

PHILIPS L2G37T

Portable Transistor Radio Receiver



TRANSISTOR ANALYSIS

Transistor voltages given in the table in col. 1 were taken from information supplied by the manufacturers. They were measured on a $100k\Omega/V$ meter and are negative with respect to battery positive. There was no signal input and the battery voltage was 6.1V.

CIRCUIT ALIGNMENT

Equipment Required.—An a.m. signal generator; an audio output meter with an impedance of 8Ω ; a $0.5\mu F$ capacitor and approximately 12in of insulated wire to be used as an r.f. coupling loop.

During alignment the input signal should be regulated so that the output level does not exceed 50mV.

- 1.—Switch receiver to m.w. and turn the tuning gang to minimum capacitance i.e. fully clockwise. Disconnect the ear-
phone socket leads at the output tags on the printed panel and connect the output meter across the output tags.
- 2.—Connect the signal generator via the $0.5\mu F$ capacitor to the switch side of C5. (An alignment point is provided for this connection, see printed panel illustration.) Turn the volume control to maximum.

(Continued overleaf, Col. 1)

FEATURING a large ferrite slab internal aerial, Philips 237T is a medium and long waveband portable transistor radio receiver which is housed in a camera style case.

A total of six transistors and one crystal diode is employed, and 6V operating power is obtained from four 1.5V cells. Waveband ranges are 185-571m (m.w.) and 1,175-2,000m (l.w.). A push-pull output stage drives a 3in loudspeaker with 200mW audio power.

Release date and original price: August 1964, £9 19s 11d. Purchase tax extra.

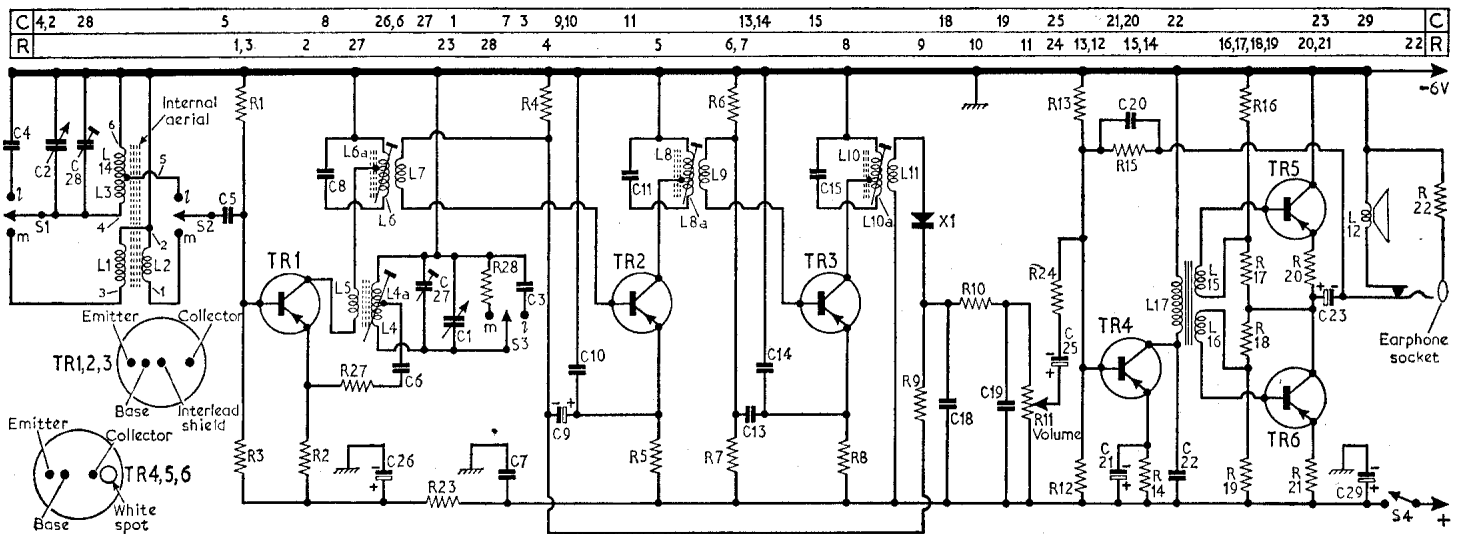
Transistor Table

| Transistor | Emitter (V) | Base (V) | Collector (V) |
|------------|-------------|----------|---------------|
| TR1 AF117 | 1.88 | 1.95 | 6.1 |
| TR2 AF117 | 0.54 | 0.77 | 6.1 |
| TR3 AF117 | 0.96 | 1.22 | 6.1 |
| TR4 OC81 | 0.97 | 1.07 | 5.7 |
| TR5 OC81 | 3.18 | 3.35 | 6.1 |
| TR6 OC81 | — | 0.18 | 3.15 |

COMPONENT VALUES & LOCATIONS

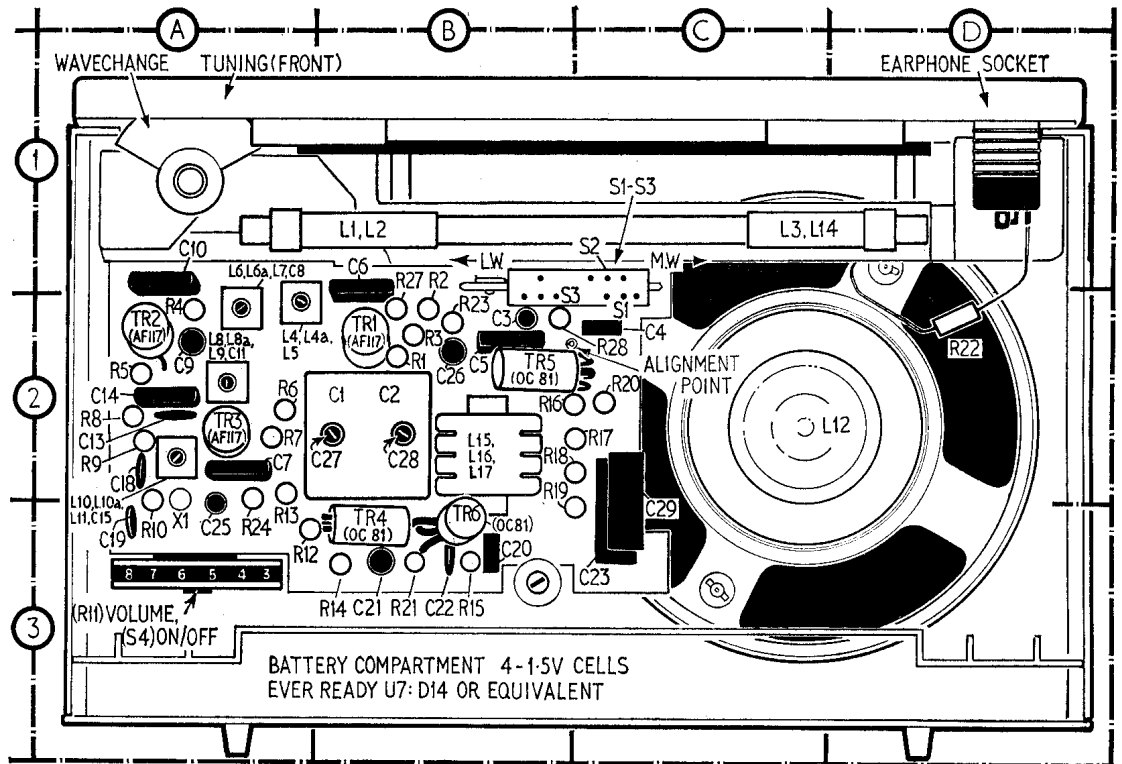
| Resistors | | Capacitors | | Miscellaneous | |
|---------------|-----------------|------------|---------------|---------------|-------|
| R1 | 22k Ω | C1 | — | L3 | 18.0 |
| R2 | 1k Ω | C2 | — | L4 | 4.8 |
| R3 | 6.8k Ω | C3 | 154pF | L4a | — |
| R4 | 82k Ω | C4 | 56pF | L5 | — |
| R5 | 470 Ω | C5 | 0.01 μF | L6 | 8.2 |
| R6 | 15k Ω | C6 | 0.022 μF | L6a | 2.1 |
| R7 | 3.9k Ω | C7 | 0.047 μF | L7 | — |
| R8 | 1k Ω | C8 | — | L8 | 7.8 |
| R9 | 12k Ω | C9 | 32 μF | L8a | 2.3 |
| R10 | 470 Ω | C10 | 0.047 μF | L9 | — |
| R11 | 5k Ω | C11 | — | L10 | 9.1 |
| R12 | 10k Ω | C13 | 0.01 μF | L10a | 3.3 |
| R13 | 47k Ω | C14 | 0.047 μF | L11 | 1.7 |
| R14 | 470 Ω | C15 | — | L12 | 8.0 |
| R15 | 390k Ω | C18 | 0.01 μF | L14 | 2.7 |
| R16 | 1.5k Ω | C19 | 0.01 μF | L15 | 46.0 |
| R17 | 100 Ω | C20 | 82pF | L16 | 46.0 |
| R18 | 1.5k Ω | C21 | 32 μF | L17 | 250.0 |
| R19 | 100 Ω | C22 | 0.01 μF | X1 | OA70 |
| R20 | 3.3k Ω^* | C23 | 200 μF | S1-S3 | — |
| R21 | 3.3k Ω^* | C25 | 3.2 μF | S4 | — |
| R22 | 3.3k Ω | C26 | 20 μF | X1 | OA70 |
| R23 | 560 Ω | C29 | 200 μF | | |
| R24 | 820 Ω | | | | |
| R27 | 56 Ω | | | | |
| R28 | 180k Ω | | | | |
| colls† | | | | | |
| L1 | 3.6 | B1 | | | |
| L2 | — | B1 | | | |

*4.7 Ω in some receivers.
†Approximate d.c. resistance in ohms.



Circuit diagram of the Philips L2G37T (237T)

View of the receiver from the rear showing component layout and alignment adjustments. For access to the foil side of the printed panel and scale drive assembly, see "Dismantling". Replacement of the drive cord is described in col. 3 under "General Notes."



Circuit Alignment—continued

- 3.—Feed in a 470kc/s 30 per cent modulated signal and adjust the cores of **L10**, **L8** and **L6** in that order for maximum output.
- 4.—Switch receiver to l.w. and turn the tuning gang to maximum capacitance (fully anti-clockwise). Feed in a 148kc/s signal and adjust **L4** for maximum output.
- 5.—Switch receiver to m.w. and turn the tuning gang to minimum capacitance (fully clockwise). Feed in a 1,635kc/s signal and adjust **C27** for maximum output.
- 6.—Loop a length of insulated wire around the receiver and connect the signal generator to the ends of the loop. Switch receiver to l.w.
- 7.—Feed in a 190kc/s signal and tune receiver to this signal. Adjust **L3/L14** for maximum output.
- 8.—Switch receiver to m.w., feed in a 525kc/s signal and tune receiver to this signal. Adjust **L1/L2** for maximum output.
- 9.—Feed in a 1,300kc/s signal and tune receiver to this signal. Adjust **C28** for maximum output.
- 10.—Repeat as necessary.

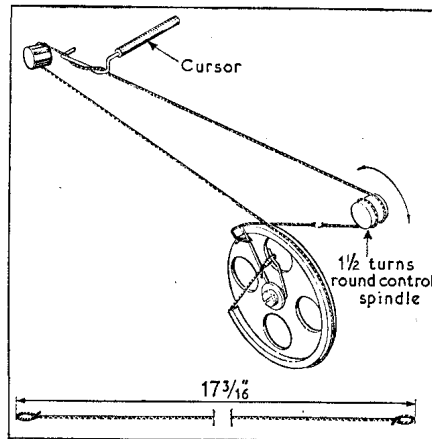
DISMANTLING

Access to the battery compartment is obtained by a sliding cover in the receiver base. Batteries can be removed and replaced without entirely removing the cover.

To remove the chassis completely, remove the battery cover and take out the batteries, battery instruction label and foam pad. Slacken off the only two screws visible, press in the screw heads

to release the clamping brackets, then with the receiver laying face uppermost, gently separate the two sections of the case, exposing the component side of the printed panel. Remove for safe keeping, the carrying strap fixing studs, case clamping brackets and battery link.

To gain access to the underside of the printed panel and the tuning drive, first



unscrew the fixing nut of the earphone socket to release the tuning scale complete with escutcheon. Next slacken off the two aerial rod support screws and swivel the end of the rod carrying the m.w. aerial windings **L1/L2** clear of the screw head below the windings. Then, taking great care not to damage **L1/L2**, remove the two screws securing the tuning cursor drive bracket to the case. Finally, remove the two screws with fibre washers securing the printed panel and lift the panel

complete with tuning drive and ferrite rod aerial from the case captive only by two wires soldered one each to the loudspeaker and earphone socket.

To replace the loudspeaker, remove the printed panel as described above, unsolder the three connecting wires and prise off the three spring retaining clips.

GENERAL NOTES

Drive Cord Replacement.—To fit a new drive cord form two loops on the ends of a piece of cord so that the overall length is 17 7/16 in. Remove the printed panel as described under "Dismantling" and having detached the old cord turn the drive drum to its fully clockwise position.

Pass one looped end of the cord over the straight leg of the tension spring and lead the cord clockwise round to the tuning spindle as shown in the sketch in col. 2. Wind one and a half turns anti-clockwise from front to back on the tuning spindle then route the cord along round the left-hand pulley and back to the drive drum. Take the cord clockwise round the drum and attach the loop on the free end to the cranked leg of the tension spring, which operation should require the spring to be compressed.

With the drive drum in its fully clockwise position (tuning control fully anti-clockwise) replace the assembly complete into the front section of the case and fit the tuning scale. Adjust the pointer to a position 1/16 in inside the calibrated portion of the scale at the 2,000m end, i.e., almost directly in line with the "R" of R. Eireann.

Switches.—A two-way slide type waveband switch is fitted details of which are shown in location reference C1. The battery on/off switch **S4** is ganged to volume control.

Batteries.—Four 1.5V cells (6V) are required, type Ever Ready D14, U7 or equivalent.