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NAVSHIPS 900,477

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INSTRUCTION BOOK

FOR

RADIO RECEIVING EQUIPMENTS

NAVY MODELS

RBB/RBC

RBB-1/RBC-1

RBB-2/RBC-2

MANUFACTURED

BY

RCA VICTOR DIVISION, RADIO CORPORATION OF AMERICA

Camden, New Jersey, U. S. A.

FOR

NAVY DEPARTMENT

BUREAU OF SHIPS

Contracts
RBB/RBC: NOs-73056
RBB-1/RBC-1: NOs-91265
RBB-2/RBC-2: NXss-17001
RBB-2, RBC-2: NXsr-39262

Approved 7 April 1945

U.S. Bureau of Ships
NAVSHIPS 900,477

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Approved 7 April 1945
IB-38094/38094-1/38216/38269

RESTRICTED

NAVY DEPARTMENT—BUREAU OF SHIPS

Washington 25, D. C.

7 April 1945

1. NAVSHIPS 900,477 is a restricted non-registered instruction book covering the installation, operation, maintenance, parts and spare parts lists of Models RBB/RBC, RBB-1/RBC-1, and RBB-2/RBC-2 Radio Receiving Equipments.
2. When superseded by a later edition, or when no longer required, this publication should be destroyed. No report of such destruction is required.
3. Spare Parts Lists for the equipment are contained herein.
4. Copies of the instruction book or appropriate spare parts lists (for contract number see equipment nameplate) should be obtained from the nearest Radio Material Pool.

/s/ J. P. DOW
By direction

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Change No.	Date	Signature of Officer Making Correction

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CONTRACTS: NOs-73056
NOs-91265
NXss-17001

CONTRACTUAL GUARANTEE

The equipment, including all parts and spare parts, except vacuum tubes, is guaranteed for a service period of TWO years with the understanding that, as a condition of this contract, all items found to be defective as to design, material, workmanship or manufacture will be replaced without delay and at no expense to the Government; provided that such guarantee and agreement will not obligate the contractor to make replacement of defective material unless the failure, exclusive of normal expected shelf life deterioration, occurs within a period of FIVE YEARS from the date of delivery of the equipment to and acceptance by the Government; and provided further, that if any part or parts (except vacuum tubes) fail or are found defective to the extent of ten per cent (10%) or more of the total number, of similar units furnished under the contract (exclusive of spares) such part or parts whether supplied in the equipment or as spares, will be conclusively presumed to be of defective design, and as a condition of contract subject to one hundred per cent (100%) replacement by suitable redesigned units.

Failure due to poor workmanship, while not necessarily indicating poor design, will be considered in the same category as failure due to poor design. Redesigned replacements which will assure proper operation of the equipment will be supplied promptly, transportation paid, to the Naval activity using such equipment, upon receipt of proper notice and without cost to the Government.

All such defective parts 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 item or unit prior to replacement without jeopardizing the integrity of Naval communications, the exigencies of the Service therefore may necessitate expeditious repair of such item or unit in order to prevent extended interruption of communications. In such cases the return of a defective item or unit for examination by the contractor prior to replacement will not be required. The report of a responsible authority, including details of the conditions surrounding the failure, will be acceptable for effective adjustment under the provisions of this contractual guarantee.

The above period of FIVE YEARS and the service period of TWO YEARS will not include any portion of the time that the equipment fails to give satisfactory performance due to defective items and the necessity for replacement thereof. All replacement parts will be guaranteed to give TWO YEARS of satisfactory service.

TUBE GUARANTEE

All vacuum tubes supplied with this equipment are covered by the Manufacturer's warranty, regarding freedom from defects of design, material and workmanship. The use of each tube in these particular equipments will assure a tube life expectation of at least fifty (50) hours under full load conditions.

RESTRICTED

CONTRACT: NXsr-39262

CONTRACTUAL GUARANTEE

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

To the extent the equipment, including all parts and spare parts, as defined above, is of the Contractor's design or is 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 effecting expeditious adjustment under the provisions of this contractual guarantee.

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

TUBE GUARANTEE

All vacuum tubes supplied with this equipment are covered by the Manufacturer's warranty, regarding freedom from defects of design, material and workmanship. The use of each tube in these particular equipments will assure a tube life expectation of at least fifty (50) hours under full load conditions. Reference Radio and Sound Bulletins, Number 9, dated 1 Jan., 1943, page 6, and Number 14, dated 1 April, 1944, page 17.

RESTRICTED

INSTALLATION RECORD

Contract: **RBB/RBC: NOs-73056**

Date of Contract: **April 13, 1940**

RBB-1/RBC-1: NOs-91265

September 2, 1941

RBB-2/RBC-2: NXss-17001

June 17, 1943

RBB-2/RBC-2: NXsr-39262

November 3, 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 table shall be filled in at time of installation. Operating personnel shall also mark the "date placed in service" on the date of acceptance plate located below the model nameplate on the equipment, using suitable methods and care to avoid damaging the equipment.

REPORT OF FAILURE

Report of failure of any part of this equipment, during its service life, shall be made to the Bureau of Ships on Failure Report form NBS-383 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 67 of the "Bureau of Ships Manual," or superseding instructions.

ORDERING PARTS

All requests or requisitions for replacement material should include the following data:

- 1 — Navy stock number or, when ordering from an Army supply depot, the Army stock number.
- 2 — Name of part.

If the Navy stock number has not been assigned, the requisitions should specify the following:

- 1 — Equipment model designation.
- 2 — Name of part and complete description.
- 3 — Manufacturer's designation.
- 4 — Contractor's drawing and part number.
- 5 — AWS, JAN, or Navy type designation.

SAFETY NOTICE

THE ATTENTION OF OFFICERS AND OPERATING PERSONNEL IS DIRECTED TO CHAPTER 67 OF BUREAU OF SHIPS MANUAL OR SUPERSEDING INSTRUCTIONS ON THE SUBJECT OF RADIO-SAFETY PRECAUTIONS TO BE OBSERVED.

While every practicable safety precaution has been incorporated in this equipment, the following rules must be strictly observed:

KEEP AWAY FROM LIVE CIRCUITS

Operating personnel must at all times observe all safety regulations. Do not change tubes or make adjustments inside equipment with high voltage supply on. Under certain conditions dangerous potentials may exist in circuits with power controls in the off position due to charges retained by capacitors. To avoid casualties always remove power and discharge and ground circuits prior to touching them.

DON'T SERVICE OR ADJUST ALONE

Under no circumstances should any person reach within or enter the enclosures for the purpose of servicing or adjusting the equipment without the immediate presence or assistance of another person capable of rendering aid.

DON'T TAMPER WITH INTERLOCKS

Do not depend upon door switches or interlocks for protection but always shut down motor generators or other power equipment. Under no circumstances should any access gate, door or safety interlock switch be removed, short circuited, or tampered with in any way, by other than authorized maintenance personnel, nor should reliance be placed upon the interlock switches for removing voltages from the equipment.

RESUSCITATION

AN APPROVED POSTER ILLUSTRATING THE RULES FOR RESUSCITATION BY THE PRONE PRESSURE METHOD SHALL BE PROMINENTLY DISPLAYED IN EACH RADIO, RADAR OR SONAR ENCLOSURE. POSTERS MAY BE OBTAINED UPON REQUEST TO THE BUREAU OF MEDICINE AND SURGERY.

SECTION I – GENERAL DESCRIPTION

1. Quick Reference Data.....	1-1
2. Introduction.....	1-2
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4. Equipment Supplied.....	1-2
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6. Description of Rectifier Power Unit.....	1-9
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Figure 1-1 — Model RBB Radio Receiver, Navy Type CRV-46147 (Front View)

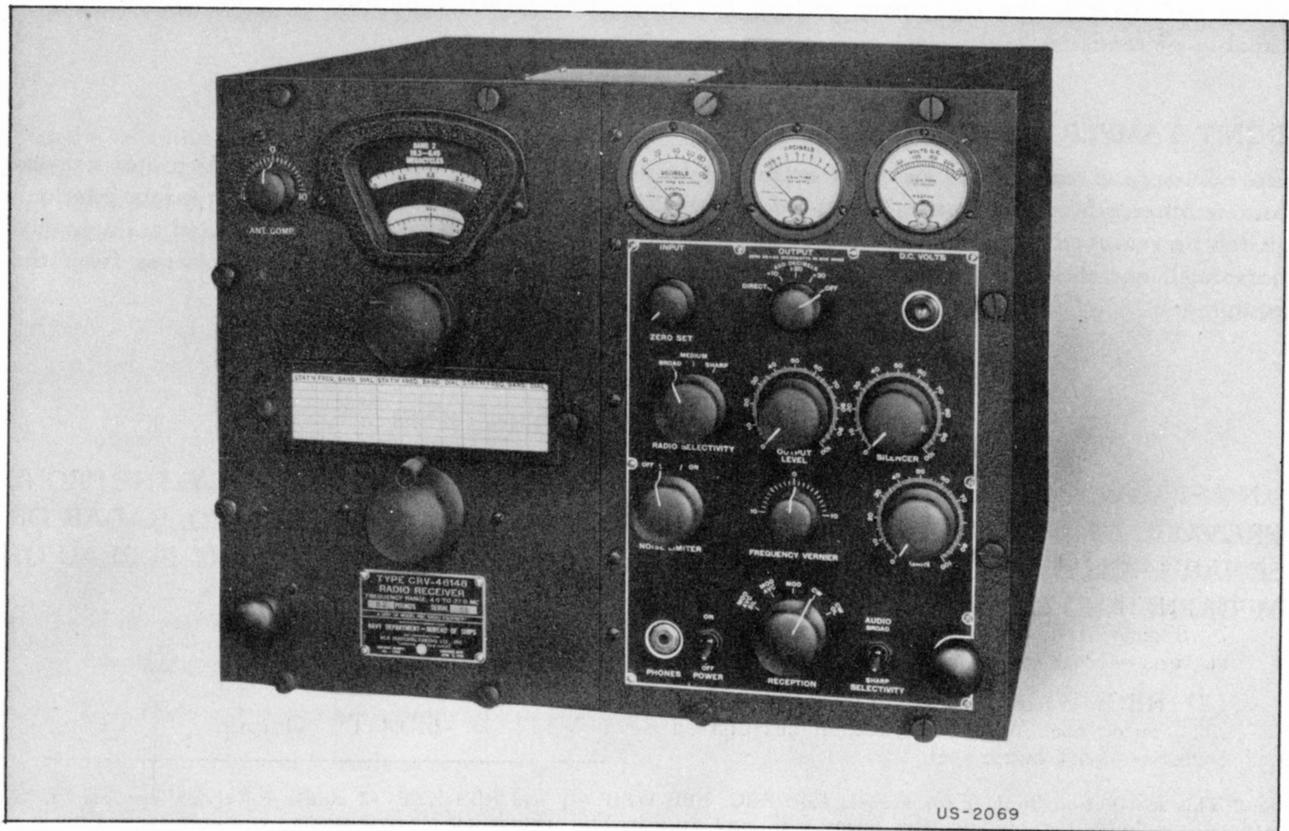


Figure 1-2 — Model RBC Radio Receiver, Navy Type CRV-46148 (Front View)

SECTION I
GENERAL DESCRIPTION

1. QUICK REFERENCE DATA.
- a. NAME AND DESIGNATION OF ALL EQUIPMENTS.—
- (1) Navy Models RBB/RBC Radio Receiving Equipments.
 - (2) Navy Models RBB-1/RBC-1 Radio Receiving Equipments.
 - (3) Navy Models RBB-2/RBC-2 Radio Receiving Equipments.
- b. CONTRACT NUMBERS AND DATES.—
- (1) RBB/RBC: NOs-73056; April 13, 1940.
 - (2) RBB-1/RBC-1: NOs-91265; September 2, 1941.
 - (3) RBB-2/RBC-2: NX_{ss}-17001; June 17, 1943.
 - (4) RBB-2/RBC-2: NX_{sr}-39262; November 3, 1943 (Second contract).
- c. CONTRACTOR.—
- (1) RCA Victor Division of Radio Corporation of America, Camden, N. J.
- d. NAVAL INSPECTOR.—
- (1) Assistant Naval Inspector In Charge, RCA Victor Division, Camden, N. J.
- e. FREQUENCY RANGE.—
- (1) *RBB: 0.5 to 4.0 Megacycles.
 - (2) *RBC: 4.0 to 27.0 Megacycles.
- f. NUMBER OF PACKAGES INVOLVED PER COMPLETE SHIPMENT OF EQUIPMENT.—
- (1) RBB: Two packages.
 - (2) RBC: Two packages.
- g. TOTAL CUBICAL CONTENTS, AS PACKED FOR SHIPMENT.—
- (1) RBB: When packed in wood boxes—22.8 cubic feet. When packed in corrugated cartons—18.3 cubic feet.
 - (2) RBC: When packed in wood boxes—22.8 cubic feet. When packed in corrugated cartons—18.3 cubic feet.

- h. TOTAL WEIGHT, AS PACKED FOR SHIPMENT.—
- (1) RBB: When packed in wood boxes—312 pounds. When packed in corrugated cartons—261 pounds.
 - (2) RBC: When packed in wood boxes—305 pounds. When packed in corrugated cartons—261 pounds.
- i. VACUUM TUBE COMPLEMENT.—
- (1) RBB: See Table 1-1.
 - (2) RBC: See Table 1-2.
 - (3) Rectifier Power Unit: See Table 1-3.

TABLE 1-1
VACUUM TUBE COMPLEMENT
MODEL RBB

Symbol	Navy Type	Function
V101	-6SK7	First R-F
V102	-6SK7	Second R-F
V103	-6AB7	Oscillator
V104	-6AB7	First Detector
V105	-991	Voltage Limiter
V106	-6-8B	Amperite
V301	-6SK7	First I-F
V302	-6SK7	Second I-F
V303	-6SK7	Third I-F
V304	-6AB7	CW Oscillator
V305	-6H6	Detector AVC
V306	-6H6	Noise Limiter, Output Limiter
V307	-6SK7	First A-F
V308	-6SK7	Silencer, Output Limiter, Amplifier
V309	-6H6	Silencer, Output Limiter
V310	-6AB7	Second A-F
V311	-6K6GT	Output

* This Instruction Book is for Models RBB/RBC, RBB-1/RBC-1, and RBB-2/RBC-2 Radio Receiving Equipments. In order to simplify the reading, the terms RBB and/or RBC will include all aforementioned equipments. Should it be necessary to refer to a particular equipment, it will be indicated specifically by its particular symbol and number designation.

TABLE 1-2
VACUUM TUBE COMPLEMENT
MODEL RBC

Symbol	Navy Type	Function
V201	-6AB7	First R-F
V202	-6SK7	Second R-F
V203	-6AB7	Oscillator
V204	-6SK7	First Detector
V205	-991	Voltage Limiter
V206	-6-8B	Amperite
V301 to V311 — See Table 1-1		

TABLE 1-3
VACUUM TUBE COMPLEMENT
RECTIFIER POWER UNIT

Symbol	Navy Type	Function
V401	-5U4G	Full Wave Rectifier
V402	-VR-105	Voltage Regulator

3. COMPLETE EQUIPMENT.

a. See Tables 1-4 and 1-5.

TABLE 1-4
MAJOR UNITS (WOOD BOX)

Quantity		Numerical Series of Reference Symbols	Name of Unit	Navy Type Designations	Height (Inches)		Width (Inches)		Depth (Inches)		Volume (Cubic Feet)		Weight (Pounds)	
RBB	RBC				*A	†B	*A	†B	*A	†B	*A	†B	*A	†B
1		100 - 199 300 - 399	RADIO RE-CEIVER	CRV-46147	14 ³ / ₄	23 ³ / ₄	18 ¹ / ₈	26 ³ / ₄	20 ¹ / ₈	31	3.1	11.4	82	162
	1	200 - 299 300 - 399	RADIO RE-CEIVER	CRV-46148	14 ³ / ₄	23 ³ / ₄	18 ¹ / ₈	26 ³ / ₄	20 ¹ / ₈	31	3.1	11.4	82	155
1	1	400 - 499	RECTIFIER POWER UNIT	CRV-20130	13 ⁷ / ₁₆	†23 ³ / ₄	15	†26 ³ / ₄	9 ⁷ / ₈	†31	1.2	†11.4	52	†150

* UNCRATED. † CRATED. ‡ INCLUDES TUBES AND ALL SPARES.

TABLE 1-5
MAJOR UNITS (CORRUGATED CARTON)

Quantity		Numerical Series of Reference Symbols	Name of Unit	Navy Type Designations	Height (Inches)		Width (Inches)		Depth (Inches)		Volume (Cubic Feet)		Weight (Pounds)	
RBB	RBC				*A	†B	*A	†B	*A	†B	*A	†B	*A	†B
1		100 - 199 300 - 399	RADIO RE-CEIVER	CRV-46147	14 ³ / ₄	21	18 ¹ / ₈	24	20 ¹ / ₈	28 ¹ / ₄	3.1	8.2	82	111
	1	200 - 299 300 - 399	RADIO RE-CEIVER	CRV-46148	14 ³ / ₄	21	18 ¹ / ₈	24	20 ¹ / ₈	28 ¹ / ₄	3.1	8.2	82	111
1	1	400 - 499	RECTIFIER POWER UNIT	CRV-20130	13 ⁷ / ₁₆	†21	15	†26 ³ / ₄	9 ⁷ / ₈	†31	1.2	†10.1	52	†150

* UNCRATED. † CRATED. ‡ INCLUDES TUBES AND ALL SPARES.

2. INTRODUCTION.

a. This Instruction Book covers the description, installation, operation, and maintenance of the Models RBB/RBC, RBB-1/RBC-1, and RBB-2/RBC-2 Radio Receiving Equipments. These radio receivers are primarily designed for operation aboard all types of U.S. Naval vessels or at Naval radio shore stations. The various conditions for which these equipments are particularly suitable include operation of a number of receivers on a single antenna, operation with little frequency separation when the receiver antenna is adjacent to transmitting antennas, operation under the influence of severe vibration, shock of gun firing and rolling, and operation under continuous subjection to high temperatures and high relative humidity.

b. The rectifier power unit is designed to operate with a single receiver unit of the types RBB or RBC equipments. Provision is made, however, for operation of both receiver units from a single power unit as an emergency condition.

c. The circuit includes all necessary provisions for stable and reliable power supply for the RBB/RBC radio receivers. The rectifier power unit is completely shielded in a metal cabinet and includes all necessary filtering for the reduction of a-c hum, and for minimizing interference from local transmitters.

4. EQUIPMENT SUPPLIED.

a. MODELS RBB/RBC and RBB-1/RBC-1.—
See Table 1-6.

**TABLE 1-6
ACCESSORIES
MODELS RBB/RBC and RBB-1/RBC-1**

Quantity	Description	RCA Reference
1	Antenna Adapter-49152	K-868940-1
1	Concentric Line Plug-49121	K-866698-2
1	Output Phone Plug-49160	K-871681-1
4	Brass Cap-Screws, $\frac{5}{16}$ " - 18 x $2\frac{1}{4}$ "	K-59286-60
4	Stainless Steel Washers, $\frac{3}{8}$ " I.D. x $1\frac{3}{4}$ " O.D. x $\frac{1}{16}$ "	K-866616-1
4	Stainless Steel Lockwashers, $\frac{5}{16}$ "	K-59048-36
4	Brass Nuts, $\frac{5}{16}$ " - 18	K-57435-59

b. MODELS RBB-2/RBC-2.—See Table 1-7.

**TABLE 1-7
ACCESSORIES
MODELS RBB-2/RBC-2**

Quantity	Description	RCA Reference
1	Antenna Adapter-49152	K-868940-1
1	Output Phone Plug Adapter-49509	MX-247930-501
1	Concentric Line Plug-49121	K-866698-2
1	Output Phone Plug-49160	K-871681-1
4	Cap-Screws, $\frac{5}{16}$ " - 18 x $2\frac{1}{4}$ "	K-59286-60
4	Washers, $\frac{3}{8}$ " I.D. x $1\frac{3}{4}$ " O.D. x $\frac{1}{16}$ "	K-866616-1
4	Lockwashers, $\frac{5}{16}$ "	K-59048-36
4	Nuts, $\frac{5}{16}$ " - 18	K-57435-59

c. RECTIFIER POWER UNIT.—See Table 1-8.

**TABLE 1-8
ACCESSORIES
RECTIFIER POWER UNIT**

Quantity	Description	RCA Reference
1	Interconnecting Cable, 6 Feet Long, With Two Female Plugs, CRV-49162	P-721090-501
1	Cable Clamp	K-868989-1
1	Brass Screw, No. 10-32 x 1", RH.	K-57460-71
4	Brass Cap-Screws, $\frac{5}{16}$ " - 18 x $\frac{3}{4}$ "	K-59286-53
1	Stainless Steel Lockwasher, No. 10	K-59048-33
4	Stainless Steel Lockwashers, $\frac{5}{16}$ "	K-59048-36
1	Brass Nut, No. 10-32	K-57435-56
4	Brass Nuts, $\frac{5}{16}$ " - 18	K-57435-59

5. DESCRIPTION OF RADIO RECEIVER.

a. GENERAL.—

(1) The Models RBB/RBC Radio Receivers are similar in construction, employing as many common components and sub-assemblies as is suitable with the different frequency coverages.

(2) Both equipments operate directly from a 110-, 115-, or 120-volt, 60-cycle power supply. Each equipment is capable of furnishing a maximum undistorted power output of 15 milliwatts to each of one to twenty pairs of 600-ohm (impedance) telephone receivers connected in parallel or equivalent load.

(3) Each receiver unit consists of two sub-assemblies which are bolted together and housed in a single cabinet. One of these sub-assemblies contains a preselector (r-f) unit; the other sub-assembly houses the intermediate-frequency/audio-frequency (i-f/a-f) unit. The i-f/a-f units (except for an a-f band-pass filter) are the same for both equipments.

(4) The preselector unit contains the controls and circuits necessary for selection of the desired radio frequency signal and for heterodyning this signal down to the intermediate frequency. The i-f/a-f unit contains the circuits for amplification and demodulation of the intermediate frequency, and delivers suitable audio output for telephone reception. This i-f/a-f unit also contains controls for the cw oscillator, automatic volume control (a.v.c.), output limiter and other features of the equipment described in Section IV, Theory of Operation.

NOTE

In the following discussion the component parts of the Model RBB preselector unit have been assigned symbol designations in the group 100 - 199, and the Model RBC preselector unit symbol designations in the group 200 - 299. Since the i-f/a-f sections of both equipments are identical, only one symbol designation group has been assigned to that section (300 - 399). When discussing the preselector sections, where corresponding similar units are used in both sections, the symbol designation group 100 - 199 will indicate a unit from the RBB preselector section, and the symbol designation group 200 - 299 will indicate a unit from the RBC preselector section.

b. PRESELECTOR (R-F) UNIT.—

(1) The preselector units of the Models RBB/RBC Radio Receivers are similar in construction, employing the same front panel arrangement except for frequency calibration (see Figure 1-3). The two preselector units (because of their different frequency coverages) differ as to tube complement, coil boxes, coil box connections, and antenna connections.

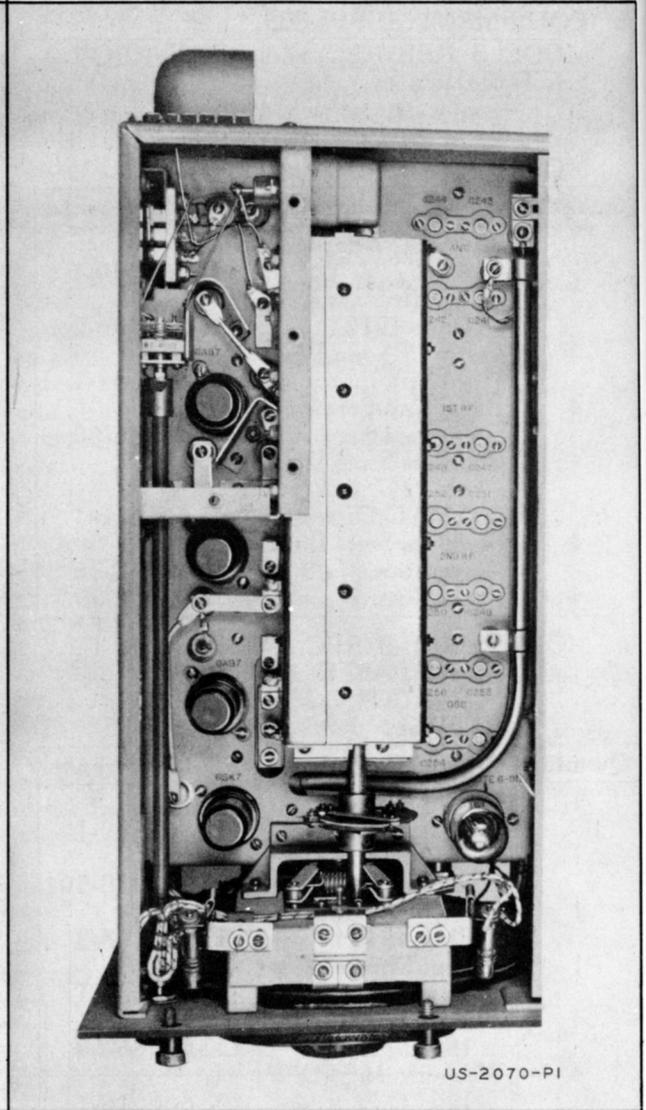
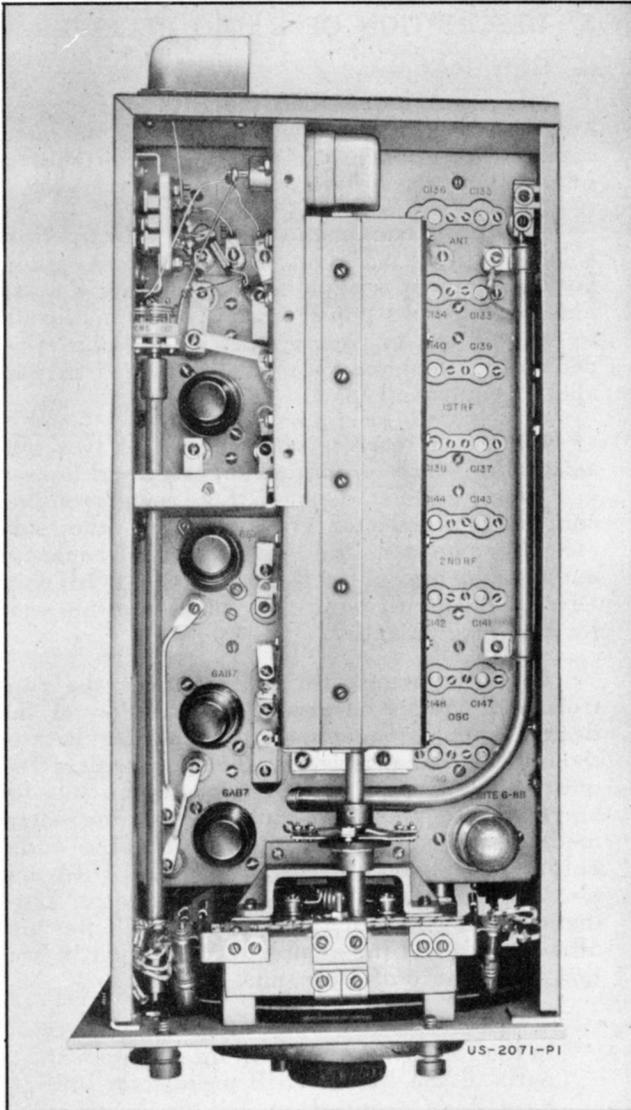


Figure 1-3 — Model RBB Radio Receiver, Preselector Unit Chassis (Top View)

Figure 1-4 — Model RBC Radio Receiver, Preselector Unit Chassis (Top View)

(2) The front panel contains the various controls and knobs that are necessary for proper operation of the equipment. In addition, the front panel and chassis assembly support the tuning drive and band switch mechanism, a five-gang tuning capacitor (C149 or C257), four individually removable coil units, vacuum tubes, and circuit elements for the antenna input stage, two r-f stages, first detector, and heterodyne oscillator. Removable cover plates are provided for access to shielded parts.

NOTE

The tuning drive band switch mechanism and the tuning capacitor (except for temperature coefficient) are the same for both units.

(3) The tuning drive and band switch mechanism is mounted directly behind the front panel (see Figures 1-3 and 1-4). The tuning drive operates the 5-gang variable capacitor (C149 or C257) through a splitgear reducing mechanism, and drives an indicating dial which is calibrated directly in frequency as well as an arbitrary 0-1000 division scale. The band switch drive, incorporated with the tuning mechanism, drives the band switch through a reducing gear. The switch has four positions corresponding to the four frequency bands employed. This switch also operates a masking device (N101 or N201) over the tuning dial so that only the frequency calibration corresponding to the band selected by the particular band switch setting is visible. The 0-1000 division scale on the tuning dial is visible at all times. A detent mechanism, incorporated with the

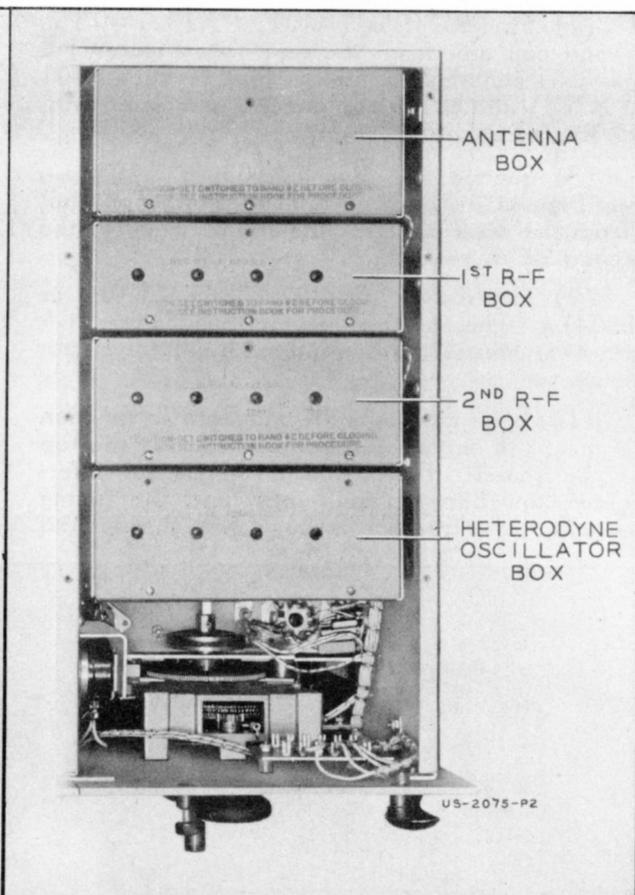
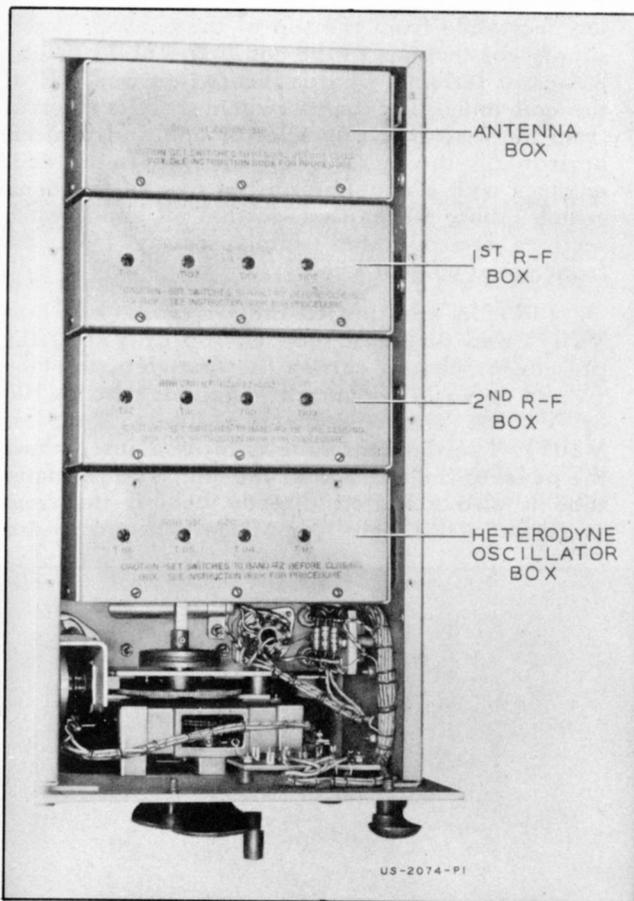


Figure 1-5 — Model RBB Radio Receiver, Preselector Unit Chassis (Bottom View)

Figure 1-6 — Model RBC Radio Receiver, Preselector Unit Chassis (Bottom View)

band switch drive, locates the switch setting in each of its four positions.

(4) The tuning capacitor (C149 or C257), with its enclosing shield, is mounted on the upper surface of the chassis. Openings with snap covers are provided on the sides of the unit for inspection purposes. Normally this capacitor unit does not require any servicing, and great care should be exercised in handling, so as not to disturb its precision alignment.

(5) See Figures 1-5 and 1-6. On the bottom of the chassis are mounted the four coil unit assemblies (A101 to A104 or A201 to A204), readily removable for servicing. These units contain the circuit elements (exclusive of the tuning capacitor) of the antenna stage, r-f amplifier stages, and heterodyne oscillator, a separate unit being employed for each stage.

(6) Antenna Box (A101 or A201) — The coil unit mounted at the rear of the preselector unit contains inductances, trimmers, band switches, and other circuit elements associated with the antenna and link tuned circuits (preceding the first r-f tube V101 or V201). The r-f input is fed into the preselector circuit by means of the concentric jack (J101 or J201) located at

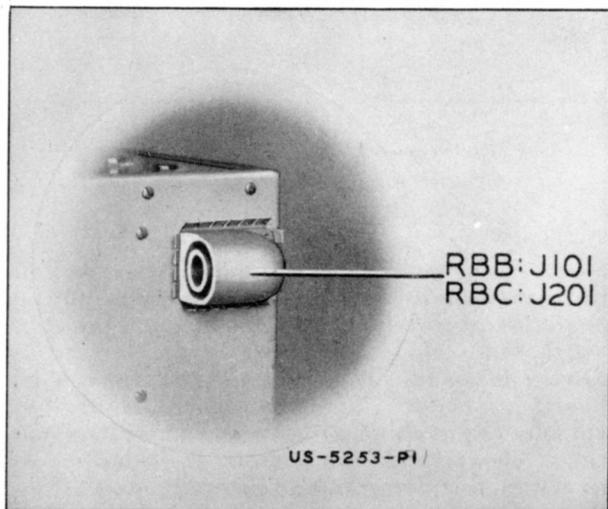


Figure 1-7 — Models RBB/RBC Radio Receivers (Rear Section Showing J101 or J201)

the rear of the preselector unit (see Figure 1-7). This jack connects to the terminal board TB-7 (E105; RBB) or TB-6 (E209; RBC) which has link connectors for adapting conditions shown in Figure 2-4.

RESTRICTED

(7) First R-F Box (A102 or A202) — The second coil unit from the rear (see Figures 1-5 and 1-6) contains the first r-f tube socket (X101 or X201) and circuit components associated with the first r-f stage.

(8) Second R-F Box (A103 or A203) — See Figures 1-5 and 1-6. The third coil unit (from the rear) contains the components for the second r-f stage.

(9) Heterodyne Oscillator Box (A104 or A204) — The fourth coil unit (see Figures 1-5 and 1-6) houses the heterodyne oscillator circuit elements.

(10) The coil units are mounted in position by means of screws that project through the top of the chassis. Tubes and terminals for interconnections between coil units, and the tuning capacitor also project through the chassis and

are accessible from the top of the chassis. Power supply connections to the coil boxes are made by means of terminal boards located on one side of the coil units. The band switch shaft is inserted from the rear of the preselector unit and projects horizontally through the coil units where the shaft engages with a coupling on the rear of the band switch tuning mechanism, so that all band switch sections are operated simultaneously from the front panel control knob.

(11) In addition to the r-f tube (V101 or V201) and oscillator tube (V103 or V203) the preselector chassis carries the first detector tube (V104 or V204), a current regulator tube (V106 or V206), and a protective tube (V105 or V205). The detector tube is located just behind the panel to the left side of the unit. The regulator tube is also mounted directly behind the front panel but at the right side of the unit and is used

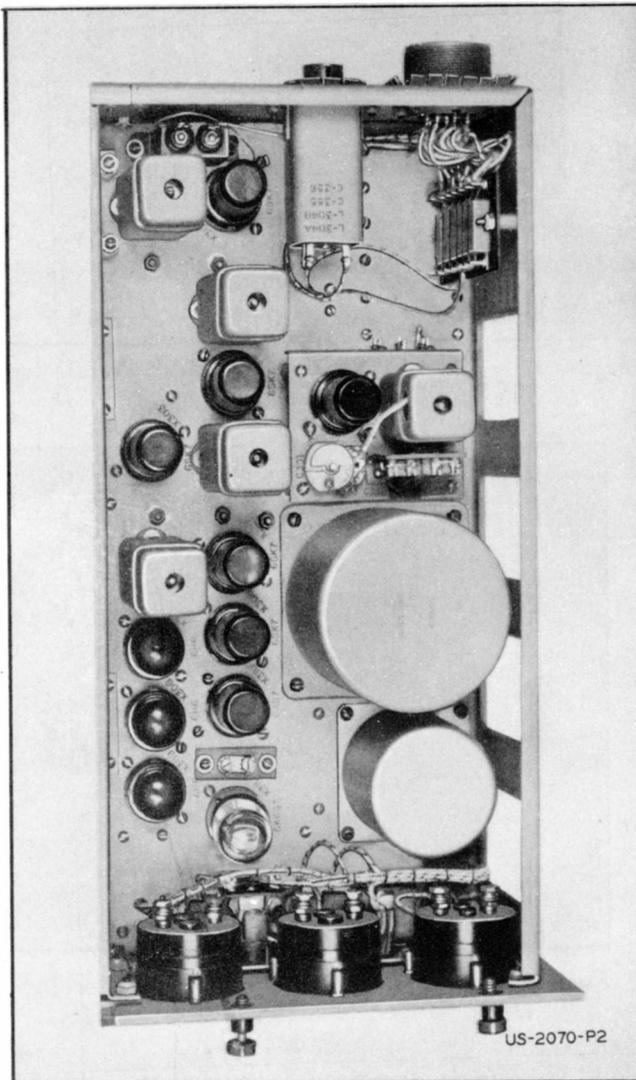


Figure 1-8 — Models RBB/RBC (only) or RBB-1/RBC-1 (up to Serial No. 1,000) Radio Receivers, I-F/A-F Unit Chassis (Top View)

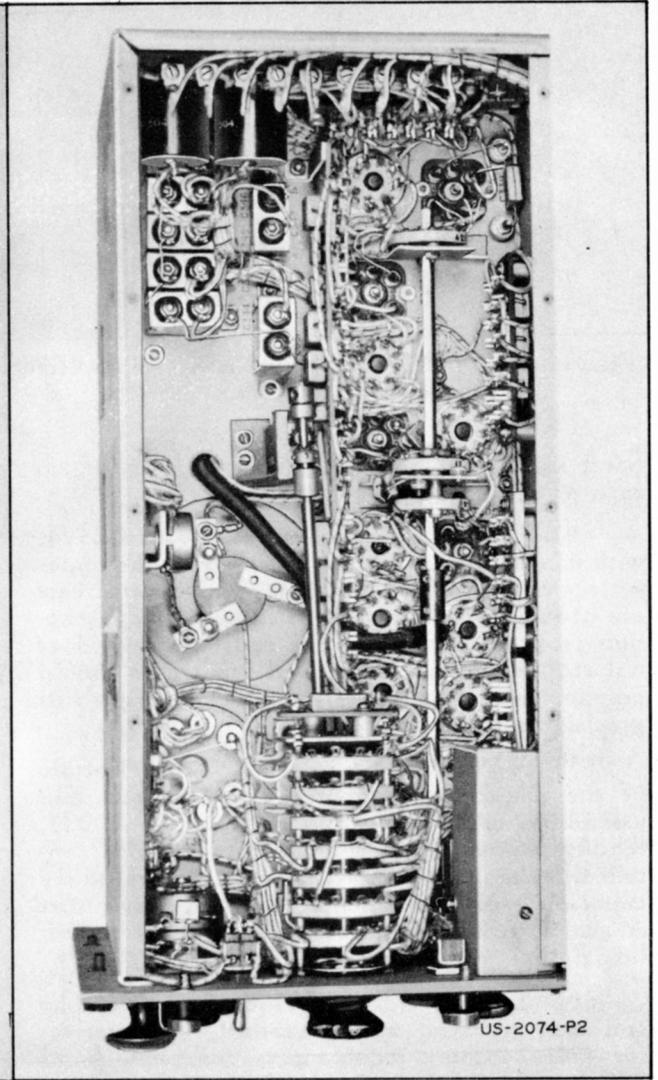


Figure 1-9 — Models RBB/RBC (only) or RBB-1/RBC-1 (up to Serial No. 1,000) Radio Receivers, I-F/A-F Unit Chassis (Bottom View)

to regulate the heterodyne oscillator heater supply. The protective tube, used to protect the input circuits from high r-f voltages, is located at the rear of the tuning capacitor and is enclosed by a small shield.

(12) A shielded compartment is located on the top of the chassis in the left rear corner. This compartment encloses the input circuits and first r-f tube (V101 or V201). A removable cover, fastened with captive thumbscrews, is provided for access to the enclosed parts. The antenna connection is brought into this compartment through a jack (J101 or J201) located at the rear of the preselector unit (see Figure 1-7). A small terminal board TB-7 (E105; RBB) or TB-6 (E209; RBC), located in this compartment, provides a means of changing the input circuit connections as required for antenna input, line input, or common operation of more than one receiver on an

antenna or line. This terminal board is accessible through the left side of the preselector unit by removing the small cover plate.

(13) The output of the preselector unit is connected to the i-f/a-f amplifier unit by means of a terminal located on the top of the preselector unit chassis in the right-rear corner. Power connections to the r-f unit are made through a cable permanently connected to the preselector unit and terminating at a terminal board (TB-308) on the bottom of the i-f/a-f amplifier unit chassis.

c. I-F/A-F UNIT.—

(1) The i-f/a-f units are identical for both Models RBB and RBC equipments except for the audio filter unit. This i-f/a-f unit contains a three-stage variable selectivity i-f amplifier, second detector, noise limiter, audio band-pass filter, cw oscillator, automatic volume control (a.v.c.), silencer circuit, and a two stage audio amplifier.

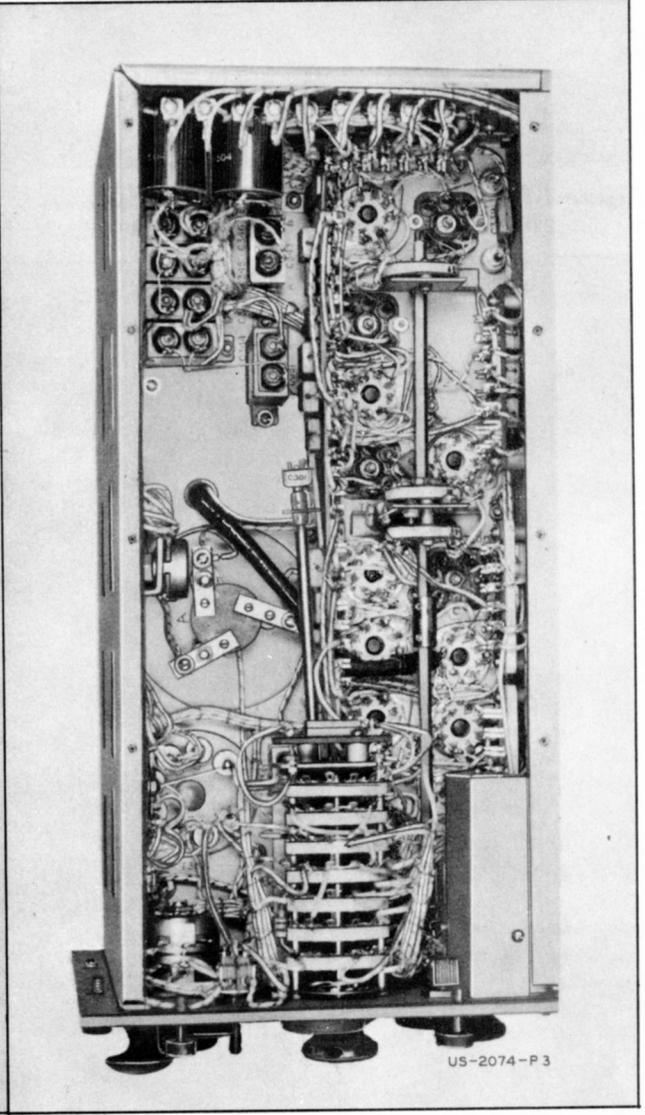
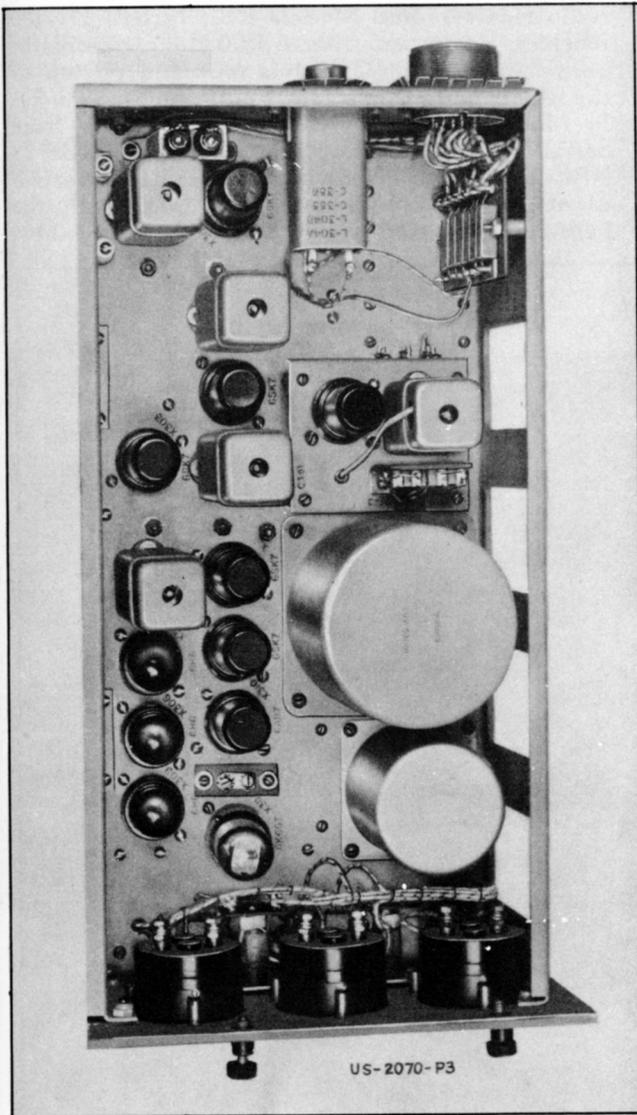


Figure 1-10 — Models RBB-1/RBC-1 (above Serial No. 1,000) or RBB-2/RBC-2 Radio Receivers, I-F/A-F Unit Chassis (Top View)

Figure 1-11 — Models RBB-1/RBC-1 (above Serial No. 1,000) or RBB-2/RBC-2 Radio Receivers, I-F/A-F Unit Chassis (Bottom View)

(2) The chassis supports circuit components and wiring is underneath the chassis (see Figures 1-8, 1-9, 1-10, and 1-11). All tubes are accessible from the top of the chassis when the receiver unit is partially withdrawn from the cabinet.

(3) The rear of the unit (upper left-hand corner as viewed from the back) carries the power supply receptacle (J301) for interconnection with the power unit. Adjacent to the power supply receptacle is the audio output receptacle (J302). See Figure 1-12.

(4) As previously mentioned, an audio band-pass filter is employed in the i-f/a-f unit. This filter is mounted on top of the chassis, and carries a terminal board which projects through to the bottom of the chassis for connection into the circuit. In case it is desired to interchange i-f/a-f units between RBB and RBC equipments, it will be necessary to remove the band-pass filter unit and substitute the correct filter:
 RBB: Band-pass filter L-301-1, CRV-53090
 RBC: Band-pass filter L-301-2, CRV-53091

(5) The cw oscillator is constructed in the form of a sub-assembly. In all Models RBB/RBC radio receivers and Models RBB-1/RBC-1 radio receivers up to Serial No. 1,000 the cw oscillator vernier capacitor (C301) is mounted on top of the i-f/a-f unit chassis (see Figures 1-8 and 1-9). In Models RBB-1/RBC-1 radio receivers from Serial No. 1,001 and up, and all Models RBB-2/RBC-2 radio receivers the cw oscillator vernier capacitor (C301) is mounted underneath the i-f/a-f unit chassis (see Figures 1-10 and 1-11).

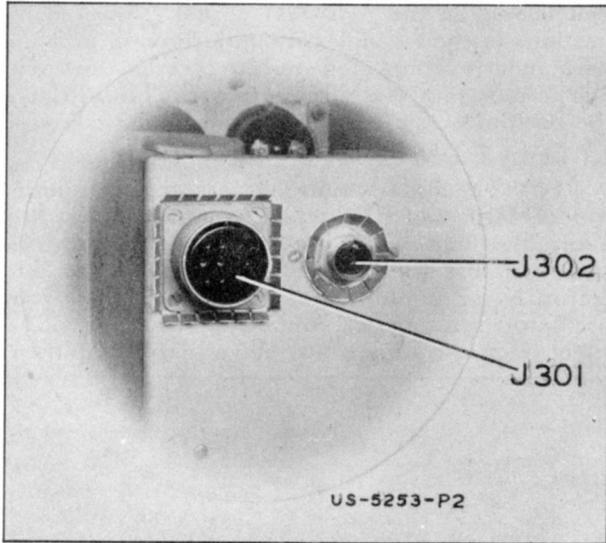


Figure 1-12 — Models RBB/RBC Radio Receivers (Rear Section Showing J301, J302)

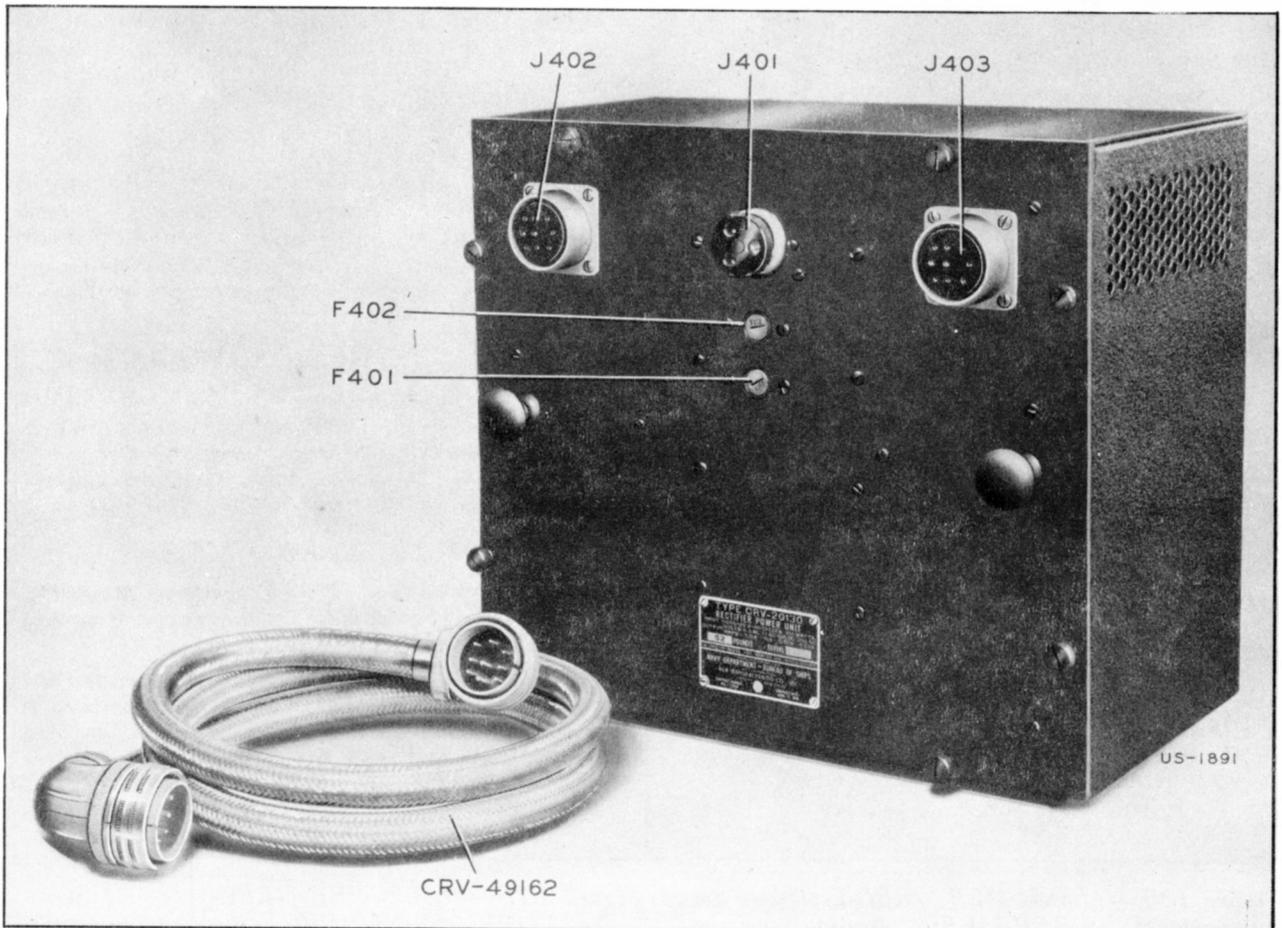


Figure 1-13 — Rectifier Power Unit, Navy Type CRV-20130 (Front View)

6. DESCRIPTION OF RECTIFIER POWER UNIT.

a. CONSTRUCTION.—

(1) The Rectifier Power Unit, Navy Type CRV-20130 is completely enclosed in a black wrinkle finished metal cabinet. The cabinet is arranged for permanent mounting, the panel and chassis assembly being removable for servicing or tube replacements. The panel and chassis assembly carries all circuit components and is ruggedly constructed with a protective frame around the back and sides (see Figure 1-13). The assembly is held in the cabinet by means of thumbscrews attached to the front panel, and spring stops are provided to prevent the chassis from accidentally falling out of the cabinet when partially withdrawn.

(2) Two knobs are provided on the front panel of the unit to facilitate withdrawal of the chassis. The power input and output receptacles are mounted near the top of the front panel.

b. FUSES.—

(1) Both sides of the a-c line within the power unit are provided with fuses, rated at 3 amperes. These fuses are accessible on the front panel of the unit. The a-c power supply plug (P401) should be removed from its receptacle when replacing these fuses.

c. The power requirements and average ratings for the rectifier power unit are as follows:

Normal load — one receiver

Input:

110-/115-/120-volts
55-65 cycles, single phase a-c
100 watts
Power factor 96%

Output:

6.3 v a-c 5.4 amps
17.0 v a-c 0.6 amps
105.0 v d-c 5.0 ma (Regulated)
200.0 v d-c 78.0 ma

Emergency load — two receivers

Input:

110-/115-/120-volts
55-65 cycles, single phase a-c
160 watts
Power factor 97%

Output:

5.5 v a-c 10.4 amps
16.5 v a-c 1.2 amps
105.0 v d-c 10.0 ma (Regulated)
175.0 v d-c 133.0 mc.

7. ACCESSORIES.

a. PLUG ADAPTER KIT.—

(1) When the Models RBB-2/RBC-2 radio receivers are shipped a Plug Adapter Kit, Navy Type -49509, is supplied (see Tables 1-6 and 1-7). These kits are for use on receiver installations using Armored Cable TTHFA-1 (two conductors), Bureau of Ships Specification 15 C-1 (INT). For Models RBB/RBC and RBB-1/RBC-1 radio receivers the Plug Adapter Kit, Navy Type -49509, is supplied under a separate contract. For installation instructions see Section II, Paragraph 3h.

b. PANORAMIC COUPLING KIT.—

(1) The Panoramic Coupling Kit, Navy Type CLP-10335 (supplied under a different contract), is intended to adapt any RBB/RBC series of radio receiving equipment for use with a RBU/RBV Panoramic Adapter Unit. When installed in a Model RBB/RBC Radio Receiver (as described in RCA Instruction Book—38359), the coupling kit provides the means for feeding signals to the RBU/RBV Panoramic Adapter Unit. The kit has been designed for field installation.

c. CONCENTRIC LINE PLUG.—

(1) When a concentric line is used on the equipment a Concentric Plug, Navy Type—49121 (see Tables 1-6 and 1-7) is plugged into r-f input jack J101 or J201.

d. ANTENNA ADAPTER.—

(1) When a single wire feed type antenna is used the antenna adapter Navy Type -49152 (see Tables 1-6 and 1-7) is plugged into the r-f input jack J101 or J201. The binding post of the adapter provides a means of terminating the lead-in of the antenna.

e. CRYSTAL CONTROL ADAPTERS.—

(1) The Navy Types CRV-35047 and CRV-35048 crystal control adapter units are designed to provide two crystal controlled operating frequencies in the RBB and RBC receivers respectively. See IB-38308, NAVSHIPS 900,530.

f. RACK MOUNTING ADAPTORS.—

(1) Navy Type -10348 rectifier mounting shelf provides for mounting the rectifier power unit in a standard relay rack.

(2) Navy Type -10350 cabinet provides for mounting the Model RBB/RBC Series receivers in a standard relay rack and replaces the cabinet which is furnished with the receiver.