

NUMBER 149

'TRADER' SERVICE SHEETS

FERRANTI PARVA

(TABLE, CONSOLE AND RADIOGRAM)

1936-37 MODELS

THE chassis fitted in the Ferranti 1936-7 Parva A.C. mains table receiver is also fitted in a console model, and, with minor modifications, in a radio-gramophone. Three pentode valves are employed in the H.F., detector and output sequence for M.W. and L.W. reception, but on the short-wave range, the H.F. amplifier is used merely as an aperiodic coupling between aerial and detector valve.

CIRCUIT DESCRIPTION

Aerial input on M.W. and L.W. via couplings coils L2, L3, to single tuned circuit L4, L5, C15. Droitwich filter L1, C14 is provided for use when necessary.

First valve (V1, Ferranti metallised VP4B) is a variable-mu pentode H.F. amplifier, operating with gain control by variable cathode resistance R5.

Choke-fed tuned-grid coupling by L6, C3, L9, L10, C19 to H.F. pentode detector valve (V2, Ferranti metallised SPT4A) which operates on anode bend system with G.B. obtained from drop along cathode resistance R11. Anode H.F. by-passing by C6. No reaction.

and controlled by variable condenser C17. When the wavechange switch is set to S.W., S8 closes to reduce G.B. applied to V2, and S9 opens to remove H.F. by-pass C6.

Resistance-capacity coupling by R9, C8, and R12 to output pentode valve (V3, Ferranti PT4D). Fixed tone correction by condenser C9 in anode circuit.

H.T. current is supplied by full-wave rectifying valve (V4, Ferranti R4). Smoothing by speaker field coil L13 in H.T. negative line and dry electrolytic condensers C11, C12. Mains H.F. by-passing by C13.

DISMANTLING THE SET

Removing Chassis.—Remove the five control knobs from their spindles (pull off). Remove the four bolts (with washers) from the underside of the cabinet and after the four speaker connections have been unplugged, the chassis can be withdrawn. *When replacing,* do not omit to fit the screening plate under the chassis. For the speaker leads colour coding, see plan chassis illustration.

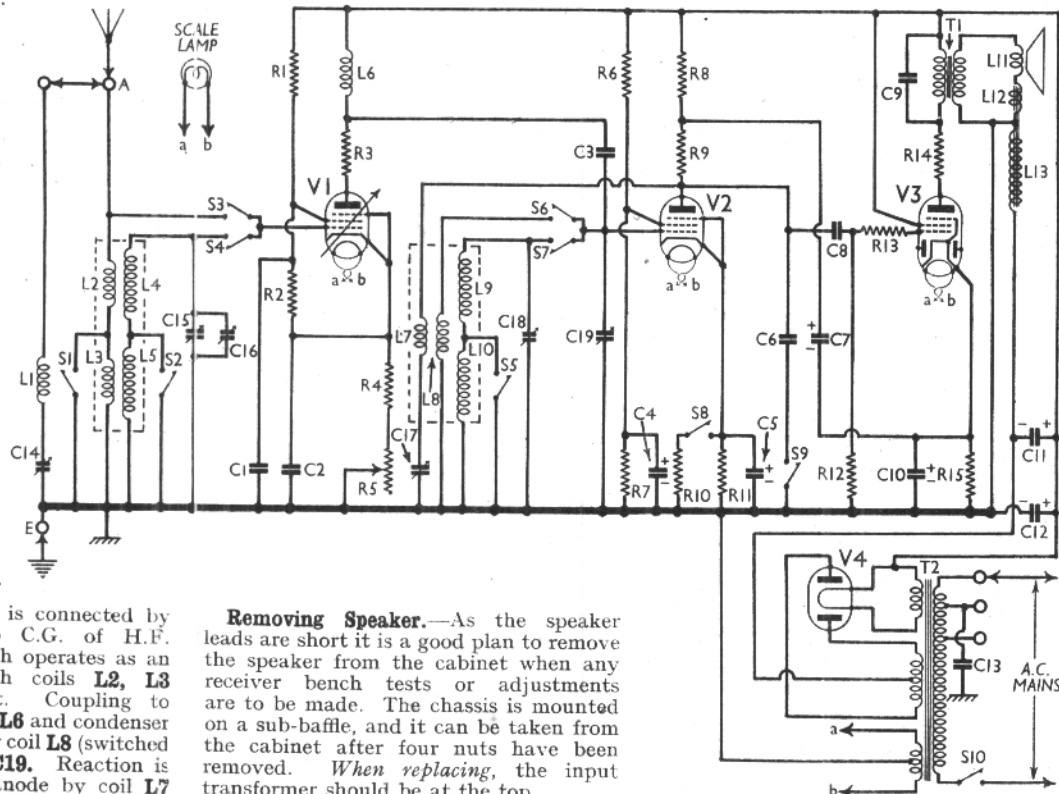
COMPONENTS AND VALUES

RESISTANCES		Values (ohms)
R1	V1 S.G. H.T. feed potential divider.	8,000
R2	V1 anode circuit stabiliser	50,000
R3	V1 fixed G.B. resistance	140
R4	V1 gain control	70
R5	V2 S.G. H.T. feed potential divider.	15,500
R6	V2 anode decoupling	250,000
R7	V2 anode load	30,000
R8	V2 anode load	6,000
R9	V2 anode load	500,000
R10	V2 G.B. resistances	2,500
R11	V3 C.G. resistance	15,000
R12	V3 C.G. H.F. stopper	1,000,000
R13	V3 anode circuit stabiliser	50,000
R14	V3 G.B. resistance	140
R15	V3 G.B. resistance	140

CONDENSERS		Values (μF)
C1	V1 S.G. by-pass	0.1
C2	V1 cathode by-pass	0.05
C3	V1 to V2 H.F. coupling	0.00016
C4*	V2 S.G. by-pass	1.0
C5*	V2 cathode by-pass	10.0
C6	V2 anode H.F. by-pass	0.00015
C7	V2 anode decoupling	1.0
C8	V2 to V3 L.F. coupling	0.01
C9	Tone corrector	0.01
C10*	V3 cathode by-pass	50.0
C11*	H.T. smoothing	8.0
C12*	H.T. smoothing	8.0
C13	Mains H.F. by-pass	0.002
C14†	Droitwich filter tuning	—
C15†	Aerial circuit tuning	—
C16†	Aerial circuit trimmer	—
C17†	Reaction control (S.W.)	0.0003
C18†	V2 grid circuit trimmer (M.W. and L.W.)	—
C19†	V2 grid circuit tuning	—

* Electrolytic. † Variable. ‡ Pre-set.

Circuit diagram of the Ferranti Parva all-wave A.C. receiver. The console has the same circuit as the table model, and the radiogram is similar, the differences being given under "Radiogram Modifications." L7 and L8 are the S.W. reaction and tuning coils respectively.



On S.W. band aerial is connected by switch S3 directly to C.G. of H.F. amplifier valve V1 which operates as an aperiodic coupling with coils L2, L3 as choke input circuit. Coupling to detector valve by choke L6 and condenser C3. Tuning is effected by coil L8 (switched by S6) and condenser C19. Reaction is applied from detector anode by coil L7

Removing Speaker.—As the speaker leads are short it is a good plan to remove the speaker from the cabinet when any receiver bench tests or adjustments are to be made. The chassis is mounted on a sub-baffle, and it can be taken from the cabinet after four nuts have been removed. *When replacing,* the input transformer should be at the top.

OTHER COMPONENTS		Approx. Values † (ohms)
L1	Droitwich filter coil	40·0
L2	Aerial coupling coils (M.W. and L.W.)	14·3
L3		80·0
L4	Aerial tuning coils (M.W. and L.W.)	4·9
L5		26·5
L6	V1 anode H.F. choke	300·0
L7	S.W. reaction coil	1·0
L8	S.W. tuning coil	0·03
L9	V2 C.G. circuit tuning coils (M.W. and L.W.)	4·9
L10		26·5
L11	Speaker speech coil	3·8
L12	Hum neutralising coil	0·23
L13	Speaker field coil	3,000·0
T1	Speaker input trans. (Pri. Sec.)	250·0 0·3
	(Pri. total Heater sec.)	32·0 0·03
T2	Mains trans. (Rect. fil. sec. H.T. sec. total)	0·1 380·0
S1-S9	Waveband switches	—
S10	Mains switch, ganged R5	—

VALVE ANALYSIS

Valve voltages and currents listed in the table were obtained from an average chassis working with 235 V 50 c.p.s. mains (230 V mains transformer tap).

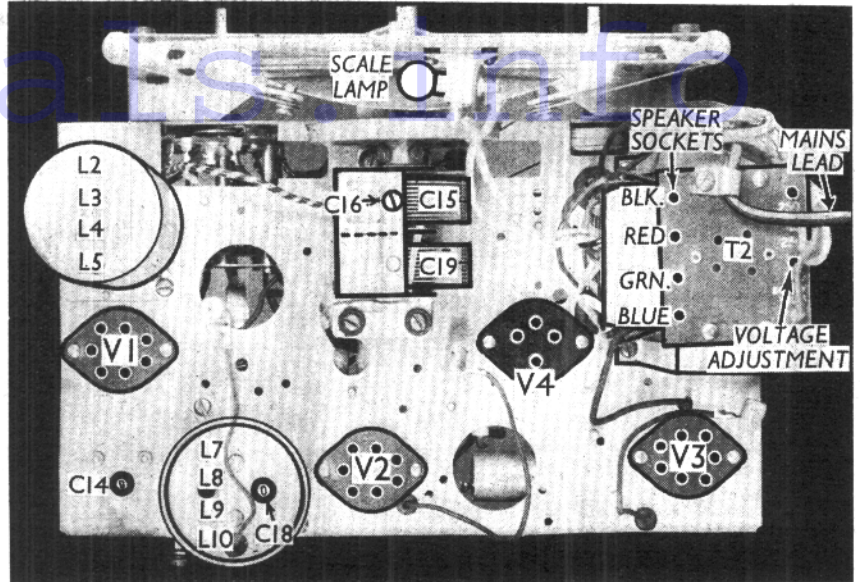
The wavechange switch was set at M.W., the gain control R5 at maximum, and the aerial and earth terminals were short-circuited. All voltages were measured on the 1,200 V scale of an Avometer, chassis being negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 VPT4B	215	12·5	145	7·0
V2 SPT4A	50	0·1	20	0·03
V3 PT4D	210	29·9	215	5·8
V4 R4	320†	—	—	—

† Each anode, A.C.

GENERAL NOTES

Switches.—S1-S9 are the waveband switches, in two ganged rotary units beneath the chassis. S1-S4, S8 and S9 are in the first unit, and S5-S7 in the second. The two units are indicated in our under-chassis view, and separate diagrams are given. These show the units with the individual switches, as seen looking at the underside of the chassis,



Plan view of the chassis. Note that C18 is fitted in the L7-L10 coil unit.

from the rear. The table below gives the switch positions for the various control settings, O indicating open, and C closed.

Switch	S.W.	M.W.	L.W.
S1	O	C	O
S2	O	C	O
S3	C	O	O
S4	O	C	O
S5	O	C	O
S6	C	O	O
S7	O	C	O
S8	C	O	O
S9	O	C	O

S10 is the Q.M.B. mains switch.

Coils.—L1, the Droitwich filter coil, and L6, an H.F. choke, are beneath the chassis. L2-L5 and L7-L10 are in two screened units on the chassis deck.

Scale Lamp.—This is an Ever-Ready M.E.S. type, rated at 6.2 V, 0.3 A.

External Speaker.—There is no pro-

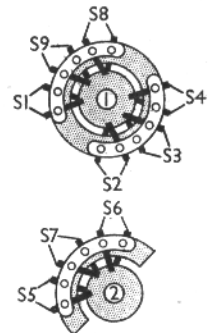
vision for an external speaker, but a low resistance type (about 4 O) could be connected across the internal speaker speech coil leads.

Condensers C11, C12.—These are two 8 μF dry electrolytics in a single unit beneath the chassis, with a common positive (red) connection. The black lead to chassis is the negative of C12.

Valve V3.—Although a PT4D double-diode output pentode is fitted, only the pentode section is used.

RADIOGRAM MODIFICATIONS

In the radiogram model the circuit is the same except for three additions and some slight modifications. Across the pick-up are connected a fixed resistance of 5,000O and a separate gramophone volume control potentiometer (20,000 O), in series. The negative connection of C5, instead of going to chassis, is taken to the pick-up terminal to which one end of the potentiometer is connected, and also to one side of an extra switch. The slider of the potentiometer goes to the other side of this switch and to chassis.

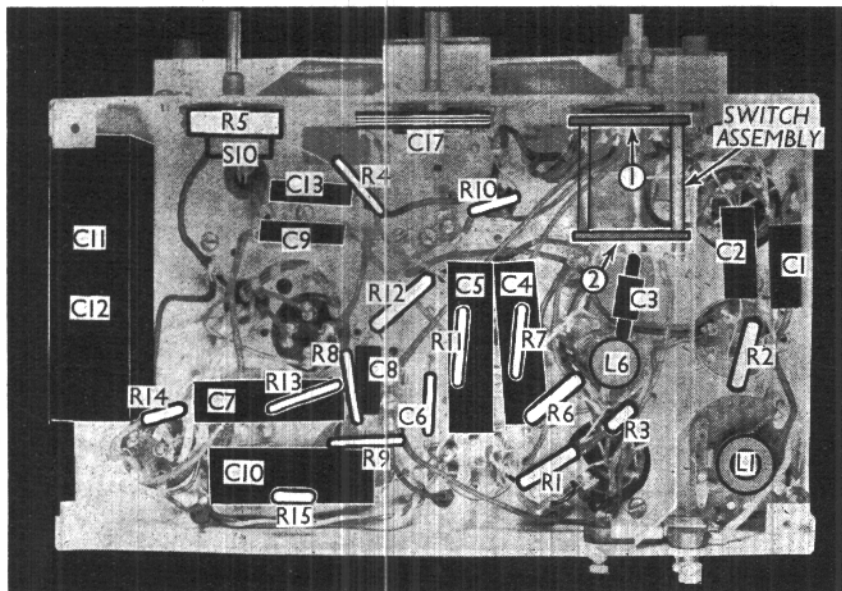


The switches, seen from the rear of the chassis.

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. Tune to 228 m. on the scale, and inject a 228 m. signal between A and E sockets, via dummy aerial or a 0.0002 μF condenser. Adjust C16 and C18 for maximum output.

No further adjustments can be made. If interference from Droitwich is experienced, adjust C14 in an attempt to reduce the interference.



Under-chassis view. The switch units are indicated by numbers in circles to correspond with the diagrams in Col. 3.