

MODEL TP 90
TRANSISTOR PORTABLE
(V.H.F./MW.LW.)



SERVICE DATA

SPECIFICATION

AERIALS:

Internal aerial for medium and long wavebands with socket for external aerials. Telescopic aerials for F.M.

WAVEBANDS:

Medium Waves: 187.3–571 metres

Long Waves: 1150–2006 metres

A.M.I.F.: 472 kc/s.

VHF/FM: 87.5 mc/s–101 mc/s.

TRANSISTORS:

AF180 F.M. R.F. Amplifier

AF115 F.M. Oscillator

AF114 A.M. Mixer/F.M. I.F. Amplifier

AF114 A.M./F.M. I.F. Amplifier

AF114 A.M./F.M. I.F. Amplifier

OC77~~81~~ Driver

OC81/D Output

OC81/D Output

DIODES:

(2) OA79 F.M. Ratio Detector

OA91 Detector A.M.

OA79 AGC Diode A.M.

SFD107 D.C. Clamp

LOUDSPEAKER:

5" round high flux density speaker—15 ohms.

CONTROLS:

Push Button: VHF; Long; Medium; On/Off.

Tuning; Volume.

BATTERY

Ever Ready PP9, Vidormax VT9 or equivalent.

CONTROLS:

Four push button controls are provided for waveband selection and On/Off.

When tuning on Medium and Long waves, the set can be rotated for best signal to noise ratio, especially on a weak signal. The telescopic aerial can be pulled out for VHF/FM listening and rotated and angled for best quality reception.

CAR AERIAL:

The receiver is provided with an aerial socket at the rear of the cabinet, which is suitable for plugging in the car aerial, using a standard banana jack plug Part No. 81/690. It is important that the outer portion of the coaxial lead is connected to a good car earth point.

This socket can be used also for permanent VHF/FM and AM external aerial installation. However, this should be necessary only in areas of excessively weak signal strength.

ADDITIONAL SOCKETS:

Earphone: An earphone socket is provided, the internal speaker being muted when the earphones are plugged in. This socket can be similarly used for plugging in a loudspeaker of 15 ohms impedance.

Tape: A tape socket is provided for feeding into a tape recorder.

BATTERY REPLACEMENT:

A general deterioration in performance indicates that the battery needs replacing. The back is easily removed after the plastic coin slotted screws have been rotated approximately a quarter turn, when the battery will be clearly visible.

AUDIO OUTPUT SOCKETS.

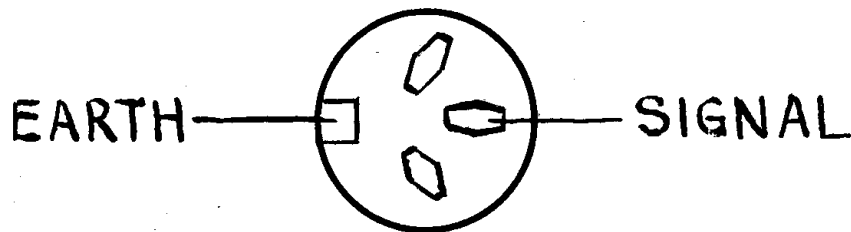
EARPHONES AND LOUDSPEAKER

This socket can be used for earphones. If a loudspeaker is plugged in, we recommend the impedance to be in the order of 15 ohms. The following plugs are suitable for use with this socket.

Hirschmann (Distributors: Neoflex Ltd.) LS7 or LS72

Preh (Distributors: G. E. Electronics Ltd.) 8:8146

Lumberg (Distributors: Super Electronics Ltd.) S34, S304 or S304N.



TAPE

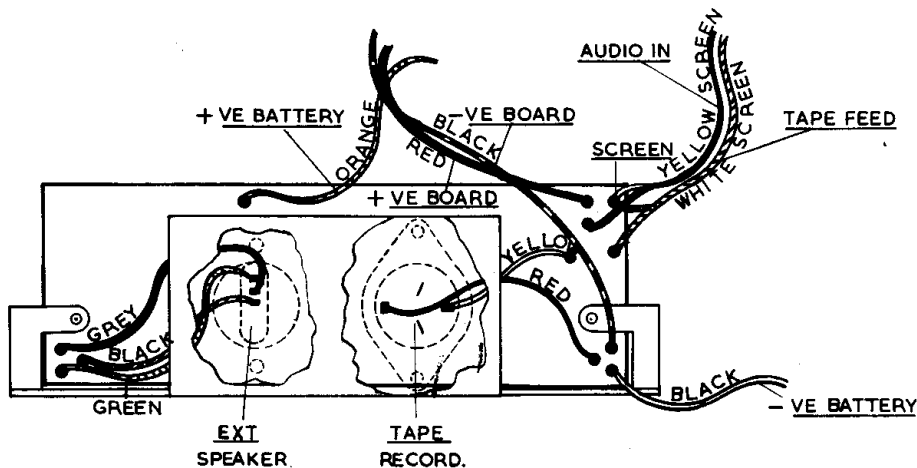
The tape socket is suitable for feeding to a tape recorder input. Any of the following four plugs are suitable. The location of socket is shown below.

Ariel Pressings type RA.2157

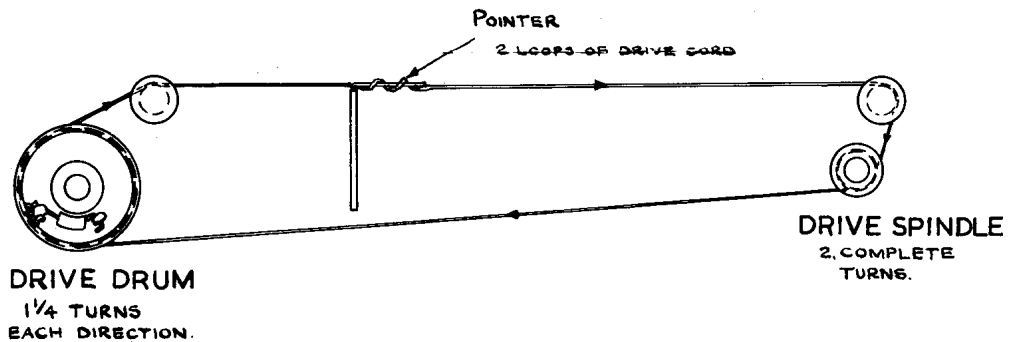
Hirschmann (Distributors: Neoflex Ltd.) MAS 3 or 30

Preh (Distributors: G.E. Electronics Ltd.) 8-8407 or 8-8869

Lumberg (Distributors: Super Electronics Ltd.) S31.



AUDIO SOCKET PANEL WIRING



DRIVE CORD DIAGRAM

TRANSISTOR REPLACEMENT

1) Take great care not to scratch or chip the paint covering on glass-cased transistors. If light is admitted, the transistors will act as a photo electric device (i.e. light will modulate the transistor current) and this may produce hum, etc.

2) When soldering transistor connections, it is essential to use a heat sink (preferably a reasonably sized pair of pliers). If excessive heat is transmitted to the transistors, it could easily cause serious damage and transistors should not be subjected to a temperature above 60°F. It is also important to realize that the electric soldering iron should be earthed, irons often have a very slight leak when hot and the resultant current can often damage a new transistor.

TR 1.	
TR 2. TR 3. TR 4. TR 5.	
TR 6. TR 7 TR 8.	

TRANSISTOR BASE DIAGRAM

DECCA RADIO & TELEVISION
 division of
 THE DECCA RECORD COMPANY LTD.
 Ingate Place,
 Queenstown Road,
 London, S.W.8
 Telephone: MACaulay 6677 (15 lines)

ALIGNMENT INSTRUCTIONS.

(Correct alignment procedure can be followed only with chassis on test bench.)

Readings taken with meter across Loudspeaker coil on low A.C. range .3V.

VHF/FM ALIGNMENT

I.F. Alignment

1. Set F.M. signal generator to 10.7 mc/s and 22 Kc/s deviation.
2. Rotate main tuning condenser until gang is closed.
3. Switch to F.M. waveband.
4. Connect F.M. signal generator lead via C22 (.01 mfd.) to base of TR3 (AF.114); other lead should make contact with the earth on printed circuit board.
5. Feed in modulated signal to give low output indication.
6. Peak top and bottom cores of L9, L11, L12 (F.M.). Repeat until no further output is obtained.
7. Connect generator to aerial input terminals.
8. Increase signal and adjust L4 for max. output.
9. Switch F.M. signal generator to A.M. position for maximum A.M. rejection. Adjust VR1, for minimum output.
10. Repeat above operation.

R.F. Alignment

1. Set signal generator to 88 mc/s and 22 kc/s deviation.
2. Turn main tuning condenser to 88 mc/s as marked on scale.
3. Remain switched to F.M. waveband.
4. Connect F.M. signal generator between chassis and F.M. aerial socket.
5. Adjust cores of L2 and L3 for maximum output.
6. Set F.M. signal generator to 100 mc/s and 22 kc/s deviation.
7. Turn main tuning condenser to 100 mc/s as marked on scale.
8. Adjust trimmers C11 and C5 for maximum output.
9. Rotate tuning condenser until pointer is on 95 mc/s; then adjust core of L1 and L5 for maximum output.

A.M. ALIGNMENT (Medium and Long Waves)

1. Set A.M. signal generator to 472 kc/s.
2. Rotate main tuning condenser until gang is closed.

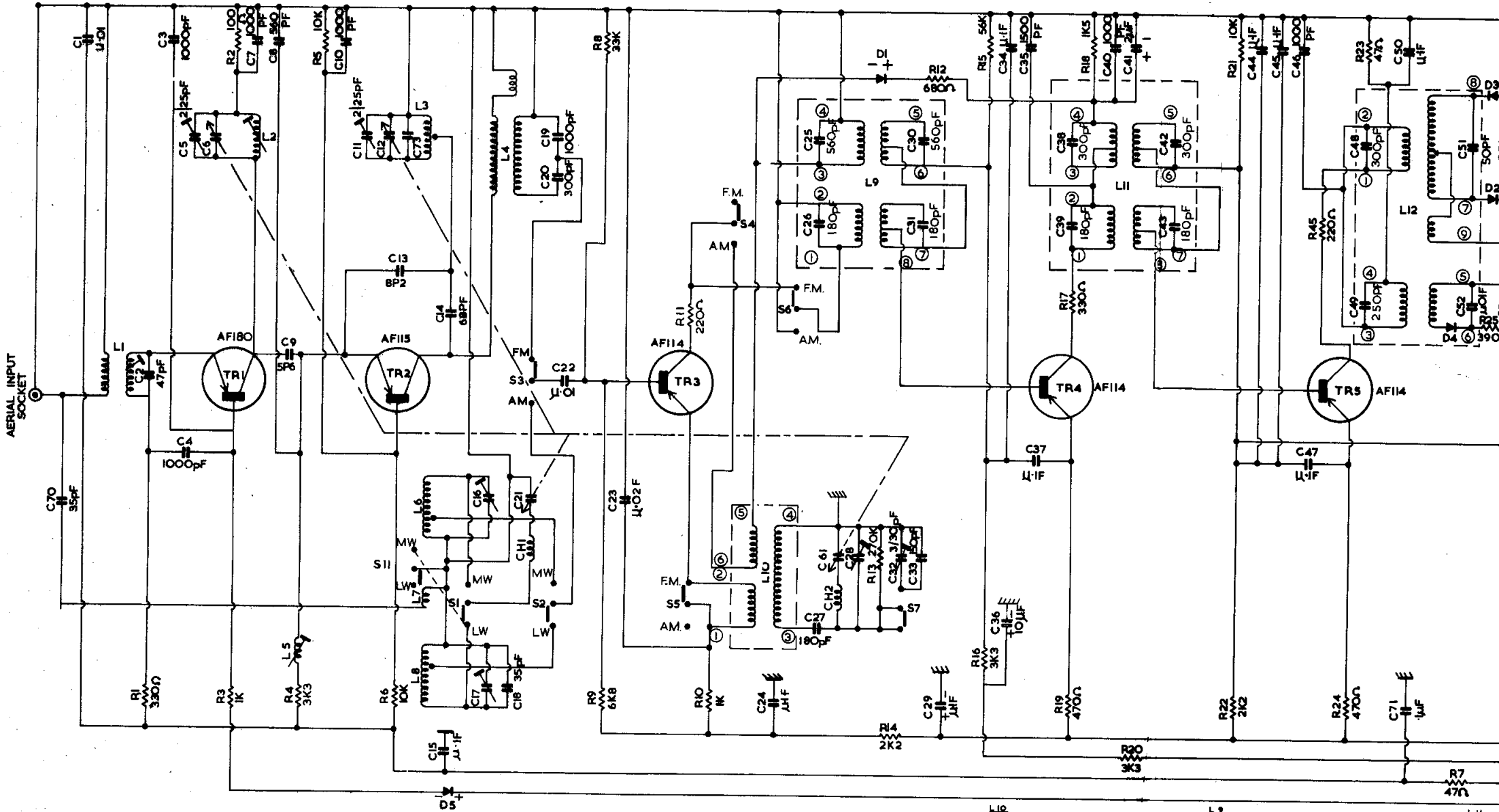
3. Switch to Medium waveband.
4. Disconnect tag lead connecting Medium wave aerial coil to TR3 base. Connect signal generator to free end of lead and to chassis.
5. Peak top and bottom cores of L9 (A.M.) and L11 (A.M.).
6. Peak L12 (one core only) for maximum output.
7. Adjust signal generator whenever necessary. Repeat above operation.

A.M. R.F. Alignment—Medium Wave

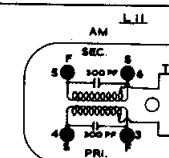
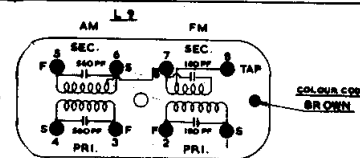
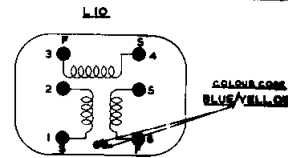
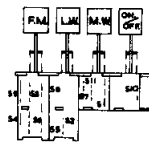
1. Re-connect lead to Medium wave aerial coil.
2. Turn tuning condenser to 500 metres as marked on scale.
3. Set A.M. signal generator to 600 kc/s.
4. Connect generator to A.M. aerial socket via 1K resistor (other lead makes contact with chassis).
5. Adjust one core of L10 (single core only) for maximum output.
6. Position Medium wave coil (L6) on ferrite rod for maximum output.
7. Turn main tuning condenser to 200 metres as marked on scale.
8. Re-set signal generator to 1500 kc/s.
9. Adjust oscillator trimmer (C28) and aerial trimmer (C16) for maximum output.
10. Repeat 5-9 until no further improvement is effected.

A.M. R.F. Alignment—Long Wave

1. Connect signal generator to A.M. aerial socket via 1K resistor (other lead makes contact with chassis).
2. Turn main tuning condenser to 1765 metres as marked on scale.
3. Re-set A.M. signal generator to 170 kc/s.
4. Adjust Long wave coil (L8) on ferrite rod for maximum output and adjust Long wave oscillator trimmer (C32) for maximum output.
5. Turn main tuning condenser to 1250 metres as marked on scale.
6. Set A.M. signal generator to 240 kc/s.
7. Adjust trimmer (C17) for maximum output.
8. Repeat 2-7 until no further improvement is effected.

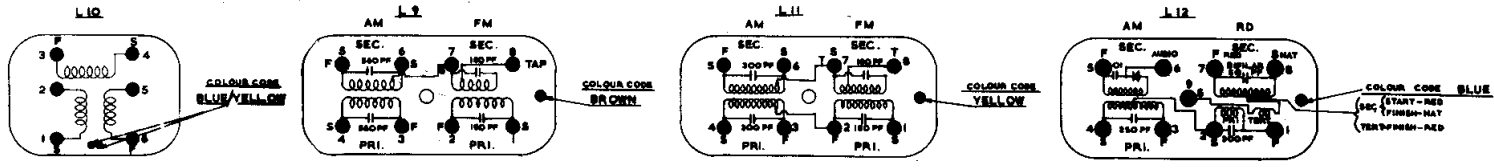
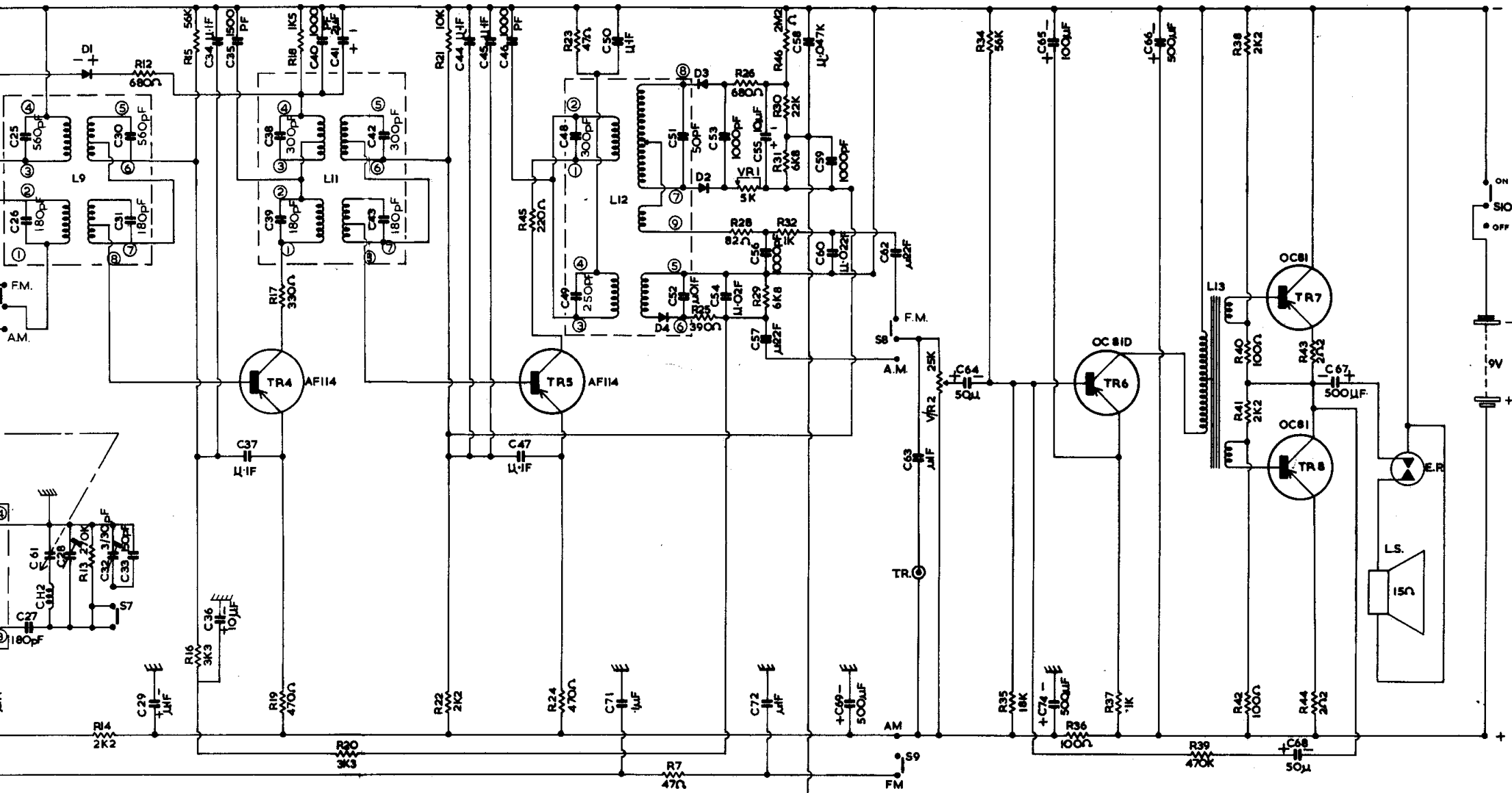


	T ₁	T ₂	T ₃	T ₄	T ₅	T ₆	T ₇	T ₈
B	4-5	2-5	4-0	5-5	5-5	6-7	4-4	6-9
E	5-2	3-0	4-5	6-0	5-9	7-3	4-6	0
C	-1	/	-1	1-5	-5	-3	/	4-6

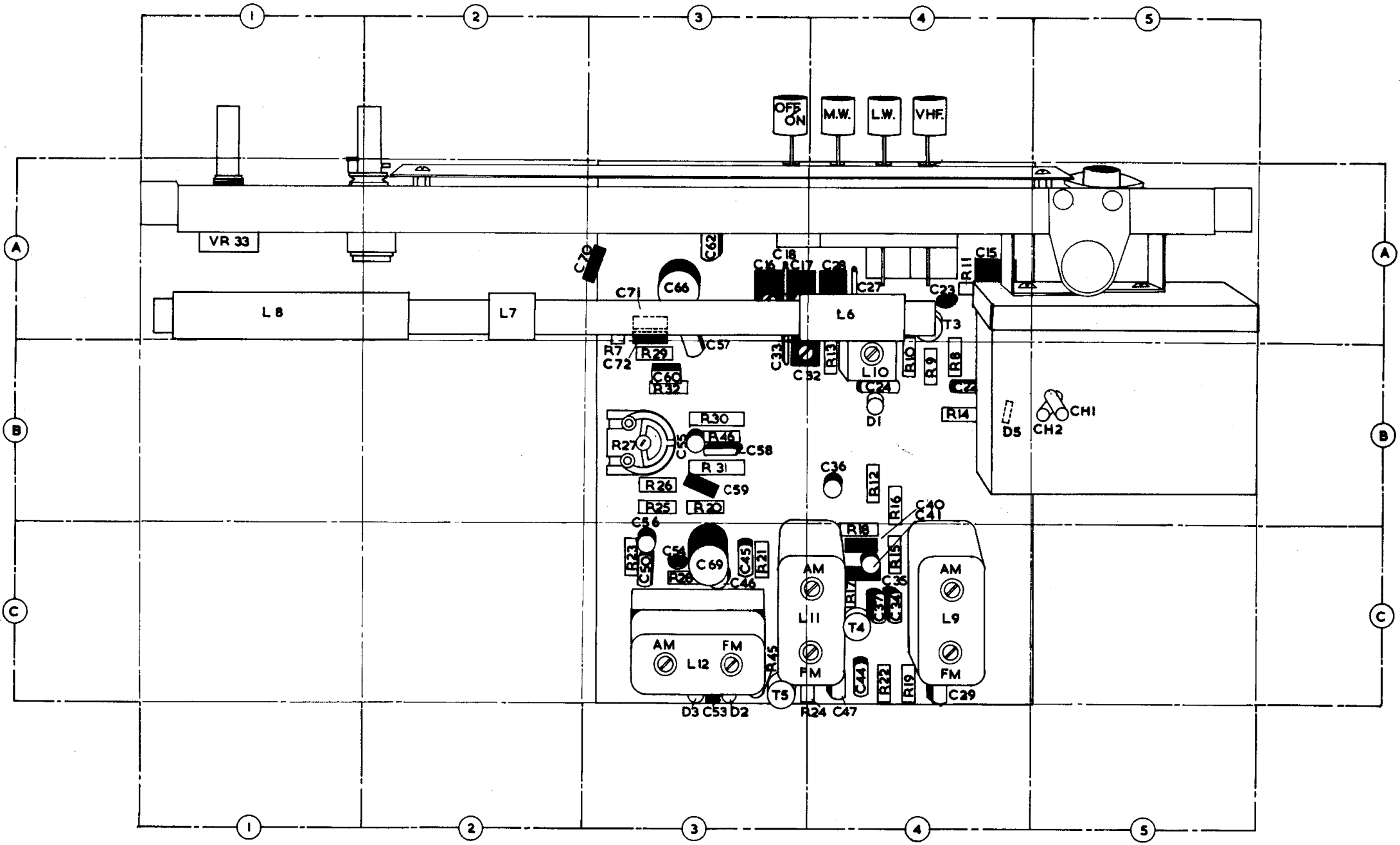


AS VIEWED FROM UNDERSIDE OF BASES.

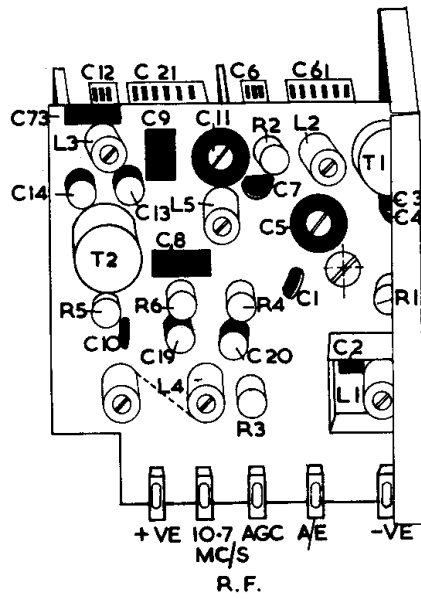
CIRCUIT DIAGRAM



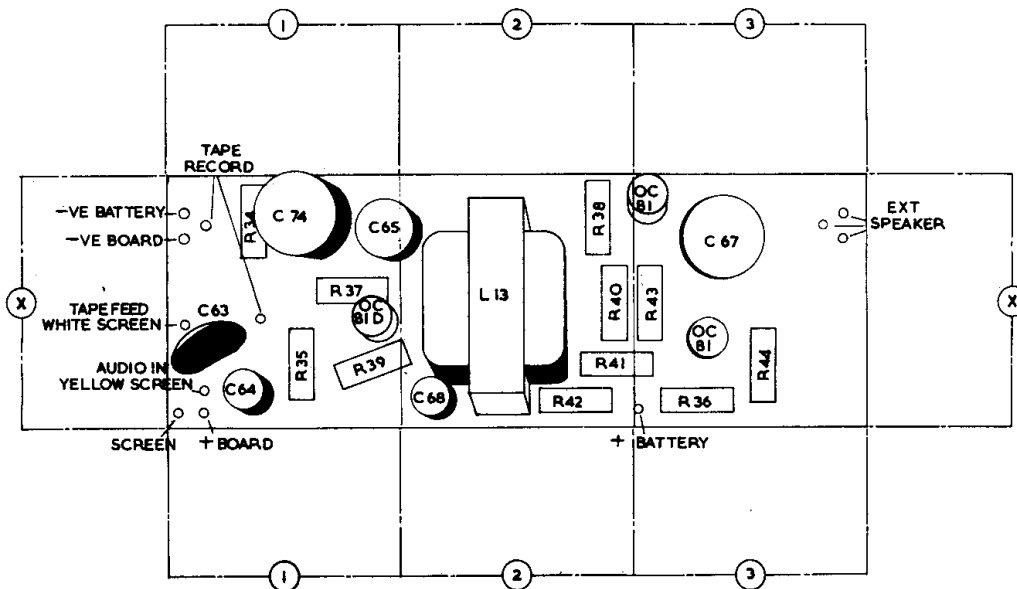
CIRCUIT DIAGRAM



MAIN CHASSIS



F.M. TUNER UNIT



AUDIO PANEL

CONDENSERS

1	.01mfd.	12V. Erie 831/T/12	F.M. Tuner
2	47pf.	5% 125V. LCR Polystyrene	F.M. Tuner
3	1000pf.	+5% -20% LEM Type 07K	F.M. Tuner
4	1000pf.	+5% -20% LEM Type 07K	F.M. Tuner
5	—	See Variables	
6	—	See Variables	
7	1000pf.	+5% -20% LEM Type 07K	F.M. Tuner
8	560pf.	5% 30V. LCR Polystyrene	" "
9	5.6pf.	± 1 pf. LEM 310 P100	" "
10	1000pf.	+50% -20% LEM Type 07K	" "
11	—	See Variables	
12	—	See Variables	
13	8.2pf.	± 1 pf. LEM 310 P100	F.M. Tuner
14	68pf.	5% 125V. LCR Polystyrene	" "
15	.1 mfd.	10% 250V. Mullard C281W	A4
16	—	See Variables	A3
17	—	See Variables	A3
18	35pf.	2% LEM S/M S/W 1106R	A3
19	1000pf.	5% 125V. LCR Polystyrene	F.M. Tuner
20	300pf.	5% 125V. LCR Polystyrene	F.M. Tuner
21	—	See Variables	
22	.01mfd.	20% 30V. Mullard C280 AA/P10K	B4
23	.02mfd.	12V. Erie 831/T/12	A4
24	.1mfd.	20% 30V. Mullard C280 AA/P100K	B4
25	—	See L9	
26	—	See L9	
27	186pf.	1% LEM S/M S/W 1510E	A4
28	—	See Variables	A4
29	.1mfd.	20% 30V. Mullard C280 AA/P100K	C4
30	—	See L9	
31	—	See L9	
32	—	See Variables	B3
33	150pf.	2% LEM S/M S/W 1106R	B3
34	.1mfd.	20% 30V. Mullard C280 AA/P100K	C4
35	1500pf.	5% 125V. LCR Polystyrene	C4
36	10mfd.	12V. SPS SPC 79-4	B4
37	.1mfd.	20% 30V. Mullard C280 AA/P100K	C4
38	—	See L11	
39	—	See L11	
40	1000pf.	5% 125V. LCR Polystyrene	C4
41	2mf.	25V. SPS SPC 77-7	C4
42	—	See L11	
43	—	See L11	
44	.1mfd.	20% 30V. Mullard C280 AA/P100K	C4
45	.1mfd.	20% 30V. Mullard C280 AA/P100K	C3
46	1000pf.	+20% -50% LEM 07K disc.	C3
47	.1mfd.	20% 30V. Mullard C280 AA/P100K	C4
48	—	See L12	
49	—	See L12	
50	.1mfd.	20% 30V. Mullard C280 AA/P100K	C3
51	—	See L12	
52	—	See L12	
53	1000pf.	5% 125V LCR Polystyrene	C3
54	.02 mfd.	12V Erie 831/T/12	C3
55	10mfd.	12V. SPS SPC 79-4	B3
56	1000pf.	5% 125V. LCR Polystyrene	C3
57	.22mfd.	20% 30V. Mullard C280 AA/P220K	B3
58	.047mfd.	20% 30V. Mullard C280 AA/P47K	B3
59	1000pf.	5% 125V. LCR Polystyrene	B3
60	.022mfd.	10% 250V. Mullard 281W	B3
61	—	See Variables	
62	.22mfd.	20 30V. Mullard C280 AA/P220K	A3
63	.1mfd.	12 V Erie 811/T/12	X1
64	50mfd.	10V. SPS SPC 3-4	X1
65	100mfd.	12V. SPS SPC 5-4/3	X1
66	500mfd.	9V. SPS SPC 13-3	A3
67	500mfd.	9V. SPS SPC 13-3	X3
68	50mfd.	10V. SPS SPC 3-4	X2
69	500mfd.	9V. SPS SPC 13-3	C3
70	35pf.	2½% 125V. Suflex Polystyrene	A3
71	.1mfd.	20% 30V. Mullard C280 AA/P100K	A3

RESISTORS

1	330 ohms	10% ±W Morganite Type S vert. SVP	F.M. Tuner
2	100 ohms	10% ±W Erie Type 15	F.M. Tuner
3	1K ohms	10% ±W Morganite Type S vert. SVP	F.M. Tuner
4	3.3K ohms	" " " " " " "	F.M. Tuner
5	10K ohms	" " " " " " "	F.M. Tuner
6	10K ohms	" " " " " " "	F.M. Tuner
7	47 ohms	10% ±W Dubilier BTT Mark II pluggable	A3
8	33K ohms	" " " " " " "	B4
9	6.8 K ohms	" " " " " " "	B4
10	1K ohms	" " " " " " "	B4
11	220 ohms	" " " " " " "	A4
12	680 ohms	" " " " " " "	B4
13	270K ohms	" " " " " " "	B4
14	2.2K ohms	" " " " " " "	B4
15	56K ohms	" " " " " " "	C4
16	3.3K ohms	" " " " " " "	B4
17	330 ohms	" " " " " " "	C4
18	1.5K ohms	" " " " " " "	C4
19	470 ohms	" " " " " " "	C4
20	3.3K ohms	" " " " " " "	B3
21	10K ohms	" " " " " " "	C3
22	2.2K ohms	" " " " " " "	C4
23	47 ohms	" " " " " " "	C3
24	470 ohms	" " " " " " "	C4
25	390 ohms	" " " " " " "	B3
26	680 ohms	" " " " " " "	B3
27	—	—	
28	82 ohms	" " " " " " "	C3
29	6.8K ohms	" " " " " " "	B3
30	6.8K ohms	10% ±W Erie 8AP2	B3
31	22K ohms	" " " " " " "	B3
32	1K ohm	10% ±W Dubilier BTT Mark II pluggable	B3
33	2.2M. ohms	10% ±W Dubilier BTT Mark 11 pluggable	B3
34	56K ohms	" " " " " " "	X1
35	18K ohms	" " " " " " "	X1
36	100 ohms	5% " " " " " " "	X3
37	1K ohm	10% " " " " " " "	X1
38	2.2K ohms	5% " " " " " " "	X2
39	470K ohms	10% " " " " " " "	X1
40	100 ohms	5% " " " " " " "	X2
41	2.2K	" " " " " " "	X2
42	100 ohms	10% " " " " " " "	X2
43	2.2 ohms	5% " " " " " " "	X3
44	2.2 ohms	" " " " " " "	X3
45	220 ohms	10% ±W Morganite Type S vert. SVP	C3

POTENTIOMETERS.

CIR REF.	VALUE	DESCRIPTION	PART NO.
VR1	5K log.	A.M. Rejection	A590260
VR2	25K log.	Volume Control	A590223

TRIMMERS.

C5	4.5pf./20pf.	FM/RF Trimmer	A58069
C6/12/21/61	—	Main Gang	B58096
C11	4.5pf./20pf.	FM/Oscillator Trimmer	A58069
C16	3pf./30pf.	M.W. Aerial Trimmer	A58091
C17	3pf./30pf.	L.W. Aerial Trimmer	A58091
C28	3pf./30pf.	M.W. Oscillator Trimmer	A58091
C32	3pf./30pf.	L.W. Oscillator Trimmer	A58091

COILS, CHOKES AND TRANSFORMERS.

L1	—	F.M. Aerial Coil	A56818
L2	—	F.M. R.F. Collector Coil	A56819
L3	—	F.M. Oscillator Coil	A56820
L4	—	1st F.M. I.F. Coil	A56821
L5	—	F.M. I.F. Rejection Coil	A56817
L6/7/8	—	M.W./L.W. Aerial Rod	B56822
L9	—	1st A.M. 2nd F.M. Coil	C56796
L10	—	M.W./L.W. Oscillator Coil Pack	A56811
L11	—	2nd A.M. 3rd F.M. Coil	C56797
L12	—	Ratio Detector	C56798
L13	—	Output Transformer	A56529
CH1	—	R.F. Coil	A525007
CH2	—	R.F. Coil	A525007

MAIN PARTS LIST.

QTY.	DESCRIPTION	PART NO.
1	Volume Control Knob	B590325
1	Tuning Control Knob	B590325
1	Complete RF Panel and Gang Assembly	B550463/ASSY.
1	Complete I.F. Panel and Chassis Ass.	D550462/ASSY.
1	Complete A.F. Panel Assembly	B550461/ASSY.
1	5" Round Speaker (15 ohms)	B590281
1	Speaker Gasket (15 ohms)	B550494
1	Cabinet Handle	C590375
2	Handle Retaining Clip	A52078
1	Battery Connector (negative)	A550495
1	Battery Connector (positive)	A550496
2	Battery Connector Cover	A550497
1	Slow Motion Drive Unit	B550526
1	Drive Drum	B59959
1	Drive Drum Spring	A52198
1	Pointer	A590254
2	Pulley Wheel	A550303
2	Retaining Clip (pulley wheels)	A52120
1	Telescopic Aerial	A590255
1	Moulded Rear Grille	B550482