RECEPTION SET R208

WORKING INSTRUCTIONS

NOT TO BE PUBLISHED

THE INFORMATION GIVEN IN THIS DOCUMENT IS NOT TO BE COMMUNICATED, EITHER DIRECTLY OR INDIRECTLY, TO THE PRESS OR TO ANY PERSON NOT HOLDING AN OFFICIAL POSITION IN HIS MAJESTY'S SERVICE.

12890

RECEPTION SET R.208

KIT No. 1 Z.A. 10083/1

COMPRISING :—

ZA.10083	RECEPTION SET R208	1
WB.2529	BULBS 6·5 VOLT 'T'	6
ZA.15037	RECEIVERS, HEADGEAR, D.L.R., DOUBLE, No. 5	2
ZA.5307	VALVES, W.T. TYPE 6K8G	3
ZA.5691	„ „ „ 6Q7G	2
ZA.3493	„ „ „ ARP.34	3
ZA.5306	„ „ „ 6V6G	2
ZA.6779	VIBRATOR No. 2	2
	or	
ZA.2932	VIBRATORS No. 6	
ZA.5624	PLUGS, SINGLE, No. 9	2
ZA.4524	LAMPS, OPERATOR No. 2	1
ZA.10790	CONNECTERS, TWIN, No. 47A	1
ZA.10784	„ „ No. 85	1
ZA.10817	WORKING INSTRUCTIONS	1
ZA.17675	SOCKET, SINGLE, No. 27	1
XA.4575	FUSE WIRE, TIN, No. 30 S.W.G.	2 yds.

CHAPTER I.

GENERAL DESCRIPTION.

1. Purpose of Set.

The Reception Set R.208 is a receiver of the Superheterodyne type which may be used for the reception of C.W., M.C.W., or R.T. It may be used for long distance reception or local broadcast service and also for mobile use in forward areas in vehicles.

2. Frequency Range.

The frequency range extends from 10 to 60 Mc/s and is covered in three bands, viz. : 10–20 Mc/s, 20–40 Mc/s and 40–60 Mc/s, by means of switching.

3. Power Supplies.

The receiver derives its power either from a single phase 50 c/s A.C. Supply at 100–250 volts or from a 6-volt battery. Both forms of power supply may be connected to the receiver and the change over from one to the other effected by means of a three-way switch. The power consumption on either supply is between 35 and 40 watts.

4. Receiver.

(*1*) *Construction.*

The receiver with power supply and loud-speaker is built on a steel chassis and is housed in a steel cabinet. The chassis slides into the front of the cabinet and has handles on the front panel for withdrawal. It is secured in position by four wing nuts. The front of the cabinet can be closed by a removable cover when the apparatus is not in use.

(2) *Circuit* (*Fig.* 3).

The received signal is amplified at the carrier frequency by a type ARP.34 valve (E.F.39) and converted to an intermediate frequency of 2 Mc/s by Valve W/T type 6K8G. This is followed by two stages of I.F. amplification, the first using type ARP.34 valve and the second a type 6K8G valve. The triode portion of the latter functions as a beat frequency oscillator. One diode of valve 6Q7G is used for demodulation and the other for A.V.C. The triode portion serves as an audio frequency amplifier and drives a 6V6G valve in the output stage.

Inductive coupling is used between the aerial (80–100 ohms) and first R.F. circuit and also between the R.F. amplifier anode and second R.F. circuit.

The local oscillator is of the tuned anode type and operates at a frequency of 2 Mc/s higher than the carrier frequency.

Two-circuit band pass filters provide interstage coupling in the intermediate amplifier. The first two L.10A and L.10B have a tertiary winding mid-way between the two tuned circuits and the coupling is decreased on the 10–20 Mc/s band by shorting these tertiary windings. The coupling in the third filter, L.11A, which feeds the speech and A.V.C. diodes, is fixed at the critical value.

The output transformer T.3A is provided with two secondary windings, one of which matches the loud-speaker and the other a 600 ohm line.

Two L.R. PHONE Jacks J1A and J2A are connected across the secondary winding feeding the speech coil of the speaker. Insertion of the phones into the right hand jack J2A disconnects the speaker, and the full output of 2 watts is available for the line. The telephones have only a small shunting effect upon the load, which limits the output to the telephones and obviates the necessity of a separate gain control.

The waverange restricting switch S4A is operated from a pre-set cam on the spindle of the main tuning condenser C14A, and earths the grid of the output valve when the receiver is tuned to any frequency outside the required band.

When receiving R/T or M.C.W. signals, A.V.C. is applied to the R.F. and I.F. amplifier valves. For C.W. a switch is provided which connects H.T. to the B.F.O. valve, and at the same time earths the A.V.C. line. The same control varies a resistance R3A which acts as a fine adjustment for the B.F.O. frequency.

The B.F.O. oscillates at 500 Kc/s and its fourth harmonic beats with the I.F. at 2 Mc/s.

The H.T. voltage and an indication of the emission of all valves may be obtained from test points on the front panel. The MUTING JACK J2B is in series with the H.T. and the total current may be read at this point.

A bridge-connected selenium rectifier is used for the anode supply which is obtained from the secondary of the H.T. Vibrator transformer T2A.

The centre-tapped primary of T2A is excited by a secondary winding of the mains transformer T1A for mains operation and by a 6V battery in conjunction with a vibrator VB1A for battery operation. Heater supply is taken from a secondary of T1A on mains and from the 6V battery on battery operation. All these switching operations are performed by the three-way power switch S3A. Two 2 amp. fuses F1A, F1B, are connected in the mains input circuit and one 10 amp. fuse F2A in the battery input circuit.

5. Aerials.

The R.F. input to the receiver is adjusted to match an 80–100 ohm line and thus the aerial used must be a dipole, connected to the set by a coaxial feeder.

When space permits, a reflector may also be employed ; this is erected parallel to the aerial and usually in the same plane. The dimensions of the aerial and reflector together with the spacing, are shown in Fig. 5 and given in feet where f is received frequency in megacycles per second. The spacing may vary between $\frac{220}{f}$ and $\frac{275}{f}$ feet, the optimum value being shown in the diagram. If dimensions allow, the reflector may be spaced from the receiving aerial by means of a wooden spreader. At lower frequencies the reflector must be supported by separate masts. The effect of the reflector is to concentrate the radiation in a direction at right angles to the plane of the dipole.

The feeder is connected to the receiver by means of either a coaxial plug and socket for use with a concentric feeder or two terminals if a dipole with open type feeder or open aerial and earth is used.

Wiring the AE Terminal of the Receiver.

If an open feeder is to be used, it will be necessary to solder a wire from the AE terminal to the center point of the concentric socket. This must be wired behind the panel. Normally the receiver is used with a concentric feeder, therefore it is supplied without this connection ; this avoids " pick up " of interference on the exposed AE terminal.

6. Method of Transport.

The complete unit may be carried between two persons by handles on either side of the cabinet. All parts are secured to withstand any normal shock or vibration which may be encountered during road or rail transport.

7. Weight and Dimensions.

Total Weight ...	80 lbs.	Overall Depth ...	12⅜ inches
Overall Length ...	23 inches	Overall Height ...	17½ inches

CHAPTER 2.

OPERATION.

1. Unpacking and Assembling for Work.

Each receiver is despatched without any packing material or crate. It is complete in itself and assembled ready for use.

2. Inserting the Valves and other Removable Components.

Normally the receiver is packed with all valves and vibrator in position. When it is necessary to replace any of these, a set of spare valves may be found in the drawer at the top of the cabinet. This drawer also contains all the accessories and may be released by unscrewing two wing nuts. The spare vibrator is carried on the H.T. Vibrator Unit.

3. Connecting the Power Supply.

Remove the cover plate from the top of the mains transformer and fix the flying leads to the taps indicating the voltage nearest to that of the A.C. supply. A self-explanatory key to this adjustment may be found on the cover plate, which should afterwards be replaced. It is important to make sure that the protective varnish is removed from the terminals before fixing the flying leads.

See that two 2-amp. fuses and one 10-amp. fuse are fitted. The holders for the former are marked blue and that for the latter are marked orange. Single strand copper wire is used in each case, 43 S.W.G. for the 2-amp. fuses and 32 S.W.G. for the 10-amp. fuse.

See that the power switch is "OFF," then insert either the mains or battery leads in the lower or upper "INPUT" sockets. Connect the other ends of the leads to the A.C. supply and/or 6-volt battery respectively.

4. Connecting the Aerial and Earth.

If a concentric feeder is used connect to the Coaxial Plug situated at the top right of the panel. If the plug is not already assembled to the end of the feeder it will be necessary to solder this connection. In the case of an open aerial and earth or dipole with open feeder, connect to aerial and earth terminals at the top right of panel.

5. Connecting the Audio Equipment.

Insert a telephone plug in either or both of the "L.R. PHONE" jacks bearing in mind that the right-hand jack mutes the speaker.

For remote line working connect the 600 ohm line to a No. 9 plug and insert this in the "LINE" jack. When the maximum output of 2 watts is required for the line, the signal should be monitored on the telephones only.

6. Tuning the Receiver.

Put the power switch to "MAINS" or "BATTERY" as required and remove the mask from the panel. Set the wave-band switch to a suitable range and the calibrated tuning dial to the frequency desired. With the A.F. and R.F. gain controls at maximum, rotate the tuning control backwards and forwards until the signal is heard. Then adjust the gain controls for the desired output.

For R.T. and M.C.W. reception, the B.F.O. control should be in the "OFF" position. It is sometimes useful to use the B.F.O. for the initial location of a weak R.T. signal.

For C.W. reception the B.F.O. Control should be set at its mid-position, and the receiver tuned to zero beat. Rotation of the B.F.O. control either way provides a fine adjustment of the frequency of the beat note.

7. Send Receive Switching.

On changing over to "SEND" the anode supply voltage to the receiver is interrupted by inserting a No. 9 plug in the "MUTING" jack. The leads to the muting plug should be short-circuited on "Receive" and open-circuited on "Send."

CHAPTER 3.

MAINTENANCE and REPAIRS.

1. Voltage and Current Analysis.

The following table gives the approximate voltages and currents to be expected when the set is operated on A.C. Mains at 24 Mc/s with the R.F. GAIN Control at maximum and the B.F.O. switched on. An Avometer, Model 7, was used throughout, the 1,200 volt range for anode and screen voltages, and the 12 volt range for bias voltages. The H.T. voltage and one operating voltage for each valve may be obtained from the test panel and these readings are tabulated in Table II.

TABLE I
(Voltages and Currents)

Test Between	*Meter Reading*	*Circuit Tested*
Terminals of C1A	230 V	Unsmoothed H.T. voltage
Terminals of C1B	205 V	Smoothed H.T. voltage
Meter in J2B plug	71 mA	Total H.T. current
Anode V4A and earth	190 V	Anode voltage V4A
Meter in H.T. lead to T3A primary	34 mA	Anode current V4A
Terminals of C2B	195 V	Screen voltage V4A
Meter in screen lead of V4A ...	1·8 mA	Screen current V4A
Cathode of V4A and chassis ...	8·1 V	Bias-voltage V4A
Meter in cathode lead of V4A ...	35·5 mA	Cathode current V4A
Terminals of C2A	150 V	Decoupled voltage to V3A anode
Anode of V3A and chassis ...	50 V	Anode voltage V3A
Meter H.T. lead to R7A ...	0·42 mA	Anode current V3A
Cathode of V3A and chassis ...	0·5 V	Bias voltage V3A
Terminals of C5K	190 V	Anode voltage V2B (Hexode Section)
Meter in H.T. lead to R14D ...	1·8 mA	Anode Current V2B (Hexode Section)
Terminals of C5H	85 V	Screen voltage V2B
Meter in H.T. lead to R10B ...	6 mA	Screen current V2B
Terminals of C5L	90 V	Anode voltage V2B (Triode Section)
Meter in H.T. lead to R9A ...	3·2 mA	Anode current V2B (Triode Section)
Cathode of V2B and Chassis ...	2·6 V	Bias voltage V2B
Meter in cathode lead of V2B ...	11 mA	Cathode current V2B
Terminals of C5F	175 V	Anode voltage V1B
Meter in H.T. lead to R14C ...	4·6 mA	Anode current V1B
Terminals C5D	80 V	Screen voltage V1B
Meter in screen lead of V1B ...	1·4 mA	Screen current V1B
Cathode of V1B and chassis ...	1·9 V	Bias voltage V1B
Meter in cathode lead of V1B ...	6·0 mA	Cathode current V1B
Terminals of C5B	188 V	Hexode anode voltage V2A
Meter in H.T. lead to R14B ...	2·7 mA	Hexode anode current V2A
Terminal C7E	100 V	Screen voltage V2A
Meter in screen lead of V2A ...	5·5 mA	Screen current V2A
Meter in H.T. lead to R13A ...	4·8 mA	Triode anode current V2A
Terminals C7F	3·1 V	Bias voltage V2A
Meter in cathode lead of V2A	13·0 mA	Cathode current V2A
Terminals C7C	175 V	Anode Voltage V1A
Meter in H.T. lead to R14A ...	4·6 mA	Anode current V1A
Terminals C7A	75 V	Screen voltage V1A
Meter in screen lead of V1A ...	1·5 mA	Screen current V1A
Terminals C7B	1·8 V	Bias voltage V1A
Meter in cathode of V1A ...	6·1 mA	Cathode current V1A

TABLE I (continued).

Test Between	*Resistance (approx.)*	*Circuit Tested*
A.V.C. diode (pin 4) V3A and chassis		
(*a*) B.F.O. in "ON" position ...	333,000	Action of S2A, also connection to R1A, R4E
(*b*) B.F.O. in "OFF" position ...	1 MΩ	
Hexode anode of V2B and H.T. line ...	5,000	L11A primary, R14D and connections
Screen of V2B and H.T.	20,000	R10B and connections
Control grid of V2B and chassis ...	500,000	L10B secondary, R4C, also action of S2A
B.F.O. in "ON" position		
Triode anode of V2B and H.T. line ...		Connections to and action of S2A also L12A reaction winding
(*a*) B.F.O. in "ON" position ...	30,000	R9A
(*b*) B.F.O. in "OFF" position ...	Infinity	
Triode grid of V2B and chassis ...	50,000	R8B, R20B, R16A and connections
Cathode socket V2B and chassis ...		R20B, action of R16A and connections
(*a*) R.F. GAIN at maximum ...	250	
(*b*) R.F. GAIN at minimum ...	2,250	
Anode socket V1B and H.T. ...	5,000	L10B primary, R14C and connections
Screen V1B and H.T.	75,000	R6B and connections
Control grid of V1B and chassis ...	500,000	L10A secondary, R4B, also action of S2A
B.F.O. in "ON" position		
Cathode socket V1B and chassis ...		R18B action of R16A and connections
(*a*) R.F. GAIN at maximum ...	350	
(*b*) R.F. GAIN at minimum ...	2,350	
Hexode anode socket V2A and H.T.	5,000	L10A primary, R14B and connections
Screen V2A and H.T.	20,000	R10A and connections
Control grid of V2A and chassis ...		R21A action of S1A, also—
(*a*) 10–20 Mc/s band	50	L4A secondary
(*b*) 20–40 ,, ,, ...	50	L5A secondary
(*c*) 40–60 ,, ,, ...	50	L6A secondary
Triode anode V2A and H.T. ...	15,000	R13A and connections
Triode grid V2A and chassis ...	50,000	R8A, R20A and connections
Cathode V2A and chassis	250	R20A and connections
Anode Socket of V1A and H.T. ...		R14A, action of S1A, also—
(*a*) 10–20 Mc/s band	5,000	L4A primary
(*b*) 20–40 ,, ,, ...	5,000	L5A primary
(*c*) 40–60 ,, ,, ...	5,000	L6A primary
Screen socket V1A and H.T. ...	75,000	R6A and connections
Control grid of V1A and chassis ...	500,000	R4A, action of S2A and connections
B.F.O. in "ON" position		

TABLE I (continued)

Test Between	Resistance (approx.)	Circuit Tested
Cathode socket V1A and chassis ...	350	R18A and connections
Dipole terminals A and E		Connection and action of S1A, also—
(*a*) 10–30 Mc/s band	Zero	L1A primary
(*b*) 20–40 ,, ,, ...	Zero	L2A primary
(*c*) 40–60 ,, ,, ...	Zero	L3A primary
One heater socket of each valve holder and chassis, power switch in "OFF" position	Zero	Earth connections to heaters
Other heater socket of each valve holder and chassis		Connection to and action of S3A, also—
(*a*) Power Switch in "MAINS" position	Zero	T1A heater winding
(*b*) Power switch in "OFF" position	Infinity	
(*c*) Power switch in "BATTERY" position	Infinity	

TABLE II
(Test Panel Readings)

Test Between	Meter Readings	Circuit Tested
± and 1A	175 V	Anode voltage V1A
± and 2A	188 V	Hexode anode voltage V2A
± and 2A[1]	1·9 V	Bias voltage V1B
± and 1B	2·6 V	Bias voltage V2B
± and 1C	0·5 V	Bias voltage V3A
± and 1D	8·1 V	Bias voltage V4A
± and 2B[1]	205 V	Smoothed H.T. voltage

2. Resistance Values of Components.

TABLE III

Component	Resistance Value
1. I.F. transformers L10A, L10B—	
(*a*) Tuned windings	1·3 ohms
(*b*) Tertiary winding	3·7 ,,
2. I.F. transformer L11A tuned windings	1·3 ,,
3. B.F.O. coil L12A reaction winding	2·0 ,,
4. Output transformer T3A—	
(*a*) Primary winding	450 ,,
(*b*) Line output winding	50 ,,
(*c*) Speaker winding	0·5 ,,

TABLE III (continued).

Component	Resistance Value
5. Smoothing choke L16A	300 ohms
6. Vibrator transformer T2A—	
(*a*) H.T. secondary winding	150 ,,
(*b*) Centre tapped primary winding	Zero each half
7. Mains transformer T1A—	
(*a*) Primary winding	75 (between 20 v. and 230 v. taps)
(*b*) Filament secondary winding	Zero
(*c*) 12-volt secondary winding	0·3 ohms

3. **Continuity Tests (with all valves removed).**

TABLE IV

Test Between	Resistance (approx.)	Circuit Tested
H.T. and anode socket V4A	450	Primary T3A and connections
H.T. and screen socket V4A ...	3,500	R15A and connections
Control grid V4A and chassis ...		Connections to and action of S4A, also—
(*a*) Waverange restrictions switch (closed)	Zero	
(*b*) Waverange restrictions switch (open)	600,000	R4F, R5B
Cathode socket V4A and chassis ...	250	R19A and connections
Anode socket V3A and H.T. line ...	300,000	R7A, R22A and connections
Control grid of V3A and chassis ...		Action of and connections to R2A also R5A
(*a*) A.F. GAIN at maximum ...	1·1 MΩ	
(*b*) A.F. GAIN at minimum ...	100,000	
Cathode socket V3A and chassis ...	5,000	R14E and connections
Speech diode socket (pin 5) and cathode socket V3A	550,000	L11A secondary R8C, R4D and connections

4. FAULT FINDING

The presence of a fault may be indicated by an unusual reading from the Test Panel. In any event the fault should be localised as far as possible before dismantling any part of the set.

A faulty valve would be indicated by high anode and screen voltages and low anode and screen currents (Table I) provided the cathode circuit resistance (Table I and IV) is correct.

In most cases a fault may be localised by means of Table I and finally traced down to the faulty component by means of the continuity tests (Table IV) in conjunction with Table III.

All trimmers in the R.F. section of the receiver are sealed by the manufacturer and it is unlikely that any of these adjustments will require resetting unless the I.F. or R.F. coils, or 3-gang tuning condenser have sustained damage and require replacement.

Replacement of parts affecting the I.F. ganging or R.F. tracking together with the necessary subsequent re-alignment of the receiver, should be carried out by Ordnance Workshops only.

RESISTANCES

Symbol	Circuit	V.A.O.S.	W.D. Cat. No.
R1A	A.V.C. diode load	Resistors, No. 1A, $\frac{1}{4}$ W., 1 megohm	ZA.11557
R2A	A.F. GAIN control	Resistors, variable, 1 megohm No. 5	ZA.11585
R3A	B.F.O. pitch control	Resistors, variable, 500,000 ohm No. 9	ZA.11584
R4A	V1A grid leak	Resistors, No. 1A, $\frac{1}{4}$ W., 500,000 ohm	ZA.11556
R4B	V1B grid decoupling	,, ,, ,, ,, ,,	ZA.11556
R4C	V2B grid decoupling	,, ,, ,, ,, ,,	ZA.11556
R4D	Speech diode load	,, ,, ,, ,, ,,	ZA.11556
R4E	A.V.C. decoupling	,, ,, ,, ,, ,,	ZA.11556
R4F	V4A grid leak	,, ,, ,, ,, ,,	ZA.11556
R5A	V3A grid decoupling	Resistors, No. 1A, 1 W., 100,000 ohm	ZA.6050
R6A	V1A screen	Resistors, No. 1A, $\frac{1}{2}$ W., 75,000 ohm	ZA.11558
R6B	V1B screen	,, ,, ,, ,, ,,	ZA.11558
R7A	V3A anode decoupling	Resistors, No. 1A, 1 W., 50,000 ohm	ZA.11560
R7B	V3A anode load	Resistors, No. 1A, 1 W., 50,000 ohm.	ZA.11560
R8A	V2A osc. grid leak	Resistors, No. 1A, $\frac{1}{4}$ W., 50,000 ohm	ZA.11555
R8B	V2B osc. grid leak	,, ,, ,, ,, ,,	ZA.11555
R8C	Speech diode load	,, ,, ,, ,, ,,	ZA.11555
R9A	V2B osc. anode	Resistors, No. 1A, 2 W., 30,000 ohm	ZA.6152
R10A	V2A screen	Resistors, No. 1A, 2 W., 20,000 ohm	ZA.6149
R10B	V2B screen	,, ,, ,, ,, ,,	ZA.6149
R11A	V4A anode	Resistors, No. 1A, 1 W., 20,000 ohm	ZA.6144
R12A	B.F.O. anode	Resistors, No. 1A, $\frac{1}{4}$ W., 20,000 ohm	ZA.13066
R13A	V2A osc. anode	Resistors, No. 1A, 1 W., 15,000 ohm	ZA.6143
R14A	V1A anode decoupling	Resistors, No. 1A, $\frac{1}{2}$ W., 5,000 ohm	ZA.8879

R14B	V2A anode decoupling	" " " " "	ZA.8879
R14C	V1B anode decoupling	" " " " "	ZA.8879
R14D	V2B anode decoupling	" " " " "	ZA.8879
R15A	V4A screen	Resistor, No. 1A, 1 W., 3,500 ohm	ZA.11559
R16A	R.F. GAIN control	Resistor, variable, 2,000 ohm No. 9	ZA.11583
R18A	V1A cathode	Resistors, No. 1A, ¼ W., 350 ohm	ZA.11553
R.18B	V1B cathode	" " " " "	ZA.11553
R19A	V4A cathode	Resistors, No. 1A, ½ W., 250 ohm	ZA.8875
R20A	V2A cathode	Resistors, No. 1A, ¼ W., 250 ohm	ZA.11552
R20B	V2B cathode	" " " " "	ZA.11552
R21A	V2A grid stopper	Resistors, No. 1A, ¼ W., 50 ohm	ZA.11551
R22A	V3A cathode	Resistors, No. 3D, ½ W., 2,200 ohm	WY. 1207

CONDENSERS

Symbol	*Value*	*Type*	*Circuit*	*V.A.O.S.*	*W.D. Cat. No.*
C1A	8 mfd.	450 V. D.C.	H.T. smoothing	Condenser 8P	ZA.11541
C1B	8 mfd.	450 V. D.C.	H.T. smoothing	Condenser 8P	ZA.11541
C2A	2 mfd.	350 V. D.C. paper	V3A anode decoupling	Condenser 2AB	ZA.11674
C2B	2 mfd	350 V. D.C. paper	V4A screen decoupling	Condenser 2AB	ZA.11674
C3A	·5 mfd.	50 V. W.	T2A primary (filter for)	Condenser P5P	ZA.11543
C3B	·5 mfd.	50 V. W.	T2A primary (filter for)	Condenser P5P	ZA.11543
C3C	·5 mfd.	50 V. W.	T2A primary (filter for)	Condenser P5P	ZA.11543
C3D	·5 mfd.	50 V. W.	T2A primary (filter for)	Condenser P5P	ZA.11543
C3E	·5 mfd.	50 V. W.	V8IA	Condenser P5P	ZA.11543
C3F	·5 mfd.	50 V. W.	Filter for T2A primary	Condenser P5P	ZA.11543

CONDENSERS (continued)

Symbol	Value	Type	Circuit	V.A.O.S.	W.D. Cat. No.
C4A	·2 mfd.	350 V. D.C. tubular paper	Across smoothed H.T. & earth	Condenser P2E	ZA.11542
C4B	·2 mfd.	350 V. D.C. tubular paper	V3A cathode	Condenser P2E	ZA.11542
C5A	·05 mfd.	350 V. D.C. tubular paper	A.V.C. by-pass	Condenser Q5G	ZA.1746
C5B	·05 mfd.	350 V. D.C. tubular paper	V2A anode decoupling	Condenser Q5G	ZA.1746
C5C	·05 mfd.	350 V. D.C. tubular paper	V1B grid decoupling	Condenser Q5G	ZA.1746
C5D	·05. mfd	350 V. D.C. tubular paper	V1B screen decoupling	Condenser Q5G	ZA.1746
C5E	·05 mfd.	350 V. D.C. tubular paper	V1B cathode by-pass	Condenser Q5G	ZA.1746
C5F	·05 mfd.	350 V. D.C. tubular paper	V1B anode decoupling	Condenser Q5G	ZA.1746
C5G	·05 mfd.	350 V. D.C. tubular paper	V2B grid decoupling	Condenser Q5G	ZA.1746
C5H	·05 mfd.	350 V. D.C. tubular paper	V2B screen decoupling	Condenser Q5G	ZA.1746
C5J	·05 mfd.	350 V. D.C. tubular paper	V2B cathode by-pass	Condenser Q5G	ZA.1746
C5K	·05 mfd.	350 V. D.C. tubular paper	V2B anode decoupling	Condenser Q5G	ZA.1746
C5L	·05 mfd.	350 V. D.C. tubular paper	V2B osc. anode decoupling	Condenser Q5G	ZA.1746
C6A	·01 mfd.	450 V. D.C. tubular paper	V4A anode	Condenser Q1AG	ZA.11545
C7A	·01 mfd.	Mica	V1A screen decoupling	Condenser Q1AF	ZA.11544
C7B	·01 mfd.	Mica	V1A cathode by-pass	Condenser Q1AF	ZA.11544
C7C	·01 mfd.	Mica	V1A anode decoupling	Condenser Q1AF	ZA.11544
C7D	·01 mfd.	Mica	V1A anode decoupling	Condenser Q1AF	ZA.11544
C7E	·01 mfd.	Mica	V2A screen decoupling	Condenser Q1AF	ZA.11544
C7F	·01 mfd.	Mica	V2A cathode by-pass	Condenser Q1AF	ZA.11544
C7G	·01 mfd.	Mica	V2A cathode by-pass	Condenser Q1AF	ZA.11544
C7H	·01 mfd.	Mica	V4A grid coupling	Condenser Q1AF	ZA.11544
C7J	·01 mfd.	Mica	Across T2A secondary	Condenser Q1AF	ZA.11544
C7K	·01 mfd.	Mica	Filter for T2A primary	Condenser Q1AF	ZA.11544

C7L	·01 mfd.	Mica	Filter for T2A primary	Condenser Q1AF	ZA.11544
C7M	·01 mfd.	Mica	Filter for T2A primary	Condenser Q1AF	ZA.11544
C8A	·002 mfd.	SMP silver mica	L8A padder	Condenser R2S	ZA.11185
C9A	·001 mfd.	SMP silver mica	L7A padder	Condenser R1AR	ZA.11183
C9B	·001 mfd.	SMP silver mica	L9A padder	Condenser R1AR	ZA.11183
C10A	·001 mfd.	Moulded	V3A grid coupling	Condenser R1AD	ZA.0862
C11A	500 M. mfd.	301 SMP silver mica	L12A	Condenser X5V	ZA.11292
C12A	150 M. mfd.	201 SMC silver mica	V2A osc. anode	Condenser X15K	ZA.11466
C12B	150 M. mfd.	201 SMC silver mica	V2B osc. grid	Condenser X15K	ZA.11466
C13A	150 M. mfd.	201 SMP silver mica	V1A grid	Condenser X15M	ZA.11546
C13B	150 M. mfd.	201 SMP silver mica	V2A osc. grid	Condenser X15M.	ZA.11546
C14A	110 M. mfd. swing	EP/10	Tuning condenser	Condensers Var. 3-gang X11A	ZA.11561
C15A	100 M. mfd.	401 SMC silver mica	L10A primary	Condensers X1M	ZA.1518
C15B	100 M. mfd.	401 SMC silver mica	L10A secondary	Condensers X1M	ZA.1518
C15C	100 M. mfd.	401 SMC silver mica	L10B primary	Condensers X1M	ZA.1518
C15D	100 M. mfd.	401 SMC silver mica	L10B secondary	Condensers X1M	ZA.1518
C15E	100 M. mfd.	401 SMC silver mica	L11A primary	Condensers X1M	ZA.1518
C15F	100 M. mfd.	401 SMC silver mica	L11A secondary	Condensers X1M	ZA.1518
C16A	100 M. mfd.	401 SMP	Signal diode load	Condensers X1AC	ZA.11167
C16B	100 M. mfd.	401 SMP	Signal diode load	Condensers X1AC	ZA.11167
C17A	100 M. mfd. max.	Double trimmer	L10A	Condensers semi-fixed X1+X1A	ZA.13064
C17B	100 M. mfd. max.	Double trimmer	L10B	,, ,, ,,	,,
C17C	100 M. mfd. max.	Double trimmer	L11A	,, ,, ,,	,,
C17D	100 M. mfd. max.	Double trimmer	L12A	,, ,, ,,	,,
C18A	50 M. mfd.	401 SMC silver mica	Across diodes of V3A	Condensers Y5U	ZA.11547
C19A	50 M. mfd.	401 SMP silver mica	Across grid of V4A & earth	Condensers Y5V	ZA.11548
C20A	9 M. mfd.	Disc	L3A secondary	Condensers Z9A	ZA.11293

CONDENSERS (continued)

Symbol	Value	Type	Circuit	V.A.O.S.	W.D. Cat. No.
C21A	3–30 M. mfd.	Concentric air trimmer	L1A secondary	Condensers semi-fixed Y3C	ZA.10175
C21B	3–30 M. mfd.	Concentric air trimmer	L2A secondary	Condensers semi-fixed Y3C	ZA.10175
C21C	3–30 M. mfd.	Concentric air trimmer	L3A secondary	Condensers semi-fixed Y3C	ZA.10175
C21D	3–30 M. mfd.	Concentric air trimmer	L4A secondary	Condensers semi-fixed Y3C	ZA.10175
C21E	3–30 M. mfd.	Concentric air trimmer	L5A secondary	Condensers semi-fixed Y3C	ZA.10175
C21F	3–30 M. mfd.	Concentric air trimmer	L6A secondary	Condensers semi-fixed Y3C	ZA.10175
C21G	3–30 M. mfd.	Concentric air trimmer	L7A secondary	Condensers semi-fixed Y3C	ZA.10175
C21H	3–30 M. mfd.	Concentric air trimmer	L8A secondary	Condensers semi-fixed Y3C	ZA.10175
C22A	2–9 M. mfd.	Concentric air trimmer	L9A secondary	Condensers semi-fixed Z9A	ZA.14341
C23A	25 mfd.	12 V. Electrolytic	V4A Cathode		

VALVES

Symbol	Description	V.A.O.S.	W.D. Cat. No.
V1A	EF.39 R.F. amplifier ARP.34	Valves, W.T. Type ARP.34	ZA.3493
V1B	EF.39 1st I.F. amplifier ARP.34	Valves, W.T. Type ARP.34	ZA.3493
V2A	6K8G Frequency changer	Valves, W.T. Type 6K8G	ZA.5307
V2B	6K8G 2nd I.F. amplifier and B.F.O.	Valves, W.T. Type 6K8G	ZA.5307
V3A	6Q7G A.F. amplifier and speech and A.V.C. rectifier	Valves, W.T. Type 6Q7G	ZA.5691
V4A	6V6G A.F. output	Valves, W.T. Type 6V6G	ZA.5306

VIBRATOR

VB1A	NS 25/6/E Red Band	Vibrator No. 2 or 6	ZA.6779 or ZA.2932

LAMPS

P1A	Bulb, 6·5 V., 0·3 amp.	Bulbs, 6·5 V., T	WB. 2629

TRANSFORMERS

Symbol	Description	V.A.O.S.	W.D. Cat. No.
T1A	Mains 25/6/23	Transformers, power 36-VA, No. 1	ZA.11578
T2A	Vibrator V.113 MS 26/6/29	Transformers, vibrator, No. 7	ZA.14547
T3A	Output	Transformers, Telephone, No. 21	ZA.11577
	INDUCTANCES	Reception Sets, R.208	
L1A	10–20 Mc/s aerial coil	Coils, aerial, Range I	ZA.11570
L2A	20–40 Mc/s aerial coil	Coils, aerial, Range II	ZA.11569
L3A	40–60 Mc/s aerial coil	Coils, aerial, Range III	ZA.11568
L4A	10–20 Mc/s R.F. transformer coil	Transformers, H.F., Range I	ZA.11567
L5A	20–40 Mc/s R.F. transformer coil	Transformers, H.F., Range II	ZA.11566
L6A	40–60 Mc/s R.F. transformer coil	Transformers, H.F., Range III	ZA.11565
L7A	10–20 Mc/s oscillator coil	Coils, L.O., Range I	ZA.11564
L8A	20–40 Mc/s oscillator coil	Coils, L.O., Range II	ZA.11563
L9A	40–60 Mc/s oscillator coil	Coils, L.O., Range III	ZA.11562
L10A	2 Mc/s 1st I.F. Trans.	Transformer, I.F., No. 1	ZA.11573
L10B	2 Mc/s 2nd I.F. Trans.	Transformer, I.F., No. 1	ZA.11573
L11A	2 Mc/s 3rd I.F. Trans.	Transformer, I.F., No. 2	ZA.11572
L12A	500 Kc/s Beat Frequency oscillator	Inductance Unit, B.F.O.	ZA.11571
L13A	1·75 μH filter chokes for T2A primary		
L13B	1·75 μH filter chokes for T2A primary		
L13C	1·75 μH filter chokes for T2A primary		
L14A	35 μH each half, filter chokes for T2A primary		
L15A	550 μH, filter chokes for T2A primary		
L16A	7 H at 60 M/A, H.T. choke	Chokes, A.F., No. 81	ZA.11538

Symbol	Description	V.A.O.S.	W.D. Cat. No
	JACKS		
J1A	Line	Jacks Microphone No. 2	ZA.4394
J1B	L.R. phones	" "	"
J2A	L.R. phones (speaker muting)	Jacks Microphone No. 2B	ZA.4369
J2B	Receiver muting	" "	"
	FUSES		
F1A	2 amp., 250 volts, "Slydlok"	Fuses, Slydlok, 5 amp., No. 5	XB.10029
F1B	2 amp., 250 volts, "Slydlok"		
F2A	10 amp., 12 volts, "Slydlok"		
	RECTIFIER		
W1A	Selenium Rec. 4 units, H.25–18–1 HD	Rectifiers, Selenium, No. 14	ZA.11696
	SWITCHES		
S1A	Wave band and selectivity		
S2A	B.F.O. ganged to R3A		
S3A	Mains/Battery/Off	Switches, rotary, 4-pole, 4-position, No.2	ZA.1576
S4A	Range-restricting switch		
	SPEAKER		
LS	Speaker	Loud-speakers No. 8	ZB.0574

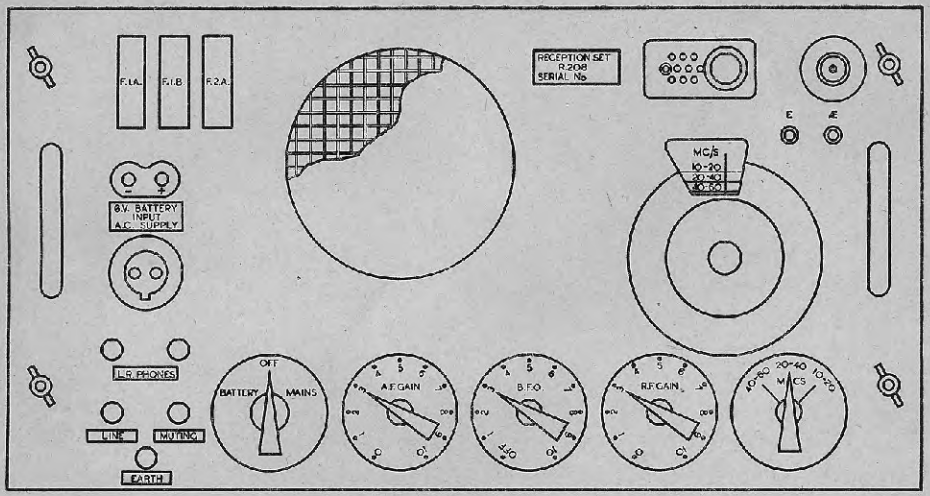
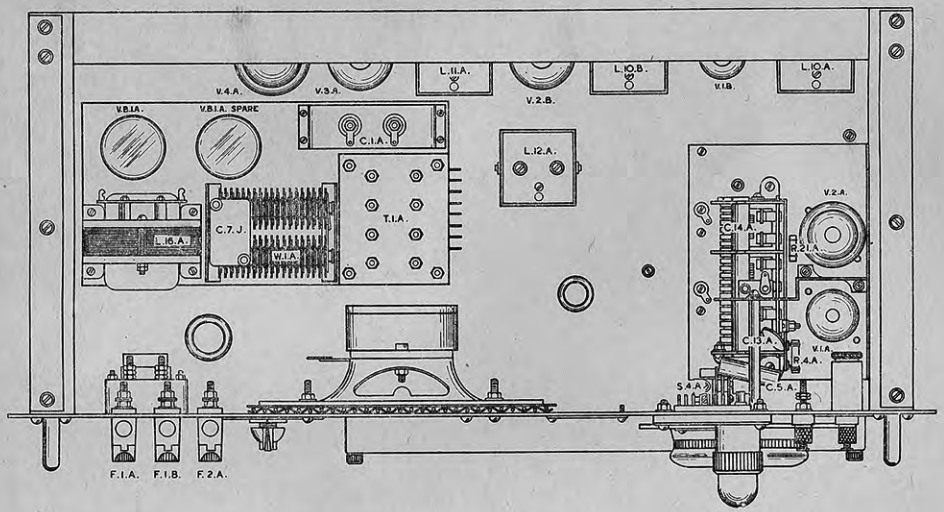


FIG.1

RECEPTION SET R.208

FRONT PANEL



VALVE	CONTACT Nos.							
	1	2	3	4	5	6	7	8
V.1.A.& B. (A.R.P. 34)	SHIELDING	HEATER	ANODE	SCREENING GRID	SUPPRES-SOR GRID	N.C.	HEATER	CATHODE
V.2.A.,4.B. (6.K.8.G.)	SHIELDING	HEATER	ANODE	SCREENING GRID	OSC. GRID	OSC. ANODE	HEATER	CATHODE
V.3.A. (6.Q.7.G.)	N.C.	HEATER	ANODE	DIODE	DIODE	N.C.	HEATER	CATHODE
V.4.A. (6.V.6.G.)	N.C.	HEATER	ANODE	SCREENING GRID	CONTROL GRID	N.C.	HEATER	CATHODE

UNDERSIDE VIEW OF VALVEHOLDER.

FIG. 2

RECEPTION SET R.208

PLAN OF CHASSIS

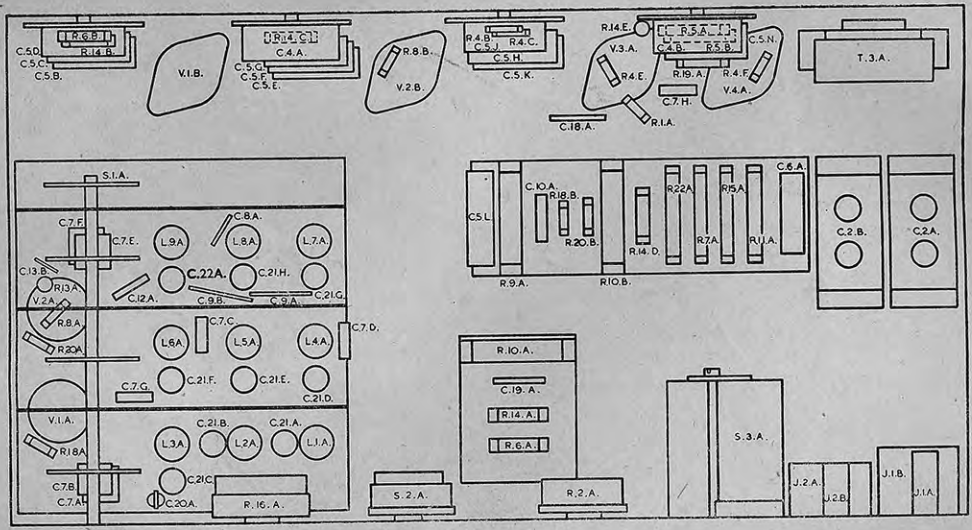


FIG. 3

RECEPTION SET R.208

UNDERSIDE VIEW OF CHASSIS

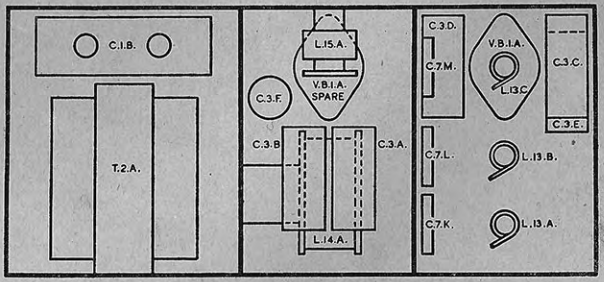


FIG. 4

RECEPTION SET R.208

UNDERSIDE VIEW

OF POWER UNIT

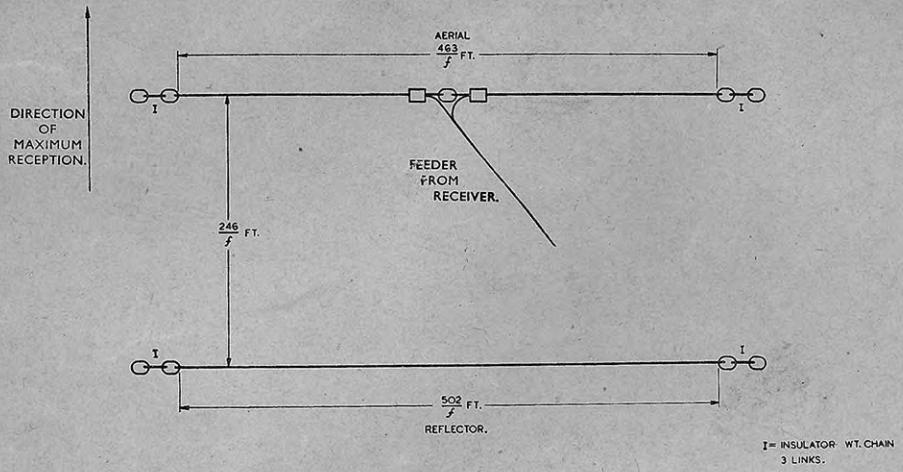


FIG.5

RECEPTION SET R.208

AERIAL DATA

CIRCUIT DIAGRAM.

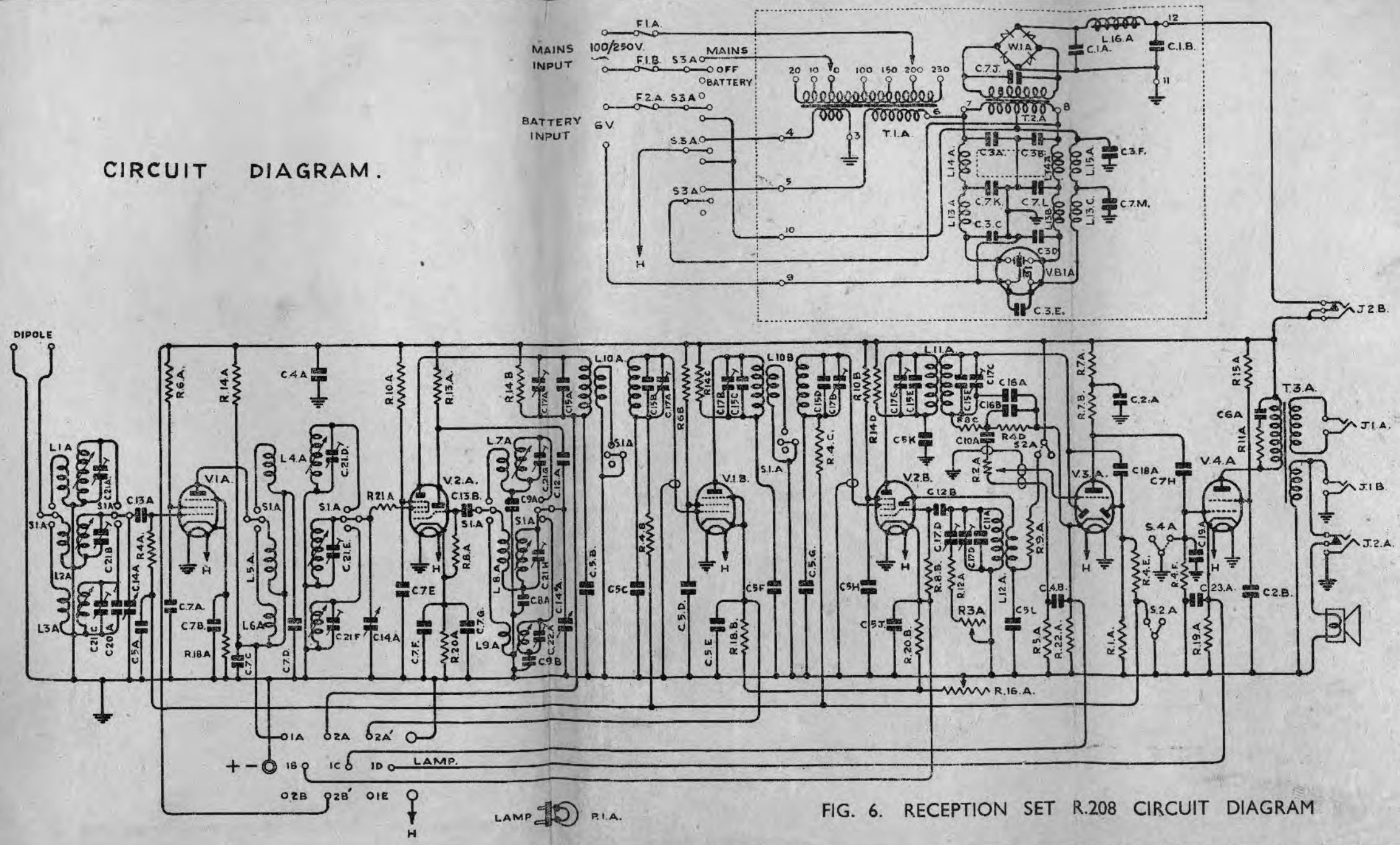


FIG. 6. RECEPTION SET R.208 CIRCUIT DIAGRAM