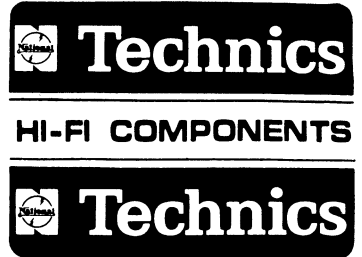


# Service Manual



## Stereo Integrated Amplifier



## MODEL SU-3500

### TECHNICAL SPECIFICATION (IHF)

#### MAIN AMPLIFIER SECTION

Music Power:	190W (4Ω) 125W (8Ω)
1kHz continuous power:	
each channel driven	65W/65W (4Ω) 50W/50W (8Ω)
both channels driven	55W+55W (4Ω) 43W+43W (8Ω)
20Hz~20kHz continuous power:	
both channels driven	47W+47W (4Ω) 41W+41W (8Ω)
Total harmonic distortion:	0.08%
Intermodulation distortion:	0.08%
Power bandwidth:	
(both channels driven at 8Ω)	5Hz~70kHz -3dB 5Hz~200kHz +0dB -3dB
Frequency response:	
Residual hum and noise:	0.5mV
S/N:	110dB
Damping factor:	50 (4Ω) 100 (8Ω)
Input sensitivity and impedance:	1V/50kΩ
Load impedance:	4~16Ω 8~16Ω
	MAIN or REMOTE MAIN + REMOTE

#### PRE AMPLIFIER SECTION

Input sensitivity and impedance:	PHONO 1, 2	2mV/25kΩ	50kΩ	100kΩ
	TUNER, AUX 1, 2		100mV/50kΩ	
	TAPE DECK 1, 2 (PLAYBACK)		100mV/50kΩ	
	TAPE DECK 1, REC/PLAY (Input)		100mV/50kΩ	

PHONO 1, 2 maximum input voltage:	510mV
Total harmonic distortion:	0.05%
S/N:	PHONO 1, 2 70dB TUNER, AUX 1, 2 90dB
Frequency response:	
PHONO 1, 2	RIAA standard curve ±0.5dB
TUNER, AUX 1, 2	5Hz~100kHz +0dB -3dB
BASS	50Hz +12dB~-12dB
TREBLE	20kHz +12dB~-12dB
LOW	30Hz -12dB/oct
HIGH	8kHz -12dB/oct
Loudness control (volume at -30dB):	100Hz +8dB
Output voltage and impedance:	PRE OUT rated max. 1V/100Ω 11V/100Ω
	TAPE DECK 1, 2 (REC OUT) 100mV/500Ω
	TAPE DECK 1 REC/PLAY (output) 30mV/80kΩ

#### GENERAL

Power Supply:	50Hz/60Hz 110/120/220/240V
Power consumption:	380W
Dimensions (W×H×D):	16-1/8"×5-1/2"×13-3/8" (410×140×340) mm
Weight:	22.5 lbs. (10.2kg)

### TECHNISCHE DATEN (DIN 45 500)

#### VERSTÄRKERTEIL

Musikleistung:	2×95W (4Ω) 2×62.5W (8Ω)
RMS-Dauerleistung bei 1kHz:	
beide Kanäle zusammen angesteuert	2×55W (4Ω) 2×43W (8Ω)
20Hz~20kHz RMS-Dauerleistung:	
beide Kanäle zusammen angesteuert	2×47W (4Ω) 2×41W (8Ω)
Harmonische Verzerrungen:	
Nennleistung bei 1kHz 4Ω	0.08%
Nennleistung bei 40Hz~16000Hz 4Ω	0.08%
Intermodulationsverzerrung:	
Nennleistung bei 250Hz: 8000Hz = 4:1 4Ω	0.08%
Leistungsbandbreite:	
(beide Kanäle zusammen angesteuert bei 4Ω)	5Hz~70kHz -3dB 5Hz~100kHz +0dB -3dB
Frequenzgang:	
Fremdspannungsabstand:	Nennleistung
	PHONO 60dB AUX 80dB 50mV Ausgangsleistung PHONO 53dB AUX 54dB
Dämpfungsfaktor:	50 (4Ω) 100 (8Ω)
Endimpedanz:	MAIN oder REMOTE 4~16Ω MAIN + REMOTE 8~16Ω

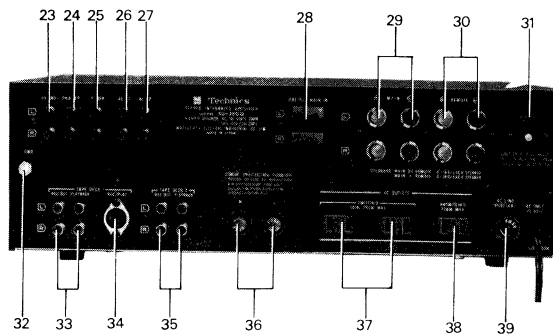
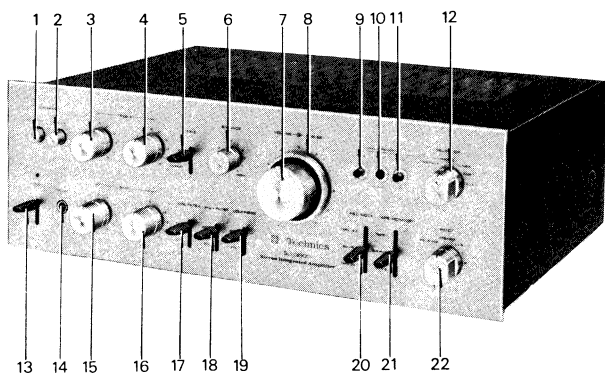
Eingangsempfindlichkeit & Impedanz:	MAIN IN 1V/50kΩ PHONO 1, 2 2mV/25kΩ 50kΩ 100kΩ TUNER, AUX 1, 2 100mV/50kΩ TAPE DECK 1, 2 (PLAYBACK) 100mV/50kΩ TAPE DECK 1 REC/PLAY (Wiedergabe) 100mV/50kΩ
PHONO 1, 2 Maximal Eingangsspannungen:	510mV
Klangregler:	Bässe 50Hz +12dB~-12dB Höhen 20kHz +12dB~-12dB Rumpel 30Hz -12dB/oct Rausch 8kHz -12dB/oct
Filter:	
Gehörliche Lautstärkekontur: (Lautstärke -30dB)	100Hz +8dB
Ausgangsspannungen & Impedanz:	PRE OUT Nenn 1V/100Ω Maximal 11V/100Ω TAPE DECK 1, 2 (REC OUT) 100mV/500Ω TAPE DECK 1 REC/PLAY (Aufnahme) 30mV/80kΩ

#### ALLGEMEINE DATEN

Netzspannung Umschaltbar:	50Hz 60Hz 110/120/220/240V
Leistungsaufnahme:	380W
Abmessungen (B×H×T):	410×140×340 mm
Gewicht:	10.2kg

**MATSUSHITA ELECTRIC**  
MATSUSHITA ELECTRIC TRADING CO., LTD.  
P. O. Box 288, Central Osaka, Japan

## LOCATION OF CONTROLS



1. MAIN SPEAKER SWITCH [S10]
2. REMOTE SPEAKER SWITCH [S11]
3. LEFT TREBLE CONTROL
4. RIGHT TREBLE CONTROL
5. TONE SWITCH [S6]
6. BALANCE CONTROL
7. VOLUME CONTROL
8. PRE-SET
9. PHONO IMPEDANCE 25kΩ SWITCH [S2-1]
10. PHONO IMPEDANCE 50kΩ SWITCH [S2-2]
11. PHONO IMPEDANCE 100kΩ SWITCH [S2-3]
12. SELECTOR SWITCH [S1]
13. POWER SOURCE SWITCH [S12]
14. HEADPHONES JACK
15. LEFT BASS CONTROL
16. RIGHT BASS CONTROL
17. LOW FILTER SWITCH [S8]
18. HIGH FILTER SWITCH [S9]
19. LOUDNESS SWITCH [S7]
20. RECORDING MODE SWITCH [S4]
21. TAPE MONITOR SWITCH [S3]
22. MODE SWITCH [S5]

23. PHONO 1 INPUT TERMINALS
24. PHONO 2 INPUT TERMINALS
25. TUNER INPUT TERMINALS
26. AUX 1 INPUT TERMINALS
27. AUX 2 INPUT TERMINALS
28. PRE AMP AND MAIN AMP CONNECTION TERMINALS
29. MAIN SPEAKER TERMINALS
30. REMOTE SPEAKER TERMINALS
31. VOLTAGE SELECTOR SWITCH [S13]
32. GROUND TERMINAL
33. TAPE DECK 1 CONNECTION TERMINALS
34. TAPE DECK 1 CONNECTION DIN SOCKET
35. TAPE DECK 2 CONNECTION TERMINALS
36. CIRCUIT PROTECTION FUSES
37. AC OUTLETS ..... Switched
38. AC OUTLET ..... Unswitched
39. AC LINE FUSE

## TO REMOVE CABINET AND BOTTOM BOARD

1. Remove six (6) cabinet mounting screws, nos. ① ~ ④, as illustrated in figure 1. (No. ③ and ④ screws are left and right side of cabinet.)
2. Remove cabinet from chassis.
3. Remove six (6) bottom board mounting red screws, nos. ⑤ ~ ⑩, as illustrated in figure 2.
4. Remove bottom board from chassis.

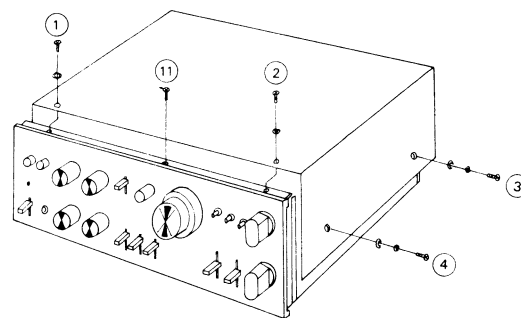


Fig. 1

## TO REMOVE FRONT PANEL

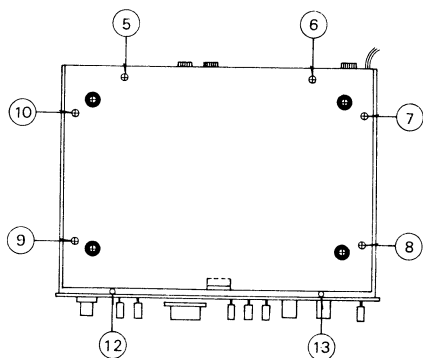


Fig. 2

1. Remove cabinet from chassis.
2. Remove control knobs from set. Refer to "Cabinet & Chassis Parts Location" on page 7.
3. Remove pre-set from set. Refer to "Cabinet & Chassis Parts Location" on page 7.
4. Remove three (3) panel mounting black screws, nos. ⑪ ~ ⑬ as illustrated in figure 1 and figure 2.
5. Remove front panel from chassis.

## ALIGNMENT INSTRUCTIONS

### Notes:

1. Volume control ..... Minimum
2. Maintain line voltage at rated voltage.
3. Before adjusting, lco adjusting volumes (VR402, Left and Right channel) should be turned to the right side completely.
4. The lco adjustment should be started about 5 minutes after setting the power switch to the ON position.

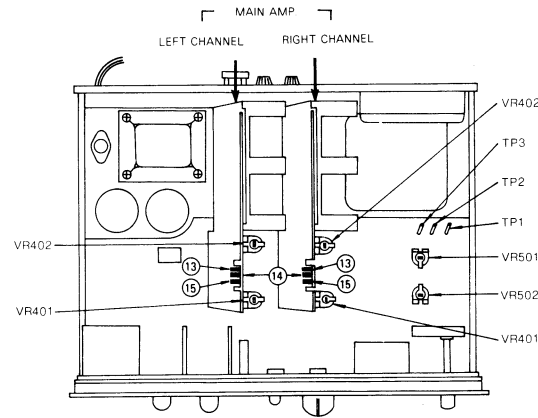
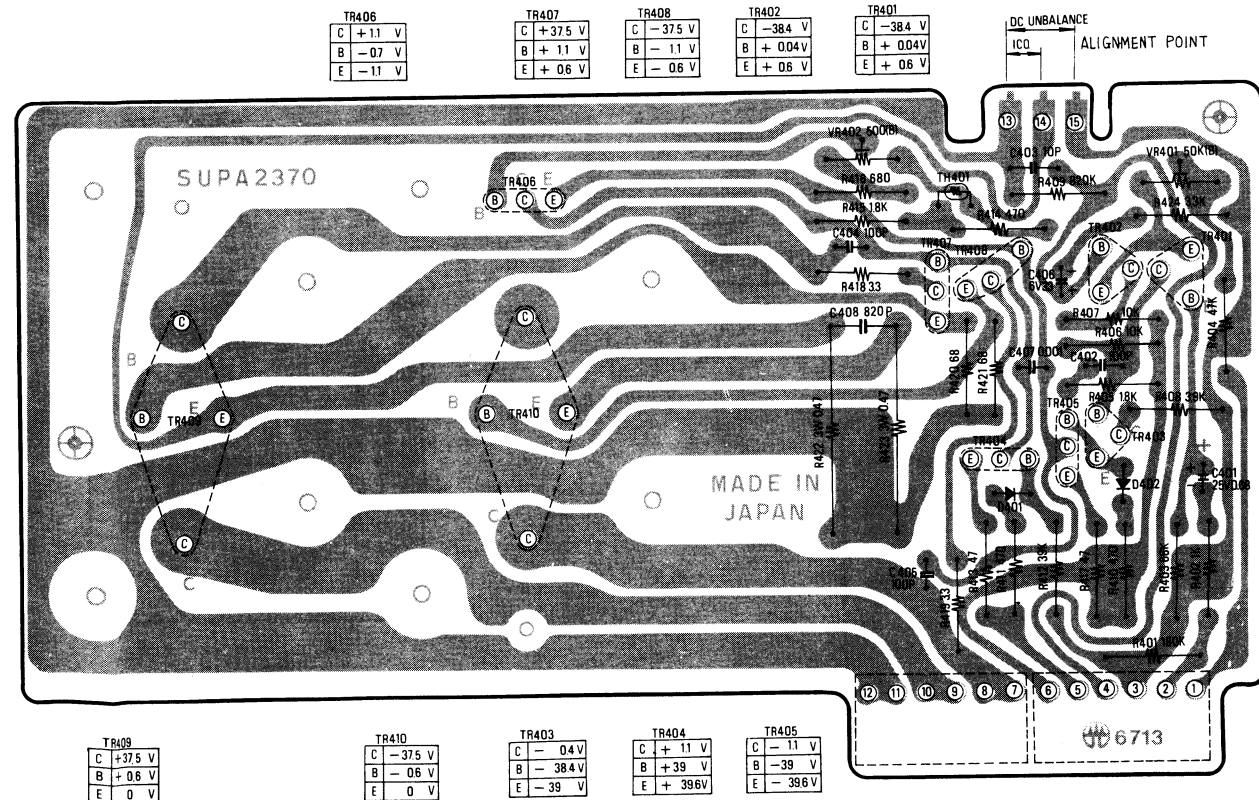


Fig. 3

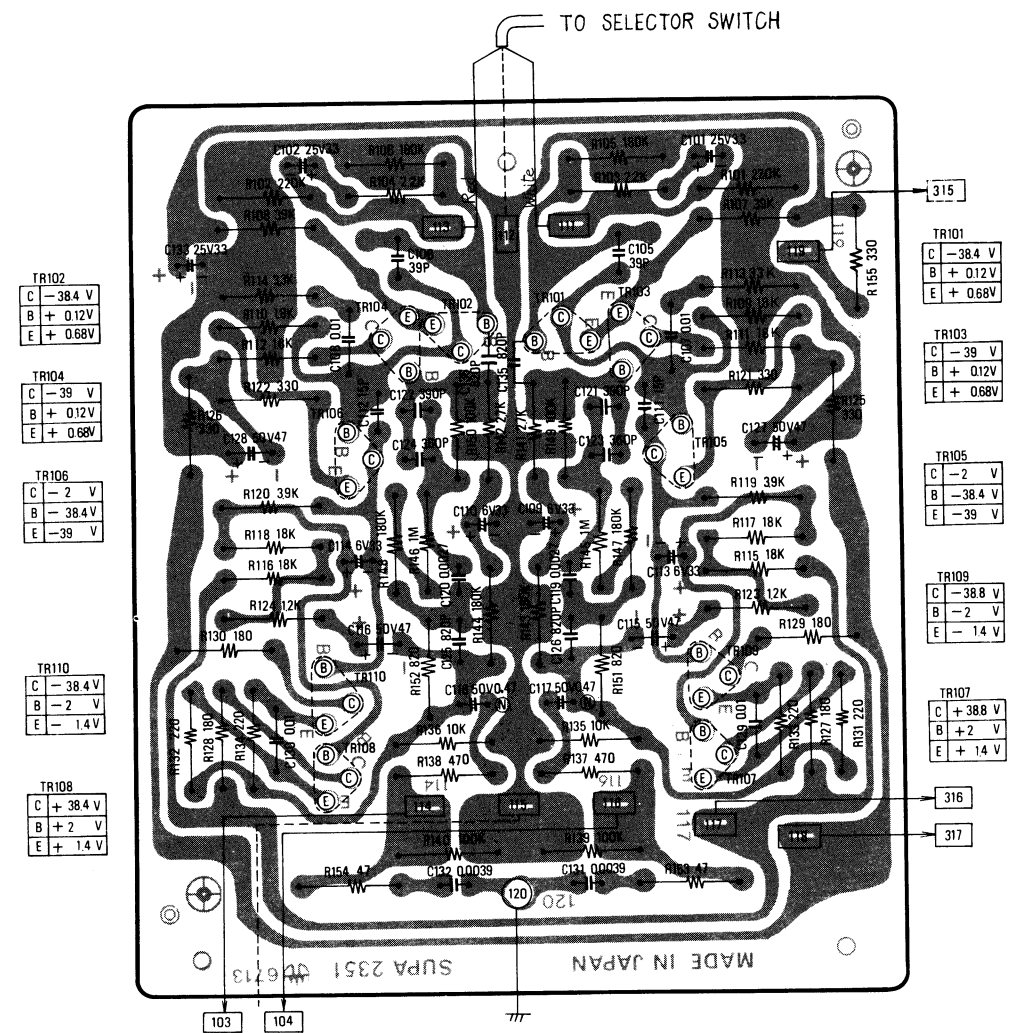
ALIGNMENT	DC VTVM CONNECTION	ADJUSTMENT POINTS	REMARKS
POSITIVE POWER VOLTAGE	Connect DC VTVM to test point TP3. Common to test point TP1.	VR501	Make sure that DC VTVM becomes positive (+) 40V.
NEGATIVE POWER VOLTAGE	Connect DC VTVM to test point TP1. Common to test point TP2.	VR502	Make sure that DC VTVM becomes negative (-) 40V.
DC UNBALANCE	Connect DC VTVM to alignment point 13 and 15 terminals. Refer to figure 3.	VR401	Make sure that DC VTVM becomes zero (0) V. [Left and Right side]
lco	Connect DC VTVM to alignment point 14 (positive side) and 13 (negative side) terminals. Refer to figure 3.	VR402	Make adjustment so that the indication on DC VTVM becomes 15mV. [Left and Right side]

## MAIN AMPLIFIER Circuit

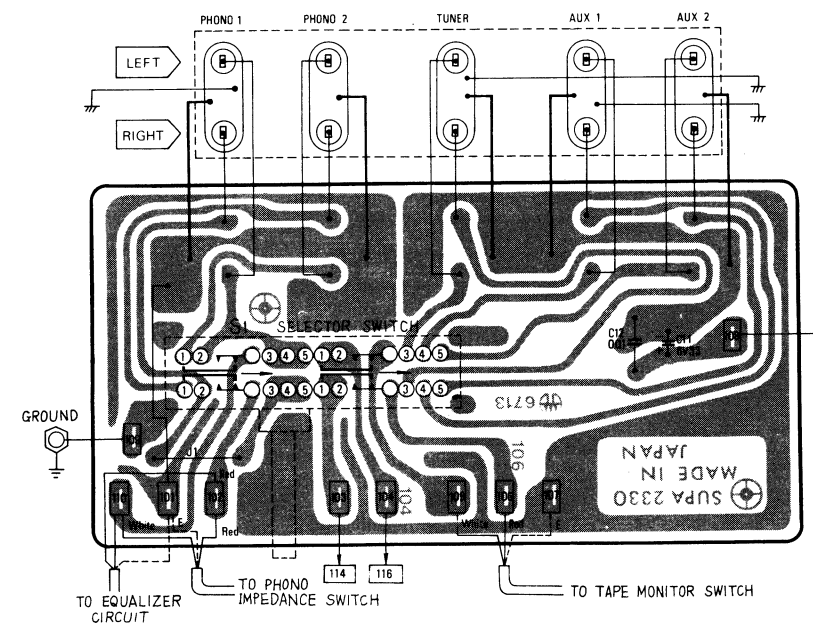
Left channel is same as Right channel



## EQUALIZER Circuit Board



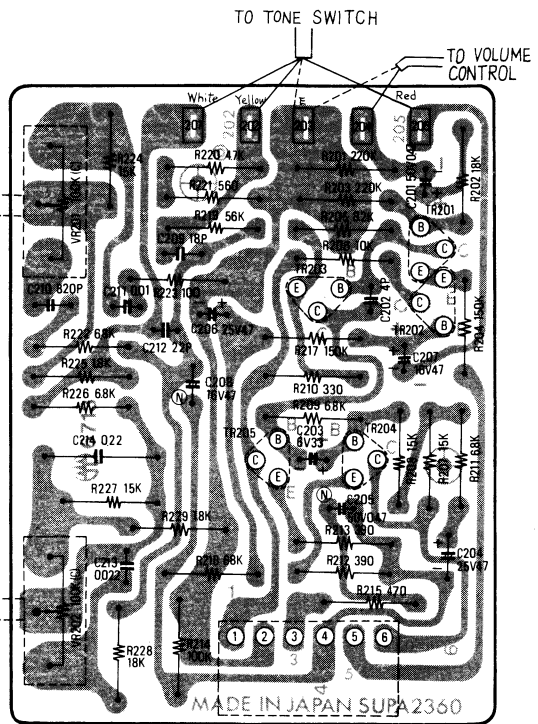
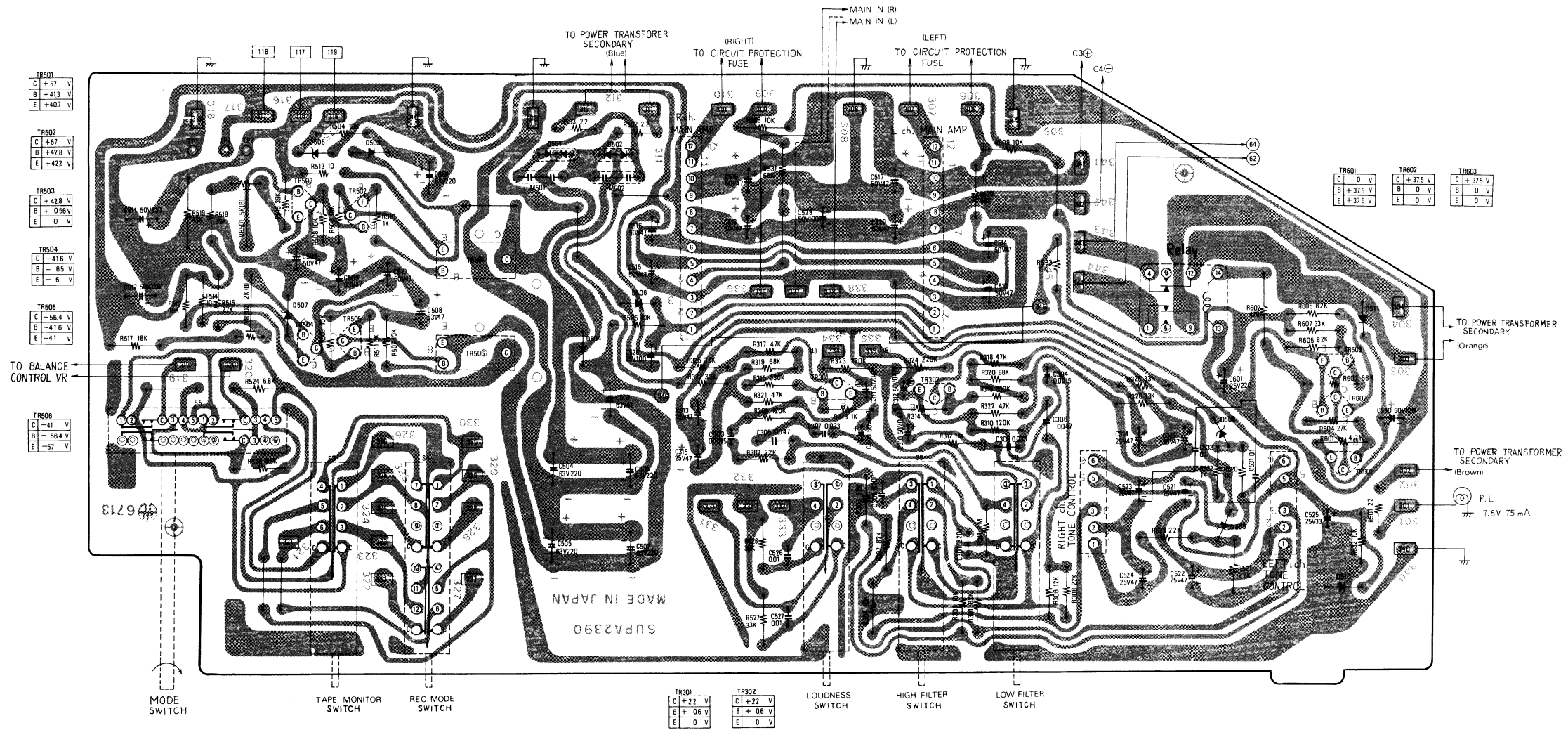
## SELECTOR SWITCH Circuit Board



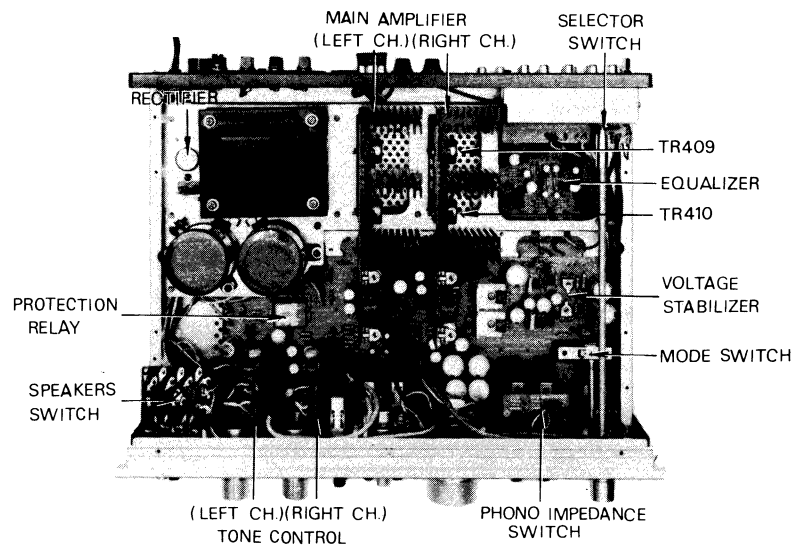
**POWER SOURCE, SPEAKER PROTECTION, FILTER AMP, TAPE MONITOR SWITCH & MODE SWITCH Circuit Board**

**TONE CONTROL Circuit Board**

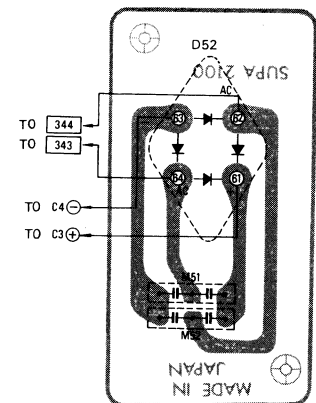
Left channel is same as Right channel



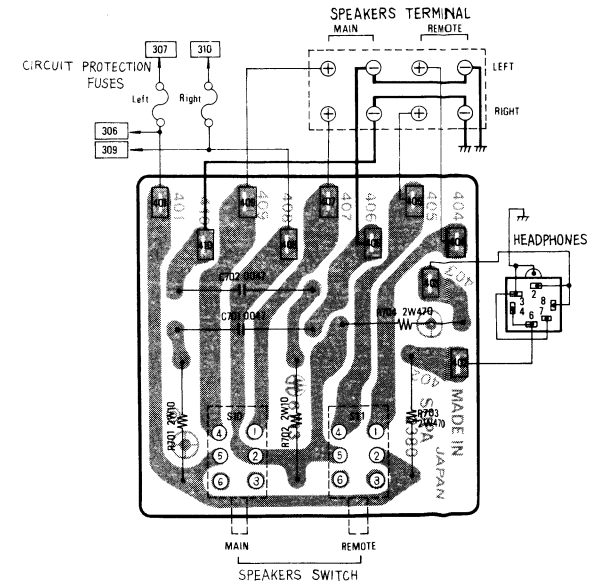
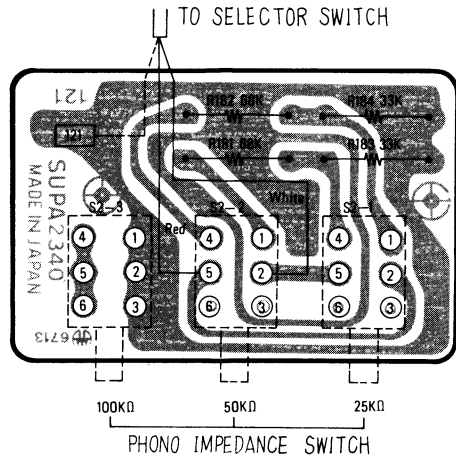
**SPEAKERS SWITCH Circuit Board**



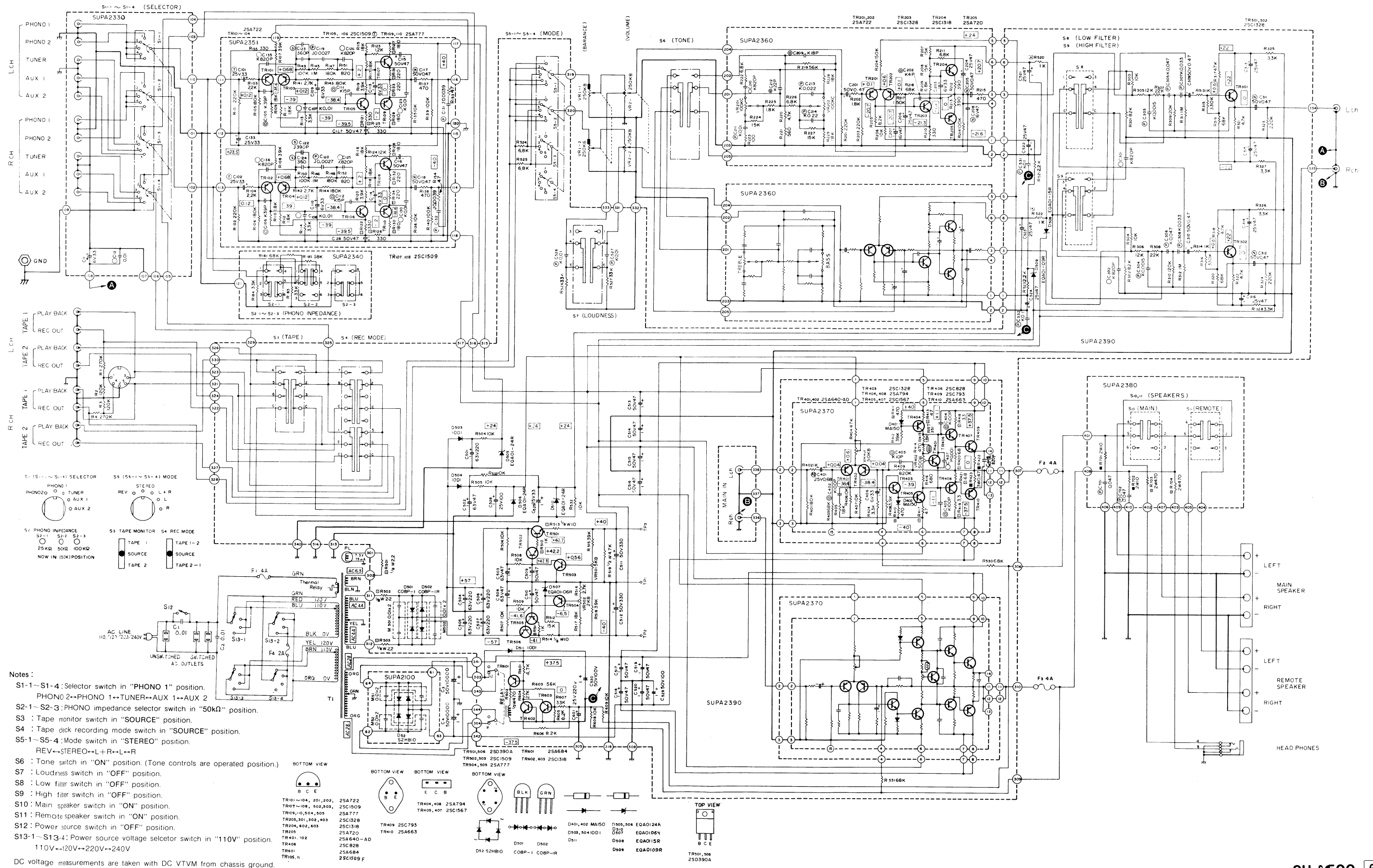
**RECTIFIER**



**PHONO IMPEDANCE SWITCH Circuit Board**

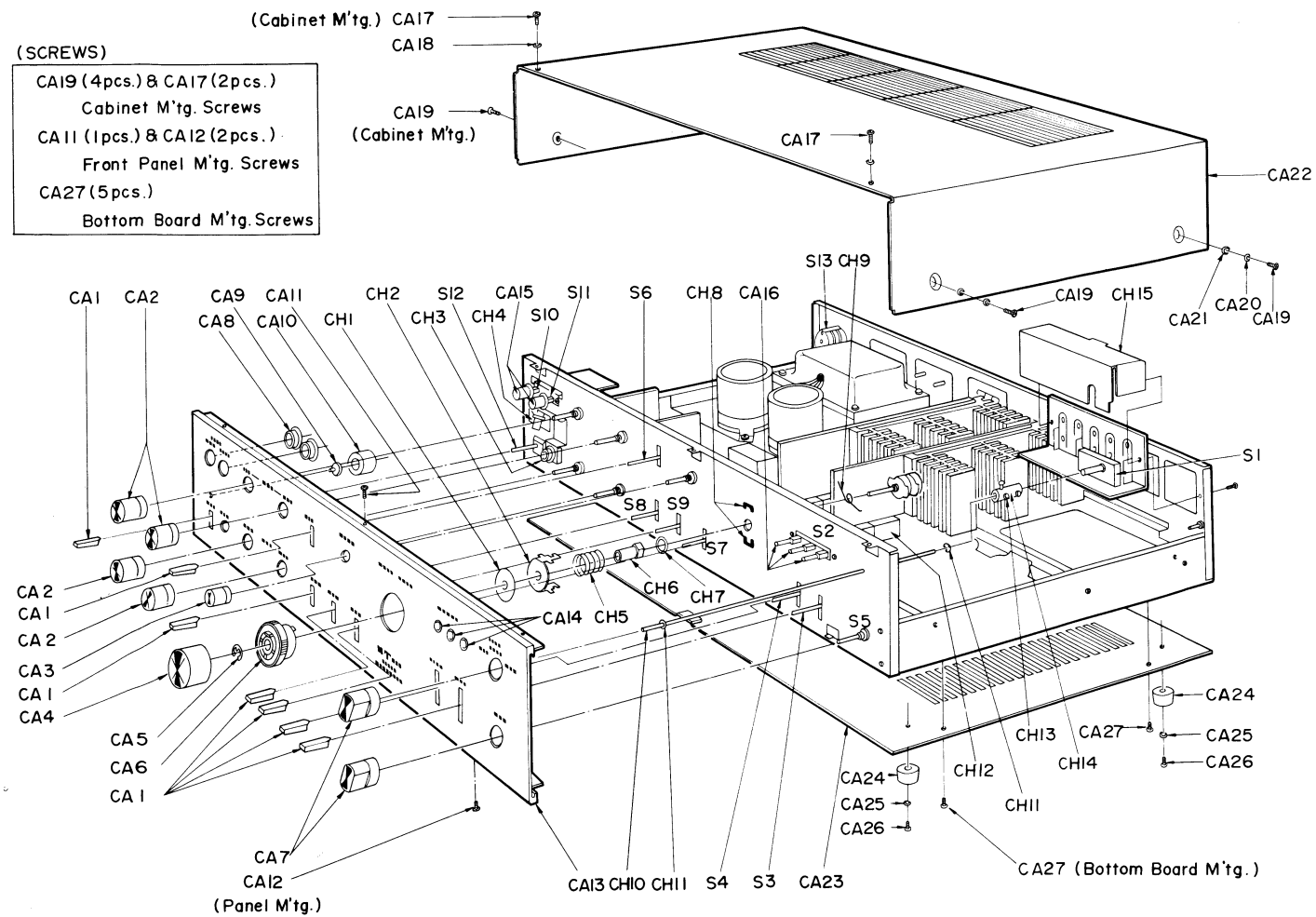


# Schematic Diagram ..... Model SU-3500 (This schematic diagram may be modified at any time with the development of new technology.)

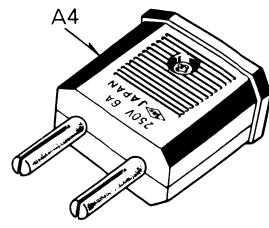
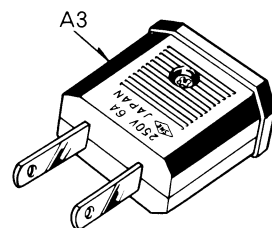
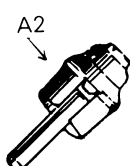
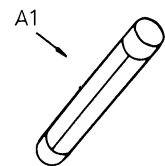


- Notes:**
- S1-1~S1-4: Selector switch in "PHONO 1" position.  
PHONO 2→PHONO 1→TUNER→AUX 1→AUX 2
  - S2-1~S2-3: PHONO impedance selector switch in "50kΩ" position.
  - S3: Tape monitor switch in "SOURCE" position.
  - S4: Tape deck recording mode switch in "SOURCE" position.
  - S5-1~S5-4: Mode switch in "STEREO" position.  
REV→STEREO→L+R→L+R
  - S6: Tone switch in "ON" position. (Tone controls are operated position.)
  - S7: Loudness switch in "OFF" position.
  - S8: Low filter switch in "OFF" position.
  - S9: High filter switch in "OFF" position.
  - S10: Main speaker switch in "ON" position.
  - S11: Remote speaker switch in "ON" position.
  - S12: Power source switch in "OFF" position.
  - S13-1~S13-4: Power source voltage selector switch in "110V" position.  
110V→120V→220V→240V
- DC voltage measurements are taken with DC VTVM from chassis ground.

## ■ CABINET & CHASSIS PARTS LOCATION



## ■ ACCESSORIES



## ■ REPLACEMENT PARTS LIST

### NOTES:

- Part numbers are indicated on most mechanical parts. Please use this part number, for parts orders.
- X-Z rank: X rank parts will cover 80% of repair needs  
X + Y rank parts will cover 95% of repair needs  
Z rank parts are less necessary.

### Bemerkungen:

- Die meisten mechanischen Teile sind mit Teilnummern versehen. Bitte geben Sie diese Nummern an, sofern die Teile keine Bezugsnummern haben.
- Gruppen X-Z: Teile der Gruppe X machen 80% des Ersatzteilbedarfes aus. Teile der Gruppen X und Y machen 95% des Ersatzteilbedarfes aus. Teile der Gruppe Z werden seltener benötigt.

Ref. No	Part No.	Description	Per Set (Pcs.)	Remarks	Ref. No	Part No	Description	Per Set (Pcs.)	Remarks
<b>TRANSISTORS</b>									
TR101.102.103	2SA722T	Equalizer Differential & Tone Differential Amplifier	8	X	R209(x2) 211(x2) 222(x2) 226(x2) 524.525	ERD14TJ682	6.8kΩ 1/4W ±5% Carbon	10	Y
104.201(x2) 202(x2)	2SC1509 @Q 2SC1328T	Equalizer Amplifier Tone, Filter & Main Pre Driver Amplifier	2 6	X	R205(x2) 605.606 R135.136	ERD14TJ822	8.2kΩ 1/4W ±5% Carbon	4	Y
TR105.106 301.302. 403(x2)	2SA720R	Tone Control Amplifier	2	X	206(x2).303. 304.406(x2) 407(x2).504.	ERD14TJ103	10kΩ 1/4W ±5% Carbon	20	Y
TR203(x2) 602.603	2SC1318R	Tone Amp & Speaker Protection Switching	4	X	505.506.507. 508.509.532.				
TR109.110.504. 505	2SA777Q	Equalizer Amp. An Error Voltage Detector & DC Amp.	4	X	533.608. 609				
TR107.108.502. 503	2SC1509Q	Equalizer Amp. DC Amp. & An Error Voltage Detector	4	X	R305.306 R207(x2)	ERD14TJ123	12kΩ 1/4W ±5% Carbon	2	Y
TR401(x2) 402(x2)	2SA640AD-R	Main Amp. Differential Amplifier	4	X	208(x2) 224(x2)	ERD14TJ153	15kΩ 1/4W ±5% Carbon	9	Y
TR406(x2) 408(x2)	2SC828R	Thermal Compensation Pre Driver & Driver Amplifier	2 4	X	227(x2).512 R115.116.117. 118.228(x2)	ERD14TJ183	18kΩ 1/4W ±5% Carbon	7	Y
TR405(x2) 407(x2)	2SC1567R	Pre Driver & Driver Amplifier	4	X	517				
TR409(x2) TR410(x2)	2SC793Y 2SA663Y	Power Amplifier Power Amplifier	2 2	X	R307.308 R604	ERD14TJ223	22kΩ 1/4W ±5% Carbon	2	Y
TR501.506 TR601	2SD390A-Q 2SA684Q	DC Voltage Control Speaker Protection Relay Switching	2 1	X	R183.184.526 527.607 R412(x2).515. 518	ERD14TJ333	33kΩ 1/4W ±5% Carbon	5	Y
<b>DIODES</b>									
D52 D401(x2) 402(x2)	SVDA2HB10 MA150	Rectifier Thermal Correction	1 4	X	R219(x2).603 R181.182 218(x2).319. 320.403(x2) 530.531	ERD14TJ563	56kΩ 1/4W ±5% Carbon	3	Y
D501 D502	SVDAC08P-1 SVDAC08P-1R	Rectifier, Positive Output Rectifier, Negative Output	1 1	X	R301.302 R139.140.149. 150.214(x2)	ERD14TJ823	82kΩ 1/4W ±5% Carbon	2	Y
D503.504.511 D505.506.510	RVD10D1 SVDAEQA0124R	Shock Noise Cancel & Rectifier 24V Zener, Shock Noise Cancel	3 3	X	R2.3.309.310 R217(x2)	ERD14TJ104	100kΩ 1/4W ±5% Carbon	6	Y
D507 D508 D509	SVDAEQA0106R SVDAEQA0115R SVDAEQA0109R	6V Zener, Voltage Stabilizer 15V Zener, Voltage Dropper 9V Zener, Voltage Dropper	1 1 1	X	R143.144.147. 148 R323.324 R1.4 R409(x2) R145.146.311. 312	ERD14TJ124	120kΩ 1/4W ±5% Carbon	4	Y
<b>TRANSFORMER and THERMISTORS</b>									
T1	SLTA5024S	Power Transformer	1	X	R107.108 R317.318 404(x2)	ERD14TJ274	270kΩ 1/4W ±5% Carbon	2	Y
TH401(x2)	RRT251	Thermistor, Driver Circuit	2	Y	R204(x2) R105.106 401(x2) R101.102	ERD14TJ824	820kΩ 1/4W ±5% Carbon	2	Y
<b>RESISTORS</b>									
R153.154 R223(x2) R155.210(x2) R212(x2) 213(x2) R137.138. 215(x2) 414(x2)	ERD14TJ470 ERD14TJ101 ERD14TJ331 ERD14TJ391	47Ω 1/4W ±5% Carbon 100Ω 1/4W ±5% Carbon 330Ω 1/4W ±5% Carbon 390Ω 1/4W ±5% Carbon	2 2 3 4	Y	R413(x2) 417(x2) R420(x2) 421(x2)	ERD14TJ471	470Ω 1/4W ±5% Carbon	6	Y
R221(x2) R416(x2) R151.152 R313.314. 402(x2)	ERD14TJ561 ERD14TJ681 ERD14TJ821 ERD14TJ102	560Ω 1/4W ±5% Carbon 680Ω 1/4W ±5% Carbon 820Ω 1/4W ±5% Carbon 1kΩ 1/4W ±5% Carbon	2 2 2 4	Y	R127.128.129. 130 R131.132.133. 134	ERD14TJ562	560Ω 1/4W ±5% Carbon	2	Y
R123.124 R109.110.111. 112.202(x2) 225(x2) 229(x2) 405(x2) 415(x2)	ERD14TJ122 ERD14TJ182	1.2kΩ 1/4W ±5% Carbon 1.8kΩ 1/4W ±5% Carbon	2 14	Y	R510.511.520. 522 R602 R519 R501.502.503	ERD14TJ122	2.2kΩ 1/4W ±5% Carbon	4	Y
R141.142.516 R113.114.325. 326.327.328. 424(x2) R119.120 408(x2) R220(x2) 321.322.601	ERD14TJ272 ERD14TJ332 ERD14TJ392 ERD14TJ472	2.7kΩ 1/4W ±5% Carbon 3.3kΩ 1/4W ±5% Carbon 3.9kΩ 1/4W ±5% Carbon 4.7kΩ 1/4W ±5% Carbon	3 8 4 5	Y	R410(x2) 411(x2) R510.511.520. 522 R602 R519 R501.502.503 R51.3514 R701.702 R422(x2) 423(x2) R703.704	ERD14TJ272	2.7kΩ 1/4W ±5% Carbon	3	Y
<b>RESISTORS (continued)</b>									
						ERD14FJ334	330kΩ 1/4W ±5% Carbon	2	Y
						ERD14FJ3R3	3.3Ω 1/4W ±5% Carbon	4	Y
						ERD14FJ470	47Ω 1/4W ±5% Carbon	4	Y
						ERD14FJ680	68Ω 1/4W ±5% Carbon	4	Y
						ERD14FJ181	180Ω 1/4W ±5% Carbon	4	Y
						ERD14FJ221	220Ω 1/4W ±5% Carbon	4	Y
						ERD14FJ331	330Ω 1/4W ±5% Carbon	4	Y
						ERD14FJ471	470Ω 1/4W ±5% Carbon	4	Y
						ERD14FJ102	1kΩ 1/4W ±5% Carbon	4	Y
						ERD12TJ471	470Ω 1/2W ±5% Carbon	1	Y
						ERD12TJ472	4.7kΩ 1/2W ±5% Carbon	1	Y
						ERD18FJ2R2	2.2Ω 1/8W ±5% Carbon	3	Y
						ERD18FJ100	10Ω 1/8W ±5% Carbon	2	Y
						ERX2ANJ100	10Ω 2W ±5% Metallic	2	Y
						ERX3ANJR47	0.47Ω 3W ±5% Metallic	4	Y
						ERG2ANJ471	470Ω 2W ±5% Metallic	2	Y



Ref. No.	Part No.	Description	Per Set (Pcs)	Remarks	Ref. No.	Part No.	Description	Per Set (Pcs)	Remarks
<b>PACKING PARTS</b>					P5	SPNA230A	Carton Box, Inner	1	○ Z
P1	SPPA16-1	Soft Cover	1	Z	P6	SPSA30	Pad, Between Inner & Outer Carton Box	1	Z
P2	SPP163	Polyethylene Bag	1	Z	P7	SPGA440A	Carton Box, Outer	1	○ Z
P3	SPSA73	Pad, Left Side	1	○ Z	P8	SQFA191	Printed Matter, Complete	1	○ Y
P4	SPSA70	Pad, Right Side	1	○ Z		SQXA5114	Instructions Book (Order SQFA191)	(1)	

## ■ PACKINGS

