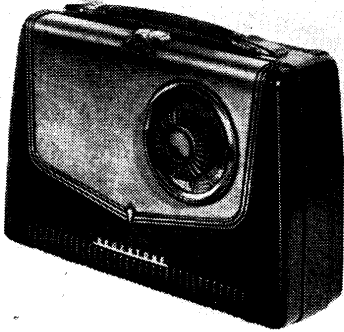


"TRADER" SERVICE SHEET
1381



DESIGNED to operate from A.C. or D.C. mains of 110-250V, 25-100c/s in the case of A.C., or from internal all-dry batteries, the Regentone "Double-Two" Mk. II is a 4-valve, 2 band portable superhet. It employs a ferrite rod internal aerial, and provision is made for the connection of an external aerial. The mains/battery change-over switch is automatically operated upon inserting the mains connector in its chassis socket. Waveband ranges are 187-570m and 1,150-1,875m.

The earlier (Mk. I) version of this receiver employs a similar circuit to the Mk. II, but the component layout is different. The circuit variations for the Mk. I version are explained under "General Notes."

Release dates: *Double-Two Mk. I*, January 1956; *Double-Two Mk. II*, May 1957. Original price, both models: £13 12s 11d. Purchase tax extra.

CIRCUIT DESCRIPTION

The normal receiving circuits are quite conventional, but the power supply to the filaments is rather intricate, being parallel-connected on battery, and series-connected on mains.

For battery operation, all switches indi-

REGENTONE "DOUBLE-TWO"

A.C./D.C./Battery Portable Radio Receiver

cated by the suffix (B) are closed. L.T. and H.T. supplies are connected via S14, S15, S16(B) and S18(B). Switches S6(B), S7(B), S9(B), S10(B) and S12 (optional) close to connect V1-V4 filaments in parallel. Bias for V4 is developed across R23 and part of V4 filament, which are in series with the H.T. negative lead and chassis. S12

operates as a battery economy switch. With S12 open, only one section of V4 filament is in circuit, thus effecting an economy in L.T. and H.T. current consumption at the cost of reduced power output.

For mains operation, all switches indicated by the suffix (M) are closed. V1-V4 fila-

(Continued overleaf col. 1)

Resistors			Capacitors		
R1	120kΩ	F3	C1	2.5pF†	A1
R2	1.2MΩ	F3	C2	180pF	B2
R3	27kΩ	F3	C3	—	A1
R4	33kΩ	F3	C4	—	A1
R5	1.2MΩ	F4	C5	220pF	A1
R6	39kΩ	F4	C6	0.01μF	F3
R7	1.2kΩ	F3	C7	100pF	A1
R8	1.5kΩ	E3	C8	100pF	A1
R9	560Ω	D4	C9	100μF	E3
R10	1.2MΩ	F4	C10	220pF	B1
R11	300Ω	D4	C11	550pF	B1
R12	33kΩ	F4	C12	—	A1
R13	1.2MΩ	F4	C13	15pF	A1
R14	470kΩ	F4	C14	—	A1
R15	1MΩ	B1	C15	527pF	A1
R16	10MΩ	F4	C16	—	A1
R17	150Ω	D4	C17	4,700pF	B1
R18	2.7MΩ	F4	C18	0.01μF	F3
R19	470Ω	D4	C19	0.01μF	F3
R20	820kΩ	F4	C20	0.01μF	E4
R21	1.8MΩ	F4	C21	100pF	A2
R22	33kΩ	F4	C22	100pF	A2
R23	560Ω	F4	C23	1μF	E3
R24	8.2kΩ	E4	C24	0.01μF	F3
R25	10kΩ	D3	C25	220pF	E4
R26	505Ω	D3	C26	0.01μF	F4
R27	573Ω	D3	C27	0.01μF	F4
R28	2.92kΩ	D3	C28	0.01μF	F4
R29	3.75kΩ	B1			
R30	243Ω	D3			
R31	193Ω	D3			

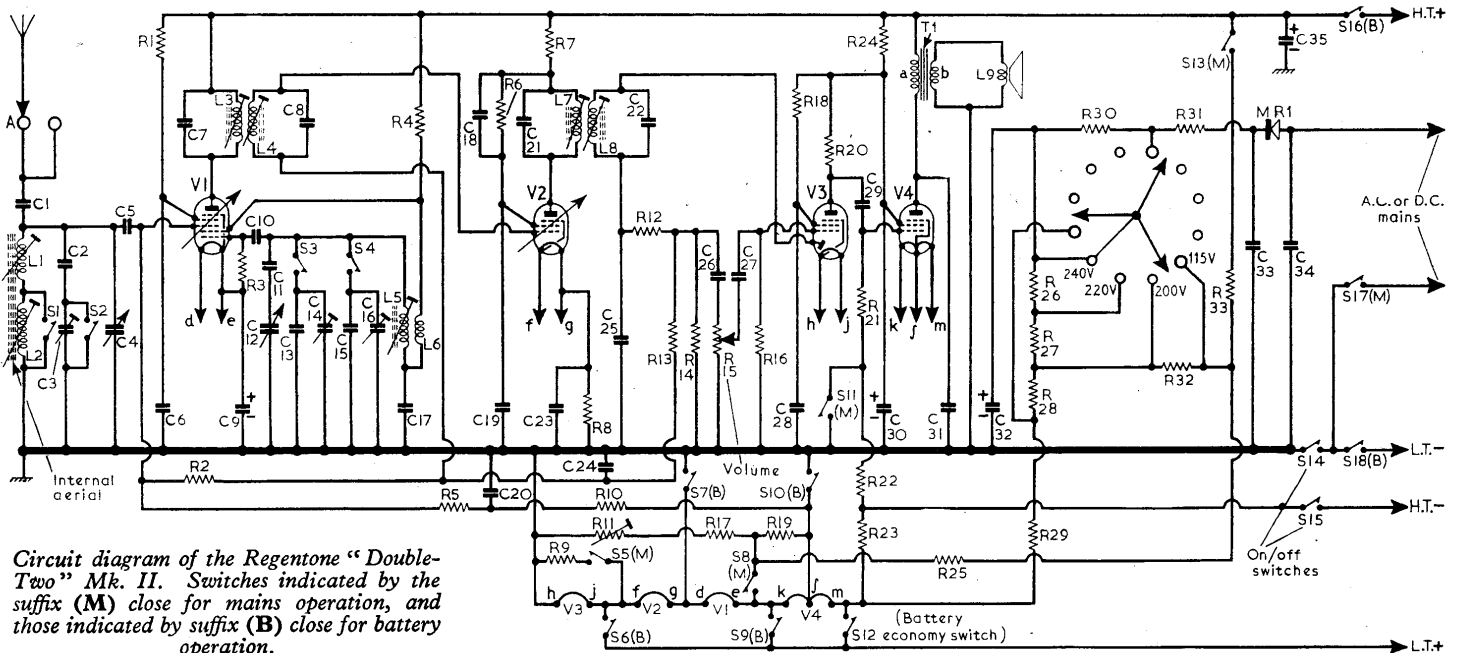
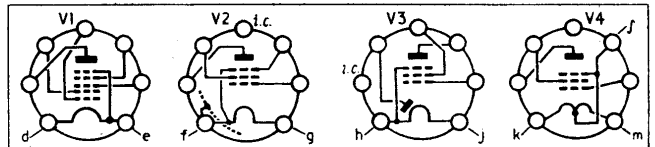
Resistors			Capacitors		
R32	3.8kΩ	D3	C29	0.002μF	F4
R33	1.5kΩ	D3	C30	8μF	B2
			C31	0.002μF	F4
			C32	40μF	B2
			C33	0.03μF	C2
			C34	0.03μF	C2
			C35	40μF	B2

Coils*		
L1	0.7	A1
L2	3.7	B1
L3	11.0	A1
L4	11.0	A1
L5	3.0	B1
L6	2.3	B1
L7	11.0	A2
L8	11.0	A2
L9	2.0	—

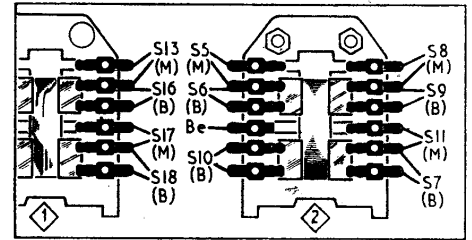
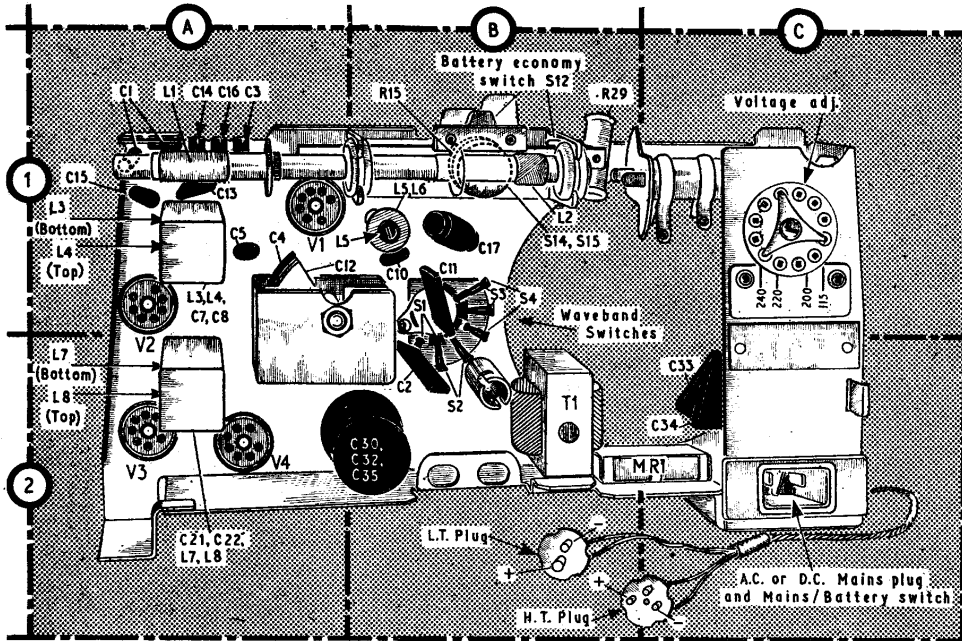
Other Components*		
T1	{ ^a 650.0 } { ^b — }	B2
MR1	18RA-1-1-16-1	C2
S1-S4	—	B1
S5-S11	—	D4
S13	—	
S16-S18	—	
S12	—	
S14, S15	—	B1

* Approximate D.C. resistance in ohms.
† Two 5 pF in series.

Diagrams of the valve base connections as seen from the free ends of the pins.



Circuit diagram of the Regentone "Double-Two" Mk. II. Switches indicated by the suffix (M) close for mains operation, and those indicated by suffix (B) close for battery operation.



Above: Diagram of battery/mains switch.
Left: Rear view of the chassis.

Circuit Description—continued

ments are then connected in series, and L.T. current is obtained from half-wave rectifier MR1, via the filament ballast resistor R29. R11, R17 and R19 are connected in parallel with V1-V4 filaments, with R11 operating as a pre-set filament current control. The centre tap of V4 filament is at a positive potential relative to its control grid, thus providing grid bias via S11(M). The A.G.C. line is also connected, via R10, to V4 filament tap; thus under weak signal conditions, V1 and V2 are operating at maximum gain. With strong signal inputs, the negative A.G.C. bias potential developed across A.F. load resistor R14 opposes the positive potential at V4 filament tap, reducing the gain of V1, V2.

CIRCUIT ALIGNMENT

To facilitate accurate tuning of the receiver during the R.F. alignment, the tuning points are indicated on the M.W. and L.W. tuning scales by small black and white dots respectively.

- 1.—Switch receiver to M.W., turn gang and volume control to maximum. Connect output meter across T1 secondary winding. Connect signal generator, via 0.1μF capacitors, between V2 (pin 6) and chassis.
- 2.—Feed in a modulated 470kc/s signal and adjust the cores of L8 (A2) and L7 (A2) for maximum output, progressively reducing the signal generator output as the circuits are aligned.
- 3.—Connect signal generator between V1 control grid (pin 6) and chassis. Feed in a 470kc/s signal and adjust the cores of L4 (A1) and L3 (A1) for maximum output, again reducing the signal generator output as the circuits are aligned.
- 4.—Turn the gang to maximum capacitance and check that the tuning pointer coincides with the lines separating the M.W. and L.W. scales. Connect signal generator, via a dummy aerial, between the aerial socket and chassis.
- 5.—Switch receiver to M.W. and tune it to 522m. Feed in a modulated 575kc/s signal and tune L5 (B1) to the first peak obtained from the adjusting end of the coil. Then adjust the former of L1 (A1) along the ferrite rod for maximum output.
- 6.—Tune the receiver to 200m. Feed in a 1,500kc/s signal and adjust C14 (A1) and C3 (A1) for maximum output.
- 7.—Repeat operations 5 and 6.
- 8.—Switch receiver to L.W. and tune it to 1,335m. Feed in a 225kc/s signal and

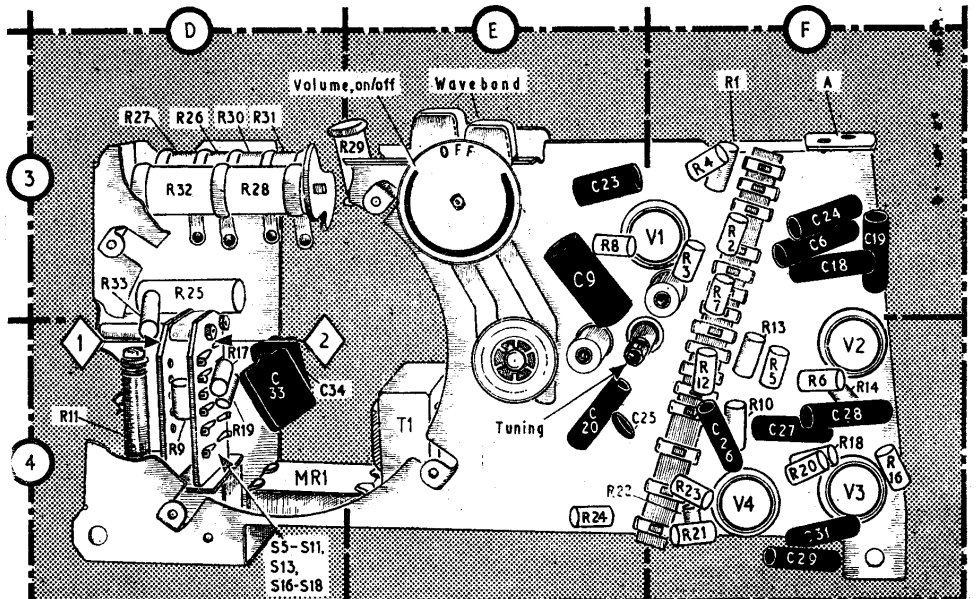
- adjust C16 (A1) and L2 (B1) for maximum output. Adjust L2 by sliding its former along the ferrite rod.
- 9.—Repeat operation 8.
- 10.—Seal the formers of L1 and L2.

GENERAL NOTES

Switches.—S1-S4 are the waveband switches ganged in a single rotary unit. This unit is indicated in the plan view of the chassis (location reference B1), where the individual switch contacts are identified. S1, S3 close for M.W. operation, and S2, S4 close for L.W.

S5-S11, S13 and S18 are the mains/battery change-over switches, ganged in a double sliding unit and shown in the plan view of the chassis (location reference D4), and is also shown in detail in the diagrams in col. 3. The two sections of the unit are identified by the numbers 1 and 2 in diamond surrounds. The action of the switches is indicated by their suffixes (M), which means that it closes for mains operation, and (B), which means that it closes for battery operation. The unit is operated by the insertion of the main's lead in its chassis socket.

S12 is the battery economy switch and is indicated in the plan view of the chassis (B1). **S14, S15** are the "on/off" switches ganged with the volume control R15.



Front view of the chassis with speaker removed and chassis cut away to show components.

Batteries.—Those recommended by the makers are H.T., Ever Ready B126, rated at 90V; L.T., Ever Ready AD35, rated at 1.5V.

Adjustment of R11.—This control is adjusted at the factory and should not normally require readjustment. If readjustment of R11 is found to be necessary, proceed as follows.

Connect a Model 8 Avometer, switched to its 10V range, between pin 1 of V4 and chassis. Set the mains adjustment to the nominal mains voltage and adjust R11 for 3.9V.

Early Version.—The following variations occur between the "Double-Two" Mk. II, from which this Service Sheet was prepared, and the earlier version of this receiver; C2 is 275pF; C11, C15 are 665pF; C18 and C34 are omitted; R7 is omitted; R6, L7 are connected to H.T. positive. C34 may be 0.01μF.

VALVE ANALYSIS

The voltages and currents given in the table below are those derived from the manufacturers' information. Voltages were measured with a Model 8 Avometer, chassis being the negative connection in every case. The receiver was switched to M.W.; there was no signal input.

On mains, average voltages across V1, V2 and V3 filaments (pins 1 and 7) were 1.3V; and 2.6V across V4 filament. Voltage measured between pin 1 of V4 and chassis was 3.9V.

When operating from battery supplies, and with the battery economy switch in the "in" position, the voltage and current readings between H.T. negative and chassis were 4V, 8mA; and when switched to the "out" position the readings were 4.6V, 10mA.

Valve	Anode		Screen	
	(V)	(mA)	(V)	(mA)
V1 DK96 {mixer	84	0.42	68	0.11
V2 DF96 {Osc.	33	1.7	—	—
V3 DAF96	82	1.45	66	0.28
V4 DL96	31	56μA	30	17μA
	82	3.5	78	0.66