TECHNICAL INFORMATION AND SERVICE DATA

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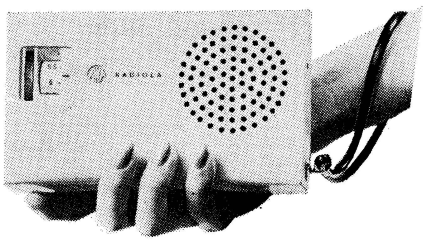
MANUFACTURERS AWA SUPERVISED SERVICE

A.W.A.
SIX TRANSISTOR PORTABLE
Model B60



GENERAL DESCRIPTION

The B60 is a six transistor, battery operated superheterodyne portable receiver designed for the reception of the Medium Wave Broadcasting Band. This model incorporates separate R.F. and A.F. printed circuit boards and provision is made for earphone operation.

ELECTRICAL AND MECHANICAL SPECIFICATIONS

Frequency Range ..... 525-1770 kHz

Intermediate Frequency ..... 455 kHz

Battery Complement ..... 9 volts Eveready Type 2362

Battery Consumption:
For zero audio output 10mA
For 50 mW audio output 25mA
For full audio output 40mA

Loudspeaker: 2¾" 53386

V.C. Impedance ..... 33 ohms at 400 Hz

Power Output 180mW

Controls: Tuning and Volume, ON-OFF.

Transistor and Diode Complement:

AS300	Converter
AS300	1st I.F. Amplifier
AS302	2nd I.F. Amplifier
AS313	Driver
AS311	Audio Output
AS128	Audio Output
1N87A	Detector Diode
OA95	Signal Clamp Diode
OA95	Overload Diode
AS9	Compensating Diode

Dimensions:
Height ..... 3¾"
Width ..... 6½"
Depth ..... 2"
Weight ..... 1 lb. 2 oz. with battery

Printed Circuit Board Servicing:

Remove a Philips Head screw securing each board to the cabinet front. The boards may now be tilted to gain access to the wiring side.

Adjustment of Output Idling Current:

An adjustment is provided on the audio board for controlling the output idling current. This adjustment is made during manufacture and need only be checked if any of the following conditions arise.

1. The receiver idling current at minimum volume is greater than 11 mA with 9V supply.

2. Cross-over distortion is present.

3. Any transistor or resistor is replaced in the audio board.

The adjustment is as follows:—

Disconnect the bridge between points U and V and the red wander lead from the test point U. Connect an ammeter between the test point and the wander lead, set the volume control in its minimum position and adjust RV101 to give a reading of 2.5 to 3mA on the meter.

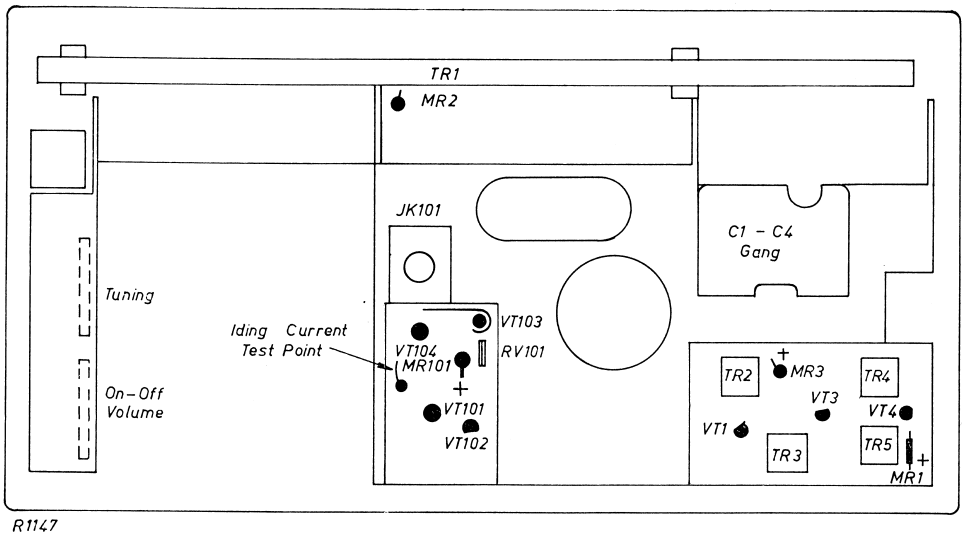


Fig. 2

Adjustment of Output Idling Current:

An adjustment is provided in the audio board for controlling the output idling current. This adjustment is made during manufacture and need only be checked if any of the following conditions arise:—

1. The receiver idling current at minimum volume is greater than 13mA with 9 volts supply.

2. Cross-over distortion is present.

3. Any transistor or resistor is replaced in the audio board.

The adjustment is as follows:—

Disconnect the red wander lead at the test point provided (Fig. 2) and insert an ammeter between the test point and wander lead. With the volume control set in its minimum (anti-clockwise) position, adjust RV101 to give a reading of 2.5 to 3mA on the meter.

ALIGNMENT PROCEDURE

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 position.

Testing Instruments:

Signal Generator — modulated 400 Hz or modulated oscillator.

If the modulated oscillator is used, connect a 220K ohms non-inductive resistor across the output terminals.

Output Meter. 15 ohm impedance.

I.F. Alignment Tool No. 39462.

ALIGNMENT TABLE (Refer to fig. 2)

ALIGN. ORDER	CONNECT "HIGH" SIDE OF GENERATOR TO:	TUNE GENERATOR TO:	TUNE RECEIVER TO:	ADJUST FOR MAX. PEAK OUTPUT
1	Aerial Section of Gang**	455 kHz	Gang fully closed	Cores in TR5, TR4 and TR3
Repeat adjustment until maximum output is obtained.				
2	Inductively coupled to Rod Aerial*	600 kHz	600 kHz	Osc. Core (TR2) †
3	Inductively coupled to Rod Aerial*	1,770 kHz	Gang fully open	Osc. Trimmer (C4)
4	Inductively coupled to Rod Aerial*	1,500 kHz	1,500 kHz	Aerial Trimmer (C2)
Repeat adjustments 2, 3 and 4 until no further improvement is possible.				

** As the gang frame is connected to the R.F. board positive rail which is 0.3 volts above ground (battery positive terminal), neither side of the power supply or output meter should be earthed during this operation.

* 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.

N.B. On completion of the alignment check the calibration of the twin pointers as follows. Check the left hand pointer directly against the frequency scale and adjust pointer position as necessary. Tune to 600kHz (6 on MW scale) and adjust right hand pointer to accurately indicate 7ZL.

CIRCUIT CODE

CODE No.	DESCRIPTION	PART No.
	RESISTORS	
	All Resistors composition type unless otherwise stated.	
R1	39K ohms ±10% ½ watt	
R2	18K ohms ±10% ½ watt	
R3	100K ohms ±10% ½ watt	
R4	15 ohms ±10% ½ watt	
R5	1.8K ohms ±10% ½ watt	
R6	56K ohms ±10% ½ watt	
R7	82K ohms ±10% ½ watt	
R8	1.5K ohms ±10% ½ watt	
R9	560 ohms ±10% ½ watt	
R10	100 ohms ±10% ½ watt	
R11	12K ohms ±10% ½ watt	
R12	15K ohms ±10% ½ watt	
R13	33K ohms ±10% ½ watt	
R14	1K ohms ±10% ½ watt	
R15	820 ohms ±10% ½ watt	
R16	100 ohms ±10% ½ watt	
R17	220 ohms ±10% ½ watt	
R18	2.2K ohms ±10% ½ watt	
R19	100 ohms ±10% ½ watt	
R20†	100K ohms ±10% ½ watt	
R101	270 ohms ±10% ½ watt	
R102	1.8K ohms ±10% ½ watt	
R103	3.3K ohms ±10% ½ watt	
R104	8.2K ohms ±10% ½ watt	
R105	5.6 ohms ± 5% ½ watt W.W.	
R106	820 ohms ±10% ½ watt	
R107	1.5K ohms ± 5% ½ watt	
R108	680 ohms ±10% ½ watt	
R109	1.5 ohms ±10% ½ watt	
R110	1.5 ohms ±10% ½ watt	
RV1	5K ohms curve T Carbon, Volume W/S	620041
RV101	100 ohms	619962
	CAPACITATORS	
C1	10-200pF Tuning Aerial	
C2	3-12pF Trimmer Aerial	
C3	10-87pF Tuning Oscillator	Gang 62746
C4	3-12pF Trimmer Oscillator	
C5	0.01µF ±20% 200VW AEE W99	
C6	0.1µF +80% —20% 25VW Hi-K disc	
C7	0.0027µF ±2½% 50VW Polystyrene	
C8	0.005µF ±20% 200VW AEE W99	
C9	330pF ±5% N750 disc	
C10	16µF 10VW Electrolytic	228878
C11	0.1µF +80% —20% 25VW Hi-K disc	
C12	330pF ±5% N750 disc	
C13	0.1µF ±80% —20% 25VW Hi-K disc	
C14	0.04µF ±20% 200VW AEE W99	
C15	0.1µF +80% —20% 25VW Hi-K disc	
C16	0.1µF +80% —20% 25VW Hi-K disc	
C17	330pF ±5% N750 disc	
C18	0.01µF ±20% 200VW AEE W99	
C19	0.04µF ±20% 200VW AEE W99	
C20	4µF 10VW Electrolytic	228189
C21	0.1µF +80% —20% 50VW disc (MSK)	227095
C22	330pF ±20% N750 disc	
C101	400µF 10VW Electrolytic	229786
C102	16µF 10VW Electrolytic	228878
C103	4µF 10VW Electrolytic	228189
C104	320µF 6VW Electrolytic	229773
C105	0.001µF +100% —20% K5000 disc	
C106	320µF 6VW Electrolytic	229773
C107	400µF 10VW Electrolytic	229786
	TRANSFORMERS	
TR1	Ferrite Rod Assembly	54132
TR2	Oscillator Transformer	54159
TR3	1st I.F. Transformer	54161
TR4	2nd I.F. Transformer	54163
TR5	3rd I.F. Transformer	54165
	TRANSISTORS & DIODES	
VT1	A.W.V. AS300	
VT2	Not used	
VT3	A.W.V. AS300	
VT4	A.W.V. AS302	
VT101	A.W.V. 2N408	
VT102	A.W.V. AS311 or AS313	
VT103	A.W.V. AS128	
VT104	A.W.V. AS311	
MR1	1N87A	
MR2	OA95	
MR3	OA95	
MR101	AS9	
	MISCELLANEOUS	
JK101	Battery Saver Jack	417405
LS1101	Speaker 5" x 3"	50259
PL101	Battery Plug	34623

† May vary in production.

D.C. RESISTANCE OF WINDINGS

Winding	D.C. Resistance in ohms
Ferrite Rod Assembly (TR1)	2
Oscillator Transformer (TR2)	
Primary	4
Secondary	*
1st I.F. Transformer (TR3)	
Primary	3
Secondary	*
2nd I.F. Transformer (TR4)	
Primary	3
Secondary	*
3rd I.F. Transformer (TR5)	
Primary	3
Secondary	*

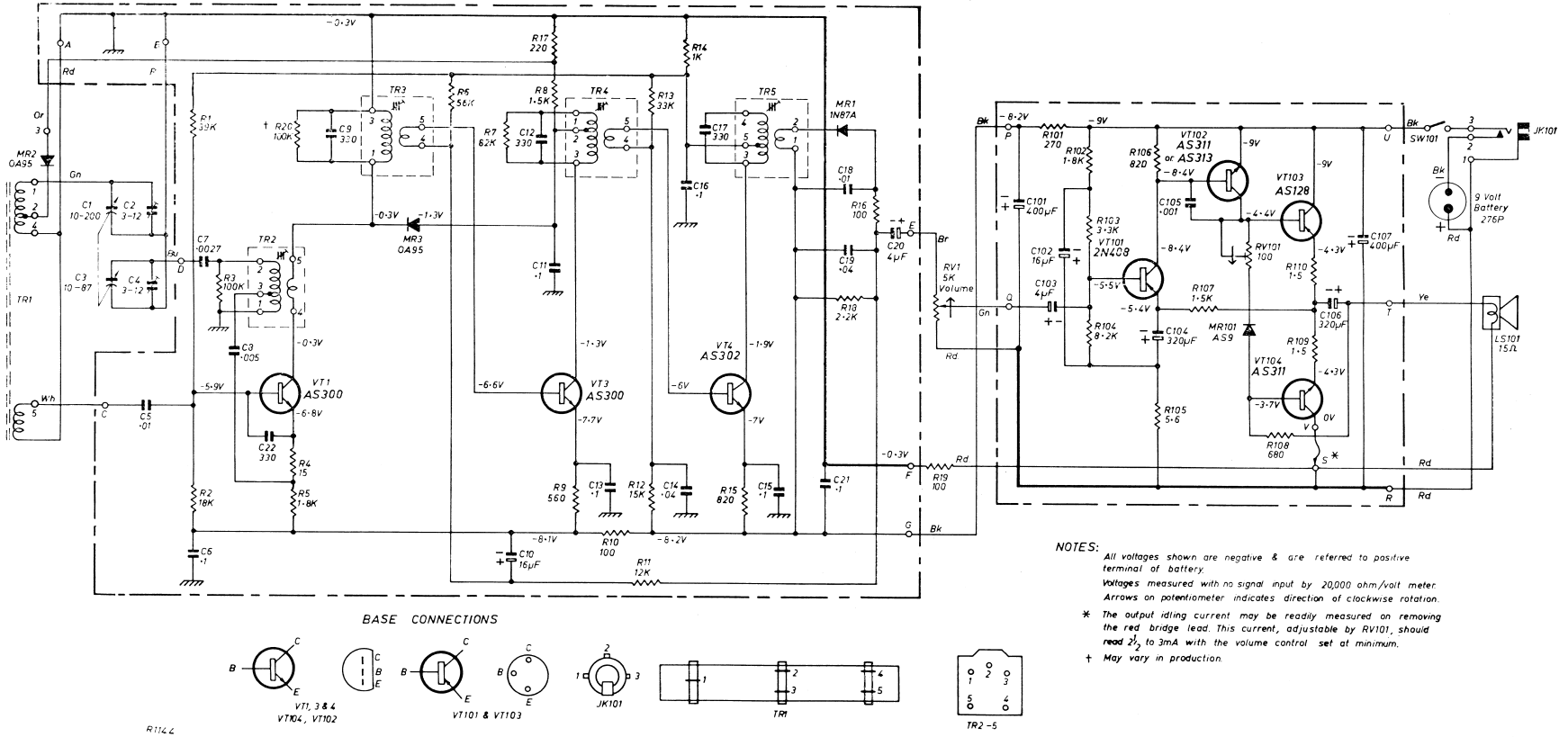
* Less than 1 ohm.

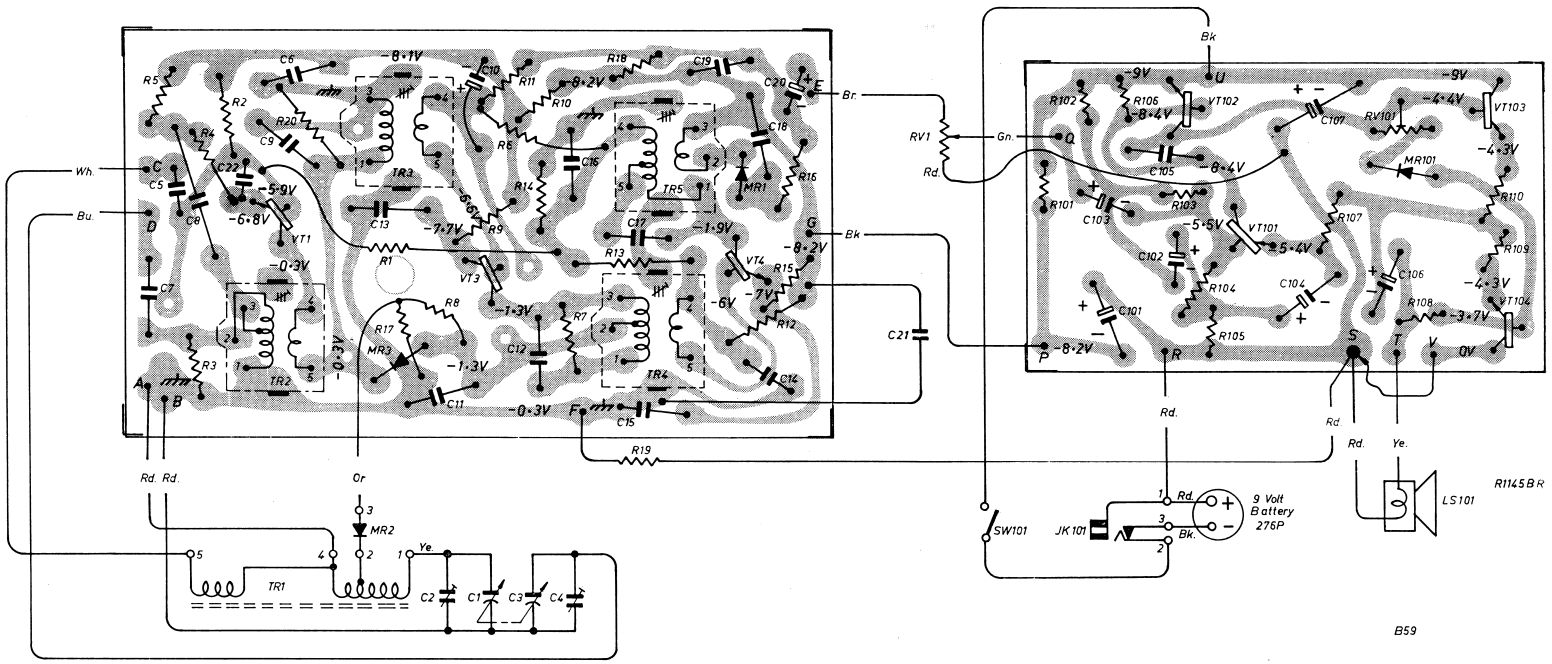
The above readings were taken on components from a standard chassis, but substitution of materials during manufacture may cause variations and it should not be assumed that a component is faulty if a slightly different reading is obtained.

MECHANICAL REPLACEMENT PARTS

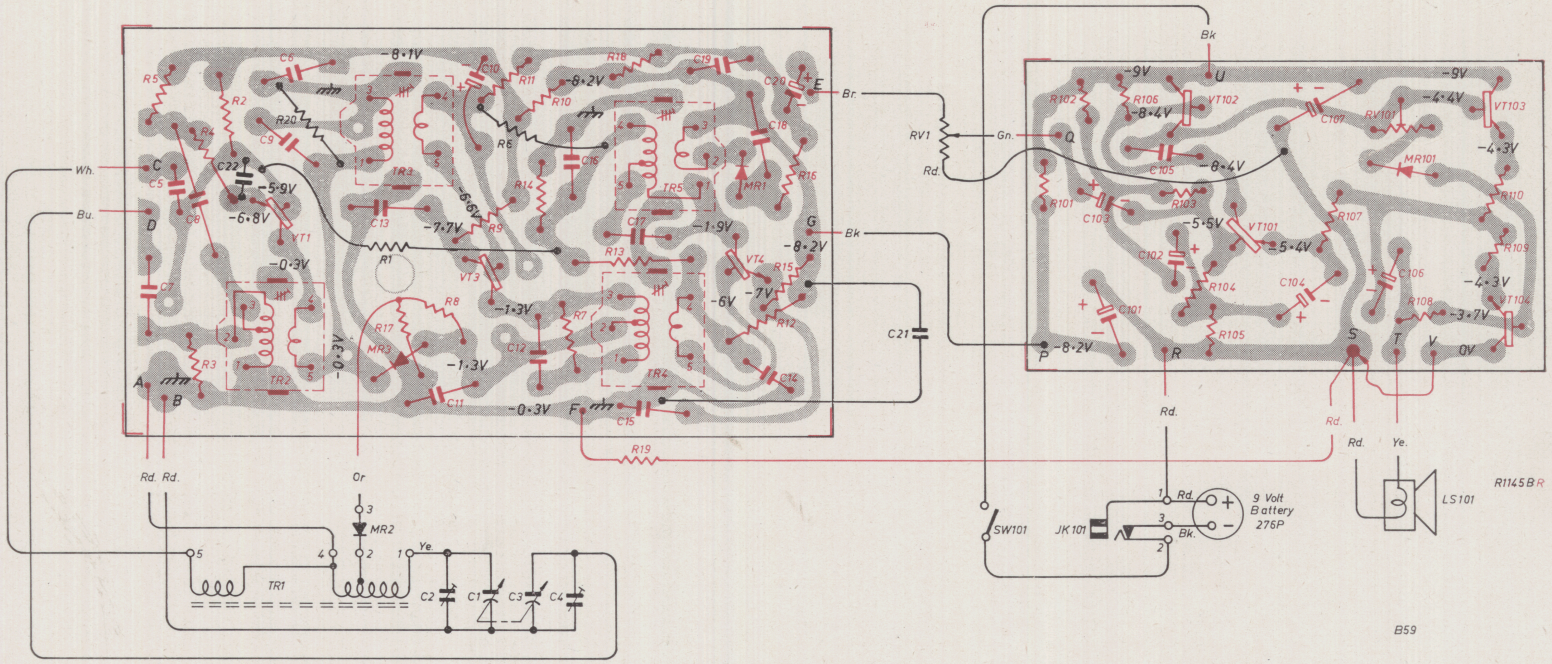
Item	Part No.
Back, Assembly, Cabinet	68841
Bracket, Speaker Mounting (2)	68807
Chassis, Moulded	68844
Circlip, Handle Retaining (2)	2537
Clamp, Battery Lead	211067
Drum, Gang	68861
Front Assembly, Cabinet	
Comprising:	
Badge, A.W.A.	68856
Dial Scale	65045
Front, Cabinet	68840
Gang Mounting	
Gang Assembly	62746
Grommet (3)	36826/002
Screw Ch./Hd. 4BA x $\frac{1}{4}$" (3)	714008
Spacer (3)	35923
Washer, Flat, 4BA (3)	15731
Handle, Assembly	68852
Knob, Tuning	68858
Knob, Volume — ON/OFF	68848
Nut, Spire (3)	492148
Nut, Spire (1)	492157
Pointer (2)	68816
Screw, Back Retaining (2)	760596
Spring, Drive Cord	44189
Speed Nut, Tuning Knob Retaining	492094

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


A
E
Rd
F
Or
MR2 OA95
Gn
C1 10-200
C2 3-12
C3 10-87
C4 3-12
TR1
Wh
C
C5 ·01
Bu
D
C7 ·0027
R1 39K
R2 18K
C6 ·1
TR2
R3 100K
C8 ·005
VT1 AS300
C22 330
R4 15
R5 1·8K
R20 100K
C9 330
TR3
R6 56K
R7 62K
TR4
R8 1·5K
C12 330
R9 560
C13 ·1
R12 15K
C14 ·04
R13 33K
TR5
C17 330
R15 820
C15 ·1
C16 ·1
R14 1K
MR1 1N87A
MR3 OA95
C18 ·01
R16 100
C19 ·04
C11 ·1
R18 2·2K
C21 ·1
C20 4μF
R19 100
R10 100
C10 16μF
R11 12K
-0·3V
-1·3V
-5·9V
-6·8V
-6·6V
-7·7V
-6V
-7V
-1·9V
-8·1V
-8·2V
VT3 AS300
VT4 AS302
Br
RV1 5K Volume
Gn
Rd
G
Bk
BASE CONNECTIONS
VT1, 3 & 4 VT104, VT102
VT101 & VT103
JK101
TR1
TR2-5
R1174
P
-8·2V
R101 270
R102 1·8K
C101 400μF
R103 3·3K
VT101 2N408
C102 16μF
C103 4μF
R104 8·2K
-9V
-8·4V
-5·5V
-5·4V
R106 820
VT102 AS311 or AS313
C105 ·001
C104 320μF
R107 1·5K
MR101 AS9
R105 5·6
VT103 AS128
RV101 100
R110 1·5
C107 400μF
C106 320μF
R109 1·5
VT104 AS311
R108 680
-4·4V
-4·3V
-3·7V
0V
Q
T
V
S
U
R
Ye
SW101
JK101
Bk
9 Volt Battery 276P
LS101 15Ω
*
NOTES:
All voltages shown are negative & are referred to positive terminal of battery.
Voltages measured with no signal input by 20,000 ohm/volt meter.
Arrows on potentiometer indicates direction of clockwise rotation.
* The output idling current may be readily measured on removing the red bridge lead. This current, adjustable by RV101, should read 2½ to 3mA with the volume control set at minimum.
† May vary in production.



Notes: The diagram represents the view from the wiring side of the printed board.
Stipple area indicates 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 positive 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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