SERVICE MANUAL

TRANSISTOR PORTABLE
RADIO RECEIVER
MODEL **JB-1G**

"HIS MASTER'S VOICE"

MANUFACTURED & DISTRIBUTED BY
E.M.I. (AUSTRALIA) LIMITED
(INCORPORATED IN N.S.W.)

6 PARRAMATTA ROAD
HOMEBUSH, N.S.W.

SPECIFICATION

BATTERY:
Eveready Type 2362 (9 volts)

BATTERY CONSUMPTION:
No Signal: 7 mA. (average)
100 mW Output: 25 mA.

FREQUENCY RANGE:
525-1650 Kc/s.

INTERMEDIATE FREQUENCY:
455 Kc/s.

SEMI-CONDUCTORS:
SE1010 (Silicon NPN)—Frequency Changer
SE1002 (Silicon NPN)—1st IF Amplifier
SE1001 (Silicon NPN)—2nd IF "
SE2002 (Silicon NPN)—Driver

SEMI-CONDUCTORS (continued)
AC127 (Germanium NPN)—Output
AC132 (Germanium PNP)—Output
OA90 (Germanium Diode) Overload Diode
OA90 (Germanium Diode) Detector and AGC

DIMENSIONS (in leather case):
Height ..... $3\frac{3}{4}$"
Width ..... $6\frac{5}{8}$"
Depth ..... $1\frac{3}{4}$"

WEIGHT: 1lb. 6oz., complete.

OUTPUT IMPEDANCE:
50 ohms at 400 c/s.

PART No. 683-5891

October, 1965.

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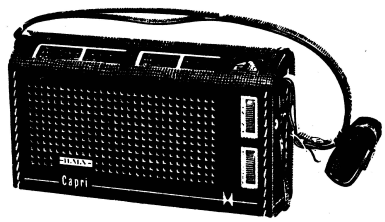

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SERVICE NOTES

Transistors can be permanently damaged by excessive external heat, or heat generated within the circuit by excessive current flow. When servicing this equipment, the following precautions should be observed:

Supply polarity should never be reversed. Never remove or replace a transistor or circuit component without first disconnecting the battery.

When soldering transistor leads, use a small iron. Solder as rapidly as possible, keeping the iron well clear of the transistor body.

The use of a 240-volt soldering iron should be avoided as leakage and capacitance effects can destroy a transistor. To avoid this problem, a low voltage iron with a step-down transformer should be used.

To unsolder multi-terminal components (IF transformers, etc.), it is best to apply heat simultaneously to all terminals, using a special iron tip. If a normal iron tip is used, apply the iron to each soldered joint in turn, and brush away the solder with a stiff brush.

Disconnect transistors before making circuit checks with an ohm-meter. Failure to do so will give misleading results and the transistors may be damaged by excessive conduction caused by the ohm-meter battery. Check polarity of the ohm-meter leads; electrolytic capacitors may be damaged if the ohm-meter battery voltage is applied in reverse polarity.

When taking voltage measurements, avoid accidental short-circuits by the voltmeter probes.

The output transistors are operated in a complementary symmetry configuration. Care must be taken not to connect the emitters of these transistors to earth. The voltage at these emitters should be approximately 5.3 volts.

Fault finding can be carried out in the usual manner, keeping in mind that a transistor failure is unlikely.

When using a signal generator, a DC blocking capacitor should be used in the live lead to prevent disturbance of the transistor DC circuits.

Before connecting the generator, adjust its attenuator for minimum output. Signal generators designed for vacuum tube circuits can often deliver more signal than a transistor can safely handle.

The output must be correctly loaded with 50 ohms during these tests. If the output load is reduced below the correct value, the maximum dissipation of the output transistors will be exceeded at high output levels.

Note that one side of the speaker is connected directly to the +9 volt line, and not to earth.

DISMANTLING

If removal of the printed circuit board is necessary, first remove the back by slackening the captive rear retaining screw. If difficulty is experienced, a coin may be twisted in a slot at the bottom of the cabinet.

Unsolder the grey lead to the earphone socket and the red lead to the speaker. Remove the three slotted nuts which hold the printed board to the cabinet.

ALIGNMENT PROCEDURE

In any case where a components replacement has been made in either IF or RF circuits of the receiver, all circuits should be re-aligned. IF alignment should always precede RF alignment. An output meter, having a resistance of at least 250 ohms, should be connected between the speaker voice coil, at its junction with the earphone socket, and earth.

In carrying out the following operations, it is important that the input to the receiver from the signal generator should be kept low and progressively reduced as the circuits are brought into line, in order that overloading shall be avoided.

Note:

(a) The tuning tool should be a small plastic screwdriver with a tip which fits cleanly into the tuning core.

(b) When tuning the core, do not use any downward pressure, as the threaded former has enough resilience to detune the circuit, after the pressure is released.

IF ALIGNMENT

(1) Set the signal generator to 455 Kc/s, with 30% modulation at 400 c/s. Turn the receiver volume control to maximum and set the tuning control to the LF end of the band.

(2) Inject the signal into the aerial section of the gang. Adjust the cores of T5, T4 and T3 in that order for maxium reading on the output meter. Start alignment of each IF transformer by first screwing its core well out, and then screwing the core into the coil until resonance is obtained.

RF ALIGNMENT

(1) Set the controls as for IF alignment. A coil comprising 3 turns of 16-gauge DCC wire about 12" in diameter should be connected across the output terminals of the generator. The coil is placed concentric with the rod aerial at a distance of not less than one foot from it.

(2) Check that, when the gang capacitor is fully enmeshed, the pointers coincide with the marks on the scale. If necessary, the pointers may be adjusted by sliding them along the cord. The receiver may be aligned out of the cabinet by means of calibration marks on the dial back plate.

These are (from right to left):

Setting mark.
530 Kc/s.
600 Kc/s.
800 Kc/s.
1000 Kc/s.
1250 Kc/s.
1500 Kc/s.
1630 Kc/s.

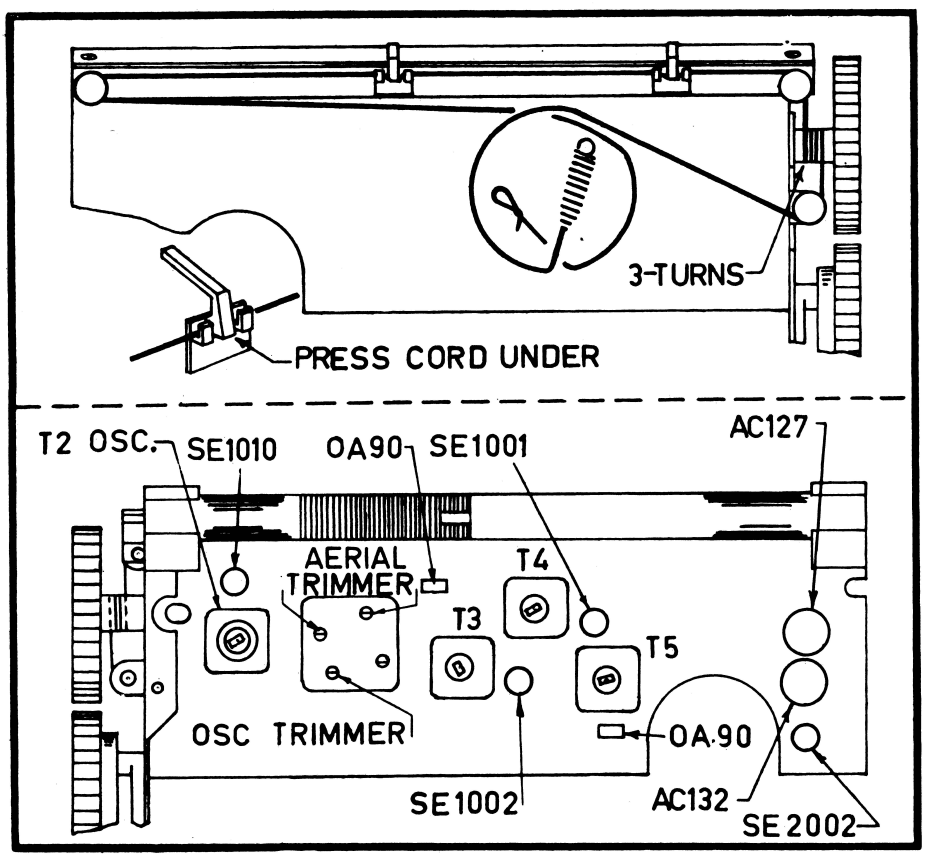
(3) Set signal generator to 600 Kc/s.

(4) Turn tuning control until the pointer is exactly over the 600 Kc/s calibration mark. Adjust the core in T2 for maximum reading on the output meter.

(5) Set signal generator to 1500 Kc/s.

(6) Turn tuning control until the pointer is exactly over the 1500 Kc/s calibration mark. Adjust VC3 and VC1 in that order for maximum reading on the output meter. Note: Two of the four trimmer capacitors, at rear of gang, are parallel connected for aerial peaking.

(7) Repeat operations (3) to (6) for optimum alignment.



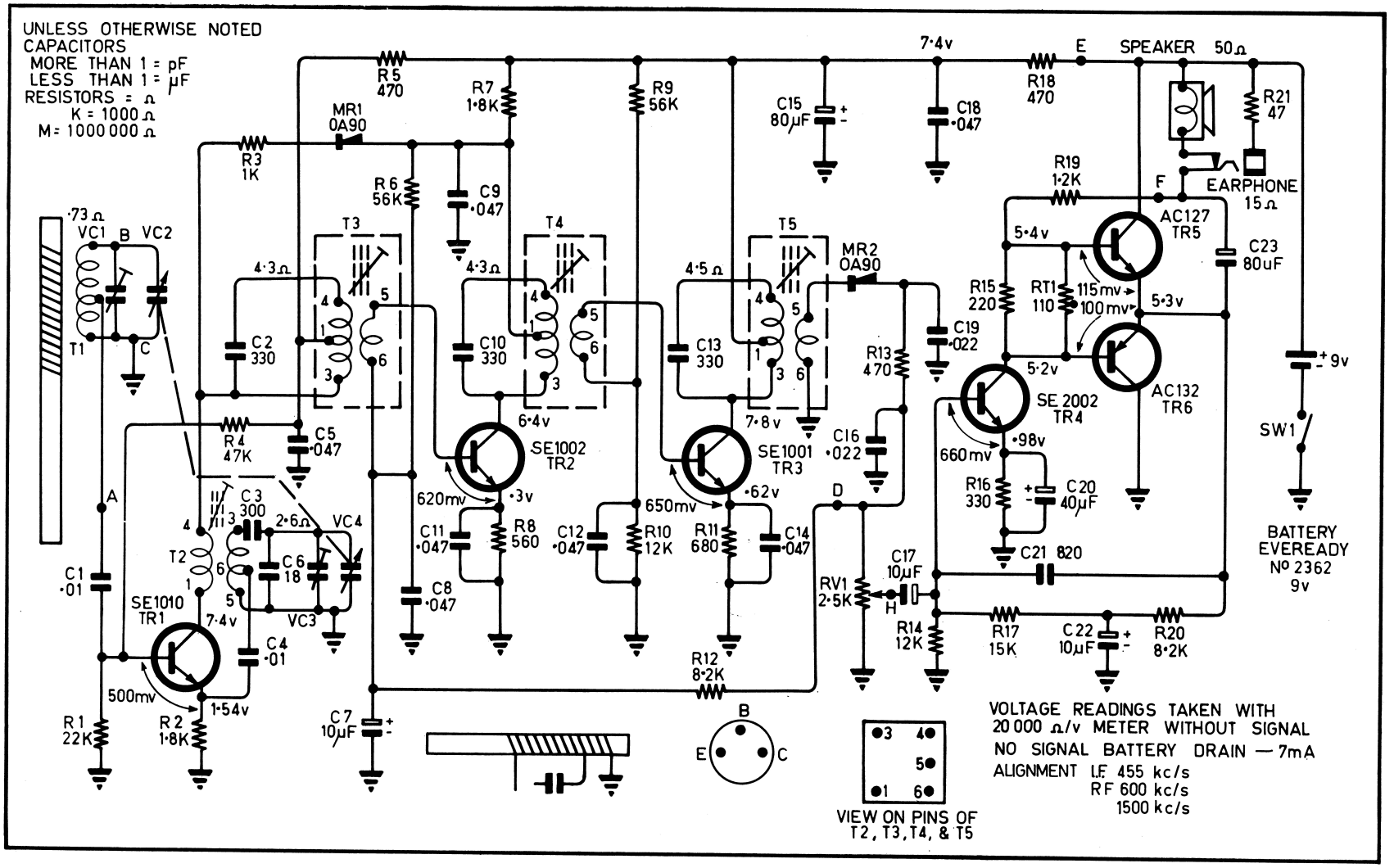
PARTS LIST — MODEL JB-1G

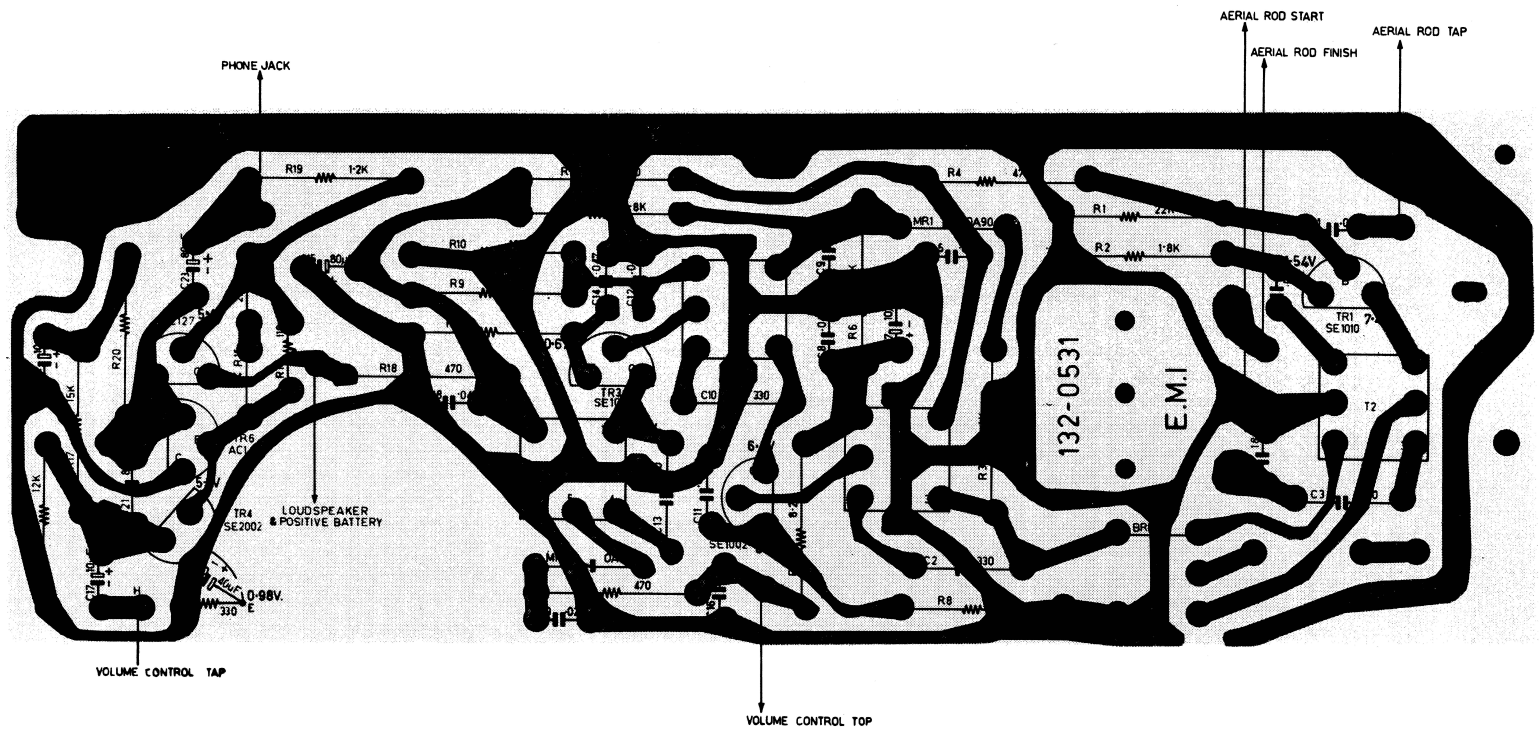
REF.	PART NO.	DESCRIPTION
		RESISTORS
R1	740-1542	22K 5% ½W
R2	740-1382	1.8K 5% ½W
R3	740-0022	1K 10% ½W
R4	740-0352	47K 5% ½W
R5	740-0012	470 ohms 10% ½W
R6	740-0972	56K 5% ½W
R7	740-0302	1.8K 10% ½W
R8	740-0262	560 ohms 10% ½W
R9	740-0702	56K 10% ½W
R10	740-0732	12K 10% ½W
R11	740-0682	680 ohms 10% ½W
R12	740-1202	8.2K 5% ½W
R13	740-0012	470 ohms 10% ½W
R14	740-1212	12K 5% ½W
R15	740-1012	220 ohms 5% ½W
R16	740-1262	330 ohms 5% ½ W
R17	740-1342	15K 5% ½W
R18	740-0012	470 ohms 10% ½W
R19	740-0322	1.2K 10% ½W
R20	740-1202	8.2K 5% ½W
R21	740-0712	47 ohms 10% ½W
		CAPACITORS
C1	271-0741	.01uF +80% —20% 25V Redcap
C2	280-3081	330pF 5% 125V Styroseal
C3	280-3321	300pF ± 5pF 125V Styroseal
C4	271-0741	.01uF +80% —20% 25V Redcap
C5	271-0731	.047uF +80% —20% 25V Redcap
C6	271-1431	18pF 10% NPO Disc
C7	269-1041	10uF 6V Electro
C8	271-0731	.047uF +80% —20% 25V Redcap
C9	271-0731	.047uF +80% —20% 25V Redcap
C10	280-3081	330pF 5% 125V Styroseal
C11	271-0731	.047uF +80% —20% 25V Redcap
C12	271-0731	.047uF +80% —20% 25V Redcap
C13	280-3081	330pF 5% 125V Styroseal
C14	271-0731	.047uF +80% —20% 25V Redcap
C15	269-1031	80uF 15V Electro
C16	271-0751	.022uF +80% —20% 25V Redcap
C17	269-1041	10uF 6V Electro
C18	271-0731	.047uF +80% —20% 25V Redcap
C19	271-0751	.022uF +80% —20% 25V Redcap
C20	269-1311	40uF 2.5V Electro
C21	271-1171	820pF 20% AY Disc
C22	269-1041	10uF 6V Electro
C23	269-1031	80uF 15V Electro

REF.	PART NO.	DESCRIPTION
		SEMI-CONDUCTORS
TR1	932-2681	SE1010 Frequency Changer
TR2	932-2711	SE1002 1st IF Amplifier
TR3	932-2281	SE1001 2nd IF Amplifier
TR4	932-2661	SE2002 Audio Pre-Amplifier
TR5, TR6	932-1971	AC127 Audio Output, AC132 Audio Output — Matched Pair
MR1	932-0971	OA90 Overload Diode
MR2	932-0971	OA90 Detector and AGC.
		TRANSFORMERS
T1	253-0341	Aerial Rod Assembly
T2	257-0261	Oscillator Coil
T3	906-0662	1st IF Transformers
T4	906-0662	2nd IF Transformer
T5	906-0442	3rd IF Transformer
		MISCELLANEOUS
VC1, VC2, VC3, VC4	281-0351	2-Gang Capacitor with Trimmers
RV1, SW1	677-1361	2.5K Curve T with SP Switch
RT1	752-0121	110 ohms 10% Thermistor
	831-2361	Loudspeaker, 2¾", M.S.P. 275JB/50, 50 ohms V.C.

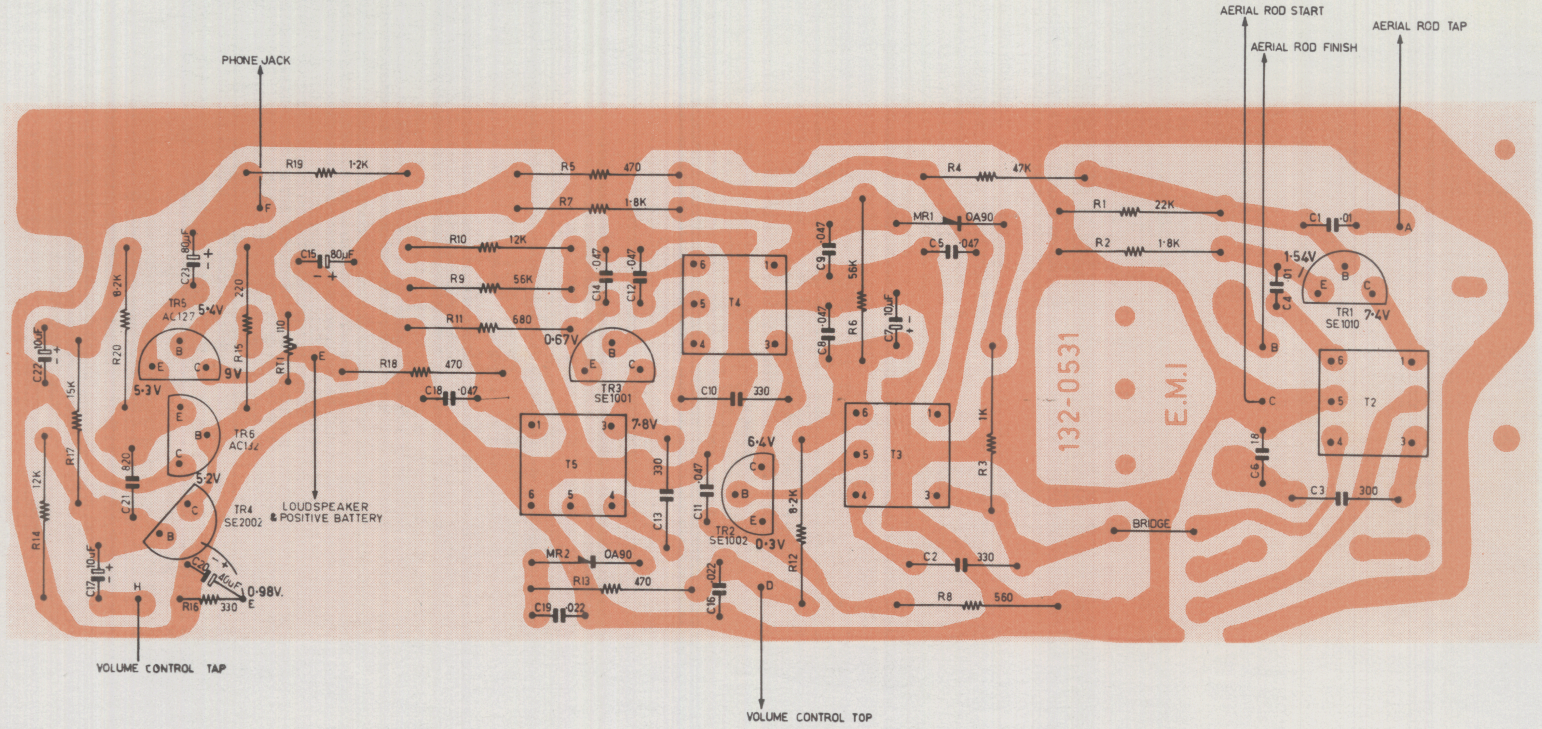
SPARE PARTS

Cabinet Front and Back, Charcoal	190-3101
Carrying Case, Black	189-1681
Carrying Case, Tan	189-1731
Carrying Case, Red	189-1751
Presentation Carton	207-5191
Medallion, H.M.V.	561-1621
Knob, Volume	517-2421
Knob, Tuning	517-2431
Dial Scale	794-1631
Earphone and Plug	831-2081
Dial Drum	381-0181
Dial Cord, 2 feet	297-0091
Pointer	671-0701
Earphone Socket with Nut	824-1161
Escutcheon	403-1961


UNLESS OTHERWISE NOTED
CAPACITORS
MORE THAN 1 = pF
LESS THAN 1 = µF
RESISTORS = Ω
K = 1000 Ω
M = 1000 000 Ω
·73 Ω
VC1
B
VC2
T1
C
A
C1 ·01
SE1010 TR1
7·4v
500mv
1·54v
R1 22K
R2 1·8K
C4 ·01
T2
C3 300
2·6Ω
VC4
VC3
C6 18
R4 47K
C5 ·047
4·3Ω
C2 330
T3
R6 56K
C8 ·047
R5 470
MR1 0A90
R3 1K
R7 1·8K
C9 ·047
T4
4·3Ω
C10 330
6·4v
SE1002 TR2
620mv
·3v
C11 ·047
R8 560
C7 10µF
4·5Ω
C13 330
T5
7·8v
SE1001 TR3
650mv
·62v
C12 ·047
R10 12K
R11 680
C14 ·047
R9 56K
R12 8·2K
C15 80µF
7·4v
C18 ·047
MR2 0A90
R13 470
C16 ·022
C19 ·022
D
RV1 2·5K
C17 10µF
H
R14 12K
E
R18 470
SPEAKER 50Ω
R21 47
EARPHONE 15Ω
F
R19 1·2K
5·4v
AC127 TR5
C23 80uF
R15 220
RT1 110
115mv
100mv
5·3v
5·2v
SE 2002 TR4
AC132 TR6
·98v
660mv
R16 330
C20 40µF
C21 820
R17 15K
C22 10µF
R20 8·2K
+ 9v
SW1
BATTERY EVEREADY Nº 2362 9v
B
E
C
VIEW ON PINS OF T2, T3, T4, & T5
VOLTAGE READINGS TAKEN WITH 20 000 Ω/v METER WITHOUT SIGNAL
NO SIGNAL BATTERY DRAIN — 7mA
ALIGNMENT LF 455 kc/s
RF 600 kc/s
1500 kc/s



COMPONENT LAYOUT (LOOKING ON COPPER SIDE)



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