

SERVICE MANUAL



TENSAI
INTERNATIONAL

**HI-FI STEREO AMPLIFIER
MODEL**

TA-2045

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SPECIFICATIONS

Amplifier section

Continuous power output	4 ohms : 2x60W
at 1 KHz both channels driven	8 ohms : 2x40W
T.H.D. 1W	0.1%
Rated output	0.2%
Power bandwidth	20-50000Hz
Frequency response	17-40000Hz
Damping factor	50dB
Input sensitivity	Phono : 2.5mV
	Mic : 2.5mV
	Aux : 160mV
	Tape : 160mV
	1KHz : 60dB
	10KHz : 40dB
Cross talk	

S/N ratio	Phono : 70dB
(Unweighted)	Mic : 65dB
	Aux : 85dB
Input overload	120mV
Tone Control	100Hz : ±10dB
	10KHz : ±10dB
Loudness	100Hz : 10dB
	10KHz : 6dB
Filter	Low : 7dB
	High : 7dB
Muting	20dB

PROTECTION CIRCUIT

1. Transient Kill

This circuit is designed to protect the speaker from the damage or reject unpleasant noise when power switch on and off.

When turn on or off the power line network composed by D602, D607, R605, R606, C602, C605 Turn on Q601 for 2 seconds each time.

If Q601 turns on, Q506 is turned on too, which is connected to a bias circuit of transient kill.

And then Q505 also be turned on these absorb the input current of driver transistor Q509, Q510.

Therefore no thump appears at speaker output terminal.

2. Current Limiter "L"

This circuit is designed to protect the speaker and power transistor from damage when the over current is flowed to power transistor by shorting the output or overload.

If the over current flow to R521, R522 and the voltage drop across the resistors more than turn on voltage of Q507 and Q508 then these transistors are turned on and the input of Q509, Q510 is shunted.

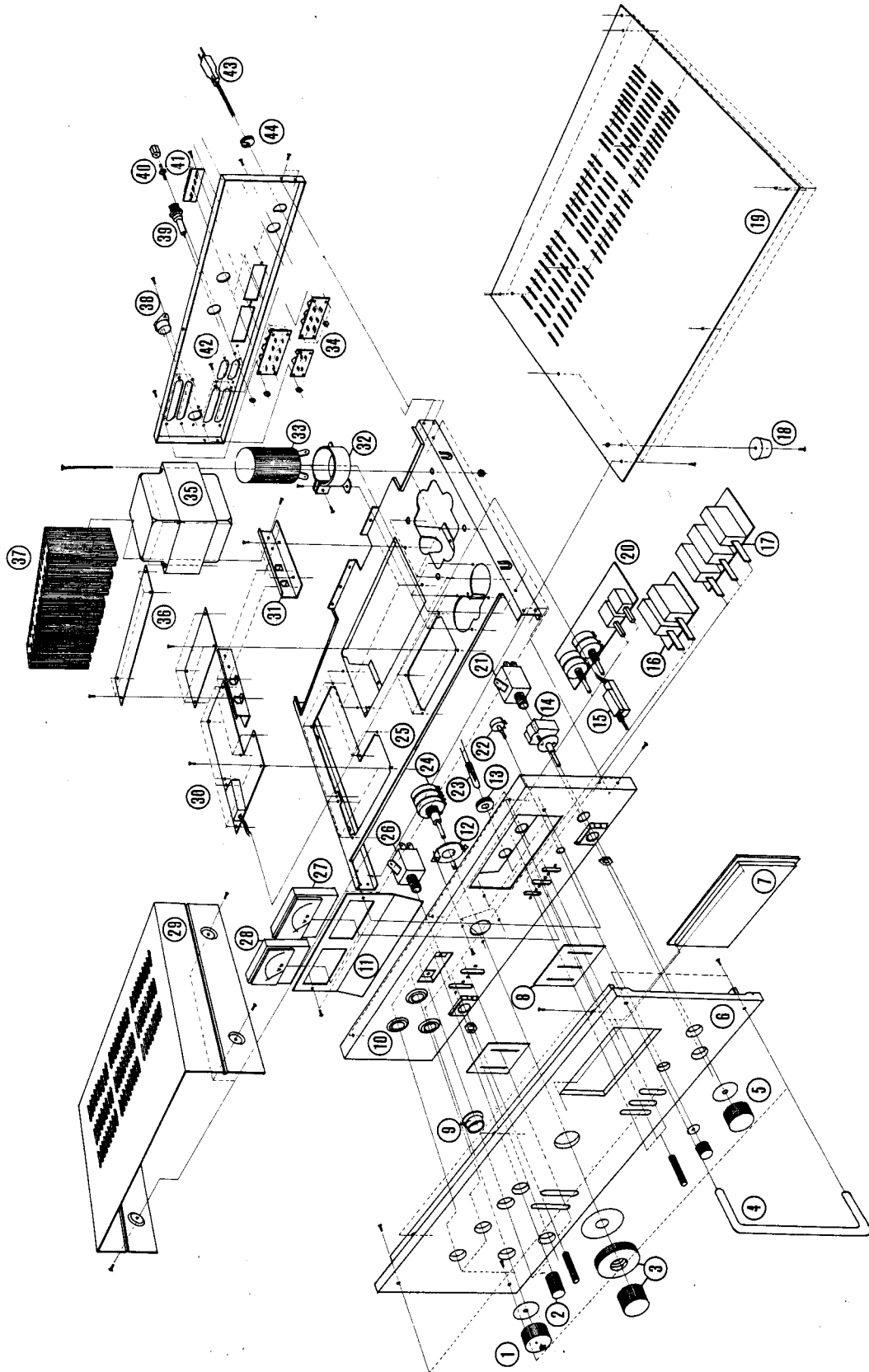
Hence this circuit protects the power transistor and speaker from damage by limiting the over current.

DESCRIPTION OF EXPLODED VIEW

Ref.No.	Parts Name	Part No.
1)	Knob for Control	22-524
2)	Knob for Push	22-009
3)	Knob for Volume and Balance	22-526A, 22-526B
4)	Handle	38-001
5)	Knob for Control	22-524
6)	Front Panel	20-023
7)	Meter Lens	40-217
8)	Felt for Level SW.	80-422
9)	Bezel for Push	40-002
10)	Front Chassis	10-021
11)	Al. Plate for Meter	33-004
12)	B.K.T. for Volume and Balance	32-099
13)	Grommet for Lamp	40-401
14)	Power & Speaker SW.	52-306-30
15)	Slide Rotary SW.	52-317
16)	P.C. B	
17)	P.C. B	
18)	Rubber Foot	40-301
19)	Bottom Cover	13-023
20)	P.C. B	
21)	Mic Jack	51-401
22)	Mic Level Switch	70-006
23)	Lamp	51-704

Ref. No.	Parts Name	Parts No.
24)	Volume and Balance Switch	7-020
25)	Master Chassis	1-011
26)	Phone Jack	5-402
27) 28)	VU Meter	5-810
29)	Steel Cabinet	2-506
30)	P.C. B	
31)	B.K.T. for Heat Sink	3-005, 32-004
32)	Retaining Clip	
33)	Electric Capacitor	
34)	R.C.A. Connector 4p, 8p, 10p	5-202, 51-201
		5-205
35)	Power Transformer	7-001
36)	P.C. B	
37)	Heat Sink	8-301
38)	Din Connector 5p	5-301
39)	Fuse Holder	5-401
40)	System Ground	5-902
41)	Speaker Terminal	5-001
42)	Back Chassis	1-021
43)	AC Cord W/Kemma Plug	6-301
44)	Cord Stopper	4-503

EXPLODED VIEW

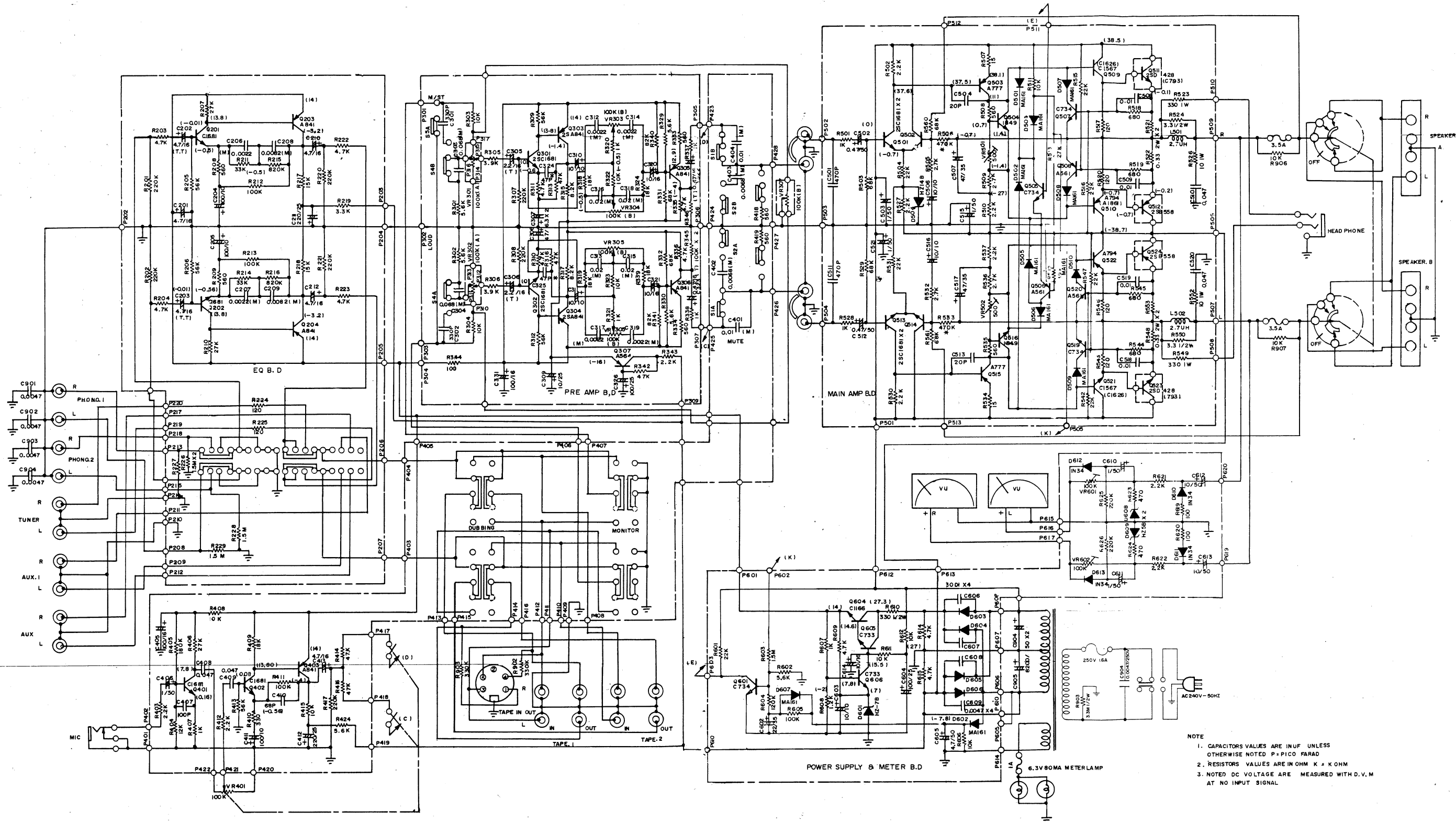


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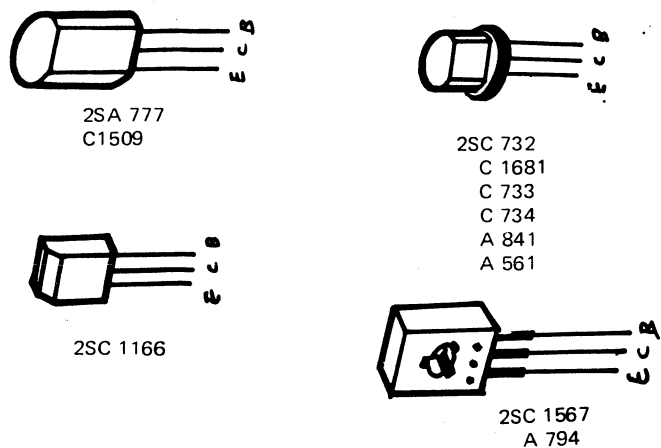
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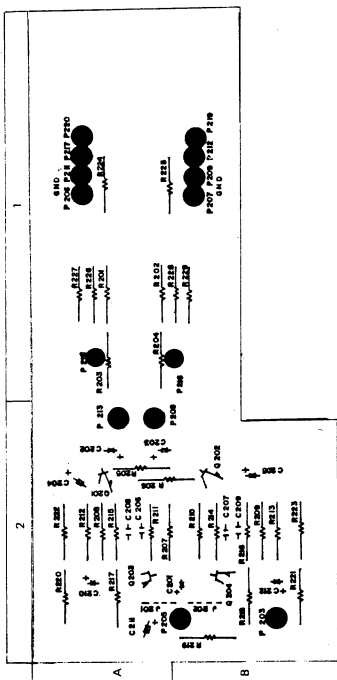


TRANSISTOR VIEW

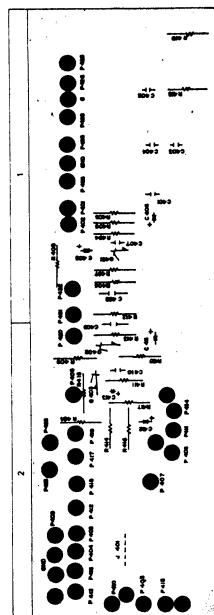


P.C. BORD AND PARTS LIST

EQ & SELECTOR SW. B.D. S1008D Meter & Supply B.D. S1015K
Mic & SW. B.D. S1091D Main Amp B.D. S1005L
Pre Amp B.D. S1018F



S1008D EQ & SELECTOR SW. B.D

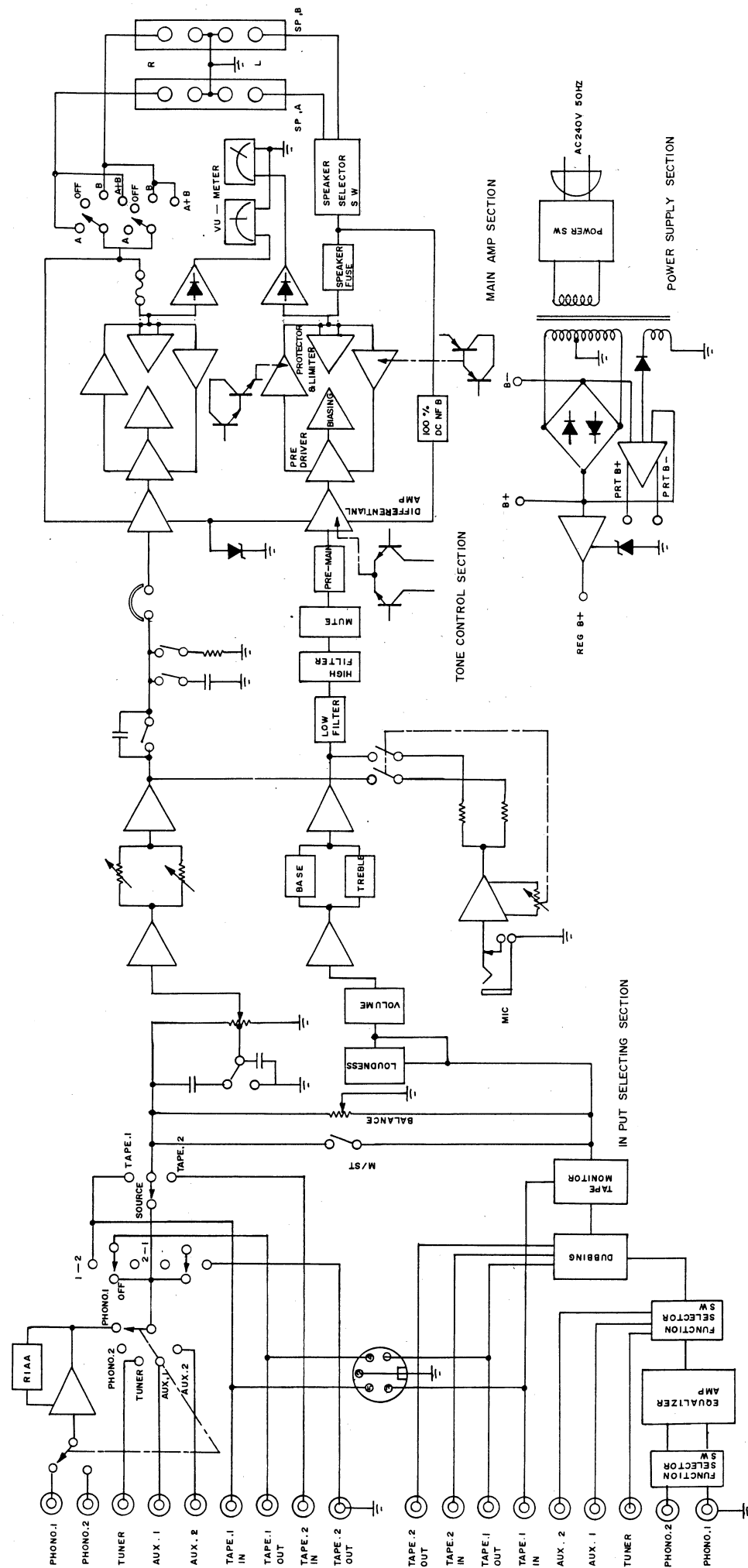


S1091D MIC & SW. B.D.

Symbol	Description	Location
R403	$2.2\text{K}\Omega \pm 5\% \frac{1}{4}\text{W}$	1
R404	$12\text{K}\Omega$ "	1
R405	$180\text{K}\Omega$ "	1
R406	$27\text{K}\Omega$ "	1
R407	$1\text{K}\Omega$ "	1
R408	$10\text{K}\Omega$ "	1
R409	$18\text{K}\Omega$ "	2
R410	330Ω "	2
R411	$200\text{K}\Omega$ "	1
R412	$2.2\text{K}\Omega$ "	2
R413	$56\text{K}\Omega$ "	2
R414	$47\text{K}\Omega$ "	2
R415	$10\text{K}\Omega$ "	2
R416	$47\text{K}\Omega$ "	2
R417	$220\text{K}\Omega$ "	2
R418	560Ω "	1
R419	560Ω "	1
R424	$5.6\text{K}\Omega$ "	2
C401	$0.01\mu\text{F} \pm 5\% (\text{M})$	1
C402	$0.0068\mu\text{F}$ "	1
C403	$0.0068\mu\text{F}$ "	1
C404	$0.01\mu\text{F}$ "	1
C405	$100\mu\text{F } 16\text{WV}$	1
C406	$1\mu\text{F } 50\text{WV}$	1
C407	$100\text{PF} \pm 10\%$	1
C408	$0.047 +80 -20$	1
C409	$0.047 +80 -20$	2
C410	$68\text{PF} \pm 10\%$	2
C411	$100\mu\text{F } 10\text{WV}$	2
C412	$220\mu\text{F } 25\text{WV}$	2
C413	$4.7\mu\text{F } 16\text{WV}$	2
Q401	2SC 1681	1
Q402	2SC 1681	2
Q403	2SA 841	2

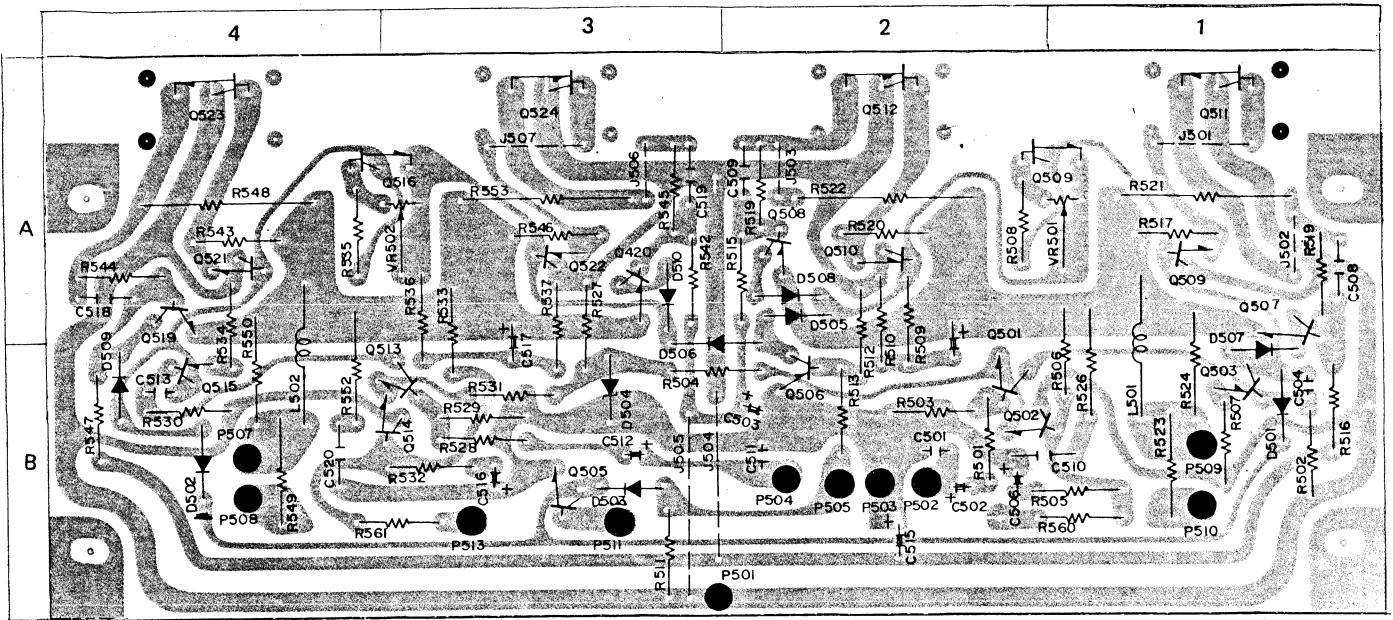
Symbol	Description	Location	Symbol	Description	Location
R201	220K Ω $\pm$ 5% $\frac{1}{4}$ W	1A	R224	120 Ω $\pm$ 5% $\frac{1}{4}$ W	1A
R202	220K Ω "	1A	R225	120 Ω "	1A
R203	4.7K Ω "	1A	R226	1.5M Ω "	1A
R204	4.7K Ω "	1A	R227	1.5M Ω "	1A
R205	56K Ω "	2A	R228	1.5M Ω "	1A
R206	56K Ω "	2A	R229	1.5M Ω "	1B
R207	27K Ω "	2A			
R208	560 Ω "	2A	C201	4.7 μ F 16WV	2A
R209	560 Ω "	2B	C202	4.7 μ F 16WV (T)	2A
R210	27K Ω "	2B	C203	4.7 μ F 16WV (T)	2A
R211	33K Ω "	2A	C204	100 μ F 10WV	2A
R212	100K Ω "	2A	C205	100 μ F 10WV	2B
R213	100K Ω "	2B	C206	0.0022 μ F $\pm$ 5% (M)	2A
R214	33K Ω "	2B	C207	0.0022 μ F "	2B
R215	820K Ω "	2A	C208	0.0082 μ F "	2A
R216	820K Ω "	2A	C209	0.0082 μ F "	2B
R217	15K Ω "	2A	C210	4.7 μ F 16WV	2A
R218	15K Ω "	2B	C211	220 μ F 25WV	2A
R219	3.3K Ω "	2B	C212	4.7 μ F 16WV	2B
R220	220K Ω "	2A			
R221	220K Ω "	2B	Q201	2SC 1681	2A
R222	4.7K Ω "	2A	Q202	2SC 1681	2B
			Q203	2SA 841	2A
R223	4.7K Ω "	2B	Q204	2SA 841	2B

BLOCK DIAGRAM



Symbol	Description	Location	Symbol	Description	Location
R601	22K Ω $\pm$ 5% $\frac{1}{4}$ W	1AB	C606	0.0047 μ F $\begin{smallmatrix} +80 \\ -20 \end{smallmatrix}$ %	2A
R602	5.6K Ω "	1B	C607	0.0047 μ F $\begin{smallmatrix} +80 \\ -20 \end{smallmatrix}$	2A
R603	1.5M Ω "	1B	C608	0.0047 μ F "	2B
R604	47K Ω "	12B	C609	0.0047 μ F "	2B
R605	100K Ω "	2B	C610	1 μ F 50WV	1A
R606	10K Ω "	2B	C611	1 μ F 50WV	1B
R607	1K Ω "	2A	C612	10 μ F 50WV	1A
R608	1.2K Ω "	2A	C613	10 μ F 50WV	1B
R609	4.7K Ω "	2A	C614	0.47 μ F 50WV	1A
R610	330 Ω $\pm$ 5% $\frac{1}{2}$ W	2A			
R611	10K Ω $\pm$ 5% $\frac{1}{4}$ W	2A			
R612	10K Ω "	1A	D601	HZ-7B Zener	2A
R614	4.7K Ω "	2A	D602	MA 161	2B
R615	4.7K Ω "	2B	D603	30DI	2A
R619	100 Ω "	1B	D604	"	2A
R620	100 Ω "	1B	D605	"	2B
R621	2.2K Ω "	1A	D606	"	2B
R622	2.2 Ω K Ω "	1B	D607	MA 161	2B
R623	470 Ω "	1A	D608	HZ-5B Zener	1A
R624	470 Ω "	1B	D609	"	1B
R625	220K Ω "	1AB	D610	IN 34	1A
R626	220K Ω "	1AB	D611	IN 34	1B
			D612	IN 34	1A
			D613	IN 34	1B
VR601	100K Ω Semifixed	1A			
VR602	100K Ω Semifixed	1B			
		1			
C602	47 μ F 35WV	2B	Q601	2SC 734	1B
C603	22 μ F 35WV	2A	Q604	2SC 1166	2A
C604	100 μ F 25WV	2A	Q605	2SC 733	2A
C605	4.7 μ F 50WV	1B	Q606	2SC 733	2A

S1005D Main Amp B.D.



Symbol	Description	Location	Symbol	Description	Location	Symbol	Description	Location
R501	1K $\pm$ 5% $\frac{1}{4}$ W	2B	C503	1 μ F 50WV	2B	Q506	2SA 561	2B
R502	2.2K "	1B	C504	20PF	1B	Q507	2SC 734	1A
R503	68K "	2B	C506	10 μ F 10WV	2B	Q508	2SA 561	2A
R504	22K "	3B	C507	47 μ F 35WV	2B	Q509	2SC 1567	1A
R505	2.7K "	1B	C508	0.01 μ F	1A	Q510	2SA 794	2A
R506	470K "	1B	C509	0.01 μ F	2A	Q511	2SD 428	1A
R507	15 Ω "	1B	C510	0.047 μ F	2B	Q512	2SB 558	2A
R508	560 Ω "	2A	C511	470PF	2B	Q513	2SC 1681	3B
R509	2.7K "	2A	C512	0.47 μ F 50WV	3B	Q514	2SC 1681	3B
R510	2.2K "	2A	C513	20PF	4B	Q515	2SA 777	4B
R511	10K "	3B	C515	1 μ F 50WV	2B	Q516	2SC 828	3A
R512	39K "	2A	C516	10 μ F 10WV	3B	Q519	2SC 734	4A
R513	27K "	2B	C517	4.7 μ F 35WV	3B	Q520	2SA 561	3A
R515	2.2K "	2A	C518	0.01 μ F	4A	Q521	2SC 1567	4A
R516	22K "	1B	C519	0.01 μ F	3A	Q522	2SA 794	3A
R517	120 Ω "	1A	C520	0.047 μ F	4B	Q523	2SD 428	4A
R518	680 Ω "	1A				Q524	2SB 558	3A
R519	680 Ω "	2A	VR501	500 Ω	1A	D501	IN 4149	1B
R520	120 Ω "	2A	VR502	500 Ω	3A	D502	IN 4149	4B
R521	0.33 Ω $\pm$ 5% 2W	1A	L 501	2.7 μ H Choke coil	1A	D503	IN 4149	3B
R522	0.33 Ω $\pm$ 5% 2W	2A	L 502	"	4A	D504	HZ14B	3B
R523	30 Ω $\pm$ 5% 1W	1B				D505	IN 4149	2A
R524	3.3 Ω $\pm$ 5% $\frac{1}{2}$ W	1B	Q501	2SC 1681	2B	D506	IN 4149	3B
R526	10 Ω $\pm$ 5% 1W	1B	Q502	2SC 1681	2B	D507	IN 4149	1B
R527	2.2K $\pm$ 5% $\frac{1}{4}$ W	3A	Q503	2SA 777	1B	D508	IN 4149	2A
R528	1K "	3B	Q504	2SC 828	1A	D509	IN 4149	4B
R529	68K "	3B	Q505	2SC 734	3B	D510	IN 4149	3A
R530	2.2K "	4B						
R531	22K "	3B						
R532	2.7K "	3B						
R533	470K "	3A						
R534	15 Ω "	4A						
R535	560 "	4A						
R536	2.7K "	3A						
R537	2.2K "	3A						
R542	22K $\pm$ 5% $\frac{1}{4}$ W	3A						
R543	120 Ω "	4A						
R544	680 Ω "	4A						
R545	680 Ω "	3A						
R546	120 Ω "	3A						
R547	22K "	4B						
R548	0.33 Ω $\pm$ 5% 2W	4A						
R549	330 Ω $\pm$ 5% 1W	4B						
R550	3.3 Ω $\pm$ 5% $\frac{1}{2}$ W	4B						
R552	10 Ω $\pm$ 5% 1W	4B						
R553	0.33 Ω $\pm$ 5% 2W	3A						
R560	68K $\pm$ 5% $\frac{1}{4}$ W	1B						
R561	68K "	3B						
C501	470PF	2B						
C502	0.47 μ F 50WV	2B						

