

"TRADER" SERVICE SHEET  
**1566**

# DECCA "DEBONETTE" TP50 & TP50A

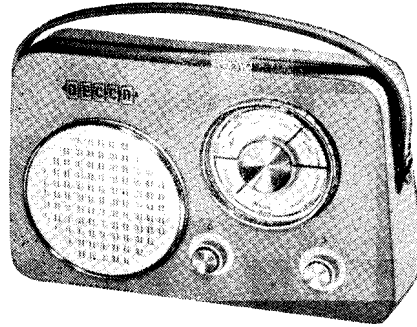
Operating from two 9V batteries, Decca TP50 is a transistorized portable radio receiver covering Medium and Long wavebands. Signal input is normally from an internal ferrite rod aerial but a socket is provided for the connection of a car type external aerial. It is housed in a plastics fabric-covered case with carrying strap. Waveband ranges are 190-565m (M.W.) and 1,120-1,950m (L.W.).

TP50A is virtually the same receiver fitted to a larger cabinet and using larger capacity batteries.

Release dates: TP50 April 1961, TP50A January 1962. Original price (both models): £12 8s 4d. Purchase tax extra.

### TRANSISTOR ANALYSIS

Voltage readings given in the table in col. 3 are taken from information supplied by the manufacturers. They were taken on an Avometer model 8 with no signal input and the volume control set at mini-



mum output. All voltages are negative with respect to chassis.

### CIRCUIT DESCRIPTION

TR1 operates as a self-oscillating mixer with the R.F. signal input coupled to its base via C5 from a tapping on the aerial coil L1 (M.W.) or L2 (L.W.). Base bias is derived from the potential divider

R1, R2. T2 is tuned at oscillator frequency by C3b and C10 on M.W. with C11 and C12 switched in parallel by S6 on L.W. (On M.W. C11 and C12 are switched to by-pass the L.W. aerial coil L2.) Regenerative feedback is provided

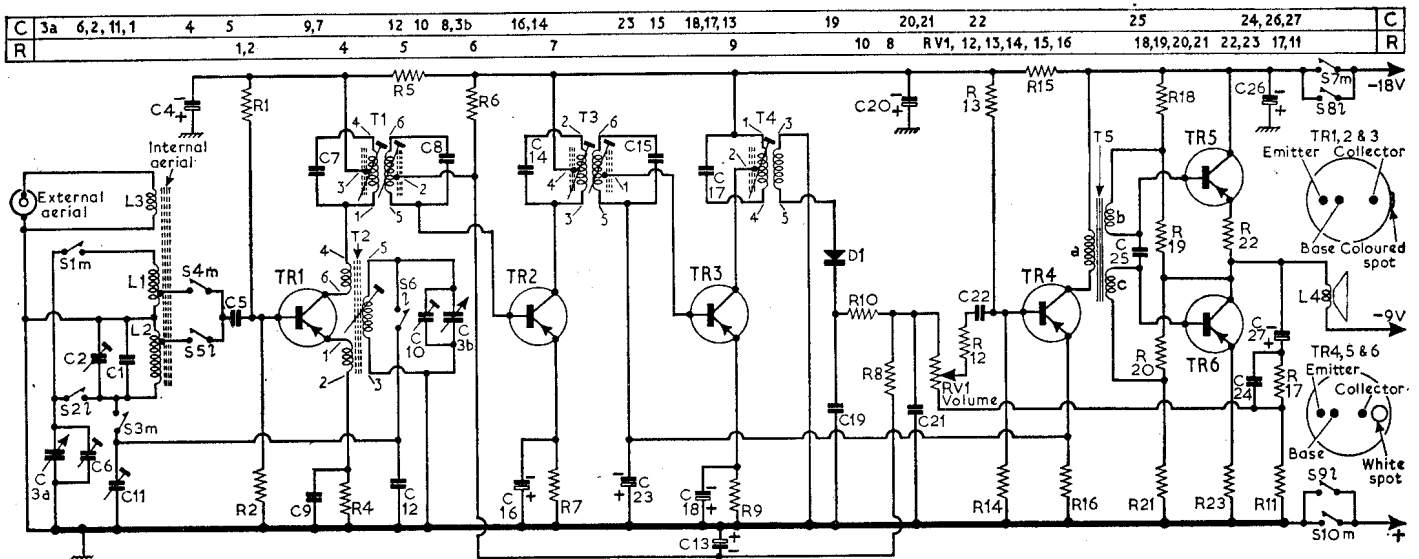
### Transistor Table

Transistor	Emitter (V)	Base (V)	Collector (V)
TR1 OC44	1.2	1.1	6.9
TR2 OC45	0.7	0.9	6.8
TR3 OC45	1.45	1.65	6.8
TR4 OC81D	1.7	1.2	17.2
TR5 OC81	8.6	8.8	17.5
TR6 OC81	—	7.2	8.6

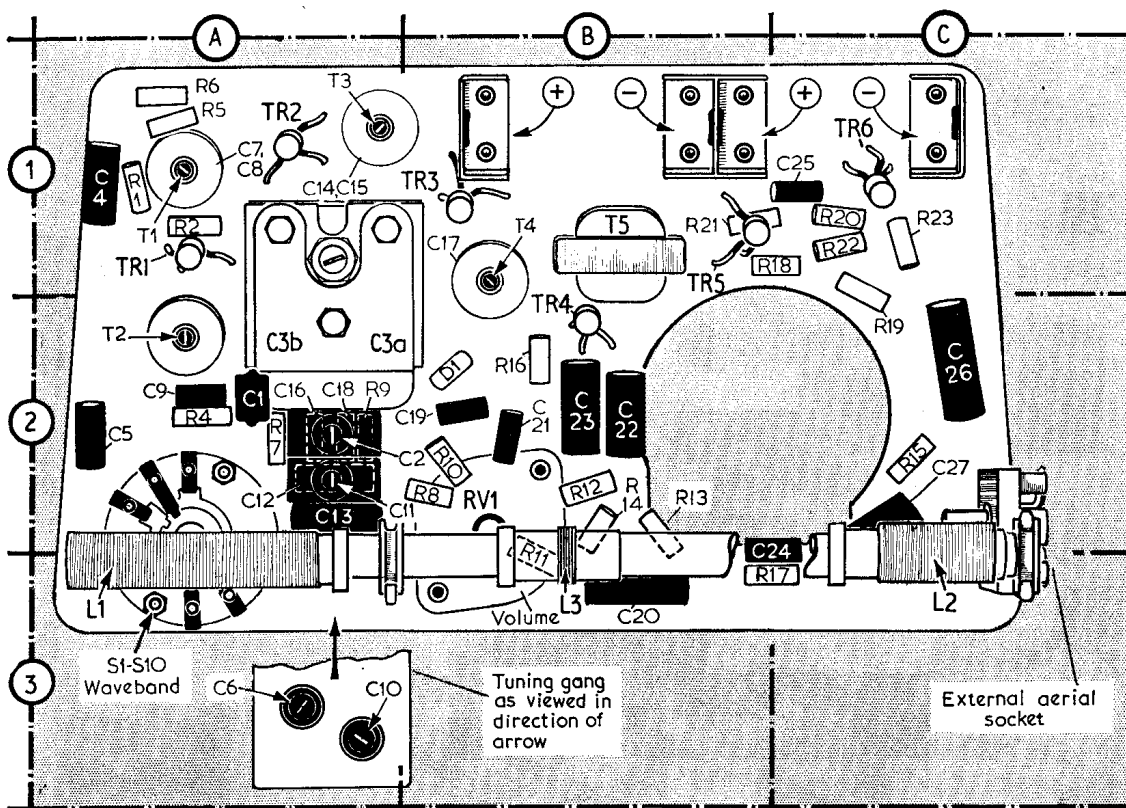
by the coupling windings in TR1 collector and emitter.

The resultant intermediate frequency produced from the R.F. and heterodyne signals and selected by the double-tuned (Continued overleaf Col. 1)

Resistors			Capacitors			Coils*			Transformers*			Miscellaneous		
R1	47kΩ	A1	C1	30pF	A2	L1	—	A3	T1	—	A1	D1	OA70	B2
R2	10kΩ	A1	C2	20pF	A2	L2	5.5	C3	T2	—	A2	S1-S10	—	A3
R3	—	†	C3a	—	A2	L3	—	B3	T3	—	A1			
R4	3.3kΩ	A2	C3b	—	A2	L4	70.0Ω	—						
R5	390Ω	A1	C4	—	A1									
R6	75kΩ	A1	C5	0.05μF	A2									
R7	1kΩ	A2												
R8	12kΩ	B2												
R9	1.8kΩ	A2												
R10	390Ω	B2												
R11	6.8Ω	B3												
R12	470Ω	B2												
R13	47kΩ	B2												
R14	18kΩ	B2												
R15	5.1kΩ	C2												
R16	1kΩ	B2												
R17	1kΩ	B3												
R18	8.2kΩ	B1												
R19	180Ω	C2												
R20	8.2kΩ	C1												
R21	180Ω	B1												
R22	4.7Ω	C1												
R23	4.7Ω	C1												
RV1	5kΩ	B2												



Circuit diagram of Decca TP50 and TP50A. L.W. oscillator shunt capacitors C11 and C12 are connected across L.W. aerial coil L2 on M.W., de-tuning L.W. aerial circuit to prevent breakthrough. Base bias for TR3 is derived from TR4 emitter potential



Rear view of an upright TP50 chassis. In the TP50A the battery brackets are different, to accommodate the larger size batteries, otherwise the chassis are identical. Components C12, C16, C18 and R9 are located on the chassis behind C2 and C11. The waveband switches, drawn from the same angle, are shown in detail at the foot of col. 2

**Circuit Description—continued**

transformer T1 in TR1 collector circuit is at 472kc/s. This is amplified by 1st and 2nd I.F. amplifiers TR2 and TR3 which are coupled by the I.F. transformer T3, and is then applied via T4 to the detector diode D1. R4, R7 and R9 are emitter D.C. stabilizing resistors.

The rectified audio output from D1, which operates with slight forward bias derived from the network R6, R8, RV1 and R11, is developed across the diode load resistor and volume control RV1. The positive D.C. potential present across RV1 as a result of rectified carrier current is employed as A.G.C. voltage and fed back via R8 to reduce the gain of the 1st I.F. amplifier TR2.

From the slider of RV1 the audio signal is capacitively coupled to the driver TR4 and from TR4 output, is transformer coupled via T5 to the bases of the output transistors TR5 and TR6. The applied signal voltages are transferred by the two secondary windings b and c in opposite phase but equal in amplitude. High impedance speaker L4 is connected as the output stage load impedance eliminating the need of a separate output transformer.

The lower end of the volume control RV1 is coupled to the junction R11, R17, C24 to provide negative feedback.

**CIRCUIT ALIGNMENT**

**Equipment Required.**—An A.M. signal generator; an A.C. voltmeter for use as an output meter; two resistors (1kΩ and 2kΩ) and a bladed type trimming tool.  
1.—Switch to M.W. and set the tuning gang to the fully meshed position. Con-

nect the signal generator across M.W. aerial coil L1; connect the A.C. voltmeter across the speaker speech coil L4.

- 2.—Feed in a 472kc/s modulated signal and maintaining the input only sufficiently high to give a reasonable deflection in the output meter, adjust the top and bottom cores of T1 and T3 and the core of T4 for maximum output.
- 3.—Repeat operation 2.
- 4.—Connect the signal generator via the 2kΩ resistor to the external aerial socket. Tune receiver to 460m. Feed in a 652kc/s signal and adjust T2 and L1 for maximum output. Adjust L1 by sliding its former along the ferrite rod.
- 5.—Tune receiver to 230m. Feed in a

- 1,300kc/s signal and adjust C10 and C6 (osc. and aerial) for maximum output.
- 6.—Repeat operations 4 and 5.
- 7.—Switch to L.W. and tune receiver to 1,750m. Connect the signal generator via the 1kΩ resistor to the external aerial socket. Feed in a 170kc/s signal and adjust C11 and L2 for maximum output. Note: When adjusting C11 there may be a degree of oscillator pulling. Care should be taken to adjust C11 and L2 for maximum signal at the correct tracking point.
- 8.—Tune receiver to 1,250m. Feed in a 240kc/s signal and adjust C2 for maximum output.
- 9.—Repeat operations 7 and 8.

**GENERAL NOTES**

**Dismantling.**—To remove the receiver from its case proceed as follows: Remove the back cover, unplug and remove the batteries.

Pull off the transparent tuning knob and slide off the tuning pointer.

Pull off volume and waveband control knobs. Unplug the loudspeaker connections. Take out two hexagon headed printed panel securing screws (one each side) and withdraw the chassis.

**Switches.**—S1-S6 are waveband switches; S7-S10 are battery on/off switches. They are all combined in a three-position rotary unit mounted on the printed panel in location reference A3. A separate diagram of the unit in col. 2 gives the individual switch positions.

**Batteries.**—Batteries recommended by the makers are two Vidormax T6004 (TP50) and two Vidormax T6006 or Ever-Ready PP6 (TP50A).

**SWITCH UNIT**

