MANUFACTURERS AWA SUPERVISED SERVICE

MODEL B40

A.W.A. PORTABLE RADIOGRAM

ISSUED BY AMALGAMATED WIRELESS (AUSTRALASIA) LTD.

GENERAL DESCRIPTION

Model B40 is a seven transistor, A.C. operated, portable radiogram designed for the reception of the Medium Wave Band and for the reproduction of 7", 10" or 12" records at all four speeds. Stereophonic records may be played without damaging the record, although both channels will be reproduced through one loudspeaker.

Features of design include:—Ferrite Rod aerial with provision for external aerial and earth connections; high gain miniature i.f. transformers; low drift oscillator; high compliance ceramic stereo cartridge.

ELECTRICAL AND MECHANICAL SPECIFICATIONS

Frequency Range	525-1650 Kc/s
Intermediate Frequency	455 Kc/s
Power Supply Rating	200-260V A.C. 50 C.P.S.
Power Consumption	12 Watts
Power Output	1½ Watts
Loudspeaker 6" x 4"	50245
V.C. Impedance	15 ohms at 400 C.P.S.

Transistor and Diode Complement:

AWV	2N1639	Converter
AWV	2N1638	1st I.F. Amplifier
AWV	2N1638	2nd I.F. Amplifier
AWV	2N408	Pre-Amplifier
AWV	2N591	Driver
AWV	AS128 (2)	P-P Output
AWV	1N87A	Detector and A.G.C. Diode
AWV	1N87A	Overload Diode
AWV	1N3193 or AS25	Power Supply Rectifier

Dimensions:

Width 11½". Depth 10". Height 5". Weight 11 lbs.

Controls (Front):

Tone-On/Off, Gram/Radio, Tuning, Volume.

Controls (Top):

Speed Selector, Motor On/Off.

Chassis Removal:

Remove the front knobs by pulling them straight off their spindles.

Remove the lid and make sure the pick-up arm is secured to its rest.

Place the radiogram face down and remove three screws exposed in the bottom of the case. The case may now be lifted from the motor board assembly.

To gain access to the wiring side of the printed board, remove three Phillips Head screws situated at the bottom front of the chassis and loosen the two screws clamping the chassis to the moulded lugs. The complete assembly may now be lifted and tilted forward to reveal the printed wiring.

Spring Loaded Foot Replacement:

To accomplish this, the whole assembly comprising foot (part No. 64846) Spring and Retaining Clip (No. SCO/1868) must be replaced. It is essential that the correctly coloured springs, as shown in the accompanying diagram, are replaced in their corresponding positions. The diagram is viewed from the underside of the cabinet case.

To replace a foot, first remove the cabinet case. Mount the correct spring on the foot and push it through its mounting hole. From inside the cabinet case push the retaining clip onto the foot until its teeth engage in the groove in the foot.

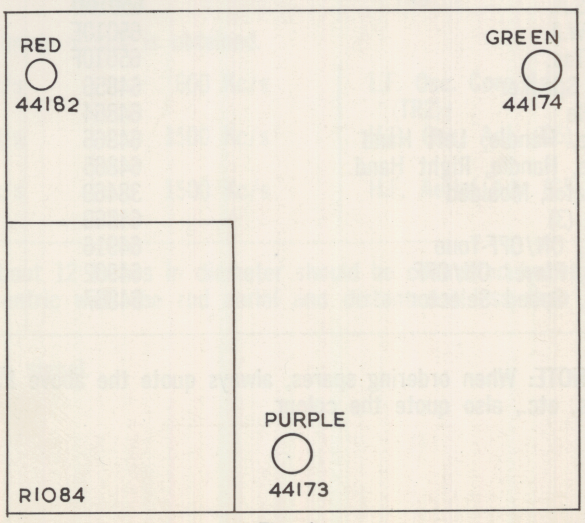


Fig. 1

D.C. RESISTANCE OF WINDINGS

Winding	D.C. Resistance in Ohms
Ferrite Rod Assembly (TR1)	
Primary	1
Secondary	*
Oscillator Coil (TR2)	
Primary	4
Secondary	*
1st I.F. Transformer (TR3)	
Primary	5
Secondary	5
2nd I.F. Transformer (TR4)	
Primary	5
Secondary	5
3rd I.F. Transformer (TR5)	
Primary	3
Secondary	*
Driver Transformer (TR6)	
Primary	250
Secondary	25
Power Transformer (TR7)	
Primary	400
Secondary	*

* Less than one 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.

MECHANICAL REPLACEMENT PARTS

ITEM	PART No.
Aerial Support, Moulded	64887
Bezel, Light	64899
Box, Cord Storage	64847
Case	64842
Catch, Button Assembly	64853
Clip, Tone Arm, Retaining	64901
Dial, Backing Assembly	64882
Dial Scale:	
N.S.W.	65010A
Vic.	65010B
Qld.	65010C
S.A.	65010D
W.A.	65010E
Tas.	65010F
Fret, Speaker	64856
Handle	64864
Hinge, Handle, Left Hand	64866
Hinge, Handle, Right Hand	64865
Insulator, Moulded	38469
Knob (3)	64869
Knob, ON/OFF-Tone	64916
Knob, Player ON/OFF	64902
Knob, Speed Selector	64867
Lamp, Holder Assembly	49277
Lid	64849
Lid, Cord Storage	64844
Nameplate (A.W.A.)	64852
Pointer Assembly	64885
Support, Lid	64850
Chassis and Variable Capacitor Assembly	64871
This consists of:—	
"C" Clip, Drive Spindle Retaining	2524
"C" Clip, Pulley Retaining	4885
Cup Washer, Moulded, Chassis Mtg. (3)	64888
Drive Drum	64770
Drive Spindle Assembly	64878
Pulley, Dial Cord	17716
Screws, Drive Drum	32816
Spring, Dial Cord	1741
Gang Mounting Assembly Comprising:—	
Gang	39263
Grommet (3)	36826/2
Screw, 4BA x 5/16" Ch. Hd. (3)	714010
Spacer (3)	64911
Washer 4BA I.T.L. (3)	921204
Washer 4BA Plain (3)	13156

NOTE: When ordering spares, always quote the above Part Numbers, and in the case of coloured parts such as knobs, etc., also quote the colour.

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 can only be re-adjusted by skilled operators using special equipment.

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

Testing Instruments:

Signal Generator—modulated 400 c.p.s. or Modulated Oscillator.

If the modulated oscillator is used, connect a 0.22 megohm non-inductive resistor across the output terminals.

Output Meter.

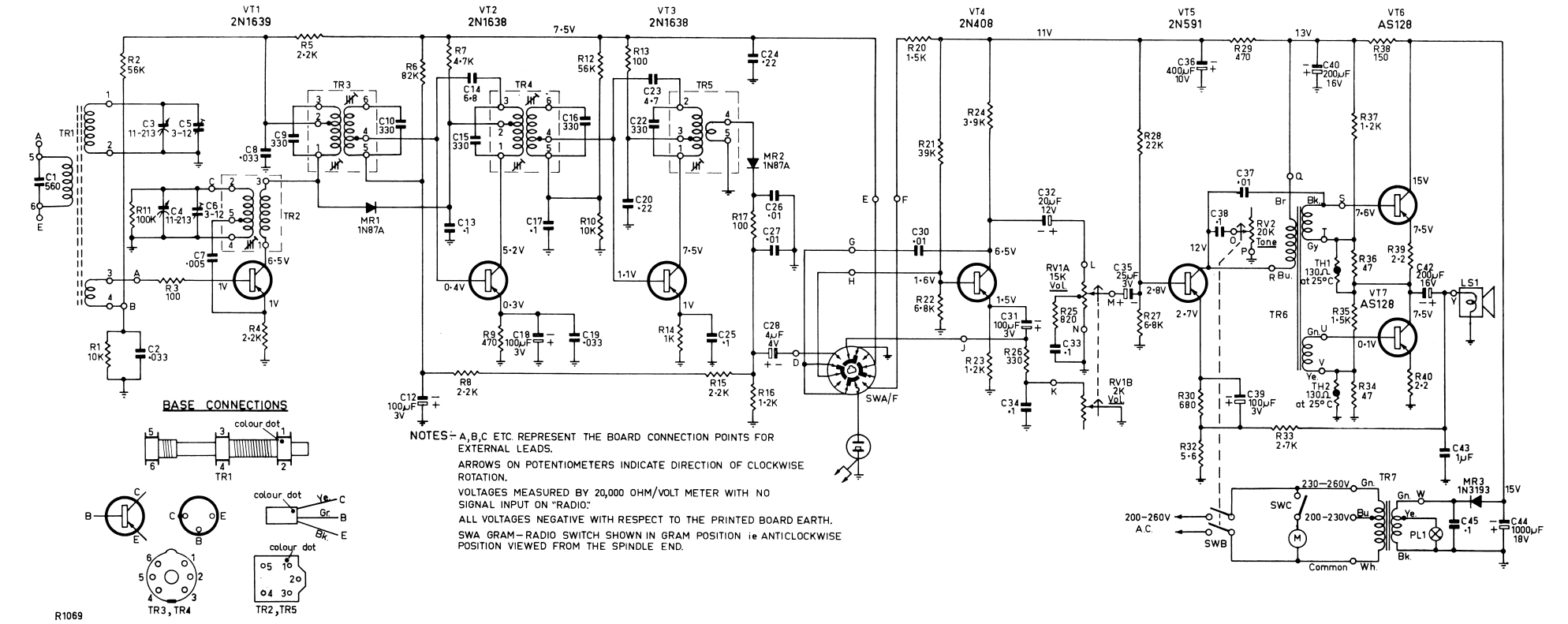
If an indication only is required then Output Meter Type TF893A, switched to 150 ohms and connected across the Voice Coil should be adequate. If other types of meters are used with the correct loading, the speaker Must Be Disconnected, otherwise the maximum dissipation of the transistors will be exceeded at medium output levels.

ALIGNMENT TABLE

ALIGNMENT ORDER:	CONNECT "HIGH" SIDE OF GENERATOR TO:	TUNE GENERATOR TO:	TUNE RECEIVER TO:	ADJUST FOR MAXIMUM PEAK OUTPUT:
1	Aerial Section of Gang	455 Kc/s	Gang fully closed	Cores in TR5, TR4 and TR3
	Repeat adjustments until maximum output is obtained.			
2	Inductively coupled to Rod Aerial*	600 Kc/s	600 Kc/s	L.F. Osc. Core Adj. (TR2)†
3	Inductively coupled to Rod Aerial*	1500 Kc/s	1500 Kc/s	H.F. Osc. Adj. (C6)
4	Inductively coupled to Rod Aerial*	1500 Kc/s	1500 Kc/s	H.F. Aerial Adj. (C5).

*A coil comprising 3 turns of 16 gauge D.C.C. wire about 12 inches in diameter should be connected between the output terminals of the test instrument, placed concentric with the rod aerial and distant not less than 1 foot from it.

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



BASE CONNECTIONS

NOTES:– A,B,C ETC. REPRESENT THE BOARD CONNECTION POINTS FOR EXTERNAL LEADS.

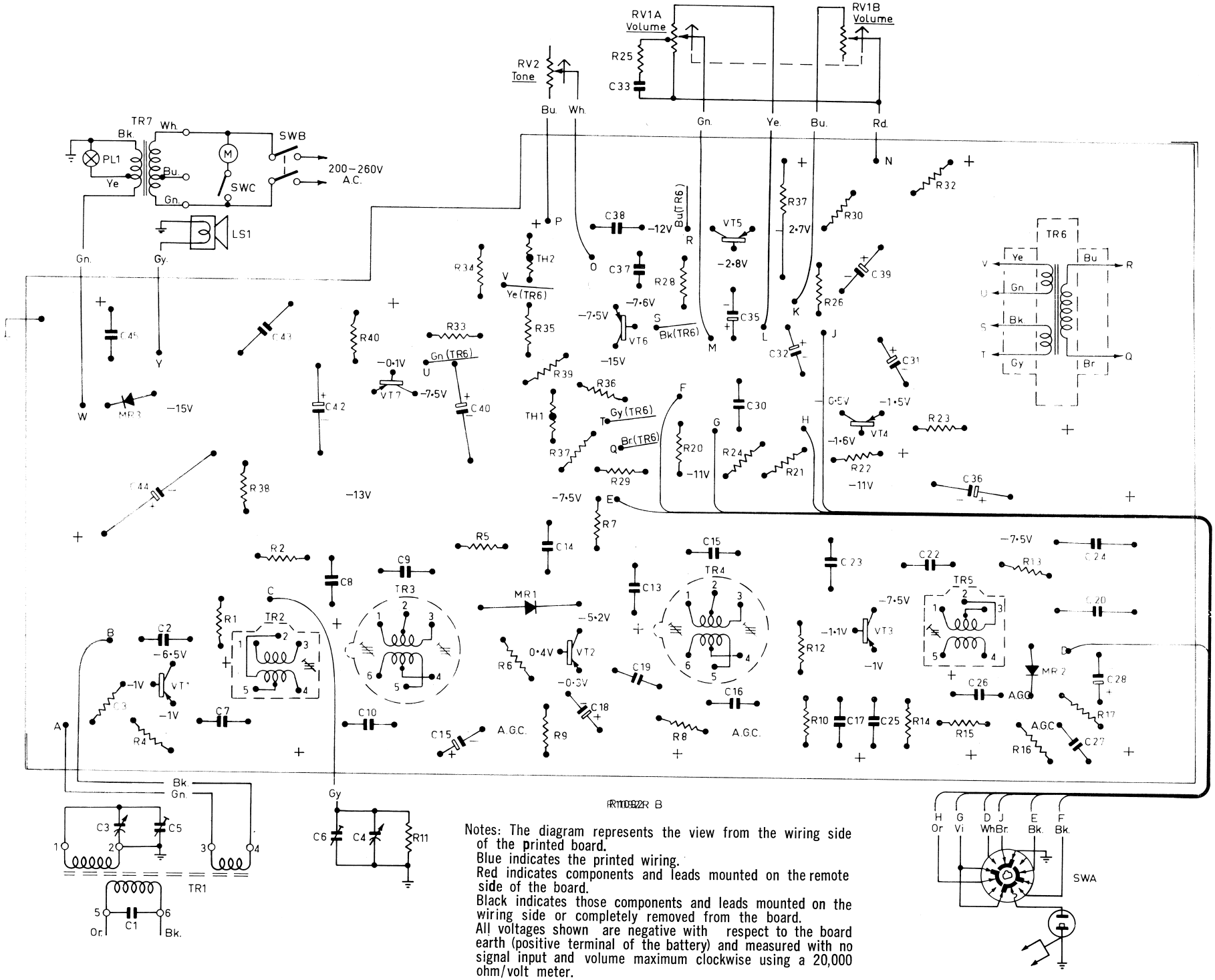
ARROWS ON POTENTIOMETERS INDICATE DIRECTION OF CLOCKWISE ROTATION.

VOLTAGES MEASURED BY 20,000 OHM/VOLT METER WITH NO SIGNAL INPUT ON "RADIO."

ALL VOLTAGES NEGATIVE WITH RESPECT TO THE PRINTED BOARD EARTH.

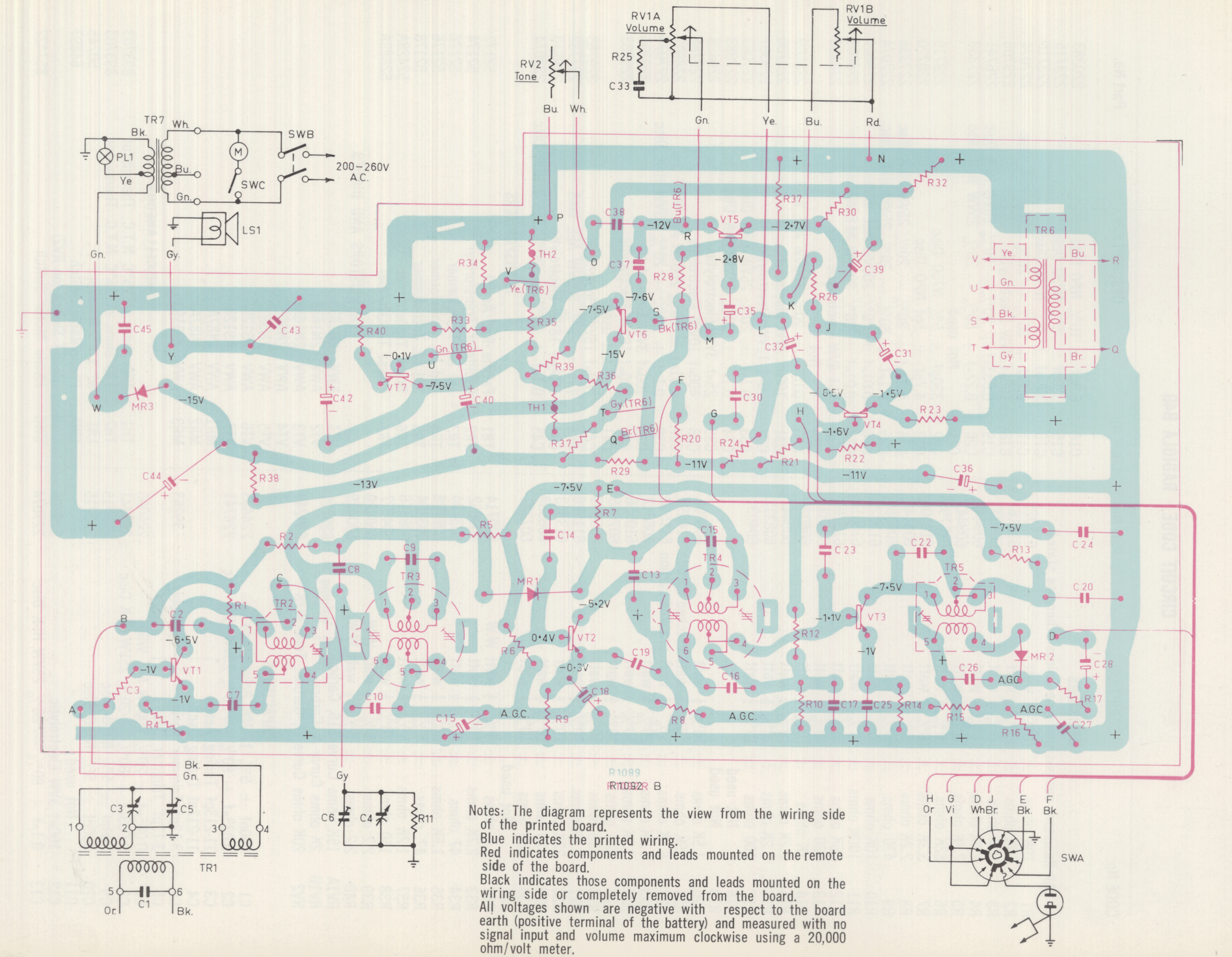
SWA GRAM – RADIO SWITCH SHOWN IN GRAM POSITION ie ANTICLOCKWISE POSITION VIEWED FROM THE SPINDLE END.

R1069



R1092R B

Notes: The diagram represents the view from the wiring side of the printed board.
Blue indicates the printed wiring.
Red indicates components and leads mounted on the remote side of the board.
Black indicates those components and leads mounted on the wiring side or completely removed from the board.
All voltages shown are negative with respect to the board earth (positive terminal of the battery) and measured with no signal input and volume maximum clockwise using a 20,000 ohm/volt meter.



Notes: The diagram represents the view from the wiring side of the printed board.
Blue indicates the printed wiring.
Red indicates components and leads mounted on the remote side of the board.
Black indicates those components and leads mounted on the wiring side or completely removed from the board.
All voltages shown are negative with respect to the board earth (positive terminal of the battery) and measured with no signal input and volume maximum clockwise using a 20,000 ohm/volt meter.

CIRCUIT CODE. RADIOLA B40

CODE No.	DESCRIPTION	Part No.
	RESISTORS	
	All Resistors composition type unless otherwise stated	
R1	10K ohms ± 10% ½ watt	612025
R2	56K ohms ± 10% ½ watt	615161
R3	100 ohms ± 10% ½ watt	604031
R4	2.2K ohms ± 10% ½ watt	609442
R5	2.2K ohms ± 10% ½ watt	609442
R6	82K ohms ± 10% ½ watt	615795
R7	3.3K ohms ± 10% ½ watt	610304
R8	2.2K ohms ± 10% ½ watt	609442
R9	470 ohms ± 10% ½ watt	606588
R10	10K ohms ± 10% ½ watt	612025
R11	100K ohms ± 10% ½ watt	616017
R12	56K ohms ± 10% ½ watt	615161
R13	100 ohms ± 10% ½ watt	604031
R14	1K ohms ± 10% ½ watt	608025
R15	2.2K ohms ± 10% ½ watt	609442
R16	1.2K ohms ± 10% ½ watt	608312
R17	100 ohms ± 10% ½ watt	604031
R18	Not used	
R19	Not used	
R20	1.5K ohms ± 10% ½ watt	608705
R21	39K ohms ± 5% ½ watt cracked carbon	614698
R22	6.8K ohms ± 5% ½ watt cracked carbon	611540
R23	1.2K ohms ± 10% ½ watt	608312
R24	3.9K ohms ± 10% ½ watt	610556
R25	820 ohms ± 10% ½ watt	607665
R26	330 ohms ± 10% ½ watt	605959
R27	6.8K ohms ± 10% ½ watt	611526
R28	22K ohms ± 10% ½ watt	613653
R29	470 ohms ± 10% ½ watt	606588
R30	680 ohms ± 10% ½ watt	607281
R31	Not used	
R32	5.6 ohms ± 5% ½ watt W.W.	600714
R33	2.7K ohms ± 10% ½ watt	609862
R34	47 ohms ± 5% ½ watt	603104
R35	1.5K ohms ± 5% ½ watt	608708
R36	47 ohms ± 5% ½ watt	603104
R37	1.2K ohms ± 5% ½ watt	608316
R38	150 ohms ± 10% ½ watt	604677
R39	2.2 ohms ± 5% ½ watt W.W.	600429
R40	2.2 ohms ± 5% ½ watt W.W.	600429
RV1A	15K ohms Curve S16, Carbon } Volume	620221
RV1B	2K ohms Curve A, Carbon }	
RV2	20K ohms Curve C, Carbon, Tone W/S	620240
	CAPACITORS	
C1	560pf ± 5% 125VW Polystyrene	224485
C2	0.033μf + 80% — 20% 25VW Hi-K disc	226741
C3	11-213pf Tuning Aerial }	
C4	11-213pf Tuning Osc. }	
C5	3-12pf Trimmer Aerial { Assembly	39263
C6	3-12pf Trimmer Osc. }	
C7	0.005μf ± 20% 200VW AEE W99	226005
C8	0.033μf + 80% — 20% 25VW Hi-K Disc	226741
C9	330pf ± 5% N750 Disc	223715
C10	330pf ± 5% N750 Disc	223715
C11	Not used	
C12	100μf 3VW Electrolytic	229706
C13	0.1μf + 80% — 20% 25VW Hi-K Disc	227074

CODE No.	DESCRIPTION	Part No.
C14	6.8pf ± 10% NPO Disc	220383
C15	330pf ± 5% N750 Disc	223715
C16	330pf ± 5% N750 Disc	223715
C17	0.1μf + 80% — 20% 25VW Hi-K Disc	227074
C18	100μf 3VW Electrolytic	229706
C19	0.033μf + 80% — 20% 25VW Hi-K Disc	226741
C20	0.22μf + 80% — 20% 25VW Hi-K Disc	227338
C21	Not used	
C22	330pf ± 5% N750 Disc	223715
C23	4.7pf ± .5pf NPO Disc	220220
C24	0.22μf + 80% — 20% 25VW Hi-K Disc	227338
C25	0.1μf + 80% — 20% 25VW Hi-K Disc	227074
C26	0.01μf ± 20% 200VW AEE W99	228609
C27	0.01μf ± 20% 200VW AEE W99	228609
C28	4μf 4VW Electrolytic	228189
C29	Not used	
C30	0.01μf ± 20% 200VW AEE W99	228609
C31	100μf 3VW Electrolytic	229706
C32	20μf 12VW Electrolytic	229307
C33	0.1μf ± 20% 25VW Hi-K Disc	227083
C34	0.1μf ± 20% 25VW Hi-K Disc	227083
C35	25μf 3VW Electrolytic	229428
C36	400μf 10VW Electrolytic	229786
C37	0.01μf ± 20% 200VW AEE W99	228609
C38	0.1μf + 80% — 20% 25VW Hi-K Disc	227074
C39	100μf 3VW Electrolytic	229706
C40	200μf 16VW Electrolytic	229763
C41	Not used	
C42	200μf 16VW Electrolytic	229763
C43	1μf ± 20% 200VW AEE W48	227732
C44	1000μf 18VW Electrolytic	229910
C45	0.1μf + 80% — 20% 25VW Hi-K Disc	227074
	TRANSFORMERS	
TR1	Ferrite Rod Aerial	52172
TR2	Oscillator Transformer	52174
TR3	1st I.F. Transformer	52176
TR4	2nd I.F. Transformer	52176
TR5	3rd I.F. Transformer	52178
TR6	Driver Transformer	52428A
TR7	Power Transformer	52689A
	TRANSISTORS AND DIODES	
VT1	AWV 2N1639	
VT2	AWV 2N1638	
VT3	AWV 2N1638	
VT4	AWV 2N408	
VT5	AWV 2N591	
VT6	AWV AS128	
VT7	AWV AS128	
MR1	AWV IN87A	
MR2	AWV IN87A	
MR3	AWV IN3193	
	MISCELLANEOUS	
TH1	130 ohms at 25°C N.T.C. Thermistor	893703
TH2	130 ohms at 25°C N.T.C. Thermistor	893703
LS1	6" x 4" Speaker	50245
SWA	Phono-Radio Switch	64897
SWB	ON-OFF Switch (on RV2)	
SWC	Phono Motor Switch	857422