

# RECEPTION SET R308

*Working Instructions*

## TEMPORARY ERRATA SLIP

### Reception Set R.308—Working Instructions

#### Page 5 Section 6—EARTH AND AERIAL SYSTEM.

For operation in a vehicle, the AERIAL 1 or AERIAL 2 terminal may be connected to a fishing rod aerial, the disconnected terminal being strapped to earth. Choice depends on which gives best results. This varies with frequency.

#### Page 6 Section 8—CONNECTIONS AS GROUND STATION.

The A.C. lead is Connectors, twin, No. 200 **NOT** No. 62.

#### Page 7 Section 9—CONNECTIONS AS VEHICLE STATIONS.

The A.C. lead is Connectors, twin, No. 200 **NOT** No. 62.

#### Pages 9 and 10—TABLE OF TESTS FOR ROUTINE MAINTENANCE OF RECEPTION SET R.308.

The A.C. lead is Connectors, twin, No. 200 **NOT** No. 62.

#### Page 10—TABLE OF TESTS.

The lead is Connector, twin, No. 142/A, **NOT** No. 61.

# Reception Set R308

## CONTENTS

### CHAPTER I.—GENERAL DESCRIPTION

<i>Section</i>	<i>Page</i>
1. Introduction .. .. .	3
2. Frequency Range .. .. .	3
3. Power Supply .. .. .	3
4. Connections and Controls .. .. .	3
5. General Construction .. .. .	4
6. Earth and Aerial System .. .. .	4

### CHAPTER II.—OPERATION

<i>Section</i>	
7. Preliminary .. .. .	5
8. Connections as Ground Station .. .. .	5
9. Connections as Vehicle Station .. .. .	7
10. Operating the Receiver .. .. .	7

### CHAPTER III.—ROUTINE MAINTENANCE

<i>Section</i>	
11. Daily Maintenance .. .. .	8
12. Table of tests for routine maintenance of Reception Set R308.	9

### APPENDICES

1. Erection of Mast 36 ft. Steel .. .. .	17
2. List of Main Components. .. .. .	19

### ILLUSTRATIONS

Fig. 1—Front Panel .. .. .	
Fig. 2—Plan view showing positions of valves, etc. ..	
Fig. 3—Erection of dipole aerial .. .. .	
Fig. 4—Circuit diagram .. .. .	
Fig. 5—Circuit diagram .. .. .	





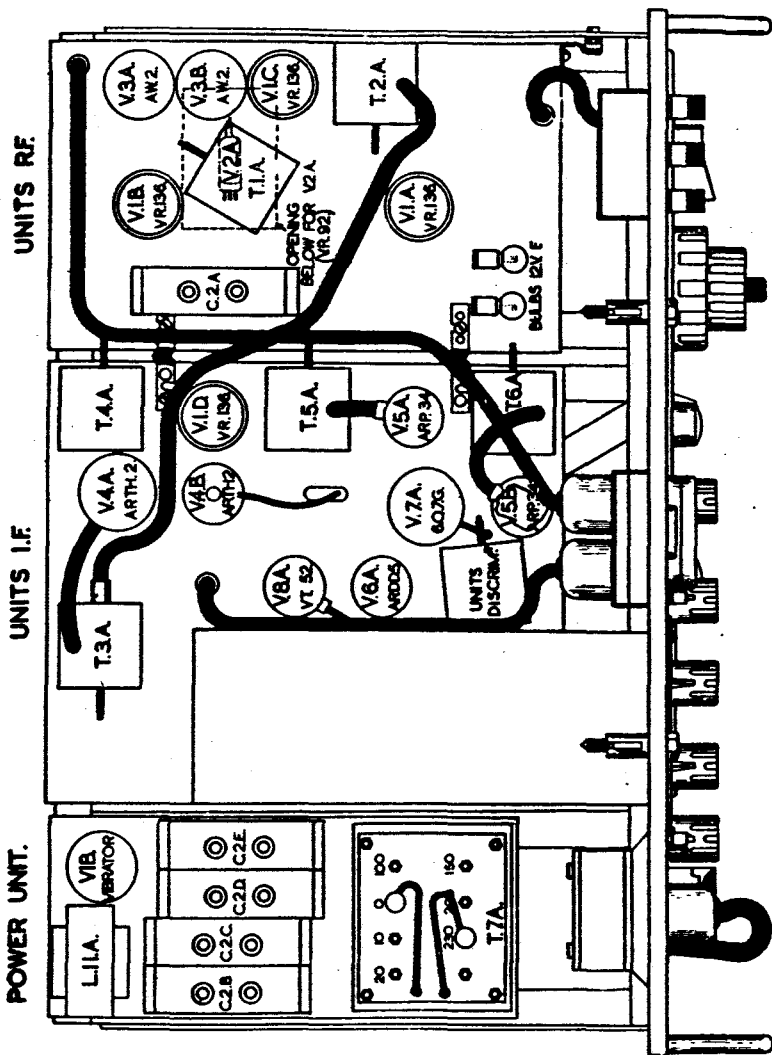


FIG. 2

# RECEPTION SET R308

## *General Description and Working Instructions*

### CHAPTER I — GENERAL DESCRIPTION

#### 1. Introduction

The Reception Set R308 is a communication receiver. Facilities for the reception of C.W. and amplitude or frequency modulated carriers are provided. The set may be used as part of either a ground station or a vehicle station, being mounted in a rubber suspended carrier to avoid damage from mechanical vibration. A built-in loudspeaker is fitted.

#### 2. Frequency range

The frequency band of 20—145 Mc/s is covered in 5 ranges, selected by a switch as follows:—

Range 1	..	..	20—30 Mc/s.
Range 2	..	..	30—48 "
Range 3	..	..	48—75 "
Range 4	..	..	75—112 "
Range 5	..	..	112—145 "

The two I.F. frequencies of the receiver are 9.72 and 2.1 Mc/s.

Three degrees of selectivity are available giving bandwidths of 140, 60 and 20 kc/s.

The tuning dial is calibrated directly in Mc/s for each range with the addition of a logging scale with 180 divisions.

#### 3. Power supply

Provision is made for operating the set from alternative A.C. or D.C. power sources. The set can be adjusted to work from a single phase A.C. supply of 40—60 c/s with a voltage in the range 100—250 V. or from a 12 V. D.C. supply.

The consumption is approximately:—

0.55A at 100 V.A.C.
0.27A at 230 V.A.C.
4.7A at 12 V.D.C.

Two batteries, Secy., Port., 12-volt, 75 Ah are normally supplied with the station, together with connectors for both D.C. and A.C. operation.

#### 4. Connections and controls

The connecting points and controls on the front panel of the set are as follows:—

**POWER INPUT** plugs, one marked A.C. and the other 12 V (+ and —). Three associated fuseholders marked A.C. (two) and 12 V.

**POWER** switch with positions marked OFF/ON. Two sockets marked A.C. and 12 V. for selection of the power supply by means of the plug on a lead brought through the panel.

AERIAL terminals 1 and 2, and EARTH terminal.  
PHONES jacks (two).  
LINE jack  
LAMPS OPERATOR, 12 V. socket.  
WAVE RANGE switch with five positions.  
AERIAL TRIMMER control. Main tuning control with two-speed drive and locking device.  
SELECTIVITY switch with three positions—BROAD, MEDIUM and NARROW (Bandwidths 140 kc/s, 60 kc/s and 20 kc/s).  
System switch with three positions—A.M., C.W. and F.M.  
B.F.O. frequency control, used for C.W. reception.  
R.F. GAIN and A.F. GAIN controls.  
LIMITER control used only on A.M. to restrict noise peaks.  
PHONES OUTPUT control.  
L.S. switch with positions marked OFF/ON for the loudspeaker.  
A.V.C. switch with positions marked OFF/ON.

Connections inside the set, in addition to those for valve top-caps are:—

Voltage taps on power transformer.

Coupling lead from R.F. unit with plug fitting socket on I.F. unit.

Leads from R.F. and I.F./A.F. units with plugs fitting sockets at rear of front panel for power supply distribution.

### 5. General construction

The set is built on three steel sub-chassis—R.F. I.F./A.F. and Power supply—mounted on a common frame behind the front panel. The complete chassis with front panel slides into a steel case, where it is secured by three captive screws through the front panel. Handles are fitted on the panel for withdrawing the chassis from the case. Two sets of handles are fitted at each end of the case for lifting the set. A protective front cover is also provided which is fixed by four captive screws to the front panel when the set is not in use, or in transit and to the back of the case during operation. The complete set is mounted in a rubber-suspended carrier.

In addition to the fittings already mentioned, the front panel has a watch-holder, a door marked PHONES giving access to a small compartment where the headphones may be stored, and the holes of the loudspeaker grill.

A detachable compartment is fitted inside the case at the top in which are carried spare valves, pilot lamps, vibrator and valve retaining-ring tool.

The set, complete in its carrier, measures  $24\frac{1}{2}$  in. long by  $16\frac{1}{2}$  in. high by  $16\frac{1}{2}$  in. wide and weighs 112 lbs.

### 6. Earth and aerial system

The receiver is designed for connection to a low impedance (80 ohm) aerial feeder. For operation at a fixed site two dipole aeri-als with feeder and adaptor are provided. The lengths of these aeri-als are adjustable



to cover the frequency range; the length of the aerial in use is normally adjusted to suit the mid-band of frequencies of operation but may be adjusted to suit any spot frequency in the range of the receiver. For operation in a vehicle the AERIAL 2 terminal of the receiver may be connected to a fishing-rod aerial while Aerial 1 terminal is strapped to earth. The EARTH terminal should whenever possible be connected to a good earth point or vehicle framework. An earth net and an earth pin are normally supplied for use with a ground station.

## CHAPTER II — OPERATION

### 7. Preliminary

The Reception Set R308 is normally supplied ready for use with valves, vibrator, lamps, etc., in position, but the set must be checked as follows:—

- (1) Release the 4 coin-slot screws holding the front cover, remove the cover and fit it to the back of the case.
- (2) Unscrew the 3 coin-slot bolts through the front panel (2 at top and 1 at bottom of panel) and withdraw the set from its case by means of the handles on the panel.
- (3) Using Fig. 2 check the valves for position, security in holders, top-cap connections, etc. See that the vibrator and lamps are fitted firmly in their holders.
- (4) See that the plugs from the R.F. and I.F./A.F. units are firmly pressed into their supply sockets and that the R.F. coupling lead is securely plugged into the I.F. unit.
- (5) If the receiver is to be used with an A.C. power supply connect the leads on top of the power transformer to terminals whose markings add up most nearly to the supply voltage. For example, for 110 volts use 100+10, for 175 use 150+20, or for 230 volts use 230+0.
- (6) Replace the set in its case and secure the front panel bolts.
- (7) Insert the selector plug on the flexible lead through the front panel in the A.C. or 12 V. socket according to the power supply to be used.
- (8) Check that the fuse-holders on the front panel are correctly wired for fusing at 5 amperes.
- (9) Fit a watch in the holder and when required plug the operator's lamp into the socket on the front panel.

### 8. Connections as ground station

Check or make the following connections:—

- (1) Connect the EARTH terminal to the set carrier by means of Connectors, Single, No. 12.
- (2) Connect the carrier to a good earth point, using the Pins, earth, small and/or Nets, earth, 14-ft. if necessary.
- (3) Secure the Aerial Coupling Equipment Set Unit M in the spring clips on top of the carrier. Connect the longest lead on the unit to the EARTH terminal and the other leads to the AERIAL terminals 1 and 2.

- (4) See that the POWER switch is at OFF, then connect the A.C. plug to the A.C. supply by means of the Connector, Twin, No. 62 and/or connect the 12 V. plug to Batteries, Secy., port. 12-volt 75 Ah by means of the Connector, Twin, No. 142A.
- (5) Plug one or two pairs of headphones into the PHONES jacks.
- (6) If transmission of the received signal over a line is required, connect the line to a No. 10 plug and insert this in the LINE jack.
- (7) Erect the aerial as shown in Fig. 3. The aerial is slung at an angle of  $45^\circ$  between the top of a 36 ft. mast and the ground. Instructions for erecting the mast are given in Appendix I. The Aerials Dipole No. 4E (20–54 mc/s) or No. 4F (54–145 mc/s) can be adjusted as shown in Fig. 3, for optimum input conditions. Each arm of either dipole is adjustable in length which is normally made to suit the mid-band frequency of the range in use as indicated in the figure. The arms must be adjusted each to the same length as shown.

To adjust the length first release the terminal on the wire of one arm nearer the end insulator and refix the terminal on the wire to give the required length from the insulator to the middle of the central adaptor. Do not fix the terminal on the wire beyond the central marker, but if the length has to be reduced to less than three-quarter of the maximum length adjust the position of the terminal at the other end of the wire as required. Adjust the length of the second arm in the same way.

The length of each arm is slightly less than a quarter of the wavelength at the frequency concerned; to assist in obtaining the required lengths for spot frequencies (other than those given in Fig. 3) Table I is given below showing lengths of dipole arms for corresponding frequencies.

**TABLE I**  
**DIPOLE-ARM LENGTHS FOR FREQUENCIES 20-145Mc/s**

Mc/s.	Ft.	in.	Mc/s.	Ft.	in.
20	11	7	70	3	4
25	9	$2\frac{1}{2}$	75	3	$1\frac{1}{2}$
30	7	$9\frac{1}{2}$	80	2	11
35	6	8	85	2	9
40	5	$9\frac{1}{2}$	90	2	$8\frac{1}{2}$
45	5	$1\frac{1}{2}$	100	2	$4\frac{1}{2}$
50	4	8	110	2	2
55	4	3	120	2	0
60	3	$10\frac{1}{2}$	130	1	10
65	3	7	145	1	8

- (8) Before hoisting the aerial remove the cap from the central adaptor and plug in a Connector Twin No. 194 and connect the other end of this to the Set Unit M on top of the receiver.

**9. Connections as vehicle station**

Check or make the following connections :—

- (1) Connect the EARTH terminal to the set carrier by means of Connectors, Single No. 12.
- (2) Connect the carrier to the vehicle chassis by means of Connectors, Single No. 25.
- (3) Connect AERIAL 2 terminal to the aerial base by means of Connectors, Single No. 10G.
- (4) Strap AERIAL 1 terminal to the EARTH terminal with a small piece of copper wire.
- (5) See that the POWER switch is at OFF, then connect the 12 V. plug to Batteries, secondary, portable, 12-volt 75 Ah, by means of Connectors, twin No. 142A. If an A.C. power unit is carried or if the vehicle is parked near an A.C. source connect the A.C. plug by means of Connectors, twin No. 62, to the A.C. supply point.
- (6) Plug one or two pairs of headphones into the PHONES jacks.
- (7) Assemble sections 1, 2 and 3 of Antennae rods F and fit the aerial in its base.

**10. Operating the receiver**

- (1) Before switching on, turn the PHONES OUTPUT, A.F. GAIN, LIMITER AND R.F. GAIN controls fully counter-clockwise and put the A.V.C. and L.S. switches to OFF.
- (2) Put the POWER switch to ON. The dial lamps should now be alight.
- (3) Listen with a pair of headphones and advance the settings of the PHONES OUTPUT and A.F. GAIN controls about half-way. Slight set noise should now be heard.
- (4) Set the WAVE RANGE switch to the position covering the required frequency.
- (5) The SELECTIVITY switch should normally be at NARROW when searching on A.M. at lower frequencies. When searching at higher frequencies on A.M. or at any frequency on F.M. the MEDIUM or BROAD setting should be used.
- (6) Turn the R.F. GAIN control until signals or noises are heard at a comfortable level.
- (7) Set the system switch to C.W. to receive C.W. signals or to A.M. to receive modulated signals.
- (8) Release the small locking knob on the main tuning control and search for the required signal, using the larger knobs and the dial. It is generally better to have the R.F. GAIN control almost fully counter-clockwise and to use the A.F. GAIN control to obtain a suitable output. If the required signal is very weak, however, it may be necessary to advance the setting of the R.F. GAIN control and readjust the A.F. GAIN control.
- (9) When the wanted signal is heard adjust the AERIAL TRIMMER control for maximum output.
- (10) On C.W., set the B.F.O. control about mid-way and adjust the fine tuning control until the signal is correctly tuned, i.e. until the pitch

of the note is reduced to zero, then adjust the B.F.O. control to obtain a note of convenient pitch for reading the signal. If an unwanted signal interferes, set the SELECTIVITY control to NARROW and try to improve reception of the wanted signal by careful adjustments to the AERIAL TRIMMER, R.F., GAIN, B.F.O. and fine tuning controls.

- (11) For amplitude modulated signals, interference may be reduced as above except that the B.F.O. control is not used and the LIMITER control can be used to reduce noise. For a weak signal with little noise the LIMITER control should be turned clockwise. If required the A.V.C. switch may be put to ON—this is most useful when receiving a fading signal.
- (12) For frequency modulated signals, when located, put the system switch to F.M. and the SELECTIVITY switch to BROAD. F.M. signals can be distinguished when listening on A.M. since they will be distorted at the mid-tuning point but become intelligible either side of this point. The LIMITER control is inoperative on F.M. It is generally impossible to receive a weak F.M. signal whose unmodulated carrier frequency is close to that of a strong F.M. signal.
- (13) For transmission of the signal via the LINE jack set the A.F. GAIN control fully clock-wise and adjust the PHONES OUTPUT control as required to monitor. The A.F. GAIN control should be used to adjust the line output level if requested by the recipient at the remote point.
- (14) When required, switch on the loudspeaker by means of the L.S. switch. There is no special control for adjusting the output level from the loudspeaker—use the A.F. GAIN control. The loudspeaker should be switched off during the reception of weak signals.

## CHAPTER III — ROUTINE MAINTENANCE

### 11. Daily maintenance

- (1) Keep the set as clean and dry as possible. Wipe the exterior daily with a clean dry cloth.
- (2) Check all external connections. Examine all connectors for damage, especially fraying where they enter plugs or sockets.
- (3) Examine the aerial and earth system. With a dipole aerial in use, check the lengths of the arms, tightness of terminals on the wires connections of feeder and condition of suspension gear. With a rod aerial see that the sections are not bent and are firmly fitted together. The joints of the sections must be kept clean.
- (4) Check the condition of the accumulators whether or not they are in use, using the instructions pasted on the lids. Test the voltage with the battery connected to the set and with the set switched on using the 15-volt range of the Voltmeter, pocket 250 V. No. 2. If the reading is less than 12 volts have the accumulators charged as soon as possible.
- (5) Switch on the receiver and check that the pilot lamps light. Operate the set in the normal manner, checking all controls and general performance. Make a written report of any apparent defects.

**TABLE OF TESTS FOR ROUTINE MAINTENANCE OF RECEPTION SET R.308**

1. Test No.	2. Test	3. What should happen	4. What should not happen	5. What is likely to be wrong	6. What to do about it
I. Receiver general A.C. supply.	Connect up receiver for A.C. supply operation and put POWER switch to ON.	Tuning dial lights up.	(a) Tuning dial does not light up.	(i) Two point connector No. 62 from mains supply not plugged in. (ii) Mains supply not switched on. (iii) Octal wander plug not plugged into A.C. socket. (iv) A.C. fuse carriers not fitted. (v) A.C. fuses open circuit.	Plug in firmly  Switch on.  Plug in firmly.  Fit fuse carriers.  Refit with 5 amp. fuse wire.
	Put POWER switch to OFF.  Remove set from case. Put POWER switch to ON.			(vi) Dial bulbs not screwed in or burnt out. (vii) Flexible voltage adjustment leads on power unit not connected. (viii) RF Unit octal plug not connected to supply socket.	Screw in firmly or replace bulbs.  Connect to appropriate supply voltage terminals.  Plug in firmly.

1. Test No.	2. Test.	3. What should happen.	4. What should not happen.	5. What is likely to be wrong.	6. What to do about it.
2. Receiver General D.C. supply.	Connect up receiver for D.C. supply operation and put POWER switch to ON.	Tuning dial lights up.	(a) Tuning dial does not light up.	(i) Four point connector No. 61 from 12 V. supply not plugged in. (ii) Octal wander plug not plugged into D.C. socket. (iii) 12 V. supply battery not charged.	Plug in firmly.  Plug in firmly.  Fit charged battery and recharge other one.
	Put POWER switch to OFF Remove set from case. Put POWER switch to ON.			(iv) Dial bulbs not screwed in or burnt out. (v) RF Unit octal plug not connected to supply socket.	Screw in firmly or replace bulbs.  Plug in firmly.
3. Receiver R.T. Reception, A.C. or D.C. supply.	Advance the AF GAIN, RF GAIN and PHONES OUTPUT controls and operate the set on each waveband.	Stations, carriers or set noise heard on phones and speaker.	(a) Set dead.	(i) Phones not connected and speaker switch not ON. (ii) IF/AF Unit octal plug not connected to supply socket. (iii) IF/AF Unit valve caps not connected	Plug in phones and put LS switch to ON.  Plug in firmly.  Ensure they are correctly fitted.

1. Test No.	2. Test.	3. What should happen.	4. What should not happen.	5. What is likely to be wrong.	6. What to do about it.
3 (cont.)			<p>(d) Set dead on D.C. supply only.</p> <p>(e) Reception on speaker only.</p> <p>(d) Reception on phones only.</p> <p>(e) Set noise heard but no stations or carriers, or weak signals only heard.</p>	<p>(iv) IF/AF Unit audio valves V7A or V8A faulty.</p> <p>(i) Vibrator not plugged in correctly.</p> <p>(ii) Vibrator faulty.</p> <p>(iii) D.C. fuse carrier not fitted.</p> <p>(iv) D.C. fuse open circuit.</p> <p>(i) Phones faulty.</p> <p>(i) Loudspeaker out of order.</p> <p>(i) Dipoles and earth or aerial and earth not connected to the set terminals.</p>	<p>Check each valve separately by replacing with a spare and if not faulty refit original valves.</p> <p>Plug in correctly.</p> <p>Fit spare vibrator.</p> <p>Fit fuse carrier.</p> <p>Refit with 5 amp. fuse wire.</p> <p>Fit new phones or repair faulty leads.</p> <p>Report.</p> <p>Connect aerial and earth system to set A. &amp; E. terminals.</p>

1. Test No.	2. Test.	3. What should happen.	4. What should not happen.	5. What is likely to be wrong.	6. What to do about it.
3 (cont.)			(e) cont.	(ii) Aerial and earth system faulty.  (iii) Interconnection lead from RF Unit not plugged into IF/AF Unit. (iv) RF Unit and IF/AF Unit valves and valve top caps not making good contact. (v) Valves or set faulty.	Check for continuity of system or for short circuit between aerial and earth, between dipoles and earth and between dipoles. Plug in firmly.  Check the fitting of the valves and top caps.  Report.
4. Receiver AF GAIN control.	While tuned to an RT signal rotate AF GAIN knob.	Volume will vary smoothly according to direction of rotation.	(a) Volume does not vary.  (b) Volume control noisy.	(i) Knob loose on spindle. (ii) Faulty control. (iii) Internal set fault.  (i) Faulty control.	Tighten grub screw.  Report. Report.  Report.



1. Test No.	2. Test.	3. What should happen.	4. What should not happen.	5. What is likely to be wrong.	6. What to do about it.
5. Receiver RF GAIN control.	While tuned to an RF signal and with AVC switch at OFF rotate RF GAIN knob.	Volume will vary smoothly according to the direction of rotation.	(a) Volume does not vary. (b) Control intermittent.	(i) Knob loose on spindle. (ii) Faulty control. (iii) Internal set fault. (i) Faulty control	Tighten grub screw. Report. Report. Report.
6. Receiver PHONES OUTPUT control.	While tuned to an RT signal and with LS switch OFF rotate PHONES OUTPUT knob.	Volume of output from phones will vary smoothly according to the direction of rotation.	(a) Volume does not vary. (b) Control intermittent.	(i) Knob loose on spindle. (ii) Faulty control. (iii) Internal set fault. (i) Faulty control.	Tighten grub screw. Report. Report. Report.
7. Receiver LIMITER control.	While tuned to an AM RT signal and with AVC switch at OFF rotate LIMITER knob.	Volume will vary smoothly according to direction of rotation.	(a) Volume does not vary. (b) Control noisy.	(i) Loose knob on spindle. (ii) Faulty control. (iii) Internal set fault. (i) Faulty control.	Tighten grub screw. Report. This control does not operate on F.M. Report. Report.

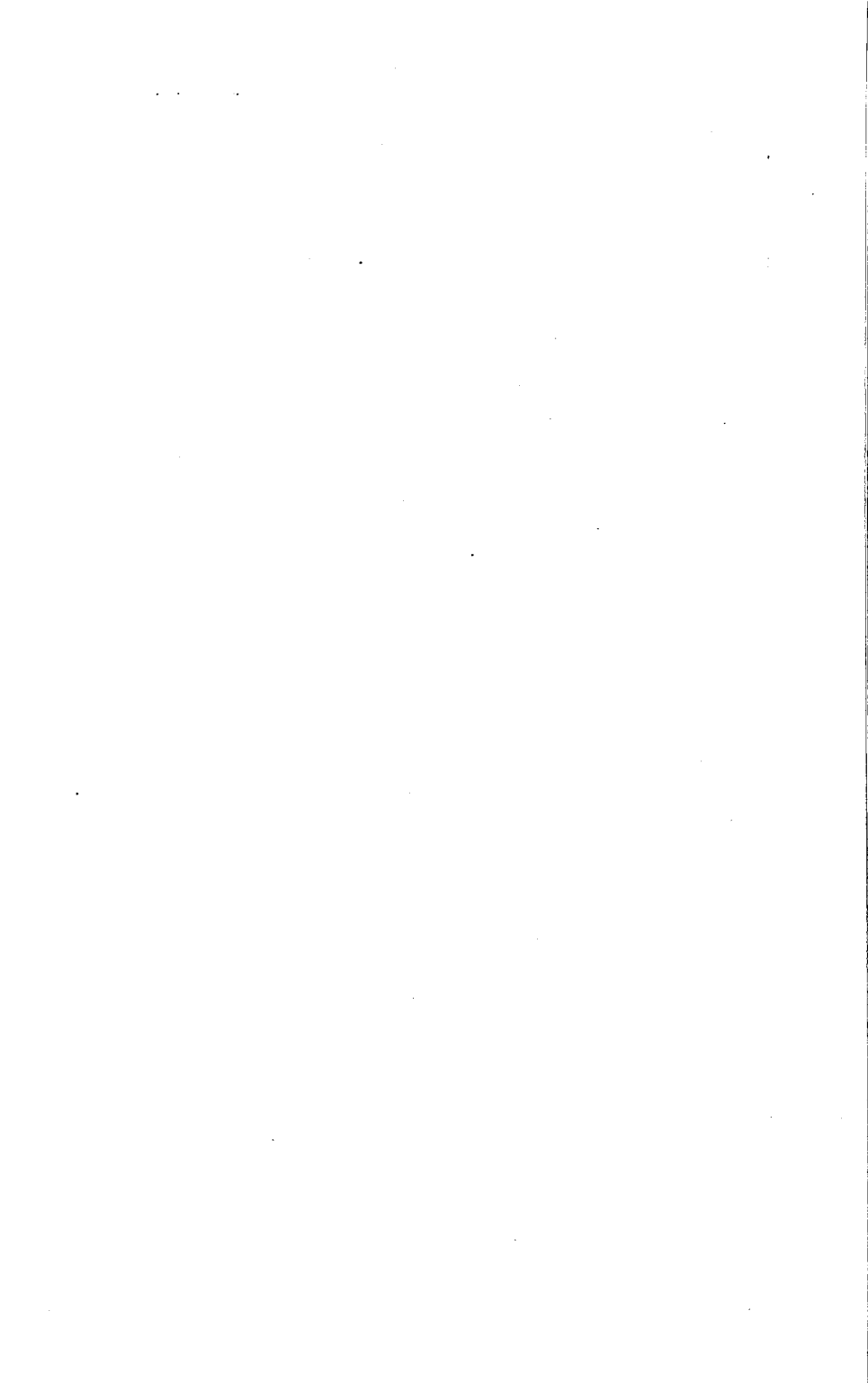
1. Test No.	2. Test.	3. What should happen.	4. What should not happen.	5. What is likely to be wrong.	6. What to do about it.
8. Receiver AERIAL TRIMMER control.	At approximate mid position on each waveband rotate the AERIAL TRIMMER knob.	Two peaks in the general noise level will be found tunable as the control is rotated a complete revolution.	(a) Output noise level constant.	(i) Knob loose on spindle. (ii) Internal set fault.	Tighten grub screw.  Report.
9. Receiver SELECTIVITY switch.	With SELECTIVITY switch set to NARROW and AVC to ON tune to strong RT carrier; reset SELECTIVITY switch consecutively to MEDIUM and BROAD, rechecking tuning.	Band width of carrier, distinguished by reduction in signal to noise ratio while tuning, will be progressively wider.	(a) No change in band width. (b) Carrier disappears or is almost indistinguishable. (c) Switch noisy or intermittent in operation.	(i) Knob loose on spindle. (ii) Internal set fault. (i) Internal set fault.	Tighten grub screw.  Report.  Report.
10. Receiver AM/CW/FM System switch.	While tuning to a moderate strength AM carrier on Band 1 with the system switch at AM,	As the tuning is varied through the carrier the modulation and noise outputs will show a charac-	(a) Modulation and noise output increase in amplitude at the centre of the carrier.	(i) Knob loose on spindle. (ii) Internal set fault.	Tighten grub screw.  Report.

(cont. below)

(cont. below)

1. Test No.	2. Test. (cont. from above)	3. What should happen.	4. What should not happen.	5. What is likely to be wrong.	6. What to do about it.
11. Receiver BFO control.	<p>SELECTIVITY at BROAD and the AVC switched OFF, turn system switch to FM.</p> <p>While tuned to an AM carrier on band 1 with the system switch at CW and the SELECTIVITY at NARROW, rotate the BFO knob from the anti-clockwise to clockwise.</p>	<p>An audio beat frequency variation of from about 5 k/cs. down to zero and up to 5 k/cs. again will be heard.</p>	<p>(a) No beat frequency.</p> <p>(b) No variation in beat frequency.</p>	<p>(i) Switch faulty.</p> <p>(i) IF/AF Unit BFO valve V4B faulty.</p> <p>(ii) Internal set fault.</p> <p>(i) Knob loose on spindle.</p> <p>(ii) Knob spindle loose in internal coupling link.</p> <p>(iii) Internal set fault.</p>	<p>Report.</p> <p>Check the valve by replacing with a spare and if not faulty refit original valve.</p> <p>Report.</p> <p>Tighten grub screw.</p> <p>Tighten coupling link screws.</p> <p>Report.</p> <p>Tighten grub screw.</p>
12. Receiver WAVE-RANGE switch.	<p>Turn WAVE-RANGE knob to one band at a time and if possible tune to an identifiable signal on each band.</p>	<p>Five distinct band positions will be located.</p>	<p>(a) Five band positions are not located.</p>	<p>(i) Knob loose on spindle.</p> <p>(ii) Coupling links between knob spindle and switch spindle not correctly aligned or are loose</p> <p>(iii) Internal set fault.</p>	<p>Report.</p> <p>Correctly align coupling links and tighten fixing screws.</p> <p>Report.</p>

1. Test No.	2. Test.	3. What should happen.	4. What should not happen.	5. What is likely to be wrong.	6. What to do about it.
12 (cont.)			(b) Switches noisy or intermittent in operation.	(i) Switches faulty.	Report.
13. Receiver fast and slow motion tuning control.	Move cursor by rotating large tuning knob.	Cursor will move freely over the whole scale.	(a) Cursor does not move freely over whole scale.	(i) Cursor or cursor carrier loose on driving spindle. (ii) Geared drive faulty. (iii) Front coupling link to gang condenser spindle loose. (iv) Locking knob screwed up too tight.	Report. Report. Report. Release locking knob.
	Move cursor by large knob to approximate position of RT signal then tune in by rotating backwards and forwards small tuning knob.	Cursor will slowly follow the rotations of the knob smoothly without serious backlash between the reversals.	(a) Cursor will not follow smoothly or without serious backlash.	(i) Geared drive faulty.	Report.



# Erection of Mast 36 ft. Steel

The mast may be erected by two men, if the procedure below is followed :—

- (i) No. 1 will note in which direction the aerial is to be run and select the position of the mast.
- (ii) On the side of each mast place the following :—
- 6 Sections 6 ft.
  - 1 Shoe with 1 Antennae Rod "A" peg.
  - 1 Stayplate No. 1 complete with guy ropes.
  - 1 Stayplate No. 2 complete with guy ropes.
  - 1 Halyard.
  - 5 Pickets, Angle, Short, Mk. III.

*NOTES.*—Four pickets are sufficient if the halyard is secured (when the aerial is up) by tying it around the base of the mast.

A hammer is carried to drive in the pickets.

- (iii) Action will be taken by each man as shown in the column below:

No. 1.	No. 2.
(1) Fixes mast shoe, with open end at 45° to direction of aerial, by means of the peg.	(1) Assembles 4 mast sections on ground, laid out with belled base near shoe in direction of open side of shoe.
(2) Drives in 4 pickets, each 6 full paces from the shoe and equally spaced round it. The first picket is in the direction of the open side of the shoe, i.e., alongside the mast.	(2) Slides the Stayplate No. 1 over the fourth section.
(3) Drives in 1 picket (for the halyard) 2-ft. from the shoe in the direction of the aerial.	(3) Completes assembly of mast sections.
(4) Puts stayplate No. 2 on top section of mast with halyard ring towards ground.	(4) Runs out two side guys from stayplate No. 1 to the pickets on either side of mast and tightens these guys.
(5) Runs out two side guys from stayplate No. 2 to the same pickets as No. 2 at (4) and tightens these guys.	(5) Puts ring on underneath guy over picket near mast and runs fourth guy out along-side mast to its full extent.
(6) As No. 2 at (5) but from stayplate No. 2.	(6) Attaches halyard and runs it out in continuation of the mast.

No. 1.	No. 2.
<p>(7) Picks up both free guys near shoe and faces in direction of mast.</p> <p>(8) Puts his foot against the base of the mast to keep it in shoe, then gives the order "Hoist." Pulls on the two guys as the mast rises.</p> <p>(9) Puts the two guys over the picket behind him and tightens the guys as No. 2 steadies the mast.</p> <p>(10) Regulates all guys until the mast is truly vertical.</p>	<p>(7) Sees that base of mast is in shoe and then takes up a position near the top of mast and facing No. 1.</p> <p>(8) At the order "Hoist!" lifts the mast and "walks up" it with his hands above his head until the mast is vertical.</p> <p>(9) Steadies the mast while No. 1 regulates the guys.</p> <p>(10) Gets halyard in correct position clear of guys and ties it to the picket at foot of mast.</p>





## LIST OF MAIN COMPONENTS

CONDENSERS.

Designation	Capacity	Tol. % ±	Wkg. v.	Type	Remarks
C1A & B	25 $\mu$ F	—	25	Elect.	
C2A-E	8 "	—	450	Elect.	
C3A & B	2 "	—	350	Elect.	
C4A	2 "	—	250	Paper	
C5A-F	0.5 "	—	50	Paper	
C6A-E	0.1 "	—	350	Paper	
C7A	0.05 "	—	250 A.C.	Paper	
C8A-Z	0.01 "	25	350	Mica	
C8AA-AC	0.01 "	25	350	Mica	
C8AJ-AL	0.01 "	25	350	Mica	Scr. Fixing
C9A	0.01 "	—	350	Paper	
C10A	0.005 "	5	500 PK.	Mica	
C11A & B	0.004 "	5	250 A.C.	Mica	350 V.D.C. Wkg.
C12A	0.003 "	25	350	Mica	
C13A	0.002 "	—	350	Paper	
C14A & B	500 $\mu$ F	25	350	Mica	
C15A-D	400 "	2	350	S. Mica	
C16A-C	300 "	2	350	S. Mica	
C17A	280 "	15	350	S. Mica	
C18A	230 "	2	350	S. Mica	
C19A & B	200 "	5	350	S. Mica	
C20A-D	200 "	2	350	S. Mica	
C21A-H	150 "	2	350	S. Mica	
C22A-G	100 "	5	350	S. Mica	
C23A-C	50 "	5	350	S. Mica	
C24A-D	50 "	2	350	S. Mica	
C25A-C	5-47 "	—	—	Variable	Gang
C26A-E	3-30 "	—	—	Variable	Trimmer
C27A & B	12.5 "	10	350	S. Mica	
C28A & B	10 "	10	—	Ceramic	
C29A	3-10 "	—	—	Aerial	Trimmer
C30A	6-8 "	—	—	Ceramic	
C31A-E	2-8 "	—	—	Variable	Trimmer
C32A	2-4 "	—	—	Ceramic	

## INDUCTANCES

Designation	Description
L1A-E	Inductances Aerial Bands 5-1
L2A-E	Inductances R.F. Bands 5-1
L3A-E	Inductances Osc. Bands 5-1
L4A	Chokes R.F. No. 200
L5A-C	Inductances I.F. (9.72 Mc/s)
L6A	Chokes R.F. No. 199
L7A	Inductances 2nd Osc. No. 1
L8A-H	Inductances I.F. (2.1 Mc/s)
L9A	Chokes R.F. No. 66 (500 $\mu$ H)
L10A-C	Chokes R.F. (1.75 $\mu$ H)
L11A	Chokes A.F. 40 H 25 mA No. 1
L12A	Chokes A.F. No. 81 (7 H)
L13A & B	Chokes R.F. No. 67 (35 $\mu$ H EACH)
L14A	Inductances B.F.O. No. 7
L15A & B	Chokes A.F. 0.91 H 15 mA No. 1
L16A & B	Chokes R.F. No. 198
L17A	Inductances I.F. Compensator No. 1

## TRANSFORMERS

Designation	Description
T1A	Transformers I.F. No. 73 (9.72 Mc/s)
T2A	Transformers I.F. No. 74 (9.72 Mc/s)
T3A	Transformers I.F. No. 75 (9.72 Mc/s)
T4A	Transformers I.F. No. 78 (2.1 Mc/s)
T5A	Transformers I.F. No. 77 (2.1 Mc/s)
T6A	Transformers I.F. No. 76 (2.1 Mc/s)
T7A	Transformers, power
T8A	Transformers, output No. 43

## RESISTANCES

Designation	Ohms	Tol % ±	Watts	Remarks
R1A-C	7	10	$\frac{1}{2}$	Wire wound
R2A	22	10	$\frac{1}{8}$	
R3A	22	20	$\frac{1}{2}$	
R4A	42	10	$1\frac{1}{2}$	
R5A	120	10	$\frac{1}{4}$	
R6A	150	10	$\frac{1}{2}$	
R7A & B	220	10	$\frac{1}{2}$	
R8A	220	20	$\frac{1}{2}$	
R9A	270	10	$\frac{1}{2}$	
R10A	470	20	$\frac{1}{4}$	
R11A	600	15	1	
R12A	700	10	$\frac{1}{2}$	
R13A	820	10	$\frac{1}{2}$	
R14A & B	1,000	20	$\frac{1}{4}$	
R15A	2,500	15	$\frac{1}{2}$	
R16A	3,000	15	$\frac{1}{4}$	
R17A	3,000	10	2	
R18A-D	4,700	20	$\frac{1}{4}$	
R19A	4,700	20	$\frac{1}{2}$	
R20A	10,000	10	15	Wire wound
R21A	10,000	10	$\frac{1}{8}$	
R22A & B	10,000	20	$\frac{1}{4}$	
R23A	22,000	10	1	
R24A	27,000	10	$\frac{1}{8}$	
R25A	27,000	20	$\frac{1}{4}$	
R26A	27,000	10	$\frac{1}{2}$	
R27A	27,000	10	1	
R28A-C	27,000	10	$1\frac{1}{2}$	
R29A & B	47,000	20	$\frac{1}{4}$	
R30A-C	68,000	20	$\frac{1}{8}$	
R31A	68,000	10	$1\frac{1}{2}$	
R32A-F	100,000	20	$\frac{1}{8}$	
R33A & B	100,000	20	$\frac{1}{4}$	
R34A-C	100,000	20	1	
R35A-C	220,000	20	$\frac{1}{8}$	
R36A	220,000	10	$\frac{1}{2}$	
R37A & B	330,000	20	$\frac{1}{8}$	
R38A & B	470,000	10	$\frac{1}{8}$	
R39A	470,000	20	$\frac{1}{8}$	

## PLUGS AND SOCKETS

Designation	Description
PL1A	Plug units R.F. supplies
PL1B	Plug units I.F. supplies
PL1C	12 V or A.C. Plug power selector
PL2A	Plug units I.F.-R.F. interconnecting
PL3A	Power input 12 V D.C.
PL4A	Power Input A.C.
SO1A	Sockets units R.F. supplies
SO1B	Sockets units I.F. supplies
SO1C	Sockets power selection 12 volt
SO1D	Sockets power selection A.C.
SO2A	Sockets units I.F.-R.F. interconnecting

## SWITCHES

Designation	Description
S1A-G	Waverrange frequency bands 5-1
S2A & B	L.S. ON-OFF & AVC ON-OFF
S3A	Power ON-OFF
S4A-C	Selectivity Broad, Medium and Narrow
S5A	AM-CW-FM System Switch

## MISCELLANEOUS

Designation	Description
J1A	Line jack
J2A	Phones jacks
W1A	Rectifier Selenium No. 70
W2A	Rectifier Selenium No. 71
F1A-C	Fuses 5 amp.
VB1A	Vibrator No. 5
P1A & B	Bulbs 12 volt F

## VARIABLE RESISTANCES

Designation		Description
VR1A & B	5,000 ohms.	3 W. Wire wound
VR2A	2,000 ohms.	3 W. Wire wound
VR3A	1 megohm	

## CONTROLS

C25A-C	Main tuning condenser
C29A	Aerial trimmer
VR1A	Phones output
VR1B	Limiter
VR2A	R.F. gain
VR3A	A.F. gain

## VALVES

Designation	Type	Description
V1A-D	VR136	R.F. Pentode
V2A	VR92	Diode
V3A & B	AW2	Voltage stabilizer
V4A & B	ARTH2	Triode Hexode
V5A & B	ARP34	Variable MU H.F. Pentode
V6A	ARDD5	Double diode
V7A	6Q7G	Double diode triode
V8A	VT52	L.F. pentode



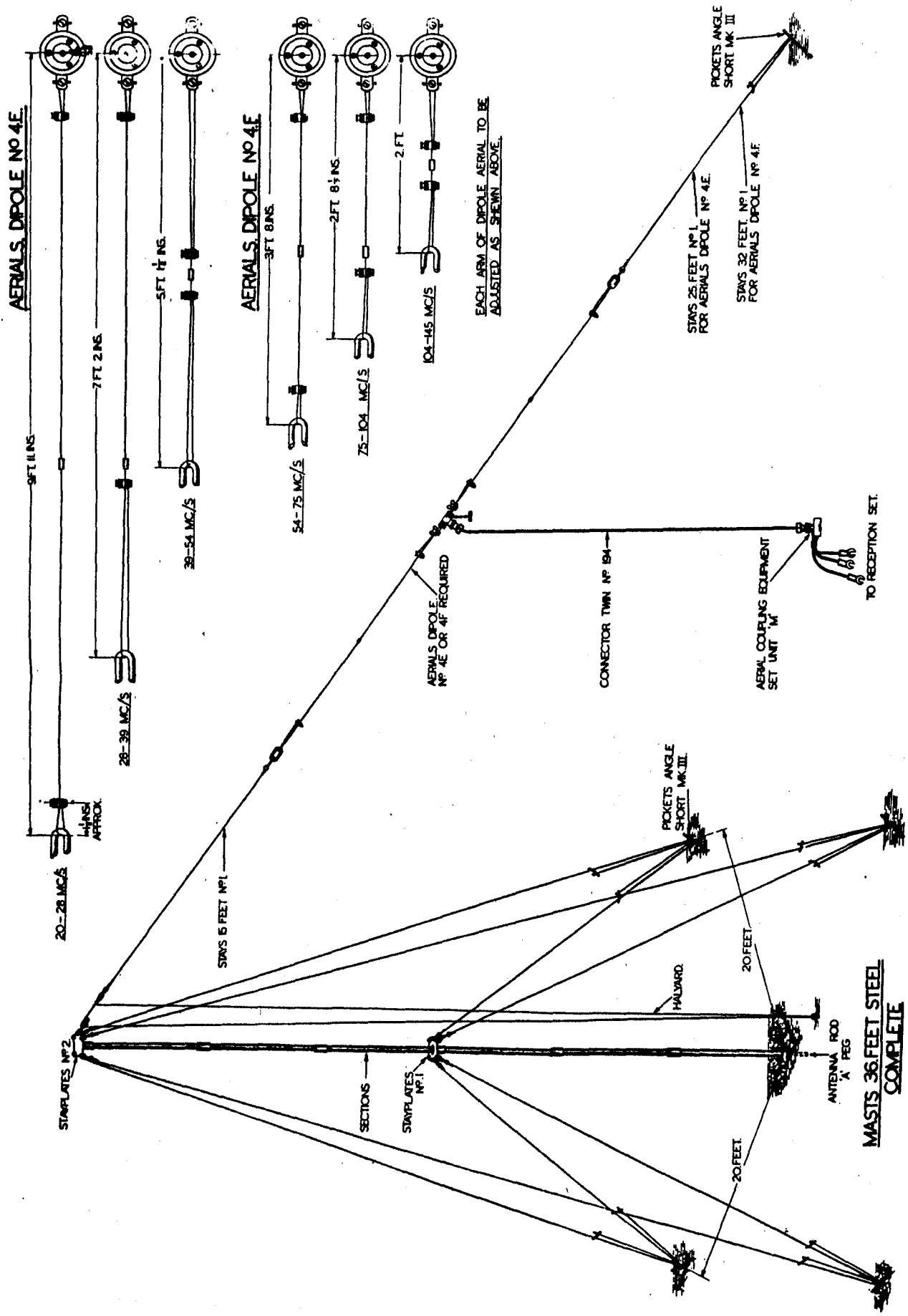
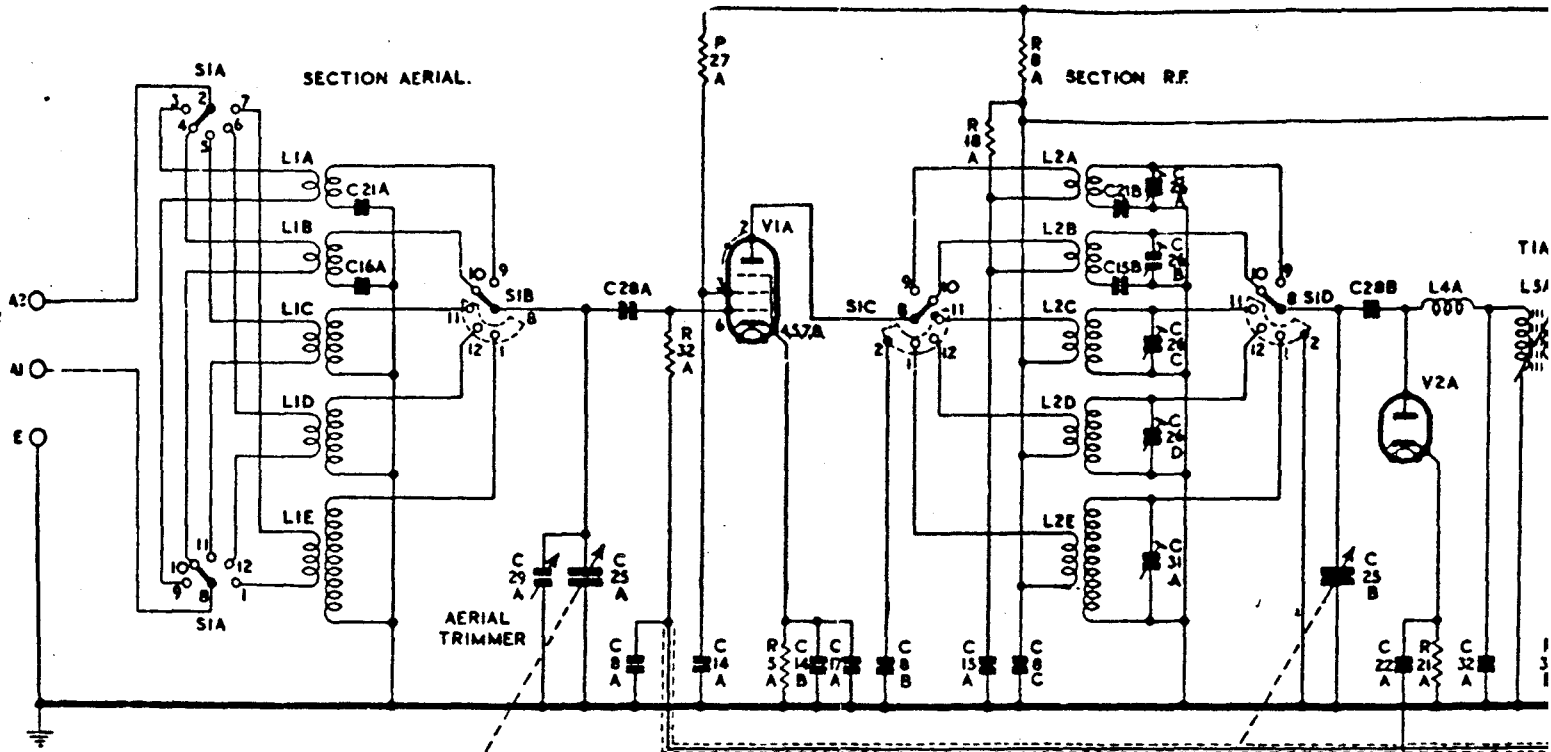


FIG. 3

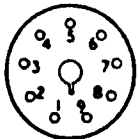




VR136

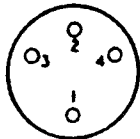


BRITISH 9-PIN GLASS.



VI—VR136 (R.A.F. TYPE)  
 PINS 4,5,7 AND 8 ARE CONNECTED TO THE CATHODE, SUPPRESSOR GRID AND INTERNAL SCREENING. THE SPIGOT EARTHS THE EXTERNAL SCREENING.

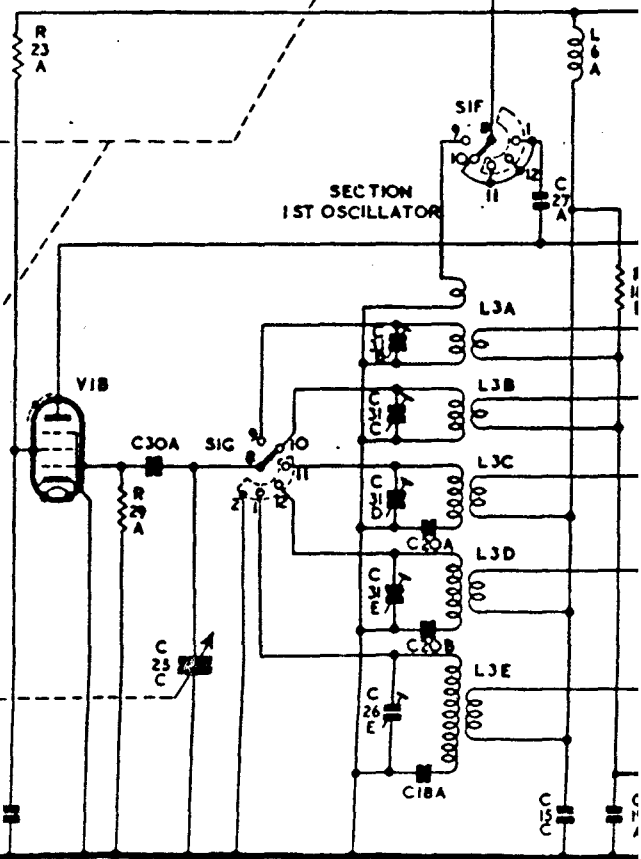
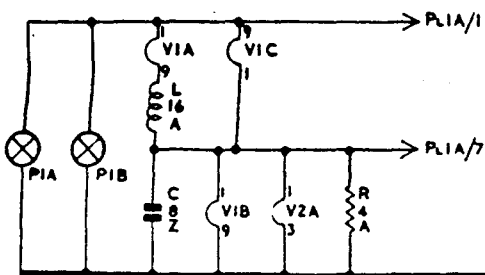
BRITISH 4-PIN.



V3—AW2



V2—VR92 (R.A.F. TYPE)



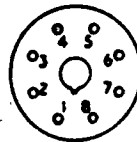
R.F. UNIT



VR136

250V.

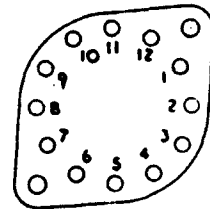
PL1A  
PLUG,  
UNITS, RF  
SUPPLIES



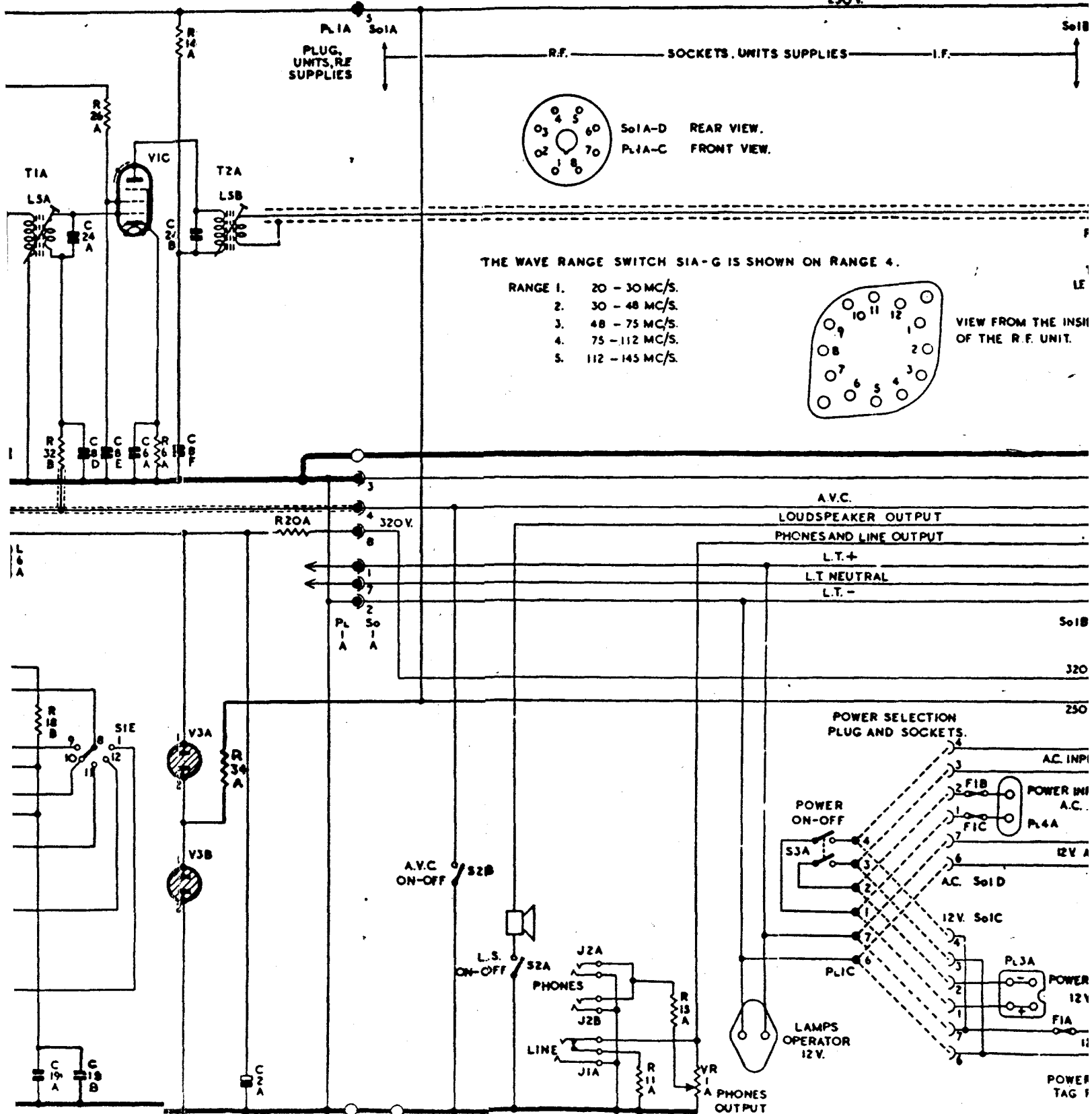
So1A-D REAR VIEW.  
PL1A-C FRONT VIEW.

THE WAVE RANGE SWITCH S1A-G IS SHOWN ON RANGE 4.

- RANGE 1. 20 - 30 MC/S.
- 2. 30 - 48 MC/S.
- 3. 48 - 75 MC/S.
- 4. 75 - 112 MC/S.
- 5. 112 - 145 MC/S.



VIEW FROM THE INSIDE  
OF THE R.F. UNIT.

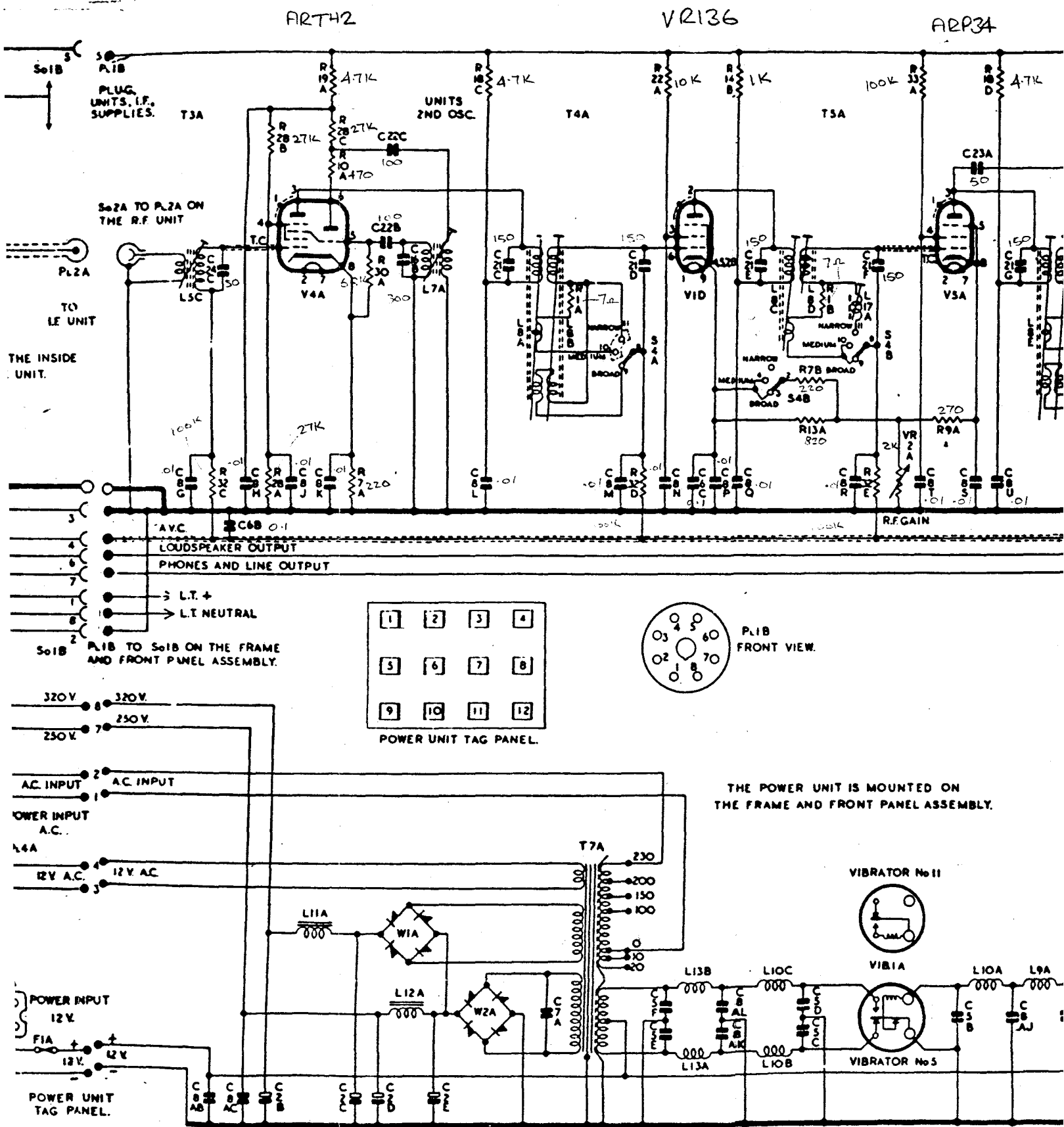


FRAME AND FRONT PANEL ASSEMBLY

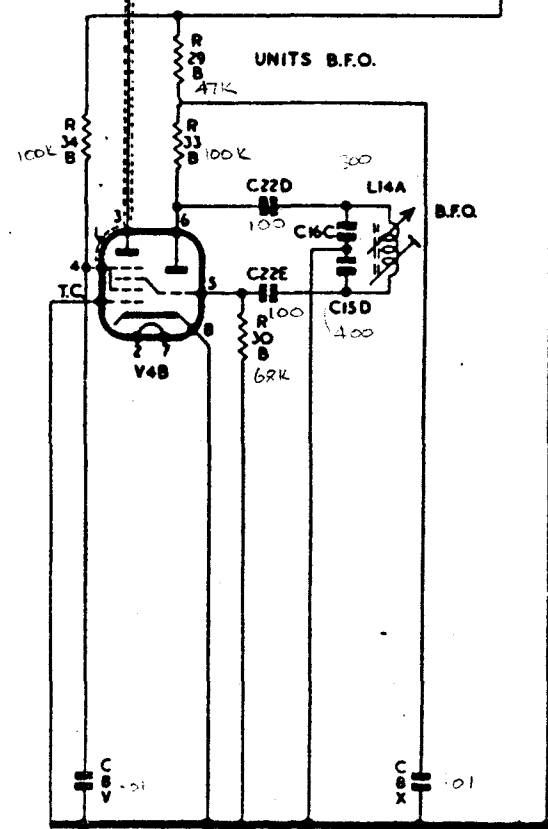
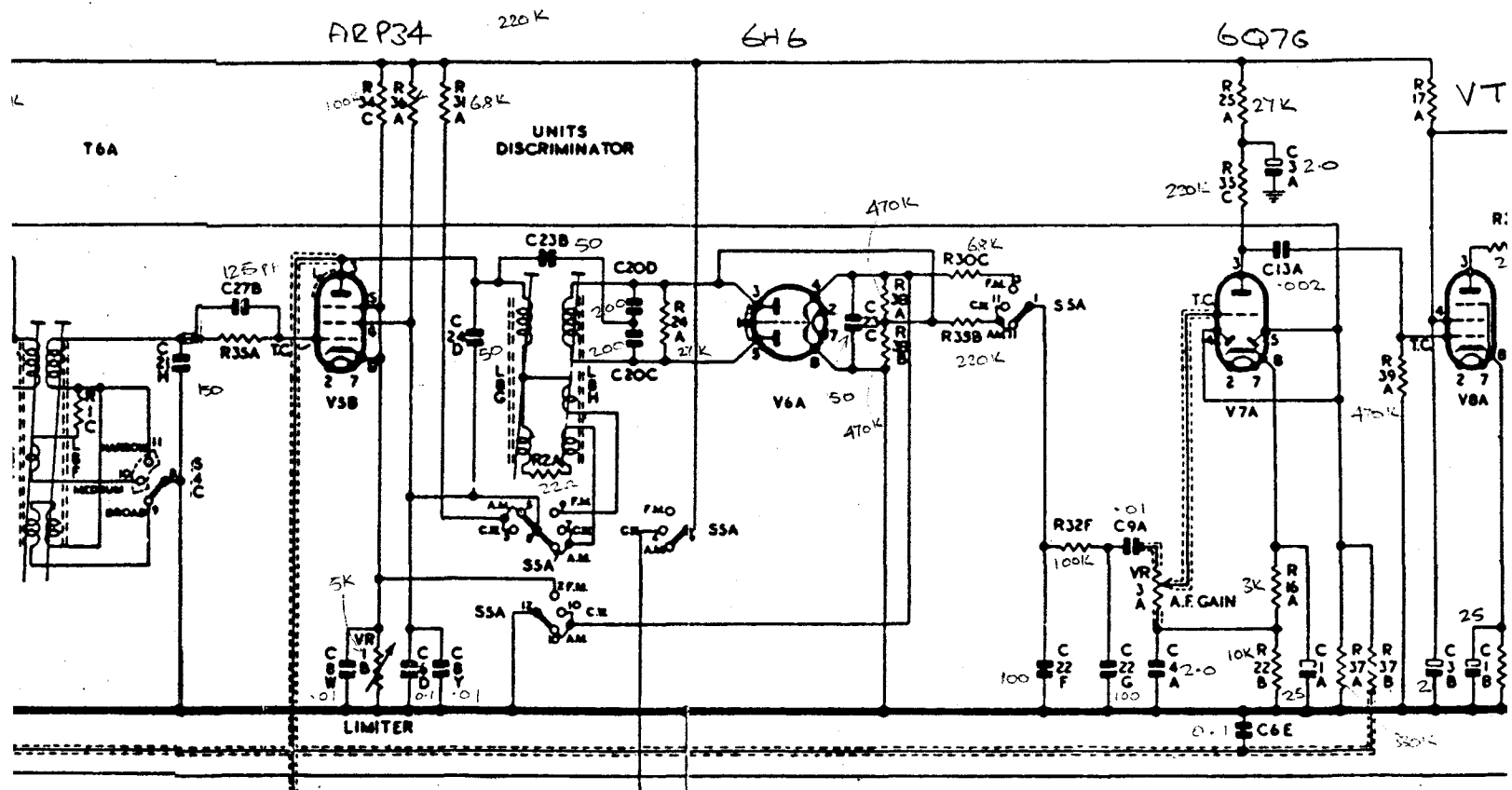
OPTION SET R 308

W2

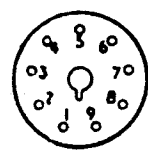






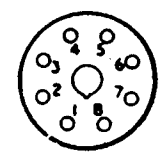


BRITISH 9-PIN GLASS

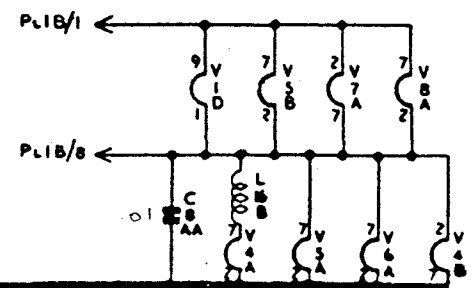


VI - VR 136 (R.A.F. TYPE)  
 PINS 4, 5, 7, AND 8 ARE CONNECTED TO THE CATHODE. SUPPRESSOR GRID AND INTERNAL SCREENING. THE SPIGOT EARTHS THE EXTERNAL SCREENING.

INTERNATIONAL OCTAL



V4 - ARTH 2  
 V5 - ARP 34  
 V6 - ARD 0 5  
 V7 - 6Q 7 G  
 V8 - VT 5 2



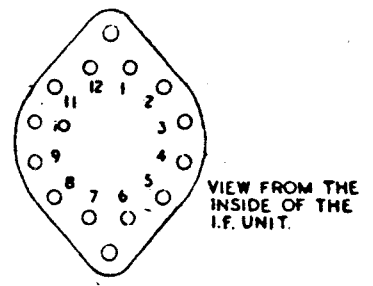
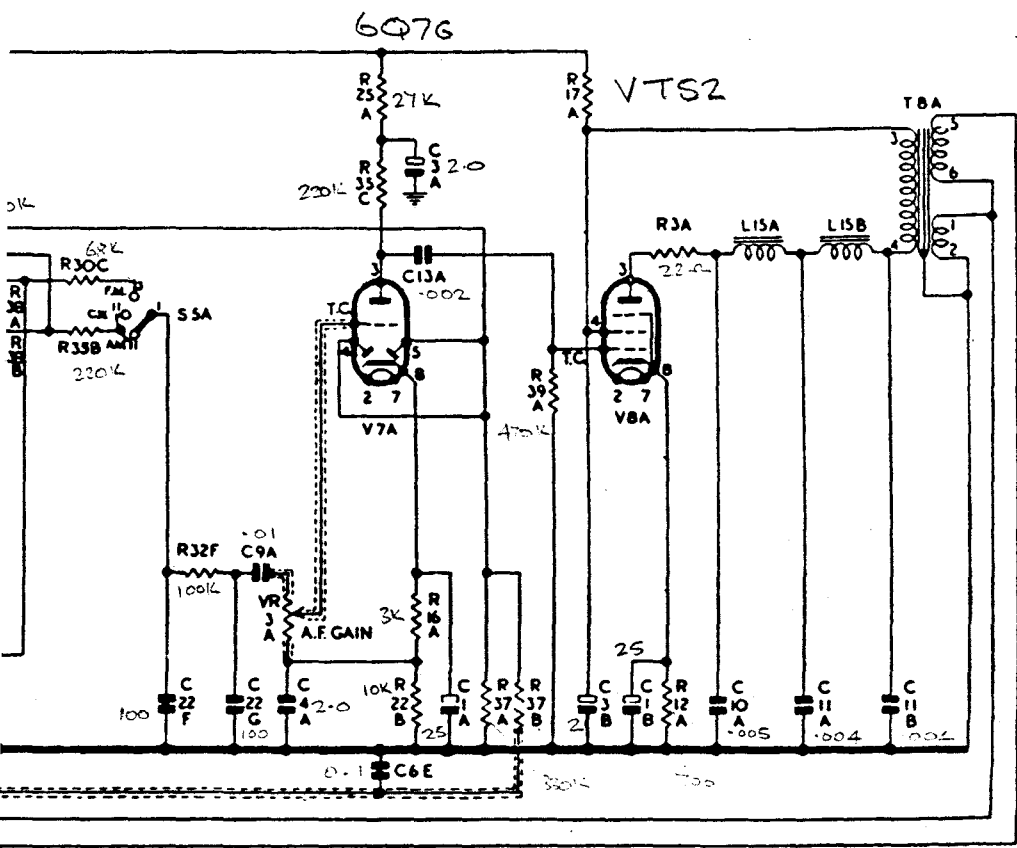
Ag-42

I.F. UNIT

OPTION SET R.308

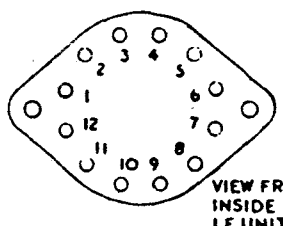






VIEW FROM THE  
INSIDE OF THE  
I.F. UNIT.

55A  
A.M.-C.W.-F.M.  
SHOWN IN THE 'A.M.' POSITION.



VIEW FROM THE  
INS