

DECCA TPW70

Transistorized Wall Radio

INTENDED primarily for use in kitchen and bathroom locations the Decca TPW70 is a self-contained transistor radio, circular in appearance and designed to hang from a wall fixing.

It has a large external tuning scale and pointer covering medium and long wavebands with on/off and waveband selection controlled by press-button switches. Volume is varied by a lever type control. The two-section case is constructed of moulded plastics. The receiver is fitted with an internal ferrite rod aerial and is also provided with sockets for the connection of an external aerial and earth. Power is obtained from two 6V batteries: the speaker is 5in; elliptical.

Waveband ranges are 190-555m (M.W.) and 1,140-2,000m (L.W.).

Release date and original price: November 1961, £13 11s 7d. Purchase tax extra.

TRANSISTOR ANALYSIS

Transistor voltages given in the table col. 3 were taken from information supplied by the manufacturer. They were measured on an Avometer model 8 with no signal input

and the volume control set at minimum. All the readings are negative with respect to chassis.

Transistor Alternatives.—Although a Mul-lard range of transistors is listed in the table, some receivers (including our sample receiver) are fitted with S.T.C. packs as follows:

R.F. pack TK1000C comprising TR1 (yellow spot), TR2 (orange spot), TR3 (blue spot) and audio pack TK1002C comprising TR4 (green spot) and TR5 and TR6 (black spot).

Transistor Table

| Transistor | Emitter (V) | Collector (V) |
|------------|-------------|---------------|
| TR1 | OC44 | 1.4 |
| TR2 | OC45 | 0.8 |
| TR3 | OC45 | 1.2 |
| TR4 | OC81D | 1.5 |
| TR5 | OC81 | 6.1 |
| TR6 | OC81 | — |

Total current consumption; 12mA with no signal.

CIRCUIT DESCRIPTION

TR1 operates as a self-oscillating mixer circuit. The R.F. input to its base is via C8 from a tapping on the aerial coil L1 (M.W.) or L2 (L.W.). L3 serves no purpose in the operation of the receiver; it is provided for factory alignment purposes. Base bias is derived from the potential dividing

(Continued col. 1 overleaf)

Ned. Ver. v. Historie v/d Radio



Appearance of the TPW70

Resistors

| | | |
|-----|-------|----|
| R1 | 47kΩ | A1 |
| R2 | 10kΩ | A2 |
| R3 | 390Ω | B1 |
| R4 | 3.3kΩ | A2 |
| R5 | 75kΩ | B2 |
| R6 | 2.7kΩ | B1 |
| R7 | 1kΩ | B1 |
| R8 | 12kΩ | B1 |
| R9 | — | † |
| R10 | 1.8kΩ | B1 |
| R11 | 390Ω | B1 |
| R12 | 6.8Ω | B2 |
| R13 | 470Ω | C2 |
| R14 | 1.8kΩ | B2 |
| R15 | 56kΩ | C2 |
| R16 | 18kΩ | C2 |
| R17 | 470Ω | C1 |
| R18 | 330Ω | B2 |
| R19 | 2.2kΩ | C3 |
| R20 | 68Ω | C3 |

| | | |
|-----|-------|----|
| R21 | 2.2kΩ | C3 |
| R22 | 68Ω | C3 |
| R23 | 2.2Ω | C3 |
| R24 | 2.2Ω | C3 |
| RV1 | 5kΩ | B1 |

Capacitors

| | | |
|-----|--------|----|
| C1a | — | B2 |
| C1b | — | B2 |
| C2 | 40pF | B3 |
| C3 | 30pF | B3 |
| C4 | 40pF | B3 |
| C5 | 10μF | B1 |
| C6 | — | † |
| C7 | — | B1 |
| C8 | 0.05μF | A2 |
| C9 | 0.01μF | A1 |
| C10 | — | B1 |
| C11 | 40pF | B3 |
| C12 | 40pF | B3 |
| C13 | 220pF | B3 |
| C14 | 10μF | B2 |

| | | |
|------|--------|----|
| C15 | 8pF | B1 |
| C15a | 4pF | B1 |
| C16 | — | B1 |
| C17 | — | B1 |
| C18 | 10μF | B1 |
| C19 | — | † |
| C20 | — | B1 |
| C21 | — | † |
| C22 | 10μF | B1 |
| C23 | 0.01μF | C1 |
| C24 | 0.01μF | B1 |
| C25 | 100μF | B2 |
| C26 | 0.25μF | B2 |
| C27 | 100μF | C1 |
| C28 | — | † |
| C29 | 100μF | B2 |
| C30 | 0.01μF | C3 |
| C31 | 100μF | C3 |
| C32 | 8pF | B2 |

Coils*

| | | |
|----|---|----|
| L1 | — | A3 |
|----|---|----|

| | | |
|----|------|----|
| L2 | 7.0 | C3 |
| L3 | — | B3 |
| L4 | 22.0 | — |

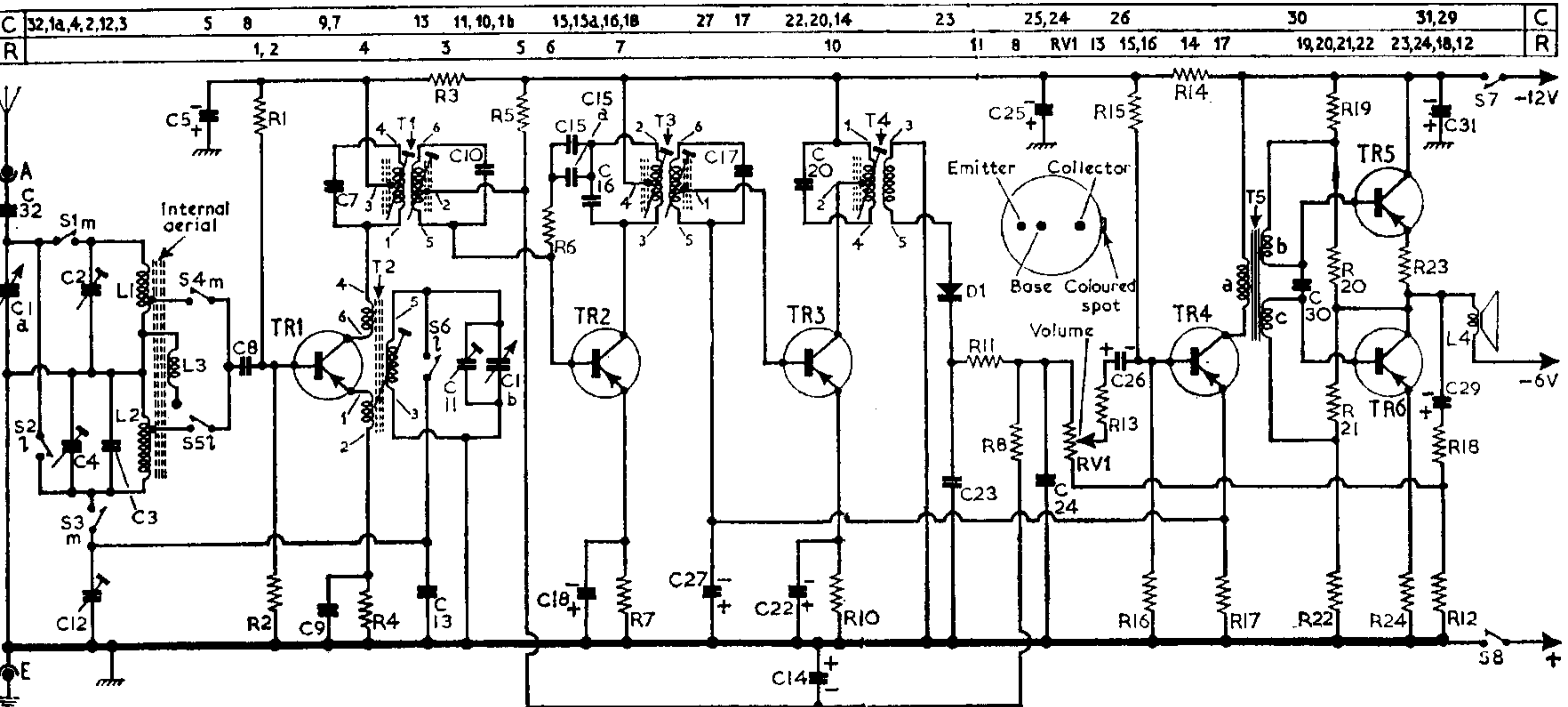
Transformers*

| | | |
|----|---------------------------------|----|
| T1 | — | B1 |
| T2 | — | A1 |
| T3 | — | B1 |
| T4 | — | B1 |
| T5 | { a 150.0 b 40.0 c 40.0 } | C3 |

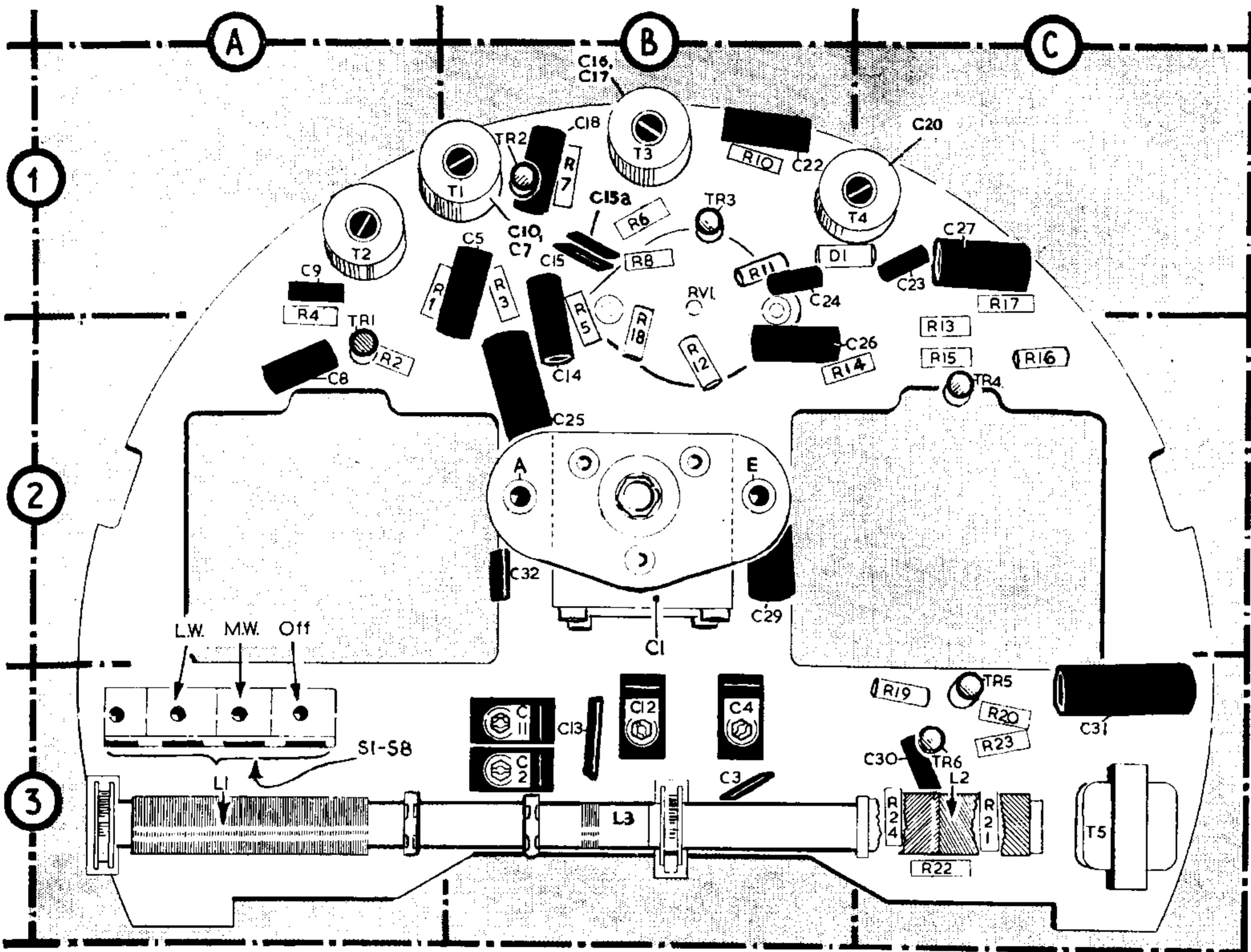
Miscellaneous

| | | |
|-------|------|----|
| D1 | OA70 | B1 |
| S1-S8 | — | A3 |

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



Circuit diagram of the Decca TPW70. L3 is provided for factory alignment purposes only



Component-side view of the printed circuit panel

Circuit Description—continued

network R1, R2. T2 is tuned at oscillator frequency in conjunction with C1b and C11 (M.W.) with C12 and C13 switched in parallel (L.W.). Oscillator voltage is injected in TR1 emitter and T2 coupling windings provide feedback from collector to emitter.

The resultant intermediate frequency selected by double-tuned transformer T1 in TR1 collector circuit is at 472 Kc/s. This is amplified by 1st and 2nd I.F. amplifiers TR2 and TR3, which are coupled by

tuned transformer T3, and is then applied via T4 to the detector diode D1. C15, C15a and R6 comprise a neutralizing network for TR2 internal capacitance. D1 operates with slight forward bias derived from the potential dividing network R5, R8, RV1 and R12 which improves its sensitivity at low signal levels.

The rectified audio output is filtered by R11 and C24 and developed across the volume control and load resistor RV1. The rectified carrier current produces a positive D.C. potential across RV1, R12 which is fed back to the base of TR2 as A.G.C. bias. TR4 operates as audio driver stage whose output is coupled via T5 to the bases of TR5 and TR6 in anti-phase.

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 C11 and C2 for maximum output.
- 6.—Repeat operations 4 and 5.
- 7.—Switch to L.W. and tune receiver to 1,750m. Feed in a 170kc/s signal and adjust C12 and L2 for maximum output. Note: When adjusting C12 there may be a degree of oscillator pulling. Care should be taken to adjust C12 and L2 for maximum signal at the correct tracking point.
- 8.—Tune receiver to 1,250m. Feed in a 240kc/s signal and adjust C4 for maximum output.
- 9.—Repeat operations 7 and 8.

CIRCUIT ALIGNMENT

Equipment Required.—An A.M. signal generator; an A.C. voltmeter; a 1kΩ resistor and a bladed type insulated trimming tool.

- 1.—Switch to M.W. and set the tuning gang to the fully meshed position. Connect 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 1kΩ

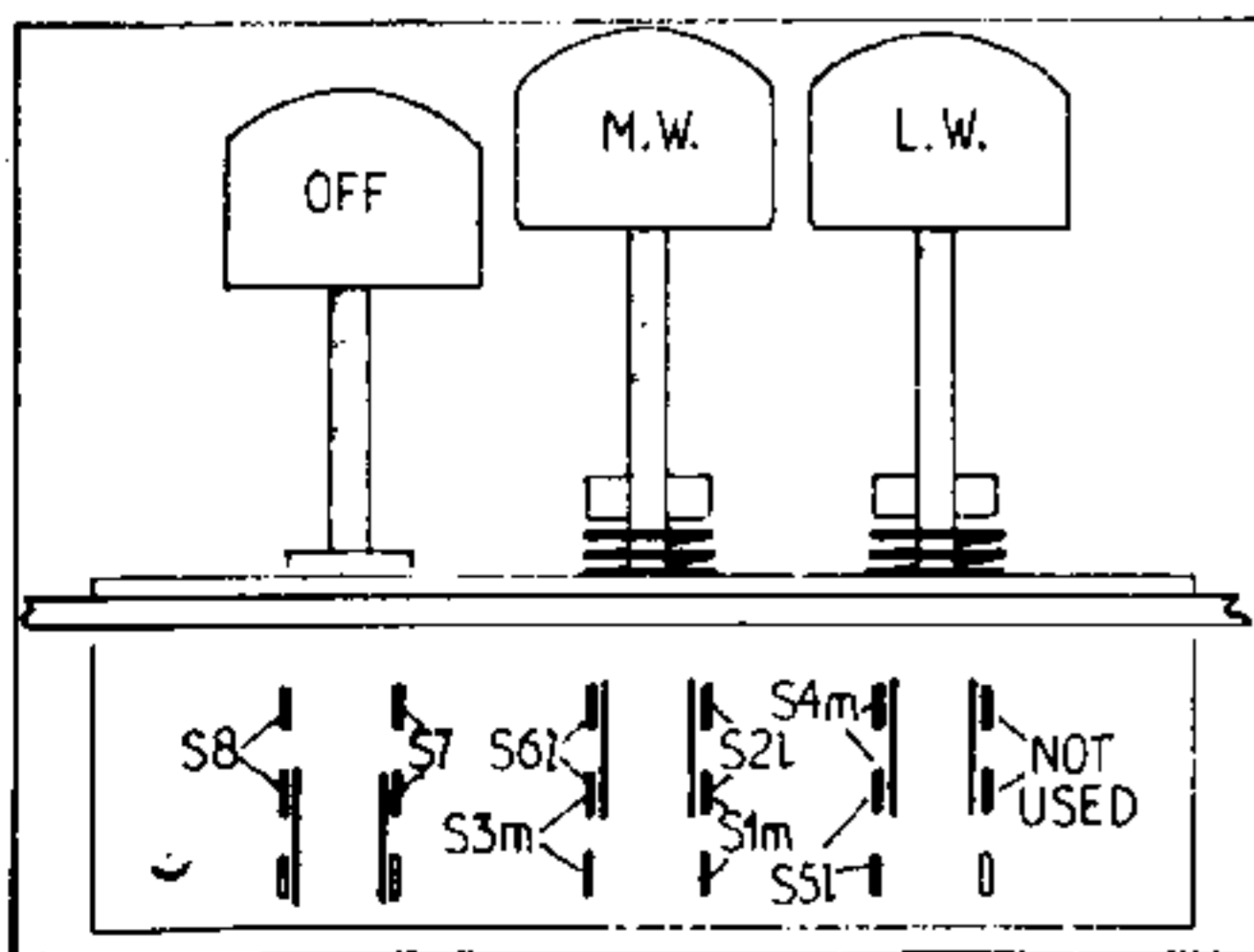
GENERAL NOTES

Dismantling.—To remove the chassis from the case first remove the case rear by taking out three self-tapping screws.

Remove batteries. Pull off the tuning knob and take out two hexagon headed screws thus revealed securing the tuning pointer and volume control lever.

Remove two spring clips securing the chassis to the case front, unplug the speaker connections and withdraw the chassis.

Battery.—Two Vidormax T6001 or Ever Ready PP1 6V.



Press-button switch unit as seen from the same direction as the arrow in location reference A3 in the chassis illustration (above)