RESTRICTED

INSTRUCTION BOOK

FOR

RADIO RECEIVING EQUIPMENT MODEL RCK

115 VOLTS, 60 CYCLES 1 PHASE
NAVSHIPS 900, 228-IB

NAVY DEPARTMENT
BUREAU OF SHIPS

CONTRACTOR

E. H. SCOTT RADIO LABORATORIES, INC.
CHICAGO, ILLINOIS
U. S. A.

CONTRACT NXSS-26192

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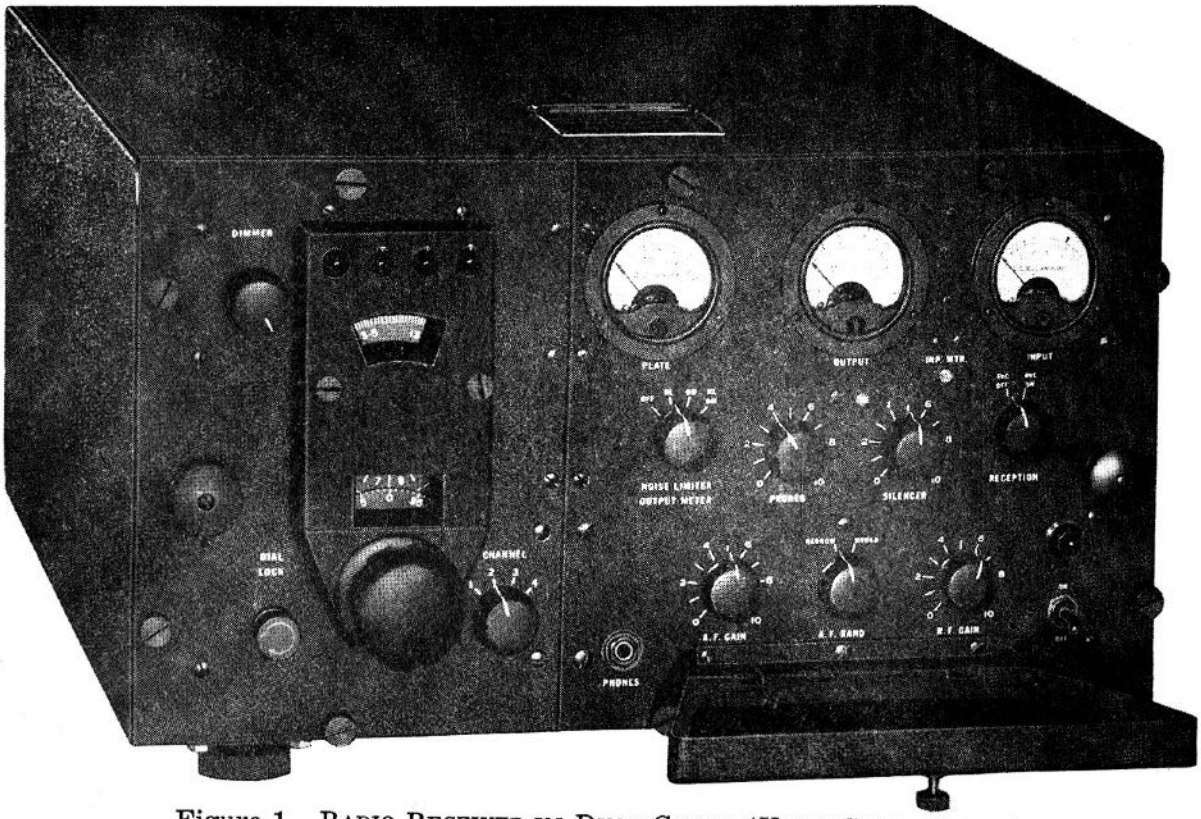


Figure 1. RADIO RECEIVER IN DUST COVER (KNOB COVER DOWN)

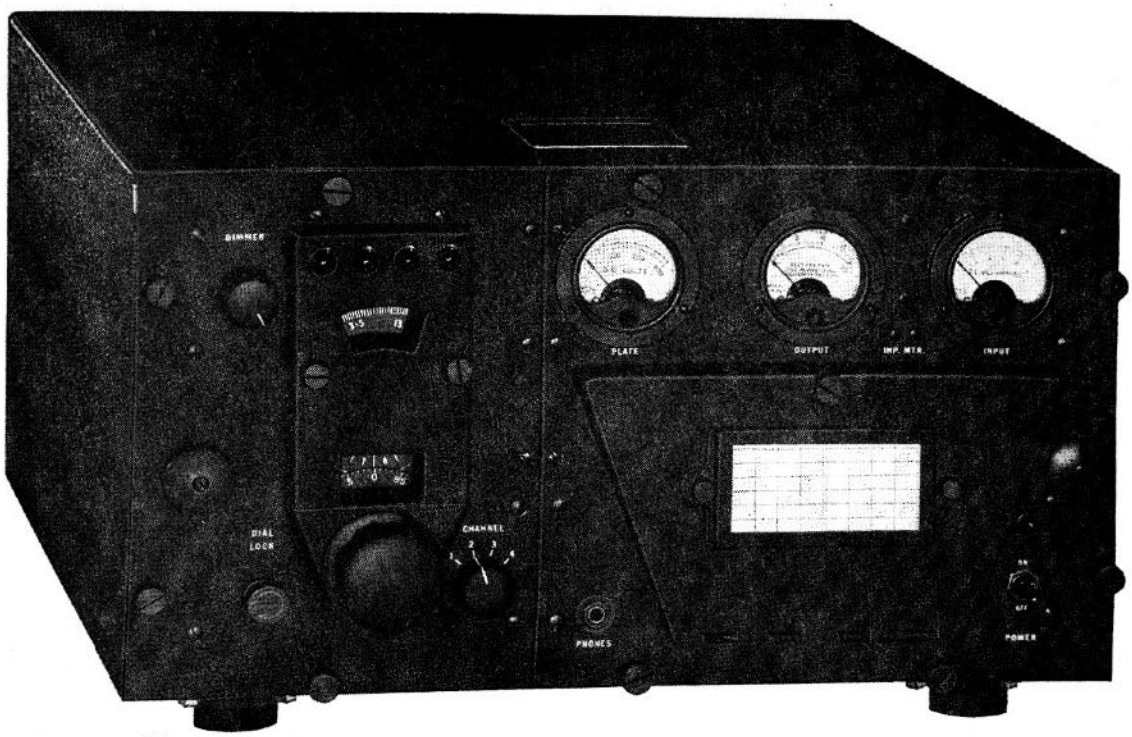


Figure 2. RADIO RECEIVER IN DUST COVER (KNOB COVER UP)

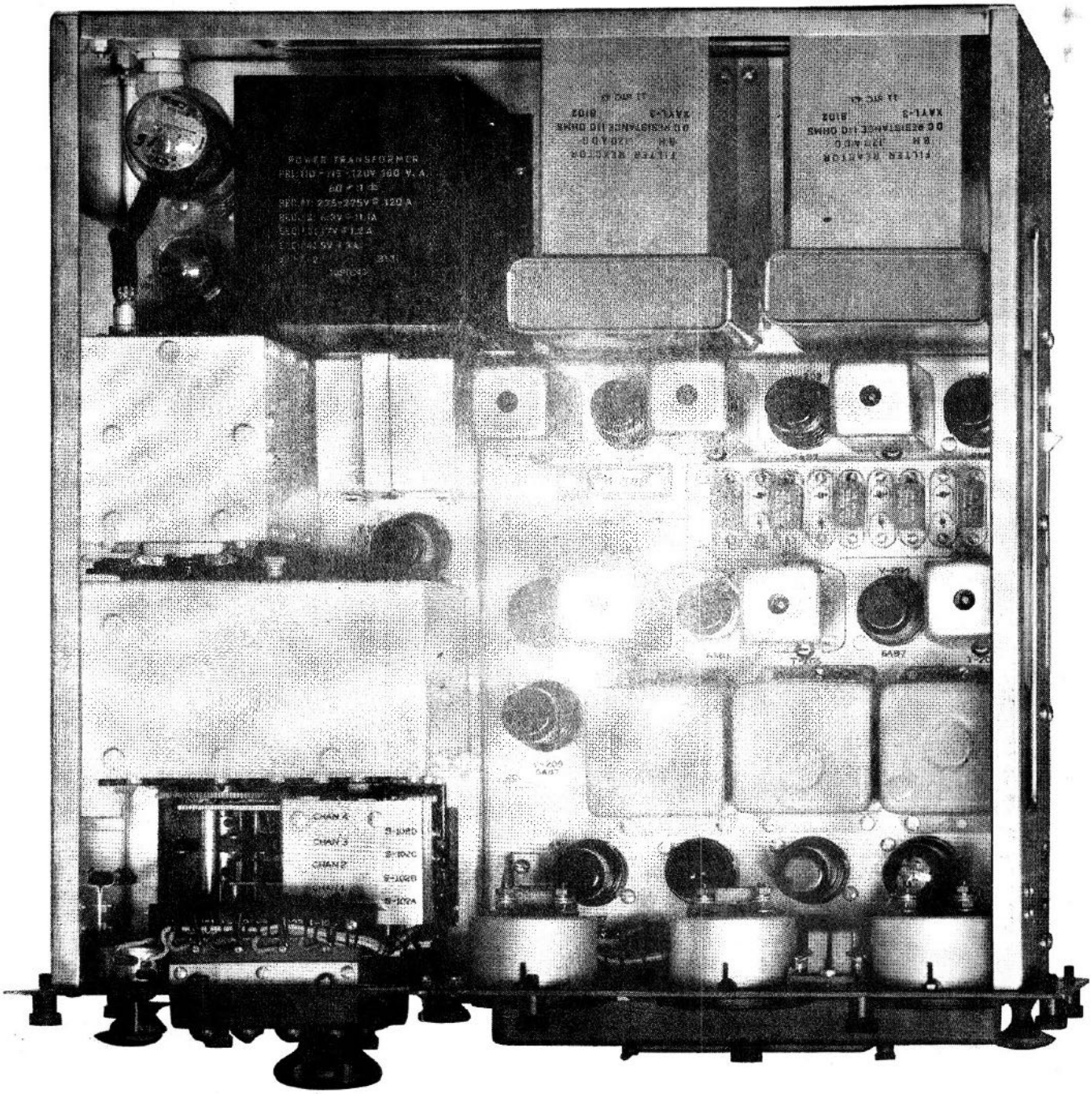


Figure 3. TOP FRONT VIEW RADIO RECEIVER

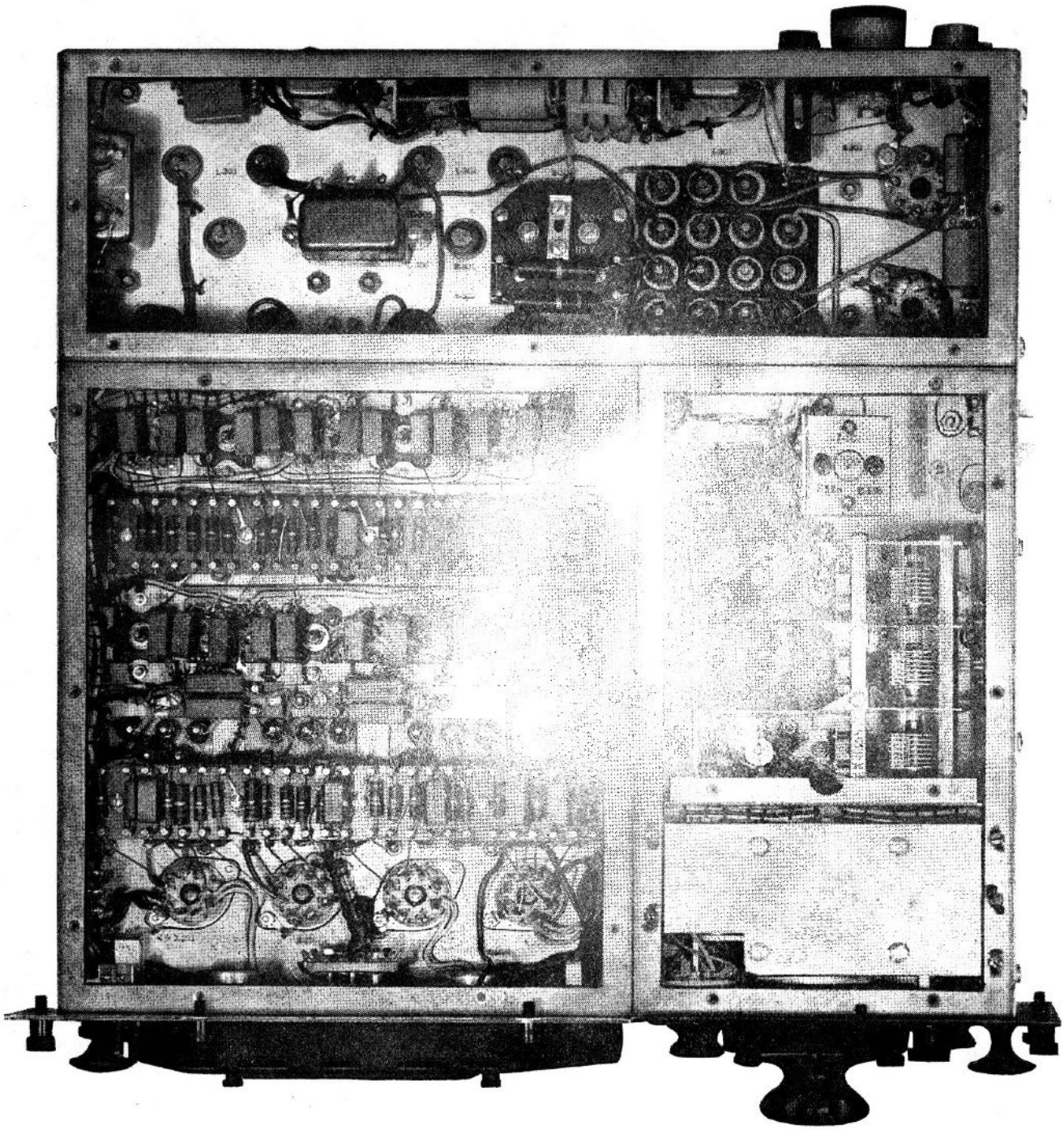


Figure 4. BOTTOM FRONT VIEW RADIO RECEIVER
BOTTOM SHIELD COVERS REMOVED

1. GENERAL

1.1 INTRODUCTION

1.101 These instructions cover the installation, operation and servicing of the Model RCK Radio Receiving Equipment. THEY SHOULD BE READ AND STUDIED WITH GREAT CARE BEFORE THE INSTALLATION OR OPERATION OF THE EQUIPMENT IS ATTEMPTED IN ORDER THAT OPTIMUM PERFORMANCE MAY BE OBTAINED.

1.102 The Model RCK Radio Receiving Equipment is primarily intended for use aboard Naval aircraft carriers and at Naval radio shore stations, for the purpose of providing voice communication between aircraft and ship and shore stations, as pertinent, on any one of four (4) quickly selected, crystal controlled, frequency channels in the operative frequency range.

1.103 The receiving equipment covers the total frequency range of 115 to 156 megacycles in one band. The equipment is suitable for the reception of signals by means of radio telephones or through remote control stations provided a suitable power amplifier is provided between the output terminals of the receiver and the remote point.

1.104 Special circuits and features are incorporated in the Model RCK Radio Receiving Equipment to provide a high degree of stability, freedom from cross-modulation, a choice of two audio fidelity ranges, and continuous tuning of all r-f circuits by means of a single dial mechanism. Four detent positions are incorporated in the dial mechanism permitting rapid adjustment of the r-f circuits for the desired operative channel. Special circuits and features are also incorporated in the Model RCK Radio Receiving Equipment to preclude its oscillator from feeding voltages into the antenna circuit and radiating interfering signals which could be detected by sensitive radio receiving or radio direction finding equipments in the same, or close vicinity.

1.105 The receiving equipment is designed for a-c operation, being equipped with a self-contained, rectifier type, power supply for supplying all operative voltages required from an a-c source of 110, 115 or 120 volts, 55 to 65 cycles, single phase.

1.106 The audio frequency output circuits of the receiving equipment are designed to permit the use of one pair of headtelephones (600 ohm impedance) separately or in conjunction with one or more suitable remote amplifiers designed to match the 600 ohm output impedance of the receiver. (Headtelephones are not furnished as part of the complete equipment.)

1.107 The equipment is supplied with one set of vacuum tubes contained within the Type CZC-46223 Radio Receiver. Two instruction books and one set of spare parts are supplied with each equipment.

1.108 The net weight and overall dimensions of the major unit of the complete equipment are listed in Paragraph 1.3.

1.109 The Type CZC-46223 Radio Receiver is an 18 tube crystal-controlled superheterodyne covering the single frequency range of 115 to 156 megacycles. The dial detent mechanism permits the pre-set adjustment of the dial to four positions corresponding to the four channels for which crystals are inserted at any given time. The operator may tune the receiver to any one of these four frequencies by adjusting the channel switch to the desired channel number and rotating the main tuning dial until the pilot lamp corresponding to the selected channel number is illuminated.

1.110 This major unit employs the cabinet type of construction, with the cabinet suitably shock mounted and designed for top of table or bench mounting.

1.111 The receiver consists of three chassis units, incorporating the following functions:

A. An r-f preselector, tuning from 115 to 156 megacycles, and an associated crystal oscillator and multiplier stages.

B. An intermediate frequency amplifier, second detector, noise limiter, interchannel silencer and an audio amplifier.

C. A power supply.

1.112 This apparatus, when combined into a single unit by mounting the three chassis units together, contains all of the circuits necessary for taking energy from an antenna, amplifying and converting it into intermediate frequency energy and then demodulating it into audio frequency energy for delivery through an audio frequency amplifier to a phone jack on the front operating panel and a set of loudspeaker terminals at the rear of the chassis.

1.113 The electrical circuits of the Type CZC-46223 Radio Receiver employed for signal reception comprise one stage of radio frequency amplification, first detector (or mixer), a mixing frequency arrangement consisting of a crystal oscillator and

two frequency multiplier stages, five stages of intermediate frequency amplification operating at 12 megacycles, a diode type second detector, one stage of audio amplification feeding into a band-pass filter (which may be inserted and/or removed by means of a front panel selector switch), a silencer diode, a second stage of resistance-coupled audio amplification and an audio frequency power output stage. The second detector utilizes one set of elements of a dual diode tube, the other set of elements being employed as a peak noise limiter. A high mutual conductance pentode is used as an amplifier for the inter-channel silencer diode.

1.114 The power supply section of the receiver, which furnishes the necessary operating voltages for the receiver circuits, is designed for operation from a 110/115/120 volts, 55/65 cycles, single phase source of a-c supply. The power supply includes a power transformer with r-f input filters and primary fuses, a full-wave vacuum tube rectifier, a two-section a-f filter and a voltage regulator tube. Voltage regulation is provided only at the 150 volt terminal for supplying stable plate supply voltage to the r-f oscillator of the preselector unit.

1.115 Two audio output circuits are provided:

(1) A phone jack is mounted on the front panel. The output from this jack can be adjusted to suit the operator's desire, by means of the front panel control marked "PHONES". The load impedance of the phone output circuit is 600 ohms.

(2) Terminals are provided at the rear of the chassis for the connection of remote amplifier systems. A negative feedback arrangement in the receiver stabilizes the output voltage so that output load resistances may vary from 30 to 600 ohms without an excessive change of voltage across the load. Thus, as many as 20 amplifiers having an input impedance of 600 ohms may be connected in parallel across the output terminals without an appreciable loss of output voltage.

1.116 A concentric jack, Navy Type -49120, is mounted at the rear of the chassis of the Type CZC-46223 Radio Receiver for antenna and ground connection. A hole in the rear of the cabinet provides access to the jack. A concentric plug, Navy Type -49121, which mates with the concentric jack, is furnished as part of the complete Model RCK Equipment, but with no antenna or ground leads attached.

1.117 Outlets for the output transformer of the receiver and the silencer circuit are provided at the rear of the receiver chassis. These circuits are brought out separately in 3 prong receptacles.

1.118 A power receptacle and mating plug are also provided at the rear of the chassis for a-c power input connection.

1.119 The fuses in the primary circuit of the power supply are mounted adjacent to the power input receptacle at the rear of the receiver chassis. The fuse mountings are of such design that the fuses which are of the miniature cartridge type are replaceable without removing the receiver from its cabinet.

1.2 TUBE COMPLEMENT

1.21 The vacuum tubes employed in the Type CZC-46223 Radio Receiver are as follows:

Preselector Unit

Symbol	*Commercial and Navy Type*	*Function*
V-101	956	R-F Amplifier
V-102	717A	First Detector/Mixer
V-103	717A	Second Frequency Multiplier
V-104	717A	First Frequency Multiplier
V-105	6J5	H-F Oscillator

I-F/A-F Amplifier Unit

V-201	6AB7	First I-F Amplifier
V-202	6AB7	Second I-F Amplifier
V-203	6AB7	Third I-F Amplifier
V-204	6AB7	Fourth I-F Amplifier
V-205	6AB7	Fifth I-F Amplifier
V-206	6H6	Second Detector, AVC and Noise Limiter
V-207	6AB7	First A-F Amplifier
V-208	6H6	Silencer Diode
V-209	6AB7	Silencer Amplifier
V-210	6AB7	Second A-F Amplifier
V-211	6V6GT	Output A-F Amplifier

Power Supply

V-301	5U4G	Rectifier (Full Wave)
V-302	VR-150/30	Voltage Regulator

1.3 DIMENSIONS AND WEIGHTS

1.31 The dimensions and weights of the Type CZC-46223 Radio Receiver are as follows:

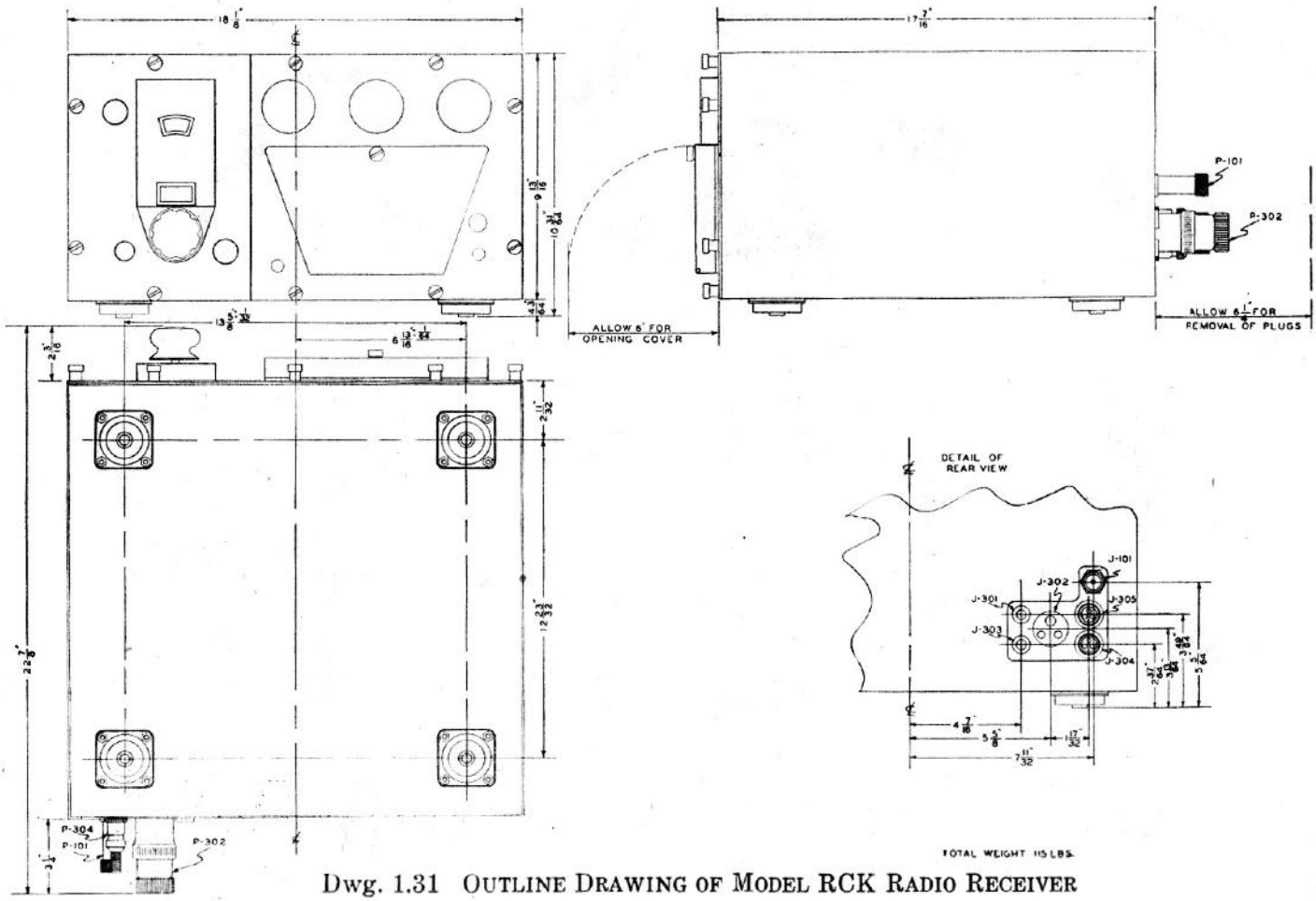
(1) *Dimensions:*

Chassis in Cabinet

Length	18⅛"
Depth	22⅞"
Height	10³¹⁄₆₄"

(2) *Weight:*

Chassis in cabinet — 115 lbs.



Dwg. 1.31 OUTLINE DRAWING OF MODEL RCK RADIO RECEIVER

1.4 POWER REQUIREMENTS

1.41 The Model RCK Radio Receiving Equipment is designed for operation from a 110/115/120 volt, 55/65 cycle, single phase power source. The line current at 115 volts is 0.92 amperes. The nominal power consumption at 115 volts is 106 watts.

1.5 ANTENNA REQUIREMENTS

1.51 The radio frequency input to the CZC-46223 Radio Receiver is made through co-axial jack J-101 at the rear of the receiver. A short section of 50 ohm transmission line is connected between the co-axial jack J-101 and the primary winding of the antenna transformer within the receiver cabinet.

1.52 This circuit is unbalanced to ground and is intended to terminate a 50 ohm transmission line.

2. DESCRIPTION

2.1 CONSTRUCTION

2.11 GENERAL

2.111 The Type CZC-46223 Radio Receiver is primarily designed for top of table or bench mounting. It is furnished in a metal cabinet supported from its mounting base with rubber shock mounts at the four bottom corners of the cabinet. The front panel, to which the chassis is secured, forms the enclosure for one side of the cabinet. The general appearance and type of construction employed are shown in Figures 1 and 2.

2.112 The cabinet is a complete enclosure with the exception of the front and an opening in the rear for access to the antenna and power input receptacles, fuses, output and silencer connections. Guide supports along the sides of the cabinet permit easy insertion of the chassis assembly.

2.113 The chassis assembly is rigidly secured to the front panel. The three basic units of the receiver are mounted together and two of the units are secured to the front panel. The complete chassis and front panel form a basic assembly capable of being inserted or withdrawn from the cabinet, as a unit.

2.114 When the chassis assembly is housed in the cabinet, it is secured to the

cabinet by the front panel through the use of ten knurled, captivated type, thumb screws which pass through slots in the panel and engage with suitable inserts in the flanged sides of the front opening of the cabinet. The captivated type thumb screws are retained, when loosened, in bushings which are attached to the front panel. Two pull-knobs are conveniently arranged on the front panel to permit the insertion or removal of the chassis assembly without subjecting any of the operating controls to strain.

2.115 The construction of the chassis assembly and the arrangement and mounting of the component parts are clearly depicted in the photographs which are shown together with the description of each unit. All vacuum tubes are accessible from the top side of the chassis upon removal of the chassis from the cabinet. In the design and construction of the chassis assembly and the arrangement of the component parts mounted thereon, an effort has been made to provide a high degree of accessibility to all items for inspection, servicing or replacement. However, the special nature of the ultra-high frequency preselector unit has made it necessary to resort to unusual shield cover arrangements and an arrangement of some of the parts in such a manner that they can be removed from the chassis only in combination with other parts or by following a single procedure. Three separate bottom cover plates not shown in the photographs mentioned above, completely enclose the bottoms of the three major units, that is, the preselector, I-F/A-F amplifier and power supply. It is provided as an added shielding feature, for the protection of under-chassis components against damage due to careless handling. Each bottom plate is secured to its respective chassis with machine screws so that it is readily removable, as and when necessary to make repairs or to effect replacement of chassis mounted components.

2.116 The receiver panel layout is shown in Figure 1, and the location and functions of the various controls are described in Section 5, Operating Instructions.

2.117 The Type CZC-46223 Radio Receiver is designed primarily for the purpose of providing reception on any one of four (4) quickly selected crystal controlled frequency channels in the operating frequency range of 115 to 156 megacycles. However, in the interests of standardization it was decided to employ a separate preselector, I-F/A-F and power supply chassis of predetermined dimensions. Thus, the basic problem in each of these units has been to arrange the circuits and components so that the desired performance for each such unit was obtained. Therefore, separate descriptions of the construction of each of the chassis is given in the following sections.

2.12 THE PRESELECTOR UNIT

2.121 The top of this chassis is arranged to provide space for the antenna preselector circuits, the r-f tube, the mixer input circuit, the mixer tube, the second harmonic multiplier tube and its associated plate circuit. The tubes, variable condenser sections, and coils associated with each of these circuits are mounted in shielded compartments. In the rear right-hand corner of the preselector chassis four crystals are mounted under a shield cover. The crystal oscillator tube and the first multiplier tube are also mounted above the chassis. However, their associated circuit components including variable condenser sections, coils, capacitors, resistors, etc., are mounted below the base. The variable condenser sections above the chassis are geared to the sections below the chassis and are driven through a dial-detent mechanism located in the front of the preselector unit.

2.122 To meet the requirements for low radiation of the fundamental and harmonic frequencies generated within the equipment by the crystal oscillator and its associated frequency multiplier stages the preselector unit has been especially designed to minimize these forms of radiation. This is accomplished by isolating the antenna preselector circuits from the first detector (or mixer) and the high frequency crystal oscillator and multiplier circuits, through the use of extensive shielding, filtering and component isolation and by the employment of a type of construction, which reduces to practical limits undesirable circuit coupling by virtue of circulating currents in common shields. In order to isolate the V.H.F. circuits "floating rotor, split stator" variable condensers are used throughout the design.

2.123 A separate shielded compartment, designed as a complete sub-assembly and detachable, as such, from the preselector chassis contains all of the circuit elements between the antenna input and the signal grid of the r-f amplifier tube. The r-f tube itself is mounted in a socket attached to the outside of the compartment and is completely supplied from external leads, except for its signal control grid which connects within the compartment. This sub-assembly is mounted at the rear left-hand side of the preselector unit and located entirely above the chassis. By disconnecting a small number of leads and unfastening the screws in the variable con-

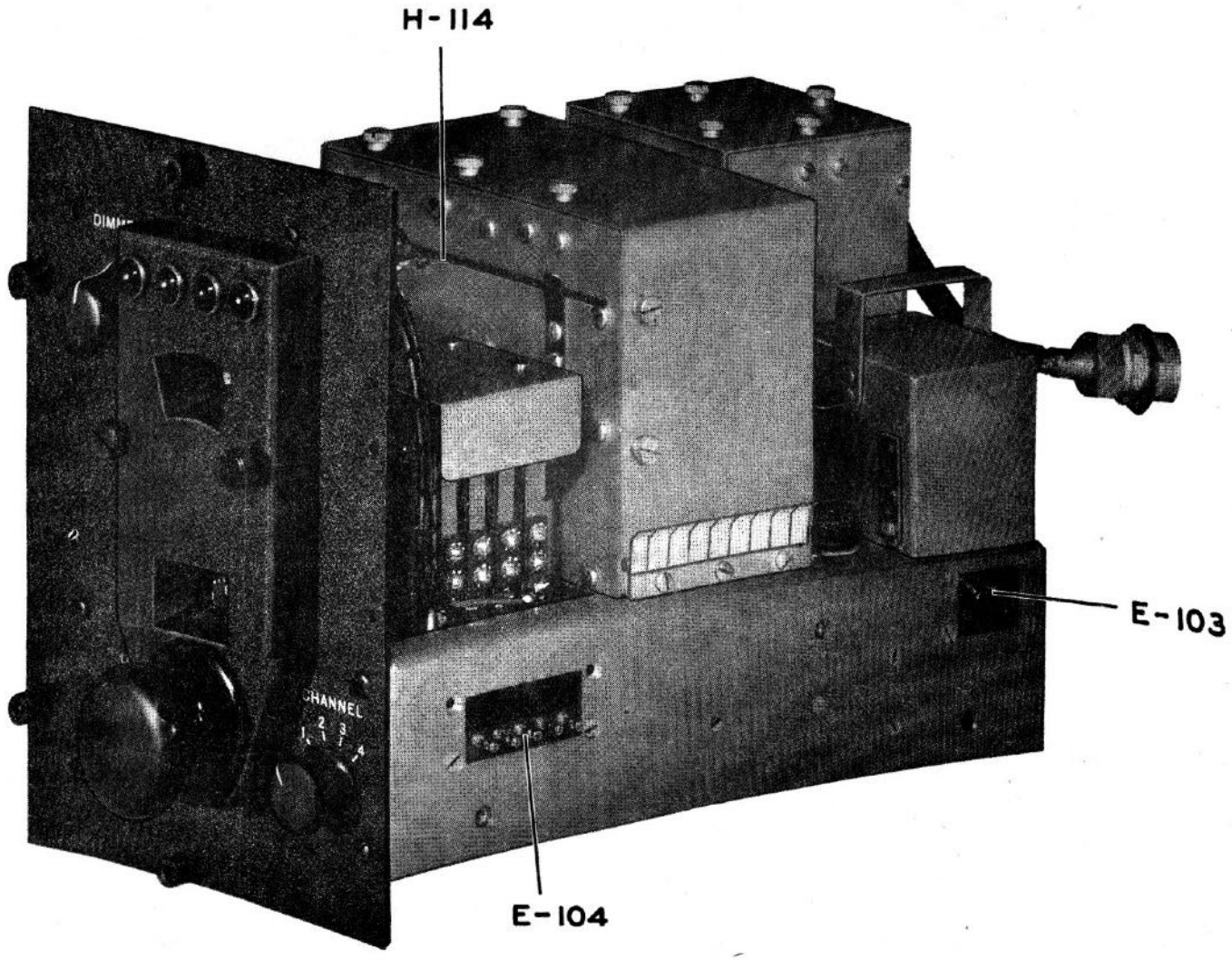


Figure 2.12 RIGHT OBLIQUE VIEW OF PRESELECTOR CHASSIS

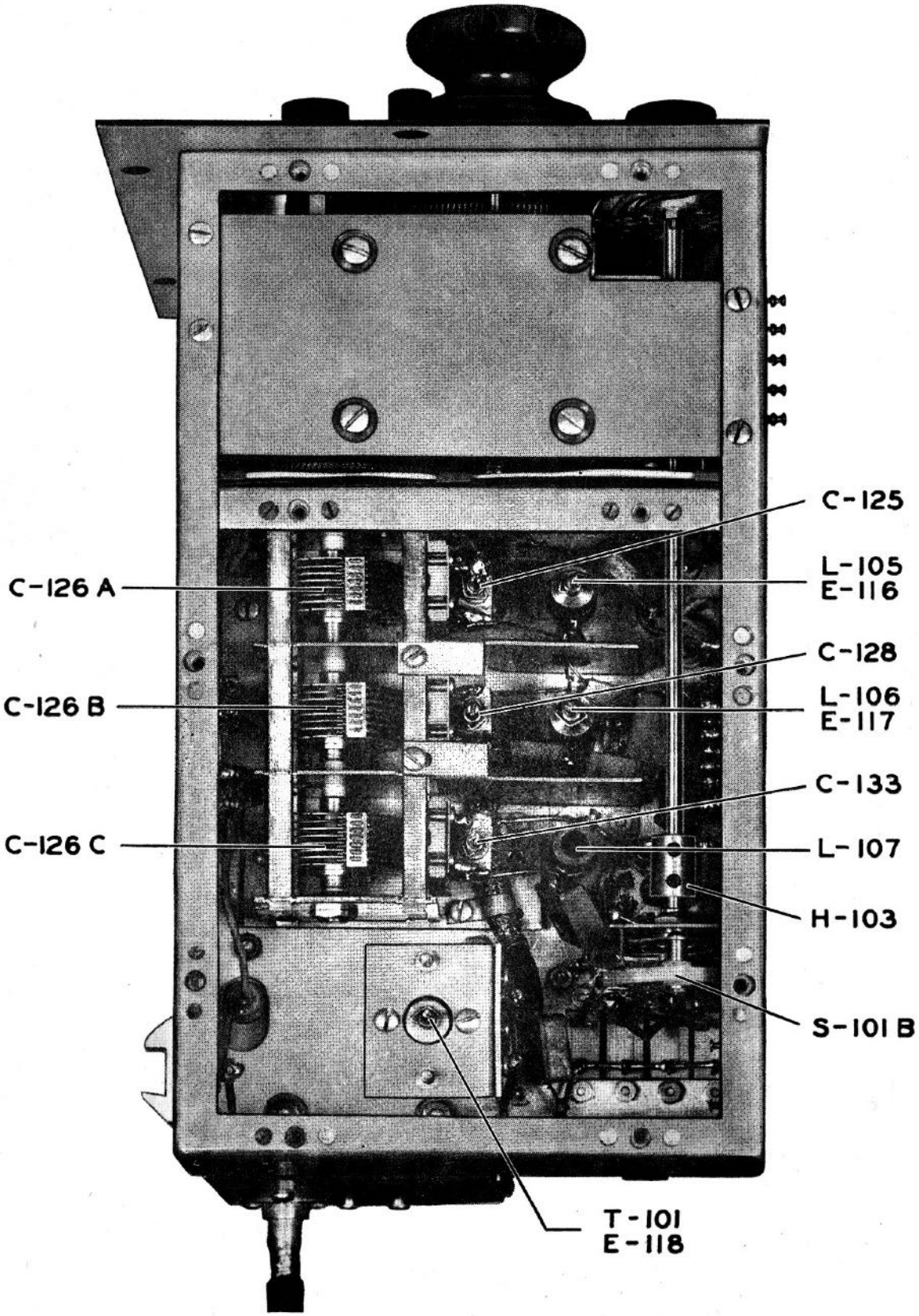


Figure 2.1210 BOTTOM VIEW OF PRESELECTOR UNIT

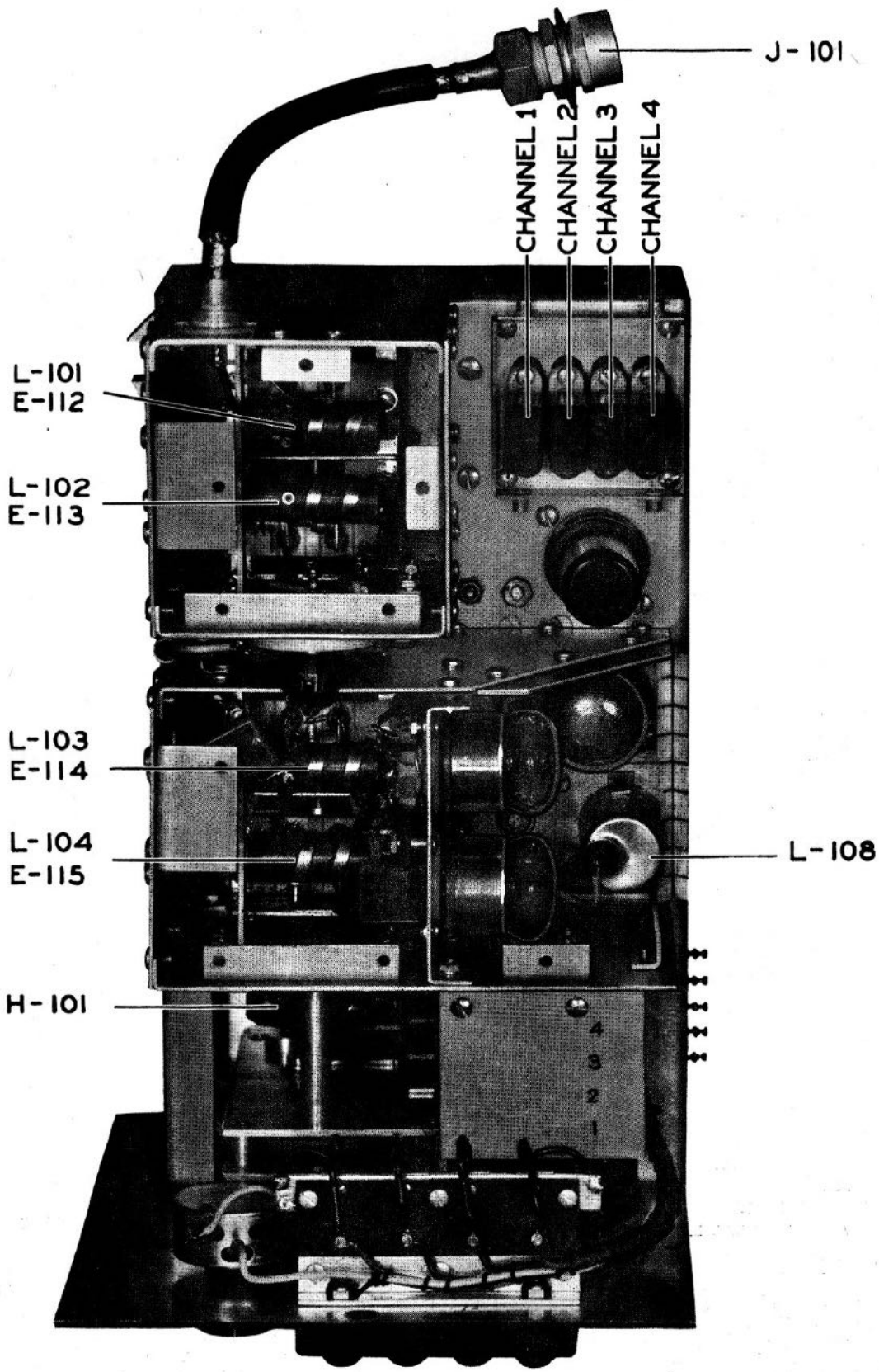


Figure 2.121 TOP VIEW OF PRESELECTOR UNIT

denser coupling and in the base of the compartment it is possible to remove the antenna preselector unit by sliding it slightly toward the rear of the chassis.

2.124 A second shielded compartment, also designed as a complete sub-assembly, but larger in overall dimensions, contains all of the circuit elements from the plate terminal of the r-f amplifier tube to the plate lead of the mixer tube and includes also, the first frequency multiplier tube and all of the circuit elements associated with the second frequency multiplier tube as well as the tube itself. This compartment is mounted on the preselector chassis between the antenna compartment and the dial-detent mechanism.

2.125 Insulated mechanical couplings are employed for joining together the shafts of the main tuning capacitors and the dial. The r-f tube is mounted in a horizontal position in a socket which is fastened to the antenna compartment. All of the wiring with the exception of the signal input grid is external to this compartment. The low plate-to-control grid capacity results in a minimum of signal transfer from the mixer V.H.F. compartment to the antenna circuit.

2.126 Removable cover plates, secured with thumb screws are provided on the two shielded compartments for access to the vacuum tubes contained within. A cover plate on the bottom of the entire preselector unit is secured with conventional machine screws. Small sliding plates on the sides of the two compartments may be shifted to provide access to the capacity trimmers and the inductance adjustments of the V.H.F. circuits. Access to the capacity trimmers and inductance adjustments of the multiplier circuits may be had through holes in the bottom cover. The first intermediate frequency adjustment is also accessible through a hole in this cover.

2.127 The secondary windings of the antenna coupling transformers feeding the grid of the r-f amplifier tube are provided with adjustable silver-plated copper cores for inductance trimming. For capacity trimming a variable titanium-dioxide composition capacitor is provided. For aligning these circuits both types of trimmers are accessible through the sides of the antenna compartment by moving the sliding side-cover plate.

2.128 The r-f transformer coupling the plate of the r-f amplifier tube with the signal grid of the mixer tube, is also provided with an inductance trimmer in the form of a silver-plated copper core and a capacity trimmer in the form of titanium-dioxide composition capacitor. Access to these units is afforded by the sliding side cover plate of the V.H.F. compartment.

2.129 The V.H.F. second multiplier circuit is provided with an adjustable powdered iron core of the insulated type and a titanium-dioxide composition capacitor for inductance and capacity trimming respectively. These adjustable trimmers together with a fixed padder capacitor in the V.H.F. multiplier circuit permit the tracking of the V.H.F. circuits at the proper difference frequency to achieve optimum conversion to the intermediate frequency.

2.1210 Underneath the preselector chassis a three section variable condenser of the "floating rotor, split stator" type tunes the plate circuit of the crystal oscillator and the double-tuned circuit in the output of the first multiplier stage. Each of these circuits are provided with titanium-dioxide composition trimmer capacitors. The oscillator plate circuit inductance toward the rear of the preselector unit is not fitted with an adjustable iron core for adjustment because this circuit is simply required to tune above the third harmonic crystal frequency by a sufficient amount for approximately optimum oscillator voltage and stability and, therefore, is not necessarily required to track exactly with the following multiplier circuits.

2.1211 The double-tuned circuit in the plate of the second multiplier, operating at three times the third harmonic crystal frequency, is equipped with both inductance and capacity trimmers in the form of powdered iron cores and titanium-dioxide composition trimmers respectively. All of these adjustments are accessible through holes in the bottom cover of the preselector unit.

2.1212 The RCK Radio Receiver incorporates a detent tuning mechanism as a means of insuring speedy and accurate setting to any one of four frequency channels. Because of this, a description of its operation is pertinent. A photograph of the dial assembly removed from the chassis and one showing the setting of one detent position have been included in Section 4.2, SETTING DIAL DETENTS. If they are referred to during the reading of the following description, the mechanical operation will be more clear:

The dial detents consist of four large cams which engage with their respective snap springs. These are secured to the shaft by hollow-head set screws for the purpose of adjustment and driven at a speed equal to the knobs rotation. At the same time the switch lever cams turn through a gear train with the same speed as the dial. Each one of the switch lever

cams, once during a complete scanning of the dial, operates a lever which raises a spring clip and closes the channel lamp switch. If the channel switch is also set at the same channel the lamp will light. As the detent catches, it can be felt through the tuning knob and additional force is necessary to move it through the setting.

2.13 I-F/A-F AMPLIFIER UNIT

2.131 This chassis is arranged to provide space for the intermediate frequency amplifier, the associated detection and control circuits and the audio frequency amplifier. The tubes, i-f transformers and audio filter units are mounted above the chassis. The controls and meters associated with these circuits are mounted on the front panel. Components such as resistors and fixed capacitors are mounted on terminal boards below the chassis.

2.132 Due to the large number of intermediate frequency stages employed at a frequency of twelve megacycles, it has been necessary to arrange all wiring and components associated with each stage for a minimum of common coupling either through proximity of parts or through ground circuits. In order to mount most of the resistance and capacity components on terminal strips it has been necessary to resort to two large terminal boards with uninsulated leads arranged for minimum coupling and the most direct connection possible under the circumstances.

2.133 Inductance trimmers in each of the i-f transformers are provided in the form of powdered iron core. They are accessible from either the top or the bottom of the I-F/A-F chassis depending upon the circuit to be adjusted.

2.14 POWER SUPPLY UNIT

2.141 This chassis is arranged to provide space for the power transformer, filter chokes, filter condensers, rectifier tube, regulator tube and a line input filter together with power input and certain output receptacles. All of these items with the exception of the line input filter and certain small resistors and capacitors are mounted above the chassis. The components underneath the chassis are arranged on terminal boards or are mounted directly to the base.

2.2 CIRCUIT DESCRIPTION

2.21 GENERAL

2.211 The complete schematic diagram of the Type CZC-46223 Radio Receiver has been placed in the pocket on the rear cover. The circuits of the preselector, I-F/A-F amplifier and power supply are discussed separately and separate diagrams are shown with each section dealing with a particular unit.

2.22 PRESELECTOR VHF SIGNAL CIRCUITS

2.221 Signal input to the receiver through concentric antenna jack J-101 is connected to the primary winding of the antenna input transformer L-101 through a short length of 50 ohm transmission line. The secondary winding of L-101 together with variable air dielectric capacitor C-101A and shunt connected trimmer capacitor C-102 constitutes the first tuned circuit. Transfer of the r-f signal at the resonant frequency of this tuned circuit, from the antenna to the first circuit is by inductive coupling. Variable air capacitor C-101A is ganged with variable capacitors C-101B and C-113A to provide uni-controlled tuning of the receiver. The secondary winding of transformer L-101 is provided with an adjustable silver-plated copper core E-112 for inductance trimming and variable titanium-dioxide trimmer capacitor C-102 for capacity trimming as stated above. These trimmer elements permit the accurate alignment of the tuned circuit at both ends of the frequency band. The r-f current flowing in the secondary of L-101 induces a voltage in L-102 by inductive coupling. L-102 is tuned to resonance at the signal frequency by means of variable air dielectric capacitor C-101B and adjustable titanium-dioxide trimmer capacitor C-104. An adjustable silver-plated copper core E-113 is used as an inductance adjustment for L-102. This unit together with capacity trimmer C-104 provides for accurate alignment of the tuned circuit at both ends of the frequency band. This second tuned circuit is tapped slightly below the high potential end to minimize loading effect on the "Q" and is connected to the control grid of the r-f amplifier tube V-101, through coupling capacitor C-105. The low potential end of the tuned circuit is returned to ground. The d-c bias return from the control grid of the r-f amplifier tube V-101 to the AVC bus is closed through grid resistor R-101.

2.222 Plate potential from the high voltage d-c bus is applied to the plate of r-f amplifier tube V-101, through decoupling filter resistor R-104, by-passed to ground by capacitor C-112. The suppressor grid is connected to ground. The screen potential, also obtained from the high-voltage d-c bus, is applied to the screen through a decoupling filter resistor R-103 and by-passed to ground through capacitor C-111.

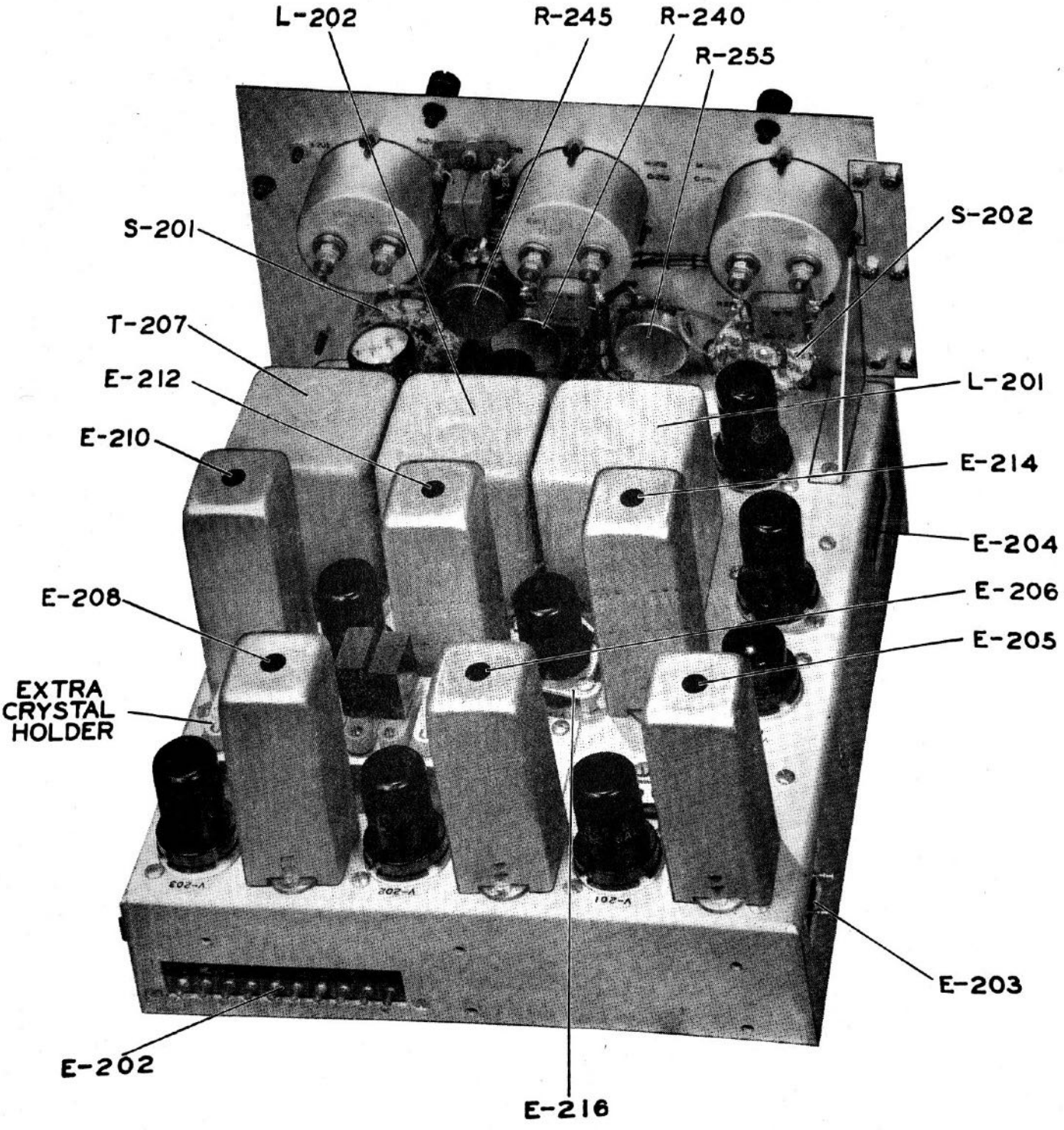


Figure 2.131A TOP VIEW OF I-F/A-F UNIT

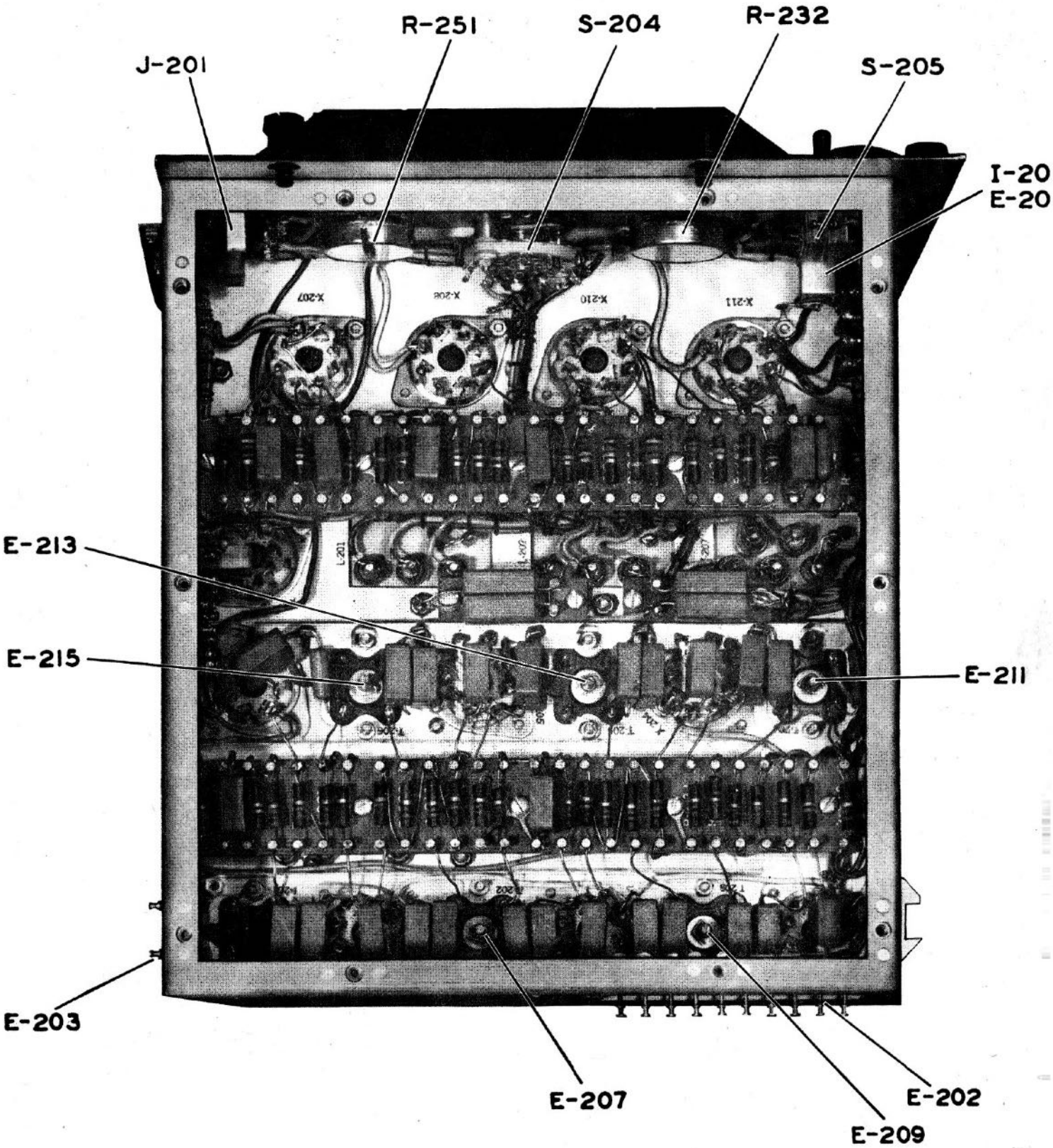


Figure 2.131B BOTTOM VIEW OF I-F/A-F UNIT

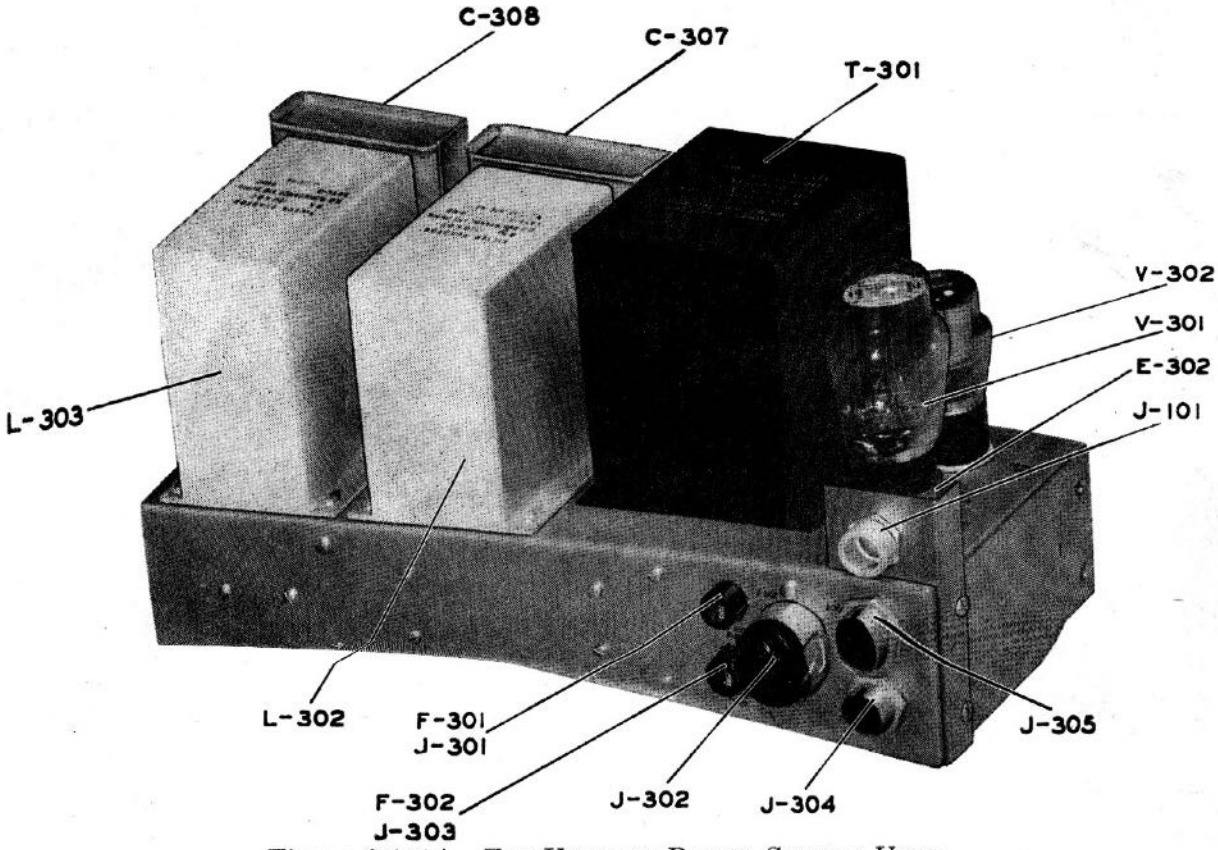


Figure 2.141A TOP VIEW OF POWER SUPPLY UNIT

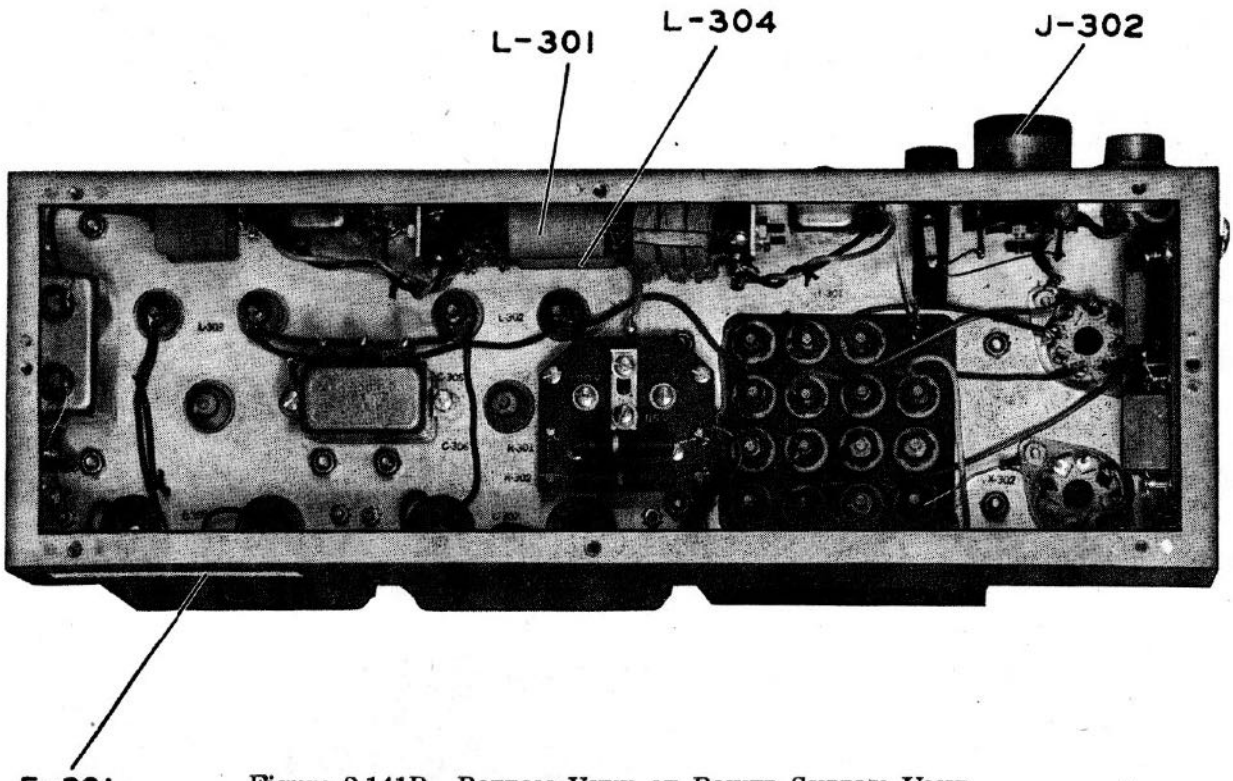


Figure 2.141B BOTTOM VIEW OF POWER SUPPLY UNIT

2.223 The amplified signal voltage in the plate circuit of r-f amplifier tube V-101 is developed across the primary winding of r-f transformer L-103. The secondary winding of transformer L-103 together with the variable air dielectric tuning capacitor C-113A, constitute the second and final tuned circuit operating at the signal frequency. The low potential end of the secondary winding of transformer L-103 connects to ground. Adjustable silver-plated copper core E-114 and parallel connected titanium-dioxide trimmer capacitor C-114, are provided for alignment purposes and are accessible for adjustment as described in Paragraph 2.126.

2.224 The mixer tube V-102 is connected as a diode detector and triode amplifier. The screen grid is connected to the plate and the suppressor grid and cathode are connected externally to ground. The grid circuit is closed to ground through resistors R-105 and R-106. The latter is provided together with jack J-102 as a means of measuring mixer grid current. The meter can be connected between J-102 and ground. Radio frequency currents are bypassed by condenser C-117.

2.23 PRESELECTOR OSCILLATOR-MULTIPLIER CIRCUITS

2.231 The high frequency oscillator voltage is obtained by starting with a crystal controlled medium frequency triode oscillator and multiplying the frequency in successive stages until a VHF signal having a frequency 12 megacycles higher than that of the incoming signal of sufficient magnitude can be supplied to the first detector. The initial crystal controlled oscillator is of the third harmonic type and the successive multiplier stages are of the grid current type. A double-tuned circuit between the first and second multiplier stages and a single tuned output circuit in the plate of the second multiplier provide adequate selectivity to oscillator harmonics as well as a load impedance for the desired harmonics. Each multiplier is a frequency tripler. Thus, the overall multiplication is nine times that of the frequency appearing in the plate circuit of the crystal oscillator.

2.232 A four-position switch S-101B in the input grid circuit of the oscillator tube V-105 selects any one of four crystals which are plugged into the sockets provided on the preselector chassis. An additional set of contacts on S-101B provide for grounding the three crystals which are not in use at any given time. (The operating crystal is connected directly to the input grid of V-105). Resistors R-114 and R-115 provide a closed grid circuit for V-105. R-115 is included simply as a means of connecting a grid current milliammeter without disturbing the circuit continuity to ground; that is, the meter may be inserted between test jack J-104 and ground to shunt R-115 and, thus, indicate the value of the grid current flowing. C-136 bypasses R-115 so that the insertion of meter leads has no effect on the r-f constants of the circuit.

2.233 In the plate circuit of V-105, there is a tuned circuit consisting of variable air dielectric capacitor, C-126C and variable titanium-dioxide capacitor C-133 and inductor L-107. This circuit resonates at a frequency slightly above the third harmonic frequency of the operating crystal. This point is chosen so that an approximate maximum grid current flows in the grid circuit of V-105 as indicated by a milliammeter connected between point J-104 and ground. The d-c plate supply voltage is supplied from a regulated source of 150 volts obtained through a regulator tube V-302 in the power supply. Capacitor C-134 bypasses this line to localize any r-f currents to the crystal oscillator.

2.234 Capacitor C-132 connects the high potential side of L-107 to the input grid of the first multiplier tube V-104. A shield plate attached to the gang isolates the oscillator from the first multiplier. Resistor R-113 closes the input grid circuit to ground. the suppressor grid and cathode are connected externally to ground and the screen derives its potential through R-112, which is bypassed by C-131.

2.235 The plate of V-104 connects to a tuned circuit resonant at three times the third harmonic frequency of the crystal. (Hereafter designated as the ninth harmonic circuit.) Variable air dielectric capacitor C-126B, variable titanium-dioxide trimmer capacitor C-128, shunt trimmer capacitor C-127 and transformer L-106 form the elements of this circuit. The primary of L-106 is provided with a powdered iron core E-117 for inductance variation. Through the alignment of this core and the variable titanium-dioxide trimmer capacitor C-128 the circuit may be adjusted to the proper resonant point at both ends of the band to permit accurate tracking with the remaining h-f and vhf circuits. Plate potential is supplied to V-104 through decoupling resistor R-111 and bypassed by capacitor C-130.

2.236 By inductive coupling between the primary and secondary of L-106 the multiplier voltage is transferred into a link circuit for coupling to a second tuned circuit adjusted to the same resonant frequency. The primary of L-105 is inductively coupled to the secondary, which forms the second tuned

circuit at the ninth harmonic frequency together with variable air dielectric capacitor C-126A and variable titanium-dioxide dielectric capacitor C-125. The secondary of L-105 is fitted with a powdered iron core E-116 to permit accurate inductance adjustment. This trimmer together with C-125 allows for adjustment of the ninth harmonic circuit at both ends of the tuning range. The high potential end of the second ninth harmonic circuit is connected through coupling capacitor C-124 to the input grid of the second multiplier tube V-103.

2.237 The grid circuit of the second multiplier tube is closed to d-c through resistors R-109 and R-110, which is provided to permit the connection of a d-c microammeter between point J-103 and ground without opening the grid circuit of V-103. C-123 bypasses R-110 to r-f and prevents any disturbance in the circuit through the connection of the meter leads. The suppressor grid and cathode of V-103 are connected to ground externally and the screen grid is connected to main d-c bus through resistor R-108, bypassed by capacitor C-121. The filament of V-103 is connected in common with that of V-102 and after being bypassed to ground by C-122 it is connected to an r-f filter choke L-108, which in turn is connected to the main filament supply terminal. A bypass capacitor C-139 acts to further filter any r-f potentials which might tend to be conducted out of the preselector through the filament line. This filter helps also to reduce oscillator and harmonic voltage radiation.

2.238 The plate terminal of the second harmonic multiplier tube V-103 is connected to a resonant circuit consisting of variable air dielectric capacitor C-113B, variable titanium-dioxide dielectric trimmer capacitor C-119, fixed mica dielectric padder capacitor C-118 and inductor L-104. This circuit resonates at nine times the third harmonic frequency of the crystal which is in operation, or twenty-seven times the fundamental frequency of that crystal. The inductor L-104 is fitted with a special adjustable molded iron core of the insulated type E-115. This adjustment together with the titanium-dioxide trimmer capacitor C-119 permits alignment of the circuit at both ends of the frequency range covered.

2.239 The vhf voltage developed across the resonant plate circuit of the second multiplier stage is fed to the grid of the mixer tube V-102 through a coupling capacitor C-116. The vhf signal voltage developed across L-103 is fed to the same control grid through fixed capacitor C-115. The d-c path in this circuit is closed to ground through R-105 and R-106 in series. R-105 is the primary grid leak resistor; R-106 is in the circuit to permit the insertion of a microammeter for measuring an indication of the vhf harmonic oscillator voltage developed at the mixer control grid. The meter may be inserted between points J-102 and ground. The meter resistance will shunt R-106 and the fixed capacitor C-117 will prevent any disturbance of the r-f circuit values due to any reflected reactance from the meter circuit. The mixer tube V-102 obtains its filament voltage from the same point as the second multiplier tube V-103. The suppressor grid and cathode are connected to ground externally. The screen grid is connected to the plate externally.

2.2310 The action in this circuit is that of a diode detector followed by a triode amplifier. The mixing action in the grid circuit of V-102 combines the two vhf voltages in that circuit to produce an intermediate frequency voltage of 12 megacycles which is developed across the resonant circuit in the plate of the same tube. This circuit consists of a fixed capacitor C-138 and transformer T-101. The combination of C-138 and the primary of T-101 resonates at 12 megacycles. The secondary of T-101 which is inductively coupled to the primary, provides the input portion of a link circuit for transferring intermediate frequency voltage from the preselector to the I-F/A-F unit. The d-c plate potential for V-102 is obtained through decoupling resistor R-116, bypassed by capacitor C-137.

2.2311 A four-position switch S-101A, operating on the same shaft as the crystal selector switch S-101B, provides connection of filament potential to the proper channel indicating lamp when S-102A, S-102B, S-102C or S-102D, as pertinent, is closed by the dial detent lever that positions the main tuning capacitor on the desired channel frequency. A rheostat R-117 provides facilities for controlling the brilliancy of the channel indicator lamp and the dial lamps E-109, E-110 and E-111.

2.24 I-F AMPLIFIER CIRCUITS I-F/A-F UNIT

2.241 Transfer of intermediate frequency energy from the first detector tube V-102 to the second detector tube V-206 is accomplished by inductive coupling through I-F transformers T-101, T-201, T-202, T-203, T-204, T-205 and T-206 and amplified through I-F amplifier tubes V-201, V-202, V-203, V-204 and V-205.

2.242 The first I-F transformer T-101 is located in the Preselector chassis and is link coupled to the I-F transformer T-201 in the I-F/A-F unit. The primary of T-101

is tuned to 12 megacycles by fixed capacitor C-138 and adjustable core E-118. It is connected to the plate of the first detector tube V-102 at the high potential end and at the low potential end to the d-c bus through decoupling resistor R-116, which is bypassed by capacitor C-137. The secondary is formed by one-half of the link coupling.

2.243 The second half of the link coupling is the primary of T-201. The impedance of the link is maintained at a low value for all frequencies by a resistor R-201 from the high potential side to ground. The secondary of T-201 is tuned to 12 megacycles by fixed capacitor C-201 and adjustable core E-205. It is connected at the high potential end to the grid of the first I-F tube V-201 through a series resistor R-264 which acts as a grid suppressor to minimize plate to grid feedback, while the low potential end is connected to the AVC bus through filter resistor R-207 bypassed by C-214, the suppressor grid is externally grounded.

2.244 D-C potential is applied to the screen of the first I-F amplifier tube V-201 through decoupling filter resistor R-209, bypassed to ground by capacitor C-216. Bias is obtained through resistor R-208, bypassed by capacitor C-215. The outer shield of the tube is ground to pin No. 1.

2.245 The third I-F transformer T-202 consists of two tuned circuits, the primary and secondary windings are tuned to 12 megacycles by fixed capacitors C-202 and C-203 and by adjustable iron cores E-206 and E-207. The cores can be reached for tuning through the top of the can and through the holes provided in the bottom plate. The high potential end of the primary connects to the plate of the first I-F tube while the low potential connects to the d-c bus through decoupling resistor R-210, bypassed by C-217. The secondary is connected in the same manner as that of T-201, described in Paragraph 2.243.

2.246 The circuit arrangement of the second, third and fourth I-F amplifier tubes V-202, V-203, V-204 is the same, except for symbol designations, as described for the first I-F amplifier tube V-201 in Paragraph 2.244 above.

2.247 The fourth, fifth and sixth I-F transformers T-203, T-204 and T-205 are the same in construction and electrical values as the third T-202. Except for differences in circuit symbol designations, the circuit description of Paragraph 2.245 is applicable to these transformers on all details.

2.248 The fifth I-F amplifier is connected in the same manner except there is no series resistor in the grid circuit and there is no connection to the AVC, the low potential end of T-205 being grounded.

2.249 The seventh I-F transformer T-206 has a higher inductance and consequently a lower capacity in its secondary, but in all other respects what has been said before holds true in this case.

2.25 SECOND DETECTOR CIRCUITS I-F/A-F UNIT

2.251 The second detector utilizes one section of a twin diode tube V-206 (designated as V-206A on the schematic diagram). The incoming radio-frequency is obtained from the plate of the preceding I-F amplifier through transformer T-206, which connects to the plate of the second detector diode and to load resistors R-227 and R-228, which are shunted by the I-F by-pass condenser C-233. The cathode is grounded so that the tube functions as a half wave rectifier for the incoming R-F signals resulting in the development of an audio voltage across the diode load resistors R-227 and R-228.

2.252 Provisions are provided in the equipment by means of a link switch (S-203), to permit measurement of the second detector diode current. This link switch appears in the center of the I-F/A-F chassis near the second detector tube and is marked to indicate the proper polarity for connection of the measuring instrument.

2.26 AUTOMATIC VOLUME CONTROL CIRCUITS I-F/A-F UNIT

2.261 Automatic volume control is provided by the same section of the twin diode tube V-206 as is used by the second detector. Rectified R-F potential is obtained from the low side of the secondary of T-206, filtered by resistor R-233 and capacitor C-239, and used to provide AVC bias to tubes V-101, V-201, V-202 and V-203. A small amount of AVC voltage is obtained by tapping between R-237 and R-236, connected between the A.V.C. bus and ground, and applied to the fourth I-F amplifier V-204 and 1st audio amplifier V-207.

2.27 AUTOMATIC PEAK NOISE LIMITER I-F/A-F UNIT

2.271 The second section of the dual diode tube V-206, designated as V-206B on the schematic diagrams, operates as a noise peak limiter. The audio voltage appearing at the junction of R-227 and R-228, as a result of the voltage developed across R-227 and R-228 by the demodulating action of the second

detector diode V-206A, is normally coupled to the input of the first A-F amplifier. This is the connection used for the "limiter off" condition. When switching the limiter "on", by means of S-202A, the input to the first audio amplifier is coupled to the cathode of V-206B, the plate of which is connected at the junction of R-227 and R-228. The cathode of V-206B also connects to the transformer end of R-227 through resistors R-233 and R-235, the junction point of R-233 and R-235 being connected to ground (which is the termination of the cathode of V-206A) through C-239. The operation of the circuit is such that under conditions of reception of a steady or slow varying carrier, the plate of the diode of V-206B is positive with respect to its cathode, thus permitting the audio voltage appearing on the plate of this diode to be conducted to its cathode and to be coupled to the input of the first A-F amplifier. If a surge noise potential suddenly appears across R-227 and R-228, the plate momentarily assumes a less positive or even negative potential with respect to its cathode. This in effect functions to decouple the input of the first audio amplifier to the junction of R-227 and R-228, and the audio amplifier no longer has any appreciable input. By the time the cathode has begun to assume an appreciably higher negative potential, the noise pulse will usually have decayed and the diode is again conductive allowing input to the audio amplifier to be resumed.

2.28 A-F AMPLIFIER CIRCUITS I-F/A-F UNIT

2.281 The audio voltage developed across the diode load resistors R-227 and R-228, as a result of the demodulating action of the second detector tube V-206, is applied to the control grid of the first A-F amplifier V-207, through coupling capacitor C-212 and VOLUME control potentiometer R-251, followed by another coupling capacitor C-234. AVC voltage from the AVC bus is applied to the grid through filter resistor R-205.

2.282 Amplification of the A-F signals from the second detector is accomplished by resistance-capacity coupling between the first A-F tube V-207 and the second A-F tube V-210. The cathode of V-207 is biased to ground through resistance R-230 and is also tapped into the B+ line through R-229. This combination is for the purpose of maintaining a more constant bias. At the same point there is a capacitor C-235 connecting the cathode to the filament line, which places a small amount of 60 cycle voltage on the cathode. This 60 cycle voltage is introduced out of phase with any 60 cycle hum voltage that may have been picked up in preceding stages, particularly in the noise limiter diode circuit, thus cancelling it.

2.283 A band-pass filter has been introduced between the first and second A-F amplifier tubes V-207 and V-210. Attenuation of the lower frequencies has been secured by chokes L-201A, L-201B and L-201C mounted in one unit and a dual bypass capacitor C-245. The higher frequencies have been attenuated by another choke unit L-202A and L-202B in series and tuned by shunting capacitors C-246, C-247, C-248 and C-249.

2.284 Resistance—capacitance coupling is also used between the second A-F amplifier V-210 and the output tube V-211. A meter has been introduced in the plate lead of the second A-F amplifier V-210 to show the value of B+ voltage in the set.

2.285 Transfer of audio energy from the plate of the output amplifier tube V-211 to the head phone jack J-201 and the speaker plug J-304 is accomplished through output transformer T-207. The secondary of T-207 has 600 ohms impedance. The speaker terminals are bypassed by capacitor C-253 and also have an output meter M-202 connected across them. The head phone output is bypassed by C-255 and level is controlled by variable resistor R-255.

2.29 INTERCHANNEL SILENCER CIRCUITS

2.291 The interchannel silencer arrangement consists of a diode silencer V-208 and its control amplifier V-209. Silencing action takes place when the plate current from the amplifier V-209 which flows through a resistor R-258 in common with the silencer diode V-208, reduces the plate voltage to cut-off. A-F signals that are too weak to exceed the cut-off level, as determined by the amount of plate current from the control amplifier are not passed through the remainder of the audio amplifier. This insures quiet operation when no signal is being received.

2.292 The amount of plate current in the control amplifier is determined by both the AVC voltage which is applied to the grid, and the screen voltage. Screen voltage is controlled by variable resistor R-240 and is the dominant factor in determining the cut-off point of the diode because of its influence on the control amplifier plate current. When silencer action is not desired, switch S-201D is opened and the cathode of the control amplifier V-209 is biased to nearly cut-off. When operating, the cathode is grounded through the silencer jack J-305 which is for remote control of the silencer.

2.210 INPUT METER CIRCUITS

2.2101 Cathode current in the third I-F amplifier V-203 is measured by an input meter which is automatically placed in the circuit by the Reception Switch S-201C when turned to "AVC ON".

2.211 RECTIFIER POWER CIRCUITS

2.2111 The proper A-C heater potential for all vacuum tubes except the rectifier is obtained from one secondary winding of the power transformer T-301. One side of this secondary is operated at ground potential. Filament voltage for the rectifier tube V-301 is obtained from another secondary winding of this transformer. High voltage A-C plate potential from a third winding of T-301 is applied to the plates of V-301. The rectified pulsating potential is obtained from the filament of this tube and fed through a two section filter. Input choke L-302 is tuned by capacitors C-305B, C-306B, and filtered by capacitors C-305A and C-306A. Capacitor C-307 completes the first section. A resistor R-304 is connected at this point and furnishes the plate and screen voltage for the power amplifier V-211. Further filtering action is secured through C-315 in this line. The second section is formed by L-303 and C-308 and furnishes plate voltage for all the tubes except the following: V-211, V-208, V-209, V-102, V-105. These tubes are supplied by a line which is reduced from the D-C bus by two resistors R-301 and R-302. Further regulation is secured by the voltage regulator tube V-302. The center tap of the high voltage winding is grounded providing a D-C return.

2.2112 The A-C power input line to the primary winding of the power transformer T-301 is filtered by a two section filter on each leg of the input line. This filter is formed by chokes L-301A, L-301B and capacitors C-301A, C-302A and C-303 in one leg and in the other by chokes L-304A and L-304B and capacitors C-301B, C-302B and C-304. The primary winding is fused by F-301 and F-302 WHICH SHOULD NEVER BE REPLACED WITH FUSES OF A HIGHER RATING THAN THREE AMPERES.

2.3 PERFORMANCE DATA

2.31 The SENSITIVITY of the Type CZC-46223 Radio Receiver at any of the frequencies covered is better than 6 microvolts. Although it is possible to check this value only with a signal generator having an accurately calibrated attenuator, any serious change will show up in the performance of the set.

2.32 The SELECTIVITY of a receiver is that characteristic which determines the extent to which it is capable of differentiating between the desired signal and disturbances of other frequencies. The I-F SELECTIVITY curves, shown in plate 1 is representative of the SELECTIVITY characteristic of the Type CZC-46223 Radio Receiver.

2.33 The IMAGE ATTENUATION is the degree to which a superheterodyne type of radio receiving equipment is capable of rejecting signals off resonance which, in combination with the fundamental of the conversion oscillator, produce intermediate frequencies which are amplified by the intermediate frequency amplifier and result in spurious responses. The IMAGE ATTENUATION vs. DESIRED SIGNAL FREQUENCY curve of Plate 3 shows the extent to which primary image frequencies are attenuated by the preselector tuned circuits of the Type CZC-46223 Radio Receiver. The primary image frequency is equal to the desired frequency plus two times the intermediate frequency. The attenuation of the primary image, corresponding to any desired signal frequency as derived from the curve of Plate 3, is predicated on the ratio between the R-F inputs at the desired signal frequencies, to produce a constant output as measured with the receiver tuned for resonance at the desired signal frequency.

2.34 The OVERALL FIDELITY characteristics are necessary when particular performance checks are desired, but are secondary in most cases in the determination of the necessity for repairs or realignment.

2.35 The MAXIMUM UNDISTORTED POWER measured at 1000 cycles across a non-inductive load of 600 ohms, is approximately 65 milli-watts.

2.36 The HIGH FREQUENCY OSCILLATOR RADIATION, as measured at the antenna input terminals of the Type CZC-46223 Radio Receiver, is less than 400 micro-microwatts at any frequency covered by the Model RCK Radio Receiving Equipment. This characteristic will permit "safe" operation of the equipment on Naval vessels.

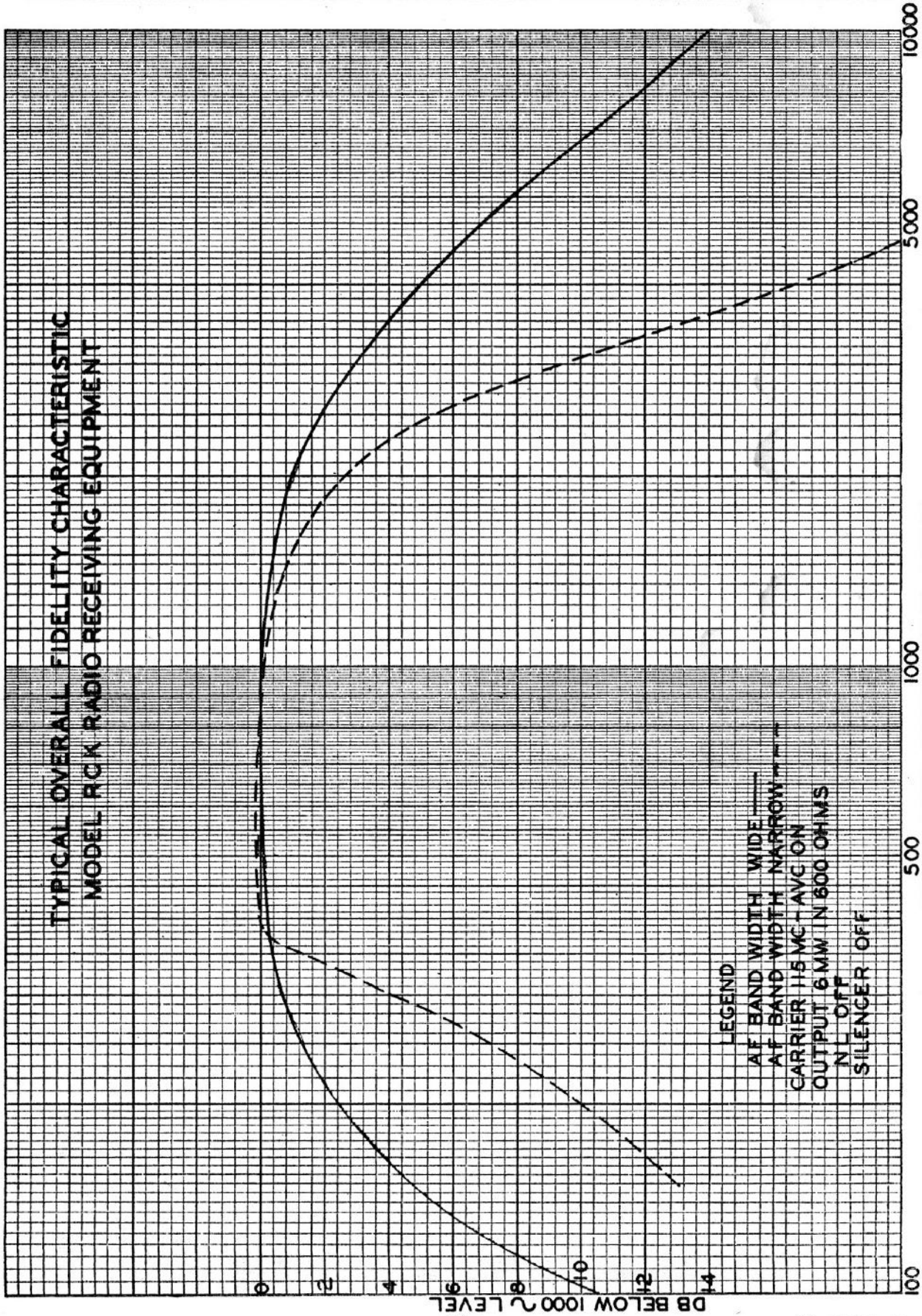

TYPICAL OVERALL FIDELITY CHARACTERISTIC
MODEL RCK RADIO RECEIVING EQUIPMENT
LEGEND
AF BAND WIDTH WIDE ——
AF BAND WIDTH NARROW - - -
CARRIER 1.5 MC - AVC ON
OUTPUT 6 MW IN 600 OHMS
N.L. OFF
SILENCER OFF
DB BELOW 1000 ~ LEVEL
0
2
4
6
8
10
12
14
100
500
1000
5000
10000
MODULATING FREQUENCY IN CYCLES

PLATE 4

3. INSTALLATION

3.1 The Model RCK Equipment with the Type CZC-46223 Radio Receiver equipped with one full complement of vacuum tubes, one Navy type -49121 concentric antenna-ground connecting plug and one female power input plug is shipped in a single wooden packing box. Two instruction books and one set of spare parts, which include one set of spare vacuum tubes are also contained in the same box. There are no headphones supplied.

3.2 After unpacking the equipment it should be inspected for any possible damage that might have resulted from careless handling in transit. Make certain all vacuum tubes are firmly seated in their sockets. Inspection of the chassis and vacuum tubes may be readily affected upon the removal of the chassis from its cabinet. This is accomplished by loosening the thumb screws on the front panel. The chassis then will slide out of the cabinet when pulled by the two pull-knobs on the front panel. Never remove the receiver by pulling any of the control knobs as this will impair their operation. The chassis slides on two Bakelite guide strips along the sides of the cabinet.

3.3 The dust cover of the Type CZC-46223 Radio Receiver is equipped with shock mountings under each corner, thru which bolts may be inserted for fastening to a table or shelf.

3.4 In planning an installation, care should be exercised to provide adequate clearance (6¼") from the back of the Type CZC-46223 Radio Receiver to the bulkhead or nearest obstruction to provide access to the power input plug, the antenna ground concentric plug, speaker plug, silencer plug and fuses, when withdrawing the chassis from the cabinet for servicing, vacuum tube replacement or inspection.

3.5 Make connection to the proper 110-120 volt 55/65 cycle single phase, A-C source by means of a suitable two conductor shielded cable for connecting to the power source with plug P-302 which is then inserted in receptacle J-302 at the rear of the receiver chassis. Proper matching to the voltage source is provided by a three position link connector S-301 on the underside of the power supply unit. When the voltage of the power source has been ascertained, the switch should be set at that value, thus, putting the correct amount of primary winding across the power input.

3.6 Make antenna connections in accordance with Paragraph 1.5, Antenna Requirements. The antenna lead should be soldered to concentric plug P-101 in accordance with previously described methods.

3.7 Jack J-304 is provided on the rear of the chassis for connection of remote listening stations to the audio output of the receiver.

3.8 Because of the necessity for replacing crystals and adjusting detents during the operation of the receiver, it is important that sufficient slack be provided in all cables at the rear of the receiver to permit removal of the chassis from the cabinet without disconnecting the cables. The receiver can not be removed sufficiently for changing crystals when a right-angle antenna plug is employed. Therefore, the antenna input must be fed through a straight plug to allow rapid replacement of crystals and readjustment of the detent mechanism.

4. ADJUSTMENTS

4.1 ALIGNMENT DATA

4.11 GENERAL

4.111 Should realignment of the Type CZC-46223 Radio Receiver become necessary, the following alignment data should be carefully studied before making any adjustments. It is important that the operator understand the functions of each circuit element so that correct alignment can be made quickly and accurately. The alignment data of this section is, therefore, supplemented by Paragraph 2.1 Construction and Paragraph 2.2 Circuit Description.

4.112 Performance Data and Test Data presented in Paragraph 2.3 and Paragraph 6.4 will be particularly helpful in determining the necessity for making any specific adjustments. The operator is cautioned against making any adjustments indiscriminately and he should not realign any circuits unless tests definitely indicate realignment is necessary.

4.113 Due to the very high frequency range of the Type CZC-46223 Radio Receiver, it is important that adjustments be made with the compartment covers in place where possible. If not possible, care should be exercised to keep unnecessary wires, etc. away from the circuits being aligned. In all cases the alignment adjustments should be made with the tool provided.

4.114 Other equipment needed includes a Signal Generator capable of covering the frequency range of 12 megacycles and 115 to 156 megacycles and two meters, a 0-100 microammeter and a 0-1 milliammeter. The Signal Generator should be adjusted to provide a 1000 cycle test signal, 30% modulated.

4.115 Before preceding with the alignment of any circuit of the Type CZC-46223 Radio Receiver, the Receiver must be removed from the cabinet. Holes in the bottom shield plates and under sliding cover plates on the various compartments provide a means of access to the capacity and inductance trimmers.

4.116 The Type CZC-46223 Radio Receiver must be connected to a 115 volt, 60 cycle single phase a-c source. The power switch S-205 should be turned on and a pure resistance load of 600 ohms should be connected across terminals 2 and 3 of output jack J-304. The R-F and A-F Gain controls should be full on, AVC off and Silencer off. Output meter control should be set at "O. M." position.

4.117 The complete alignment of the Type CZC-46223 Radio Receiver may be divided in three steps:

(1) Intermediate Frequency Alignment
(2) Oscillator—Multiplier Alignment
(3) Radio Frequency Alignment

NOTE: THE CIRCUITS MUST BE CHECKED IN THE ABOVE ORDER WHEN COMPLETE ALIGNMENT IS NECESSARY.

4.12 I-F AMPLIFIER ALIGNMENT

4.121 The intermediate frequency of the Type CZC-46223 Radio Receiver is 12 megacycles.

4.122 Tuning adjustments are provided in each I-F transformer. These adjustments consist of adjustable iron cores and are designated by symbol numbers E-118 and E-205 to E-215 inclusive, as indicated on the circuit diagram.

4.123 The alignment of the I-F circuit is very critical and should be checked following any circuit change, repair or tube replacement.

4.124 The output lead of the Signal Generator should be connected to the grid (pin no. 4) of the mixer tube V-102 and the ground lead to any adjacent metal part of the chassis. To reach the socket of the converter tube V-102 it will be nececssary to remove the cover of the oscillator—mixer compartment.

4.125 The frequency of the Signal Generator should be carefully adjusted to 12 megacycles and the signal input to tube V-102 adjusted to provide a reading on the output meter, with the A-F Gain control fully advanced and the R-F Gain control reduced to the noise threshold level. The AVC should be off. The I-F tuning adjustments listed in Paragraph 4.122 should each be carefully made to give a maximum reading on the output meter. The adjustments should be made first with the last I-F transformer T-206 and work back to the first. The primary of T-201 is not tuned as it is part of the link coupling to the Preselector Chassis. The other side of the link appear in T-101 in the preselector chassis. The primary of this transformer should be tuned by the iron core E-118.

4.126 While making these adjustments it may be necessary to reduce the signal input to the Receiver in order to avoid overload in the second detector and audio circuits. Such overload will make the I-F trimmer adjustments appear to be considerably less critical than they actually are and may in extreme cases indicate incorrect peak adjustments. To be safe, the audio output at the speaker terminals should not exceed 7 db. on the output meter. It may also be found necessary to reduce the R-F Gain control because of noise.

4.127 The performance of the I-F amplifier and audio circuits can be checked against the stage gain data in Section 6, Paragraph 6. Similarly, the selectivity may be checked against the data in Section 2, Plate 1.

4.13 OSCILLATOR MULTIPLIER ALIGNMENT

4.131 To determine the need for oscillator-multiplier alignment the following steps should be taken:

1. Connect the 0-100 microammeter between ground and jack J-102 on the grid of V-102 (mixer tube).
2. Insert a crystal for the 151.20 megacycles or the nearest available channel within plus or minus 2 megacycles in the number four crystal holder X-109.
3. Set channel switch to position four.
4. Rotate dial until detent number four is engaged and loosen detent locking screw on band 4.
5. Tune the dial carefully to the channel frequency as marked on the crystal. The grid current meter should read maximum grid current when the dial is tuned to within ±0.5 megacycle of the mean frequency. The grid current should be within the limits of 5-12

microamperes. If the grid current meter reads maximum when the dial is detuned more than 0.5 megacycles from the mean frequency, it indicates need for realignment of the multiplier circuits. The above procedure should be repeated on Channel 1 at the low frequency end of the dial, using a crystal frequency of 117.90 megacycles or a frequency within ±2 megacycles.

WARNING: READJUSTMENT OF THE VHF OSCILLATOR-MULTIPLIER CIRCUITS SHOULD NOT BE ATTEMPTED UNTIL THE NEED FOR SUCH ALIGNMENT HAS BEEN ESTABLISHED BY THE ABOVE TESTS.

4.132 When testing or aligning the VHF oscillator-multiplier circuits it is not necessary to have the audio gain at a high level because no signal is fed thru to the receiver output.

4.133 The following general procedure should be followed for the alignment of the VHF oscillator-multiplier circuits:

The oscillator stage is a crystal oscillator in which the plate circuit is tuned to a slightly higher frequency than the grid circuit. The best alignment is secured when the grid current is at a maximum, but if tuned far off resonance no grid current will show. Never adjust the oscillator circuits unless a grid current meter is used as a guide because it cannot be done by checking output of receiver. The following are the necessary steps in tuning the oscillator stage, in order:

1. Connect a 0-1 milliammeter in the grid circuit of the oscillator tube V-105 by placing the negative lead in jack J-104 and grounding the positive lead to the chassis.
2. Place the crystal for the 151.20 or the nearest available channel within plus or minus 2 megacycles in the number four crystal holder.
3. Turn channel switch to number four channel.
4. Engage detent number four and loosen it up with the detent wrench from in back of the panel.
5. Tune dial very carefully to the frequency channel as printed on the crystal and tighten the detent. This will insure getting back to the same spot after checking other points on the dial.
6. Tune oscillator to maximum grid current by adjusting C-133. The oscillator grid current should lie somewhere between .25 and .4 milliamperes. The latter value may sometimes be exceeded.
7. Leave the Receiver in this setting for tuning the next stage.

4.134 The first multiplier has its plate circuit tuned and is link-coupled to the grid circuit of the second multiplier. This adjustment is extremely critical and should only be made when absolutely certain of its necessity. It is possible to throw the double tuned circuit so far out of line that no oscillator signal will be passed. If the Receiver is still in the same setting as in Step 7 above, no further setting is needed. Steps in alignment are as follows:

1. Place the 0-100 microammeter in the grid circuit of the second multiplier V-103, plugging the negative lead in jack J-103 and grounding the positive lead to the chassis.
2. Tune the trimmers C-128 and then C-125 for maximum grid current reading (about 50 microamperes) with the receiver still set at the number four channel.
3. Place a crystal whose marked channel is near 117.90 megacycles in the crystal holder in position number one. If this channel is not available use the next nearest one within ±2 megacycles.
4. Set channel switch to position one.
5. Rotate dial until number one detent is engaged and loosen with wrench.
6. Tune dial to the frequency channel as shown on crystal and tighten detent.
7. Adjust carefully trimmer E-117 and then E-116 until maximum grid current is indicated.
8. Turn channel switch to number four channel and engage number four detent.
9. Again check C-128 and C-125. Very little adjustment should be necessary and tuning should be done slowly and carefully.
10. Change to #1 channel and again check inductance trimmers E-117 and E-116.
11. Repeat above until no more change in grid current is noted.

The second multiplier stage is aligned as follows:

1. Insert the 0-100 microammeter in the mixer grid circuit using grid jack J-102.
2. Set channel switch to number four position and engage number four detent.
3. Tune C-119 for maximum grid current (between 7 and 15 microamperes).
4. Change to #1 channel and tune inductance trimmer E-115.
5. Check tuning of C-119 at high end and E-115 at low end of dial until no further increase in grid current is noted.

4.14 R-F AMPLIFIER ALIGNMENT

4.141 The alignment of the r-f amplifier involves aligning the input and output circuits of the r-f tube V-101. It will be necessary to use the signal generator. The output meter should be switched in and the audio gain control set at MAX. and the R-F Gain control adjusted to the threshold noise level. The AVC should be turned to OFF.

4.142 The following steps in order are to be taken in r-f amplifier alignment.

1. Connect Signal Generator to antenna input jack J-101 using a 50 ohm pure resistance dummy antenna.
2. Set the channel switch on number 4 position and engage detent. No. 4 at high frequency end of dial.
3. Tune signal generator to dial frequency and slowly rock generator until signal is passed thru receiver.
4. Adjust capacitors C-102, C-104 and C-114 for maximum reading of the output meter in the order named.
5. Set dial to low frequency channel No. 1.
6. Tune generator until a signal is passed thru.
7. Tune inductance trimmers E-112, E-113 and E-114 in numerical order for maximum output meter reading.
8. Repeat above steps until no increase in output is noted. This step may have to be carried out a number of times before the absolute maximum is reached.

4.2 SETTING DIAL DETENTS

4.21 The Model RCK Radio Receiver incorporates a new tuning mechanism design which requires some careful study before the presetting of the channels can be attempted. All the components mentioned are shown in the photographs, figures 4.21A and 4.21B. Caution should be used so as not to injure the mechanism. Especially make sure that each detent is engaged in its spring clip before releasing the adjusting screw. If any detent should become loosened accidently while not engaged in its spring clip, it should be retightened and the knob turned until it engages. It can then be loosened and reset to the proper frequency. In the event the cam drops down, it will be necessary to turn it with the detent wrench until the adjusting screw is in position for tightening. As designed, the oscillator frequency is determined by the crystal and two harmonic multipliers that follow the crystal oscillator. These must be tuned to the correct frequency in order that the oscillator signal reaches the converter. The VHF signal circuits must also be tuned to the correct frequency in order to produce an intermediate frequency of 12 megacycles. Since there are only four crystals in the crystal holder at any one time, there are only four places on the dial where a signal can be received. As explained in Paragraph 2.112, any of these four channels can be quickly selected and tuned by means of dial detents. This section is concerned with the presetting of these detents.

4.22 The equipment needed includes a signal generator, capable of generating a signal within the frequency range of the receiver, a microammeter with a range of 0-100 microamperes and the dial detent wrench which is secured to the front of the converter compartment by clip holders.

4.23 After the receiver has been installed, the chassis should be partially removed from the cabinet. Remove the cover from the crystal holder and insert the desired crystals in ascending order according to frequency. That is, the lowest in frequency should be placed in the number one position. The microammeter should be connected in the grid circuit of the converter tube V-102, the negative lead being in the grid jack J-102 and the positive lead grounded. The signal generator should be connected to the antenna jack J-101, the high side being connected to the center of the jack and the low side to the chassis.

4.24 Receiver settings are as follows:

1. RECEPTION switch to AVC OFF.
2. NOISE-LIMITER — OUTPUT METER switch to OM.
3. A-F GAIN control set at MAX.
4. R-F GAIN control advanced until the output meter reads —5 db. (This indicates the noise level and should not be exceeded.)

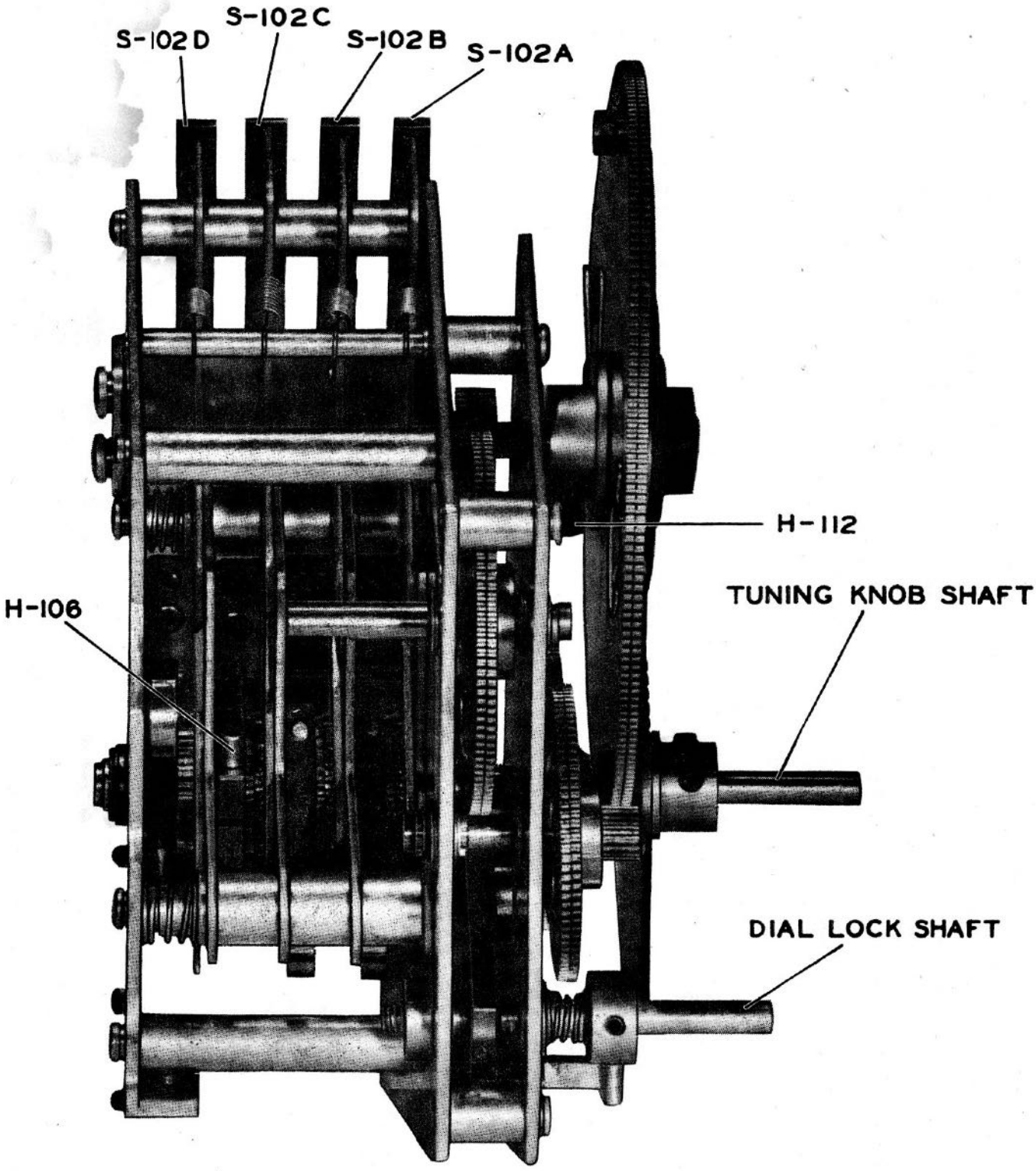


Figure 4.21A DIAL DETENT SYSTEM REMOVED FROM CHASSIS

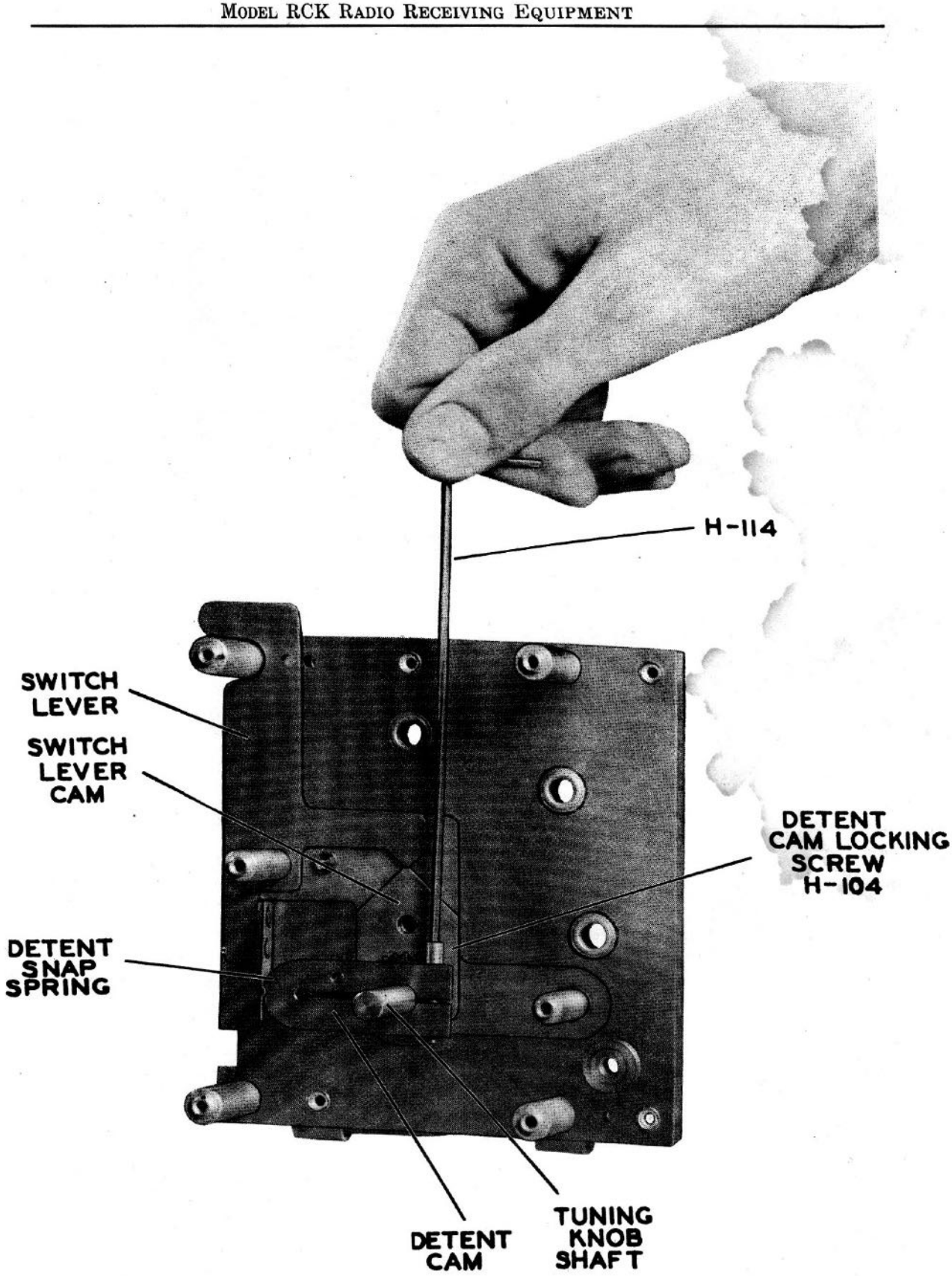


Figure 4.21B CUTAWAY MODEL SHOWING THE SETTING OF ONE DETENT POSITION

4.25 To set the first detent, turn the CHANNEL switch to number one position and rotate the tuning knob until lamp #1 lights. Detent one is then engaged and can be loosened by the detent wrench. The hollow head set screw will be on top of the shaft for easy access. It should be loosened until it is just free. About one turn is all that is necessary. The dial should be tuned toward the approximate channel desired and then rotated carefully until a deflection is shown on the microammeter. This adjustment is not critical and any deflection or reading of the meter indicates the oscillator voltage is reaching the converter tube V-102 through the multiplier circuits.

4.26 When grid current is indicated the signal generator can be tuned very slowly until the output meter shows a signal present. When a signal is shown on the output meter it means the signal generator voltage differs from the oscillator voltage by approximately 12 megacycles, the i-f frequency. The Receiver should then be retuned to maximum deflection of the output meter and the signal generator again tuned for best output reading. The procedure should be repeated until further adjustment of the receiver and the signal generator shows no increase in output. The set is then tuned to the channel desired. Lock the dial in this position so it cannot be jarred or thrown out of adjustment and then tighten the detent CAREFULLY USING A NORMAL AMOUNT OF PRESSURE. It is now set. Before proceeding to another detent, make sure that the dial brake is released by turning dial lock knob on the front panel in a counter-clockwise direction to its stop.

4.27 If it should become necessary to change the channel, the method outlined above should be studied. The crystal to be changed must be removed and the new one inserted in its place. The detent involved must then be changed to engage at the new setting. It can be reset by the method outlined above.

5. OPERATING INSTRUCTIONS

5.1 All switches and controls (with the exception of the main tuning control) of the Type CZC-46223 Radio Receiver, are identified by panel engraving.

5.2 The main tuning control knob is located at the left side of the panel and is secured to a shaft which drives the ganged main tuning capacitors through a 13:1 ratio gear train. The dial calibration scale is secured to a shaft and is driven by the same gear train so as to give 336 degrees of rotation of the dial scale for 90 degrees rotation of the tuning capacitors. The dial is calibrated in megacycles. The dial escutcheon is fitted with a transparent shatter-proof lens. Indirect dial illumination is afforded by dial lamps I-105, I-106 and I-107 mounted in back of the dial scale.

5.3 When the dial is set it may locked by turning the knob engraved DIAL LOCK clockwise. When tight the dial cannot be jarred out of position by vibration. The DIAL LOCK is released by turning the knob counter-clockwise as far as necessary to allow the control to turn freely.

5.4 The CHANNEL switch is directly to the right of the main tuning knob and is marked with four positions corresponding to the four channels to which the receiver can be tuned. This switch places the proper crystal in the grid circuit of the oscillator tube V-103, determining the oscillator frequency. When the detent positions are preset, tuning the dial to the channel determined by the CHANNEL switch will cause the lamp corresponding to that frequency channel to light. These four lamps are above the dial. The strength of the illumination is determined by a variable resistor R-117 in the filament circuit. This control is at the extreme top left of the front panel and is marked DIMMER.

5.5 The R-F Gain control R-232 is mounted in the lower right hand portion of the panel. It controls the gain in the R-F amplifier tube V-101 and the first, second, third and fifth I-F amplifier tubes V-201, V-202, V-203 and V-205, when the AVC is off. When the AVC is on it is shorted to ground and has no effect on the circuit.

5.6 To the left of the R-F Gain control is the A-F BAND switch S-204. It has two positions NARROW and BROAD. In the NARROW position a band pass filter is switched in the audio amplifier. In the BROAD position, the filter is removed from the circuit.

5.7 To the left of the A-F BAND switch is the A-F GAIN CONTROL R-251. It varies the strength of the signal fed into the grid of the first audio amplifier V-207.

5.8 The PHONE JACK J-201 is placed just to the left and lower than the A-F GAIN CONTROL. A PHONE control R-255 near the center of the panel is provided for controlling the output level at the phone jack.

5.9 A switch for controlling the NOISE LIMITER and OUTPUT METER appears on the schematic as S-202A and S-202B. When in the first position, OFF, the NOISE LIMITER and the OUTPUT METER are off. The second position, NL, connects the noise limiter which utilizes one diode section of the tube V-206. The third position is marked OM and connects the OUTPUT METER alone across the secondary windings of the output transformer T-207. In the fourth and last position both the OUTPUT METER and the NOISE LIMITER are placed in operation.

5.10 The RECEPTION switch S-201 is in the extreme right center of the panel. Its two positions are labeled AVC ON and AVC OFF. When the switch is in the ON position the R-F GAIN control is grounded and the AVC circuit is completed. This setting also connects the interchannel silencer amplifier V-209 and the input meter. The OFF position grounds the AVC line and also disconnects the input meter and silencer amplifier.

5.11 The INP. MTR. adjustment R-245 located below and to the left of the Input meter, is provided for zero adjustment of the input meter. This adjustment should be made only when the Receiver is operating but with no signal input.

5.12 The SILENCER control R-240 is located directly to the left of the RECEPTION switch. It is provided in order to determine the level at which the Silencer circuit will operate. This control is effective only when the remote station control is connected to Jack J-305. If it is desired to operate the Silencer circuit when Jack J-305 is not connected to the Remote station, terminals 1 and 3 of Jack J-305 must be shorted.

5.13 The POWER switch S-205 is located in lower right corner. This switch is connected to the power input circuit and removes or applies power to the complete equipment. When the power is on, it is shown by the red light directly above the POWER switch.

5.14 A set screw wrench for No. 8 hollow head screws is furnished with each unit. It is retained under two clips on the right side brace just in back of the panel. This wrench can be used to loosen all the control knobs.

5.15 An alignment tool is provided and can be found on the left side brace just in back of the panel. NEVER USE ANY METAL ALIGNMENT TOOL.

5.16 Pull knobs are provided on the front of the chassis to aid in removing the chassis from the cabinet without subjecting any of the operating controls to undue strain.

5.17 NEVER REPLACE THE LINE FUSES F-301 AND F-302 WITH FUSES OF A HIGHER RATING THAN THREE AMPERES.

6. MAINTENANCE—FAILURES AND REMEDIES

6.1 GENERAL

6.11 Adequate test equipment for maintenance of Model RCK Radio Receiving Equipment should include the following items:

(1) A Radio Frequency Standard Signal Generator, which will cover 110-160 megacycles and 12 megacycles for I-F check.

(2) A Model OE Analyzer, or equivalent for resistance measurements, testing vacuum tubes and measuring a-c and d-c potentials and currents in the circuits with which the tubes under test are associated. The performance and Test Data of Sections 2 and 6 may be determined with the test equipment as listed above.

(3) A microammeter with ranges 0-100 and 0-1000 microamperes.

6.12 In making any tests or adjustments, it is essential that the operator consider the influence that any one circuit may have upon other associated circuits. The Test Data of Paragraph 6.5 will be particularly helpful in determining extent of such influences and the necessity for making further replacement after a fault in one particular circuit element has been located and repaired.

6.13 Any repairs in the Model RCK Radio Receiving Equipment which necessitate resoldering of joints should be made with care. The plastic (Polystyrene) which has been used in the molded I-F coil forms will melt if overheated. All joints should have a firm mechanical connection before soldering and a minimum of solder should be used. A large lump of solder may cause a short circuit or otherwise seriously impair efficient operation.

6.2 TUBE REPLACEMENT

6.21 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.

6.22 Failure of a vacuum tube in the Receiver may reduce the sensitivity of the equipment to radio signals, produce intermittent operation or cause the equipment to become completely inoperative. In such cases, all tubes should be checked either in an analyzer or similar tube testing equipment, or by replacement with tubes of proven quality. When any tube is tested it should be tapped or jarred to make sure it has no loose internal connections or intermittent short circuits.

6.23 When tube replacement becomes necessary, substitution of new tubes may alter alignment of r-f or i-f amplifier circuits, inasmuch as the replacement tubes may not be identical with those originally employed. The necessity for realignment as well as alignment procedure is discussed in Section 4.

6.3 FAILURE OF THE RADIO RECEIVER

6.31 In case of breakdown or failure of the Type CZC-46223 Radio Receiver, the fault must first be localized in one portion of the circuit. This can be accomplished by observation of some peculiar action of one of the controls or by checking the receiver against Test Data tabulated in Paragraph 6.4 Reference to Figures 1 to 4.2 inclusive, will show the location of any component parts of the receiver. Functions and ratings of component parts are given in Parts List, Section 7.

6.32 It must be remembered that the Test Data of Section 6.4 will not positively locate certain faults. For instance an open circuited bypass capacitor will not appear in point to point resistance tests and may introduce regeneration or oscillation in certain circuits which affect the stage gain of other circuits. Similarly, a short circuit occurring in a low resistance inductor will not appear in point to point resistance tests and if the short appears in an r-f coil a false indication of the necessity for realignment may result.

6.33 Bypass or filter capacitors, which develop poor internal connections or become short circuited, will cause decreased sensitivity or poor stability. The defective unit can be generally located by temporarily connecting a good capacitor in parallel with each capacitor that is under suspicion.

6.34 Failures of any bypass filter capacitors may seriously overload resistors of associated circuits. Overloads of a 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.

6.35 Open or short circuited resistors can be definitely located by testing the resistance of each individual resistor. The schematic diagram Figure 8.5 should be consulted to make sure that any particular resistance is not connected in parallel with some other circuit element which might produce misleading measurements.

6.36 Loose connections causing intermittent or noisy operation and which cannot be found by point to point resistance tests can usually be located by individually testing each circuit element or by tapping or shaking the component under suspicion when the receiver is adjusted for normal operation.

6.37 The primary fuses F-301 and F-302 will "blow" when the primary circuit of transformer T-301 is subjected to a sustained primary current in excess of three amperes.

6.4 TEST DATA

6.41 The TUBE SOCKET VOLTAGES AND CATHODE CURRENTS, Table 2 must not be considered as a list of the actual operational voltages and currents in the circuits of the Type CZC-46223 Radio Receiver. The resistance of the measuring instruments together with capacitive and resistive loading effects, will disturb many of the circuits to such an extent that they become inoperative, thus altering normal voltage and current distribution.

6.42 The only currents listed in Table 2 are those in the various cathode circuits with three exceptions, grid currents are given for the oscillator V-105, second multiplier V-103 and mixer V-102. Jacks for measuring grid current on these tubes are provided as explained in Section 2. The listing of cathode currents alone is a desirable simplification, as measurements of cathode currents constitute a definite check on all circuits directly associated with vacuum tube in question.

6.43 The POINT TO POINT RESISTANCE TABLE shows average resistance values in the Type CZC-46223 Radio Receiver with the speaker disconnected from terminals J-304 and the headphones removed from Jack J-201. The vacuum tubes need not be removed from their sockets. In using Table 3 the statement of Paragraph 6.32 must be given consideration.

6.44 All measurements in Table 2 were made with receiver connected for normal operation on a 115 volt, 60 cycle, single phase a-c source.

Table 2: TUBE SOCKET VOLTAGES AND CATHODE CURRENTS

Terminal		Pin	D-C Voltages R-232 Setting 0	D-C Voltages R-232 Setting 10	D-C Voltages R-240 Setting 0	D-C Voltages R-240 Setting 10	Cathode Current DC MA
V-101	Grid	Cap	0	0			
	Cathode	Short End	20	3.5			7.8
	Screen	5	165	105			
	Suppressor	2	0	0			
	Plate	3	195	180			
		Cap Long End					
V-102	Grid	4	0	0			
	Cathode	3	0	0			1.1
	Screen	6	28	28			
	Plate	8	28	28			
V-103	Grid	4	0	0			
	Cathode	3	0	0			4.7
	Screen	6	100	95			
	Plate	8	195	180			
V-104	Grid	4	0	0			
	Cathode	3	0	0			4.5
	Screen	6	100	95			
	Plate	8	195	180			
V-105	Grid	5	0	0			
	Cathode	8	0	0			6
	Plate	3	150	150			
V-201	Grid	4	0	0			
	Cathode	5	19	2			12.0
	Screen	6	195	155			
	Suppressor	3	0	0			
	Plate	8	195	170			
V-202	Grid	4	0	0			
	Cathode	5	1.9	1.8			12.0
	Screen	6	195	155			
	Suppressor	3	0	0			
	Plate	8	195	170			
V-203	Grid	4	0	0			
	Cathode	5	1.9	1.8			12.0
	Screen	6	195	155			
	Suppressor	3	0	0			
	Plate	8	195	170			
V-204	Grid	4	0	0			
	Cathode	5	1.9	1.8			12.0
	Screen	6	160	150			
	Suppressor	3	0	0			
	Plate	8	175	165			
V-205	Grid	4	0	0			
	Cathode	5	1.9	1.8			12.0
	Screen	6	160	150			
	Suppressor	3	0	0			
	Plate	8	175	165			

Voltage measurements made with a D-C Voltmeter, 20,000 ohms per volt.
All voltage measurements made between socket terminals and receiver chassis.

Table 2: TUBE SOCKET VOLTAGES AND CATHODE CURRENTS

Terminal		*Pin*	*D-C Voltages*				*Cathode Current DC MA*
			R-232 Setting		*R-240 Setting*		
			0	10	0	10	
V-206	Cathode #1	8	0	0			
	Cathode #2	4	0	0			
	Plate #1	5	0	0			
	Plate #2	3	0	0			
V-207	Grid	4	0	0			
	Cathode	5	2.05	1.95			.75
	Screen	6	50	47			
	Suppressor	3	50	47			
	Plate	8	50	47			
V-208	Cathode #1	8	Not Used	Not Used			
	Cathode #2	4			94	98	
	Plate #1	5	Not Used	Not Used			
	Plate #2	3			94	98	
V-209	Grid	4	0	0	0	0	
	Cathode	5		*.3			.04
	Screen	6		**7.5	0	95	
	Plate	8			120	110	
V-210	Grid	4	0	0			
	Cathode	5	2	1.85			.43
	Screen	6	40	40			
	Suppressor	3	0	0			
	Plate	8	25	25			
V-211	Grid	5	0	0			
	Cathode	8	8	7.5			
	Screen	4	175	170			27
	Plate	3	175	170			
V-301	Filament	2 & 8	5 (ac)	5 (ac)			
	Plate #1	6	260 (ac)	260 (ac)			
	Plate #2	4	260 (ac)	260 (ac)			
V-302	Cathode	2	0	0			
	Plate	5	150	150			

* AVC on. ** AVC off.
Voltage measurements made with a D-C Voltmeter, 20,000 ohms per volt.
All voltage measurements made between socket terminals and receiver chassis.

Table 3: POINT TO POINT RESISTANCES
(Terminal to Chassis)

Terminal		*Pin*	*Variable*		*Resistance (Ohms) Plus or Minus 10%*
			Symbol	*Setting*	
V-101	Grid	Cap (short end)	S-201	AVC ON	1.0 meg.
	Grid	Cap (short end)	S-201	AVC OFF	0.5 meg
	Cathode	5	R-232	0	2,200
	Cathode	5	R-232	10	400
	Suppressor	3	None		0
	Plate	Cap (long end)	None		8,100
V-102	Grid	4	None		0.23 meg.
	Cathode	3	None		0
	Screen	6	None		0.12 meg.
	Plate	8	None		0.12 meg.
V-103	Grid	4	None		0.23 meg.
	Cathode	3	None		0
	Screen	6	None		83,000
	Plate	8	None		8,100
V-104	Grid	4	None		0.22 meg.
	Cathode	3	None		0
	Screen	6	None		83,000
	Plate	8	None		8,100
V-105	Grid	5	None		57,000
	Cathode	8	None		0
	Plate	3	None		8,100
V-201	Grid	4	S-201	AVC OFF	90,000
	Grid	4	S-201	AVC ON	0.6 meg.
	Cathode	5	R-232	0	2,000
	Cathode	5	R-232	10	150
	Screen	6	None		20,000
	Suppressor	3	None		0
	Plate	8	None		9,000
V-202	Grid	4	S-201	AVC OFF	90,000
	Grid	4	S-201	AVC ON	0.6 meg.
	Cathode	5	R-232	0	2,000
	Cathode	5	R-232	10	150
	Screen	6	None		20,000
	Suppressor	3	None		0
	Plate	8	None		9,000
V-203	Grid	4	S-201	AVC OFF	90,000
	Grid	4	S-201	AVC ON	0.6 meg.
	Cathode	5	R-232	0	2,000
	Cathode	5	R-232	10	150
	Screen	6	None		20,000
	Suppressor	3	None		0
	Plate	8	None		9,000
V-204	Grid	4	S-201	AVC OFF	90,000
	Grid	4	S-201	AVC ON	0.6 meg.
	Cathode	5	None		150
	Screen	6	None		20,000
	Suppressor	3	None		0
	Plate	8	None		9,000

Table 3: POINT TO POINT RESISTANCES
(Terminal to Chassis)

Terminal		Pin	Variable		Resistance (Ohms) Plus or Minus 10%
			Symbol	Setting	
V-205	Grid	4	None		.6
	Cathode	5	None		150
	Screen	6	None		20,000
	Suppressor	3	None		0
	Plate	8	None		9,000
V-206	Cathode #1	8	S-201	AVC OFF	1.1 meg.
	Cathode #1	8	S-201	AVC ON	1.0 meg.
	Cathode #2	4	None		0
	Plate #1	5	S-201	AVC OFF	56,000
	Plate #1	5	S-201	AVC ON	55,000
	Plate #2	3	S-201	AVC OFF	0.155 meg.
	Plate #2	3	S-201	AVC ON	0.145 meg.
V-207	Grid	4	S-201	AVC OFF	0.270 meg.
	Grid	4	S-201	AVC ON	1 meg.
	Cathode	5	None		330
	Screen	6	None		0.120 meg.
	Suppressor	3	None		0.120 meg.
	Plate	8	None		0.120 meg.
V-208	Cathode	4	None		0.68 meg!
	Plate	3	None		1.6 meg.
V-209	Grid	4	S-201	AVC OFF	1.5 meg.
	Grid	4	S-201	AVC ON	2.2 meg.
	Cathode	5	S-201	AVC OFF	.27 meg.
	Cathode	5	S-201	AVC ON	0
	Screen	6	R-240	0	0
	Screen	6	R-240	10	22,000
	Suppressor	3	None		0
	Plate	8	None		0.83 meg.
V-210	Grid	4	None		.82 meg.
	Cathode	5	None		330
	Screen	6	None		1.5 meg.
	Suppressor	3	None		0
	Plate	8	None		0.47 meg
V-211	Grid	5	None		.82 meg.
	Cathode	8	None		270
	Screen	4	None		8,000
	Plate	3	None		8,200
V-301	Filament	2 & 8	S-201	AVC OFF	7,500
	Filament	2 & 8	S-201	AVC ON	7,400
	Plate #1	4	None		50
	Plate #2	6	None		51
V-302	Cathode	2	None		0
	Plate	5	None		8,500

STAGE GAIN MEASUREMENTS

The sensitivity measurements listed below, are made under the following itions:

(1) The Model RCK Radio Receiving Equipment is removed from the cabinet and the bottom plate of the I-F/A-F unit removed.

(2) The standard signal generator is adjusted for a test signal of 12 megacycles, modulated 30% at 1000 cycles.

(3) The output of the Signal generator is connected through a 10,000 micro-microfarad condenser to each grid of the stage measured.

(4) The RECEPTION switch at "AVC off". The R-F and A-F GAIN controls at maximum.

(5) Noise limiter output meter switch at "OM".

(6) A-F band switch at "wide".

6.52 When measuring from the grid of V-102, V-201 and V-202 the noise level will be high. Therefore, the R.F. gain control R-232 should be adjusted so that a 10 db. signal plus noise to noise ratio is maintained with the signal generator output adjusted to give an audio output of 1.9 volts across a 600 ohm load connected to terminals 2 and 3 of output receptacle J-304 at the rear of the receiver.

6.53 When measuring from the grid of V-203, V-204 and V-205 the R.F. and audio gain controls are set at maximum position and the output of the signal generator adjusted to give an audio output of 1.9 volts across a 600 ohm load connected to terminals 2 and 3 of output receptacle J-304.

Table 1

Terminal	*I-F Sensitivity Microvolts* *
V-102 — Grid	9
V-201 — Grid	16
V-202 — Grid	13
V-203 — Grid	132
V-204 — Grid	1250
V-205 — Grid	12000

* The measurements at V-201 and V-102 were taken at 10 db. signal plus noise to noise ratio. Values may vary as much as ± 20% in all cases.

7. PARTS LISTS

FOR MODEL RCK RADIO RECEIVING EQUIPMENT

7.1 TABLE I

LIST OF MAJOR UNITS

Symbol Group	*Navy Type Designation*	*Name of Major Unit*	*Number Assembly Drawing*
101-199	CZC-46223	PRE-SELECTOR	
201-299	CZC-46223	IF/AF AMPLIFIER	
301-399	CZC-46223	POWER SUPPLY	

7.2 TABLE II
PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT
SECTION 1 (101-199)

Symbol Desig.	Function	Description	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Part Number Drawing and	Quan. Spare Parts	All Symbol Designations Involved
			CAPACITORS						
C-101 C-101A C-101B	L-101 tuning L-102 tuning	Capacitor, variable air, min. cap. 4.3 MMF, max. cap. 25 MMF., Insulated rotors ceramic shaft, 90° rotation, min. spacing .010", 2 gang			5	C-1582	8357		
C-102	C-101A trimmer	Capacitor, variable plunger type trimmer, polystyrene insulation, min. cap. 0.5 MMF, max. cap. 12 MMF. slotted adj. screw.			25	8450	8450	2	C-102, 104, 114, 119, 125, 128, 133
C-103	C-101A shunt	Capacitor, silvered ceramic 10 MMF, 10%, 500 volts DC wkg.			8	NPOK10-10	8417	1	C-103
C-104	C-101B trimmer	Same as C-102							
C-105	L-102 to V-101 coupling	Capacitor, silvered mica 51 MMF, 5%, 500 volts DC wkg.	CM20C510J	C75.3-1942	20	K-1451	8418	1	C-105, 132, 140
C-106	V-101 grid return bypass	Capacitor, mica, 5100 MMF, 20%, 300 volts DC wkg.	CM35B512M	C75.3-1942	20	C-1251	8421	3	C-106, 117, 122, 123, 130, 131, 134, 135, 136, 137, 139
C-107	V-101 screen bypass	Capacitor, mica, 510 MMF. 10%, 500 volts DC wkg.	CM20B511K	C75.3-1942	20	K-1351	8655	1	C-107, 108, 109, 110
C-108	V-101 cathode bypass	Same as C-107	CM20B511K						
C-109	V-101 heater bypass	Same as C-107	CM20B511K						
C-110	V-101 cathode bypass	Same as C-107	CM20B511K						
C-111	V-101 screen bypass	Capacitor, mica, 510 MMF, 10%, 500 volts DC wkg.	CM30B511K	C75.3-1942	20	C-1351	8420	1	C-111, 112
C-112	V-101 plate filter bypass	Same as C-111	CM30B511K						
C-113 C-113A C-113B	L-103 tuning L-104 tuning	Capacitor, variable, air, min. cap. 4.3 MMF. max. cap. 25 MMF, insulated rotors, ceramic shaft, 90° rotation, min. spacing .010", 2 gang			5	C-1581	8356		
C-114	C-113A trimmer	Same as C-102							
C-115	L-103 to V-102 coupling	Capacitor, silvered ceramic, 5 MMF, 10%, 500 volts DC wkg.			8	NPOK5-10	8416	1	C-115, 127, 141
C-116	V-103 plate to V-102 grid coupling	Capacitor, silvered ceramic, 2 MMF, 10%, 500 volts DC wkg.			8	NPOK2-10	8415	1	C-116
C-117	V-102 grid return bypass	Same as C-106	CM35B512M						
C-118	L-104 padder	Capacitor, silvered mica, 390 MMF, 5%, 500 volts DC wkg.	CM20C391J	C75.3-1942	20	K-1339	8419	1	C-118, 120, 121

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT SECTION 1 (101-199)

Symbol Desig.	Function	Description	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			CAPACITORS (*Continued*)						
C-119	C-113B trimmer	Same as C-102							
C-120	V-103 plate filter	Same as C-118	CM20C391J						
C-121	V-103 screen bypass	Same as C-118	CM20C391J						
C-122	V-103 heater bypass	Same as C-106	CM35B512M						
C-123	V-103 grid filter	Same as C-106	CM35B512M						
C-124	L-105 to V-103 coupling	Capacitor, silvered mica, 20 MMF, 5%, 500 volts DC wkg.	CM20C200J	C75.3-1942	20	K-1420	8217	1	C-124
C-125	C-126A trimmer	Same as C-102							
C-126		Capacitor, variable air, min. cap. 4.3			5	C-1580	8355		
C-126A	L-105 tuning	MMF, max. cap. 25 MMF, insulated							
C-126B	L-106 tuning	rotors, ceramic shaft, 90° rotation							
C-126C	L-107 tuning	min. spacing .010" 3 gang							
C-127	C-126B shunt	Same as C-115							
C-128	C-126B trimmer	Same as C-102							
C-129	Not used								
C-130	V-104 plate filter	Same as C-106	CM35B512M						
C-131	V-104 screen bypass	Same as C-106	CM35B512M						
C-132	V-104 grid to V-105 plate coupling	Same as C-105	CM20C510J						
C-133	C-126C trimmer	Same as C-102							
C-134	V-105 plate filter	Same as C-106	CM35B512M						
C-135	V-105 heater bypass	Same as C-106	CM35B512M						
C-136	V-105 grid filter	Same as C-106	CM35B512M						
C-137	V-102 plate filter	Same as C-106	CM35B512M						
C-138	T-101 sec. tuning	Capacitor, silvered mica, 180 MMF, 5%, 500 volts DC wkg.	CM20C181J	C75.3-1942	20	K-1318	7285	1	C-138
C-139	Heater bypass at L-108	Same as C-106	CM35B512M						
			MISCELLANEOUS ELECTRICAL PARTS						
E-101	V-101 grid connector	Connector for 956 tube, grid terminal			25	8593	8593		
E-102	V-101 plate connector	Same as E-101							
E-103	IF input connector strip	2 terminal connector strip .125 thick phenol fiber			25	8153A	8153A		
E-104	Preselector power input connector strip	5 terminal connector strip .093 thick phenol fiber			25	8445A	8445A		

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT SECTION 1 (101-199)

Symbol Desig.	FUNCTION	DESCRIPTION	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
		MISCELLANEOUS ELECTRICAL PARTS (*Continued*)							
E-105	Channel indicator lamp socket No. 1	Miniature bayonet socket for #47 lamp, wire lead 2" long			25	8649	8649	1	E-105, 106, 107, 108
E-106	Channel indicator lamp Socket No. 2	Same as E-105							
E-107	Channel indicator lamp socket No. 3	Same as E-105							
E-108	Channel indicator lamp socket No. 4	Same as E-105							
E-109	Dial lamp socket, top	Miniature bayonet socket for #47 lamp, wire lead 3⅞" long			25	8648	8648	1	E-109
E-110	Dial lamp socket, right	Miniature bayonet socket for #47 lamp, wire lead 6¼" long			25	8647	8647	1	E-110
E-111	Dial lamp socket, left	Miniature bayonet socket for #47 lamp, wire lead 3⅝" long			25	8646	8646	1	E-111
E-112	L-101 inductance trimmer	Silver-plated copper core with slotted adj. screw			25	8479	8479		
E-113	L-102 inductance trimmer	Same as E-112							
E-114	L-103 inductance trimmer	Same as E-112							
E-115	L-104 inductance trimmer	Compressed powdered iron core coil inductance trimmer			22	8478	8478		
E-116	L-105 inductance trimmer	Compressed powdered iron core coil inductance trimmer			22	8477	8477		
E-117	L-106 inductance trimmer	Same as E-116							
E-118	T-101 inductance trimmer	Compressed powdered iron core coil inductance trimmer			22	8528	8528		
E-119	Channel indicator bezel No. 1	Lamp bezel, red jewel with plastic insert, marked "1"			7	8520	8520	1	E-119
E-120	Channel indicator bezel No. 2	Lamp bezel, red jewel with plastic insert, marked "2"			7	8521	8521	1	E-120
E-121	Channel indicator bezel No. 3	Lamp bezel, red jewel with plastic insert, marked "3"			7	8522	8522	1	E-121
E-122	Channel indicator bezel No. 4	Lamp bezel, red jewel with plastic insert, marked "4"			7	8523	8523	1	E-122
E-123	Antenna plug adapter	Adapter for concentric line antenna plug 90° angle	-49151	RA49F224D	15	8402	8402	1	E-123

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT SECTION 1 (101-199)

Symbol Desig.	Function	Description	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			HARDWARE						
H-101	Dial to C-101 coupling	Coupling, insulated, flexible, for ¼" to ⅜" shafts			25	8480	8480		
H-102	C-101 to C-113 coupling	Coupling, insulated, flexible, for ⅜" to ⅜" shafts			25	8481	8481		
H-103	Channel selector switch shaft coupling	Coupling, solid, for ¼" to ¼" shafts			25	7573	7573		
H-104	Dial detent locking screw No. 1	Screw—5-40 x $\frac{13}{16}$ socket head cap screw			25	8351	8351	2	H-104, 105, 106, 107
H-105	Dial detent locking screw No. 2	Same as H-104							
H-106	Dial detent locking screw No. 3	Same as H-104							
H-107	Dial detent locking screw No. 4	Same as H-104							
H-108	Shock mounting	Shock mounting, plate type, dural mtg. plate			29	200P-25	8267	1	H-108, 109, 110, 111
H-109	Shock mounting	Same as H-108							
H-110	Shock mounting	Same as H-108							
H-111	Shock mounting	Same as H-108							
H-112	238 tooth gear fastening screw for dial	Screw—10-32 x ⅜" long, cheese head with dog			25	7520	7520	2	H-112
H-113	Knob set screw wrench	Wrench for #8 hollow head set screw, $\frac{5}{64}$ Hex. x 1⅞" long			25	8684	8684	1	H-113
H-114	Dial detent set screw wrench	Wrench for #10 hollow head set screw, $\frac{3}{32}$" Hex. x 5" long			25	8527	8527	1	H-114
H-115	Trimmer adjusting wrench	Wrench, insulated, 4½" long x ¼" dia., steel screwdriver nibs			25	8683	8683	1	H-115
			INDICATING DEVICES						
I-101	Channel No. 1 indicator lamp	Lamp, minature bayonet base, 6.3 volts, .15 amp			10	#47	8225	16	I-101, 102, 103, 104, 105, 106, 107, 201
I-102	Channel No. 2 indicator lamp	Same as I-101							
I-103	Channel No. 3 indicator lamp	Same as I-101							
I-104	Channel No. 4 indicator lamp	Same as I-101							
I-105	Dial lighting lamp, top	Same as I-101							
I-106	Dial lighting lamp, right	Same as I-101							
I-107	Dial lighting lamp, left	Same as I-101							

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT

SECTION 1 (101-199)

Symbol Desig.	Function	Description	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			JACKS AND RECEPTACLES						
J-101	Antenna input jack	Concentric line antenna jack, polystyrene insulation, silver plated shell	-49120	RA49F215E	15	8138	8138	1	J-101
J-102	V-102 grid current jack	Jack, pin type for standard test prod			25	8486	8486	1	J-102, 103
J-103	V-103 grid current jack	Same as J-102							
J-104	V-105 grid current jack	Jack, pin type for standard test prod			25	8484	8484	1	J-104
			INDUCTORS, R.F. AND A.F.						
L-101	Antenna input	R.F. inductor, Pri. 2 turns, 16 x 36 tinned copper wire, plastic insulation, Sec. 2 turns .010 x .156 silver plated copper ribbon			25	8469	8469		
			INDUCTORS, R.F. AND A.F. (*Continued*)						
L-102	Antenna coupling inductor	R.F. inductor, 2 turns .010 x .156 silver plated copper ribbon			25	8537	8537		
L-103	V-101 to V-102 coupling	R.F. inductor, Pri. 6 turns #26 SSE wire, Sec. 2 turns .010 x .156 silver plated copper ribbon			25	8539	8539		
L-104	V-103 plate tuning indicator	R.F. inductor, 2 turns .010 x .156 silver plated copper ribbon			25	8538	8538		
L-105	V-103 grid tuning inductor	R.F. inductor, Pri. 2 turns #24 E wire. Sec. 4½ turns #24 E wire			25	8540	8540		
L-106	V-104 plate tuning inductor	R.F. inductor, Pri. 2 turns #24 E wire. Sec. 4½ turns #24 E wire			25	8471	8471		
L-107	V-105 plate tuning inductor	R.F. inductor, 14 turns #24 E wire			25	8470	8470		
L-108	Heater supply filter choke	R.F. choke, 15 turns #20 celanese covered wire on ½" form			25	8475	8475		
			PLUGS						
P-101	Antenna connecting plug	Concentric line antenna plug	-49121-A	RA49F216F	15	8401	8401	1	P-101

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT

SECTION 1 (101-199)

Symbol Desig.	Function	Description	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			RESISTORS						
R-101	V-101 grid leak	Resistor, composition, 0.47 meg. 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	5145	2	R-101, 235, 252
R-102	V-101 cathode bias	Resistor, composition, 390 ohms, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	8250	1	R-102
R-103	V-101 screen filter	Resistor, composition, 39,000 ohms, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	8254	1	R-103
R-104	V-101 plate filter	Resistor, composition, 1,000 ohms, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	5136	2	R-104, 107, 111
R-105	V-102 grid leak	Resistor, composition, 0.22 meg, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	5144	2	R-105, 109, 113
R-106	V-102 grid filter	Resistor, composition, 10,000 ohms, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	7008	2	R-106, 110, 115, 248
R-107	V-103 plate filter	Same as R-104	-63360						
R-108	V-103 screen filter	Resistor, composition, 75,000 ohms, 10%, ½ watt, pigtail terminals		RE13A340C	21	SCI-½	8422	1	R-108, 112
R-109	V-103 grid leak	Same as R-105	-63360						
R-110	V-103 grid filter	Same as R-106	-63360						
R-111	V-104 plate filter	Same as R-104	-63360						
R-112	V-104 screen filter	Same as R-108	-63360						
R-113	V-104 grid leak	Same as R-105	-63360						
R-114	V-105 grid leak	Resistor, composition, 47,000 ohms, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	5141	1	R-114
R-115	V-105 grid filter	Same as R-106							
R-116	V-102 plate filter	Resistor, composition, 0.12 meg, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	8424	1	R-116
R-117	Dial lamp dimmer control	Potentiometer, wire wound, 30 ohms, 10%, 4 watts, shaft ¾″ x ¼″ dia.			28	4R	8488	1	R-117
			SWITCHES						
S-101		Channel selector switch, 2 section, rotary type ceramic wafers, each section 1 pole, 4 position silver contacts			16	26604	8504		
S-101A	Channel indicator lamp section						8504-1	1	S-101A
S-101B	Crystal selector section						8504-2	1	S-101B
S-102		Switch, channel indicator lamp, one pole, open circuit, silver contacts			25	8508	8508	1	S-102A, 102B 102C, 102D
S-102A	Channel 1 lamp switch								

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT

SECTION 1 (101-199)

Symbol Desig.	Function	Description	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			SWITCHES (*Continued*)						
S-102B	Channel 2 lamp switch								
S-102C	Channel 3 lamp switch								
S-102D	Channel 4 lamp switch								
			TRANSFORMERS R.F., A.F., AND POWER						
T-101	V-102 plate to E-103 coupling	I.F. transformer, 12 mgc. Pri: 8 turns #26 E wire. Sec: 2 turns #26 E wire polystyrene form			25	8533	8533		
			VACUUM TUBES						
V-101	R.F. Amplifier 956	Vacuum tube (Receiving glass) super control amplifier pentode (acorn type) Heater: current 0.15 amp at 6.3 volts AC or DC		JAN-1	26	956	8353	2	V-101
V-102	1st detector, mixer 717A	Vacuum tube (Receiving glass) U.H.F. pentode, sharp cutoff. Base: Intermediate shell octal 7 pin. Heater: current 0.175 amp at 6.3 volts AC or DC		JAN-1	17	717A	8352	6	V-102, 103, 104
V-103	2nd multiplier 717A	Same as V-102							
V-104	1st multiplier 717A	Same as V-102							
V-105	Crystal oscillator 6J5	Vacuum tube (Receiving metal) detector amplifier triode. Base: small wafer octal 6 pin phenolic. Heater: current 0.3 amp at 6.3 volts AC or DC	-6J5	JAN-1	18	6J5	6015	2	V-105
			SOCKETS						
X-101	Socket for V-101	Vacuum tube socket, 5 contact for acorn type tube, ceramic, silver plated lock type contacts			14	33305	8354	1	X-101

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT

SECTION 1 (101-199)

Symbol Desig.	Function	Description	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			SOCKETS (*Continued*)						
X-102	Socket for V-102	Vacuum tube socket, 8 contact octal, plug-in type with retaining ring and spacer washer. Molded ceramic base, circular	-49373	RE49AA313A	27	115057	8268	6	X-102, 103, 104, 201, 202, 203, 204, 205, 206, 207, 209
X-103	Socket for V-103	Same as X-102							
X-104	Socket for V-104	Same as X-102							
X-105	Socket for V-105	Same as X-102 but locating pin 90° off	-49373	RE49AA313A	27	115059	8134	2	X-105, 301, 302
X-106	Crystal socket for channel 1	Socket for FT-243 crystal holder, ceramic			14	33102	8446	2	X-106, 107, 108, 109
X-107	Crystal socket for channel 2	Same as X-106							
X-108	Crystal socket for channel 3	Same as X-106							
X-109	Crystal socket for channel 4	Same as X-106							
			QUARTZ CRYSTALS						
Y-101	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 14.233 MC Channel Freq. 116.10 MC	-40125C-CRV		30	8181	8181		
Y-102	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 14.433 MC Channel Freq. 117.90 MC	-40125C-CRV		30	8705	8705		
Y-103	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 14.593 MC Channel Freq. 119.34 MC	-40125C-CRV		30	8706	8706		
Y-104	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 14.833 MC Channel Freq. 121.50 MC	-40125C-CRV		30	8707	8707		
Y-105	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 15.073 MC Channel Freq. 123.66 MC	-40125C-CRV		30	8708	8708		

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT SECTION 1 (101-199)

Symbol Desig.	Function	Description	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			QUARTZ CRYSTALS (*Continued*)						
Y-106	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 15.113 MC Channel Freq. 124.02 MC	-40125C-CRV		30	8709	8709		
Y-107	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 15.153 MC Channel Freq. 124.38 MC	-40125C-CRV		30	8710	8710		
Y-108	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 15.353 MC Channel Freq. 126.18 MC	-40125C-CRV		30	8182	8182		
Y-109	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 15.633 MC Channel Freq. 128.70 MC	-40125C-CRV		30	8183	8183		
Y-110	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 16.953 MC Channel Freq. 140.58 MC	-40125C-CRV		30	8185	8185		
Y-111	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 16.973 MC Channel Freq. 140.76 MC	-40125C-CRV		30	8711	8711		
Y-112	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 16.993 MC Channel Freq. 140.94 MC	-40125C-CRV		30	8712	8712		
Y-113	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 17.013 MC Channel Freq. 141.12 MC	-40125C-CRV		30	8713	8713		
Y-114	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 17.113 MC Channel Freq. 142.02 MC	-40125C-CRV		30	8186	8186		

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT SECTION 1 (101-199)

Symbol Desig.	FUNCTION	DESCRIPTION	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
		QUARTZ CRYSTALS (*Continued*)							
Y-115	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 17.173 MC Channel Freq. 142.56 MC	-40125C-CRV		30	8187	8187		
Y-116	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 17.193 MC Channel Freq. 142.74 MC	-40125C-CRV		30	8188	8188		
Y-117	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 17.253 MC Channel Freq. 143.28 MC	-40125C-CRV		30	8714	8714		
Y-118	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 17.293 MC Channel Freq. 143.64 MC	-40125C-CRV		30	8715	8715		
Y-119	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 17.333 MC Channel Freq. 144.00 MC	-40125C-CRV		30	8716	8716		
Y-120	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 17.373 MC Channel Freq. 144.36 MC	-40125C-CRV		30	8189	8189		
Y-121	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 17.573 MC Channel Freq. 146.16 MC	-40125C-CRV		30	8190	8190		
Y-122	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 17.773 MC Channel Freq. 147.96 MC	-40125C-CRV		30	8191	8191		
Y-123	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 17.933 MC Channel Freq. 149.49 MC	-40125C-CRV		30	8192	8192		

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)
PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT
SECTION 1 (101-199)

Symbol Desig.	FUNCTION	DESCRIPTION	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			QUARTZ CRYSTALS (*Continued*)						
Y-124	Quartz crystal	Quartz plate mtd. in phenolic holder, $1\frac{9}{16}$" long x $\frac{13}{16}$" wide x $\frac{7}{16}$" thick. Crystal Freq. 18.133 MC Channel Freq. 151.20 MC	-40125C-CRV		30	8193	8193		

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT SECTION 2 (201-299)

Symbol Desig.	FUNCTION	DESCRIPTION	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			CAPACITORS						
C-201	Sec. T-201 tuning	Capacitor, silvered mica, 250 MMF, 5%, 500 volts DC wkg.	CM20C251J	C75.3-1942	20	K-1325	7135	2	C-201, 202, 203, 204, 205, 206, 207, 208, 209, 210
C-202	Pri. T-202 tuning	Same as C-201	CM20C251J						
C-203	Sec. T-202 tuning	Same as C-201	CM20C251J						
C-204	Pri. T-203 tuning	Same as C-201	CM20C251J						
C-205	Sec. T-203 tuning	Same as C-201	CM20C251J						
C-206	Pri. T-204 tuning	Same as C-201	CM20C251J						
C-207	Sec. T-204 tuning	Same as C-201	CM20C251J						
C-208	Pri. T-205 tuning	Same as C-201	CM20C251J						
C-209	Sec. T-205 tuning	Same as C-201	CM20C251J						
C-210	Pri. T-206 tuning	Same as C-201	CM20C251J						
C-211	Sec. T-206 tuning	Capacitor, silver mica, 50 MMF. 5%, 500 volts DC wkg.	CM20C500J	C75.3-1942	20	K-1450	8197	1	C-211
C-212	V-206B to AF Gain control coupling	Capacitor, mica, 0.01 MFD. 20%, 300 volts DC wkg.	CM35B103M	C75.3-1942	20	C-06110	8580	8	C-212, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 234, 237, 238, 239, 240, 241, 242, 243, 244, 251, 253, 255, 256, 257, 258, 259, 260, 261
C-213 C-213A C-213B	V-207 to C-204A coupling	Capacitor, paper, 0.1/0.1 MFD. each section 600 volts DC wkg. hermetically sealed	-48313-B10	RE 48A129F RE 13A488E	6	DYR-6011-4	8220	1	C-213, 306
C-214	T-201 Sec. filter bypass	Same as C-212	CM35B103M						
C-215	V-201 cathode bypass	Same as C-212	CM35B103M						
C-216	V-201 screen bypass	Same as C-212	CM35B103M						
C-217	T-202 primary filter bypass	Same as C-212	CM35B103M						
C-218	T-202 secondary filter bypass	Same as C-212	CM35B103M						
C-219	V-202 cathode bypass	Same as C-212	CM35B103M						
C-220	V-202 screen bypass	Same as C-212	CM35B103M						
C-221	T-203 primary filter bypass	Same as C-212	CM35B103M						
C-222	T-203 secondary filter bypass	Same as C-212	CM35B103M						

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT SECTION 2 (201-299)

Symbol Desig.	Function	Description	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			CAPACITORS (*Continued*)						
C-223	V-203 cathode bypass	Same as C-212	CM35B103M						
C-224	V-203 screen bypass	Same as C-212	CM35B103M						
C-225	T-204 primary filter bypass	Same as C-212	CM35B103M						
C-226	T-204 secondary filter bypass	Same as C-212	CM35B103M						
C-227	V-204 cathode bypass	Same as C-212	CM35B103M						
C-228	V-204 screen bypass	Same as C-212	CM35B103M						
C-229	T-205 primary filter bypass	Same as C-212	CM35B103M						
C-230	V-205 cathode bypass	Same as C-212	CM35B103M						
C-231	V-205 screen bypass	Same as C-212	CM35B103M						
C-232	T-206 primary filter bypass	Same as C-212	CM35B103M						
C-233	T-206 secondary filter bypass	Capacitor, mica, 700 MMF. 10%, 500 volts DC wkg.	CM30B701K	C75.3-1942	20	C-1370	8218	1	C-233, 252
C-234	R-251 to V-207 grid coupling	Same as C-212	CM35B103M						
C-235	V-207 cathode to V-209 heater	Capacitor, mica, 150 MMF. 10%, 500 volts DC wkg.	CM20B151K	C75.3-1942	20	K-1315	8147	1	C-235
C-236 C-236A C-236B C-236C	V-207 plate filter bypass V-208 cathode filter bypass	Capacitor, paper, 0.1/0.1/0.1 MFD. 10%, each section, 600 volts DC wkg. Hermetically sealed	-48713-B10	RE48A129F RE13A488E	6	DYR-6111-3	5065	1	C-236, 250
C-237	AVC bypass	Same as C-212	CM35B103M						
C-238	V-209 input filter bypass	Same as C-212	CM35B103M						
C-239	V-206B noise limiter filter bypass	Same as C-212	CM35B103M						
C-240	Input meter filter bypass	Same as C-212	CM35B103M						
C-241	Input meter filter bypass	Same as C-212	CM35B103M						
C-242	S-204B to V-208 cathode coupling	Same as C-212	CM35B103M						
C-243	V-208 plate to V-210 coupling	Same as C-212	CM35B103M						
C-244	V-210 plate to V-211 coupling	Same as C-212	CM35B103M						
C-245 C-245A C-245B	L-201 tuning	Capacitor, paper, 0.05/0.05 MFD, 10%, each section 600 volts DC WKG. hermetically sealed	-48315-B10	RE48A129F RE13A488E	6	DYR-60055-1	5067	1	C-245, 305
C-246	L-202 filter input	Capacitor, mica, .007 MFD. 10%, 300 volts DC wkg.	CM40B702K	C75.3-1942	20	C-06270	8219	1	C-246, 247, 248, 249
C-247	L-202 filter center	Same as C-246	CM40B702K						
C-248	L-202 filter center	Same as C-246	CM40B702K						
C-249	L-202 filter output	Same as C-246	CM40B702K						

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7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT SECTION 2 (201-299)

Symbol Desig.	Function	Description	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			CAPACITORS (*Continued*)						
C-250		Same as C-236	-48713-B10						
C-250A	V-208 plate filter bypass								
C-250B									
C-250C	V-210 screen bypass								
C-251	DC voltmeter bypass	Same as C-212	CM35B103M						
C-252	V-211 grid bypass	Same as C-233	CM35B103M						
C-253	Output meter shunt	Same as C-212	CM35B103M						
C-254	Not used								
C-255	Phone jack bypass	Same as C-212	CM35B103M						
C-256	V-201 heater bypass	Same as C-212	CM35B103M						
C-257	V-202 heater bypass	Same as C-212	CM35B103M						
C-258	V-203 heater bypass	Same as C-212	CM35B103M						
C-259	V-204 heater bypass	Same as C-212	CM35B103M						
C-260	V-205 heater bypass	Same as C-212	CM35B103M						
C-261	V-206 heater bypass	Same as C-212	CM35B103M						
			MISCELLANEOUS, ELECTRICAL PARTS						
E-201	Pilot lamp socket	Min. bayonet type, red jewel lamp assembly			7	50	8271	1	E-201
E-202	Terminal strip	Power input connecting strip, 10 terminals			25	8126-A	8126-A		
E-203	Terminal strip	I.F. input connecting strip, 2 terminal			25	8285-A	8285-A		
E-204	Terminal strip	Power interconnecting strip, 5 terminals			25	8444-A	8444-A		
E-205	T-201 Sec. inductance trimmer	Compressed powdered iron core, coil inductance trimmer			22	8221	8221		
E-206	T-202 Pri. inductance trimmer	Same as E-105							
E-207	T-202 Sec. inductance trimmer	Same as E-205							
E-208	T-203 Pri. inductance trimmer	Same as E-205							
E-209	T-203 Sec. inductance trimmer	Same as E-205							
E-210	T-204 Pri. inductance trimmer	Same as E-205							

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT SECTION 2 (201-299)

Symbol Desig.	Function	Description	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			MISCELLANEOUS, ELECTRICAL PARTS (*Continued*)						
E-211	T-204 Sec. inductance trimmer	Same as E-205							
E-212	T-205 Pri. inductance trimmer	Same as E-205							
E-213	T-205 Sec. inductance trimmer	Same as E-205							
E-214	T-206 Pri. inductance trimmer	Same as E-205							
E-215	T-206 Sec. inductance trimmer	Same as E-205							
E-216	V-205 tube ground clamp	Clamp ring for grounding metal tube shell			25	8207	8207		
			INDICATING DEVICES						
I-201	Pilot lamp	Same as I-101	-47						
			JACKS AND RECEPTACLES						
J-201	Headphone jack	Jack, single, open circuit for two conductor plug with tip and sleeve only			13	JK34A	8222	1	J-201
			INDUCTORS R.F. AND A.F.						
L-201 L-201A L-201B L-201C	High pass filter	3 section iron core choke. Section A, terminals 2-4, 2.8 H, DC resistance 210 ohms. Section B, terminals 3-4, 1.6 H, DC resistance 140 ohms. Section C, terminals 1-4, 2.8 H, DC resistance 210 ohms. Hermetically sealed.			23	454CU7	8294	1	L-201
L-202 L-202A L-202B	Low pass filter	2 section iron core choke, Section A, terminals 2-3, 0.8 H, DC resistance 69 ohms. Section B, terminals 1-3, 0.8 H, DC resistance 69 ohms. Hermetically sealed.			23	454CU6	8295	1	L-202

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7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT SECTION 2 (201-299)

Symbol Desig.	Function	Description	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			METERS						
M-201	R.F. input indicator meter	0-1 ma full scale. Res at 0 on scale 100 ohms, black bakelite case	MR25W001 DCMA	C39.2-1943	24	2AU321	8229		
M-202	Audio output indicator meter	Rectifier type meter, scale—10/0/+20 DB, Black bakelite case	-22427		24	2DU347	8230		
M-203	D.C. voltmeter	0-300 volts DC full scale, 1,000 ohms per volt, black bakelite case	MR25W300 DCVV	C39.2-1943	24	2AU346	8231		
			RESISTORS						
R-201	T-201 Pri. shunt	Resistor, composition, 68 ohms, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	8337	1	R-201
R-202	V-202 grid series	Resistor, composition, 56 ohms, 5%, ½ watt, pigtail terminals	-63355	RE13A340C	21	SCI-½	8687	2	R-202, 203, 204, 264
R-203	V-203 grid series	Same as R-202	-63355						
R-204	V-204 grid series	Same as R-202	-63355						
R-205	V-207 grid return	Resistor, composition, 0.27 meg, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	8259	2	R-205, 239, 249
R-206	V-207 plate load	Resistor, composition, 56,000 ohms, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	8176	2	R-206, 228, 231
R-207	V-201 grid return	Resistor, composition, 82,000 ohms, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	8258	3	R-207, 211, 215, 220, 227
R-208	V-201 cathode bias	Resistor, composition, 150 ohms, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	8174	3	R-208, 212, 217, 221, 224
R-209	V-201 screen filter	Resistor, composition, 15,000 ohms, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	8194	3	R-209, 213, 218, 222, 225
R-210	V-201 plate filter	Resistor, composition, 1,800 ohms, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	8122	3	R-210, 214, 219, 223, 226, 303
R-211	V-202 grid return	Same as R-207	-63360						
R-212	V-202 cathode bias	Same as R-208	-63360						
R-213	V-202 screen filter	Same as R-209	-63360						
R-214	V-202 plate filter	Same as R-210	-63360						
R-215	V-203 grid return	Same as R-207	-63360						
R-216	Input meter series	Resistor, composition, 820 ohms, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	8178	1	R-216
R-217	V-203 cathode bias	Same as R-208	-63360						
R-218	V-203 screen filter	Same as R-209	-63360						
R-219	V-203 plate filter	Same as R-210	-63360						
R-220	V-204 grid filter	Same as R-207	-63360						

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)
PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT
SECTION 2 (201-299)

Symbol Desig.	FUNCTION	DESCRIPTION	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			RESISTORS (*Continued*)						
R-221	V-204 cathode bias	Same as R-208	-63360						
R-222	V-204 screen filter	Same as R-209	-63360						
R-223	V-204 plate filter	Same as R-210	-63360						
R-224	V-205 cathode bias	Same as R-208	-63360						
R-225	V-205 screen filter	Same as R-209	-63360						
R-226	V-205 plate filter	Same as R-210	-63360						
R-227	V-206 diode filter	Same as R-207	-63360						
R-228	V-206 diode load	Same as R-206	-63360						
R-229	V-207 cathode bleeder	Resistor, composition, 47,000 ohms, 10%, 1 watt, pigtail terminals	-63288	RE13A340C	21	SC-1	8319	2	R-229, 246, 259
R-230	V-207 cathode bias	Resistor, composition, 330 ohms, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	8249	2	R-230, 244, 254, 260
R-231	V-207 plate filter	Same as R-206	-63360						
R-232	R.F. gain control	Potentiometer, wirewound, 1,500 ohm, 10%, 2 watts, linear taper, shaft ¼" dia. x ⅞" long			11	Type W	8412	1	R-232
R-233	V-206 noise limiter filter	Resistor, composition, 0.56 meg, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	8175	1	R-233
R-234	V-209 grid	Resistor, composition, 1.5 meg, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	8177	1	R-234, 261
R-235	V-206B cathode	Same as R-101	-63360						
R-236	AVC voltage divider	Resistor, composition, 0.82 meg, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	7090	4	R-236, 237, 241, 250, 253, 256, 257, 258
R-237	AVC voltage divider	Same as R-236	-63360						
R-238	Input meter filter	Resistor, composition, 220 ohms, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	8247	1	R-238, 243
R-239	V-209 cathode	Same as R-205	-63360						
R-240	Silencer control	Potentiometer, composition, 50,000 ohms, 20%, linear taper, shaft ¼" dia. x ⅞" long			11	CS	8244	1	R-240
R-241	V-210 grid return	Same as R-236	-63360						
R-242	R.F. gain control bleeder	Resistor, composition, 15,000 ohms, 10%, 1 watt, pigtail terminals	-63288	RE13A340C	21	SC-1	8195	1	R-242, 265
R-243	Input meter filter	Same as R-238	-63360						
R-244	Input meter adj. series	Same as R-230	-63360	RE13A340C					
R-245	Input meter adj.	Potentiometer, wirewound, 150 ohms, 10%, 2 watts, linear taper, shaft ¼" dia. screwdriver slot adj.			11	Type W	8241	1	R-245

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT

SECTION 2 (201-299)

Symbol Desig.	Function	Description	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			RESISTORS (*Continued*)						
R-246	Input meter bleeder	Same as R-229	-63288						
R-247	V-211 to V-210 feedback	Resistor, composition, 0.15 meg, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	8332	1	R-247
R-248	V-208 input shunt	Same as R-106	-63360						
R-249	V-208 cathode	Same as R-205	-63360						
R-250	V-208 plate load	Same as R-236	-63360						
R-251	Audio gain control	Potentiometer, composition, 1 meg, 20%, ½ watt, taper "C", shaft ¼" dia. x ⅞" long			11	CS	8245	1	R-251
R-252	V-210 plate load	Same as R-101	-63360						
R-253	V-211 grid return	Same as R-236	-63360						
R-254	Phone pad	Same as R-230	-63360						
R-255	Phone control	Potentiometer, composition, 1,000 ohms, 20%, ½ watt, taper "G", shaft ¼" dia. x ⅞" long			11	Type CS	8242	1	R-255
R-256	V-208 cathode bleeder	Same as R-236	-63360						
R-257	V-208 cathode bias	Same as R-236	-63360						
R-258	V-209 plate load	Same as R-236	-63360						
R-259	V-210 cathode bleeded	Same as R-229	-63288						
R-260	V-210 cathode bias	Same as R-230	-63360						
R-261	V-210 screen filter	Same as R-234	-63360						
R-262	V-211 cathode bias	Resistor, composition, 270 ohms, 10%, 1 watt, pigtail terminals	-63288	RE13A340C	21	SC-1	8216	1	R-262
R-263	Not used								
R-264	V-201 grid series	Same as R-202	-63355						
R-265	R.F. gain control bleeder	Same as R-242	-63288						
R-266	Silencer control series	Resistor, composition, 33,000 ohms, 10%, ½ watt, pigtail terminals	-63360	RE13A340C	21	SCI-½	8179	1	R-266
			SWITCHES						
S-201 S-201A S-201B S-201C S-201D	AVC switch N.L. output switch Input meter switch Silencer switch	Switch section, ceramic wafer, rotary type, 4 pole, 2 position, one section			16	25667-HIC	8291-1	1	S-201

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)
PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT
SECTION 2 (201-299)

Symbol Desig.	Function	Description	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			SWITCHES (*Continued*)						
S-202 S-202A S-202B	N.L. ON-OFF switch Output meter switch	Switch section, ceramic wafer, rotary type, 2 pole, 4 position, one section			16	25669HIC	8292-1	1	S-202
S-203	Diode current link switch	Link switch, 2 terminal with connecting link mtd. on phenol fiber strip			25	8288-A	8288-A		
S-204 S-204A S-204B	Audio filter input switch Audio filter output switch	Switch section, ceramic wafer, rotary type, 4 pole, 2 position, one section			16	25668HIC	8293-1		
S-205	Power switch	Toggle switch D.P.S.T. silver plated contacts, rated at 3 amp, 125 volts	-24001	RE24AA118A	1	20902	8333	1	S-205
			TRANSFORMERS, R.R., A.F. AND POWER						
T-201	T-101 to V-201 coupling	No. 1 I.F. transformer, 12 mgc., polystyrene form. Pri. 2 turns, #26 E wire. Sec. 7¼ turns, #26 E wire			25	8210	8210		
T-202	V-201 to V-202 coupling	No. 2 I.F. transformer, 12 mgc., polystyrene form. Pri. 7¼ turns, #26 E wire. Sec. 7¼ turns, #26 E wire			25	8211	8211		
T-203	V-202 to V-203 coupling	Same as T-202			25	8212	8212		
T-204	V-203 to V-204 coupling	Same as T-203			25	8213	8213		
T-205	V-204 to V-205 coupling	Same as T-204			25	8214	8214		
T-206	V-205 to V-206 coupling	No. 6 I.F. transformer, 12 mgc., polystyrene form. Pri. 7¼ turns, #26 E wire. Sec. 15 turns, #26 E wire			25	8215	8215		
T-207	V-211 to speaker	Output transformer, Pri: 1500 turns, #34 E wire, 4.15 H, DC resistance, 115 ohms. Sec: 82 turns, #25 E wire, center tapped, DC resistance, total 0.5 ohms, hermetically sealed			23	454A4	8296	1	T-207
			VACUUM TUBES						
V-201	1st I.F. amplifier	Vacuum tube (Receiving metal) amplifier pentode. Base: small wafer octal 8 pin. Heater: current 0.45 amp at 6.3 volts AC or DC	-6AB7	JAN-1	18	6AB7	8180	16	V-201, 202, 203, 204, 205, 207, 209, 210
V-202	2nd I.F. amplifier	Same as V-201	-6AB7						

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT
SECTION 2 (201-299)

Symbol Desig.	Function	Description	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			VACUUM TUBES (*Continued*)						
V-203	3rd I.F. amplifier	Same as V-201	-6AB7						
V-204	4th I.F. amplifier	Same as V-201	-6AB7						
V-205	5th I.F. amplifier	Same as V-201	-6AB7						
V-206 V-206A V-206B	2nd detector Noise limiter	Vacuum tube (Receiving metal) twin diode. Base: intermediate shell octal 7 pin. Heater: current 0.3 amp at 6.3 volts AC or DC	-6H6	JAN-1	18	6H6	6010	4	V-206, 208
V-207	1st A.F. amplifier	Same as V-201	-6AB7						
V-208	Silencer diode	Same as V-206	-6H6						
V-209	Silencer amplifier	Same as V-201	-6AB7						
V-210	2nd A.F. amplifier	Same as V-201	-6AB7						
V-211	Output A.F. amplifier	Vacuum tube (Receiving glass) Beam power amplifier. Base: intermediate shell octal 7 pin. Heater: current 0.45 amp at 6.3 volts AC or DC	-6V6GT	JAN-1	18	6V6GT	7153	2	V-211
			SOCKETS						
X-201	Socket for V-201	Same as X-102	-49373						
X-202	Socket for V-202	Same as X-102	-49373						
X-203	Socket for V-203	Same as X-102	-49373						
X-204	Socket for V-204	Same as X-102	-49373						
X-205	Socket for V-205	Same as X-102	-49373						
X-206	Socket for V-206	Same as X-102	-49373						
X-207	Socket for V-207	Same as X-102	-49373						
X-208	Socket for V-208	Same as X-102 but locating pin 45° to right	-49373	RE49AA313A	27	115079	8269	1	X-208, 211
X-209	Socket for V-209	Same as X-102	-49373						
X-210	Socket for V-210	Same as X-102 but locating pin 45° to left	-49373						
X-211	Socket for V-211	Same as X-208	-49373						

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT SECTION 3 (301-399)

Symbol Desig.	Function	Description	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			CAPACITORS						
C-301		Capacitor, paper, 0.1 x 0.1 MFD. each section, 600 volts DC wkg. Hermetically sealed	-48712-B10	RE48AA129F RE13A488E	6	DYR-6011-8	5089	1	C-301, 302
C-301A	Power input filter								
C-301B	Power input filter								
C-302		Same as C-301	-48712-B10						
C-302A	Power input filter								
C-302B	Power input filter								
C-303	Power input filter	Capacitor, mica, 0.01 MFD., 20%, 300 volts DC wkg.	CM40B103M	C75.3-1942	20	J-06110	8108	2	C-303, 304, 309, 310, 311, 312, 313, 314
C-304	Power input filter	Same as C-303	CM40B103M						
C-305		Same as C-245	-48315-B10						
C-305A	L-302 input filter								
C-305B	L-302 tuning								
C-306		Same as C-213	-48313-B10						
C-306A	L-302 input filter								
C-306B	L-302 tuning								
C-307	Power supply filter center	Capacitor, paper, 10 MFD. 600 volts DC wkg. Hermetically sealed	-48867-10	RE48A110 RE13A488E	4	A-1000	8107	1	C-307, 308
C-308	Power supply filter output	Same as C-307	-48867-10						
C-309	J-304 #3 bypass	Same as C-303	CM40B103M						
C-310	J-304 #2 bypass	Same as C-303	CM40B103M						
C-311	J-305 #3 bypass	Same as C-303	CM40B103M						
C-312	Audio output filter	Same as C-303	CM40B103M						
C-313	Audio output filter	Same as C-303	CM40B103M						
C-314	Silencer output	Same as C-303	CM40B103M						
C-315	300 volt supply filter	Capacitor, paper, 2 MFD., 600 volts DC wkg. Hermetically sealed	-48403-B10	RE48AA129F RE13A488E	2	AH-100	8198	1	C-315
			MISCELLANEOUS ELECTRICAL PARTS						
E-301	Power supply terminal strip	10 terminal connector strip			25	8286-A	8286-A		
E-302	V-301 tube clamp	Tube retaining clamp			14	33087	8447	1	E-302
			FUSES						
F-301	AC line fuse	Fuse, 3 amp, 250 volt, cartridge type, 1¼" long, ferrules ¼" dia.			12	1043 3AG	8110	20	F-301, 302
F-302	AC line fuse	Same as F-301							

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT

SECTION 3 (301-399)

Symbol Desig.	Function	Description	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			JACKS AND RECEPTACLES						
J-301	Fuse holder	Extractor type fuse holder			12	1075	5112	1	J-301, 303
J-302	Power receptacle	Receptacle, female, polarized, 2 wire, 3 pole, chassis mtg. type	-49126		19	F-7079	8119	1	J-302
J-303	Fuse holder	Same as J-301							
J-304	A.F. output receptacle	Receptacle, female, polarized, 3 contact			3	SP-PC3F	8120	1	J-304, 305
J-305	Silencer receptacle	Same as J-304							
			INDUCTORS, R.F. AND A.F.						
L-301		Filter choke, 2 section. Section A, 620 uH. DC resistance 0.07 ohms, 10%, 3 Pi, 49 turns, #22 SCE wire per pi. Section B, 17 uH, DC resistance 0.014 ohms, 10%, 40 turns, #22 SCE wire			25	8103	8103		
L-301A	AC line input filter								
L-301B	AC line output filter								
L-302	+B input filter choke	Filter reactor, 8 H, 120 MA, DC, tapped at 3.8 MH, 2800 T, #28 E wire, DC resistance 110 ohms max.			23	454C5	8102	2	L-302, 303
L-303	+B output filter choke	Same as L-302							
L-304		Same as L-301							
L-304A	AC line input filter								
L-304B	AC line output filter								
L-305	A.F. output filter choke	R.F. choke, $\frac{5}{16}$" dia. x 1¼" long, 47 T #26 SSE wire, DC resistance 0.015 ohms, 10%			25	8104	8104		
L-306	A.F. output filter choke	Same as L-305							
			PLUGS						
P-301	Not used								
P-302	Power input plug	Plug, male, polarized 3 terminal, 2 wire type	-49125		19	8116	8116	1	P-302
P-303	Not used								
P-304	A.F. output plug	Plug, male, polarized 3 terminal			3	MC3M	8117	1	P-304, 305
P-305	Silencer plug	Same as P-304							

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)

PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT SECTION 3 (301-399)

Symbol Desig.	FUNCTION	DESCRIPTION	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			RESISTORS						
R-301	V-302 anode supply	Resistor, composition, 680 ohms, 10%, 2 watt, pigtail terminals	-63474	RE13A340C	21	S1-2	7239	1	R-301, 302
R-302	V-302 anode supply	Same as R-301	-63474						
R-303	Silencer output filter	Same as R-210	-63360						
R-304	300 volt series filter	Resistor, composition, 1,000 ohms, 10%, 2 watt, pigtail terminals	-63474	RE13A340C	21	S1-2	8196	1	R-304
			SWITCHES						
S-301	Power input primary switch	Primary link switch, link mounted on .125 thick phenol fiber board marked 110V/115V/120V/			25	8125-A	8125-A		
			TRANSFORMERS R.F., A.F. AND POWER						
T-301	Power transformer	Transformer, Pri. 110/115/120 V, 60 cycles, 1 phase, 152 V. A. 263½ turns, #19 E wire tapped at 241½ and 251½ turns, terminal 1 common, 2-110 V, 3-115 V, 4-120 V. Sec. 1: 275-275 V, 0.12A 1280 turns, #30 E wire, center tapped, terminals 5-6-7. Sec. 2: terminals 13-14-15, 6.3 V, 11.1A 15 turns #12 square DCC. Sec. 3: terminals 9-10, 17 V. @ 1.2A, 40 turns, #20 E wire. Sec. 4: terminals 11-12, 5 V @ 3A, 12 turns #18 E wire, hermetically sealed.			23	454P5	8131		
			VACUUM TUBES						
V-301	Rectifier	Vacuum tube(Receiving glass) full wave high vacuum rectifier, Base: medium shell octal, 5 pin, Heater: current 3 amp at 5 volts AC	-5U4G	JAN-1	18	5U4G	7154	2	V-301

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.2 TABLE II (*Continued*)
PARTS AND SPARE PARTS LIST BY SYMBOL DESIGNATIONS FOR MODEL RCK RADIO RECEIVING EQUIPMENT
SECTION 3 (301-399)

Symbol Desig.	FUNCTION	DESCRIPTION	Navy Type Number **	Navy Dwg. or Spec.	MFR.	Mfr. Desig.	Contractor's Drawing and Part Number	Quan. Spare Parts	All Symbol Designations Involved
			VACUUM TUBES (*Continued*)						
V-302	Voltage regulator	Vacuum tube (Receiving glass) voltage regulator, Base: small octal 6 pin, Rated: 30 MA @ 150 V DC	-38250	JAN-1	18	VR150/30	8132	2	V-302
			SOCKETS						
X-301	Socket for V-301	Same as X-105	-49373						
X-302	Socket for V-302	Same as X-105	-49373						

** In many cases the Navy Type Number listed is not the actual item supplied; however, this type will effect a suitable replacement.

7.3 TABLE III
PARTS LIST BY NAVY TYPE NUMBERS
FOR MODEL RCK RADIO RECEIVING EQUIPMENT

Quantity	Navy Type Number	All Symbol Designations Involved
	MISCELLANEOUS Class 10	
2		E-101, E-102
1		E-103
1		E-104
4		E-105, 106, 107, 108
1		E-109
1		E-110
1		E-111
3		E-112, 113, 114
1		E-115
2		E-116, 117
1		E-118
1		E-119
1		E-120
1		E-121
1		E-122
1	-49151	E-123
1		E-201
1		E-202
1		E-203
1		E-204
11		E-205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215
1		E-216
1		E-301
1		E-302
1		H-101
1		H-102
1		H-103
4		H-104, 105, 106, 107
4		H-108, 109, 110, 111
1		H-112
1		H-113
1		H-114
1		H-115
8	-47	I-101, 102, 103, 104, 105, 106, 107, 201
	METERS Class 22	
1	MR25W 001 DC MA	M-201
1	-22427	M-202
1	MR25W 300 DC VV	M-203
	SWITCHES Class 24	
1		S-101
1		S-102
1		S-201
1		S-202
1		S-203
1		S-204
1	-24001	S-205
1		S-301
	FUSES Class 28	
2		F-301, 302
	TRANSFORMERS AND A.F. INDUCTORS Class 30	
1		L-201
1		L-202
1		L-302
1		L-303
1		T-207
1		T-301
	VACUUM TUBES Class 38	
1		V-101
3		V-102, 103, 104
1	-6J5	V-105
8	-6AB7	V-201, 202, 203, 204, 205, 207, 209, 210
2	-6H6	V-206, 208
1	-6V6GT	V-211
1	-5U4G	V-301
1	-38250	V-302
	QUARTZ CRYSTALS Class 40	
24	-40125C-CRV	Y-101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124
	R.F. INDUCTORS AND CHOKES Class 47	
1		L-101
1		L-102
1		L-103
1		L-104
1		L-105
1		L-106
1		L-107
1		L-108
2		L-301, 304
2		L-305, 306
1		T-101
1		T-201
1		T-202
1		T-203
1		T-204
1		T-205
1		T-206

7.3 TABLE III (*Continued*)
PARTS LIST BY NAVY TYPE NUMBERS
FOR MODEL RCK RADIO RECEIVING EQUIPMENT

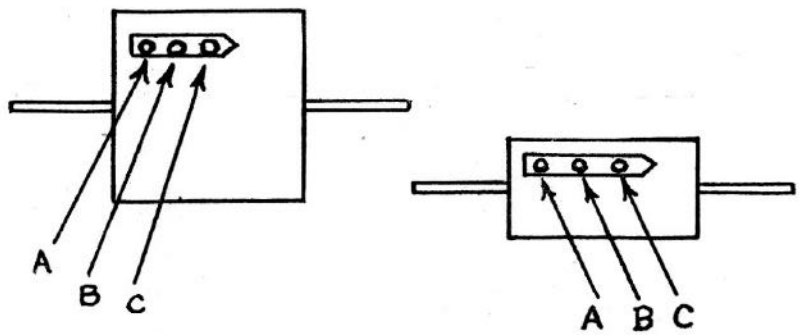
Quantity	Navy Type Number	All Symbol Designations Involved
	CAPACITORS Class 48	
2	-48313-B10	C-213, 306
2	-48315-B10	C-245, 305
1	-48403-B10	C-315
2	-48712-B10	C-301, 302
2	-48713-B10	C-236, 250
2	-48867-10	C-307, 308
1	CM20C200J	C-124
1	CM20C500J	C-211
3	CM20C510J	C-105, 132, 140
1	CM20B151K	C-235
1	CM20C181J	C-138
10	CM20C251J	C-201, 202, 203, 204, 205, 206, 207, 208, 209, 210
1	CM20C391J	C-118
2	CM20B391K	C-120, 121
4	CM20B511K	C-107, 108, 109, 110
2	CM30B511K	C-111, 112
2	CM30B701K	C-233, 252
11	CM35B512M	C-106, 117, 122, 123, 130, 131, 134, 135, 136, 137, 139
4	CM40B702K	C-246, 247, 248, 249
38	CM35B103M	C-212, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 234, 237, 238, 239, 240, 241, 242, 243, 244, 251, 253, 255, 256, 257, 258, 259, 260, 261
8	CM40B103M	C-303, 304, 307, 310, 311, 312, 313, 314
1		C-101
7		C-102, 104, 114, 119, 125, 128, 133
1		C-103
1		C-113
3		C-115, 127, 141
1		C-116
1		C-126
	Not Used	C-129
	Not Used	C-254
	JACKS AND PLUGS Class 49	
1	-49120	J-101
1	-49121A	P-101
1	-49125	P-302
1	-49126	J-302
1		J-102
1		J-103
1		J-104
1		J-201
2		J-301, 303
2		J-304, 305
2		P-304, 305
	Not Used	P-301, 303
	VACUUM TUBE SOCKETS Class 49	
17	-49873	X-102, 103, 104, 105, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 301, 302
1		X-101
4		X-106, 107, 108, 109
	RESISTORS Class 63	
3	-63288	R-229, 246, 259
2	-63288	R-242, 265
1	-63288	R-262
4	-63355	R-202, 203, 204, 264
3	-63360	R-101, 235, 252
1	-63360	R-102
1	-63360	R-103
3	-63360	R-104, 107, 111
3	-63360	R-105, 109, 113
4	-63360	R-106, 110, 115, 248
2	-63360	R-108, 112
1	-63360	R-114
1	-63360	R-116
1	-63360	R-201
3	-63360	R-205, 239, 249
3	-63360	R-206, 228, 231
5	-63360	R-207, 211, 215, 220, 227
5	-63360	R-208, 212, 217, 221, 224
5	-63360	R-209, 213, 218, 222, 225
	-63360	R-210, 214, 219, 223, 226, 303
1	-63360	R-216
4	-63360	R-230, 244, 254, 260
1	-63360	R-233
2	-63360	R-234, 261
8	-63360	R-236, 237, 241, 250, 253, 256, 257, 258
2	-63360	R-238, 243
1	-63360	R-247
1	-63360	R-266
2	-63474	R-301, 302
1	-63474	R-304
1		R-117
1		R-232
1		R-240
1		R-245
1		R-251
1		R-255
	Not Used	R-263

7.4 TABLE IV

APPLICABLE COLOR CODES AND MISCELLANEOUS DATA FOR MODEL RCK RADIO RECEIVING EQUIPMENT

Color Code in MMFD for Capacitors

Color	*A 1st Digit*	*B 2nd Digit*	*C Ciphers*
Black	—	0	.0
Brown	1	1	0
Red	2	2	00
Orange	3	3	000
Yellow	4	4	0000
Green	5	5	00000
Blue	6	6	000000
Purple	7	7	0000000
Gray	8	8	00000000
White	9	9	—

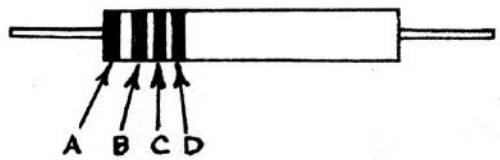


Silver mica capacitors have values stamped into body of condenser.

RMA Color Code for Resistors

Color	*A 1st Digit*	*B 2nd Digit*	*C Ciphers*
Black	—	0	.0
Brown	1	1	0
Red	2	2	00
Orange	3	3	000
Yellow	4	4	0000
Green	5	5	00000
Blue	6	6	000000
Purple	7	7	0000000
Gray	8	8	00000000
White	9	9	—

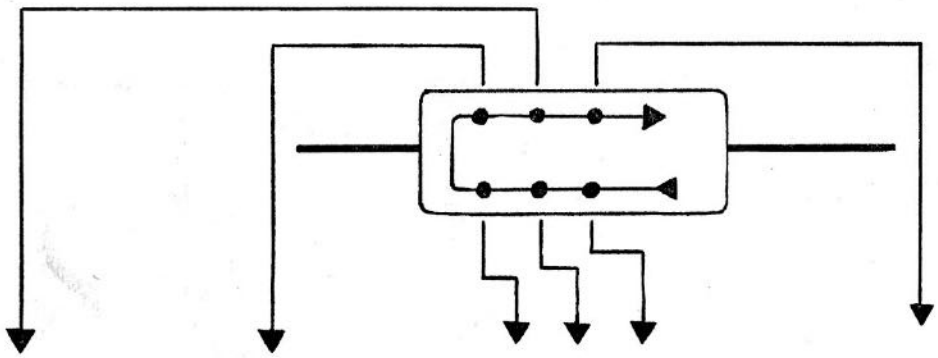
D—Tolerance Code:
Gold—5% Silver—10%



7.4 TABLE IV
APPLICABLE COLOR CODES AND MISCELLANEOUS DATA FOR MODEL RCK RECEIVER

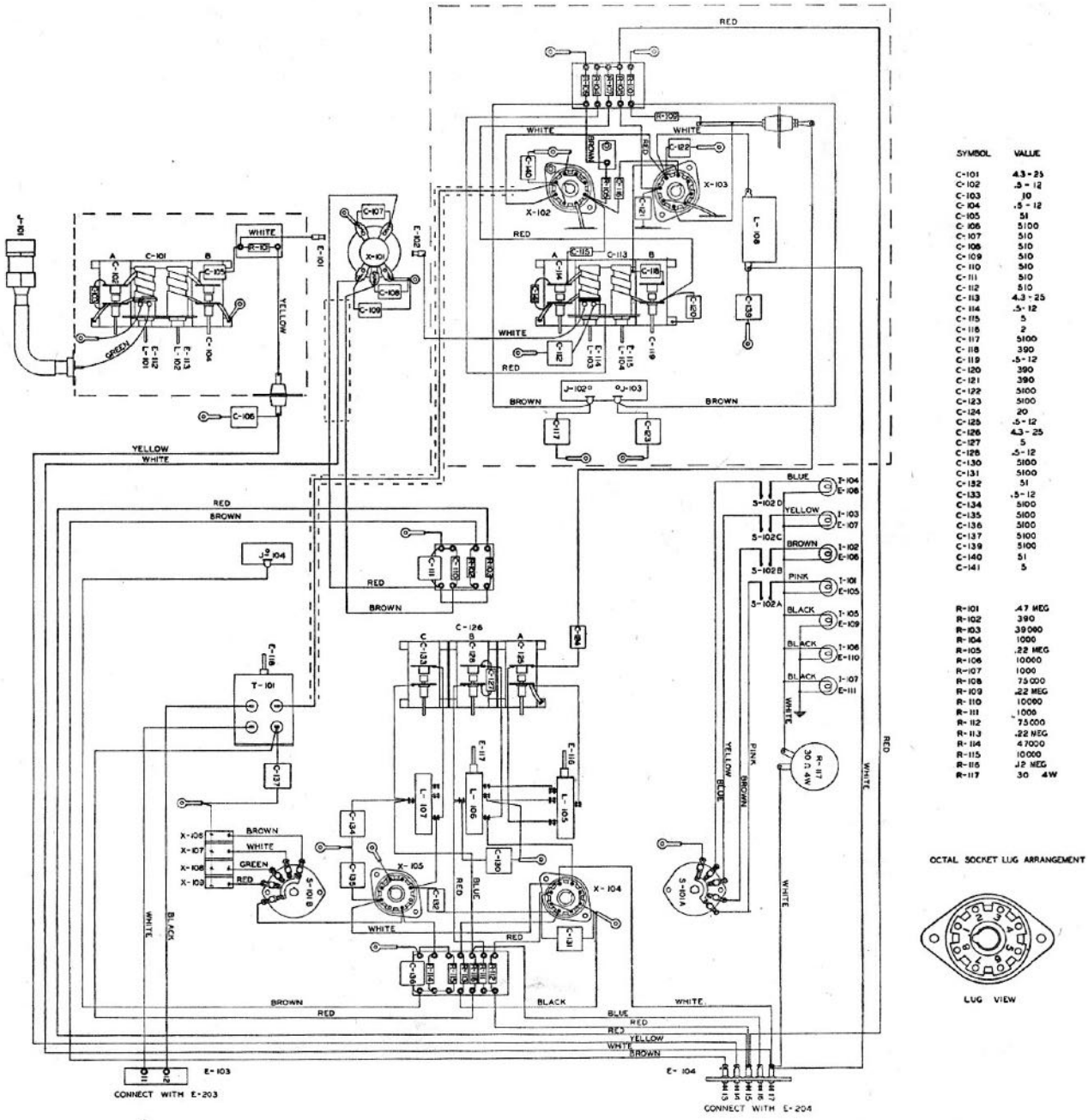
RMA 6 Dot Color Code
Read In Direction of Molded Arrow

Color of Dot	*Working Voltage*	*Significant Figure of Dot*	*Decimal Multiplier*	*Tolerance*
Black	.....	0	1	.....
Brown	100	1	10	1%
Red	200	2	100	2%
Orange	300	3	1000	3%
Yellow	400	4	.....	4%
Green	500	5	.....	5%
Blue	600	6	.....	6%
Violet	700	7	.....	7%
Gray	800	8	.....	8%
White	900	9	.....	9%
Gold	1000	....	.....	.....
Silver	2000	....	.....	10%



7.5
LIST OF MANUFACTURERS FOR MODEL RCK RADIO RECEIVING EQUIPMENT

CODE NO.	MFR. PREFIX	NAME	ADDRESS
1	CHH	Arrow Hart and Hegeman Electric Co.	Hartford, Connecticut
2	CQU	American Condenser Corp.	2508 S. Michigan Ave., Chicago, Ill.
3	CPH	American Phenolic Corp.	1250 W. Van Buren St., Chicago, Ill.
4	CAAI	Capacitrons Inc.	318 W. Schiller St., Chicago, Ill.
5		Comar Electric Co.	3150 N. Washtenaw Ave., Chicago, Ill.
6	CD	Cornell-Dubilier Corp.	1000 Hamilton Blvd., So. Plainfield, N. J.
7		Drake Mfg. Co.	1713 W. Hubbard St., Chicago, Ill.
8	CER	Erie Resistor Corp.	Erie, Penn.
9		Etching Co. of America	1520 Montana St., Chicago, Ill.
10	CG	General Electric Co.	Schenectady, N. Y.
11	CIR	International Resistance Co.	401 W. Broad St., Philadelphia, Penn.
12	CLF	Littlefuse Labs.	4757 N. Ravenswood Ave., Chicago, Ill.
13		P. R. Mallory & Co., Inc.	Indianapolis, Indiana
14		Millen Mfg. Co.	Malden, Mass.
15	CN	National Electric Machine Shops, Inc.	1935-5th St. N. E., Washington, D. C.
16	COC	Oak Mfg. Co.	1260 N. Clybourn Ave., Chicago, Ill.
17		Raytheon Prod. Corp.	55 Chapel St., Newton, Mass.
18	CRV	RCA Mfg. Co.	(Radiotron Div.) Harrison, N. J.
19		Russel and Stoll	120 Barclay St., New York, N. Y.
20	CAN	Sangamo Electric Co.	Springfield, Ill.
21	CPQ	Speer Resistor Co.	St. Mary's, Penn.
22	CSA	Stackpole Carbon Co.	St. Mary's, Penn.
23		Standard Transformer Corp.	1500 N. Halsted St., Chicago, Ill.
24	CADR	Sun Mfg. Co.	6323 N. Avondale Ave., Chicago, Ill.
25	CZC	E. H. Scott Radio Labs., Inc.	4450 N. Ravenswood Ave., Chicago, Ill.
26		Tungsol Lamp Works	95 8th Ave., Newark, N. J.
27	CUF	Ucinite Co.	459 Watertown St., Newton, Mass.
28	CRA	Utah Radio Products Co.	812 Orleans St., Chicago, Ill.
29		Lord Mfg. Co.	Erie, Penn.
30	CRV	RCA Mfg. Co.	(RCA Victor Div.) Camden, N. J.



SYMBOL	VALUE
C-101	4.3 - 25
C-102	.5 - 12
C-103	10
C-104	.5 - 12
C-105	51
C-106	5100
C-107	510
C-108	510
C-109	510
C-110	510
C-111	510
C-112	510
C-113	4.3 - 25
C-114	.5 - 12
C-115	5
C-116	2
C-117	5100
C-118	390
C-119	.5 - 12
C-120	390
C-121	390
C-122	5100
C-123	5100
C-124	20
C-125	.5 - 12
C-126	4.3 - 25
C-127	5
C-128	.5 - 12
C-130	5100
C-131	5100
C-132	51
C-133	.5 - 12
C-134	5100
C-135	5100
C-136	5100
C-137	5100
C-139	5100
C-140	51
C-141	5

R-101	.47 MEG
R-102	390
R-103	39000
R-104	1000
R-105	.22 MEG
R-106	10000
R-107	1000
R-108	75000
R-109	.22 MEG
R-110	10000
R-111	1000
R-112	75000
R-113	.22 MEG
R-114	47000
R-115	10000
R-116	.12 MEG
R-117	30 4W

Figure 8.1 PRESELECTOR CHASSIS WIRING DIAGRAM

6.5 STAGE GAIN MEASUREMENTS

6.51 The sensitivity measurements listed below, are made under the following conditions:

(1) The Model RCK Radio Receiving Equipment is removed from the cabinet and the bottom plate of the I-F/A-F unit removed.

(2) The standard signal generator is adjusted for a test signal of 12 megacycles, modulated 30% at 1000 cycles.

(3) The output of the Signal generator is connected through a 10,000 micro-microfarad condenser to each grid of the stage measured.

(4) The RECEPTION switch at "AVC off". The R-F and A-F GAIN controls at maximum.

(5) Noise limiter output meter switch at "OM".

(6) A-F band switch at "wide".

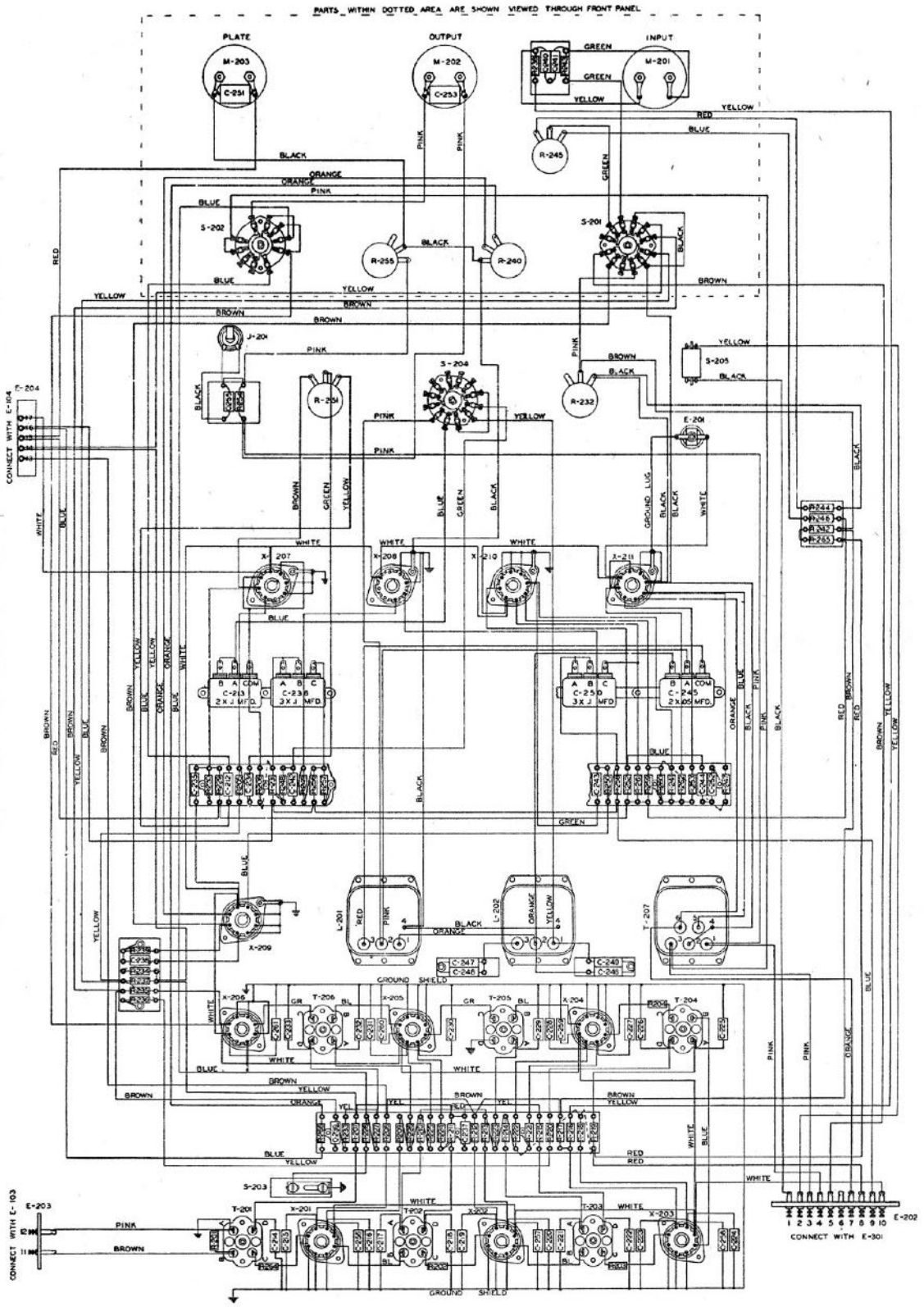
6.52 When measuring from the grid of V-102, V-201 and V-202 the noise level will be high. Therefore, the R.F. gain control R-232 should be adjusted so that a 10 db. signal plus noise to noise ratio is maintained with the signal generator output adjusted to give an audio output of 1.9 volts across a 600 ohm load connected to terminals 2 and 3 of output receptacle J-304 at the rear of the receiver.

6.53 When measuring from the grid of V-203, V-204 and V-205 the R.F. and audio gain controls are set at maximum position and the output of the signal generator adjusted to give an audio output of 1.9 volts across a 600 ohm load connected to terminals 2 and 3 of output receptacle J-304.

Table 1

Terminal	*I-F Sensitivity Microvolts* *
V-102 — Grid	9
V-201 — Grid	16
V-202 — Grid	13
V-203 — Grid	132
V-204 — Grid	1250
V-205 — Grid	12000

* The measurements at V-201 and V-102 were taken at 10 db. signal plus noise to noise ratio. Values may vary as much as ± 20% in all cases.



SYMBOL	VALUE
C-212	.01
C-213	2 X .1
C-214	.01
C-215	.01
C-216	.01
C-217	.01
C-218	.01
C-219	.01
C-220	.01
C-221	.01
C-222	.01
C-223	.01
C-224	.01
C-225	.01
C-226	.01
C-227	.01
C-228	.01
C-229	.01
C-230	.01
C-231	.01
C-232	.01
C-233	700
C-234	.01
C-235	150
C-236	3 X .1
C-237	.01
C-238	.01
C-239	.01
C-240	.01
C-241	.01
C-242	.01
C-243	.01
C-244	.01
C-245	2 X .05
C-246	.007
C-247	.007
C-248	.007
C-249	.007
C-250	3 X .1
C-251	.01
C-252	700
C-253	.01
C-255	.01
C-256	.01
C-257	.01
C-258	.01
C-259	.01
C-260	.01
C-261	.01

R-201	68
R-202	56
R-203	56
R-204	56
R-205	.27 MEG
R-206	56000
R-207	82000
R-208	150
R-209	15 000
R-210	1800
R-211	82000
R-212	150
R-213	15 000
R-214	1800
R-215	82000
R-216	820
R-217	150
R-218	15000
R-219	1800
R-220	82000
R-221	150
R-222	15000
R-223	1800
R-224	150
R-225	15000
R-226	1800
R-227	82000
R-228	56000
R-229	47000 1 W
R-230	330
R-231	56000
R-232	1500 2W
R-233	.56 MEG
R-234	1.5 MEG
R-235	.47 MEG
R-236	.82 MEG
R-237	.82 MEG
R-238	220
R-239	.27 MEG
R-240	50200
R-241	.82 MEG
R-242	15000 1 W
R-243	220
R-244	330
R-245	150 2 W
R-246	47000 1 W
R-247	.15 MEG
R-248	10 000
R-249	.27 MEG
R-250	.82 MEG
R-251	1. MEG
R-252	.47 MEG
R-253	.82 MEG
R-254	330
R-255	1000
R-256	.82 MEG
R-257	.82 MEG
R-258	.82 MEG
R-259	47000 1 W
R-260	330
R-261	1.5 MEG
R-262	270 1 W
R-264	56
R-265	15 000 1 W
R-268	33 000

Figure 8.2 I-F/A-F CHASSIS WIRING DIAGRAM

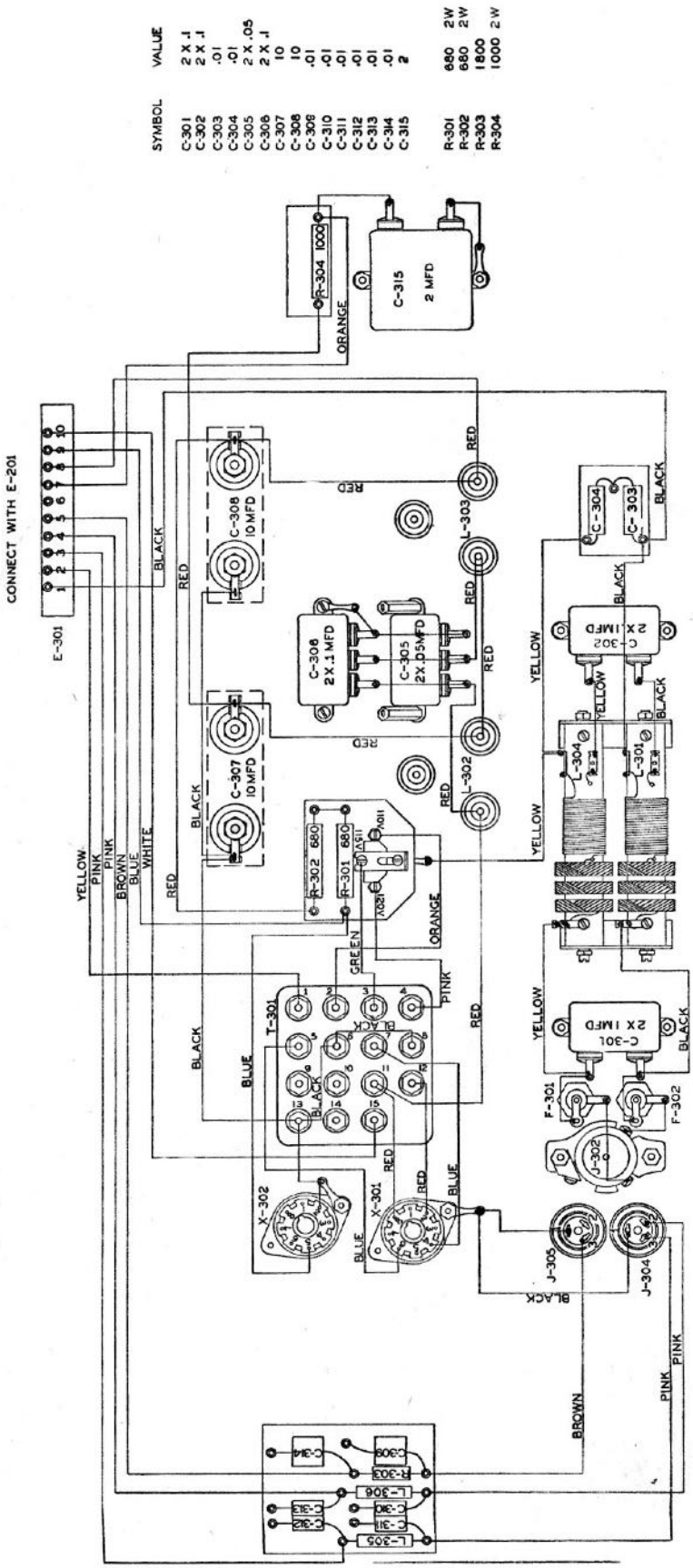


Figure 8.3 POWER SUPPLY CHASSIS WIRING DIAGRAM

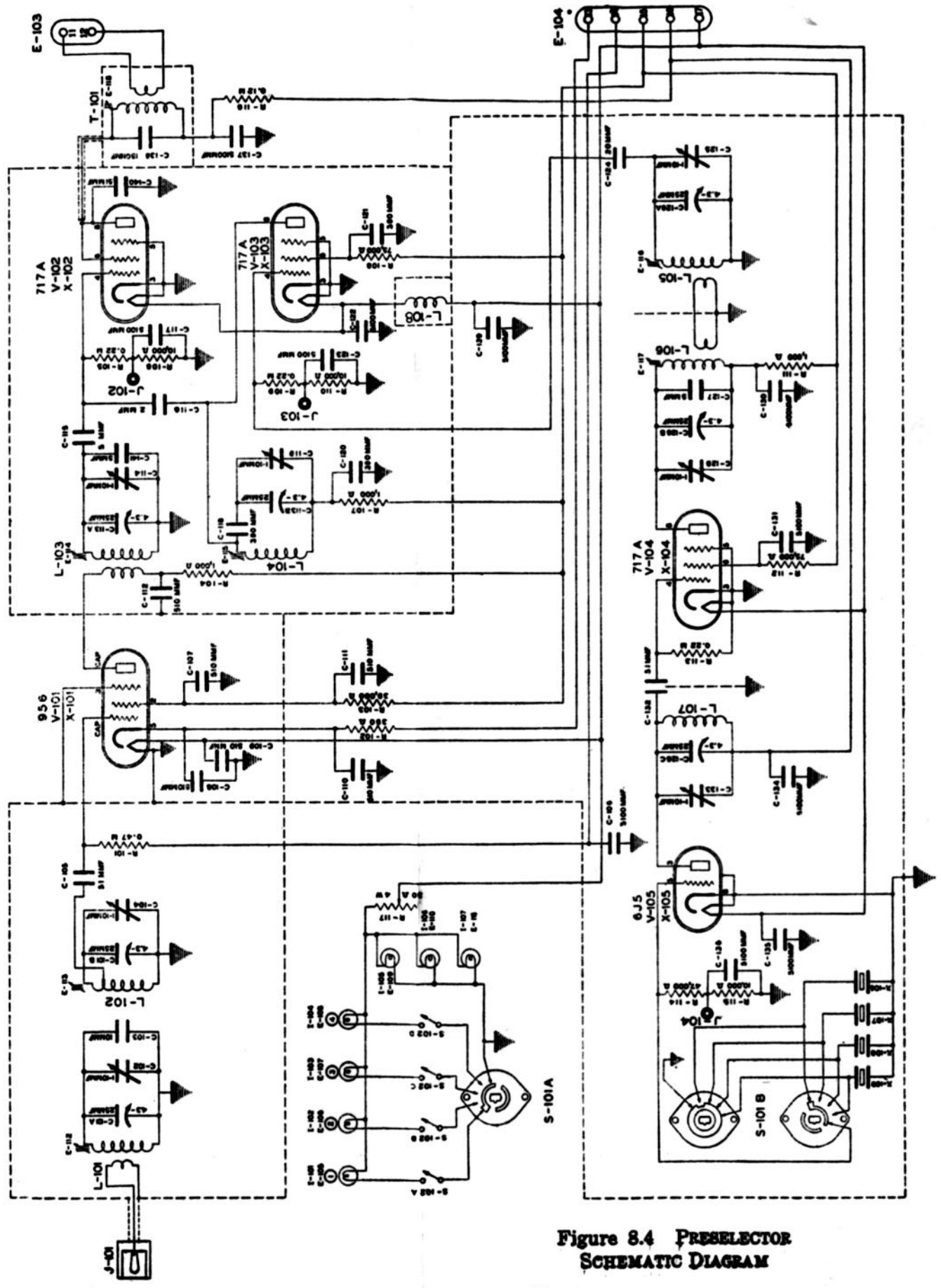


Figure 8.4 PRESELECTOR SCHEMATIC DIAGRAM

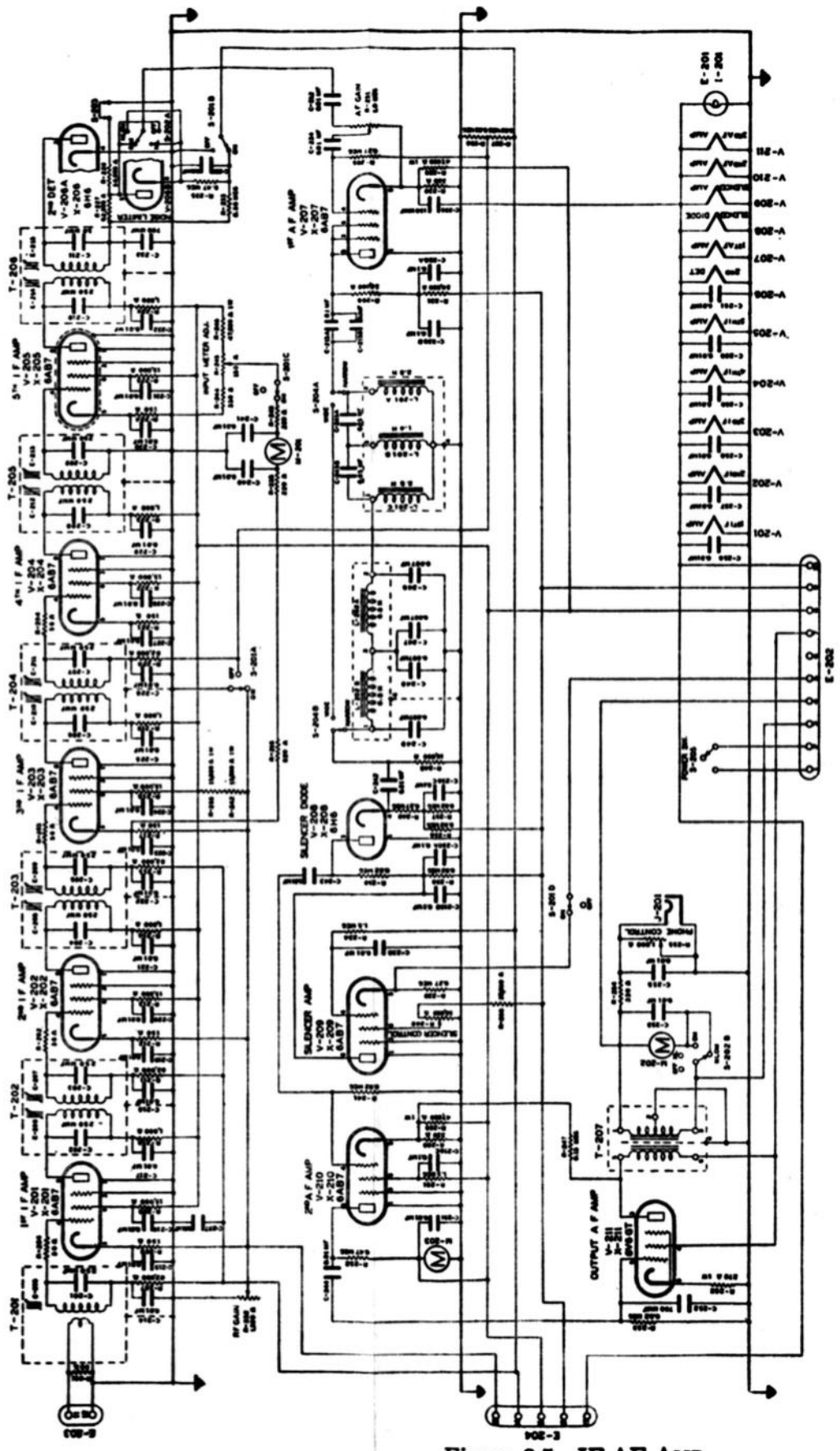


Figure 8.5 IF-AF AMP.
SCHEMATIC DIAGRAM

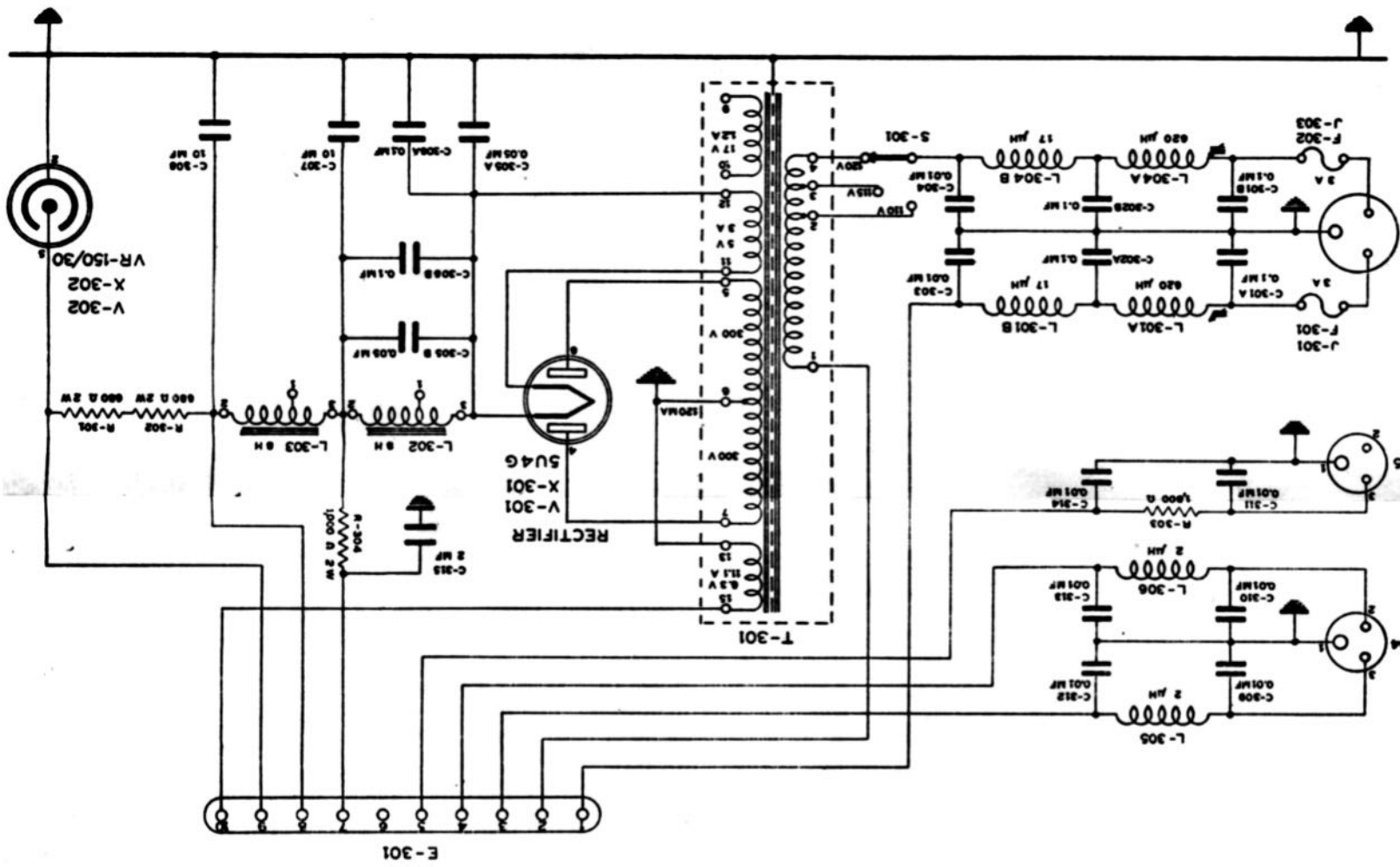


Figure 8.6 Power Supply Schematic Diagram

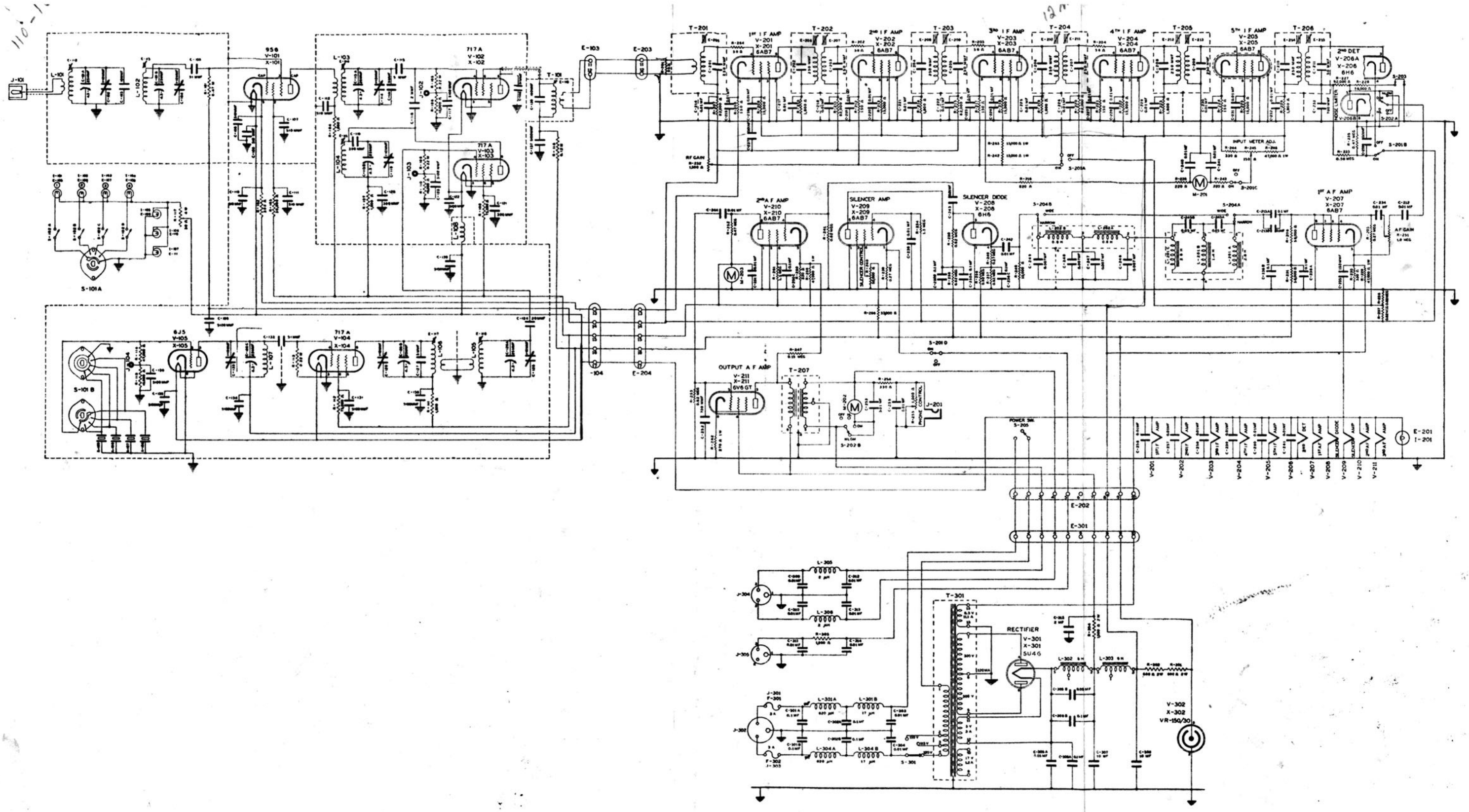


Figure 8.7 TYPE CZC-46223
RADIO RECEIVER
SCHEMATIC DIAGRAM