

**"TRADER" SERVICE SHEET**  
**1734**

# PHILIPS L3G36T 'Majorca' & STELLA ST428T

*Transistor Portable Radio Receivers*

**E**MPLYING a common six-transistor chassis, Philips L3G36T and Stella ST428T are portable radio receivers which cover reception in the medium and long wavebands. An internal ferrite rod aerial is fitted and three sockets provide for the connection of a car type aerial, tape recorder and earphone. The circuit features a stabilized push-pull output stage and manual tone control. Waveband ranges are 187-555m (m.w.) and 1,215-2,000 (l.w.).

Operating power is obtained from a 9V dry battery (Ever Ready PP9 or any equivalent) and no-signal current consumption is 16mA average. Audio power output is approximately 1W.

**TRANSISTOR ANALYSIS**

Transistor voltages given in the table in col. 3, were taken from information supplied by the manufacturers. They were measured

on a 100k $\Omega$ /V meter with the receiver switched to m.w. and the volume control at maximum. The readings are negative with respect to the battery positive terminal, the "on load" battery voltage was 9V.

**CIRCUIT ALIGNMENT**

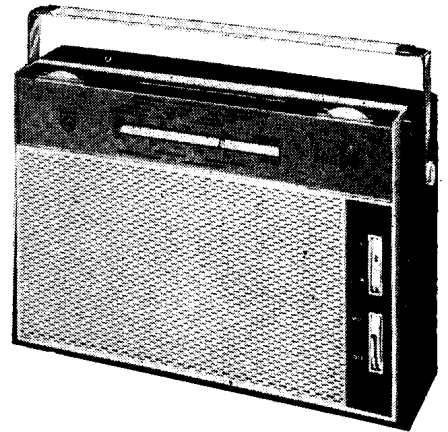
**Equipment Required.**—An audio output meter with an impedance to match 30 $\Omega$  or alternatively a 2.5V a.c. voltmeter shunted by a 30 $\Omega$  resistor; an a.m. signal generator; a 0.05 $\mu$ F capacitor and a length of insulated copper wire for use as an r.f. coupling loop.

During alignment, the signal input level should be adjusted to maintain a receiver output of 50 mW (1-1.5V on the a.c. voltmeter).

1.—Disconnect the loudspeaker and connect the audio output meter or the a.c. voltmeter shunted by 30 $\Omega$  in its place. Switch receiver to m.w. and turn the volume and tone controls to maximum.

- 2.—Connect the signal generator via the 0.05 $\mu$ F capacitor to the S3 side of C6. Set the tuning gang to minimum capacitance.
- 3.—Feed in a 470 kc/s signal (remove L14 screening cover if fitted) and adjust L14 for maximum output, feed in a 468 kc/s signal and adjust L11 for maximum output, feed in a 472kc/s signal and adjust L8 for maximum output.
- 4.—Loop the piece of insulated wire round the receiver and connect a low impedance output from the generator to the loop. Turn the tuning gang to maximum capacitance and feed in a 535kc/s signal. Adjust L5 for maximum output.

*(Continued overleaf col. 1)*



*Appearance of the Philips L3G36T*

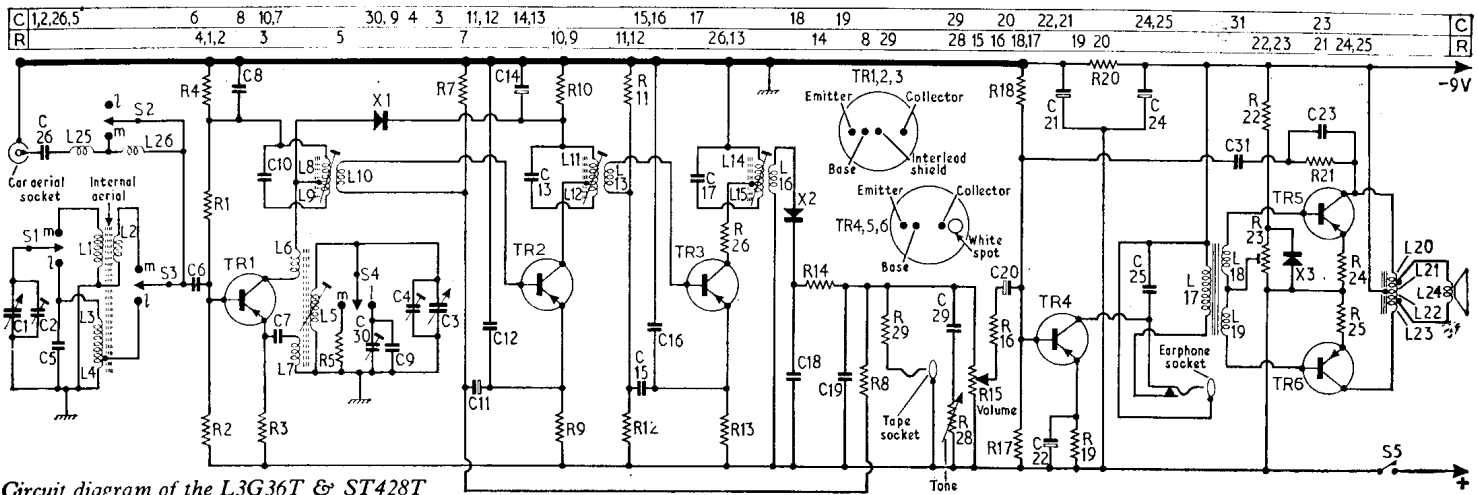
**Transistor Table**

Transistor	Emitter (V)	Base (V)	Collector (V)
TR1 AF117	0.85	1.0	6.1
TR2 AF117	0.45	0.7	4.5
TR3 AF117	0.85	1.15	6.4
TR4 OC81D	0.7	0.8	8.7
TR5 OC81	0.01	0.15	9.0
TR6 OC81	0.01	0.15	9.0

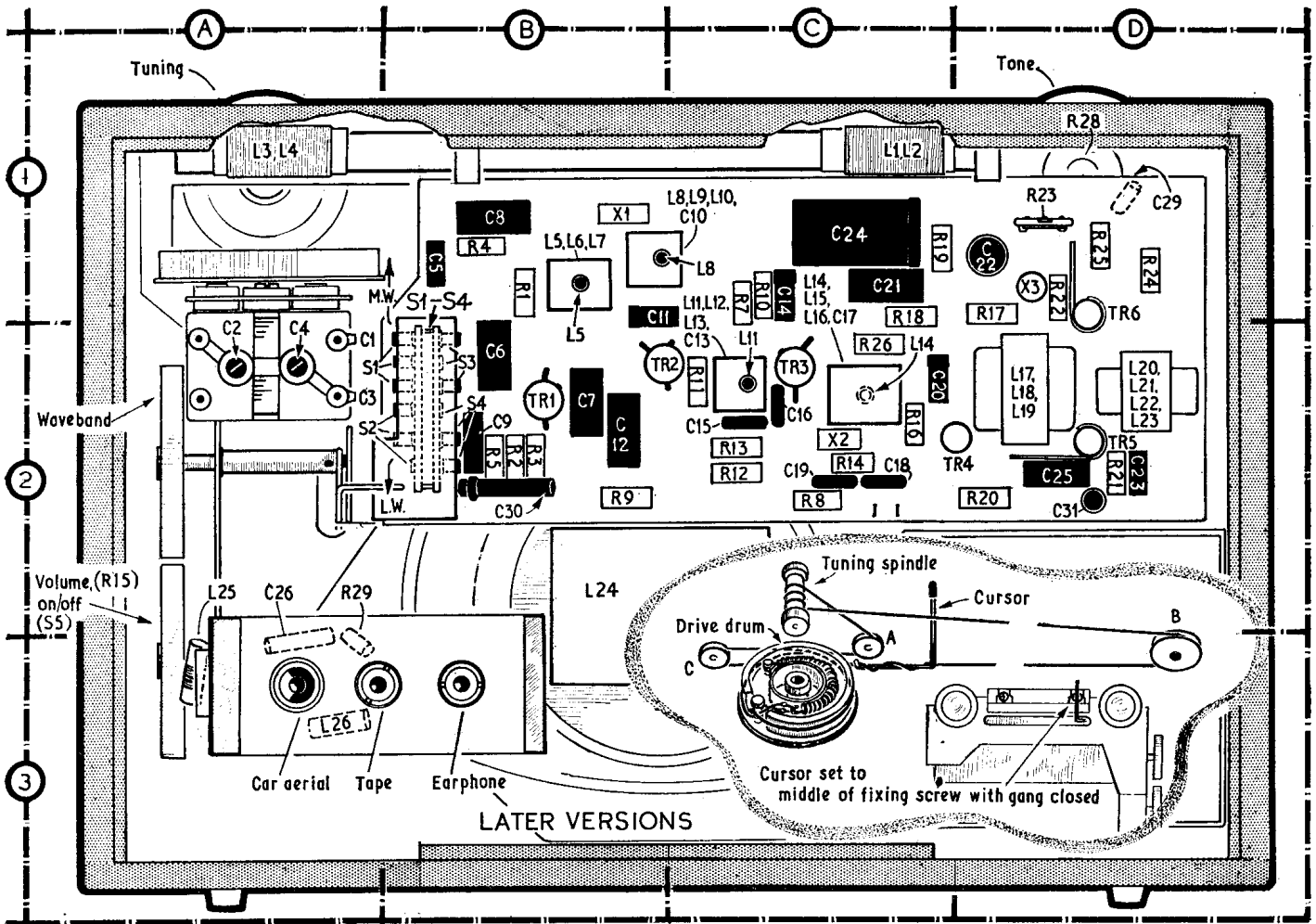
\*In some receivers R21 is changed to 47k $\Omega$ , C25 is omitted and an additional capacitor of 0.047 $\mu$ F is shunted across the loudspeaker connections.

†In earlier production receivers R23 is a fixed value of 33 $\Omega$  or 43 $\Omega$  and X3 is omitted.

Resistors		Capacitors		Coils		Miscellaneous	
R1	33k $\Omega$	C1	—	L1	1.5	S1-S4	—
R2	6.8k $\Omega$	C2	—	L2	—	S5	—
R3	1k $\Omega$	C3	—	L3	6.0	X1	OA79
R4	470 $\Omega$	C4	—	L4	—	X2	OA79
R5	100k $\Omega$	C5	68pF	L5	3.5	X3†	AA129
R7	100k $\Omega$	C6	0.01 $\mu$ F	L6	—		
R8	12k $\Omega$			L7	—		
R9	470 $\Omega$			L8	—		
R10	2.2k $\Omega$			L9	2.0		
R11	22k $\Omega$			L10	—		
R12	4.7k $\Omega$			L11	—		
R13	680 $\Omega$						
R14	470 $\Omega$						
R15	5k $\Omega$						
R16	820 $\Omega$						
R17	10k $\Omega$						
R18	56k $\Omega$						
R19	390 $\Omega$						
R20	680 $\Omega$						
R21*	390k $\Omega$						
R22	2.2k $\Omega$						
R23†	200 $\Omega$						
R24	3.3 $\Omega$						
R25	3.3 $\Omega$						
R26	390 $\Omega$						
R28	20k $\Omega$						
R29	47k $\Omega$						
C7	0.022 $\mu$ F						
C8	0.1 $\mu$ F						
C9	180pF						
C10	91pF						
C11	32 $\mu$ F						
C12	0.047 $\mu$ F						
C13	91pF						
C14	32 $\mu$ F						
C15	0.047 $\mu$ F						
C16	0.047 $\mu$ F						
C17	200pF						
C18	0.01 $\mu$ F						
C19	0.01 $\mu$ F						
C20	1.6 $\mu$ F						
C21	100 $\mu$ F						
C22	200 $\mu$ F						
C23	22pF						
C24	640 $\mu$ F						
C25*	0.01 $\mu$ F						
C26	0.01 $\mu$ F						
C29	0.1 $\mu$ F						
C30	100pF						
C31	2,700pF						
L12	2.0						
L13	—						
L14	—						
L15	1.0						
L16	—						
L17	220.0						
L18	60.0						
L19	60.0						
L20	1.0						
L21	1.0						
L22	1.0						
L23	1.0						
L24	30.0						
L25	12.0						
L26	—						



*Circuit diagram of the L3G36T & ST428T*



View of receiver from rear with back cover removed giving component locations, also sketch of drive cord assembly. On earlier version printed panels some output stage components were arranged differently as shown in illustration below (see also component table footnotes)

**Circuit Alignment—Continued**

- 5.—Turn the tuning gang to line up the cursor with the left-hand marker on the tuning scale. Feed in a 1,610 kc/s signal and adjust C4 for maximum output.
- 6.—Tune receiver to 500m. Feed in a 600 kc/s signal and adjust L1 for maximum output.
- 7.—Tune receiver to 231m. Feed in a 1,300 kc/s signal and adjust C2 for maximum output.
- 8.—Repeat operations 4-7 as necessary.
- 9.—Switch receiver to l.w. and turn the tuning gang to maximum capacitance. Reconnect the signal generator to the S3 side of C6. Feed in a 145kc/s signal and adjust C30 for maximum output.
- 10.—Transfer the signal generator to the r.f. coupling loop and tune the receiver to 1,622m. Feed in a 185kc/s signal and adjust L3 for maximum output.
- 11.—Repeat operations 9 and 10 as necessary.

**GENERAL NOTES**

**Dismantling.**—To remove the chassis from the case, remove the case back cover by releasing two captive coin-slotted screws in the base.

Remove the battery and battery holder. Take out four screws, one from each corner of the case securing the front moulding to the case, and withdraw the chassis and front moulding from the front.

To remove the chassis from the front

moulding, remove three screws securing the socket plate assembly and two chassis securing screws, one situated above the waveband knob and the other near the tone control mounting plate. Unsolder the loud-speaker leads and withdraw the chassis.

To gain access to the underside of the printed panel, remove two fixing screws and withdraw the panel from slots in the rod aerial rubber mounting brackets.

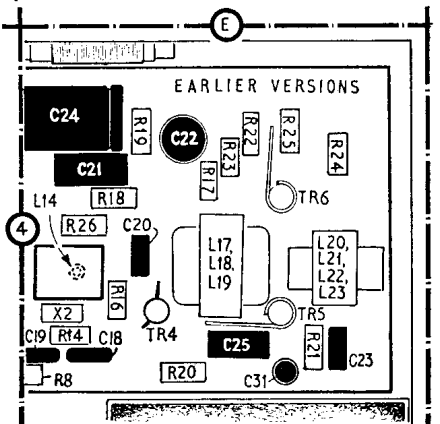
**Drive Cord Replacement.**—To fit a replacement scale drive cord refer to the sketch above where the drive assembly is shown with the tuning gang in the fully meshed position. Make up a new cord and attach one end of the cord to the tension spring. Lead the cord clockwise round the drive drum to pulley A then to the tuning spindle and wind 2½ turns anti-clockwise from front to rear. Route the cord over pulley B, across to pulley C, pass ½ turn round and back to the tuning drum. Secure the free end to the tension spring. With the tuning gang fully closed, set the cursor over the centre of the fixing screw as shown in the sketch.

**Output Collector Current Setting.**—On later receivers R23 preset control is provided. It should be adjusted for correct output collector current as follows:

Disconnect the link between points A and B on the printed panel, located on the component side of the panel just below the output transformer. Insert a d.c. milliammeter into circuit in place of the link. Make a temperature check near the printed panel and adjust R23 for 4.5mA at 18 deg C (64.4 deg F), 5.3mA at 24 deg C

(75 deg F) or 6.0mA at 30 deg C (86 deg F) with no signal input.

**Replacement of Driver Transformer L17-L19.**—In the event of the driver transformer fitted to early receivers requiring replacement, the two connecting leads to L17 (primary) should be discarded and the new transformer fitted with L17 pin connections soldered direct to the printed circuit.



Showing part of the printed panel used in early receivers: serial numbers up to 4049 (L3G36T) and up to 2934 (ST428T), where the component layout is slightly different