

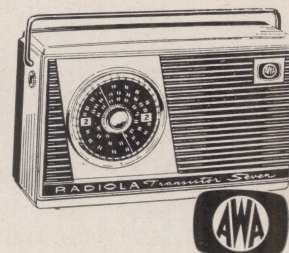
## TECHNICAL INFORMATION AND SERVICE DATA



### A.W.A. SEVEN TRANSISTOR PORTABLE

**Models B19, B19Y, B19Z, B24, B24Z and B52**

ISSUED BY AMALGAMATED WIRELESS (AUSTRALASIA) LTD.



### GENERAL DESCRIPTION

NOTE. Service information covering models B19, B24, and B24Z have already been produced. However, the following will apply to them in addition to the B19Y, B19Z and B52.

### ELECTRICAL AND MECHANICAL SPECIFICATIONS

Frequency Range ..... 525-1,650 Kc/s  
Intermediate Frequency ..... 455 Kc/s  
Battery Complement ..... 9 Volt Eveready Type 2362  
Battery Consumption:  
For Zero audio output ..... 7mA  
For 50 mW audio output ..... 28mA

Loudspeaker:  
2-3/4" Permanent Magnet ..... 50000  
V.C. Impedance ..... 15 ohms at 400 c.p.s.  
Undistorted Power Output ..... 150 mW

Controls:  
Tuning Control—front left-hand side.  
ON/OFF Volume Control—right-hand side.

Transistor and Diode Complement:  
A.W.V. 2N1639 ..... Converter  
A.W.V. 2N1638 ..... 1st I.F. Amplifier  
A.W.V. 2N406 ..... Overload  
A.W.V. 2N1638 ..... 2nd I.F. Amplifier  
A.W.V. 2N408 ..... Driver  
A.W.V. 2N408 ..... Output  
A.W.V. 2N408 ..... Output  
A.W.V. IN87A ..... Detector and A.G.C.

Dimensions (B19, B19Y, B19Z, B52):  
Height ..... 3-5/8"  
Width ..... 6-1/8"  
Depth ..... 2"  
Weight ..... 1 lb. 4 oz.

Dimensions (B24, B24Z):  
Height ..... 3-3/4"  
Width ..... 6-3/8"  
Depth ..... 2"  
Weight ..... 1 lb. 8 oz.

#### CHASSIS REMOVAL (B19, B19Y, B19Z, B52.)

Slacken off the rear retaining screw and remove the cabinet back.

Remove the tuning knob locking screw and tuning knob.

Remove the three board mounting screws.

The board assembly may now be lifted clear of the cabinet front giving complete access for servicing.

Installation is the reverse of the above procedure making sure that the gang spindle is concentric with the dial scale before tightening the board mounting screws. Clearance around these holes allows a slight amount of movement for correct positioning.

When replacing the tuning knob turn the gang fully clockwise. Place the knob on the gang spindle and align the pointer across the arrow heads on the dial scale.

Secure the knob with the locking screw without disturbing the pointer setting.

Switch the receiver on and tune to a known station. The pointer should fall across the centre of the station markings. If it does not, loosen the locking screw, re-adjust the tuning knob to accommodate the error and re-tighten the locking screw.

#### CHASSIS REMOVAL (B24, B24Z).

Slacken off completely the captivated cabinet back retaining screw.

Carefully free the earplug end of the back and lift it approximately 1/2" clear of the die cast front. Spring the volume control end of the back free, pressing the volume control in slightly if necessary.

With the back freed from the die cast front, unscrew the nut securing the earplug and remove the latter.

SEVEN TRANSISTOR B19, B19Y, B19Z, B24Z and B52



Remove the tuning knob locking screw and tuning knob.

Remove the three board mounting screws and plain washers.

The board assembly may now be lifted clear of the die cast front giving complete access for servicing.

Installation is the reversal of the above procedure taking note of the following points.

The insulating spacers must be in position on the three bosses used for mounting the printed board.

Make sure that the gang spindle is concentric with the dial scale and recheck calibration as with B19 series above.

## 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 220K ohms 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

ORDER	CONNECT GENERATOR TO:	TUNE GENERATOR TO:	TUNE RECEIVER TO:	ADJUST FOR MAX. PEAK OUTPUT
1	Aerial Section of Gang	455 Kc/s	Gang fully closed	Cores in TR5, TR4 and TR3
Repeat adjustment until maximum output is obtained.				
2	Inductively Coupled to Rod Aerial*	600 Kc/s	600 Kc/s	Osc. Core Adj. (TR2) †
3	Inductively Coupled to Rod Aerial*	1,650 Kc/s	Gang fully open	Osc. Trimmer C4
4	Inductively Coupled to Rod Aerial*	1,500 Kc/s	1,500 Kc/s	Aer. Trimmer C3

Repeat Steps 2, 3 and 4.

\* 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.

## D.C. RESISTANCE OF WINDINGS

Winding	D.C. Resistance in ohms	Winding	D.C. Resistance in ohms
Ferrite Rod Assembly (TR1):		Coupling Transformer (TR6):	
Primary 1-2 .....	1.25	Primary .....	290
Secondary 3-4 .....	*	Secondary .....	440
Oscillator Transformer (TR2):		Speaker Transformer (TR7):	
Primary 1-5 .....	1.2	Primary .....	50
Secondary 2-4 .....	*	Secondary .....	1.5
1st, 2nd and 3rd I.F. Transformers:			
Primary .....	1.5		
Secondary .....	*		

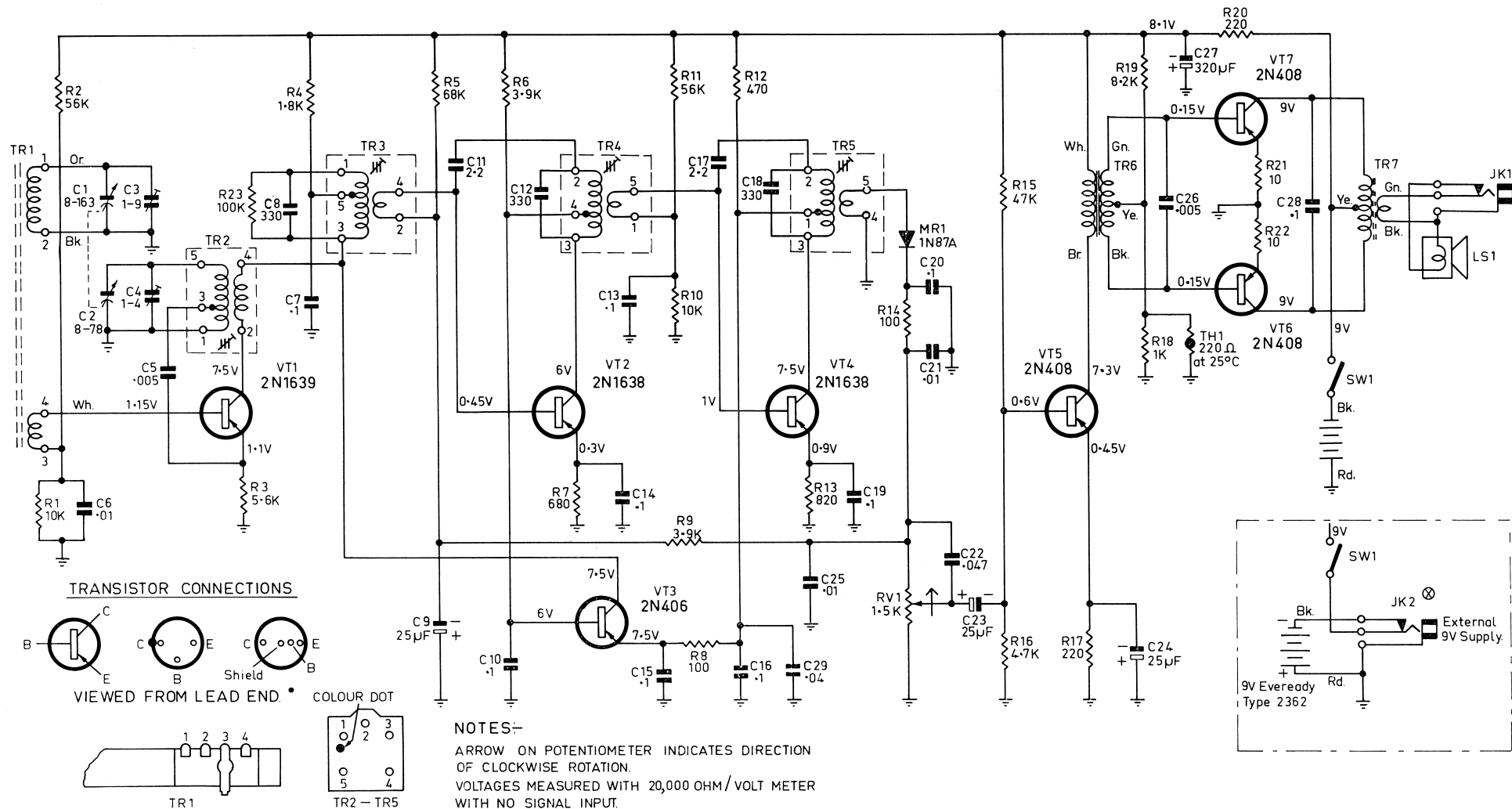
\* Less than 1 ohm.

The above readings were taken on components from 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

Items	Part No.	Items	Part No.
Badge, "A.W.A." (B19, B19Y, B19Z) .....	39120	Dial Scale (B52) .....	65031
Badge, "A.W.A." (B24, B24Z) .....	62561	Earphone .....	39839
Badge, "A.W.A." (B52) .....	66385	Earphone, Clip .....	61558
Boss, Spindle .....	39106	Earphone, Pouch .....	39836
Cabinet, Back (B19, B19Y, B19Z, B52) .....	60220	Escutcheon, (B19, B19Z) .....	39100/1
Cabinet, Back (B24, B24Z) .....	60230	Escutcheon (B19Y) .....	64591
Cabinet, Front (B19, B19Z) .....	60219	Escutcheon, (B52) .....	64591/1
Cabinet, Front (B19Y) .....	60253	Fret, Large (B19, B19Y, B19Z) .....	39101
Cabinet, Front (B24, B24Z) .....	62562	Fret, Large (B52) .....	66386
Cabinet, Front (B52) .....	66389	Fret, Small (B19, B19Y, B19Z) .....	39102
Case, Carrying (B19) .....	61468	Fret, Small (B52) .....	66387
Case, Carrying (B19Y) .....	63619/1	Handle (B19Y) .....	64590
Case, Carrying (B24, B24Z) .....	62570	Handle (B52) .....	66388
Dial Scale (B19):		Knob, Tuning (B19, B19Y, B19Z, B52) .....	39103
N.S.W. ....	37936A	Knob, Tuning (B24, B24Z) .....	62555
VIC. ....	37936B	Knob, Volume (B19, B19Y, B19Z, B52) .....	39104
QLD. ....	37936C	Knob, Volume (B24, B24Z) .....	39801
S.A. ....	37936D	Nameplate, "Radiola" (B19, B19Y) .....	39655
W.A. ....	37936E	Nameplate, "Radiola" (B24, B24Z) .....	62554
TAS. ....	37936F	Nameplate, "Radiola" (B52) .....	66384
Dial Scale (B19Y, B19Z) .....	37977	Screw, Back Retaining (B19, B19Y, B19Z, B52) .....	39109
Dial Scale, (B24, B24Z):		Screw, Back Retaining (B24, B24Z) .....	62573
N.S.W. ....	37953A	Screw, Tuning Knob Mounting (B19, B19Y, B19Z) .....	39105
VIC. and TAS. ....	37963B	Screw, Tuning Knob Mounting (B24, B24Z) ....	62553
QLD. ....	37963C	Screw, Tuning Knob Mounting (B52) .....	39105/1
S.A. and W.A. ....	37963D	Strap, Carrying (B19, B24, B24Z) .....	39837

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



#### BASE CONNECTIONS

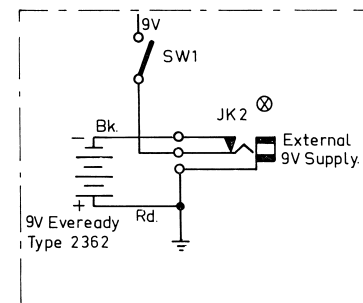
#### NOTES:-

ARROW ON POTENTIOMETER INDICATES DIRECTION OF CLOCKWISE ROTATION.  
VOLTAGES MEASURED WITH 20,000 OHM/VOLT METER WITH NO SIGNAL INPUT.

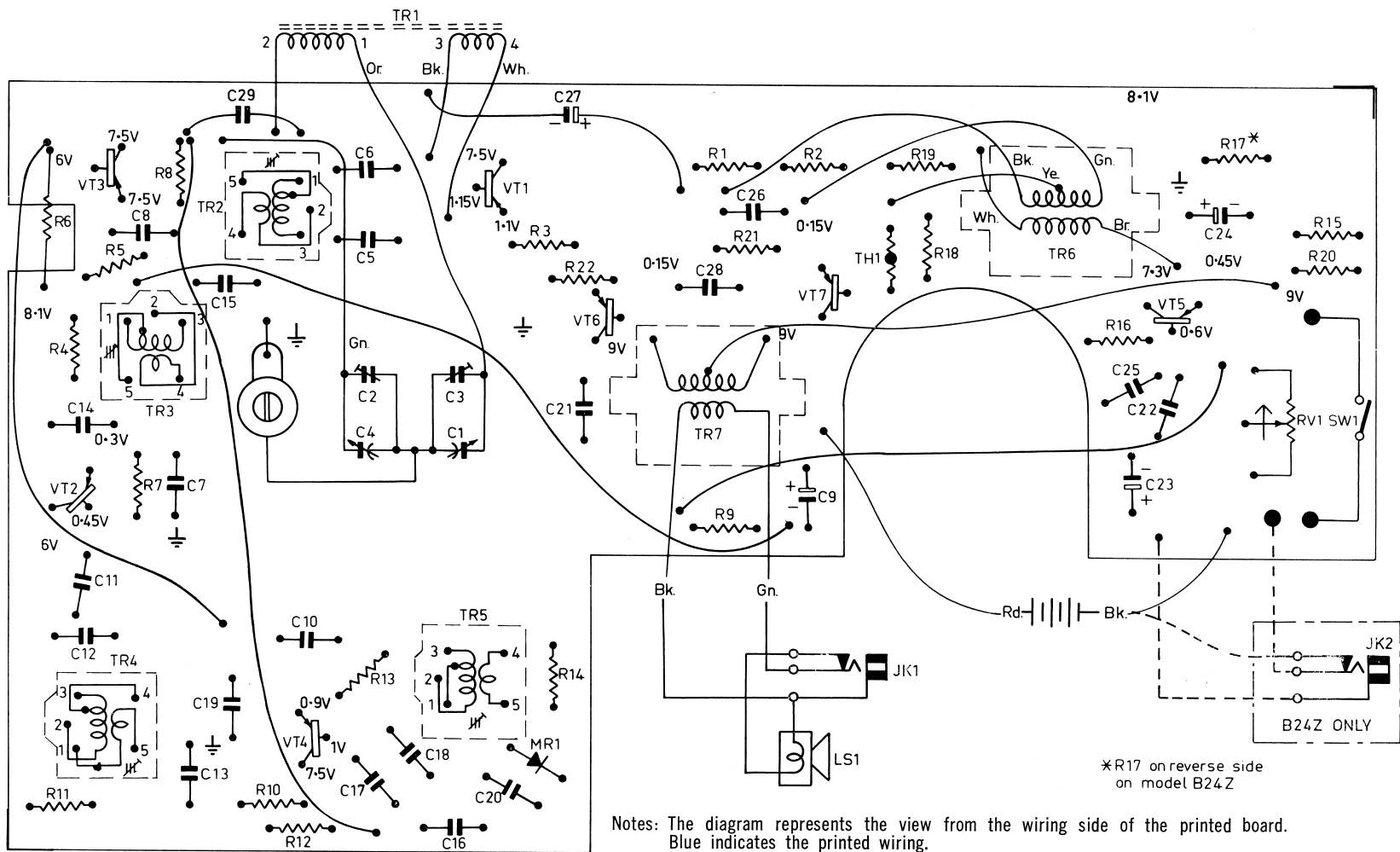
ALL VOLTAGES NEGATIVE WITH RESPECT TO PRINTED BOARD EARTH (BATTERY POSITIVE TERMINAL.)

R23 MAY VARY, SELECTED IN PRODUCTION.

⊗ JK2 USED ON B24Z ONLY.







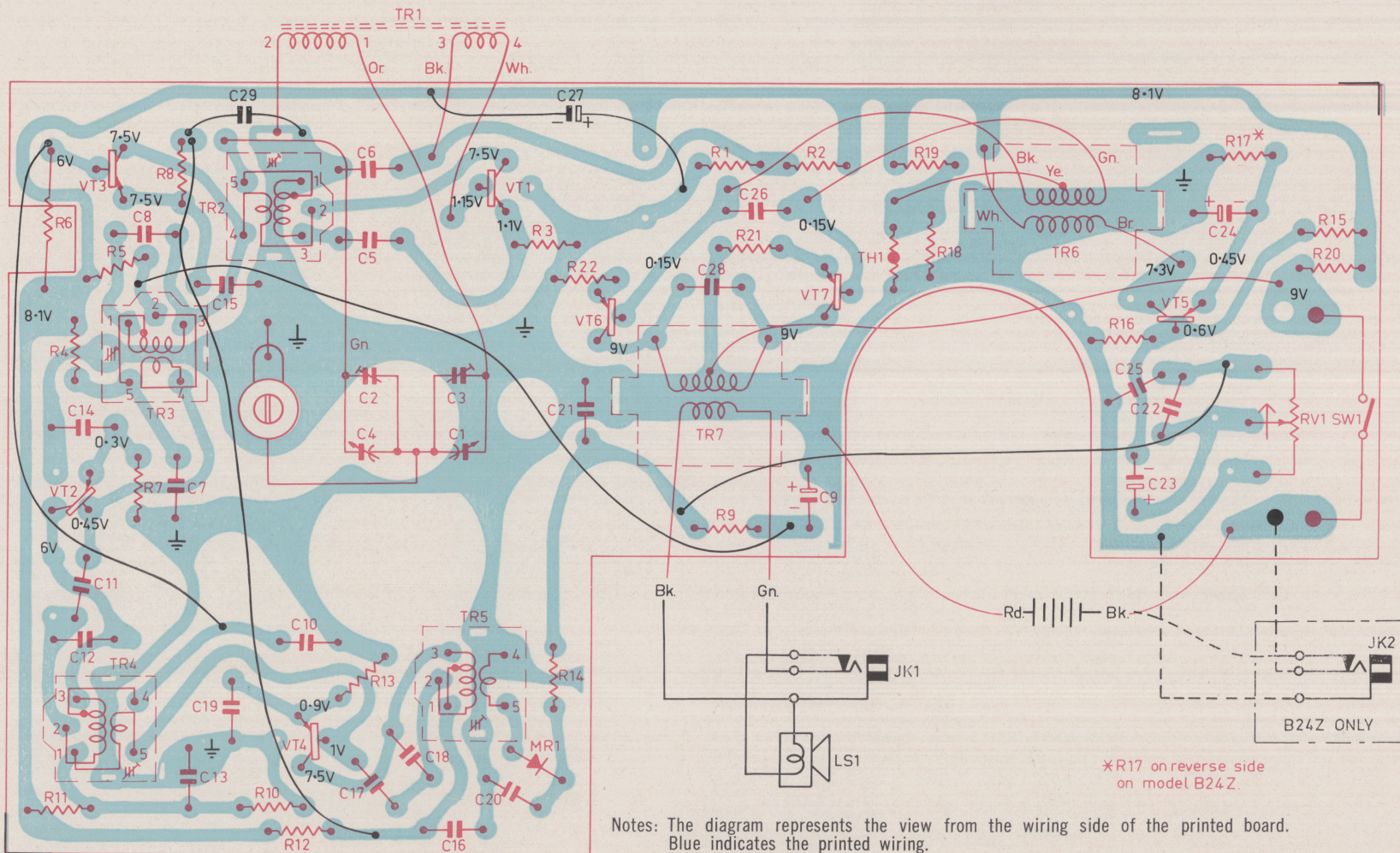
R1122 RB

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

Code No.	DESCRIPTION	PART No.	Code No.	DESCRIPTION	PART No.
<b>RESISTORS</b>			<b>CAPACITORS (Cont.)</b>		
	All Resistors composition type unless otherwise stated.		C13	0.1 $\mu$ F +80%—20% Hi-K 25VW disc	227074
R1	10K ohms $\pm 10\%$ $\frac{1}{2}$ watt	612025	C14	0.1 $\mu$ F +80%—20% Hi-K 25VW disc	227074
R2	56K ohms $\pm 10\%$ $\frac{1}{2}$ watt	615161	C15	0.1 $\mu$ F +80%—20% Hi-K 25VW disc	227074
R3	5.6K ohms $\pm 10\%$ $\frac{1}{2}$ watt	611293	C16	0.1 $\mu$ F +80%—20% Hi-K 25VW disc	227074
R4	1.8K ohms $\pm 10\%$ $\frac{1}{2}$ watt	609077	C17	2.2pF $\pm 10\%$ NPO disc	221494
R5	68K ohms $\pm 10\%$ $\frac{1}{2}$ watt	615494	C18	330pF $\pm 5\%$ N750 disc	223715
R6	3.9K ohms $\pm 10\%$ $\frac{1}{2}$ watt	610556	C19	0.1 $\mu$ F +80%—20% Hi-K 25VW disc	227074
R7	680 ohms $\pm 10\%$ $\frac{1}{2}$ watt	607281	C20	0.1 $\mu$ F +80%—20% Hi-K 25VW disc	227074
R8	100 ohms $\pm 10\%$ $\frac{1}{2}$ watt	604031	C21	0.01 $\mu$ F $\pm 20\%$ 200VW AEE W99	228609
R9	3.9K ohms $\pm 10\%$ $\frac{1}{2}$ watt	610556	C22	0.047 $\mu$ F +80%—20% Hi-K 25VW disc	226823
R10	10K ohms $\pm 10\%$ $\frac{1}{2}$ watt	612025	C23	25 $\mu$ F 3VW Electrolytic	229428
R11	56K ohms $\pm 10\%$ $\frac{1}{2}$ watt	615161	C24	25 $\mu$ F 3VW Electrolytic	229428
R12	470 ohms $\pm 10\%$ $\frac{1}{2}$ watt	606588	C25	0.01 $\mu$ F $\pm 20\%$ 200VW AEE W99	228609
R13	820 ohms $\pm 10\%$ $\frac{1}{2}$ watt	607665	C26	0.005 $\mu$ F $\pm 20\%$ 200VW AEE W99	226005
R14	100 ohms $\pm 10\%$ $\frac{1}{2}$ watt	604031	C27	320 $\mu$ F 9VW Electrolytic	229776
R15	47K ohms $\pm 10\%$ $\frac{1}{2}$ watt	614961	C28	0.1 $\mu$ F +80%—20% Hi-K 25VW disc	227074
R16	4.7K ohms $\pm 10\%$ $\frac{1}{2}$ watt	610932	C29	0.04 $\mu$ F $\pm 20\%$ 200VW AEE W99	228750
R17	220 ohms $\pm 10\%$ $\frac{1}{2}$ watt	605253	<b>TRANSFORMERS</b>		
R18	1K ohms $\pm 10\%$ $\frac{1}{2}$ watt	608025	TR1	Ferrite Rod	51216
R19	8.2K ohms $\pm 10\%$ $\frac{1}{2}$ watt	611846	TR2	Oscillator Coil	51638
R20	220 ohms $\pm 10\%$ $\frac{1}{2}$ watt	605253	TR3	Converter I.F.	51612
R21	10 ohms $\pm 10\%$ $\frac{1}{2}$ watt	601001	TR4	2nd I.F.	51614
R22	10 ohms $\pm 10\%$ $\frac{1}{2}$ watt	601001	TR5	3rd I.F.	51270
R23†	100K ohms $\pm 10\%$ $\frac{1}{2}$ watt	616017	TR6	Driver Transformer	51161
RV1	1.5K ohms log. carbon, Volume W/S	620014	TR7	Speaker Transformer	38158B
†	On some chassis only.		<b>TRANSISTORS AND DIODES</b>		
<b>CAPACITORS</b>			VT1	A.W.V. 2N374 or 2N1639	
C1	8—163pF tuning Aerial	21240 21241	VT2	A.W.V. 2N373 or 2N1638	
C2	8—78pF tuning Oscillator		VT3	A.W.V. 2N406	
C3	1—9pF trimmer Aerial		VT4	A.W.V. 2N373 or 2N1638	
C4	1—4pF trimmer Oscillator		VT5	A.W.V. 2N408	
C5	0.005 $\mu$ F $\pm 20\%$ 200VW AEE W99	226005	VT6	A.W.V. 2N408	
C6	0.01 $\mu$ F $\pm 20\%$ 200VW AEE W99	228609	VT7	A.W.V. 2N408	
C7	0.1 $\mu$ F +80%—20% Hi-K 25VW disc	227074	MR1	A.W.V. 1N87A or equiv.	
C8	330pF $\pm 5\%$ N750 disc	223715	<b>MISCELLANEOUS</b>		
C9	25 $\mu$ F 3VW Electrolytic	229428	LS1	2 $\frac{3}{4}$ " P. M. Speaker	50000
C10	0.1 $\mu$ F +80%—20% Hi-K 25VW disc	227074	SW1	ON/OFF Switch (on RV1)	
C11	2.2pF $\pm 10\%$ NPO disc	221494	TH1	220 ohms at 25°C Thermistor	893709
C12	330pF $\pm 5\%$ N750 disc	223715	JK1	Earphone Jack	417019
			JK2	Battery Saver Jack (B24Z only)	417405





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