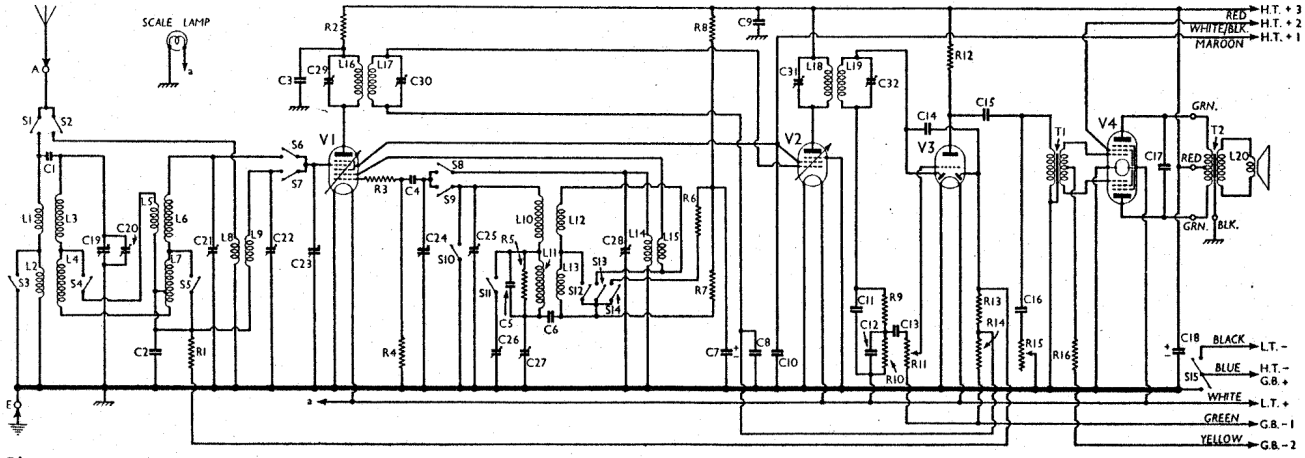
FERRANTI - 1237 B



Circuit diagram of the Ferranti 1237B and 1137B receivers. Band-pass input coupling is used on M.W. and L.W., with a single tuned circuit on S.W. The tone control circuit is across the primary of **T1.**

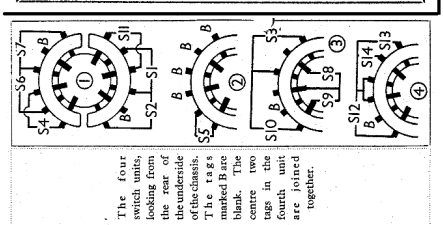
COMPONENTS AND VALUES

	RESISTANCES	Values (ohms)
R1	V1 tet. C.G. decoupling	1,000,000
R2	V1 anode decoupling	1,000
R3	V1 osc. C.G. stopper	70
R4	V1 osc. C.G. resistance	50,000
R5	L11 shunt	30,000
R6	V1 osc. anode feed (S.W.)	1,000
R7	V1 osc. anode feed (M.W. and L.W.)	30,000
R8	V1 osc. anode decoupling	5,000
R9	I.F. filter resistance	100,000
R10	V3 signal diode load	1,000,000
R11	Manual volume control	1,000,000
R12	V3 anode load	50,000
R13	V3 A.V.C. diode load pot.	2,000,000
R14	V3 A.V.C. diode load pot.	1,000,000
R15	Variable tone control	50,000
R16	V4 grids bias feed	100,000

	CONDENSERS	Values (μF)
C1	Aerial top coupling (M.W. and L.W.)	0·000016
C2	Band-pass bottom coupling (M.W. and L.W.)	0·05
C3	V1 anode decoupling	0·1
C4	V1 osc. C.G. condenser	0·00005
C5	Osc. L.W. fixed trimmer	0·000018
C6	V1 osc. anode coupling	0·01
C7*	V1 osc. anode decoupling	2·0
C8	V2 A.V.C. line decoupling	0·05
C9	Max. H.T. line R.F. by-pass	0·1
C10	V1, V2 S.G. by-pass	0·1
C11	I.F. filter condenser	0·0001
C12	Signal diode load by-pass	0·0001
C13	A.F. coupling to vol. cont.	0·02
C14	V3 A.V.C. diode coupling	0·00015
C15	A.F. coupling to T1	0·1
C16	Part T.C. filter	0·03
C17	Tone corrector	0·002
C18*	Max. H.T. line reservoir	8·0
C19†	Band-pass pri. tuning	—
C20‡	Band-pass pri. trimmer	—
C21‡	Band-pass sec. trimmer	—
C22‡	Aerial circuit trimmer (S.W.)	—
C23†	Band-pass sec. tuning	—
C24†	Oscillator tuning	—
C25‡	Osc. trimmer (M.W. and L.W.)	—
C26‡	Osc. M.W. tracker	—
C27‡	Osc. L.W. tracker	—
C28‡	Osc. trimmer (S.W.)	—
C29‡	1st I.F. trans. pri. tuning	—
C30‡	1st I.F. trans. sec. tuning	—
C31‡	2nd I.F. trans. pri. tuning	—
C32‡	2nd I.F. trans. sec. tuning	—

* Electrolytic. † Variable. ‡ Pre-set.

	OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial coupling coils (M.W. and L.W.)	18·0
L2	Aerial coupling coils (M.W. and L.W.)	70·0
L3	Band-pass primary coils	4·5
L4	Band-pass primary coils	45·0
L5	Band-pass coupling coil	0·2
L6	Band-pass secondary coils	4·5
L7	Band-pass secondary coils	40·0
L8	Aerial coupling coil (S.W.)	1·3



The four switch units, looking from the rear of the underside of the chassis. The tags marked B are blank. The centre two tags in the fourth unit are joined together.

	OTHER COMPONENTS (*Continued*)	Approx. Values (ohms)
L9	Aerial tuning coil (S.W.)	0·05
L10	Osc. tuning coils (M.W. and L.W.)	8·5
L11	Osc. tuning coils (M.W. and L.W.)	23·0
L12	Osc. reaction coils (M.W. and L.W.)	7·2
L13	Osc. reaction coils (M.W. and L.W.)	8·0
L14	Osc. tuning coil (S.W.)	0·05
L15	Osc. reaction coil (S.W.)	0·8
L16	1st I.F. trans. Pri.	80·0
L17	1st I.F. trans. Sec.	80·0
L18	2nd I.F. trans. Pri.	80·0
L19	2nd I.F. trans. Sec.	80·0
L20	Speaker speech coil	3·8
T1	Inter-valve trans. Pri.	485·0
T1	Inter-valve trans. Sec.(total)	21,000·0
T2	Speaker input trans. Pri.(total)	510·0
T2	Speaker input trans. Sec.	0·2
S1-14	Waveband switches, ganged	—
S15	Battery switch, ganged R11	—

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating from an H.T. battery reading 150 V. The receiver was tuned to the lowest wavelength on the medium band and the volume control was at maximum, but there was no signal input.

Voltages were measured on the 1,200 V scale of an Avometer, chassis being negative.

In our receiver **V4** was marked with the letter V.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 VHT2A*	150	0·3	60	1·1
V2 VP21	150	0·8	60	0·2
V3 HD22	90	1·1	—	—
V4 QP21	148†	0·9†	135	0·4

* Oscillator anode (G2) 110 V, 0·7 mA.
† Each anode.

GENERAL NOTES

Switches.—S1 to **S14** are the wave-change switches, in ganged rotary units beneath the chassis. These are indicated in our under-chassis view, and are shown in detail in the diagrams on page VIII, drawn looking at the underside of the chassis, from the rear. The table (p. VIII) gives the switch positions for the three control settings, starting from fully anti-clockwise. O indicates open, and C closed.

Switch to S.W., set tuning condenser to 19·7 m. (marked by black line at top of scale), and apply 19·7 m. signal to aerial. Screw oscillator trimmer **C28** to maximum (anti-clockwise) and then slowly clockwise until second maximum peak output is obtained. To verify adjustment, turn tuning condenser slightly to right and the image output should be obtained. Go back to correct peak and adjust aerial trimmer **C22** for maximum output.

S15 is the 3-point battery switch, ganged with the gain control **R11.**

Coils.—L1-L4, L5-L7, L10-L15 and the I.F. transformers **L16, L17** and **L18, L19** are in five screened units on the chassis deck. The oscillator unit, **L10-L15,** also contains the M.W. and L.W. trackers **C26** and **C27,** adjustable at the top of the screen. The second I.F. unit contains, besides its associated trimmers **C31** and **C32,** the fixed condensers **C11, C12** and **C14,** and the resistances **R9, R10.**

The S.W. coils **L8, L9** are on a tubular former beneath the chassis, with **L8,** the fine wire winding, at the top.

Gang Condenser.—Note that only the front section of this has a trimmer fitted to it. It is beneath the Magnascopic scale optical unit.

Scale Lamp.—This is an Osram M.E.S. type, rated at 2·5 V, 0·2 A. The lamp is fitted on a metal unit clipping into the Magnascopic scale assembly. The unit is shown dotted in our plan view of the chassis, and by lifting the projecting tag on the right, it can be detached, with the lamp.

CIRCUIT ALIGNMENT

I.F. Transformers. — Adjust signal generator to 125 KC/S and feed output between **V1** control grid (top cap) and chassis. Adjust trimmers **C32, C31, C30**

Switch	S.W.	M.W.	L.W.
S1	O	C	C
S2	C	O	O
S3	O	C	O
S4	O	C	O
S5	O	C	O
S6	O	C	C
S7	C	O	O
S8	C	O	O
S9	O	C	C
S10	C	O	O
S11	O	C	O
S12	C	C	O
S13	C	O	O
S14	C	O	O

and **C29,** in that order, to obtain maximum reading on output meter.

Signal Frequency and Oscillator Circuits. —Set tuning pointer to 200 m. with the condenser vanes fully out of mesh (anti-clockwise). Set wavechange switch to M.W. and tuning condenser to 228 m. and feed in a 228 m. signal between **V1** top cap and chassis. Screw oscillator trimmer **C25** to maximum (anti-clockwise) and then slowly clockwise until the second maximum peak output is obtained.

Now apply the 228 m. signal to aerial circuit via an artificial aerial or 0·0002 μF condenser and adjust band-pass trimmers **C20, C21** for maximum output. Adjust tuning condenser and signal generator to 500 m. and adjust M.W. tracker **C26** for maximum output while rocking the gang. Switch to L.W. and adjust tracker **C27** for maximum output at 1,807 m.