

NUMBER SEVENTY-THREE

'TRADER' SERVICE SHEETS

ALBA 501 RECEIVER (AND 701 RADIO-GRAMOPHONE)

IN the Alba 501 table receiver a 3-valve (plus rectifier) circuit is employed, consisting of a variable-mu pentode H.F. stage, a pentode detector and a pentode output valve. The chassis is for A.C. mains of 190-250 V, 40-100 c.p.s.

A similar chassis is fitted in the 701 radio-gramophone, which is for mains of 190-250 V, 50-60 c.p.s. There is a special model for 40-100 c.p.s.

CIRCUIT DESCRIPTION

Aerial input via fixed series condenser **C1** and Droitwich wave-trap **L1, C15** to coupling coils **L2, L3**. Single tuned circuit **L4, L5, C16** precedes first valve (**V1, Mullard metallised VP4A**), which is a variable-mu pentode operating as H.F. amplifier. Gain control by potentiometer **R4** which varies G.B. applied and simultaneously acts as aerial-earth shunt (M.W. and Droitwich only).

Tuned-secondary transformer coupling by **L6, L7, L9, L10, C19** to H.F. pentode detector (**V2, Mullard metallised SP4**), operating on grid leak system with **C4** and **R7**. Reaction is applied from anode by coil **L8** and controlled by variable condenser **C18**. Switch **S6** connects gramophone pick-up in grid circuit, while **S8** connects lower end of **V1** gain control **R4** to grid, and thus provides a means of volume control on gram. by shunting the valve input circuit. **S2** short-circuits aerial coupling coils **L2, L3** and thus prevents radio break-through on gram.

Resistance-capacity coupling by **R10, C9** and **R11** to pentode output valve (**V3, Mullard Pen 4 VB**). Fixed tone compensation by condenser **C11**.

H.T. current is supplied by full-wave rectifying valve (**V4, Mullard IW3**). Smoothing by speaker field **L13** and dry electrolytic condensers **C12, C13**.

DISMANTLING THE SET

Removing Chassis.—To remove the chassis from the cabinet, remove the four control knobs (recessed grub screws) and the four round-head bolts (with washers) holding chassis to cabinet bottom. The chassis can now be withdrawn. To remove the chassis entirely, unsolder the leads on the speaker terminal panel.

When replacing, connect as follow:—
F and 1 joined together, red; 2 and 3, blank; 4, black; F, blue.

Removing Speaker.—If it is necessary to remove the speaker, this can be done by removing the nuts from the four bolts holding it to the sub-baffle. Each of these is fitted with a rubber and a large metal washer. When replacing, see that the transformer is on the right.

Resistances		Values (ohms)
R1	V1 S.G. H.T. potential divider	40,000
R2		50,000
R3	V1 fixed G.B. resistance	250
R4	V1 gain control	10,000
R5	V2 S.G. H.T. feed	1,000,000
R6	Gram. pick-up series resistance	75,000*
R7	V2 grid leak	1,000,000
R8	V2 G.B. resistance (gram.)	1,000
R9	V2 anode decoupling	75,000
R10	V2 anode load	250,000
R11	V3 grid resistance	500,000
R12	V3 grid H.F. stopper	100,000
R13	V3 G.B. resistance	150

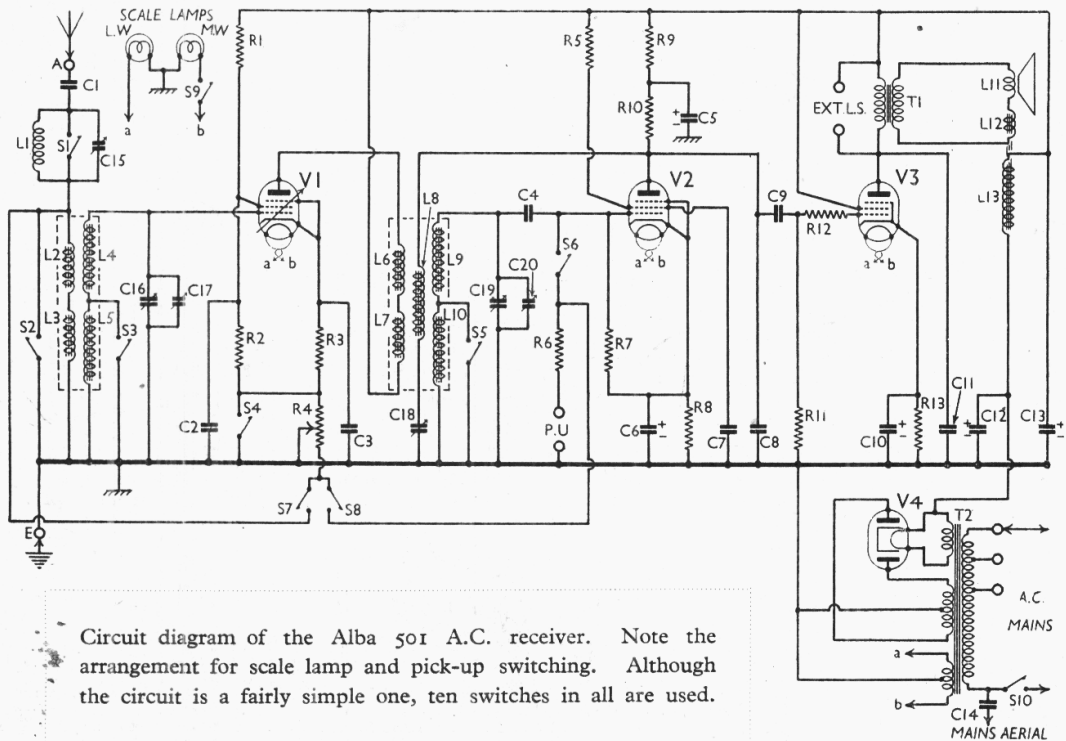
* May be 150,000 O.

COMPONENTS AND VALUES

Condensers		Values (μF)
C1	Aerial series condenser	0.00012†
C2	V1 S.G. by-pass	0.1
C3	V1 cathode by-pass	0.1
C4	V2 grid condenser	0.0001
C5*	V2 anode decoupling	2.0
C6*	V2 cathode by-pass	25.0
C7	V2 S.G. by-pass	0.1
C8	V2 anode H.F. by-pass	0.00025 §
C9	L.F. coupling to V3	0.005
C10*	V3 cathode by-pass	25.0
C11	Fixed tone compensator	0.01
C12*	H.T. smoothing	6.0
C13*		6.0
C14	Mains aerial condenser	0.0002
C15†	Droitwich wavetrap tuning	—
C16	Aerial circuit tuning	—
C17†	Aerial circuit trimmer	—
C18	Reaction control	0.0001
C19	H.F. transformer tuning	—
C20†	H.F. transformer trimmer	—

* Electrolytic. † Pre-set. ‡ May be 0.0001 μF. § May be 0.0002 μF.

Other Components		Values (ohms)
L1	Droitwich wave-trap coil	2.0
L2		0.4
L3		1.75
L4	Aerial coupling coils	1.5
L5		10.0
L6	Aerial tuning coils	0.4
L7		1.75
L8	H.F. transformer primary	3.5
L9	Reaction coil	1.5
L10		10.0
L11	H.F. transformer secondary	2.0
L12	Speaker speech coil	0.1
L13	Hum neutralising coil	2000.0
T1	Speaker field winding	350.0
	Speaker input trans.	0.25
		49.0
		0.05
		0.1
		400.0
T2	Mains trans.	—
S1	Droitwich filter switch	—
S2		Radio muting switch (gram.)
S3, S5	Waveband switches	—
S4, S6		Radio-gramophone change-over switches
S7, S8	Radio-gramophone change-over switches	—
S9		M.W. scale lamp switch
S10	Mains switch, ganged R4	—



Circuit diagram of the Alba 501 A.C. receiver. Note the arrangement for scale lamp and pick-up switching. Although the circuit is a fairly simple one, ten switches in all are used.

VALVE ANALYSIS

Valve voltages and currents given in the table below were measured with the receiver operating on 225 V mains, with the transformer working on the 220 V tap, in accordance with the manufacturer's instructions. There was no signal input and the volume control was at maximum, with the reaction control at minimum. 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 VP4A ..	260	4.3	95	1.8
V2 SP4 ..	40	0.5	25	0.2
V3 Pen4VB	240	38.0	260	3.8
V4 1W3 ..	310†	—	—	—

† Each anode, A.C.

GENERAL NOTES

Switches.—There are in all nine wave-change, gramophone, Droitwich filter and scale-lamp switches, and they are all ganged in a single unit, seen in the under-chassis view. Note that certain of the tags are not used, one (next to

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

S6) is earthed, and in some cases one contact is common to two switches.

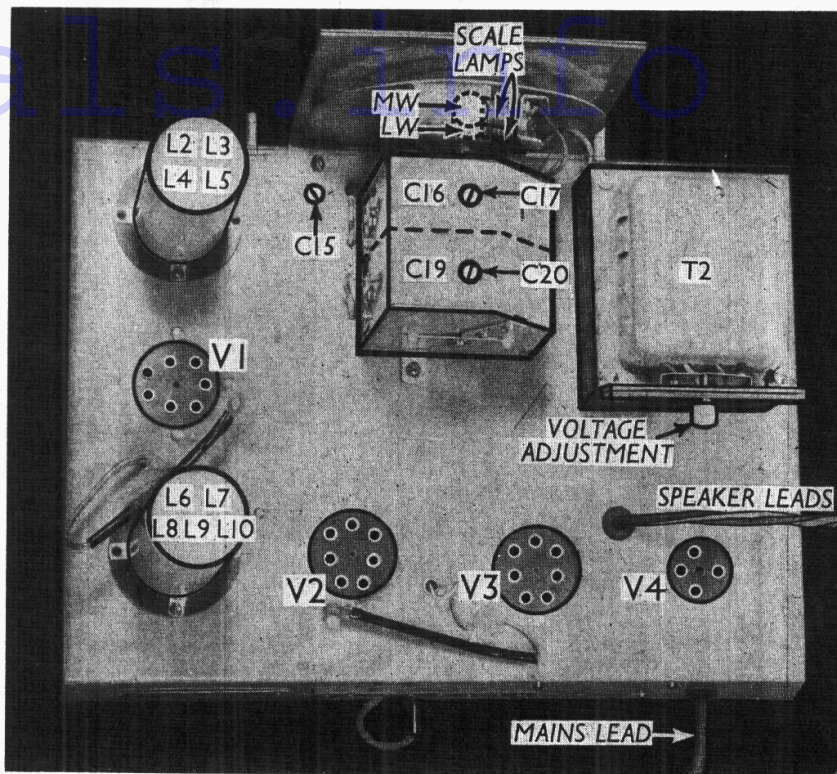
The table above gives the switch positions for the various settings of the knob. The "Droitwich" setting, bringing in the filter, is indicated by a white dot. Above, O indicates open, and C closed. S10 is the Q.M.B. mains switch.

Coils.—These, with the exception of L1, are in two screened units on the chassis deck. L1 is beneath the chassis.

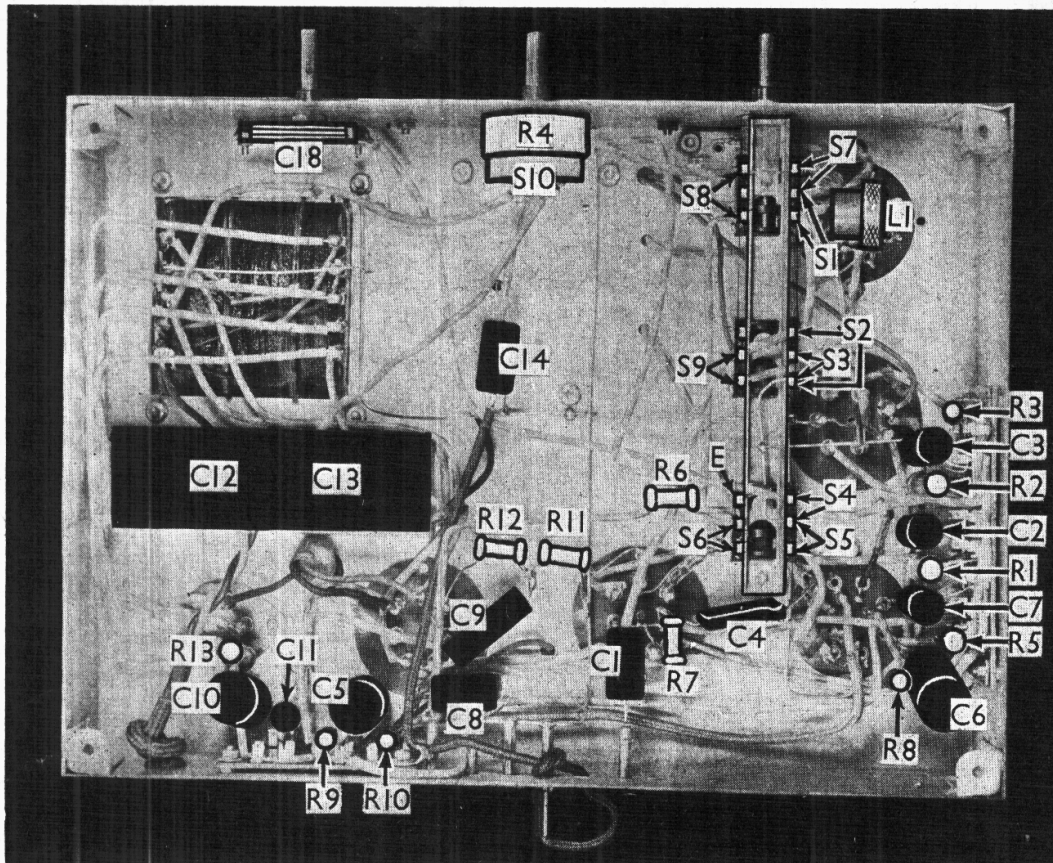
Scale Lamps.—There are two of these, each rated at 3.5 V, 0.15 A. They are of the Osram M.E.S. type. The L.W. lamp is alight the whole time the set is "on." The M.W. lamp lights up in addition when the set is switched to M.W., S9 then being closed.

External Speaker.—There is provision for an external high resistance speaker, two terminals being provided on the T1 terminal panel.

Condensers C12, C13.—These are two 6 μF dry electrolytics, in a single unit. The negative connection is common (black lead), while the two positives are red. That connecting to one of the mains transformer tags is the positive of C12.



Above: Plan view of the chassis. C15 is the Droitwich filter trimmer. Below: Under-chassis view. Note particularly the switch unit, in which some tags are not used, some are common to two switches, and one is earthed.



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