

SERVICE INFORMATION FOR THE

PHILIPS

'303' PORTABLE RECEIVER L3G03T

INTRODUCTION

The L3G03T is an M.W.-L.W. battery-operated portable radio. Six transistors and one crystal diode are used and a car aerial input socket is provided.

TRANSISTOR COMBINATION

T1	OC44	Frequency Changer.
T2	OC45	1st I.F. Amplifier.
T3	OC45	2nd I.F. Amplifier.
T4	OC81D	Driver.
T5	OC81	Output (Matched Pair).
T6	OC81	
XI	OA70	Detector. (Diode.)

SUPPLY VOLTAGE

18 volts D.C.

BATTERY CONSUMPTION

With a battery voltage of 18 volts and the receiver set to M.W. under no signal conditions the battery drain should be 12mA. average.

BATTERY TYPES

Every Ready PP9, Vidor T6009. Two required.

WAVEBAND RANGES

M.W. 187-555 metres.
L.W. 1215-2000 metres.

OUTPUT

800 mW. approx.

TRIMMING FREQUENCIES

I.F. 470 Kc/s.
M.W. 632 Kc/s. 1450 Kc/s.
L.W. 180 Kc/s.

CABINET DIMENSIONS

Height 7 $\frac{3}{4}$ in. Width 10 $\frac{5}{8}$ in. Depth 3 $\frac{1}{2}$ in.

UNCASING

a) Separating the Cabinet

Place receiver face downwards on a soft cloth. Release the two screws (captive) at the back of the receiver and lift off the rear moulding. When replacing, it is important to ensure that the locating lugs and sockets on their respective mouldings interlock correctly.

(b) Releasing the I.F. Panel

With the rear moulding 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.

(c) Removing Chassis Assembly

The main chassis, tuning and drive assemblies may be detached from the front moulding as one unit. Remove four (some sets three) fixing screws and unsolder both the inter-panel connecting lead and earth return wire to speaker chassis.

REPLACING DRIVE CORD

Two types of drive-drums have been used during production with three different drive cord arrangements. For identification and procedure see drawings and Spares List.

TRIMMING INSTRUCTIONS

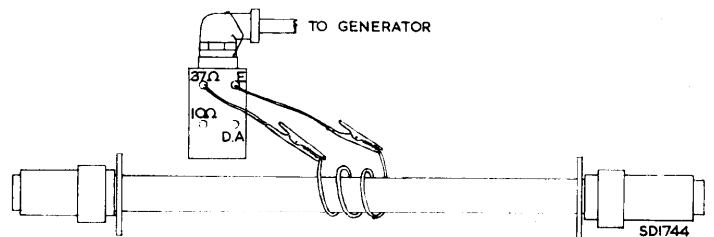
Pointer Setting

Turn tuning gang to maximum and adjust pointer to the right-hand trimming mark.

General

(a) Output should be observed with an output meter set for a 30 Ω load impedance, trimming level, 50mW. Alternatively, an A.C. voltmeter (2.5V. range) with a 30 Ω resistor in parallel may be used, trimming level, 1-1 $\frac{1}{2}$ V. In either case, the loudspeaker must be disconnected and the meter connected to the receiver output leads. Adjust volume control for maximum output.

(b) When trimming the aerial circuits, a convenient coupling between the generator and receiver may be made by winding two or three turns of insulated wire around the centre of the ferrite aerial. A low impedance output from the generator should be connected to this coil.



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(c) 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 a non-metallic size 10 knitting needle.

I.F. Trimming

- 1.—Switch to M.W.
- 2.—Turn the tuning gang to minimum and the volume control to maximum.
- 3.—Connect a signal generator to the base of T1 via a 470 KpF capacitor and trim as follows :

Frequency				Trim for maximum
470 Kc/s	..	..	..	L14/L16
472 Kc/s	..	..	..	L11/L13
468 Kc/s	..	..	..	L8/L10

R.F. Trimming

(a) Oscillator trimming (M.W.)

- 1.—Switch to M.W. and turn the tuning gang to maximum.
- 2.—Apply a modulated signal of 537 Kc/s to the base of T1 via a 470 KpF capacitor.
- 3.—Trim L5/L6 for maximum.
- 4.—Set the gang so that the pointer lines up with the left-hand scale trimming mark.
- 5.—Adjust the generator frequency to 1610 Kc/s and trim C10 for maximum output. Repeat as necessary.

(b) Aerial trimming (M.W.)

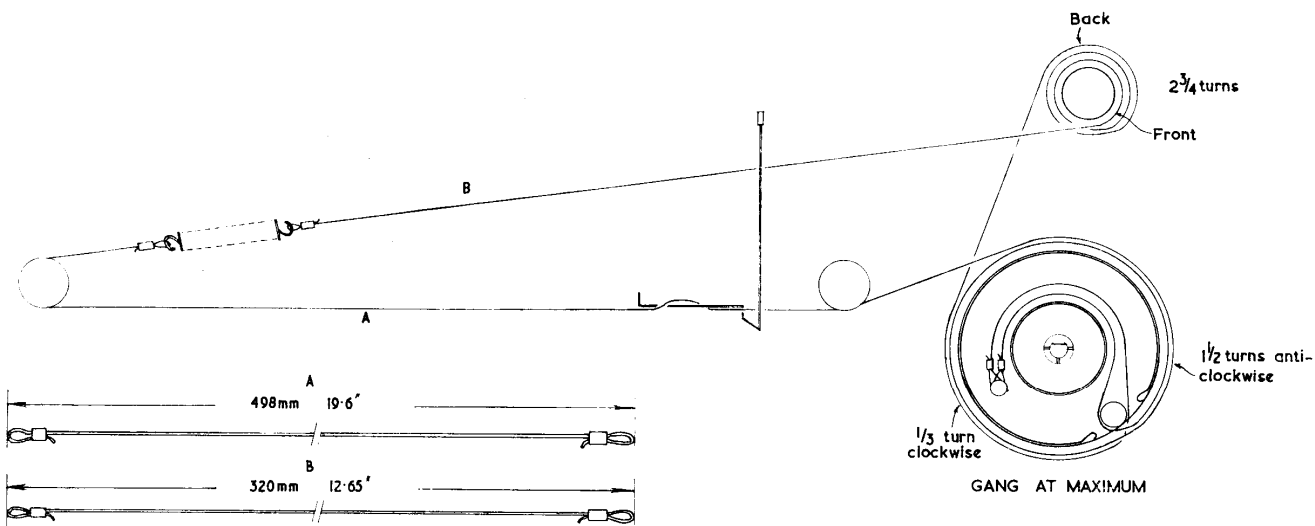
- 1.—Switch to M.W. and turn the volume control to maximum.
- 2.—Apply a modulated signal of 632 Kc/s to the base of T1 via a 470 KpF capacitor.
- 3.—Rotate the tuning gang to the position of maximum output.
- 4.—Without altering the gang position, disconnect the generator from T1 and loosely couple the signal to the aerial circuit.
- 5.—Trim L3/L4 for maximum output.
- 6.—Change the input frequency to 1450 Kc/s and without altering the input position, tune the gang for maximum and trim C11 for maximum output.

(c) Oscillator trimming (L.W.)

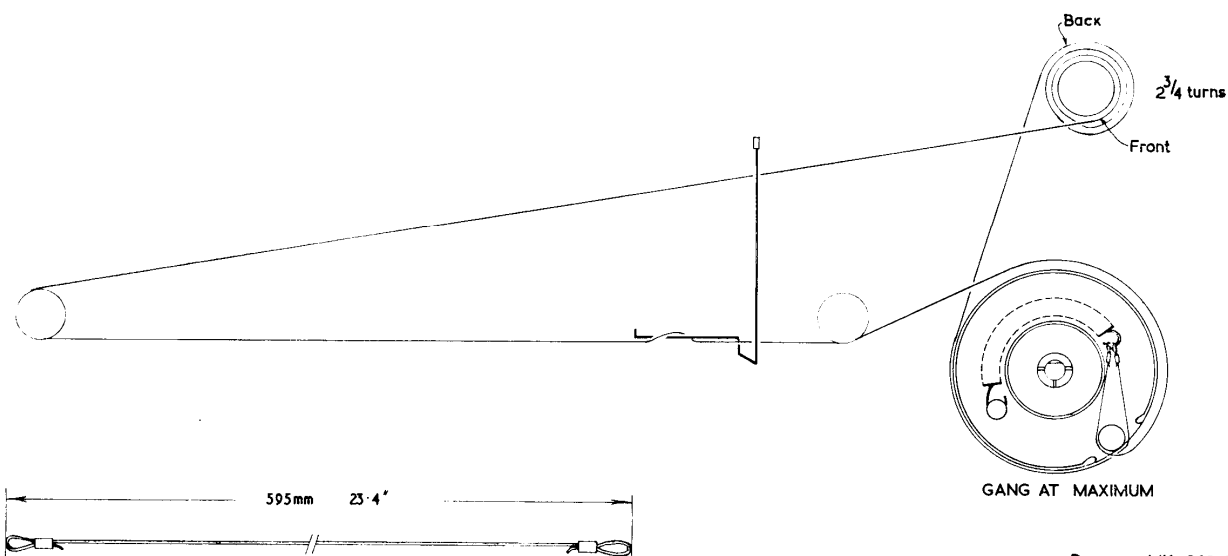
- 1.—Switch to L.W. and turn the volume control to maximum.
- 2.—Apply a modulated signal of 180 Kc/s to the base of T1 via a 470 KpF capacitor.
- 3.—Rotate the gang to the position of maximum output and trim C8 for maximum.

(d) Aerial trimming (L.W.)

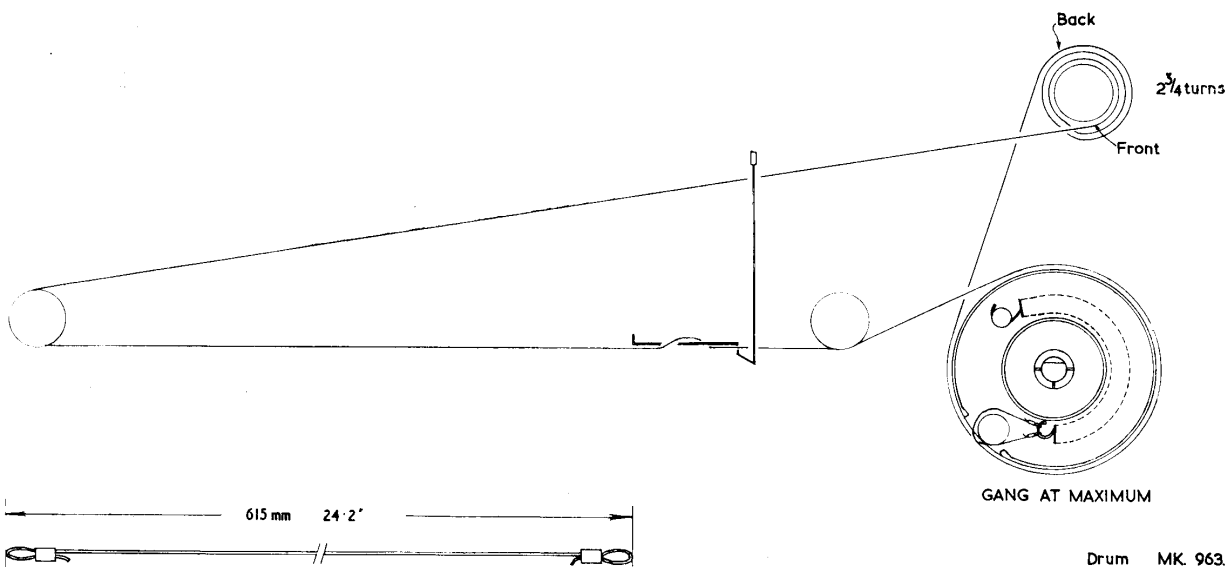
- 1.—Switch to L.W. and turn the volume control to maximum.
- 2.—Apply a modulated signal of 180 Kc/s to the base of T1 via a 470 KpF capacitor.
- 3.—Rotate the gang to the position of maximum output.
- 4.—Without altering the gang position, disconnect the generator from T1 and loosely couple the signal to the aerial circuit.
- 5.—Trim L1/L2 for maximum. Repeat Section (b).



Drum MK. 963.05
Spring MK. 740.43

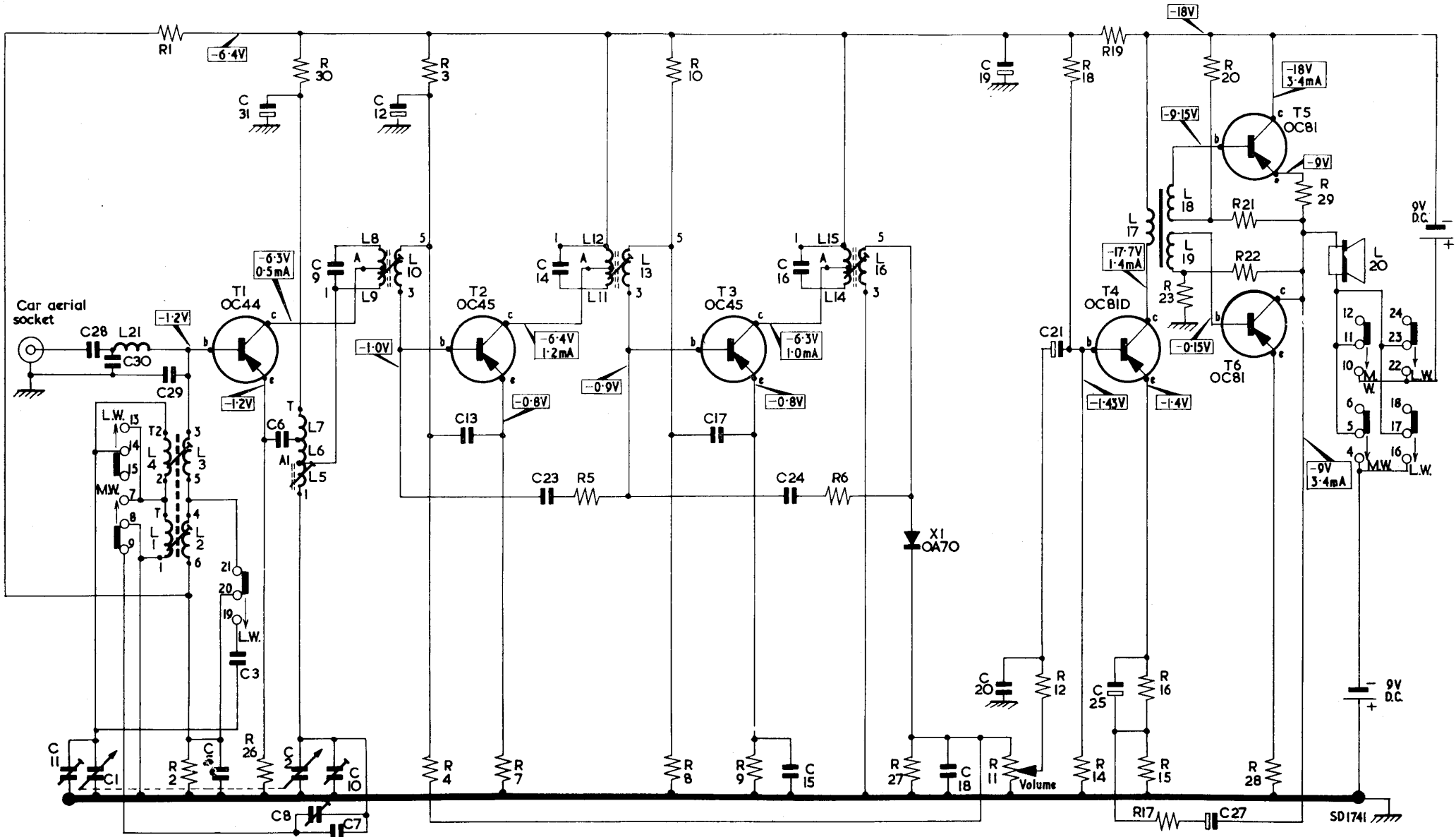


Drum MK. 963.05
Spring MK. 740.43



Drum MK. 963.16
Spring MK. 740.56

L	21.	4. 1.	3. 2.	7. 6. 5.	8. 9. 10.	12. 11. 13.	15. 14. 16.	17. 18. 19.	20.						
C	11. 1.	28. 30.	29	5. 3.	31. 6. 2. 8. 10. 7. 9.	12.	13.	23. 14.	17.	24. 15. 16.	18.	19. 20.	21.	25.	27.
R	1.	2.	26. 30.	3. 4.	7.	5.	10. 8.	9.	6.	27.	11. 12. 18. 14. 19.	16. 15. 17. 23. 20. 21.	22.	28. 29.	

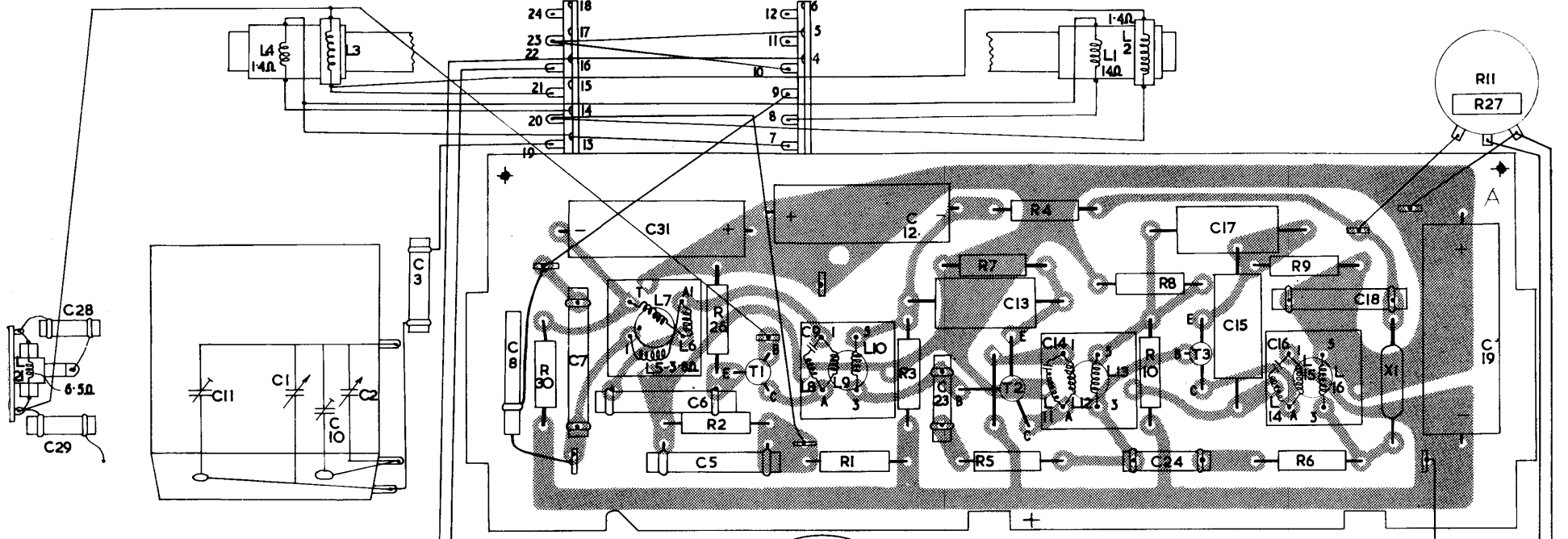


In some sets C30 is not fitted. R25 has been added across L1. (See Spares List.)

All voltages taken with respect to chassis using a 20,000 /V meter. Set switched to M.W.

CIRCUIT DRAWN IN THE "OFF" POSITION.

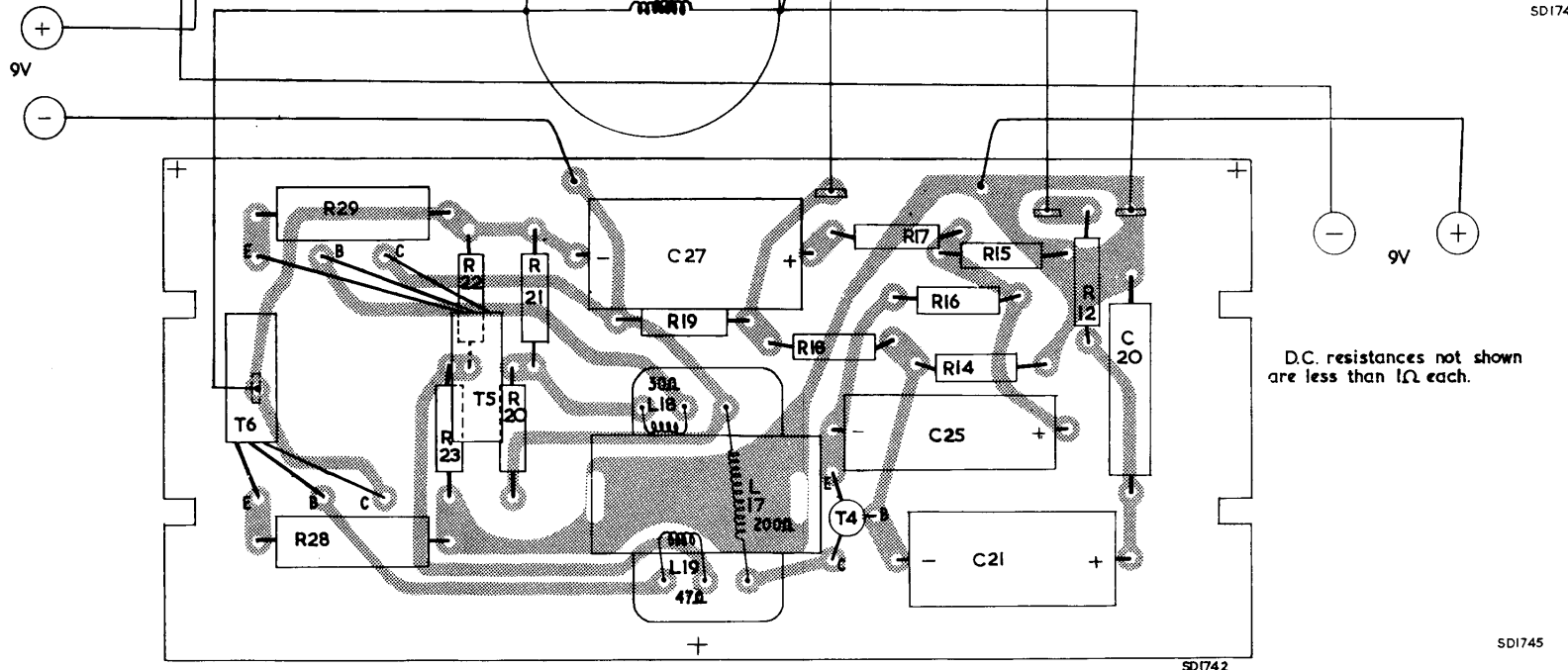
L	21.	4	3.		5	7	6	8,9	18,20	10,19	17	11	12	1	13	2.	14.	15.	16.					
C	29, 28.	11.	1	10, 2.	3.	8.	7	31	6.	5.	9	27	12	23.	13.	14, 25.	21, 24.	20	17	15.	16.	18.	19.	
R						30, 28, 29.	23	22, 20, 21, 2, 26.			1.	19.	3.	7, 18.	5.	4.	17, 16.	14.	15.	8, 10.	12.	9.	6.	11, 27.



In some sets C30 has been added between the junction C28/L21 and chassis.

R25 has been added across L1.

(See Spares List)



D.C. resistances not shown are less than 1Ω each.

SD1743

SD1745

SD1742

SPARE PARTS LIST—TYPE L3G03T

CABINET ASSEMBLY

Front moulding with grille	...	...	...	MK.983.52
Grille with word-plates	...	...	...	HY.992.19
Threaded pillar for mouldings (2)	...	...	...	MK.962.28
" Transistor " plate	...	...	...	MK.909.92
" Philips " plate	...	...	...	MK.707.20
Rear moulding—fallow brown	...	...	...	MK.990.10/FB
Rear moulding—green	...	...	...	MK.990.10/Green
Ventilation grille—fallow brown	...	...	...	MK.912.48/FB
Ventilation grille—green	...	...	...	MK.912.48/Green
Foam pad for battery (2)	...	...	...	MK.965.44
Handle	...	...	...	MK.914.37
Fixing pin for handle (2)	...	...	...	B.074.AF/3 x 10
Ornamental screw for mouldings (2)	...	...	...	MK.962.27
Retaining washer for above (2)	...	...	...	MK.450.61
Speaker clamp (4)	...	...	...	MK.751.68
CONTROL KNOBS (2)	...	...	...	MK.856.98
Spring clip (2)	...	...	...	MK.955.56
Compression spring (2)	...	...	...	MK.730.50
STATION SCALE—green	...	...	...	MK.707.19
Station scale—red	...	...	...	MK.707.34
Window for scale	...	...	...	MK.990.11
Moulded scale support (2)	...	...	...	MK.962.31
Foam strip	...	...	...	MK.682.10
Pointer assembly	...	...	...	MK.985.37

CHASSIS ASSEMBLY

PUSH BUTTON SWITCH ASSEMBLY	...	...	...	MK.966.87
Push button (3)—fallow brown	...	...	...	MK.263.08/FB
Push button (3)—green	...	...	...	MK.263.08/Green

TUNING SPINDLE ASSEMBLY	...	...	...	MK.004.49
Special washer	...	...	...	B.046.AF/4
Circlip	...	...	...	B.108.AF/2.3

DRIVE ASSEMBLY	...	...	...	MK.963.05
Drive drum	...	...	...	MK.963.16
*Drive drum	...	...	...	MK.740.43
Tension spring	...	...	...	MK.740.56
*Tension spring	...	...	...	K.299.ZZ/923
Drive cord	...	...	...	B.002.AF/3 x 5
Bushes for above	...	...	...	A3.680.02
Pulley (2)	...	...	...	B.108.AF/1.9
Circlip (2)	...	...	...	A3.602.31
Pulley mounting pin (2)	...	...	...

* (See alternative arrangements on drive layout page)

MISCELLANEOUS

Ferrite aerial rod	...	...	...	MK.425.06
Support for above (2)	...	...	...	MK.281.58
Car aerial socket assembly	...	...	...	MK.966.83
Connector stud for batteries (2)	...	...	...	MK.955.61
Connector socket for batteries (2)	...	...	...	MK.955.60
Nut for R11	...	...	...	MK.927.05
Grommets for gang mounting (3)	...	...	...	08.008.73

CAPACITORS

	Working Voltage	Permitted Tolerance %	
C1 } Gang	196pF		MK.211.21
C2 } Ceramic	110pF		
C3 } Ceramic	68pF	1	HT.930.55
C5 } Ceramic	10,000pF	+50 -20	HT.930.52
C6 } Ceramic	10,000pF	+50 -20	HT.930.52
C7 } Ceramic	180pF	10	HT.930.99
C8 } Trimmer	100pF		49.005.51
C9 } ...	91pF		In L8-10
C10 } Trimmer	2-30pF		On C1-2
C11 } Trimmer	2-30pF		
C12 } Electrolytic	10uF	50	909/D10
C13 } Polyester	82,000pF	125	906/L82K
C14 } ...	91pF		In L11-13
C15 } Polyester	82,000pF	125	906/L82K
C16 } ...	91pF		In L14-16
C17 } Polyester	82,000pF	125	906/L82K
C18 } Ceramic	10,000pF	350	HT.930.52
C19 } Electrolytic	100uF	12	909/W100
C20 } Ceramic	4,700pF	+50 -20	904/4K7
C21 } Electrolytic	1uF	50	909/D1
C23 } Ceramic	56pF	5	HT.930.54
C24 } Ceramic	22pF	5	HT.930.59
C25 } Electrolytic	100uF	6	909/A100
C27 } Electrolytic	1uF	50	909/D1
C28 } Ceramic	10,000pF	350	HT.930.52
C29 } Ceramic	56pF	5	HT.930.17/B56E
*C29 } Ceramic	18pF	350	HT.930.53
*C30 } Ceramic	56pF	350	HT.930.17/B56E
C31 } Electrolytic	50uF	12	909/B50

* (C30 may not be fitted in some sets, in which case C29 is 18pF)

Screws for above (3)	...	...	...	B.808.AD/4N x 1/4"
Distance pieces for above (3)	...	...	...	B.001.AC/4.1 x 6 x 4
Screened battery lead—red	...	...	...	R.903.KA/800C
Screened battery lead—black	...	...	...	R.903.KA/800A
Transistor heat sink	...	...	...	MK.081.07
Sleeving	...	...	...	K.558.LB/Size
Tags for printed panel	...	...	...	A3.320.36
Licence plate	...	...	...	MK.707.29

FIXING MATERIAL

SCREWS				
3 x 5 mm.	} Cheesehead	...	...	B.054.ED/3 x 5
3 x 6 mm.		...	...	B.054.ED/3 x 6
3 x 8 mm.		...	...	B.054.ED/3 x 8
3 x 12 mm.	} Self-tapping	...	...	B.054.ED/3 x 12
No. 5 x 1/8"		...	...	B.070.AD/5N x 1/8"
No. 5 x 3/16"		...	...	B.070.AD/5N x 3/16"
No. 8 x 3/8"	...	...	...	B.070.AD/8N x 3/8"

NUTS				
3 mm.	...	...	...	B.020.ED/3

WASHERS				
3 mm.	...	...	...	B.050.ED/3
4 mm.	...	...	...	B.050.AD/4

LOCK WASHERS				
3 mm.	...	...	...	B.053.AD/3

SOLDER TAGS				
3 mm.	...	...	...	B.201.AF/3

TRANSISTORS

T1	...	...	...	OC44
T2	...	...	...	OC45
T3	...	...	...	OC45
T4	...	...	...	OC81D or OC81
T5	...	...	...	OC81
T6	} Matched pair	...	...	OC81

DIODE				
X1	...	...	...	OA70

COILS and TRANSFORMERS

L1-3	Aerial coil—M.W.	...	...	MK.570.06
L2-4	Aerial coil—L.W.	...	...	MK.569.93
L5-7	Oscillator coil	...	...	MK.569.92
L8-10	1st I.F. transformer	...	...	MK.569.90
L11-13	2nd I.F. transformer	...	...	MK.569.90
L14-16	3rd I.F. transformer	...	...	MK.569.91
L17-19	A.F. driver transformer	...	...	MK.516.10
L20	Loudspeaker	...	...	ND.2350HX
*L21	Car-aerial loading coil	...	...	MK.550.29
L21	Car-aerial loading coil	...	...	MK.569.46

CORES FOR COILS				
L5, 8, 11, 14	...	...	...	K5.120.00

* (Use only if C30 is not fitted)

RESISTORS

	Wattage	Permitted Tolerance %	
R1	39,000Ω	10	48.426.10/39K
R2	10,000Ω	10	48.426.10/10K
R3	68,000Ω	10	48.426.10/68K
R4	12,000Ω	10	48.426.10/12K
R5	1,200Ω	10	48.426.10/1K2
R6	3,300Ω	10	48.426.10/3K3
R7	680Ω	10	48.426.10/680E
R8	4,700Ω	10	48.426.10/4K7
R9	1,000Ω	10	48.426.10/1K
R10	22,000Ω	10	48.426.10/22K
R11	50,000Ω	10	MK.812.14
R12	470Ω	10	48.426.10/470E
R14	18,000Ω	10	48.426.10/18K
R15	15Ω	10	48.426.10/15E
R16	1,000Ω	10	48.426.10/1K
R17	2,200Ω	10	48.426.10/2K2
R18	47,000Ω	10	48.426.10/47K
R19	3,900Ω	10	48.426.10/3K9
R20	2,700Ω	5	48.426.05/2K7
R21	56Ω	5	48.426.05/56E
R22	2,700Ω	5	48.426.05/2K7
R23	56Ω	5	48.426.05/56E
R24	0.22MΩ	10	48.426.10/220K
*R25	0.56MΩ	10	48.426.10/560K
R26	2,200Ω	10	48.426.10/2K2
R27	18,000Ω	10	48.426.10/18K
R28	Wirewound	5.1Ω	MK.792.05
R29	Wirewound	5.1Ω	MK.792.05
R30	...	220Ω	48.426.10/220E

* (May not be fitted)