

"TRADER" SERVICE SHEET  
**1678**

# DECCA TP99

Portable Transistor Radio Receiver

**F**ACILITIES for earphone listening and feeding radio programmes to a tape recorder are provided on the Decca TP99 six-transistor (plus two diodes) portable radio receiver. A third socket allows the connection of a car type aerial to supplement the internal ferrite rod aerial.

The receiver comprises a printed circuit panel mounted on a metal chassis frame, and the whole can be removed from the case as a single unit, including external sockets, for servicing.

Waveband ranges are 187.3m—576.9m (m.w.) and 1,105—2,000m (l.w.). Waveband and on/off switching is by means of a press-button unit.

Release date and original price: May 1964 £13 11s 5d. Purchase tax extra.

### TRANSISTOR ANALYSIS

Transistor voltages given in the table in col. 3 were taken from information supplied by the manufacturers. They are negative with respect to battery positive.

### Transistor Table

Transistor	Emitter (V)	Base (V)	Collector (V)
TR1 AF117	1.0	1.05	6.4
TR2 AF117	0.55	0.75	5.0
TR3 AF117	1.2	1.4	7.0
TR4 OC81D	1.45	1.3	8.5
TR5 OC81	4.5	4.6	9.0
TR6 OC81	0.13	0.14	4.4

### CIRCUIT DESCRIPTION

Signals induced in the ferrite rod aerial coils L1 (l.w.) and L3 (m.w.) are coupled via S4 and S5 to the base of TR1 which operates as a self-oscillating mixer stage. Waveband switches are designated m or l to indicate the waveband on which they close. Aerial tuning components C3, C4 and C7 via CH1 are common to both medium and long wavebands and are connected appropriately by S1 and S2.

(Continued overleaf, col. 1)

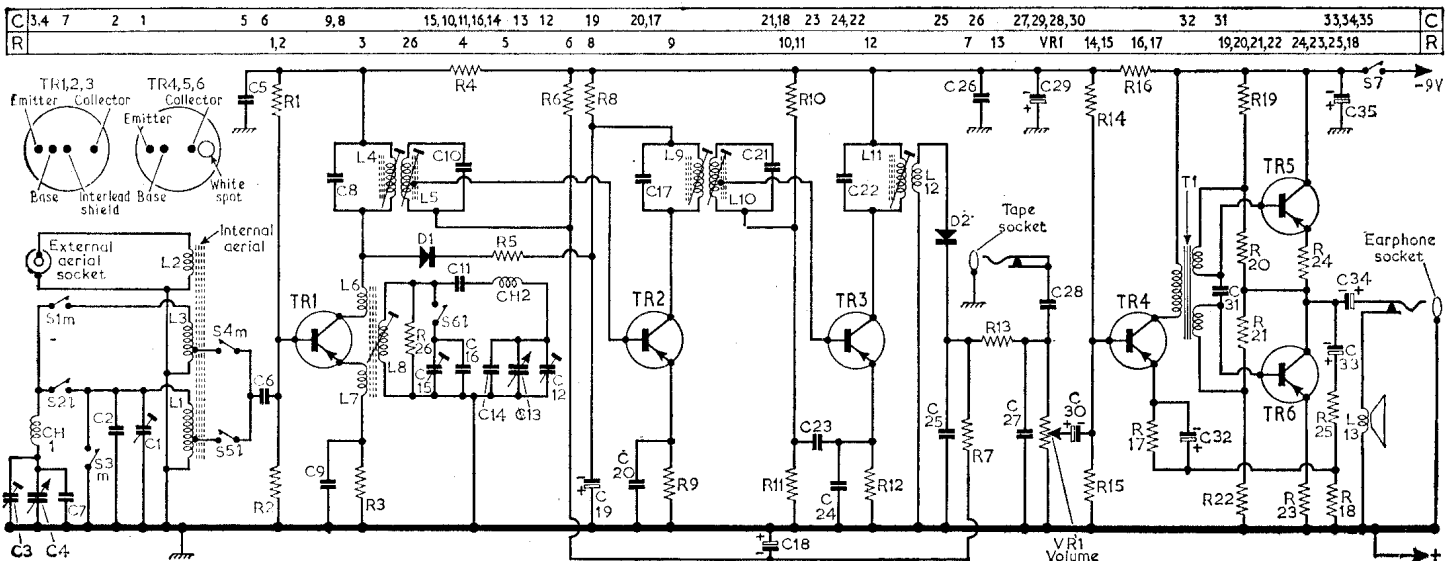


Appearance of the Decca TP99

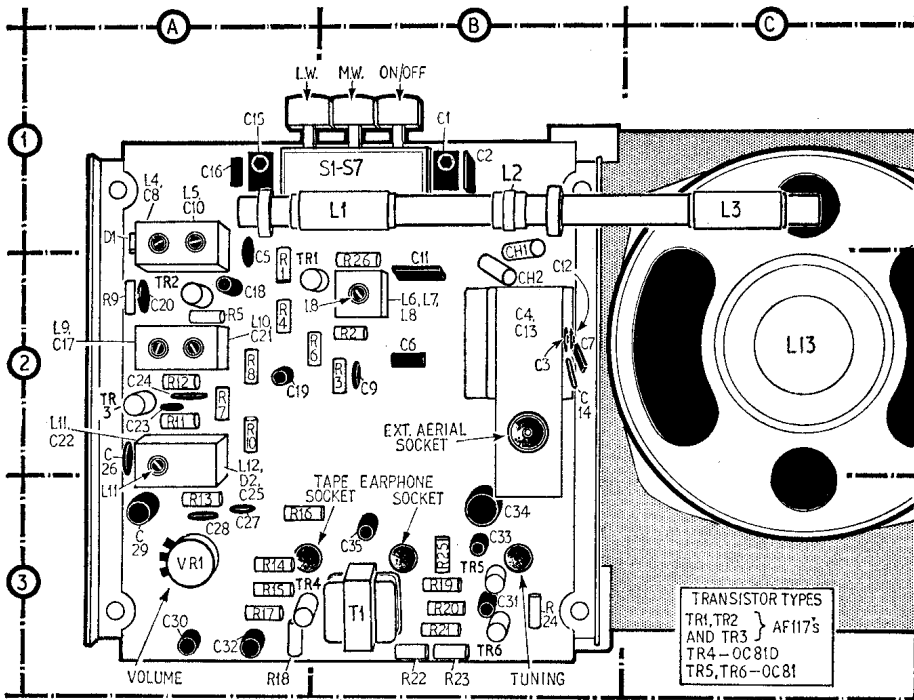
### COMPONENT VALUES AND LOCATIONS

Resistors			Capacitors			Coils		
R1	33kΩ	A2	C1	25pF	B1	L1	—	B1
R2	6.8kΩ	B2	C2	75pF	B1	L2	—	B1
R3	1kΩ	B2	C3	25pF	B2	L3	—	C1
R4	330Ω	A2	C4	410pF	B2	L4	—	A1
R5	680Ω	A2	C5	0.22μF	A2	L5	—	A1
R6	56kΩ	A2	C6	0.01μF	B2			
R7	6.8kΩ	A2	C7	8.2pF	B2			
R8	2.2kΩ	A2	C8	560pF	A1			
R9	680Ω	A2	C9	0.02μF	B2			
R10	18kΩ	A2	C10	560pF	A1			
R11	4.7kΩ	A2	C11	362pF	B2			
R12	680Ω	A2	C12	25pF	B2			
R13	390Ω	A3	C13	340pF	B2			
R14	56kΩ	A3	C14	15pF	B2			
R15	18kΩ	A3	C15	25pF	A1			
R16	680Ω	A3	C16	280pF	A1			
R17	470Ω	A3	C17	270pF	A2			
R18	2.2Ω	A3	C18	10μF	A2			
R19	2.2kΩ	B3						
R20	100Ω	B3						
R21	2.2kΩ	B3						
R22	100Ω	B3						
R23	2.2Ω	B3						
R24	2.2Ω	B3						
R25	330Ω	B3						
R26	470kΩ	B2						
VR1	5kΩ	A3						

Miscellaneous		
D1	0A91	A1
D2	0A91	A3
S1-S7	—	B1
T1	—	B3
CH1	—	B1
CH2	—	B2



Circuit diagram of the Decca TP99 two waveband portable radio receiver



View of the receiver from the rear showing component locations

generator; an a.c. voltmeter and a  $1k\Omega$  resistor.

- 1.—Switch receiver to m.w. and fully close the tuning gang. Turn the volume control to maximum output. Set the voltmeter to read 2.5V a.c. and connect it across the loudspeaker.
- 2.—Connect the signal generator across the m.w. aerial coil L3 and feed in a 472kc/s modulated signal. Adjust the cores of L4, L5, L9, L10 and L11 for maximum output, reducing the signal input as the circuits come into line to prevent a.g.c. action. Repeat until there is no further improvement.
- 3.—Connect the signal generator to the external aerial socket via a  $1k\Omega$  resistor. With the receiver switched to m.w., tune to 500m on the scale. Feed in a 600kc/s signal, and adjust L8 and L3 for maximum output.
- 4.—Tune receiver to 200m. Feed in a 1,500kc/s signal and adjust C12 and C3 for maximum output.
- 5.—Repeat operations 3 and 4.
- 6.—Switch receiver to l.w. and tune to 1,750m on scale. Feed in a 170kc/s signal and adjust C15 and L1 for maximum output.
- 7.—Tune receiver to 1,250m. Feed in a 240kc/s signal and adjust C1 for maximum output.
- 8.—Repeat operations 6 and 7.

**Circuit Description—continued**

L.w. coil L1 is short-circuited on m.w. by the action of S3. Signals from the external aerial socket are coupled to the ferrite rod via L2.

Forward base bias for TR1 is arranged by the choice of suitable values for R1 and R2 to which the base is connected at their junction, in conjunction with the emitter stabilizing resistor R3. Local heterodyne signals are developed by positive feedback from TR1 collector to emitter via L6 and L7 through L8, the latter forming part of the oscillator tuned circuit. L8 is tuned by C11, C12, C13 and C14, with C15 and C16 added in parallel on l.w. Oscillator damping is provided by R26.

If signals present in TR1 collector are selected and coupled via the double-tuned transformer L4/L5 to the first i.f. amplifier TR2. This is an a.g.c. controlled stage with d.c. output from the detector D2 fed back to the base via R7, the d.c. level being a function of signal strength. On strong local signals the reduced collector current through TR2 collector feed resistor R8 due to a.g.c. action has the effect of removing the reverse bias on D1, taking the diode into the conducting region and heavily damping L4.

Amplified output from the second i.f. stage TR3 is applied via L11/L12 to the detector diode D2 and rectified audio-signals are filtered by R13 and C27 and developed across the load resistor and volume control VR1. At this point a tape socket coupled via C28 allows the detector output to be fed to the recording head of a tape recorder.

Audio signals from the slider of VR1 are capacitively coupled via C30 to the base of the driver TR4 which feeds the

bases of the push-pull output pair TR5 and TR6 with alternate half-cycles via the split-secondary transformer T1 connected in its collector circuit. TR5 and TR6 are series connected and biased by the network R19-R22 for operation in Class B. The high impedance loudspeaker L13 forms the output load impedance. A switched earphone socket automatically disconnects the loudspeaker when the plug is inserted. A degree of output developed across R18 is fed to TR4 emitter as negative feedback.

**CIRCUIT ALIGNMENT**

Equipment Required.—An a.m. signal

**GENERAL NOTES**

**Dismantling.**—To remove the chassis from its case, first remove the back cover by giving half-a-turn to two screw heads at the top, and withdrawing the bottom edge from the slot in the base.

Remove the battery. Pull off the front control knobs. Note the colour code and pull off the leads from the loudspeaker terminals.

Take out two hexagon-head screws from the bottom corners of the panel and withdraw the chassis bottom edge first, clearing two top chassis flanges from slots in the switch escutcheon moulding.

**Battery.**—Ever Ready PP9, Vidormax VT9 or equivalent.

Scale drive assembly as seen from the front, with the gang at maximum. When replacing the drive cord it is important that the tension spring is located in the position shown to prevent the spring fouling the bottom pulley when the gang is rotated to the opposite end of its traverse

