

FIVE valve portable tape recorder, released May, 1958 at 50gns., later raised to 52gns., then reduced to 42gns.

Mains. 110-125, 190-210, 210-230, 230-250V, AC 50c/s only.

Consumption. 45W.

Valves. EF86, ECC81, EL95(2), EM84 and full wave bridge selenium rectifier.

Deck. Manufacturer's own.

Weight. 20lb.

Dimensions. 13½x12x7ins.

Output. 2.5W.

Speaker. 5½x3½in. elliptical, 3ohms.

Microphone. Grundig condenser microphone GCM3 is included.

Tape speeds. 3½ips only.

Number of tracks. Two, recording left to right on top track.

Maximum spool size. 5in.

Fuses. One 400mA fuse in mains input

lead (600mA at 117V); one 100mA fuse in HT secondary of transformer.

Manufacturer. Grundig (Great Britain) Ltd.
Service department. Newlands Park, Sydenham, London, SE26.

DISMANTLING

Deck Top removal. Slacken the small grub screw in the upper part of knurled right-hand control knob, and remove this and the lower portion. Pull off the left-hand control knob. Extract the four coin-slotted screws retaining the top cover and lift off.

Chassis removal. Unscrew the four small nuts (3BA) securing the chassis to the cabinet. Unsolder the speaker connections and the earth lead from the back panel and lift the chassis out of the cabinet. Lift by the frame and not the clutches.

All valves are now accessible and removal of screens provides access to the sub-chassis.

of the deck assembly and from left to right are as follows:—

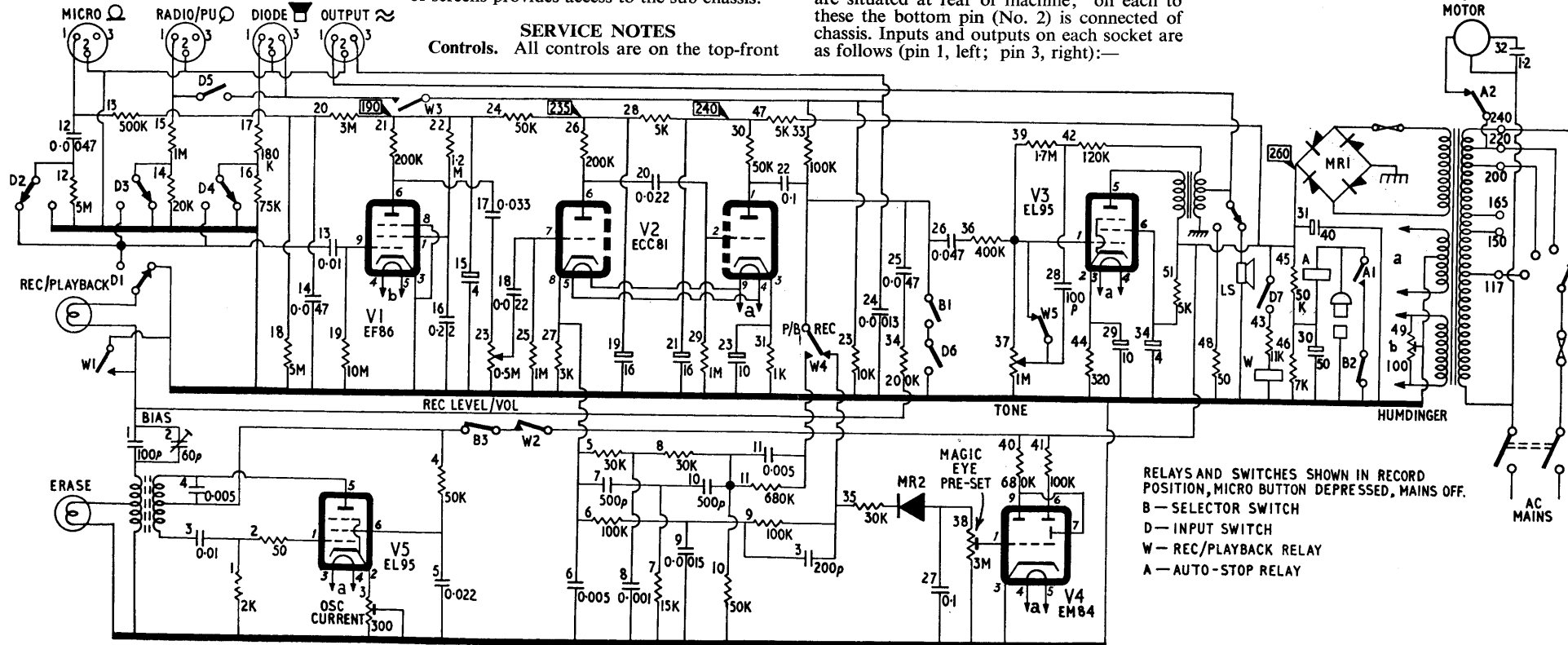
1. Position indicator resetting wheel.
2. Function selector knob, the markings on which are coded as follows: left pointing arrow for fast rewind; circle for stop; right-pointing triangle for play/record; small dot for pause; right-pointing arrow for fast forward.
3. Concentric knob assembly with following functions: outer part is record level/volume control; inner part comprises rotary on/off switch and tone control, and when pulled in or out acts as a switch for the internal speaker.
4. Three push buttons for selecting the various inputs when recording. These are used in conjunction with the left-hand selector knob, and the required one must be depressed before the latter is switched to record.

Inputs and outputs. Four three-pin sockets are situated at rear of machine; on each of these the bottom pin (No. 2) is connected of chassis. Inputs and outputs on each socket are as follows (pin 1, left; pin 3, right):—



1. Microphone, pin 1 (with 100V polarising voltage).
2. Radio/pick-up, pin 1.
3. Diode, pin 1 for input; pin 3 for high impedance output to feed back to radio pick-up

Continued overleaf



sockets for playing back through radio without changing connections.

4. Output: pin 1, low impedance for external speaker; pin 3, high impedance for external amplifier, etc.

Bias and erase currents. Bias current during recording should be 1.1mA. To measure this, insert a 200ohm resistor in series with chassis return lead of the recording head and measure the voltage across this with the valve voltmeter. It should be 220mV RMS ± 10 per cent. If HF current is below this, adjust C2 to maximum capacity and readjust R3 for correct current.

Erase current should be 44mA and should be measured by inserting a 10ohm resistor in series with chassis end of erase head. The voltage across this should be 440mV.

Head adjustments. Use a test tape with 6kc/s recorded on a standard machine. Connect a valve voltmeter to the high impedance outlet and adjust the screws which fix the record/replay head brass bracket to the head mounting plates for maximum output. The top edge of the head should be about 0.1mm. above the top edge of tape.

Sensitivities and level indicator. Inputs for full recording level at microphone, radio/pickup and diode sockets respectively are 2mV, 80mV and 7mV. Peak recording level corresponds to 14mV across 200ohms inserted in series with chassis end of record / playback head, measured at 333c/s. For this measurement the oscillator valve EL95 must be removed. Distortion through the complete system at this level should not exceed 5 per cent.

R38 should be adjusted so that magic eye EM84 just closes at peak recording level.

Frequency response. Feed a 20mV signal at 1kc/s into the diode socket and adjust recording level control for full modulation. Then reduce input by 20dB and record signals of 60c/s, 333c/s, 1kc/s, 8kc/s and 10kc/s. Play back and observe the output with a valve voltmeter on the high impedance outlet; response should be within +5dB and -4dB over the whole range, referred to the level at 1kc/s.

Noise level. Hum may be adjusted to a minimum by humdinger R49. To check signal-to-noise ratio, apply 20mV at 333c/s at diode input and record at full level. Play back at full volume and note the signal level at high impedance outlet. When tape is removed hum level should be at least 45dB lower than signal.

Voltages. Voltages shown on circuit diagram are measured with 20K per volt meter, machine switched to record with no signal input.

MECHANICAL ADJUSTMENTS

Clutches. These are of friction type and will not normally need attention. Their felts may be cleaned with methylated spirits and roughened with fine sand paper.

Dismantle clutch as follows: Remove large clutch spring ring and release upper clutch spindle. Retaining circlip of upper clutch half thus exposed is then removed, followed by upper clutch half. Take care not to lose rubber washer from bottom. Lower half may be left in position.

Brakes. The two brakes should sit squarely against the clutches, and left-hand brake should be adjusted so that its felt ring is just clear of outer rim of left-hand clutch when on **Fast Forward**. Right hand brake is set so that its felt ring is just clear of outer rim of right-hand clutch when on **Fast Rewind**.

In the **Off** position both brakes should be firmly engaged; in **Pause** position the left-hand brake should be engaged; and in **Record/Play** position both should be free.

Pressure roller and pads. Pressure roller and capstan should be vertical and parallel to each other; eccentric screw on roller arm may be used for adjustment. Pressure between them should be 900gms (approx. 2 lb.).

Recording head pressure pad should sit squarely and centrally and should apply a pressure of 30gms (approx. 1 oz).

Tape guides. These are carried on the sound channel assembly and should be adjusted (if necessary) to achieve a straight run for the tape along its full travel. Take care to avoid scraping of tape on outer edge of mu-metal head screening shield.

After any adjustments to sound channel, screws should be resealed with varnish or laquer.

Lubrication. All bearings are self lubricating, but should be checked after 500 hours' use. Fine machine oil may be applied, but used sparingly and with care.

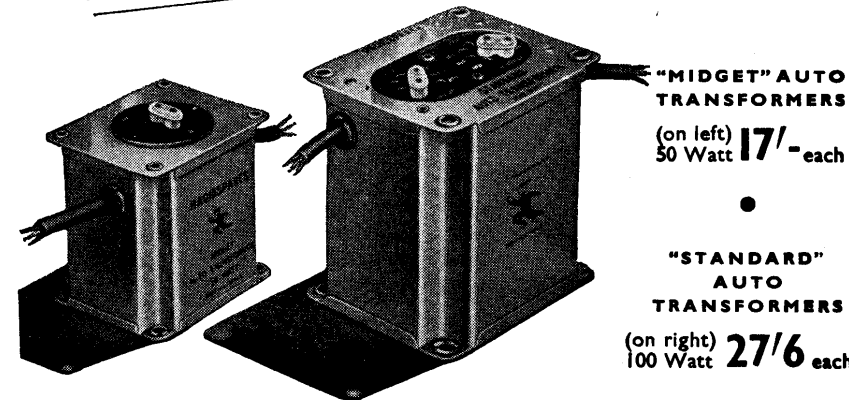
COMPONENT RATINGS

Capacitors
500V : C1 3-5 12 14 16
17 20 22
350V : C15 19 21 31 34
250V : C13
220V AC : C32
30V : C30
12V : C23 29
All others 125V wkg.

Resistors
6W : R43.
2W : R45.
1W : R4.
 $\frac{1}{2}$ W : R44 47 48 51.
 $\frac{1}{4}$ W : R36.
All others $\frac{1}{2}$ W.

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