TECHNICAL INFORMATION AND SERVICE DATA

Portable Model 555-P

FIVE VALVE, BROADCAST, DRY-CELL BATTERY or A.C. POWER UNIT OPERATED SUPERHETERODYNE

AND

Portable Model 653-P

SIX VALVE, BROADCAST, DRY-CELL, BATTERY or A.C. POWER UNIT OPERATED SUPERHETERODYNE.

ISSUED BY:
AMALGAMATED WIRELESS (AUSTRALASIA) LTD.

ELECTRICAL SPECIFICATIONS

Frequency Range ..... 540-1600 Kc/s (555-187.5 Metres)

Intermediate Frequency ..... 455 Kc/s

Battery Complement:

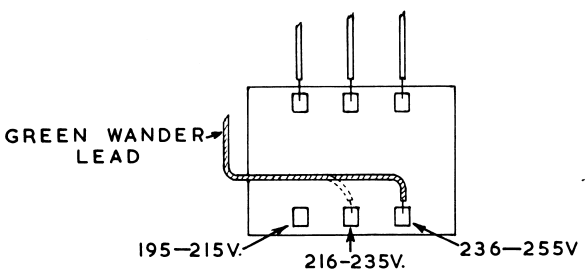
Model 555-P .... "A" Battery:—One 7.5 volt, type 719
"B" Battery:—One 90 volt, type 490P

Model 653-P .... "A" Battery:—One 90 volt, type 765
"B" Battery:—One 90 volt, type 490P

Battery Consumption:

Model 555-P .... "A" Battery = 50 mA
"B" Battery = 13 mA ("Full")
8 mA ("Save")

Model 653-P .... "A" Battery = 50 mA
"B" Battery = 13 mA ("Full")
8 mA ("Save")



Power Unit Operation:

The receiver may be operated on the following voltage ranges by altering the transformer tappings:—
195-215 volts
216-235 volts
236-255 volts

Power Unit Frequency Range:
50-60 C.P.S. and 40 C.P.S.

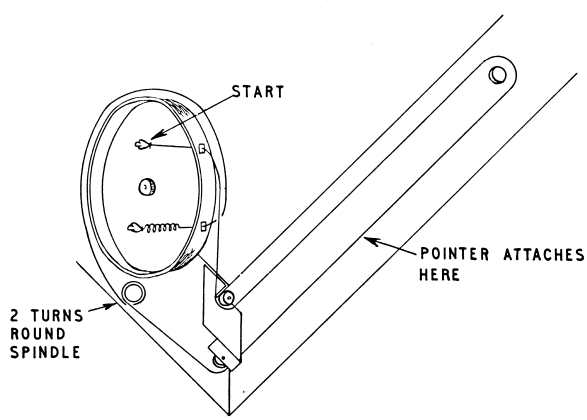
A.C. Power Consumption ..... 17 watts

1T4 R.F. Amplifier (653-P only)
1R5 Converter
1T4 I.F. Amplifier
1S5 Detector, A.F. Amplifier, A.V.C.
3V4 Output
6X4 Rectifier

Loudspeaker (Permanent Magnet):
6 inch — Code No. AG52
Transformer — 31727A
V.C. Impedance 3 ohms at 400 C.P.S.

Undistorted Power Output ..... 200 milliwatts

Controls:
Tuning Control — right-hand end of cabinet.
Volume Control — top left hand end of cabinet.
Power Selector Switch — bottom left-hand end of cabinet.



Drive Cord Replacement:
The accompanying diagram shows the route of the cord and the method of attachment.

CHASSIS TOP VIEW MODEL 555-P

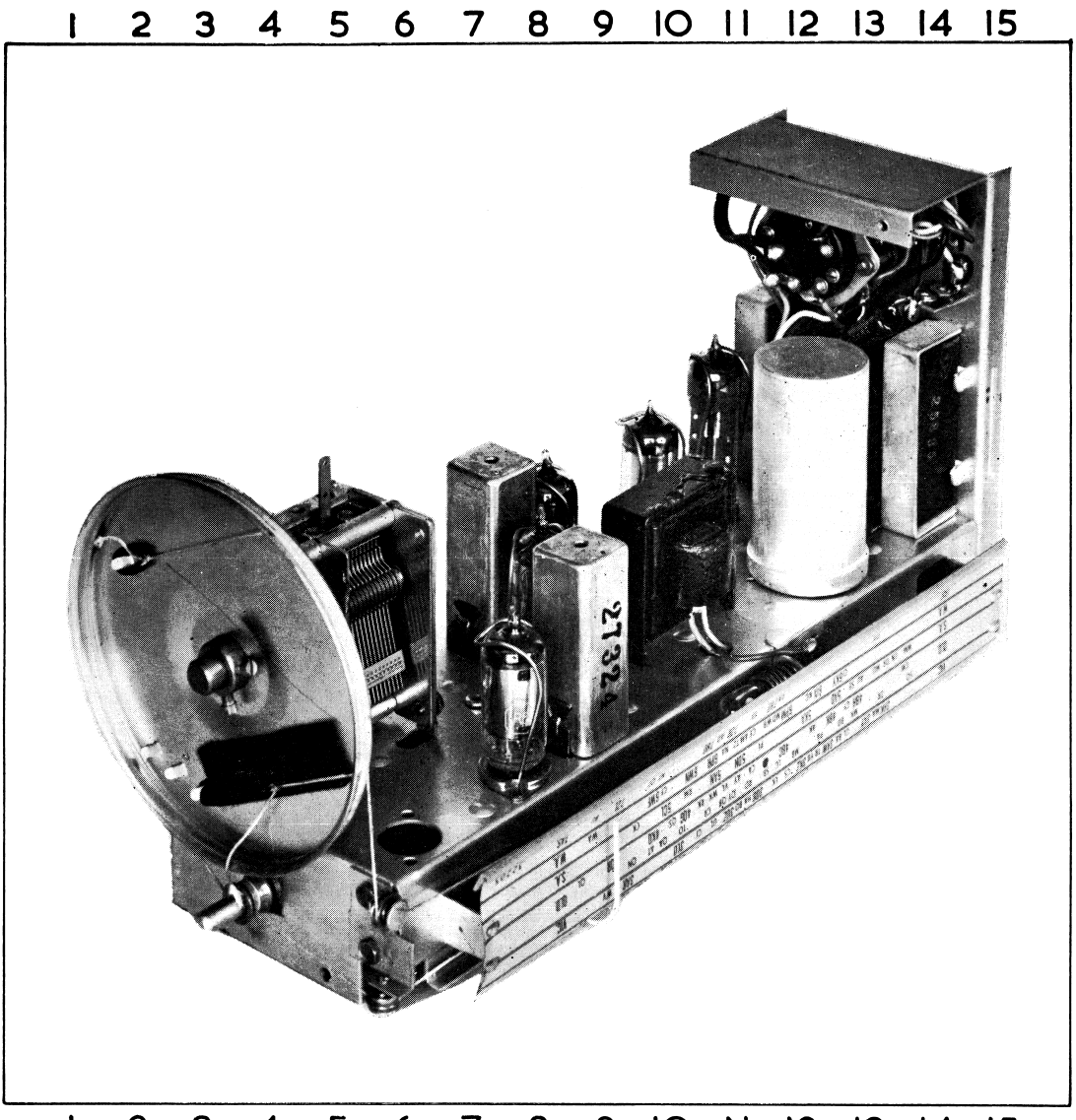


FIG. 1

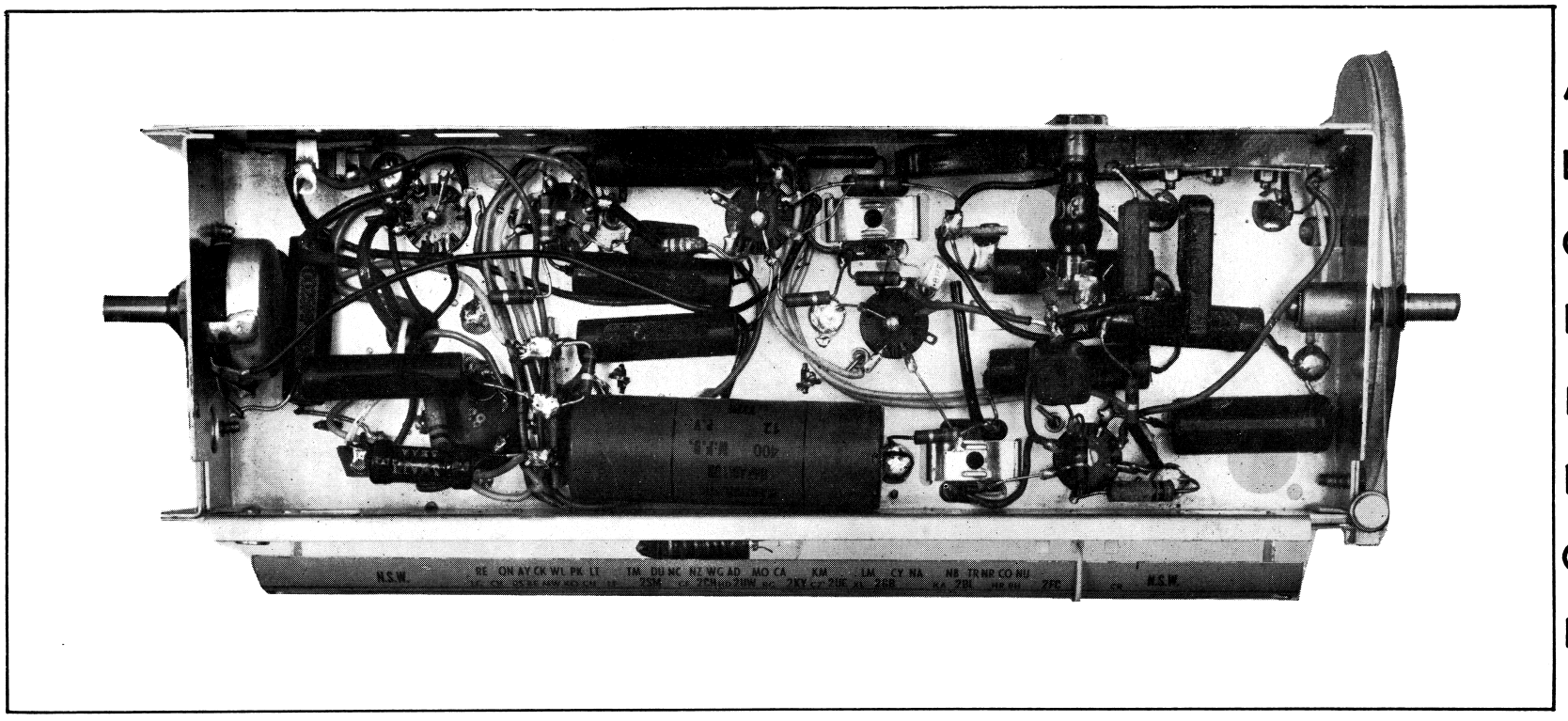


FIG. 2

CHASSIS UNDERNEATH VIEW MODEL 555-P

CHASSIS TOP VIEW MODEL 653-P

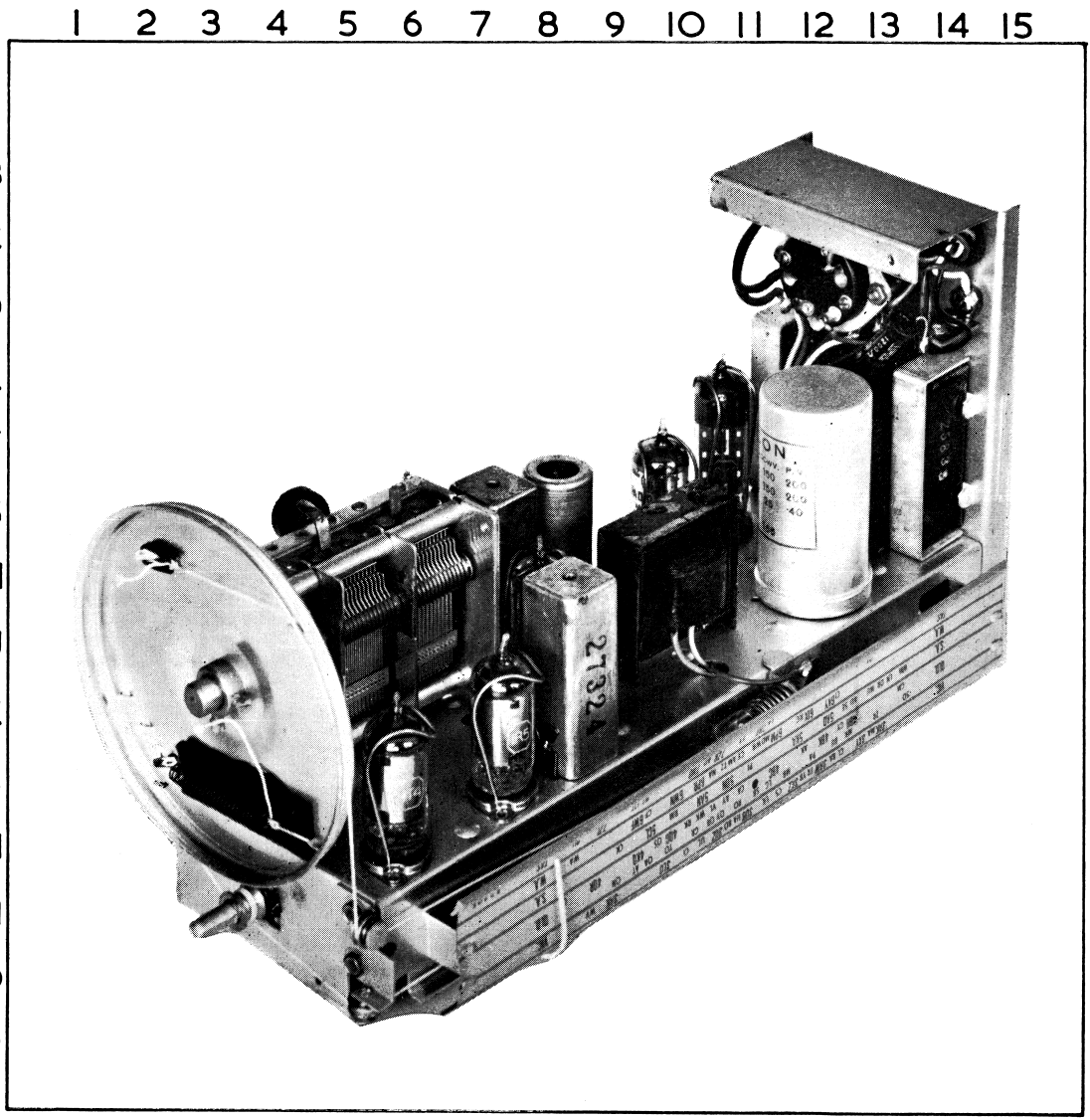


FIG. 3

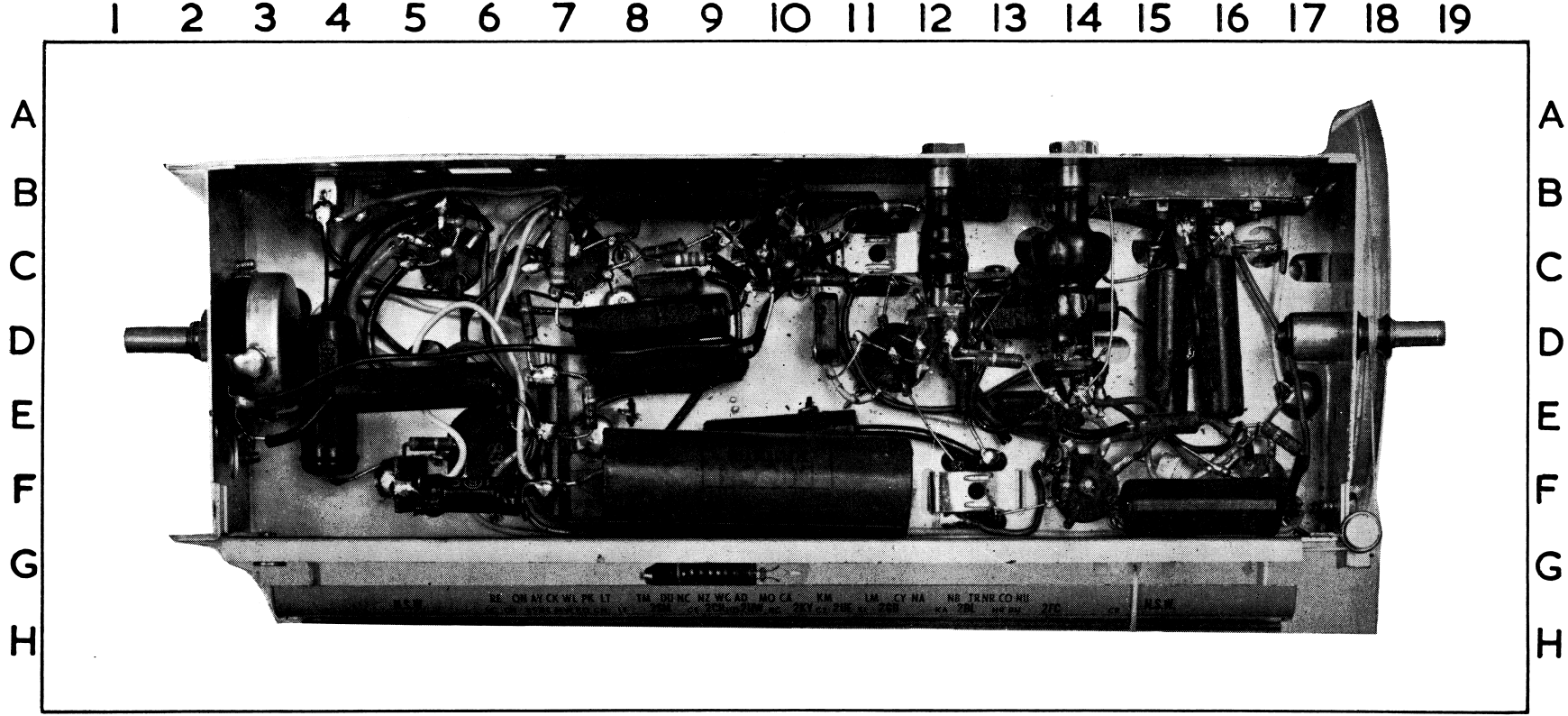
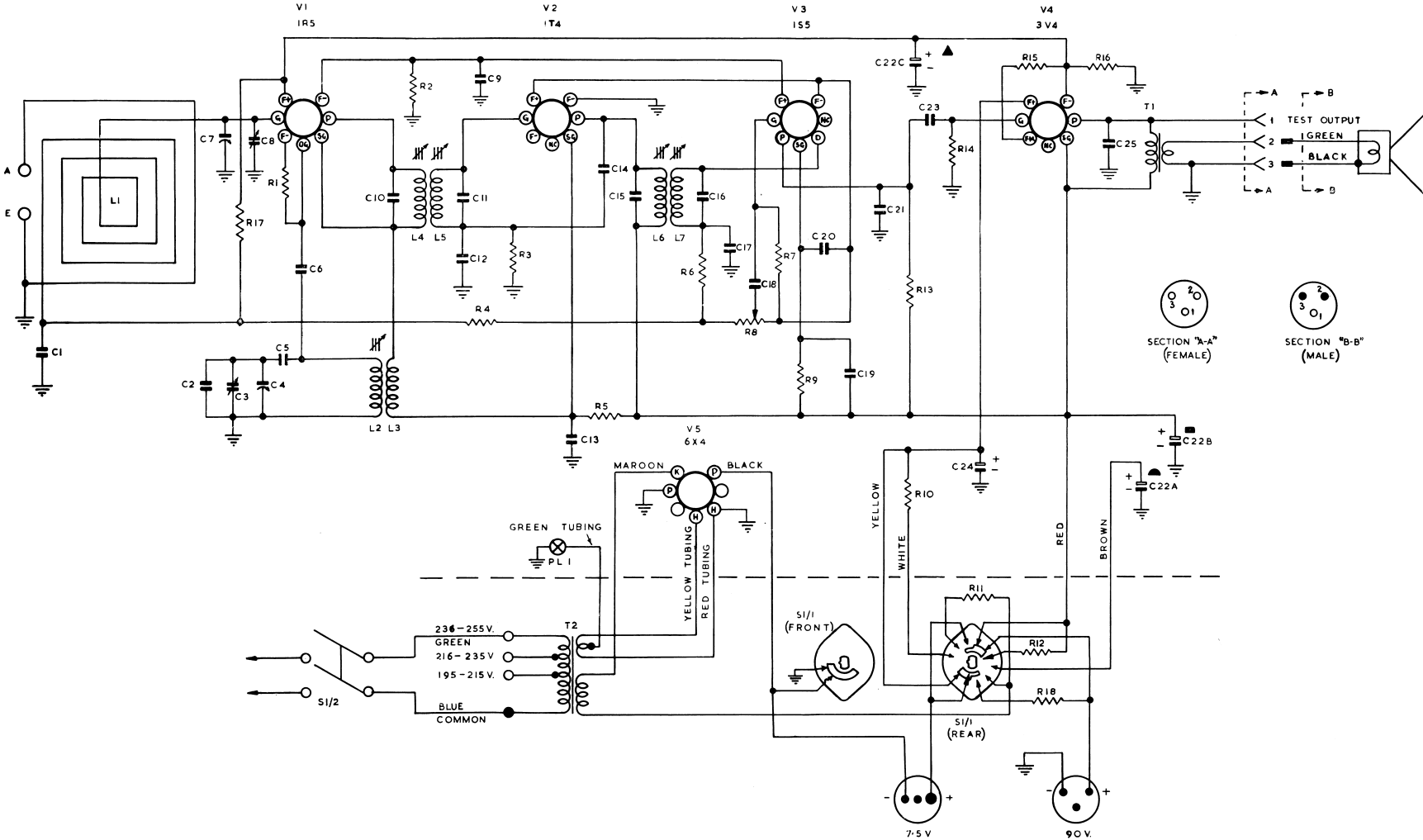
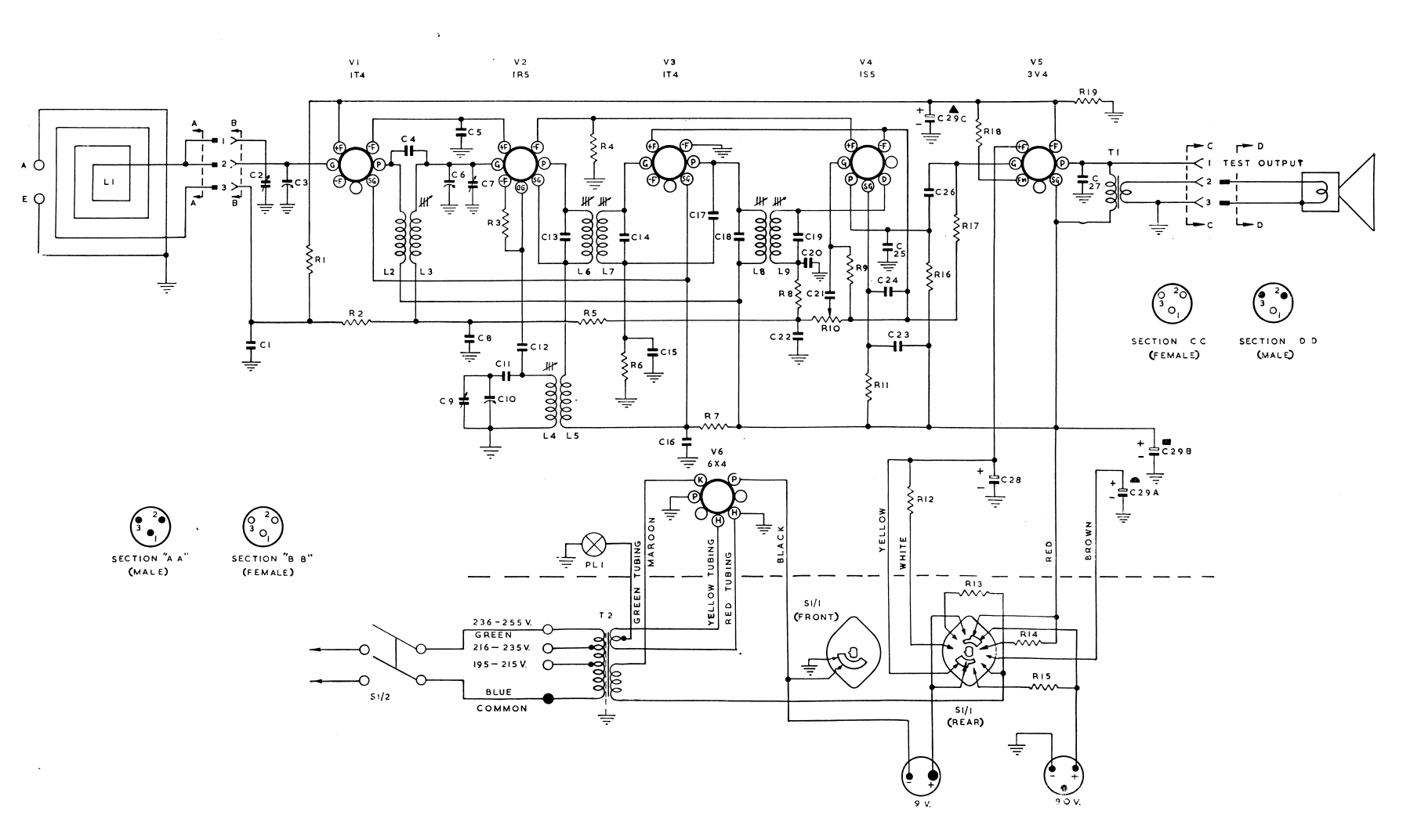


FIG. 4

CHASSIS UNDERNEATH VIEW MODEL 653-P


V1
1R5
V2
1T4
V3
1S5
V4
3V4
V5
6X4
A
E
L1
C1
C2
C3
C4
C5
C6
C7
C8
R1
R17
R2
C9
C10
C11
C12
R3
L4
L5
L2
L3
R4
R5
C13
C14
C15
C16
C17
C18
R6
R7
R8
C20
L6
L7
C21
C22C
C23
R13
R14
R15
R16
T1
C25
TEST OUTPUT
GREEN
BLACK
SECTION "A-A" (FEMALE)
SECTION "B-B" (MALE)
R9
C19
C22B
C24
C22A
R10
MAROON
BLACK
GREEN TUBING
PL1
YELLOW TUBING
RED TUBING
YELLOW
WHITE
RED
BROWN
R11
R12
R18
S1/1 (FRONT)
S1/1 (REAR)
T2
236–255V.
GREEN
216–235V
195–215V.
BLUE
COMMON
S1/2
7·5 V
90 V.


V1 1T4
V2 1R5
V3 1T4
V4 1S5
V5 3V4
V6 6X4
L1
L2 L3
L4 L5
L6 L7
L8 L9
T1
T2
R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R18 R19
C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15 C16 C17 C18 C19 C20 C21 C22 C23 C24 C25 C26 C27 C28 C29A C29B C29C
A
E
TEST OUTPUT
SECTION "A A" (MALE)
SECTION "B B" (FEMALE)
SECTION C C (FEMALE)
SECTION D D (MALE)
PL1
S1/1 (FRONT)
S1/1 (REAR)
S1/2
236 - 255 V.
GREEN
216 - 235 V.
195 - 215 V.
BLUE
COMMON
GREEN TUBING
MAROON
YELLOW TUBING
RED TUBING
BLACK
YELLOW
WHITE
RED
BROWN
9 V.
90 V.

CIRCUIT CODE — MODEL 555-P

Code No.	Description	Part No.	Fig. No.	Location
	INDUCTORS			
L1	Loop Aerial Coil	31841		
L2, L3	Oscillator Coil 540-1600 Kc/s	30777	2	C14
L4, L5	1st I.F. Transformer	27324	1	H9
L6, L7	2nd I.F. Transformer	27324	1	G7
	RESISTORS			
R1	0.1 megohm ½ watt		2	F14
R2	820 ohms ½ ,,		2	F15
R3	4.7 megohms ½ ,,		2	E12
R4	3.3 megohms ½ ,,		2	B11
R5	13,000 ohms ½ ,, ± 5%		2	C11
R6	47,000 ohms ½ ,,		2	B11
R7	10 megohms ½ ,,		2	E7
R8	1.0 megohm volume control	28311	2	D3
R9	3.3 megohms ½ watt		2	D10
R10	1,200 ohms 3 ,, (Wire Wound ± 5%)		2	F5
R11	1,200 ohms 3 ,, (Wire Wound ± 5%)		1	D13
R12	1,800 ohms 1 ,,		1	B13
R13	0.47 megohm ½ ,,		2	C9
R14	1.0 megohm ½ ,,		2	D7
R15	470 ohms ½ ,,		2	C7
R16	820 ohms ½ ,,		2	E6
R17	3.3 megohms ½ ,,		2	E15
R18	470 ohms ½ ,,		1	C12
	CAPACITORS			
C1	0.05 μF paper 200V working		2	C13
C2	9 μμF mica		2	C15
C3	3-25 μμF trimmer	27526	2	B15
C4	12-445 μμF tuning	18621	1	G5
C5	470 μμF padder ± 2½%		2	C15
C6	68 μμF silvered mica		2	E14
C7	12-445 μμF tuning	18621	1	H3
C8	3-25 μμF trimmer	27526	2	B17
C9	0.1 μF paper 200V working		2	E16
C10	47 μμF silvered mica		2	F13
C11	47 μμF silvered mica		2	F13
C12	0.01 μF paper 600V working		2	E14
C13	0.05 μF paper 200V working		2	D15
C14	6.8 μμF ceramic		2	D12
C15	47 μμF silvered mica		2	C11
C16	47 μμF silvered mica		2	C11
C17	200 μμF mica		2	B13
C18	0.01 μF paper 600V working		2	E5
C19	0.01 μF paper 600V working		2	B9
C20	0.05 μF paper 200V working		2	D9
C21	100 μμF silvered mica		2	C8
C22A	50 μF 150 W.V. electrolytic		1	F12
C22B	40 μF 150 W.V. electrolytic		1	F12
C22C	40 μF 25 W.V. electrolytic		1	F12
C23	0.01 μF paper 600V working		2	C8
C24	400 μF 12 P.V. electrolytic		2	F9
C25	0.0025 μF paper 600V working		2	D4
	TRANSFORMERS			
T1	Loudspeaker Transformer	31727A	1	H10
T2	Power Transformer, 50 C.P.S.	25835	1	F14
	40 C.P.S.	25837		
	LOUDSPEAKER			
	6" Permanent Magnet	AG52		
	SWITCHES			
S1	Power Selector	31835	1	C12
	PILOT LAMP			
PL1	6.3V, 0.15 Amp. M.E.S.			

Chassis Removal:

To remove the chassis from the cabinet open the back and disconnect the speaker cable and batteries. Unsolder the loop aerial leads and pull them back through the guides on the side of the cabinet.

Remove the knobs by pulling them straight off their spindles. Remove a screw under each knob when the cream link covers may be lifted off. The screw under each cover on being removed allows the chassis to be withdrawn.

When replacing the chassis pass the loop leads through the guides, keeping the green lead separate from the black and white, and solder the green lead to the panel so that it connects to the inside of the loop winding.

Note that the link covers are slightly different and must be replaced on the correct side, the one marked "TUNE" on the tuning spindle side and the one marked "VOL" on the volume control side.

ALIGNMENT PROCEDURE

Manufacturer's Setting of Adjustments:

The receiver is tested by the manufacturer with precision instruments and all adjusting screws are sealed. Re-alignment should be necessary only when components in tuned circuits are repaired or replaced, or when it is found that the seals over the adjusting screws are broken.

It is especially important that the adjustments should not be altered unless in association with the correct testing instruments listed below.

Under no circumstances should the plates of the ganged tuning capacitor be bent, as the unit is accurately aligned during manufacture and cannot be re-adjusted unless by skilled operators using special equipment.

For all alignment operations, keep the generator output as low as possible to avoid A.V.C. action and set the volume control in the maximum clockwise position.

Testing Instruments:

(1) A.W.A. Junior Signal Generator, type 2R3911, or

(2) A.W.A. Modulated Oscillator, type J6726.
If the modulated oscillator is used, connect a 0.25 megohm non-inductive resistor across the output terminals.

(3) A.W.A. Output Meter, type 2M8832.

ALIGNMENT TABLE—MODEL 555-P

Order	Connect "high" side of Generator to:	Tune Generator to:	Tune Receiver to:	Adjust for maximum peak output:
	NOTE: If loop leads protruding from the chassis are disconnected, connect a 1 megohm resistor across them.			
1	Grid of 1T4* (I.F. Amp.)	455 Kc/s	Gang in full mesh	L7 and L6 Cores
2	Aerial Section of Gang* (Drive End)	455 Kc/s	Gang in full mesh	L5 and L4 Cores
	Repeat adjustments 1 and 2 until the maximum output is obtained. With gang in full mesh, set the pointer to the setting mark at the right-hand end of the dial scale. Replace the cover over the receiver chassis which should then be fitted in the cabinet, the resistor removed from the loop leads and the leads then connected to the aerial in the back lid, the green lead to the inside of the loop. The batteries must be in place in the cabinet and the back closed before remainder of alignment is proceeded with.			
3	Inductively coupled to loop†	600 Kc/s	600 Kc/s (7ZL)	L.F. Osc. Core Adj. (L2)‡§
4	Inductively coupled to loop†	1640 Kc/s	Gang fully open	H.F. Osc. Adj. (C3)§
5	Inductively coupled to loop†	1500 Kc/s	1500 Kc/s (3AK)	H.F. Aer. Adj (C8)§
	Repeat adjustments 3 and 5 until the maximum output is obtained.			

* A 0.001 μF capacitor should be connected in series with the high side of the test instrument.

† A coil comprising 3 turns of 16 gauge D.C.C. wire and about 6 inches in diameter should be connected between the output terminals of the test instrument, placed co-axial with the loop and distant not less than 1 foot from it.

‡ Rock the tuning control back and forth through the signal.

§ These adjustments are accessible through 3 holes in the cabinet back.

D.C. RESISTANCE OF WINDINGS
MODEL 555-P

Winding	D.C. Resistance in ohms
Oscillator Coil:	
Primary (L3)	1
Secondary (L2)	4
I.F. Transformer Windings	25
Loudspeaker Input Transformer (T1)	
Primary	450
Secondary	*
Power Transformer (T2)	
Primary	140
Secondary	100

* Less than 1 ohm.

The above readings were taken on a standard chassis, but substitution of materials during manufacture may cause variations, and it should not be assumed that a component is faulty if a slightly different reading is obtained.

SOCKET VOLTAGES—MODEL 555-P

	VALVES	Bias Volts	Screen to Chassis Volts:	Anode to Chassis Volts:	Anode Current mA:	Filament Volts:
1R5	Converter	*	48	48	0 5	1.3-1.4
1T4	I.F. Amp.	*	48	90	2 0	1.3-1.4
1S5	Det., A.F. Amp. A.V.C.	*	25*	35*	0.1	1.3-1.4
3V4	Output	−4.5	90	88	6.5	2.6-2.8

* Cannot be measured with an ordinary voltmeter.
Measured with no signal input. Volume Control maximum clockwise.
A.C. Power Unit Operation:—
H.T. Secondary Volts = 130V A.C.
6X4 Cathode to Chassis Volts =120V D.C.
Heater Volts = 6.3V A.C.

ALIGNMENT TABLE—MODEL 653-P

Order	Connect "high" side of Generator to:	Tune Generator to:	Tune Receiver to:	Adjust for maximum peak output:
	NOTE: If loop leads protruding from the chassis are disconnected, connect a 1 megohm resistor across them.			
1	Grid of 1T4* (I.F. Amp.) (Rear Section of Gang)	455 Kc/s	Gang in full mesh	L9 and L8 Cores
2	Grid of 1R5* (Rear Section of Gang)	455 Kc/s	Gang in full mesh	L7 and L6 Cores
	Repeat adjustments 1 and 2 until the maximum output is obtained.			
	With gang in full mesh, set the pointer to the setting mark at the right-hand end of the dial scale.			
	Replace the cover over the receiver chassis which should then be fitted in the cabinet, remove the resistor from the loop leads and connect them to the aerial in the cabinet back, the green lead to the inside of the loop. The batteries must be in place in the cabinet and the back closed for alignment of aerial circuits.			
	Connect a 10,000 ohm resistor from the rear section of the gang to chassis.			
3	Inductively coupled to loop†	600 Kc/s	600 Kc/s (7ZL)	L.F. Osc. Core Adj. (L4)‡§
4	Inductively coupled to loop†	1640 Kc/s	Gang fully open	H.F. Osc. Adj. (C9)¶
5	Inductively coupled to loop†	1500 Kc/s	1500 Kc/s (3AK)	H.F. Aer. Adj. (C2)§
	Repeat adjustments 3 and 5 until maximum output is obtained. Remove the 10,000 ohm resistor.			
6	Inductively coupled to loop†	600 Kc/s	600 Kc/s (7ZL)	L.F. R.F. Core Adj. (L3)§
7	Inductively coupled to loop†	1500 Kc/s	1500 Kc/s (3AK)	H.F. R.F. Adj. (C7)§
	Repeat adjustments 6 and 7 until maximum output is obtained and finally check adjustments 3 and 5.			

* A 0.001 μF capacitor should be connected in series with the high side of the test instrument.

† A coil comprising 3 turns of 16 gauge D.C.C. wire and about 6 inches in diameter should be connected between the output terminals of the test instrument, placed co-axial with the loop and distant not less than 1 foot from it.

‡ Rock the tuning control back and forth through the signal.

§ These adjustments are accessible through 4 holes in the cabinet back.

¶ Open the back to make this adjustment and then close to complete alignment.

CIRCUIT CODE — MODEL 653-P

Code No.	Description	Part No.	Fig. No	Location
	INDUCTORS			
L1	Loop Aerial Coil	31841		
L2, L3	R.F. Coil 540-1600 Kc/s	30784	4	C14
L4, L5	Oscillator Coil 540-1600 Kc/s	30777	4	C12
L6, L7	1st I.F. Transformer	27324	3	J8
L8, L9	2nd I.F. Transformer	27351	3	G7
	RESISTORS			
R1	6.8 megohms ½ watt ± 10%		4	E17
R2	1.8 megohms ½ ,, ,,		4	E15
R3	0.1 megohm ½ ,, ,,		4	F14
R4	820 ohms ½ ,, ,,		4	C8
R5	3.3 megohms ½ ,, ,,		4	B11
R6	4.7 megohms ½ ,, ,,		4	E12
R7	22,000 ohms ½ ,, ,,		4	D13
R8	47,000 ohms ½ ,, ,,		4	B11
R9	10 megohms ½ ,, ,,		4	E7
R10	1.0 megohm volume control	28311	4	D3
R11	3.3 megohms ½ watt		4	C11
R12	1,200 ohms 3 ,, (Wire Wound ± 5%)		4	F6
R13	1,200 ohms 3 ,, (Wire Wound ± 5%)		3	E13
R14	1,800 ohms 1 watt ± 10%		3	B13
R15	470 ohms ½ ,, ,,		3	C12
R16	0.47 megohm ½ ,, ,,		4	C9
R17	1.0 megohm ½ ,, ,,		4	D6
R18	470 ohms ½ ,, ,,		4	C7
R19	820 ohms ½ ,, ,,		4	E5
	CAPACITORS			
C1	0.05 μF paper 200V working		4	D16
C2	3-25 μμF trimmer	27526	4	B17
C3	12-445 μμF tuning	30785	3	H3
C4	6.8 μμF ceramic		4	F15
C5	0.1 μF paper 200V working		4	F16
C6	12-445 μμF tuning	30785	3	H6
C7	3-25 μμF trimmer	27526	4	B15
C8	0.05 μF paper 200V working		4	D13
C9	5-50 μμF trimmer		3	G4
C10	12-445 μμF tuning	30785	3	H5
C11	470 μμF padder ± 2½%		4	C13
C12	68 μμF silvered mica		4	E13
C13	47 μμF silvered mica		4	F13
C14	47 μμF silvered mica		4	F13
C15	0.01 μF paper 600V working		4	E10
C16	0.05 μF paper 200V working		4	D15
C17	6.8 μμF ceramic		4	C12
C18	100 μμF silvered mica		4	C11
C19	100 μμF silvered mica		4	C11
C20	100 μμF silvered mica		4	B13
C21	0.01 μF paper 600V working		4	E5
C22	100 μμF silvered mica		4	D10
C23	0 01 μF paper 600V working		4	B8
C24	0.05 μF paper 200V working		4	D9
C25	100 μμF silvered mica		4	C8
C26	0.01 μF paper 600V working		4	D8
C27	0 0025 μF paper 600V working		4	D4
C28	400 μF 12 P.V. electrolytic		4	F9
C29A	50 μF 200 P.V. electrolytic		3	F12
C29B	40 μF 200 P.V. electrolytic		3	F12
C29C	40 μF 40 P.V. electrolytic		3	F12
	TRANSFORMERS			
T1	Loudspeaker Transformer	31727A	3	H10
T2	Power Transformer 50 C.P.S.	25835	3	F13
	40 C.P.S.	25837		
	LOUDSPEAKER			
	6" permanent magnet	AG52		
	SWITCHES			
S1	Power Selector	31835	3	D12
	PILOT LAMP			
PL1	6.3V, 0.15 Amp. M.E.S.		3	K11

D.C. RESISTANCE OF WINDINGS
MODEL 653-P

Winding	D.C. Resistance in ohms
R.F. Coil:	
Primary (L2)	100
Secondary (L3)	4
Oscillator Coil:	
Primary (L5)	1
Secondary (L4)	4
1st I.F. Transformer Windings	25
2nd I.F. Transformer Windings	20
Loudspeaker Input Transformer (T1)	
Primary	450
Secondary	*
Power Transformer (T2)	
Primary	140
Secondary	100

* Less than 1 ohm.

The above readings were taken on a standard chassis, but substitution of materials during manufacture may cause variations, and it should not be assumed that a component is faulty if a slightly different reading is obtained.

SOCKET VOLTAGES—MODEL 653-P

	VALVES	Bias Volts	Screen to Chassis Volts:	Anode to Chassis Volts:	Anode Current mA:	Filament Volts:
1T4	R.F. Amp.	*	40	90	0.5	1.3-1.4
1R5	Converter	*	40	40	0.5	1.3-1.4
1T4	I.F. Amp.	*	40	90	1.5	1.3-1.4
1S5	Det., A.F. Amp., A.V.C.	*	25*	35*	0.1	1.3-1.4
3V4	Output	−5.0	90	88	6.5	2.6-2.8

* Cannot be measured with an ordinary voltmeter.
Measured with no signal input. Volume Control maximum clockwise.
A.C. Power Unit Operation:—
H.T. Secondary Volts = 130V A.C.
6X4 Cathode to Chassis Volts = 120V D.C.
Heater Volts = 6.3V A.C.


AWA