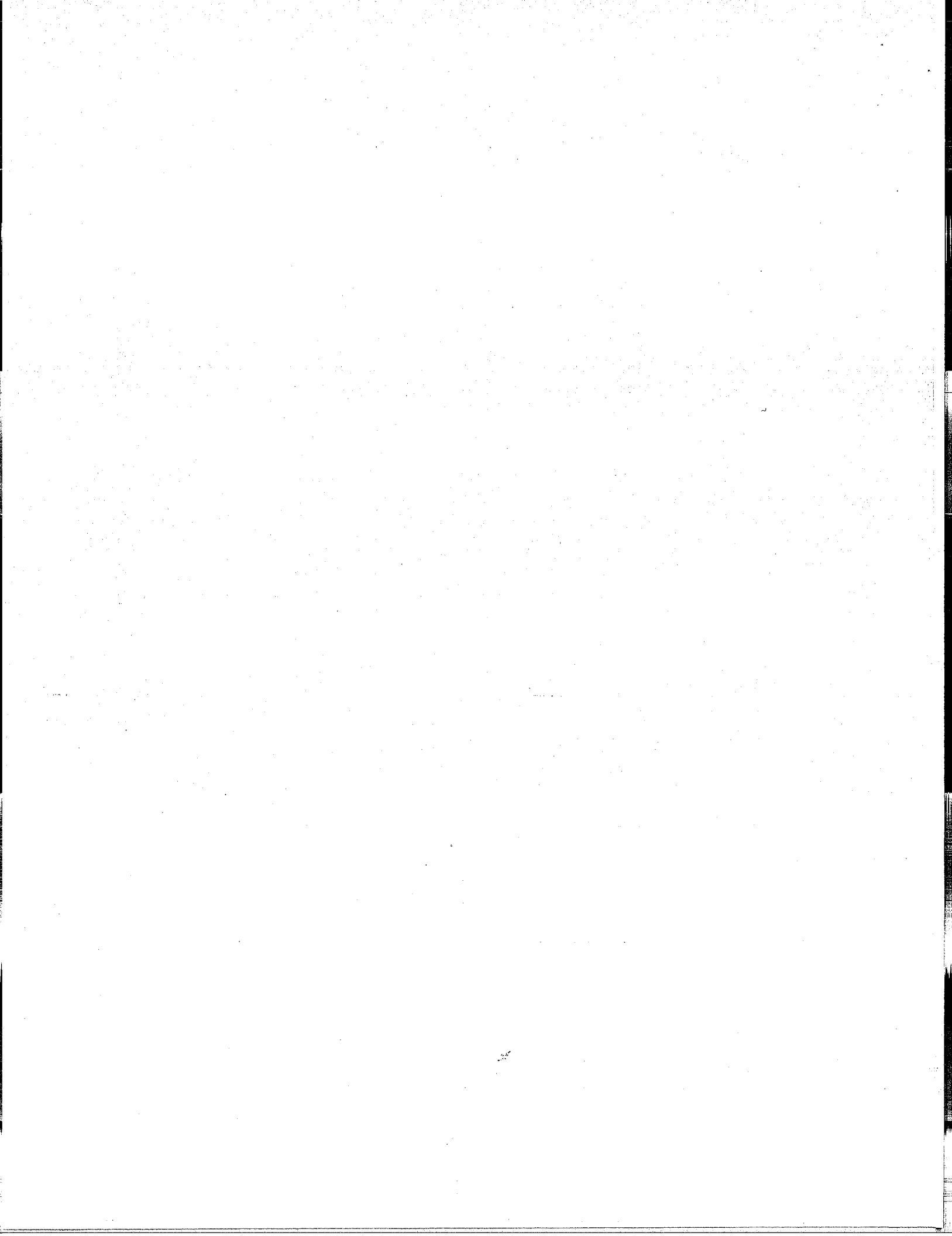


Fig. 2. Coil Switch Diagram - Type CNA-46161-B Radio Receiver



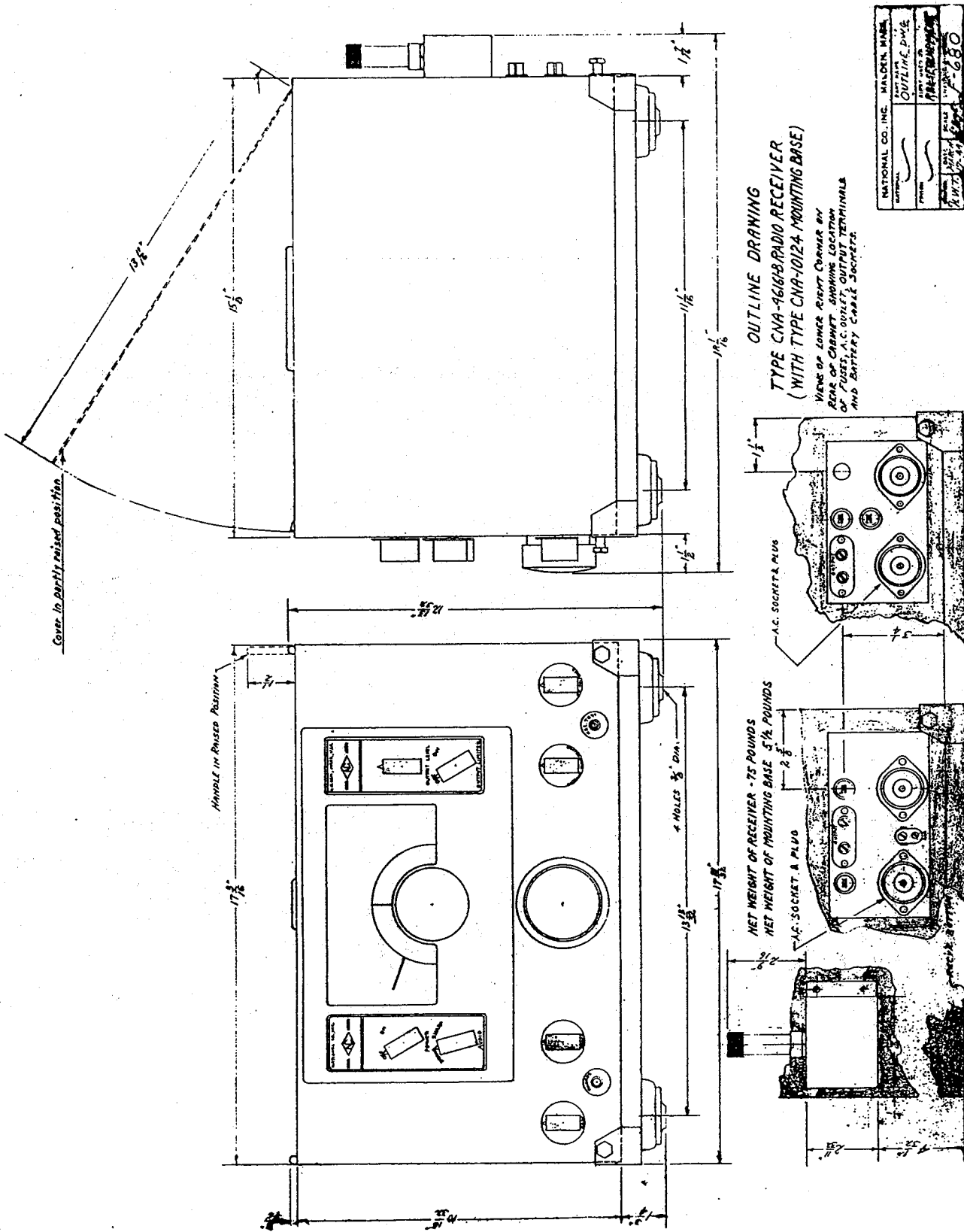
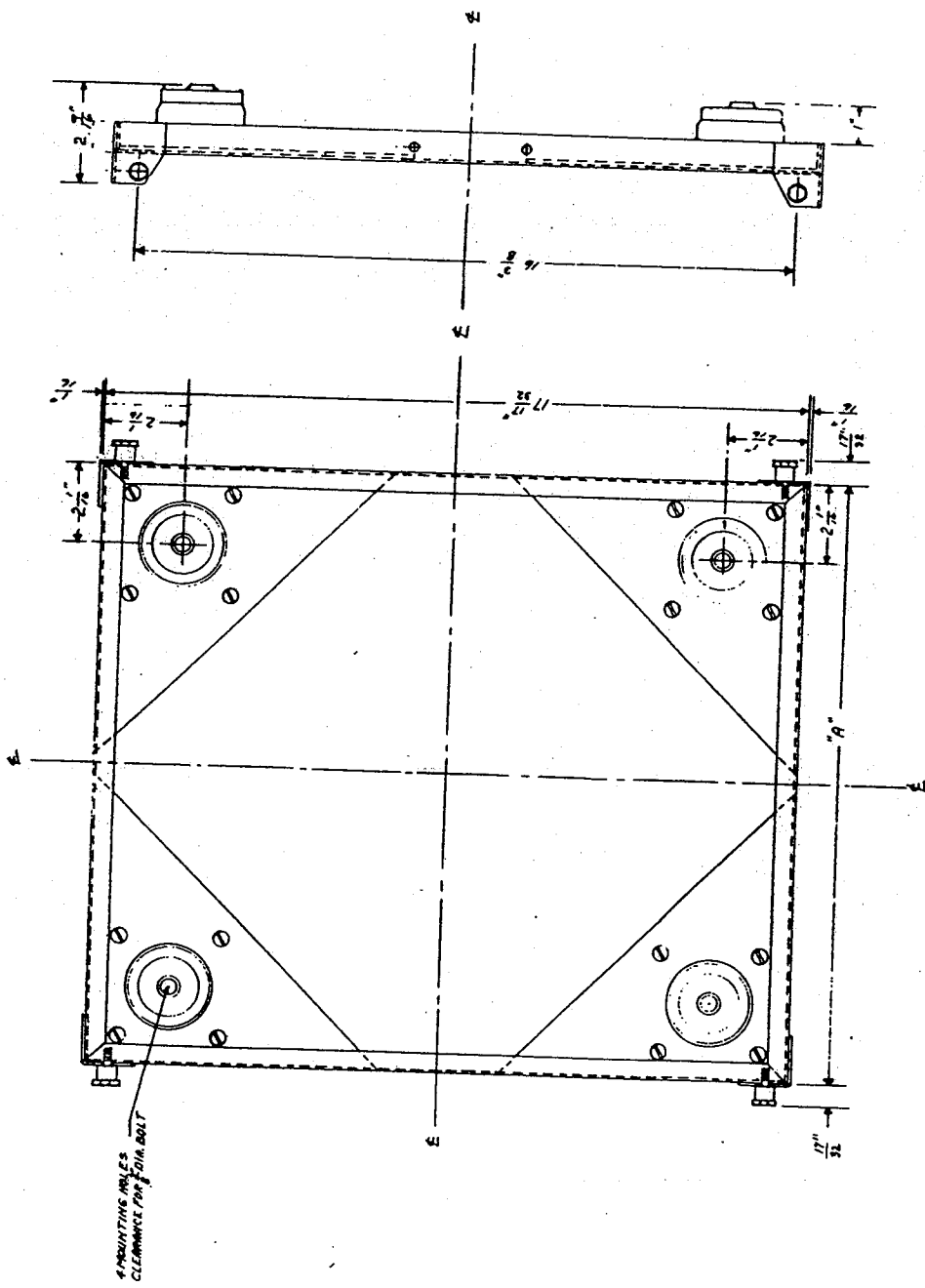


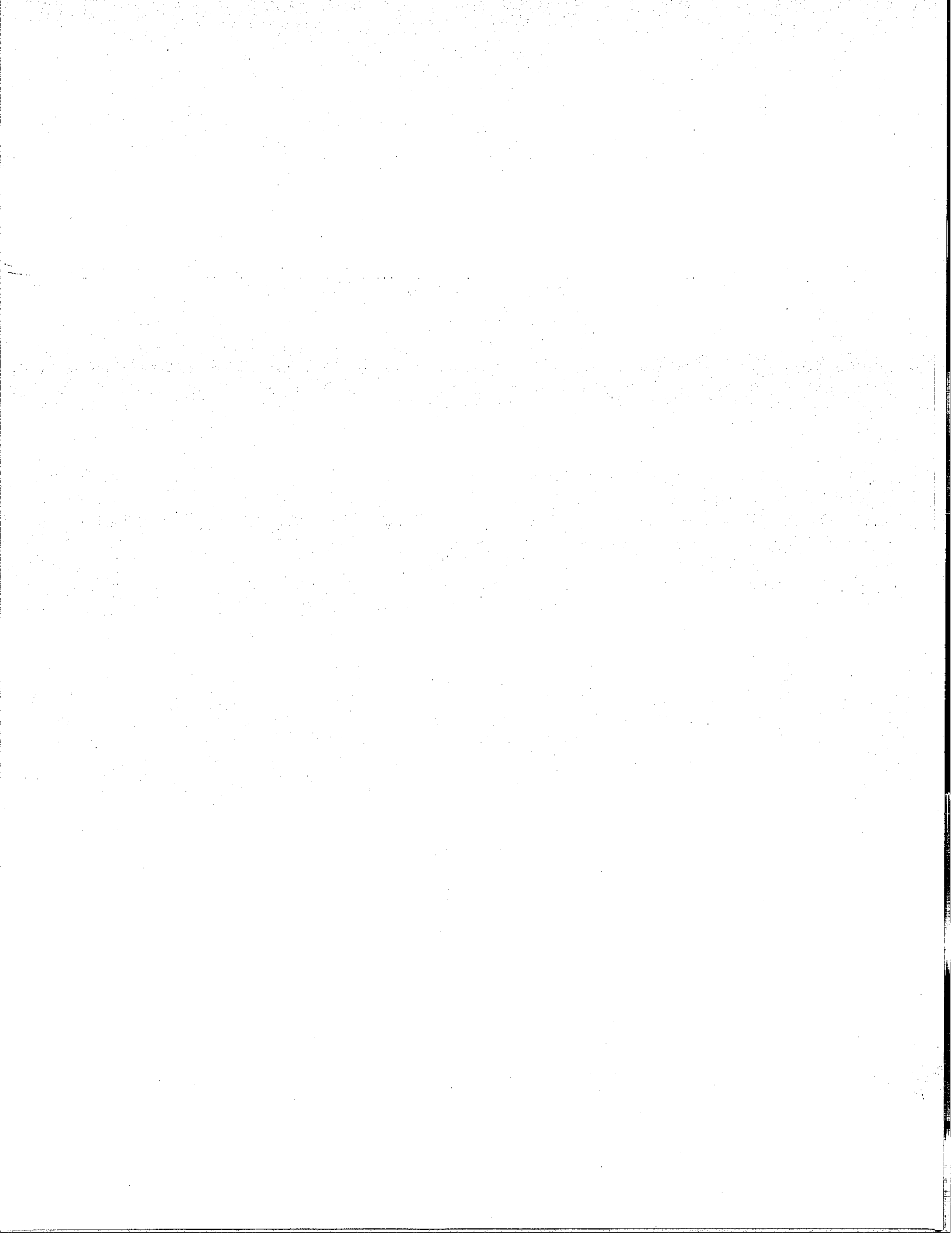
Fig. 3. Outline Drawing - Type CNA-46161-B Radio Receiver

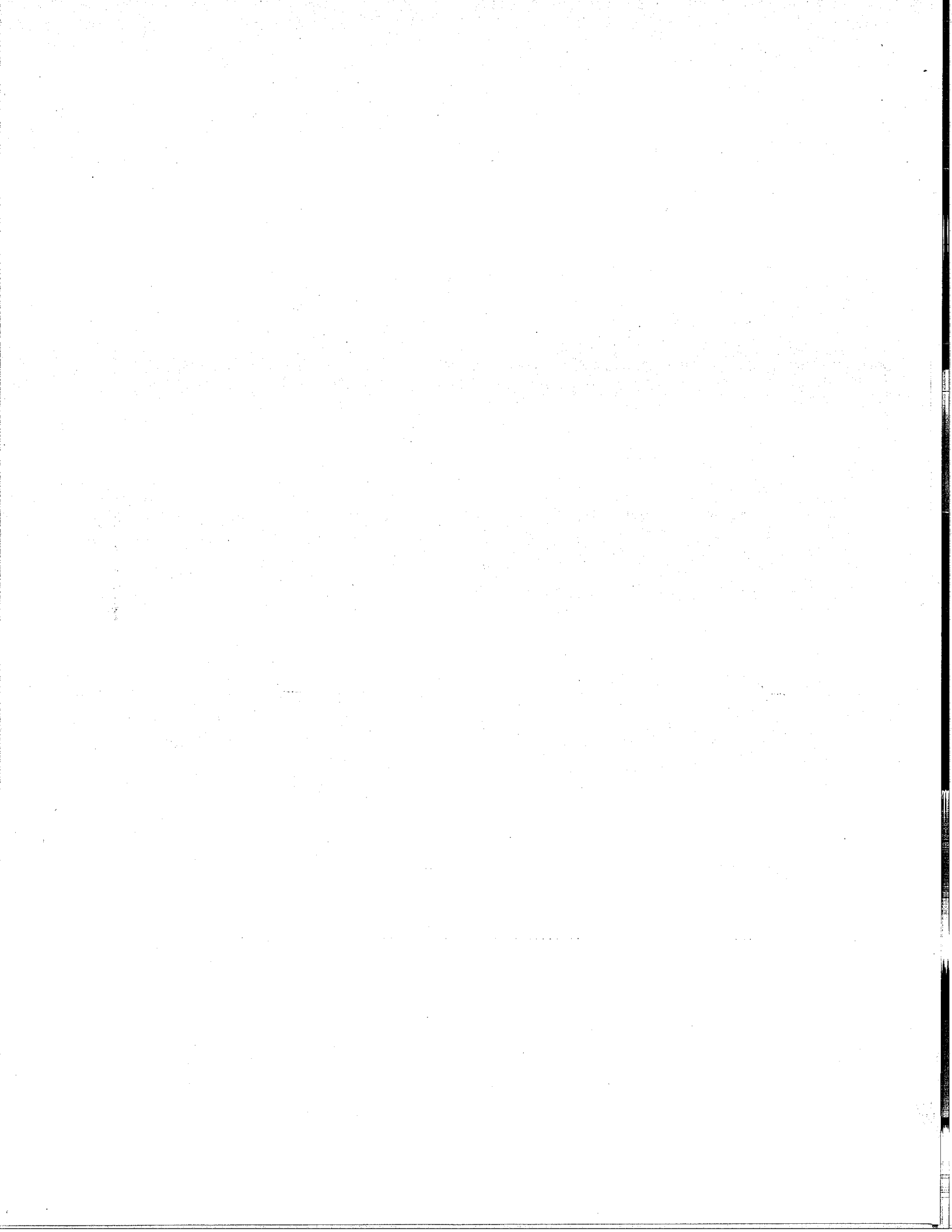


MOUNTING BASE	USED WITH	DIM. "A"	WEIGHT
CNA-10124	RBL	15 3/8"	5 1/4 lbs.
CNA-10125	RBL-2 RBL-1	15 3/8"	5 1/4 lbs.

Fig. 4. Outline Drawing - Type CNA-10124 Mounting Base







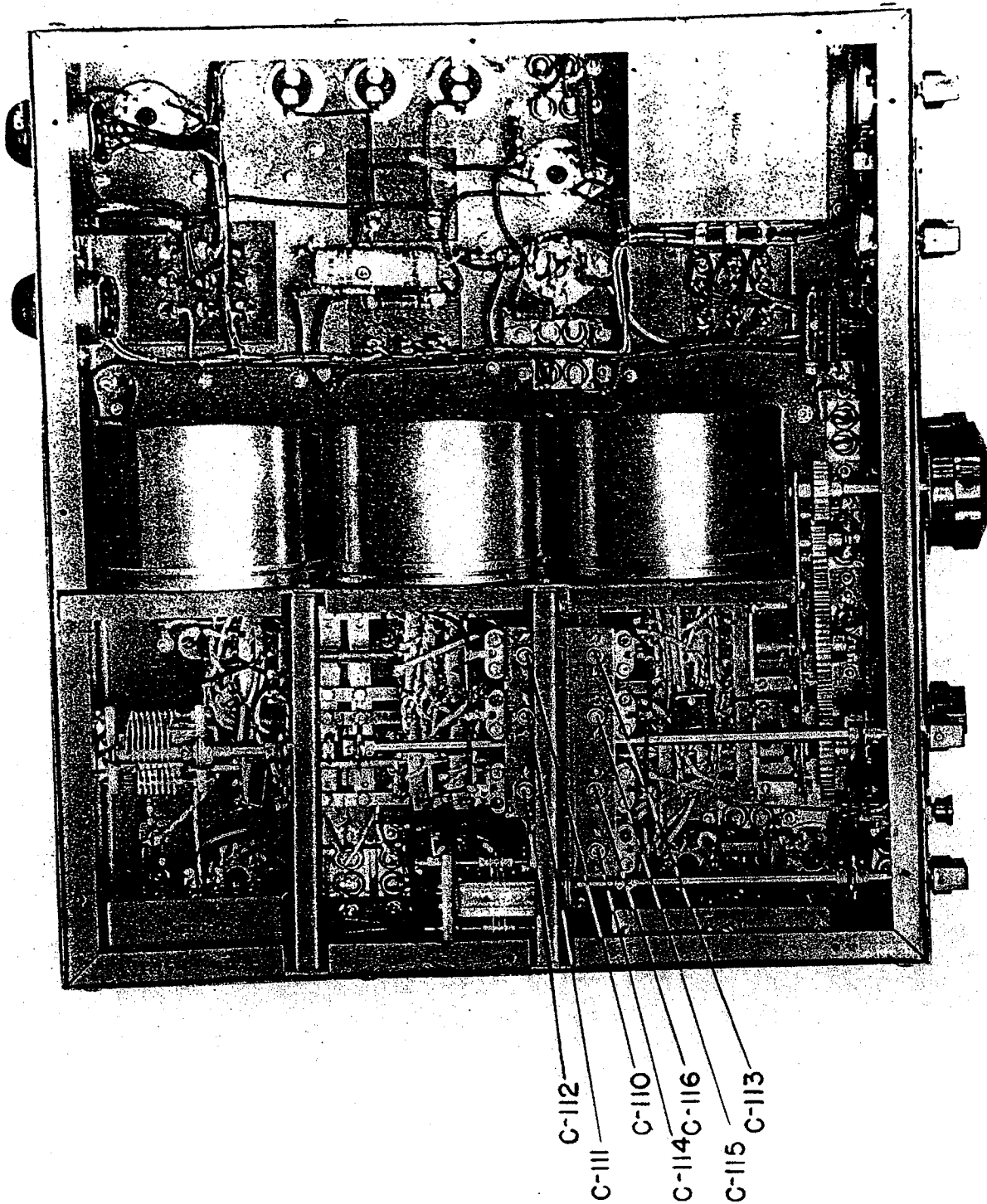


Fig. 5. Trimmer Positions

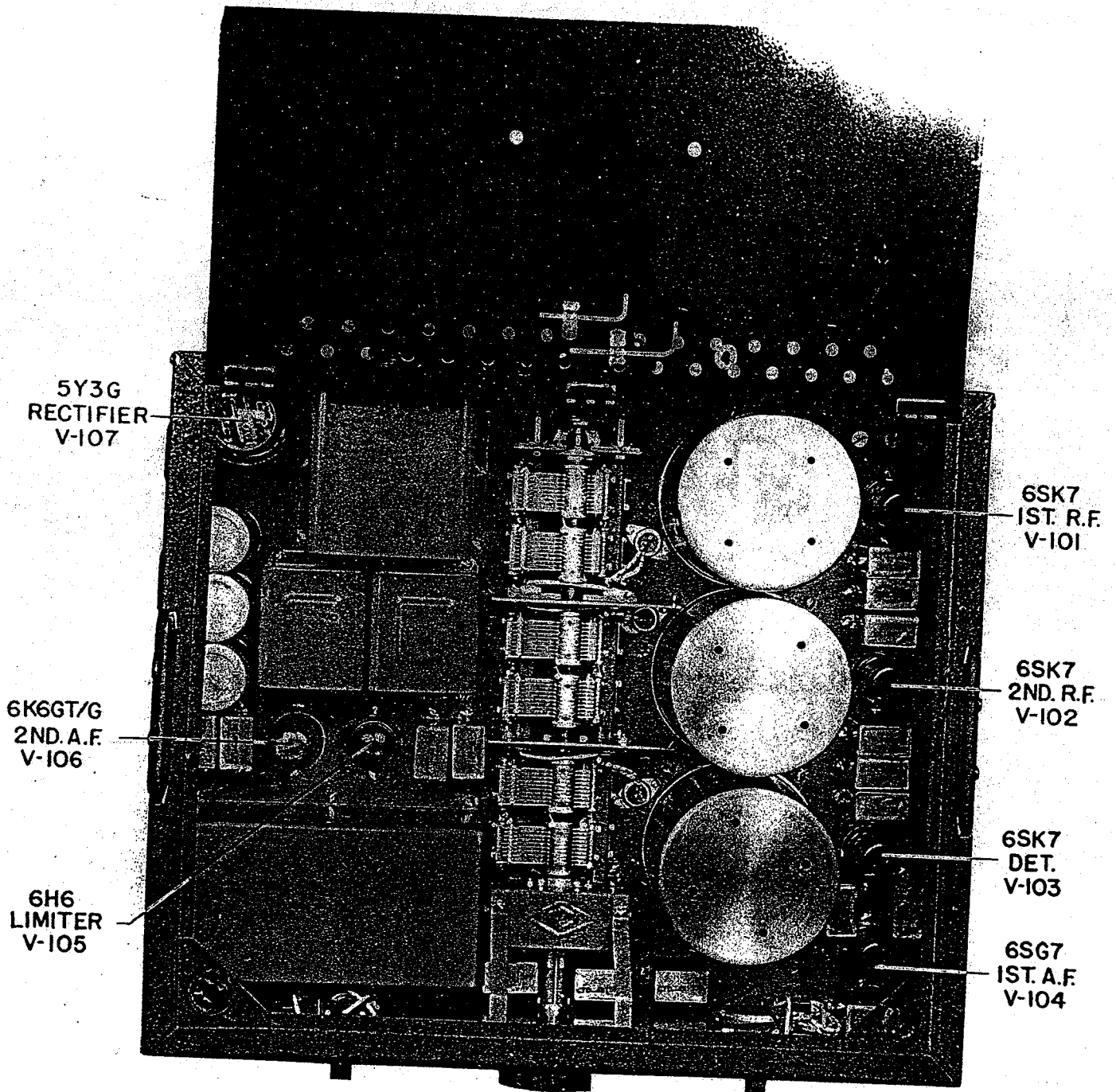
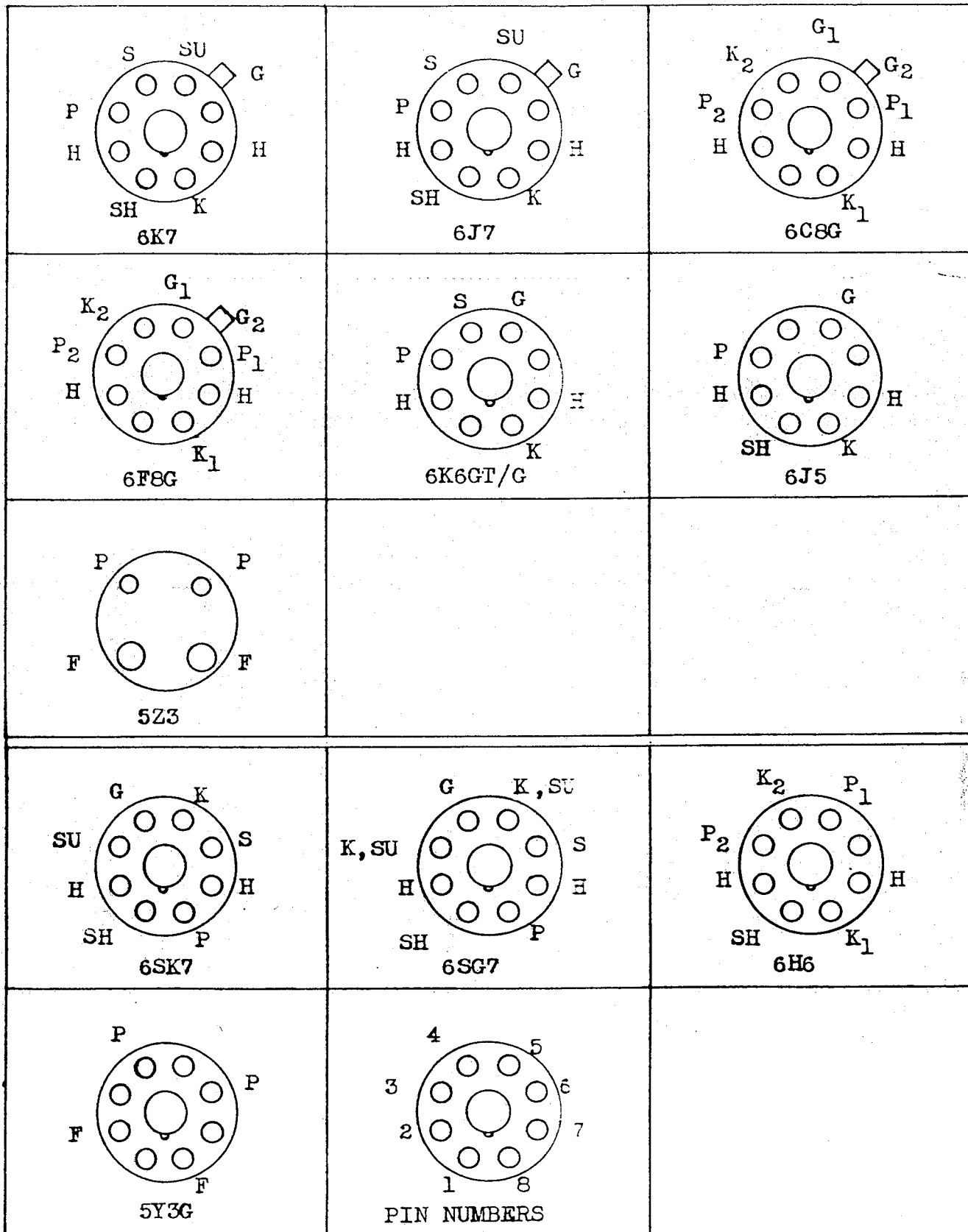


Fig. 6. Tube Positions

TUBE BASE CONNECTIONS - BOTTOM VIEWS



SH - SHELL  
H - HEATER

P - PLATE  
SU - SUPPRESSOR  
K - CATHODE

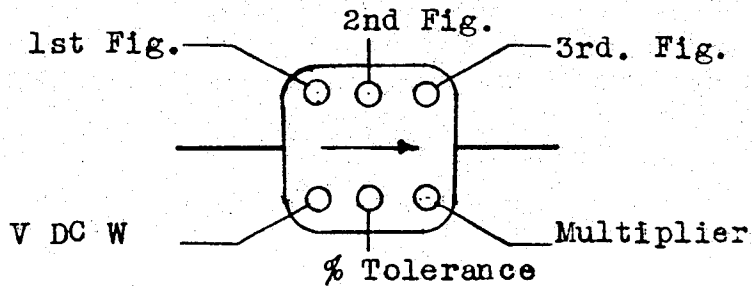
G - GRID  
F - FILAMENT

Fig. 7. Tube Base Diagrams

TABLE V

COLOR CODE FOR CAPACITORS

Color	Figures	Multiply By	V DC W	Tolerance
Black	0	1		
Brown	1	10	100	1%
Red	2	100	200	2%
Orange	3	1,000	300	3%
Yellow	4	10,000	400	4%
Green	5	100,000	500	5%
Blue	6	1,000,000	600	6%
Violet	7	10,000,000	700	7%
Gray	8	100,000,000	800	8%
White	9	1,000,000,000	900	9%
Gold		0.1	1000	5%
Silver		0.01	2000	10%
No Color			500	20%



COLOR CODE FOR RESISTORS

Color	1st Figure	2nd Figure	Multiply By
Black		0	1
Brown	1	1	10
Red	2	2	100
Orange	3	3	1,000
Yellow	4	4	10,000
Green	5	5	100,000
Blue	6	6	1,000,000
Violet	7	7	
Gray	8	8	
White	9	9	

Resistive Tolerance Code  
 Gold -- 5%      Silver -- 10%      No Color -- 20%

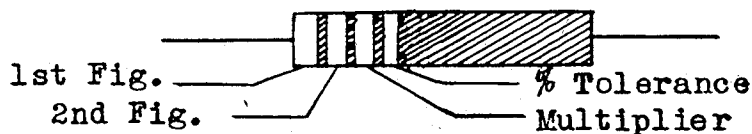


Fig. 8. Color Code Chart

## ADDENDA

Rectifier Tube V-107 as listed in Parts List Table II, and shown on the Schematic Diagram Fig. 1, should be Navy Type -5Y3G or -5Y3GT/G, not -5U4G.

Equipments with Serial No. 339 and larger have certain changes in Receiver components, which result in improved performance. To correct the Instruction Book for Equipments with Serial No. 339 and larger the following changes should be made:

In the Parts List, Table II, the following changes should be made:

Capacitor C-127 should be listed as follows:

\*C-127 --- V-103 Grid Coupling --- Ceramic: .0001 mfd.  
±10%, 500 V DC W --- XX --- XX --- 10 --- Class C  
--- XX --- D-825-C Pt. 324.

Capacitor C-165 should be listed as Same as C-107.

Capacitor C-169 should be added and listed as follows:

\*C-169 --- L-108 Tuning --- Same as C-154 --- -481073-10  
--- XX --- XX --- XX --- XX --- XX.

Resistor R-106 should be listed as 10 megohms, not 2½ megohms.

Resistor R-109 should be listed as follows:

\*R-109 --- V-103 Plate --- .25 megohms ±10%, ½ watt, Fixed  
--- -63360-10 --- RE 13A 372G --- 220 --- SCI-½ --- XX ---  
E-635 Pt. 2.

Resistor R-119 should be listed as Same as R-109.

Resistor R-120 should be listed as follows:

\*R-120 --- Limiter Control --- 10000 ohm, W.W. Var., 1.5  
watt --- XX --- XX --- 11 --- P58-10000 --- H-6633 ---  
D-771 Pt. 8.

Resistor R-137 should be listed as Same as R-109.

Resistor R-138 should be added and listed as follows:

\*R-138 --- R.F. Gain Control Bleeder --- Same as R-102  
--- XX --- XX --- XX --- XX --- XX --- XX

In the Equipment Spare Parts List the following changes should be made:

Capacitor Symbol C-165 should be listed with C-107, not with C-127.

MODEL HEL-5 INSTRUCTION BOOK ADDENDA

Resistor R-120 should be listed as follows:

- 1 --- xx --- R-120 --- Var., 10000 ohms,  $\frac{1}{2}$  watt --- xx ---
- 11 --- P58-10000 --- H-6633 --- D-771 Pt. 8.

Certain changes in components were anticipated in the design of the Receiver and therefore Tender Spare Parts lists include components as supplied in the Receiver before and after these changes, except in instances such as C-108, C-165 and R-120, where improved performance is obtained by the use of the new component without requiring changes in related components.

In the Tender Spare Parts List the following changes should be made:

Capacitor C-108 quantity should be one not two.

Capacitor Symbol C-165 should be listed with C-107 and the quantity increased to two.

The listing for ceramic .0001 Mfd., 500 V DC W Capacitor should not read as shown, but as follows:

- 1 --- xx --- C-127 --- Ceramic .0001 mfd., 500 V DC W ---
- xx --- 10 --- Class C ---  $\pm 10\%$  --- D-825-C Pt. 324.

Capacitor C-127 should also be listed as follows:

- 1 --- xx --- C-127 --- Ceramic .0005 mfd., 500 V DC W ---
- xx --- 10 --- Dual C ---  $\pm 10\%$  --- E-603 Pt. 3.

Capacitor Symbol C-169 should be added to the listing for Navy Type -481073 capacitor.

Resistor R-106 should be listed as 10 megohms as shown and also as follows:

- 2 --- -63360 --- R-106 --- Fixed, 2 $\frac{1}{2}$  megohms,  $\frac{1}{2}$  watt ---
- xx --- 220 --- SCI- $\frac{1}{2}$  ---  $\pm 10\%$  --- E-635 Pt. 2.

Resistor R-109 should be listed with R-119 and R-137 as 250,000 ohms and also listed separately as follows:

- 2 --- -63360 --- R-109 --- Fixed, 70,000 ohms,  $\frac{1}{2}$  watt ---
- xx --- 220 --- SCI- $\frac{1}{2}$  ---  $\pm 10\%$  --- E-635 Pt. 2.

Resistor R-120 should not be listed as shown but as follows:

- 2 --- ~~xx~~ --- R-120 --- Var., 10,000 ohms,  $\frac{1}{2}$  watt --- ~~xx~~
- 11 --- P58-10000 --- H-6633 --- D-771 Pt. 8.

The correct symbol for Low Pass Filter Navy Type -53108 is AF-101, not AF-102.

The correct symbol for High Pass Filter Navy Type -53109 is AF-102, not AF-101.



EQUIPMENT SPARE PARTS BY NAVY TYPE DESIGNATION

FOR MODEL RBL-5 EQUIPMENT

QUANTITY	NAVY TYPE NUMBER	ALL SYMBOL DESIGNATIONS INVOLVED	DESCRIPTION	APPROX. UNIT PRICE	MFR. DESIG.	MFR. DESIG.	SPECIAL TOLERANCE OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
MISCELLANEOUS CLASS 10								
1	E-101		Terminal Panel	.10		E-265 Pt 6		E-265 Pt 6
1	E-102		Binding Posts	.55		SA:26-C		E-808 Pt 1
1	E-103		Binding Post	.20		SA:91-D		E-769 Pt 1
1	A-201, A-202, A-203, A-204		Shockproof Mount	.80	125	200PH35		D-664
4			Tube Socket Contact	.03	1	E-769 Pt 1		D-947 Pt 1
2			Insulator Holder	.05	1	D-664		D-947 Pt 2
2			Insulated Mounting Lugs	.02	8	1510		D-947 Pt 4
2			Insulated Mounting Lugs	.02	8	1513		D-947 Pt 6
2			Insulated Mounting Lugs	.03	8	1520		D-947 Pt 7
2			Insulated Mounting Lugs	.03	8	1529		D-890 Pt 11
1			Insulated Mounting Lugs	.03	8	1525		B-367 Pt 2
1			Spring Parts Box	9.00	1	D-890 Pt 11		D-550
4			Switch Section	.10	1	E-367 Pt 2		F-131 Pt 2
1			Spanner Wrench	1.00	1	D-550		F-131 Pt 3
1			Allen Wrench	.25	1	SA:101-H		F-136 Pt 6
1			Allen Wrench	.10	1	F-131 Pt 2		
4	I-101, I-102		Lamp	.10	18	F-131 Pt 3		
SWITCHES CLASS 24								
1	-24047	S-101	Switch	.65	5	2001		D-776 Pt 1
1		S-102	Switch	1.25	3	1570-NM		D-666
1		S-105	Switch	1.00	3	8102L-V		D-667
1		S-106	Switch	1.50	111	22744-HLC		D-807
FUSES CLASS 28								
20		F-101, F-102	Fuse	.10	76	1042		F-135 Pt 4
TRANSFORMERS AND REACTORS CLASS 30								
1	-30930	T-101	Transformer	8.00	1	SA:31-G		D-778
1	-30931	L-108	Reactor	3.50	1	SA:31-E		D-782 Pt 1
1	-30932	T-102	Transformer	3.50	1	SA:31-H		D-783
VACUUM TUBES CLASS 38								
2	-5Y3G	V-107	Vacuum Tube	.65		5Y3G		
2	-6H6	V-105	Vacuum Tube	.60		6H6		
2	-6K6GT	V-106	Vacuum Tube	.55		6K6GT		
2	-6SG7	V-104	Vacuum Tube	.60		6SG7		
5	-6SK7	V-101, V-102, V-103	Vacuum Tube	.55		6SK7		

Spare parts supplied are as listed, or the equivalent

EQUIPMENT SPARE PARTS LIST BY NAVY TYPE DESIGNATION  
FOR MODEL RBL-5 EQUIPMENT

QUANTITY	NAVY TYPE NUMBER	ALL SYMBOL DESIGNATIONS INVOLVED	DESCRIPTION	APPROX. UNIT PRICE	MFR. DESIG.	SPECIAL TOLERANCE OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
R. F. TRANSFORMERS AND INDUCTORS CLASS 47.							
1	-47252	L-101	Inductor	\$ 3.25	1		
1		L-113	R.F. Transformer Assembly	4.50	1	SA:53-D	D-781 Pt 1
1		L-109	R.F. Transformer Assembly	4.50	1	SA:53-D	
1		L-111	R.F. Transformer Assembly	4.50	1	SA:53-F	
1		L-114	R.F. Transformer Assembly	7.00	1	SA:53-E	
1		L-110	R.F. Transformer Assembly	7.00	1	SA:53-A	
1		L-112	R.F. Transformer Assembly	7.00	1	SA:53-C	
CAPACITORS CLASS 48							
1	-48983	C-106, C-124, C-130, C-131	Mica	.20	14	1467	D-775 Pt 55
2	-481073	C-154, C-168, C-169	Paper	.50	14	489	E-369 Pt 16
2	-481080	C-159, C-160, C-161	Paper	2.25	13	P8213	E-333 Pt 2
1	-481098	C-117, C-142, C-143	Mica	.20	14	1467	D-775 Pt 63
1	-481428	C-102	Mica	.20	14	1467	D-775 Pt 69
4	-481997	C-118, C-119, C-122, C-123	Paper	1.50	110	OM-550-0	F-289 Pt 2
5	-481998	C-137, C-155, C-162, C-163	Paper	1.75	110	OM-601-0	F-289 Pt 1
1		C-120, C-125, C-126, C-128	Paper				
1		C-129, C-132, C-134, C-135	Paper				
1		C-136, C-158	Paper				
1		C-156	Paper				
1		C-166, C-167	Paper	.30	218	340	E-784 Pt 10
1		C-139, C-144	Paper	.30	218	340	E-784 Pt 12
2		C-140, C-146, C-148, C-152	Paper	.30	218	340	E-784 Pt 14
1		C-149, C-153	Paper	.30	218	340	E-784 Pt 2
1		C-150, C-151	Paper	.30	218	340	E-784 Pt 4
2		C-141, C-145	Paper	.30	218	340	E-784 Pt 6
1		C-108	Paper	.30	218	340	E-784 Pt 8
1		C-105	Ceramic	.15	10	Class D	D-825-D Pt 420
1		C-164	Ceramic	.15	10	Class D	D-825-D Pt 416
1		C-107	Ceramic	.15	10	Class D	D-825-D Pt 417
1		C-127, C-165	Ceramic	.15	10	Class C	D-825-C Pt 319
1		C-101	Ceramic	.15	10	Class C	D-825-C Pt 324
1		C-138, C-147	Ceramic	.15	10	Class C	D-825-C Pt 333
PLUGS, JACKS AND SOCKETS CLASS 49							
1	-49120	J-104	Jack	1.75	259		F-455 Pt 1
1	-49121-A	P-104	Plug	2.35	259		F-456 Pt 1
1	-49201	J-103	Socket	.25	128	61CP7S	D-769 Pt 1
1		P-102	Plug	.50	93	7484	F-439 Pt 1
1		J-102	Socket	.50	93	7486	F-438 Pt 1
1		J-101	Phone Jack	.25	129	IJ-102	D-777 Pt 1
1		P-103	Plug Assembly	.20	1	SA:1196	

Spare parts supplied are as listed, or the equivalent

EQUIPMENT SPARE PARTS LIST BY NAVY TYPE DESIGNATION  
FOR MODEL RBL-5 EQUIPMENT

QUANTITY	NAVY TYPE NUMBER	ALL SYMBOL DESIGNATIONS INVOLVED	DESCRIPTION	APPROX. UNIT PRICE	MFR. DESIG.	SPECIAL TOLERANCE OR MODIFICATION	NATIONAL CO. DRAWING AND PART NUMBER
PLUGS, JACKS AND SOCKETS (CONTINUED) CLASS 49							
1		X-110, X-111	Fuse Extractor Post	.40	1075		D-887
1		X-108, X-109	Lamp Socket Assembly	.15	85-UL		C-455 Pt 1
4	-49373	X-101 Through X-107	Socket	.30	128 RSS-6M		D-806 Pt 1
FILTERS CLASS 53							
1	-53108	AF-101	Low Pass Filter	14.50	1		D-780 Pt 1
1	-53109	AF-102	High Pass Filter	9.00	1	SA:31-F SA:31-I	D-779 Pt 1
INSULATORS CLASS 61							
4			Insulator	.05	1	C-812	C-812
RESISTORS CLASS 63							
1	-63360	R-101, R-104	Fixed, 350 Ohms, $\frac{1}{2}$ Watt	.10	220	SCI-1	E-635 Pt 2
1	-63360	R-112	Fixed, 500 Ohms, $\frac{1}{2}$ Watt	.10	220	SCI-1	E-635 Pt 2
4	-63360	R-102, R-105, R-107, R-110	Fixed, 10000 Ohms, $\frac{1}{2}$ Watt	.10	220	SCI-1	E-635 Pt 2
1	-63360	R-128, R-130, R-138	Fixed, 20000 Ohms, $\frac{1}{2}$ Watt	.10	220	SCI-1	E-635 Pt 2
1	-63360	R-117, R-125	Fixed, 25000 Ohms, $\frac{1}{2}$ Watt	.10	220	SCI-1	E-635 Pt 2
1	-63360	R-108, R-115	Fixed, 50000 Ohms, $\frac{1}{2}$ Watt	.10	220	SCI-1	E-635 Pt 2
1	-63360	R-121, R-122	Fixed, 100000 Ohms, $\frac{1}{2}$ Watt	.10	220	SCI-1	E-635 Pt 2
2	-63360	R-114, R-116, R-118	Fixed, 250000 Ohms, $\frac{1}{2}$ Watt	.10	220	SCI-1	E-635 Pt 2
2	-63360	R-109, R-119, R-137	Fixed, 500000 Ohms, $\frac{1}{2}$ Watt	.10	220	SCI-1	E-635 Pt 2
1	-63360	R-111, R-113, R-123, R-136	Fixed, 5 Megohms, $\frac{1}{2}$ Watt	.10	220	SCI-1	E-635 Pt 2
1	-63360	R-103	Fixed, 10 Megohms, $\frac{1}{2}$ Watt	.10	220	SCI-1	E-635 Pt 2
1	-63474	R-106	Fixed, 500 Ohms, 2 Watt	.20	220	SI-2	E-637 Pt 2
1	-63474	R-124	Fixed, 5000 Ohms, 2 Watt	.20	220	SI-2	E-637 Pt 2
1	-63474	R-135	Fixed, 10000 Ohms, 2 Watt	.20	220	SI-2	E-637 Pt 2
1	-63474	R-126	Fixed, 20000 Ohms, 2 Watt	.20	220	SI-2	E-637 Pt 2
1	-63474	R-131, R-132	Fixed, 100000 Ohms, 2 Watt	.20	220	SI-2	E-637 Pt 2
1	-631284	R-120	Var., 750 Ohms, $\frac{1}{2}$ Watt	.75	11	P58-750	D-595 Pt 2
1	-631285	R-133	Var., 5000 Ohms, $\frac{1}{2}$ Watt	.75	11	P58-5000	D-595 Pt 1
1	-631286	R-134	Var., 10000 Ohms, $\frac{1}{2}$ Watt	1.50	11	P58-10000	D-771 Pt 1
1	-631287	R-127	Var., 25000 Ohms, $\frac{1}{2}$ Watt	.75	11	P58-25000	D-771 Pt 3

Spare parts supplied are as listed, or the equivalent

TABLE VI  
LIST OF MANUFACTURERS  
FOR MODEL RBL-5 RECEIVING EQUIPMENT

CODE NO	MFR. PREFIX	NAMES	ADDRESS
1	CNA	National Company, Inc.	Malden, Massachusetts
3	CHH	Arrow, Hart & Hegeman	Hartford, Connecticut
5	CMA	P. R. Mallory & Co.	Indianapolis, Indiana
8		Cinch Manufacturing Co.	Chicago, Illinois
10	CBN	Central Radio Laboratories	Milwaukee, Wisconsin
11	CMC	Clarostat Manufacturing Co.	Brooklyn, New York
13	CSF	Sprague Specialties Co.	North Adams, Massachusetts
14	CAW	Aerovox Corporation	North Bedford, Massachusetts
18	CG	General Electric Company	Cleveland, Ohio
69		Cornish Wire Company, Inc.	New York City, New York
76	CLF	Littlefuse Laboratories	Chicago, Illinois
83		Hubbell, Harvey	Bridgeport, Connecticut
110	CTD	Tobe Deuschmann Corp.	Canton, Massachusetts
111		Oak Manufacturing Co.	Chicago, Illinois
125		Lord Manufacturing Co.	Erie, Pennsylvania
127		Alden Products Co.	Brookton, Massachusetts
128	CPH	American Phenolic Co.	Chicago, Illinois
129		Utah Radio Products Co.	Chicago, Illinois
259	CN	National Elec. Machine Shops	Washington, D.C.