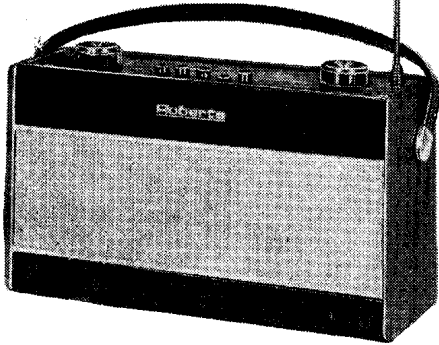


"TRADER" SERVICE SHEET
1852

Appearance of the Roberts R600.



AN a.m./f.m. transistored portable radio, the Roberts R600 features two modules, a v.h.f. tuner and i.f. amplifier respectively. These two modules utilize five transistors out of a complement of eleven, plus five diodes.

Wavebands covered using press-buttons for selection, are m.w. (185-566m), l.w. (1,132-2,000m), reception is via an internal ferrite rod aerial, and v.h.f. (87.5-108Mc/s) via an eleven section telescopic aerial, which, when extended measures 39in. overall. Two additional press-buttons operate a tone control (all wavebands), and a.f.c. operative on v.h.f. only. An external aerial socket is fitted which is suitable for the connection of a car type aerial.

A conventional audio amplifier built on a printed panel is of the transformerless variety, incorporating complementary symmetry for the output stage. Adequate audio output power is delivered by a 5Ω, 7 by 3½in. elliptical loudspeaker. Power overall being supplied by an Ever Ready PP9 battery (or its equivalent).

Personal listening can be accomplished with an earphone of not less than 5Ω impedance connected via a 3.5mm jack and plug.

TRANSISTOR ANALYSIS

Transistor voltages given in the table below were obtained from information supplied by the manufacturers. They are all negative with respect to battery positive, and were measured on a model 8 Avometer, there was no signal input, the volume control was at minimum, and the receiver was switched to m.w.

(Continued overleaf, col. 1)

Transistor Table

Transistor	Emitter (V)	Base (V)	Collector (V)
TR1	BC148	5.7	4.6
TR2	BC148	4.3	3.1
TR3	AC128	0	0.17
TR4	OC44/5	—	—
TR5	AC187	4.7	0
TR6	AC188	4.7	9.0

When switched to v.h.f.; Tag 10 v.h.f. tuner 6.3V; tag 18 i.f. module 6.5V.
Junction of R19, R20 and RV3 4.7V.

ROBERTS R600 A.M./F.M. Portable Radio Receiver

Resistors

R1	100Ω	B1
R2	150kΩ	B1
R3	8.2kΩ	C1
R4	390Ω	C1
R5	82kΩ	C2
R6	22kΩ	C2
R7	4.7kΩ	C2
R8	6.8kΩ	C2
R9	560Ω	C2
R10	2.2kΩ	C2
R11	330Ω	B2
R12	330Ω	C2
R13	68kΩ	C2
R14	68kΩ	C1
R15	680Ω	C1
R16	10Ω	C2
R17	560Ω	C2
R18	8.2kΩ	C1
R19	12Ω	C1
R20	470Ω	C1
R21	330Ω	C1
R22†	100Ω	**
RV1	20kΩ	C1
RV2	47kΩ	C1
RV3	220Ω	C1

Capacitors

C1	22pF	**
C2	330pF	B1
C3	0.01μF	A1
C4	220pF	B1
C5	0.01μF	B1
C6	8.2pF	B1
C7	50pF	B2
C8	0.01μF	**
C9	0.047μF	C2
C10	2,200pF	C2
C11	0.047μF	C1
C12	0.47μF	C1
C13	0.01μF	**
C14	0.033μF	**
C15	400μF	C1
C16	2.5μF	C2
C17	0.047μF	C2
C18	2.5μF	C2
C19	16μF	B2
C20	16μF	C2
C21	200μF	C2
C22	4,700pF	C1
C23	640μF	C1
C24	200μF	C1
CV1	80pF	B1
CV2	80pF	B2

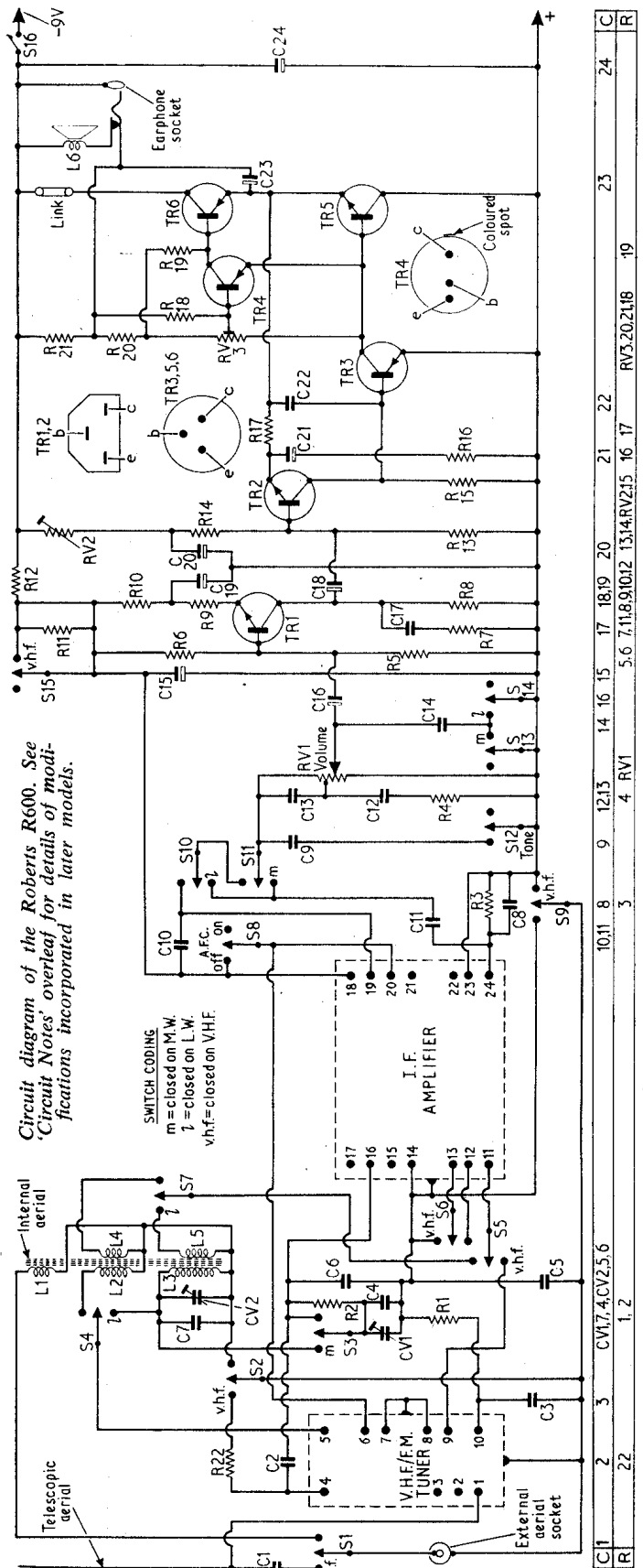
Coils*

L1	—	C2
L2	—	B2
L3	—	C2
L4	—	B2
L5	—	C2
L6	5Ω	+ C2

Miscellaneous

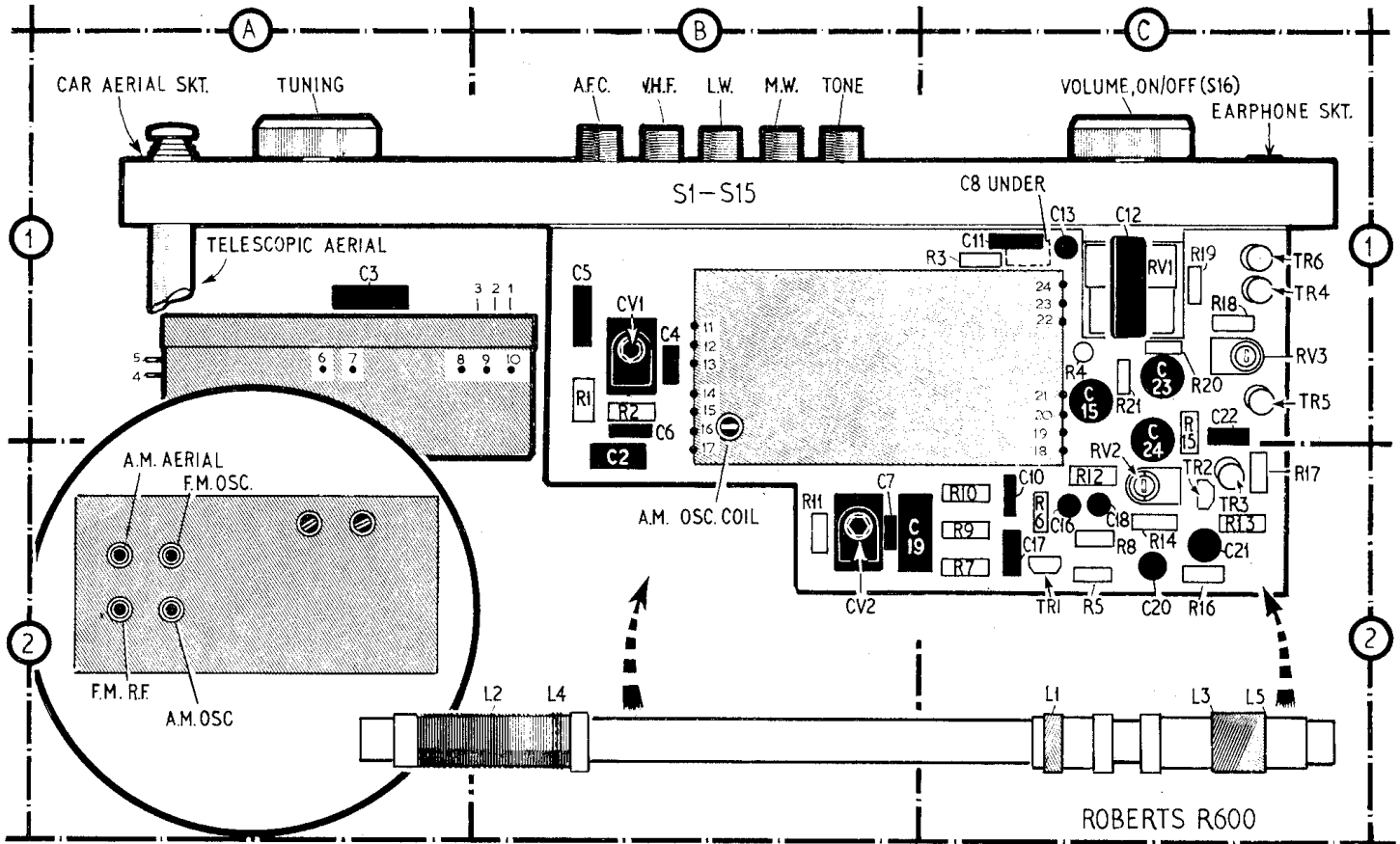
S1-S15	—	B1
S16	—	C1

* Approximate d.c. resistance in ohms.
** Wired on waveband switches.
† Loudspeaker.
‡ Not fitted in chassis prior to serial No. 2880.



Circuit diagram of the Roberts R600. See 'Circuit Notes' overleaf for details of modifications incorporated in later models.

C1	2	3	CV1,7,4, CV2,3,6
C2	22	1, 2	
C3	10,11	8	
C4	9	12,13	4
C5	14	16	RV1
C6	15	17	5, 6
C7	18,19	20	7, 11, 8, 9, 10, 12
C8	21	22	13, 14, RV2, 15
C9	23	24	16, 17
C10	24		RV3, 20, 21, 18



Component-side view of the printed panel as seen with the chassis removed from case.

Continued from overleaf—

CIRCUIT NOTES

The circuit diagram overleaf applies to all models from and including serial number 2880. All chassis prior to this do not include R22, and the pole labelled v.h.f. on S15 is connected to tag 16 on the i.f. amplifier module. The common pole is connected to tag 14.

If a fault develops in either the i.f. amplifier or v.h.f. tuner modules the manufacturers advise that the complete unit should be carefully removed and returned to them for replacement or repair.

CIRCUIT ALIGNMENT

Equipment Required.—A signal generator covering the range 100kc/s-2Mc/s, 30 per cent amplitude modulated, and an f.m. output (25kc/s deviation) at 108Mc/s; an audio output meter of 5Ω impedance to be used in place of the loudspeaker, alternatively an a.c. voltmeter switched to the 2.5V a.c. range connected in parallel with the loudspeaker, and an r.f. coupling coil.

During alignment the input signal should not be allowed to exceed the level required to produce an audio output of not greater than 50mW in order to prevent a.g.c. action masking the alignment peaks.

Note: No alignment instructions are given for the i.f. transformers, and no attempt should be made to realign them.

1.—Switch on signal generator and allow 15 minutes to warm up. Connect in appropriate manner the output meter to be used.

Rotate tuning control fully anti-clockwise, and check that cursor coincides with the low frequency end of tuning scale.

Connect the r.f. coupling coil to the signal generator output; all signals are to be fed in via this coil in order to avoid disturbance to the r.f. oscillator circuits.

2.—Switch receiver to the m.w., and tune to the 200m calibration mark. Loosely couple the r.f. coupling coil to ferrite rod aerial, and feed in a 1,500kc/s a.m. signal. Adjust a.m. oscillator and aerial trimmers for maximum output.

3.—Tune receiver to the 536m calibration mark and feed in 560kc/s a.m. signal. Adjust a.m. oscillator coil core, and L2 (slide along ferrite rod) for maximum output.

4.—Repeat operations 2 and 3 for optimum results finishing with 2.

5.—Switch receiver to l.w. and tune to the 200m calibration mark. Feed in a 263kc/s a.m. signal, and adjust CV1 and CV2 for maximum output.

6.—Tune receiver to the 536m calibration mark, and feed in a 158kc/s a.m. signal. Adjust L3 (slide along ferrite rod) for maximum output.

7.—Repeat operations 5 and 6 for optimum results finishing with 5.

8.—Switch receiver to v.h.f.; switch off a.f.c. (press-button depressed); rotate tuning control fully clockwise, and loosely couple the r.f. coupling coil to the telescopic aerial.

9.—Feed in a 108Mc/s f.m. signal. Adjust f.m. oscillator and f.m. r.f. trimmers for maximum output.

Audio Adjustments.—All the following adjustments are carried out with 9V measured across C24.

Connect a voltmeter switched to a suitable range between junction of TR5 and TR6 emitters and positive supply, and with volume control at minimum adjust RV2 to produce a reading of 4.7V on the meter.

Connect a milliammeter in black flex link (LINK) on foil side of printed panel, and adjust RV3 to give an output stage quiescent current of 3.5mA at 20 deg C. Allow one minute then recheck this figure. Remove meter and reconnect link.

Connect an oscilloscope to the output across a 5Ω load, and turn volume control to maximum.

Apply an audio signal to the top of the volume control and increase the input until clipping is apparent.

Adjust RV2 for symmetry at onset of clipping.

DISMANTLING

To remove the chassis from the case, first remove the base cover by inserting a finger in the hole provided, and pulling the cover to one side, then lift clear when sufficient clearance with the side flange has been achieved.

Remove the battery, and unsolder the leads from the loudspeaker.

Unscrew and remove two screws securing chassis to case (one each side), and one screw retaining telescopic aerial.

The complete chassis may now be removed from the top of the case.

