

**General Description:** A cassette type tape recorder giving two-track operation at  $1\frac{7}{8}$  i.p.s. The machine is portable and operates from internal batteries.

Cassette Type: C60.

Batteries: 6 volts ( $4 \times 1.5$  V) LPU 11 or equivalent.

Output Impedance: 8 ohms.

Output Power: 300mW maximum, 200mW at 10 per cent distortion.

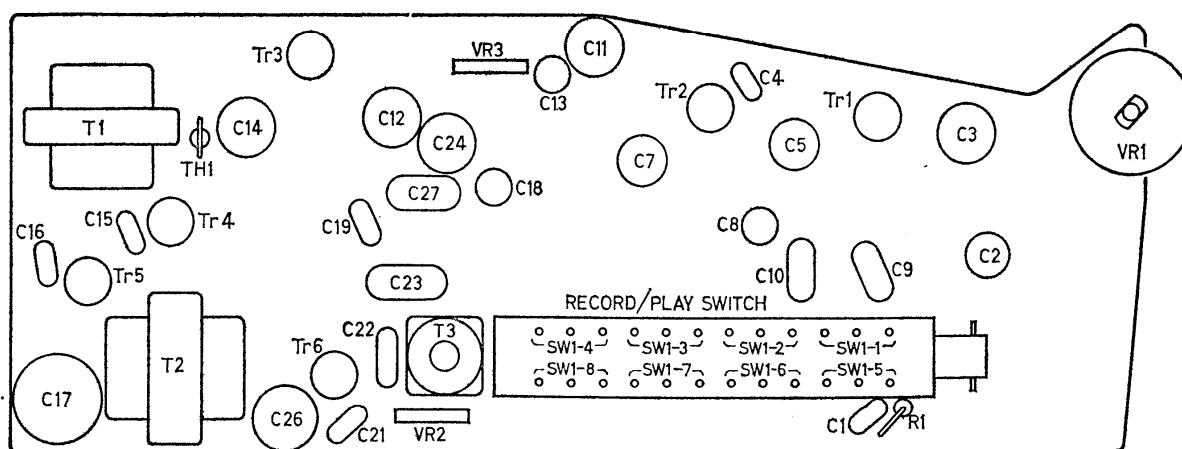
Erase System: D.C.

**Dismantling:** Take off battery compartment cover and remove batteries. Remove the two Phillips screws in case bottom, which may then be lifted off. This exposes the tin dip side of the printed circuit board and provides access to the motor and flywheel.

For further dismantling, remove the two Phillips screws in the cassette compartment and the two Phillips screws securing the chassis assembly to the case (these are adjacent to the battery clips). The complete chassis assembly may then be taken out of the case, providing full access to the main mechanical assemblies.

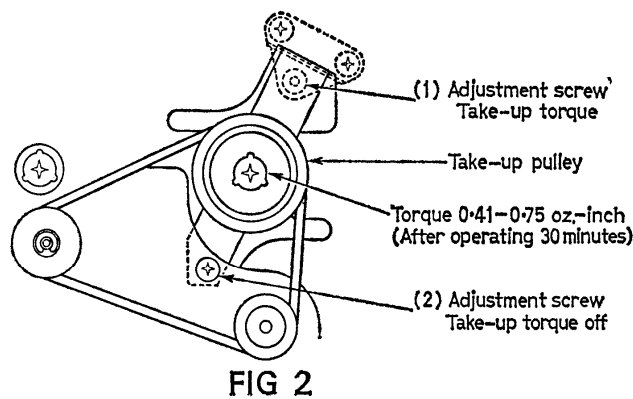
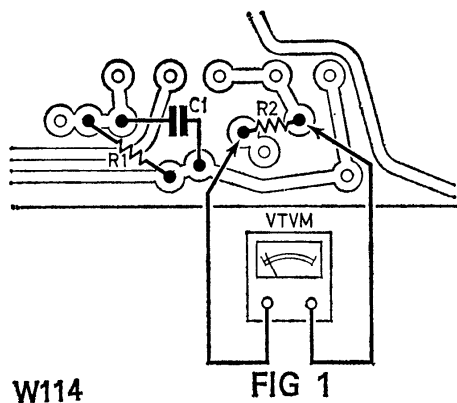
To obtain access to the component side of the printed circuit board, remove the two Phillips screws (marked 1 and 2 on the panel). Then bend back the clip securing the lead assembly near the R/P heads and gently ease the leads through the chassis. This will enable the circuit board to be hinged over sideways, to the extent of the other interconnecting leads.

When reassembling, first pull the R/P head leads back through the chassis and secure by bending the clip back. Ensure that the red Record button (which is tensioned by a leaf spring) is placed in position on its spindle before the chassis assembly is reunited to the case. Also ensure that before fixing screws 1 and 2 back on the circuit board the plastic R/P switch forked lever engages with the pin in the slider bar.



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(W112) COMPONENT LAYOUT—MODEL R23



(W114) ADJUSTMENT POINTS

Note that the input socket assembly should be located by its slot in the edge of the case and by its side slots with the case bottom.

### Electrical Adjustments

The following adjustments should be made whenever the record and erase heads, the bias adjustment control VR<sub>2</sub>, etc., are replaced in the amplifier. The adjustments should be checked periodically.

**Recording Bias:** With new batteries fitted, or with a stable external 6 V D.C. power supply connected, connect a high impedance voltmeter across R<sub>2</sub> and set the volume control to its mid-range (i.e., to white mark 11).

Insert a cassette and make a short recording with 0.18 mV at 150 Hz and 5 kHz input signals to the MIC socket. Connect a dummy load to the ear-phone socket and play back the recorded signals, noting the output levels.

If the output level at 150 Hz is higher than that at 5 kHz, turn the bias adjustment control VR<sub>2</sub> clockwise. If the 150 Hz recording is lower than the 5 kHz recording, turn VR<sub>2</sub> anticlockwise.

Repeat the procedure until the outputs at 150 Hz and 5 kHz are as near to each other as possible.

**Level Indicator:** Whenever the indicator lamp or the level indicator control VR<sub>3</sub> is replaced, VR<sub>3</sub> must be re-adjusted as follows:

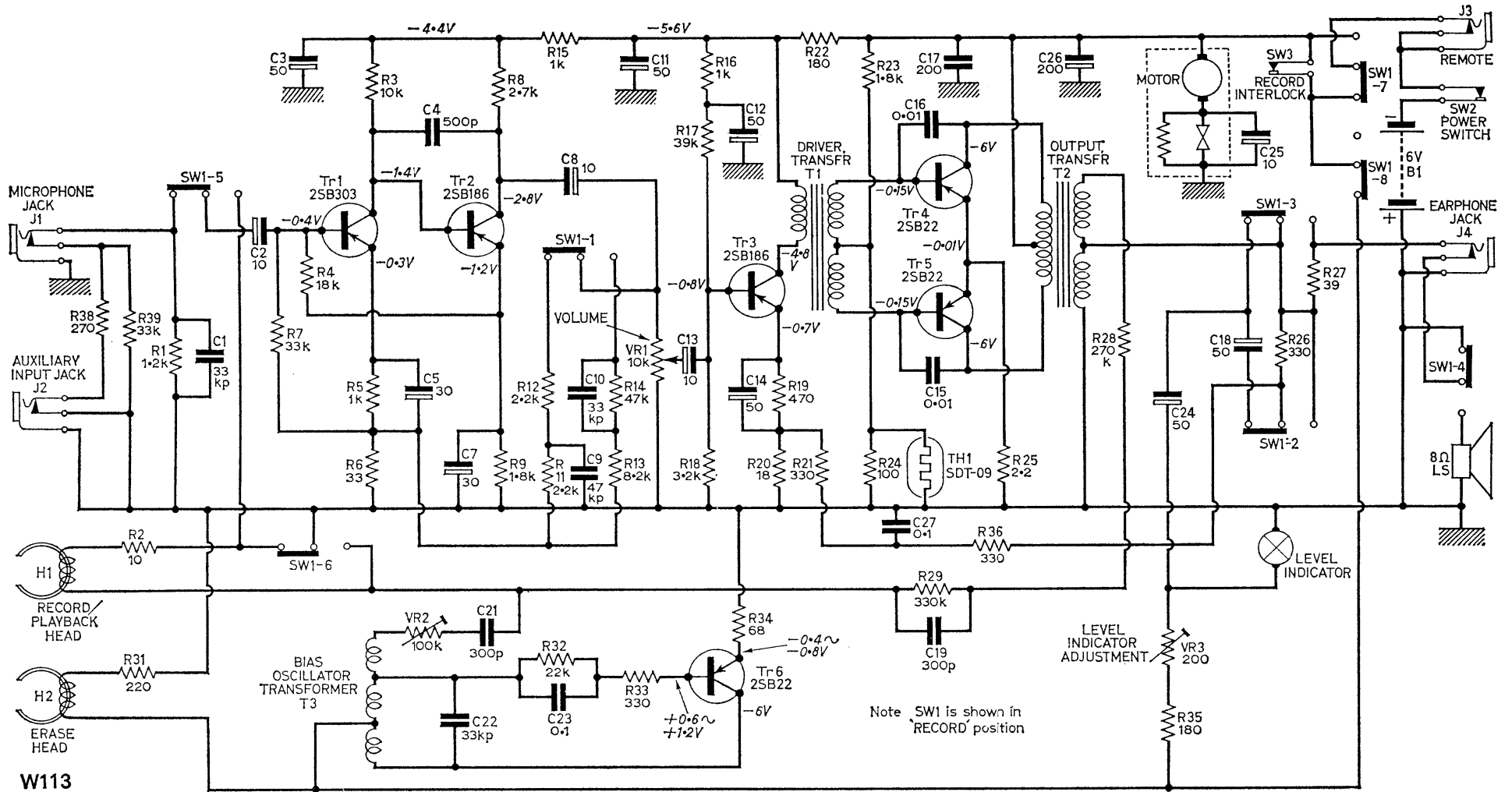
With new batteries inserted, set the tape recorder to Record and adjust VR<sub>3</sub> so that the indicator lamp just starts to glow.

### Mechanical Adjustment

**Take-up Torque:** The take-up torque adjustment screw (1) affects the take-up torque, while the take-up torque off screw (2) affects the space.

After 30 minutes' continuous running, adjust the screw (1) first. Then adjust the screw (2) so that the take-up torque in play mode may be 0.41 to 0.75 oz.-inch and the space between the nylon washer and the reel plate may be 0.00786 to 0.01572 in.

*Circuit Diagram Note:* All voltages measured in Play position, except TR<sub>6</sub> (in Record position).



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(W113) CIRCUIT DIAGRAM—MODEL R23