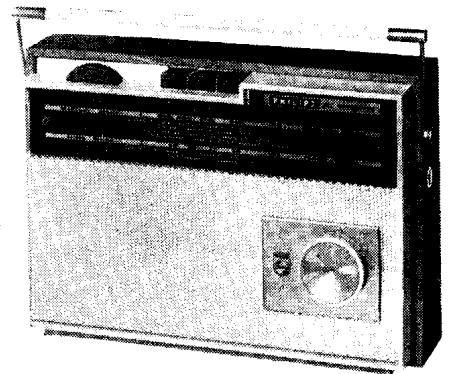


"TRADER" SERVICE SHEET
1544

PHILIPS L3G04T



GENERAL DESCRIPTION

PHILIPS L3G04T is a battery operated portable radio receiver employing six transistors and one crystal diode. It is designed for reception in the medium and long wavebands and covers the range 187-555m (M.W.) and 1,215,-2,000m (L.W.).

Operating power is obtained from two 9V batteries and the quiescent current is approximately 12mA with new batteries.

The receiver is fitted with an internal ferrite rod aerial and is also provided with a car aerial input socket. Audio output is approximately 800mW.

Release date and original price: August, 1961, £14 7s 1d. Purchase tax extra.

TRANSISTOR ANALYSIS

Transistor voltages given in col. 2 were taken from information supplied by the manufacturers. They were measured on a 20,000 Ω/voltmeter with the receiver switched to M.W. All readings are negative with respect to chassis.

CIRCUIT ALIGNMENT

Equipment Required.—An a.m. signal generator; an audio output meter with a 30 ohm impedance or an A.C. voltmeter set to the 2.5V range with a 30 ohm resistor connected in parallel; a length of insulated wire for use as a coupling loop; a 0.5µF capacitor and a slotted trimming tool. If a suitable trimming tool is not available, one can be made by cutting a slot in the end of plastics size 10 knitting needle.

During alignment the signal generator

Transistor Table

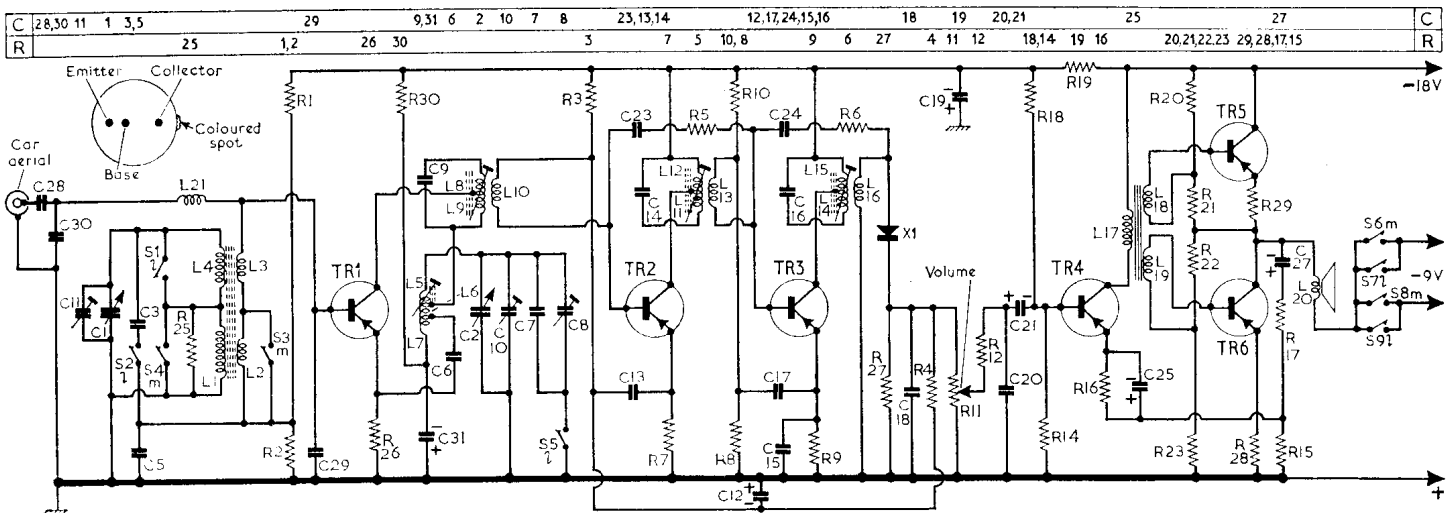
Transistor	Emitter (V)	Base (V)	Collector	
			(V)	(mA)
TR1 OC44	1.2	1.2	6.3	0.5
TR2 OC45	0.8	1.0	6.4	1.2
TR3 OC45	0.8	0.9	6.3	1.0
TR4 OC75D	1.4	1.43	17.7	1.4
TR5 OC74	9.0	9.15	18.0	3.4
TR6 OC74	—	0.15	9.0	3.4

should be adjusted to maintain an output of 50mW.

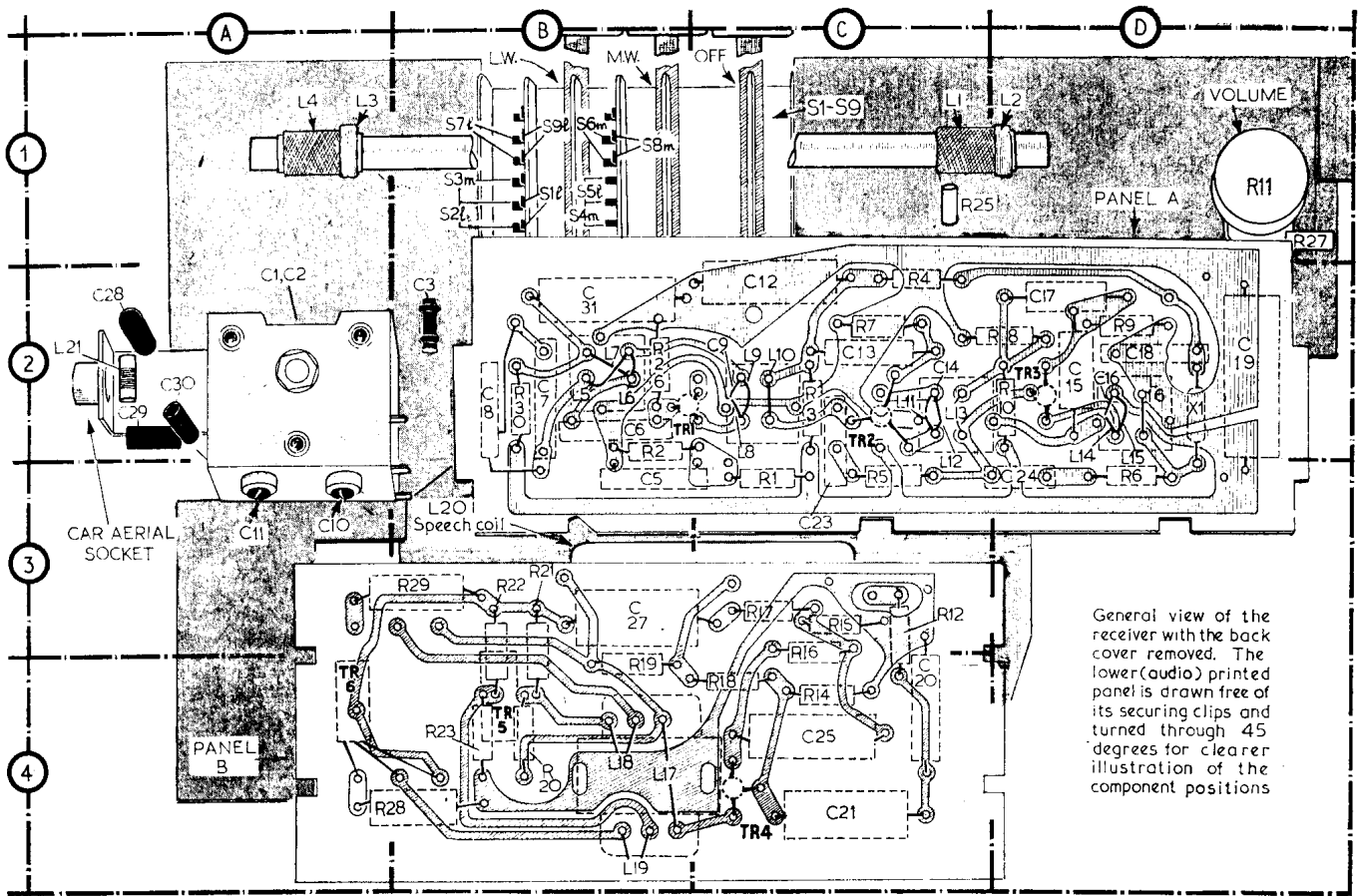
- 1.—Disconnect the loudspeaker and in its place connect the output meter or the A.C. voltmeter shunted by the 30 ohms resistor. (In the case of the voltmeter, the alignment level is 1-1½V.) Connect the signal generator to the base of TR1 via the 0.5µF capacitor.
- 2.—Switch to M.W. and turn the tuning gang to minimum capacitance. Turn the volume control to maximum output.
- 3.—Feed in a 470kc/s signal and adjust L14/L16 (D2) for maximum output. Feed in a 472kc/s signal and adjust L11/L13 (C2) for maximum output. Feed in a 468kc/s (Continued overleaf col. 1)

Component Values and Locations

Resistors			Capacitors			Coils*			Miscellaneous		
R1	39kΩ	C3	R24	—	†	C16	91pF	D2	L7	—	B2
R2	10kΩ	B2	R25	560kΩ	C1	C17	0.082µF	D2	L8	—	C2
R3	68kΩ	C2	R26	2.2kΩ	B2	C18	0.01µF	D2	L9	—	C2
R4	12kΩ	C2	R27	18kΩ	D1	C19	100µF	D2	L10	—	C2
R5	1.2kΩ	C2	R28	5.1Ω	A4	C20	4,700pF	C4	L11	—	C2
R6	3.3kΩ	D3	R29	5.1Ω	B3	C21	1µF	C4	L12	—	C2
R7	680Ω	C2	R30	220Ω	B2	C22	—	†	L13	—	C2
R8	4.7kΩ	D2	Capacitors			C23	56pF	C3	L14	—	D2
R9	1kΩ	D2	C1	196pF	A1	C24	22pF	D3	L15	—	D2
R10	22kΩ	D2	C2	110pF	A1	C25	100µF	C4	L16	—	D2
R11	50kΩ	D1	C3	68pF	B2	C26	—	†	L17	200.0	B4
R12	470Ω	C3	C4	—	†	C27	1µF	B3	L18	30.0	B4
R13	—	†	C5	0.01µF	B3	C28	0.01µF	A2	L19	47.0	B4
R14	18kΩ	C4	C6	0.01µF	B2	C29	15pF	A2	L20	24.0	B3
R15	15Ω	C3	C7	180pF	B2	C30	15pF	A2	L21	6.5	A2
R16	1kΩ	C3	C8	100pF	B2	C31	50µF	B2	Miscellaneous		
R17	2.2kΩ	C3	C9	91pF	C2	Coils*			X1	OA70	D2
R18	47kΩ	C4	C10	30pF	A3	L1	14.0	C1	S1-S9	—	B1
R19	3.9kΩ	B4	C11	30pF	A3	L2	1.4	D1	*Approximate D.C. resistance		
R20	2.7kΩ	B4	C12	10µF	C2	L3	—	A1	in ohms.		
R21	56Ω	B3	C13	0.082µF	C2	L4	1.4	A1	‡Or 12pF		
R22	2.7kΩ	B3	C14	91pF	C2	L5	3.8	B2	†No component.		
R23	56Ω	B4	C15	0.082µF	D2	L6	—	B2			



Circuit diagram of Philips L3G04T transistor portable receiver. A high impedance loudspeaker serves directly as the output load impedance



General view of the receiver with the back cover removed. The lower (audio) printed panel is drawn free of its securing clips and turned through 45 degrees for clearer illustration of the component positions

Circuit Alignment—continued
signal and adjust L8/L10 (C2) for maximum output.

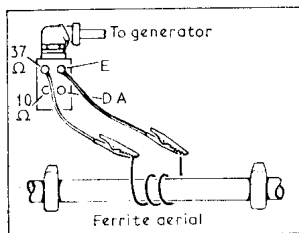
R.F. Alignment

Oscillator (M.W.)

- 1.—Rotate the tuning gang so that the cursor lines up with the right-hand scale calibration mark.
- 2.—Feed in a 537kc/s signal and adjust L5 (B2) for maximum output.
- 3.—Rotate the tuning gang to minimum capacitance. Feed in a 1,610kc/s signal and adjust C10 (A3) for maximum output.
- 4.—Repeat operations 1, 2 and 3 until no further improvement can be obtained.

Aerial (M.W.)

- 1.—Feed in a 632kc/s signal and rotate the tuning gang to the position of maximum output. Leave the tuning gang in this position and disconnect the signal generator from the base of TR1.
- 2.—Loosely couple the signal generator to the aerial circuit by winding 2 to 3 turns of insulated wire round the centre of the ferrite rod and connecting the generator



Method of signal injection for R.F. alignment purposes

output across the ends of the coil which is thus formed (see diagram foot of col. 1). Adjust L4 (A1) for maximum output.

- 3.—Feed in a 1,450kc/s signal and rotate the tuning gang for maximum output, then adjust C11 (A3) for maximum output.

Oscillator (L.W.)

- 1.—Switch to L.W. Connect the signal generator via the 0.5µF capacitor to the base of TR1.
- 2.—Rotate the tuning gang to make the cursor line up with the 1,667m calibration mark on the scale (above the 1,700m block) and adjust C8 (B2) for maximum output.

Aerial (L.W.)

- 1.—Feed in a 180kc/s signal and rotate the tuning gang to the position of maximum output.
- 2.—Leave the tuning gang in this position, disconnect the signal generator from the base of TR1 and loosely couple it to the aerial circuit.
- 3.—Adjust L1 (C1) for maximum output.
- 4.—Repeat "Aerial (M.W.)" operations.

GENERAL NOTES

Dismantling.—Place receiver face downwards on a soft cloth. Release the two retaining screws (captive) at the back of the receiver and lift off the backplate. To remove the front moulding release the front fixing screws, one either side at the top, two at the bottom.

With the cabinet rear removed, most components will be accessible. If it is necessary to replace components or take measurements on the printed side of the board, this panel may need to be released. Unsolder wiring as required and remove the end fixing

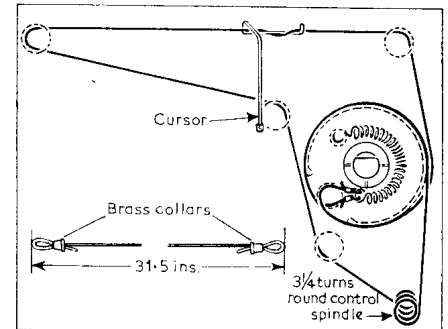
bracket nearest to the volume control.

The main chassis, tuning and drive assemblies may be detached from the front moulding as one unit. Remove four fixing screws and unsolder both the speaker leads and earth return wires to speaker chassis. The audio panel is secured by two spring clips.

Battery.—Two Ever Ready PP9 or Vidor T6009.

Switches.—S1-S5 are waveband switches; S6-S9 are battery on/off switches. They are housed in a three-way press-button unit shown in location reference B1 where the individual switches are given a code letter m or l to indicate the position in which they are closed.

The same code letters appear on the circuit diagram (overleaf).



Drive cord assembly as seen when looking from the front of the receiver