

# FERRANTI MODEL 2337 RADIOGRAM

**CIRCUIT.**—Aerial input on all bands is via transformer coils to V1, a heptode frequency changer, L7 and L21 with associated condensers are image rejector and I.F. wavetrapp circuits respectively.

The output of V1 passes via an I.F. transformer, tuned to 450 kc., to the grid of V2, the I.F. amplifier.

A further transformer couples V2 to the demodulating diode of V3, a double diode triode. The other diode, fed by a coupling condenser, provides a D.C. potential that is fed back to the grids of V1 and V2 for A.V.C.

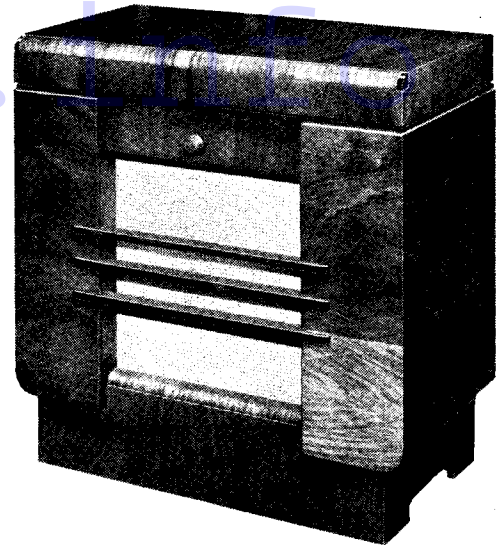
Coupling arrangements to the grid of the triode section of V3 include a manual volume control and connections for a pick-up. A scratch filter is included in the pick-up connections.

V3 is resistance capacity coupled to V4, an output pentode. Between the grid of V4 and chassis a variable resistance and

condenser in series provide a tone control. Pentode compensation is given by a fixed resistance and condenser across the primary of the speaker transformer.

Mains equipment consists of a mains transformer, a full-wave rectifying valve V5, electrolytic smoothing condensers and a smoothing choke (the field coil). A mains suppressor condenser is connected between one side of the mains and chassis.

**Chassis Removal.**—First remove the speaker leads (terminated in plugs) from the insulating panel on top of the mains transformer. For reconnection the colours of the leads are black, red, green and blue, counting from top to bottom. Then



remove the four bolts and the speaker. Next remove the control knobs and the four wood screws securing the volume control bracket.

Next remove the two fixing bolts from the lower end of the chassis, taking due care to prevent the chassis falling. The two upper ends are held by lugs on a ledge and if the chassis is tipped outwards and upwards it can then be completely removed.

**Special Notes.**—A pair of terminals on the speaker enable a low-impedance permanent-magnet extension speaker to be operated.

There are two diallights located in screw-in holders that clip one each side of the

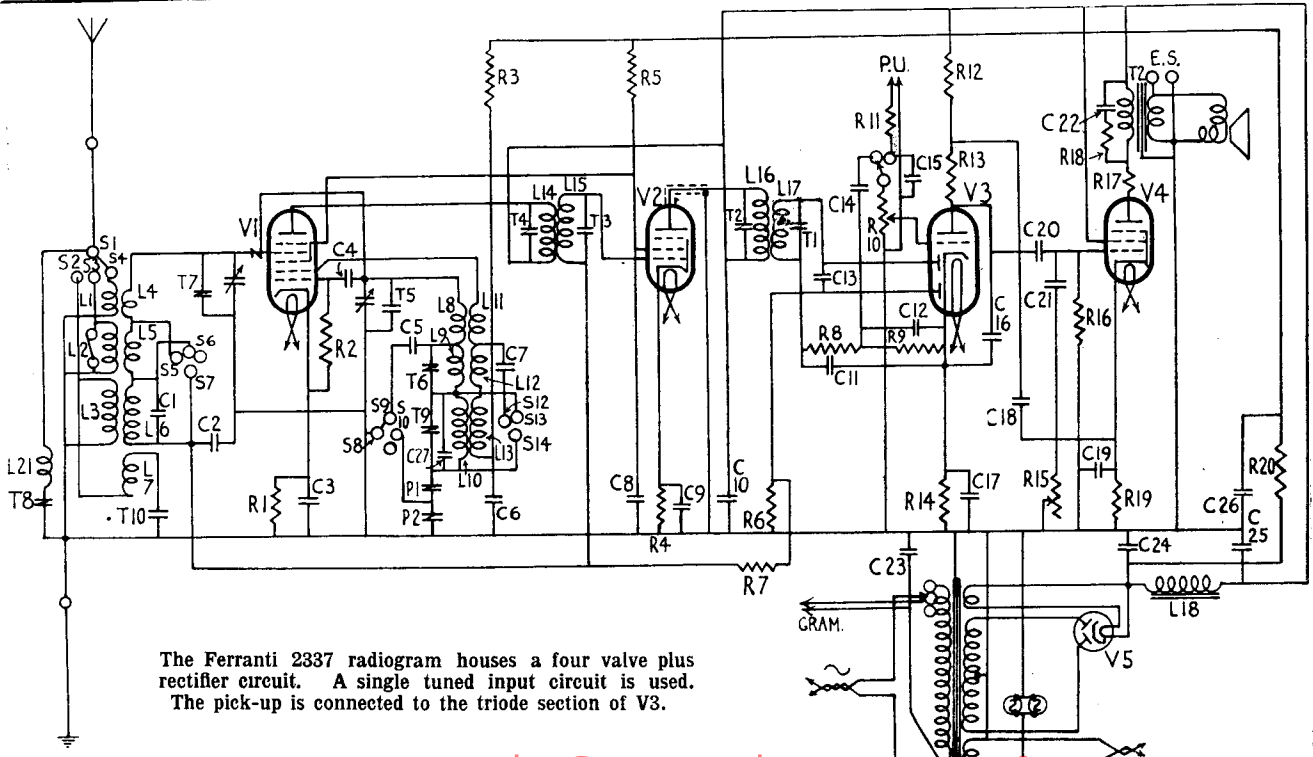
## VALVE READINGS

No signal. Volume maximum. M.W. min. cap 200 volt. A.C. mains.

V.	Type.	Electrode.	Volts.	Ma.
1	Ferranti VHT4 (7)	Anode ..	265	1.8
		Screen ..	92	4.8
		Osc.anode	168	6.5
2	Ferranti VPT4 (5)	Anode ..	270	2.2
		Screen ..	90	1.1
3	Ferranti H4D (7) or Mazda AC/HL/DD	Anode ..	240	.5
		Screen ..	270	8
4	Mazda Ac2Pen. DD (7) or Ferranti PT-4D	Anode ..	260	3.5
		Screen ..	270	8
5	Brimar R2 (5)	Cathode.	378	—

## WINDINGS

Windings.	Ohms.	Windings.	Ohms.
L1 .. .. .	.3	L12 .. .. .	1.7
L2 .. .. .	23	L13 .. .. .	2.2
L3 .. .. .	59	L14 .. .. .	9
L4 .. .. .	.035	L15 .. .. .	12
L5 .. .. .	2.4	L16 .. .. .	12
L6 .. .. .	11	L17 .. .. .	8.5
L7 .. .. .	5.4	L18 .. .. .	2,200
L8 .. .. .	.035	T2 prim.	260
L9 .. .. .	5	T1 prim.	30
L10 .. .. .	8.5	HT sec.	360
L11 .. .. .	.6	L21 .. .. .	21



The Ferranti 2337 radiogram houses a four valve plus rectifier circuit. A single tuned input circuit is used. The pick-up is connected to the triode section of V3.

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scale. They are Ever Ready bulbs rated at 6.2 volts .2 amp., have M.E.S. bases and are painted white to prevent glare.

In our chassis V4 was a Mazda AC2PenDD with the diodes unused. Consequently before valve readings are taken the type of output valve supplied must be determined.

## Alignment Notes

**I.F. Circuits.**—Connect an output meter across the primary of the speaker transformer. Set the volume control to maximum, wavechange switch to M.W., and tuning control to maximum capacity. Connect a service oscillator between the top grid cap of V1 and chassis.

Tune the service oscillator to 450 kc. and adjust T1, T2, T3 and T4 in that order for maximum response. Reduce the input from the oscillator as the circuits come into line so as to prevent the A.V.C. working.

**Signal Circuits.**—Connect the service oscillator to the A and E terminals of the receiver via a dummy aerial. Only feed sufficient input from the service oscillator to obtain definite peaks in the output meter to render the A.V.C. inoperative.

**Short Waves.**—Tune service oscillator to 38 mc. (16.6 metres) and (with the gang condenser right out) adjust T5 for maxi-

mum response. Use the peak obtained with T5 in the lower capacity position.

The short wave padding is fixed.

**Medium Waves.**—Leaving gang as before, tune oscillator to 200 metres (1,500 kc.) and adjust T6 for maximum, again being careful to choose the right peak.

Then tune set and oscillator to 228 metres (1,315 kc.) and adjust T7 for maximum.

Tune set and oscillator to 500 metres (600 kc.) and adjust P1 for maximum, simultaneously rocking the gang.

Repeat adjustment until no further improvement results.

**Long Waves.**—Tune set and oscillator to 1,128 metres (266 kc.) and adjust T9 for maximum.

Tune set and oscillator to 1,807 metres (166 kc.) and adjust P2 for maximum, simultaneously rocking the gang.

Repeat both operations until no further improvement results.

Then with the receiver still switched to L.W. apply a 261 metre signal between aerial and earth terminals, tune in on receiver (approximate reading 1,200 metres) and adjust T10 for minimum output.

**I.F. Wavetrap.**—Set gang full in, tune service oscillator to 450 kc., and adjust T8 for minimum response.

## Ferranti 2337 on Test

**MODEL 2337.**—Standard model for A.C. mains, 200-250 volts, 40-100 cycles. Price, 23 gns.

**DESCRIPTION.**—Four-valve, plus rectifier, superhet radiogramophone, with three waveranges.

**FEATURES.**—Full-vision scale calibrated in metres and station names. Controls for wave selection, tone, combined volume and master switch, **tuning and separate switch for radiogram control.** Terminals for extension speaker.

**LOADING.**—75 watts.

### Sensitivity and Selectivity

**SHORT WAVES (16.7-51 metres).**—Good sensitivity and adequate selectivity. Easy handling and no drift. Gain fairly well maintained.

**MEDIUM WAVES (200-550 metres).**—Excellent sensitivity and good selectivity. Local stations spreading on adjacent channels only. Slight whistle on London Regional. Gain well maintained.

**LONG WAVES (1,000-2,000 metres).**—Good gain and selectivity with a certain amount of interference on Deutschlandsender. All main stations easily received.

### Acoustic Output

Ample volume for an ordinary room with well balanced tone, not too severely cut by the control. Upper and lower note radiation good both on gramophone and radio. Speech and orchestral music very nicely balanced. Pick-up does not appear to load fully the output valve on the average record.

**REPLACEMENT** condensers for the 2337 are available from A. H. Hunt, Ltd., Garratt Lane, Wandsworth, London, S.W.18. These are: for the block containing C6 and C26, unit 3633, 4s. 6d.; for block containing C24 and C25, unit 1573, 6s. 6d.; for C17 or C19, 2915, 1s. 9d.; for C18, 1983, 1s. 9d.

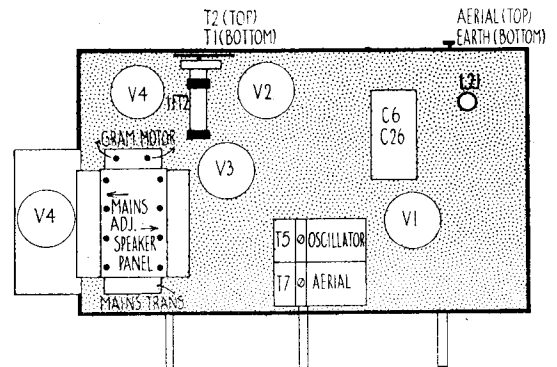
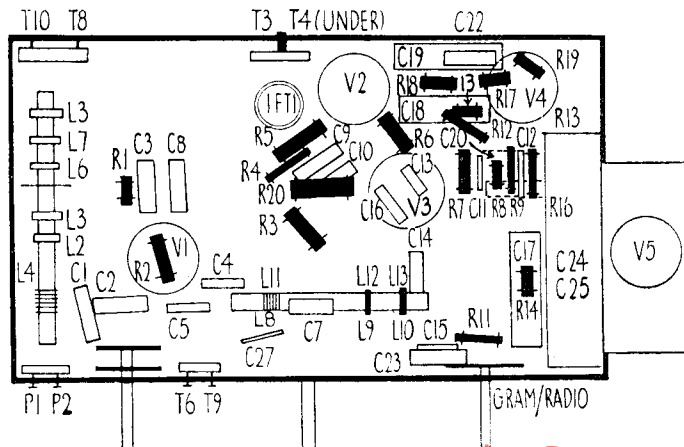
## CONDENSERS

C.	Purpose.	Mfds.
1	L.W. aerial coil fixed trimmer	.00005
2	V1 A.V.C. decoupling	.05
3	V1 cathode bias shunt	.1
4	Oscillator grid	.0001
5	S.W. osc. fixed padder	.004
6	Osc. anode decoupling	.4
7	S.W. reaction by-pass	.001
8	V1 and V2 screen decoupling	.1
9	V2 cathode bias shunt	.05
10	V2 anode H.F. by-pass	.1
11	H.F. by-pass	.00015
12	H.F. by-pass	.00015
13	A.V.C. diode coupling	.00005
14	L.F. coupling	.05
15	Pick-up tone filter	.0018
16	V3 anode shunt	.0003
17	V3 cathode bias shunt	.50
18	V3 anode decoupling	.1
19	V4 cathode bias shunt	.50
20	L.F. coupling	.1
21	Tone control	.1
22	Tone modifier	.02
23	Mains suppressor	.002
24	H.T. smoothings	.8
25	H.T. smoothings	.8
26	V1, V2 (part) decoupling	.4
27	L.W. osc. fixed padder	.00006

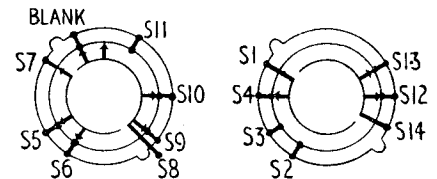
## RESISTANCES

R.	Purpose.	Ohms.
1	V1 cathode bias	300
2	Oscillator grid leak	50,000
3	Oscillator anode decoupling	10,000
4	V2 cathode bias	2,000
5	V1 and V2 screen decoupling	25,000
6	A.V.C. diode load	2 meg.
7	V1 A.V.C. decoupling	1 meg.
8	H.F. stopper	100,000
9	Demodulating diode load	500,000
10	Volume control	1 meg.
11	Pick-up tone filter	50,000
12	V3 anode decoupling	12,000
13	V3 anode load	7,500
14	V3 cathode bias	2,000
15	Tone control	50,000
16	V4 grid leak	250,000
17	V4 anode stabiliser	140
18	Tone modifier	10,000
19	V4 cathode bias	140
20	V1 and V2 (parts) decoupling	10,000

On left and right are the two diagrams identifying the components of the 2337 chassis.

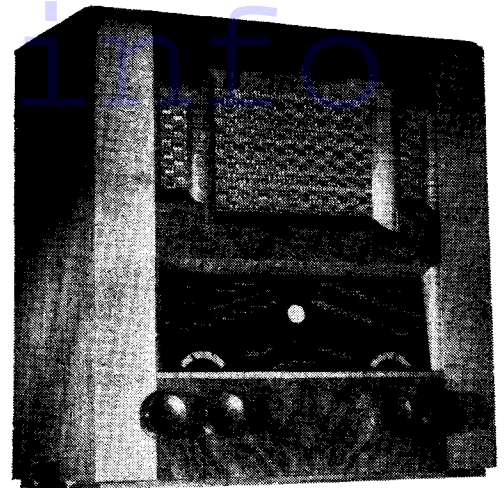


Right are diagrams of the switch banks numbered to correspond to the circuit diagram.



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# PYE QPAC TRANSPORTABLE



The QPAC by Pye, Ltd., is a five-valve plus rectifier A.C. superhet with built-in aerials. Three bands are covered.

**CIRCUIT.**—The input applied to the grid of V1, an H.F. pentode, is obtained from self-contained frame aerials that constitute the tuned grid circuit. The short-wave frame is arranged at right angles to the L.W. and M.W. aerials.

A static screen is fitted to reduce pick up from the mains, and arrangements are made whereby an external aerial and earth may be used if desired.

V1 is coupled to V2, a triode-hexode frequency changer, by special couplers designed to give maximum sensitivity. Here the signal is converted to the I.F. It passes via a variable band-width iron-cored transformer tuned to 465 kc. to the I.F. amplifying valve V3. A fixed transformer leads to the demodulating diode of V4, a double diode triode.

A tapping from the signal diode load also feeds the visual tuning indicator. A quenching bias controlled by a switch enables inter-station quieting to be obtained on the medium and long bands.

The other diode of V4, fed by C36, provides a D.C. potential for A.V.C. The coupling arrangements to the grid of the triode section of V4 include a manual volume control.

V4 is resistance capacity coupled to V5, an output pentode. Across the primary of the speaker transformer is connected a choke in series with a fixed condenser, whilst a three-position tone switch enables extra condensers to be connected between the anode of V5 and chassis thereby modifying the tone. A pentode compensator condenser is also fitted.

Mains equipment consists of a mains transformer, a full-wave rectifying valve, V6, electrolytic smoothing condensers and a smoothing choke (the field coil). A mains suppressor condenser is connected between one side of the mains and chassis.

**Chassis Removal.**—The cabinet has a false bottom that may be removed for inspection of the underside of the chassis.

First remove the back of the cabinet, the four spring-fixed control knobs, and remove the four chassis securing bolts.

Remove the 10 wood screws that secure the false bottom. Near the wavechange switches will be noticed a paxolin strip. The tagged leads to these must be removed. When reconnecting, the two black leads go to the terminal nearest to the wavechange switches, the white lead to the next and the yellow lead to the remaining terminal.

Remove the two wood screws from the top ends of the dial assembly. Pull out the multi-cable plug from its socket on the chassis deck. Remove the speaker leads from the rear of the chassis and

the frame aerial tags from the opposite side. When replacing the frame aerial leads connect the green lead to the upper terminal. Remove A and E panel.

C30 and C31 are inside the oscillator coils can, C27 inside I.F.T1 and C38 and R16 in I.F.T2. C50 and C51 are mounted on the top of the cabinet, and C17 on the aerial and earth strip.

**Special Notes.**—A pair of sockets at the rear of the chassis, near the output valve, have "socketed" plugs therein, whereby an external speaker may be connected to the receiver. For simultaneous operation the additional speaker plugs are inserted into the sockets of the "socketed" plugs whilst for independent operation the "socketed" plugs are removed and the additional speaker plugs are inserted in the sockets on the chassis.

A low impedance (2 to 4 ohms) permanent magnet speaker should be used.

A muting switch at the rear of the chassis enables inter-station "quieting"

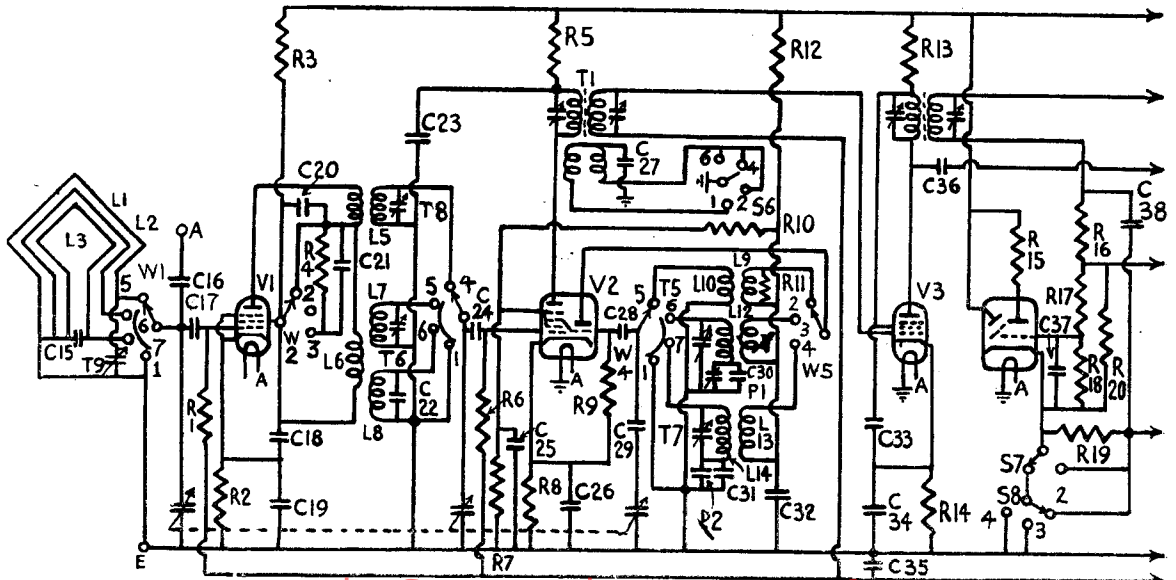
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## VALVE READINGS

No signal. M.W. band, min cap. Volume maximum 200 volts. A.C. mains.

V.	Type.	Electrode.	Volts.	Ma.
1	EverReady 50P or Mullard VP4B (7)	Anode ..	145	7.5
		Screen ..	145	2.8
2	Ever Ready A36A or Mullard TH4 (7)	Anode ..	230	5
		Screen ..	40	2.5
		Osc.anode	90	6
3	Ever Ready 50P or Mullard VP4B (7)	Anode ..	195	9.2
		Screen ..	195	3.5
4	Ever Ready A2A or Mullard TDD4(7)	Anode ..	100	2.8
5	Ever Ready A70D or Mullard Pen. A4 (7)	Anode ..	240	27
		Screen ..	260	4.4
6	Ever Ready A11D or Mullard IW4/350 (4)	Cathode..	355	—

A first stage of R.F. provides the QPAC with the high gain and low "noise" necessary with a frame-aerial receiver. The I.F. transformers are iron-cored.



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