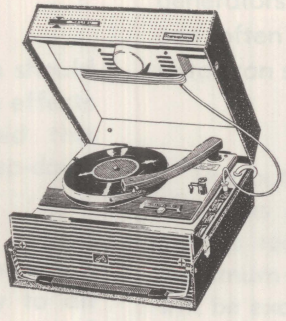
SERVICE MANUAL

EIGHT-TRANSISTOR MAINS-OPERATED STEREOPHONIC GRAMOPHONE AMPLIFIER. MODEL **O2-8J**

"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

POWER SUPPLY:
240-250 volts, 50 c/s.

CONSUMPTION:
Amplifier: 16 mA (no signal)
Motor: 8 watts.

SEMI-CONDUCTORS:
SE4010 (Silicon NPN)—Pre-Amplifier
SE4010 (Silicon NPN)—Pre-Amplifier
AY1108 (Silicon PNP)—Driver
AY1108 (Silicon PNP)—Driver
2 { AC127 (Germanium NPN)—Output
  { AC128 (Germanium PNP)—Output
AS25—Silicon Power Diode

OUTPUT IMPEDANCE:
27 ohms at 400 c/s.

DIMENSIONS:	Unpacked	Packed
Width	12¾"	15⅞"
Height	6"	8½"
Depth	12½"	17½"

WEIGHT:

Gross	16¼ lb.
Nett	12½ lb.

PART No. 683-5871

April, 1966.

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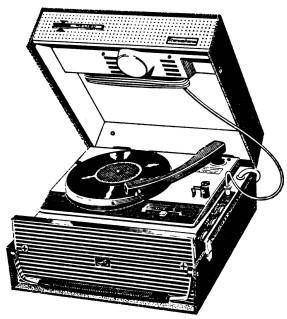

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2 { AC128 (Germanium PNP)—Output
AS25—Silicon Power Diode

OUTPUT IMPEDANCE:
27 ohms at 400 c/s.

DIMENSIONS:	Unpacked	Packed
Width	$12\frac{3}{4}$"	$15\frac{7}{8}$"
Height	6"	$8\frac{1}{2}$"
Depth	$12\frac{1}{2}$"	$17\frac{1}{2}$"

WEIGHT:

Gross	$16\frac{1}{4}$ lb.
Nett	$12\frac{1}{2}$ lb.

PART No. 683-5871

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SERVICE NOTES

Transistors can be permanently damaged by excessive external heat, or by heat generated within the circuit by means of 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 switching the amplifier off.

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, 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 +9 volts.

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

When using an audio frequency generator for signal tracing, 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 27 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 taking 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

(1) Disconnect power plug from mains.

(2) Check that pickup is securely fastened to its rest.

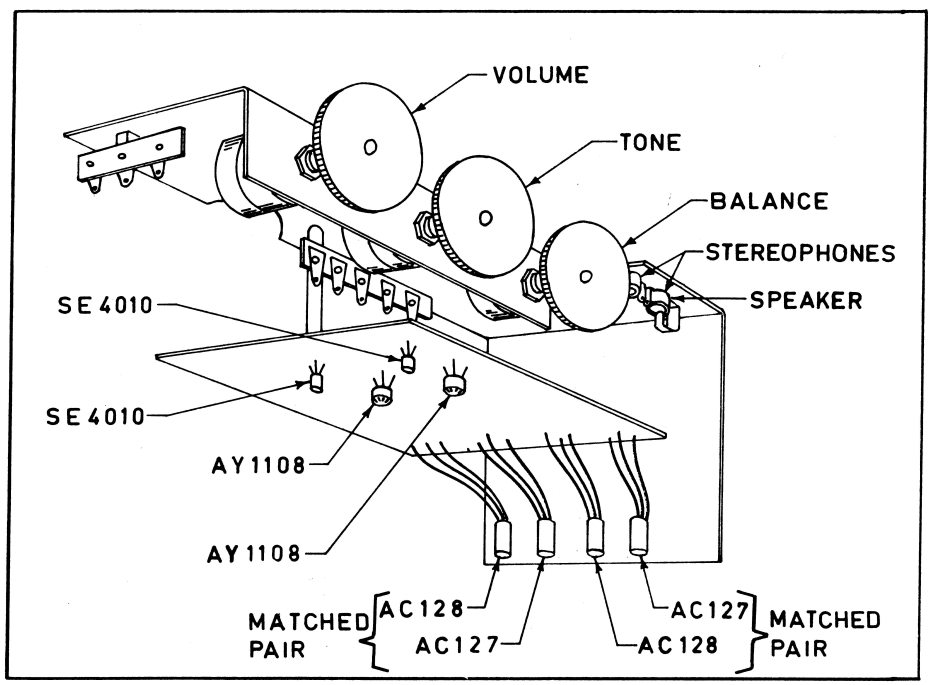
(3) Remove the two screws located in the lower half of the cabinet hinges.

(4) Lift back edge of motor board, which will now pivot on the handle fixing screws, to give access to the underside of the mechanism and to the chassis, speaker, etc.

AMPLIFIER POWER SUPPLY

A special secondary winding on the gramophone motor supplies 13.5V, AC, which is rectified and filtered at the player. To avoid possible damage to the motor when the player is inverted, the rotor may be "locked" by inserting a suitable folded paper wedge between the rotor face and bearing.

The unit may then be switched on in the normal manner by moving the pickup arm to the right. All DC voltages will be 3% lower than those indicated on the circuit diagram, and the amplifier may be operated in this manner for up to 20 minutes.

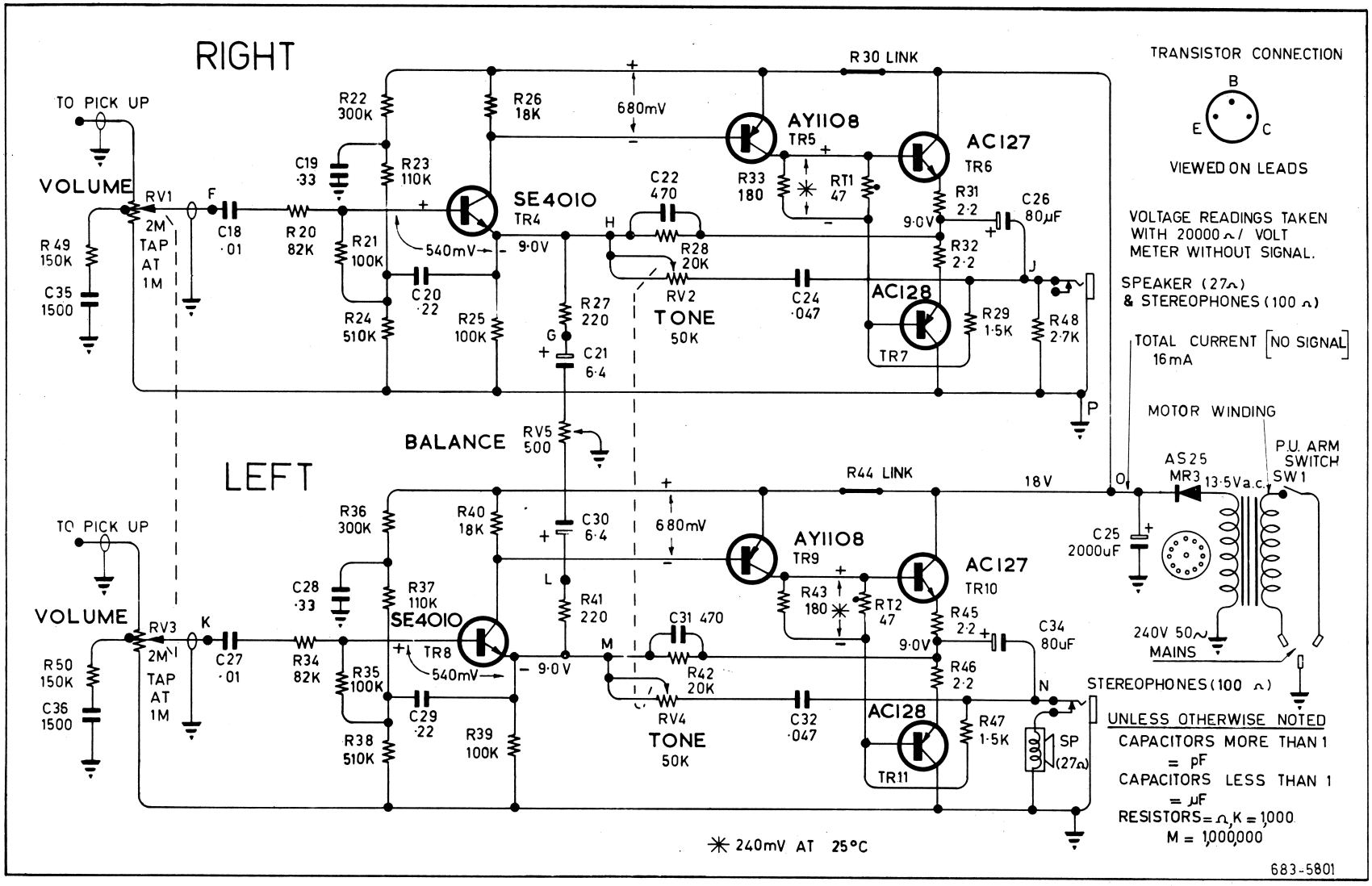


PARTS LIST — CHASSIS TYPE 02-8J

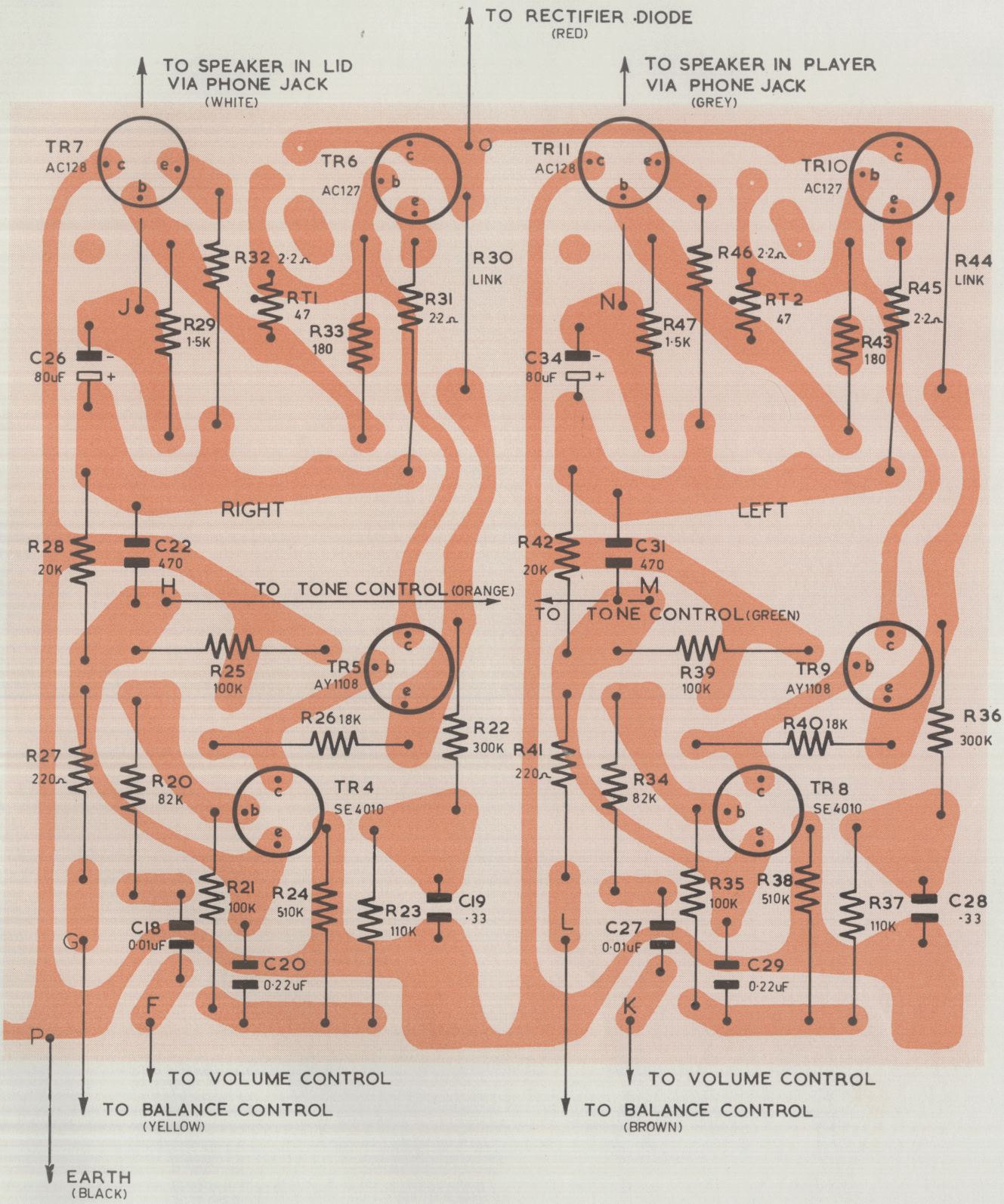
REF.	PART NO.	DESCRIPTION
		RESISTORS
R20	740-0132	82K 10% ½W
R21	740-0142	100K 10% ½W
R22	740-1642	300K 5% ½W
R23	740-1632	110K 5% ½W
R24	740-1652	510K 5% ½W
R25	740-0142	100K 10% ½W
R26	740-0862	18K 10% ½W
R27	740-0282	220 ohms 10% ½W
R28	740-1672	20K 5% ½W
R29	740-0642	1.5K 5% ½W
R30		Link
R31	746-0372	2.2 ohms ww 10%
R32	746-0372	2.2 ohms ww 10%
R33	740-0932	180 ohms 5% ½W
R34	740-0132	82K 10% ½W
R35	740-0142	100K 10% ½W
R36	740-1642	300K 5% ½W
R37	740-1632	110K 5% ½W
R38	740-1652	510K 5% ½W
R39	740-0142	100K 10% ½W
R40	740-0862	18K 10% ½W
R41	740-0282	220 ohms 10% ½W
R42	740-1672	20K 5% ½W
R43	740-0932	180 ohms 5% ½W
R44		Link
R45	746-0372	2.2 ohms ww 10%
R46	746-0372	2.2 ohms ww 10%
R47	746-0642	1.5K 5% ½W
R48	740-0042	2.7K 10% ½W
R49	740-0152	150K 10% ½W
R50	740-0152	150K 10% ½W
	740-0532	1 Meg 20% ½W (Between PU terminals)
		CAPACITORS
C18	271-1201	.01uF 50V Ceramic Disc
C19	271-1451	.33uF +80% —20% 25V Redcap
C20	271-0711	.22uF +80% —20% 25V Redcap
C21	269-1321	6.4uF +80% —20% 25V Electro
C22	271-0841	470pF 20% Ceramic Disc Type AY
C23		Not used
C24	283-1201	.047uF 10% 125V Polyester
C25	269-0921	2000uF +80% —20% 25V Electro
C26	269-1031	80uF +80% —20% 15V Electro
C27	271-1201	.01uF 50V Ceramic Disc
C28	271-1451	.33uF +80% —20% 25V Redcap
C29	271-0711	.22uF +80% —20% 25V Redcap
C30	269-1321	6.4uF +80% —20% 25V Electro
C31	271-0841	470pF 20% Ceramic Disc Type AY
C32	283-1201	.047uF 10% 125V Polyester
C33		Not used
C34	269-1031	80uF +80% —20% 15V Electro
C35	283-1521	1500pF 10% 400V Polyester
C36	283-1521	1500pF 10% 400V Polyester
		POTENTIOMETERS
RV1, RV3	677-1292	2 x 2M tapped 900K Curve 'B'
RV2, RV4	677-1391	2 x 50K Curve 'C'
RV5	677-1401	500 ohms Curve 'A'
		SEMI-CONDUCTORS
TR4	932-2731	SE4010 Audio Pre-Amplifier
TR5	932-2691	AY1108 Audio Driver
TR6, TR7	932-2591	AC127 Audio Output, AC128 Audio Output — Matched Pair
TR8	932-2731	SE4010 Audio Pre-Amplifier
TR9	932-2691	AY1108 Audio Driver
TR10, TR11	932-2591	AC127 Audio Output, AC128 Audio Output — Matched Pair
MR3	932-2261	AS25 Power Diode
		MISCELLANEOUS
RT1	752-0111	47 ohms 10% Thermistor
RT2	752-0111	47 ohms 10% Thermistor
	558-1351	B.S.R. record player, type GU7F, with special 13.5V AC winding. Fitted with C1 type ceramic stereo cartridge and ST3 stylus.
	831-1552 or 831-2351	Loudspeaker, E.M.I. 7" x 4" PG, 27 ohms V.C. / Loudspeaker, E.M.I. 7" x 4" PN, 27 ohms V.C.
	831-2381	Loudspeaker, E.M.I. 5" PN (in cabinet lid)

SPARE PARTS

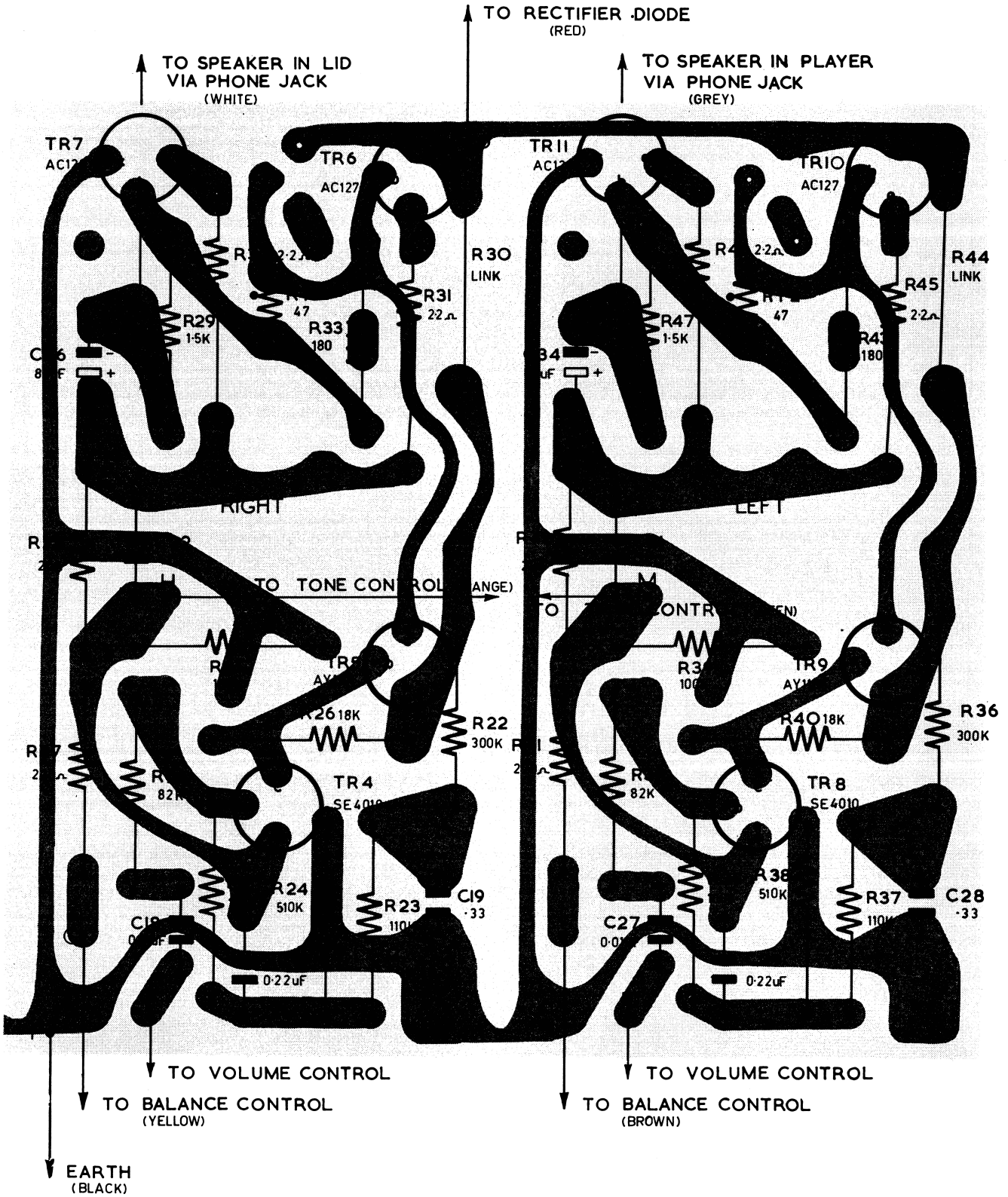
189-1761	Cabinet, Charcoal
189-1771	Cabinet, Tan
403-1341	Escutcheon, Grille
470-0171	Handle
419-0261	Felt, Speaker Cover
561-1721	Medallion, Control Indicator
664-2681	Plate, Cabinet Front
517-2081	Knob, Volume, Tone
517-2511	Knob, Balance
211-0411	Cartridge, Type C1
611-0541	Stylus, B.S.R. Type ST3.



Note: Two resistors, R51 and R52, 680 ohms 10% ½W each, have been added to the circuit; they are inserted between RV2 and C24, and RV4 and C32, respectively.



COMPONENT LAYOUT (LOOKING ON COPPER SIDE)



COMPONENT LAYOUT (LOOKING ON COPPER SIDE)

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