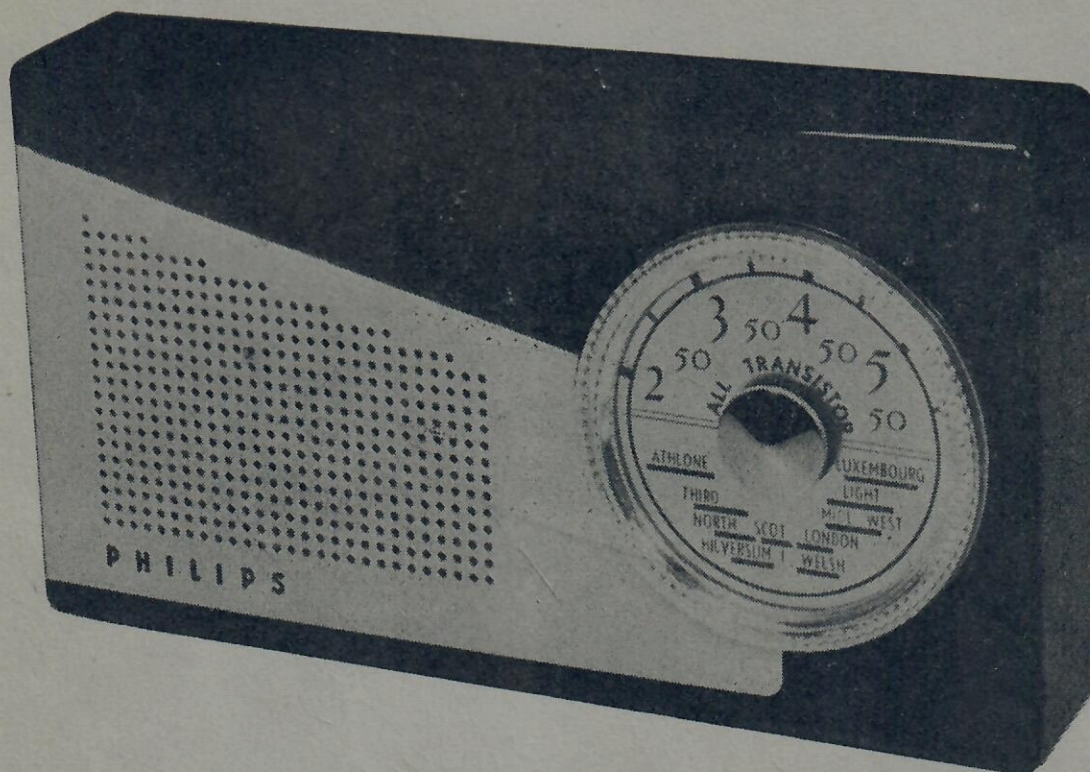


SERVICE MANUAL

PHILIPS

“PERSONIC”



Radio Receiver Type L1G75T



SERVICE DEPARTMENT
WADDON FACTORY ESTATE
CROYDON . SURREY

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SERVICE MANUAL FOR THE

PHILIPS RADIO RECEIVER

TYPE L1G75T

INTRODUCTION

The L1G75T is a transistor operated pocket portable receiver. All components, together with batteries and loudspeaker are mounted on a paxolin plate (conventionally wired) and sockets for the connection of high impedance headphones are included.

Tr.1	OC44	Frequency Changer.
Tr.2	OC45	1st I.F. Amplifier.
Tr.3	OC45	2nd I.F. Amplifier.
Tr.4	OC71	1st A.F. Amplifier.
Tr.5	OC71	2nd A.F. Amplifier.
Tr.6)	OC72	(Matched pair) Output.
Tr.7)		
X1	OA95	Detector.

SUPPLY VOLTAGE

6 V.

CONSUMPTION

6—9 mA. (No signal.)

BATTERIES

Four 1.5 V. batteries of any of the following types are required:—

Ever Ready D14	Vidor V0030
Ever Ready U12	Vidor V0028

WAVEBAND RANGE

Medium Wave 185—580 metres.

TRIMMING FREQUENCIES

I.F.	470 Kc/s.
R.F.	512 Kc/s, 1,630 Kc/s, 600 Kc/s, 1,500 Kc/s.

HEADPHONE

Type AS 9110.

CABINET DIMENSIONS

Height 3½". Width 6¼". Depth 1¾".

REMOVING THE CASE

Remove the rear panel (coin slotted screws). Remove the knurled screw in the centre of the scale, the tuning knob, spring washer, felt washer and scale. Remove the three countersunk fixing screws under the scale and slide the receiver out of the case.

PRECAUTIONARY NOTES

Information concerning the use of transistors has been published in various technical journals and books. For engineers who are not yet familiar with the technique involved, the following notes may be of assistance. It will be evident that certain methods of fault-finding, measurements, etc., hitherto regarded as "normal" can cause damage to equipment using transistors.

1. Transistors are temperature conscious. The current which flows between base and collector (with emitter disconnected) is approximately doubled for every 7° C. temperature rise. This current is multiplied by the amplification factor when the emitter is grounded. There is a maximum working temperature above which the current will increase until the transistor is destroyed. Apart from working conditions, heat alone is detrimental and they should not be subjected to temperatures above 60° C. in storage, etc.
2. A temperature rise of about 1° C. is produced by a dissipation of about 2.5 mW. in a transistor. For this reason the output transistors are equipped with cooling fins which must always be fitted when the receiver is operative.

3. The output transistors (Tr.6, Tr.7) are supplied as a matched pair. If either one or both transistors require replacement a replacement pair must be used.
4. When a resistance meter is being used for fault-finding, care must be taken to ensure that the voltage applied from the meter battery does not exceed the normal circuit potential at the point being measured. Due to current flow through the transistors caused by the meter battery, false readings will be observed, when making resistance checks on some parts of the circuit. In these instances it will be necessary to disconnect the component under test.
5. Voltage surges can cause damage. Although low voltages are involved, it is essential to switch the apparatus off before replacing transistors and components. Soldering to the transistor leads must be done rapidly with the aid of a heat shunt (i.e., grip the leads with a pair of pliers).
6. Transistors are photo-electric. Glass cased units are painted black. This paint must not be scratched or chipped. Whilst exposure to light does no harm, it will modulate the transistor current (e.g., such a transistor operating under a fluorescent light will produce hum).
7. Transistors are adversely affected by humidity. The glass cased units are fragile, and a crack may not be conspicuous. Ingress of moisture will cause the unit to deteriorate at a rate depending on the size of the flaw. Care must, therefore, be exercised in handling and storage.

TRIMMING INSTRUCTIONS

General

- (a) Sound output should be observed by disconnecting the loudspeaker and connecting an output meter, in parallel with a 5Ω load resistor across the loudspeaker leads. An output level of 50 mW. should be used when trimming.
- (b) If a suitable trimming tool is not available for trimming the cores of the I.F. and oscillator coils, one can easily be made by cutting a slot in the end of an insulated No. 10 knitting needle.

I.F. Trimming

Turn the volume control to maximum and the tuning gang to minimum.

Apply a modulated signal of 470 Kc/s to the base of Tr.1 via a 470 KpF capacitor.

Trim the following cores for maximum output:—

S8, S6, S4.

R.F. Trimming

When trimming the R.F. section of the receiver the applied signal is loosely coupled to the internal "Ferreoceptor" aerial. This can be conveniently done by winding two or three turns of wire round the "Ferreoceptor" rod and connecting the generator output lead to one end of the wire.

(a) Oscillator Trimming

Turn the volume control and tuning gang to maximum.

Adjust the generator frequency to 512 Kc/s and trim S2 for maximum output.

Turn the gang to minimum, adjust the generator frequency to 1,630 Kc/s and trim C23 for maximum output.

Repeat as necessary.

(b) Aerial Trimming

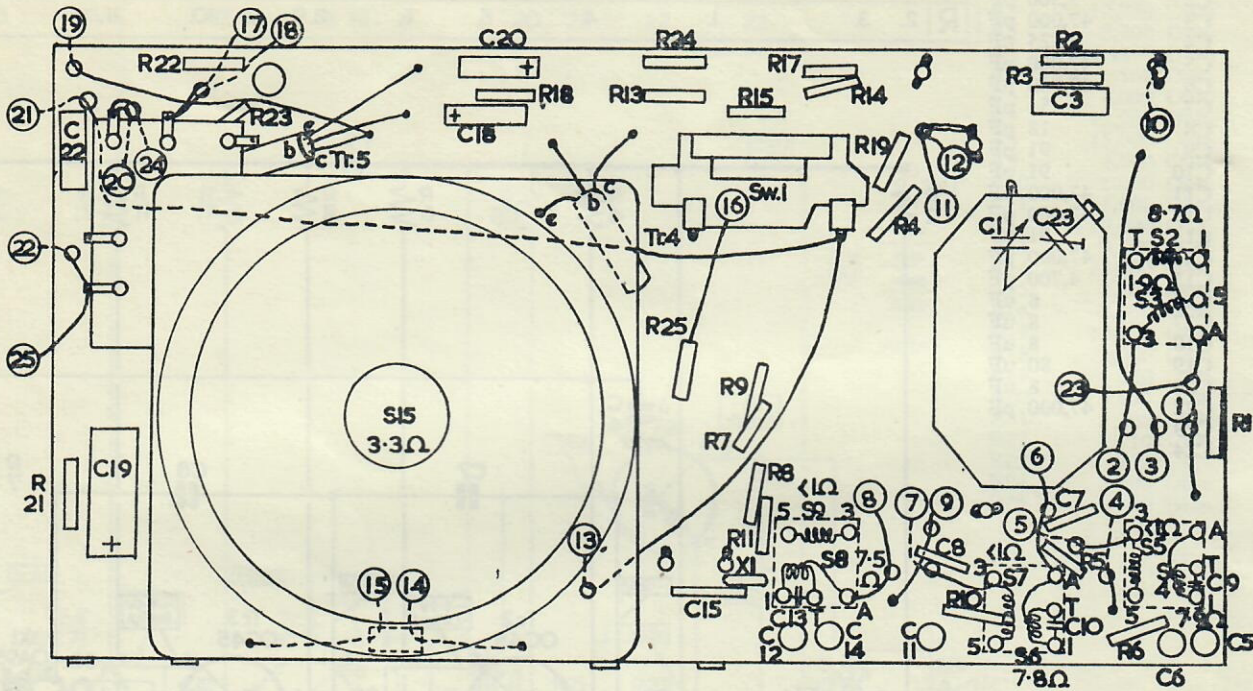
Set the generator to 600 Kc/s.

By rotating the gang, tune the receiver to this frequency, and adjust S1/S1a for maximum output.

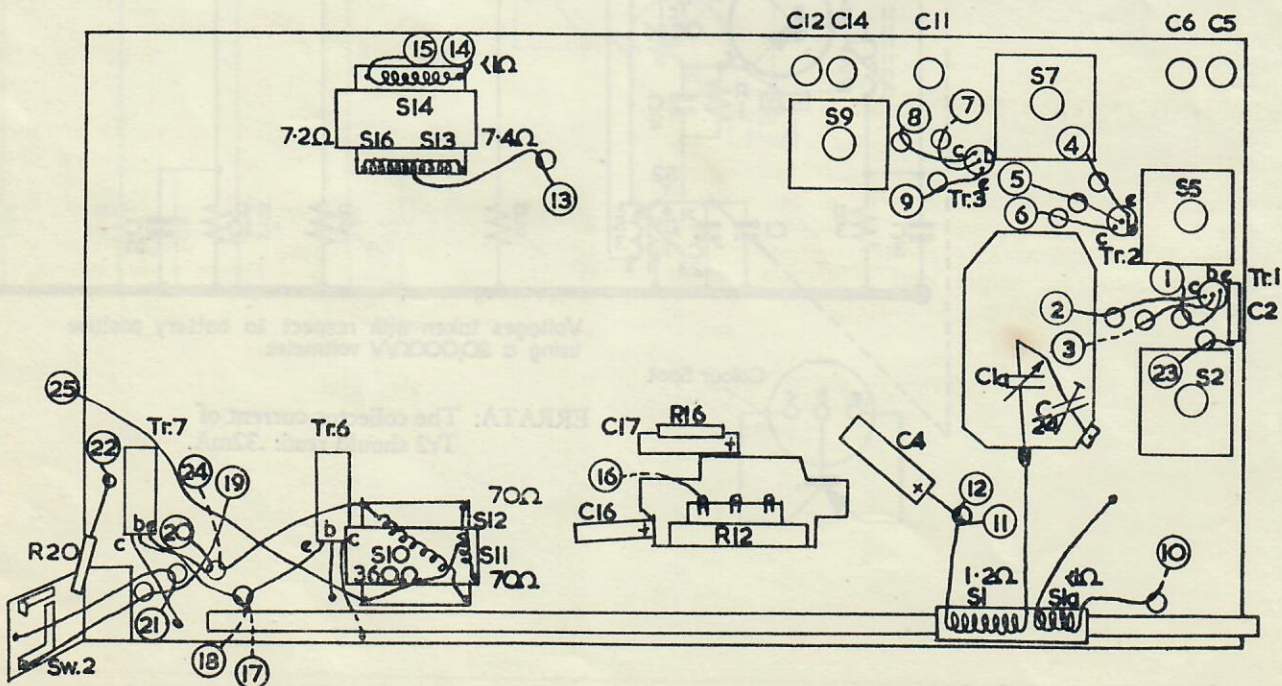
Set the generator to 1,500 Kc/s.

By rotating the gang, tune the receiver to this frequency and trim C24 for maximum output.
Repeat as necessary.

S	15.		8.9.			7.6.		5.4.2.3.	
C	22.19.		20.18.	15.	13.12.14.	11.8.	10.7.1.3.2.	6.9.5.	
R	21.	22.23.	18.	25.24.13.15.9.7.11.17.14.19.4.		10.	5.2.3.6.	1.	



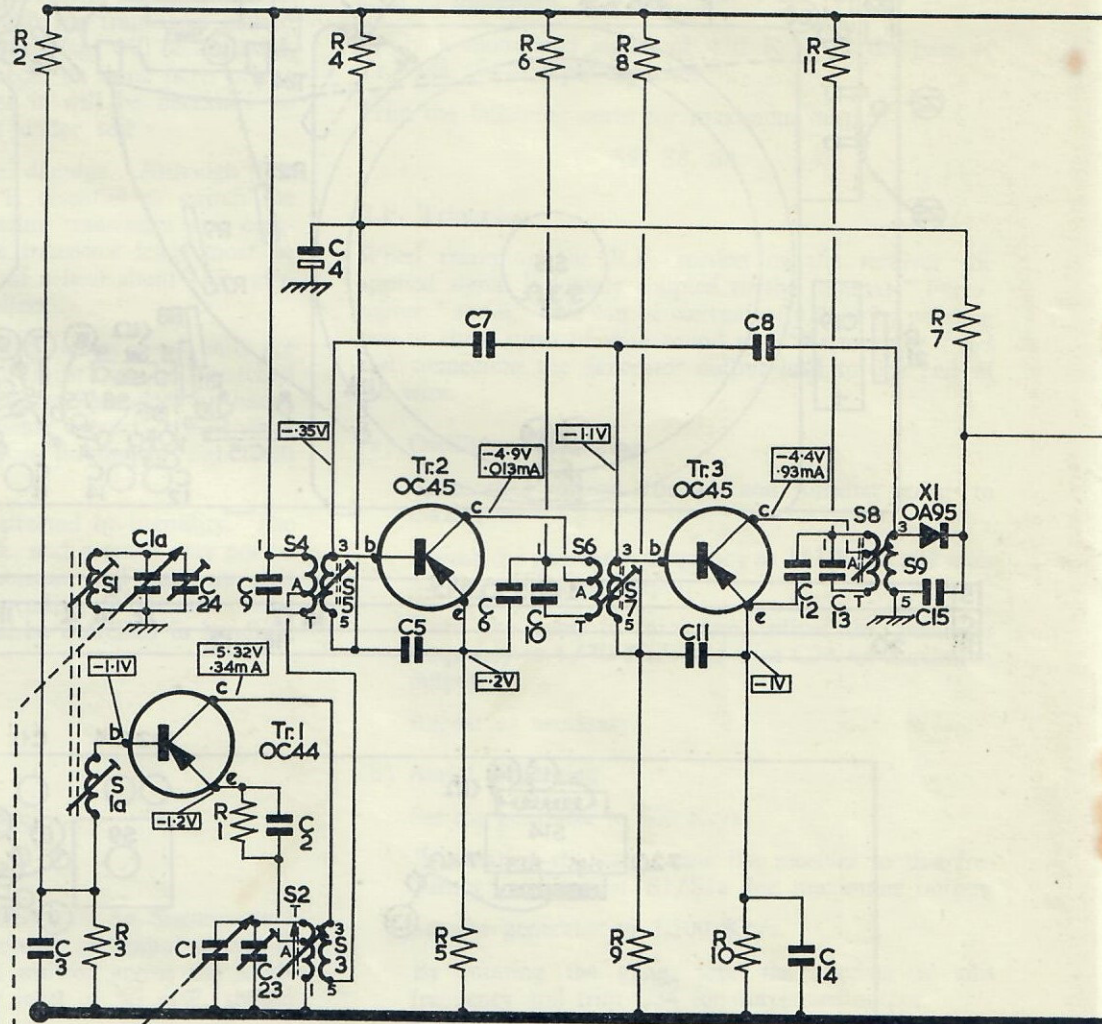
S	16.14.13.10.11.12.				9.		1. 7. 1a.		5.2.
C					16.17.	12.14.4.	11.	1a. 24. 6. 5.2.	
R	20.				16. 12.				



CAPACITORS

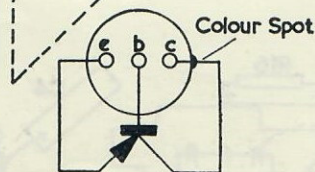
- C1-1A 3,300 pF
- C2 47,000 pF
- C3 25 uF
- C4 47,000 pF
- C5 47,000 pF
- C6 47,000 pF
- C7 54 pF
- C8 18 pF
- C9 91 pF
- C10 91 pF
- C11 47,000 pF
- C12 47,000 pF
- C13 91 pF
- C14 47,000 pF
- C15 4,700 pF
- C16 8 uF
- C17 8 uF
- C18 8 uF
- C19 80 uF
- C20 8 uF
- C22 47,000 pF
- C23
- C24

S	I. Ia.	4.3.2.5.	6. 7	8. 9
C	3. Ia. 24. I. 23. 9 2.	4. 5.	7. 6. 10.	II. 8. 12. 14. 13. 15.
R	2. 3.	I. 4.	5. 6. 8. 9.	10. II. 7.



Voltages taken with respect to battery positive using a 20,000Ω/V voltmeter.

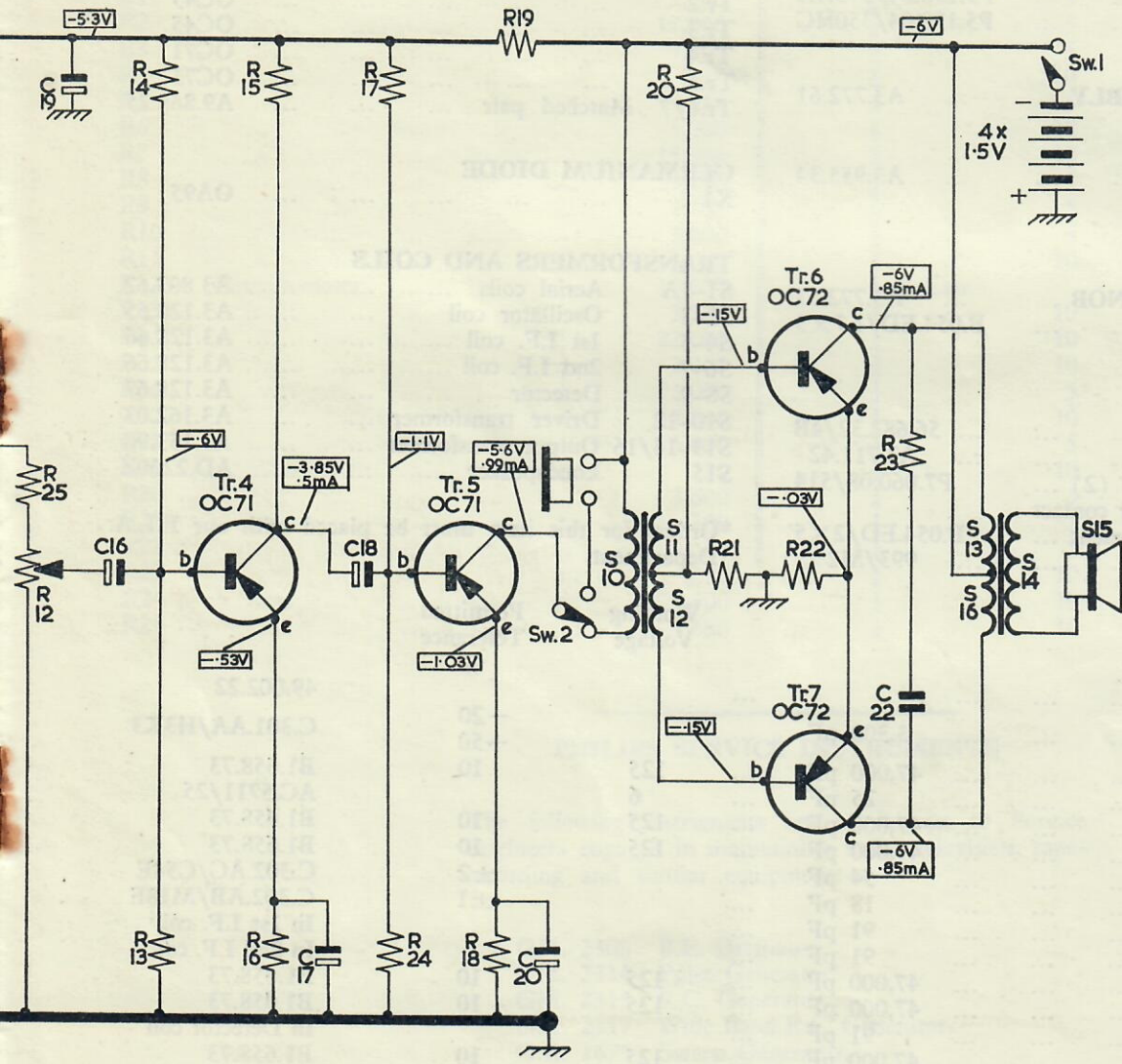
ERRATA: The collector current of Tr2 should read: .32mA.



				10. 11. 12.			13. 16. 14. 15.		
19. 16.		17. 18.		20.		22.			
25. 12.	14. 13.	15. 16.	17. 24.	18. 19.	20. 21.	22.	23.		

RESISTORS

R1	3,300 Ohm
R2	12,000 Ohm
R3	3,300 Ohm
R4	0.18M Ohm
R5	560 Ohm
R6	1,000 Ohm
R7	15,000 Ohm
R8	15,000 Ohm
R9	4,700 Ohm
R10	1,000 Ohm
R11	1,000 Ohm
R12	10,000 Ohm
R13	3,300 Ohm
R14	22,000 Ohm
R15	2,700 Ohm
R16	1,000 Ohm
R17	12,000 Ohm
R18	1,000 Ohm
R19	220 Ohm
R20	3,600 Ohm
R21	100 Ohm
R22	10 Ohm
R23	270 Ohm
R24	3,300 Ohm
R25	680 Ohm



CIRCUIT DIAGRAM

SPARE PARTS LIST—TYPE L1G75T

CASE ASSEMBLY

Front moulding complete—Black ...	...	A3.779.64
Front moulding complete—Blue ...	...	A3.781.85
Sponge pad for speaker ...	...	P7.060.10/319
Rear cover plate—Black	P5.190.04/350HA
Rear cover plate—Blue	P5.190.04/350HC

TUNING KNOB ASSEMBLY	A3.772.61
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STATION SCALE	A3.955.34
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CHASSIS ASSEMBLY

VOLUME CONTROL KNOB	A3.772.57
Fixing screw	B.054.ED/1.7×3

MISCELLANEOUS

Rod for aerial coils ...	...	56.682.32/4B
Aerial retaining clip (2) ...	...	A3.711.42
Rubber grommet for aerial (2) ...	...	P7.060.08/514
Screw (2 mm.) for battery contact and socket plate replacement ...	...	B.054.ED/2×5
Nut for above ...	...	993/M2

CAPACITORS

			Working Voltage	Permitted Tolerance %	
C1-1A	Gang	...	...	...	49.002.22
C2	Ceramic	...	3,300 pF	-20 +50	C.301.AA/H3K3
C3	Polyester	...	47,000 pF	125	B1.658.73
C4	Electrolytic	...	25 uF	6	AC.5711/25
C5	Polyester	...	47,000 pF	125	B1.658.73
C6	Polyester	...	47,000 pF	125	B1.658.73
C7	Ceramic	...	54 pF	±2	C.302.AC/C54E
C8	Ceramic	...	18 pF	±1	C.302.AB/M18E
C9	...	...	91 pF	...	In 1st I.F. coil
C10	...	...	91 pF	...	In 2nd I.F. coil
C11	Polyester	...	47,000 pF	125	B1.658.73
C12	Polyester	...	47,000 pF	125	B1.658.73
C13	...	...	91 pF	...	In Detector coil
C14	Polyester	...	47,000 pF	125	B1.658.73
C15	Ceramic	...	4,700 pF	-20 +50	C.301.AA/H4K7
C16	Electrolytic	...	8 uF	6	AC.5711/8
C17	Electrolytic	...	8 uF	6	AC.5711/8
C18	Electrolytic	...	8 uF	6	AC.5711/8
C19	Electrolytic	...	80 uF	6	AC.5711/80
C20	Electrolytic	...	8 uF	6	AC.5711/8
C22	Polyester	...	47,000 pF	125	B1.658.73
C23					} In Gang Capacitor
C24					

*HEADPHONE	AS 9110
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TRANSISTORS

Tr.1	OC44
Tr.2	OC45
Tr.3	OC45
Tr.4	OC71
Tr.5	OC71
Tr.6/7 Matched pair	A9.868.25

GERMANIUM DIODE

X1	OA95
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TRANSFORMERS AND COILS

S1-1A Aerial coils	A3.803.62
S2-3 Oscillator coil	A3.128.65
S4-5 1st I.F. coil ...	...	A3.128.66
S6-7 2nd I.F. coil ...	...	A3.128.66
S8-9 Detector ...	...	A3.128.67
S10-12 Driver transformer ...	...	A3.162.03
S13-14/16 Output transformer ...	...	A3.153.90
S15 Loudspeaker ...	...	AD.2200Z

*Orders for this item must be placed with our E.L.A. Department.

SPARE PARTS LIST—TYPE L1G75T—(Contd.)

RESISTORS

Wattage is based upon an ambient temperature of 70° C.						Wattage	Permitted Tolerance	
						Ohms	%	
R1	...	...	...	...	...	3,300	5	48.426.05/3K3
R2	...	...	...	...	...	12,000	5	48.426.10/12K
R3	...	...	...	...	...	3,300	5	48.426.10/3K3
R4	...	...	...	...	...	0.18M	10	48.426.10/180K
R5	...	...	...	...	...	560	5	48.426.10/560E
R6	...	...	...	...	...	1,000	10	48.426.10/1K
R7	...	...	...	...	...	15,000	10	48.426.10/15K
R8	...	...	...	...	...	15,000	5	48.426.10/15K
R9	...	...	...	...	...	4,700	5	48.426.10/4K7
R10	...	...	...	...	...	1,000	5	48.426.10/1K
R11	...	...	...	...	...	1,000	10	48.426.10/1K
R12	Potentiometer	...	...	...	...	10,000	Log Law	B1.514.06
R13	...	...	...	...	...	3,300	10	48.426.10/3K3
R14	...	...	...	...	...	22,000	10	48.426.10/22K
R15	...	...	...	...	...	2,700	10	48.426.10/2K7
R16	...	...	...	...	...	1,000	5	48.426.10/1K
R17	...	...	...	...	...	12,000	10	48.426.10/12K
R18	...	...	...	...	...	1,000	5	48.426.10/1K
R19	...	...	...	...	...	220	10	48.426.10/220E
R20	...	...	...	...	...	3,600	5	B8.305.05B/3K6
R21	...	...	...	...	...	100	5	48.426.10/100E
R22	...	...	...	...	...	10	5	48.426.10/10E
R23	...	...	...	...	...	270	10	48.426.10/270E
R24	...	...	...	...	...	3,300	10	48.426.10/3K3
R25	...	...	...	...	...	680	10	48.426.10/680E

PHILIPS SERVICE INSTRUMENTS

The following instruments are of interest to Service Engineers engaged in maintaining radio, television, tape-recording and similar equipment:—

GM. 2308	B.F. Oscillator.
GM. 2314	Pulse Generator.
GM. 2315	R.C. Generator.
GM. 2317	Wide Band R.C. Generator.
GM. 2675	Sweep Generator.
GM. 2886	Radio Type Sweep Generator.
GM. 4144	R.C. Measuring Bridge.
GM. 4575	Signal Tracing Probe for GM. 5655.
GM. 4579	E.H.T. Probe for GM. 6009.
GM. 5650	T.V. Service Oscilloscope.
GM. 5654	H.F. Oscilloscope.
GM. 5655	Radio Service Oscilloscope.
GM. 6009	Electronic Test Meter.
GM. 6012	Millivolt Meter.
GM. 6014	H.F. Millivolt Meter.
GM. 7628	Signal Tracer.