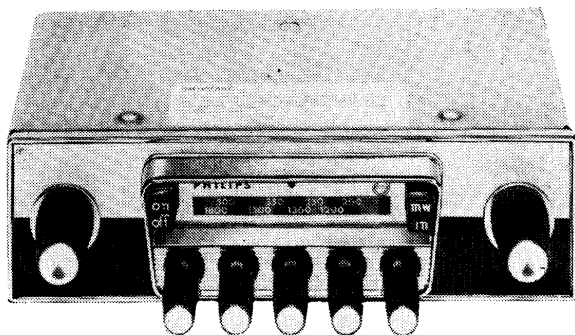


SERVICE INFORMATION FOR THE

PHILIPS

CAR RADIO—Type 13RN260



A. INTRODUCTION

The 13RN260 is a fully transistorised car radio with variable tone control, push-button wavechange switch and press button selection of any combination of five medium or long wave stations. It is designed to operate from a 12V. D.C. supply system with either battery pole connected to the car chassis.

B. SPECIFICATION

Power supply	12V. D.C. (positive or negative earth)
Consumption	700mA. at 14.5 volts (approx.)
Wavebands	Long 1,200—1,940 metres Medium 185— 575 metres
	Type Function
Transistors	T1 AF117 Self-oscillating mixer T2 AF117 I.F./A.F. amp. T3 OC82DM Driver T4 AD140 Power output
Diodes	X1 OA81 A.G.C. clamp diode X2 OA70 Demodulator and A.G.C.
Pilot lamp	14V. 0.75W.
Loudspeaker	7"×4" elliptical
Output	2.5 watts
Dimensions	Height 2". Width 7". Depth 3½".

C. INSTALLATION

Refer to instructions supplied with each receiver.

NOTE: The receiver, when dispatched, is suitable for negative earth operation. For conversion to positive earth, see Section "D" para. 4.

D. MAINTENANCE NOTES

WARNING

The receiver must not be switched on with the loudspeaker disconnected; to do so may result in damage to the transistors.

NOTE: For normal maintenance, the top and/or bottom covers may be hinged at 90° from the chassis by removing the appropriate two cross-headed screws at the rear of the casing.

1. Removing the scale assembly and covers

- Remove volume and tone control knobs, together with locking nuts and washers from spindles.
- Remove the scale assembly from the chassis.
- Remove the two cross-headed screws which secure the top and bottom covers to the chassis.
Reassemble in the reverse order.

2. Removing the press-button unit

- Carry out instructions as in 1 above.
- Slacken grub screws and pull off all five press-button knobs.
- Unclip tuning pointer.
- Remove the four bolts securing the front of the tuning unit.
- Remove the two bolts and spacers from the rear of the tuning unit.
- Unsolder leads and ease the unit from the chassis.

In the event of all five press buttons being depressed simultaneously, they may be released by pushing the centre button.

3. Scale lamp replacement

- Carry out instructions for removing scale assembly.
- Unscrew lamp from holder and fit replacement.

4. Polarity adjustment

To adjust the receiver for positive earth operation, remove the bottom cover plate and fit polarity leads as shown in Fig. 1.

5. Press-button adjustment

To obtain a medium wave station, first select "M.W." on the wavechange switch. Secondly depress one of the press-button until it clicks into the tuning position. Thirdly, using the same button as a tuning control, turn it so that the pointer coincides

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Telex 262308

with the wavelength of the required station; then carefully adjust in either direction for the best possible reception. Repeat this procedure with the other four press-buttons to obtain five stations in all, using the wavechange switch where necessary.

6. Replacing the output transistor (T4)

When replacing the output transistor, a coating of silicone grease should be applied to both sides of the mica insulating washer.

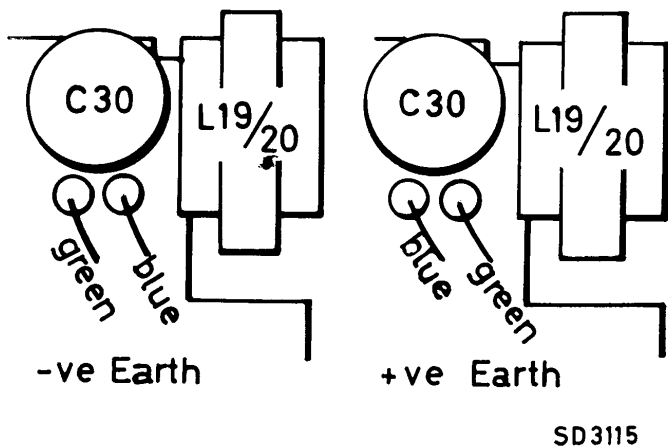


Fig. 1. Polarity connections

E. TRIMMING INSTRUCTIONS

General

An A.M. signal generator covering the given test frequencies, together with an A.F. output meter is required. Connect the output meter to the loudspeaker plugs. All alignment and measurements to be taken in the negative earth position, with tone and volume controls at maximum. It is important to keep signal input levels down to a minimum during alignment to avoid A.G.C. detuning effects.

I.F. circuits

- Switch to M.W. and tune receiver to approximately 1030Kc/s. Inject a 470Kc/s signal via a 100KpF capacitor to the base of T1, then adjust L13/15, L11/12 and L10 in that order for maximum output. Repeat as necessary.
- With receiver tuned as in (a), inject a 470Kc/s signal to the aerial socket and adjust L3 aerial loading coil (I.F. rejector on M.W.) for minimum output by sliding coil along former.

R.F. alignment

Medium wave

- Switch the receiver to M.W. and depress one of the press-buttons. Set the tuning pointer to the stop at the high frequency end of the scale i.e. approx. 185 metres.
- Inject a 1620 Kc/s signal (30% modulated with 400c/s) via a dummy aerial (see Fig. 2).
- Adjust C12 and C3 in that order for maximum output.
- Inject a 600Kc/s signal, tune receiver to signal and check calibration. Adjust L2 and L4 if necessary.

Long wave

Switch the receiver to L.W. and inject a 250Kc/s signal via the dummy aerial to the aerial socket. Tune the receiver to 1200 metres and adjust L5 for maximum output.

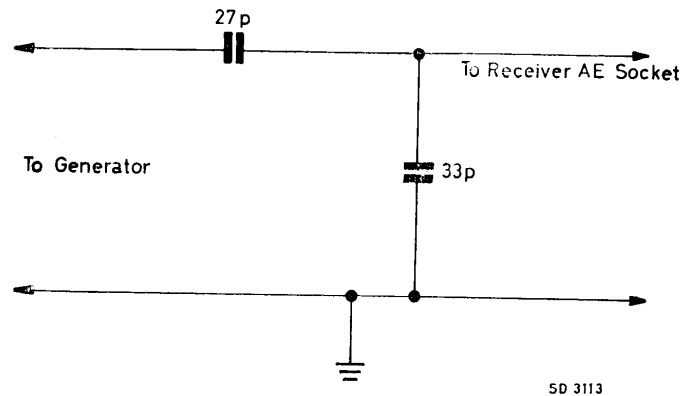


Fig. 2. Dummy aerial

Aerial trimming

To obtain optimum results, the receiver must be trimmed to suit the car aerial by adjusting C3 (situated near aerial socket) for maximum output when tuned to a weak signal near 200 metres.

R3 adjustment

Place a high impedance meter across X1 and adjust R3 for a meter reading of 0.1V. under no signal conditions.

R30 adjustment

Insert a high impedance meter (1 amp. range) in T4 collector lead and adjust R30 for a meter reading of 550mA.

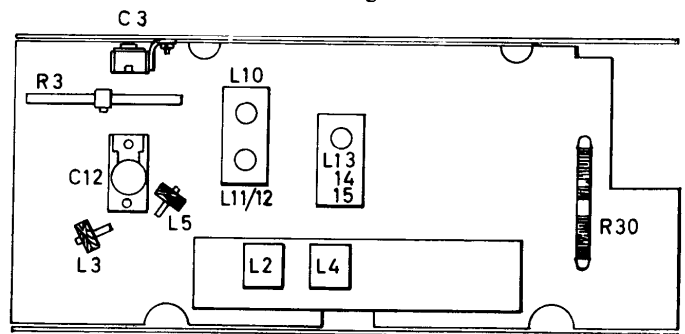


Fig. 3. Trim plan

COIL RESISTANCES > 1Ω			
L1	—	2Ω	} — 5.5Ω
L2	—	7.5Ω	
L3	—	6.5Ω	} — 160Ω
L4	—	5Ω	
L5	—	4Ω	L18 — 2Ω
L10	—	2.5Ω	L19 — 1Ω
L11	}	— 5Ω	L21 — 2.5Ω
L12			

L	1.	2.	3.						10.	11.	4.		13.	16.
C	1.				8.		16.			12.	5.		14.	15.
R	2.	3.	6.	5.	7.	4.	11.	9.	10.	13.	12.	14.	15.	17.
M	1.				35.	3.	4.	5.	2.	6.	7.	8.	12.	10.
					SW1. SW2.	X1.	SW3.	T1.	SW4.				T2.	

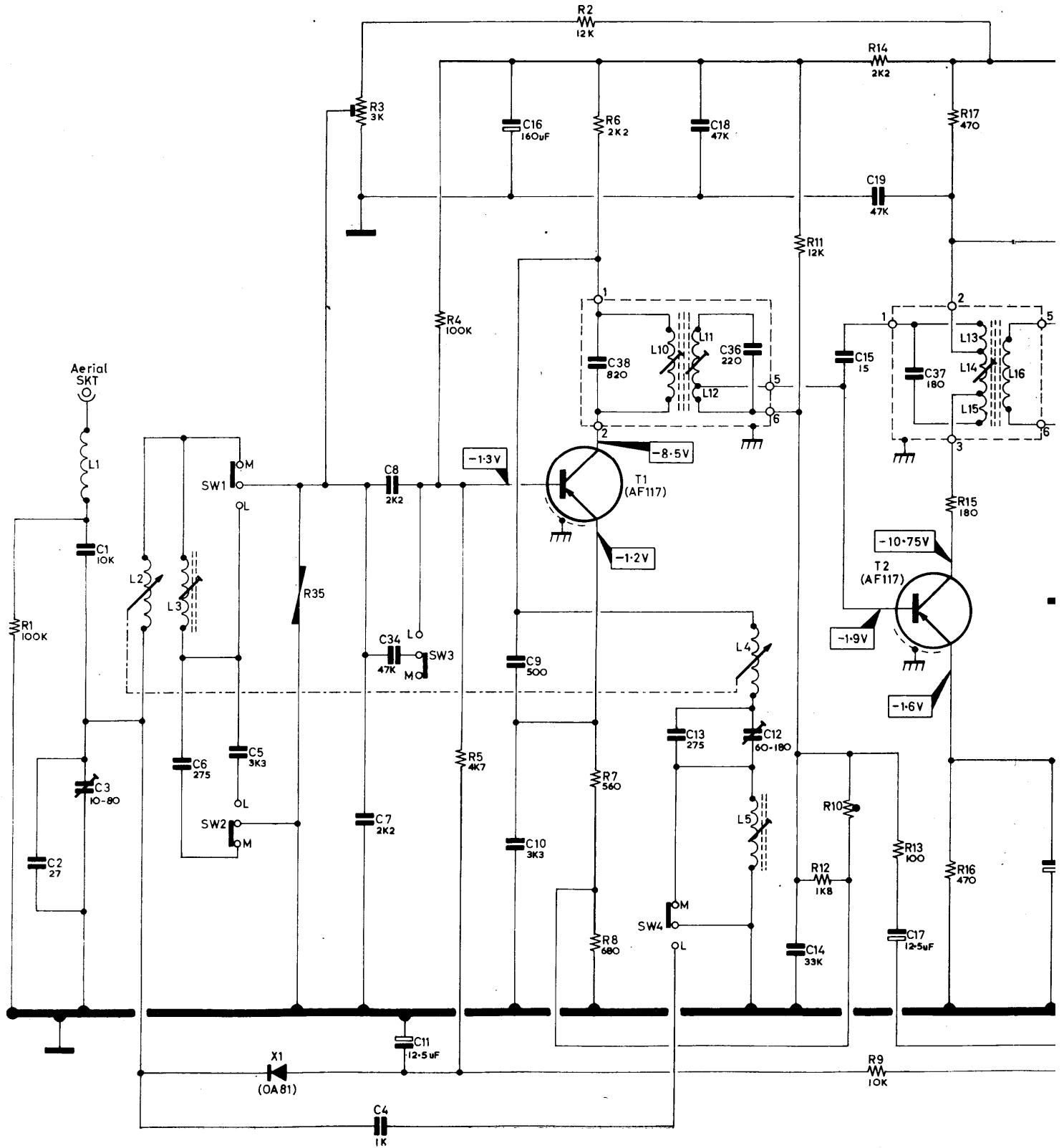


Fig. 5. CIRCUIT I

L	19.	20. 8. 6.	21	7.	17.	16.	13. 14. 15.	12.	10.	5.	1.	2.									
C	32. 31.		30. 25.	24. 29.	29.	33.	23.	37. 11.	16. 12.	18. 14.	10. 6.	13. 5.	12.	3. 8. 4.	2. 34. 1. 7. 27.						
R		22.	30.	18.	27. 31.	26. 32.	25. 23.	28. 29.	19.	20. 12.	33.	9. 16.	17. 14.	15.	13.	6. 11.	12. 7. 10. 2.	8. 4.	3. 5.	24. 35.	1.
Misc								T4.	T3.	X2.	LP1.		T2.			T1. SW3. SW2.	SW4. SW1.		X1.		Ae SKT.

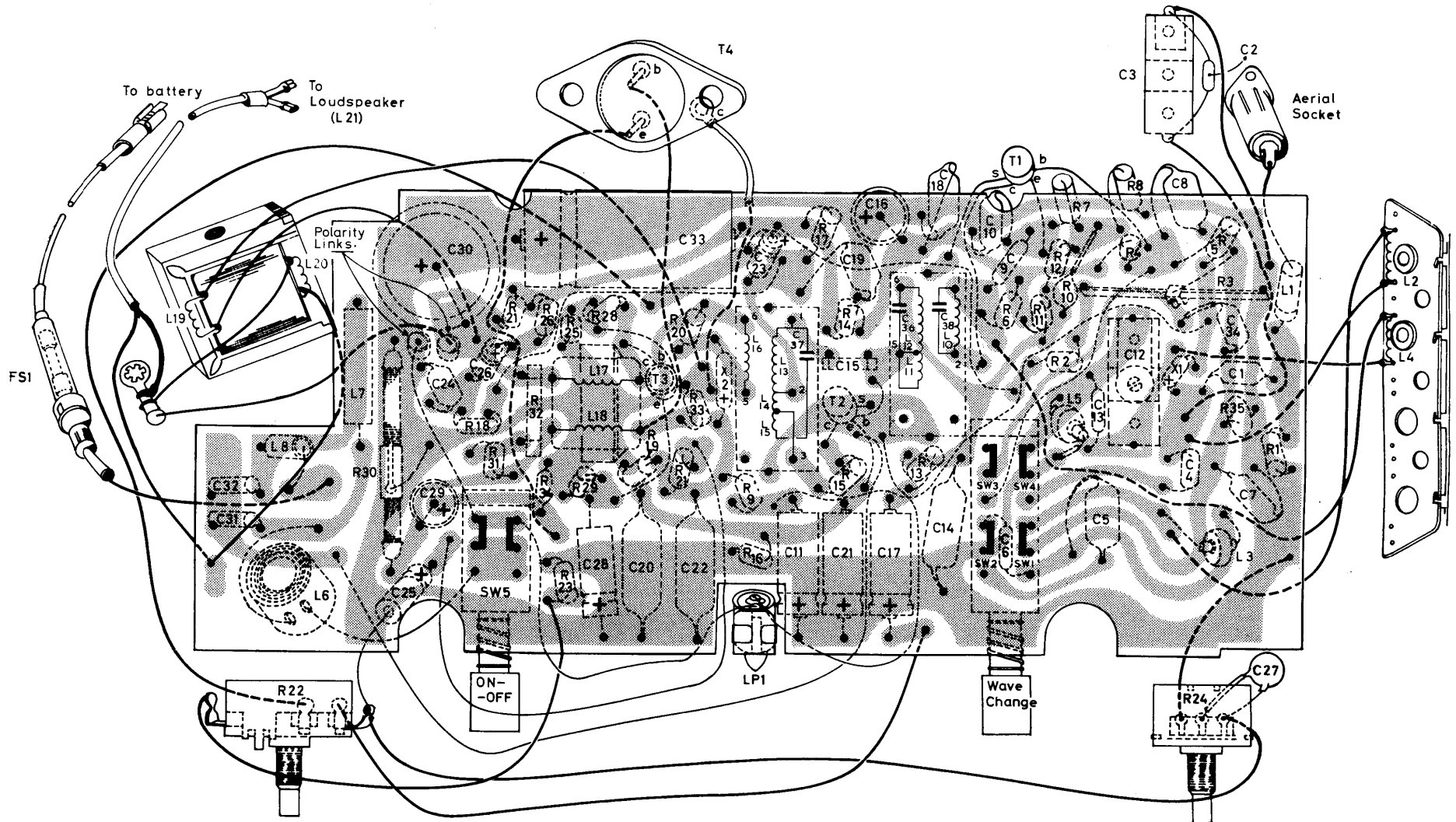


Fig. 6. PRINTED PANEL (Print side)

SPARE PARTS LIST

When ordering spare parts, please quote code number, description and position number in order to expedite dispatch.

CASE ASSEMBLY

1	Cover—bottom	...	...	AJ.011.74
2	Cover—top	...	...	BD.011.03
3	Escutcheon—plastic—two tone	...	...	BD.011.23
3a	Escutcheon for station scale	...	...	BG.105.81
4a	Label—polarity	...	...	EB.009.67
4b	Label—polarity diagram	...	...	EB.009.69
5	Station scale	...	...	EB.033.58
6	Screw for item 4—No. $4 \times \frac{1}{4}$"	...	...	B.070.AD/4N $\times \frac{1}{4}$
7	Screw for items 1 and 2—No. $6 \times \frac{1}{4}$ " (4)	...	...	B.808.AD/6N $\times \frac{1}{4}$
8	Washer for item 3 (2)	...	...	BC.240.17

30	Spring—compression for tuning knob (5)	...	...	FS.180.43
31	Spring—tuner latch bar	...	...	FS.180.46
32	Socket—aerial	...	...	3113.100.20000
33	Screw for printed panel—No. $4 \times \frac{1}{4}$ " (3)	...	...	B.070.AD/4N $\times \frac{1}{4}$
34	Screw for item 29— $6BA \times 1 \frac{1}{4}$ " (2)	...	...	RW.110.20A
35	Screw for item 32— $6BA \times \frac{3}{8}$ " (2)	...	...	RW.110.06A
36	Screw for T4— $6BA \times \frac{5}{16}$ " (2)	...	...	HY.135.33/60
37	Screw for item 38a— $8BA \times \frac{1}{8}$ " (4)	...	...	RY.110.02A
38	Solder tag—3mm	...	...	B.201.AF/3
38a	Tuner unit complete	...	...	AF.001.67
39	Washer for R22 and R24 (2)	...	...	BD.011.32
40	Washer for item 32 (2)	...	...	B.050.AE/3
41	Washer for item 37 (4)	...	...	988/2

CONTROL KNOBS

9	Wavechange	...	...	BH.004.55
10	On-off	...	...	BH.004.54
11	Screw for items 9 and 12— $4BA \times \frac{1}{8}$ " (7)	...	...	RK.912.02A
12	Tuning (5)	...	...	AK.020.27
13	Tone	...	...	AJ.012.25
14	Volume	...	...	AJ.012.25

COILS AND TRANSFORMERS

L1	Aerial filter coil	...	...	AN.018.19
L2+L4	Aerial and osc. coil assy	...	...	AJ.011.36
L3	Aerial loading coil—L.W.	...	...	LN.016.06
L5	Oscillator loading coil—L.W.	...	...	AN.016.08
L6	L.F. ignition coil	...	...	AN.010.25
L7	L.F. ignition coil	...	...	AN.018.17
L8	L.F. ignition coil	...	...	AN.018.17
L10-11-12	1st I.F. transformer	...	...	AN.007.22
L13-14-15-16	2nd. I.F. transformer	...	...	AN.007.23
L17-18	Driver transformer	...	...	AN.006.03
L19-20	Output transformer	...	...	AN.002.15
L21	Loudspeaker	...	...	850019

CHASSIS ASSEMBLY

15	Connector—push on (2)	...	...	QA.005.91
15a	Core for L4	...	...	FC.022.62
15b	Core for L2	...	...	FC.022.63
16	Holder for dial lamp	...	...	FH.030.32
17	Insulator disc for T4	...	...	56201
18	Lead assy.—speaker	...	...	AJ.005.40
19	Lead assy.—battery—car end	...	...	AJ.011.94
20	Lead assy.—battery—receiver end	...	...	AJ.011.96
21	Nut for R22 and R24 (2)	...	...	BB.004.46
21a	Nut for item 32 (2)	...	...	B.801.AD/6N
22	Pointer	...	...	BL.000.78
24	Plug for item 32	...	...	978/3 \times 40
25	Switch on/off	...	...	FS.001.04
26	Switch—wavechange	...	...	FS.001.05
27	Sleeving	...	...	K.558.LB/size
28	Spacer for item 38a (4)	...	...	BL.000.87
29	Spacer for rear of item 38a (2)	...	...	BB.005.21

TRANSISTORS, DIODES AND LAMP

T1	...	...	...	AF117
T2	...	...	...	AF117
T3	...	...	...	OC82DM
T4	...	...	...	AD140
X1	...	...	...	OA81
X2	...	...	...	OA70
LPI	...	...	...	HY.111.57
FS1	(2 amp. fuse)	...	...	G8.140.11

CAPACITORS

Type	Value pF
C1	Polyester ... 10,000
C2	Styroflex ... 27
C3	Trimmer ... 10-80
C4	Styroflex ... 1,000
C5	Polyester ... 3,300
C6	Styroflex ... 275
C7	Polyester ... 2,200
C8	" ... 2,200
C9	Styroflex ... 500
C10	Polyester ... 3,300
C11	Elco ... 12.5uF
C12	Trimmer ... 60-180
C13	Styroflex ... 275
C14	Polyester ... 33,000
C15	Ceramic ... 15
C16	Elco ... 160uF
C17	" ... 12.5uF
C18	Polyester ... 47,000
C19	" ... 47,000
C20	" ... 47,000
C21	Elco ... 125uF
C22	Polyester ... 10,000
C23	Elco ... 12.5uF
C24	Polyester ... 22,000
C25	Elco ... 12.5uF
C26	" ... 12.5uF
C27	Ceramic ... 0.25uF
C28	Elco ... 100uF
C29	" ... 640uF
C30	" ... 1,000uF
C31	Ceramic ... 0.1uF
C32	" ... 0.1uF
C33	Elco ... 500uF
C34	Polyester ... 47,000
C36	" ... 220
C37	" ... 180
C38	" ... 820

C.296.AA/A10K
PQ.059.07
PV.051.15
905/D1K
C.296.AC/A3K3
PQ.103.68
C296.AC/A2K2
C.296.AC/A2K2
905/D500E
C.296.AC/A3K3
C.426.AM/G12.5
PV.050.41
PQ.103.68
C.296.AA/A33K
904/15E
C.426.AM/D160
C.426.AM/G12.5
C.296.AA/A47K
C296.AA/A47K
C.296.AA/A47K
C.426.AE/A125
C.296.AA/A10K
C.426.AM/G12.5
C.296.AA/A22K
C.426.AM/G12.5
C.426.AM/G12.5
PN.643.00
C.426.AM/B100
C.426.CM/A640
MK.185.60
PN.632.10
PN.632.10
PS.460.61
C.296.AA/A47K
In L10-11-12
In L13-14-15-16
In L10-11-12

RESISTORS

Type	Value Ω
R1	0.1M
R2	12,000
R3	Pre-set 3,000
R4	0.1M
R5	4,700
R6	2,200
R7	560
R8	680
R9	10,000
R10	Thermistor
R11	12,000
R12	1,800
R13	100
R14	2,200
R15	180
R16	470
R17	470
R18	470
R19	2,200
R20	1,000
R21	1,000
R22	Volume 10,000 log
R23	680
R24	Tone 10,000 log
R25	10,000
R26	27,000
R27	180
R28	0.12M
R29	1,000
R30	Pre-set 33
R31	68
R32	150
R33	560
R34	1
R35	V.D.R.

902/100K
902/12K
PL.023.36
902/100K
902/4K7
902/2K2
902/560E
902/680E
902/10K
VA.1055
902/12K
902/1K8
902/100E
902/2K2
902/180E
902/470E
902/470E
902/470E
902/2K2
902/1K
902/1K
PL.002.23
902/680E
PL.002.26
902/10K
902/27K
902/180E
902/120K
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