

# **THE RAVENSBORNE STEREO AMPLIFIER**

## **INSTALLATION AND OPERATION INSTRUCTIONS**

We recommend that these instructions be read fully and carefully before any attempt is made to connect up or use the Amplifier.

### **GENERAL**

- (1) Set the Mains voltage selector to the appropriate supply voltage. When the supply voltage falls between two tappings always use the higher tapping, i.e. Supply voltage 230v. use 240v. tap.
- (2) Connect a suitable 3-pin Mains Plug Top to the 3-core Mains Lead. Colour Code: GREEN/YELLOW - Earth BROWN - Live, BLUE - Neutral. In the case of a 2-pin Mains Plug the GREEN/YELLOW wire should be taken to a reliable earth.
- (3) For convenience the A.C. power for a gramophone motor or other piece of auxiliary equipment, may be taken from the dual A.C. Outlet Socket at the rear of the amplifier chassis. These sockets are 'Switched' by the mains on/off switch but are not 'fused'. The sockets are rated at 125 watts each. The gramophone motor earth may be taken to the earth tag located adjacent to the dual A.C. outlet socket.
- (4) An A.C. mains fuse is located at the rear of the chassis. If the amplifier fails to operate when switched on this fuse should be checked for continuity. Rating – 20mm. 1.5A anti-surge Note: In case of replacement it is essential to use an **anti-surge** pattern.

The four output transistors are protected by four 20mm. 1A quick-blow fuses. These fuses are located inside the chassis in four holders at the rear of the main amplifier Printed Circuit board. If one or other channel is 'dead' or badly distorted these fuses should be checked for continuity. When replacing these fuses great care should be taken to see that the pre-set controls adjacent to the fuse holders are not disturbed.

- (5) Connect the loudspeaker leads, terminated in 2-pin DIN plugs, to the appropriate DIN sockets at the back of the amplifier.

Care should be taken to see that a short circuit is not applied to the speaker terminals as this may cause the transistor protection fuses to blow.

### **METHOD OF MOUNTING**

**Chassis Model:** The amplifier is suitable for mounting in either a vertical or horizontal position; in either case a cut-out measuring 13¾" wide by 4½" high must be provided in the cabinet panel, and a shelf measuring approximately 14" wide by 10½" deep should be fitted to the cabinet so that it is level with the bottom edge of the cut-out. The amplifier chassis is secured to the shelf by means of four 4 B.A. Bolts which pass through the shelf and locate in four hank bushes fitted to the chassis bottom cover. A cut-out to clear the ventilation grille at the base of the amplifier must be cut in the shelf. The cut-out and the four fixing holes should be made in the shelf using the template provided. The front panel is secured to the chassis by two ¾" brass nuts on the VOLUME and BALANCE Control bushes. After the front panel has been fitted the five control knobs may be fitted taking care to see that the pointer lines correspond with the panel markings. In planning a cabinet installation it is essential to provide adequate ventilation both above and below the amplifier.

**Case Model:** The free standing case model may be placed on any convenient shelf and it is simply necessary to ensure that adequate ventilation is provided; it is essential that the top ventilation grille is not obstructed in any way and in particular other pieces of equipment should not under any circumstances be placed on top of the amplifier case.

### **INPUT CONNECTIONS**

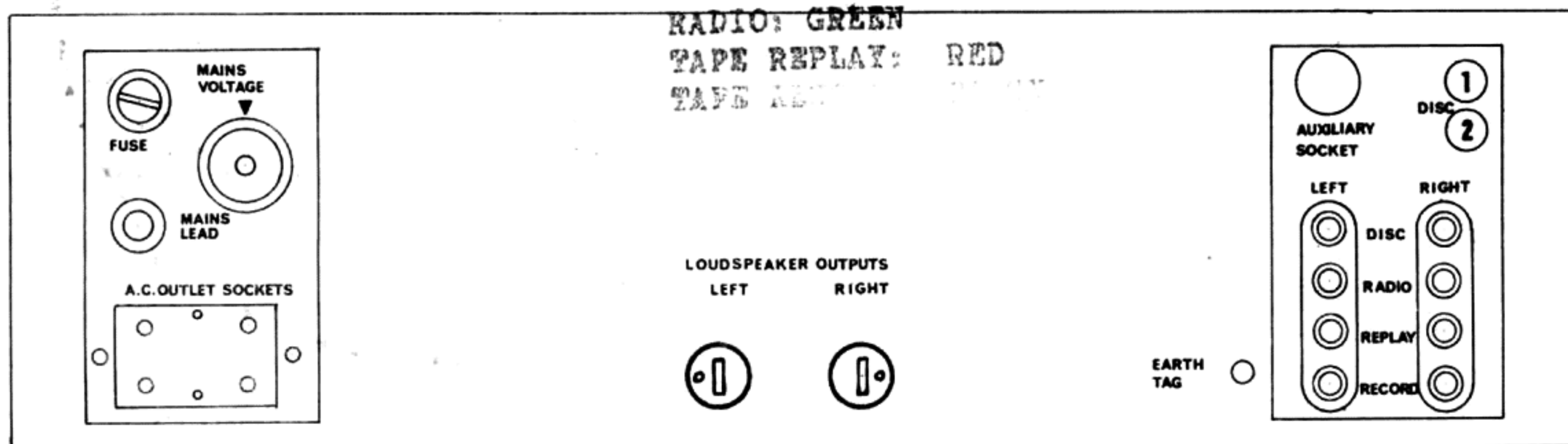
#### **General:**

Three pairs of standard miniature phono sockets located at the rear of the unit provide stereo inputs for DISC, RADIO and TAPE. A single pair of phono sockets provide TAPE RECORD output. The Tape Record and Replay connections are duplicated via a 5-pin DIN socket located on the Front Panel. Stereo auxiliary inputs are provided via a 6-pin DIN socket located next to the bank of phono sockets. This socket also provides power for the optional auxiliary pre-amplifier. Stereo headphone inputs are provided via a 5-pin DIN socket located on the Front Panel.

Good quality low-loss screened flex with an insulated outer covering must be used for all input connections, the braiding is soldered to the body of the phono plug provided, the centre conductor to the centre pin of the plug. When using DIN plugs the braiding should be taken to the appropriate earth terminal.



DISC: BLUE  
 RADIO: GREEN  
 TAPE REPLAY: RED  
 TAPE RECORD: BLUE



### **DISC** (Socket Colour Code Black)

A two-button disc sensitivity switch, located next to the auxiliary socket, provides four alternative Disc Sensitivities as follows:—

1. IN 2. OUT 75m/V. 1. OUT 2. OUT 50m/V. 1. IN 2. IN 3m/V. 1. OUT 2. IN 2m/V.

The above sensitivities for 25 watts output. All inputs have an impedance of 50K. RIAA Compensated.

The sensitivity best suited to the pick-up cartridge being used can be determined by reference to the manufacturer's pick-up data.

The sensitivity switch should only be operated with the volume control at minimum setting.

When connecting the pick-up lead, on no account should the braiding be earthed to the motor or amplifier chassis earth. The braiding will automatically be earthed at the correct point when the phono plug is inserted in the disc socket.

### **RADIO** (Socket Colour Code Red)

Dual radio inputs are provided suitable for the connection of the majority of AM, FM and FM Stereo Radio Receivers.

Sensitivity 200m/V (for 25 watts) Impedance 100K.

### **TAPE REPLAY** (Socket Colour Code Green)

Dual tape replay inputs are provided suitable for the connection of the majority of complete Tape Recorders. These connections are duplicated at the 5-pin DIN Socket located on the front panel. All controls are operative on replay.

Sensitivity 200m/V (for 25 watts) Impedance 100K. The source impedance is not critical.

### **TAPE RECORD** (Socket Colour Code Blue)

Dual tape record outputs are provided suitable for connection to the majority of complete Tape Recorders. These connections are duplicated at the 5-pin DIN Socket located on the Front Panel. Whatever programme source is selected will appear at the Record Sockets and will be unaffected by the settings of the Volume, Tone and Filter Controls. Only the mono L and mono R buttons will affect the tape record outputs.

We must emphasise that the record signal is not suitable for feeding direct to tape record heads, a tape deck alone is therefore not sufficient and a complete tape recorder incorporating a record amplifier and bias oscillator is essential. Record outputs 200m/V for rated input sensitivities. Minimum external source impedance 100K.ohms.

### **AUXILIARY**

Dual auxiliary inputs are provided via a 6-pin DIN socket located next to the bank of phono sockets. Power for an optional transistorised pre-amplifier may also be drawn from this socket. Pre-amplifiers are available providing inputs for Tape Head Replay, Microphone and Second Pick-up. Using the Tape Head pre-amplifier it is possible to copy tapes from one recorder to another.

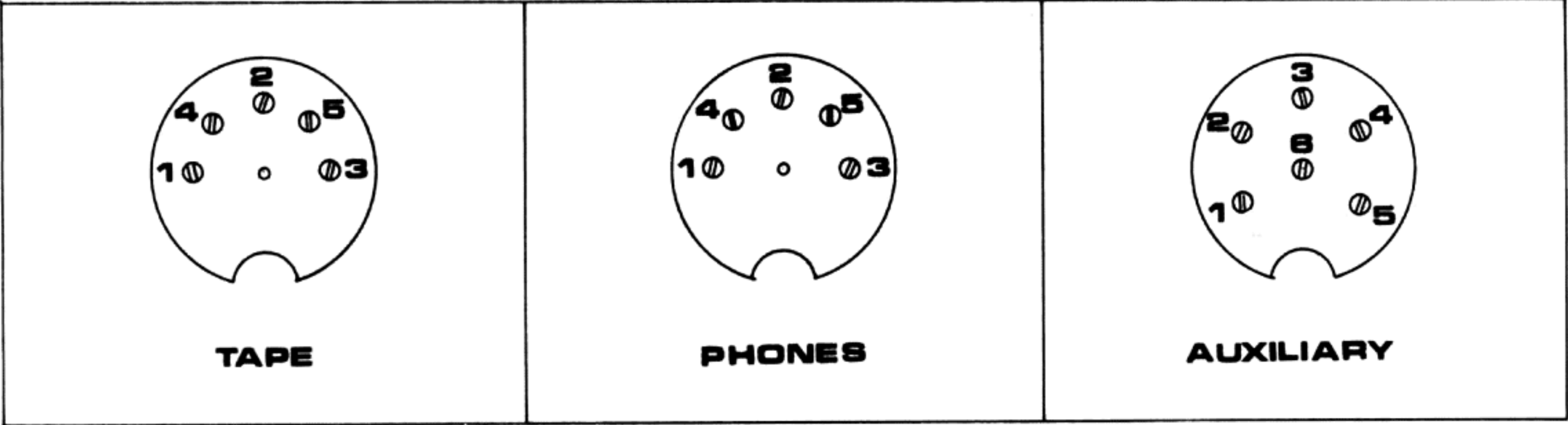
Sensitivity (without pre-amplifier) 200m/V (for 25 watts) 100K.ohms.

**HEADPHONES**

Dual outputs suitable for the majority of high fidelity stereo headphones ranging from 15 – 200 ohms are provided via a 5-pin DIN socket located on the Front Panel.

**DIN SOCKET CONNECTIONS**

In all cases the numbers are those appearing on the flex plug moulding and the diagrams show the socket viewed from the front, i.e. the rear of the plug with cover removed.



**TAPE PANEL SOCKET (5-Pin)**

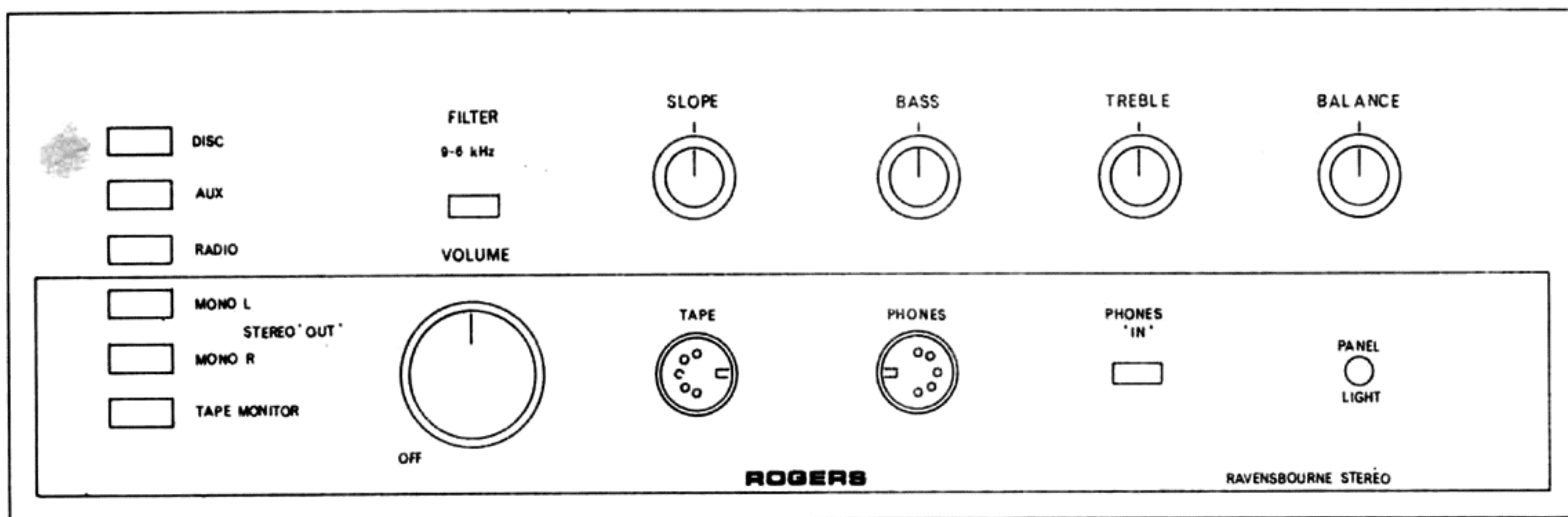
- (1) Record left channel
- (2) Earth
- (3) Replay left channel
- (4) Record right channel
- (5) Replay right channel

**HEADPHONE PANEL SOCKET (5-Pin)**

- (1) Left channel
- (2) Earth
- (3) Right channel
- (4) Not connected
- (5) Not connected

**AUXILIARY CHASSIS SOCKET (6-Pin)**

- (1) Left channel input
- (2) Not connected
- (3) H.T.
- (4) Not connected
- (5) Right channel input
- (6) Earth



## **CONTROL FACILITIES**

**Input Selector:** The first three buttons provide selection on the DISC, AUXILIARY and RADIO Inputs. The next two buttons marked Mono L and Mono R work independently and enable the Mode of operation to be selected. With both buttons out stereo operation will be obtained, with the Mono L or Mono R button depressed a mono signal fed into the left or right input respectively will appear at both loudspeakers. When using a compatible stereo pick-up to play a mono record the Mono L button should be depressed. Both buttons should not be depressed together. The final button selects Tape Replay and will also mute the loudspeakers. On Tape Recorders having a separate replay head this button provides a Tape Monitor facility.

**Low Pass Filter:** A push button switch provides two cut-off frequencies. With the button in the filter operates at 9 kHz, out it operates at 6 kHz. A continuously variable Slope control enables the degree of cut to be controlled from zero (fully anti-clockwise) to 20 dB per octave (fully clockwise).

The filter is used to reduce high note distortion on poor programme material, the minimum amount of filtering consistent with acceptable results should be used.

A fixed High Pass Filter operating at 20 Hz 30 dB per octave is built-in and is operative at all times.

**Bass and Treble:** Continuously variable control employing a modified Baxendall circuit. Optimum settings depend on programme material, room acoustics and personal taste. It is therefore, impossible to give 'recommended settings' and a start should be made with both controls at mid-position. It should not be attempted to employ a high degree of bass or treble boost at high volume levels.

**Balance:** A vernier control having sufficient range of control (9 dB) to compensate for inequalities of recordings etc. operates on all inputs.

**Volume:** Dual-ganged close tolerance control affecting overall volume from all inputs has no effect on the Tape Record Output. Incorporates On/Off Switch in fully anti-clockwise position. Small amber panel light located at the bottom right hand corner of the panel indicates when the amplifier is on.

**Phones Switch:** Single push-on, push-off switch. When depressed brings headphone socket into operation and at the same time mutes the loudspeakers.



**RAVENSBOURNE STEREO AMPLIFIER.**

**COMPONENT VALUES.**

**RESISTORS.**

<b>No.</b>	<b>Value.</b>	<b>Tolerance.</b>	<b>Rating.</b>	<b>Type.</b>
R1	47k	± 5%	¼ watt.	High Stability.
R2	2.2k	"	"	" "
R3	100k	"	"	" "
R4	120k	"	"	" "
R5	47k	"	"	" "
R6	120k	"	"	" "
R7	150 ohms	"	½ watt.	" "
R8	220 ohms	"	"	" "
R9	180k	"	¼ watt.	" "
R10	9.1k	± 2%	"	" "
R11	150 ohms	± 5%	"	" "
R12	1k	"	"	" "
R13	3.9k	"	"	" "
R14	330k	"	"	" "
R15	10k	"	"	" "
R16	220 ohms	"	"	" "
R17	220 ohms	"	½ watt.	" "
R18	33k	"	¼ watt.	" "
R19	4.7k	"	"	" "
R20	22k	"	"	" "
R21	100 ohms	"	"	" "
R22	1k	"	"	" "
R23	10k	"	"	" "
R24	6.8k	"	"	" "
R25	47k	"	"	" "
R26	47k	"	"	" "
R27	22k	"	"	" "
R28	18k	"	⅛ watt.	" "
R29	10k	"	"	" "
R30	18k	"	"	" "
R31	10k	"	"	" "
R32	10k	"	"	" "
R33	4.7k	"	"	" "
R34	680k	"	¼ watt.	" "
R35	150 ohms	"	"	" "
R36	2.2k	"	"	" "
R37	680 ohms	"	"	" "
R38	10k	"	"	" "
R39	10k	"	"	" "
R40	22k	"	"	" "
R41	3.3k	"	"	" "
R42	2.2k	"	"	" "
R43	330k	"	"	" "
R44	47k	"	"	" "
R45	4.7k	"	"	" "
R46	680 ohms	"	"	" "
R47	3.9k	"	"	" "
R48	1.8k	"	"	" "
R49	10k	"	"	" "
R50	1k	"	"	" "
R51	100k	"	"	" "
R52	390 ohms	"	"	" "
R53	47 ohms	"	"	" "

**RESISTORS.**

No.	Value.	Tolerance.	Rating.	Type.
R54	100k	± 5%	¼ watt.	High Stability.
R55	12k	"	"	" "
R56	2.2k	"	"	" "
R57	1k	± 2%	"	" "
R58	1k	"	"	" "
R59	4.7k	± 5%	"	" "
R60	4.7k	"	"	" "
R61	22k	"	"	" "
R62	22k	"	"	" "
R63	22 ohms	"	"	" "
R64	22 ohms	"	"	" "
R65	330 ohms	"	1 watt	" "
R66	150 ohms	"	½ watt	" "
R67	1k	"	2 watt	" "
R68	27 ohms	"	¼ watt	" "
R69	1k	"	2 watt	" "
R70	27 ohms	"	¼ watt	" "
R71	820 ohms	"	½ watt	" "
R72	18 ohms	"	¼ watt	" "
R73	18 ohms	"	"	" "
R74	1 ohm	± 10%	3 watt	Wire Wound
R75	1 ohm	"	"	" "
R76	10 ohms	± 5%	½ watt	High Stability.
R77	220 ohms	"	¼ watt	" "
R78	1K	5	¼ watt	" "

**CAPACITORS.**

C1	10mfd		16 v	Electrolytic.
C2	33,000 pf.	± 5%	400 v	Polyester.
C3	8,200 pf.	"	"	"
C4	50 mfd.		6.4 v	Electrolytic.
C5	.33mfd.	± 20%	250 v	Polyester.
C6	50 mfd.		40 v	Electrolytic.
C7	40 mfd.		16 v	"
C8	250 mfd.		40 v	"
C9	0.1 mfd.	± 20%	250 v	Polyester.
C10	10 mfd.		16 v	Electrolytic.
C11	2,200 pf.	± 10%		Polystyrene.
C12	10 mfd.		16 v	Electrolytic.
C13	0.33 mfd.	± 20%	250 v	Polyester.
C14	0.33 mfd.	"	250 v	"
C15	0.68 mfd.	"	250 v	"
C16	470 pf.	± 5%		Polystyrene.
C17	470 pf.	"		"
C18	1000 pf.	"		"
C19	0.047 mfd.	± 10%	250 v	Polyester.
C20	680 pf.	± 5%	160 v	Polystyrene.
C21	0.68 mfd.	± 20%	250 v	Polyester.
C22	0.047 mfd.	± 5%	400 v	"
C23	0.047 mfd.	"	400 v	"
C24	2,200 pf.	"	125 v	Polystyrene.
C25	125 mfd.		16 v	Electrolytic.
C26	10 mfd.		16 v	"
C27	50 mfd.		6.4 v	"
C28	10 mfd.		16 v	"
C29	400 mfd.		40 v	"
C30	10 mfd.		16 v	"
C31	1000 pf.	± 5%	125 v	Polystyrene.

**CAPACITORS.**

No.	Value.	Tolerance.	Rating.	Type.
C32	160 mfd.	± 20%	2.5 v	Electrolytic.
C33	0.22 mfd.		250 v	Polyester.
C34	80 mfd.		16 v	Electrolytic.
C35	80 mfd.		16 v	Electrolytic.
C36	40 mfd.		16 v	Electrolytic.
C37	250 mfd.	+ 5%	40 v	Electrolytic.
C38	1,500 pf.		160 v	Polystyrene.
C39	1,500 pf.		40 v	Electrolytic.
C40	4,000 mfd.		40 v	Electrolytic.
C41	4,000 mfd.	±20%		
C42	1000 pf.			Ceramic
C43	1500 pf.			Ceramic
C44	47 pf.			Ceramic

**POTENTIOMETERS.**

No.	Value.	Law.	Type.
RV1	100 k	LOG	Dual Carbon.
RV2	250 k	LIN	" "
RV3	100 k	LIN	" "
RV4	100 k	LIN	" "
RV5	50 k	LIN	" "
RV6	100 k	1/10 watt	Pre-set Carbon
RV7	150 ohms	1/10 watt	" " "
RV8	150 ohms	1/10 watt	" " "

**TRANSISTORS.**

No.	Type.	Make.
T1/L/R	Silicon 'PNP'.	BC214 or Equivalent
T2/L/R	" 'NPN'.	BC184 " "
T3/L/R	" 'NPN'.	BC184 " "
T4/L/R	" 'NPN'.	BC184 " "
T5/L/R	" 'NPN'.	BC184 " "
T6/L/R	" 'NPN'.	BC184 " "
T7/L/R	" 'NPN'.	BC184 " "
T8/L/R	" 'NPN'. RCA	2N1711 " "
T9/L/R	" 'NPN'. "	2N1711 " "
T10/L/R	" 'NPN'. "	2N3055 " "
T11/L/R	" 'NPN'. "	2N3055 " "

**NO. DESCRIPTION.**

**TRANSFORMERS.**

TR1	DRIVER
TR2	MAINS

**Silicon Rectifiers.**

D1,2,3,4.	RCA 4026/.
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**Thermistors.**

TH1,2,3,4.	Mullard VA 1033.	4 ohm at 25°C ± 0.8 ohms. 1 watt
TH 5, 6.	" VA 1034.	50 " " " ± 10 " "

**Zener Diode.**

ZD1	30v ± 5%. 1 watt.
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<b>NO.</b>	<b>DESCRIPTION</b>
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### **Fuses.**

F1/L/R. F2/L/R	1A. 20 mm. Glass Cartridge. "Quick Blow".
F3	1A(250v) 2A(110v) 20mm. Glass Cartridge "Anti-Surge".

### **Dial Bulb.**

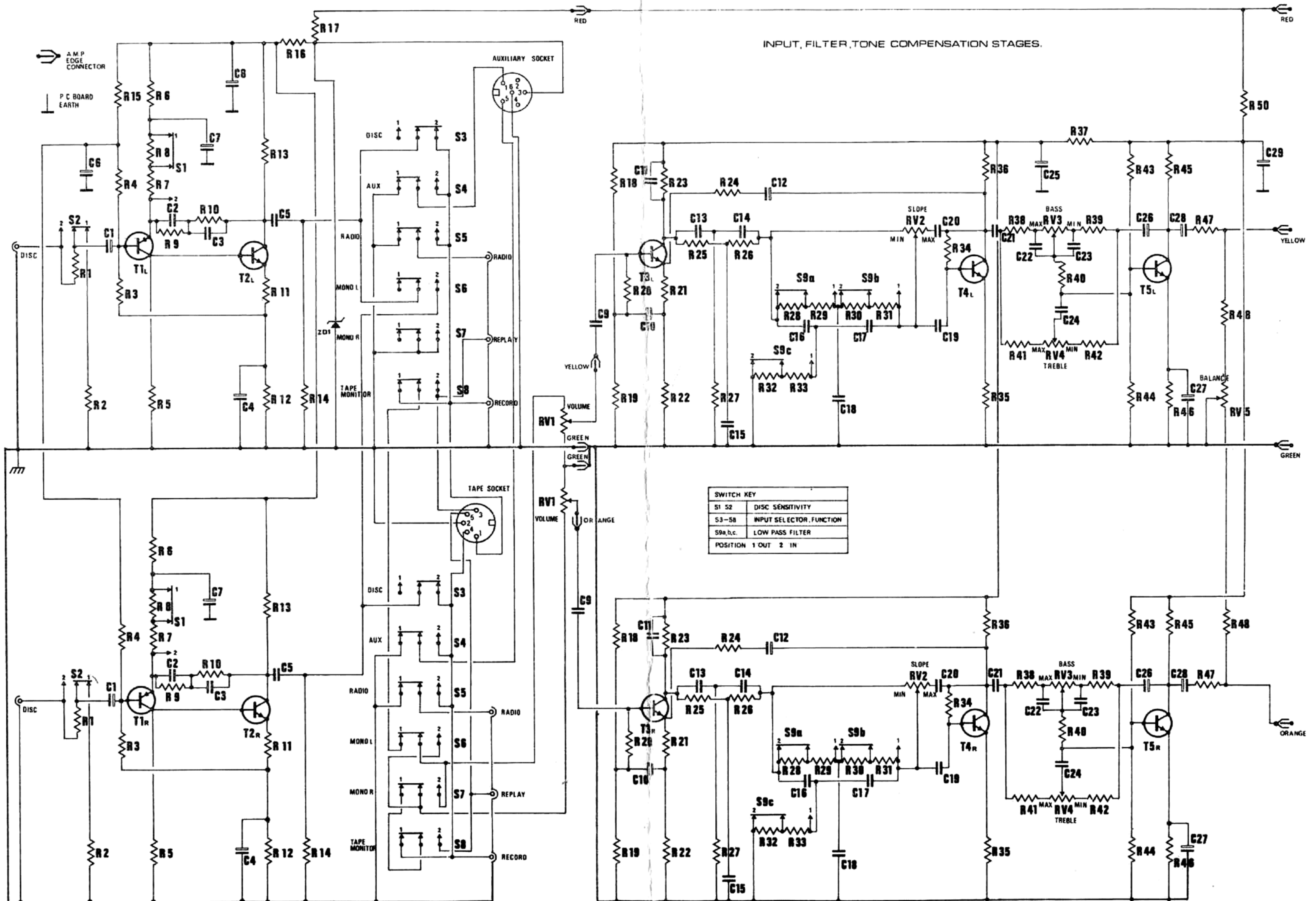
LP1	8v. 1w. L.E.S.
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### **Switches.**

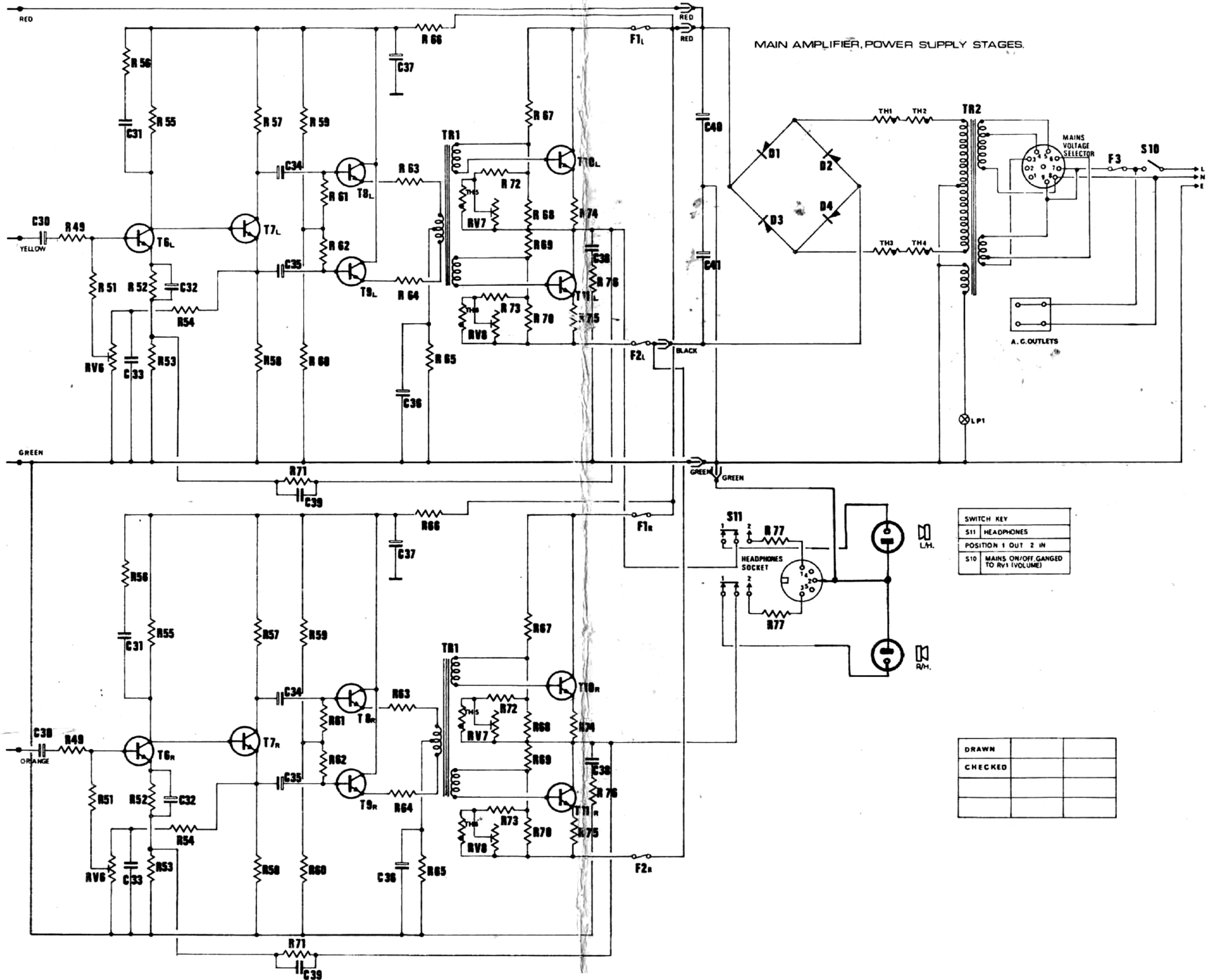
S1,2	2 – button. 2 – pole change-over per button.
S3-8	6 – button. 2 – pole " " " "
S9a,b,c.	1 – button. 6 – pole " " " "
S10	Single-pole on/off ganged to RV1.
S11	1 – button. 2 – pole change-over per button.



# RAVENSBORNE STEREO AMPLIFIER



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SWITCH KEY	
S11	HEADPHONES
POSITION 1 OUT 2 IN	
S10	MAINS ON/OFF GANGED TO RV1 (VOLUME)

DRAWN		
CHECKED		