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"TRADER" SERVICE SHEET

1102

ALBA 101 Series

Covering Models 101, 101B, 707, 707B and LP707

DESIGNED to operate from A.C. or D.C. mains of 200-250 V, or self-contained dry batteries, the Alba 101 is a 4-valve (plus metal rectifier) 2-band portable superhet, covering the waveband ranges of 190-570 m and 950-2,000 m. A special device prevents the lid being closed unless the power control knob is in the "off" position.

The 707 and LP707 are portable radiogram versions of the 101, being standard and long-playing models respectively. The differences between them and the 101 are fully described under "General Notes" overleaf.

The 101B and 707B are low-voltage export versions of the 101 and 707, and are fully covered under "General Notes." Model 707B was also produced for the home market.

Release dates and original prices: 101, *March* 1953, £13 10s 3d; 707, *August* 1952, £22 5s 2d; 707B, *August* 1952, £23 17s; LP707, *May* 1953, £23 17s. *Batteries and purchase tax extra.*

CIRCUIT DESCRIPTION

Tuned frame aerial input by **L1**, loading coil **L2** and **C26** (M.W.) or **L1**, loading coils **L2**, **L3** and **C26** (L.W.) to heptode valve **(V1, Mullard DK92)** which operates as frequency changer with electron coupling. No provision is made for the connection of an external aerial or earth.

Oscillator grid coils **L4** (M.W.) and **L5** (L.W.) are tuned by **C27**. Parallel trimming by **C7, C28** (M.W.) and **C29** (L.W.); series tracking by **C8** (M.W.) and **C9** (L.W.). Reaction coupling from oscillator anode across the common impedance of the trackers, with additional coupling on M.W. by **L6**.

Second valve **(V2, Mullard DF91)** is a variable-mu R.F. pentode, operating as intermediate frequency amplifier with tuned transformer couplings **C2, L7, L8, C3** and **C12, L9, L10, C13.**

Intermediate frequency 470 kc/s.

Diode signal detector is part of diode pentode valve **(V3, Mullard DAF91).** A.F. component in rectified output is developed across volume control **R9**, which acts as diode load, and passed via **C16** to control grid of pentode section. I.F. filtering by **C14, R5** and **C15.**

D.C. potential developed across **R9** is fed back as bias from appropriate points on the potential divider network **R6, R7, R8** to **V1** and **V2**, giving automatic gain control. Standing bias for **V1** and **V2** is obtained by returning **R8** to the positive side of the heater chain.

In the gram models the pick-up is switched via **S13** across **R9** in the gram position of the waveband control. Two other extra switches **S11** and **S12** close and open respectively on gram to prevent radio break-through. Section diagrams of the pick-up circuits are shown overleaf (col. 2).

Resistance-capacitance coupling by **R11, C18** and **R13** between **V3** and pentode output valve **(V4, Mullard DL92).** Tone correction by **C20.**

For battery operation, power supplies are carried by switches **S7(B)** and **S9(B),** which close in that position as indicated by the suffix **(B).** For mains operation **S6(M), S8(M)** and

(*Continued col. 1 overleaf*)

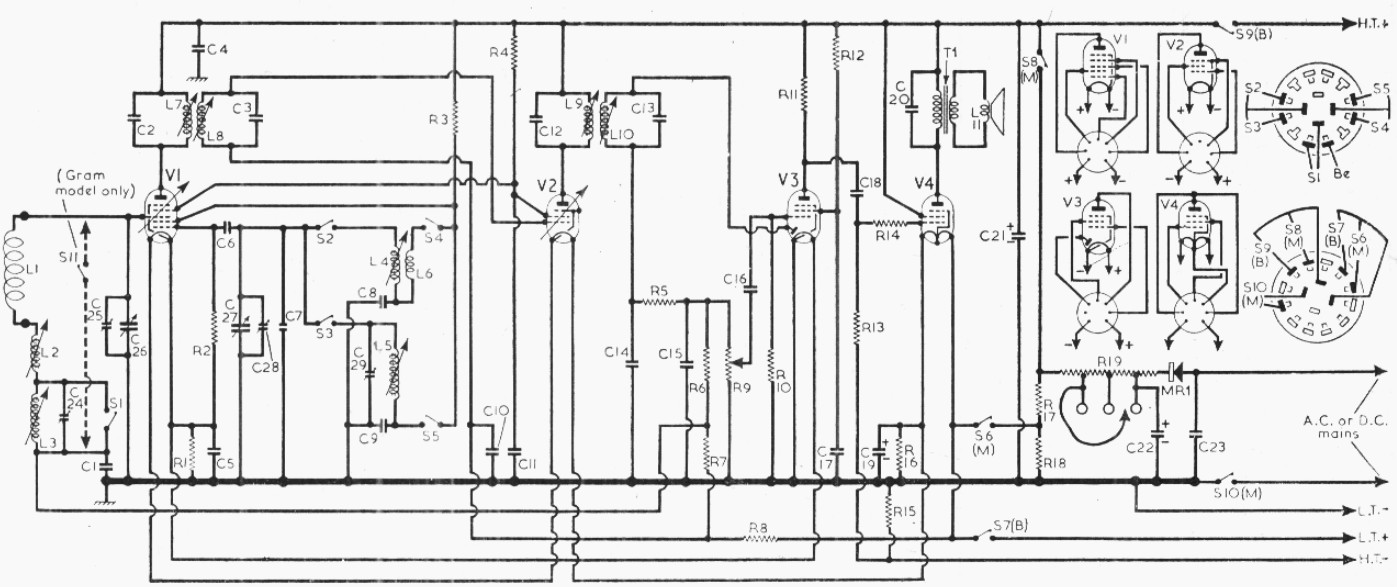
	CAPACITORS	Values	Locations
C1	A.G.C. decoupling	0·1μF	C1
C2	1st I.F. trans.	100pF	C1
C3	tuning	100pF	C1
C4	H.T. by-pass ...	0·1μF	E2
C5	Filament by-pass...	0·1μF	E3
C6	V1 osc. C.G. ...	100pF	E2
C7	M.W. osc. trim. ...	15pF	F3
C8	M.W. osc. tracker	625pF	D2
C9	L.W. osc. tracker	250pF	E2
C10	A.G.C. decoupling	0·05μF	D2
C11	S.G. decoupling ...	0·05μF	E2
C12	2nd I.F. trans.	100pF	B1
C13	tuning	100pF	B1
C14	I.F. by-pass ...	100pF	F3
C15		100pF	E2
C16	A.F. coupling ...	0·001μF	E2
C17	V3 S.G. decoupling	0·05μF	G2
C18	A.F. coupling ...	0·005μF	F2
C19*	Filament by-pass	50μF	G2
C20	Tone corrector ...	0·005μF	—
C21*	H.T. smoothing	32μF	A1
C22*		32μF	A1
C23	Mains R.F. by-pass	0·01μF	A1
C24‡	L.W. aerial trim....	120pF	D2
C25‡	M.W. aerial trim....	35pF	F2
C26†	Aerial tuning ...	523pF	F2
C27†	Oscillator tuning...	523pF	F3
C28‡	M.W. osc. trim. ...	35pF	F3
C29‡	L.W. osc. trim. ...	120pF	D2

* Electrolytic. † Variable. ‡ Pre-set.

The appearance of the Alba 101 portable showing the two lock-screws which secure the front panel.

	RESISTORS	Values	Locations
R1	Fil. H.T. by-pass ...	220Ω	F3
R2	V1 osc. C.G. ...	27kΩ	E3
R3	Osc. anode feed ...	33kΩ	E2
R4	S.G. H.T. feed ...	39kΩ	E2
R5	I.F. stopper ...	47kΩ	F2
R6	A.G.C. potential	2·2MΩ	E2
R7		2·2MΩ	E2
R8	divider ...	10MΩ	E2
R9	Volume control ...	2MΩ	D3
R10	V3 C.G.	2·2MΩ	F3
R11	V3 anode load ...	1MΩ	F3
R12	V3 S.G. feed ...	4·7MΩ	F2
R13	V4 C.G.	1MΩ	F2
R14	V4 C.G. stopper ...	10kΩ	F2
R15	V4 G.B.	220Ω	F2
R16	Fil. H.T. by-pass	330Ω	F2
R17	Filament ballast ...	1,750Ω	F3
R18	Filament shunt ...	10kΩ	F3
R19	H.T. smoothing ...	*2·3kΩ	G3

* Tapped at 200Ω + 350Ω + 350Ω + 1,400Ω from MR1.



Circuit diagram of the Alba 101 A.C./D.C./A.D. portable. The gram version pick-up circuits are shown overleaf. The waveband and mains/battery switch units inset beside the circuit diagram are drawn as viewed in the chassis pictures overleaf.

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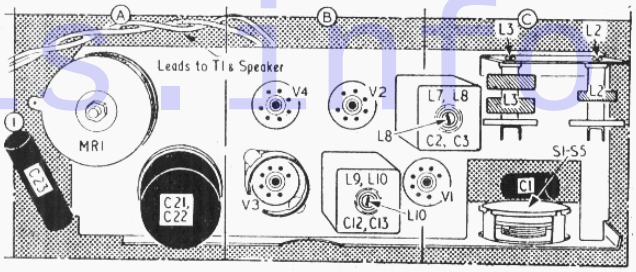
OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	Frame aerial ...	1·6	—
L2	M.W. loading coil ...	1·6	C1
L3	L.W. loading coil	10·0	C1
L4	Oscillator tuning coils	3·8	D2
L5		8·0	D2
L6	M.W. osc. reaction	2·0	D2
L7	1st I.F. trans. Pri.	14·0	C1
L8	1st I.F. trans. Sec.	14·0	C1
L9	2nd I.F. trans. Pri.	14·0	B1
L10	2nd I.F. trans. Sec.	14·0	B1
L11	Speech coil ...	2·5	—
T1	O.P. trans. Pri. ...	500·0	—
	O.P. trans. Sec. ...	—	
S1-S5	Waveband switches	—	C1
S6(M)-S10(M)	Mains/battery sw.	—	D3
S11-S13	Gram sw., 707 series	—	—
MR1	Two SenTerCel RM1's	—	A1

Plan view of chassis. The frame aerial **L1** is contained in the lid of the carrying case. No provision is made for the connection of an external aerial and earth.



Circuit Description—*continued.*

S10(M) close. A plastic peg in the carrying case lid prevents it being closed while the set is still switched on. In the long-playing gram model this plastic peg is replaced by a lid-operated battery switch which breaks the positive connection to the L.T. battery when the lid is closed.

Mains H.T. current is supplied by metal rectifier **(MR1,** two **SenTerCel RM1** units in series). Smoothing by **R19** and electrolytic capacitors **C21** and **C22.** Filament current is also taken from the H.T. circuit, the series-connected filaments being fed via **R17.**

Filament decoupling by **C5** and **C19.** H.T. current drawn by the valves is shunted past the filaments by **R1** and **R16.** Bias is obtained from points of appropriate potential in the filament chain, extra bias for **V4** being obtained from the voltage drop across **R15** in the H.T. negative lead to chassis. Details of low-voltage models (model number followed by suffix B), which can operate from 110 V mains, are given under "General Notes."

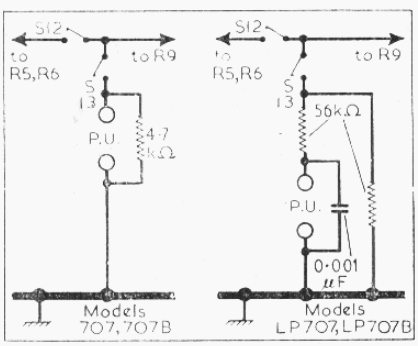
GENERAL NOTES

Switches.—S1-S5 are the waveband switches, ganged in a single rotary unit beneath the chassis. Its position is indicated in our underside view of the chassis, but the unit is shown in detail in the diagram inset beside the circuit diagram overleaf, where it is drawn as seen when looking towards the top deck of the chassis. **S1, S2** and **S4** close for M.W. operation (control knob turned anti-clockwise); **S3** and **S5** close for L.W.

S6(M)-S9(B), S10(M) are the mains/battery/off switches, ganged in a single rotary unit. This is indicated in our under-chassis view below and shown in detail inset beside the circuit diagram overleaf, where it is drawn as seen when looking towards the under-chassis. Switches with the suffix **(M)** close for mains operation and those with **(B)** for battery. At "off" all switches are open.

Models 707, LP707.—These are standard and 2-speed portable radiogram versions of model 101, using Garrard pick-ups and spring motors. The chassis used in these versions is similar to that used in the 101 but incorporates the following modifications.

A third (gram) position is provided on the waveband control, and when in use the additional switches **S11** (shown in broken line in the circuit diagram overleaf), **S12** and **S13** (shown in the diagrams below) are brought into operation. The diagrams below show the method of pick-up



P.U. circuits of standard and L.P. models.

connection in the two models, and the additional tone correction components used in the 2-speed version. A lid-operated battery switch is also used in the 2-speed version to break the positive connection to the L.T. battery when the lid is closed.

Models 101B, 707B.—These are low-voltage export versions of the 101 and 707 respectively and have a S.W. band coverage of 19-65 m in place of the L.W. band. A home version of the 707B is also produced for the home market and has the normal M.W. and L.W. bands. The voltage adjustment tappings on these models are for 110 V, 200 V and 240 V mains. The other differences between these and the standard models are confined to the power supply circuit, and are as follows.

The 1,400 Ω section of **R19** is omitted, the junction of **R17** and **S8(M)** going directly to the first voltage tapping. The remainder of **R19** becomes 2,280 Ω, and is tapped at 180 Ω+1,400 Ω +700 Ω from **MR1.** A smoothing choke is inserted in the H.T. feed from **R19** to **S8(M)** and a 50 μF capacitor is shunted across **R18. C19** becomes a 200 μF capacitor and **MR1** consists of two **SenTerCel** RM1A units in series.

Batteries.—In the 101 series the L.T. unit is an Ever Ready All Dry 39, rated at 7.5 V. The H.T. battery is an Ever Ready B129, rated at 85.5 V.

In the 707 series the L.T. unit is an All Dry 31, rated at 7.5 V, and the H.T. battery is a B107, rated at 90 V.

Modification.—A 15 pF capacitor may be connected across **C29** in some models.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating from 235 V A.C. mains, the voltage adjustment being set to the 240 V tapping. The receiver was tuned to the high wavelength of M.W., a point being selected where there was no signal pick-up.

Voltages were measured with an Avo Electronic TestMeter, and as this instrument has a high internal resistance, allowance should be made for the current drawn by other types of meter. The voltage across **C22** was 206 V. The manufacturers quote the anode current of **V5** as about 6 mA and its screen current as about 1 mA when the receiver is operated from a new set of batteries.

Valve	Anode		Screen	
	V	mA	V	mA
V1 DK92	80	80 μA	52	20 μA
Oscillator	35	5·6		
V2 DF91	80	0·9	52	0·6
V3 DAF91	18	70 μA	18	15 μA
V4 DL92	73	15·0	80	3·5

CIRCUIT ALIGNMENT

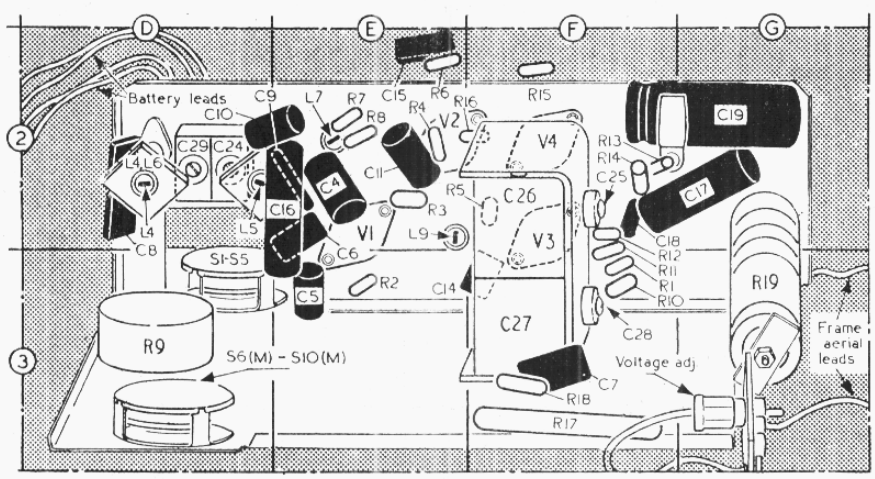
For the following adjustments, the panel carrying the chassis and speaker should be released from the carrying case (two large-head locking screws), and tilted upwards to lean against the carrying case lid.

I.F. Stages.—Switch receiver to M.W. and turn gang to maximum. Connect output of signal generator (via an 0.1 μF capacitor in each lead if receiver is operated from mains supply) to control grid (pin 6) of **V1** and chassis. Feed in a 470 kc/s (638.3 m) signal and adjust the cores of **L10** (location reference B1), **L9** (E2), **L8** (C1) and **L7** (E2) for maximum output, reducing the input as the circuits come into line to avoid A.G.C. action. Repeat these adjustments.

R.F. and Oscillator Stages.—Disconnect signal generator leads and lay them near the frame aerial winding. Check that with the gang at maximum capacitance, the ends of the cursor line up with the two brass pins in the panel escutcheon.

M.W.—Switch receiver to M.W., tune to 500 m, feed in a 500 m (600 kc/s) signal and adjust the cores of **L4** (D2) and **L2** (C1) for maximum output. Tune receiver to 200 m, feed in a 200 m (1,500 kc/s) signal and adjust **C28** (F3) and **C25** (F2) for maximum output. Repeat these adjustments until no further improvement results.

L.W.—Switch receiver to L.W., tune to 1,950 m, feed in a 1,950 m (154 kc/s) signal and adjust the cores of **L5** (D2) and **L3** (C1) for maximum output. Tune receiver to 1,000 m, feed in a 1,000 m (300 kc/s) signal and adjust **C29** (D2) and **C24** (D2) for maximum output.



Underside view of chassis, showing accessibility of components when the panel is raised.

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