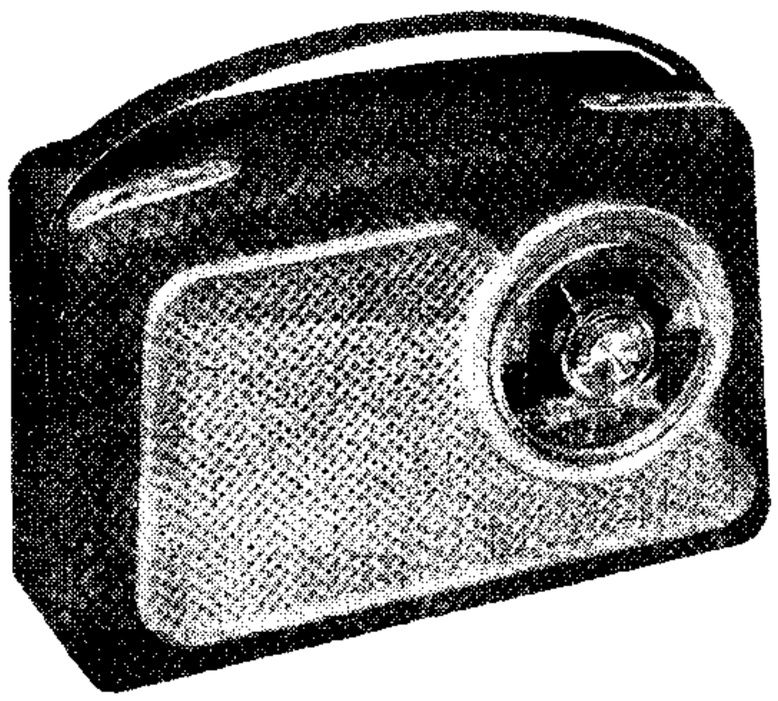
DANSETTE RT222



DANSETTE RT222 is a six-transistor portable radio receiver designed for Medium and Long wave reception and housed in a plastics fabric covered, glass-fibre case. It is fitted with an internal ferrite-rod aerial and is provided with a socket for the connection of a car aerial. The chassis comprises two printed-circuit panels (RF and audio) which together with the loudspeaker are secured to a metal frame. The whole is removable as a single unit from the case for servicing. Operation is from a single 9V battery.

Release date and original price: March 1961, £12 0*s* 7*d*. *Purchase tax extra.*

TRANSISTOR ANALYSIS

Transistor voltages given in the table in col. 2 were measured on our specimen receiver using an Avo Electronic Test-meter. The receiver was switched to M.W. and the volume control was set in the minimum output position. All voltages are negative with respect to chassis.

Transistor Table

Transistor		Emitter (V)	Base (V)	Collector (V)
TR1	OC44 ..	1·1	1·0	7·0
TR2	OC45 ..	0·5	0·8	7·1
TR3	OC45 ..	0·9	1·1	7·1
TR4	OC81D ..	1·1	1·2	8·6
TR5	OC81 ..	—	0·2	8·9
TR6	OC81 ..	—	0·2	8·9

Battery consumption was 13.5mA with no signal input; 25mA with normal signal.

Alternative Transistor Types.—Some receivers are fitted with a range of G.E.C. transistors in place of Mullard as follows: **TR1** GET874, **TR2** GET873, **TR3** GET873, **TR4, TR5** and **TR6** GET114. In these receivers **R16** becomes 6.8kΩ. In early production receivers where Mullard transistors are fitted, **TR4** may be OC78D, **TR5** and **TR6** may be OC78.

CIRCUIT DESCRIPTION

Signal input is by way of the internal aerial **L2/L4** (L.W.) and **L3/L5** (M.W.) or from an external aerial via coupling winding **L1.** Switches **S1, S2, S4** and **S5** select the appropriate coil windings; **S3** short-circuits the L.W. aerial coil on M.W. Tuning is by **C1** and **C2** on both wavebands with **C3** added in parallel on L.W. R.F. signals are fed directly to the base of **TR1** which operates as a self-oscillating mixer. Base bias is derived from the potential divider **R1, R2.**

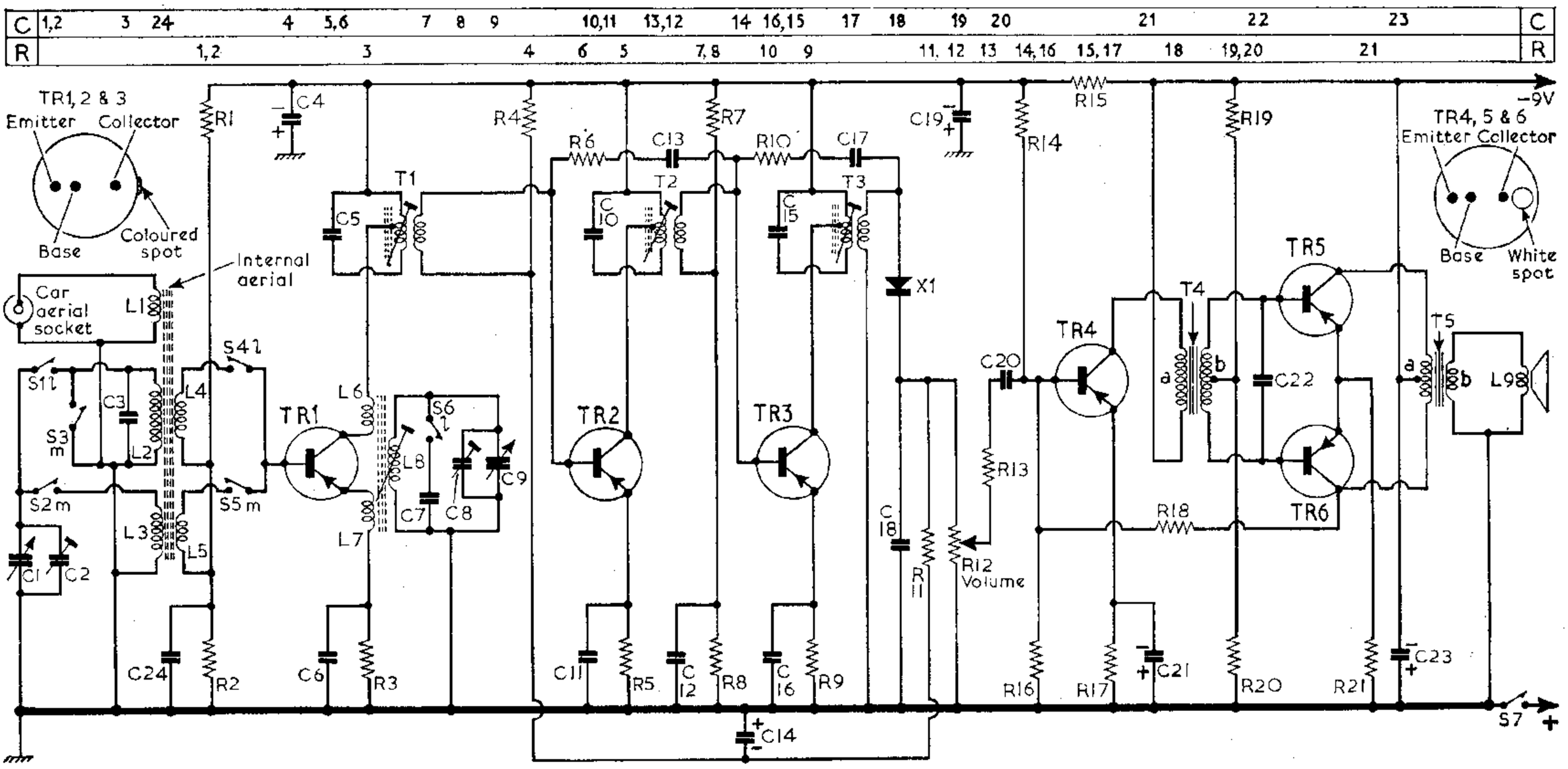
L8 with **C8** and **C9** (M.W.) comprise the

(*Continued overleaf col.* 1)

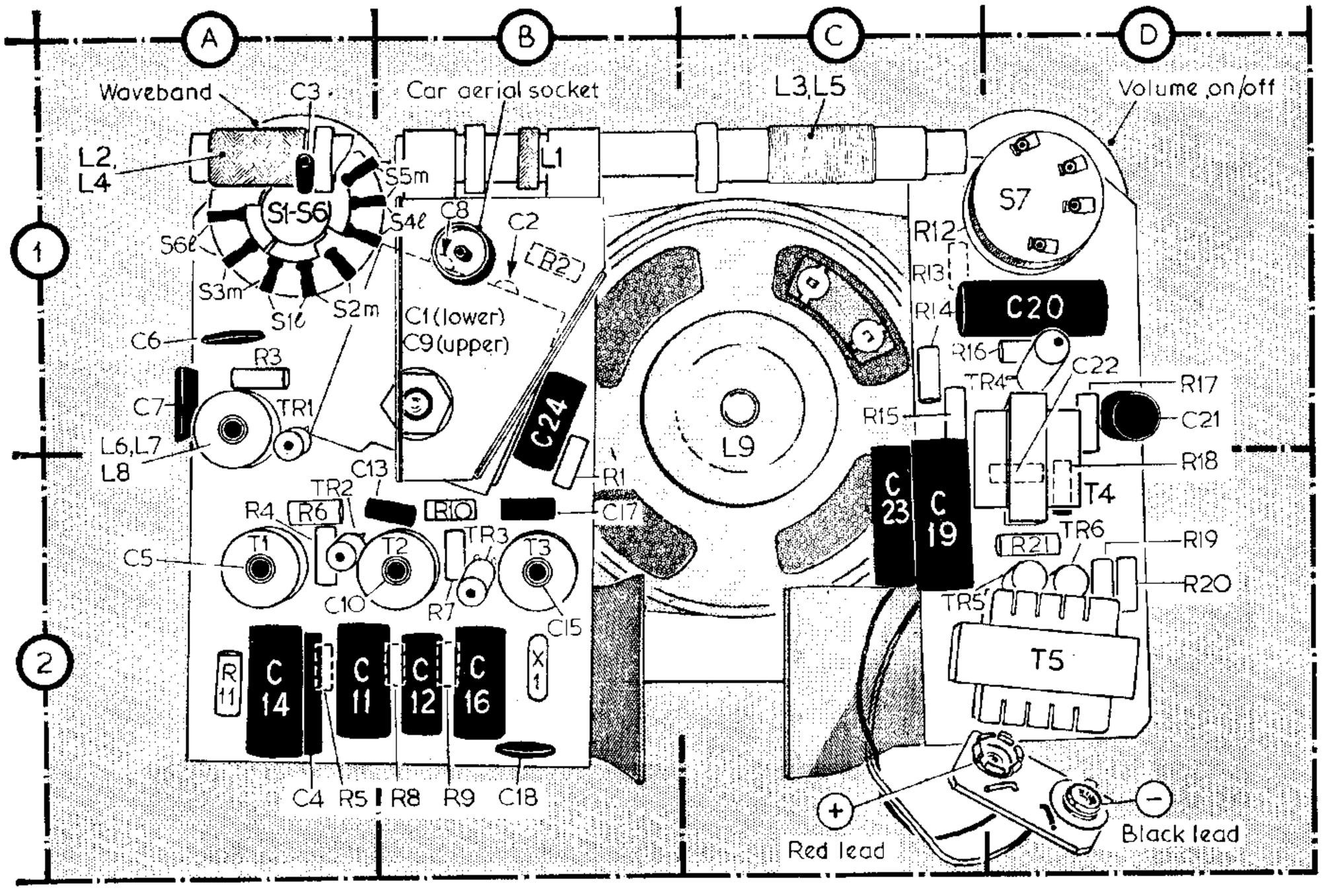
Resistors			
R1	56kΩ	B2	
R2	10kΩ	B1	
R3	3·9kΩ	A1	
R4	68kΩ	A2	
R5	680Ω	A2	
R6	1·2kΩ	A2	
R7	22kΩ	B2	
R8	4·7kΩ	B2	
R9	1kΩ	B2	
R10	3·9kΩ	B2	
R11	8·2kΩ	A2	
R12	5kΩ	C1	
R13	2·7kΩ	C1	
R14	39kΩ	C1	
R15	680Ω	C1	
R16	12kΩ†	D1	
R17	560Ω	D1	
R18	1MΩ	D2	
R19	4·7kΩ	D2	
R20	100Ω	D2	
R21	4·7Ω	D2	
Capacitors			
C1	157·pF	B1	
C2	20pF	B1	
C3	18-56pF	A1	
C4	8μF	A2	
C5	250pF	A2	
C6	0·01μF	A1	
C7	240pF	A1	
C8	20pF	B1	
C9	111pF	B1	
C10	250pF	A2	
C11	0·25μF	A2	
C12	0·1μF	B2	
C13	56pF	A2	
C14	8μF	A2	
C15	250pF	B2	
C16	0·25μF	B2	
C17	18pF	B2	
C18	0·01μF	B2	
C19	100μF	C2	
C20	0·47μF	D1	
C21	100μF	D1	
C22	2,000pF	D1	
C23	100μF	C2	
C24	0·1μF	B1	
Coils*			
L1	1·25	B1	
L2	7·5	A1	
L3	1·5	C1	
L4	—	A1	
L5	—	C1	
L6	—	A1	
L7	—	A1	
L8	2·3	A1	
L9	3·0	C1	
Transformers*			
T1	—	A2	
T2	—	A2	
T3	—	B2	
T4 a	115·0	D2	
T4 b	86·0	D2	
T5 a	4·0	D2	
T5 b	—	D2	
Miscellaneous			
X1	OA70 or GEX34	B2	
S1-S6	—	A1	
S7	—	D1	

**Approximate D.C. resistance in ohms.*

†6·8kΩ *in receivers fitted with G.E.C. transistors.*



Circuit diagram of Dansette RT222. In some receivers a 560Ω or 680Ω resistor may be wired across **T5** *primary*



The complete receiver removed from its case, observed from the rear. Components not directly visible from this angle are trimmers **C2** *and* **C8** *which are mounted on the tuning gang behind the aerial socket plate (location reference B1), also* **R13** *and* **C22** *which are mounted on the reverse side of the audio panel (D1)*

Circuit Description—*continued*

oscillator tuned circuit generating the heterodyne signal which is injected via **L7** into the emitter circuit. Regenerative feedback coupling from collector to emitter is provided by **L6** and **L7**. **C7** is brought into circuit by **S6** on L.W. to tune **L8** to the lower frequency waveband.

Intermediate frequency selected by **T1** is at 470 kc/s and is coupled via the secondary of the single tuned transformer to the base of **TR2**. **TR2** and **TR3** operate as a two-stage I.F. amplifier in conjunction with associated coupling transformers **T2** and **T3**.

The primary windings of **T1, T2** and **T3** are suitably tapped to match the low impedance collector output of the transistors. **R6, C13** and **R10, C17** are feedback circuits which neutralize the internal capacitances of **TR2** and **TR3**. Amplified I.F. output from **TR3** is fed to the detector diode **X1** and rectified audio signals are developed across the combined load resistor and volume control **R12**. The D.C. component present across **R12** is tapped off and after filtering by **R11** and **C14** is returned to the base of **TR2** as A.G.C. bias.

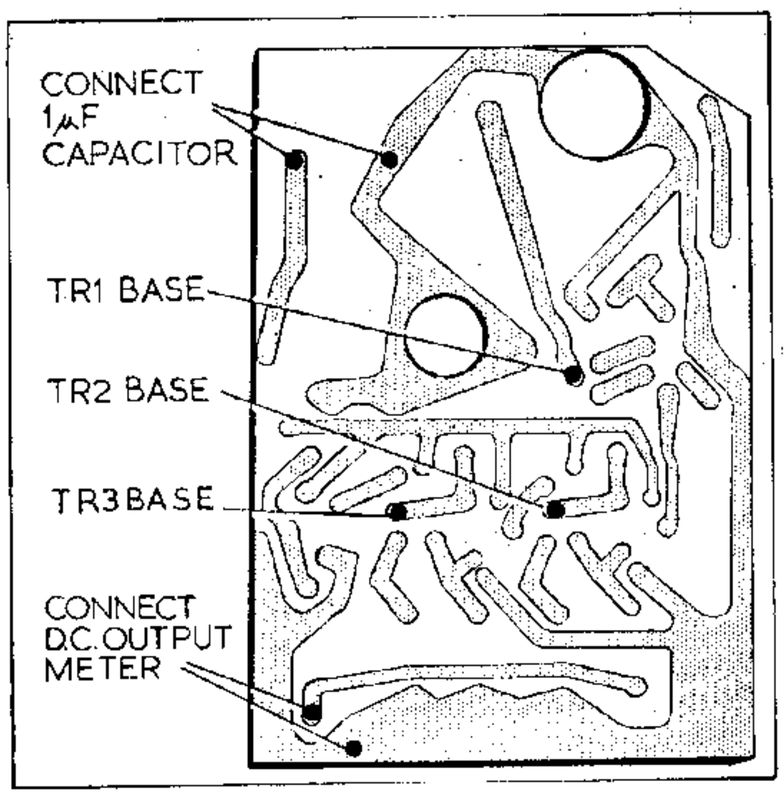
From the slider of **R12** the audio signal is coupled via **C20** to the base of the driver **TR4**. Connected in the collector circuit of **TR4** the driver transformer **T4** has a centre-tapped secondary which feeds the bases of **TR5** and **TR6** in anti-phase. These two transistors form a class B push-pull output stage which drives the loudspeaker **L9**.

CIRCUIT ALIGNMENT

Equipment Required.—An A.M. signal generator; a high resistance 0-2.5V D.C. voltmeter; an R.F. coupling loop constructed by winding 3 turns of insulated wire to a diameter of 10ins. with a 430Ω resistor connected in series; a 0.5μF capacitor and an 820 ohm resistor wired in series for use as a generator terminating network; a 1μF capacitor and a bladed type trimming tool for the I.F. transformer cores.

The identity of the equipment connecting points referred to in the instructions which follow, are given in the illustration of the foil side of the receiver panel below.

1.—Connect the D.C. voltmeter as an audio output meter across the volume control **R12.** Switch receiver to M.W. and turn the volume control to minimum output.
2.—Connect the signal generator via the 0.5μF capacitor and 820 ohm resistor network to the base of **TR3.** Feed in a 470 kc/s signal and adjust **T3** (location reference B2) for maximum output on the D.C. meter.
3.—Transfer the signal generator to the base of **TR2** and adjust **T2** (A2) for maximum output.
4.—Shunt **C24** (B1) with the 1μF capacitor. Transfer the signal generator to the base of **TR1** and adjust **T1** (A2) for maximum output.
5.—Rotate the tuning gang to the maximum capacitance position (fully meshed). Feed in a 540 kc/s signal and adjust **L8** (A1) for maximum output.



Foil side of R.F. panel showing connections required for alignment purposes

6.—Rotate the tuning gang to the minimum capacitance position. Feed in a 1,640 kc/s signal and adjust **C8** (B1) for maximum output.
7.—Repeat operations 5 and 6 until no further improvement can be obtained. Remove the 1μF capacitor from across **C24.**
8.—Connect the signal generator output leads across the R.F. coupling loop and place the loop about 2 feet distant from the ferrite rod. Tune receiver to the 500m mark on the scale. Feed in a 600 kc/s signal and adjust **L3** (C1) for maximum output.
9.—Tune receiver to the 250m mark on the scale. Feed in a 1,200 kc/s signal and adjust **C2** (B1) for maximum output.
10.—Repeat operations 8 and 9 until no further improvement can be obtained.
11.—Switch receiver to L.W. and tune to 1,400m on scale. Feed in a 214 kc/s signal and adjust **L2** (A1) for maximum output.

GENERAL NOTES

Dismantling.—To remove the chassis from the cabinet first undo two coin-slotted screws and remove the back cover.

Remove and disconnect the battery.

Pull off the tuning control knob.

Remove two hexagonal pillars which secure the chassis.

Using the loudspeaker magnet as a grip, lift out the chassis in a down and outwards movement to clear the case with the control knobs.

Switches.—S1-S6 are the waveband switches which are housed in a two-way rotary unit shown in location reference A1, where individual switch sections can be identified. In the switch drawing and on the circuit diagram, suffix letter *m* means closed on M.W. and suffix letter *l* means closed on L.W. **S7** is the battery on/off switch and is ganged with the volume control **R12.**

Battery.—9V Vidor T6007, Ever-Ready PP7, or equivalent.

Modifications.—In earlier receivers **R20** was 82Ω not 100Ω.

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