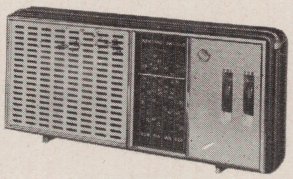
MANUFACTURERS AWA SUPERVISED SERVICE

# A.W.A.
# EIGHT TRANSISTOR PORTABLE
# Model B54



## GENERAL DESCRIPTION

The B54 is an eight transistor, battery operated superheterodyne portable receiver designed for the reception of the Medium Wave Broadcasting Band. Provision is made for battery saver operation.

## ELECTRICAL AND MECHANICAL SPECIFICATIONS

Frequency Range ..... 520-1,620 Kc/s

Intermediate Frequency ..... 455 Kc/s

Battery Complement ..... 6V
4 Eveready type 1050 Batteries

Battery Consumption:
- For Zero audio output ..... 17 mA
- For 50 mW audio output ..... 50 mA
- For full audio output ..... 155 mA

Loudspeaker: 5″ x 3″ ..... 50070

V.C. Impedance 56 ohms (centre tapped) at 400 c.p.s.

Undistorted Power Output ..... 330 mW

Controls:
- On/Off Volume—front left-hand.
- Tuning—front right-hand

Transistor and Diode Complement:

| | |
|---|---|
| AWV 2N1639 | Converter |
| AWV 2N1638 | 1st I.F. Amplifier |
| AWV 2N1638 | 2nd I.F. Amplifier |
| AWV 2N408 | Audio Amplifier |
| AWV 2N408 | Driver |
| AWV AS128 | Output |
| AWV AS128 | Output |
| AWV AS22 | Compensating Diode |
| AWV IN87A | Overload Diode |
| AWV IN87A | Detector |

Dimensions:
- Height ..... $4\frac{3}{4}$″
- Width ..... $10\frac{1}{2}$″
- Depth ..... $2\frac{1}{4}$″
- Weight (with batteries) ..... 3lb. 4oz.

### CHASSIS REMOVAL

Remove two screws holding the back to the cabinet body and remove the back.

Remove the batteries.

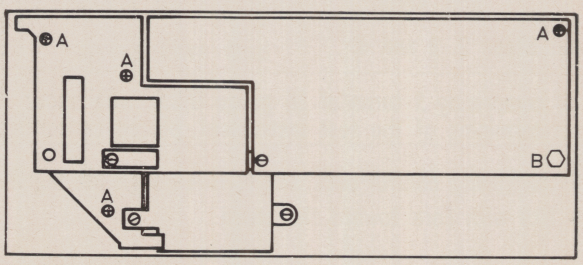
Referring to Fig. 1 remove four screws (marked "A") and one hexagon spacer (marked "B").

Lift the chassis and printed board assembly as far from the cabinet as possible and tilt it back.

Remove the dial backing plate by unscrewing the two retaining screws.

The wiring side of the printed board is now exposed for service checks.

Re-assembly is the reverse of the above.



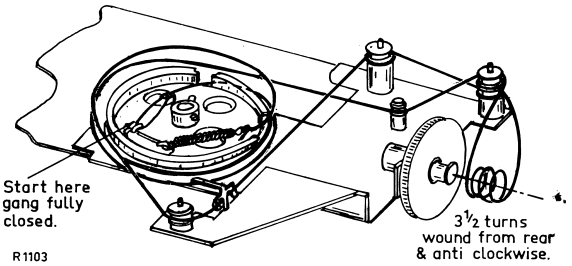

R.1110

fig. 1

Dec. '66

**Drive Cord Replacement:**

Fig. 2 shows the route of the cord and the method of attachment.




## 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 megohms non-inductive resistor across the output terminals.

Output measurements must be made with either the speaker connected or with two 28 ohms resistors connected in series across the output collectors when the speaker is removed. If an indication only is required, Output Meter type 2M8833, switched to 5000 ohms and connected across the collectors, should be adequate. For a true reading of power output, an a.c. meter, with neither probed earthed, connected similarly will measure 1.2 volts for 50 mW (the effective load being 28 ohms).

I.F. Alignment Tool Part No. 39462.

## 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 (TR2) † |
| 3 | Inductively Coupled to Rod Aerial* | 1,650 Kc/s | Gang fully open | Osc. Trimmer (C5) |
| 4 | Inductively Coupled to Rod Aerial* | 1,500 Kc/s | 1,500 Kc/s | Aer. Trimmer (C4) |
| 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.

‡ Peak TR5 with core toward the board.

## D.C. RESISTANCE OF WINDINGS

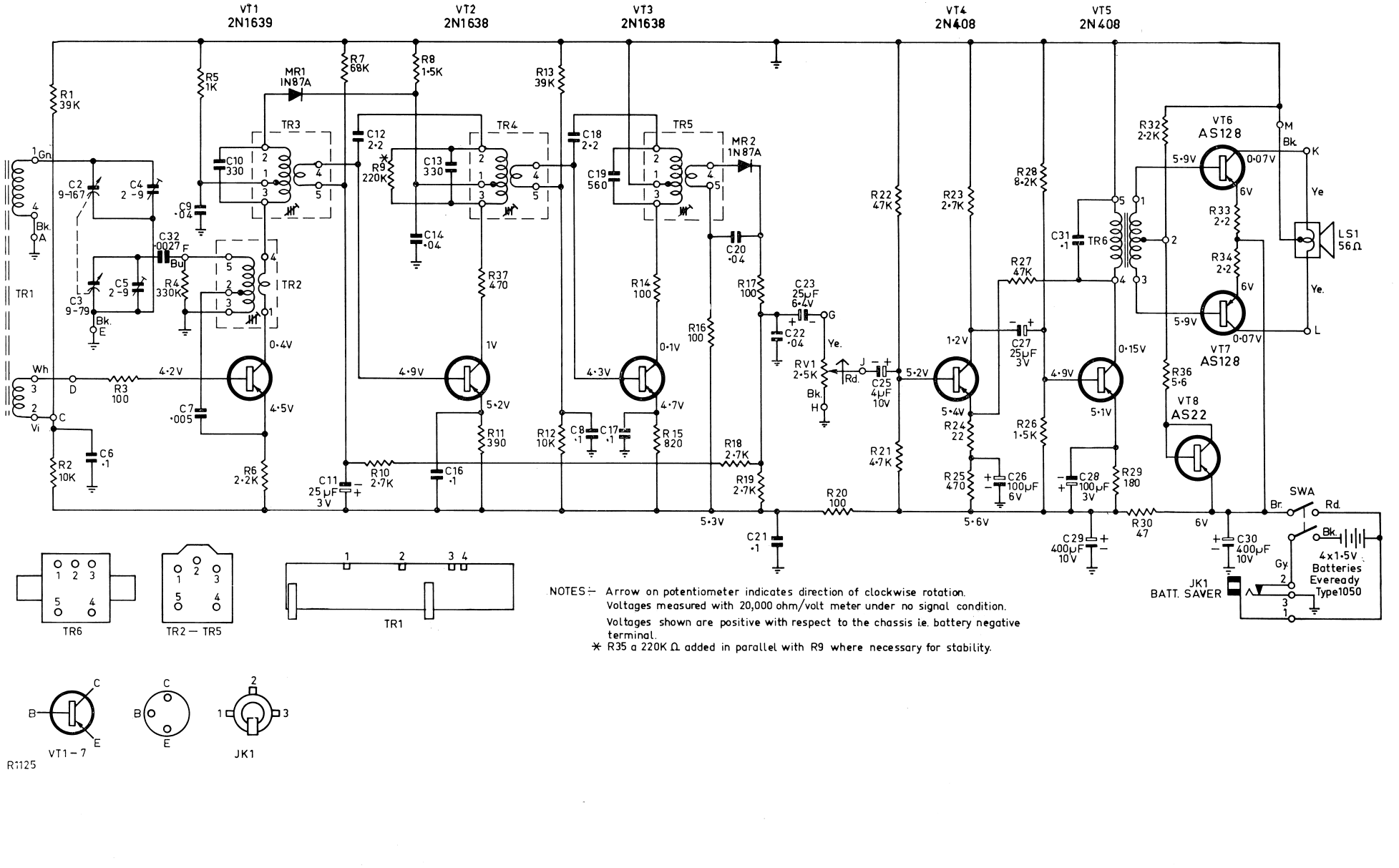
| WINDING | D.C. RESISTANCE IN OHMS |
|---|---|
| Ferrite Rod Assembly TR1: | * |
| Oscillator Transformer TR2: | |
| Primary | 1 |
| Secondary | 4.7 |
| 1st I.F. Transformer TR3: | |
| Primary | 3 |
| Secondary | * |
| 2nd I.F. Transformer TR4: | |
| Primary | 3 |
| Secondary | * |
| 3rd I.F. Transformer TR5: | |
| Primary | 3 |
| Secondary | * |
| Driver Transformer TR6: | |
| Primary | 50 |
| Secondary (each half) | 25 |

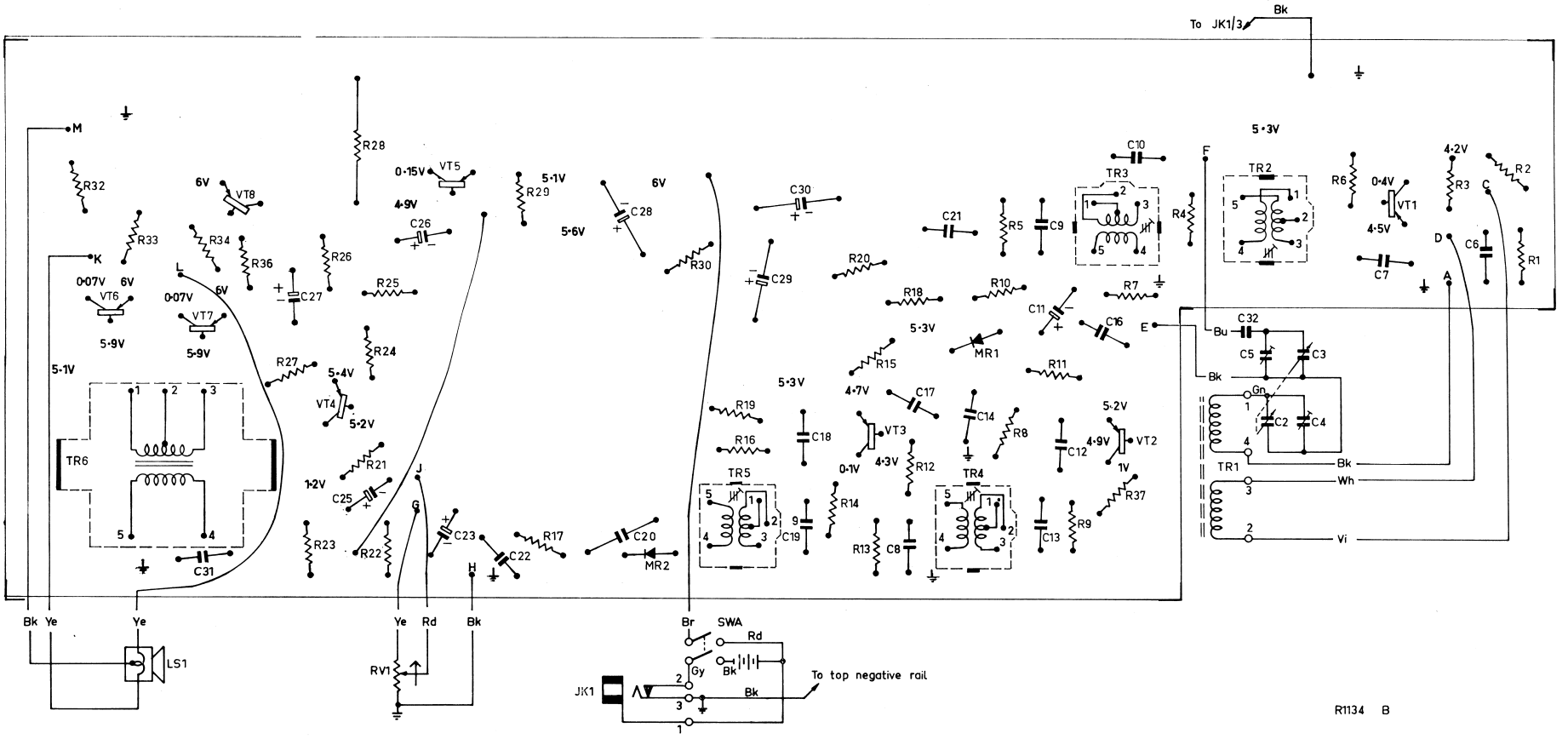
* Less than 1 ohm.
The above readings were taken on a standard chassis, but substitution of materials during manufacture may cause variations and it should not be assumed that a component is faulty if a slightly different reading is obtained.

## MECHANICAL REPLACEMENT PARTS

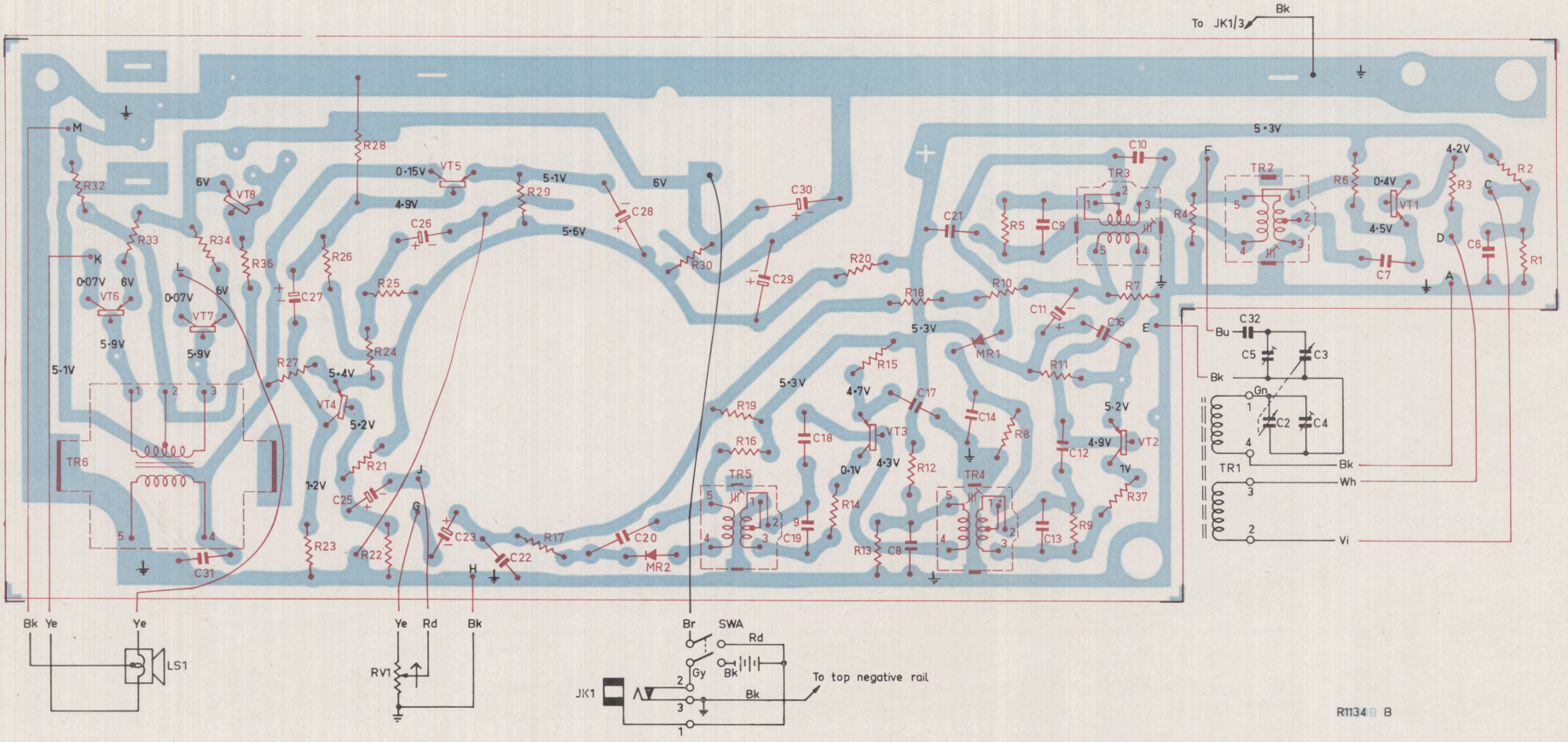
| Item | Part No. |
|---|---|
| Cabinet, Back | 66674 |
| Cabinet, Body | 60296 |
| Cabinet, Front | 66677/001 |
| Cover, Dial | 66447 |
| Dial Scale | 65026B |
| Drum, Drive | 64700 |
| Fret, Cloth | 66438 |
| Fret, Moulded | 66437 |
| Gang Mounting: | |
| Gang | 66351 |
| Grommet (3) | 63199 |
| Screw, 6BA x 9/32″ Ch. Hd. (3) | 716009 |
| Spacers (3) | 39110 |
| Washers, 6BA Flat (3) | 15722 |
| Washer, 6BA ITL | 921206 |
| Holder, Battery | 66673 |
| Knob, Tuning | 66468 |
| Knob, Volume | 66464 |
| Nameplate | 66672 |
| Plate, Contact, Negative | 66473 |
| Plate, Contact, Positive | 66475 |
| Pointer, Tuning | 66476 |
| Pulley, Large (2) | 66626 |
| Pulley, Small | 17716 |
| Spindle, Drive | 66469 |
| Spring, Battery Contact | 44188 |
| Spring, Drive Cord | 44189 |
| Trim, Handle | 66432 |

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


VT1
2N1639
VT2
2N1638
VT3
2N1638
VT4
2N408
VT5
2N408
VT6
AS128
VT7
AS128
VT8
AS22
R1 39K
R2 10K
R3 100
R4 330K
R5 1K
R6 2·2K
R7 68K
R8 1·5K
R9 220K*
R10 2·7K
R11 390
R12 10K
R13 39K
R14 100
R15 820
R16 100
R17 100
R18 2·7K
R19 2·7K
R20 100
R21 4·7K
R22 47K
R23 2·7K
R24 22
R25 470
R26 1·5K
R27 47K
R28 8·2K
R29 180
R30 47
R32 2·2K
R33 2·2
R34 2·2
R36 5·6
R37 470
C2 9-167
C3 9-79
C4 2-9
C5 2-9
C6 ·1
C7 ·005
C8 ·1
C9 ·04
C10 330
C11 25µF 3V
C12 2·2
C13 330
C14 ·04
C16 ·1
C17 ·1
C18 2·2
C19 560
C20 ·04
C21 ·1
C22 ·04
C23 25µF 6·4V
C25 4µF 10V
C26 100µF 6V
C27 25µF 3V
C28 100µF 3V
C29 400µF 10V
C30 400µF 10V
C31 ·1
C32 ·0027
MR1 IN87A
MR2 1N87A
TR1
TR2
TR3
TR4
TR5
TR6
RV1 2·5K
LS1 56Ω
JK1 BATT. SAVER
SWA
4x1·5V Batteries Eveready Type1050
1Gn
4 Bk. A
Wh 3
2 Vi
C
D
E
F Bu
G
H
J
K
L
M
Bk.
Ye.
Rd.
Br.
Gy
0·4V
4·2V
4·5V
1V
4·9V
5·2V
4·3V
0·1V
4·7V
5·3V
1·2V
5·2V
5·4V
5·6V
0·15V
4·9V
5·1V
5·9V
0·07V
6V
TR1
TR2 — TR5
TR6
VT1 — 7
JK1
NOTES:- Arrow on potentiometer indicates direction of clockwise rotation.
Voltages measured with 20,000 ohm/volt meter under no signal condition.
Voltages shown are positive with respect to the chassis i.e. battery negative terminal.
* R35 a 220K Ω added in parallel with R9 where necessary for stability.
R1125




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 positive with respect to the board earth (negative terminal of the battery) and measured with no signal input and volume maximum clockwise using a 20,000 ohm/volt meter.

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# CIRCUIT CODE

| CODE No. | DESCRIPTION | PART No. |
|---|---|---|
| | **RESISTORS** | |
| | All resistors composition type unless otherwise stated. | |
| R1 | 39K ohms ±10% ½ watt | |
| R2 | 10K ohms ±10% ½ watt | |
| R3 | 100 ohms ±10% ½ watt | |
| R4 | 330K ohms ±10% ½ watt | |
| R5 | 1K ohms ±10% ½ watt | |
| R6 | 2.2K ohms ±10% ½ watt | |
| R7 | 68K ohms ±10% ½ watt | |
| R8 | 1.5K ohms ±10% ½ watt | |
| R9 | 220K ohms ±10% ½ watt | |
| R10 | 2.7K ohms ±10% ½ watt | |
| R11 | 390 ohms ±10% ½ watt | |
| R12 | 10K ohms ±10% ½ watt | |
| R13 | 39K ohms ±10% ½ watt | |
| R14 | 100 ohms ±10% ½ watt | |
| R15 | 820 ohms ±10% ½ watt | |
| R16 | 100 ohms ±10% ½ watt | |
| R17 | 100 ohms ±10% ½ watt | |
| R18 | 2.7K ohms ±10% ½ watt | |
| R19 | 2.7K ohms ±10% ½ watt | |
| R20 | 100 ohms ±10% ½ watt | |
| R21 | 4.7K ohms ±10% ½ watt | |
| R22 | 47K ohms ±10% ½ watt | |
| R23 | 2.7K ohms ±10% ½ watt | |
| R24 | 22 ohms ±10% ½ watt | |
| R25 | 470 ohms ±10% ½ watt | |
| R26 | 1.5K ohms ±10% ½ watt | |
| R27 | 47K ohms ±10% ½ watt | |
| R28 | 8.2K ohms ±10% ½ watt | |
| R29 | 180 ohms ±10% ½ watt | |
| R30 | 47 ohms ±10% ½ watt | |
| R31 | Not used | |
| R32 | 2.2K ohms ±10% ½ watt | |
| R33 | 2.2 ohms ±10% ½ watt W.W. | |
| R34 | 2.2 ohms ±10% ½ watt W.W. | |
| R35* | 220K ohms ±10% ½ watt | |
| R36 | 5.6 ohms ±10% ½ watt | |
| R37 | 470 ohms ±10% ½ watt | |
| RV1 | 2.5K ohms curve C, Volume W/S | 620037 |
| * Fitted when necessary | | |
| | **CAPACITORS** | |
| C1 | Not used | |
| C2 | 9—167pF tuning Aerial } | |
| C3 | 9—79pF tuning Oscillator } Ass'y | 66351 |
| C4 | 2—9pF trimmer Aerial } | |
| C5 | 2—9pF trimmer Oscillator } | |
| C6 | 0.1μF +80% —20% 25VW Hi-K disc | |
| C7 | 0.005μF ±20% 200VW AEE W99 | |
| C8 | 0.1μF +80% —20% 25VW Hi-K disc | |
| C9 | 0.04μF ±20% 200VW AEE W99 | |
| C10 | 330pF ±5% N750 disc | |
| C11 | 25μF 3VW Electrolytic | 229428 |
| C12 | 2.2pF ±20% NPO disc | |
| C13 | 330pF ±5% N750 disc | |
| C14 | 0.04μF ±20% 200VW AEE W99 | |
| C15 | Not used | |
| C16 | 0.1μF + 80% —20% 25VW Hi-K disc | |
| C17 | 0.1μF +80% —20% 25VW Hi-K disc | |
| C18 | 2.2pF ±20% NPO disc | |
| C19 | 560pF ±5% 100VW polystyrene | |
| C20 | 0.04μF ±20% 200VW AEE W99 | |
| C21 | 0.1μF + 80% —20% 25VW Hi-K disc | |
| C22 | 0.04μF ±20% 200VW AEE W99 | |
| C23 | 25μF 6.4VW Electrolytic | 229254 |
| C24 | Not used | |
| C25 | 4μF 10VW Electrolytic | 228189 |
| C26 | 100μF 6VW Electrolytic | 229733 |
| C27 | 25μF 3VW Electrolytic | 229428 |
| C28 | 100μF 3VW Electrolytic | 229706 |
| C29 | 400μF 10VW Electrolytic | 229786 |
| C30 | 400μF 10VW Electrolytic | 229786 |
| C31 | 0.1μF +80% —20% 25VW Hi-K disc | |
| C32 | 0.0027μF ±2½% 50VW polystyrene | |
| | **TRANSFORMERS** | |
| TR1 | Ferrite Rod Ass'y | 53285 |
| TR2 | Oscillator Transformer | 53200 |
| TR3 | 1st I.F. Transformer | 51268 |
| TR4 | 2nd I.F. Transformer | 51268 |
| TR5 | 3rd I.F. Transformer | 53290 |
| TR6 | Driver Transformer | 53075 |
| | **TRANSISTORS AND DIODES** | |
| VT1 | AWV 2N1639 | |
| VT2 | AWV 2N1638 | |
| VT3 | AWV 2N1638 | |
| VT4 | AWV 2N408 | |
| VT5 | AWV 2N408 | |
| VT6 | AWV AS128 | |
| VT7 | AWV AS128 | |
| VT8 | AWV AS22 | |
| MR1 | AWV 1N87A | |
| MR2 | AWV 1N87A | |
| | **MISCELLANEOUS** | |
| LS1 | 5″ x 3″ Speaker | 50070 |
| JK1 | Battery Saver Jack | 417405 |
| SWA | On/Off Switch (on RV1) | |