

GRAMDECK

TAPE RECORDER

General Description: Tape-recording attachment for use with conventional radiogram or record reproducer to provide dual-track tape recorder with maximum spool diameter of $5\frac{3}{4}$ in. The equipment consists of a tape deck which is powered by the gramophone turntable and a transistorised pre-amplifier control unit. Marketed by Andrew Merryfield Ltd.

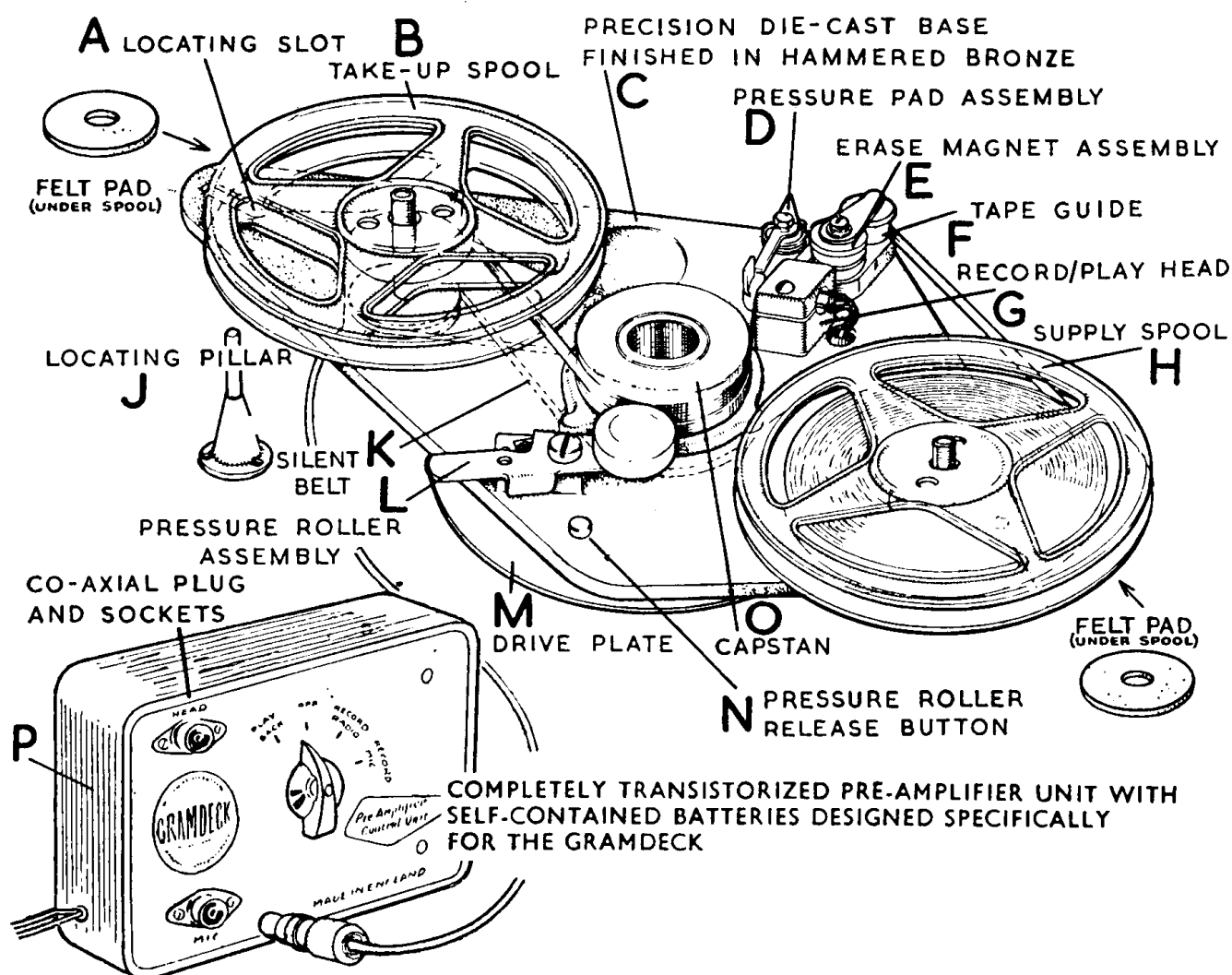
Speeds: This will be determined by the gramophone speed setting, as follows: 78 r.p.m. provides tape speed of $7\frac{1}{2}$ in./sec.; 45 r.p.m.— $4\frac{1}{3}$ in./sec.; 33 r.p.m.— $3\frac{1}{5}$ in./sec.; 16 r.p.m.—1.6 in./sec.

Record/Replay Times: May be determined from formula: $L/(5S)$, where L is length of tape in feet and S is speed of tape in in./sec.

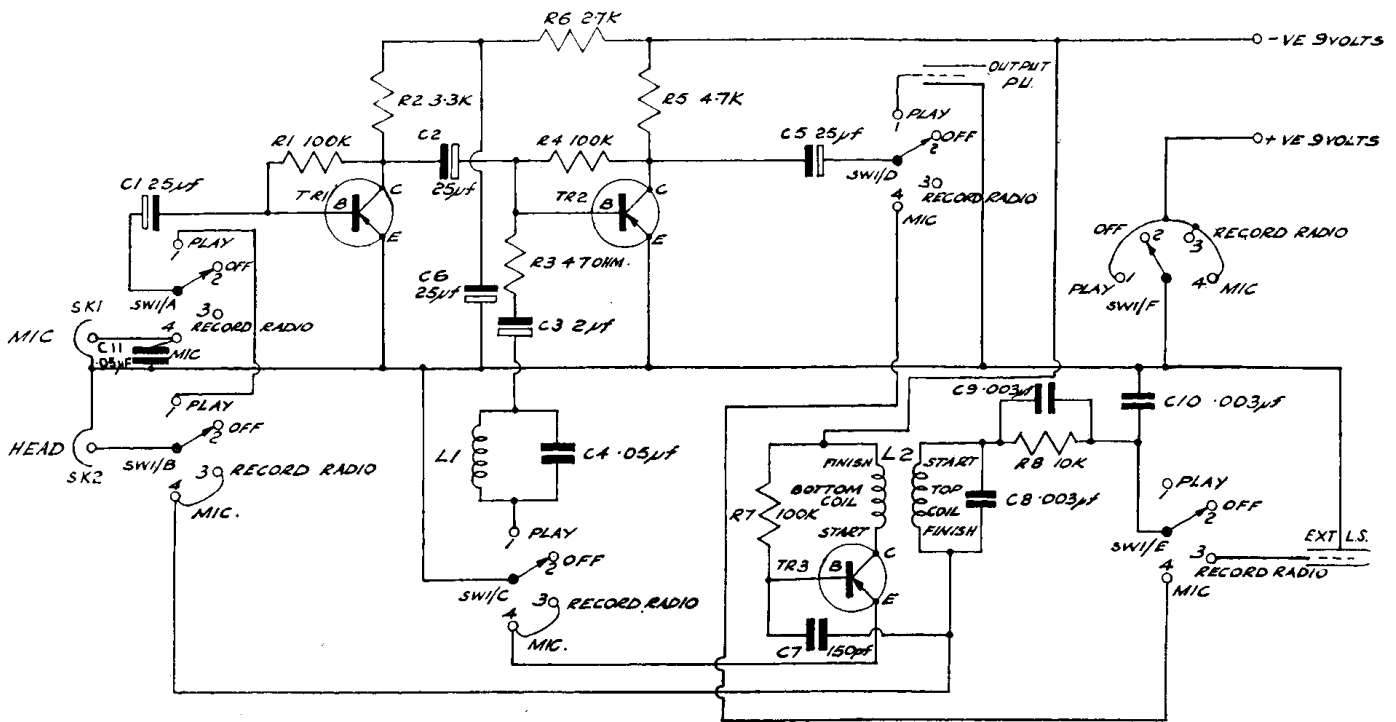
Power Supply: 9 volts (Ever Ready PP9 or equivalent) for pre-amplifier.

Transistor Analysis: Following measurements taken with a 20,000-ohms/volt meter with pre-amplifier switched to "record mic." with head plugged in. Transistors, TR₁, TR₂ and TR₃, type XB102.

Voltages with respect to earth: (a) TR₁ collector, -3.4 volts; (b) TR₂ collector -3.2 volts; (c) TR₃ collector, -9 volts; (d) TR₁ base, -0.15 volts; (e) TR₂ base, -0.16 volts; (f) TR₃ base, +4.6 volts. Tolerance of



GRAMDECK TAPE DECK AND PRE-AMPLIFIER



CIRCUIT DIAGRAM—GRAMDECK PRE-AMPLIFIER (Mk. II)

± 10 per cent. may be anticipated on measurements (a) to (e) and ± 50 per cent. on (f).

Currents, meter connected in negative battery lead with head plug removed. (a) Pre-amp. switch to "play" 2.2 mA.; (b) "record" 3.55 mA.; "record mic." 3.9 mA. With head plug replaced: (d) "play" 2.2 mA.; "record radio" 5.75 mA.; "record mic." 6 mA. Tolerance on all measurements ± 10 per cent.

Tape Deck: Permanent-magnet erase system. Poles of magnet (gap) should face the tape-guide pillar. Head alignment is accomplished with use of $7\frac{1}{2}$ -kc/s. test tape. The output of the head is fed to valve voltmeter, the adjustment of the head is made possible when the hexagonal bolt on the head housing is slackened. This bolt must always be tightened when alignment is completed.

The deck is orientated on the record-player turntable so that when the units are installed and the pre-amplifier switched to "play back" there is minimum hum from the gramophone motor. The deck is then maintained in this position by means of a locating pillar fitted to the record player.

Pre-amplifier: There are four connections to the pre-amplifier: two sockets on the front panel for "head" and "microphone" plugs and two cables which protrude from the side of the pre-amplifier for extension loudspeaker and pick-up connections. These are normally terminated with banana plugs, red for centre conductor and black for earthed braiding.

Bias Voltage: With head plugged in measure voltage on 100-volt A.C. range across the back of the head socket: this should indicate 17 volts A.C. ± 10 per cent. Remove head plug from socket, and this voltage should rise by 2 or 3 volts, indicating continuity of the head windings. The voltage should rise by a further volt when the "Ext. L.S." plugs are shorted.

Notes: On no account should an ohm-meter be used in any checks on this equipment: continuity checks made in this way could magnetise the recording head and introduce noise on to the tape. Care must also be taken that battery polarity is correctly observed. It is also essential that the lid of the pre-amplifier is replaced the correct way round to ensure battery retention. In no circumstances should the equipment be connected directly to A.C./D.C.-type record players or receivers without being adequately isolated with respect to mains supplies.

Should bias oscillator cause heterodyne interference to radio the oscillator coil should be tuned to a null interference point; this form of interference is not applicable to V.H.F./F.M. sets.

Maintenance: Occasional drop of light machine oil on take-up and supply-spool spindle bearings and two or three drops on the capstan ball-race. Do this by carefully turning deck on its side and putting oil in gap between capstan and metal deck casting. Make sure no oil reaches capstan or deck. Face of record/playback head (G) should occasionally be cleaned with rag moistened with Thawpit or methylated spirit.

LAY-OUT OF PRINTED
WIRING PANEL OF
GRAMDECK PRE-
AMPLIFIER

