SERVICE MANUAL

PORTABLE RADIO CHASSIS TYPE **JD** JA.

"HIS MASTER'S VOICE"

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

6 PARRAMATTA ROAD
HOMEBUSH, N.S.W.

SPECIFICATION

BATTERY:
Eveready Type 2510.

BATTERY CONSUMPTION:
No Signal ..... 9 mA
400 mW Audio Output .... 45 mA

FREQUENCY RANGE:
525 Kc/s to 1750 Kc/s.

INTERMEDIATE FREQUENCY:
455 Kc/s.

SEMI-CONDUCTORS:
SE1002 (Silicon NPN) Frequency Changer
SE1002 (Silicon NPN) First IF Amp.
SE1002 (Silicon NPN) Second IF Amp.
SE1002 (Silicon NPN) Audio Amplifier
AC132 (Germanium PNP) Audio Output
AC127 (Germanium NPN) Audio Output
Matched Pair
OA90 (Germanium Diode) Auxiliary AGC
OA90 (Germanium Diode) Detector and AGC.

OUTPUT IMPEDANCE:
48 ohms at 400 c/s.

PART No. 683-5461

March, 1965.

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SERVICE NOTES

Transistors can be permanently damaged by excessive external heat, or by 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 the emitters should be approximately 8 volts. Note, also, that one side of the speaker is connected directly to the +15 volt line, and not to earth.

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 attentuator 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 48 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. When making output measurements, an output meter having a resistance of at least 250 ohms may be connected across the speaker voice coil. Do not use a meter of lower resistance.

DISMANTLING

If removal of the printed circuit board is necessary, first remove the back by slackening the captive rear retaining screw.

Withdraw the tuning knob from the spindle.

Remove the three slotted nuts and one self-tapping screw, which hold the printed board to the cabinet. Remove the inverted "U" bracket and the printed circuit board may now be lifted away. If necessary, the speaker leads may be extended to give greater freedom of movement.

ALIGNMENT PROCEDURE

In any case where a component replacement has been made in either IF or RF circuits of the receiver, all circuits should be realigned. IF alignment should always precede RF alignment. An output meter is connected across the voice coil of the speaker. 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 relieved.

(c) The thread in the former may be damaged if the core is wound in and forced against the circuit board. A light torque should be all that is normally required to turn the core.

IF ALIGNMENT

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

(2) Inject a signal into the aerial section of the gang. Adjust the cores of T5, T4 and T3 for maximum reading on the output meter.

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 and distant not less than one foot from it.

(2) Check that, when the gang capacitor is fully enmeshed, the points coincide with the setting lines. If necessary, the pointers may be adjusted by releasing the screw on the coupling to the gang. After adjustment, the screw should be tightened.

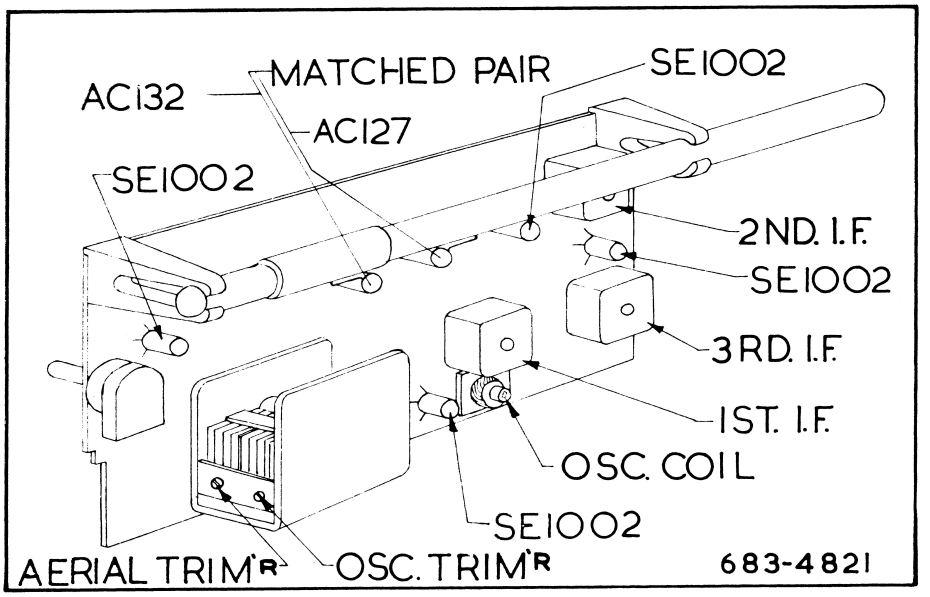
(3) Set signal generator to 600 Kc/s.

(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 for maximum reading on the output meter.

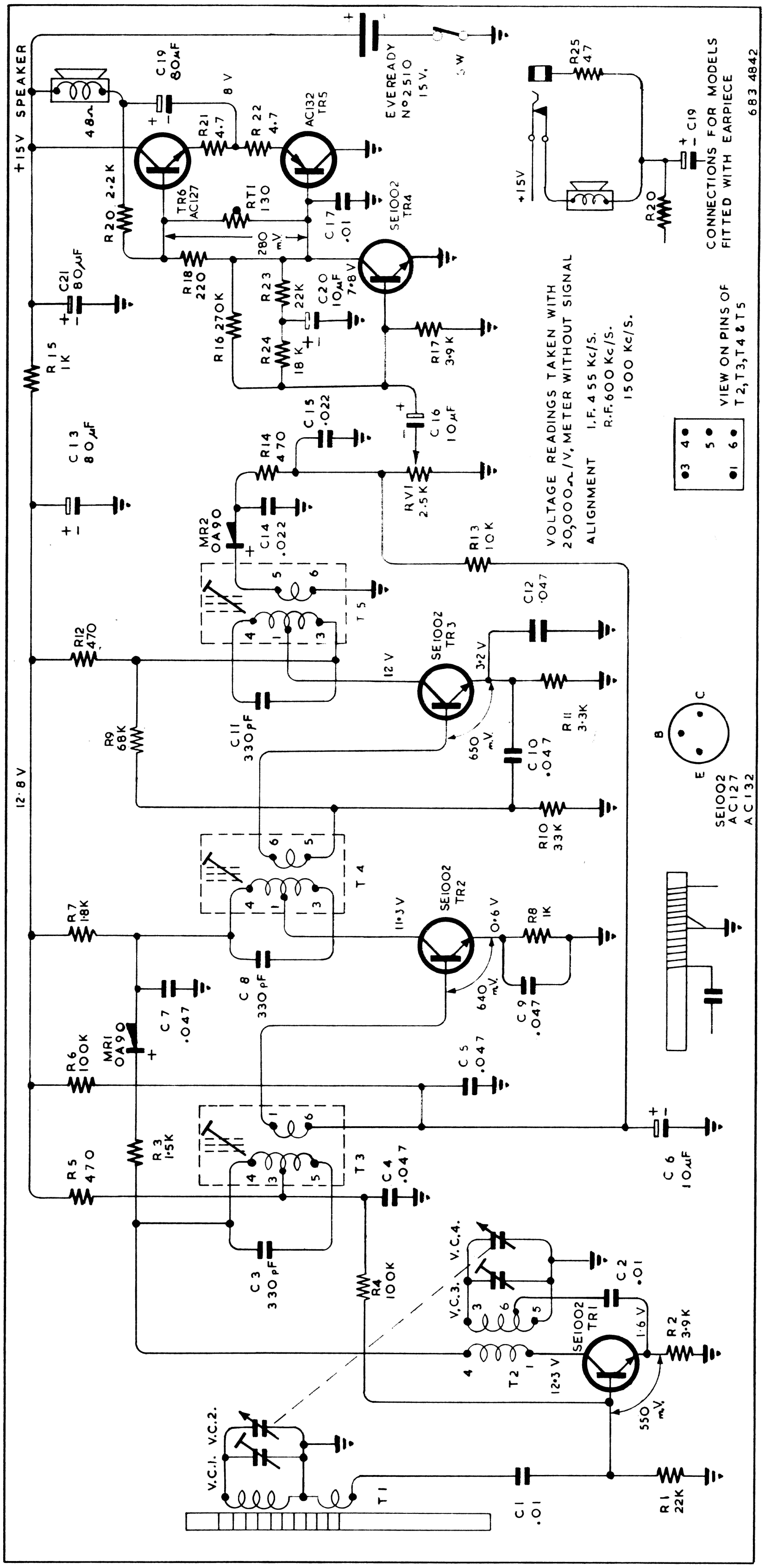
(7) Repeat operations (3) to (6) for optimum alignment.



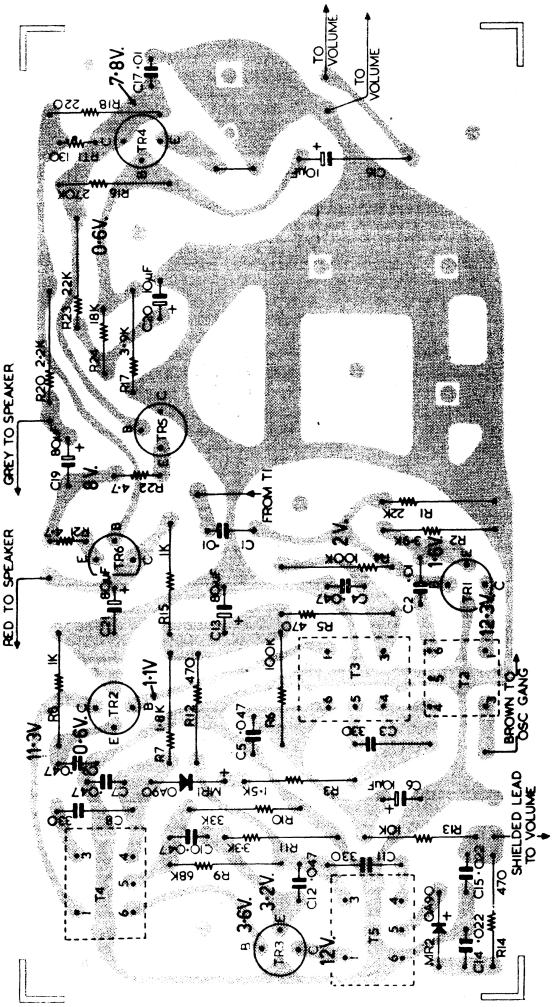
PARTS LIST — CHASSIS TYPE JD

REF.	PART NO.	DESCRIPTION
		RESISTORS
R1	740-1542	22K 5% ½W
R2	740-1252	3.9K 5% ½W
R3	740-0252	1.5K 10% ½W
R4	740-0332	100K 5% ½W
R5	740-0012	470 ohms 10% ½W
R6	740-0332	100K 5% ½W
R7	740-0302	1.8K 10% ½W
R8	740-0022	1K 10% ½W
R9	740-0752	68K 10% ½W
R10	740-0242	33K 10% ½W
R11	740-0052	3.3K 10% ½W
R12	740-0012	470 ohms 10% ½W
R13	740-0962	10K 5% ½W
R14	740-0012	470 ohms 10% ½W
R15	740-0022	1K 10% ½W
R16	740-0172	270K 10% ½W
R17	740-1252	3.9K 5% ½W
R18	740-0282	220 ohms 10% ½W
R19		
R20	740-1312	2.2K 5% ½W
R21	746-0252	4.7 ohms 10% ½W Wire Wound
R22	746-0252	4.7 ohms 10% ½W Wire Wound
R23	740-0102	22K 10% ½W
R24	740-1532	18K 5% ½W
R25	740-0712	47 ohms 10% ½W
		CAPACITORS
C1	271-1201	.01 uF +100% —0% 50V Type D Ceramic
C2	271-1201	.01 uF +100% —0% 50V Type D Ceramic
C3	280-3081	330pF 5% 33V Styroseal
C4	271-1181	.05uF +80% —20% 50V Type D Ceramic
C5	271-1181	.05uF +80% —20% 50V Type D Ceramic
C6	269-1051	10uF 6V Electro
C7	271-1181	.05uF +80% —20% 50V Type D Ceramic
C8	280-3081	330pF 5% 33V Styroseal
C9	271-1181	.05uF +80% —20% 50V Type D Ceramic
C10	271-1181	.05uF +80% —20% 50V Type D Ceramic
C11	280-3081	330pF 5% 33V Styroseal
C12	271-1181	.05uF +80% —20% 50V Type D Ceramic
C13	269-1031	80uF 15V Electro
C14	271-0751	.022 uF +80% —20% 25V Red-cap
C15	271-0751	.022uF +80% —20% 25V Red-cap
C16	269-1051	10uF 6V Electro
C17	271-1201	.01 uF +100% —0% 50V Type D Ceramic
C18		
C19	269-1031	80uF 15V Electro
C20	269-1051	10uF 6V Electro
C21	269-1031	80uF 15V Electro

REF.	PART NO.	DESCRIPTION
		SEMI-CONDUCTORS
TR1	932-2431	SE1002, SE1001-R, Converter
TR2	932-2431	SE1002, SE1001-R, 1st IF Amp.
TR3	932-2431	SE1002, SE1001-R, 2nd IF Amp.
TR4	932-2441	SE1002, SE1002-R, Audio Pre-Amp.
TR5, TR6	932-1971	AC132—Audio Output, AC127—Audio Output, Matched Pair
MR1	932-0971	OA90, Auxiliary AGC
MR2	932-0971	OA90, Signal Detector and AGC
		TRANSFORMERS
T1	252-0303	Aerial Rod Assembly
T2	257-0226	Oscillator Coil
T3	906-0394	IF Transformer
T4	906-0661	IF Transformer
T5	906-0441	IF Transformer
		MISCELLANEOUS
VC1, VC2, VC3, VC4	281-0332	2-Gang Capacitor With Trimmers
RV1, SW	677-1203	2.5 Curve 'AC' Volume Control with SPST Switch
RT1	752-0051	Thermistor, 130 ohms 10% Ducon



+15V SPEAKER
EVEREADY No 2510 15V.
SW
C19 80μF
48Ω
8V
R21 4.7
R22 4.7
AC132 TR5
TR6 AC127
R20 2.2K
RT1 130
SE1002 TR4
C17 .01
280 mV
R18 220
R23 22K
C20 10μF
7.8V
C21 80μF
R16 270K
R24 18K
R17 3.9K
R15 1K
C13 80μF
C15 .022
R14 470
C16 10μF
MR2 OA90
C14 .022
RV1 2.5K
R13 10K
R12 470
T5
SE1002 TR3
12V
3.2V
C12 .047
C11 330pF
R11 3.3K
650 mV
C10 .047
R9 68K
12.8V
R10 33K
R7 1.8K
T4
SE1002 TR2
11.3V
0.6V
R8 1K
C8 330pF
640 mV
C9 .047
C7 .047
MR1 OA90
R6 100K
C5 .047
R3 1.5K
R5 470
T3
C4 .047
C6 10μF
C3 330pF
R4 100K
V.C.4.
V.C.3.
C2 .01
T2
SE1002 TR1
1.6V
12.3V
R2 3.9K
550 mV
V.C.1. V.C.2.
T1
C1 .01
R1 22K
VOLTAGE READINGS TAKEN WITH 20,000Ω/V, METER WITHOUT SIGNAL
ALIGNMENT I.F. 455 Kc/S. R.F. 600 Kc/S. 1500 Kc/S.
VIEW ON PINS OF T2, T3, T4 & T5
SE1002 AC127 AC132
R25 47
+15V
R20
CONNECTIONS FOR MODELS FITTED WITH EARPIECE
683 4842



COMPONENT LAYOUT (LOOKING ON COPPER SIDE).

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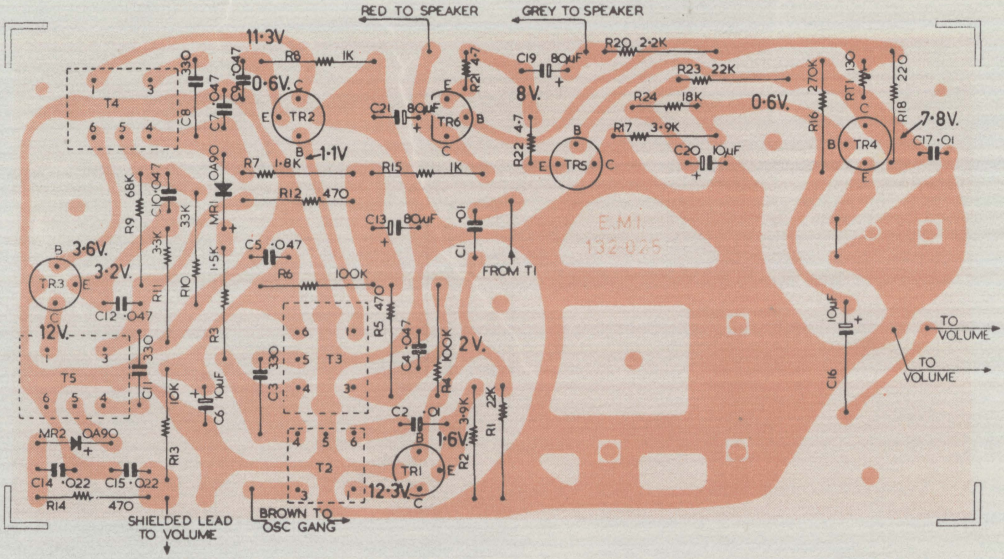

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