1358 'E R T' SERVICE CHART INVICTA 331

NINE transistor portable radio covering LW, MW and VHF/FM bands, released May, 1962, at £25 16s. 2d., later reduced to 23½gns.

Batteries. 9V Ever Ready PP9 or equivalent.

Consumption. 40mA at 50mW output.

Wavebands. MW—182-545 metres (1625-550kc/s), LW—1200-2000 metres (250-150kc/s), VHF—88-108 Mc/s.

Transistors. AF114, AF115, AF116 (3), NKT255, NKT252, NKT251 (2).

Diodes. OA79, OA70 (3).

IFs. AM, 470kc/s; FM, 10.7Mc/s.

Output. 200 mW.

Speaker. 5 x 2¾ in. elliptical, 3 ohm impedance.

Aerials. Internal ferrite rod for LW/MW, with socket for car aerial; telescopic rod for VHF, with socket for external FM aerial.

Manufacturer. Invicta Radio Ltd.

Service department. Radio and Television Services Ltd., Gloucester Street, Cambridge.

DISMANTLING

Chassis removal. Release captive screws at rear of cabinet and lift out back cover, then pull off tuning control knob and disconnect battery. Insert a screwdriver through hole in bottom of cabinet, undo fixing screw at bottom end of telescopic aerial and pull aerial upwards to top of cabinet.

Remove three chassis-fixing screws (at either side of printed panel), unsolder leads to speaker and aerial and tape sockets. Withdraw chassis.

When replacing chassis, ensure that volume control knob locates in slot at side of cabinet.

Drivecord. This starts and finishes at spring on main drum, with 2½ turns around spindle. The cord should be a length of nylon braided glass yarn with 28in. between centres of loops.

SERVICE NOTES

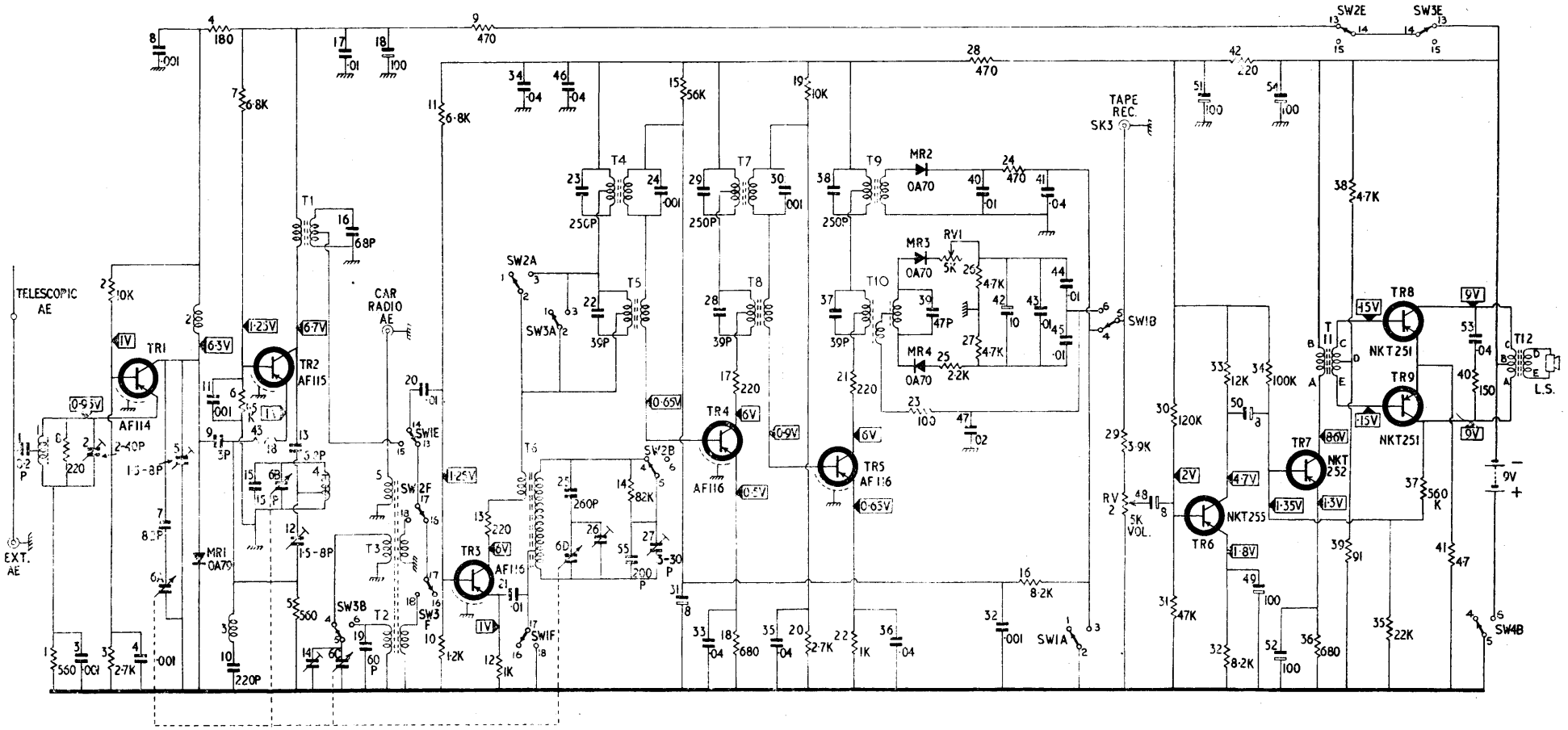
Voltages. Readings given on circuit are taken on MW band with dial set to 450m, with no signal input and volume control set to minimum. All voltages are negative with respect to chassis and are measured with a 20K-per-volt meter.

Circuit differences. On earlier models the following components were valued as stated: C35, 0.02mF; C41, 0.01mF; C47, 0.01mF; R14, 150K. On some models a 33K resistor is connected across the primary of T8.

ALIGNMENT

Equipment required. Signal generator covering 200-1500kc/s, 10.7Mc/s and 80-110Mc/s with AM and FM modulation. Audio output meter. DC voltmeter. Meter with 50 microA range. Standard loop consisting of 20 turns of 20SWG enamelled wire evenly spaced over a length of 2⅜in. on a 4in. diameter former (approx. 40microH). Matched pair of 100K resistors. Two 0.1mF capacitors.

Procedure, AM. Switch to MW and set dial to low frequency end of band. Check that pointer is aligned with LF ends of tracks on tuning scale with gang fully closed. Apply a 470kc/s AM modulated signal aross T3 secondary via a 0.1mF in each lead, then adjust cores of T4, T7 and T9 for maximum



on audio meter across speaker, with volume control turned to maximum.

Disconnect generator from receiver and feed a 600kc/s modulated signal into standard loop placed 15in. from centre of MW aerial coil. Set receiver dial to 500m and adjust core of T6 and position of T3 on rod for maximum output.

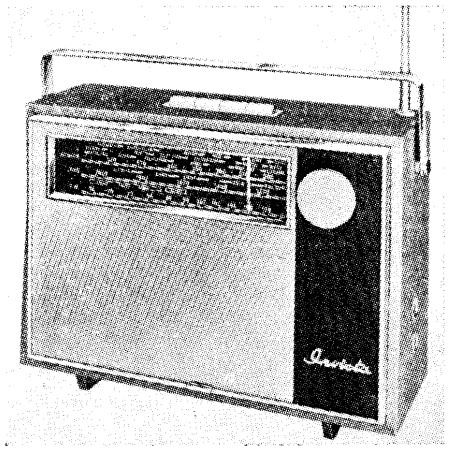
Change input to 1,500kc/s and dial setting to 200m, then adjust C26 and C14 for maximum. Repeat operations in these two paragraphs until calibration and tracking are correct.

Switch to LW, inject 214kc/s and set dial to 1,400m; adjust C27 and position of T2 on rod for maximum output.

Aerial coils T2 and T3 are sealed at the factory and should not normally require adjustment unless ferrite rod has to be replaced.

Procedure, FM. Set volume control to minimum, switch to FM and set dial to low frequency end of band. Connect two 100K resistors in series across R26/27 and connect micro-ammeter between the junction of the 100Ks and junction T10/R23. Connect a DC voltmeter across C42.

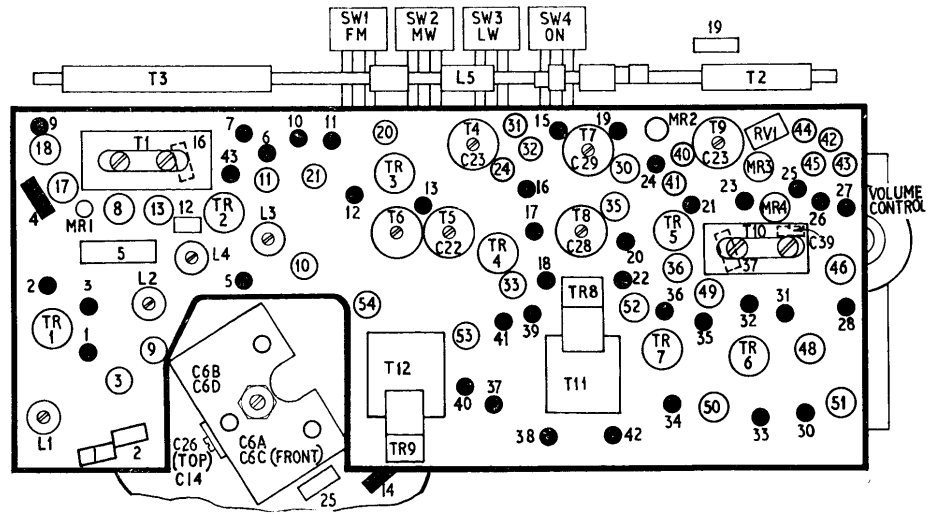
Apply a 10.7Mc/s unmodulated signal to base of Tr5 and adjust core of T10 primary for maximum on voltmeter, with RV1 set to mid-traverse. Next, adjust secondary of T10 for zero current on micro-ammeter, noting that output swings from one polarity to the other either side of the zero point. Readjust primary for maximum voltage and secondary for zero current, then swing input frequency either side of 10.7Mc/s to ascertain that zero current point lies approximately at centre of linear portion of discriminator output curve.



Adjust RV1 for correct relationship as necessary.

Transfer generator to base of Tr4 and adjust core of T8 for maximum on voltmeter, then transfer to switch end of C20 and adjust T5 for maximum. Repeat these two operations, then remove resistors and meters.

Apply a 92Mc/s signal with ±15kc/s FM modulation to FM aerial socket, set receiver dial to 92Mc/s and adjust cores of L4 and L2 for maximum on audio meter with volume control set to maximum. Restrict input to limit output to 50mW. Change input to 102Mc/s, tune receiver to signal and adjust C2 for maximum on audio meter.



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