

NUMBER SEVENTY-NINE

'TRADER' SERVICE SHEETS

FERRANTI UNA

BATTERY CONSOLETTA

IN their "Una Battery Consolette" Ferranti fit a 3-valve chassis using a variable-mu tetrode H.F. amplifier, a tetrode detector and a pentode output valve. Both volume and reaction ("range and selectivity") controls are provided.

There are two models—"Standard" and "Rejector," the latter incorporating a Droitwich wave-trap. Our model was a "Rejector" type.

CIRCUIT DESCRIPTION

Two alternative aerial connections (A1 via Droitwich wave-trap L1, C11) to coupling coils L2, L3. Series condenser C1 is in circuit only on long wave-band. Aerial tuning coils L4, L5 tuned by C12; small condenser C2 provides a degree of capacitative aerial coupling.

First valve (V1, Osram metallised VS24) is a variable-mu tetrode operating as H.F. amplifier. Gain control by variable potentiometer R2, which varies G.B. applied.

Tuned-secondary H.F. transformer coupling by L6, L7, L8 to tetrode detector (V2, Osram metallised VS24) operating on grid leak system with C6 and R3. Reaction is applied from anode by coil L9 and controlled by variable condenser C16. H.F. by-passing in V2 anode circuit by C7.

Resistance-capacity coupling by R4, C9 and R5 to output pentode (V3, Osram PT2). Tone correction in anode circuit by fixed condenser C10.

In order to effect some measure of

G.B. compensation as the H.T. battery voltage falls, the gain control R2 is connected permanently across the G.B. battery, thus providing a steady drain of some 18μA.

COMPONENTS AND VALUES

Resistances		Values (ohms)
R1	V1 cont. grid decoupling	100,000
R2	V1 gain control	500,000
R3	V2 grid leak	2,000,000
R4	V2 anode load	50,000
R5	V3 grid resistance	500,000
R6	V3 grid H.F. stopper	50,000

Condensers		Values (μF)
C1	Aerial series condenser (L.W.)	0.0005
C2	Aerial "top" coupling	0.00001
C3	V1 cont. grid decoupling	0.05
C4	V1 and V2 S.G.'s by-pass	0.1
C5	H.F. trans. "top" coupling	0.000005
C6	V2 grid condenser	0.00015
C7	V2 anode H.F. by-pass	0.00015
C8*	H.T. reservoir	2.0
C9	L.F. coupling to V3	0.05
C10	Tone corrector	0.004§
C11†	Droitwich wave-trap tuning	—
C12†	Aerial circuit tuning	—
C13†	Aerial circuit trimmer	—
C14†	H.F. transformer tuning	—
C15†	H.F. transformer trimmer	—
C16†	Reaction control	0.0003

* Electrolytic. † Variable. ‡ Pre-set.
§ May be two 0.002 μF condensers in parallel.

Other Components		Values (ohms)
L1	Droitwich wave-trap coil	40.0
L2	Aerial coupling coils	10.0
L3		26.0
L4		6.0
L5	Aerial circuit tuning	33.0
L6		35.0
L7	H.F. transformer primary	6.0
L8	H.F. transformer secondary	34.0
L9		10.0
L10	Reaction coil	2.5
T1	Speaker speech coil	680.0
	Speaker input trans.	0.15
S1-S4	Waveband switches	—
S5	L.T. switch, ganged R2	—

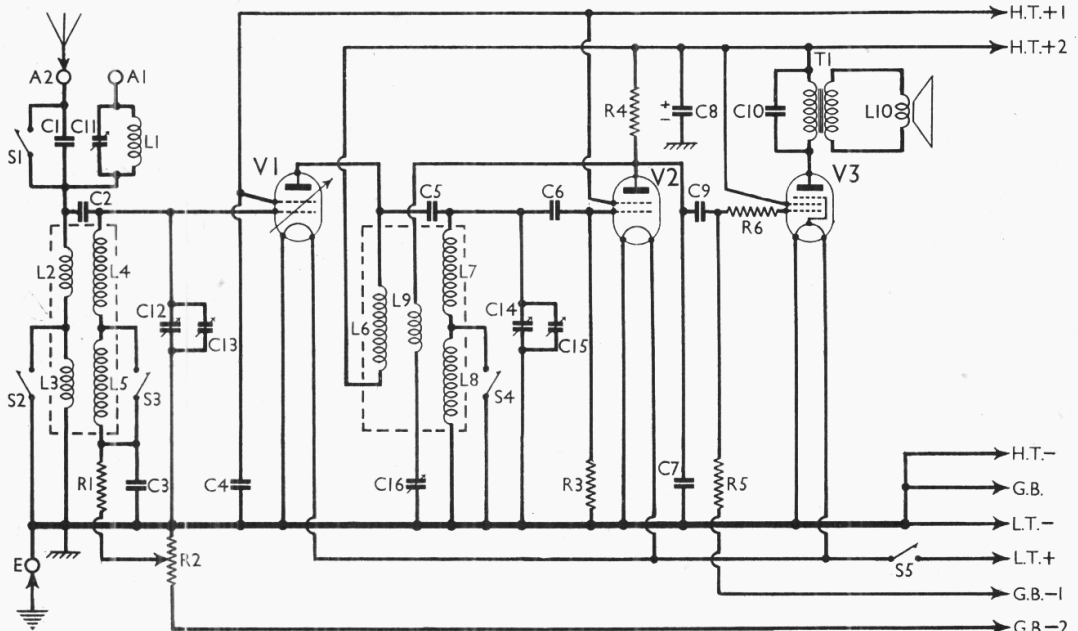
DISMANTLING THE SET

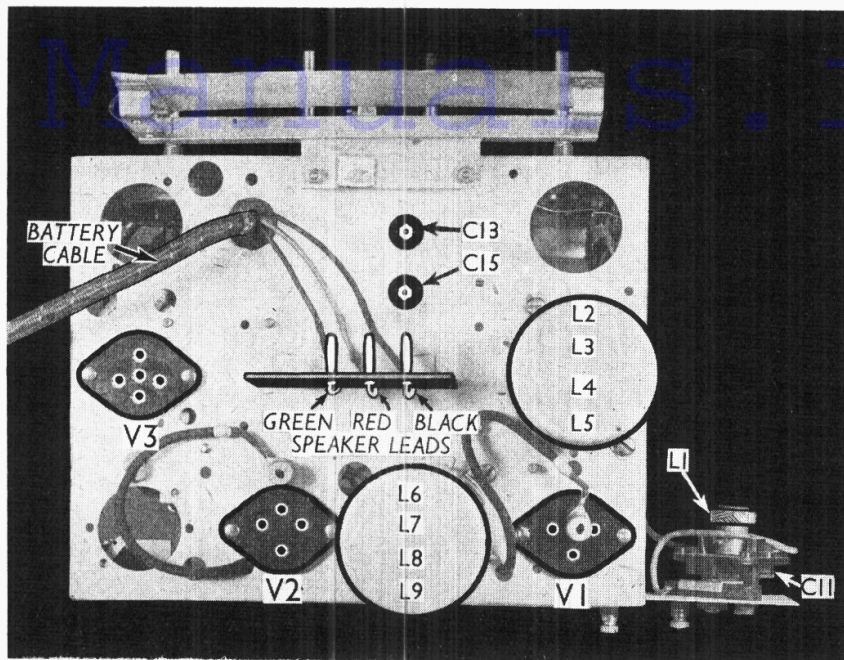
Removing Chassis.—If it is necessary to remove the chassis, remove the four control knobs (pull off) and the four bolts (with washers) holding the chassis to the cabinet bottom. The chassis can now be removed to the extent of the speaker leads, which is sufficient for normal purposes.

To remove the chassis entirely, unplug the speaker leads from the terminal panel on the chassis. They are coloured red, green and black, and when replacing, should be connected to the pins bearing wires of the same colour. The black lead to speaker frame may be omitted in some models.

Removing Speaker.—If necessary, the speaker can be removed by taking off the four nuts and spring washers from the four bolts holding it to the sub-baffle. If the leads should be removed from the speaker they should be replaced on the outer tags on the transformer terminal panel.

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Circuit diagram of the Ferranti Una Battery Consolette. This shows the "Rejector" model, incorporating the Droitwich filter, L1, C11. The "Standard" model is similar, but does not contain a filter.
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Plan view of the chassis. Note the coding of the plugs to which the speaker leads connect. The black lead may be omitted. The Droitwich filter L1, C11 projects to the right.

VALVE ANALYSIS

When the valve voltages and currents given in the table below were measured, the receiver was operating with the recommended H.T. and G.B. voltages, obtained from new batteries. The volume control was at maximum, while the reaction control was at minimum, and there was no signal input. Voltages were measured on the 1,200 V scale of an Avometer, with chassis as negative.

Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V1 VS24 ..	120	2.1	50	0.7
V2 VS24 ..	50	1.4	50	1.1
V3 PT2 ..	118	3.1	120	0.8

GENERAL NOTES

Switches.—S1-S4 are the waveband switches, ganged in a single rotary unit behind the front of the chassis. This is indicated in our under-chassis view, and is shown in a separate diagram in which the contacts of the switches are shown. Note that one contact of S1 is connected to one tag of an unused switch. This merely acts as a bearer tag for C1. All the switches are closed on the M.W. band and open on the L.W. band.

S5 is the Q.M.B. L.T. switch, ganged with the V1 gain control, R2.

Coils.—L1 is the Droitwich filter coil, mounted on an extension to the chassis. It is not screened. The remaining coils, L2-L5 and L6-L9 are in two screened units on the chassis deck. The complete units must be removed, with the screens, if coil faults are found.

External Speaker.—To fit an external speaker, connections will have to be

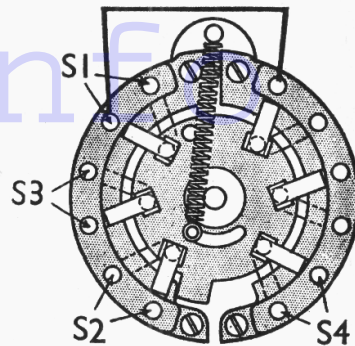


Diagram of the switch unit, as seen looking at the underside of the chassis, from the rear.

Trimmers C13, C15.—These are adjustable through holes in the chassis deck.

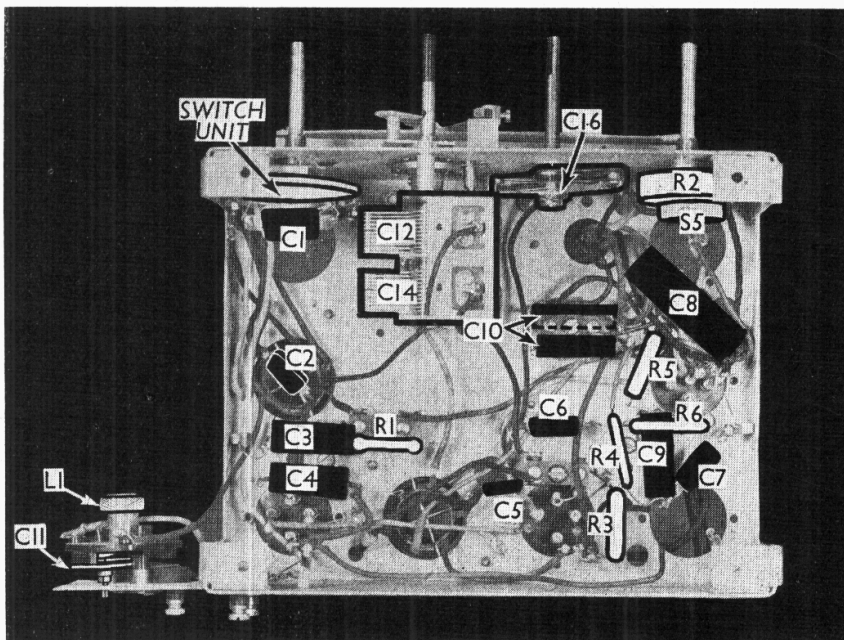
Battery Leads and Voltages.—Black lead, with black spade tag, black plug and red plug, L.T. negative, H.T. negative, G.B. positive. Blue lead, red spade, L.T. positive. Maroon lead, red plug, H.T. 48 V positive (HT+1). Red lead, red plug, H.T. 120 V positive (HT+2). Green lead, black plug, G.B. 4.5 V negative (GB-1). Yellow lead, black plug, G.B. 9V negative (GB-2).

Note that there is a steady drain of about 18μA on the G.B. battery, due to R2, even when the set is switched off.

Condenser C8.—This is a 2μF electrolytic acting as an H.T. reservoir. Note that the leakage of this condenser forms a steady drain on the H.T. battery. Normally, it is very low, of the order of a few microampères. Should C8 develop a fault, however, the leakage may rise considerably, and complaints of short H.T. battery life should cause C8 to be suspected.

soldered to the tags, to which the red and green leads are already joined, on the terminal panel of T1. The speaker must be of the high resistance type, and it will, of course, carry part of the H.T. current of V3.

Speaker Connections.—In our receiver there were only two leads (red and green) to T1. The black lead to the speaker chassis was omitted, the plug marked "black" on the chassis deck being left free.



Under-chassis view. C10 consists of two condensers in parallel. A diagram of the switch unit is given above.