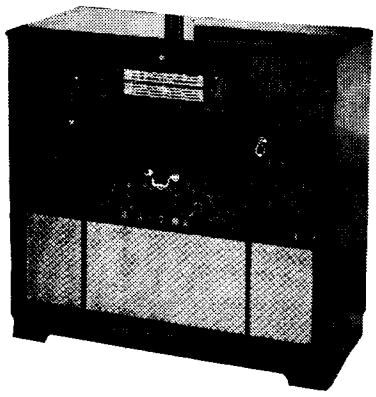
TECHNICAL INFORMATION AND SERVICE DATA

AWA RADIOLA

Model 538-GA

FIVE VALVE, TWO BAND,
A.C. OPERATED SUPERHETERODYNE.

ISSUED BY
AMALGAMATED WIRELESS (A/SIA) LTD.



ELECTRICAL SPECIFICATIONS

Frequency Ranges:
- Medium Wave ..... 540-1600 Kc/s (555-187.5 Metres)
- Short Wave ..... 6-18 Mc/s (50-16 Metres)

Intermediate Frequency ..... 455 Kc/s
Power Supply Rating ..... 200-260 volts 50-60 C.P.S.
(Models are produced with other voltage and frequency ratings)
Power Consumption ..... 45 watts Receiver
45 watts Record Changer
Dial Lamps ..... 6.3 volts, 0.25 Amp. M.E.S.

Valve Complement:

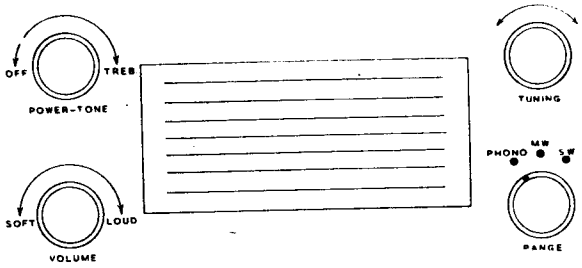
1.	6AE8	Converter
2.	6AR7GT	I.F. Amplifier, Detector, A.V.C.
3.	6AU6	A.F. Amplifier
4.	6V6GT	Output
5.	5Y3GT	Rectifier

Loudspeaker (Permanent Magnet):
12 inch — Code No. AU60
Transformer — TU201
V.C. Impedance ..... 6.5 ohms at 400 C.P.S.
Undistorted Power Output ..... 5 watts.

GENERAL DESCRIPTION

The model 538-GA is a five valve, two band, A.C. operated Phono-Radio superheterodyne and features of its design include:—Tropic-proof construction, automatic volume control, magnetite cores in I.F. transformers and broadcast oscillator coil, air-dielectric trimming capacitors, straight-line edge lighted perspex dial scale, 3 speed Record Changer.

The Record Changer may be either a Garrard RC70B modified for 3 speeds or a Garrard RC72A which is designed to play 78, 45 or 33⅓ R.P.M. records. Both Record Changers feature a synchronous motor and simple construction with minimum of working parts, ensuring trouble-free service.



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 have been broken.

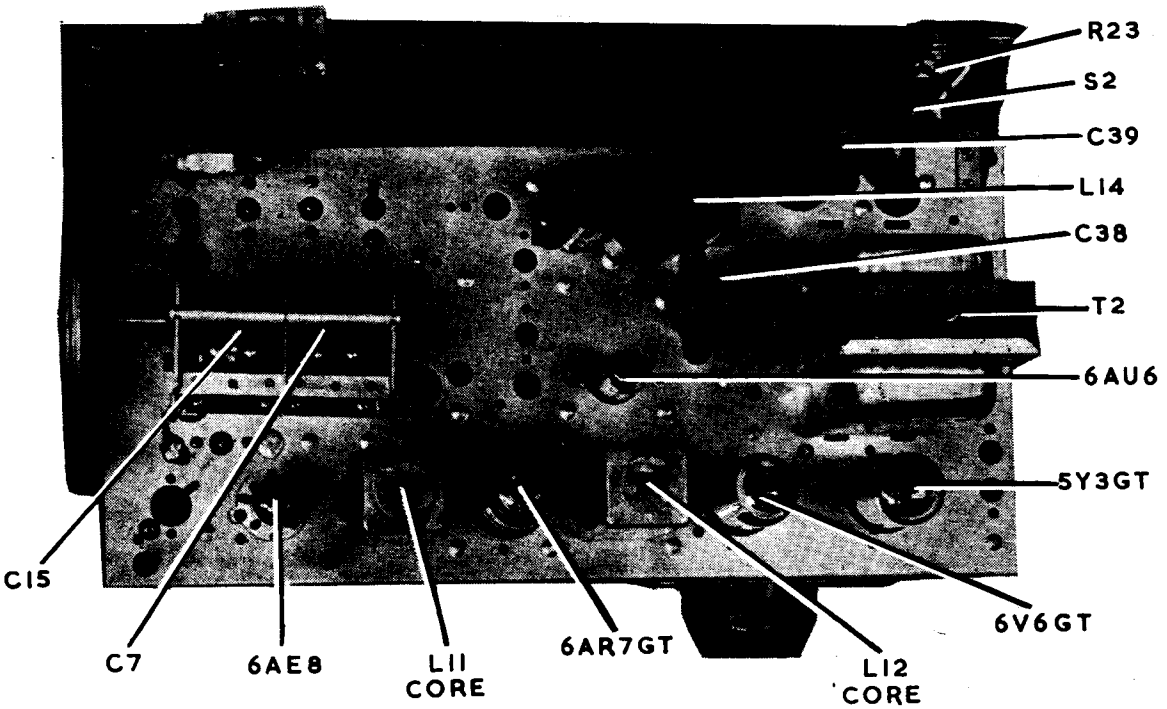
It is especially important that the adjustments should not be altered, unless in association with the correct testing instruments listed below.

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.

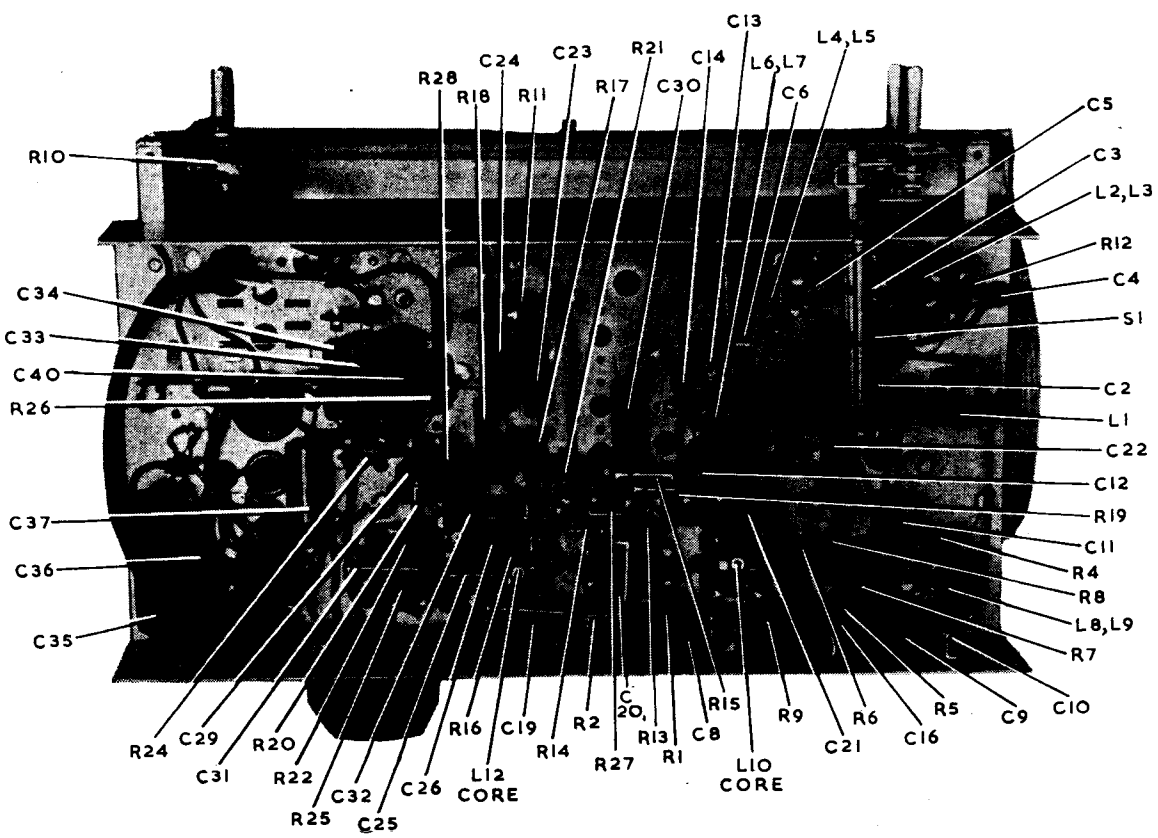
For all alignment operations connect the low side of the signal generator to the receiver chassis, and keep the generator output as low as possible to avoid A.V.C. action. Also, keep the volume control in the maximum clockwise position.

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, and, for short wave alignment, an additional 400 ohms non-inductive resistor in series with the "high" output lead of the instrument.
(3) A.W.A. Output Meter, type 2M8832.



CHASSIS TOP VIEW MODEL 538-GA



UNDERNEATH VIEW MODEL 538-GA

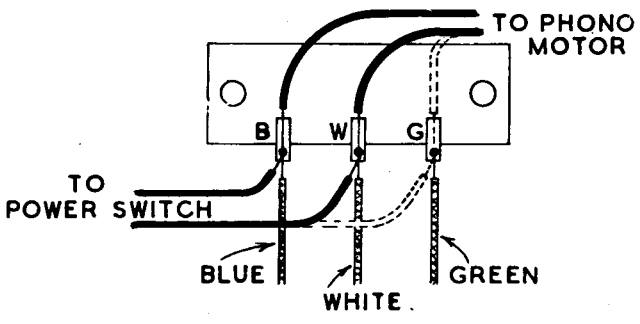
ALIGNMENT TABLE

Alignment Order	Connect "high" side of Generator to:	Tune Generator to:	Tune Receiver Dial to:	Adjust for Maximum Peak Output.
1	Aerial Section of Gang (Drive end)	455 Kc/s	540 Kc/s	L13 Core
2	Aerial Section of Gang (Drive end)	455 Kc/s	540 Kc/s	L12 Core
3	Aerial Section of Gang (Drive end)	455 Kc/s	540 Kc/s	L11 Core
4	Aerial Section of Gang (Drive end)	455 Kc/s	540 Kc/s	L10 Core
	Repeat the above adjustments until the maximum output is obtained.			
5	Aerial Terminal	600 Kc/s	600 Kc/s	L.F. Osc. Core Adj. (L7)*
6	Aerial Terminal	1500 Kc/s	1500 Kc/s	H.F. Osc. Adj. (C13)
7	Aerial Terminal	1500 Kc/s	1500 Kc/s	H.F. Aer. Adj. (C3)
	Repeat adjustments 5, 6 and 7.			
8	Aerial Terminal	16 Mc/s	16 Mc/s	H.F. Aer. Adj. (C11)†
9	Aerial Terminal	16 Mc/s	16 Mc/s	H.F. Osc. Adj. (C5)‡

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

† Use minimum capacity peak if two can be obtained. Check to determine that the trimmer has been adjusted to correct peak by tuning the receiver to approximately 15.09 Mc/s where a weaker signal should be received.

‡ Use maximum capacity peak if two can be obtained.



Connection to Power Supply.

The receiver should not be connected to any circuit supplying other than alternating current from 200-260 volts, and at the frequency stated on the label within the cabinet. The power supply connections are shown in the accompanying diagram.

Chassis Removal.

First remove the control knobs by pulling them straight off their spindles.

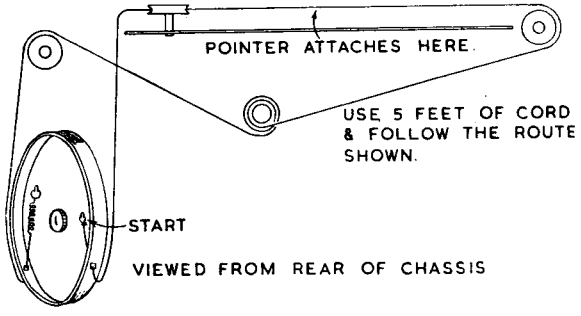
Then, disconnect the loudspeaker cable, pick-up cable, phono-motor plug from the socket on the rear of the chassis and the dial lamp leads from the top of the chassis.

Pull the Record Player Drawer out and from the rear of the cabinet remove two bolts situated under the receiver shelf. Two other bolts holding the chassis are accessible from the front of the cabinet under the receiver shelf with the Record Player drawer open.

With these bolts removed, the chassis may be withdrawn from the cabinet.

Drive Cord Replacement.

The accompanying diagram shows the route of the cord and the method of attachment.

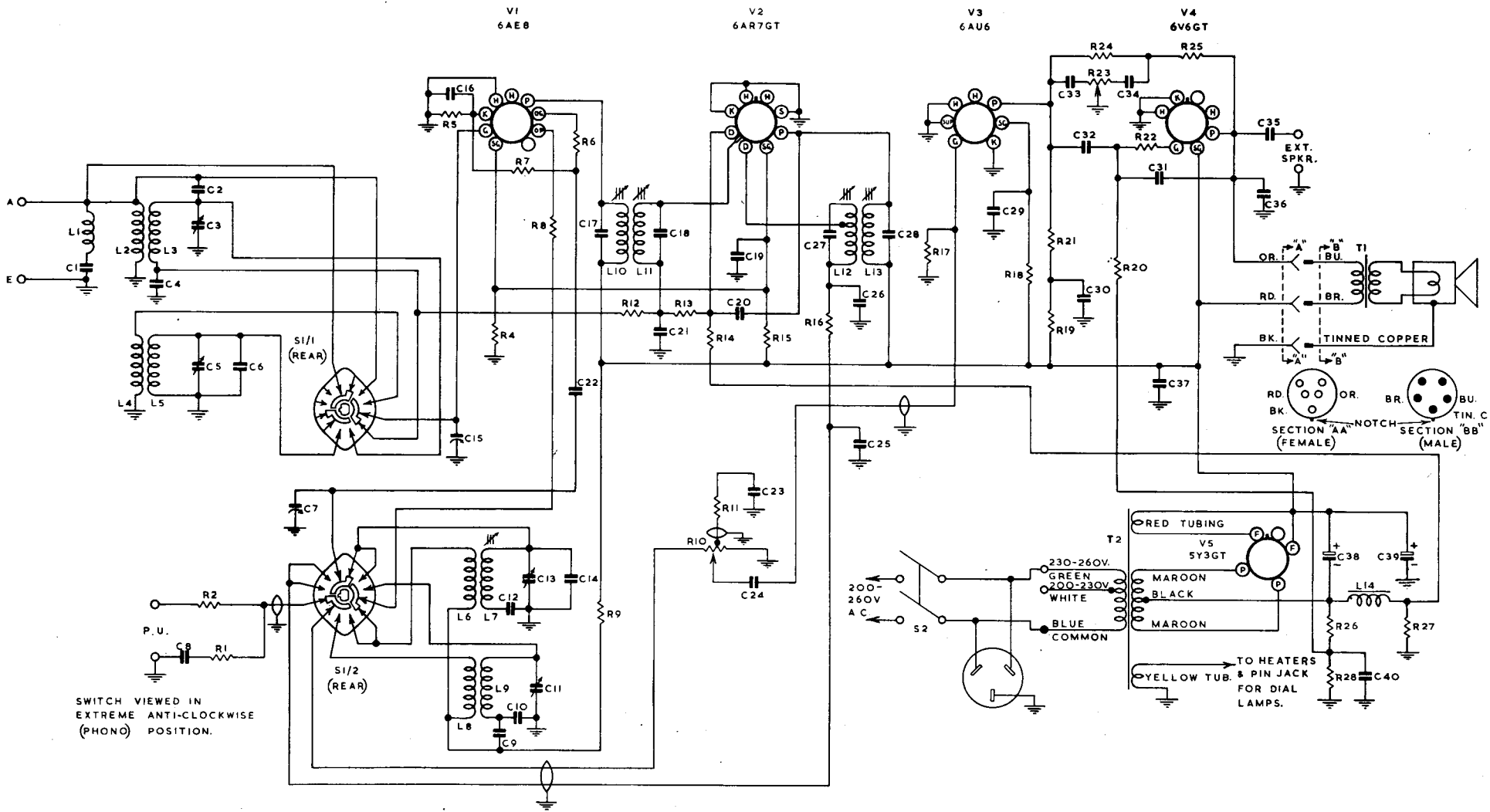


Dial Lamp Replacement.

First remove the chassis from the cabinet. The Dial Lamps and Record Compartment Lamp may now be removed from their brackets and the faulty lamps replaced.

CIRCUIT CODE RADIOLA 538-GA

Code No.	Description	Part No.
	INDUCTORS	
L1	I.F. Filter (including C1)	9382
L2, L3	Aerial Coil 540-1600 Kc/s	15454
L4, L5	Aerial Coil 6-18 Mc/s	15456
L6, L7	Oscillator Coil 540-1600 Kc/s	7638A
L8, L9	Oscillator Coil 6-18 Mc/s	15458
L10, L11	1st I.F. Transformer	25195
L12, L13	2nd I.F. Transformer	25197
L14	Filter Choke	TU17
	RESISTORS	
R1	0.1 megohm ½ watt	
R2	0.5 megohm ½ ,,	
R3	Not used	
R4	30,000 ohms 1 watt	
R5	150 ohms ½ ,,	
R6	100 ohms ½ ,,	
R7	40,000 ohms ½ ,,	
R8	200 ohms ½ ,,	
R9	30,000 ohms 1 ,,	
R10	0.5 megohm Volume Control (Tapped at 40,000 ohms)	27145
R11	10,000 ohms ½ watt	
R12	0.1 megohm ½ ,,	
R13	1.0 megohm ½ ,,	
R14	1.5 megohms ½ ,,	
R15	25,000 ohms 2 ,,	
R16	50,000 ohms ½ ,,	
R17	10 megohms ½ ,,	
R18	1.0 megohm 1 ,,	
R19	50,000 ohms 1 ,,	
R20	0.5 megohm ½ ,,	
R21	0.25 megohm 1 ,,	
R22	50,000 ohms ½ ,,	
R23	1.0 megohm Tone Control (including S2)	26444
R24	0.4 megohm ½ watt	
R25	0.6 megohm ½ ,,	
R26	1.5 megohms ½ ,,	
R27	50 ohms ½ ,,	
R28	0.5 megohm ½ ,,	
	CAPACITORS	
C1	50 $\mu\mu$F silvered mica	
C2	4 $\mu\mu$F mica	
C3	2-20 $\mu\mu$F air trimmer	19659
C4	0.05 μF paper 200V working	
C5	2-20 $\mu\mu$F air trimmer	19659
C6	9 $\mu\mu$F mica	
C7	12-430 $\mu\mu$F tuning	18230
C8	0.0025 μF paper 600V working	
C9	0.05 μF paper 400V working	
C10	4,000 $\mu\mu$F padder $\pm$ 2½%	
C11	2-20 $\mu\mu$F air trimmer	19659
C12	440 $\mu\mu$F padder $\pm$ 2½%	
C13	2-20 $\mu\mu$F air trimmer	19659
C14	9 $\mu\mu$F mica	
C15	12-430 $\mu\mu$F tuning	18230
C16	0.1 μF paper 200V working	
C17	100 $\mu\mu$F silvered mica	
C18	100 $\mu\mu$F silvered mica	
C19	0.1 μF paper 400V working	
C20	50 $\mu\mu$F mica	
C21	0.05 μF paper 200V working	
C22	70 $\mu\mu$F mica	
C23	0.025 μF paper 400V working	
C24	0.05 μF paper 400V working	
C25	100 $\mu\mu$F mica	
C26	100 $\mu\mu$F mica	
C27	100 $\mu\mu$F silvered mica	
C28	100 $\mu\mu$F silvered mica	
C29	0.1 μF paper 400V working	
C30	0.05 μF paper 400V working	
C31	14 $\mu\mu$F mica	
C32	0.05 μF paper 400V working	
C33	0.005 μF paper 600V working	
C34	200 $\mu\mu$F mica	
C35	0.5 μF paper 400V working	
C36	0.0025 μF paper 600V working	
C37	0.1 μF paper 400V working	
C38	8 μF 525 P.V. electrolytic	
C39	16 μF 525 P.V. electrolytic	
C40	0.4 μF paper 200V working	
	TRANSFORMERS	
T1	Loudspeaker Transformer	TU201
T2	Power Transformer 50-60 C.P.S.	17875B
	40 C.P.S.	17877B
	LOUDSPEAKER	
	12 inch permanent magnet	AU60
	SWITCHES	
S1	Phono-Radio-Range Switch	28285
S2	Power Switch (on R23)	


V1
6AE8
V2
6AR7GT
V3
6AU6
V4
6V6GT
A
E
L1
C1
L2
L3
C2
C3
C4
L4
L5
C5
C6
S1/1
(REAR)
C15
C16
R5
R6
R7
R8
C17
C18
L10
L11
R12
R13
C20
C21
R4
C22
C19
C27
C28
L12
L13
C26
R16
R14
R15
R17
C29
R18
R24
R25
R23
C33
C34
C32
R22
C35
EXT.
SPKR.
C31
C36
R21
R20
C30
R19
C37
OR.
RD.
BK.
BU.
BR.
TINNED COPPER
T1
"A"
"B"
RD.
OR.
BK.
BR.
BU.
TIN. CU
NOTCH
SECTION "AA"
(FEMALE)
SECTION "BB"
(MALE)
C25
C7
C23
R11
R10
C24
R2
P.U.
C8
R1
S1/2
(REAR)
L6
L7
C12
C13
C14
L9
C10
C11
L8
C9
R9
200-
260V
A.C.
S2
230-260V.
GREEN
200-230V.
WHITE
BLUE
COMMON
T2
RED TUBING
V5
5Y3GT
MAROON
BLACK
MAROON
YELLOW TUB.
TO HEATERS
& PIN JACK
FOR DIAL
LAMPS.
C38
C39
L14
R26
R27
R28
C40
SWITCH VIEWED IN
EXTREME ANTI-CLOCKWISE
(PHONO) POSITION.

D.C. RESISTANCE OF WINDINGS

Winding	D.C. Resistance in ohms
Aerial Coil (M.W.)	
Primary (L2)	30
Secondary (L3)	4
Aerial Coil (S.W.)	
Primary (L4)	4
Secondary (L5)	*
Oscillator Coil (M.W.)	
Primary (L6)	1.5
Secondary (L7)	6
Oscillator Coil (S.W.)	
Primary (L8)	*
Secondary (L9)	*
I.F. Transformer Windings	10
I.F. Filter (L1)	17.5†
Filter Choke (L14)	1,000
Power Transformer (T2)	
Primary	25
Secondary	600
Loudspeaker Input Transformer (T1)	
Primary	345
Secondary	*

* Less than 1 ohm.

† In some receivers this reading may be as high as 60 ohms.

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

VALVE		Screen to Chassis Volts	Anode to Chassis Volts	Anode Current mA	Heater Volts
6AE8	Converter	85	265	3.0	6.3
	Oscillator	—	80	5.0	--
6AR7GT	I.F. Amp., Det., A.V.C.	85	265	5.0	6.3
6AU6	A.F. Amp.	30*	70*	0.5	6.3
6V6GT	Output	265	260	40	6.3
5Y3GT	Rectifier	—	320 A.C.	—	5.0

Total H.T. Current 60 mA. Volts across L14, 60 volts.

Measured at 240 V A.C. supply. No signal input. Volume Control maximum clockwise. Voltmeter 1,000 ohms per volt; measurements taken on highest scale giving accurate readable deflection.

* This reading may vary depending on the resistance of the voltmeter used.