

'TRADER' SERVICE SHEET

177

FERRANTI PARVA
STANDARD AND REJECTOR MODELS

THE Ferranti Parva battery-operated receiver, which was generally released in August, 1936, is a 3-valve model with a circuit employing a variable-mu pentode H.F. amplifier, a pentode detector and a pentode output valve.

It is made in two models—a standard type and a rejector model, the latter having a Droitwich filter which is brought into use by means of a link across two terminals. This *Service Sheet* was prepared on a rejector model.

CIRCUIT DESCRIPTION

Aerial input via coupling coils L2, L3 to single tuned circuit L4, L5, C12 which precedes variable-mu pentode H.F. amplifier (V1, Osram metallised VP21). Gain control by variable G.B. potentiometer R2. Droitwich filter L1, C11 can be shunted across aerial-earth circuit by means of a link arrangement.

Choke-fed tuned-grid coupling by L6, C3, L9, L10 and C16 between V1 and H.F. pentode detector (V2, Mullard metallised SP2) which operates on grid leak system with C4 and R4. Reaction is applied from anode by coils L7 (M.W.) and L8 (L.W.) and controlled by variable condenser C14. H.F. filtering by anode by-pass condenser C6.

Resistance-capacity coupling by R5, C8 and R6 between detector and pentode output valve (V3, Ferranti PT2). Fixed tone correction in anode circuit by condenser C9. H.F. choke L11 prevents parasitic oscillation. Provision for connection of external low-impedance speaker across secondary of internal speaker transformer T1.

G.B. potentials for V1 and V3 are obtained automatically from drops along resistances R8, R9 in common H.T. negative line.

DISMANTLING THE SET

Removing Chassis.—If it is desired to remove the chassis from the cabinet, remove the four control knobs (pull off) and the four bolts (with washers) holding the chassis to the bottom of the cabinet. Now unplug the speaker leads from the strip on the chassis.

To put the chassis into operating condition, pull the speaker leads up through the gap in front of the battery platform and re-connect them as follows, numbering the sockets on the chassis strip from left to right:—1, black, 2, blank; 3, red; 4, green.

When replacing the chassis, do not forget the metal screen between the chassis and the bottom of the cabinet.

Removing Speaker.—If it is desired to remove the speaker from the cabinet, it is first necessary to remove the battery platform (two screws). Now remove the nuts from the four bolts holding the speaker to the sub-baffle. Alternatively the speaker and sub-baffle may be removed together by removing the two screws and the nuts and washers from the bolts holding the sub-baffle to the front of the cabinet. When replacing, see that the terminal panel is at the top.

COMPONENTS AND VALUES

RESISTANCES		Values (ohms)
R1	V1 C.G. decoupling	100,000
R2	V1 gain control	50,000
R3	V1 anode circuit stabiliser ..	140
R4	V2 grid leak	2,000,000
R5	V2 anode load	250,000
R6	V3 C.G. resistance	1,000,000
R7	V3 C.G. H.F. stopper	50,000
R8	Automatic G.B. resistances	1,000
R9		700

CONDENSERS		Values (μF)
C1	V1 C.G. decoupling	0.05
C2	V1 S.G. by-pass	0.1
C3	V1 to V2 H.F. coupling	0.000017
C4	V2 C.G. condenser	0.00015
C5	V2 S.G. by-pass	0.1
C6	V2 anode H.F. by-pass	0.00015
C7	H.T. supply reservoir	0.25
C8	V2 to V3 L.F. coupling	0.001
C9	Fixed tone correction	0.002
C10*	Auto. G.B. circuit by-pass ..	50.0
C11†	Droitwich filter tuning	—
C12†	Aerial circuit tuning	—
C13‡	Aerial circuit trimmer	—
C14†	Reaction control	0.0003
C15‡	V2 C.G. circuit trimmer	—
C16†	V2 C.G. circuit tuning	—

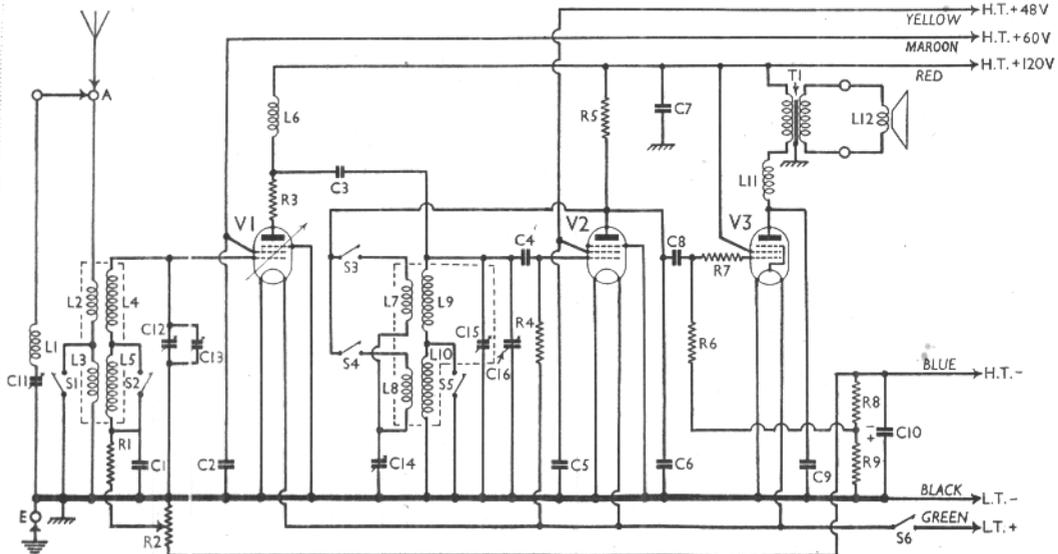
* Electrolytic. † Variable. ‡ Pre-set.

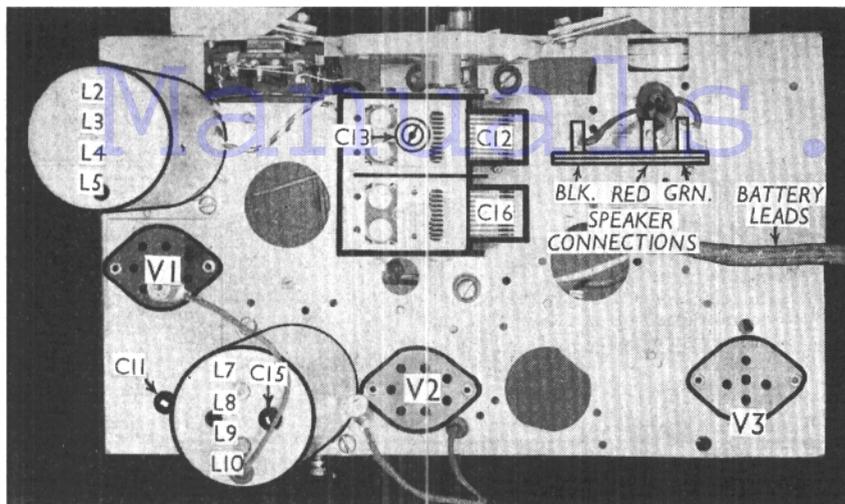
OTHER COMPONENTS		Approx. Values (ohms)
L1	Droitwich filter coil	45.0
L2	Aerial coupling coils	14.5
L3		65.5
L4	Aerial tuning coils	4.5
L5		18.5
L6	V1 anode H.F. choke	340.0
L7	M.W. reaction coil	3.0
L8	L.W. reaction coil	6.0
L9	V2 C.G. tuning coils	4.5
L10		18.5
L11	V3 anti-parasitic choke	320.0
L12	Speaker speech coil	2.2
T1	Speaker input trans. { Pri. ..	700.0
	{ Sec. ..	0.3
St-S5	Waveband switches	—
S6	L.T. circuit switch	—

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating from a new H.T. battery reading 128 V on load. The receiver was tuned to the lowest

A Droitwich filter is embodied in the Rejector model of the Ferranti Parva battery receiver. The standard model is similar in every particular, except that the filter is omitted. Automatic grid bias is employed, and an interesting point is the employment of a choke in the anode circuit of V3 to suppress parasitic oscillations.





This plan view of the chassis shows the coding for the speaker connection strip.

beneath the chassis. **L2-L5** and **L7-L10** are in two screened units on the chassis deck. The second of these also contains the trimmer **C15**. **L6** and **L11** are two H.F. chokes mounted beneath the chassis.

External Speaker.—Although no sockets or terminals are provided for this, it would be possible to solder the leads from a low resistance (2-2.5 Ω) type to the two central tags on the speaker transformer terminal strip.

Batteries.—Recommended types are: L.T., Exide DFG-C 2 V celluloid-cased cell; H.T., Drydex Red Triangle 120 V, type H1006. Grid bias is automatic.

Battery Leads and Voltages.—Black lead, spade tag, L.T. negative; Green lead, red spade tag, L.T. positive 2 V; Blue lead, black plug, H.T. negative; Yellow lead, red plug, H.T. positive 48 V; Maroon lead, red plug, H.T. positive 60 V; Red lead, red plug, H.T. positive, 120 V.

Standard Model.—In the Standard model, the Droitwich filter **L1**, **C11**, is omitted, together with the link to connect it up to the aerial terminal.

CIRCUIT ALIGNMENT

With the receiver switched to M.W., turn tuning condenser to the minimum position (anti-clockwise) and adjust scale pointer to indicate 200 m. It can be quite easily moved along the cord, being held in position by friction only.

Tune receiver to 228 m. on the scale, and inject a 228 m. signal from a signal generator connected to the **A** and **E** sockets, via a dummy aerial or 0.0002 μF fixed condenser. Now adjust **C13** and **C15** for maximum output.

If interference is experienced from Droitwich, put the filter in circuit by bridging the **A** and "Wavetraps In" terminals with the shorting link. Feed in a 1,500 m. signal, tune to 1,500 m. and adjust **C11** for minimum output. Alternatively, **C11** may be adjusted on the actual signal from Droitwich, until the interference is at its minimum.

wavelength on the medium band and the volume control was at maximum, but the reaction control was at minimum. There was no signal input.

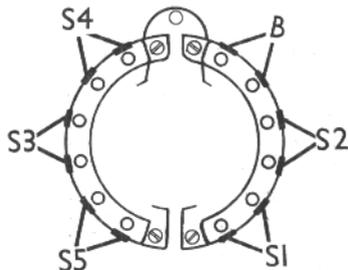
Voltages were measured on the 1,200 V scale of an Avometer, with chassis as negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 VP2r	112	2.3	55	0.5
V2 SP2	30	0.2	40	0.1
V3 PT2	111	3.2	115	0.8

GENERAL NOTES

Switches.—**S1-S5** are the wavechange switches in a single rotary unit beneath the chassis. This is indicated in our under-chassis view, the arrow showing the direction in which the unit is seen in the diagram on this page. Note that there are two blank tags, one pair of contacts not being used. All the switches

except **S4** are closed on the M.W. band and open on the L.W. band. **S4** is open on the M.W. band and closed on the L.W. band.



An arrow in the under-chassis view shows the direction from which this sketch of the switch unit was drawn.

S6 is the Q.M.B. L.T. circuit switch, ganged with the gain control **R2**.

Coils.—**L1** is the Droitwich filter coil,

This under-chassis view indicates clearly the positions of all the components which are not on the top deck of the chassis. The L.T. circuit switch, **S6**, is ganged with the **V1** gain control, **R2**, and the wavechange switches are in the single unit seen on the right. A separate diagram of this is given above.

