

ERT SERVICE CHART 1637



Black Rexine covering with oiled natural teak end panels, one of four finishes available

ROBERTS R303 PORTABLE

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EIGHT-TRANSISTOR and three-diode battery portable covering medium and long wavebands. Printed circuit construction is employed with separate boards for IF module and audio stages. Complementary transformerless output stage delivers 650mW into high-flux 7 x 3½in. speaker.

Slim wood case is Rexine covered in red, green or blue, or an alternative finish is black Rexine with teak end panels. Base of receiver has ball-bearing turntable. Waterproof zipper carry case is optional extra.

Battery. Ever Ready PP9, Vidor VT9, Exide DT9 or equivalent.

Consumption. 15mA quiescent.

Wavebands. MW 182-555m(1648-540kc/s), LW 1160-2000m(259-150kc/s).

Transistors. TR AF115 self-oscillating mixer, TR AF117 first IF amplifier, TR AF117 second IF amplifier, TR1 BC108 audio preamplifier, TR2 AC127 audio amplifier, TR3 AC128 audio driver, TR4 AC127 and TR5 AC128 complementary output pair.

Diodes. 0A90 detector and AGC, AA119 AGC clamp, BA114 bias stabiliser.

Thermistor. TH1 VA1040.

IF. 470kc/s.

Aerial. Internal 8½ x ¾in. ferrite rod covering long and medium waves. Provision for car radio aerial.

Speaker. High-flux 7 x 3½in. elliptical with 10ohm voice coil.

Output. 650mW.

Sockets. 3.5mm miniature jack socket for personal phone (minimum impedance 10ohms). Socket for car radio aerial plug.

Dimensions. 10 x 5½ x 3¼in.

Weight. Approx. 4lb.

Controls. Top-mounted controls comprise waveband and on/off, tuning and volume.

Recommended price. 15gns including battery and PT.

Manufacturer. Roberts Radio Co. Ltd., Molesey Avenue, West Molesey, Surrey.

Service department. Molesey Avenue, West Molesey, Surrey. Tel: 01-979 7474.

DISMANTLING

Chassis removal. Remove cabinet back. Take out battery. Slacken the three 4BA nuts holding battery bracket in position and remove bracket.

Remove the two 4BA nuts retaining speaker and carefully remove to extent of connecting leads. For further freedom of movement, if required, unsolder leads.

Take out two woodscrews at either side of chassis and withdraw the two

wood members. Chassis may now be slid out of cabinet.

BRIEF CIRCUIT DESCRIPTION

Signal is picked up on ferrite rod coils (L1 for LW and L2 for MW) and tuned by gang section CV1. CV2 is MW aerial trimmer and CV3 covers LW.

Low impedance coupling coils L4 (LW) and L5 (MW) connect via switches S3 (closed on LW) or S4 (closed on MW) to base of mixer-oscillator transistor on IF module.

Oscillator coil (also on IF module) is tuned by gang section CV4 with CV5 and CV6 medium and long wave trimmers respectively.

After two stages of IF amplification the signal is detected by 0A70 diode and taken from module to top end of volume control (RV1) via R16. From

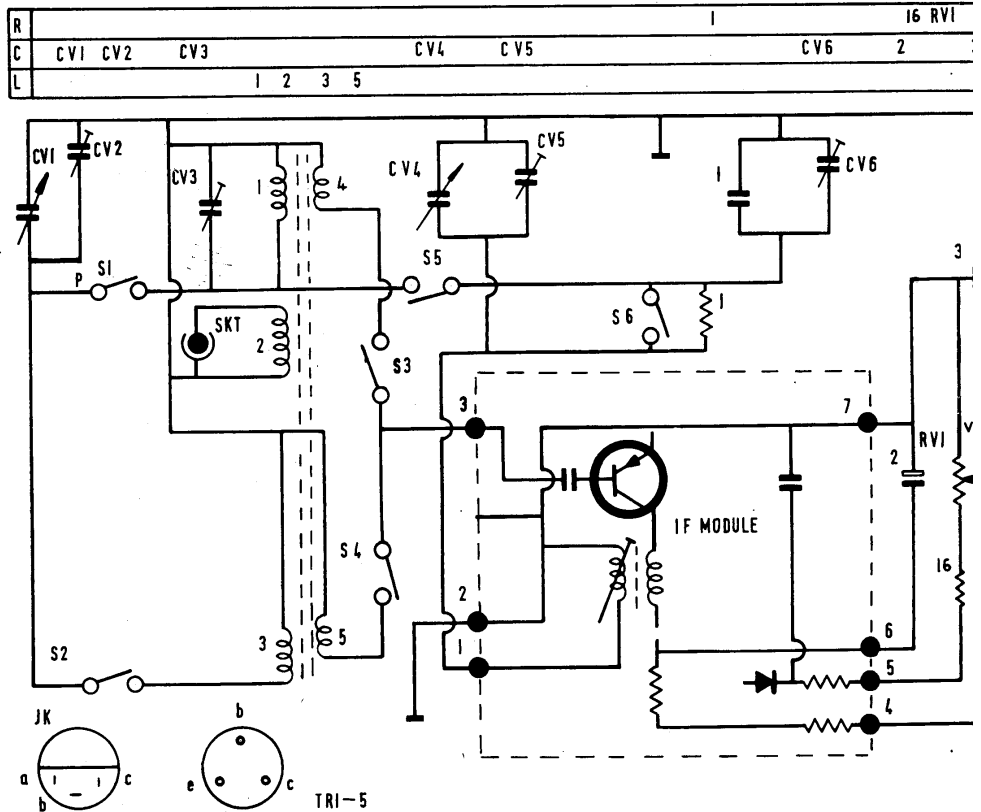
slider of control signal goes to base of audio preamplifier TR1 (NPN transistor BC108). C3 provides tone compensation.

A second NPN transistor (TR2 AC127) gives further amplification before passing signal to base of driver TR3 (AC128). Collector of TR3 is directly coupled to base circuit of complementary output pair TR4 and TR5.

Resultant audio signal appearing at junction of the two output transistor emitters is coupled to a 10ohm speaker via C13. Negative feedback loops operate over TR2 and TR1 stage via R8 C10 and from output to base circuit of TR4 and TR5 via R15 R14.

SERVICE NOTES

IF module. In the event of a fault developing in the IF module the complete unit should be carefully unsoldered



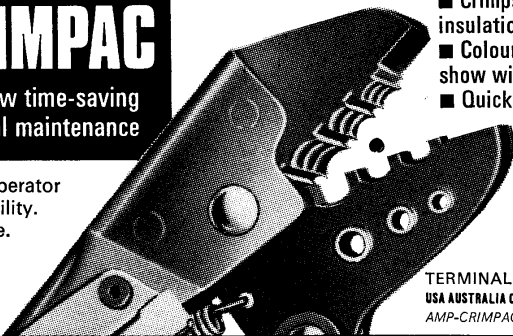
All voltages measured with respect to chassis

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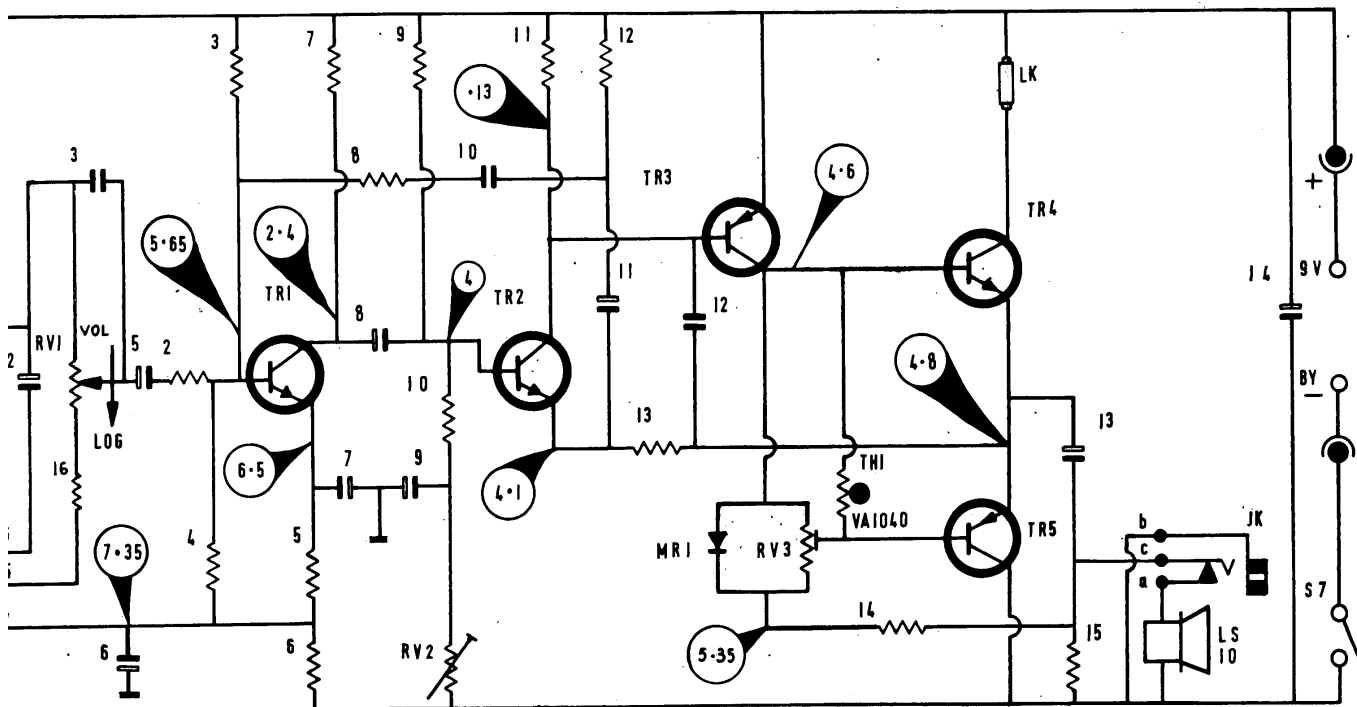
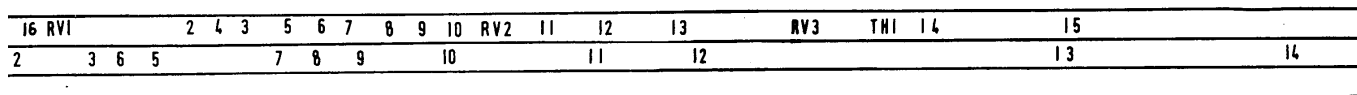
from the printed board and returned to the manufacturers for repair or replacement.

Bias adjustment. The following adjustments should be carried out with battery voltage reading of 9V across C14. Turn volume control to minimum. Connect voltmeter between junction of TR4/TR5 emitters and chassis. Adjust preset RV2 to give reading of 4.8V.

Connect milliammeter in red flex link (LK) under the printed board. Adjust preset RV3 to give an output stage quiescent current of 4.5mA at 20 deg. C. Leave receiver switched on for one minute and then recheck reading.

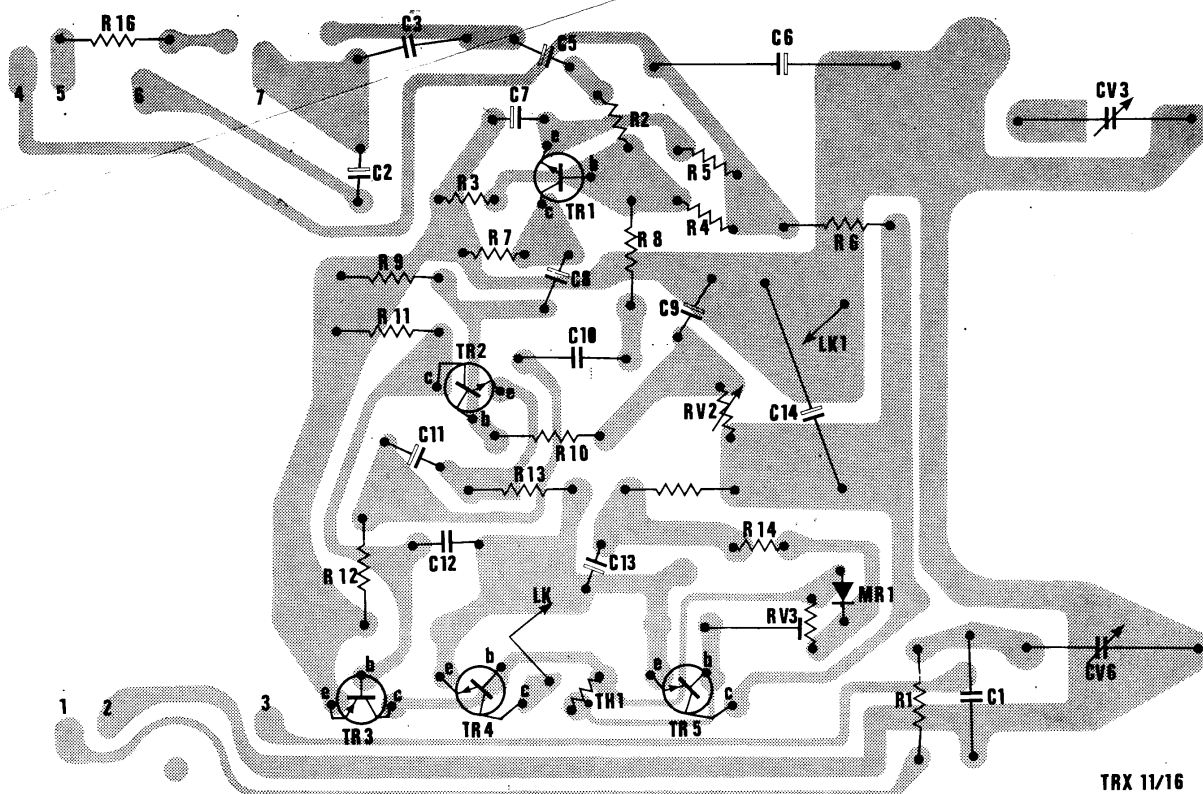
RESISTORS		POTENTIOMETERS		CAPACITORS		VARIABLES	
R1	470K	R14	680	C1	200pF	CV1	207pF
R2	10K	R15	330	C2	125mF	CV2	30pF
R3	82K	RV1	4K7 log	C3	47KpF	CV3	10-80pF
R4	22K	RV2	10K	C4	2.5mF	CV4	110pF
R5	2K2	RV3	470	C5	2.5mF	CV5	30pF
R6	390			C6	200mF	CV6	10-80pF
R7	6K8			C7	16mF		
R8	33K						
R9	10K						
R10	6K8						
R11	330						
R12	33						
R13	1K5						

Continued overleaf

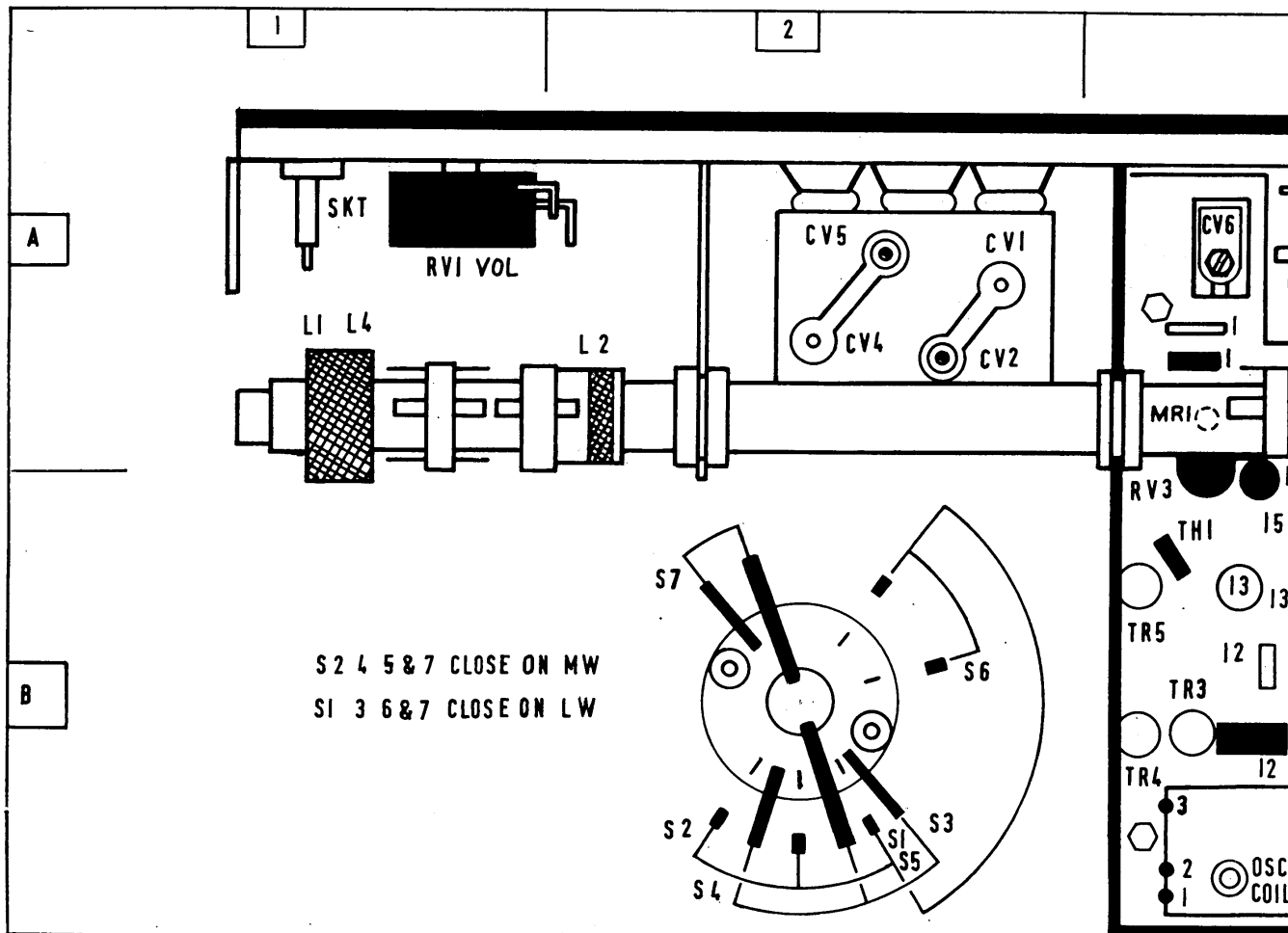


chassis using Avo 8. Test conditions; no signal input and volume control at minimum

Electrical and Radio Trading, March 28, 1968



Left, print from tin component



ALIGNMENT

Equipment required. Modulated signal generator covering long and medium waves and IF, output meter 10ohms (or AC voltmeter), suitable coupling coil, trimming tools.

Connect output meter in place of speaker, or AC voltmeter on low volts range in parallel with speaker.

IF. The IF transformers have been accurately aligned to 470kc/s by the makers and no attempt should be made to realign unless it is known that the cores have been disturbed.

When alignment is necessary inject modulated 470kc/s signal between tag 3 and earth line and adjust IF cores in turn for maximum output. Repeat until no further improvement results.

MW RF. Fully mesh gang capacitor (maximum capacity) and check that pointer coincides with high wavelength end of tuning scale. Connect output meter or AC voltmeter as described.

To prevent AGC action masking correct alignment peaks keep generator output as low as possible consistent with obtaining adequate indication for adjustment. Signals should be fed into set via transmitting loop to avoid interaction with tuned circuits by direct connection.

Calibration marks are provided on the scale at 1224m and 1936m.

Switch to MW. Tune receiver to calibration mark at 1224m. Inject modulated signal at 1360kc/s and adjust trimmers CV5 and CV2 for maximum output. Change receiver tuning to 1936m calibration mark. Inject modulated 580kc/s signal. Adjust core of oscillator coil L3 for maximum output. Repeat last two operations for optimum results. Final adjustment should be on CV5 and CV2 at 1360kc/s.

LW RF. Switch to LW. Set receiver pointer to 1224m calibration mark. Inject modulated 245kc/s signal via transmitting loop. Adjust CV6, CV3 for maximum output.

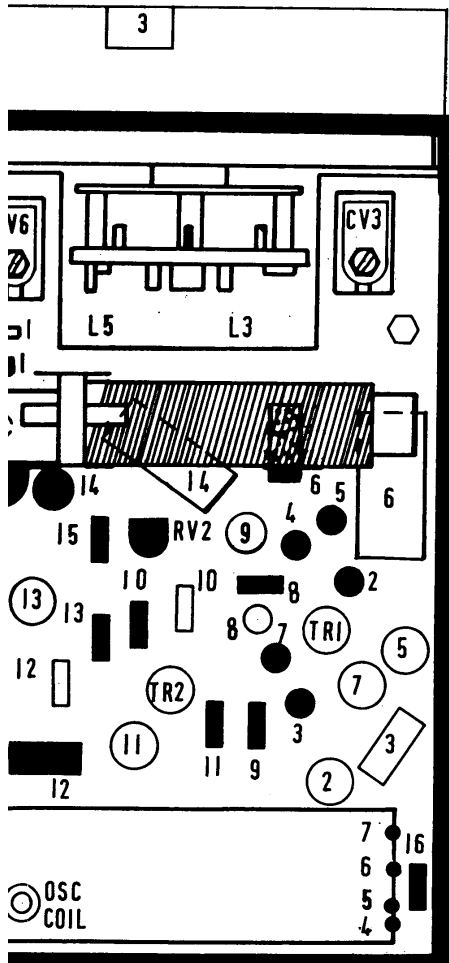
Retune receiver to 1936m. Inject modulated 155kc/s signal. Adjust core of L1 for maximum output. Repeat long wave alignment operations for optimum results. Final adjustment should be on CV6 and CV3 at 155kc/s.

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Left, printed circuit board with components as viewed from tin dip side. Below, receiver rear view showing component layout. Resistors are in solid black, capacitors in outline only



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