INSTRUCTION MANUAL

FOR

R.A.A.F. Y10D/70418 TRANSMITTER RECEIVER ATR2B

RAAF Y10D/70353

UNIT POWER SUPPLY TYPE J
12 VOLTS DC FOR ATR2B

RAAF Y10D/70354

UNIT POWER SUPPLY TYPE K
240 VOLTS 50 CYCLES FOR ATR2B

RADIO CORPORATION PTY. LTD.
(A DIVISION OF ELECTRONIC INDUSTRIES LTD.)
126-130 GRANT STREET, S.C. 4
MELBOURNE, AUSTRALIA

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INSTRUCTIONAL MANUAL

for

R.A.A.F. Y10D/70418
Transmitter-Receiver
ATR2B

R.A.A.F. Y10D/70353
Unit Power Supply Type J.
12 volts DC for ATR2B.

R.A.A.F. Y10D/70354
Unit Power Supply Type K.
240 volts 50 cycles for ATR2B.

Radio Corporation Pty. Ltd.,
(A Division of Electronic Industries Ltd.),
126 Grant Street, S.C.4.
MELBOURNE. Aust.

LIST OF EQUIPMENT PER STATION

The complete ATR2B radio transmitter-receiver station consists of the following equipment :—

a. ATR2B radio transmitter-receiver housed in metal cabinet complete with one set of working valves and 4 crystals. Crystal frequencies.

b. Speaker housed in metal cabinet complete with cord and plug Part No. PM823.

c. Key - telephone complete with plug and cable - Part No. 821

d. Hand microphone complete with plug and cable type No. 3 - Part No. 822.

e. Accumulator 12 volt 150 a/h. - lead acid complete in carrying case - Part No. PM803.

f. Telephones high impedance complete with plug and cord - Part No. PM820.

g. Power supply unit operation 12 volts DC complete with metal cabinet, type RC72A.

h. Aerial assembly - Part No. PM663.

i. Counterpoise earth - PM 665.

j. Connecting cable power - Part No. PM668.

k. Cord and insulator 2 off - Part No. PM664.

NUMBER OF UNITS AS PACKED PER COMPLETE STATION INCLUDING WEIGHT AND DIMENSIONS.

a.	ATR2B Transmitter-receiver	—	Weight 39 lbs.	12in. x 18in. x 12in.
b.	Speaker	—	Weight 61lbs.	7in. x 7in. x 7in.
c.	Accumulator	—	Weight 136lbs.	28in, x 11¼in. x 9in.
d.	Power Pack including all accessories.	—	Weight 50lbs,	13in. x 13in. x 11in.

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TRANSMITTER-RECEIVER ATR2B

1.1 General

The ATR2B Transmitter-Receiver is a mobile equipment designed for the reception of Radio telephony, modulated continuous wave or continuous wave telegraphy between 3 and 7.5 megacycles, and the transmission of either continuous waves telegraphy or radio telephony at any four spot frequencies crystal controlled or any Master Oscillator frequency within the same tuning range as the receiver.

This equipment may be operated in conjunction with power supply unit type "J" (12V DC operation) or power supply unit type "K" (220-240V AC operation) depending on the primary source of power available.

The ATR2B being designed for mobile use has been constructed to function satisfactorily under any service condition and is designed to require a minimum of attention when in service. All components have been constructed to withstand the vibration and bumping met with in the normal handling and transport in the course of normal service operation.

1.2 Circuit Arrangement

The receiver section of the unit consists of a six valve superhetrodyne receiver details of which are given in Section 2A.

The transmitter section consists of a pentode crystal or electron coupled oscillator driving a beam power pentode which is modulated by a similar valve when operated on radio telephony.

1.3 Power Requirements

When the equipment is operated in conjunction with the Power Supply Unit type "J" complete operation is possible from one 12 volt accumulator.

The current drain from the accumulator being

Receiving or CW Key up	9.2	amps
Transmitting CW Key down	11.5	"
" RT	14.3	"

When the equipment is operated from 230V 50 cycle AC mains, the power input to the Power Supply Unit type "K" is

Receiving	130	watts
Transmitting CW Key down	165	"
" RT	180	"

1.4 Construction

The ATR2B transmitter unit is housed in a dust proof metal case with carrying strap and removable front cover, the removal of which gives access to all operating controls. A cover plate at the rear of the case gives access to the 4 crystals which may be changed without removing the chassis from the can. Two spare pilot lights are also carried in clips on the inside of this cover plate.

Two separate power supply units are provided, one type "J" for 12 volt DC operation and the other type "K" for operation from 220-240V 50 cycle AC mains. Both of these supplies are housed in metal cases, sufficient room being provided in the power supply type "J" to carry the aerial equipment, headphones, microphone, key and the necessary connecting cables. The main "On-Off" switches are located on the front panels of these units.

1.5 Aerial Equipment

A single wire end fed aerial is used with this unit, this aerial being automatically changed over from the transmitter to the receiver by means of a relay incorporated in the transmitter HT circuit.

2A. RECEIVER — Leading Particulars

2A.1 The receiver is of the super-hetrodyne type and consists of:

1. A pentode radio frequency amplifier
11. Converter
111. 455KC. Intermediate frequency amplifier
1V. 455KC. Intermediate frequency amplifier and diode detector.
V. Beat frequency oscillator and audio amplifier
VI. Triode connected output valve.

2A.2 Controls

The front panel of the ATR2B transmitter-receiver unit mounts all of the controls necessary for traffic operation. All of these controls are clearly designated by means of etched plates. These controls and their functions are as follows in paragraphs 2A.3 to 2A.10.

2A.3 Receiver Tuning Control.

This control is located at the top right hand side of the

transmitter-receiver panel and drives the receiver tuning condenser.

The dial disc is calibrated directly in frequency and is read against an indicator placed over the right hand side of the dial. The drive for this dial disc is through a 40:1 ratio planetry vernier, the knob for which is in the centre of the dial disc. For quick frequency setting the dial disc is used to directly rotate the receiver tuning condenser and for fine tuning the vernier knob in the centre of the dial disc is used.

2A.4 RF Gain Control

This control is located below and to the left of the condenser dial and is designated "RF Gain". Rotating this control varies the gain of the radio frequency and first intermediate frequency amplifying valves and is used to adjust the sensitivity of the receiver.

2A.5 Audio Gain Control

This control is located at the bottom left hand corner of the panel next to the telephone jacks and is designated "AF Gain". This control varies the input to the output valve and is used to adjust the audio frequency output to the telephones.

2A.6 Tone Control

This control is located on the right next to the "AF Gain" control and is designated "Tone", and attenuates the higher audio frequencies being fed to the output valve and is used to limit the high frequency response of the receiver with consequent reduction of certain types of noise

2A.7 Beat Frequency Oscillator-Note Control

This control is located at the right hand side of the panel and is designated "Beat Note". This control tunes the Beat Frequency Oscillator 1KC on either side of zero beat and is used to vary the frequency of the audible signal when receiving continuous wave telegraphy.

2A.8 Beat Frequency Oscillator On-Off Switch

This switch is located between the Beat Note and the RF Gain controls and is designated "BFO On", it connects the HT supply to the oscillator plate circuit of the beat frequency oscillator valve when in the "On" position.

2A.9 Netting Switch

This switch is located at the centre bottom of the panel and is a spring return type of switch. It is used to nett the receiver dial with any one of the four transmitter crystals or Master Oscillator frequency and when held down excites the oscillator circuit from the receiver power supply. The receiver dial is adjusted to tune exactly to the transmitter frequency by this means, or vice versa. During this operation the RF Gain control should be turned to the "Off" position (anti-clockwise) the BFO Switch turned to the "On" position and "CW RT" Switch to the "RT" position.

2A.10 Send-Receive Switch

This Switch is located to the right of the Netting Switch on the bottom of the panel. It is used to change from transmitter operation to receiver operation, and operates relays within the power supply and also a relay for changing over aerial from receiver circuit to transmitter circuit. It is not a main "On-Off" switch as this is located directly on the power supply.

2B. DESCRIPTIONS & OPERATIONS OF CONTROLS - TRANSMITTER

2B.1 Frequency Selector Switch

This is a 5 position switch located in the centre of the panel and selects any one of 4 crystal transmitting frequencies within the range 3 - 7.5 megacycles or switches to the master oscillator for variable frequency control within the above frequency range. An etched plate designated "Frequency" gives the approximate oscillator dial readings corresponding to the master oscillator frequency and indicates the 5 positions of the switch. X1, X2, X3, X4 being the 4 crystals and MO the master oscillator position.

2B.2 Oscillator Tuning Control

This control is to the left of the frequency switch and is coupled to a single gang condenser which is used to tune the crystal oscillator plate circuit to resonance with the particular crystal in use when using crystal control, and to vary the oscillator frequency of the electron coupled oscillator when using the variable frequency oscillator.

Rotating the outside dial provides a direct drive on the

tuning condenser for rough setting, a 40:1 action being provided by the centre bakelite disc for fine adjustment. This control is designated "Osc. Tuning".

2B.3 Amplifier Tuning Control

This control is located at the top centre of the panel and is indicated by an etched plate "Amp Tuning". This control rotates the single gang condenser tuning the resonant circuit in the plate circuit of the power amplifier (V2). Rotating this dial by the outside of the dial disc provides direct drive to this tuning condenser for rough setting. A 40:1 ratio vernier action is provided by the bakelite centre knob for fine adjustment. This Amp Tuning control is used to tune the P.A. plate current to resonance with the oscillator frequency under any aerial loading condition.

2B.4 Aerial Tuning Control

This control is located at the top left hand side of the panel and rotates a 2 gang condenser in the aerial circuit. Rotating this dial by the outside dial disc provides direct drive to the tuning condenser for rough setting. A 40:1 ratio vernier action is provided by the bakelite centre knob for fine adjustment. This control is used in conjunction with the "Amp Tuning" control in tuning the aerial system to the operating frequency of the transmitter.

2B.5 Key Jack

This jack is located at the bottom left-hand side of the panel into which is plugged a morse-key for CW transmission.

2B.6 Microphone Jack

This jack is located next to the key jack and is used to connect the microphone to the modulator grid circuit for R.T. transmission.

2B.7 Aerial Terminal

Aerial connection is provided at the left side of the ATR2B panel through a terminal mounted in a moulded bakelite housing.

2B.8 Earth Terminal

This terminal takes an earth connection or counterpoise

when used and is located in the top right hand corner of the panel. For normal service operation an earth or counterpoise connection is not required.

2B.9 Power Plug

This plug is located on the front panel of the ATR2B. This plug takes the 6 pin socket on the end of the connecting cable to the power supply. This socket will only fit one way owing to the polarisation of contacts.

2B.10 Main Power On-Off Switch

This switch is located in a recess on the front of the power supply unit and switches the primary circuits of the power supply sections, disconnecting the complete equipment from the power source.

2B.11 CW RT Switch

This switch is located in the bottom left hand corner of the front panel and makes all necessary circuit changes when rotated to either position.

CIRCUIT DESCRIPTIONS

3A Receiver

3A.1 General

The circuit arrangement used in the receiver of the ATR2B equipment is of the superhetrodyne type, using one RF amplifier stage ahead of the converter circuit. This is followed by two intermediate amplifier stages at 455 Kc., which in turn feed a diode detector. Audio amplification then follows in a voltage amplifier and a power amplifier. A beat frequency oscillator provides for the reception of continuous wave telegraphy. The filament circuit is arranged for 12 volt operation by using the valve filaments in a series parallel arrangement.

3A.2 Radio Frequency Circuits

The input to the RF amplifier valve, V4, is connected through a relay, RL1, to the primary of the aerial coil, L3.

The RF amplifier stage is of the tuned plated type being coupled to the converter grid circuit via the coupling condenser and the grid leak, R23.

3A.3 Converter Circuit

The valve is a triode hexode valve, the triode section being the local oscillator, mixing of oscillator and signal is accomplished in the hexode section.

3A.4 IF Amplifier Stages and Detector

The IF transformer T2 in the plate circuit couples the converter circuit to the grid of the first IF amplifier valve at 455 Kc. The IF amplifier valves V6 and V7 are coupled via the IF transformer T3. The transformer T4 in the plate circuit of V7 couples this valve to the diode plates in V7 where detection takes place, the rectified signal appearing across R33 at audio frequency.

3A.5 Audio Stages

The audio voltages developed across R33 are amplified in the hexode section of V8, the output of which is then fed into the grid of V9 via a coupling network and volume control. The transformer T6 in the plate circuit of V9 matches the plate circuit of the valve to a pair of 20,000 ohm impedance telephones. V9 is a pentode power amplifier valve used in triode connection.

3A.6 Beat Frequency Oscillator

The triode section of V8 is arranged as an oscillator at the IF frequency of 455 Kc. and is coupled into the detector circuit via C54. The "Beat Note" control condenser varies the frequency of this oscillator above and below 455 Kc. by 1000 cycles thus giving a variable beat note against signals arriving in the detector circuit via the IF channel.

3B. CIRCUIT DESCRIPTION OF TRANSMITTER

3B.1 General

The transmitter circuit used in ATR2B utilizes a pentode oscillator driving a beam power amplifier. When the unit is being used for RT, a further beam power tube is used as modulator.

3B.2 Oscillator Circuit

This circuit uses the pentode Valve V1 as an oscillator, any one of the four crystal frequencies or any master oscillator frequency within the range 3 - 7.5 megacycles, is selected with frequency selector switch, S1. Valve, V1, is tuned by condenser C1, and inductance L1 and the output is coupled to the grid circuit of the PA valve, V2, via the coupling network, CH1, C11, R9.

3B.3 Telegraphy

Provision for keying the transmitter is made by means of a key jack wired in the cathode circuits of V1 and V2.

3B.4 Telephony

A jack is provided on the front panel to allow connection of a single button carbon microphone to the grid circuit of the modulator valve V3, via T1. The plate circuit of this valve is choke coupled to the plate circuit of V2 through choke CH2.

3B.5 Power Amplifier Circuit

The PA amplifier valve V2 is a beam power valve operated as a Class C amplifier and is coupled to the aerial system via C18, C22, L2 and relay RL1.

3B.6 Aerial Tuning Circuit

The inductance L2 and condenser C15 and C16 tune the output and aerial circuits to the resonant frequency of the oscillator. The 0-100 ma meter M1 indicates the plate current flowing in V2 and is used to indicate correct tuning of C15 and C16 also to indicate when the oscillator circuit is tuned to resonance with the crystal in use when using crystal control.

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4. INSTALLATION & OPERATION OF ATR2B.

4.1 Setting Up

The procedure for setting up the ATR2B equipment is the same for both 12 volts DC operation and 240 volts AC operation, the appropriate power supply being used for the type of operation required. The ATR2B equipment

and the desired power supply are set up in a convenient location for operation. Releasing the two screws on the front of the cabinet allows the front cover to be removed, exposing the tuning controls.

4.2 Connecting the Power Supply

The connecting cable carrying the two 6 pin sockets is then connected to the 6 pin plug on the ATR2B unit. This plug is located in the front panel. The remaining end of this cable is plugged into the power supply used. The receptacle on the power supplies for this plug is located behind a flap on the power supply case.

4.3 Connecting the Aerial

The aerial terminal is located on the left hand side of the ATR2B panel and takes the form of a terminal projecting from a bakelite housing. This connection is used for operation on a single wire fed aerial or a straight wire 30 - 50 ft. in length.

4.4 Tuning the Receiver

With the equipment connected as outlined in the previous section the switch on the power supply designated the "Main Power" is switched on with the "Send-Receive" switch in the "Receive" position. This supplies high tension voltage to the receiver section and filament power to all valves in the unit. The RF Gain control is rotated in a clockwise direction, this brings the RF Gain or sensitivity of the receiver to maximum. The audio gain control is rotated in a clockwise direction increasing the audio output of the receiver to maximum.

Rotating the receiver tuning dial tunes the receiver over the calibrated range 3 - 7.5 mcs. Any MCW or telephone signals will then be heard in the telephones. Re-adjustment of the RF gain control and the AF gain control adjusts the received signal to the most comfortable listening level. Use of the tone control may be made to reduce noise level or increase clarity. The setting of this control is governed primarily by the receiving conditions. For the reception of CW telegraph the switch marked "BFO" is switched on. In this condition when the signal is tuned on the receiver tuning dial a hetrodyne note is heard in the telephones. The pitch of this beat note can be adjusted to a suitable frequency by means of the "Beat Note" control.

4.5 Tuning the Transmitter

With the main power switched on as above and placing the "Send-Receive" switch in the "Send" position, the high tension supply is connected to the transmitter and the aerial changed over for transmitting operation by means of the relay RL1. With the frequency switch set to the desired position and CW-RT switch in the RT position, the aerial and PA tuning condensers are rotated to 180° (fully clockwise.)

Crystal Control Operation

For crystal control operation, the frequency switch is set to the desired crystal position and oscillator tuning condenser rotated to indicate the maximum reading on MA meter (HT). The oscillator tuning condenser is then slightly detuned to allow prompt starting of the crystal at all times.

Master Oscillator Control

For master oscillator control, the switch is set to "M.O." the approximate frequency calibrations of the oscillator tuning condenser are listed on the frequency control plate. The oscillator tuning condenser should therefore be set to its approximate position. For accurately calibrating the master oscillator, the send-receive switch should be placed in the "Receive" position and the Netting switch held down. The BFO switch should be turned on and the RF Gain Control turned to the maximum counter clockwise position. The receiver dial is then set to the required frequency and Master Oscillator tuning dial rotated slightly until thesignal from the Master Oscillator is heard to beat against receiver frequency. For accurate adjustment the oscillator tuning condenser should be finally adjusted for zero beat after the amplifier and aerial have been adjusted for correct loading and output.

Power Amplifier and Aerial Tuning

The tuning adjustment of the power amplifier and aerial are identical for either crystal or master oscillator control and should be carried out as follows.

The power amplifier tuning control should be rotated anti-clockwise until the current is indicated by the Amp HT registers approximately 10-15 MA. Rotating the aerial tuning control will cause the "Amp HT2 meter to rise to approximately 70 milliamps. The "Amp Tuning" is then retuned to cause a dip. "Aerial Tuning" is then re-adjusted to cause an "Amp HT

current rise again to approximately 70 milliamps and by successive adjustment of aerial tuning and amp tuning the final adjustment is correct when the "Amp HT" meter shows a dip to approximately 60-70 milliamps when the amp tuning is rotated.

4.6 Transmitter Frequency Doubling with Crystals

It is possible in the ATR2B equipment to operate at a frequency of twice that of the crystals having a fundamental frequency between 3 and 3.75 mcs. e.g. should it be desired to operate on a frequency of 6 mc., a 3 Mc. crystal could be used and the output circuit tuned to 6 Mc. For the same reason care should be exercised in tuning up the transmitter that the circuit is tuned to the correct frequency desired for operation, that is the correct dip is selected on the "Amp HT" meter. In fundamental operation the correct dip will always be to 15 milliamps or less. On harmonic operation this dip is usually a little over 15 milliamps. The following procedure should be followed to double transmitter frequency with crystals of fundamental frequencies between 3 mc. and 3.75 mc. Doubled frequencies using crystals within this range will be between 6 and 7.5 mc. With aerial tuning at 180° (fully clockwise) Amp tuning is rotated anti-clockwise from 180°. The first dip indicated on the "Amp HT" meter is the fundamental frequency. Rotating Amp Tuning control past this dip, a second dip occurs at a lower dial reading. This is the doubled frequency (First harmonic). Tuning then proceeds as for fundamental operation. (See sect. 4.5). As the Master Oscillator covers the entire range of 3 - 7.5 mcs. it is not necessary to double when using Master Oscillator control.

4.7 Protection of Personnel

In the design of the ATR2B equipment every precaution has been taken to protect operating personnel from source of high voltage. With the equipment set up for operation there is no point accessible where accidental contact can be made with dangerous voltages. At the transmitter aerial terminal and the aerial lead, RF voltage appears but the impedance of the line is low and the voltage exposed cannot reach dangerous potentials.

4.8 Precautions in Operation

The ATR2B equipment is designed for mobile service operation but unnecessary mechanical abuse should be avoided as far as possible. This applies particularly to receiver tuning controls if accurate dial calibration is to be maintained. All connecting cables should be connected before any of the power supply switches are switched on.

The "Send-Receive" switch should always be placed in the "Receive" position when the set is first turned on, this allows the transmitter valve filaments time to reach operating temperature before the Transmitter HT supply is applied.

In withdrawing the chassis unit from the cabinet, care should be exercised as the small size of this equipment requires very small clearance between the components and the cabinet and if this withdrawal operation is done carelessly damage would result to certain components. Valves should never be removed from their sockets with power switched on or the set operated with any valves removed, as the series-parallel filament wiring requires all valves to be in circuit for correct voltage division of the filament supply.

5. SERVICE INSTRUCTIONS

5A. Transmitter Receiver Unit ATR2B

5A.1 Withdrawal of Chassis from Cabinet

The chassis unit is held in the cabinet by means of eleven oxidised screws. Three of these screws are located along the top front edge of the cabinet, three along the underneath edge of the cabinet, two at each side of the cabinet and one at the rear. Removal of these screws permits the withdrawal of the chassis from the cabinet.

5A.2 Routine Inspection

Routine inspection involves the removal of the chassis from the cabinet as outlined above. This inspection should include valves seated tightly in their respective sockets, and freedom from dust and foreign matter, particularly between the plates of the variable condenser and aerial relay contacts. Inspection of the underneath wiring should also be made. This inspection would include mounting of components, condensers and resistors firmly in place, overheating of resistors or any other apparent weakness of components.

5A.3 Valve replacement

With the chassis and panel removed from the cabinet as in previous section all valves are accessible for checking and replacement. Valve replacement diagram is attached to inside of cabinet. Removal of grid clips on valves carrying grid caps permit withdrawal of these valves

from their sockets after the retaining clips on the valve bases have been loosened.

5B. POWER SUPPLY TYPE J.

5B.1 General

This HT supply consists of a motor-generator with appropriate high tension filter network, C1, C2, CH2, and is operated from a primary source of 12 volts DC obtained from a 12 volt accumulator. As a safeguard against short circuit or overload the input to the generator is protected by a short circuit and overload circuit breaker, S1.

5B.2 Removal of Chassis from Cabinet

To remove the chassis from the cabinet, it is necessary to first remove the back. This is accomplished by unscrewing the screws which are used to hold the back panel, thus exposing the chassis. The chassis is then removed by taking out chassis holding bolts on under side of cabinet -- the chassis will then slide out.

5B.3 Routine Inspection

With the motor generator chassis removed as in the previous section routine inspection should include mounting of components, over heating or any apparent weakness of wiring. Particular attention should be taken of the condition of Commutator and brushes also contacts on relays.

5C. POWER SUPPLY TYPE K.

5C.1 Removal of Chassis from Cabinet

Removal of eight round head screws on the outside edge of the cabinet lid allows the removal of the cabinet lid. Removing the six screws around the edge of the front panel and removing the four holding screws in the base in the cabinet allows the chassis to be withdrawn from the cabinet for inspection or service.

5C.2 Routine Inspection

Removal of the cabinet lid as above allows inspection for dust or foreign matter. Valves should also be checked for seating in their respective sockets. Further inspection should be conducted at intervals of the underneath wiring. Removal of the chassis as in

previous section permits checking of components for firm mounting, overheating or apparent weakness.

5C.3 Replacement of Valves

Removal of the cabinet lid as in section 5C1 permits testing or replacement of the valves.

6. RECEIVER ALIGNMENT

6.1 Necessary Equipment

Should it become necessary to realign the receiver the following procedures should be followed. The principal equipment necessary for this operation would be a signal generator with suitable dummy antenna of 400 ohms non inductive resistance and an output meter with an impedance of 12,000 ohms.

6.2 Intermediate Frequency Alignment

With the ATR2B equipment removed from the case and connected as in Section 4, the output meter is connected to one of the telephone jacks. During adjustment a pair of telephones may be used in the remaining jack for monitoring the signal but when taking measurements this should be removed to give correct loading for an accurate output measurement. With the generator connected between the grid of V and earth and set on 455 Kc. with 30% modulation at 400 cycles the adjusting screws on the IF transformers are then adjusted for maximum output signal. Two adjusting screws are provided on each IF transformer, one at the top of the transformer being accessible from the top of the chassis, the other projecting through the bottom of the IF transformer and accessible from underneath the chassis. Care should be exercised that the setting of the generator frequency is accurate to 455 Kc. and adjusting screws are checked carefully to insure each is tuned to resonance. The overall sensitivity measurement on the IF channel from the grid of V to an output of 6 milliwatts in a receiver in normal operating condition should be approximately 15 microvolts.

6.3 BFO Adjustment

With the generator and receiver equipment connected as in previous section and the generator set to 455 Kc. modulation is removed from the generator and the BFO switch on the ATR2B equipment is turned to the "On" position. With the "Beat Note" control set to the

centre line on the name plate, the adjusting screw on the top of the BFO coil (see plate 3 and placement diagram inside ATR2B cabinet) is adjusted until zero beat is heard in the telephones.

6.4 Alignment of RF Stages

With the ATR2B equipment connected as in section 6.2 the signal generator is connected between receiver aerial and earth through the dummy antenna of 400 ohms. Alignment of the RF stages can then proceed.

With the generator set to 3.2 mc. and the generator signal tuned in on the receiver, the inductance trimming screws for the aerial and RF stages can be adjusted for maximum output. These screws project through the bottom of the coil cans and are accessible from underneath the chassis through holes in the terminal strip mounted over the coil unit. The aerial and RF screws are the two nearest the front panel. These inductance adjustments are made to produce maximum output as indicated on the output meter. Next the generator is set at 7 Mc. and the signal tuned in on the receiver. The aerial and RF parallel trimmers are then adjusted for maximum output, these are located along the top of the mount bracket (see diagram inside cabinet, also plate 3). The overall sensitivity of the receiver from the aerial terminal to an output of 6 milliwatts in a receiver in normal operating condition should be better than 5 microvolts.

6.5 Dial Calibrations

Should it become necessary to reset the dial calibrations, a thorough inspection should be made of the gang and dial drive movements for tight set screws and correct movement. The dial calibrations should be set against a reliable source of frequency preferably 1000 Kc. crystal oscillator which would indicate every megacycle calibration. If this equipment is available the following procedure should be used.

With the dial set to 3 megacycles, the 3 megacycles signal from the crystal oscillator or other reliable signal source is adjusted for maximum output with the oscillator inductance trimming screw. This screw projects through the coil unit and is accessible underneath the chassis. This is the screw towards the rear of the chassis. The receiver dial is then set to 7 Mc. and the crystal oscillator signal or other signal source being used is adjusted for maximum output with the parallel trimmer located to the rear of the

gang mount bracket. These adjustments should be checked alternately two or three times as slight coupling exists between the two adjustments. After the dial calibrations have been set alignment of aerial and RF stages should be checked as previous section.

7. TRANSMITTER ADJUSTMENT

The type of transmitter circuit used precludes the possibility of making any particular adjustment, but certain procedures can be followed to check for normal operation. With the aerial circuit completely out of resonance and crystals inserted, the dip, when the amp tuning control is tuned through resonance at fundamental frequency, should be between 10 and 15 milliamps for crystals of normal activity. This dip indicates that the crystal oscillator and amplifier valve and their associated tuning circuits are functioning normally. To check aerial loading circuits for normal operation, connect to the aerial provided with the equipment. With this connection the amp tuning and aerial tuning are adjusted, following the tuning procedure outlined in section 4.5 until the loading indicated on the amp HT meter is between 60 and 70 milliamps. The same procedure is adopted in the case of the master oscillator, particular attention being given to uniformity of output over the tuning range.

8. FAULT FINDING

Failure of the ATR2B equipment in service may be caused by some superficial fault which can frequently be corrected by operating personnel. A summary of possible faults is given below and suggestions for their correction.

Symptom	Possible Fault	Correction
Noises in receiver	Faulty telephones	Inspect, repair or replac
	Aerial system	" " " "
	Valves or grid clips loose	Inspect and tighten
	Bad battery connection	" " "
	Faulty connecting cable or plugs	Inspect, repair or replac
	Interference from local sources (power lines etc.)	Check for noise with no aerial connected.
Receiver dead	Power failure	Check primary source
	Faulty connecting cable	Inspect, repair or replac
	Valves faulty	Inspect, repair or replac
	Faulty telephones	Test or replace.

Symptom	Possible Fault	Correction
Transmitter dead	Power failure	Check primary source
	Faulty valves	Inspect or replace
No "AMP HT" current when key closed	Key, or key connections faulty	Inspect, repair or replace.
	Faulty connecting cables	Test, repair or replace.
Amp HT fails to dip when transmitter tuned	Crystal faulty	Replace
	Supply voltages low	Check primary source
	Incorrect tuning	Aerial circuits must be off resonance for full dip to occur.
	Faulty valves in transmitter	Test or replace.
Transmitter will not load	Faulty aerial connection	Check aerial connection and aerial change over relay.
Transmitter will not key	Short in key lead, key, or key jack May be on RT.	Check, repair or replace

9. VOLTAGE ANALYSIS

The following charts indicate the voltage that should be obtained with equipment in normal operating condition when the stated input voltages are applied to the respective power supplies. All readings taken to chassis with 1000 ohm per volt meter. Voltage readings may vary plus or minus 5% due to normal variations in components.

Transmitter voltages measured with aerial loaded and "Amp HT" current adjusted to 70 MA.

Receiver voltages measured with all controls turned fully clockwise.

12 Volts DC Operation Using Power Supply Type J.

Input 12V DC
Pin No. according to RMA Code.

Circuit Symbol	Valve type & Application	1	2	3	4	5	6	7	8
V1	6F6G Osc.	-	5.2	275	130	-	-	10.6	6.5
V2	807 P.A. ~~Modulator~~	10.8	318	-	18	53	Plate Cap. 325		
V3	807 MOD ~~Power~~ Amplifier	5.5	260	-	20	E	Plate Cap. 320		
V4	6U7G RF Amplifier	E	5.5	185	80	2.9	-	10.9	2.9
V5	6J8G Converter	E	E	222	80	-	125	5.4	2.4
V6	6U7G 1st IF Amplifier	E	5.5	222	43	1.5	-	10.9	1.5
V7	6G8G 2nd IF Amplifier and Detector	E	5.5	222	-	-	43	5.5	1.4
V8	6J8G 1st Audio Amp. BFO Osc.	E	E	87	18	-	BFO ON 14	5.5	.75
V9	6V6G Power Output	E	E	215	215	-	-	5.4	11.5

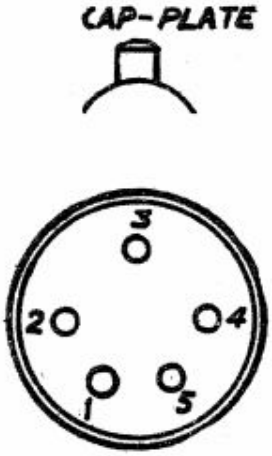
Primary Current 12V DC Input

Transmitter only "Amp HT" to 70 MA

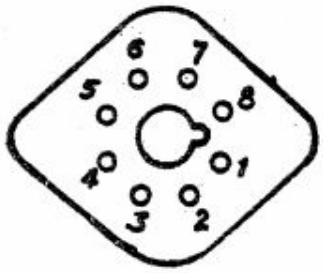
Receiver only 9.2 amps

W.T.
Transmitter Key up 9.2 amps
Key down 11.5 amps

R.T.
Transmitter 14.3 amps.



Underneath view.
807 Power Amp. Socket
& Modulator Socket.



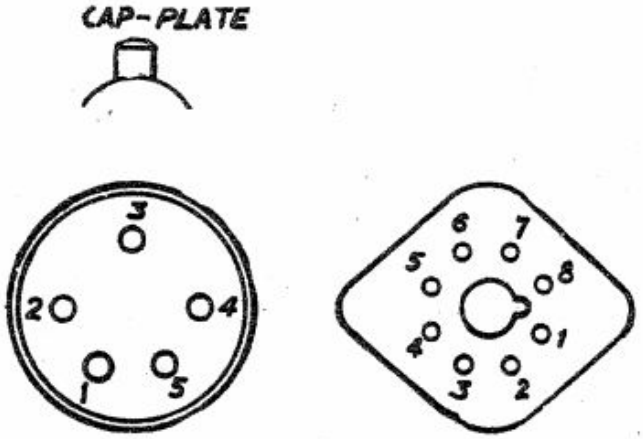
Underneath view. All other sockets. (Standard Octal).

240 Volts AC operation using Power Supply Type K. 23.

240 Volts AC input.
Measurements taken in R.T. Position

Pin No. according to RMA Code.

Circuit Symbol	Valve type & Application	1	2	3	4	5	6	7	8	
V1	6F6G Osc.	E	5.2 AC	290	145	-	-	11 AC	7	Receiver HT 230V Transmitter HT 345V
V2	807 P. A, ~~Modulator~~	11	325	-	20	5.6 AC	Cap. Plate 345			Loaded to 75 MA on "Amp HT"
V3	807 MOD. ~~Power~~ Amplifier	5.6	280	-	22.5	E	Cap. Plate 340			Power Consumption 230V. AC Input Rec. 130 Watts CW Key Down 165 watts 150 "
V4	6U7G RF Amplifier	E	5.6 AC	195	85	3	-	11 AC	3	
V5	6J8G Converter	E	E	230	85	-	130	5.4 AC	2.5	
V6	6U7G 1st IF Amplifier	E	5.6 AC	230	44	1.5	-	11 AC	1.5	
V7	6G8G 2nd IF Amplifier	E	E	230	-	-	44	5.6 AC	1.2	
V8	6J8G 1st Audio Amp BFO Oscillator	E	E	90	19	-	15 BFO ON	5.4 AC	.75	
V9	6V6G Power Output	E	E	220	220	-	-	5.4 AC	12	



Underneath view.
807 Power Amp. Socket
& Modulator Socket.

Underneath view. All other sockets. (Standard Octal).

PARTS LIST R.A.A.F. Y10D/70418

Transmitter-Receiver ATR2B

Circuit Diagram Plate

Circuit Symbol	Description	Manufacturer	Radio Corp. Part No.	R.A.A.F. Ident.No.
	Capacitors			
C1	Condenser Variable Single Gang	1	PC419	Y10C/66370
C2	Condenser Mica 1000V. .0001 mfd.	3	PC110	" 66374
C3	Condenser Neg.Temp.Co-eff. 30mmfd.	2	PC331	" 66432
C4	Condenser Mica 1000V. .002 mfd.	3	PC168	" 66239
C5	Condenser Mica 2000V. 5mmfd.	1	PC380	" 65434
C6	Condenser Mica 1000V. .01 mfd.	3	PC145	" 65002
C7	Condenser Paper 200V. .25 mfd.	4	PC146	" 66330
C8	Condenser Mica 1000V. .01 mfd.	3	PC145	" 65002
C9	Condenser Mica 1000V. .00025 mfd.	3	PC126	" 66325
C10	Condenser Mica 1000V. .01 mfd.	3	PC145	" 65002
C11	Condenser Mica 1000V. .002 mfd.	3	PC168	" 66329
C12	Condenser Mica 1000V. .01 mfd.	3	PC145	" 65002
C13	Condenser Paper 400V. .5 mfd.	4	PC115	" 65845
C14	Condenser Paper 400V. .1 mfd.	4	PC103	" 65883
C15	Condenser Mica 1000V. .01 mfd.	3	PC145	" 65002
C16	Condenser Mica 1000V. .005 mfd.	3	PC249	" 65722
C17	Condenser Variable Single Gang 12-480mmfd.	1	PC416	" 66373
C18	Condenser Variable 2 Gang 24-960mmfd.	1	PC418	" 66375
C19	Condenser Mica 1000V. .002 mmfd.	3	PC168	" 66329
C20	Condenser Mica 1000V. .01 mfd.	3	PC145	" 65002
C21	Condenser Mica 1000V. .005 mfd.	3	PC249	" 65722
C22	Condenser Mica 1000V. .01 mfd.	3	PC145	" 65002
C23	Condenser Mica 1000V. .0001 mfd.	3	PC110	" 66324
C24	Condenser Mica 1000V. .003 mfd.	3	PC383	" 65669
C25	Condenser Midget 7 Plate 24 mmfd.	1	PC342	" 66374
C26	Condenser Variable 3 Gang (AER.Section)	1	PC403	" 66371
C27	Condenser Paper 200V. .1 mfd.	4	PC218	" 65736
C28	Condenser Paper 400V. .05 mfd.	4	PC109	" 65738
C29	Condenser Variable 3 Gang (R.F. Section)	1	PC403	" 66371
C30	Condenser Mica 1000V. .003 mfd.	3	PC383	" 65669
C31	Condenser Midget 7 Plate 24 mmfd.	1	PC342	" 66374

Circuit Symbol	Description	Manufacturer	Radio Corp. Part No.	R.A.A.F. Ident.No.
C32	Condenser Paper 400V. .1 mfd.	4	PC103	Y10C/65883
C33	Condenser Mica 1000V. .0001 mfd.	3	PC110	" 66324
C34	Condenser Paper 200V. .1 mfd.	4	PC218	" 65736
C35	Condenser Midget 7 Plate 24 mmfd.	1	PC342	" 66374
C36	Condenser Mica 1000V. .0001 mfd.	3	PC110	" 66324
C37	Condenser Mica 1000V. .003 mfd.	3	PC383	" 65669
C38	Condenser Variable 3 Gang (Osc. Section)	1	PC403	" 66371
C39	Condenser Mica 1000V. .003 mfd.	3	PC383	" 65669
C40	Condenser Mica 1000V. .001 mfd.	3	PC108	" 66328
C41	Condenser Silver Mica 1000V. 100 mmfd.	1	PC294	" 65667
C42	Condenser Silver Mica 1000V. 100 mmfd.	1	PC294	" 65667
C43	Condenser Paper 200V. .1 mfd.	4	PC218	" 65736
C44	Condenser Silver Mica 1000V. 100 mmfd.	1	PC294	" 65667
C45	Condenser Paper 400V. .25 mfd.	4	PC128	" 65741
C46	Condenser Silver Mica 1000V. 100 mmfd.	1	PC294	" 65667
C47	Condenser Paper 200V. .1 mfd.	4	PC218	" 65736
C48	Condenser Silver Mica 1000V. 100 mmfd.	1	PC294	" 65667
C49	Condenser Paper 400V. .05 mfd.	4	PC109	" 65738
C50	Condenser Paper 600V. .01 mfd.	4	PC140	" 65876
C51	Condenser Silver Mica 1000V. 100 mmfd.	1	PC294	" 65667
C52	Condenser Mica 1000V. .0001 mfd.	3	PC110	" 66324
C53	Condenser Paper 200V. .1 mfd.	4	PC218	" 65736
C54	Condenser Mica 1000V. .00005 mfd.	3	PC141	" 65668
C55	Condenser Electrolytic 40V. 25 mfd.	2	PC269	" 65751
C56	Condenser Mica 1000V. .0001 mfd.	3	PC110	" 66324
C57	Condenser Mica 1000V. .001 mfd.	3	PC108	" 66328
C58	Condenser Midget 5 Plate 12 mmfd.	1	PC382	" 66372
C59	Condenser Silver Mica 1000V. 100 mmfd.	1	PC294	" 65667
C60	Condenser Mica 1000V. .0001 mfd.	3	PC110	" 66324
C61	Condenser Mica 1000V. .002 mfd.	3	PC168	" 66329
C62	Condenser Mica 1000V. .01 mfd.	3	PC145	" 65002
C63	Condenser Paper 600V. .01 mfd.	4	PC140	" 65876
C64	Condenser Electrolytic 40V. 25 mfd.	2	PC269	" 65751

Circuit Symbol	Description	Manufacturer	Radio Corp. Part No.	R.A.A.F. Ident.No.
	Resistors			
R1	Resistor Carbon ½ watt 50000 ohm	7	PR160	Y10C/66268
R2	Resistor wire wound ½ watt 500 ohm	7	PR274	" 65723
R3	Resistor carbon 1 watt 5000 ohm	7	PR304	" 66273
R4	Resistor wire wound 5 watt 10000 ohm	7	PR400	" 65175
R5	Resistor carbon 1 watt 5000 ohm	7	PR304	" 66273
R6	Resistor carbon 1 watt 5000 ohm	7	PR304	" 66273
R7	Resistor wire wound 5 watt 100000 ohm	7	PR400	" 65175
R8	Resistor carbon ½ watt 10000 ohm	7	PR103	" 65760
R9	Resistor carbon 1 watt 10000 ohm	7	PR235	" 66379
R10	Resistor wire wound 3 watt 250 ohm	7	PR260	" 65231
R11	Resistor wire wound 3 watt 200 ohm	7	PR206	" 65171
R12	Resistor carbon 4x100 ohm	2	PR406	" 65571
R13	Resistor wire wound ½ watt 20: ohm	7	PR231	" 65714
R14	Resistor carbon 2 watt 50000 ohm	7	PR324	" 66040
R15	Resistor wire wound 3 watt 3000 ohm	7	PR402	" 65252
R16	Resistor wire wound 1 watt 40 ohm	7	PR342	" 66378
R17	Resistor wire wound 5 watt 10000 ohm	7	PR400	" 65175
R18	Resistor volume control 10,000 ohm	6	PR358	" 65450
R19	Resistor wire wound 3 watt 120 ohm	7	PR401	" 66382
R20	Resistor wire wound ½ watt 400 ohm	7	PR268	" 65621
R21	Resistor carbon 2 watt 50000 ohm	7	PR363	" 65228
R22	Resistor carbon ½ watt 5000 ohm	7	PR250	" 66264
R23	Resistor carbon ½ watt 1 megohm	7	PR246	" 66311
R24	Resistor wire wound ½ watt 400 ohm	7	PR268	" 65621
R25	Resistor carbon ½ watt 50000 ohm	7	PR160	" 66268
R26	Resistor carbon ½ watt 20,000 ohm	7	PR166	" 66309
R27	Resistor carbon ½ watt 50,000 ohm	7	PR160	" 66268
R28	Resistor carbon ½ watt 100000 ohm	7	PR103	" 65730
R29	Resistor wire wound ½ watt 250 ohm	7	PR259	" 65720
R30	Resistor carbon 1 watt 10000 ohm	7	PR235	" 66379
R31	Resistor carbon 1 watt 30,000 ohm	7	PR156	" 66380
R32	Resistor carbon ½ watt 100000 ohm	7	PR103	" 65760

Circuit Symbol	Description	Manufacturer	Radio Corp. Part No.	R.A.A.F. Ident. No.
R33	Resistor wire wound ½ watt 400 ohm	7	PR268	Y10C/65621
R34	Resistor carbon ½ watt 1 megohm	7	PR246	" 66311
R35	Resistor carbon ½ watt 100000 ohm	7	PR103	" 65760
R36	Resistor carbon ½ watt 1 megohm	7	PR246	" 66311
R37	Resistor carbon ½ watt 2000 ohm	7	PR253	" 66308
R38	Resistor carbon ½ watt 5000 ohm	7	PR250	" 66264
R39	Resistor carbon ½ watt 1000 ohm	7	PR252	" 66261
R40	Resistor carbon ½ watt 500,000 ohm	7	PR245	" 66310
R41	Resistor carbon ½ watt 20,000 ohm	7	PR166	" 66309
R42	Resistor carbon ½ watt 250,000 ohm	7	PR249	" 66269
R43	Resistor carbon ½ watt 200,000 ohm	7	PR255	" 65763
R44	Volume Control 1 megohm	1	PR275	" 65449
R45	Tone Control .5 megohm	1	PR514	" 65451
R46	Resistor wire wound ½ watt 400 ohm	7	PR268	" 65621
	Valves			
V1	Transmitter Crystal Oscillator Valve	Type 6F6G	PM236	Y10E/75005
V2	Transmitter Power Amplifier Valve	" 807	PM282	Y10E/55202
V3	Transmitter Modulator Valve	" 807	PM282	Y10E/55202
V4	Receiver Radio Freq. Amp. Valve	" 6U7G	PM261	Y10E/55249
V5	Receiver converter stage valve	" 6J8G	PM222	Y10E/75085
V6	Receiver Int. Freq. Amp. Valve	" 6U7G	PM261	Y10E/55249
V7	Receiver Int. Freq. Amp. & Detector Valve	6G8G	PM667	Y10E/75025
V8	Receiver 1st. Audio Amp. & B.F.O. Valve	6J8G	PM222	Y10E/75085
V9	Receiver Power Output Valve	" 6V6G	PM383	Y10E/55248
	Inductors			
L1	C.O. Tank Coil	1	PT539	Y10D/70609
L2	P.A. Tank Coil	1	PT457	" 70593
L3	Aerial Coil	1	PT524	" 70594
L4	R.F. Coil	1	PT452	" 70595
L5	Oscillator Coil	1	PT453	" 70596

Circuit Symbol	Description	Manufacturer	Radio Corp. Part No.	R.A.A.F. Ident. No.
	Transformers			
T1	Microphone transformer	1	PT303	Y10A/55835
T2	455 Kc. I.F. transformer	1	PT449	" 55836
T3	455 Kc. I.F. transformer	1	PT449	" 55836
T4	455 Kc. I.F. transformer	1	PT447	" 55837
T5	455 Kc. B.F.O. transformer	1	PT450	" 55838
T6	Output transformer	1	PT454	" 55513
	Chokes			
CH1	R.F. Choke	1	PT340	Y10C/66386
CH2	Modulation Choke	1	PT515	" 66385
CH3	R.F. Choke	1	PT340	" 66386
	Switches			
S1	5P 4W Switch	1	PM784	Y10F/80301
S2	4P 2W Switch	1	PM740	" 80100
S3	SP. DT. Toggle Switch	5	PM744	G5A/5048
S4	SP. ST. Toggle Switch	5	PM743	G5G/5124
S5	DP. ST. Toggle Switch	10	PM547	Y10F/80285
	Meter			
M1	0-100 M/A. Meter (2")	11	PM591	Y10A/55840
	Relay			
RL1	Aerial change over relay	9	PM710	Y10F/80287
	Plug			
P1	Plug - Jones type	1	A100/276	Y10H/90377
	Jacks			
J1	Key Jack	1	A102/266	Y10H/90189
J2	Microphone jack	1	A102/266	" 90189

Circuit Symbol	Description	Manufacturer	Radio Corp. Part. No.	R.A.A.F. Ident.No.
J3	Telephone jack	1	A102/266	Y10H/90189
J4	Telephone jack	1	A102/266	" 90189
	Pilot Lamps			
PL1	3.8V. .3A Pilot Lamps Screw type		PM474	G5A/25253
PL2	" " " " " "		PM474	" 25253
PL3	" " " " " "		PM474	" 25253
PL4	" " " " " "		PM474	" 25253

PARTS LIST R.A.A.F. Y10D/70353

Power Supply Type J.

12 volts DC for ATR25

Circuit Diagram Plate

Circuit Symbol	Description	Manufacturer	Radio Corp. Part No.	R.A.A.F. Ident.No.
	Capacitors			
C1	Condenser Electrolytic 525 V. 16 mfd.	2	PC298	Y10C/66259
C2	Condenser Paper 400 V. .5 mfd.	4	PC115	" 65845
C3	Condenser Paper 200V. 1 mfd.	4	PC182	" 66435
C4	Condenser Electrolytic 12 V. 500 mfd.	2	PC296	" 65757
C5	Condenser Paper 200 V. 1 mfd.	4	PC182	" 66435
C6	Condenser Paper 400 V. .25 mfd.	4	PC128	" 65741
	Resistors			
R1	Resistor wire wound .53 ohm	1	PR517	Y10C/66383
R2	Resistor wire wound 50 ohm 3 watt	7	PR226	" 65623
R3	Resistor wire wound 50 ohm 3 watt	7	PR226	" 65623
R4	Resistor carbon 250 ohm 1/2 watt	7	PR259	" 65720
	Chokes			
CH1	High tension choke	1	PT518	Y10C/66387
CH2	Hash choke	1	PT520	" 66041
CH3	Filter choke	1	PT108	" 66389
	Relays			
RL1	Relay 12 volt	1	PM708	Y10F/80288
RL2	Relay 12 volt	1	PM804	" 80289
	Switch			
S1	Circuit Breaker 12V. 16A	12	PM751	Y10F/80286

Circuit Symbol	Description	Manufacturer	Radio Corp. Part No.	R.A.A.F. Ident.No.
	Motor Generator			
MG1	Motor Generator 12 volts	13	PM739	Y10A/55846

PARTS LIST R.A.A.F. Y10D/70354

Power Supply Type K.

Circuit Diagram Plate

Circuit Symbol	Description	Manufacturer	Radio Corp. Part No.	R.A.A.F. Ident.No.
	Capacitors			
C1	Condenser Electrolytic 50V. 150 mfd.	2	PC364	Y10C/65753
C2	Condenser Electrolytic 350 V. 24 mfd.	2	PC276	" 65660
C3	Condenser Electrolytic 350 V. 24 mfd.	2	PC276	" 65660
C4	Condenser Electrolytic 525 V. 16 mfd.	2	PC298	" 66259
C5	Condenser Electrolytic 350 V. 24 mfd.	2	PC276	" 65660
C6	Condenser Electrolytic 350 V. 24 mfd.	2	PC276	" 65660
C7	Condenser Electrolytic 525 V. 16 mfd.	2	PC298	" 66259
C8	Condenser Paper 400V. .25 mfd.	4	PC128	" 65741
C9	Condenser Paper 400V. .25 mfd.	4	PC128	" 65741
	Resistors			
R1	Resistor wire wound 2 watt 50,000 ohm	7	PR363	Y10C/65228
R2	Resistor carbon 50,000 ohm	7	PR115	" 66381
R3	Resistor carbon 50,000 ohm	7	PR115	" 66381
R4	Resistor carbon 50,000 ohm	7	PR115	" 66381
R5	Resistor wire wound 50 ohm 3 watt	7	PR226	" 65623
R6	Resistor carbon 50,000 ohm	7	PR115	" 66381
R7	Resistor carbon 250 ohm 1/2 watt	7	PR259	" 65720
R8	Resistor carbon 250 ohm 1/2 watt	7	PR259	" 65720
	Transformers			
T1	Power transformer (transmitter)	1	PT516	Y10A/55583
T2	Power transformer (receiver)	1	PT517	" 55839
	Chokes			
CH1	Filter choke (300 ohm)	1	PT518	Y10C/66387
CH2	Filter choke (500 ohm)	1	PT108	" 66389

Circuit Symbol	Description	Manufacturer	Radio Corp. Part No.	R.A.A.F. Ident.No.
	Valves			
V1	Type 5V4G Tube		PM731	Y10E/75094
V2	Type 5V4G Tube		PM731	" 75094
V3	Type 5V4G Tube		PM731	" 75094
	Switch			
S1	DP.ST Toggle Switch	10	PM547	Y10F/80285
	Relay			
RL1	Relay .2500 ohm coil	9	PM709	Y10F/8029C

LIST OF MANUFACTURERS

1. Radio Corporation Pty. Ltd.,
   126 Grant Street, South Melbourne, Vic.

2. Ducon Condensers Co. Pty. Ltd.,
   73 Burke Street, Waterloo, N.S.W.

3. Simplex Products Pty. Ltd.,
   716 Parramatta Road, Petersham, N.S.W.

4. Chanex Condensers,
   73 Burke Street, Waterloo, N.S.W.

5. H. A. Chivers,
   140 King Street, Melbourne, Vic.

6. A. G. Naughton & Co.,
   5 Montclair Ave., Brighton, Vic.

7. International Resistance Co.,
   55 Addison Road, Marrickville. N.S.W.

8. International Radio Co. Ltd.,
   403 Bourke Street, Melbourne, Vic.

9. Standard Telephones & Cables Pty. Ltd.,
   252 Botany Road, Alexandria, N.S.W.

10. Arrow Electric Switches Ltd.,
    Hanger Lane, London, W.5. England.

11. Triplett Electrical Instrument Co.,
    Bluffton, Ohio, U.S.A.

12. John Ogden Industries Ltd.,
    145 Neville Street, Middle Park, Vic.

13. F. W. Davey & Co.,
    25 Berkeley Street, Carlton, Vic.

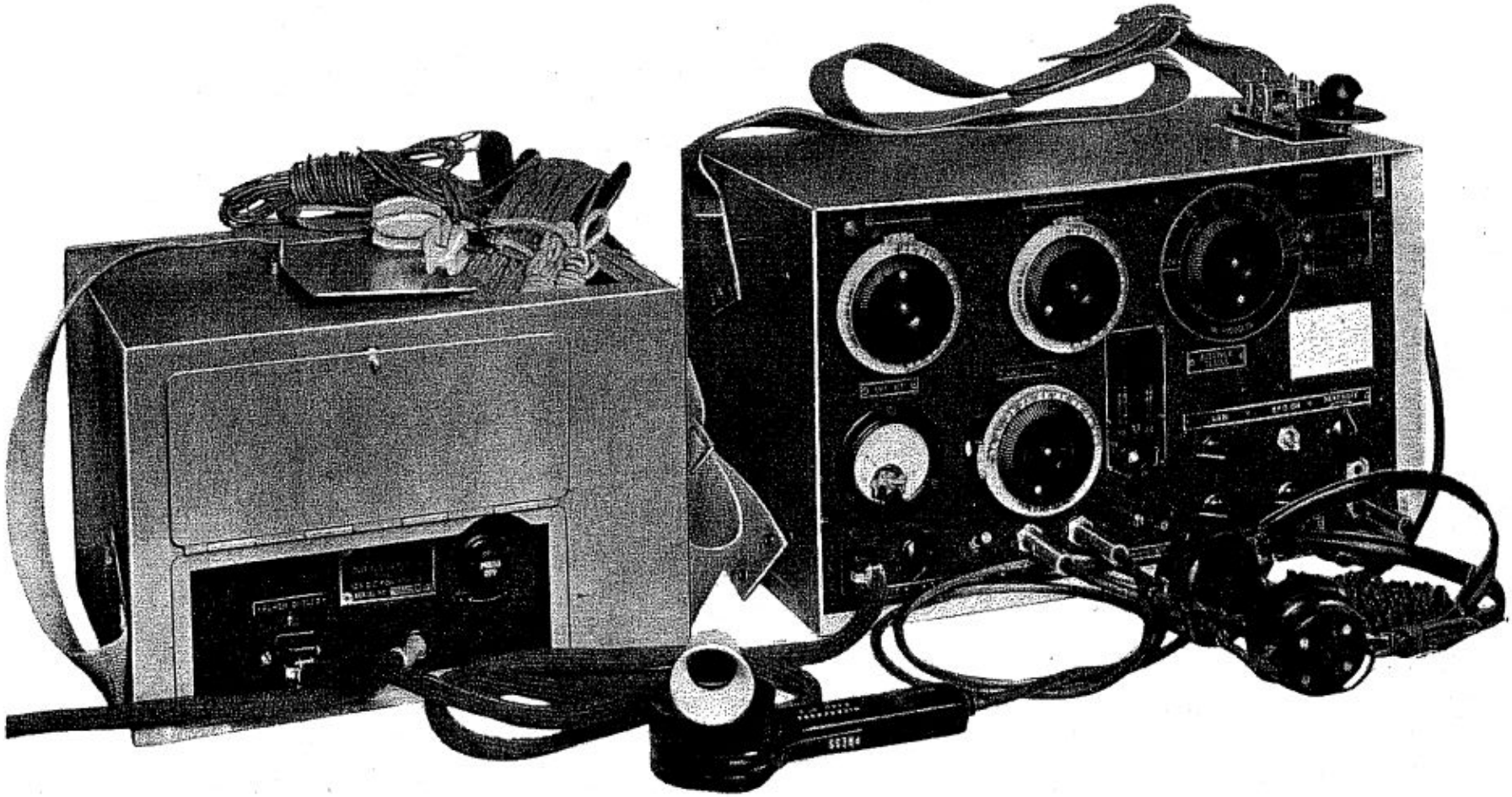


FIG. 1

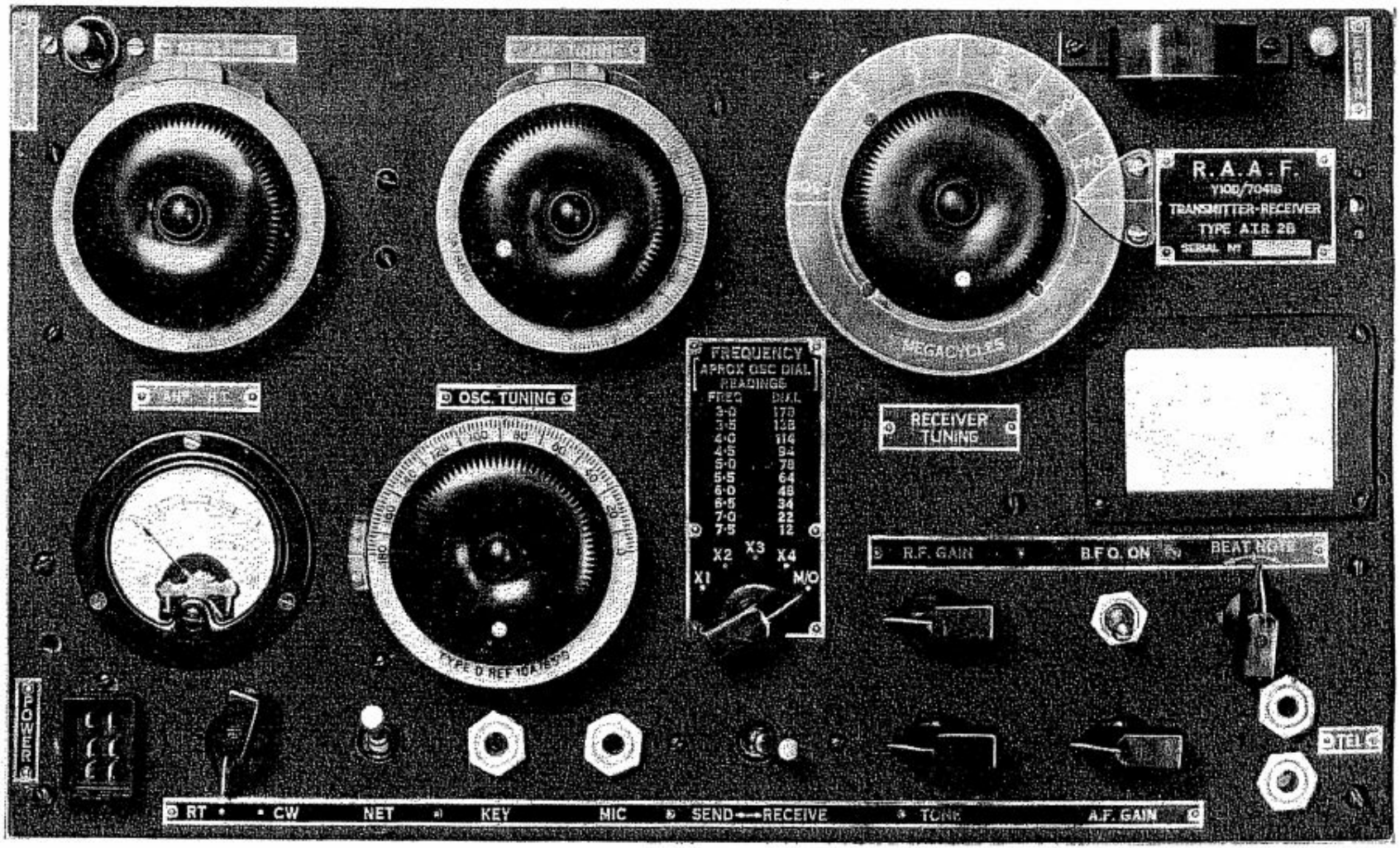

R.A.A.F.
TRANSMITTER-RECEIVER
TYPE A.T.R. 2B
MEGACYCLES
OSC. TUNING
FREQUENCY
APPROX OSC DIAL
READINGS
FREQ DIAL
3·0 178
3·5 138
4·0 114
4·5 93
5·0 78
5·5 64
6·0 48
6·5 34
7·0 22
7·5 12
X1 X2 X3 X4 M/O
RECEIVER
TUNING
R.F. GAIN
B.F.O. ON
BEAT NOTE
POWER
TEL
RT
CW
NET
KEY
MIC
SEND←→RECEIVE
TONE
A.F. GAIN

FIG. 2

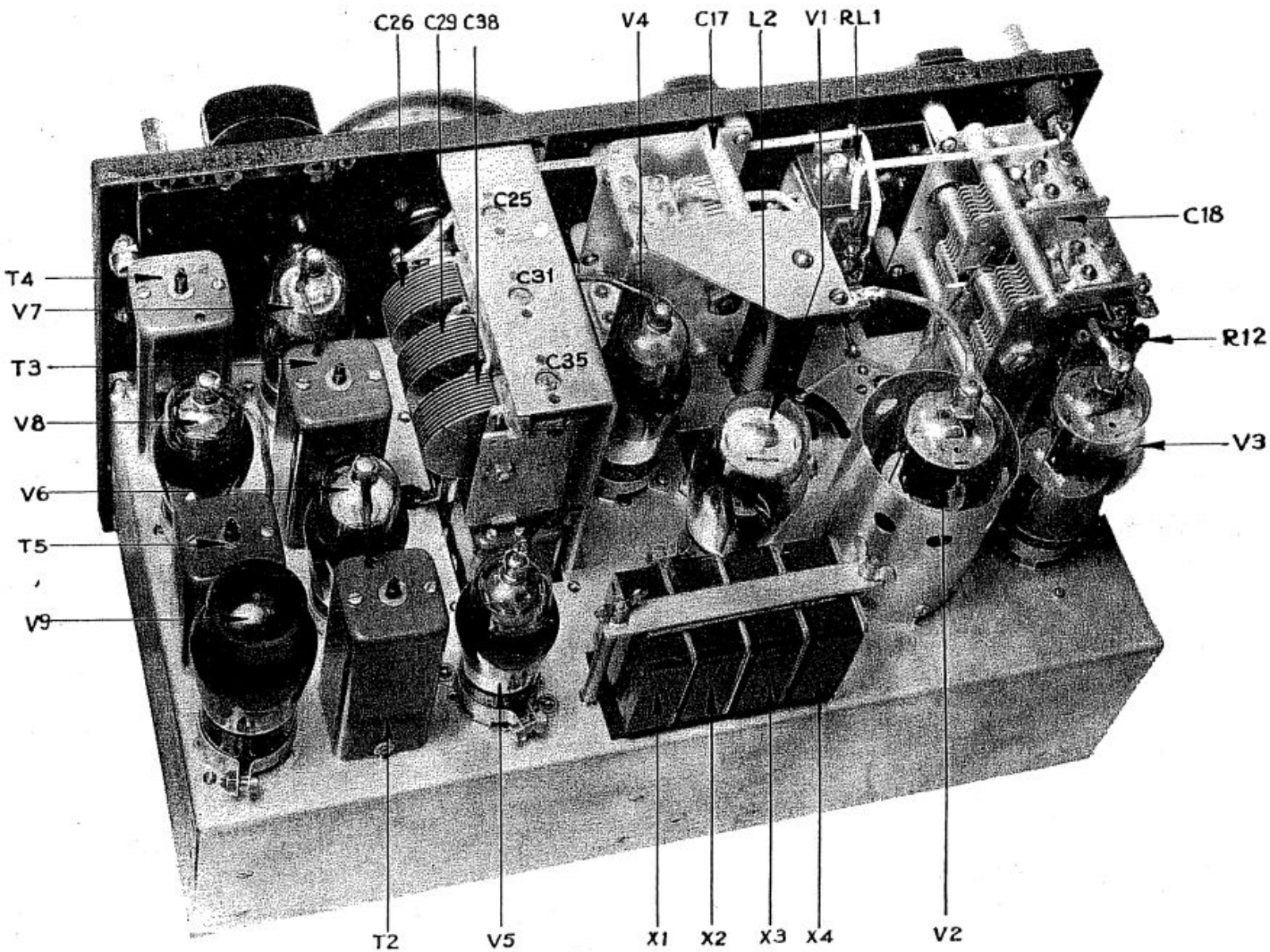

C26
C29
C38
V4
C17
L2
V1
RL1
C25
C31
C35
C18
R12
V3
T4
V7
T3
V8
V6
T5
V9
T2
V5
X1
X2
X3
X4
V2

FIG. 3

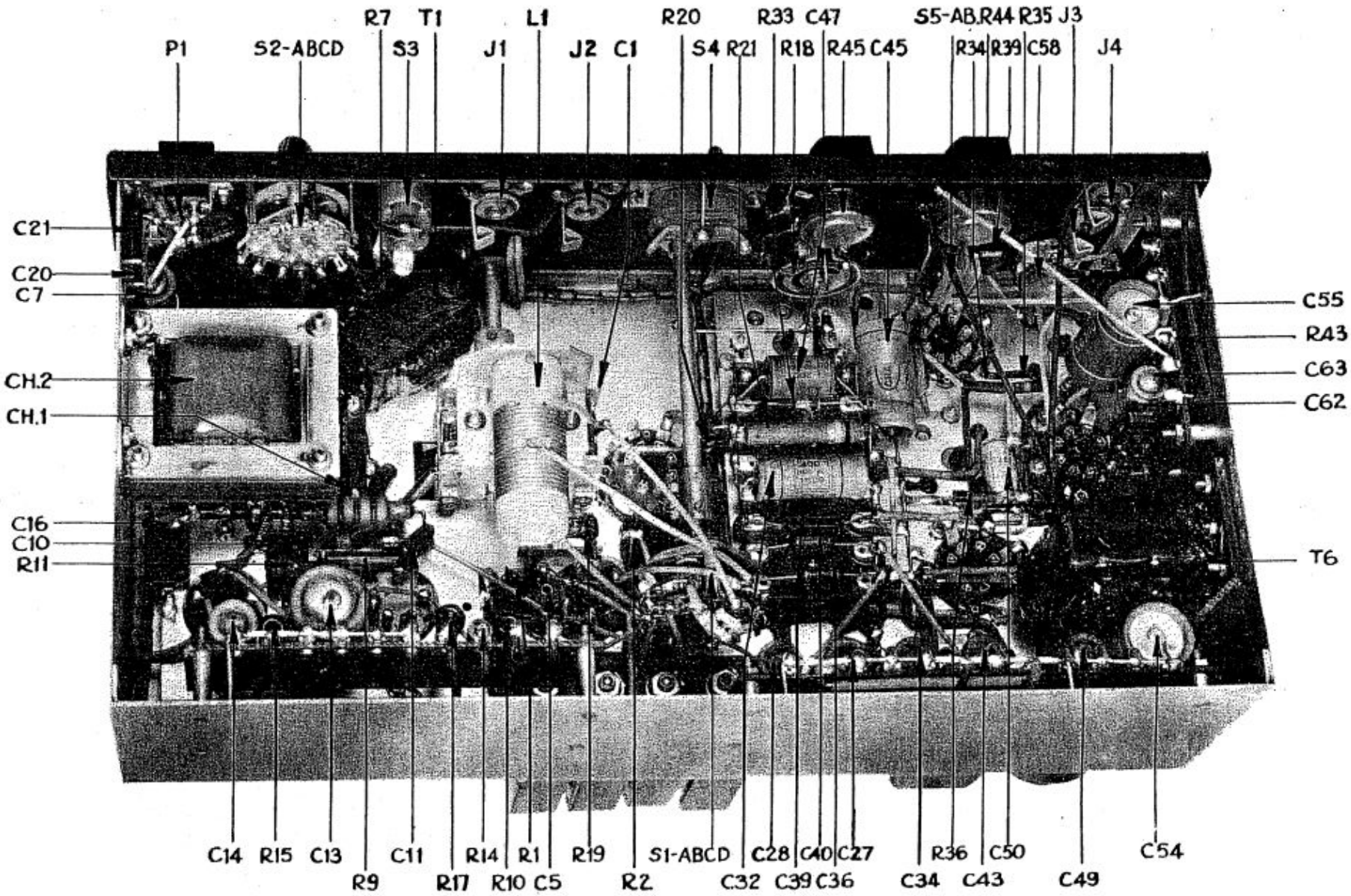

P1
S2-ABCD
R7
S3
T1
J1
L1
J2
C1
R20
S4
R21
R33
R18
C47
R45
C45
S5-AB
R44
R35
J3
R34
R39
C58
J4
C21
C20
C7
CH.2
CH.1
C16
C10
R11
C55
R43
C63
C62
T6
C14
R15
C13
R9
C11
R17
R14
R10
R1
C5
R19
R2
S1-ABCD
C32
C28
C39
C40
C36
C27
C34
R36
C43
C50
C49
C54

FIG. 4

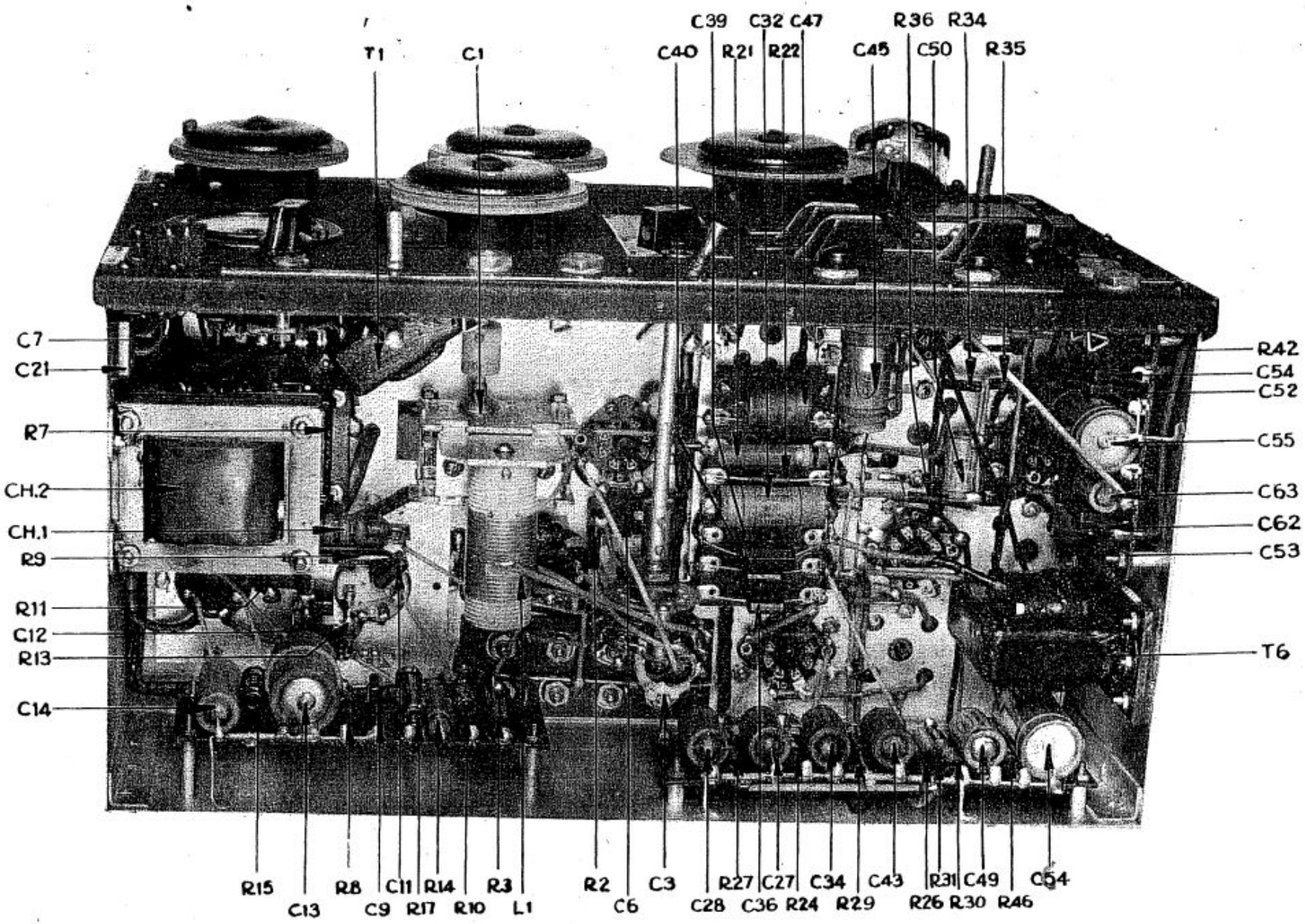

T1
C1
C39
C32
C47
R36
R34
C40
R21
R22
C45
C50
R35
C7
C21
R7
CH.2
CH.1
R9
R11
C12
R13
C14
R42
C54
C52
C55
C63
C62
C53
T6
R15
C13
R8
C9
C11
R17
R14
R10
R3
L1
R2
C6
C3
C28
R27
C36
C27
R24
C34
R29
C43
R26
R31
R30
C49
R46
C54

FIG. 5

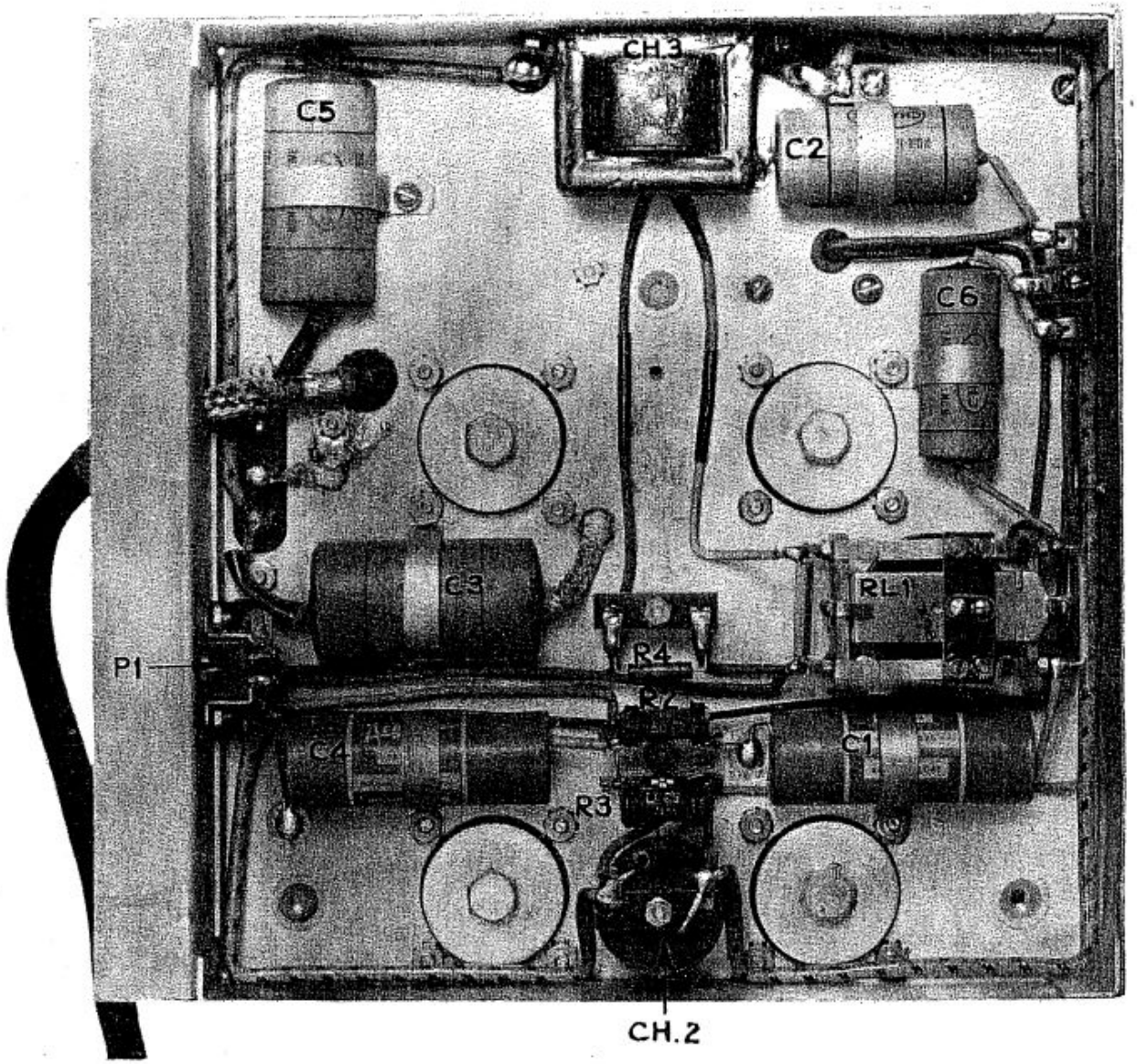


FIG. 6

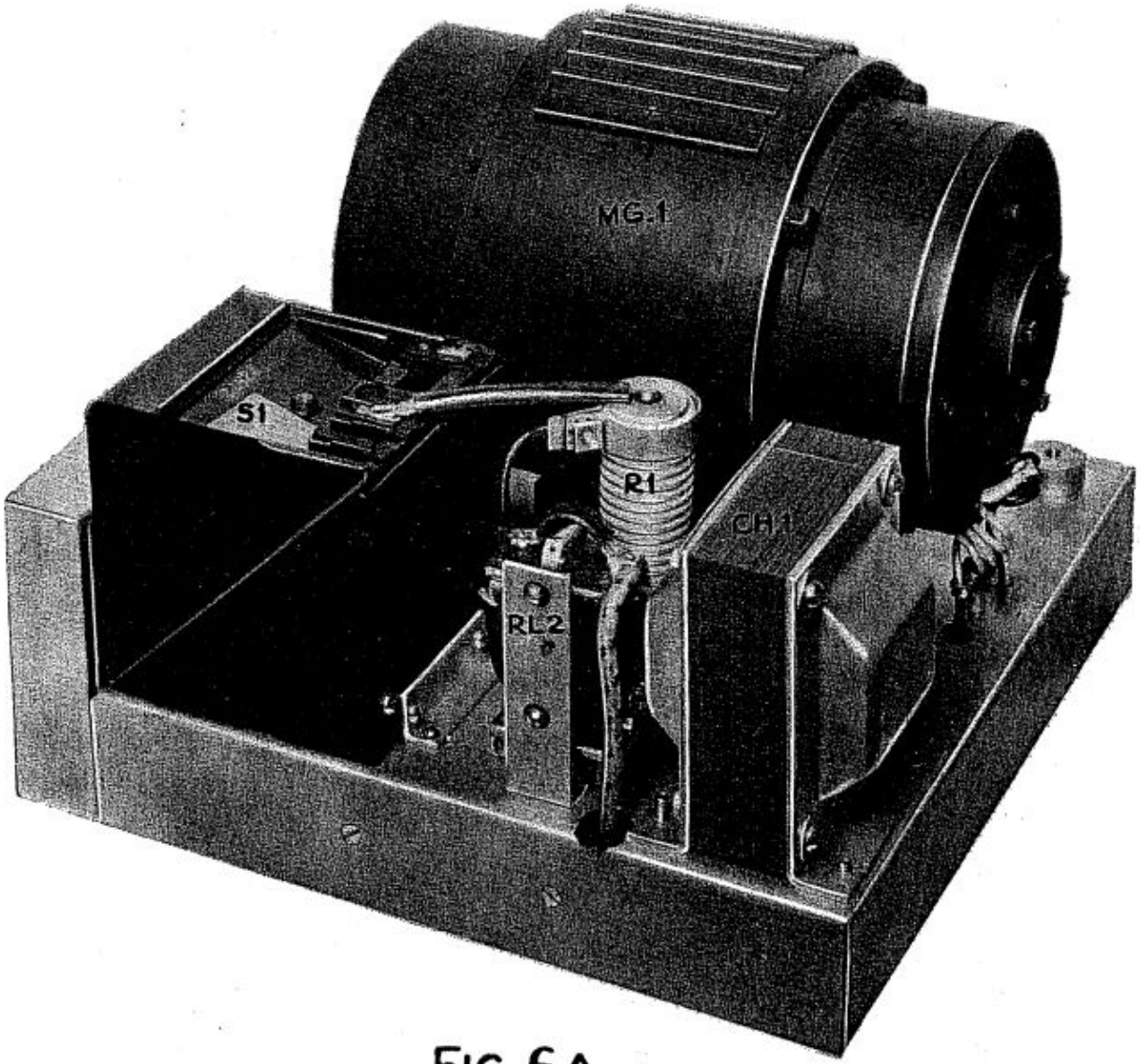


FIG. 6A

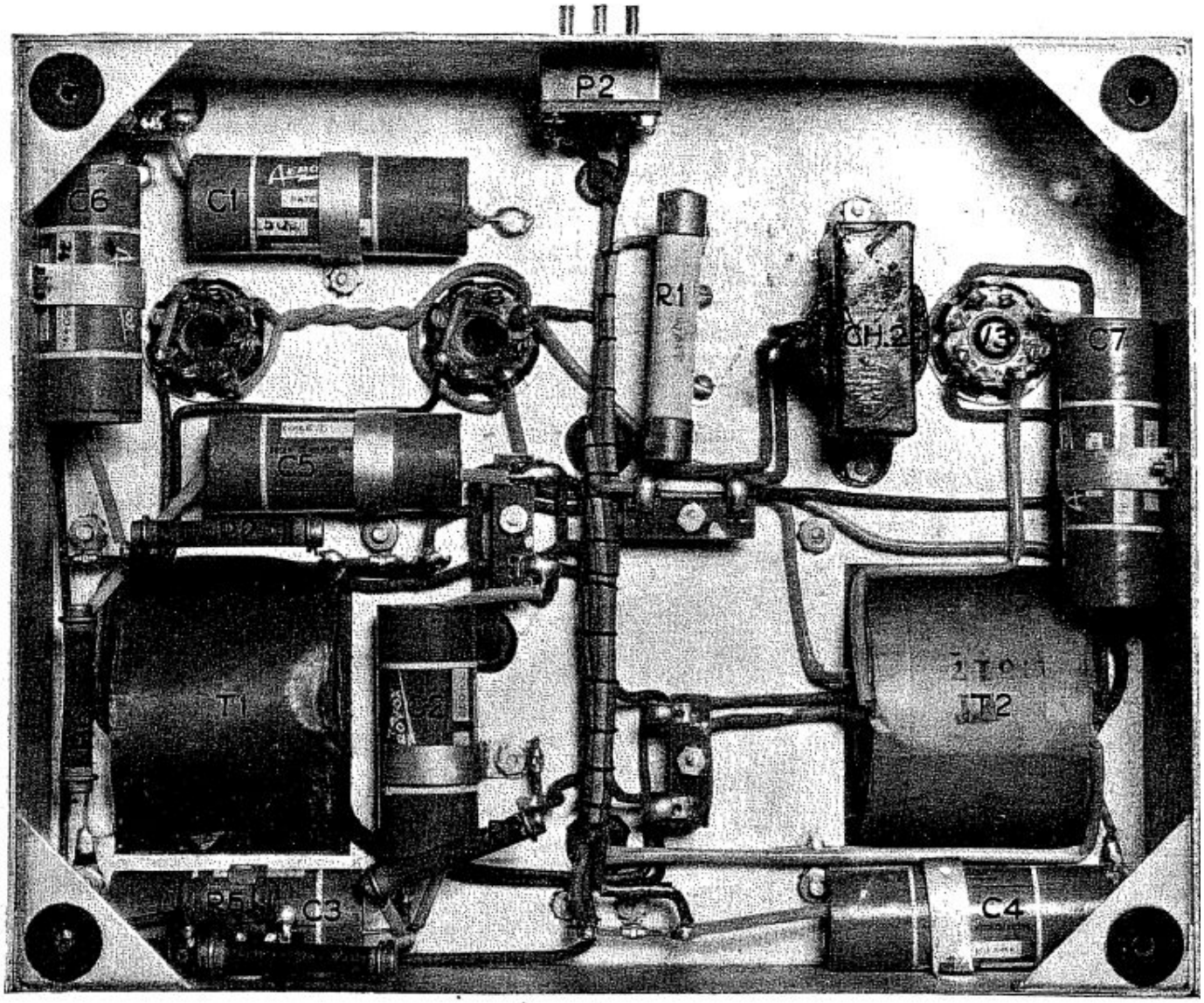


FIG.7

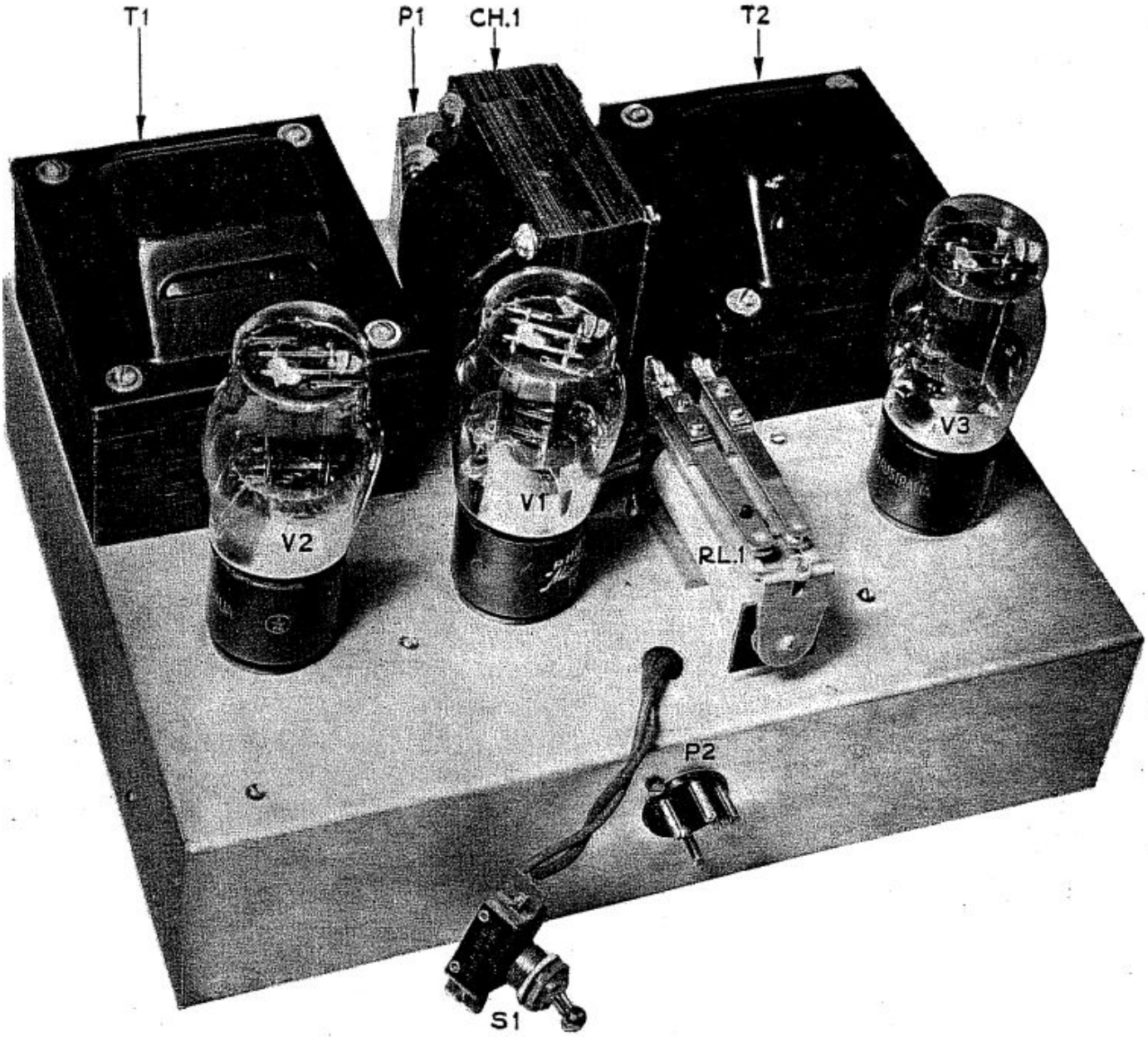


FIG.8

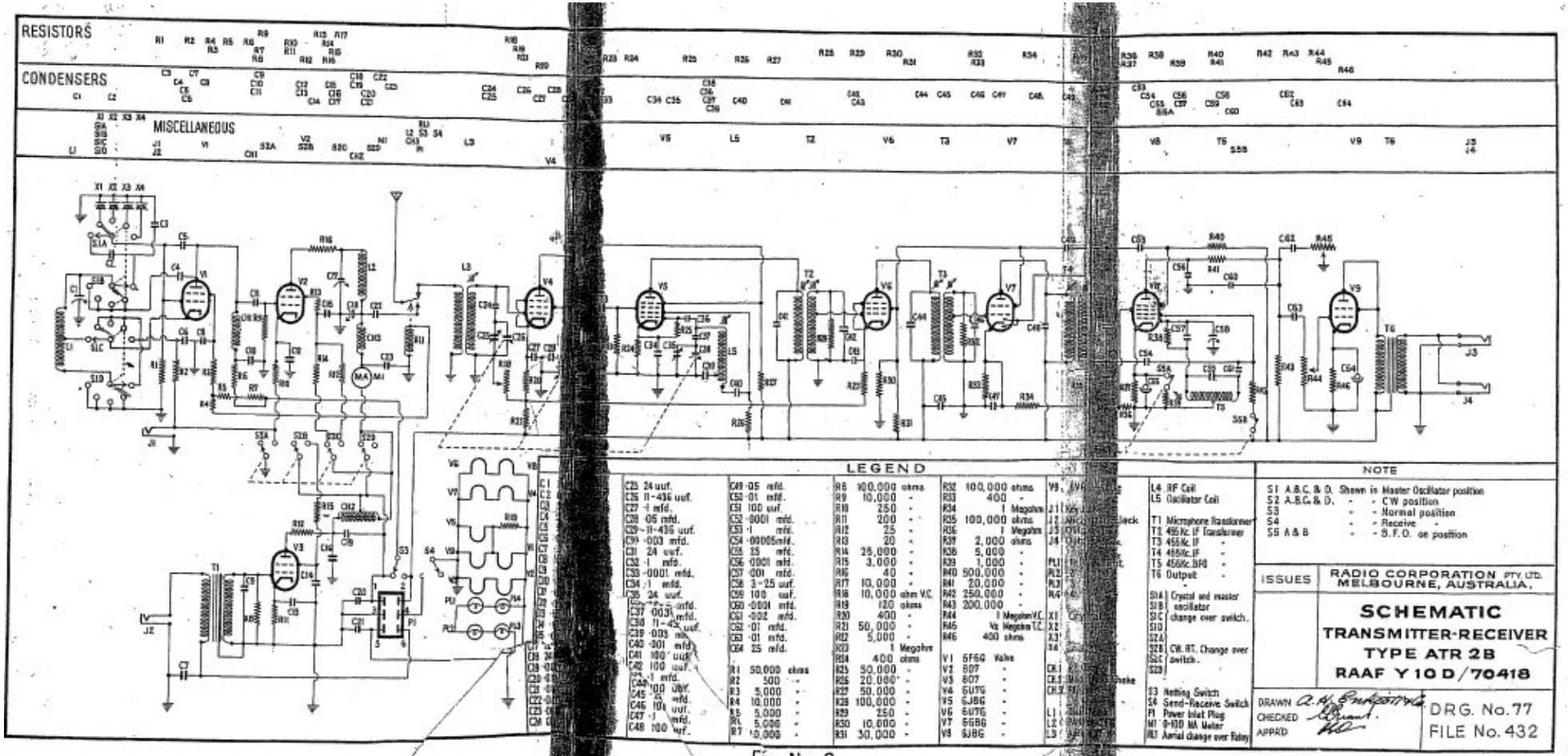

RESISTORS
CONDENSERS
MISCELLANEOUS
LEGEND
NOTE
S1 A.B.C. & D. Shown in Master Oscillator position
S2 A.B.C. & D. - - CW position
S5 - - Normal position
S4 - - Receive -
S5 A & B - - S.F.O. on position
L4 RF Coil
L5 Oscillator Coil
T1 Microphone Transformer
T3 455Kc IF Transformer
T4 455Kc IF -
T5 455Kc BFO -
T6 Output -
S3 Netting Switch
S4 Send-Receive Switch
P1 Power Inlet Plug
M1 0-100 MA Meter
RU Aerial change over Relay
ISSUES
RADIO CORPORATION PTY. LTD.
MELBOURNE, AUSTRALIA.
SCHEMATIC
TRANSMITTER-RECEIVER
TYPE ATR 2B
RAAF Y10D/70418
DRAWN
CHECKED
APPR'D
DRG. No. 77
FILE No. 432

Fig. No. 9

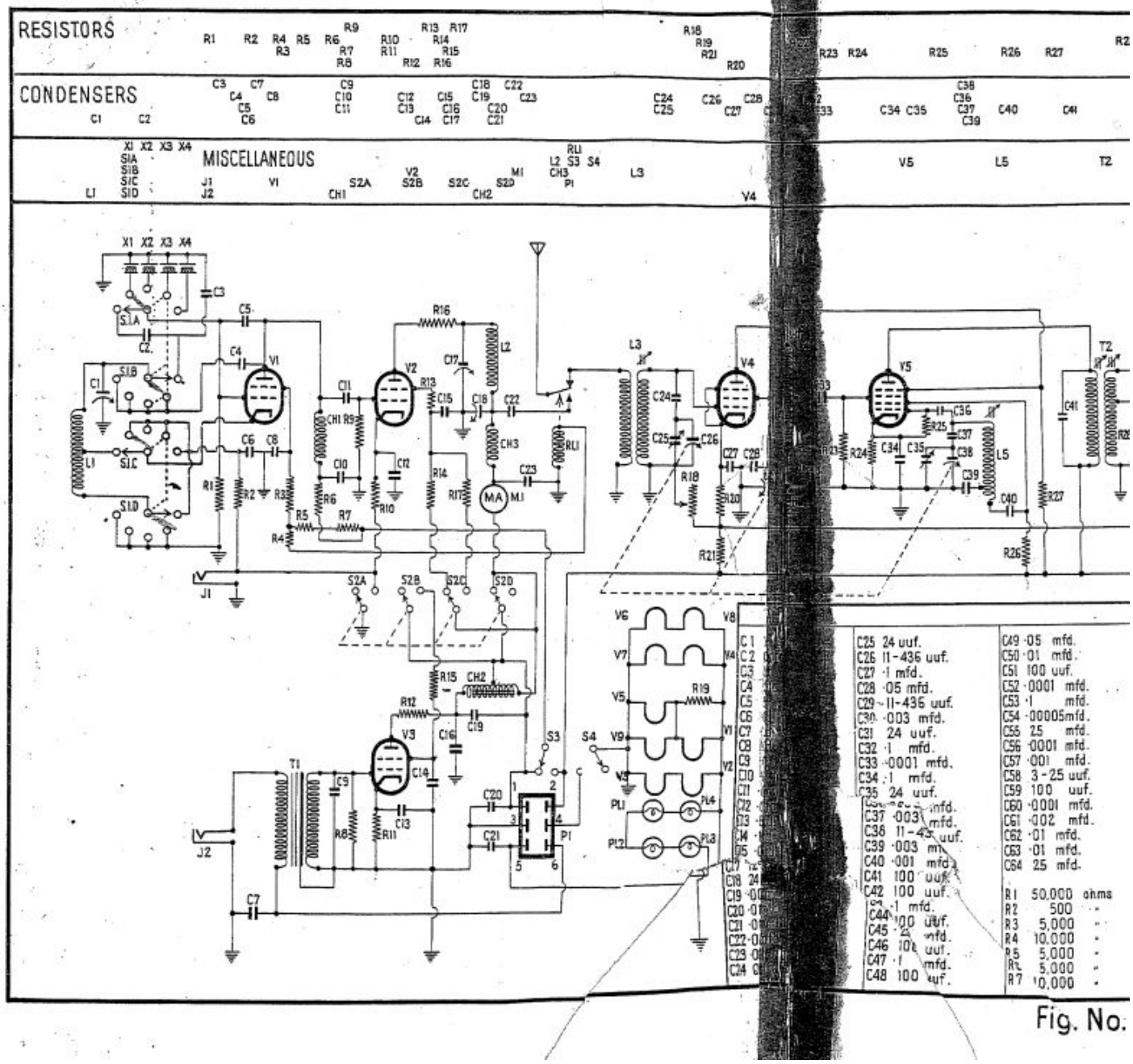
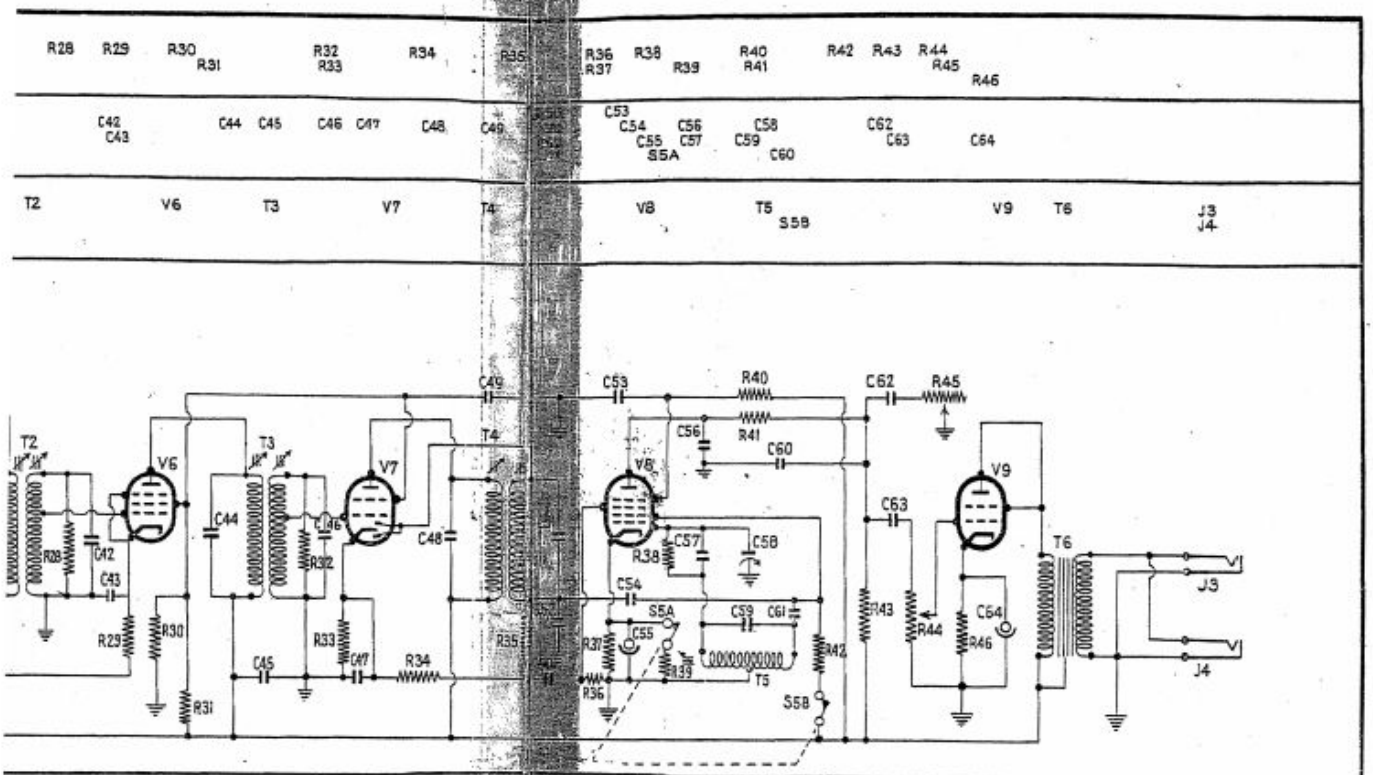

RESISTORS
CONDENSERS
MISCELLANEOUS
C25 24 uuf.
C26 11-436 uuf.
C27 ·1 mfd.
C28 ·05 mfd.
C29 11-436 uuf.
C30 ·003 mfd.
C31 24 uuf.
C32 ·1 mfd.
C33 ·0001 mfd.
C34 ·1 mfd.
C35 24 uuf.
C37 ·003 mfd.
C39 ·003 mfd.
C40 ·001 mfd.
C41 100 uuf.
C42 100 uuf.
C44 100 uuf.
C47 ·1 mfd.
C48 100 uuf.
C49 ·05 mfd.
C50 ·01 mfd.
C51 100 uuf.
C52 ·0001 mfd.
C53 ·1 mfd.
C54 ·00005 mfd.
C55 25 mfd.
C56 ·0001 mfd.
C57 ·001 mfd.
C58 3-25 uuf.
C59 100 uuf.
C60 ·0001 mfd.
C61 ·002 mfd.
C62 ·01 mfd.
C63 ·01 mfd.
C64 25 mfd.
R1 50,000 ohms
R2 500
R3 5,000
R4 10,000
R5 5,000
R7 10,000

Fig. No.



LEGEND

R8	100,000 ohms	R32	100,000 ohms	V9	6V6 Valve	L4	RF Coil
R9	10,000 -	R33	400 -			L5	Oscillator Coil
R10	250 -	R34	1 Megohm	J1	Key Jack		
R11	200 -	R35	100,000 ohms	J2	Microphone Jack	T1	Microphone Transformer
R12	25 -	R36	1 Megohm	J3	Output Jack	T2	455 Kc. IF Transformer
R13	20 -	R37	2,000 ohms	J4	Output Jack	T3	455 Kc. IF -
R14	25,000 -	R38	5,000 -			T4	455 Kc. IF -
R15	3,000 -	R39	1,000 -	PL1	1 Dial Light	T5	455 Kc. BFO -
R16	40 -	R40	500,000 -	PL2	2	T6	Output -
R17	10,000 -	R41	20,000 -	PL3	3		
R18	10,000 ohm V.C.	R42	250,000 -	PL4	4	S1A	Crystal and master
R19	120 ohms	R43	200,000 -			S1B	oscillator
R20	400 -	R44	1 Megohm V.C.	X1	Crystal	S1C	change over switch.
R21	50,000 -	R45	½ Megohm T.C.	X2		S1D	
R22	5,000 -	R46	400 ohms	X3		S2A	
R23	1 Megohm			X4		S2B	CW. RT. Change over
R24	400 ohms	V1	6F6G Valve			S2C	switch.
R25	50,000 -	V2	807 -	CH.1	RF Choke	S2D	
R26	20,000 -	V3	807 -	CH.2	Modulation Choke		
R27	50,000 -	V4	6U7G -	CH.3	RF Choke	S3	Netting Switch
R28	100,000 -	V5	6J8G -			S4	Send-Receive Switch
R29	250 -	V6	6U7G -	L1	Oscillator Coil	P1	Power Inlet Plug
R30	10,000 -	V7	6G8G -	L2	PA Tank Coil	M1	0-100 MA Meter
R31	30,000 -	V8	6J8G -	L3	Aerial Coil	RL1	Aerial change over Relay

NOTE

S1 A.B.C. & D. Shown in Master Oscillator position
S2 A.B.C. & D. - - CW position
S3 - - Normal position
S4 - - Receive -
S5 A & B - - B.F.O. on position

ISSUES

RADIO CORPORATION PTY. LTD.
MELBOURNE, AUSTRALIA.

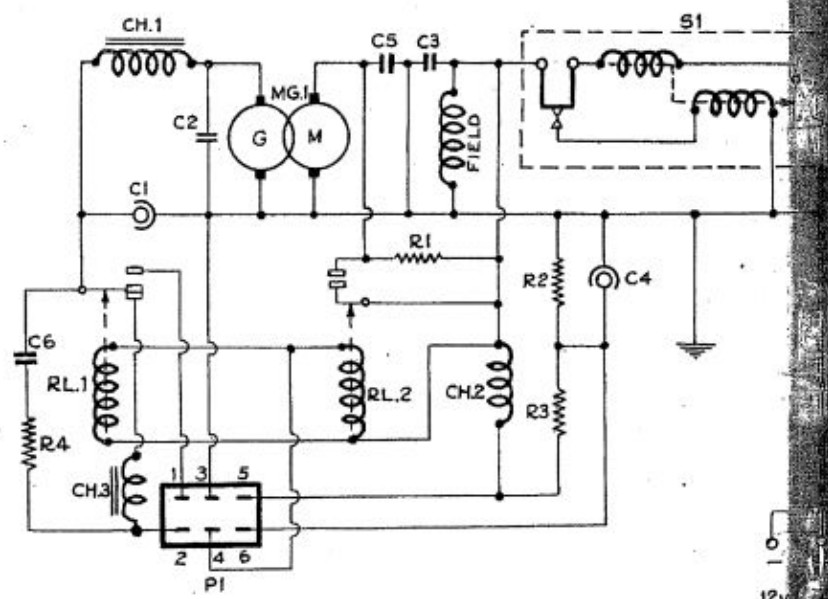
SCHEMATIC
TRANSMITTER-RECEIVER
TYPE ATR 2B
RAAF Y10 D/70418

DRAWN A. H. Brukpoitmeta
CHECKED L. Grant.
APPR'D

DRG. No. 77
FILE No. 432

No. 9

RESISTORS	R1 R2 R3
CONDENSERS	C6 C1 C2 C5 C3 C4
MISCELLANEOUS	R4 CH.1 RL.1 CH.3 P1 MG.1 RL.2 CH.2 S1



LEGEND

C1	16 MFD. - 325 V. Electrolytic.
C2	·5 MFD. - 400 V Paper
C3	1·0 MFD. - 350 V.
C4	500 MFD. 12 V. Electrolytic.
C5	1·0 MFD 400 V. Paper
C6	·25 MFD 400 V. Paper
R1	·53 OHM Wire
R2	50 OHMS Wire 3W
R3	50 OHMS " "
R4	250 OHMS Carbon, 5 W.
RL.1	H.T CHANGE OVER RELAY
RL.2	FIELD RELAY
CH.1	H.T FILTER CHOKE
CH.2	HASH CHOKE
CH.3	FILTER CHOKE
P1	OUTLET PLUG
S1	CIRCUIT BREAKER & OVERLOAD RELAY. 12V.
MG.1	12/325V. MOTOR-GENERATOR

ISSUES

RADIO CORPORATION PTY. LTD.
MELBOURNE, AUSTRALIA.

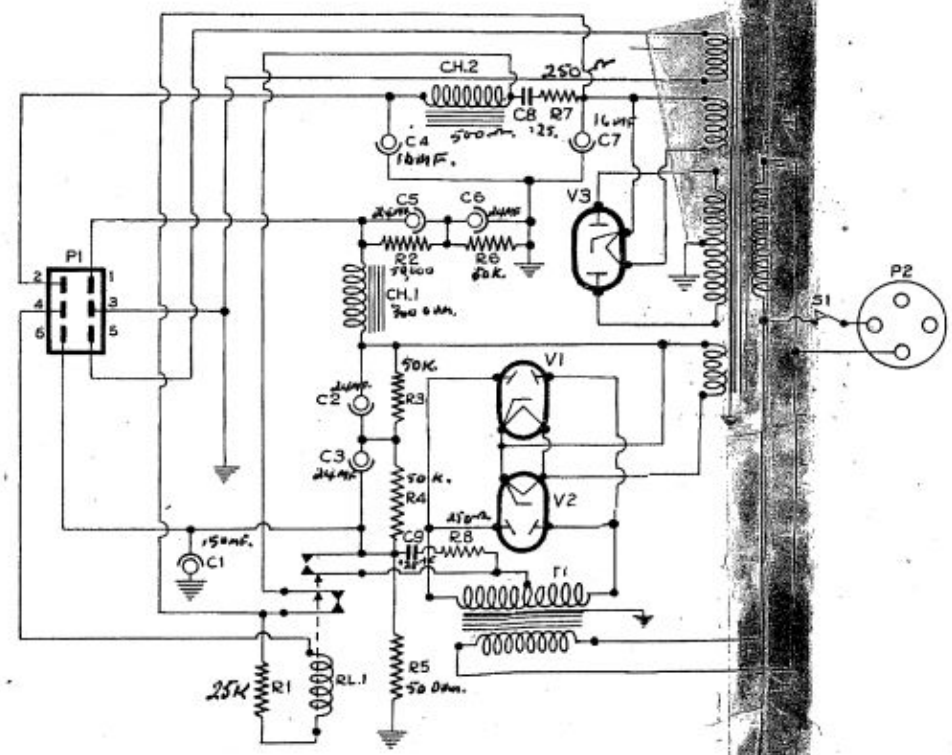
SCHEMATIC
12 V. D.C. POWER SUPPLY
TYPE R.C. 72

DRAWN T.B. SISSONS. 2-9-42
CHECKED
APPR'D

DRG. No. 33
FILE No. 467

FIG.1

RESISTORS	R1 R2 R3 R4 R5 R6 R7 R8
CONDENSERS	C1 C2 C3 C4 C5 C6 C7 C8 C9
MISCELLANEOUS	P1 P2 CH.1 CH.2 RL.1 V1 V2 V3 T1 T2 S1



LEGEND

R1	25.000 OHMS
R2	50.000 OHMS
R3	50.000 OHMS
R4	50.000 OHMS
R5	50 OHMS
R6	50.000 OHMS
R7	250 OHMS
R8	250 OHMS
C1	150 MFD.
C2	24 MFD
C3	24 MFD.
C4	16 MFD.
C5	24 MFD.
C6	24 MFD
C7	16 MFD.
C8	·25 MFD.
C9	·25 MFD.
V1	5V4G
V2	5V4G
V3	5V4G
P1	OUTLET PLUG
P2	INPUT PLUG
T1	TRANSMITTER H.T TRANSFORMER 400.V-200ma.
T2	FILAMENT & RECEIVER H.T TRANSFORMER
CH.1	TRANSMITTER H.T FILTER CHOKE.
CH.2	RECEIVER H.T FILTER CHOKE
S1	MAIN POWER SWITCH
RL.1	H.T CHANGE OVER RELAY

ISSUES

RADIO CORPORATION PTY LTD
MELBOURNE, AUSTRALIA.

SCHEMATIC
240 V. A.C. POWER SUPPLY
TYPE R.C. 68

DRAWN T.B.SISSONS 2-9-42
CHECKED
APPRD

DRG No. 9
FILE No 453

FIG.11