TECHNICAL INFORMATION AND SERVICE DATA

MANUFACTURERS AWA SUPERVISED SERVICE

Radiola
Portable Transistor Player
Model 124G

ISSUED BY
AMALGAMATED WIRELESS (AUSTRALASIA) LTD.

GENERAL DESCRIPTION

Model 124G is a four transistor, battery operated portable record player designed for the reproduction of all standard and microgroove recordings. The complete unit is housed in a plastic covered fibre case and is powered by a single easily replaceable 6-volt battery.
Features of design include:—
Class B push-pull output stage; use of negative feedback to reduce distortion; four speed, low consumption manual player with built in electrical governor; filter circuit to eliminate motor interference.

ELECTRICAL AND MECHANICAL SPECIFICATIONS

Transistor Complement:

AWV 2N408 — Pre Amplifier.
AWV 2N408 — Driver.
AWV 2N270 — Output.
AWV 2N270 — Output.

Loudspeaker: 5" Permanent Magnet 21620.
Loudspeaker Transformer 38149A.
V/C Impedance: 15 ohms. at 400 cps.

Undistorted Power Output 350 mW.

Battery Complement: 6V Eveready 509 or Diamond 3509.

Battery Consumption:

Amplifier: For zero output = 7-12 mA.
For 50 mW output = 40-50 mA.
Motor: With 12", 78 r.p.m. record playing = 55-75 mA.

Controls: Tone, Volume, Power, Speed Selector and On/Off Motor Lever.

Dimensions: Height — 6½", Depth — 13", Width — 14½".

Weight unpacked — 13 lbs.

Chassis Removal:

Remove the eight (8) screws and cup washers around the edge of the motor board.

Making sure the tone arm is firmly secured on its rest, stand the case on its side with the turntable uppermost. Tilt the motor board out at the top until the case is cleared, then lift upward to allow the chassis to clear the motor board support brackets.

All components are mounted on the motor board are now readily accessible.

Installation of the motor board is the reverse of the above procedure.

Note: The chassis serial number appears on the base of the battery holder which can be easily removed should this number be required.

Service Notes for Transistor Circuits:

While transistors, when used within the manufacturer's ratings, should give considerably longer life in service than vacuum tubes, the following precautions should be observed when servicing receivers to prevent damage to transistors.

Transistors can be damaged when checking circuit continuity by the D.C. voltage present in an ohmmeter. To avoid damaging a transistor or obtaining a misleading resistance reading the transistor must be disconnected from the circuit.

The use of screwdrivers as a means of checking high tension, as is commonly done in mains operated instruments, is not only a waste of time but can permanently damage the transistors. Similarly the indiscriminate shorting out of bias resistors as a means of checking whether certain stages are operating will almost certainly have drastic results, particularly in the output stage.

Transistors are extremely sensitive to heat, temperatures in excess of 90° C. can cause permanent damage. Great care should therefore be exercised when soldering transistor leads, keeping the soldering iron as far away from the transistor body as practicable and applying heat for as short a time as possible while using pliers on the leads to act as a heat sink.

It should be noted that all electrolytic capacitors have their positive terminal going to earth or to the earthy part of the circuit.

Testing Procedure:

The first thing to check when the player is inoperative is the battery. With the player switched on a new battery should measure 6 volts, although satisfactory operation will still be obtained with 4 volts.

Voltmeters used for test purposes must be at least 20,000 ohms per volt. The use of low impedance meters will only give misleading results as serious shunting effects will occur.

When checking for a circuit fault causing excessive battery drain, an overall current measurement and supplementary voltage measurements should be made. For reasons stated above continuity measurements can be misleading.

Signal tracing by injection of a signal from a audio signal generator is carried out on transistor amplifiers in exactly the same manner as has been done for many years with conventional vacuum tube amplifiers. The audio generator should be connected in series with a 25μF non polarized electrolytic capacitor to avoid shorting out bias voltages. With the transistors used in this amplifier the BASE is the signal input terminal (corresponding to the signal grid of vacuum tubes), the COLLECTOR is the signal output terminal (corresponding to plate) and the EMITTER is the common terminal (corresponding to the cathode).

The output circuit used in this amplifier is of the "Class B" type; this type of output circuit has not been used in commercial radios or amplifiers for the past few years. It should therefore be noted that the battery current increases greatly with increased signal input to the base.

The output impedance from collector to collector is 120 ohms. If an indication only is required then A.W.A. Output Meter, type 2M8832, switched to 5,000 ohms. and connected across the output collectors should be adequate. If an accurate measurement of output is required, the voice coil of the speaker should be disconnected and the speaker loading replaced by an output meter with 15 ohms impedance. The 2μF paper capacitor mounted on the speaker should be left in the circuit.

D. C. RESISTANCE OF WINDINGS

Winding	DC Resistance in ohms.
Driver Transformer T1:	
Primary	330
Secondary	190
Output Transformer T2:	
Primary	12
Secondary	1.8

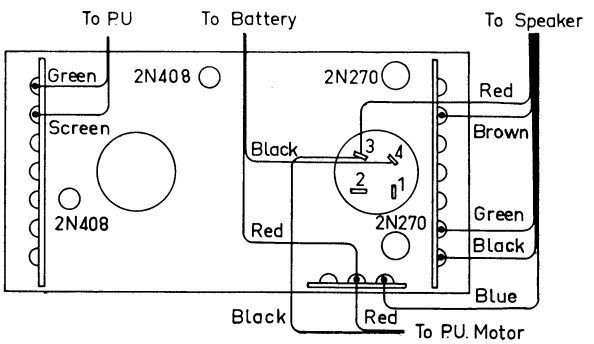
The above readings were taken on a standard chassis, but substitution of materials during manufacture may cause variations and it should not be assumed that a component is faulty if a slightly different reading is obtained.

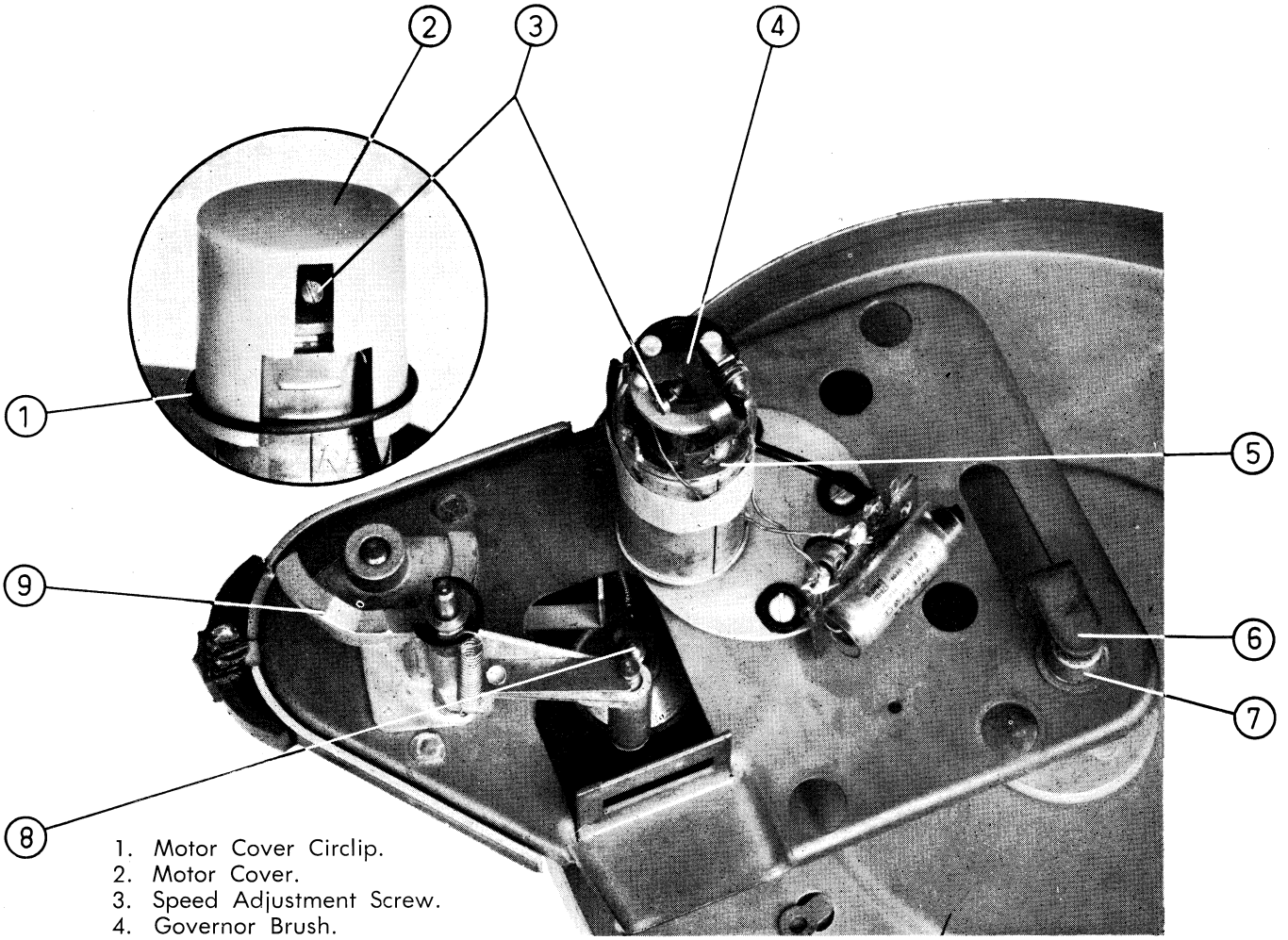
MECHANICAL REPLACEMENT PARTS

Item	Part No.
Battery Holder Assembly	38961
Control Card	38965
Knob Assembly, Power/Tone	38948
Knob Assembly, Volume	37589

When ordering, always quote the above Part Numbers and in the case of coloured parts such as cabinets, knobs, etc., the colour plus the Part Number.

INTERCONNECTING WIRING DIAGRAM





1. Motor Cover Circlip.
2. Motor Cover.
3. Speed Adjustment Screw.
4. Governor Brush.
5. Motor Brush Holder.
6. Thrust Bearing.
7. Sleeve Bearing.
8. Idler Wheel Bearing.
9. Speed Change Cam.

MOTOR MAINTENANCE

Description:

The B.S.R. Model TU9B four speed record player is designed to operate from a dry cell battery having an initial voltage of 6 volts. A centrifugally-operated governor controlling the motor current maintains the selected turntable speed constant until the battery voltage has fallen to approximately 4 volts. When playing microgroove records of varying sizes and speeds, the current consumed by the motor is normally within the range 40 to 55 ma. However the current may rise to about 75 ma when a 12 inch, 78 r.p.m. record is being played.

To ensure that the record player maintains its high electrical efficiency at all times and to obtain the maximum usable life from the battery, some attention may be required at intervals throughout its life.

1. Battery Voltage:

If battery voltage is below 4 volts when a record is being played, replace the battery.

2. Governor Brush:

This brush, attached to the governor assembly, may be cleaned by drawing a piece of ordinary writing paper between the carbon brush and the beryllium-copper contact several times. Access to the governor assembly is obtained as follows: Remove the cardboard tube over the motor housing with a clockwise twisting action and unwrap the estafoam and sponge rubber sound absorbers. Slide the circlip off the plastic motor cover and remove the cover, which exposes the governor assembly. For identification of governor parts refer to above illustration.

3. Motor Brushes:

These do not usually require attention but it is advisable to inspect them after about 500 hours operation. Remove the brushes by slackening wiring and ease the brush covers off the end of the motor assembly. If excessive wear is visible, replace the brushes. When replacing the brushes, check that good contact is made with the commutator and, if necessary, bend the brush assembly slightly to ensure adequate tension.

4. Lubrication:

If turntable speed is slow or varying after the above items (1) to (3) have been checked, the record player should be lubricated as follows:

Turntable.—Use very light grease or vaseline on both sleeve and thrust bearings.

Jockey pulley.—Apply light sewing machine oil to jockey pulley bearing. Avoid spilling oil on rubber tyre.

Motor bearings.—Apply small drop of light sewing machine oil to bearings at each end of motor, using a large needle to carry oil into the bearing.

Speed change cam.—If necessary, use light grease or vaseline on working faces.

5. Speed Adjustment:

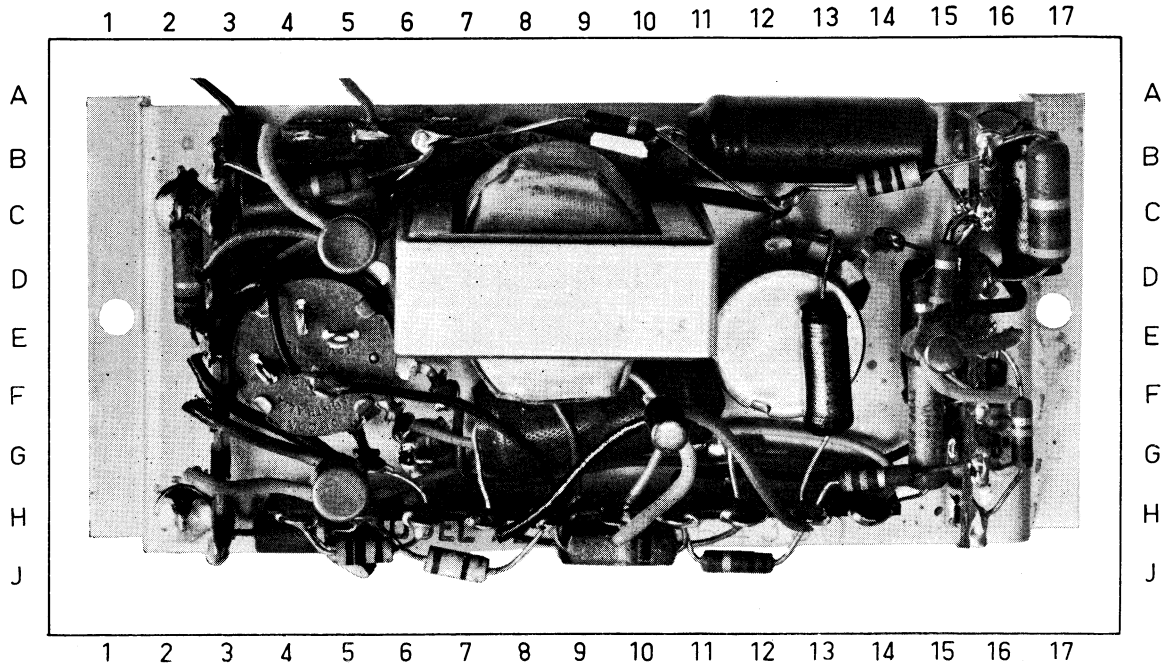
The turntable speed is set correctly at the factory and no further adjustments should be attempted until the above items (1) to (4) have been completed.

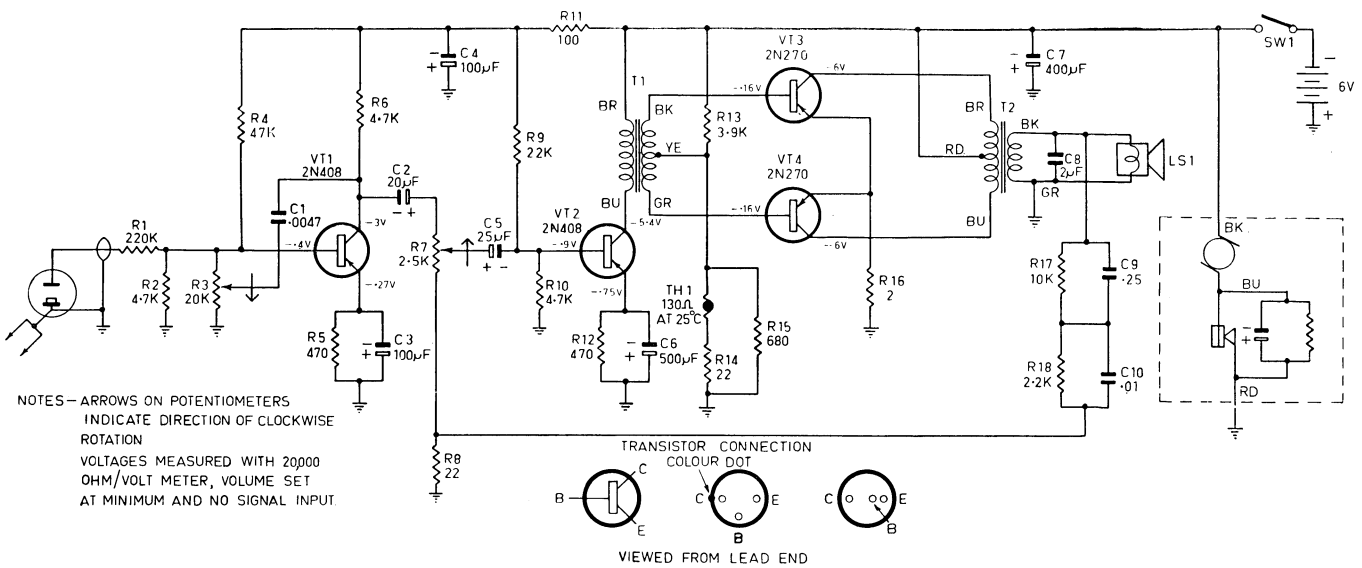
Speed adjustment is effected by rotating the brass cheese-head screw visible through the slot in the plastic motor cover (see above). Clockwise rotation of this screw increases turntable speed and vice-versa. The adjustment should be carried out at 78 r.p.m. with a suitable stroboscope.

Wrap the rubber and estafoam insulation tightly over the motor and cover; replace the cardboard tube, making sure that the motor power leads seat correctly in the slot provided.

6. Stylus Replacement:

To avoid damage to records, replace the sapphire stylii when they become worn. Part numbers for ordering replacements appear on the cartridge moulding.

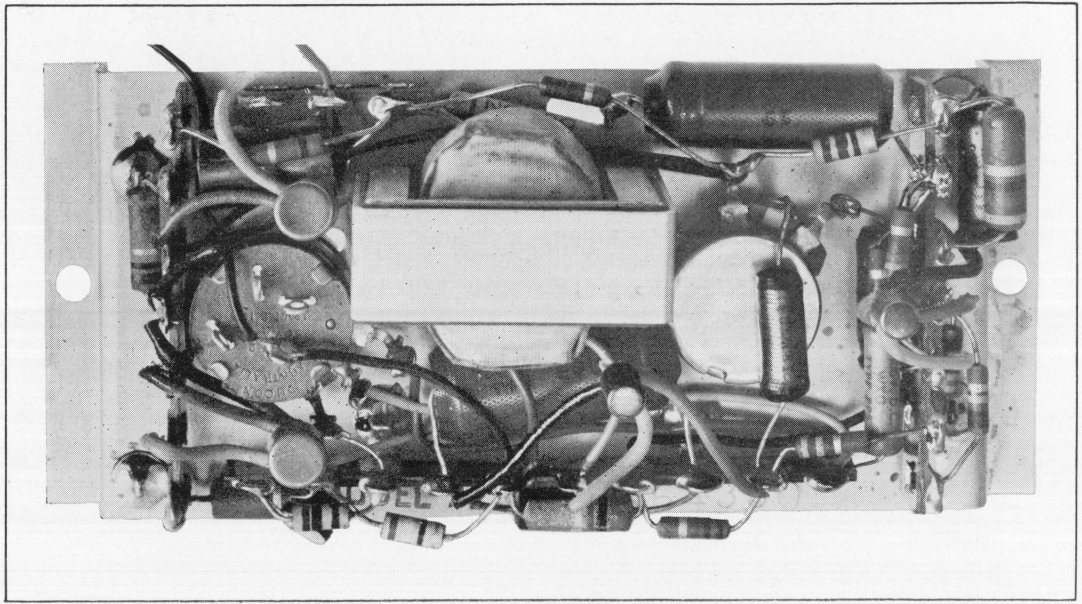


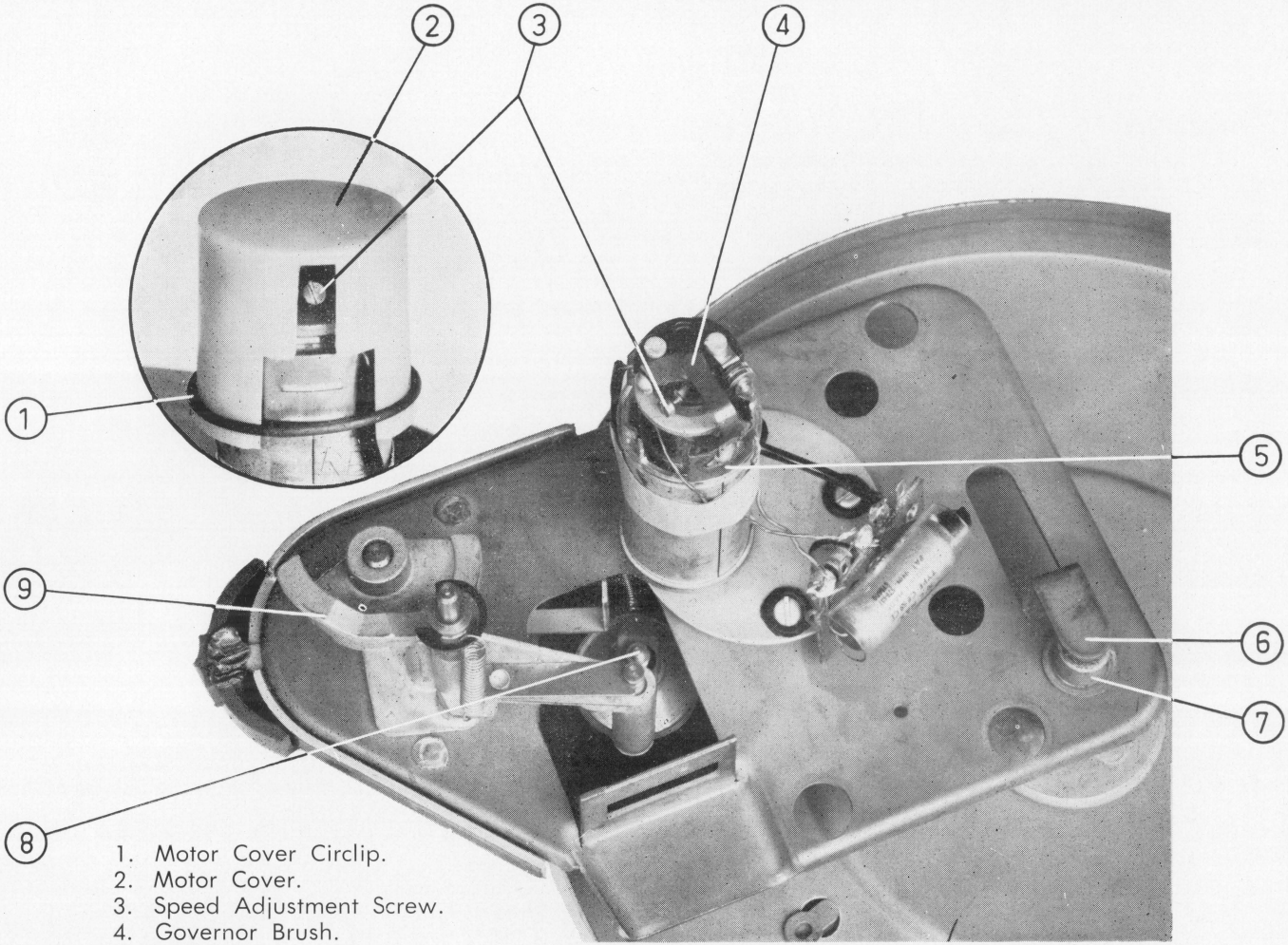


Note: C4 is now a 500μF 18 VW Electrolytic. Code No. 229853.

Code No.	Description	Part No.	Location
	RESISTORS		
	All Resistors ± 10% Carbon unless otherwise stated		
R1	220K ohms ½ watt	601740	G16
R2	4.7K ohms ½ watt	601340	F16
R3	20K ohms Tone Control W/S	620254	E5
R4	47K ohms ½ watt	601610	D15
R5	470 ohms 1 watt	600675	C17
R6	4.7K ohms ½ watt	601340	E15
R7	2.5K ohms Volume Control	620040	E13
R8	22 ohms ½ watt W.W.	602318	B14
R9	22K ohms ½ watt	601490	J12
R10	4.7K ohms ½ watt	601340	G14
R11	100 ohms ½ watt W.W.	602061	J10
R12	470 ohms 1 watt	600675	J10
R13	3.9K ohms ½ watt	601310	J7
R14	22 ohms ½ watt W.W.	602318	J5
R15	680 1 watt	600677	H4
R16	2 ohms ½ watt W.W.	600422	D2
R17	10K ohms ½ watt	601400	C5
R18	2.2K ohms ½ watt	601240	B9

Code No.	Description	Part No.	Location
	CAPACITORS		
C1	0.0047 μF 400 volt working paper	225973	G15
C2	20 μF 12 volt working Electrolytic	229307	E15
C3	100 μF 3 volt working Electrolytic	229706	C17
C4	100 μF 10 volt working Electrolytic	229704	B13
C5	25 μF 3 volt working Electrolytic	229562	F13
C6	500 μF 3 volt working Electrolytic	229854	G10
C7	400 μF 10 volt working Electrolytic	223111	On Motor Board
C8	2 μF 200 volt working Hunts W48	229394	On LS1
C9	0.25 μF 200 volt working Hunts	229007	C5
C10	0.01 μF 200 volt working paper	226310	B9
	MISCELLANEOUS		
T1	Driver Transformer	38146A	D9
T2	Output Transformer	38149A	On LS1
VT1	AWV 2N408	906492	E15
VT2	AWV 2N408	906492	G10
VT3	AWV 2N270	906485	C5
VT4	AWV 2N270	906485	H5
TH1	130 ohms at 25° C. N.T.C. Thermistor	893703	J5
LS1	5" Permanent Magnet Loudspeaker	21620	


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A B C D E F G H J



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