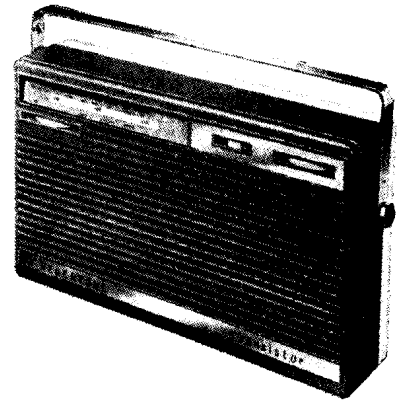


"TRADER" SERVICE SHEET
1535

REGENTONE BT16 & BT17



Appearance of model BT17

SIX transistors and one crystal diode are employed in the Regentone BT16 and BT17 portable receivers. The circuit is wired on a printed panel and is designed for reception on M.W. and L.W. using an internal ferrite rod aerial. A socket on the side of the case provides for the connection of an external aerial if required.

Waveband ranges are 186-571m (M.W.) and 1053-1875m (L.W.). Power is obtained from two 9V batteries connected in series and the consumption is 18mA with no signal and 44mA at 50mW output.

Release dates and original prices: BT16, August 1961 £10 17s 3d; BT17, June 1961 £9 14s. Purchase tax extra.

TRANSISTOR ANALYSIS

Transistor voltages shown in the table below were supplied by the manufacturer. They were measured with respect to chassis, not battery positive. The positive meter lead was connected to chassis.

Transistor Table

Transistor	Emitter (V)	Base (V)	Collector (V)
TR1 OC44 ..	1.2	1.1	7.7
TR2 OC45 ..	0.6	0.7	7.7
TR3 OC45 ..	0.9	1.2	7.7
TR4 OC81D ..	9.6	9.5	16.3
TR5* OC81 ..	7.6	7.9	16.9
TR6* OC81 ..	1.1†	1.0†	7.6

*Matched pair. †With reversed polarity.

CIRCUIT DESCRIPTION

Coils L1, (L.W.) and L3 (M.W.) are the aerial tuning coils and are wound on a ferrite rod to form an internal aerial. TR1 operates as a self oscillating mixer and the signals are fed to its base via

(Continued overleaf, col. 1)

Resistors

R1	56kΩ	B2
R2	10kΩ	B2
R3	3.9kΩ	B2
R4	68kΩ	B2
R5	8.2kΩ	C2
R6	680Ω	B3
R7	1.2kΩ	B3
R8	4.7kΩ	B3
R9	22kΩ	B3
R10	—	†
R11	1kΩ	B3
R12	3.9kΩ	C3
R13	5kΩ	D2
R14	10kΩ	C3
R15	—	†
R16	1kΩ	C2
R17	27kΩ	C3
R18	680Ω	C3
R19	680Ω	C3
R20	—	†
R21	5Ω	C3

R22	470Ω	C2
R23	3.3kΩ	C2
R24	56Ω	C2
R25	3.3kΩ	C2
R26	56Ω	C2
R27	5Ω	C2
R28	5Ω	C2
R29	1kΩ	C3
R30	330kΩ	A1

Capacitors

C1	178pF	A2
C2	40pF	A1
C3	0.1μF	B2
C4	250pF	B2
C5	0.01μF	B2
C6	220pF	B1
C7	111pF	A1
C8	8μF	B2
C9	250pF	B3
C10	—	†
C11	50pF	B3

C12	0.1μF	B3
C13	0.04μF	C3
C14	0.1μF	B2
C15	15pF	B3
C16	250pF	B3
C17	0.1μF	B3
C18	100μF	B2
C19	1μF	C3
C20	—	†
C21	50μF	C3
C22	100μF	C3
C23	100μF	C2
C24	0.01μF	C3
C24a	0.01μF	C3
TC1	—	A1
TC2	—	A2
TC3	—	B1

Coils*

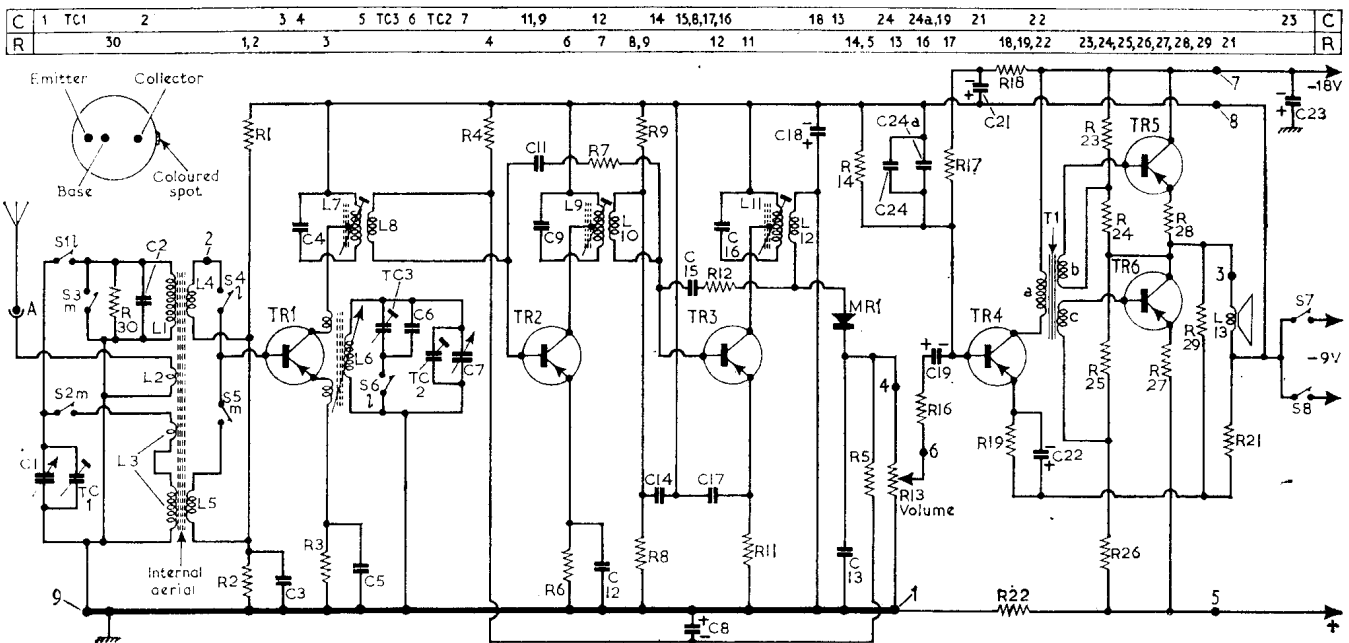
L1	15.0	A1
L2	5.0	A1
L3	—	C1

L4	—	A1
L5	—	B1
L6	2.0	B2
L7	—	B2
L8	—	B2
L9	—	B3
L10	—	B3
L11	—	B3
L12	—	B3
L13	35.0	—

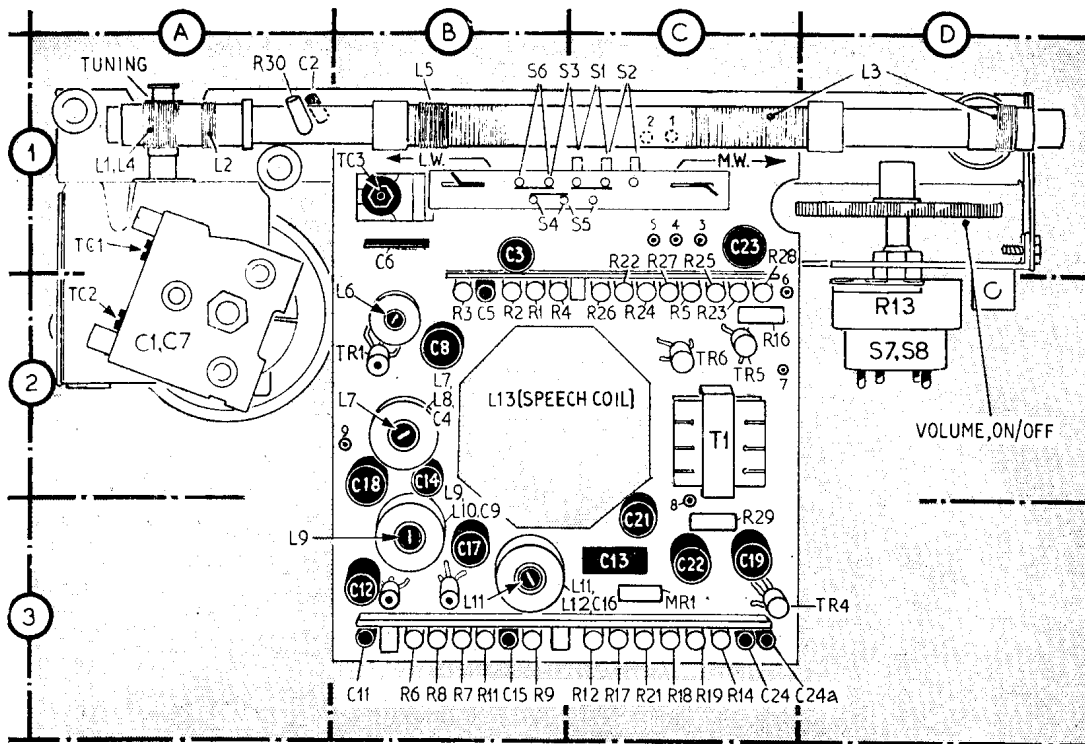
Miscellaneous*

T1 { a	200	} C2
b	43	
c	43	
MR1	OA70	C3
S1-S6	—	C1
S7, S8	—	D2

* Approximate D.C. resistance in ohms.
† No component.



Circuit diagram of Regentone BT16 and BT17. Differences are confined to external appearance.



View of the receiver as seen when the back cover is removed. The aperture in the centre of the panel fits round the speaker magnet and the foil side of the panel is insulated from the speaker frame by a polythene wafer. When re-fitting the chassis after service, ensure that the polythene wafer is in position.

Circuit Description—continued

coupling windings L4 and L5. L6 is tuned at local oscillator frequency and the oscillator voltage is fed via a coupling winding to TR1 emitter.

The resultant I.F. signal developed across L7 in TR1 collector is at 475 kc/s. TR2 and TR3 operate as I.F. amplifier stages, the output from TR3 being applied via L12 secondary winding to the detector diode MRI. TR1, TR2 and TR3 collectors are connected to tappings on their respective primary coils to match the output impedance. Rectified audio output from MRI is fed to the volume control R13 and the positive carrier D.C. voltage is fed back via R5 to TR2 base as A.G.C. Driver transistor TR4 is connected between -9V and -18V supply and receives its base bias from the potential dividing network R14, R17 and R18.

The output from TR4 is applied via phase splitting transformer T1 connected in its collector, to the output transistors TR5 and TR6. The latter form a single ended push-pull stage driving the loud-speaker, whose high impedance speech coil L13 is connected as the load impedance. Negative feedback is applied via R29.

CIRCUIT ALIGNMENT

Circuit alignment can be carried out with the chassis in the case.

Equipment Required.—An output meter or a 0-10V A.C. voltmeter; an A.M. signal generator modulated 30 per cent; a 0.1µF capacitor and a screwdriver-type trimming tool.

1.—Connect the output meter in place of the speaker speech coil or connect the A.C. voltmeter across the speech coil

(tags 3 and 8 on the printed circuit panel).

- 2.—Turn the tuning gang to minimum capacitance and the volume control to maximum. Connect the signal generator via the 0.1µF capacitor to the base of TR1 (right-hand side slide switch pillar).
- 3.—Feed in a 475kc/s signal and adjust the cores of L11, L9 and L7 for maximum output.
- 4.—Disconnect the signal generator from TR1 and connect a loop of wire across the generator output leads. Place the loop a few inches from the ferrite rod. Switch to M.W. and tune receiver to 522m (calibration dot on scale).
- 5.—Feed in a 575kc/s signal and adjust L6 for maximum output.
- 6.—Tune receiver to 200m. Feed in a 1,500kc/s signal and adjust TC2 and TC1 for maximum output.
- 7.—Repeat operations 5 and 6 until no further improvement can be obtained.
- 8.—Switch to L.W. and tune receiver to 1,500m. Feed in a 200kc/s signal and adjust TC3 and L1 for maximum output.

DISMANTLING

BT16.—Loosen the two coin slotted screws about ¼ in, then holding the case, push against the two screw heads until the front and chassis protrude from the case.

Then remove the two retaining screws and pull the front and chassis from the case.

BT17.—Loosen the two coin slotted screws and remove the back cover.

Remove the batteries and unsolder the connections to the external aerial socket. Unscrew the two hexagonal pillars

securing the metal frame to the case.

The chassis can now be removed to the extent of the speaker leads.

To re-assemble, reverse the above procedure ensuring that the polythene wafer is in place.

DRIVE CORD REPLACEMENT

About 36 inches of nylon braided glass yarn is required for a new drive cord. Turn the tuning gang to maximum capacitance and thread the cord as shown in our diagram below. This illustrates the fully assembled cord with the tuning gang in the maximum capacitance position.

MODIFICATIONS

In early versions capacitors C24 and C24a were omitted and a 0.01µF capacitor was connected across the primary winding of T1.

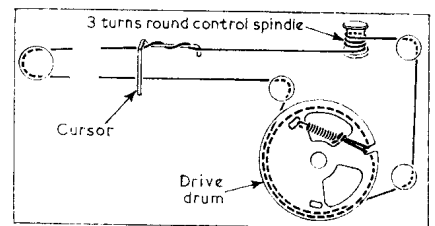
Alternative transistor types to those shown may be found on some chassis as follows:

OC75 in place of OC81D.

OC74 (matched pair) in place of OC81.

In the event of replacement becoming necessary either type can be used without any circuit changes.

Battery.—Ever Ready PP7 (two).



Drive cord assembly as seen from the front.